



Time[less] sk[etches]

Unearthing the narratives of Portion Six on the farm Nooitgedacht through a Geoarchaeological Research Centre and Field Station

Carmi Engelbrecht 2017222288



FOREWORD

This thesis was written for my Masters degree in Architecture at the University of the Free State, South Africa. The subject of the thesis is related to a project proposal for a Geoarcheological Field Station and Research Centre on portion 06 of the farm Nooitgedacht 66 between Kimberley and Barkley West in the Northern Cape. This project was driven by my desire to learn more about an ancient culture and its identity within a contemporary world and discover a sense of self by learning more about my Grandfather, a former geology lecturer at the University of the Free State. This project has allowed me to be creative in new and exciting ways and was by far the best year of my five school years. However, I would like to thank a few people for their constant support throughout the year.

To my Heavenly Father, I would not be able to create without Your direction in this year. I thank You for sharing a small part of Your magnificent creation with me and all who will read this document. I want to thank my family for their unwavering assistance and all the late-night coffee cups. I also want to express my gratitude to my lecturers and supervisors for their support and encouragement. Lastly, to my group of friends in the yellow cubicle. I will always treasure the memories we shared.

DECLARATION

This dissertation is submitted in partial fulfillment of the requirements for the Master's Degree in Architecture. All the work contained in this document is my own except where otherwise acknowledged.

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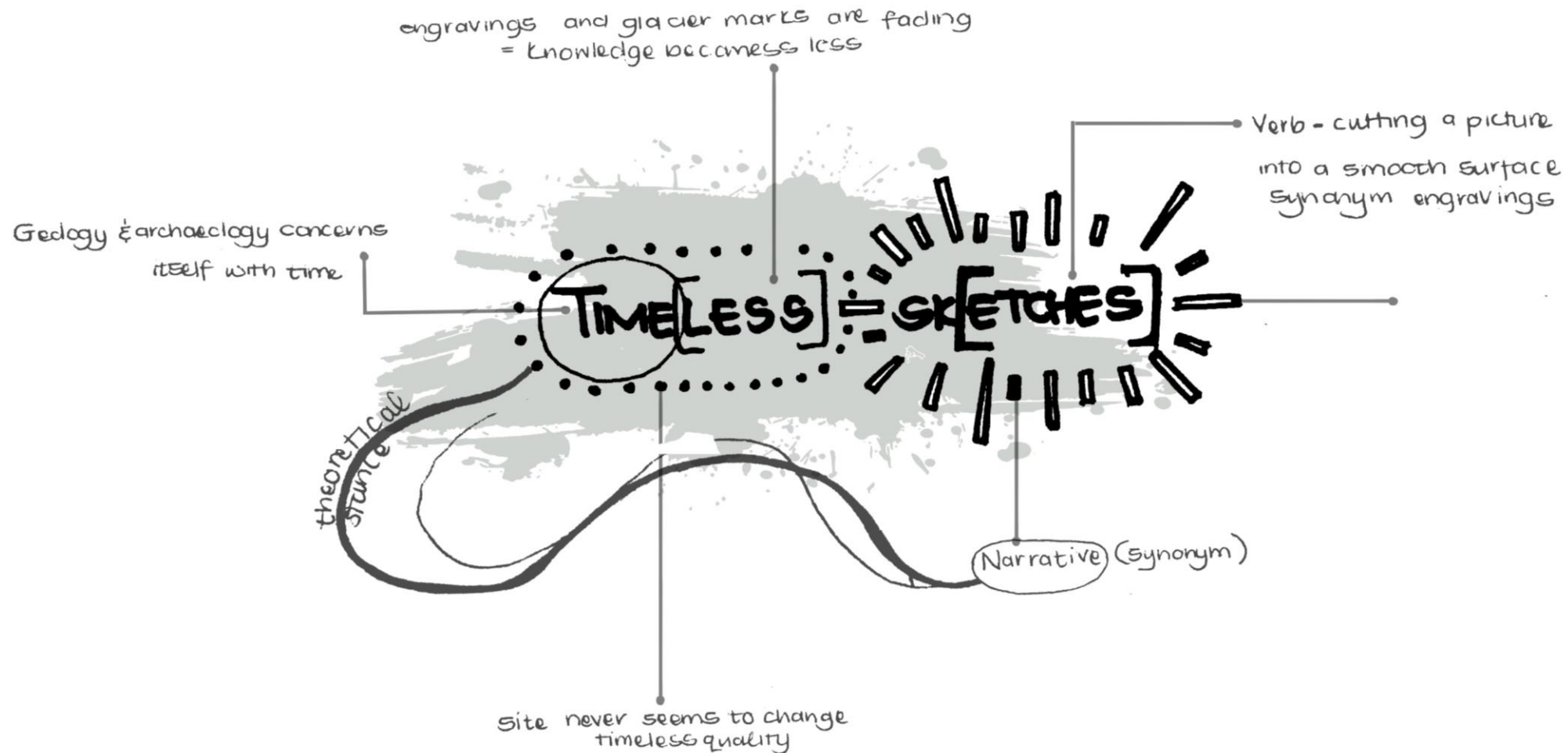
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Date of submission: 13 October 2023

Declaration of original authorship:

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

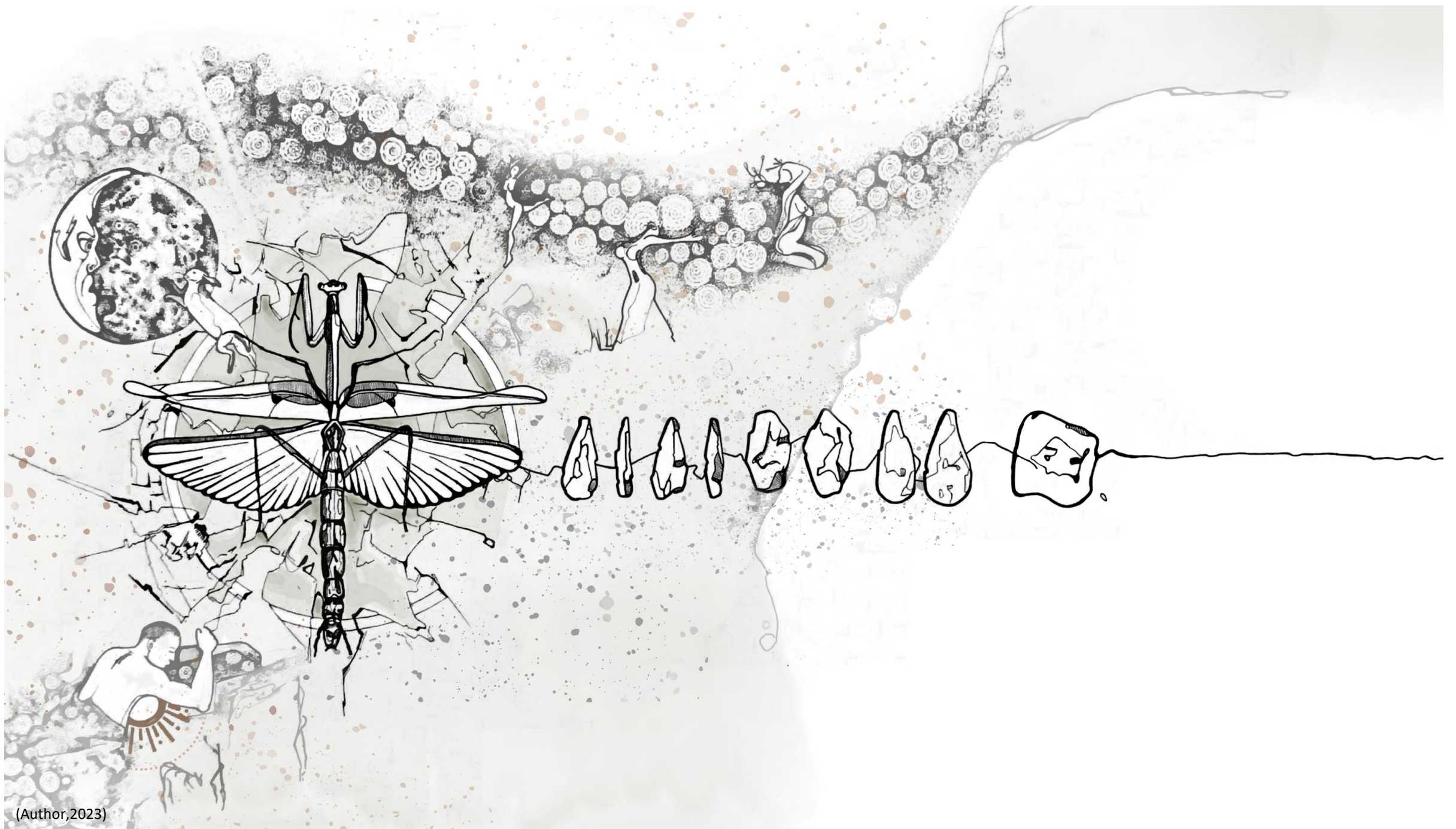


ABSTRACT

The Northern Cape is a place where the landscape preserves and reveals time within the layers of the earth's crust, unearthing the silent narratives of life. The region revealed phenomena that date back to 2.7 billion years (Almond, Pether, 2009: online), revealing the natural occurrences of the 300 Mya Dwyka Glacial Movement and the evidence of early civilization. It is known as the place where mankind grew up (Dipicio, 2001: online), especially the San and KhoeKhoe communities. The only traces of their existence left in the barren landscape are that of the 93 engraving and 11 painting sites (Morris, nd: online). Portion six of the farm Nooitgedacht is one of the many points of origin within the historical plot of the Northern Cape's Genesis. This provincial monument is a forgotten plot, its voice silenced as time seems to be the only character passing through the site. A Geoarchaeological Field School and Research center, located on portion six of the farm Nooitgedacht, is proposed to unearth and preserve the site's structured narratives and forgotten voices. Connected by the multiple narratives of the site, the lay of the land inspires an intervention that explores the possibilities of the Narrative as a dialogue of time between man and space. The intervention focuses on creating architecture that could narrate multiple narratives. The Geoarchaeological Field School and Research Center, funded by the Northern Cape's Cape Department of Education, proposes an architectural narrative through the lens of African time, using time as the main character who navigates the visitor through carefully articulated events.



(Herbert, 2023 : Altered by Author)



(Author, 2023)

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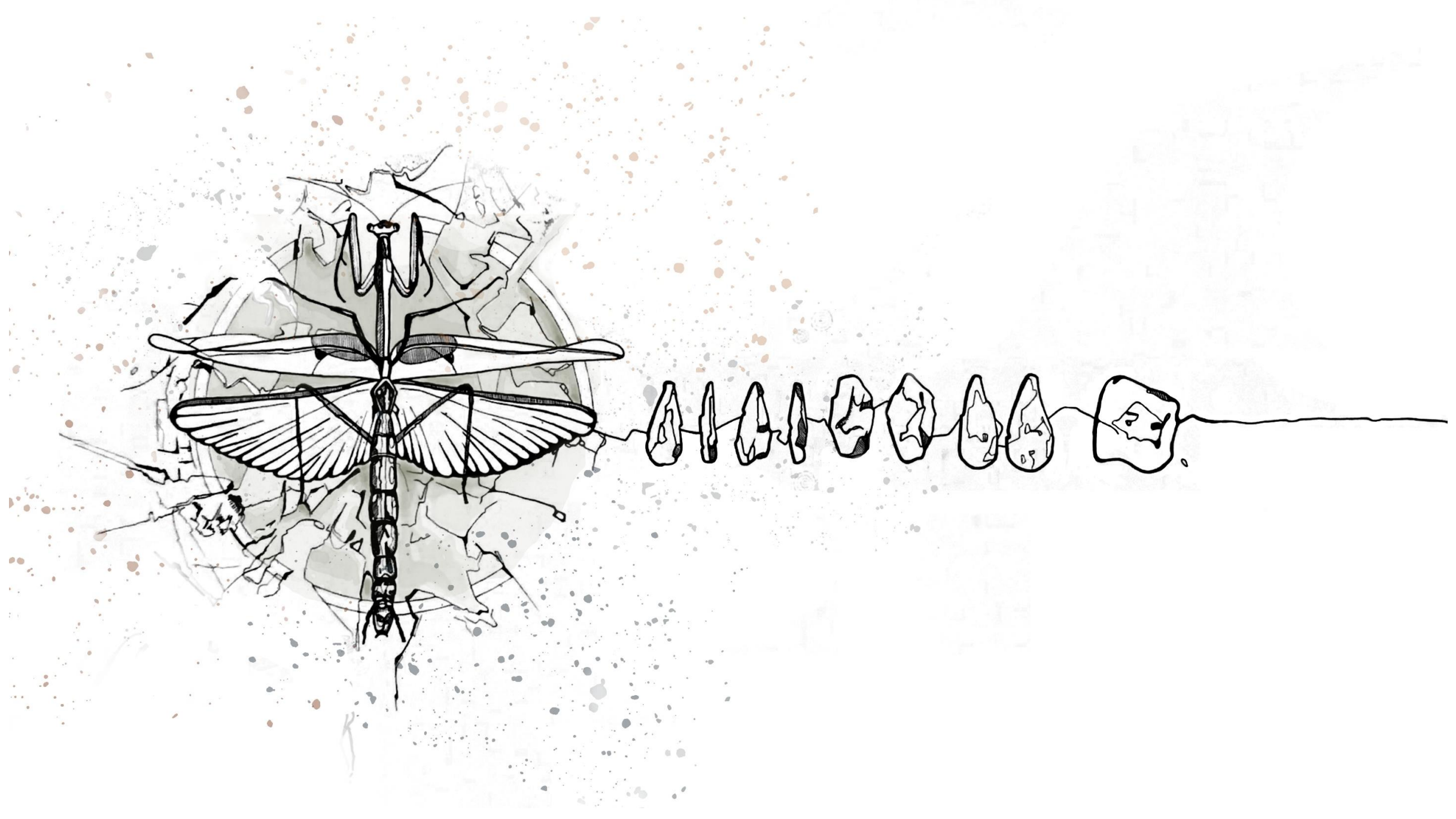
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The technical Report

09 REFLECTION

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01

Prologue
The ice-breaker



African Genesis

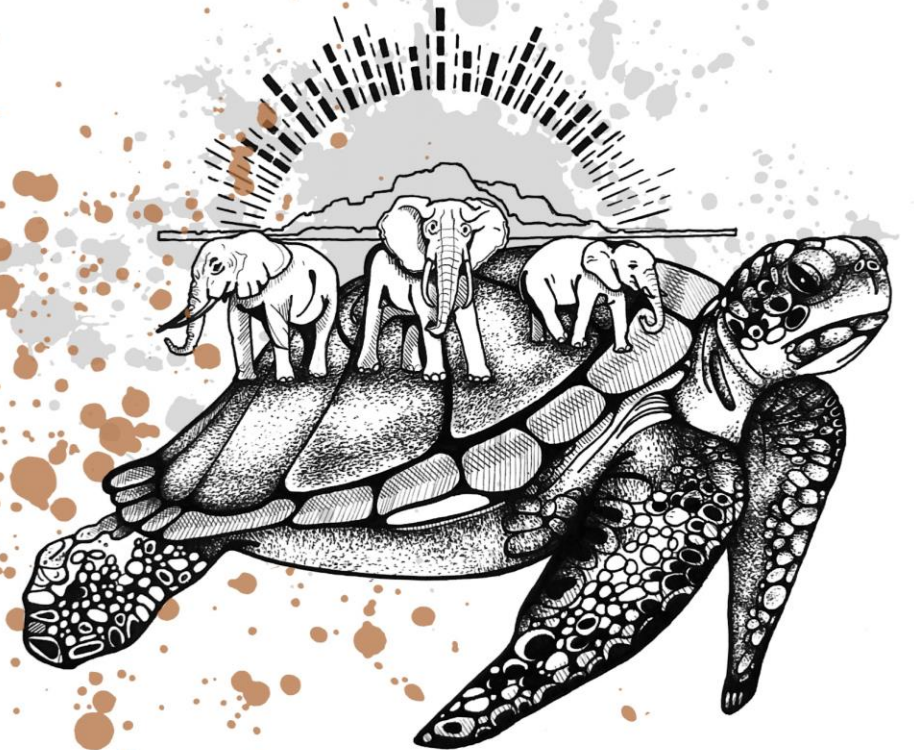
“Aforetime the gods and their creatures lived in the sky, as Rain and Flame was one. Flame sculpted the earth as his partner Rain carried the rainbow as a girdle around her waist. The mantis hatched as the earth was given life. The mantis and the bees traveled to Earth to discover the reason for existence itself. The bee grew weary carrying the Mantis as it traveled while the world was immersed in water. After finding a stable surface, the bee placed the Mantis in the center of a white flower and laid the first human being's seed with him. Mantis awoke as the sun rose and warmed the blossom, and from within him, from the seed that the bee had left, the first San was born.” (Chrigi-in-Africa, nd: online)

(Author,2023)

1.1 THE PLOT OF THE GROUNDWORK

I have always loved the thrill of exploring historical places, always expecting to be the first to locate the fabled riches. My love for adventure and the mythical was mostly influenced by the popular Indiana Jones film series, particularly *Indiana Jones and the Kingdom of the Crystal Skull (2008)*, and the *Discworld series* written by Sir Terry Pratchett. The film portrays Indiana Jones as an archaeologist who seeks ancient treasures or culture. In all the films, he becomes the protector of those discoveries and will defend them from the antagonist who wishes to exploit the treasures. His character understood that these relics and cultures should be sought after with care as it is important to our understanding of where we place ourselves in the world. There was also something about the pursuit of ancient knowledge and its conservation that truly resonated with me.

Yearning for more adventure, I became an adamant reader. I could lose myself for hours in Pratchett's hilarious fantasy Discworld book series. In these books, he applies science, mythology, and real-world issues to create a fantasy world where a flat globe is supported by four elephants, who in turn are standing on a huge turtle. The narrative does not have a linear storyline and is filled with interesting characters who take part in many adventures filled with magic and treasures.



(Author,2023)



As one does, I wondered why this interest has originated within me. Within my lineage, I searched for someone or something that could hold the answer to my quest. The answer became an entry point within the thesis and took me on an academic and personal journey. The inspiration for this project was mainly drawn from a man that I knew but never met. My grandfather and former geology lecturer, Casper Kruger Engelbrecht, inspired many with his enthusiastic attitude toward life and his work. The only academic record found was that of his Thesis (M.Sc) on the topic of *A part of the geology within the Smithfield-Rouxville area (1951)*, supervised by Prof von Bonde. In his years as a lecturer, he mainly conducted his work within the Eastern Free State region and regularly traveled with students to explore research within fieldwork.



Fig 1a (left) : Casper Kruger Engelbrecht and his late wife, Estelle Engelbrecht (Engelbrecht,nd : Altered by Author)

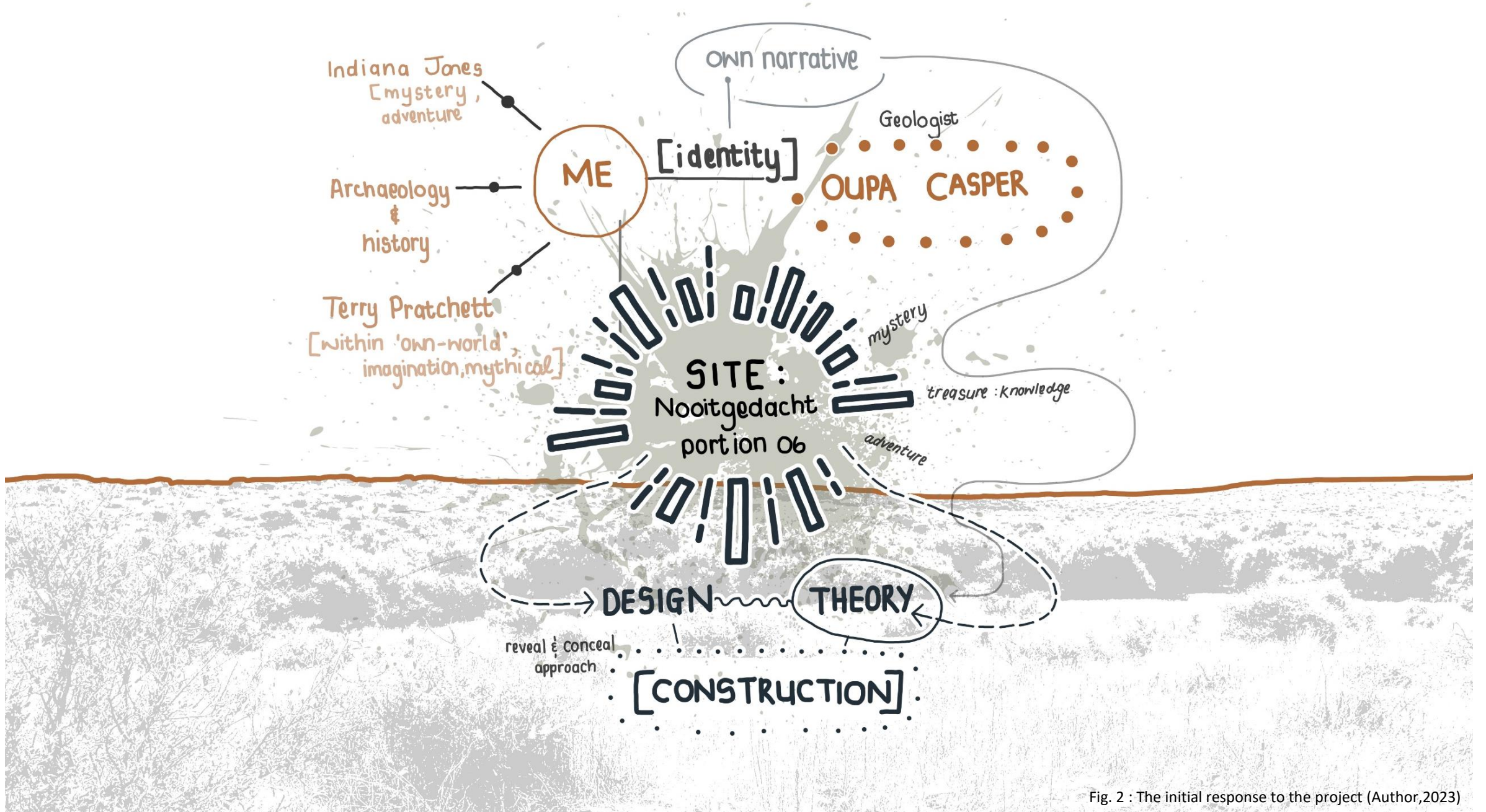


Fig. 2 : The initial response to the project (Author,2023)

1.2 THE PREFIGURED SETTING

The setting understood for the proposed Geoarcheological Field Station and Research Center is located on portion 6 of the farm Nooitgedacht 66, between Barkly West and Kimberley. The farm's semi-arid landscape revealed many ancient treasures that date back thousands and millions of years. Some of the discoveries include the early alluvial diamond mining¹, dry diggings², and the discovery of various early civilization stone tools (Coetzee,2017: online).

Portion six on the farm is an origin point within the geological and archeological history of South Africa (Dimri,2022:online). The setting is a declared provincial monument based on the gradings of the glacial pavements³ and San engravings found on the site. A historical farmhouse complex (grade II) is also found on the southern side of the site. Since its discovery in 1924, the location has drawn scholars' attention on a national and international level. Regardless of its heritage status, no recent measures have been taken to secure the site. The location of the site presents a unique opportunity to connect the archeological and geological heritage of Portion Six with the broader context of the Nooitgedacht farm, Barkley West, Canteen Kopje, Wildebeestkuil, and Kimberley.

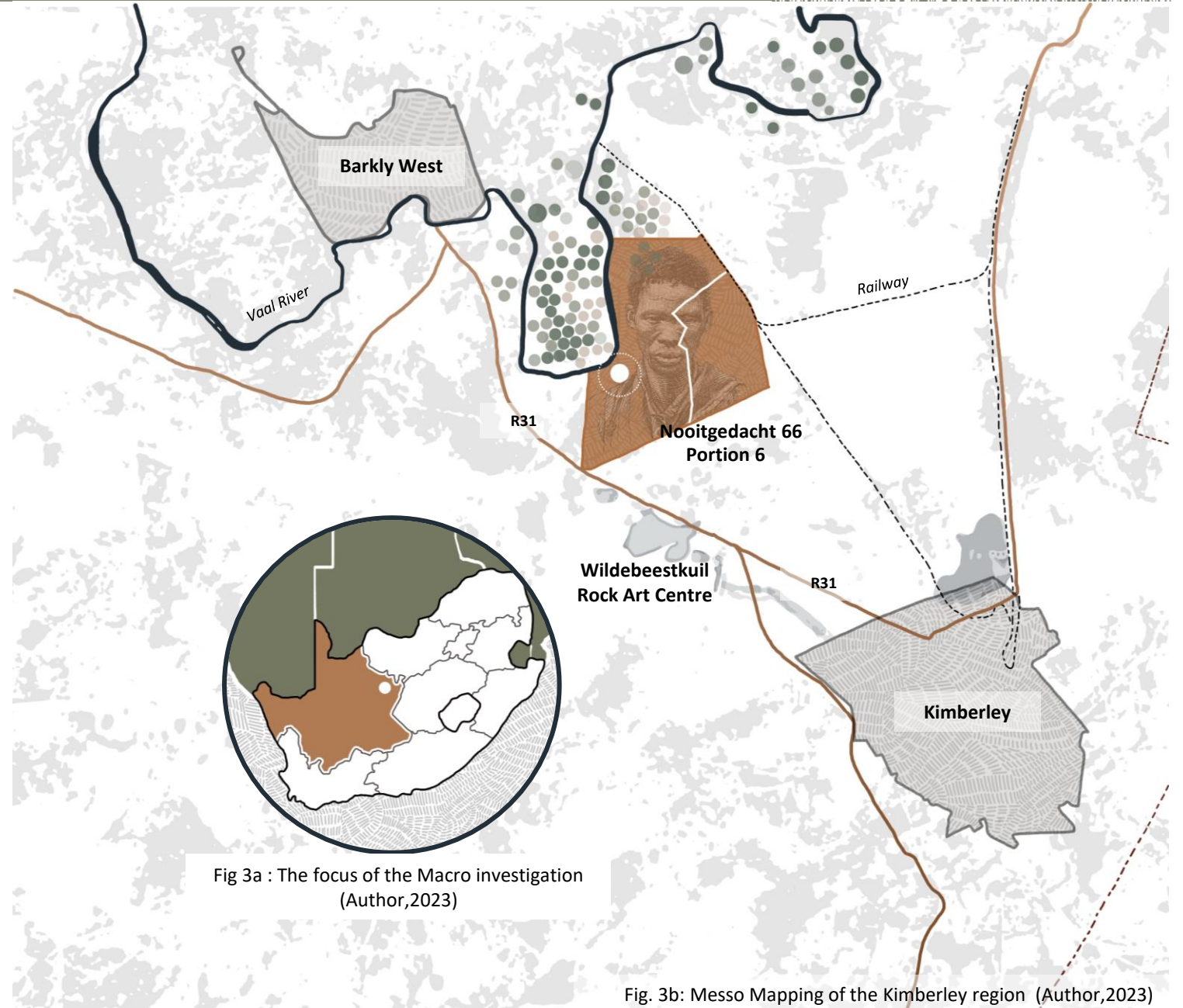


Fig 3a : The focus of the Macro investigation
(Author,2023)

Fig. 3b: Messo Mapping of the Kimberley region (Author,2023)

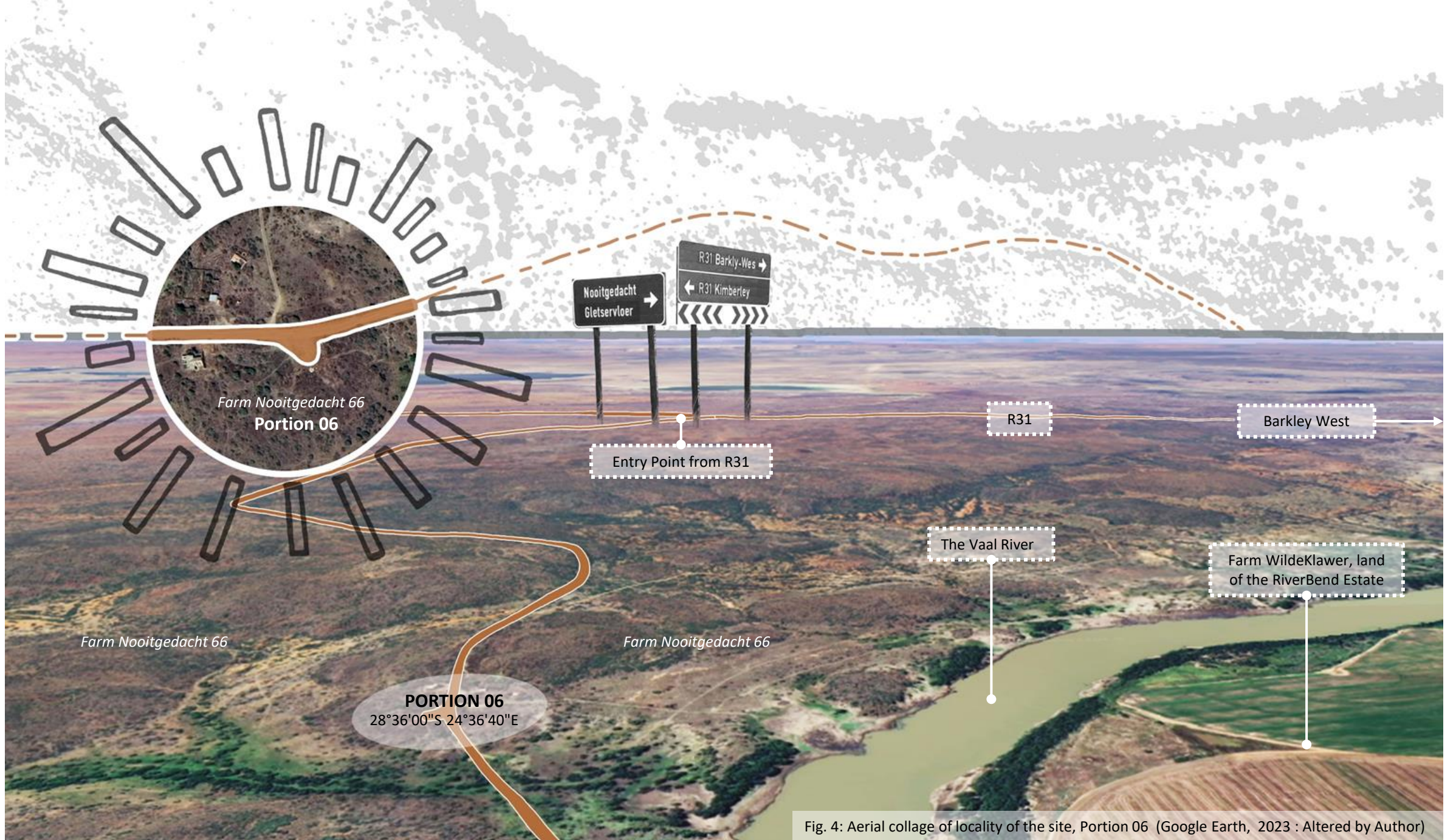


Fig. 4: Aerial collage of locality of the site, Portion 06 (Google Earth, 2023 : Altered by Author)

The South African Heritage Resources Agency (SAHRA), the Sol Plaaityje University, and the University of Witwatersrand proposed a Geoarchaeological Field Station and Research Center (Fig 6) complex on parcel six of the farm Nooitgedacht. Because of the site's location, it has the potential to create a network of natural and cultural heritage sites (Fig 5) that would work simultaneously with the project's program. This network between the site and the surrounding sites of significance aims to re-establish the relationship between the preservation of the heritage sites and the educational experience it would provide for researchers, scholars, and the public.

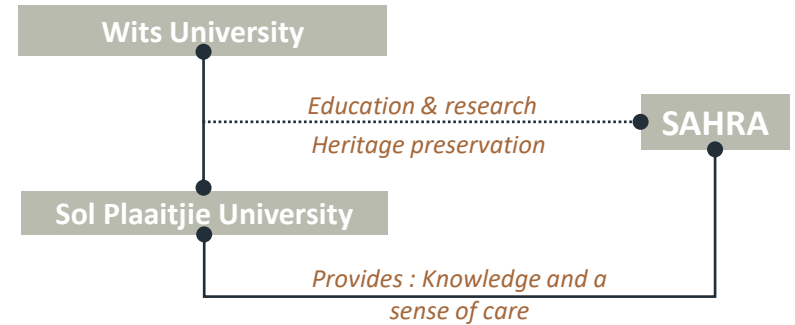


Fig 6 : The relationship between the clients (Author,2023)

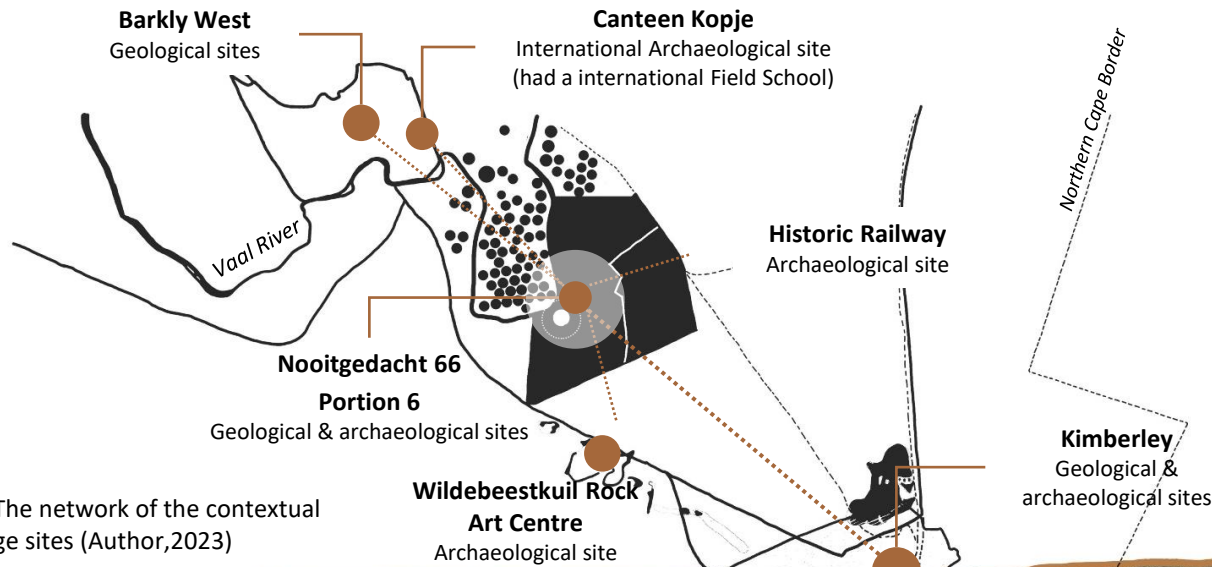


Fig 5: The network of the contextual heritage sites (Author,2023)

The project's program has identified three user groups :

1. **The researchers and students** from various national and international tertiary institutions
2. **The local community that shares the lineage of the (Khoi)San**
3. **Visitors of the public sector.**



(Author, 2023)

The Northern Cape is a place of great geological and archaeological significance, and according to its former premier, Dipicio (2001: online), the place in which humankind grew up. The province has a lot to offer within the field of geological and archeological research, especially within the regions of Kimberley and Barkly West. There is, however, no research facility that can support the future research plans by Dr Morris of the McGregor Museum in Kimberley. One of the area regions that piqued the interest of researchers is that of Portion Six on the farm Nooitgedacht. Concealed within the rural topography of the landscape, this declared province is barely visible to the outside world. Regardless of its heritage status, the years have suffered various degrees of deterioration over the years, such as the derelict condition of the farmhouse complex and the vandalism on the glacial pavements. Based on the investigations done in Chapter 02, other sites of cultural and natural significance of the meso context also suffer from damaging procedures, such as illegal mining activities. The historical evidence of the site is also slowly fading, meaning that it has the potential to disappear in the future.

The project aims to address the following concerns through the unique client-program relationship :

- Restore a newfound degree of care managed through the relationship between research, education, and natural and cultural heritage preservation.
- Providing a place for local communities of (Khoi)San lineage to discover their cultural identity



The first phase of the conceptual investigations secured the touchstone as an entry point within the project that determined the essence of the project. The relationship between revealing and concealing developed into the first milestone within the project and established the Research question of :

“ How can the narratives of the glacial pavements, engravings, and the historical farmhouse found on Portion 06 of farm Nooitgedacht 66, be unearthed by the dialogue between time, space, and man within a Geoarchaeological Research Center and Field Station? ”

After poetically measuring the site, the Site{date} emphasized the importance of how the site can provide different experiences for a visitor. Further discussed in Chapter 04, the concepts of *Distorted Impressions* and *The dialogue between mass and tectonic*, aimed to further develop the essence of the project whilst aiming to respond appropriately to the site and its historical significance. The theoretical stance of the Narrative was not a linear process and is therefore firstly discussed in Chapter 05, and then in Chapter 06 where the theoretical stance developed along with the design.



1.6 THE SUPPORTING CHARACTERS

The supporting characters in this document refer to the precedents used to support the architectural narrative. The cast was chosen based on their approaches to the site, heritage, alternative use of stone as a material, and how narrative integrates itself within design and communities, especially the (Khoi)San. Collectively, the precedents supported the development within the project’s design, construction, and theoretical development on how to reveal the narratives of a place. Precedents 01 to 03 will mainly focus on the approach to a site with rock outcrops and on the functionality of the program of a Geoarchaeological Research Centre and a Field school. The integration between design and construction is analyzed in Precedents 04 to 06, while 07 to 09 concentrated on the theoretical vantage point of the Narrative. However, the details of their role and how it could be applied to the design are discussed and analyzed in Chapter 03.



01

Fig 7a



02

Fig 7b



03

Fig 7c

Clear Rock Lookout,
Texas, USA

**European Centre For
Geological Education,** Poland

**Drimolen Field
School,** South Africa

Focus :

- Context : site approach
- Materiality

Focus :

- Context : site approach
- Materiality

Focus: Program within a South African context



04

Fig 7d



05

Fig 7e



06

Fig 7f



07

Fig 7g



08

Fig 7h



09

Fig 7i

Dovecote Studio
Snape, UK

Mortensrud church
Oslo, Norway

Westcliff Pavilion,
South Africa

**Nelson Mandela
Memorial statue,**
South Africa

**!KHWATU San Heritage
Centre,** South Africa

**Bushman Heritage
Museum and Art
Centre,** South Africa

Focus:

- Approaching heritage and ruins

Focus :

- Alternative stone use
- Passive design

Focus :

- Alternative use of stone
- Site approach

Focus :

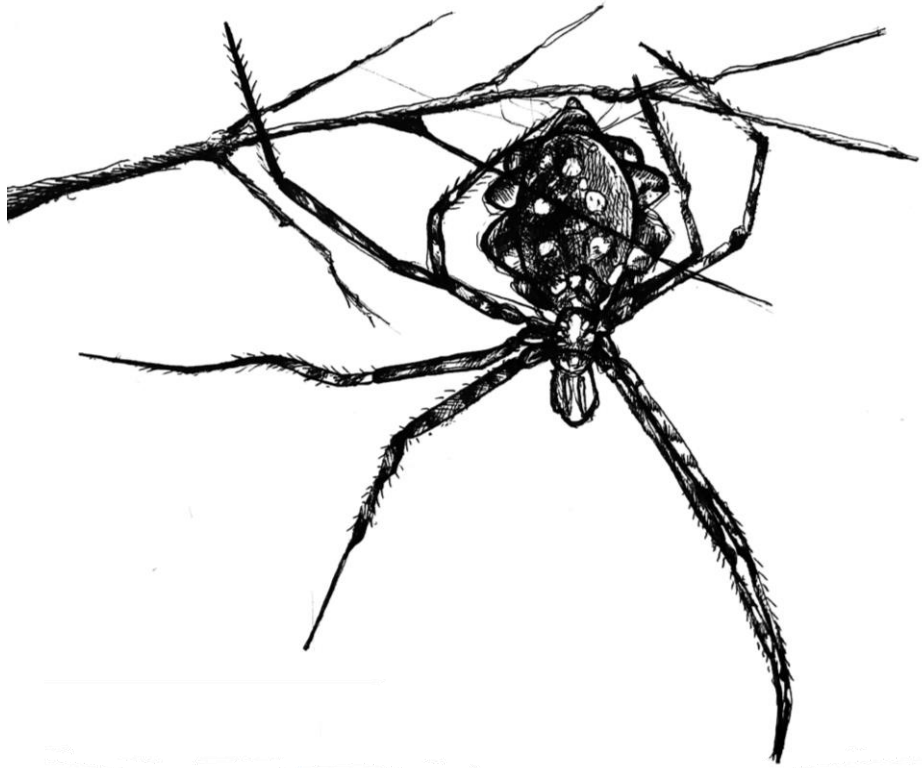
- Translating the culture of the San into Architecture

Focus :

- Translating culture into Architecture

Focus :

- Rediscovering the San identity through narratives



(Author,2023)

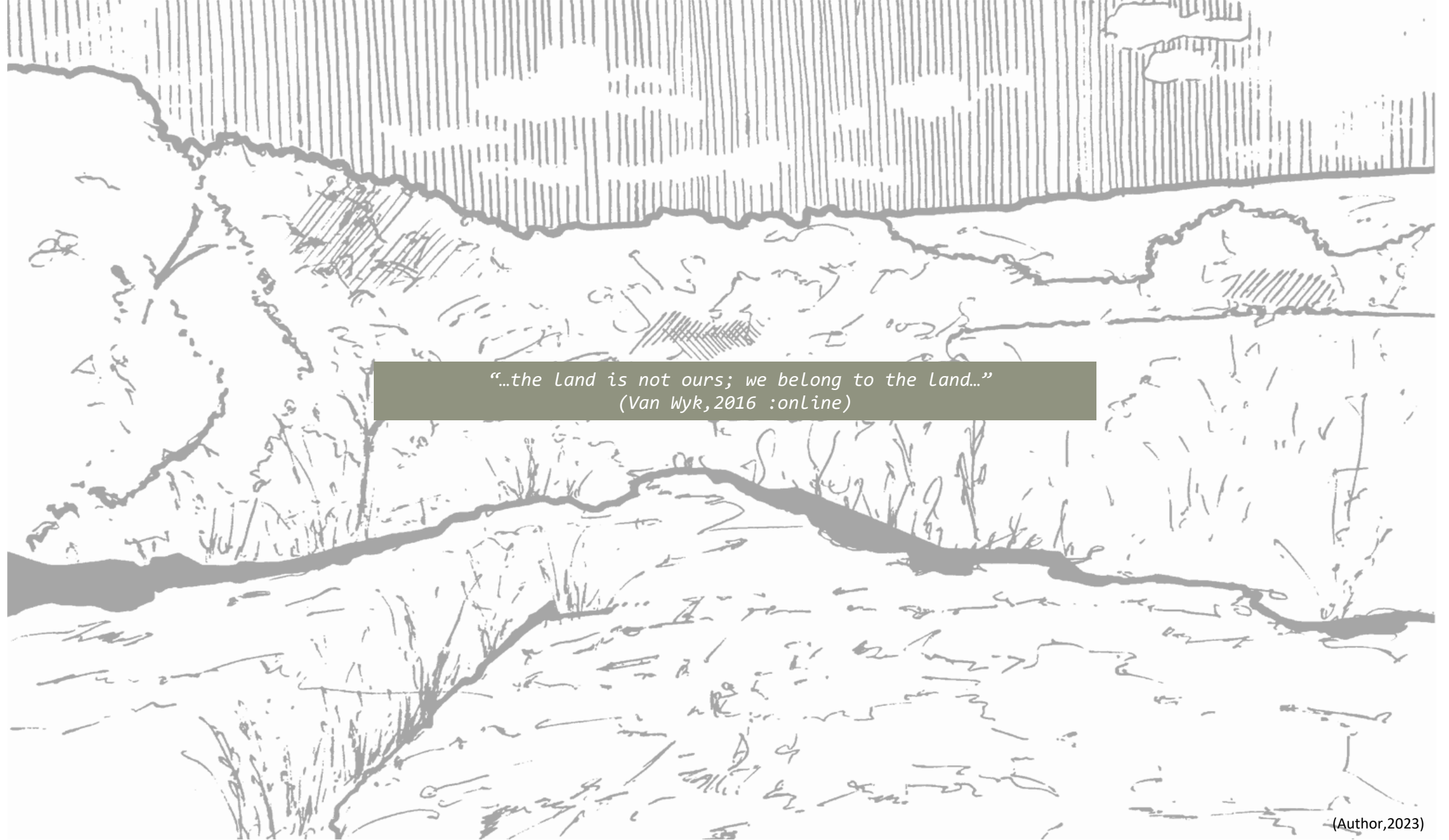




02

The Setting

Site investigations



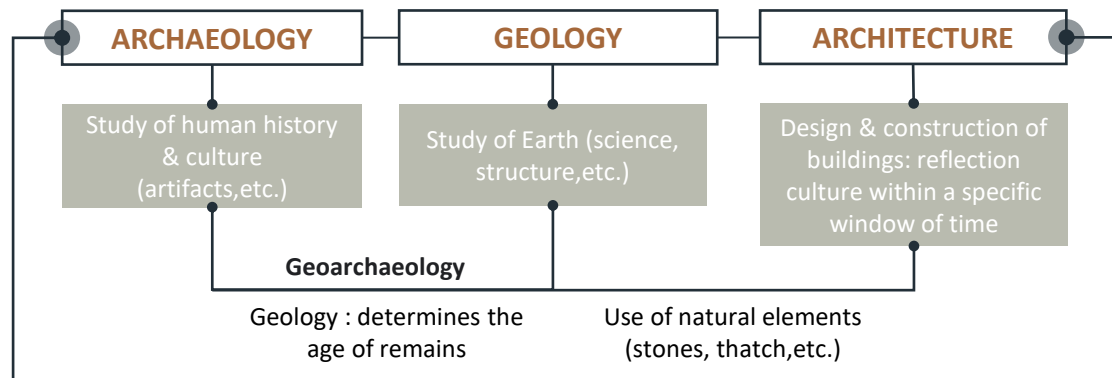
"...the Land is not ours; we belong to the Land..."
(Van Wyk, 2016 :online)

(Author, 2023)

2.1 FOREWORD

South Africa is one of the few places on Earth with an extensive geological and archaeological history that dates back millions of years. The construction of the geological profiles visible today was influenced by several processes, including the shift of tectonic plates, glacier movements, volcanic eruptions, and the deposition of gravel through water erosion (Joburg.org.za,nd:online). The oldest rocks unearthed are thought to be 3600 million years old, which is significant as the earth is thought to be 4.6 billion years old. Life on Earth was traced through the Paleontological findings of dinosaurs and vegetation that date to 255 million years, while findings of human occupation were estimated to be 600, 000 years ago. These discoveries identify a specific time within the framework of the earth's existence and establish humankind's place within the world.

Approaching the project, it was essential to understand the relationship between geology, archeology, and architecture (Fig 8), as well as how its significance situates itself within the Northern Cape. In subdivisions 2.2, 2.3, and 2.4, the different site investigations revealed the natural and cultural significance of various sites. The investigations are all connected to establish a basic network that provides an understanding of how the proposed site would establish itself within the macro setting of the Northern Cape (Fig 9).



Determine place within the world by disclosing the historical narratives

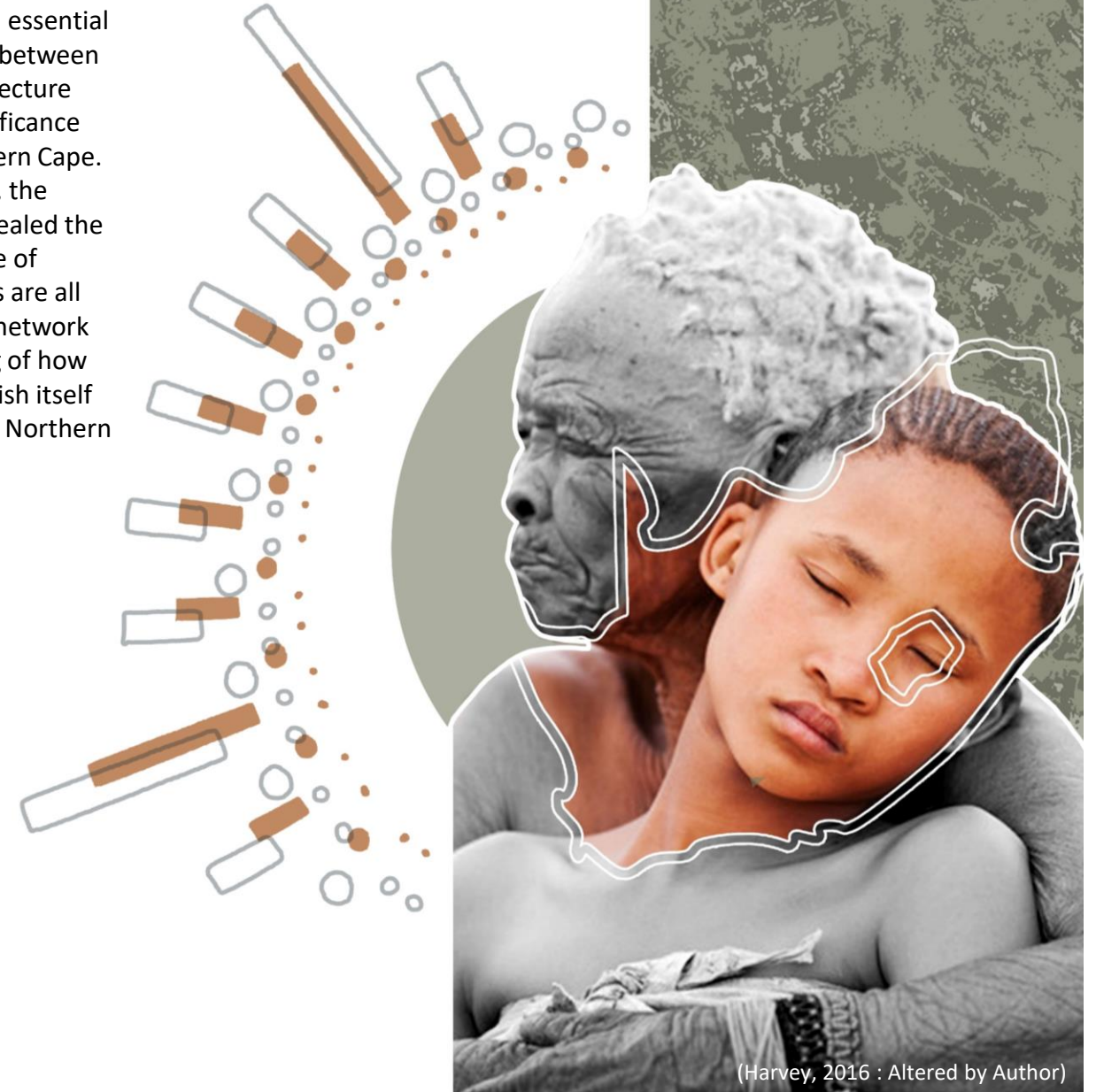


Fig 8 : The relationship between the three fields (Author,2023)

(Harvey, 2016 : Altered by Author)

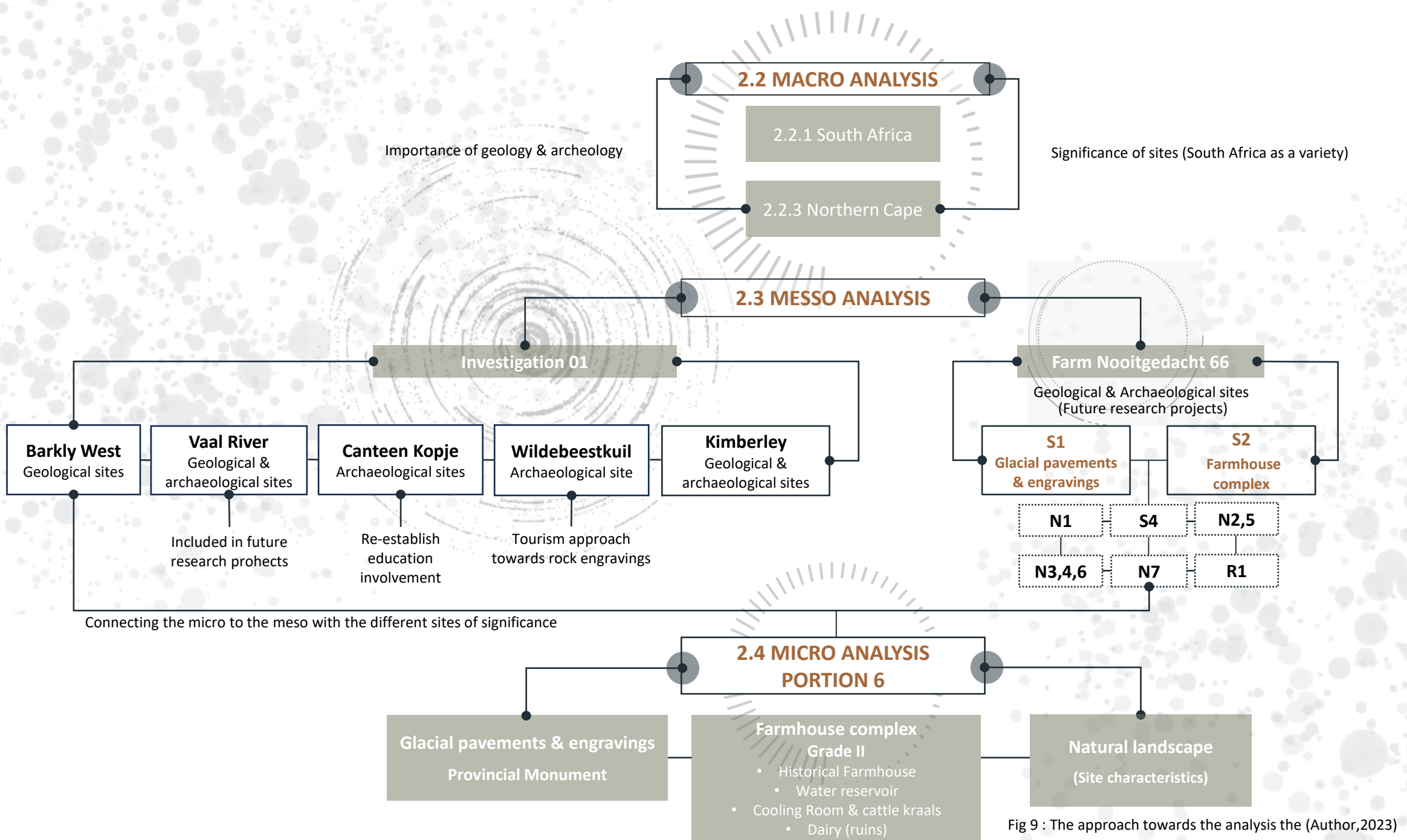
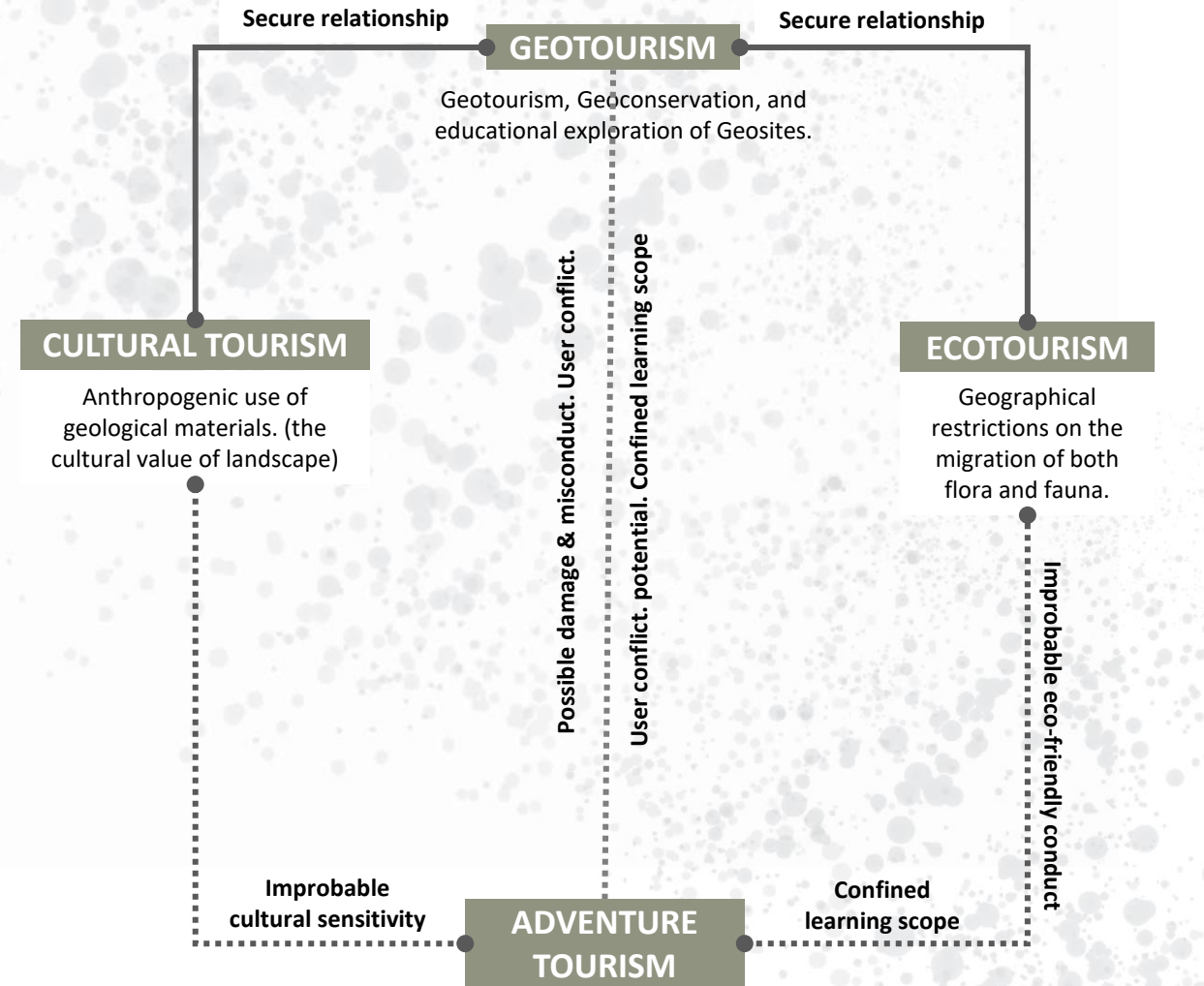


Fig 9 : The approach towards the analysis the (Author,2023)

South Africa has various Archeological and Geological sites that demonstrate how the topography and life of man and animals developed over time. The diagrams in subdivision 2.2.2 clearly demonstrate how different the sites are from one another, making it significant in the way we place ourselves within the world. It is unfortunate, however, that most of the sites are damaged over time, either by natural occurrences or by man. In order to understand an architectural approach to natural and cultural heritage sites, it is, therefore, necessary to understand how the systems within South African Geo Tourism work, along with the important sectors of the Northern Cape, and how it can possibly develop in the future.

2.2.1 Geo Tourism

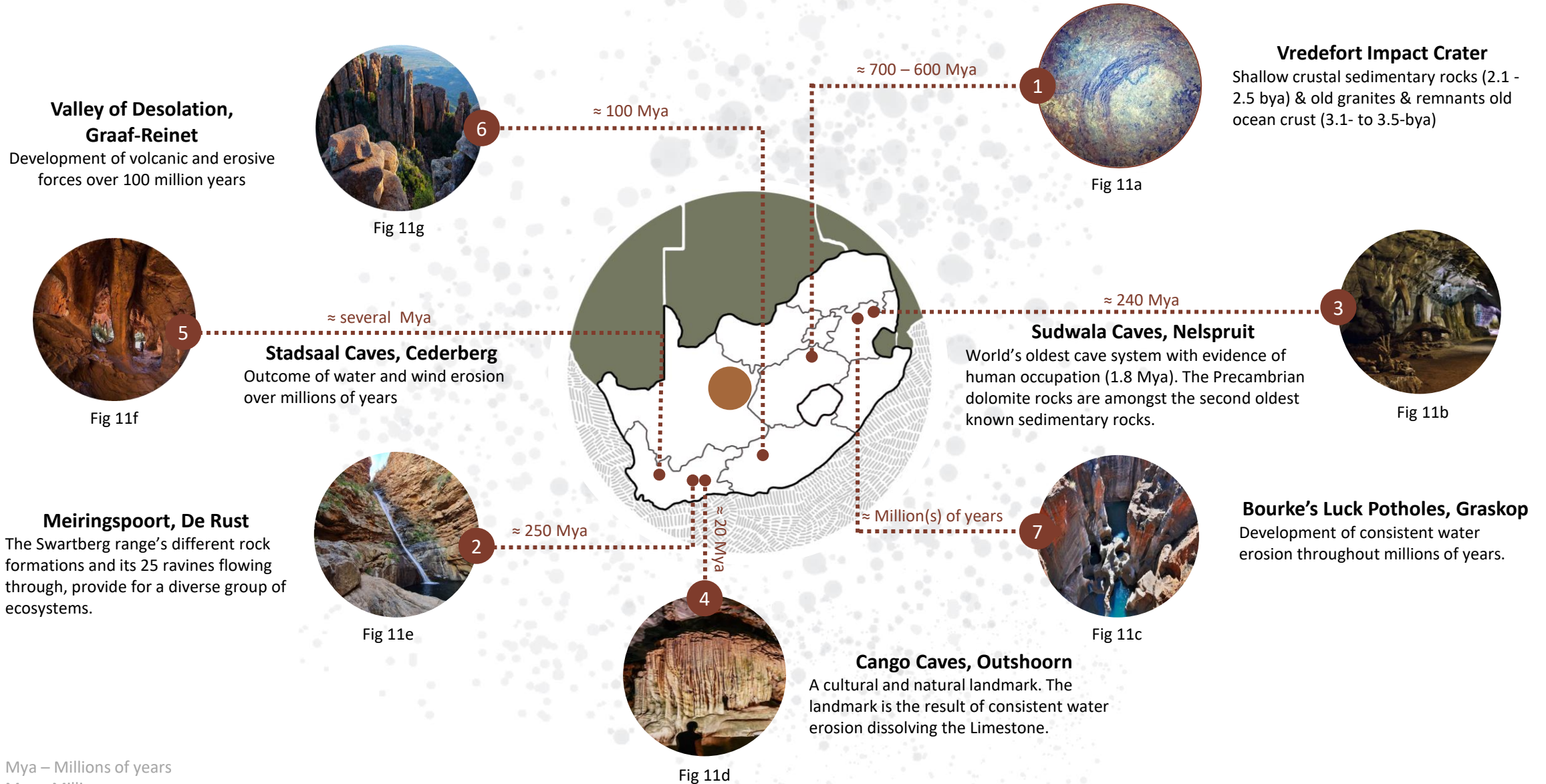
There are various tourism divisions with their own respective objectives and functions (fig). Geotourism, however, is within the South African context, still in the early research stages but still aims to find objectives that would create a sustainable foundation for the historical significance of a site (Leonard, Matshusa, Thomas, 2021:online). The authors of the article *Challenges of Geotourism in South Africa: A Case Study of the Kruger National Park* (2021:online) claim that prior research has indicated that the challenge of this tourism typology is the lack of authoritative and communal involvement. Moreover, the natural and cultural heritage sites are protected by *The National Heritage Resources Act* (NHRA), Act No. 25 of 1999, but are facing legislation complications, lack of management, and staff shortages that can prevent regional growth. The result of these challenges often leads to sites being damaged or demolished by either natural occurrences or development schemes.



The geomorphology and scenery serve as the setting for extreme sports like rock climbing.

Fig 10 : The relationship of geotourism with other forms of tourism (Dowling, 2013: Altered by Author)

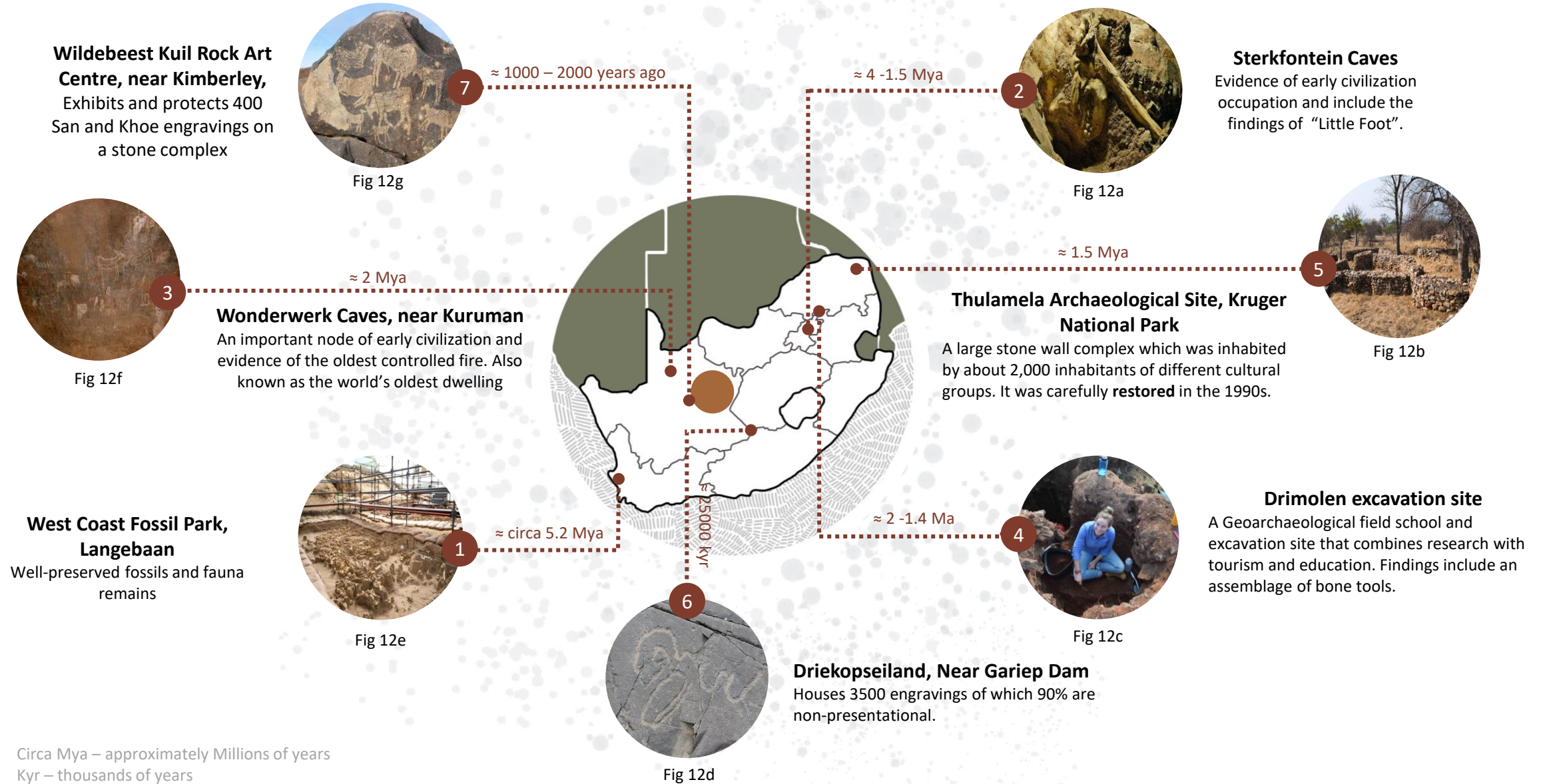
2.2.2 GEOLOGICAL SITES, SOUTH AFRICA



Mya – Millions of years
 Myr – Million years
 Kyr – thousands of years

(Author,2023)

2.2.2 ARCHAEOLOGICAL SITES, SOUTH AFRICA



Circa Mya – approximately Millions of years

Kyr – thousands of years

Little Foot – a complete skeleton discovered between 1994 and 1998, dating back to 3.6 mya

(Author,2023)

2.2.3 THE NORTHERN CAPE

The Northern Cape is one of South Africa's nine provinces and is situated against the borders of Botswana, Namibia, and the southern side of the Orange River. This vast arid land covers approximately a third of South Africa's total land area (gov. z, nd: online). The province is further divided into six geographical regions: the Namaqualand, Northwest, Lower Orange, Kalahari, Diamond Fields, and Upper Karoo (Fig 13a). Following the historical occurrences and various sector developments, Kimberley has established itself as the capital city of the Northern Cape. The region is connected through a secure road network and small airports (southafricainfo.co.za, nd: online) which allows for the provincial's economic growth.

The economy mostly depends on the mining sector, but also benefits from tourism and manufacturing enterprises and exports as illustrated in Fig 14a. This zone falls under the Nama-Karoo Biome and is characterized as having minimal rainfall with hot summers and cold winters.

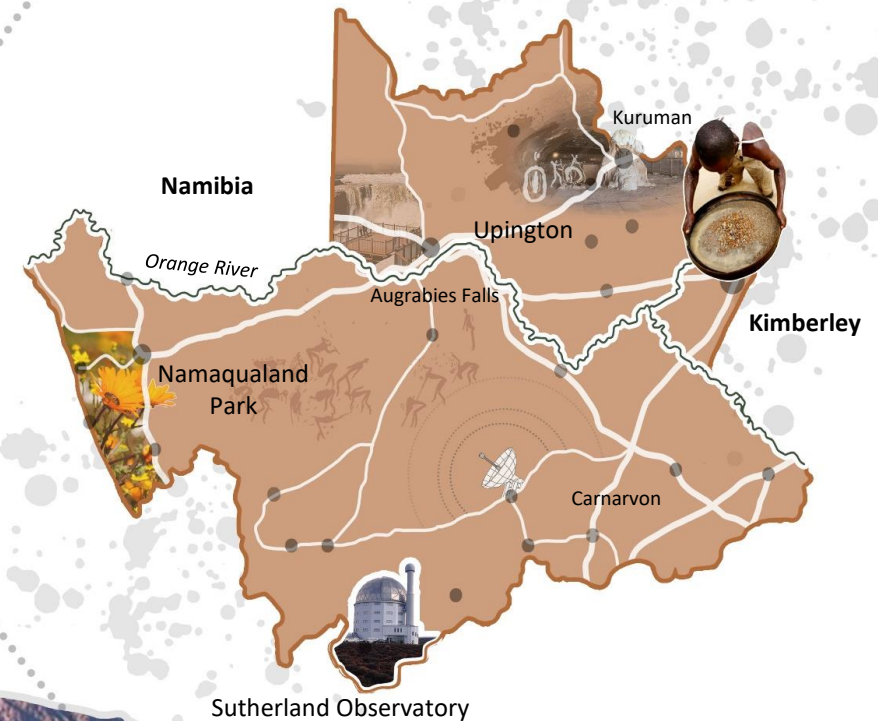


Fig 13a: Important nodes within the Northern Cape (Author, 2023)
Fig 13b (unserekleinemaus, 2014 : Altered by Author)

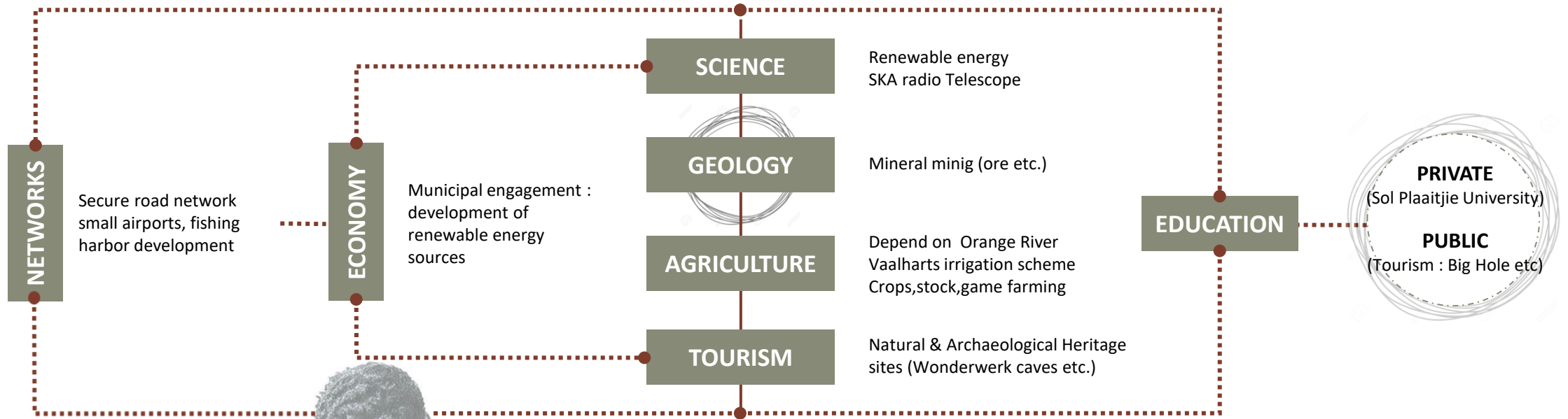


Fig 14a: The relationship between the important sectors of the Northern Cape (Author, 2023)



Fig 14b(unserekleinemas, 2014 : Altered by Author)

2.2.4 Populace

Despite taking up almost a third of the country's land area (372,889 square kilometers, 30.5%), the Northern Cape has the smallest population, with just over 2% of the national total (Alexander, 2023: online). Groups found within the Northern Cape include black, colored, and white communities, who mostly speak Afrikaans (53.8%) and Setswana (33.1%). Many of the colored communities are descendants of the early indigenous groups of the Khoikhoi and San (indigenoustravel.com, 2023:online). Within contemporary South Africa, the remaining native groups are thought to make up about 1% of the region's total population of 59 million people. Often confused as one ethnic group, the Khoi-San has various communities that are distinguished by different languages and cultural practices. According to McQuillan's article *South Africa's Language Spoken in 45 'Clicks'* (2021:online), there are between 120,000 and 140,000 San living in southern Africa, of which approximately 30,000 live in South Africa.

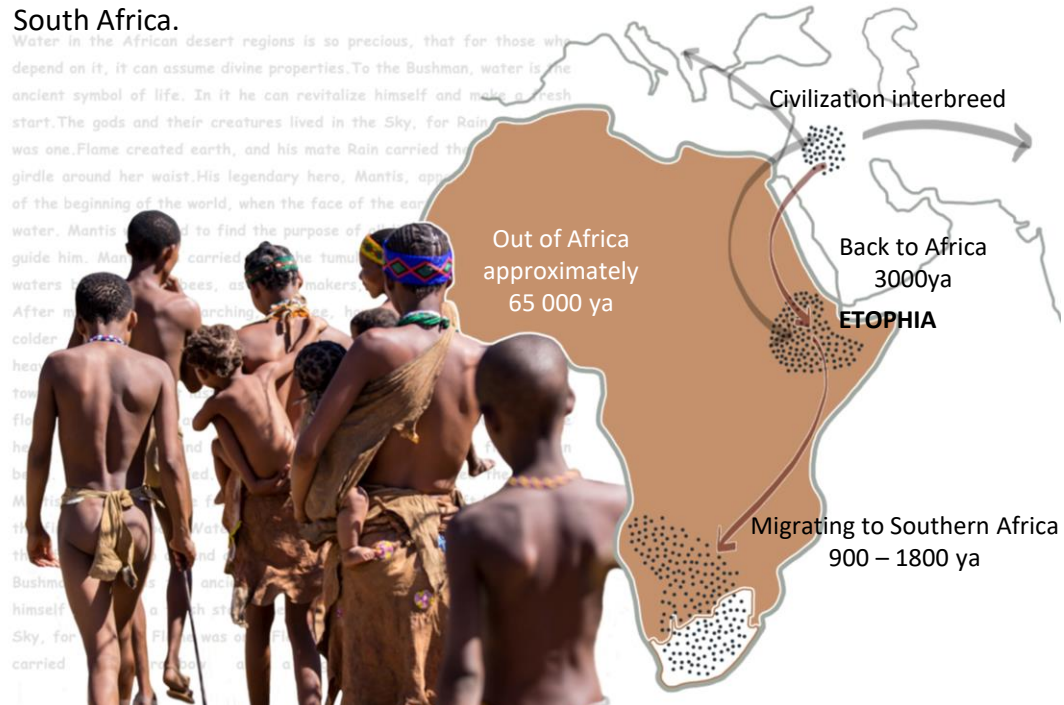


Fig 15a: Migration patterns of the KhoiSan based on a gene study by Harvard University (2014: Altered by Author)

The main groups identified within South Africa are (indigenoustravel.com, 2023:online) :

1. The Khomani San (Kalahari region)
2. **The Khwe and !Xun** (Platfontein, Kimberley)
3. **The Khoikhoi & Nama** (Northern Cape)
4. **The Koranna** (Kimberley and the Free State)
5. The Griqua (Western Cape, Eastern Cape, Free State)
6. The Cape Khoekhoe (Western Cape, Eastern Cape, Gauteng, and the Free State province)



Fig 15b: The Khwe (Reporter, 2020:online)

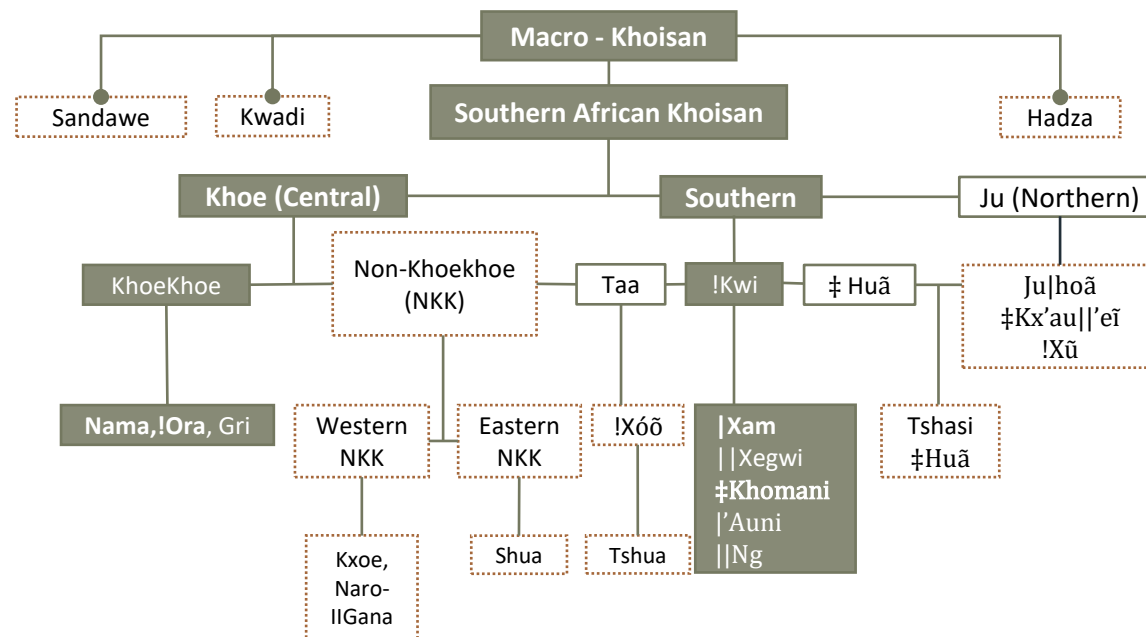


Fig 15c : Classification of KhoiSan Groups within Africa (britannica.com, 2006 : Altered by Author)

2.2.5 The Stone : a Poetic Device

The Northern Cape region has a remarkable geological, archaeological, and paleontological history that dates to 2.7 bya (Almond, Pether, 2009: online). According to the region's previous premier, Dipicio(2001:online), this is the place where mankind grew up in. Archeological evidence of human habitation and the use of stone tools led researchers to the conclusion that early civilization cultures such as the Pebble and Axe groups had colonized the area before the San and Khoekhoe communities.

The typology of stones played a major role in the movement and migration of these groups, as only specific stones could be used to create weapons, tools, and art. The art was mostly part of rituals where they used a 'pecking technique' to carve out their visions or journeys through the spiritual world. The sites of these rituals are scattered over the Northern Cape region, having 93 of the 15000 painting or engraving sites recorded in South Africa (Morris, nd: online).

In the 1820s the use of stone developed into structural elements within the white Corbelled Houses, built by early settlers. The stone has become a poetic device as it was initially used for daily implements, then developed into weapons, tools for art, and eventually part of architecture.

Bya – Billions of years ago

Pecking Technique – A method used to shape stones or to create stone engravings by chipping the surface away (stonetoolsmuseum.com, nd:online)



Fig 16 : The stone : a poetic device (homefoodandtravel.co, 2022: Altered by Author)

2.3 MESSO ANALYSIS

The Messo Analysis is a lengthy analysis that includes two investigations concerning the region surrounding the farm Nooitgedacht and the farm itself. This method of research was essential in understanding how the project of a Geoarchaeological Field Station and Research center in portion six, would interact with the surrounding context. The site falls within the center of a context with many geological and archeological sites of significance that would enrich the educational experience of students and researchers. Investigation one focuses on the geoarchaeological significance of the sites surrounding the farm, such as Barkly West, Canteen Kopje, and Kimberley (see fig). Investigation 02, however, describes farm Nooitgedacht's 66 sites of scientific and cultural significance. The establishment of contextual relationships is essential as it would not only enrich an educational experience but would also place new emphasis on the integration between education and natural heritage.

INVESTIGATION 01

2.3.1 Barkly West

Barkly West (1870), previously known as Klipdrift, was initially a diamond mining settlement (1869) that gradually developed into a town. Early mining activities have revealed numerous geoarchaeological discoveries, such as Stone Age implements and soil deposits. Other heritage sites within the town include the Dutch Reformed Church (1906), the Old Magistrate Court (1897), and the St Mary's Church (1869). The town continues to adhere to historical customs such as permitting diamond evaluations and negotiations between the diamond buyer and seller (showme. co. za, 2012). Local communities are further connected through the surrounding interconnected dairy farms and guesthouses. Future developments of the town include a proposed Waterfront infrastructure and park as illustrated in Fig 18a.

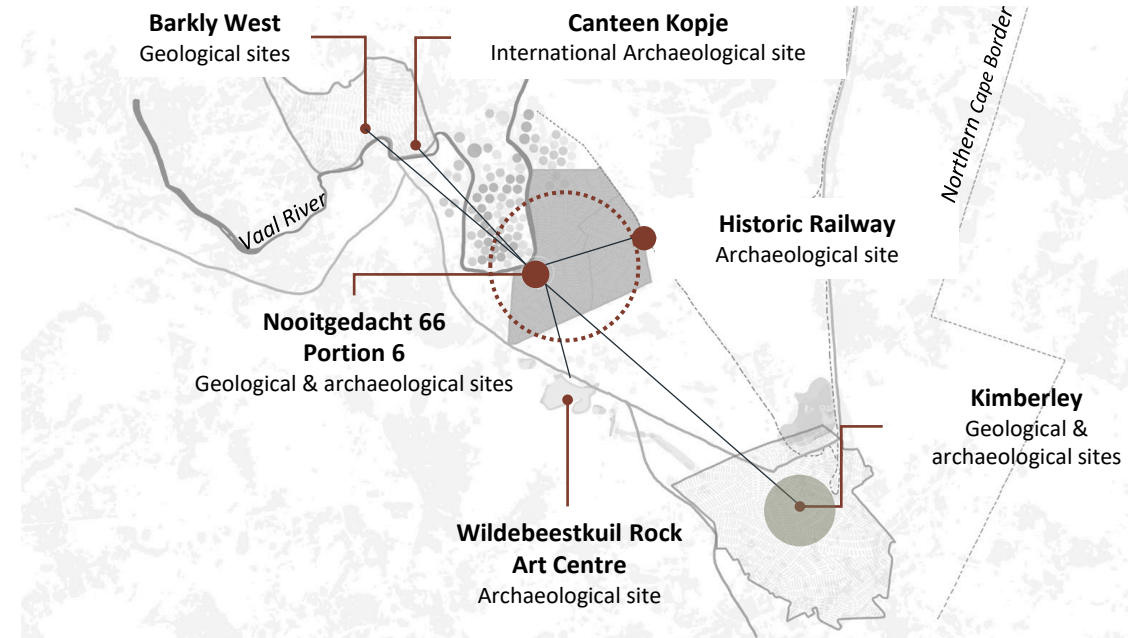


Fig 17 : Contextual Mapping (Author,2023)



Fig 18a : Proposed Promethean Waterfront Infrastructure (Naidoo,2023 :online)



Fig 18b : Manual diamond digging within the region (barklywest.co.za, nd:online)

2.3.2 The Vaal River

The Vaal and Orange Rivers might be thought of as the golden thread that binds the historical events within the Northern Cape. These two valleys had a major role in the movement of the Dwyka glaciers, around 200 million years ago. The processes of erosion and various climate cycles revealed evidence of early human occupation within the region. According to Power (p, 1949), the Vaal River valley area is *"South Africa's oldest center of prehistoric habitation [that] corresponds with the dawn of human culture [in the] matter of a million years."* The discovered artifacts suggested that the various groups, such as the Pebble and Axe cultures, the San, and KhoiKhio migrated alongside the river.

Of the approximately 50 species of fauna discovered, 20 of them still exist today. The Vaal River, however, remains relevant to archeological and geological researchers as a long-term study financed by the Quaternary Research Association and the Rust Family Foundation began in 2017. Using modern research methods, the project aims to excavate the fossil-bearing section of the lower Vaal River. Future research within the project includes that of the farm Pniel 281 and the Pleistocene archaeological sites on the farm Nooitgedacht 66.

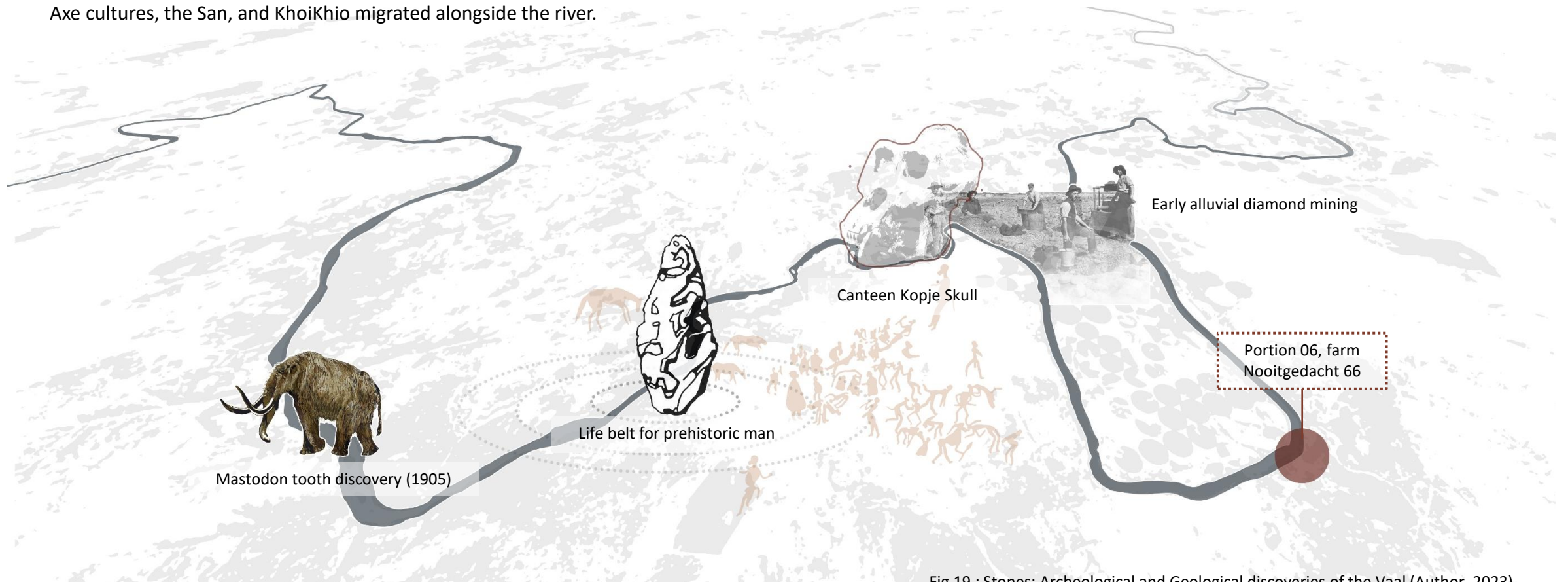


Fig 19 : Stones: Archeological and Geological discoveries of the Vaal (Author, 2023)



2.3.3 The Canteen Kopje

The **Canteen Kopje** is an important archaeological site and is situated just a stone's throw away from the town of Barkly West. The site yields significant archaeological significance through its 1500-year-old Stone Age deposits and the 1929 discovery of the 10,000-year-old Canteen Copje Skull. It was evident that the region was once extensively occupied by the Stellenbosch culture (McGregor, 1949). From 1869 through 1927, the Kopje was one of the first locations for alluvial diamond mining and camping.



Fig 20a-c : Canteen Kopje skull (Smith· Nshimirimana · de Beer· David Morris· Jacobson· Chazan· Horwitz, 2012:online)

Even after the declaration of the site as a National Monument (1948), illegal mining still proceeds, which can potentially harm archaeological evidence. In 2016 the site was declared as one of the top endangered heritage sites in South Africa. To give students an educational experience, Sol Plaatje University, in partnership with the University of Toronto and the McGregor Museum, launched a Field School close to the site in 2015. However, no additional information was available on whether the field school is still operational.



2.3.4 Wildebeestkuil San Rock Art

The Wildebeestkuil San Rock Art Center protects 400 San and Khoe petroglyphs, aged between 1000 and 2000 years. The petroglyphs were created through a “pecking” technique, where a tapered stone was used to carve the images. The contrasting colors of the engraved stone were short-lived, as the weathering ecological process allowed the images to fade into the hue of the stone's exterior crust. The stones remain in their original position within the landscape. As of today, the center has been closed but the site and surrounding landscape are occupied by the Khwe San and !Xuan groups.



Fig 21 : One of the many engraved stones (McGregor Museum, nd:online)



2.3.5 Railway

During the time of the diamond rush, the railway line was established in 1885, connecting Kimberley with Cape Town. Following the discovery of minerals and mining development, the line was extended to more regions such as Barkley West (1922-1930), Port Elizabeth, Johannesburg, Durban, and Bloemfontein. Additionally, the transport method of the train was unfortunately responsible for the spread of the 1918 Spanish Influenza Epidemic. The railway system is still used today as a deluxe tourist experience.



Fig 22 : Train rails at the Kimberley train station (www.dfa.co.za,2020:online)



2.3.6 Kimberley

The Northern Cape's capital was previously known as Voortuitzigt and New Rush but was officially declared Kimberley in 1873. As of today, the city serves as part of the agriculture and mining sector within the Northern Cape (wikiwand.com,nd: online). However, before Kimberley was an African Babylon, it was the dwelling place of early Stone Age people, the San communities, and the Tswana groups. The discoveries of diamonds (1869) within the region have intertwined a series of historical events, such as The Big Hole, that created the city.

it was the dwelling place of the early Stone Age people, the San communities, and the Tswana groups during the pre-colonial era

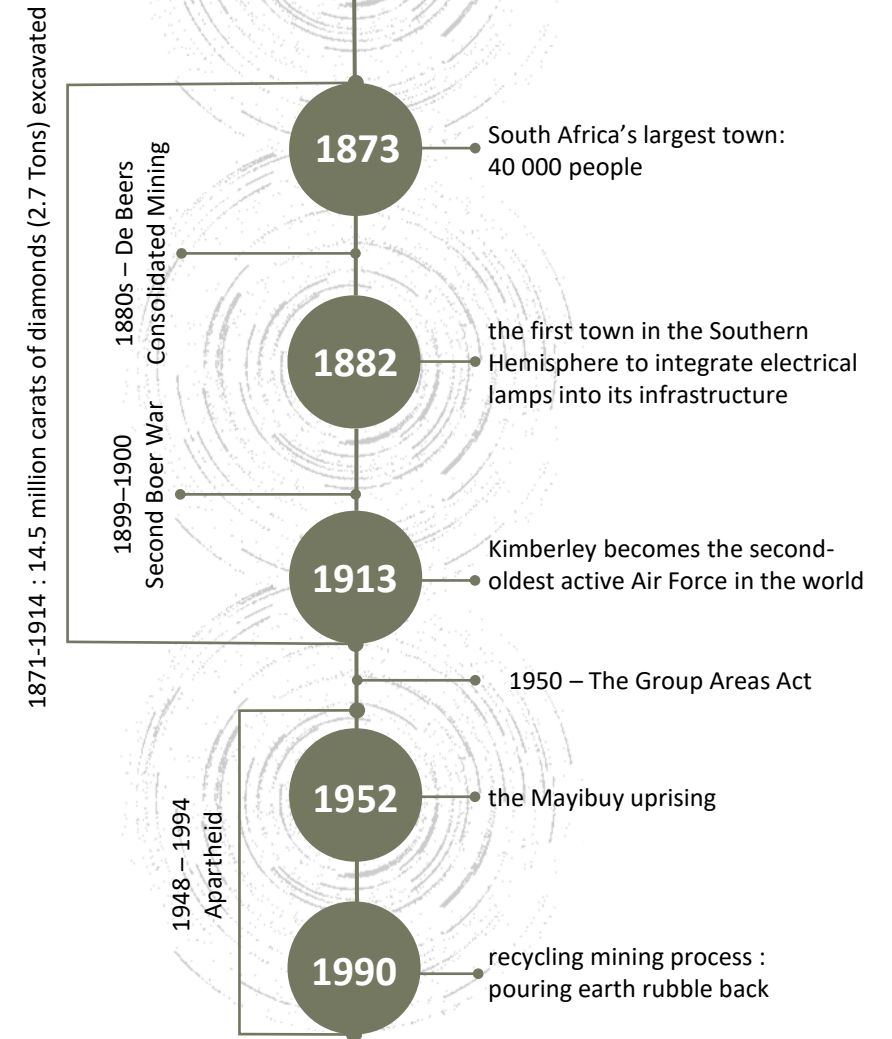


Fig 23 : Timeline of Kimberley's historical occurrences (Author,2023)

2.3.8 The Architecture of Investigation 01

As the site is located within a remote area with no concrete architectural influences, it was important to understand and acknowledge the type of architectural language surrounding the site and how it could possibly influence the design process. The architecture included within this section is of the Kimberley and the Barkley West region which surrounds the site. This analysis briefly focuses on the identity of the structures, how they identify themselves within the region using natural materials, and the relationship between the Western and regional design approaches (Fig 24a-f).

Historical Steel Bridge (1884)

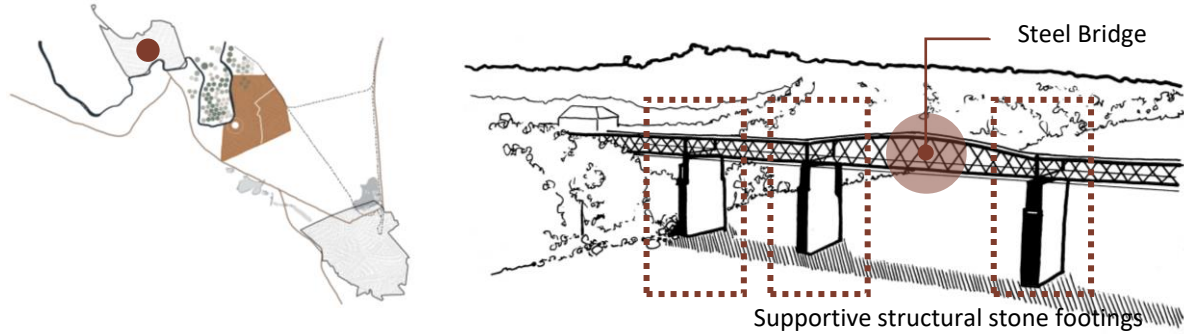


Fig 24a (Author,2023)

St Mary The Virgin Anglican Parish Church (1869)

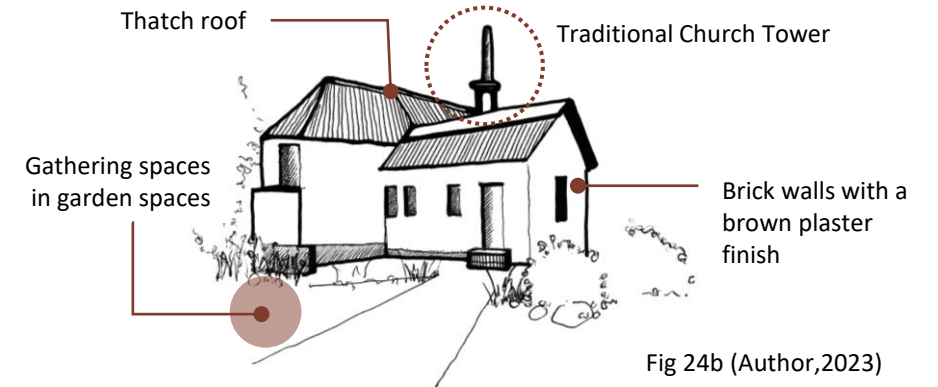


Fig 24b (Author,2023)

Wildebess Kuil Rock Art Centre (2001)



Fig 24c: Entrance to the Centre (Author,2023)



Fig 24d: Interaction between visitor and heritage (Author,2023)

Timber walkway connecting engraved stones



Fig 24c : Structural integration with cultural heritage (Author,2023)

It's remarkable to see how Kimberley's architecture has changed over time, going from early civilization homes to Victorian-era structures. As was noted in 2.3.7, Kimberley served as a node that linked numerous cultures from all over the world, which resulted in structures being erected that reflect a certain historical period, such as the Honoured Dead Memorial (Fig 24d). Contemporary architecture within the region focuses on reflecting the narratives of the various cultures, such as the Northern Cape Legislature Building (Fig 24f), and that of the mining history (Fig 24e). The Sol Plaatjie University aimed to link the two main narratives of the cultures and of the mining by designing a complex of heavy massing, decorated in some spaces with bright mosaic patterns.

The Honoured Dead memorial (1904)



Provincial heritage site pays homage to soldiers lost in the Anglo-Boer War (designed by Sir Herbert Baker)

Inspiration : Greek temple (sculpted friezes) on a base

Sandstone

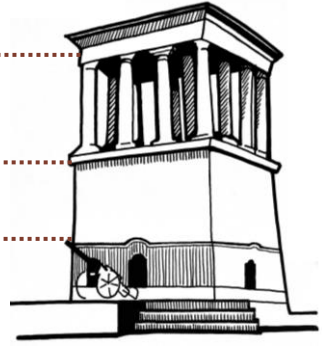


Fig 24d : (Author,2023)

The Northern Cape Legislature Building (2008)

Architectural landmark

respond to the historical, and cultural narratives of the region

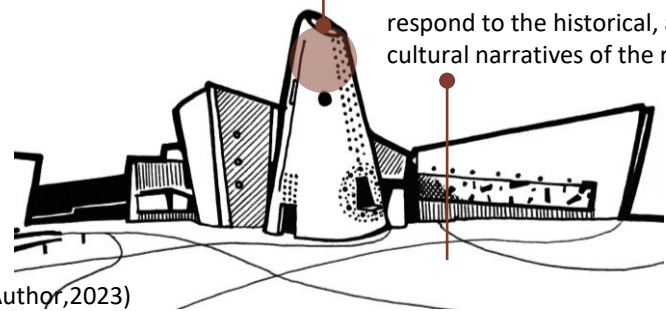


Fig 24f : (Author,2023)

Sol Plaatjie University (2014)

Contrast between heavy and light



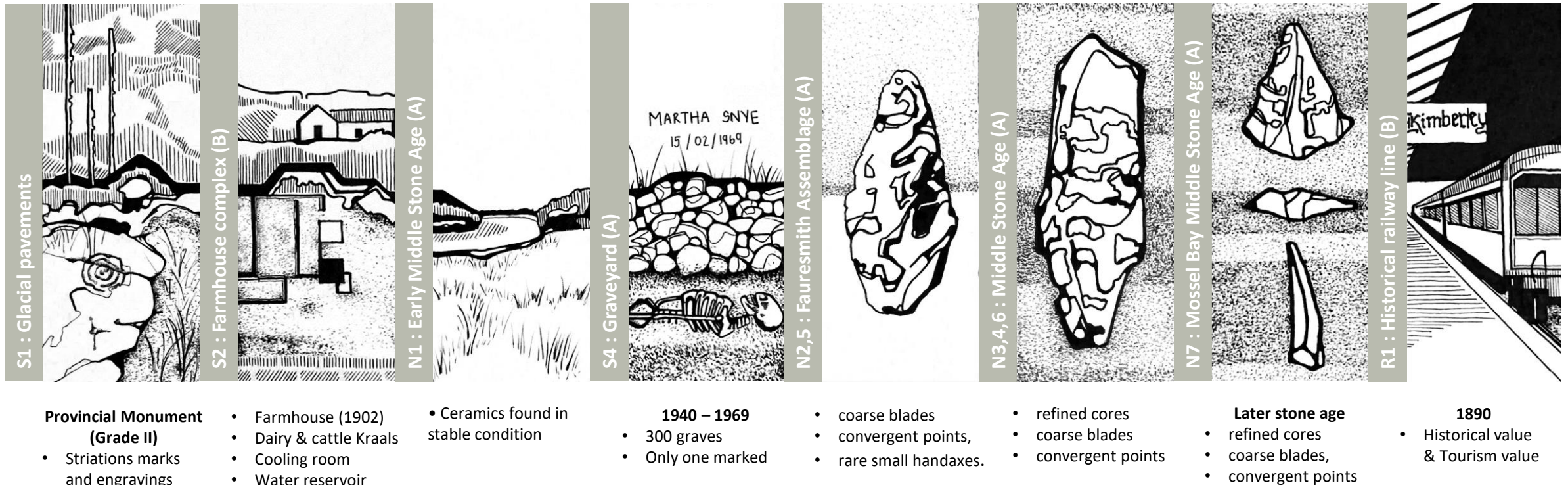
Fig 24e : (Author,2023)

responds to an existing urban & and historical design framework

2.3.9 Farm Nooitgedacht 66

The farm Nooitgedacht 66 is situated between Barkly West and Kimberley, bordering on the east bank of the Vaal River. The farm is the land property of Mr. Mike Hall but is under the jurisdiction of the Sol Plaatje – and Francis Baard District Municipality. The property is well renowned for its rich diamond mining and geoarchaeological history. On behalf of the South African Museum, Peter Beaumont and Louis Albert Peringuey conducted excavations in 1911 that uncovered further archeological evidence, such as Stone Age relics. As of today, the land of the farm is utilized for agricultural purposes, such as the distribution of livestock grazing.

The farm has identified and recorded various heritage sites as illustrated in fig 36. The Heritage Impact Assessment (2017) completed by Mr. Coetzee found that these sites have aesthetic, scientific, and social aspects that are treasured by cultural groups and have the potential to reveal information about South Africa’s natural and cultural heritage. The sites fall under the protection of the *National Heritage Resources Act (Act No. 25 of 1999, Section 34 -36)*, and have been graded according to their historical significance, ranging from high (A) to medium (B) significance as on the drawings presented in fig 25 .



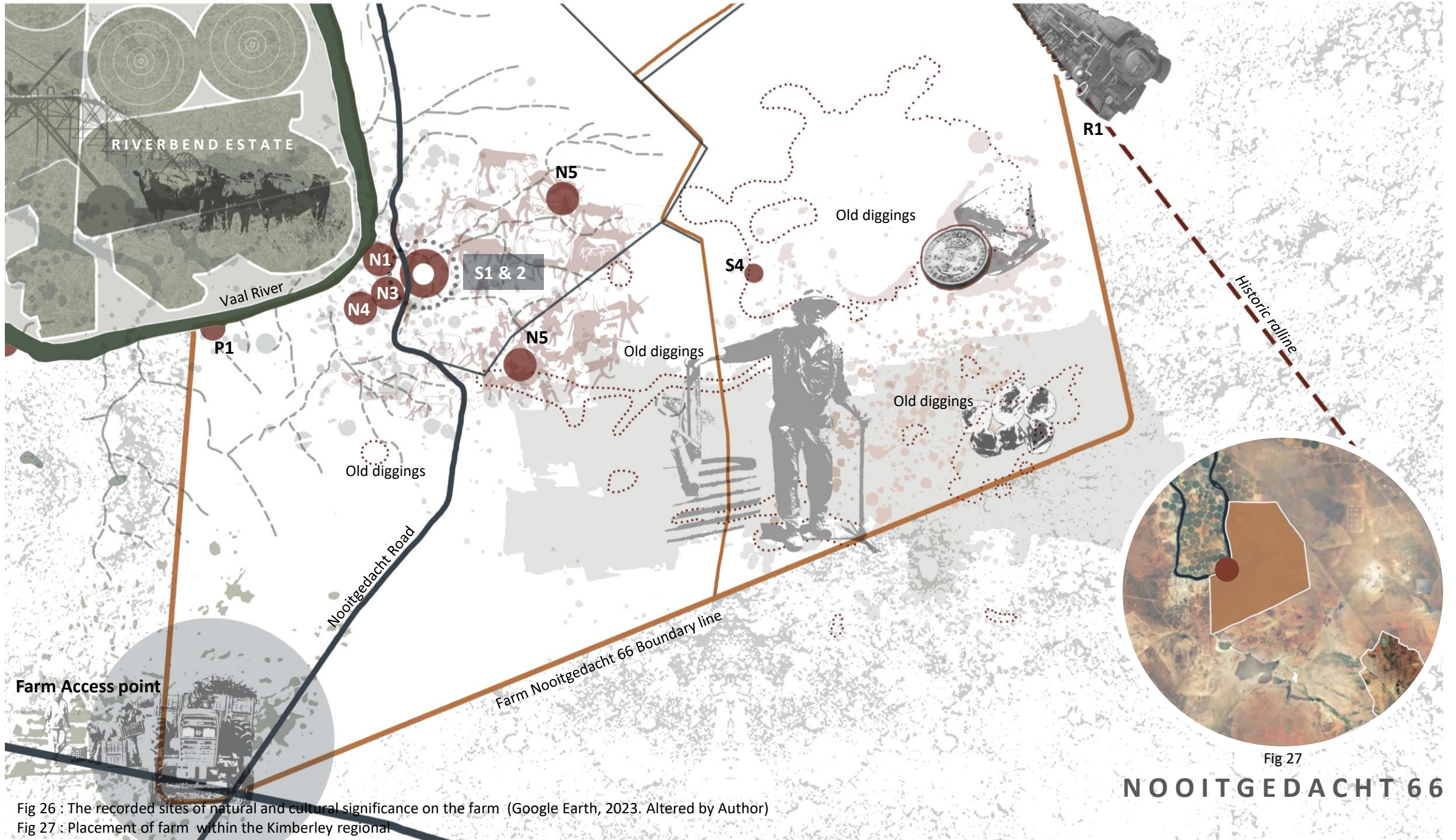


Fig 26 : The recorded sites of natural and cultural significance on the farm (Google Earth, 2023. Altered by Author)

Fig 27 : Placement of farm within the Kimberley regional

Fig 27
NOOITGEDACHT 66

2.4 MICRO ANALYSIS

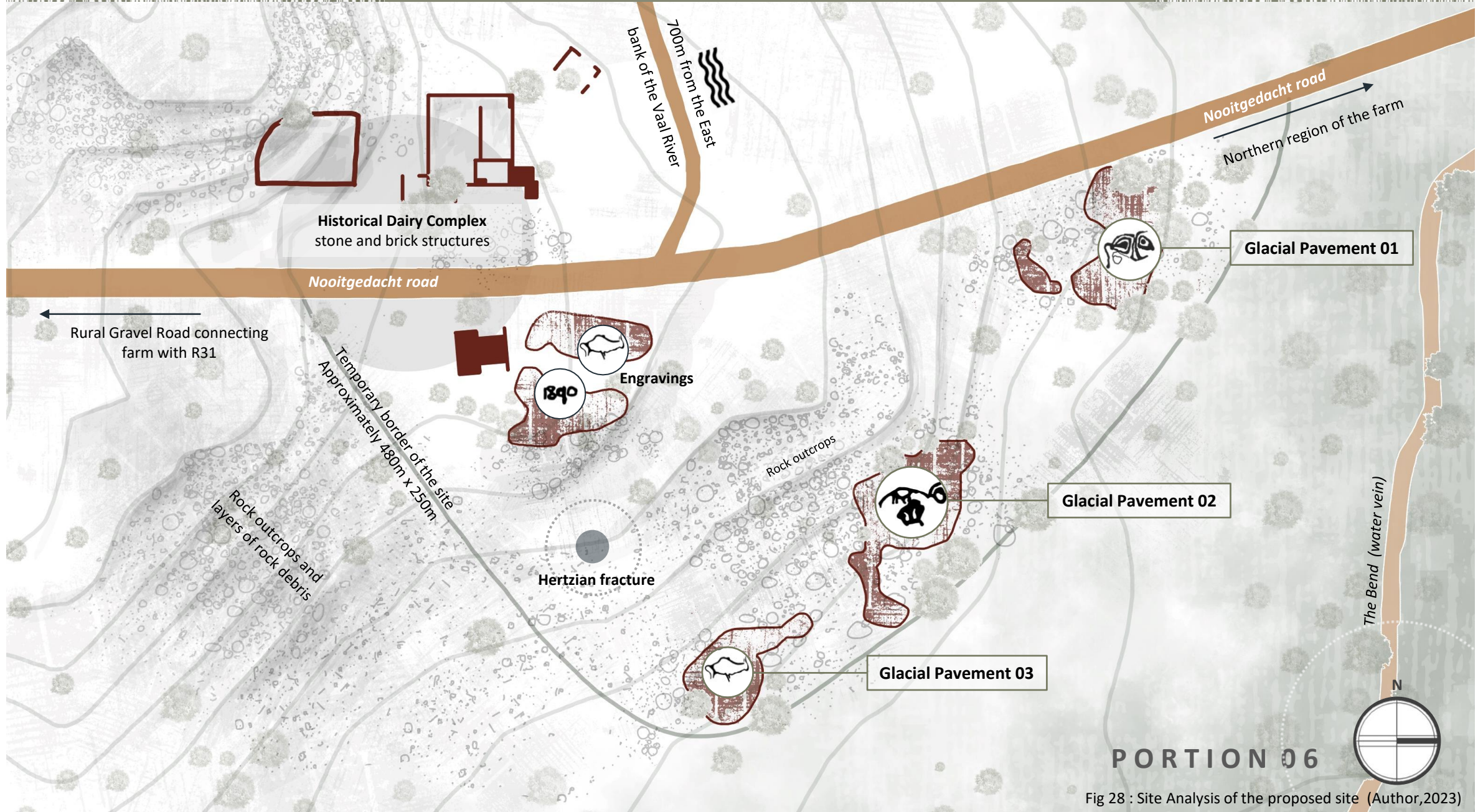


Fig 28 : Site Analysis of the proposed site (Author,2023)

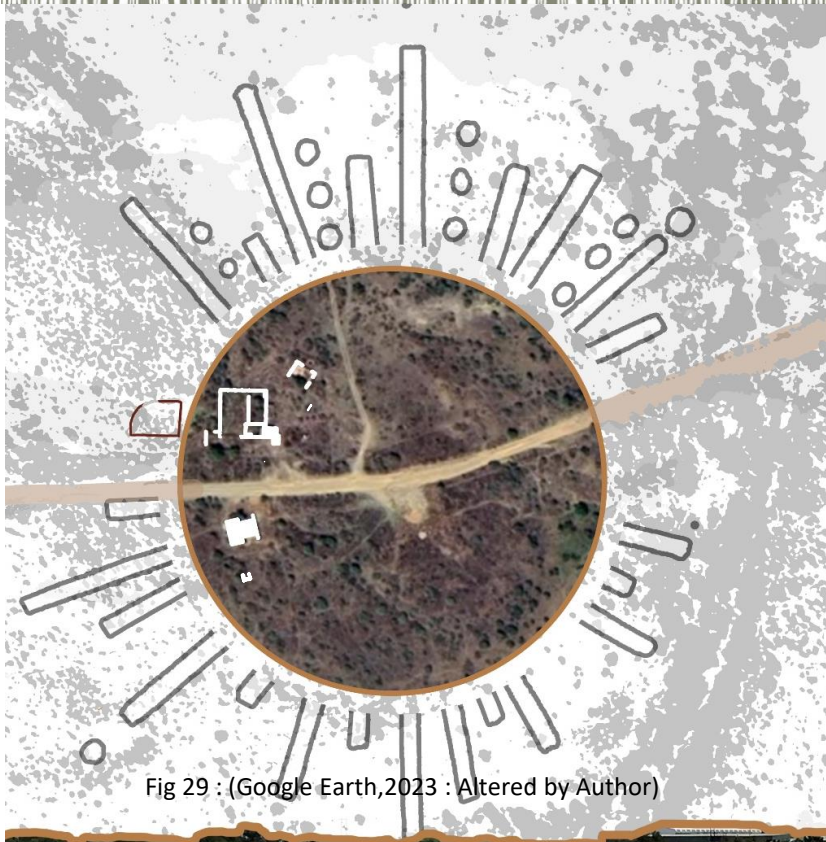


Fig 29 : (Google Earth,2023 : Altered by Author)

2.4.1 Approaching the site

The site, known as Portion Six, is situated 700m from the Vaal River's east bank and is easily reachable by a 6km gravel road that connects to the R31 paved road between Kimberley and Barkly West. The language of the semi-arid landscape is revealed throughout the journey to the site. The green-covered undulating hills define the surrounding topography and stretch toward the Northern region of the farm. The historical farmhouse complex and the recently added spanned metal fence are the only elements that initiate the location of the site. The topography of the site conceals the glacial pavements from the road, making it easy to miss this site of significance. The fence serves as a minimal security measure for the site as the two entry and exit points remain unlocked. Portion six has identified the two heritage sites, the Glacial pavements and of the historical farmhouse complex (Coetzee,2017:online). In subdivisions 2.4.2 and 2.4.3 the sites' historical significance is revealed and established their place within the site's historical framework of the site. (Coetzee,2017:online).



(Author, 2023)

2.4.2 Site 01: Glacial Pavements and engravings (SAHRA No. 9/2/049/0105)

The Glacial Pavements

This site is declared a provincial monument (grade 2) and is considered to have a high field rating significance based on its several Permo-carboniferous periods glacial pavements and later stone age engravings. The striation marks on the glacial pavements are significant as they captured the movement of the glacial movement over the South African content 300 mya. There are three glacial pavements on the site (fig 41-43), each with its own set of engravings and Hertzian fractures. The site was, however, initially a declared national monument on 18 January 1956, but has been reevaluated according to additional legislation of the NHRA ACT No. 25 of 1999 (Coetzee,2017:online).

The Engravings

Carved out through a 'pecking technique', the engravings of animals and strange symbols almost appear three-dimensional on the surfaces of the pavements. It is unclear which group is responsible for these images, but research suggests that the site, connected with the engravings Wildebeestkuil and Driekopseiland, were the sacred grounds of the same groups (Coetzee,2017:online). According to Dimri's article (2022:online), the groups were possibly identified through the different styles and imagery of the engravings as illustrated in fig 30. Unfortunately, on some of the pavements, a series of 19th – 20th-century graffiti marks are also present.



Fig 30 : The 'pecking technique' used to create the engravings (Author,2023)

Hertzian Fractures

First recognized in 2007 by the researcher, Sharad Master, the Hertzian fractures have revealed additional knowledge on the movement of the glaciers. These fractures appear in a complete or incomplete circular form with a dent in the centre (Master,2007: p563). There are other glacial pavement sites in South Africa, but none has illustrated this kind of geological feature. Master noted in his article *Hertzian fractures in the sub-dwyka Nooitgedacht striated pavement, and implications for the former thickness of karoo strata near Kimberley, South Africa* (2012: online), that the pavements were further studied in 2010 and 2012, but that he hopes that his preliminary study of the site could be further researched.



Fig 31 : Glacial Pavement 01



Fig 32: Glacial Pavements 01 – 03

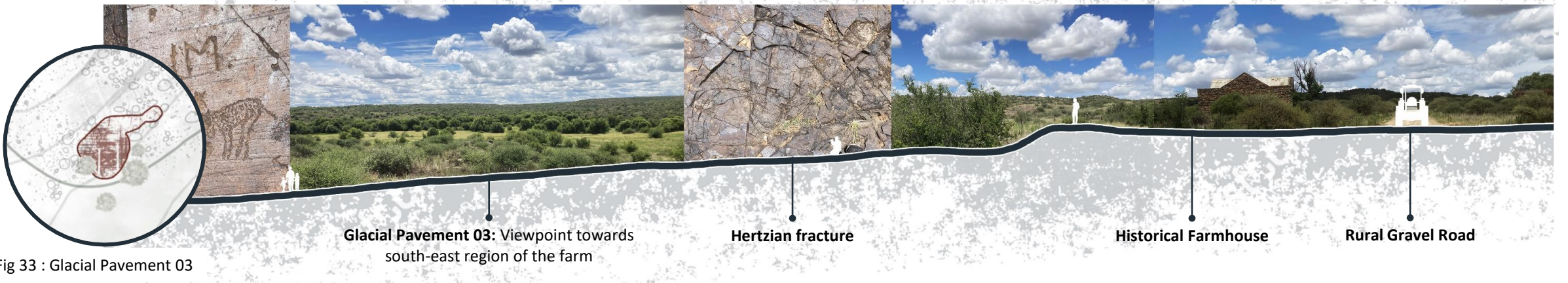


Fig 33 : Glacial Pavement 03

Fig 31-33 : The journey between the sites of significance (Author,2023)

Site 02: Historical farmhouse complex

The historical farmhouse and dairy complex has a generally protected B rating with medium significance. This series of structures on the site was erected between 1902-1910 by Mr Sachs after the Second Anglo-Boer War. According to the Heritage Impact Assessment (Coetzee,2017), this site is considered as having some scientific value :

“ It has the potential to yield information that will contribute to an understanding of South Africa’s natural and cultural heritage. It has importance to the wider understanding of the temporal change of cultural landscapes, settlement patterns, and human occupation. It is important in demonstrating the principal characteristics of a particular class of South Africa’s natural or cultural places or objects.”



(Author,2023)

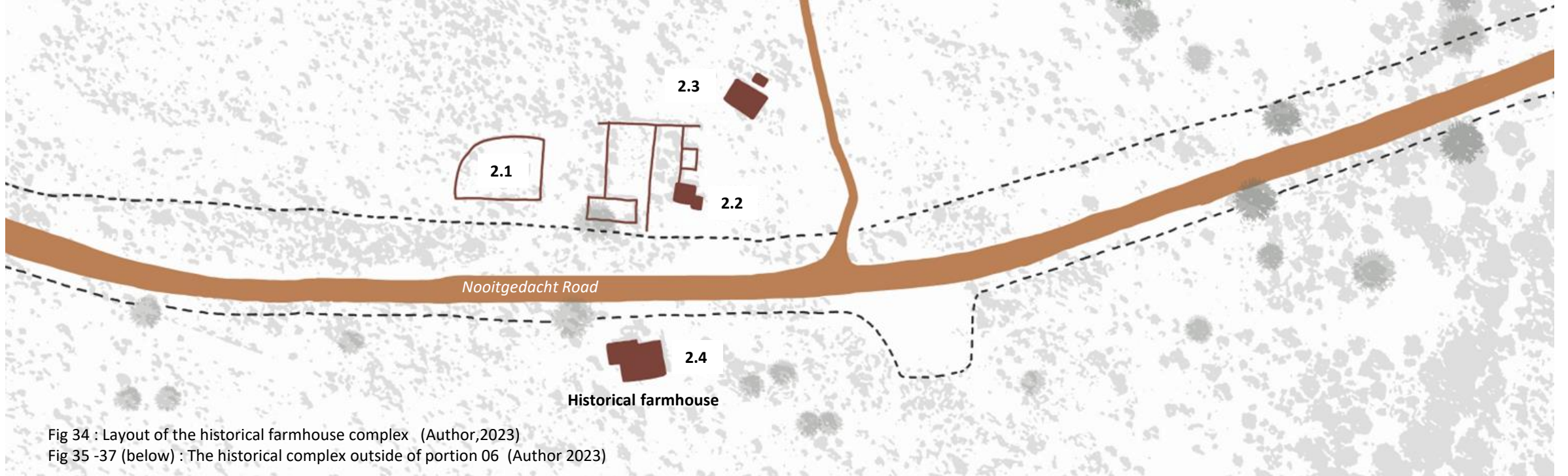
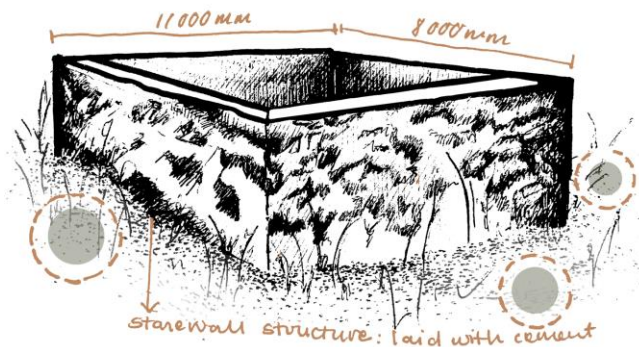


Fig 34 : Layout of the historical farmhouse complex (Author,2023)

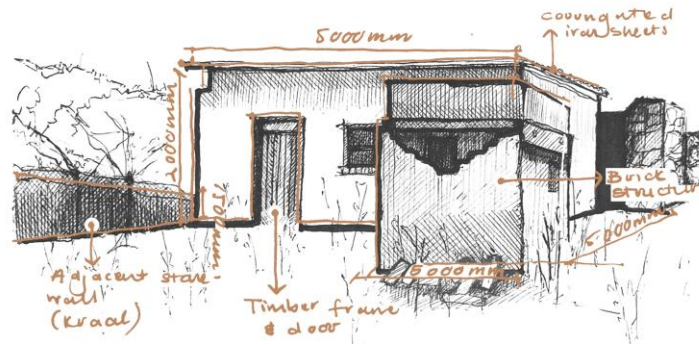
Fig 35 -37 (below) : The historical complex outside of portion 06 (Author 2023)

2.1 The Water reservoir



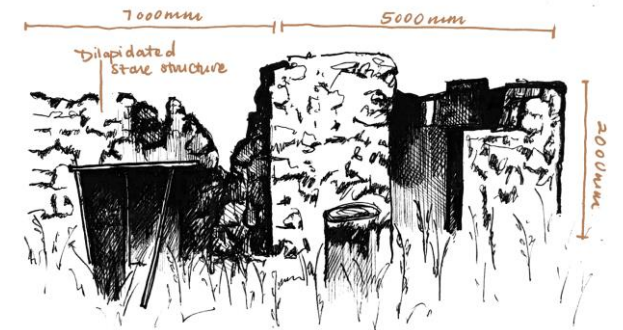
- Stonewall structure, laid with cement
- An immense midden site with documented cinder and cultural remnants (glass, whiteware, and bone fragments)
- Structure is considered stable
- 11 m x 8 m: wall height 1.2 m

2.2 The Cooling room



- Brick structures
- 5m x 5m, 2m wall height
- Water system that filters through the walls
- Structural condition: not stable
- Cattle kraals: 23 m x 22 m; 23 m x 18 m: wall height 1.5

2.3. The Dairy :



- Battered stone structure
- 5m x 7m, 2.2 m wall height
- Various stone walled kraals beside structures
- Structural condition: not stable

2.4 The Historical Farmhouse

Situated next to two engraved outcrops on the highest level of the site, is the historical thick stone wall farmhouse. According to Coetzee’s Heritage Impact Assessment (2017), the house is mostly stable. However, the house has suffered structurally in some areas, such as stones and the breakdown of walls as shown in Fig 48. The house consists of multiple rooms and is mainly entered from the west façade. Heavy stone walls are visible from an exterior point of view while the interior is painted with different colors, ranging from blue to pink. Most of the windows and doors are missing, except for the remnants of timber frames. The house is further covered partially covered with a piece of corrugated iron roof sheeting. The farmhouse, along with the remnants of the complex falls under the protection of the **National Heritage Resources Act (Act No. 25 of 1999, Sections 34)**, stating that :

“ 34. (1) No person may alter or demolish any structure or part of a structure that is older than 60 years without a permit issued by the relevant provincial heritage resources authority.”

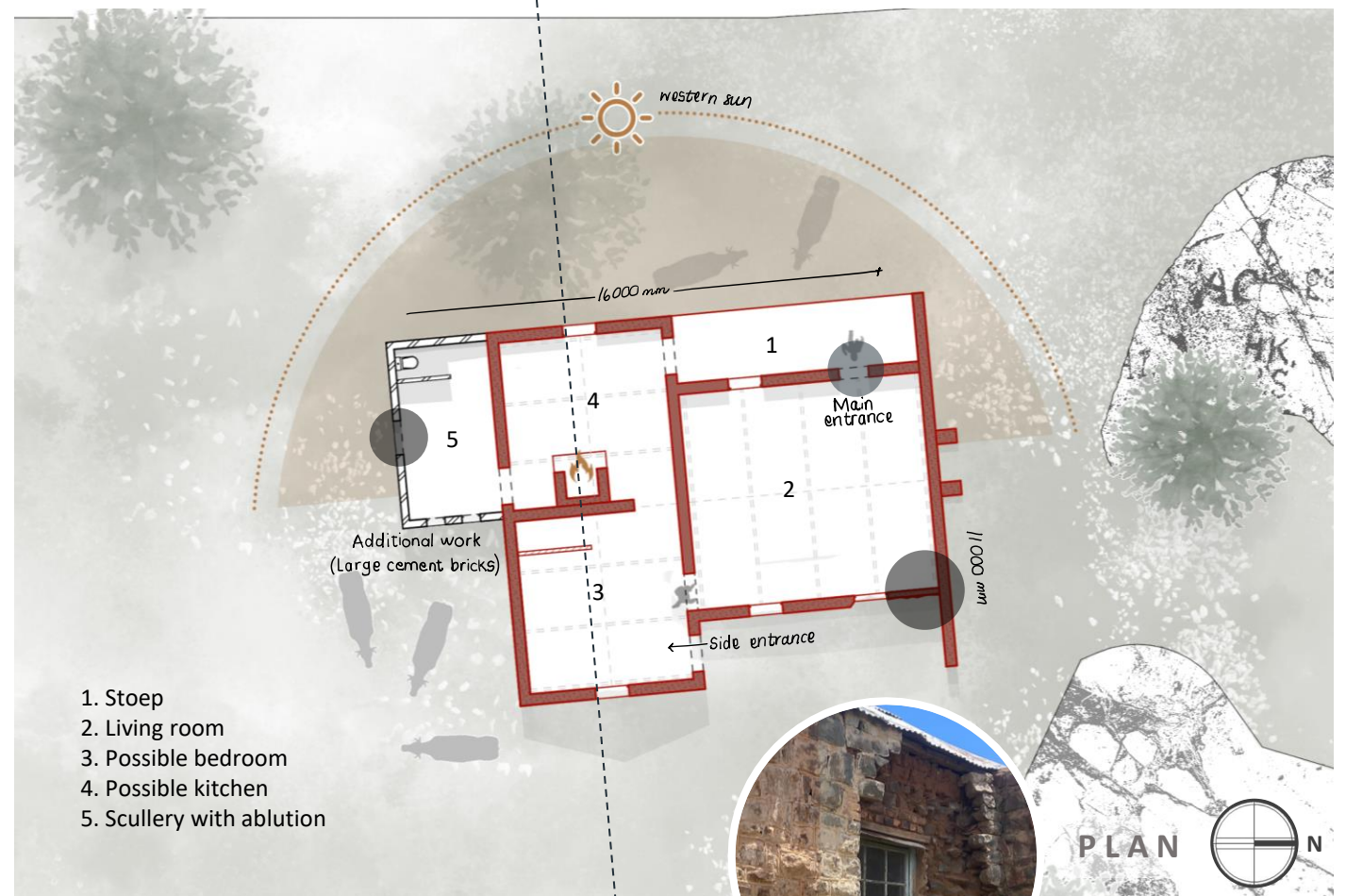


Fig 38 : The structural condition of the house (Author,2023)



Fig 39 : The relationship between the farmhouse and the landscape (Author,2023)



The second entrance on the western façade Rotten thin timber vinyl ceiling Fireplace Interior ceiling and wall structures Odd interior geometry View of house from the Hertzian fracture (see Fig 49)

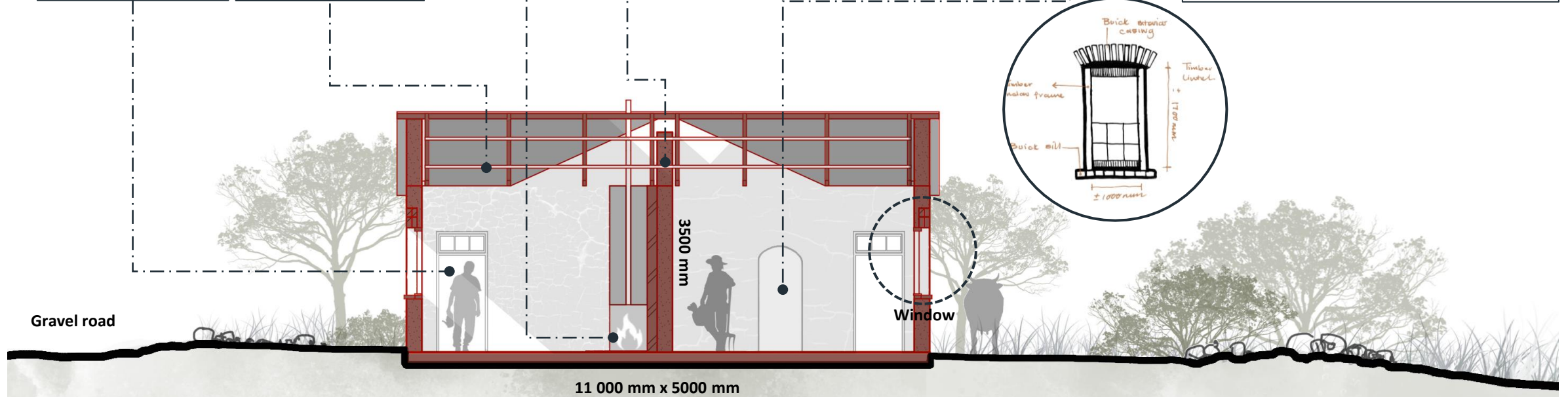


Fig 40 : Section view on the structural condition of the house (Author,2023)

2.4.3 THE TOPOGRAPHY

The soil and terrain of the site are defined by Red Hutton Sand or Kalahari sand, outcrops of the late Archaean Ventersdorp lava, and Dwyka tillite which forms part of the Karoo supergroup.



Fig 41a



Fig 41b



Fig 41c

Red Hutton Sand / Reddend Kalahari Sand

This red sand is spread over most of the landscape, ranging between the thicknesses of tens of cm to several meters. It is characterized as having a weak structure, meaning that it absorbs water quickly and is prone to erosion. This influenced the structural design by determining the substructure. The soil has poor bearing capacity, meaning that a structure can only be erected if elevated from the ground with a minimum of 1m deep bearing column posts.



Vegetation

The vegetation within this region and of the context mostly consists of various grass, bush, and tree species that adapt and flourish within the semi-arid climate. These groups of vegetation are also necessary for the livelihood of animals within the area, such as the ground cricket and Springbok herds (Wilson, 2018:online)

The grass within this region can reach a growth between 60cm and 1m with root characteristics that make it suitable for areas to prevent further soil erosion. The vegetation also has further historical significance as it was used for food, medicinal purposes and weapons for the KhoiSan.



Fig 42a : Silky Bushmen grass

- Seeds used to make porridge
 - Adaptable roots



Fig 42b : Speargrass

- Medicinal properties (treating rheumatism)



Fig 42c : Natal Redtop

- Root properties : control soil erosion



Fig 42d: Lehmann's Lovegrass

- Medicinal properties (remedy for diarrhea, and typhoid fever)



Fig 42e: Thimble grass

- Root properties : control soil erosion



Fig 42f : Fingergrass

- Root properties : control soil erosion



Fig 42g : Grey Sourgrass

- Root properties : control soil erosion



Fig 42h: Blue Bush

- Medicinal properties (remedy for eye troubles and as purgatives)



Fig 42i: Black Thorn Tree



Fig 42j: Buffalo Thorn Tree



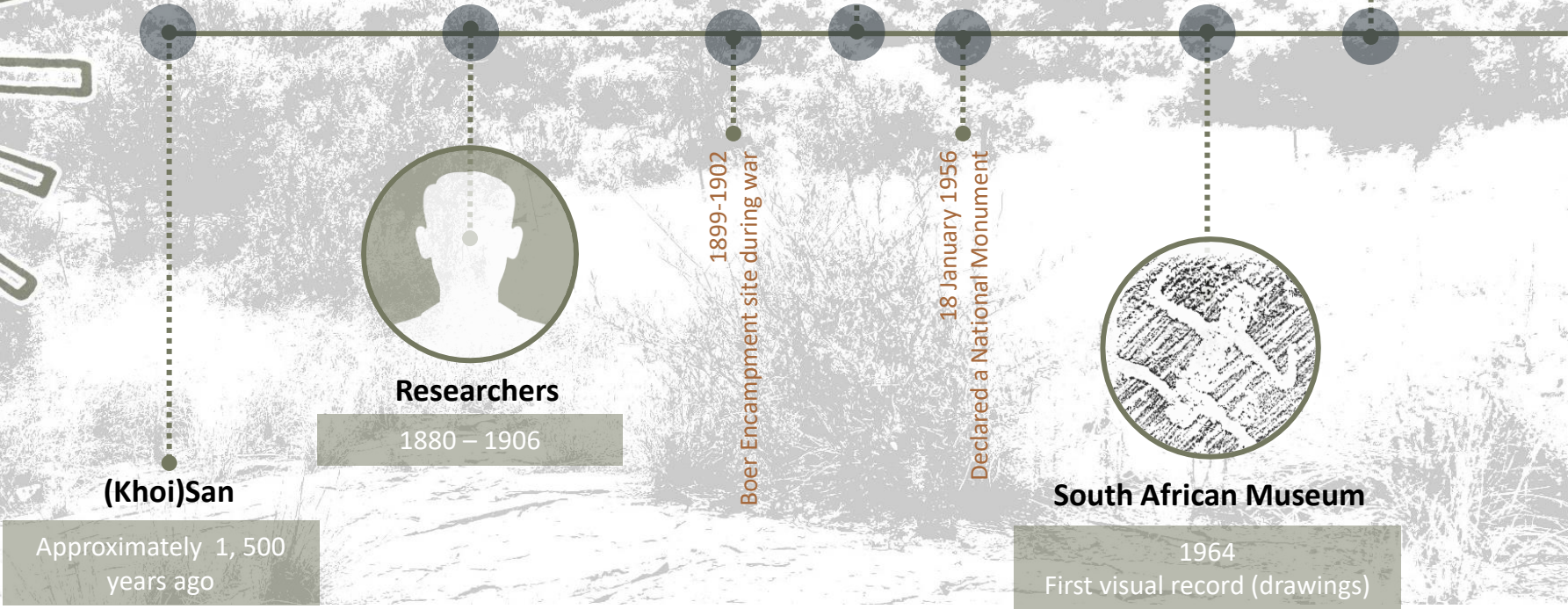
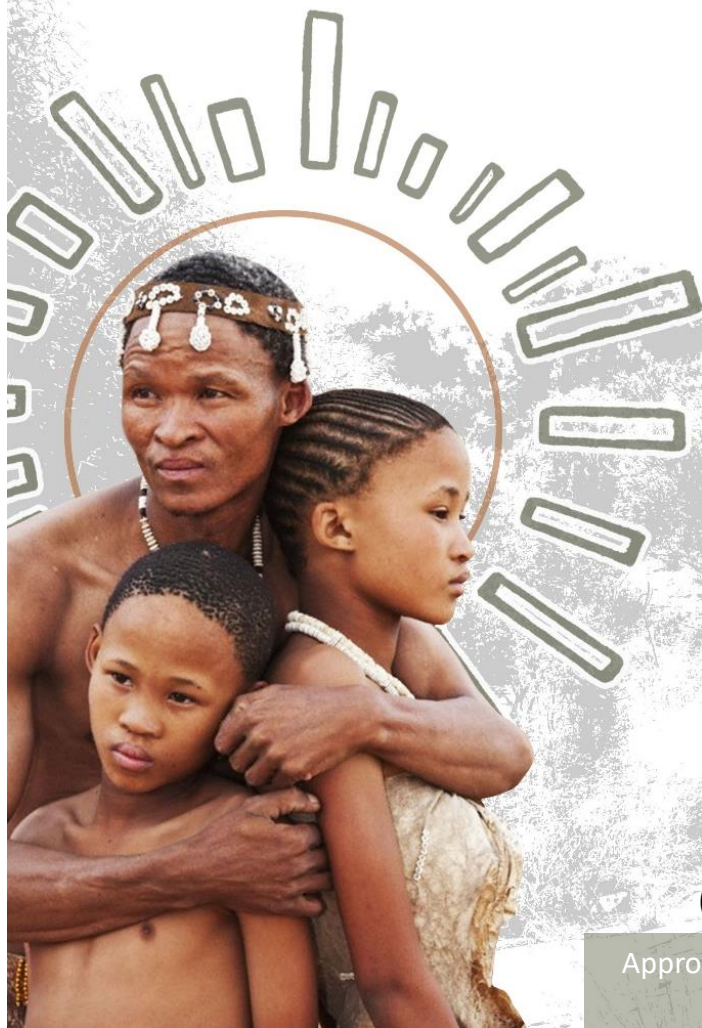
Fig 42k : Karee tree

- Bark of tree was used by the KhoiSan for tanning, while the weaker branches were used to create bows



VISITORS OF THE SITE

Since the site is situated in a remote area, it was important to establish what groups of people would visit the site based on the historical data of previous visitors. This data revealed that the (Khoi)San, Geology, and Archaeology Scholars and the public frequently visited the site and provided a safe network of individuals who collectively support the program of a Geoarchaeological Field Station and Research Centre



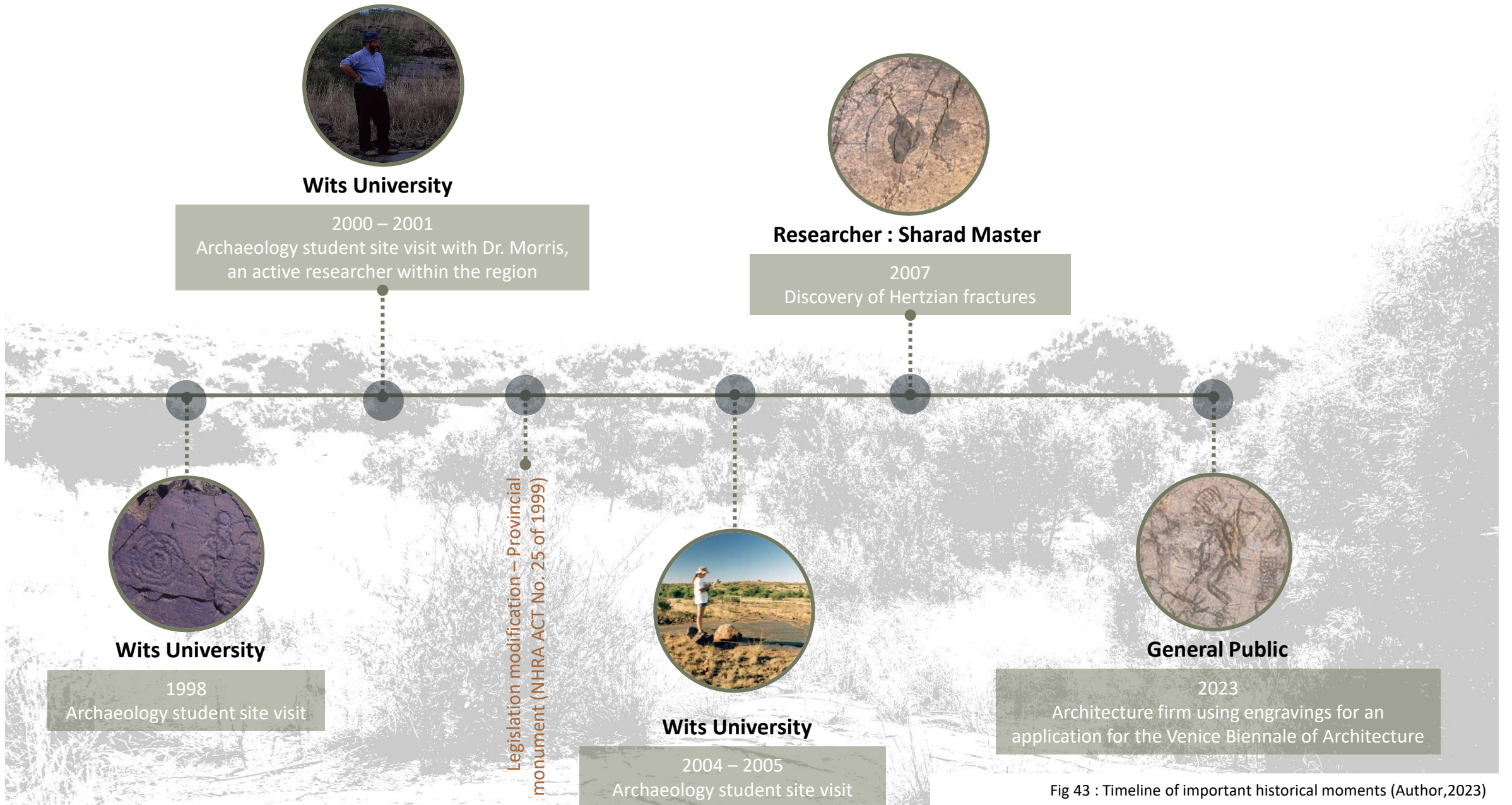


Fig 43 : Timeline of important historical moments (Author,2023)

2.4.5 Geo Tourism : The Challenges



Regulatory challenges

- The site is protected by the NHRA Act No.25 of 1999 but should involve the additional protection of SANPARK, as the regulations can be enforced in a sustainable manner.
- Lack of interest from governing bodies



Inadequate marketing & deficient funding

- No awareness of the site and its potential for geotourism
- Not equipped by SANPARK
- Lack of interest from local governing body = lack of financial resources



Accessibility & security

- Used as a slum spot
- Minimal safety measures (recent installation of a fence)
- Lacks the balance between education and protection of a natural and cultural heritage site



Social Challenges

- Lack of communal involvement: The local community does not have knowledge of the site and therefore does not know of its historical significance.



Lack of infrastructure

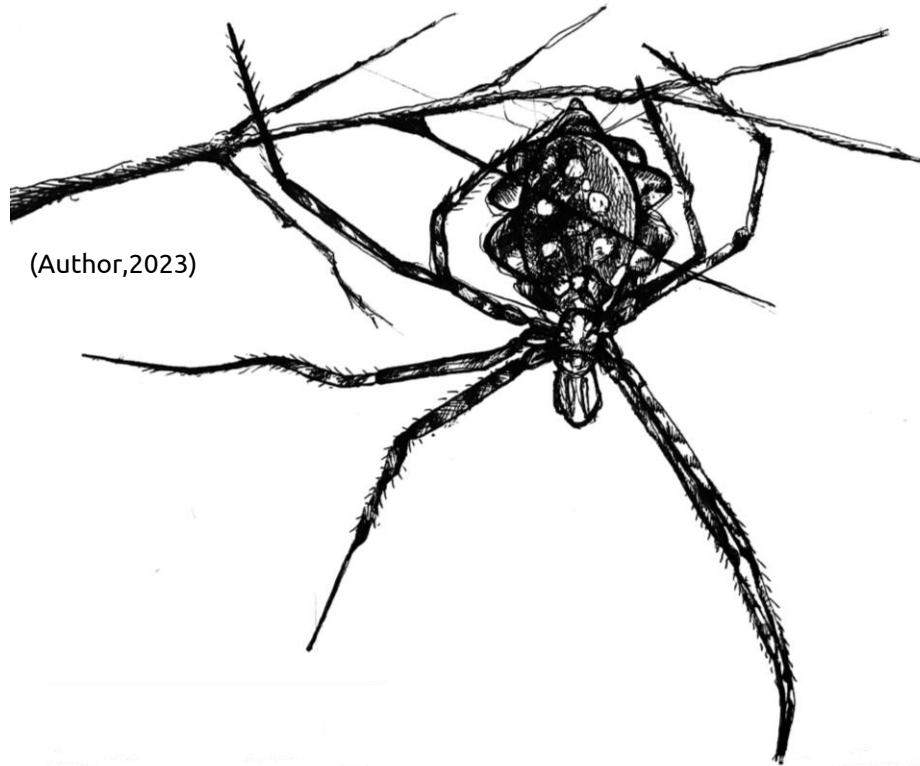
- No Ecofriendly road networks and ablution facilities
- Difficult site topography: Challenges physically disabled visitors

The investigation of the micro-analysis revealed the historical significance of the site based on its archeological and geological findings. It was therefore important to reach an understanding of the reason the site struggling to survive. Introduced in subdivision 2.2.1, Geotourism focuses on balancing the relationship between preserving heritage and providing education to visitors. By applying the principal challenges found within the case study of the Kruger National Park (2021:online) of Leonard, Matshusa, and Thomas(2021), the analyses have revealed reasons for the sites' difficulties. These challenges, as illustrated in Fig 51, provided an initiation point within the design, construction, and theoretical framework of the project.

Fig 44 : The challenges of the site (Author,2023)



(Author,2023)



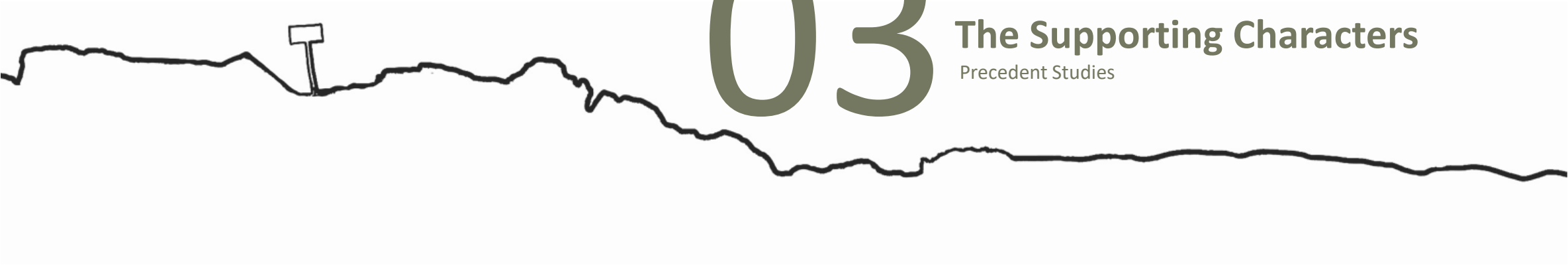
(Author,2023)

I was first unsure of how I might translate the site, portion six of the farm Nooitgedacht into a location that would carry any significance, especially to its neighboring sites of natural and cultural importance. My perspective of the information and stories about the location didn't change until after the site visit. The discovery of the glacial pavements, Hertzian fractures, and numerous early civilization drawings brought back in me the childlike joy of treasure-seeking. It was truly an experience that cannot be put into words. Only by touching the striation marks and the fading lines of the engravings can one truly comprehend the worth of the experience. Although the topography conceals the location from passersby, it nevertheless has much to reveal about the historical significance of mankind within the surrounding messo setting of Kimberley and Barkley West in addition to the micro context.



(Author,2023)

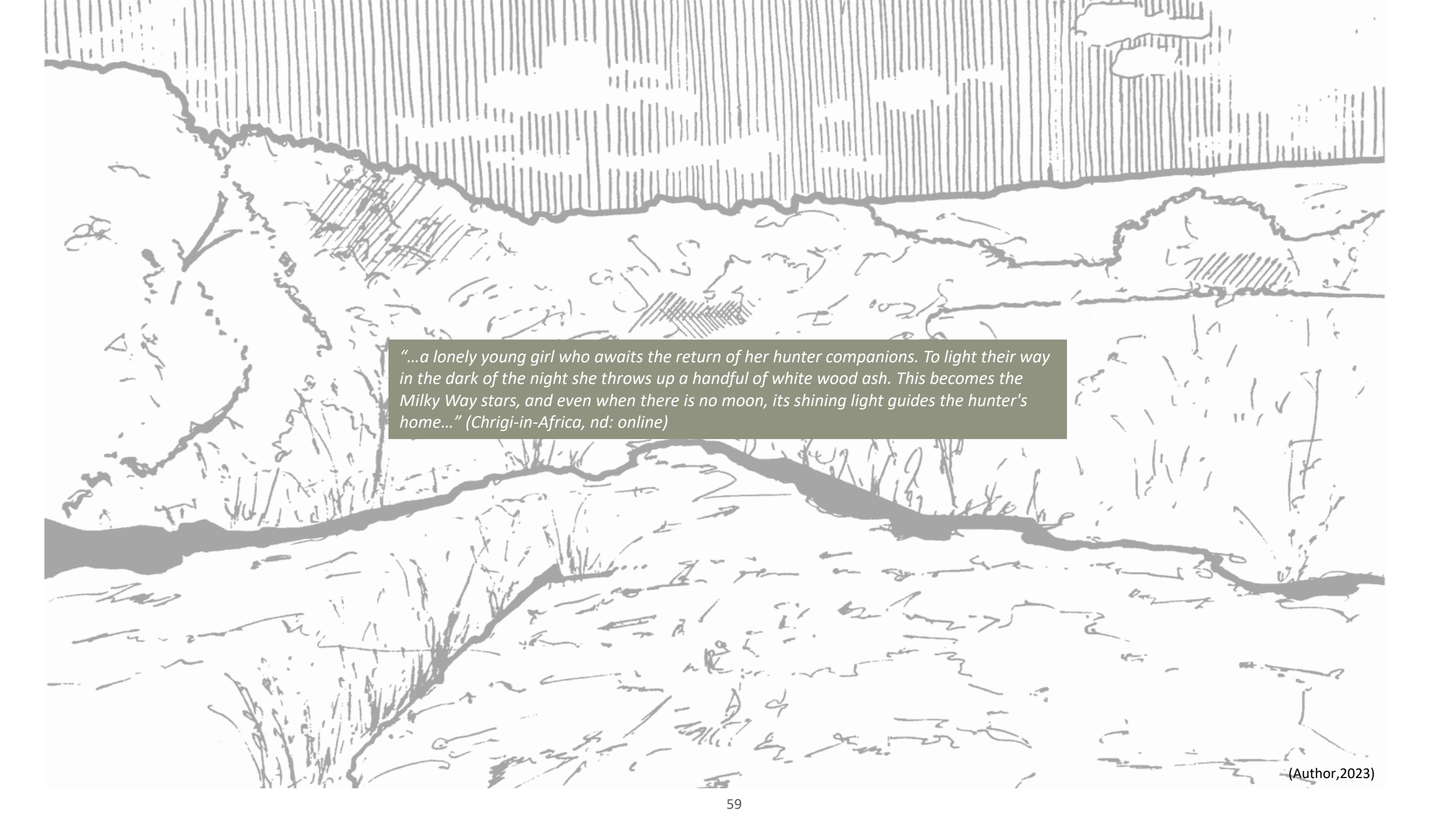




03

The Supporting Characters

Precedent Studies



"...a lonely young girl who awaits the return of her hunter companions. To light their way in the dark of the night she throws up a handful of white wood ash. This becomes the Milky Way stars, and even when there is no moon, its shining light guides the hunter's home..." (Chrigi-in-Africa, nd: online)

(Author,2023)

3.1 FOREWORD

The supporting characters provide encouragement for the architectural narrative that the project of a Geoarchaeological Research Centre and Field Station wants to pursue. The cast was chosen based on their approach to the site, dilapidated heritage and the integration between design and narrative of a culture, especially of the (Khoi)San community. Collectively, the precedents supported the development within the project’s design, construction, and theoretical development on how to reveal the narratives of a place.

Precedents 01 to 03 (Fig 45a -7b) will mainly focus on the approach to a site with rock outcrops and on the functionality of the program of a Geoarchaeological Research Centre and a Field school. The integration between design and construction is analyzed in Precedents 04 to 06 (Fig 45d –f), while 07 to 09 (Fig 45g-i) concentrated on the theoretical vantage point of the Narrative.



01

Fig 45a



02

Fig 45b



03

Fig 45c

Clear Rock Lookout,
Texas, USA

European Centre For Geological Education, Poland

Drimolen Field School, South Africa

Focus :

- Context : site approach
- Materiality

Focus :

- Context : site approach
- Materiality

Focus: Program within a South African context



04

Fig 45d



05

Fig 45e



06

Fig 45f



07

Fig 45g



08

Fig 45h



09

Fig 45i

Dovecote Studio
Snape, UK

Mortensrud church
Oslo, Norway

Westcliff Pavilion,
South Africa

Nelson Mandela Memorial statue,
South Africa

!KHWATRU San Heritage Centre, South Africa

Bushmen Heritage Museum and Art Centre, South Africa

Focus:

- Approaching heritage and ruins

Focus :

- Alternative stone use
- Passive design

Focus :

- Alternative use of stone
- Site approach

Focus :

- Translating the culture of the San into Architecture

Focus :

- Translating culture into Architecture

Focus :

- Rediscovering the San identity through narratives

3.2.1 Clear Rock Lookout



Texas Hillside, United States (2018)
Lemmo Architecture and Design

The AIA Austin Award-winning (2017) Clear Rock Lookout, a multipurpose cabin, is situated on a ranch in the Texas Hill Country region. The multifunctional hunting blind structure is situated below the edge of a limestone cliff, celebrating the natural surroundings with its choice of materials and approach towards the site.

The walkway above the one-story studio follows the concept of revealing and concealing spaces and the landscape as it leads the visitor through a sequence of events, leading them from above to the experience of the [in-between]. The interior allows the progressive reveal of the landscape from the exterior to the interior through a series of floor-to-ceiling glass panels, creating a landscape panorama (Castro,2016:online).

Application on design :

- Site approach – raised building on steel and concrete footings on an uneven slope
- Materials – Balances exterior and interior (aesthetic vs. comfortable). Blending in with the landscape.



Fig 46 : Clear Rock Lookout (Dunn,2018: Altered by Author)

3.2.2 European Centre for Geology



Chęciny, Poland (2015)
WXCA Architects

The Swietokryskie Mountains are a geological landmark with its exposed 560-million-year-old rocks. The site is also connected to the cultural and architectural landmark of the ruins of a medieval royal castle, situated approximately 500m away (archdaily.com, 2016: online).

Application on design :

- Dividing the functions of the program into a complex of buildings
- Building A (Public) : entrance lobby, cafeteria, foyer and an auditorium hall
- Building B (Semi-Public) : research laboratory facility connected with an education area
- Building C –E: Housing for students, staff and guests

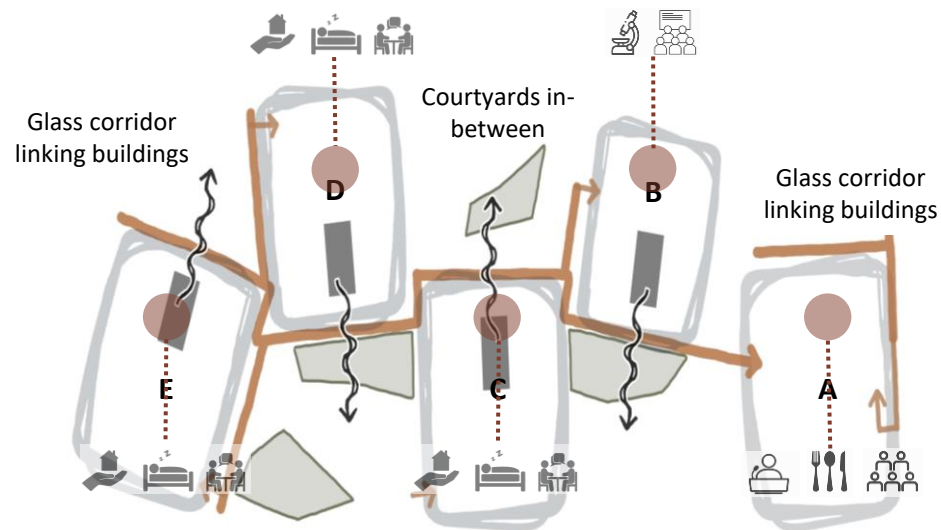


Fig 47 : Walkway connecting various buildings and green spaces to create a complex (Author, 20230)

3.2.3 Drimolen Field School



Near Sterkfontein, South Africa
Drimolen Paleoanthropology & Geoarchaeology Field School

The Field School, which is located on the site of the Drimolen Palaeocave, gives students and researchers an introduction to excavation training and geoarchaeology education, particularly on the scientific evaluation of caves (archaeomagnetism.com, nd: online) The position of the Field School allows for local and international connections as illustrated in Fig 62.

Application on design :

- Program
- Network of sites and institutions

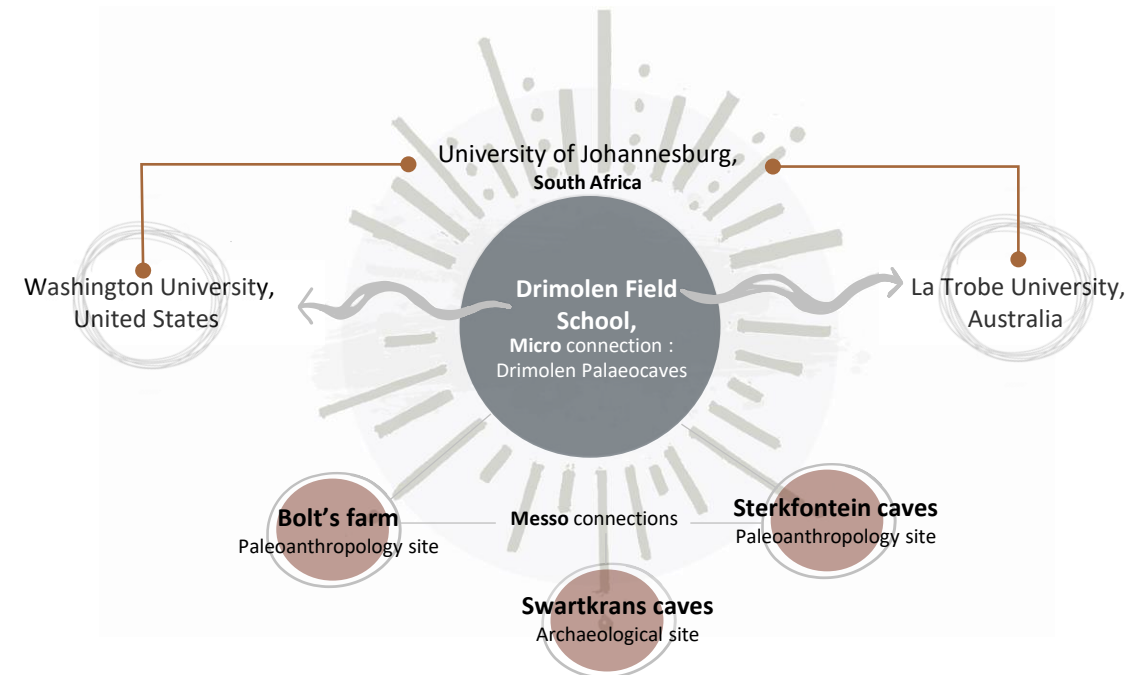


Fig 48 : The site's micro-to-macro network (Author, 2023)

3.3.1 Dovecote Studio



Snape Maltings, United Kingdom (2009)
HaworthTompkins Studio

The Dovecote Studio is a versatile workspace for artists, performers, and other creatives on the prestigious Aldeburgh Music Campus in the rural community of Snape Maltings in Suffolk. The initial complex of red brick granaries and kilns was renovated with industrial aesthetics, such as steel and timber, to enhance the quality of creative educational spaces.



Fig 49a (Vile, 2009 : Altered by Author,2023)

The Victorian remnants of the Dovecote Studio situated itself within the landscape as a symbol of romantic abandonment. The ruins are in a depilated state, allowing for a creative, but simple approach to a restoration design. The design strategy was to use the existing remnants as a shell that embraces a structure within without touching it. A lightweight steel structure was carefully placed within the ruins by a crane. This two-story weathering steel cladding structure restored the appearance of the original dovecote from a distance, but up close, the historical and additional architectural languages reveal themselves through the spatial composition and materials.

Application on design :

- Approach to fragile heritage remnants
- The Installation process
- Materiality – portraying a sense of time between the historical and the addition

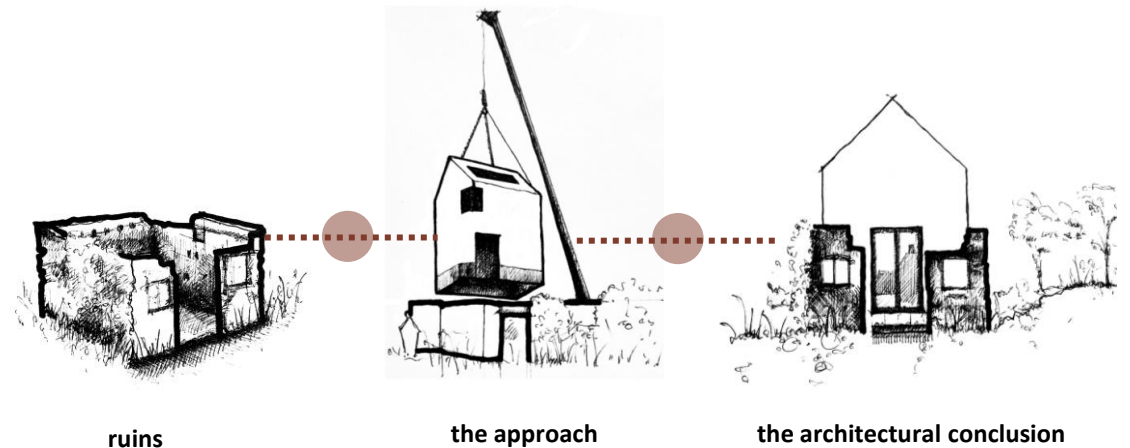


Fig 49b : The installation process (Author,2023)

3.3.2 Mortensrud Church

 Oslo, Norway (2002)
Jensen & Skodvin Architects

The Mortensrud Church is situated on a high vantage point in between rock outcrops and pine trees. The conversation between architecture and nature was understood as some of the rock outcrops were included within the floor plan. The design further proposed an alternative route of using stone as a material. The stone in this design is used as a 'heavy' element that appears light and which also filters light. The stone is stacked upon each other, resting on a steel structure.

Application on design :

- Alternative use of stone: an element of 'light'

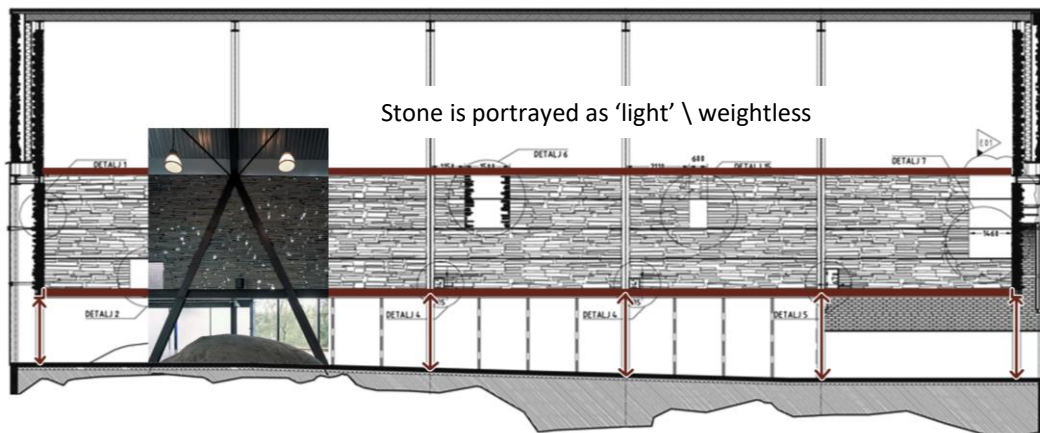


Fig 50 (archdaily.com,2011 : Altered by Author)

3.3.3 Westcliff Pavilion

 Johannesburg, South Africa (2012)
GASS Architecture Studios

Situated on the Westcliff ridge, the pavilion rests lightly on the earth, concealed by the natural surroundings of the city. The objective of the project was to propose an alternative way to use native stone as an element that balances the contrasting relationship between heavy and light or rather weightless. Concealed from the exterior, the wall is not solid, but is rather part of an engineered system of stone cladding.

Application on design :

- Sensitive approach to the site
- Alternative use of stone
- The plan: interior-exterior relationship

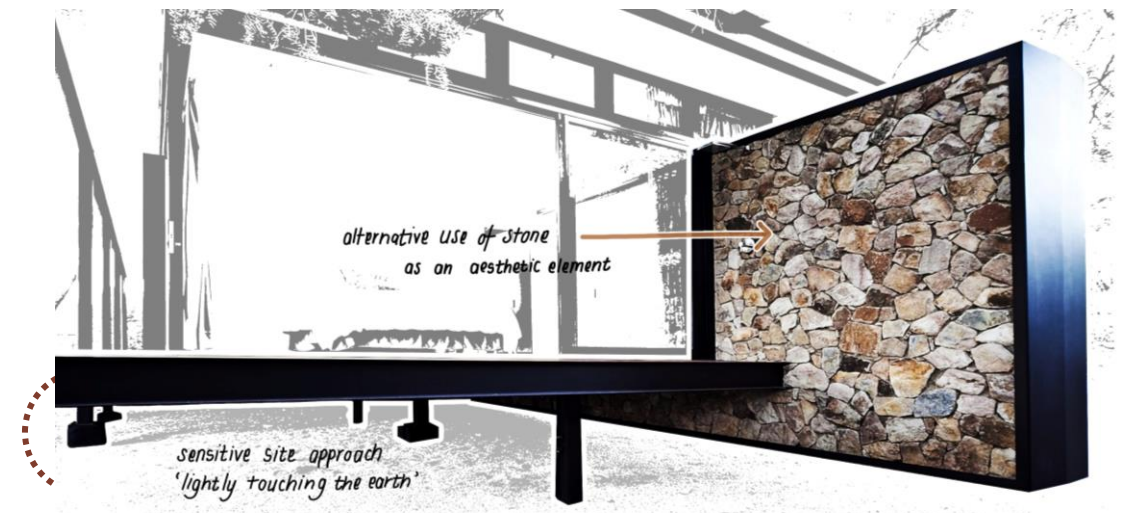


Fig 51 (Viljoen,2012 : Altered by Author)

3.4.1 Nelson Mandela Memorial statue



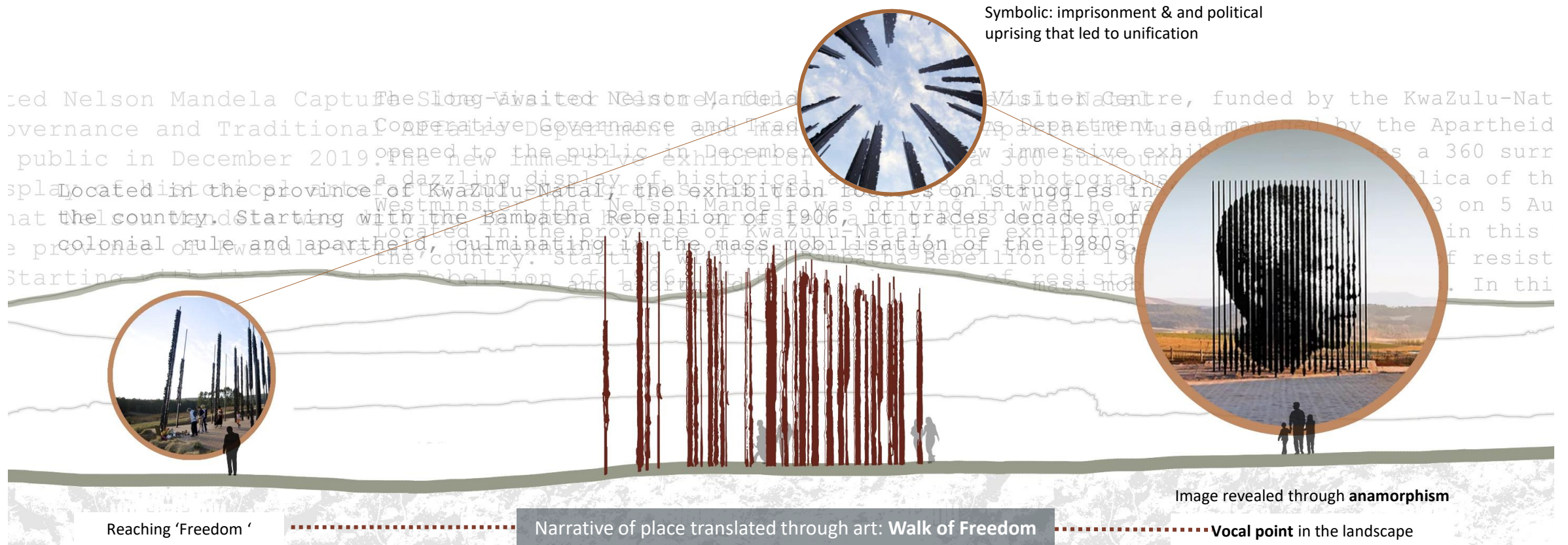
Near Howick, South Africa (2012)

Marco Cianfanelli & Jeremy Rose (Mashabane Rose Architects)

Situated near the site where Nelson Mandela was captured, this memorial statue pays homage to the narrative of one of the most celebrated political leaders of the world. The 50 steel bars celebrate the 50 years since his imprisonment, symbolizing his imprisonment and the people who supported him in his political avenues. The installation camouflages itself within the landscape as it appropriately uses the techniques of anamorphism to reveal and conceal the portrait of Nelson Mandela.

Application on design :

- Using points within a narrative to create a visual integration
- Anamorphism as a way of revealing new perspectives of a narrative
- Narrative to connect space and place



Symbolic: imprisonment & and political uprising that led to unification

Image revealed through anamorphism

Reaching 'Freedom'

Narrative of place translated through art: Walk of Freedom

Vocal point in the landscape

Fig 52 : The translation of a narrative through landscape art (Cianfanelli, nd: Altered by Author)

3.4.2 !Kwahtu San Heritage Museum



Yzerfontein, South Africa (2019)
KLG Architects

The !Kwahtu San Heritage Museum had an architectural dedication to design a space that would reflect the culture and heritage of the San. The building acknowledges the landscape as it establishes an outside-inside relationship through the inclusion of the granite ridge and sections of red soil. The integration of the landscape becomes part of the exhibition hall. The narrative of the San is captured within the organic roof structure as it translated the structural elements of the traditional hut, by making the rings and layered grass curved beams and an exposed ceiling. Rather than focusing on the traditional way of expressing culture through architecture, KLG Architects focused on the 'way of the San', emphasizing their way of living and doing daily tasks.

Application on design :

- Translating the San narrative and ideologies in an alternative manner
- Architecture reveals the knowledge of the culture through design and landscaping
- Focus : the way of the San (customs, beliefs, etc.)



Fig 53 (Letch, 2019 : Altered by Author)

3.4.3 The Bushmen Heritage Museum



Nieu Bethesda, South Africa (1999) The Bethesda Arts Centre

Founded by local poet and psychoanalyst Jeni Couzyn (1999), the Bethesda Arts Centre has become a sanctuary of healing for the members of the nearby community. Initially a space for AA meetings for the community, the center transitioned to accommodate the community's need to discover their cultural identity through art. The effect of generational narratives has a powerful impact on the community. They are no longer ashamed of their heritage and embrace it fully by creating their own narratives. By knowing their heritage, they can add their own narratives for future generations.

Application on design :

- Using narrative an effective theoretical approach to translate heritage and history of a place through the means of art
- Involvement of local community of (Khoi)San descendants

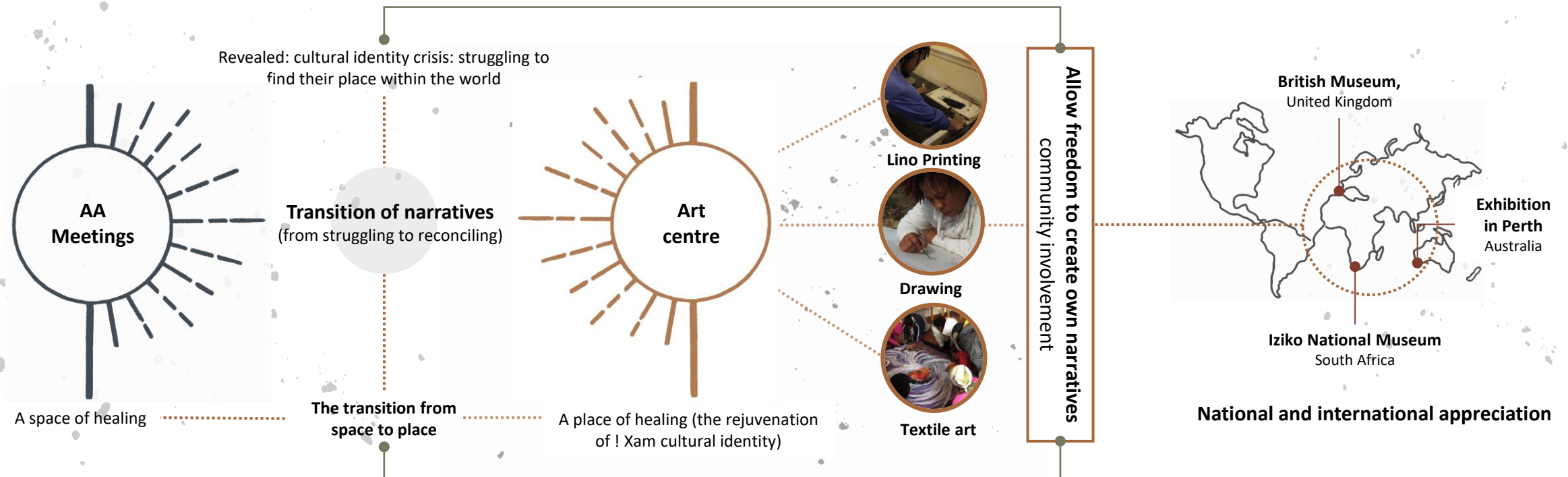
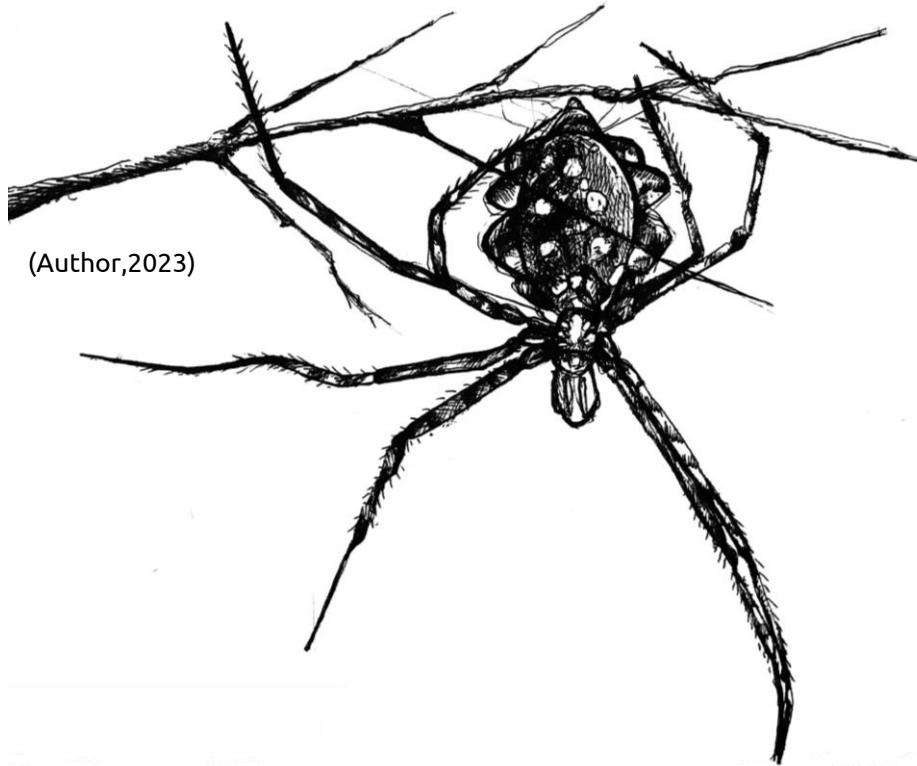


Fig 54 : The influence of cultural narratives on a community Altered by Author,2023)



(Author,2023)



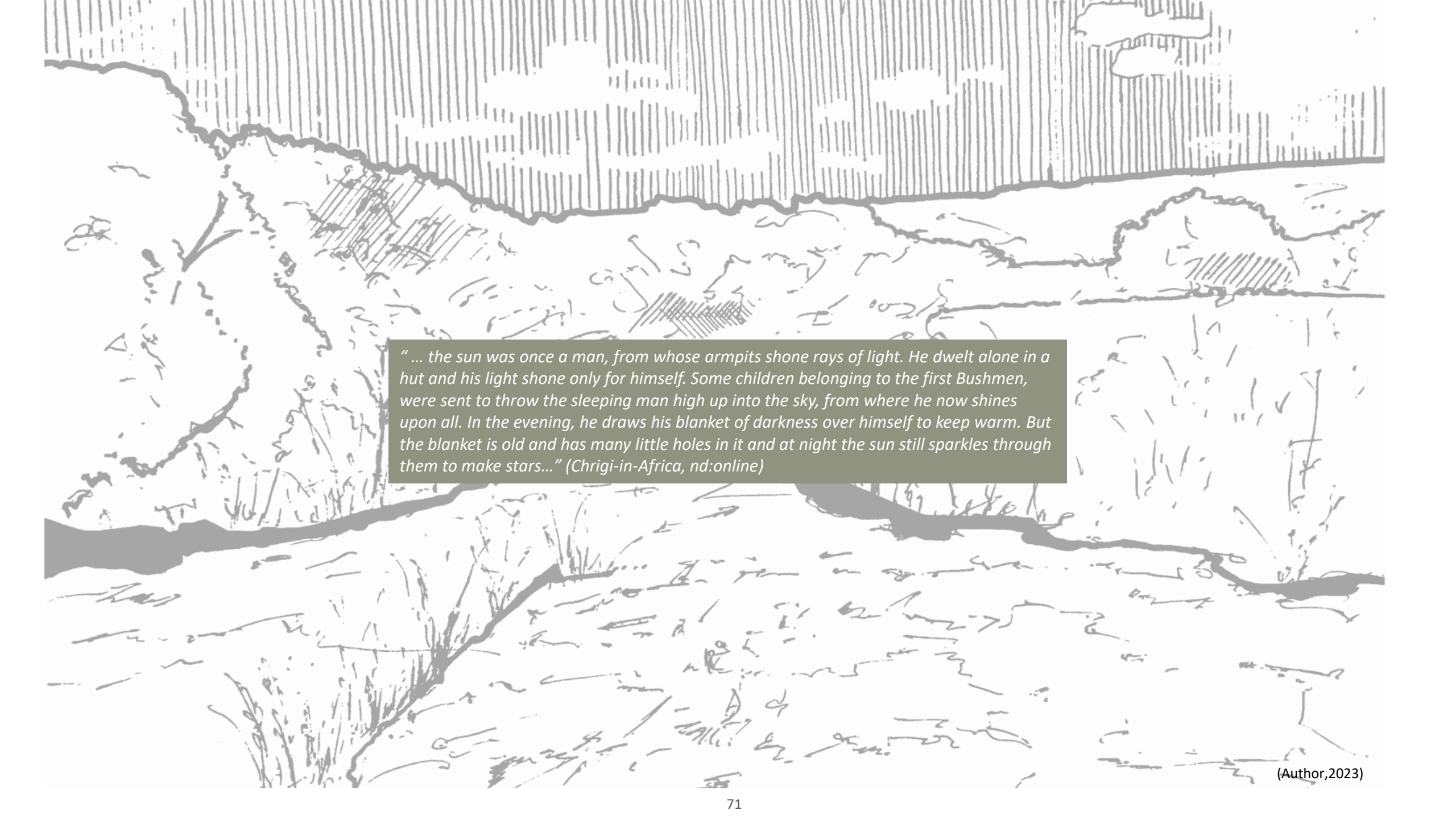




04

First Impressions

Conceptual Approaches



"... the sun was once a man, from whose armpits shone rays of light. He dwelt alone in a hut and his light shone only for himself. Some children belonging to the first Bushmen, were sent to throw the sleeping man high up into the sky, from where he now shines upon all. In the evening, he draws his blanket of darkness over himself to keep warm. But the blanket is old and has many little holes in it and at night the sun still sparkles through them to make stars..." (Chrigi-in-Africa, nd:online)

(Author,2023)

The objective of geology and archaeology is to unearth information or historical artifacts that can tell stories about the past, how it impacted the present, and perhaps even how it will influence the future. The two respective fields also have a dependent relationship, as archaeology needs geological facts and knowledge to determine the unearthed findings. The conceptual explorations of this chapter determined and investigated the essence of the project, revealing the *knowledge* or *narratives* of the site through architecture.

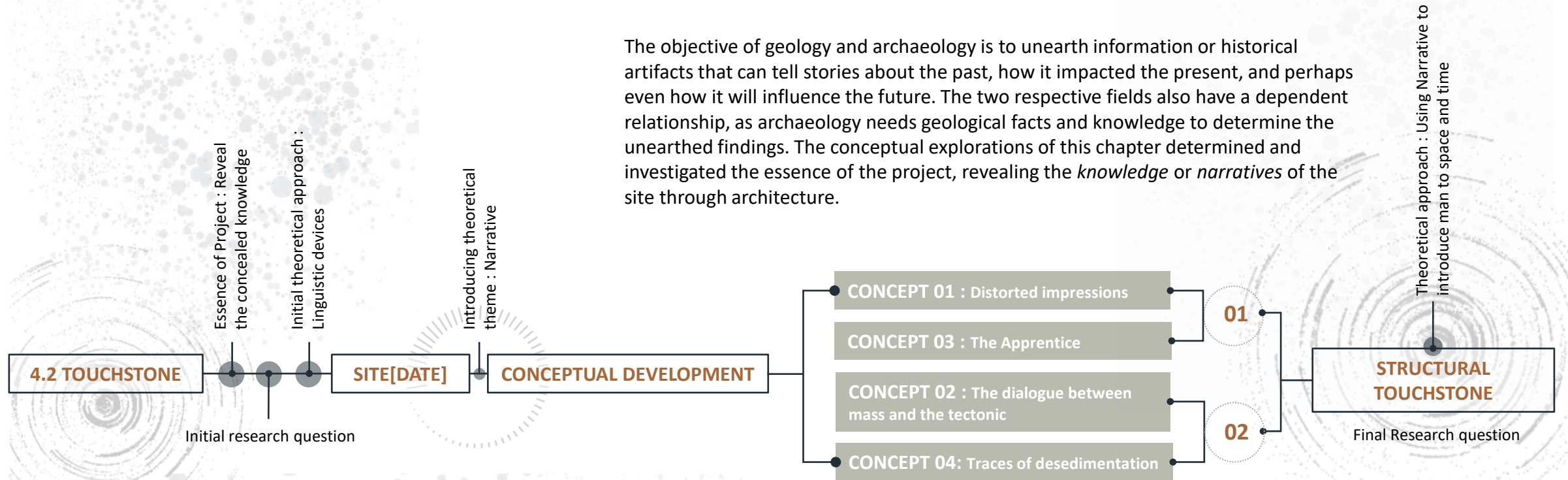


Fig 55 : The influence of cultural narratives on a community (Altered by Author,2023)



4.2 TOUCHSTONE

Intended as a poetic device, the touchstone introduced the essence of this project through the balanced relationship between the reveal and conceal of narratives. It was discovered, based on the site investigations done in Chapter 02, that the glacial pavements and the contextual sites of significance are naturally hidden in the terrain of the landscapes, making it easy to go unnoticed. The site only reveals itself to those who actively seek its location. Considering this, the touchstone followed the processes used by archeologists and or geologists to unearth artifacts. The unearthing process within the touchstone reveals a poetic vessel of knowledge (Fig 56a) that presents three pockets. These three pockets of knowledge introduce different sensory experiences to the participant through the variation in tone and texture. This was an effort to comprehend how the various narratives of the site may not only be shown visually but also enable an interactive experience between architecture and man. By introducing the essence of the project, this device also led to the research question of :

“ How can the geological and archaeological narratives of Portion 06 on the farm Nooitgedacht 66 between Barkley West and Kimberley be revealed through the dialogue between time, space, and man in an Architectural Narrative within a Geoarchaeological field school and Research center?

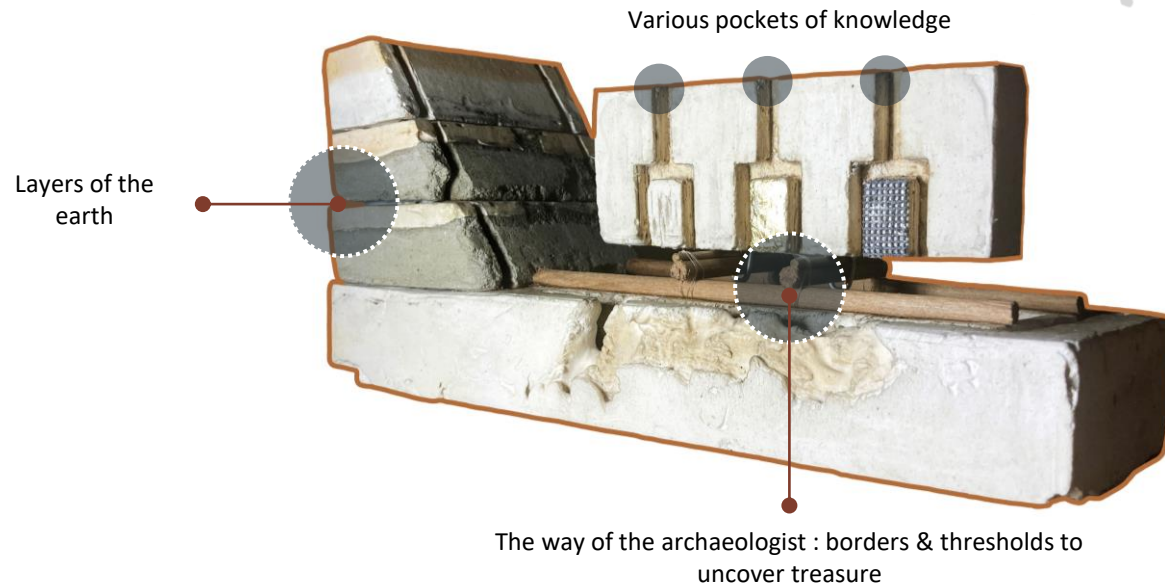


Fig 56a : The touchstone unearthed (Author,2023)

Removing the veil



Unearthing the pockets of knowledge



Fig 56b : The unearthing process (Author,2023)

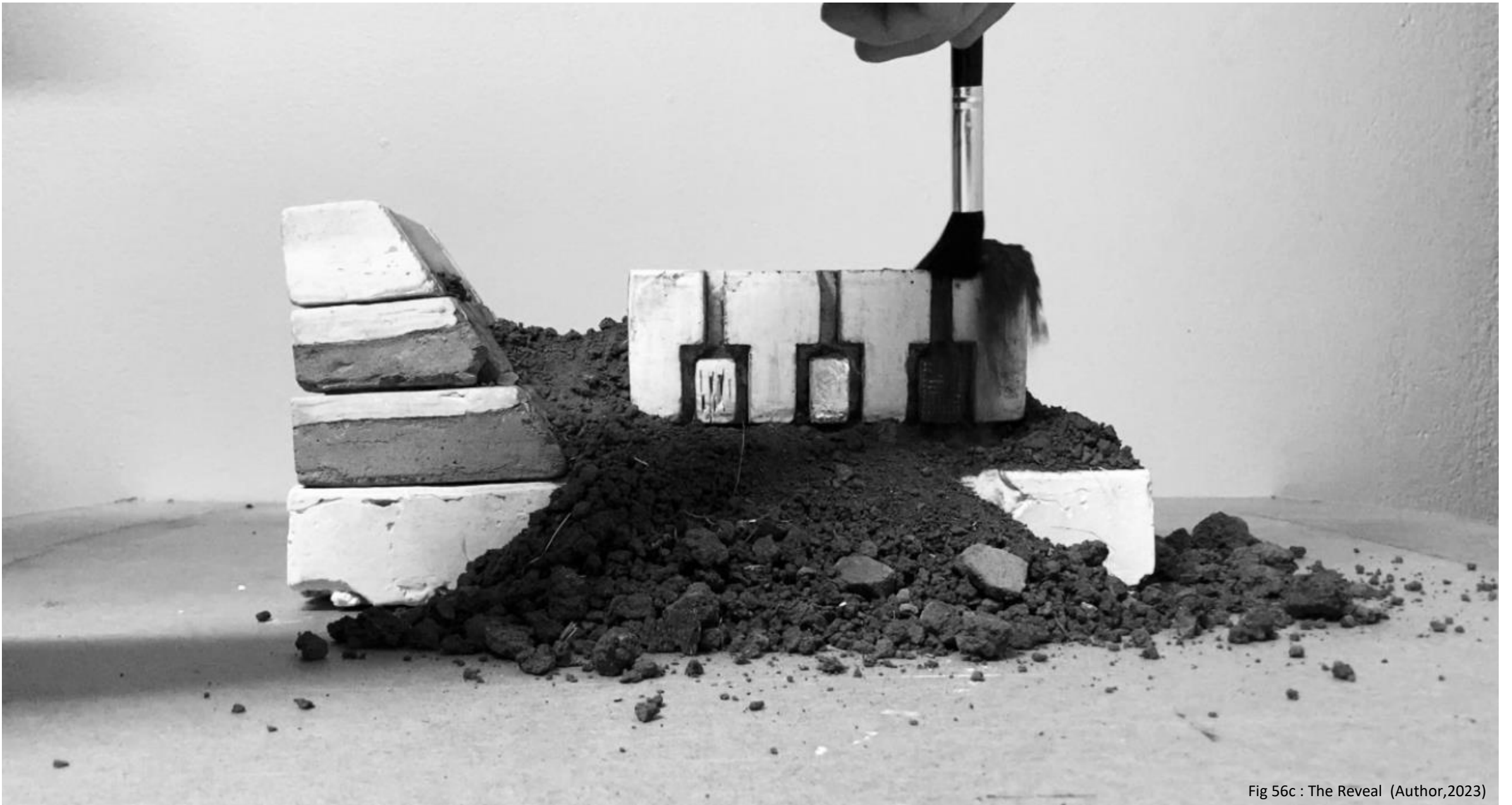


Fig 56c : The Reveal (Author,2023)

The Veil: Revealing the language exchange between man and the landscape

The **SITE[DATE]** was used as a research method to measure the site with a poetic device. Based on the site's history with the Khoi(San), it only seemed appropriate to become the poetic device by translating the different experiences into art. The process of measuring the site focused on the conceptual idea of the 'Veil', a threshold between the concrete and spiritual world of the San. It was crucial to return to the site after my initial experience in order to gain new insights into my previous interactions with it. The measuring procedure was broken down into three parts :

01 The Search



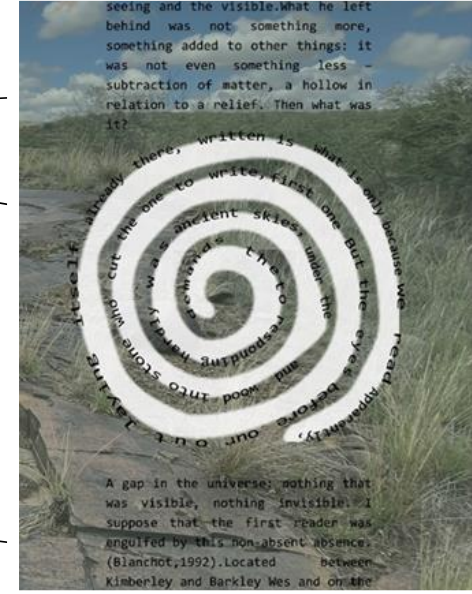
The San and researchers, such as archaeologists, used the site to guide them toward natural resources or sites of significance. Using a "veil" to cover my eyes, a visual map was drawn, reflecting the sensory encounters along the pathway.

02 The Discovery



After removing the "veil", the ambiguous language of the landscape within Step 01, has become more refined, as sensory experiences connect with the visual characteristics of the various elements. The various element massing and characteristics could now be added through drawing and imprints of the objects found in step 01.

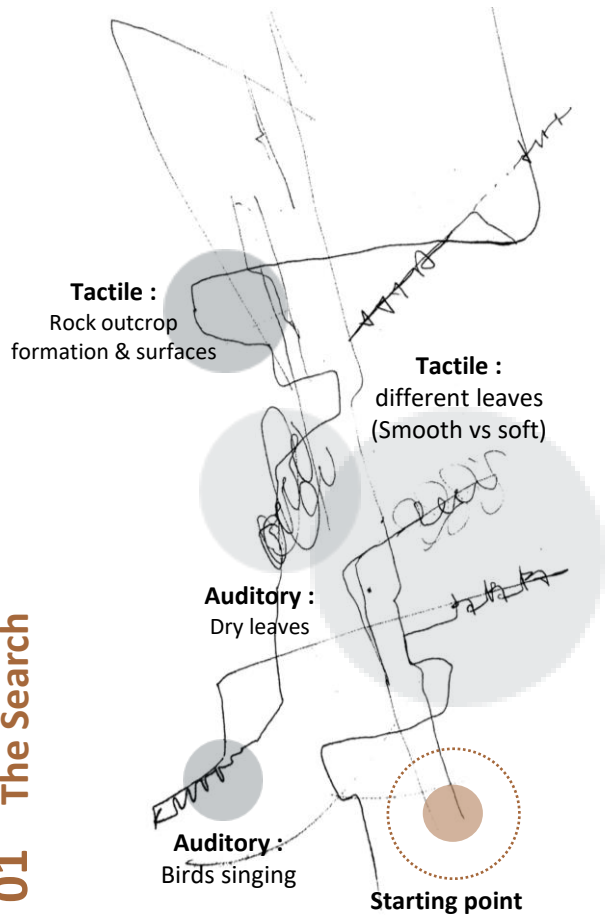
03 The Absent Voice



Written documents of the history and research of the site have also played a vital role in approaching the site. This was an attempt to understand how the language could have possibly influenced my perception of the site and how it could be rewritten to unify the language between man, nature, and early civilization.

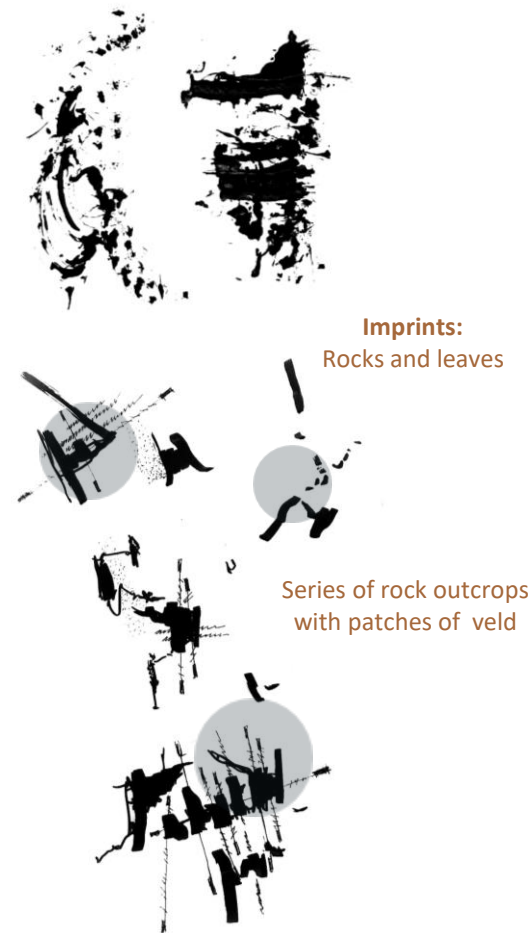
Fig 57a – c : Measuring the site through different mediums (Author, 2023)

01 The Search






















The visual pathway revealed a variation of sensory encounters, including the abrasive surfaces of the granite outcrops, the smoothness of the leaves, and the ephemeral sounds of birds singing.

02 The Discovery



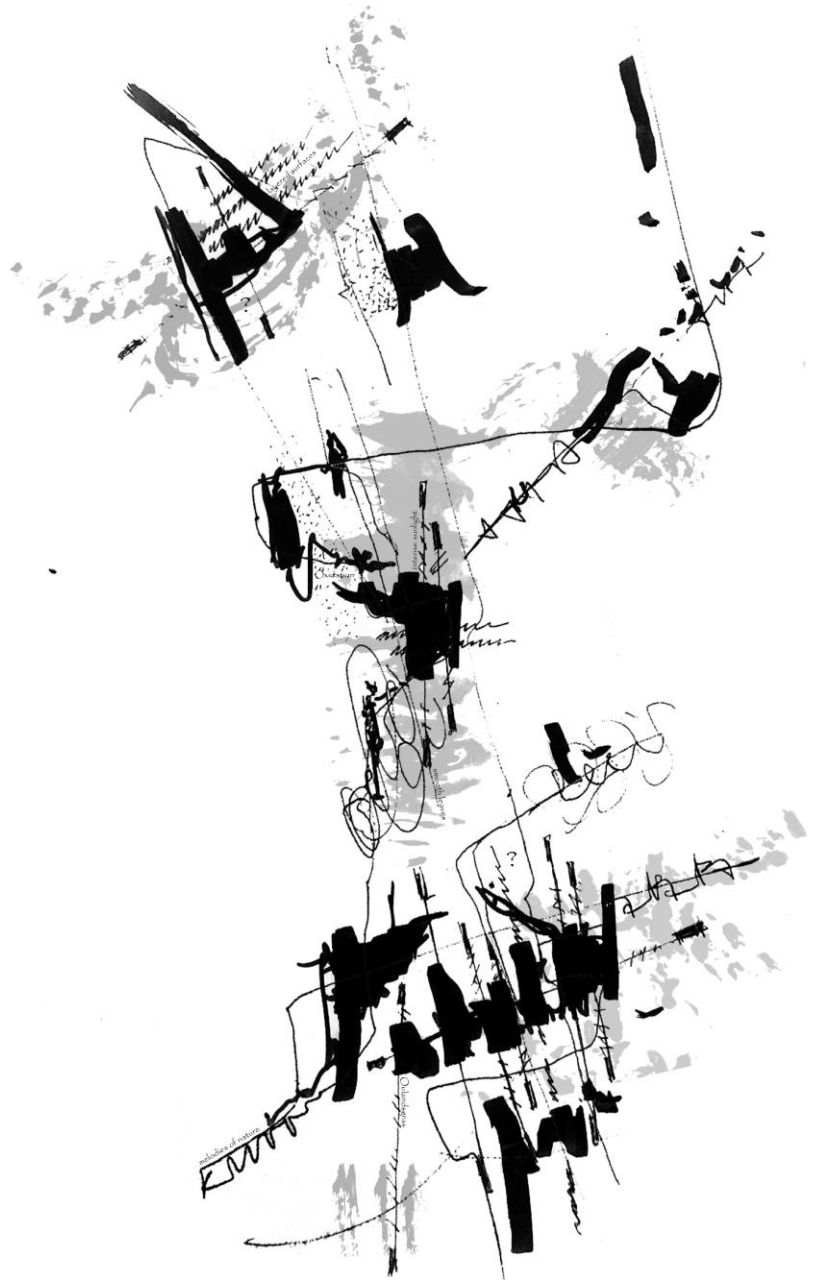
The added pen drawings added to the massing of the elements of the site, such as large rocks. This was an interpretation made by my experience, while the imprints of natural elements revealed a degree of truth.

03 The Absent Voice

The farm Nooitgedacht No 66 is situated between  and Barkley West. The site is located on portion 6 of the farm and is a provincial . On the site, a series of  and archeological sites are identified as  pavements with early civilization and  petroglyphs. The terrain of the site is quite tough with its  differences characterized by the number of  found. The only human presence left on the site is a dilapidated  and the  of the pathways leading to the different sights. The tall veld  of the site conceals the different sites well, making it difficult to know what to  for or what to expect. It is almost  and the heat of the day has settled on the site. The  pavement is hot to the touch. It is evident through the colors of the pavement and surrounding  that they have been exposed to the  for a long period. Even the lines of the petroglyphs have become darker and shallower because of the environmental influences. However, the images are still visible and ranges from  to . It is surreal to experience this  as a veil to the spiritual world. I have touched, listened and engaged with the site. I still have so many .

After considering this achievement, the third phase shifted from being a measurement-based task to a creative investigation that tested the ways in which a text might be understood to include visuals as a component of language structure.

Fig 58a – c : The results of the different experiences (Author,2023)



The measured terrain revealed the type of space experienced by the layering process of *The Search*, *The Discovery*, and *The Absent Voice*. The process of this measurement initially followed the theoretical thinking of Gaston Bachelard's work within this book, *The Poetics of Space* (1969). The initial aim of the process was to identify linguistic components within the landscape that could reveal the narrative of the site through architecture. This approach, however, proved to be difficult as it struggled to create connections between the narratives and the design process.

After reflecting upon this alternative site analysis, it was clear that the project should be addressed through the lens of Narrative, especially considering how the different stages of time, spaces, and human experiences could be reflected within the architecture. Although this investigation's architectural potential was not immediately apparent, it gradually became apparent during the design development in Chapter 06.

Fig 59 : The interwoven experiences – an overlay of the various findings (Author,2023)

4.4 CONCEPTUAL DEVELOPMENT

Drawing on the imaginative explorations from sections 4.2 and 4.3, the conceptual development started with models and drawings that sought to comprehend a sensitive approach to the site and an appropriate tone to portray the historical narratives of natural and man-made occurrences. At first, there were four conceptual investigations; *Distorted Impressions* (fig 75), *The Apprentice* (fig 76), *Traces of Desedimentation* (fig 77), and *The Dialogue between mass and the tectonic* (fig 78). After some conceptual analysis, it was clear that the conceptual thoughts were linked together and were presented as two distinct conceptual stances, as illustrated in fig 79.

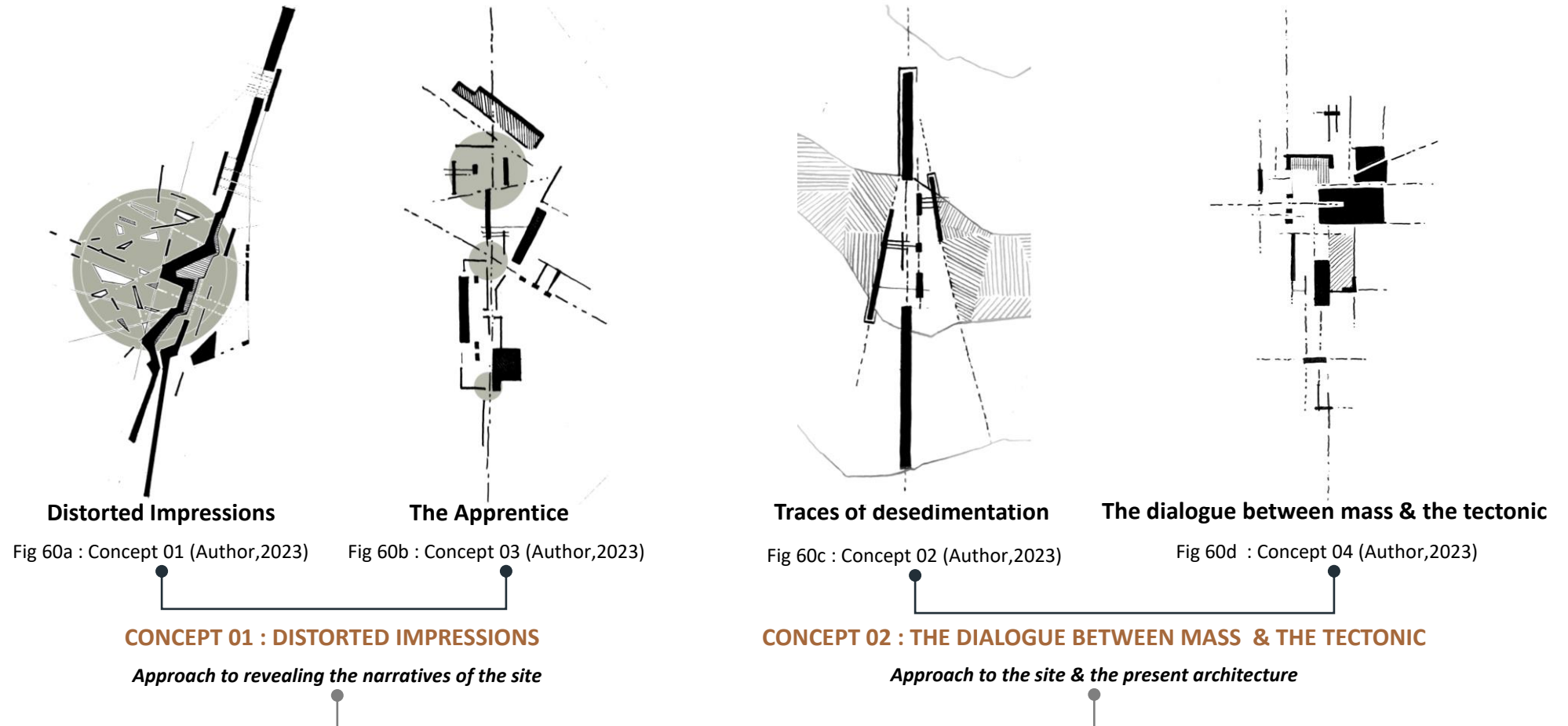


Fig 60 : The relationship between the various conceptual approaches (Author,2023)

4.4.1 DISTORTED IMPRESSIONS

The glacial pavements and the petroglyphs of the site play a vital role in the geological and archaeological literature realms. The glacial pavements are substantiated by scientific facts, but the engravings of the early civilization communities and the San always had an ambiguous nature. Because of Western theoretical speculations, the perception of the indigenous groups became distorted. Recent knowledge suggests otherwise as the petroglyphs were part of sacred ceremonies performed by the shamans in the communities. This concept investigates how the perception of knowledge can be revealed by using natural elements of the site as inspiration. It is only through the technique of anamorphisms that the observer stands apart from what they are viewing by becoming self-aware in the process of seeing. The visual language of this concept intertwines with the ambiguous language of the petroglyphs and follows the literature of the 'Infinite conversations' of Maurice Blanchot (1969) as the reader can only interpret the engravings

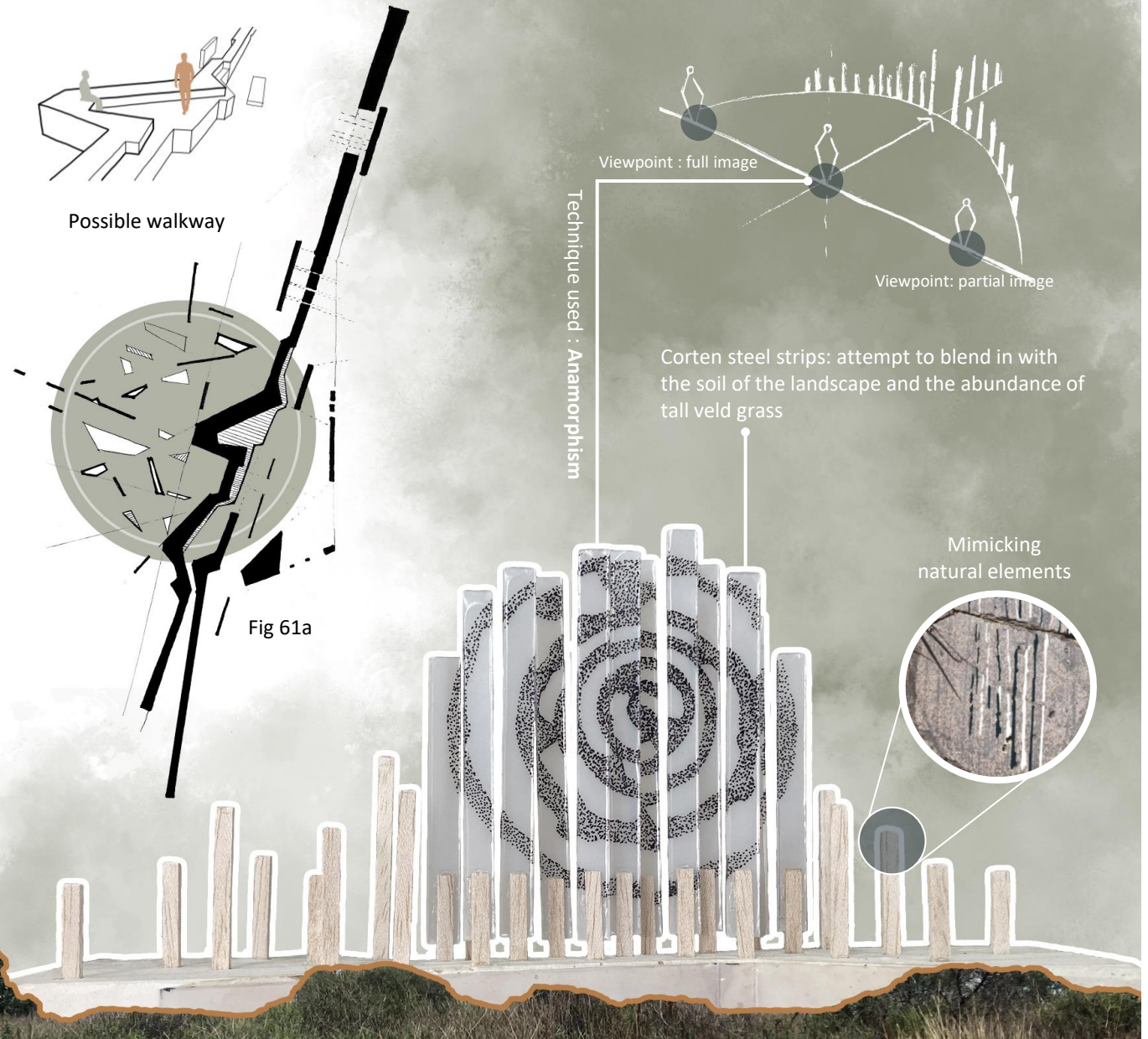


Fig 61a-b : Concept drawings and model with possible design integrations (Author, 2023)

4.4.2 THE APPRENTICE

The essence of the project is to reveal knowledge through a lived experience, which is supported by the relationship between the educator, novice, and observer. The Infinite Conversation of Maurice Blanchot (1969) now becomes concrete. However, these three entities do not only have to be people but can also be translated into architecture. The building is the educator, unfolding and revealing knowledge through a design for the visitor. To understand the knowledge, the concept is further supported by the Finnish architect and professor, Juhani Pallasmaa's work on 'The Slowness of Space' (2016). The concept is encouraged to create a space that would allow time to metaphorically slow down through a designed atmosphere that embraces deep and meaningful experiences. Architecture then becomes the art of reconciliation between man and the world. The concept encourages spatial organization would include a sensory approach to create a nearness and intimacy between man, nature, and architecture

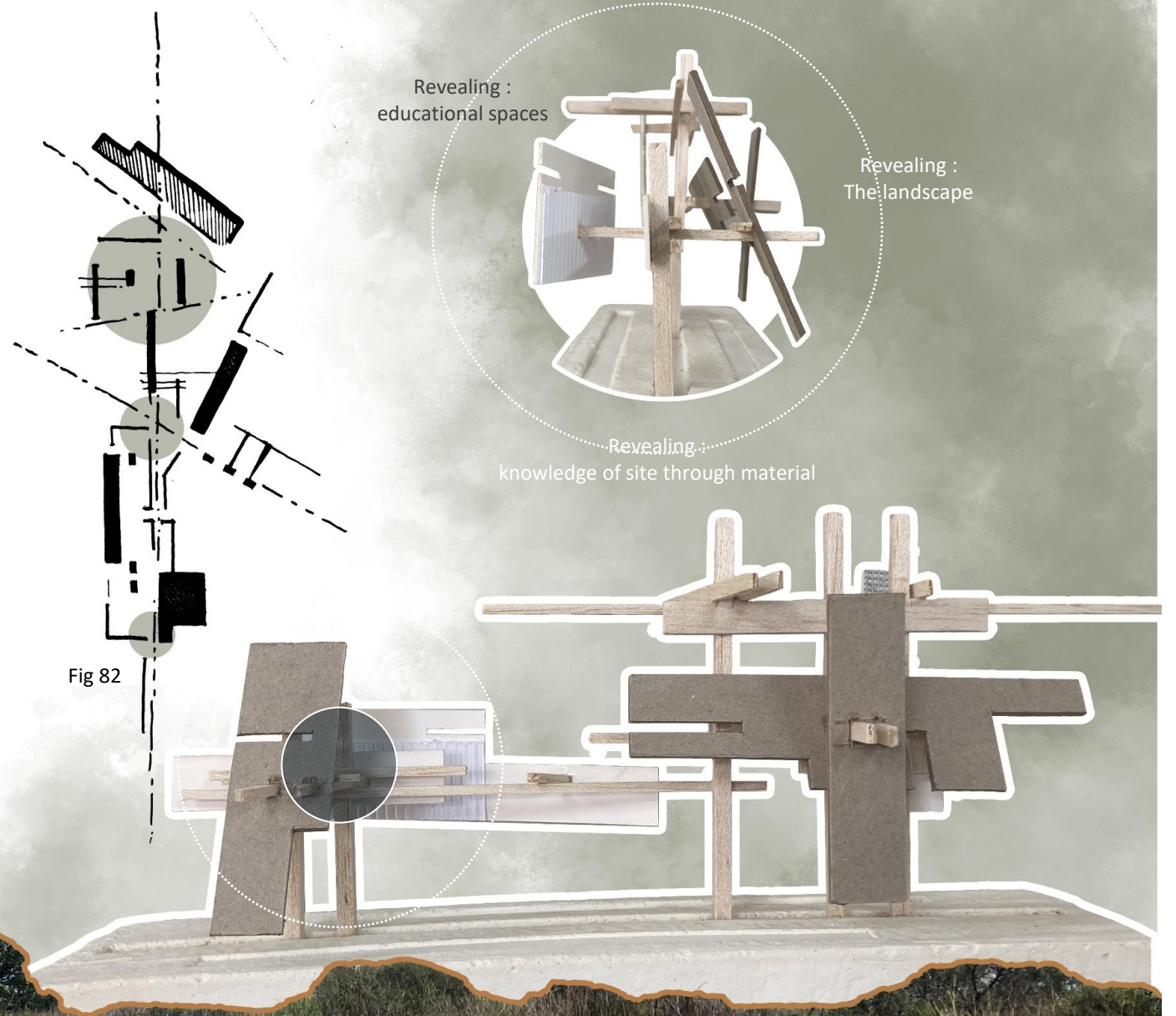


Fig 82,83 : Concept drawings and model with possible design integrations (Author,2023)

4.4.3 THE DIALOGUE BETWEEN MASS AND THE TECTONIC

To touch the earth lightly is a well-known architectural intention of the architect, Glenn Murcutt. As the site is a declared provincial monument, it is appropriate to introduce the phrase within the theoretical thinking of Kenneth Frampton in his work on Critical Regionalism. The structure used by geologists, archeologists, and the San Communities all have one element in common. Temporality. Their dwellings are easily removed from a place without leaving a trace. Whether it is coincidental or on purpose, it encourages a sensitive careful approach to the site. On rare occasions, the san would leave the frame of their dwelling, knowing that they would return to the site within time. This reveals an interesting relationship between the tectonic structures resting on the mass of the context. This concept investigates the relationship between tectonics and stereotomic to establish a way of lightly touching the earth for a return.

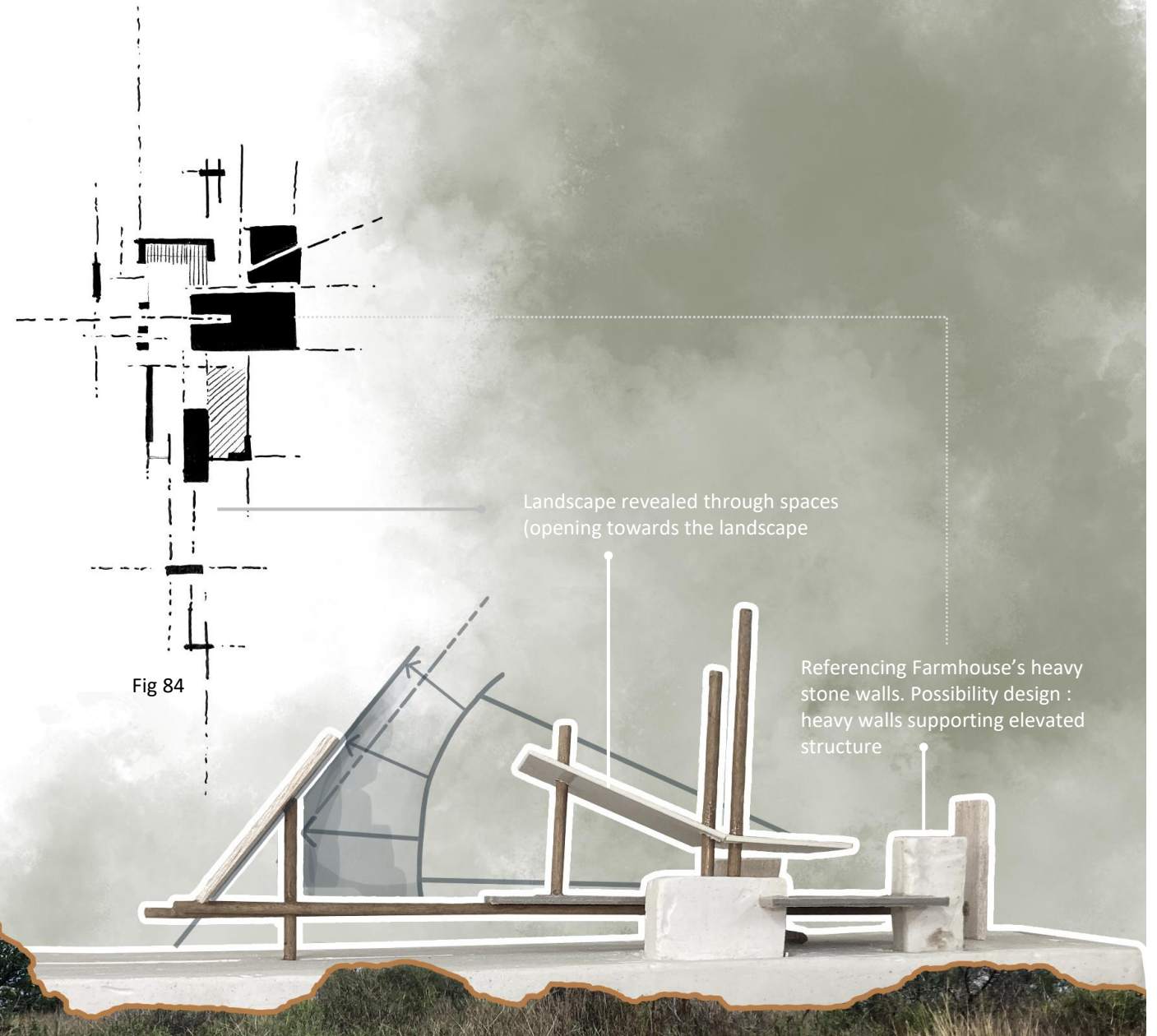
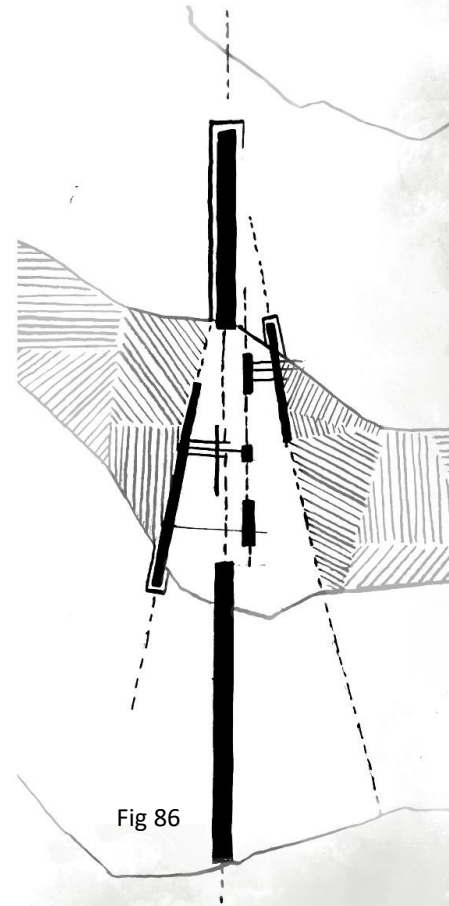


Fig 84

Fig 84,85 : Concept drawings and model with possible design integrations (Author,2023)

4.4.4 TRACES OF DESEDIMENTATION

Over the years, the unknown has passed through the site, only leaving a single memory within the desired paths found on the site. It is important to acknowledge the importance of Time as an architectural theme here. As the desired paths experience changes through erosion, it seems appropriate to suggest a transitory architectural intervention that may play with time. The Khoisan has a beautiful philosophy that “the land is not ours, we belong to the land” (van Wyk, 2016:online). Through this philosophy, we acknowledge that we are merely temporary and will one day also settle within the dust of a landscape. We eventually become part of the landscape. The concept appropriately approaches this philosophy by transforming the desired lines into pathways by cutting into the earth. This is, however, only provisional, as the pathways will follow the process of erosion over time and will eventually become part of the natural landscape again.



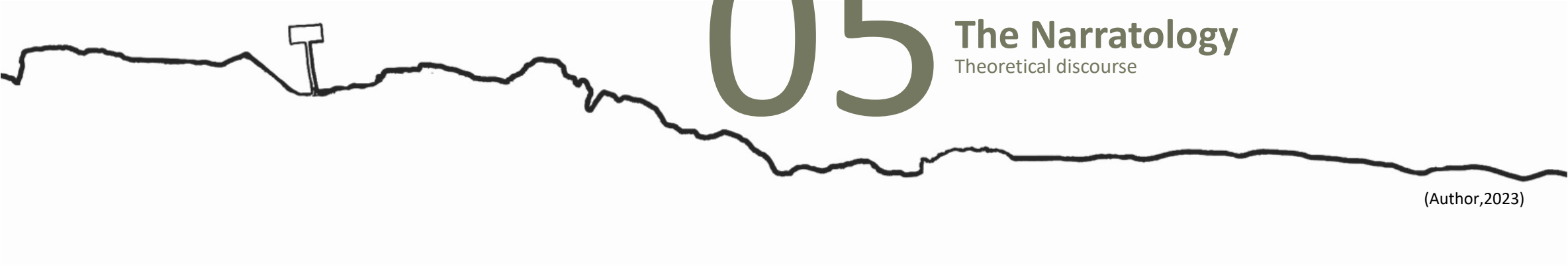
Using fading pathways to connect spaces



Fig 86,87 : Concept drawings and model with possible design integrations (Author,2023)

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05

The Narratology

Theoretical discourse

(Author, 2023)

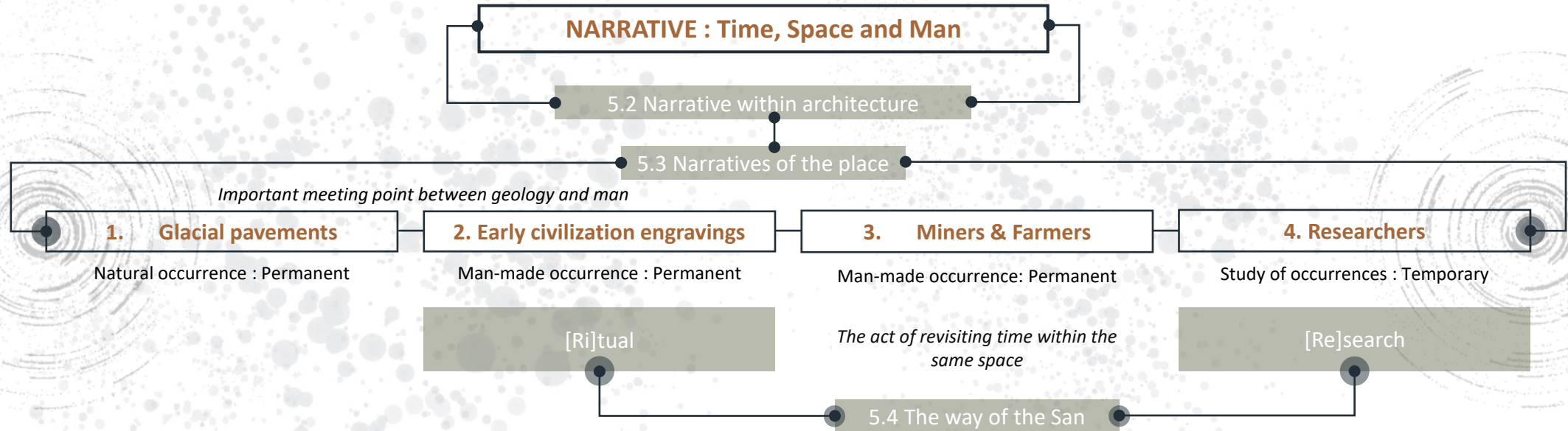


*"I don't know, I am making this up as I go!"
(Indiana Jones, Raiders of the Last Ark, 1981)*

(Author, 2023)

5.1 FOREWORD

The objective of geology and archaeology is to unearth information or historical artifacts that can tell stories about the past, how it impacted the present, and perhaps even how it will influence the future. The two respective fields also have a dependent relationship, as archaeology needs geological facts and knowledge to determine the unearthed findings. The conceptual explorations of this chapter determined and investigated the essence of the project, revealing the *knowledge* or *narratives* of the site through architecture.



(Author,2023)

5.2 NARRATIVE WITHIN ARCHITECTURE

For all time humankind has used visual devices for the narration of stories. The visual devices range from rock art, sculptures, paintings, and architecture. Architecture has the capacity to translate the narrative of a place or a certain historical time frame into a space. According to Wallace (2007:online),

“Architecture forms a visual, spatial link between the past, present, and future, becoming a point in the timeline of a place and culture.”

The narration of stories within architecture is mostly evident in the design of early churches, such as Notre Dame (Fig 88a,b) or St Peter’s Basicilla (Fig 88c). Since people of that period were illiterate, it was important that the relationship between art and architecture could portray the narratives of Christianity. Within a contemporary setting, narration within buildings has become less or rather one-dimensional. The work of Peter Zumthor (Fig 89a), Daniel Libeskind (Fig 89c), and Michael Arad and Peter Walker (Fig 89b proves otherwise as they create spaces that not only tell a story but provoke an emotional response from visitors. Within an African setting, Peter Rich uses natural materials and construction techniques to reflect the narrative of the place (Fig 90a) while KLG Architectures translated cultural aspects of the (Khoi)San into structural details (Fig 90b)

PAST



The Notre Dame

Fig 88a : (Bradley,2017:online)



Fig 88b : (RicardMN,2019:online)



St Peter Basilica

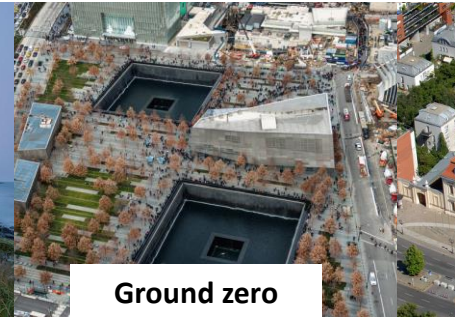
Fig 88c : (youlocalrome.com,2019:online)

PRESENT



The Steilneset Memorial

Fig 89a : (Meredith,nd:online)



Ground zero

Fig 89b :
(constructconnect.com,2021:online)



Jewish Museum

Fig 89c : (Schneider,2021:online)

AFRICAN



Mapungubwe Interpretation Centre

Fig 90a : (archidatum.co, 2016:online)



!kwahtu San Heritage Museum

Fig 90b : (Letch,2019:online)

5.3 NARRATIVES OF THE PLACE

Nooitgedacht, nooit gedink, never thought of. An appropriate name for a place that goes beyond what one would often associate with a farm in the Northern Cape. transcends any expectation of a farm within the Northern Cape. The various narratives of the heritage sites found on and within the surrounding context of Portion 06 place themselves within the significant natural and cultural history of South Africa. To execute a theoretical approach within the narrative, it was essential to identify the narratives of the site, such as the :



Glacial Pavements
(Author,2023)



Engravings
(Author,2023)



Farmers
(Author,2023)



Researchers
(sarada.co.za,nd:online)

Main narratives



Fig 91 : : the various narratives (Author,2023)

Each of these narratives was created based on an occurrence that situates itself within a specific window of time. This type of time can be identified based on the characteristics of the event that took place, such as the permanency of the striation marks found on the glacial pavements. Time therefore created different types of space on the site, ranging from permanent to temporary, and from research to a sacred space.

The glacial pavements and engravings present an interesting time dynamic as they appear permanent within the rock surfaces but is busy fading due to weathering. Even though the striation marks and engravings share the same place, they do not share the same space, as one is of a natural occurrence and the other is defined by man as a spiritual and sacred space.



5.4 WAY OF THE (KHOI)SAN

The (Khoi)San are people of stories. The generational stories date back to the first (Khoi)San who walked over the earth in search for the mighty eland. These stories gave them an identity that could place themselves within the world. The influence of their stories greatly influenced the manner in which they carry out their daily activities, rituals, and interactions with nature. Closely related to the theoretical thinking of Kenneth Frampton's *Critical Regionalism* (1983), the theoretical approach of Narrative focused on the *Way of the (Khoi)San*.

- **The way of migration**

The (Khoi)San are traditionally nomadic and migrated to find natural resources. They travelled lightly over the earth and used the landscape to create a space of temporary residence.

- **The way of dwelling**

A third skin are made from natural elements of the surrounding landscape, including grass, twigs, and stones. To designate a living space, a circle is carved in the ground whilst the group would sing and dance around it. The structure is first roughly built with a membrane and then covered with grass. A reed mat covering the third skin's entryway establishes the threshold between the personal and communal space. Additionally, the process of opening the reed mat invites the landscape to the interior.

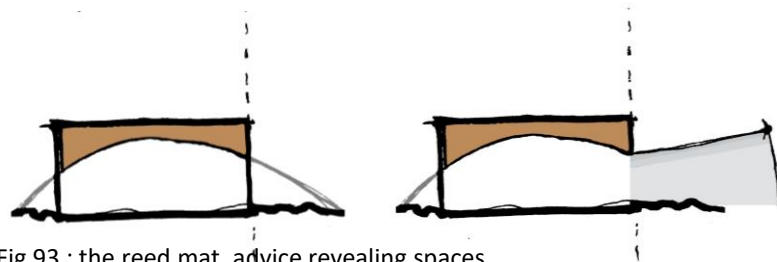


Fig 93 : the reed mat, advice revealing spaces

- **The way of storytelling**

At the chance of storytelling, the (Khoi)San mimicked nature to narrate stories. They also believed that stories travelled through the wind and would only lend itself to those who wants to hear.

- **The way of celebrating**

The majority of dances are done in a circular formation since a circle has neither a beginning nor an end. Anyone is free to join or leave at any moment. Applying it to the location reveals that events are linked based on the several ritualistic locations discovered.

- **The way the Veil**

The veil is believed to be the threshold between the mundane world and of the spiritual realm (fig 94) The spiritual realm was often experienced through a trance-like state, choreographed by the shaman or spiritual leader (Witelson, Williams, Pearce, Challis. 2021 : online). The journey through the spiritual realm is reflected within the engraving made on the sought out stones. Engravings are also however, according to Klopper(2005:online) one of the first visual methods early civilization used to communicate.

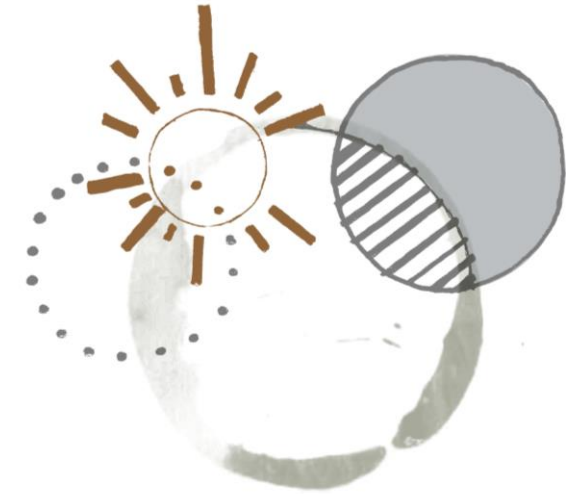


Fig 94 : the reed mat, advice revealing spaces

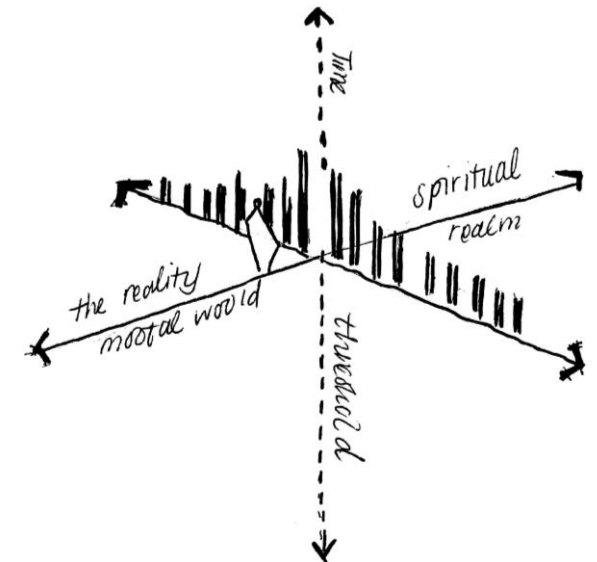


Fig 95 : The Veil : the threshold fo metaphysical time



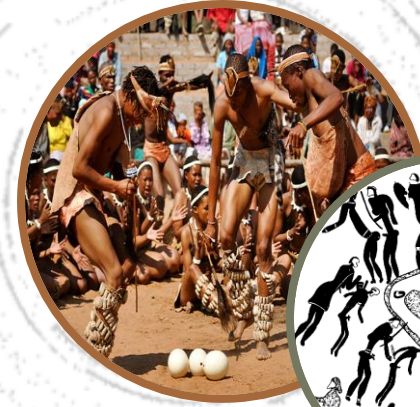
01 The way of migrating
 * Move lightly over the earth



02 The way of dwelling
 • The Layers of the structure
 • Reed mats



03 The way of storytelling
 • Stories travel through the wind)
 • Mimicking nature to portray occurrences

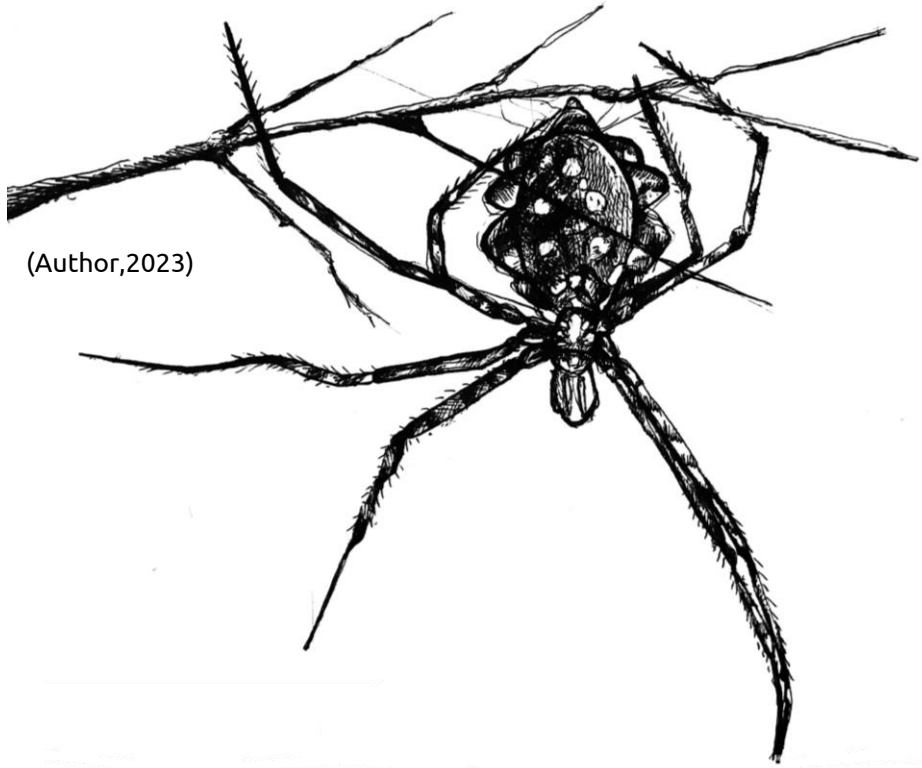


04 The way of celebrating (ritual)
 • Dancing in a circle (can be joined at any time = a continuous celebration)



05 The way of the Veil

Fig 96 : : The different ways of the San (Author,2023)



(Author,2023)







06

The Plot

Design and theoretical Development

(Author,2023)



*"There is always a dream, dreaming of us!"
(gateway-Africa.com,nd : online)*

(Author,2023)

The design development is divided into four stages, the Conceptualization, the First Draft, the Second Draft, and the Third Draft. In the conceptualization phase, the architectural possibilities included in the abstract models and drawings were investigated. The initial draft developed itself within the conceptual approaches and sought to establish a theoretical relationship in the preliminary phases of the design process. Following the first draft, the second draft establishes itself within the theoretical framework of the narratives and concentrates on architectural components that would represent the narratives of the site and the surrounding landscape. Finally, the Third Draft recognized the connection between storytelling and architecture that would be reflected in the final design (Fig 97)

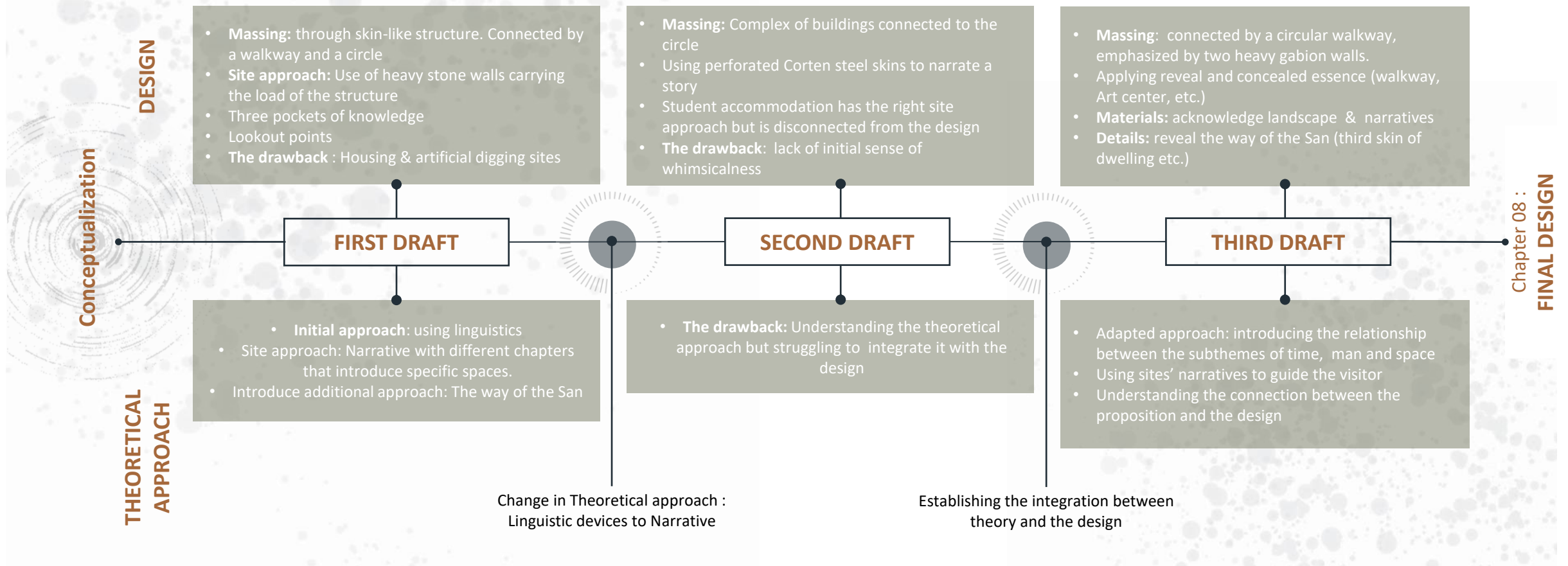


Fig 97: Chapter layout (Author,2023)

6.2 CONCEPTUALISATION

The Conceptualization stage within the design development first explored design possibilities within abstract diagrams before translating it into possible architectural elements. The first series of abstract conceptualization focused on the integration between the natural elements of significance of the site and with the framework of the different cultures of the site. The explorations of Fig 98 attempted to understand the broken lines of a Hertzian fracture as Fig 99 situates itself within the exploration between landscape, heritage, and culture.

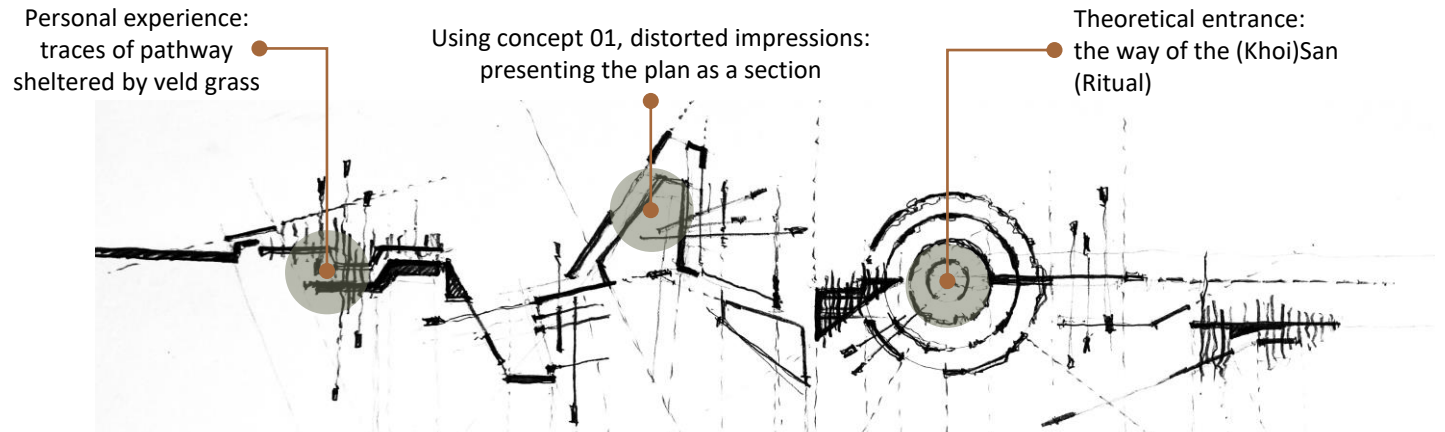


Fig 99 : An abstract approach between revealing the natural elements through the narrative of the (Khoi)San (Author,2023)

The abstract diagrams of Fig 100 largely presented theoretical perspectives on the project, but they didn't truly build a design strategy. It was, therefore, important to analyze the conceptual work done thus far. The Site[Date] revealed an architectural possibility on how the buildings could be connected. The massing would be connected to a walkway, held together by two heavy stone walls. This further supported the relationship between the concealed and revealed spaces as one travels through the complex.

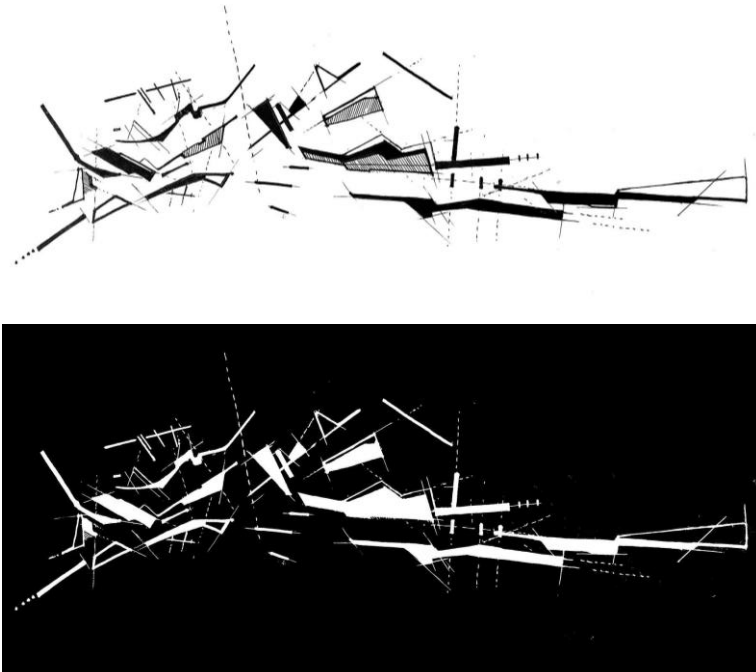


Fig 98 : Abstract exploration of the rock outcrop (Author,2023)

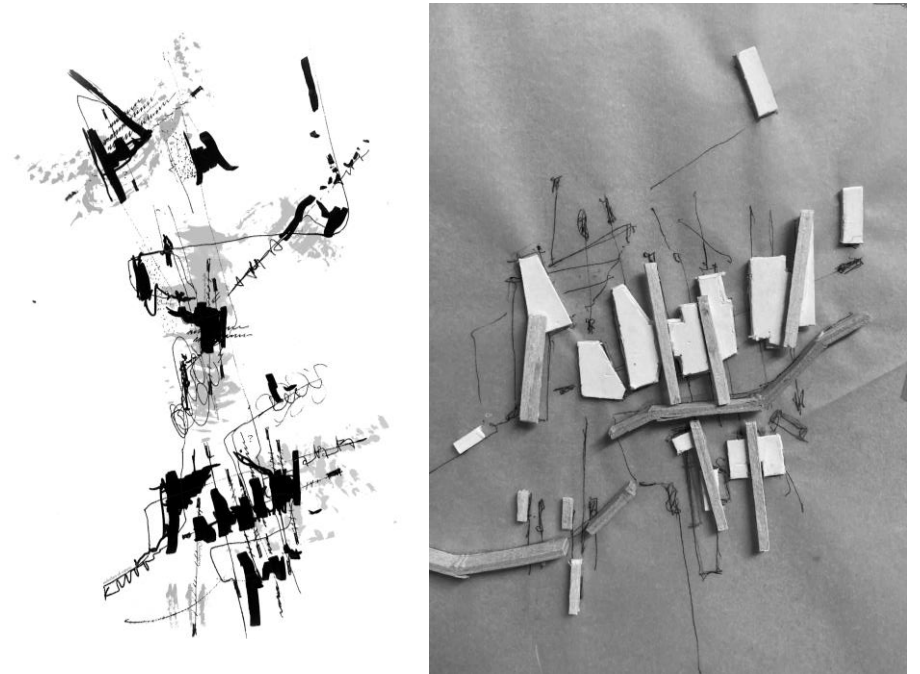


Fig 100: Translating the abstract diagram to a possible massing layout (Author, 2023)

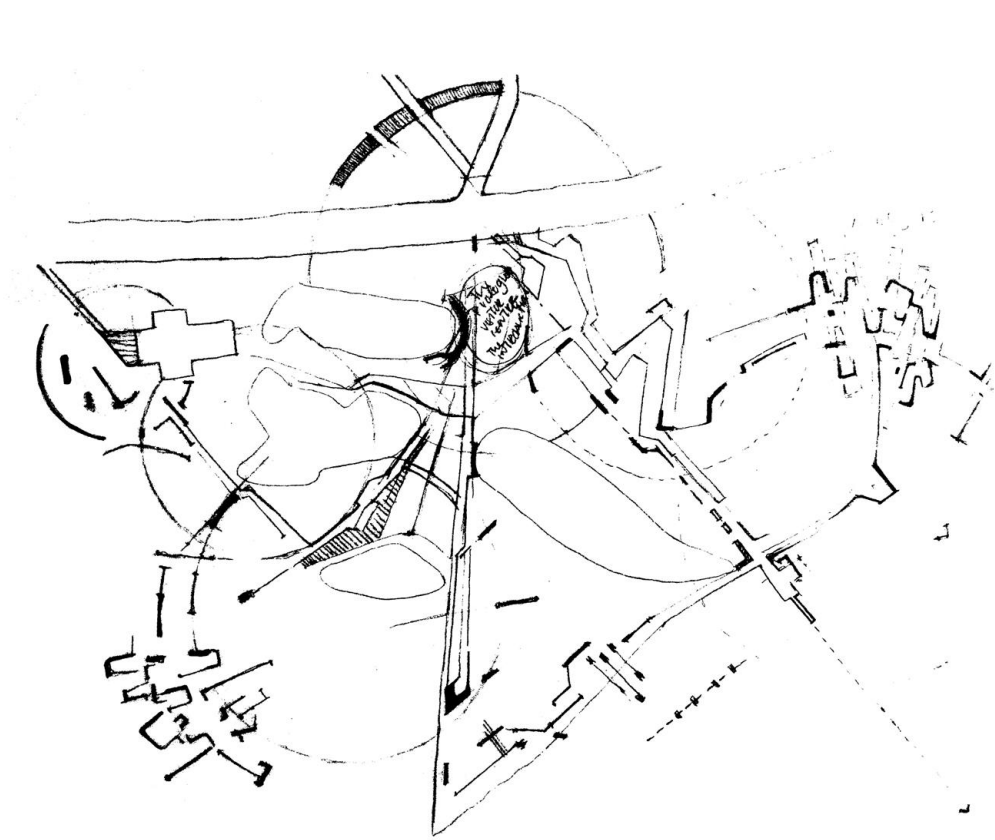


Fig 101 : Initial diagram approach to the site (Author,2023)

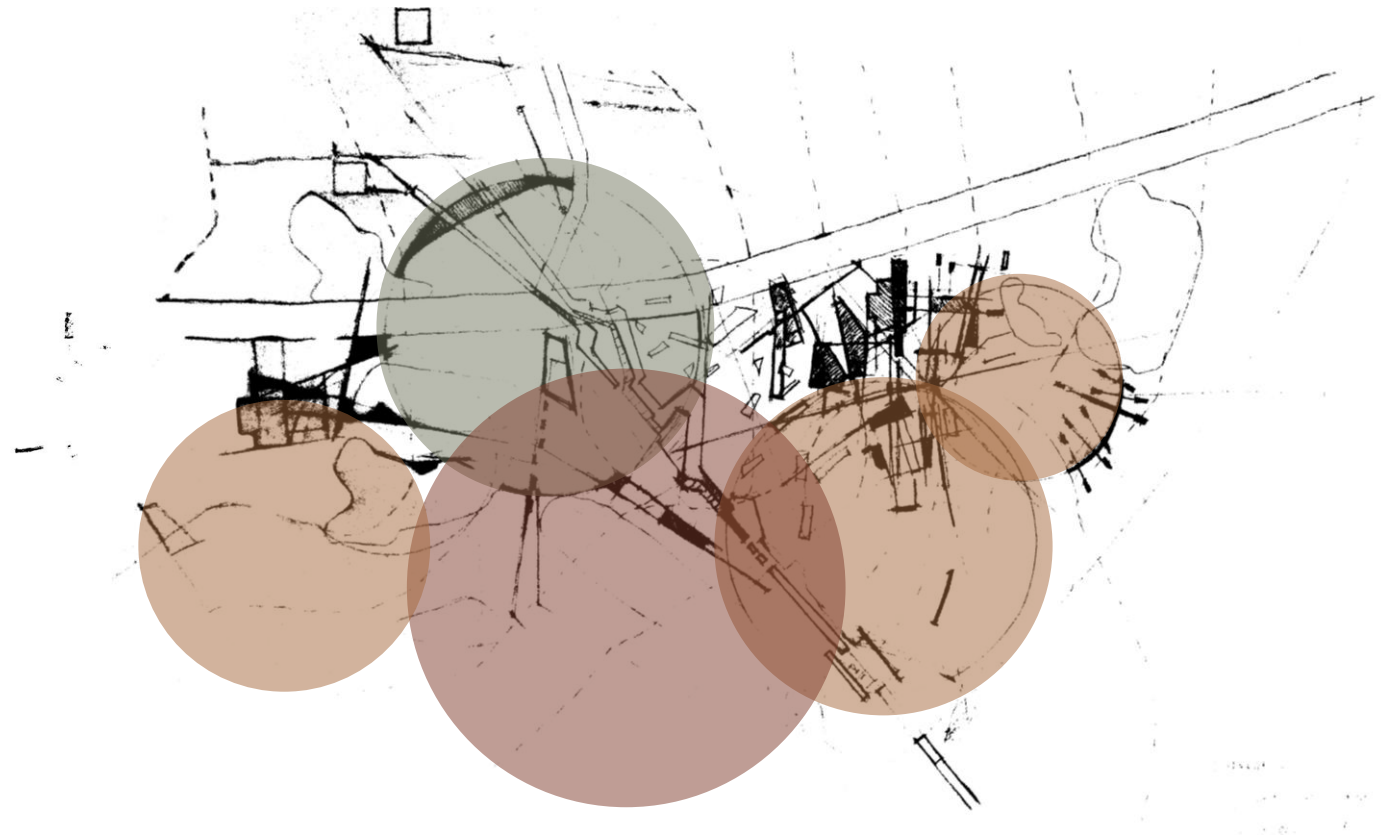
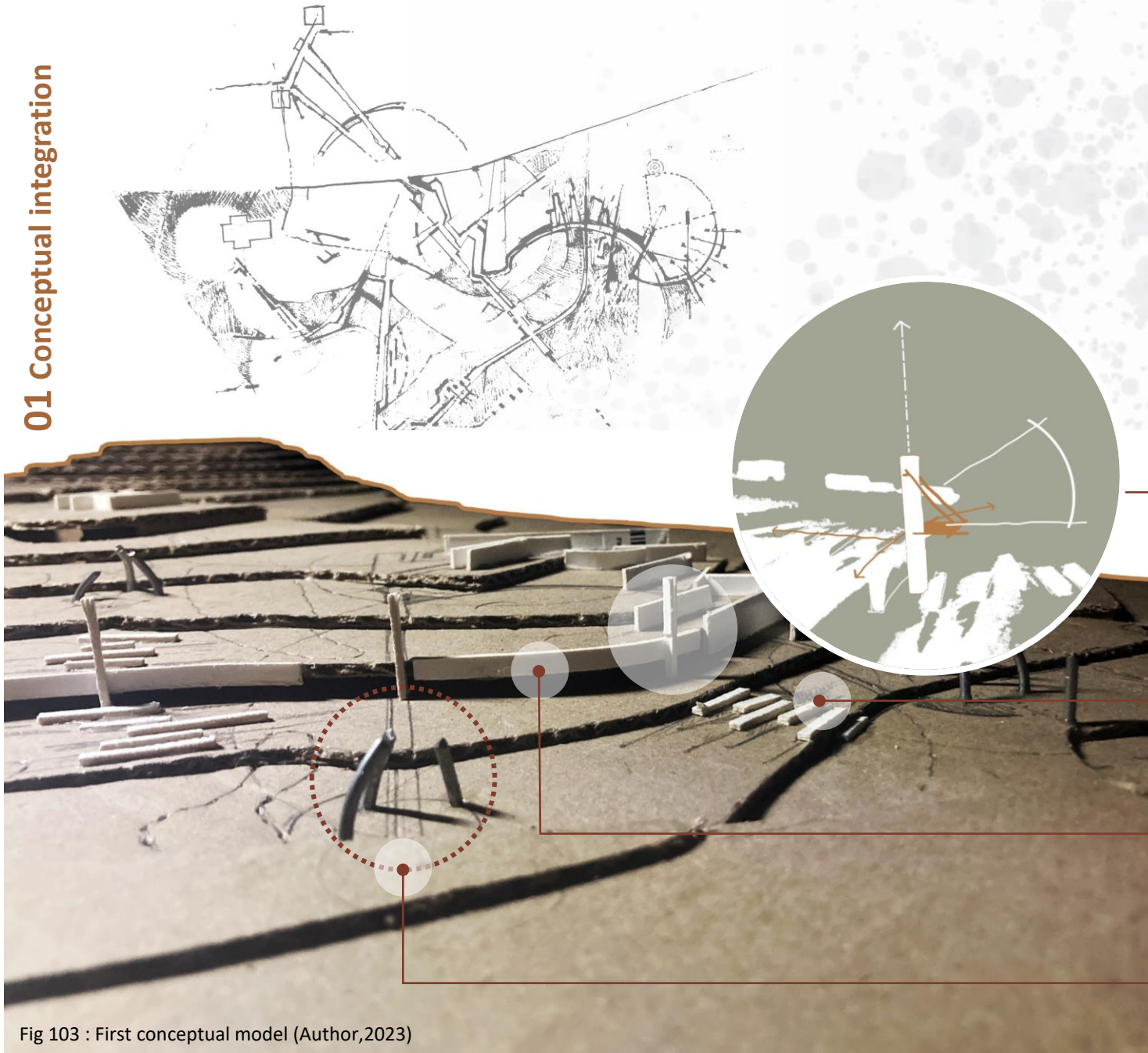


Fig 102 : Connecting the complex with the different celebrations (Author,2023)

The site was initially responded to by connecting the spaces of significance through circles . The circles reflect the way in which the San performed rituals and dances. It is the formation of different celebrations in which a visitor enters and leaves simultaneously. The diagrams in Fig 101 and 102 aimed to find an understanding of the conceptual work within Chapter 04. The initial response to the massing of the project was to connect it with a walkway that would introduce the visitor to a series of spaces that would reveal the narrative of the site.

01 Conceptual integration



A series of early concept models aimed to translate the diagrams and initial approaches into architectural elements. The skin-like massing introduced the initial design approach of elevated structures supported by heavy stone walls that situate within the site's topography of the site Fig 103). The placing of the massing was appropriately placed to avoid potential damage to the heritage of the site. Building on this, architectural explorations of possible structures could be made as illustrated in fig 103.

● A vantage point within the landscape introduces a view to glacial pavements

● The steps become part of the landscape as they steadily bury themselves within the contours of the landscape

● A rural pathway is the only trace of human occupation on the site. Those traces are used to create an efficient walkway that connects the complex and the glacial pavements

● Three pavilions: introduced as pockets of knowledge. They aim to narrate the narratives of specific spaces on the site.

Fig 103 : First conceptual model (Author,2023)

02 Conceptual integration

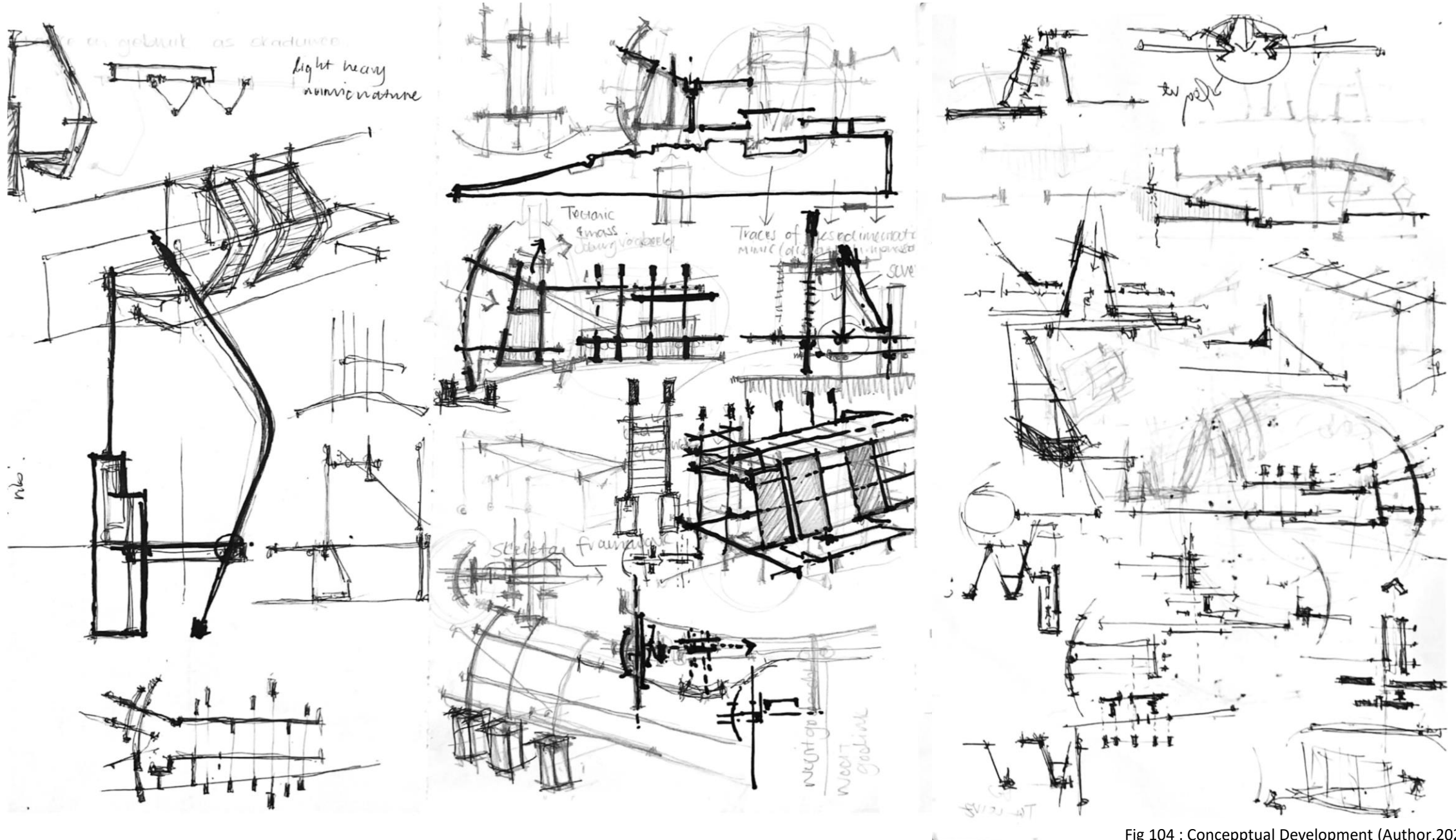


Fig 104 : Conceptual Development (Author,2023)

THE STRUCTURAL TONE | Construction Touchstone

Based on the conceptual development, the Construction Touchstone introduces a refined approach to the site, structural elements, and the integration of the various narratives of the glacial pavements, engravings, and the people who spent time on the site. The touchstone plays an essential role in the project as it not only determines structural possibilities but also provides the foundation of the design. Initially starting with a sketch (Fig 105), the concept easily developed into a concept model as portrayed in Fig 106.



Fig 105 : initial concept sketch of the touchstone

This approach mainly envisioned how the journey through the complex would be. Rib-like structures embrace the walkway and guide the visitor through the different spaces within the complex. The site approach of an elevated structure resting on steel and concrete footings was encouraged by Glenn Murcutt's sensitive approach of touching the earth lightly. The space-making of the touchstone focused on translating cultural elements of the (Khoi)San through architecture, such as the third skin becoming a suspended ceiling as illustrated in Fig 107. The choice of weathering steel as a material also situates within the framework of temporality, as it would age with the landscape.

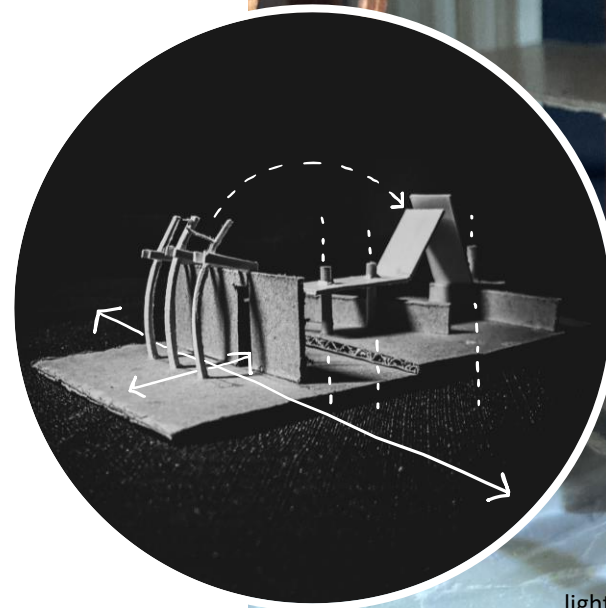


Fig 106 : Concept model
(Author, 2023)

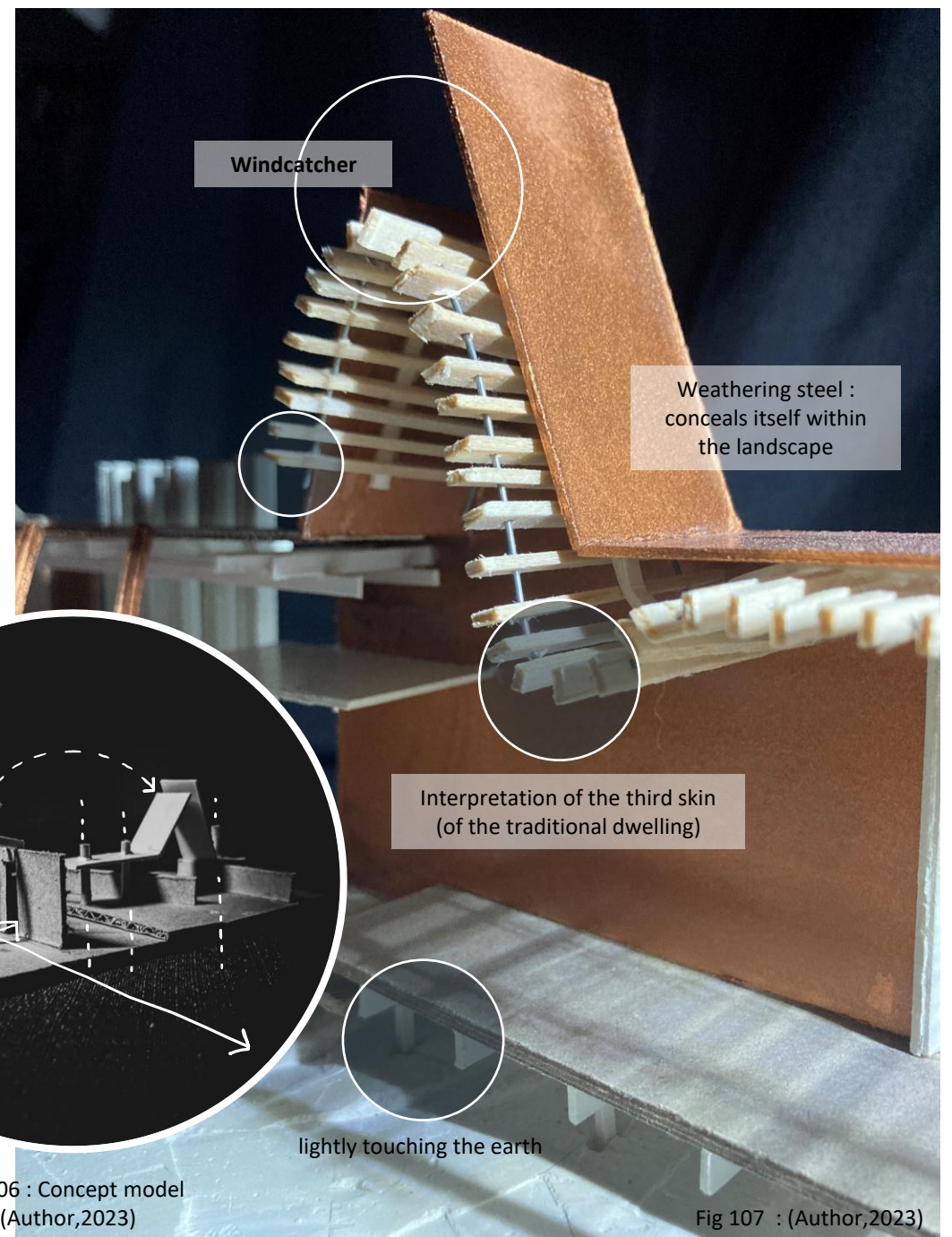
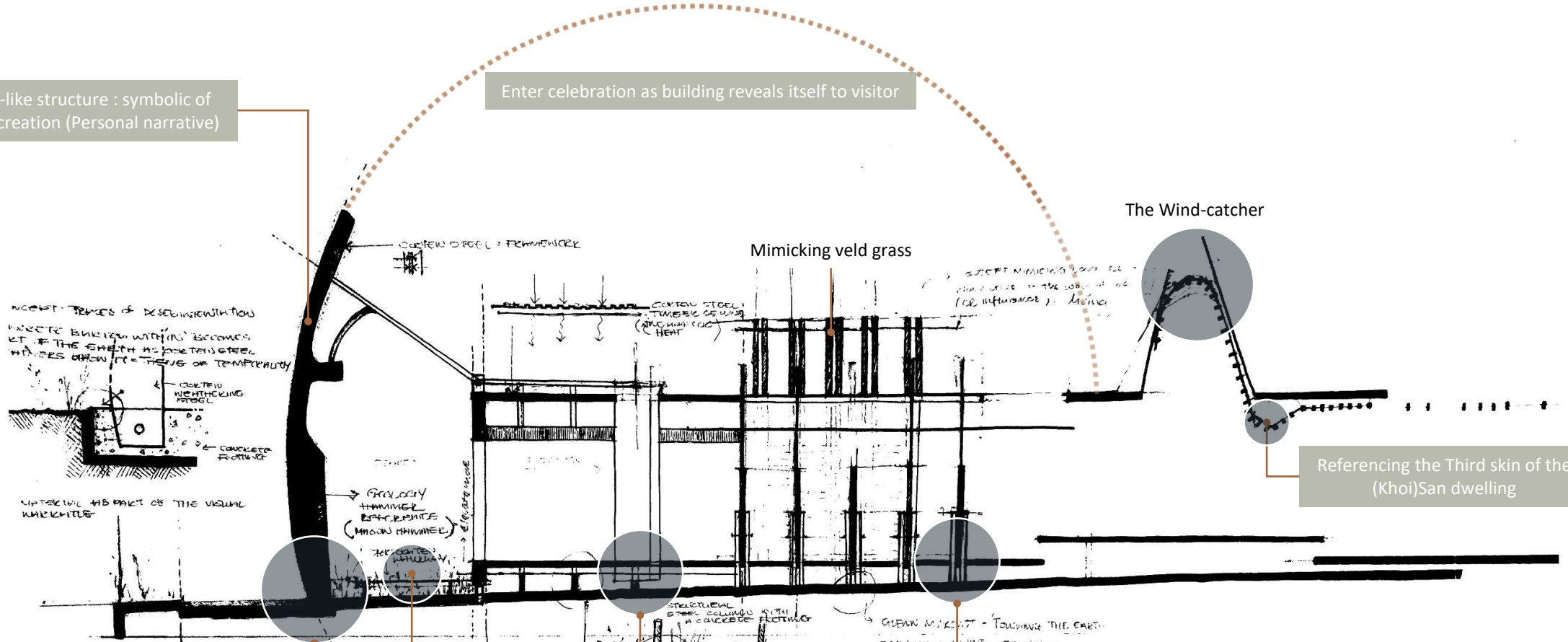


Fig 107 : (Author, 2023)

Rib-like structure : symbolic of the creation (Personal narrative)

Enter celebration as building reveals itself to visitor



The Wind-catcher

Mimicking veld grass

Referencing the Third skin of the (Khoi)San dwelling

Weathering steel clad structure buried within ta concealed concrete footing

Elevated grated walkway (disappears within the landscape during the seasons)

Response to the site : elevate the building from the ground (Glenn Murcutt's approach: lightly touching the earth)

Smaller corten rib-like structures holed together by two steel elements

Fig 108 : The preliminary section of the touchstone (Author,2023)

6.3 THE FIRST DRAFT

The final model presented as a first draft focused on connecting the massing of the research complex to a walkway that intercepts a circle that leads to the different pockets of knowledge of the site. The circular walkway followed the traces on the existing pathways of the site. The pockets are announced through different landscape art that reveals the narrative of the space, such as the use of Corten steel strips revealing the engravings through the visual manipulation technique of anamorphism. The reveal and conceal relationship allows for an exciting journey that offers clues about the site's history through architectural elements.

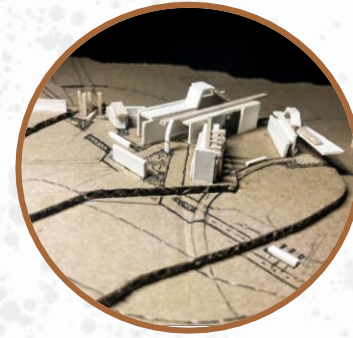


Fig 110 : Pathway cutting into a circle (connects the complex)



Fig 111 : First Pocket of knowledge

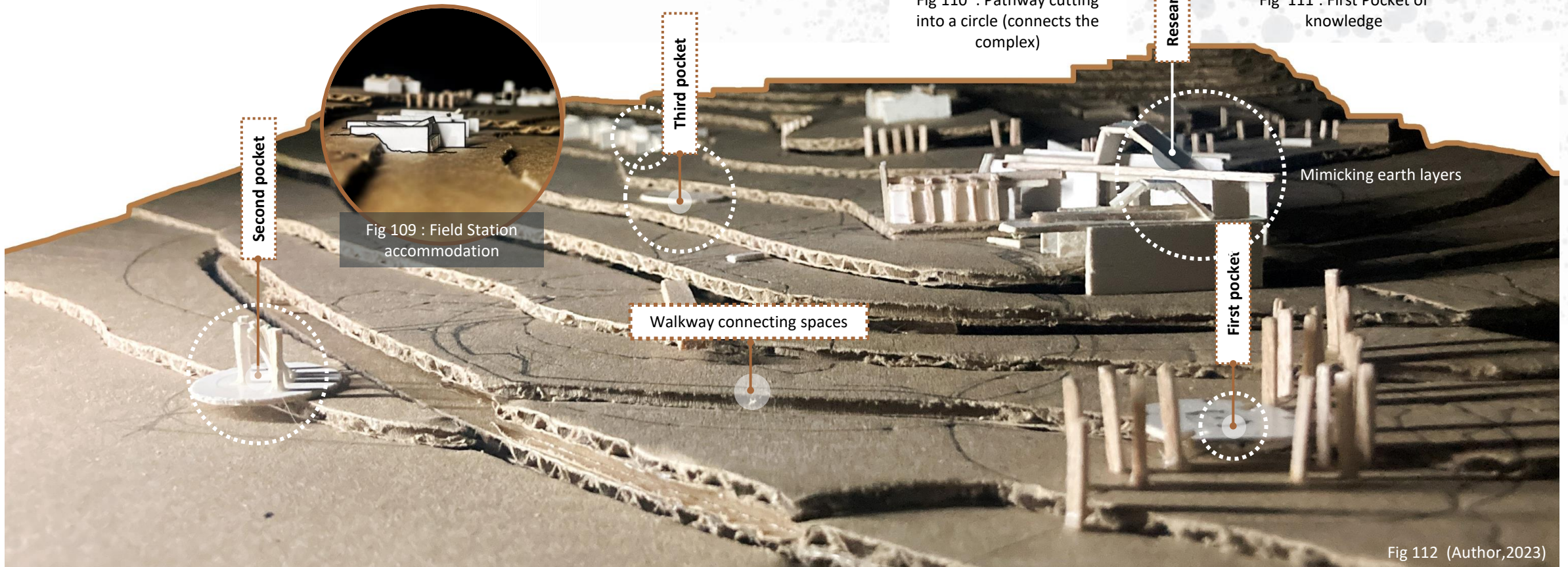


Fig 109 : Field Station accommodation

Fig 112 (Author,2023)

PROGRAM DRAFT

1. Parking
2. Visitor centre
3. Research complex (classrooms and offices)
4. First Pocket of knowledge
5. Second Pocket of knowledge
6. Third Pocket of knowledge
7. Housing facilities (kitchen, living room)
8. Student accommodation

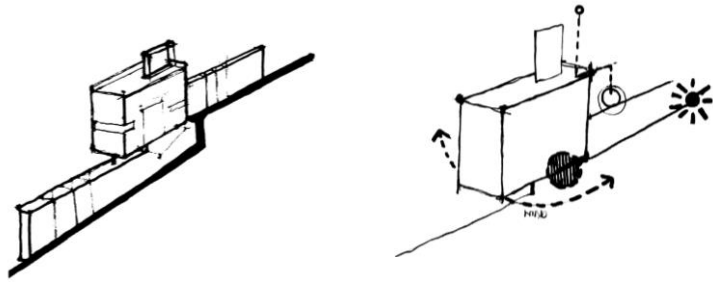


Fig 113 : Conceptual approach of the cabins (Author, 2023)

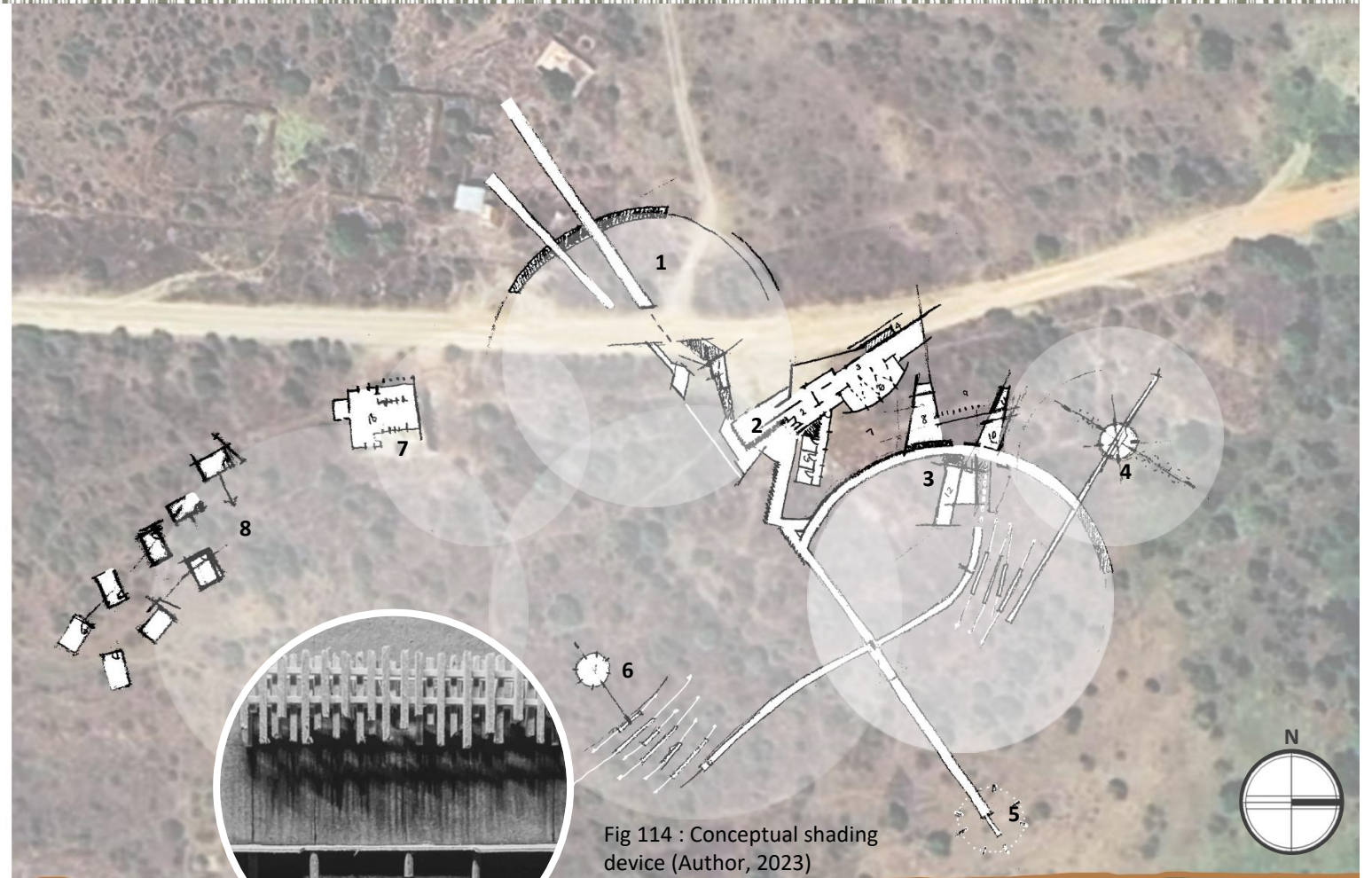
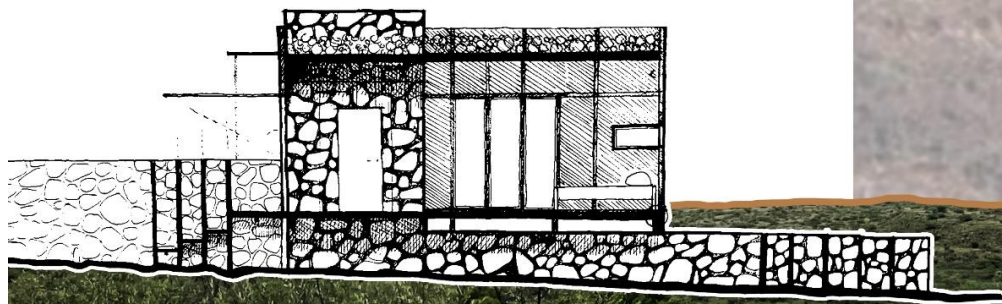
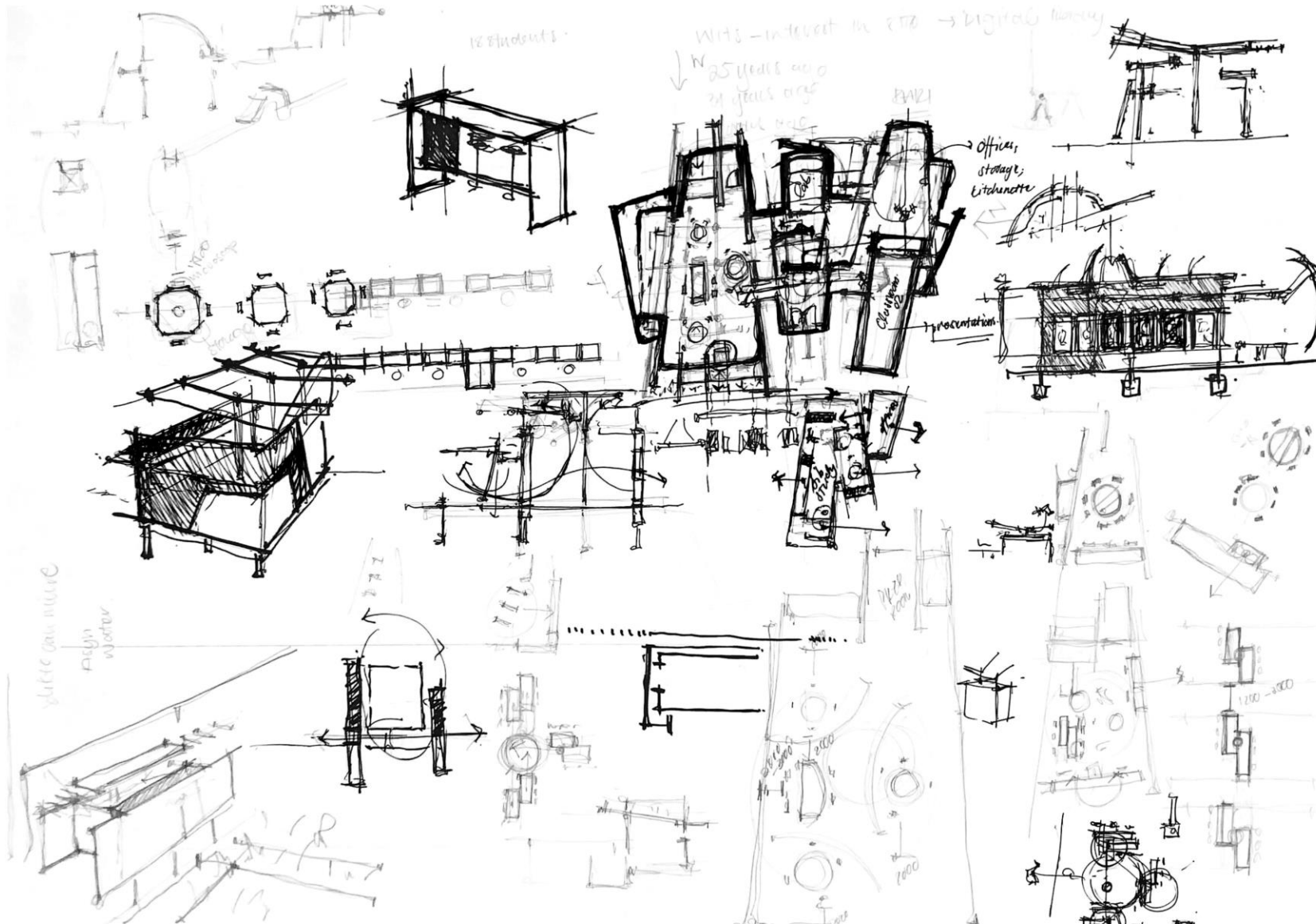


Fig 114 : Conceptual shading device (Author, 2023)

Fig 115 (Author, 2023)

6.4 THE SECOND DRAFT



The Research offices and its neighboring buildings of the presentation room and the second classroom further developed the initial idea of the reveal and conceal relationship through either solid stone or corten-clad extended walls. Attempting to narrate the narrative of the site, perforated corten steel skins would portray.

FOCUS POINTS

- Skin portraying narrative (day & night)
- Buildings elevated from the ground
- Corten boxes (camouflaging within the landscape)
- Materials (stone, corten, etc.) used as an element to connect the various narratives
- Important reflection note : Not enough whimsicalness

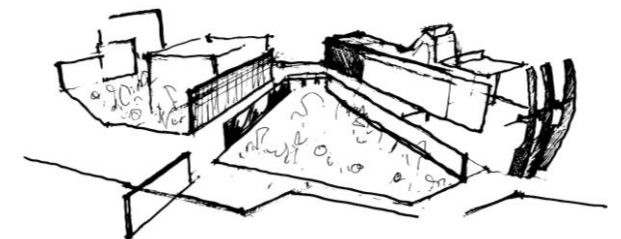


Fig 116 : Conceptual progress (Author,2023)



Green roof :
For interior thermal comfort

- Southern sunlight
- View of landscape & towards the historical farmhouse

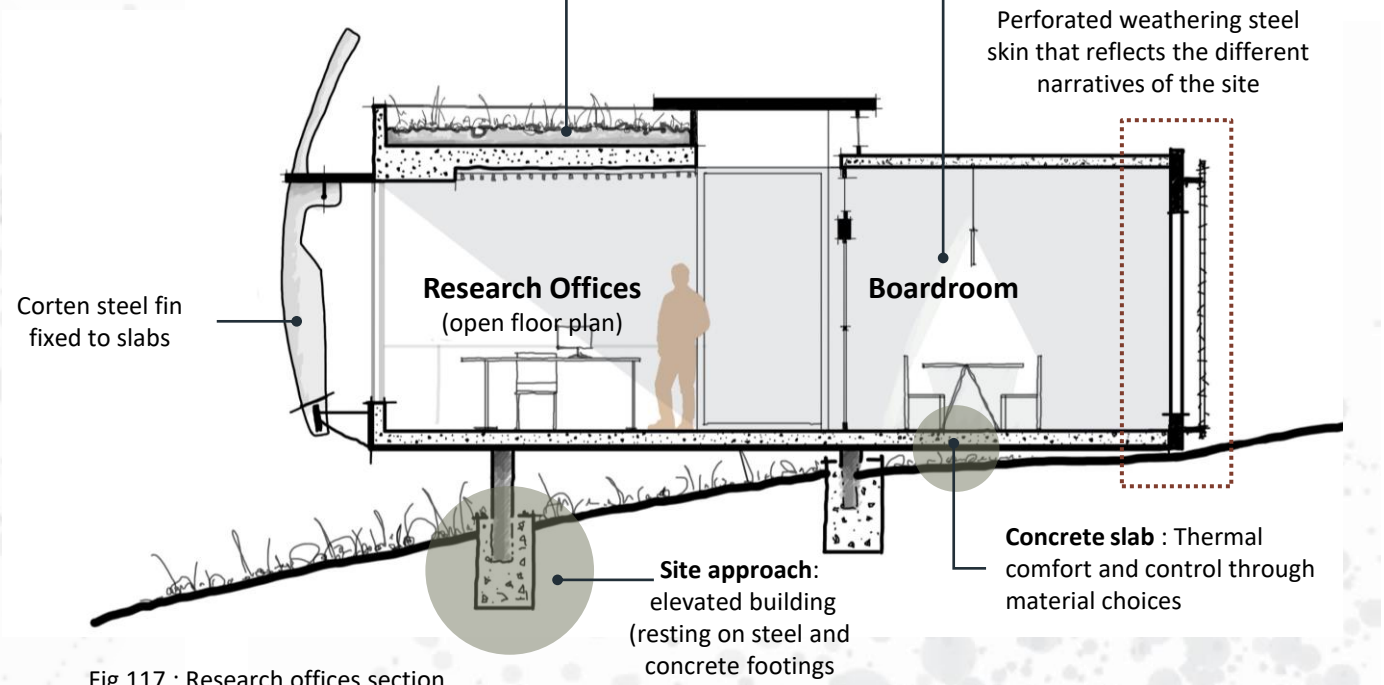


Fig 117 : Research offices section

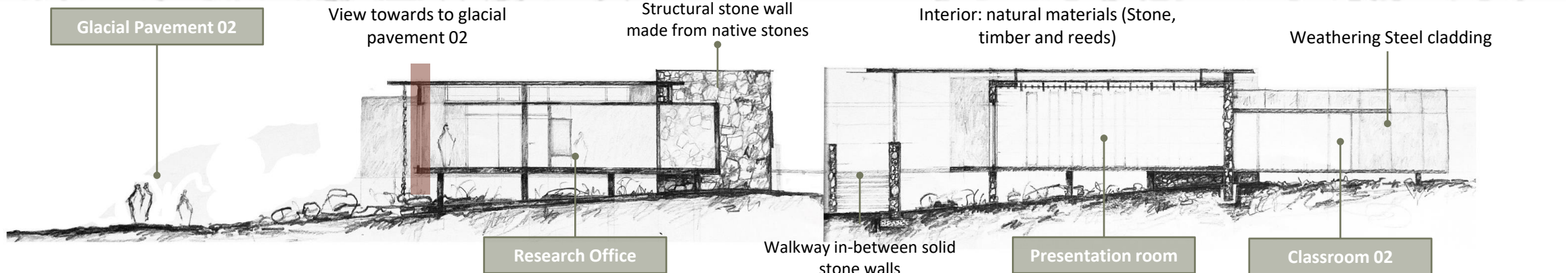


Fig 118 : Research offices section

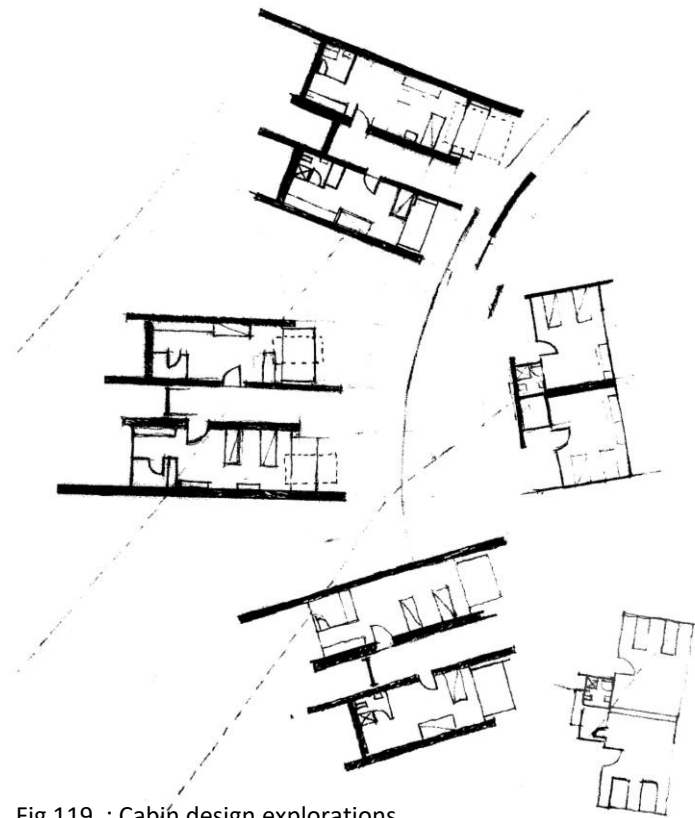
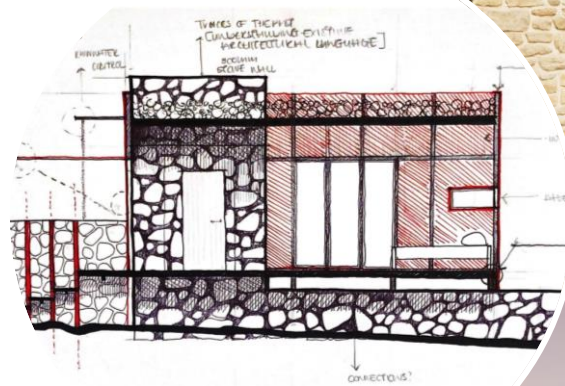
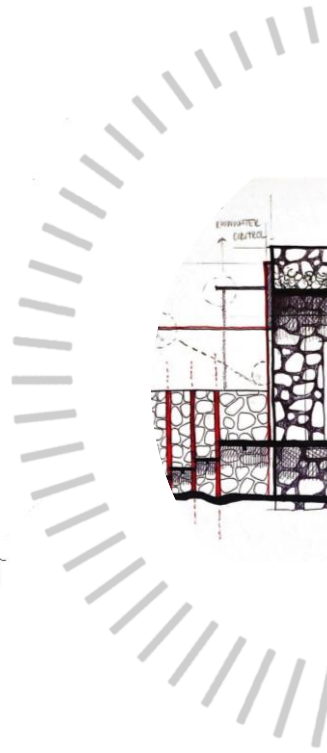


Fig 119 : Cabin design explorations

Building on the first draft, the second draft aimed to find a design resolution that would conceal the cabins from the research complex



6.5 THE THIRD DRAFT

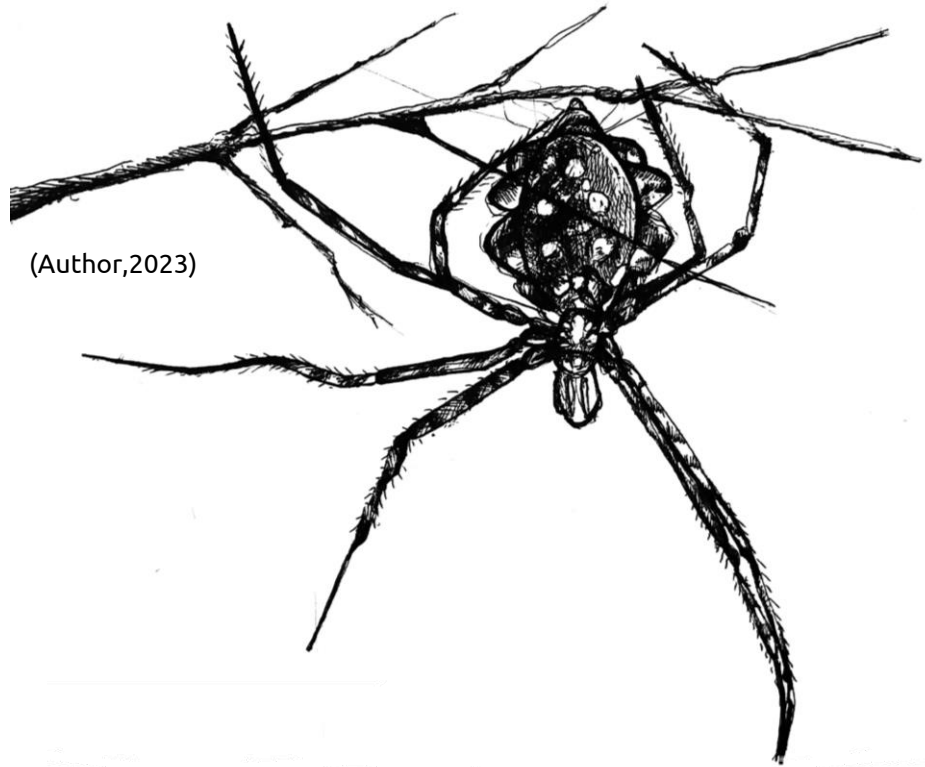
The third draft focused on understanding the theoretical stance of the Narrative, especially the relationship between time, space, and man. The design has now revealed the narratives of the site through a sequence of events. The visitor enters the site through a 'veil' made from Corten steel strips that also dabbles with the technique of anamorphism.

FOCUS POINTS

- Story catchers
- Glacial pavement introduction
- The veil – mimicking the striation marks of the glacial pavements and engravings
- Connecting historical moments with a circle complex
- 1st place in the story makers = story catcher = clue of the San
- 2nd place complex = reveal and conceal concept
- Ribs – a Biblical reference (Genesis)
- Observation tower (African time and spatially) – reflection point for visitor's for time spent on site



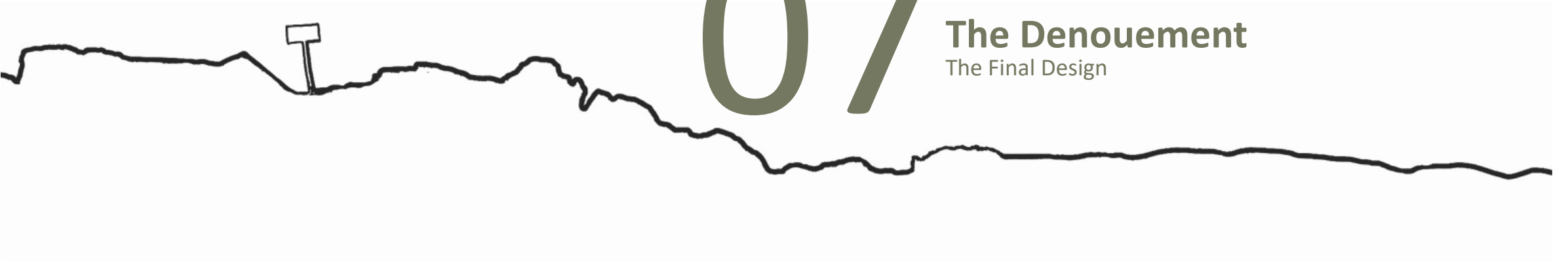
Fig 120: The finalization of concepts and design (Author,2023)

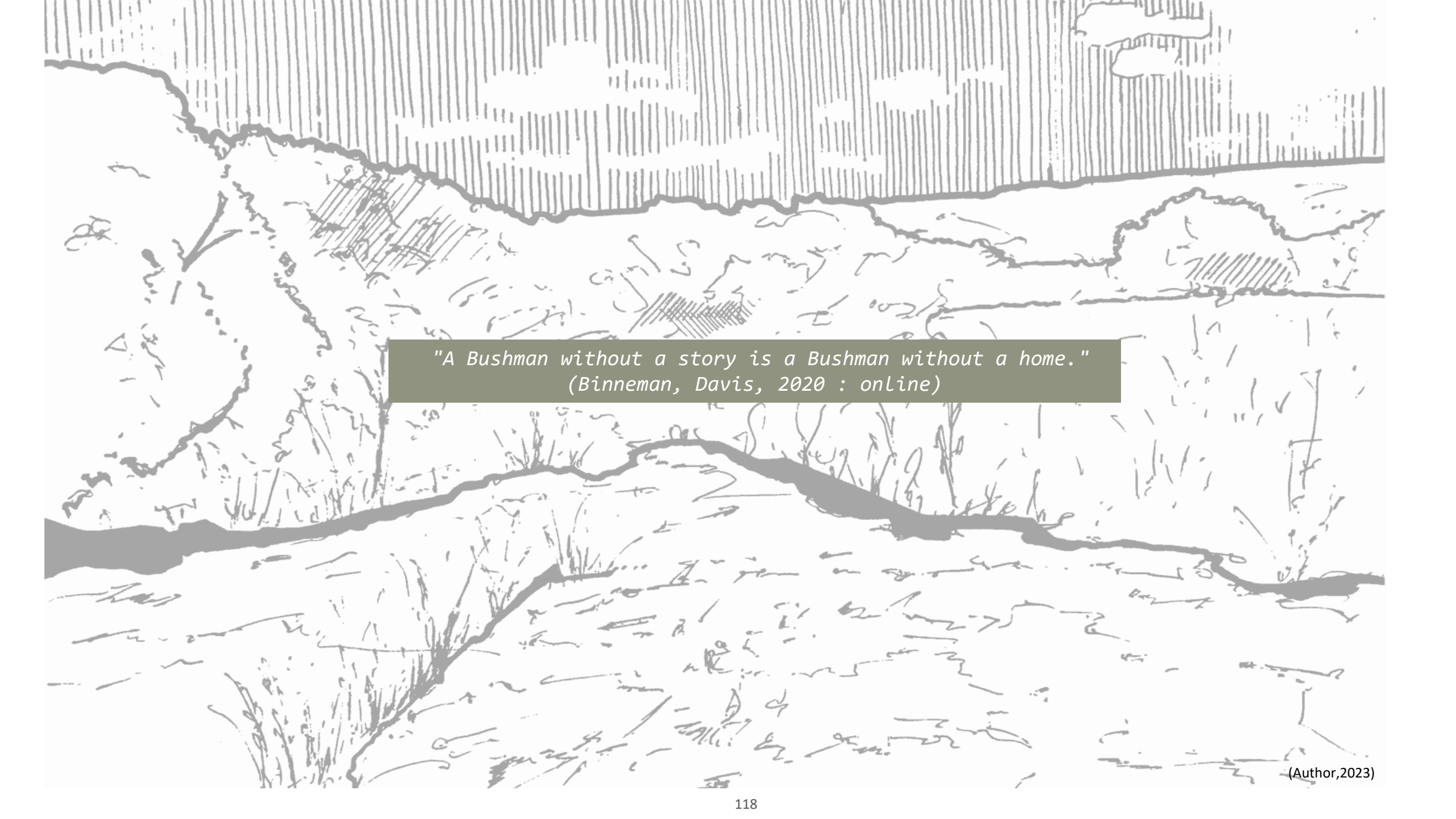


(Author,2023)









*"A Bushman without a story is a Bushman without a home."
(Binneman, Davis, 2020 : online)*

(Author,2023)

THE FINAL DESIGN

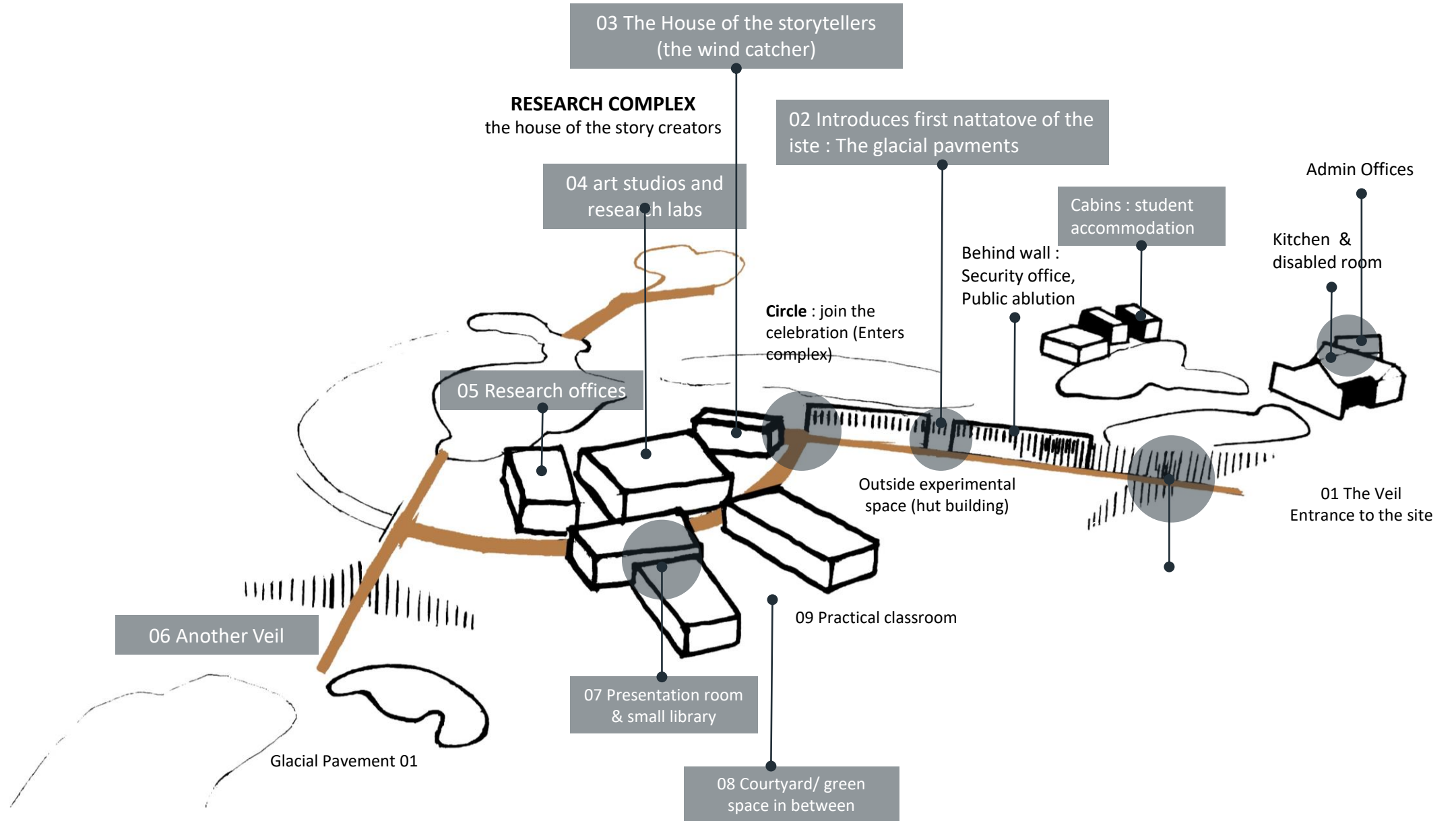
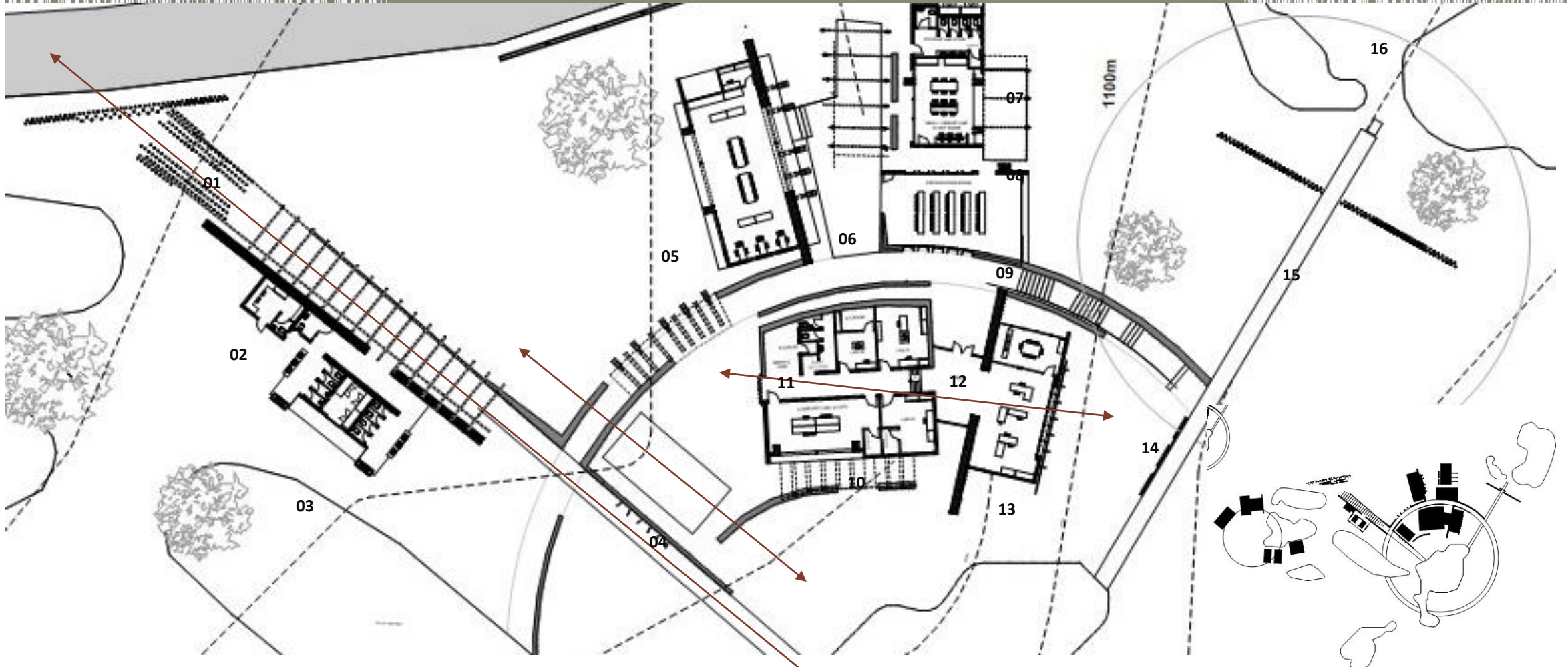


Fig 121 : Diagrammatic illustration of circulation (Author,2023)

THE FINAL DESIGN



01 The Veil – Entrance and exit
02 Security office
03 Public Ablution
04 Art centre
05 Practical classroom with exterior experimental space

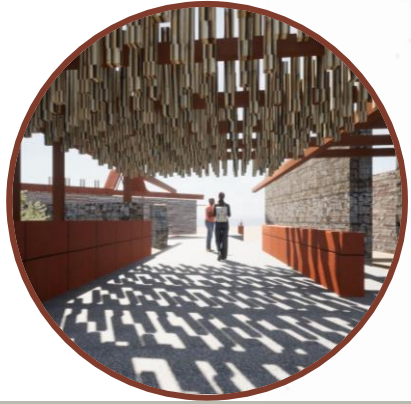
06 Courtyard space
07 Research complex ablution
08 Small study room
09 Presentation room
10 Community Art Studio
11 Research Labs

12 Research centre lobby
13 Research Offices
14 Seating
15 A veil - landscaping
16 Glacial pavement 01





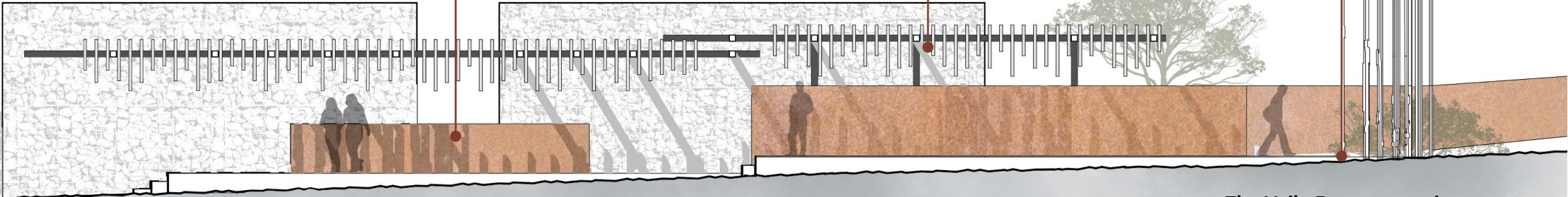
Translating a heavy movement into 'light'



Crossing the threshold



Narrative: glacial pavements



SECTION AA
Scale 1:200

The Veil : Entrance to site
Moving through a threshold that use an occurrence to capture new time where they cross from reality into a sacred space



Fig 122 : The introduction of glacial narrative through light and shadow play (Author,2023)

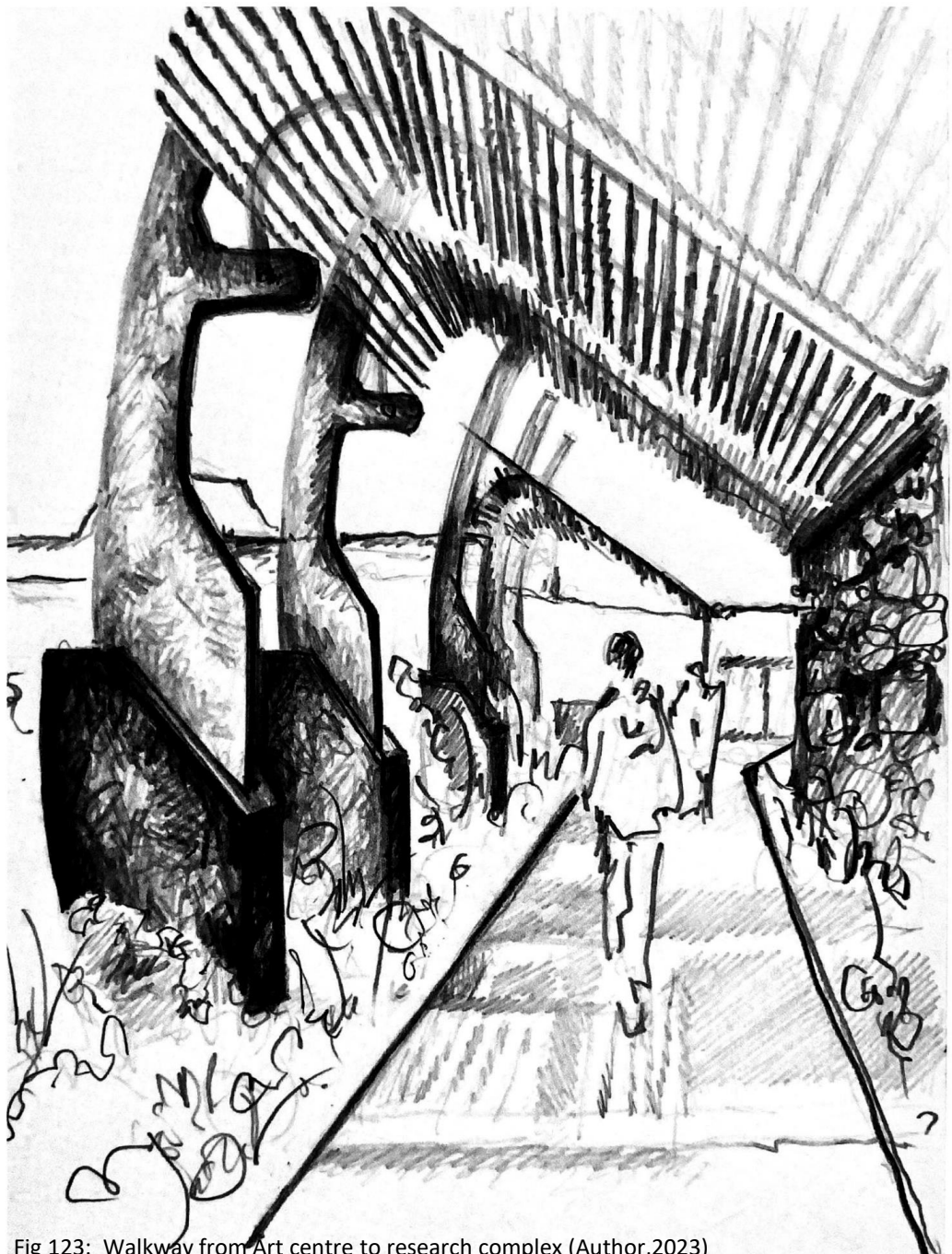


Fig 123: Walkway from Art centre to research complex (Author,2023)

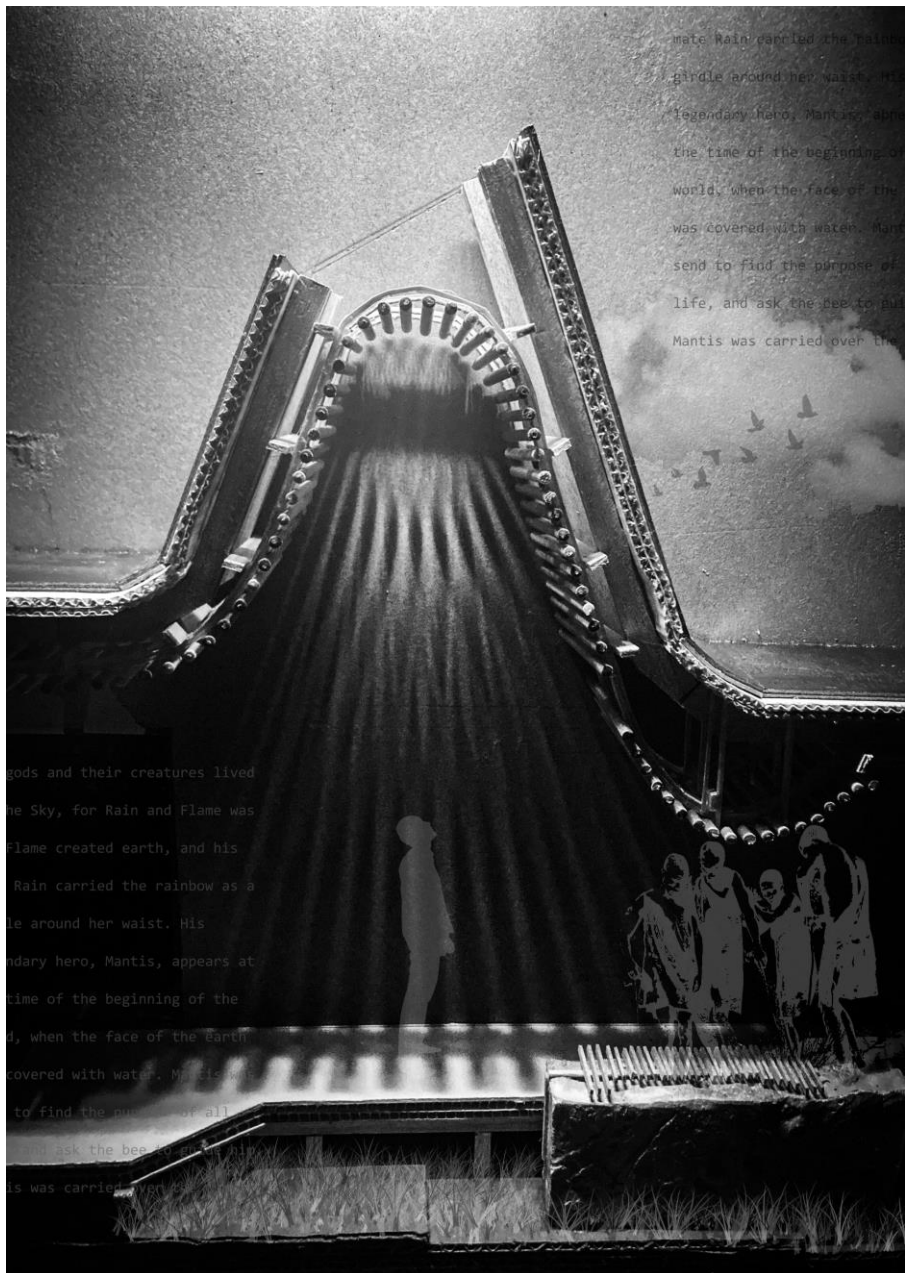


Fig 124: Research offices entrance (Author,2023)



Fig 125: Courtyard space between the art centre and studio (Author,2023)

THE PLACE OF THE STORYTELLER



THE VEIL



Fig : The Veil of the first glacial pavement (Author,2023)



Fig Walkway becoming part of the landscape between glacial pavement 02 & 03 (Author,2023)



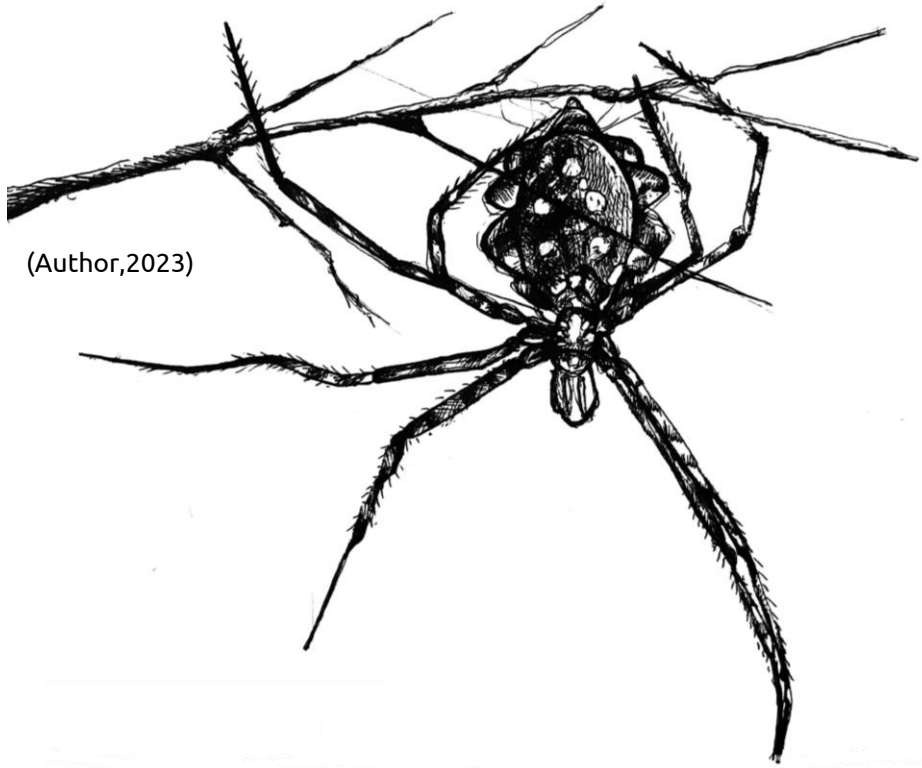
Fig : Seating area at glacial pavement 03 (Author,2023)

FIELD SCHOOL ACCOMODATION



Moon told Rabbit that it wanted to send a message to man. It said that it had caught a bad cold and wanted to take a rest, but it wanted to let Man know that it wouldn't be gone long. Rabbit offered to go and Moon gave him the message. "I'm growing weak to gather strength; I go into the shadows to gather light." When Rabbit gave the message, Man he said, "I'm growing weak and have no strength; I'm going into the shadows are dark." Man sent back word that "Seldom see and soon forgot; when Moon dies her feet get cold." Rabbit took man's message back to the Moon and it made Moon angry. It hit Rabbit in the face with a shovel and made Rabbit angry. Rabbit jumped at Moon and used his claws. The moon was hurt and man can see the marks of today.

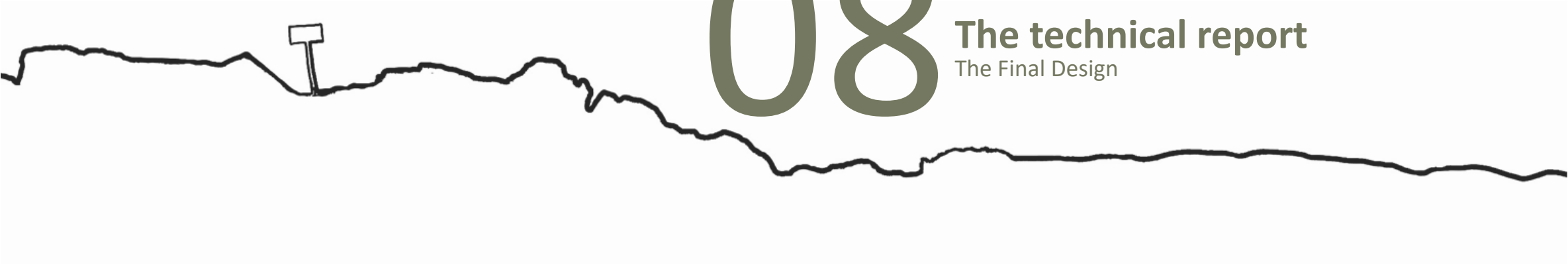
Fig : Cabins concealed within the landscape (Author,2023)



(Author,2023)







08

The technical report The Final Design

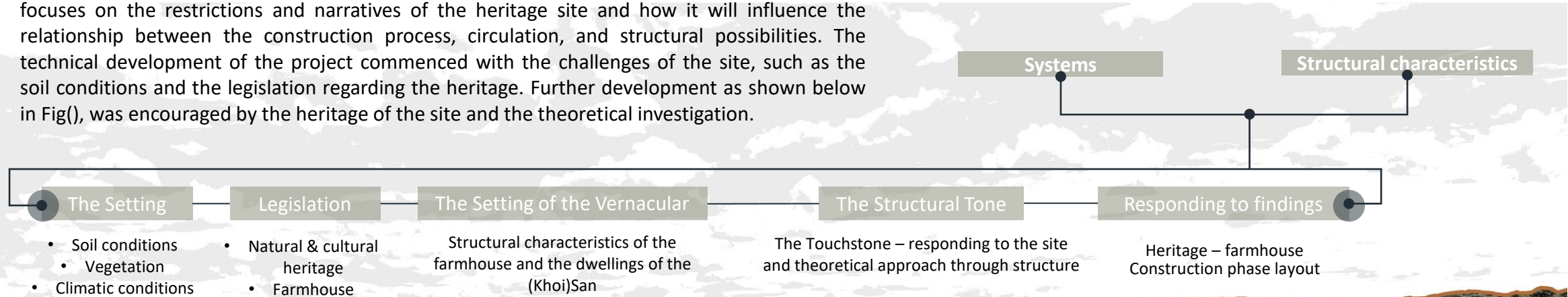


*"...We do not follow maps to buried treasure, and
x never ever marks the spot..."
(Indiana Jones & The Last Crusade, 1989)*

(Author, 2023)

8.1 FOREWORD

This section gathered all the research, explorations, and development within the previous sections to compile a technical investigation. This investigation aimed to resolve the functionality, structural components, and technical obstacles within the theoretical framework of Narrative to create a Geoarchaeological Field Station and Research Station. The section focuses on the restrictions and narratives of the heritage site and how it will influence the relationship between the construction process, circulation, and structural possibilities. The technical development of the project commenced with the challenges of the site, such as the soil conditions and the legislation regarding the heritage. Further development as shown below in Fig(), was encouraged by the heritage of the site and the theoretical investigation.



(Author, 2023)

As previously mentioned within subdivision 2.4.3, the soil and the terrain of the site are defined by Red Hutton Sand or Kalahari sand, outcrops of the late Archaean Ventersdorp lava, and Dwyka tillite which forms part of the Karoo supergroup.

8.2.1 Red Hutton Sand / Reddend Kalahari Sand

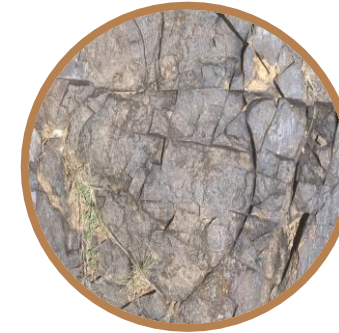
This red sand is clearly visible within the landscape, ranging from a cm to several meters thick. The soil is prone to erosion, based on its weak structure by having poor bearing capacity. This influenced early structural decisions of an elevated building with concrete and steel column footings. The footings therefore had to be approximately a metre deep. This is not only an appropriate approach towards the site's soil conditions but also to the natural and cultural heritage present.

8.2.2 Archaean Ventersdorp lava outcrops & Dwyka tillite

Although dispersed over the terrain, these outcrops are primarily noticeable at the location. The exposed surfaces are smooth and have been scorched by the sun to different color of reddish brown.



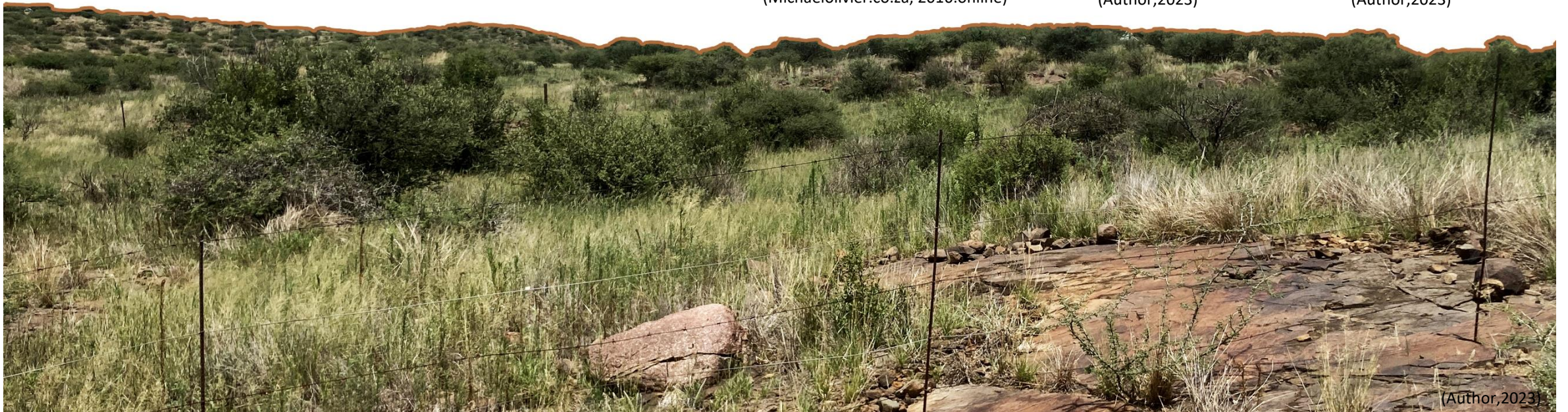
(Michaelolivier.co.za, 2016:online)



(Author,2023)



(Author,2023)



(Author,2023)

8.2.3 Vegetation

The vegetation within the region consists mostly of various grass, bush, and tree species that will adapt and flourish within the semi-arid climate. As previously mentioned within subdivision 2.4.3, the grass within the area is essential to landscaping approaches as it not only grows up to 1m tall but has root characteristics that can prevent further soil erosion, such as in fig ().



Fig : Silky Bushmen grass
(Crawford,2014: online)



Fig : Thimble grass
(Vlok, nd : online)



Fig : Fingergrass
(Flowcomm, 2014: online)



(Author,2023)

8.3 THE ATMOSPHERE OF THE SETTING

The site falls within the semi-arid savannah biome (Coetzee,2017:online), which is defined as an Arid interior climatic zone according to SANS10400-XA-2011 as displayed in Fig (). The climatic zone has the following characteristics:

- Warm to hot dry summers with cool winters
- Low rainfall and low humidity
- Considerable climate conditions within a daily range

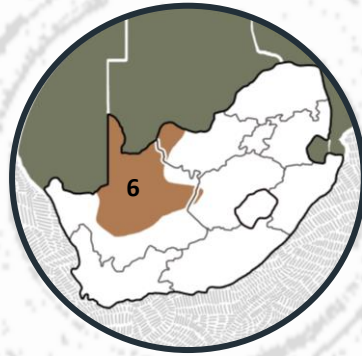


Fig: Climatic Zone 6 (Author,2023)

The following data is based on the climatic conditions of Kimberley within the Northern Cape. This was done as the site is near the region and would share similar climatic conditions.

8.3.1 Heat and Humidity

January and December are the hottest months of the year with temperatures ranging from 30°C to 40°C as illustrated in the diagram (fig) below. According to meteoblue.com (nd, online), historical data indicates that humidity is mostly present within the months of September to June, ranging from 25% to 44% respectively.

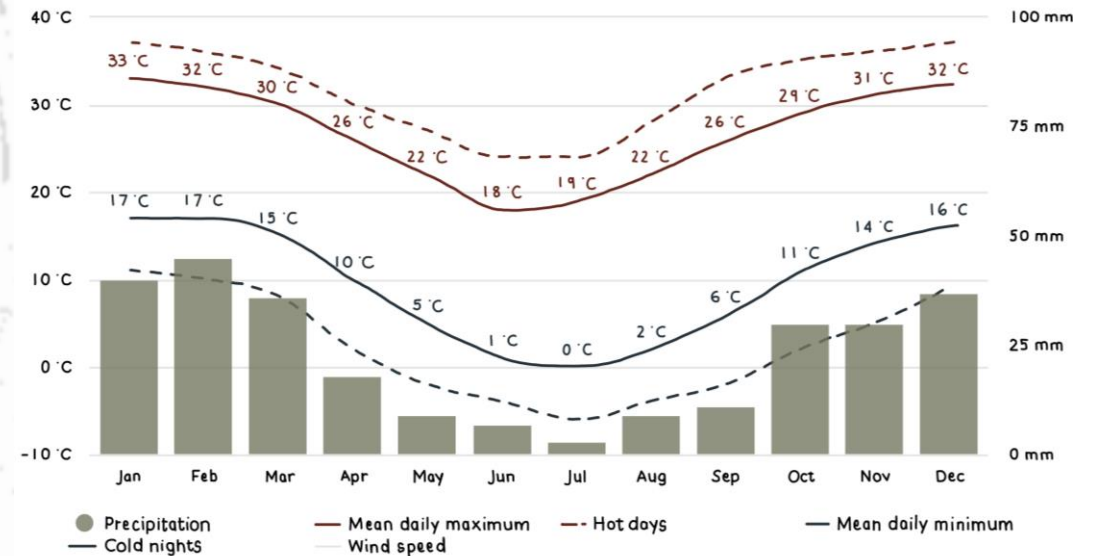


Fig: Average temperatures and precipitation of Kimberley in the Northern Cape (Meteoblue.com, nd: online)

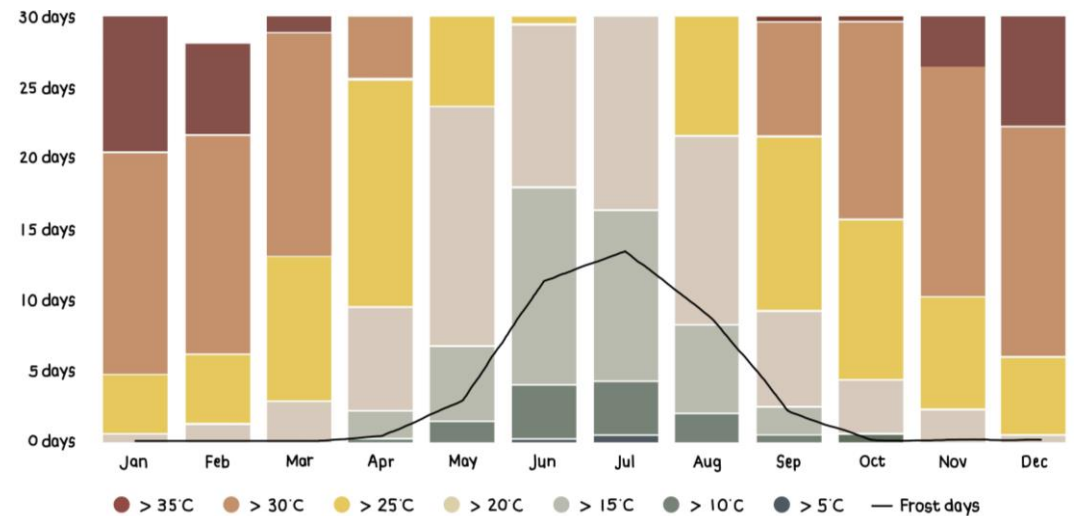
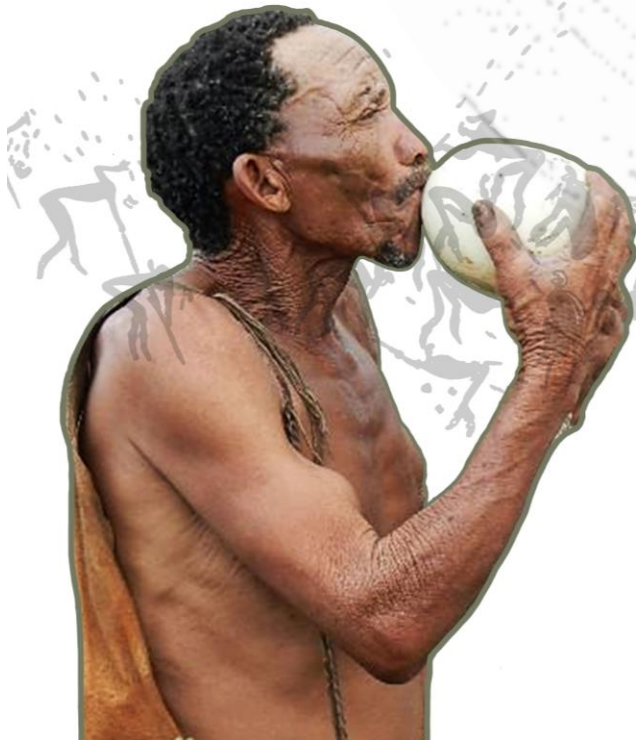


Fig: Maximum temperatures (Meteoblue.com, nd: online)



8.3.2 Rainfall

The region experiences sporadic rainfall precipitation throughout the year, with increasing dry days within the winter. The highest quantity of rainfall mostly occurs within the months of January and December.

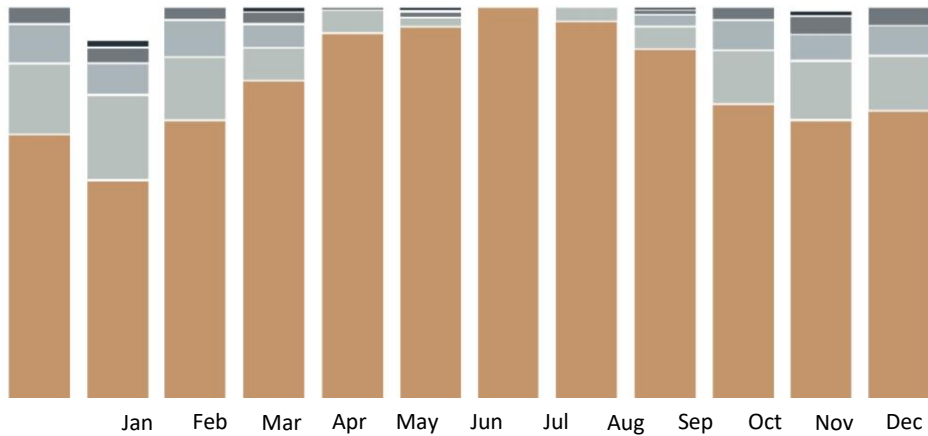


Fig: Precipitation amounts (Meteoblue.com, nd: online)

8.3.3 Wind

The windspeed within the Kimberley region ranges from 5km/h to 38km/h as illustrated in fig(). It is however important to note that the landscape of Kimberley and of portion 6 on the farm Nooitgedacht is slightly different as the site is surrounded by undulating hills that can have an influence on the speed and direction of the wind. The wind speed of Kimberley is only used as a reference. The wind rose diagram (Fig) illustrates the direction in which the wind blew during the year.

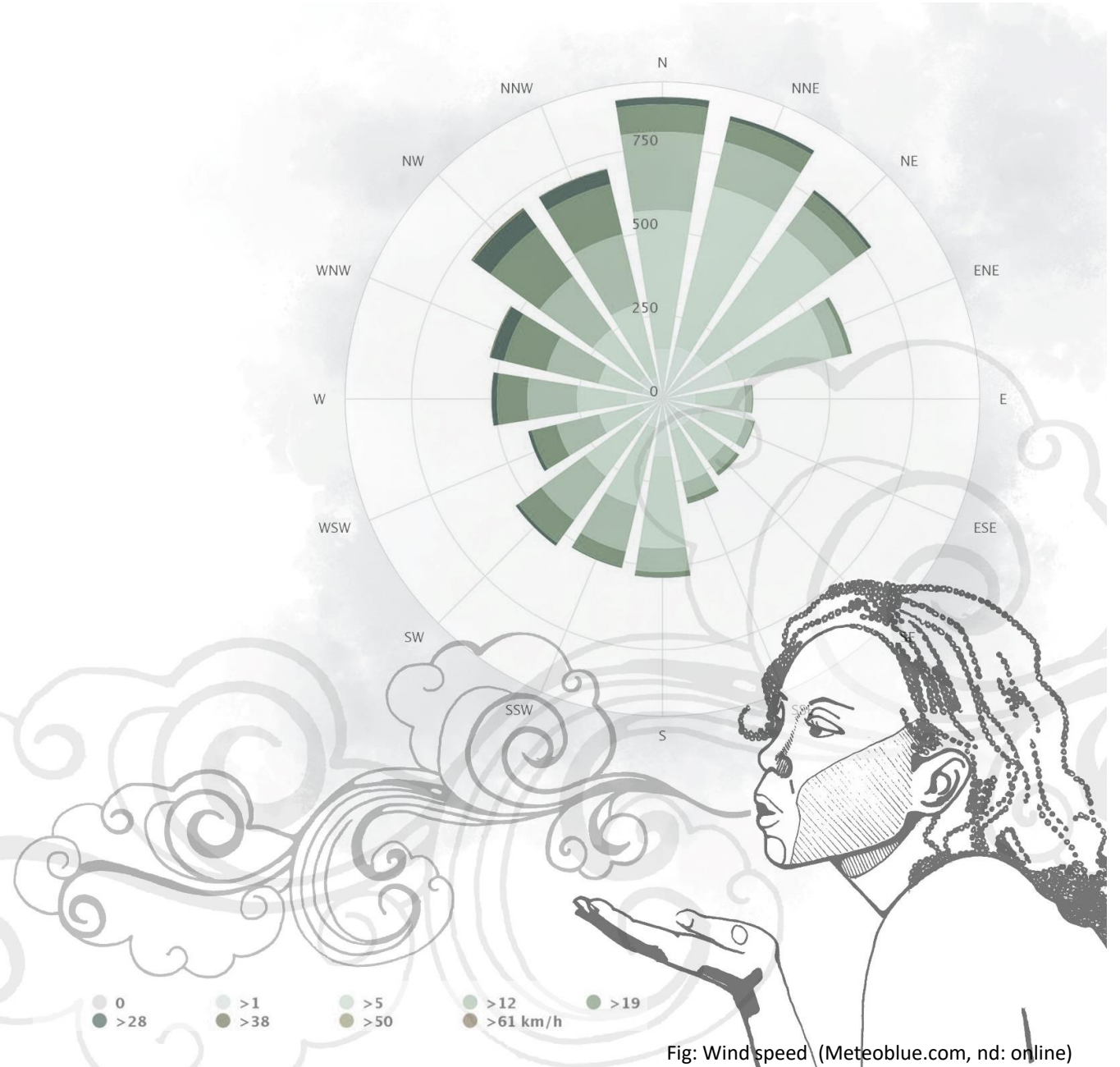


Fig: Wind speed (Meteoblue.com, nd: online)

8.4 THE STRUCTURE AND TECHNIQUES OF THE NARRATIVE

As mentioned previously in Chapter 02, subdivision 2.39 and 2.4.2, the site is surrounded by various sites of archeological significance that reveal historical artifacts, ranging from early civilization tools, ceramics, and graves. Even though the site is a declared provincial monument based on its glacial pavements and engravings, it was necessary to consider the possibility of recovering artifacts during the construction process. In the circumstances of discovery, the Northern Cape Heritage Resources Authority (NCHRA) should be informed, and all further proceedings should be executed as stated within the **National Heritage Resources Act No. 1999, Chapter II, Section 27** (sahra.org.za, nd: online). The regulations related to this site are as follows :

“...(18) No person may destroy, damage, deface, excavate, alter, remove from its original position, subdivide or change the planning status of any heritage site without a permit issued by the heritage resources authority responsible for the protection of such site...[...]

If artifacts of any kind are recovered, the NCHRA or the McGregor Museum in Kimberley should immediately be informed. In the instance of recovering objects, the procedure according to the Act is as follows: These objects are property of the state and should be lodged in a museum or any other appropriate institution that adheres to the policy of the NCHRA.

“...(3) Any person who discovers archaeological or paleontological objects or material or a meteorite in the course of development or agricultural activity must immediately report the find to the responsible heritage resources authority [the NCHRA], or to the nearest local authority offices or museum [the McGregor Museum], which must immediately notify such heritage resources authority...”



(Author, 2023)

8.5 THE SETTING OF THE VERNACULAR

As the site is located within a remote area it was important to understand the cultures that moved through the landscape and how they treated the setting within the terms of erected structures. There are three groups that could be identified, namely, the (Khoi)San, the Archaeologist /Geologists, early alluvial diamond miners, and later livestock farmers. The different groups have various approaches when it comes to situating themselves within the landscape.

Although being on the land for different purposes, The San and the Geologist, Archeologists, and early miners had dwellings that rested lightly on the earth, while the old farmhouse complex situates itself permanently on the land through its heavy thick stone walls. The structure types and how they function are of importance to not only the technical points of the design but also within the theoretical framework of Narrative and time, man, and space.



The (Khoi)San used materials from the landscape to construct and design their dwellings. It is clear that the dwelling reflects the group's understanding of the landscape and how to function. Through the process, as shown below, the groups illustrate the symbiotic relationship between designing, ritual, and the constructing of their dwellings.



01 Collecting and cutting of branches or twigs (Nomad Architecture, 2020:online)



02 Marking the site of the dwelling



03 Digging Holes for structural components



04 Loadbearing structures put in designated place



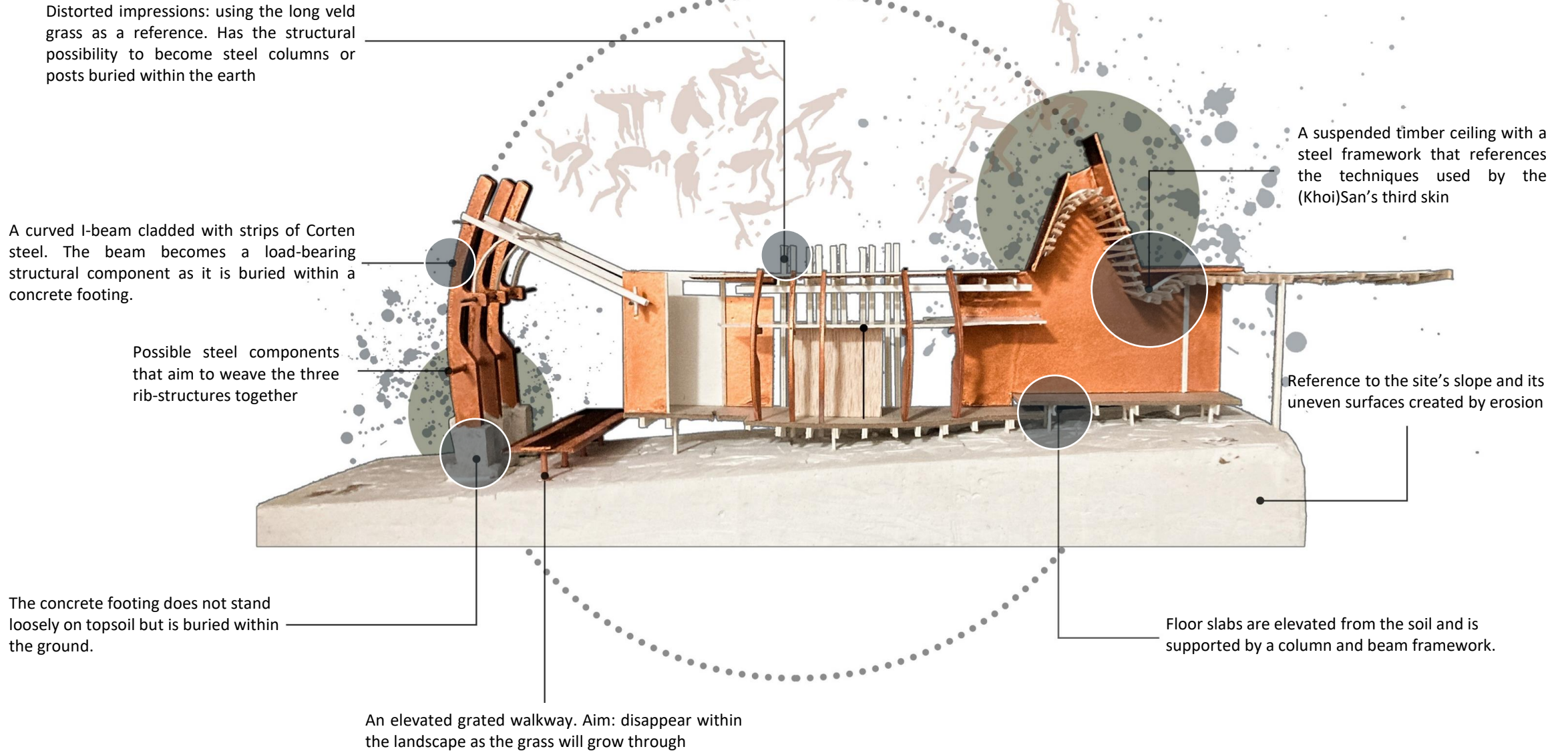
05 Creating the third skin through the weaving of twigs



06 Collecting veld grass & plants for structural binding

06 Collecting veld grass & plants for structural binding

8.5 THE STRUCTURAL TONE | TOUCHSTONE

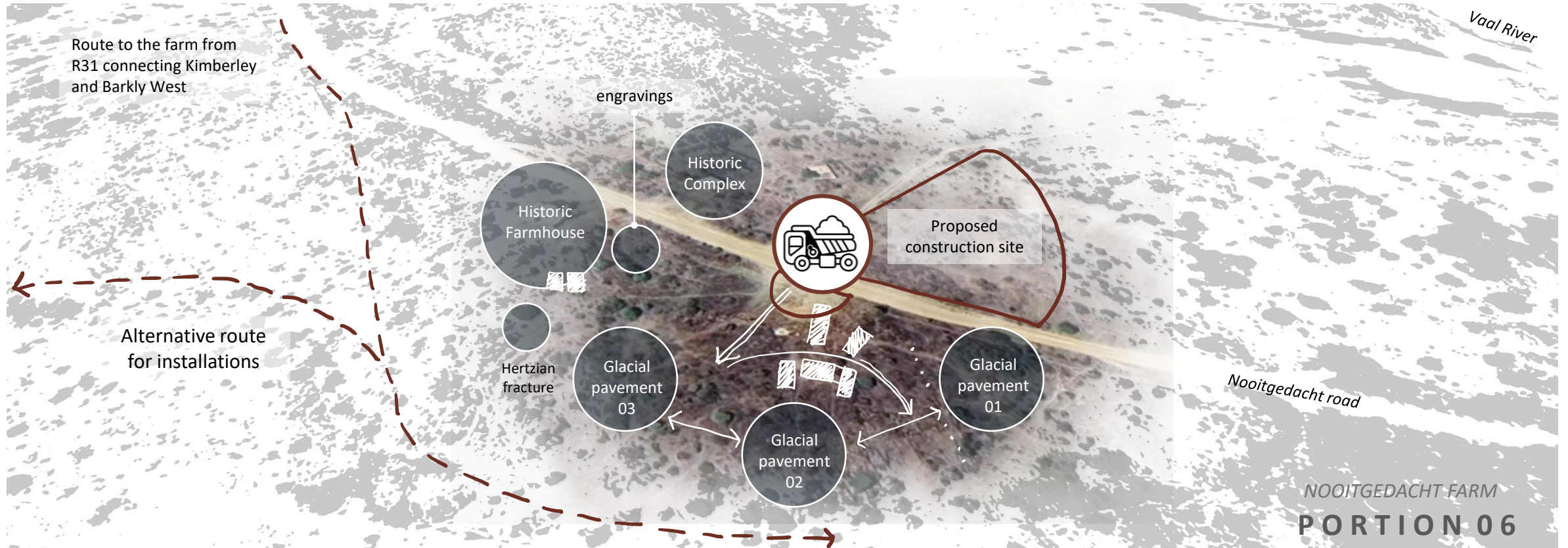


(Author,2023)

8.1 THE CONSTRUCTION PROCESS

The Touchstone introduced a way in which the structure could situate itself within the landscape. This developed into a possible schematic proposal for the construction phase of the project. It was also an attempt to understand what structural elements would be appropriate or not for the site. To ensure that the heritage was protected, Dr Morris who resides in Kimberley and is also involved with the McGregor Museum, had to make one site visit every week to ensure that the site is not damaged. The main site for the storage of materials, equipment, and heavy deliveries was made across the road.

A small portion on the site as indicated in Fig , can also be used for delivering the precast and prefabricated d pieces, but can also be used by a crane to install these components into their place. This proposal allowed the design and structure process to combine their conceptual approaches to create a complex and series of cabins that would reflect environmentally friendly methods through the installation procedures and metal.



Thoroughly discussed in division 2.4, the Historical farmhouse has been rated as a structure with medium significance. The house and the rest of its complex across the law must be approached through the legal framework of a declared level II heritage structure that is protected by the legal framework of the **National Heritage Resources Act (Act No. 25 of 1999, Sections 34)**.

The structural condition of the farmhouse is according to Coetzee's Heritage Impact Assessment (2017) in a stable condition, but it was clear that there were weak structural tones within the heavy stone walls as seen in fig(). The Dovecote Studio by HaworthTompkins was used as a precedent to assist with the integration between additional structural components and a fragile structure. Applying their approach, the historical farmhouse's stone walls are used as a shell that embraces a weathering steel clad structure. However, before the prefabricated light steel frame of 75mm x 100mm C section profiles could've been placed within the existing structure, a screed of 75mm was installed on to existing floor surface for ensured stability.



Fig : The Installation Method (Author,2023)

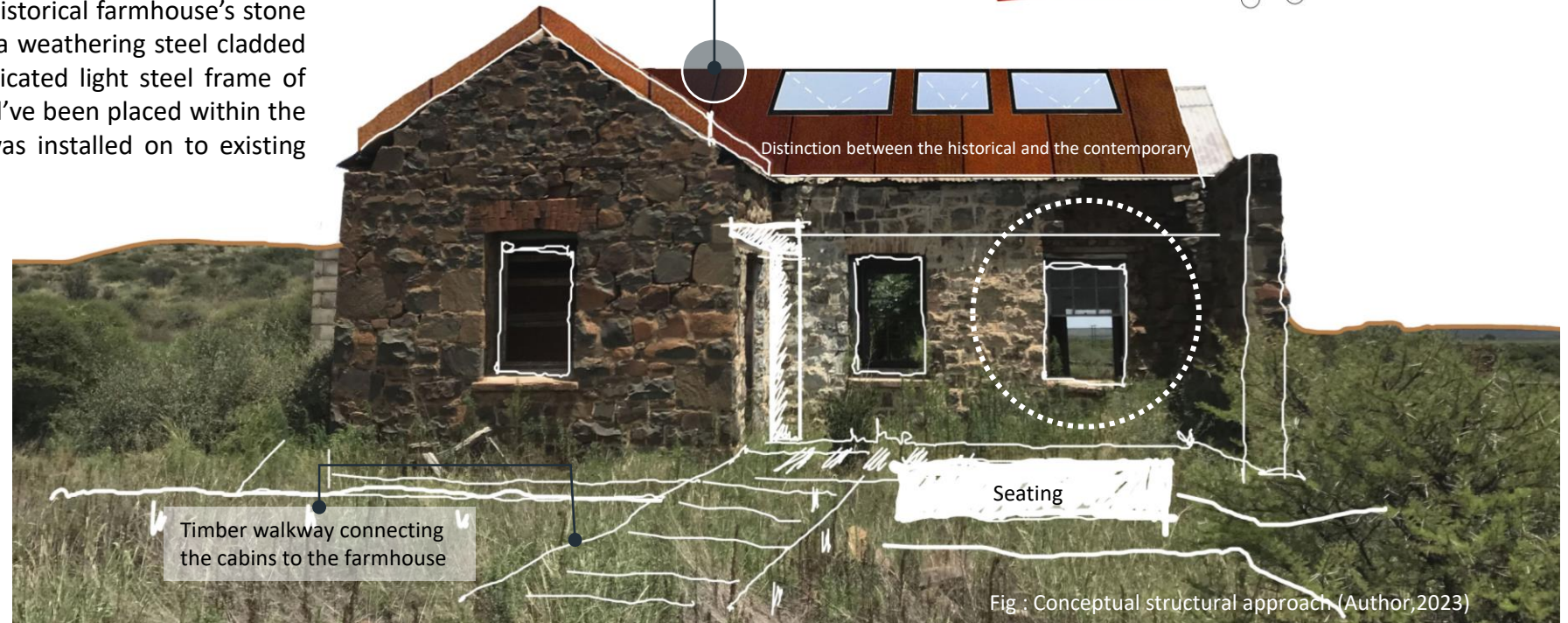
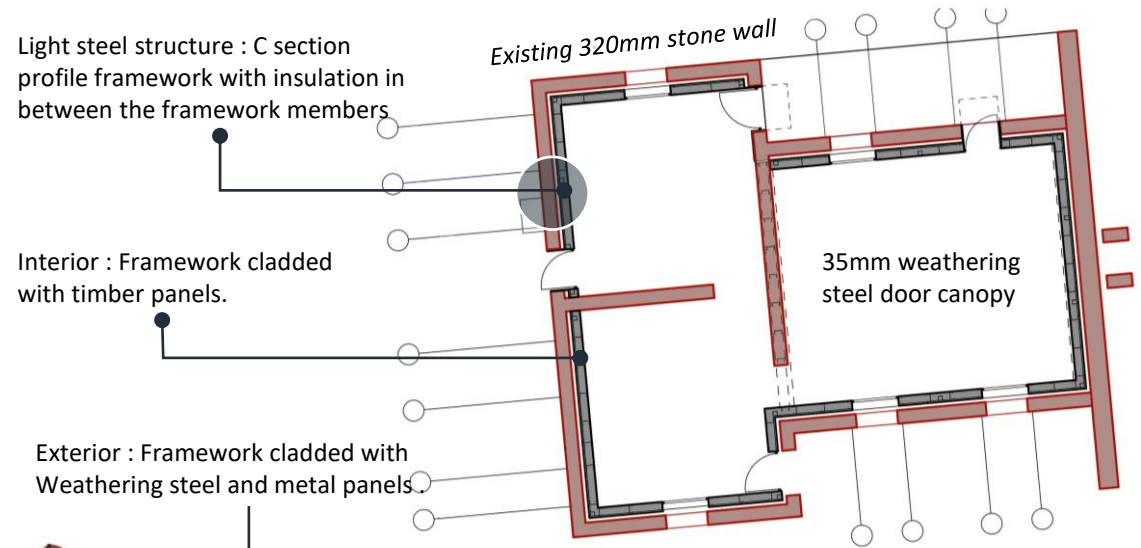
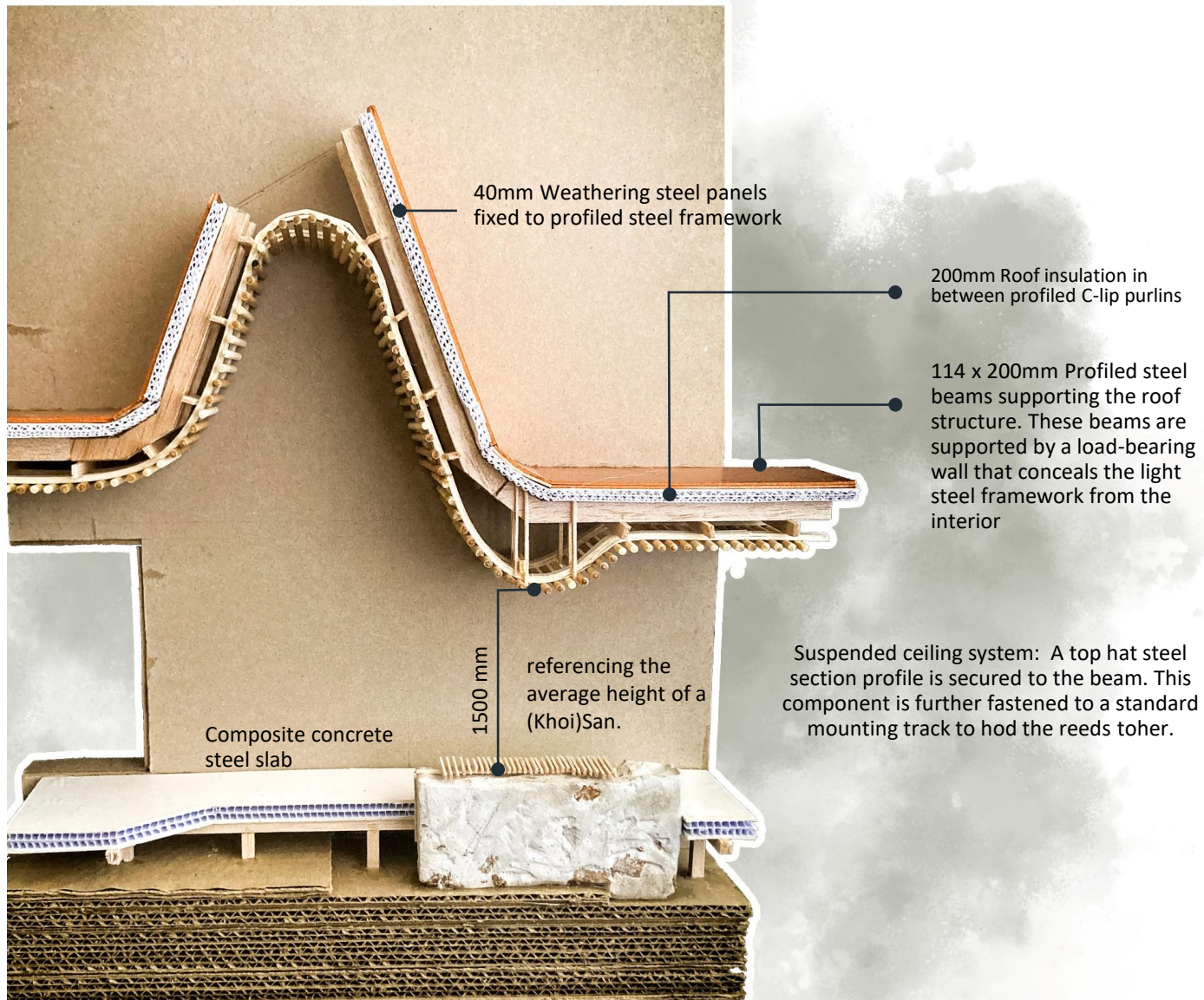
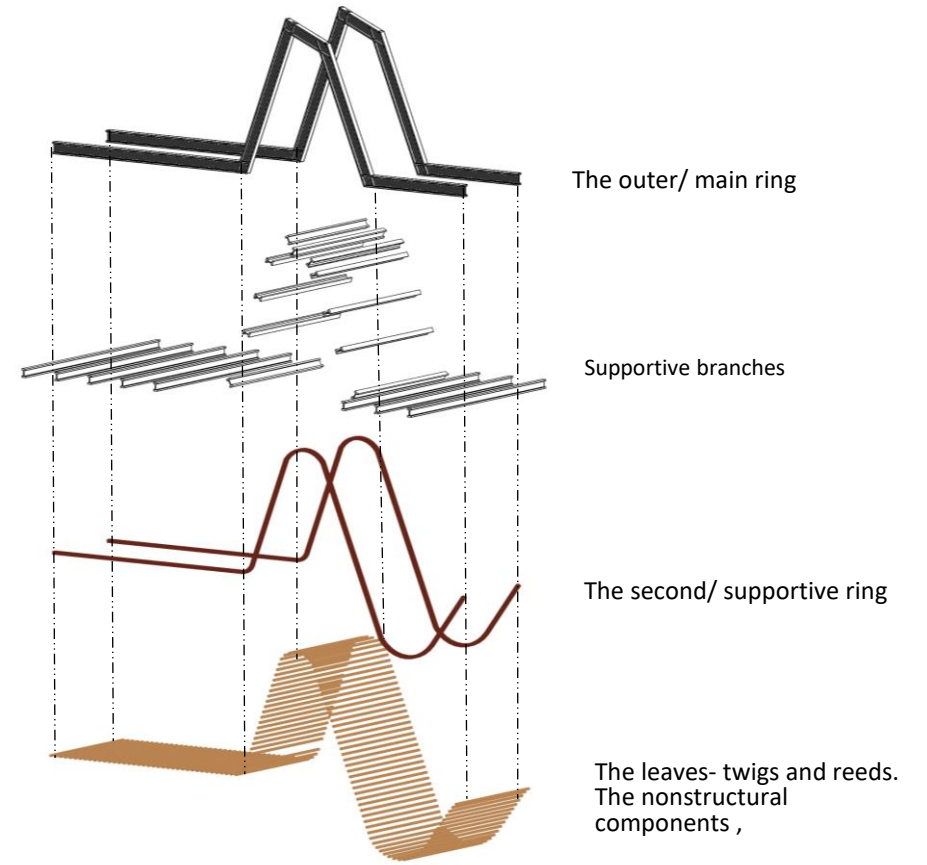


Fig : Conceptual structural approach (Author,2023)

RESPONDING TO CONCEPTUAL APPROACHES

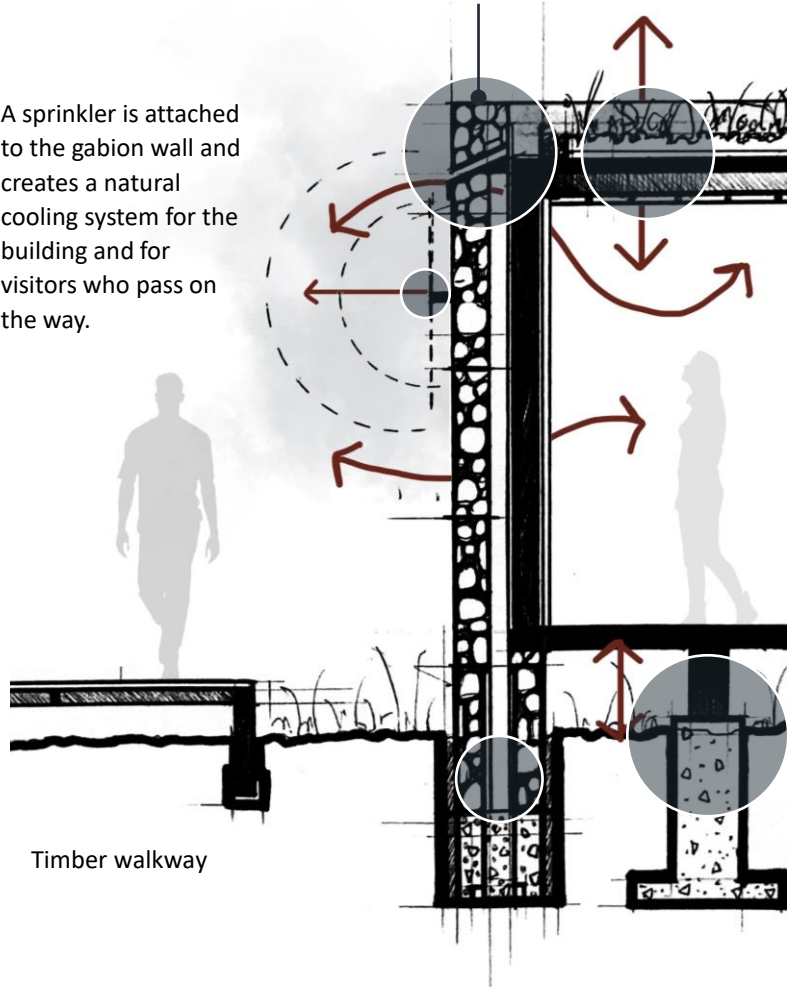


This model aimed to understand the conceptual approach within the structure of the suspended ceiling system. In this 1:50 model, the type of structural components could identify and further assisted the project with regards to design and the theoretical approach. The skin responds to the previously discussed way in which the (Khoi)San built their third skins.



Even though the region rarely experiences rain. The gutter reveals itself through the gabion wall. The gutter also becomes part of the natural cooling system as the water glides over the stones.

A sprinkler is attached to the gabion wall and creates a natural cooling system for the building and for visitors who pass on the way.



Timber walkway

Galvanized steel post
– secured the walls

The Extensive roof not only ensures interior thermal comfort, but also protects the roof surfaces of the buildings from the sun

The use of stone as a thermal agent supports an efficient natural cooling system for the interior against the intense heat of the eternal sun western

FEC column/ posts – a 100mm x 250 I beam is secured within circular concrete footings that support the load of the elevated structure

2. GABION WALLS

The project settled on Gabion baskets as the most appropriate type of gabion wall that responded to the site and heritage conditions. The walls are an effective erosion control method (gabionsupply.com, 2023: online) that would alongside the vegetation within the landscaping, aim to prevent the further loss of topsoil. It's also an eco-friendly approach that allows for easy and immediate drainage between the structure and the soil. As the walls within the project vary between 300mm and 600mm, it was essential to install internal support, such as the 75x100 mm galvanized steel posts that are spaced 12200 from the center.

Alternative use of stone:

As the project theoretical engages with the narratives of the site, it was important to acknowledge the use of stone throughout the years. From being transformed from a weapon to an art tool to architecture. It is truly an unappreciated poetic device. It was, however, important to address the use of stone in this project in an alternative manner, by having heavy gabion walls, slightly elevated stone walls, and walls where stone becomes 'light'.

Fig : Structural relationships and systems within the research center complex

THE SUBSTRUCTURE

Circular encased composite concrete footings

The soil conditions require that the structure should be elevated. 500mm circular fully encased composite (FEC) concrete columns that support the building, are buried 1000m underneath the ground to ensure a secure relationship between the soil and the structure.

THE SUPERSTRUCTURE

Composite concrete and steel decking: (decide if precast or cast on site)

Because of the environmental conditions with extreme heat in the day and coldness in the night, it was important to establish material choices that would be best for thermal efficiency. Alongside this, it was important to also consider how the structure would be erected on site, if it could be prefabricated, and if on-site, how it be installed to ensure that the glacial pavements are not damaged in the process. The structural components of steel beams, metal decking, and concrete allowed for a high strength-weight ratio that was easier to install with less labor required. The prefabrication process of the slabs was divided into sections for an easier on-site installation process.

ROOFS

Based on the climatic conditions of the site, it was appropriate to propose a series of flat roofs. However, the weather conditions can easily make an uncomfortable. It was, therefore, essential to install roof systems that would not only keep the building cool but also protect it from the sun's UV rays. The roofs identified within the project are extensive green roofs (administrative offices next to the farmhouse, the research labs, art studio and the presentation room), and ballasted Roof systems (cabins, research offices, library, ablution blocks).

Extensive green roofs

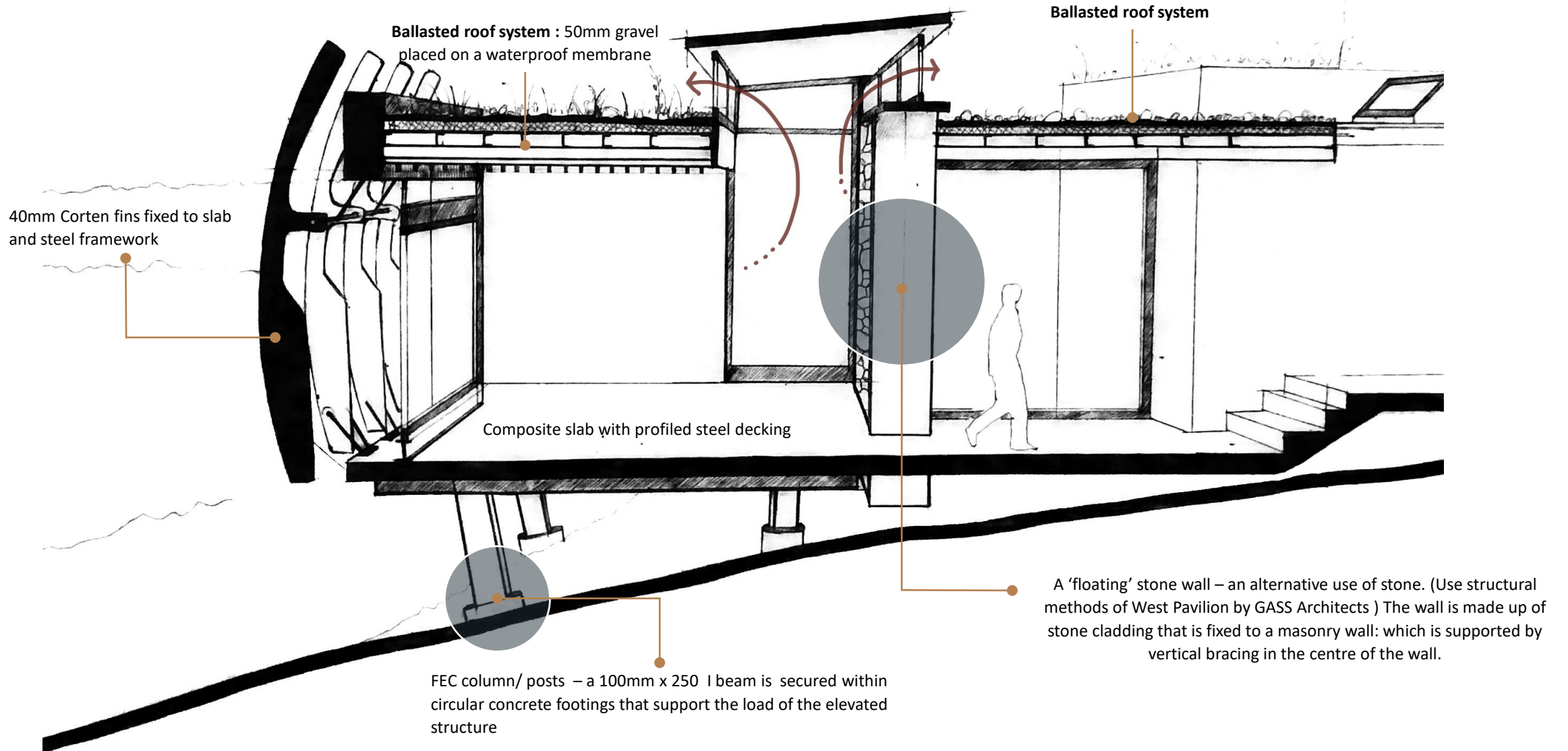
These roofs are an economical choice with green roofs as it a self-sustaining systems that can create sustainable energy efficiency.

Gravel Ballasted Roofs

This type of roofing consists of a 50mm gravel layer (80kg/m²) that covers a waterproof membrane. It is according to Sika South Africa (nd: online), a very economical roofing system that can be easily installed. The roof surfaces are also prone to have a longer lifespan as the gravel layers protect them from the sun. This system also requires minimum requirements.



Gathering warm air from the interior and releasing it in a small corridor.



SERVICES AND SYSTEMS

Based on the site's location, the region does not have any municipal service connections. It was therefore important to establish an 'off-the-grid' system for water and waste management.

Water management

All buildings are connected to respective steel water tanks that store water from the site's borehole on the northern side. With the cabin's shower facilities, the stored water within the steel tanks is connected to a solar system that would provide water for the users.

Greywater management

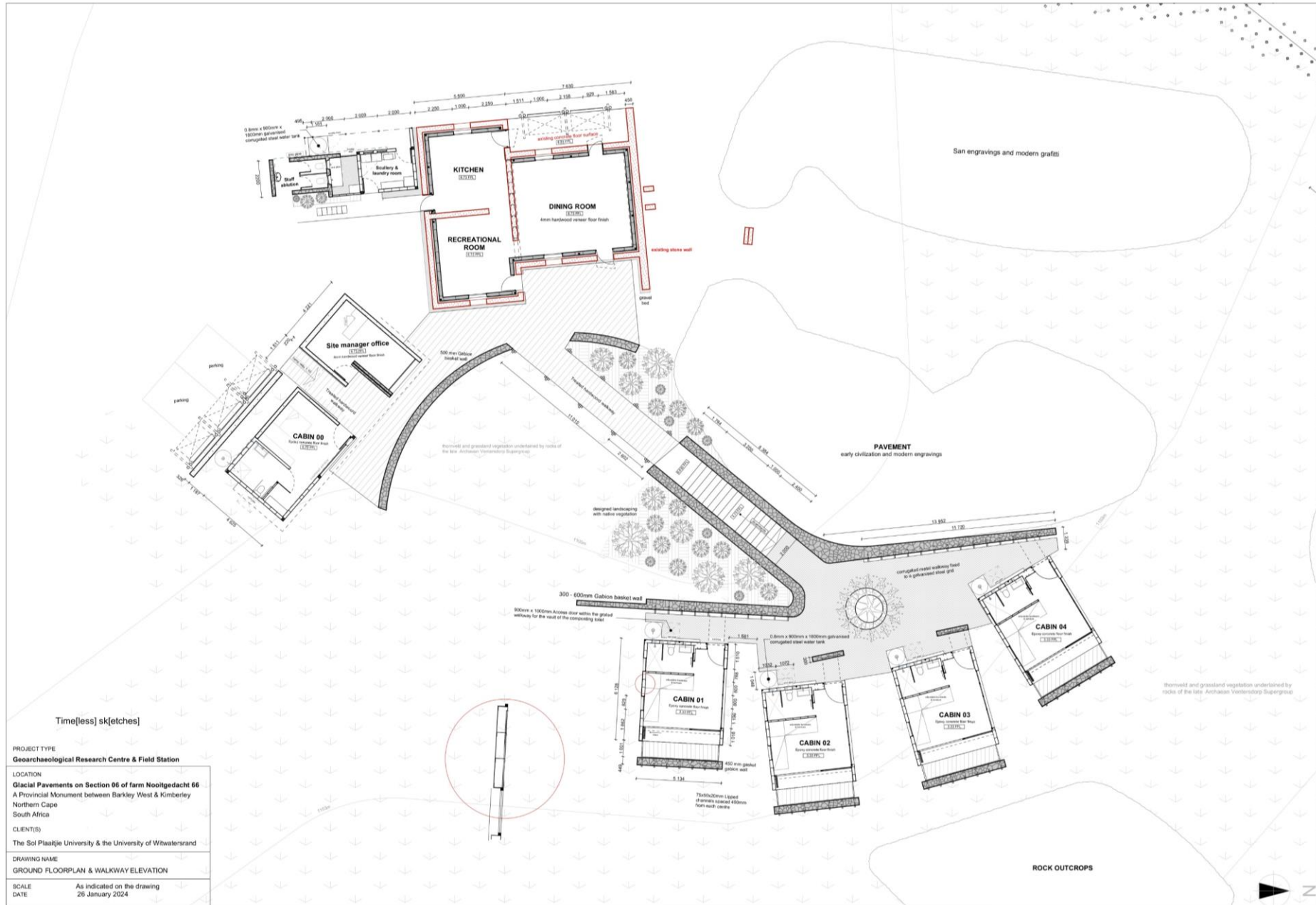
Water is collected from showers and basins to be distributed within the landscape. Not only is it used for irrigation purposes, but also as a medium that assists in thermal control of the buildings through the installation of spray head. This also plays a role in recycling water that is not only used for

Waste management

As the site is not connected to any municipal pipelines or sewage services, the waste will be managed through a composting system. The process of composting can be sped up by adding sawdust. The containers are cleaned every two weeks. To avoid an odor within the buildings, a vent hose is connected to the toilet.

FINAL DRAWINGS : The Field Station

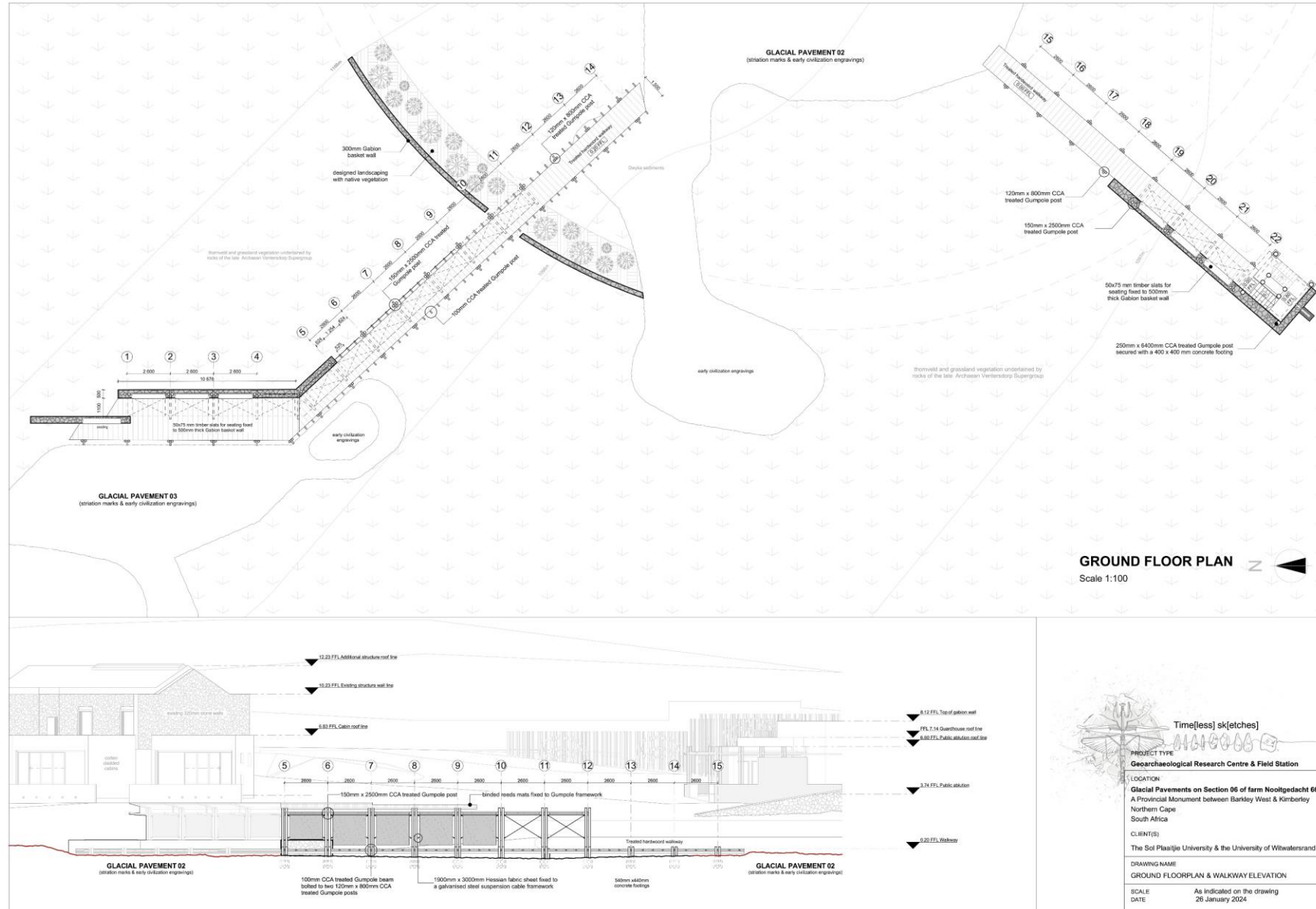
ARCHICAD EDUCATION VERSION

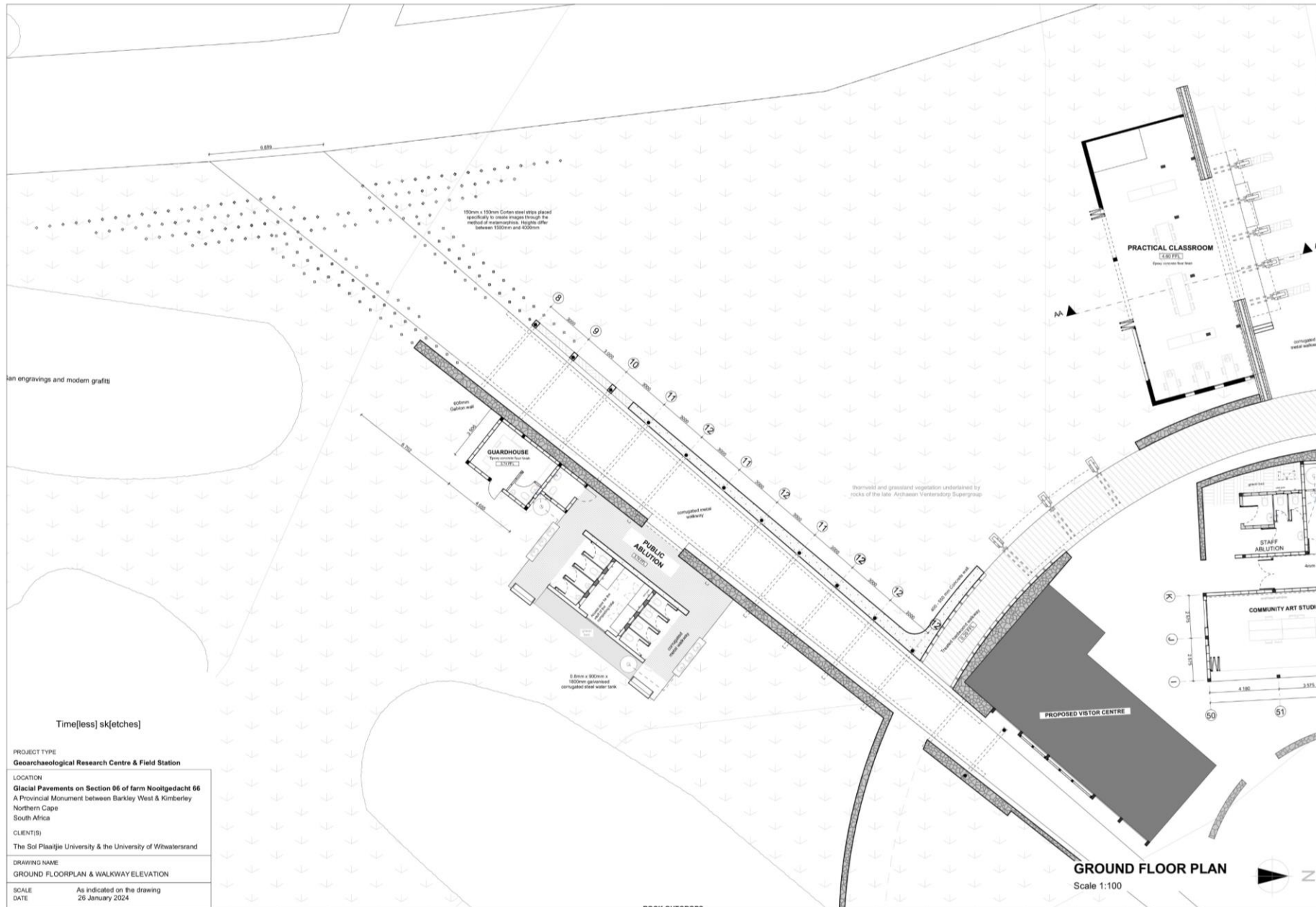


Time[less] sk[etches]

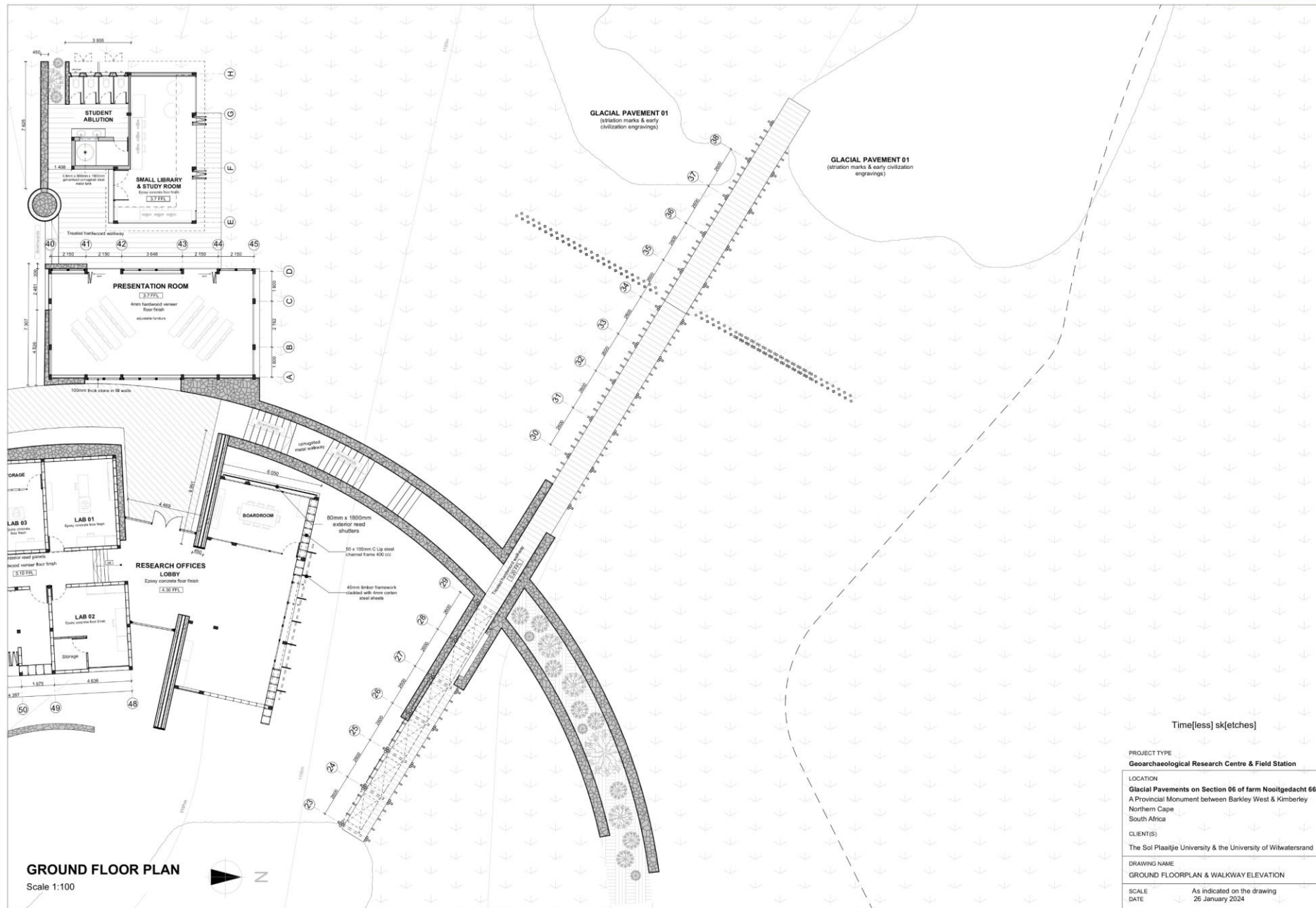
PROJECT TYPE	Geoarchaeological Research Centre & Field Station
LOCATION	Glacial Pavements on Section 06 of farm Nootgedacht 66 A Provincial Monument between Barkley West & Kimberley Northern Cape South Africa
CLIENT(S)	The Sol Plaatjie University & the University of Witwatersrand
DRAWING NAME	GROUND FLOORPLAN & WALKWAY ELEVATION
SCALE	As indicated on the drawing
DATE	26 January 2024

FINAL DRAWINGS : The walkway between pavement 01 & 02

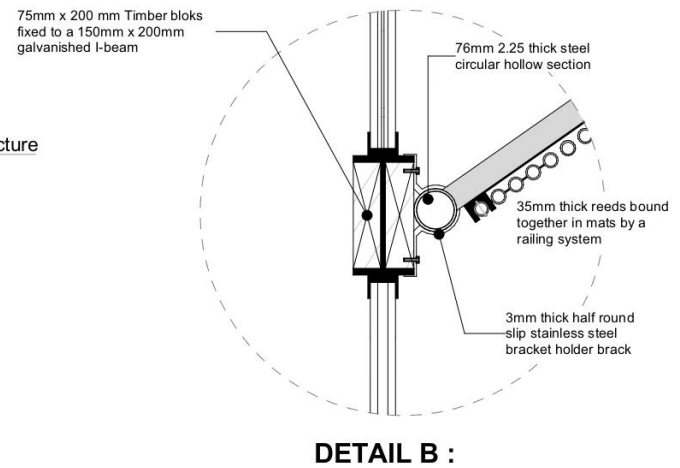
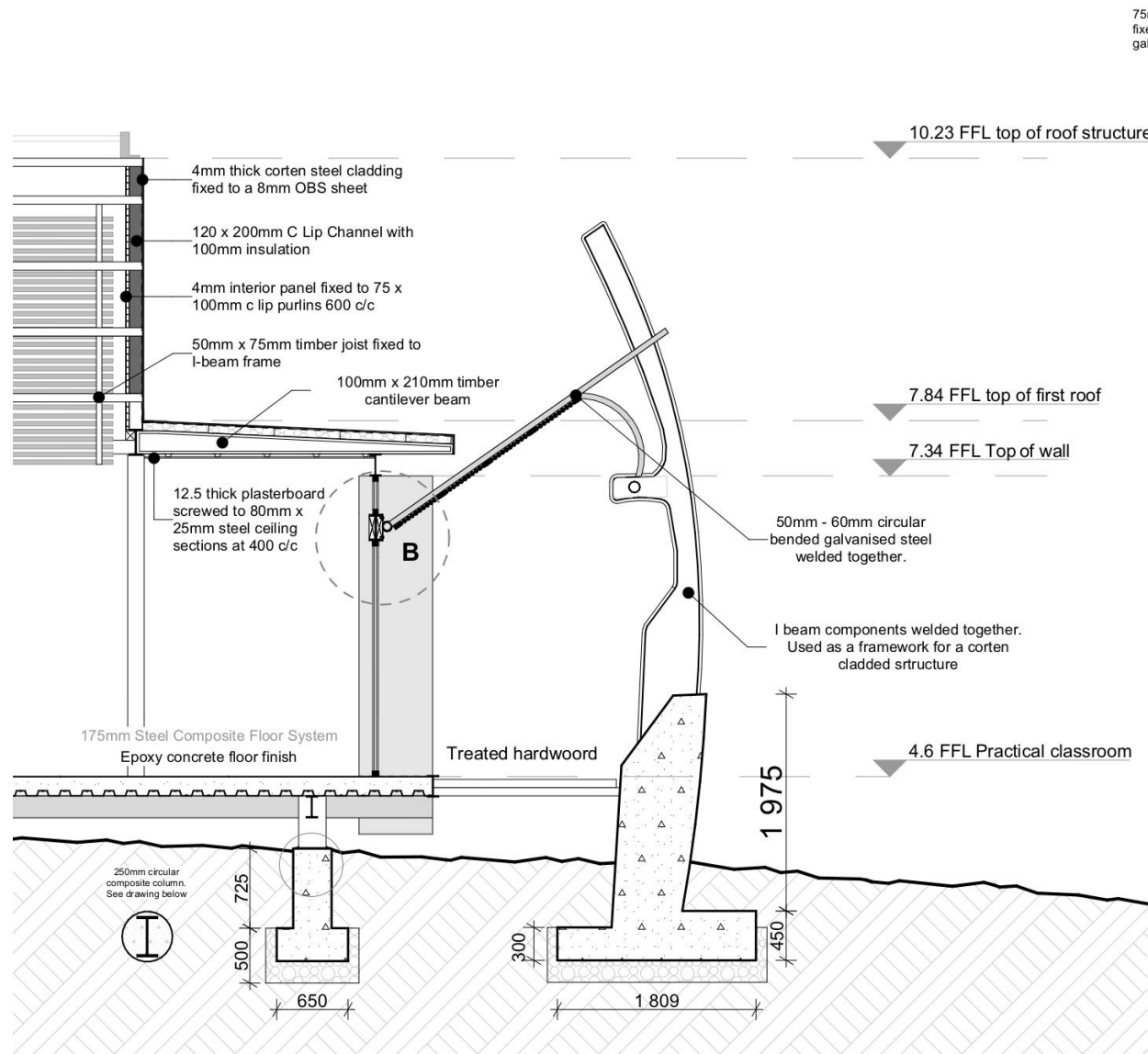




FINAL DRAWINGS : The Research Centre



FINAL DRAWINGS : Section AA and Detail B



Time[less] sk[etches]

PROJECT TYPE

Geoarchaeological Research Centre & Field Station

LOCATION

Glacial Pavements on Section 06 of farm Nooitgedacht 66

A Provincial Monument between Barkley West & Kimberley

Northern Cape

South Africa

CLIENT(S)

The Sol Plaatjie University & the University of Witwatersrand

DRAWING NAME

PRACTICAL CLASSROOM SECTION AA

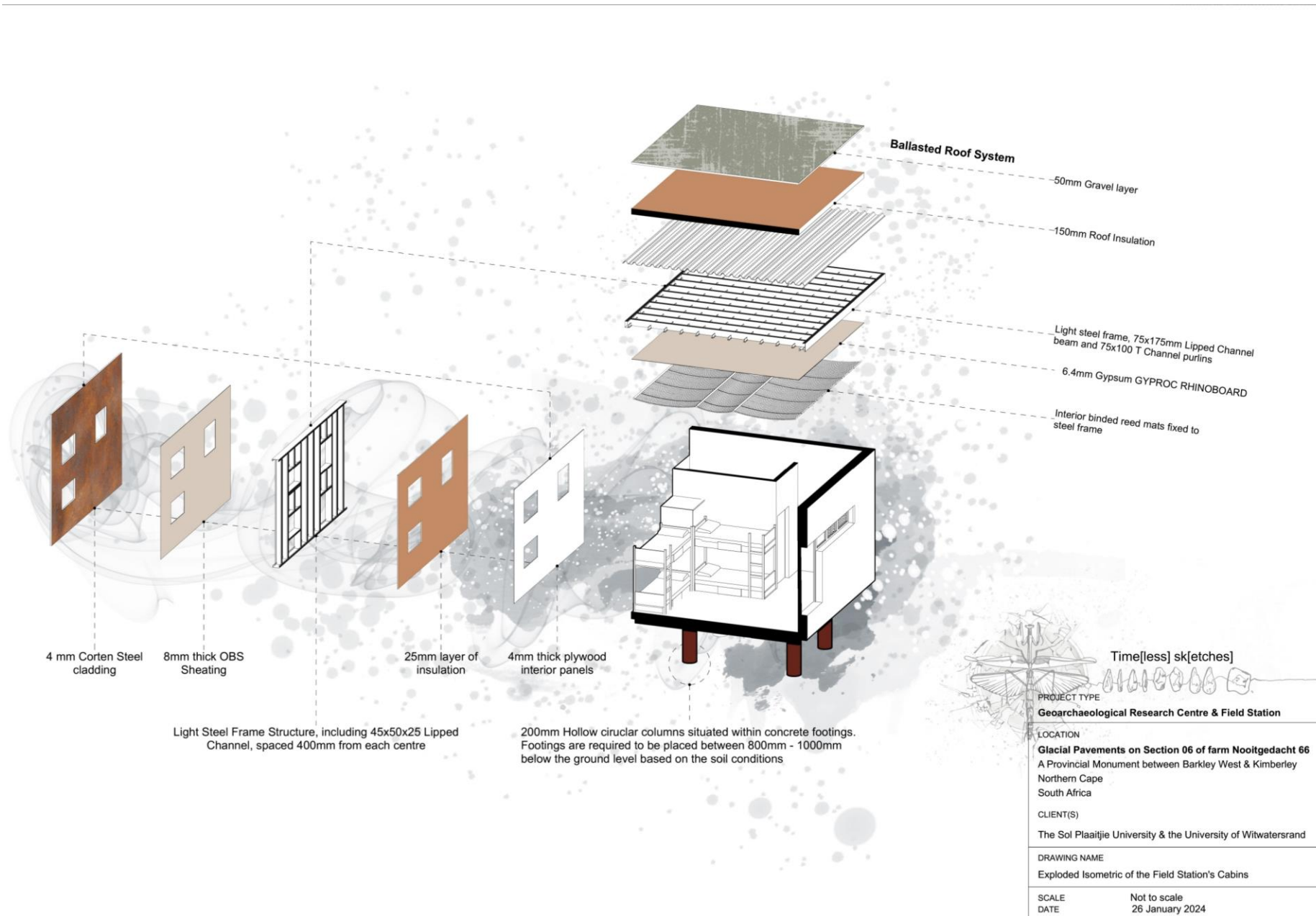
SCALE

1:50 (magnified) & 1:10

DATE

26 January 2024

FINAL DRAWINGS : Isometric exploration of the cabins



50mm layer of gravel mixture of fine aggregates placed on the waterproof membrane

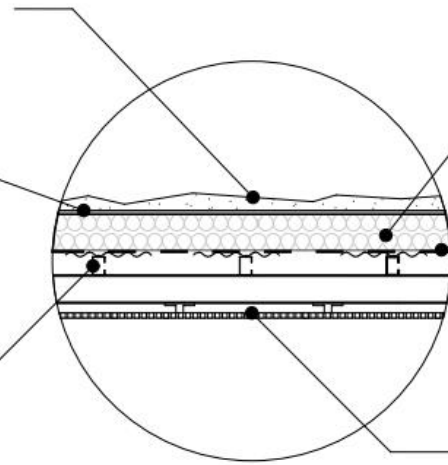
15mm EPDM single layer or a PVC membrane layer

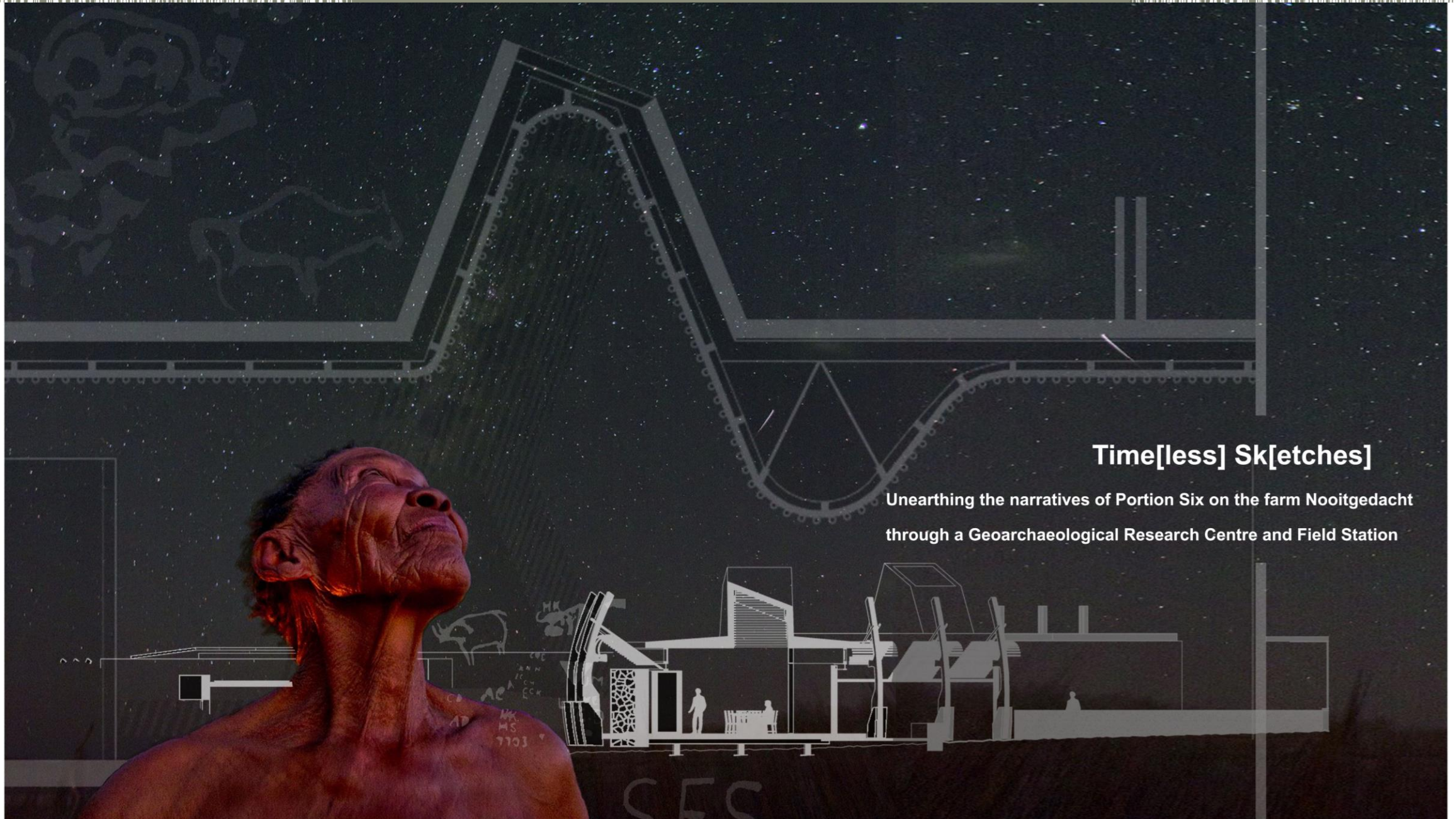
Corrugated metal sheet fixed to 50 x 75mm C Lip channel

150mm Insulation

Waterproof membrane between corrugated metal sheet and insulation

Reed fencing fixed to I-beam





Time[less] Sk[etches]

Unearthing the narratives of Portion Six on the farm Nooitgedacht through a Geoarchaeological Research Centre and Field Station



1. The Vaal River
2. The Farmhouse complex
3. Public parking
4. Nooitgedacht Road
5. The veil - the entrance
6. Security office
7. Public Ablution
8. Research centre
9. Field Station

SITE PLAN
Scale 1:750





THE FIELD STATION

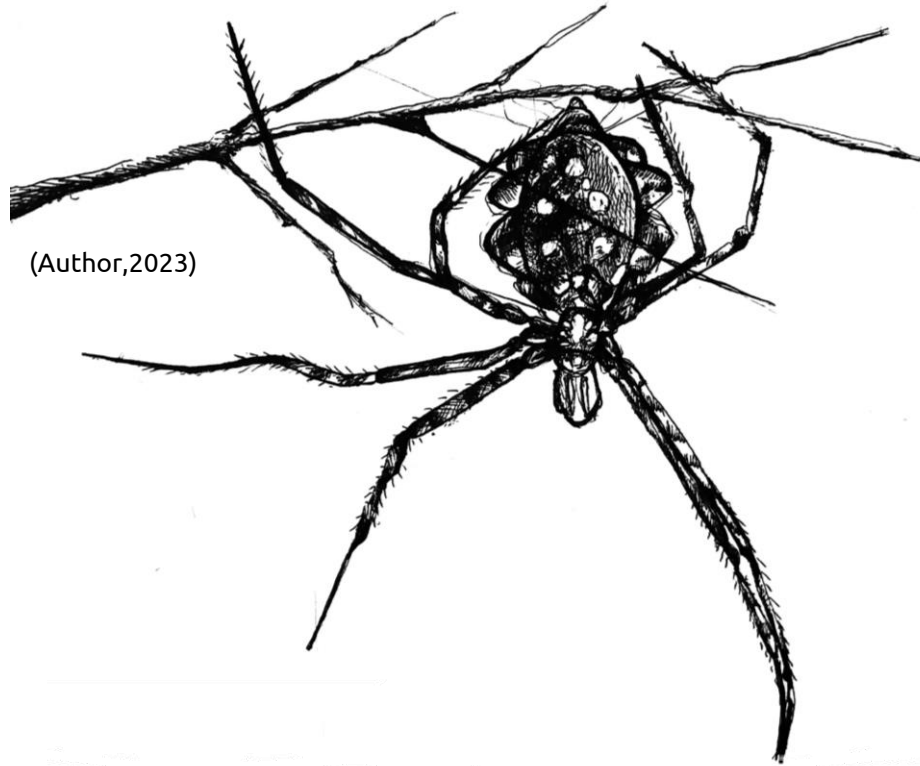
- 30. Cabins for students
- 31. Supervisor's cabin
- 32. Universal accessible cabin
- 33. Administrative offices with a lockerroom and shower facilities
- 34. Service yard
- 35. Wash room
- 36. Kitchen
- 37. Recreational room
- 38. Multipurpose Dining area

- 2. The Farmhouse complex
- 3. Public parking
- 4. Nooitgedacht Road

- 5. The veil - the entrance
- 6. Security office
- 7. Public Ablution
- 8. The Art centre - The place of the storyteller
- 9. Courtyard space
- 10. Community Art studio - The place of the storyteller
- 11. Deck as a gathering space

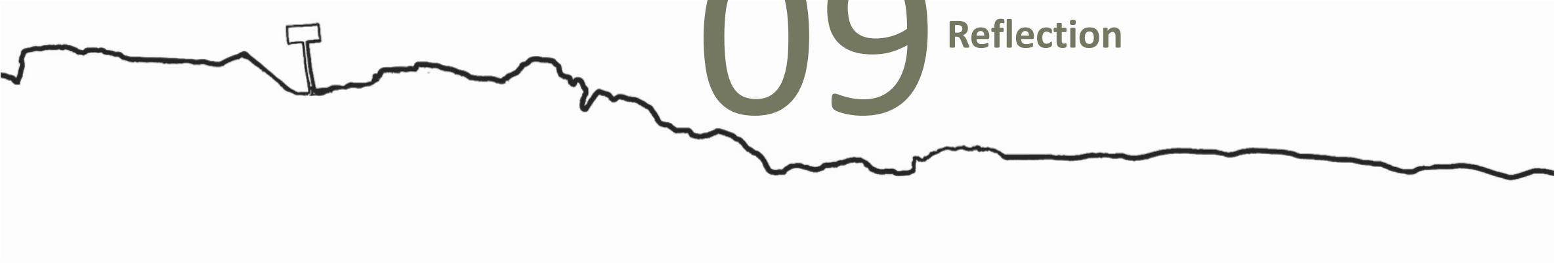
THE RESEARCH CENTRE - The place of the story gatherer

- 12. Courtyard space
- 13. Practical classroom
- 14. Exterior experimental learning space
- 15. Research centre ablution
- 16. Small library and study
- 17. Presentation room
- 18. Research offices lobby
- 19. Research labs
- 20. Researcher office
- 21. Multifunctional boardroom
- 22. Second veil
- 23. Seating
- 24. First glacial pavement
- 25. Seating
- 26. Second glacial pavement
- 27. Observation tower
- 28. Third glacial pavement
- 29. Seating



(Author,2023)





At the very long time ago, there were only the wild animals and the sun (the first people of Africa) living in the wild open spaces of Africa. It was the earth people and animals.

The animals being around longer, were longer, wiser and stronger than

men.

Otter had the knowledge how to
he Otter and Baboon was quiet
dark night. He was a good
Having no hands, he was a
So, over a long time, the
Because the Rhino did not see

knowledge of which wild
but Rhino being a gumpy
He could not know
the thing about the tree
Rhino's hide to a prey
secretly from him, but that



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Fig 7a (Dunn,2018:online)

Fig 7b (Ciesielski, 2015:online)

Fig 7c (evomorphwustl.com,nd :online)

Fig 7d (Vile, 2010 : online)

Fig 7e (Jensen & Skodvin Architects, 2002:online)

Fig 7f (Viljoen, 2012:online)

Fig 7g (Burton,nd :online)

Fig 7h (Letch, 2019 : online)

Fig 7i (bushmanheritagemuseum.org, nd : online)

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Fig 11a: Vredefort Impact Centre (Wikipedia,2012: online)

Fig 11b: Sudwala Caves (sudwalacaves.com, nd: online)

Fig 11c: Bourke's Luck Potholes (Connell,2016: online)

Fig 11d: Cango Caves (jarattours, 2019: online)

Fig 11e : Meiringspoort (derust.syce.co.za/,nd :online)

Fig 11f : Stadsaal Caves (Alheit, nd : online)

Fig 11g : Valley of Desolation (sa-venues. com,nd : online)

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Fig 12a : Sterkfontein Caves (Engineeringnews.com,nd: online)

Fig 12b: Thulamela Archaeological Site (de la Harpe,nd: online)

Fig 12c: Drimolen excavation site (Catch Themes, nd: online)

Fig 12d : Driekopseiland engravings (sahistory.org.za, 2015: online)

Fig 12e : West Coast Fossil Park (Xinhua,2021 : online)

Fig 12f : Wonderwerk Caves (Van Zyl, 2018 : online)

Fig 12g : Wildebeest Kuil Rock Art Centre (McGregor Museum,nd: online)

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Fig 41a (Author,2023)

Fig 41b (Author,2023)

Fig 41c (Coetzee,2017: online)

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Fig 42 a : Silky Bushmen grass (Crawford,2014: online)

Fig 42 b : Speargrass (randomharvest.com, nd : online)

Fig 42 c : Natal Redtop (pza.sanbi.org, 2018 :online)

Fig 42 d : Lehmann's Lovergrass (Krupski, 2022 : online)

Fig 42 e : Thimble grass (Vlok, nd : online)

Fig 42 f : Fingergrass (Flowcomm, 2014 : online)

Fig 42 g : Grey Sourgrass (Carnahan, nd : online)

Fig 42 h : Blue Bush (Ballings,2006 :online)

Fig 42 i : Black Thorn Tree (Rebelo, nd:online)

Fig 42 j : Buffalo Thorn Tree (randomharvest, co.za, nd:online)

Fig 42 k : Karee Tree (randomharvest.co.za, nd : online)