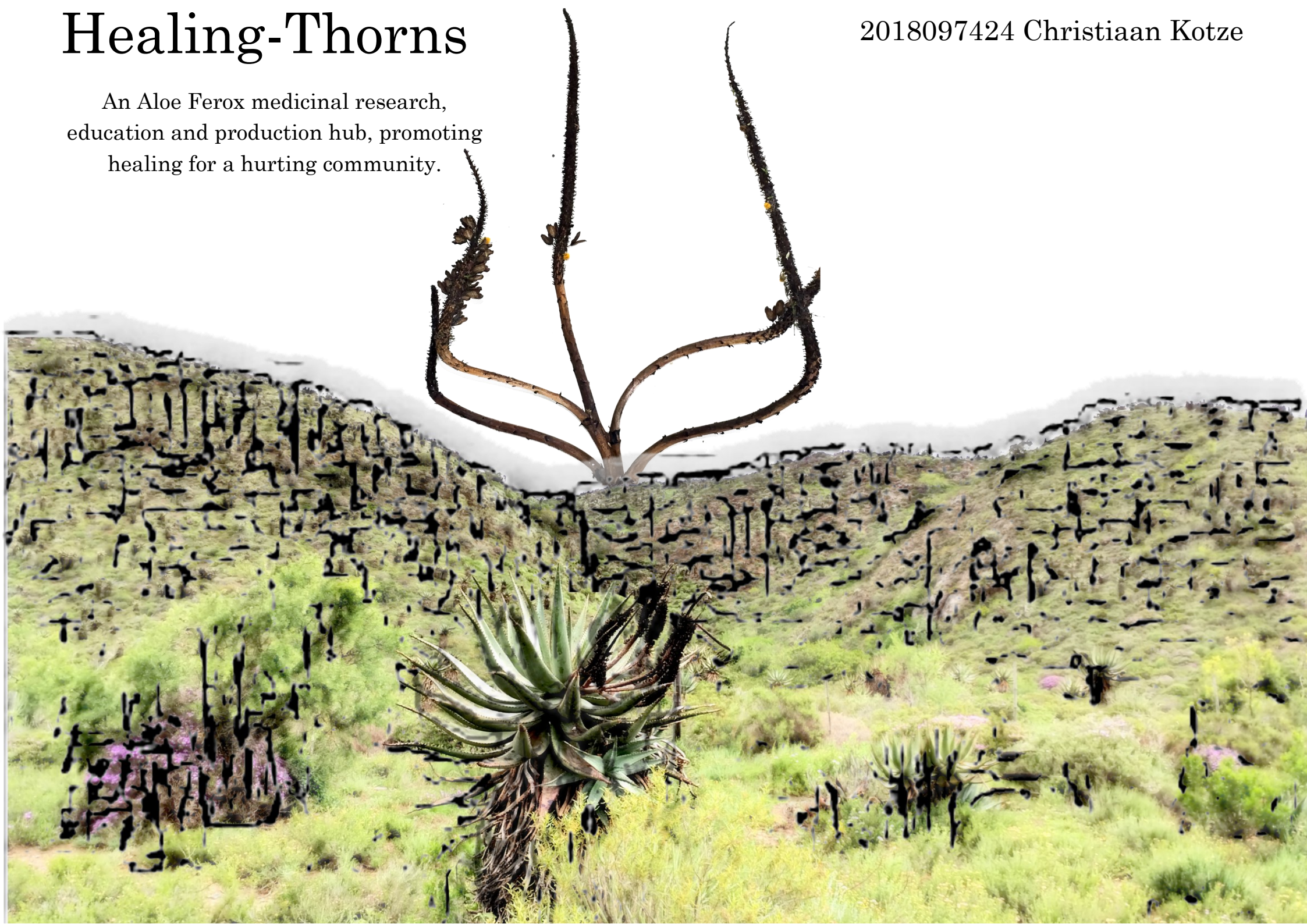
Healing-Thorns

2018097424 Christiaan Kotze

An Aloe Ferox medicinal research, education and production hub, promoting healing for a hurting community.



Acknowledgements

First and foremost I want to give thanks to my God, Lord and Saviour- Jesus Christ for giving me the strength to persevere throughout the hardships that I've experienced this year, spiritually, mentally and physically. Without Him, this dissertation would not have been possible.

Next, I want to give special thanks to the following people for their support, motivation, guidance, care and love during the establishment of this document:
My mother and sister for their motivational and caring words of understanding filled with love, and keeping me on track.

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'Oom' Willie Zeitsman for his fascinating tales of Albertinia and of him growing up as a child in that region. As well as his willingness to lend me his drone and acting as tour guide in the Albertinia Museum.

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Mr Chris Pattinson from Organicaloe PTY LTD for his time, advice and investment on the formulation of the factory as well as providing me with the necessary documents regarding the Aloe Ferox production and research. Furthermore, for his words of encouragement.

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Declaration

I know that plagiarism is wrong. Plagiarism is creating the impression that someone else's work is my own. Every contribution and quote from other sources in this essay has been acknowledged and there is a reference and a source. This essay is my own work. I have not copied it, nor will I allow that anybody copy it. I have read and understand the University's 'Policy on the Prevention of Plagiarism and Dealing with Academic Writing Misconduct' online. Available from: http://www.ufs.ac.za/docs/default-source/all-documents/plagiarism-prevention-policy-364-eng.pdf?sfvrsn=0. I acknowledge that as a Postgraduate Student of the Department of Architecture a maximum of 20% similarity will be accepted, and that after a first transgression of any Plagiarism rule any further transgression will result in a fail, and will be referred to the applicable institutional body dealing with academic misconduct.

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Date: 27/07/2023

Date submitted (completed by lecturer):

Remarks:

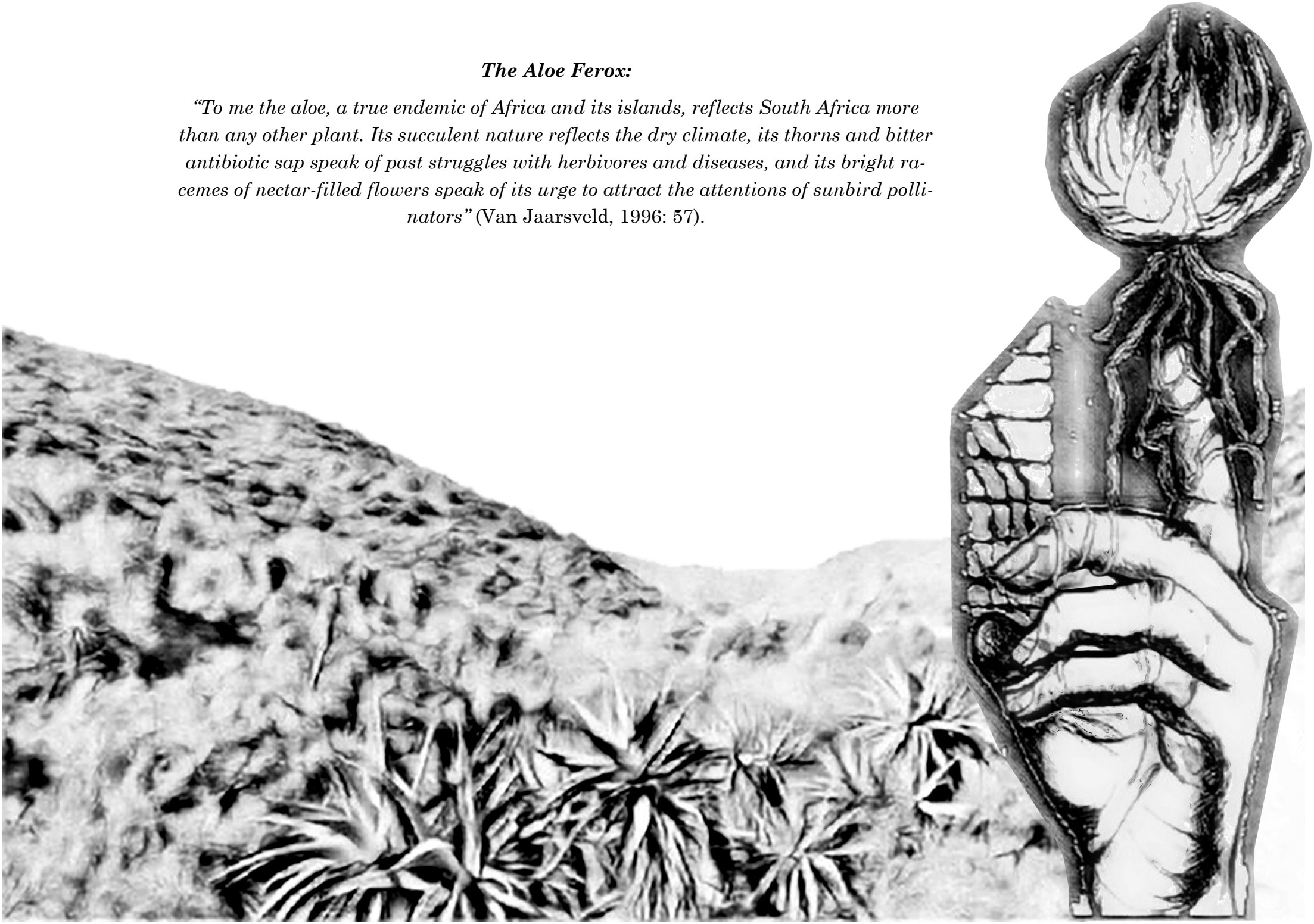
Supervisor: Hein Raubenheimer

MARK

All work within this book is done by the author unless stated otherwise via reference

The Aloe Ferox:

"To me the aloe, a true endemic of Africa and its islands, reflects South Africa more than any other plant. Its succulent nature reflects the dry climate, its thorns and bitter antibiotic sap speak of past struggles with herbivores and diseases, and its bright racemes of nectar-filled flowers speak of its urge to attract the attentions of sunbird pollinators" (Van Jaarsveld, 1996: 57).



Aloe X:

With gaze as piercing as the cold winter night. Roots entangled, weaving in and out forming a network of veins, verging between flesh and structure.

Creaking and squeaking as wood grinds against wood, the being turns toward me.

Its face masked with thorny leaves showing only eyes as deep as chasms, telling the tale of eons of hardship and survival, eager to lure anything that dares meet it into a trance.

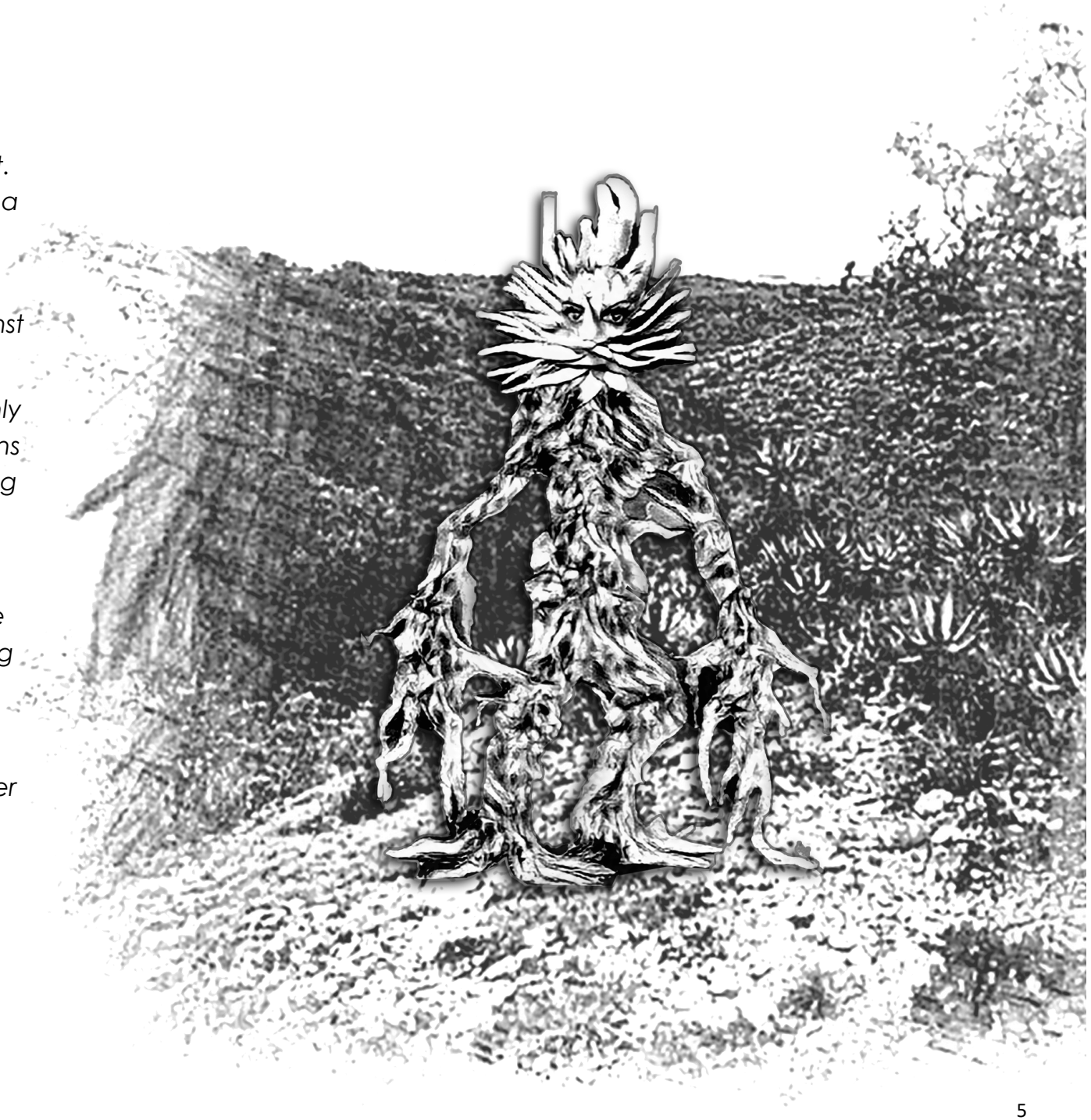
It speaks.

I brace myself in horrified anticipation, for the sound of grinding tectonic plates, the crashing of deep-sea waves or the rolling of thunder

I am mistaken.

A voice as sweet as the late afternoon summer breeze after a hard day's work fills my ears.

"Do not be afraid, I am Aloe X".



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The Aloe Ferox: Abstract

The *Aloe Ferox* Mill. is dwarfed by its American counterpart, the aloe vera plant, most of the companies in charge of manufacturing its byproducts tend to resonate a disunified front.

The main question is:

How can the notion of a healing environment inspire the unification between various disjointed communities within the aloe Ferox industry, whilst simultaneously commend the plant by establishing a safe space that will instil a positive metaphysical engagement with the multi-faceted development?

Various companies have established themselves within the aloe Ferox manufacturing industry, but none have seemed to address the divide between its various communities, which seems like a missed opportunity that can also help the product's growth in popularity.

The design dissertation aims to address these challenges by investigating various theoretical stances and designing a facility comprising various facets of the industry to create a unified front that would exalt the aloe Ferox plant.

This was done through various investigative and research methods, such as interviews and studies which were then reflected upon and applied to the design development appropriately.

The aloe Ferox industry and its communities have a dormant growth potential, and it is hoped that this dissertation will shine a new light upon it.

Viva la Ferox.

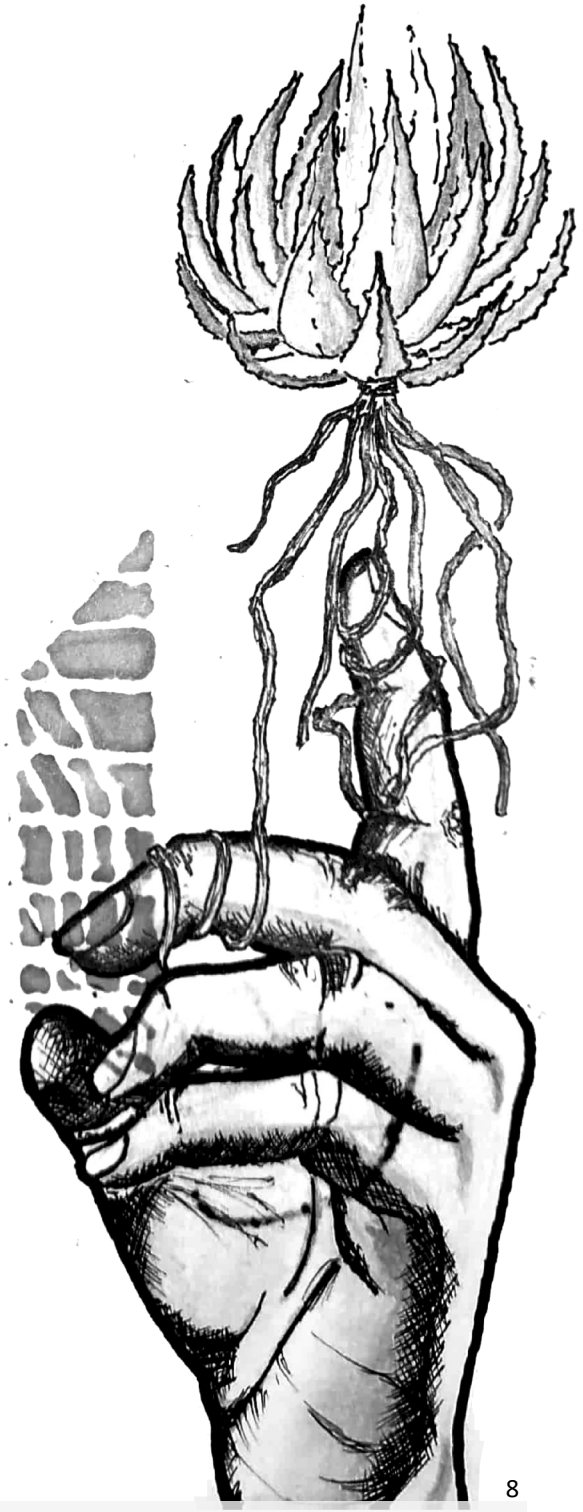


Fig 1: Depiction of unity between man, aloe Ferox and architecture (author, 2023).

Aloe Ferox and its magnificent healing

A Personal Narrative

As a child of 14 years of age, my sister, who was 6 at that time, contracted a rare disease "*Henoch-Schonlein purpura"* where the blood vessels underneath her skin started leaking erratically.

She was immediately hospitalized and admitted to the emergency room. I still remember the feeling of dread and helplessness as the older brother incapable of protecting his younger sister.

My sister was close to a critical medical situation and if not treated immediately, kidney failure would have been imminent.

It was then decided that my sister should receive Cortisone as a means to suppress her immune system against this auto immune condition and hope for the best.

Sadly the Cortisone had its side effects.

My mother, who is a veterinarian, started doing research on natural forms of medicines in the hope of finding a possible cure.

She came across the Aloe Ferox plant, which is indigenous to South Africa.

Its medicinal products showed revelatory results in helping against the leaking of the blood vessels and in my sister's case, aloe gel was applied externally to the skin and fortified juice containing aloe was ingested and my sister's symptoms steadily dissipated

This personal experience led me to realise the significance of this plant and played a huge role in the establishment of this dissertation in the hopes of designing a facility which will further encourage the research on rare diseases and how medicinal plants indigenous to South Africa can possibly serve as cures.

Furthermore the Aloe Ferox plant is still very underrated in comparison to its international counterparts such as the Aloe Vera, and it is my hope to give this miraculous plant the necessary attention and respect it is due.



Fig 2: The start of the journey (author, 2023).

Introduction

Background:

Albertinia is a small town about 40 kilometres away from Still Bay and is home to a very unique plant indigenous to the region, the Aloe Ferox (Seeff, 2023: online).

The town is mostly known for its plantations and the retail of the aloe Ferox plant and its byproducts, with a big statue of the plant near the entrance of the town beckoning one to indulge in the unknown mysteries that the town may hold (Seeff, 2023: online).

It is the country's leading source of Aloe Ferox products, which is used in the health and skin care industries, and is well renowned for its quantity of aloes growing in the district.

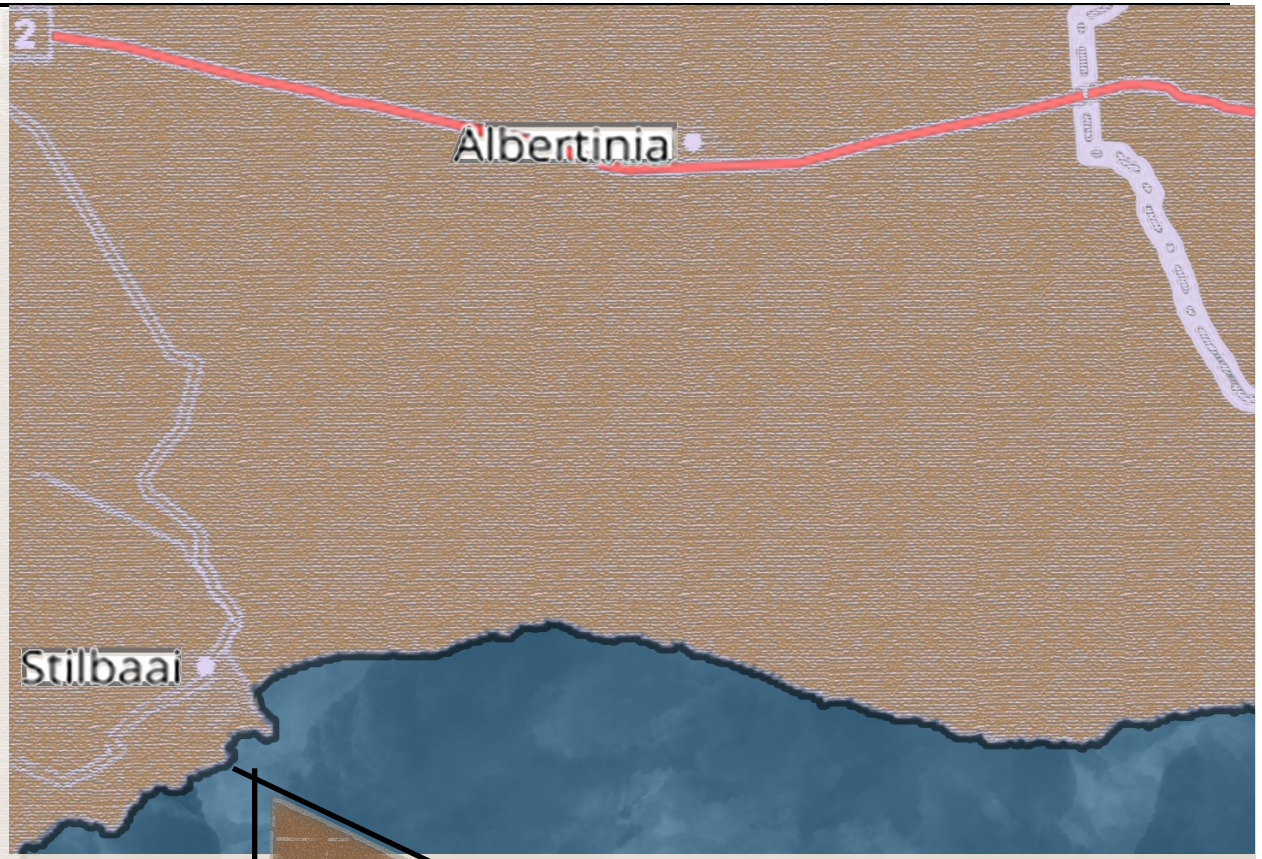




Fig 3: Map of Albertinia and statue at entrance of the town (author, 2023).

Site:

The proposed site is located on the western edge of Albertinia. It is situated between Albertinia's RDP housing settlement and two of the most prominent manufacturing and retail companies of Aloe Ferox products –

Alcare Aloe & Organic Aloe

Thus, the site functions as the threshold between Aloe Ferox harvesters and retailers who live in, accepted but not embraced, coexistence with one another which will later be discussed within this document.

The site itself comes across as quite a barren piece of land since it has been deforested and the current plant life thriving in the area are various types of grass and small scrubs.

A prominent historical structure is the railroad stretching parallel to the site, which throughout history has led to many developments within and around the town and also is a key landmark of where the two sides, industrial and residential meet.

Furthermore, the site is situated quite closely to a main road (N2) running parallel to the site which provides ideal accessibility for both tourists and locals.



Fig 4: The proposed site (author, 2023).

Introduction

Clients:



5

Fig 5: The proposed clients (author, 2023).

It was decided that the three main manufacturing companies known in Albertinia for their research, production and retail of the Aloe Ferox plant would be chosen for the varying respective reasons of their specialized production and their means as well as flaws for addressing the disunity between the harvesters, retailers researchers and manufacturers:

Organic Aloe:

- International retail and outsourcing research of the aloe Ferox “Bitters”/ sap for medicinal use.
- Addressing the disunity between retailers, manufacturers and researchers

Aloe Ferox (the company):

- Wide spread Aloe Ferox plantations in the region of which they employ their own harvesters.
- Manufacturing of Aloe Ferox juice products
- Retail of cosmetic and medicinal Aloe Ferox products
- Thus, addressing the gap between retail , manufacturing and harvesters

Alcare Aloe:

- Retail in mainly cosmetic Aloe Ferox products and medicinal products to a small extent such as the Crystals and powder formed during boiling

Introduction

Problem Statement

On the farm Menanteau, approximately 30 kilometres away from Albertinia, an interview with one of its owners (Pauline du Plessis) and one of its staff members (Jarome Losper) was conducted regarding the harvesting of the Aloe Ferox leaves and sap.

The harvesting process was quite interesting to witness but what stood out was the comments made about the aloe Ferox industry. The owner claimed that the corporate bodies running the industry in Albertinia came across as very secretive, similar to an "*Aloe Ferox Mafia*" (Du Plessis & Losper, 2023: interview).

This led to further investigation via interviews and observations where it was determined that the industry was in fact very secretive and that there was a certain sense of social division between the respective careers within the industry, such as harvesters, production workers, retailers and researchers.

Thus, this led to the decision to not only address the problem of promoting the medicinal properties of the Aloe Ferox plant, but also to mend the prominent social divide between the various careers within the industry.

It was determined that the best solution would be to develop a space where the social mending of communities and the popularization of the Aloe Ferox's medicinal properties could be handled through architectural intervention.



Fig 6: The interview (author, 2023).

Introduction

Research question

How can the notion of a healing environment inspire the unification between the various disjointed communities in the Aloe Ferox industry and commend the Aloe Ferox plant by establishing safe spaces that will instil positive metaphysical engagement with the architectural design.

The reason for this thesis is to establish a notion of healing for the surrounding region of the site and within the production of Aloe Ferox products. There are various levels of disunity and 'scars' that can be experienced when one engage with the surroundings.

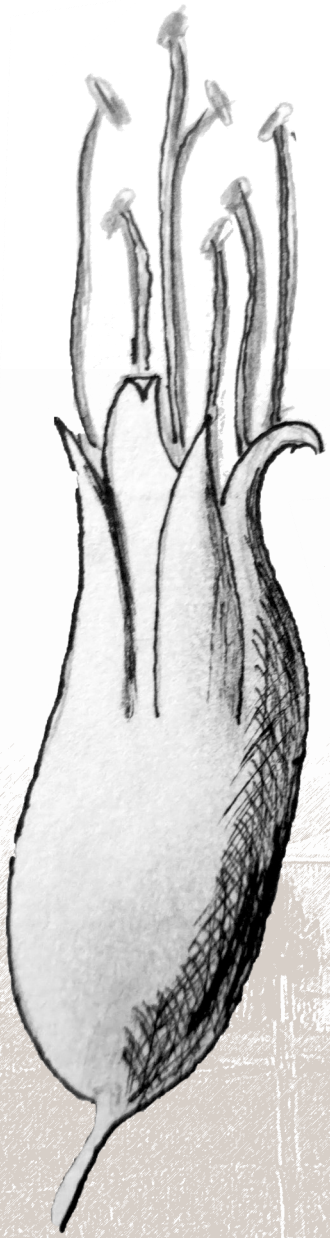
Disunity and moments in need of healing are:

- The divide between harvesters, retailers, researchers and manufacturers
- Sick people of the region and of South Africa that needs healing (Via the form of medicinal research on indigenous plant life and the application of it through medicine).
- The surroundings that have been deforested and function as non-places.
- The Aloe Ferox plant that needs to be uplifted for its medicinal properties and not only its cosmetic purposes.



Fig 7: *Aloe Ferox Mill.* (author, 2023).

Introduction



Thus, the brief was set to provide for these instances and experiences in an effort to promote the notion of healing.

The brief constitutes:

- **A medicinal research facility** - Focussing on; Research on the medicinal properties of the Aloe Ferox and possibly other indigenous plants.
- **Aloe Ferox Factory** - Sustainable development of the commercial manufacturing of medicinal Aloe Ferox products and job creation for the community.
- **Education centre -** Educating the public on the medicinal properties of the Aloe Ferox, how to correctly harvest it and unify a disjointed community.
- **Show-room and retail -** Promoting the products of the clients and the products of the development as well.

Fig 8: *Ferox* flower. (author, 2023).

Document structure

A

Throughout the document snippets of the genre ‘magical realism’ will be upheld.

This is done to specifically create a narrative referring to the topic of conversing with the aloes via the story of *Aloe X*.

This is the medium in which the author expresses his emotion in a non-direct way

Chapter 1:

Chapter one sets the stage via introduction of this dissertation ensuring that association is possible with the topics at hand

Chapter 2:

This chapter delves into an in-depth analysis on Albertinia and the site.

Chapter 3:

This chapter will dissect the decision making and influences that led to the touchstones and concepts which played a significant role on the formulation of the design.

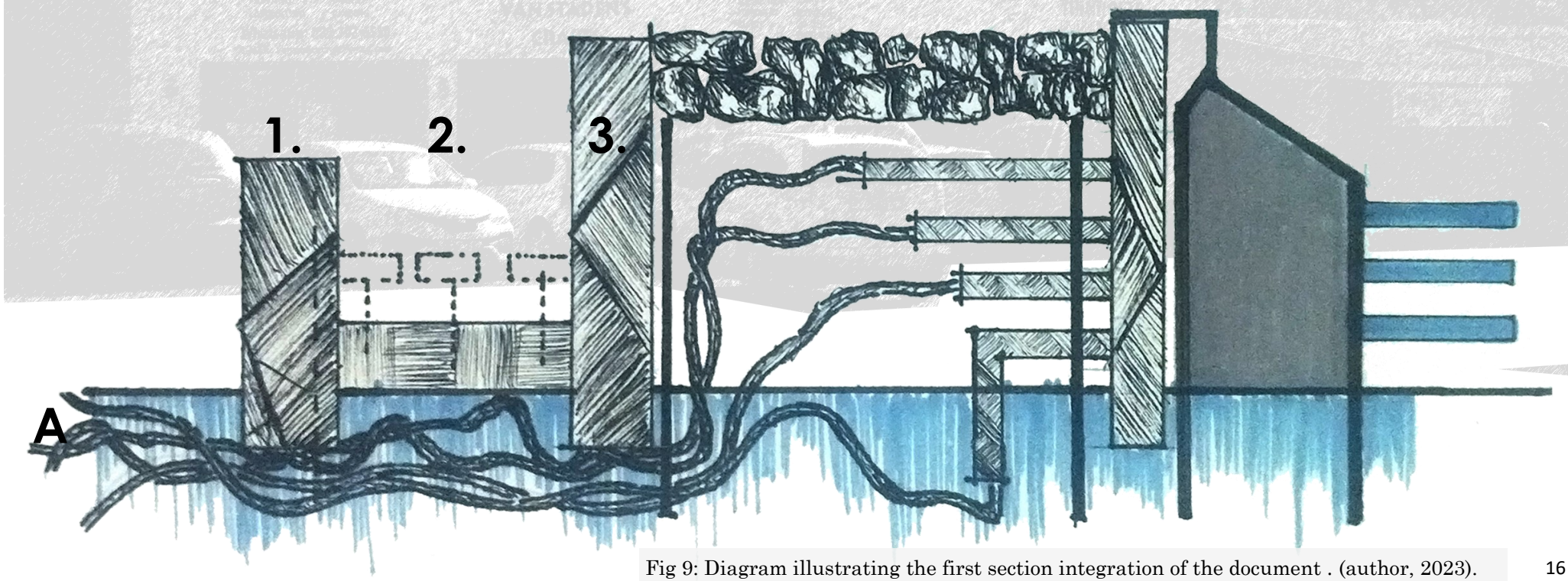


Fig 9: Diagram illustrating the first section integration of the document . (author, 2023).

Document structure

Chapter 4:

This section of the document focuses on establishing the theoretical discourse .

By focussing on:

- Bio- metaphorical Architecture
- Critical regionalism
- Healing through Architecture

Chapter 5.1:

- Design Brief development

Chapter 5.2

- Developmental studies

Chapter 5.3

- Development towards a final design

Chapter 5.4:

- Final design

Chapter 6:

Design synthesis and conclusion

Chapter 7:

Reference list.

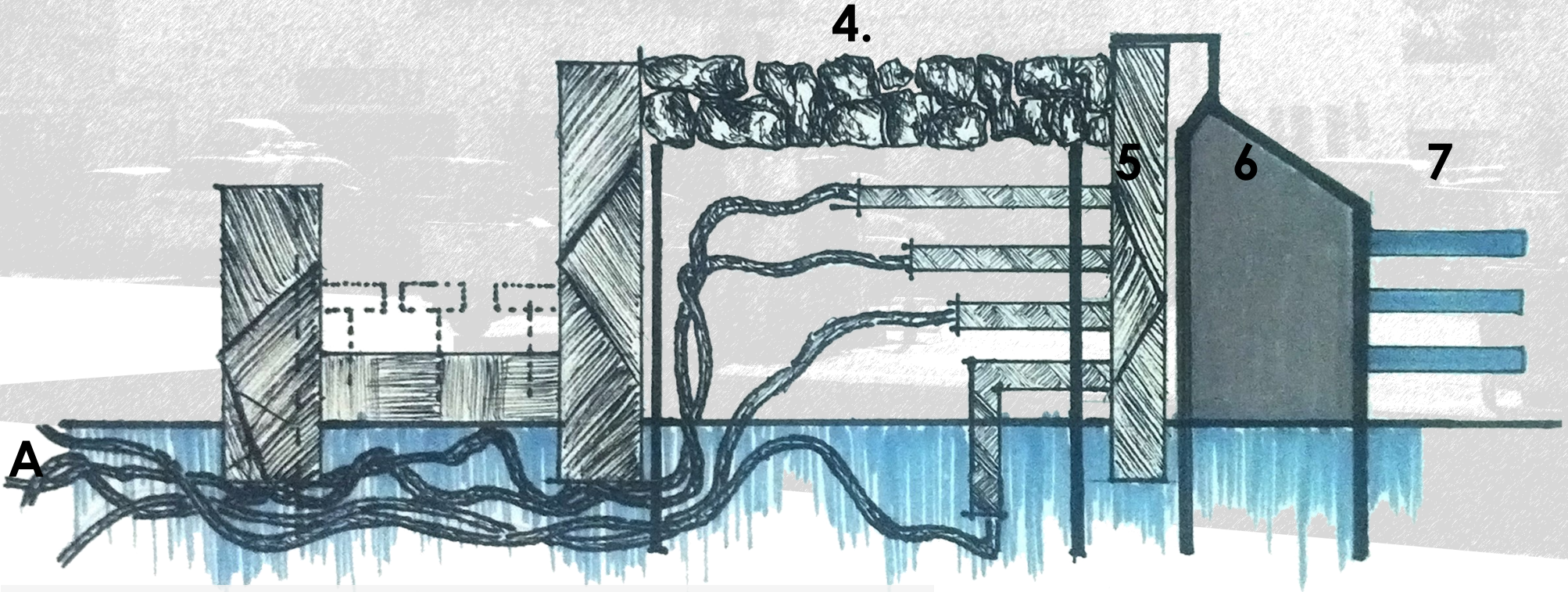


Fig 10: Diagram illustrating the second section integration of the document . (author, 2023).



Chapter 2

Pp. 20 -36

MACRO ANALYSIS



Fig 11: Western Cape Province of South Africa. (author, 2023).



Fig 12: Albertinia situated within the Western Cape Province (author, 2023).



Fig 13: The municipalities of the Southern Cape region (author, 2023).

Albertinia is located in the Western Cape region of South Africa and is situated at the base of the Langeberg mountain range (SAvenues, 2023: online).

Other than its prominent Aloe Ferox product production, it is also the primary source of red and yellow ochre used in the production of paints and colorant additives for cement and linoleum in South Africa (Ibid).

Furthermore, it also produces thatch reed which is used in large scale thatch roof construction across South Africa (Ibid).

The Albertinia region including the small town of Albertinia itself comprises residential, industrial, and small scale commercial areas, which is surrounded by vast farmlands used for various agricultural methods such as the cultivation of crops and livestock.

Albertinia is under the jurisdiction of the Hessequa Municipality which strives to provide for its communities whom are suffering from *"The negative effects of very real economic strain"* (Hessequa, 2021: online).

Thus, Albertinia, although most renowned for its Aloe Ferox production, can be seen as a diversified production hub attempting to provide for its communities economically.



Fig 14: The *Langeberg* mountain range (author, 2023).

Site Analysis:

MACRO ANALYSIS

In the 1900's on the farm '*Grootfontein'* Albertinia was established by the first Dutch Reformed Church minister, Reverend Johannes Rudolph, Albertyn whom the town was also named after(Seeff, 2023: online).

As a result of the steadily growth of its population the town became a municipality in 1920 (SAhistory, 2020: online).

The following information was gathered during an interview with 'Oom Willie Zeitsman' the tour guide at the Albertinia museum.

At first the town Albertinia mostly comprised a local farming community. It was only after the establishment of the train station in the year 1924 that the town started to gain momentum and popularity (Zeitsman, 2023: interview).

The train station and railroad contributed immensely to the transportation of the agricultural produce as well as livestock from the surrounding farming communities.

This also ensured the increase in tourism which resulted in small scale businesses being establish within the town. The resulting effect of its slow progression led to where the town is today.



Fig 15: J,R. Albertyn (Wikipedia, 2017:online)



Fig 16:The first photograph of Albertinia 1902 (Zeitsman, 2023, Adapted by author)



Fig 17: Transport in the old days (Zeitsman, 2023, Adapted).



Fig 18: The train station and railroad (Zeitsman, 2023, Adapted).



Fig 19: Aerial photograph of Albertinia 2010 (Zeitsman, 2023, Adapted).



Site Analysis:

MACRO ANALYSIS



Fig 20: Diagram of the town Albertinia and its respective areas. (author, 2023).

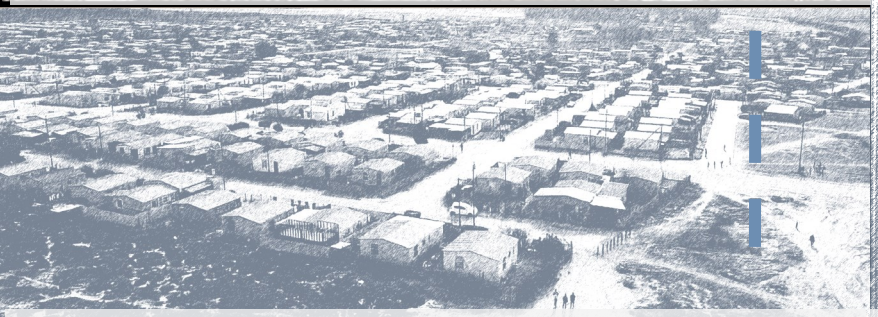


Fig 21: RDP housing settlement. (author, 2023).

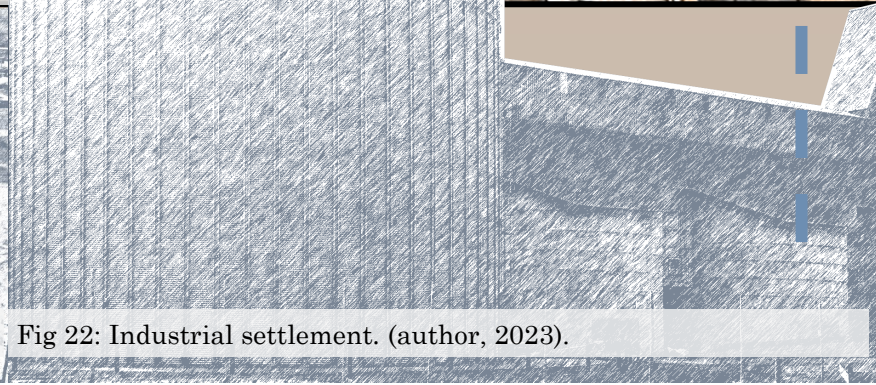
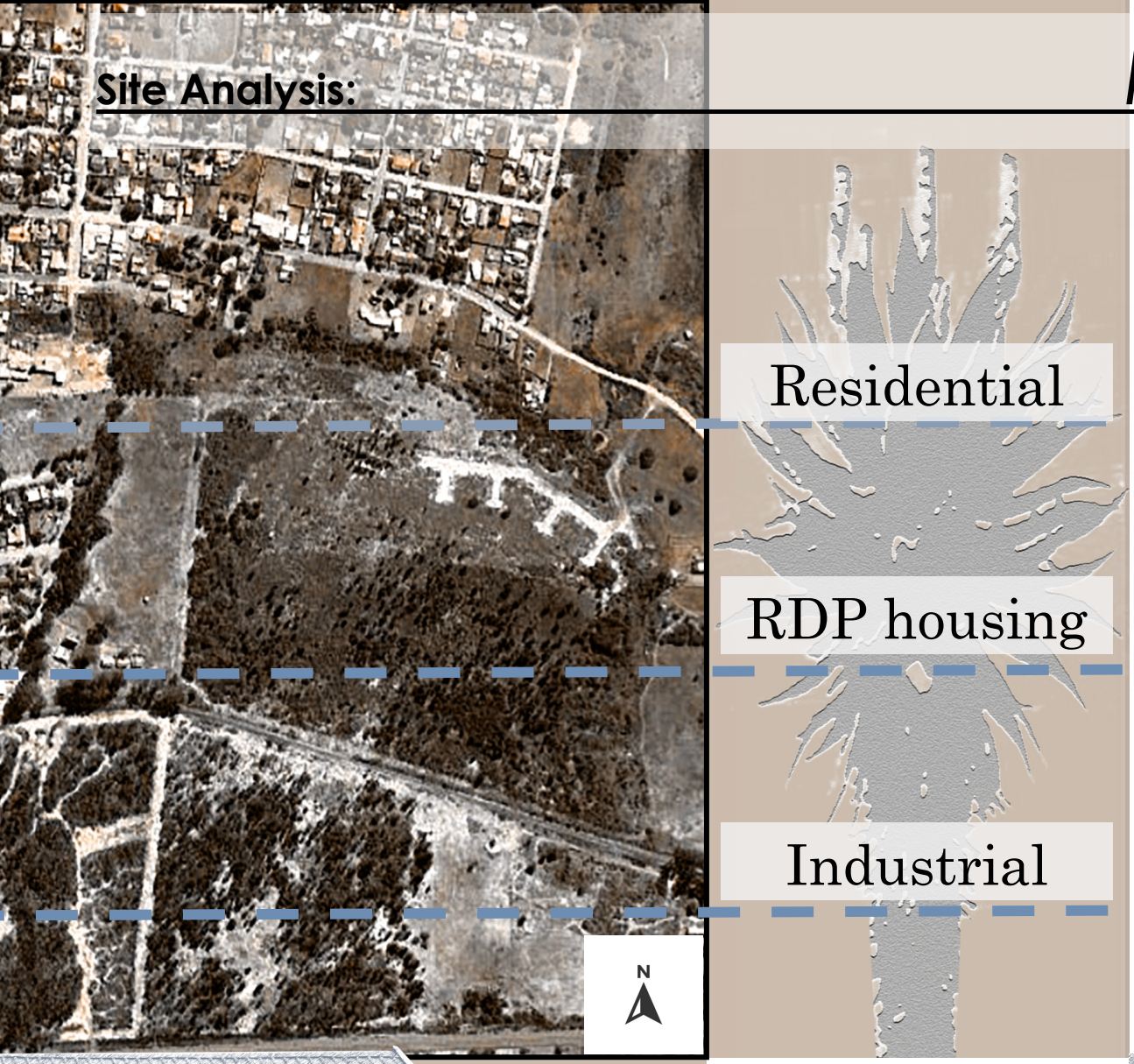


Fig 22: Industrial settlement. (author, 2023).



Fig 23: Residenti

Site Analysis:



MACRO ANALYSIS

As one can gather from the images on the left, the town Albertinia is divided up into three distinct sectors.

- RDP housing & informal settlement
- Industrial & retail area
- Residential & small scale businesses

These three sectors have their own unique characteristics and typologies which makes the town such a diverse hub of different architectural styles intermingling with each other.

The RDP housing & informal settlement is set out in a modernist strong grid-like formation with a slight Cardo and Decumanus running through it.

The residential area, on the other hand, comes across as more organically structured which relates to the town's steadily expansion over the years

The industrial - and retail areas are crisply divided from the rest of the town by the railroad and has one road stretching through it along which the factories are arranged according to functionality.



al settlement. (author, 2023).

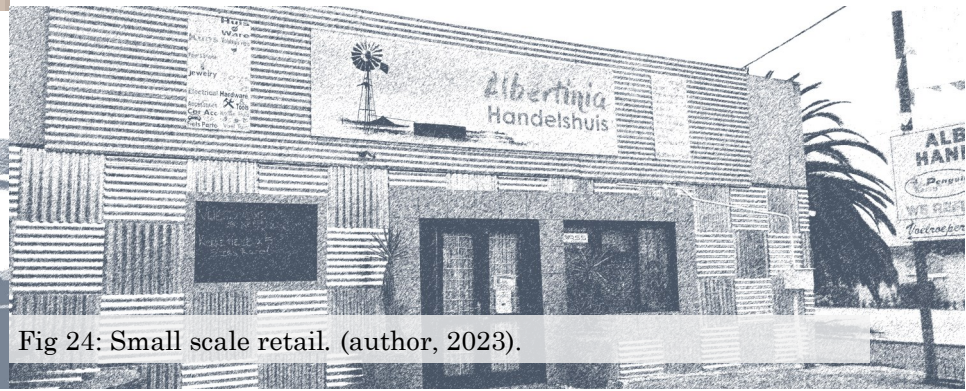
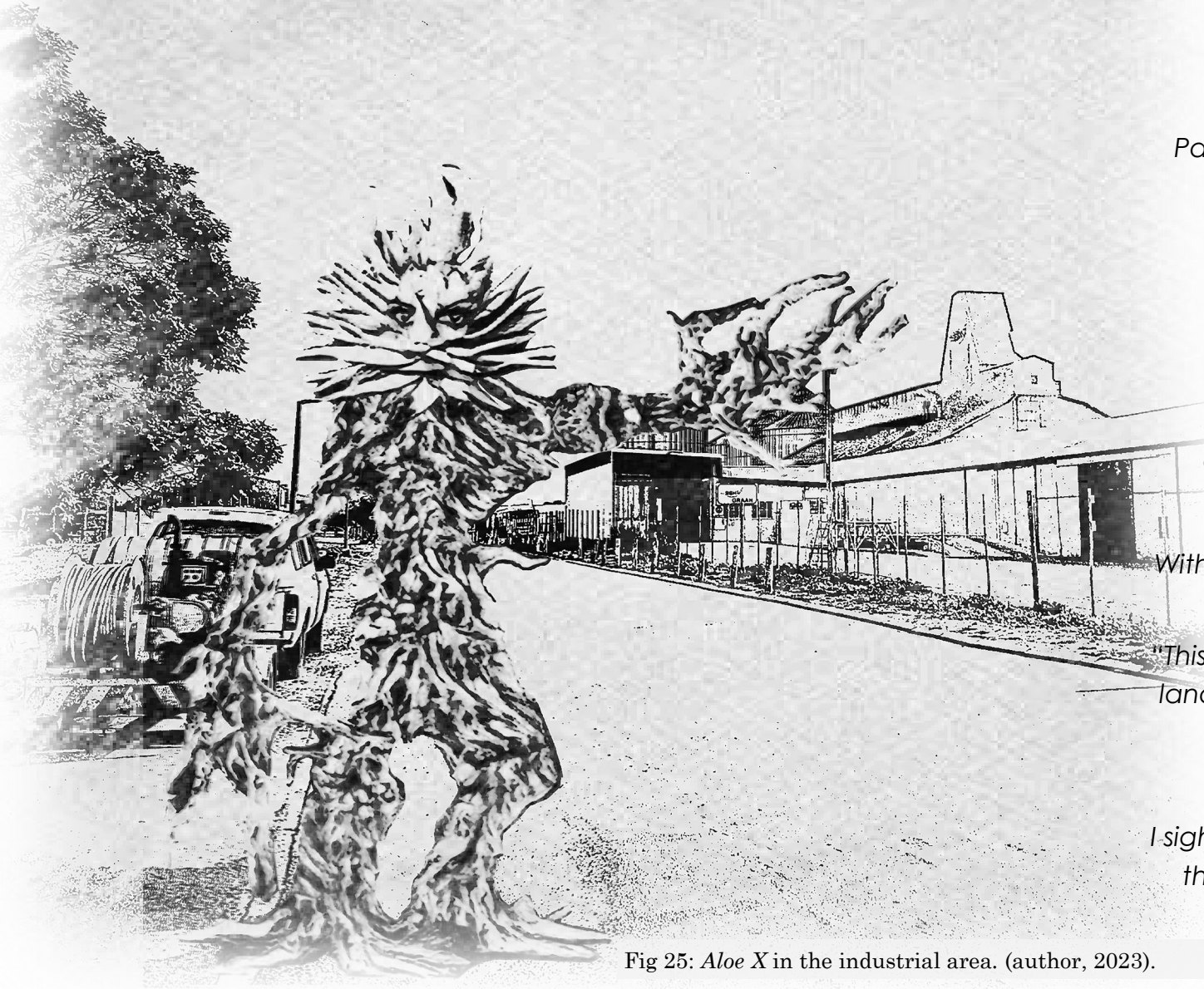


Fig 24: Small scale retail. (author, 2023).



Aloe X: Exploring the unknown

I find myself in a road splitting a sea
of industrial looming monstrosities.
Their presence, staring into the depths
of my soul,
ready to pounce.
Patiently waiting for me to make a false step,
leaving me gasping for air.

Aloe X slowly lifts up its arm-like limb,
with vines contracting and relaxing
as the movements progress,
and gestures towards one of the biggest
imposing structures.
With voice filled with saddening disappointment it speaks.
"This, this is what they have done to our beautiful land."... "They forcefully evicted and destroyed my kin, all for this".

I sigh with sad resignation and dreadfully despise the horrors that man have created over the years for their own selfish gain.

Fig 25: *Aloe X* in the industrial area. (author, 2023).

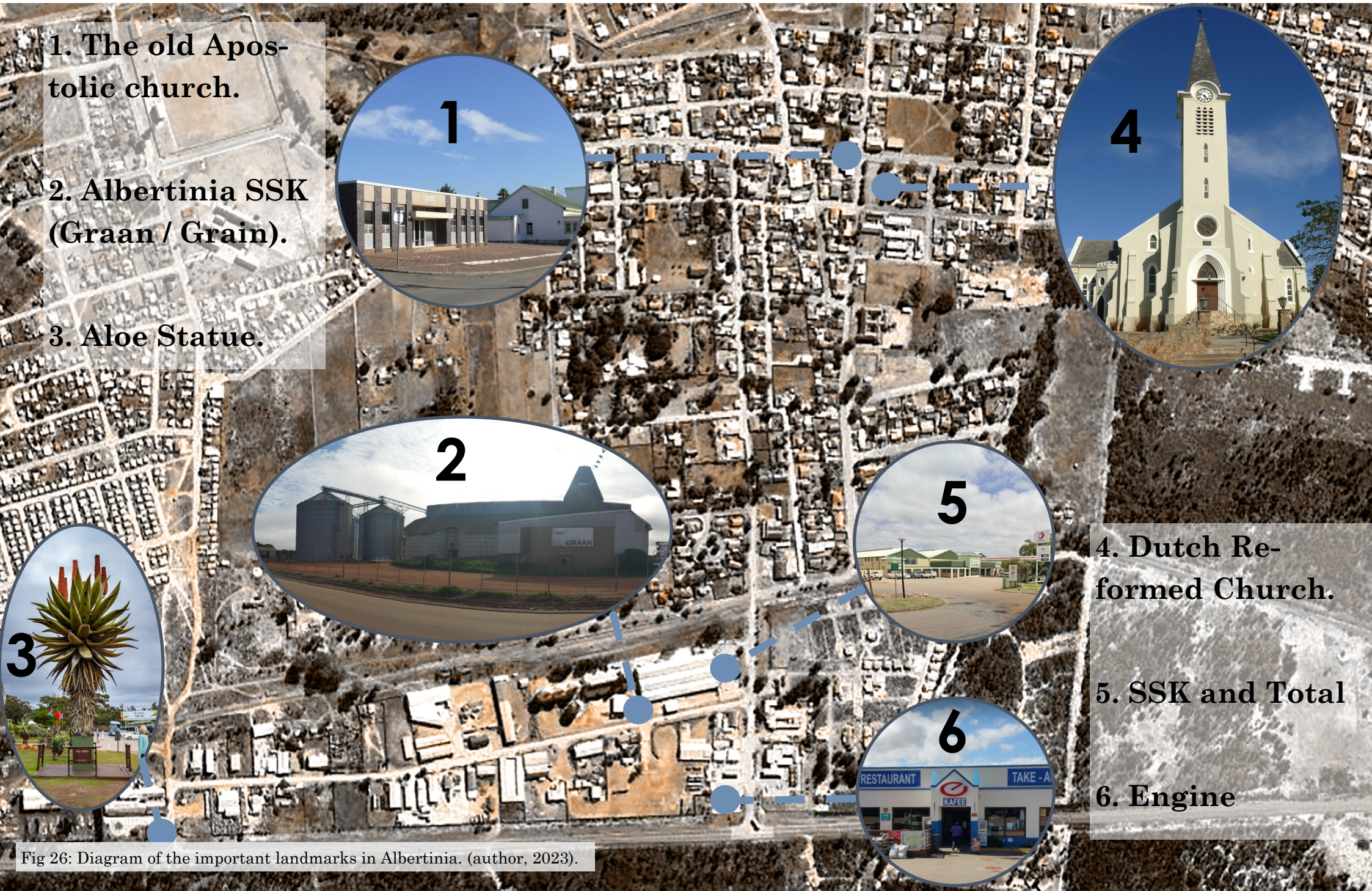
Site Analysis:

MEZZO ANALYSIS

1. The old Apostolic church.

2. Albertinia SSK (Graan / Grain).

3. Aloe Statue.



4. Dutch Reformed Church.

5. SSK and Total

6. Engine

Fig 26: Diagram of the important landmarks in Albertinia. (author, 2023).

MEZZO ANALYSIS

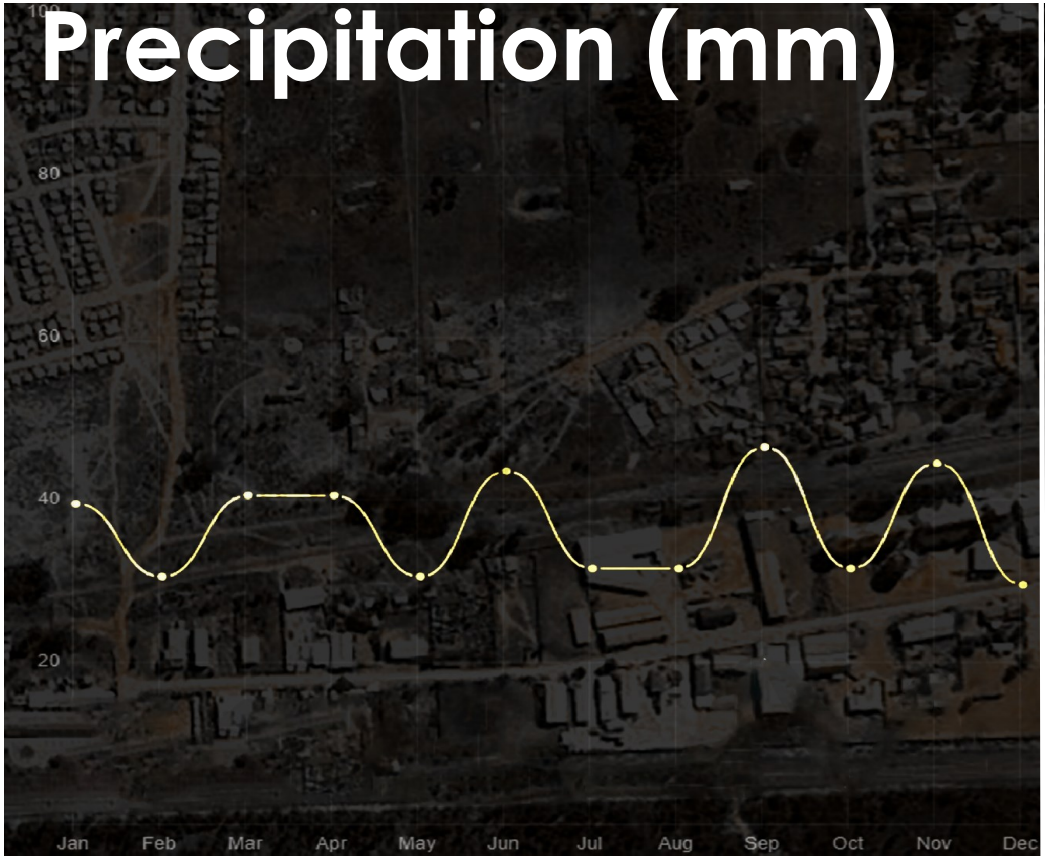
Albertinia's climatic condition is classified as a regional steppe climate (Climate-data, 2023: online).

A steppe is a grassy area that is arid. Steppes arise in temperate climatical conditions between the tropics and the poles. Temperate climates experience distinct seasonal temperature fluctuations, with frigid winters and hot summers (Stanley, 2023: online).

The town has a below moderate amount of rainfall throughout the year, with the lowest amount of rainfall during February with a mean value of 26 mm and the highest amount during November with a mean value of 45mm (Climate-data, 2023: online).

On the other hand February also experiences the highest temperature and the coldest being in July (Ibid).

Albertinia experiences its highest humidity levels during April with a slight fluctuation in the levels as the year progress towards June (its coldest month) but overall the town has a relative humidity of 67.66% (Ibid).



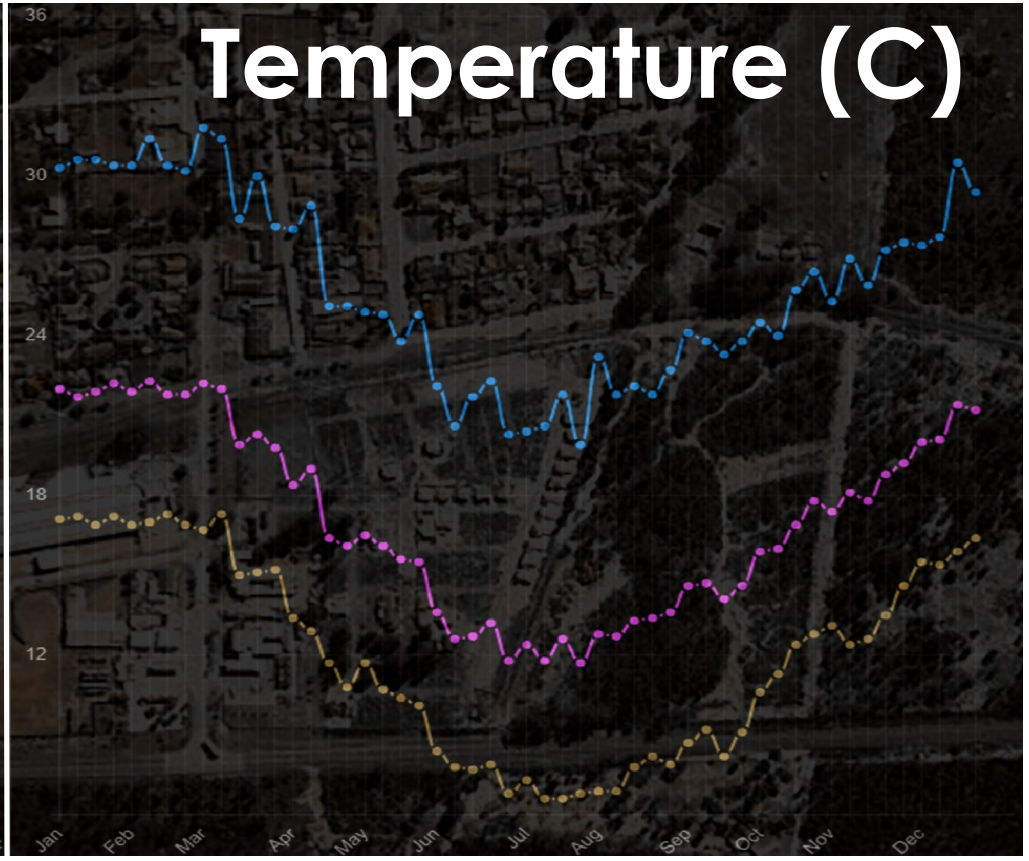


Fig 27: Climatic diagrams of Albertinian weather conditions. (Climate-data, 2023: adapted by author).

THE ALOE FEROX

Analysis:

The Aloe Ferox an indigenous to South Africa:

There are roughly 150 aloe species in South Africa belonging to the *Aloaceae* family (Van Jaarsveld, 1996: 57).

The Aloe Ferox/*Cape Aloe* with its upright candle-like flowers can be noted as possibly the most typical (Ibid), since it abundantly grows in the South Cape region.

It can be found from the Western Cape to southern KwaZulu Natal, as well as in areas of the Eastern Cape, Lesotho and Free State (Ibid). With densely grown areas along the N2 from Swellendam to George.

The Aloe Ferox plant is an *monocotyledon* with a linear leaf growth (Usually in sets of three) and extrinsic root system that is *non-aggressive* (Van Jaarsveld, 1996: 58).

Furthermore, after the leaves have completed their life cycle they do not simply fall off and wait to be swept away by the wind. To the contrary they stay persistently attached to the stem of the plant forming a "*Dry Skirt"* protecting the plant from fire and other external factors that may cause damage to the plant (Ibid).

The *Renosterveld*, dry fynbos, succulent karoo, Nama karoo, Eastern Cape *noorsveld* (thickets), and grassland are among its natural habitats (Van Jaarsveld, 1996: 57)..

It can be found on mineral-poor quartzitic sandstone, shale, ranite, conglomerate, limestone, and dolerite soils, hence its commonality across the provinces previously named (Ibid).

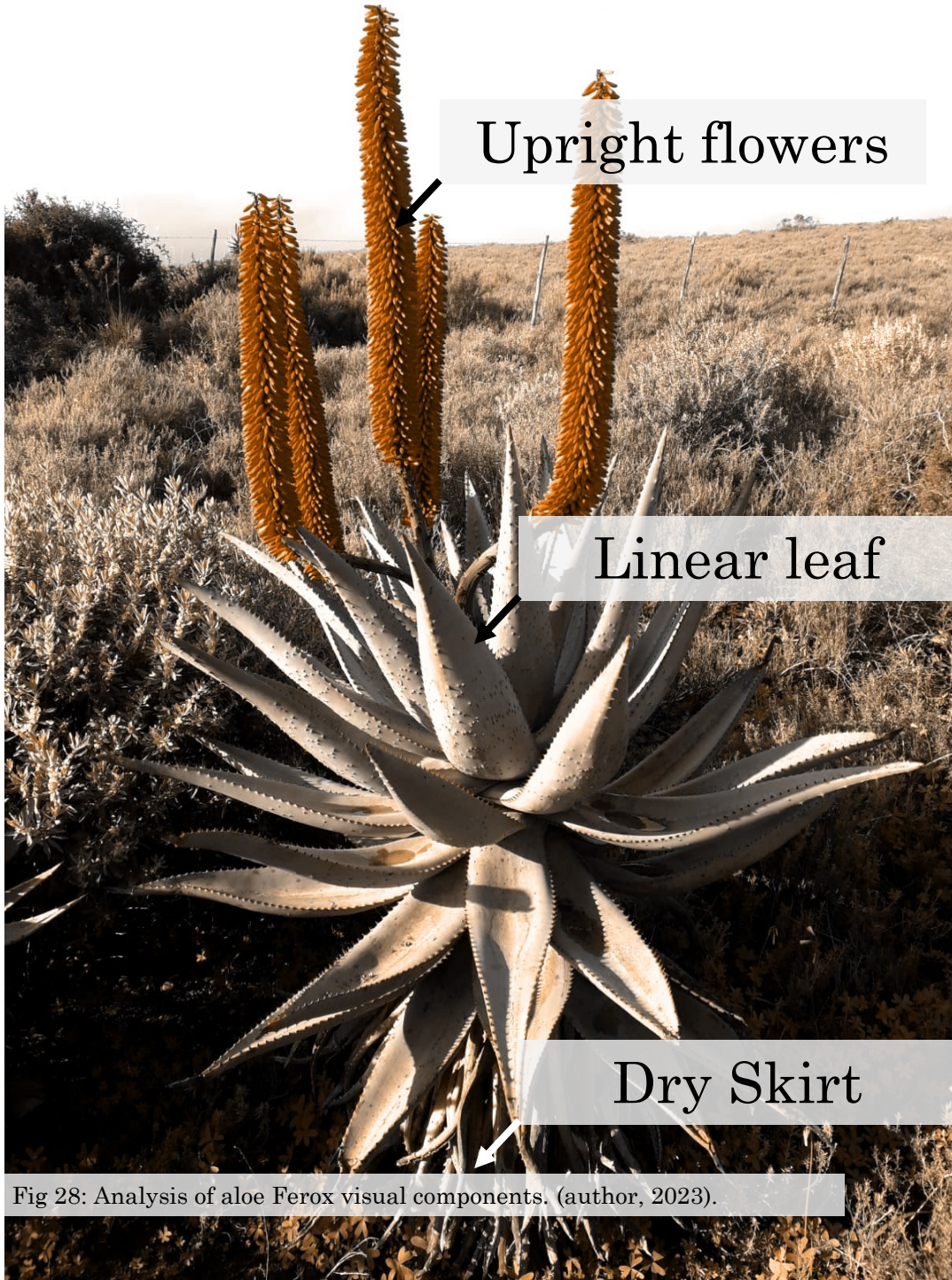


Fig 28: Analysis of aloe Ferox visual components. (author, 2023).

Analysis:

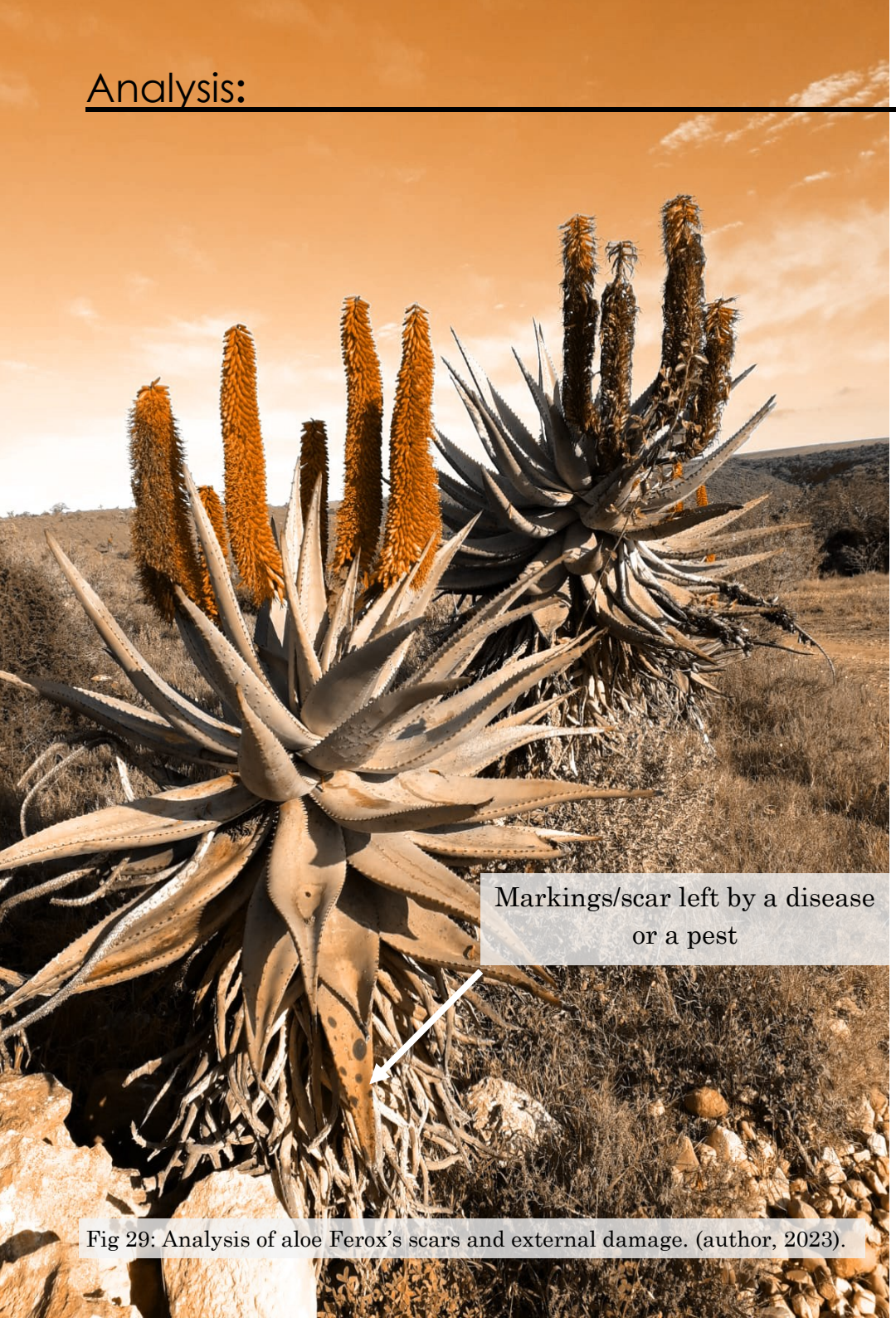


Fig 29: Analysis of aloe Ferox's scars and external damage. (author, 2023).

THE ALOE FEROX

The aloe Ferox was first described in the *Gardens Dictionary* 1768 by Miller and was one of the first plants to be cultivated on the Cape Peninsula (Van Jaarsveld, 1996: 57).

Aloe Ferox: Medicine and healing

Aloe plants have been used for medicinal purposes throughout history, such as sailors using it for treatment of the skin due to the rough conditions at sea (Ibid). There are some records of the 'bushmen'/Khoi-San depicting the plant on their renowned rock art.

Only recently in the mid-1900's did the Aloe Ferox gain more popularity for its medicinal properties. When it was applied to radiation burns in Japan 1945 after the second world war nuclear bombings (Ibid).

The aloe plant's various biological capabilities such as a fungicide, cancer cell growth inhibitor, anti-inflammatory, and anti-aging agent are described in twentieth-century scientific literature (Ibid). Aloe derivatives have also been discovered to stimulate the growth of various cells such as skin and normal lymph cells, and more recent studies reveal that aloe gel increases blood flow to the area of application, which is important for skin cell regeneration (Ibid).

The Aloe Ferox does not only contain healing properties it also perseveres against diseases and predators with its bitter antibiotic sap (Ibid). The Aloe Ferox plant is mostly pest- and disease- free, only a few selected pests like the aloe snout weevil and dwarf fly larvae, seem to trump its almost impenetrable defence and even then it can only render some leaves destroyed and/or scarred with the plant still intact (Ibid).

Analysis:

As surmised, healing is interlaced into the very essence of the aloe Ferox plant, either through its medicinal properties, self healing capabilities, etc.

The largest natural threat to the aloe Ferox plant, which poses real damage, is the Crested porcupine/ 'Ystervark' which can totally topple and destroy the plant in search of its fruit located in the centre of the plant.

Aloe Ferox: Harvesting

The following is a description of the harvesting demonstration and interview done on farm Menanteau previously mentioned within this document.

Firstly a hole about 20 centimetres deep, with a gentle slope, is dug into the ground. This will function as the gathering point for the sap to filtrate towards. Thereafter, a sheet of DPM is laid over the hole to ensure the capturing of the sap. Thirdly the harvester chooses which leaves he or she wants to gather from various aloe plants and must leave "at least four rows from the top untouched" or unscathed to ensure the longevity of the plant (Du Plessis & Losper, 2023: online). Following this, the harvester stacks the leaves on top of each other in levels with each level cantilevering about a centimetre inwardly more than the previous level to ensure that all the 'bitters'/ sap is collected. After the harvester has deemed that enough leaves have been stacked onto the pile, it is left to slowly drain for about 12 to 24 hours. The compression of leaf upon leaf due to gravity, ensures that most leaves are fully drained from their sap when the determined time has elapsed. Finally the sap caught by the DPM is filtered into a 20 litre bucket and the leaves are collected and both products are separately sold to the factories for production.

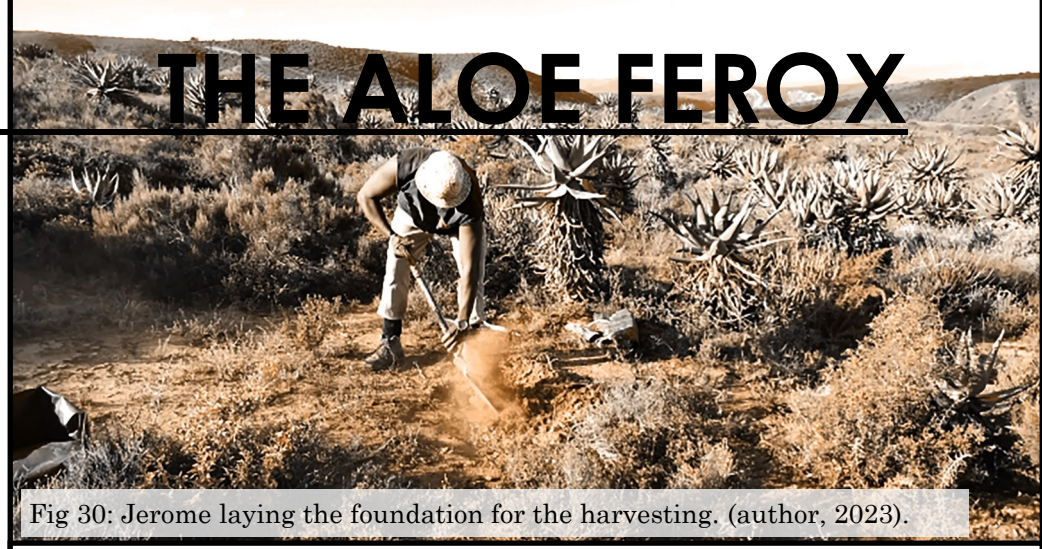


Fig 30: Jerome laying the foundation for the harvesting. (author, 2023).


Fig 31: The semi-circular stacking of leaves. (author, 2023).


Fig 32: Experiencing the harvesting process. (author, 2023).

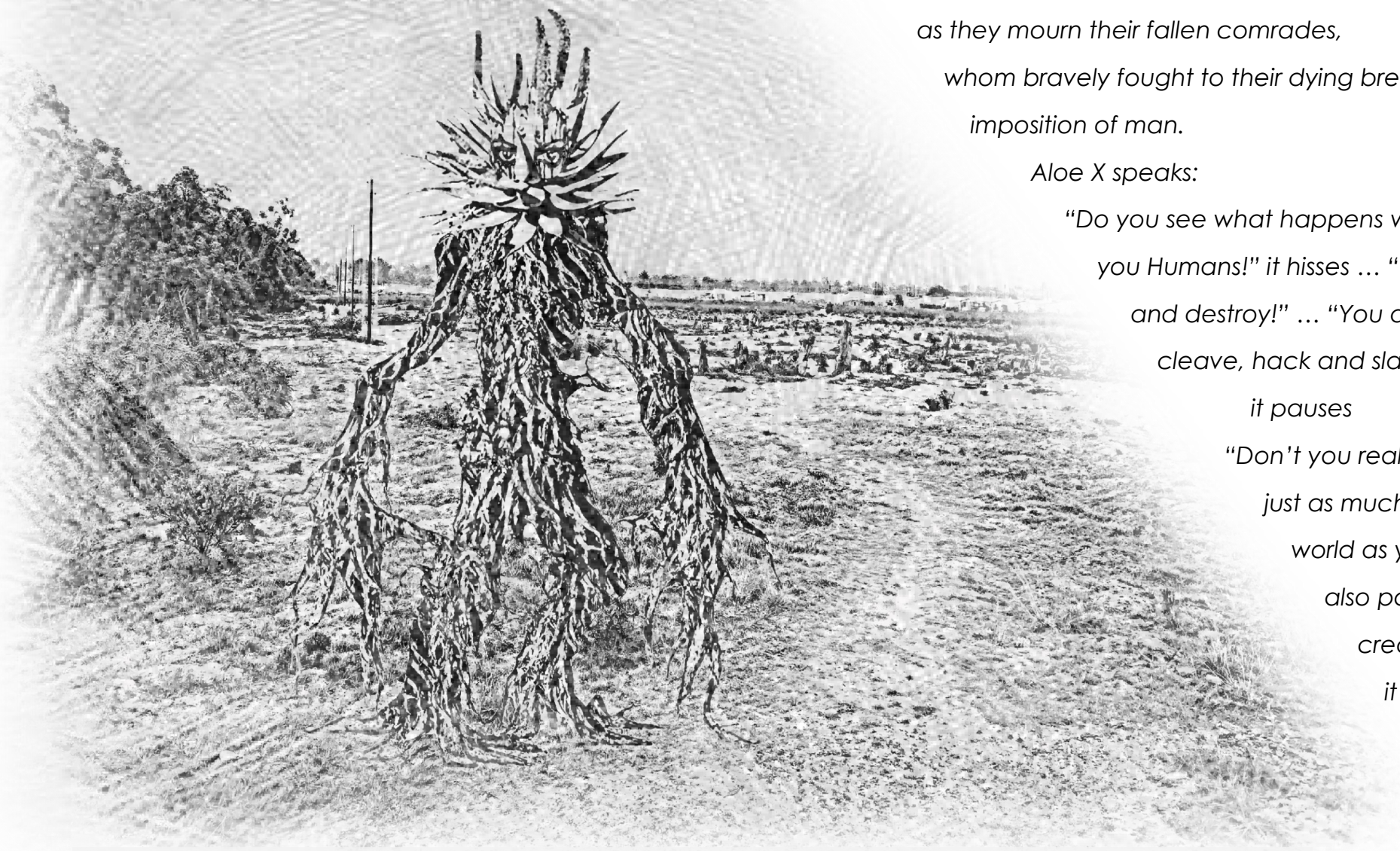


Fig 33: *Aloe X* discussing the conditions of the site. (author, 2023).

Aloe X: The establishment of the site

With eyes filled with dread and justified rage, Aloe X takes me
to a piece of land void of life.
I can hear the moans and cries coming from the trees
as they mourn their fallen comrades,
whom bravely fought to their dying breath against the
imposition of man.
Aloe X speaks:
"Do you see what happens when we trust
you Humans!" it hisses … "You ravage
and destroy!" … "You demolish and
cleave, hack and slash!"
it pauses
"Don't you realise we have
just as much part of this
world as you… we are
also part of His
creation"
it whispers.
A tear trickles down
my cheek as I stare
at the crime scene
laid bare before me.

Site Analysis:

MICRO ANALYSIS

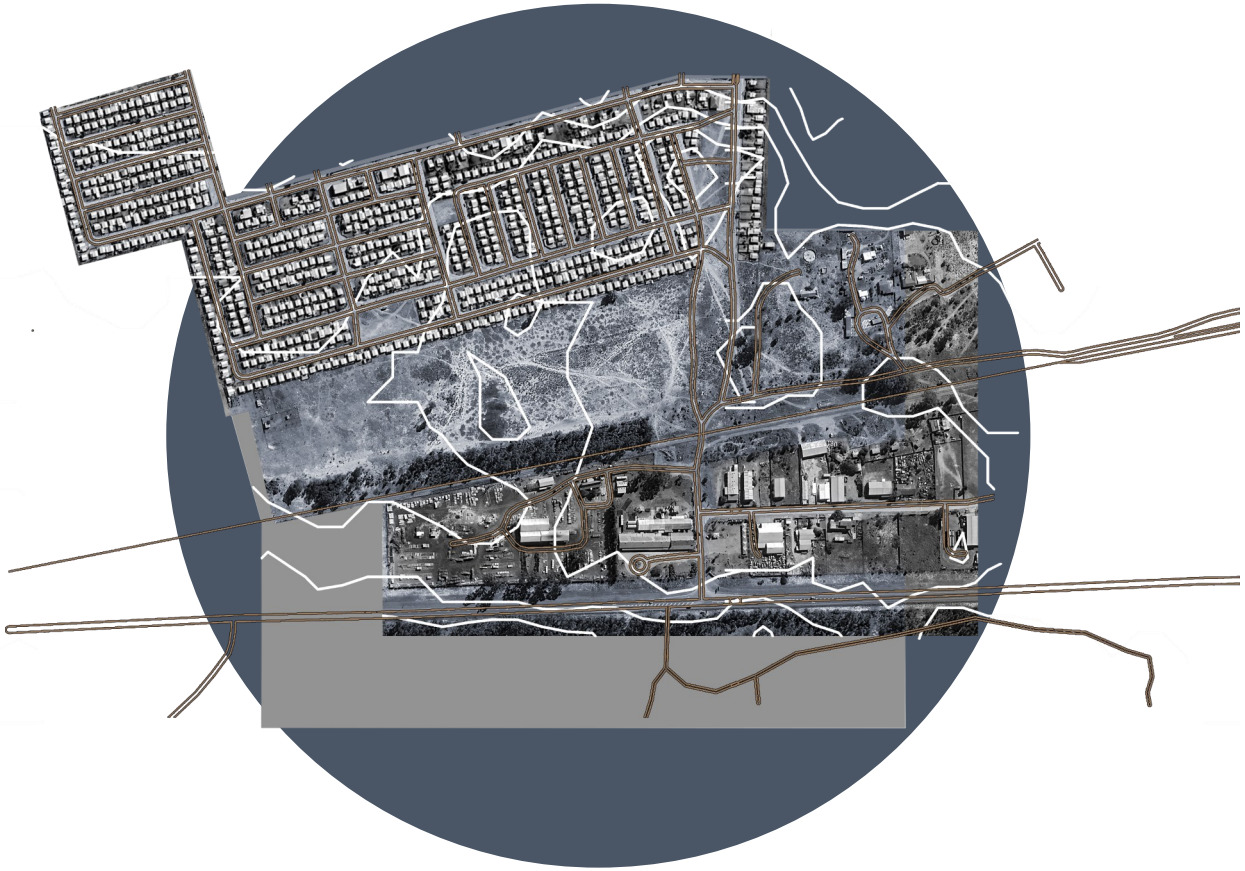


Fig 34: The chosen site. (author, 2023).

Key characteristics of the site:

The site itself has a few prominent characteristics that can be experienced when engaging/observing the site.

Firstly the railroad stretching from East to West at the southern edge of the site, which has the purpose of dividing RDP housing settlement and the industrial settlement.

Secondly the lane of trees between the railroad and the site, which functions as a wind break and visual barrier, as not to affect the RDP housing settlement.

Thirdly the desire lines of the community stretching over the site.

Lastly the surrounding mountains in the distance creating a classical landscape atmosphere.



Fig 35: The railroad and one of the clients *Organicaloe [Pty] Ltd.* (author, 2023).

MICRO ANALYSIS



Fig 36: The graveyard of desolation. (author, 2023).



Fig 37: The building rubble (author, 2023).



Fig 38: The remnants of a long forgotten past (author, 2023).

As previously mentioned the site comes across as quite a barren piece of land since it has been deforested and the current plant life thriving in the area are various types of grasses and small bushes.

To be more specific, thatch reed plants, sour figs and some rudiments of the original vegetation. This creates ample opportunity to bring nature back to the site by reintroducing plants indigenous to the region .

Furthermore, it is evident that the site experienced neglect and pollution to a certain extent, with building rubble and plastic waste scattered across it.

Ground conditions that can be experienced on site is the sandy soil, providing extensive drainage during the rainy season with a moderate slope of 1,5 metres.

One of the more saddening sights that can be experienced is the clump of dead and dried out stumps spread in a semicircle waiting to be dispatched.

Thus, as one can gain from the information, in its totality the site resonates a sense of desolation and neglect.

This can be seen as a positive aspect since there are various possibilities on how to approach the site via architecture and landscaping which could have a positive influence upon it. The main question would be how to do this in an appropriate way.

MICRO ANALYSIS

Site Analysis:

From an arial point of view one can clearly and fully grasp the physical conditions of the site. It is from this perspective that one realises the scale of devastation that man has left on the area. A place of death and destruction (with reference to the natural plant life), a space without hope.

This paints quite a dull future for the site itself which lies dormant waiting for another developer to come along and impose his or her own version of architecture as just another means to an end.

It is within this dire scenario that the author finds the motivation to believe that he will be able to positively influence this region of concern and rejuvenate the site providing a space where man can coalesce with nature.

The one positive of the site being 'semi' cleared and made barren is that it provides a vast area for the implementation of renewable energy strategies, such as the construction and application of a small scale solar farm, which would be able to provide electricity for the RDP housing settlement during these challenging times that the people are currently experiencing in South Africa with Loadshedding.



Fig 39: Eastern aerial view of the site (author, 2023).



Fig 40: Western aerial view (author, 2023).



Fig 41: Behold the graveyard! (author, 2023).

Site Analysis:

ALTERNATIVE ANALYSIS

We as beings tend to exploit and dictate our surrounding environment. This tends to create a “narrative of separation” (Saltmarshe, 2022: online), where people are separate from the surrounding world. The posing challenge is how to reintegrate our narrative as humans with the rest of the living world and banish the illusion of separation.

Michael Pawlyn encourages the notion of biomimicry (Pawlyn, 2016: 8). Where biology is used as the main contributor to solving problems in design. Thus, reintegrating the narrative of nature with that of our own. The situation on the site is no exception to the problem at hand where the beings have dominated their surroundings once again…



Fig 42: Reflection on gathering the stories of pathways (author, 2023).

Site Analysis:

ALTERNATIVE ANALYSIS

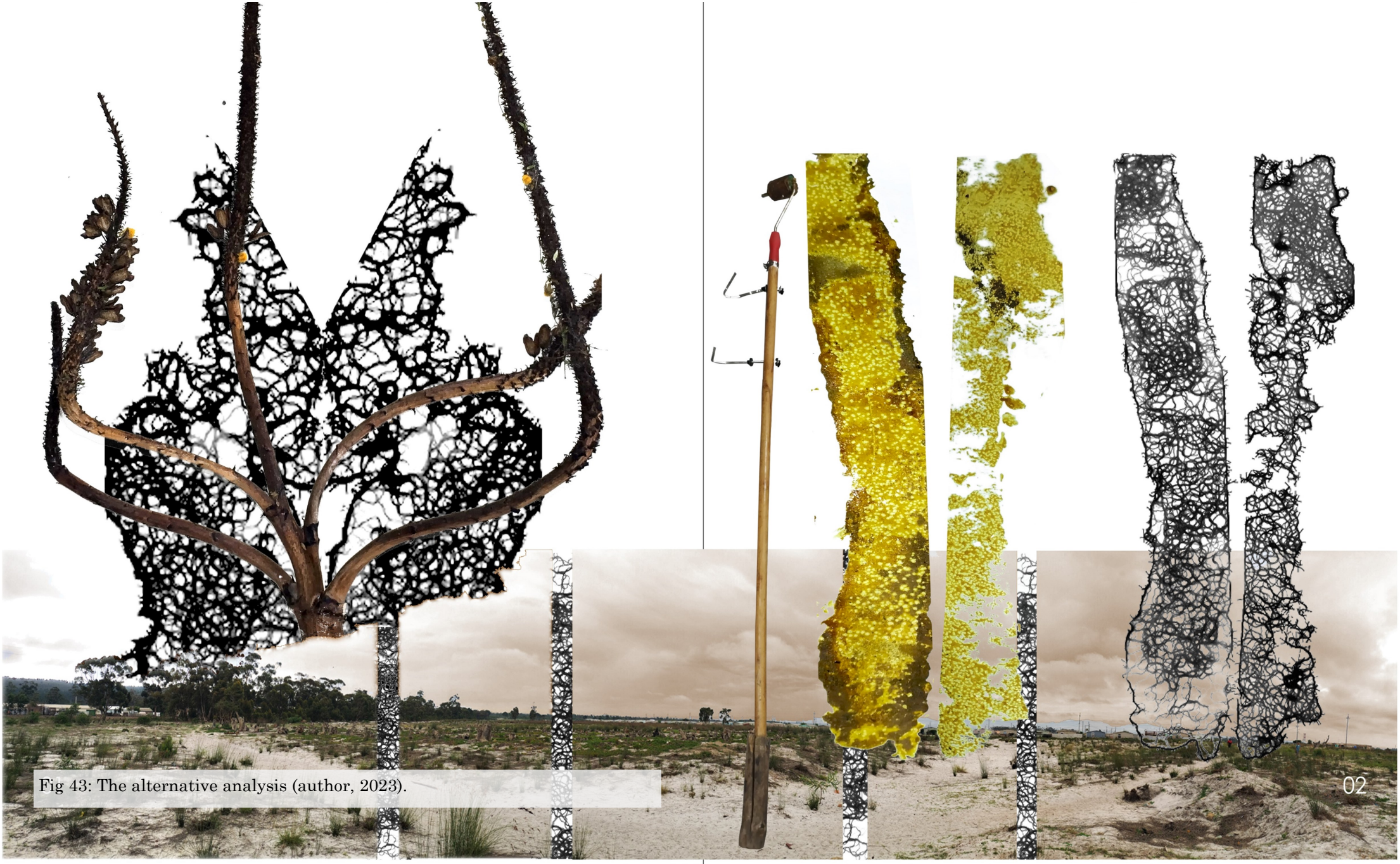


Fig 43: The alternative analysis (author, 2023).

ALTERNATIVE ANALYSIS

Site Analysis:

The process aimed to listen to the walkways used by the beings on the site. By sympoetically tracing their stories with the Aloe Ferox sap which acted as a translator of these temporal-spatial conditions. The walkways revealed a layered interconnectedness, which was then interpreted by an AI program to reveal latent realities.

Insights:

The results revealed that these walkways showed characteristics of a unified organism embodying the relationship between the being and the area traversed. These interconnected expressions may hold the solution on how to approach the disjointed reality between man and nature as well as promote healing /mending of other forgotten realities

This layered interconnected expression was quite a moment of revelation and questions submerged such as:

What would happen if we could embody these interconnected expressions within our architecture?

What if these intertwined threads did not only apply to the instances between the beings and that where dominance and order are implemented over, but between the being and raw nature itself, or between beings and other beings etc?

What would the interaction between beings look like if we could visualize it in such an abstract yet intricate way?

Thus, the last device was built as it may hold the solution on how to approach the disjointed realities between man and nature, man and man etc. as well as promote healing /mending of other forgotten realities.



Fig 44: AI inspired visual representation via a model (author, 2023).

Chapter 3

Pp. 38 - 44

ALOE X



A voice speaks directly in my mind

I quickly surmise that it is Aloe X

At first I do not comprehend what is going on.

It's the same repetition of words over and over.

Investigate

Develop

Attempt.

…

Investigate

Develop

Attempt.

Finally the realisation of what is happening hit me like a bolt of lighting on the open vast sea, fast and devastatingly beautiful.

Aloe X was motivating me to create a solution for the problem.

Invigorated, I started pouring myself into the work.

This is the tale of how I established my design.

Fig 45: *Aloe X* entering the mind (author, 2023).

Design Touchstone

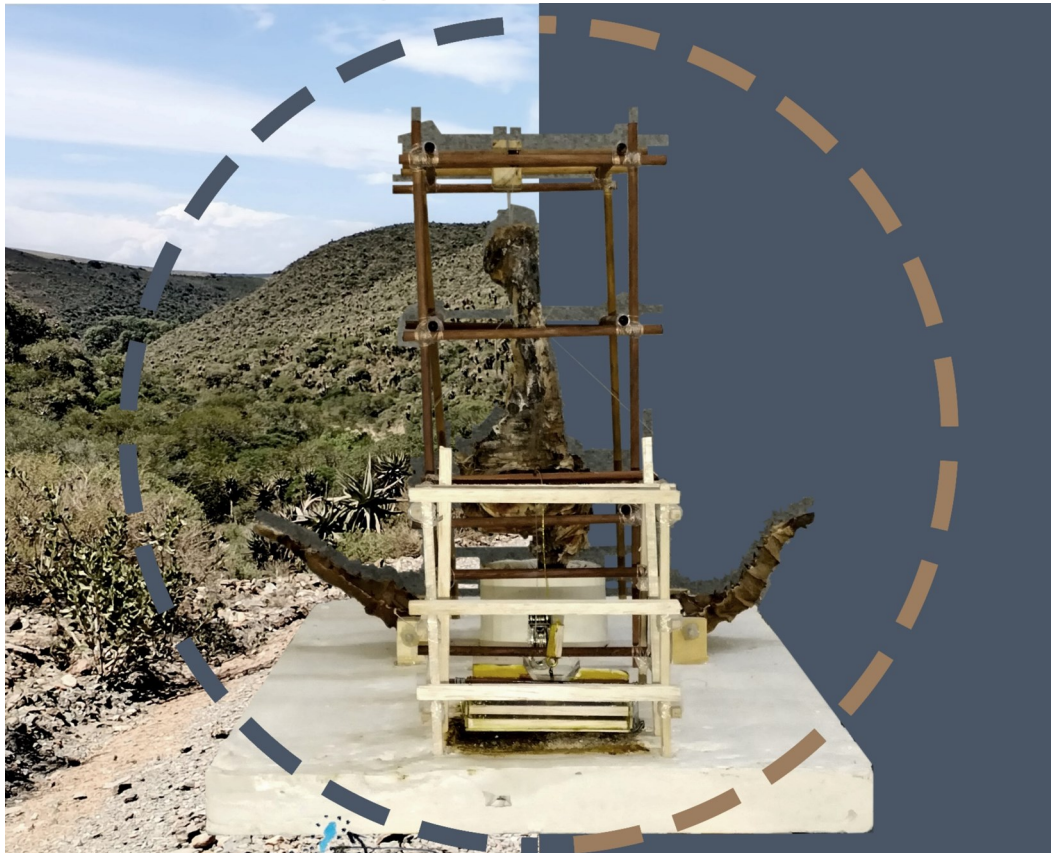
We as human beings tend to exploit and dictate our surrounding environment. In modern times this has often culminated in a "narrative of separation" (Saltmarshe, 2022: online), where people see themselves as existing separate from the surrounding world of nature.

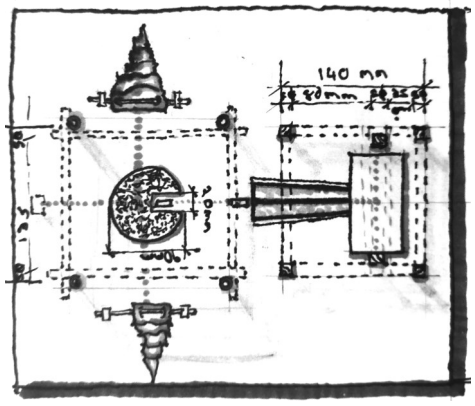
The touchstone addresses this problem by illustrating the THE PHYTO-ALTRUIST IN SEARCH OF PARAMOUR ACCORD, which can be paraphrased as nature as a giver in search of an intimate relationships where it equally receives.

Where the essence of the project is to promote an intimate relationship between nature (Aloe Ferox) and beings of the surroundings (humans utilizing the plant). Above all, the hand that gives must also receive, thus generating a full closed circle or ecosystem. By promoting and providing a medium in which a cheaper and more accessible form of medicinal care is researched and manufactured as well as educated to the public for the public, to inspire an enclosed ecosystem or eco-circle, where beings care for nature and vice versa.

The touchstone illustrates this process of ecosystem integration in two steps where the aloe is first harvested and processed or researched by the beings.

Thereafter the being is motivated to give back to the plant where he/she fills the container which supplies life force back to the plant and ground. Thus generating an enclosed and sustainable system.





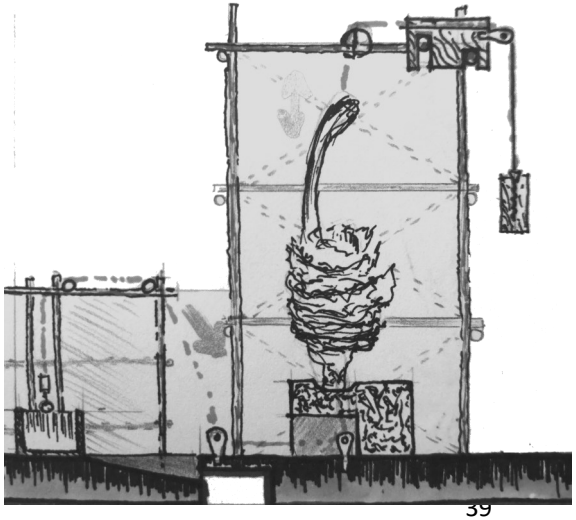


Fig 46: Design touchstone drawings and representation (author, 2023).

Chapter 3:

Concept 01

Respiratory Tears:

Concept one deals with how the healing prospects of nature (specifically focussing on the aloe Ferox) can be illustrated through architectural ideas, whereas the sap produced by the plant is seen as tears of healing thus the name, breathing tears and the building is seen as an artificial lung thus, inspiring breathing architecture.

This concept aims to correlate with one of the theories of healing through architecture/therapeutic architecture, where the design itself does not heal the being or entity but rather through the manipulation of place and space acts as a catalyst for a healing environment. This healing environment does not only focus on the beings themselves but also on the surroundings and how to revitalize the surrounding environments. Thus, one can see how the concept attempts not to disturb the site as much as possible but rather creates a levitating effect allowing spaces to breathe and inspire rejuvenation.

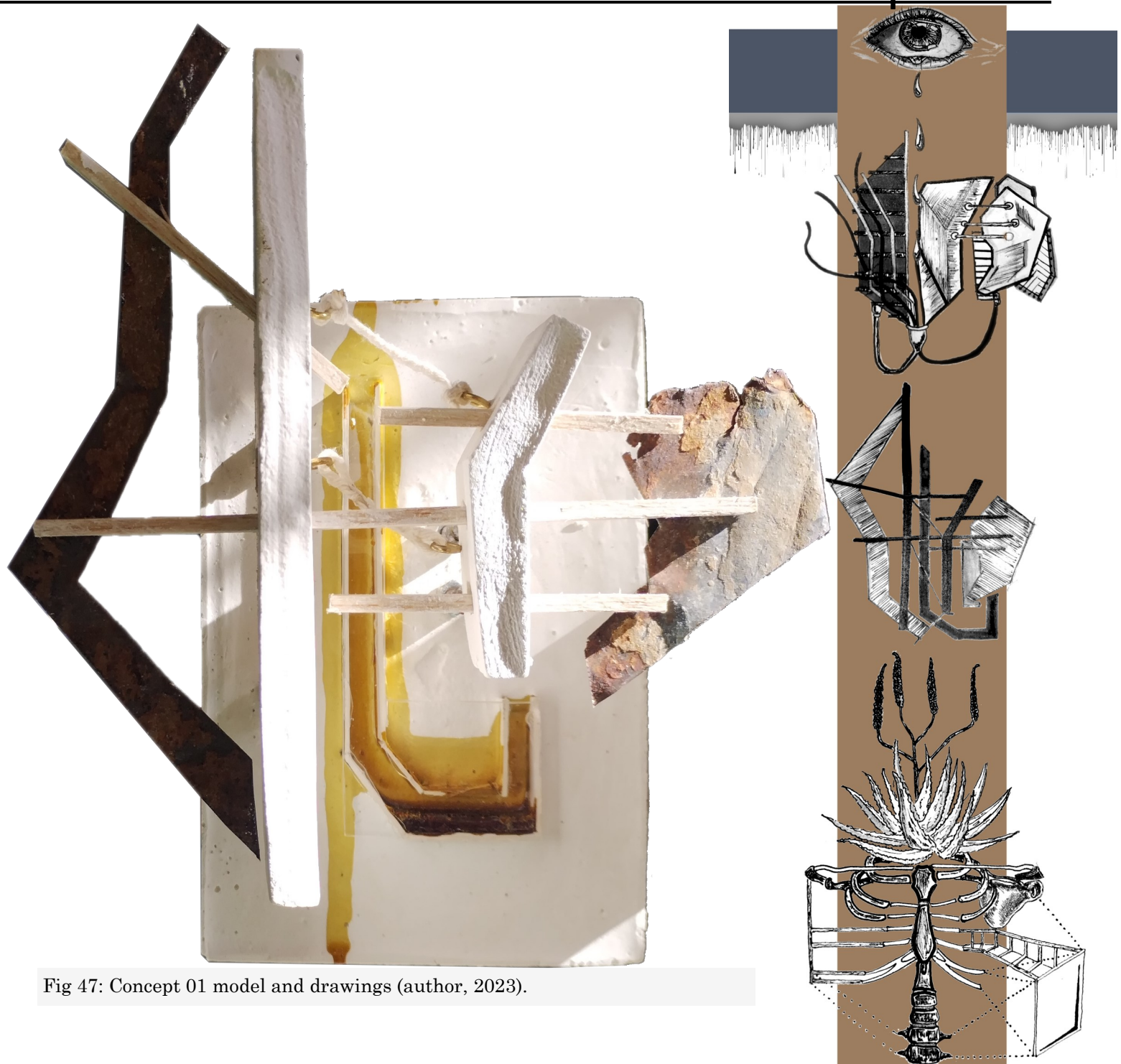


Fig 47: Concept 01 model and drawings (author, 2023).

Concept 02

Environ - Symbiosis

Environ means to form a circle or to surround or envelop something, whereas symbiosis is a relationship between two entities in which each entity is dependent upon and receives reinforcement from the other. This concept attempts to illustrate and propagate interdependent relationships between humans and nature, linking with the theory of biomimicry.

Where we as designers can learn from the different systems in nature and integrate them into our designs to create sustainable architecture that not only benefits us but nature as well. This can be seen in the concept where the two different materials illustrate the two different entities. Balsa as nature and plaster as humanity, where the balsa illustrates how the natural systems are architecturally woven into the rigid obstinate systems of humans to create something beautiful which is also sustainable.



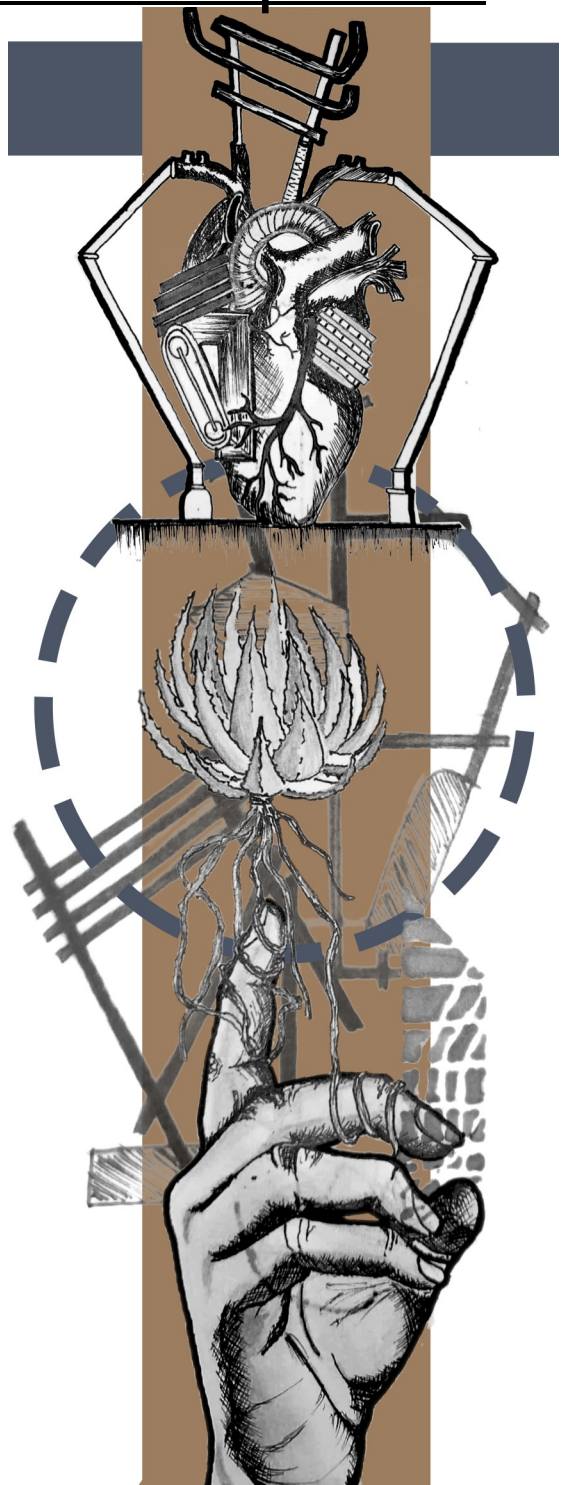
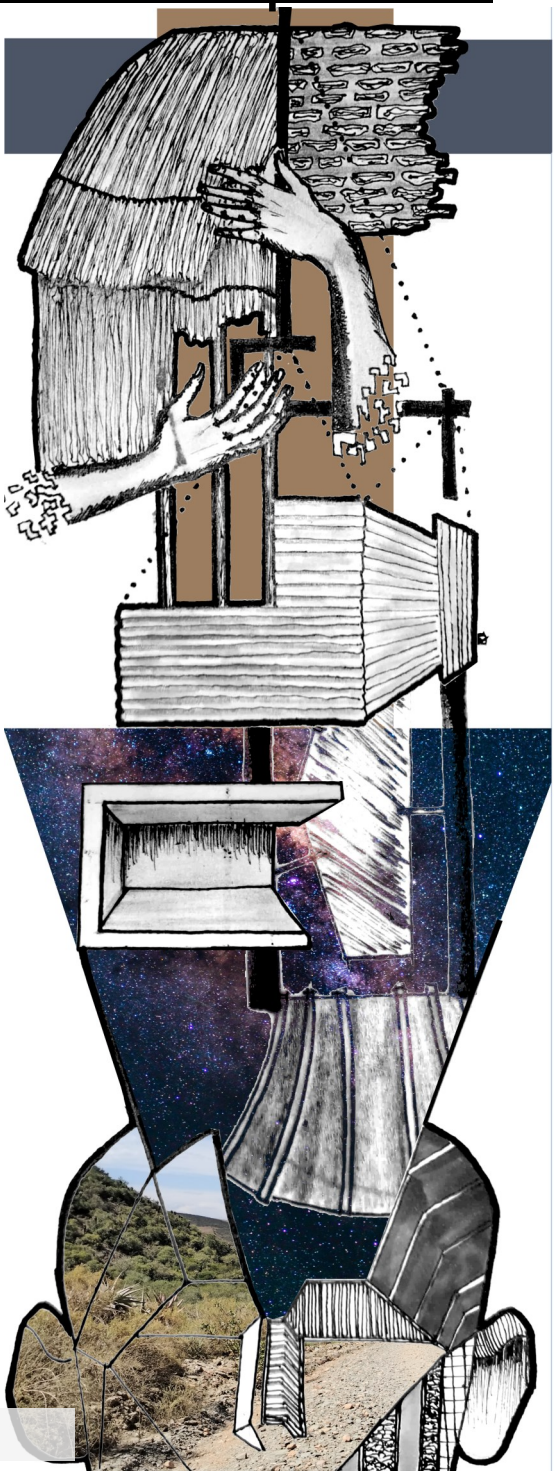


Fig 48: Concept 02 model and drawings (author, 2023).

Concept 03





The last concept deals with the implementation of critical regionalism for a non-place where the site itself is quite barren and upon further investigation, the beings traversing the site seemed to express the same characteristics as which they would when caught within a non-place, where they hurried from the informal settlement to the industrial region and back, never attempting to linger and dwell within the space, which is understandable due to the fact that it does come across as this liminal threshold which beings perceive as just part of their daily route, may it be to work, shops etc.

This led to the understanding that in order for the previous two concepts to achieve the ideal outcome it needs that last piece of the puzzle, which would inspire beings to linger within the space and interact with it. Thus, the decision was made to implement critical regionalism which can be seen as insightful defamiliarization, such as materials, structural systems and layouts known to the region being used in revelatory ways not known to the public, to invoke curiosity and illustrate the worth of the region in architectural terms to the public thus creating a sense of kinship with the design.

Fig 49: Concept 013model and drawings (author, 2023).

Construction Touchstone

Germination of structural mending

Reshaping and Unifying the known typologies of Albertinia.

The touchstone explores the notion of utilizing and unifying existing construction methods and typologies within the region, with an aim to resonate a sense of kinship with the beings dwelling in the surrounding environment. The touchstone attempts to create open accessible spaces that invite both being and site to engage with it.

The use of semi-dry stack walls or the illusion of it combined with shed-like typologies resonates a subtle voice harmonizing with the rhythms projected by the site. Furthermore, the touchstone addresses certain challenges that might arise with the said structure and propose methods on how to deal with them.

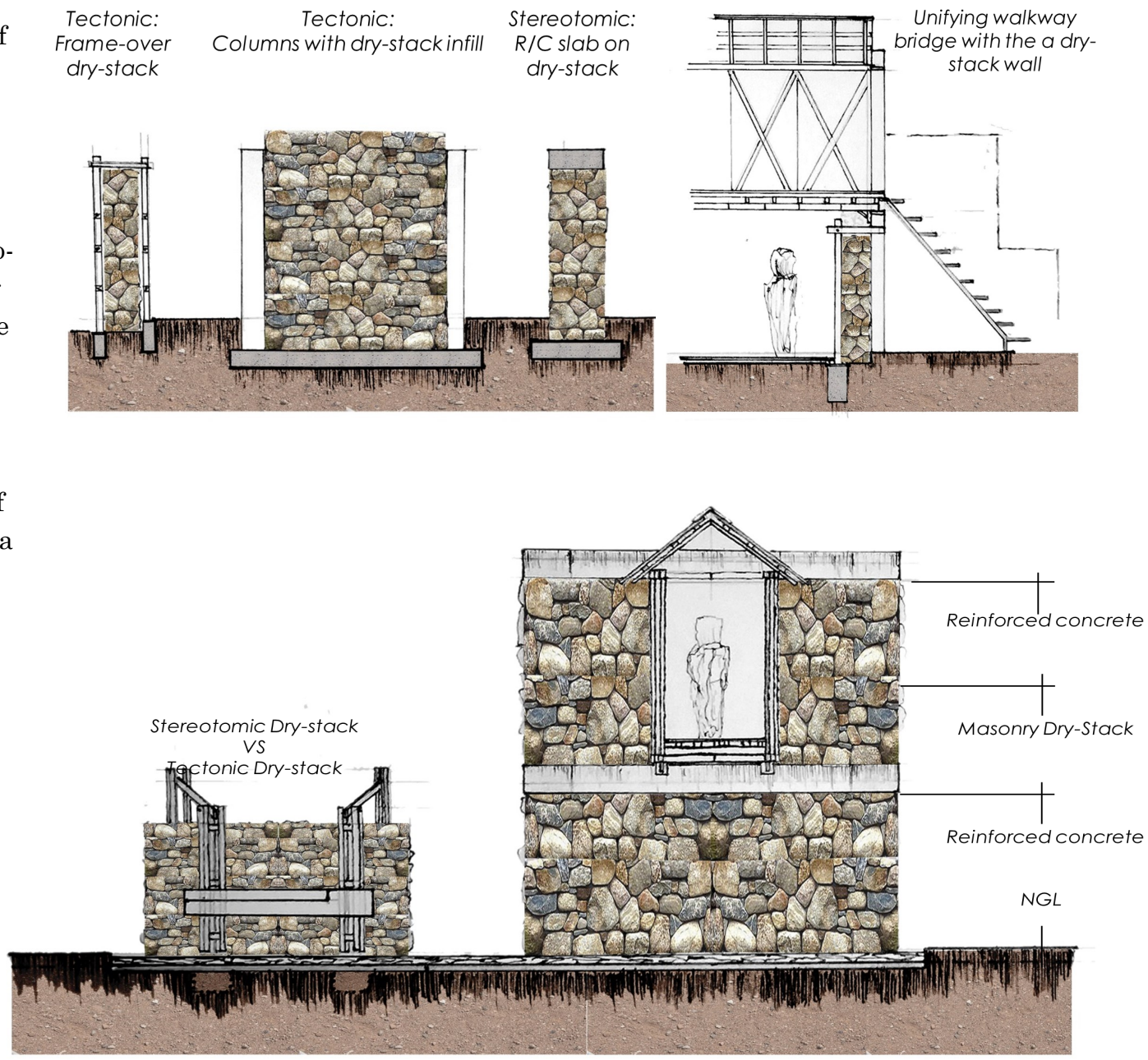


Fig 50: Construction touchstone drawings (author, 2023).

Chapter 3:

Construction Touchstone



Fig 51: Construction touchstone model (author, 2023).

Chapter 4

Pp. 46-63

Theory chapter: Introducing the challenges

Research question:

How can the notion of healing and a curative environment inspire the unification between the various disjointed communities in the Aloe Ferox industry and commend the Aloe Ferox plant by establishing safe spaces that will instil positive metaphysical engagement with the architectural design.

From the previous chapters and the research question itself, one can confirm that there are various challenges that needs to be addressed to achieve a sensible design. This chapter will attempt to address some of these challenges through theoretical investigations and precedent studies.

The challenges that will be addressed are:

- The exaltation/glorification of the Aloe Ferox plant without referring to formalistic design strategies pertaining to the plant itself.
- The site functioning as a threshold between the industrial region and the RDP housing settlement and how to approach it (The division of communities within the Aloe Ferox industry).
- The establishment of a curative environment.
- The positive Metaphysical engagement with the Architectural design

Thus, investigations will be made into the following theories to attempt at manifesting sensible answers for the challenges posed.

A. Metaphorical Design
B. Place Attachment
C. Healing Through Architecture
D. Critical Regionalism

These investigations will then be implemented within the design to help formulate an appropriate answer.



Fig 52: Ferox as an extension of the body (author, 2023).

Theory chapter: Metaphors and the medium

When approaching the design with the aims of celebrating the Aloe Ferox plant it is quite easy to refer to formalistic approaches which represents the plant in typological, morphological and topological manners.

For a design pertaining to this project which aims to engage with the beings at various levels and not only the visual experience, it tends to create a notion of architectural-makeup.

Thus, it is deemed necessary to delve further and deeper into the subject of the Aloe Ferox plant and see what can be gathered from it with poetic interventions and applications.

Referring to the analysis of the Aloe Ferox plant earlier within this document one can establish that the concept of healing is interlaced within the very being of the plant. Furthermore, the prevalent characteristics of its humble multi-faceted construction hints to the notion of simplicity intertwined with dignified depth. Therefore, it is of the essence for the design to resonate these highlighted aspects with subtle demeanour which gradually reveals itself to the dwellers engaging with the architecture.

A. Metaphorical Architecture:

Metaphor is a term we use, which means to convey a message. It can associate itself with words, things or entities transcribing a certain depth of emotions or characteristics which is not usually associated with the given subject (Fez-Barringten, 2012: 2). Thus, giving the primary use of the subject a secondary context.

We as beings use metaphors throughout our everyday lives, may it be through writing, conversing or even thinking. Metaphors has the ability to creatively influence our day to day mundane existences, it is a method which enables us as beings to associate with our emplaced lived realities and even organize/dictate our cognitive experiences in revelatory ways (Bagh - e Nazar, 2018: 41).

In his monograph, *Architecture: The Making of Metaphors,* Barie Fez-Barringten states that: “Metaphor is shown to be a tool used by designers, architects, and users as well as the medium between its creators and readers. The built metaphor is explained as the dual tracks which combine the technical and conceptual with the practical and artistic” (Fez-Barringten, 2012: 5).

Therefore, we as architectural designers are given the important task of providing built mediums which can hold underlying messages or meaning which hopefully would inspire imaginative engagement since imagination and metaphors coexists in reciprocity with one another (Fez-Barringten, 2012: 1).

Theory chapter: Metaphors and Cognition

Metaphorical Architecture and the cognitive experience.

In the academic piece of writing, *Architecture as Extensive Mind,* its authors, quite briskly, dissect the four branches of the basic cognitive approach (Embedded cognition, Embodied cognition, Enacted cognition and Extended cognition) and attempts to prove that Extended cognition is the way we as beings organize our minds and thought processes alongside metaphors with relation to architecture (Bagh - e Nazar, 2018: 33- 46).

Embedded cognition:

Embedded cognition deals with the notion of Heidegger's Being in the world/ *Dasein* (Dreyfus, 1990: 1), in other words being present or thrown into the moment and enacting upon what is experienced on multifarious levels, thus our 'cognitive being' is subjected to our lived reality and on how we enact upon it (Bagh - e Nazar, 2018: 35).

Embodied cognition:

Embodied cognition comprises Maurice Merleau-Ponty's theory of the cognition being heavily influenced by the bodily engagement of the being (Wilson & Foglia, 2017). Thus, each being's cognition is individually influenced by their own unique bodily experience (Bagh - e Nazar, 2018: 35).

Enactive cognition:

Enactive cognition portrays the notion that we as beings develop our cognition through embodying experiences and that the world is slowly individually revealed to us as beings through each experience we have. Thus, the world/lived reality is seen as an "*Emergent phenomenon"* and we as beings no longer dictate our cognition rather, we become part of a 'cognitive situation' (Bagh - e Nazar, 2018: 36).

Extended cognition:

Extended cognition functions as an extension of enactive cognition (Bagh - e Nazar, 2018: 36). It not only states that our cognition is subjected to our 'cognitive situation' it also states that we as beings have an extensive mind, where our cognition is not bounded to our bodily periphery, rather that we as beings have the ability to couple our cognitive thought with elements of the environment through symbolism (Bagh – e Nazar, 2018: 36).

For example: Say one grew up near a park, and within that park there is a specific tree which one holds dear or emotions towards, since it was where one has had a first kiss or rescued a cat. Thus, each time when the park is visited and the tree is seen, it sparks the memory of what happened, and so the tree becomes a symbol for the brain from which it gathers a personal memory laced with emotion i.e., an extension of the mind from which information is gathered/remembered.

Metaphors and Cognition

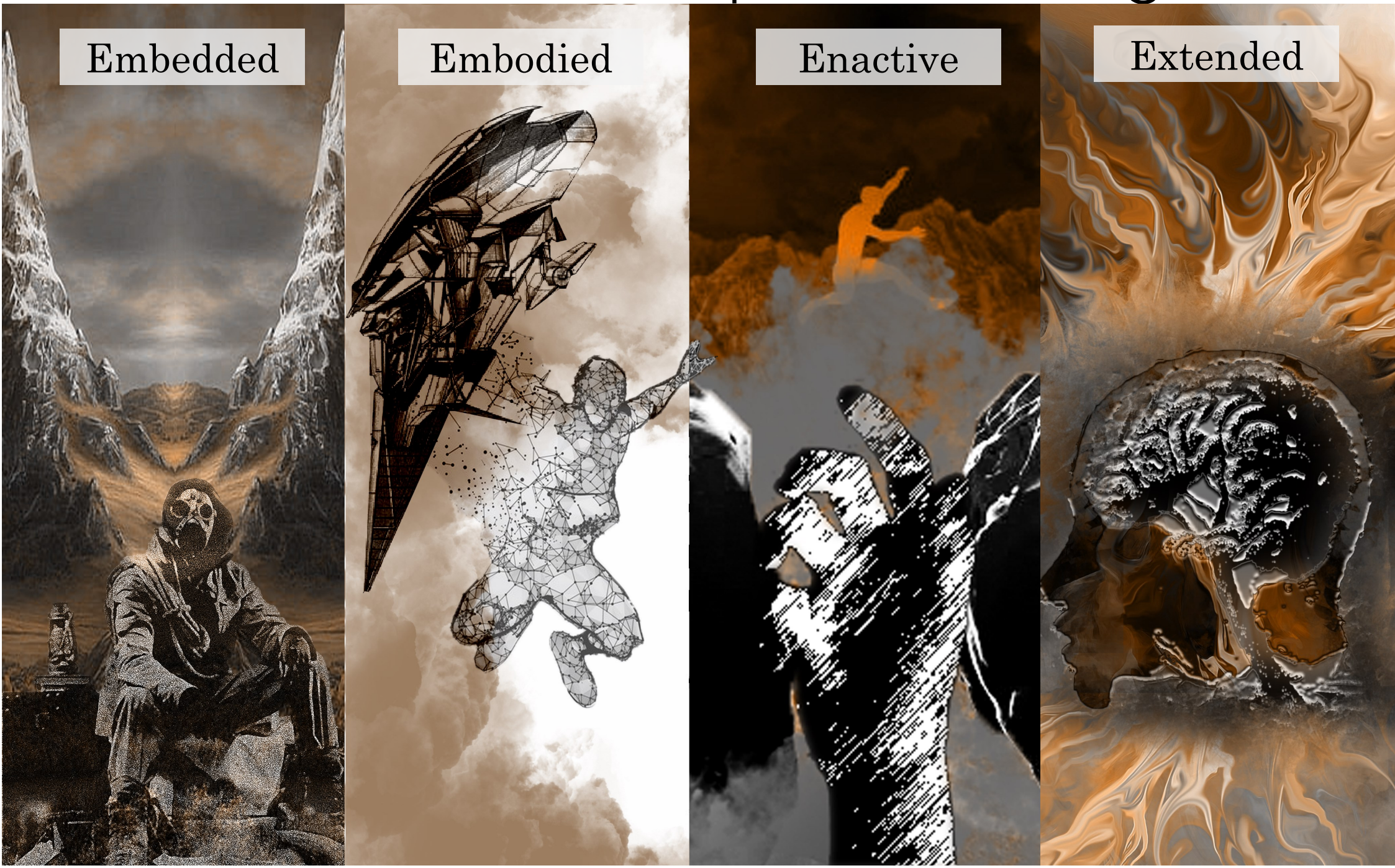


Fig 53: The 4 branches of cognition and their engagement (author, 2023).

Metaphors and Cognition

Metaphors can be added to such an experience. For instance we take the tree example, but this time one has visited the tree just before a big test, overcome with stress and fear, and certain characteristics of the tree, such as its branches reaching for the heavens or its perseverance throughout a drought, seemed to encourage one to further endeavor and take the challenge of the test head-on. Now every time when one visits the tree during tough times in one's own reality it instills encouragement or grants strength to persevere.

Just like the tree example, Architecture has the ability to 'speak' to engaging beings and hold memories which they then couple with the design (Bagh - e Nazar, 2018: 38).

Therefore, the author deemed it necessary to approach the design with the notion of extended cognition, where certain elements within the design can be metaphorically appropriated which can spark the imagination, inspire cognitive engagement and formulate personal connections which would refer back to the Aloe Ferox plant.

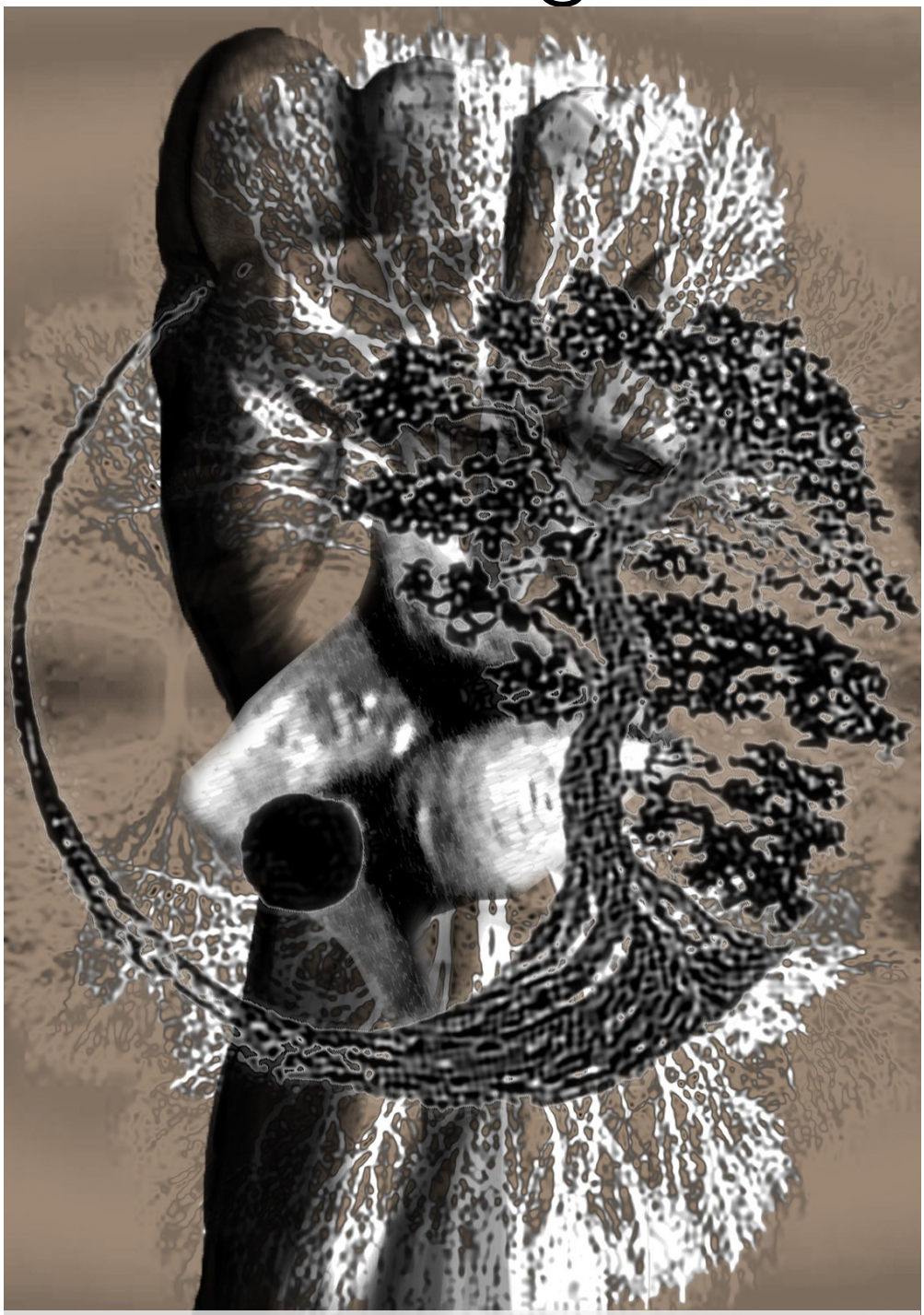


Fig 54: Extensive connotations to memory (author, 2023).

The space we know as place



Fig 55: Passengers of the site (author, 2023).

As mentioned, the site functions as a threshold between the industrial region and the RDP housing settlement, simultaneously this threshold is crossed at a daily basis by the beings moving to-and-fro the settlement and the industrial region. In his book, *Non-Places, Introduction to an Anthropology of Supermodernity* 1995, Augé describes a *non– place* as:

> "A place to be passed through, a place where the theme of equality and distinction is breached, … a space of non-place creates neither singular identity nor relations; only solitude and similitude. […] A space where a person is relieved of his/her usual determinants, a place where one becomes no more than what one does or experiences in the role of the passenger, customer or driver". (Augé, 1995: pp 103 -111)

After personally experiencing the site, the author established that there are few to little engagements with the site except for the beings moving between the distinctive borders of the two regions. The beings moving through the site become no more than 'passengers' of the site where they don't intend to linger or engage, rather they are only focussed on steadily progressing from their starting location to their set destination, and so the site is deemed a non-place.

Note: a non-place is not the same as a space with a sense of *placelessness. Placelessness* is "*an environment without significant places and the underlying attitude which does not acknowledge the significance in places"* (Ujang & Zakariya, 2014: online). A non-place on the other hand, in its most basic form, is where one does not feel the need to associate with it 'individually', since it is already accepted as a space to be moved through or 'just another means to an end' such as the que by the till in a shopping centre.

To combat the view of the site functioning as a non-place, one must look at its polar opposite, in the sense of creating a space to linger/identify with, which is place attachment.

Theory chapter: The space we know as place

Place attachment as described by Ujang & Zakariya in their study, "Place Attachment and the Value of Place in the Life of the Users, 2015, PROCEDIA 373 - 380, is the connection between a person and their surroundings. Furthermore, it relates to the emotional and cognitive aspects which one experiences from the surroundings, where physical aspects of a design do not directly influence 'the sense of place', and rather creates figurative meaning of the surrounding with which beings can associate (Ujang & Zakariya, 2015: online).

This colludes quite adequately with the theory of Metaphorical Architecture where physical elements can hold cognitive meaning and experiences which creates aspects that has the ability to influence the 'value' of the sense of place (Ujang & Zakariya, 2015: 374).

The main characteristic of place attachment is the desire to stay close to the object of attachment, it describes the unique emotion associated with a specific space which may be connected to appealing factors, frequent visits, and the degree of familiarity (Ujang & Zakariya, 2015: 374).

Place attachment is a favourable element to one's design, since it can either create or preserve a space's place identity. It can promote emotional wellbeing and a positive state of mind (Ujang & Zakariya, 2015: 374), which correlates with the healing through architecture theory, later to be discussed within this document. But most importantly it encourages the being to visit the site more frequently which is the hopes of the author as the means to mend the divide between the regions and its communities.

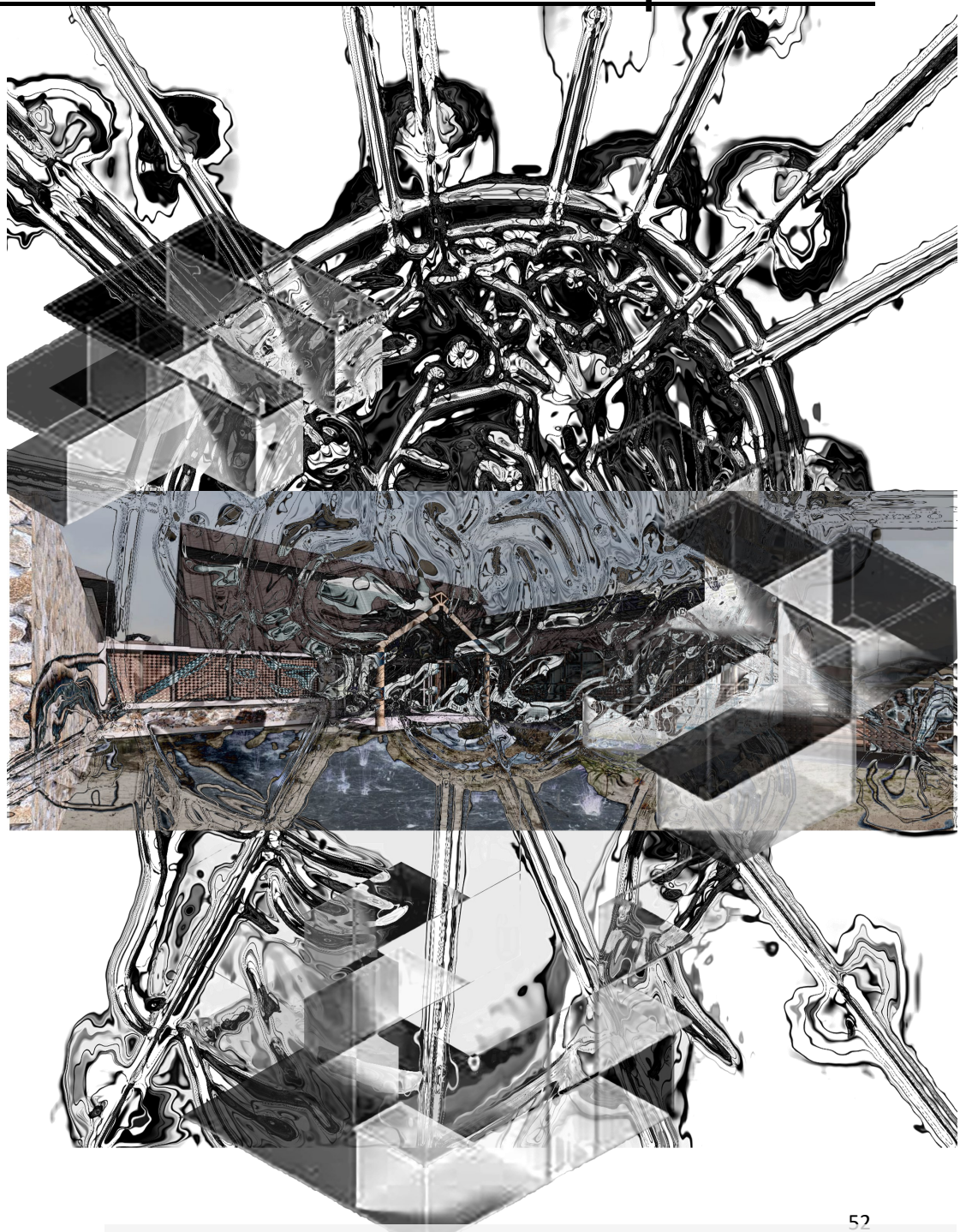


Fig 56: Architectural association with place (author, 2023).

The space we know as place

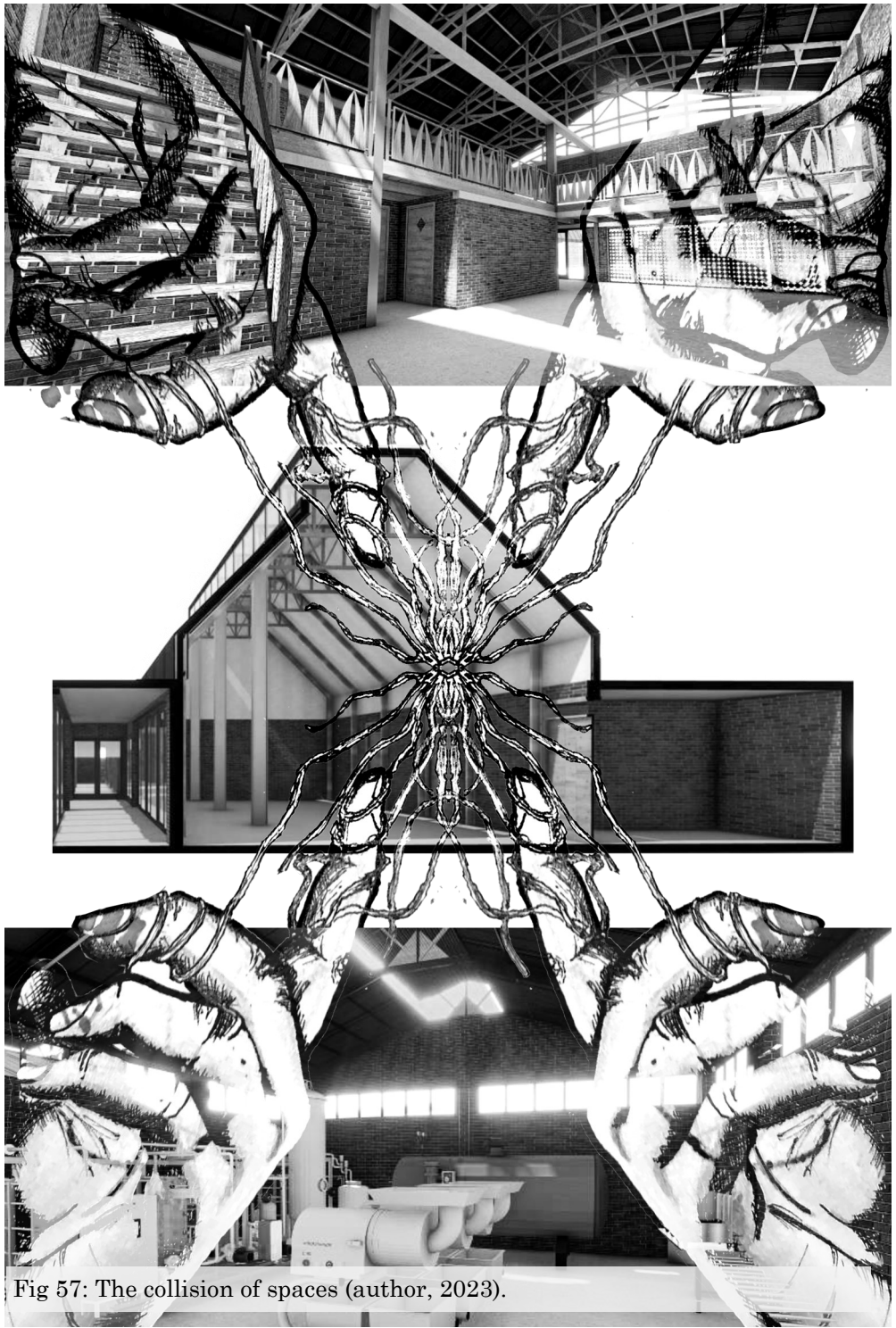


Fig 57: The collision of spaces (author, 2023).

In a online discussion, Theory of Architecture -#15 |Eleanor Ratcliffe, Buckland architects, 2020. Ratcliffe talks about the characteristics pertaining to place attachment and place loss.

She states that people tend to feel more attached to places and spaces which comprise the following characteristics:

- Private spaces
- Flexible spaces
- Controllable spaces

(Buckland Architects, 2020: online video).

Private spaces: These spaces tend to be regions of concern where beings feel most 'at home', where they can freely express themselves and pour their identities into these spaces (Ibid).

Flexible spaces: These spaces do not require big amounts of square meterage to fulfil their design goals and are usually multi-functional spaces (Ibid).

Controllable spaces: Beings tend to feel uncomfortable within spaces with which they struggle to associate with and have no control of. Therefore, they are inclined to add as much control to their environment as possible (Ibid).

And so, the author established the intention of developing the site in such a way, that the threshold between industrial and housing is blurred. Where the notions of the function driven machine (controllable spaces such as: factories and laboratories) and flexible and / or private spaces where one can linger, where imaginative - cognitive experiences is encouraged (such as: gardens, cafés, and courtyards), can symbiotically coalesce. Where spaces can be designed with the intent of encouraging people to formulate a place attachment with the design to combat the looming notion/possibility of site remaining as a non-place.

Theory chapter: The place as a Healing medium

It is of the utmost importance to establish a curative environment for the purposes of exalting the Aloe Ferox plant, mending various communities within the industry and the two main vocations of the design being the research and production of the plant's medicinal products.

Thus, as an architectural designer the author deemed it necessary to create spaces of healing through architecture.

It should be noted that the use of the terms healing and curative environments within this document does not refer to the physical act of healing or application of medicines on a patient, rather it is connected to the phycological component of healing and architecture being used as a medium to evoke this phenomenon through engagement between the beings and their environments.

Healing through architecture:

The body's fight-or-flight reaction is triggered by stress. Your mood, immunological -, digestive systems, and cardiovascular health can all suffer from chronic stress (Pietrangelo, 2023: online). If chronic stress is not treated or approached correctly it can lead to strokes, heart attacks, and type 2 diabetes at worst (Pietrangelo, 2023: online).

> "Architecture can have negative effects on human mental health. [On various scales] …monotonously repeating architecture could lead to weariness and boredom followed by depression and social confusion." (Chiu & Ho, 2021: online)

On the other hand, Ahmad Zohby states that architecture can also provide relief from stress. Architectural phenomenon such as churches, mosques and cathedrals are living embodiments where senses of "magnificence, royalty, glory, serenity, and peacefulness" resonate from (Zohby, 2022: online).

It has been proven that architecture can positively supplement one's overall - and mental health through factors like the "Architectural placebo effect" (Zohby, 2022: online).

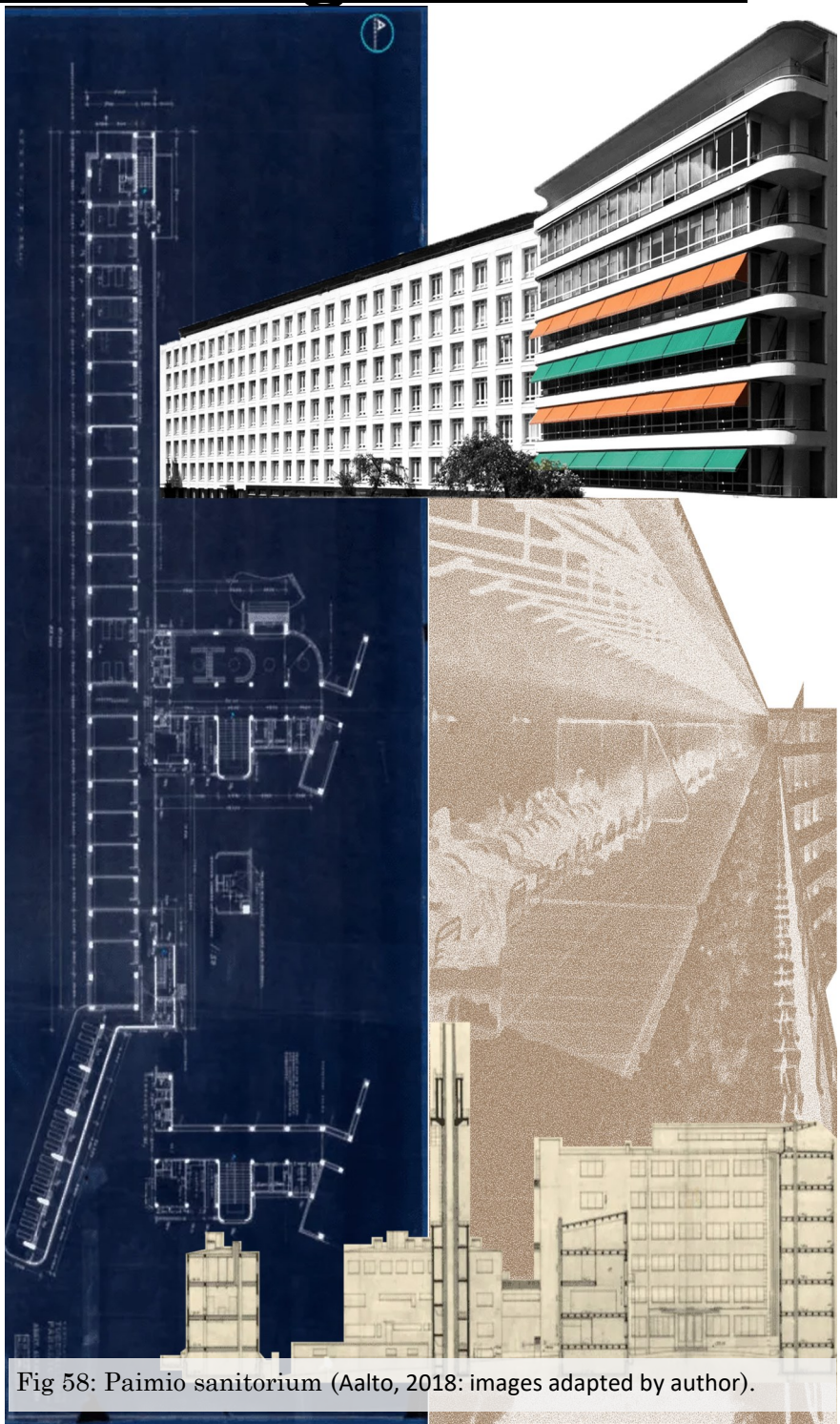


Fig 58: Paimio sanitorium (Aalto, 2018: images adapted by author).

Theory chapter:

The place as a Healing medium

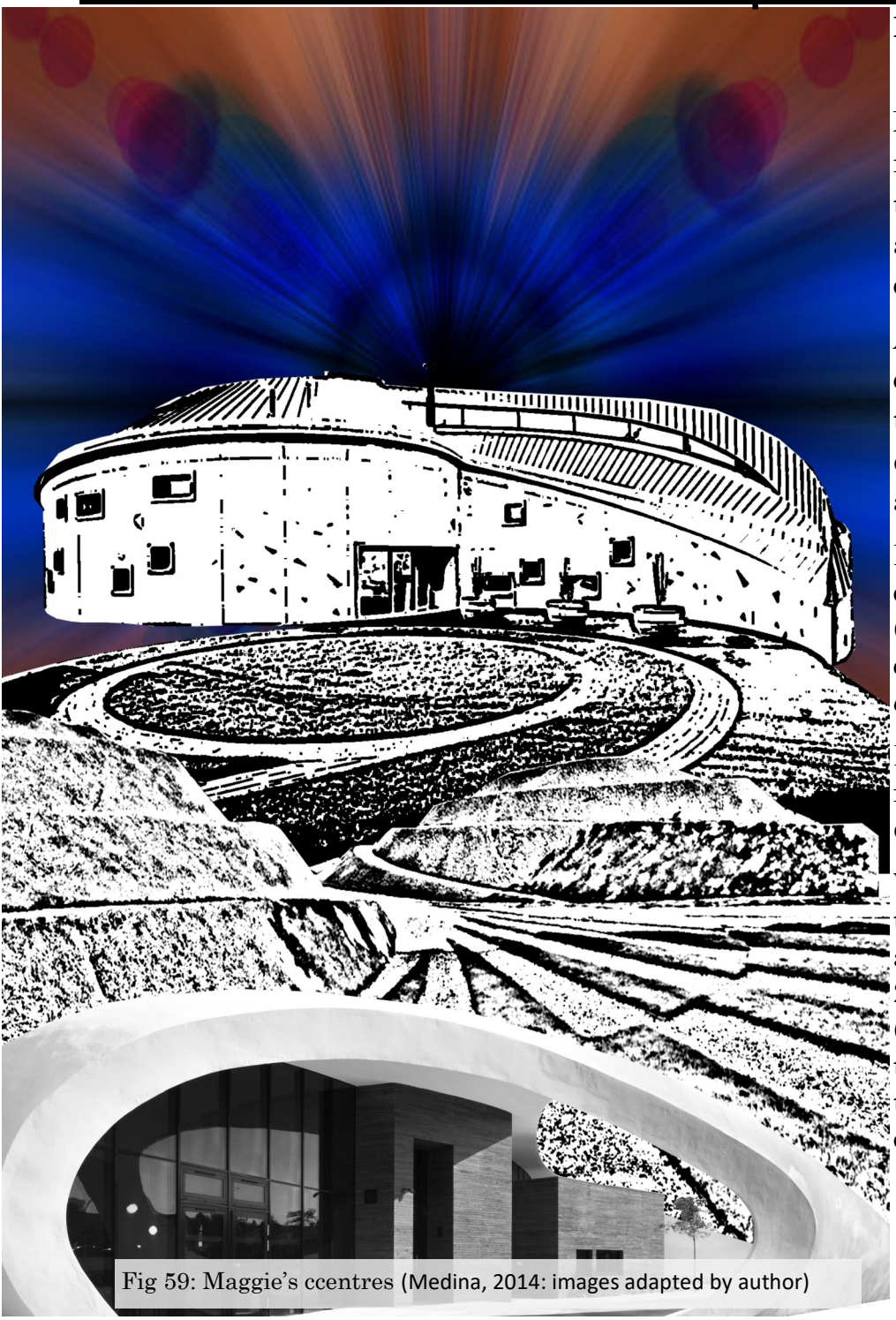


Fig 59: Maggie's ccentres (Medina, 2014: images adapted by author)

Maggie's Centres inspired by Charles & Margaret, Jencks:

May 1993 in Scotland, Margaret Jencks received the news that she had recurrent cancer. Although the news was dreadful, she stated that the waiting in the waiting room was "*draining*" since it had no windows and came across as a design-neglected space, which left the patient there to "wilt under the desiccating glare of fluorescent lights*" (*Medina, 2014: online).

After personally experiencing the emotional effect that the room had for the cancer patients, she observed that if architecture can completely dishearten the being could it not also do the complete opposite? This then sparked the development of *"Maggie's centres"* started by her husband Charles Jenks an architectural historian and theorist (Medina, 2014: online).

He believed that through the use of the "*Architectural placebo effect"* the architecture could help 'heal' the body through interacting with the mind (Zohby, 2022: online). And so, world renowned architects have pitched in to create Maggie's centres all across the world providing *"…free, global care for cancer patients through great architecture"* (Medina, 2014: online).

For clarification the *placebo effect* is not a real medicinal method of healing rather it's a trick played on the mind which prompts it to heal itself. It can be defined as:

When a person takes a placebo or 'dummy' treatment, their physical or mental health appears to improve. The term "placebo" refers to a treatment that appears real but is intended to have no therapeutic benefit (Betterhealth, 2021: online). A placebo can be a sugar pill, an injection of water or salt water (saline), or even a simulated surgical procedure. Rather than the qualities of the placebo, the placebo effect is caused by the person's belief in the efficacy of the treatment and their expectation of feeling better (Betterhealth, 2021: online)

Theory chapter: The place as a Healing medium

Alvaro Velera Sosa in his study, *Healing Architecture and Evidence-based Design,* did research on the role of the placebo 'hope' effect, specifically pertaining to architecture, as a means to help in curing certain illnesses deriving from emotional and/or mental stressors.

The following design applications was gathered from his various case studies on how to effectively design for stress coping or relief via the 'Architectural placebo effect':

Views of nature
Feeling of home or familiarity
A connection between nature and beauty
Daylight/ sunlight exposure
Clear wayfinding systems
Therapeutic gardens
Good air quality
Flexibility of spaces
Orientation
Indoor greenery.
(Sosa, 2017: 39-44)

It is the hopes of the author to implement the "*Architectural Placebo Effect"* within the design for an overall establishment of a curative environment, which would encourage the stress reduction of the being to metaphorically draw across the notion of healing and create a safe space to which people would want to return to and associate with. This is done with the intent to inspire the unification and healing of disjointed communities and glorify the medicinal qualities of the aloe Ferox plant.

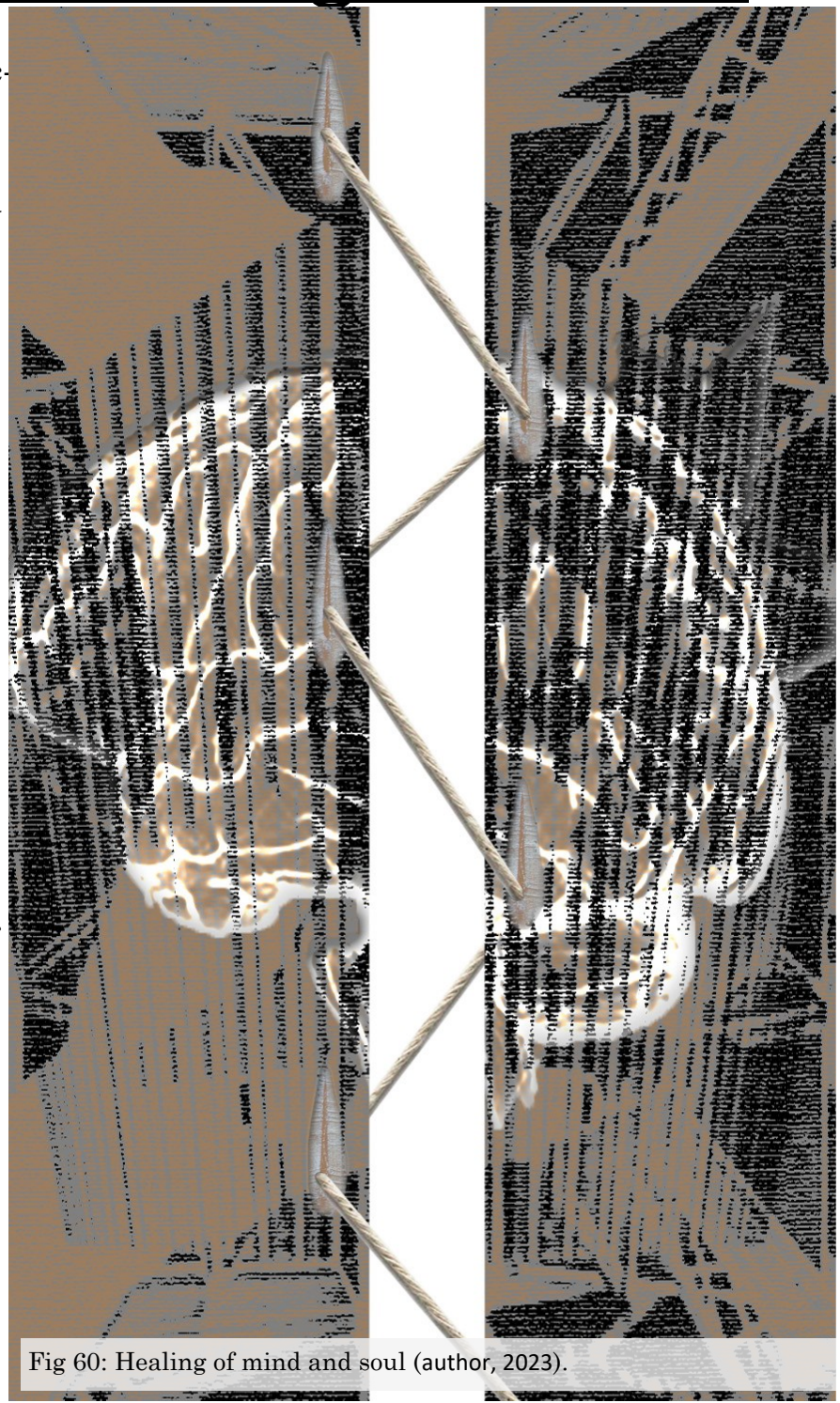


Fig 60: Healing of mind and soul (author, 2023).

Theory chapter: The critical engagement of region



Fig 61: Regional association through architecture (author, 2023).

Now that it has been established that a curative environment would be created through physical and metaphorical design interventions, this would hopefully inspire the notion of a place attachment, which would encourage beings from various communities/social standing to return to the development.

The next question would be: How to motivate beings to fully engage with the design, in a tangible sense, that would carry across its meta-physical/-phorical aspects in a positive and restorative fashion?

Critical Regionalism:

David Hopman from the University of Texas in his essay, "The ideology of critical regionalism as a teaching and design resource for the next 100 years of Cela", broadly summarises critical regionalism as follows:

Critical regionalism can be seen as ideas or concepts that provide insightful meaning when it is applied to design, planning, and regional development interventions. Furthermore, these ideas represent the coming - together or unification of the 'contemporary' and the 'historical' to creatively express regionalist design within a new universal language, which cannot be revoked. It (critical regionalism) has the ambition to encourage both intelligent and deep thought, which would inspire sensual (place-attachment and metaphorical-architecture) interaction with the design and unveil a wider experience not only pertaining to the visual but the non-visual as well (such as the psychological and metaphysical experiences) (Hopman, 2020: online).

Furthermore, Aldo Leopold stated: "We can be ethical only in relation to something we can see, feel, understand, love, or otherwise have faith in" (Leopold, 1986: 251), which affirms that the tangibility of the critical regionalist design would be a necessity to weaving a coherent pattern through the non-tangible theories of metaphorical architecture, place attachment, and healing through architecture.

Theory chapter: The critical engagement of region

The tangibility of critical regionalism is not the only reason for its application.

Hopman summarises John Dewey's understanding of experiential aesthetics pertaining to critical regionalism as follows: "The creativity encouraged by Critical Regionalism moves culture forward through the dissemination of innovation" (Hopman, 2020: online).

It is the ambition of the author, using critical regionalist design interventions, to abolish/evolve the division culture between the industrial and residential regions, at least architecturally, and inspire the unification thereof through a universal language which can be appreciated and / or engaged with by any being traversing the site. Thus, making it a suitable solution to be applied to the development of such an important existing threshold, which would also glorify the surrounding region(s) appropriately.

To achieve the ever-evolving phenomena known as Critical Regionalism within one's design, Hopman identifies and states eight basic elements which can be applied.

1. a critique of the perceived excesses of modernism, functionalism, and enlightenment rationality.

2. a critique of the romantic, picturesque, and commercial approaches to regionalism.

3. an embrace of the postmodern emphasis on place, rather than primarily forms and space.

4. an embrace of regionally defining physical, tactile, environmental/ecological, social and cultural elements.

5. a desire to create designs that balance a celebration of regional character with the influences of world culture.

6. a striving to make the landscape an object for intellectual contemplation as well as sensual pleasure.

7. a distrust of grand design solutions and an embrace of incrementalism.

8. a desire to create an imageable bounded place where the excesses of endless megalopolitan development and a consumer driven culture are resisted. (Hopman, 1998: 11).



Fig 62: Regional characteristics (author, 2023).

The critical engagement of region



Fig 63: Key references of the natural region (author, 2023).

The following summary by the author form the previously mentioned, attempts to provide clarity on the eight basic elements of Critical Regionalism:

1. *A critique of the perceived excesses of modernism, functionalism, and enlightenment rationality:*

This element functions as a resistance towards designing for pure efficiency and profit where psychological anchors are scarce and creative potential is nullified. It resists functionalism and strives for an aesthetic experience celebrating the surrounding environment to enhance the poetics of the design in search of beauty.

2. *A critique of the romantic, picturesque, and commercial approaches to regionalism.*

This element functions as the balancing act for designers who strives to resist functionalism and end up with 'architectural pornography', where the true poetics of the design being overruled by aesthetical make-up is resisted. It exclaims the socio-cultural value of the region as opposed to romanticising/commercializing the design.

3. *An embrace of the postmodern emphasis on place, rather than primarily forms and space:*

As designers we sometimes tend to refer to form when attempting to celebrate a certain aspect within the concept. It is important that we reach beyond the basic answers provided and search for the gems(ideas) hidden within the maze we call our thought process. The emphasis of place pertains to how a being's feelings are structured when experiencing (experiential aesthetics) a certain space.

Thus, we must design *"a celebration that goes beyond creating a completely or primarily invented or transferred experience of place*" (Hopman, 2020: online).

4. an embrace of regionally defining physical, tactile, environmental/ecological, social and cultural elements.

This element encourages the observation, noticing, understanding, and revelatory implementation of the visual and non-visual signifiers of the region in a defamiliarized intervention.

5. a desire to create designs that balance a celebration of regional character with the influences of world culture.

This element describes the design intention of creating architecture that, a) glorifies and celebrates the region of concern, so that the various communities and socio-cultures of that region can personally associate with it, whilst simultaneously, b) designing for admiration and appropriation to a larger scale, so that people from other areas can also be encouraged to engage with the design and not feel ostracized.

6. a striving to make the landscape an object for intellectual contemplation as well as sensual pleasure.

According to Hopman the aesthetic experience evokes a combination of desire and thought where the 'sensuous' and the 'intellectual' meet. The intellectual engages a deeper experience of the object, which triggers ideas that are beyond a formalistic regionalist/landscape perception. (Hopman, 2020: online).

The sensuous creates a direct rush of emotional engagement which encourages the being to be fully present within the moment of mattering.

The best way to achieve this phenomenon of deep intellectual thought coupled with the sensual experience, is through insightful defamiliarization. Since, if a design should "promote critical thinking, it must first be noticed" (Hopman, 2020: online). Through defamiliarization, the architecture is enabled to break away from the norm or habitual design interventions, which captures the dwellers attention revealing hidden messages (metaphorical architecture) through its borne truthfulness and humility.



Fig 64: Regional embrace (author, 2023).



Fig 61: Architectural resistance (author, 2023).

7. a distrust of grand design solutions and an embrace of incrementalism

This element encourages the designer to leave room for improvement/ adaptation where a design can be completed by the users of the development over a period of time. This co-habituates with the notion of place attachment on *controllable spaces* where beings tend to get more attached to spaces which they issue control over.

8. a desire to create an imageable bounded place where the excesses of endless megalopolitan development and a consumer driven culture are resisted.

Within a region there are various micro-regions (Hopman, 2020: online). These micro-regions have their own unique characteristics varying from the physical such as topography, climate and vernacular structures to the sociological, such as culture, political beliefs and social division.

This creates a great opportunity to incorporate and address these aspects of the micro-regions where they might overlap for an astute approach via the design. On the other hand, if not enough resistance is applied towards these aspects, when incorporating them within the design, it might lead to a development with a sense of bipolarism, and instead of engaging with the being the architecture can shun people away. Thus, resistance is an important aspect to incorporate within a design to avoid confusion and the lack of interest due to the fact that to many things are beings said through its interventions.

(Hopman, 2020: online).

Theory chapter: Theoretical Application

The following decisions were made after carefully considering all the theoretical standings previously investigated:

Metaphorical Architecture:

- To symbolize the Aloe Ferox plant throughout the plan.
- Using structural instances such as joinery and topological flow, to express the mending of communities.
- Further visually illustrate “coming-together” through architectural interventions.
- Create spaces for adaptive cognitive engagement where people can physically and mentally put themselves in the situation by linking their unique thoughts to various instances within the design.
- Resonate the experience of therapeutic spaces.

Place Attachment:

- Create spaces of privacy, flexibility and control. This will enable people to either feel at home or at ease with the space as a place.
- The reason for the decision is to create a certain level of comfortability within the development in order to combat stress so that ‘healing’ through architecture can take place.

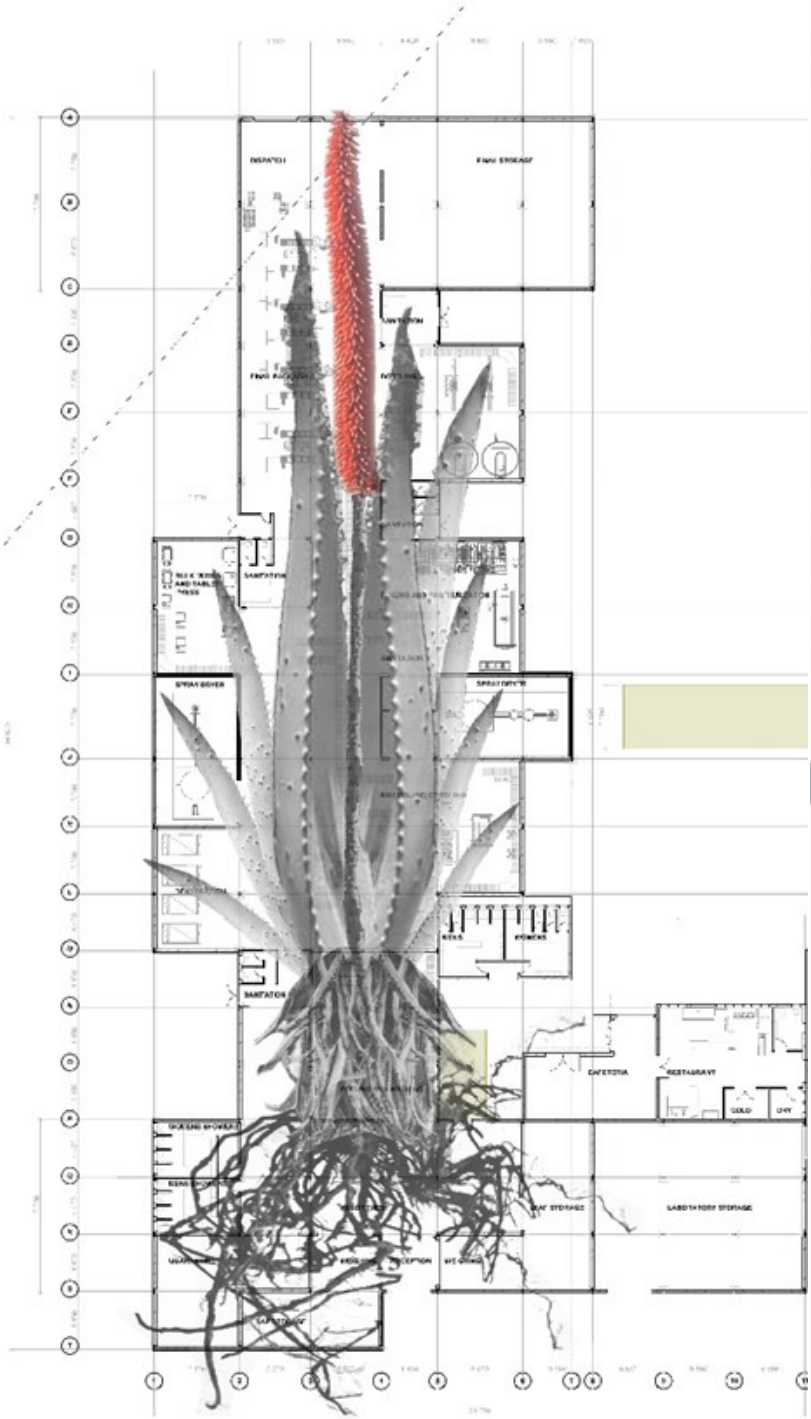


Fig 66: Regional embrace (author, 2023).

Theoretical Application



Fig 67: Reinterpreted notions (author, 2023).

Healing through Architecture:

After comfortability has been established it creates ample chance for the implementation of the *architectural placebo effect*.

It will be implanted via:

1. Views of nature from enclosed spaces (With the factory as an exception).
2. Feeling of home and familiarity.
3. Exposure to direct and indirect sunlight, via walkways courtyards and lightwells.
4. Therapeutic gardens.
5. Flexible spaces allowing for adaptation of their function.

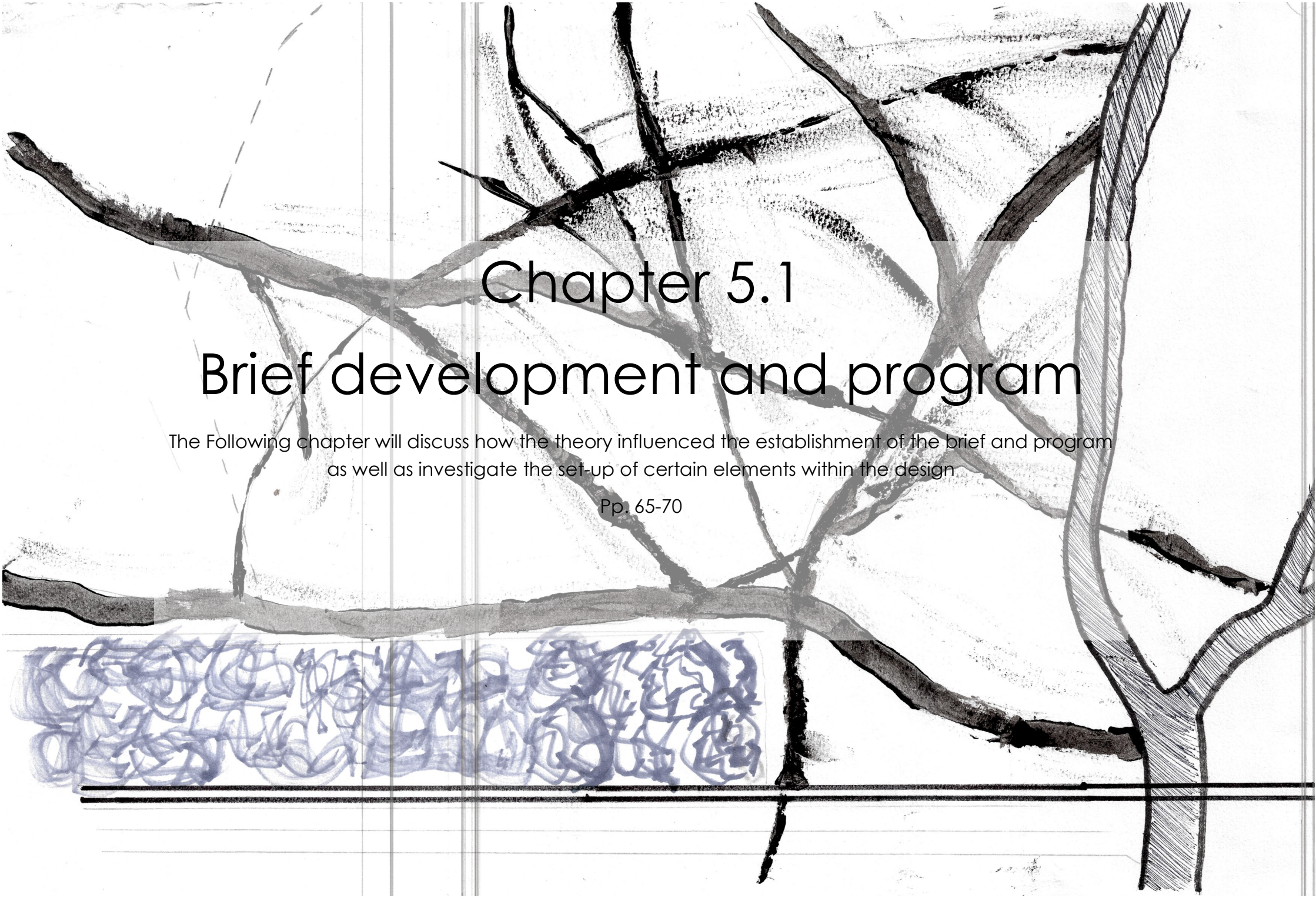
These spaces will aim to be as stress free and tranquil as possible to ensure that a person would be able to engage with the architectural placebo effect if he or she wishes to do so

Critical Regionalism:

Lastly, the notion of critical regionalism will be interwoven into the typologies of the design.

This will suffice as the medium resonating the beauty and reality of the surrounding region of concern whilst establishing a architectural narrative that speaks to man and nature equally.

Furthermore, it will function as a tangible thread linking the non-visual (theories and ideas) in an appreciable medium.



Chapter 5.1

Brief development and program

The Following chapter will discuss how the theory influenced the establishment of the brief and program as well as investigate the set-up of certain elements within the design

Pp. 65-70

Brief Development

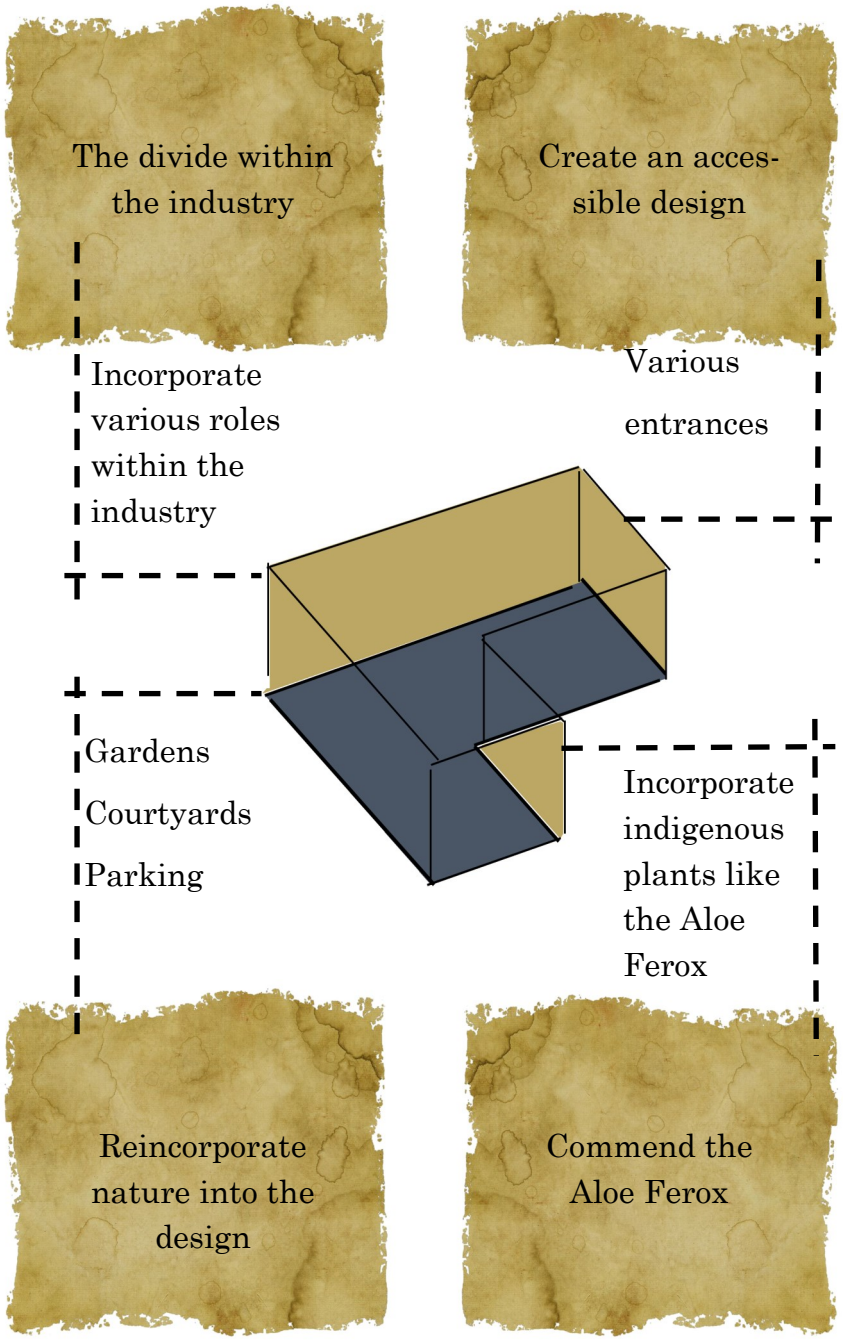


Fig 68: Brief diagram (author, 2023).

The conditions of the region and moments that needed to be addressed were:

- The divide between harvesters, retailers, researchers and manufacturers
- Sick people of the region and of South Africa that needs healing (via the form of medicinal research on indigenous plant life and the application thereof through medicine).
- The surroundings that have been deforested and the site functioning as non-place.
- The Aloe Ferox plant that needs to be uplifted for its medicinal properties and not only its cosmetic purposes.

This led to the establishment of the following brief:

The development must comprise a multi-faceted/hub approach where various vocations such as medicinal research, production and retail should be incorporated in order to address the posing challenge of a disunified community. Furthermore the development must strive to resonate a sense of porosity where any and all people would be welcome to engage with the design to a certain sense, e.g. ,harvesters after delivering the raw product may engage with therapeutic gardens or have a meal at a cafeteria within the proposed development.

The development must also aim to reincorporate nature into and onto the site since as before mentioned the site has been deforested and little to no plant life grows there. Thus, the incorporation of indigenous plant life would be essential so plants such as the Aloe Ferox, “Skilpad bossie” and various types of fynbos can be reimplemented within the region’s ecosystem.

Chapter 5.1: Brief Development

Following the establishment of the practical aims of the brief the theory was implemented to further supplement the aims of designing a development which would also aim to engage with the being on metaphysical levels.

With regards to *place attachment*:

The development must comprise:

Flexible spaces such as multi-functional halls, courtyards and other forms of gathering spaces which would allow for people engaging with the building to use it in ways they see most fit.

Private spaces such as offices, waiting areas and pavilion typologies giving ample chance for beings to establish a defensible/safe surrounding.

Controllable spaces such as a factory and laboratory, providing people working in the various facilities to situate themselves within a working environment.

Familiar spaces such as cafes, cafeterias and walkways where people can either associate and relax or establish a sense of belonging with these spaces.

With regards to *Healing through architecture:*

In order to create places of healing via architecture it is crucial to design spaces that are discussed within the theoretical application subheading. Thus it was decided that tranquil spaces such as gardens, secluded walkways and resting areas would suit the development adequately to create an *architectural placebo effect of healing*.

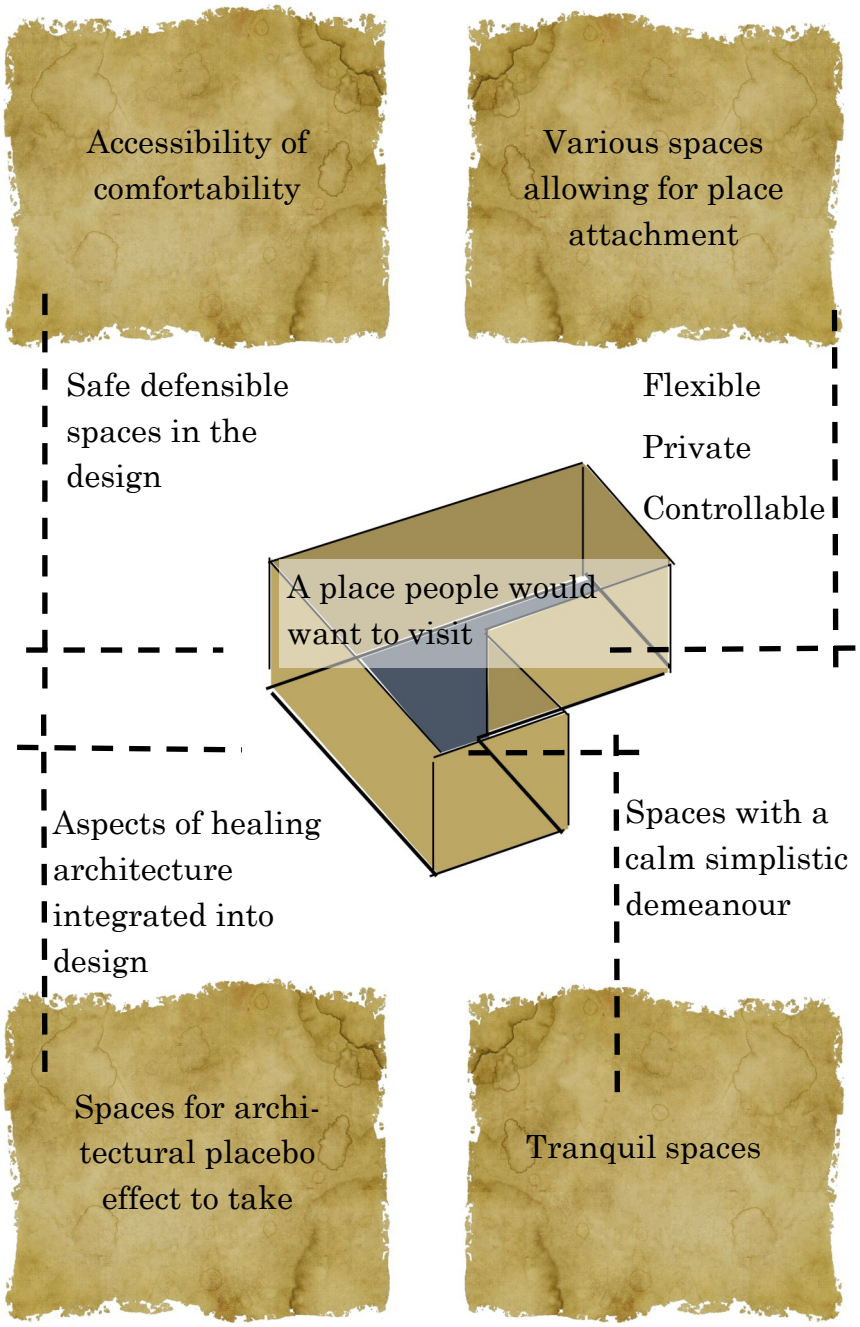


Fig 69: Brief diagram theory integration (author, 2023).

Brief Development

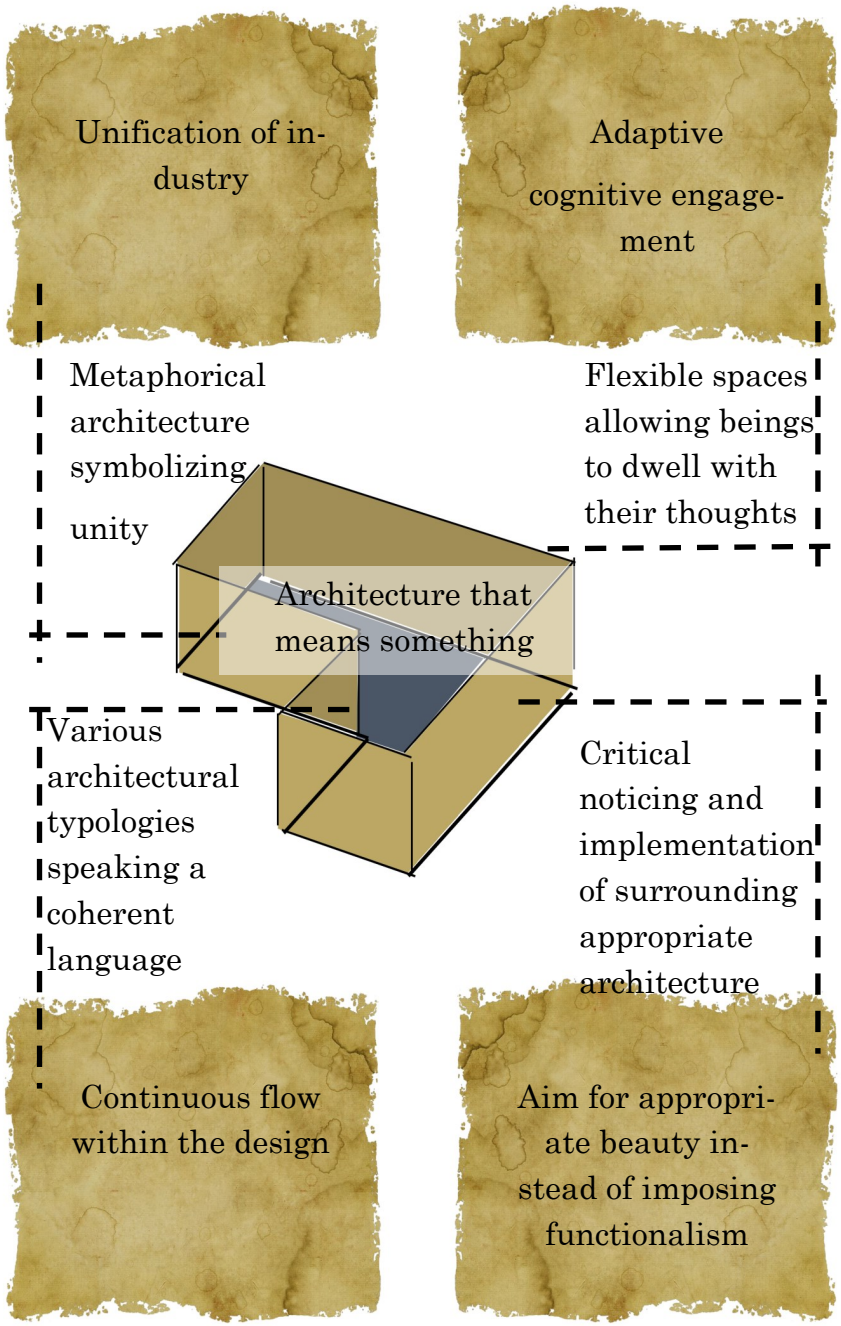


Fig 70: Brief diagram theory integration (author, 2023).

With regards to *metaphorical architecture*:

Firstly the aim would be to compliment the Aloe Ferox plant whereas a secondary aim of resembling the unification and mending of communities would be symbolized throughout the design and structure.

Lastly the design should also be able to provide places which could function as spaces for adaptive cognitive engagement where people can be situated within the design. These places can be utilized within transitioning zones between vocations and correlate with the notion of private spaces referring to place attachment.

With regards to *critical regionalism:*

The notion of critical regionalism should be implemented throughout the whole of the development, ensuring a continuous flow within the design since unification cannot be resembled if a design tends to feel compartmentalised.

Furthermore, when designing for typologies such as factories and laboratories one tend to strive for functionalism over beauty. Critical regionalism would therefore ensure that the idea of designing sensibly and appropriately without imposing man's will onto the region and rather glorifying the region will commence.

Chapter 5.1: Program Development

And so the following program was established due to the formulation of the brief:

The main vocations that will be focussed on:

- Aloe Ferox medicinal product production factory.
- Medicinal research laboratory focussing on indigenous plants such as the Aloe Ferox.
- Retail of the client's and the factories products.
- Multi-functional hall .

The secondary functions that will flow from the main vocations are:

- Factory:
    1. Offices
    2. Receiving and dispatch areas
    3. Cafeteria
    4. Sanitation spaces.
- Laboratory:
    1. Offices
    2. Reception
    3. Utility rooms

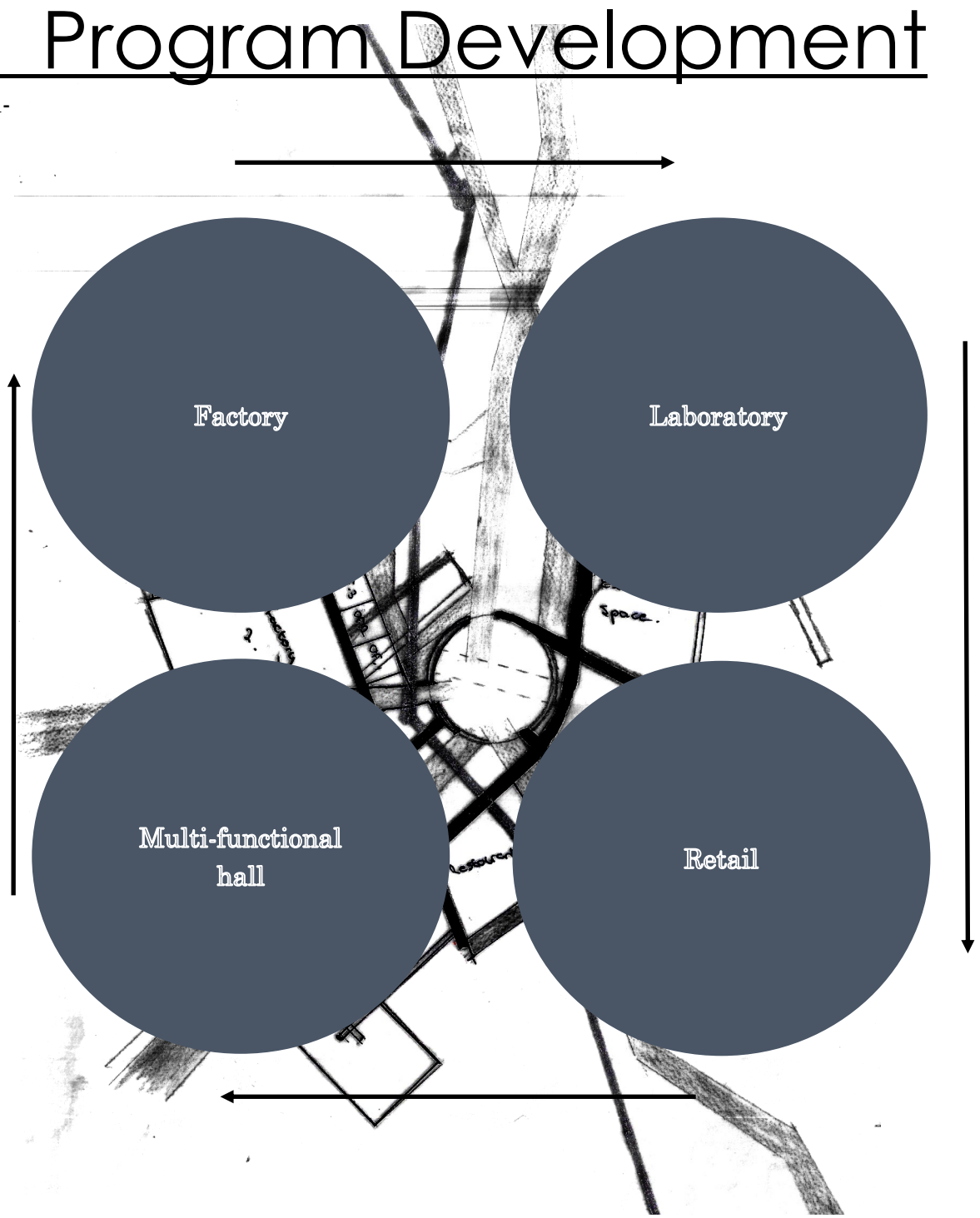
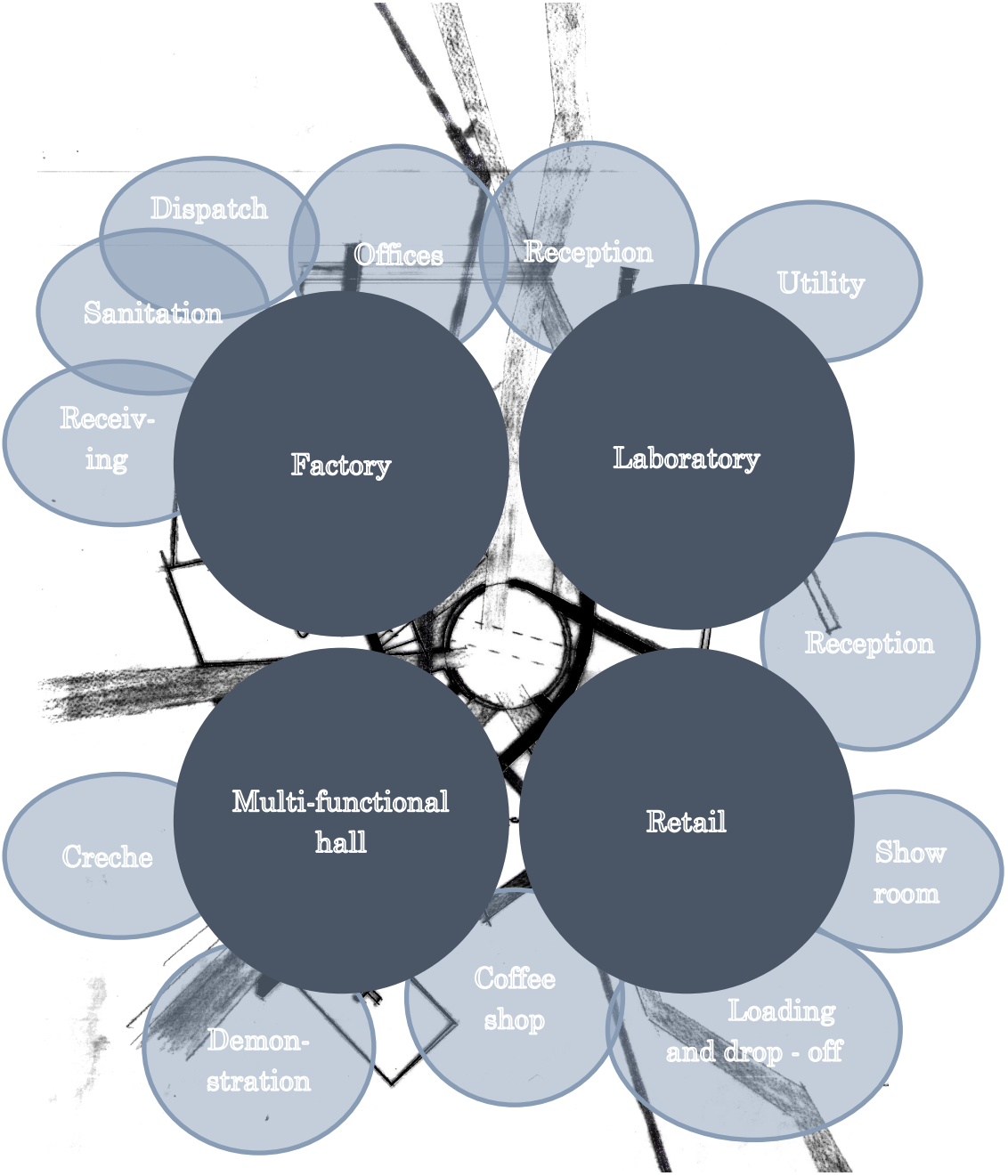


Fig 71: Program diagram primary spaces (author, 2023).

Theoretical Integration



- Retail
    1. Reception
    2. Showroom
    3. Café/ Coffee shop
    4. Loading Zones
    5. Tourist drop-off zones
- Multi-functional hall
    1. Educational hall for lectures and live demonstrations for educational purposes on the healing that indigenous plants can provide.
    2. Creche for the children providing a safe space for children to coalesce/gather after school

The tertiary functions/spaces that will be implemented to compliment the design as a whole will be:

- Therapeutic gardens
- Courtyard spaces
- Seating and waiting areas
- Walkways

Fig 72: Program diagram secondary spaces (author, 2023).

Chapter 5.1: Theoretical Integration

Regarding the program the theory was meticulously integrated into its formulation, the integration is as follows:

Factory:

- Critical regionalism
- Place-attachment

Medicinal research facility:

- Critical regionalism
- Place-attachment
- Healing through architecture

Retail:

- Critical regionalism
- Place-attachment
- Healing through architecture
- Metaphorical Architecture

Multi - functional hall:

- Critical regionalism
- Place-attachment
- Healing through architecture
- Metaphorical Architecture

The various theoretical investigations and their respective theoretical implementations will further be discussed later within this document in the design development Sub-Chapter

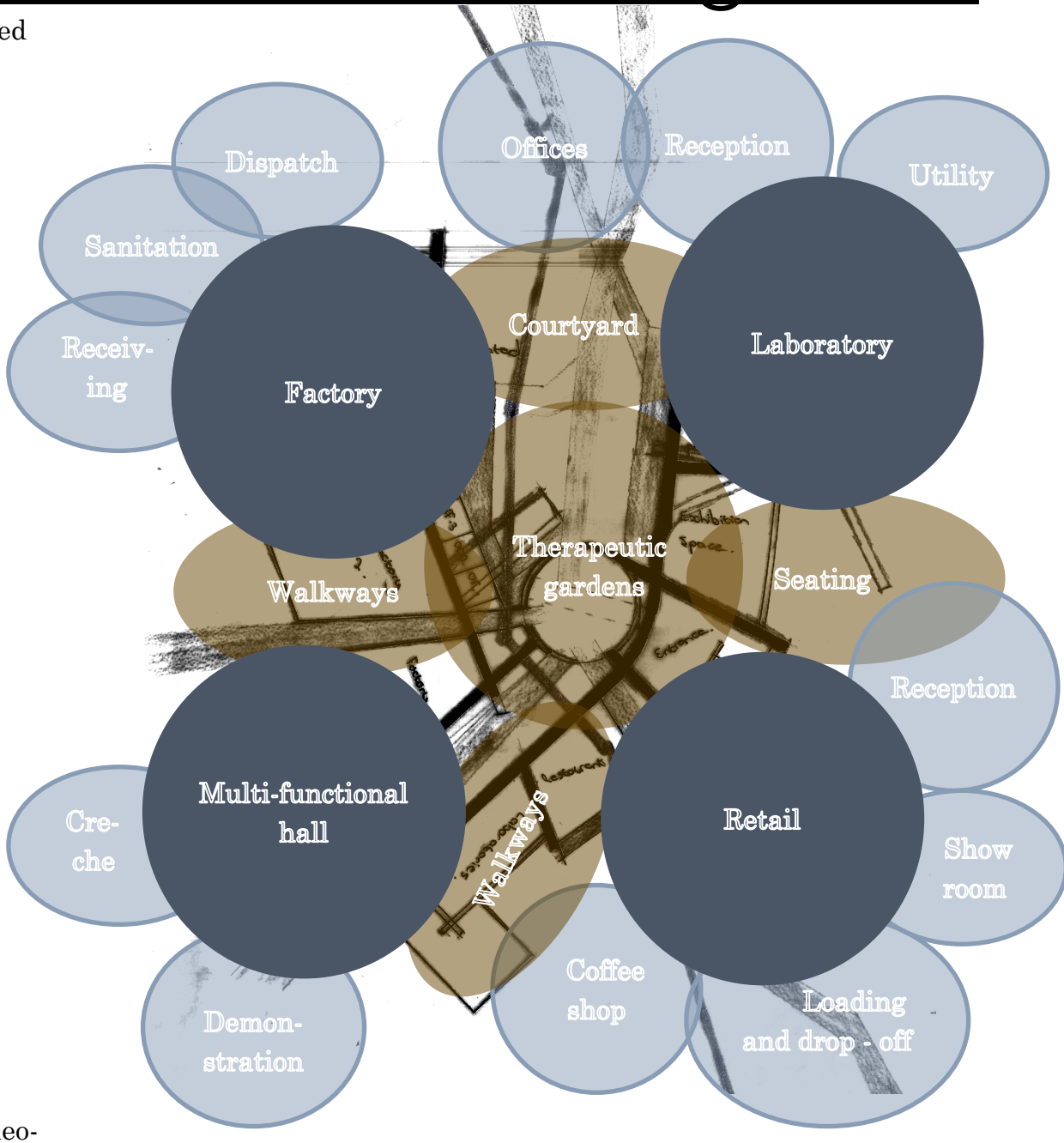


Fig 73: Program diagram tertiary spaces (author, 2023).

Chapter 5.2.1

Early design development influences, precedent studies and case studies

Pp. 72-79

first attempts



Fig 74: First attempts, exploring sustainable regionalist architecture (author, 2023).

The first approach and investigations focussed on the integration of the Aloe Ferox plant and other sustainable ways of architectural interventions.

After a quick analysis it was established that a structure gathering inspiration from the plant's leaves would have multiple design benefits.

Firstly it would prove to be structurally stable and secondly the panels on the side of the structure would allow for cold air to infiltrate which would be suitable for Albertinia's dry summers.

The next key characteristic focussed on was the railroad on the southern edge of the site.

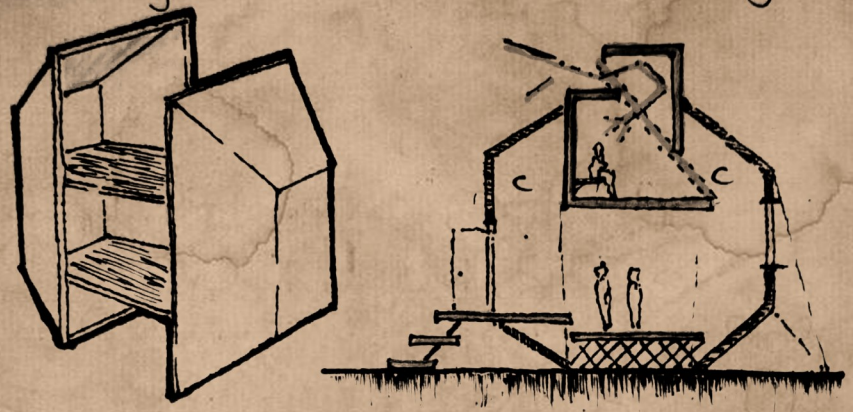
Train carts and their structural integrity were further explored to see how it can correlate metaphorically with the Aloe Ferox plant.

Sadly these investigations proved to be too formalistic for a design with the aims of *critical regionalism* but the metaphysical aspects incorporated were definitely a step in the correct direction.

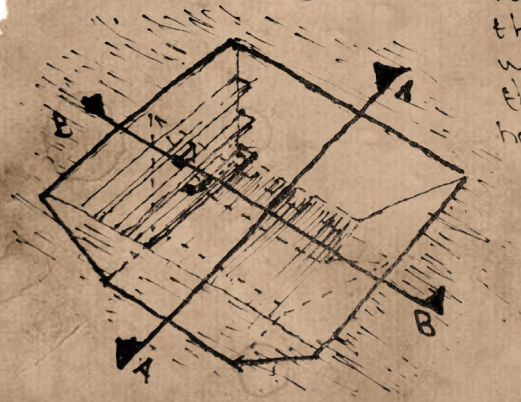
first attempts

Integrating the candelabrum with the train cart idea...

1. Establishing how the carts will be structurally used.



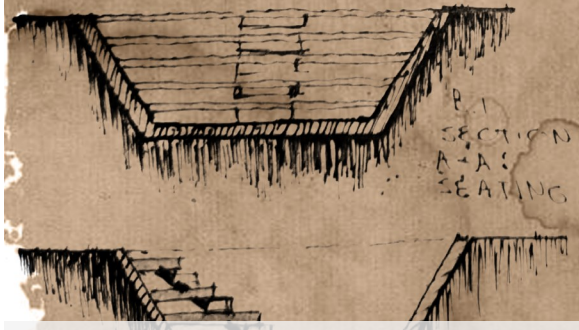
a) Using the carts as protective skins.



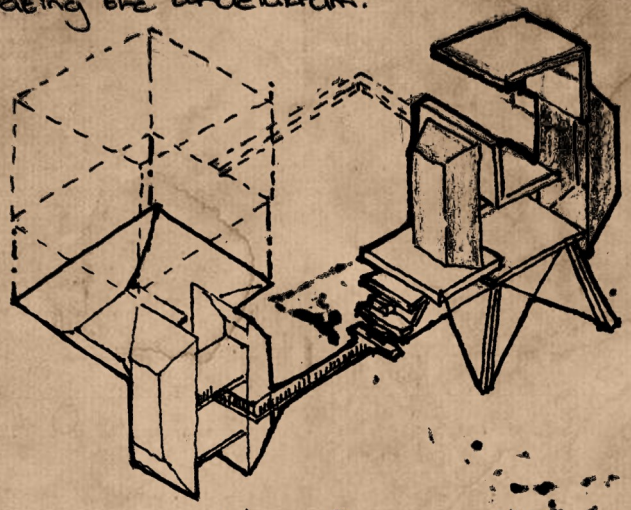
- The carts will have the function of supporting the structural slabs while being anchored into the ground and will be held upright via tertions

b) Placing 2 carts next to each other and cutting away the inner faces of the carts, welding them together to create a bigger "square" cart.

- Then secondly inserting it into the ground to be the base structure for creating a stage.

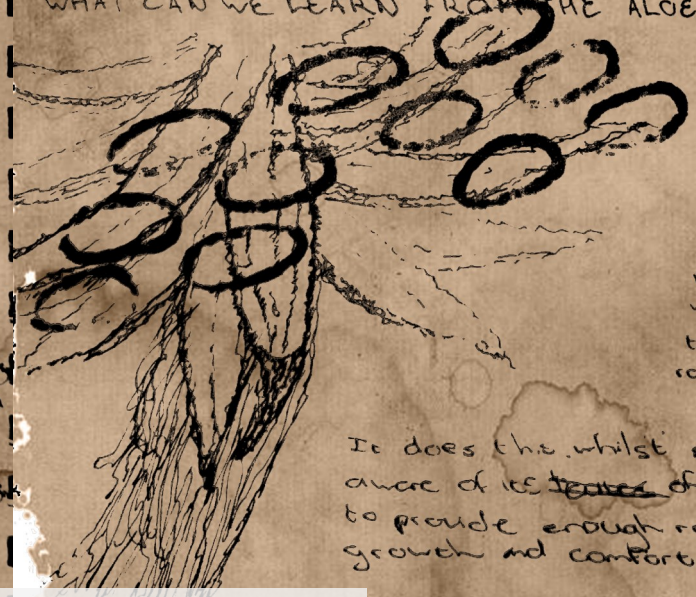


Integrating the candelabrum.



- This integration idea focusses on integrating the hierarchical relationship of masses seen in the candelabra with the structural aspects of the train carts. Although it is still very early stages there lies some form of sophistication within this attempt - like a diamond in the rough.

WHAT CAN WE LEARN FROM THE ALOE-FEROX PLANT:



The Aloe ferox spatially structures its leaves to act as water receptors which captures the most possible volume of water and transfer it to its roots during rain season.

It does this whilst still being spatially aware of its leaves position to provide enough room for potential growth and comfort.

Fig 75: First attempts, exploring sustainable regionalist architecture (author, 2023).

First precedent study

Karoo Wilderness Center - Field Architecture

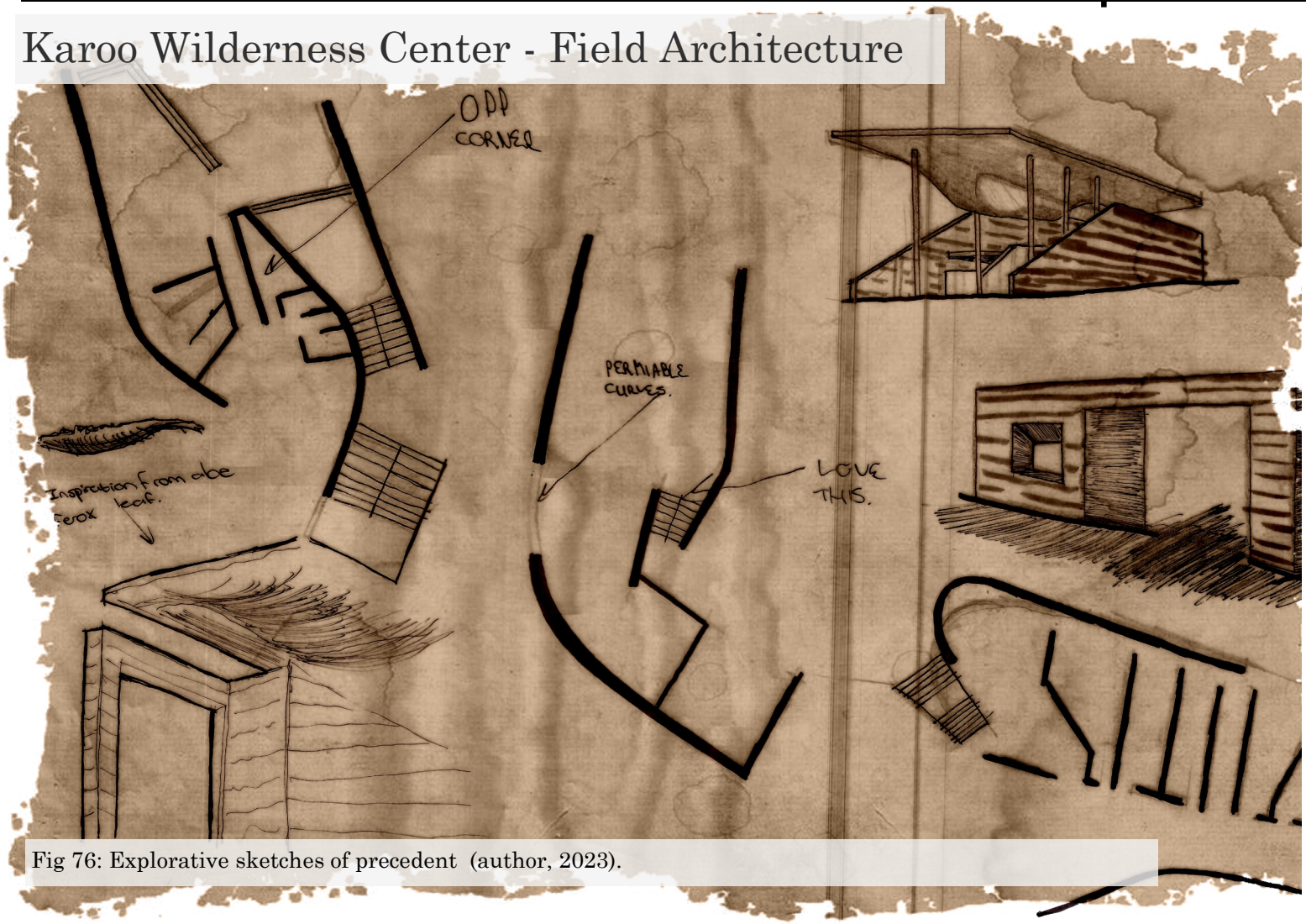


Fig 76: Explorative sketches of precedent (author, 2023).

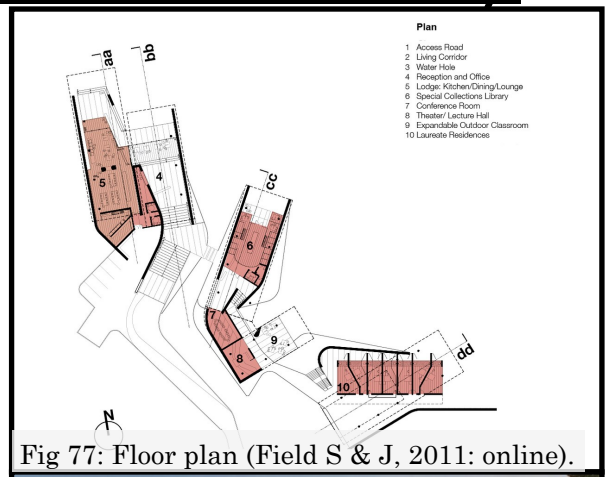


Fig 77: Floor plan (Field S & J, 2011: online).

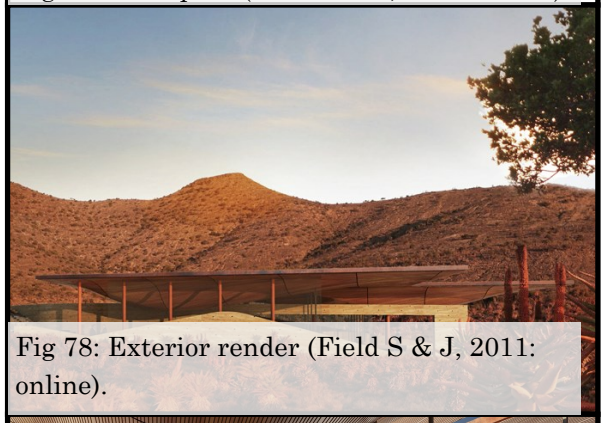


Fig 78: Exterior render (Field S & J, 2011: online).



Fig 79: Interior render (Field S & J, 2011: online).

Due to the scepticism of the design leading to a complete formalistic approach with no connection to the region.

The first precedent, *Karoo Wilderness Centre* by Field Architects, was consulted as a means to learn how to be formalistic and regional at the same time.

The precedent, similarly to the project of this dissertation, also gained inspiration from the Aloe Ferox plant and used materials such as rammed earth gathered from the surrounding region (Henry, 2011: online).

Furthermore, the rhythms created by the plan and the building's morphology sang harmoniously with its surrounding hills and the Aloe Ferox plant.

Chapter 5.2.1:

First floor plans

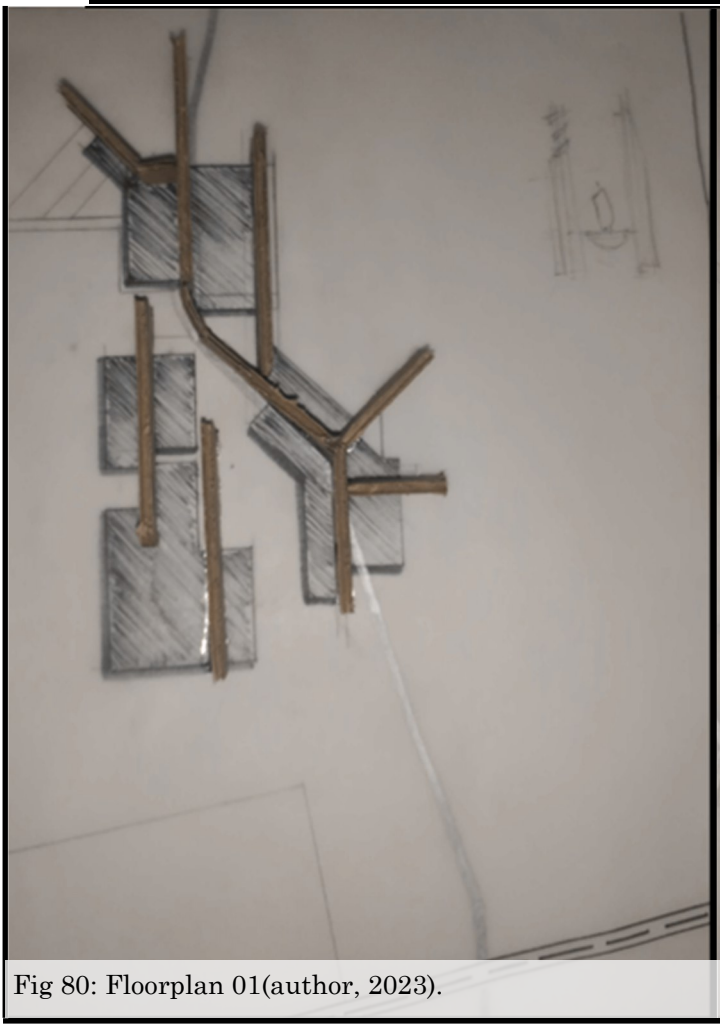


Fig 80: Floorplan 01(author, 2023).

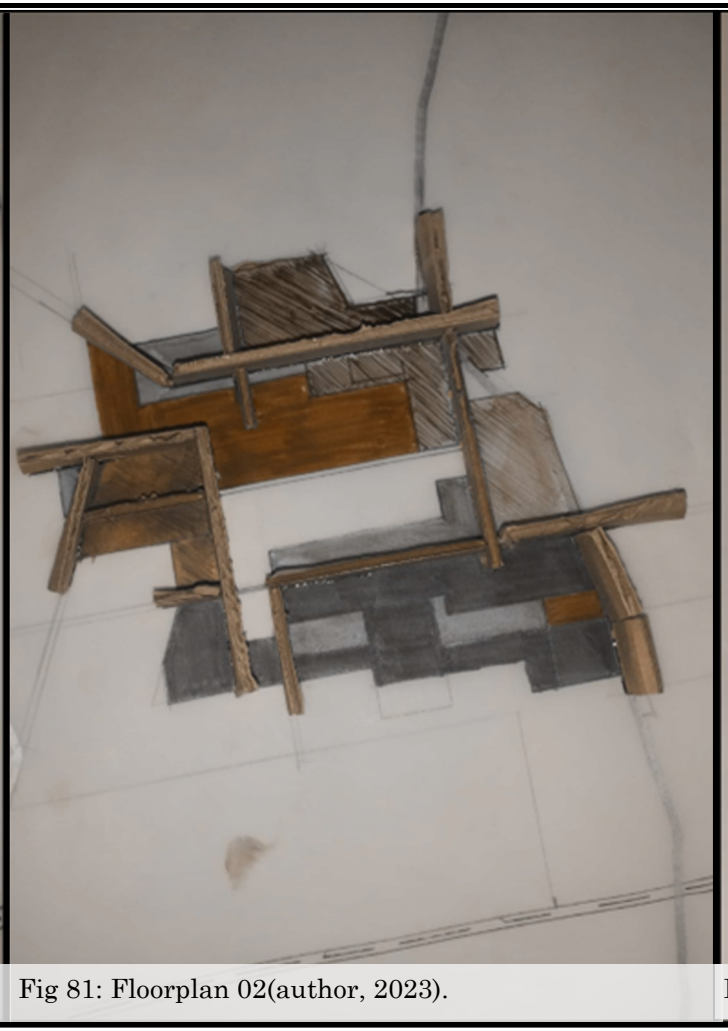


Fig 81: Floorplan 02(author, 2023).

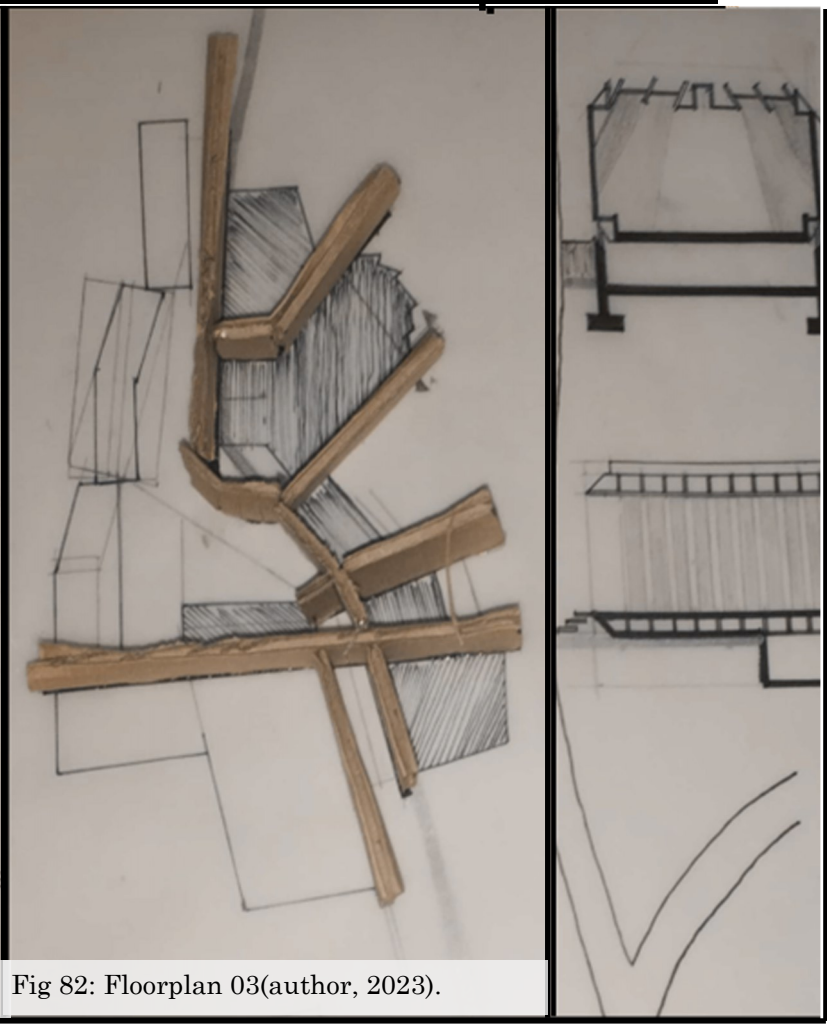


Fig 82: Floorplan 03(author, 2023).

Following the precedent study, the first triptych of floorplans were established each approaching the site and the brief in unique methods.

The first and third floorplans aimed to follow the rhythms of the contours on site, where the second floorplan imposed its functional purposes upon it.

The thicker walls illustrated the supposed effect that the Albertinia-stone masonry walls would have in correlation with the rest of the design's flow.

The first and third floorplans attempted to establish an organic rhythm generated by its' walls as well as mimicking the desire lines of the pathways on-site.

The second floorplan focussed rather on creating a central gathering space, in coherence with the *place-attachment* theory, from which the rest of its functions circulated.

The positives that can be taken from these attempts are the aims to associate with the region and creating a centralizing effect.

Chapter 5.2.1:

First attempt drawings

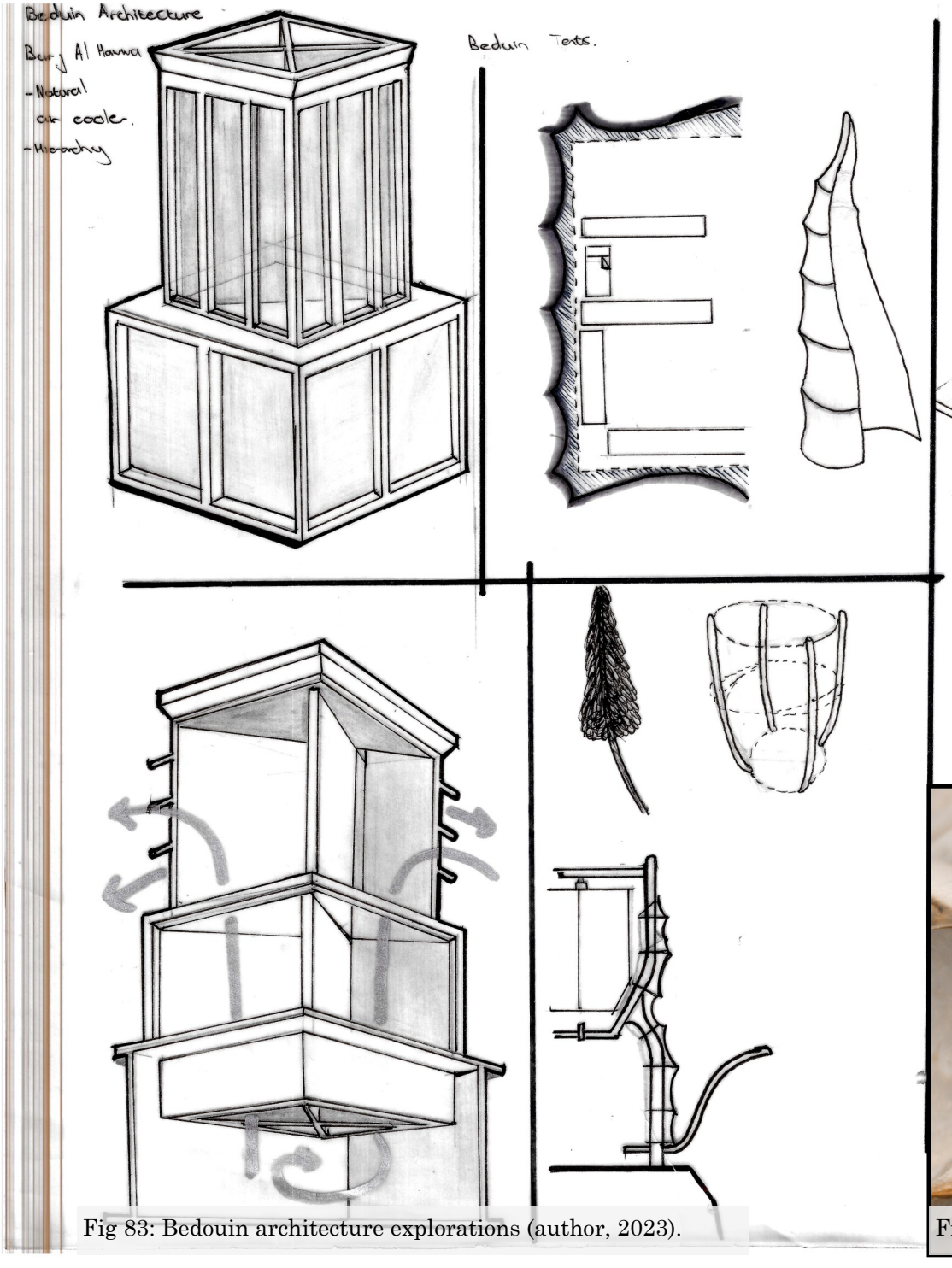
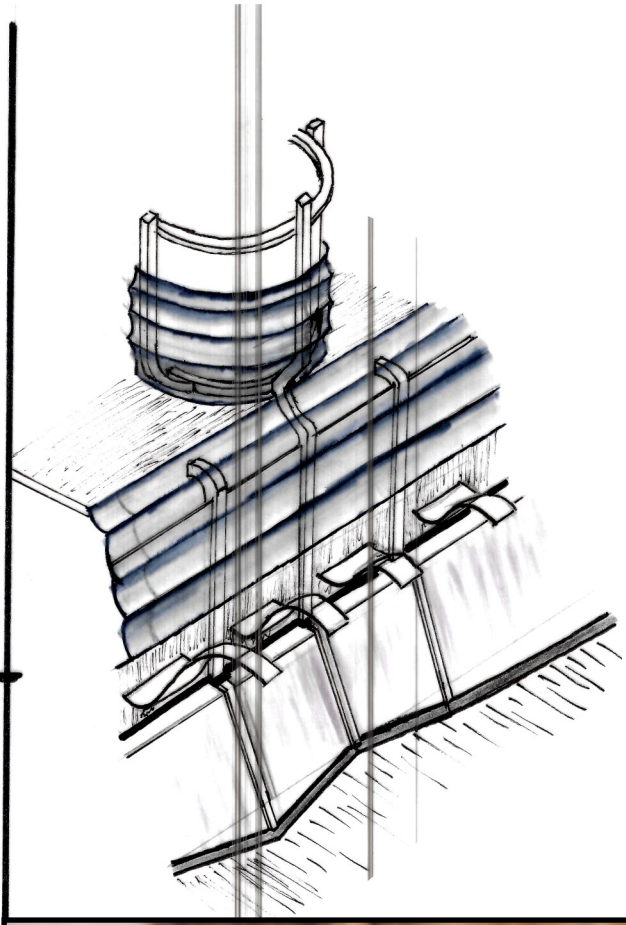


Fig 83: Bedouin architecture explorations (author, 2023).



Further investigations were made with the use of sustainable architecture and how it can correlate with the Aloe Ferox.

Investigations were made into Bedouin architecture, such as its wind tower or "*Barjeel",* Allowing air to flow in from the top, cool down and flow into the spaces below (Dawood, 2022: online).

Further the tent structures were reinterpreted to see how it can be applied to the development in a reconfigured way which simultaneously has the set passive design strategies.



Fig 84: Result of aloe leaf experiencing frost (author, 2023).

Plans and first attempts

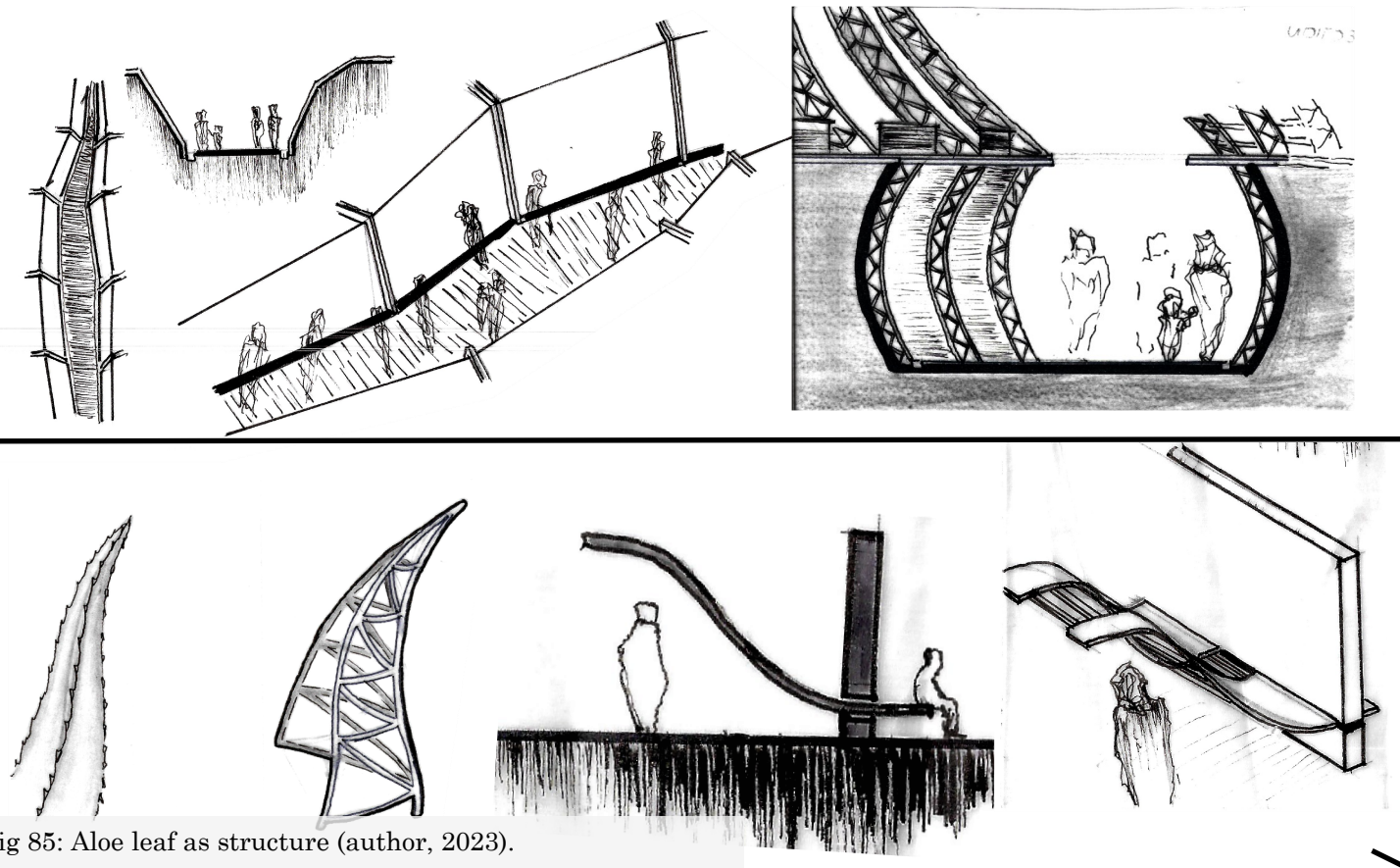


Fig 85: Aloe leaf as structure (author, 2023).

The aloe Ferox leaf was also implemented into the structural aspects of the design, where its shape influenced the formulation of indented walkways and support columns.

It was also incorporated into the wall structures playing a supportive role whilst having the duel function of seating spaces.

The main aspect of these investigations that still proved a challenge for designing appropriately, was that it still came across as formalistic architectural acrobatics.

The designer's will was imposed onto the site rather than having a reciprocal relationship between the site, region and architecture within the design.

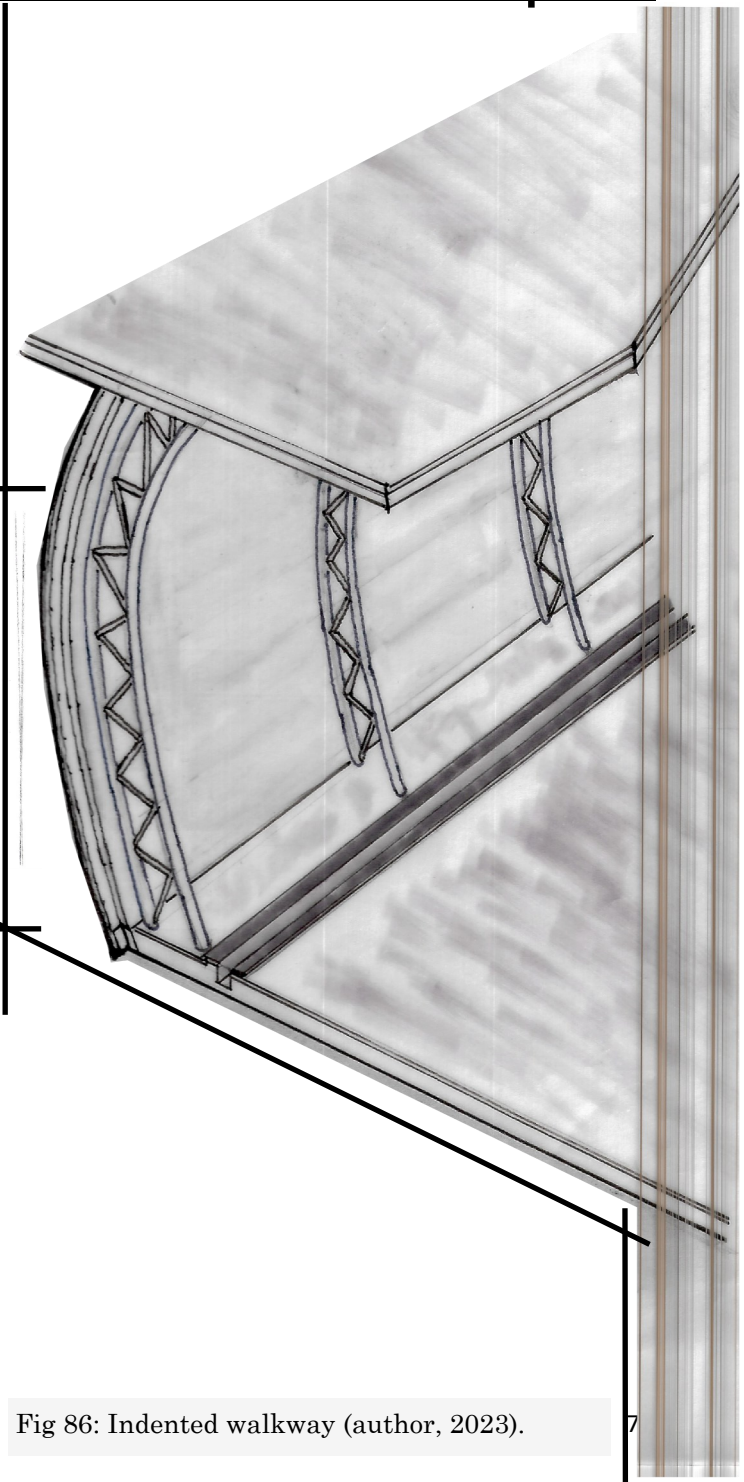


Fig 86: Indented walkway (author, 2023).

Chapter 5.21:

Plans and first attempts

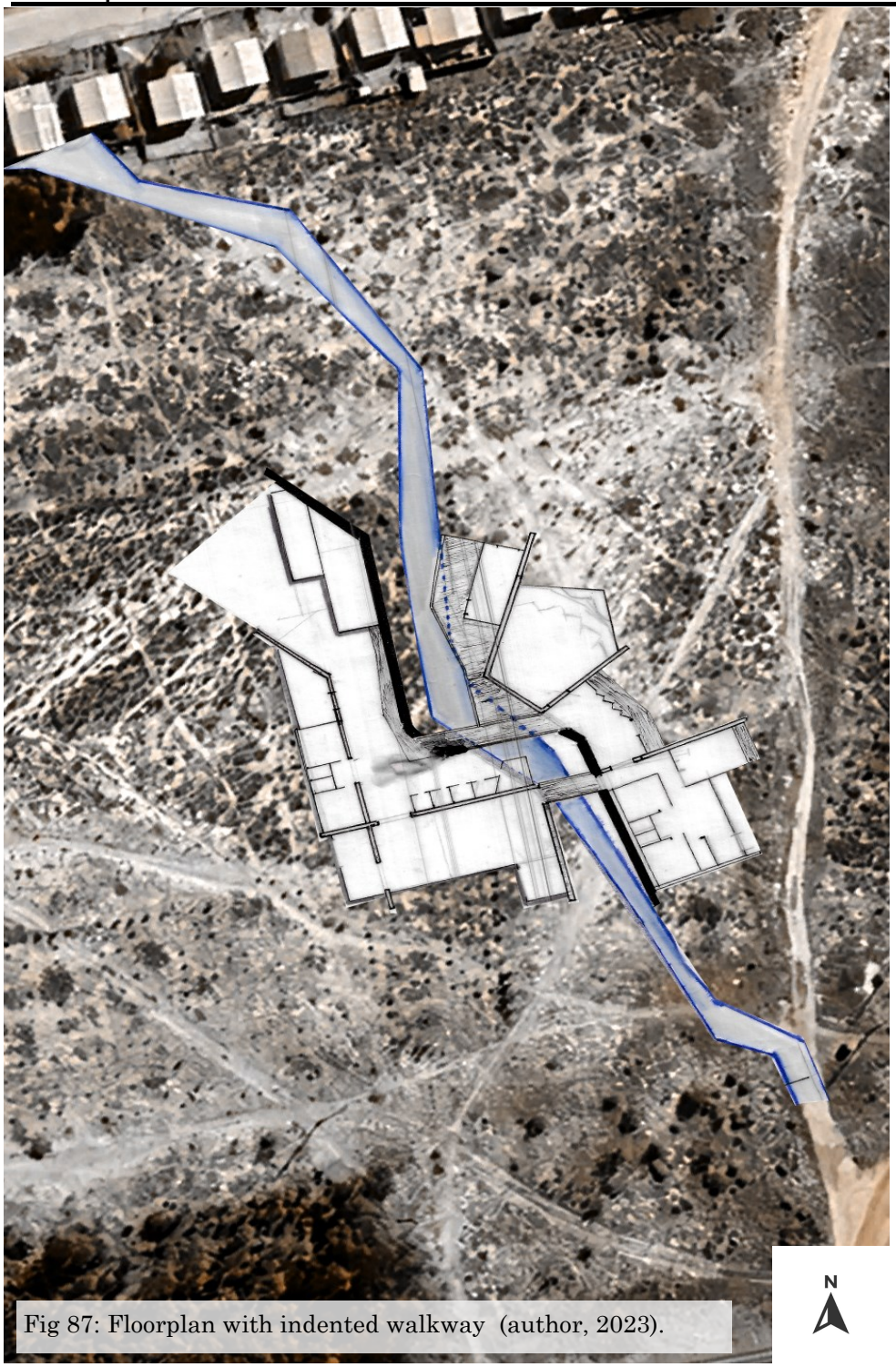


Fig 87: Floorplan with indented walkway (author, 2023).



Fig 88: Floorplan with centralization of walkways (author, 2023).

Chapter 5.2.1: First attempts reflection

The two plans on the previous page were the result of the various investigations being implemented within the design.

Thus, as the reader can gather from it, it still came across as very formalistic where form was the main driver and function had a backseat role and was filled into the spaces provided.

Main positives that can be taken from the first attempt:

- The goal of integrating the aloe Ferox into the design (metaphorically, and physically).
- The aim to work with the site instead of imposing mans will (Although at this stage the challenge was unresolved).
- Creating a centralizing effect allowing the design to become a gathering space (correlating with *place attachment).*

Main aspects to avoid:

- Indented walkways creating which would motivate people to cross the site as quickly as possible (Thus, accelerating the phenomena of the site becoming a *non-place*) .
- Architectural acrobatics within plan and structural form. Thus, allowing for a one sided expression of the design instead of it conversing with the site and resonating harmoniously.

The key elements which could be taken from this attempt was that the ideas motivating the design was heading in the correct direction it was just the application thereof that lacked the appropriate answers.

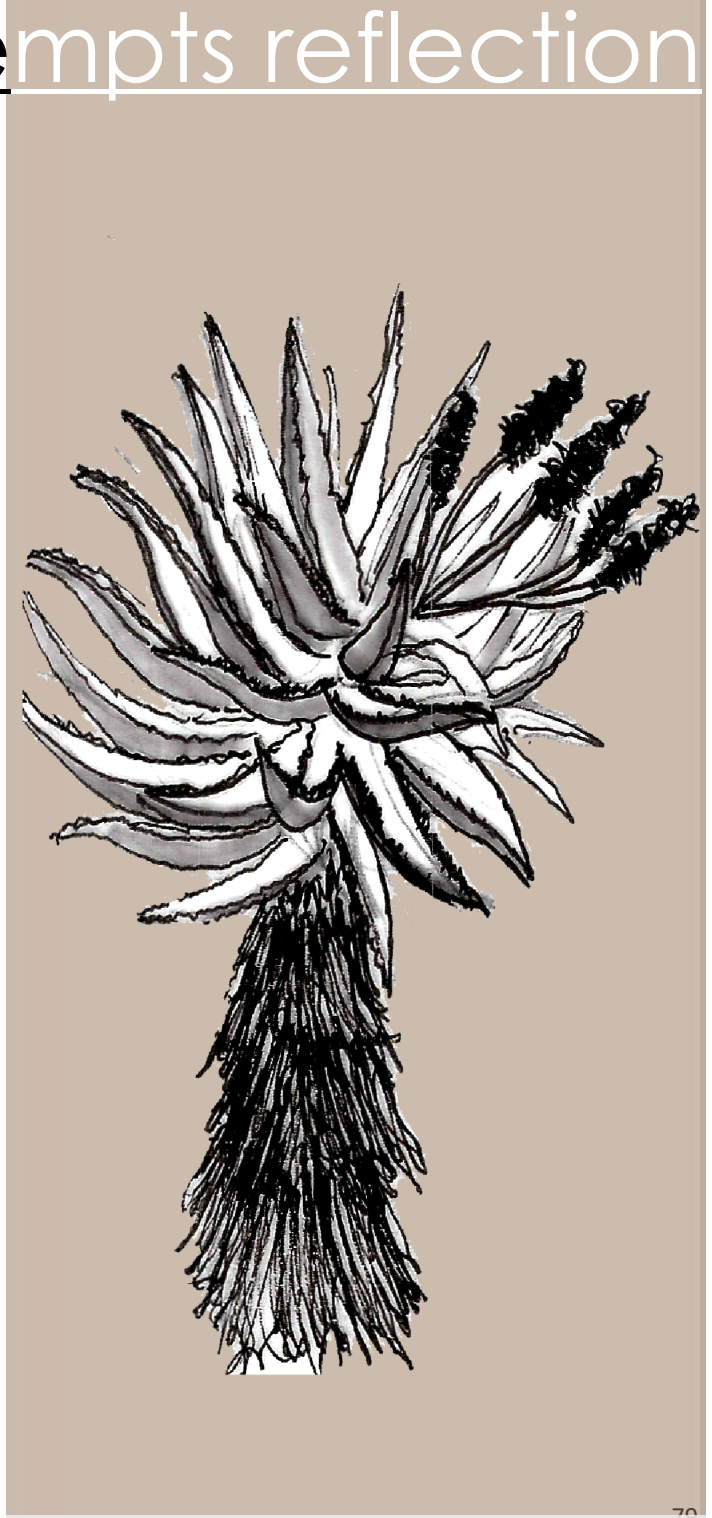
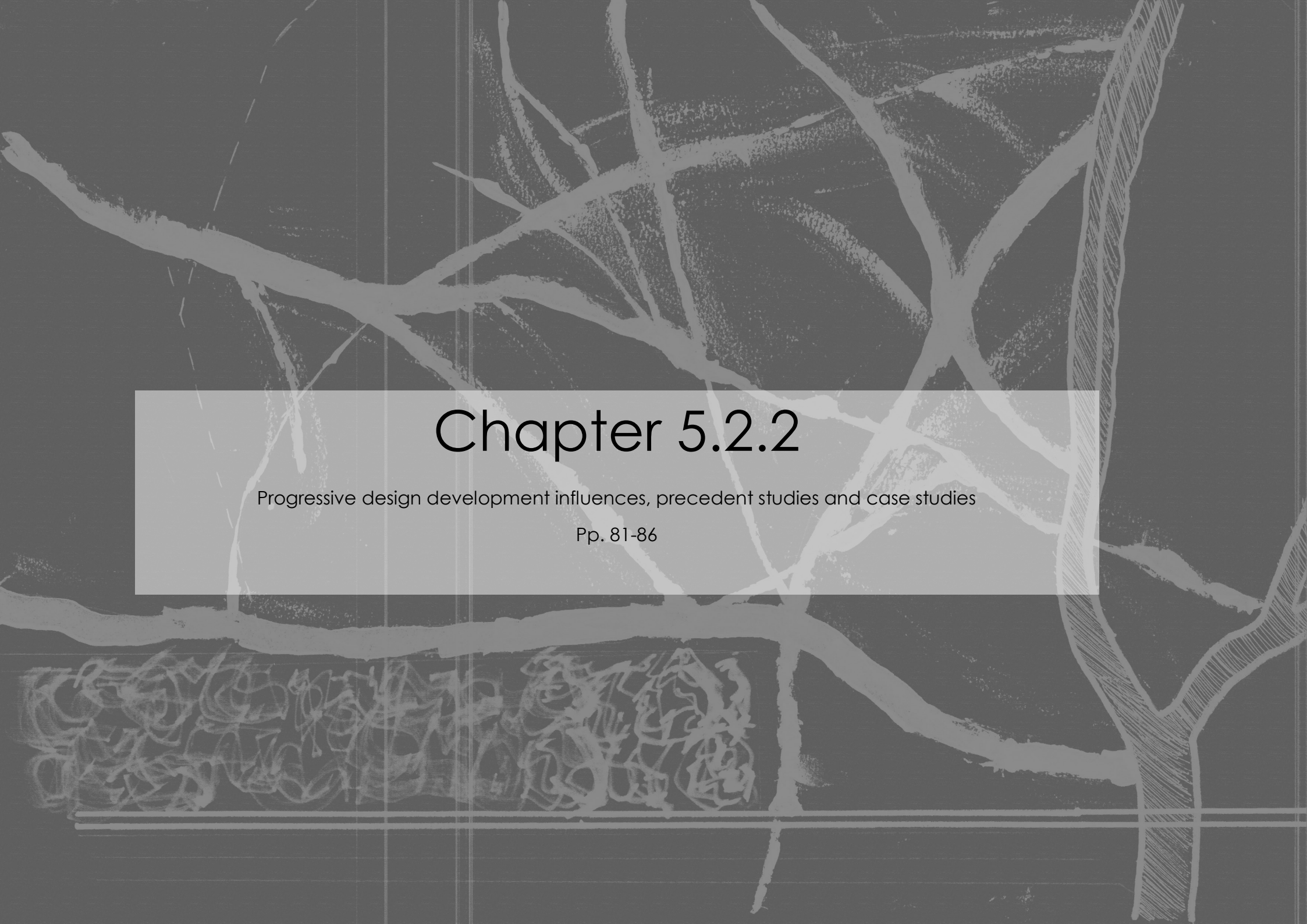


Fig 89: Aloe Ferox (author, 2023).



Chapter 5.2.2

Progressive design development influences, precedent studies and case studies

Pp. 81-86

Chapter 5.2.2: Appropriate Application

After the reflection on the first attempts stated in the previous sub-chapter it was decided that the design approach should be re-evaluated.

The focus was placed on the functions of the factory and the implements used within, since it would require the largest square meterage of built product for the development of the design.

Various forms of references were investigated, (with regards to the aloe vera industry, since there is little information to be found on the aloe Ferox production industry).

This led to the establishment of a vague understanding of the various products produced, and machines used within the industry as one can see on the diagrams below.

The three main medicinal products that are made within the industry form Aloe Ferox plant are:

1. Aloe Ferox powders, crystals and supplements (tablet or pills).
2. Aloe Ferox juice.
3. Aloe Ferox gel.

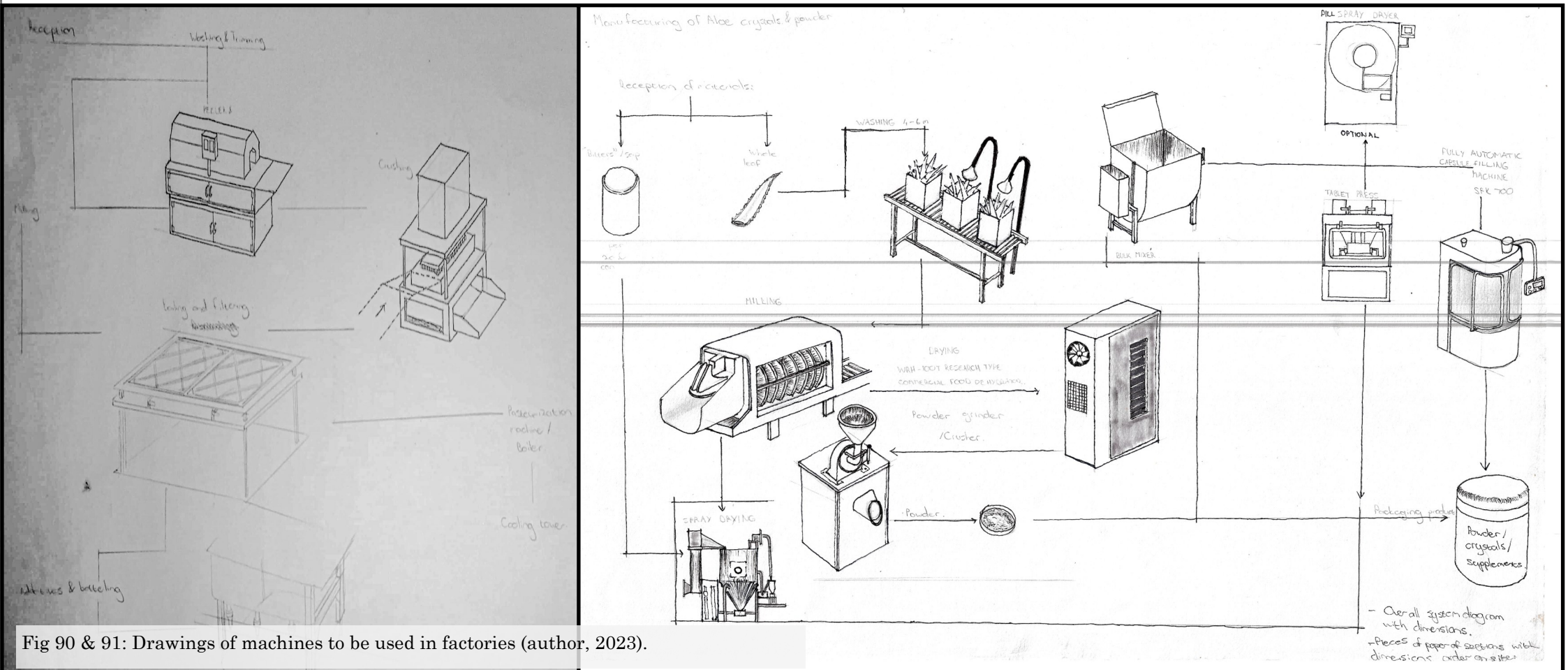


Fig 90 & 91: Drawings of machines to be used in factories (author, 2023).

Chapter 5.2.2: Appropriate Application

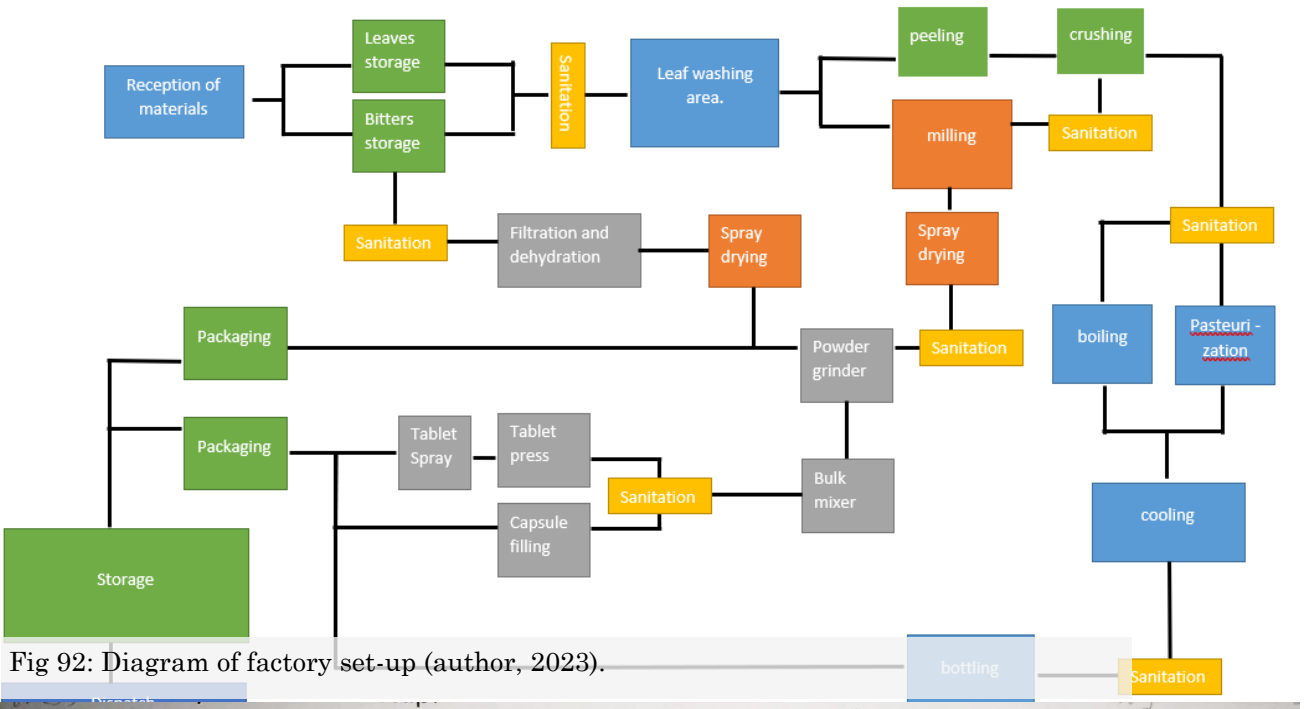


Fig 92: Diagram of factory set-up (author, 2023).

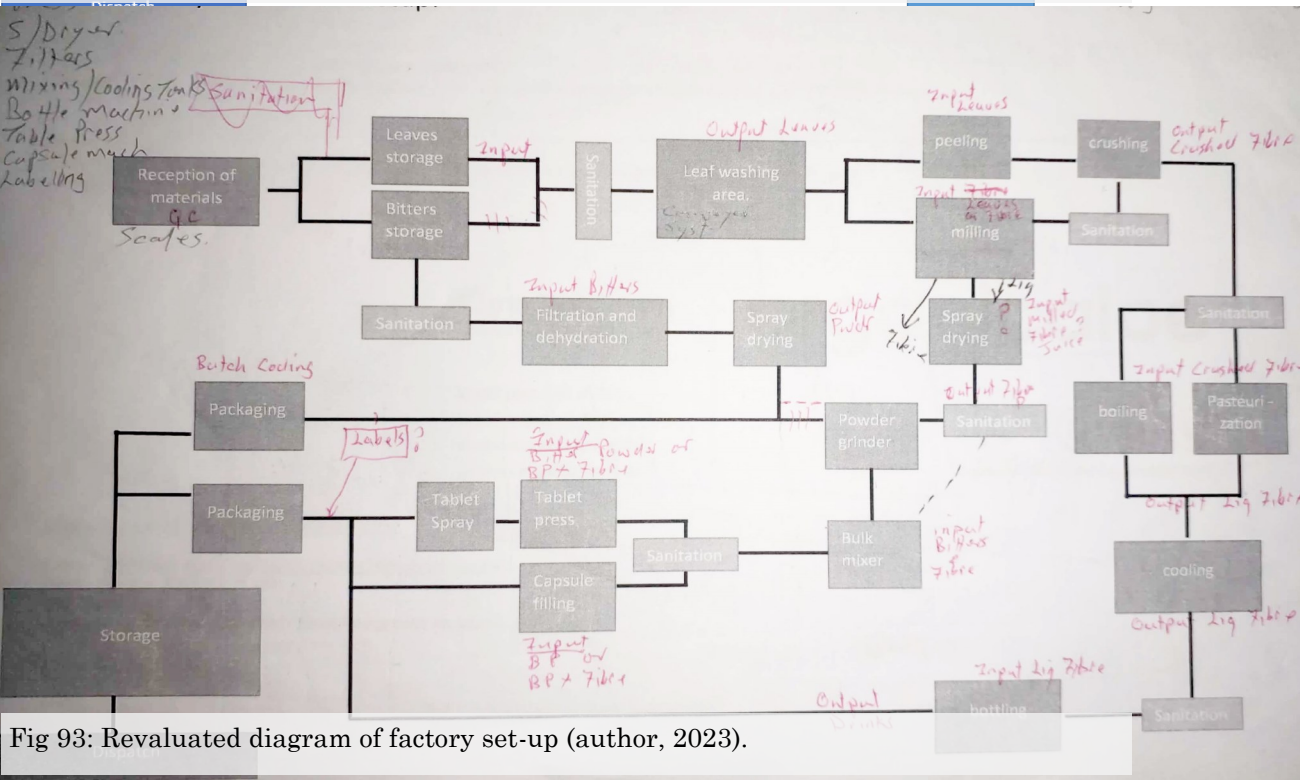


Fig 93: Revaluated diagram of factory set-up (author, 2023).

An interview with Mr Chris Pattinson from Organicaloe (Pty) Ltd, helped clarify various uncertainties and specifics surrounding the production process and setup of the factory.

The first clarification was that of the production process setup.

Key elements which were highlighted was that the production comprised a wet and dry produce and must run separately for the most part of the process to avoid cross contamination (Pattinson, 2023: interview).

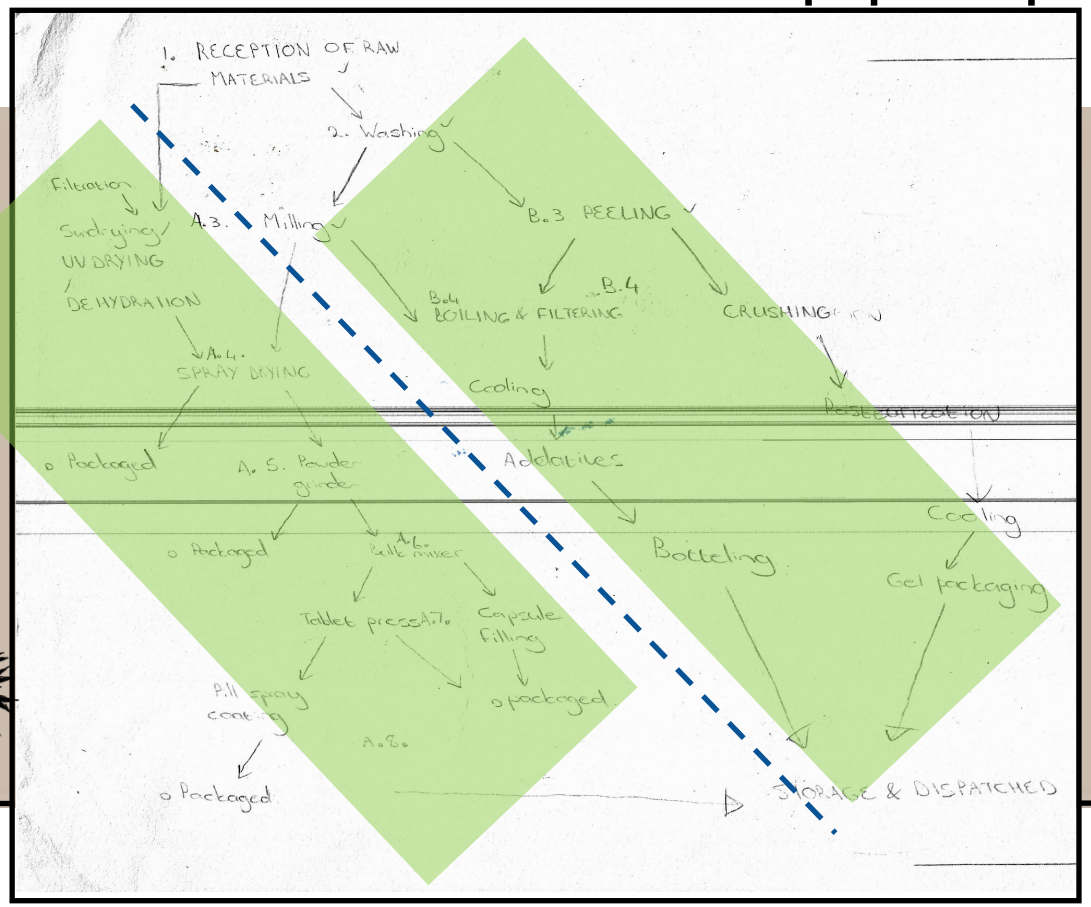
Furthermore, ample space should be provided for sanitation, due to the fact that the products from the factory are made for human intake/ingestion and contamination should be avoided at all costs (Ibid).

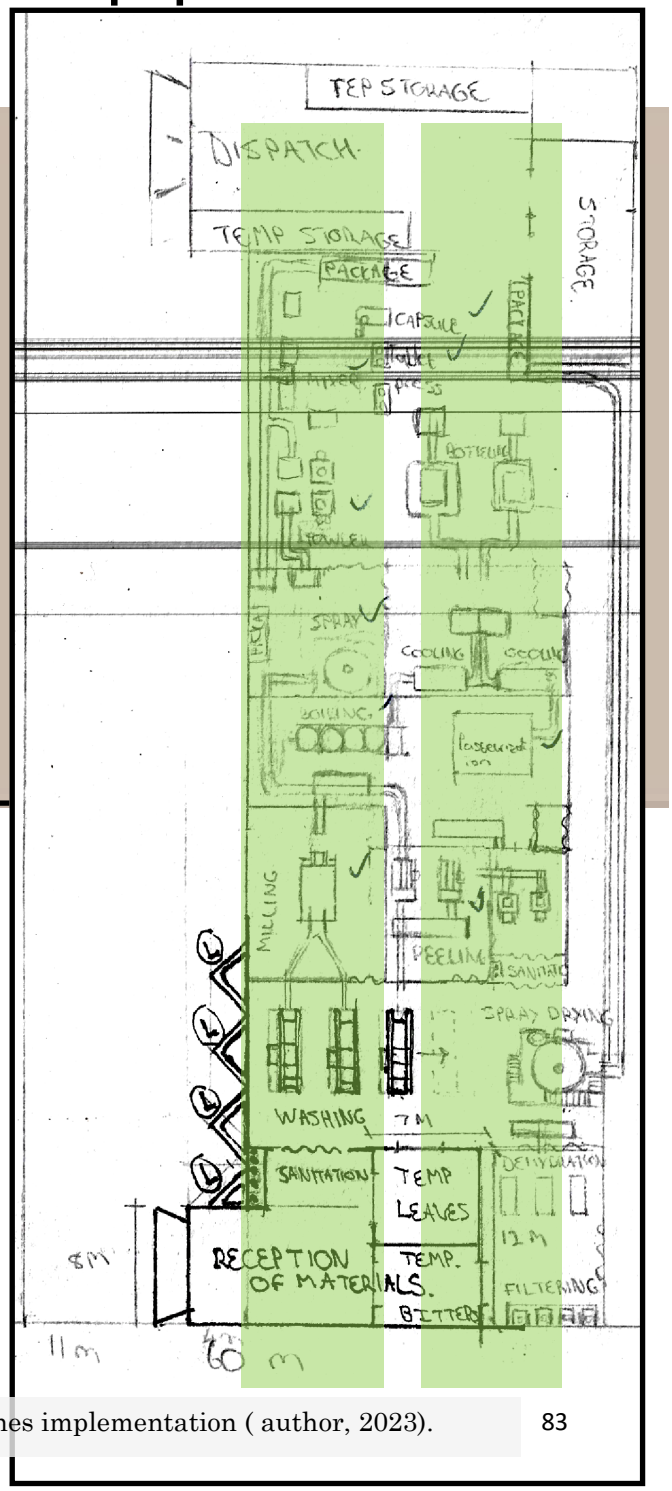
Thirdly, the two main produces have various outputs that are compiled into multiple products and does not necessarily need to go through all the facets of each produce to be used as a product (Ibid).

E.g. after the aloe sap/ *"bitters"* is reworked into powder form it can be packaged as is or could progress further down the production line and be pressed into tablet form or stored in digestible capsules.

Another factor regarding sanitation was that the floor surfaces of the factory must be easy to clean after the day's work has concluded. Thus, floor surface treatments such as an epoxy-coating should suffice and dust or other organic waste can easily be washed off.

Appropriate Application





From the diagrams above and to the right, one can derive that following the interview, the factory was split into two production produce lanes, where each output of one process would either serve as the input to the next or be sent to packaging and storage via the main production line.

Furthermore, the diagram on the right helped in further understanding the required amount/size of the spaces for the various types of machinery used within the factory would be, for it to function properly.

Fig 95: Two production lanes implementation (author, 2023).

Appropriate Application



Fig 96: Restaurant (Tripadvisor, 2023: adapted by author)



Fig 97: Thatch roof interpretations (Tripadvisor, 2023: adapted by author)



Fig 98: Entrance (Tripadvisor, 2023: adapted by author)

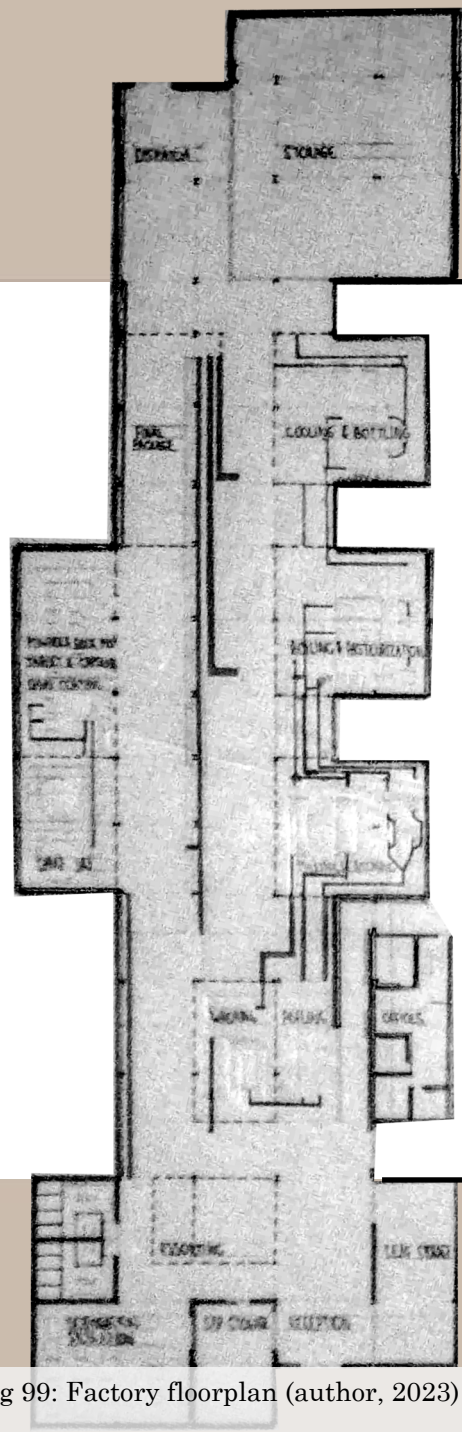


Fig 99: Factory floorplan (author, 2023)

And so, the first design attempt at a factory commenced:

The factory set-up comprised:

- A receipt area
- Storage, weighing and quarantine areas.
- A washing and pealing zone
- Two main production lines, for the wet and dry produce respectively, with a set of conveyor belts running down the middle.
- Packaging and storage area.
- Dispatch area.

Furthermore, the factory resonated a strong grid from which the rest of functions of the development was placed upon. The alignment with the grid of the factory aimed to create a unity between the rhythms of the various buildings within the design.

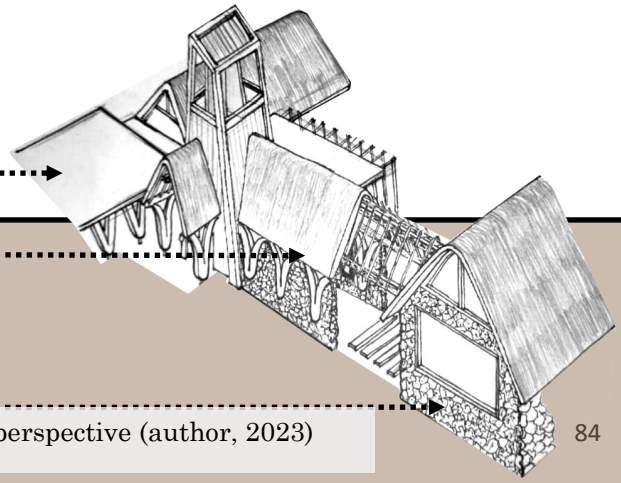


Fig 100: Typology perspective (author, 2023)

Appropriate Application



Fig 101: Further typological investigations (author, 2023)

The next challenge within the design was to establish the materiality of the structures used within the design.

The Garden Route Game Lodge which is situated in close proximity of Albertinia was looked to for plausible guidance. Its revelatory use of thatch roof structures and stone walls alongside wooden pole structures (Possibly from South Cape Poles Pty Ltd), inspired the implementation and reconfiguration thereof to suit the aims of the design.

Thus, the design attempted to create a relationship between the thatch -, steel, and flat roof structures. Furthermore, the stone walls aimed to associate with the region and the site, creating a sense of familiarity ,which can also be appreciated from an international style mindset (See *place-attachment* and *critical regionalism*).

The overall aim of the design was to create a set of spaces, which could co-habituate with one another and speak the same architectural language without preferring form over function.

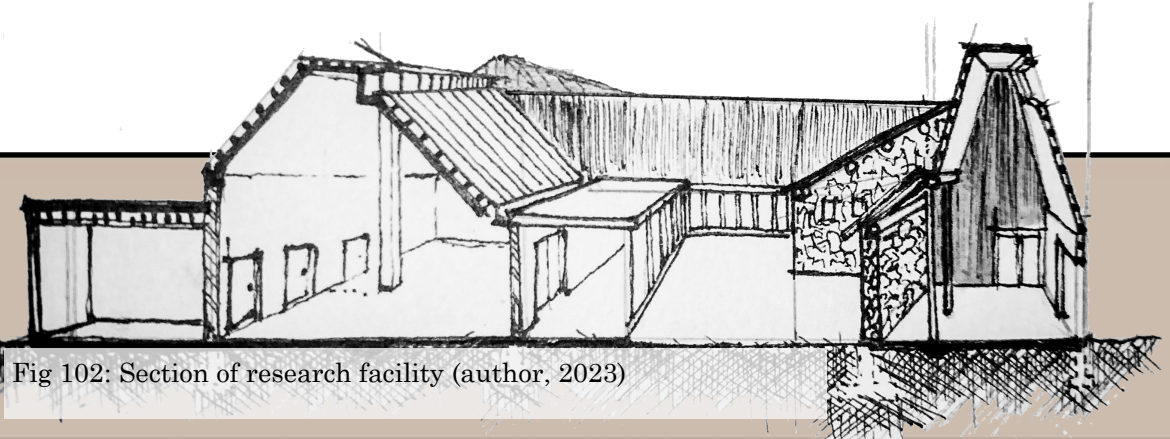


Fig 102: Section of research facility (author, 2023)

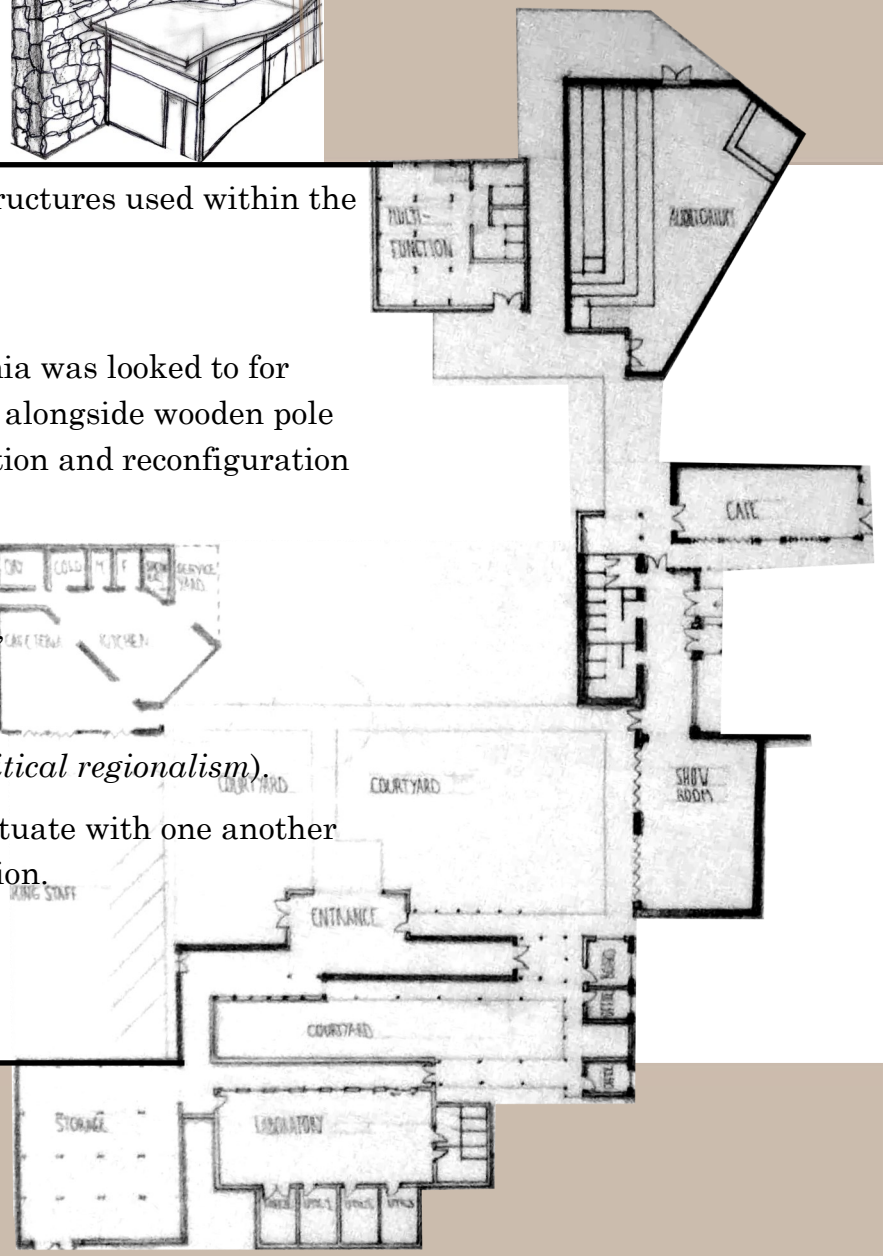


Fig 103: Rest of development set out on factory grid (author, 2023)

Appropriate Precedents

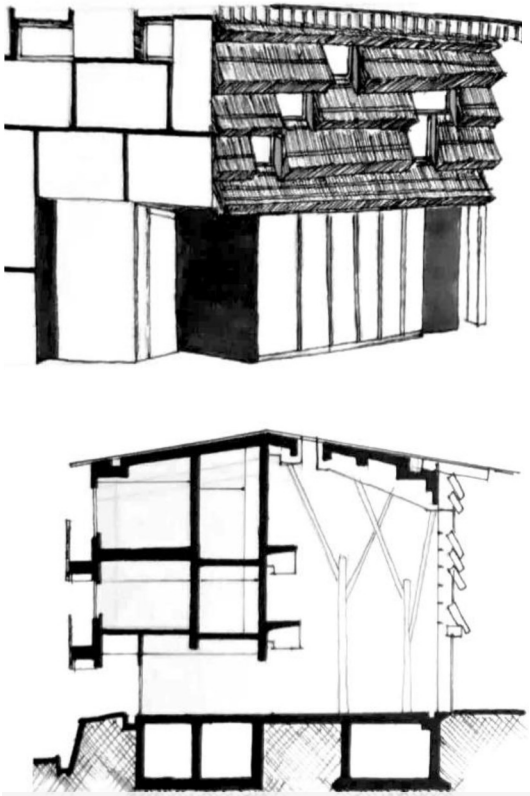


Fig 104: Investigative drawings (author,

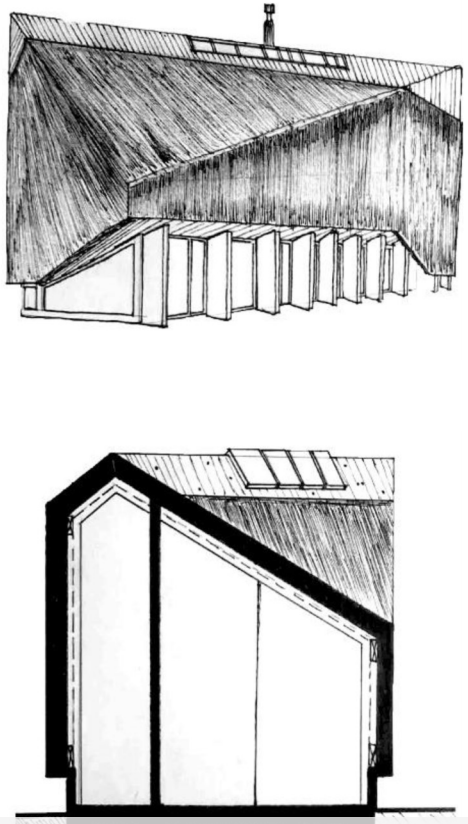


Fig 105: Investigative drawings (author, 2023)

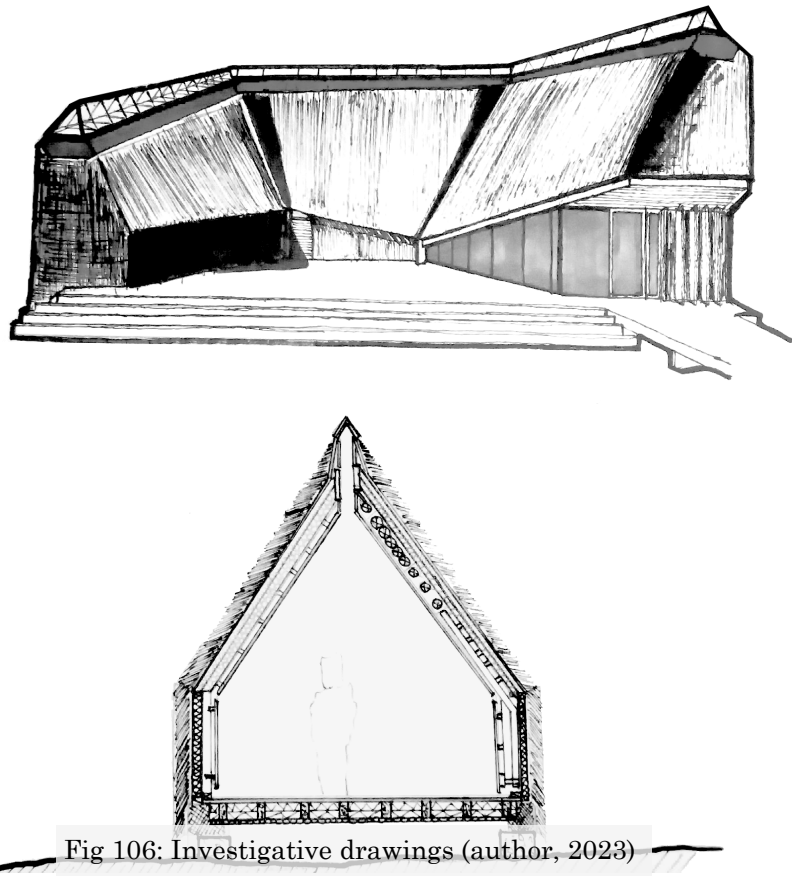


Fig 106: Investigative drawings (author, 2023)

Yusuhara Marche - Kergo Kuma & Associates:

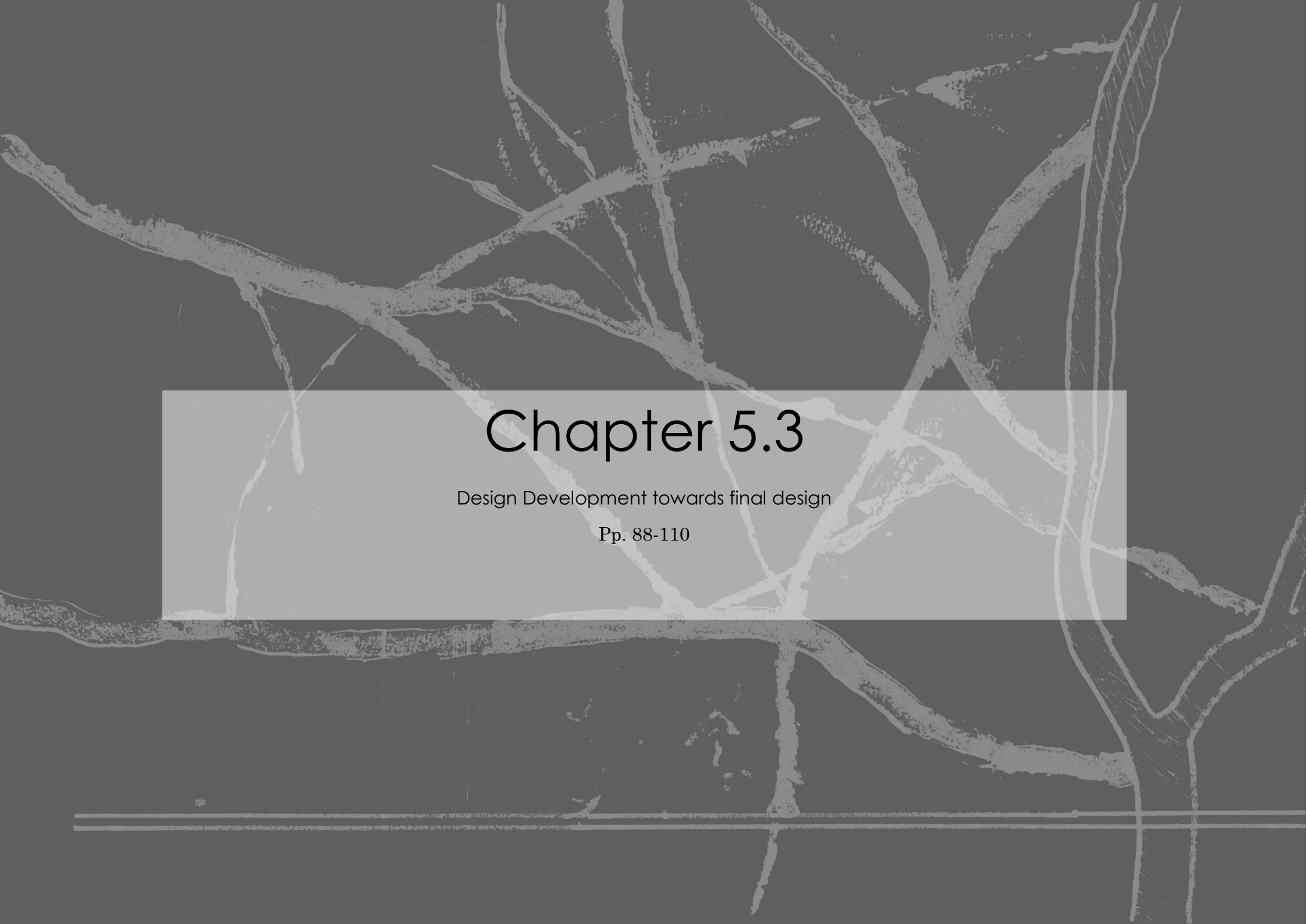
This precedent illuminated how one can creatively use various materials such as glass, thatch, wood panels, and brick masonry in revelatory ways within a building that is driven by function in a urban set-up.

Tåkern Visitors Centre - Wingårdh Arkitekt kantor AB:

This building was admired for its use of thatch in a contemporary set-up where the thatch roof integrates with the wall acting as a thermal blanket. Although it did come across as a bit fake.

The Dune House - Archispektras:

In this precedent the boundaries of the third skin between wall and roof becomes completely blurred. An interesting aspect which stood out was the use of thatch cladding, which was crisply eclipsed by a triangular lightwell.



Chapter 5.3

Design Development towards final design

Pp. 88-110

Development 3.1: A design in search of critically connecting with its region



Fig 107: Entrance perspective 01 (author, 2023)

Development 3.1

The first element that this design focussed on was the visual experience the viewer would have when entering the building.

It aimed to critically associate with the aspects of the surrounding region such as integrating thatch roof typologies with industrial steel typologies whilst simultaneously accentuating its wooden structure.

The result, was to celebrate the act of entering and creating a space which people would want to gravitate towards.

The use of Albertinia stone walls were implemented to create a visual references for the locals to associate with materials found in the region, creating a space where they would not feel alienated and more at home with.

The use of various roof typologies such as ; mono-pitched, pitched, flat and clerestory roofs can be seen on the 3-D renders. This was the result of each space being separately designed, (The designing of moments instead of designing for the whole).

This phenomena was seen as something to be addressed further within the development of the design, since it created a disunified front of the visual experience and did not metaphysically draw across the notion of mending communities.



Fig 108: Potential gathering/waiting area next to café (author, 2023)



Fig 109: café (author, 2023)

Development 3.1



Fig 110: Courtyard space (author, 2023)



Fig 111: Storage space (author, 2023)

The next focus point within the design was to appropriately implement secondary spaces, such as courtyards and storage units.

The courtyards aimed to incorporate the theoretical notion of private spaces which would not create a sense of an enclosed encampment and rather harbour a feeling of porosity which would be easily accessible for the people inhabiting the proposed spaces.

As one can see on the rendering to the left this was done via protruding into the footprints of the building, creating shaded walkways, and the implementation of semi- glass facades.

This resonated a sense of transparency where there were no hidden corners within such spaces that still enabled people to feel safe and enclosed, creating a comfortable environment.

Regarding the storage facilities the, regular shed typologies were used since they had an important function to address.

Positives:

- The notion of creating private spaces with a sense of porosity.
- Certain spaces being designed for function over form.

Negatives:

- Private spaces creating a claustrophobic feeling.
- Materiality not resonating with each other.

Development 3.1

On a structural level, sections were developed to investigate how the various material incorporated into the design would resonate with one another.



Fig 112: Section development of entrance showroom and café (author, 2023)

As one can see on the sections to the right the structural morphologies did resonate a sense of integrity but the main challenge still posing a threat, was the fact that there were to many voices trying to seek attention, creating an anthology of eclectic architecture.

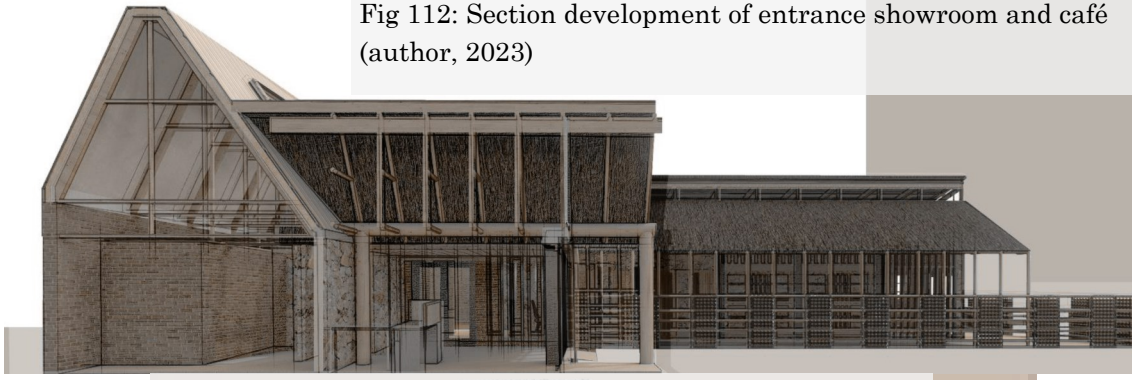


Fig 113: Section development of entrance (author, 2023)

The reason for this, was that a lot of focus was placed on the integration of various materials as a means to associate with *critical regionalism* which then resulted in a multi-polarised design.

Overall positives and negatives:

Positives:

- The design diverging from its original formalistic inspired morphology.
- The integration of local materials
- Harbouring an attentive notion towards the theory within the design.

Negatives:

- The design coming across as 'multi-polarised' (too many architectural languages).
- Spaces not yet achieving what is aimed for within the theory.

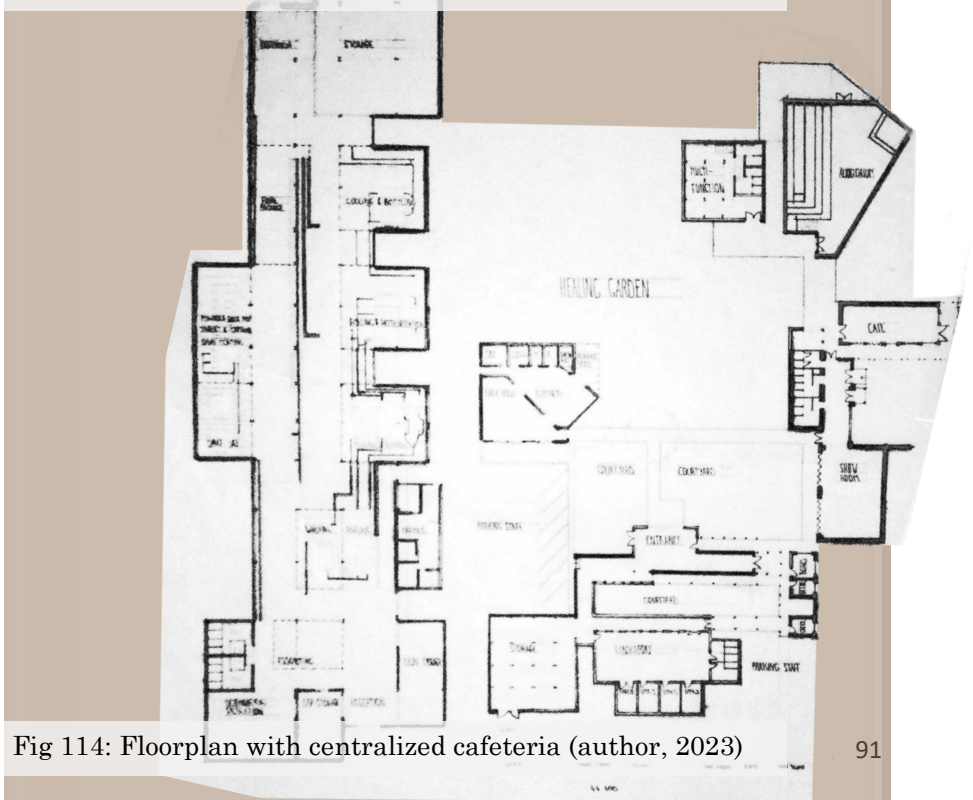


Fig 114: Floorplan with centralized cafeteria (author, 2023)



Fig 115: Photographs of case study (author, 2023)

Cheré Botha School - Wolff Architects

A school for learners with special educational needs.

Due to the fact that it seemed that the development of this dissertation's design was stagnating, the decision was made to look at a case study of an architectural development that harboured a sense of attentive care towards it users.

Chere Botha school is a school for children between the ages of 3 and 18 that are falls on the autism spectrum with intellectual challenges (Wolffarchitects, 2023: online). The design was developed in such a way, that the students experiencing the said challenges could learn in a safe and appropriate designed environment.

The building comprises six sectors, each designed with their own purpose of which they share timber A-frame shaded gathering spaces, due to the sensitivity of the circumstances of the children (Ibid). This allows the children with their respective challenges to comfortably learn in their separate classrooms from which they can move into the gathering spaces, where they can play and learn from one another during any weather conditions.

> "The horizontality of the canopy around the arrival court is contrasted with the verticality of the A-frame structures and the hall. The sculptural volumes of the hall and workshops with its characteristic roof profile are the central moments of the architectural composition. These two volumes are clad in corrugated iron and rise like cumulus clouds from the datum of the canopy at their base. The interior of the hall is triangulated in section just like the A-framed spaces. As another triangulated space, the hall becomes an exaggerated version of other collective forms. Openings for light are carefully arranged to ensure a low glare interior." (Wolffarchitects, 2023: online).

Aspects regarding this building's design that stood out were:

- The use of different surface applications to suit the needs of each respective sector.
- The A-frame typology resonating with the surrounding mountainscape.
- The use of light quality creating comfortable and stress-free spaces (which can relate to *healing through architecture*).
- Rebelling against the generic typologies of schools and designing for the needs of the users instead of pure functionalism.
- Creating flexible spaces, such as the A-frame courtyard.
- Creating a place of inclusion rather than exclusion.
- Designing appropriately for the given circumstances.

This case study played a enormous role in the further development of the design which will be discussed and applied in the sub-chapters to follow.

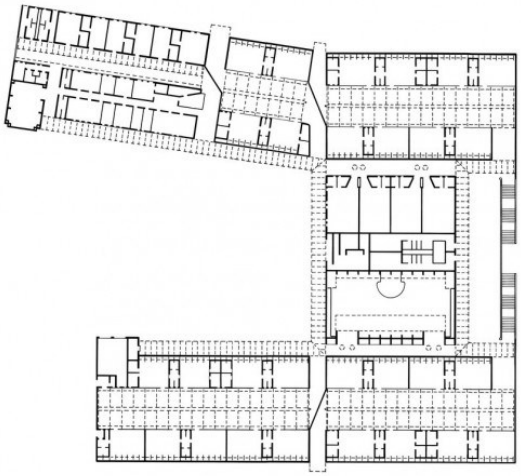


Fig 116: Floorplan (Wolffarchitects, 2023: adapted by

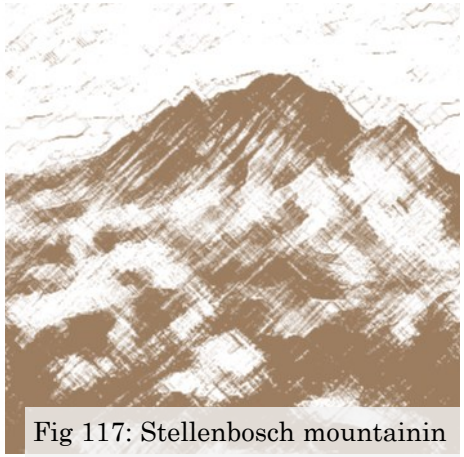


Fig 117: Stellenbosch mountainin background (Wolffarchitects, 2023: adapted by author)



Fig 118: Hallway (Wolffarchitects, 2023: adapted by author)



Fig 119: Lecture hall (Wolffarchitects, 2023: adapted by author)

Development 3.2: A design in search of unity



Fig 120: Entrance perspective 02 (author, 2023)

Development 3.2

The influences of the case study led to the following developments:

- The implementation of A-frame roof structures.
- The use of steel roof sheeting.
- The aim of designing architecture that corelates with one another.
- Designing open spaces and courtyards where people can gather.
- Experimenting with how light can enter a building.
- Designing spaces that have dual purposes such as the showroom, auditorium and multifunctional hall.
- Designing walkways to explore how the various vocations can flow into each other.

Extra developments not influenced by the case study:

- Implementation of machinery into the factory to see if enough space is provided for the function.
- Creating accessibility towards the development via a road and allocated parking spaces.



Fig 121: Floorplan 02 less ambiguous cafeteria design (author, 2023)

Development 3.2



Fig 122: Research facility perspective (author, 2023)



Fig 123: Laboratory interior perspective (author, 2023)

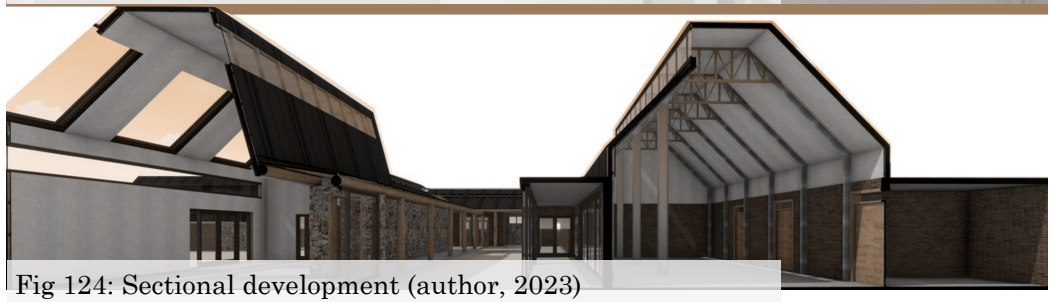


Fig 124: Sectional development (author, 2023)

The next challenge to be addressed was the designing of a laboratory:

There were a lot of uncertainty regarding the specifications of the laboratory's setup. An interview via *Gmail* with Dr. Mauritz Wentzel (PhD) was conducted regarding advice on research facilities and laboratories.

The questions posed were:

1. Excluding the reception, office spaces, ablution, and laboratory spaces, what other spaces are necessary for a laboratory to function correctly, for example; boardrooms, storage spaces, etc?

2. Regarding the accessibility and comfort aspect of the workplace would you say that the offices should be as close to the laboratory as possible or the opposite?

3. In your experience. How important is the use of light quality in a laboratory? Should there only be artificial light provided to ensure continuity in the work environment, or may it be in fact the opposite that natural light provides a better environment for one to perform in (If natural light from the sun is better, would northern or southern light be preferable?).

4. Is there a different set of fire regulations for laboratories? How does that affect the layout of the laboratory?

5. Are there only certain building materials that may be used in certain spaces?

(author, 2023: interview).

The answers were:

1. "*You can never have too much storage space. After Covid, the only way to get lab consumables is to buy in bulk. We now have a new prefab building just for this. You can also consider walk-in fridges/ freezers. Utility rooms for clean air compressors, water purification, UPS, generator, high -pressure gas cylinders, and flammable solvents. We have split our lab into sample prep and instrumental analysis"* (Wentzel, 2023: online).
2. "*Closer is better, as long as it's safe. Lab people don't like to walk far*." (Ibid).
3. *"Artificial is more practical and can be controlled. Natural is great but often brings in too much heat, or needs to be supplemented on cloudy rainy days."* (Ibid).
4. *"Best to get this one from a fireman. Flammable solvents and compressed gasses are onsite, not to mention various chemicals"* (Ibid).
5. *"We prefer brick-and-mortar to dry-walling, although I don't think it makes much of a difference."* (Ibid).

Following the interview the advice was taken to heart and implemented within the design. The research facility was designed with its own separate storage facility providing for bulk bought products and space allocations were made for utility rooms and a walk in freezer. The laboratory was placed in close proximity to the entrance and office spaces addressing the comfortability aspect. The use of normal brick walls alongside a defamiliarized A-frame roof was implemented as well.

The only aspect that was not according to the answers was the use of natural light since the aims were not only to provide for practicality but to create a healing experience and a certain level of comfort where the users of the building can feel inspired by the architecture and find is pleasing to work in.



Fig 125: Reflecting on work so far (author, 2023)

Development 3.2



Fig 126: Factory interior (author, 2023)



Fig 127: Birds eye perspective (author, 2023)



Fig 128: Factory sectional development (author, 2023)

The factory was further developed in three aspects:

1. Machinery put into the design:

   The machinery was implemented within the design to see if ample space was provided for it to function and to grasp the scale of the elements with which the designer was working with.

2. The structure implemented within the factory:

   It was decided that the use of a steel structure with brick infill and steel roof sheeting was deemed most suitable for the development of the factory.

3. The visual representation:

   The design aimed to visually represent the characteristics of its region through metaphorical architecture (integration of *critical regionalism* and *metaphorical architecture*). The typologies of its roof structure aimed to associate with the rhythms of the *Langeberg* mountain range whilst still corelating with an industrial language. The footprint of the factory was purely determined by function and not formalistic acrobatics and so another goal was achieved.

The design of the factory was seen as a major break through since it incorporated two of the four theories whilst also harbouring a sense of resistance towards a formalistic topology approach.



Fig 129: Factory elevation resonating with the mountain range (author, 2023)

Development 3.2

At this stage of the development the multi-functional hall and the auditorium were designed as separate buildings.

The purposes of the multifunctional hall:

- Main purpose of providing a facility for practical demonstrations on and of aloe Ferox.
- Secondary purpose of providing a haven for the children of the area via the means of an after-school creche.
- Tertiary purpose of providing a flexible space where people from various age groups and communities can mingle and coalesce.

The purpose of the auditorium:

- A space where lectures on aloe Ferox can be held.
- The structure itself attempts to illustrate certain qualities pertaining to the aloe Ferox plant (The inside of an aloe Ferox leaf).

The auditorium came across as very formalistic in comparison to the multifunctional hall. Upon closer investigation one would find that it also harboured odd angled spaces which can create feelings of discomfort since these spaces were neither *controllable* nor *flexible (Place-attachment).*

The multifunctional hall celebrated the use of natural light and open spaces which allowed the being to interact with these spaces in any manner they wanted to, which correlated with the *healing through architecture* (placebo effect) and *place -attachment* theories. One negative aspect that could be easily removed was the formalistic railings which resembled aloe Ferox leaves.



Fig 131: Multi-functional hall (author, 2023)



Fig 132: Lecture hall (author, 2023)

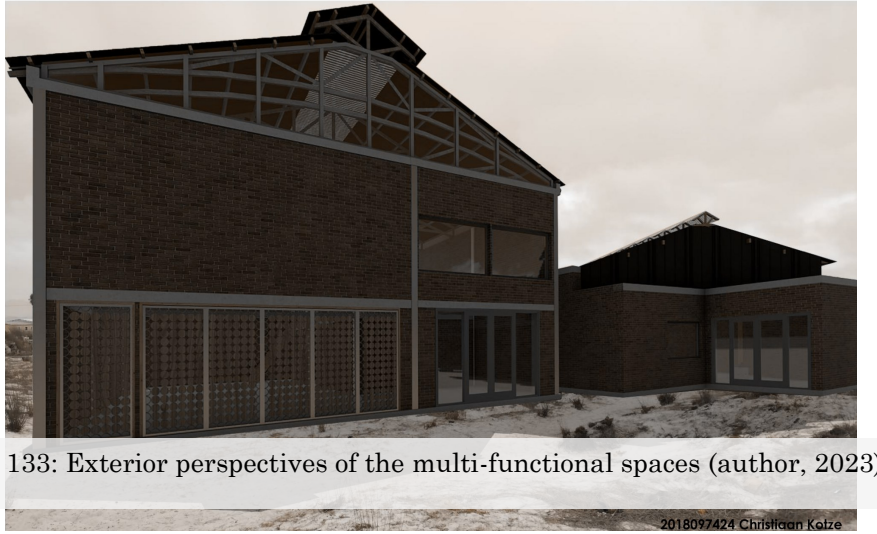


Fig 133: Exterior perspectives of the multi-functional spaces (author, 2023)

Development 3.3: A design in search of unity



Fig 134: Exterior perspective 03 in search of unity (author, 2023)

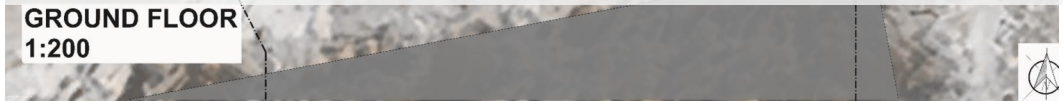
Chapter 5.3.3: Development 3.3

Development 5.3.3 led to a few alterations of the layout of the plan:

- The cafeteria was moved from the central position in the design to next to the laboratory storage area as to provide easy accessibility for the factory and laboratory staff, avoiding any ambiguity of it being a semi public space.
- A space was allocated for a walkway dividing the site into two sectors of public and semi-public areas.
- The public bathrooms near the entrance was rearranged next to the show room.
- The multifunctional hall and auditorium hall paired into one building with two levels.
- The factory experienced a level change of 500 mm
- The factory entrance was re-positioned on the eastern façade of the building providing easy access for its users
- Courtyard and gathering spaces were aligned with the grid set by the factory.



Fig 135: Floorplan 03 Cafeteria repositioned next to laboratory storage (author, 2023)



Development 3.3: Model

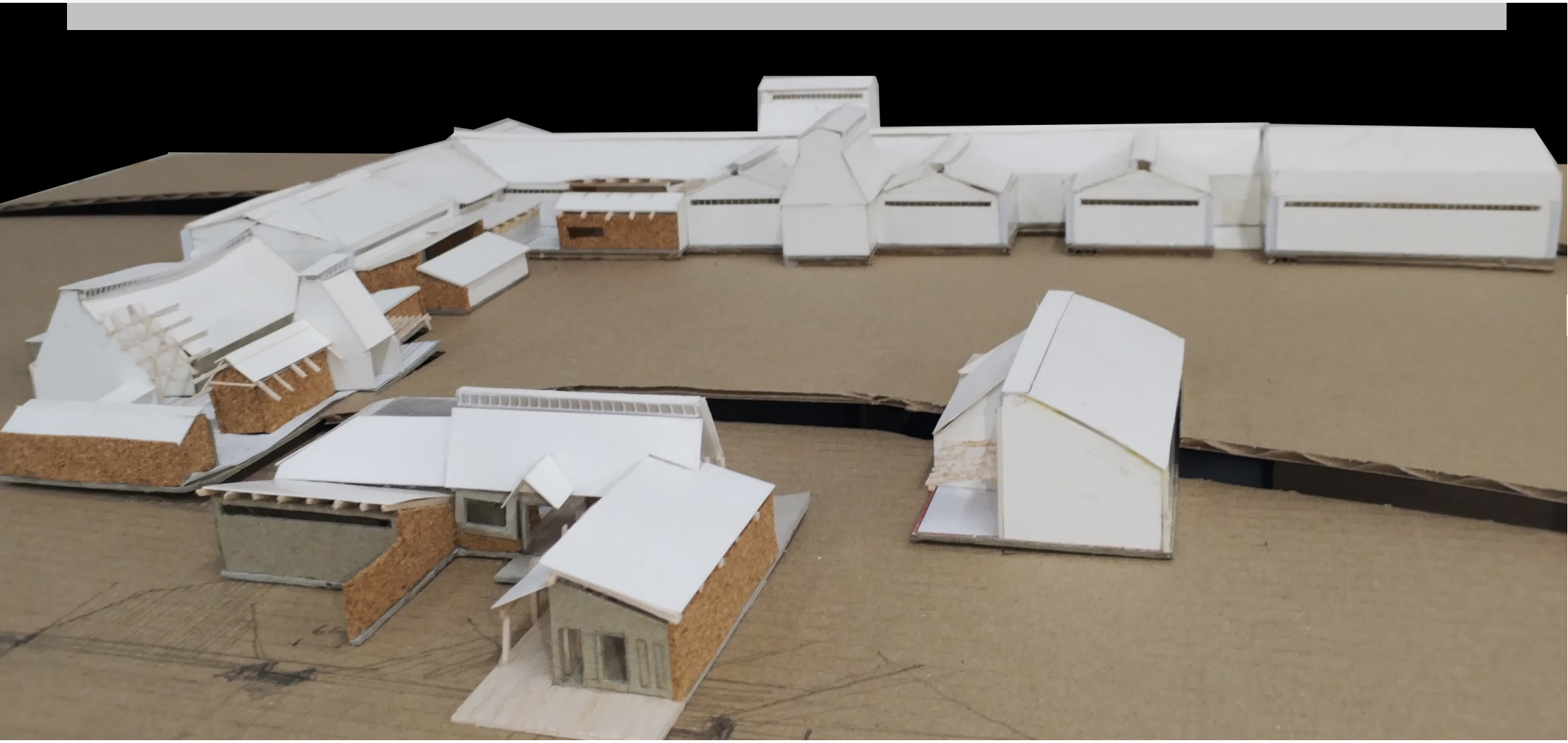
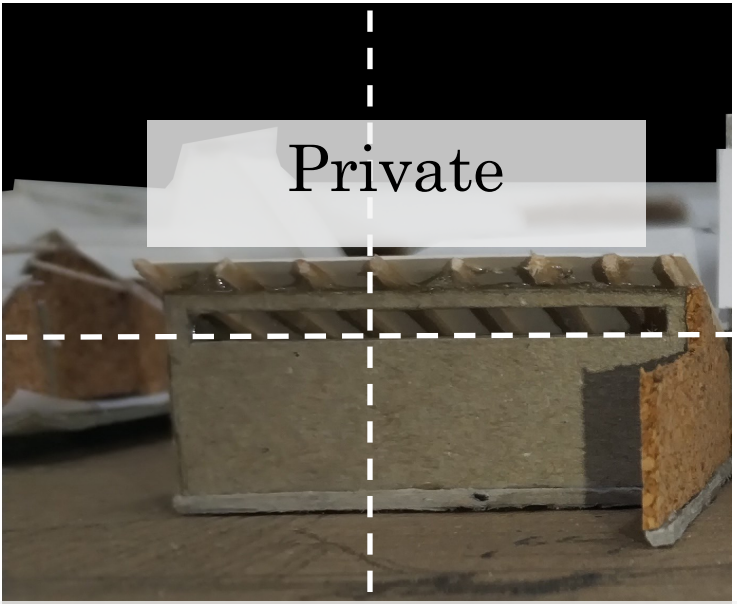
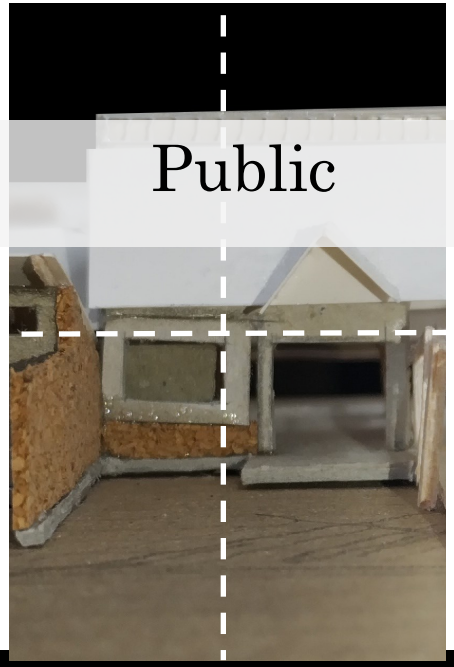


Fig 136: Model of development exploring the rhythms of the various typologies (author, 2023)

Development 3.3





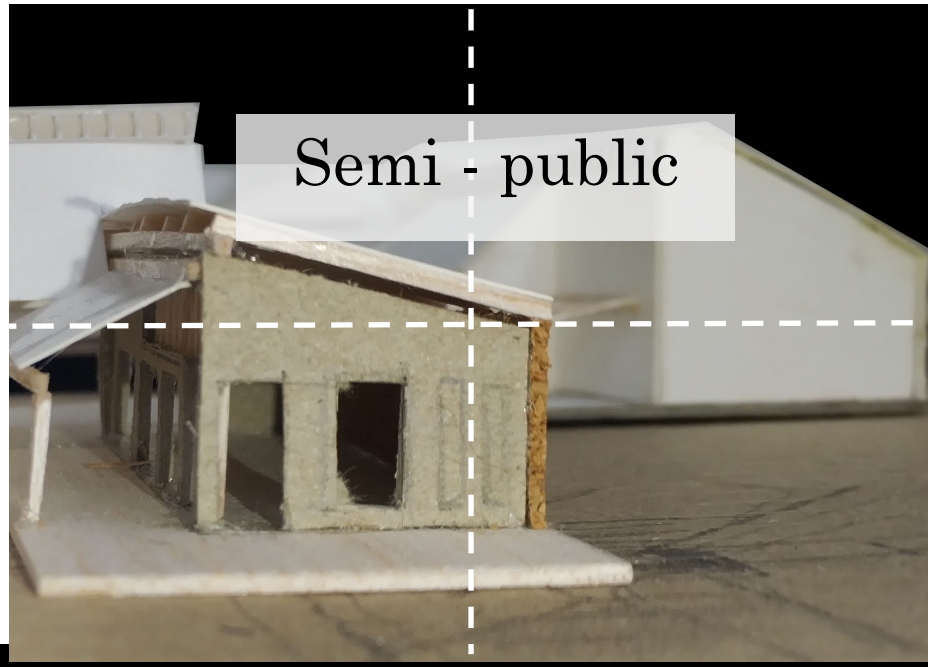


Fig 137: The division of sectors (author, 2023)



Fig 138: The triumphant factory (author, 2023)

Final developments



Development 3.4: A design in search of unity



Fig 139: Reflecting on previous entrances (author, 2023)



Fig 140: New entrance (author, 2023)

Final developments

After all the progress made within the developments it still felt that there was something missing.

Investigations were done in how possible pavilion structures within the design may look and how it can be integrated into the walkways on site, where it resonated a language similar to the industrial machines used within the factory and used materials known to the region.

The aim was to make the visitor feel included within the production process, making it more possible to associate with what the users of the factory are experiencing.

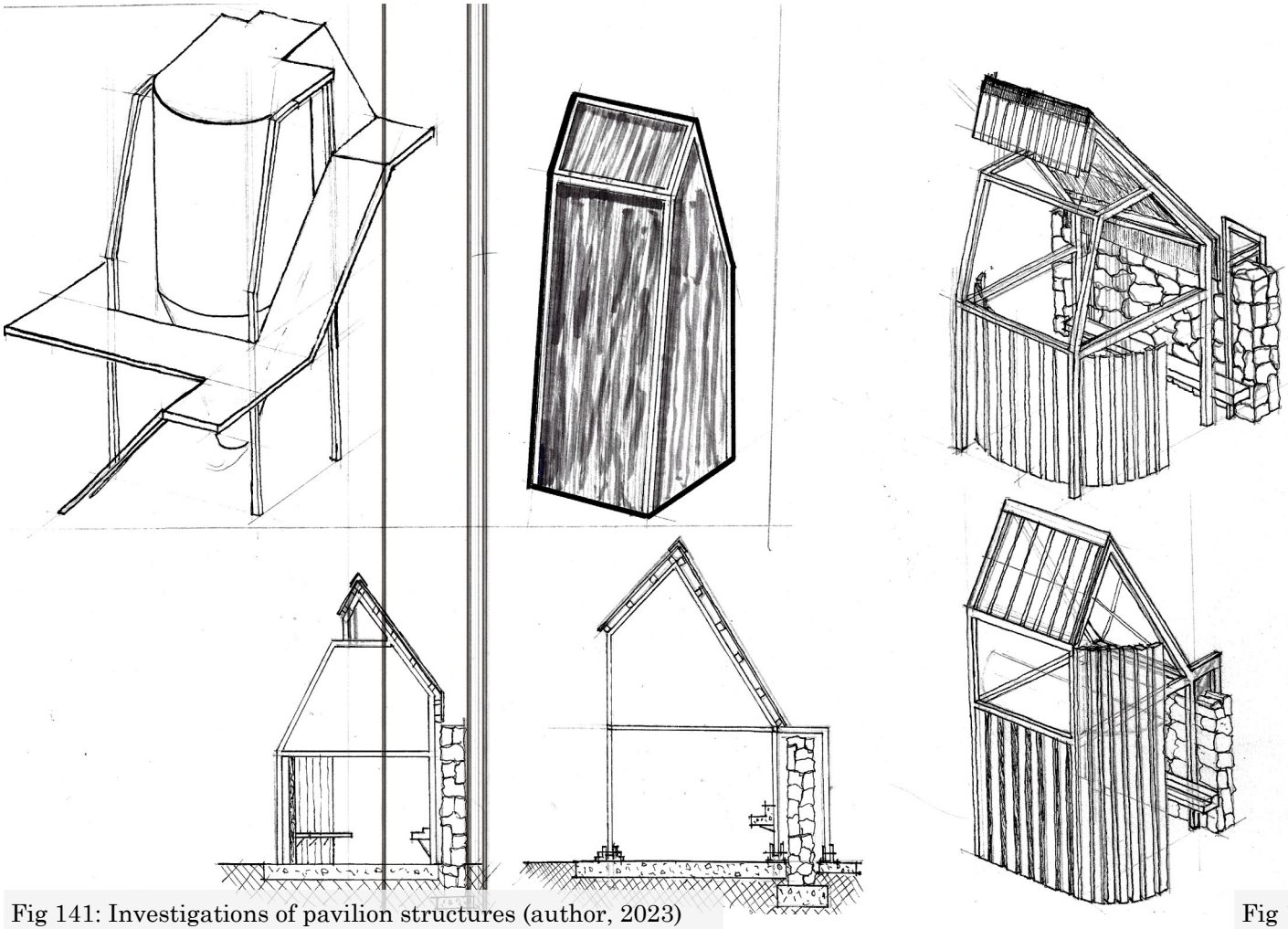


Fig 141: Investigations of pavilion structures (author, 2023)



Fig 142: Model of spray dryer (author, 2023)

Final developments

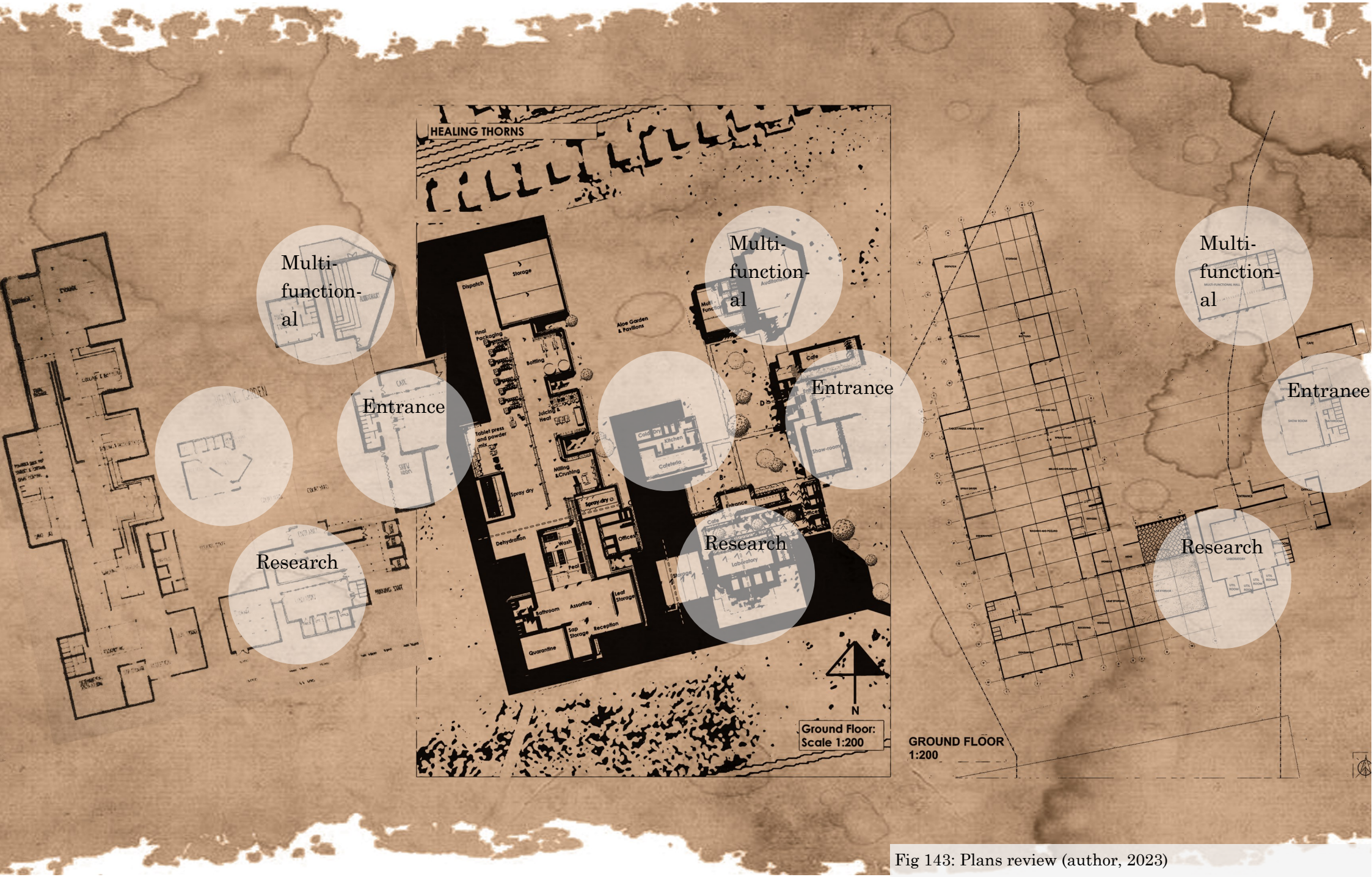


Fig 143: Plans review (author, 2023)

Chapter 5.3.4:

Final developments

The previous developments were critically reflected on to see what made the design feel disjointed although most of the theory have been applied.

It was established that the main problem that stood out from all three of the previous designs was the fact that the various vocations, with the exception of the factory, was designed for separately. This created an excluded block / sector effect where each vocation of function of the design was given its own space, thus the alienation of spaces within the design.

The last working model of the plan was built for the aims of rebuking this alienation and creating a unified language throughout the design.

This can be seen on the photograph of the model (to the right), where the entrance was reinterpreted as an axis flowing into the multifunctional and research spaces creating a unified language.

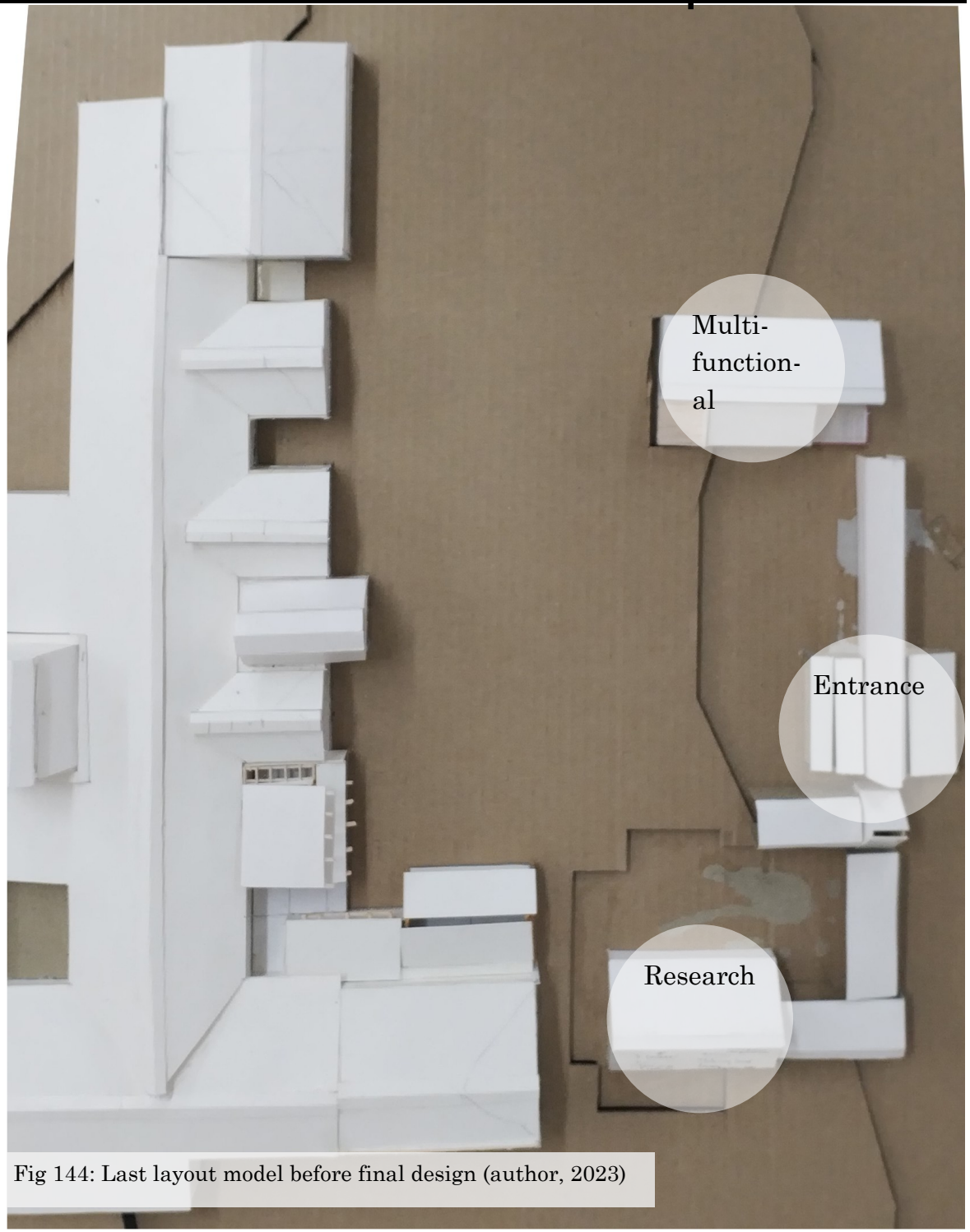


Fig 144: Last layout model before final design (author, 2023)

Final developments

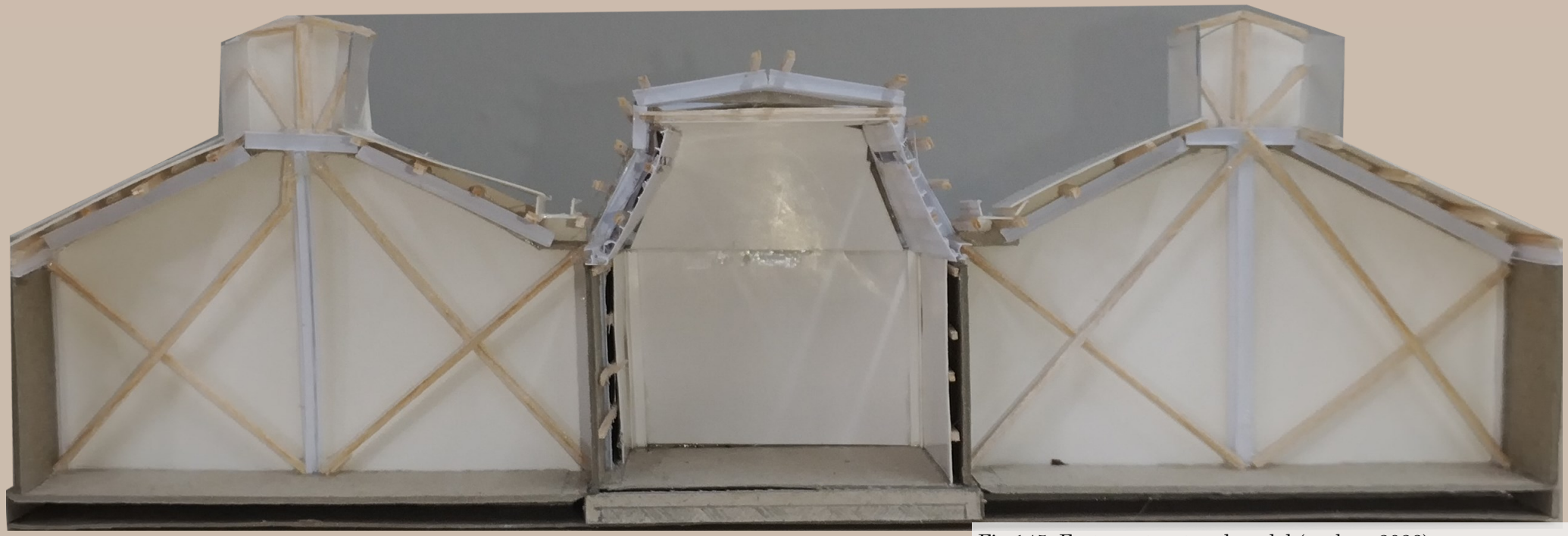


Fig 145: Factory structural model (author, 2023)

A structural section model of the spray dryer booth and two wet produce sectors was built to investigate if anything can be learned and integrated from their typologies into the design.

It was then integrated into the design as one can see from the reinterpreted A-frame typology of the entrance's sectional model on the next page.

Final developments



Fig 146: Entrance typology model (author, 2023)

A reinterpreted sectional model of the entrance was built with the dual purpose of understanding the structure but also to see if it was still applicable enough to be implemented within the new development of the design.

The result was that the normal pitched veranda typology did not correlate with the new developments of the design and had to be removed but the A-frame structure could still be further utilised.

Final developments

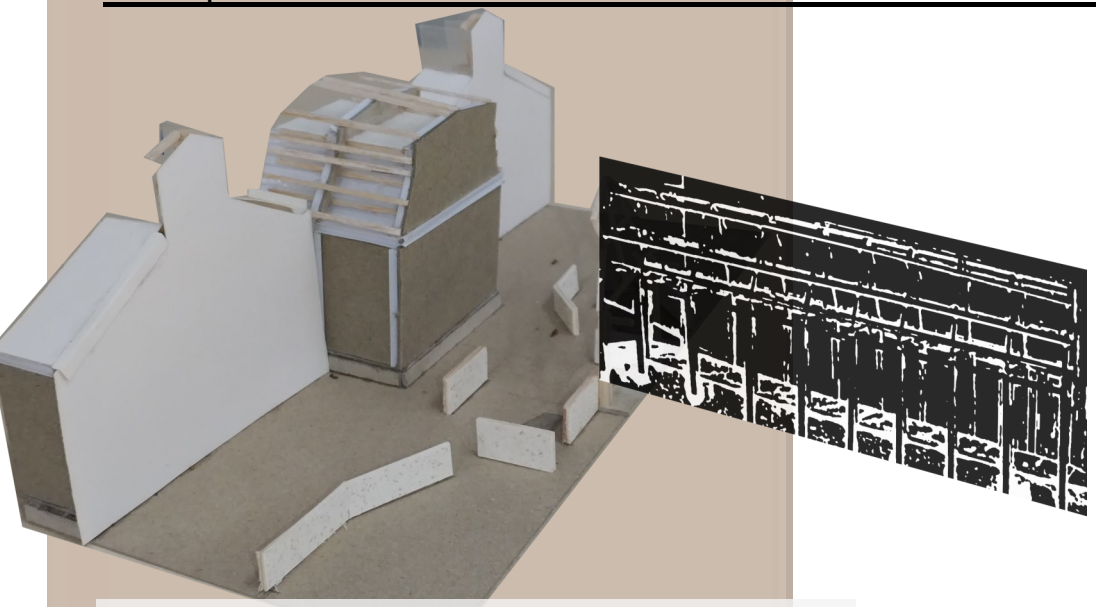


Fig 147: Factory and landscape engagement (author, 2023)

Lastly the factory's typology was further investigated to see if it could influence the design of the walkways.

The result was the development of a partially shaded walkway which was a hybrid between the languages of the factory and pavilion typologies.

This walkway stretching from the main entrance, across the site, to the edge of the factory aimed to function as a flexible space. It would serve the purpose of becoming a space which one can move through or linger and engage with the visual and metaphorical aspects of the design.

This space would experience the most movement of tourists, workers, researchers, retailers, etc. since it linked various buildings and vocation with one another. Thus, drawing across the notion of mending between communities through physical (The act of crossing from one space to another, with the walkway serving as medium) and metaphysical experience (The use of structural joints and seating spaces protruding into courtyards and gardens).

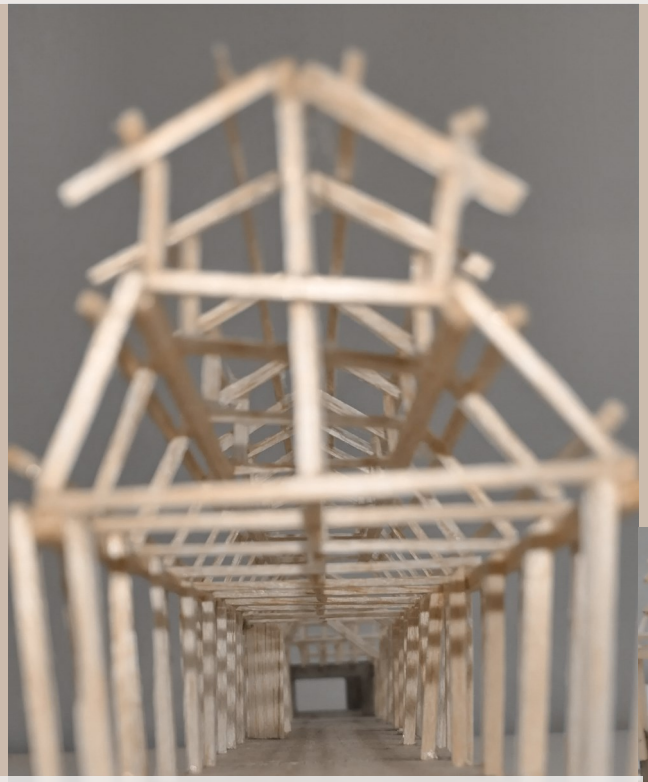
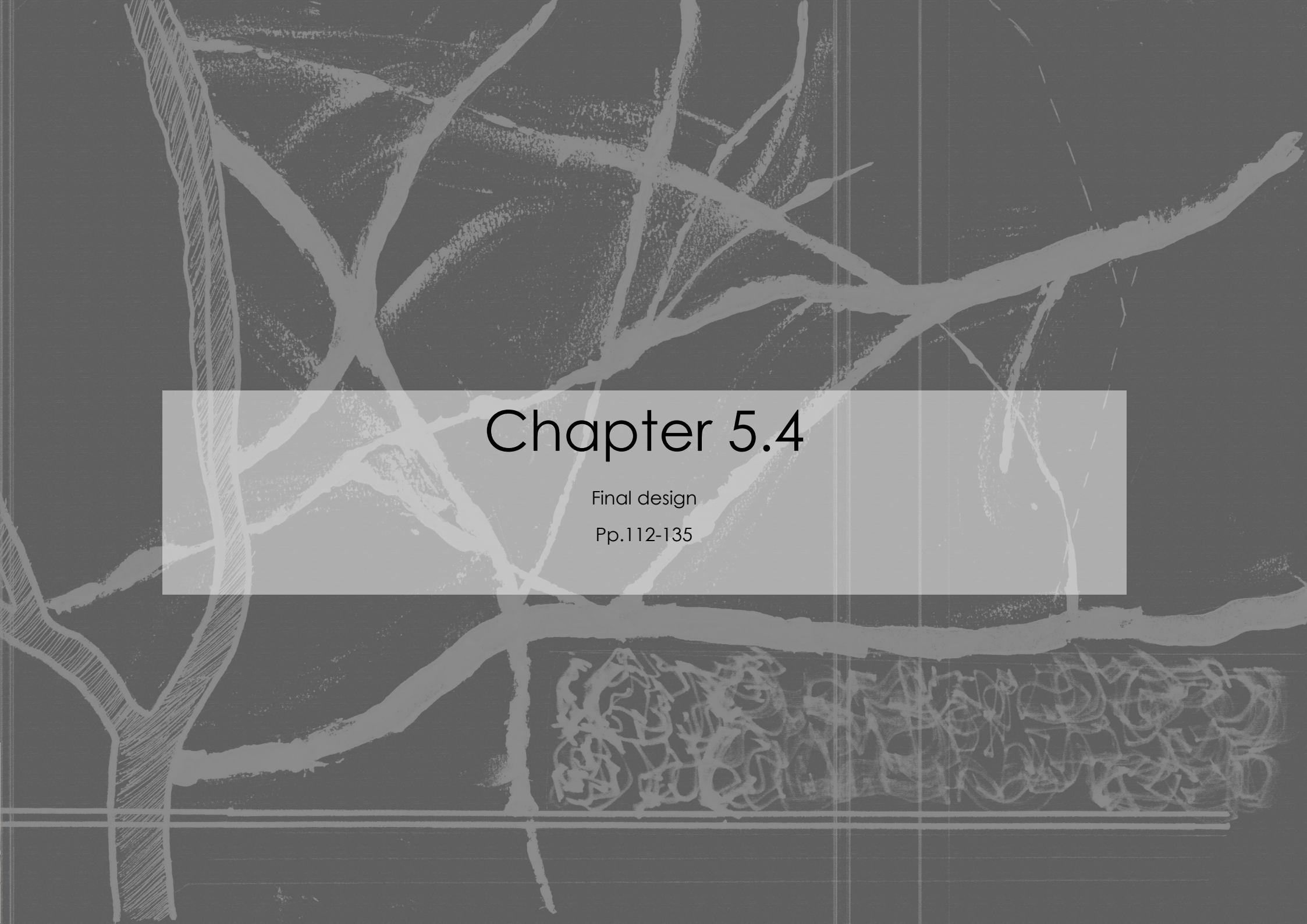


Fig 148: Walkway first person view (author, 2023)



Fig 149: Walkway elevation (author, 2023)



Chapter 5.4

Final design

Pp.112-135

Approaching the site



Fig 150: View of design from parking lot (author, 2023)

Site plan

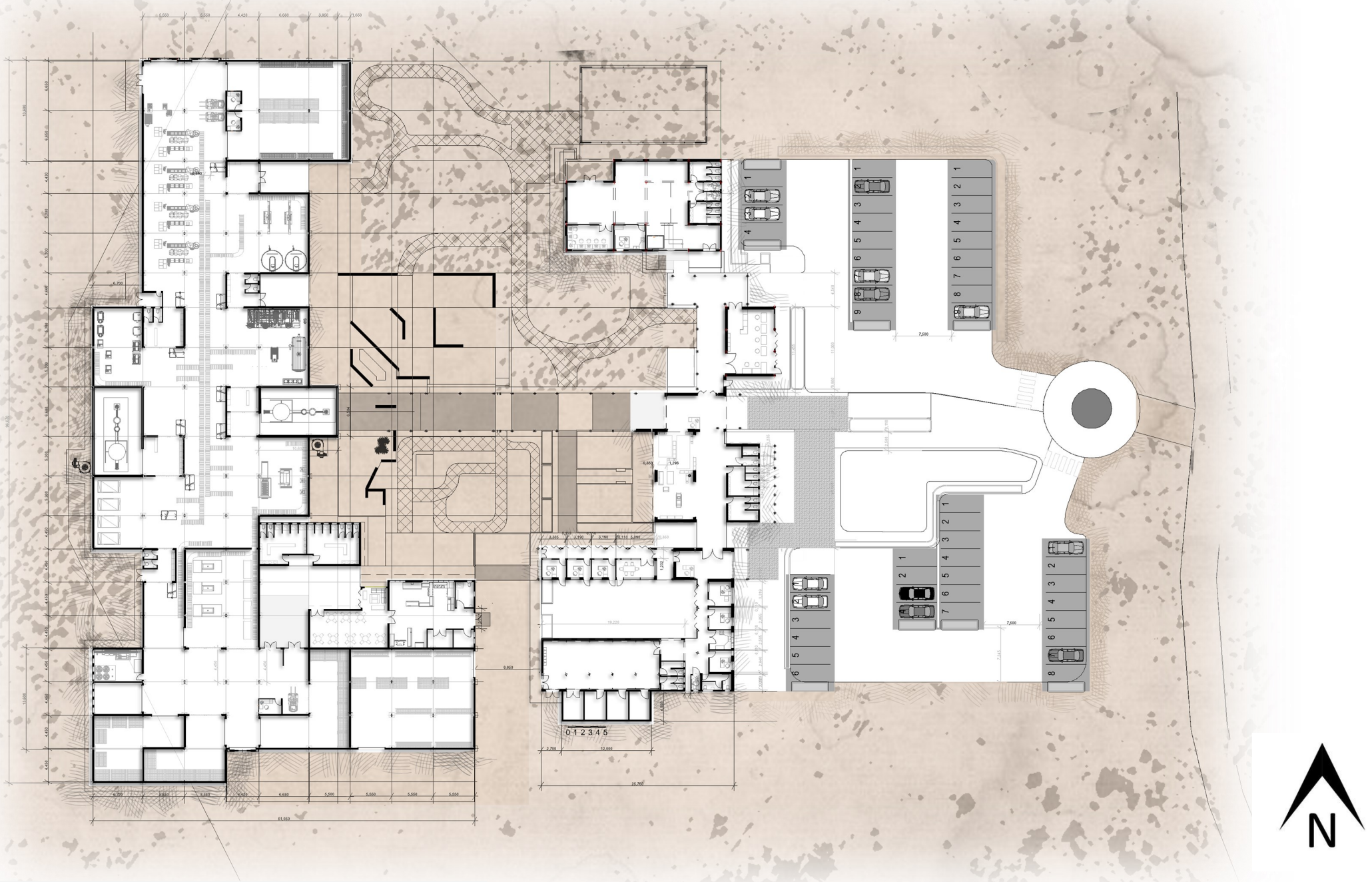


Fig 151: Site plan (author, 2023)

Ground Floor level 0 -500

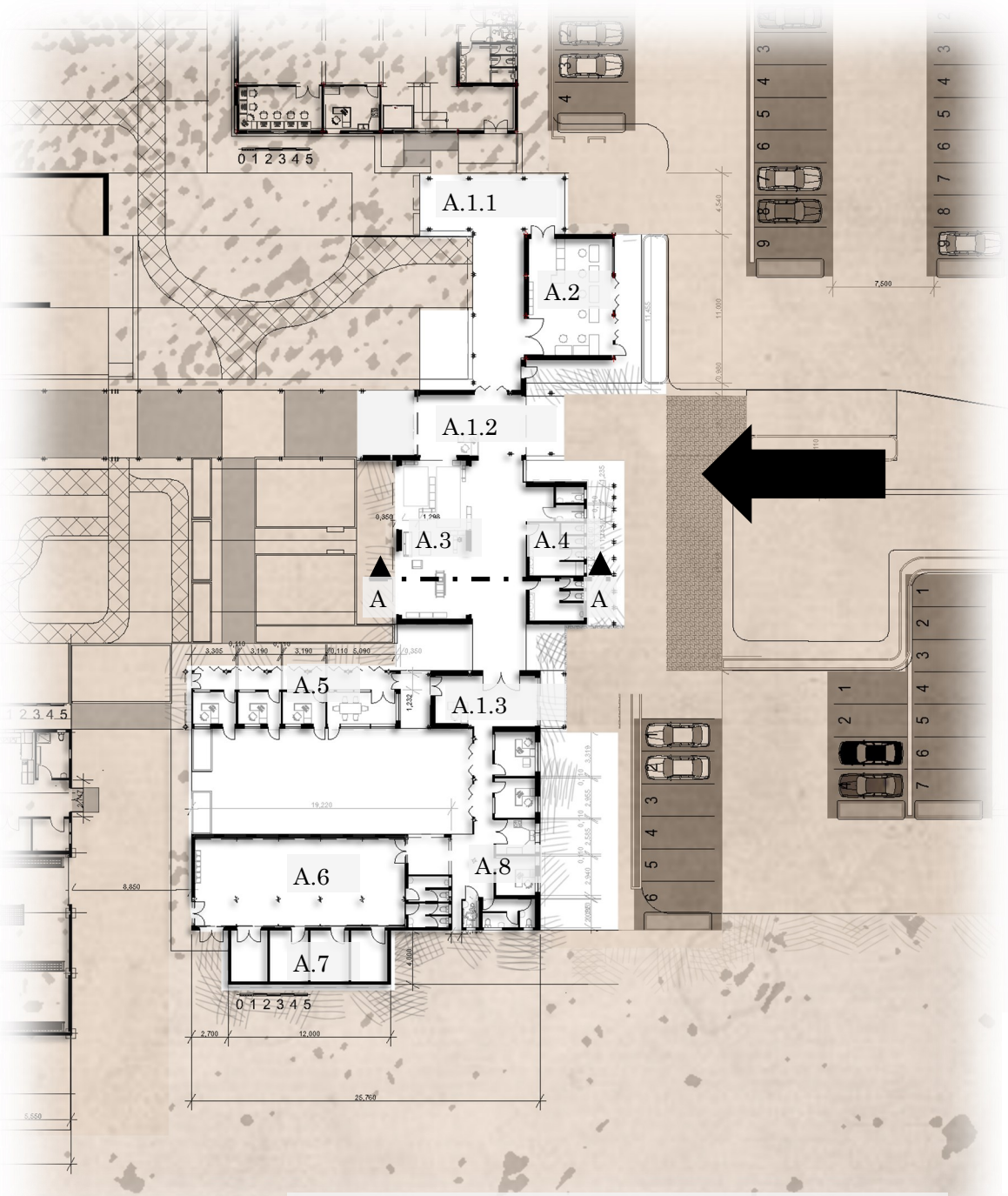
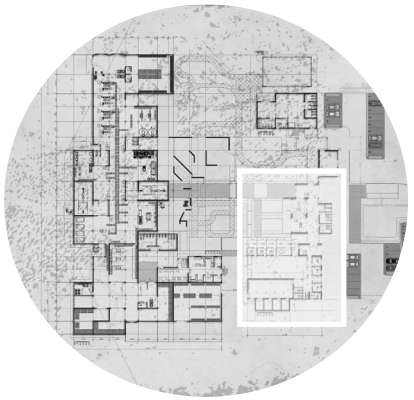


Fig 152: First floor plan (author, 2023)

Legend:

- **A.1.1: Multifunctional hall entrance**
- **A.1.2 Main entrance**
- **A.1.3 Research and manufacturing entrance**
- **A.2 Café**
- **A.3 Showroom**
- **A.4 Public ablution**
- **A.5 Retail and production offices**
- **A.6 Laboratory**
- **A.7 Utility rooms**
- **A.8 Lab offices and kitchenette**



Key Plan

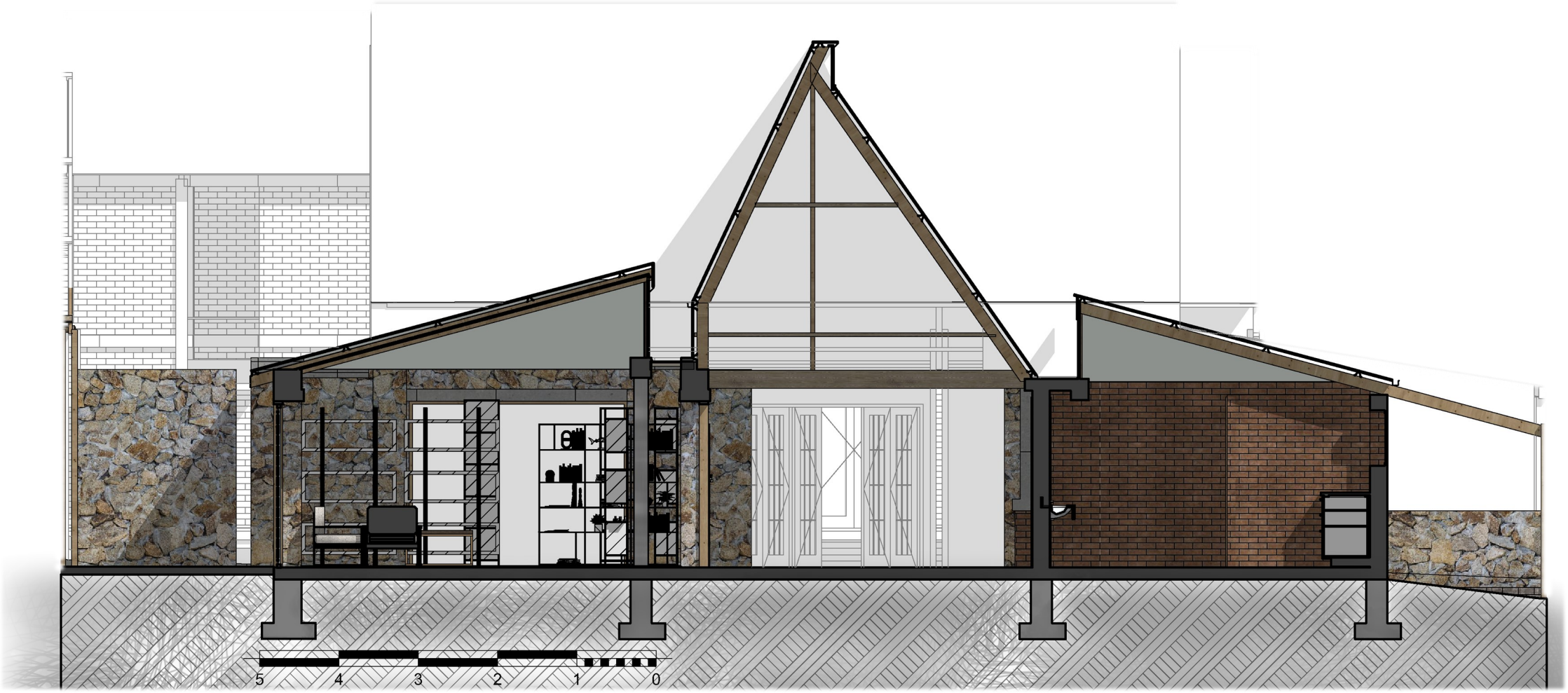


Entrance



Fig 153: Entrance render (author, 2023)

Section A-A



In this section one can see how the use of various reinterpreted typologies (A-frame and mono-pitched roof structures) were incorporated into the design to associate with the industrial language of the surrounding architecture. Further, local materials (Stone walls) were incorporated to create a harmony with the region (*Critical regionalism).*

The imperfections of the reinterpreted A-frame typology with its off centre connection points illustrate the division between the respective professions within the aloe Ferox industry. The mono pitched roofs and box gutters illustrate the action of reaching out and embracing the moment as a means to breach the separations (*metaphorical architecture).*

Fig 154: Section A-A cad drawing (author, 2023)

Hallway



Fig 155: Hallway render (author, 2023)

Ground Floor level 0

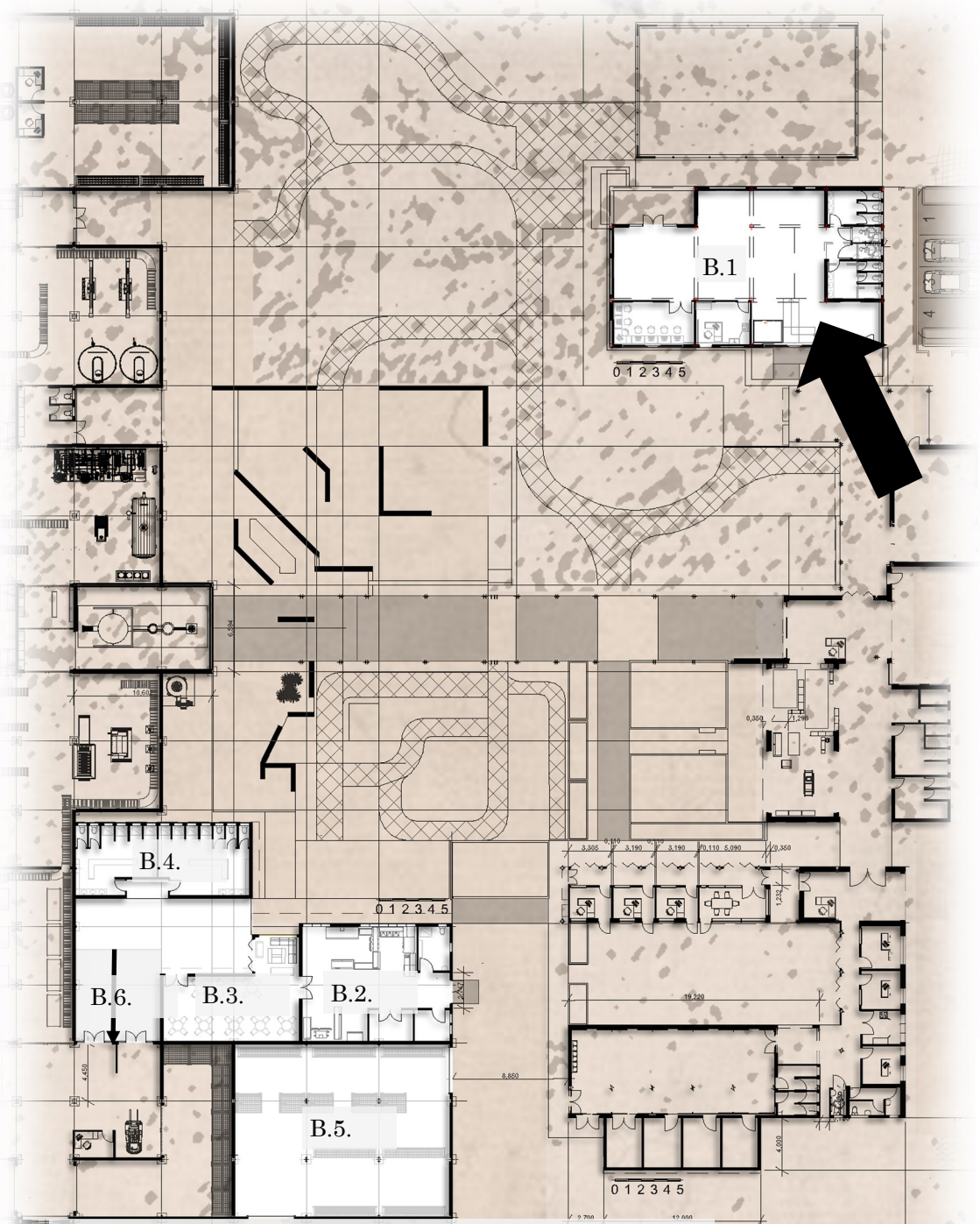
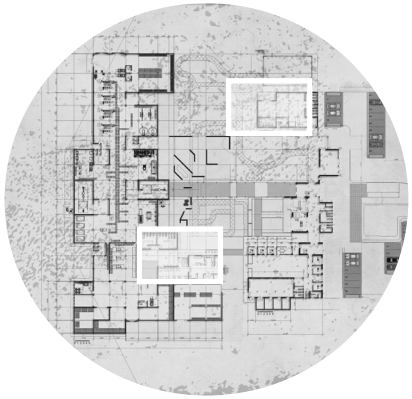


Fig 156: Ground floor plan level 0 (author, 2023)

Legend:

- B.1 Crèche
- B.2 Kitchen
- B.3 Cafeteria
- B.4 Factory ablution and showers
- B.5 Lab storage
- B.6 Factory entrance



Key Plan



Multifunctional hall



Fig 157: Multifunctional hall, proposed creche (author, 2023)

Ground Floor level 0 + 500

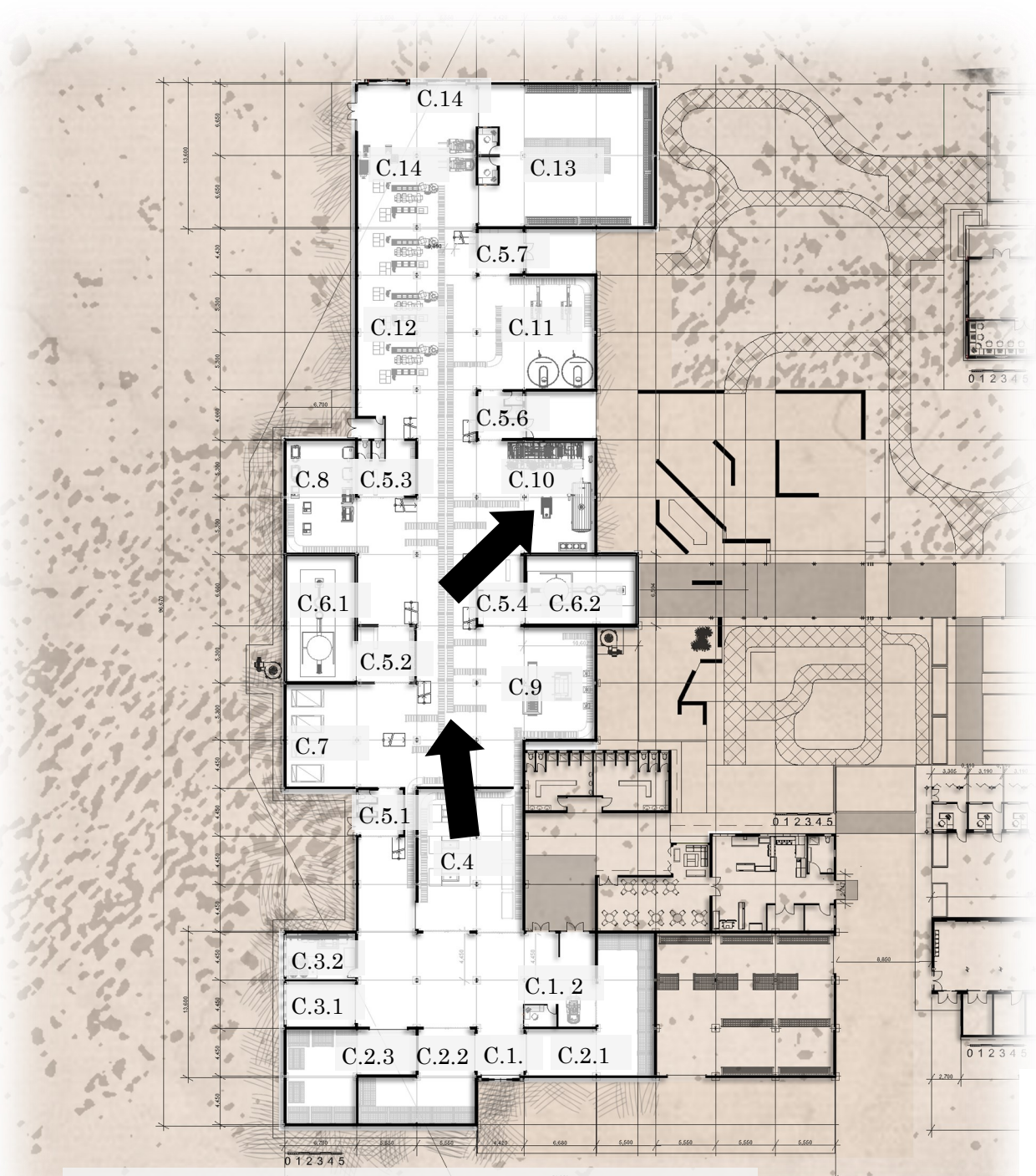
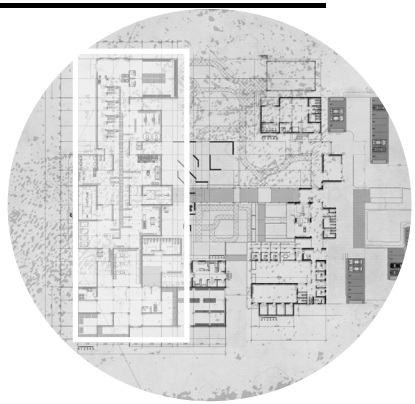


Fig 158: Factory layout (author, 2023)



Key Plan

Legend:

- **C.1 Receiving**
- **C.1.2 Forklift and supervisor**
- **C.2.1 Leaf storage**
- **C.2.2 Sap storage**
- **C.2.3 Quarantine**
- **C.3.1 Maintenance office**
- **C.3.2 Water purification**
- **C.4 Peeling and washing**
- **C.5 Sanitation areas**
- **C.6 Spray dryers**
- **C.7 Dehydration and filtration**
- **C.8 Bulk mixing and tablet press**
- **C.9 Crushing and milling**
- **C.10 Boiling and pasteurization**
- **C.11 Cooling and bottling**
- **C.12 Final packaging**
- **C.13 Storage**
- **C.14 Dispatch and forklift (s) station.**



Chapter 5.4:

Factory interior



Fig 159: Factory interiors (author, 2023)

Chapter 5.4:

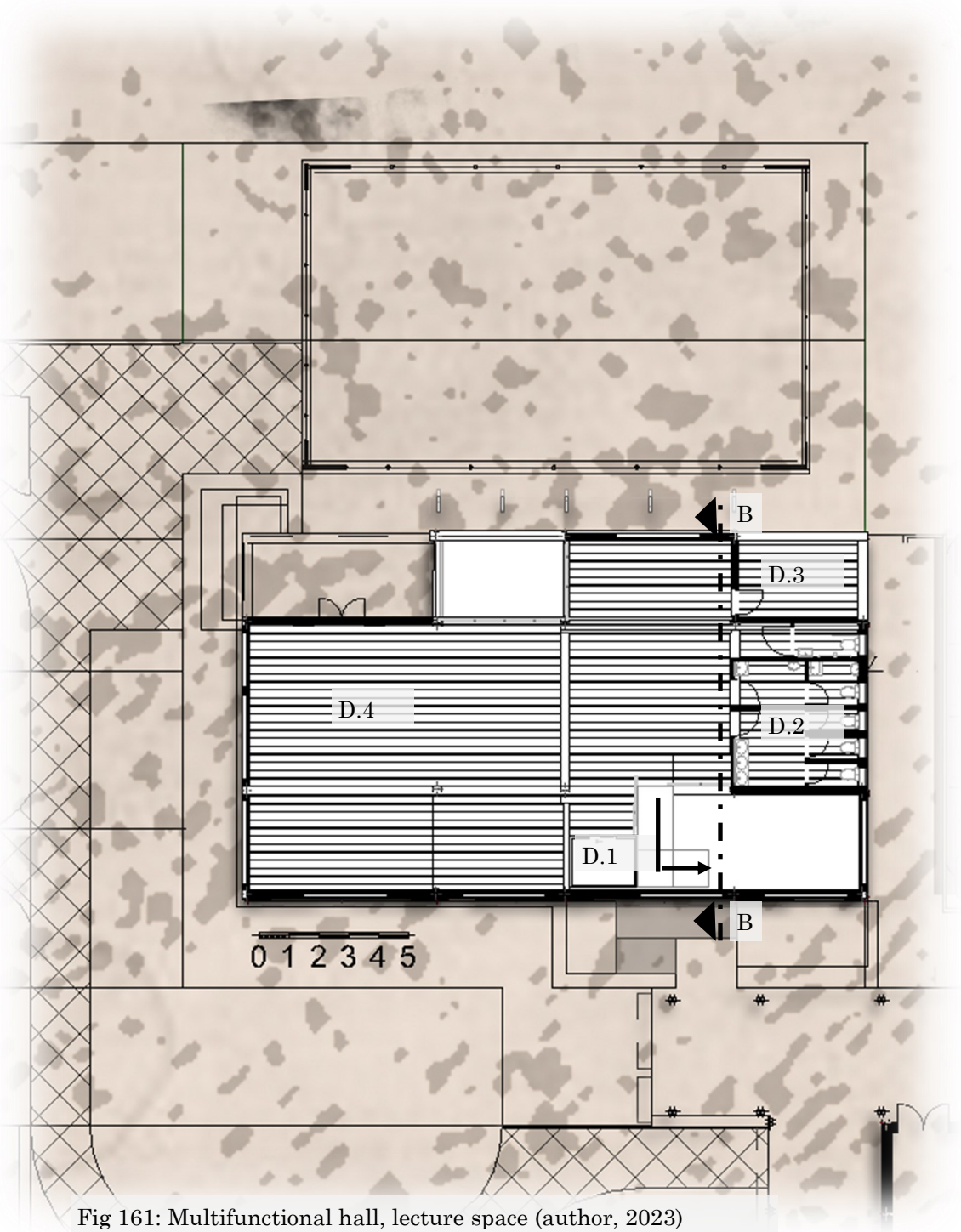


East elevation



Fig 160: East elevation (author, 2023)

First Floor level 0 + 2700



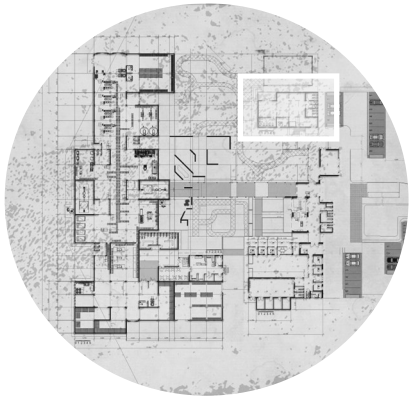
Legend:

D.1 Elevator

D.2 Ablution

D.3 Balcony

D.4 Lecture hall



Key Plan



Fig 161: Multifunctional hall, lecture space (author, 2023)

Section B-B

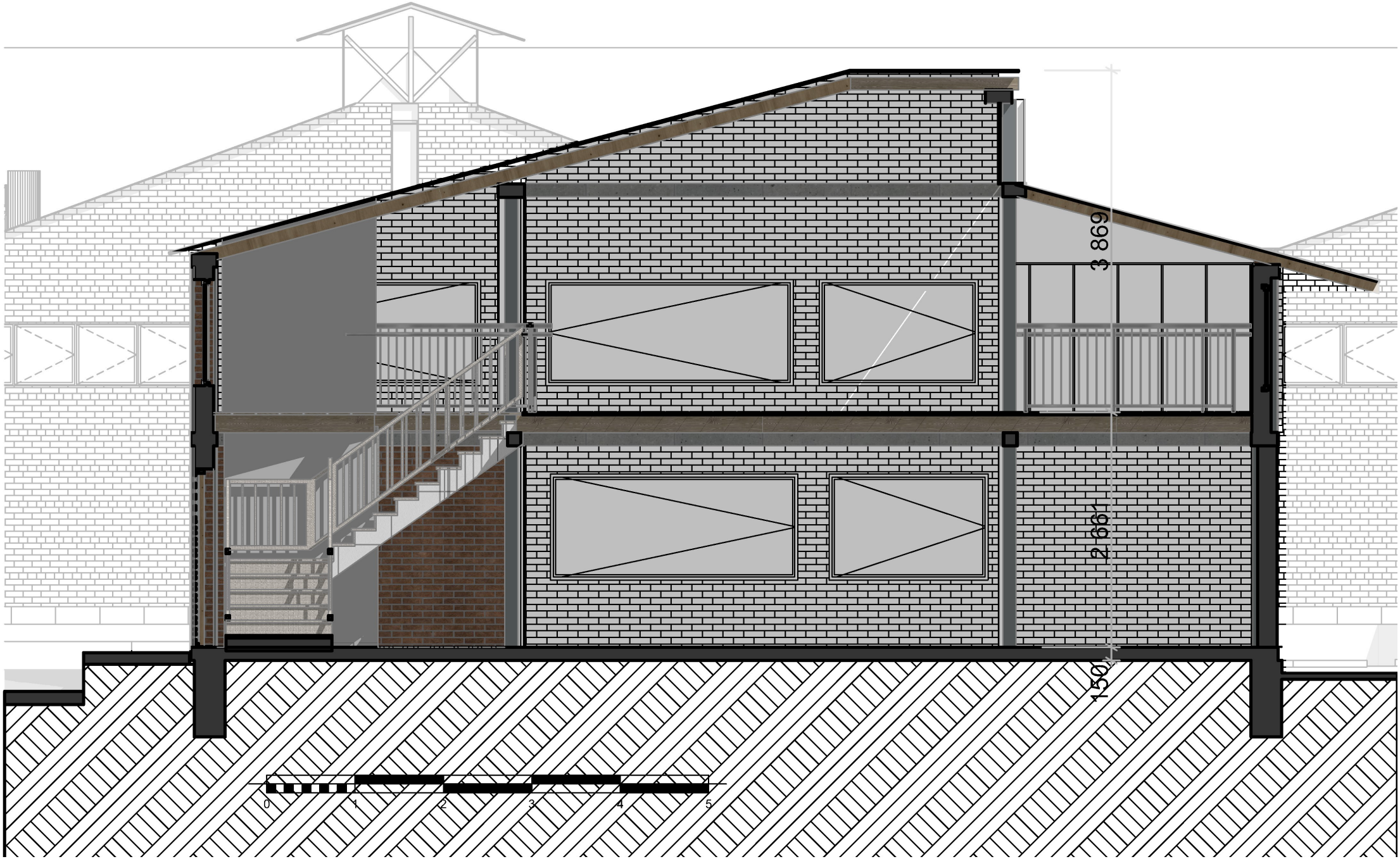


Fig 162: Section B-B (author, 2023)

Ground Floor level 0 + 500

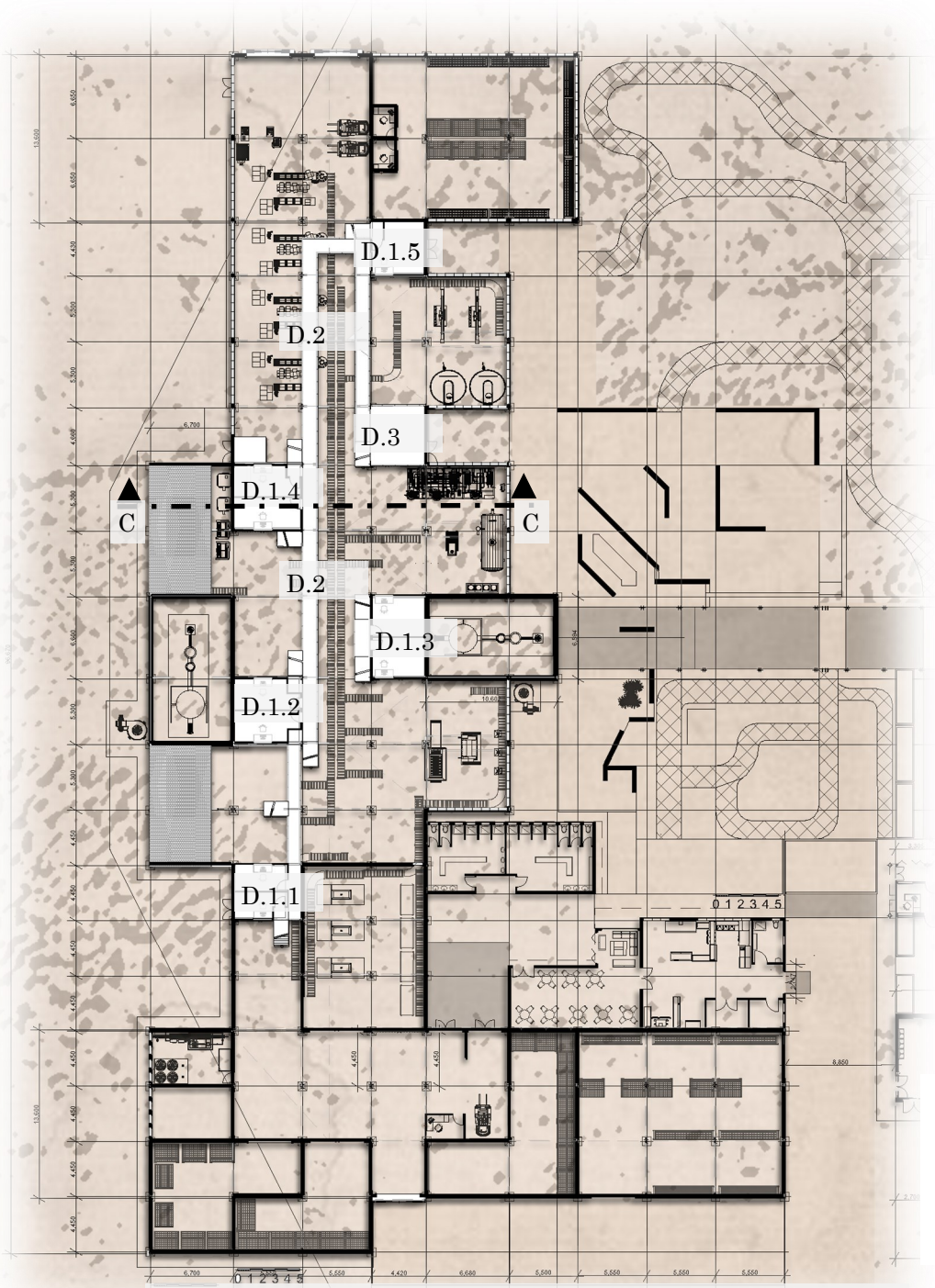
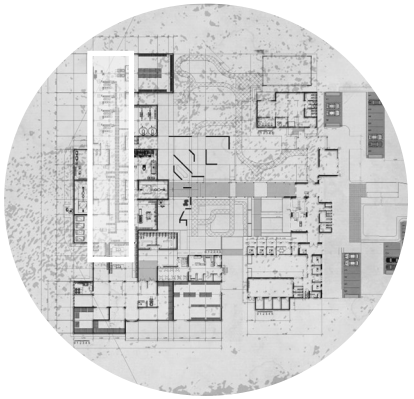


Fig 163: Supervisor offices (author, 2023)

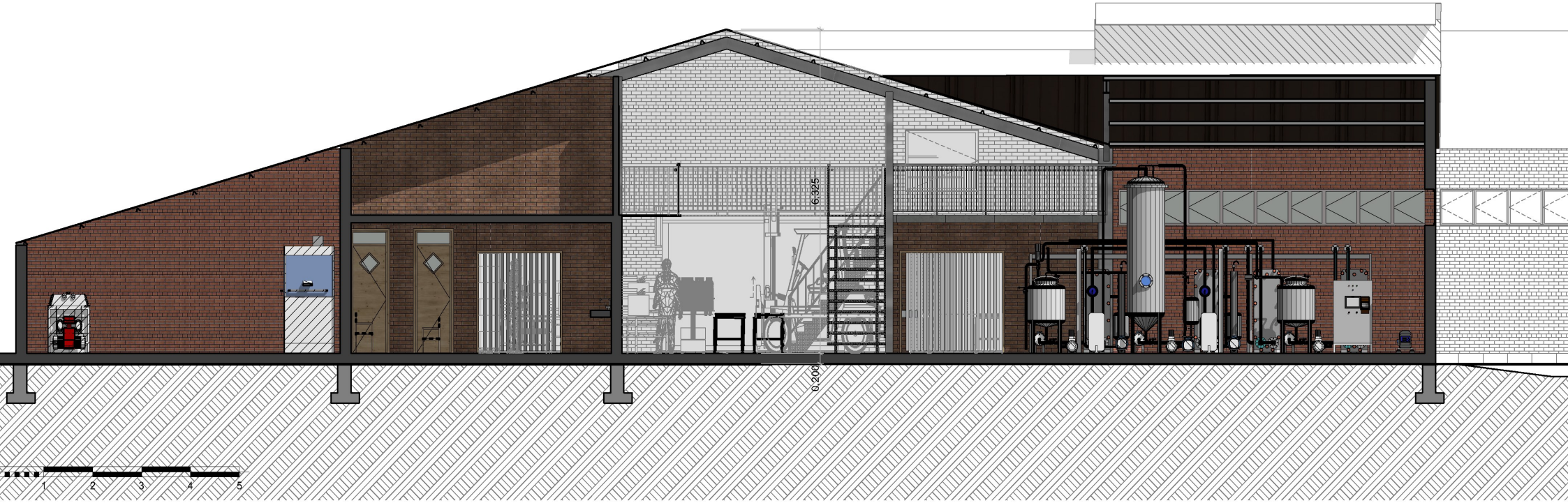
Legend:

- **D.1 Supervisor offices**
- **D.2 Gantry, accessibility to offices and duct system**
- **D.3 Supervisor gathering point, production viewpoint.**



Key Plan

Section C-C



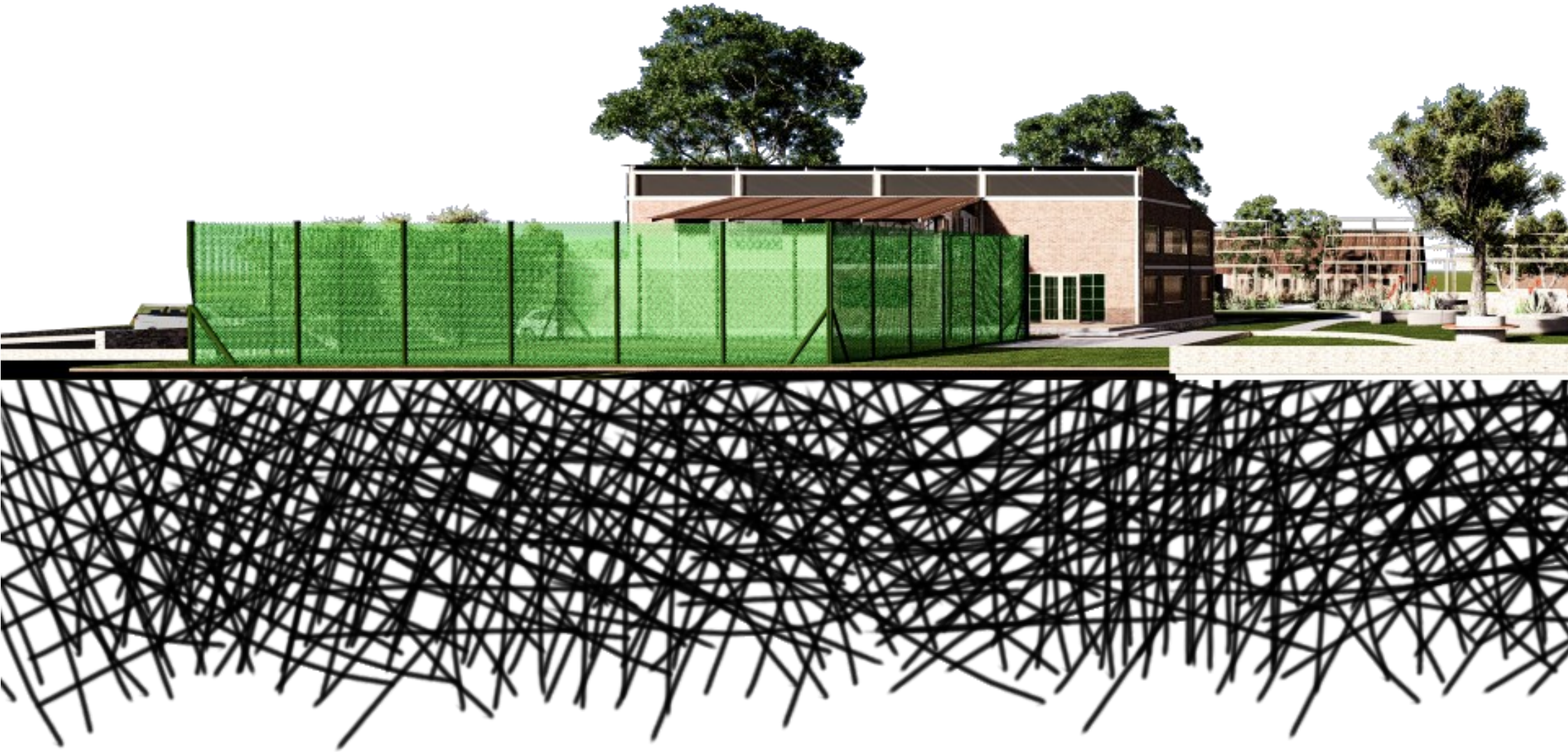
In section c-c one can see the defamiliarization of a shed typology with roofs protruding upwards. These protruding roofs were not only implemented to resonate with the mountains of the surrounding region, but also to accentuate the art or joy of making the aloe Ferox products.

Thus, it can also be seen on plan where specifically each sector of the wet produce, since its on the eastern façade where tourists and locals can metaphysically engage with the building, were designed with its own protruding roof to lay claim to the importance of the process.

Fig 164: Section C-C (author, 2023)

Final design:

North elevation



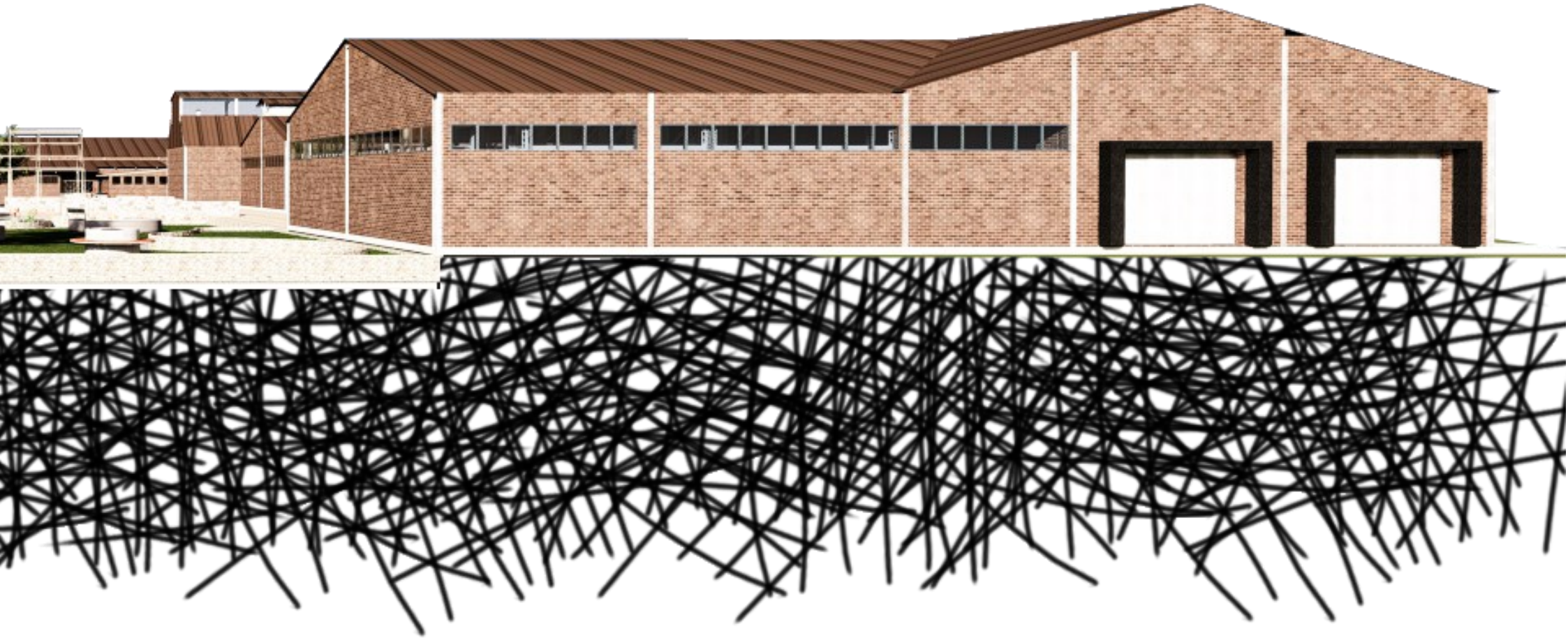


Fig 165: North elevation (author, 2023)

Final design:

View of Nature



Fig 166: View of nature from multi-functional hall (author, 2023)

Final design:

Visitors Seating



Fig 167: Seating area looking at the back western elevation of the show room (author, 2023)

Final design:

Staff's seating



Fig 168: Seating area for staff of laboratory and factory (author, 2023)

Final design:

Courtyard and Laboratory



Fig 169: Courtyard space next to laboratory (author, 2023)

Laboratory

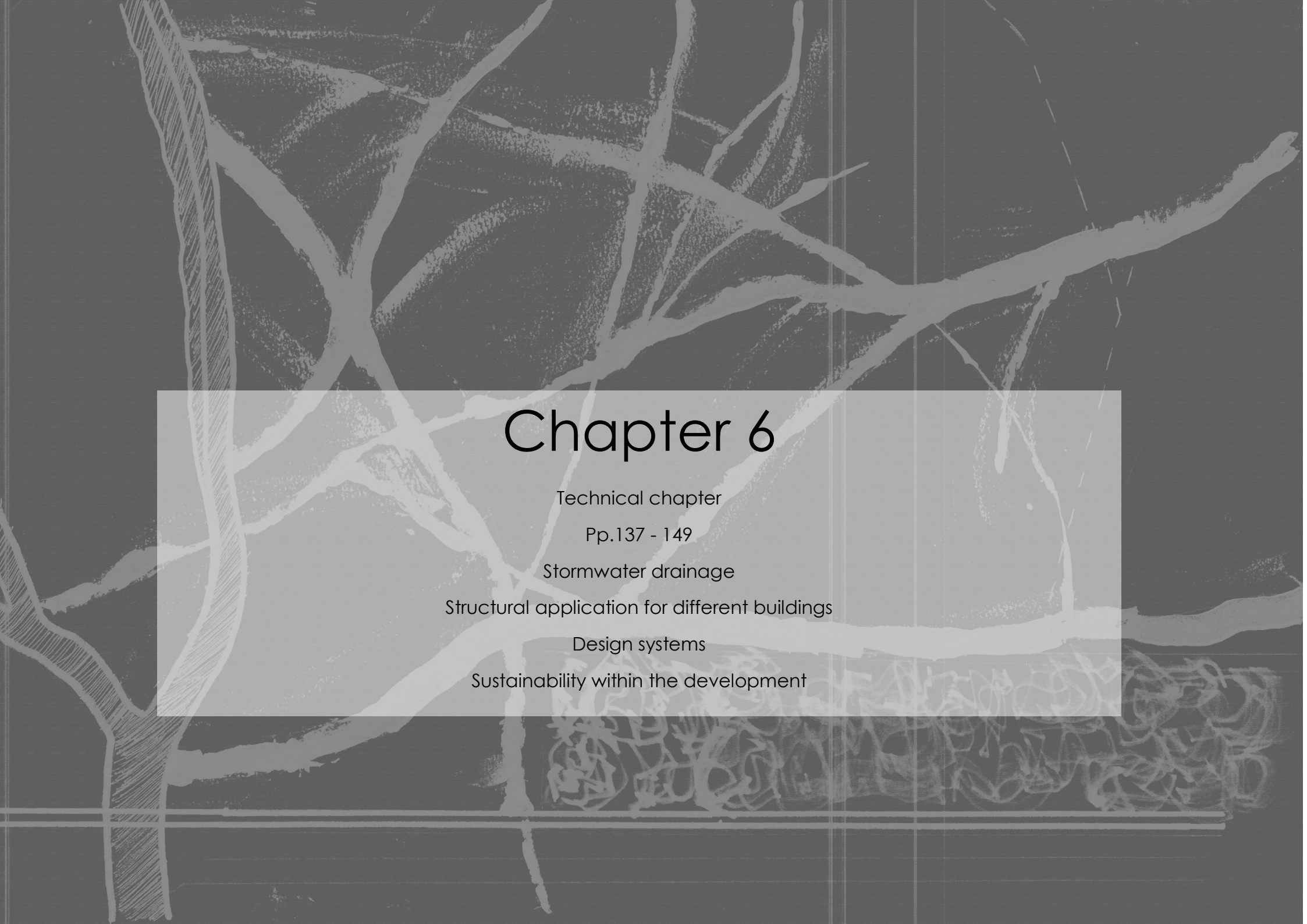


Fig 170: Laboratory incorporation of southern light (author, 2023)

The Showroom



Fig 171: Showroom a space for comfortability (author, 2023)



Chapter 6

Technical chapter

Pp.137 - 149

Stormwater drainage

Structural application for different buildings

Design systems

Sustainability within the development

Technical chapter: Stormwater drainage

From the western edge to the eastern edge, the site contains a gentle slope of 1,5 meters over a span of about 90 meters. Where, a steeper slope can be experienced on the western and northern flanks of the site.

This tends to create a water collection zone on the South- East section of the site.

Thus, the challenge to be addressed would be how to ensure efficient stormwater drainage and deviation through architectural interventions such as landscaping, efficient use of gardens and duct systems.

Stormwater is defined as rain/or other forms precipitation which isn't absorbed by the ground. Stormwater is usually caused by the development of land where natural vegetation is removed and when the site experiences topographical changes (BuildingGreen, 1994: online).

Poor management of storm water can cause various problems, such as erosion, flooding, and pollution (BuildingGreen, 1994: online). Thus, it is of critical importance to correctly approach stormwater management in a project such as this, where the site itself has been deforested (see site analysis) with few to no vegetation except the common scrubs and bushes dispersed gingerly across it.

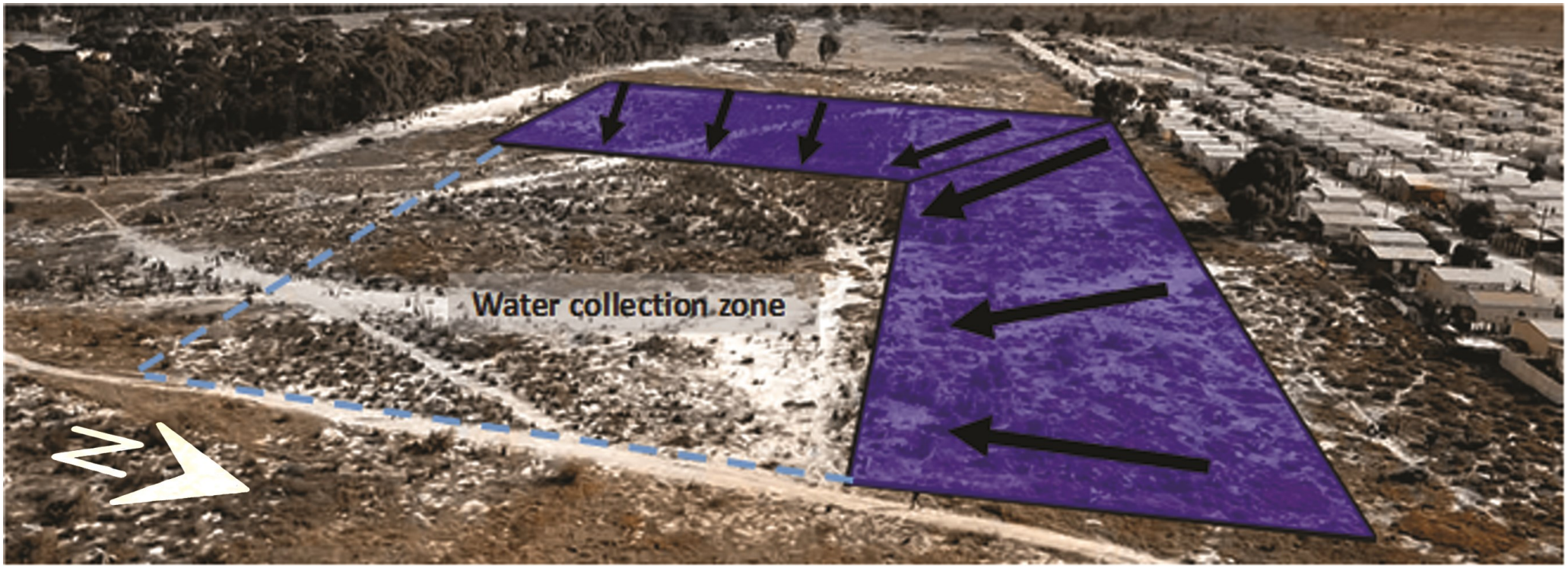


Fig 172: Illustration of water collection zone (author, 2023)

Possible Approaches:

Possible approaches provided by BuildingGreen.com were researched, chosen and implemented for solving the potential stormwater problem on site. These approaches were:

- **Minimal use of impervious materials, such as concrete slabs (Fig 173)**

With reference to the floorplan, one can deduct that the factory was separated from the rest of the developments to allow for vegetative interventions via landscaping in the garden and courtyard spaces.

- **Installation of rainwater collection gutters and tanks (Fig 174)**

The installation of rainwater collection gutters will be implemented within and around the factory design, since the factory has the largest roof span. These gutters will then direct water to the collection tanks.

- **Porous paving within the landscaped areas (Fig 175)**

The use of porous paving within the landscape will be utilized onto the walkways in the various allocated spaces to allow for water filtration into the surrounding vegetation.

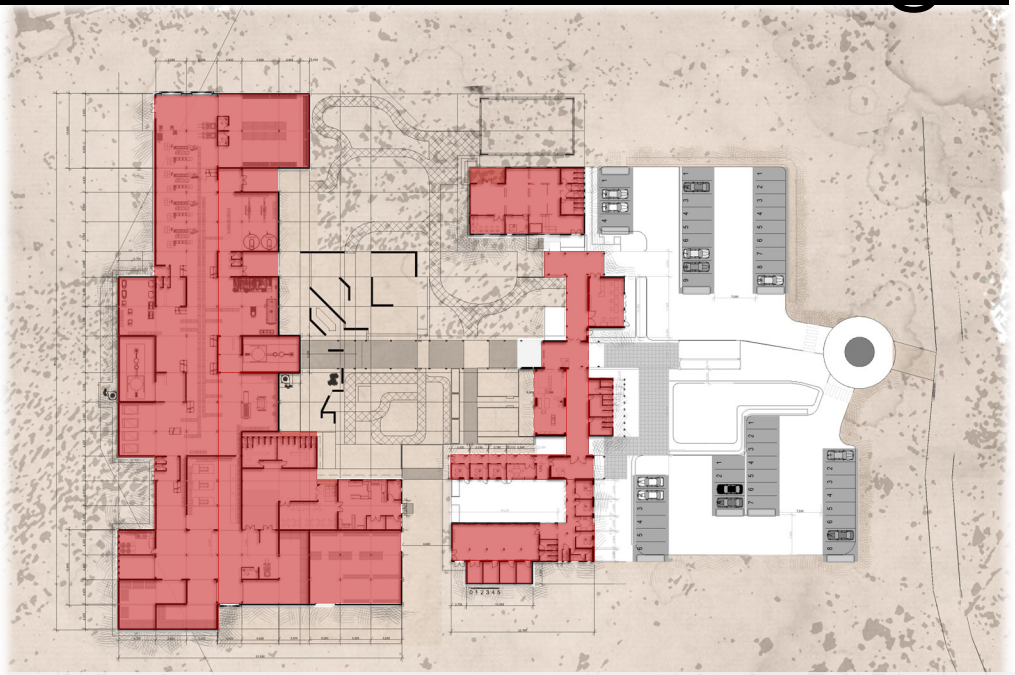


Fig 173: Diagram of separation of factory from the rest of the development (author, 2023)

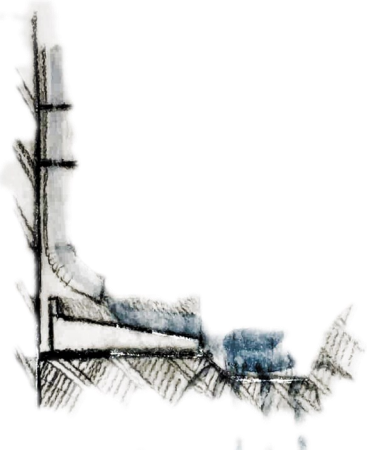


Fig 174: Drawing of rain water collection gutters filtering to a water collection trench (author, 2023)

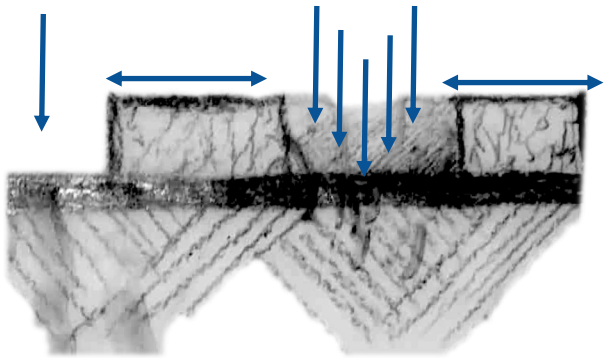


Fig 175: Drawing of porous paving allowing water to filtrate through it (author, 2023)

• Plantation of vegetation indigenous to the area and low maintenance landscaping (Fig 176)

The aloe garden will not only consist of the Aloe Ferox plant, but rather plantation strategies will also be composed of various plants within the garden that can be found within the veld in the South Cape region, such as the local fynbos, Aloe Arborescence succulents etc. Furthermore, the plants will also be planted in a way to compliment their symbiotic relationships i.e., the Aloe Ferox and "Karoo bos" relationship.



Fig 176: Photographs of indigenous plant life of the surrounding area (author, 2023)

• Minimal slope modifications

As stated previously, the site contains a gentle slope of roughly 1,5m from its western to eastern edge. Thus, the various developments were stepped in 500mm to ensure as little as possible natural slope adaptations.

• Infiltration trenches surrounding large built areas. (Fig 177)

Infiltration trenches function as large natural ducts which captures excessive runoff water and allows it to gradually filter into the natural ground. They're usually composed of filtration fabric which is covered with soil and gravel or small stones, which can additionally be topped off with planted grass (author unknown, 1994: online). Regarding this development the infiltration trenches will be implemented around the surrounding the roads and parking areas to avoid excessive stormwater run-off and collection.

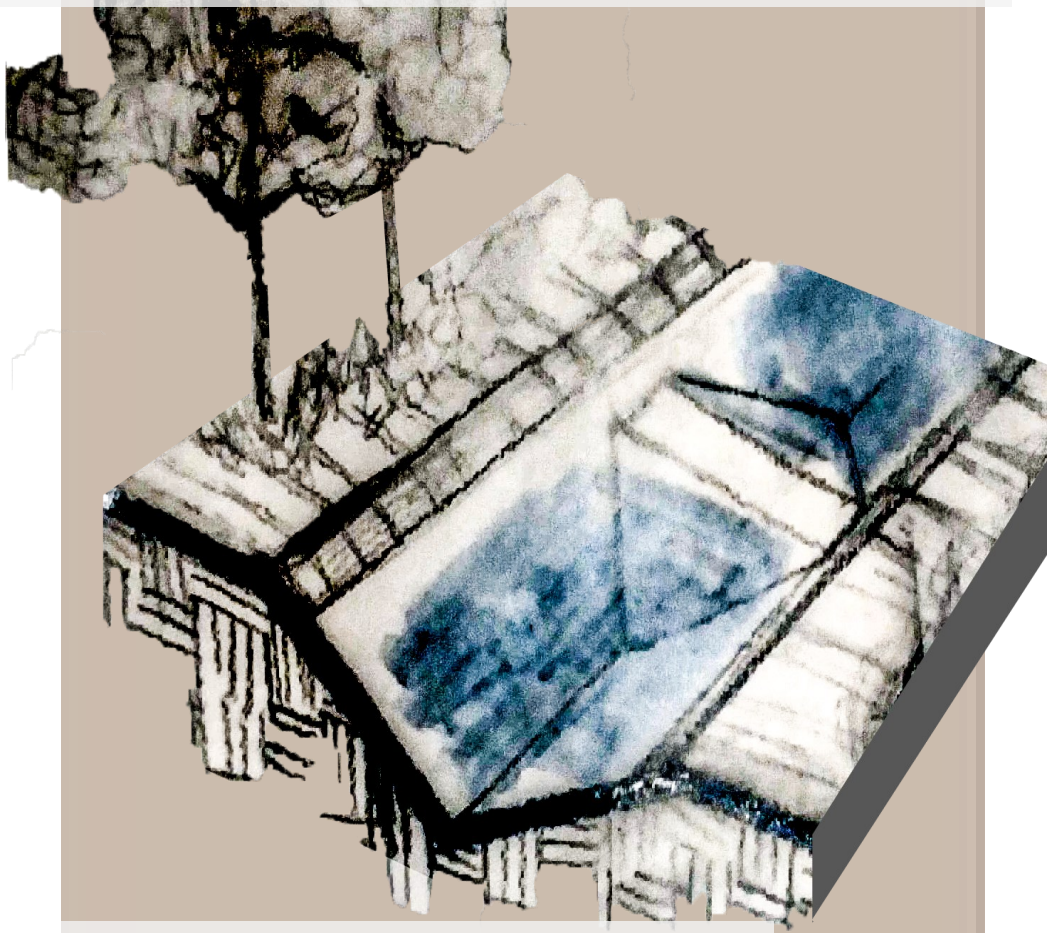


Fig 177: Drawing of infiltration trenches (author, 2023)

Structural application

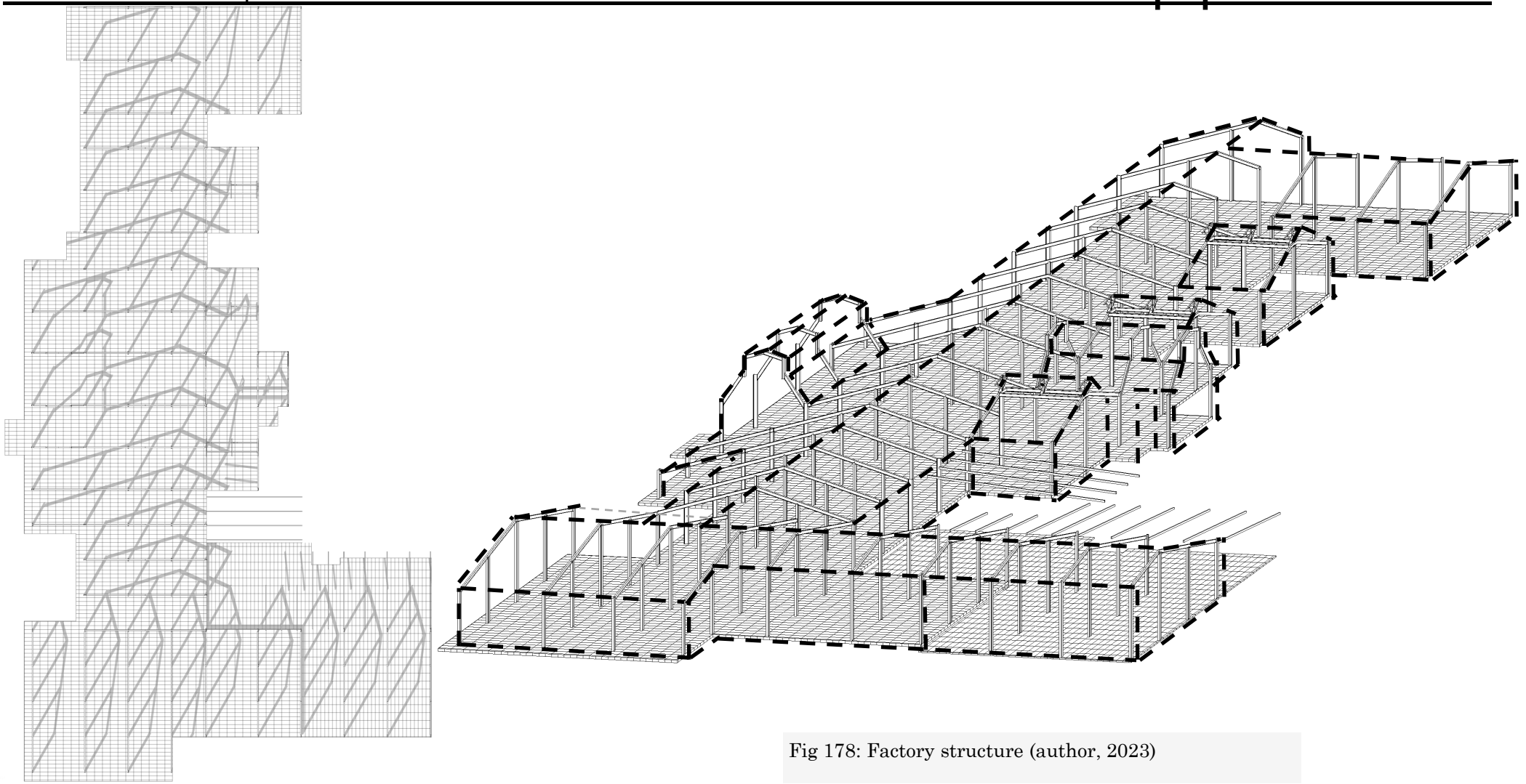


Fig 178: Factory structure (author, 2023)

The factory consist of various steel portal frame structures with brick infill connected with each other spaced according to the integrity of the material and functions of spaces.

The reasoning for this being that it is a very common type of structure within the industrial setting and easy to construct.

Further, for most of the composition of the factory's design, the roof structure has to span over large floor areas without support, may it be for storage space, areas where large machinery operate or to create a continuous flow within the production setup.

Medicinal Research:

The medicinal research laboratory also consists of a portal frame structure with 100mm - fire retardant- insulating panels infill, in order to correlate with the factory's structure.

The reason for this being, firstly, to accommodate the need to adhere to the strict hygiene and safety regulations of the vocation, and secondly, to enable the users of the development to make a connection between the types of spaces and their structural typologies.

These associations can be made as such:

- Private spaces: Unbraced - Portal frames with infill.
- Semi private: Braced - Timber frame structures with concrete ring beam.
- Semi public: concrete frame.
- Public: Timber roof truss structure



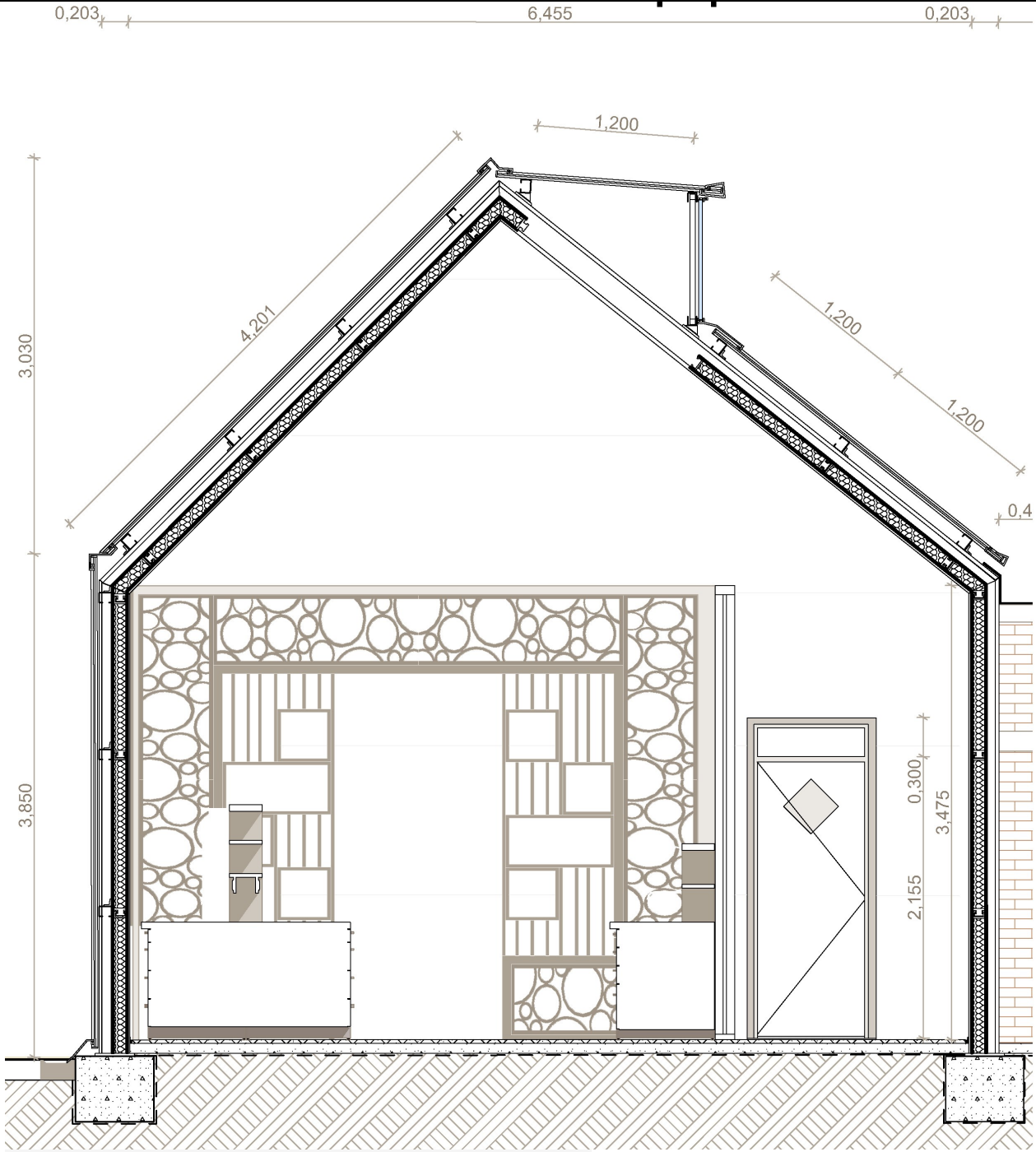


Fig 179: Laboratory structure (author, 2023)

Structural application

Retail:

The retail and reception composes a custom made exposed A-frame-like truss structure which are accentuated within the entrances and hallway structures.

These trusses are connected to wooden columns spaced at roughly 3 metre increments.

The use of timber for the majority of the public structures were motivated by the theories of place-attachment and metaphorical architecture, since timber is widely used in the construction industry of that region and the joinery associated with this structural application provides ample opportunity for extensive metaphysical engagement (see theory chapter).

Multi-functional hall:

The multi-functional hall comprise a concrete column and beam structure for the purpose of creating flexible spaces such as the lecture hall on the first floor and the creche on ground floor

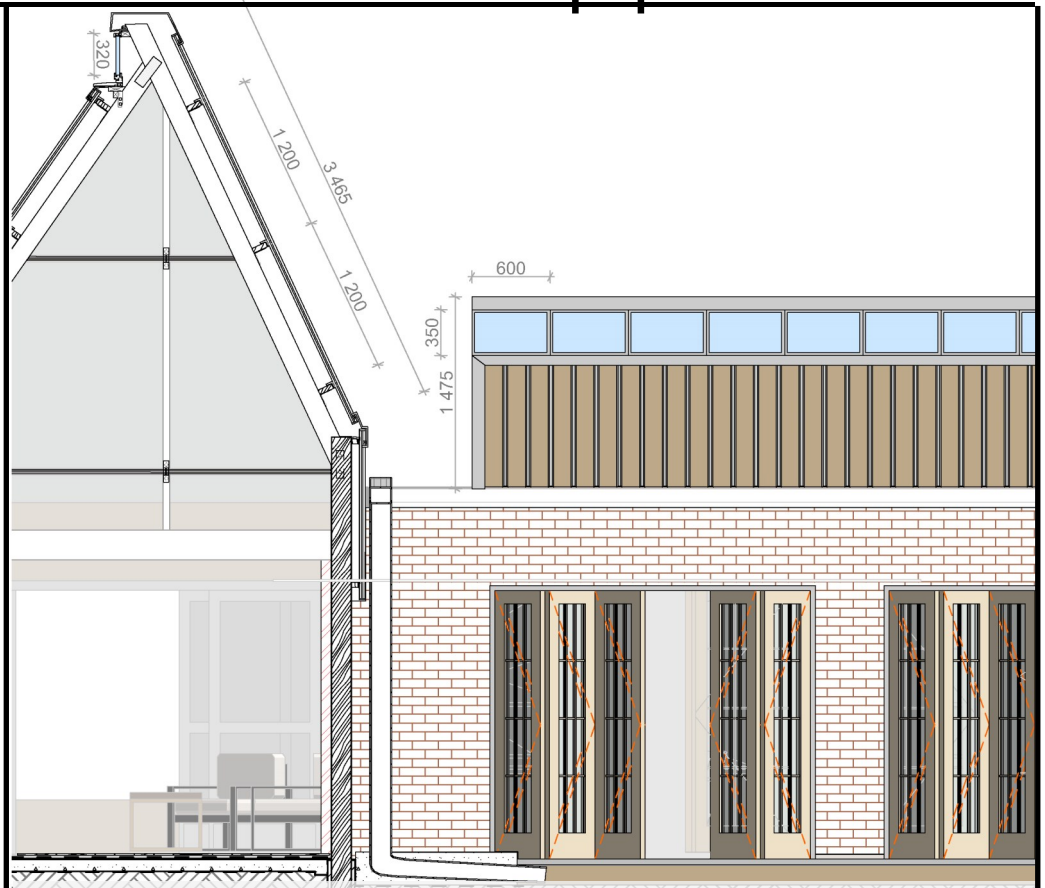


Fig 180: Reception structure connecting with office spaces (author, 2023)

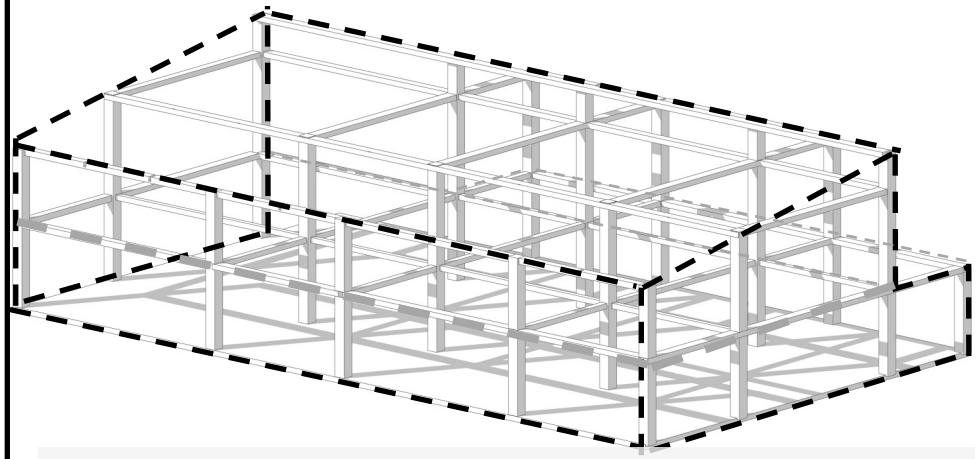


Fig 181: Multifunctional- hall structural grid (author, 2023)

HVAC:

An HVAC system, at its most basic, draws air in, cools or warms it, and then blows it into an enclosed room. HVAC systems are made to move air while also heating or cooling an indoor environment. The three main components of these systems are typically a heating unit, a cooling unit, and air ducts. Through air cleaners that remove germs, spores, and virus-sized particles, HVAC devices can help regulate humidity levels and enhance air quality (Bitler, 2023: online).

The decision was made to incorporate an HVAC system into the factory design since its function is the production of medicinal Aloe Ferox products, where hygiene is a non-negotiable and cross contamination must be avoided throughout each section of the production process.

For the purposes of this development, it was decided that a larger industrial HVAC unit would be situated in an allocated space on the factory ground floor, since there is ample space provided. The only exception to the system would be the spray dryer booths which would have their own smaller HVAC units mounted on the roofs to correctly function alongside the dust extraction units.

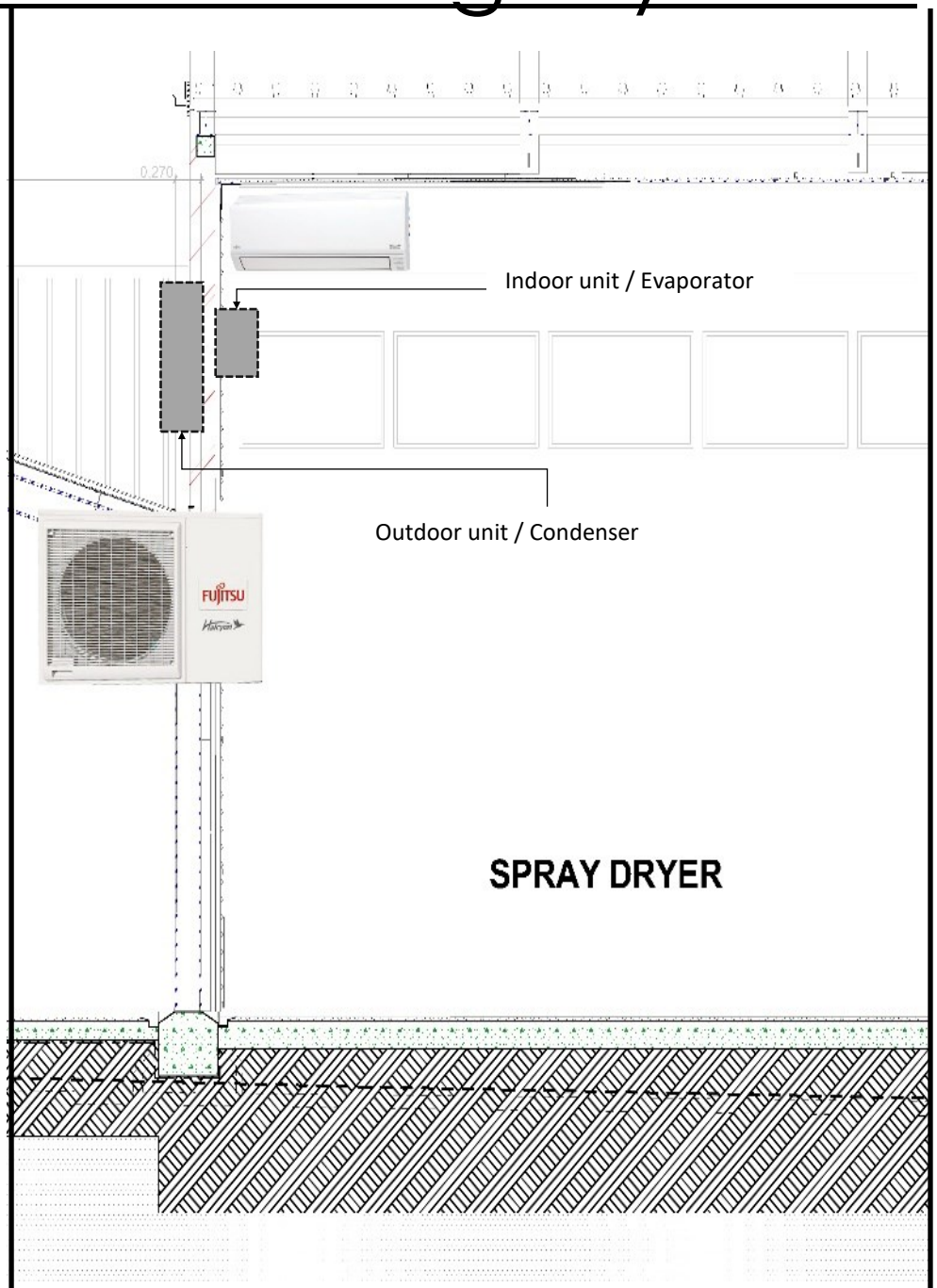


Fig 182: Personal HVAC for spray dryer (author, 2023)

It was decided that for the aims of this project, an overall packaged HVAC system will be used for the factory and a ducted mini-split system for the spray dryer booths, since it tends to become uncomfortably hot within the booths.

Packaged System:

A packaged system contains the traditional components of a split system, but all units are housed outside. Packaged systems are quieter, since everything is located outside, and have lower installation costs because there's only one unit to install (Bitler, 2023: online). Furthermore, it maximises the system's use of the available square footage and reduces energy costs, improves climate control, saves space, and is suitable for commercial, warehouse or factory usage (AFGO, 2022: online).

Ducted Mini-Split System

A ducted mini-split system moves air from an exterior compressor and condenser into a room using tubes rather than bigger ducts. Areas with limited space for conventional ductwork benefit most from this arrangement. Better air circulation is a benefit of ducted mini-split systems over their ductless counterparts (Bitler, 2023: online).

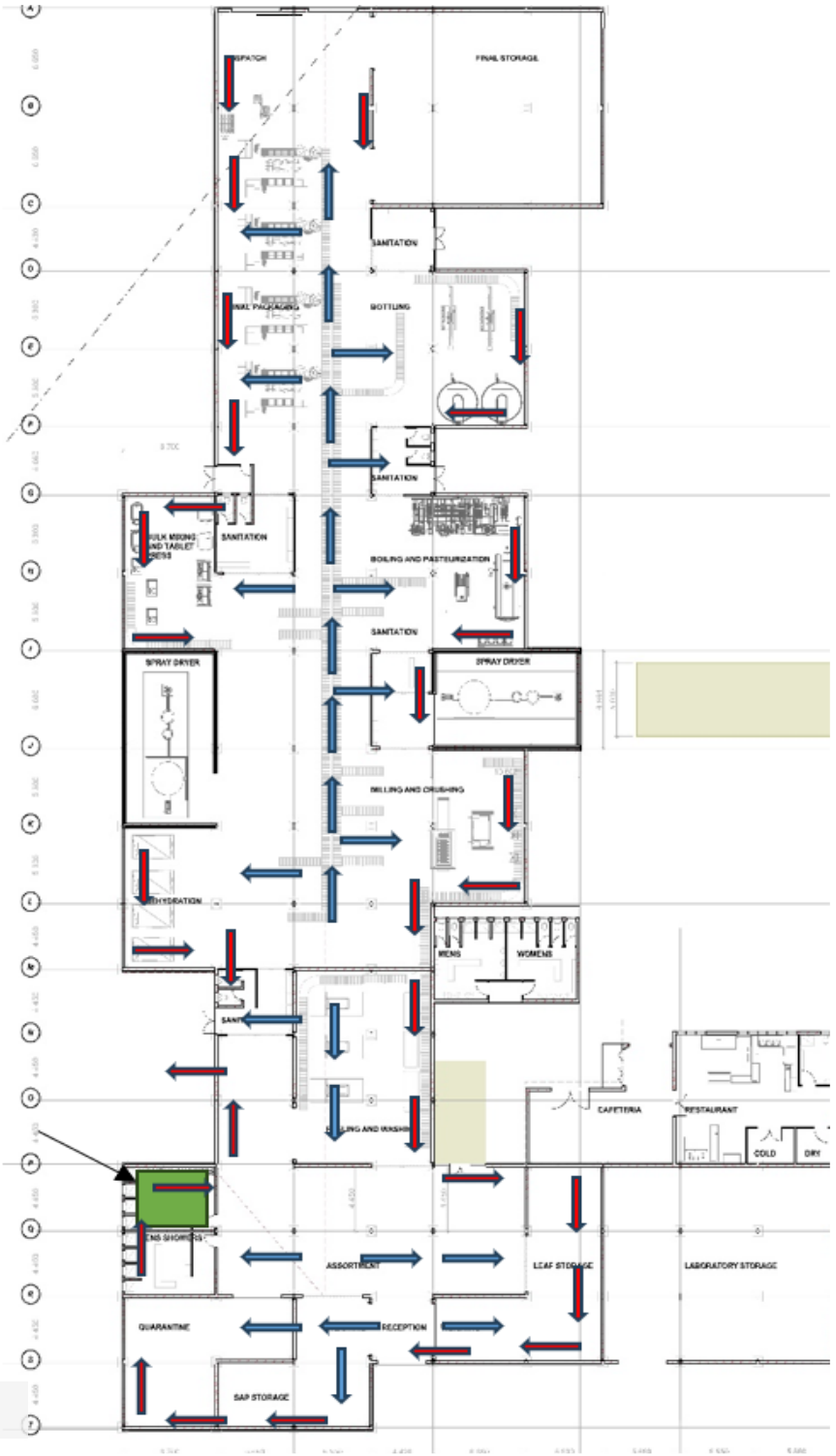


Fig 183: Packaged system HVAC for factory (author, 2023)

Dust extraction:

Within a spray dryer booth, the dust particles in the air are so fine and densely compacted that one's throat tends to dry or clog up, creating sub-par breathing circumstances. Thus, the booths should contain dust extraction units which would be individually installed.

An industrial dust extraction system is used in manufacturing plants, factories, foundries, and similar facilities to capture and collect dust, airborne pollutants, and particulate matter generated during production processes. Additionally, dust extraction systems are made to filter dangerous gases, flammable dust, and particulates that could endanger the health of workers, harm the environment, or result in an explosion or deflagration in the workplace (CPEF, 2023: online).

In industrial production contexts, two main types of dust extraction devices are typically used. These methods are, dry compatibility design and a moist compatibility design.

The former primarily comprises various dust-collecting fabric filtering devices. In contrast, the latter uses water and air pressure to "scrub" dust particles before collecting them. The two systems differ from one another, with one technique extracting dry dust and the other sticky, wet, or hygroscopic dust. (CPEF, 2023: online).

For the function of the factory, a dry dust collection system was deemed necessary since both the wet and dry production lines' spray dryers produce dry dust particles. If some dust is still left behind it will be removed during the sanitation process where the water used for the cleaning will filtrate via the gutters to the purification unit.

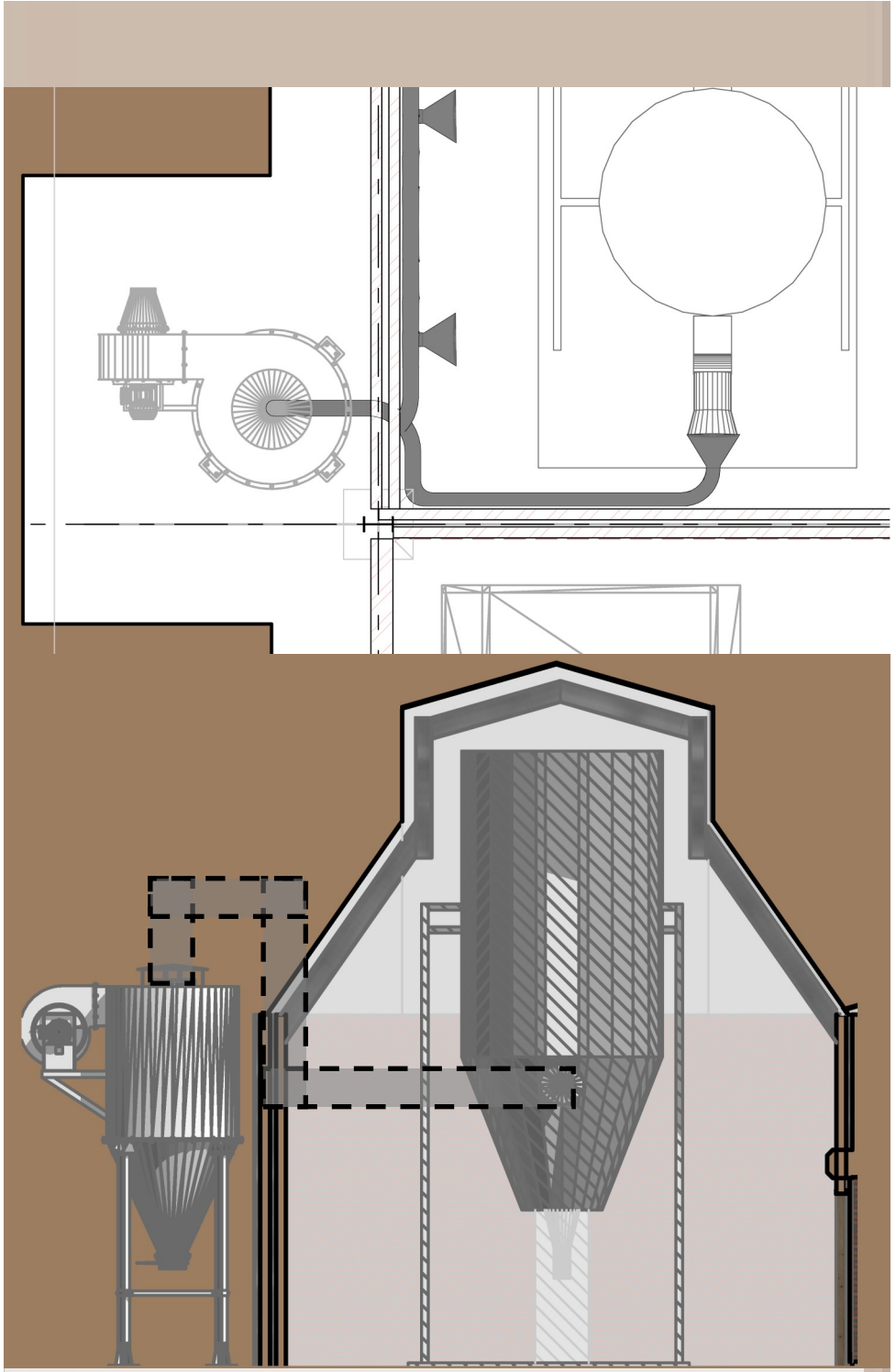


Fig 184: Dust extraction on plan and section (author, 2023)

Water purification system:

Water used in the manufacturing of pharmaceutical products must adhere to a strict hygienic criterion (NGK-insulators, n/d: online).

The use of water purification systems is very important to ensure that the water is suitable for its use within the production process.

Large amounts of water at high flow rates are often treated using industrial water purification systems. The number of impurities in the raw water and the level of purity needed for the process will determine much of the type of water purification equipment used in the system (WaterProfessionals, 2018: online).

Reverse osmosis, carbon filtration, aerobic/anaerobic treatment, and other techniques are used in pharmaceutical manufacturing facilities to treat wastewater. These are necessary for the discharge, recycling, and reuse of water (Pharmaceutical-Technology, 2023: online).

> "Various processes and technologies are adopted in the pharmaceutical industry for wastewater treatment. These include preliminary treatment, aeration, neutralisation, flocculation and coagulation, biological degradation, filtration, and recycling." (Pharmaceutical-Technology, 2023: online).

The following processes were gathered from the WaterProfessionals, eGuide to Industrial Water Purification Systems and were deemed relevant for the project at hand.

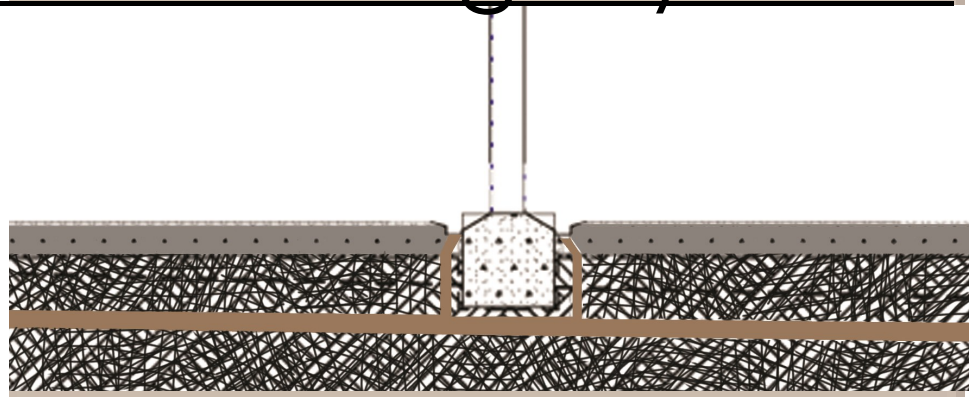


Fig 185: Water filtration gutters built into factory (author, 2023)



Fig 186: Water purification render (author, 2023)

Reverse osmosis:

Systems for reverse osmosis use a high input pressure on the ‘contaminated side’ (side with high mineral content) of a semi-permeable membrane to counteract natural osmotic pressure that is trying to flow in the other direction. This entails the application of additional pressure to quicken the process and push water to the "clean side" of a semi-permeable membrane. At least 98% of the dissolved minerals in the RO process are left behind on the membrane's ‘contaminated side’

Ultrafiltration:

Depending on the particle size and its membrane's pore size rating, ultrafiltration uses a semi-permeable membrane to physically remove suspended particles from water. Ultrafiltration is often one step ‘tighter’ (i.e., having smaller pores) than microfiltration among commonly employed membrane technologies. The silt density index of the water is decreased by ultrafiltration because it is particularly successful at eliminating small particles that can easily clog reverse osmosis membranes.

Therefore, a reverse osmosis system will be used for municipal water purification and an ultrafiltration system will be used for recycling the factory’s wastewater so that it can either be used again or pumped through the reverse osmosis system to ensure there is no contamination within the water.

For the process of new municipal water to be utilized, it will be directly pumped from the main line into the reverse osmosis system which will then be distributed to the factory. The process of wastewater will comprise a built-in gutter system within the factory where it will then be pumped into the ultrafiltration system and back into the reverse osmosis process, thus creating a sustainable circulation of water.



Fig 187: Thinking today for a better tomorrow, embodying the aloe Ferox (author, 2023)

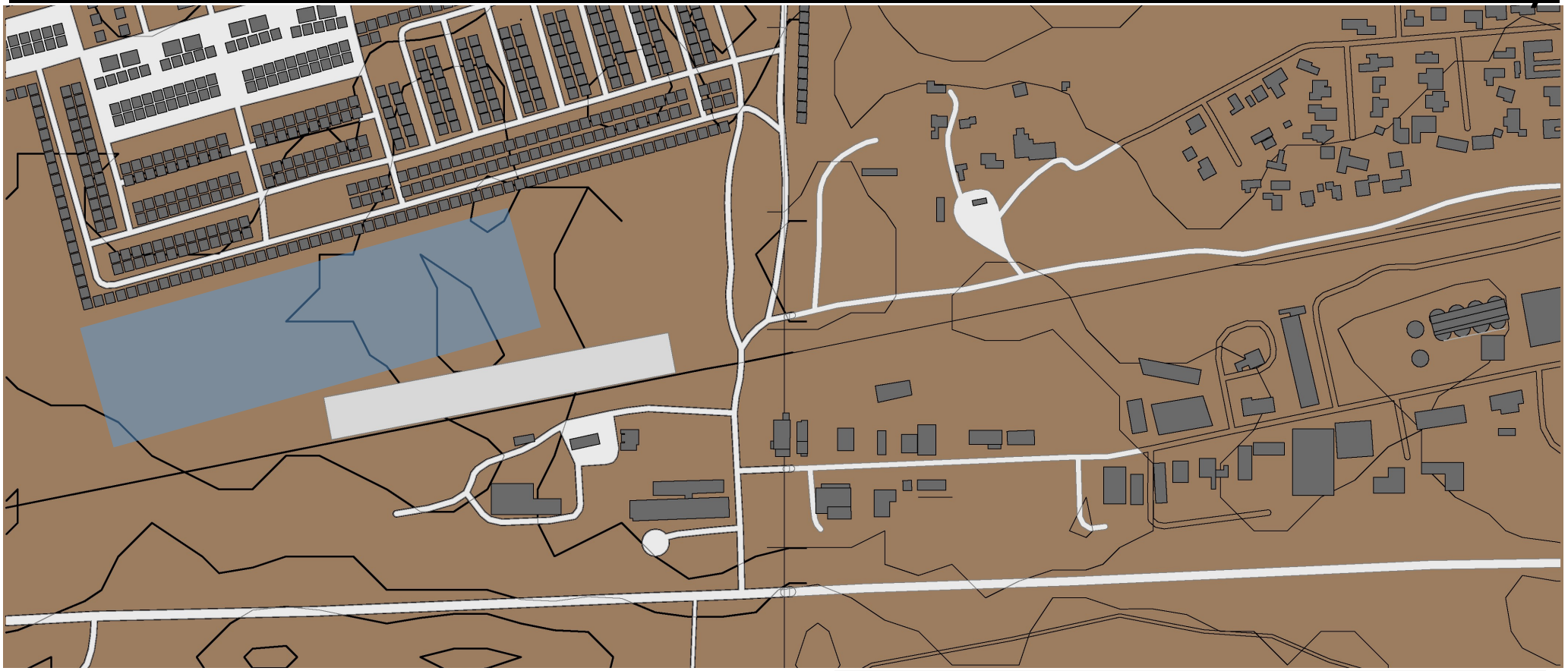


Fig 188: Proposed possible solar development (author, 2023)

With regards to designing with the aims of sustainability and the current situation of South Africa's electrical supply, possible solutions such as solar power were looked at.

A proposal was made to utilize the deforested stretch of land on the western edge of the site for a 'mini' solar plantation.

The solar plantation will not only function as secondary power supply for the development during 'loadshedding' but also for the RDP housing settlement.

This will also promote the notion of unifying communities by collaborating in the face of the shared challenges.

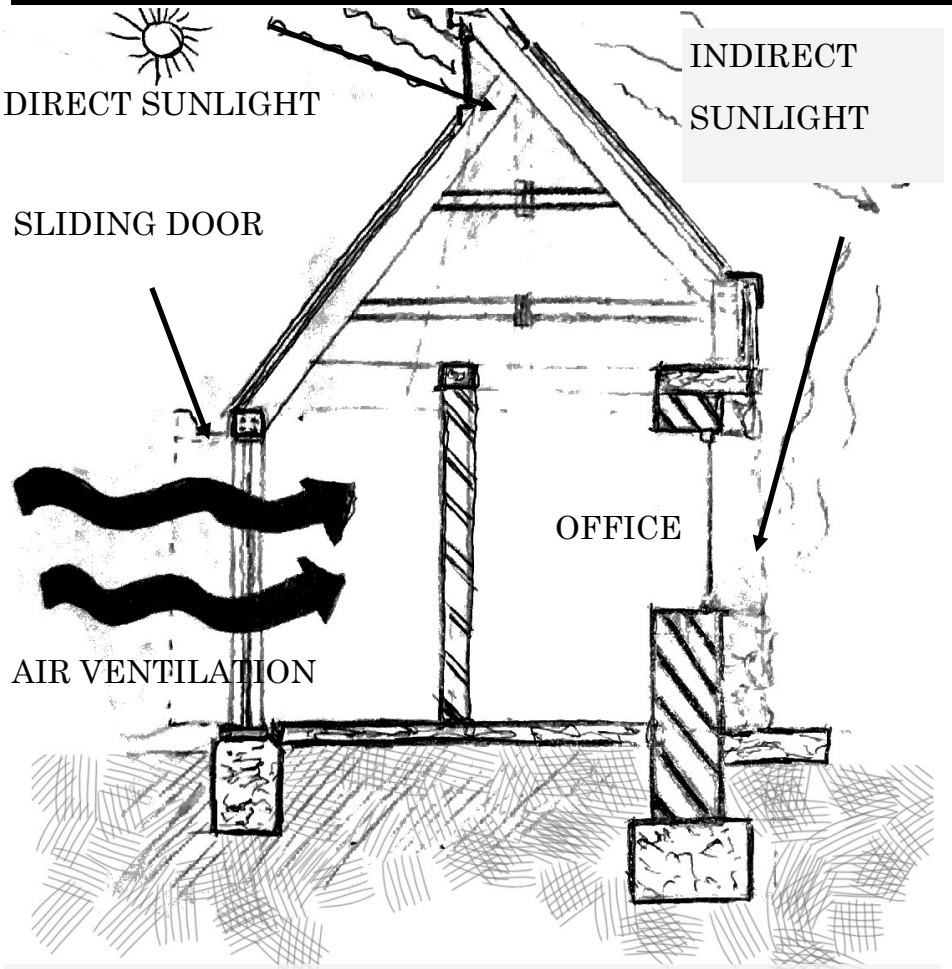


Fig 189: Sustainability investigation (author, 2023)

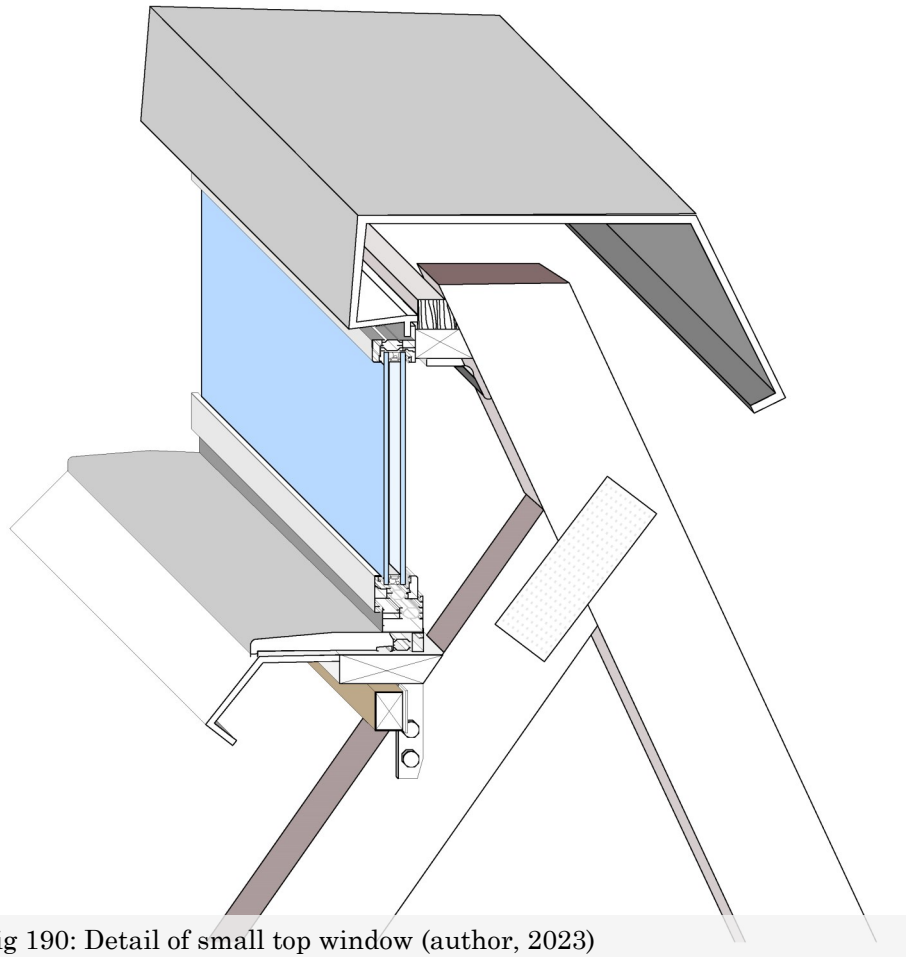


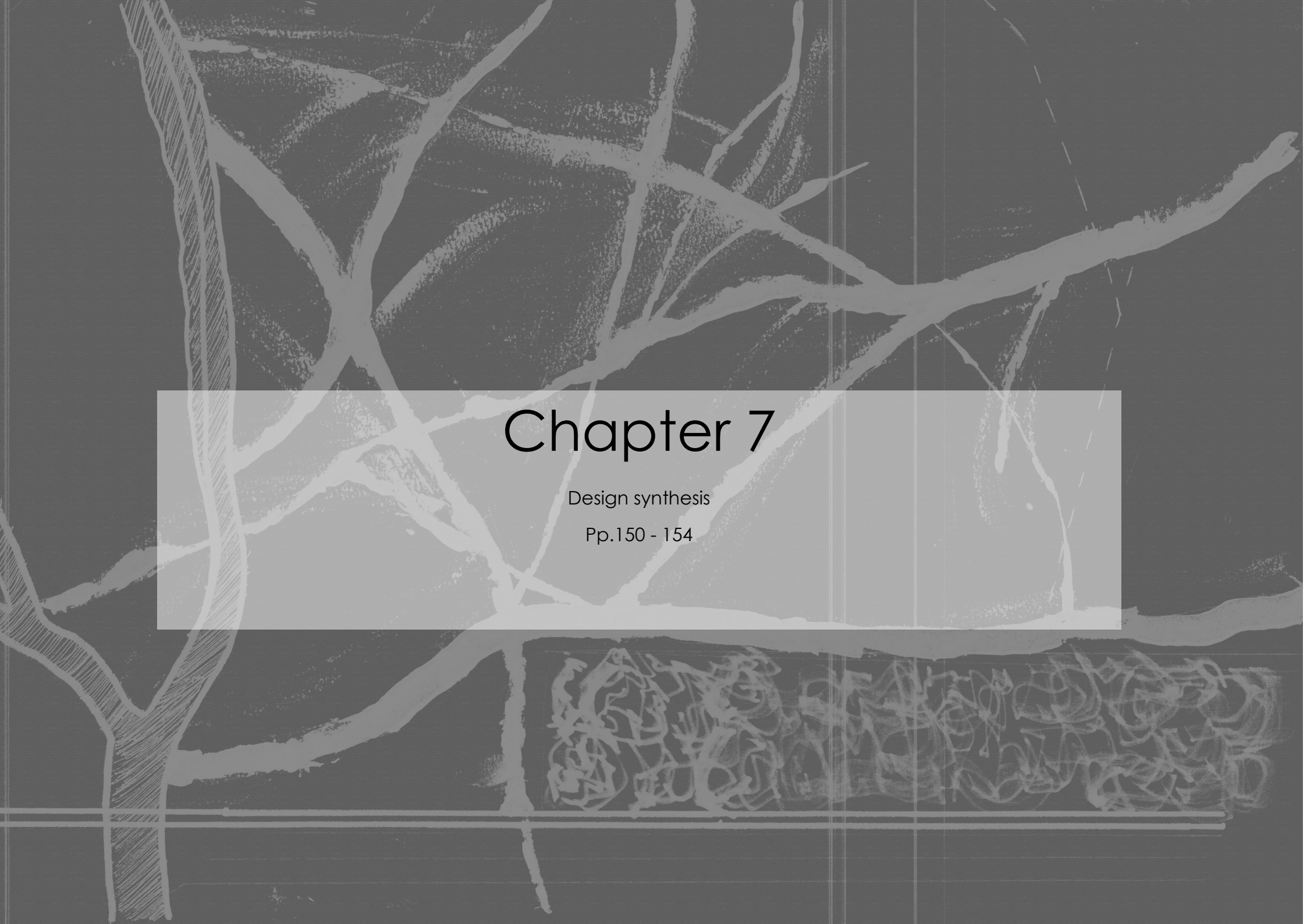
Fig 190: Detail of small top window (author, 2023)

Further investigations made by integrating passive design strategies into the structure:

Key elements such as the use of natural ventilation, indirect sunlight (southern light), and minimizing northern sunlight were integrated into the office spaces to provide comfortable working environments.

As one can see in fig 189 and 190 the clerestory window allows for minimal direct sunlight to enter the building through its double glazing.

This allows for a soft cathedral -like atmosphere when moving beneath these structures (see fig 155 on p. 117).



Chapter 7

Design synthesis

Pp.150 - 154

Design synthesis: The challenges addressed

After reviewing the final design it can be established that it attempts to address the following challenges.

Challenges that were addressed:

1. Commendation of the aloe Ferox
2. Addressing the problem of the site as a non-place.
3. Commemorating the pathways previously on site as discussed in the alternative site analysis
4. Creating spaces for architectural healing
5. Harbouring a sense of resistance towards a formalistic and disjointed approach
6. Metaphorically symbolizing the mending of communities through various methods
7. Integrating critical regionalism into the essence of the design.
8. Reincorporating nature onto the site.
9. Creating spaces for extensive cognitive engagement.

Design synthesis: The challenges addressed

Challenges that were addressed:

1. Commendation of the aloe Ferox:

The aloe Ferox was commended within the design in various ways. Firstly the vocations of the design are all relevant and part of the multiple facets of the industry. Secondly the aloe Ferox was also integrated into the landscaping of the design (see on renders), since it is indigenous to the region and is complementary to the colour schemes of the buildings on site.

2. Addressing the problem of the site as a non-place:

The centralization of gathering spaces such as therapeutic gardens, courtyards and seating spaces, these developments functions as mediums to which people would want to gravitate towards if they want top associate with the design. Thus, the site is no longer viewed as a place to cross to get to the other side and rather provides ample opportunity for engagement on various levels.

Flexible spaces such as the multifunctional hall, courtyard and a play-court for the children were incorporated

Controllable spaces such as office spaces, manufacturing spaces and the research facility were implemented in the design.

Private spaces such as seating areas allowing for contemplation were implemented

These spaces link with the notion of *place attachment* which is the main combatant of *non-places.*

3. Commemorating the pathways previously on site as discussed in the alternative site analysis:

As one can see in the layout of the pathways of the garden spaces, there is a clear reinterpreted reference made to the previous pathways on site

4. Creating spaces for architectural healing:

Spaces were designed so that various characteristics for the establishment of the *architectural placebo effect* could be implemented.

These spaces can be seen on multiple of the renders where the incorporation of natural sunlight, views of nature and invitational spaces are illustrated. Furthermore, on plan level one can see the incorporation of spaces known for their promotion of *the* effect such as therapeutic gardens

Design synthesis: The challenges addressed

5. Harbouring a sense of resistance towards a formalistic and disjointed approach:

As one can see within the design a lot of progress was made with regards to resisting a formalistic approach, where the morphology was influenced by functionality and not form.

6. Metaphorically symbolizing the mending of communities through various methods:

The symbolization of the mending of communities can be seen on section (see section A-A), plan - as spaces flow into each other and elevation - various typologies correlating with one another and resonating in harmony.

7. Integrating critical regionalism into the essence of the design:

One can see that critical regionalism was integrated on various levels with reference to the incorporation of local materials, typologies of the region being reinterpreted and implemented within the design, such as defamiliarized shed typologies and lastly the morphology of the design metaphorically and visually resonating with its surroundings (Factory imitating the *Langeberg* mountain range).

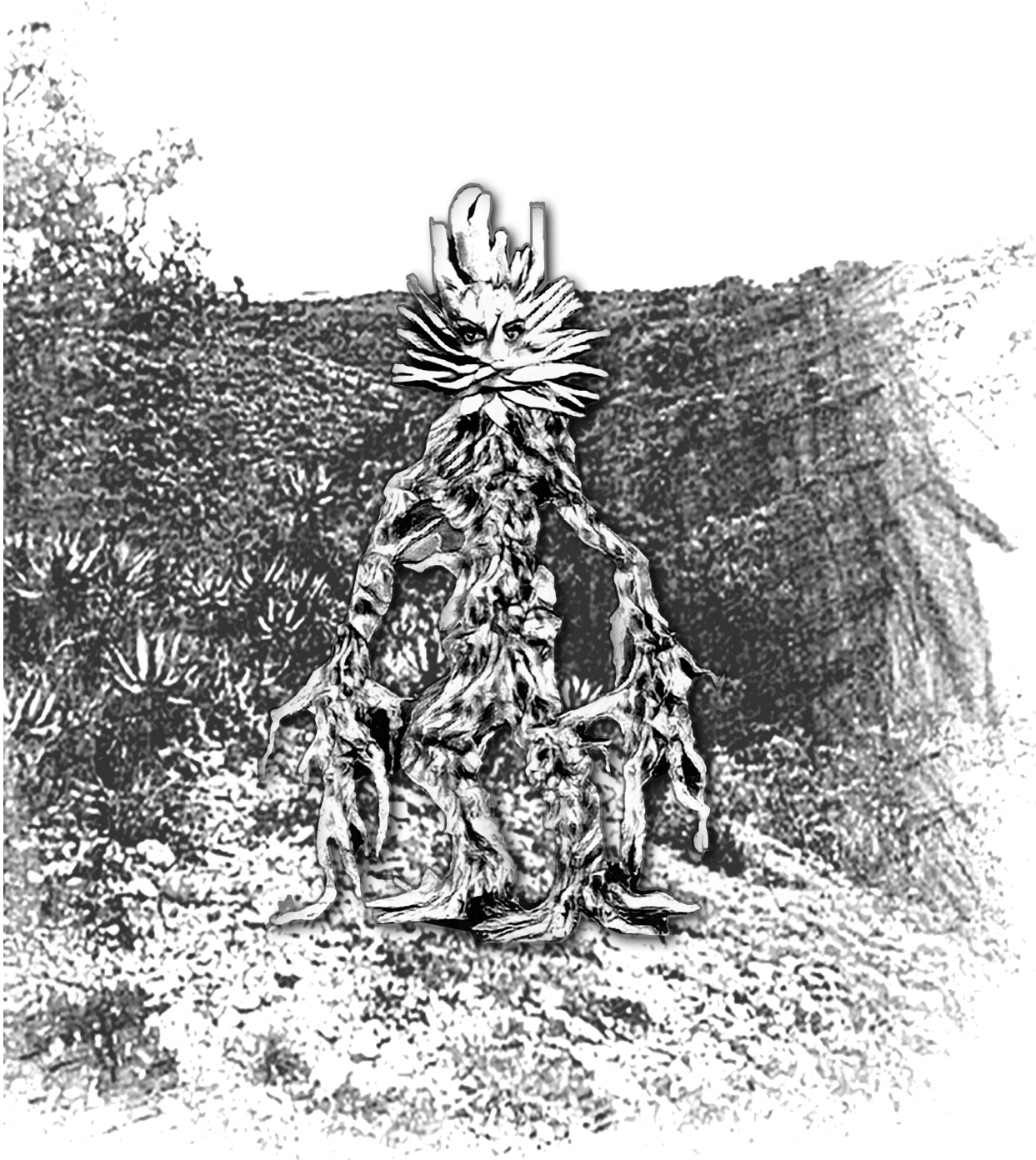
8. Reincorporating nature onto the site:

Gardens and green courtyard spaces.

9. Creating spaces for extensive cognitive engagement:

The renders illustrate these spaces such as the showroom, hallway, seating spaces etc. where on can feel comfortable within these spaces and dwell within one's thoughts and connect these thoughts to external mediums like material, structural and design elements.

Conclusion



Aloe X:

As I stand on the edge of the hill where I first met Aloe X.

I think about the journey that it had motivated me to undertake.

I am exhausted

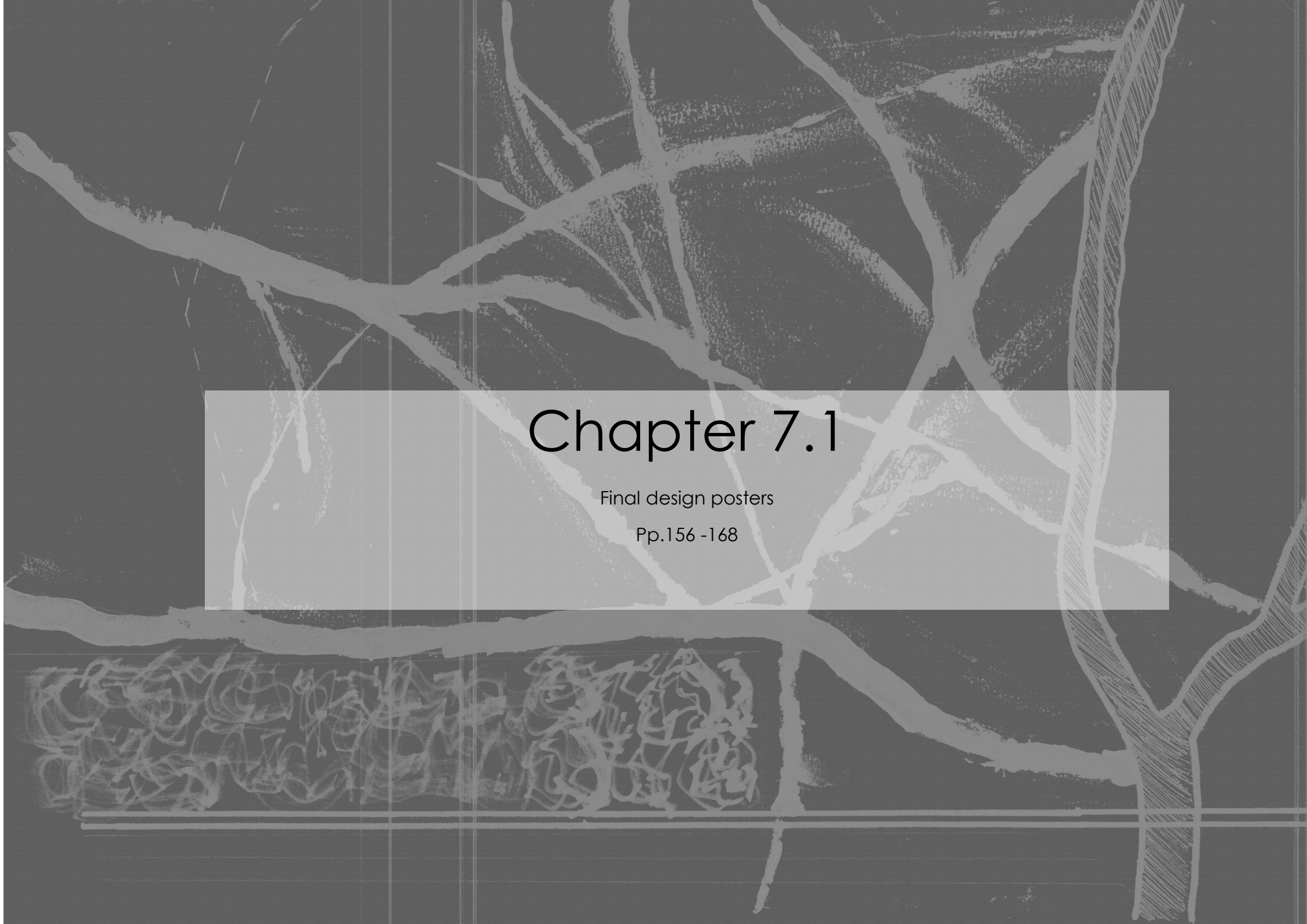
I am grateful

I am thankful

I smile

Viva la Ferox!

Fig 91: *"Adieu, Goodbye, Auf Wiedersehen"* (author, 2023)



Chapter 7.1

Final design posters

Pp.156 -168

SITE PLAN:
1:500

The *Aloe ferox* Mill. is dwarfed by its American counterpart, the aloe vera plant, most companies in charge of manufacturing its byproducts tend to resonate a disunified front.

The main question is:

How can the notion of a healing environment inspire the unification between various disjointed communities within the aloe ferox industry, whilst simultaneously commending the plant by establishing a safe space that will instil a positive metaphysical engagement with the multi-faceted development?

Various companies have established themselves within the aloe ferox manufacturing industry. Still, none have addressed the divide between its various communities, which seems like a missed opportunity that can also help the product's growth in popularity.

The design dissertation aims to address these challenges by investigating various theoretical stances and designing a facility comprising various facets of the industry to create a unified front that would exalt the aloe ferox plant.

This was done through various investigative and research methods, such as interviews and studies which were then reflected upon and applied to the design development appropriately.

The aloe ferox industry and its communities have dormant growth potential, and it is hoped that this dissertation will shine a new light upon it.

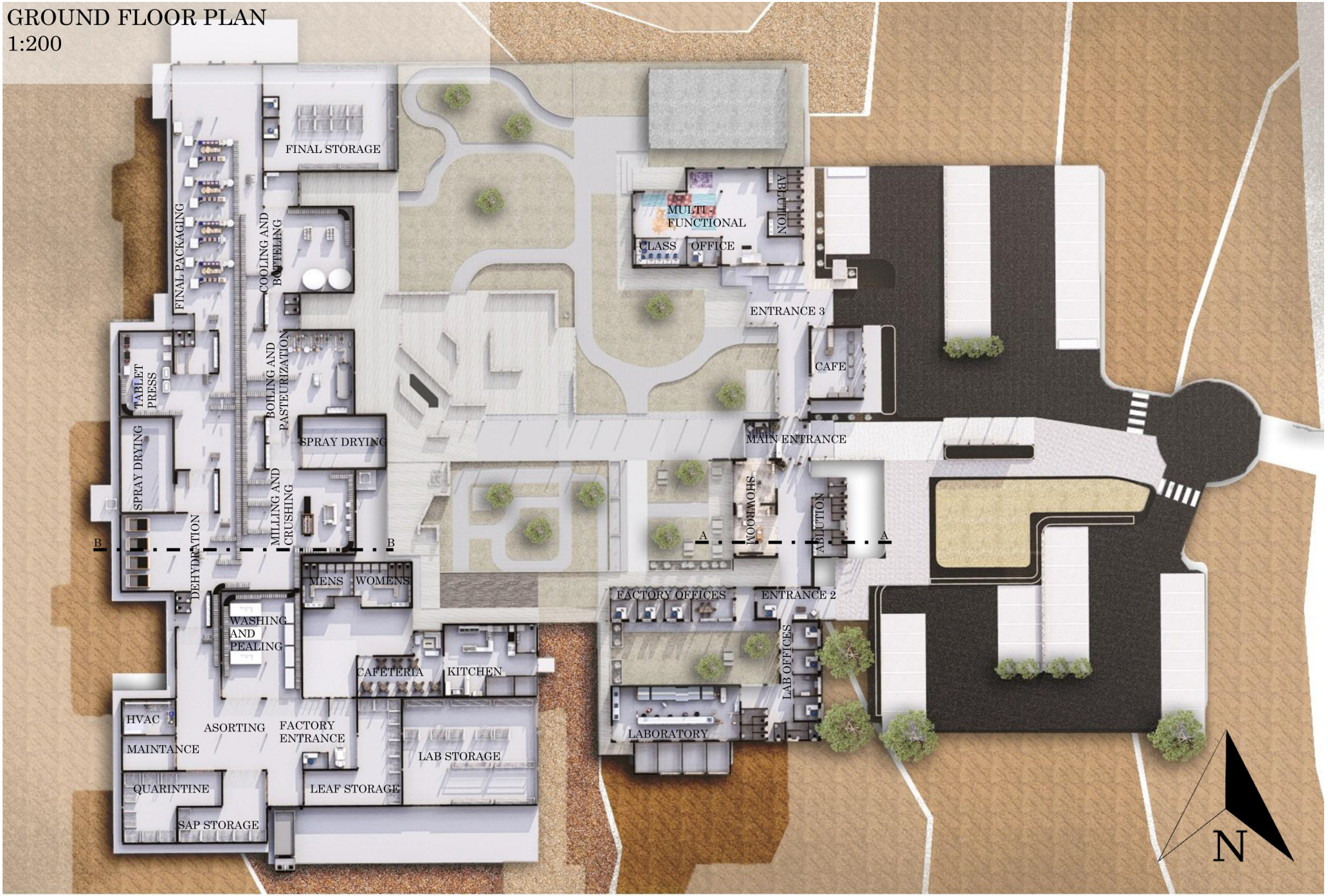
Viva la ferox.



APPROACHING THE SITE



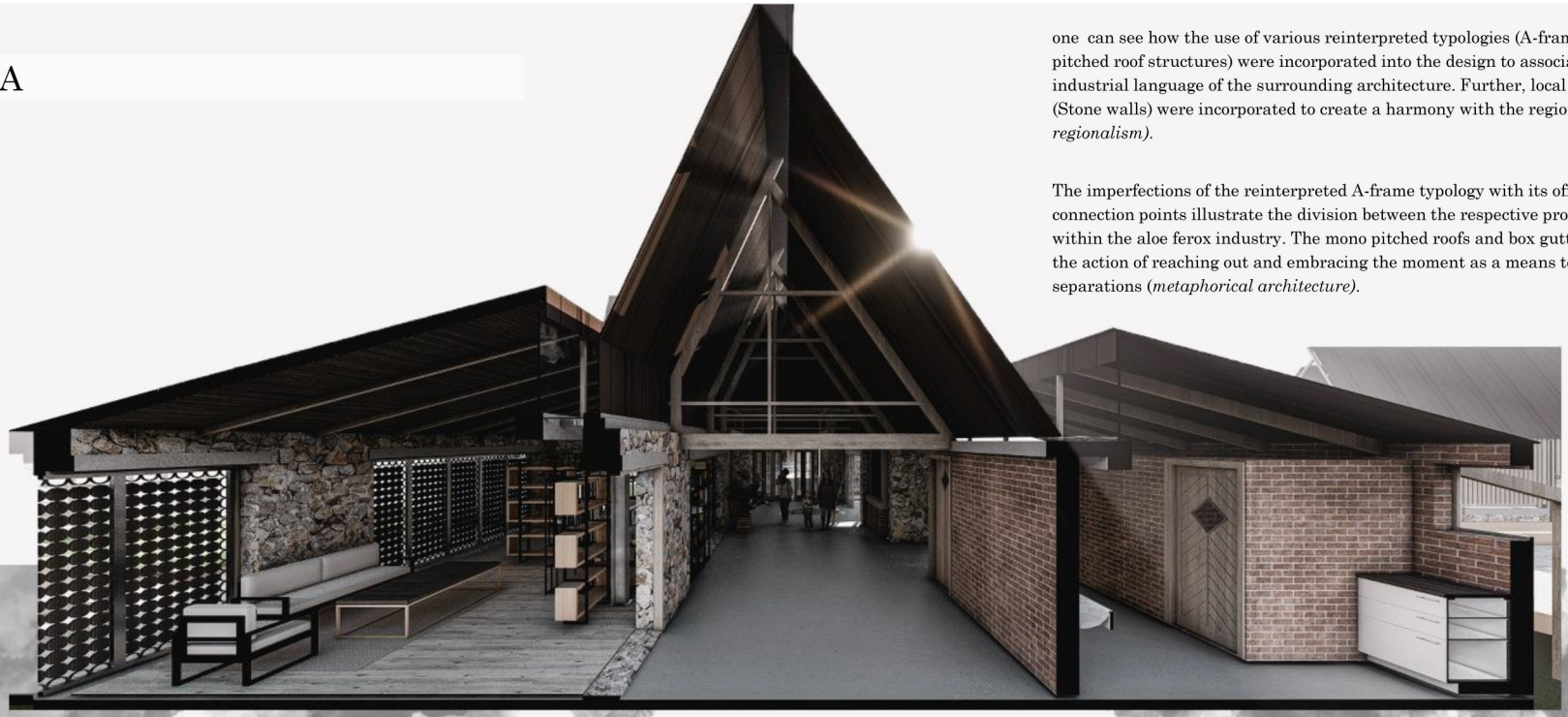
GROUND FLOOR PLAN
1:200



FIRST FLOOR PLAN
1:200



SECTION A-A



one can see how the use of various reinterpreted typologies (A-frame and mono-pitched roof structures) were incorporated into the design to associate with the industrial language of the surrounding architecture. Further, local materials (Stone walls) were incorporated to create a harmony with the region (*Critical regionalism).*

The imperfections of the reinterpreted A-frame typology with its off centre connection points illustrate the division between the respective professions within the aloe ferox industry. The mono pitched roofs and box gutters illustrate the action of reaching out and embracing the moment as a means to breach the separations (*metaphorical architecture).*

SECTION B-B



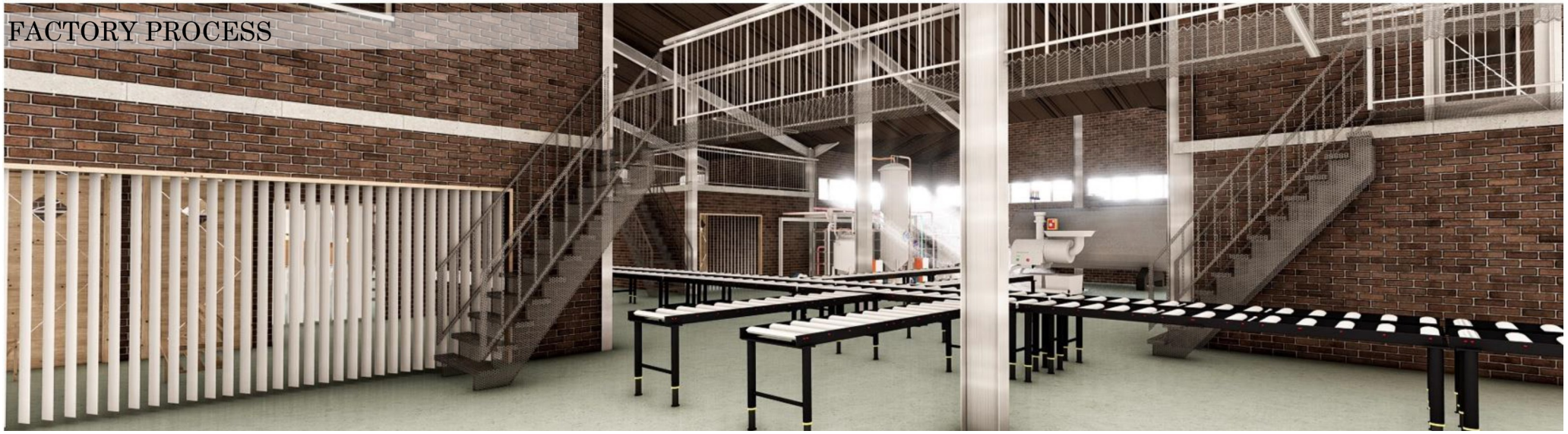
ENTRANCE AND RECEPTION



LABORATORY



FACTORY PROCESS



FINAL PACKAGING



WORKERS ABOUT TO PROGRESS THROUGH SANITATION



SHOW ROOM



MULTI FUNCTIONAL HALL, CRECHE



The centralization of gathering spaces such as therapeutic gardens, courtyards and seating spaces, these developments functions as mediums to which people would want to gravitate towards if they want top associate with the design. Thus, the site is no longer viewed as a place to cross to get to the other side and rather provides ample opportunity for engagement on various levels.

Flexible spaces such as the multifunctional hall, courtyard and a play-court for the children were incorporated

Controllable spaces such as office spaces, manufacturing spaces and the research facility were implemented in the design.

Private spaces such as seating areas allowing for contemplation were implemented

These spaces link with the notion of *place attachment* which is the main combatant of *non-places.*

Spaces were designed so that various characteristics for the establishment of the *architectural placebo effect* could be implemented.

These spaces can be seen on multiple of the renders where the incorporation of natural sunlight, views of nature and invitational spaces are illustrated. Furthermore, on plan level one can see the incorporation of spaces known for their promotion of *the* effect such as therapeutic gardens

BIRDS EYE VIEW



THE RHYTHMS OF THE FACTORY



EAST ELEVATION



BIRDS EYE VIEW IN COMPARISON TO RDP HOUSING



BIRDS EYE VIEW IN COMPARISON TO INDUSTRIAL SETTLEMENT



PRIVATE SPACE

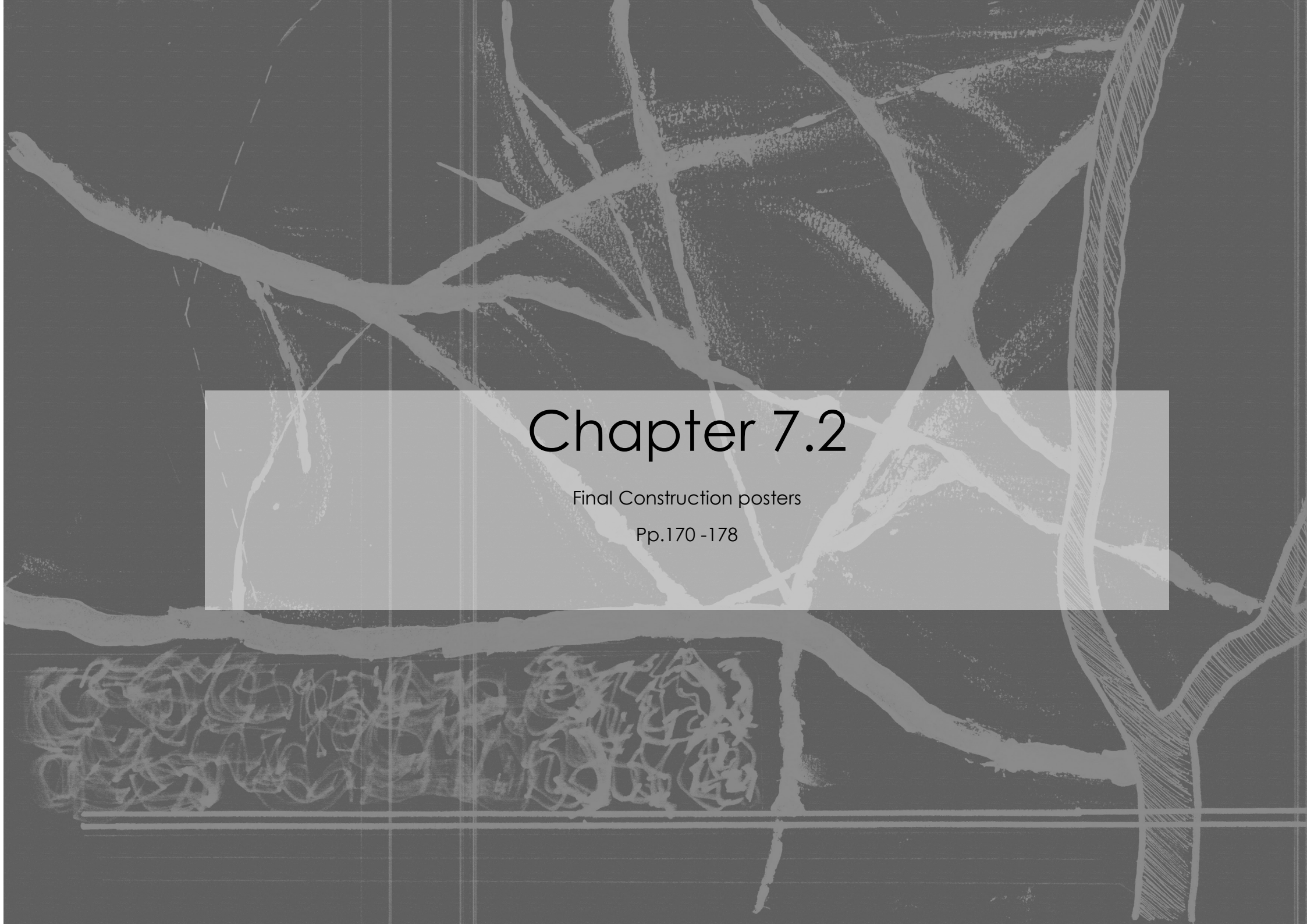


SEMI – PUBLIC SPACE



PUBLIC SPACE

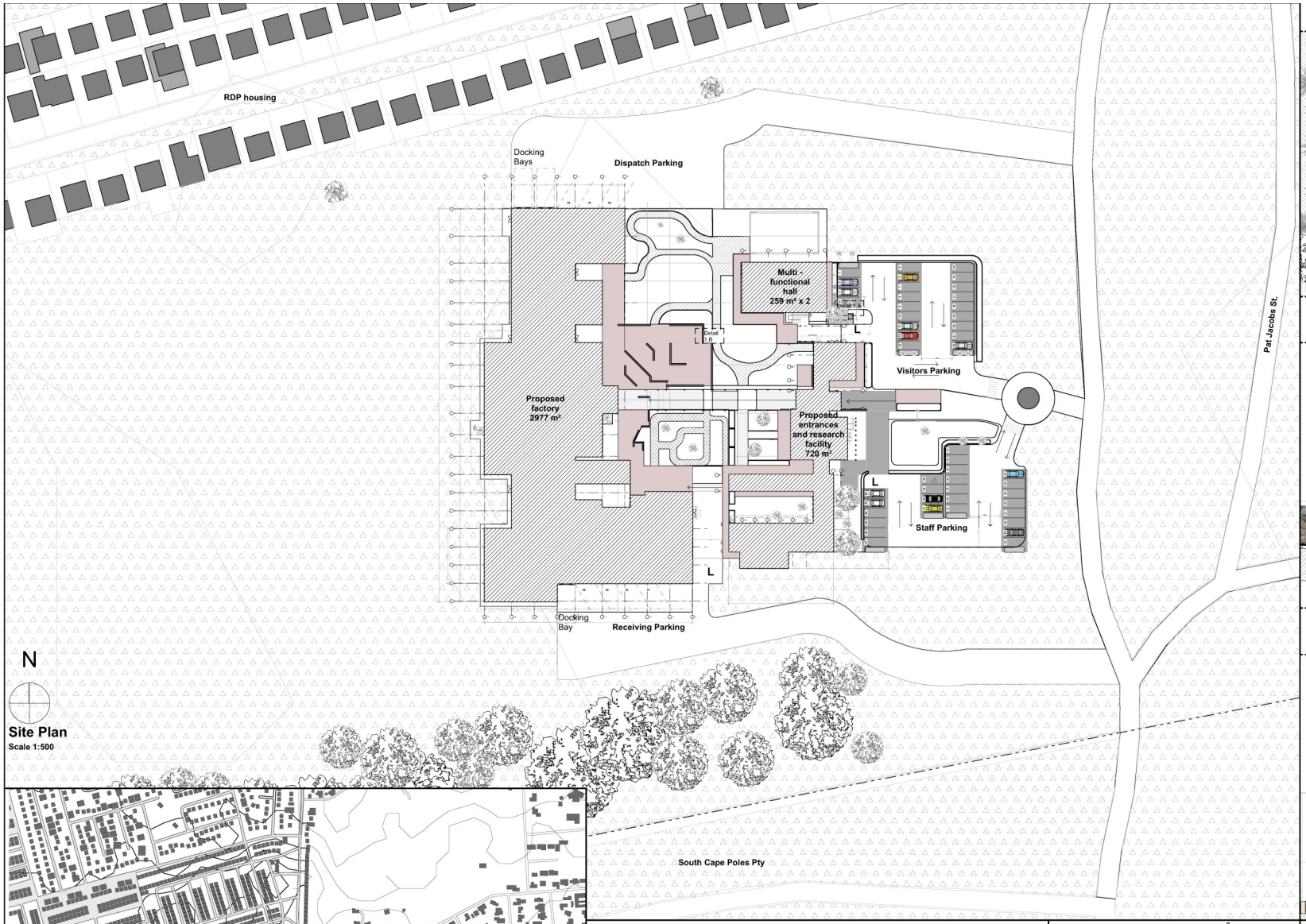




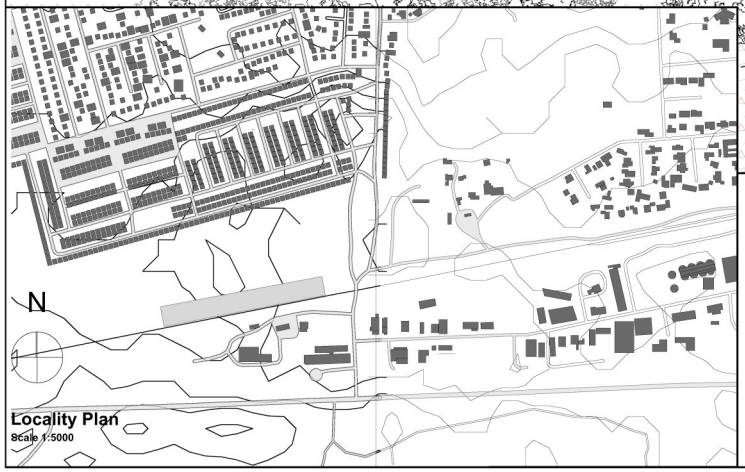
Chapter 7.2

Final Construction posters

Pp.170 -178



Site Plan
Scale 1:500



Locality Plan
Scale 1:5000

Site plan legend:

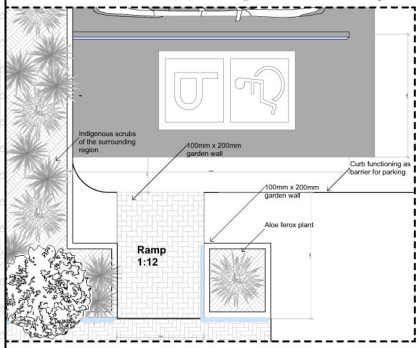
Vegetation
- Compacted re-worked ground
- Natural ground with bushes, scrubs and sandy surface

Parking
- L — Loading zone
- Disabled/differently - abled parking

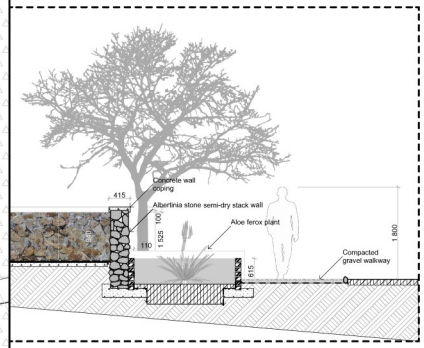
Structure
- Proposed brick, steel and Albertinia stone masonry structures
- Albertinia stone half-walls
- Recycled plastic boardwalks and walkways
- Gravel pathways gardens and seating spaces

ARCHICAD EDUCATION VERSION

Detail 1.A: Disabled parking and accesibility



Detail 1.B: Section A-A walkway



Detail 1.C Section of drop-off zone





Location:

Site no(s). 1, 1015 & 390
Buffelsfontein 435
Albertinia
6695

Drawing name:

Site Plan
Locality Plan
Details 1.A, 1.B & 1.C

Clients:

Organicaloe (Pty) Ltd.

Aloe Ferox International (Pty) Ltd.

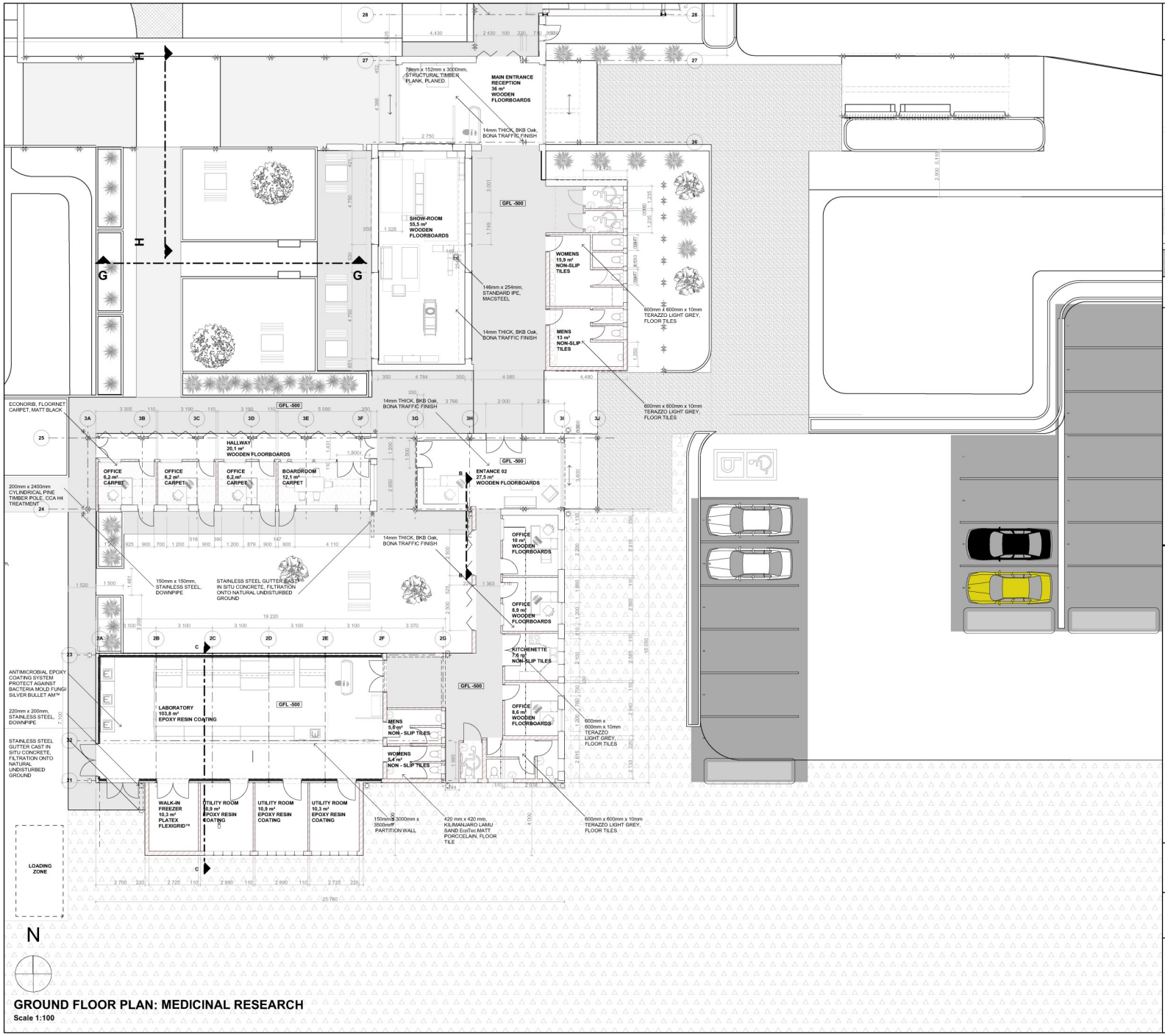
Alcare Aloe (Pty) Ltd.

Scale

Locality Plan - 1:5000
Site Plan - 1:500
Details - 1:50

Date: 2023/10/18

Sheet no: No 1.



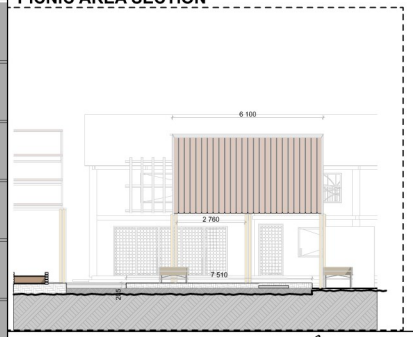
GROUND FLOOR PLAN: MEDICINAL RESEARCH

Scale 1:100

SECTION H-H 1: 50
WALKWAY SECTION



SECTION G-G 1: 50
PICNIC AREA SECTION



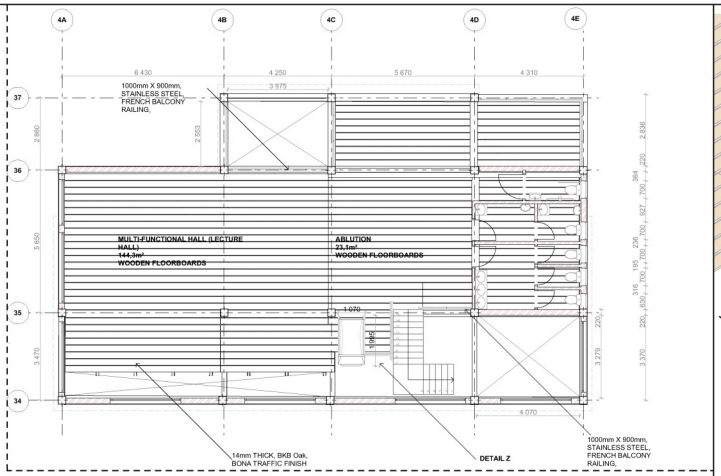
ARCHICAD EDUCATION VERSION

DRAWN BY: MARTIENS KOTZE

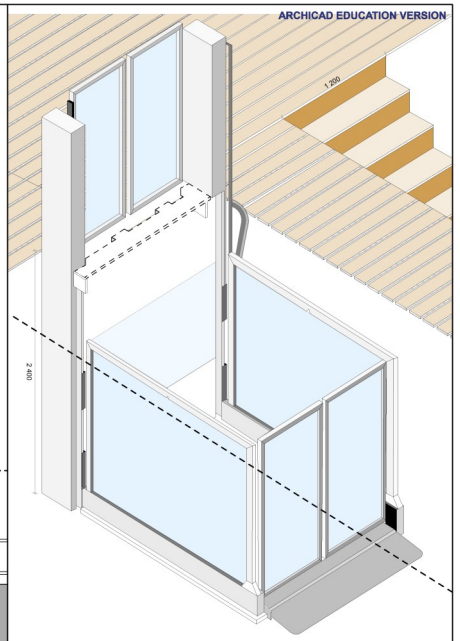
Scale
GROUND FLOOR PLAN 1:100

Date:
2023/10/18

Sheet no:
No 2



FIRST FLOOR PLAN - MULTI-FUNCTIONAL HALL 1:100



DETAIL Z - 1:25:
1070mm x 1995 DISABLED LIFT

GROUND FLOOR PLAN: MULTI FUNCTIONAL HALL
Scale 1:100

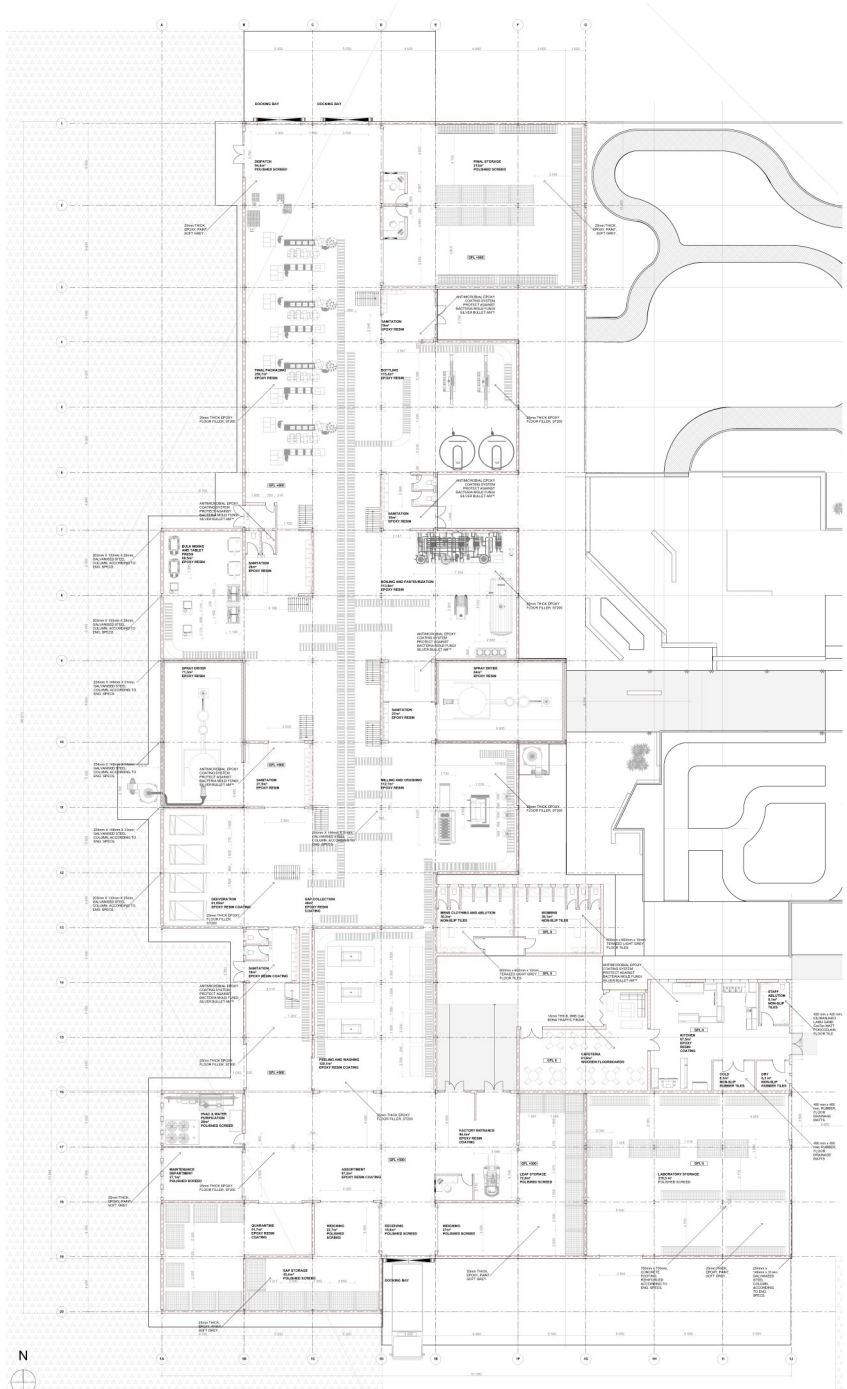


DRAWN BY: MARTIENS KOTZE

Scale
GROUND FLOOR PLAN 1:100

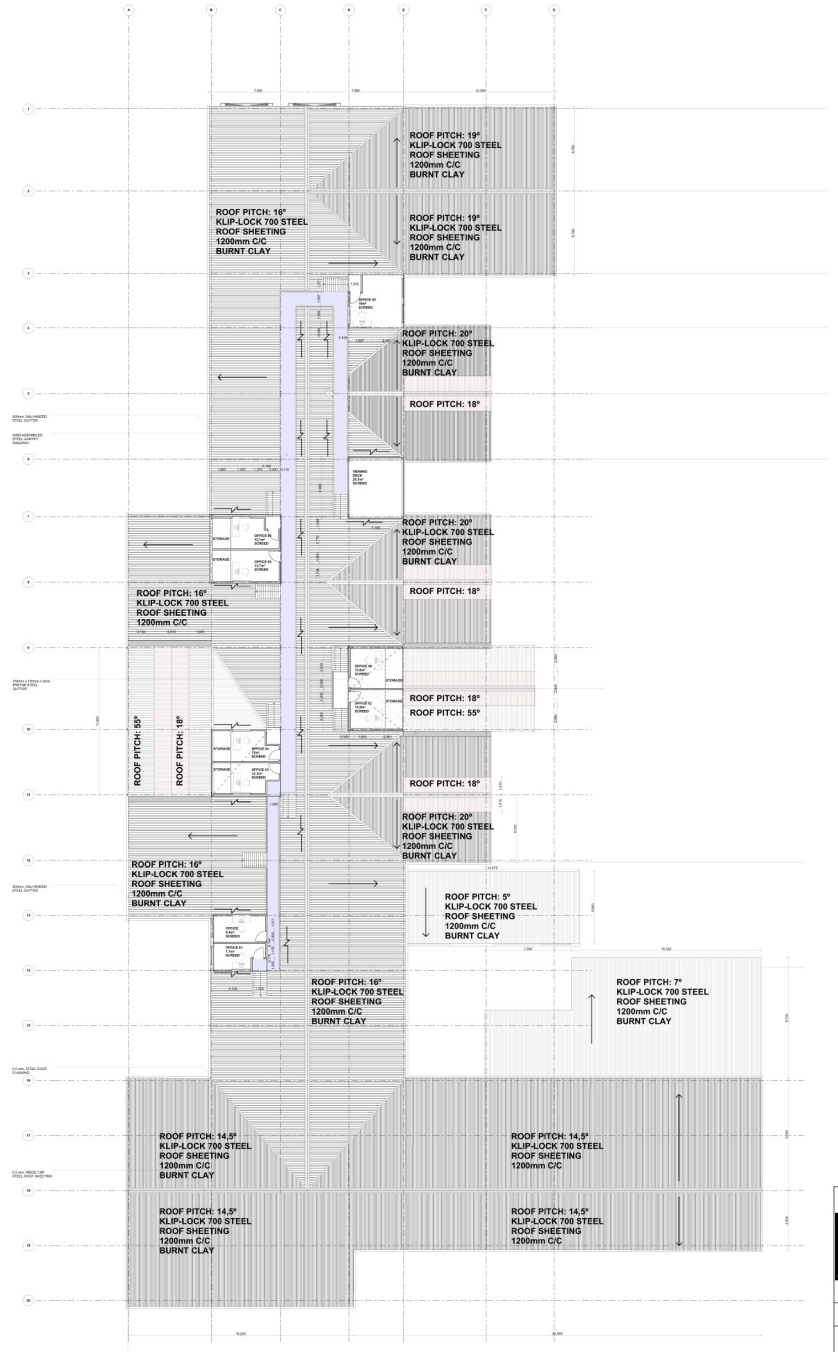
Date:
2023/10/18

Sheet no:
No 3



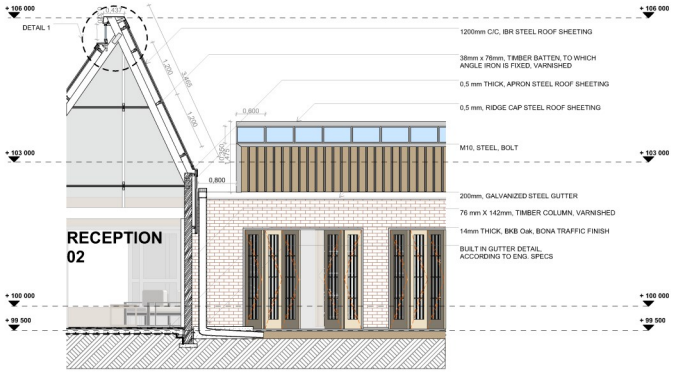
GROUND FLOOR PLAN: FACTORY
Scale 1:100

DRAWN BY: MARTIENS KOTZE	
Scale: GROUND FLOOR PLAN 1:100	
Date: 2023/10/18	Sheet no: No 4

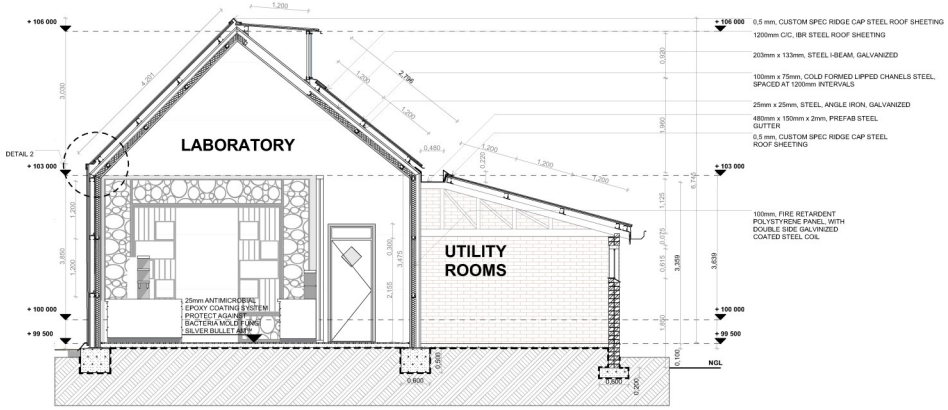


FIRST FLOOR PLAN: FACTORY
Scale 1:100

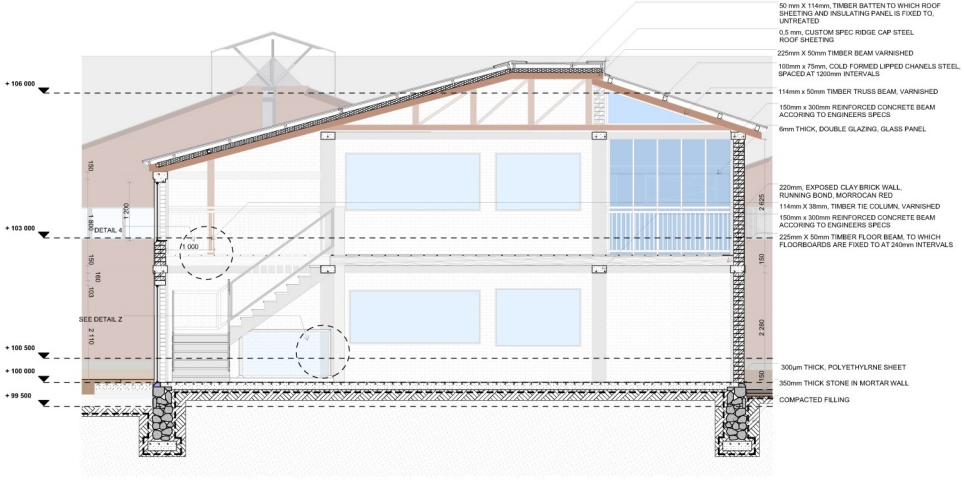
DRAWN BY: MARTIENS KOTZE	
Scale: FIRST FLOOR PLAN 1:100	
Date: 2023/10/18	Sheet no: No 5



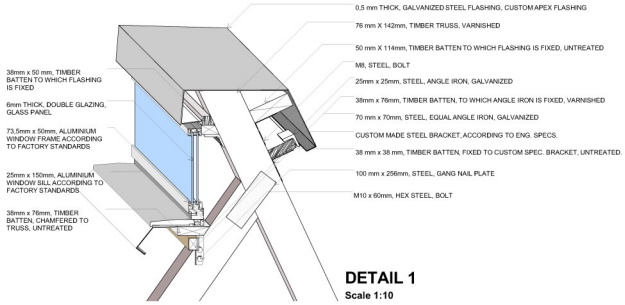
SECTION B-B
Scale 1:50



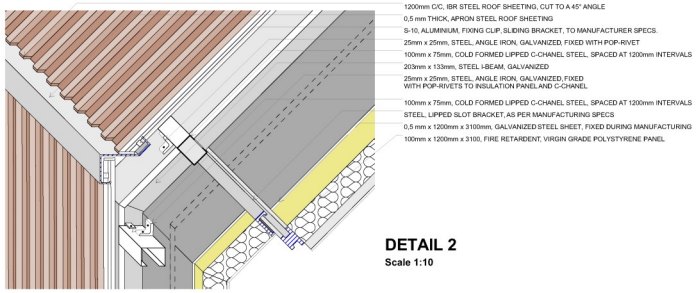
SECTION C-C
Scale 1:50



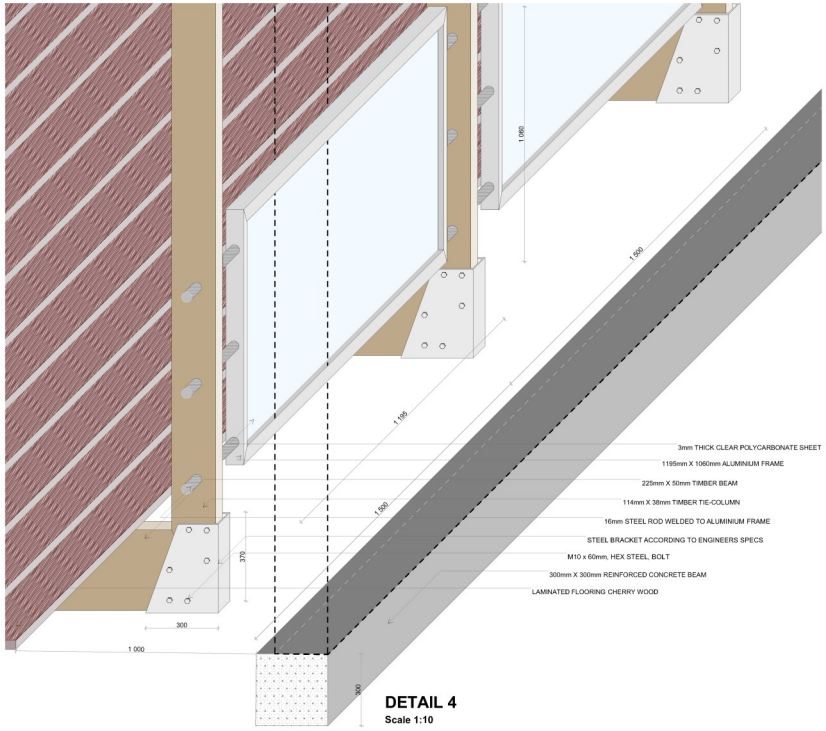
SECTION F-F
Scale 1:50



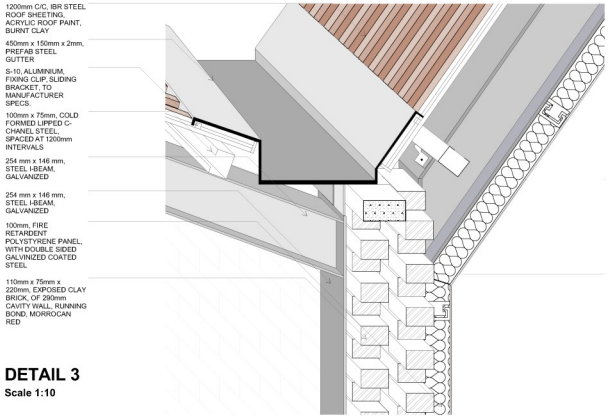
DETAIL 1
Scale 1:10



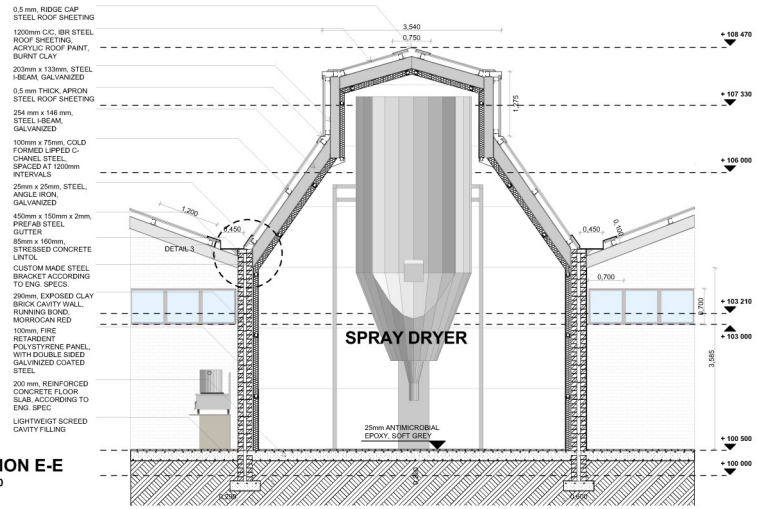
DETAIL 2
Scale 1:10



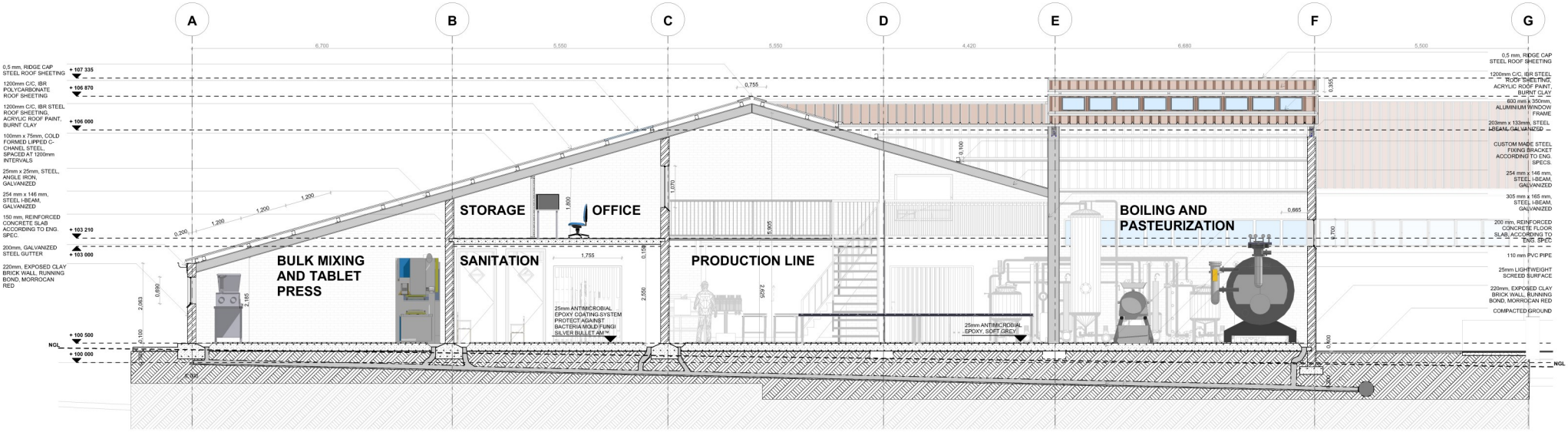
DETAIL 4
Scale 1:10



DETAIL 3
Scale 1:10



SECTION E-E
Scale 1:50



SECTION D-D
Scale 1:50

KM ARCHITECTS

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Scale
SECTIONS 1: 50
Details - 1:10

Date:
2023/10/18

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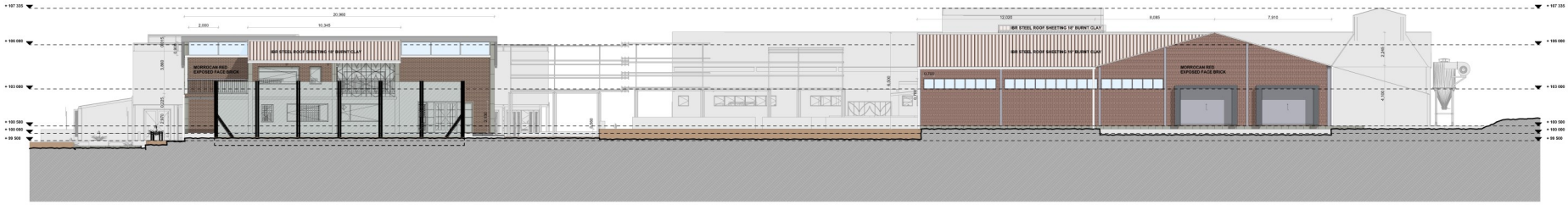
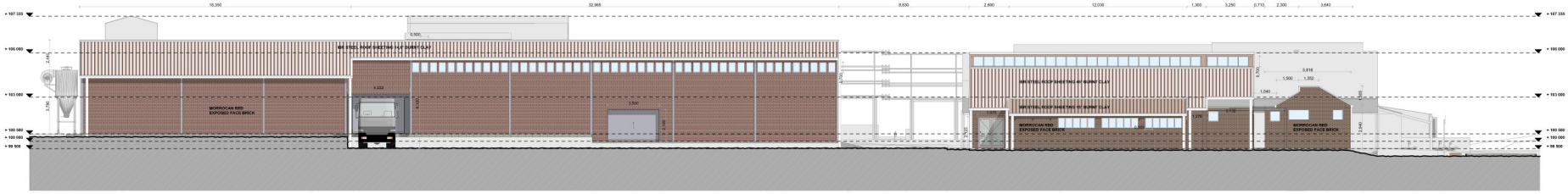
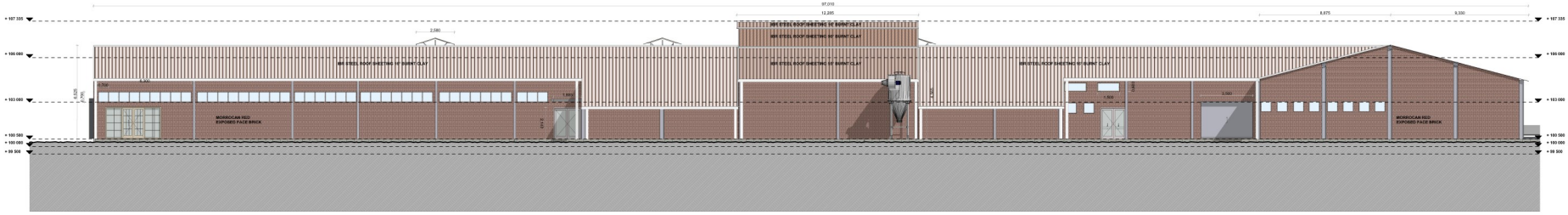
No 6



NORTH ELEVATION
SCALE 1: 100



SOUTH ELEVATION
SCALE 1: 100



WEST ELEVATION
SCALE 1: 100



EAST ELEVATION
SCALE 1: 100

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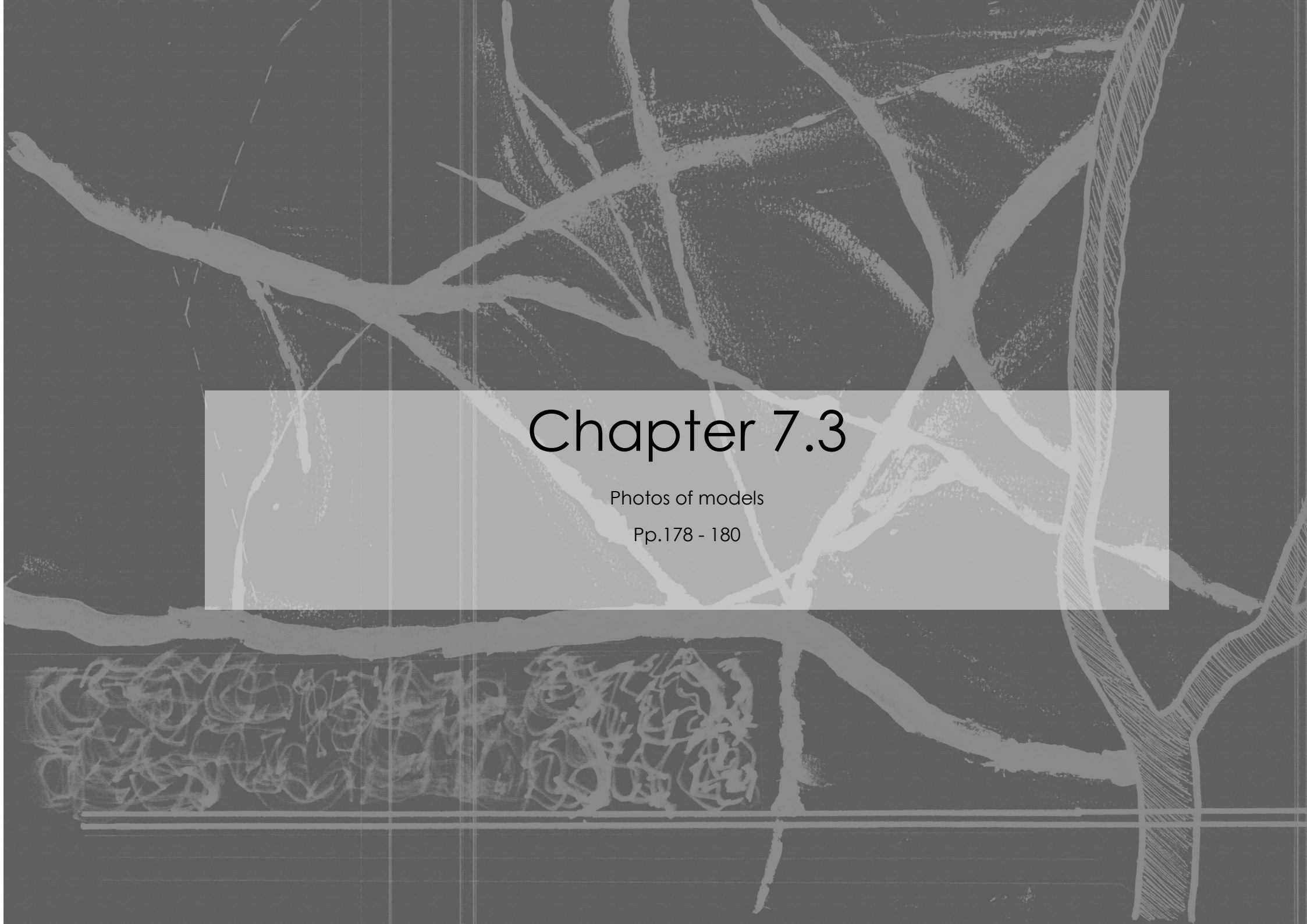
Scale Elevations 1:100	
Date: 2023/10/18	Sheet no: No 6



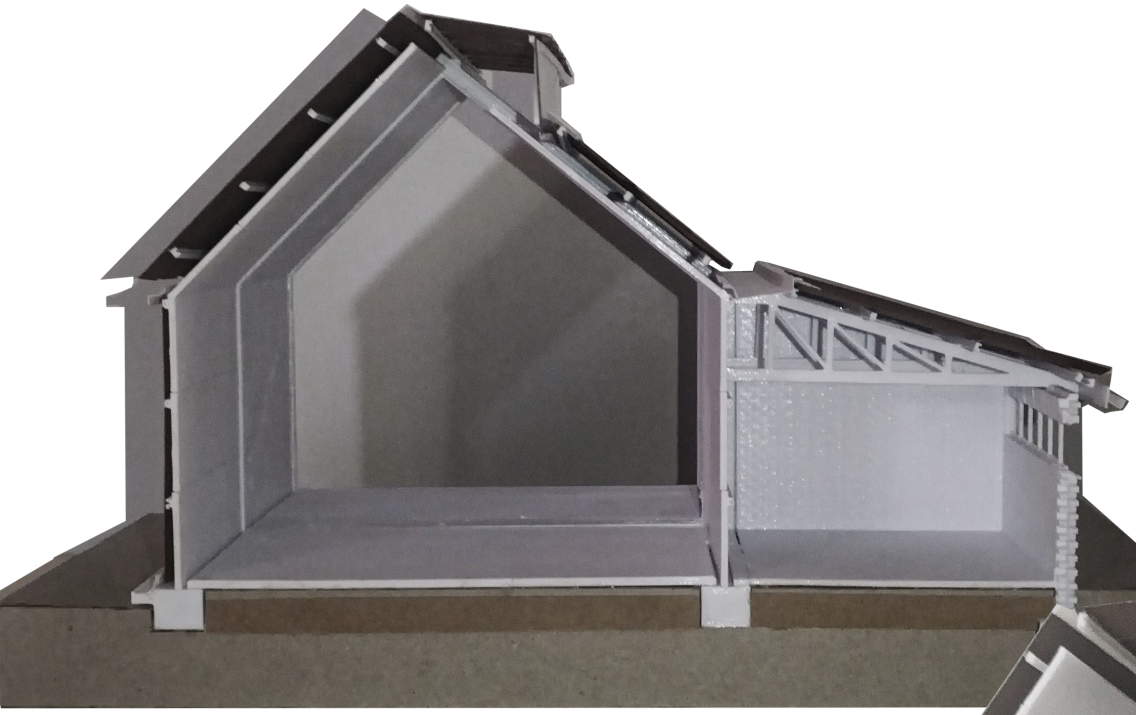
Chapter 7.3

Photos of models

Pp.178 - 180

Models:

Laboratory section model



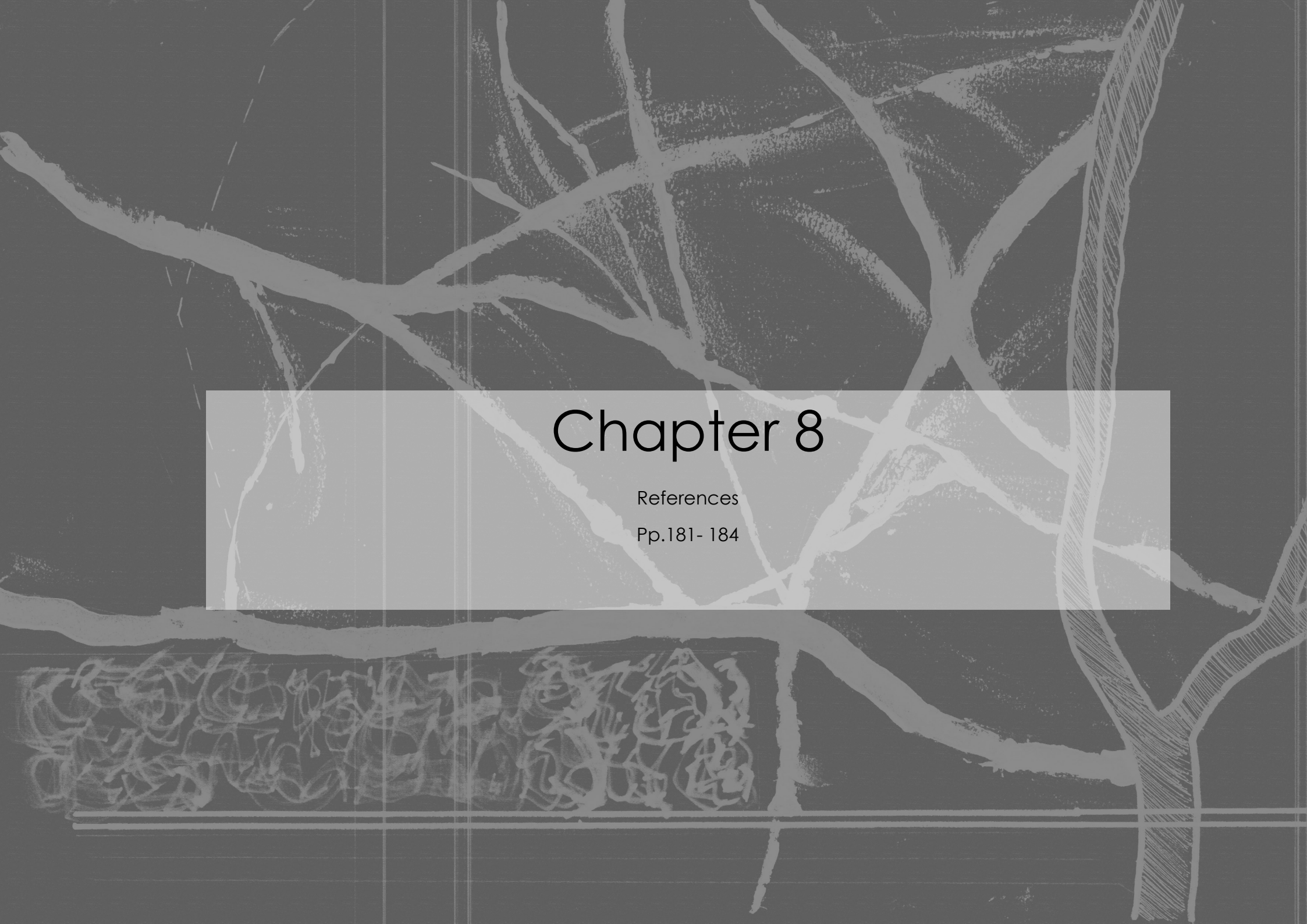




Models:

Design model





Chapter 8

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Pp.181- 184

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