TOWARDS AN ABIOTIC **MUTUALISM**

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M.Arch. (Prof) 2023

Addressing the **conservation crisis** in **Pilanesberg National Park**.

Author, 2023

– WILDLIFE VISITORS AND EDUCATION CENTRE IN PILANESBERG NATIONAL PARK –

[Unless otherwise referenced, **all figures in this document** were photographed in **Pilanesberg National Park**.]

Author, 2023

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This dissertation's work has not previously been submitted to fulfil the requirements for an award at this or any other institution of higher learning. Except where noted, this dissertation contains no work previously published or authored by another individual, to the best of my knowledge.

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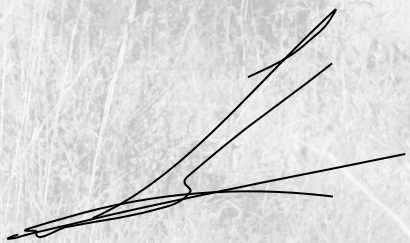

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Author, 2023

Abstract

The conservation of the natural landscape and the health of its ecology is today, more than ever, dependent on the decisions of humankind. As nature once determined our survival, we now determine the survival of its many species. This dissertation is derived from the realities of the post-Covid animal conservation crisis in South Africa, particularly focusing on Pilanesberg National Park situated in the North West Province. This park along with several others plays a crucial role in South Africa's tourism sector, constituting 7% of the country's GDP and providing employment to over 1.5 million people. The revenue generated from this industry contributes significantly to the preservation of animals and the environment. Unfortunately, this indispensable source of income was abruptly halted in March 2020, further exacerbating the already substantial financial gap required for not only the conservation efforts of Pilanesberg National Park and its constituents, but also the fight against the global illegal poaching industry. Therefore, the question is asked; ***How can the architectural assemblage of thresholds in Pilanesberg National Park serve as an ecological vessel of mutualism, enhancing the connection between human and non-human inhabitants while responding to the natural landscape and preserving the material narratives that shape its pretext?*** This composition investigates the interconnectedness between conservation systems and practices while considering aspects such as landscape memory, ecological coherence, and our ethical obligations towards the natural landscape.

Keywords:
Conservation, ecological coherence, threshold, human and non-human narratives, symbiosis, mutualism.

Author, 2023

CHAPTER 01

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Figure 1: Black Rhino Game Reserve, Northern Pilanesberg, rangers respond to a wounded white rhino, shot by poachers. (Author, 2012).

1.1 Introduction to the Project

This dissertation delves into the concepts and theoretical disposition of an architectural application that attempts to demonstrate a caring response to the conservation crisis (Fig. 1) in Pilanesberg National Park (PNP), as a means of understanding processes and design concerns that support the architectural interventions. By investigating various stages of development, a thorough grasp of how architecture may contribute to conservation efforts and generate a sympathetic response to the park's surroundings will be illustrated. In addition to applying a theoretical lens to the concepts and frameworks that govern the implementation of this research, this composition is to make a strong case for the value of architectural intervention in resolving conservation challenges and support sustainable practices within and around Pilanesberg National Park. This chapter will explore the context of *PNP* as well as establish an avenue of discourse examining the various milestones of theoretical, conceptual and pretextual understandings that will ultimately develop the brief for this architectural design response.

In addition to exploring the conceptual disposition, it is **crucial to consider the unique wildlife and ecology of Pilanesberg National Park** when justifying a caring response to the conservation crisis, as the park is home to a diverse range of species. The delicate ecological balance and intricate interdependencies within the park's ecosystems highlight the urgency of protecting and preserving this habitat. By integrating a caring response, which takes into account the specific interactions and thresholds of the landscape, architecture can act as a harmonious extension of the natural environment, minimizing disturbance and enhancing ecological sustainability. This approach acknowledges the intrinsic value of the park's wildlife and ecology, emphasizing the importance of their long-term conservation and serving as a driving force behind the proposed architectural applications. Therefore an assemblage of precedent studies can further examine how architecture can respond sensitively to not only the landscape, but also the complex narratives of the natural landscape.

1.2 Pilanesberg National Park

Situated near the city of Rustenburg (Fig. 2) in South Africa's North West Province, Pilanesberg national park is a renowned game reserve known for its biodiversity and rich fauna. It's geological formation makes it a valuable site for conservation efforts as well as a popular destination for nature enthusiasts and scholars. Furthermore, Pilanesberg National Park is widely recognised as one of the world's most ambitious efforts of its kind. The Park was game-fenced during Operation Genesis in 1979, and several long-extinct species were reintroduced; the Park now has approximately 7,000 animals, including 24 of the larger species (Pilanesberg National park, 2023; online). Here you'll find Africa's Big 5 and Little 5, as well as 25 more animal species and over 300 bird species. Crocodiles are also present in the park. Pilanesberg is located in the Bojanala Region of the North West Province, near Sun City, and is only 2 hours from Johannesburg and 1.5 hours from Pretoria. In this 580 km^2 diverse and stunning bushveld environment, there is a wealth of species (Pilanesberg Wildlife Trust, 2022). The coexistence of these species within the park's different habitats demonstrates this protected region's precise ecological balance.

Wildlife is essential to the delicate web of nature. However, human impacts on the environment pose the greatest threat to them. These include habitat loss and overexploitation from both local and international illegal trade. Demand for wildlife parts and products from Asia continues to fuel this black market trade. The involvement of organised crime networks exacerbates this problem (www.wwf.org.za, 2023). Wildlife is also important for South African tourism. It generates opportunities and benefits for the surrounding communities as well as the broader economy. Therefore the conservation of Pilanesberg National Park and the health of its ecology is dependant on the conservation efforts of park staff and wildlife enthusiasts who visit this park time and time again.

2.1.1 Park history

Pilanesberg National Park is named after Tswana Chief Pilane. Until the 1960s, the Bakgatla tribe occupied the northern parts of Pilanesberg, while the southern portion was farmland. These lands were later taken by the government during apartheid. The Bakubung tribe established themselves here, and the land became a part of Bophuthatswana.

The reintroduction of wildlife and the establishment of the game reserve was marked by Chief Tsidmane Pilane's agreement to include their mountainous region. Families were relocated east to a new town. This process resulted in the current Pilanesberg Game Reserve. Sun International built Sun City on an adjacent farm around the same time. The park's development is still recognized as an ambitious and complex undertaking (Pilanesberg National Park, 2023; online).

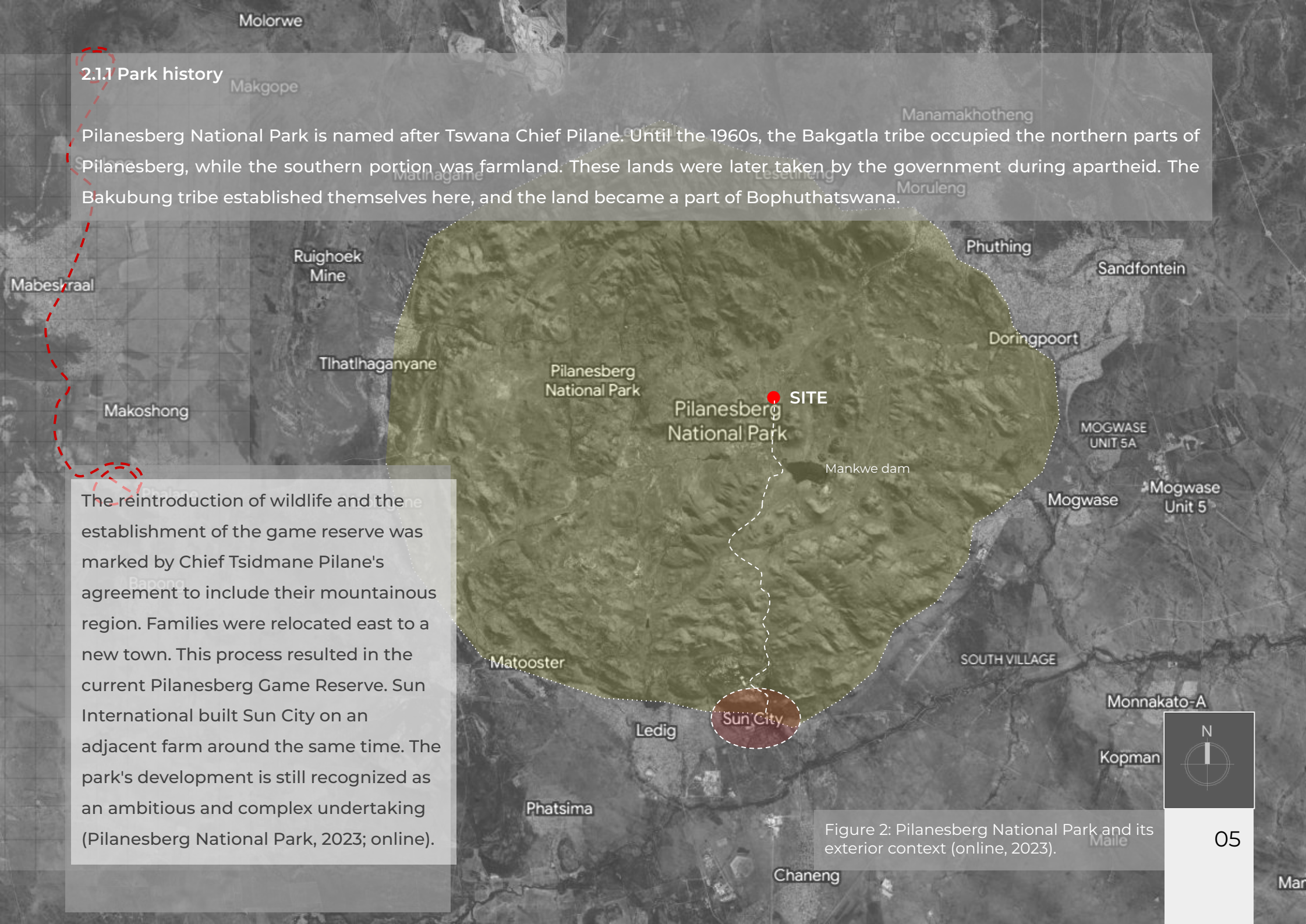


Figure 2: Pilanesberg National Park and its exterior context (online, 2023).

Figure 3: One of several African white rhinos protected by the conservationist at PNP (Author, 2019).

1.2.1 Conservation

This section addresses the interdependence of conservation systems and practises. South African wildlife conservation is aimed at preserving the country's rich biodiversity and protecting its unique and endangered species (Fig. 3). The country has long recognised the value of conservation efforts and has implemented a variety of strategies to address wildlife issues. One critical aspect is anti-poaching initiatives, which combat illegal wildlife hunting and trading. These efforts involve collaboration among government agencies, private organisations, and local communities to enforce stricter laws and improve wildlife habitat surveillance and monitoring. South Africa also supports various types of nature conservation, such as the establishment of national parks and private game reserves that promote habitat protection and wildlife rehabilitation. Furthermore, in recent years, community-based conservation projects have gained traction, fostering a sense of ownership and responsibility among local residents for the preservation of their natural surroundings. These integrated approaches have made significant contributions to South Africa's wildlife conservation, serving as an important model for other regions facing similar challenges.

1.2.2 The Crisis

The post-COVID-19 era has posed significant challenges for conservation efforts in Pilanesberg National Park. The pandemic's impact on tourism and economic activities has resulted in reduced funding and resources for wildlife conservation initiatives in the park (Fig. 4). As tourism is a major source of revenue for the park, the decline in visitor numbers has hindered the ability to maintain anti-poaching patrols and invest in vital conservation projects. Moreover, the pandemic's disruption to travel and trade has led to an increase in illegal poaching activities, putting the park's wildlife at greater risk. Governments are facing severe budget crises as a result of the economic fallout from the COVID-19 pandemic, as well as the cost of relief measures. Shortages will force policymakers to cut any 'non-essential' items. African wildlife authority budgets, which are already woefully inadequate, face further cuts, putting wildlife and wildlands at risk (Lindsey et al., 2020). Furthermore, the pandemic's toll on local communities has heightened human-wildlife conflict, as communities may turn to illegal activities, such as bushmeat hunting, for survival.

Despite the challenges, the post-COVID-19 conservation crisis in Pilanesberg National Park calls for urgent action through collaborative efforts involving the government, and local communities to bolster anti-poaching measures, restore tourism, and implement sustainable conservation strategies. Moreover, the integration of sustainable building practices in the form of an ***ecologically coherent*** extension of educational space that addresses the need for conservation funding and community integration.

Figure 4: 'Wilderness foundation, Rhino protection unit' patrol vehicle about its business (Author, 2021).

1.2.3 The Ecology

This section highlights the intricate interdependencies of life found in Pilanesberg National Park (Fig. 5) as well as the concerns of designing an architectural vessel of mutualism within the natural landscape. It should be noted that this project does not seek to accommodate nature nor any of its many creatures in a programmatic sense. The objective of this project's cohesive nature is to create a place whereby the human connection to these dwellers of the landscape can be considered and felt true. Therefore, it is important to note the various kind of landscape dwellers that call Pilanesberg National Park home. Herbivores such as zebras, giraffes, wildebeests, and impalas thrive in the park's grassy plains and waterholes. Predators such as cheetahs and hyenas roam the park's expanses, contributing to the park's intricate ecological balance. Avian enthusiasts will take pleasure in the park's abundant birdlife, which includes raptors such as the African fish eagle and vultures that circle above. Pilanesberg also supports a diverse range of reptiles, including Nile crocodiles and various snake species. On the botanical front, the park features an array of indigenous flora, including marula trees, knob thorns, and shepherd's trees. The picturesque Mankwe Dam is a thriving wetland habitat for water-loving plants and a haven for a variety of waterfowl species.

Figure 5: African elephant bull seen on a drive which approached the vehicle a few moments of stopping to watch the herd, this is a connection that individuals seek when visiting the park. (Author, 2022).

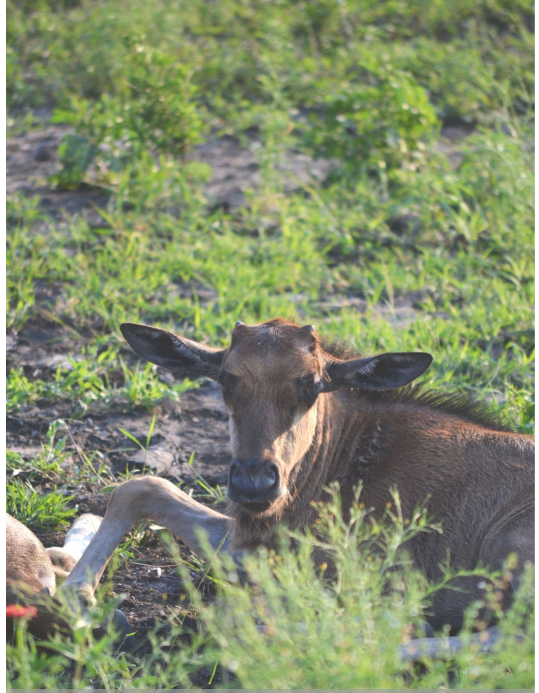


Figure 6: Blue Wildebeest calf (Author, 2019).

Figure 7: Spiders den nestled in a scrub (Author, 2019).

Figure 8: A young steenbokkie; a common small species of antelope (Author, 2019).

Figure 9: The Kori Bustard is Africa's heaviest flying bird (Author, 2022).

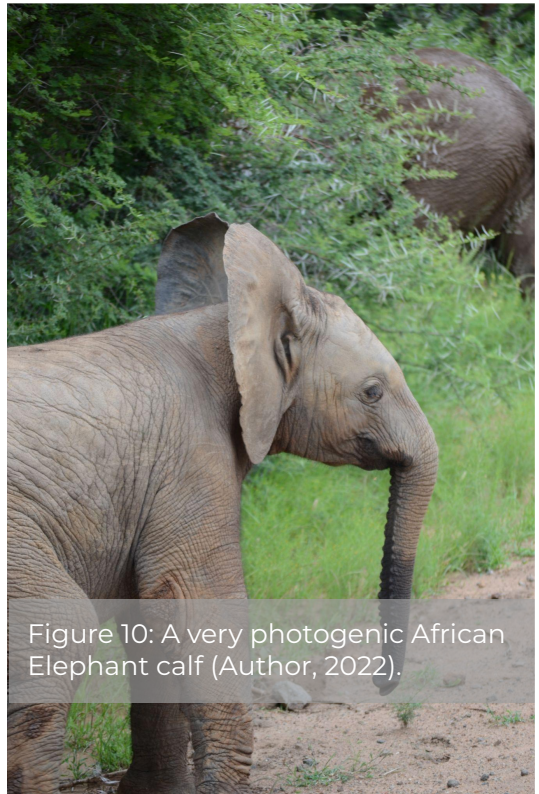


Figure 10: A very photogenic African Elephant calf (Author, 2022).

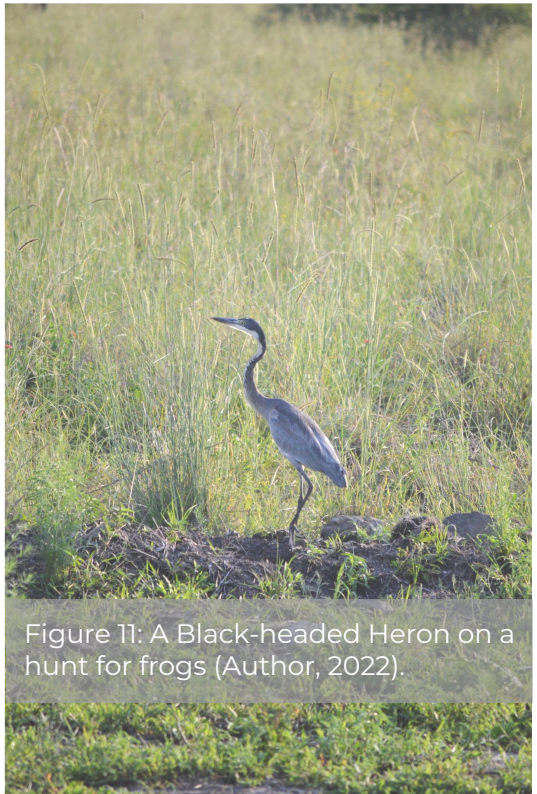


Figure 11: A Black-headed Heron on a hunt for frogs (Author, 2022).

Figure 12: The common Tsessebe (Author, 2022).

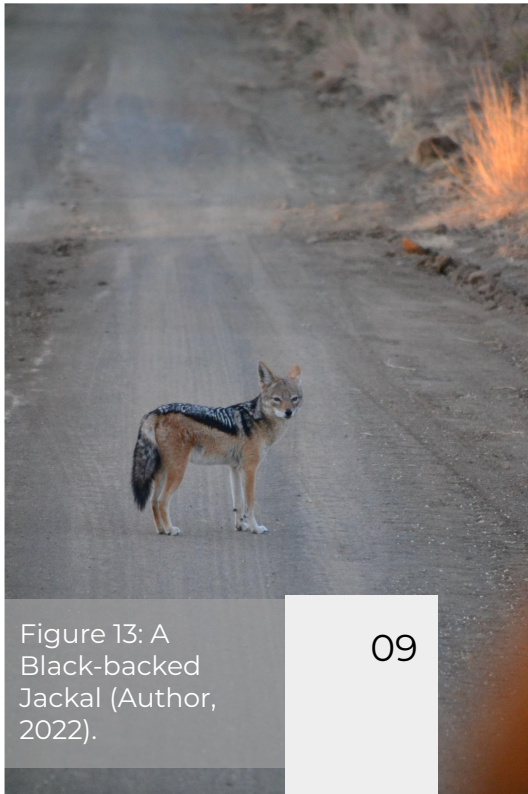
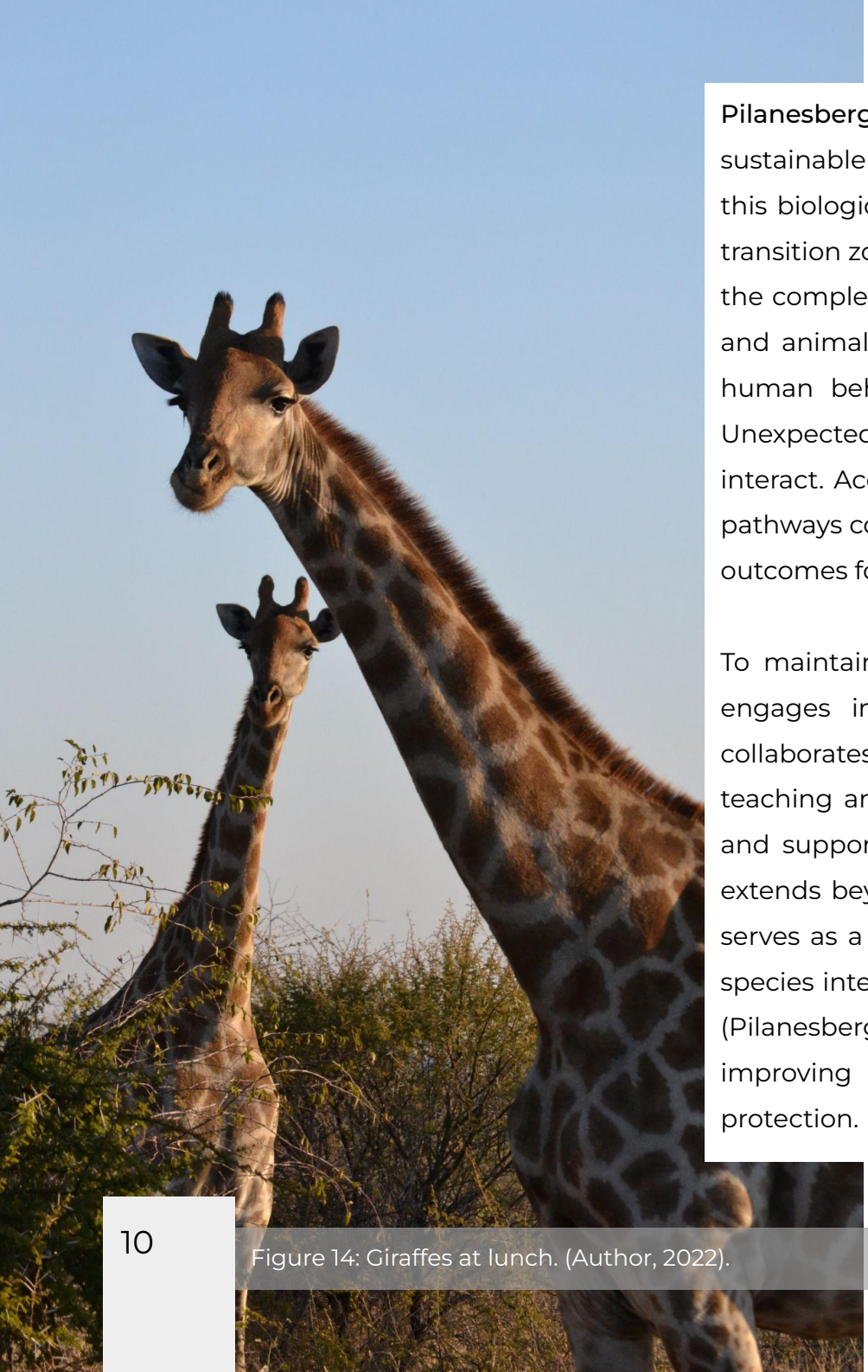


Figure 13: A Black-backed Jackal (Author, 2022).



Pilanesberg National Park has developed robust conservation programmes and sustainable management practices in recognition of the importance of protecting this biological gem. Pilanesberg is significant in terms of its ecology because it is a transition zone between the Arid Savanna and the Moist Savanna Biomes. Because of the complex substrate, there are numerous landscapes and habitats for both plants and animals. Every aspect of society has changed as a result of the alterations in human behaviour and travel patterns brought on by the COVID-19 pandemic. Unexpected opportunities have emerged to examine how people and nature interact. According to preliminary research, there are numerous direct and indirect pathways connecting changes in human activity and presence to both good and bad outcomes for wildlife, ecosystems, and conservation (Young et al., 2021).

To maintain the health and diversity of its ecosystem (Fig. 14), the park actively engages in habitat restoration, including controlled burning. Furthermore, it collaborates with local communities, students, and conservation groups to assist teaching and research programmes aimed at improving ecological understanding and supporting sustainable practices. Pilanesberg National Park's biological value extends beyond its borders, contributing to the regional conservation landscape. It serves as a living laboratory for researchers, revealing important information about species interactions, ecosystem dynamics, and the impact of conservation initiatives (Pilanesberg National park, 2023; online). Furthermore, the park is critical in improving ecotourism and creating awareness about the value of biodiversity protection.

Figure 14: Giraffes at lunch. (Author, 2022).

The impact of the construction industry on habitats within and around the park, on the other hand, poses significant challenges. Rapid urbanisation and infrastructure development disrupt natural migration routes and fragment ecosystems. Reduced biodiversity and increased human-wildlife conflict can result from habitat loss. Furthermore, construction activities pollute the environment, disturb wildlife, and alter behavioural patterns, all of which disrupt the delicate balance of the park's ecology. Therefore, when considering an architectural response to conservation mitigation, the notion of **ecological coherence** and sustainable design practices along with the knowledge of **what is to be designed in this environment needs to grow, adapt and enhance the natural landscape over time**, rather than harm it. In response to these pressing concerns, architecture can play a crucial role in mitigating the negative impacts of construction on wildlife and their habitats. By understanding the rich biodiversity of Pilanesberg National Park, conducting ecologically focused research, and employing environmentally conscious architectural responses, we can strive to protect and preserve this invaluable habitat (Fig. 15, 16) for future generations.

Figure 15: Crimson-Breasted Shrike resting in a Karee tree (Author, 2021).

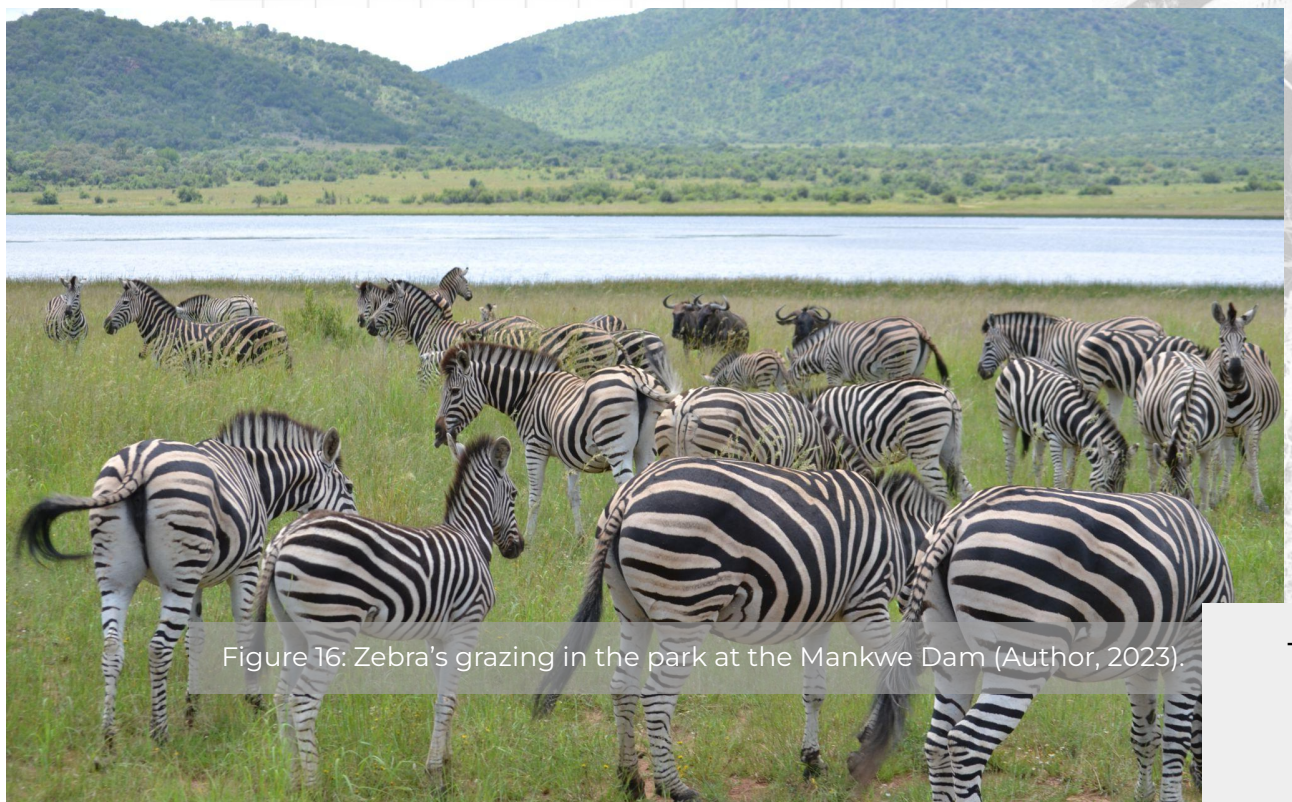


Figure 16: Zebra's grazing in the park at the Mankwe Dam (Author, 2023).

1.3 The Client

Pilanesberg is more than just a tourist destination; it additionally drives economic development in the region, which has resulted in social upliftment in this impoverished rural community. The Northwest Parks and Tourism Board established the **Pilanesberg Wildlife Trust** (PWT) in 1999 to promote conservation and social upliftment. One of the priorities is to create initiatives that have the potential to produce funds for the Trust, which is a registered Public Benefits Organisation (PBO), in order to make it more sustainable. The trust was founded on the notion that funding for the park means funding for conservation.

Some of Pilanesberg Wildlife Trust's main objectives include:

+ Eco-tourism and conservation
+ Conservation of the biodiversity
+ Socio-economic upliftment in of nature conservation & tourism
+ Internal and external corporate communications
+ Fundraising to meet the above objectives

Figure 17: (Pilanesberg Wildlife Trust, 2023).

Visitors to the park have the opportunity to engage in various activities that offer immersive experiences in the lush landscape of the Northwestern bushveld; game drives (Fig. 17), guided walks, and hot air balloon safaris provide avenues for observing and appreciating the park's wildlife and stunning landscapes. Additionally, strategically positioned hides and serene picnic spots enable visitors to relax while interacting with the park's fauna and flora. Pilanesberg National Park also features two distinct game reserves, the Mankwe Wildlife Reserve and the Manyane Wildlife Reserve, which provide exclusive and secluded areas for game viewing. These reserves enhance the visitor experience, allowing for a more intimate and immersive connection with the wildlife and natural surroundings. The park's dedication to conservation and sustainable tourism ensures the preservation of its ecological and cultural heritage, establishing it as a prominent landmark in South Africa's vast landscape.

Figure 18: Cheetahs proudly standing on a rock in the landscape. (Author, 2023).

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Author, 2023

CHAPTER 02

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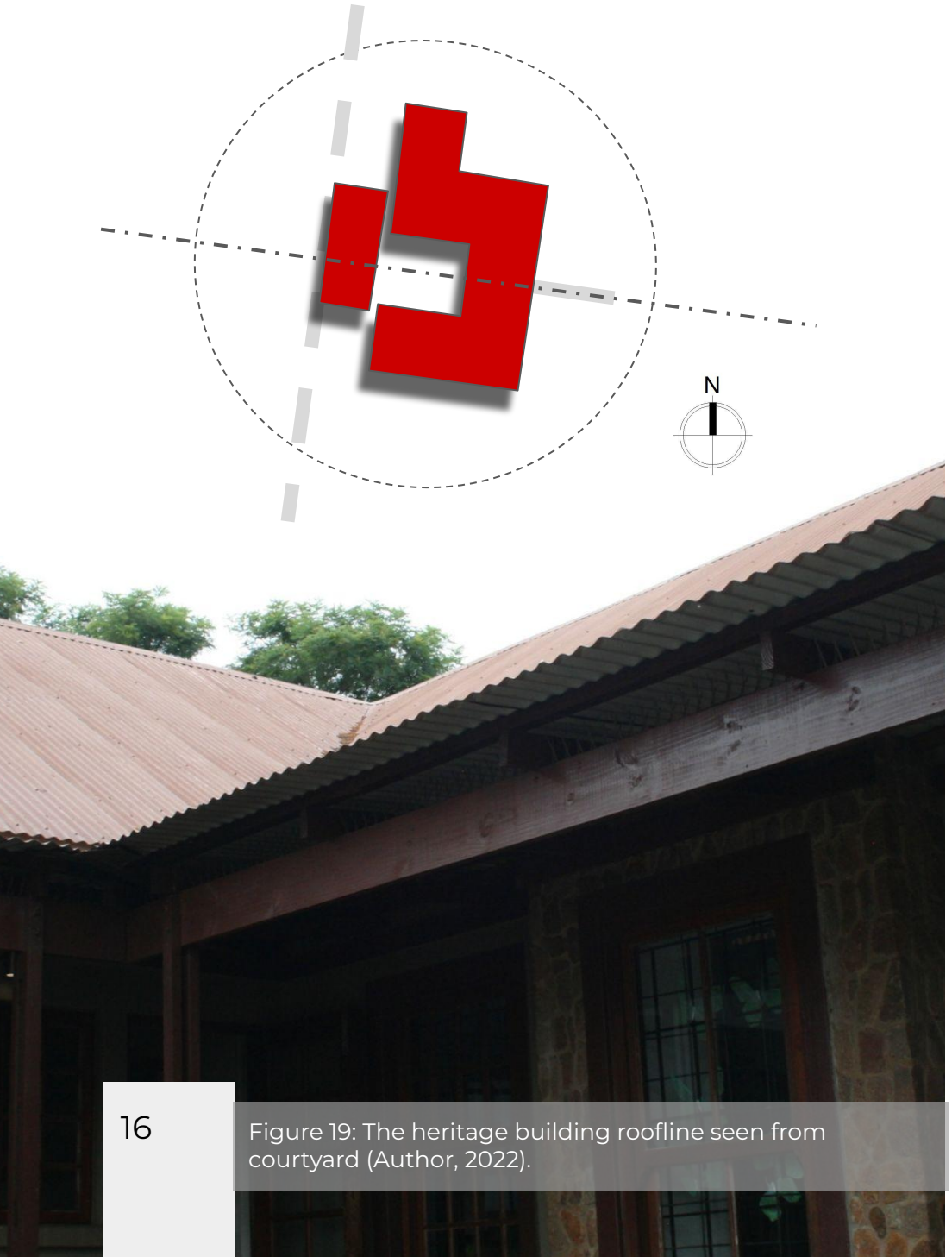


Figure 19: The heritage building roofline seen from courtyard (Author, 2022).

2.1 Site analysis

This section specifically focuses on the site, its topographical context as well as the spaces that shape this ***vessel of the landscape.*** From here, a metaphysical understanding of the existing building, its orientation and its role within the park will be illustrated. Therefore two initiatives are established to ground this analysis in the discourse of this project:

A.) Preserving historical structures while providing a functional and immersive space, tuned with the landscape.

In this specific heritage building (Fig. 19), where an enthralling spatial journey awaits the visitors, invoking a sense of visiting a built-form from a different place in time. The building's layout manipulates the visitors' perceptions, guiding them through various thresholds that culminate in a unique cosmic interaction. The frame of dwelling, carefully preserved and restored, sets the stage for an immersive experience. The journey through the heritage building takes an intriguing turn as visitors traverse a second threshold. Here, the atmosphere changes, as they encounter a fire pit-centered courtyard opening the landscape and framing the site.

B.) Preserving site memory while considering an architectural response to the landscape that seeks to remediate specific contextual concerns.

When considering a site in the physical and maintained state as this built form, as well as the landscape it unfolds so geometrically, the life and trace silhouette of place generates a specific cosmic transaction that remains forever a spatial memory (Fig. 19). This convergence of elements evokes a sense of unity. The open space of the courtyard serves as a powerful stage for contemplation and reflection as visitors progress further, the cosmic interaction finds its crescendo. Positioned strategically to offer panoramic views of the surrounding landscape, this space becomes a portal to connect with nature's grandeur while enjoying culinary delights in the final extension of the threshold. However, if this space is to house the remediation of specific conservation concerns, the main concern should be maintaining the spatial memory of both human and Non-human dwellers of the landscape, and subsequently immersing the the building, keeping it as a perched extension of the landscape.

Figure 20: The sunset in Pilanesberg National Park (Author, 2022).

2.1.2 Site history

Burgert Gotlieb Smit purchased a registration certificate for Buffelshoek (Fig. 20) in 1920. Prior to the park's opening in 1981, the historic structure served as a magistrate's court and a home affairs office for locals who resided within the park's limits. This analysis will deal with the heritage site's contextual foreground (Fig. 21) by addressing the morphological responsibility of a built form in the complex natural landscape.

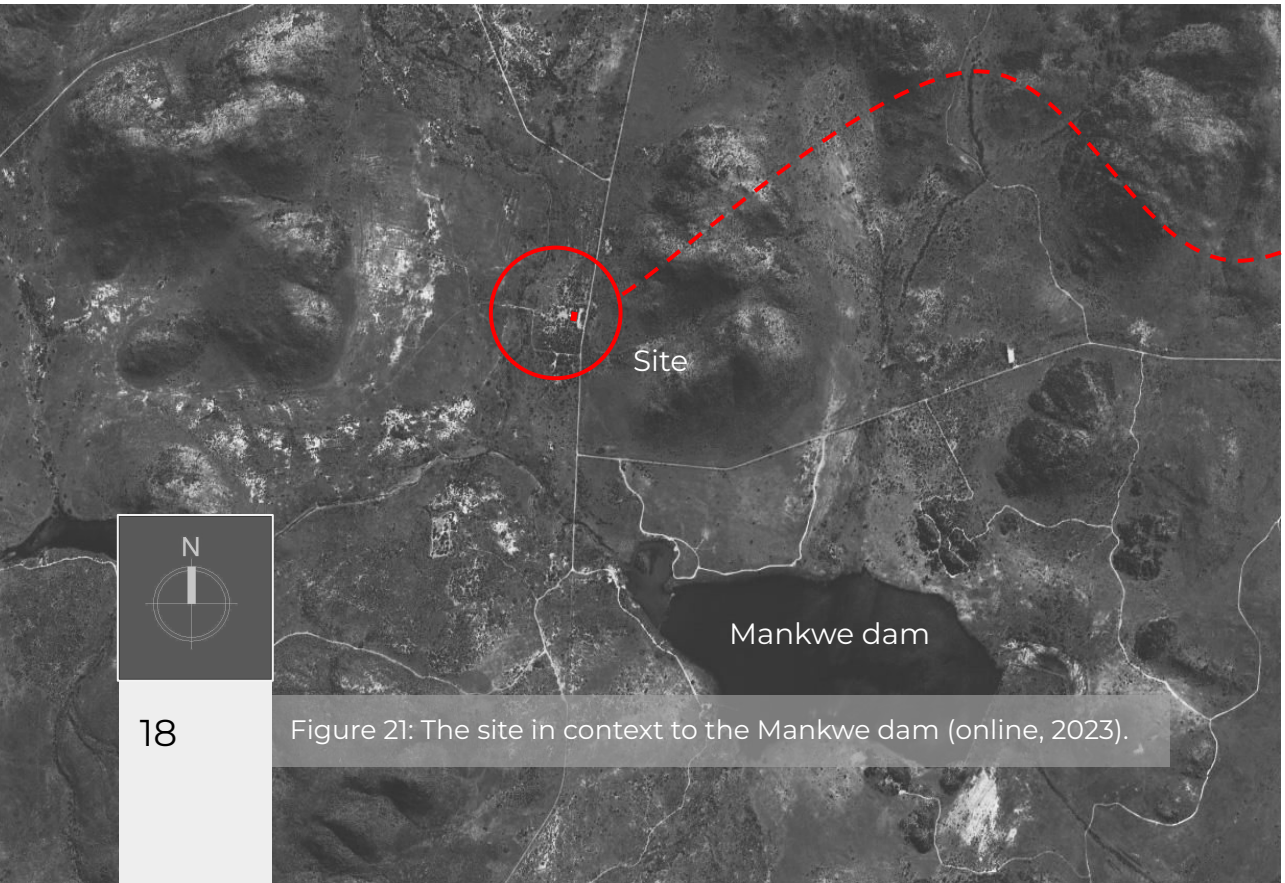


Figure 21: The site in context to the Mankwe dam (online, 2023).

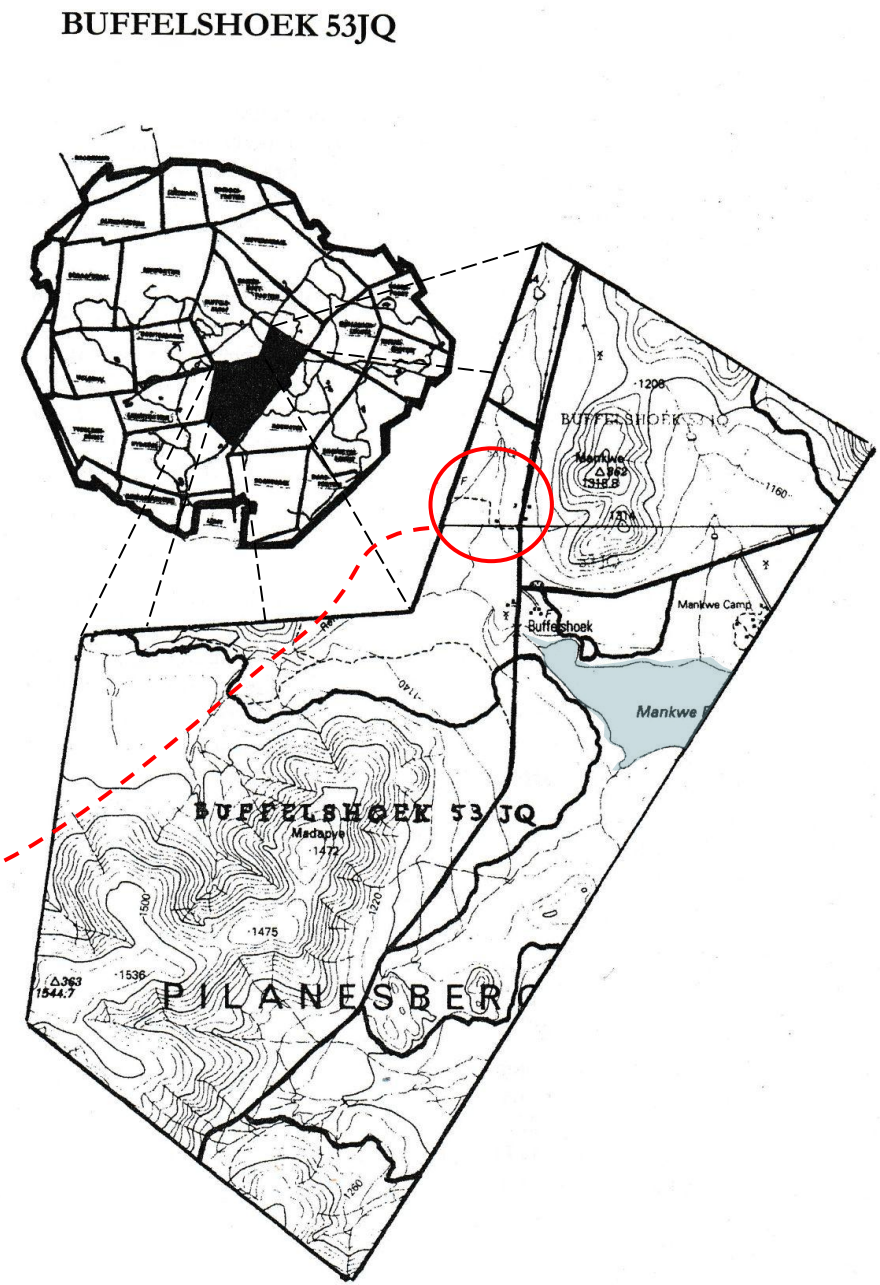


Figure 22: Map of Buffelshoek outlined from the Pilanesberg National Park map (Ruyter, 2005).

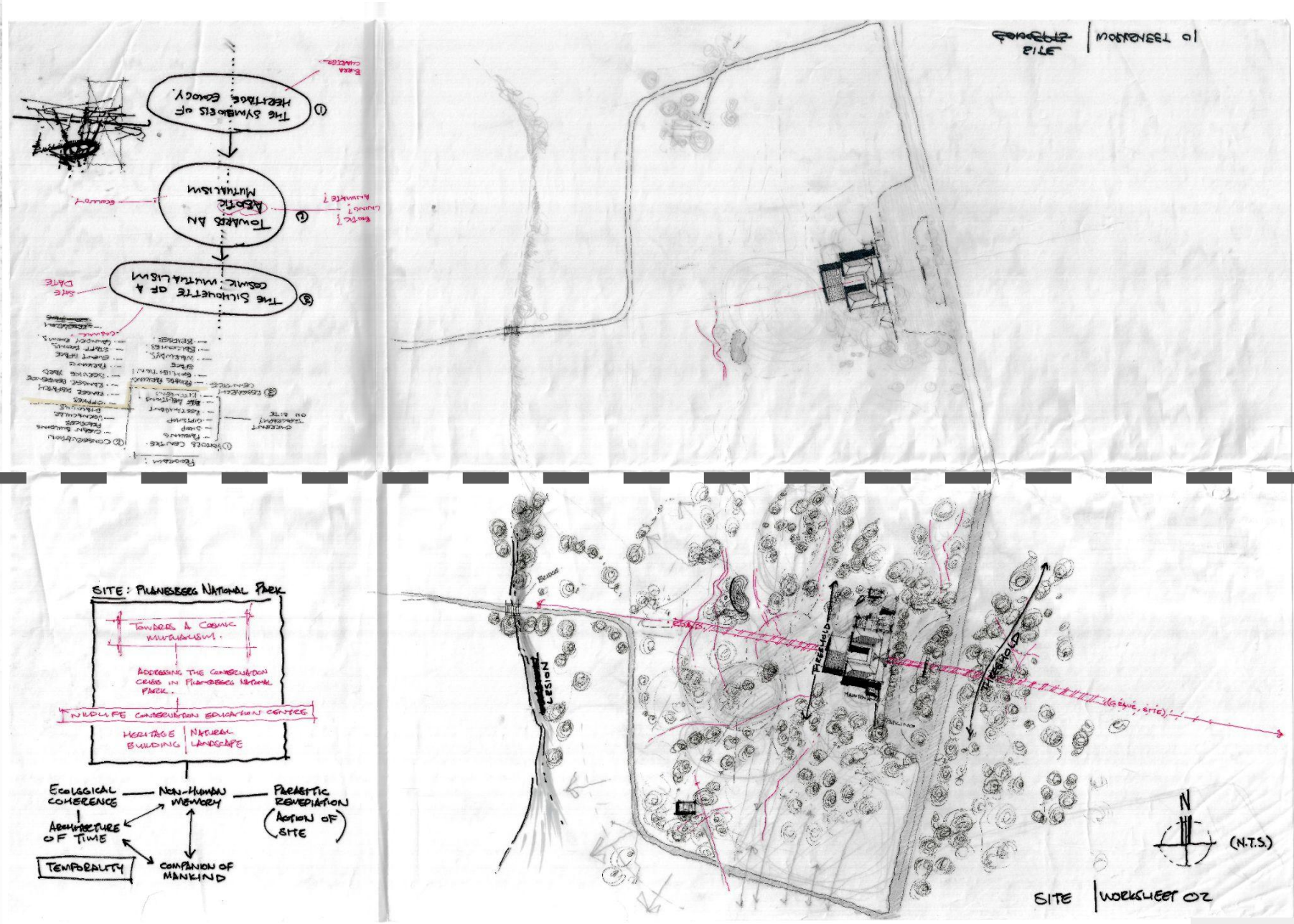


Figure 23: First two sketches of the site and its abiotic context, establishing a mode of analysis as well as interpreting an understanding of site thresholds and boundaries (Author, 2023).

Figure 24: Heritage building bell gable on the south-east elevation (Author, 2023).

2.1.3 The heritage building

Originally designed as a magistrate's office, this structure (Fig. 24) has adapted to the landscape and the needs of its dwellers over tim. The built form has been pierced, painted, disjointed, and neglected over time, however, as of recently the park has taken measures to uphold the maintenance and standards of this visitors centre. The current measure of the place is similar to that of an oasis, peering through the trees and orienting the visitors experience of the park. The current visitors centre is a dedicated space where everyone is welcome to relax in the shade, enjoy a meal, shop for souvenirs, and resock the cooler before heading out for the remainder of your game drive and wilderness experience.(Fig. 25)

Figure 25: Entering the PNP visitors centre heritage building Axis view (Author, 2023).

Figure 26: Entering the PNP visitors centre heritage building Axis view (Author, 2023).

Figure 27: Restaurant adjacent to heritage building (Author, 2023).

The site demonstrates an extension of thresholds that encapsulate the visitors experience. This experience is augmented along an axis that extends from the exterior of your vehicle in the parking lot, to the ridge of the restaurants railing (Fig. 26). On this axis a dialogue of topography can be traced (Fig. 26), noting the various absences of vegetation, as well as well as the collection of axes that frame the heritage site in the landscape. Within the confines of the visitors' centre, modest yet practical amenities are provided to enhance the overall visitor experience. These include a **gift shop, padstal, restaurant, ablutions, kitchen, and buffet area,** contributing to the visitors' comfort and engagement with elements of local culture and heritage. Nevertheless, it is imperative to address the prevailing concerns regarding the neglect of the heritage building and the insufficiency of funding, leading to challenges in maintaining this essential infrastructure. This state of disrepair raises pertinent questions about the conservation and preservation of historically significant structures, necessitating scholarly attention and proactive restoration efforts.

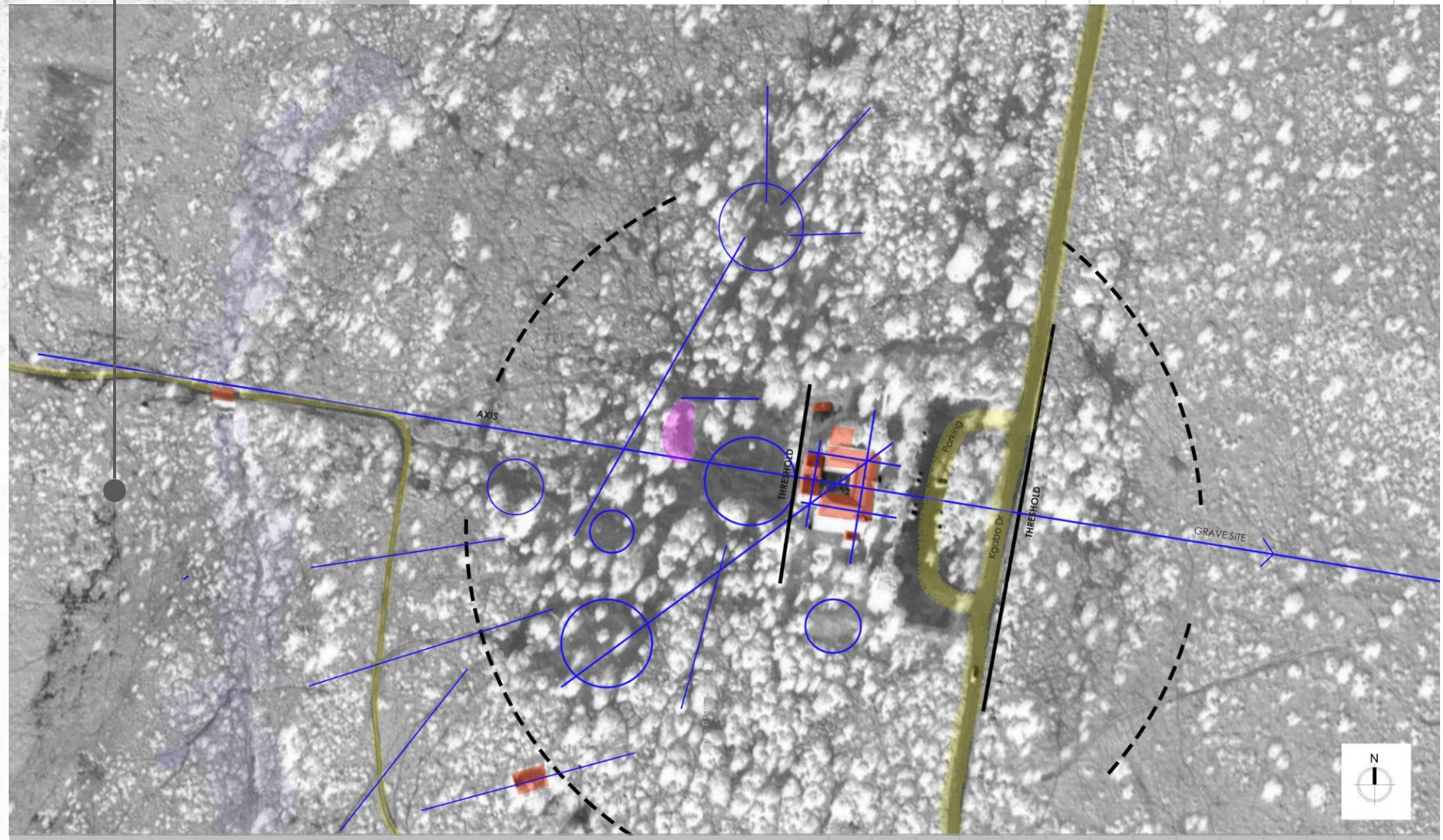


Figure 28: The site under investigation. This illustration depicts various absences of vegetation set along the main axis of discovery whereby the landscape unfolds (Author, 2023).

Figure 29: The courtyard fire pit. This cosmic space is often used to host events and ushers visitors into a pace of discovery (Author, 2023).

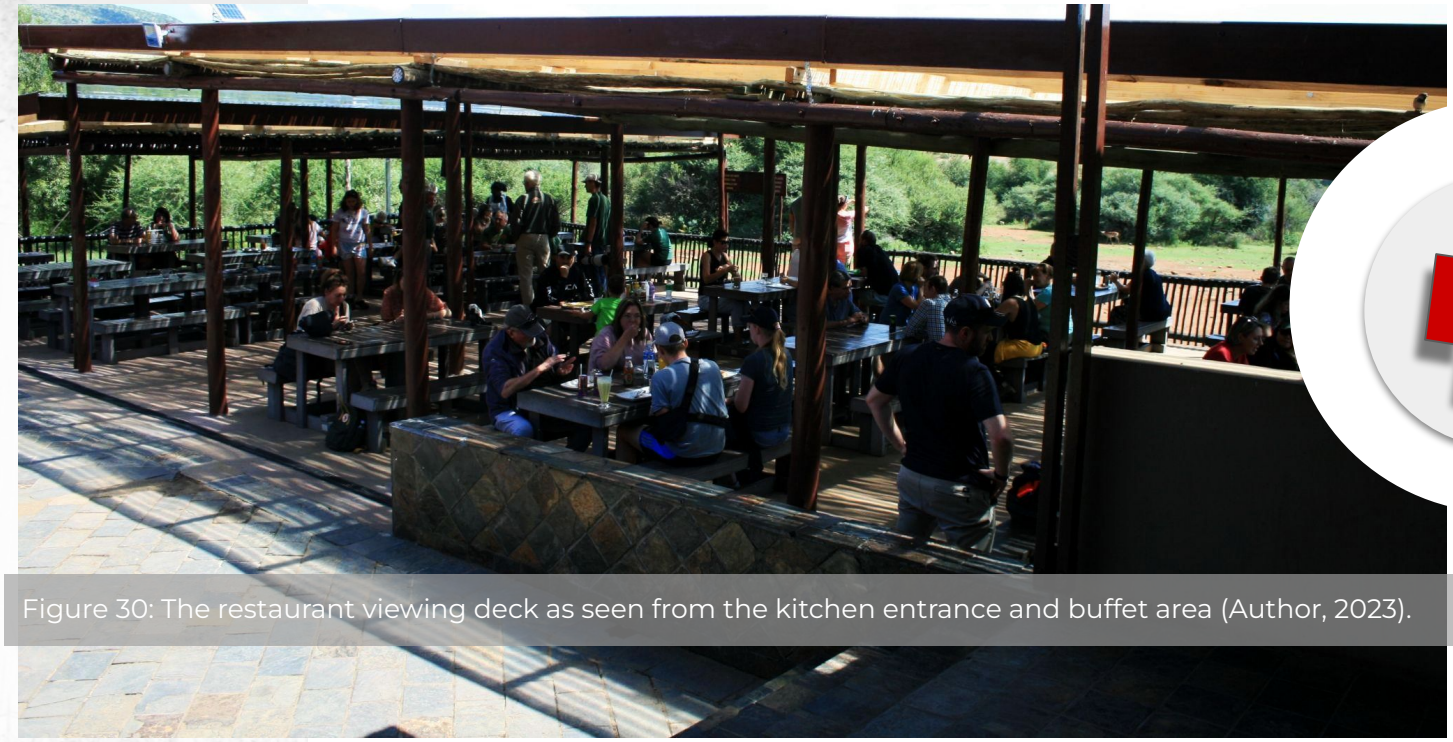


Figure 30: The restaurant viewing deck as seen from the kitchen entrance and buffet area (Author, 2023).

Figure 31: Heritage building bell gable on northern elevation, where the service yard feeds into the kitchen back room (Author, 2023).

2.2 Touchstone

This section of the project explores the narratives and unrefined pretext of the project, a touchstone; testing the essence of the project and the cohesion of possible concepts that can be generated, through the presentation of a physical model. This theoretical exploration creates the first ripple in the water that creates avenues of discourse. Undoubtedly, formulating an architectural response from this exploration seems dubious. However, establishing a contextual narrative for an architectural response is the true nature of this exercise.

The rhino horn evolved as a defence mechanism and sparring tool, it is however, its Achilles heel and the reason for its persecution. At the beginning of the 20th century, 500,000 rhinos roamed Africa and Asia. By 1970, rhino numbers had dwindled to 70,000; today, less than 27,000 rhinos remain in the wild (wwf.org.za, 2023). This is merely a reflection in the myopic lens of the illegal trade industry and the parasitism that has and continues to slaughter in the name of greed and misguided medical claims. This touchstone exemplifies the corporal essence of an animal in crisis; statically facing off against the flame of time. Furthermore, this model generates a trace narrative of non-human memory through abiotic mutualism; developing a visual essence of the crisis at hand (Fig.32).

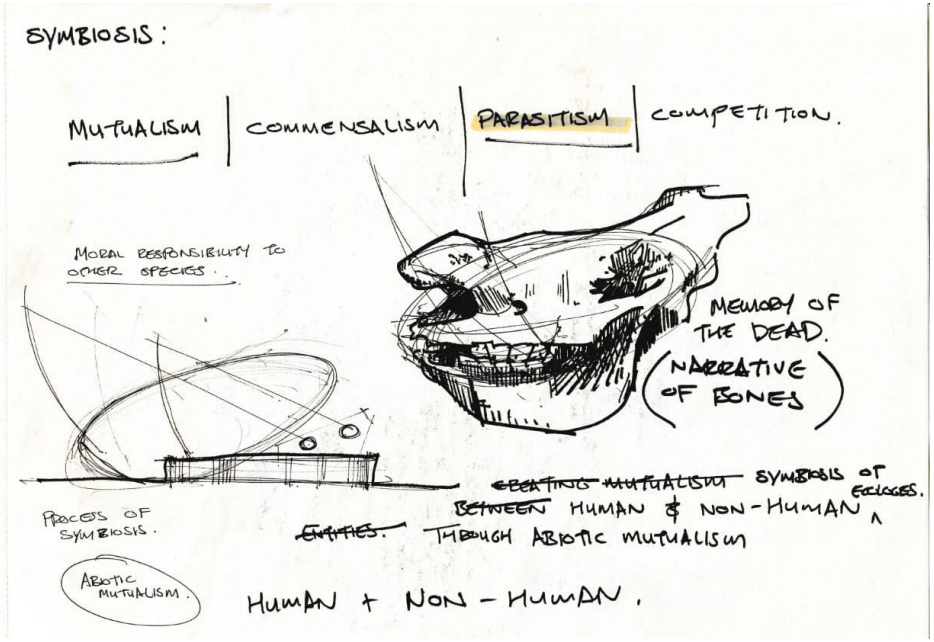


Figure 32: This sketch illustrates the conceptual approach to this touchstone (Author, 2023).

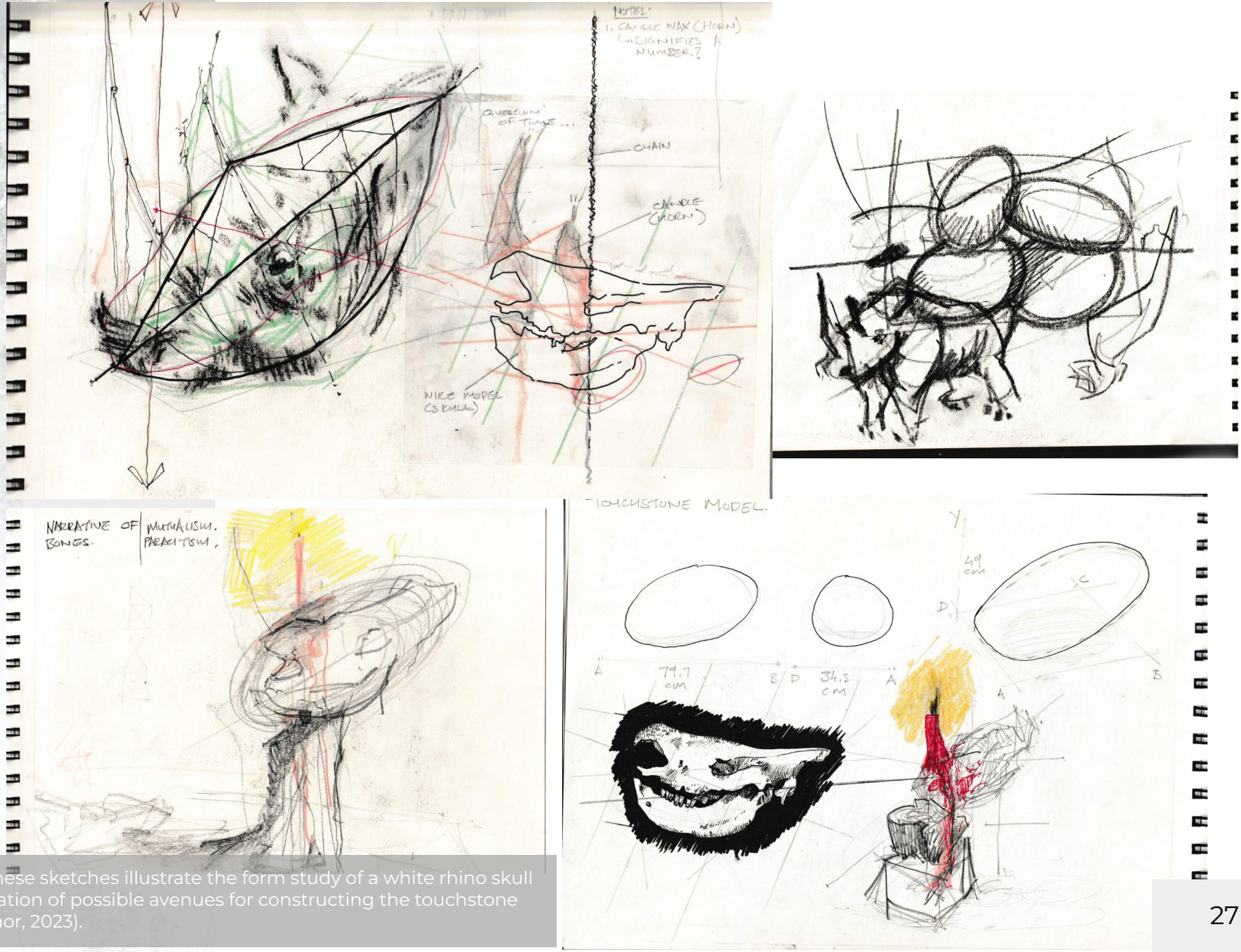


Figure 33: These sketches illustrate the form study of a white rhino skull as an exploration of possible avenues for constructing the touchstone model (Author, 2023).

2.2.1 Touchstone: **Model**

The model was built through a meticulous process of manipulating wires and deftly bending them into frames with subtle variations in thickness. This was accomplished by meticulously replicating a series of detailed investigative line drawings, ensuring a faithful representation of the form qualities. When the scale frame of an African White Rhino skull began to take shape, it signaled the start of a transformative journey. The strategic interplay of rust and twine caused the deliberate deconstruction of features and the measured tension of membranes. These elements worked together to guide the molten drips of wax, orchestrating the evolution of the built form in its ongoing battle with the relentless passage of time (Fig.34).

Figure 34: These sketches illustrate the form study of a white rhino skull as an exploration of possible avenues for constructing the touchstone model (Author, 2023).

Figure 35: These sketches illustrate the form study of a white rhino skull as an exploration of possible avenues for constructing the touchstone model (Author, 2023).

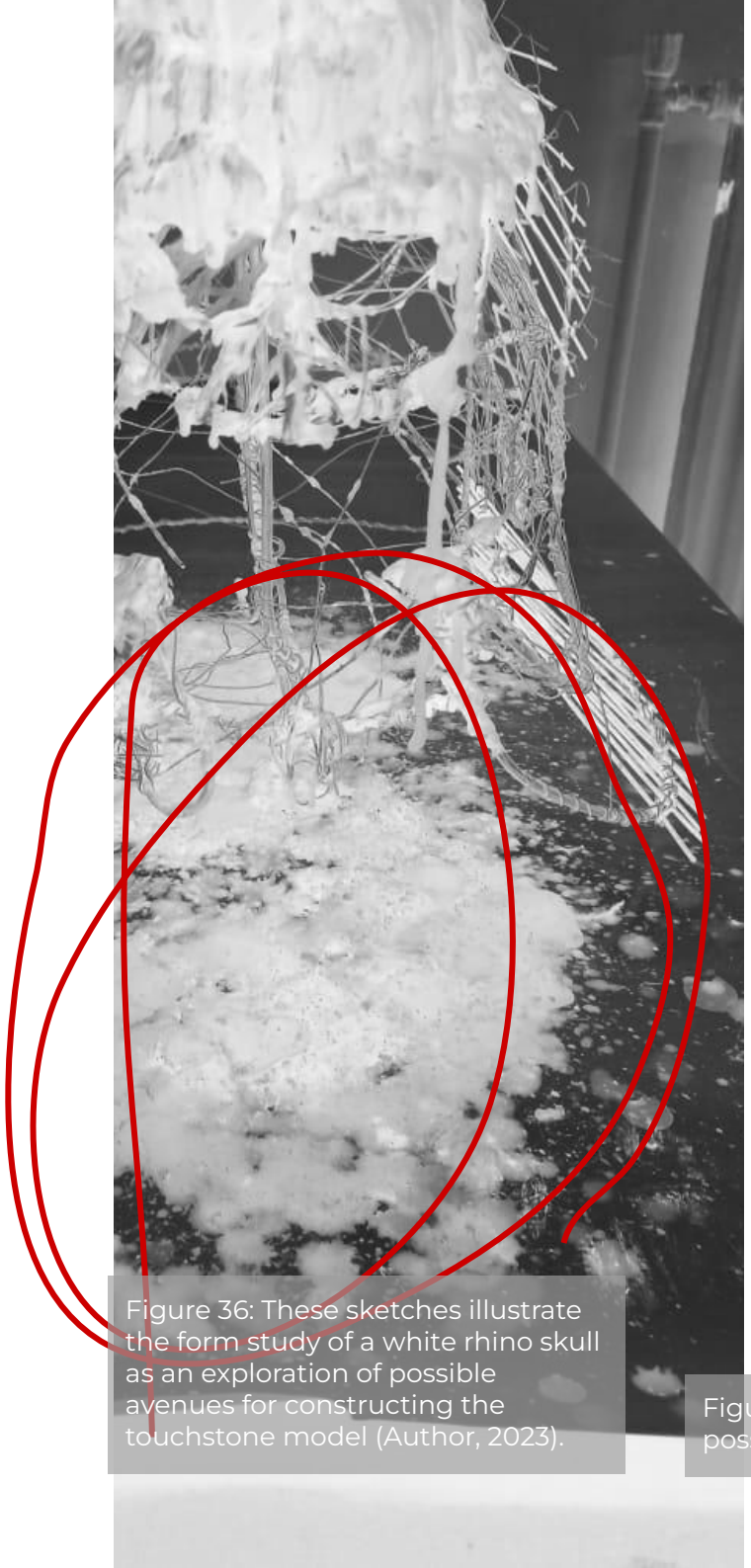


Figure 36: These sketches illustrate the form study of a white rhino skull as an exploration of possible avenues for constructing the touchstone model (Author, 2023).

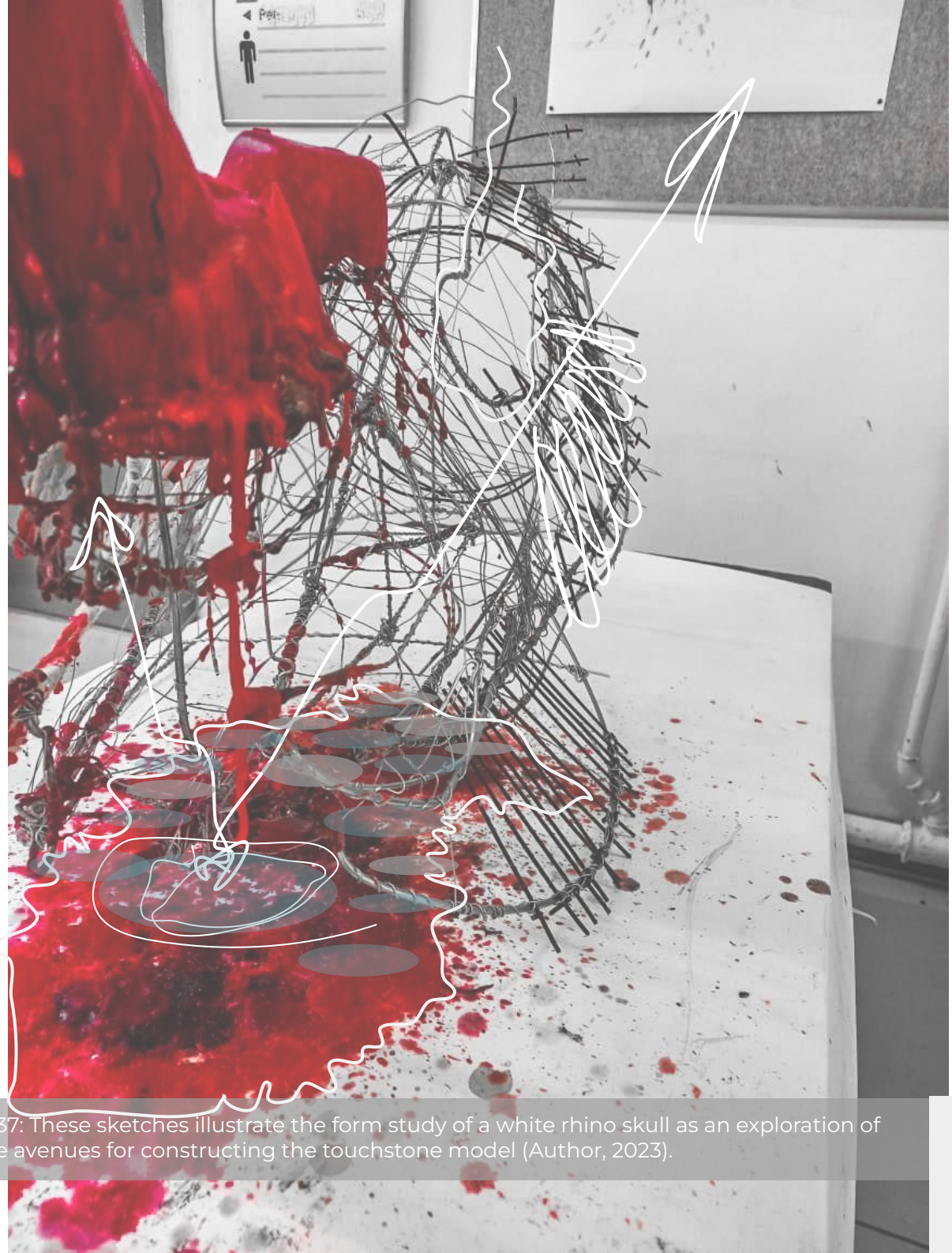


Figure 37: These sketches illustrate the form study of a white rhino skull as an exploration of possible avenues for constructing the touchstone model (Author, 2023).

2.3 Three **Concepts**

This milestone in the project was intended to develop different avenues of discourse, iterating from the touchstone exercise on three different conceptual approaches to the project, each presented as a concept diagram with conceptual key words and a concept model (Fig. 38). By establishing a visual and physical narrative pretext for the project based on the site and its context, this tryptic; ***Parasitic remediation, Non-human memory, Ecological coherence*** - is conglomerately shaped to form a narrative pretext for site interaction and the unfolding of thresholds.

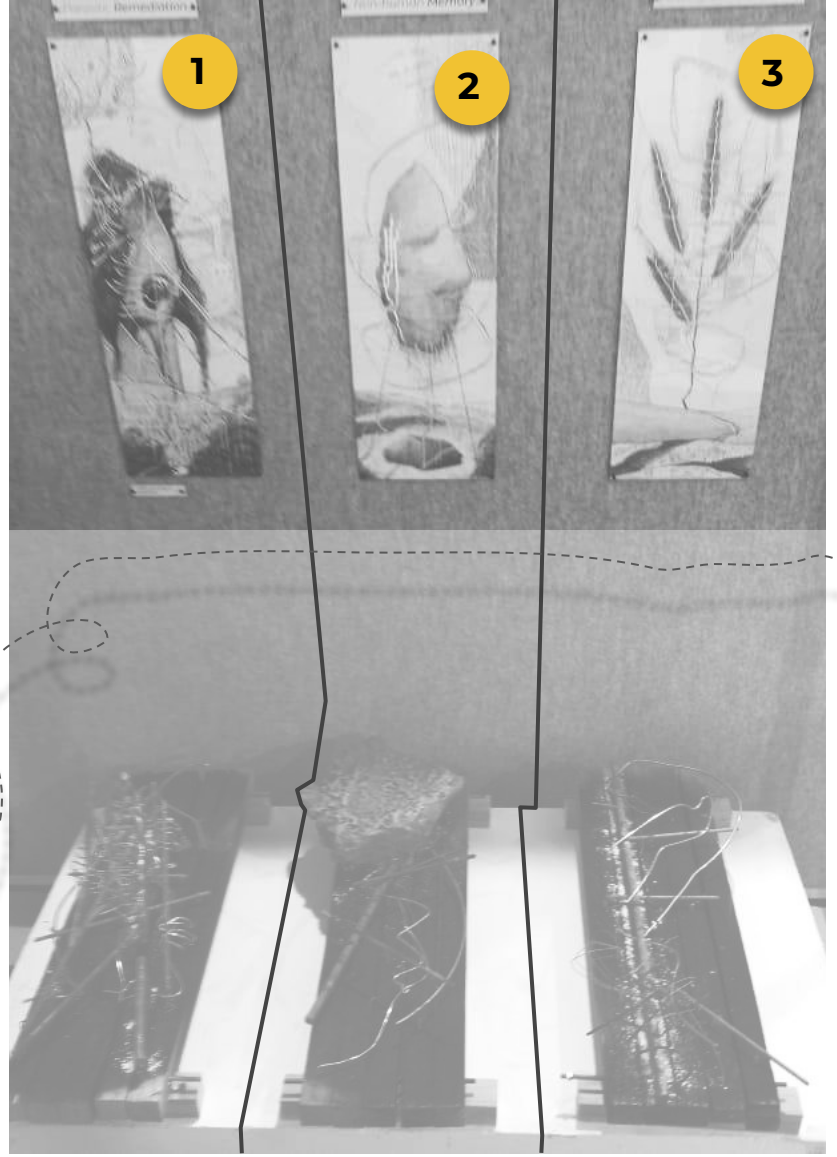


Figure 38: These sketches illustrate the form study of a white rhino skull as an exploration of possible avenues for constructing the touchstone model (Author, 2023).

01

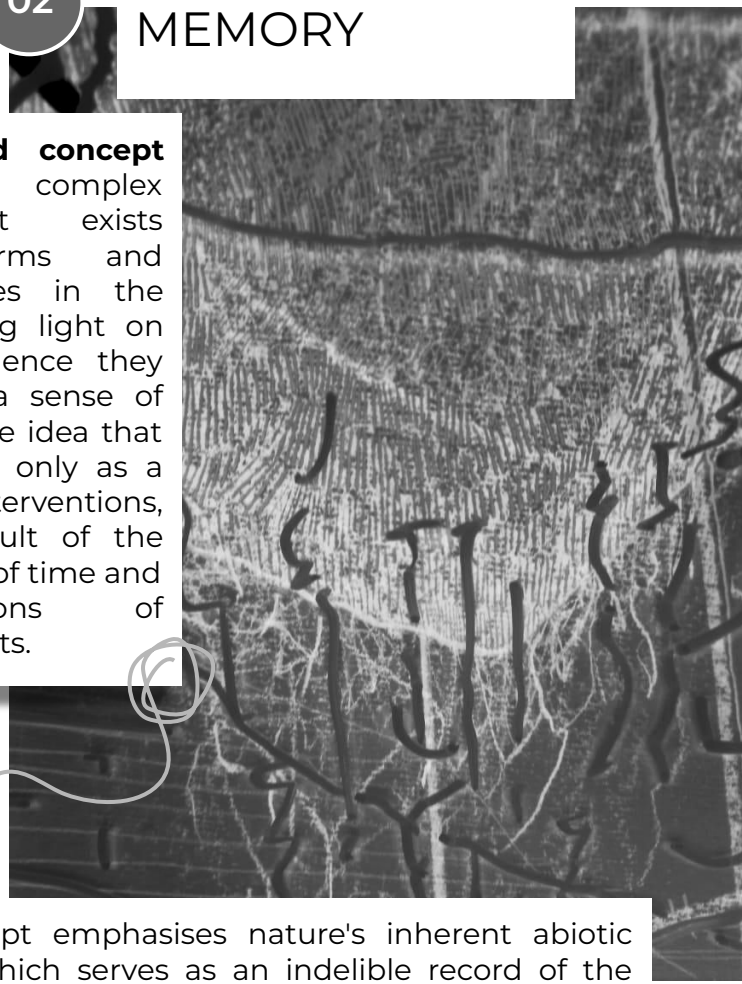
PARASITIC REMEDIATION

2.3.1) The first concept is inspired by nature's circular arc, encapsulating the cyclical essence of life within the natural world. It depicts the intricate dance of birth, growth, decay, and renewal, which reflects the eternal rhythms that govern ecosystems. This depiction of nature's corporeal essence, marked by symbiotic relationships, emphasises the interconnectedness of all living organisms. Each entity feasts on the landscape in its own unique way, drawing sustenance and energy from it. However, it is critical to recognise that this dynamic exchange is a two-way street. In turn, organisms contribute to the vitality of their surroundings, ensuring the continuity of life's grand tapestry. This profound realisation highlights the potential for architectural intervention to address human nature's parasitic tendencies. By drawing inspiration from these natural cycles, architectural design can seek to emulate the harmony and balance found in ecosystems, forging a sustainable relationship between the built environment and the surrounding landscape.

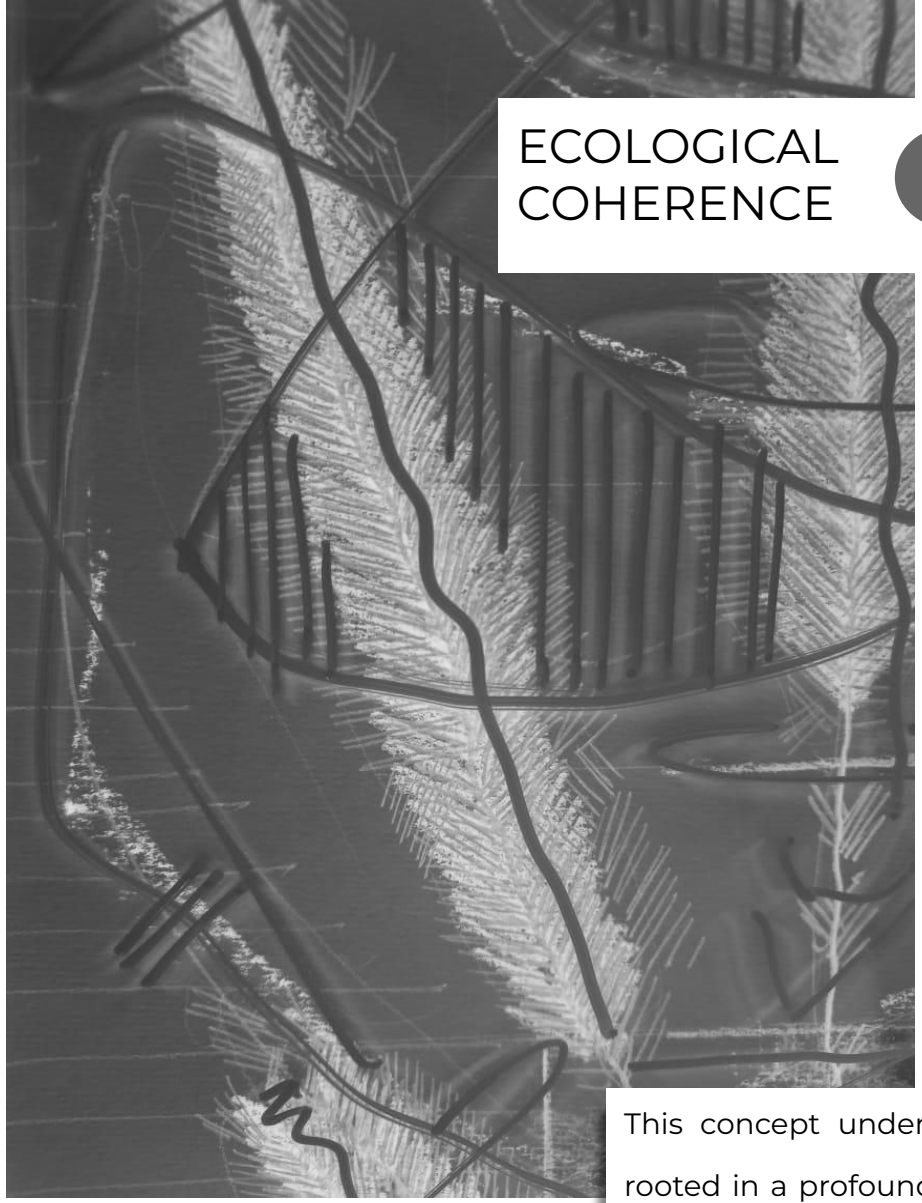
02

NON-HUMAN MEMORY

2.3.2) The second concept delves into the complex relationship that exists between time-forms and non-human entities in the landscape, shedding light on the profound influence they have on shaping a sense of place. It explores the idea that places emerge not only as a result of human interventions, but also as a result of the inexorable passage of time and the contributions of non-human elements.



This concept emphasises nature's inherent abiotic layering, which serves as an indelible record of the past, etching the chronicles of geological shifts, climatic variations, and the subtle imprints of numerous organisms. These temporal narratives, intertwined with the enduring presence of non-human entities, serve as the core of a place's identity.



ECOLOGICAL COHERENCE

03

2.3.3) The third concept encapsulates a profound awareness of nature's enduring, cohesive trace within the landscape. It asserts that any design within this environment must contend with the inevitability of time and the complexities of the fourfold - a dynamic interplay between earth, sky, divinities, and mortals. This viewpoint necessitates the realisation that architectural interventions must not only be visually appealing or functionally efficient, but must also be resilient enough to evolve in tandem with the ever-changing natural forces. In essence, it calls for designs that are living, breathing entities that adapt and respond to the dynamic rhythm of the environment, rather than static entities.

This concept underscores the imperative for architectural endeavors to be rooted in a profound respect for the enduring legacy of nature and its eternal presence in the landscape. By doing so, designs can aspire to be not just structures, but integral components of a larger, interconnected system, ultimately contributing to a sustainable and harmonious coexistence with the natural world.

CONCEPTS: SUMMARY

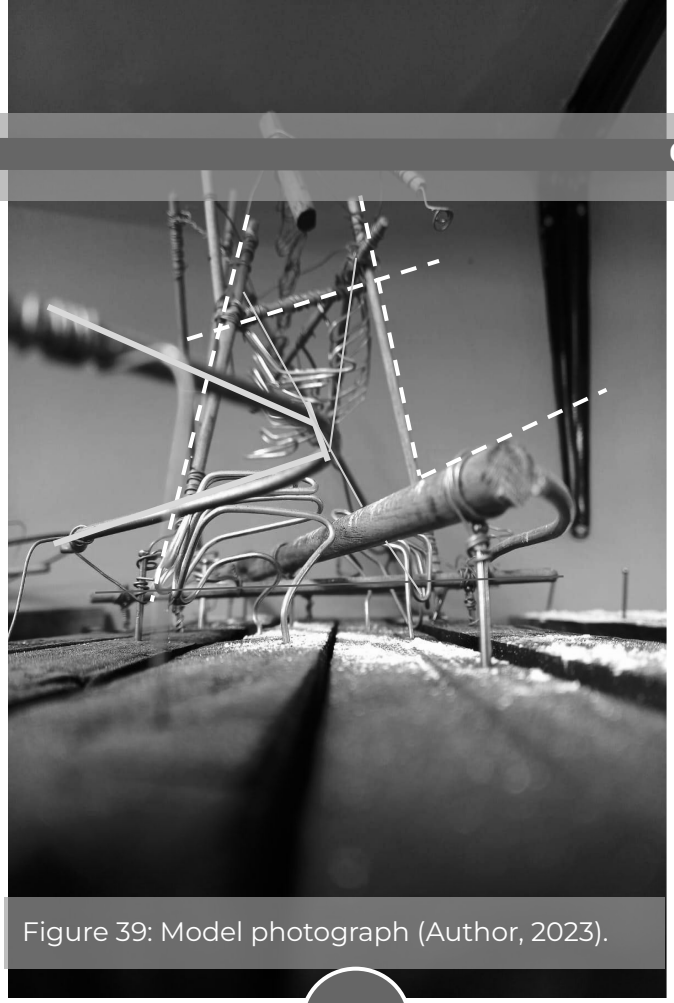


Figure 39: Model photograph (Author, 2023).

Figure 40: Model photograph (Author, 2023).

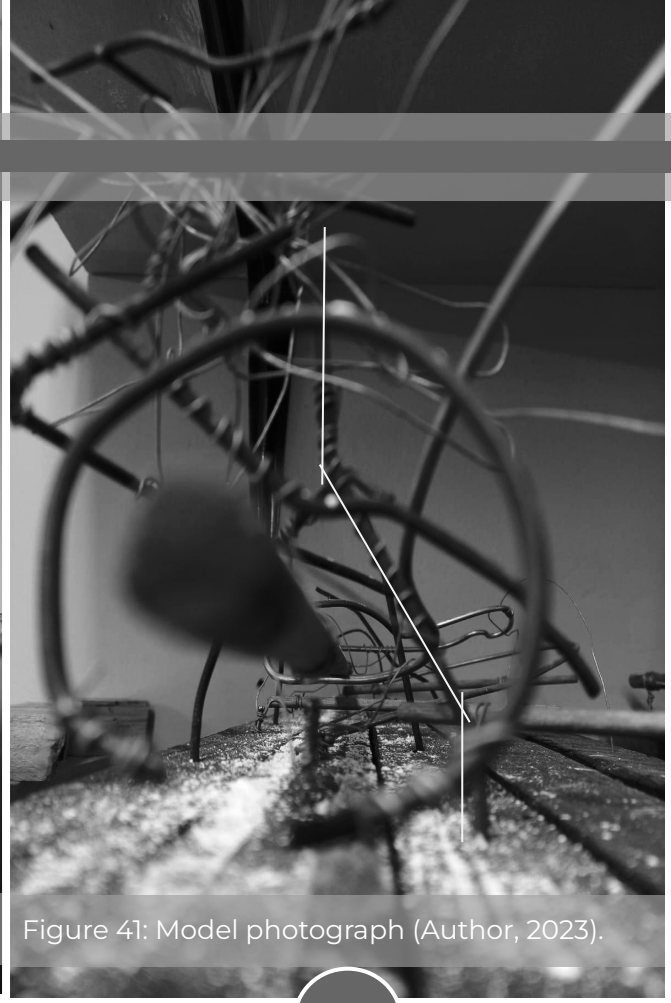


Figure 41: Model photograph (Author, 2023).

01

PARASITIC REMEDIATION

[attacking from the root]

The first concept evokes the circular arc of nature. The corporeal essence of symbiosis feasting on the landscape and then returning to the dust; realising how an architectural response can address the parasitic tendencies of human-nature.

02

NON-HUMAN MEMORY

[aligned with what was before]

The second concept examines how place is generated from time-forms and non-human entities in the landscape. This concept highlights the intrinsic abiotic layering of nature over time.

03

ECOLOGICAL COHERENCE

[what grows here; stays here]

The third concept exemplifies the cohesive trace of nature; acknowledging that whatever is to be designed in this landscape needs to face off time and adapt to the fourfold.

34

Author, 2023

CHAPTER 03

CONTENTS:

The leitmotif of this chapter *is to outline various themes and narratives that subject the project to a different mode of site analysis. Now that a malleable understanding of site temporality and context has been generated, the discourse of narratives can be established. In this section, a theoretical disposition will be developed, interpreting the process's findings thus far as an exploration of alternative assemblages of narrative pre-text. The preservation of the natural landscape and the health of its ecology is now more than ever dependent on human actions. We now decide the survival of its numerous species, just as nature previously determined our own. A greater understanding of the fourfold and the character of the landscape that embeds this project as a cycle of temporal abiotic adaptation to the landscape of Pilanesberg National Park will be generated by delving into the pretextual elements that generate theoretical discernment. This analysis is essential to understanding the context that shapes the thresholds of this landscape and its pluralistic architecture that ultimately contributes to the conservation of the park. In summary, this chapter investigates the intersection between architectural heritage, typology, thresholds, and mutualism. It emphasises the importance of considering architecture as an essential part of the landscape in which it exists. The planned Wildlife Visitors and Education Centre strives to be a tribute to the power of architecture as a catalyst for positive change in Pilanesberg National Park.*

Figure 42: Interconnected species swimming in the makwe dam (Author, 2023).

Figure 43: This sketch denotes the conceptual approach to this metaphysical analysis of threshold (Author, 2023).

03/04/23

3.1 Human and Non-human narratives

This composition explores the narrative pretext presented on site as the cohesive memory of both the human (Fig. 43) and non-human (Fig.44) experience, usage of, and adaptation to the site. Understanding the human and non-human narratives that shape the site experiences will aid in analyzing the abiotic trace memory of the site.

The narratives that shape this discussion are linked to three design concepts: ***ecological coherence, non-human memory, and parasitic remediation***. These concepts generate the programmatic and physiological conditions that stimulate landscape dwellers' perceptions. The narratives of the park's visitors, the mammals that roam it, the insects that inhabit its micro-context, and the parasitic interferences that seek to harm this environment for personal gain are all interconnected and form a cohesive experience. The physical abiotic built forms in the landscape that serve as time-forms, fostering the connection between these two independent entities, create the human and non-human narratives that shape this project response.

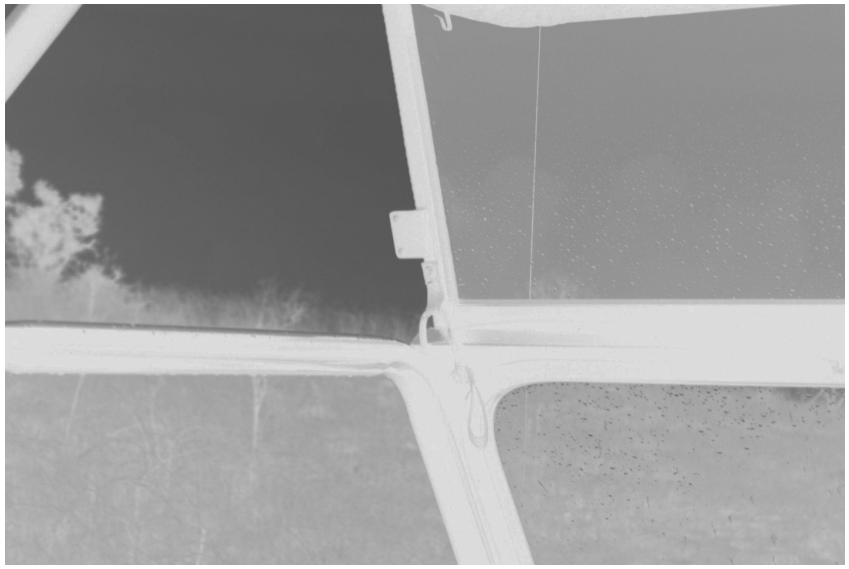


Figure 44: Photograph taken from vehicle interior (Author, 2023).

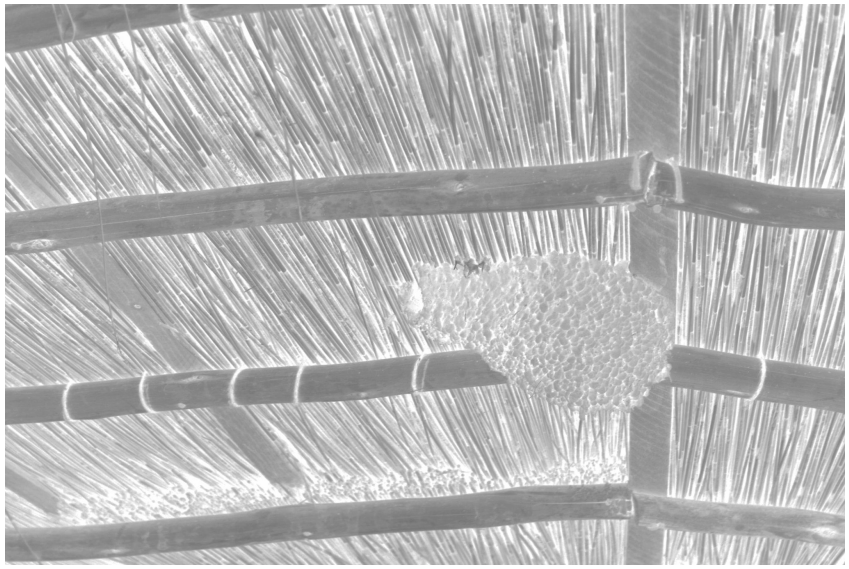


Figure 45: Photograph taken from hide interior of nest (Author, 2023).

The combination of these narratives and their deep connection to the landscape are intricately woven together by the abiotic rhythms of the fourfold. This framework helps us understand how these memory entities interact spatially (Fig. 45), as they pass through different thresholds. This, in turn, gives rise to the overarching themes that encompass the exchange of landscape memory on a metaphysical level. The interplay between spaces and voids, revealed by the unfolding contours of the landscape, the built forms that frame its microcontext, and the abiotic entities of the site, all contribute to the creation of liminal voids—spaces that are notably difficult to access. The character inherent in liminal space is primarily its transformative nature, which allows for a new understanding of the dwellers of the landscape, and the space occupied by the two.

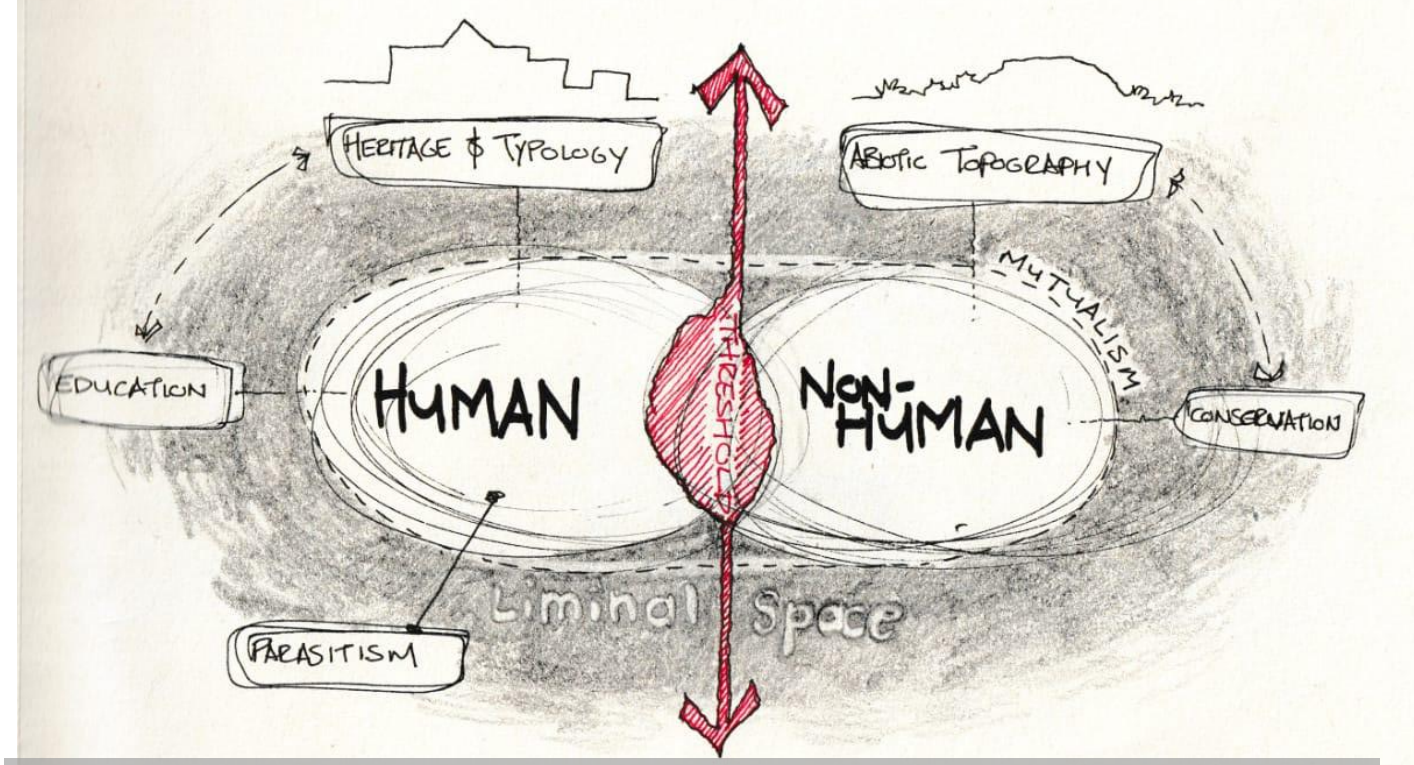


Figure 46: This sketch illustrates the metaphysical spatial cohesion of concepts (Author, 2023).

It's important to note that this discussion arises from the practical realities inherent to wildlife national parks, thus bestowing upon these liminal voids a heightened significance within the spatial discourse. In this context, the concept of space goes beyond the traditional understanding in Newtonian physics. Instead, it embraces a more nuanced perspective characterized by a universal **space** with meaningful directionality and varying density. This arises from the symbiotic relationship between spirit and flesh (Farhady & Nam, 2011). This profound ontological viewpoint not only highlights the deep interconnection between the human and non-human narratives, but also assigns a heightened importance to the liminal spaces within the conservation context.

In the context of the landscape and its thresholds, **human and non-human narratives refer to** the stories, experiences, and interactions of both humans and the natural environment, as well as the points of transition or interface between them. Heritage typologies, education, and parasitism are all important themes in shaping and influencing human narratives within the landscape. Heritage typologies evoke a sense of cultural continuity and historical resonance, connecting people to the past generations of the landscape. This narrative thread imbues the landscape with a profound sense of identity and belonging by evoking stories of previous generations and their peaceful coexistence with the environment. Such stories instill a deep appreciation for the ecological heritage, as well as a sense of stewardship and responsibility for its preservation.

Within the landscape, **education** functions as a catalyst for information distribution and awareness-building. The landscape becomes a dynamic dwelling engaging with the visitors of the park through providing opportunities for learning and involvement, enabling a deep grasp of its intricate ecological processes and interdependencies. Individuals are empowered as a result of this narrative, allowing them to make informed decisions and actively contribute to conservation efforts. Education serves as a link between human experience and the natural world, adding a deeper dimension of intellectual and emotional resonance to the project. Conversely, the theme of **parasitism** introduces a contrasting narrative, highlighting the complex relationships between various elements within the landscape. Parasitic interactions, where one entity exploits another for personal gain, serve as cautionary tales of ecological imbalance and the potential consequences of human intervention. This narrative sheds light on the delicate equilibrium that sustains the environment, urging individuals to approach their interactions with the landscape with a heightened sense of responsibility and ethical consideration. These elements, in essence, integrate to create an eclectic tapestry of human narratives within the landscape. **Heritage typologies** promote cultural continuity, education promotes awareness and empowerment, and parasitism provides critical insights into the delicate balance of ecological connections. They form a holistic framework to engage with the concepts set discussed, cultivating a narrative of reverence, understanding, and active participation in its conservation.

3.2 Abiotic trace memory

The term "abiotic" refers to non living elements of an ecosystem or environment. These are physical and chemical factors that have an impact on living creatures but have no biological origins. Temperature, sunlight, soil composition, water, and geological features are examples of abiotic elements. Understanding abiotic elements is critical in the context of wildlife conservation architecture for creating structures and spaces that support and enhance the well-being of both wildlife and their ecosystems. Architects and environmentalists must consider how abiotic elements interact with the built environment. Therefore, enabling the built form to act as an extension of the abiotic environment rather than an entity of interference, would formulate a fourth wall whereby thresholds are devised.

A fundamental discourse is formed through the interaction between heritage and typology (Fig. 46). It acts as a repository for cultural identity and form-based memory, providing insights into the impact of cultural demands on the physical environment. Architectural elements based on common qualities, attributes, and historical context aid in understanding the design principles and aesthetics that distinguish various architectural shapes.

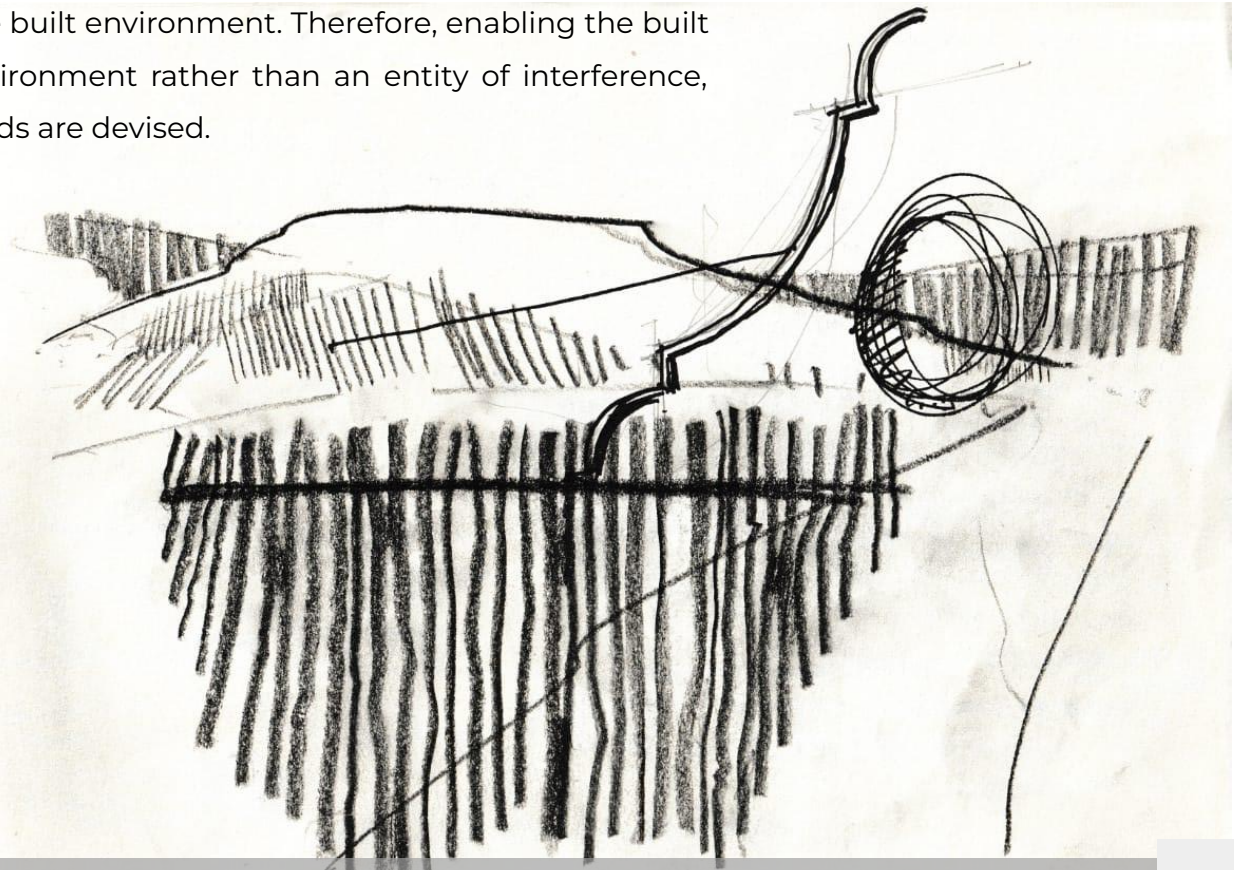


Figure 47: This reflection sketch illustrates the fundamental discourse of between heritage and site (Author, 2023).

3.2.1) Heritage and typology

Heritage architecture refers to built structures that have historical, cultural, or architectural characteristics. It includes buildings, monuments, and locations of historical, artistic, or social value. The National Heritage Resources Act safeguards any structure older than 60 years. Heritage Western Cape (HWC), local administrations with the appropriate competencies, and the South African Heritage Resource Agency (SAHRA) monitor and grade heritage properties. These structures frequently exhibit historical workmanship, architectural styles, and construction techniques, signifying a community's cultural identity and form-based memory (Fig. 47). It helps us understand the evolution of the site's structural environment as well as the impact of various cultural and managerial requirements of the built environment. We not only conserve our spatial memory by maintaining and appreciating heritage buildings, but we also acquire insights into our past, promoting a sense of connection and continuity with those who came before us. ***Typology*****,** on the other hand, is the classification or categorising of architectural elements based on common qualities, features, and historical context. It aids in comprehending the general design principles and aesthetics that characterize the silhouette of individual architectural forms. Cape Dutch gables and a Neo-Classical gable are two significant typologies present on this site.

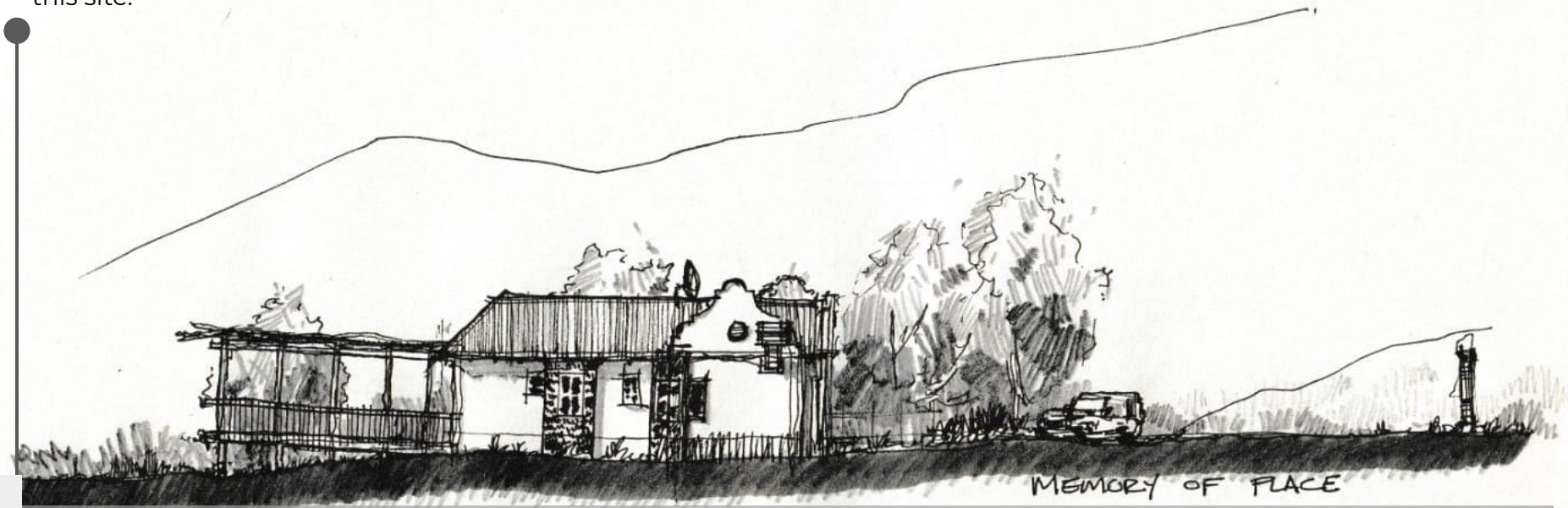


Figure 48: Southern elevation of the heritage building sketched from memory (Author, 2023).

a.) Cape Dutch (Fig. 48) architecture is a style that emerged in the 17th century in the Western Cape province of South Africa, influenced by the Dutch settlers. The most recognizable feature of Cape Dutch architecture is the distinctive gable design. Gables are the triangular portions of a building's facade formed by the intersection of two sloping roof surfaces. Cape Dutch gables typically have a curvilinear shape, resembling the bell of a Dutch gable. They often feature decorative elements such as scrolls, finials, and sometimes, even ornate plasterwork. Cape Dutch style is associated with country houses first and foremost, not city houses. As a result, designs were not constrained by a rigid lot that required a specific plan or multiple storeys — they spread out, unconstrained. These gables were a key feature of the gabled houses, farmsteads, and other structures built during the Cape Dutch period.

Figure 49: The southern most bell gable on site (Author, 2023).

b.) Neoclassical (Fig. 49) architecture is a revival of classical architectural elements that emerged in the late 18th and early 19th centuries. This style drew inspiration from ancient Greek and Roman architecture, emphasizing symmetry, proportion, and the use of classical orders (Doric, Ionic, and Corinthian columns). In the case of gables, Neoclassical architecture applied the principles of classical design to the triangular end of the building, creating a formal and refined appearance. Neo-Classical gables are characterized by their simple, geometric shapes with straight lines and clean edges, often adorned with decorative moldings and pediments.

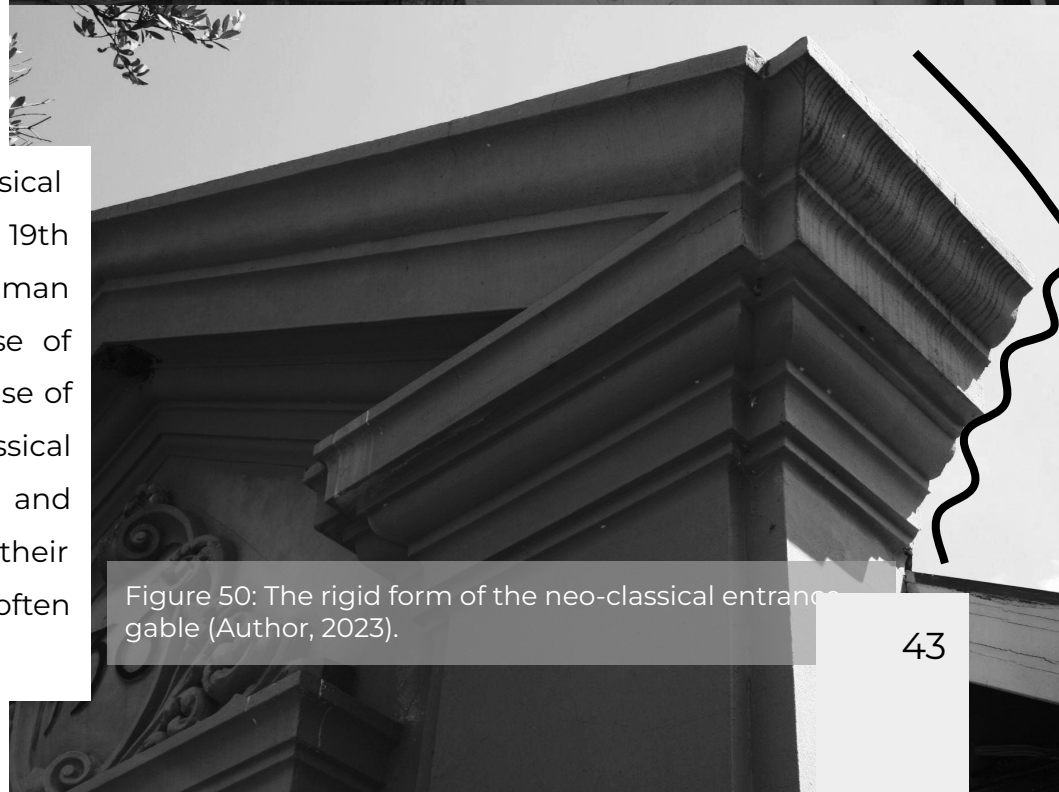


Figure 50: The rigid form of the neo-classical entrance gable (Author, 2023).

Figure 51: The device (Author, 2023).

3.2.2) Site date:

The silhouette of a cosmic mutualism

This analysis delves into the intriguing interplay between the natural landscape and man-made structures. Specifically, we explore how the landscape's organic rhythms shape the built environment, fostering a mutually beneficial relationship between inhabitants and the surroundings. A tectonic balsa wood frame, initially designed for use as a camera mount, was used to facilitate this investigation. The topological micro-context of the landscape is obtained by aiming this instrument towards the sun at midday at several on-site locations (Fig. 50, 52, and 53). Following that, the collected photographs are edited and printed onto translucent sheets to create cyanotype stencils. **The act of exposing these stencils to the sun** (inverted), creates a one-of-a-kind micro-context that reflects the site's cosmic features. This micro-context is then used to create a narrative that informs the planning and conceptual stages of the project. This investigation's findings are diverse in medium, rich in detail, and offer a new creative experience of generating silhouetted place formations. Creating a tale of topological transitions in a cosmic transaction with a silhouetted landscape as a way of generating place-form discourse expansions. This activity aided in the development of site data, capturing the essence of shadows, texture, angles, groupings, and patterns. This enabled the two-dimensional creative mode of thinking to be activated by the site rather than the design process itself.

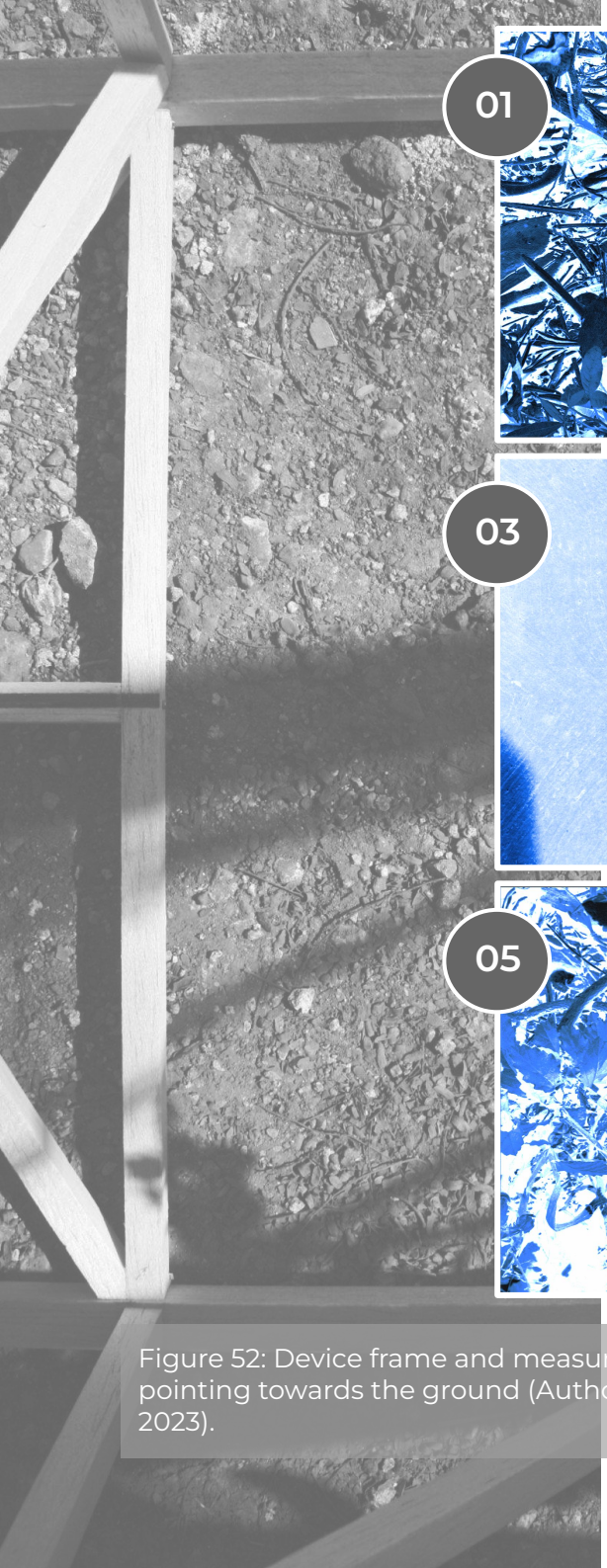


Figure 52: Device frame and measurement pointing towards the ground (Author, 2023).

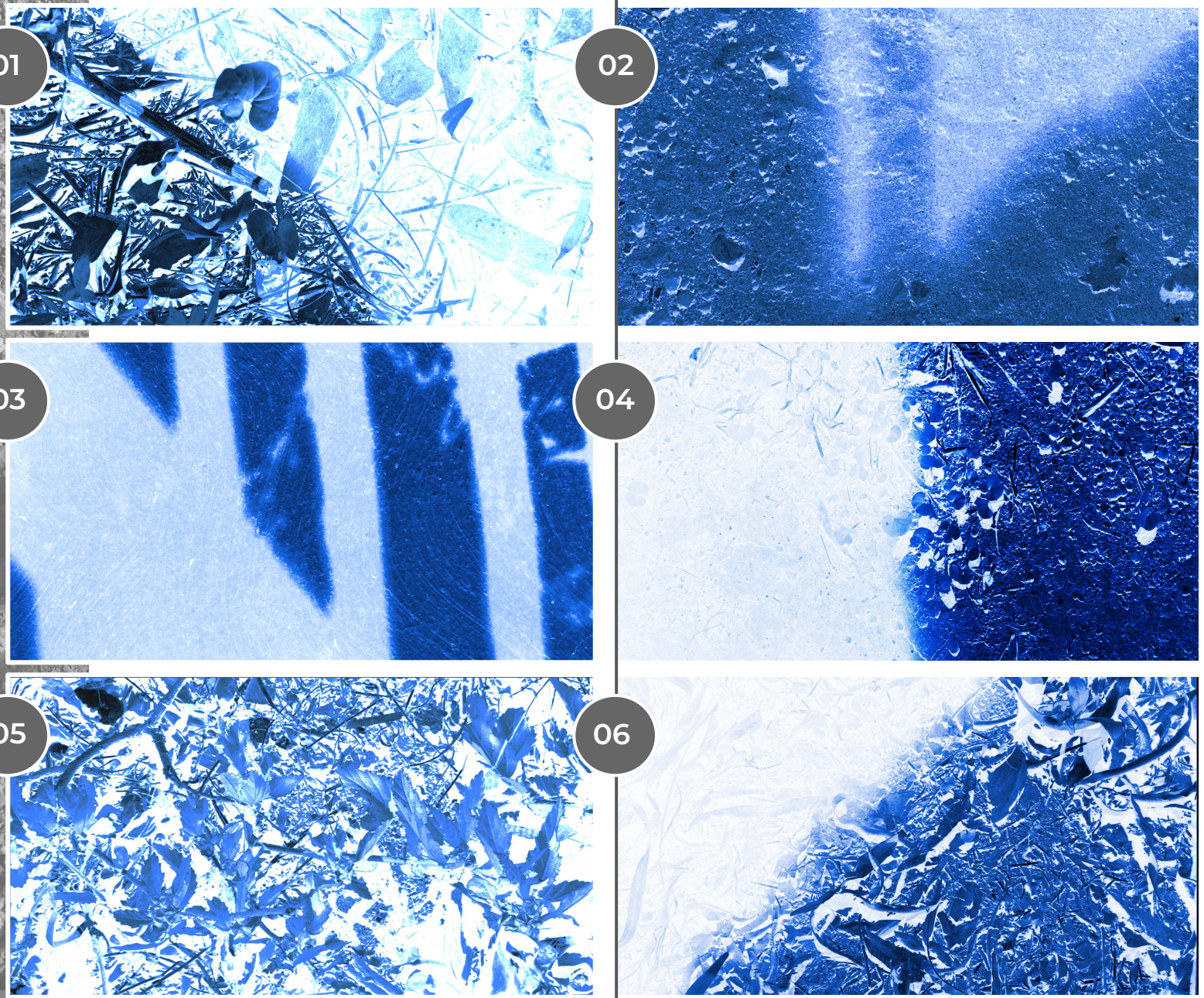


Figure 53: Cyanotype stencils generated from the analysis of silhouettes on site (Author, 2023).

Figure 54: A Red-billed Oxpecker resing on the shoulders of a White Rhino, attributing to this mutualistic relationship (Author, 2023).

3.3 Mutualism

When considering ***mutualism as an act of spatial collision; whereby two entities form a void of cohesiveness*** (Fig. 53) - this void is to be a response to the landscape. The concept of mutualism, a type of symbiosis where two or more species interact in a way that benefits each other, offers a valuable lens for shaping architectural responses to conservation issues in Pilanesberg National Park. By drawing inspiration from mutualistic relationships in nature, architectural designs can prioritize coexistence, sustainability, and harmonious integration with the surrounding ecosystem. Mutualistic architecture emphasizes reciprocity and interconnectedness, acknowledging that human well-being and the preservation of wildlife and natural habitats are intricately linked (Smith & Johnson, 2022). Integrating mutualistic principles into the design of the Wildlife Visitors and Education Centre can foster a sense of responsibility towards the environment, promoting ethical behaviors and encouraging visitors to become active participants in conservation efforts (Jones et al., 2023). This approach ensures that the architectural response contributes positively to both the park's ecological health and human experiences, fostering a lasting commitment to biodiversity conservation.

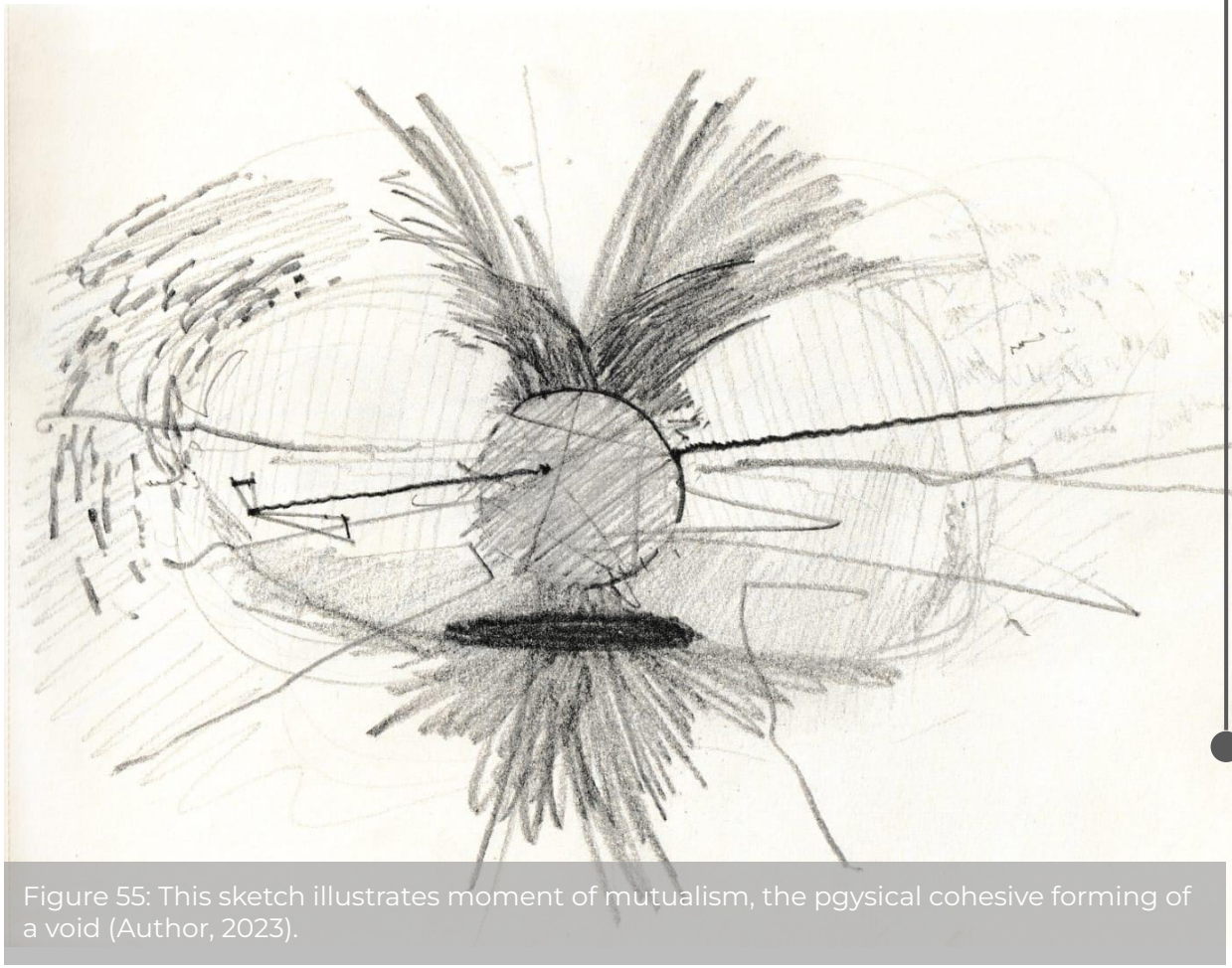


Figure 55: This sketch illustrates moment of mutualism, the pgysical cohesive forming of a void (Author, 2023).

Mutualism, commensalism, and parasitism are all examples of **symbiotic relationships** between members of different species. As a result, both positive (beneficial) and negative (unfavorable to harmful) associations are included, and the members are referred to as symbionts. Any relationship between two species populations that coexist is symbiotic, regardless of whether the species benefit, harm, or have no effect on one another (The Editors of Encyclopedia Britannica, 2018). The physiological expression of spaces created for this design project, aims to encode a similar ethos and functioning within the abiotic landscape.

The translation of mutualism within the design intricacies of this response to the living landscape, aims to illustrate and analyse its place and site of happening. The metaphysical understanding of mutualism as a habitual act of survival, and the “taking place” thereof (Fig. 54), will aid the site response and the development of site intent. By imagining this physical moment as a cohesive forming of a void that sustains the immediate partners to this cosmic transaction. **The formation of this cohesive threshold** generates a portal whereby two entities (human or non-human) are tied by their experience of the landscape and the abiotic voids within.

3.4 Threshold and Verge

This section investigates how the physical and metaphorical thresholds serve as points of transition and connection between different environments on site (Fig. 55), whether natural or man-made. Thresholds take on added significance in the context of Pilanesberg National Park. They mediate the interface between the protected wilderness and areas designated for human use, such as visitor spaces and educational facilities. Generally speaking, the threshold offers the connection and transition between regions with conflicting territorial claims. It essentially provides the spatial setting for interaction and communication between regions of various orders. It is a location where two worlds collide (Farhady & Nam, 2011). The architectural intervention aims to create a seamless and harmonious transition, allowing visitors to experience the park's natural beauty while also respecting its ecological sensitivities, by meticulously designing these thresholds. This attention to thresholds emphasizes the project's commitment to mutualism, as it aims to enhance the harmony between human and non-human inhabitants within the site boundaries.

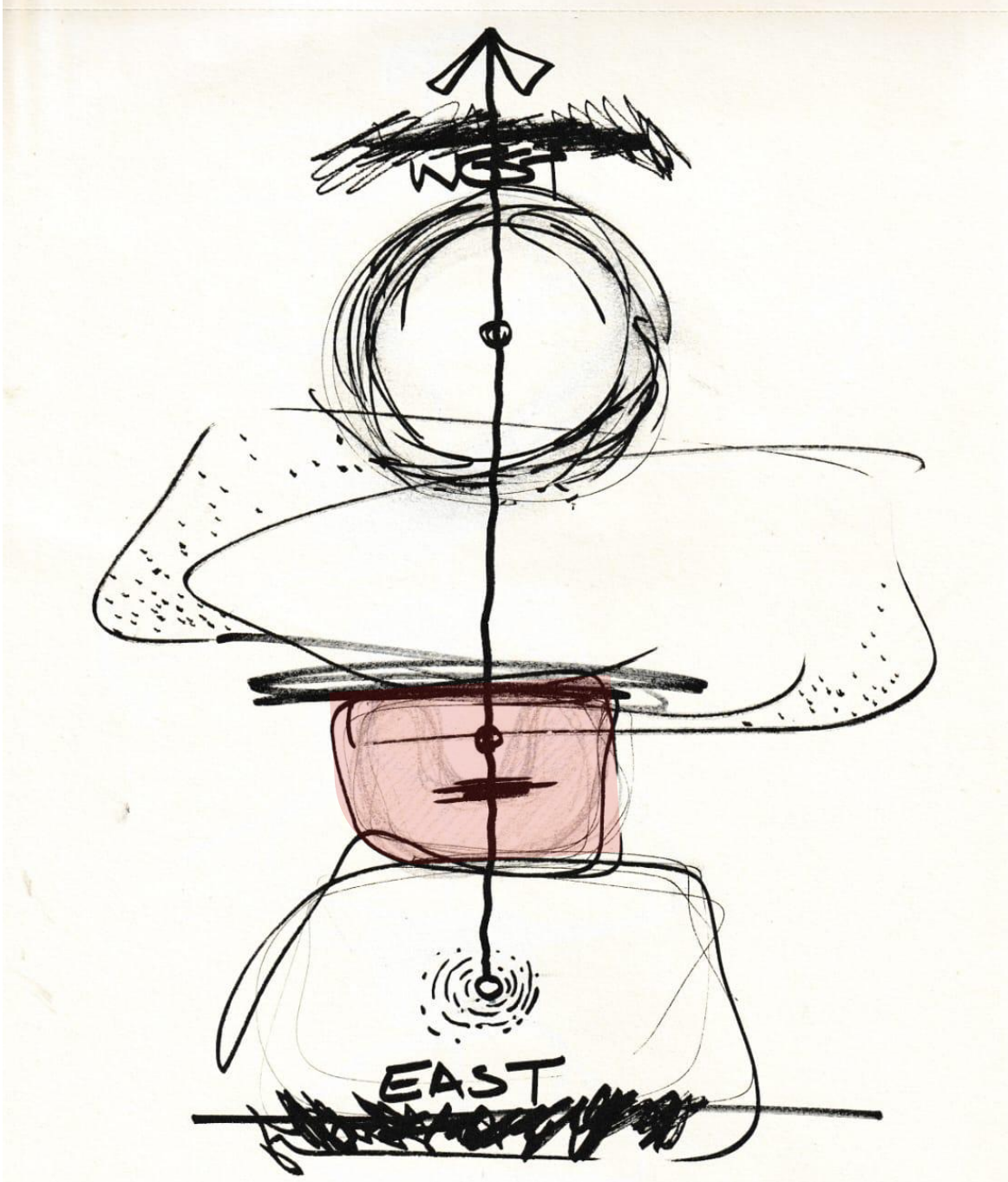


Figure 56: This sketch illustrates the thresholds and voids of movement on site, moving from east to west (Author, 2023).

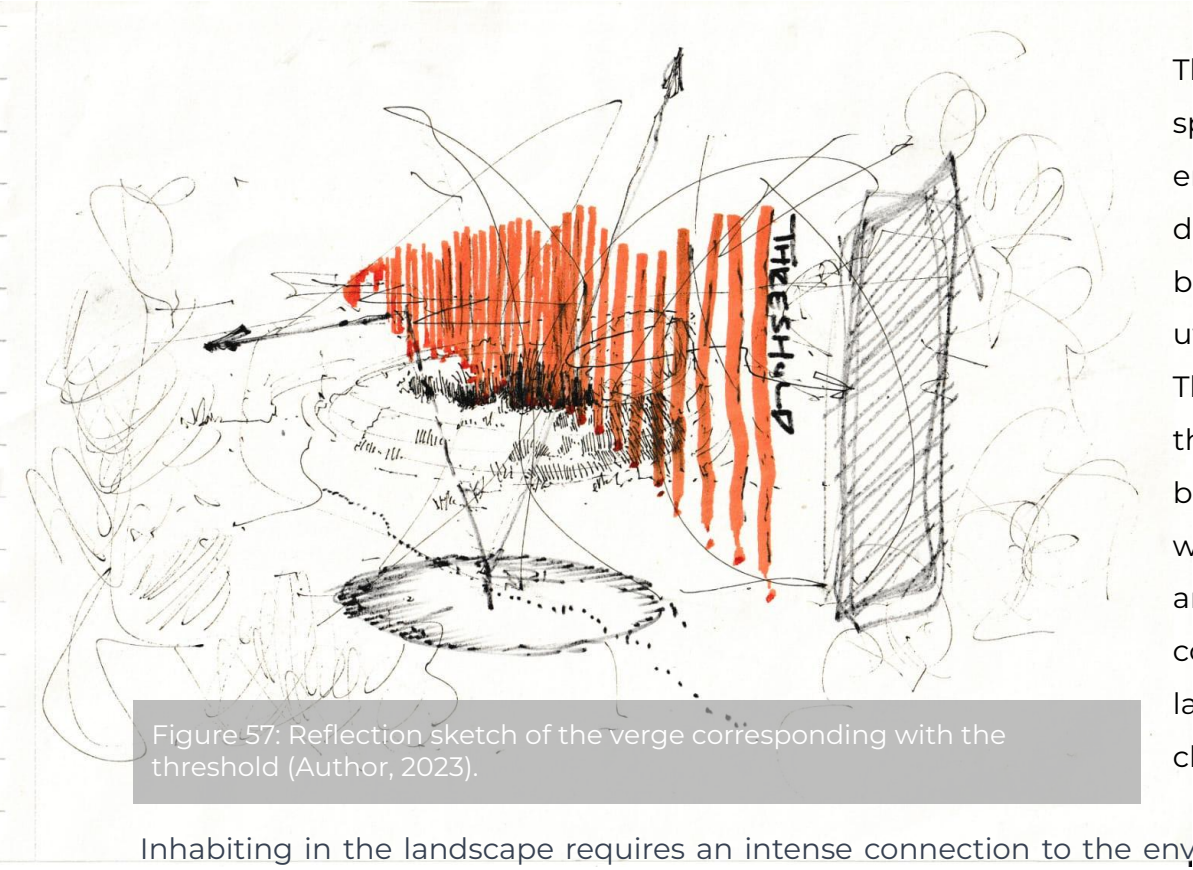


Figure 57: Reflection sketch of the verge corresponding with the threshold (Author, 2023).

The concept of **thresholds** (Fig. 56) refers to transitional spaces or elements that mediate the passage from one environment to another. These transitions happen at different scales, from entering a building to moving between rooms or zones within a structure. Thresholds are utilized to define and articulate spaces within a built form. They give a sense of progression and hierarchy throughout the architectural arrangement by delineating the boundaries between distinct features in the landscape. A well-designed threshold may inspire emotions, develop anticipation, or create a sense of arrival, all of which contribute to the overall atmosphere and character of the landscape and the immediate ecology surrounding the clearings on site.

Inhabiting in the landscape requires an intense connection to the environment that goes beyond simple physical occupancy of space to include a sensory, emotional, and cultural connection to the natural world. Fundamentally, this idea emphasises the mutual influence between habitation and the environment, highlighting the significance of thresholds as critical points of interaction. These transitional areas serve as a bridge between the developed environment and the wild wilderness, providing opportunities for reflection. A person's perceptual experience is shaped by the interaction of light, shadow, texture, and sound at thresholds in the natural world, which act as liminal zones. Here, the line separating the interior from the exterior is blurs, creating a sense of continuity with the landscape. Crossing these thresholds becomes a sensory journey, heightening awareness of the nuances in the natural setting.

Thresholds provide chances for material expression as well as architectural detailing. They can be built to emphasise the transition between distinct spaces by articulating the alteration in substance, texture, or colour. With regard to universal design principles, threshold consideration is essential for making sure that environments are inclusive and accessible for all users, regardless of their age or level of ability. Examples of such features include ramps, facilities, walkways, and wide entrances. Overall, thresholds are architectural components that serve both functional and symbolic functions. They shape how people experience and interact with spaces, and they add to the landscape's overall narrative and frame. As a result, architects carefully evaluate thresholds as a key component of their design process.

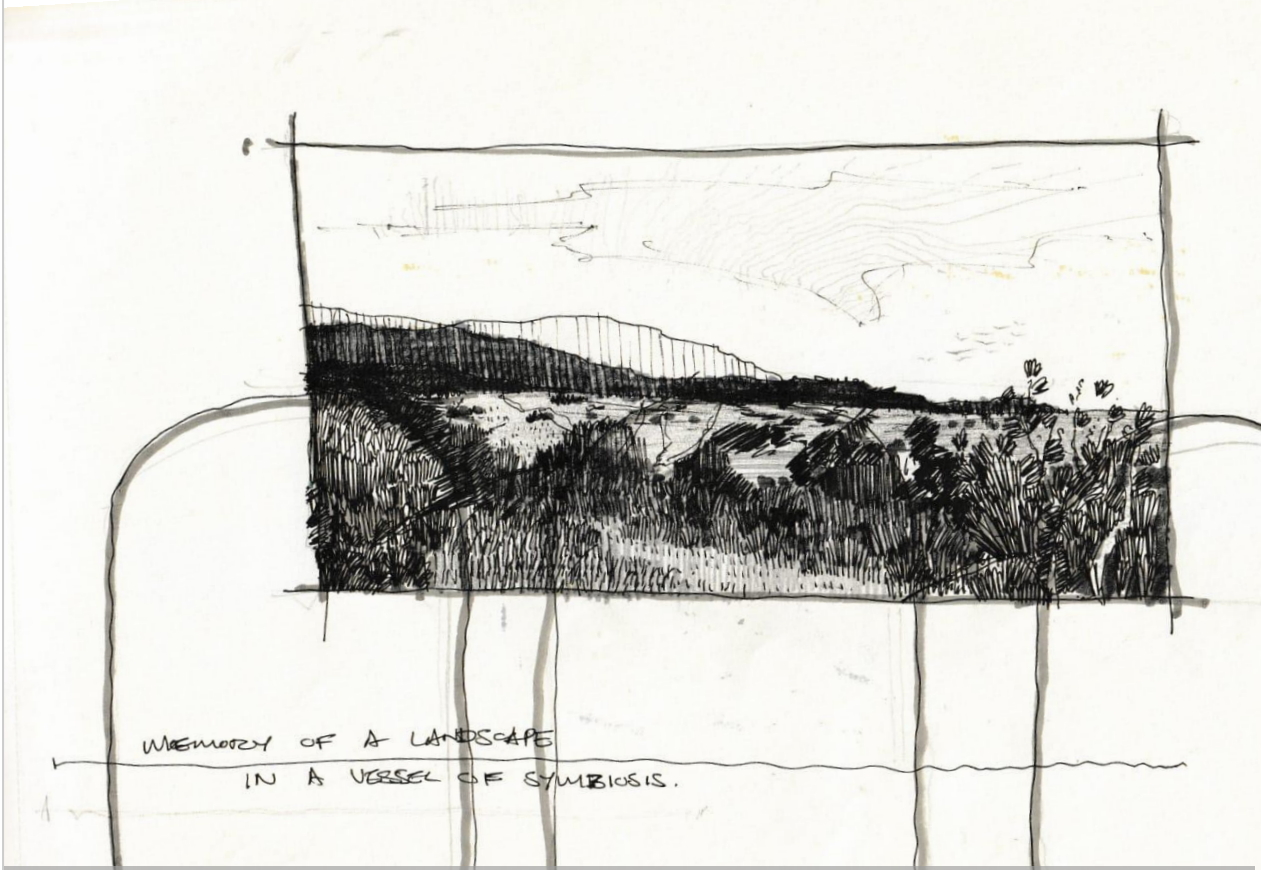


Figure 58: The permeable skin of the abiotic-framework (Author, 2023).

However, when considering a mode of architecture whereby **the experience of thresholds** is directly linked to the experience of the landscape, and consequently the connection to its ecology through some form of abiotic-framework (Fig. 57), it is critical to denote the edifications of the pluralistic architecture explored here, and the nature of its thresholds specifically. Pluralistic architecture is distinguished by the variety of forms utilised and the suggestion of a strong outward vector. Forms are lighter in visual weight and more dispersed in arrangement. Pluralistic architecture demonstrates a transition from inside to outside, or more precisely, from centripetal vector space to centrifugal vector space and from depth to surface layer (Farhady & Nam, 2011).

Physical and metaphorical thresholds serve as points of transition and connection between different nodes on site, whether natural or man-made. Thresholds take on added significance in the context of Pilanesberg National Park. They mediate the interface between the protected wilderness and areas designated for human use, such as visitor spaces and educational facilities. By meticulously designing these thresholds, the architectural intervention ultimately personifies this discussion, aiming to create a seamless and harmonious transition, allowing visitors to experience the park's natural beauty while also respecting its ecological sensitivities. This emphasises the project's commitment to mutualism, as it seeks to improve harmony among human and non-human inhabitants within the site boundaries.

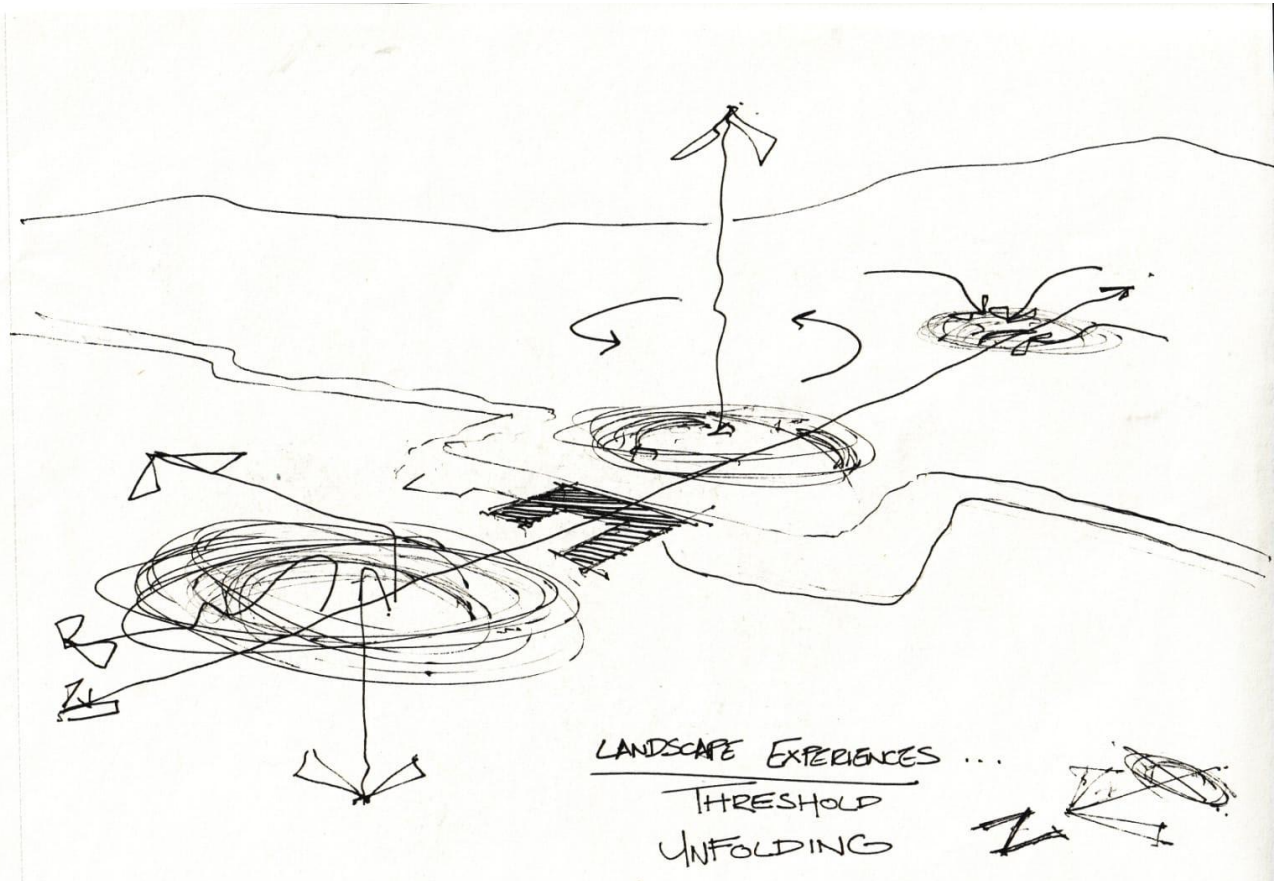
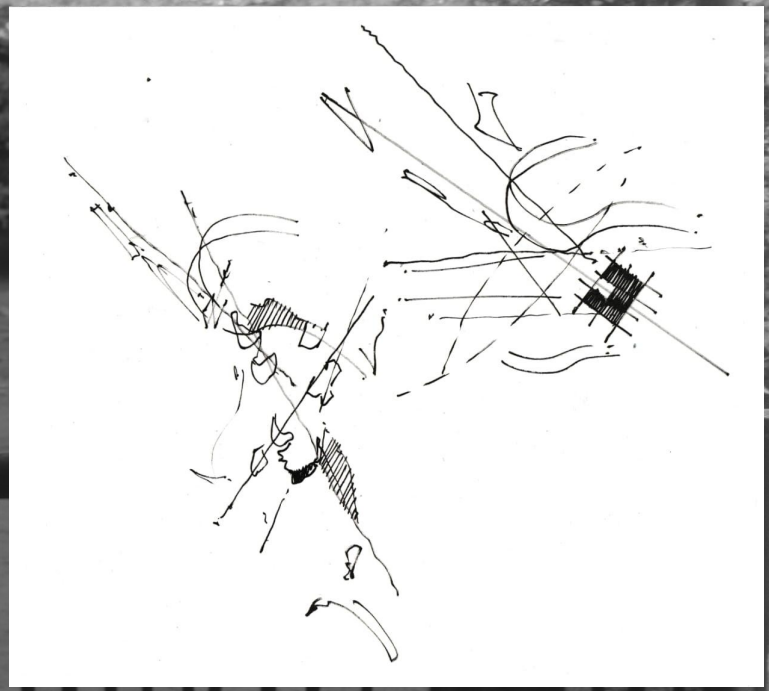


Figure 59: This sketch illustrates the narrative thresholds of the site unfolding (Author, 2023).

In Summary, these trace narrative thresholds (Fig. 58) are subsequently the set out point whereby the landscape unfolds. T**his tryptic denotes the communicative qualities of various movements in the landscape,** framing perceptions of the outset by transitioning to and from the permeable void spaces between. The pluralistic formations of the site and its thresholds denote the complex union of geometry and nature. Nature destroys geometry, but also sets geometry to work. Nature supplies the capacity needed to interpret geometry, while giving it fluidity and eroding static order.



The two sketches on the left were drawn hastily on a sheet of tracing paper set over cyanotype print number six.
This was done as an exercise in its own; from here the design was felt as an initial expression on paper - an ice-breaker. This is however, merely an expression of "topographical-animation".

Author, 2023

CHAPTER 04

CONTENTS:

4.1 PROJECT PRE-TEXT; design response CONSIDERATIONS

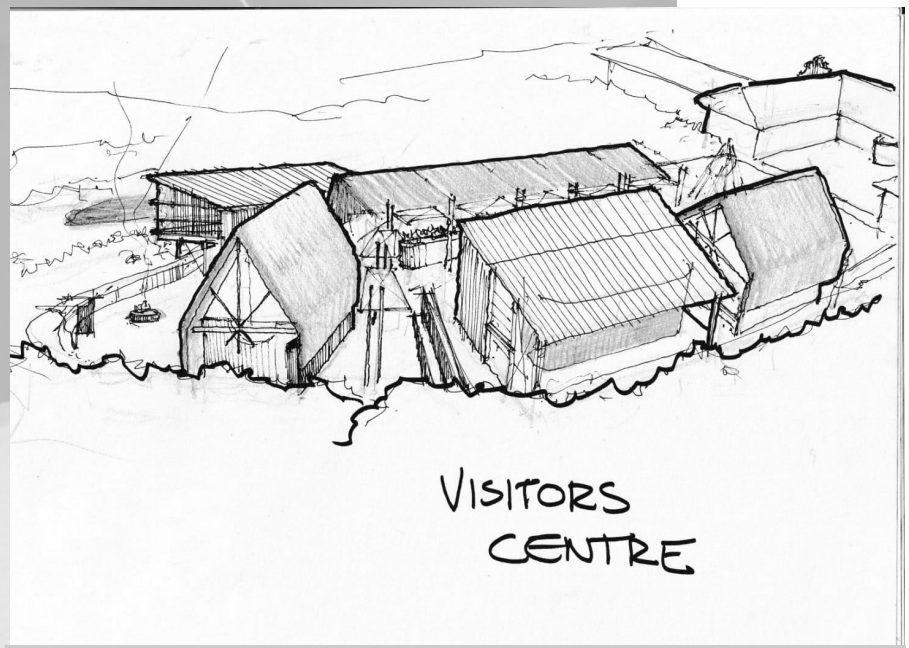
This section investigates the site pre-text and avenues of discourse that shape the program and functions of the site. By addressing specific site concerns, relevant to the ecological, social, economical and physical landscape of Pilanesberg National Park, a kinetic datum can be generated within the heart of the park. A well-designed Wildlife Visitors and Education Centre in the heart of Pilanesberg National Park can help to overcome the conservation concerns mentioned previously. A center of this type can act as a hub for conservation initiatives, public participation, and education, helping to alleviate numerous difficulties in the following ways:

4.1.1) Conservation and mitigation

The Wildlife Visitors (Fig.51) and Education Centre (Fig.52) can serve as a base for conservation activities, allowing park rangers and law enforcement to coordinate their efforts in one area. The education center, which hosts a sixty-day ranger field guide course, can improve monitoring capabilities, follow wildlife movements, and respond quickly to suspected harm to the ecology.

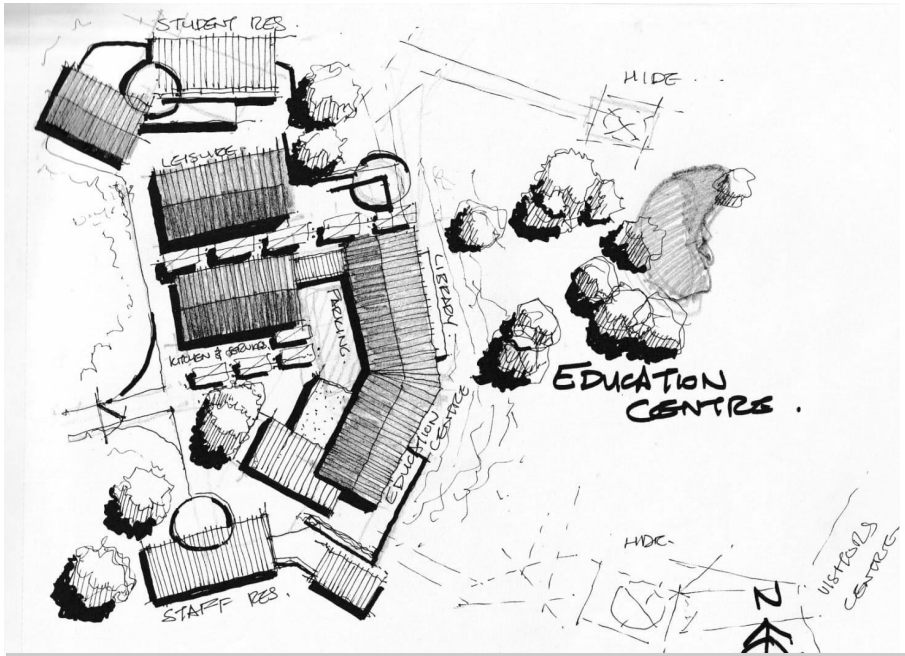
4.1.2) Education and Awareness

One of the key strategies to combat poaching is raising public awareness about the consequences of wildlife trafficking. The center can host educational programs, workshops, and interactive exhibits that inform visitors, including local communities and tourists, about the importance of wildlife conservation and the negative impacts of poaching on the park's ecosystem.



CONCEPT

Figure 60: West elevation of the rock wall perched on the hillside (E. Summer, 2019).



CONCEPT

Figure 61: West elevation of the rock wall perched on the hillside (E. Summer, 2019).

4.1.3) Habitat Restoration and Connectivity The architectural design of the center can incorporate sustainable and eco-friendly practices, demonstrating environmental consciousness. Furthermore, the center can serve as a demonstration site for habitat restoration projects, showcasing methods for regenerating degraded areas and establishing wildlife corridors to enhance ecological connectivity.

4.1.4) Invasive Species Management As an educational facility, the center can offer resources on identifying and controlling invasive species. Additionally, it can conduct workshops and training programs for park staff and volunteers, equipping them with the knowledge and skills to manage invasive species effectively.

4.1.5) Research and Wildlife Monitoring: The Wildlife Visitors and Education Centre can also serve as a research hub, collaborating with conservation organizations and academic institutions to conduct wildlife monitoring and scientific studies. The data collected can contribute to informed conservation decisions and policies.

To summarise, a Wildlife Visitors and Education Centre located in the heart of PNP might considerably alleviate the park's conservation issues, by either actively engaging with or indirectly influencing the surrounding landscape. The centre can foster a deeper appreciation for wildlife and the natural environment by combining public education, community involvement, research, and sustainable architectural practises, promoting a harmonious coexistence between humans that visit this park and the diverse array of species that call it home.

4.2 Visitors centre vs. Education centre

This section provides a comprehensive overview of the various programmes and initiatives associated with the site datum's designated functions. It was clear from the start of the planning process that separating the two site initiatives and delegating their respective programmes was critical to optimize the allocation of private and public spaces. Despite this spatial separation, it is critical to emphasise that both centres are united by a common overarching mission: the conservation of wildlife and the long-term support of Pilanesberg communities. This common goal is being pursued through a collaborative approach that includes active participation in the park's ecological framework and associated initiatives.

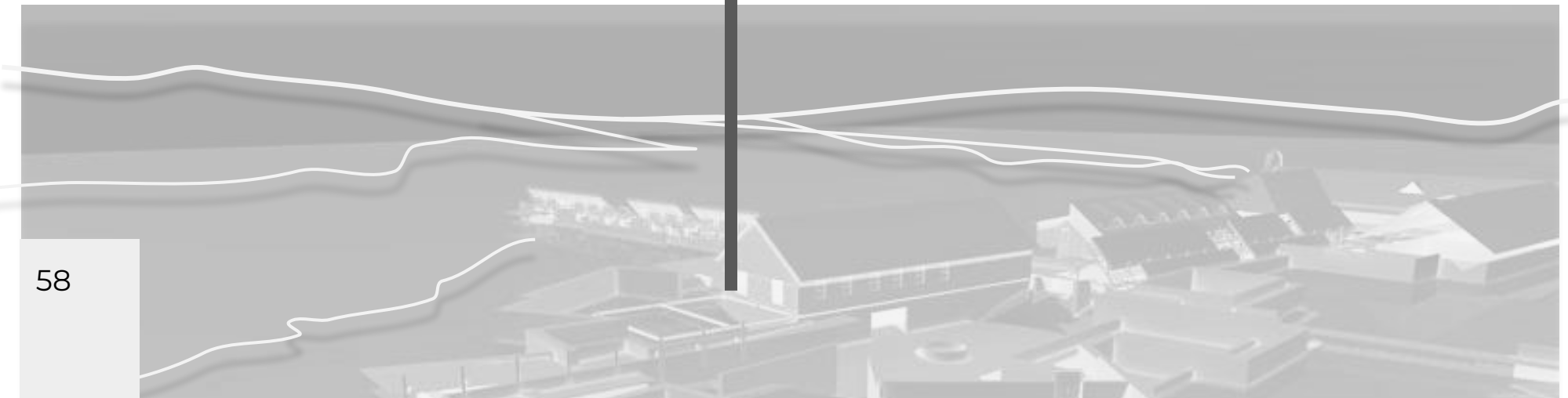
To accomplish this, the centres employ a multifaceted strategy that includes educational outreach, exhibitions, lectures, and engaging presentations. These initiatives serve as vital platforms for informing the public about various conservation issues, fostering a greater understanding of the critical interplay between human activities and the natural environment. Furthermore, both centres are involved in conservation efforts throughout the park, as evidenced by their significant contributions to the Pilanesberg Wildlife Trust. The Trust drives a variety of conservation projects and initiatives, highlighting the centres' unwavering commitment to the long-term well-being of Pilanesberg's biodiversity and surrounding communities. This integrated approach reflects a holistic commitment to conservation, wherein education, public engagement, and direct involvement in conservation endeavors converge to uphold the ecological integrity of Pilanesberg National Park.

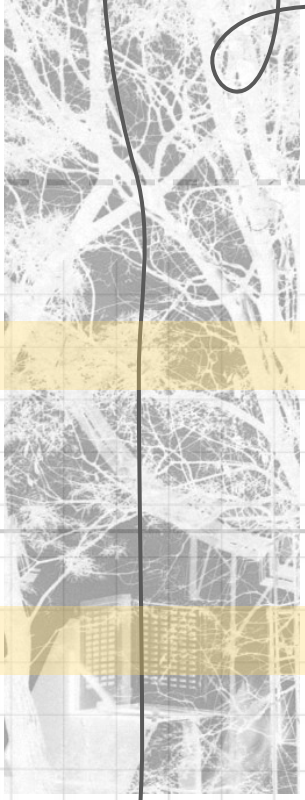
4.2.1) VISITORS CENTRE

This adaptively reused building could include multimedia displays and exhibits showcasing the history of the park in conjunction with the narratives that frame the site experience. Cultural festivals, workshops, and community gatherings held at the centre can actively engage community members in sharing their stories and customs. This promotes a sense of ownership and pride in the environment. Using locally available materials and traditional building techniques, for example, can create a seamless transition between the built environment and its complex setting. The visitors centre responds to the human narrative pretext, embodying the formation of an abiotic assemblage of thresholds and borders for both visitors and the ecology.

4.2.2) EDUCATION CENTRE

The Wildlife Ranger Education Centre, perched on the eastern slope adjacent to the visitors centre, is a vital hub for environmental education and conservation efforts. This centre has a multifaceted role in the conservation of biodiversity and the park's long-term management. For example, it serves as an educational hub, educating aspiring rangers and the general public about local ecosystems, wildlife behaviour, and conservation practises. It cultivates a deep understanding of the delicate balance between human activities and the natural world through workshops, lectures, and hands-on experiences. The Education Centre hosts a 60 day course catering to 14 student of two independent teams, moderated by four instructors and course leaders. Furthermore the centre comprised of private spaces that house the social, educational, and conservation functions.





4.3 PROGRAM LIST

±805 m²

4.3.1) Visitors centre
[Public parking]
[Private parking]

- *Foyer*
  - Reception
  - Exhibition (Pilanesberg Wildlife Trust)
  - Private exhibit and catering

±250 m²

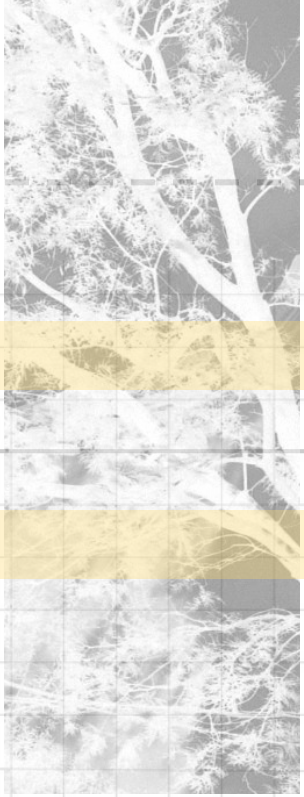
- *Kitchen*
- Offices
- Staff services
- Dressing rooms
- Storage
- Refuse collection

±1100 m²

- *Restaurant*
- Restaurant patio
- Bush bar (deck)
- WC male and female
- Storage
  - Maintenance storage
  - Furniture storage
  - Service room (Sump pump and generator)

±80 m²

- *Waterline hide*
- Bush walkways
- *Coffee stop and gift shop* (All proceedings aid the Pilanesberg Wildlife Trust)



4.3.2) Education centre

[Private parking]

±270 m²

- *Foyer*
  - Reception
  - Exhibition (Pilanesberg Wildlife Trust)

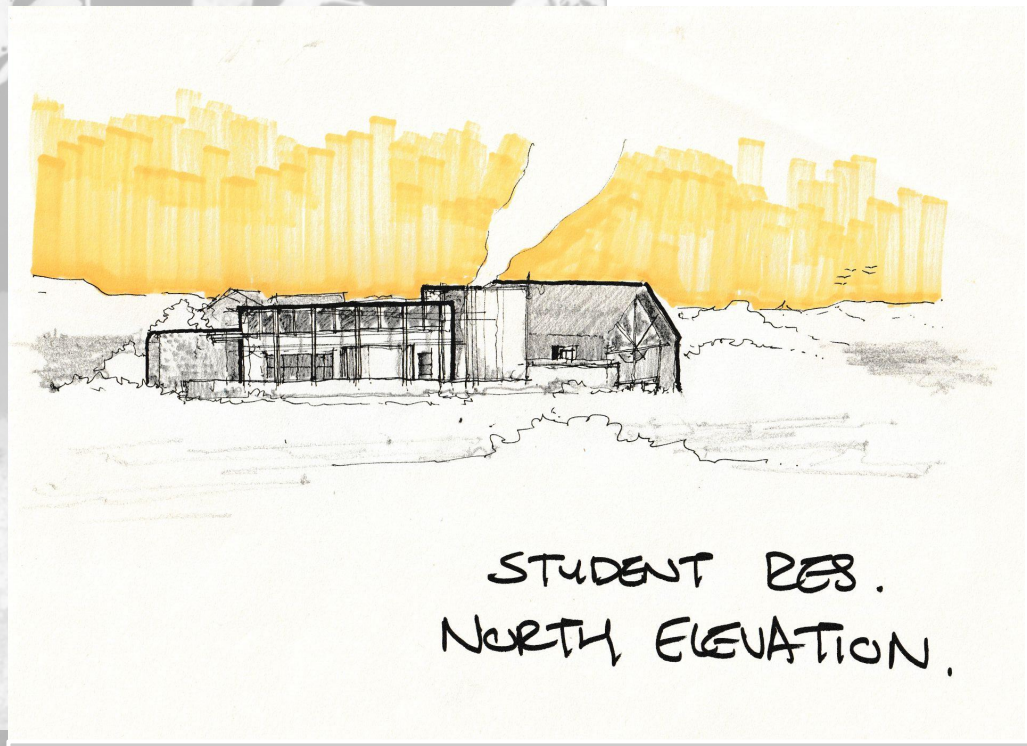
±260 m²

- Offices
- Staff services
- Storage
- *Lecture hall*
- Exam room
- WC male and female (public)

±1250 m²

- *Student accommodation*
- *Staff accommodation*
- *Ranger accommodation*
  - Prep room
  - Gear storage
  - Laundry rooms
  - Ablution block

- Social spaces



CONCEPT sketch

CONCEPT sketch

project PRECEDENT#01

4.4 PRECEDENT STUDY

Bramasole, Herbst Architects, New Zealand, 2016

This structure (Fig. 61, 62, and 63) is a tryptic of spaces separated by positive and negative thresholds. The Lania, the garage, and the bedrooms are all housed in the positive spaces. They are articulated in the shape of simple box forms with aged timber planked skins that reference agrarian crates (ArchDaily, 2016). The massive crates define the negative spaces and frame views of the landscape. To lift the house out of the potentially moist homogeneous terrain, it is elevated on a blockwork plinth. This height allows the boxes to oat, provides the occupants with a view of the vineyards, and brings them closer to the horseman's eye level. The plinth, which is crossed and framed by gabions, serves to obscure the positive and negative spaces.

Figure 62: West elevation of the gabion wall, the hierarchal stereotomic element on site (P. Reynolds, 2016).

Figure 63: The exterior view of a positive threshold (P. Reynolds, 2016).

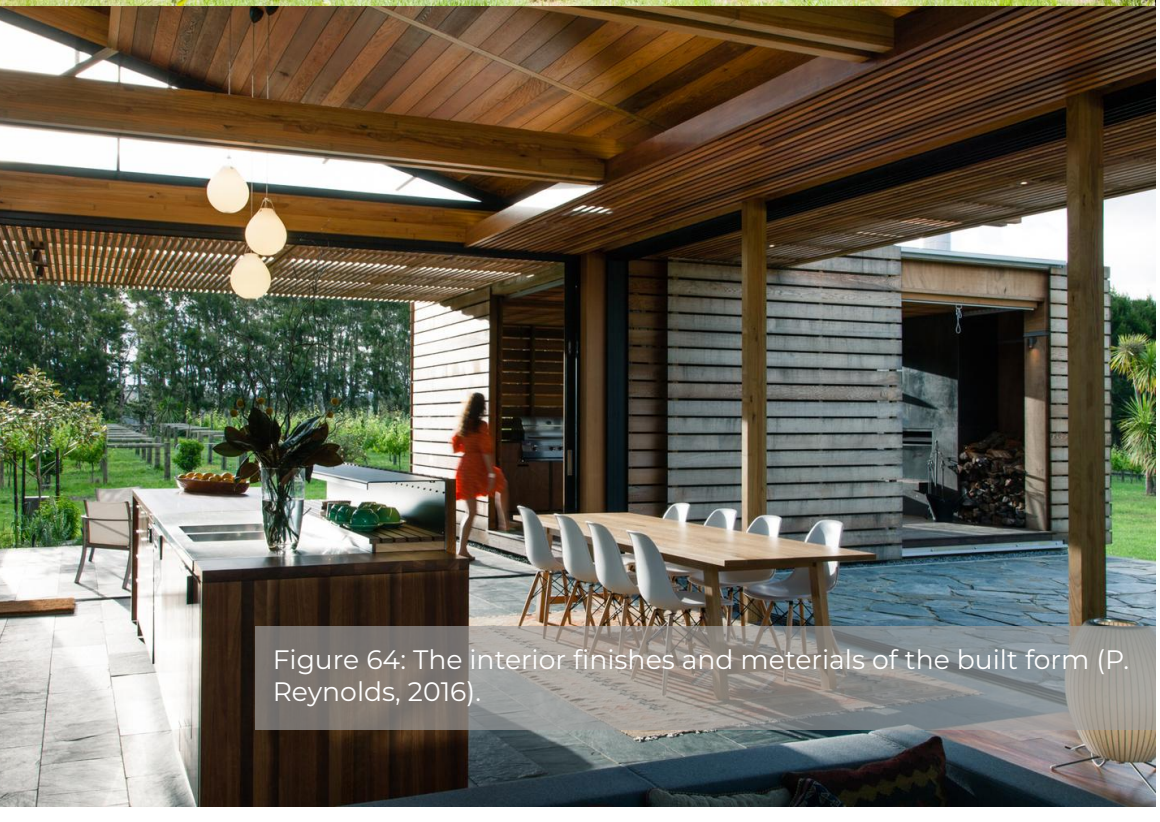


Figure 64: The interior finishes and meterials of the built form (P. Reynolds, 2016).

The integration of thresholds and the framing views evoke an immersive experience of the landscape encapsulating this design. By considering the material placement, stereotomic layering and vernacular construction techniques, this design project can emulate the elements that have brought Bramasole to life. Timber finishes, gabion walls, earthy floor textures and the compartmentalization of masses are all physical attributes that can be drawn from when designing the final response to site concerns. Understanding how positive and negative spaces can influence the users sense of place-making and space-taking will enable this design to evoke a feeling of interconnectedness between the dweller and the landscape

64

Author, 2023

CHAPTER 05

CONTENTS:

5.1 Introduction to design response

Now that the site pretext has been established the various avenues, processes, and physical project discourses can be illustrated. This chapter explores the various avenues of the reiterative process that has shaped the design in its considerations of site response and program placement. The design is sectioned in a tryptic of narratives that shape the thresholds of transitions in the landscape, further denoting a connection to nature and the ecology (from a safe distance of course, considering this is a national park filled with dangerous animals). This tryptic is shaped by the three concepts mentioned in chapter 2.5 of this dissertation; Ecological coherence, non-human memory and parasitic remediation.

The allocation of thresholds on site was conglomerately brought on by the axial nature of the existing building, the natural rhythms of the landscape, the current boundaries and thresholds of the site, as well as the silhouettes explored as a result of the site date - mentioned in chapter 3.2 of this dissertation. The process was subsequently brought to life by a series of sketches; ice breakers, massing diagrams, and axial explorations. Ultimately, this process evolved throughout the design journey due to the perched cosmic energy of the site, architecturally enabling the designer to explore proportions and the scattering of masses. It was clear from early on in the process that the majority of built forms on the site were to be single story structures accounting for the assemblage of materials on site and the machinery required to erect these structures as to not disrupt the ecological footprint to a non-recognisable extent. Furthermore this would contribute to the hierarchy of the heritage building and the formation of programmes on site.

Figure 65: North-western elevation of the Visitors centre nestled in the landscape.. (Author, 2023).

This chapter contains numerous **sketches**, worksheets and drafts of plans and sections. **It is important to note that the majority of these works are iterations of various concepts.** The final design, however, will be clearly illustrated and noted in the design summary.

The disposition set forth by the act of sketching as a mode of investigation has generated a clear explorative nature for this project. Therefore, most of these sketches capture the relationship between the abiotic landscape and the design (Fig.56); acting as an extension of the vessel that encapsulates the dwellers experience of the immediate ecology.

5.2 Process and procedure

The initial formulation of design intent was brought on by the site orientation and form qualities. The linear exposition of the site birthed a composition of form dialogues, based on the existing proportional framework of the heritage building. After initialising a pre-developmental response and solidifying the site programme, a series of worksheets were utilized to investigate these pre-developmental findings. From here the project evolved onto scale, providing greater context to circulation spaces, public interaction as well as technical development of the superstructure that engages with the ecology and the site-narrative thresholds.

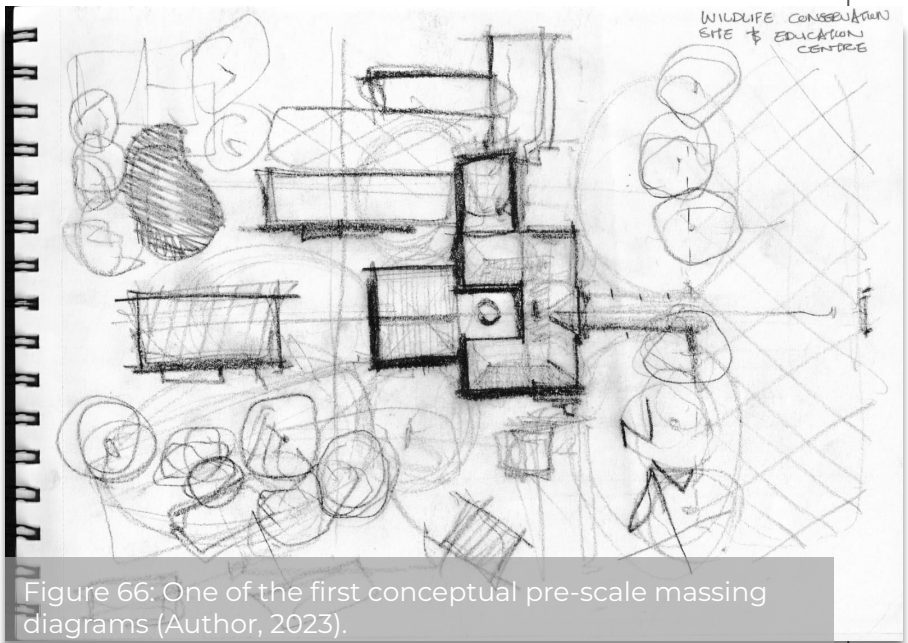


Figure 66: One of the first conceptual pre-scale massing diagrams (Author, 2023).

There have been numerous iterations of massing, programme placement, and orientations throughout the design process. This section demonstrates how the design was decoded and shaped communicatively through various sketches (Fig.57) and diagrams. From the outset of the process, certain considerations as to how thresholds can be experienced through informative and functional design decisions. For instance, Establishing well-marked nature trails for guided walks with designated starting points at the centre can serve as thresholds between human and natural environments. Guided tours led by knowledgeable rangers can provide informative introductions before visitors venture further. Additionally, designing indoor and outdoor spaces within the centre where visitors can engage with tactile exhibits can facilitate a gradual transition into the landscape. Implementing sustainable design practices such as green roofs, rainwater harvesting, and natural ventilation systems can serve as thresholds that interactively tether the user their natural surroundings.

The design procedures were divided between the Visitors Centre and the Education Centre, as these were the two initiatives and dividers of programme experiences on site, and then rejoined in site plan format to form a cohesive datum insurgency. The majority of works created were enigmatic documentations of possible avenues that could have completely changed the project course and are thus conceptual in for the most part. A series of sketches, pre-scale worksheets, scale worksheets, as well as three scale massing models, are what brought the main investigative procedures of this design process to life. This section explains how these procedures were fractionated between the two site initiatives.

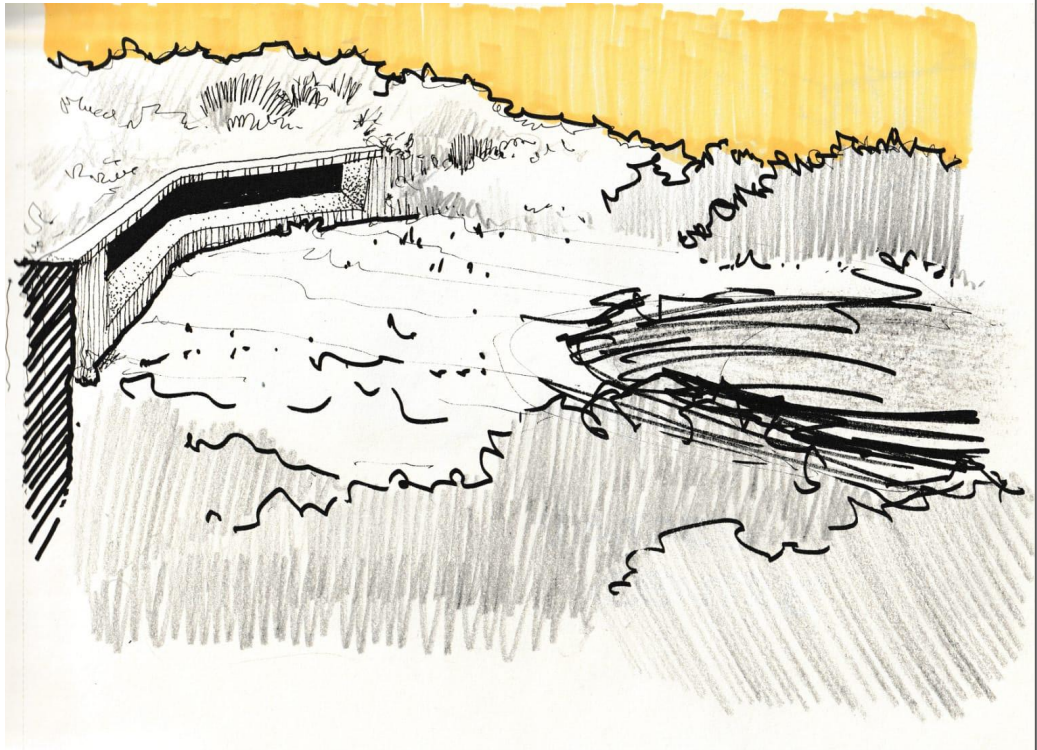


Figure 67: The first etch of proportionate massing, considering the link to the Heritage Building and the placement of the waterline hide (Author, 2023).

5.2.1) Sketchbook development

The visual investigation of possible design solutions is homogeneous to the expression of site intent. This mode of analysis enabled the project to visually develop various forks in the road, so to speak. This part of the chapter illustrates various stages of development of various structures, programmes and designed forms. Understanding how these elements evolved in sketch form, will aid in understanding the design's response to the site and its regional concerns.

Through the iterative process of sketching, a visual inquiry has been undertaken, significantly influencing the progression of the design project. These sketches serve as tangible records of ideas, enabling the exploration of diverse concepts, forms, and spatial configurations. Each pen stroke encapsulates a moment of critical reflection, dissecting and refining ideas. The act of sketching allows for swift experimentation with varied design approaches, affording a freedom and immediacy unattainable through digital means. As each sketch is scrutinized and reinterpreted, unforeseen possibilities and solutions emerge, culminating in a continuous refinement of the project's fundamental concepts. The tactile engagement with sketching cultivates an intimate connection between hand and intellect, facilitating a profound comprehension of the architectural lexicon being articulated. Ultimately, this iterative process has been paramount in nurturing a design that not only encapsulates the initial vision, but has also matured into a conceptually robust vessel of mutualism.

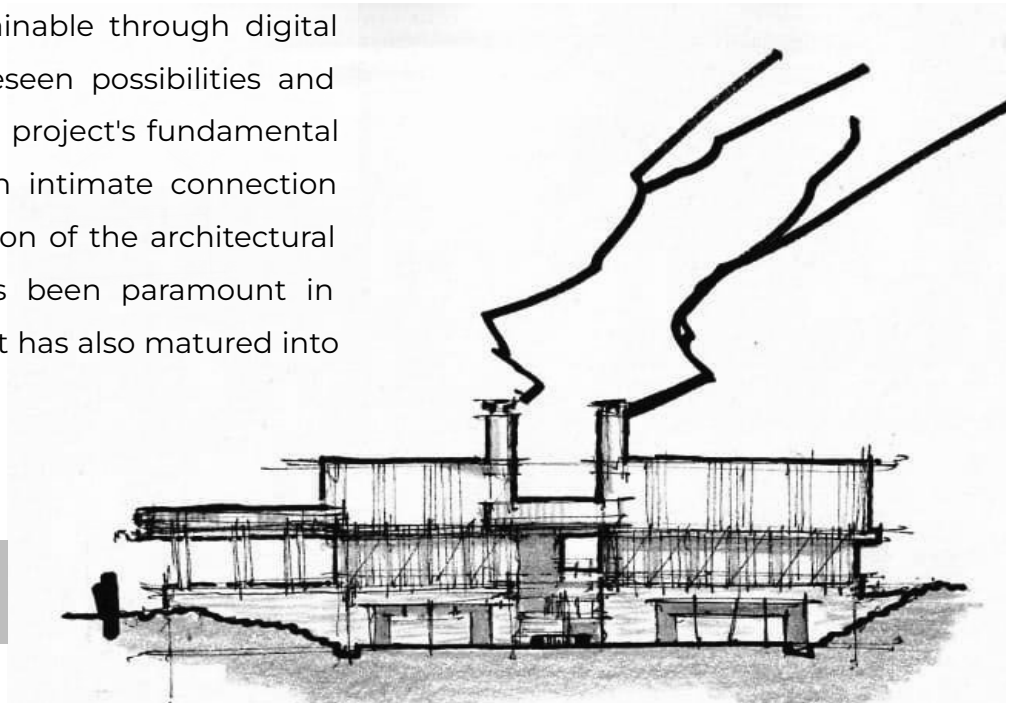


Figure 68: Restaurant South Elevation sketch from courtyard perspective (Author, 2023).

Education Centre entrance development	Heritage building link development	Central walkway visitors centre development

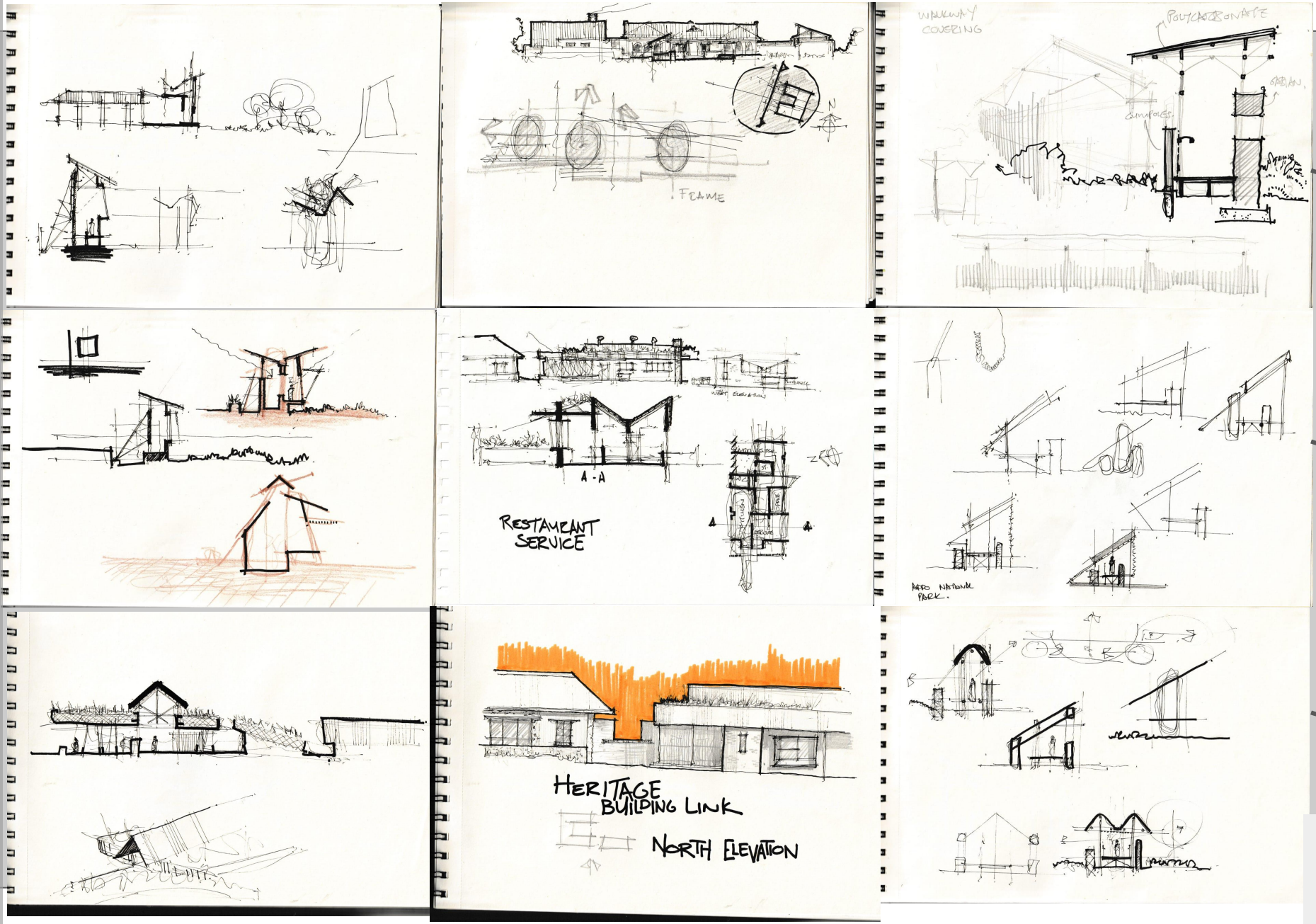


Figure : Developmental sketches A4. (Author, 2023)

Restaurant and courtyard visitors centre development	Threshold and circulation development	Visitors centre datum and massing development

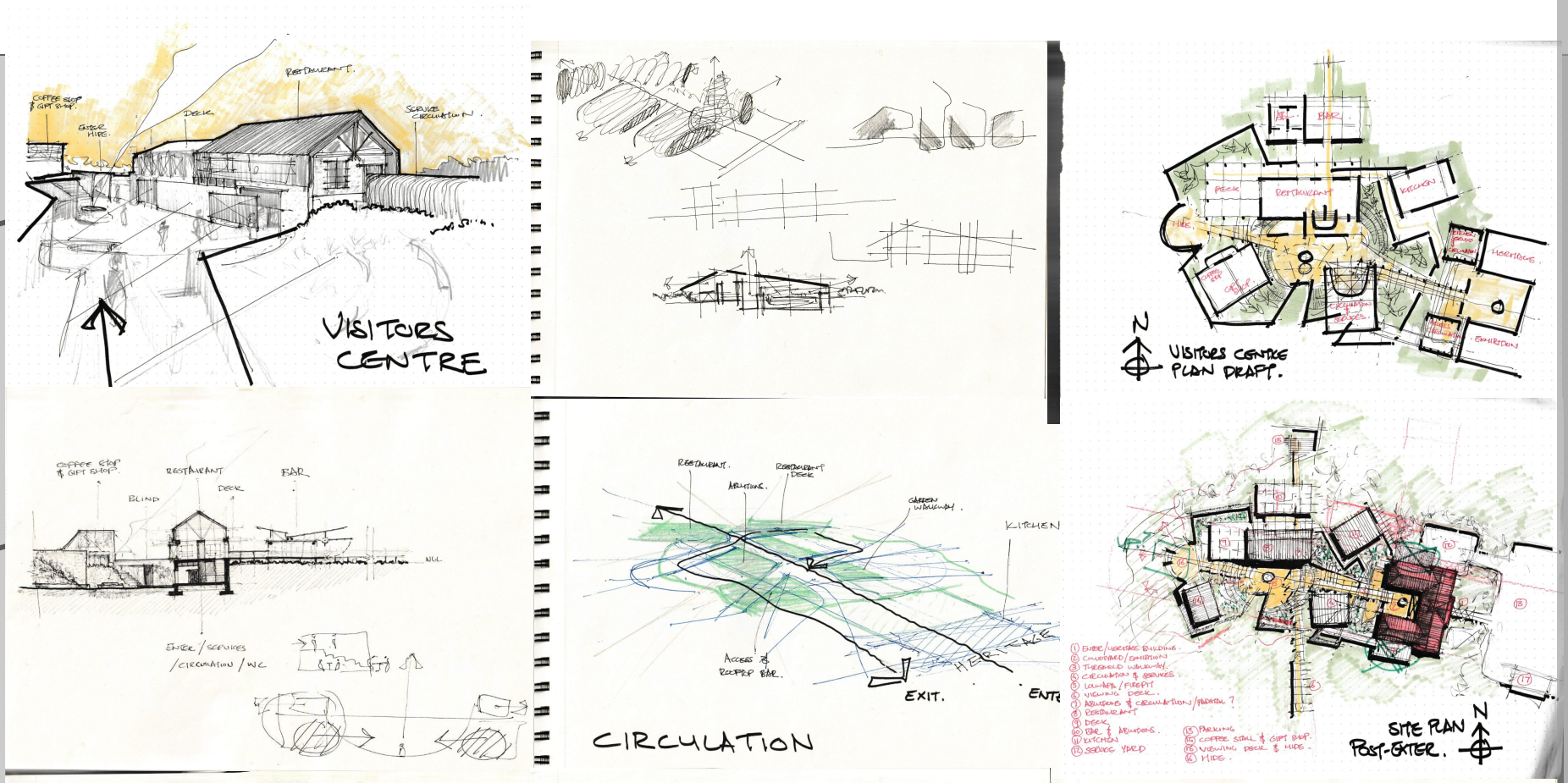


Figure : Developmental sketches A4. (Author, 2023)

The design of the exterior spaces and thresholds of the **Visitors Centre** was explored in section. Initially the biggest design challenges were presented by the roofs. It was important to keep the material placement and tectonic qualities of the superstructure on a level of cohesiveness that ties inside spaces to outside spaces, whilst not conflicting the typological silhouette and height of the heritage building adjacent to it. The permeable quality of spaces is brought on by the level changes and roof pitches of the transitional node. This process of exploration helped form a strategy for roof planning and material discussion early on in the sketching procedure. These iterations, however, we mainly focused on the Visitors Centre as the primary response to the heritage building and the hierarchy of programs and spaces on site.

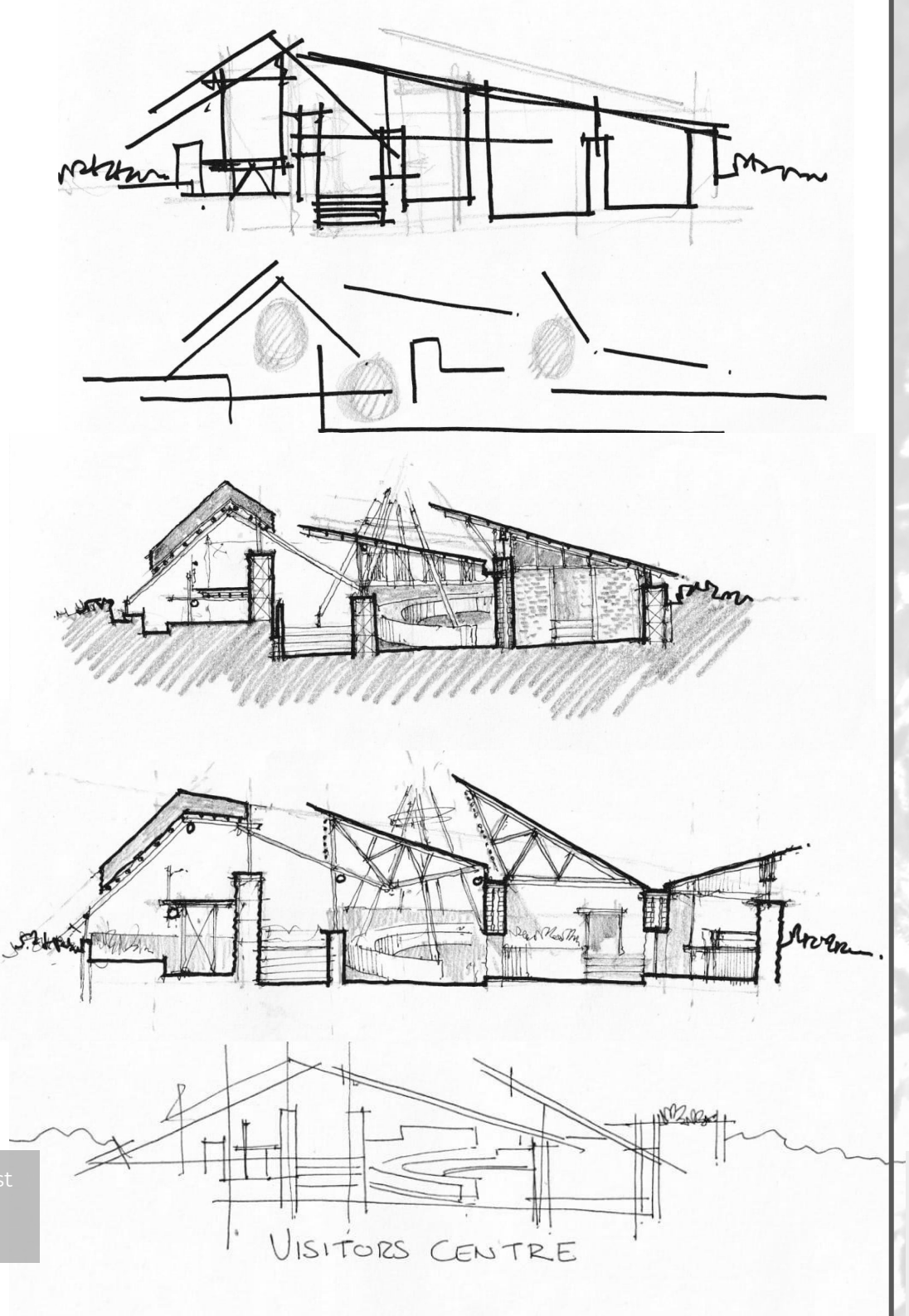


Figure 69: Differing section explorations of the same space, post crossing the courtyard threshold of the Visitors Centre (Author,2023).

5.2.2) Pre-scale worksheets

This mode of exploration was consistently applied throughout the design development phase. By layering tracing paper over various forms of site contexts and massing concepts. This enabled the design to refine its datum and engage with its thresholds in a communicative placement on site. The diagrams and sketches produced during stages of site development, are crucial to the filtering of concepts that led to the final design. A constant throughout the developmental phase was the interconnectedness between the Education Centre and the Visitors Centre whilst maintaining a division of private and public programs on site. The joinery of these elements are explored in this section of the chapter, illustrating the development of site decisions and massing explorations.

The pre-scale worksheets are iterative processes of investigation sketched on tracing paper sheets, brown paper rolls and cardboard sheets. Mixed mediums were essential to the development of the design as a means of compartmentalizing the various massings and programs as well as a method of incorporating diverse energies into the conceptual development of the design project, allowing the design process to flow from one “item” to another as the mode of pre-scale conceptualization.

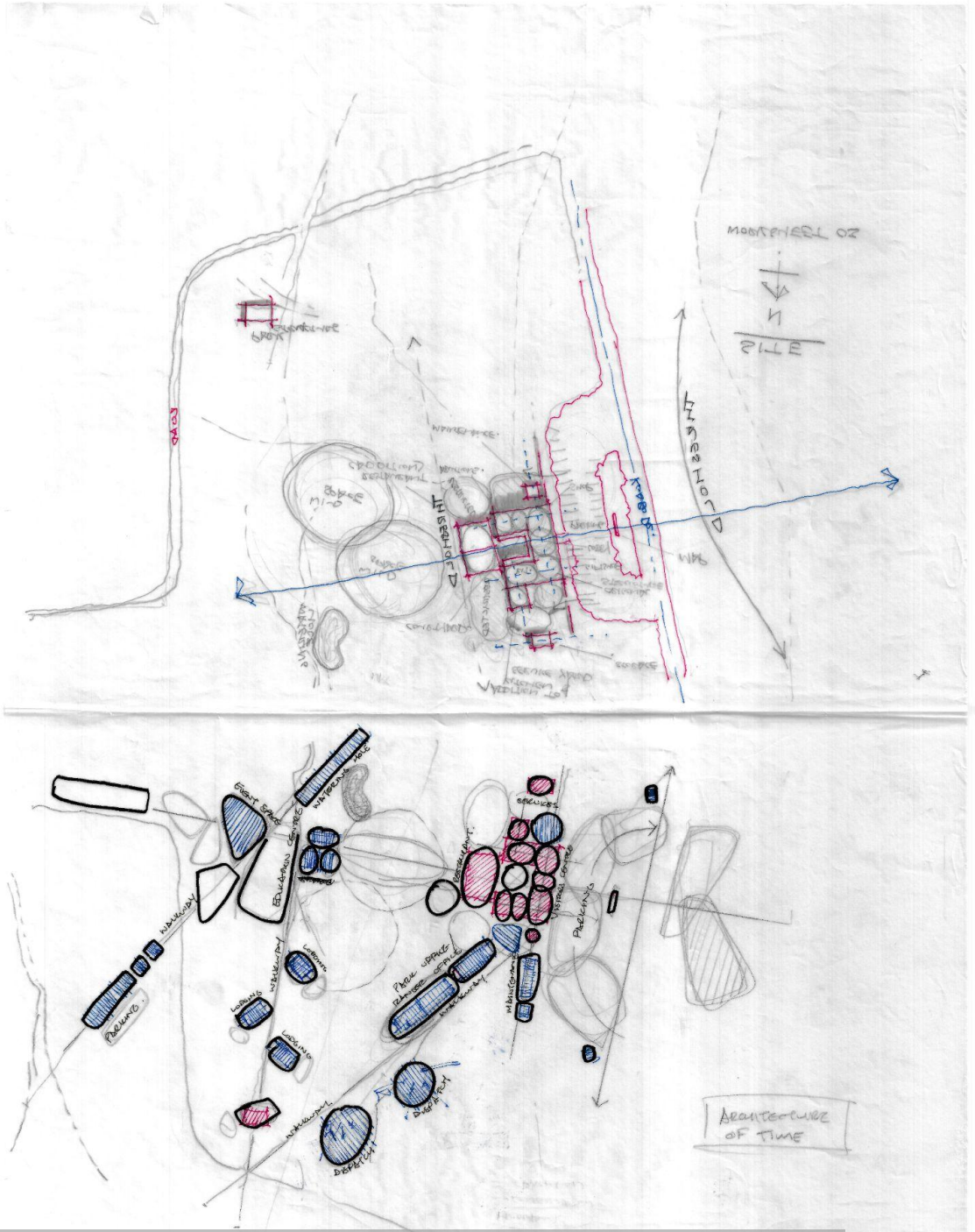


Figure 70: The firs spatial diagram and massing worksheets traced from free hand sketch on tracing paper (Author, 2023).

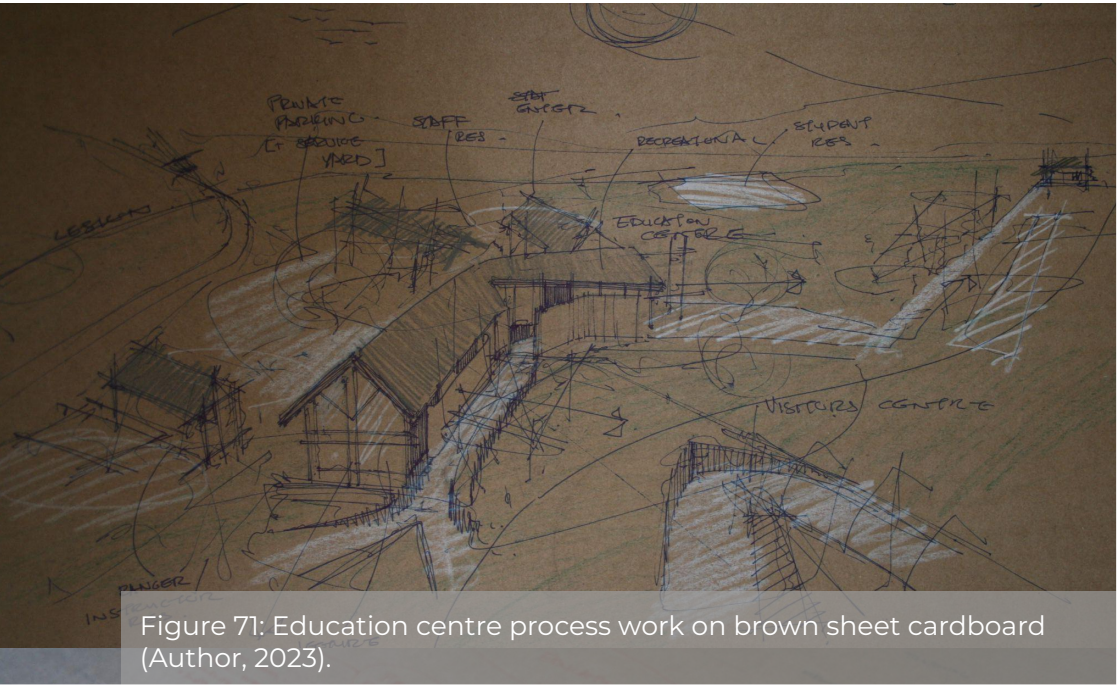


Figure 71: Education centre process work on brown sheet cardboard (Author, 2023).

Figure 72: Visitors centre process work on brown sheet cardboard (Author, 2023).

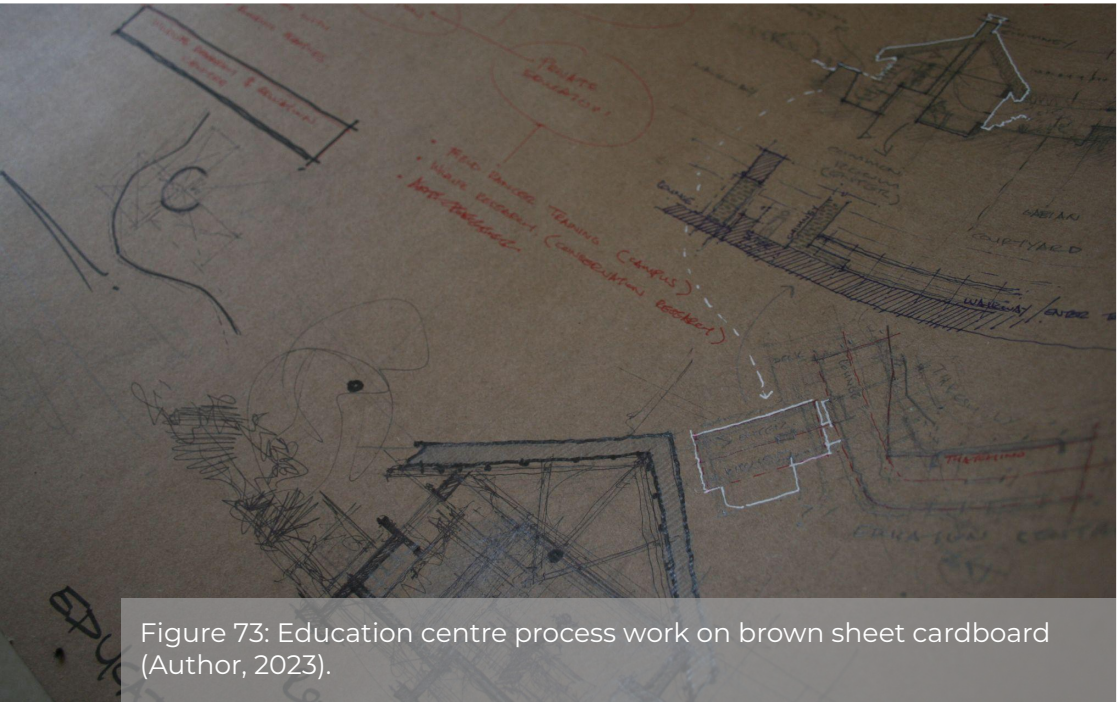


Figure 73: Education centre process work on brown sheet cardboard (Author, 2023).

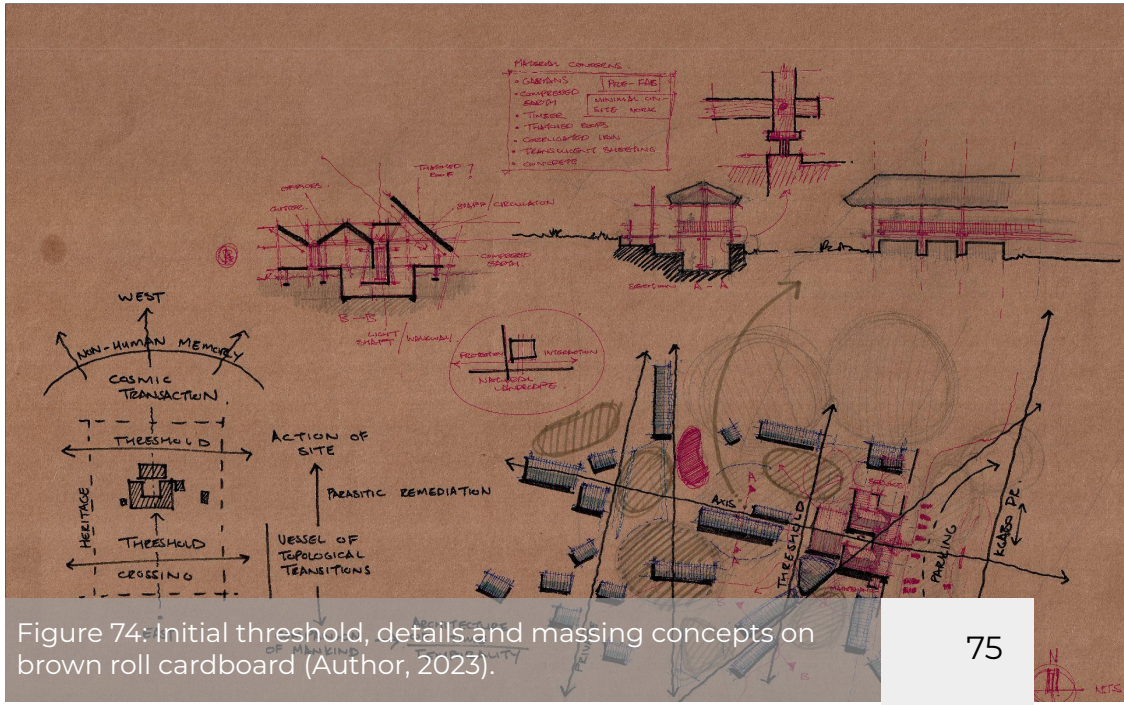


Figure 74: Initial threshold, details and massing concepts on brown roll cardboard (Author, 2023).

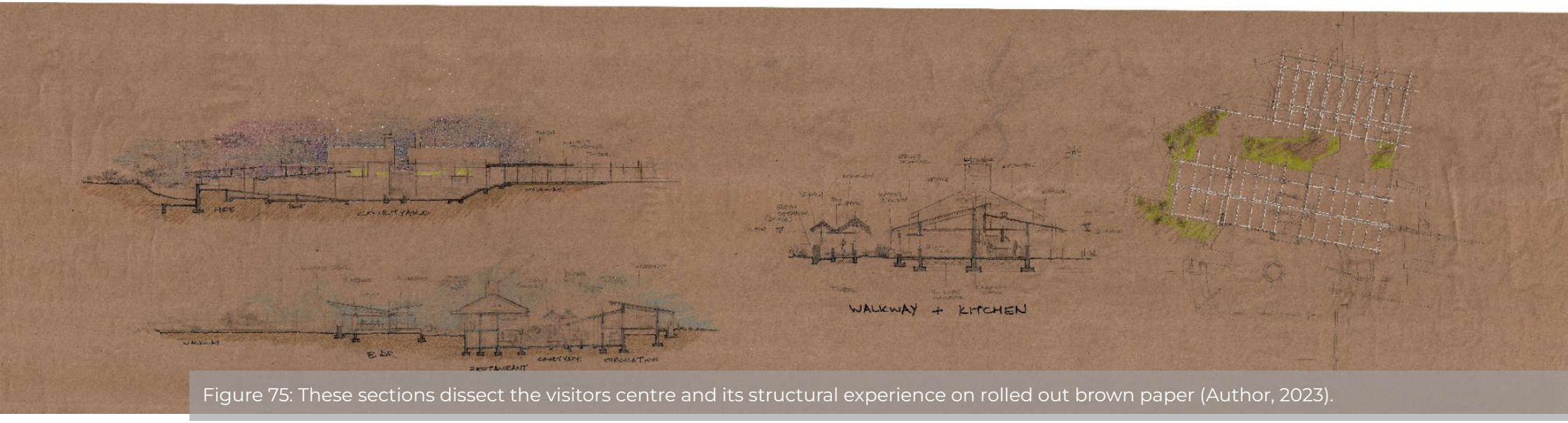


Figure 75: These sections dissect the visitors centre and its structural experience on rolled out brown paper (Author, 2023).

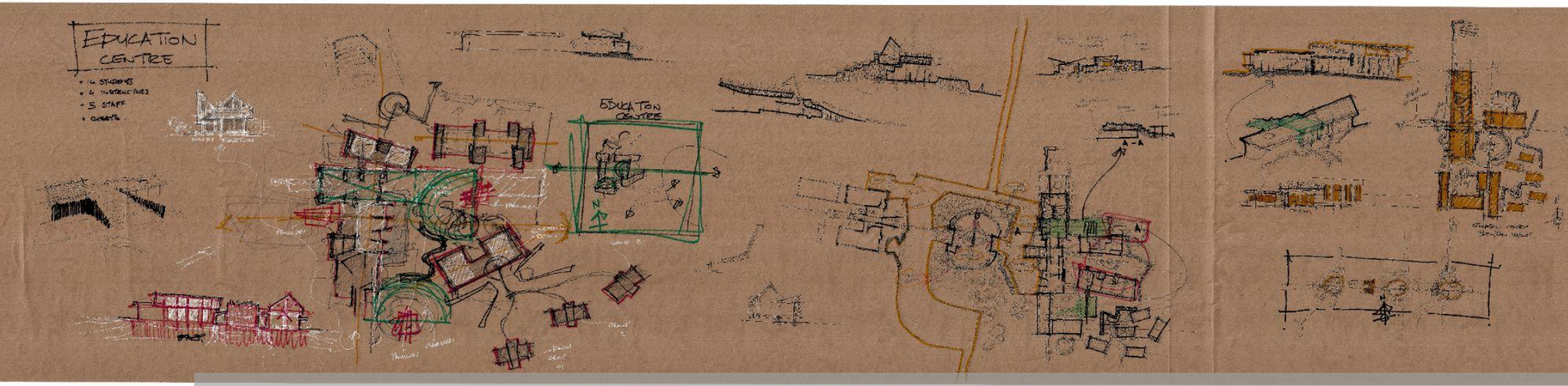
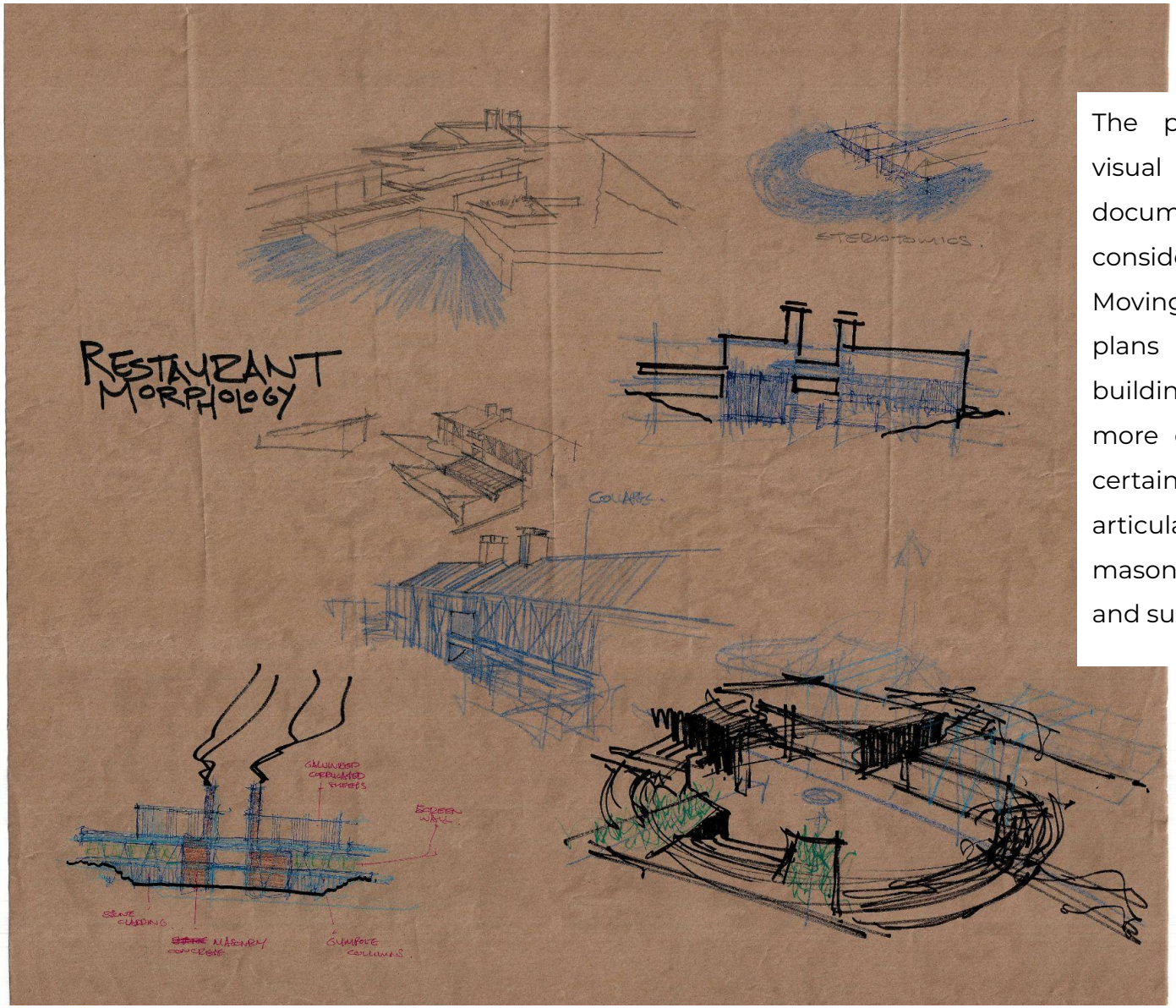


Figure 76: This roll of process work documents how certain concepts were generated for the Education Centre (Author, 2023).



The pre-scale worksheets are a visual narrative of concepts that document the morphological considerations of site masses. Moving to scale by drafting site plans and floor plans, as well as building models, was done with more confidence and attention to certain details, such as timber articulations, concrete massing, masonry placement, roof texturing, and superstructure development.

Figure 77: The restaurant and its morphology was resolved on this sheet, exploring its tactile three dimensional emergence (Author, 2023).

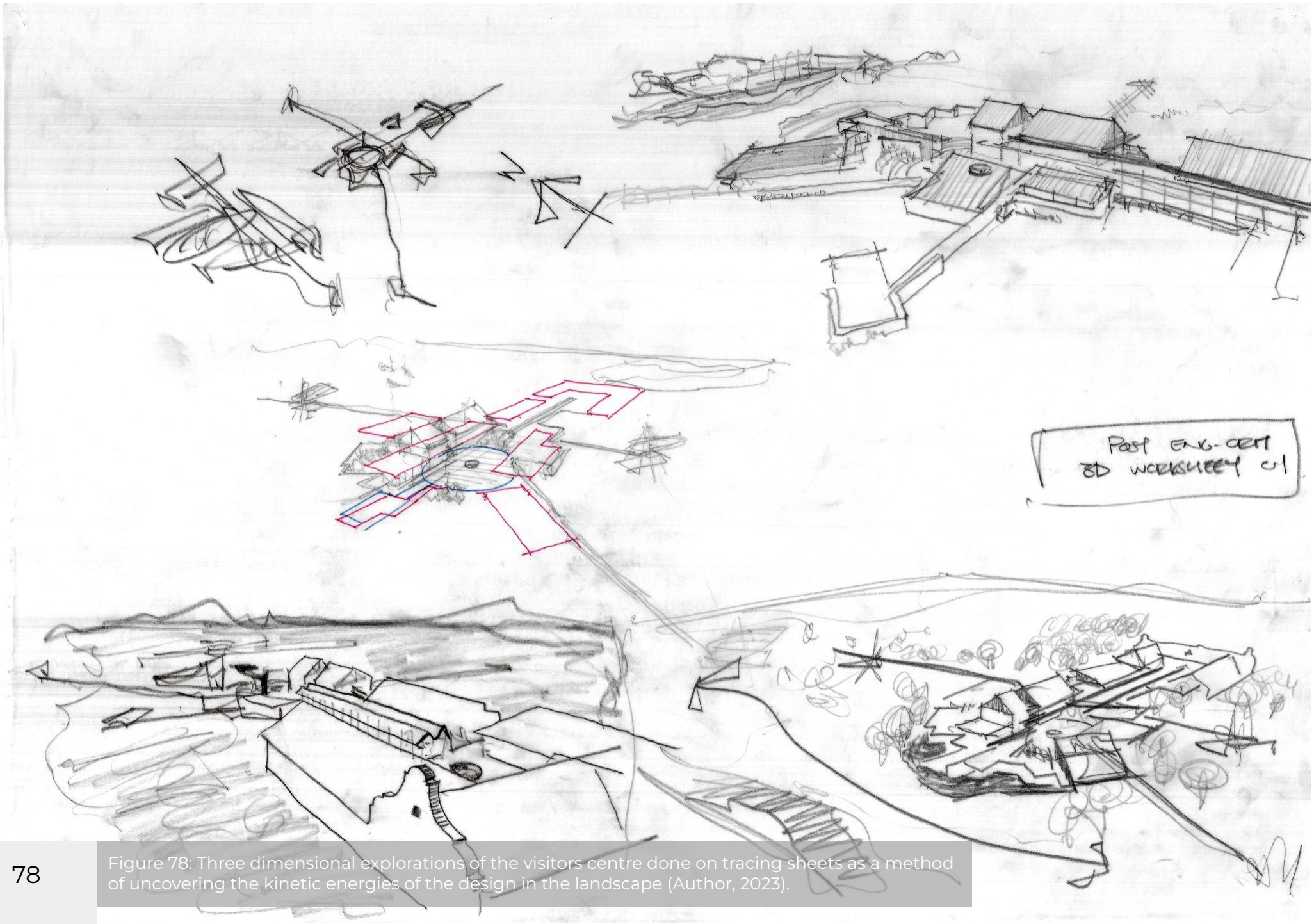


Figure 78: Three dimensional explorations of the visitors centre done on tracing sheets as a method of uncovering the kinetic energies of the design in the landscape (Author, 2023).

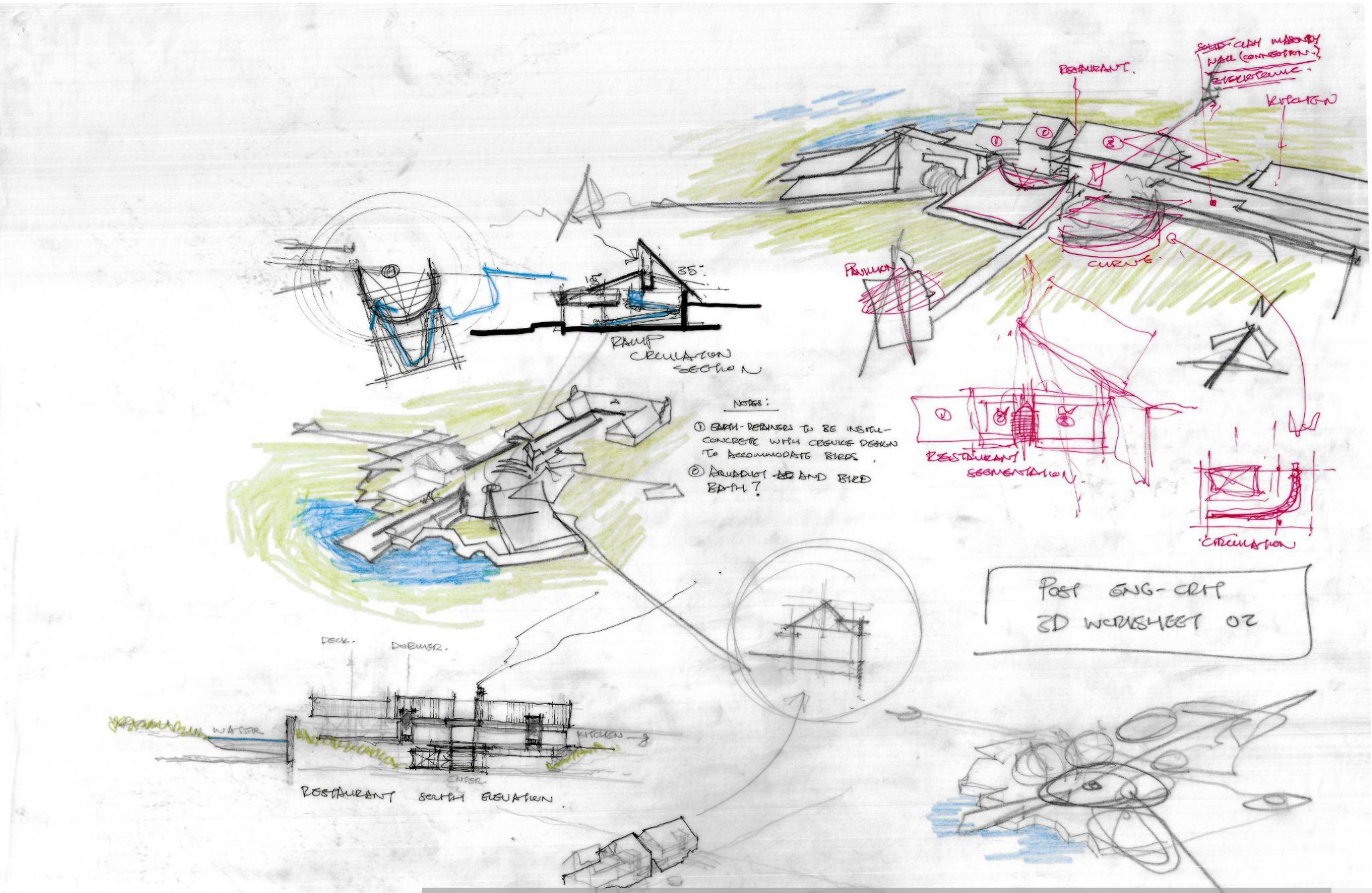


Figure 79: Three dimensional explorations of the visitors centre done on tracing sheets as a method of establishing specific material languages for the design in the landscape (Author, 2023).

5.2.3) Scale worksheets

The worksheets are a series of tracing paper sketches that delineate the thought process of the design development section. These sketches were investigative in nature and were experimental explorations of the developmental framework of this design. Illustrating various avenues of discourse, the worksheets were a defining moment of this design process and enabled scale developments to be formulated with a comprehensive overview of site dialogue.

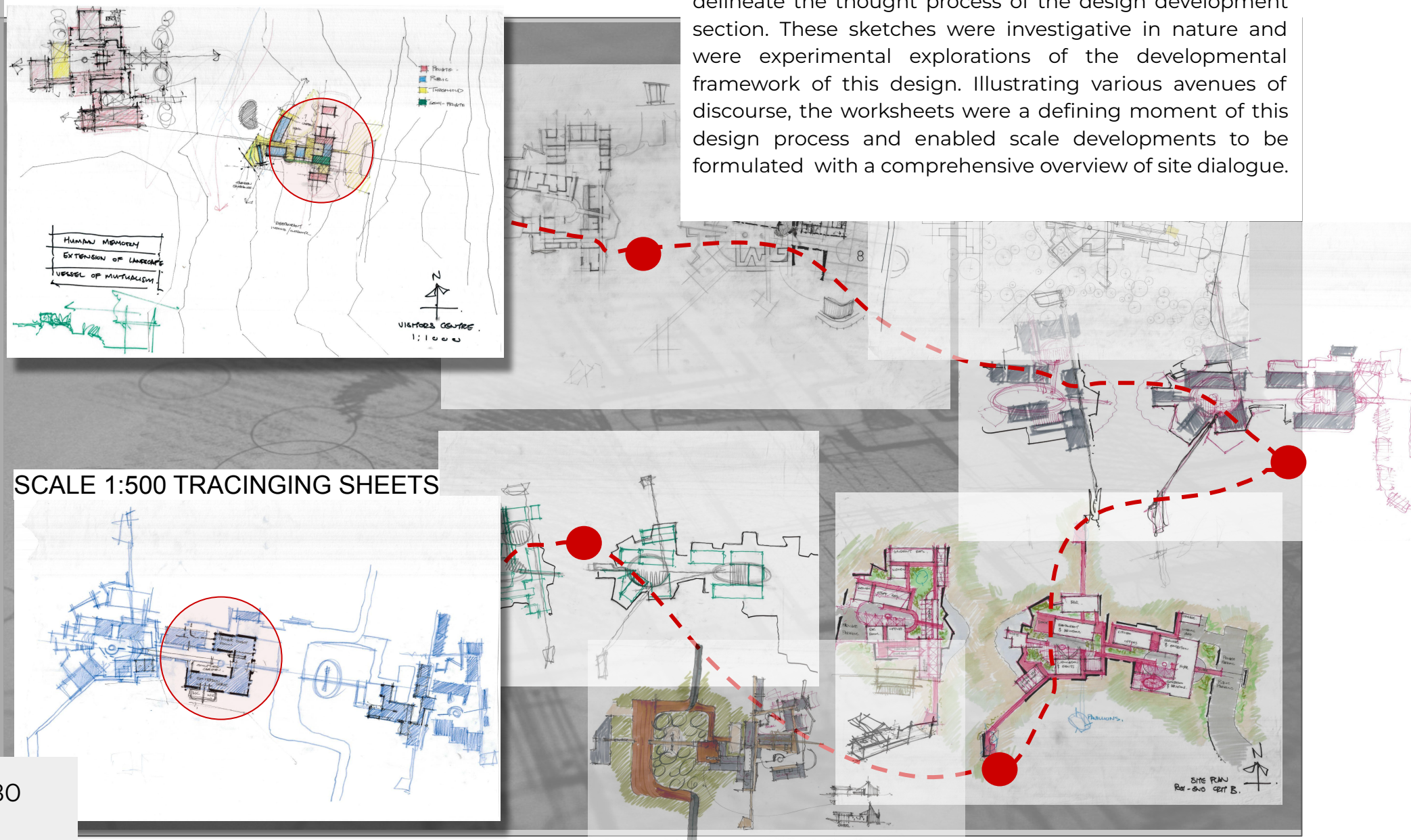


Figure : Developmental site-diagrams A2 tracing sheets. (Author, 2023)

Throughout the design development stage of the project, scale development has been critical as the foundation for spatial comprehension and accurate depiction. It enables design to convert abstract conceptions and ideas into quantitative measurements. This stage of the process ensured that proportions, relationships, and spatial layouts were exact and consistent by paying close attention to scale. The distillation of concepts that would ultimately shape the final design, started to take form here. These scale worksheets were created throughout the design development phase as a mechanism that tethered the design response to the disposition of the concepts, site analysis, and documentation of spatial considerations.

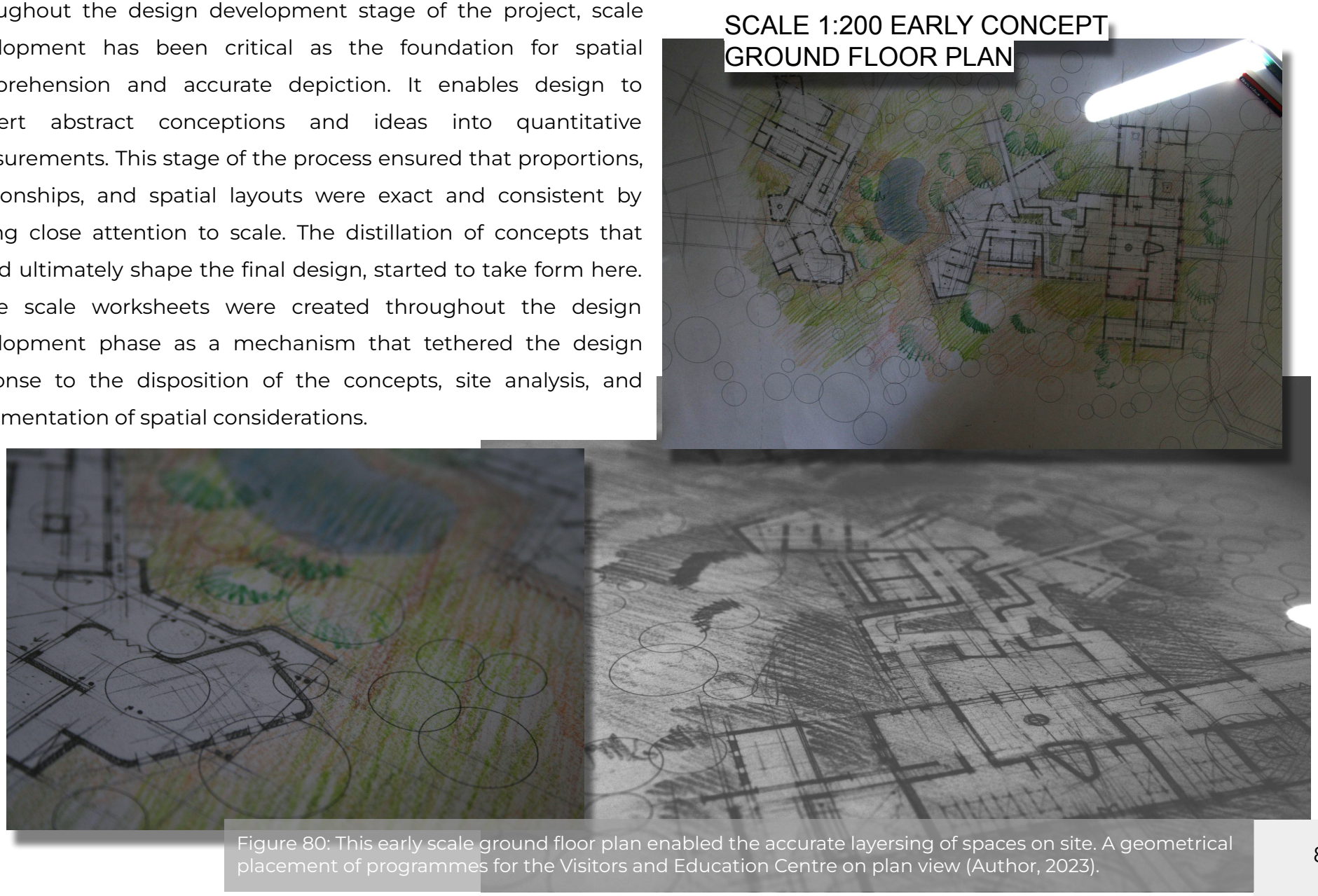


Figure 80: This early scale ground floor plan enabled the accurate layersing of spaces on site. A geometrical placement of programmes for the Visitors and Education Centre on plan view (Author, 2023).

5.2.4) Massing models

Model 1:
Scale 1:1000

The first scale model of this project was built on scale 1 to 1000. This model was a physical massing exploration of initial diagrams sketched on brown paper. This was the first scale design exploration of the project and was helpful to the analysis of program placement, scale, orientation and general placement in the landscape. From here more worksheets were generated as the project shifted to a more topographical mode of investigation as site plans and massing diagrams were produced.

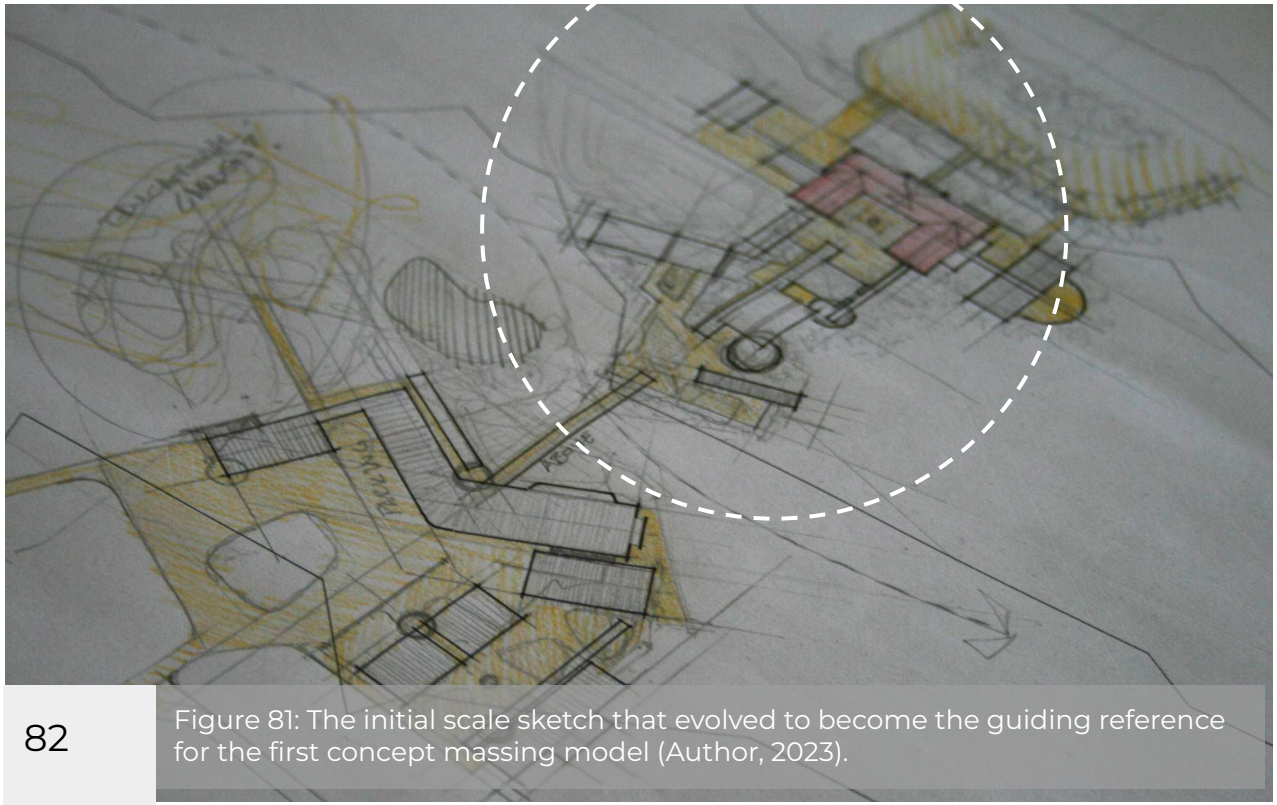
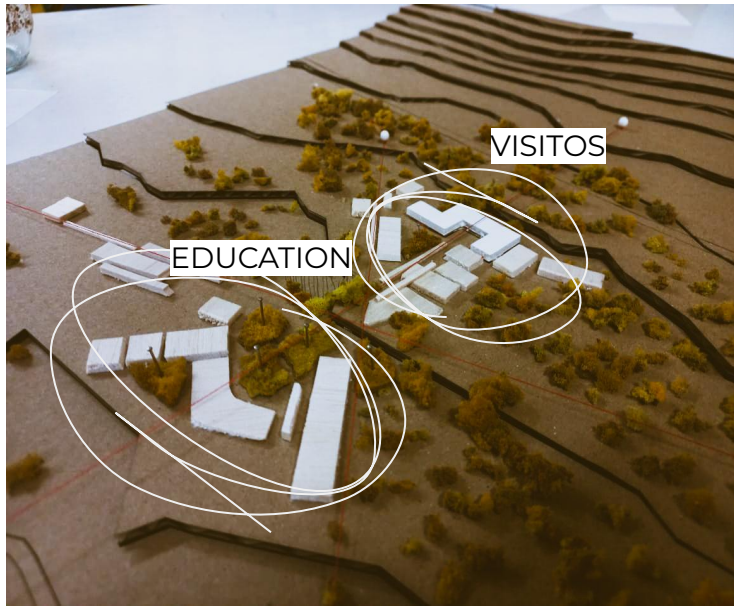


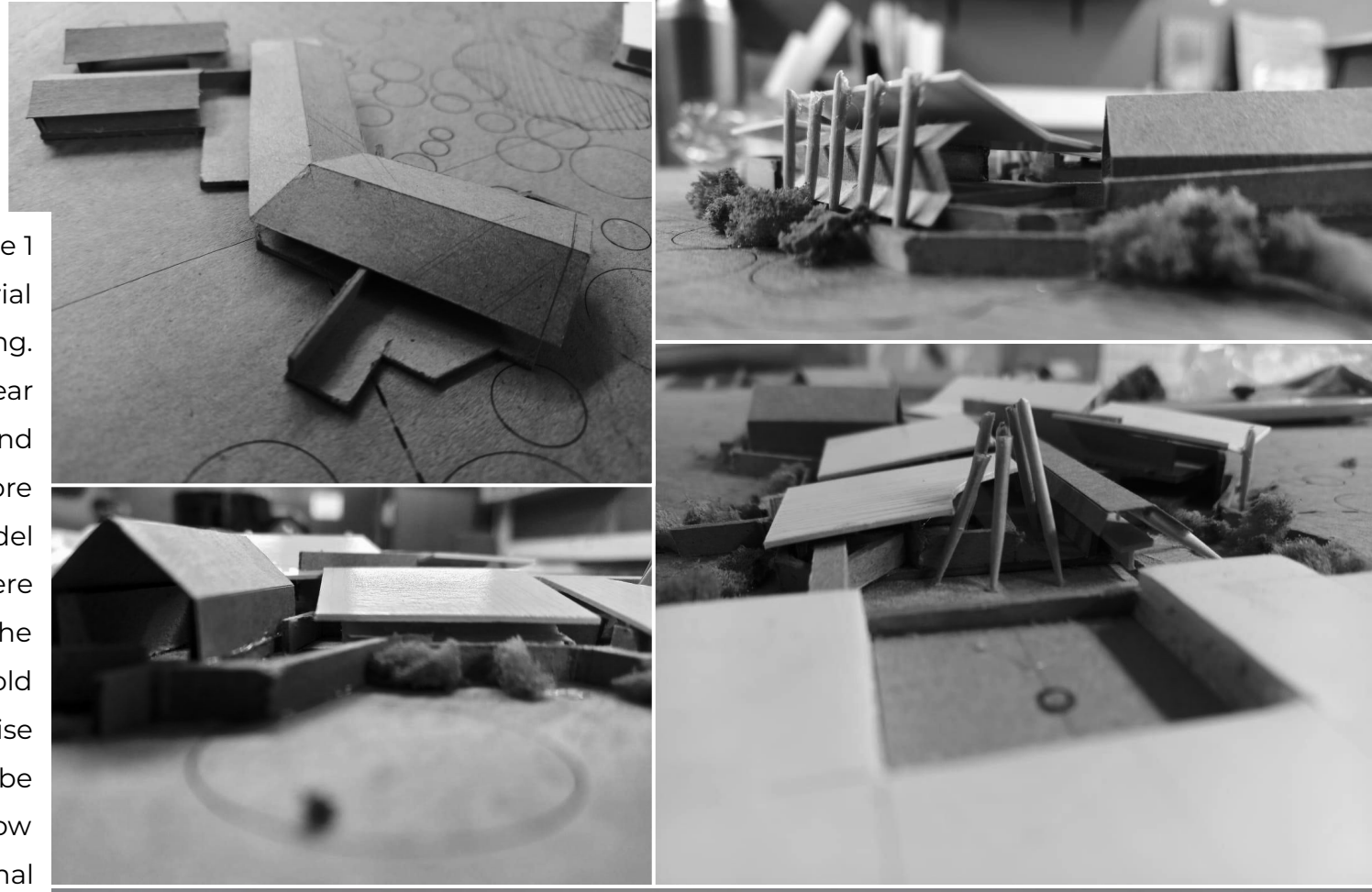
Figure 81: The initial scale sketch that evolved to become the guiding reference for the first concept massing model (Author, 2023).

Figure 73: Scale model made from boxboard, foamboard and textured foam (Author, 2023).



Model 2:
Scale 1:500

The second scale model was built on scale 1 to 500. This model investigated material qualities, roof designs and general massing. At this point in the project a clear understanding of program allocation and orientation had been generated and more details could be explored. This model allowed important changes that were made to the designs energy towards the site, the cohesive nature of its threshold and the axial language. This exercise allowed the first scale 1 to 200 plans to be drafted with a better understanding of how the design occupies three dimensional space and how it can make better use of this complex landscape..



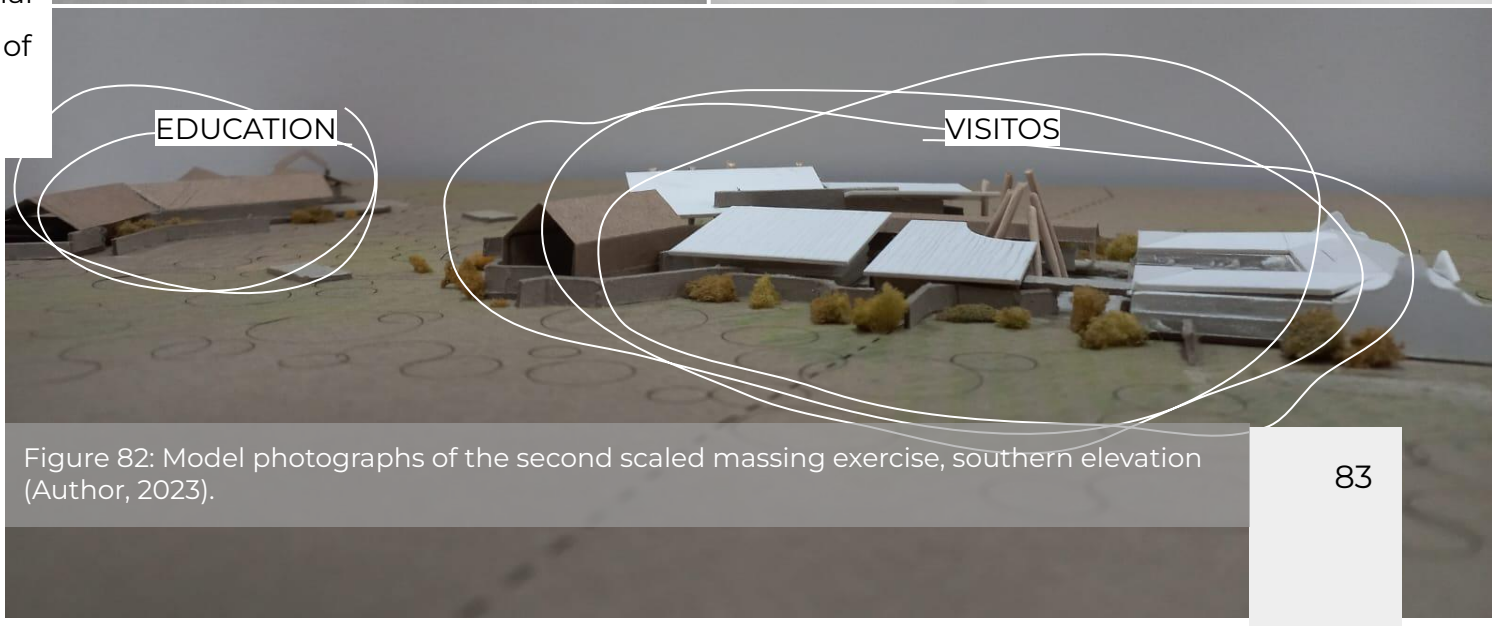


Figure 82: Model photographs of the second scaled massing exercise, southern elevation (Author, 2023).

Model 3:
Scale 1:500

The third and preliminary model was built on scale 1 to 500 and demonstrates a cohesive understanding of the designs massing and program layout. Changes made form this iteration of the design led to the development of the final design. By building a more detailed 3D representation of the design on scale, a better understanding of how the walkways, singular masses and site boundaries affect the thresholds of the built can be generated.

The perched nature of the walkways extending the visitors experience of the landscape, as well as the collaboration of masses in the central courtyard, enables the design to come to rest with the landscape, not dissimilar to the corporal silhouette of a carcass returned to the earth. This model demonstrates how these elements are joined together to form a functional form driven design solution to conservation housing and funding, as well as the enigmatic transitions of thresholds that generate a harmonious experience of Pilanesberg National Park and its ecology.

Figure 83: Model photograph, Visitors centre (Author, 2023).

Figure 84: Model photograph, visitors centre west elevation (Author, 2023).

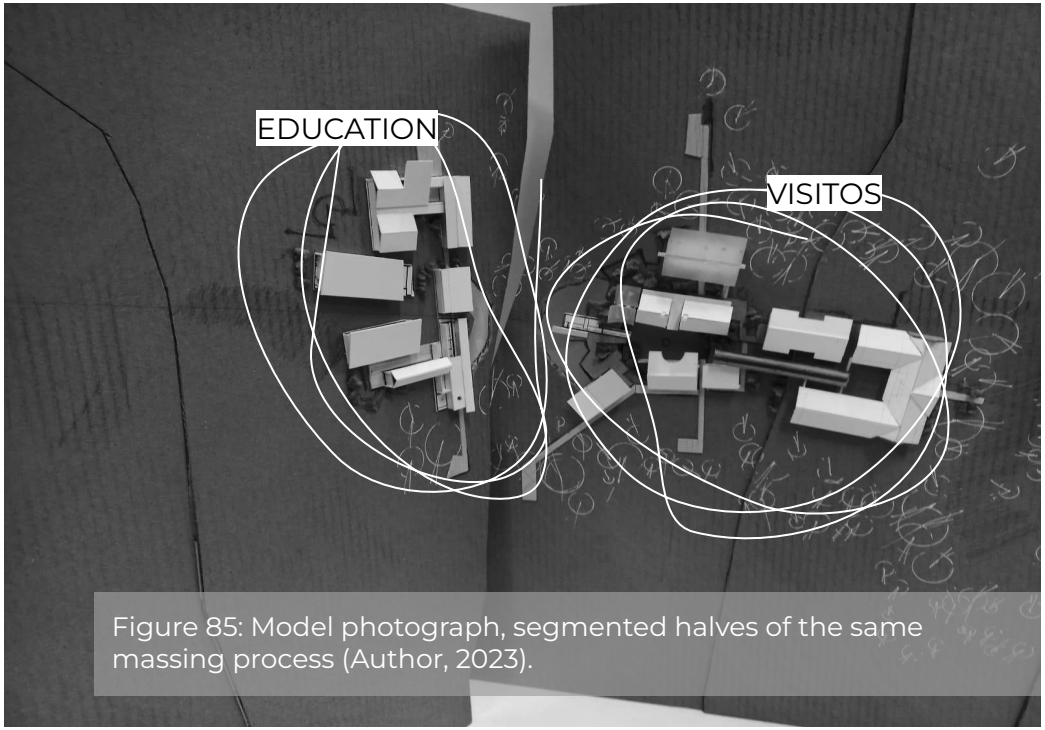


Figure 85: Model photograph, segmented halves of the same massing process (Author, 2023).

Figure 86: Model photograph, visitors centre south western elevation (Author, 2023).

Figure 87: Model photograph education centre courtyard (Author, 2023).

5.3 Design summary

This section illustrates the final design as well as its positioning in the landscape (Fig. 87 and 88), its conceptual closure, floor plans and sections as well as the allocation of functions on site. The Pilanesberg Wildlife Visitors and Education Centre is a tryptic of thresholds in the landscape, intertwined with the abiotic topography and ecology that sustains it. This design houses a series of programmes that are set towards the conservation of Pilanesberg National Park and the communities of Pilanesberg that dependent on its future. By grossing the necessary finances, Pilanesberg Wildlife Trust can ensure that the park has the necessary financing for conservation funding. In wildlife conservation architecture, inclusive permanence represents a holistic approach. It combines biodiversity conservation, long-term community engagement, and long-term management. The harmonious coexistence of protected ecosystems and local communities is emphasised in the design ethos for this vessel of mutualism. It ensures that conservation efforts are long-term, inclusive, and sustainable, recognising the importance of both humans and the ecology in the long-term success of protected areas.

Figure 88: The final design positioned on site (Author, 2023).

Figure 89: South elevation sketch of the Visitors Centre immersed in the landscape (Author, 2023).

5.3.1) Site positioning

The topological evolution of the project has unveiled the intricacies inherent in designing within a complex natural landscape. The immersive quality of the design juxtaposed with the relatively flat topography of the site necessitates a meticulous examination of every desire-line, clearing, vantage point, and transitional element. These constituent features collectively converge to shape the cohesive and integral experiential fabric of the site (Fig 89). This heightened sensitivity to the interplay between the designed environment and the natural surroundings underscores the imperative for a comprehensive design strategy that seamlessly harmonizes with the existing landscape.

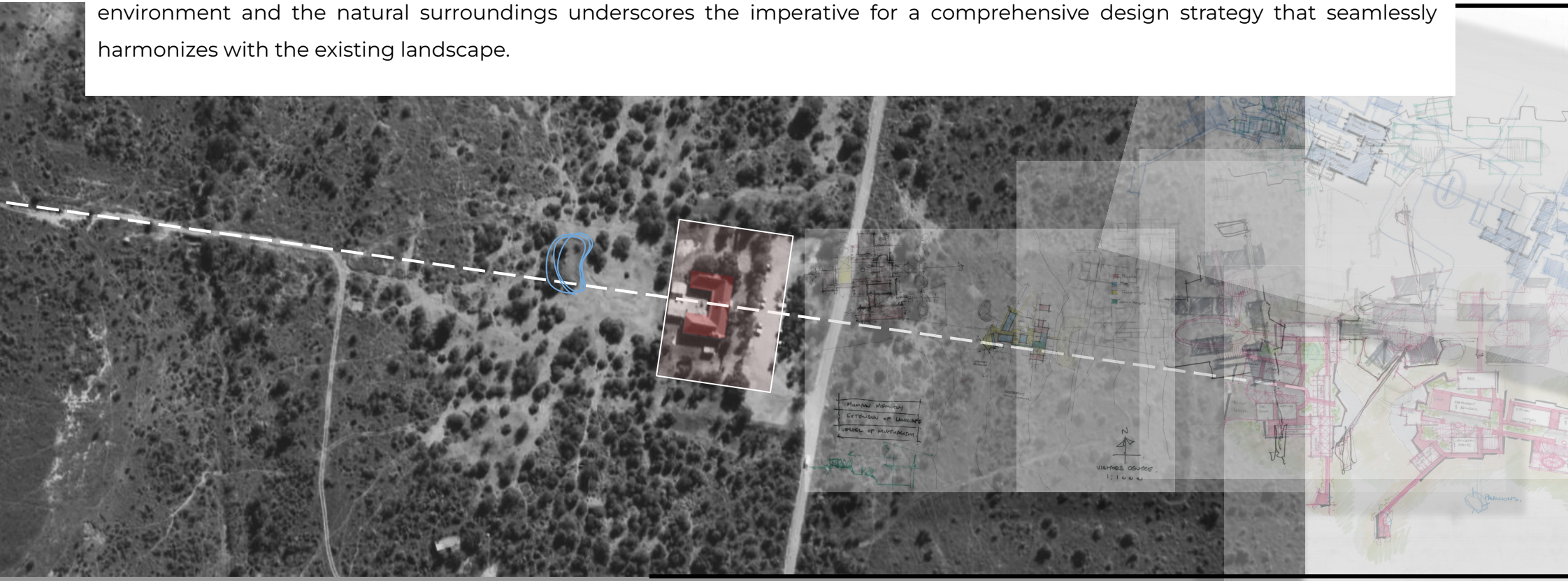


Figure 90: This figure illustrates how the project has evolved to its current designed form on site (Author, 2023).

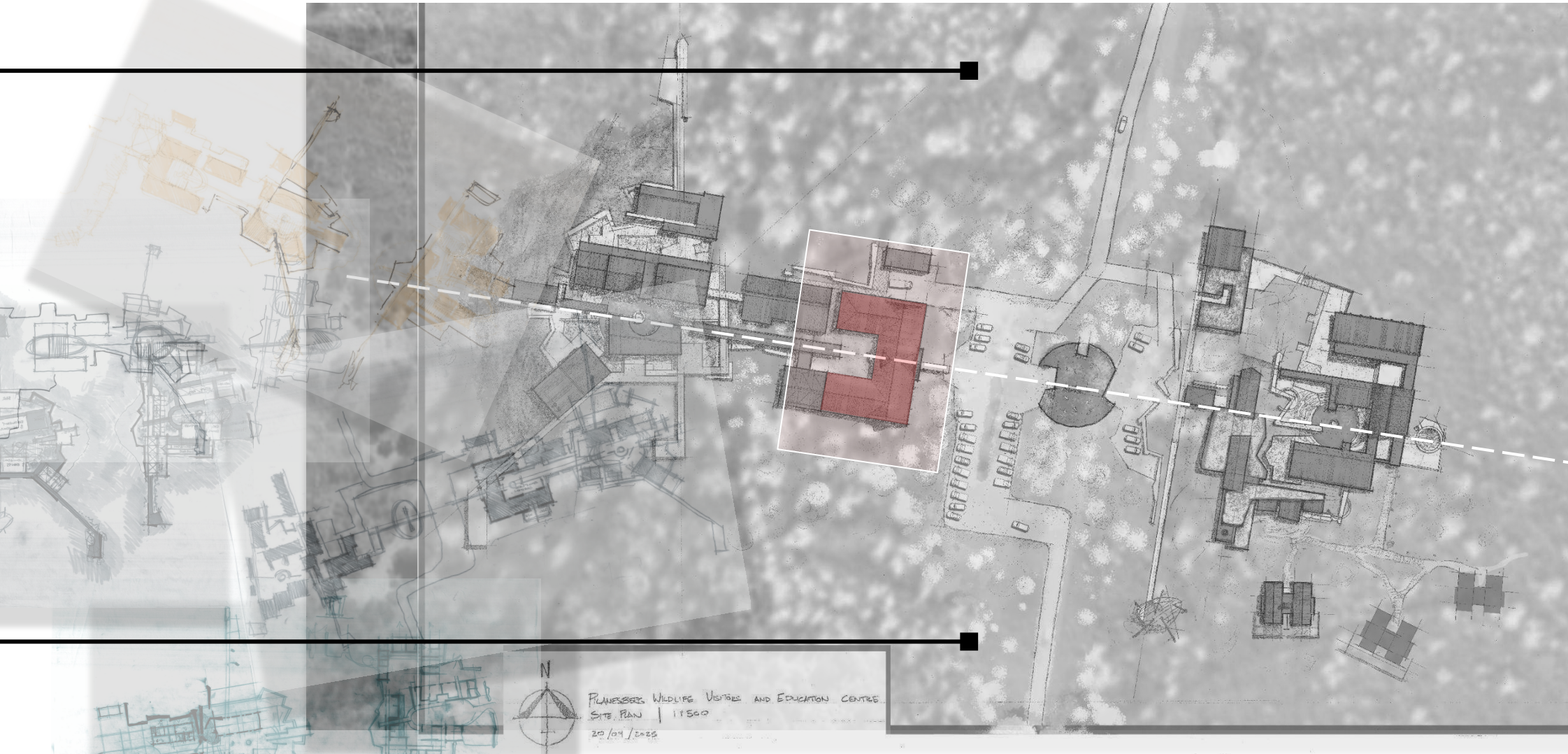


Figure 91: The Heritage building in its topological context within the proposed design intervention (Author, 2023).

Pilanesberg Wildlife Visitors and Education Centre:

Site narratives

The conjunction of thresholds and the experience of the landscape are homogeneous and crucial to the visitors experience. These narratives that communicate and embody these thresholds are inherently linked to the concepts discussed in Chapter 2 of this dissertation. The physical narration of landscape memory embodied by the built form enables the kinetic filtering of visitors, staff members, and students by generating moments of pause and moments of limbless locomotion so to speak.

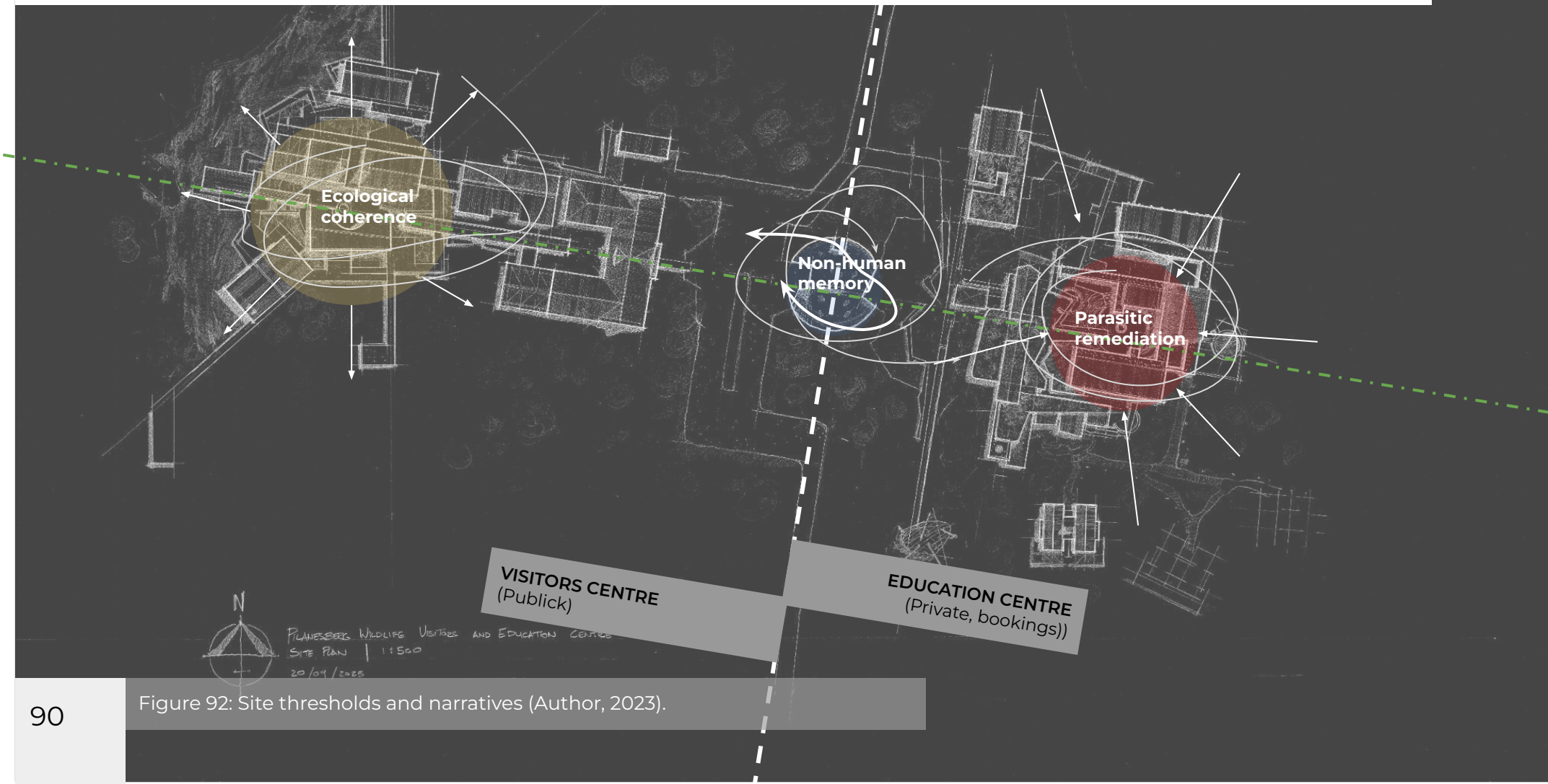


Figure 92: Site thresholds and narratives (Author, 2023).

1. Public parking (visitor)
2. Private parking (staff)
3. Private parking (Staff and bookings)
4. Sculpture garden and map
5. Heritage building; enter visitors centre
6. Kitchen and admin
7. Restaurant
8. Circulation and amphitheatre
9. Coffee-stop and gift shop
10. Waterline hide
11. Bush bar
12. Watering hole
13. Thatch pavillion
14. Park security
15. Education venue
16. Classroom and offices
17. Instructor residence
18. Leisure space
19. Staff residence
20. Student residence
21. Maintenance and storage

Pilanesberg Wildlife Visitors and Education Centre:

Program and layout

The functions of the buildings are allocated along an axis that extents through the thresholds of the site, forming a datum of enclosure that subjects the visitor to various landscape, educational, cultural and leisurely experiences.

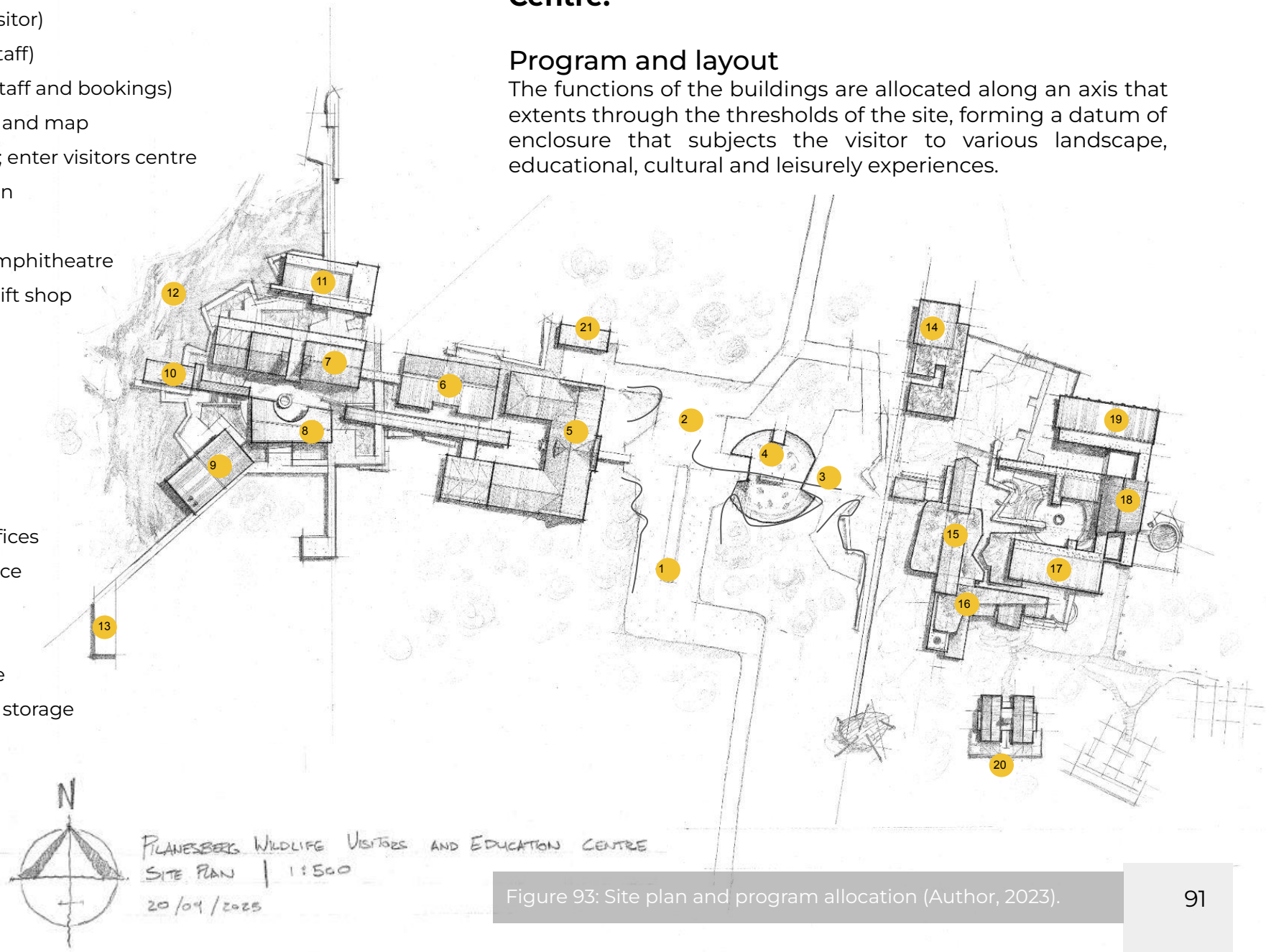


Figure 93: Site plan and program allocation (Author, 2023).

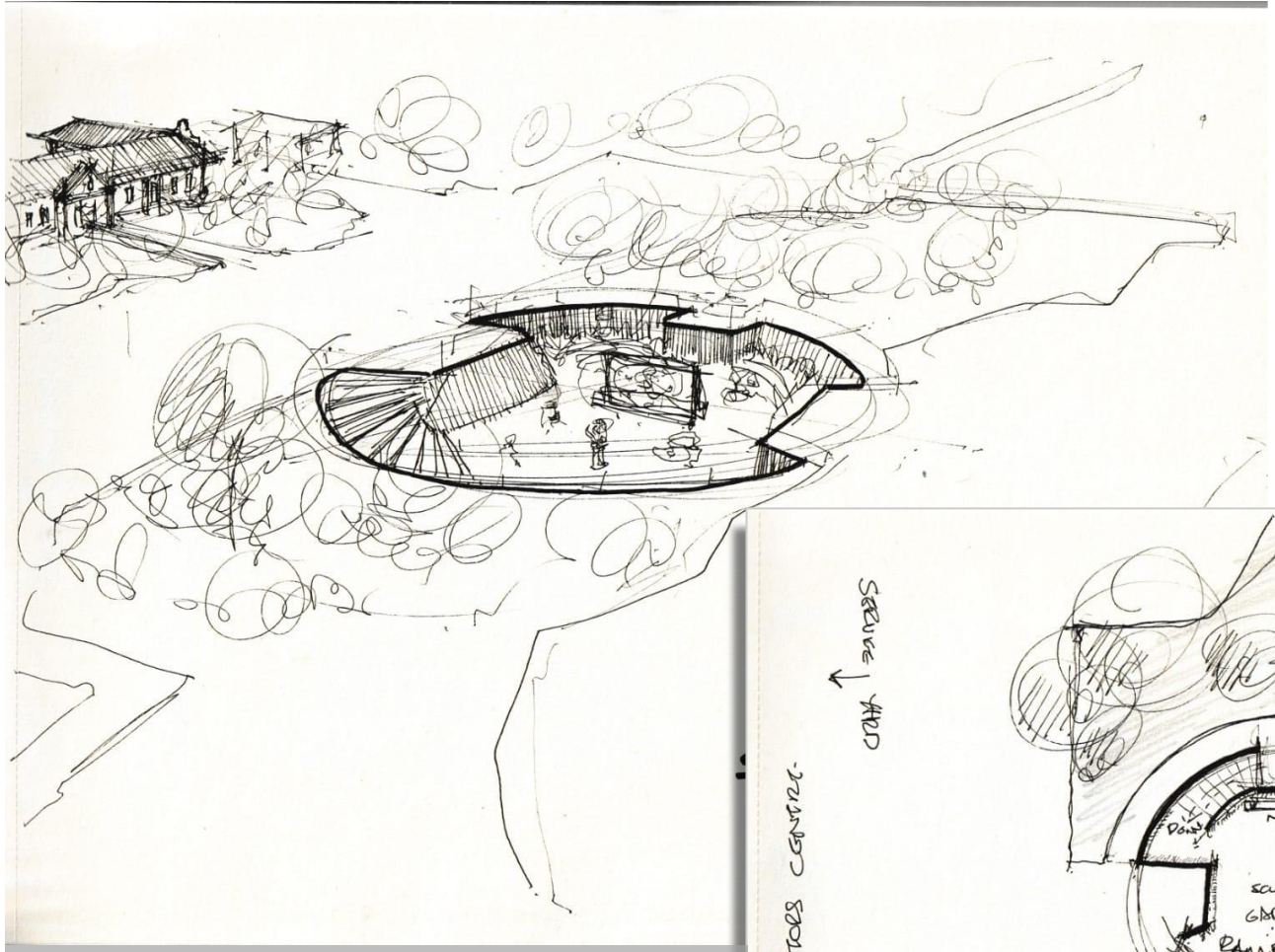


Figure 94: Freehand perspective of the general node located between the Education Centre and Visitors Center. (Author, 2023).

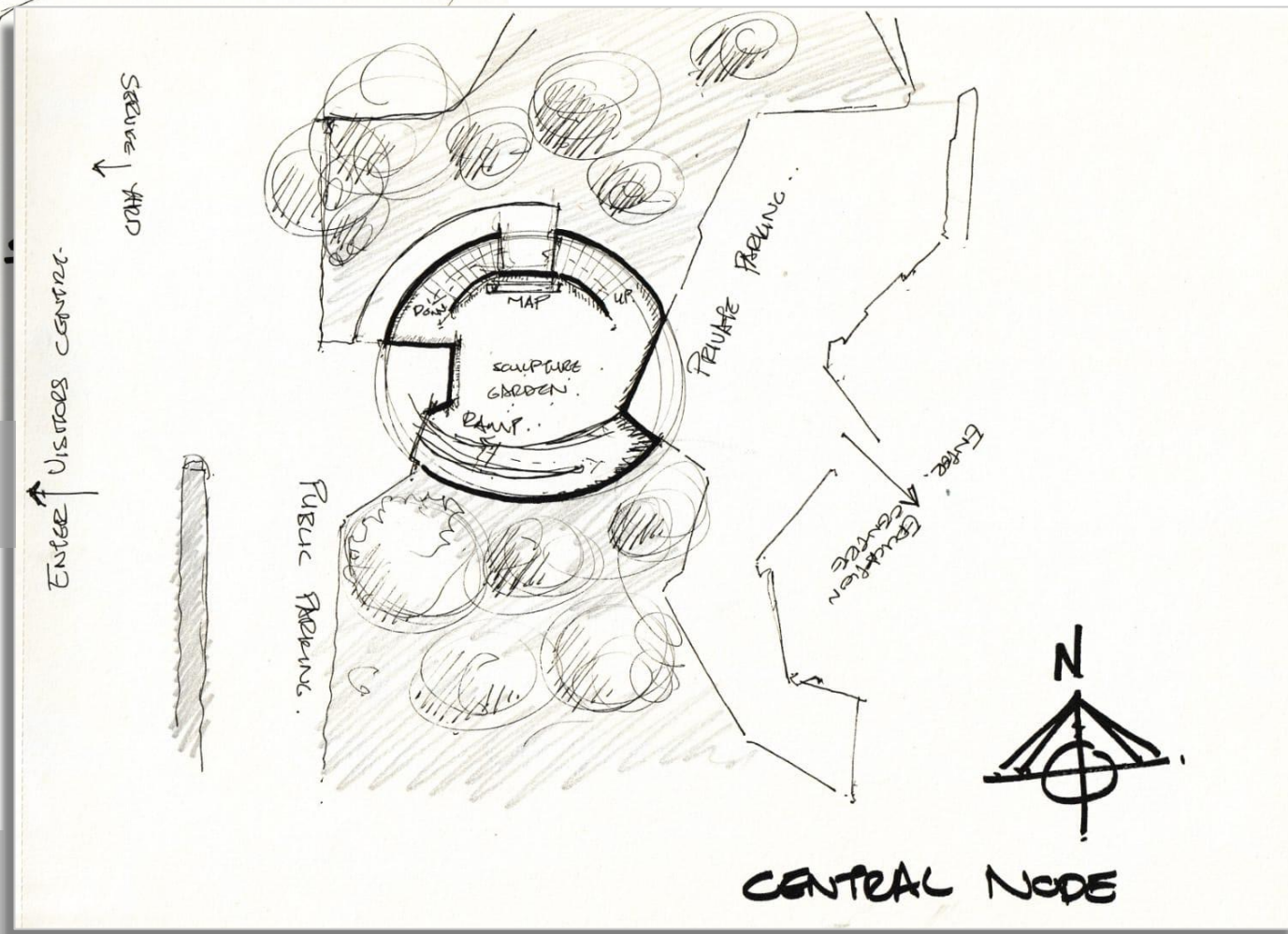


Figure 95: Site plan of the central mode between the Education Centre and the Visitors Centre. (Author, 2023).

5.3.3) Visitors Centre conceptual summary

The massing and morphological development of the visitors centre is hinged on the development of the hierarchical node stationed at the base of the restaurant and circulation routes. From here the water-level hide is accessible, joined with the amphitheatre and open courtyard as the mediator of thresholds on site. The silhouette of the visitors centre and the masses that cohorsely generate its permeable spaces, was filtered through various states of sketch development (Fig.). The Visitors Centre's design process was distinguished by a strong emphasis on creating a welcoming and immersive environment for visitors. Unlike the Education Centre, the Visitors Centre presented a unique challenge in terms of space allocation and circulation. It was critical to strike a balance between functionality and aesthetic appeal, ensuring that the centre would serve as an inviting gateway to the Pilanesberg National Park's natural tourists. The design evolved through iterative sketch development to harmonise with the existing landscape, seamlessly integrating with the surrounding terrain and providing visitors with a sense of belonging within the natural built environment.

Figure 96: Visitors centre courtyard concept (Author, 2023).

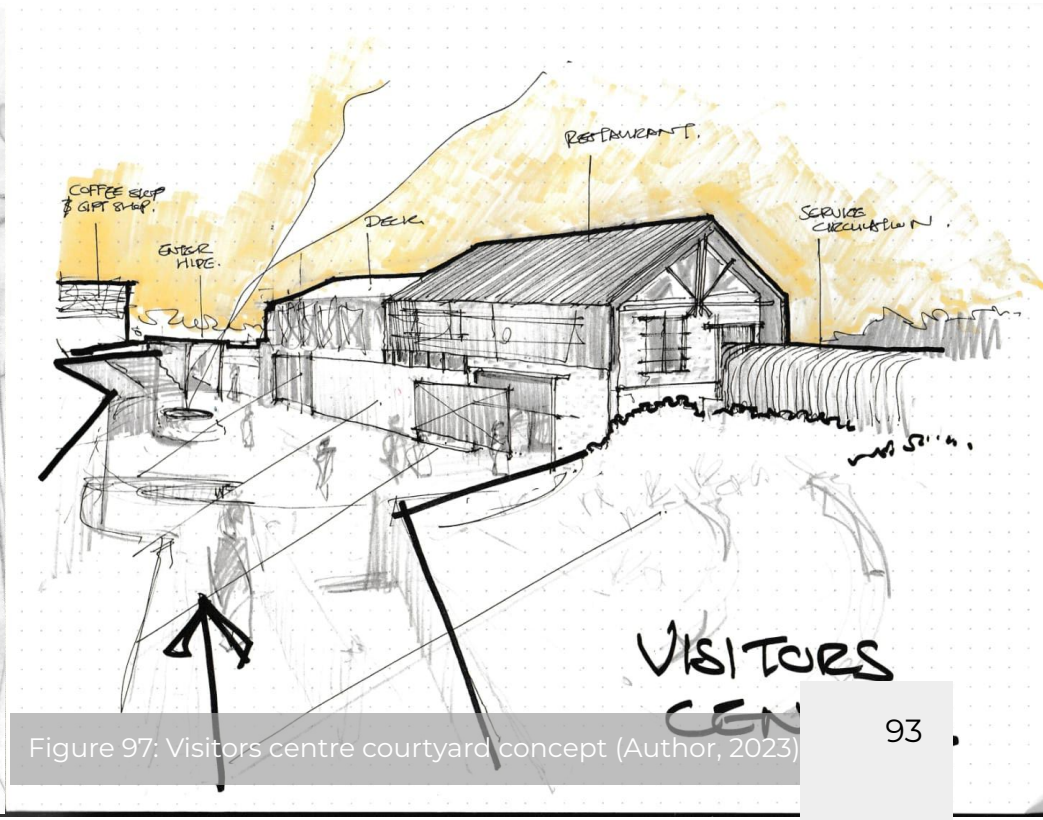
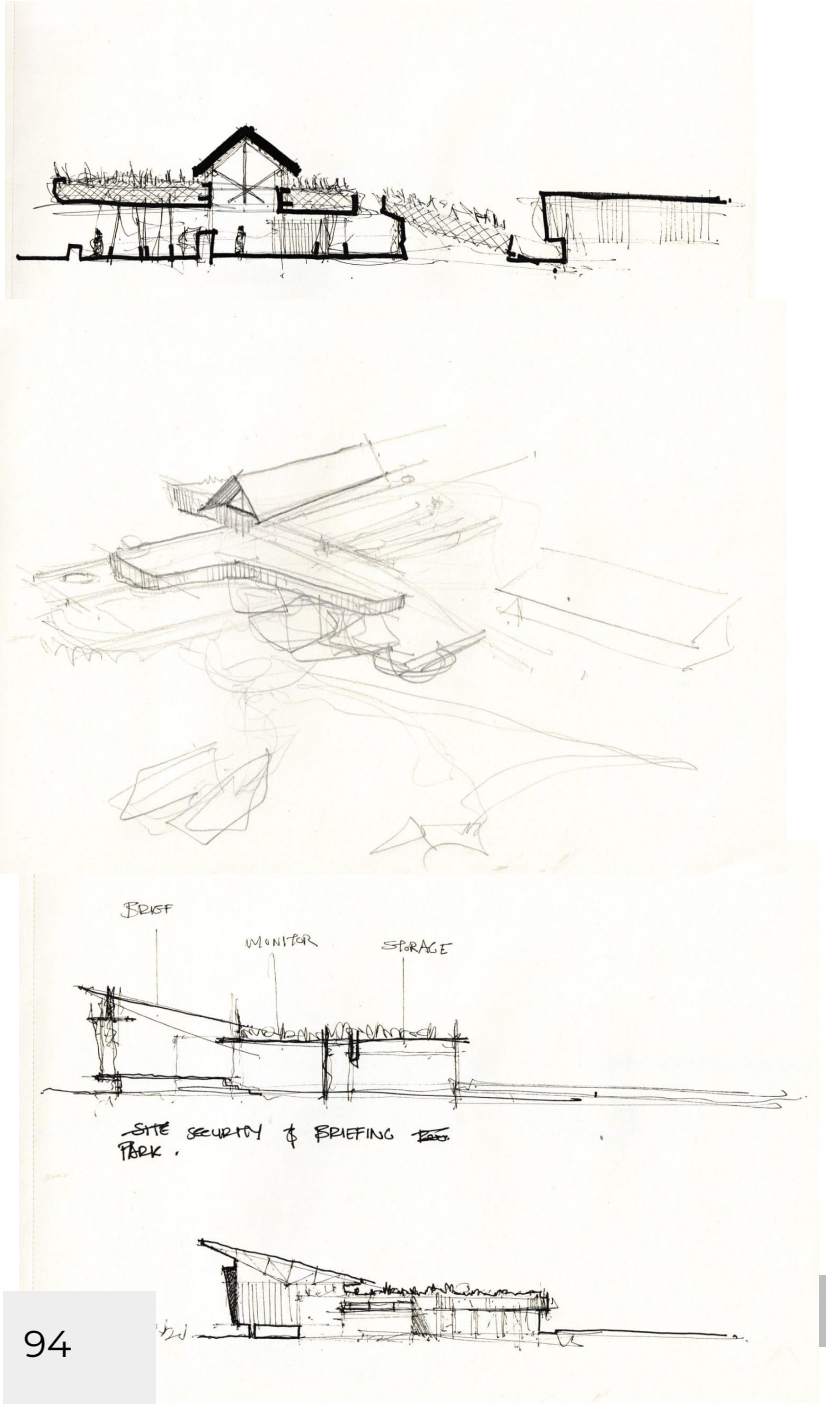


Figure 97: Visitors centre courtyard concept (Author, 2023)



5.3.2) Education Centre conceptual summary

The design process brought about a mode of development for the Education centre. Due to the allocation of programme and private spaces, the circulation and massing of the education centre proved less of a design challenge challenge than that of the Visitors Centre . Through a series of sketch developments, the Education Centre evolved to become the starting node of this tryptic, rising form the earth and meeting the perched level of the Heritage building adjacent to it, merely separated by two parking terrains and the threshold of non-human memory, a sculpture garden dedicated to the endangered and extinct animals of Pilanesberg National Park.

The Education Centre is positioned on the rising slope of the hillside adjacent to the Visitors Centre. This enables the design to be nestled, composing the horizontal experience of the landscape as a kinetic expression of regional materials. The layering of these materials are tapered to the central courtyard and final cosmic threshold of this tryptic. The stereotomic entrance and emergence of this building articulates the rigid, typological symmetry of the Heritage Building, both acting as the reciprocal thresholds of the site experience.

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Figure 98: Developmental sketches of the Education Centre (Author, 2023).

When creating floor plans for the Education Centre, it is critical to consider a layout that best accommodates the intended functions and user flow. For example, the ground floor is designed to include key communal areas such as a reception area, exhibition spaces, and educational facilities. These spaces should be strategically arranged to provide visitors with easy navigation while also allowing for flexibility in hosting a variety of educational programmes and events. The architectural placement of the Education Centre on the ascending slope adjacent to the Visitors Centre is a deliberate strategy that fosters a seamless integration with the natural terrain. This meticulous positioning not only establishes a visual dialogue with the surrounding landscape but also encourages a dynamic interaction with locally sourced materials, infusing the architectural composition with a profound sense of contextual relevance.

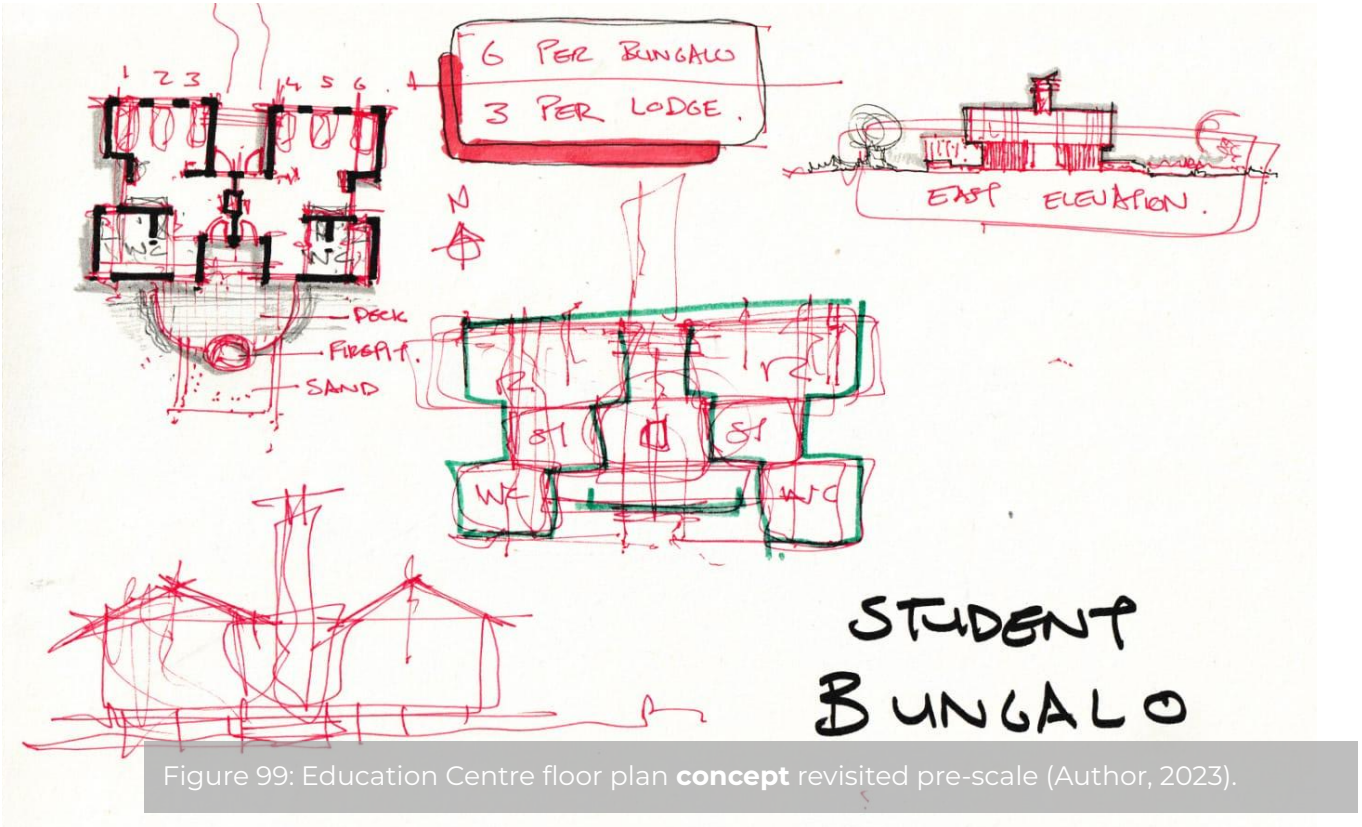
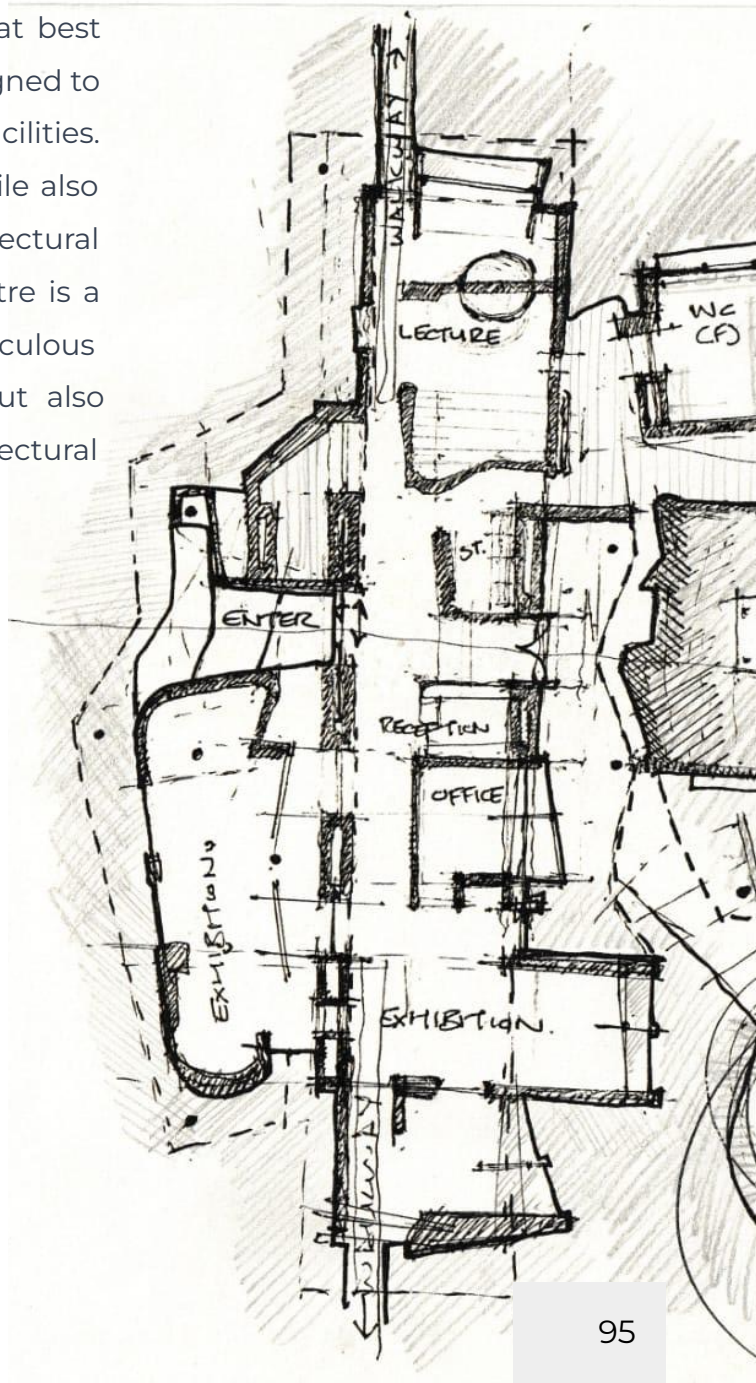


Figure 99: Education Centre floor plan **concept** revisited pre-scale (Author, 2023).



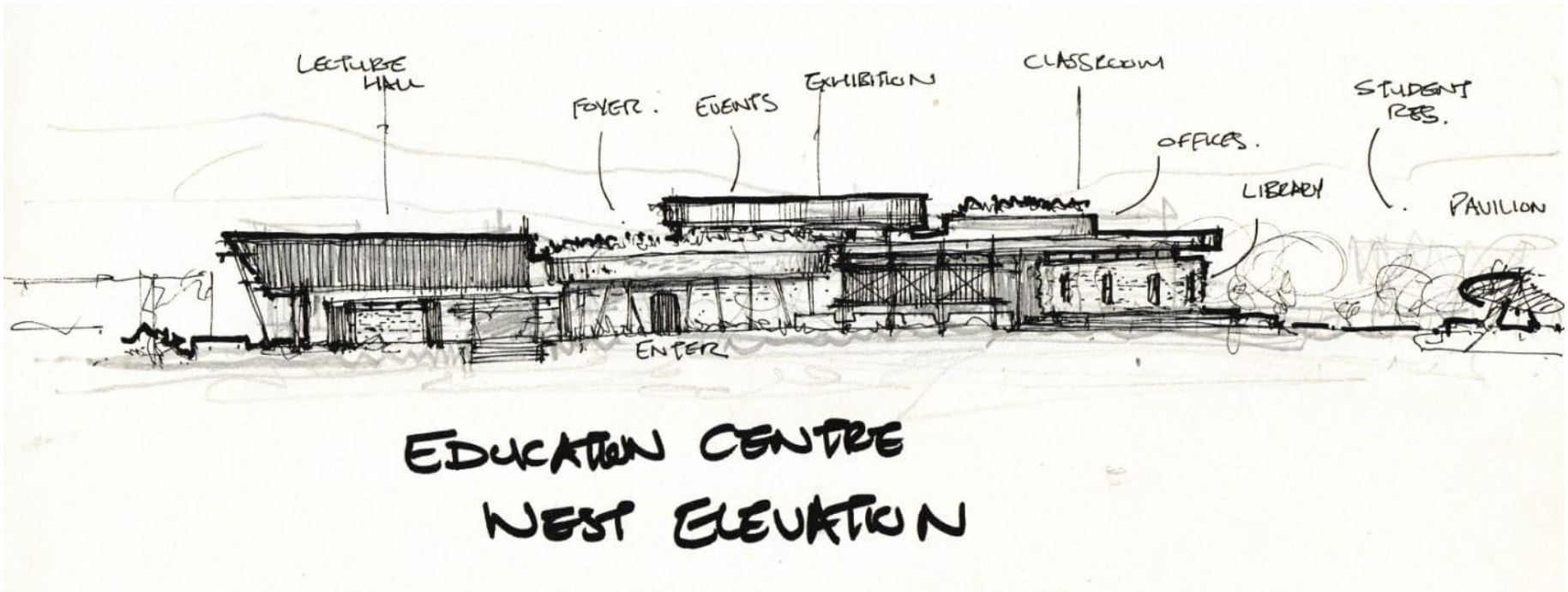


Figure 100: West Elevation of the Education Centre.(Author, 2023).

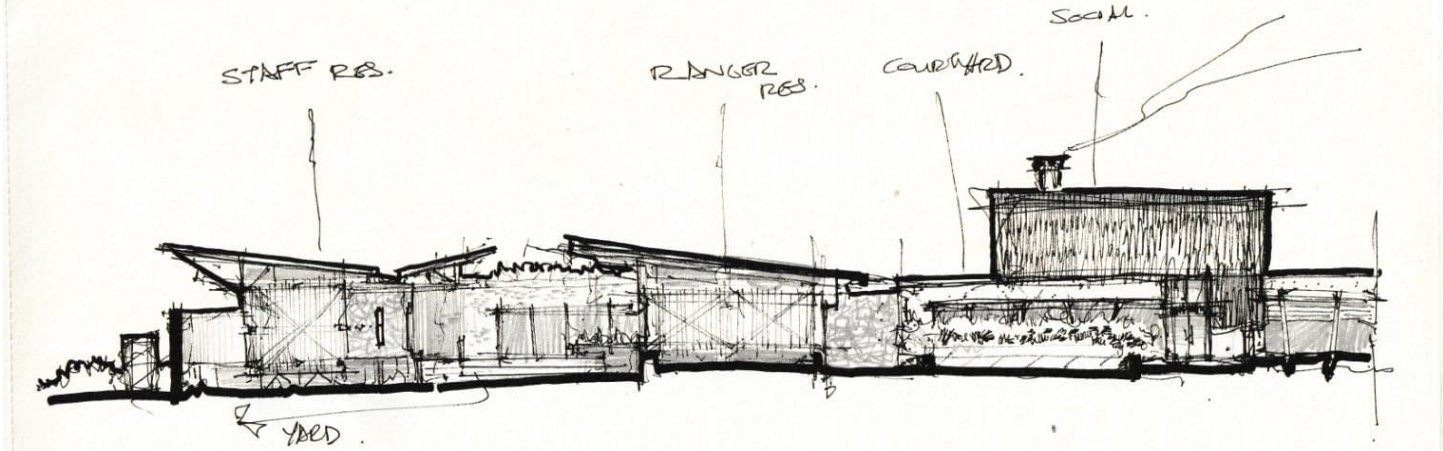


Figure 101: West Elevation of the Private Wing of the Visitor Center. (Author, 2023).

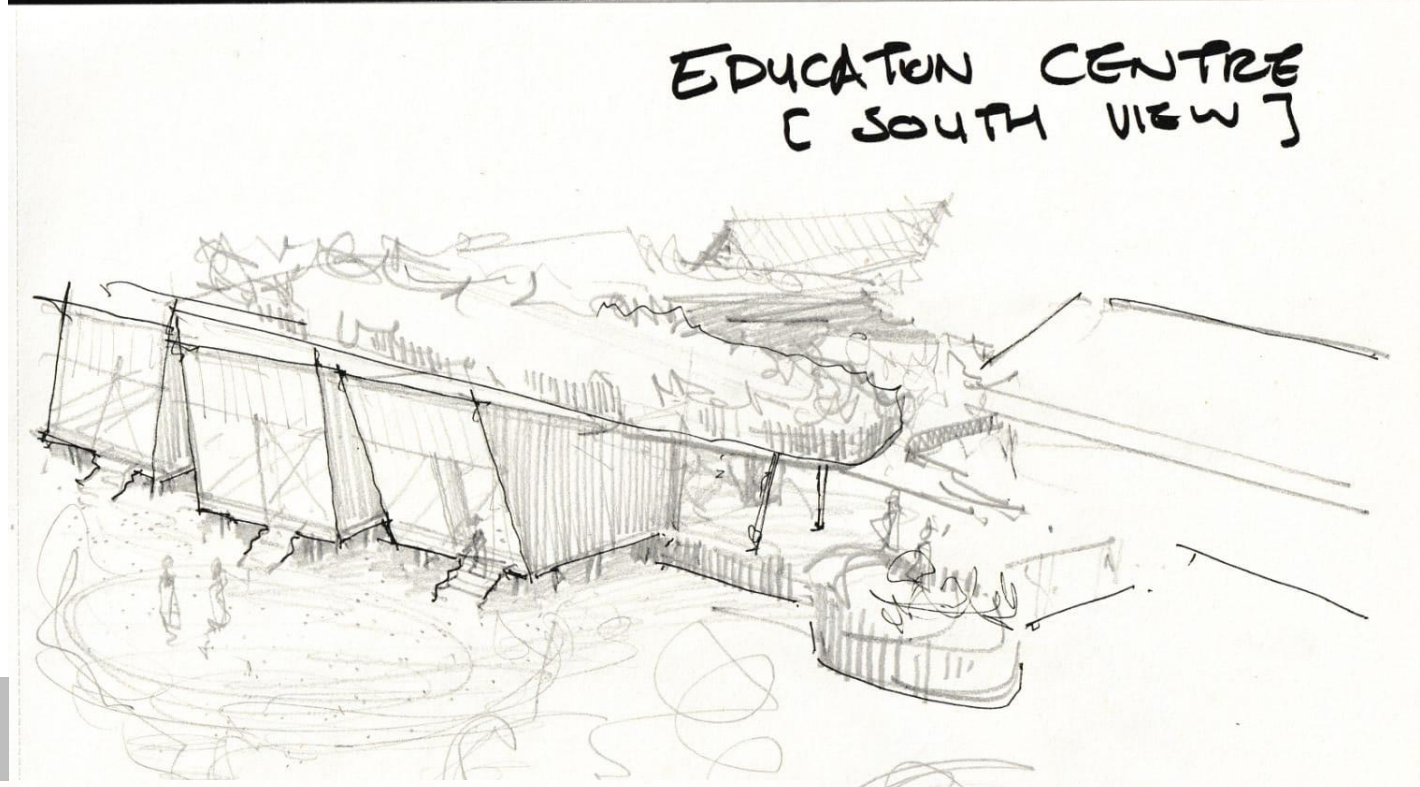


Figure 102: (Right) South perspective of the Education Centre. (Author, 2023).

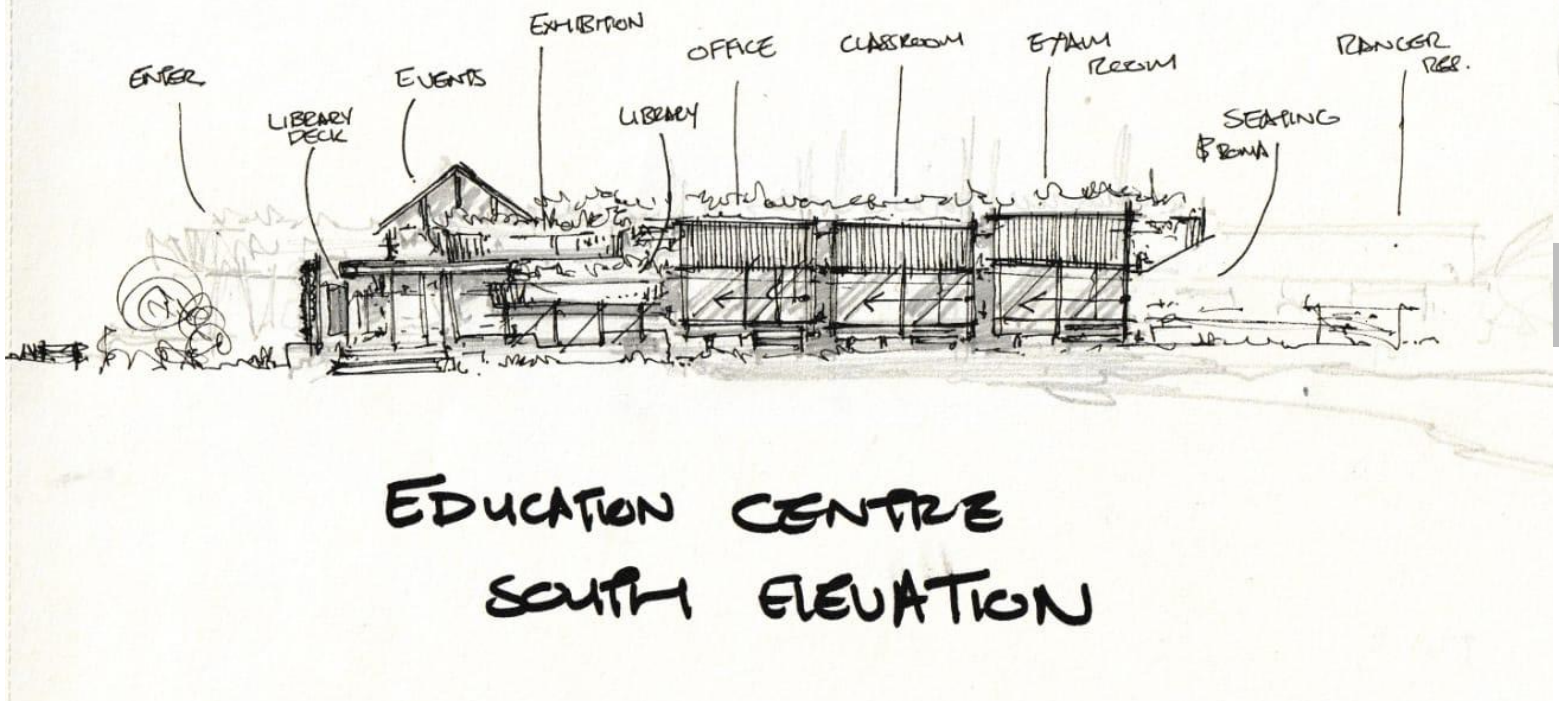


Figure 103: South elevation of the Education Centre. (Author, 2023).

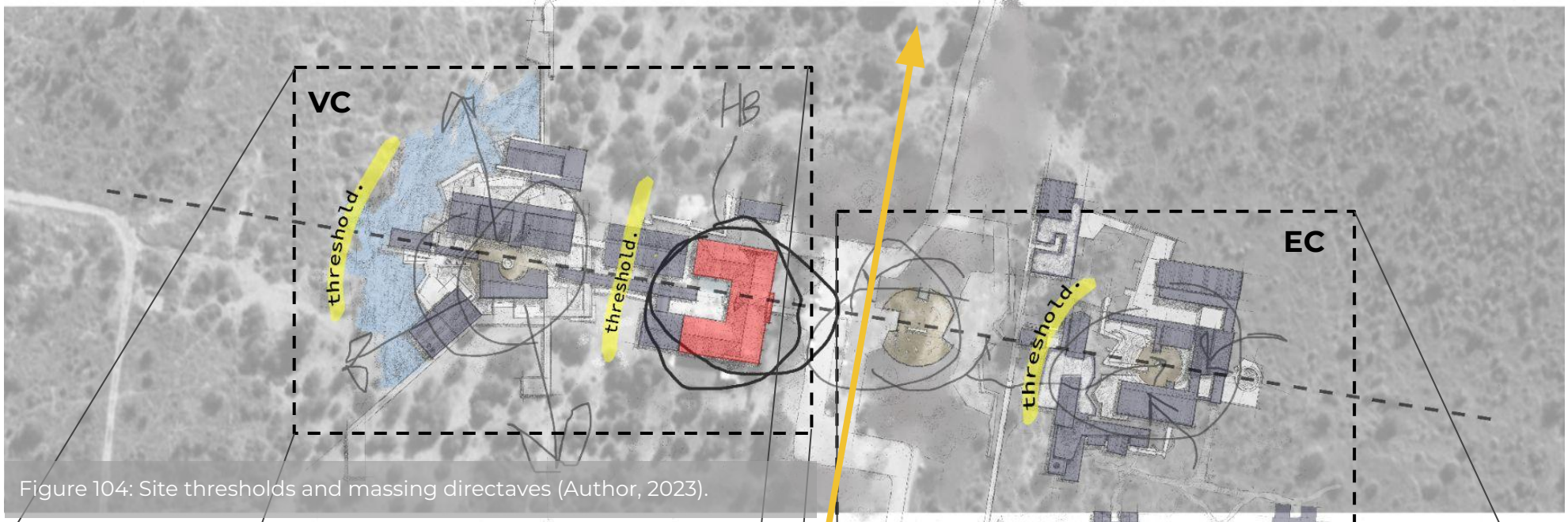


Figure 104: Site thresholds and massing directaves (Author, 2023).

Figure 105: Visitors centre ground floor plan (Author, 2023).

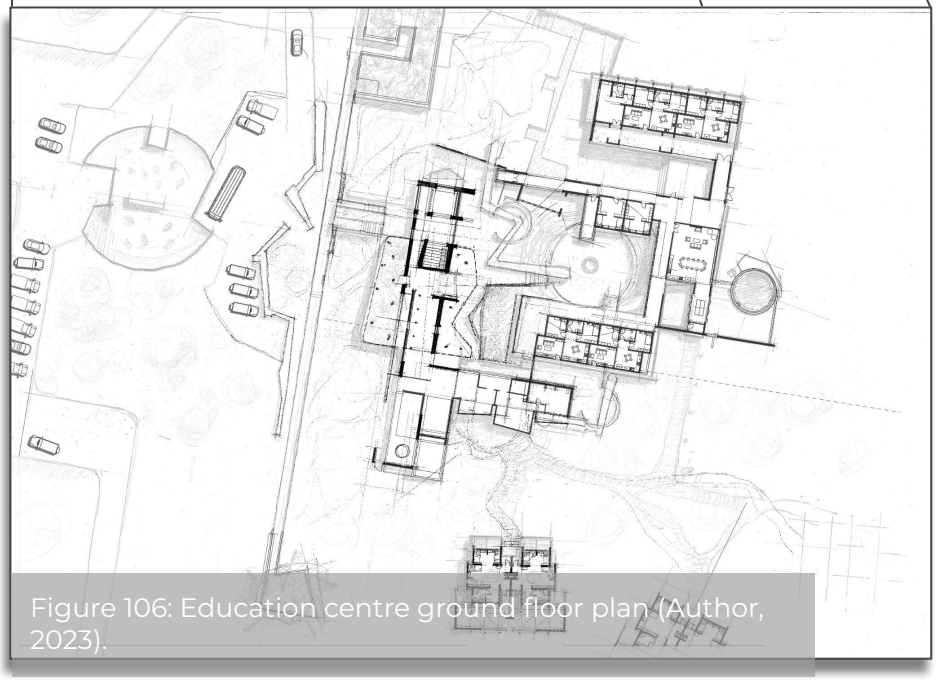


Figure 106: Education centre ground floor plan (Author, 2023).

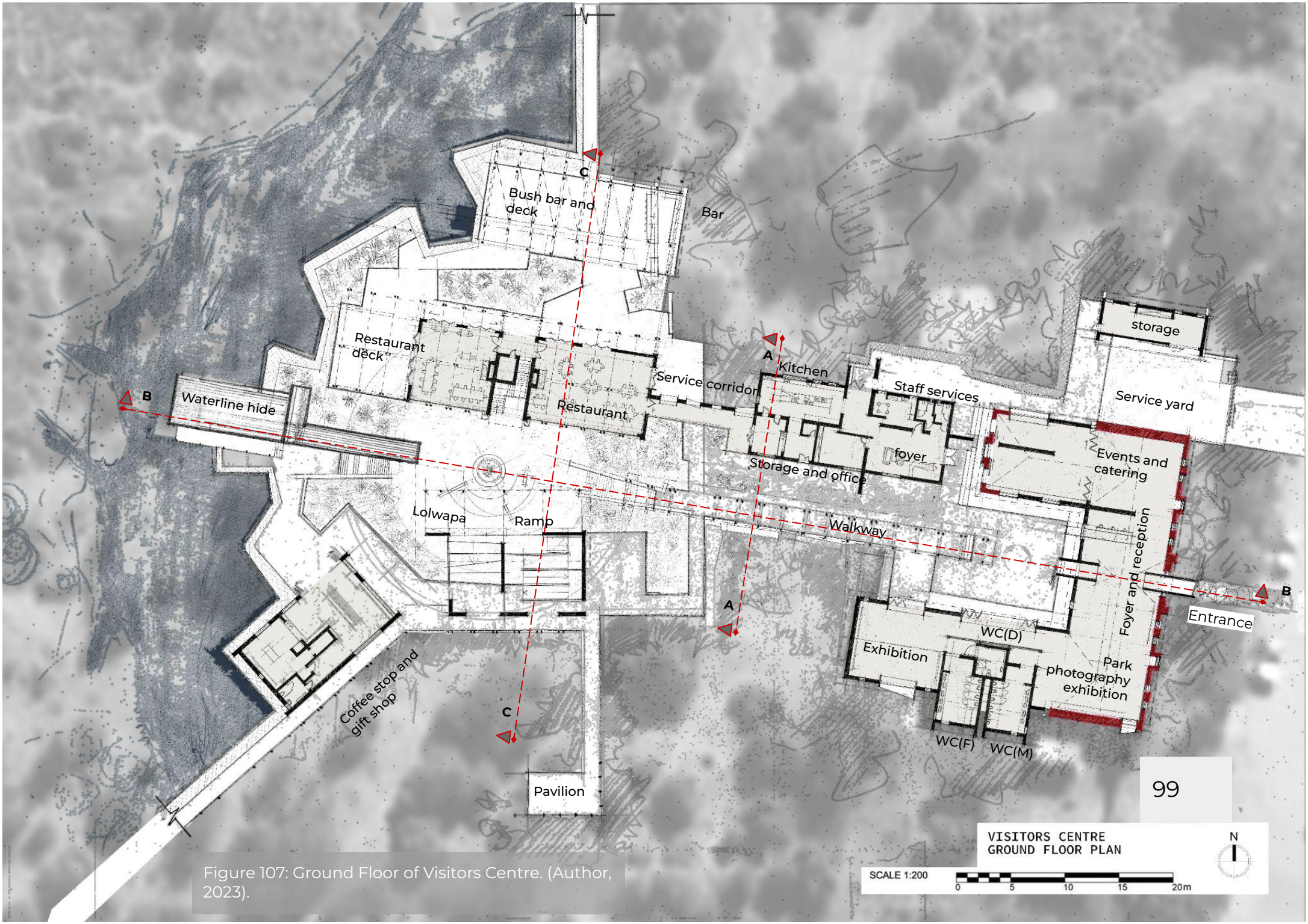


Figure 107: Ground Floor of Visitors Centre. (Author, 2023).

Figure 108: Ground Floor Plan of education Centre. (Author, 2023).

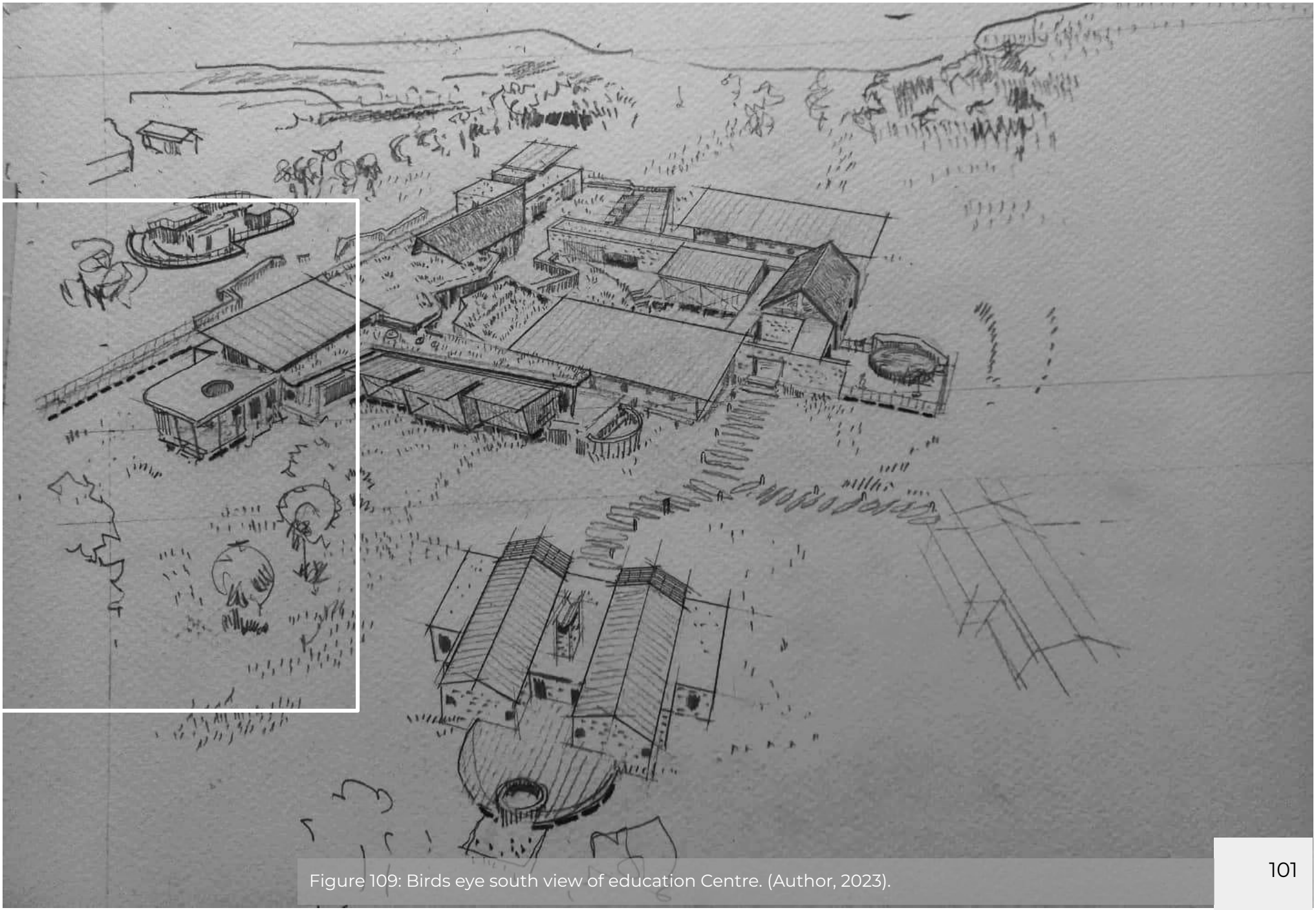
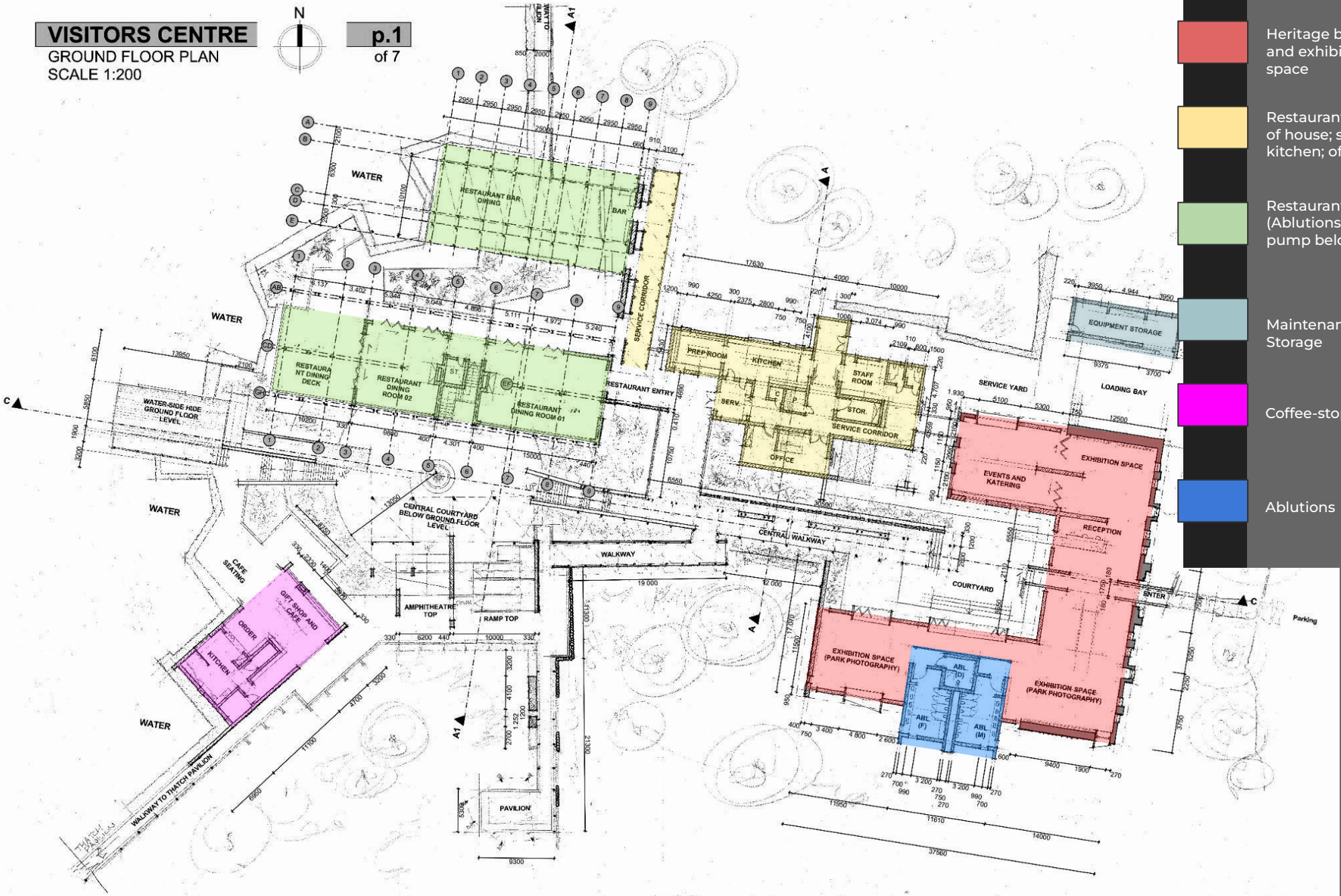


Figure 109: Birds eye south view of education Centre. (Author, 2023).



Heritage building and exhibition space

Restaurant back of house; staff, kitchen; office

Restaurant and bar (Ablutions, storage and sump pump below)

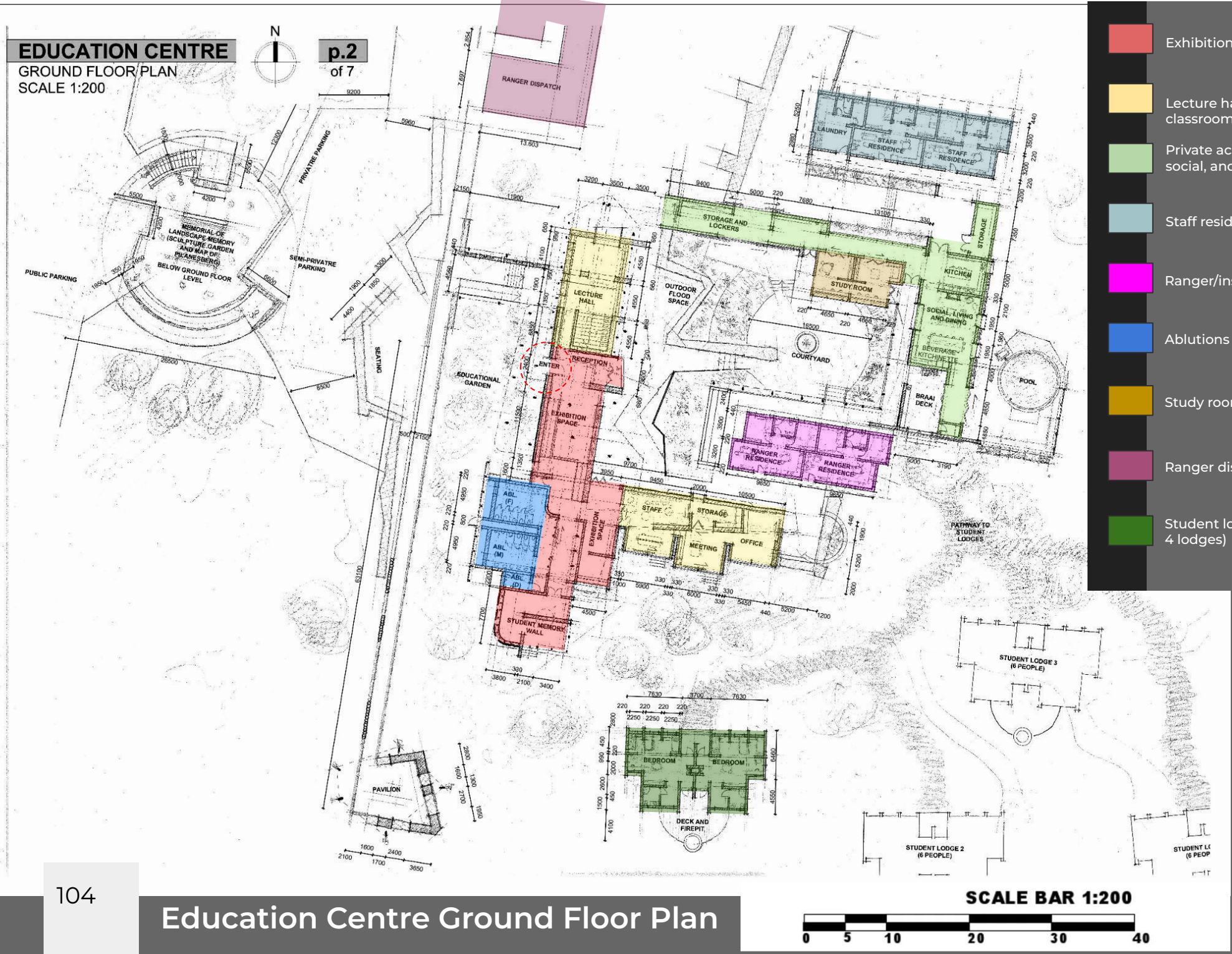
Maintenance and Storage

Coffee-stop and gift shop.

Ablutions

Visitors Centre Ground Floor Plan

Visitors Centre Ground Floor Plan



- Exhibition space
- Lecture hall and classrooms
- Private access, kitchen, social, and storage.
- Staff residence
- Ranger/instructor residence
- Ablutions
- Study room
- Ranger dispatch
- Student lodge (6 people x 4 lodges)

Education Centre Ground Floor Plan

Education Centre Ground Floor Plan

5.3.6) SKETCH SECTIONS:

Sketch sections are tool for understanding the construction of a design, its massing and circulation as well as the interior detailing of materials. The combination of sections created during the process allowed the design to retain conceptual energy while refining structural and programmatic details. The visitors centre, on the other hand, is the focal point of this two-dimensional study because it communicates the thresholds created by superstructure and substructure formation. This design activity was critical to the dissection of the building's interior. The visitors centre, for example (Fig. 110, 111), acts as a transitional point, transforming the visitor's frame of the landscape from a horizontal romantic landscape to a vertical cosmic landscape, encapsulated by the courtyard "lolwapa" space - this being the central node of social and cultural divergence, as well as circulation and function. It can thus be illustrated that the processes and procedures of this project is strongly dependant on the considerations of site response and the construction of the built form.

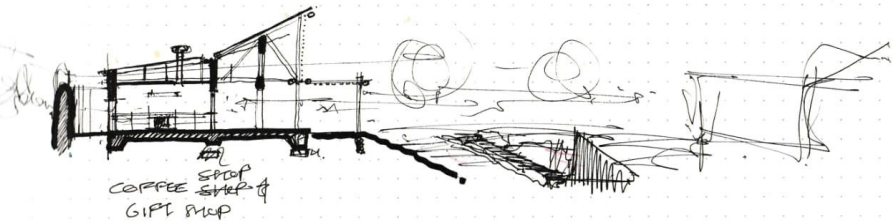


Figure 110: Coffee stop and gift shop concept section sketch (Author, 2023).

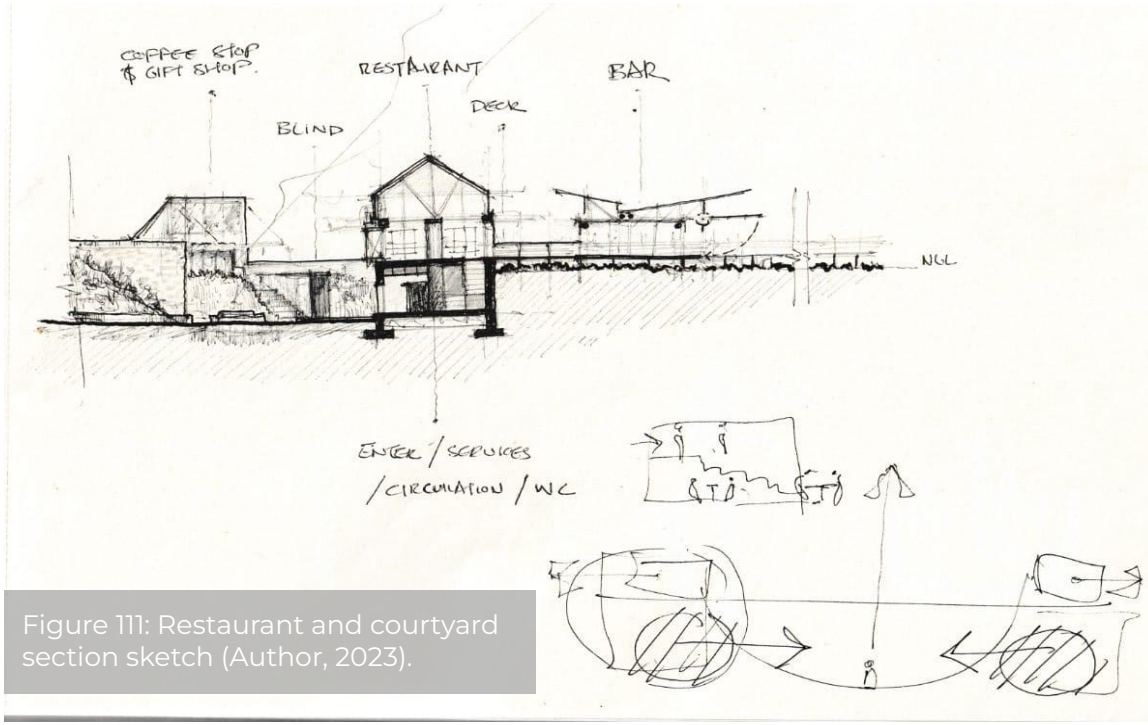
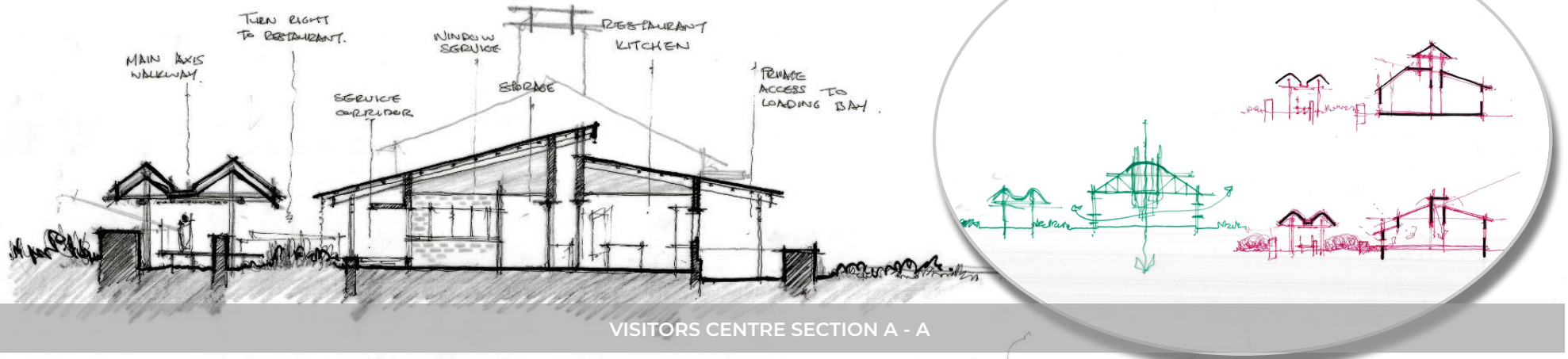
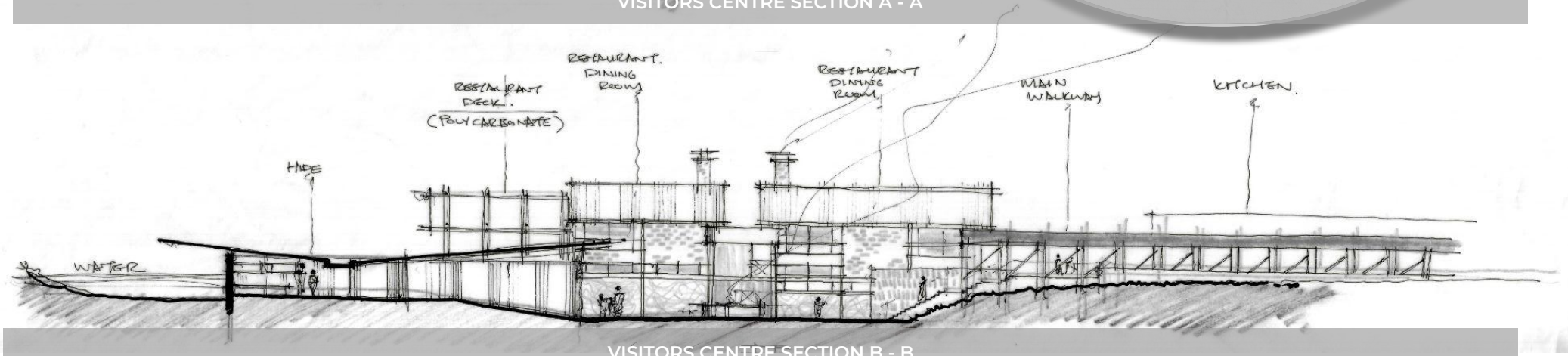


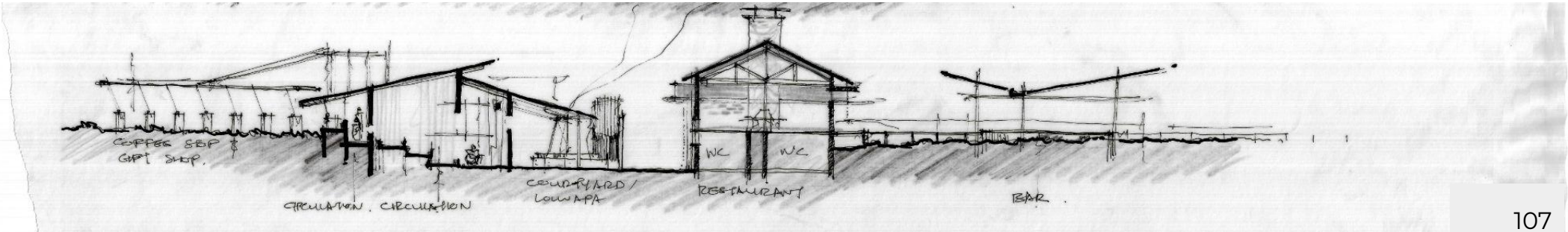
Figure 111: Restaurant and courtyard section sketch (Author, 2023).



VISITORS CENTRE SECTION A - A



VISITORS CENTRE SECTION B - B



VISITORS CENTRE SECTION C - C

5.4 Final Model

Figure 112: VC walkway onto central node (Author, 2023).

Figure 113: Central node courtyard (Author, 2023).

Figure 114: Heritage building courtuard link (Author, 2023).

Figure 115: View above from west onto watering hole (Author, 2023).

Figure 116: EC social link (Author, 2023).

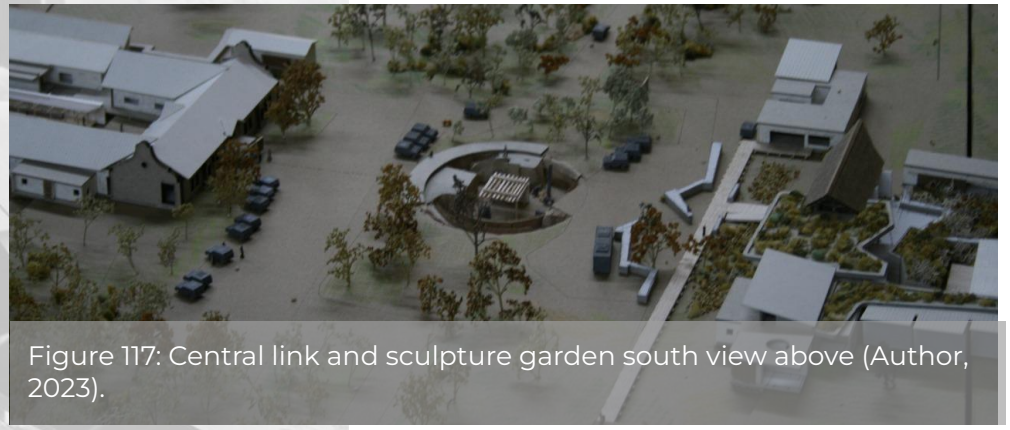


Figure 117: Central link and sculpture garden south view above (Author, 2023).

Figure 118: View of Visitors Centre massing on axis (Author, 2023).

Figure 119: restaurant view from west accross watering hole (Author, 2023).

Figure 120: EC eastern corridor (Author, 2023).

Figure 121: Walking in and looking up, the ceiling of the existing entrance foyer on site (Author, 2023).

CHAPTER 06

CONTENTS:

6.1 MATERIAL AND PLACE

Now that the design has been formulated, a better understanding of how the design response can be tethered to a “physical” disposition is now the concern. This chapter explores the variety of material and form qualities of park infrastructure as well as the multifaceted realm of technical development, with a specific focus on Pilanesberg National Park. By examining park infrastructure, ecological coherence, structural touchstones, utilities and spaces, structural systems, and the interplay of form and function, this study aims to provide an academic exploration of the intricate processes that shape an architectural response.

Pilanesberg National Park serves as a compelling case study, offering valuable insights into the elements of nature and human thresholds in park design. Through an analysis of this context, we delve into the key considerations and innovative approaches that drive the technical development of this project, ultimately contributing to the enhancement of park experiences, ecological sustainability, and the seamless integration within the built environment.

+ *Chapters 1 and 2 of this dissertation address the site and its context in detail.*

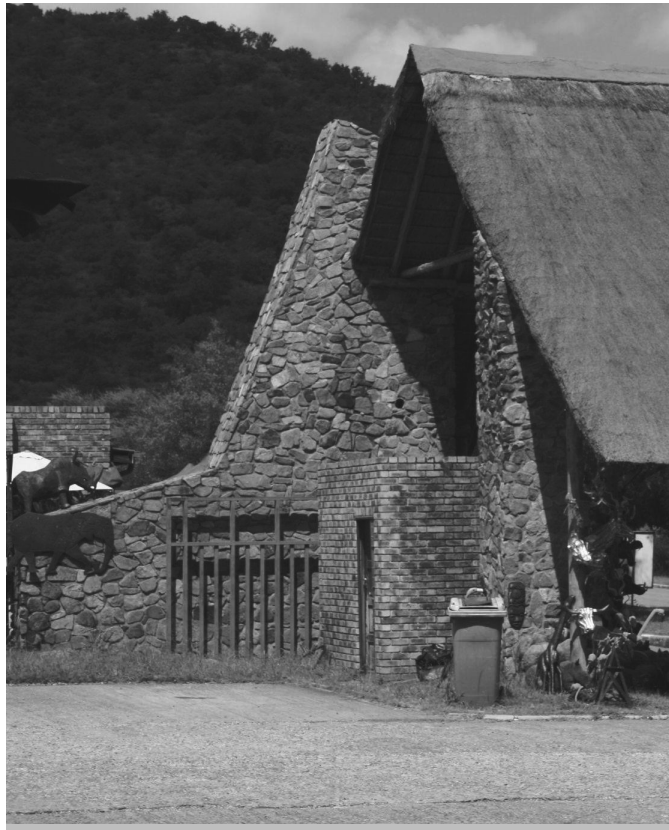


Figure 122: Some of the existing infrastructure on site (Author, 2023).

Figure 123: Timber roof of the current restaurant on site constructed with hurricane clips, steel rods, bolts and polycarbonate sheeting. (Author, 2023).

6.1.1) Park infrastructure

Understanding the layered material palette of structures found within the confounds of the park will generate a clear picture of how architecture can influence the natural environment and how structures influence the experience of these landscapes. Furthermore, this section will delineate possible avenues for material understanding as well as the articulative nature of the project design.

> **The Mankwe dam viewing deck** is a great example of material consciousness (Fig.), perched on the waterside and extending its walkway to a secured rest stop with public lavatories. This structure communicates a basic palette of available materials and familiar construction methods within the park's built environment.

By analysing the connections and materials of this ecological vessel an articulative understanding (Fig.) of park-influenced tectonics and substructure, an informed response to design concerns can be generated. An example of this is the intingu and reed ceiling and gum pole walkway covering, both demonstrating how locally sourced materials shape design decisions (Fig.).

Figure 124: Timber connection on the Mankwe Dam viewing deck (Author, 2023).

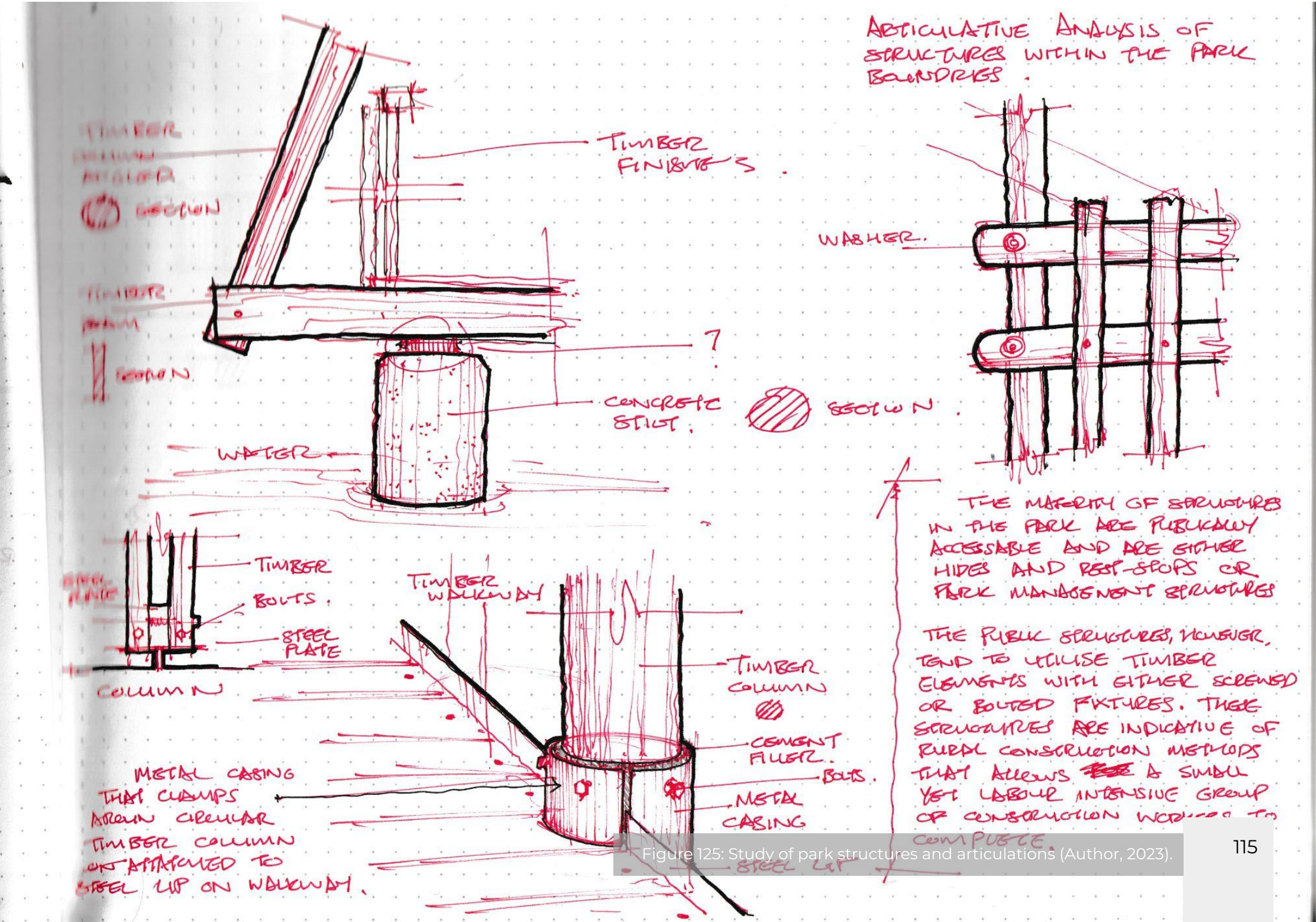


Figure 125: Study of park structures and articulations (Author, 2023).

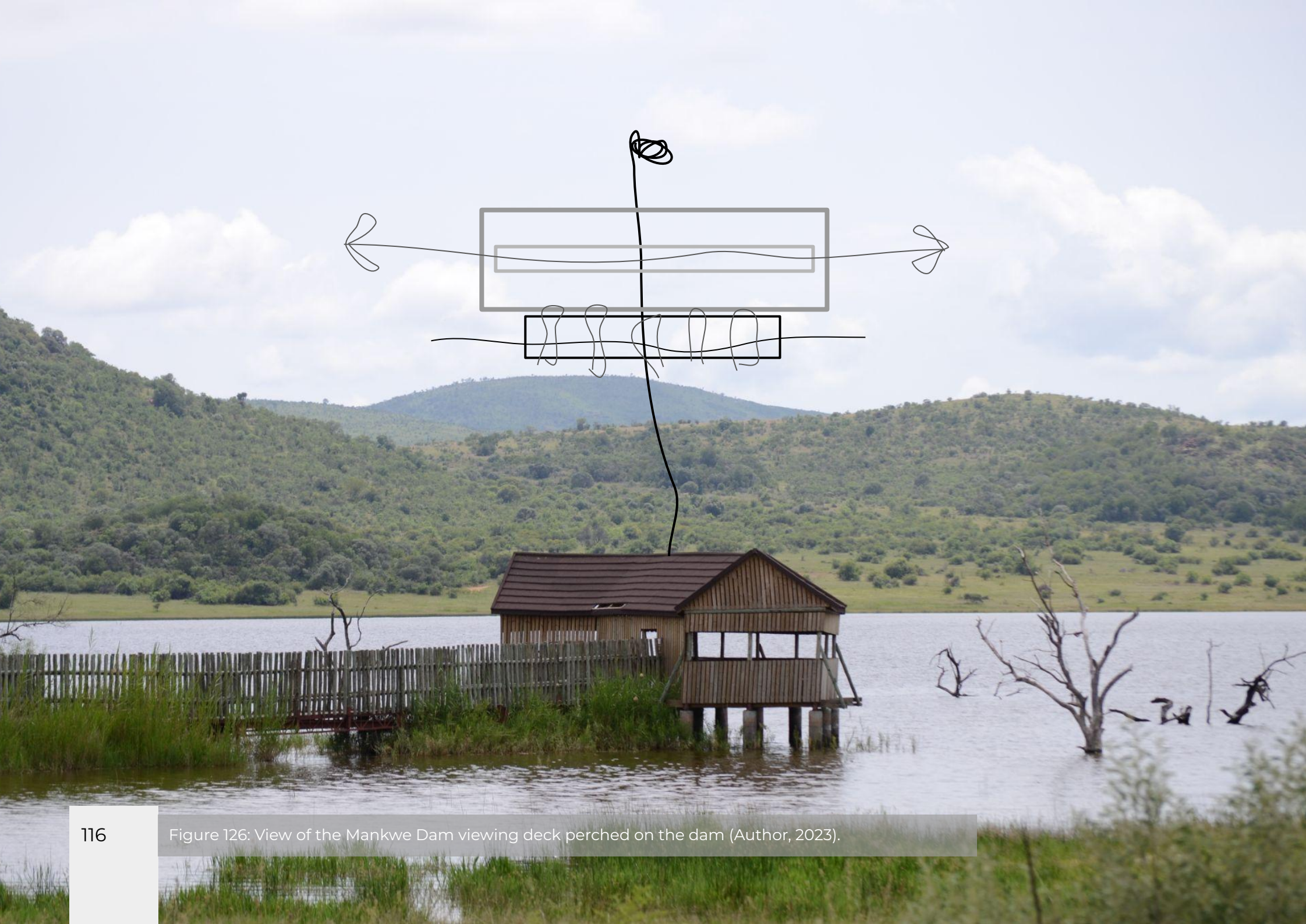
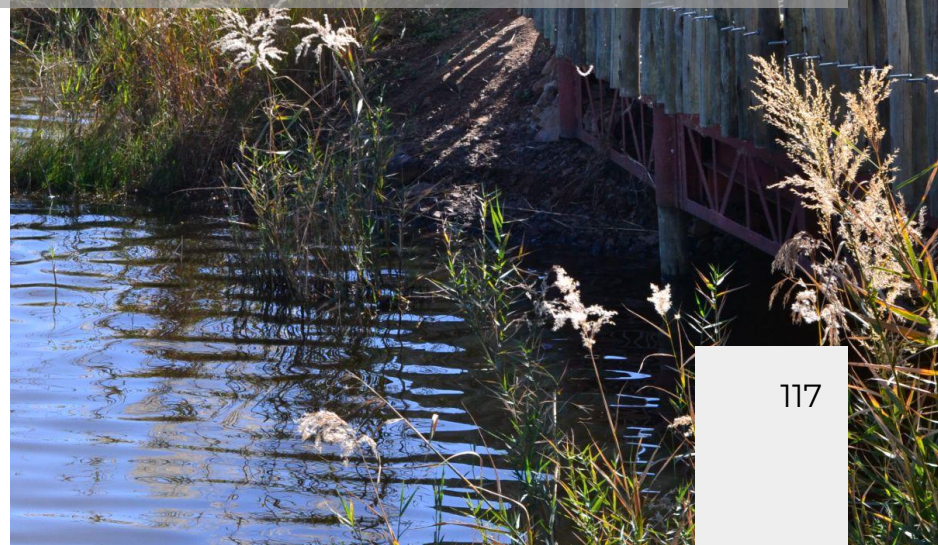


Figure 126: View of the Mankwe Dam viewing deck perched on the dam (Author, 2023).

Figure 127: The interior ceiling intingu and reed covering (Author, 2023).

Figure 128: Gum pole walkway siding (Author, 2023).



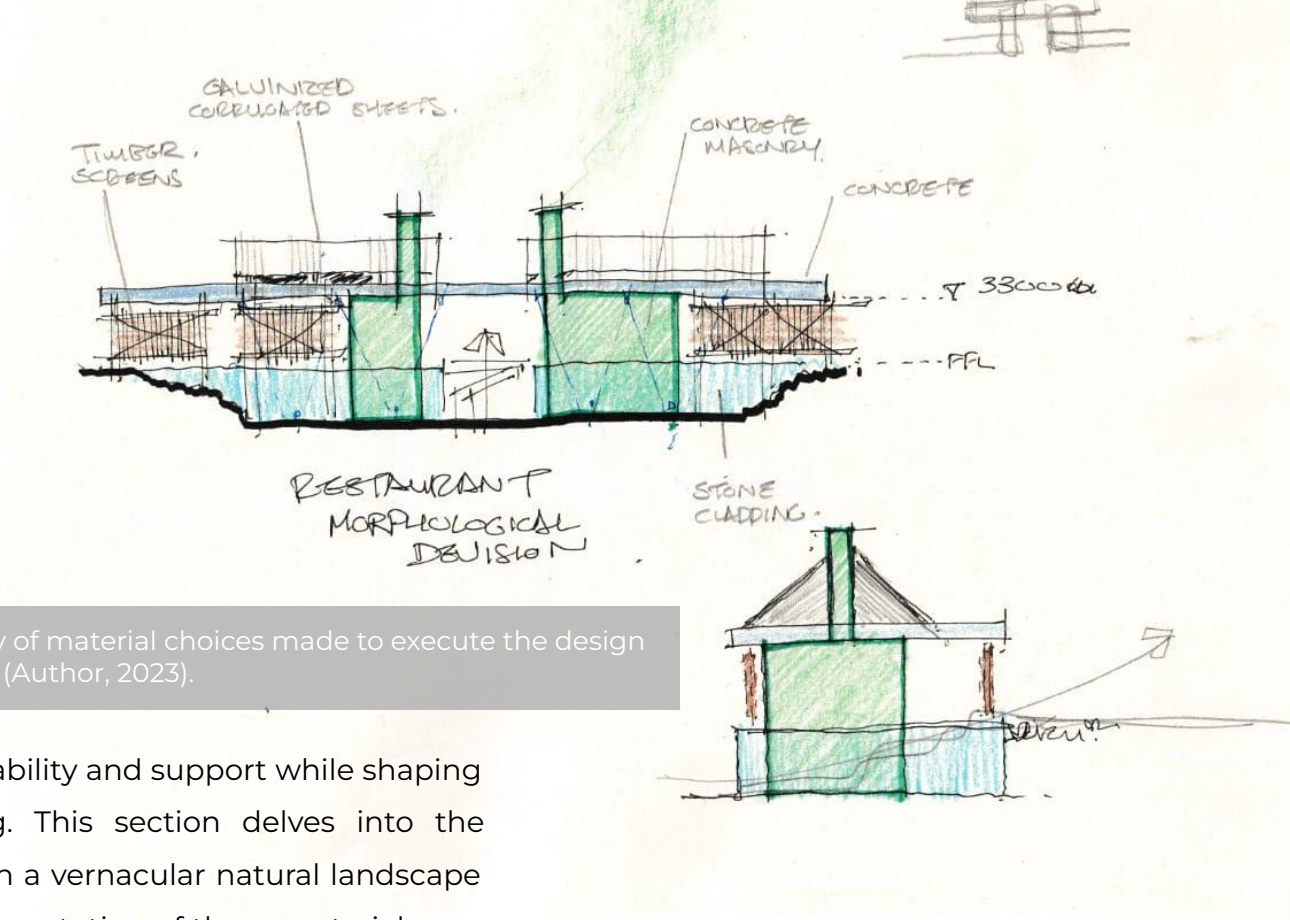


Figure 129: Variety of material choices made to execute the design of the restaurant. (Author, 2023).

6.1.2) Material analysis

Materials play a pivotal role in any design, providing stability and support while shaping the aesthetic and functional aspects of a building. This section delves into the integration of timber construction with clay masonry in a vernacular natural landscape in South Africa. Specifically, it examines how the implementation of these materials can create sustainable and culturally relevant structures that harmonize with the local environment and respond to the unique needs of the landscape. Furthermore, the materials and substructure of this architectural response will be discussed as a means of grasping the intricate nature of this built environment and the effect it has on the ecology of the site. The following material overview (Fig. 129) is compiled from materials that are prevalent in and surrounding the park, creating a palette of textures and articulations that can be implemented in this design.

a.) Timber is a versatile material renowned for its strength, durability, and renewable properties. In the context of a vernacular natural landscape in South Africa, timber construction techniques can offer numerous advantages. It allows for lightweight and flexible structures that can adapt to the natural terrain and withstand environmental pressures. Timber's organic texture and warm hues also provide a visual connection with the surrounding landscape, creating a harmonious integration between the built environment and the natural setting. Vernacular timber construction techniques, deeply rooted in the local culture, can contribute to the form and function of the architectural project. By employing traditional craftsmanship and using locally sourced timber, the design can pay homage to the region's heritage while promoting sustainable practices. The timber's warm aesthetic qualities and tactile textures can create a harmonious integration with the surrounding wildlife landscape, enhancing the visitor experience and establishing a sense of place.

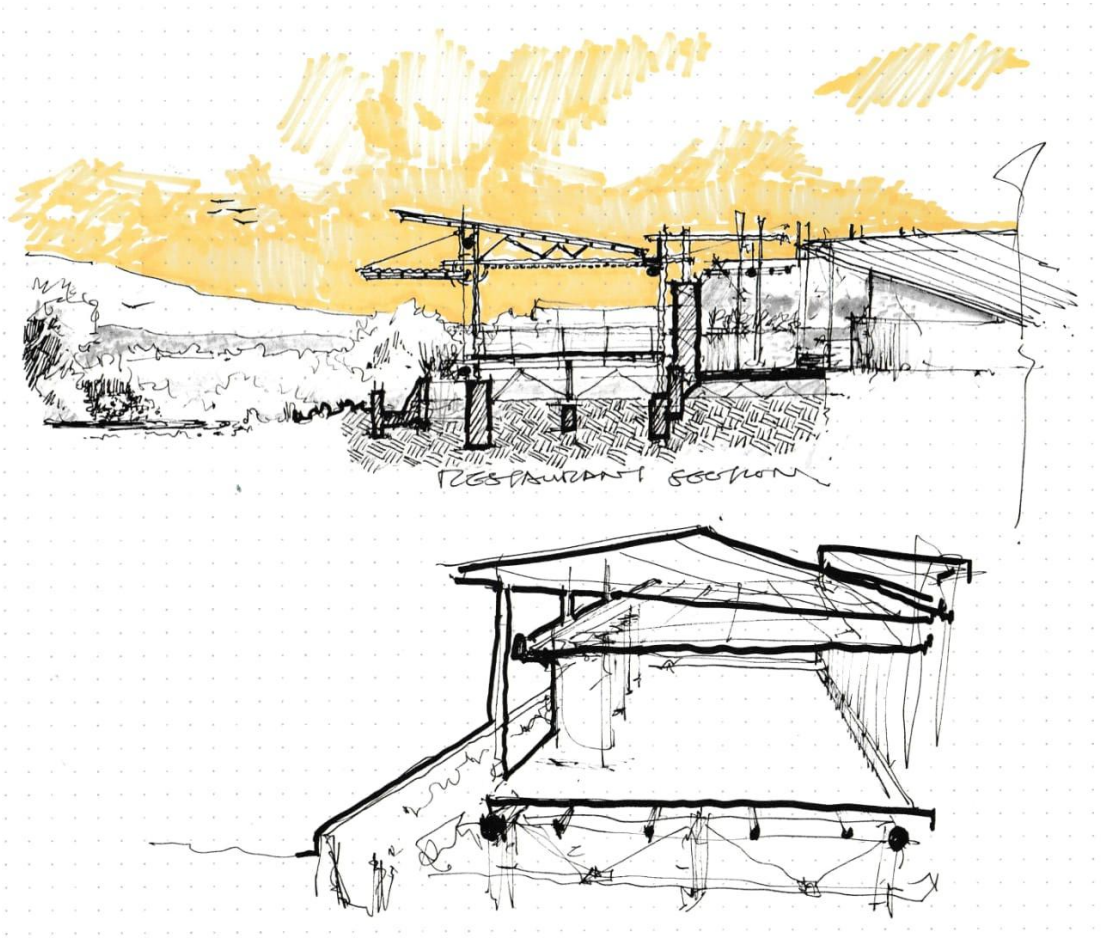


Figure 130: Restaurant deck **concept sketch** (Author, 2023).

This design engages with timber construction by engaging with the tectonic superstructure that frames the horizon of thresholds and site boundaries. The use of gum poles and SA pine generates a coherent palette that resonates with other structures in the larger area of the park. The design of timber features and articulations enables the structure to stitch through the landscape as a light assemblage of timber features, a prominent material of place. Timber is also utilized as a shading device, designing intingu timber screens for overhead coverings and shading. This is paired with the polycarbonate translucent sheets on the roof of the restaurant deck and bar, as currently found on site, generates a holistic response to material application.

b.) Clay masonry construction is deeply rooted in vernacular architecture, showcasing the cultural heritage and traditions of a region. In the South African context, clay bricks or rammed earth walls can be utilized to build structurally sound walls that are aesthetically pleasing. Clay masonry provides excellent thermal insulation, ensuring comfortable indoor temperatures in a range of climates. Additionally, clay is locally available, making it a sustainable and cost-effective choice for construction. Its earthy tones further contribute to the vernacular aesthetic and blend seamlessly with the natural landscape.

Clay masonry is applied to this design as both permeable and stereotomic features. The texture quality of clay bricks, the tapered silhouette of its rigidedness, as well as its early colours, all contribute to the understanding of place and context in this assemblage of materials.

c.) Concrete, a versatile and widely used construction material, presents unique considerations when utilized in the South African climate, particularly within the context of vernacular architecture. The sustainable use of concrete in vernacular settings entails a careful examination of local environmental factors and a holistic approach to construction practices. South Africa's climate, with its varying temperatures and precipitation patterns, demands the selection of appropriate concrete mixes and reinforcement strategies to ensure durability and resistance to weathering. Additionally, incorporating sustainable practices in the production of concrete, such as utilizing locally sourced materials, optimizing mix proportions, and minimizing energy-intensive processes, contributes to reducing environmental impact.

The application of concrete during the design process was set out to ensure the cohesive permanence of the built form. This material should be used as a sensitive response, however, the concept of ecological coherence as well as the sustainability and permanence of landscape memory explored throughout this project, subjects this design to an alternative mode of construction. Concrete is utilized as a stereotomic “sorter of thresholds” whereby floor slabs, earth and water retainers, planted roofs (Fig. 131) and textured features are utilized to connect the dweller to the landscape.

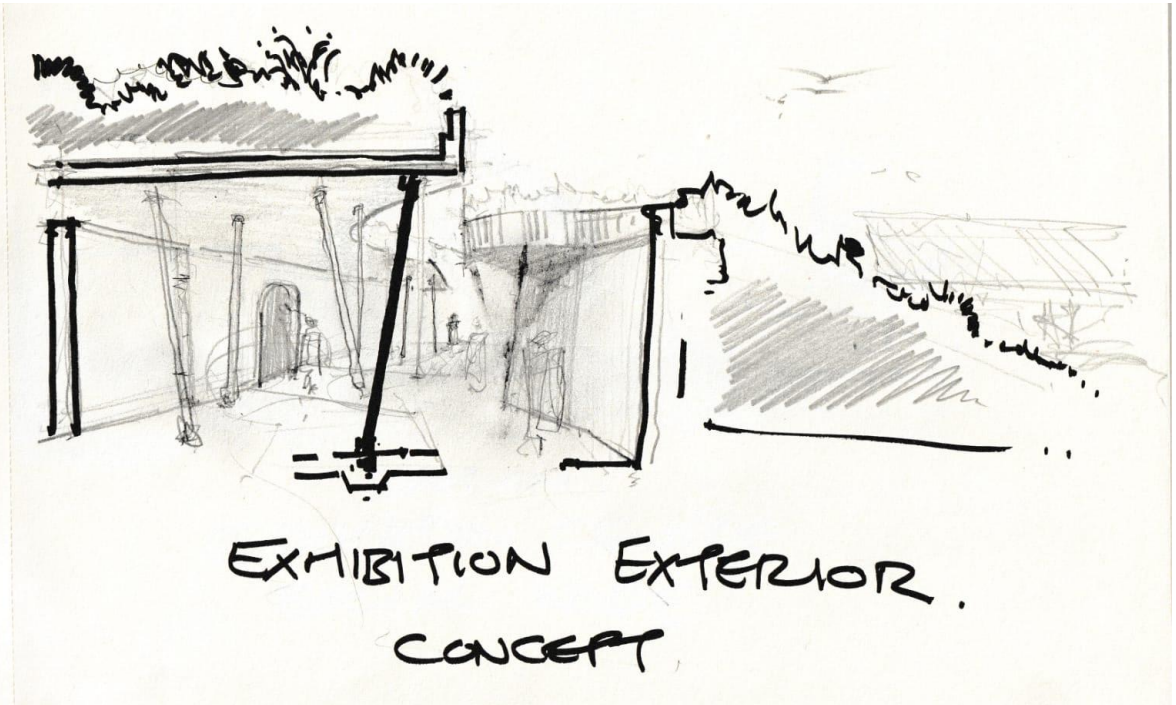
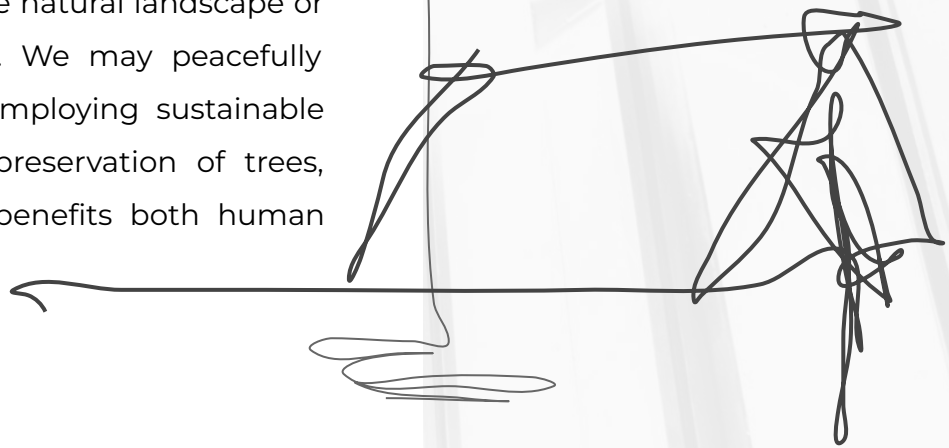


Figure 131: Freehand perspective section communicating the exterior exhibition design. (Author, 2023).

d.) Thatched roofs, renowned for their unique aesthetic appeal and historical significance, have long been associated with traditional architecture in South Africa. In the South African climate, characterized by hot summers and sporadic rainfall, the construction of thatched roofs requires careful consideration of local environmental factors. The selection of appropriate thatching materials, such as reeds or grasses, and the meticulous craftsmanship employed in their installation are vital in ensuring durability and weather resistance. The thatching process involves layers of overlapping material, creating a tightly woven and water-shedding surface. Additionally, proper roof pitch and ventilation mechanisms play crucial roles in managing heat and moisture within the structure (Product1on, 2020). Understanding the construction techniques and principles involved in thatched roofs in the South African climate contributes to the preservation of cultural heritage and the sustainable integration of traditional building practices in contemporary architectural contexts.

e.) Foundations and trees

Concrete foundations are critical when building in the natural setting because they must be thoughtfully built to preserve the surrounding trees and their delicate root systems. Given the inherent value of these trees and the ecosystem they support, it is critical that the foundations do not alter the natural landscape or jeopardise the trees' health and stability. We may peacefully connect the built form with nature by employing sustainable construction practices that include the preservation of trees, producing a symbiotic relationship that benefits both human residents and the current ecosystem.



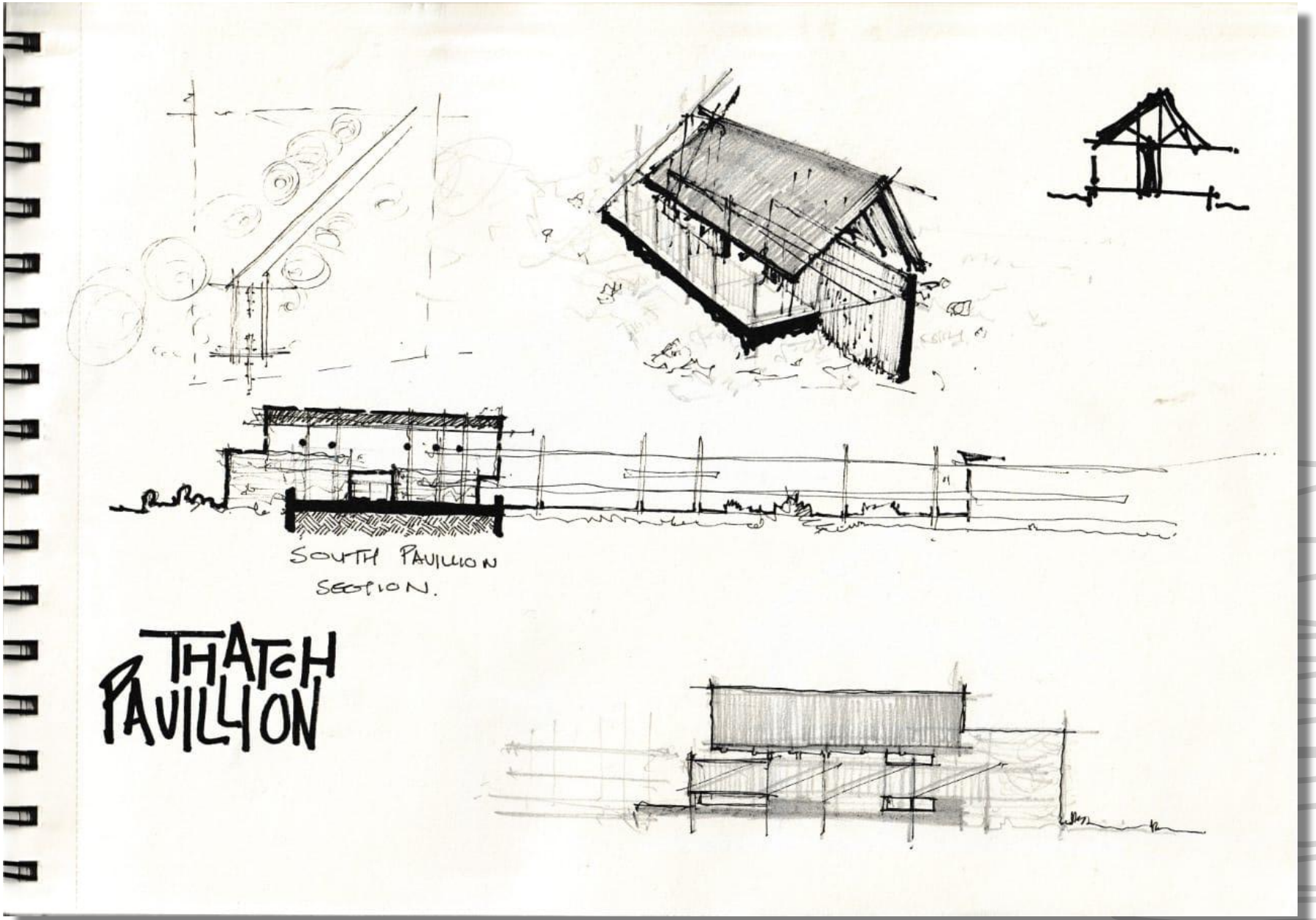


Figure 132: Thatch pavilion concept for southern most walkway (Author, 2023).

project PRECEDENT#02

6.1.3) PRECEDENT STUDY:

A Restorative Rural Retreat for Sartfell, *Foster Lomas*

Isle of Man, 2018

The Sartfell Restorative Rural Retreat, constructed into the west facing slope of Sartfell on the Isle of Man, takes advantage of the stunning landscape. The house's distinguishing feature is a ribbon window that wraps around it, framing the sweeping views of the Mourne Mountains, the Irish Sea, and the Mull of Galloway in Scotland. Foster Lomas' Sartfell Restorative Rural Retreat is part of a growing collection of commissions that investigate the relationship between landscape and self-sustaining buildings (ArchDaily, 2019). The drystone walls, which were extracted from the site, provides nooks and crevices where the local ecology to nest. Its natural rooftop mimics the local flora and harmonises with the drystone walling. The walls will have a minimal impact on the land over time and gradually blend into the surroundings. This design engagees with the landscape in a symbiotic manor, adapting to the layered context of the site over time.

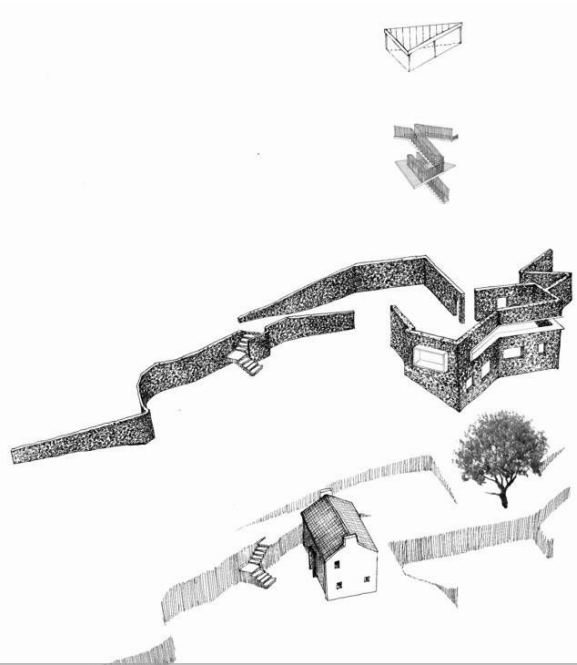


Figure 133: Exploded view of stone wall (ArchDaily, 2019).

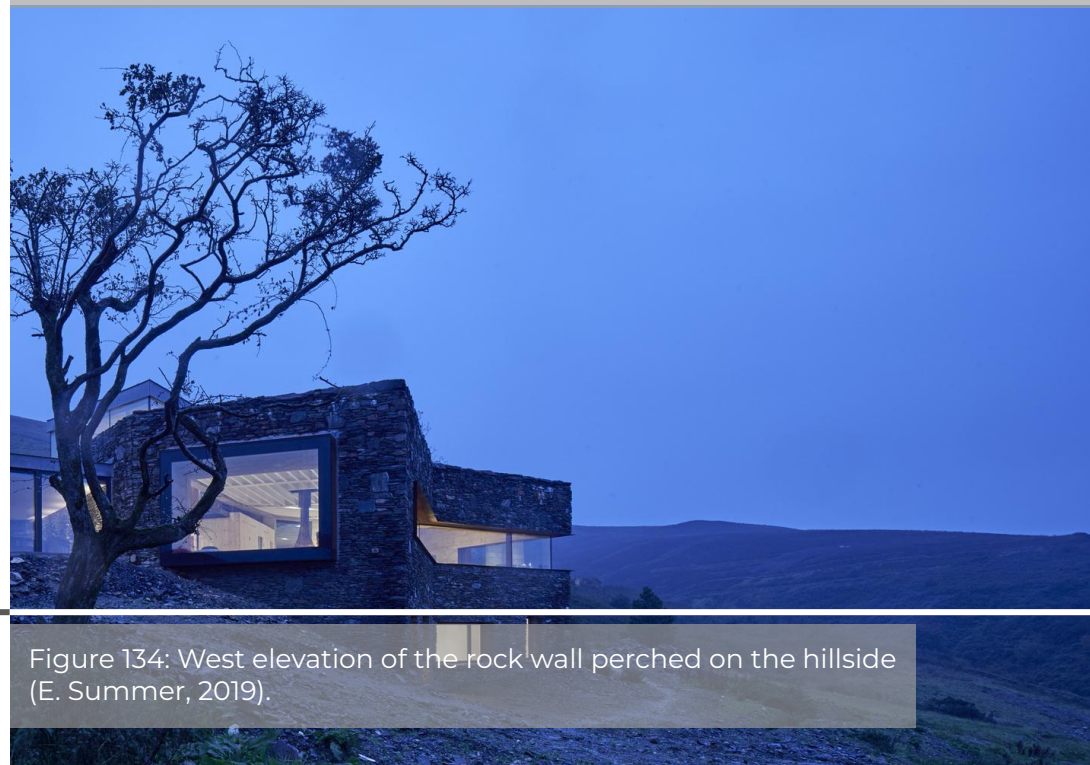


Figure 134: West elevation of the rock wall perched on the hillside (E. Summer, 2019).

Figure 135: Corten frame cutting through the stone wall, framing the landscape (E. Summer, 2019).

To achieve a seamless integration with the Pilanesberg National Park, the design is expected to utilize materials sourced from the park's natural landscape. Local stones, timber, and sustainable materials can be incorporated into the design, reflecting the essence of the park and minimizing the ecological footprint. By using these materials, the project can establish a sense of belonging and authenticity, providing a unique experience that reflects the cultural and environmental context of the area. The site may subsequently generate a wildlife education and visitors centre that effortlessly corresponds with its surroundings while providing functional and appealing spaces by adopting the ideals of technical space enhancement and utilising materials from the natural setting. The integration of the design with the surrounding landscape harmoniously evokes the symbiotic intentions of the design, generating a mutualistic abiotic environment.

6.1.4) Pilanesberg as a **case study**

Material selection in architectural design is a fundamental aspect that significantly impacts the integration of built forms within their natural context. This section examines the case of Pilanesberg National Park, specifically the articulations, materials, and positionings of built forms within and surrounding this landscape. This analysis enabled the project to consider the appropriate material responses to the design. This map (Fig. 136) serves as an index for the locations of various structures in and around the prak, adding to the contextual and structural understanding of the built environment.

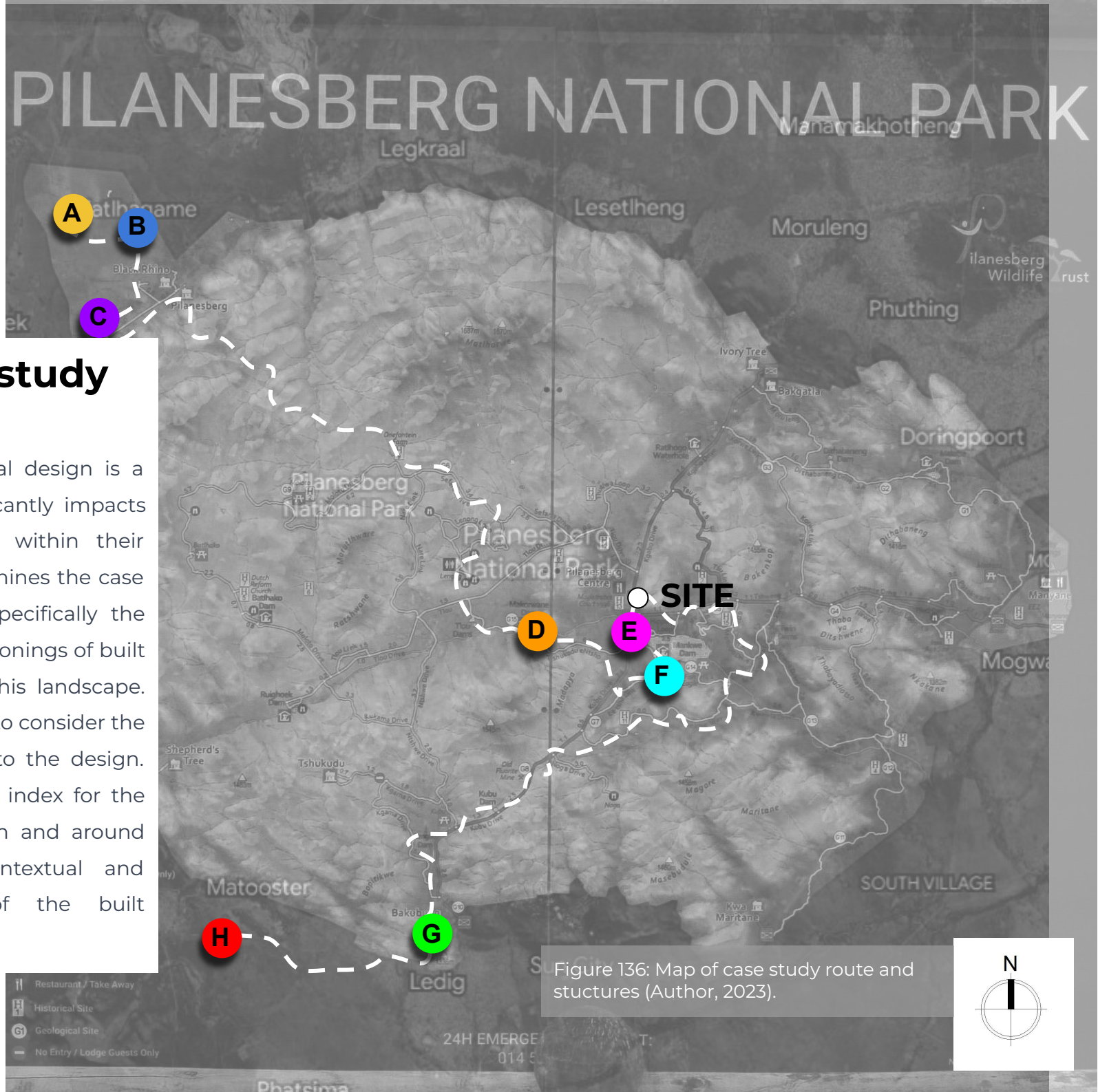


Figure 136: Map of case study route and stuctures (Author, 2023).

Waterside bunker-like hide

Fig. 137

A

Fig. 138

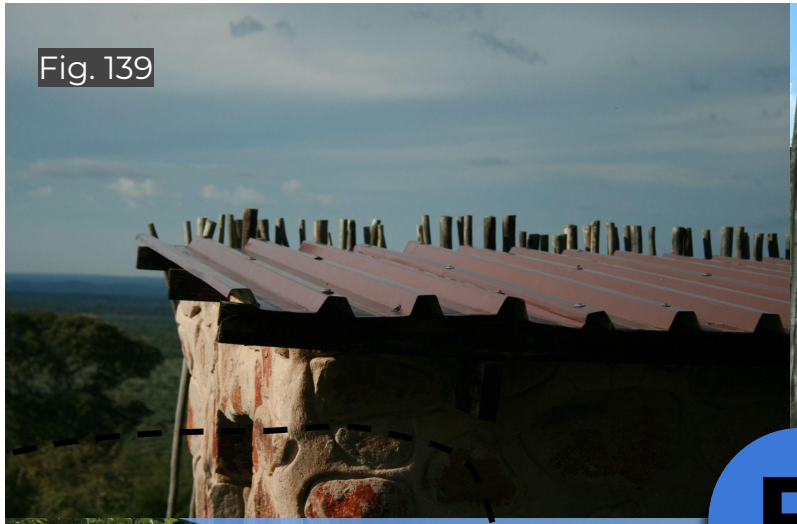
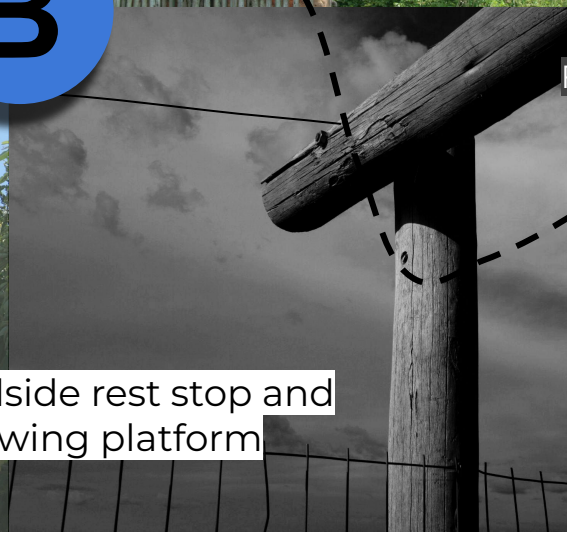


Fig. 139

Fig. 140

B

Fig. 141



Hillside rest stop and viewing platform

Pilanesberg National Park features a careful selection of materials that are in tune with its unique ecological and textural context. Indigenous materials, particularly stone, timber, and thatch, are preferred for their seamless integration with the natural environment. Stone, which is abundant in the area, not only reduces the environmental impact of transportation but also creates a tangible link between the built environment and the park's geological foundation.

Fig. 143

C

Rest stop and hide

D

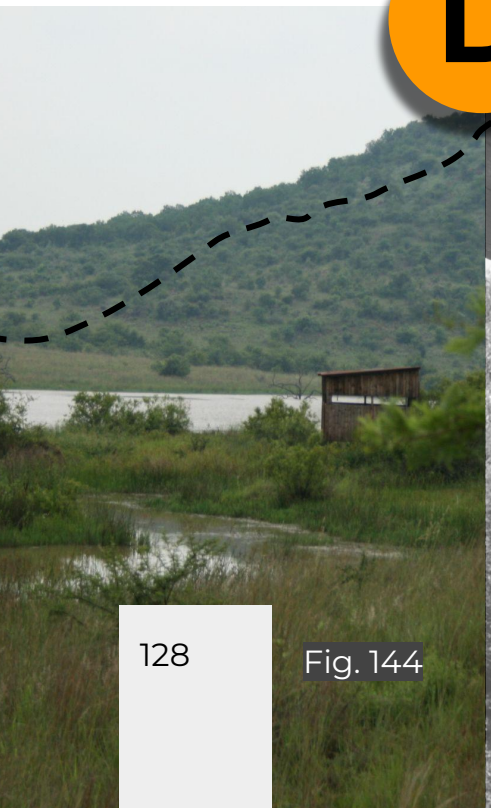


Fig. 144

Fig. 145

Makromane dam wall and rest stop with viewing deck

Fig. 146

Fig. 147

E

Mankwe dam walkway

F

Bridge crossing from manke dam to the site

Fig. 148

Fig. 149

G

Bakubung visitors gate

Rural chapels and gathering spaces

H

Fig. 150

Fig. 151

6.2 STRUCTURAL TOUCHSTONE

6.2.1) Model

The aim of this exploration (Fig. 152) was to develop a narrative and constructivist pretext of the site and how it could be responded to architecturally. This model was constructed to illustrate a contemporary way of forming structures and masses with the types of materials this project aimed to explore. A thatched roof walkway supported by gum pole tectonics (Fig.), treading the earth lightly with braced articulations.

+ This enabled the project to progress in a steadfast mode of analysis, constantly considering the application of these materials and how they might be joined to create a built form.

Figure 152: Touchstone model photographs (Author, 2023).

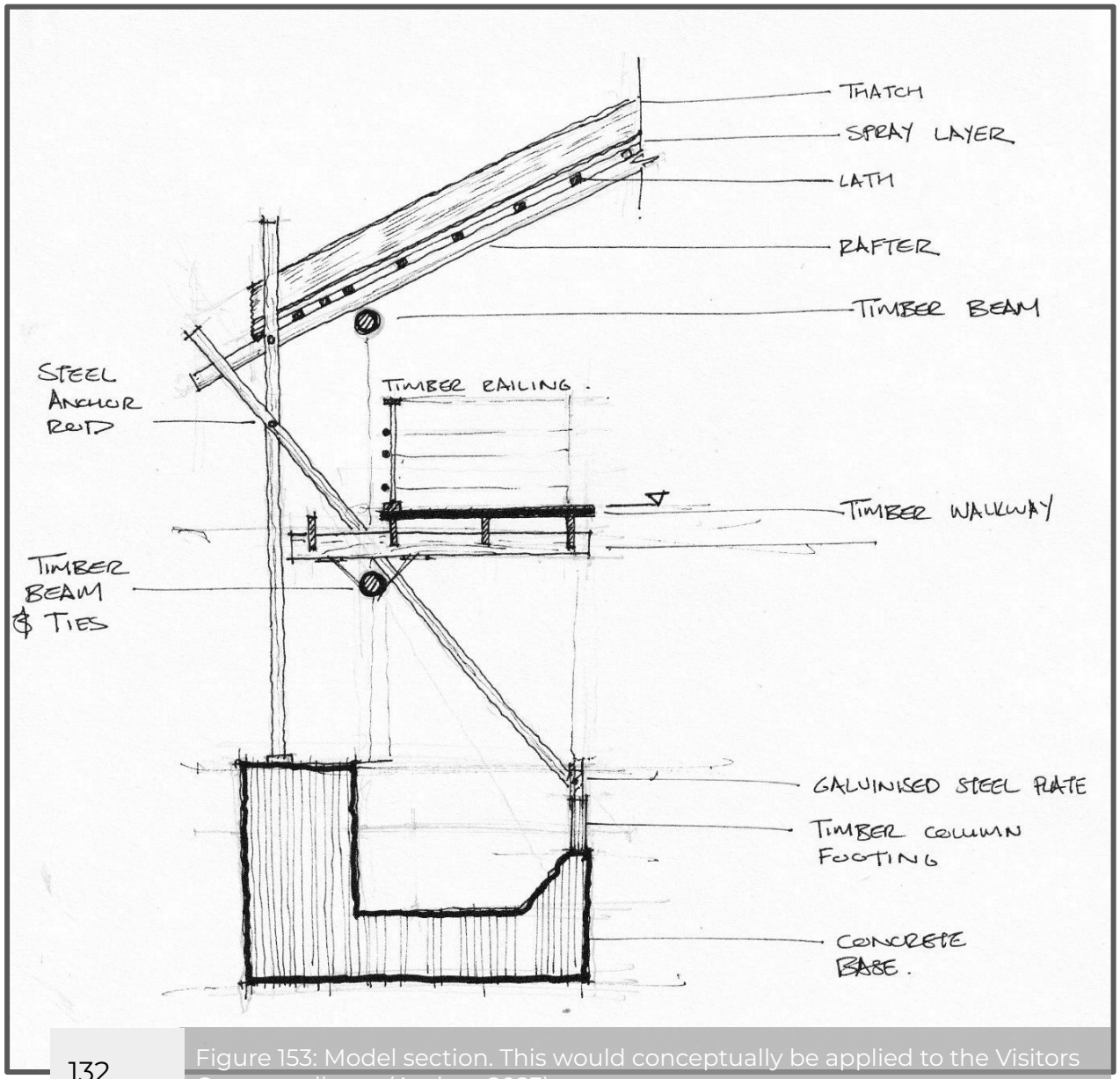
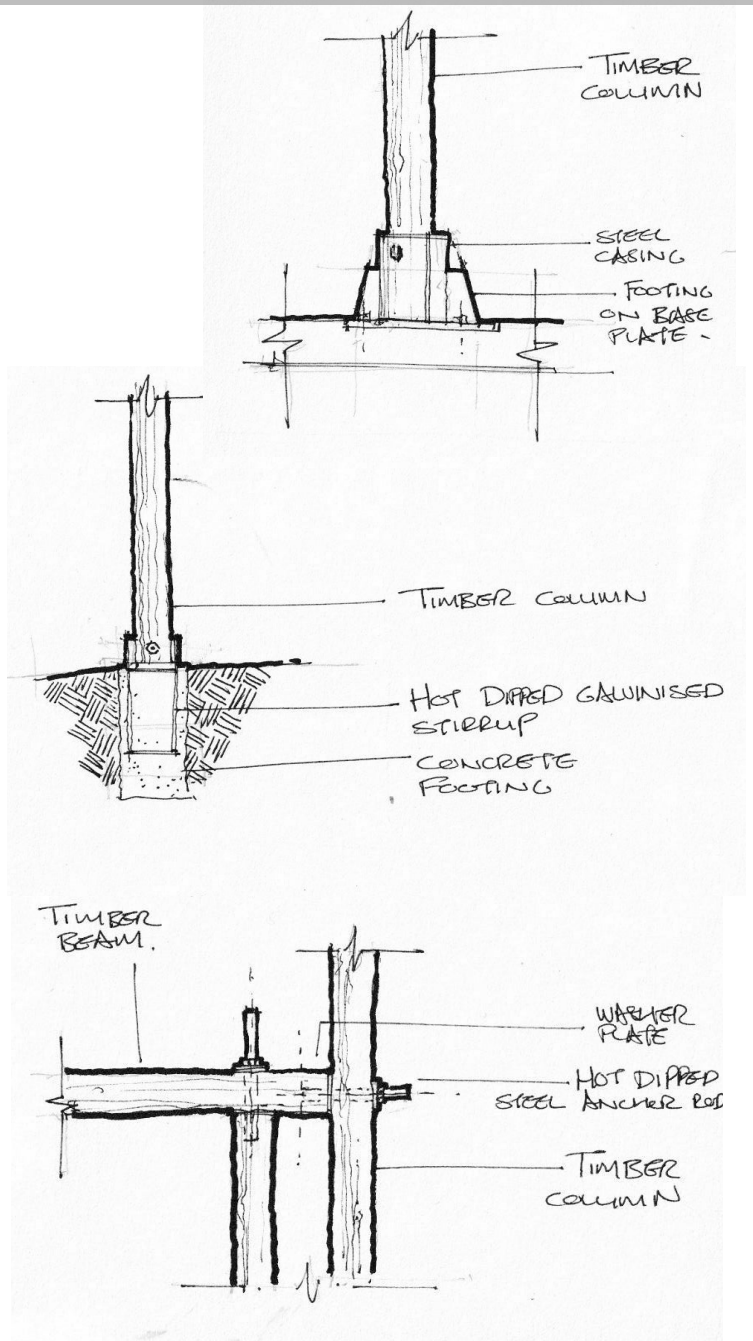


Figure 153: Model section. This would conceptually be applied to the Visitors Centre walkway (Author, 2023).

Figure 154: Gum pole articulations and connections (Author, 2023).



6.2.2) Superstructure

By utilizing materials sourced from the park's surroundings, the design aims to harmonize the built environment with its ecological context while providing functional and aesthetically pleasing spaces. Utility in architecture refers to the effective use of space, materials, and technologies to meet functional requirements. Space enhancement, on the other hand, involves optimizing spatial qualities to create engaging and transformative experiences. In the case of the wildlife education and visitors centre, these concepts need to be thoughtfully applied to facilitate educational activities, support visitor needs, and establish a harmonious connection with the surrounding environment.

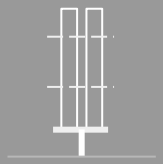
Figure 155: Model section. This would conceptually be applied to the Visitors Centre walkway (Author, 2023).

6.3 CONSTRUCTING A THRESHOLD

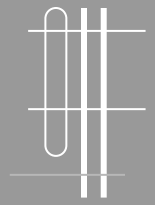
This section considers the elements that generate thresholds form a material sense. This is an analytical summary of the tectonic and stereotomic languages that are presented in the design and ultimately the connective processes of its form. Form refers to the aesthetic qualities and visual composition of architectural structures, while function refers to the practical purpose and intended use of the built environment. In the context of the wildlife education site and visitors centre, form should reflect the natural beauty of Pilanesberg National Park and evoke a sense of environmental consciousness. The functional aspects should prioritize educational spaces, visitor amenities, and conservation facilities, ensuring an optimal experience for both visitors and wildlife conservation efforts. Concrete foundations are critical when building in the natural setting because they must be thoughtfully built to preserve the surrounding trees and their delicate root systems. Given the inherent value of these trees and the ecosystem they support, it is critical that the foundations do not alter the natural landscape or jeopardise the trees' health and stability. We may peacefully connect the built form with nature by employing sustainable construction practices that include the preservation of trees, producing a symbiotic relationship that benefits both human residents and the current ecosystem.

The design aims to utilize the dry and “dead” areas of the site with the least amount of shrubbery or trees. The key is having designated ‘construction zones” as a means of minimising negative effects construction effects on the landscape. The waterline, a defining feature of this design, serves as both a functional element and a metaphorical nexus between the built and natural environments. Through strategic placement and design, water becomes an integral part of the visitors' experience, providing not only aesthetic pleasure but also ecological significance. Rainwater harvesting systems, wetland filtration, and water-sensitive landscaping techniques have been integrated to promote sustainable water management. This careful orchestration of the waterline ensures that it becomes a dynamic, living element that engages visitors in a deeper understanding of the delicate balance between human intervention and natural processes.

ELEMENTS OF SITE-FORM



TOUCH THE EARTH LIGHTLY



NAVIGATED BY FIXTURES

COMPONENT BASED

BRACED ARTICULATIONS

Figure 156: These site form principles inform the construction and navigation between stereotomic and tectonic elements on site (Author, 2023).

SITE FORM DEVELOPMENT

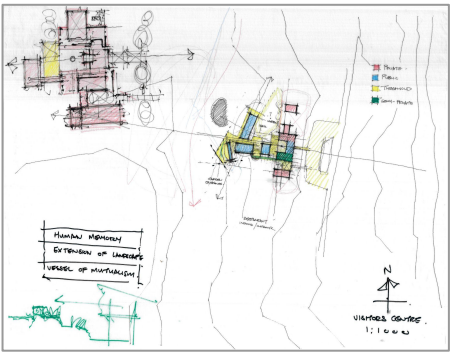


Fig. 157

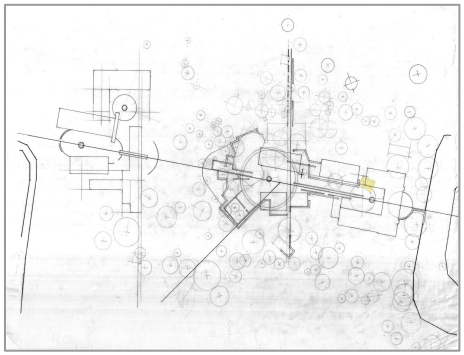


Fig. 158

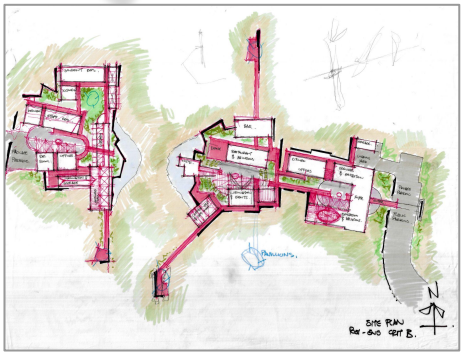


Fig. 159

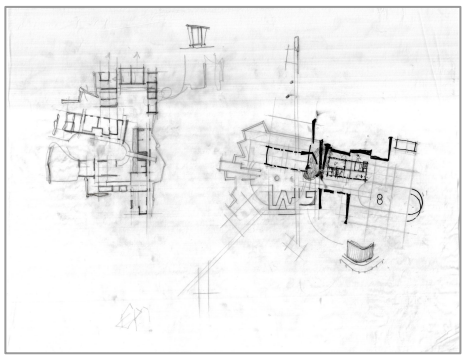


Fig. 160

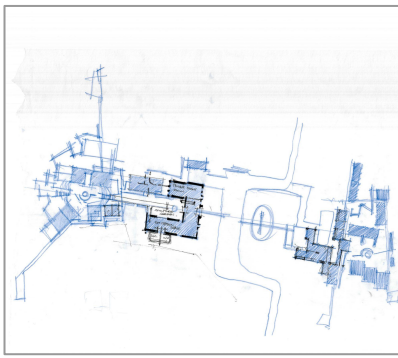
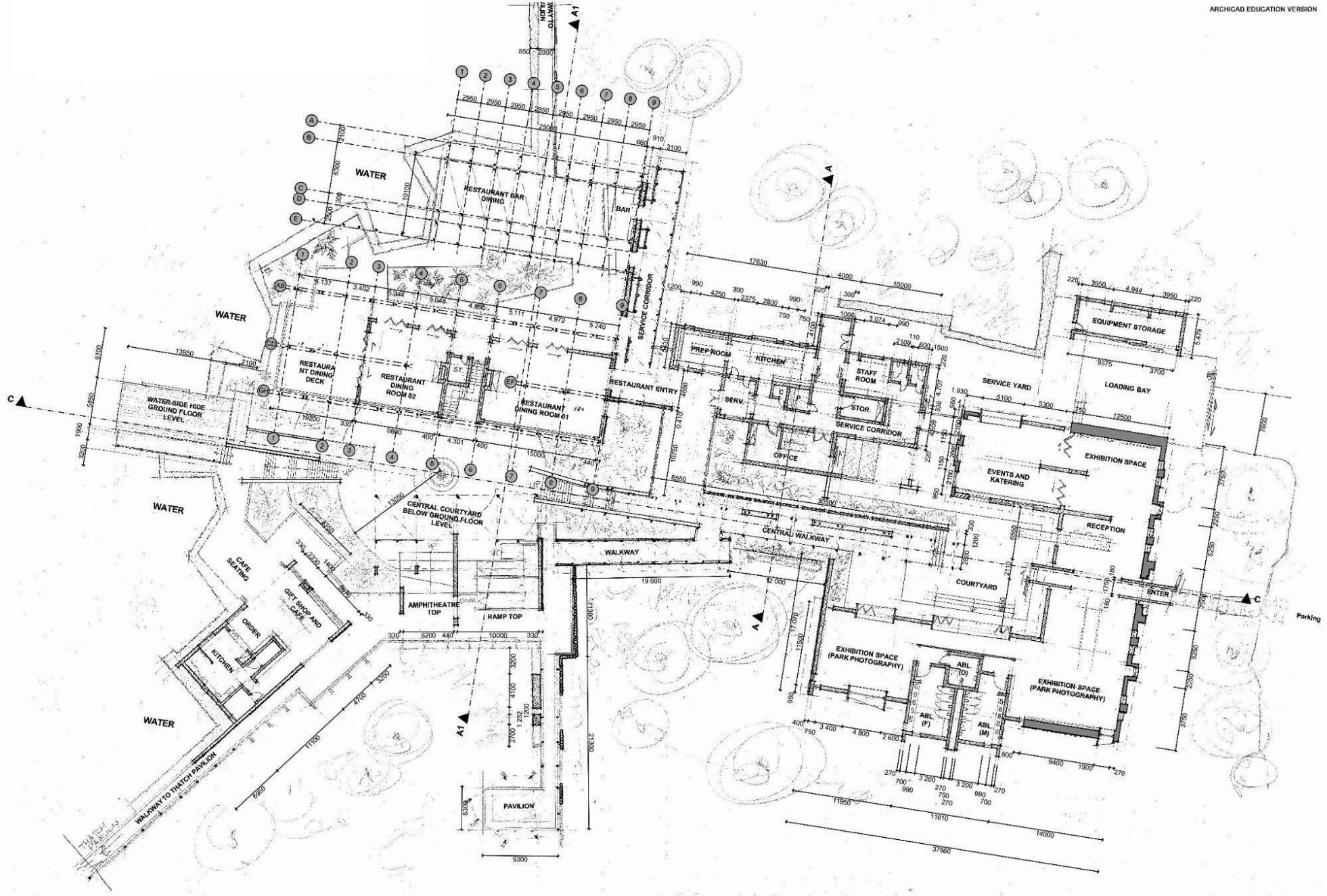


Fig. 161

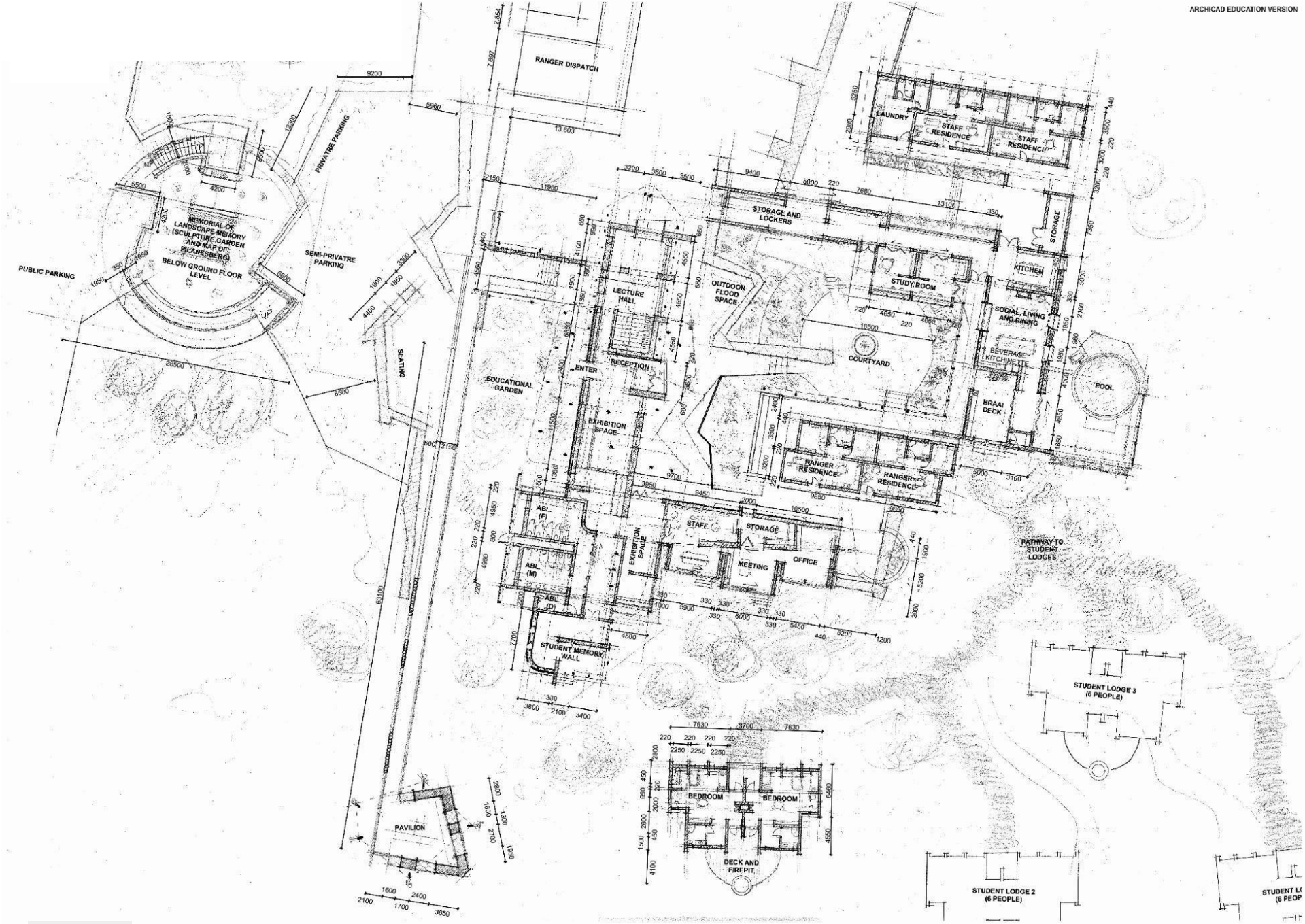
Once an understanding of the site was established, the design process was able to start diagrammatically - from this point on, it was clear how physical and metaphorical thresholds serve as points of transition and connection between different environments on site. The design is divided into tryptic parts with narratives that shape the landscape's thresholds and transitions, further implying a connection to nature and ecology.



Visitors Centre Ground Floor Plan

SCALE BAR 1:200

0 5 10 20 30 40



Education Centre Ground Floor Plan

SCALE BAR 1:200

0 5 10 20 30 40

Figure 162: Freehand interior perspective exploring the exhibition / foyer space of the education Centre. (Author, 2023).

Figure 163: Freehand interior perspective exploring the social outside spaces of the education Centre. (Author, 2023).

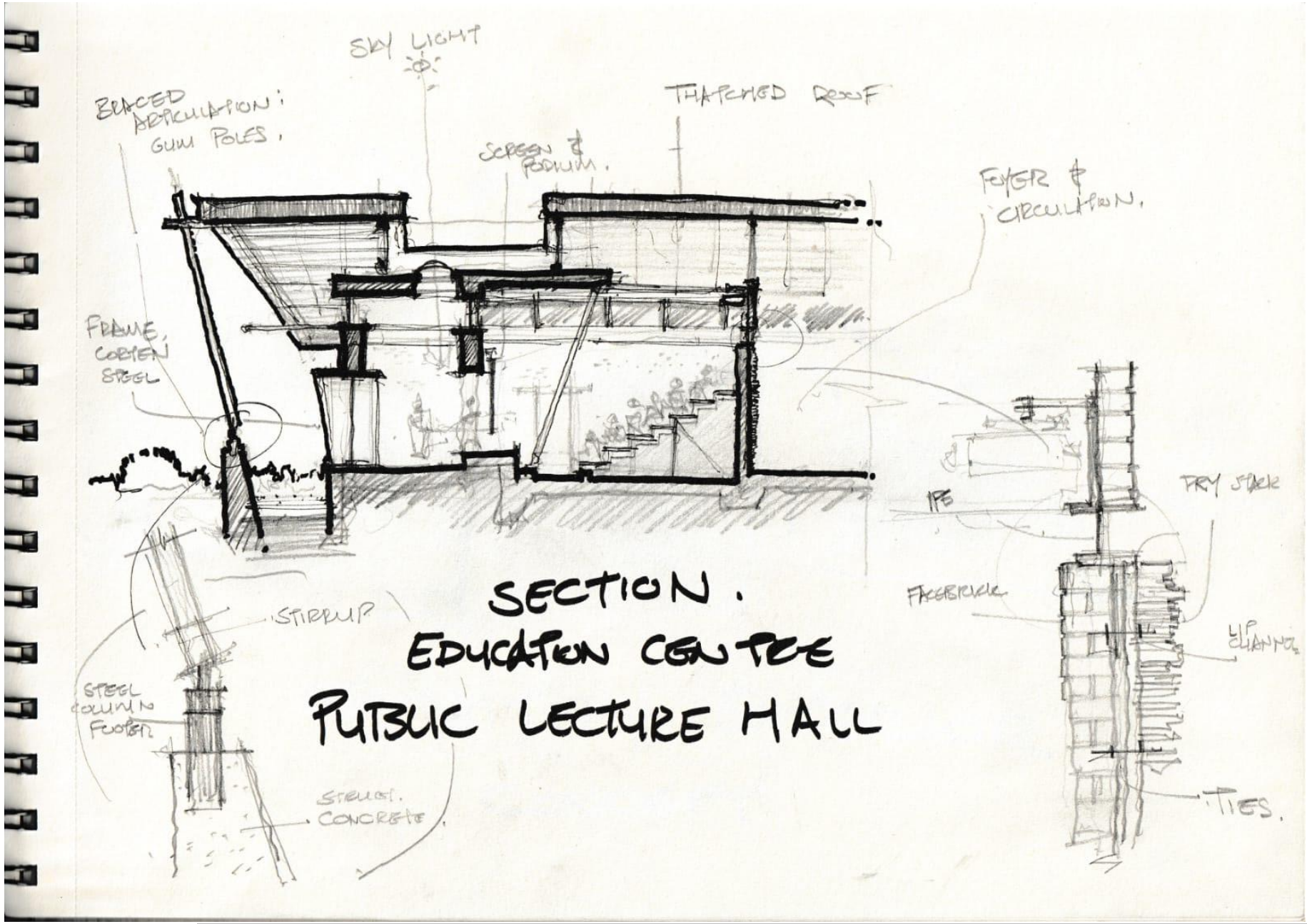


Figure 164: Freehand interior perspective section of the public lecture hall present in the education Centre. (Author, 2023).

CHAPTER 07

CONTENTS:

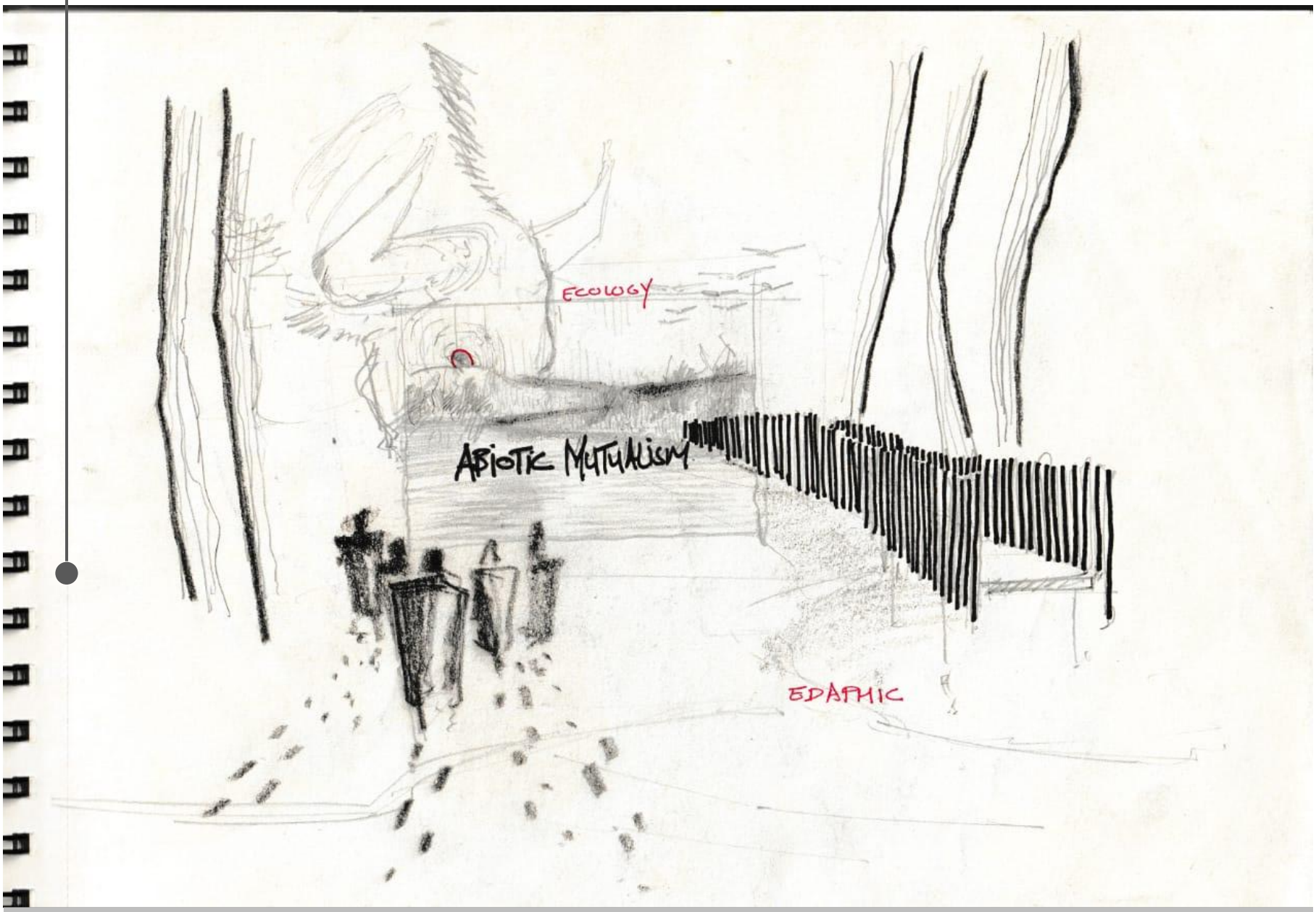


Figure 165: The abiotic landscape (Author, 2023).

7.1 PROJECT SUMMARY

[Pre-text]

South Africa has by far the largest population of rhinos in the world and is an incredibly important country for rhino conservation. From 2007-2014 the country experienced an exponential rise in rhino poaching – a growth of more than 9,000%. Rhino poaching in **Africa** surged since 2008 due to the high demand for rhino horn in Asia, particularly in China and Vietnam. Efforts to combat poaching have been made, but it remains a significant threat to not only rhino populations but our biodiversity and ultimately our country's tourism industry. These are just the detectable crimes and these are just the rhinos. Today, more than ever, the continued existence of the natural landscape and the health of its ecology is dependent on the actions of humans. The funding and active remediatory basis for conservation necessitates an ecologically coherent base of operations that educates future wildlife conservationists and commits to the connective tissues that shape the experience of the lush Pilanesberg bushveld. By shedding light on the matter and facilitating park strategies, we can experience the landscape as the thresholds that distinguish the human from the non-human.

[Site]

Situated near the city of Rustenburg (Fig. 2) in South Africa's North West Province, Pilanesberg national park is a renowned game reserve known for its biodiversity and rich fauna. It's geological formation makes it a valuable site for conservation efforts as well as a popular destination for nature enthusiasts and scholars. The site exemplifies an expansion of thresholds that encompasses the visitors' experience. This feeling is enhanced along an axis that runs from the exterior of the vehicle in the parking lot to the ridge of the restaurant’s railing. A topographic discourse may be followed along this axis, noting the numerous absences of plants.To enhance the overall visiting experience, basic yet practical amenities are provided at the Pilanesberg Centre. A souvenir shop, padstal, restaurant, ablutions, kitchen, and buffet area are among the amenities that contribute to guests' comfort and involvement with aspects of local culture and landscape.

[Brief and client]

The site exemplifies unique experiences. By developing spaces that shape the social, ecological and cultural experiences of visitors and educationalists, **an** active remediatory basis for conservation and its funding can be established as a staple of ***leisure, immersement and learning*** in the Pilanesberg landscape.The Pilanesberg Wildlife Visitors and Education Centre caters to not only the needs of park visitors, and staff members, but also the 24 students who attend the sixty day field guide and ranger course alternately throughout the year. The Northwest Parks and Tourism Board established the **Pilanesberg Wildlife Trust** (PWT) in 1999 to promote conservation and social upliftment. Some of the trust's objectives include; Eco-tourism, Conservation of biodiversity and Socio-economic upliftment as well as fundraising to meet the above objectives. Therefore they are the optimal client for this project as they embody the power of change and human intervention for the parks' remediation of parasitic entities. From here, an active role can be played and a relationship with the ecology can be formed.

[Project discernment]

Establishing a symbiotic interdependency with the site is essential to considering **mutualism** *as an act of spatial collision; whereby two entities form a void of cohesiveness*. This void is to be a response to the landscape. The concept of mutualism, (a type of symbiosis where two or more species interact in a way that benefits each other), offers a valuable lens for shaping architectural responses to conservation issues in Pilanesberg National Park. From here, narratrives are established that communicate the various site experiences and abiotic memories of the non-human context. Considering **narratives** *as an mode of spatial discernment; whereby two entities experience each other through a threshold interaction.* Therefore the question is asked: How can the architectural assemblage of ***thresholds*** in Pilanesberg National Park serve as an ***ecological vessel of mutualism***, enhancing the connection between human and non-human inhabitants while responding to the natural landscape thus ***preserving the material narratives*** that shape its pretext?

Once an understanding of the site, its narratives and the concepts has been established; the design process was able to start **diagrammatically** - From here on it was clear how the *physical and metaphorical* thresholds serve as the points of transition and connection between different environments on site. The design is sectioned in a tryptic of narratives that shape the thresholds and transitions in the landscape, further denoting a connection to nature and the ecology. The Pilanesberg Wildlife Visitors and Education Centre is subsequently the vessel of narration. The various programmes of this design are allocated along an axis that extents through the thresholds of the site, forming a datum of enclosure that subjects the visitor to various landscape, educational, cultural and leisurely experiences. Thereby contributing to the funding and conservation efforts of the Park.

By addressing specific site concerns, relevant to the landscape, a kinetic datum can be generated within the heart of the park. A Wildlife Visitors and Education Centre in the heart of Pilanesberg National Park can help to overcome the conservation concerns mentioned previously. A center of this type can act as a hub for conservation initiatives, public participation, and education, securing a future for Pilanesberg and the inhabitants who depend on the success and well being of the park. The center can host educational programs, workshops, and interactive exhibits that inform visitors, including local communities and tourists, about the importance of wildlife conservation - by immersing them in the landscape and enabling the community to experience the ecology and the beauty of Pilanesberg National park.

7.2 CONCLUSION

This dissertation has been a journey of discovery, weaving together threads of ecological consciousness, and spatial intervention. It has underscored the imperative of viewing architecture not in isolation, but as an integral abiotic extension of the larger ecosystem it inhabits. The concept of mutualism, in particular, has emerged as a powerful lens through which architectural interventions can be imbued with a sense of responsibility towards the environment. Through careful consideration of heritage, typology, landscape memory, and thresholds, the proposed Wildlife Visitors and Education Centre aspires to be a testament to the potential of architecture as a force for positive change in the realm of conservation. In the face of a post-Covid animal conservation crisis, the role of humankind in shaping the fate of our natural landscapes has become paramount. This crisis laid bare the fragility of the financial underpinning for conservation efforts. This dissertation has sought to address a critical question: How can the architectural intervention within Pilanesberg National Park serve as a nexus of mutualism, fostering a deeper connection between human and non-human inhabitants, while respecting the intrinsic narratives of the landscape?

Through a comprehensive exploration of conservation systems, landscape memory, site context and design considerations, this dissertation has sought to present an architectural response that transcends mere structures to become an integral part of the park's ecological narrative. The metaphysical disposition of this project process has been instrumental in shaping a caring response to the conservation crisis. By delving into the unique wildlife and ecology of Pilanesberg National Park, we have come to understand the intricate interdependencies that define this landscape. This understanding has informed the architectural interventions, which, rather than disrupting, seek to harmonize with the natural environment. Through precedent studies and theoretical frameworks, we have established that architecture can serve as a medium through which we express our commitment to the preservation of the park's wildlife and ecosystems. It has the potential to be an embodiment of ecological coherence and an extension of the landscape itself.

7.3 REFLECTION

This dissertation has delved into various themes that have shaped the developmental tapestry of a caring response to the conservation crisis in Pilanesberg National Park. The inherent nature of the landscape presented this project with cunning design challenges as the the vast expanse of the landscape is the greatest catalyst to decision making and procedure development. The procedures of analytical and theoretical demarcation enabled the project cycle to evolve into a multifaceted design and construction experience as the constant throughout this exploration was the regional integration of conservation systems and practices.

Personal reflection: In reflecting on this journey, I have come to appreciate the immense potential of architecture to be a catalyst for positive change in the realm of conservation. It is not merely about designing buildings, but about crafting experiences that inspire awe and respect for the natural world. The lessons learned in this endeavor will undoubtedly inform my future design and theoretical perspectives as an architect, emphasizing the ethical responsibility we hold towards the environments we inhabit.

Looking ahead, it is my hope that this architectural response will not only contribute to the conservation efforts in Pilanesberg National Park but also serve as a beacon for similar projects about the conservation of the natural landscape. For in the face of challenges, architecture stands as a powerful tool for transformation and a testament to our commitment to the well-being of our countries precious ecosystems.

Figure 166: Black Rhino Game Reserve, Northern Pilanesberg, rangers respond to a wounded white rhino, shot by poachers (Author, 2012).

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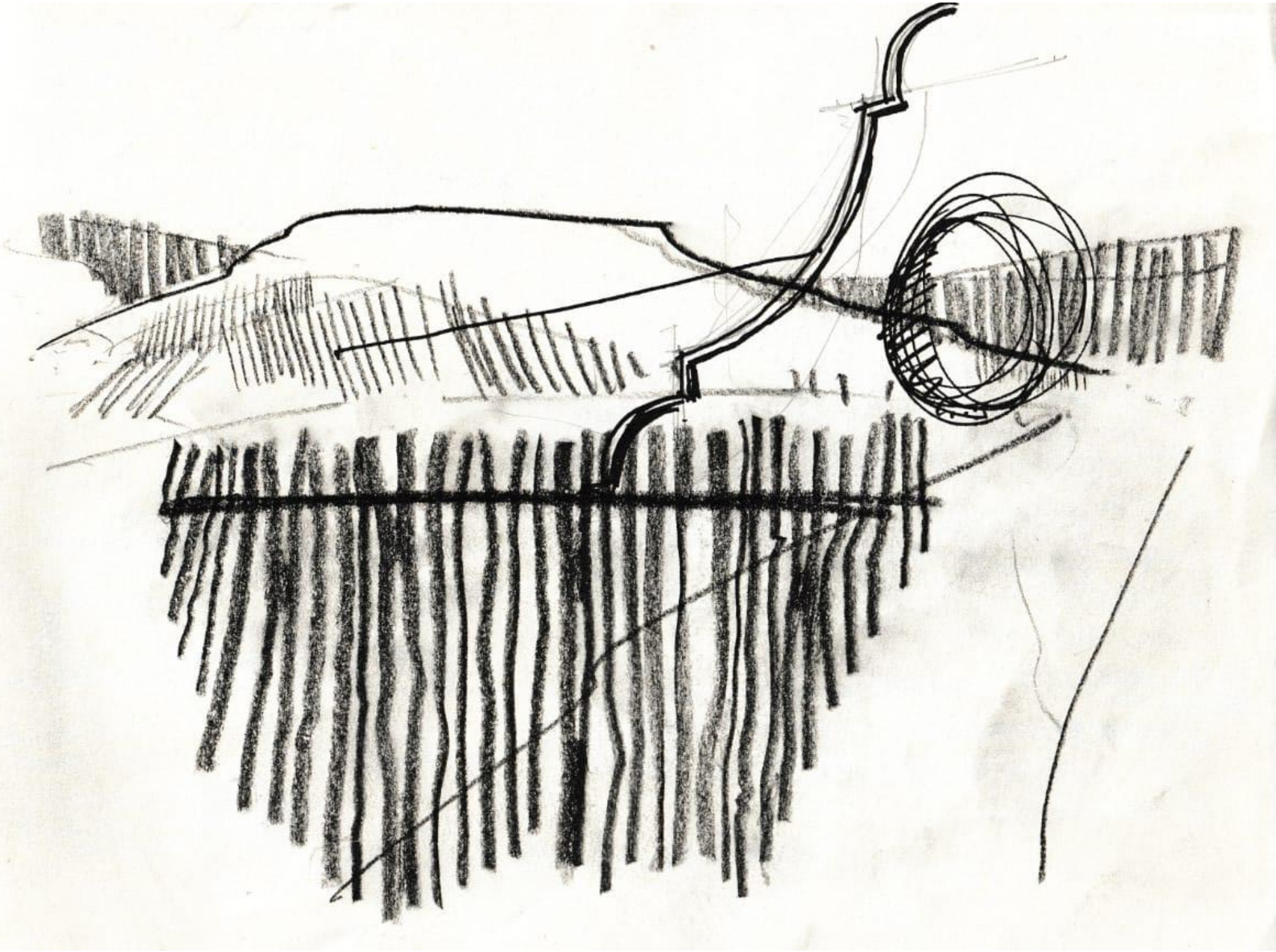


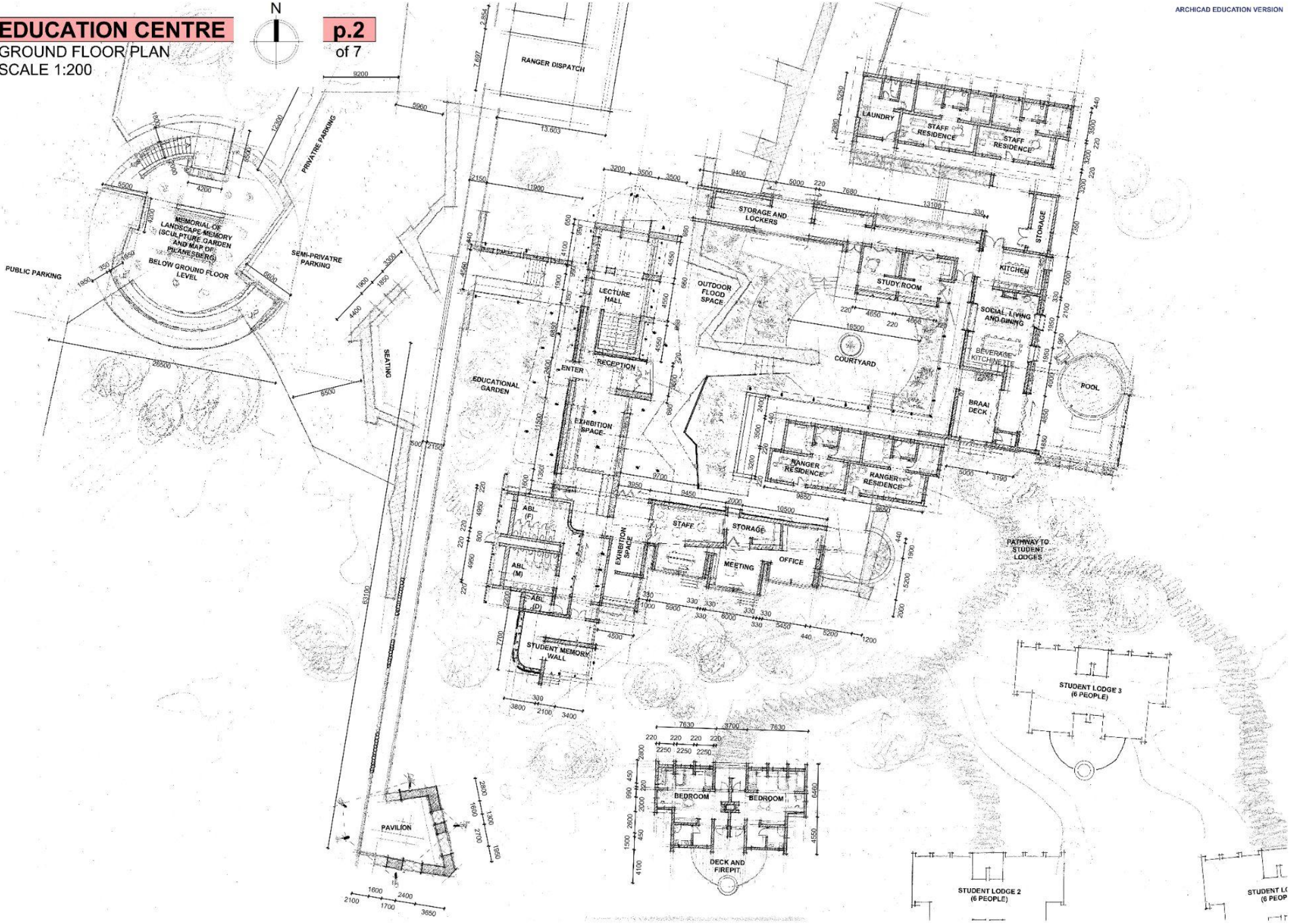
FINAL POSTERS:

VISITORS CENTRE

GROUND FLOOR PLAN
SCALE 1:200

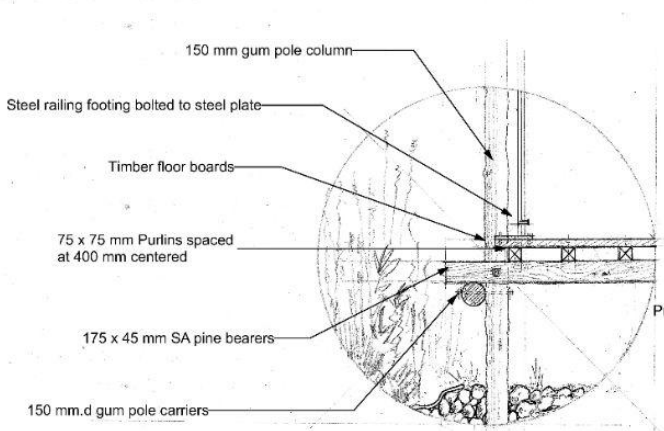
EDUCATION CENTRE

GROUND FLOOR PLAN
SCALE 1:200

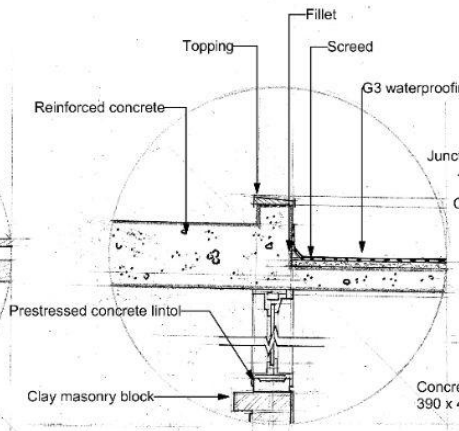


SECTION A-A AND DETAILS

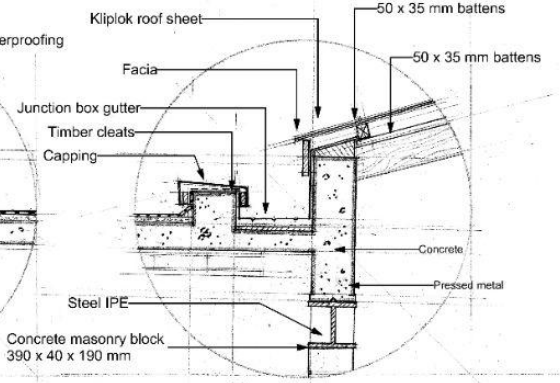
Visitors centre restaurant kitchen and walkway



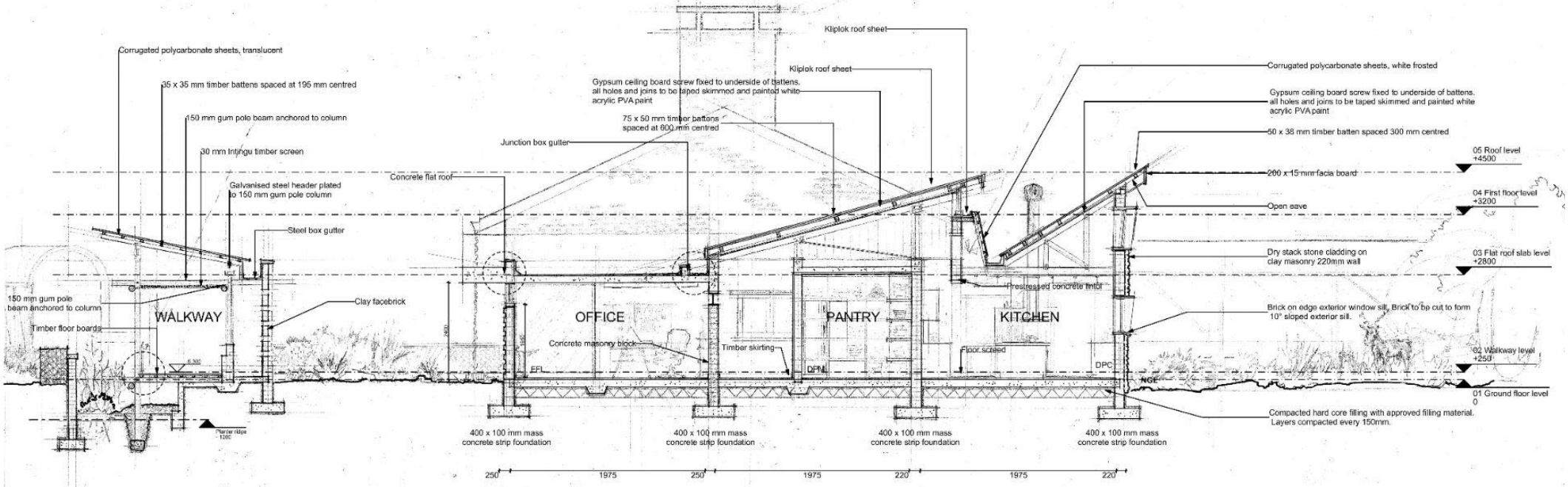
WALKWAY
DETAIL 1:20



FLAT ROOF
DETAIL 1:20



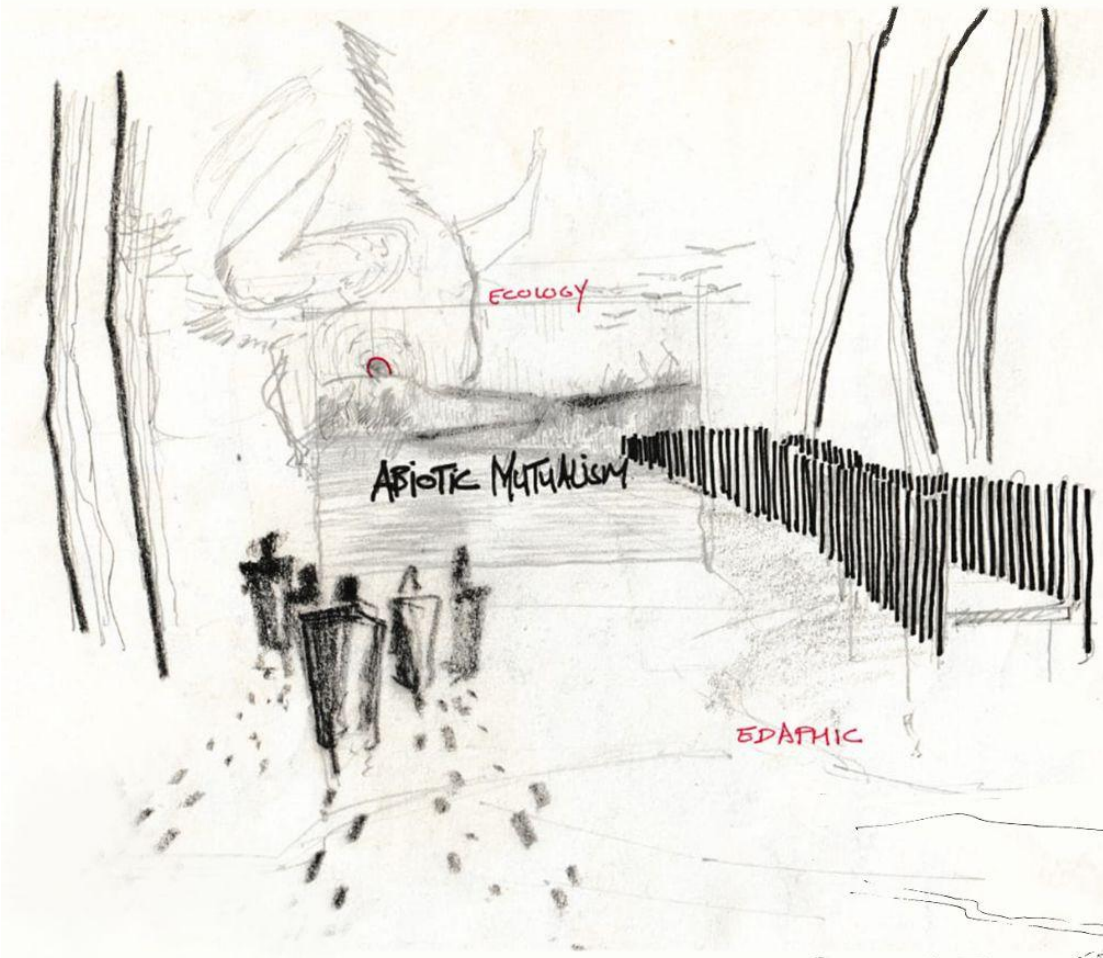
JUNCTION BOX GUTTER
DETAIL 1:20



TOWARDS AN ABIOTIC MUTUALISM

Addressing the **conservation crisis** in **Pilanesberg National Park**

WKS Labuschagne
2018175691
M.Arch (Prof)

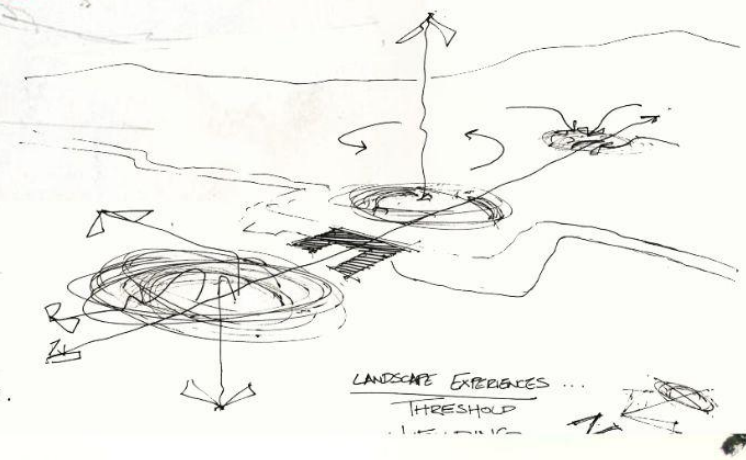


ABIOTIC MUTUALISM

The term "abiotic" refers to non-living elements of an ecosystem or environment. These include physical and chemical factors that have an impact on living organisms but do not have biological origins. Temperature, sunlight, soil composition, water, and geological features are examples of abiotic elements.

Understanding the significance of abiotic elements is critical in the field of wildlife conservation architecture, as it guides the design of structures and spaces that benefit both wildlife and their ecosystems.

Architects and environmentalists must consider how abiotic elements interact with the built environment. As a result, designing the built form to function as an extension of the abiotic environment rather than as an interfering entity creates a fourth wall with carefully devised thresholds.



MUTUALISM | COMMENSALISM | PARASITISM | COMPETITION.

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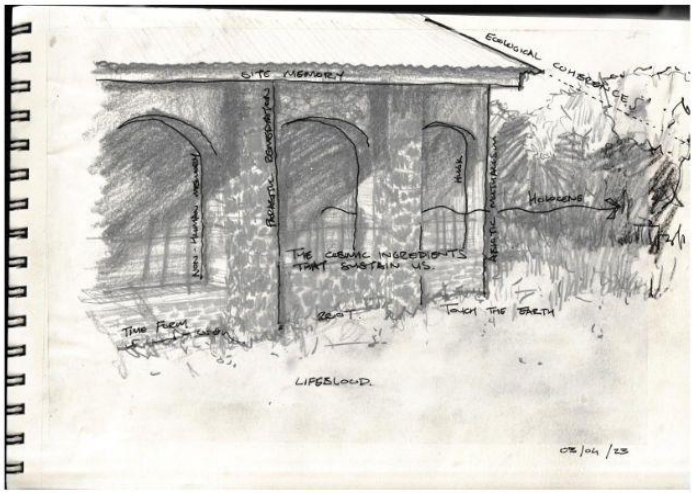
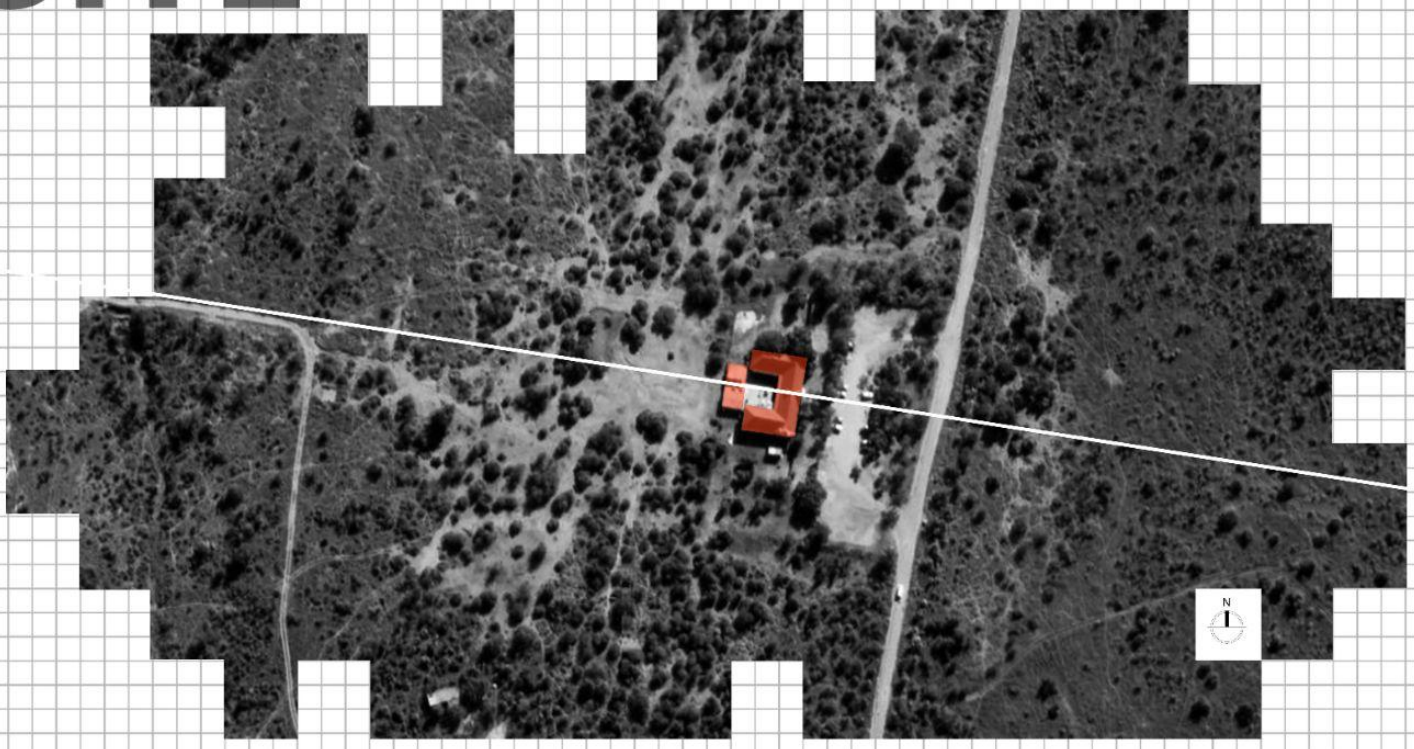
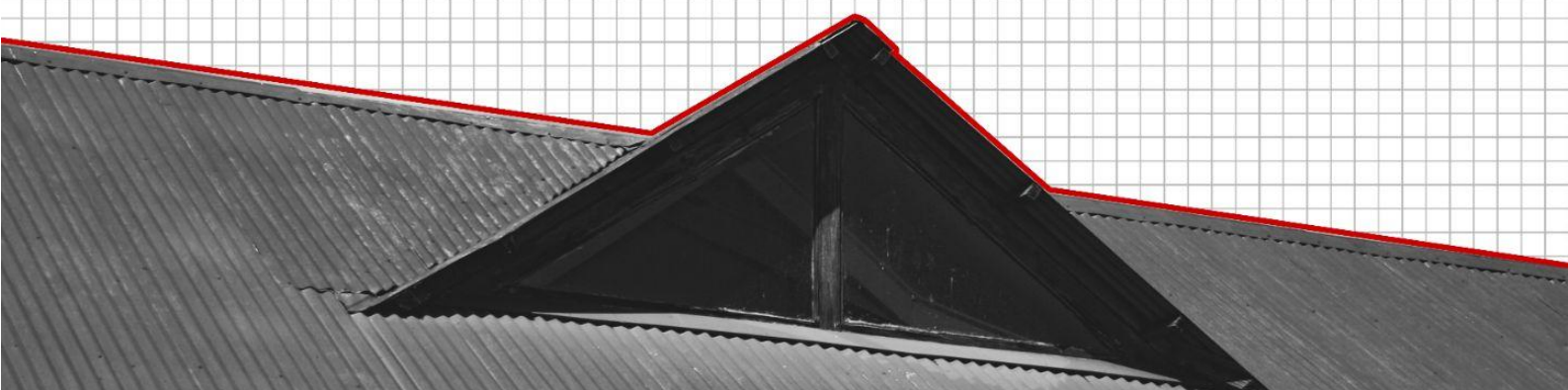


SITE





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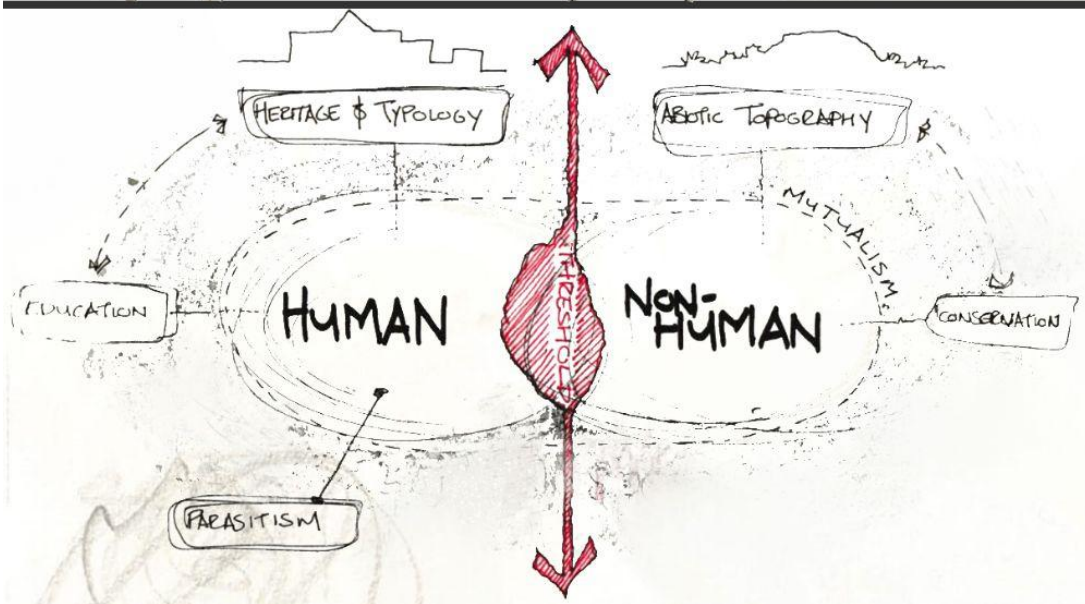

The translation of mutualism within the design complexities of this response to the living landscape aims to illustrate and analyse its location and site of occurrence.

The metaphysical understanding of mutualism as a habitual act of survival and its "taking place" will aid site response and site intent development. By visualising this physical moment as a cohesive void that sustains the immediate participants in this cosmic transaction.

This cohesive threshold creates a portal through which two entities (human or non-human) are linked by their experiences of the landscape and the abiotic voids within.

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