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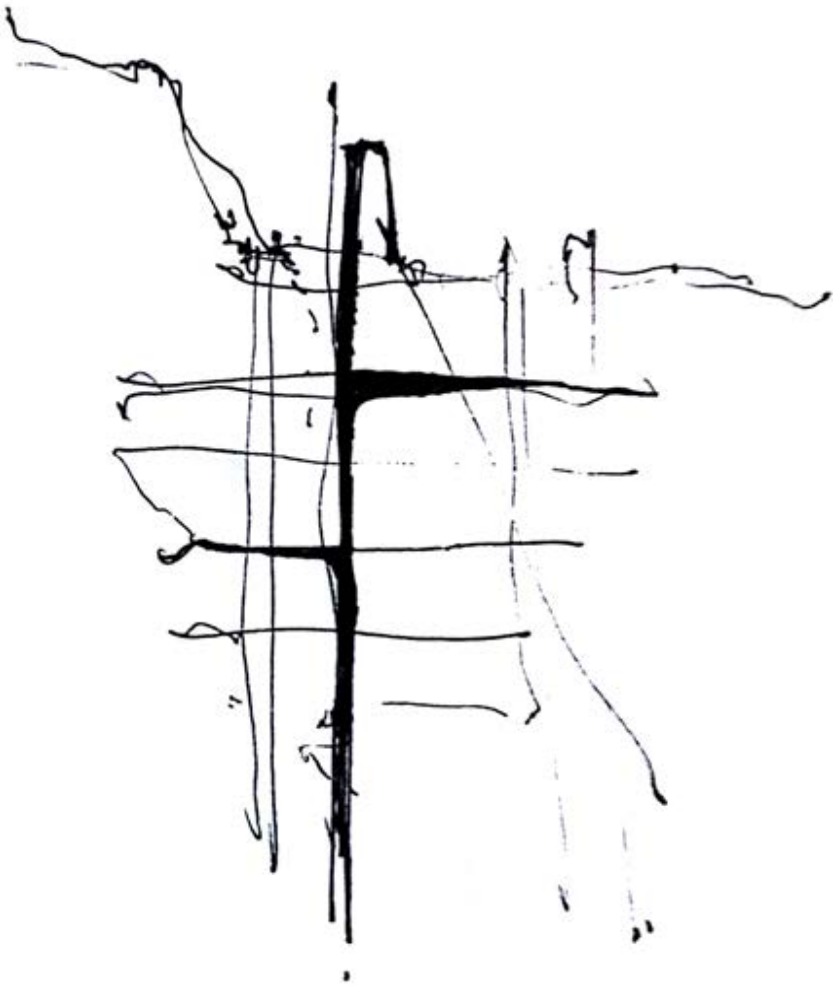

MAVERICK:

An Architecture of Refuge from the margins, in anticipation of a disastrous event in a hostile South African context.

Dalita Rosslee

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The space of our primary perception, the space of our dreams and that of our passions hold within themselves qualities that seem intrinsic: there is a light, ethereal, transparent space, or again a dark, rough, encumbered space, a space from above of summits, or on the contrary a space from below of mud…

Gaston Bachelard (Foucault 1967:2)

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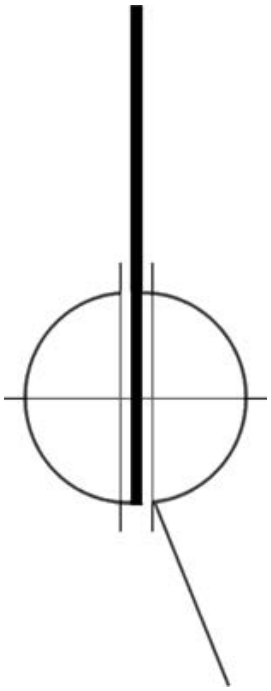

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PURPOSE:

Submitted in fulfilment as part of the requirements
for the degree of Masters of Architecture (Professional),
March(Prof), in the Faculty of Engineering,
Built Environment and Information Technology.

UNIVERSITY:

Department of Architecture
The University of Pretoria
South Africa
2016

DEGREE:

Master of Architecture (Prof)

COURSE CO-ORDINATOR:

Dr. Arthur Barker

STUDY LEADER:

Johan Swart

KEY WORDS:

Marginalised, Marginal, Refuge, Periphery

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MAVERICK:

An Architecture of Refuge from the margins, in anticipation of a disastrous event in a hostile South African context.

PROGRAM:

Place of refuge and development

SITE LOCATION:

Langeberge Ridge,
Pretoria Townlands 351-JR
Pretoria

COORDINATES:

25°46'14.5"S
28°09'39.1"E

THEORETICAL PREMISE:

From a distinctive normative position, a dominant narrative is formulated in order to regain an identity from the margins.

ARCHITECTURAL APPROACH:

The investigation into traditions of shelter and refuge facilitates the need to be safe. The architectural devices aim at prolonging safety through preservation and development of skills and knowledge.

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PART I

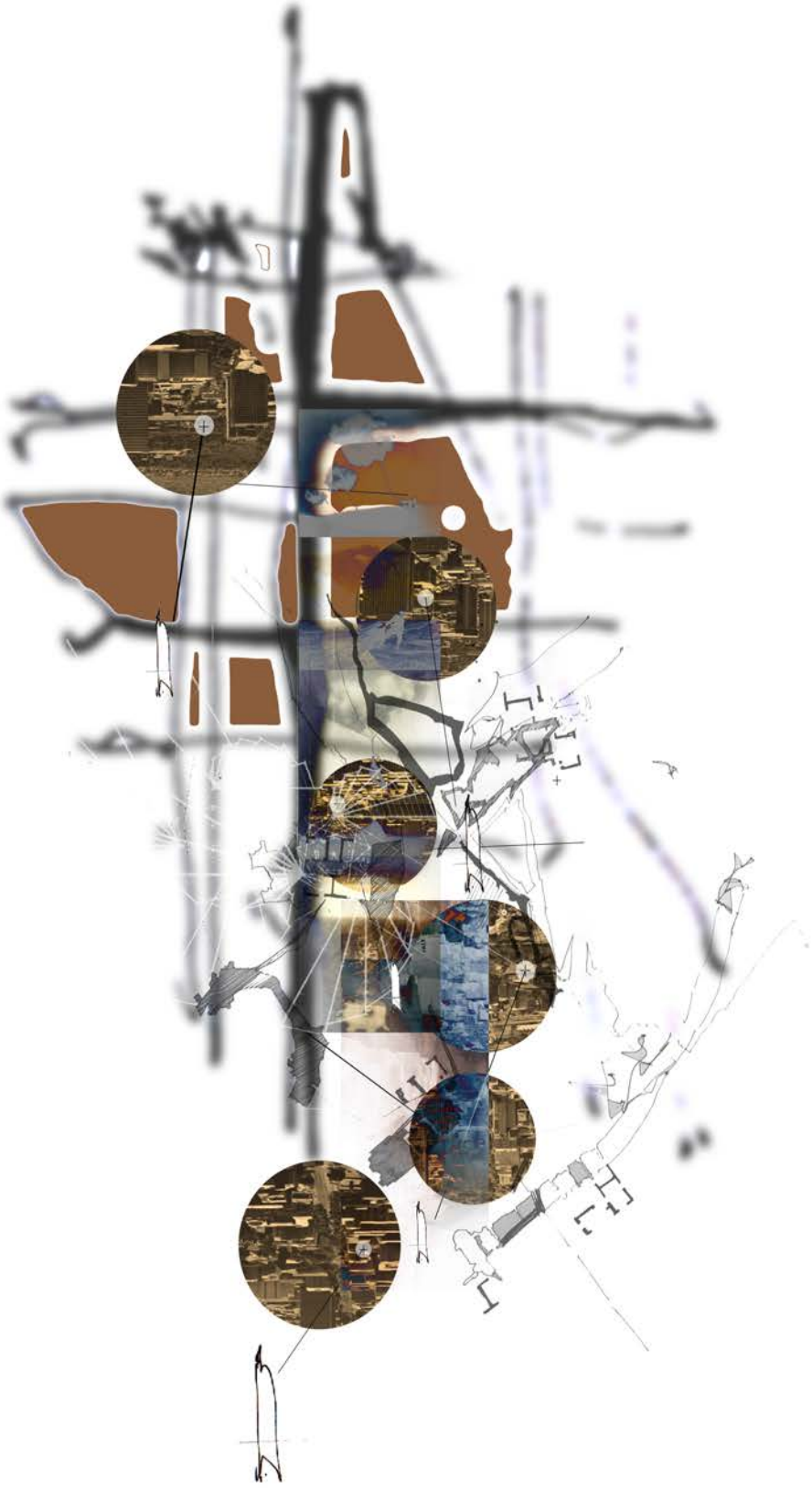

Figure 1: Parti diagram of the layers of the architectural intentions.

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DECLARATION:

In accordance with Regulation 4(e) of the General Regulations (G.57) for dissertations and theses, I declare that the dissertation, which I hereby submit for the degree Master of Architecture (Professional) at the University of Pretoria, is my own work and has not been submitted by me for a degree at this or any other tertiary institution.

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

Dalita Rosslee

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ACKNOWLEDGEMENTS

This dissertation is dedicated to my brother, Dieter.

My deepest gratitude to everyone who believed in me throughout my studies.

A special thank you:

Johan Swart, for the guidance, wisdom and encouragement throughout the year.

Dr. Arthur Barker, for making me believe (again) that architecture is meaningful and magical. You gave me the confidence I never knew I had.

To the De Reuck family for all your support and providing a home away from home.

Jenna de Reuck thank you for the editing of my book.

Aan my ouers, dankie dat mamma en pappa my altyd onvoorwaardelik ondersteun en liefhet.

Dane, your unconditional support, belief, advice and care throughout my studies.

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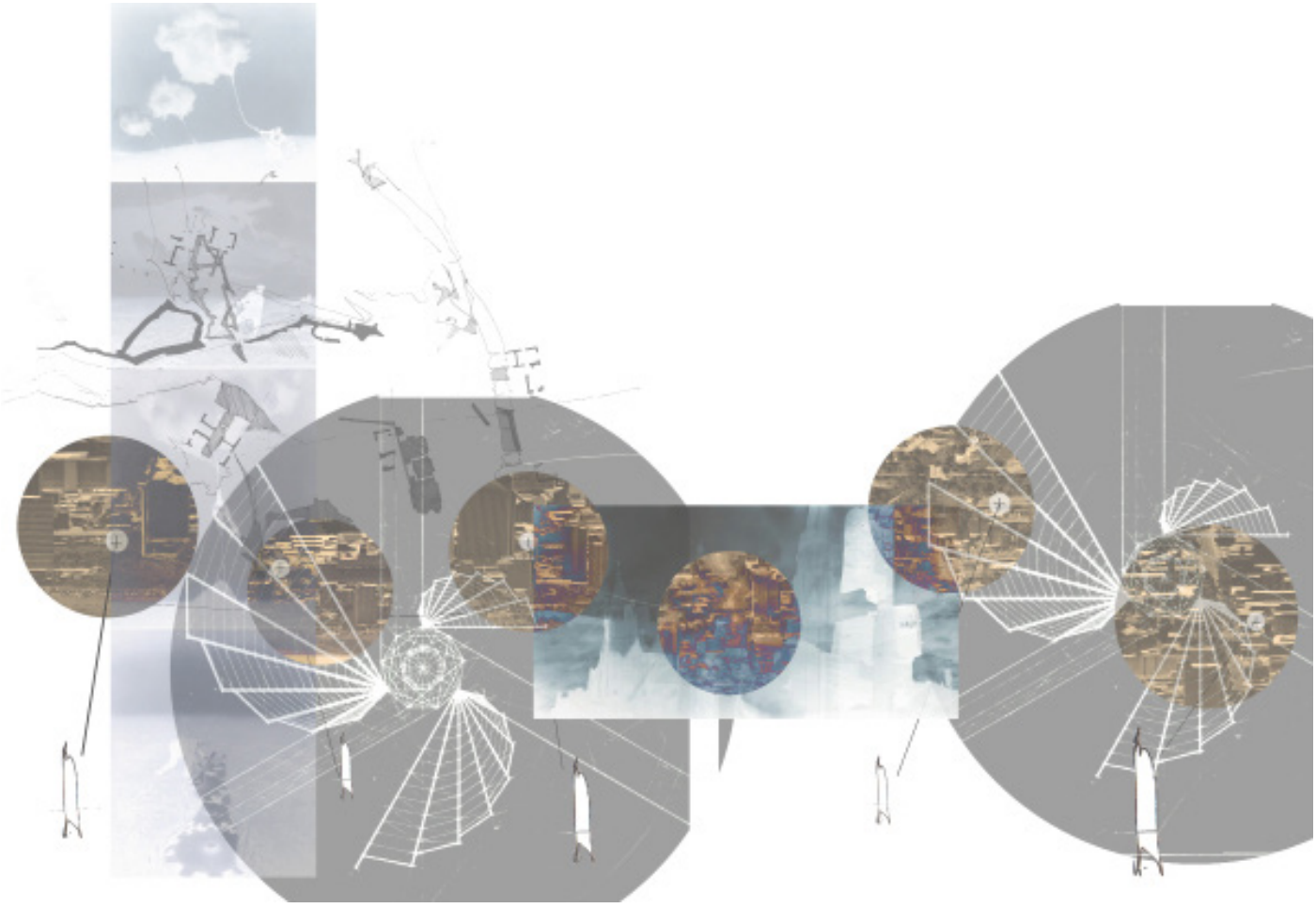
Figure 2: Abstract condition of author's perception of Pretoria. (2016)



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I. PREFACE

PURPOSE OF THE STUDY

The purpose of the investigation is to understand an alternative perception of architecture through various personalities and conditions. Current spatial and societal conditions are dissected to suggest that these conditions could be altered through experience (light-dark, move-stop, see-listen).

The initial premise stems from a deeply personal perspective, growing up with a physically disabled sibling. It is suggested that during the experience of a trauma (experienced specifically by my sibling) an inherent value exists in the need to provide support structures and safe environments. These structures and environments provide the victim of trauma with the ability to express continuous feelings of progress and regress.

In a position of the 'outsider' to this kind of trauma, it remains difficult to comprehend the perception embedded in the struggle of the victim - to regain a stable identity in relation to other people as well as the outside world. Through observation, it has become evident that this identity continually shapes according to conditions and the effects of the spatial and societal conditions on perception.

During the continuous struggle, the identity of the victim defends 'itself' and masks pain in order to regain strength and credibility. The dissertation focuses on struggling identities from the margins of life and attempts to understand how a marginalised position is continually shaped through a 'hostile' society and the conditions embedded in environments created by built form (architecture).

Architecture is deeply rooted in the understanding of conditions in time, thus the study argues for an alternative approach to the present and future narrative of Pretoria. This book illustrates a narrative that exists firstly on a global scale of time and secondly in the context of Pretoria. The narrative relates to a marginal group of people in need of shelter and refuge in anticipation of a disastrous event. Therefore the dissertation is to be viewed and understood in a speculative manner.

The reader is guided through the narrative to understand the group of marginal people in their original mental state, how current societal and political change alters this state and how the intervention can stabilise this state through shelter and refuge.

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The dissertation will consist of three parts:

PART 1
LATENT POTENTIAL:

Marginalised people and marginal space is investigated in relation to society.

PART 2
DISCERNING THE UNSEEN:

Interpretation of physical and social space in the making of architecture.

PART 3
BLURRING THE VISIBLE:

Introducing concepts of space and perception which lead to architectural ideas. The architectural development and and response blurs the norms of society.

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II. ABSTRACT

Survival is bound to conditions of safety (now) and preservation (future). The places that marginal people inhabit are either permanent familiar places, or temporary unfamiliar places. These places however are also bound to time. When circumstances are unpredictable survival instincts are heightened, and when circumstances are predictable survival instincts are at a neutral level (or in in a state of homeostasis). If a place is undergoing change such as societal and political change, the change in mental state of a person occurs as this affects the survival of that person.

The dissertation explores ideas of identity (valued, strong, useful), perception (how other people see the marginal) and marginalisation of specific groups of people. This will be investigated in terms of the preservation of the marginalised people through programmatic devices and activities (what can the marginal offer). The proposed programme (and supporting programmes) allow for the development of marginalised people in a hostile society in which survival and refuge are the first instincts.

The intent of the architecture seeks to explore the relationship between a marginal person and place on a conceptual and physical level. Moreover the architecture seeks to negotiate the margins that society has placed between those who are approved within society (the norm) and those who are different than the norm. A consciousness of this difference or 'margin area' exists throughout the investigation which allows for an alternative approach to create thought-provoking architecture rather than an aesthetically pleasing architecture.

It is the belief of the author that even though something might be 'broken', it remains more useful and is more valuable than something that was perfect in the first place. The project moves beyond monotony and strives for unity in difference (the marginal unite). Difference as a strength creates an opportunity to emphasise those who are different and finds a way to strengthen the alternative identities in a future spatial condition. The proposed programme facilitates the development of these identities to become stronger in time in order to withstand struggle and unpredictability.

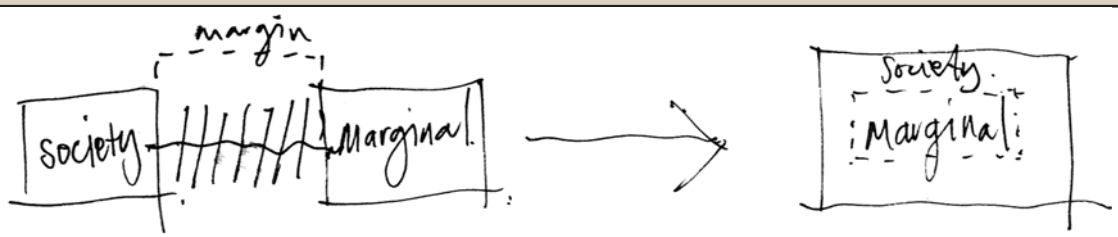

Figure 3: Relationship between marginal and society. (2016)

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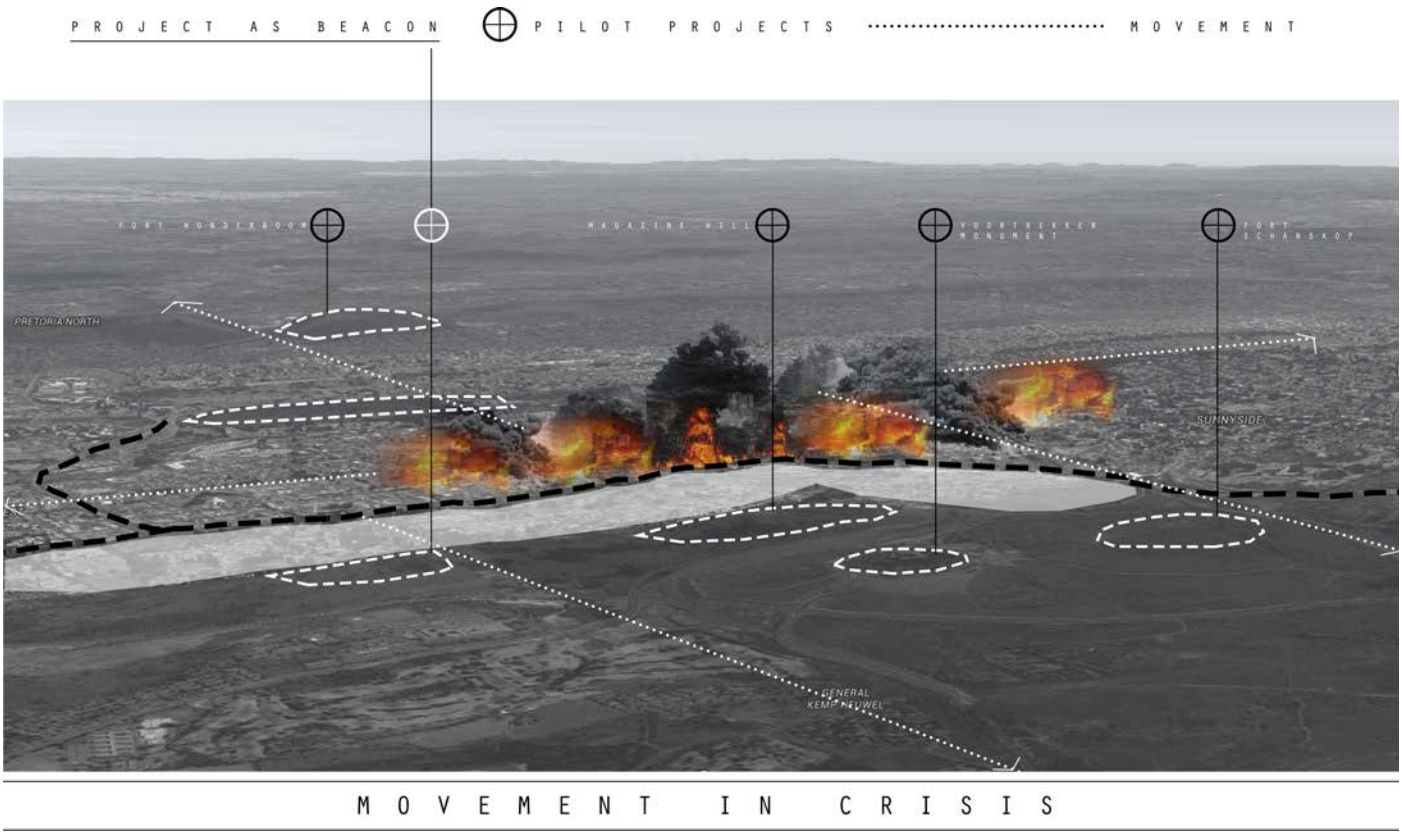

Figure 4: The location of the project in the context of a disaster in the CBD of Pretoria. The possible positions of similar pilot projects are also indicated. (2016)

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III. THE NARRATIVE/PROPOSED CURRENT CONDITION

"STUDENT FEES MUST FALL"
"ZUMA MUST FALL"
"RACISM MUST FALL"
"HOTTEST TEMPERATURES RECORDED TO DATE"
"WATER SCARCITY"
"DROUGHT INCREASES"
"NEAR JUNK STATUS FOR SA"

It was bound to happen. It is the year 2016 and in Tshwane all hell has begun to break loose. Globally there have been similar occurrences of outrage and violence such as ISIS and the havoc the group has created in vulnerable cities. The question asked, as the world begins to stand together sympathetically, sharing in suffering and loss, is, what has the world come to?

As events begin to worsen, the human condition reveals its character and fear begins to envelope peoples' minds and hearts. The realisation of the risk results in citizens gathering contingency plans for a near uncertain future, and with that there are the others that are not considered.

So what about the marginal? How do they survive in this crisis of an uncertain future?

With a theme of flight developing, survival is the first instinct. To each his own is the currency, and with that the struggles spill over to the political, economic and social.

The elderly folk wonder how many days they have left to come by with their limited pension funds. The mentally and physically disabled quiver away as their dependency on assistance increases. The homeless scrounge up the last left-overs and gather their belongings to "trek" to the next safest location. Prisoners manage to deal with their isolation in isolation, as they are acquainted with these themes of crisis and solitude.

As Disaster strikes there are limited safe havens to seek shelter in the increased destruction of the city.

With the condition that is coming into being where do the marginal take Refuge?

A grassroots movement forms and word of mouth rumours that a place exists. There yonder on the periphery, the marginal slowly trek and gather as a collective, gaining a hope as they travel to a sanctuary where all can seek comfort. Although their "homes" are destroyed by the outrage, it is now the survival of their identity that remains. Architecture awaits them.

Their message:
We grow stronger in numbers. Every day new distraught faces join the collective.

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IV. TERMINOLOGY

CONDITION:
(n) the circumstances or factors affecting the way in which people live or work, especially with regard to their well-being.
(v) have a significant influence on or determine (the manner or outcome of something).

CRISIS:
(n) a time of intense difficulty or danger.

DISABILITY:
(n) a physical or mental condition that limits a person's movements, senses, or activities.

EMBRYONIC:
(a) (of a system, idea, or organization) in a rudimentary stage with potential for development.

EMPIRICAL:
(a) based on, concerned with, or verifiable by observation or experience rather than theory or pure logic.

EPISTEMOLOGY:
(n) the theory of knowledge, especially with regard to its methods, validity, and scope, and the distinction between justified belief and opinion.

MARGINAL:
(n) relating to or at the edge or margin.

MARGINALISED:
(v) treat (a person, group, or concept) as insignificant or peripheral.

MARGINALISATION:
(n) the social process of becoming or being made marginal (especially as a group within the larger society); "the marginalization of the underclass".

MAVERICK:
(n) an unorthodox or independent-minded person.

NARRATIVE:
(n) a spoken or written account of connected events; a story.

PHENOMENOLOGY:
(n) an approach that concentrates on the study of consciousness and the objects of direct experience.

SCENARIO:
(n) a postulated sequence or development of events. A setting, in particular for a work of art or literature [or architecture].

SCENARIO ARCHITECTURE:
(n) a unique way of thinking, approaching and creating architecture - free from ideas, styles and preconceptions; it emerges spontaneously through a methodical and analytic design process.

REFUGE:
(n) the state of being safe or sheltered from pursuit, danger, or difficulty. A place or situation providing safety or shelter.

(Oxford English Dictionary)

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DISASTER:

(n) a sudden accident or a natural catastrophe that causes great damage or loss of life.

PRESERVATION:

(n) the action of preserving something for future use.

(Oxford English Dictionary)

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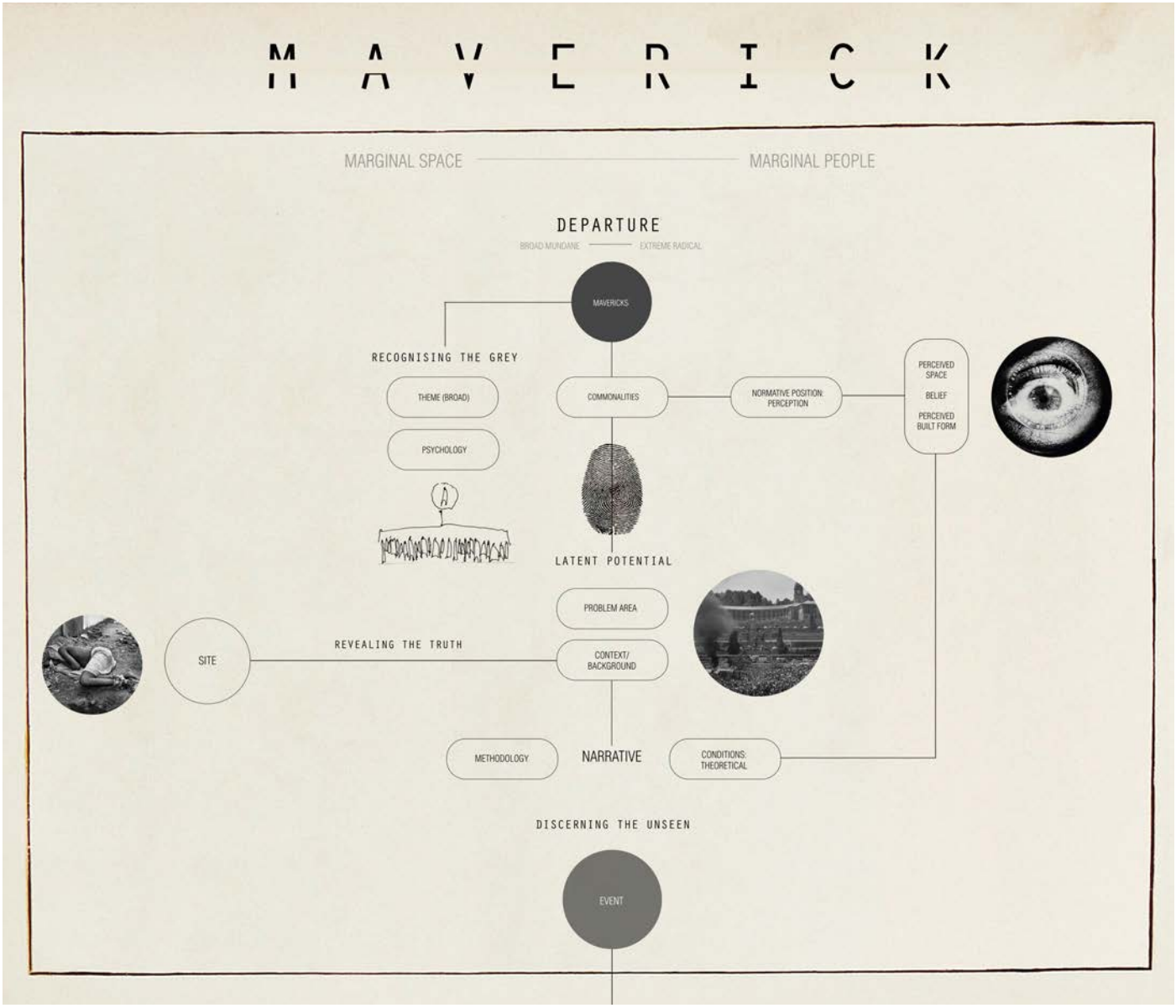

Figure 5: Mindmap of proposal process. (2016)

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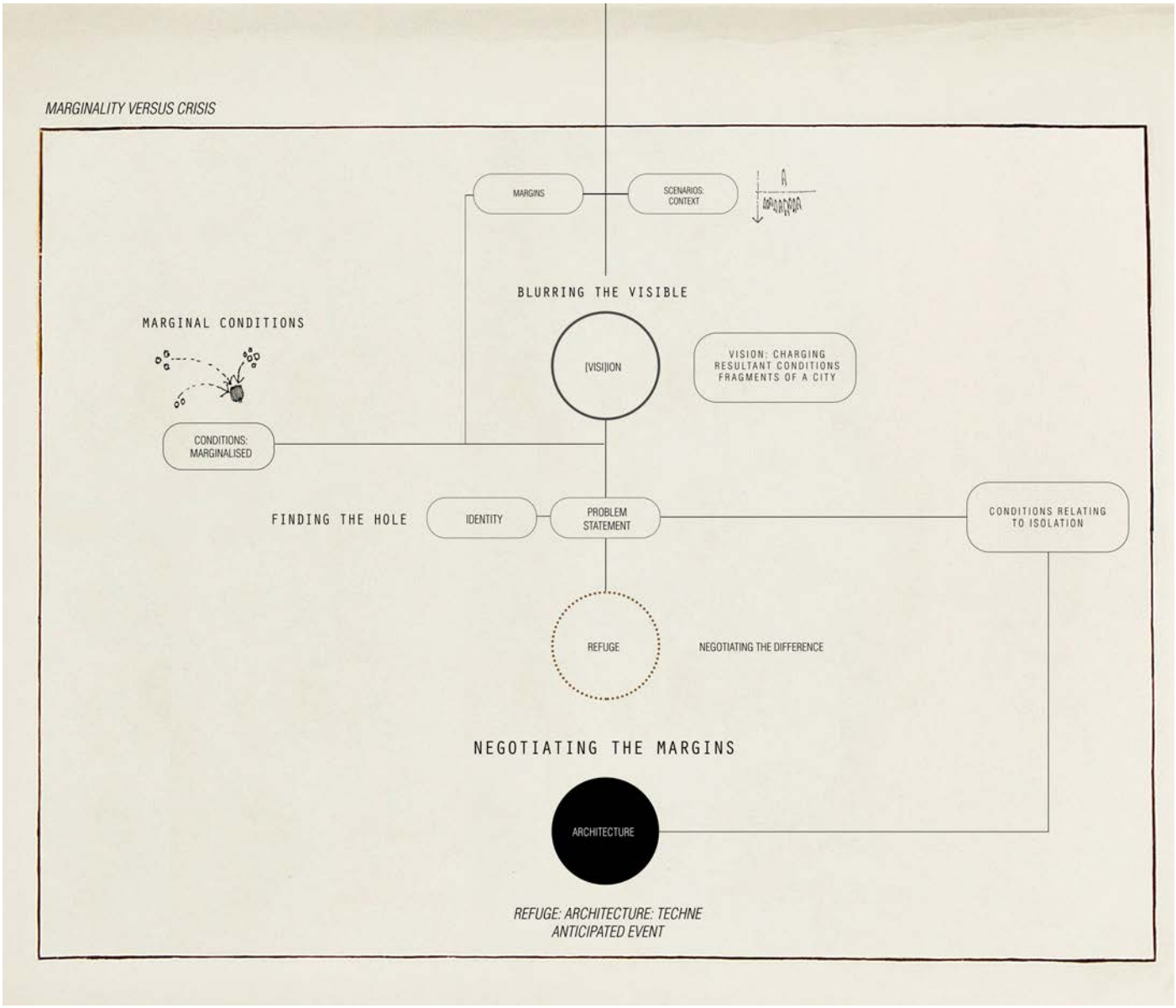

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XIV THE MARGINAL

a. A BRIEF OVERVIEW OF MARGINALITY

The following descriptions of marginality may be used as a starting point to comprehend and examine the concept of marginal space.

Marginality can be defined as the temporary state of having been put aside of living in relative isolation, at the edge of a system (cultural, social, political or economic), … when one excludes certain domains or phenomena from one's thinking because they do not correspond to the mainstream philosophy (International Geographical Union (IGU), 2003:2).

Marginality is generally used to describe and analyse socio-cultural, political and economic spheres, where disadvantaged people struggle to gain access (societal and spatial) to resources, and full participation in social life (Sommers et al., 1999). In other words, marginalised people might be socially, economically, politically and legally ignored, excluded or neglected, and are therefore vulnerable.

Due to the fact that we are dealing with people and resources, there is an immediate spatial implication to the act of marginalisation. Resources are limited based on location therefore a marginal condition exists. This implies lying at the edge of or poorly integrated into system (Sommers et al., 1999). With this concept in mind, it is intended to gain insights into the influence of physical locations and distance on the livelihoods of individuals/ groups and the space itself.

If spatial marginality is based on location, where integration is lacking, we can conclude that the spatial aspect is linked to the person inhabiting that specific place. Thus the argument of relationships is supported and therefore it is relevant to note that societal and spatial marginality go hand-in-hand to understand and interpret marginalisation as a whole.

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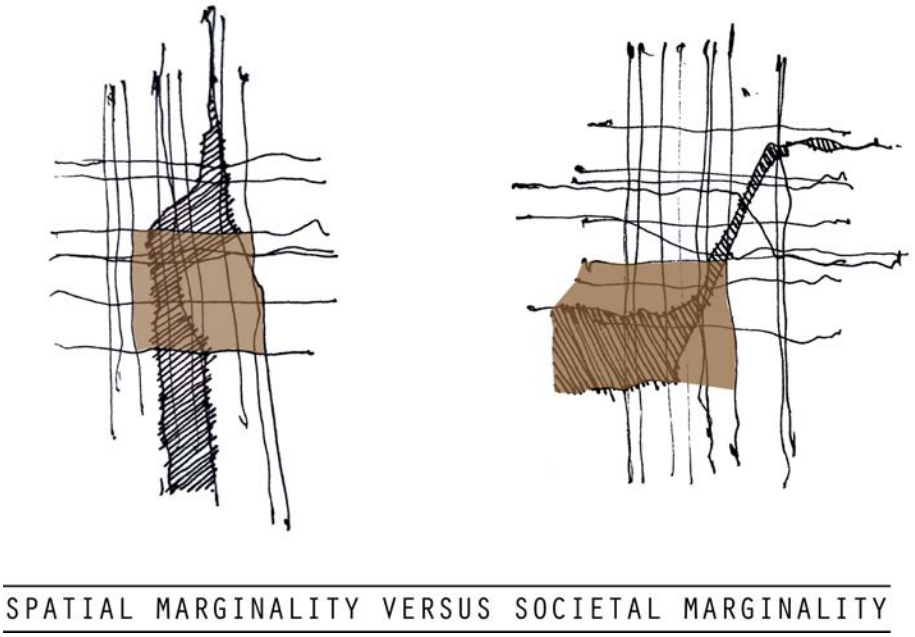

Figure 6: Societal and Spatial marginality form a close relationship in the investigation into marginality in the city. The shaded area in both figures represent the integration of the relationship from all directions of life.

b. CURRENT CONDITION OF MARGINALISATION IN PRETORIA

With the marginalisation of people comes marginalised space. The city is evidently based on a model of marginalisation through political regimes and social constructs. Today marginalised communities are unseen observers of the city due to the lack of credibility given to such people. The problem is embedded in city planning and development which lead to forced removals and displacement of marginal communities in the past.

Purely based on the narrative presented, one could argue that given South Africa's current condition of political chaos and civilian uproar over student fees, racism, inequality and language, the overall condition is problematic.

The prevalence of vulnerability is also observed throughout the city of Pretoria attributed to natural and societal risks experienced on a daily basis - countrywide protests on university grounds are examples of such risks. Future conditions in the same state of decline (political, social, cultural, physical and economic) could potentially cause disastrous events of a massive scale. The problem lies in the current mental state of the marginalised communities who face increased exposure to risks with very little control over their circumstances. Proposing an architectural intervention that ensures safety against such risks increases the marginalised community's coping strategies and improves their resilience against future disaster.

The consequences of leaving current marginalised conditions (on a spatial level) untouched, could lead to the complete destruction of the identity of marginalised communities and their environments. The legacy of these groups of people ultimately shaped by a broken society, will be lost.

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c. CHARACTERS INTRODUCED

To reference the marginal groups, this section will now introduce the characters (the marginal) which form part of the narrative of the dissertation. The characters and what they symbolise will only be stated here in order to understand further reference made to the marginal groups. The marginal groups are called 'The Mavericks'.

One should also note the reasoning for these characters. As part of the argument for a different perception from the margins, different identities exist within the marginal groups. This should be viewed as a strength not a shortcoming. Together the marginal groups form a collective identity of stability and potential for future sustenance.

CHARACTER 1: A CRIMINAL

This character symbolises a person experiencing inner conflict and solitude.

CHARACTER 2: AN ELDERLY PERSON

This character symbolises knowledge and the ability to preserve memories through collection and study.

CHARACTER 3: A MENTALLY DISABLED PERSON

This character symbolises the ability to observe through an imaginative perception.

CHARACTER 4: A PHYSICALLY DISABLED PERSON

This character symbolises the ability to use intellectual knowledge to create things.

CHARACTER 5: A HOMELESS PERSON

This character symbolises the ability to adapt quickly to different environments.

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d. CONCLUSION

The characters introduced, form part of the method of this investigation. As the initial premise states that the different identities within marginal groups are continually shaped according to conditions, it is clear that a past, present and future condition exists for each of the characters.

It is relatively simple to identify past and present conditions, but it is only through the investigation that future conditions can be synthesised through scenarios. The method will help to determine what the psychological effects would be on the characters stated on the previous page.

The outcome of the method should deal with the fact that a condition and the state of perception is significant in the act of place- and space-making.

The choice of characters and what they symbolise will be elaborated on later.

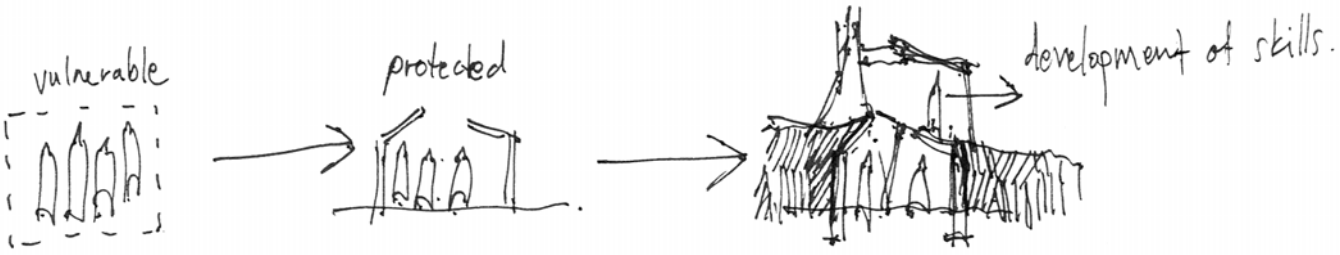

Figure 7: An evolution of the marginal community from left to right. (2016)

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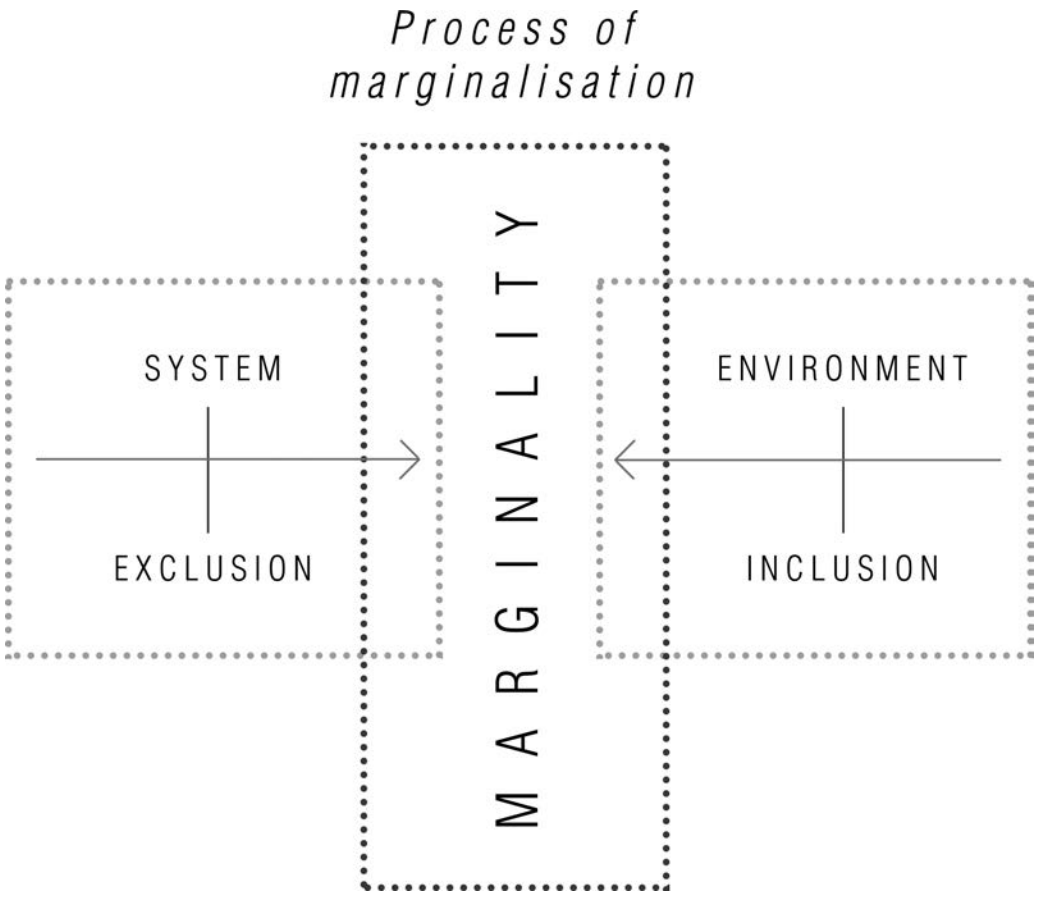

Figure 8: The image aims to illustrate the factors that affect marginality. (2016)

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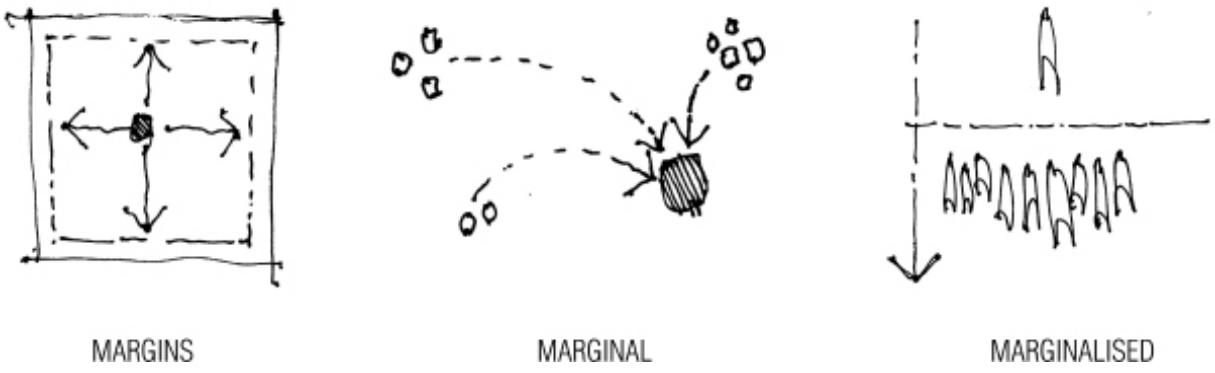

Figure 9: Representations of margins, marginal and marginalised. (2016)

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[PART ONE]

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CHAPTER

01

INTRODUCTION:

This Chapter aims to introduce the scope of the dissertation and the interpretation of relationships which leads up to conceptual and practical issues. The site is briefly introduced in order to contextualise the narrative of the study.

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1.1. NORMATIVE POSITION

"Perception is a central issue in epistemology, the theory of knowledge. At root, all our empirical knowledge is grounded in how we see, hear, touch, smell and taste the world around us" (O'Brien 2003:1).

The sceptical arguments of Descartes suggests certain scenarios that threaten to undermine all of our empirical knowledge of the world (Cottingham et.al. 1983). It could be evident that all human beings are living in a constant dream. It is also a possibility that there may not be an external world at all, and all our perceptual experience and perceptual beliefs may simply be planted in our minds by an external entity.

Given such scenarios, it is not clear how our perceptual beliefs can be justified and thus, how we can have perceptual knowledge. Any reasons for thinking that such beliefs correctly represent the world are undermined by the fact that such beliefs could exist even if the external world did not exist (Cottingham et.al. 1983). Since the seventeenth century, epistemology aimed at searching for a solution to this scepticism. The notion of perception simply assumes that we can have justification for our perceptual beliefs and that perceptual knowledge is possible. Given this assumption, the focus is on how we should conceive of such justification.

It is postulated that the marginal groups in this study have an alternative form of perception. This is based on the premise that current society, not including the margins, is altered through devices of propaganda, social media and the like to a point of no return. Although some form of societal influence occurs within the marginalised community, it is not to the effect that their identities change drastically. Marginal identities are instead largely shaped by the instinct of survival rather than image. The marginal groups are therefore the hope of human civilisation and it is of great importance to shelter and develop the identities of these groups to be sustained in future.

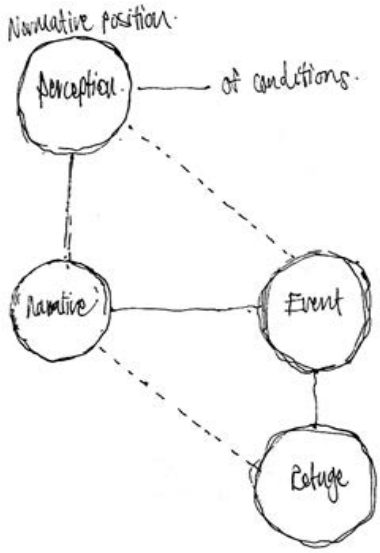

Figure 10: The figure above represents the relationship between the issues of perception and the rest of the structure of the study. (2016)

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"In nature, as an organism evolves it increases in complexity and it also becomes a more compact or miniaturized system. Similarly a city should function as a living system. Arcology, architecture and ecology as one integral process, is capable of demonstrating positive response to the many problems of urban civilization, population, pollution, energy and natural resource depletion, food scarcity and quality of life."

(Paolo Soleri [sa])

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1.2. LATENT POTENTIAL

1.2.1. THE SIGNIFICANCE OF MARGINAL GROUPS

Architecture is a powerful tool used to express various aspects of life, worldview and perception. The act of implementing this tool has to do with the relationships built up between different types of people as well as their environments. Furthermore it is necessary to understand the expression of identity relevant to space.

Identity is interpreted in the comfort of space where freedom of expression exists. Nowadays, and since the technological boom of the 21st century, these identities are altered through various means: internet, fashion, image, branding etc. in current society .

The dissertation deals with marginal people, as it is in the opinion of the author that these communities do not have the same exposure as those who have access to mainstream alterations of self. The capabilities that unaltered identities possess is the unexplored territory (the margins) that could potentially challenge the way we look at the world and ultimately architecture. In this view, when society has to rebuild what once was, the marginal community could offer their ways of learning to survive.

1.2.2. RESEARCH QUESTIONS

As Paolo Soleri mentions in his definition of 'Arcology' - architecture and ecology - (Soleri [sa]), when a natural organism (like a community of people) evolves it becomes a more compact and complex system. In the case of marginalised groups, it is possible that the groups form a collective identity through development. A few questions arise regarding this concept:

a. In an existing marginalised condition, how would the creation of an architecture of refuge support the establishment of a collective identity?

b. How will this have an effect on future development of the broken city? In other words, could the marginalised community transfer newly developed skills to a society post-disaster?

c. Could the investigation lead to a model for marginal communities worldwide (i.e. refugees etc.)?

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1.3. BROAD SCHEME

1.3.1. CONTEXTUALISING THE PROBLEM ON A GLOBAL SCALE

The world has experienced an increasing number of threats against humanity in the recent past. Although many of these threats are location specific, a few stand out that could have an effect on humanity on a global scale. As is quite clear, climate change, due to the alteration of our atmosphere caused by carbon dioxide gases and other pollutants, is one of the biggest threats to our world. If and when policies are ignored that aim to help the reduction of these effects, the problem could continue to exist for centuries to come.

On another level, it is evident to note that humans pose a threat to other humans. In recent global events, militant groups such as ISIS and other politically driven terrorist organisations pose a real threat to civilians all over the world. In these cases, the threat against humanity is larger than what is perceived by the public with little evidence of true intentions by these groups of people. Although it is a generalisation that only threats publicised by the media are a conscious reality, many concealed risks and threats are evident which have an implication on current global conditions. From 2008 the world population has also endured major economic decline causing underlying consequences leading to unpredictable circumstances such as increased inflation, petrol- and food price hikes to name a few.

The relevance of this information lies in the recognition of the act of destruction in many forms - socio-political, economic, natural and man-made.

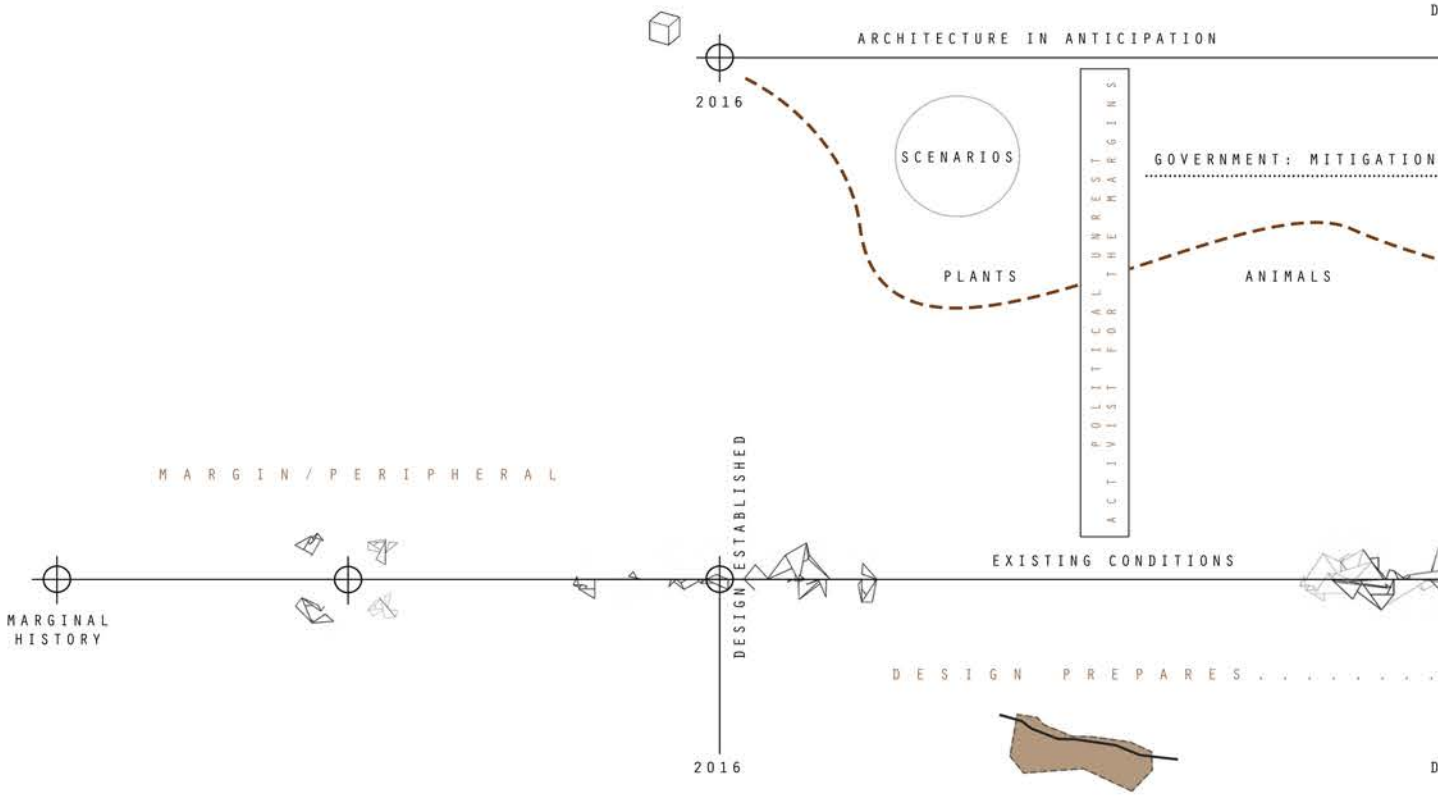

Figure 11: An illustration of the timeline of the project in relation to a broader scheme. (2016)

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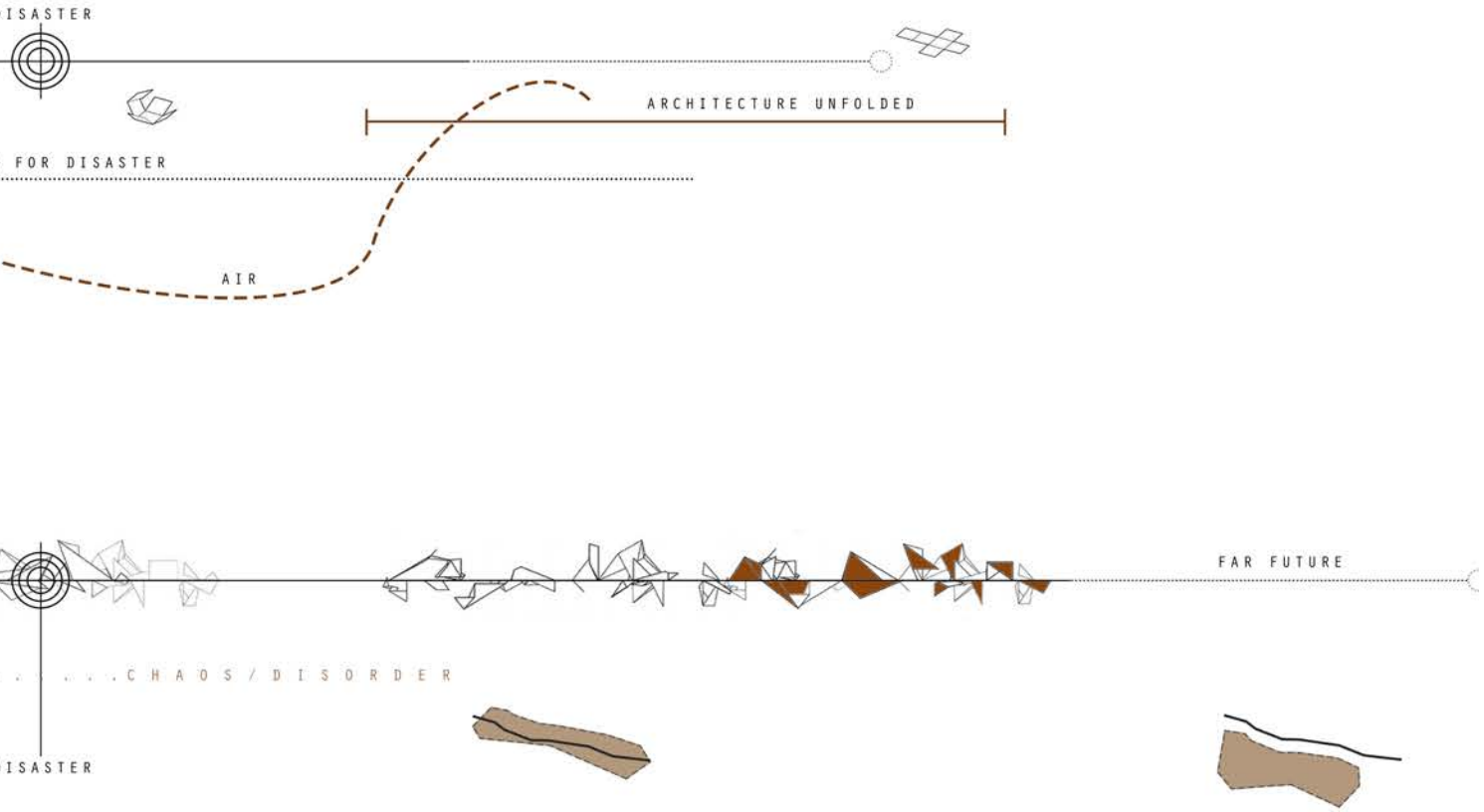
1.3.2. SOUTH AFRICA AS CONTEXT - CURRENT STATE OF THE PROBLEM

To contextualise the dissertation within the global scale (*refer to Figure 7 below*), elements such as water, plants, animals, air, the human condition and disaster mitigation are relevant in the context of South Africa and ultimately Pretoria.

With reference to an article posted on the Sunday Times website (City Press 2016) named 'Impact of water shortage in South Africa'; maize, soya bean and sunflower farmers alone have lost up to R10 billion this year due to the impact of drought. A report released by the UN's food and nutrition working group last month found this drought – the country's worst since 1992 – had caused a decline in maize production that had already led to an increase in food prices of 6.4% (City Press 2016).

Agricultural business chamber Agbiz CEO John Purchase stated that the drought – which had been hitting North West, parts of the Free State and the Northern Cape for the past three years – had already diminished the country's GDP. "Given its severity and prolonged nature, the economic effect will be, and is already, severe. The latest poor and disappointing GDP figures for agriculture are indicative of the drought impact," he said. "Agbiz expects quarters 2 and 3 GDP figures to look even worse, as the full extent of the drought is only then reflected in the GDP figures (City Press 2016)."

There is no doubt that economic, political and social implications impact people's livelihoods directly. Unfortunately these circumstances are unpredictable and people are forced to survive in any way possible. For an average working person the cost of living has increased tremendously while salaries remain the same. The margin that exists between the two conditions does not decrease unless additional financial stability is seeked. If an average individual experiences such pressure to survive, it can only be emphasised that a marginal person endures even greater pressure in an unstable society.



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1.4. DELIMITATIONS

1.4.1. DELIMITATIONS OF THE DISSERTATION

The setting for the investigation is placed on a timeline. The timeline aims to represent a consciousness of past, present and future conditions in order to conduct a thorough study and determine comprehensive responses.

Although it is suggested that a disaster will occur, this investigation does not deal with an apocalyptic future. Instead current socio-political unrest and the rapid depletion of resources sets the scene for anticipation of such an event. The dissertation takes into account the merit of scenarios as a valid design informant.

The argument for the proposed architectural intervention is structured around a response to current conditions in anticipation of future conditions, therefore the proposed building is to be 'built' in 2016/2017. Further alterations of the 'building' or site may occur based on future scenarios: firstly the building becomes a ruin; the site becomes an isolated sustained community; and lastly the intervention is a catalyst for the rebuilding of the city.

Figure 12: An illustration of a marginalised position. [sa]

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1.5. BEHAVIOUR AND THE LANDSCAPE

1.5.1. THE EXPERIENCE OF LANDSCAPE - JAY APPLETON

In his book *The Experience of Landscape* (1993:2) Appleton suggests a rather apt analysis of the link between a landscape (natural or built) and human behaviour. It is in his opinion that landscape forms the backdrop to all human activity and is instrumental to literary history. Appleton explains that there are different ways of viewing a landscape - firstly the interest may lie in the interpretation and explanation of a landscape itself and secondly in the way we look at it. It is then suggested that two types of studies of landscapes exist namely artistic study or scientific study. It may be argued here that architectural investigations lie inbetween these realms of study.

One of the principle reasons for Appleton's enquiry into landscapes is recognising why environments are so significant to human behaviour. In other words, why do certain landscapes feel safer than others?

In the context of this study it can be assumed that a consciousness of the current and possible future environment is appropriate based on the fact that a future condition is suggested. Appleton postulates that during the 20th century, the awareness of the environment was *aroused by the discovery that we (the human race) are polluting it at such a rate that the survival of some species is already in doubt, and that we ourselves could be numbered among such species in the not-so-distant future (Appleton 1993:3).*

The biological behaviour of human beings determine which environments are more appropriate for refuge than others. The basis of this theory relies partly on the selection of site to provide a relevant response to seeking refuge and safety.

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1.5.2. SELECTION OF SITE

To refer to the premise that the 'Mavericks' aim to seek refuge, the process of site selection was based on Jay Appleton's postulated theories of prospect and habitat (Appleton 1993). Criteria for the selection of a site had to adhere to all biological needs of a human being as well as the need to observe without being seen.

The environment should:
- Have a biodiverse landscape.
- Be close to a source of water.
- Be located on the periphery of the city.
- Be at a higher elevation than that of the CBD of Pretoria for surveillance purposes.
- Have views to observe the surrounding context.

The location of site will now be introduced briefly to contextualise the rest of the argument.

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1.6. SITE/SIGHT OF REFUGE

1.6.1. SITE LOCATION

The proposed site is located along the Langeberge Ridge on the periphery of the CBD of Pretoria. The image below aims to illustrate the site in relation to its macro context (Figure 9). Although the physical and historical context will be discussed later in this document, it is noteworthy to mention that the proposed intervention relates to functional and aesthetic aspects of the forts of Pretoria. Therefore the positions of the forts are also allocated below. In reference to the theory of prospect and refuge, the site was initially selected mainly for its latent potential, views and topography. Further discoveries will be discussed at a later stage.

PROPOSED SITE IN RELATION TO MACRO SITE

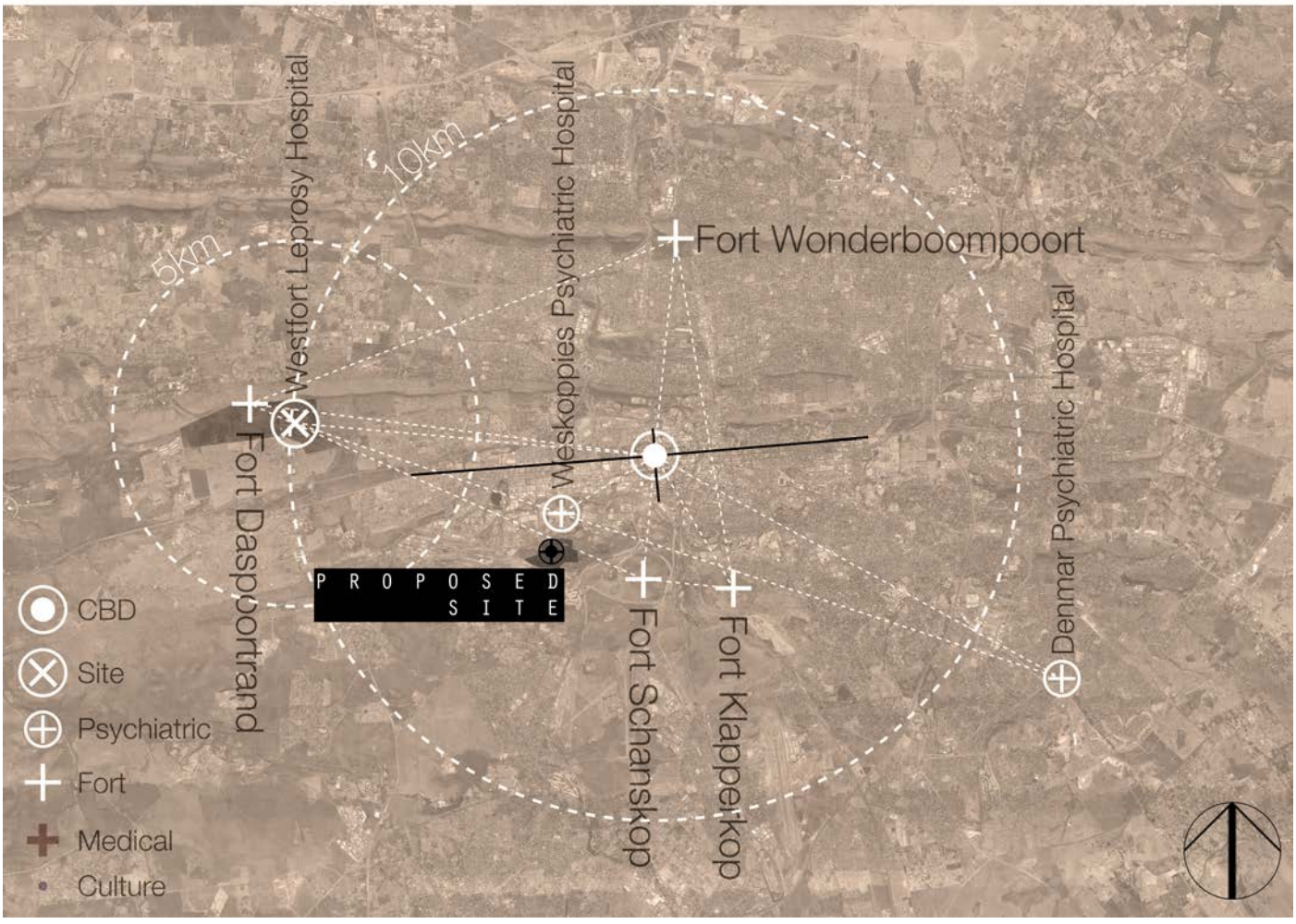

Figure 13: Image of the location of the proposed site in relation to its macro-context. (2016)

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Figure 14: Proposed site in relation to meso site. (2016)

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1.6.2. SITE EXPERIENCE

Figure 15: Photographs taken at different locations on the ridge. (2016)

Based on the initial site selection process, one cannot immediately comprehend the experience brought forth by the act of exploration. It was therefore important to document different site conditions on the ridge as part of a practical analysis study (plants, geology) as well as a theoretical aesthetics study of the environment (views, surveillance, isolation).

With observation or 'sight' as one of the conditions to adhere to regarding refuge, the environment of the ridge also calls attention to other refuge related conditions such as a nearby water source (reservoirs) for future use.

Refer to Figure 10:

1. Panoramic view from the top of the ridge
2. Existing dilapidated pumphouse structure
3. Water reservoir (municipal)
4. Forest-like environment
5. Found objects
6. Plants
7. Existing stream of water possibly from an aquifer.

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Figure 16: Photographs taken at different locations on the ridge. (2016)

2.

3.

4.

5.

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Figure 17&18: Panoramic photographs taken from the top of the ridge. (2016)

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1.7. PROBLEM STATEMENT

In a previously marginalised society, disadvantaged or marginalised people (the 'Mavericks') are situated in conditions with little or no control over their environment. This assumption is made by merely observing general conditions in which the characters find themselves:

1. A prisoner - Prison environment.
2. An elderly person - Old age home or family home.
3. A mentally disabled person - Psychiatric facility.
4. A physically disabled person - Home (with assistance) or rehabilitation facility.
5. A homeless person - Homeless shelter or streets.

The spatial conditions stated above are problematic due to the fact that they only facilitate the provision of certain needs at a specific time. If a disaster were to occur in the city of Pretoria, the current environments that the marginal inhabit would prohibit them from being safe and cared for.

If the assumption is that the existing condition does not improve quality of life (and perception), how can a new architectural typology achieve this and how is the value of the marginal community useful in the greater society?

1.7.1. GENERAL ISSUE

The issue of identity, experienced from the margins, is key in the negotiation of architecture and the human condition. The general context of the study will therefore demonstrate a contested relationship between mind, body and architecture.

According to David Bathory (1993:5), during the early stages of human development, the psychological presentation of the self is a defenceless, passive observer who is unable to take action or alter the trauma experienced during a momentary event. Natural defence mechanisms occur such as regression, denial in fantasy, dissociation and sublimation (Psychoanalytic and Jungian theory in Bathory 1993). A similar position is argued for marginalised people in this dissertation based on the trauma they have to endure on a daily basis. Thus they are passive observer in society - unseen and undervalued.

In addition to an altered physical self, a distortion of space-time manifests, as the self, strives to evaluate the damage and re-establish a physical location of 'its' body in space. Resilience of the marginalised people is necessary as it determines the survival or destruction of the mind-body relationship as well as the position in space and time. The position in space implicates architecture directly as the proposed intervention needs to provide resilience.

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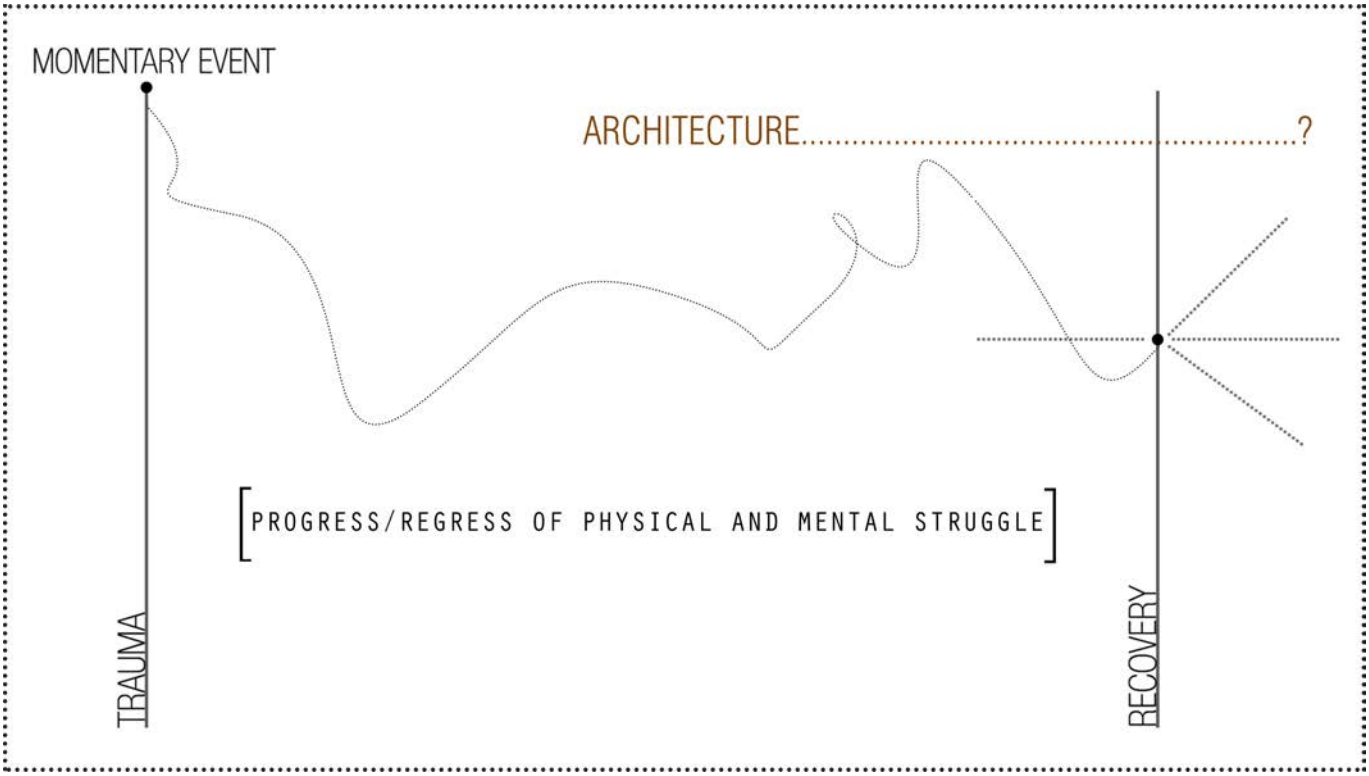

Figure 19: Diagram illustrating the synthesis of the problem statement. (2016)

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1.7.2. ARCHITECTURAL ISSUE

The relationship of mind-body-architecture is a reference to how architecture or built-form is experienced and perceived. In this study it is suggested that a contested relationship exists between psychological and physical aspects of human nature. It is thus not only of importance to recognise what effect architecture has on perception, but to determine how the marginal community can regain their identity through this relationship.

Part of the investigation of identity, will be to recognise that architecture cannot change belief. It can however assist in justifying a position and collective identity of a marginalised population (the 'Mavericks') due to the collective contributions provided by different skillsets of the characters.

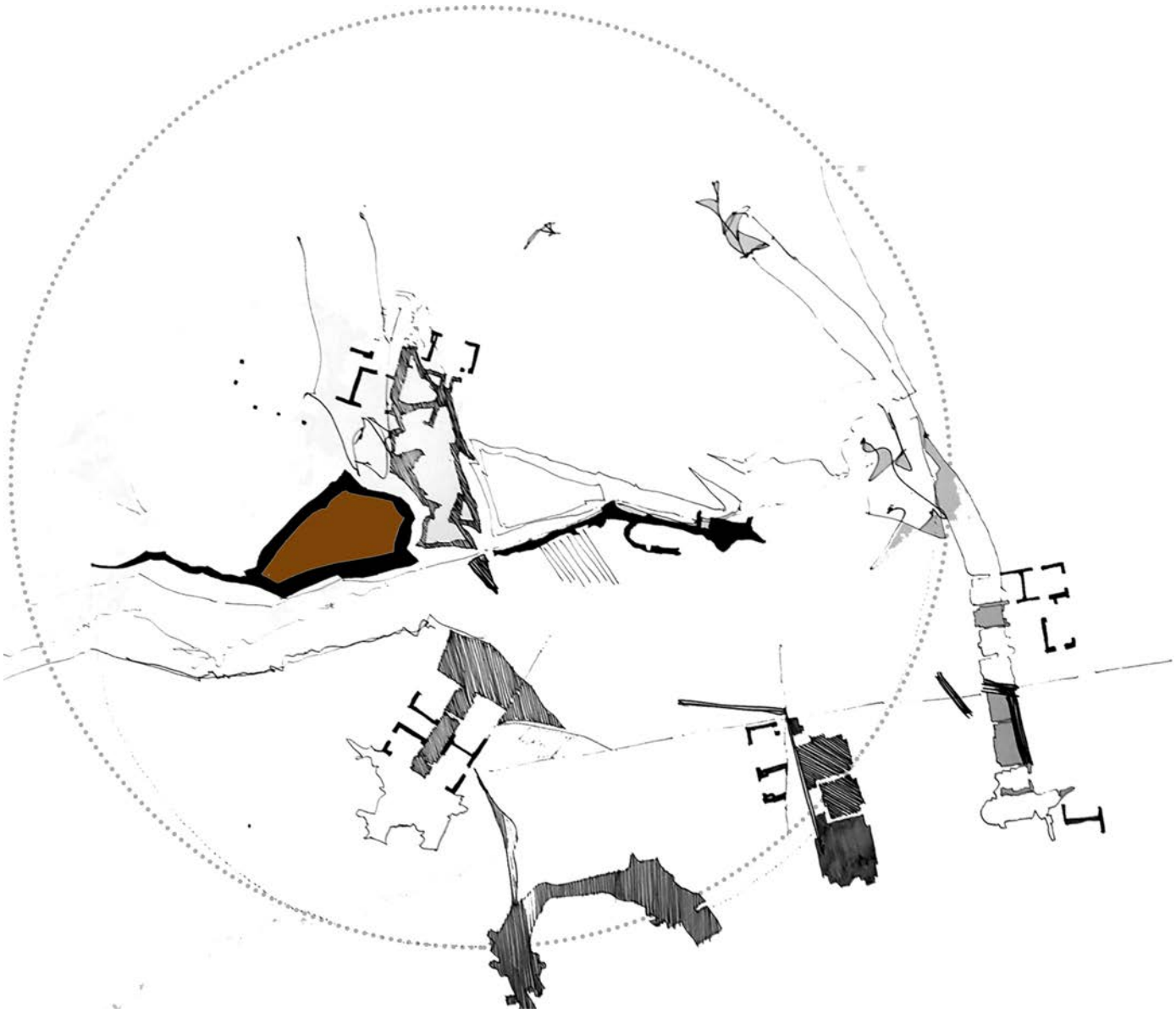

Figure 20: Abstract image of the fragments of the mind and body. (2016)

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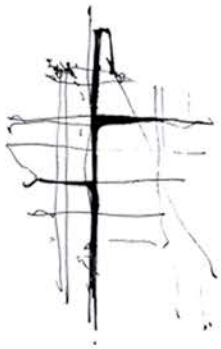
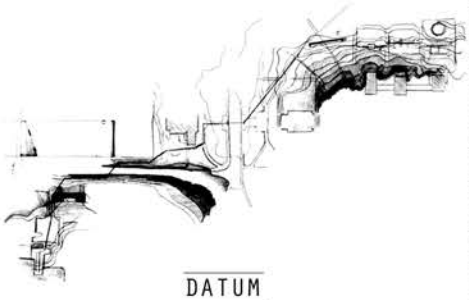
SHELTER

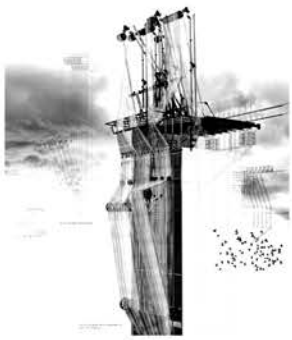


MERGING MARGINS



DATUM

HIDDEN/ISOLATION



RESILIENCE/SUSTAINING

1.7.3. ARCHITECTURAL OBJECTIVES

- To create a new condition that could improve the mental state of marginal people (upliftment).

- Introduce a new typology for the purpose of preservation and refuge; to survive and start a new community that is valued.

- To design a robust structure that could withstand disaster with the possibility of being adapted after disaster.

- To prove the necessity of a structure to enable the marginal people to develop their skills for a better future.

Figure 21: Different ideas are illustrated here that pertain to the architectural devices used during the investigation. (2016)

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CHAPTER

02

THE PROCESS:

This Chapter aims to describe the process of the investigation. The context is analysed to present a past and present condition of marginality.

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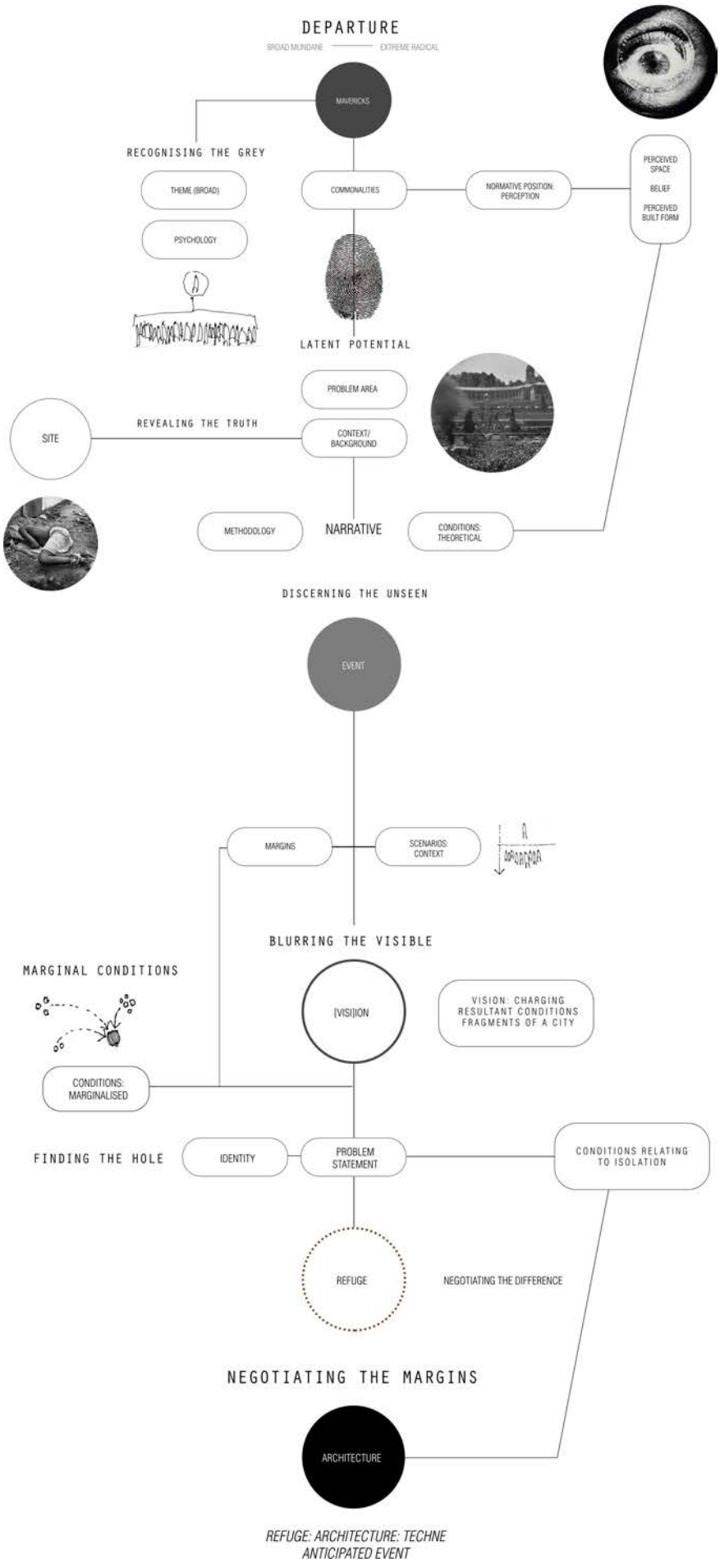

Figure 23: Mindmap of investigation process. (2016)

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2.1. THE STORY

2.1.1. DISSECTING THE PROCESS

[PART ONE]

a. THE VISION

Drawing from the urban vision it is suggested that resultant spatial and societal fragments (subjective) exist across the city of Pretoria. Some fragments are isolated and dealt with separately as project-specific issues by the indivuduals involved in the urban framework. This lead to a problem statement in its own right relating to the architectural intentions of each student's project.

b. THE PROBLEM AREA

The context of Pretoria is analysed to propose a historical marginal condition. The historical study suggests little has changed for marginal communities based on problematic boundaries and thresholds created through urban development.

c. THE EVENT

As the investigation process continues many un[fore]seen circumstances arise. The most significant being the emminent threat to the survival of marginal communities if disaster strikes. The disaster is a theoretical event caused by political chaos (as observed in the current state of affairs in the country) making the proposition relevant.

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[PART TWO]

a. THE THEME

The theme of the project relates to a contextual problem, globally and locally, with an influence of psychological behaviour. By challenging the perception of human nature one ultimately challenges the belief of perceived space and built form (architecture). An example - how a mentally disabled person perceives space around him/her may differ from an abled working professional.

b. THE CHARACTERS

The departure of the dissertation was initiated by a curiosity of an architectural spectrum - from the mundane to the radical. The Mavericks formed part of this departure as the clients of the project to propose an alternative approach to test the architectural intervention. Interpreting the human condition into space is a complex endeavour therefore simple analytical steps had to be put in place to lead to a response.

c. PERCEPTION

Perception is affected by a number of influences - physical, political, social and psychological yet it (perception) has the potential to negotiate the issues underlined by the investigation. The problem area encompasses all of the influences above in a theoretical manner to transcend perception into physical space. Therefore a theoretical narrative is presented to ground conceptual scenarios and produce a viable future condition for the Mavericks to survive in.

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[PART THREE]

a. SEEKING REFUGE

The introduction proposes why certain contextual, social and political issues have an effect on a marginal person however safety is the main concern. Why do people seek refuge from bad environments? Their physical and mental well-being determines a good and healthy life. If a person is unfit to carry out daily activities (working to earn money to put food on the table etc.) an onset of uncontrollable consequences are initiated. The first instinctive behaviour during such a crisis is aiming to feel safe. It is argued that during a catastrophic event current marginal environments will not necessarily enable safety and comfort.

b. NEGOTIATING THE MARGINS

Negotiations take place whether it is a conscious or subconscious process. Part of the human condition also involves negotiating which environments feel safer than others. It is theoretically suggested that in a marginal position some of these negotiations are limited. In this dissertation these negotiations are seen as opportunities to make a marginal person feel safe and needed in the broader scheme of society.

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2.2. THE RESEARCH PROCESS

2.2.1. MERGING NARRATIVE AND PROCESS

In order to complete the initial intentions of the city (which forms part of the fortification of Pretoria) a link should be established between the historical narrative of the city and the proposed theoretical narrative of the investigation.

Consequently the new architectural intervention has a few objectives. Firstly, to function as a fort-like structure in order to protect those in most need (the 'Mavericks'); secondly to become a starting point for marginal communities to re-establish an identity by developing skills; and thirdly to become a self-sustaining sanctuary over time.

The narrative locates the proposal in time and departs by investigating previous conditions of marginality in the planning of Pretoria, moving on to current conditions, and suggesting a future condition for the marginal community.

The dissertation is not only located within a continuum of local conditions, but it suggests a position on a global scale. In doing so, the proposal suggests a pilot project (relative to the context of Pretoria) that could possibly challenge post-disaster environments to function more effectively for the people who need them.

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2.2.2. APPROACH

The theory of prospect and refuge (Appleton 1993) seeks to describe why certain environments feel secure and thereby meet basic biological needs of human beings. Environments that meet such needs provide people with the ability to observe (prospect) without being seen (refuge). Not only would the architectural intervention aim at security and refuge, it would need to facilitate different characters as a collective identity in a hostile society.

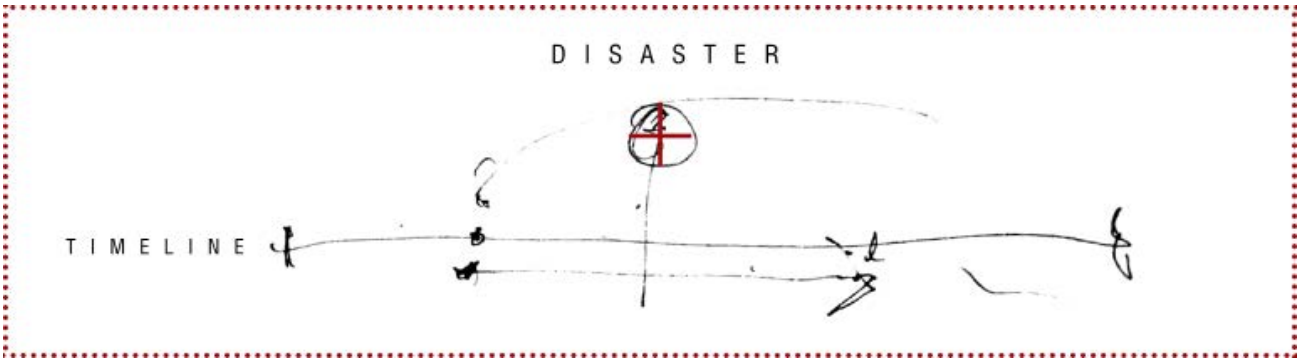

Figure 24: Point of disaster on a timeline. (2016)

The timeline (*Figure 24*) illustrates that there is a period leading up to the event of disaster. The approach of seeking refuge takes place before the event. The development of the collective identity evolves after the event when the marginal community is sustainable.

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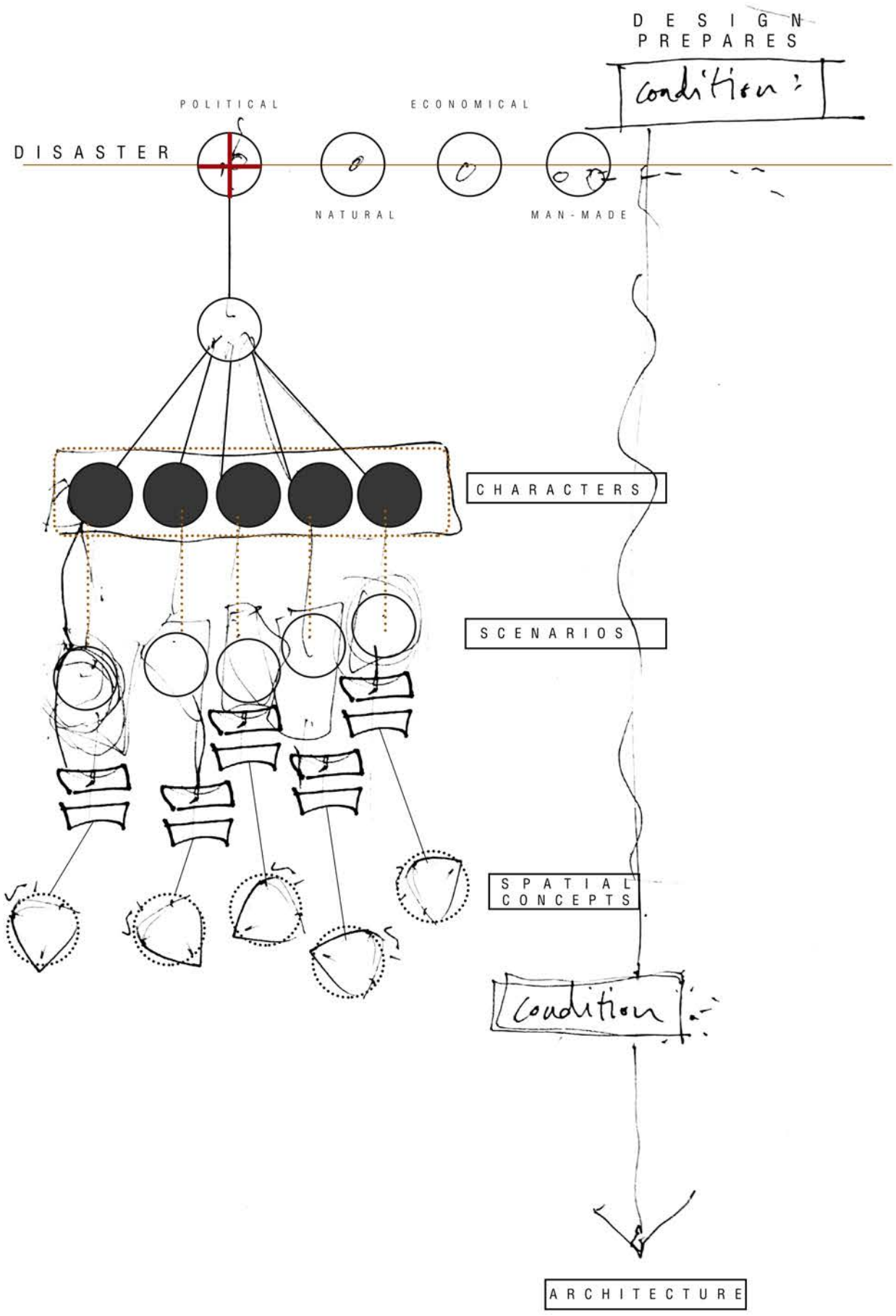

Figure 25: Process diagram illustrating the development and method of the study. (2016)

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2.2.3. DESCRIBING THE PROCESS

The process starts with the anticipation of a political disaster which is the first conceptual condition. Within this condition, design has to be prepared for such an event - the element of refuge.

The clients (The Mavericks) are identified to be in most need of protection from disaster. The categories of the characters present different symbols of marginalisation which informs the methodology to test the problem statement.

Each character proposes a scenario in which the skill of the character is valued and developed through architectural intentions. In each scenario an essence of space is identified in order to allocate appropriate programmes. Through the development of scenarios, relationships exist between the spaces and the people.

Spatial concepts are created to suggest a second conceptual condition after the disaster has taken place. The architectural intervention evolves into a complex sustainable community which survives independently. In the rebuilding of a new city the principles and skills of this community could be transferred to renegotiate societal norms based on the strengthened collective identity of the margins.

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2.3. INTENTIONS

2.3.1. ARCHITECTURAL INTENTIONS

In a time of social and political conflict in the city of Pretoria, the project intends to deal with the specific societal and political implications of current conditions as well as creating a sense of obscurity about function and form. The author aims to challenge architecture to engage with meaning rather than perfection and not restrain itself to issues of aesthetics, form and function.

The intentions of this dissertation also pertain to mental or subconscious thresholds created by societal norms. The architectural response aims to transcend norms and propose a phenomenological approach to architecture.

Figure 26: Conceptual sketch of taking refuge underground. (2016)

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LINEAR DIFFUSION

COLLECTION

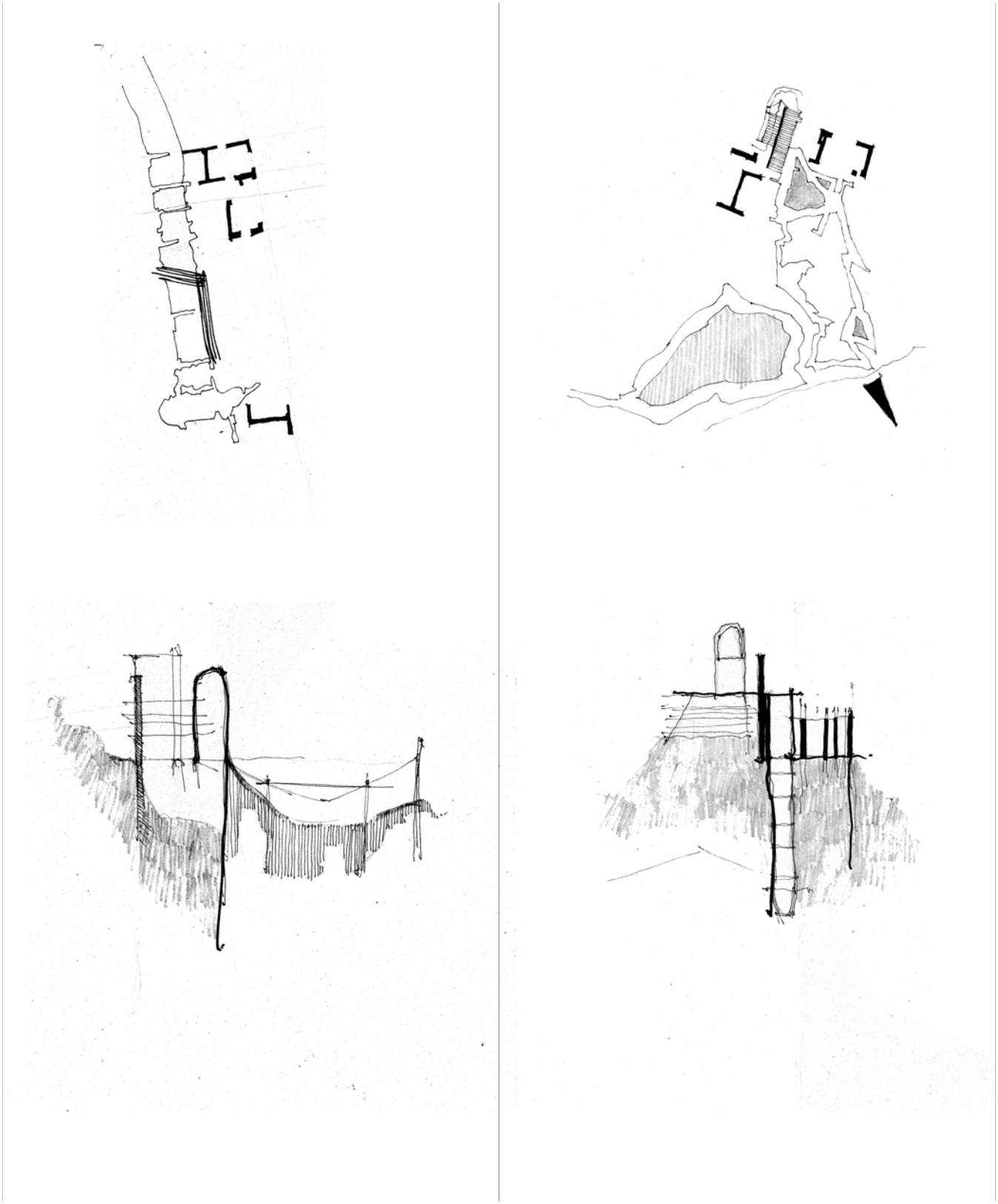

Figure 27: Initial explorations to illustrate refuge in different forms. (2016)

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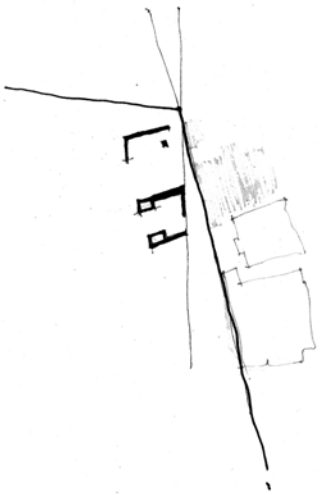
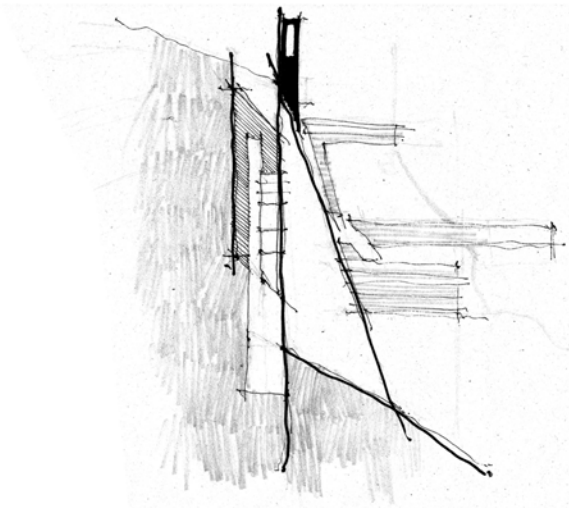
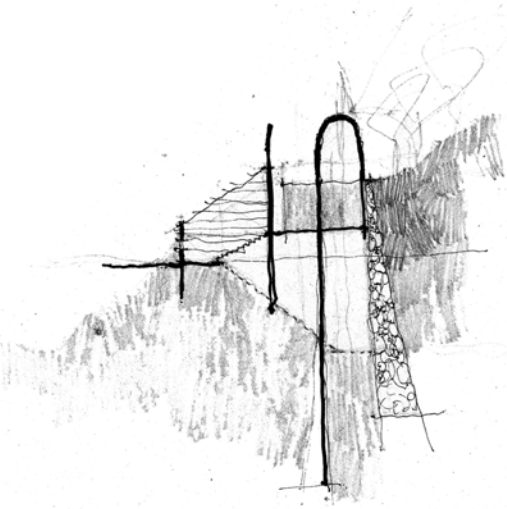
DIS[CONNECT]





CLOSURE



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2.4.

THE CONTEXT

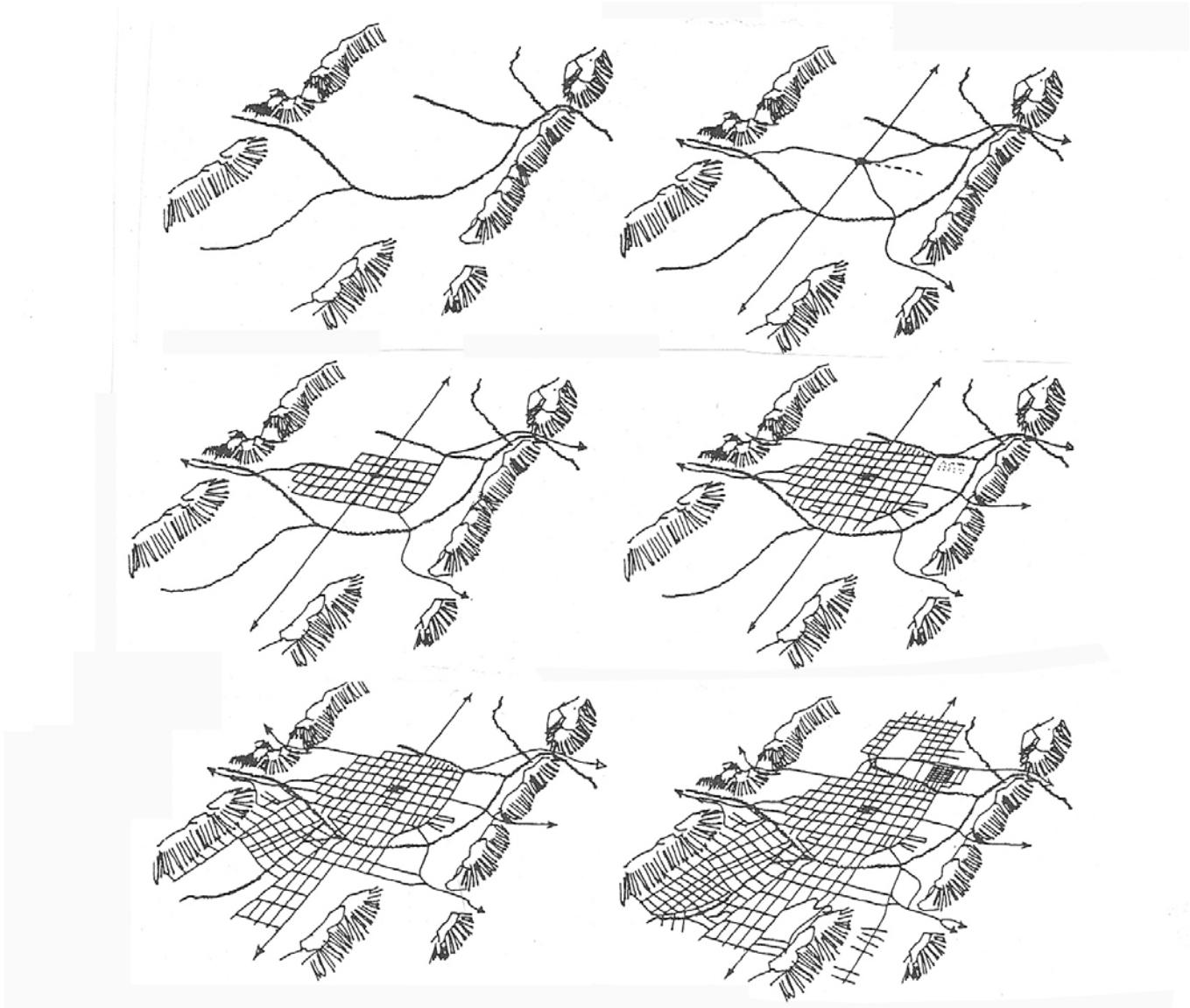

Figure 28: Development in the Pretoria valley up to the end of the nineteenth century with the emphasis on the surrounding ridges. (De Klerk)

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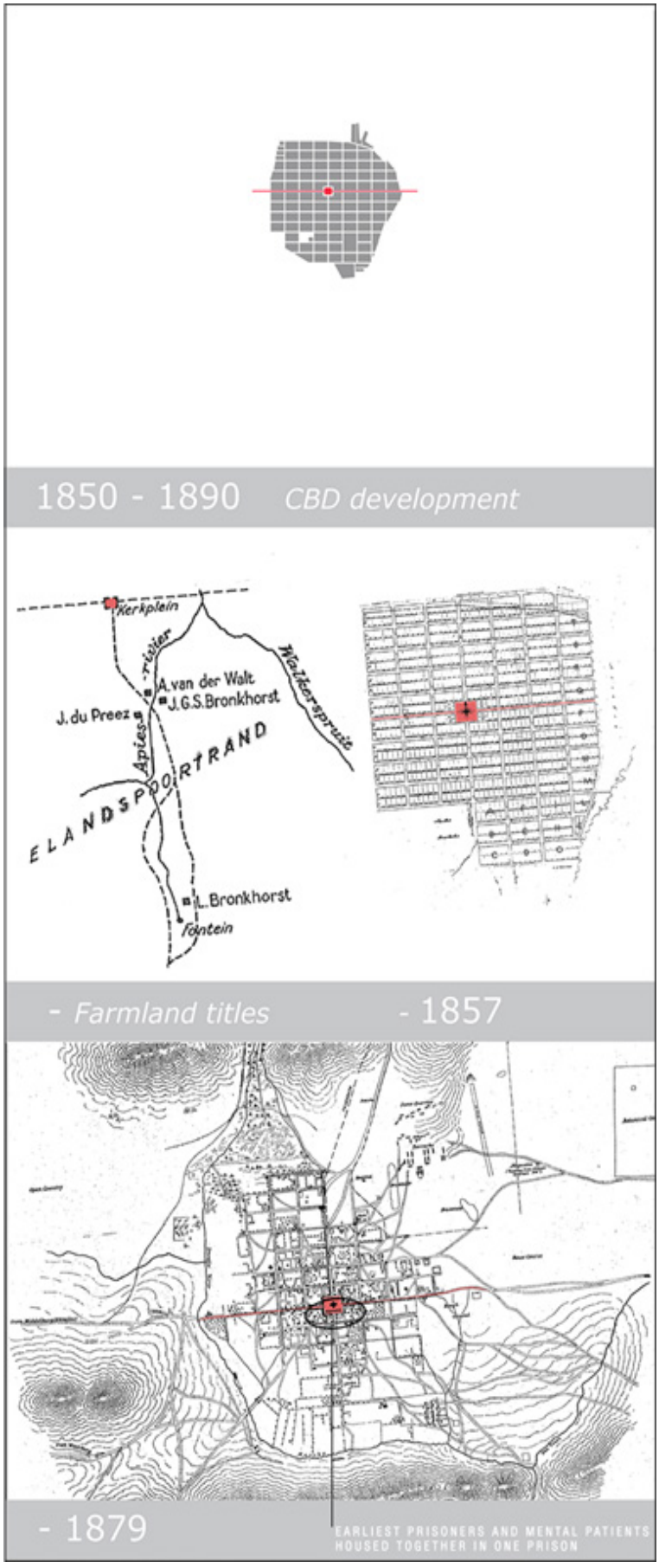

Figure 29: The evolution of city planning in Pretoria from 1850 to 1879. (De Klerk 2015)

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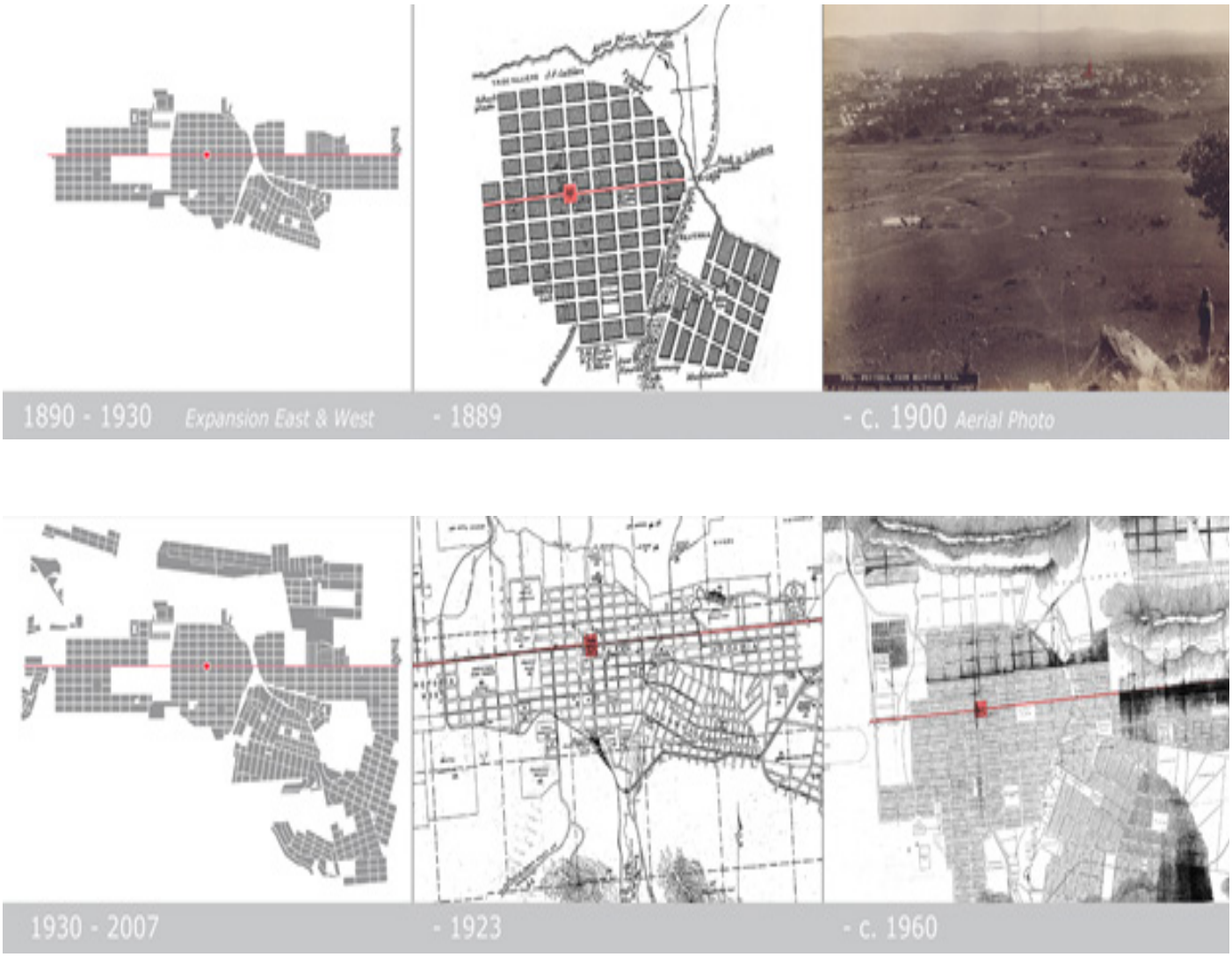

Figure 30: The evolution of city planning in Pretoria from 1890 to 1960. (De Klerk 2015)

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2.4.1. PRETORIA AS CONTEXT: AN OVERVIEW

Founded: 1855
Area: 688km2
Population (2011): 741 651

Pretoria was founded in 1855, the capital of the Zuid-Afrikaansche Repupliek (ZAR), has served as the capital city for all successive regimes and was named after Voortrekker leader Andries Pretorius (Fisher et.al. 2014:86).

Originally the location now known as Pretoria was inhabited by Ndebele groups who were forced towards the Middelburg area when Dutch immigrant settlements grew extensively. The city first developed as a rural town in the Transvaal region until the discovery of gold in the Witwatersrand area which very quickly caused economic transformation. Following the Anglo Boer War (1899-1902) Pretoria became the administrative capital of the Union of South Africa (Fisher et.al. 2014:86).

Based on its geographical location on the highveld and its proximity to the gold fields of the Witwatersrand, Pretoria has mostly been populated by government employees (South African History online). During the Apartheid regime, the city represented symbols of white values as seen in the establishment of the Afrikaner culture through the erection of monuments (an example - the Voortrekker Monument). Since the establishment of a democratic government in 1994 when Nelson Mandela was appointed as the nation's first democratically elected President, Pretoria symbolised a very specific struggle towards freedom and equality.

With its rich political history, Pretoria has played an important role in the negotiations between government and people. The immense diversity of cultures in our city creates the potential for a layered collective identity which aims to heal the wounds of past experiences. Current political conditions still aim at reconciling past notions of singular power in order to ensure the future welfare of our country.

As we are slowly moving into a new political paradigm, Pretoria as a city has been influenced by the progressive vitality of democracy. This evidently challenges our own political views and gives way to an opportunity for cross-pollination between different cultures and political symbols. New social parameters are constructed through this political shift which alters our perception of what the new city should be.

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2.4.2. SPACE IN AN AFRICAN CITY

"In the context of a world that is progressively more interconnected, the concept of place has become important" (van Rensburg et al. 2008:30).

During the planning of a city the production of urban places and the erection of public buildings is what constitutes space in an urban environment. Based on the diversity of an African city, many rituals are involved and this is what gives meaning to place. Cultural and geographical influences bring about genius loci in a city such as Pretoria. The origin of Pretoria was initially based on a religious structure (the church, which later became Church Square) and moved onto ideas of protection based on the geographical setting between ridges.

While guarding the developing city from enemies, the fort structures built on four of Pretoria's ridges were symbols of strength and power in a time of war. A sense of stability existed in the city at this stage and the fortifications enabled residents to continue developing an urban environment free of fear and destruction.

In the writing of Van Rensburg and Da Costa (2008), it is suggested that spatial quality can only be understood through spatial ability. Spatial ability is defined here as "the capacity to present knowledge about space and to organise spatial information" (Van Rensburg et.al. 2008: 30). In light of the information given by the spatial and cultural understanding of Pretoria, knowledge is presented through the historical development of the city and how it has had implications on the present conditions of the urban environment.

The influence that Western urban ideologies has had on african cities suggests that there is a gap between urban processes and the people that inhabit the urban environment. In this way the city of Pretoria is largely marginalised due to the effects of globalisation and the Western/Modern imposition of norms of urban theory (Van Rensburg et.al. 2008:31). As a result the African city has been weakened by layers of 'otherness' and is not a true reflection of African rituals.

The aim of this section is not to question why certain planning processes took place in our unique city, but to suggest that various power relations has had a major effect on the marginalised character of the city. Significantly the effects of authorative rule lead to nihilist ideas of architecture to inforce the image of power rather than the celebration of true african rituals. Thus it is argued that the city consists of fragmented urban environments.

The problem area suggests an existing marginalised condition in an African city, such as Pretoria. Many spaces in the CBD of Pretoria have been subject to marginalised notions caused by Apartheid rule and have also been affected post-Apartheid as seen in the evolution of urban development between 1937 and current Pretoria.

With the shift in socio-economic energy, the CBD developed leaving remnants of stagnation and decline (the fragments of a city). Many marginalised communities were forced to and beyond the periphery of the CBD in order to make space for infrastructural development and effectively exclude these groups of people from mainstream access to the urban condition.

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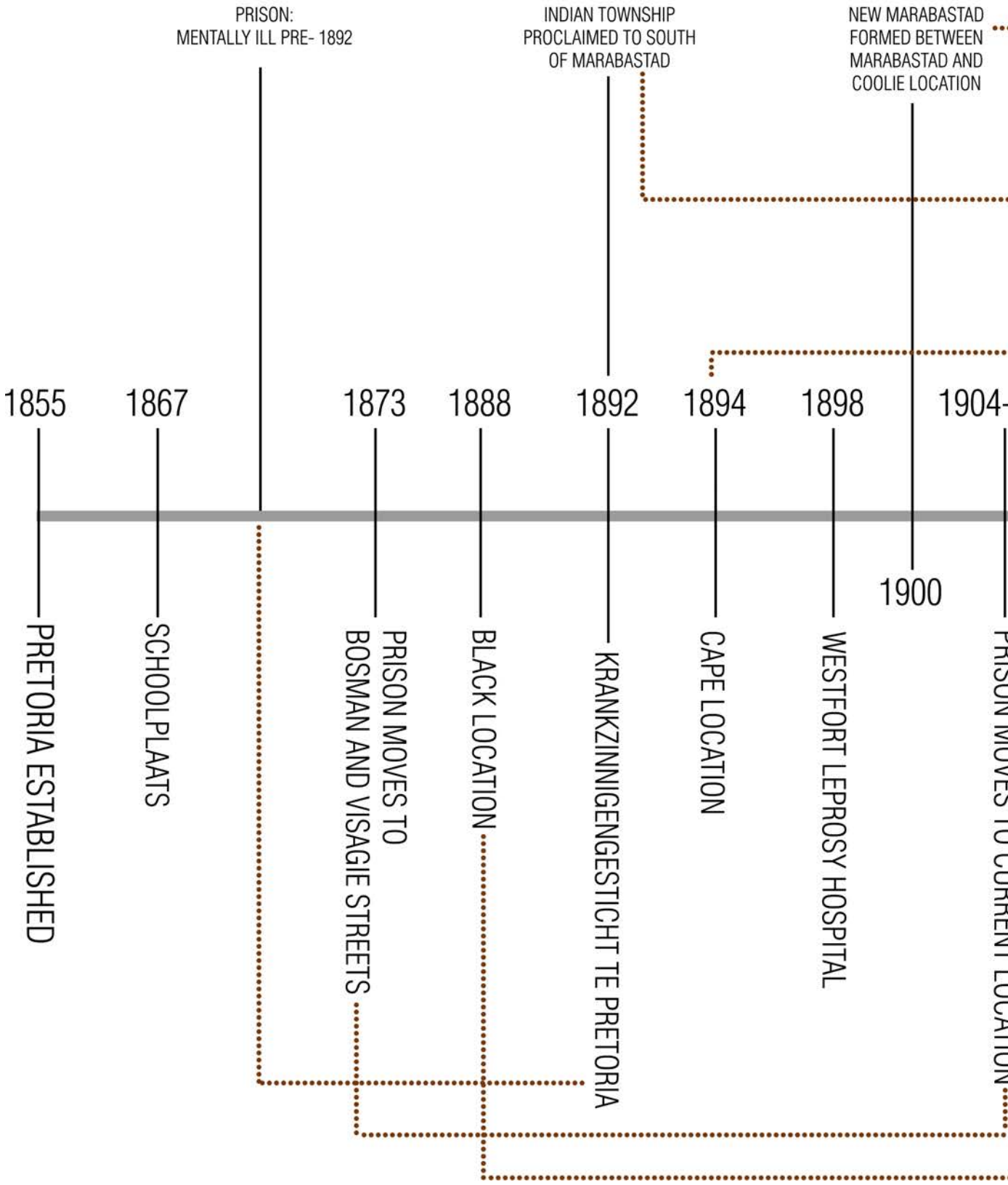
TIME
MARGINAL GRO



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LINE:
UPS AND SPACE

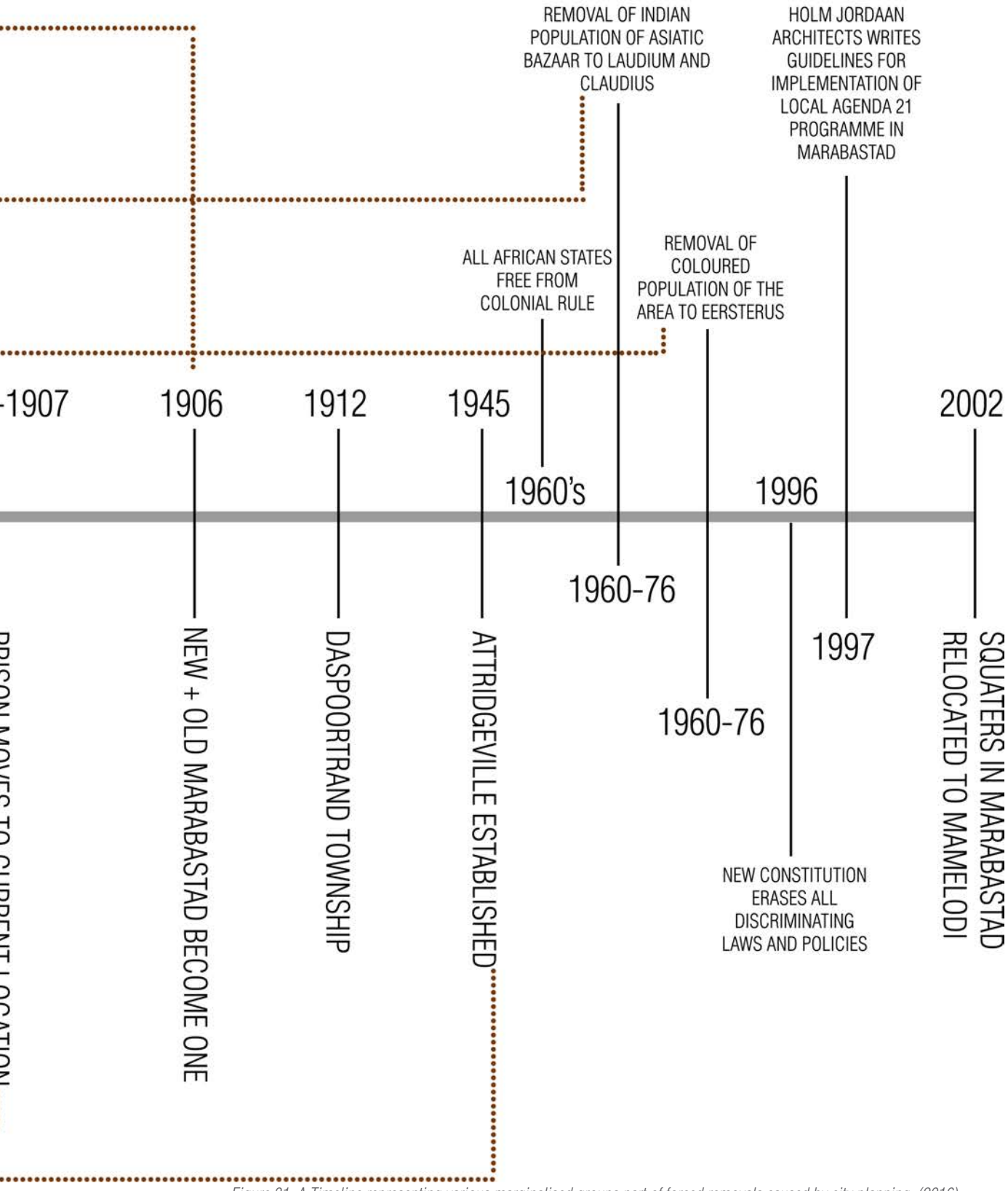

Figure 31: A Timeline representing various marginalised groups part of forced removals caused by city planning. (2016).

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During the late 1900's and early 20th century, the attempts of Apartheid law (in the form of the Native Land Act, 1912, and Native Urban Areas Act, 1923) were clearly forceful acts of rule over non-European populations. Specific areas were allocated to different marginalised groups – Schoolplaats, the first Black Township; Marabastad, an alternative Black Township; 'Indian' location, an Indian township; and the 'Cape Location' proclaimed for the coloured community.

Mentally ill patients and prisoners were also dealt with in a subordinate manner. Before the establishment of the Krankzinnigengesticht te Pretoria, the first psychiatric hospital in the ZAR, opened in May 1892, prisoners and mental patients were all housed in the same prison on the corner of then Pretorius- and Paul Kruger streets. The second prison was built in 1873 on the corner of then Bosman- and Visagie streets. From there the current Correctional Services and Weskoppies Hospital were placed on the periphery to cut-off communication with the rest of the city (A Brief History of Prisons in South Africa 1998).

2.4.3. CONCLUSION

The concept of place and spatial ability is blatantly diminished in the current urban condition due to forceful exclusions and removals of marginalised groups from the city towards the periphery. This consequently creates a static condition on the periphery.

The spatial ability of the above mentioned groups, is equally diminished as a result of abstracted power relations throughout the city of Pretoria. Rituals of the African city in the image of power lack the ability to value the periphery and the marginalised – societal and spatial – by reducing meaning of place. The aim is therefore to create new meaning of place on the periphery.

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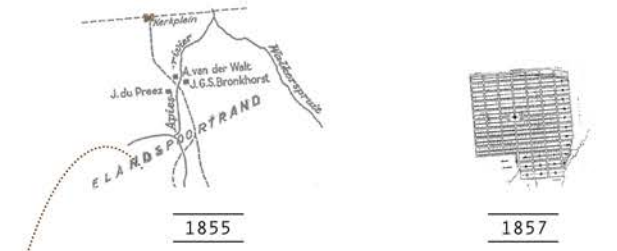
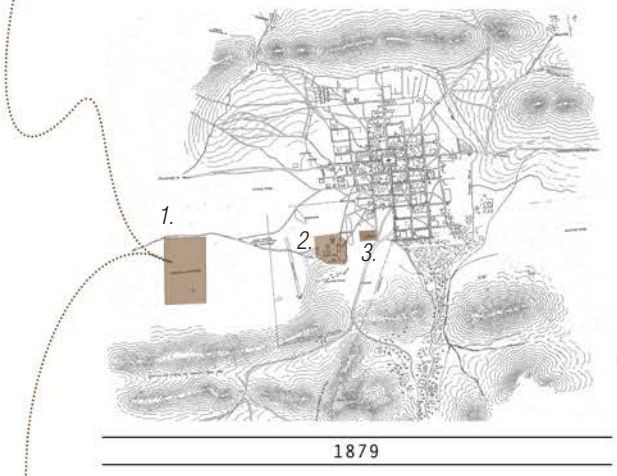
EVOLUTION OF PRETORIA: MARGINAL SPACE

Figure 32: Evolution of Pretoria in terms of marginal space. (2016)



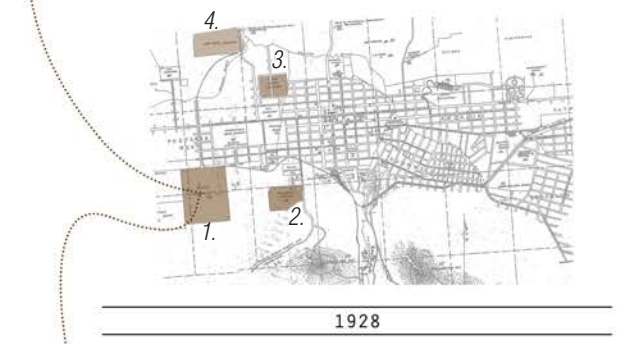


(*LEFT*) - Map of Pretoria, 1879.

SITE 1: The original location of the Botanical gardens;

SITE 2: the Barracks; and

SITE 3: a hospital.



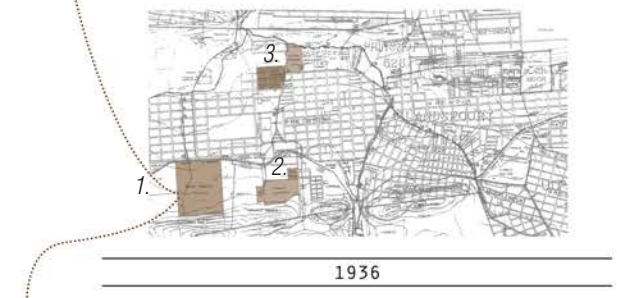
(*LEFT*) - Map of Pretoria, 1928.

SITE 1: Mental hospital;

SITE 2: Transvaal prisons;

SITE 3: Old Native location;

SITE 4: New Native location.



(*LEFT*) - Map of Pretoria, 1936.

SITE 1: Mental hospital;

SITE 2: Prison and hospital;

SITE 3: New and Old Marabastad as one location.

(*LEFT*) - Map of Pretoria, 2007.

SITE 1: Weskoppies Psychiatric hospital;

SITE 2: Correctional services precinct;

SITE 3: Marabastad.

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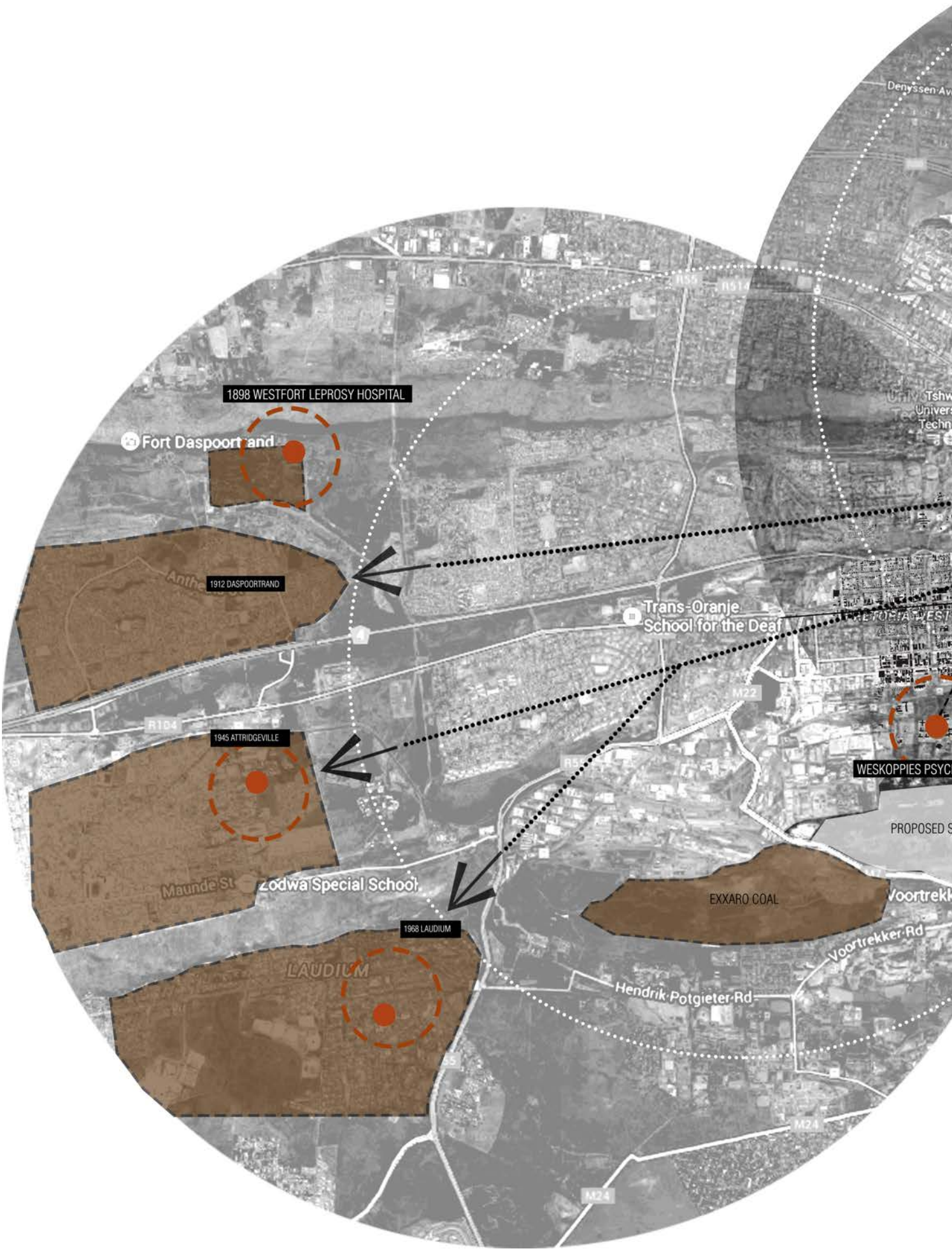

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Figure 33: The image illustrated here coincides with the timeline presented previously and aims to represent the movement of marginalised communities to alternative locations. (2016)

1867: Establishment of Schoolplaatz (First Black location).
1888: Establishment of alternative Black Location.
1873: Prison on the corner of then Bosman- and Visagie street.
Pre-1892: Mentally ill patients and prisoners housed in the original prison.
Pre-1892: Original Botanical gardens.
1892: Establishment of Krankzinnigengesticht te Pretoria.
1894: Establishment of Coolie Location.
1898: Westfort Leprosy Hospital.
1904-1907: New prison and current Correctional Services precinct.
1906: Establishment of New Marabastad.
1912: Establishment of Daspoortrand Township.
1945: Establishment of Attridgeville.
1962-65: Coloured population forced to Eersterust.
1968: Establishment of Laudium.

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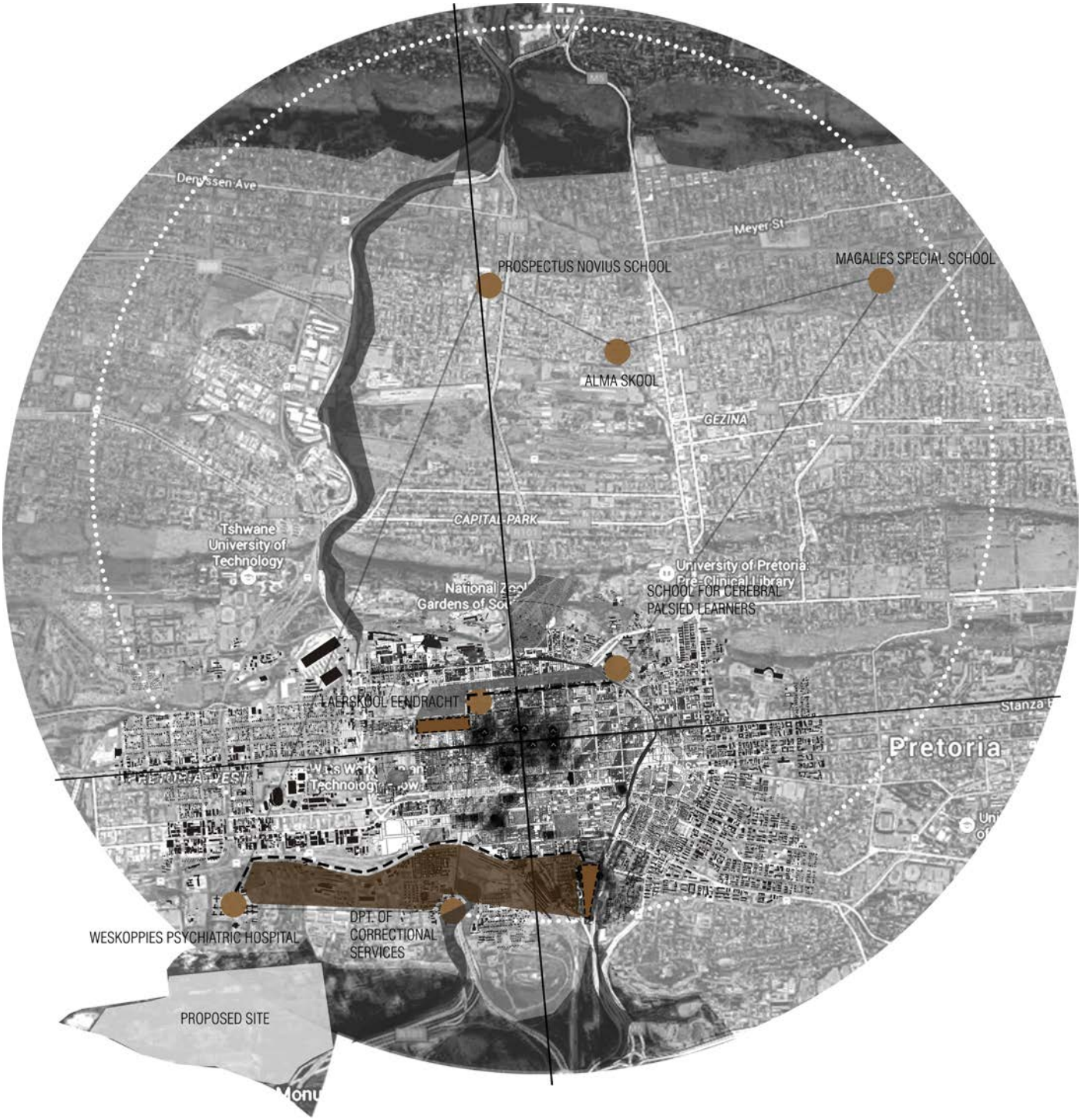

Figure 34: Mapping of existing establishments for marginal people in the vicinity of the CBD of Pretoria. (2016)

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2.4.4. EXISTING FACILITIES AND INSTITUTIONS

Marginalised space has been described as remnant spaces within the city as well as the forceful removals of larger marginal groups (related to race) to the outskirts of the city. In the planning of Pretoria a historical account has also been established of how space has been organised to separate people with mental impairments from the rest of society (Weskoppies Psychiatric Hospital and the Westfort Leprosy hospital). These sites not only segragate 'patients' but were thought to offer suitable environments for treatment and recovery (Kitchin 1998:347).

Similarly, people with physical and sensory impairments have also been forced to live in different spatial spheres. Segragated schools for deaf, blind and physically impaired children as well as segragated emplyment training and day-care units have been marginalised to the periphery.

Although the spatial formations pose an issue regarding integration in the city, when the theoretical disaster occurs in the CBD, the peripheral institutions form a framework to facilitate refuge. The fact that other facilities are located on the outskirts of the CBD proposes a larger network of aid. The network of facilities become a supporting structure for the greater aim to protect the marginal communities. However, it should be acknowledged here that the existing typologies do not provide all needs for the existence in future.

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2.4.5. INTERPRETATION OF BOUNDARIES, THRESHOLDS AND MARGINS

As mentioned earlier, spatial ability can only be understood through the presentation of spatial knowledge and organisation. In the image to follow (Figure 5) an analysis was executed to interpret boundaries and territories in the light of the marginal character of the city. Marabastad in the north and Weskoppies Psychiatric hospital in the south are represented as marginal communities. The segregation of these areas suggest islands of isolation which enforces the peripheral condition.

Reasons for these peripheral conditions are stated as follows:

- The shift of socio-economic energy to the eastern part of the city.
- Based on the evolution of city planning marginalised communities are forced to the south- and north-west periphery of the city with the main purpose of exclusion.
- The peripheries of the city develop as isolated industrial and military islands.
- The introduction of transport infrastructure creates a boundary between the central urban environment and the periphery.
- The effects of past political regimes ensure all government buildings are situated around Church square and near the location of the Union buildings.

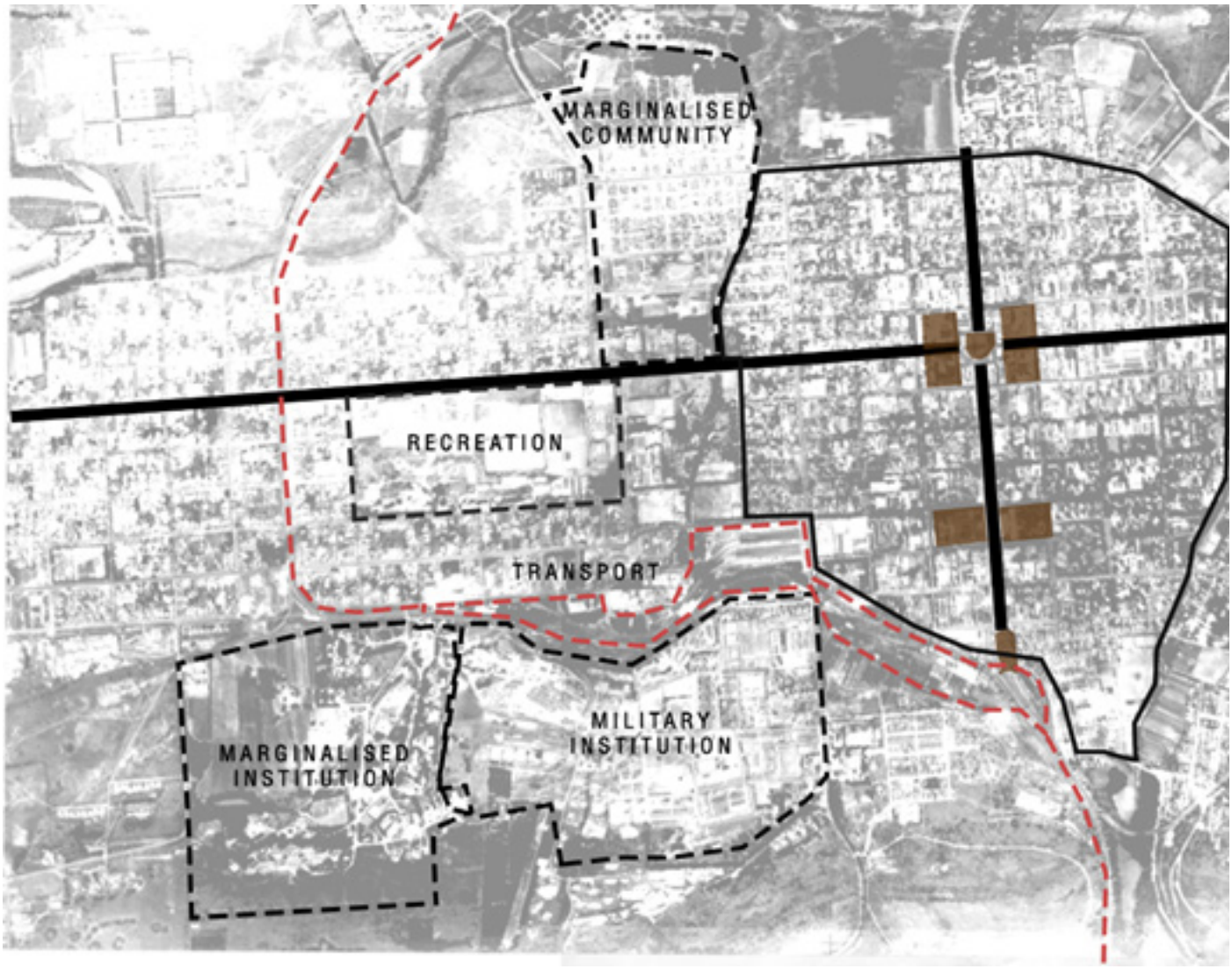

Figure 35: 1948; The evolution of Pretoria's city planning and development with reasons for the conditions. (2016)

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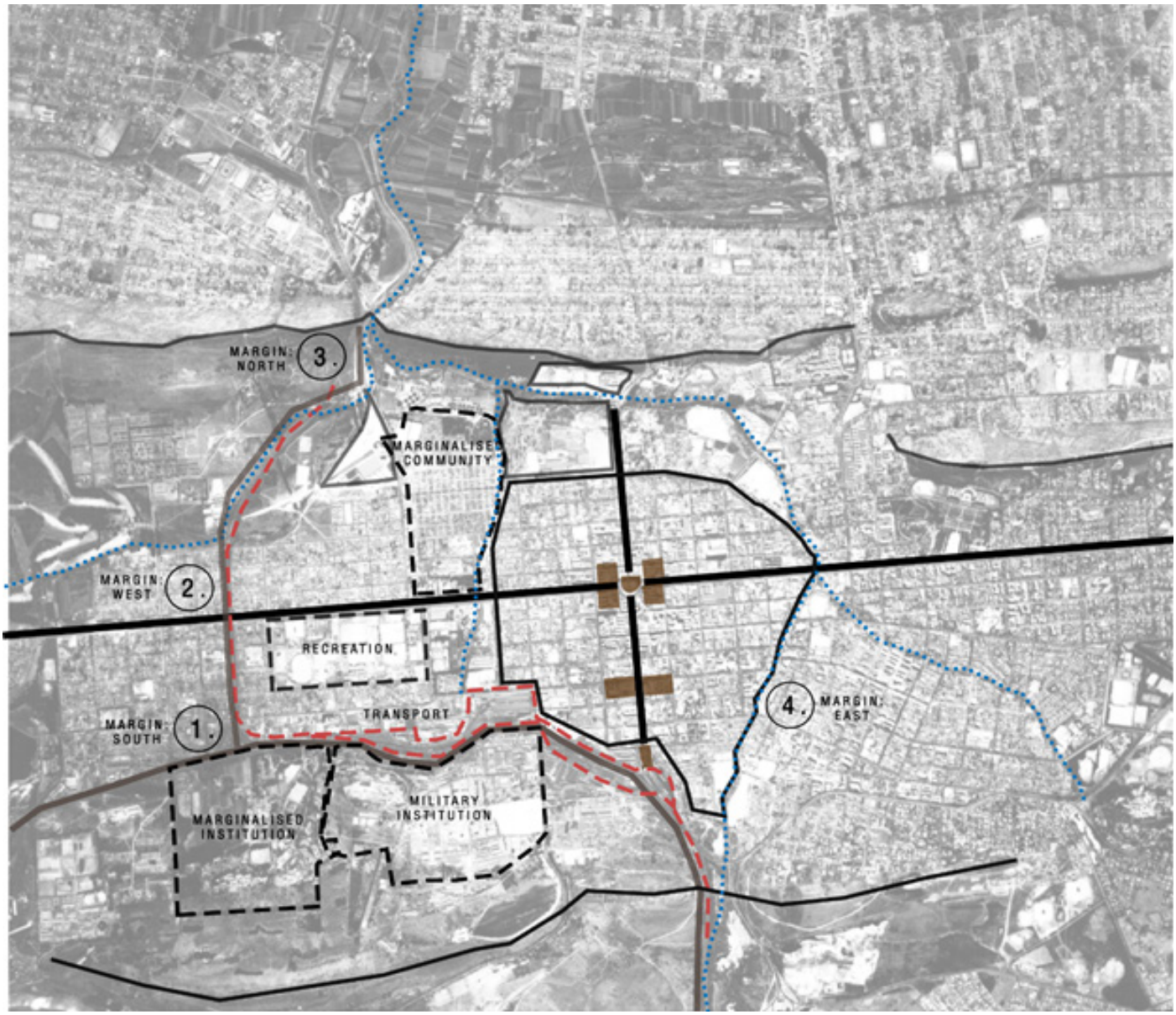

Figure 36: 1964 - The continued evolution of margins around the city centre. (2016)

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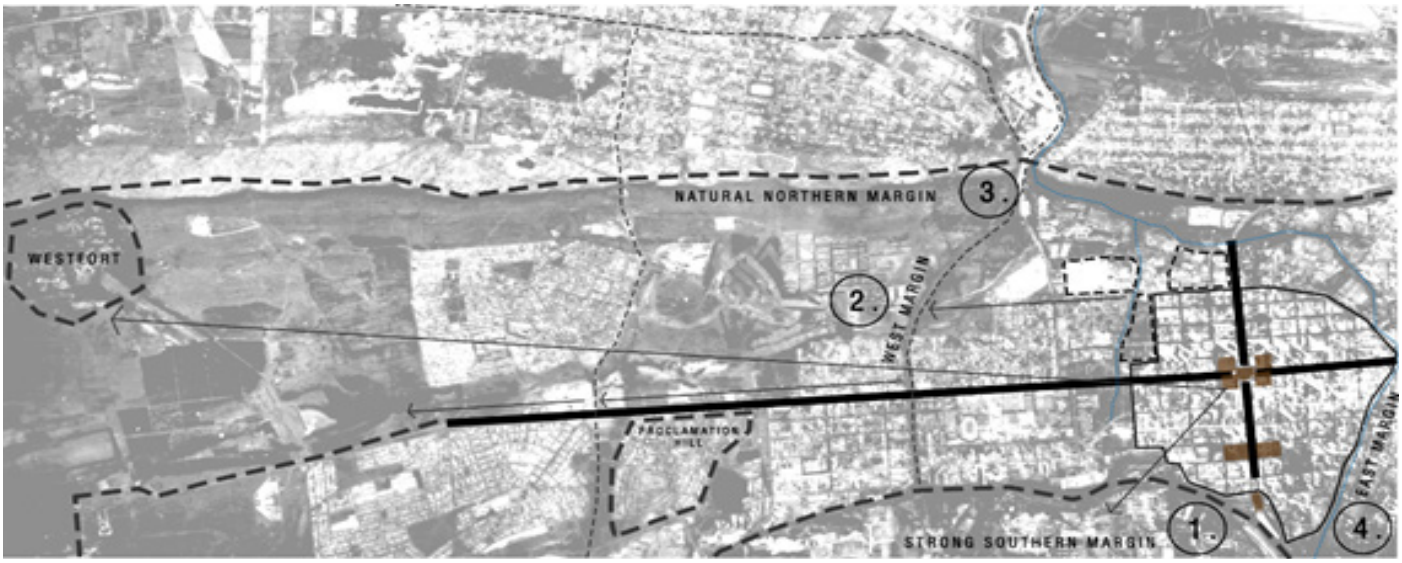

Figure 37: 1976 - The expansion of margins to the west and south-west of the city. (2016)

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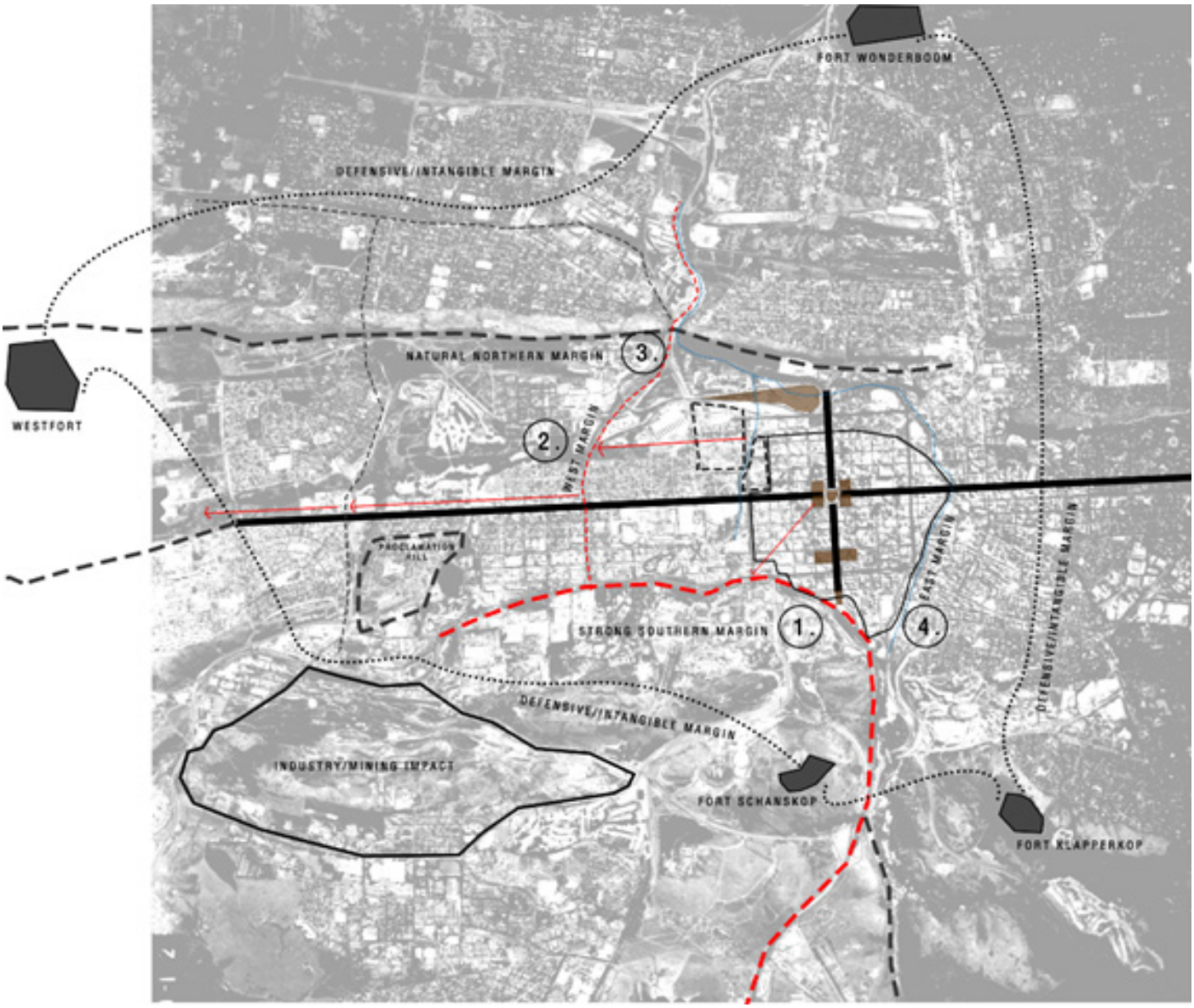

Figure 38: 1991 - The establishment of an industrial island to the south-west of the city as well as the link between the fortification sites that represent an intangible defensive margin. (2016)

With an established marginalised condition in the layout of the city, an interpretation of the relationships and thresholds of the city is illustrated above (Figure 38). Organisational margins represent an understanding of past conditions so that the architectural response is appropriate within its context. The fortification sites form an intangible defensive margin which crosses through the proposed site. This further strengthens the link of the architectural intervention with the functional aspects of the forts. The intitial intention of protection now latches onto the narrative of the forts and evidently the historical narrative of Pretoria.

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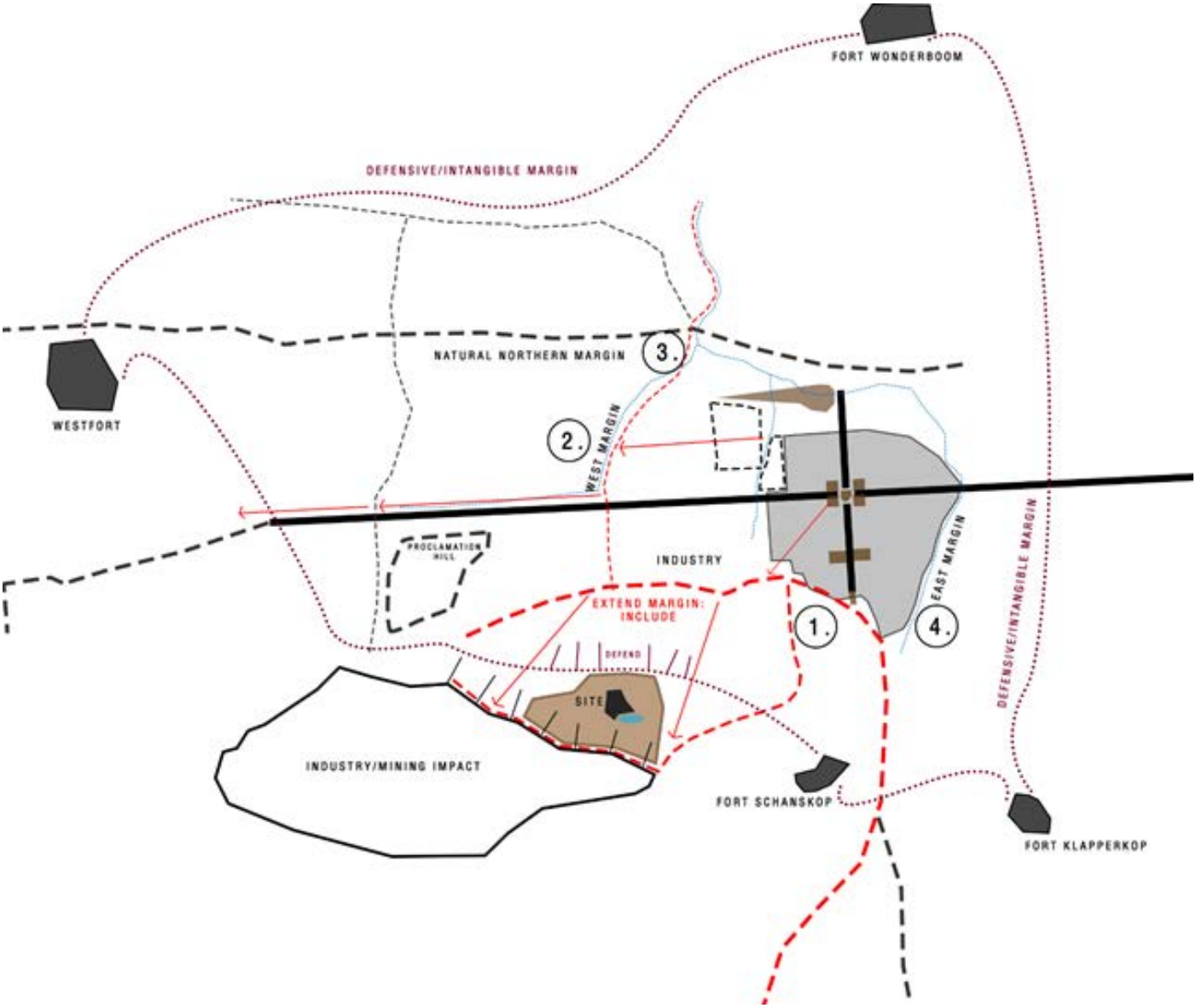

Figure 39: An amalgamation and shifting of margins in Pretoria. (2016)

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2.4.6. POSTCOLONIAL INQUIRY

"Social historians of Africa have now begun to study the complex ways in which colonial subjects contested the intricate workings of colonial power, particularly in language, identity and in the reorganisation of space ... By moving away from identifying discrete epochs of economic changes, this new approach to inquiry examines the creation and recreation of social boundaries, places of contest and their cultural representations, as well as the process by which knowledge emerges as a particular type of power" (Demissie 2012:5).

Based on the potentials and challenges of a postcolonial, democratic South Africa, questions of power and identity in a hostile society still remain essential to finding out how these issues and prospects have an effect on the perception of South Africa's marginalised people.

In an article written by Jyoti Hosagrahar - *Interrogating Difference: Postcolonial perspectives in architecture and urbanism (Crysler, et.al. 2012:70)*, it is stated that two distinct conditions in postcolonial thought have an effect on architecture and urbanism. First in "*legitimising 'other' histories that are non-Eurocentric and making visible people and landscapes that received accounts had been blind to; and second in recognising the subtle ways in which even the most marginalised populations actively shape and negotiate the spaces they inhabit* "(Crysler, et.al. 2012:72).

Theories of postcolonial inquiry suggest transformation in architectural and urban perceptions that relate to power and identity. With objectives such as the empowerment of the ordinary and marginalised, architectural design may introduce new approaches of negotiating powerlessness among these groups of people. This objective becomes a catalyst for positive change among a collective marginalised identity.

Hosagrahar (2012) suggests that potential exists in the delusional interconnectedness of our city (and on a global scale). This potential may be acknowledged as a possibility of finding new kinds of strength and identity through the experimentation of difference. Therefore the power of postcolonial ideas in architecture enables an ability to transcend aspects of form and function.

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In depicting Pretoria as a city influenced by universal ideas of modernism one cannot dismiss the transformation of a new democratic South Africa. With the layering of historically and politically significant events that occurred in the capital city, a new approach to meaning and memory in the making of architecture has been adopted in many architectural practices today.

The history of Pretoria together with ideas of postcolonial theory has therefore informed thinking about buildings as "*symbolic cultural landscapes that are historically constituted, culturally constructed, political artefacts whose forms are dynamic and meanings constantly contested" (Crysler, et.al. 2012:73).*

It becomes evident that through a postcolonial approach, the emphasis is placed on the ability of diverse marginalised people to contest previously dominant control to define their identities.

Although postcolonial perspectives do not relate directly to marginalised space, these criticisms suggest a deeper issue of power relations. Throughout the development of Pretoria, margins have been controlled and defined due to the political conflicts that the city has endured in the past. Hosagrahar (2012:80) postulates four key themes in the attempt to design from the margins which are relevant informants for the proposed architectural intervention of this investigation: *"an emphasis on the particularities of region, site and context; in-depth knowledge of a place and people; social responsibility in design; and sustainability" (Crysler, et.al. 2012:73).*

2.4.7. CONCLUSION

In a South African context (and the urban environment of Pretoria), accounts of negotiation by those in the margins begin to destabilise the singular authority of those in power. The study therefore suggests that through form, use and meaning, architecture has the potential to contribute to imagining and reconstructing identities of the marginalised people.

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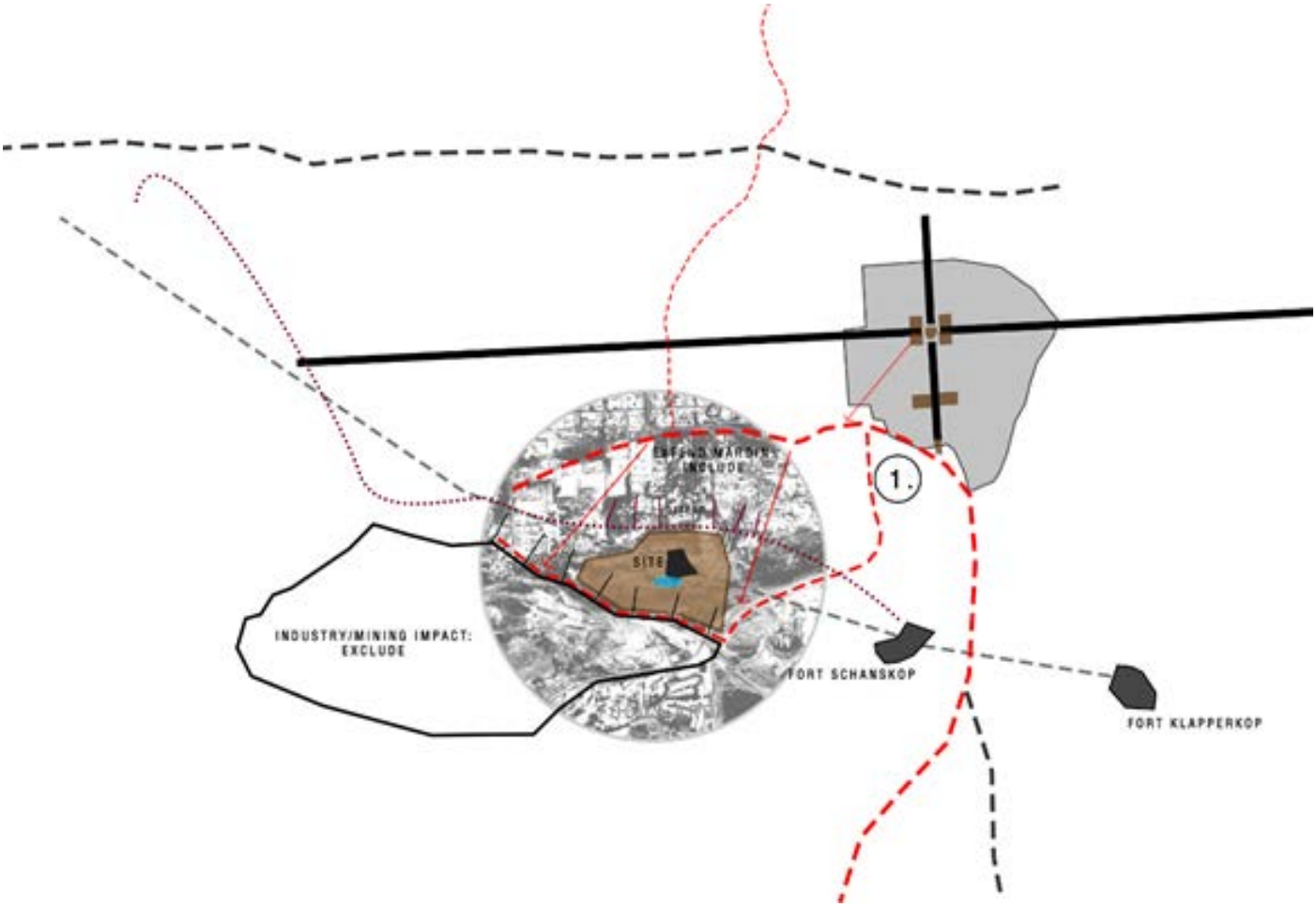
Figure 40: Synthesis of marginal interpretations. (2016)



2.4.8. SYNTHESIS

In the interpretation of margins and boundaries it is suggested that the southern margin extends to include the proposed intervention to renegotiate power relations in the 'new' city. The intentions of a future scenario proposes that post-disaster, the intervention becomes a basis for new power relations to exist and that the establishment of such relations can create an example for the rebuilding of the city from the margins.

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2.5. THE INSTINCTIVE JOURNEY:

Deliberate subjective exploration – a Flaneur's perspective

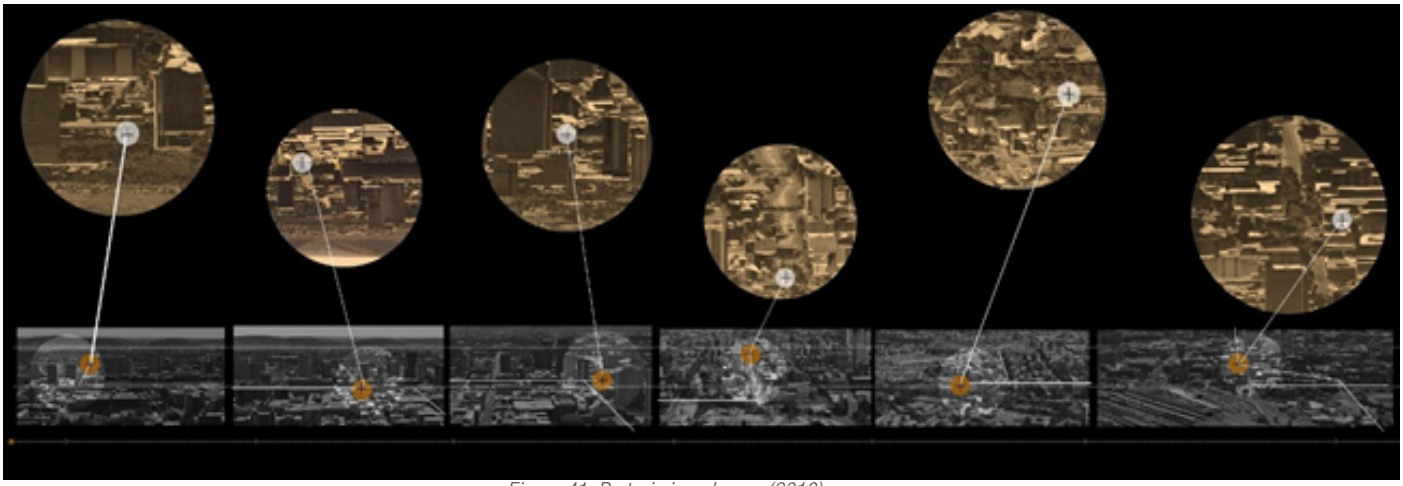

Figure 41: Pretoria in a dream. (2016)

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2.5.1 URBAN EXPLORATION

As the Metro-rail is about to pull into Belle Ombre Station, he catches passing glimpses of Pretoria. The train comes to a stop and he steps out onto a shaded area where bodies are moving about; a confluence of strangers seeming to come from every corner in the world – people from every culture, race, religion, age and class in society – he starts walking towards the exit and begins the journey to his next destination: Nana Sita A Re Yeng bus station.

Passing the hustle and bustle of Marabastad, he walks up a few streets where he notices a protest coming his way. He alters his route and continues straight up, reaching Schubart Park on his right. With the new sound of children playing on the roof gardens, protected, yet also exposed to the city, he pauses and recalls the memory of this once derelict site, now re-appropriated as residential housing. He continues up a street and turns left as he reminisces of past times.

Arriving in Church Square, he is confronted by a lively green area filled with diverse activities and he remembers the barbed wire fence once laid out in the centre. He walks through the space where there are sounds of music, vendors selling food, and groups of students laughing at the happenings of the day. He continues onward and something catches his eye: a gathering of people on the Rentbell Tower's rooftop.

Without thinking about it he decides to make a quick detour and enters the building to go to the roof. There he pauses and looks out to Pretoria, seeing a different city than the one he used to.

Realising the time, he rushes down to Church Street, and gets distracted by people walking towards an entryway to his left, which seems to have multiple thresholds. Giving in to his curiosity, he follows them inside, to discover a hidden Mosque that consumes him in its beauty. He doesn't have time to take off his shoes, so he rushes out to continue his more familiar route to the Nana Sita station.

Unaware that he actually took a different route in his state of allure from the hidden treasure, he stumbles across an unexpected, vibrant courtyard between two buildings. He recalls it as a mere service alleyway before.

Continuing onwards, he reaches Nana Sita where the left-over islands have become re-appropriated to public use. On the bus he bumps into an old friend and they share stories of the city. They turn right onto Nelson Mandela drive where he sees the intersection of Walkerspruit and Apies River re-appropriated to form an open recreational area.

The bus passes Berea Park where he smiles at children running around in the Apies water, bleeding into the landscape, from what used to be neglected open land, now contributing to the city's fabric. His daydream continues his journey on…

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2.6. FRAGMENTS OF A CITY

2.6.1. ANALYSIS OF PERCEPTION IN THE CITY

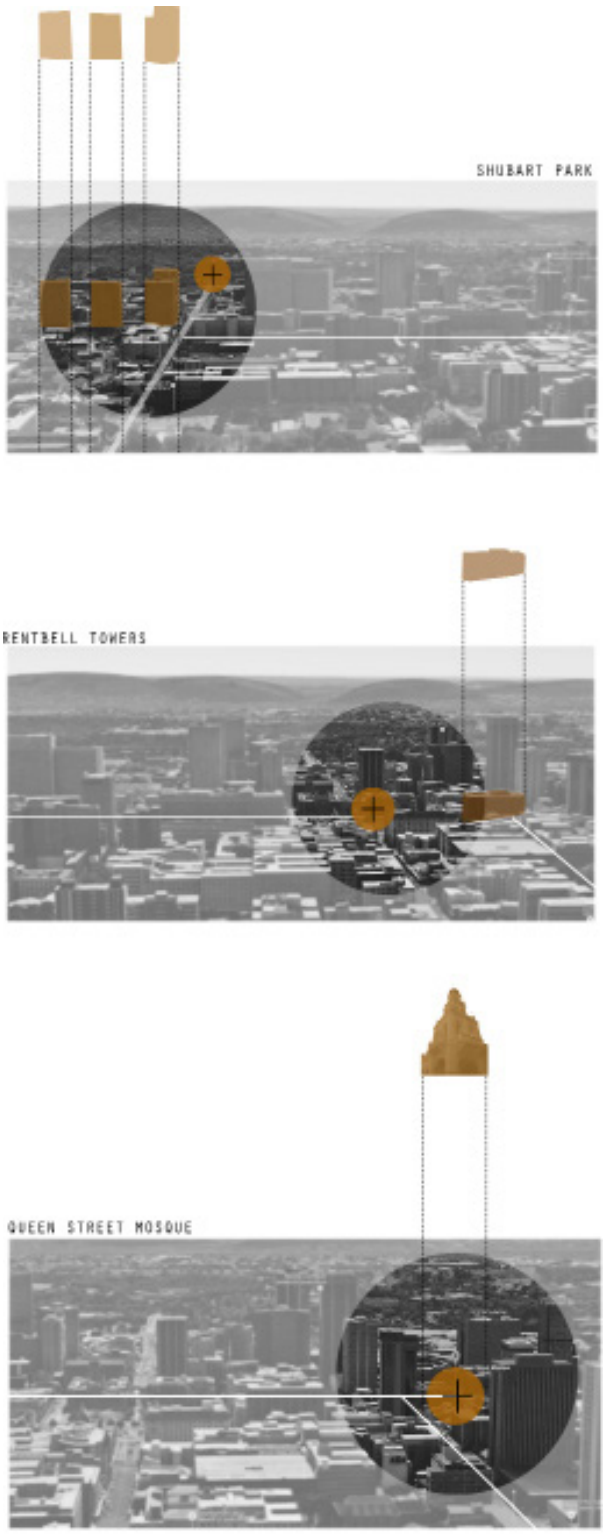

Figure 42: Fragments highlighted in the city of Pretoria. (2016)

In an attempt to establish an argument for marginalised spaces in the city, an analysis was conducted as part of the urban framework. Several resultant spaces were observed and mapped during a subjective exploration through the city of Pretoria.

The evidence of marginal space was clear which also formed part of the narrative written about the route that was undertook by the urban framework group. Even though the foundings were deliberately subjective, it was evident that a layer of perception exists in the mapping of such spaces.

Departing from the Belle Ombre station, long the route different static and dynamic activities were discovered. The people inhabiting or not inhabiting the spaces presented character and various layers of spatial quality. It was also observed that thresholds and boundaries revealed hidden and unhidden space as far as the eye could see.

Along the route of discovery marginalised spaces were imagined through sketches (see Addendum A) in order to propose new contributions to the fragmented city.

Further thinking of the city as part of a phenomenological journey suggested thoughts of contestation as well. A dream or nightmare where spaces can transcend thinking about the future of the city. Within this phenomenological dimension the author was able to extract a sense of controversy about the city.

It seemed as though the pleasant journey was masking the realities of distress.

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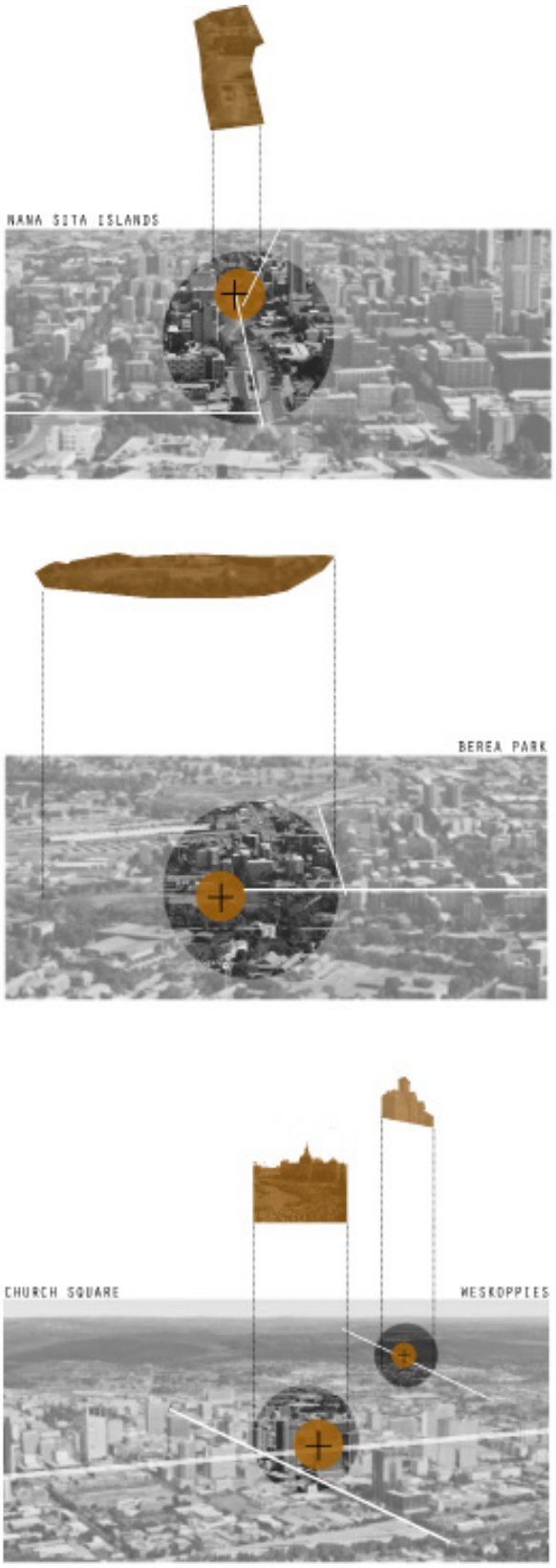

Figure 43: Fragments highlighted in the city of Pretoria. (2016)

In the writing of the normative position it is suggested that we as human beings may have perceptual knowledge but that this knowledge cannot necessarily be justified indefinitely. Therefore what we might perceive as an active and energetic space in the city, could possibly be the opposite.

The mapping of the journey through Pretoria, however perceptual it might have been, proved that a contestation exists between what is real and what is perceived and imagined.

2.6.2. CONCLUSION

In the scheme of this dissertation and the speculative nature thereof, what we perceive as space goes far beyond physical parametres. Many layers exist in the perception of space which can be that of emotion, wellbeing, psychological state and spirituality.

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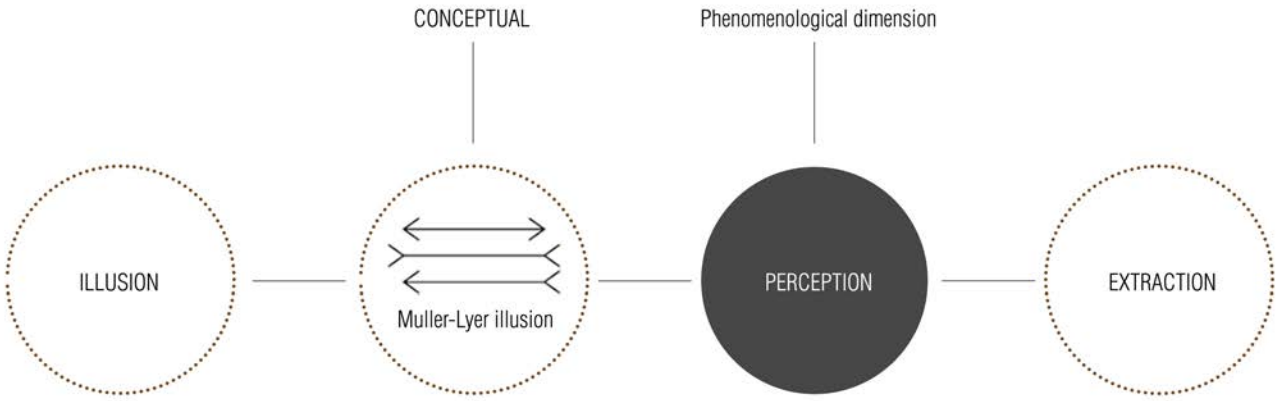
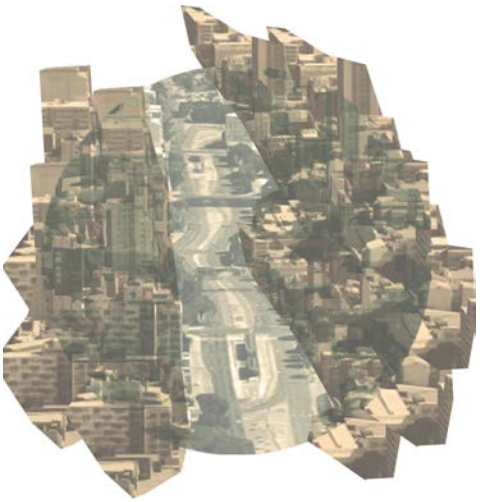


Figure 44: The process of perception from illusion to extraction. (2016)

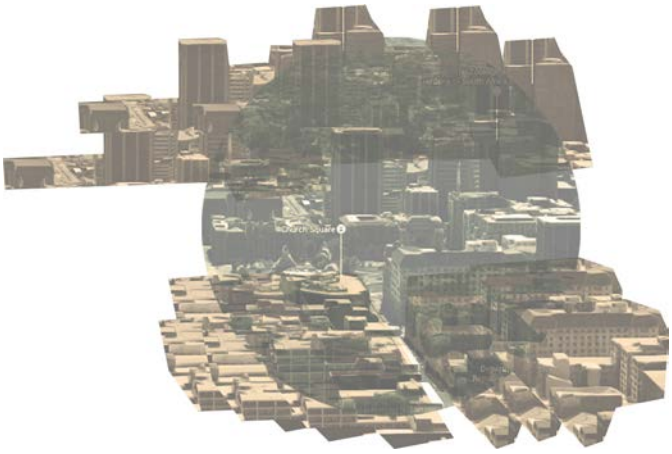
Different layers of perception are extracted in the illustrations below. Marginal space is the central layer with images of abstraction surrounding these spaces.

Shubart Park

Berea Park



Nana Sita islands



Church Square

Figure 45: Abstracted images of marginal spaces in Pretoria. (2016)

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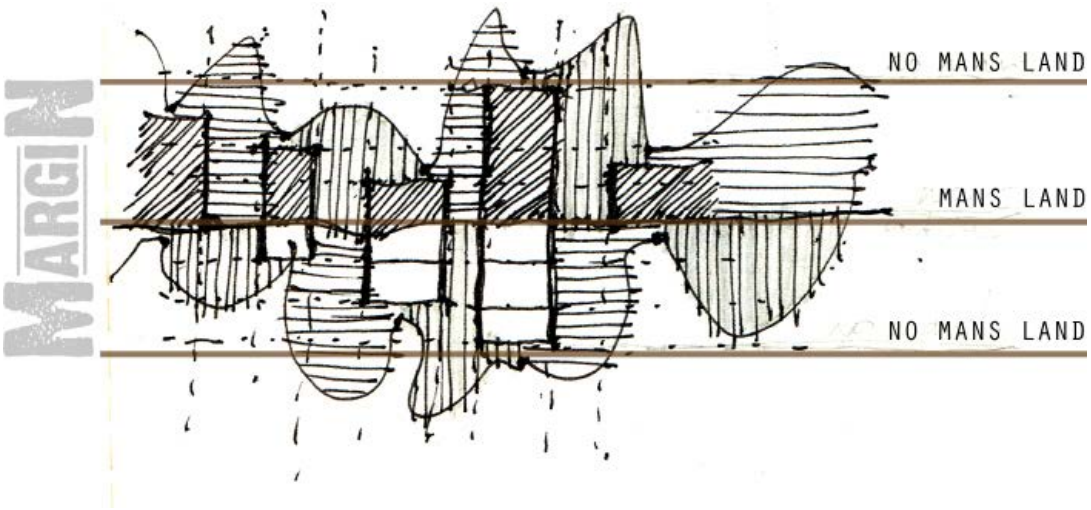
Figure 46: Viewing the city, in a sectional plane, margins are proposed between ground level, above and below this level. (2016)



The margins between ground level, below ground and above ground suggest differences in spatial qualities of the three marginal spheres. This is the departure of the investigation into underground space and what it could represent.

Further exploration on the ground level propose that phenomenological space is divided into three interpretations of what is seen and unseen (See figure 47).

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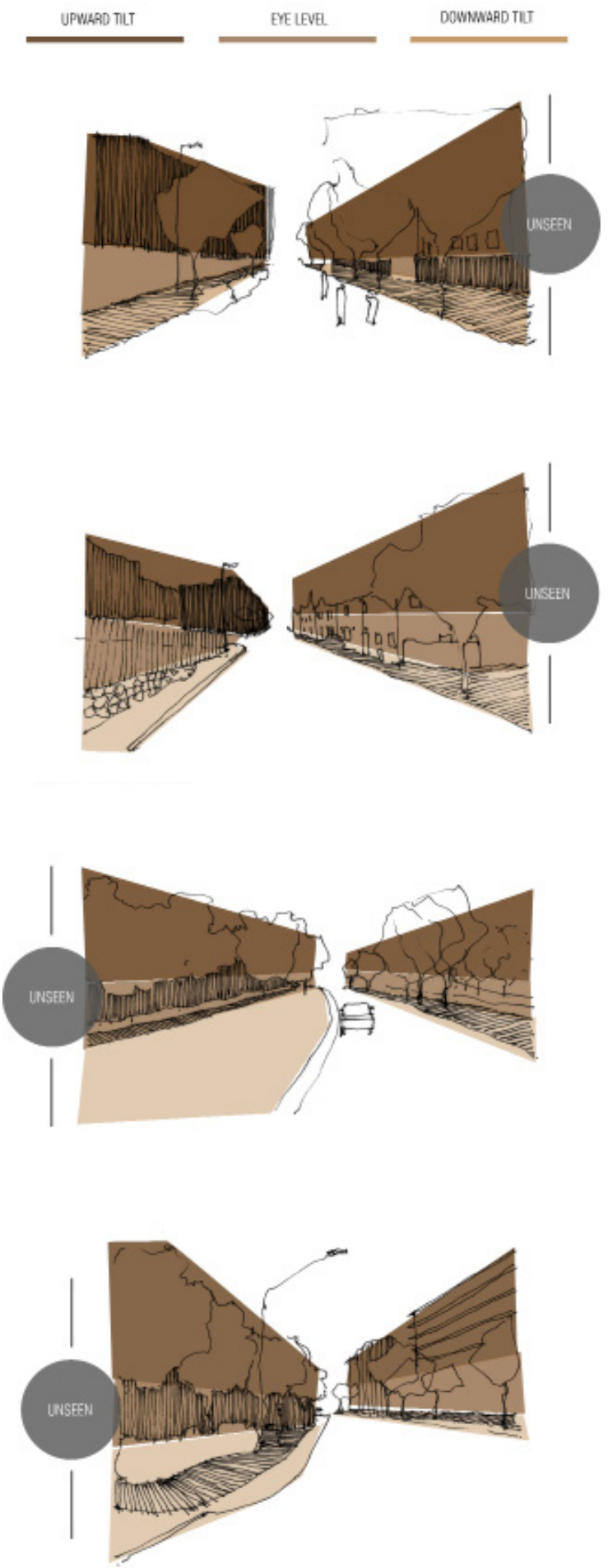

Figure 47: Interpretations of the three marginal spheres and what is seen and unseen. (2016)

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2.6.4. FOUNDINGS FROM PERCEPTUAL INVESTIGATION

The phenomenological approach to space is grounded in the spheres of margins. Throughout the subjective journey of the city, observations presented commonalities and differences of marginal space.

COMMONALITIES

_Open surrounded space
_Vast open dilapidated space
_Surrounded concealed private space
_Rehabilitated space
_Revealed space
_Concealed space
_Hidden public space
_Underutilised space

DIFFERENCES
_Levels of dilapidation
_Light and dark
_Levels of potential
_Accessibility
_Edges
_Spatial quality
_Existing vs. open
_Program

2.6.5. RESPONSE

In the response to the findings the aim was to extract various potentials through conceptual intervention which, from the urban framework, is called: Charging embryonic conditions.

2.6.6. CONCLUSION

The methods of 'charging' is the synthesis of the urban framework which are the following:

1. ROOFTOPS – Providing connection
2. HIDDEN GEMS – Veiling/recognition
3. BACK ALLEY/COURTYARD SPACES – Exposing
4. UNDERUTILISED SPACE – Appropriation
5. CHANNELS/UNDERGROUND TUNNELS – Bleeding into the landscape
6. OPEN LAND – Development

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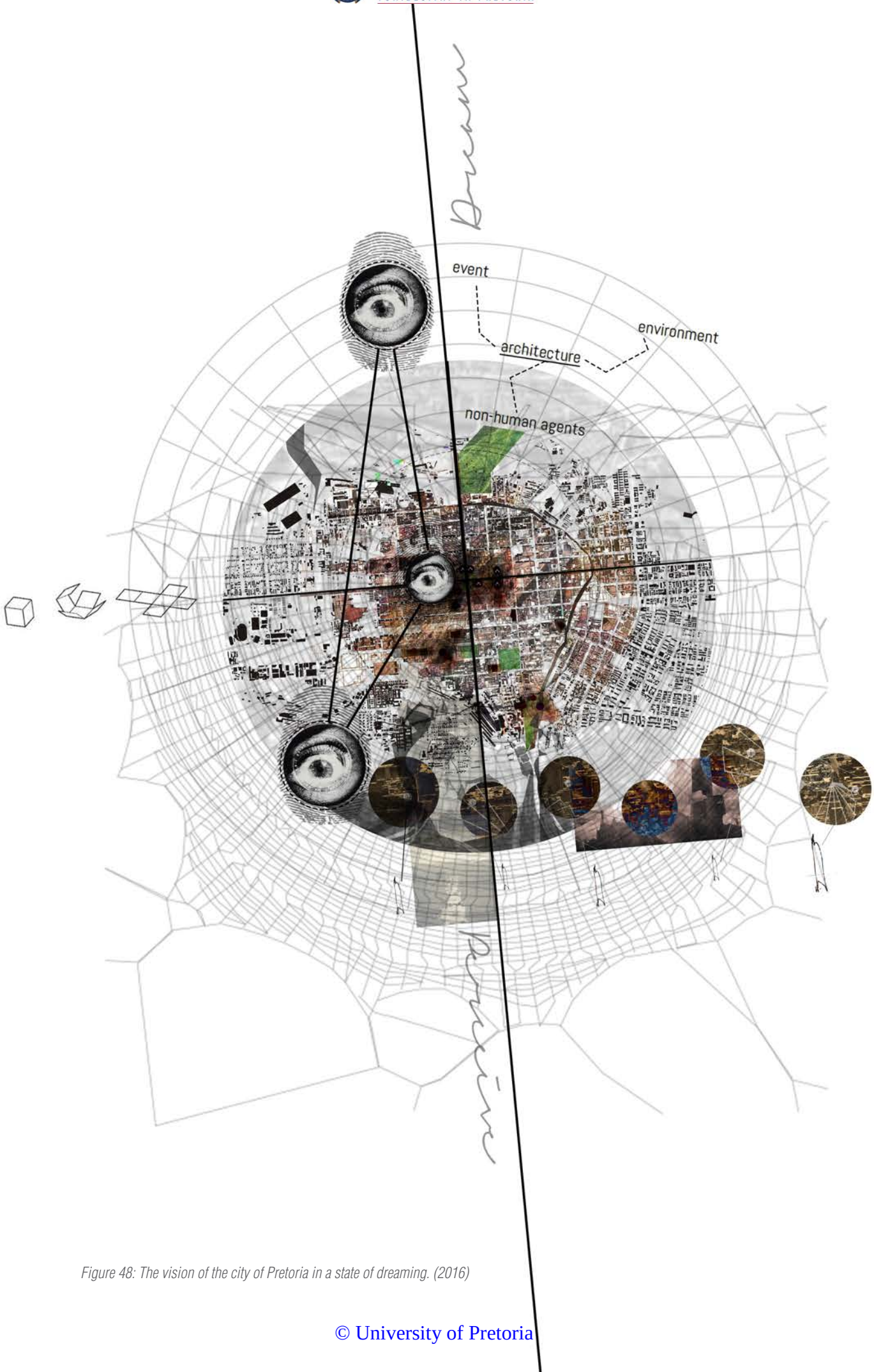

Figure 48: The vision of the city of Pretoria in a state of dreaming. (2016)

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[PART TWO]

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CHAPTER

03

This Chapter aims to describe the theme and the theoretical discourse which leads to the production of spaces based on different identities.

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ANTICIPATED EVENT: DISASTER

Figure 49: An illustration of recent incidents of destruction in the city of Pretoria and other locations in South Africa. (2016)

3.1. THE THEME

3.1.1. THE IMPLICATIONS OF A DISASTER

The definition of a disaster is: “a progressive or sudden, widespread or localised, natural phenomena or human-caused occurrence which causes or threatens to cause death, injury or disease; damage to property, infrastructure or the environment; or disruption of a community; and is of a magnitude that exceeds the ability of those affected by the disaster to cope with its effects using only their own resources” (Disaster Management Act, 57 of 2002).

Various recent incidents that relate to human-caused ocurrences have taken the country by storm. Although mitigation between the government, universities and activist groups have taken place it is of great concern that underlying issues of political and social systems will cause increased disruptions across the country in future. Even though not all citizens are affected it is argued that the marginalised are in most need of relief and being equipped with coping strategies to survive.

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Figure 50: Photographs by Robin Hammond capturing severe conditions of mental health victims, in African countries in crisis. (Hammond 2016)

More than one billion people worldwide, or about 15% of the global population, have disabilities. According to the Women's Refugee Commission, 6.7 million people with disabilities are forcibly displaced as a result of persecution and other human rights violations, conflict and generalised violence (Women's Refugee Commision 2013:3).

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3.1.2. POTENTIAL OF MARGINALITY

The exclusion experienced by marginal people (including people with disabilities) is the result of a range of diverse economic and social factors. This causes a disadvantage in the overall scheme of society which may include factors such as poverty, social isolation and unemployment.

According to the CENSUS conducted in 2011 named *Profiles of persons with disabilities in South Africa* (Statistics South Africa 2014), one of the major challenges for persons with disabilities is unemployment. Based on inaccessible and unsupportive work environments, attitudes and practices of a discriminatory nature is developed. As a result only a minority of disabled people in South Africa have access to jobs, with the rest relying on sheltered workshops which are run by the Departments of Social Development and Labour, private organisations or by persons with disabilities themselves (CENSUS 2011).

It is of great concern, that the accessibility and provision of basic services (and psychological needs) of the disadvantaged community is limited. In light of this concern the argument is reaffirmed to shelter and protect the marginalised in a time of crisis.

Statistics are very often unreliable due to insufficient surveys and interviews. The intention of this dissertation, however, is to understand the capabiities of previously disadvantaged people and how opportunities are created through the recognition of these potentials.

With this in mind, not all disabled persons are used in the methodology to create an outcome. Instead, essential concepts of marginalised persons are extracted, to address an intention rather than an issue. The reason for this, is to interpret identity instead of disability. The range of categories of the marginalised (Mavericks) are carefully chosen with the recognition of specific skills to develop a sustainable community.

The proposed intervention aims to create an overall concept of development and preservation. Therefore, when it comes to the making of architecture, activities lead the way to introduce functions of potential and not functions of occupation categories i.e. hospital, school, museum etc.

Keeping these concepts in mind, functions have been chosen to develop a unifying identity instead of defining it. However, the nature of scenario architecture suggests that various elements could co-exist to create an environment of overall potential and development.

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3.1.3. CRISIS

In the context of this investigation a person experiencing limitations - physical, intellectual or psychiatric - is in a marginalised position. Based on the definition of disability and concerning the marginalisation of people the elderly, homeless and prisoners are included in this category.

In the theme of disaster other disabling fears relate to loss of homes and livelihoods, social identity and social references, bringing hopelessness and despair. This reduces the chances of earning a decent livelihood, being self-reliant, productive, and contributes to growing poverty and marginalisation.

During a time of crisis marginalised people may be deprived of special assistance to follow routines of evacuation. Therefore as part of the narrative of the dissertation the author and other private organisations act as emergency personnel in the anticipation of a destructive event. Transport is also provided by means of buses travelling along back-routes to access the proposed site from the South.

According to the International Labour Office (ILO InFocus Programme on Crisis response and Reconstruction, 2003:1) during crises, disabled persons (a marginal position) are unable to assist themselves in order to survive and recover from the destruction of a disaster. The requirement of ensuring the safety and protection of these people is extensive planning within communities to determine what type of conditions they live in and what assistance is needed in a time of crisis.

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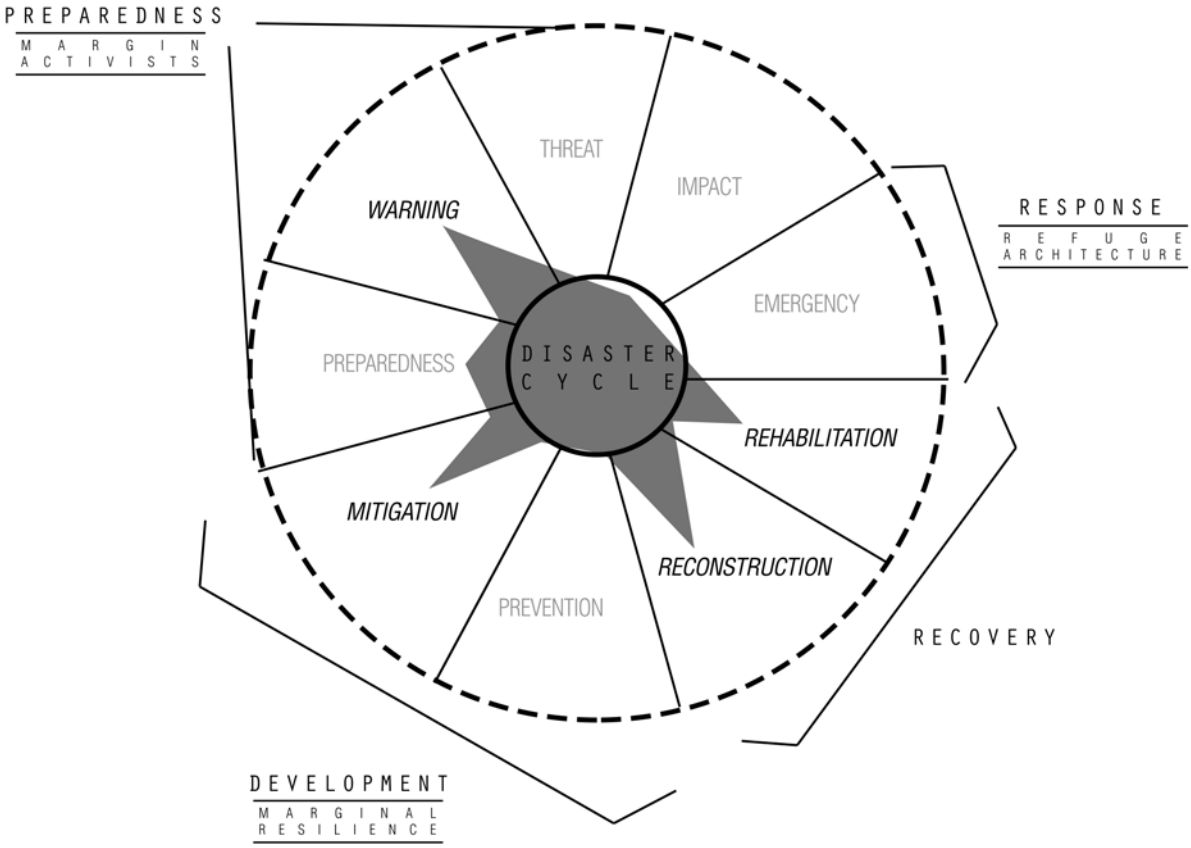

Figure 51: Suggested disaster cycle and how the Mavericks project evolves according to the different stages of the cycle. (2016).

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3.2. DISASTER RISK MANAGEMENT PLANNING FRAMEWORK (DRMF) FOR THE CITY OF TSHWANE

"The City of Tshwane, as one of the urban growth centres in South Africa, faces increased levels of urban risk" (DRMF 2011:77). Some of the risks identified in the framework relevant to the context of this study include: community impact of mission critical systems failure, civil strife and zenophobia, special events incidents and terrorism/weapons of mass destruction. Special events incidents here are described as risky social behaviour, cultural clashes, unusual emotional states and lack of crowd control.

"Contingency planning is therefore a matter of creating scenarios and making assumptions, asking the question 'What if?', and then planning to deal with the possible consequences. Disaster risk-based planning means that although plans must address the specific hazards which have been identified as a priority for a given area they must also be flexible enough to cater for all eventualities (hazards). All of these factors will have a direct influence on how contingency plans are structured" (DRMF 2011:62).

The identification of risks in the framework presents a rationale that disaster risk can largely be addressed through developmental initiatives and projects (IDP's). Although it is acknowledged that disaster risk management will not be incorporated into all developmental projects in the short-term, the imperitive remains that current projects aim at adhering to the disaster risk management framework.

The intervention of this investigation proposes to represent one of the developmental initiatives specific to the vulnerability of marginalised people during a disaster. Through partnerships of the IDP's, including the Mavericks project, risks are reduced and the implementation of such projects aim to mitigate disaster planning in the overall DRMF of the City of Tshwane.

3.2.1. CONCLUSION

The creation of contingency plans to deal with disaster and the proposal that the Mavericks project could be included in the framework relates to the negotiation of power in the city. The Mavericks project mitigates power relations by adding value to disaster risk management.

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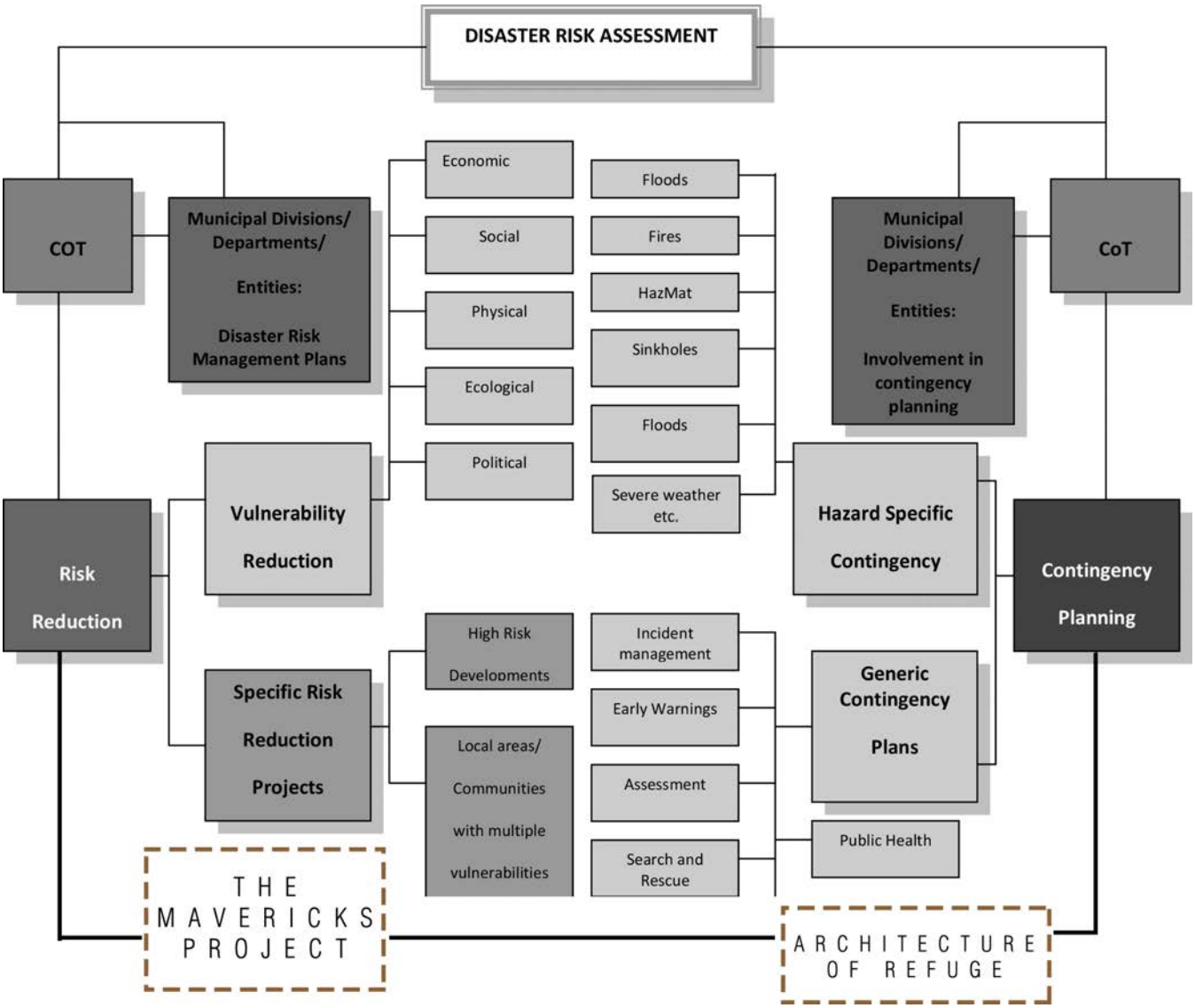

Figure 52: Disaster Risk Management Planning Framework for the Cot with alterations by the author to include the Mavericks project. (2016)

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3.3. WAR AND CRISIS

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3.3. WAR AND ARCHITECTURE

Architecture may be described as an embodiment of knowledge gained through social, political and cultural relationships of a society (Van Rensburg, et.al. 2008). This knowledge changes over time and can inflict moments of emotion, trauma and destruction in the fight for an existence and identity. These contested territories of existence can be represented through architecture which will be discussed in the theoretical discourse. As a result, architecture can create symbols of conflict between identities that fail to co-exist in society.

Lebbeus Woods, in his manifesto of Architecture and War (Papadakis 1993), proposes a philosophical approach to the concept of war and how it fits into a body of architectural knowledge.

LEBBEUS WOODS MANIFESTO:

Architecture and war are not incompatible. Architecture is war. War is architecture.

I am at war with my time, with history, with all authority that resides in fixed and frightened forms.

I am one of millions who do not fit in, who have no home, no family, no doctrine, no firm place to call my own, no known beginning or end, no 'sacred and primordial site'.
I declare war on all icons and finalities, on all histories that would chain me with my own falseness, my own pitiful fears.

I know only moments, and lifetimes that are as moments, and forms that appear with infinite strength, then 'melt into air'.

I am an architect, a constructor of worlds, a sensualist who worships the flesh, the melody, a silhouette against the darkening sky. I cannot know your name. Nor can you know mine. Tomorrow, we begin together the construction of the city.

(Papadakis 1993)

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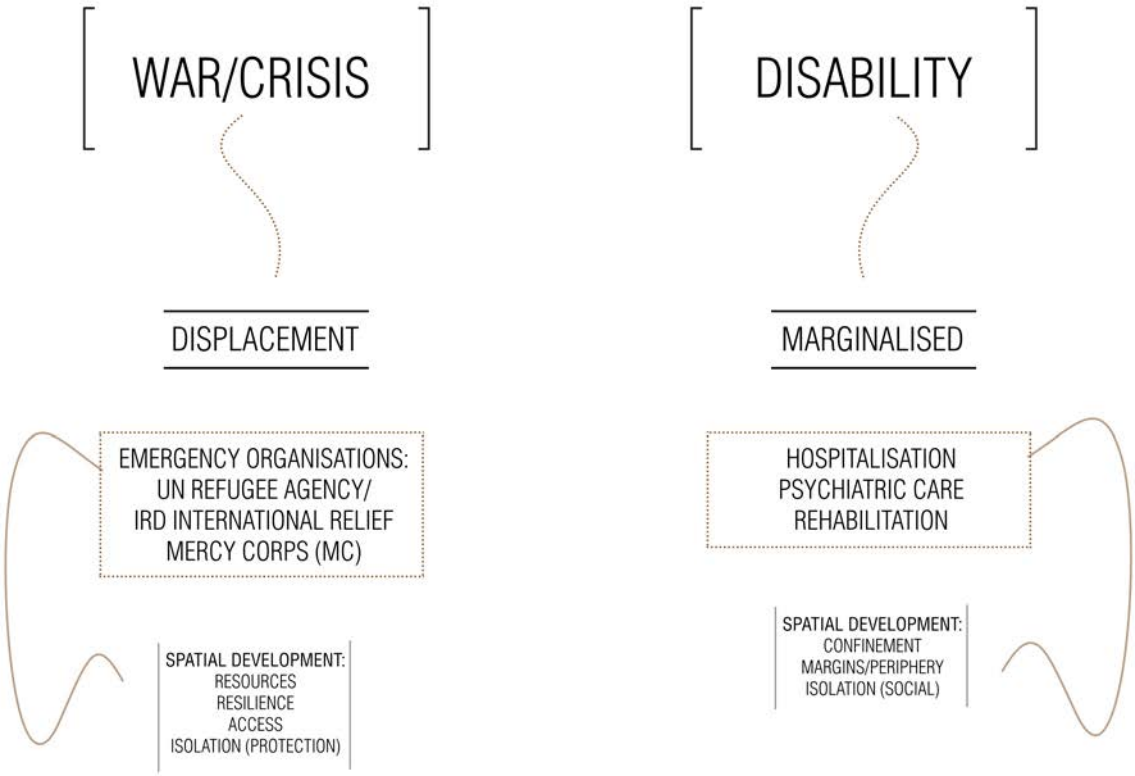

Figure 53: Relationships between crisis and marginality. (2016)

3.4. REFUGEE CAMPS: SPACE AND RESOURCES

During natural disasters such as earthquakes, floods, storms and terrorist attacks, many injured and traumatised civilians are left to seek refuge elsewhere. Various emergency agencies, such as the Red Cross and UN, deploy trained personnel to provide temporary relief in encampments with services and special assistance in place. Thousands of people are displaced and disabled and in need of urgent access to medical care and rehabilitation services (ILO 2003:2).

In the illustration above, similarities are identified in the approach of refuge between war and a marginal person in crisis. In conclusion the framework for the establishment of refugee camps in which thousands of marginal and disabled persons have to rebuild a community, provides a theoretical precedent for this study.

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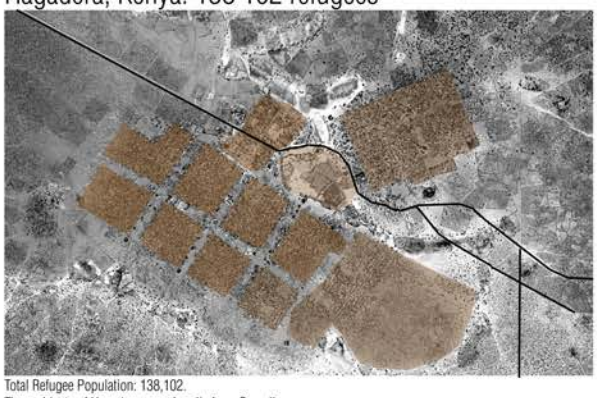
3.4.1. SPATIAL FORMATIONS OF REFUGEE CAMPS

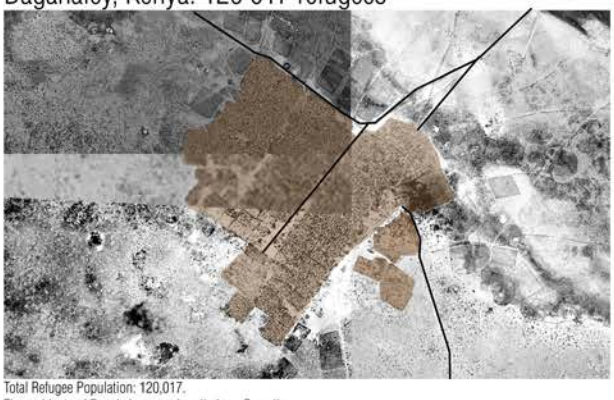
In most cases, refugee encampments develop with a combination of sporadic and grid-like spatial formations. Often these communities settle close to a source of water, along a route or between ridges for the purpose of isolation and protection.

Hagadera, Kenya: 138 102 refugees



Total Refugee Population: 138,102.
The residents of Hagadera are primarily from Somalia.
Online: http://storymaps.esri.com/stories/2013/refugee-camps/#sthash.8p9uaBv4.dpuf

Dagahaley, Kenya: 120 017 refugees

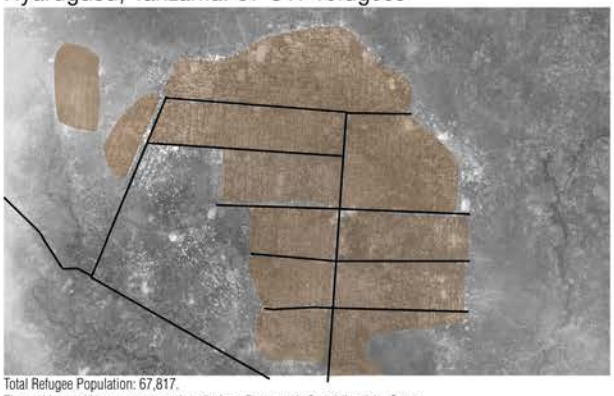


Total Refugee Population: 120,017.
The residents of Dagahaley are primarily from Somalia.
Online: http://storymaps.esri.com/stories/2013/refugee-camps/#sthash.8p9uaBv4.dpuf

IFO, Kenya: 96 372 refugees

Total Refugee Population: 96,372.
The residents of Ifo are primarily from Somalia.
Online: http://storymaps.esri.com/stories/2013/refugee-camps/#sthash.8p9uaBv4.dpuf

Nyarugusu, Tanzania: 67 817 refugees

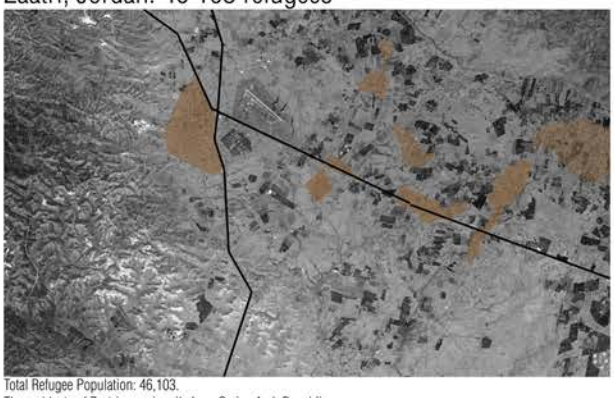


Total Refugee Population: 67,817.
The residents of Nyarugusu are primarily from Democratic Republic of the Congo.
Online: http://storymaps.esri.com/stories/2013/refugee-camps/#sthash.8p9uaBv4.dpuf

Panian, Pakistan: 56 820 refugees

Total Refugee Population: 56,820.
The residents of Panian are primarily from Afghanistan.
Online: http://storymaps.esri.com/stories/2013/refugee-camps/#sthash.8p9uaBv4.dpuf

Zaatri, Jordan: 46 103 refugees



Total Refugee Population: 46,103.
The residents of Zaatri are primarily from Syrian Arab Republic.
Online: http://storymaps.esri.com/stories/2013/refugee-camps/#sthash.8p9uaBv4.dpuf

Figure 54: Illustrations of the spatial formations of refugee camps around the world. (2016)

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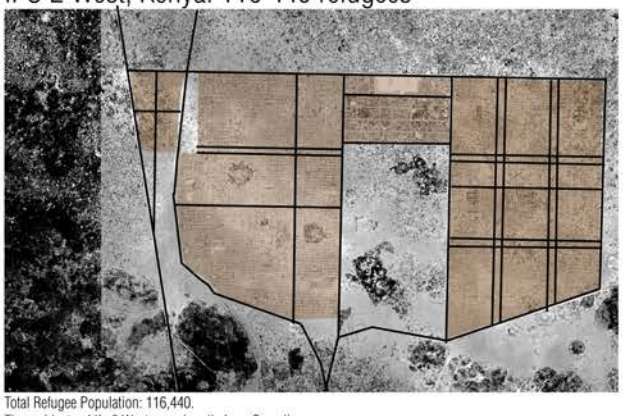
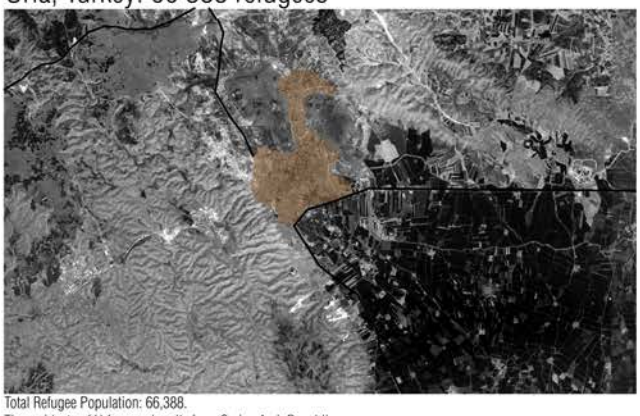
IFO 2 West, Kenya: 116 440 refugees



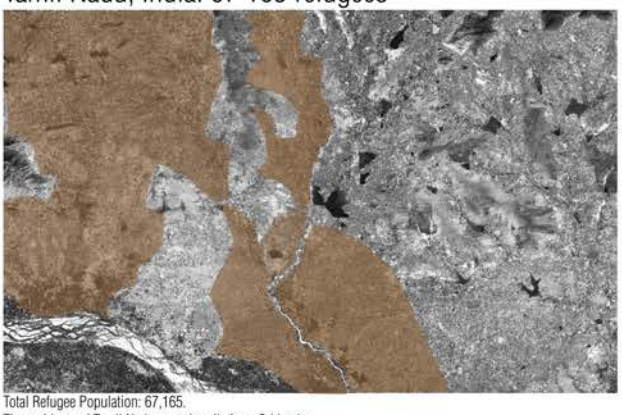
Total Refugee Population: 116,440.
The residents of Ifo 2 West are primarily from Somalia.
Online: http://storymaps.esri.com/stories/2013/refugee-camps/#sthash.8p9uaBv4.dpuf

Urfa, Turkey: 66 388 refugees



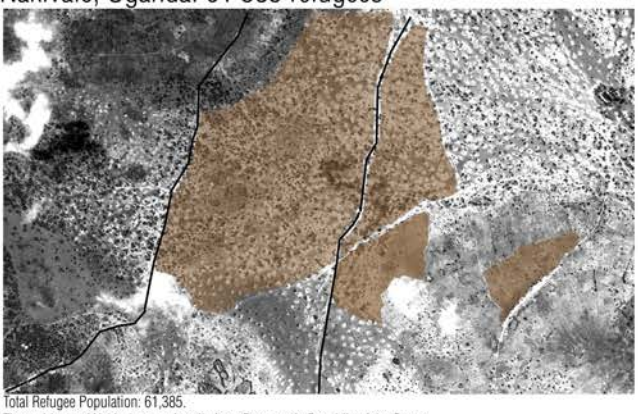
Total Refugee Population: 66,388.
The residents of Urfa are primarily from Syrian Arab Republic.
Online: http://storymaps.esri.com/stories/2013/refugee-camps/#sthash.8p9uaBv4.dpuf

Tamil Nadu, India: 67 165 refugees



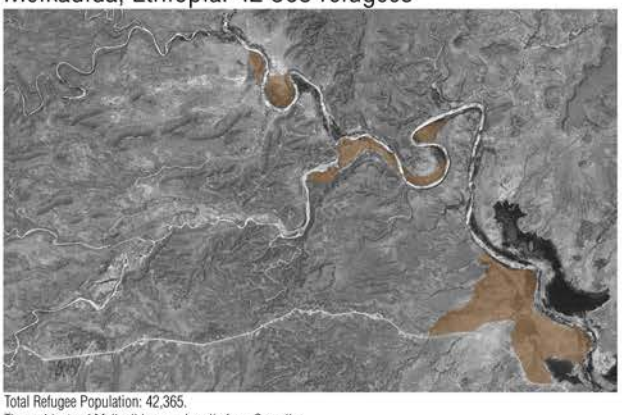
Total Refugee Population: 67,165.
The residents of Tamil Nadu are primarily from Sri Lanka.
Online: http://storymaps.esri.com/stories/2013/refugee-camps/#sthash.8p9uaBv4.dpuf

Nakivale, Uganda: 61 385 refugees



Total Refugee Population: 61,385.
The residents of Nakivale are primarily from Democratic Republic of the Congo.
Online: http://storymaps.esri.com/stories/2013/refugee-camps/#sthash.8p9uaBv4.dpuf

Melkadida, Ethiopia: 42 365 refugees



Total Refugee Population: 42,365.
The residents of Melkadida are primarily from Somalia.
Online: http://storymaps.esri.com/stories/2013/refugee-camps/#sthash.8p9uaBv4.dpuf

Bredjing, Chad: 37 494 refugees

Total Refugee Population: 37,494.
The residents of Bredjing are primarily from Sudan.
Online: http://storymaps.esri.com/stories/2013/refugee-camps/#sthash.8p9uaBv4.dpuf

Figure 55: Illustrations of the spatial formations of refugee camps around the world. (2016)

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3.4.2. SPATIAL PRINCIPLES

Based on the examples of the sites of refugee camps, spatial formation principles are delineated here to understand spatial relationships between resources (roads, water, ridges) and inhabited space.

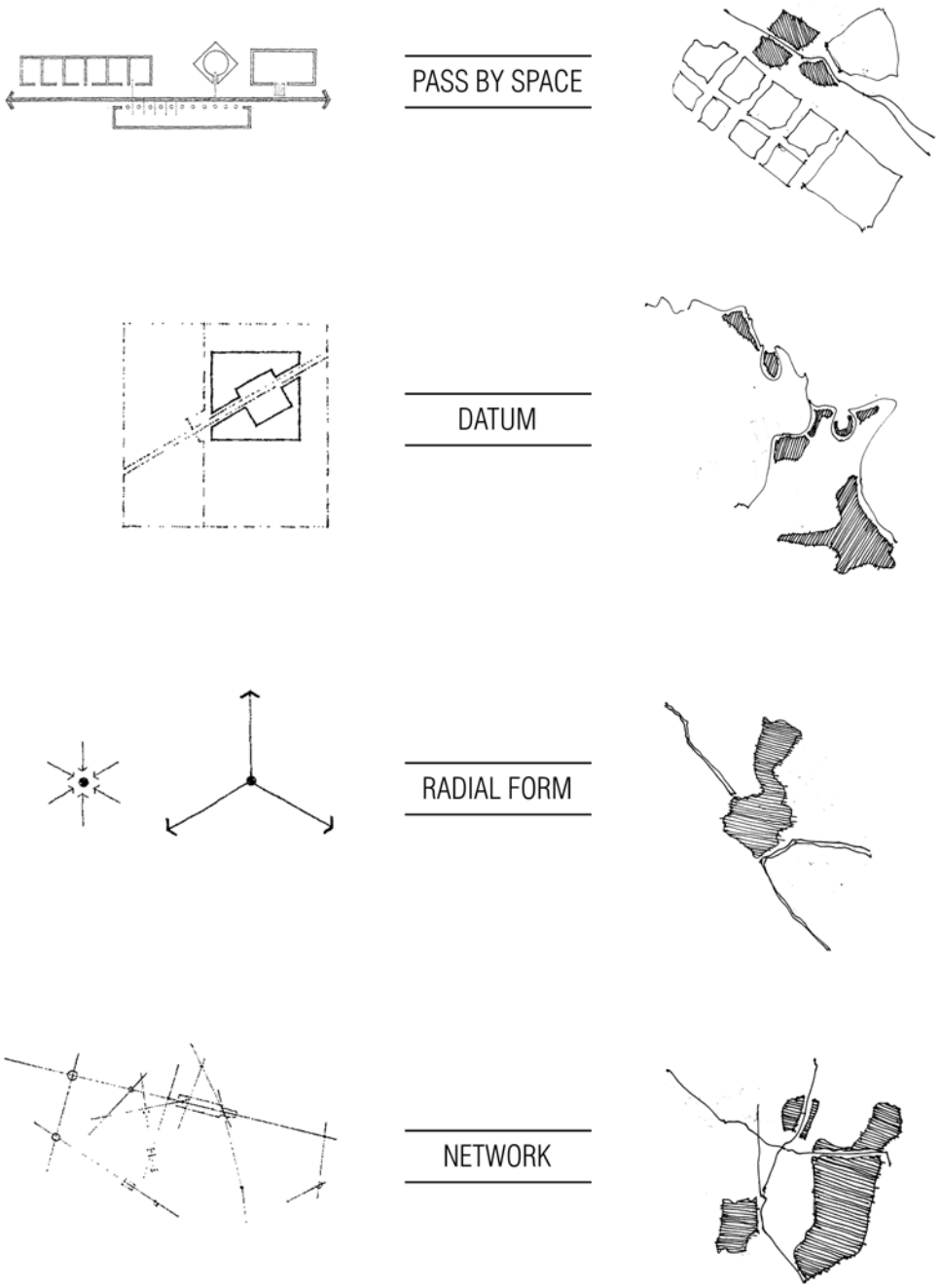

Figure 56: Drawings of spatial principles derived from the layouts of refugee camps around the world. (2016)

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CHAPTER

04

This Chapter aims to describe the characters of the narrative as methodology.

UNSEEN OBSERVERS

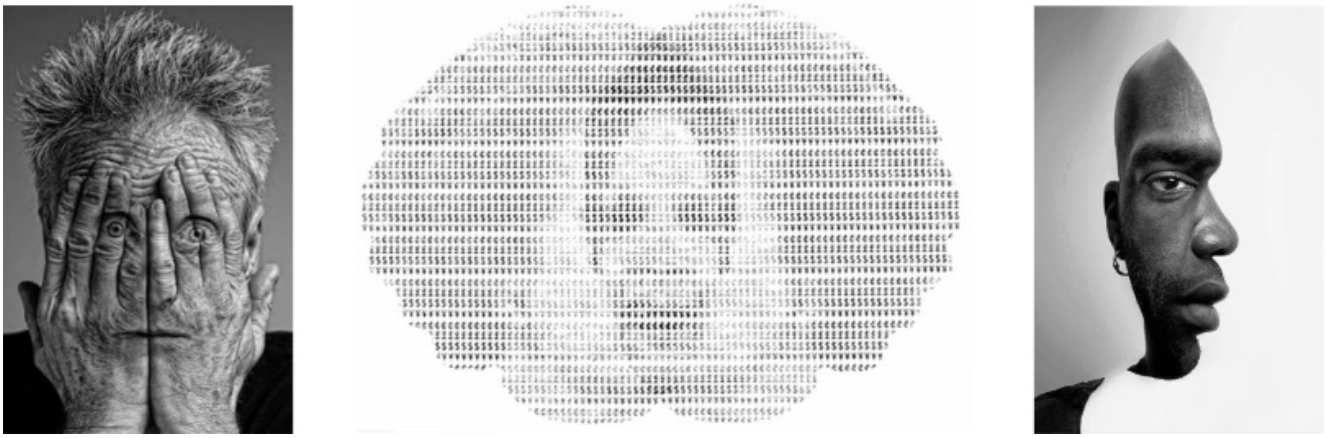

Figure 57: Marginal characters depicted as unseen observers. (2016)

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4.1. THE MAVERICKS

The characters derived from the marginalised groups are used as method to establish whether architecture can be understood through different personalities and their perceptions. The reason for choosing such specific personalities is based on the personal opinion of the author.

The author, as architecture student and activist for marginal people, plays a key role in the narrative of this investigation. Observing first hand what a marginal human being has to deal with in their lives of struggle against society's opinions, the author recognises that immense strength and integrity exists in the heart of such a character. Utmost respect is expressed for these marginalised people.

Past and current marginal conditions in Pretoria suggest outcomes for the making of architecture in this dissertation. The argument continues to relate back to identity of self, of a group, and of different groups together.

In isolation, each group functions in a very specific way but provides common ground for sympathy and general understanding towards each other. All functional responsibilities are assigned separately but the overall aim of the intervention is that a collective community is formed to become resilient and sustainable in future.

In a pre- and post-disaster environment where chaos is a dominating factor, it is not an assurance that activities will run smoothly and everyone will coincide. Instead, room is left for the potential of organic development.

The aim of this section of the dissertation is to indicate where the potential lies in the making of architecture. Later, as will be revealed in the design development, the narrative continues and reasons for design intentions become clear.

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4.2. THE IMPORTANCE OF SCENARIOS AS A DESIGN INFORMANT

Just like any human being, the survival of physical and emotional existence is of utmost importance. Value is inherently measured by the contribution of people against the world. A human being is critisized by so many external factors, that it is altered on a daily basis. Emotions such as happiness, sadness, depression, etc. implicate the survival of the human being.

The power of scenarios lies in the collective nature of this process of exploring uncertainty. By drawing on the ideas of a diverse group with different worldviews and specialties, it is possible to build a collective picture of what the forces driving change might be and their likely impact.

The result is a set of stories about the future. This provides a template with which to develop and test alternative ways to anticipate and adapt services and environments as responses to the risks that might arise.

Scenarios help people imagine and manage the future more effectively under conditions of human-related incidents, high uncertainty, potential disruptive political and social change, depleting resources and contested relationships between society and marginalised groups of people.

Anticipating and understanding risk within a specific context is critical for any community that wants to survive and thrive in a turbulent external environment. It requires a resilient organisational culture that can promote strategic thinking to anticipate and adapt to change.

Risk is the possibility that human actions or events lead to consequences that affect aspects of what people value (Scenarios architecture 2010). The rapid speed of change, the complex interactions between different developments taking place globally and the impact of modern channels of communication are all transforming the world, making many of the risks we face more complex and global in nature.

In the following section various scenarios are suggested which were informed by the conditions of the characters.

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[CHARACTER 1]

PRISONER

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EXISTING CONDITION:

A person that experiences inner conflict of a dark nature will continue such thoughts in an environment of solitude and isolation. Their struggle is further enabled when an identity is given to them by society - 'a criminal', 'a low-life', 'a parasite'.

Their routine includes eating, sleeping and interacting with other prisoners that experience similar struggles. Their environment prohibits them from moving beyond a mindset of anger and struggle.

1

P R I S O N E R

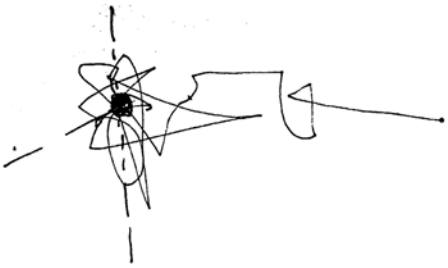
C U R R E N T M A R G I N A L S T A T E :

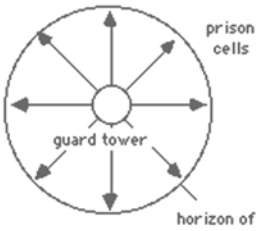
P R I S O N

I S O L A T I O N
A U T H O R A T I V E R U L E

S T R E E T S

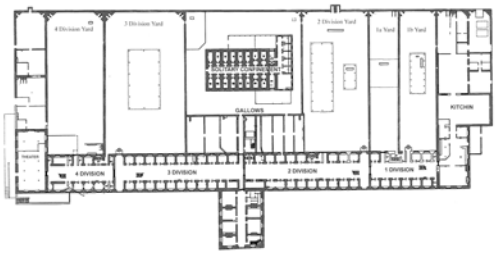
U N P R E D I C T A B I L I T Y
I N S T A B I L I T Y
N A R C O T I C S





PANOPTICON LAYOUT

CORRECTIONAL SERVICES FACADE



TYPICAL PLAN OF PRISON

Figure 58: Current marginal state of character 1. (2016)

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PROPOSED SCENARIO:

In the proposed intervention the intention of the spatial experience for the 'prisoner' is to create breathing space for free interaction with people experiencing struggles of a different nature. Although there is still an extent of confinement (purely for security reasons) these characters are now able to create objects like furniture, building components and prostheses from collected materials as part of a therapeutic activity. These spaces are called workshops.

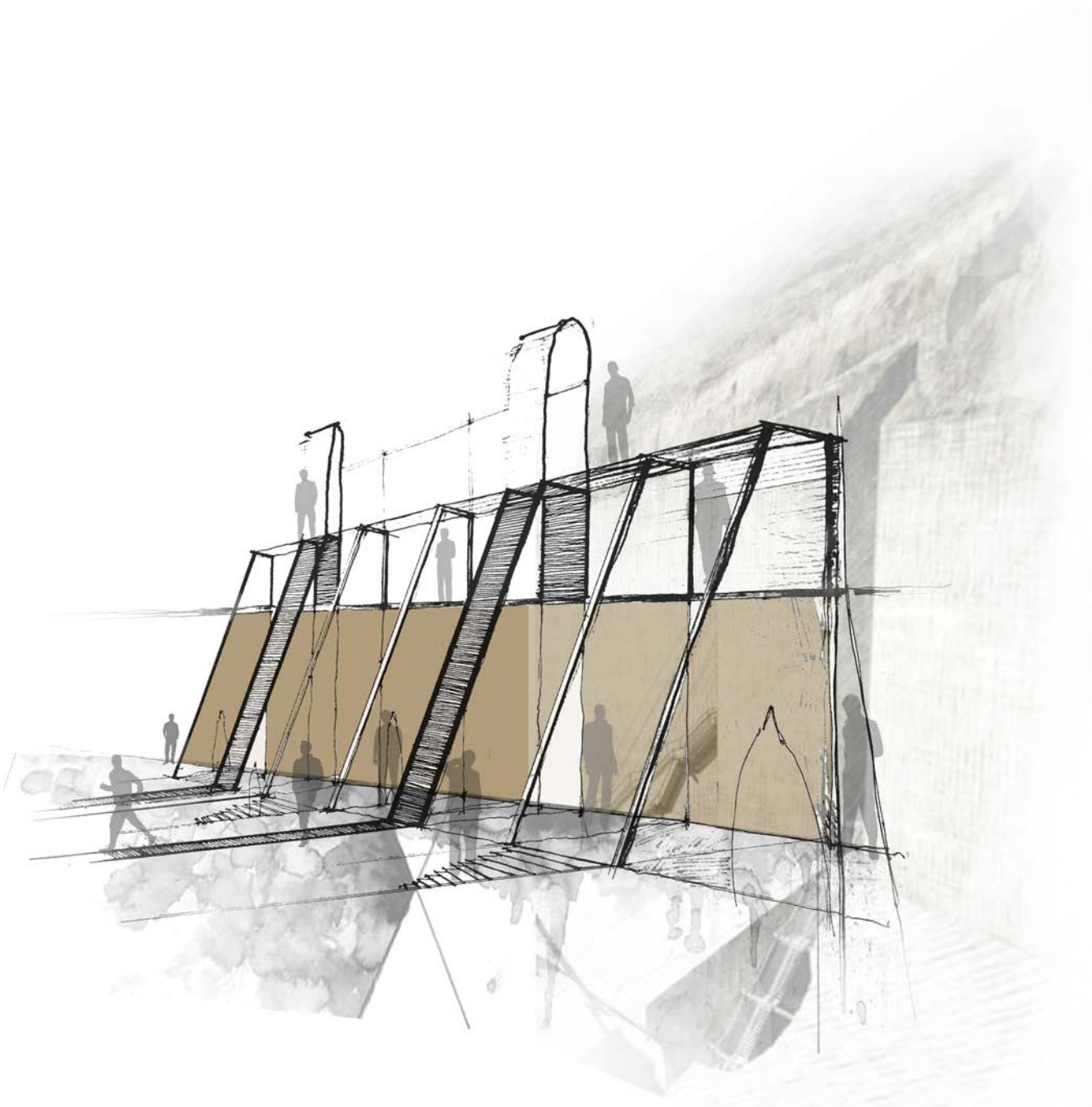

Figure 59: Proposed condition of character 1. (2016)

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[CHARACTER 2]

ELDERLY

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EXISTING CONDITION:

An elderly person is very conscious of time. Past time represents their memories and present time represents the collection and preservation of memories. Someone who possess knowledge of time has gained experience of dealing with people on various levels. An elderly person fosters relationships and has the ability to teach others based on their own experiences.

2

E L D E R L Y

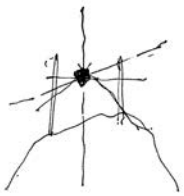
C U R R E N T M A R G I N A L S T A T E :

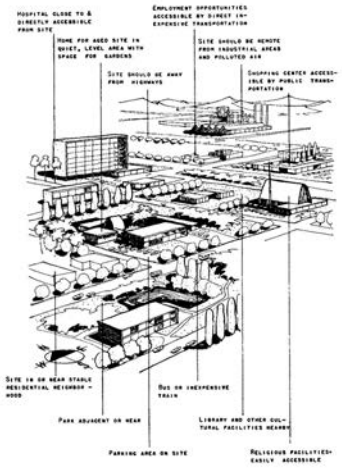
O L D A G E H O M E

D E P E N D A N T O N S U P P O R T
S O L I T U D E
S O C I A L L Y D E F I C I T

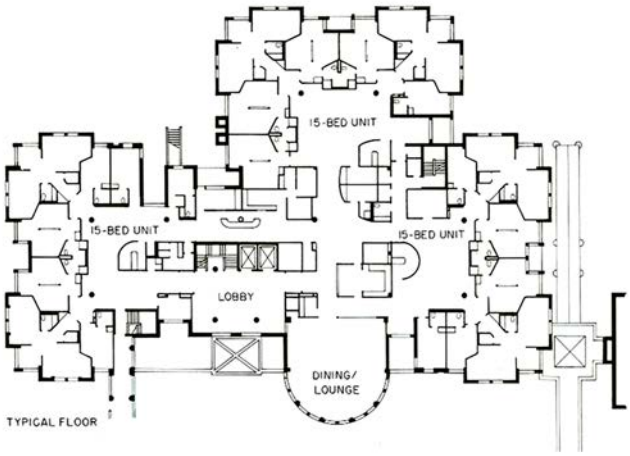
W I T H F A M I L Y

I N C A P A B L E O F O W N W O R K
D E P E N D A N T O N S U P P O R T





TYPICAL LAYOUT OF RETIREMENT VILLAGE



TYPICAL PLAN OF RETIREMENT VILLAGE

Figure 60: Current marginal state of character 2. (2016)

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PROPOSED SCENARIO:

In the proposed intervention the elderly represents a leadership figure who is able to take responsibility for the flow of activities. This character therefore makes diplomatic decisions at specific points in time about the interactions of people in different spaces and during activities. The elderly also takes responsibility for the archival materials collected that are to be preserved for future use.

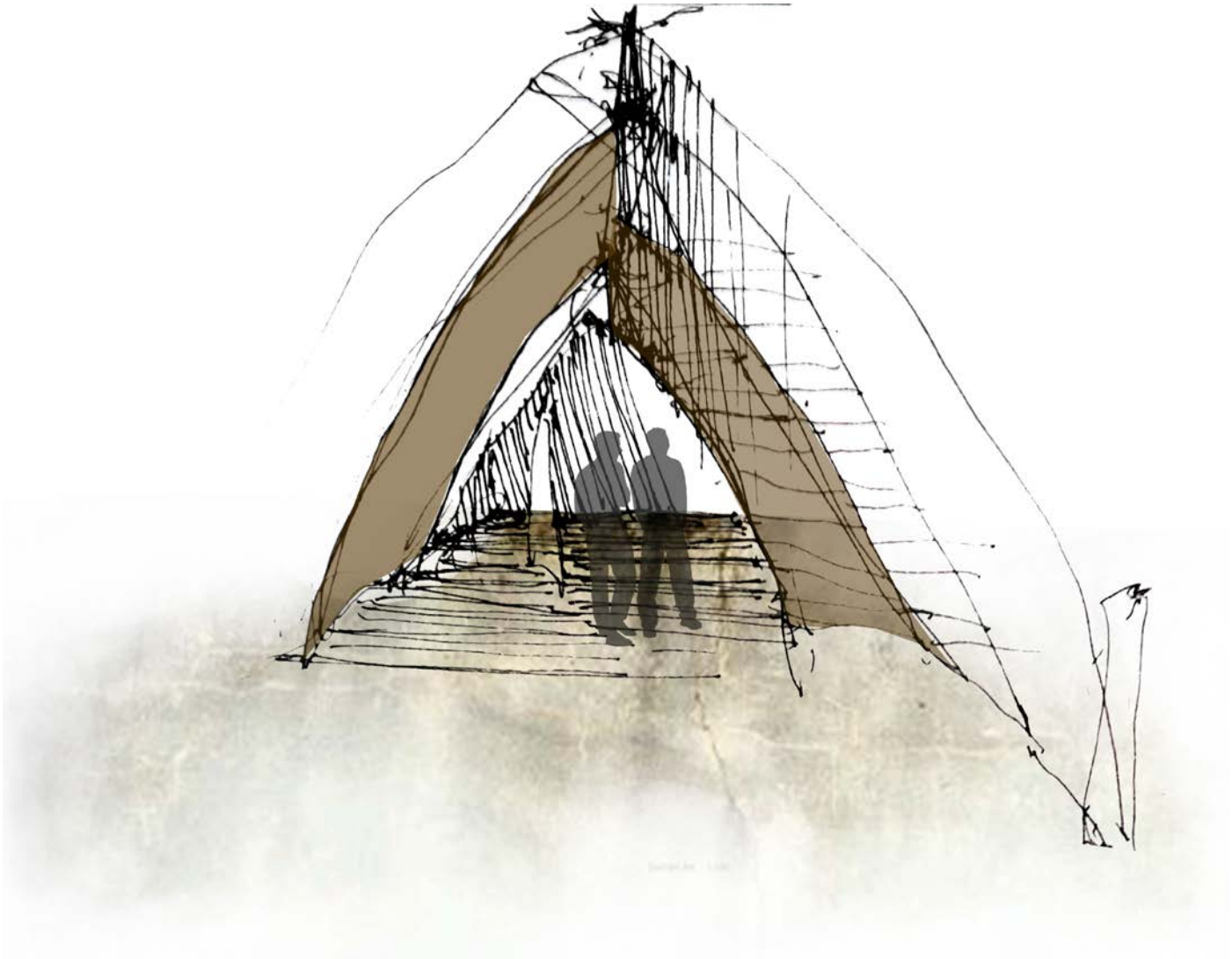

Figure 61: Proposed condition of character 2. (2016)

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[CHARACTER 3]

MENTALLY DISABLED

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EXISTING CONDITION:

A mentally disabled person in an institution is controlled by rehabilitation practices. This includes medicine to control their psyche as well as isolated environments with little interaction with the outside world. Through these experiences of control they adopt the ability to observe everything around them.

3

MENTALLY DISABLED

CURRENT MARGINAL STATE:

INSTITUTION

FRAME OF REFERENCE
COMPLETE ISOLATION
SOCIALLY INCAPABLE
DEPENDANT ON MEDICAL ASSISTANCE

DEPRESSION/PSYCHOPATH

PERCEPTION OF REALITY DISTORTED
EMOTIONAL DETACHMENT

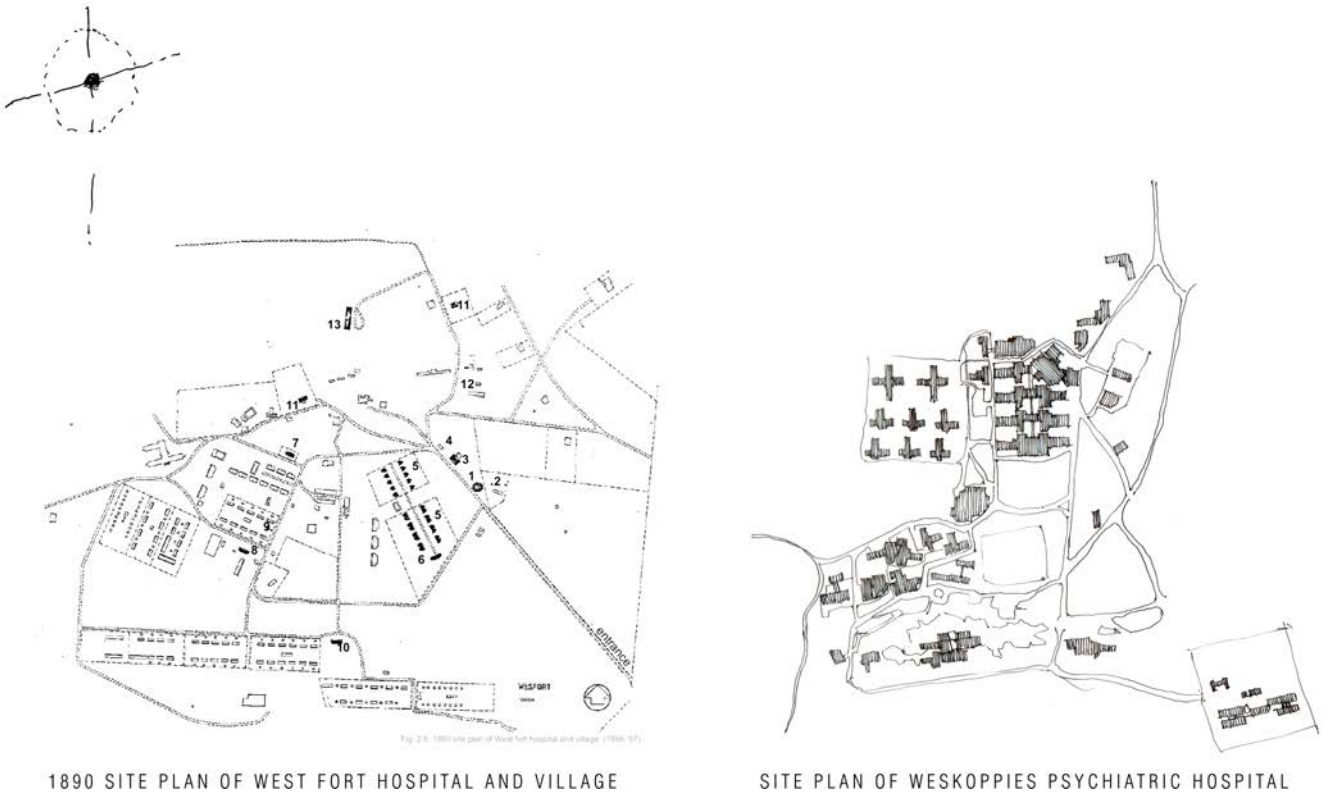

Figure 62: Current marginal state of character 3. (2016)

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PROPOSED SCENARIO:

In the proposed intervention the mentally disabled characters are tasked to observe the areas around the building without being seen from the exterior environment. Their responsibility is to alarm the rest of the characters if a threat is spotted in the surrounding area.

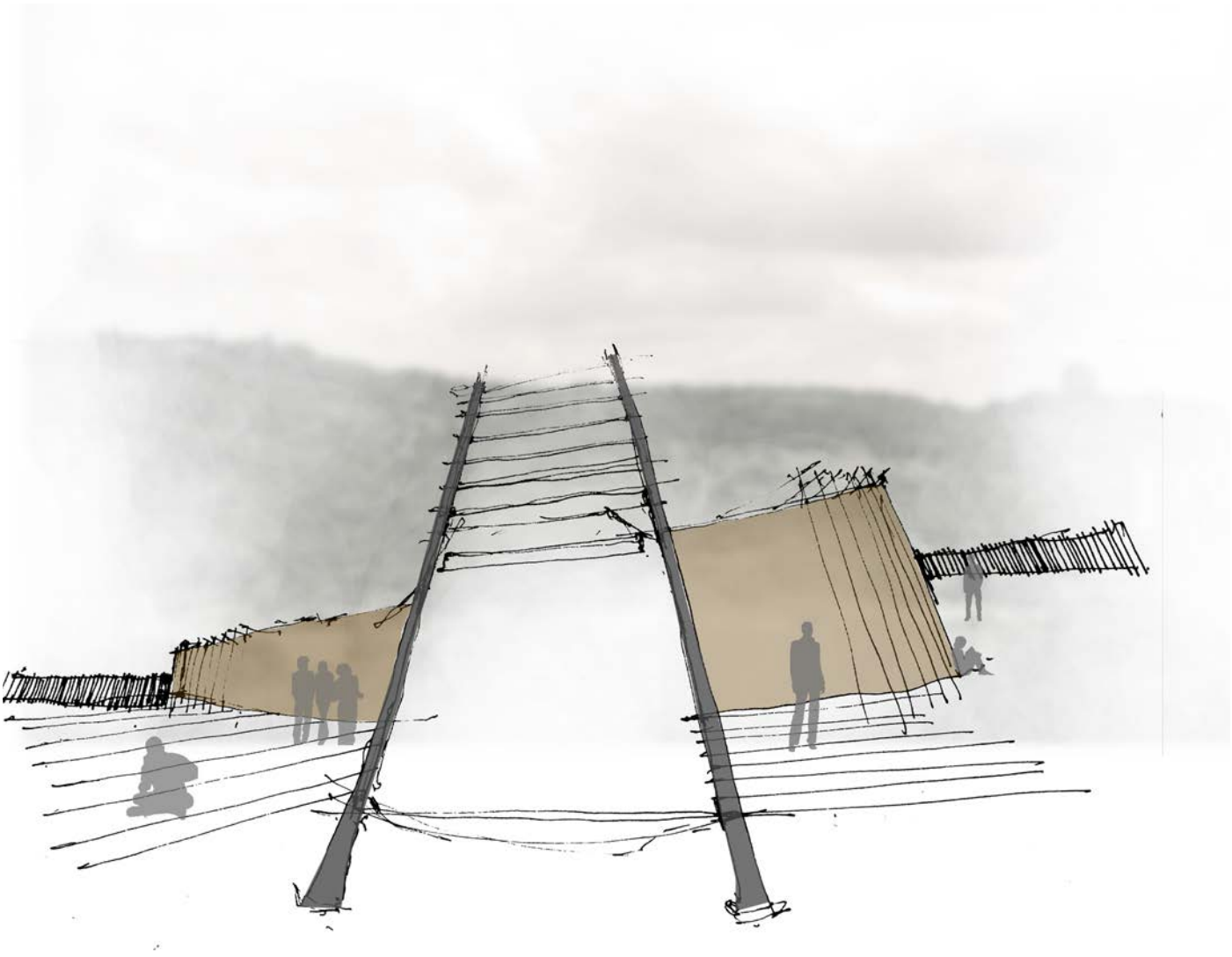

Figure 63: Proposed condition of character 3. (2016)

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[CHARACTER 4]

PHYSICALLY DISABLED

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EXISTING CONDITION:

A physically disabled person is limited by movement. In many cases assistive devices are to be implemented in their daily activities to deal with this limitation.

4

PHYSICALLY DISABLED

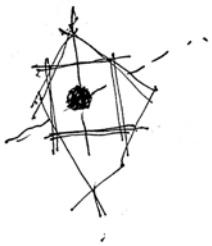
CURRENT MARGINAL STATE:

INSTITUTION

TOOL DEPENDANT (PROSTHESIS, WHEELCHAIR, MEDICAL)
PHYSICAL REALITY DISTORTED
(WHEELCHAIR HEIGHT, BLINDNESS)

STREETS

TOTAL ISOLATION FROM SOCIETY
LIMITED ENVIRONMENTS AND
INTERACTION (SOCIAL)



The Lebone II College in Phokeng, North West

Figure 64: Current marginal state of character 4. (2016)

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PROPOSED SCENARIO:

In the proposed intervention, movement is assisted through open flexible space that does not limit activities. Instead the characters' intellectual capabilities are put to use in the form of research and study. The development of innovation is essential in their activities - such as the study of plants for the use of food and medicine as well as new ways to create prosthetics for their own use. These spaces are named laboratories to provide a sense of resilience for the future.

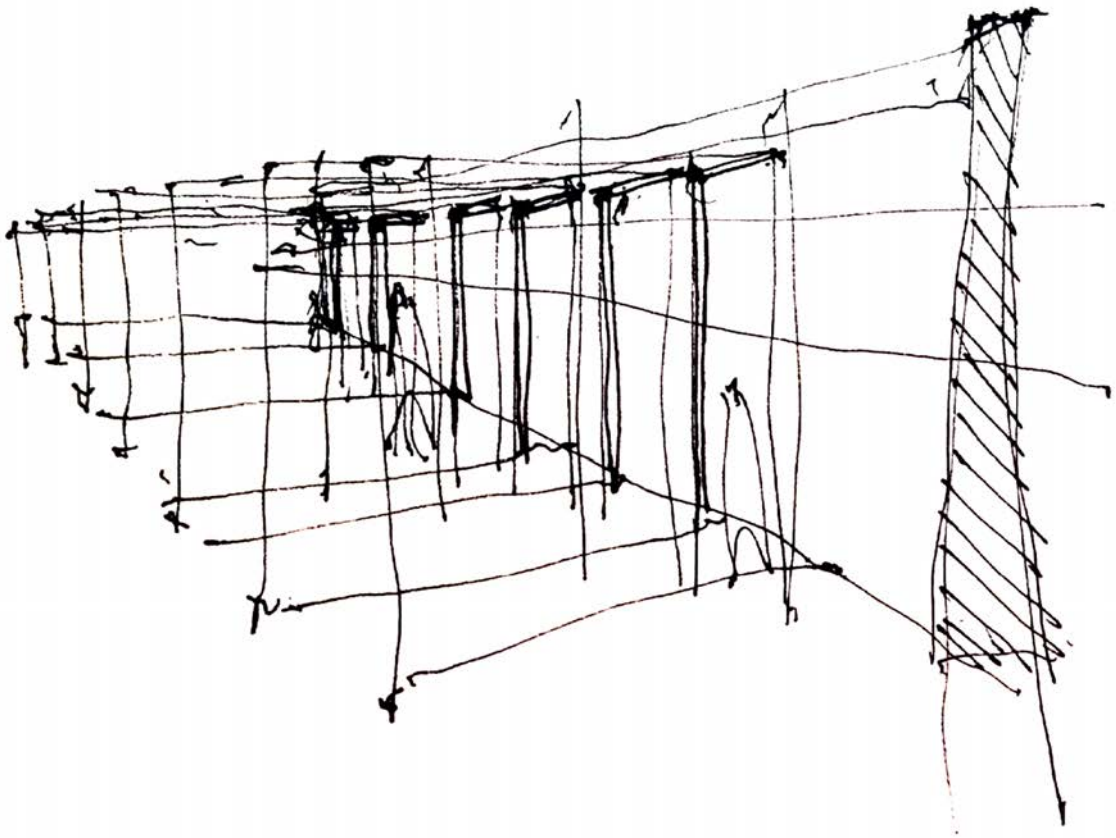

Figure 65: Proposed condition of character 4. (2016)

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[CHARACTER 5]

HOMELESS

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EXISTING CONDITION:

A homeless person's environment consists of streets or temporary homeless shelters. These characters are able to adapt to different environments very quickly in order to survive on a daily basis.

5

H O M E L E S S

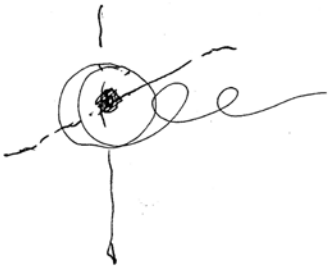
C U R R E N T M A R G I N A L S T A T E :

A D A P T A B L E E N V I R O N M E N T

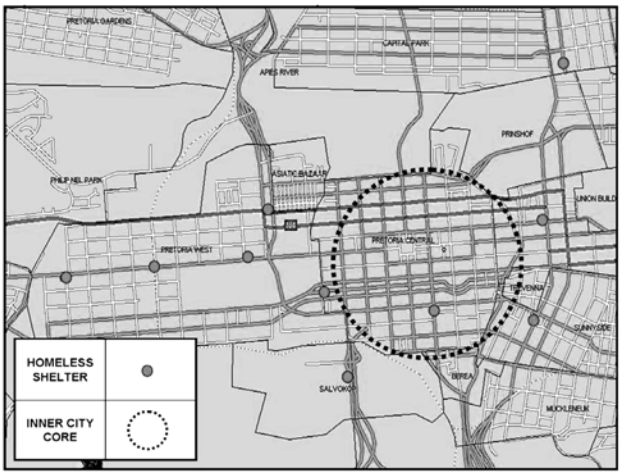
U N P R E D I C T A B L E C I R C U M S T A N C E S

S C A R E E X P O S U R E T O P U B L I C R E S O U R C E S

H E A L T H H A Z A R D



STREET CONDITIONS



HOMELESS SHELTER LOCATIONS IN PRETORIA

Figure 66: Current marginal state of character 5. (2016)

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PROPOSED SCENARIO:

In the proposed intervention the initial function of the structure is to protect the inhabitants from disaster. This strategy is already put in place by the design of the building. As time progresses, the homeless characters are tasked to disassemble certain parts of the structure and replace these with 'lighter' structural components. The characters also have the responsibility to use food sources for cooking to provide for all the inhabitants.

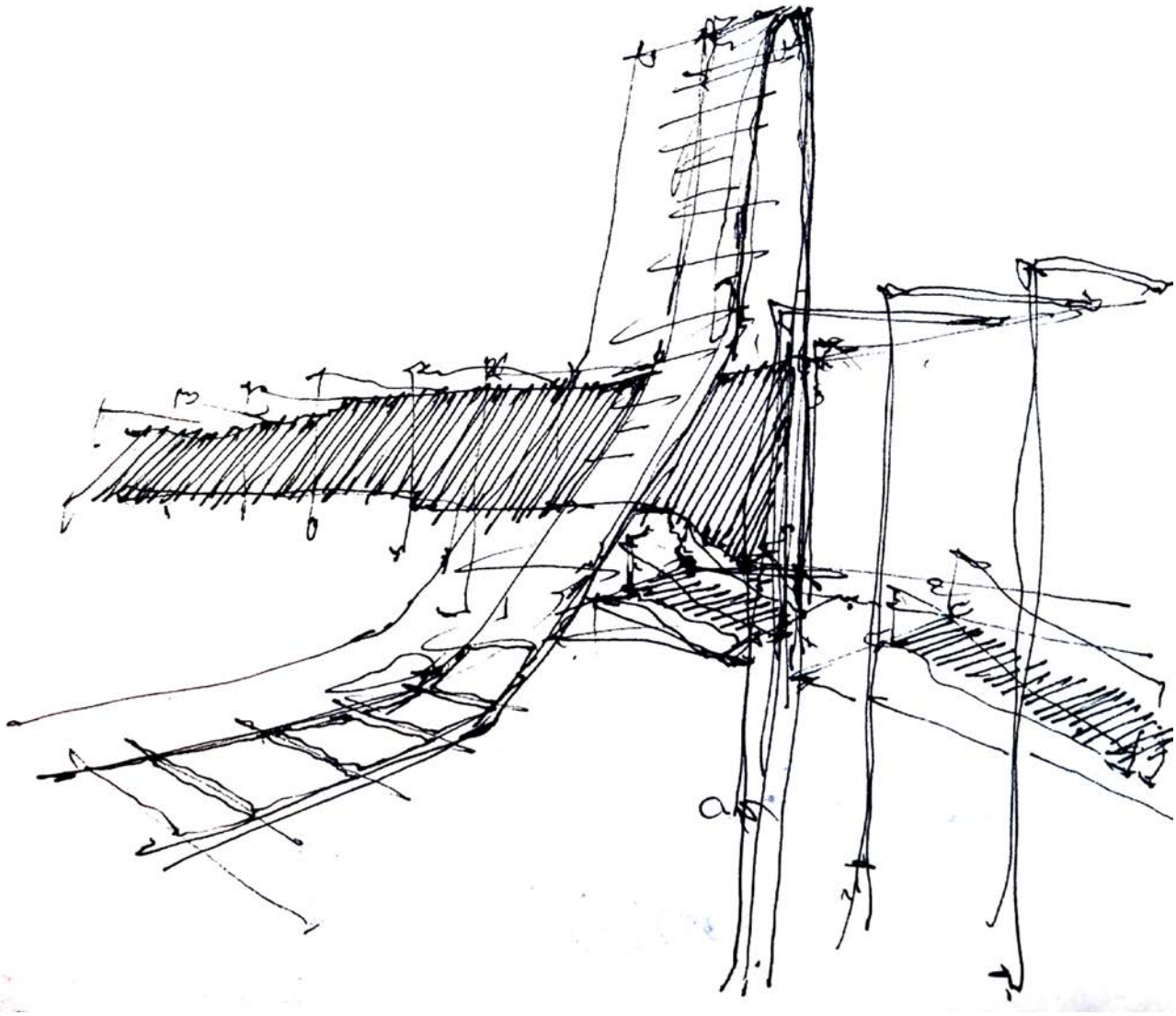

Figure 67: Proposed condition of character 5. (2016)

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4.3. THEORETICAL DISCOURSE

4.3.1. SPACE, POWER AND EXCLUSION

This section aims to follow the argument of the scenarios presented.

It has already been established in earlier sections of the book that marginalised people are excluded from 'mainstream society'. "In general, our understanding of the processes of exclusion is grounded in time and history" (Kitchin 1998:343). Spaces are currently organised to keep marginal people 'in their place' and 'written' to convey to these people that they are 'out of place'.

Kitchin (1998) argues that psychoanalytic and social constructivist theories are key in understanding why marginal people are oppressed in society. As a basic human condition people tend to categorise subjects and objects as either good or bad. The relationship between the self and the social world creates a contested boundary that is defined and formed to protect the self on the one hand and define the self on the other hand. Such a boundary is shaped through spatial experiences and acquired cultural representations. "The construction of 'Other' is a deep seated method of self-protection leading to the grouping of like-minded individuals" (Kitchin 1998:344). In the argument for different marginalised groups to co-exist in the proposed intervention, the concept of self-protection becomes a collective notion of the 'Other'.

Space can be understood as a constituent of social relations which is ambiguous, dynamic and contested in nature. Based on this definition of space, it is suggested that socially produced space excludes marginal people in two ways: firstly spaces are currently organised to keep marginal people 'in their place'; secondly spaces are social texts that convey to the marginal people that they are 'out of place' (Kitchin 1998:345).

In *Justice and Politics of Difference* (Young 1990), it is suggested that the classification of oppression is used to illustrate power relations and exclusion processes related to marginal people. It is through this view that marginal people are rendered powerless. This power relationship between the marginal and the 'dominant power of society' only exists by way of political means (arguing for a political disaster).

Another form of power relationships is through the use of ideology. The norms of society are promoted over and above the values of 'others' which are seen as deviant. Marginal people are seen as 'unworthy' in the greater scheme of society. The investigation recognises the hegemony of power (in the context of Pretoria) and aims to deconstruct the landscapes of power and exclusion.

The intervention idealistically aims to resist these ideas and norms by creating a protected and resilient environment for the marginal. Therefore each scenario proposes a valued position for each character.

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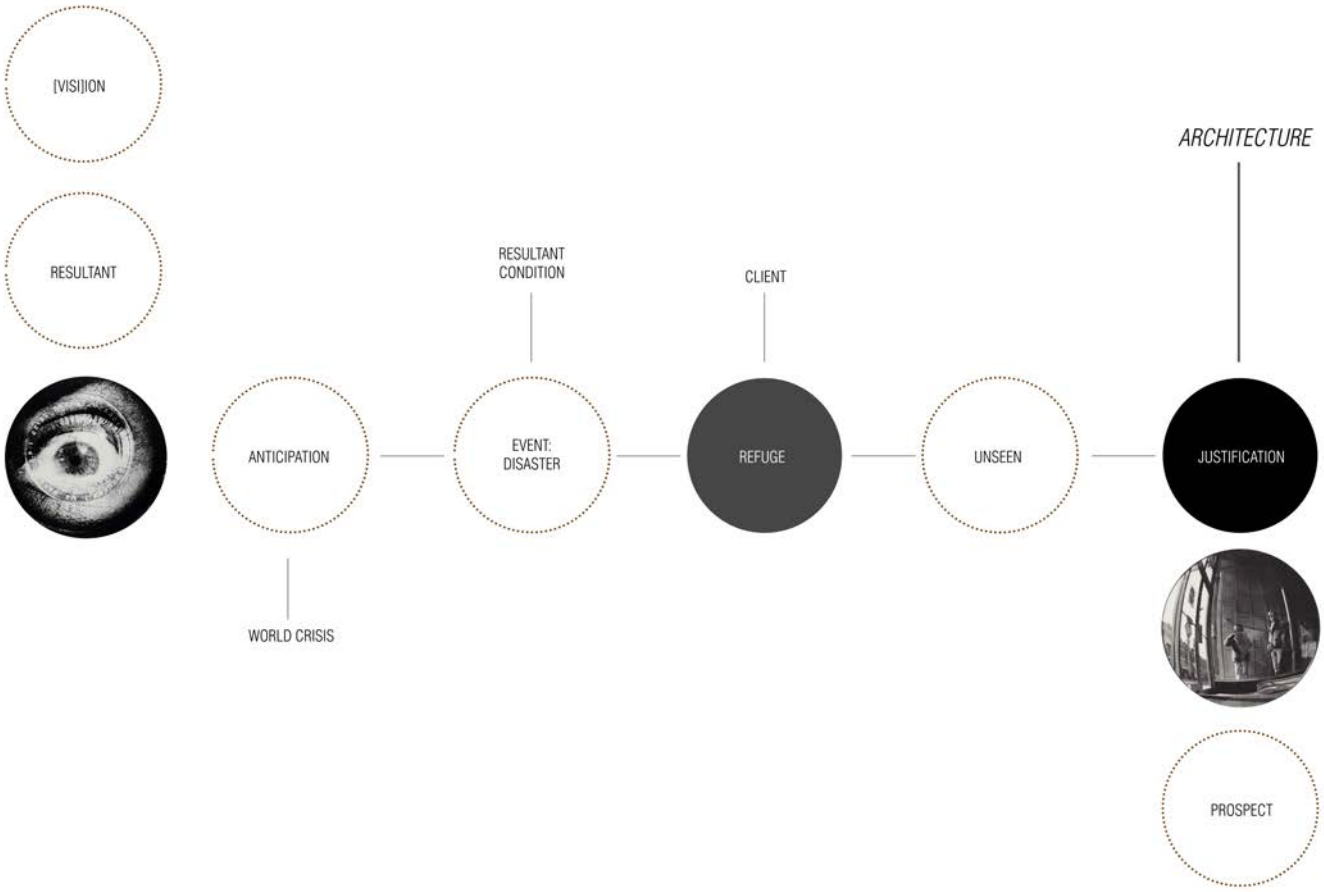

Figure 68: Ilustration of the evolution of perception from the vision through to the justification and belief of perception based on the theoretical discourse. (2016)

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4.3.2. THE CONCEPT OF SPECULATIVE SPACE

For the purpose of this study we can assume that space is not absolute. It is a representation of experiences.

Liam Young is a speculative architect who in his own words, “operates in the spaces between design, fiction and futures” (Young 2015). His exploration includes future implications of emerging urban developments, by investigating unreal and forgotten landscapes. It is Young’s view that speculative architecture and the role of humans in relation to nature is what drives the conceptual ideas of storytelling through fictional environments.

In the past the shaping of cities were majorly driven by the development of infrastructure, public spaces and buildings to establish an ‘economically stable’ urban environment. With emerging technologies as shifting agents cities are starting to develop beyond the physical spectrum. In Young’s opinion the use of speculative scenarios is merely an attempt to “stay relevant in the context of a city that is always changing” (Young 2015:2).

We as human beings are no longer just an existence of our physical selfs but rather identified by our social media footprints. Young states that the creation of future speculative projects is a way of coping with uncertainty. The future as a speculative project is slowly starting to make more sense than merely dealing with what architecture should look like in current aesthetic tendencies.

What is argued in this theoretical framework by Young is that an attempt should be made to “tell stories and exaggerate the present so that certain forces, tendencies or cultural idiosyncrasies become more legible, apparent and visible. The role of the future project is to critically engage with the present in a meaningful way and put in place scaffolds for the future we want” (Young 2015:9).

In light of Liam Young’s speculative approach to the creation of meaningful spaces, Bernard Rudofsky in Architecture Without Architects (1988) aims to recognise and acknowledge ideas of participatory and humanistic spaces. Rudofsky’s term of ‘non-pedigreed architecture’ is grounded in the idea that community and heritage can promote and motivate human-centred change to create a sense of place through the physical and psychological (Di Cintio [sa]).

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4.3.3. THE PRODUCTION OF SPACE – LEFEBVRE

According to Lefebvre (1991:27) space is a social product which constitutes spatial devices such as transparency and opacity.

The aspect of transparency in space gives design a responsibility for mediation between mental activity and social activity. In this case design in any form enables a sense of transcendence into an imaginary world. Transparency in design therefore moves away from the mechanistic and materialistic which argues for a phenomenological approach in architecture.

It can be argued here that mental space is an image of physical space and vice versa. Patricios (1973:311) in his attempt to argue for a new approach to spaces describes these images as being a result of "sensations manipulated primarily by factors such as personality and culture of the perceiver and modified by expectation, attention, motivation and emotion" (Patricios 1973:312).

The argument resides in the idea that physical space is constructed and given meaning to through perception and the psychology of the mind. In this investigation, although the concepts are broad and intangible, an attempt is made through the scenarios of the characters. How different personalities are depicted in the proposed scenarios give meaning to spaces by way of the use of materials and movement through space.

Lefebvre (1991:33) suggests three different ways of creating meaningful space.

Firstly SPATIAL PRACTICE acknowledges the production and movement in the formation of different spaces which ensures a sense of continuity.

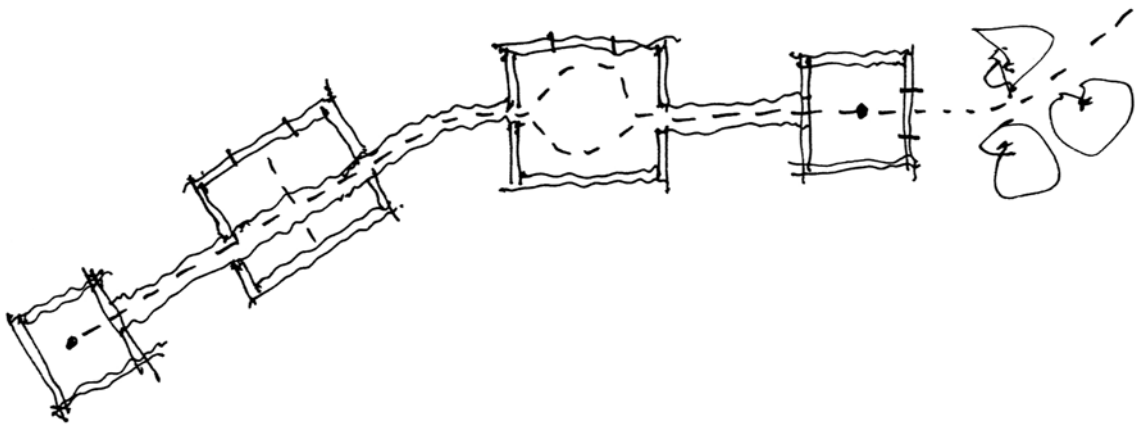

Figure 69: A drawing that represents spatial practice. (2016)

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Secondly REPRESENTATIONS OF SPACE are embedded in the relationships of people and activities within a space. Herein lies the symbols that make certain spaces unique and implies a link to the personalities of the people that inhabit a specific space.

Figure 70: A drawing of representations of space. (2016)

Thirdly REPRESENTATIONAL SPACE is what constitutes emotions expressed in specific spaces. These experiences can take place individually or in a collaborative scenario.

Figure 71: A drawing of representational space. (2016)

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4.3.4. POWER

Power-knowledge as coined by Michel Foucault (Seisun 2004:1) refers to social norms and power structures created and facilitated by the built environment. The effects that it has on architecture is relevant in the case of the marginalisation of space and people. Hierarchy exists in all aspects of life. In architecture, unfortunately, the hierarchy of power through the authorship of a design enforces power relations between those who make decisions and the rest who have to adhere to them.

In his theoretical framework of space, power and knowledge, Foucault (2004:1) is concerned with how power structures are manifested in the modern and contemporary context. He suggests further that surveillance is the main driving force within these power relations between people which has a direct effect on the planning and spatial formation in architectural design.

In the context of this investigation, authorship of the design is translated to the identities of the marginalised characters. In doing this the controlling and ordering of spaces are left to the scenarios that are proposed for each character and how every scenario can relate to the others.

Space and power is therefore representational which refers to the production of space on different levels as mentioned in the ideas of Lefebvre (1991). The role of the individualisation of every character is manifested in the way that space symbolises each identity. “This perspective negates the role of the designer as it focuses on the main forces that shape design of the environment as those governed by the power-knowledge relations” (Seisun 2004:1).

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4.3.5. A PHENOMENOLOGICAL APPROACH AS CONCLUSION

In light of the theoretical approach to space, how we conceive justification of our beliefs is evident in the construction of environments. Any external source, whether verbal or physical, is seen as an addition to our empirical knowledge. Without external knowledge, growth and process cannot take place.

Representation of space is the acknowledgement of beliefs through the alteration of space. Altering an environment presents symbols of a psychological state. An example could be that of an elderly woman in an old-age home. Adding memorabilia of the woman's children and grandchildren, alleviates the effect of loss of time spent with her family. By altering the environment, the perceptual belief of being far away from loved ones is limited.

In the case of a mentally disabled patient, reality is only justified through the means represented by external sources. Being given medicine in an institution on a daily basis strengthens the psychological illusion of physical improvement.

The idea of creating representations of space in order to manage emotions exists within many environments. By altering elements of space moments of emotions are created which draws people closer to reality. Thus it can be said that reality exists in the psychology of perceptions. This justifies the notion of perception and how it is constructed through environments. Space therefore exists in the creation of reality through different devices (architectural or materialistic).

In the context of this dissertation, spatial perception is a dominant factor in the representation of an environment inhabited by a marginal person. This not only allows for a conceptual approach to place-making, it also provides opportunity to explore different devices to create specific qualities of space in an environment of refuge. Refuge in itself could only mean safety and hidden isolation, but the intentions require further exploration to represent symbols rather than simply adhering to spatial requirements of different functions.

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CHAPTER

05

This Chapter presents the programme and sub programmes based on the production of spaces through the identities of the characters.

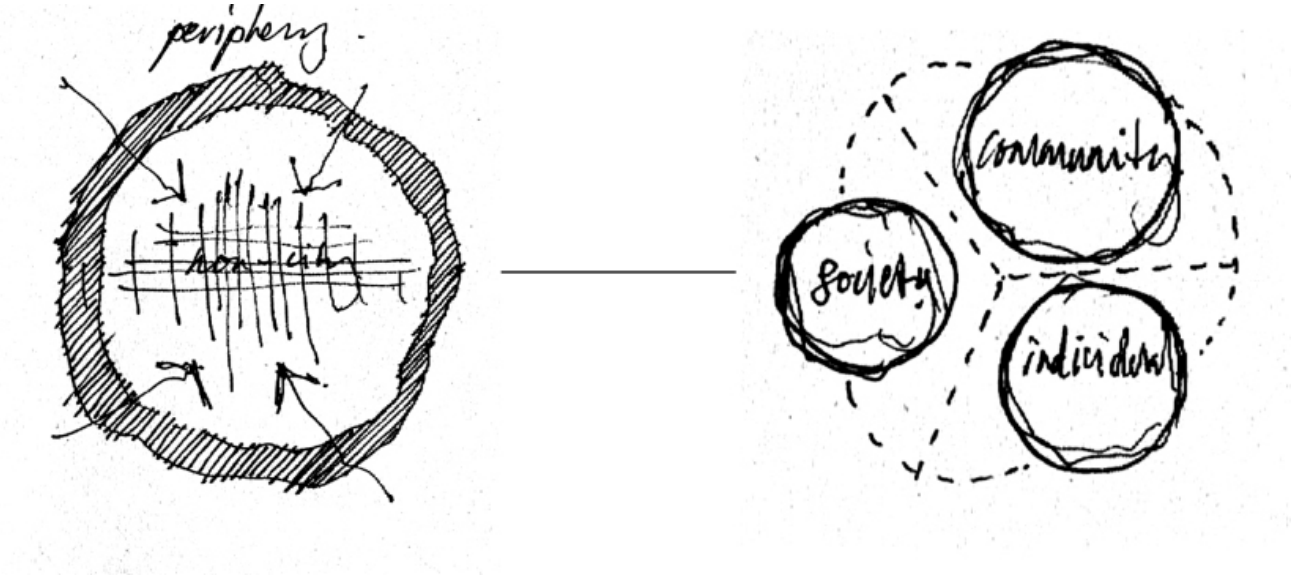

Figure 72: Forced integration versus facilitated and mediated integration. (2016)

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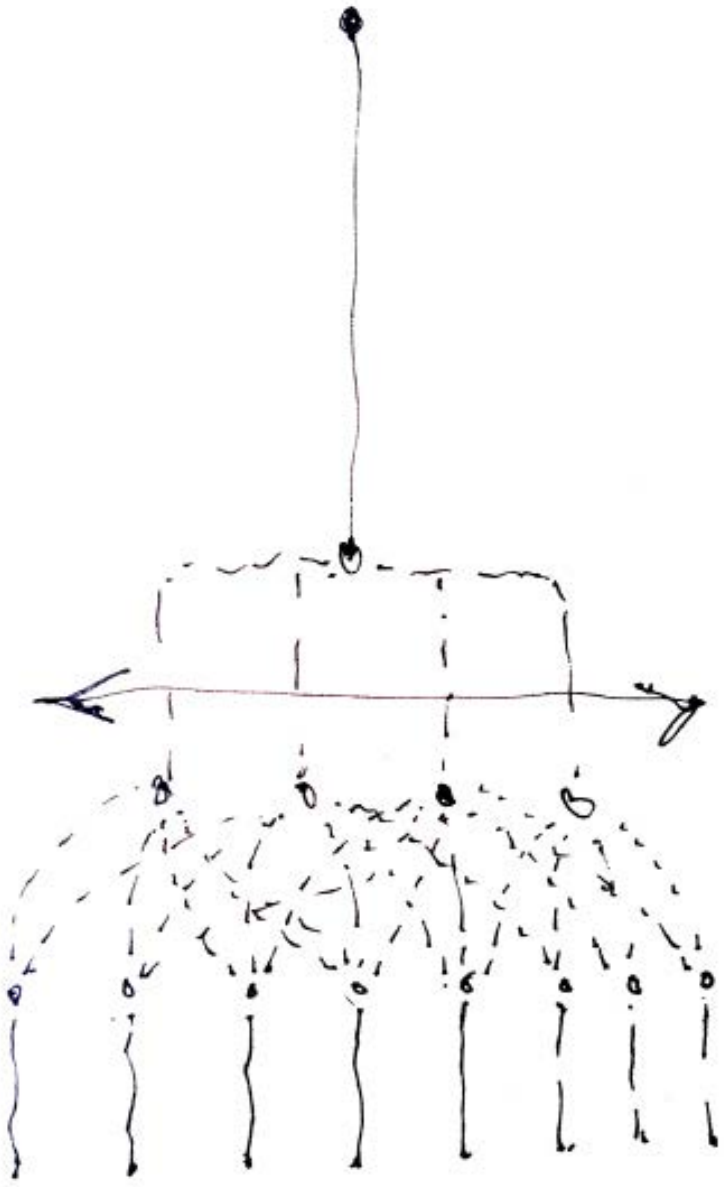

Figure 73: An image representing unity in difference and the relationships created through different activities. (2016)

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5.1. IDENTITY

In the design development the different phases of the building is centred around the identities of the characters and how they fit together in a spatial formation.

Based on the argument that the marginal community has the potential to challenge views on society and ultimately become the only self-sustaining community post-disaster, each space is proposed to illustrate and interpret different identities.

As part of a systematic procedure and a mode of inquiry the method is used to justify a specific mode of investigation aiming, in the end, to challenge conventional principles of the built environment.

The spatial development proposes meaningful relationships as architecture cannot exist without these. Relationships connect the mind with the body, and the body with space.

If the marginal community is excluded from mainstream access, it is suggested that major potential lies in the production of a sustainable community that could function by itself in future. New ways of thinking, building, preservation and study can exist in the proposed intervention, by looking at traditional methods of surviving and altering these ideas to suit the current and future condition.

The next section aims to give insight into how specific programmes were developed to accommodate symbolism of the different characters.

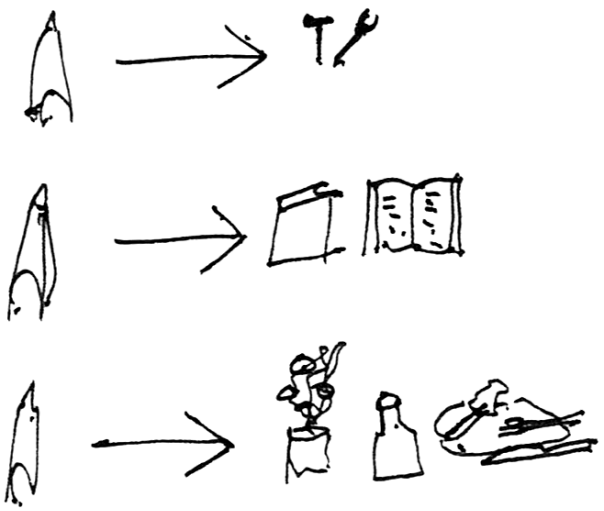

Figure 74: Different skillsets based on different identities. (2016)

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Figure 75: Segragated identities versus a collective identity. (2016)

5.1.1. PROGRAMME

The function of the proposed building is mainly to provide refuge for marginal people in the anticipation of disaster. Yet the problem statement suggests that different characters would have to co-exist in such an environment. The narrative also proposes that the future function of the intervention would have to accommodate specific activities to develop the skills of the characters and preserve the knowledge gained through this experience. The programmes will now be stated and illustrated.

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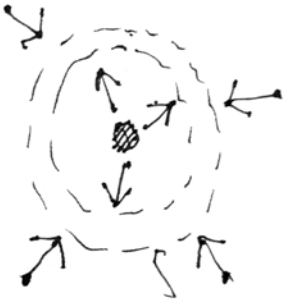

5.2. FUNCTION 1: AN INTERPRETATION OF THE PANOPTICON

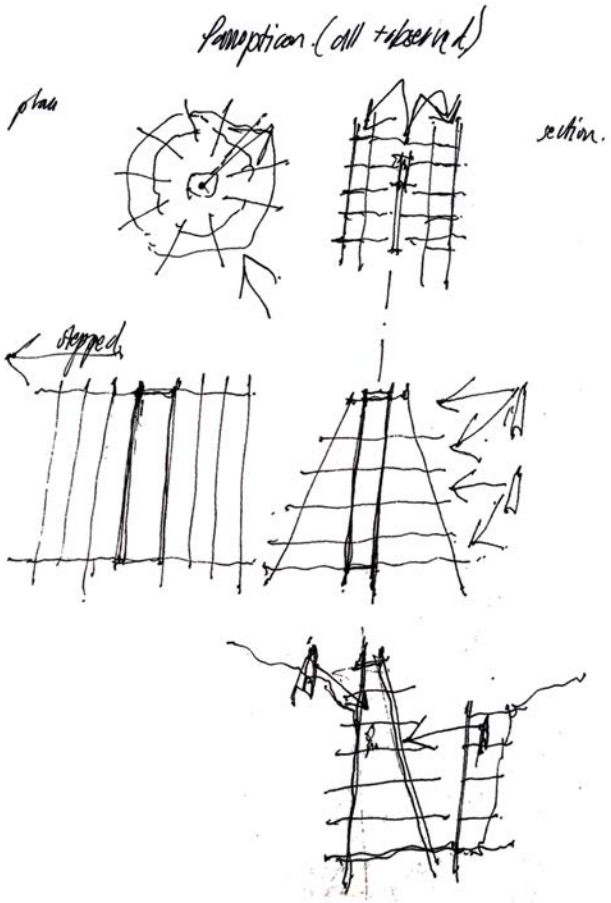

Figure 76: Interpretation of the panopticon. (2016)

THE WORKSHOPS

The interpretation of the panopticon, the theory created by Jeremy Bentham, aims to illustrate the act of observation and surveillance in the controlled environment of a prison. The scenario which symbolises the 'prisoner' responds to the controlling nature of a typical prison cell. The person that inhabits a cell is confined and limited. It is stated in this proposed scenario that security is the main concern to confine the 'prisoner' character to an extent. However, through the therapeutic activities taking place in the workshop spaces the future condition leaves the scenario open to adaptation. The workshops are therefore multifunctional in terms of spatial layout and depending on the future development of the characters these spaces could be inhabited by other characters as well.

To conclude the essence of these spaces is grounded in the act of observation.

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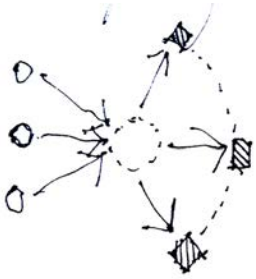

5.3. FUNCTION 2: THE ARCHIVE AND THE PROCESS OF PRESERVATION

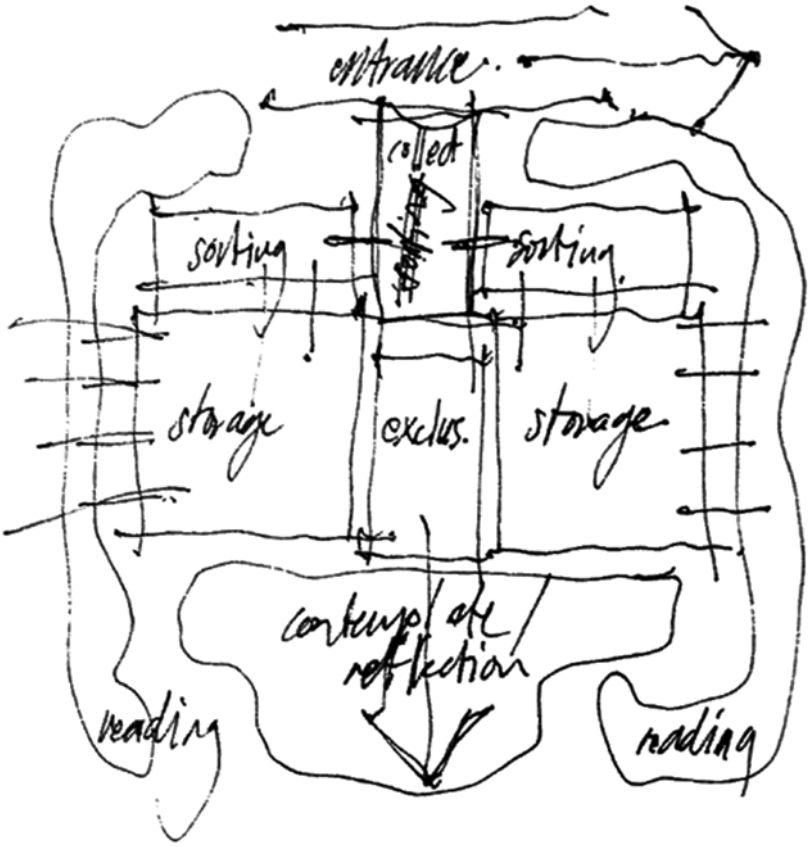

Figure 77: Interpretation of an archive. (2016)

THE ARCHIVE

The interpretation of the archive relies mainly on the act of collection and preservation. As previously mentioned the character of the elderly has the responsibility to oversee these activities based on the experience and knowledge that this character possesses. In the proposed scenario of this character, artefacts such as books, plants, geology and other forms of documentation are collected and ordered in several storage spaces for preservation. These spaces become the vaults of knowledge which could ultimately assist in the rebuilding of society after a disaster.

To conclude the essence of these spaces is grounded in the act of preservation.

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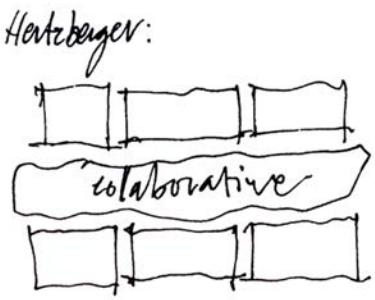
5.4. FUNCTION 3: OBSERVATION DECK



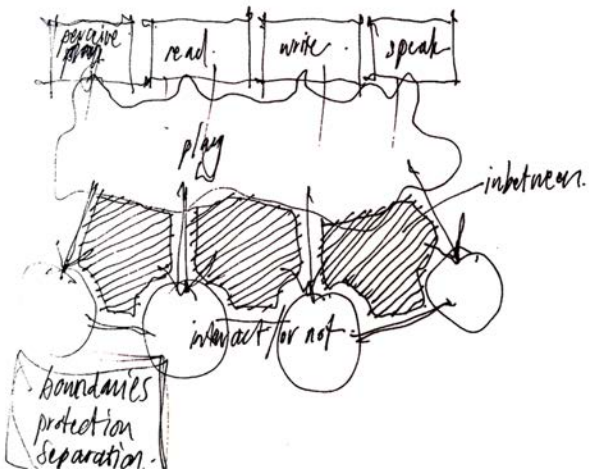


Figure 78: Interpretation of observation. (2016)

OBSERVATION DECK

The interpretation of observation in the scenario of the mentally disabled is aimed at the skill of collecting mental and physical images which are stored in the minds of these characters. The aim of this scenario is to suggest that the interaction between similar characters can evolve into the sharing of these intangible ideas whether it is through writing, speaking or merely observing each other. The power of mental images and observing the surrounding world could potentially evolve into strategic ways of dealing with future threats.

To conclude the essence of these spaces is grounded in the act of observation.

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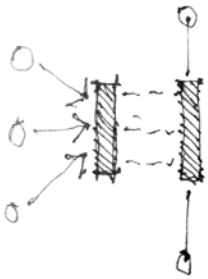

5.5. FUNCTION 4: THE LABORATORY

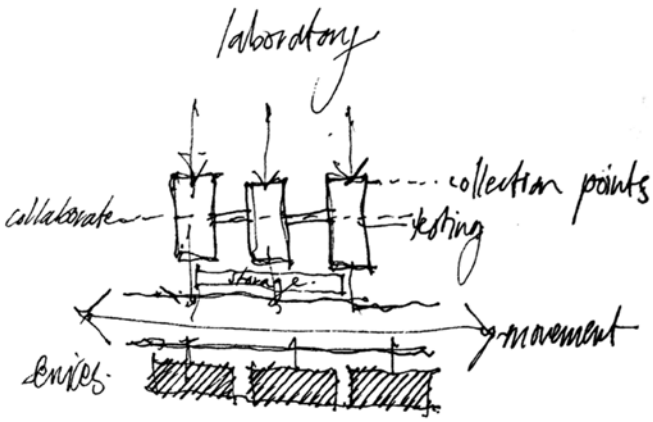

Figure 79: Interpretation of a laboratory. (2016)

THE LABORATORY

The interpretation of a laboratory in the scenario of the physically disabled is aimed at strengthening the argument that these people have value. In fact, this is the case for all the characters. The character of the physically disabled has limited physical movement. In the scenario presented earlier, instead of recognising the limitation the focus is on their mental abilities in order to initiate innovation. After disaster, these characters have little means to replace their prostheses or wheelchairs (which are already costly) therefore the activities involved in the laboratory includes finding new ways to create such objects.

To conclude the essence of these spaces is grounded in the act of innovation.

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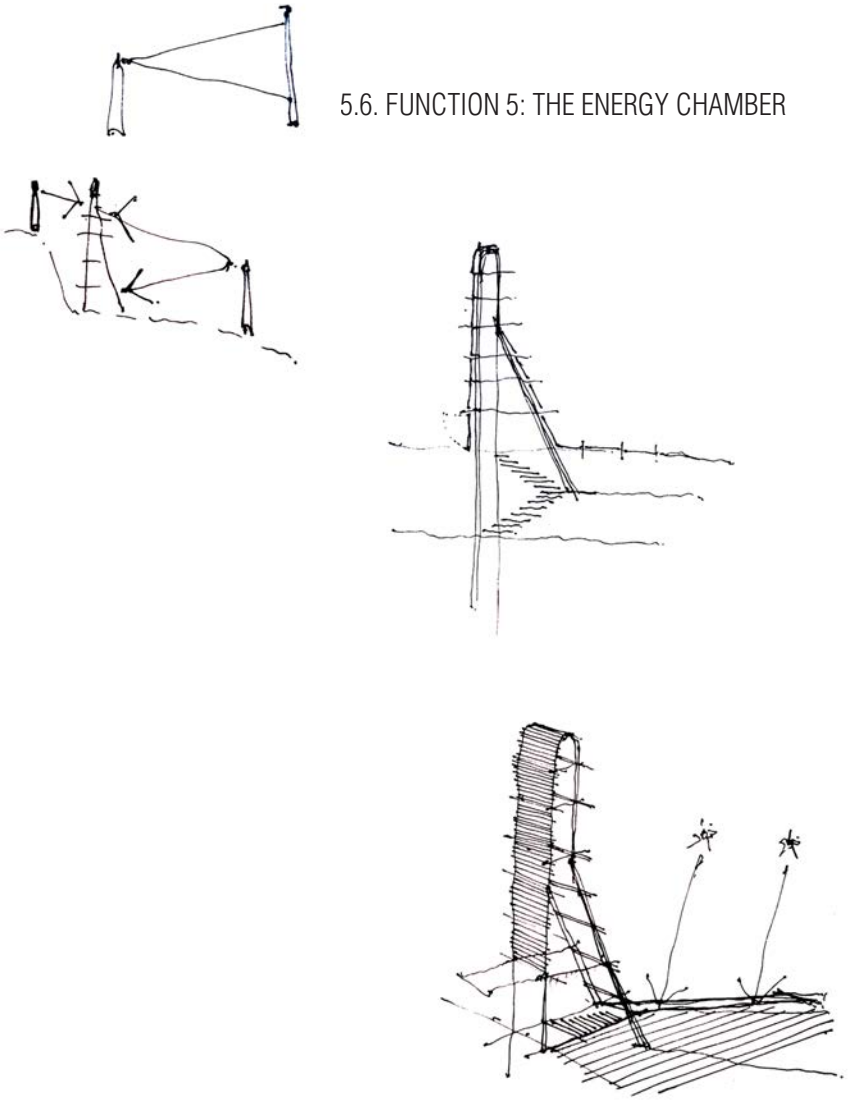

Figure 80: Interpretation of a beacon and energy chamber. (2016)

5.6. FUNCTION 5: THE ENERGY CHAMBER

THE ENERGY CHAMBER

The interpretation of energy in the scenario of the homeless aims at giving hope to others. The value of the homeless characters in the overall scenario of the building is to create a sense provision for the rest of the characters. Due to the fact that these characters are able to adapt very quickly in different environments, they are tasked to assess and adapt the flow of energy for the structure to function efficiently. This may include the provision of food and the functioning of service components in and around the building.

To conclude the essence of these spaces is grounded in the act of provision and services.

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5.7. CONCLUSION

The premise stated at the start of the document relating to intentions of the project, is illustrated in the choice of programmes to create a sense of obscurity about function and form. Through the engagement of meaning and the value of the different characters a relationship is formed between activity and inhabitant.

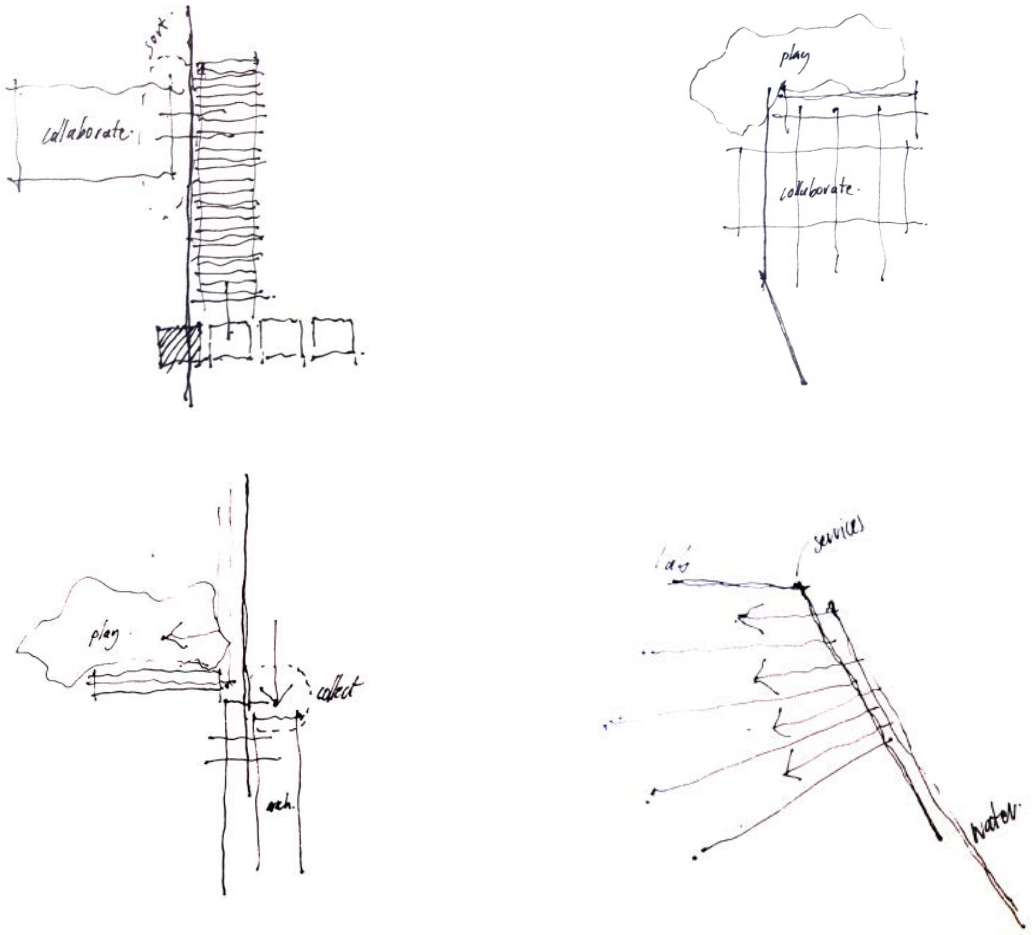

Figure 81: Interpretation of functions in a collaborative setting. (2016)

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[PART THREE]

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CHAPTER

06

This Chapter presents the theoretical, functional and formal precedents used to inform design development.

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REFUGE

The state of being safe or sheltered from pursuit, danger, or difficulty.

a Place or situation providing safety or shelter.

synonyms: shelter, protection, safety, security, asylum, sanctuary
(Oxford English Dictionary)

Figure 82: " The Dome" in its Sonoran Desert landscape. (Shulman 1985)

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6.1 THE THEORY OF PROSPECT AND REFUGE

In the investigation into different landscape configurations that incite different experiential responses, Jay Appleton's work aims to bridge a gap between theoretical aesthetics and practical analysis of landscapes (artistic and scientific). By referencing the work of American philosopher John Dewey in *Experience and Nature* (1929), Appleton is able to argue that the aesthetic behaviour of a human being has emerged out of an evolutionary process and that this alone suffices to explain that 'our' preference in landscape lies in biological conditioning.

Two theories of the above mentioned conditioning emerge and it is in these theories that the dissertation relates to human behaviour and built landscapes. The theories are briefly described to contextualise the relationship between man and his environment.

6.1.1. Habitat theory

Habitat theory *asserts that the relationship between the human observer and the perceived environment is basically the same as the relationship of a creature to its habitat. It asserts further that the satisfaction which we derive from the contemplation of this environment, and which we call 'aesthetic', arises from a spontaneous reaction to that environment as a habitat, that is to say as a place which affords the opportunity for achieving our simple biological needs (Appleton 1993:63).*

In layman's terms this theory is about a place's ability to satisfy every biological need of a human being (eat, sleep, etc.).

6.1.2. Prospect-refuge theory

Prospect-refuge theory postulates that, because the ability to see without being seen is an intermediate step in the satisfaction of biological needs, the capacity of an environment to ensure the achievement of both prospect and refuge, becomes a more immediate aesthetic satisfaction (Appleton 1993:66).

The ability to see and the ability to hide are important for a human being to calculate the effectiveness of survival. In the desire to satisfy all our biological needs, the ability to see without being seen is not an opposite theory to the former. Rather, these theories are embedded in one another to experience an environment of comfort and safety.
Ultimately a level of aesthetic satisfaction and acceptance should occur in a specific environment to catalyse responses of relief and comfort. Therefore a landscape (natural or built) only needs to have the appearance of satisfying the needs of survival.

In conclusion, an optimal environmental condition of shelter comprises of different parts. The most important factor in the search of such an environment is survival instinct determined by a biological drive in human beings.

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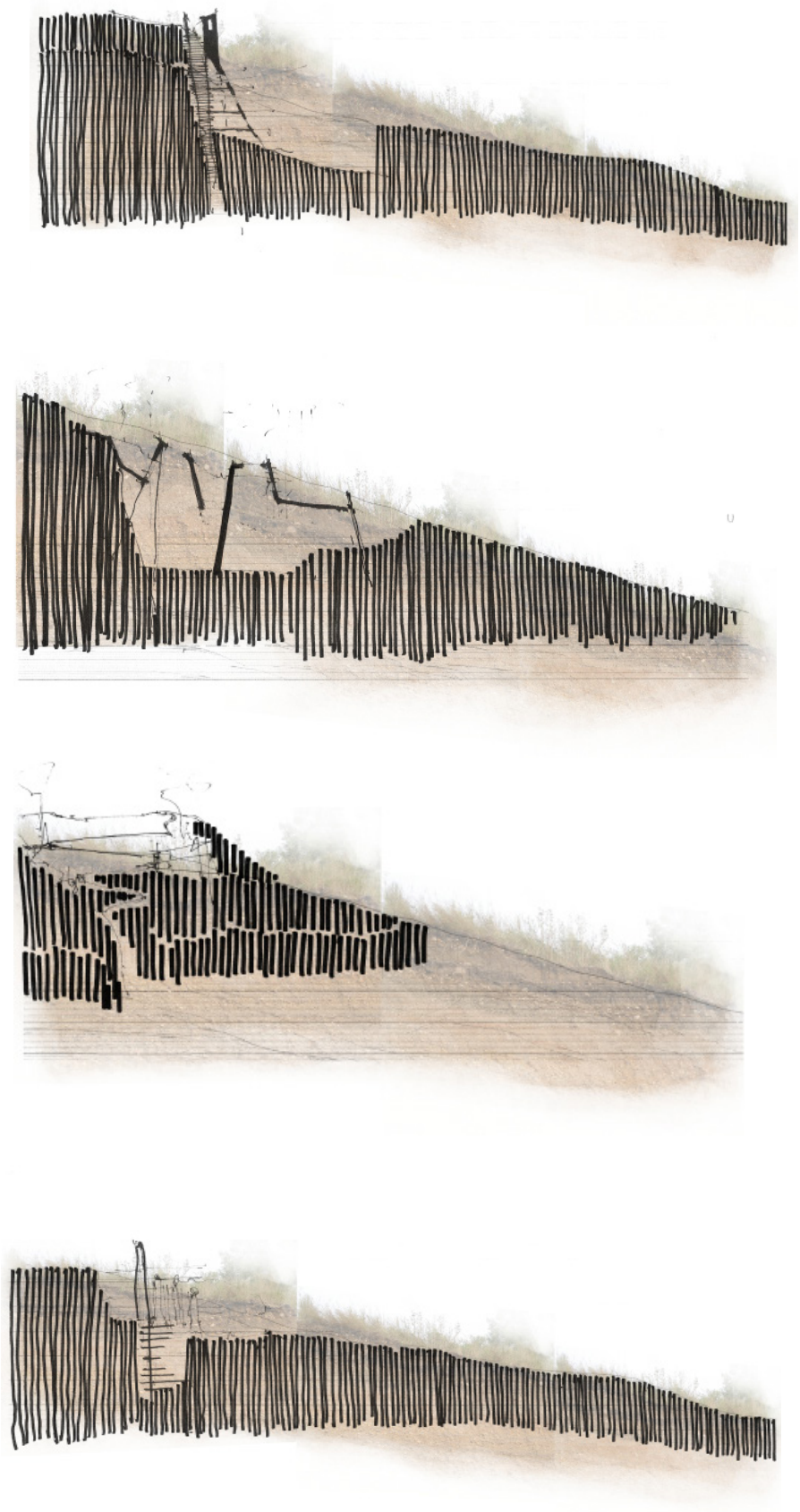

Figure 83: Sectional drawings of the interpretation of prospect and refuge in different scenarios. (2016)

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6.2
CASE STUDY 1

THE COROMANDEL ESTATE MANOR HOUSE

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6.2.1. FORMAL ASPECTS

As part of a formal study the building as a ruin or object in the landscape is considered.

This aspect is illustrated in the start of the journey towards the house, with a winding driveway and natural vegetation revealing and concealing the stone walls embedded in the landscape. The approach and movement within the plan layout is conceptually derived from the qualities on an italian town with narrow streets leading to private interior spaces. The intimate effect of moving through a narrow street is enhanced by texture and use of materials. Through narrow 'paths' sheltered by thermal mass the building responds to the South African climate and typical farm heat and glare. The structure provides cooling and greenery which allows for the incorporation of water in a sustainable manner.

As a structure it resembles a city of stone in the distance only revealing its delicate shaded streets as one wanders through and within in. Contrasting to its fortified nature the two sets of parallel wings extend towards landmarks in the rural landscape - extending into and receiving the veld.

The nature of the architecture provides a constant play between appearance of brutality and 'object'; and a delicate experience of threshold and movement which collaboratively creates a sculptured shelter within the landscape.

6.2.2. ENVIRONMENTAL ASPECTS

The environment and natural vegetation laid the foundation for the architectural palette. Structurally the building consists of a reinforced concrete frame covered with a green roof. Infill brickwork and cavity walls are tied together under this grass canopy while extending towards the landscape. The cavity walls are craftfully cladded with stonework.

The roof is covered with 700mm of soil and indigenous vegetation. The recreated habitats on the roof and between the corridoors and atria of the building, are planted with indigenous species from the immediate environment. This was done to the extent where the architecture recreates an endemic habitat for nature, making it difficult to distinguish which came first - the trees or the building. This is once more attributed to the ruin in the landscape where nature has appropriated the building as extension of the veld.

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Figure 84: Photographs of Coromandel Manor house taken by author. (2016)

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6.3
CASE STUDY 2

MALCOLM WELLS
ONION HOUSE

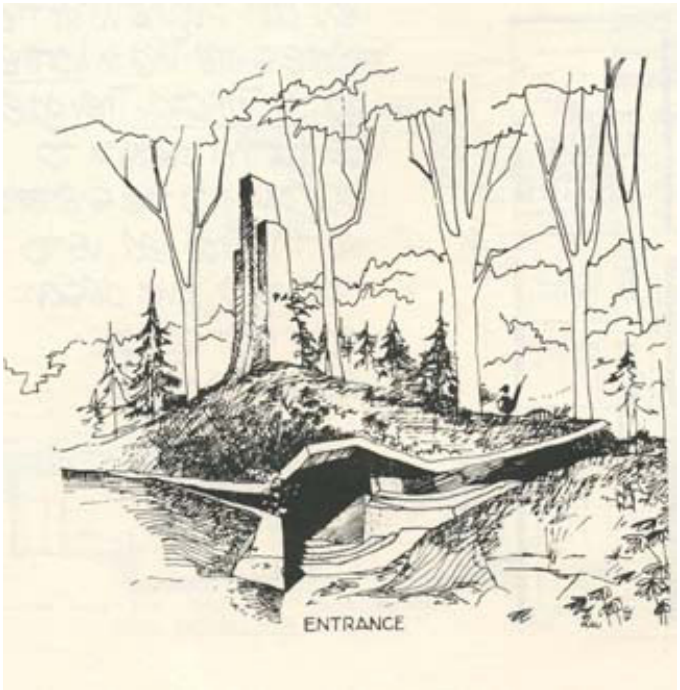

Figure 85: Sketch of 'Onion house' by Malcolm Wells. (Higginson 2006)

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6.3.1. AN OVERVIEW

Malcolm Wells (1926-2009) known as an 'underground architect' was born in America.

Using nature as his major form generator he perceives the earth's surface as the habitats of plants and creatures other than humans. By using the earth's surface as part of building materials he achieves an energy conscious and responsive design. Wells did not only achieve an environmentally responsive design but used the form of his architecture (The Onion House) to shape the user's perception and interaction with nature through everyday dwelling.

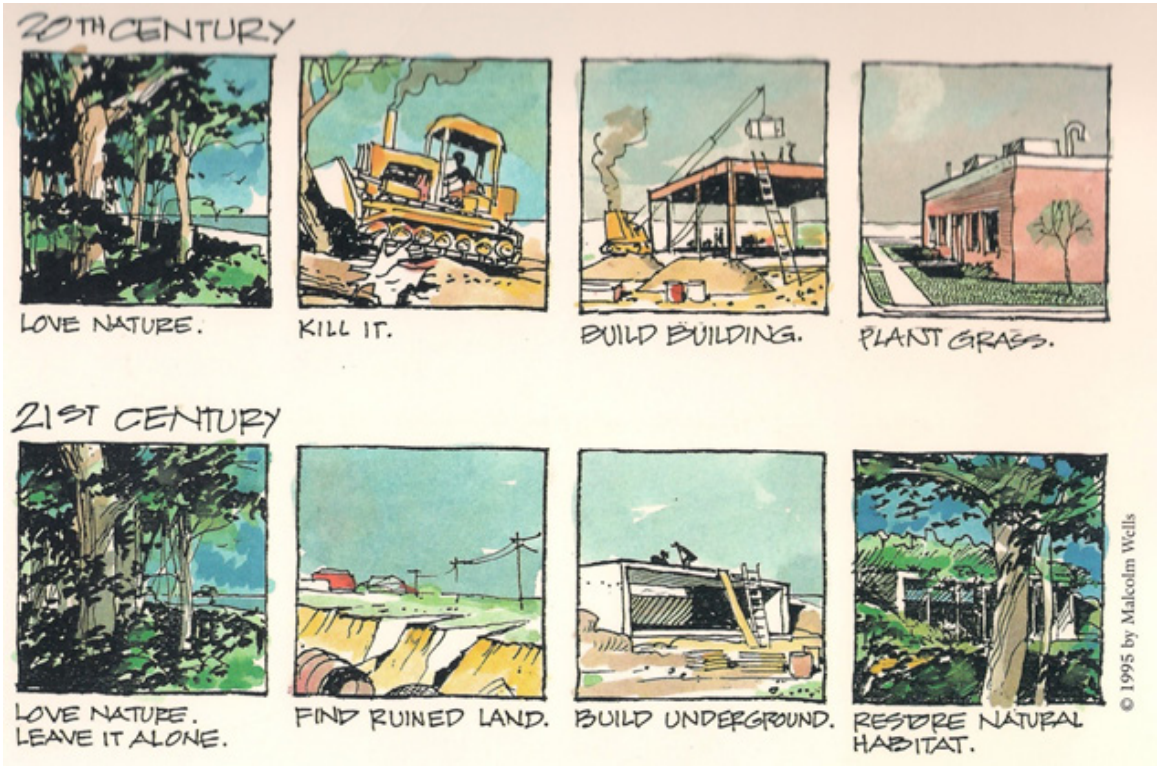

Figure 86: Malcolm Wells's philosophy. (Higginson 2006)

6.3.2. BIOMORPHEMIC APPROACH TO FORM

A biomorphemic approach can be described as artistic design elements based on naturally ocurring patterns or shapes which are reminiscent of nature and living organisms. Wells's approach was not only to mimic but restore the earth's surface. Thus rather than building on remnant land the architecture restores the natural habitat. His approach was not to create underground architecture, but rather use the earth's surface as part of your architectural building material. This type of architecture allows for a sheltered dwelling which functions as a safe and inclusive sanctuary.

The technical approach is building an insulated building, covering it with earth and natural vegetation providing a habitat for new plant and animal life. The implications of this stretches further than inclusive design towards a responsive dwelling which would include the storing of rainwater, the production of food and using solar energy. By creating insulated, earth-sheltered architecture a moderate climate is also achieved.

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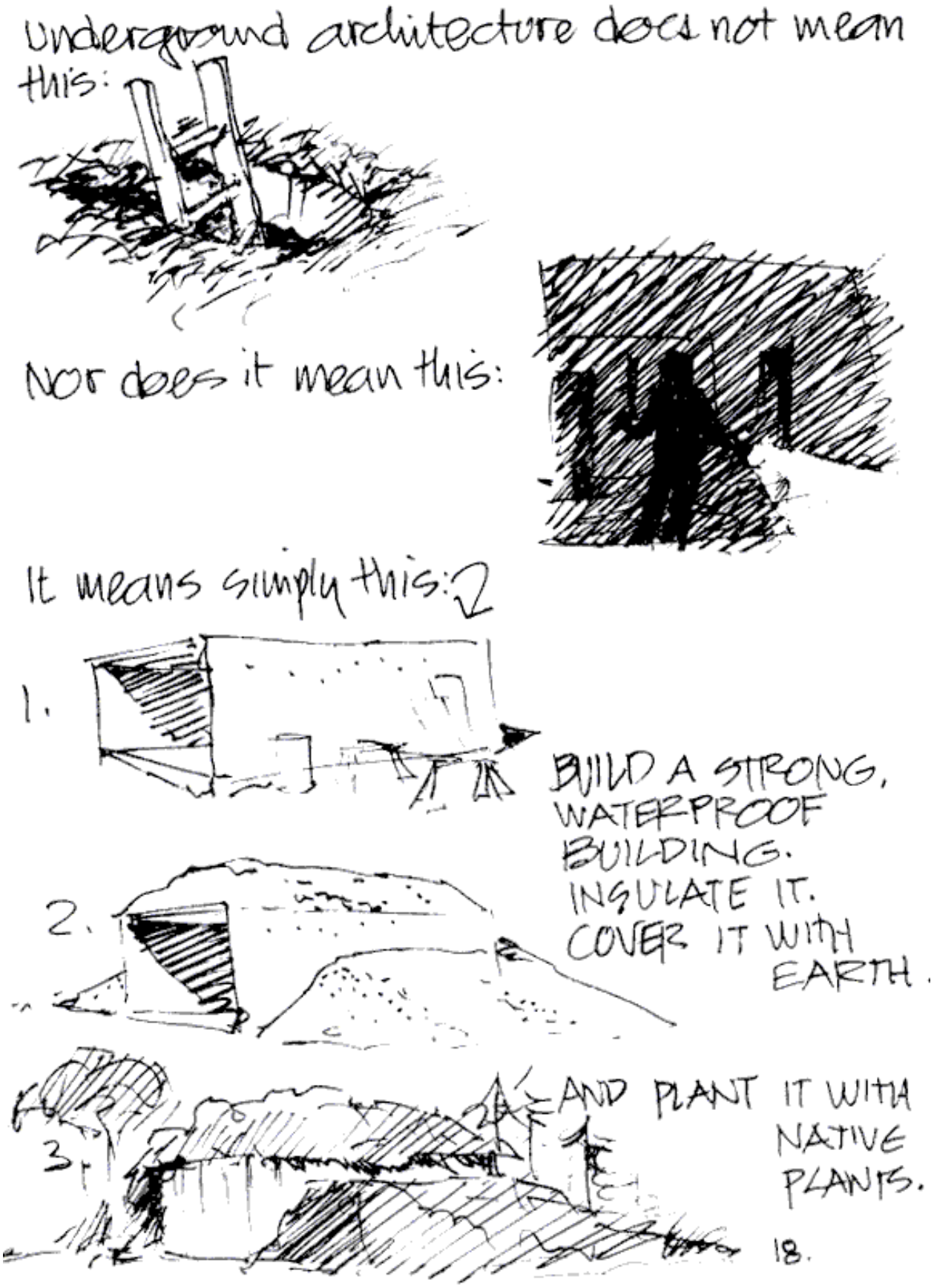

Figure 87: Sketch by Malcolm Wells. (Higginson 2006)

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6.4
CASE STUDY 3

FREEDOM PARK

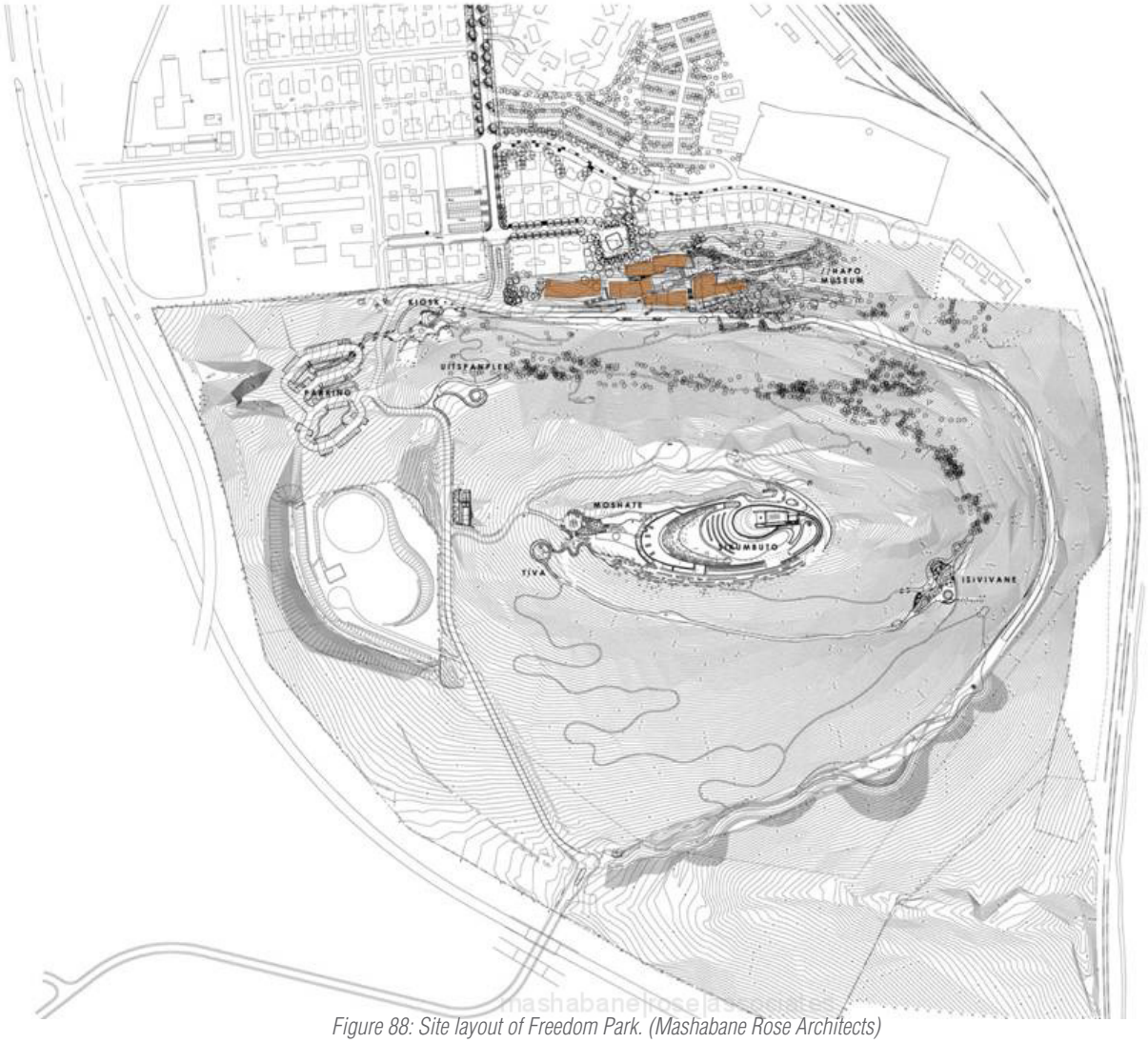

Figure 88: Site layout of Freedom Park. (Mashabane Rose Architects)

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6.4.1. AN OVERVIEW

The Freedom Park monument is situated on the eastern slope of the Salvokop Hill - a landscape dominated by politically charted buildings. Due to its context (The Voortrekker Monument, The UNISA campus and forts on the surrounding hills) the architecture had to incorporate dialogue with its context as part of its narrative.

The relationship with surrounding contexts resulted in a narrative journey through the landscape. The elements of design is revealed and connected through a route using the museum to define the 'entrance' instead of anouncing the start of the route. Discovery, rather than direction, is encouraged along the route. The use of architectural elements (stone, water, indigenous vegetation and fire) is rooted in memory and history of African architecture and the historical natural landscape of the hill-top site.

Figure 89: Photographs of Freedom Park. (Mashabane Rose Architects)

The design incorporates the necessity and qualities of a monument being situated on a hill in Tshwane and functioning as a beacon without being intrusive and disrespectful on closer inspection. Integration into the landscape is succesfully incorporated with monumental design that had to consider political contestation and memory in architecture. The design achieved this without resulting in a heavy visual weight. Verticality (beacon element) was achieved through the placement of the ephemeral stainles steel 'reeds' countering the mass of UNISA and the Voortrekker Monument.

The line between architecture and landscape is blurred allowing the building to emerge from the hill as one continues on the path.

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6.5
CASE STUDY 4

VERNACULAR ARCHITECTURE

Many forms of vernacular architecture embodies specific spatial principles, especially on plan. What is significant in the following examples, is the manner in which movement can link space and simultaneously create space.

DEGOR HOUSING CLUSTER, MALI, WEST AFRICA
15TH CENTURY-PRESENT

Figure 90: Movement through the Dogon housing clusters. (Ching 2007:70)

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DURBAR SQUARE, PATAN, NEPAL, RENOVATED 17TH CENTURY

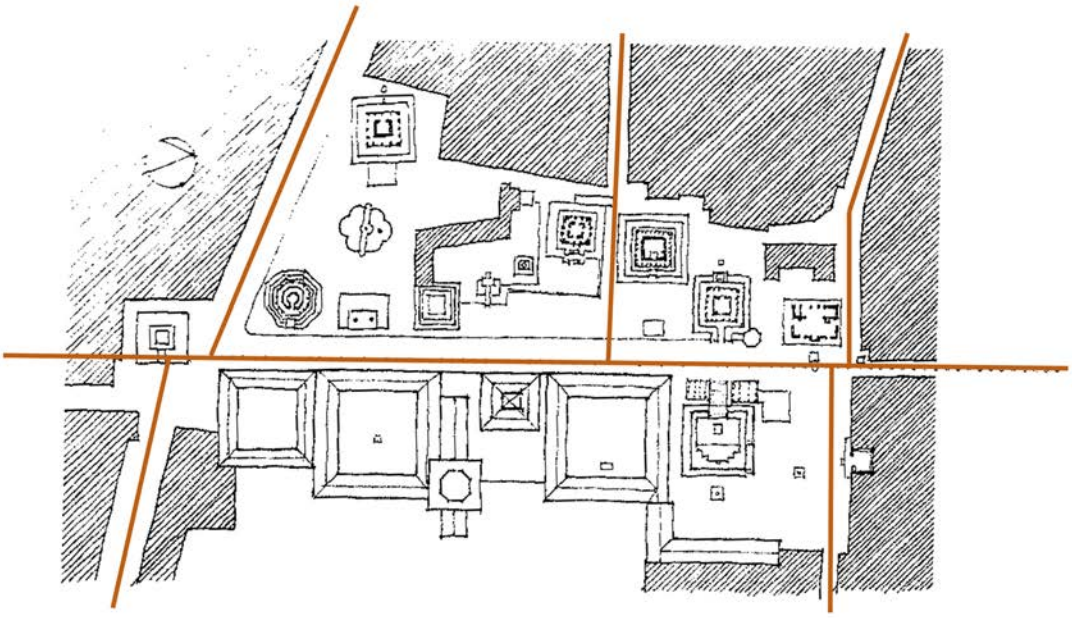

Figure 91: Datum represented in the Durbar Square. (Ching 2007:370)

GUGGENHEIM MUSEUM, BILBAO, SPAIN, 1991-7, FRANK GEHRY

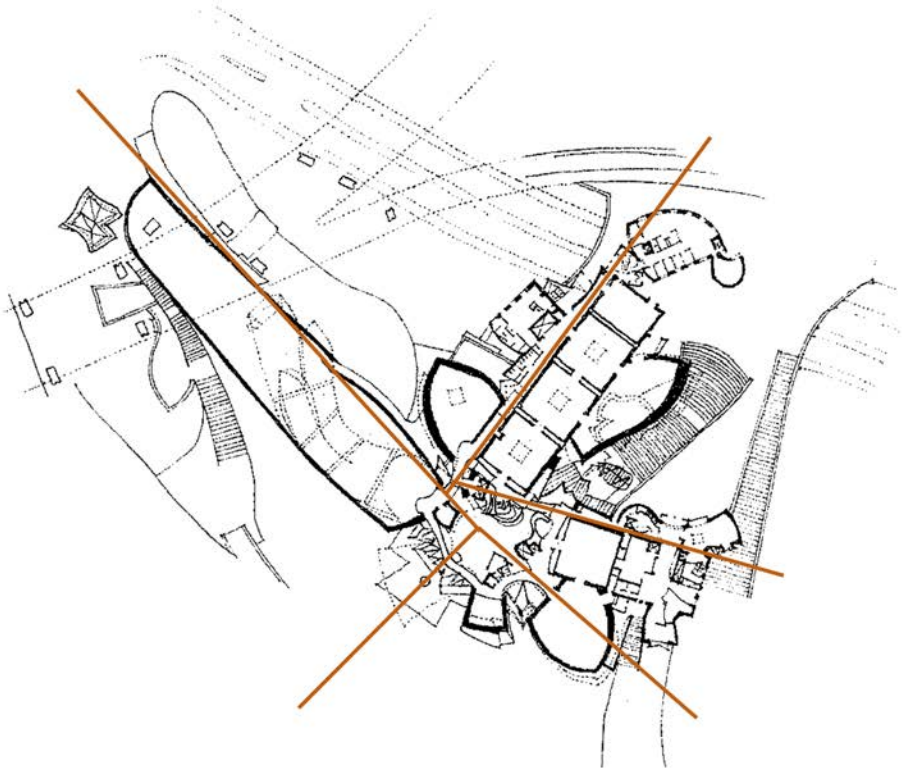

Figure 92: Radial formation of the museum, connecting spaces together. (Ching 2007:221)

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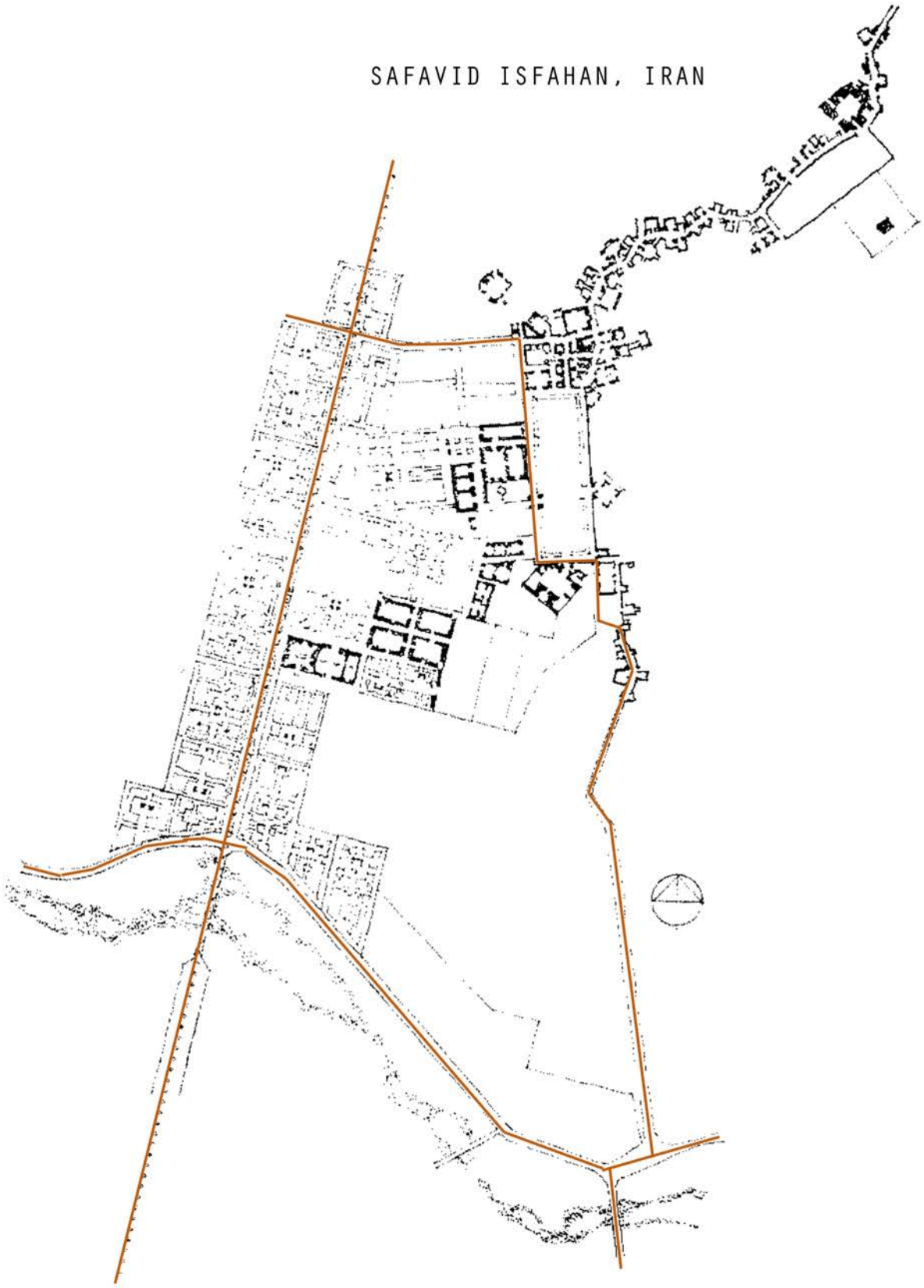

Figure 93: An enclosing of space through passages in the plan of Safavid, Persia. (Ching 2007:370)

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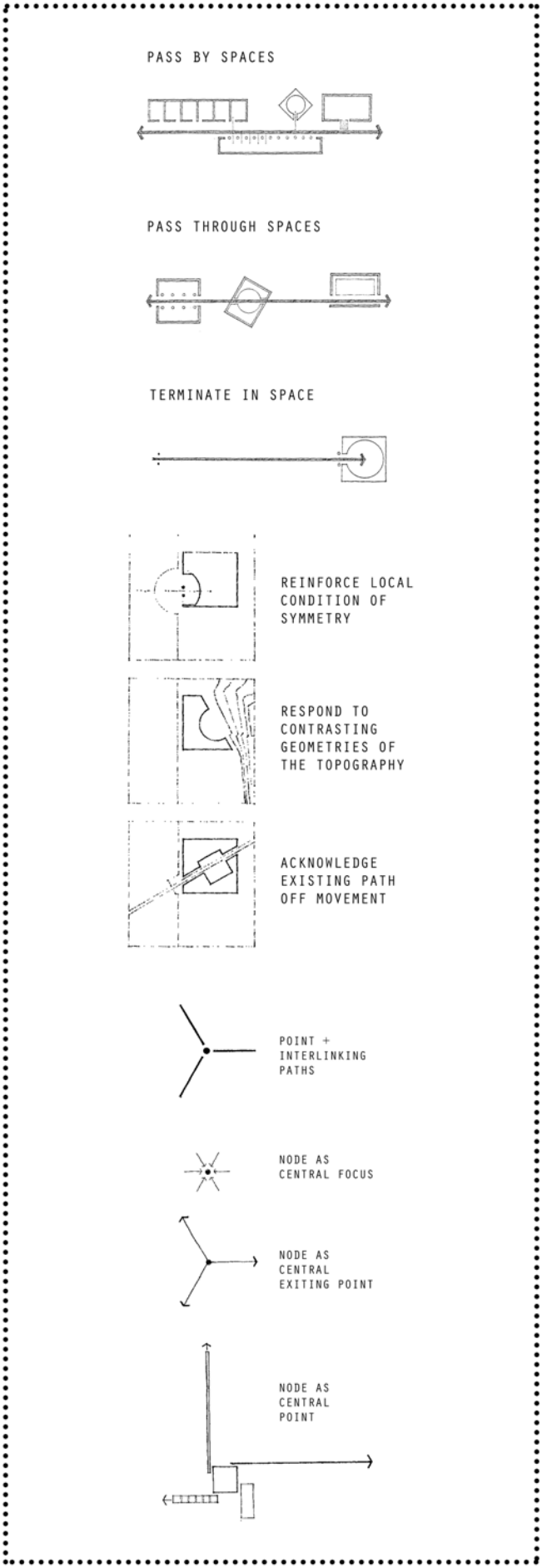

Figure 94: Amalgamation of principles considered in the design development. (Ching 2007)

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6.6
CASE STUDY 5

FORTS

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Figure 95: Fortification plan of Pretoria. (Van Vollenhoven 1998:11)

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6.6.1. OVERVIEW

The history of Pretoria starts all the way back in 1855. Pretoria was named after Andries Pretorius – a national Voortrekker hero of the Battle of Blood River and major role-player in the negotiations for the independence of the Transvaal. His son, Marthinus Pretorius, also a Voortrekker leader and more importantly, founder of Pretoria, decided to honour his father in this way. According to Van Vollenhoven (1998), the founding of Pretoria marked the end of the Great Trek.

It is clear (and almost all sources agree), that the forts were built due to a paranoia that was sparked by the failed Jameson Raid of 1895 (Panagos, 2004). The Jameson raid caused the Zuid-Afrikaansche Republiek to seriously consider the defense of the Transvaal, and particularly that of its capital city – Pretoria.

The government was restless about the growing number of "Uitlanders" (foreigners) on the Witwatersrand, and, to add to their unrest, maps of Pretoria were found in the trunks of a British spy, Captain Robert White (Van Vollenhoven 1998). According to Van Vollenhoven (1992), it was also known that the Reformers had a supply camp near Irene, and were planning on invading Pretoria on 27 December 1896.

Fort Schanskop, Fort Wonderboompoort and Fort Klapperkop were designed by the two German engineers Von Dewitz and Werner from the company Schneider and Krupp (also suppliers of artillery equipment to the ZAR). Architect Christiaan Kuntz and building contractor Celso Giri also had a part in the building of these forts. Fort Daspoortrand was built on the design of Grunberg. Consequently, the three German-built forts had corresponding designs, while Fort Daspoortrant differed from them (Van Vollenhoven, 1998).

All four of the forts were earthen redoubts, and earthen protective ramparts were built to shelter the bombproof rooms below. According to Panagos (2004), this idea was derived from European-style fortifications of that time, which originated in the town of Plevna during the Turko-Russian war of 1877.

Steel used in the construction process came from Germany, while stone from the surrounding area was used. The forts contained the following spaces: entrance gates, stables, officers' quarters, provisions stores, soldiers' quarters, machine room, telegraph room, kitchen, hospital, ammunition store (and reservoir), cannon positions and a drainage furrow. There is a big open space in the centre of the fort.

Other features of the forts include a substantial earthen ramp sloping up to the top of the fort. It is possible to walk the perimeter of the fort on the northern side. From here, being on raised ground, the fort had a clear view of the surrounding landscape, making it possible to see the approaching enemy.

The setting, the use of materials and the act of refuge of the forts, is all relevant in the design development of the proposed intervention.

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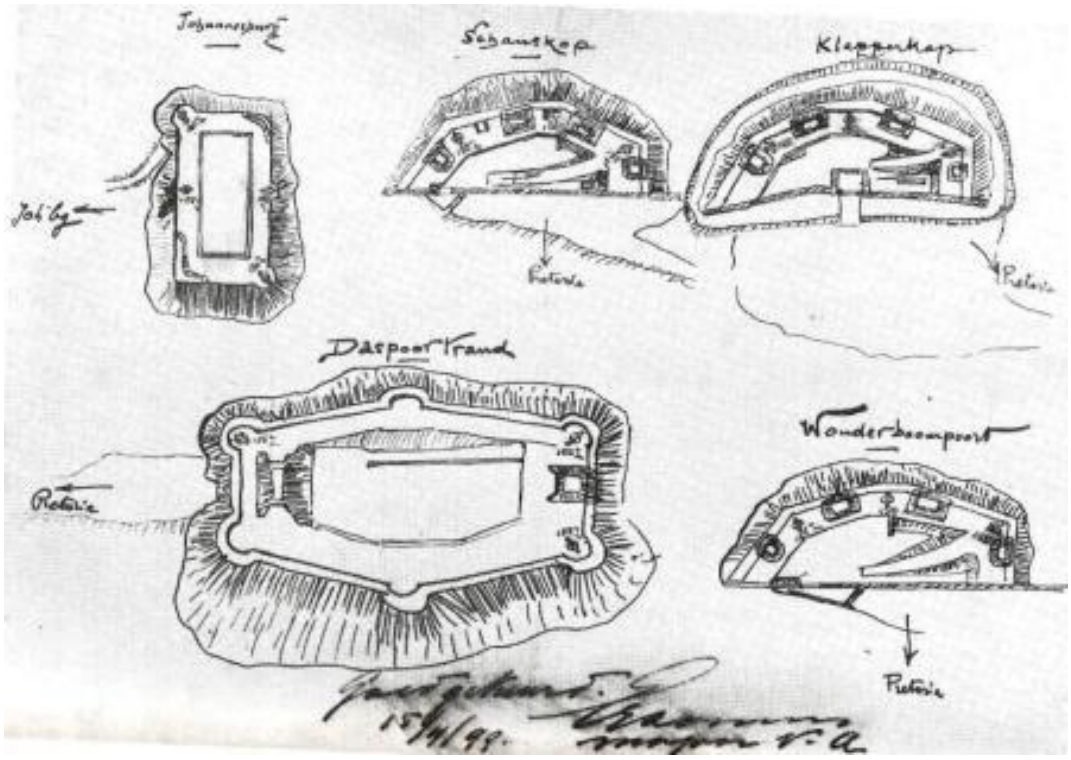

Figure 96: Plan layouts of all the forts of Pretoria. (Panagos 2004)

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6.6.2. CONCLUSION

Pretoria's original need to be fortified is carried through into the narrative of this dissertation.

The concept of refuge is evident, as the proposed intervention is isolated from the CBD and located on the periphery for protection from the destruction of the inner city.

Using the principles of the existing fortifications, the intervention aims to function independently from the rest of the city, with systems activating the structure to form a living organism. Although the structure only serves as a starting point for future organic development attached to the structure, the intentions are clear in the robust nature of the building.

Strategies of camouflage and protection are embedded in the technical resolution and layers of compilation of materials. Areas of the site are vegetated to provide food for the users as well as artefacts for further study.

The overall concept of the design is preservation, thus the structure protects and preserves natural and human elements inside and adjacent to the building.

The existing reservoirs serve as batteries for energy purposes as well as the potential to house aquaponics. Although the water in the reservoirs is an existing resource, a specific quantity is pumped from the reservoirs to serve the building and vegetation.

Based on the language of existing forts around Pretoria, natural materials such as clay, sandstone and shale are re-used from excavations to form thermal mass structures for environmental and heritage value. Ecology on the site is seen as a heritage element due to the fact that the site is the original location of the botanical gardens of Pretoria and should be preserved and touched lightly as much as possible in the overall scheme.

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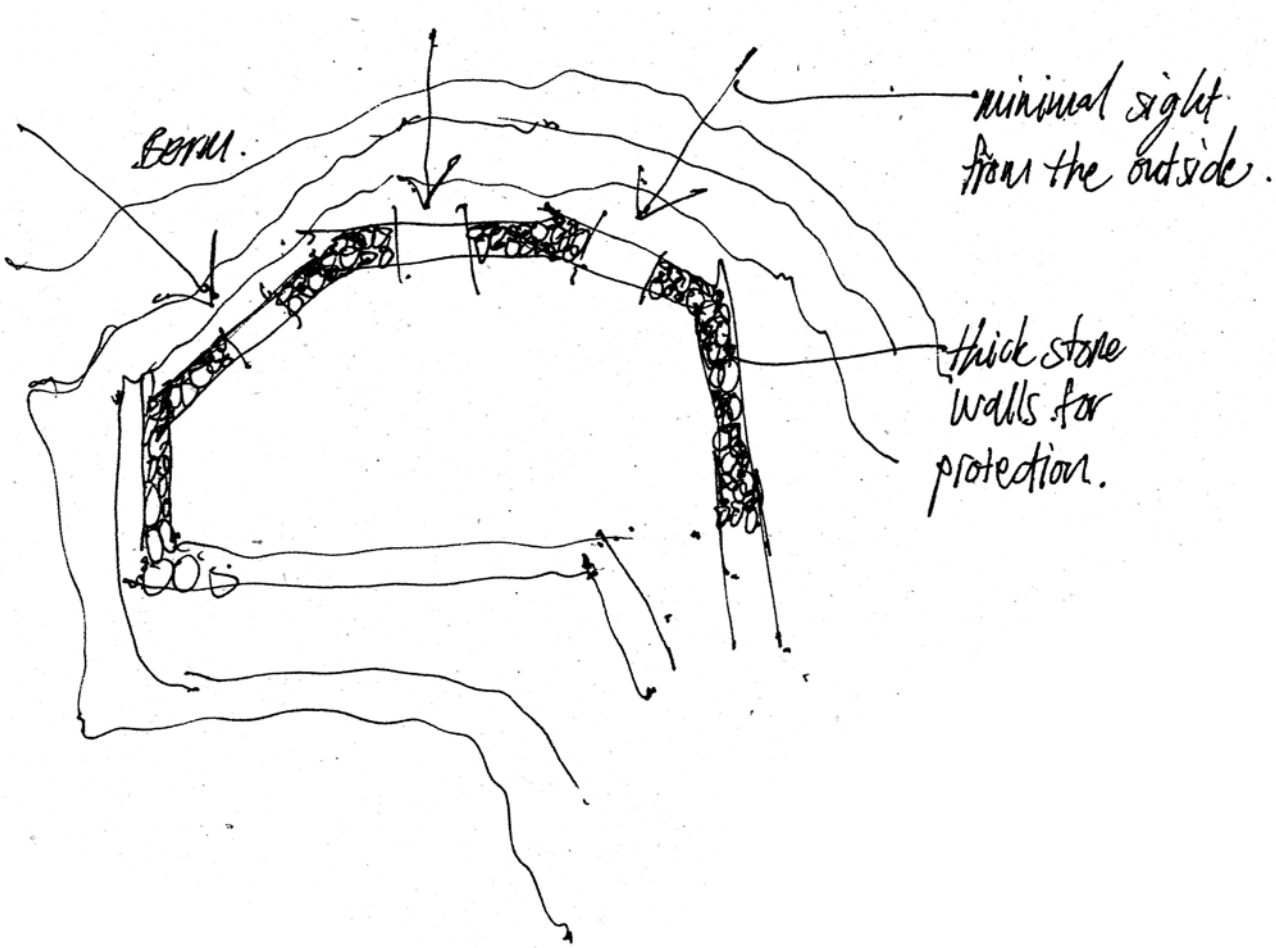

Figure 97: The relevance of observation without being seen, in a fort. (2016)

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CHAPTER

07

This chapter aims to analyse and interpret the conditions of the site. The concept and development of design is part of the investigation of the original intentions.

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SEEKING REFUGE

7.1 KEY CONCEPTS

The informants of the design development is grounded in the ideas of power relations, identity and representational space introduced in Chapter 5. The architectural intentions of the proposed structure has been established to be that of refuge, protection and development.

The following section aims to present the interpretation of the site, iterations of design and how theoretical ideas have evolved into design and structural concepts.

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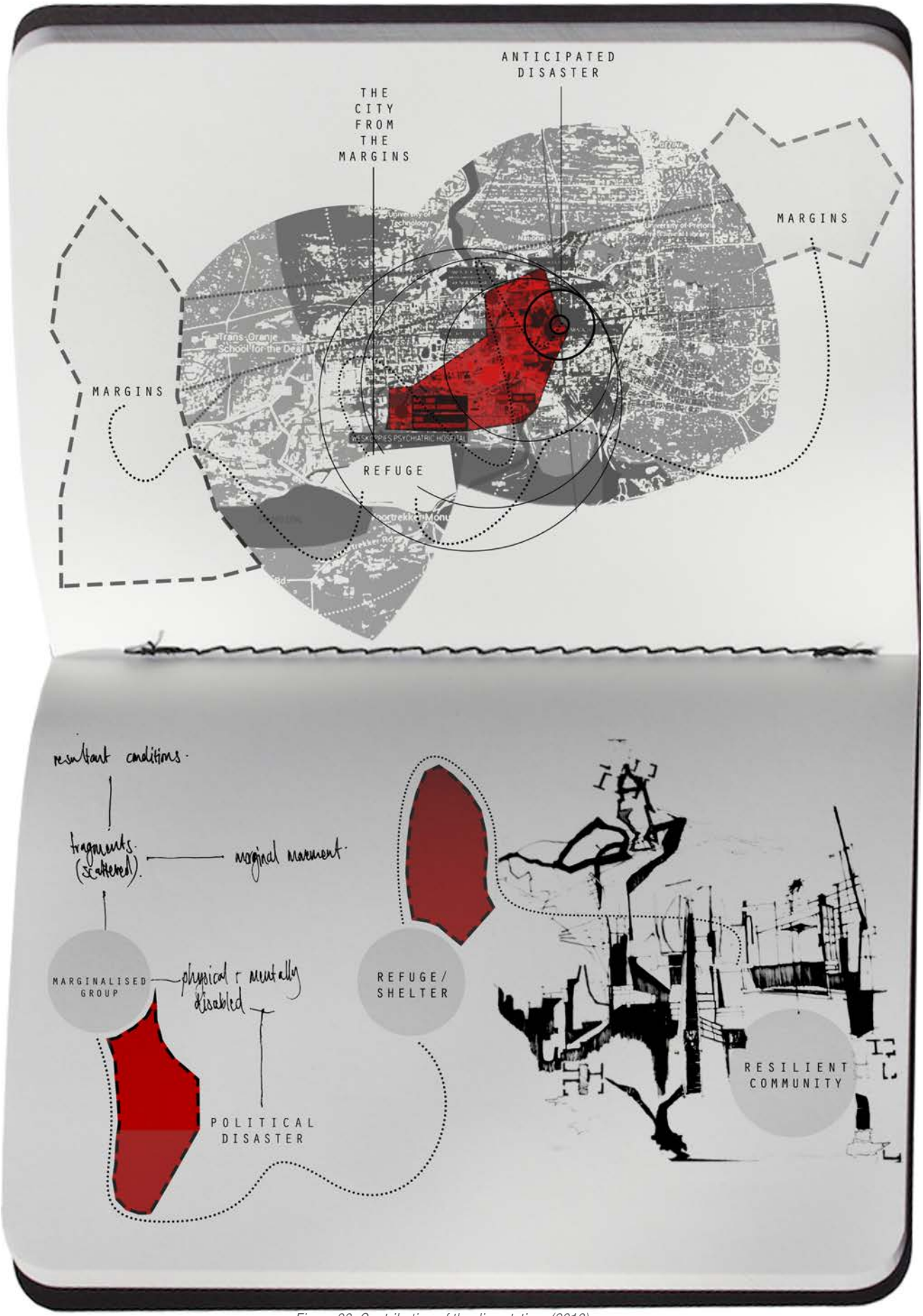

Figure 98: Contribution of the dissertation. (2016)

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7.1.1. CONTRIBUTION

The contribution of the dissertation is firstly to deal with different marginalised groups, understanding their potential in the greater scheme of society and recognising them as strong identities rather than 'outcasts'. Secondly, the scheme deals with the concept of refuge in a narrative where disaster takes place. The act of refuge itself suggests the protection of specific resources for preservation (humans and other elements) to rebuild a new society post-disaster. Thirdly the scheme recognises that the structure presents the potential for future scenarios. The outcome of the first scenario may be that the entire structure and the surrounding site becomes a resilient community which can operate on its own through alternative energy sources and the cultivation of new resources. The outcome of the second scenario may be that the structure is left as a ruin in the landscape and that the marginalised people have been accepted back into society on an equal level (in relation to the norm). The third scenario may suggest that the position of the structure becomes the core of the new city and ultimately manifests a new society based on alternative power relations. The marginal community is thus an example of how a new society may function after the disaster - off the grid and completely independent.

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Figure 99: Google Earth image of proposed site. (Google Earth 2016)

7.2 SITE: AN INTRODUCTION

The heritage component of this proposal lies in the historical location of the original botanical gardens of Pretoria. The 'Langeberge Ridge' is an untouched natural piece of heritage with a range of plant life and geology yet to be explored and interpreted. The aim is thus to expose the potential of the site through activities of collection, preservation and study. By way of method through the characters of the narrative, each category of people has inherent skills and potential. Skills are then used to unlock the potential of the site as a proposed future sanctuary for the marginal community. Not only will the identities of the marginal community be developed and established, but the protection of the users is of utmost importance. Therefore, the building proposal comprises of elements of robustness with the potential to be developed further by the people that inhabit it.

The ridge is set within a context of multiplicity. The surrounding functions are illustrated in Figure: . The site is further interpreted in relation to boundaries and physical thresholds. Although the structure develops in isolation on and within the ridge, it aims to rehabilitate and restore what has been excavated. The existing plant types found on the ridge are reintroduced on soil that is placed on roofs.

The three eservoirs on the site is part of the Tshwane Water and Sanitation Bulk services for the West of Pretoria and provides water to the surrounding areas. In the context of the dissertation, it is assumed that post-disaster these reservoirs are left for ruin and so in the proposal ownership is taken by the marginal community of these structures as a viable resource not only for water but for the potential of energy generation.

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7.2.1. INTERPRETATION AND ANALYSIS

The context is seen to be surrounded by various contested layers of zoning. With industrial sites to the south; memorial sites to the east and south-east (Magazine Hill, Freedom Park and Voortrekker monument); and rehabilitation and military sites to the immediate north (See Figure:). The site can thus be seen as a natural island surrounded by many resources for construction, water services and the idea of memory. These resources are considered in the making of place as well as the structural and environmental concepts.

Key considerations in the development of the site is to use the ridge as a place to observe (without being seen), to collect artefacts of the surrounding landscape, to use the reservoirs as a source of water and energy and that access would be from the south to use the existing roads and pathways already established on site.

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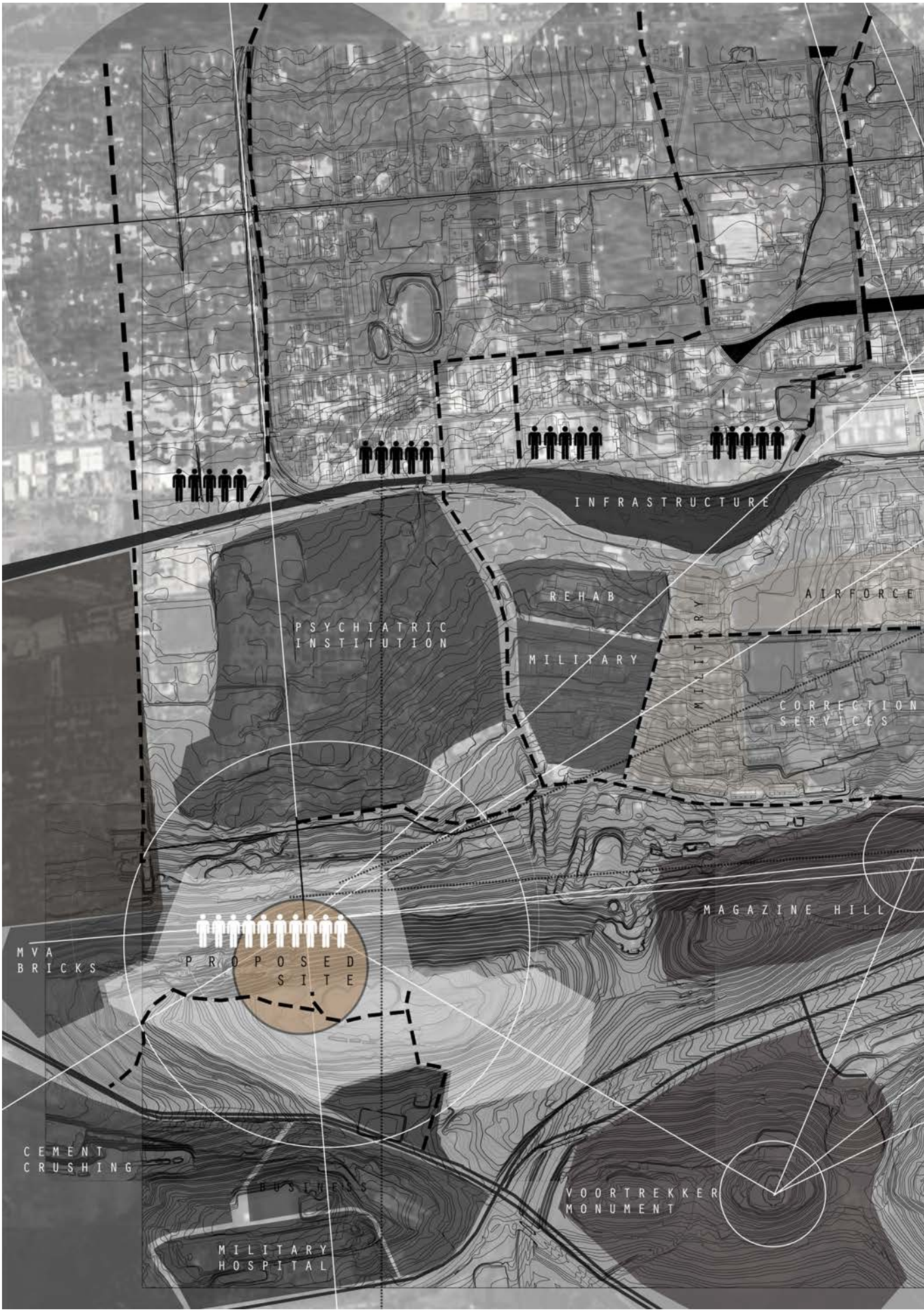

Figure 100: Mapping of surrounding areas and intangible links to other ridges in the vacinity. (2016)

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Figure 101: Mapping of surrounding areas and zones in the vacinity. (2016)

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INDUSTRIAL — RESIDENTIAL — MILITARY — TRANSPORT/INFRASTRUCTURE

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7.3. PHYSICAL CONTEXT

7.3.1. RESOURCES

The proposed timeline of the intervention suggests that the architecture develops from a present condition to a future condition. The context presents sites of resources to be used in the construction of the proposed structure. Crushed concrete from the Econoslag Crusher plant is used for cast in-situ components; and paving bricks from the adjacent MVA Bricks site are used for pathway surfaces between the different structures as well as precast concrete barrier kerbs used for exposed vertical surfaces.

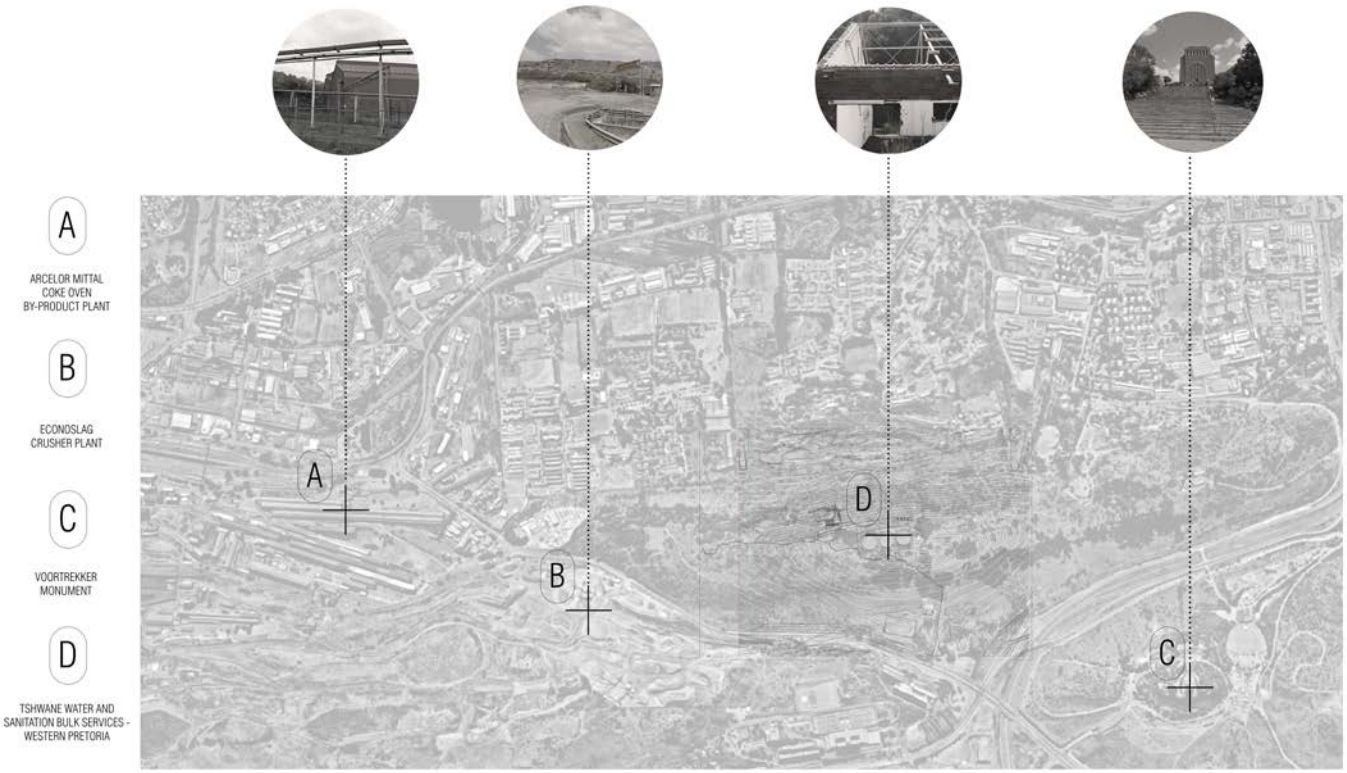

Figure 102: Allocation of surrounding sites which are used as informants for various elemnts of the design and structure. (2016)

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Figure 103: An image of the MVA bricks site. (Google Earth 2016)

Figure 104: An image of the Econoslag crushing plant. (Google Earth 2016)

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Figure 105: A flow chart diagram for the production of aggregate (DSMAC 2014)

7.3.2. CONSTRUCTION AGGREGATE

Construction aggregate, or simply "aggregate", is a broad category of coarse particulate material used in construction, including sand, gravel, crushed stone, slag, recycled concrete and geosynthetic aggregates. Aggregates are the most mined material in the world. Aggregates are a component of composite materials such as concrete and asphalt concrete; the aggregate serves as reinforcement to add strength to the overall composite material (DSMAC 2014).

The production of aggregate as seen in Figure will be described here to illustrate how aggrgates are produced using natural stones as well as recycled concrete. Even though these aggregate mines leave large footprints of unutilised land, it is part of the process of recycling earth into buildable components. The blasted raw stones are hauled to the a stockpile by a heavy duty truck; the raw stones like granite, basalt, marble, limestone, cobble stone etc. are fed into jaw crusher as primary crushing machine; the crushed stones are transferred to impact crusher for further processing; according to the clients application, the crushed stone is sieved into different grade by vibrating screen, or transferred to cone crusher for fineness crushing; after the screening process, an aggregate washing machine clears away the dust and small particles (DSMAC 2014).

In the making of the proposed structure the aggregate produced by die Econoslag crushing site is used for the production of in-situ components. Any concrete building components in some of the future scenarios may be re-crushed and reused in a different manner. This will only take place if a decision is made in a future condition to re-utilise the proposed structure in a different way.

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7.3.3. MVA BRICKS

In addition to producing paving bricks, MVA Bricks also supply precast concrete kerb components. With this in mind, as already mentioned in previous chapters, the proposed structure should primarily comprise of robustness yet allow for alterations in future. Within the range that MVA Bricks supply to the public, a specific 'barrier kerb' is produced - 1000 x 250 x 100mm - which will be used in the proposed structure as a cladding element pre-disaster. The barriers may then be removed post-disaster to be replaced by lighter structural elements as part of the alterations taking place in future.

MVA Bricks also supply paving bricks to be used as a robust surface for pathways that link the different structures in the proposed design.

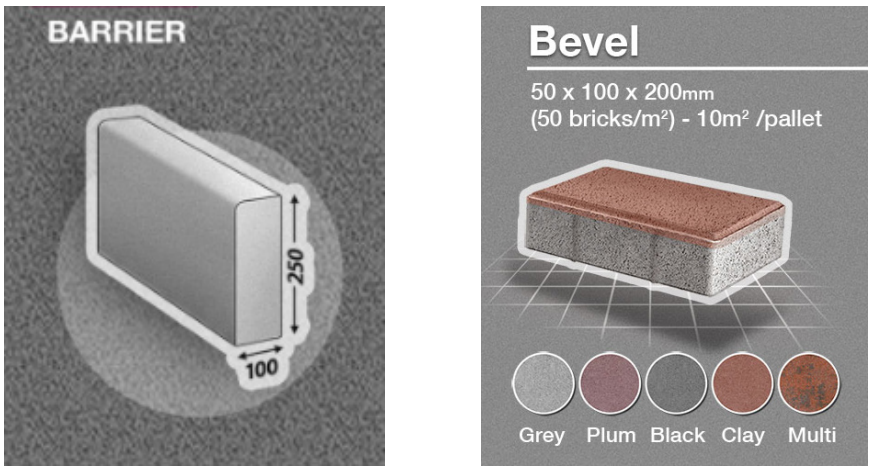

Figure 106: Barrier kerb and Bevel paver produced by MVA Bricks. (2015)

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7.4 FURTHER INTERPRETATION OF SITE

Upon further analysis of the site in a theoretical manner, different conditions are illustrated (see Figure:) on section to position the site within a broader spatial framework. The aim here is to allocate where refuge will take place in relation to different margins that have formed through the development of city planning. The ridge is then analysed in terms of structural and environmental considerations as a viable site of refuge that will adhere to all architectural objectives already mentioned.

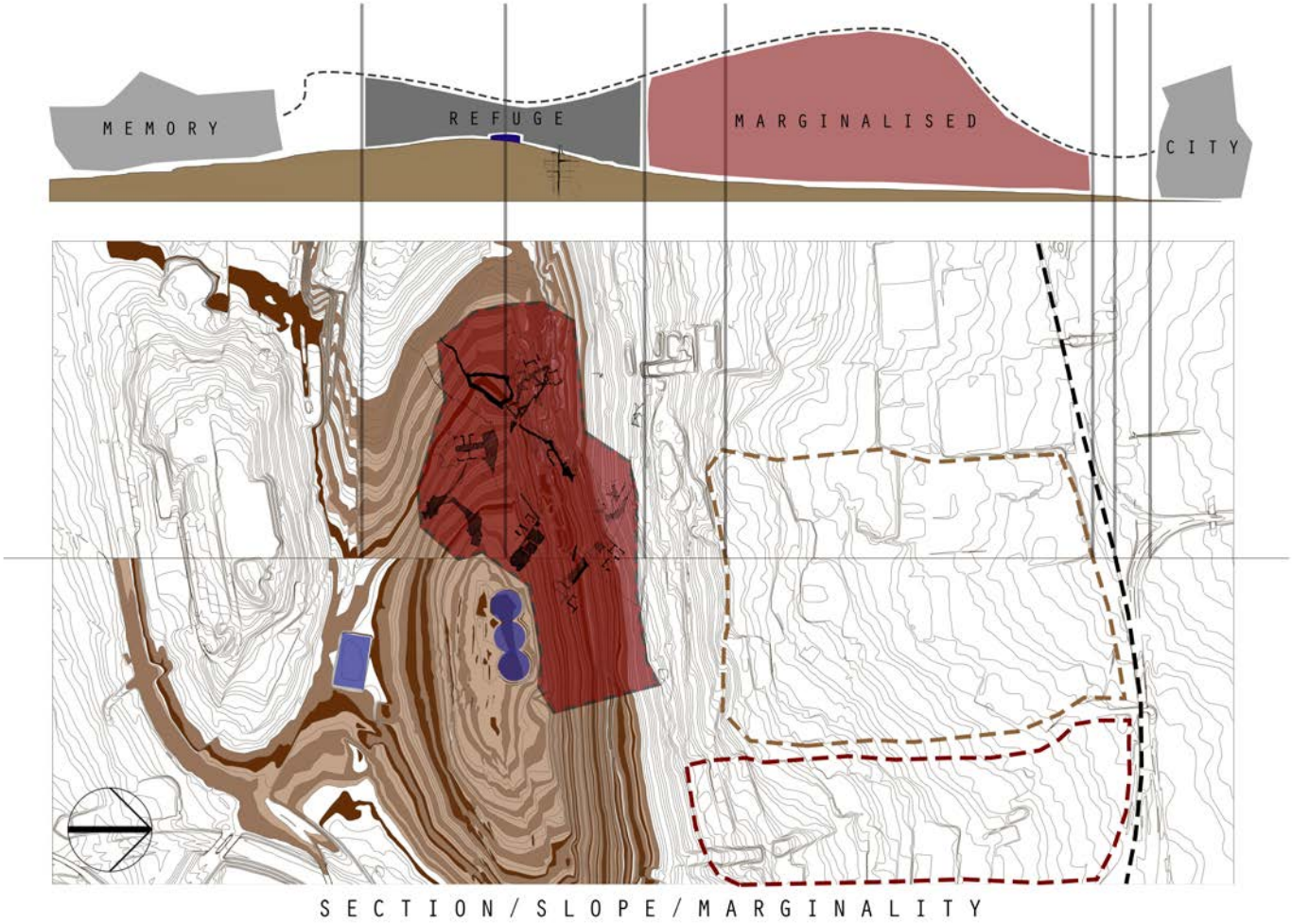

Figure 107: An illustration of the ridge slope in relation to surrounding margins. (2016)

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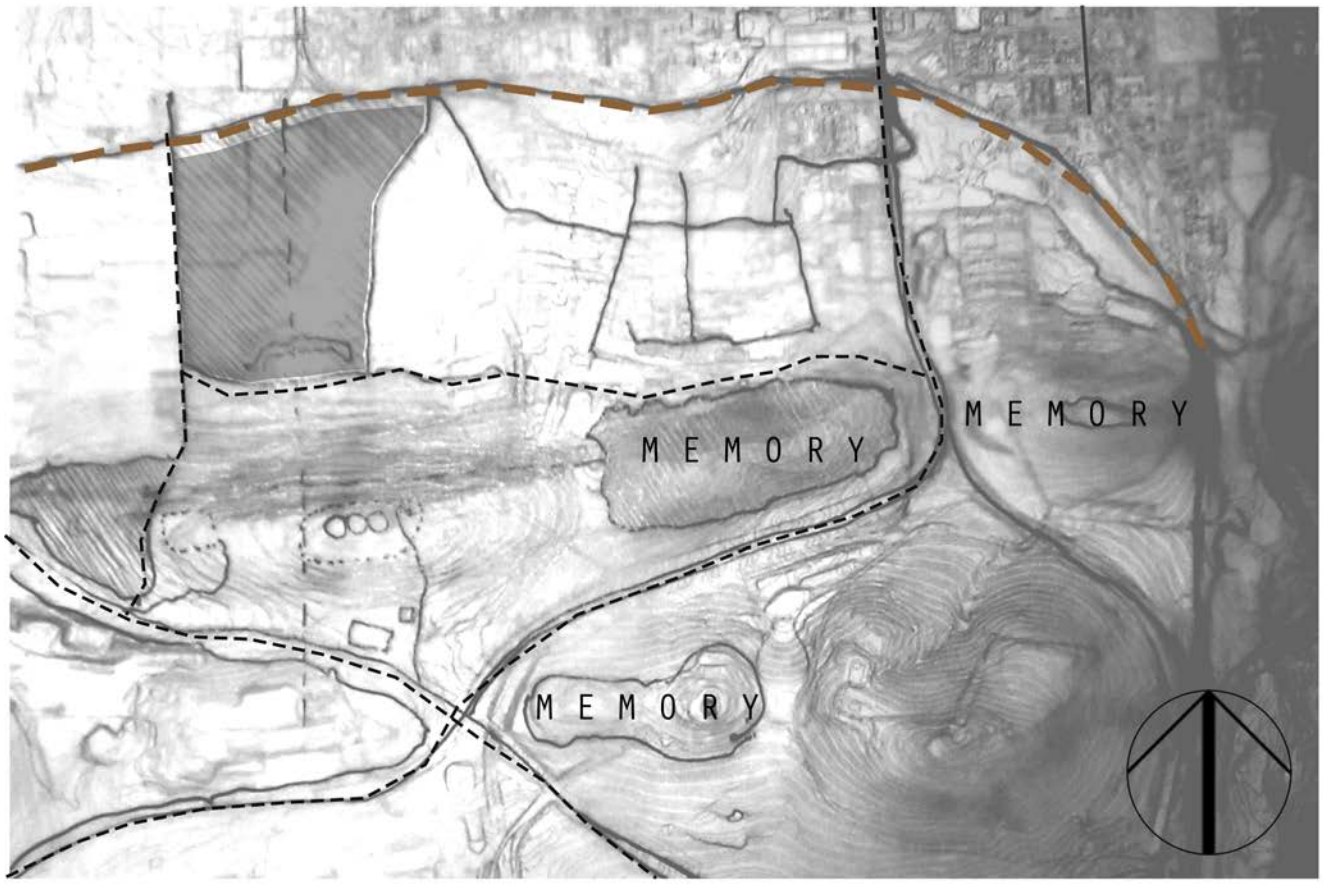

Figure 108: An illustration of the ridge slope in relation to surrounding margins. (2016)

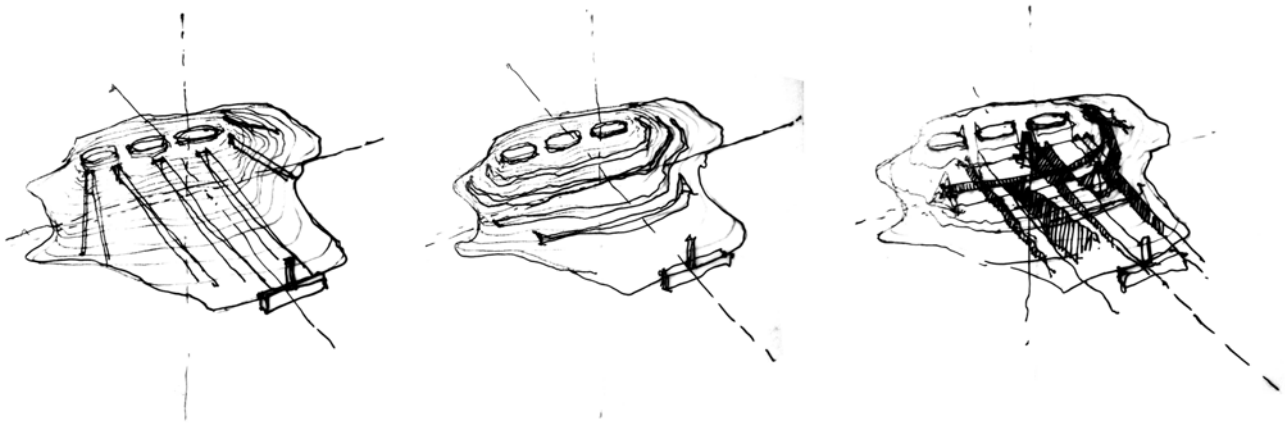

Figure 109: An illustration of the ridge slope in relation to surrounding margins. (2016)

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7.4.1. INTERPRETATION OF SITE: ACTIVITIES

In Chapter 5 of the dissertation various programmes were suggested to suit the needs of the characters individually. In the overall scheme however the main activities are allocated in terms of resources found on the site (see Figure). The proposed structure acts as a mediator between the collection and distribution of resources. The design development is therefore intiated through the means of these activities and this mediation is what informs the development of the overall site plan in relation to the surrounding landscape.

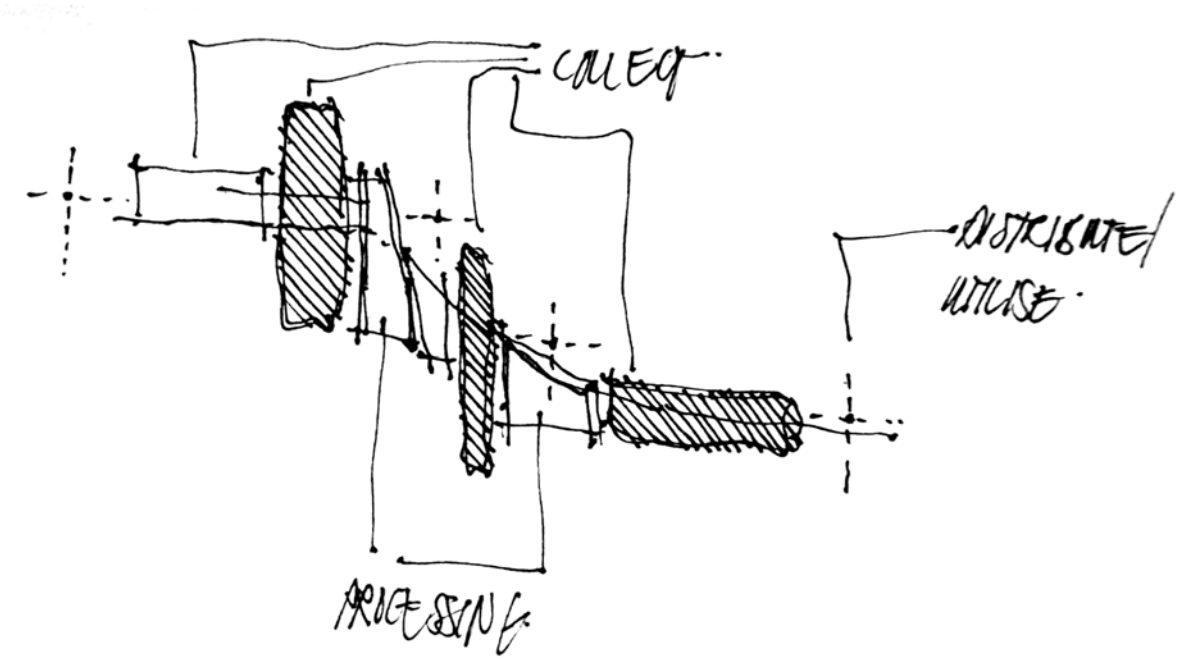

Figure 110: The mediation between landscape and building in section. (2016)

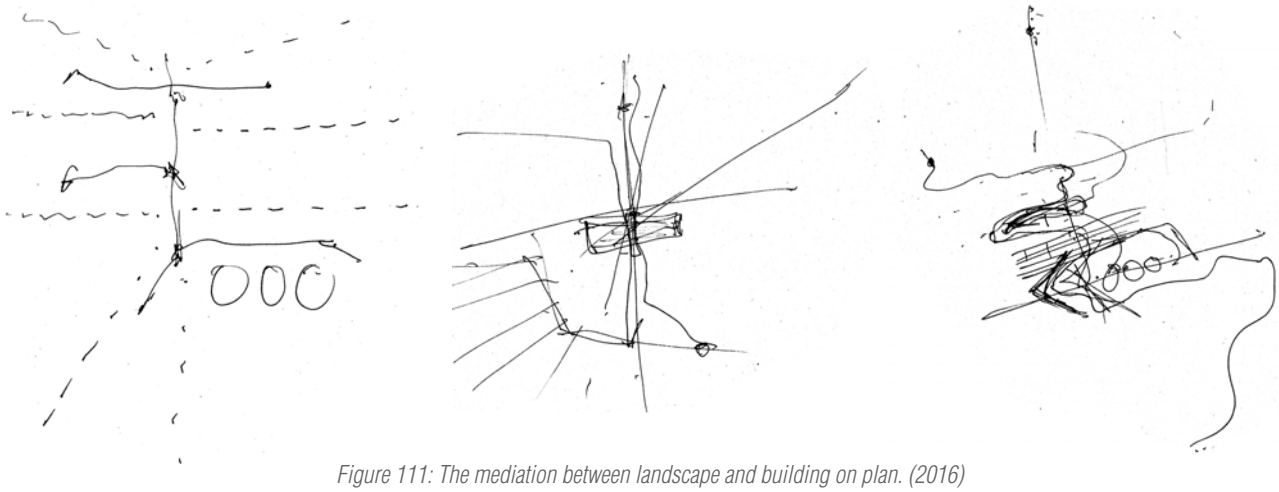

Figure 111: The mediation between landscape and building on plan. (2016)

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Figure 112: Found natural objects on the site of the ridge. (2016)

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The departure of 'seeking refuge' was initiated through the means of an abstract approach. In order to represent space through an alternative perception, one has to start with an alternative lens to 'seeing site/sight'. It was necessary during the initial design investigation to create abstract ideas on how to deal with different identities, functions and resources in the form of relationships. Although these do not relate directly to the development of the structure it is important to recognise the extent of the investigation.

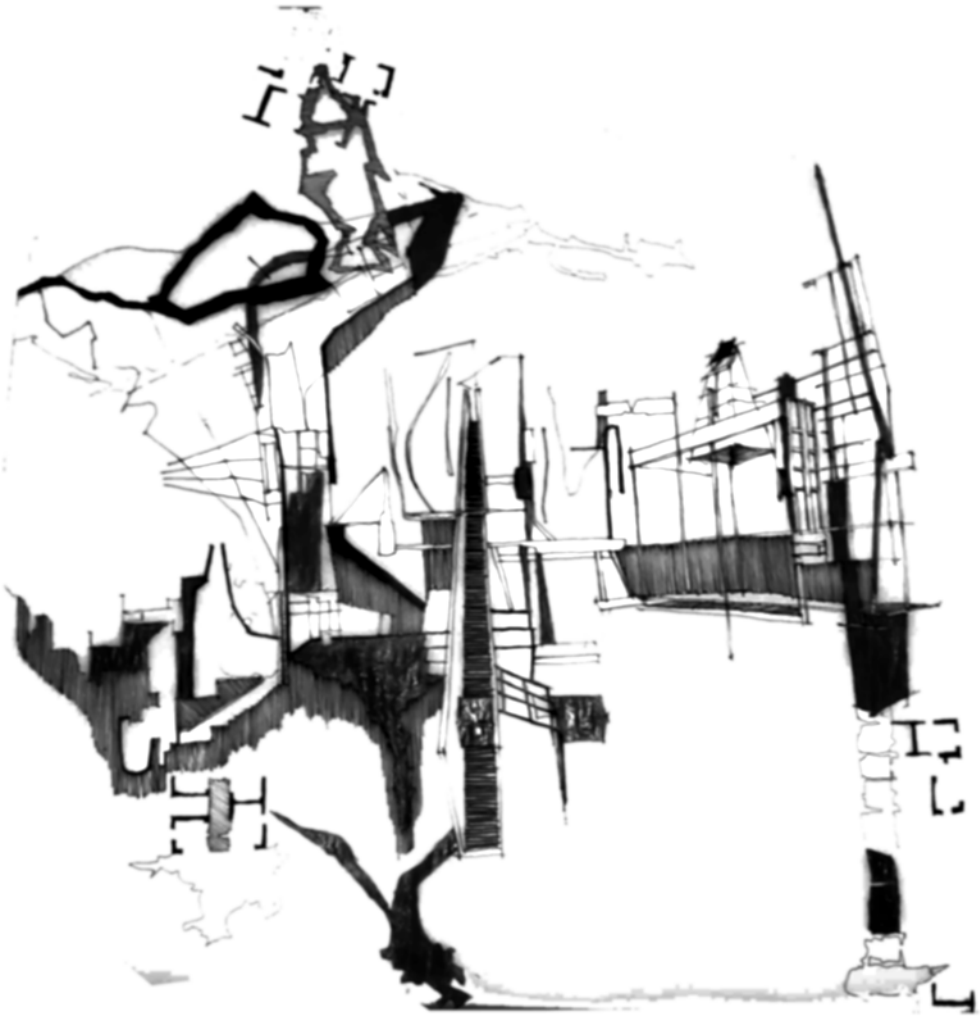

Figure 113: Perspective drawing of the amalgamation of underground and above ground. (2016)

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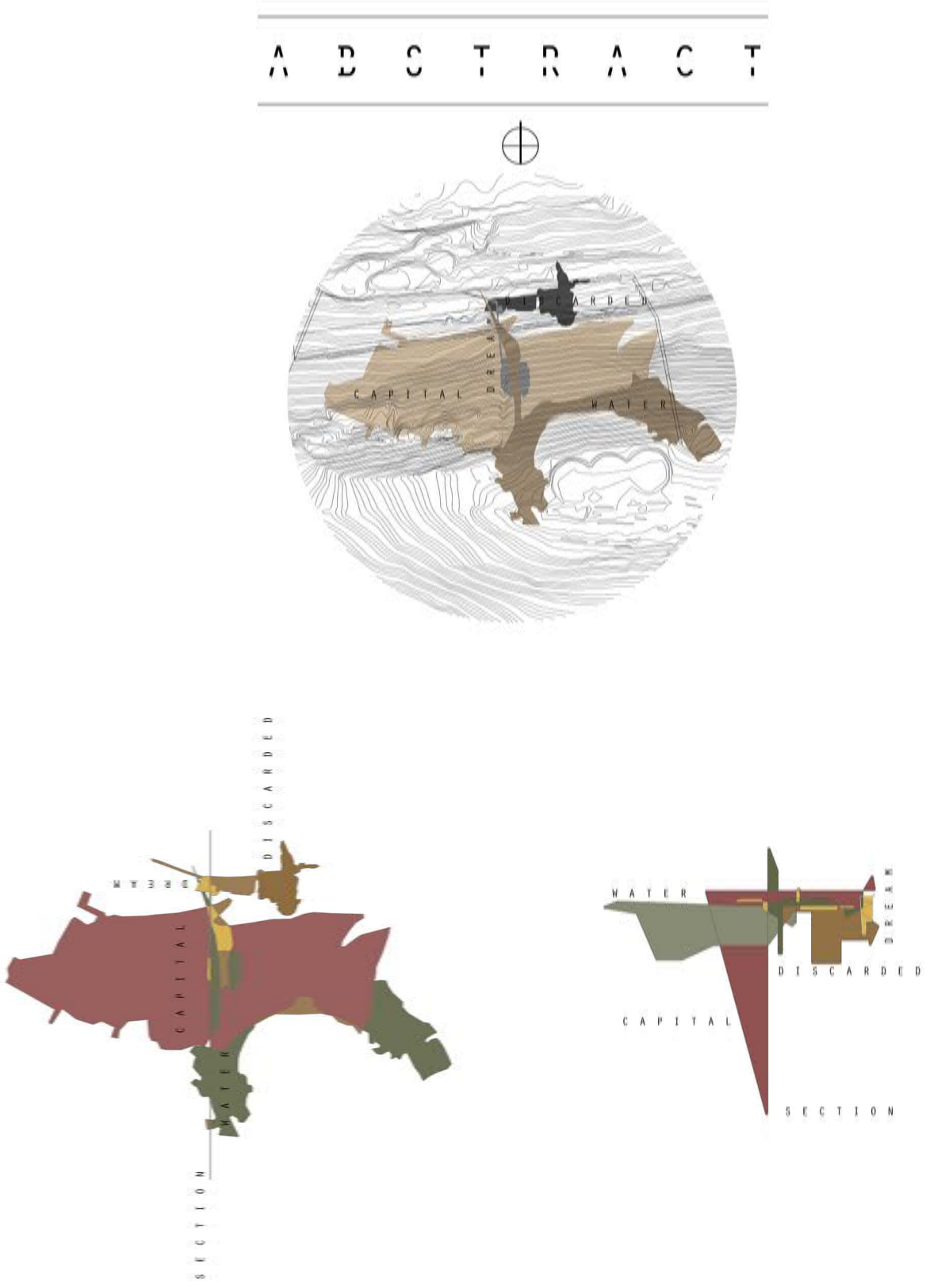

Figure 114: A series of abstracted zone diagrams with water, captal, dream and discarded and subjects. (2016)

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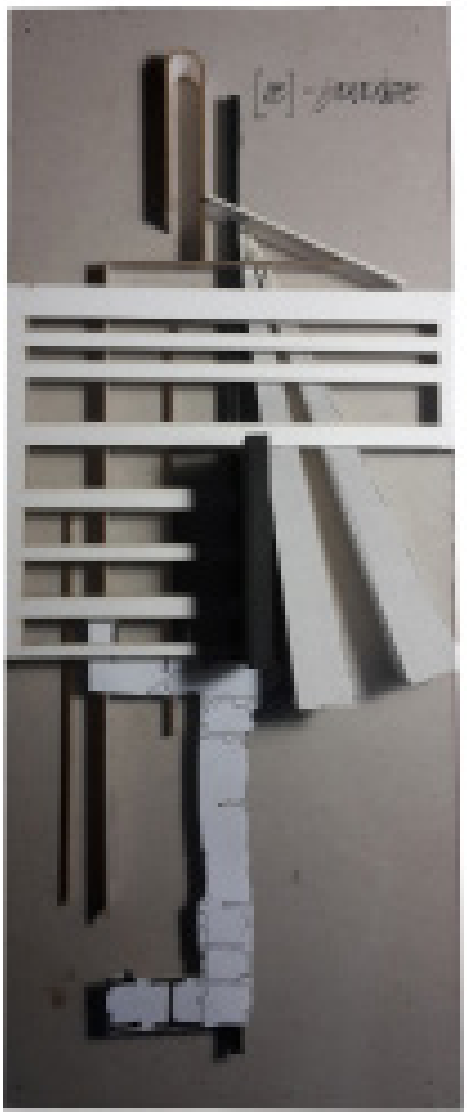
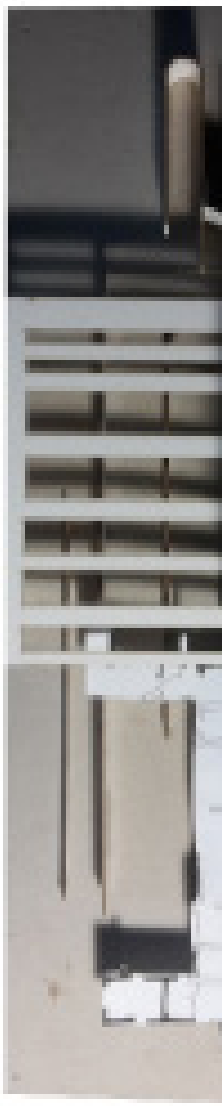
Figure 115: An initial sectional model with different representations illustrated in each image from left to right. (2016)



LATENT POTENTIAL

TRANSCEND BEYOND



DARK

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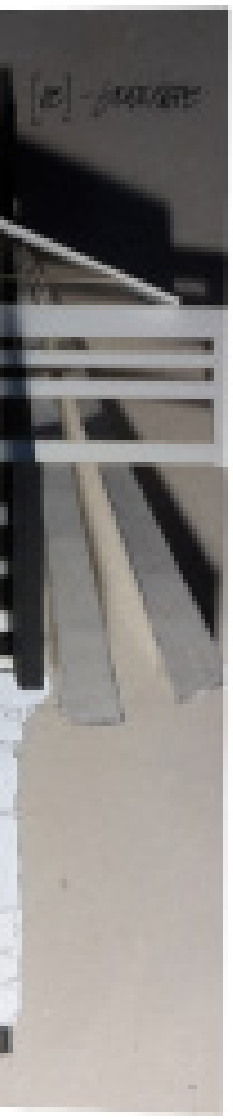
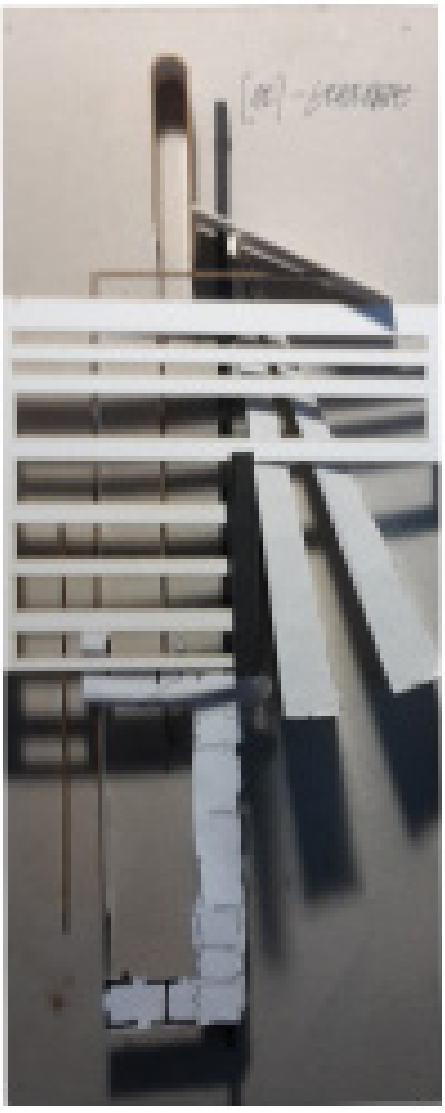
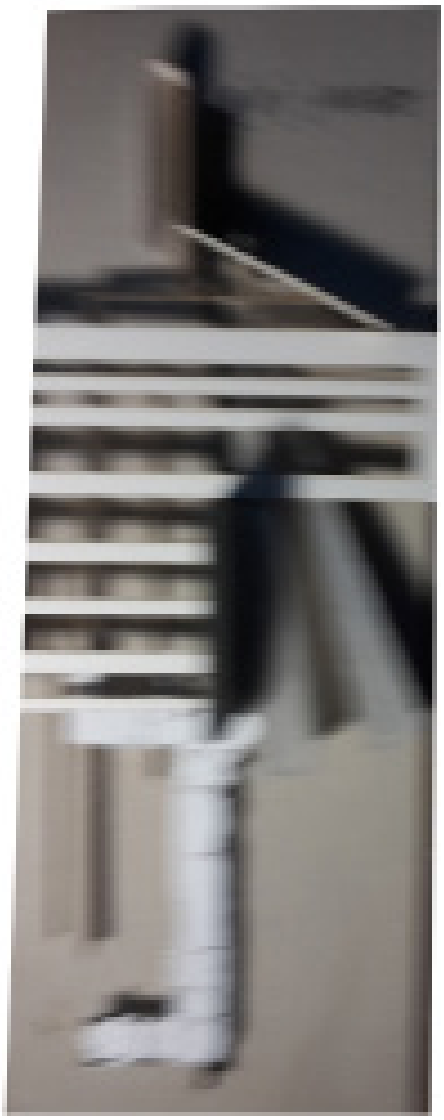


SKIES



DARK UNDERGROUND



BLURRING THE VISIBLE

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7.5. CONCEPT DEVELOPMENT

The image below aims to recap on what has already been mentioned in the dissertation. We are now dealing with the 'seeking refuge' phase of the document.

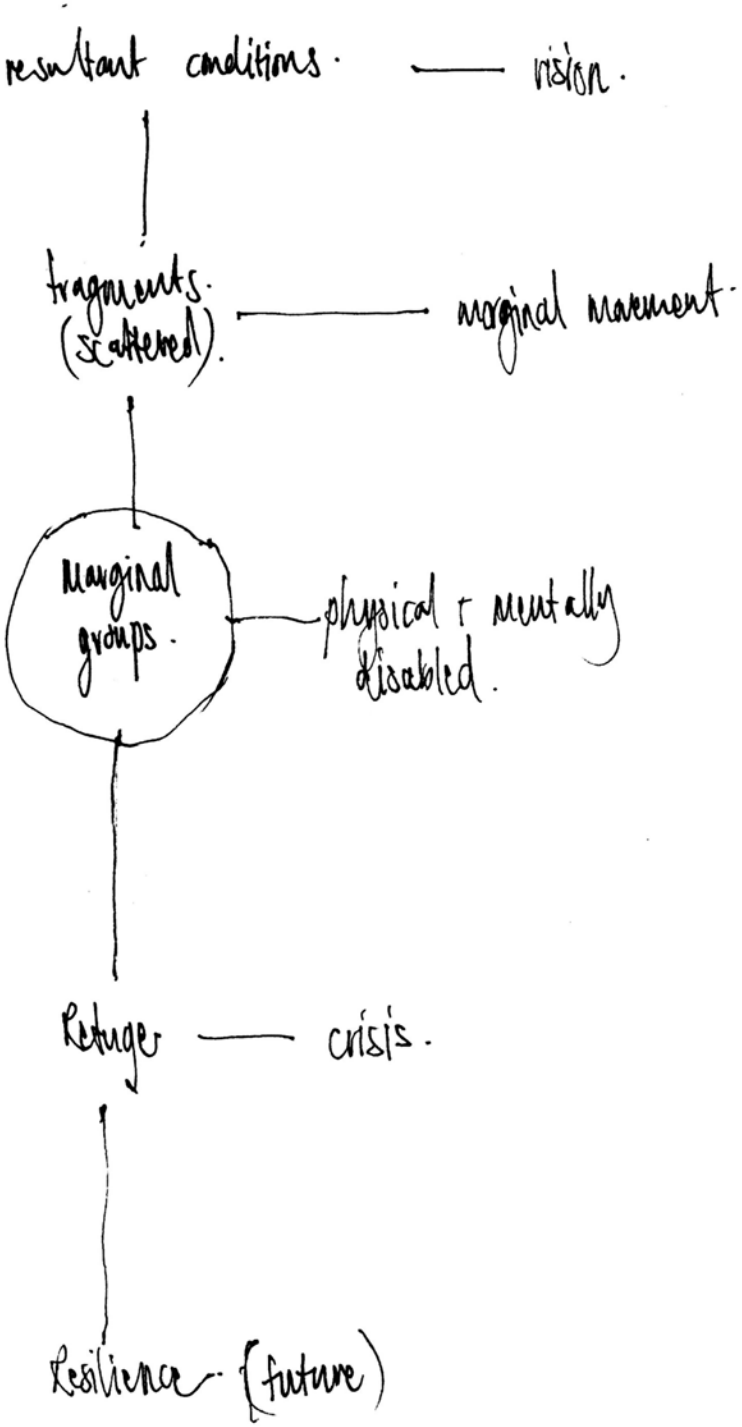

Figure 116: An illustration of the phases of development to ground the design concepts in theory. (2016)

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Figure 117: Design generators. (2016)

7.5.1. CONCEPT GENERATORS IN RELATION TO SITE

The concept of shelter aims to describe the protection of a group of people during a disaster. As has already been mentioned one of the architectural objectives is to create a robust structure that can withstand disaster. Shelter in another sense also means to hide away. This idea is pulled through into the design development by creating submerged spaces with some elevated elements.

The act of merging margins can already be acknowledged in the description of possible future scenarios where the marginal community can suggest new power relations in the rebuilding of the city. Another way of merging margins is through the act of mediation. The structure aims to mediate the landscape, the resources and the people inhabiting the spaces.

The concept of 'datum' can also be described as movement along a continuous line. This idea is represented in the movement of the plan from one function to the other as well as the movement of people throughout the proposed building. This will be illustrated later in the development of the sketch plans.

The concept of being hidden or isolated is already represented in the choice of site. As has been mentioned, the Langeberge Ridge functions as an isolated natural island between various zoned areas. This idea of isolation is also pulled through from the theoretical premise that the marginal community would be able to function on its own post-disaster.

The idea of resilience or sustenance can take many forms. In the context of this dissertation the meaning of these two words is represented in the environmental considerations of the scheme. Various resources are utilised to create energy and passive systems are implemented to reduce the use of electric energy. In the introduction of site in Part one it is indicated that the three reservoirs will be utilised as sources of water as well as energy. Other environmental systems will be discussed later in the technical chapter.

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7.5.2. DESIGN DEVELOPMENT FROM CONCEPTUAL GENERATORS

From the conceptual generators the following diagrams aim to illustrate a form of analysis of the slope (in section) in a way that the intentions are appropriate and relate to the initial architectural objectives of the dissertation. This also informs the rest of the design approach and development in various ways. As mentioned before, the act of excavating on a quartzite ridge could be quite costly. The aim here is to use the Econoslag crushing plant to produce concrete aggregate from the blasted quartzite in the cast in-situ components of the structure. Softer clay and sandstone excavations are used to fill the rooftops that function as green roofs.

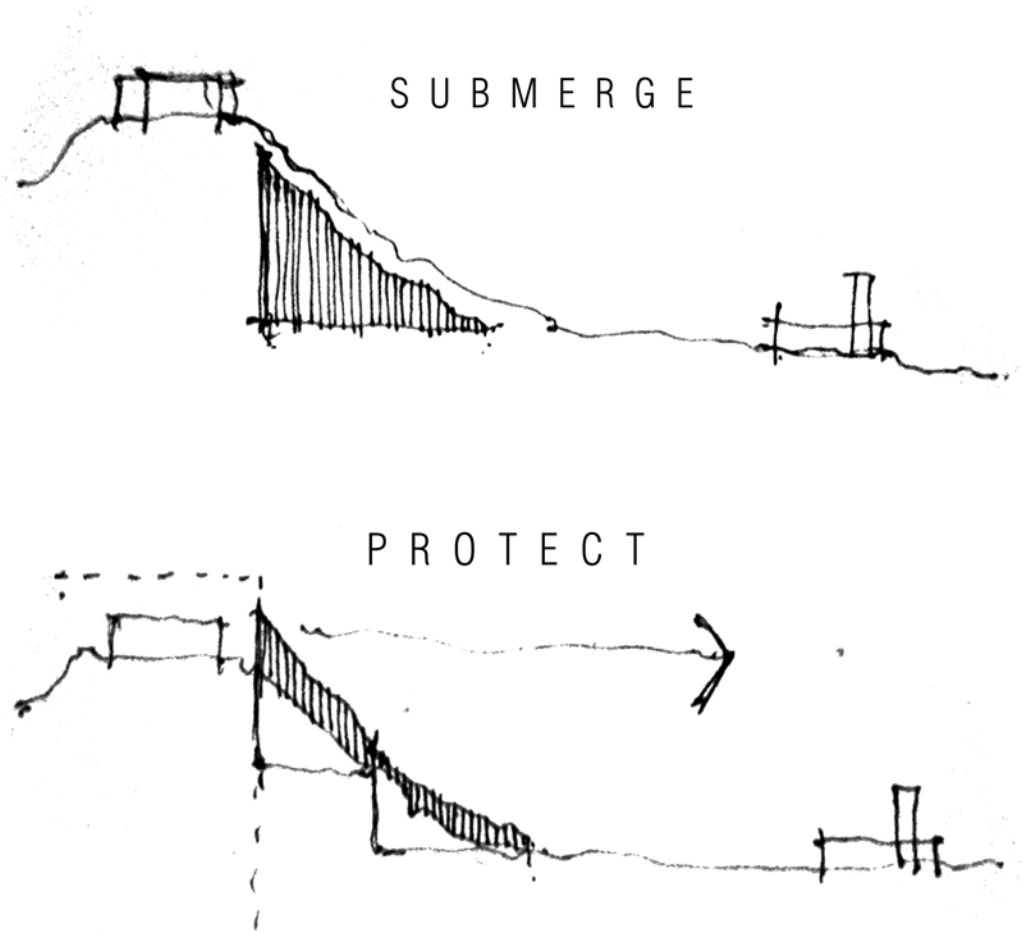

Figure 118: An illustration of the acts of submerging and elevation in a relationship to protect the marginal community from outsiders. (2016)

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The diagrams below illustrate the intention of the main structural intervention on the northern side of the ridge for observation purposes and to use daylight and other natural elements to the maximum. In the design development the building intends to create its own topography yet respect the original topography.

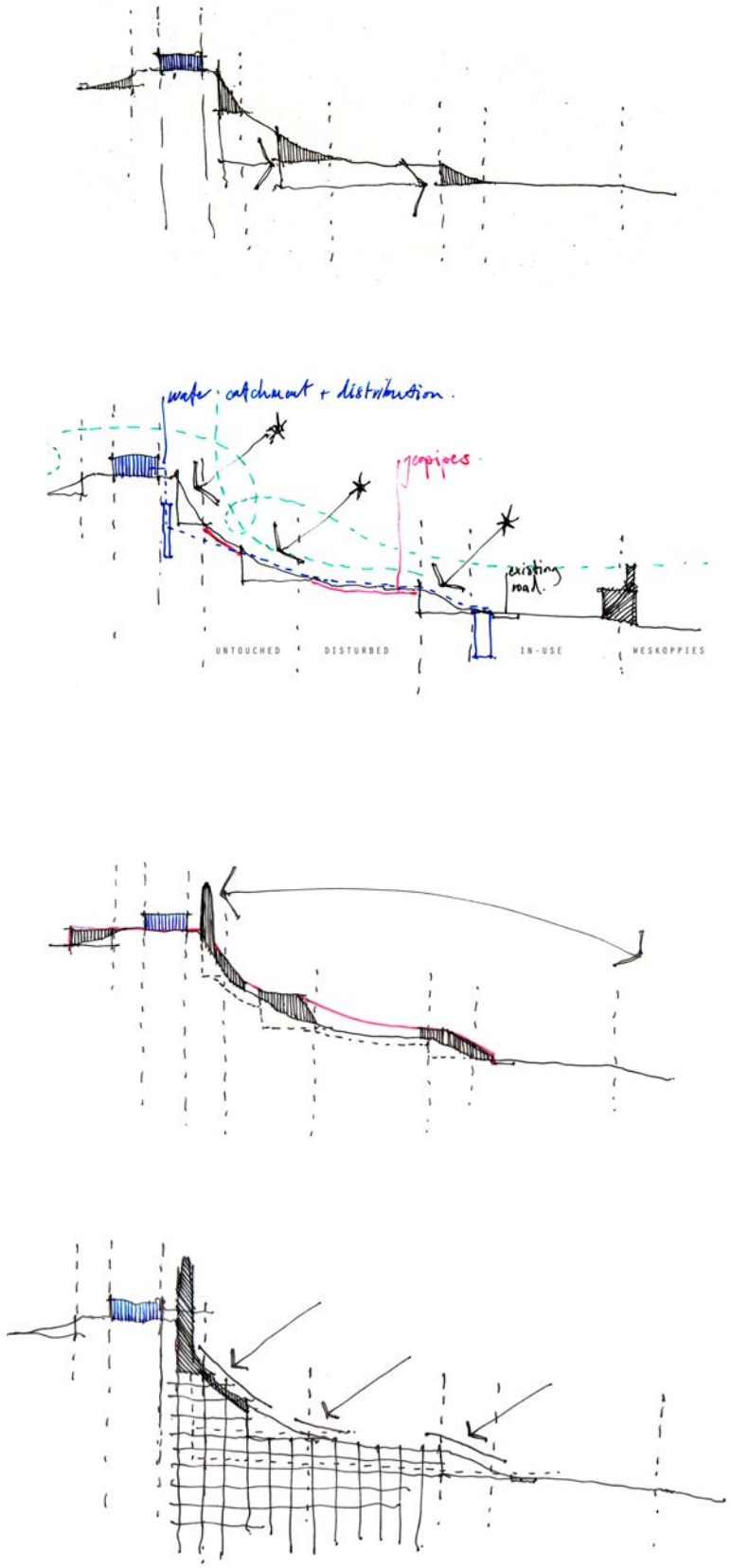

Figure 119: An analysis of the northern part of the ridge in section. (2016)

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I have alluded to the negative conditions of our time, to superannuated notions of inevitable progress that are as destructive as they are fallacious. In this regard I would like to suggest that critically resistant "regions," like "schools," have to be created. They are, in this sense, necessary myths, as any self-consciously created culture must be. Far from being merely an illusion, a myth can become a critical and creative force. (Frampton 1987: 380)

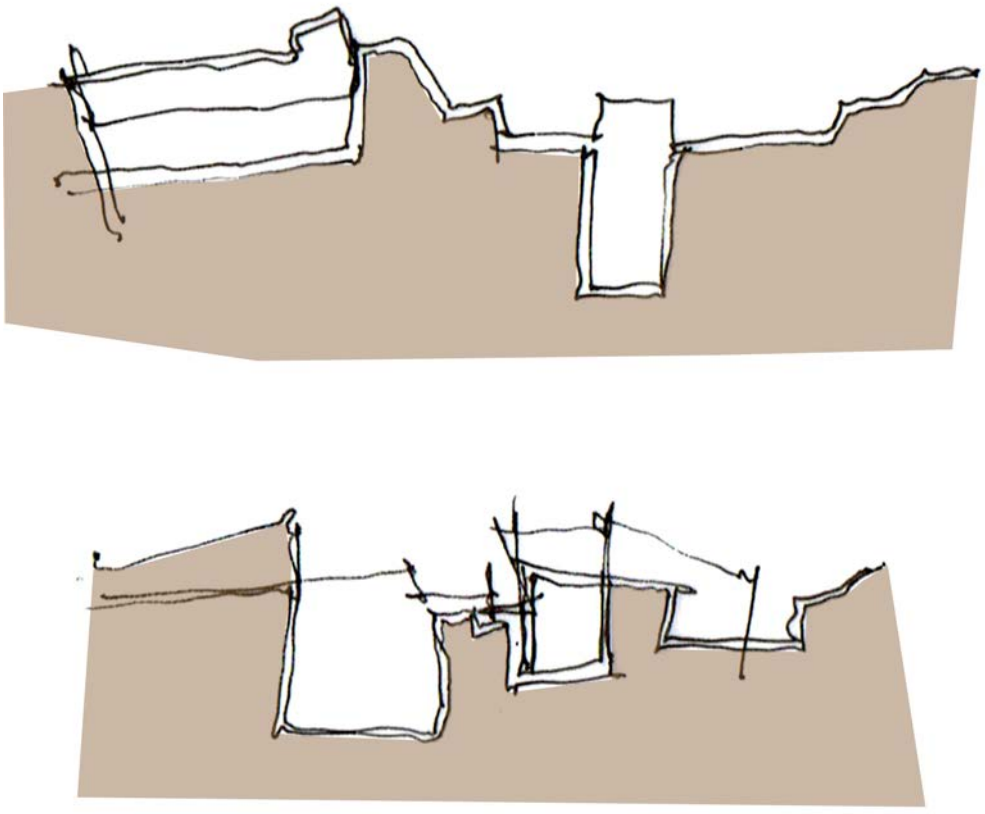

Figure 120: Indentation in the landscape to seek refuge. (2016)

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7.5.3. SPATIAL EXPLORATION

The creation of form is both ambiguous and dynamic in nature. The making of place is representational as mentioned in the theoretical discourse. The following spatial explorations aim to represent a mediation between earth and structure; underground and above ground; slope and sky; and protection and observation.

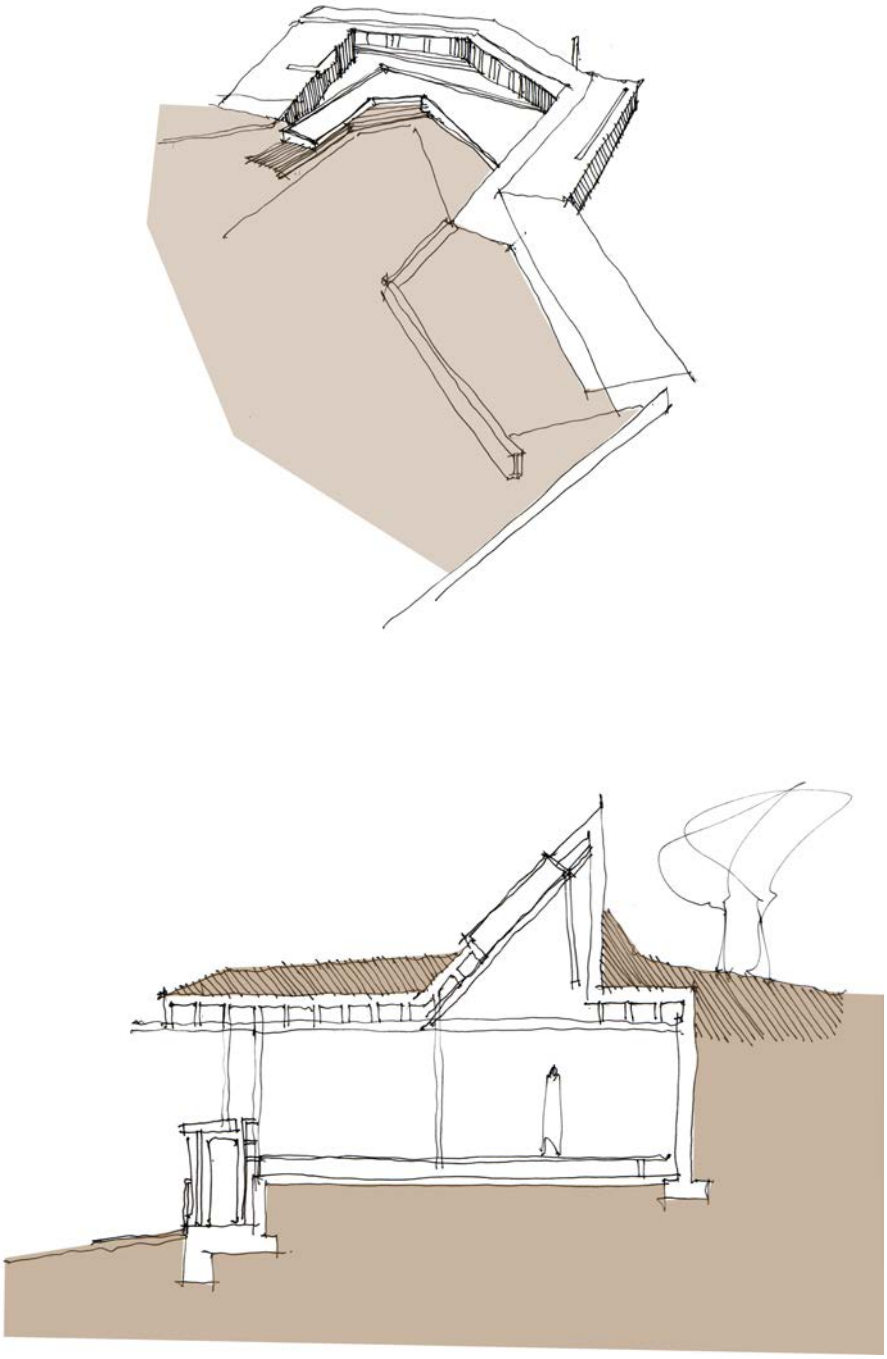

Figure 121: Indentation in the landscape to seek refuge. (2016)

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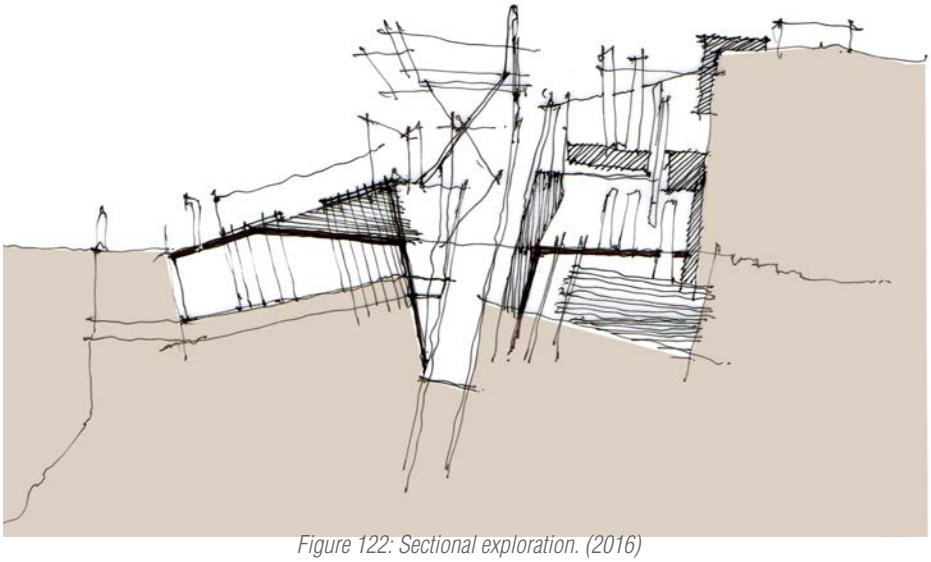

Figure 122: Sectional exploration. (2016)

Thresholds (vertical and horizontal) are intertwined in a diverse underground energy. These sections illustrate how the structure forms an identity within the slope of the site. With the water sources at the top of the ridge and during rainy seasons, a natural flow of water can occur - in some cases water is caught, filtered and stored in the proposed intervention, in other cases the structure allow the flow of water over the roofs of the structure and into constructed wetlands or designated agricultural areas.

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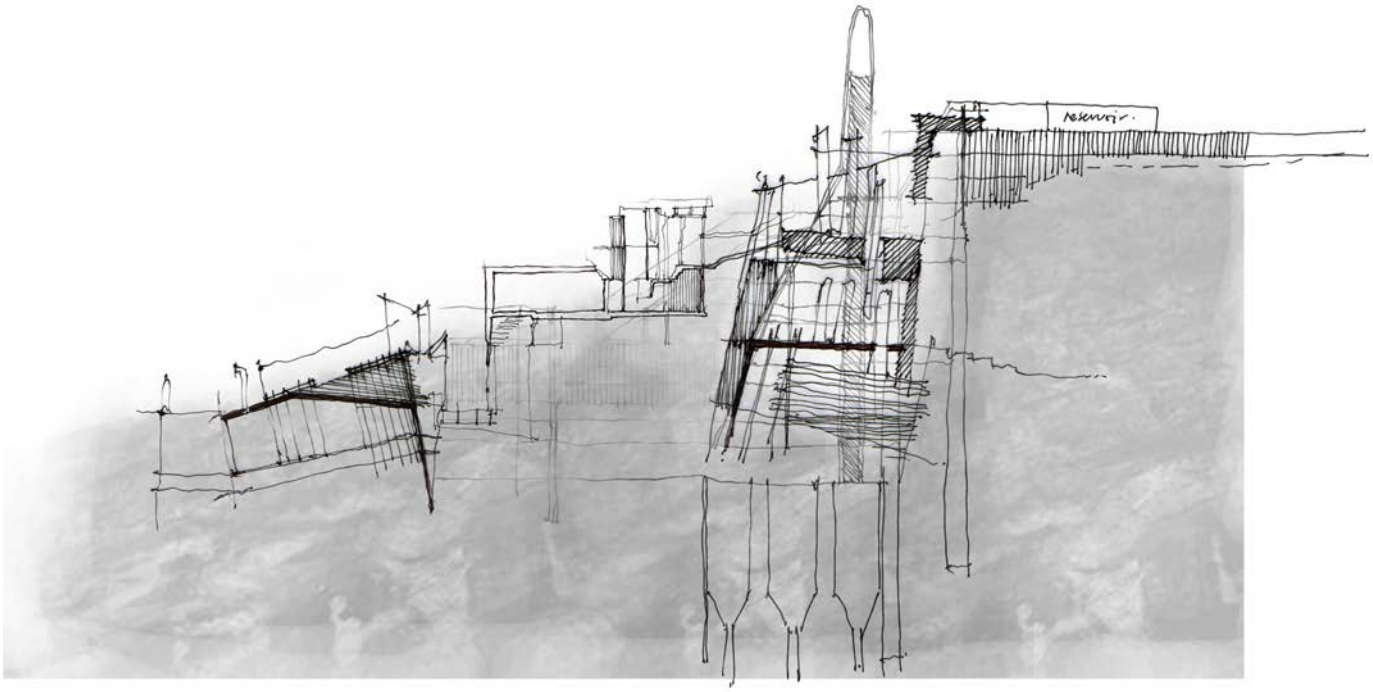

Figure 123: Sectional exploration. (2016)

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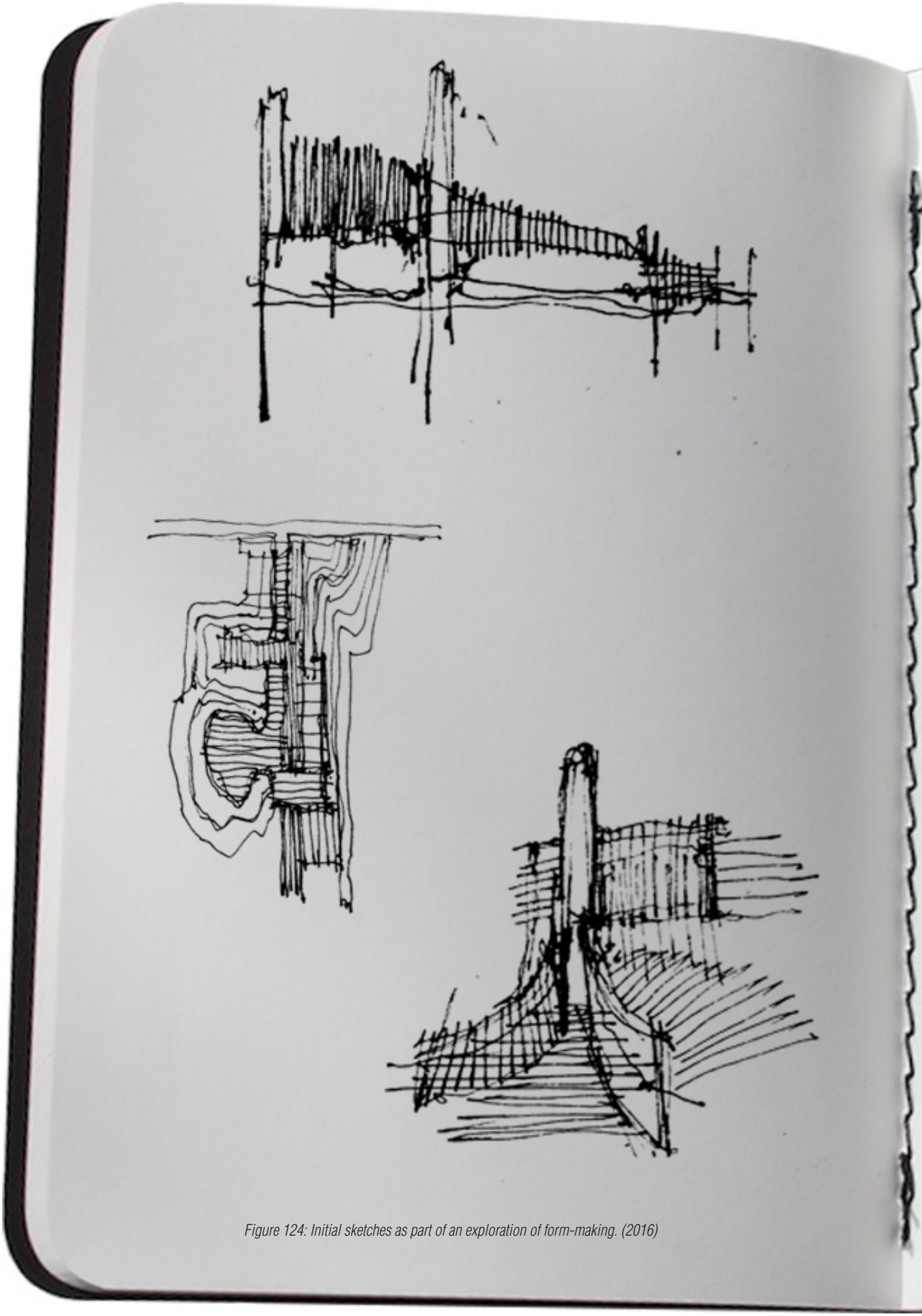

Figure 124: Initial sketches as part of an exploration of form-making. (2016)

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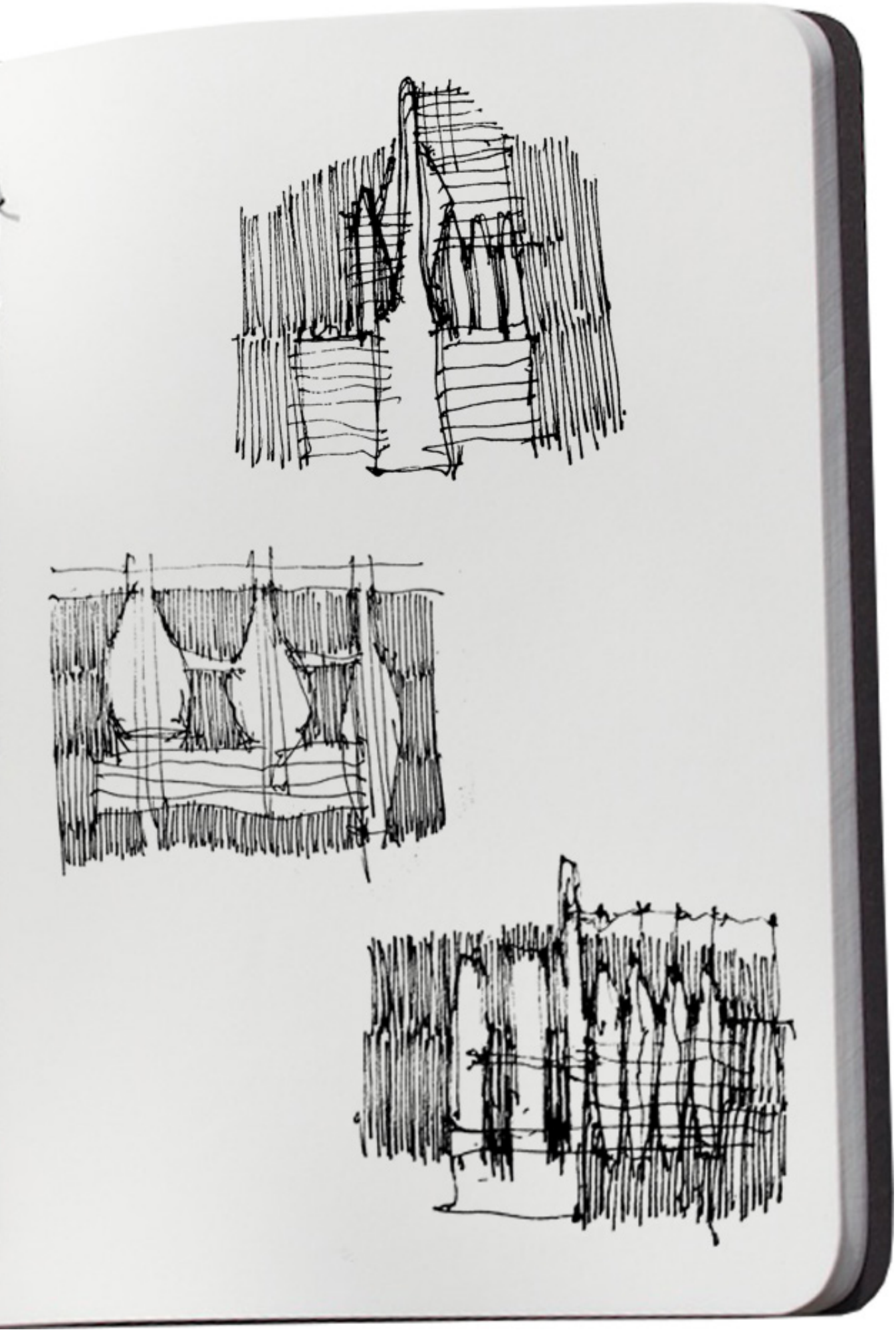

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NEGOTIATING THE MARGINS

7.6. DESIGN DEVELOPMENT

Pretoria's ridges were initially intended to act as buffer protection from the invasion of enemies, the reason for the planning of 8 forts around the city centre. Only 4 forts were realised, of which 2 are in excellent condition today. What if a pilot project could be introduced to complete the initial intentions of the fortification of the city?

Based on the existing marginalised condition, it is necessary that the architectural intervention inherit self-sustaining strategies in order to function independently after the act of disaster. The aim, structurally, is therefore to create a robust shell, with the ability to provide and preserve specific resources over time (seeds, plant and animal artefacts, water, agriculture and archival material).

As part of the narrative of the dissertation, the new architectural intervention has a few objectives. Firstly, to function as a fort-like structure in order to protect those in most need; secondly to become a starting point for communities to re-establish an identity by developing skills; and thirdly to become a self-sustaining sanctuary over time.

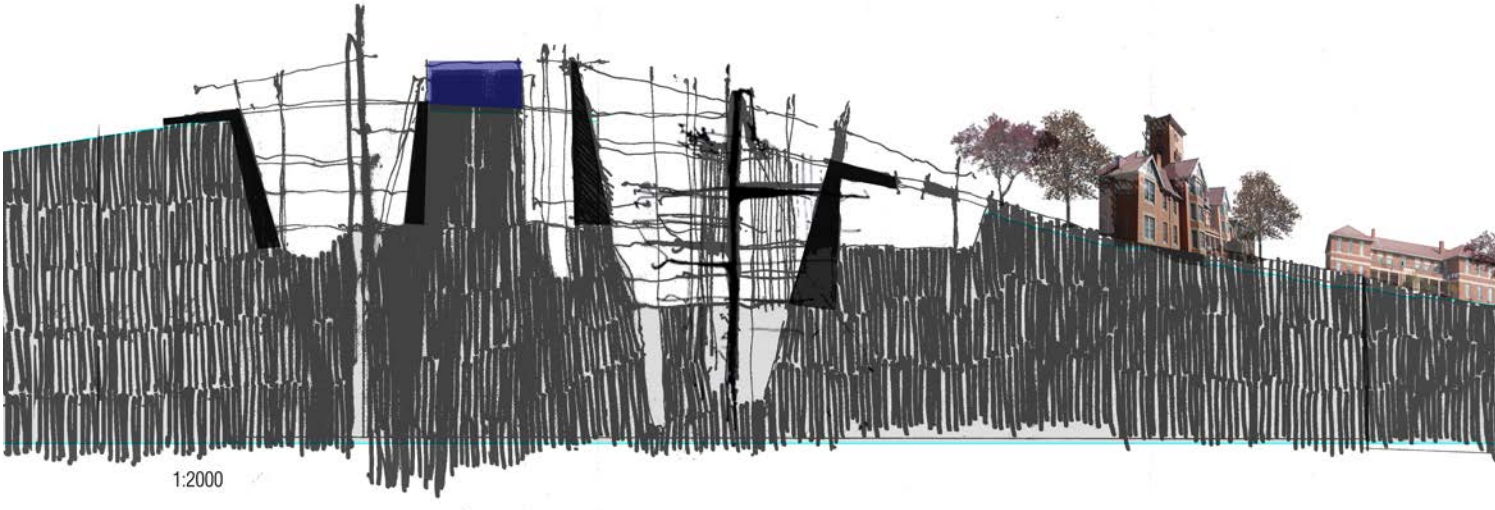

Figure 125: Conceptual section. (2016)

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Materials are largely based on excavated earth and stones reclaimed on site. For the robust shell, cast in-situ concrete is used, with some steel work for large spans and heights. All surfaces directly linked to the slope of the site, should emphasise the concept of camouflage and retain the agricultural value of the site - green roofs will be implemented here to assist with erosion and groundwater filtration. Furthermore, a collaborative concept exists throughout the structure. Some elements having to withstand destruction and others being able to adapt to the natural ecology of the site. The existing reservoirs at the height of the slope are utilised for rainwater harvesting, alternative energy strategies as well as creating synthetic environments for food sources such as fish and water-plant life, in order to sustain the community in future.

As part of the concept of refuge, the architectural intervention aims to facilitate the need for shelter and protection while developing the skills and potential of the marginal community. As mentioned before, the ecological heritage of the site pertains to the historical location of the original botanical gardens of Pretoria. As a result, the value of ecology is of great importance. Therefore, the aim of the structural intervention is to impact minimally on the surface while value is added to the environmental potential of the site. The building is subterranean with some elevated elements - this is based on the concept of surveillance, observation and perception throughout the site. Daylighting, waterproofing, temperature fluctuation and soil erosion is therefore critical during technification.

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7.6.1. THE CONCEPT OF UNDERGROUND

Underground structures have been used widely in a range of conditions throughout history to meet specific needs. Some of these needs can be summarised as follows:

1. To achieve a moderate ambient indoor climate in regions with stressed climates such as dry and cold or dry and hot.
2. To meet religious ceremonial needs.
3. To meet defense needs.
4. To save agricultural land.
5. As storage space for agricultural products (especially wheat).
6. As civilian shelters against air attacks.
7. For educational purposes.

(Carmody 1985)

It can be argued that many of the above mentioned needs are practical alternatives for human shelter if the nature of the environment allows for the creation of such spaces. In the context of this dissertation the main purpose of utilising the 'underground' is for protection and simultaneously the creation of a moderate indoor climate which will be discussed in the technical chapter.

Figure 126: Types of earth shelter design. (2016)

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A prime example of a civilisation who relied on their specific environment for survival and shelter is that of Cappadocia.

7.6.2. CAPPADOCIA, TURKEY: UNDERGROUND SETTLEMENTS

In Cappadocia, Turkey, two subterranean cities exist today - Derinkuyu and Kaymakli - which are still inhabited by the settlers in these areas. Some of the first settlements comprised of communal dwellings cut out of the rock of the hillsides (Carmody 1985:). After several invasions, the original settlers were forced in self-defence to develop the underground system extensively. These settlements are a significant example of how man has to adapt to his natural context in order to survive. The communities grew grapes and other fruits and vegetables and utilised underground spaces for storage of food.

One of the main responses of the creation of the subterranean spaces was the scarcity of good timber and materials for mortar but for the protection of inhabitants against invaders (Ahrens, et.al. 1981:15). The relevance of this underground community as precedent does not necessarily relate to form, instead it relates to the creation of a community which had to adapt for protection of the inhabitants.

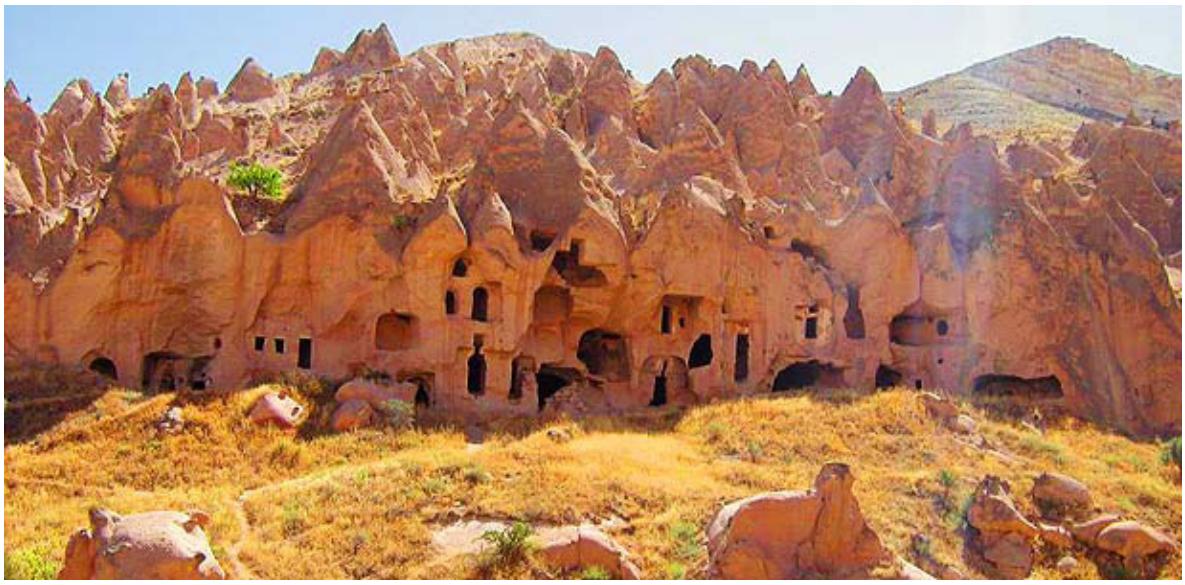

Figure 127: A photograph of the Monks Valley in Cappadocia, Turkey. (North Cappadocia tour [sa])

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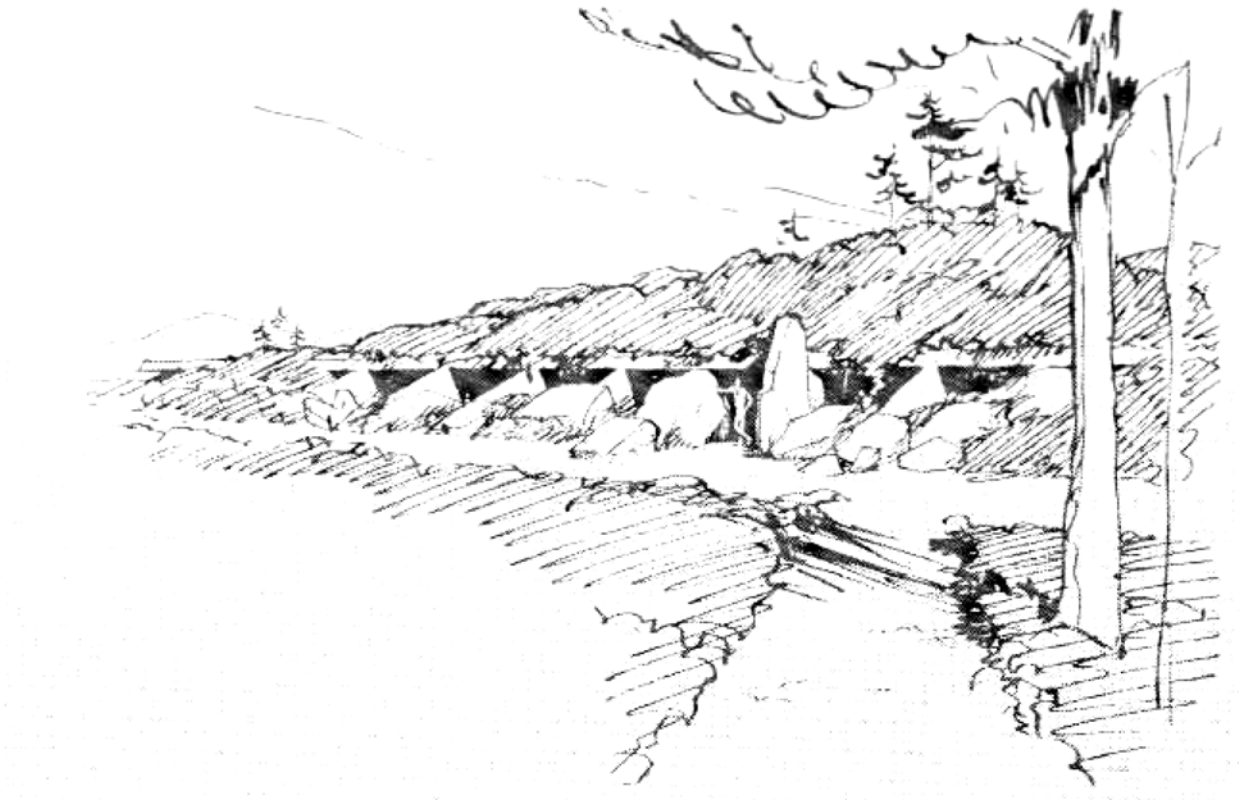

Figure 128: Underground living. (Ahrens, et.al. 1981:8)

With the collaboration of the University of Minnesota and the Underground Space Center, during the 1980's a rapid popularity developed for underground or earth sheltered design. The reason for the exploration into this architectural 'style' was mainly based on the consumption of energy. With the rising cost of fossil fuels, the evolution of earth sheltered architecture introduced alternative ways of dealing with active and passive strategies. Although it is suggested that a typical house design on the surface can use active and passive solar strategies as well as insulation to achieve appropriate energy performances, earth sheltered design have additional advantages (Ahrens, et.al. 1981:9).

The advantages are listed below:

- A moderate climate is achieved.

- The surrounding earth dampens noise from the outside.

- The masonry or concrete used for structural purposes are rot- and vermin-proof.

- The masonry or concrete is fire-resistant.

- The underground structures are less damaged by natural storms and other disastrous occurrences.

- An attractive landscape or view can be preserved while allowing access to natural light.

- The concept of working with nature as part of the design.

- Forms of earth sheltered designs tend to compliment and duplicate forms found in nature.

(Ahrens, et.al. 1981:9)

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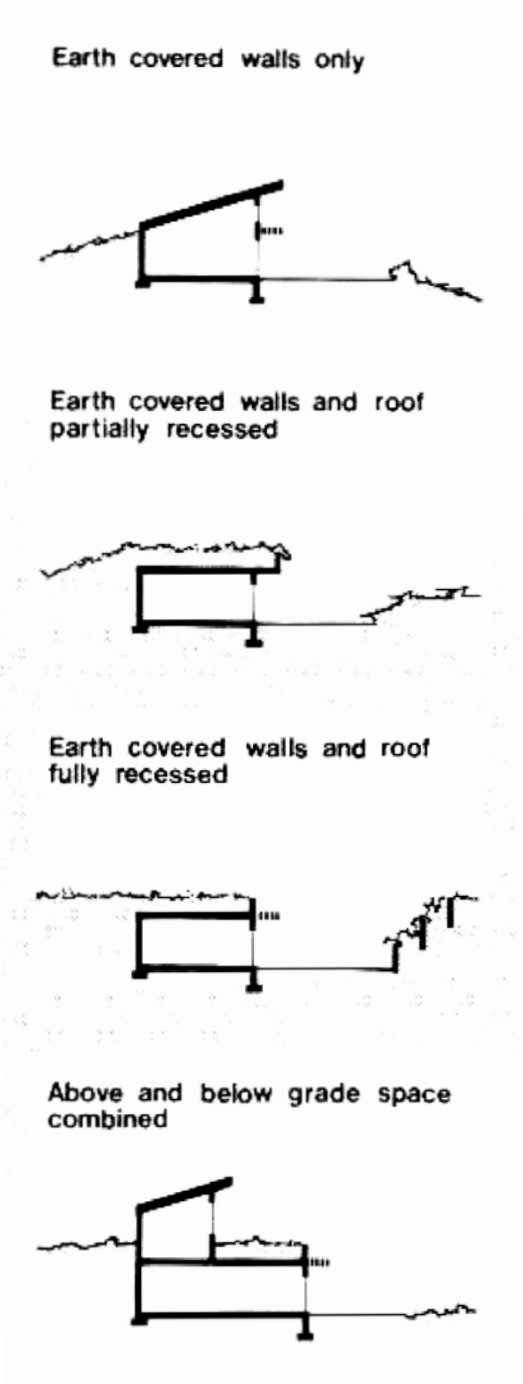

Figure 129: Various relationships to the surface. (Ahrens, et.al. 1981:12)

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7.7. SPATIAL DEVELOPMENT

Based on the complex nature of the programmes introduced earlier, an ambiguous system had to be developed to tie the different functions together to form a symbiotic relationship and a flow of movement - between people, nature and resources.

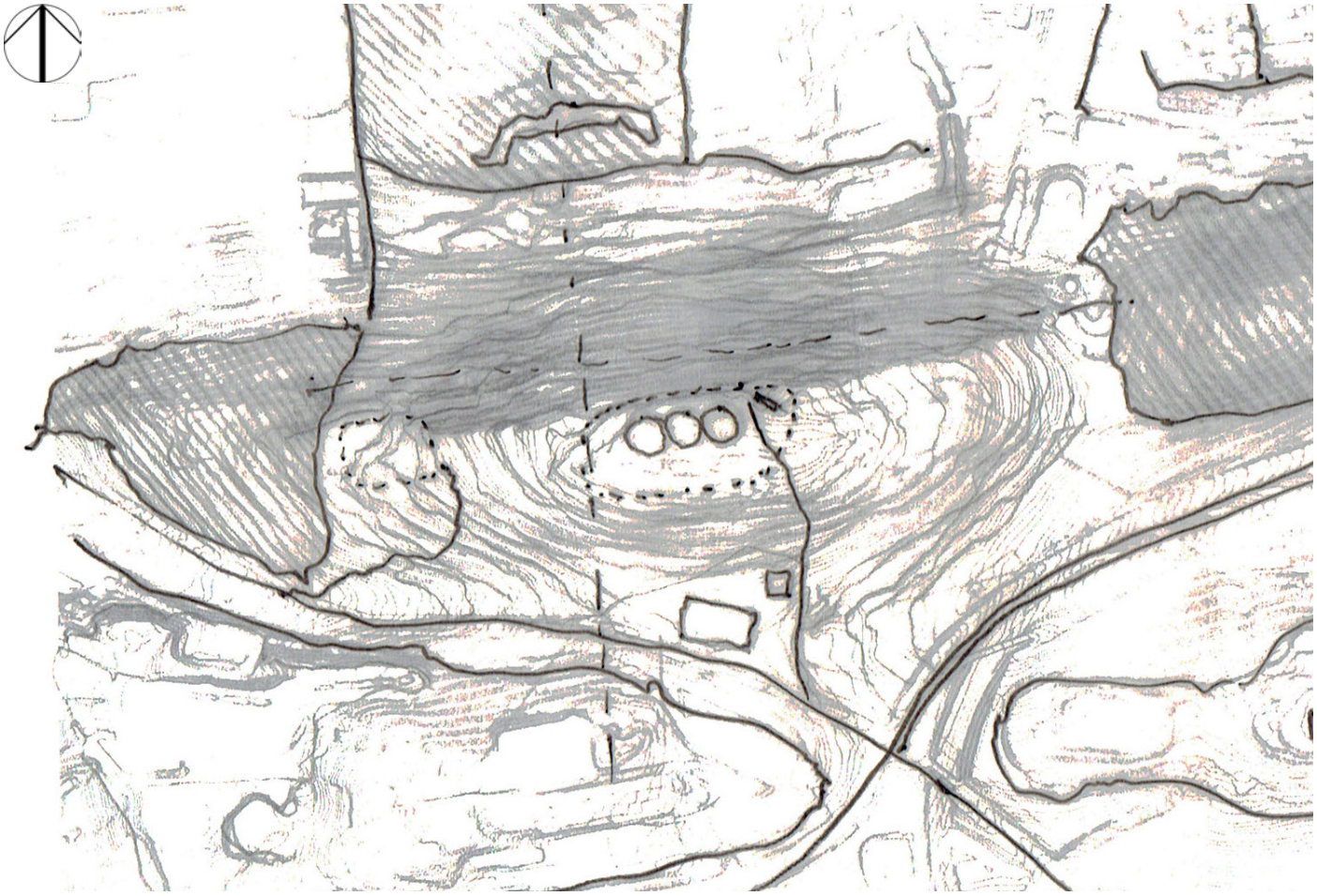

Figure 130: A drawing of the site on plan to illustrate the nature of the ridge in its context. (2016)

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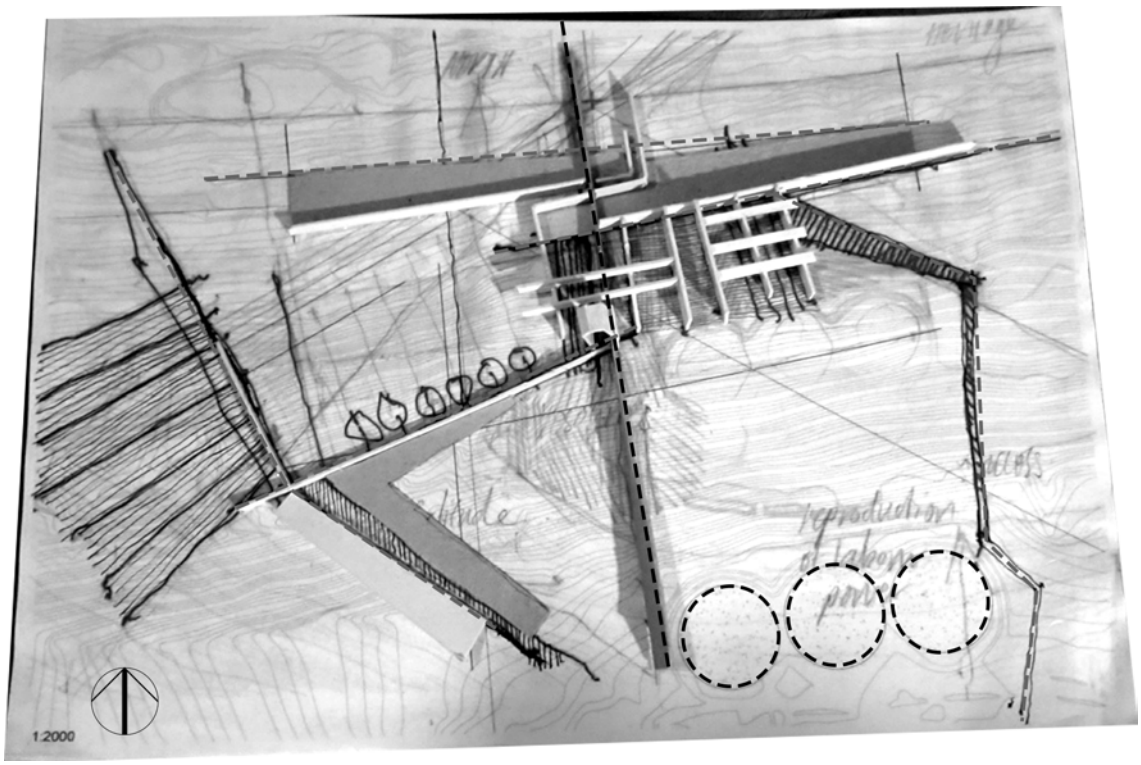

Figure 131: Site exploration by means of a model. (2016)

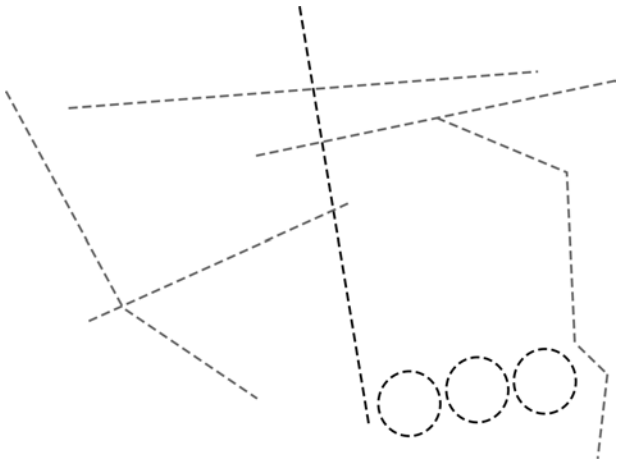

Figure 132: Delineation of lines created by model exploration. (2016)

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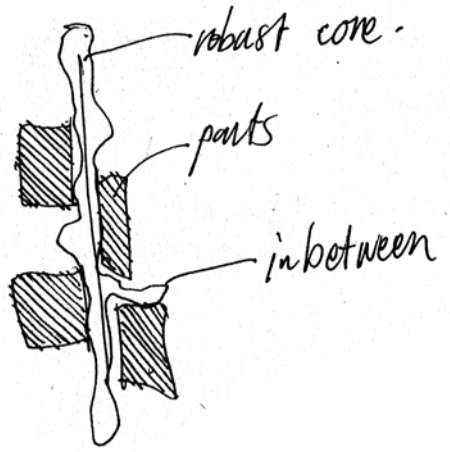

Figure 133: An diagrammatic drawing to illustrate the concept of a robust core, parts and the inbetween. (2016)

During the initial design development of the plan layout, an integrated concept was adopted so that the structure forms a robust core for the different functions/parts to latch onto and the inbetween spaces represented the flow of movement. A few explorations were conducted to recreate the concept on plan which lead to the first design iteration of representational space.

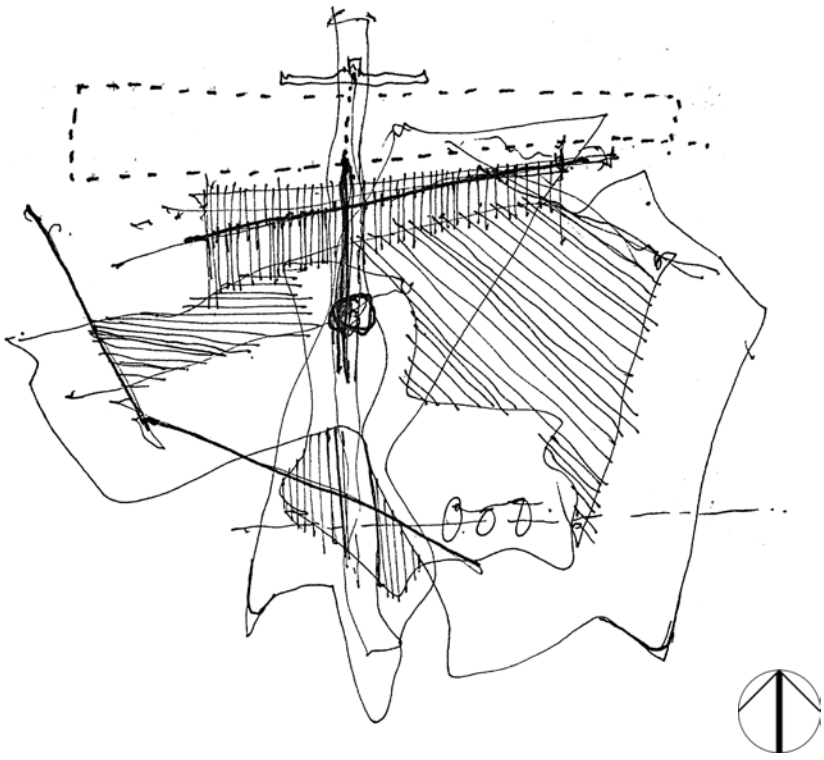

Figure 134: Site vision drawing. (2016)

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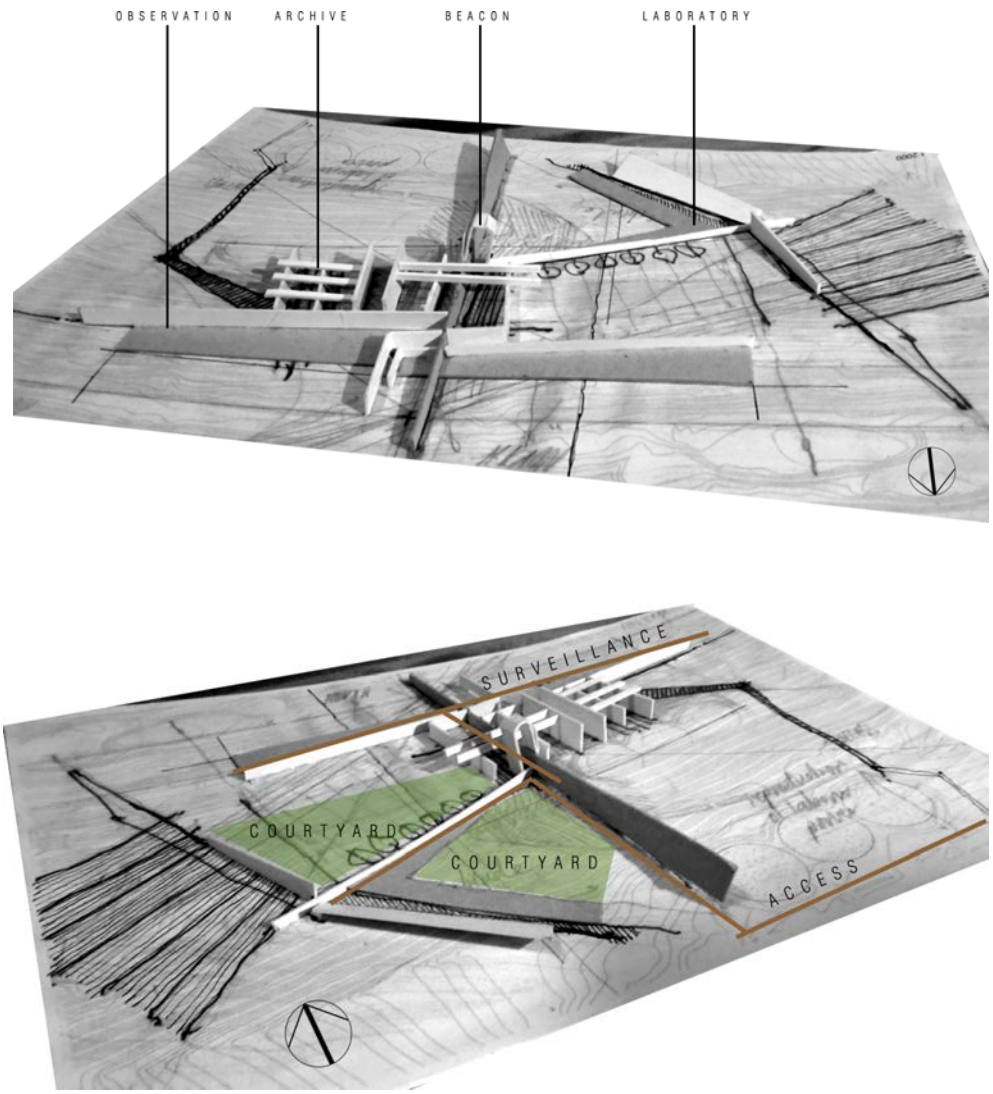

Figure 135: Model explorations of an integral system. (2016)

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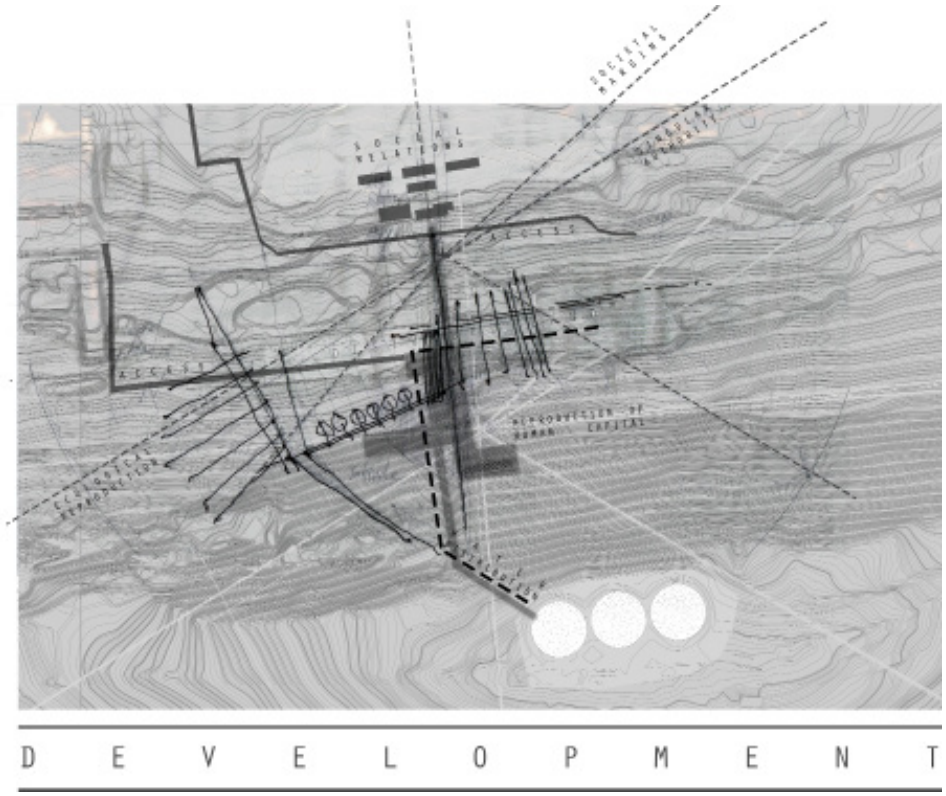

Figure 137: Site development. (2016)

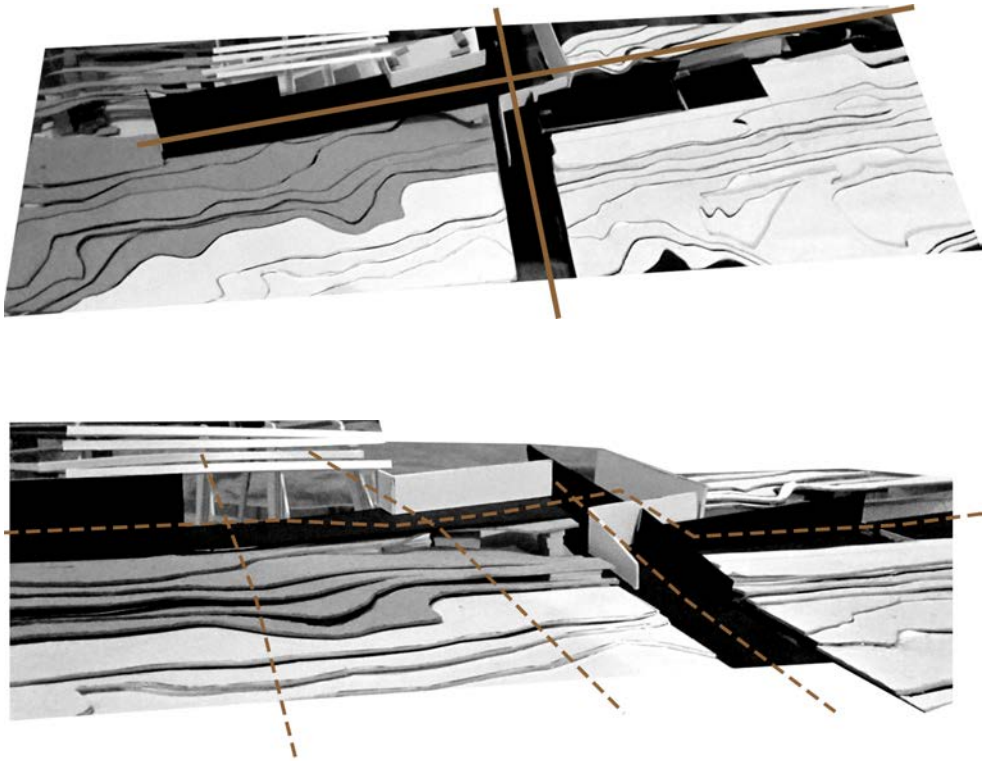

Figure 138: Submerging into the topography, model. (2016)

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7.7.1. DESIGN ITERATION 1

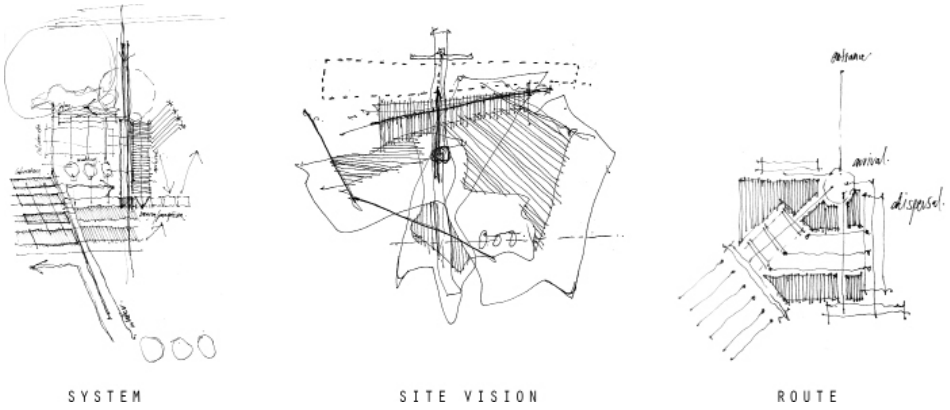

Figure 139: System, site vision and route drawings. (2016)

The first design iteration aimed at focusing on how the functions form an integral system. As part of a critical reflection, it seemed as though the connections between spaces were quite superficial. Even though the spatial system was informed by various conceptual generators (functions, resources) the representations of spaces based on the different identities were overpowering the system and did not form a cohesive environment with the landscape. The structure rather formed as an object on the slope of the ridge instead of shaping the ridge in a natural manner. The following drawings are illustrations of the first design iteration.

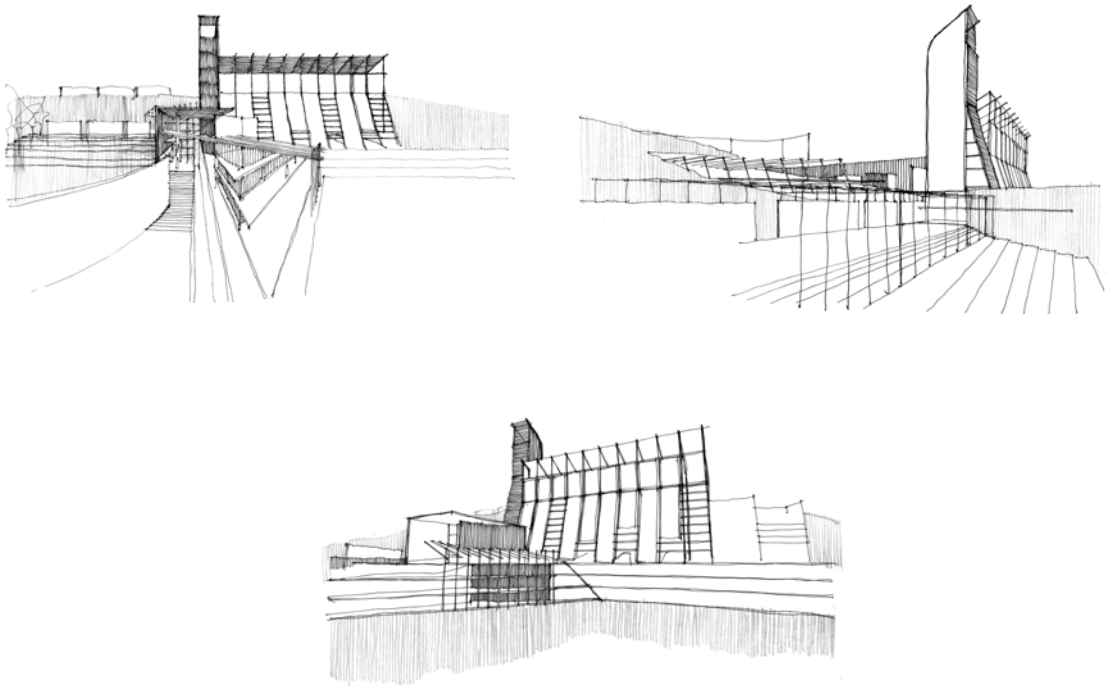

Figure 140: Design iteration 1 drawings. (2016)

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7.7.2. DESIGN ITERATION 2

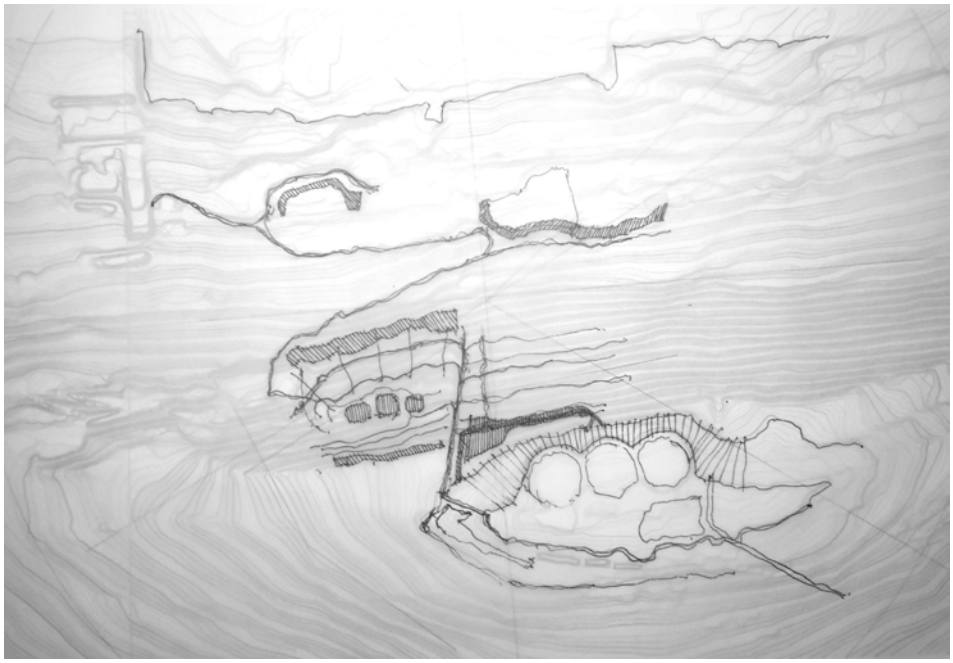

Figure 141: Development of site layout during design iteration two. (2016)

The second design iteration focused primarily on the relationship between landscape and the movement through landscape. Informed by the spatial layouts of Pretoria's forts this iteration moved closer to the existing reservoirs so as to surround and protect this resource. This decision also enabled the layout to extend to the eastern part of the reservoirs, linking to the existing pumphouse and simultaneously creating a linear extension for observation. The flow of this spatial layout reacts more sensitively to the topography of the site by using the contours as an informant of movement. The layout also considers the distance of the movement of water from the reservoirs to the proposed structure. In the preparation phase before the disaster takes place, some of the reservoir water is pumped into underground tanks as a precaution, to be used immediately after the disaster takes place.

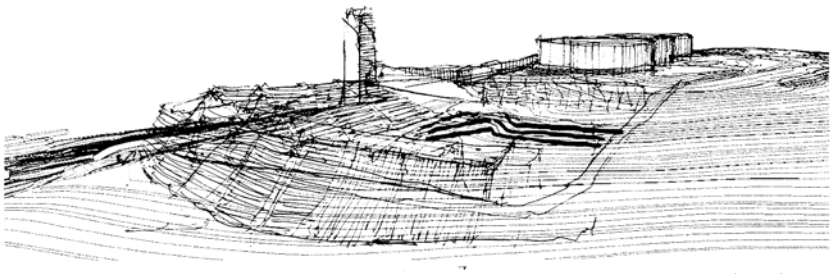

Figure 142: Three dimensional drawing of the potentials of design iteration two. (2016)

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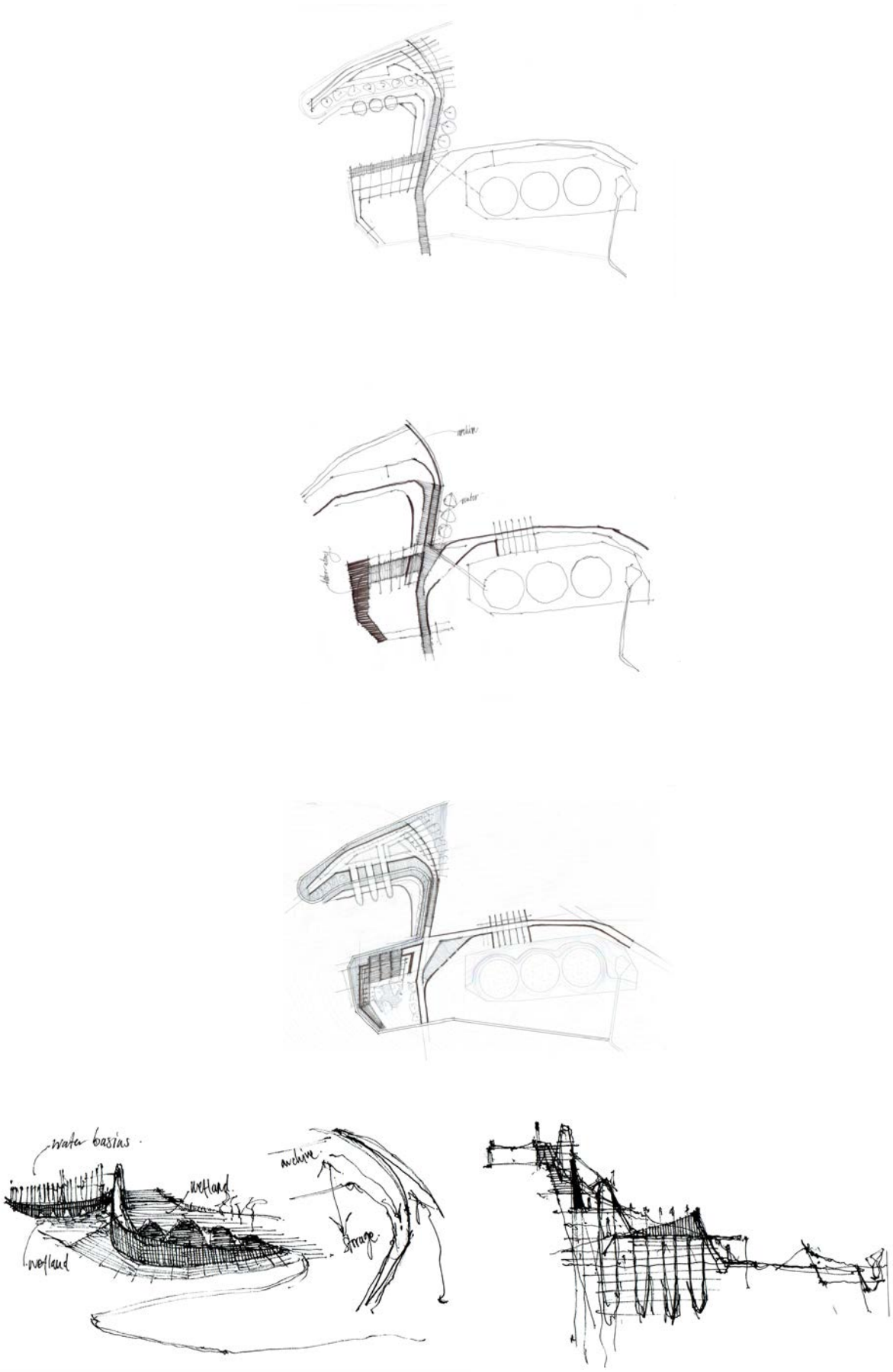

Figure 143: Exploration drawings of site layout and form of design iteration two. (2016)

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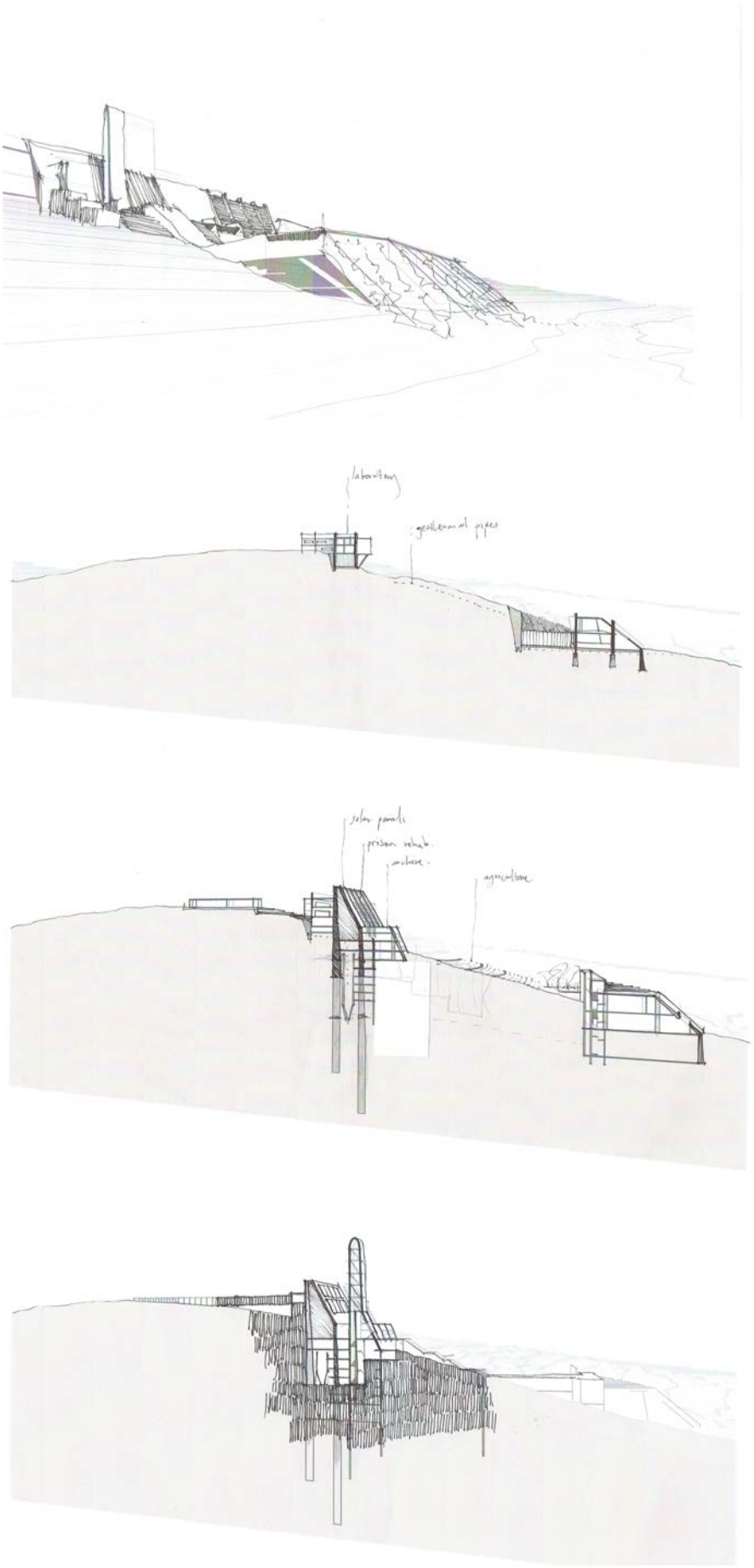

Figure 144: 3-dimensional and sectional explorations of design iteration two. (2016)

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The design iteration also focused on environmental considerations. The following three-dimensional sections aim to illustrate how these factors were considered throughout the structure. Most of these considerations are pulled through into the final design development yet are resolved more sensitively in the development of sections.

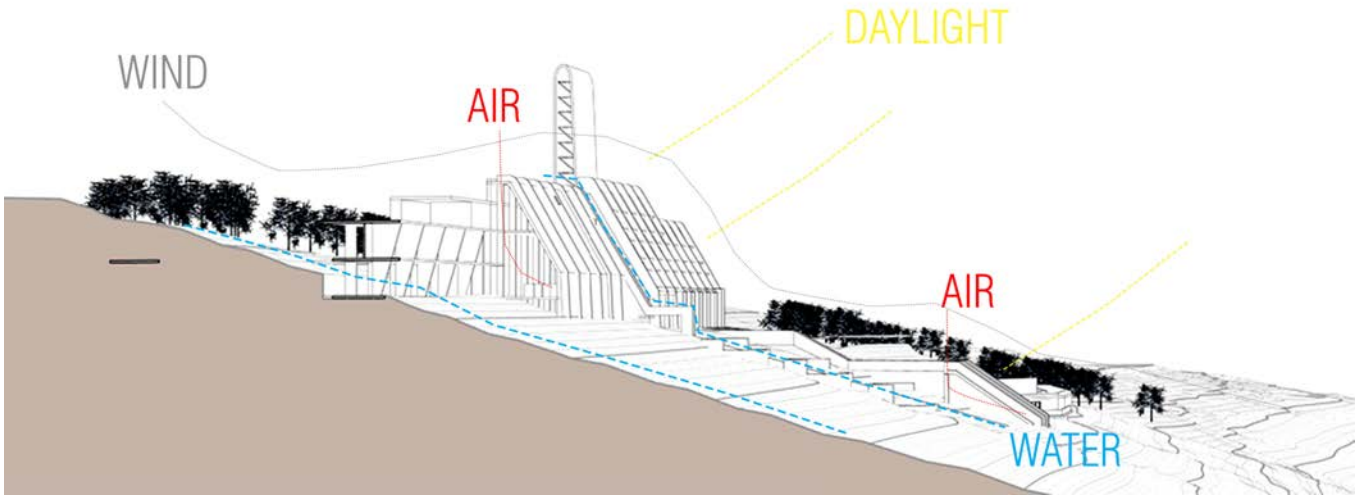

Figure 145: Sectional 3D illustrating environmental strategies. (2016)

Figure 146: Sectional 3D illustrating environmental strategies. (2016)

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Figure 147: Site layout of design iteration 2. (2016)

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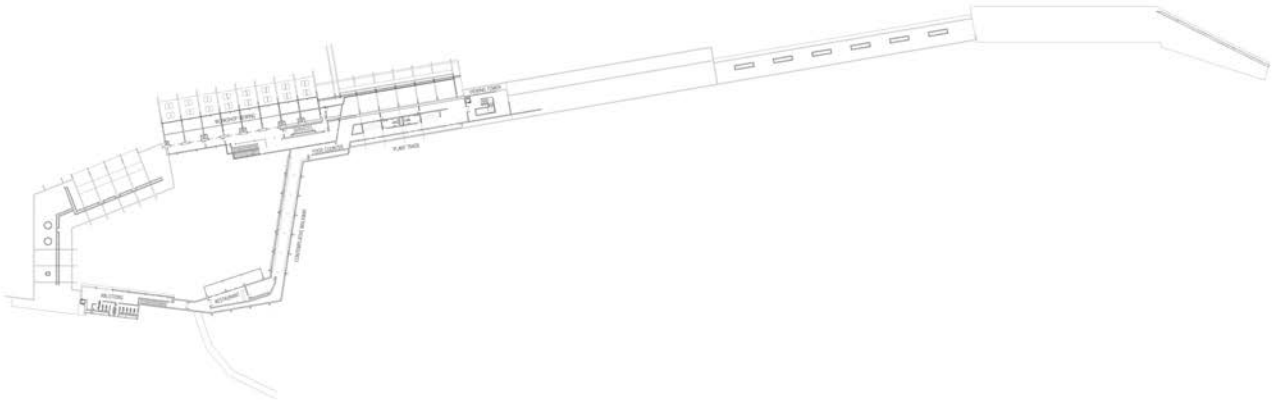
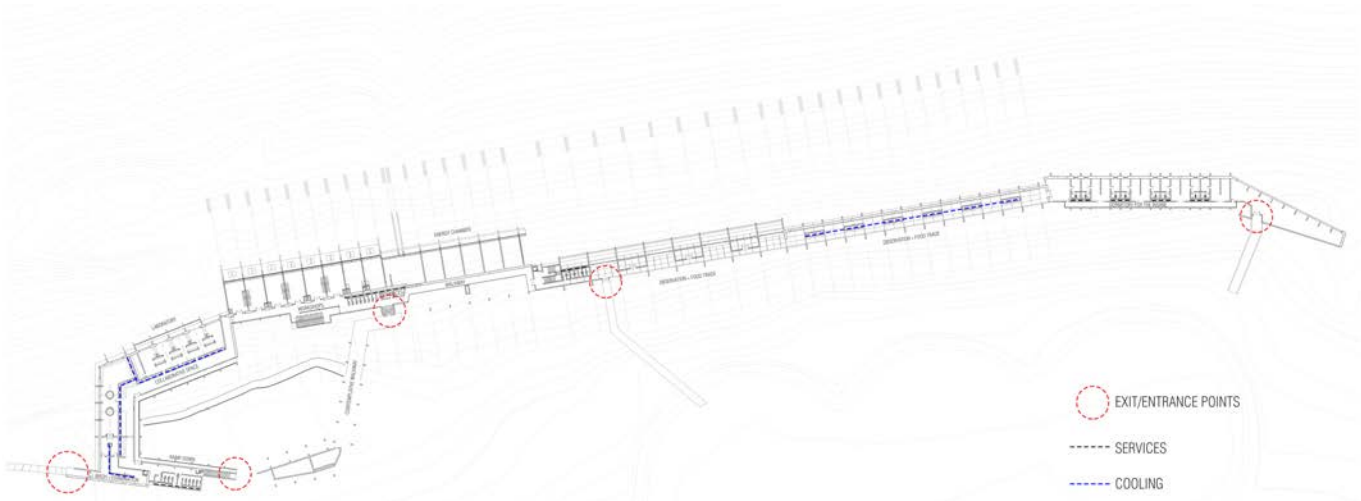
Figure 148: Plan layouts of different levels of design iteration 2. (2016)



LEVEL 1
1 : 500



LEVEL 2

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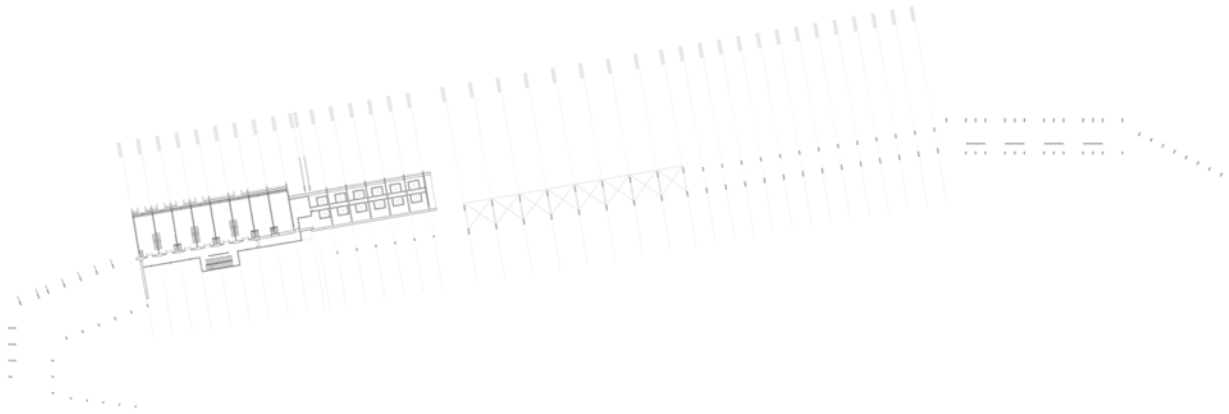
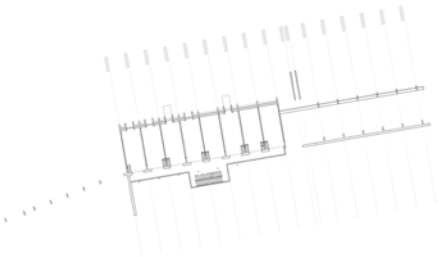
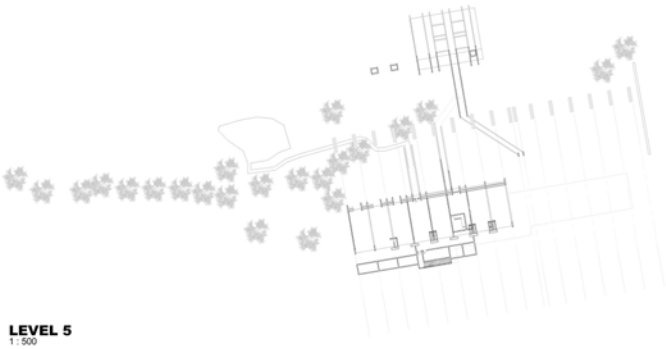


LEVEL 3
1 : 500

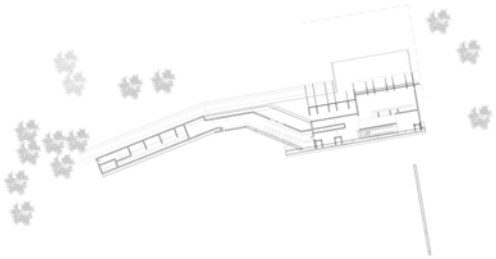


LEVEL 4
1 : 500

LEVEL 6
1 : 500



LEVEL 5
1 : 500



LEVEL 7
1 : 500

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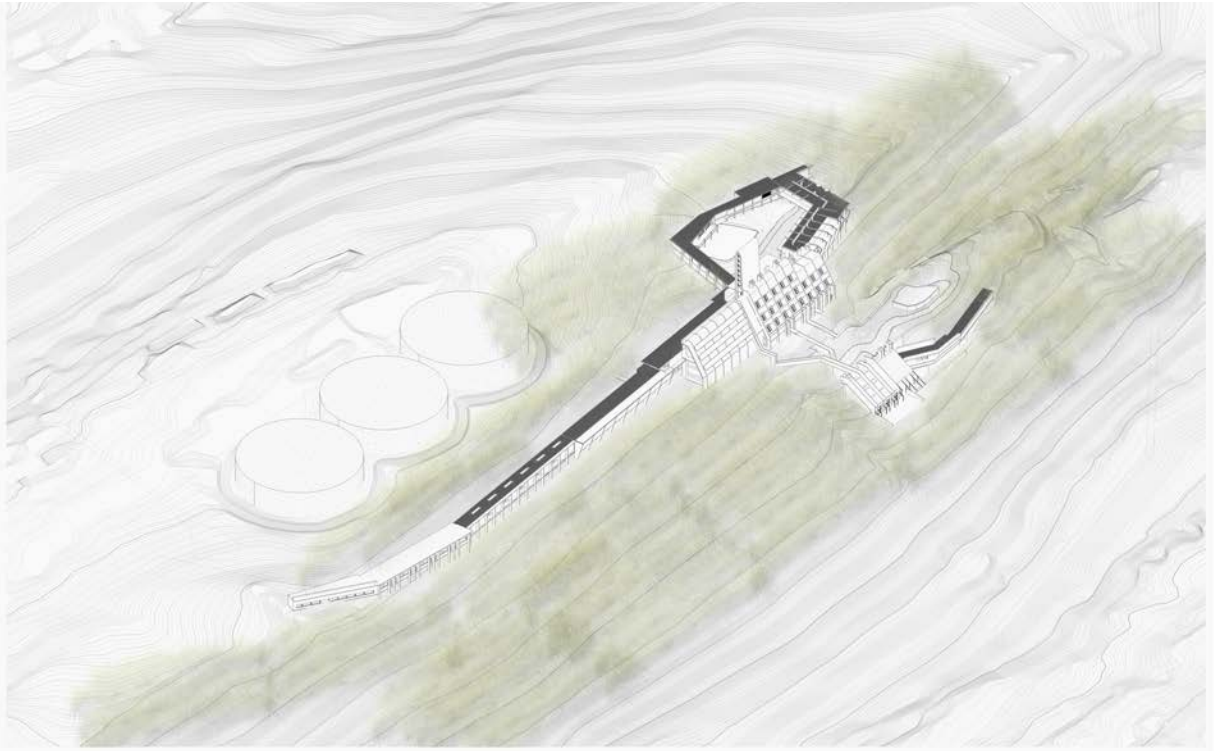

Figure 149: Three-dimensional illustration of design iteration 2 in context. (2016)

7.7.2.1. CRITICAL REFLECTION

Upon reflection of the second design iteration, the aim of the design development focused primarily on impacting minimally on the ridge's surface. The structure developed as a series of spaces, some submerged, but most are elevated and supported by a grid of pile columns. This decision was made to consider that in certain parts of the site water can flow beneath the structure on the natural topography. Other considerations were based on the quartzite geology of the ridge so that blasting can be reduced. Even though the site layout is considered appropriate based on design informants, the structure remains static and does not fulfill the objective of protection and the relationship with the human condition. Very little consideration exists regarding camouflage as part of the landscape.

Passive solar, heating and cooling strategies remain the same in the final design development but more consideration is shown relating to the concept of underground and the advantages thereof.

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Figure 150: Model of design iteration 2 in context. (2016)

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7.8. FINAL DESIGN ITERATION

Figure 151: Parti diagram of the final development of the site layout. (2016)

In the final design iteration, the concept of underground structures is used to create and represent different functions. Some parts of the structure are elevated for observation as well as 'breathing' spaces for natural ventilation and light. The informants of design iteration one and two are utilised in a more cohesive way to create overall form. During the final design development water is considered to have an important role for the use of services, cooling and filtering of the water for irrigation of plants (structured wetlands).

The representation of space as part of the final design concept, is illustrated in the different approaches to sections as well as functions of the proposed structure. The scenarios presented earlier in the dissertation play a key role in the production of activities throughout the structure, however these scenarios remain theoretical and only present the hierarchy of people and responsibilities allocated to the different characters.

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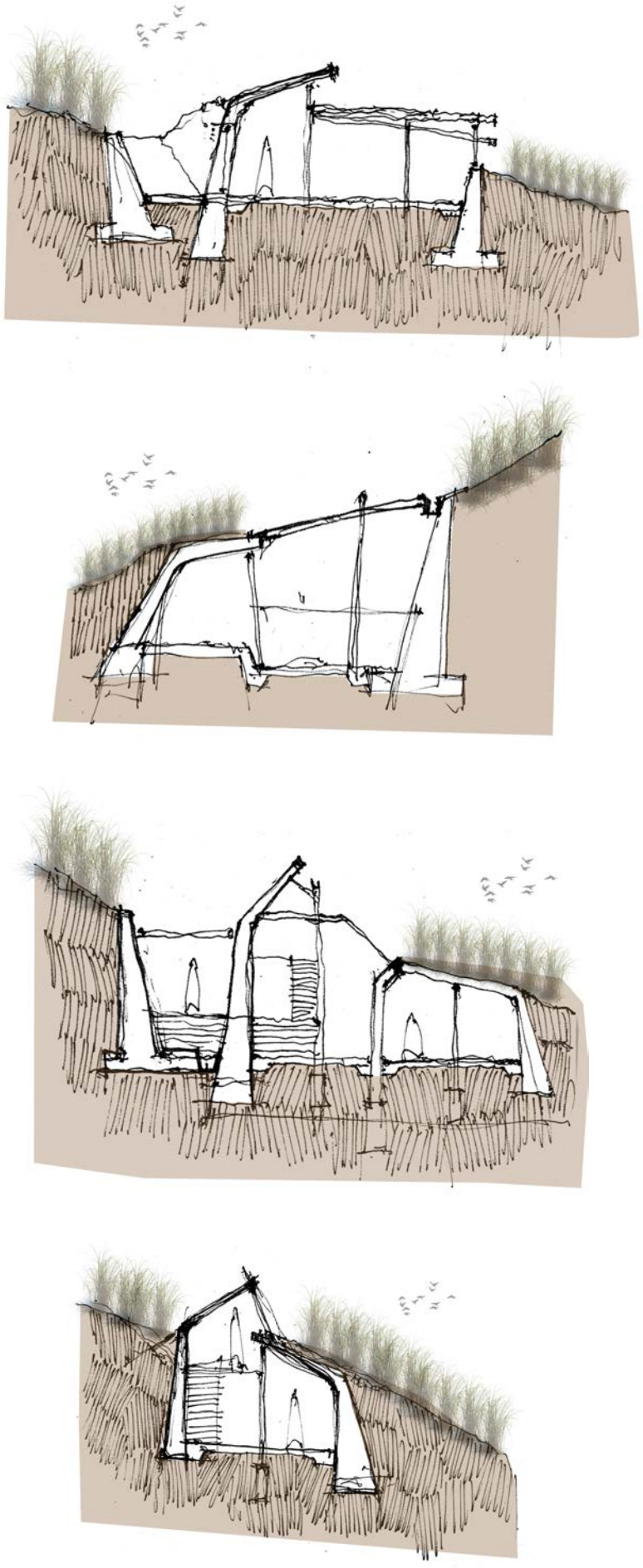

Figure 152: Sectional explorations of final design development. (2016)

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Figure 153: Final site layout. (2016)

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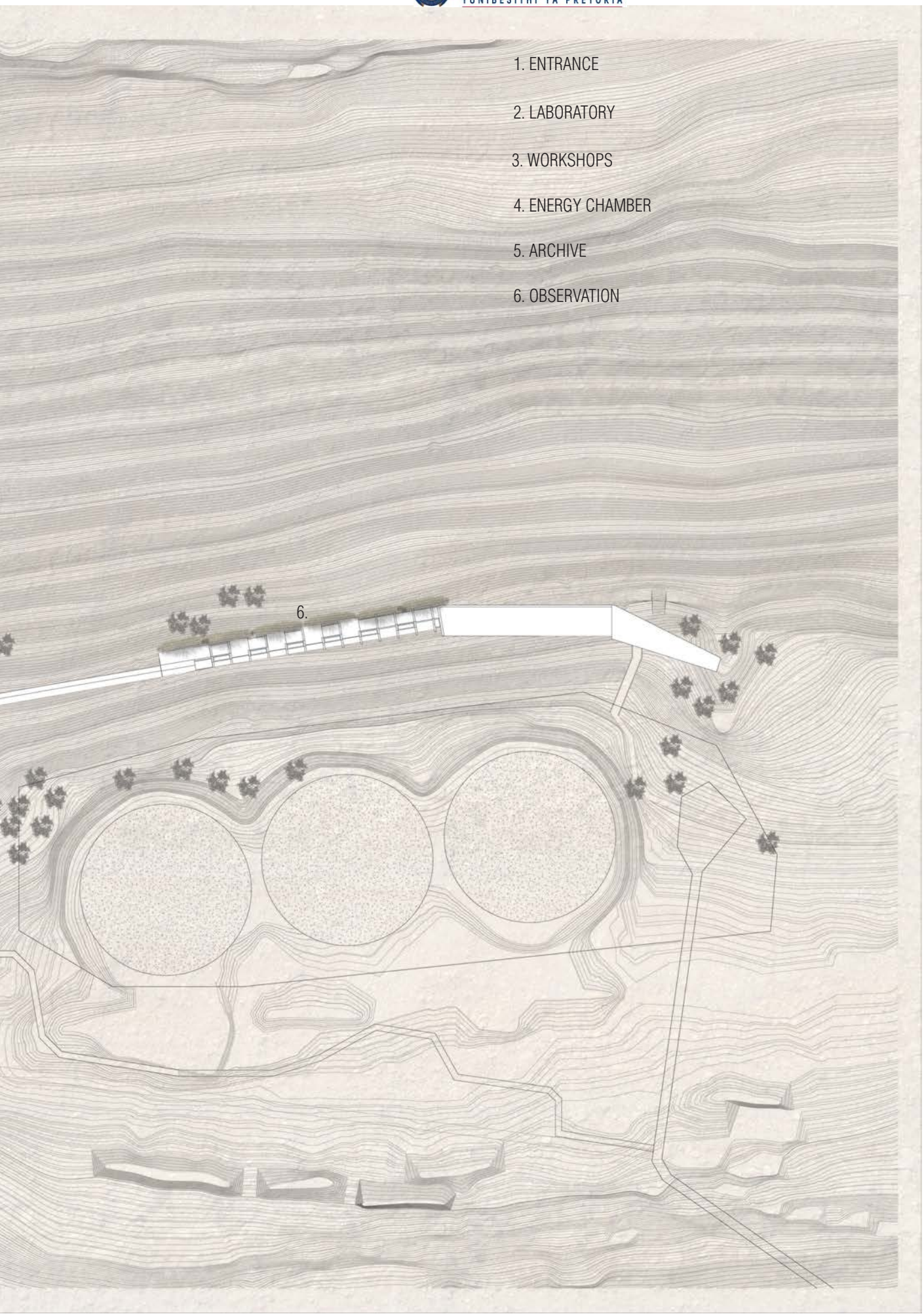

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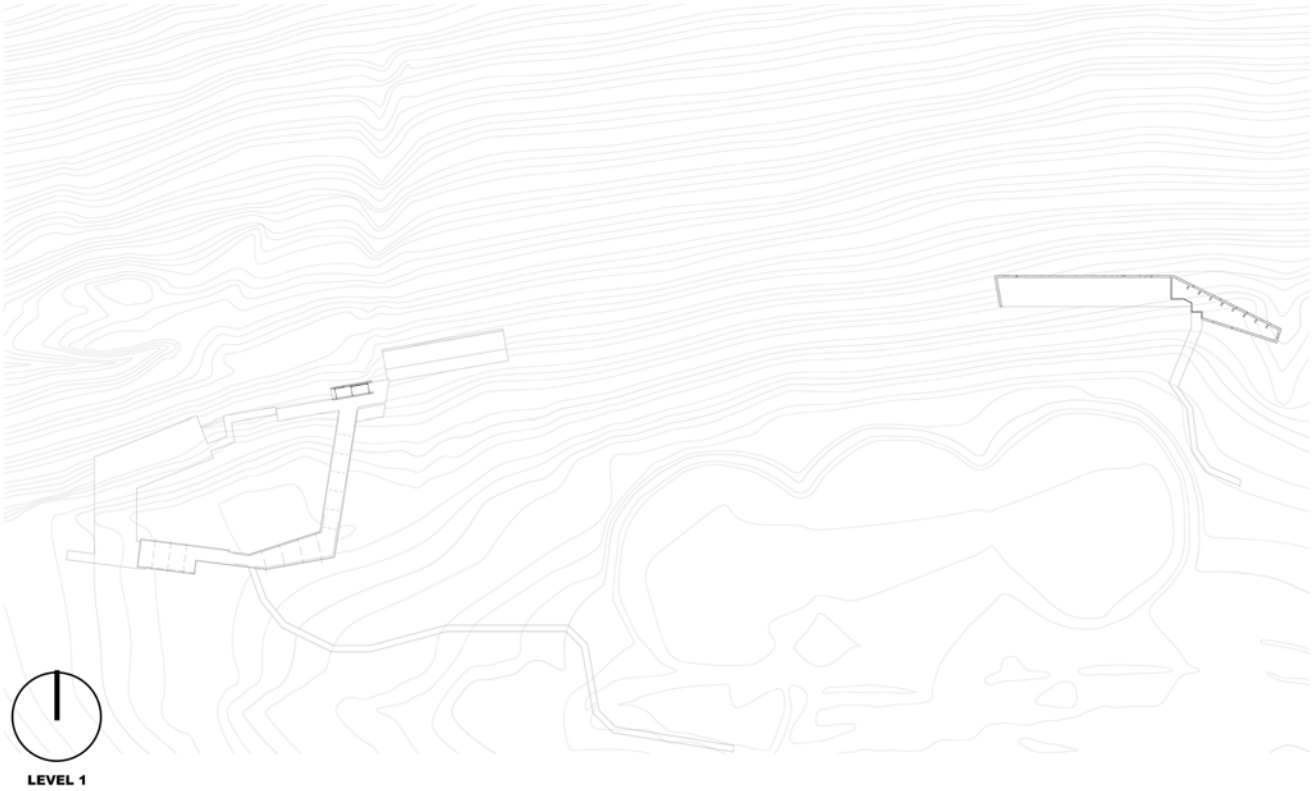

Figure 154: Level 1 layout. (2016)

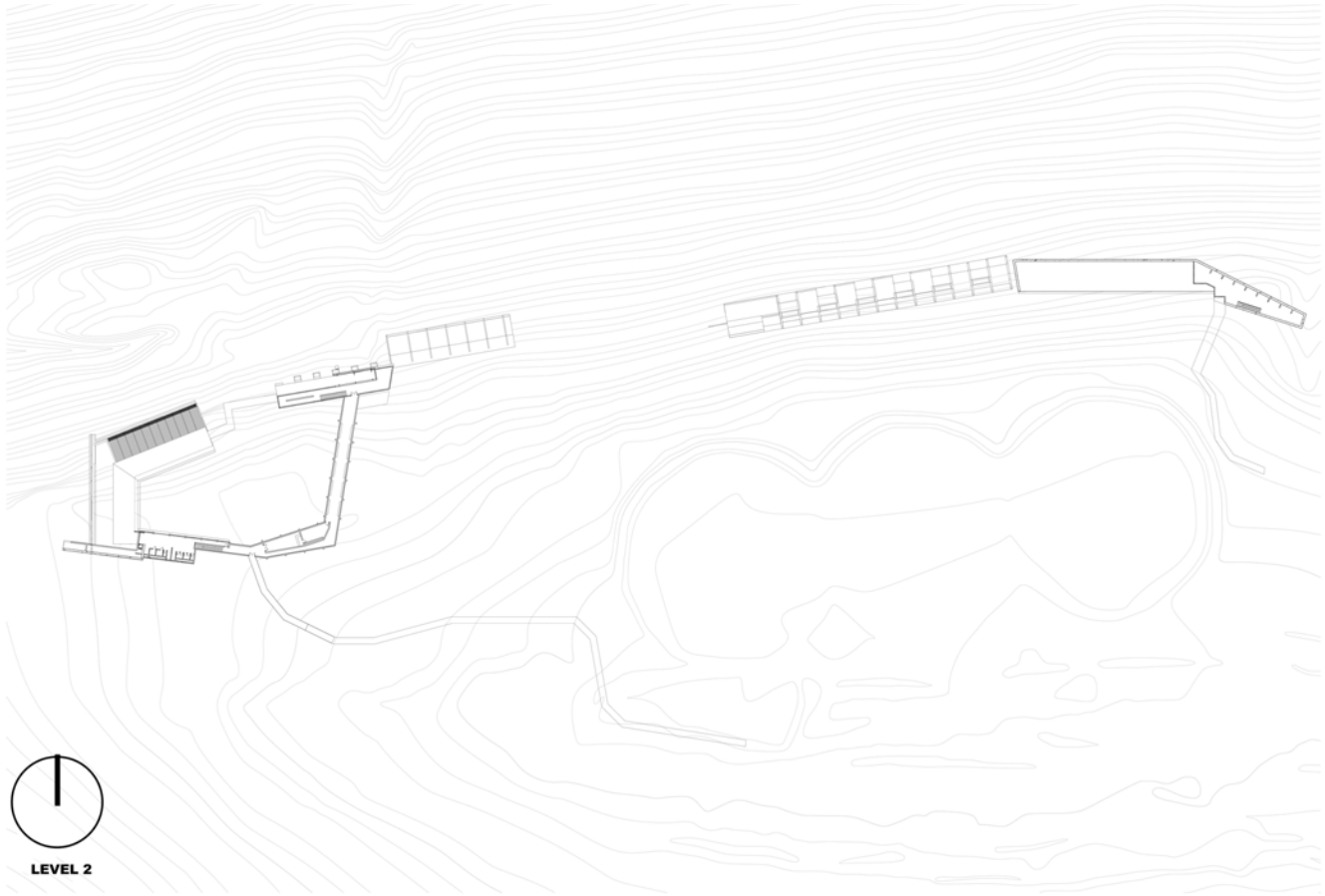

Figure 155: Level 2 layout. (2016)

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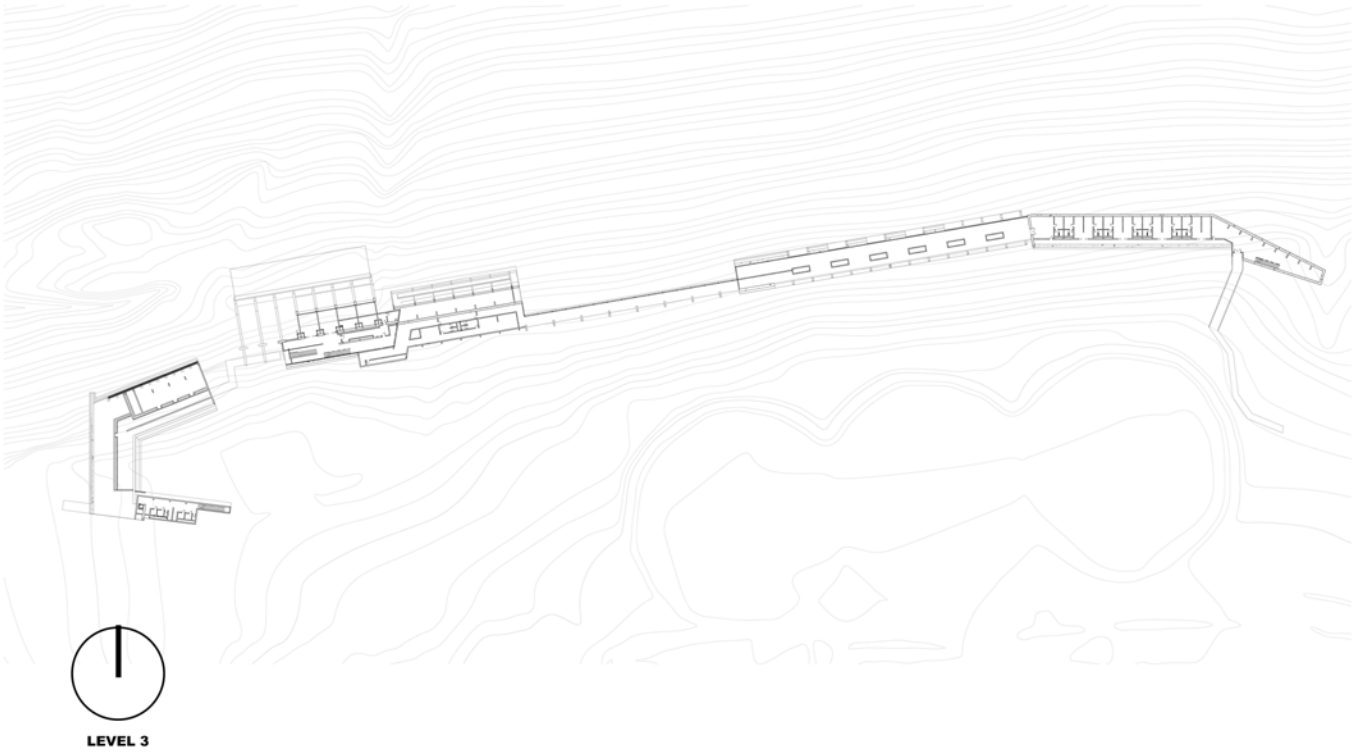

Figure 156: Level 3 layout. (2016)

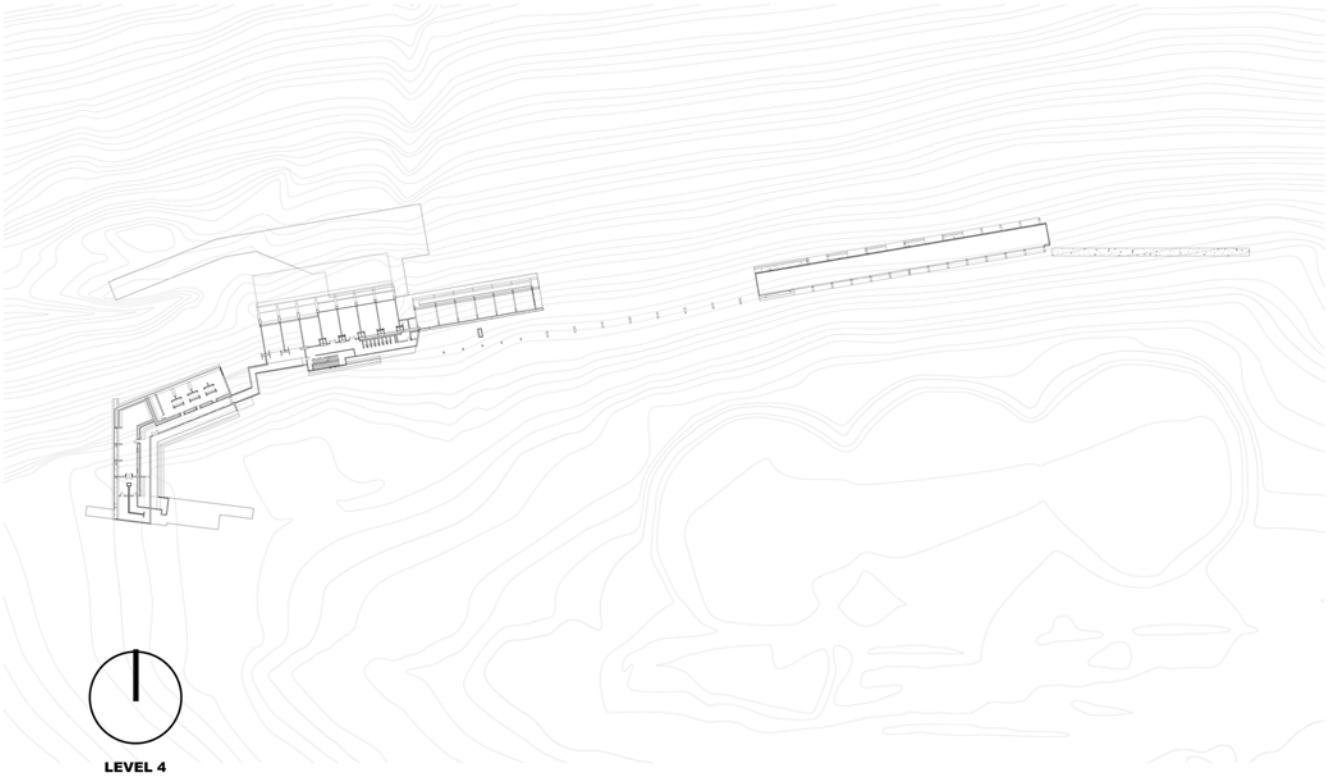

Figure 157: Level 4 layout. (2016)

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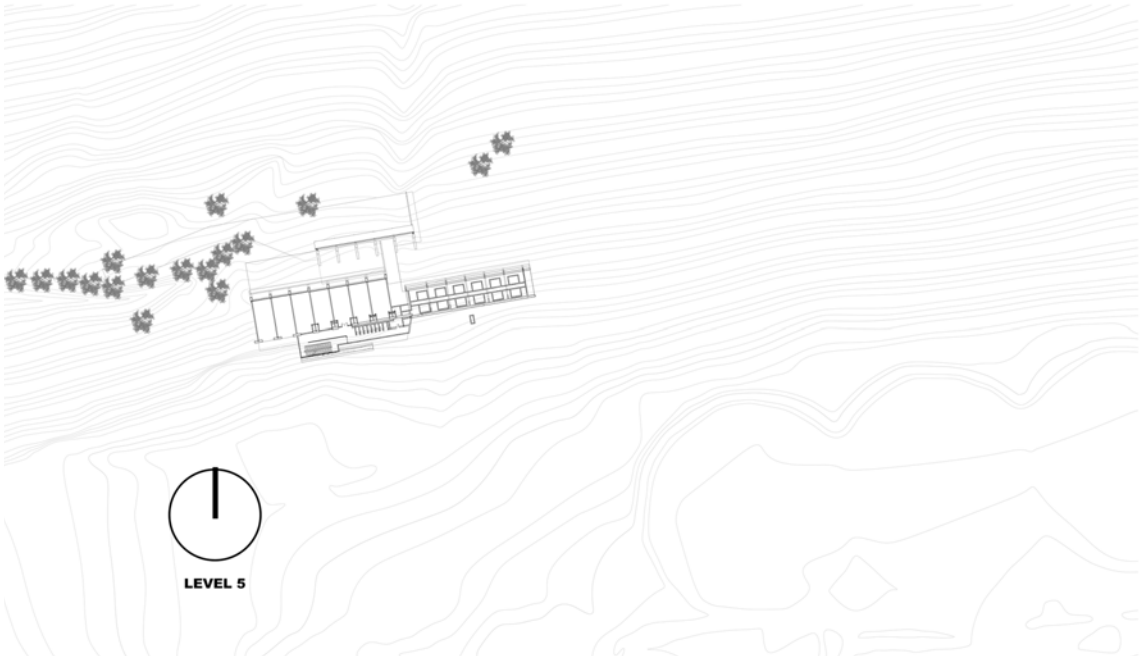

Figure 158: Level 5 layout. (2016)

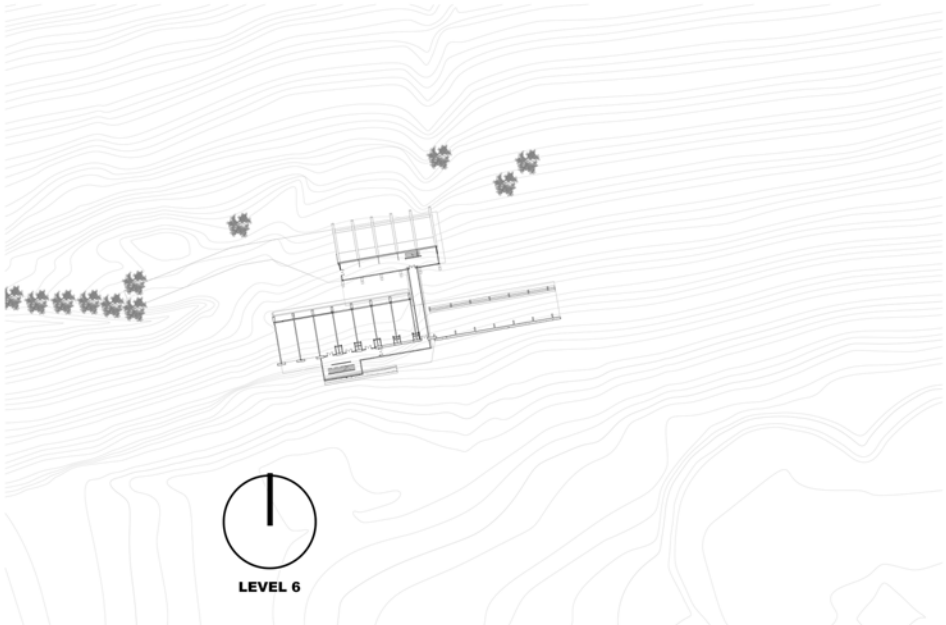

Figure 159: Level 6 layout. (2016)

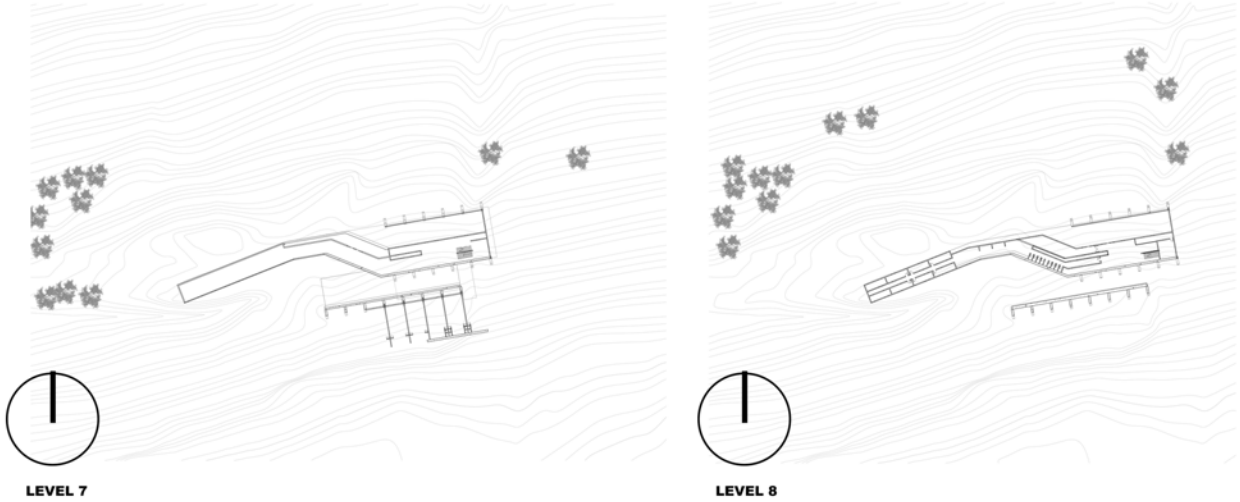

Figure 160: Level 7 and 8 layout. (2016)

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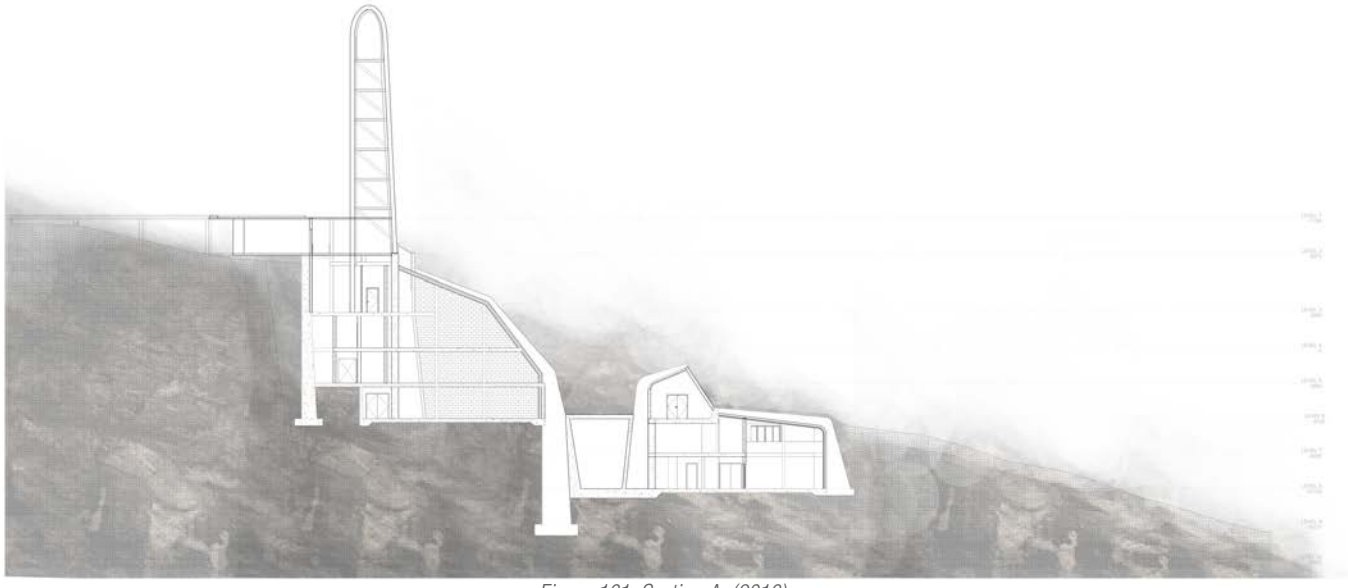

Figure 161: Section A. (2016)

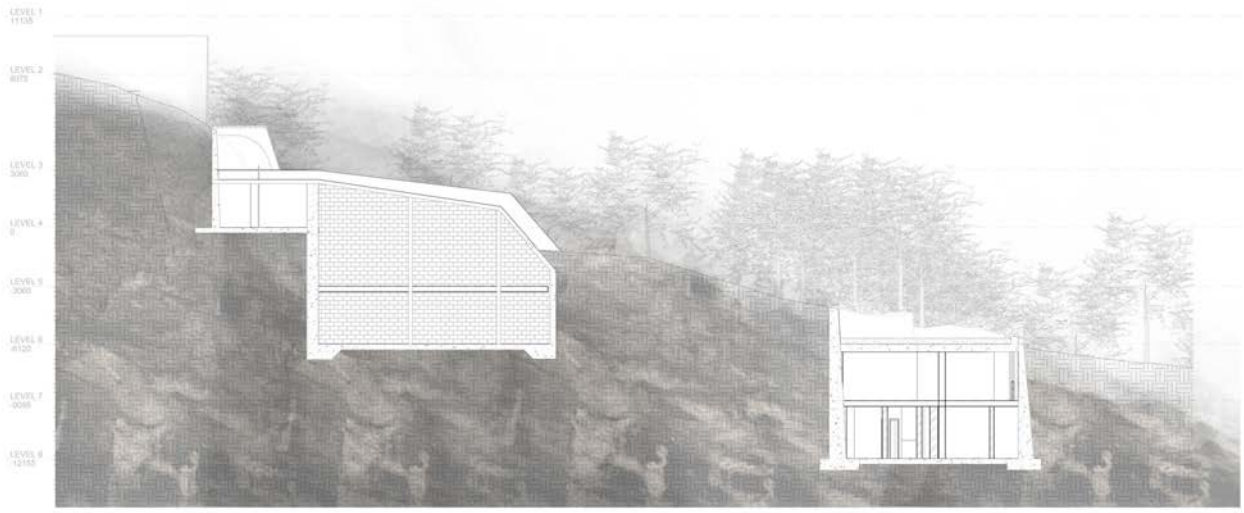

Figure 162: Section B. (2016)

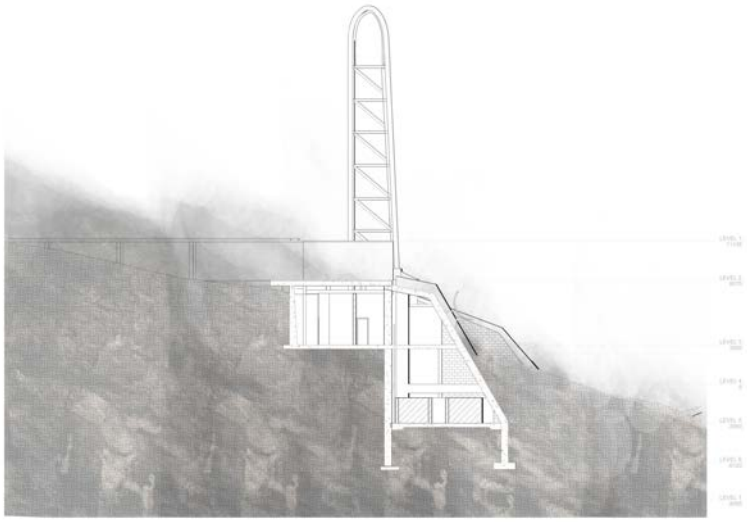

Figure 163: Section C. (2016)

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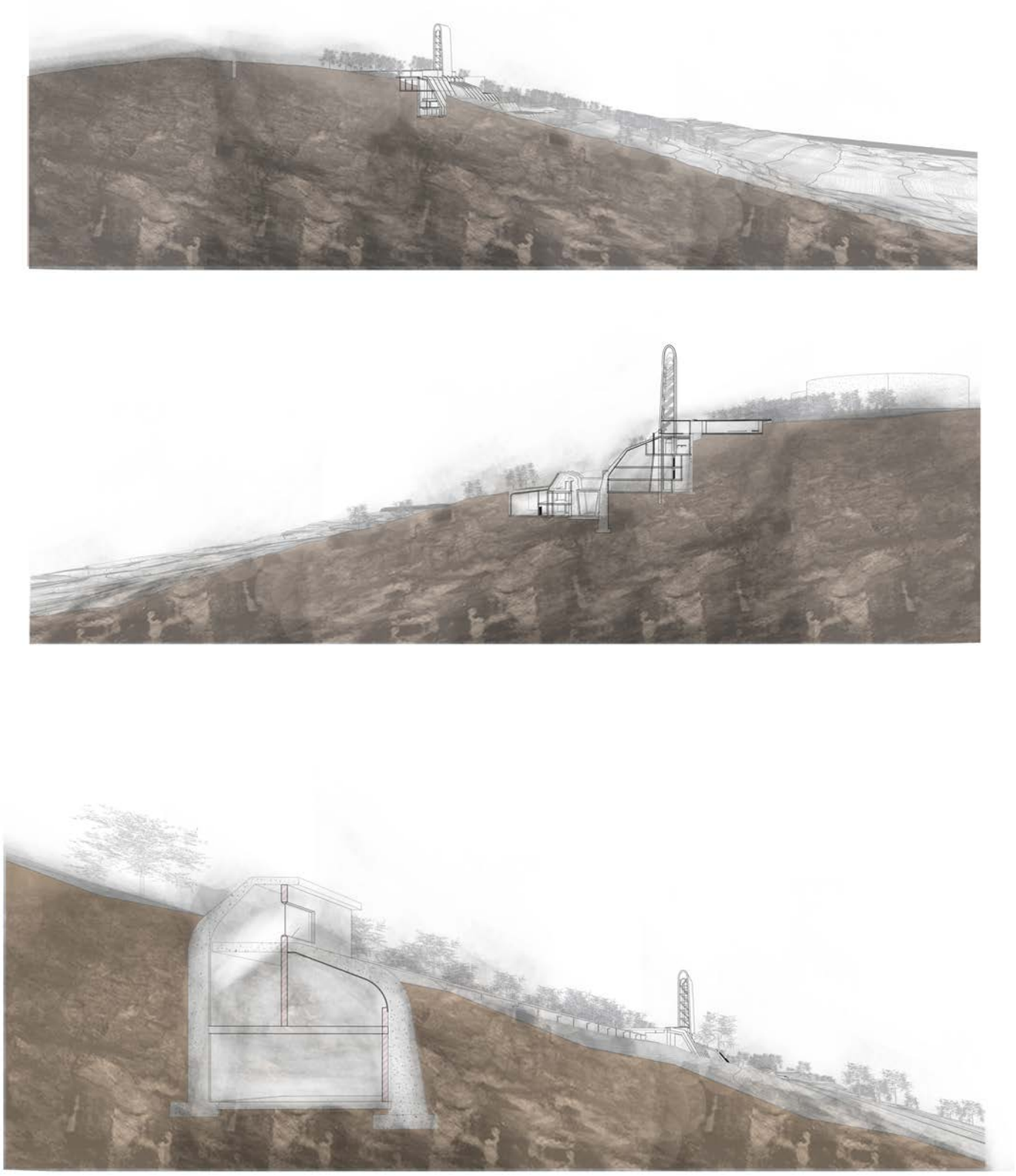

Figure 164: Three-dimensional sections of the final design iteration. (2016)

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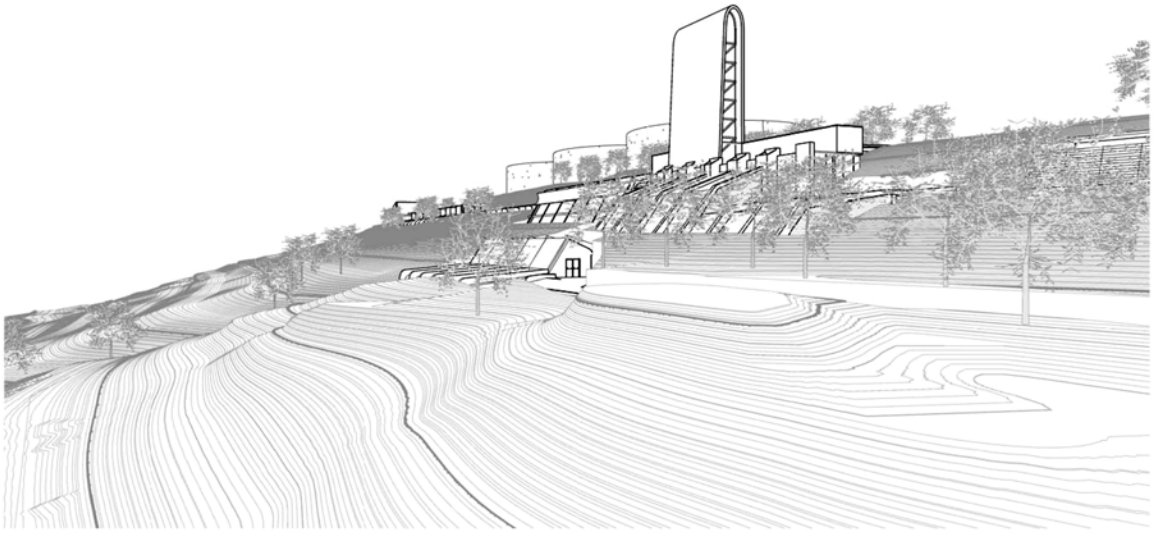

Figure 165: Three-dimensional representation of the final design resolution in its context. (2016)

7.8.1. CONCLUSION

To conclude the design development section, the final design iteration section focuses on the initial architectural objectives of mediation between landscape and structure through merging margins; shelter; protection and isolation; observation; and datum. The representation of different identities are introduced in the various approaches to sectional elements as well as the function of each of the space. Through contemplation and reflection the final design resolution does not aim for perfection but rather the interpretation of different character and their role in the making of spaces. The role of the architect is subsided in the creation of new hierarchies and power relations. The proposed structure serves to introduce a new beginning for the marginal community through which they could alter the design as they see fit. Future scenarios will be presented in the final examination as a continuation of the dissertation.

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CHAPTER

08

This chapter aims to introduce the technical, structural and environmental concepts and considerations informed by the final design development.

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8.1. CONCEPTUAL APPROACH

As part of the concept of refuge, the architectural intervention aims to facilitate the need for shelter and protection while developing the skills and potential of the marginal community. Most of the technical and environmental concepts follow through from the design development. Firstly the re-use of materials from the excavated site into concrete elements within the structural design; the act of building underground/subterranean to introduce a moderate indoor climate; the use and re-use of water; and the development of active and passive strategies through the natural and new structural slope.

Figure 166: Structural and environmental concept in section. (2016)

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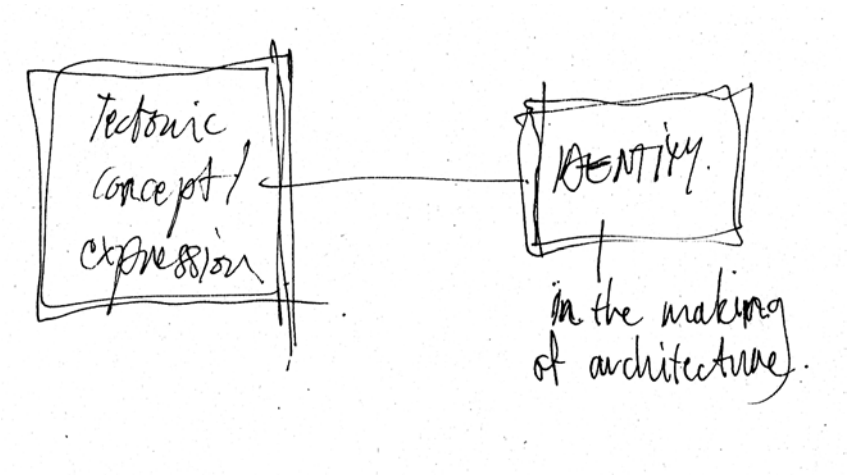

Figure 167: The tectonic expression relates to identity. (2016)

8.1.1. STRUCTURAL CONCEPT

Based on the architectural objectives and the robust nature of the proposed structure, materials consist mainly of cast in-situ and precast concrete, masonry, stone and structural steel. This decision is purely based on the concept of protection and refuge. A grid of cast in-situ fins forms part of the primary structure with masonry infill; and the secondary structure consists of a steel framework replicating the shapes of the fins for internal support of roofs. Thermal mass is created through infill earth as well as stone walls mainly on the northern side of the structure. Retaining walls are made of concrete - as mentioned before, the blasted quartzite is crushed on the site of the Econoslag crushing plant to produce most of the aggregate used in the concrete structural elements.

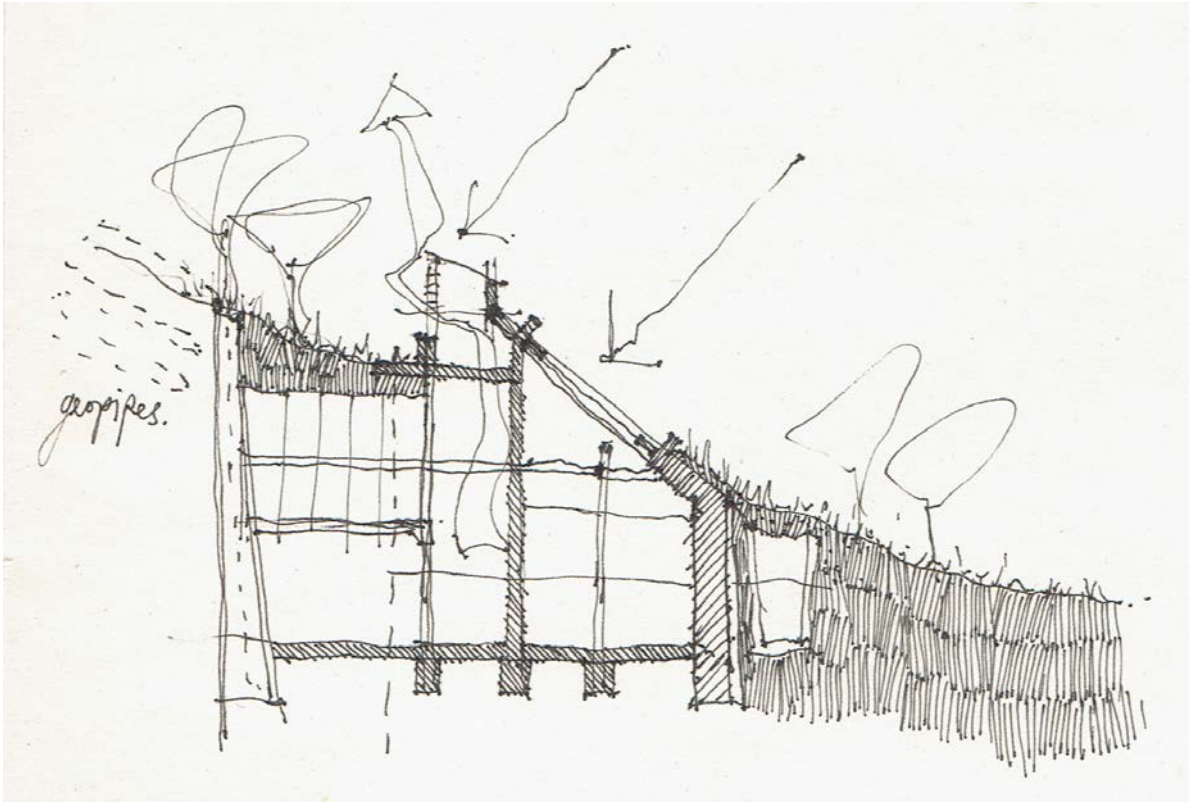

Figure 168: Initial exploration of structure in section. (2016)

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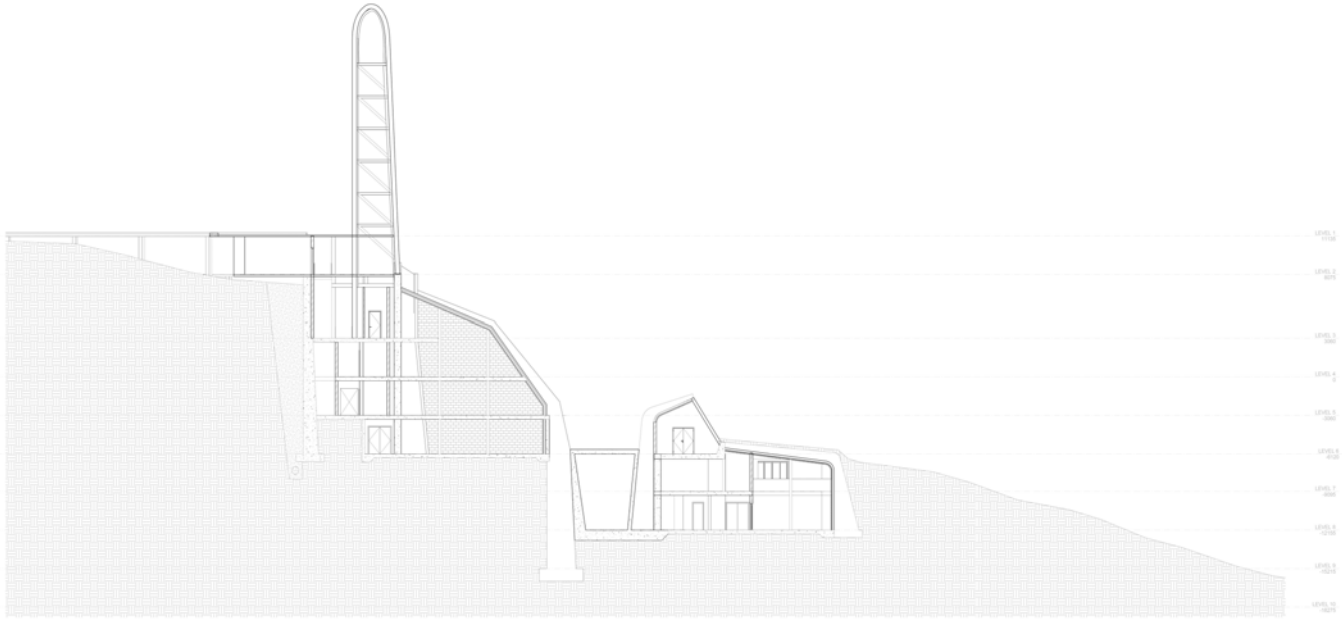

Figure 169: Main structural section (A). (2016)

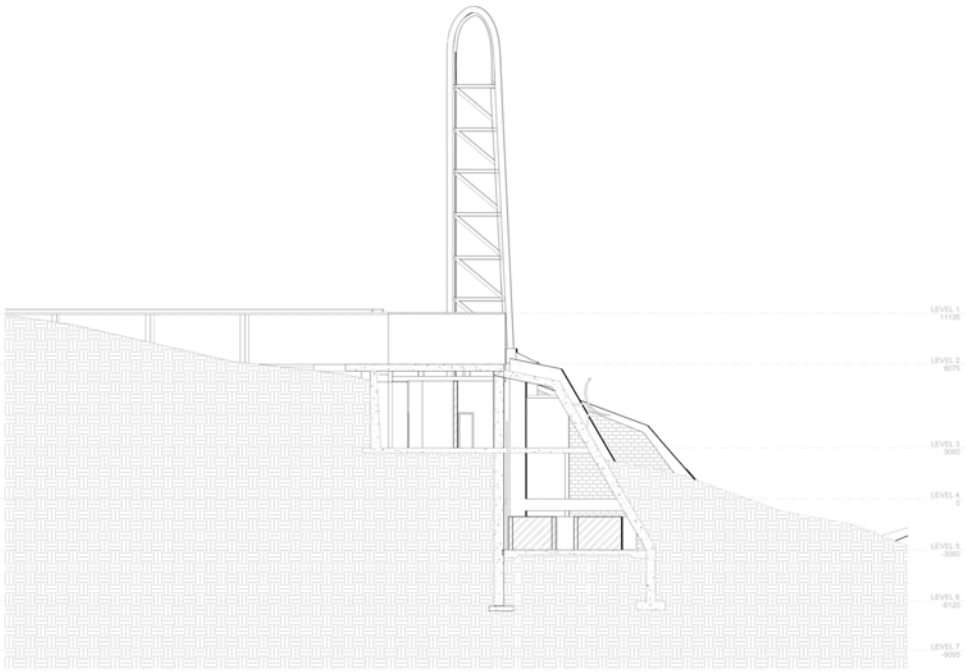

Figure 170: Structural section (C). (2016)

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8.1.2. STRUCTURAL EXPLORATION

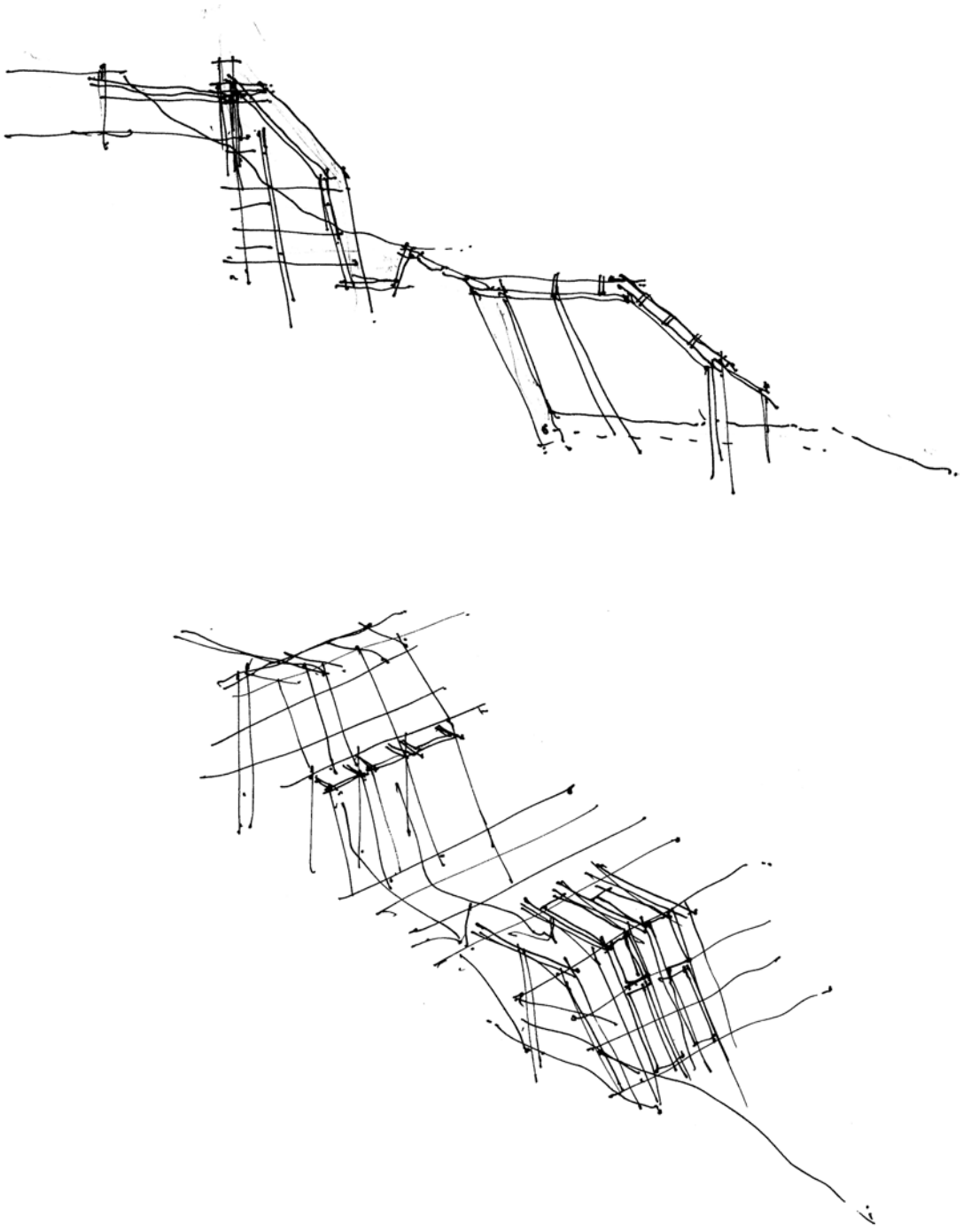

Figure 171: Structural explorations. (2016)

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8.1.3. DETAIL EXPLORATION

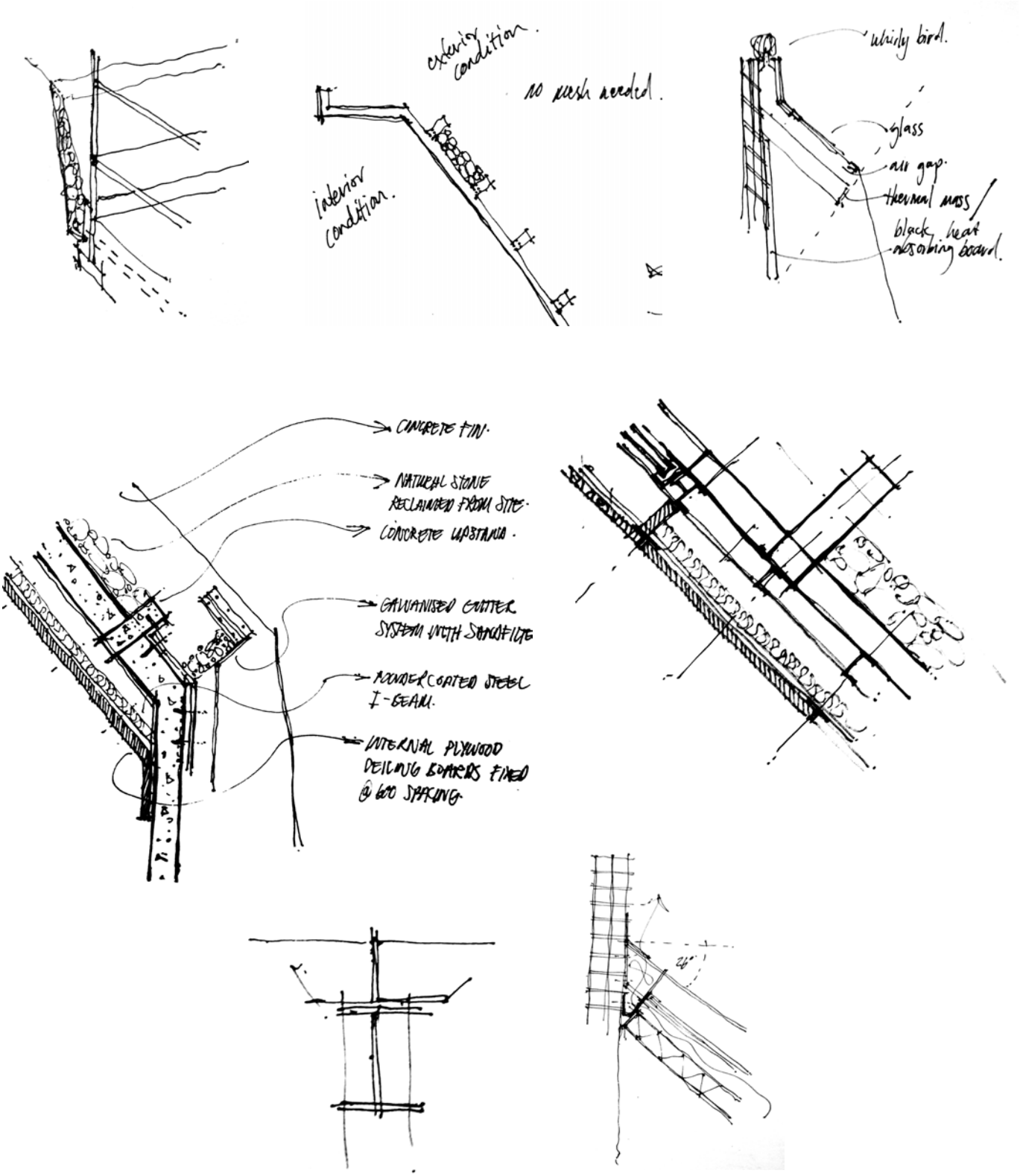

Figure 172: Detail explorations of roof and wall junctions. (2016)

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Figure 173: Workshop roof junction detail. (2016)

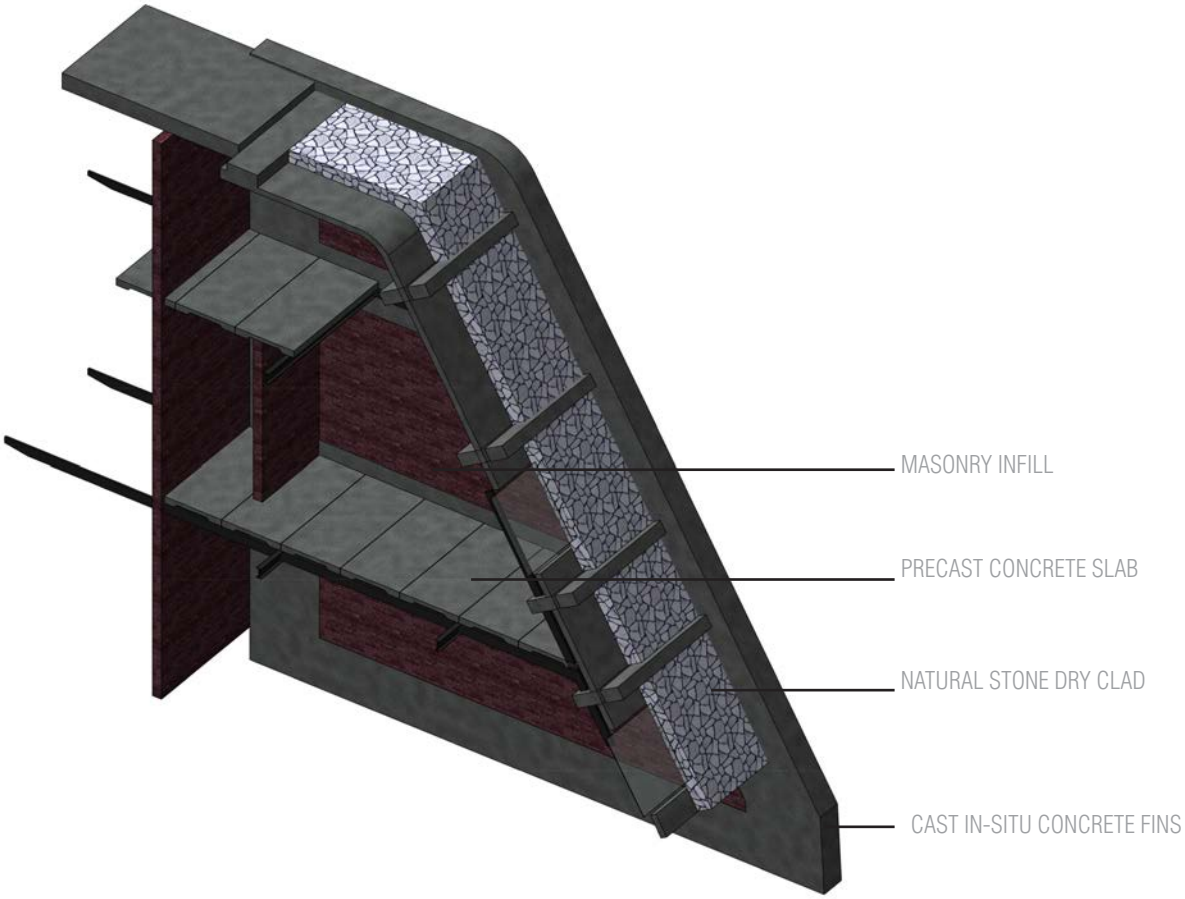
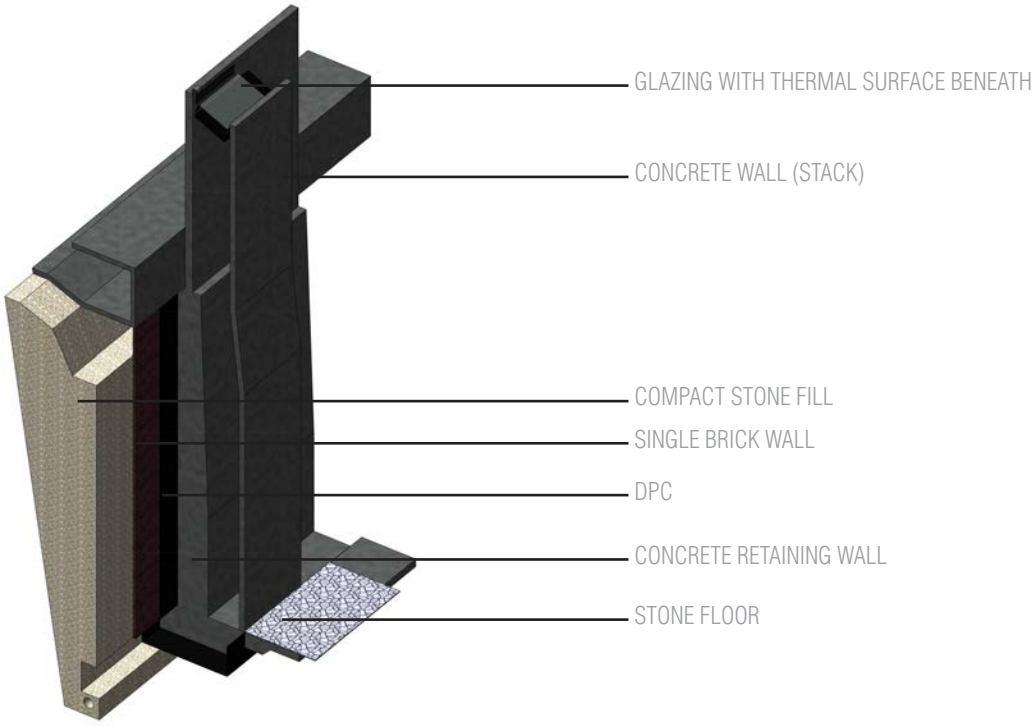


Figure 174: Archive floor and wall junction detail. (2016)



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8.2. STRUCTURAL PRECEDENT: CAMDEN STATE PARK HOUSE

"The Camden State Park house demonstrates how unique and interesting details can be incorporated into a basic, straightforward design, yielding a house that looks distinctive but is architecturally unpretentious and uncomplicated. Its simplicity also helps the house blend in well with the natural environment of the park" (Ahrens, et.al. 1981:22).

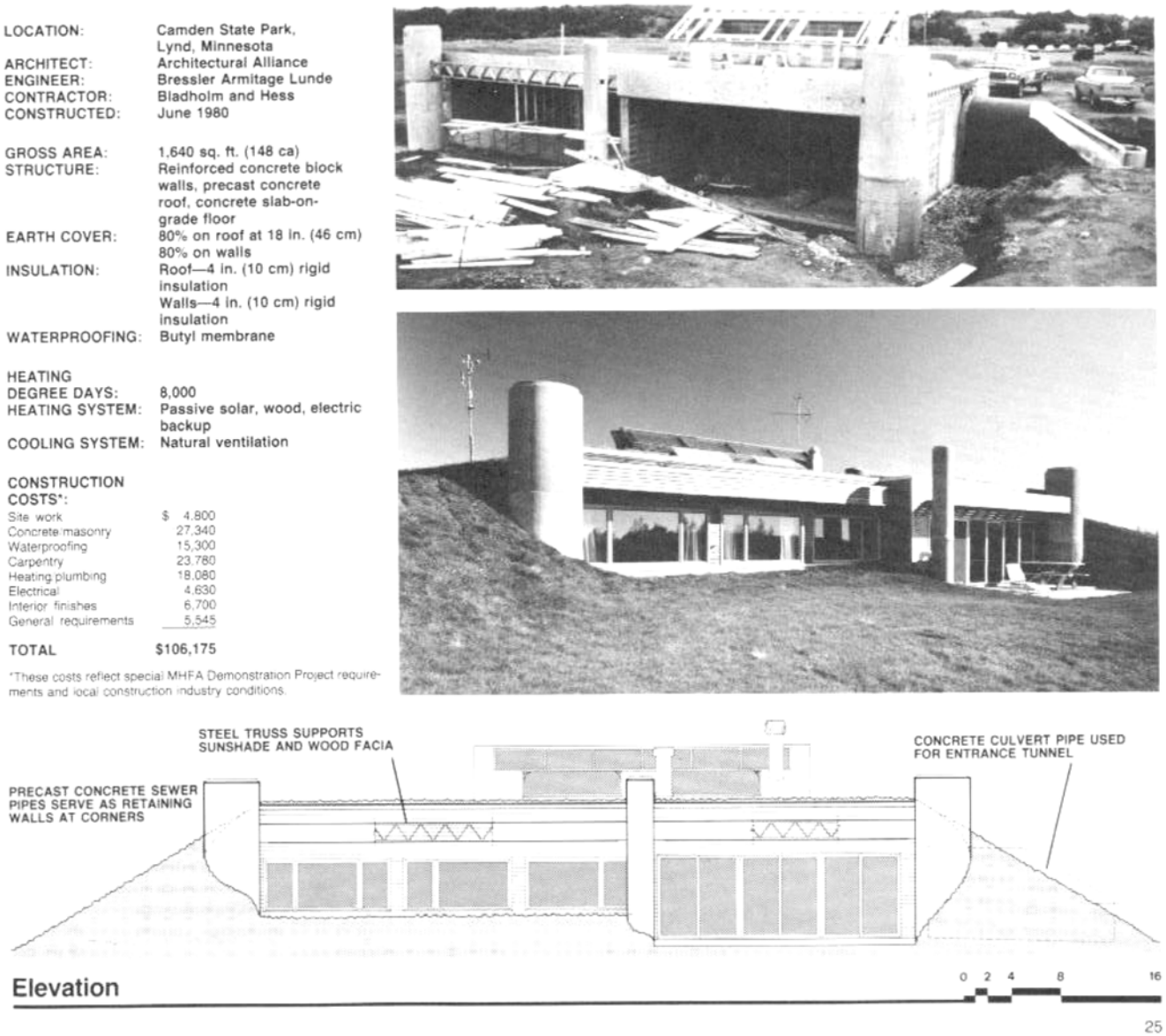

Figure 175: Camden State Park house. (Ahrens, et.al. 1981:25)

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With simple construction, sufficient layers of insulation and passive solar strategies, this house reduces energy consumption as an earth-sheltered structure. “It is expected that the passive solar gain, combined with energy conservation aspects such as earth sheltering and automatic motor-operated nighttime window insulation on the major glass areas, will significantly reduce the heating demand of the house” (Ahrens, et.al. 1981:22).

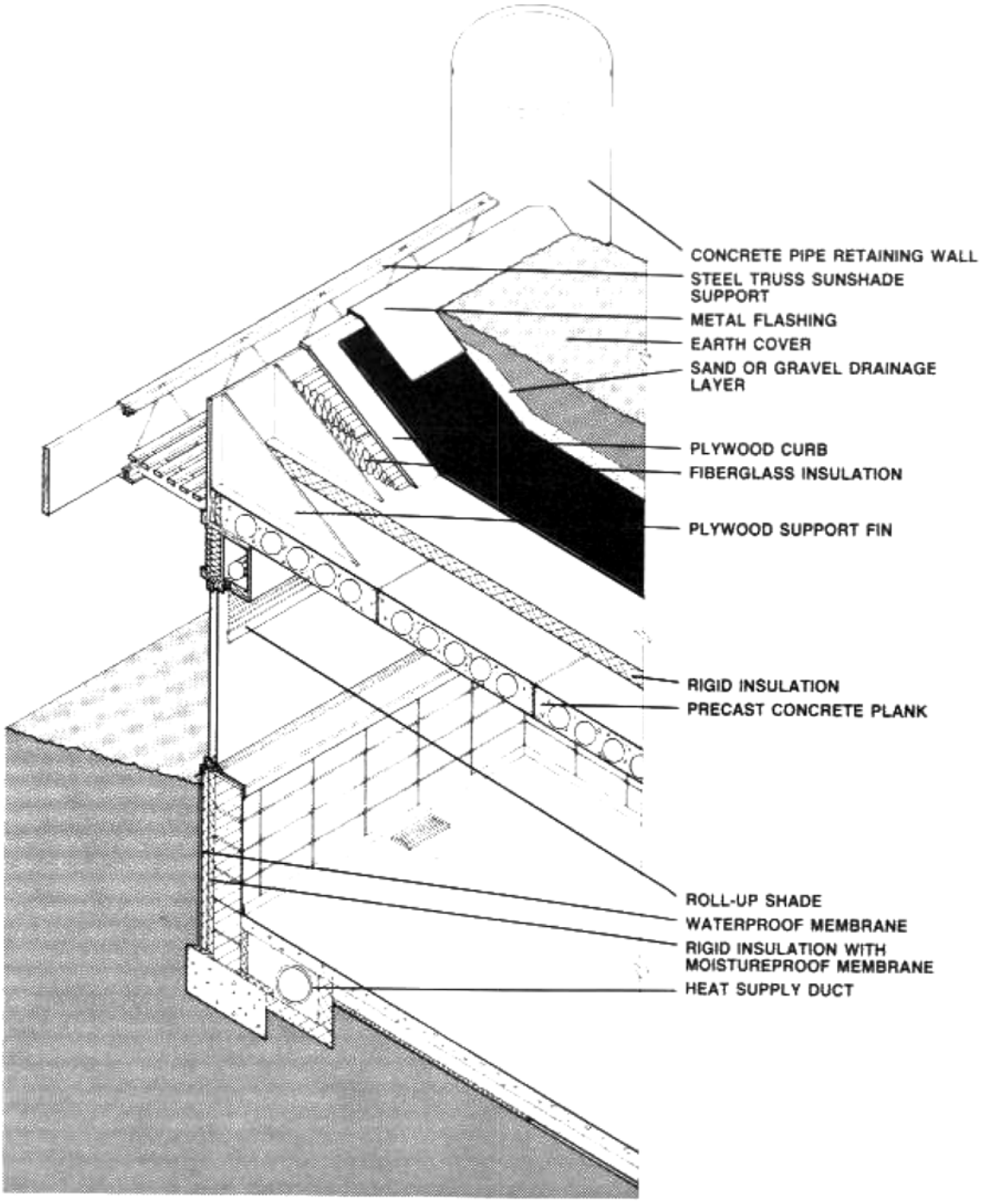

Figure 176: South wall/roof detail of the Camden State Park house. (Ahrens, et.al. 1981:24)

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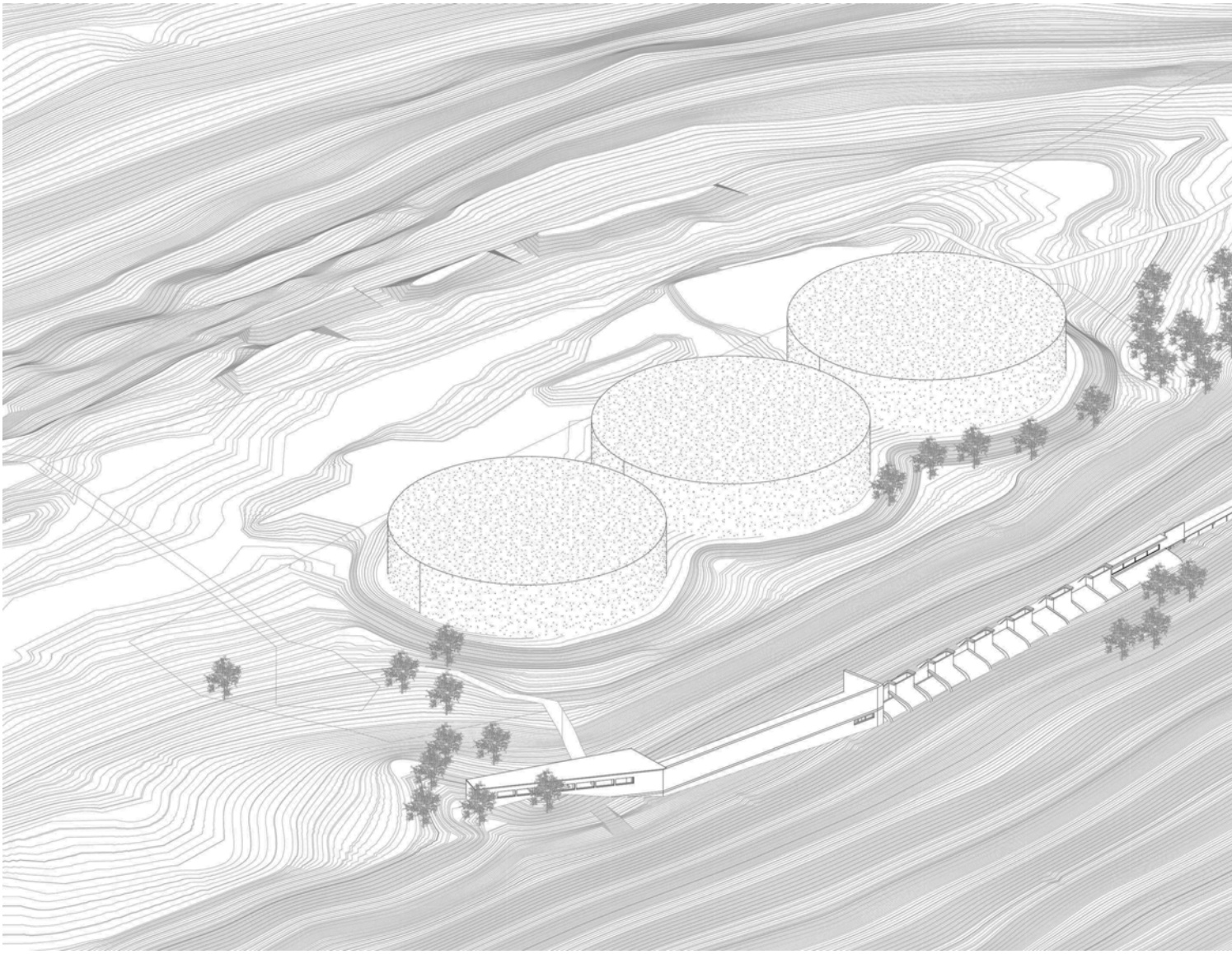
Figure 177: Three-dimensional structure within context. (2016)



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8.3. FINAL DETAIL OF OBSERVATION DECK

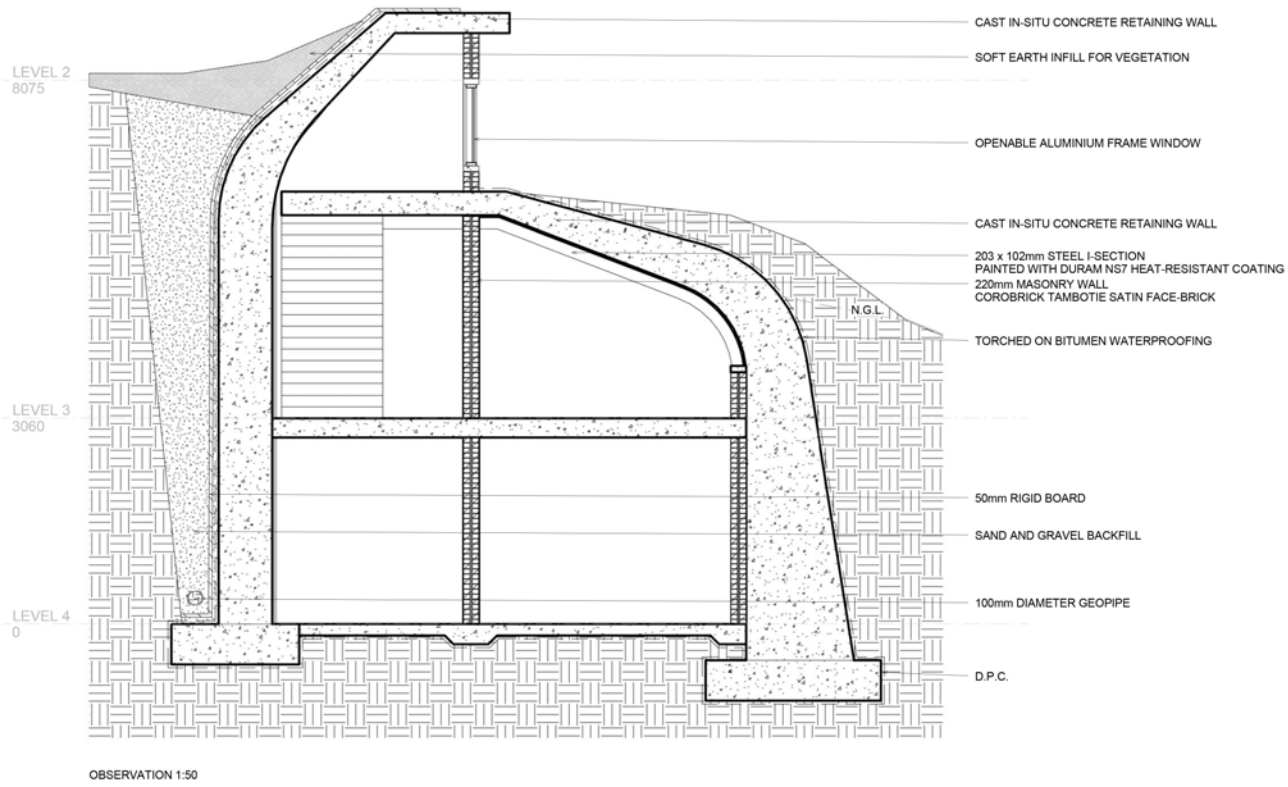

Figure 178: Construction detail of the observation deck. (2016)

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8.4. ENVIRONMENTAL CONSIDERATIONS

In the overall design of the structure, energy and hot water is primarily provided through solar heat collectors attached to the structural fins of the energy chamber, as well as solar panels placed on the top surfaces of the reservoirs (electricity for lights, lifts, turbines, water pumps and other mechanical equipment).

Geothermal pipes (in combination with radiators) are installed on the southern side of the workshops and energy chamber to use the southern wind for air-intake in order to provide either heating in winter or cooling in summer (radiators are installed on each floor as it is multi-storey). Trombe assisted stacks are already part of the structural intervention and will assist in removing hot air from the workshops in summer.

Biodigesters are constructed on the southern side of the laboratory (near the main kitchen) in order to use high energy waste (high calorific value) to produce additional electricity.

The treatment of grey- and black water is primarily dealt with through the use of constructed wetlands. This treated water is mainly used for the irrigation of plants.

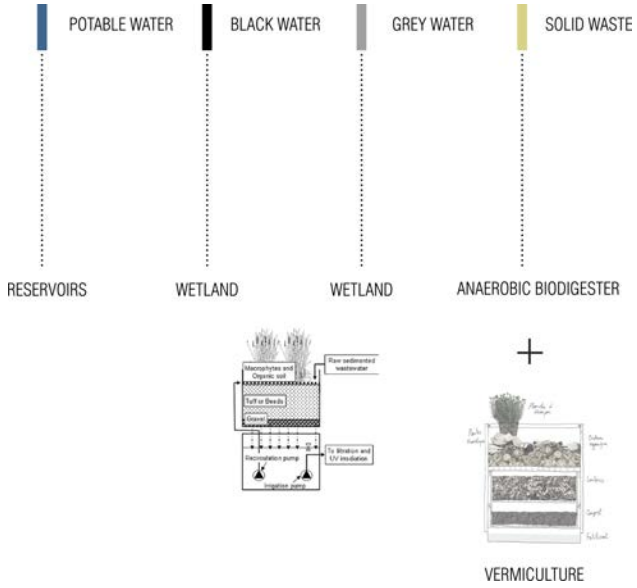

Figure 179: Water and waste strategies. (2016)

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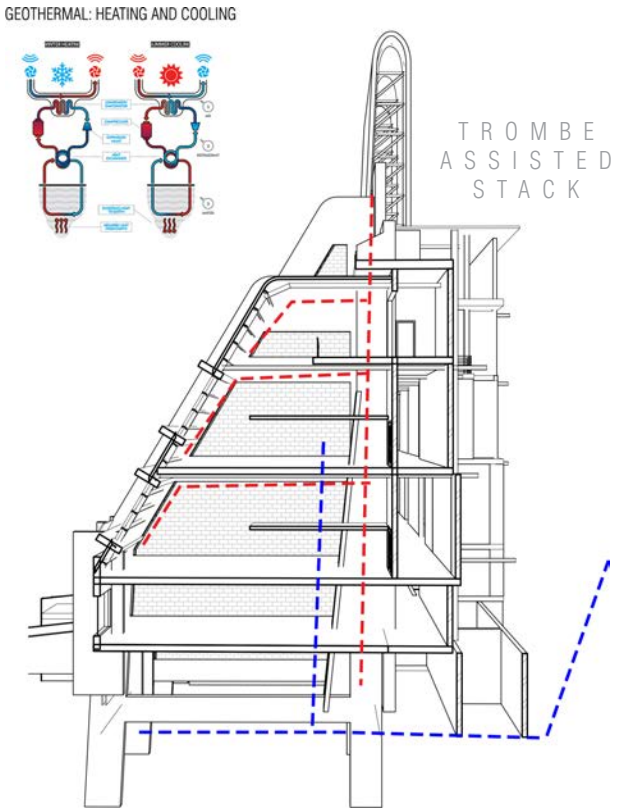

Figure 180: A 3D illustration of the workshops' heating and cooling strategy. (2016)

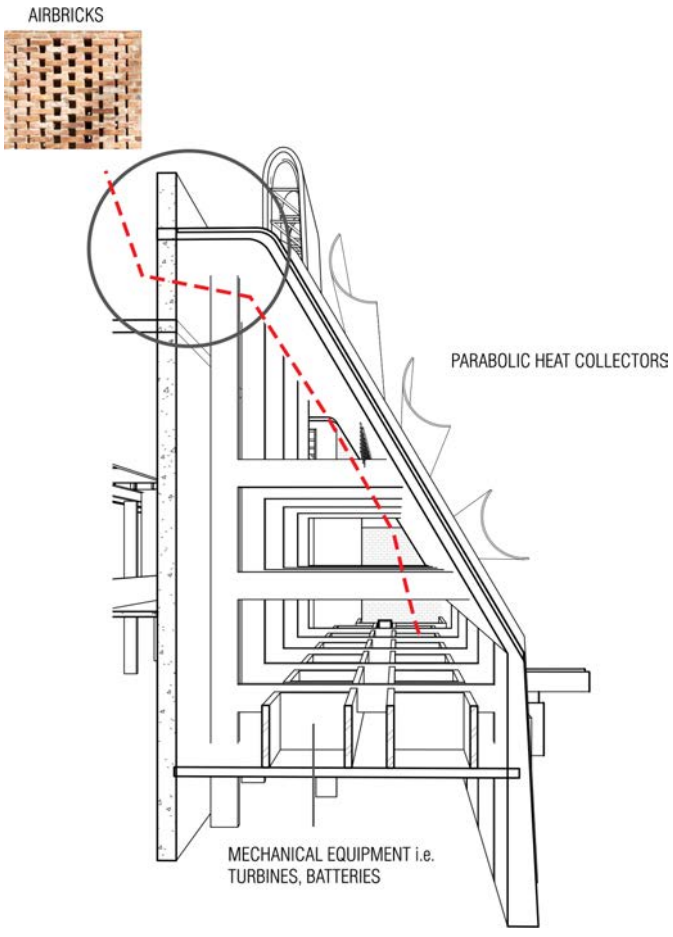

Figure 181: A 3D illustration of the energy chamber. (2016)

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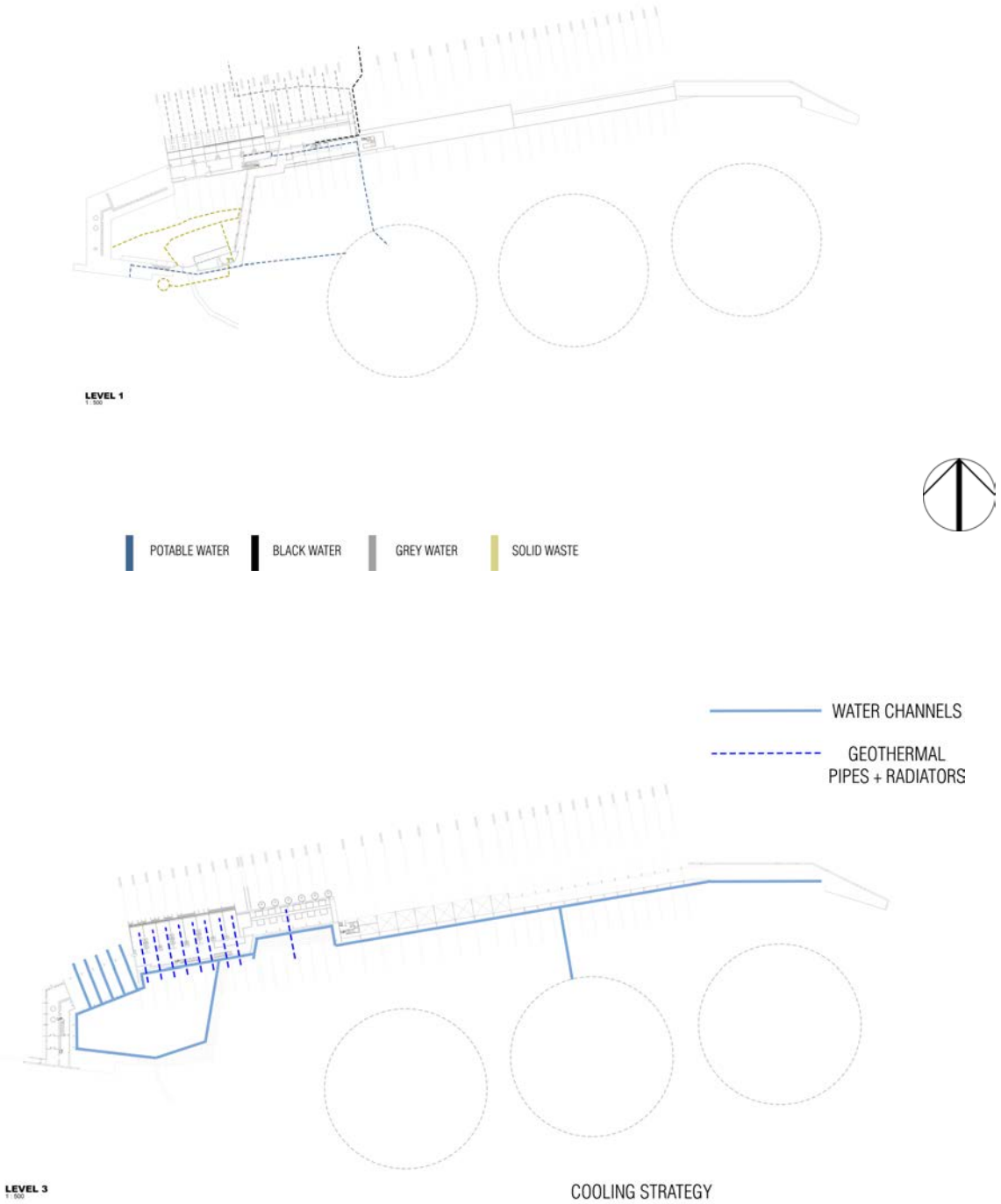

Figure 182: Plan configurations with environmental and passive strategies illustrated. (2016)

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8.4.1. RESERVOIR ENERGY CAPACITY

Figure 183: The energy capacity of one reservoir surface covered with solar PV's. (Solar Masters [sa])

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8.4.2. CALCULATIONS

CALCULATIONS

Solar PVs'on reservoirs:

Total area: 3167m2

Peak solar output: 228kW

Average daily solar energy: 1046.93 kWh

X3 reservoirs = 3140.8kWh per day

Occupancy:

E1: Place of detention – 2 persons per bedroom

D4: Plant room

H2: Dormitory – 1 person/5m2

B3: Low risk commercial – 1/15m2

J3: Low risk storage – 1/50m2

A1: Entertainment and assembly – 1/m2

400kWh/m2

RAINWATER CATCHMENT FROM ROOFS AND LAWN:

8251.4m2 + 4000m2

RESERVOIRS VOLUME CAPACITY:

11879147221.386m3

WATER TANK SIZES:

Tank 1: 1736.9m3

Tank 2: 940,8m3

WATER DEMAND (Low-flow installations):

Showers: 12 (4.5litres per minute)

Toilets: 35 (3.2 litres per minute)

Urinals: 11 (2 litres per flush)

Basins: 65 (4.5litres)

15min peak factor per day

= 300m3 per month

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CHAPTER

09

This chapter aims to conclude the dissertation with final drawings and images.

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9.1. DISSERTATION CONCLUSION

To conclude this dissertation, the initial architectural and theoretical intentions were explored through the use of various functions and character groups. The first objective of protection is achieved through the use of robust construction. The second objective of observation is achieved through various camouflaged spaces that allow the user groups to observe without being seen. The third objective of merging margins is achieved through the use of specific activities that facilitate the user groups to adapt and assist each other through the struggle to regain their identities. The fourth objective of resilience is achieved through the use of alternative energy strategies which includes passive solar, ventilation, heating and cooling strategies.

Due to the speculative nature of the dissertation, it was the hope of the author to suggest an alternative way of creating architecture that provokes meaning and thinking. The journey of the project involved processes of questioning, struggle and contemplation in order to achieve an imperfect product open for interpretation.

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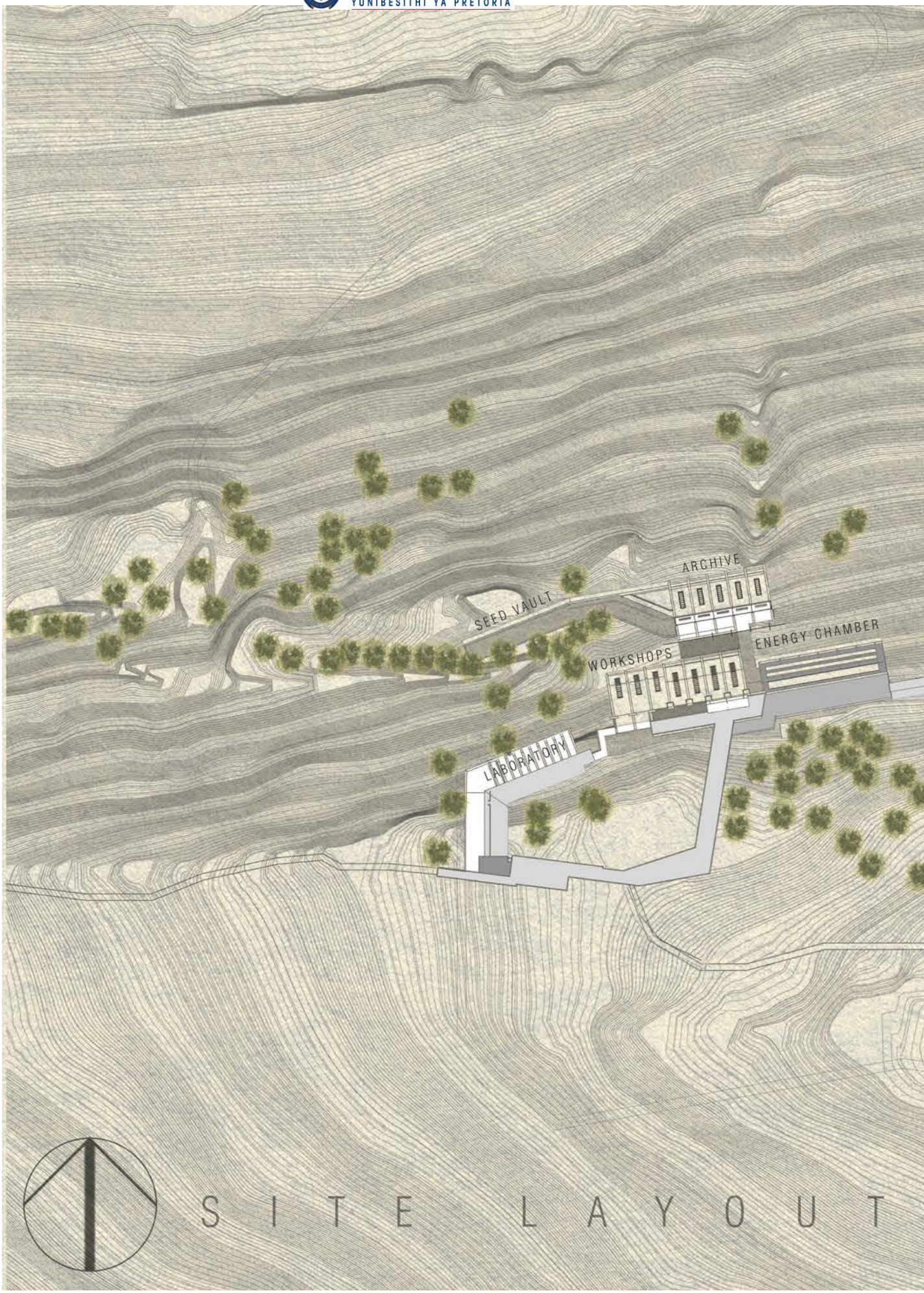

Figure 184: Final site layout. (2016)

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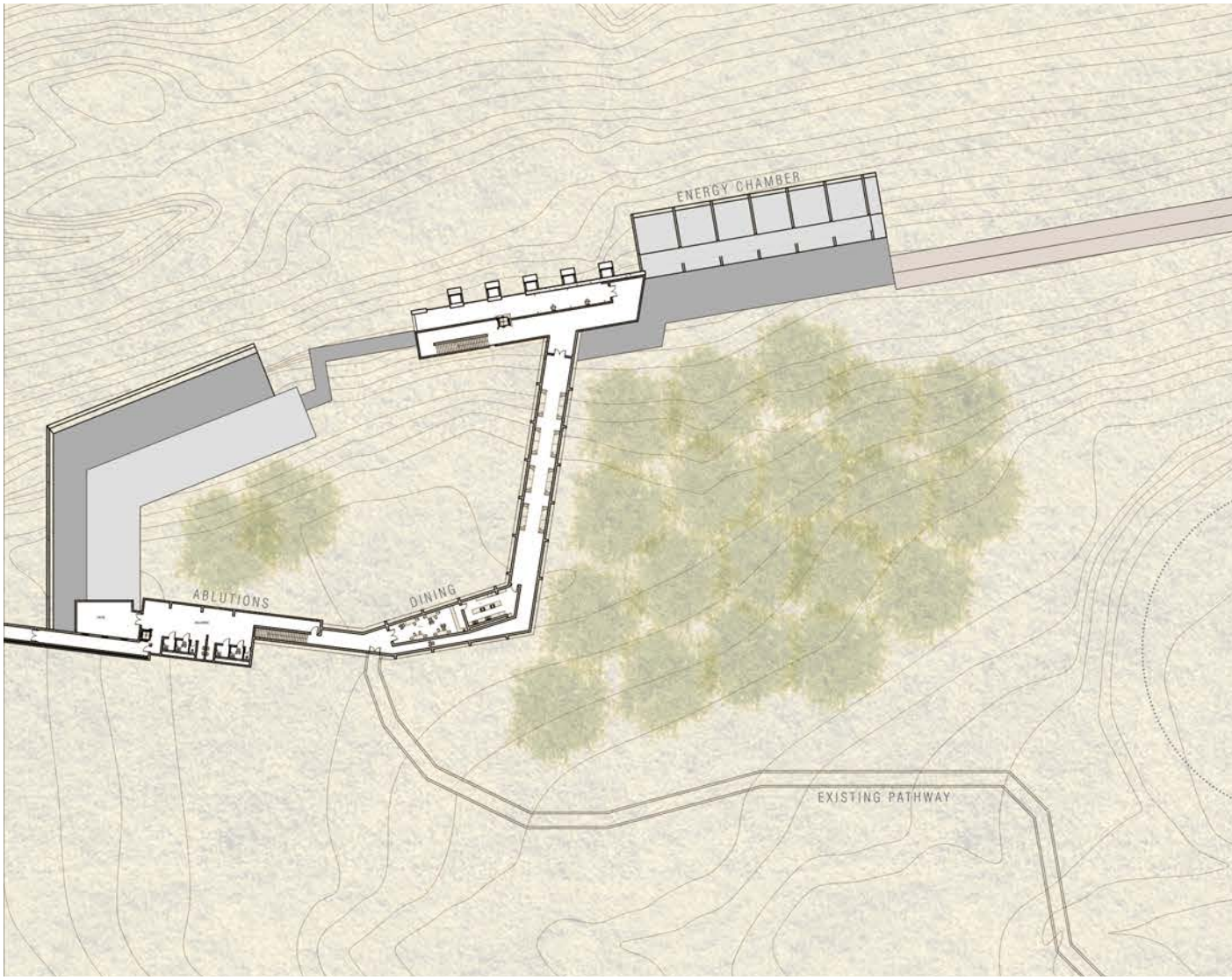

Figure 185: Final LEVEL 2 layout. (2016)

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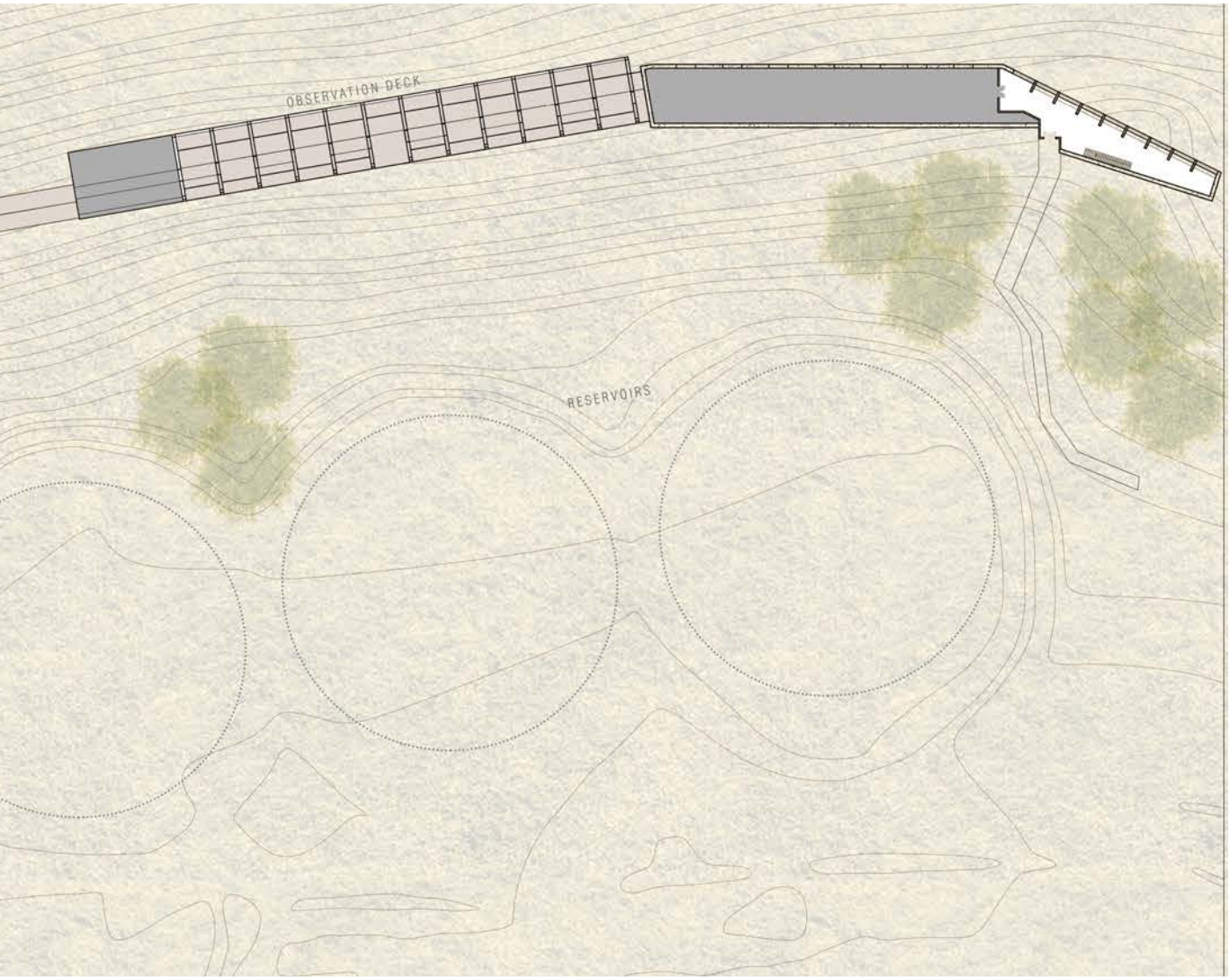

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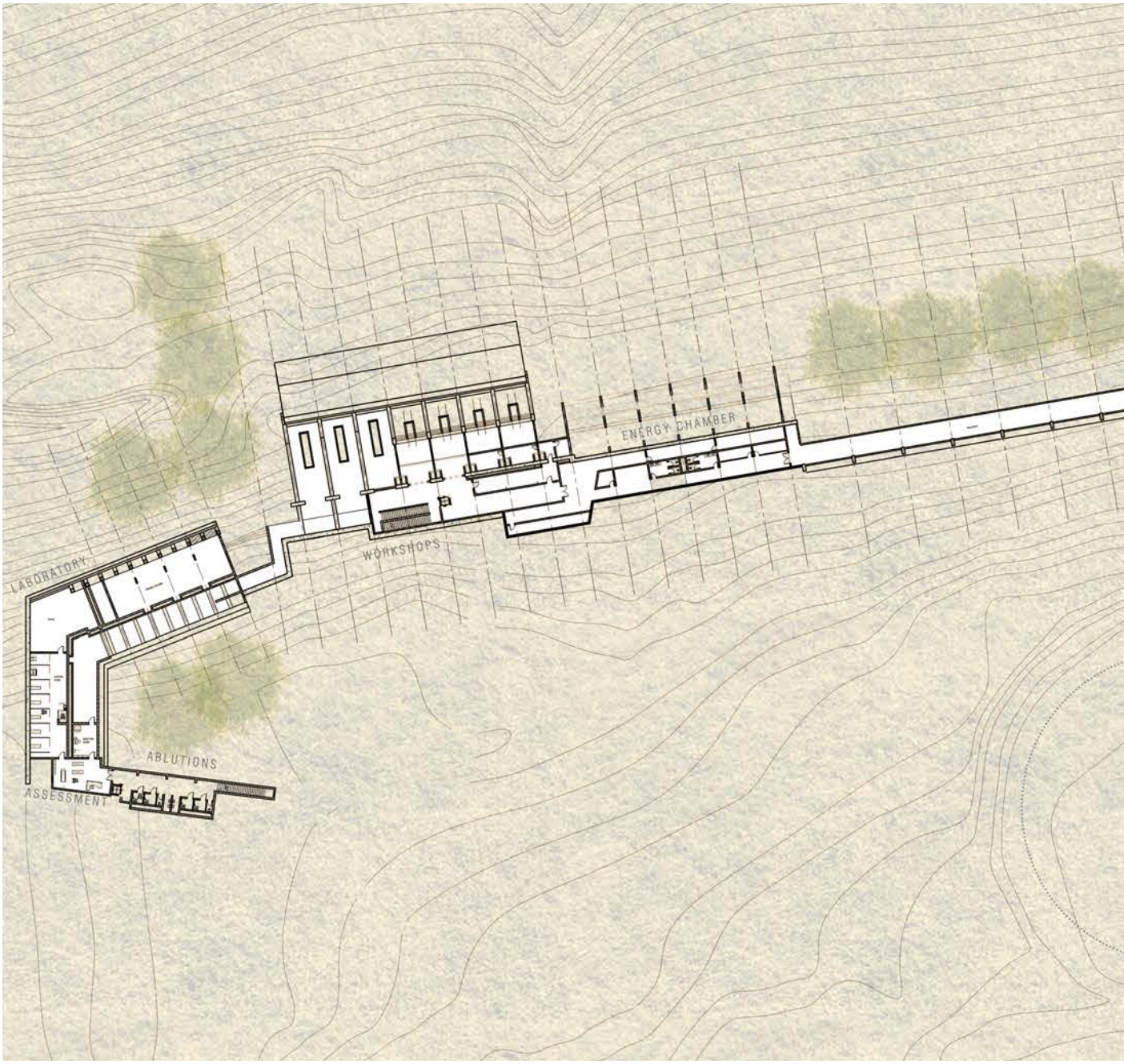

Figure 186: Final LEVEL 3 layout. (2016)

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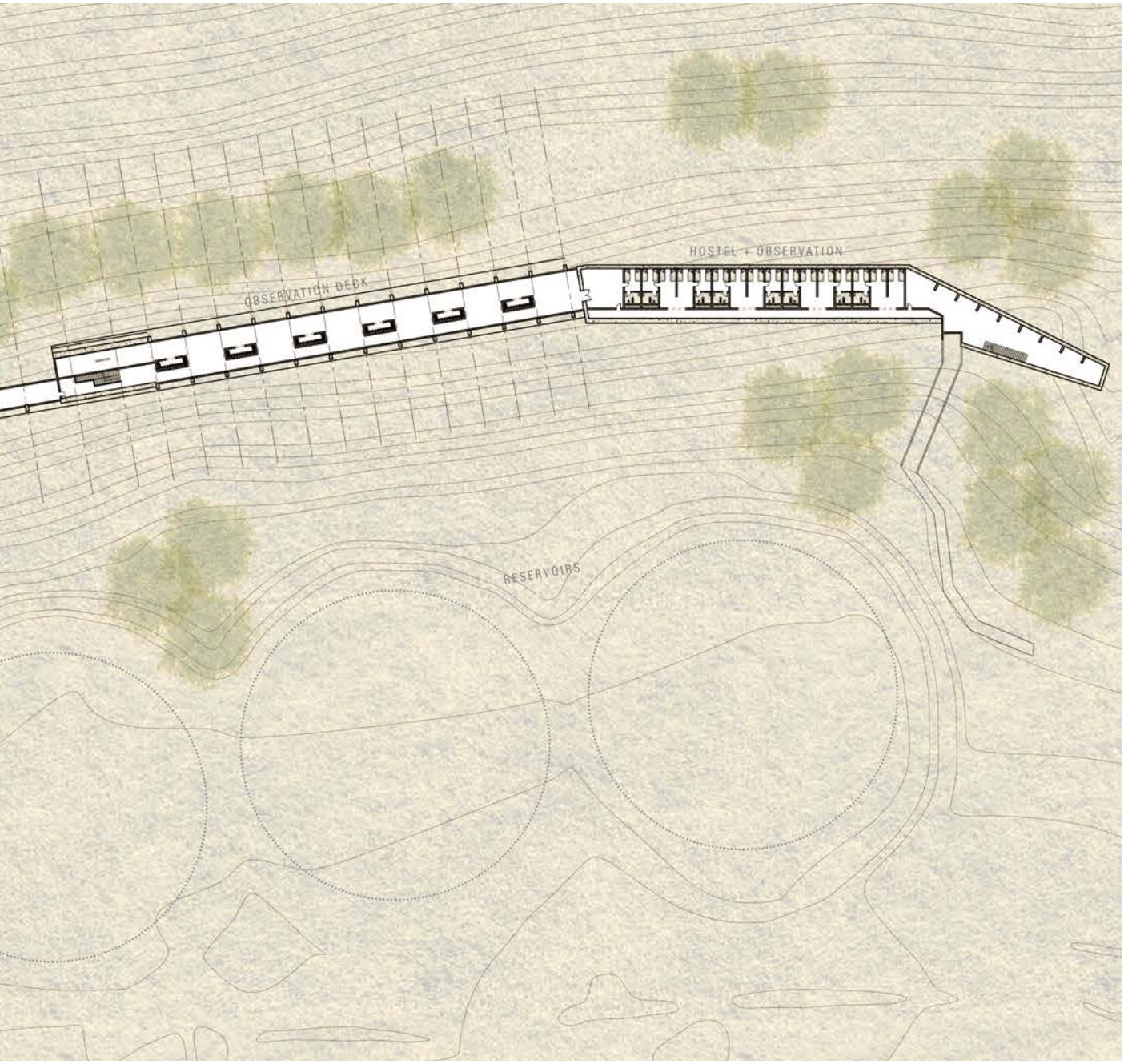

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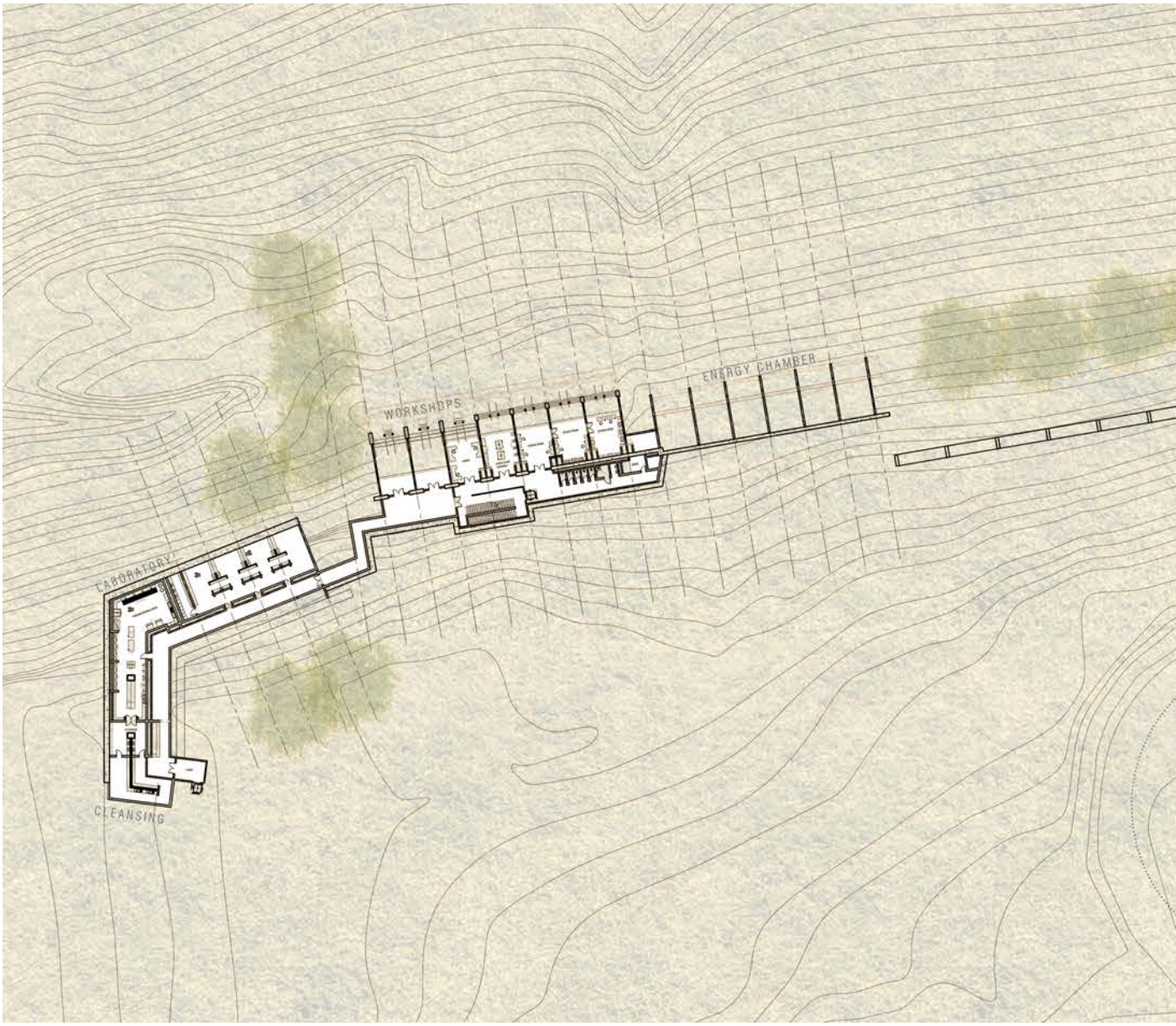

Figure 187: Final LEVEL 4 layout. (2016)

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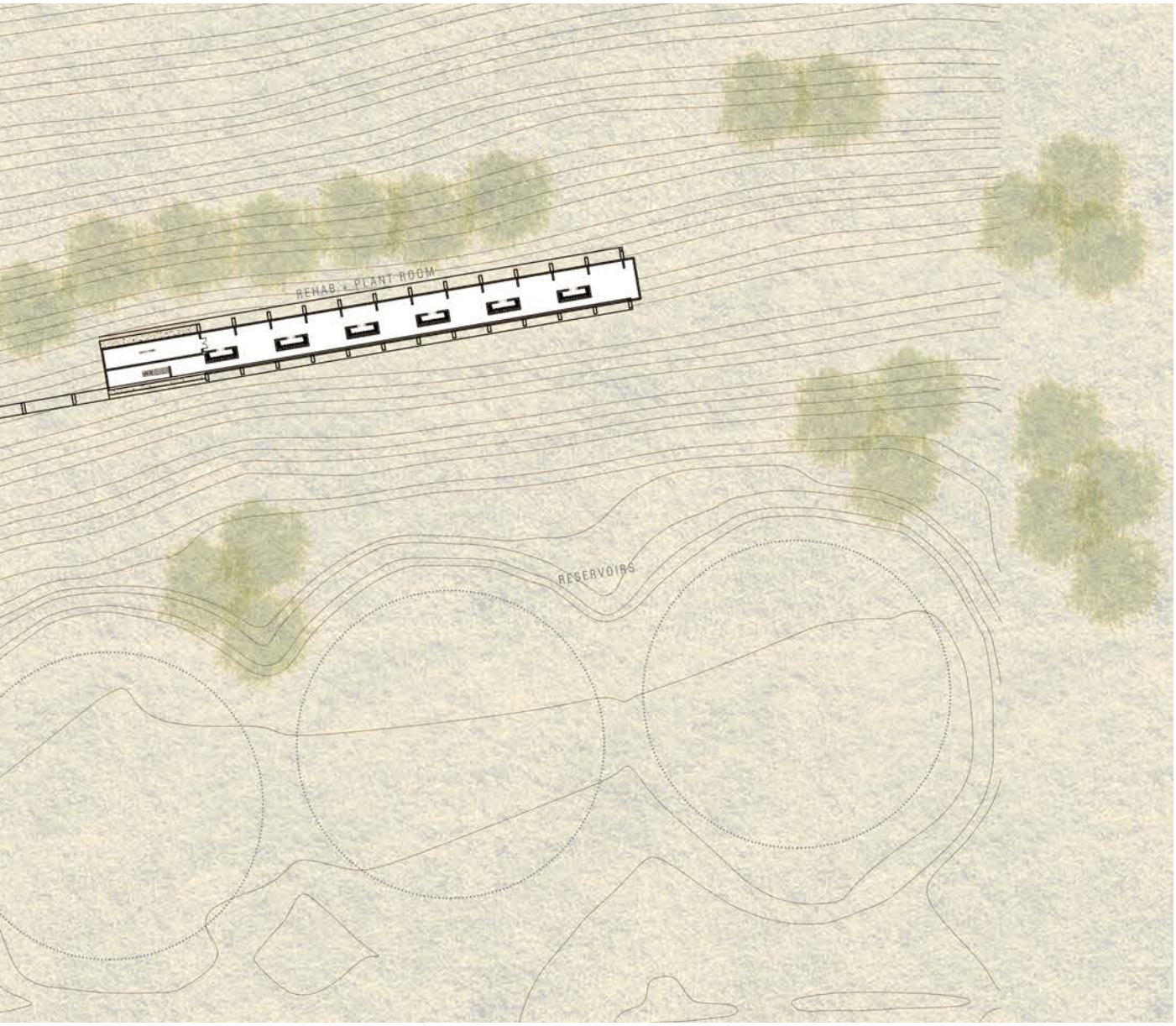

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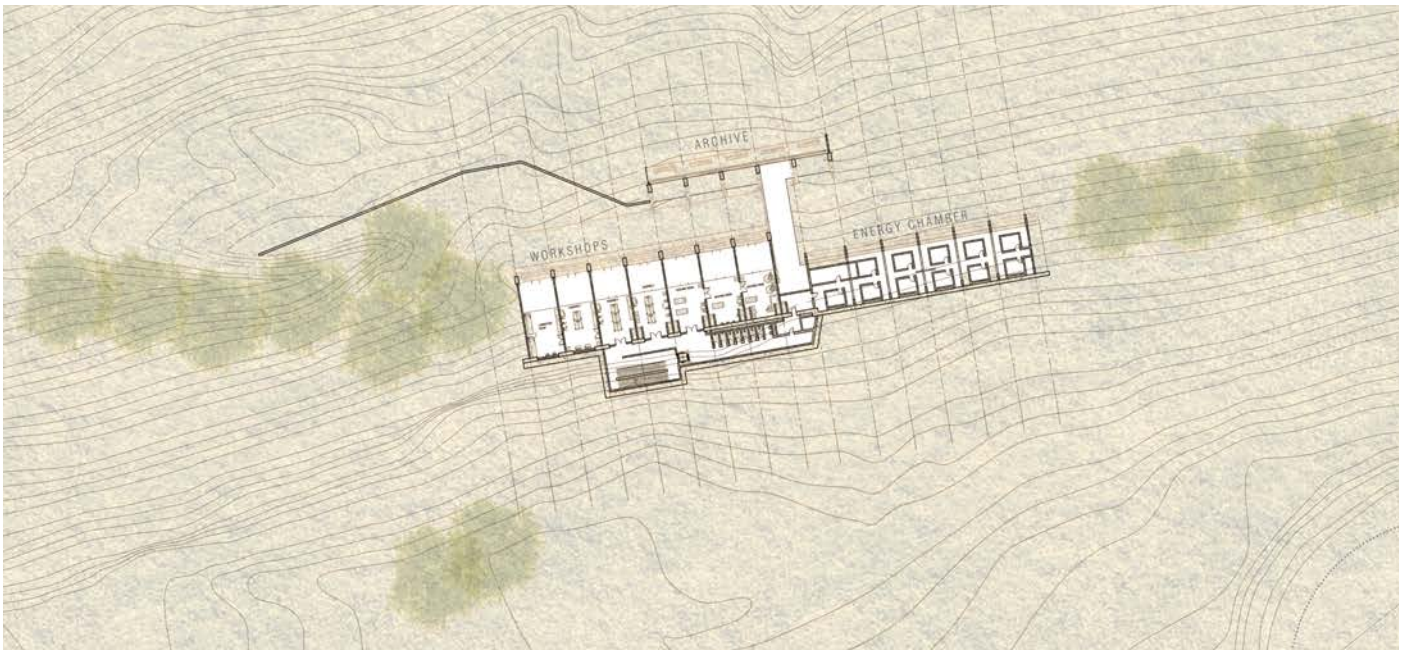

Figure 188: Final LEVEL 5 layout. (2016)

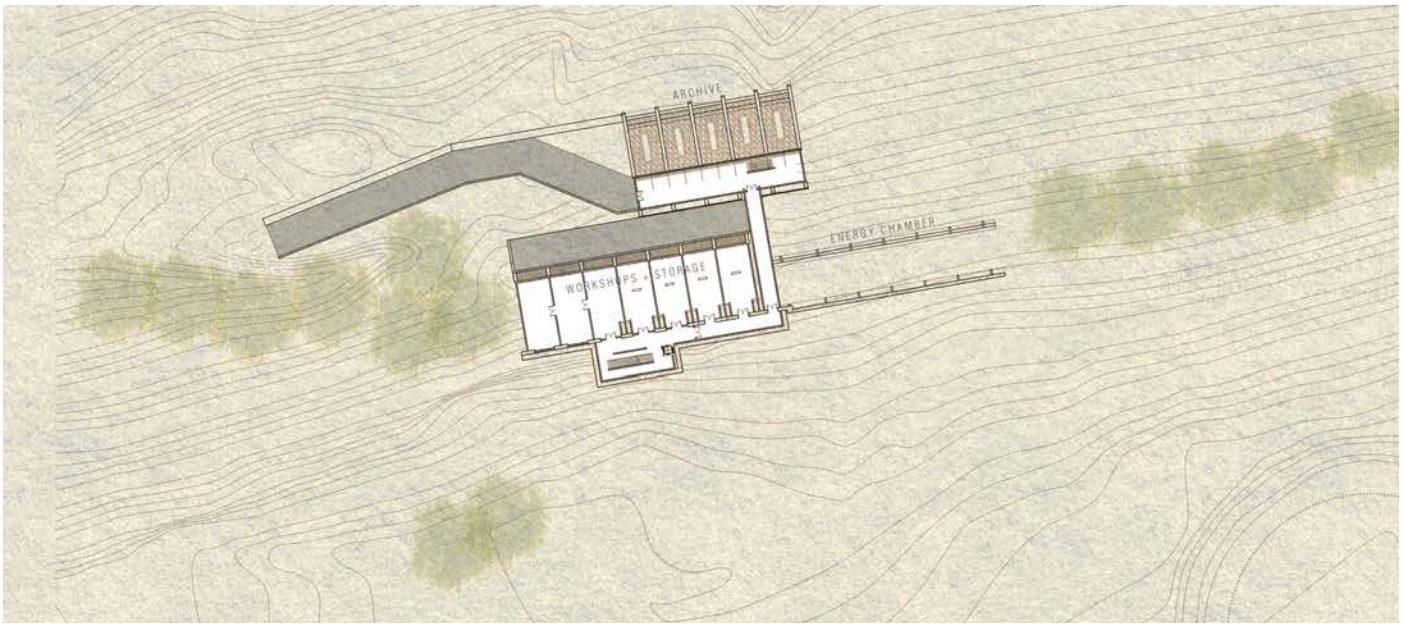

Figure 189: Final LEVEL 6 layout. (2016)

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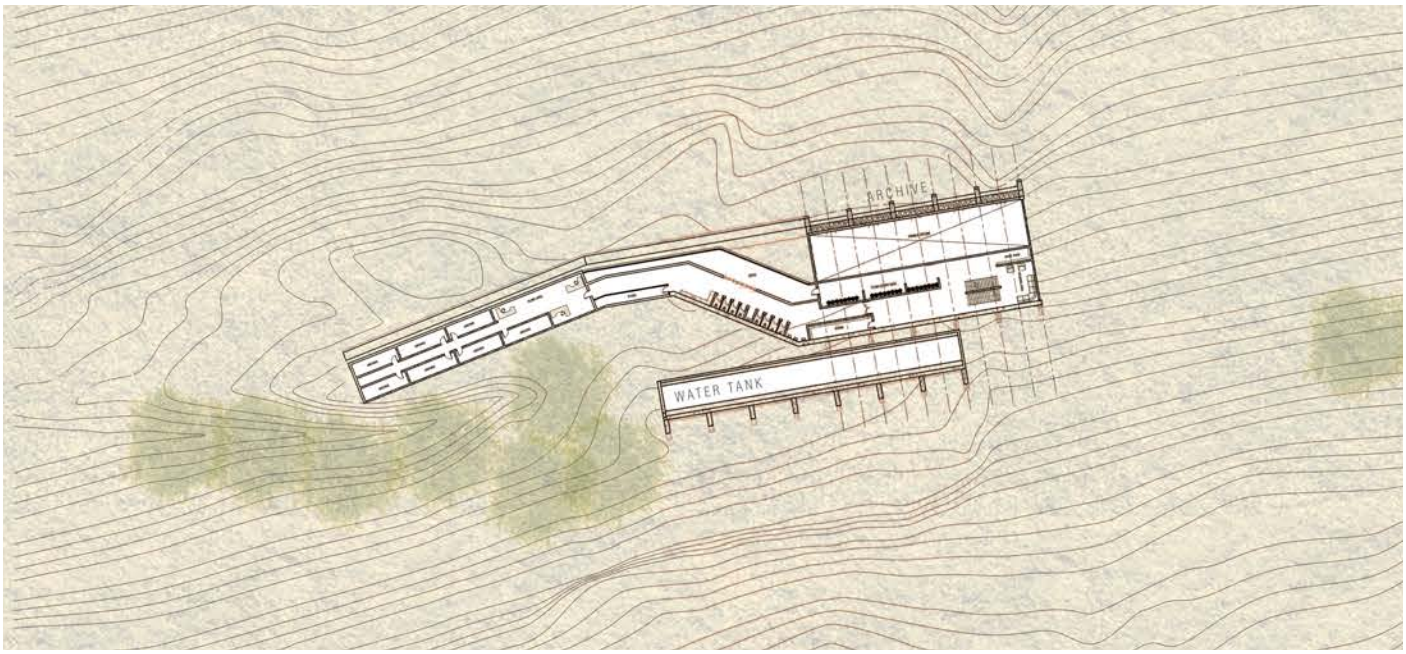

Figure 190: Final LEVEL 7 layout. (2016)

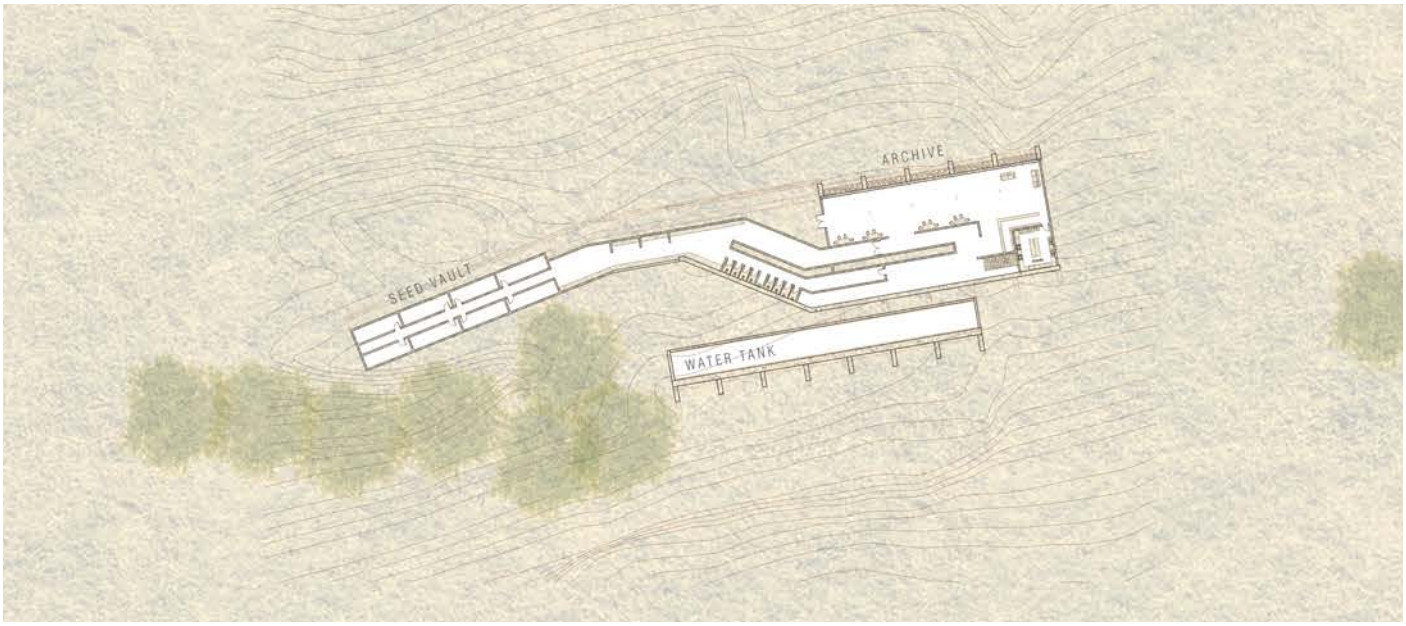

Figure 191: Final LEVEL 8 layout. (2016)

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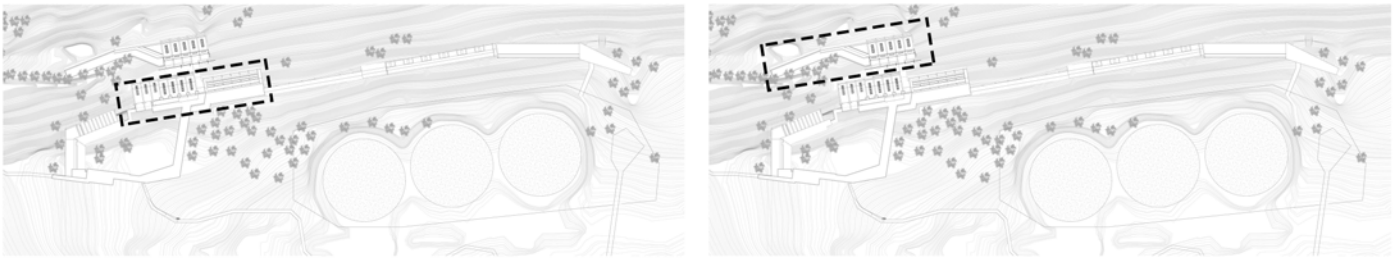

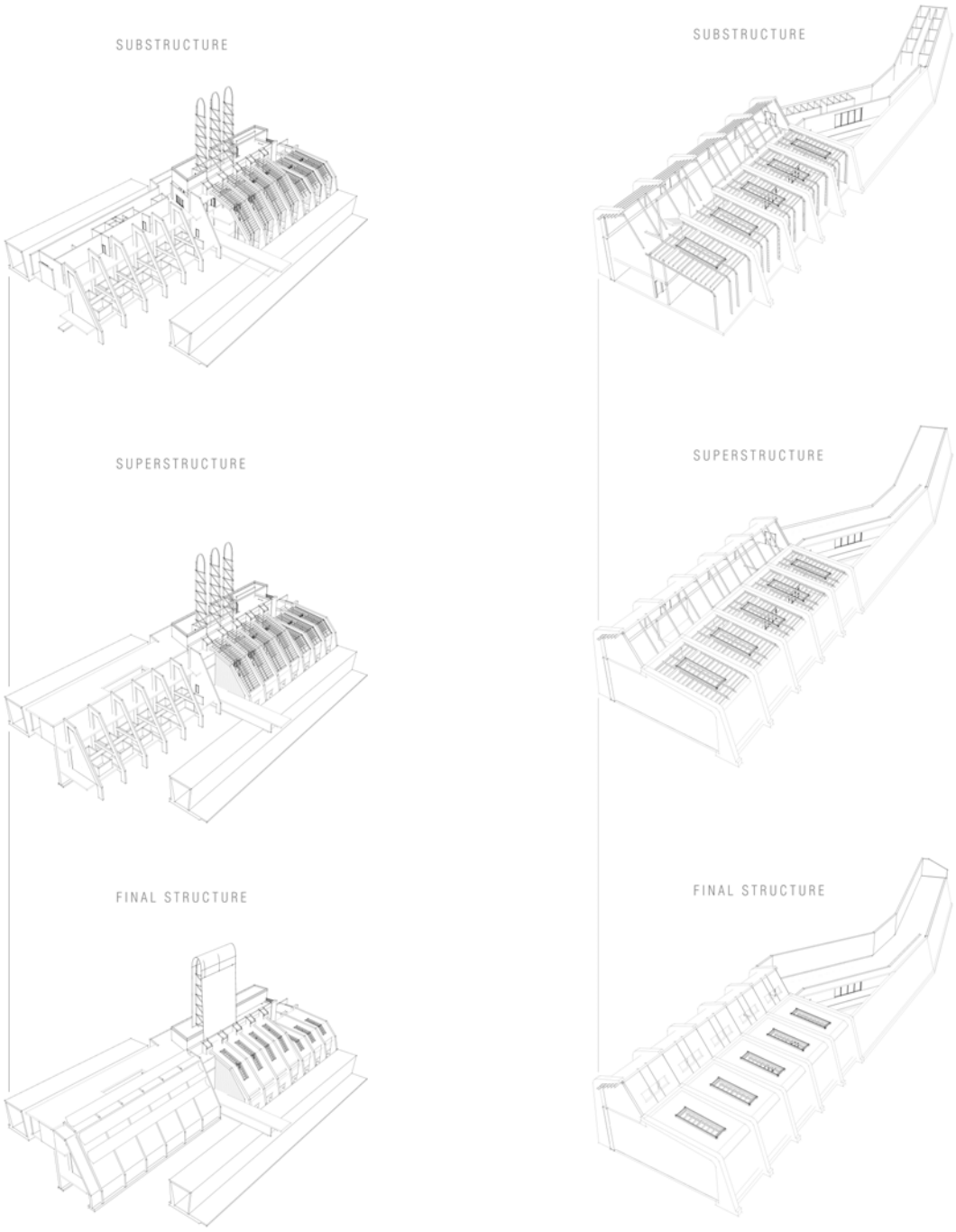

Figure 192: Structural clarification of the Core and Archive buildings. (2016)

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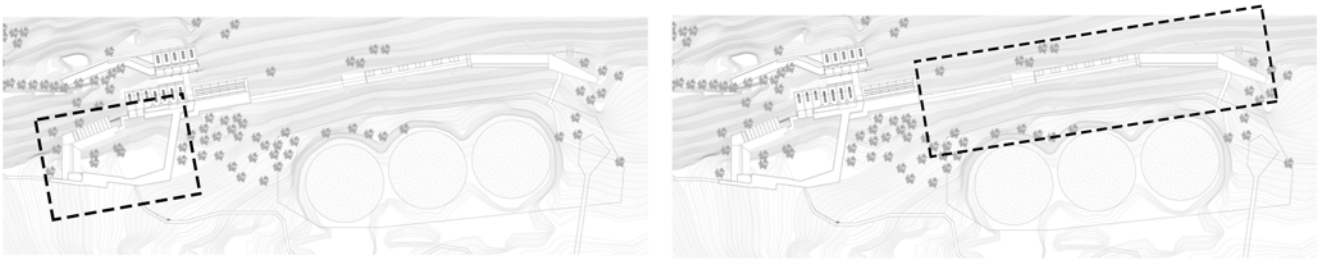
LABORATORY

OBSERVATION DECK



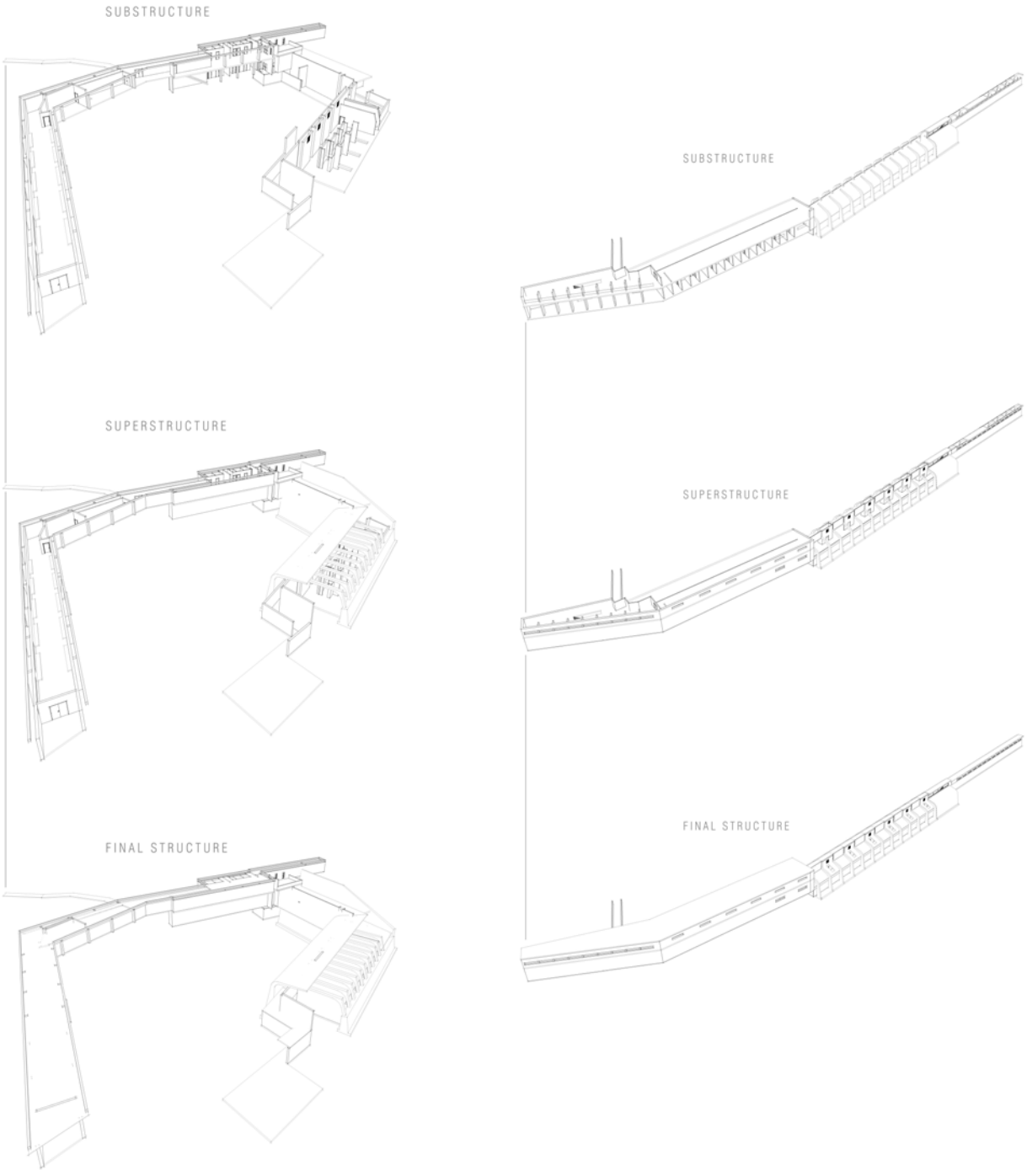


Figure 193: Structural clarification of the Laboratory and Observation deck buildings. (2016)

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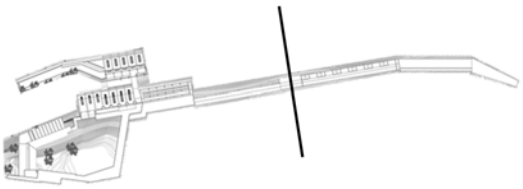

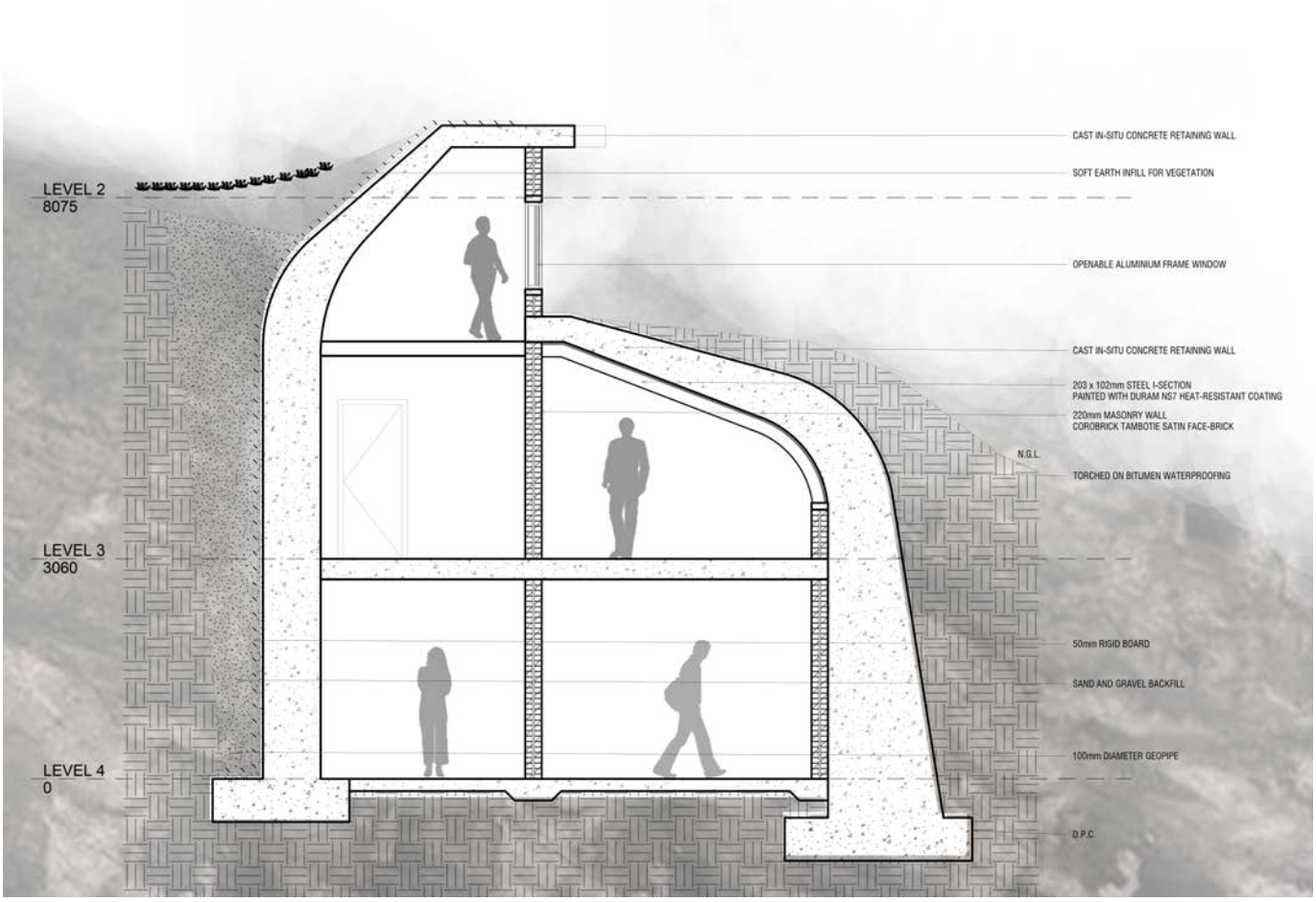

Figure 194: Detail (not to scale) of the Observation deck. (2016)

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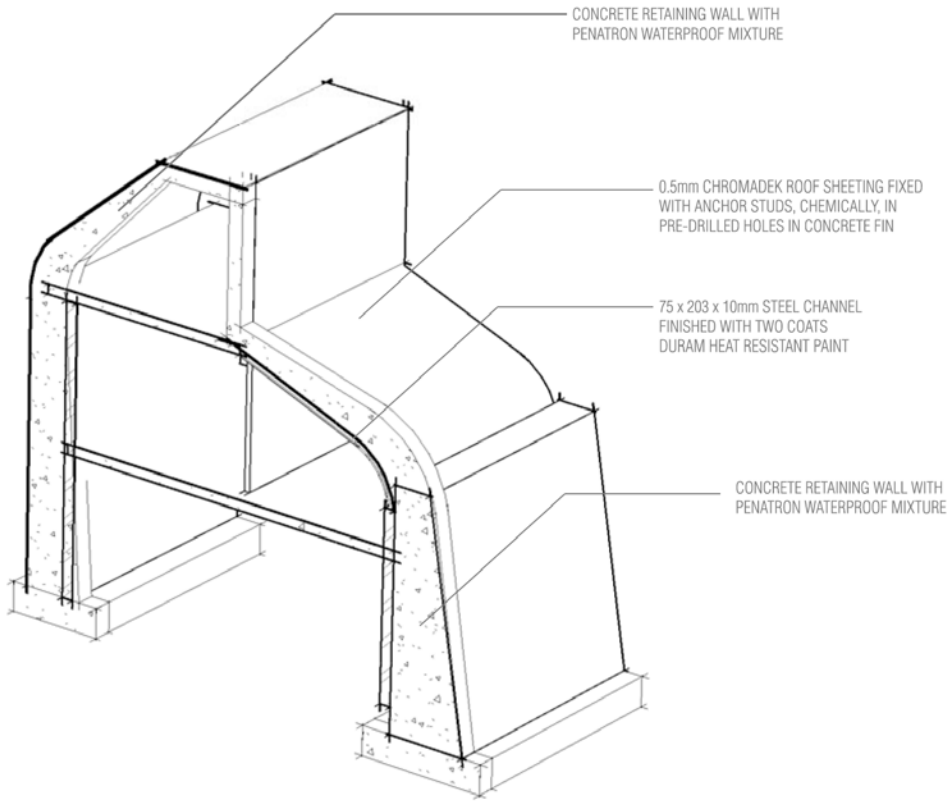

Figure 195: 3-dimensional detail (not to scale) of the Observation deck. (2016)

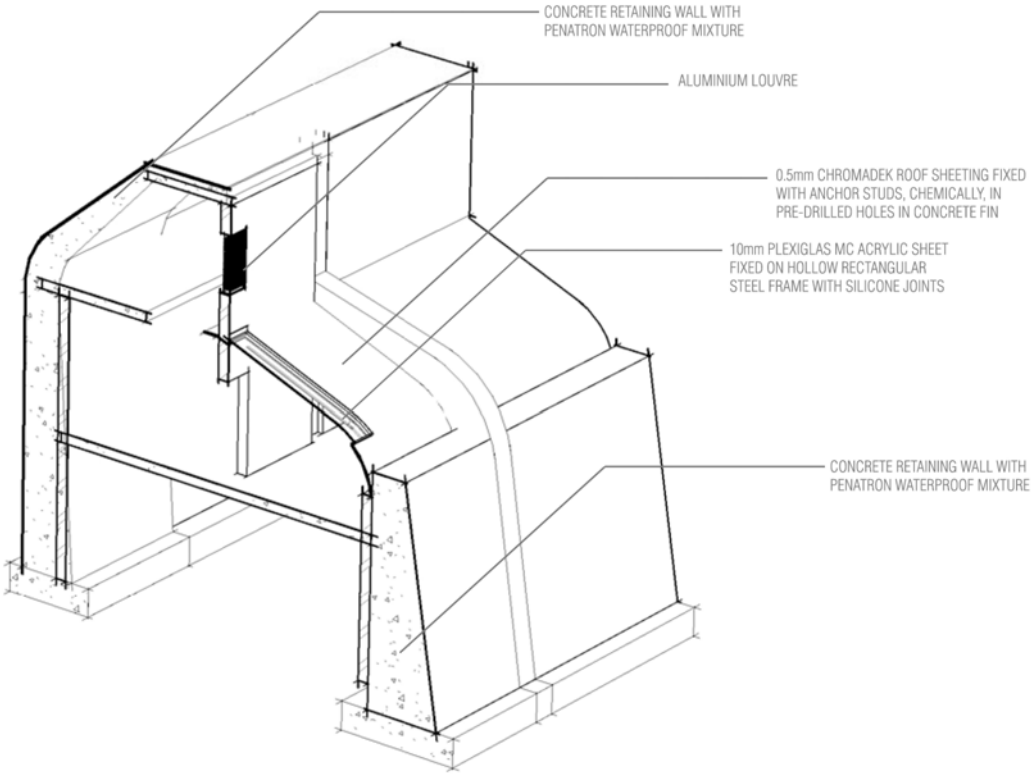

Figure 196: 3-dimensional detail (not to scale) of the Observation deck. (2016)

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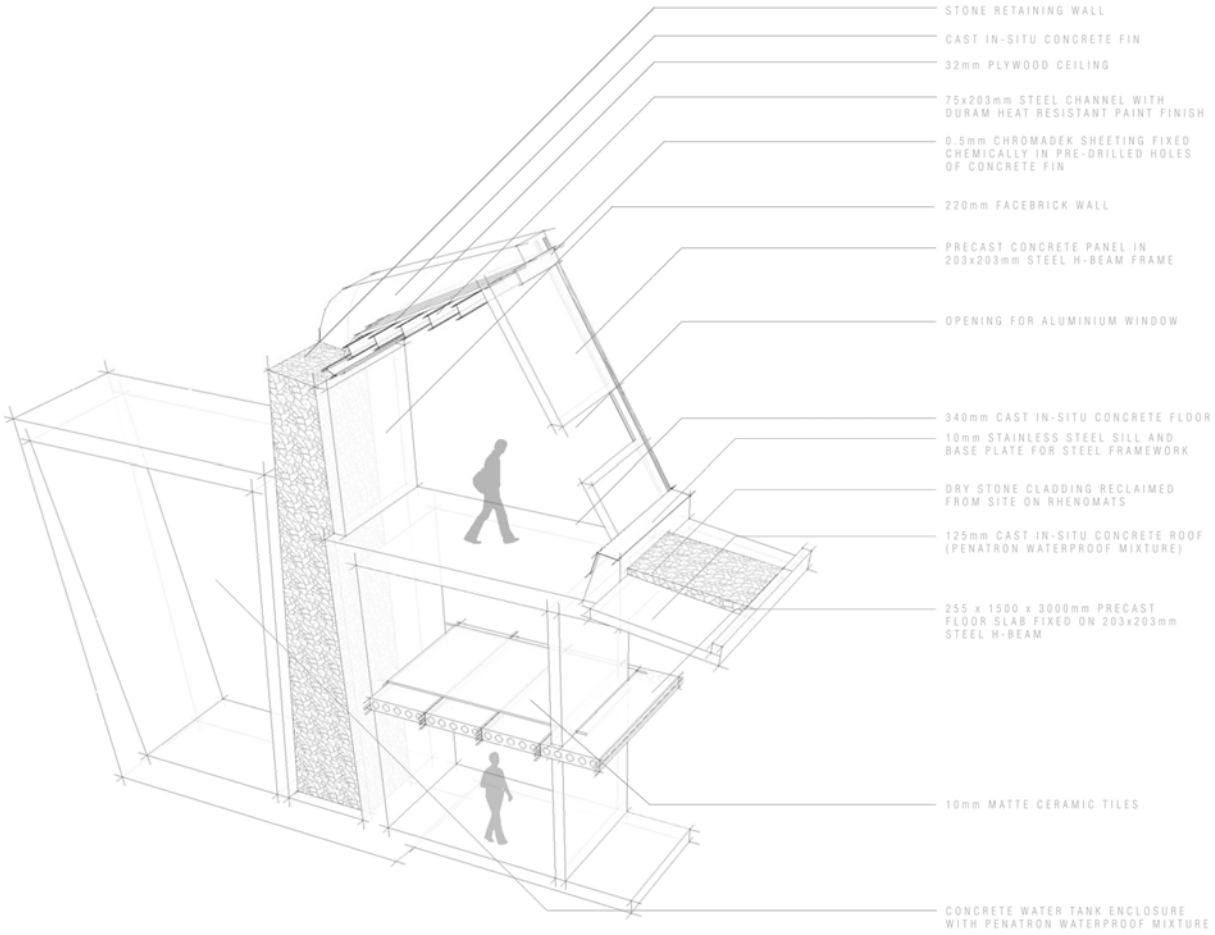

Figure 197: 3-dimensional detail (not to scale) of the Archive. (2016)

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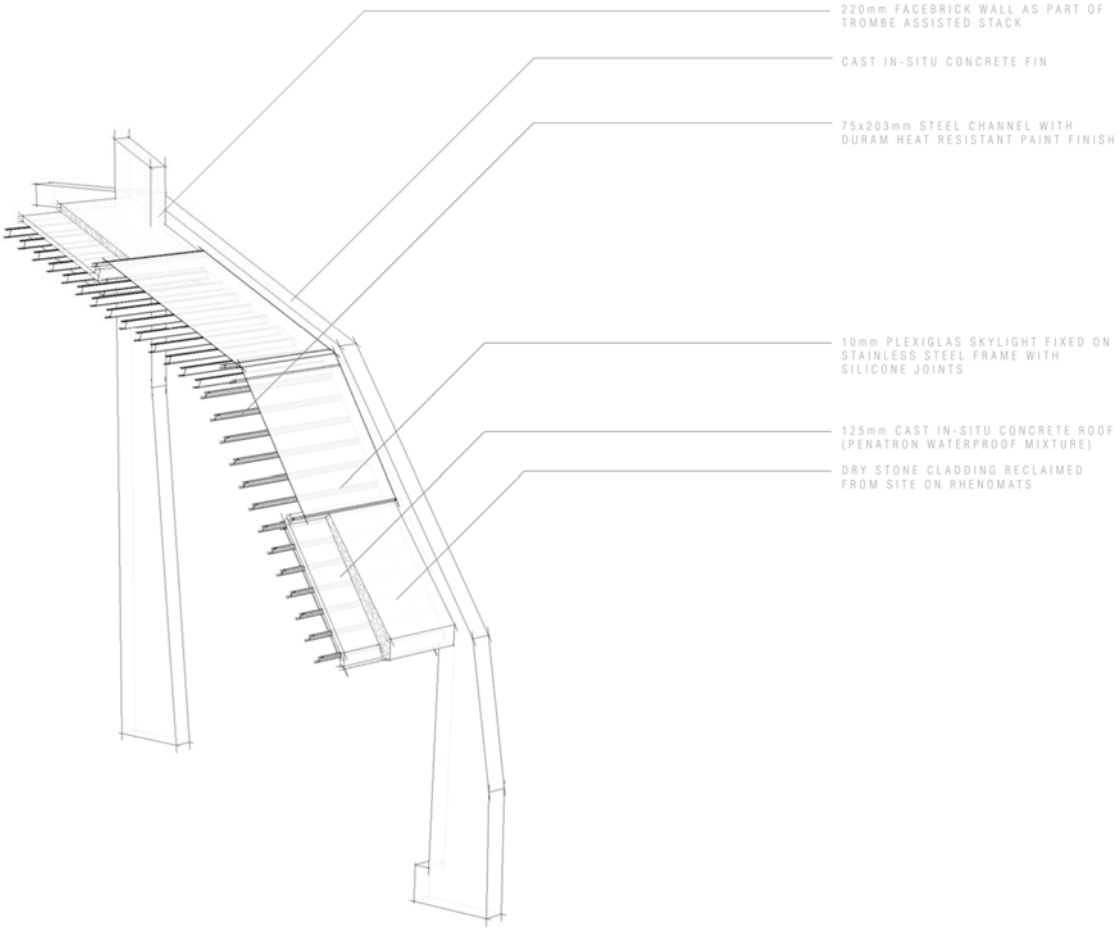

Figure 198: 3-dimensional detail (not to scale) of the Archive. (2016)

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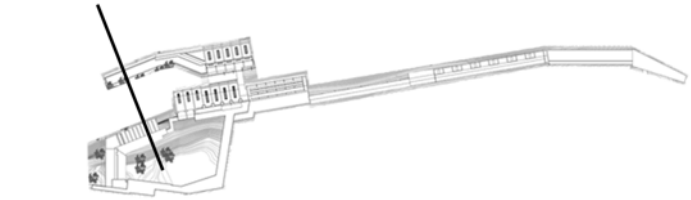

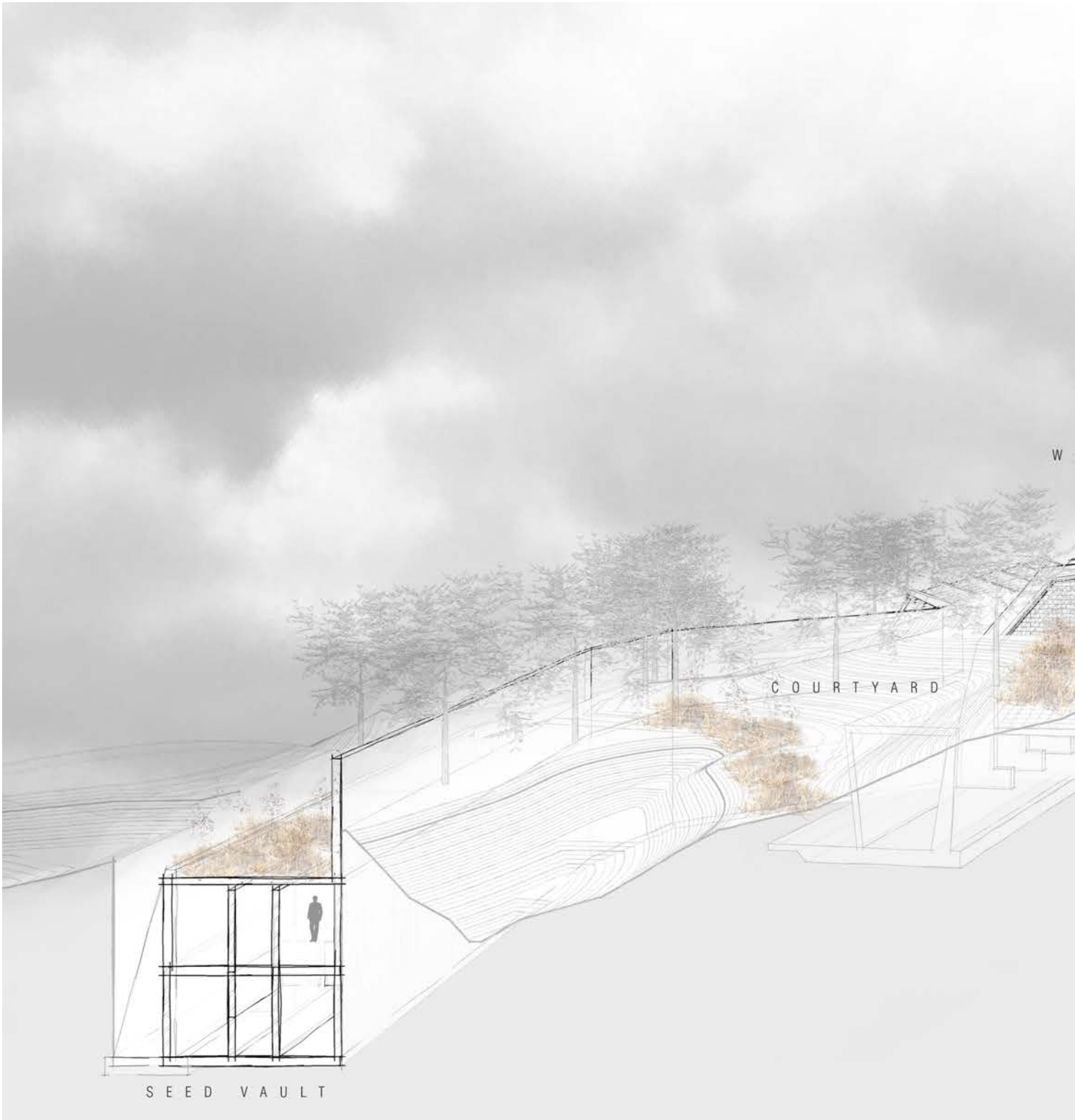

Figure 199: 3-dimensional section of the Laboratory (right) and the seed vault (left). (2016)

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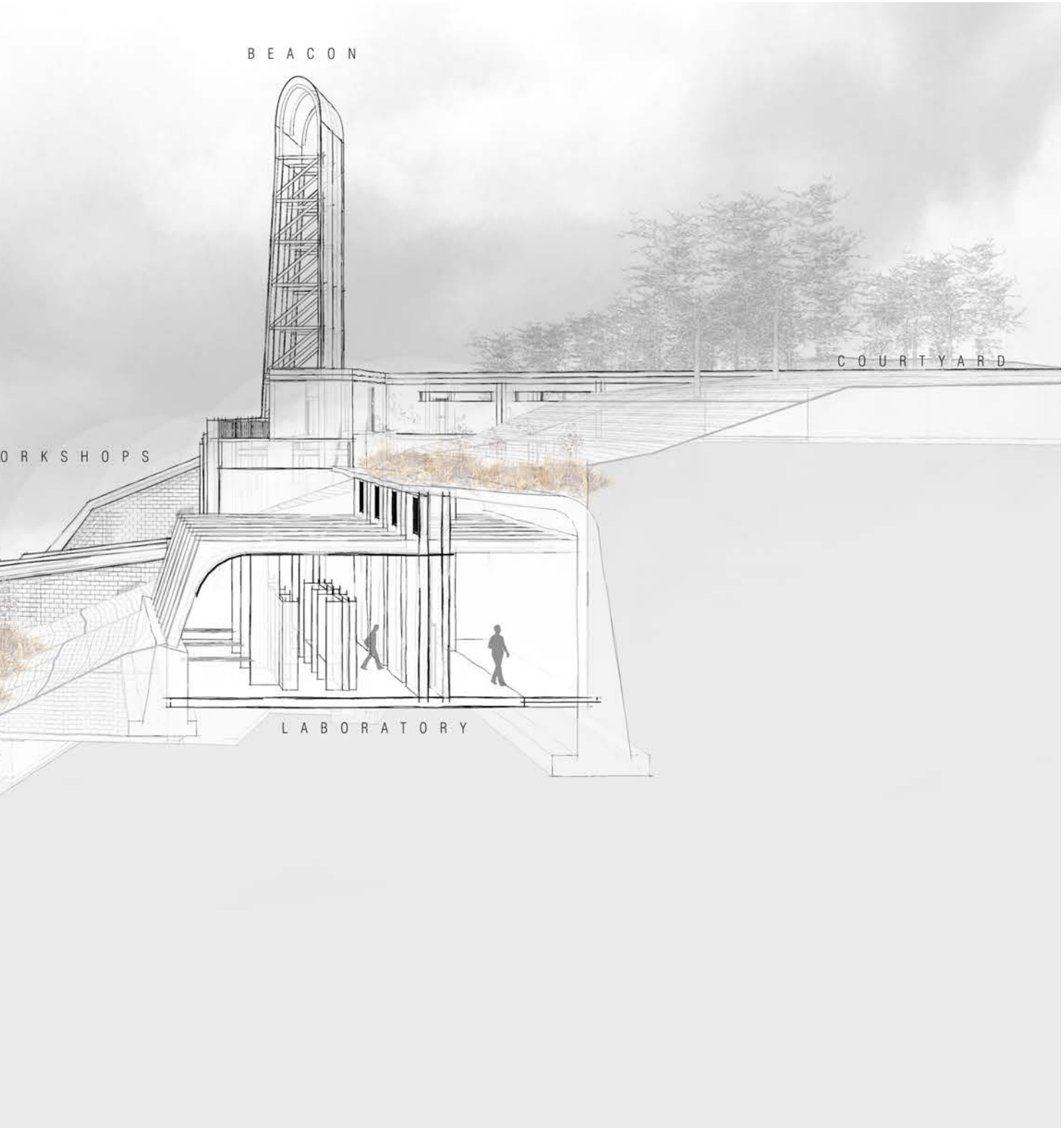

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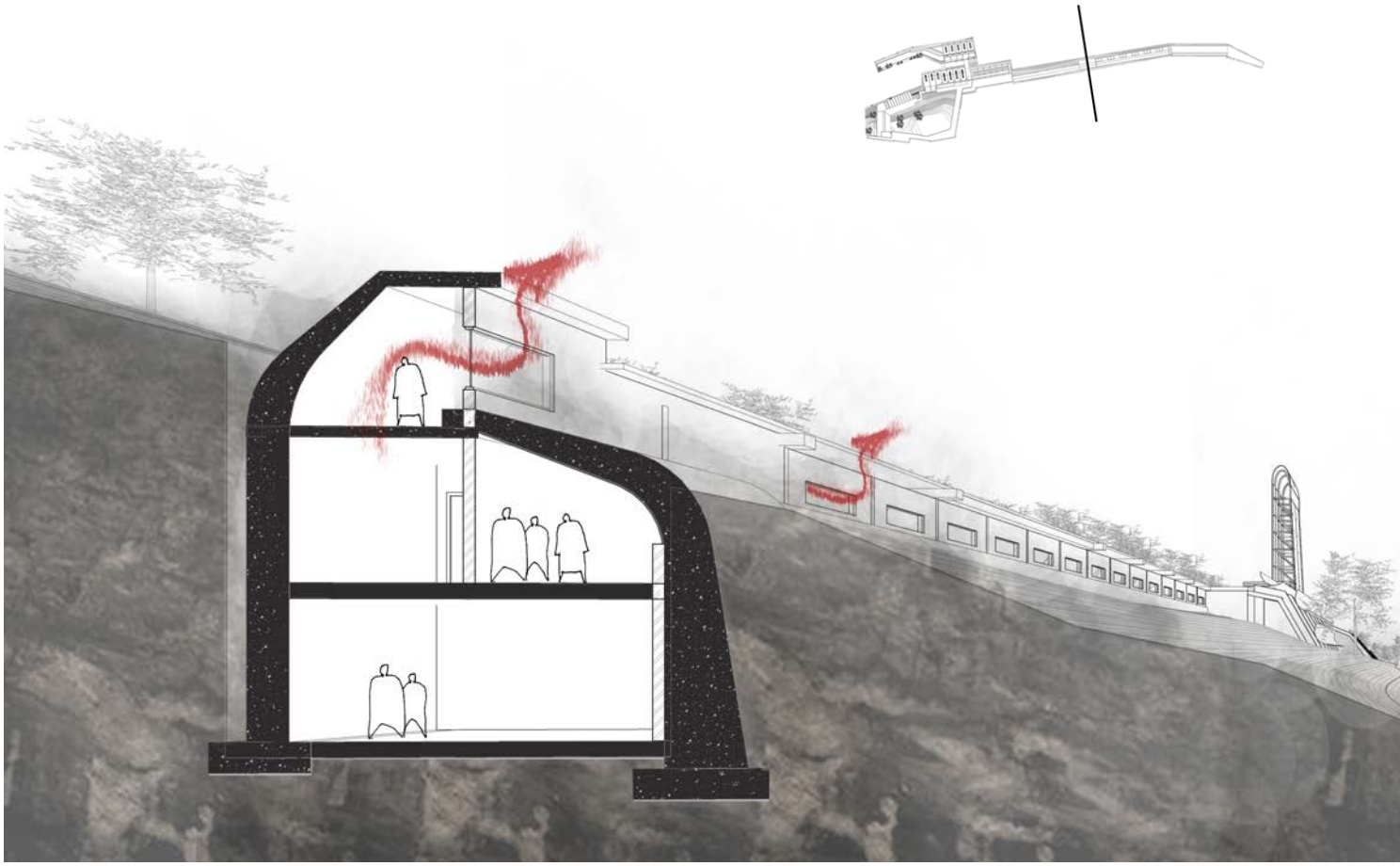

Figure 200: 3-dimensional section (not to scale) of the Observation deck, illustrating how hot air is extracted from the building during summer. (2016)

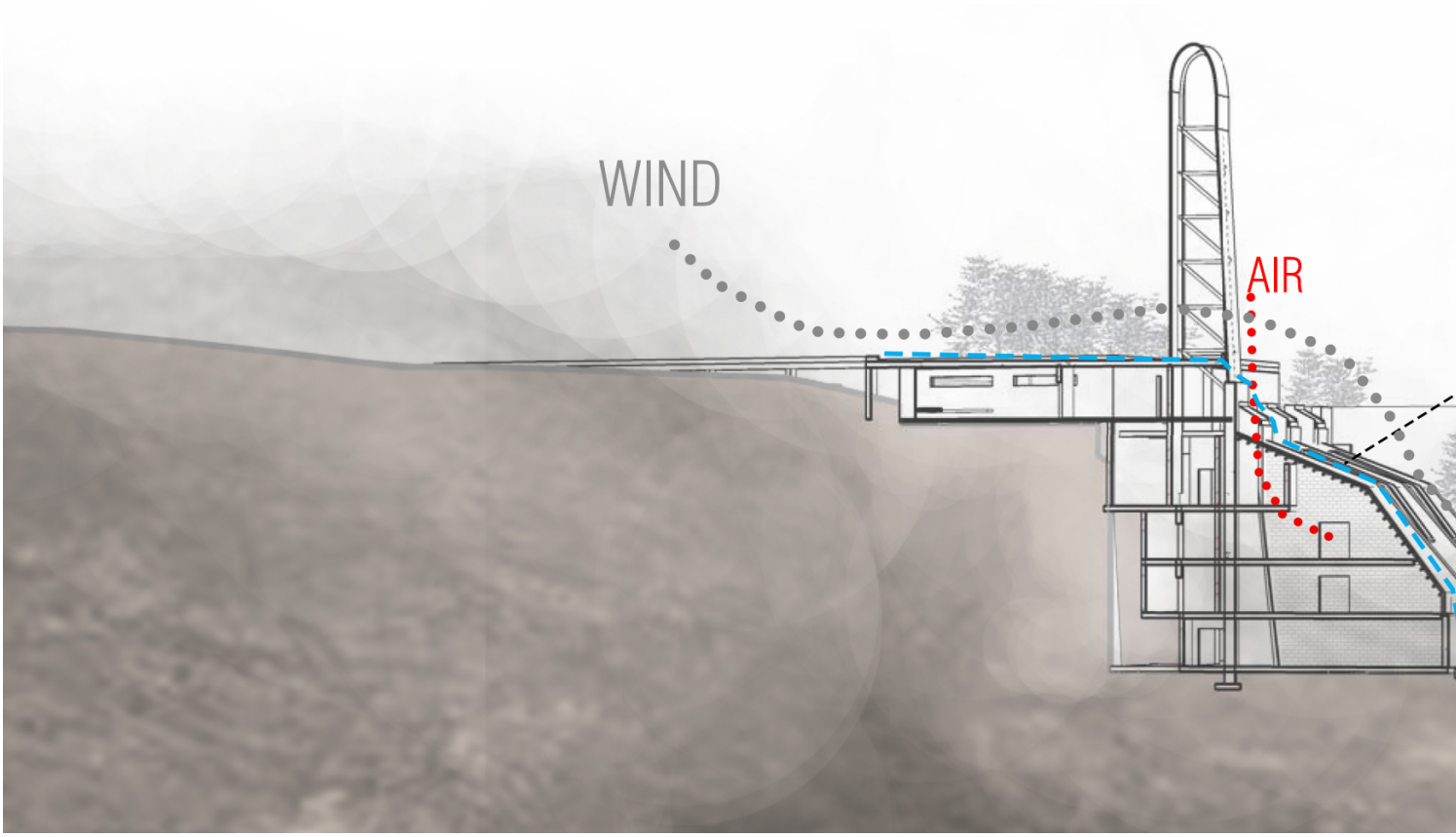

Figure 201: 3-dimensional section of the Workshops and Archive, illustrating how passive strategies were considered. (2016)

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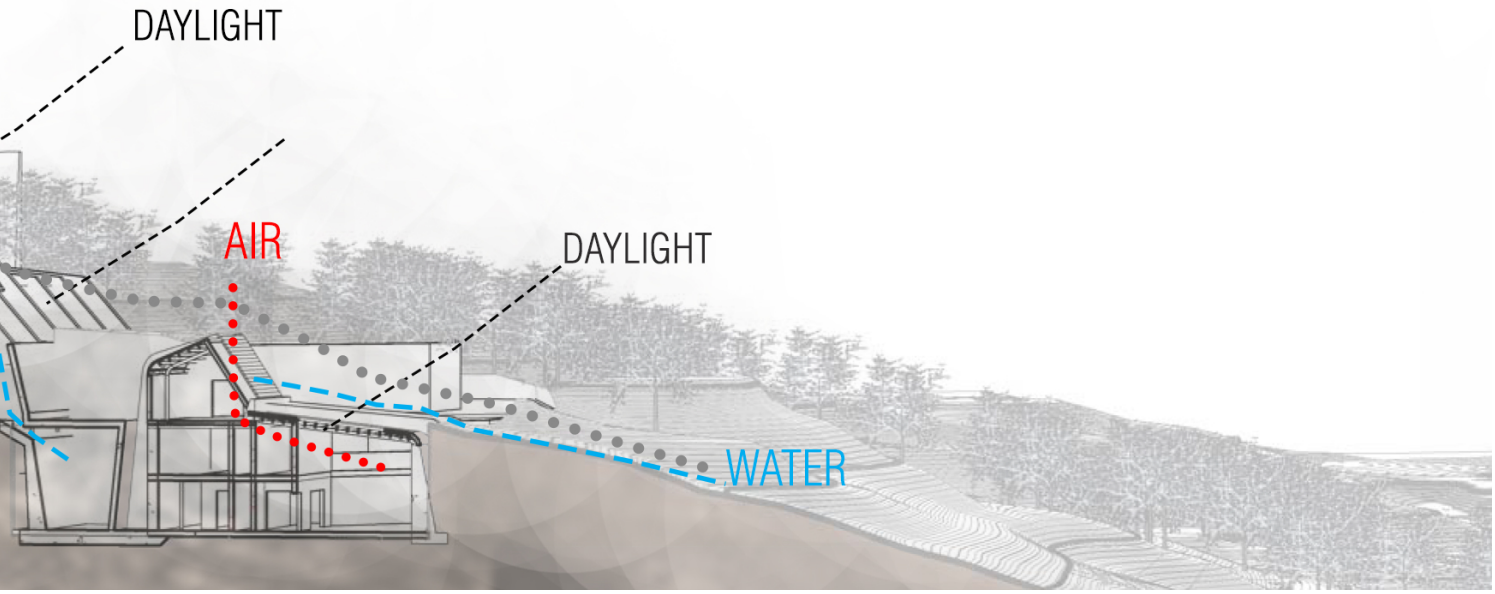

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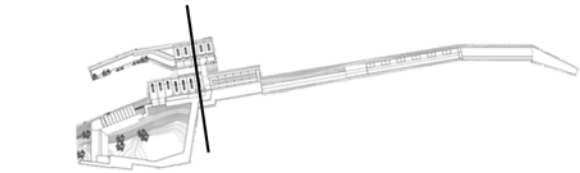

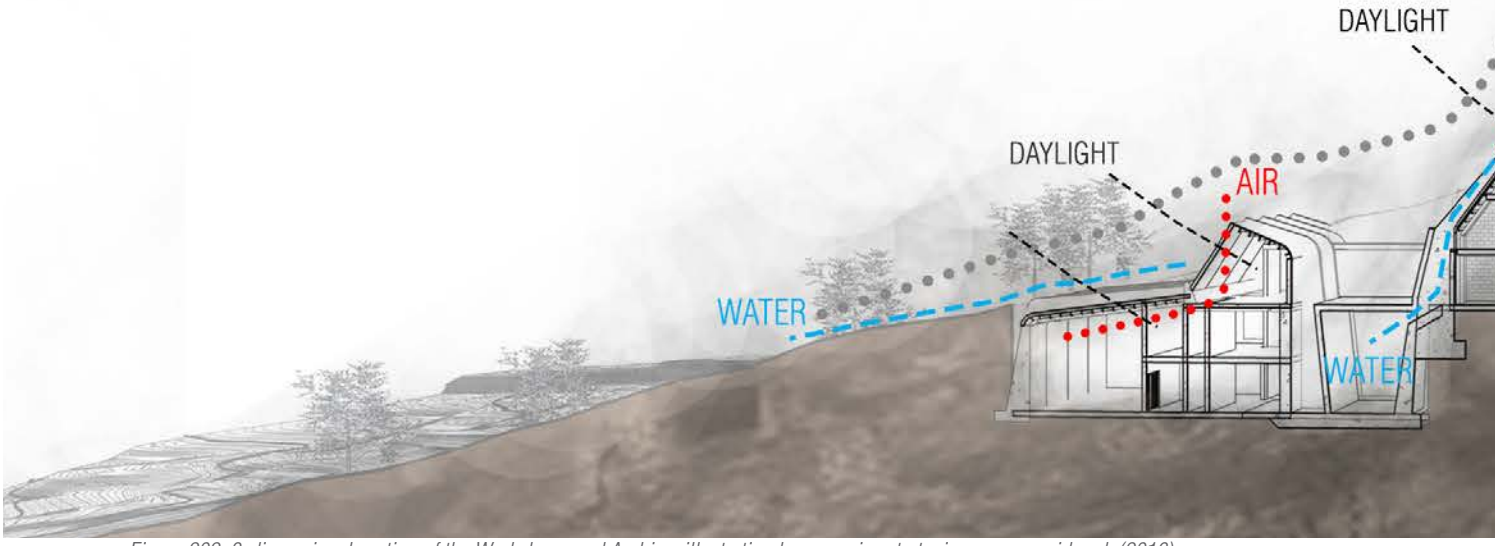

Figure 202: 3-dimensional section of the Workshops and Archive, illustrating how passive strategies were considered. (2016)

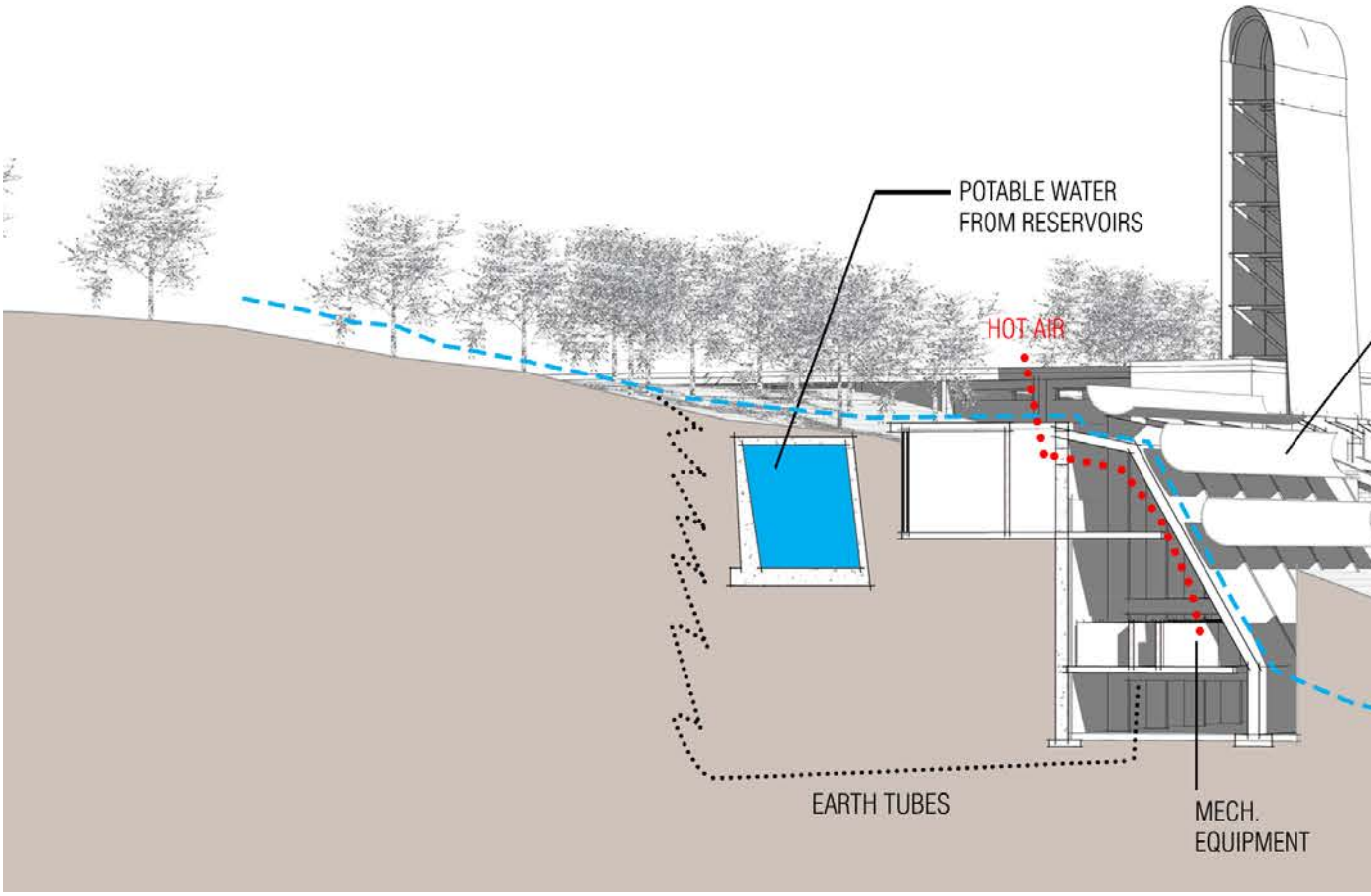

Figure 203: 3-dimensional section of the Energy Chamber, illustrating how passive strategies were considered. (2016)

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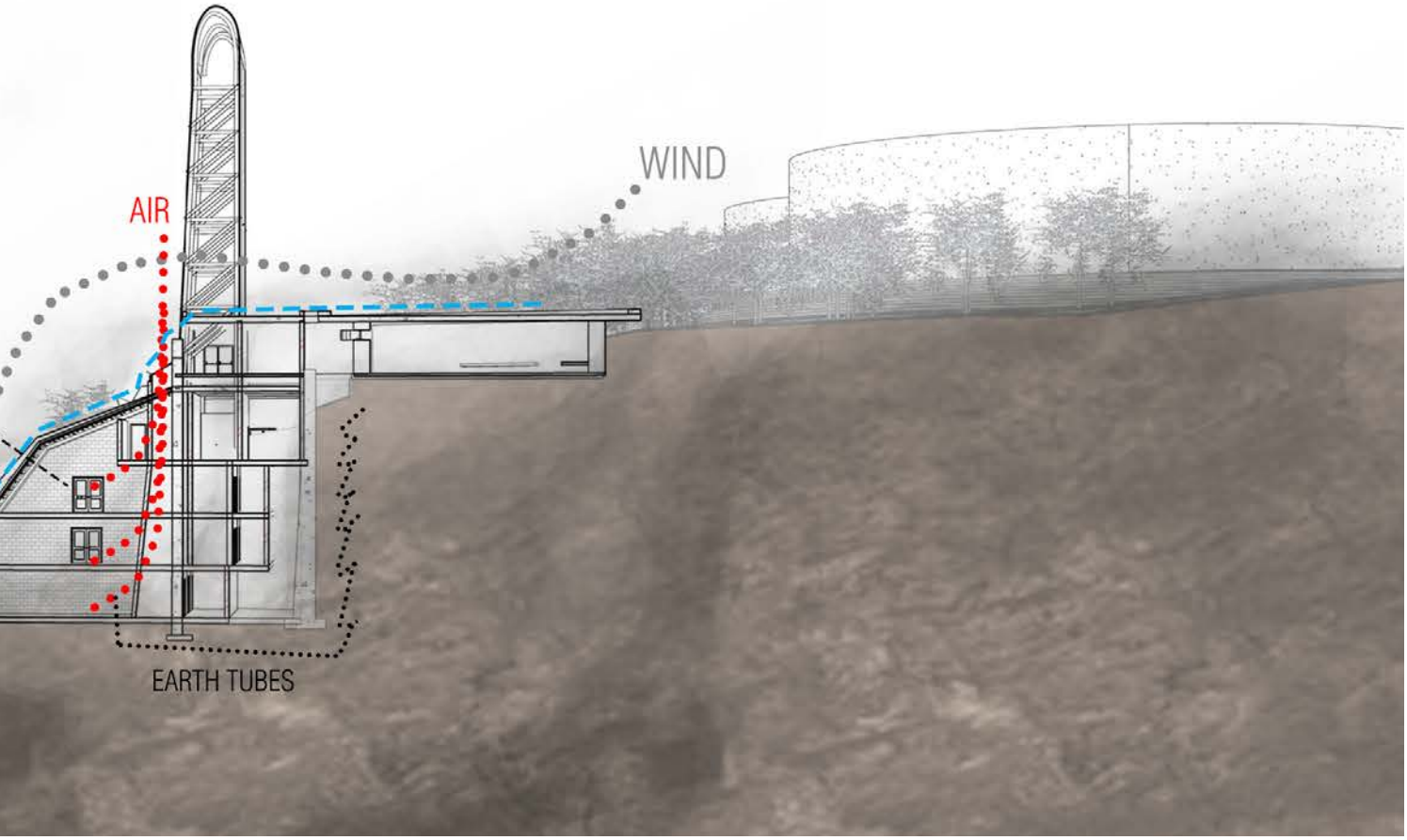

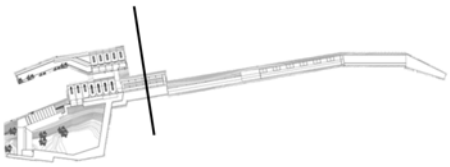

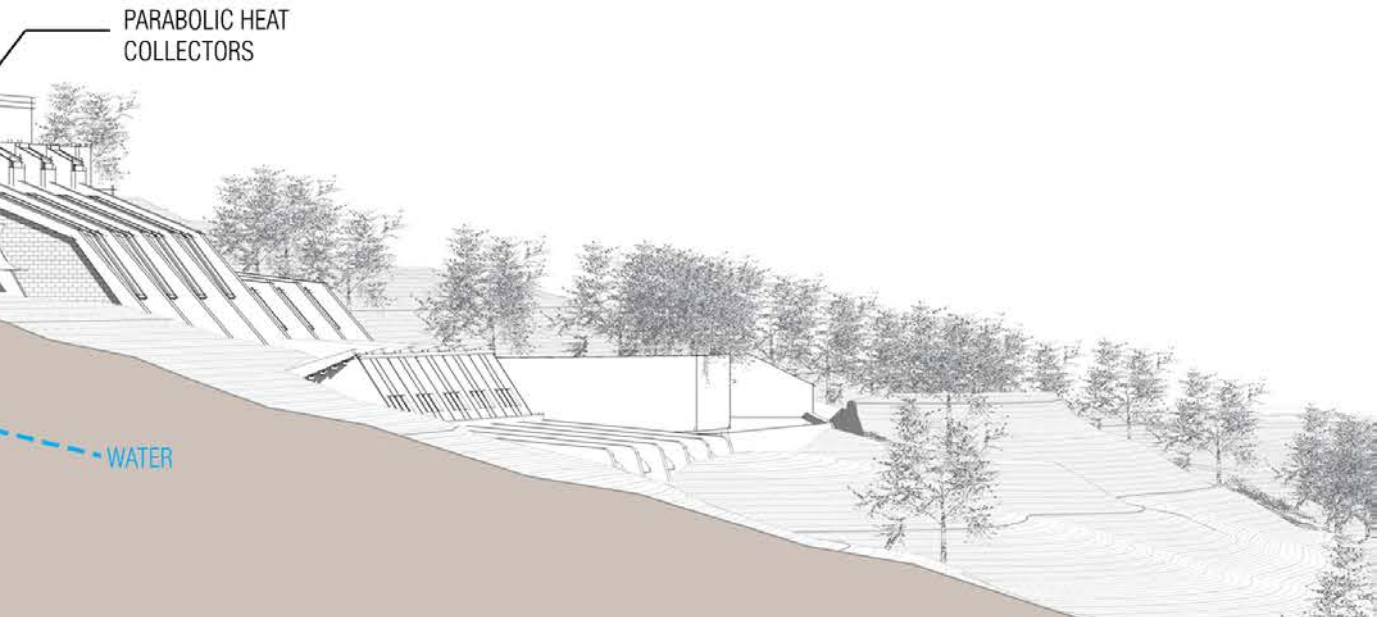

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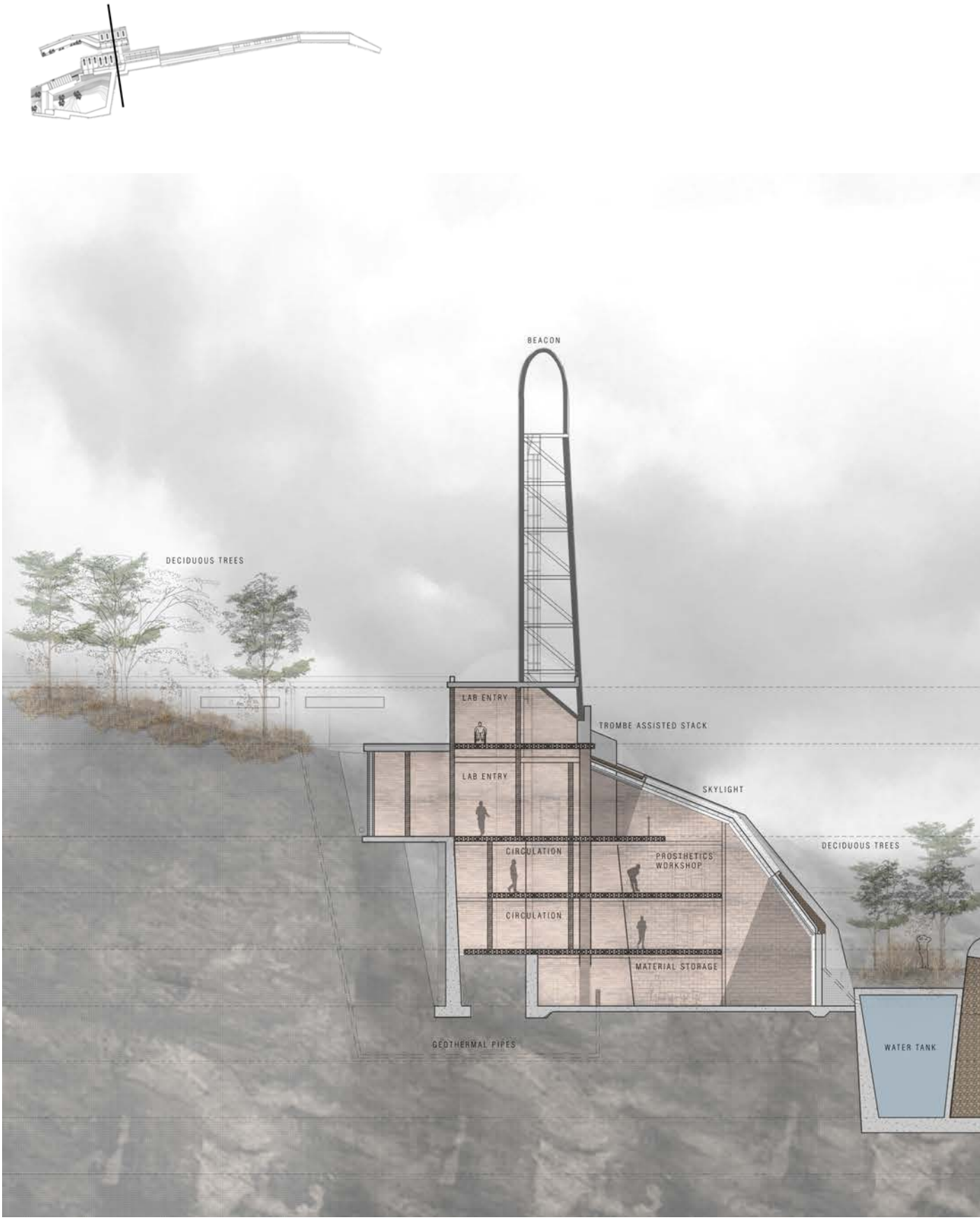

Figure 204: Main technical section. (2016)

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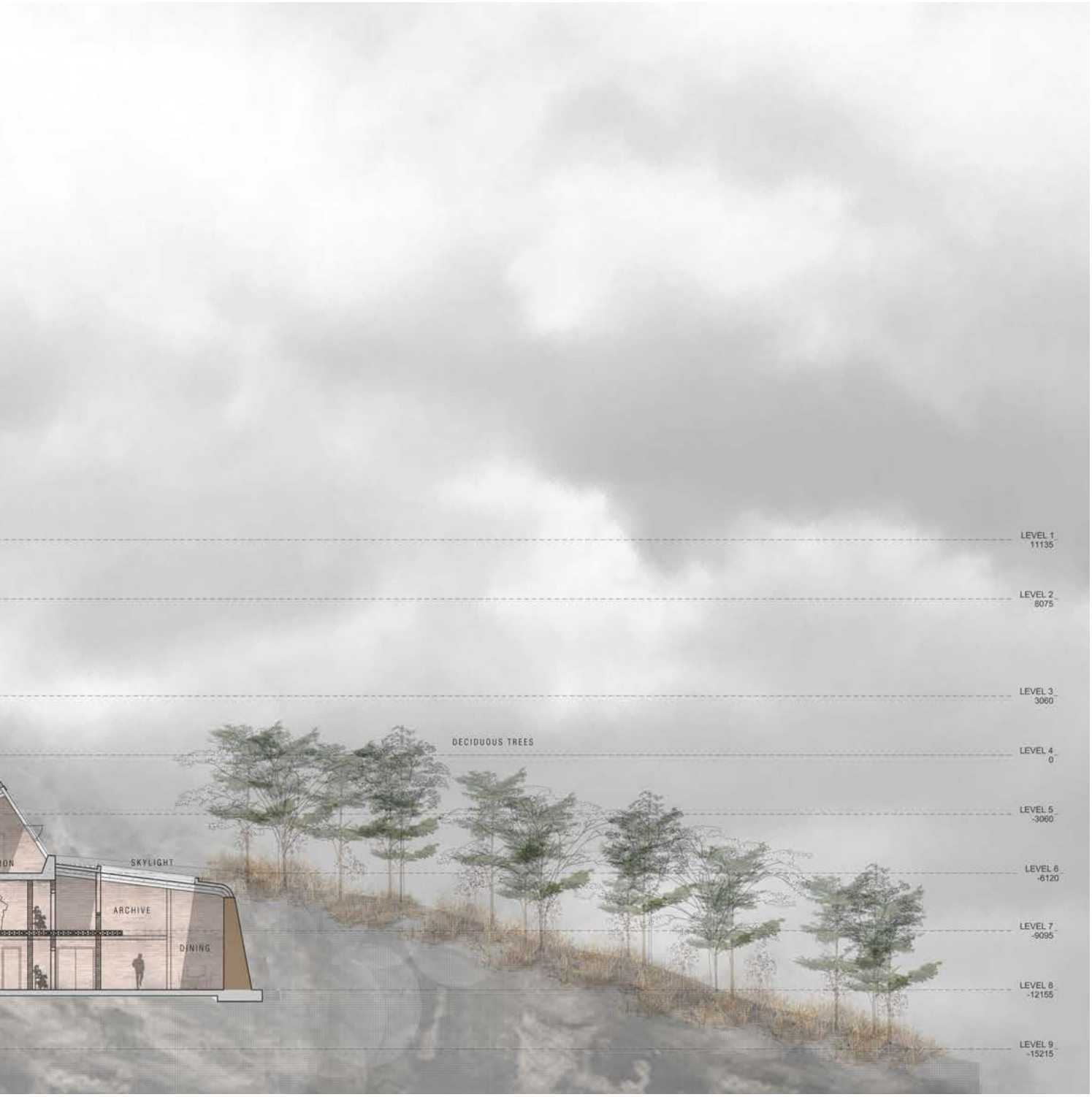

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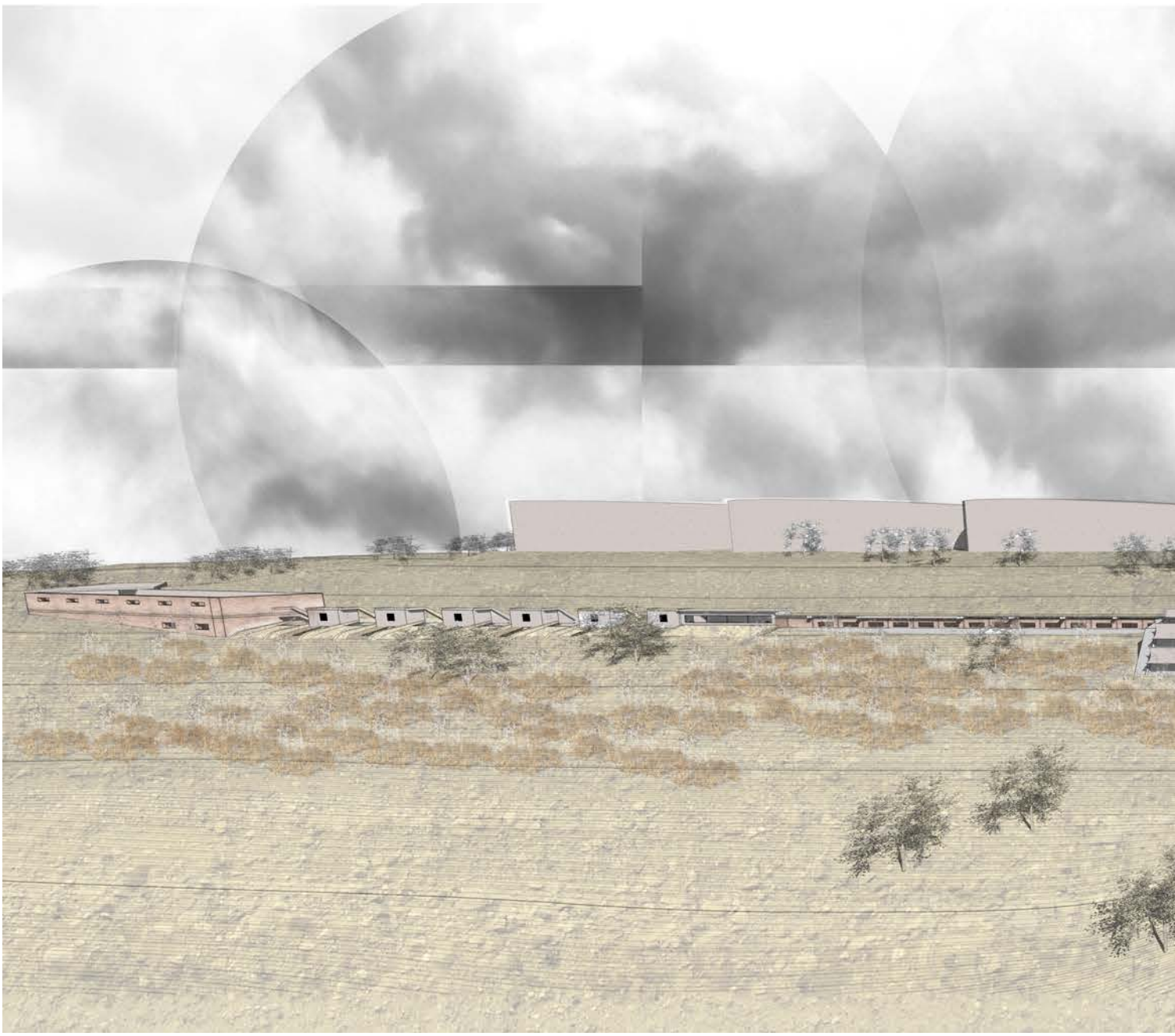

Figure 205: 3-dimensional illustration of the first scenario: a protected and self-sustained community. (2016)

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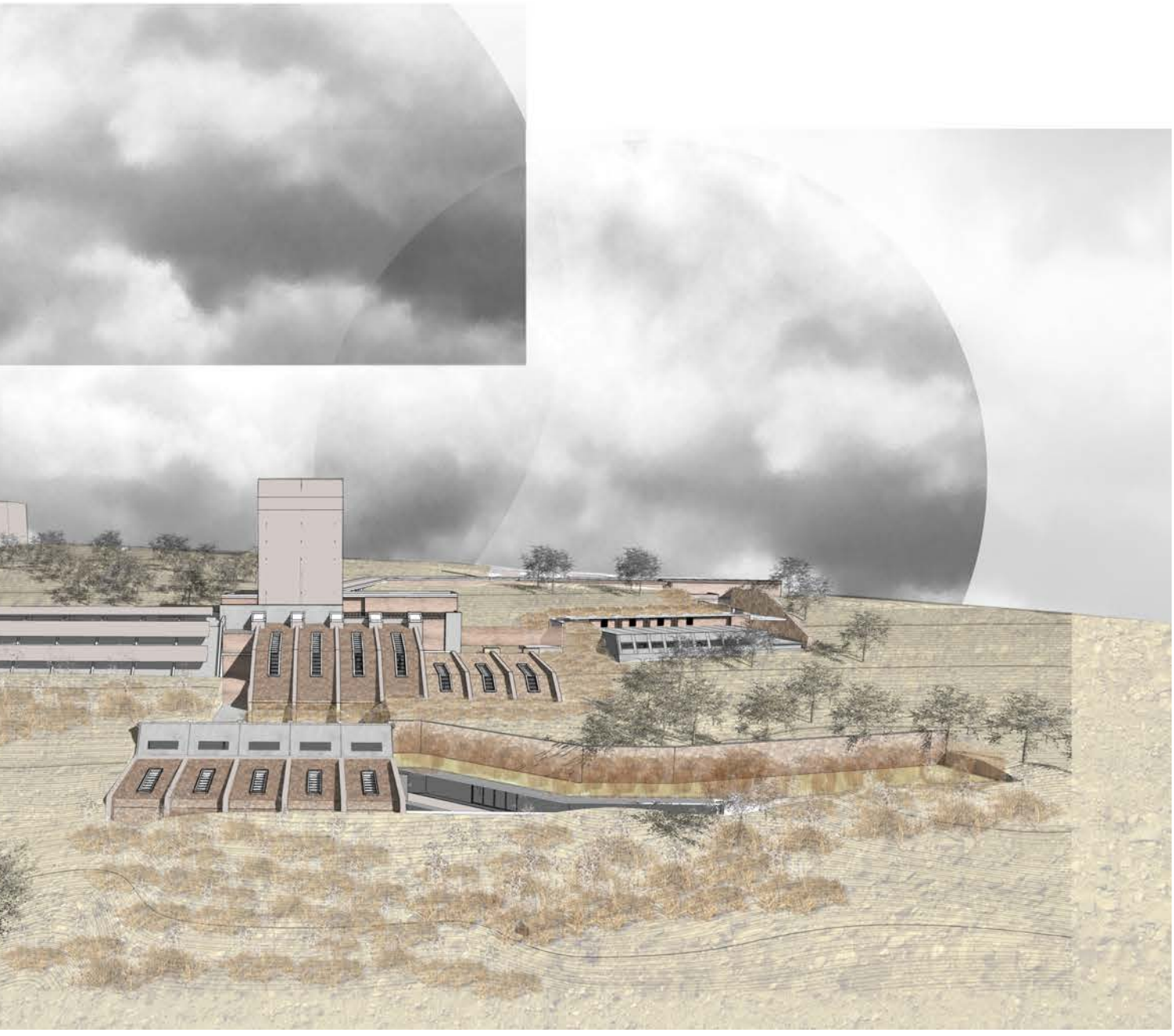

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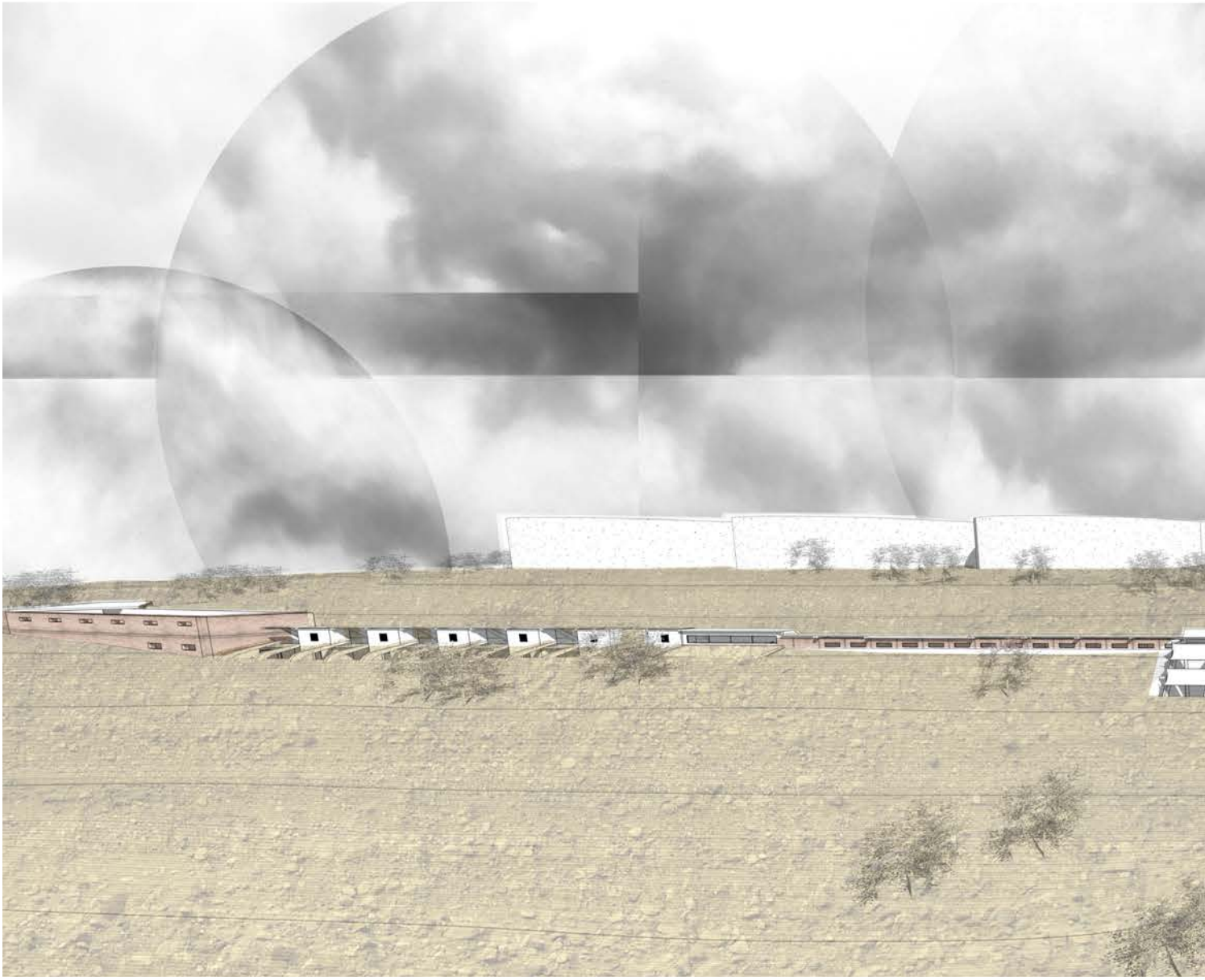

Figure 206: 3-dimensional illustration of the second scenario: a monument falling to ruin. (2016)

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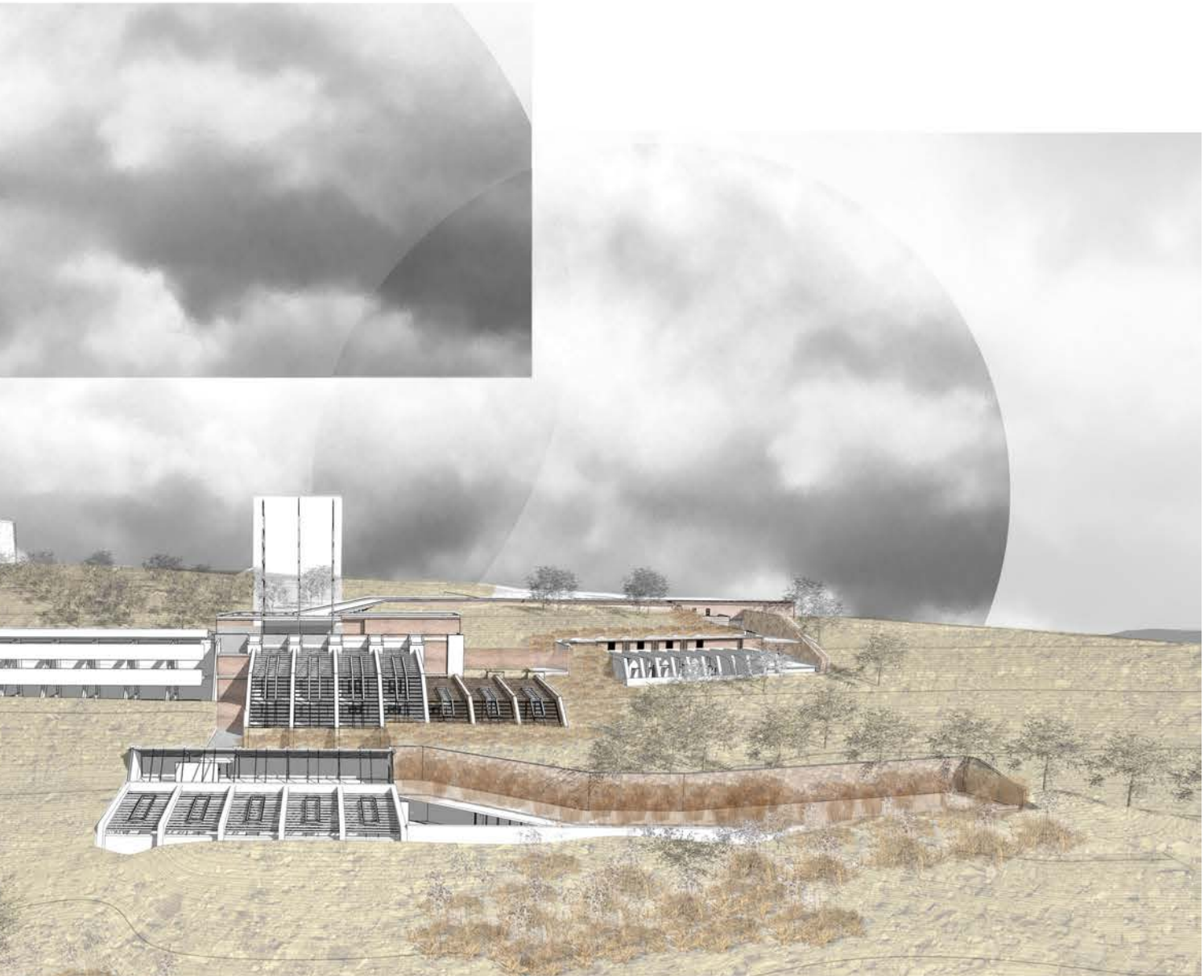

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Figure 207: 3-dimensional illustration of an architecture of refuge in its entirety. (2016)

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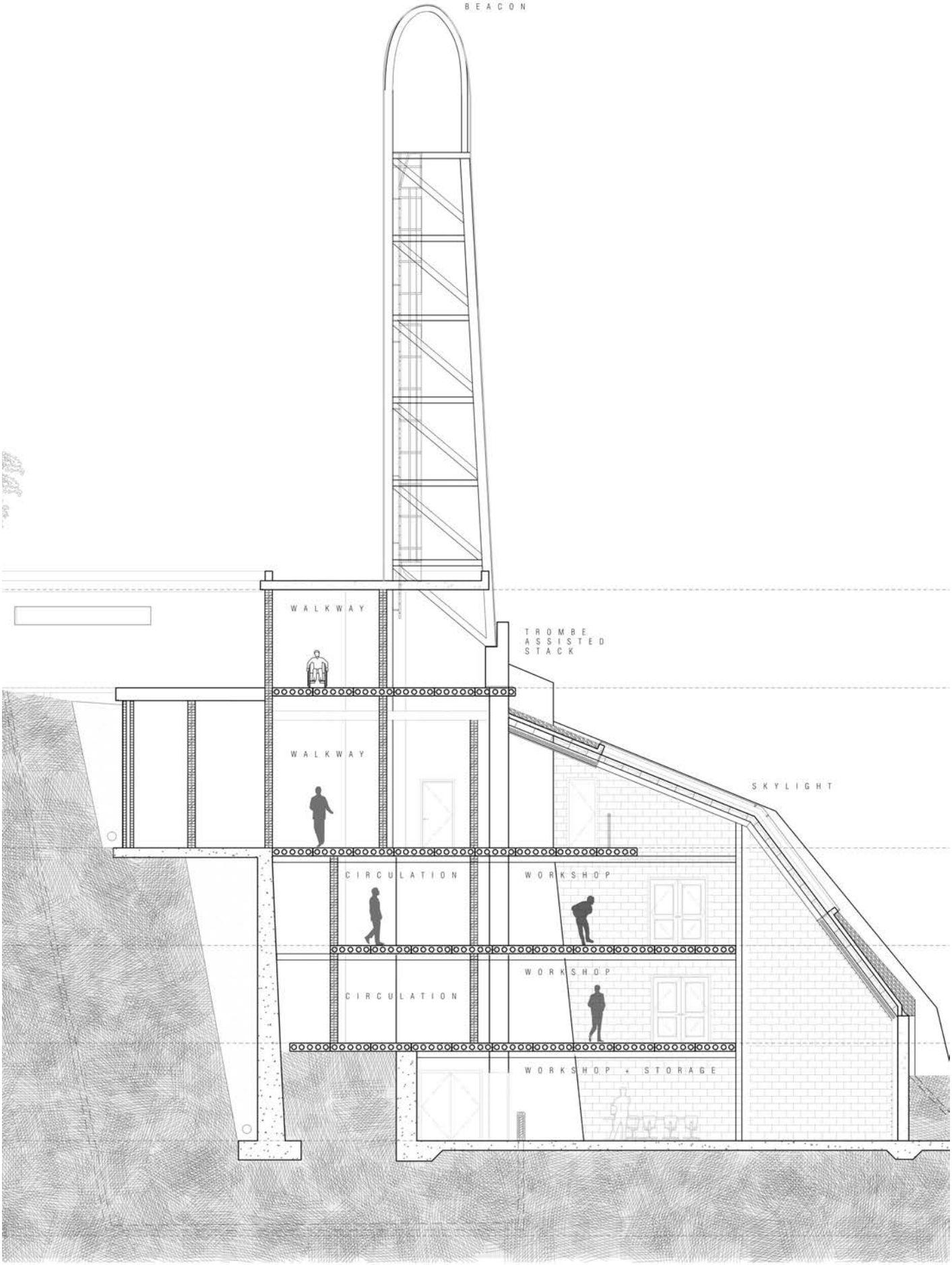

Figure 208: Technical section of Workshops. (2016)

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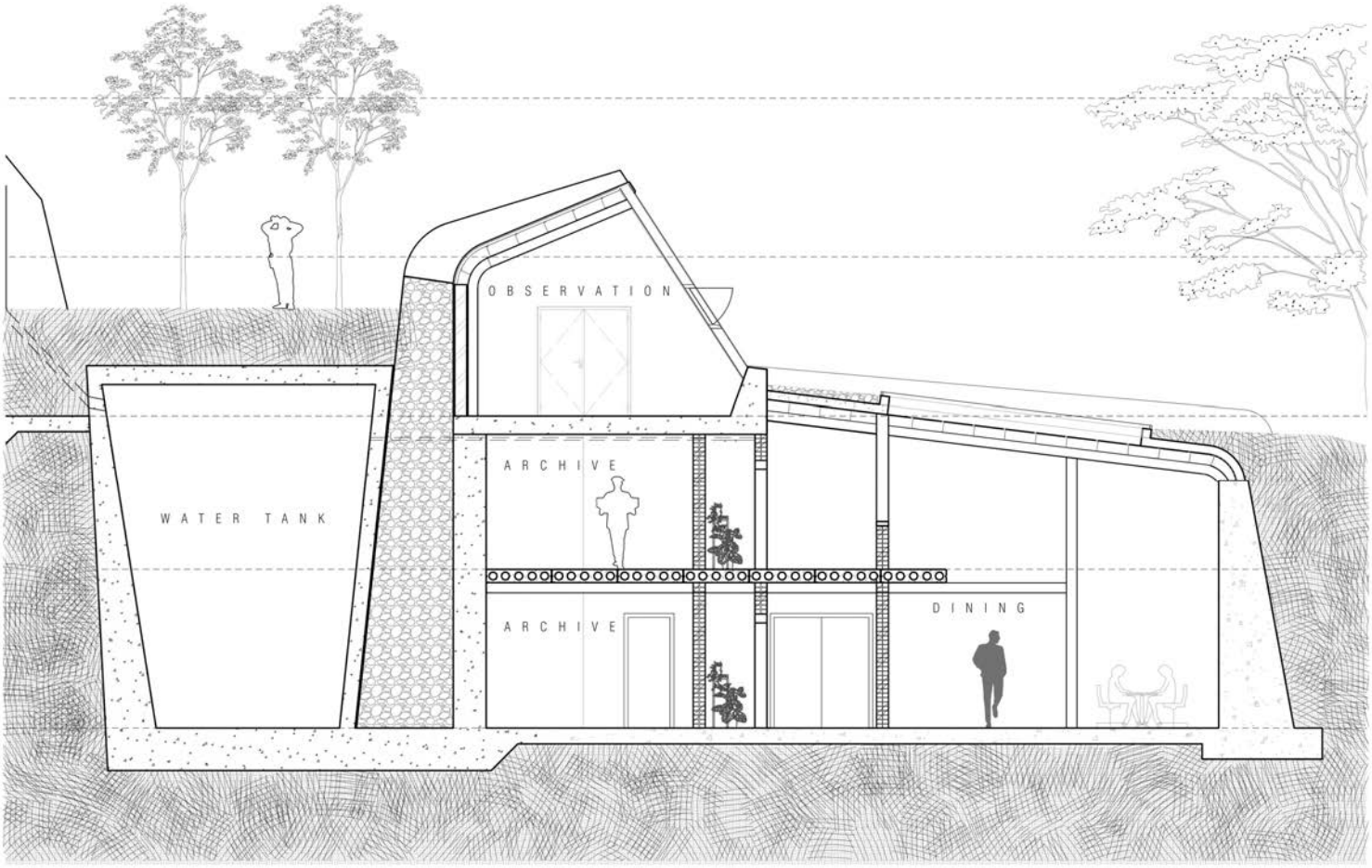

Figure 209: Technical section of Archive. (2016)

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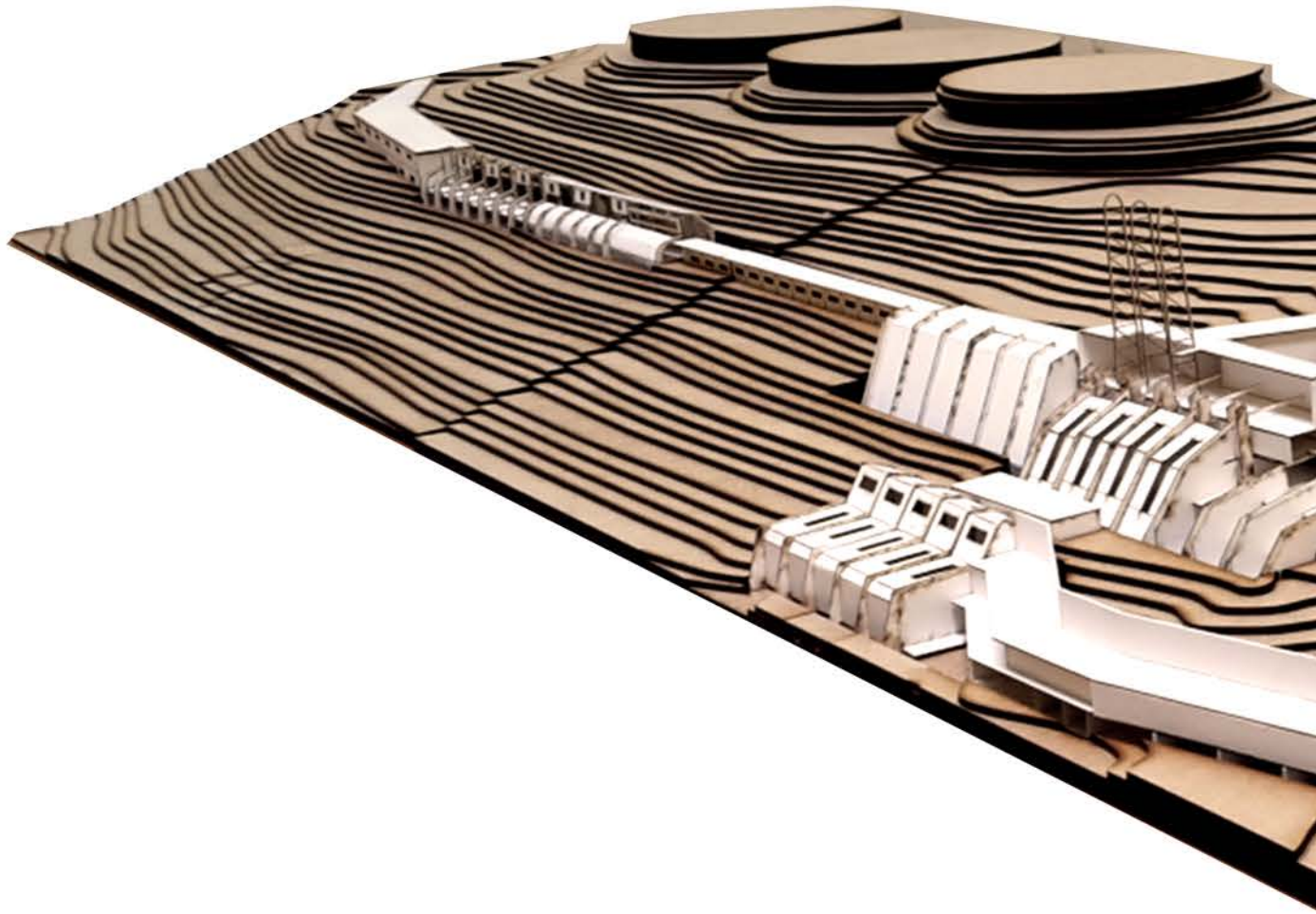

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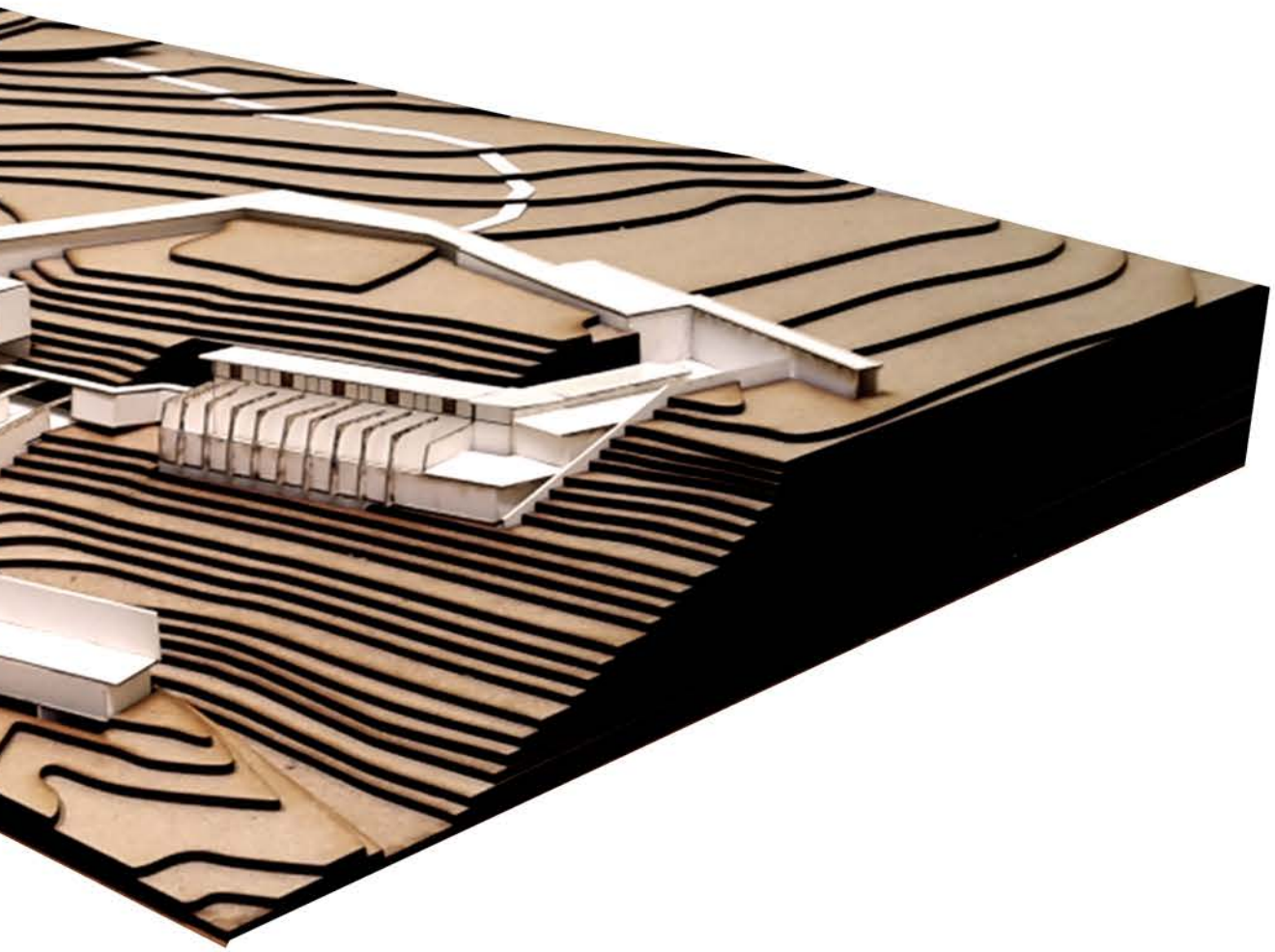

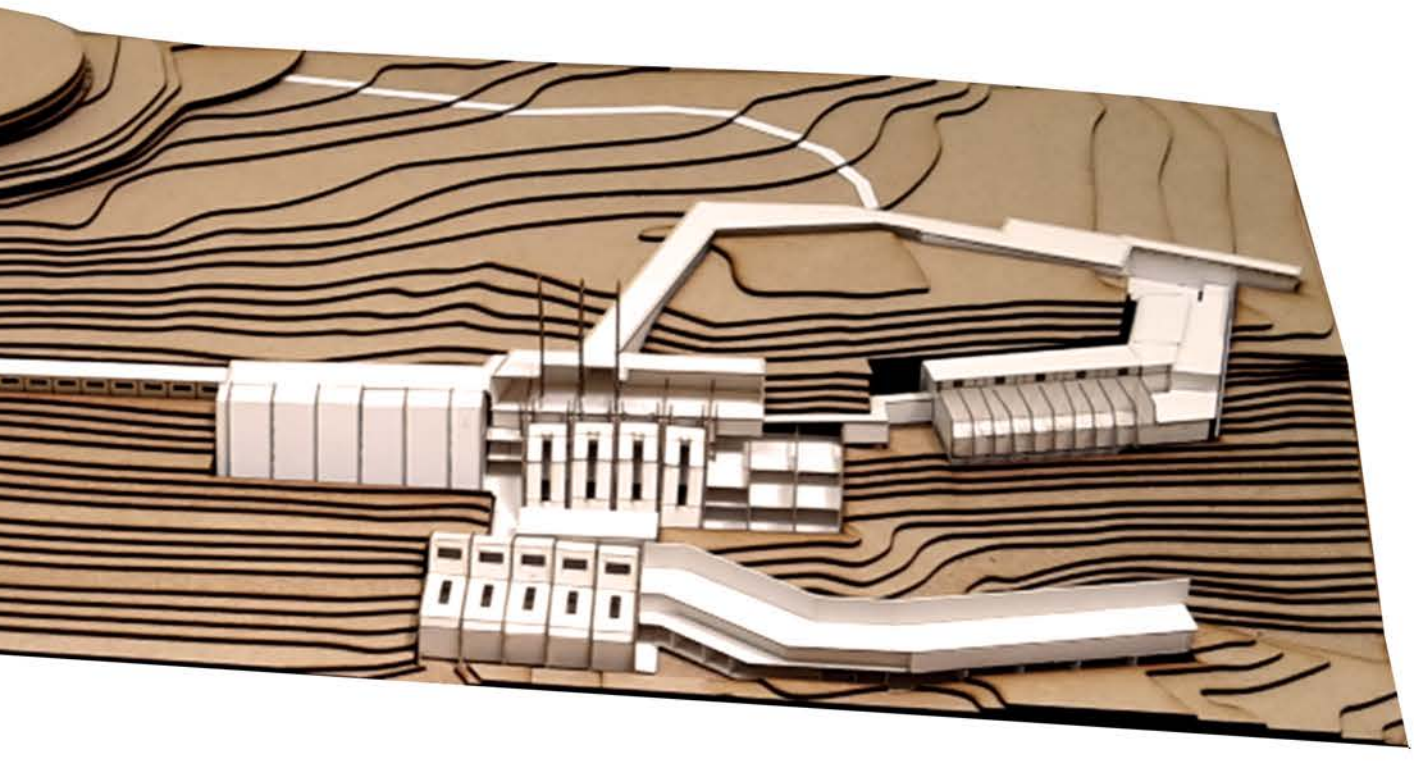

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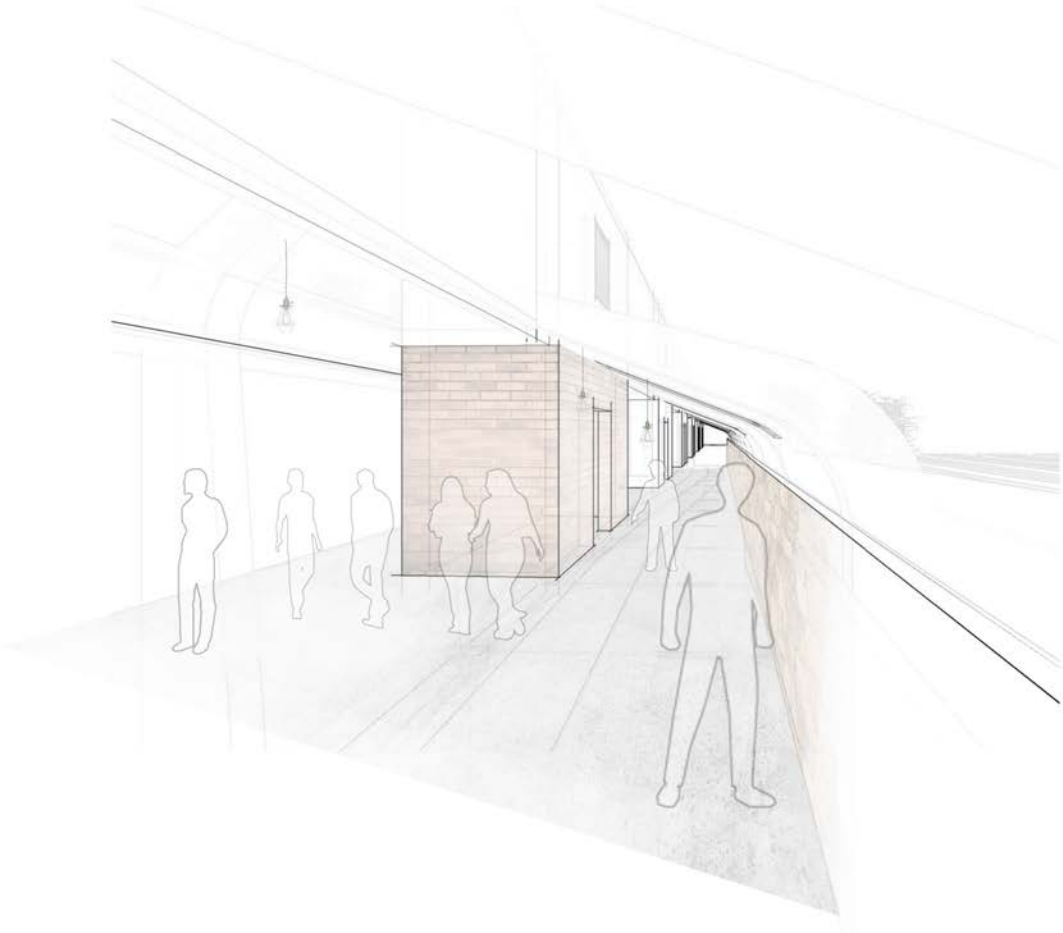

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