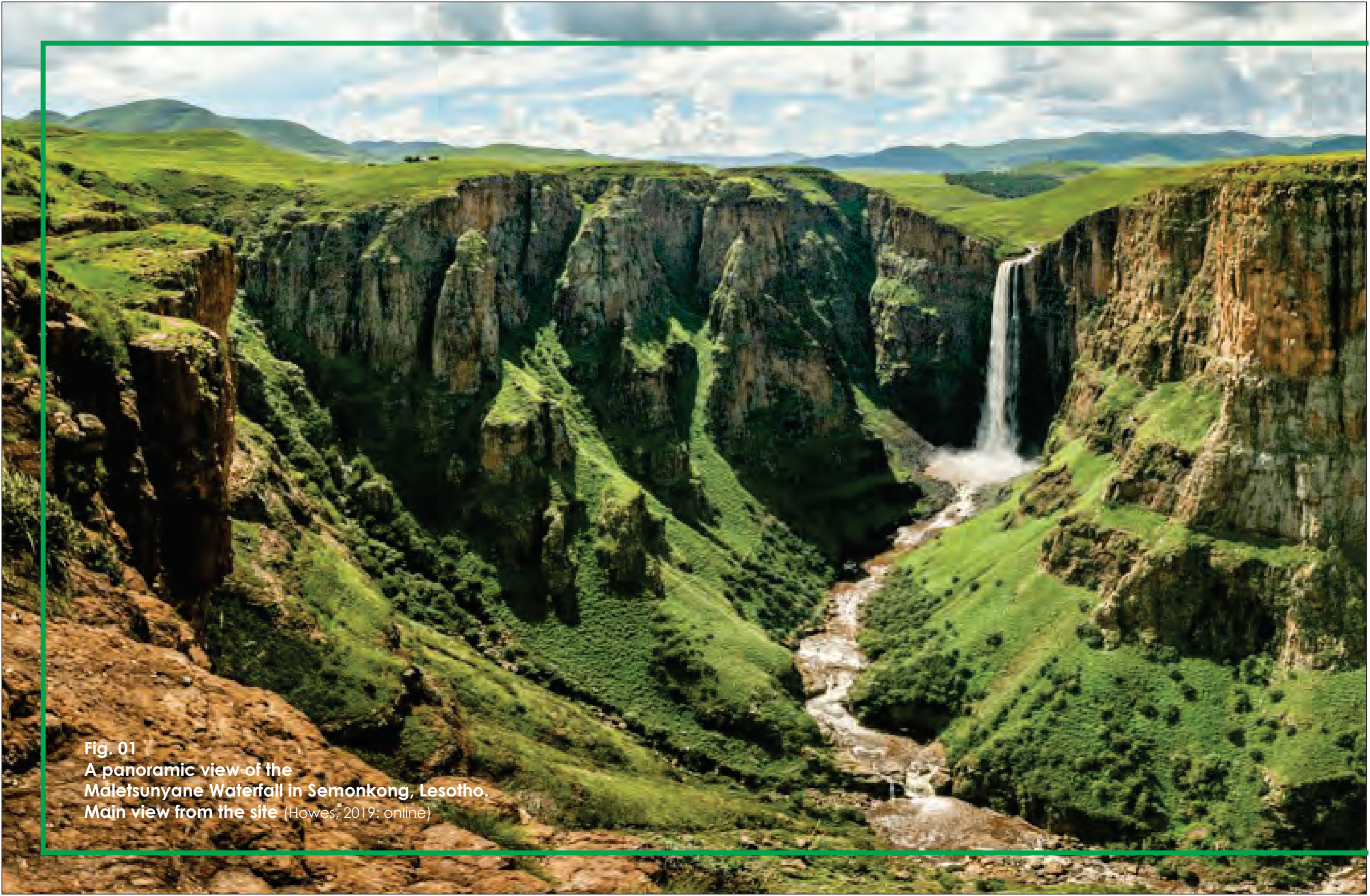


# LANDSCAPE APPRECIATION CENTRE

AN ARCHITECTURAL EXPLORATION OF IDENTITY AND GENIUS LOCI  
AT SEMONKONG, LESOTHO

MARC MAKEKA 2014099762





**Fig. 01**  
A panoramic view of the  
Maletsunyane Waterfall in Semonkong, Lesotho.  
Main view from the site (Howes, 2019: online)



SCAN ME



**Fig. 02**  
**Semonkong, Lesotho.**  
(online)

### **Declaration of original authorship**

I, Marc Makeka, acknowledge and declare that the work contained in the dissertation has not been previously submitted to meet the requirements for a qualification at this or any other higher academic institution.

Figures not referenced in this dissertation are by the author. All quotes used are referenced and acknowledged with a source list provided. To the best of my knowledge, this dissertation does not contain any material previously written or published by any other person, except where due reference is made.



### **Acknowledgments**

My family for their support and always believing in me.  
Professor Jan and Petria Smit, Martie Bitzer, Annemarie Wagener and all lecturers for their well versed advice throughout the year.  
My friends and the red cubicle team.

The Masters class of 2019

This dissertation is submitted in partial fulfillment of the requirements for the degree M.Arch (Prof)

08 October 2019

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## PREAMBLE

This dissertation emanates from an interest in vast natural landscapes. It proposes an Appreciation centre in the majestic mountains of Semonkong, nestled in the heart of Lesotho. The objective is to design a meaningful place that respects the site with regards to the context, climate, appropriate technology and materials. This will be achieved through the investigation of identity and biophilia.

The client is the Lesotho Tourism Development Corporation (LTDC) which aims to promote sustainable and responsible economic development through tourism. Other objectives of this institution include providing a positive and consistent voice for Lesotho, and encourage tourists to learn more about the destinations they visit in Lesotho.

This dissertation has been organized into two main parts which focus on the grounding and making of the project respectively. The first part will identify the aims and problem statements by exploring the topology, morphology, typology and tectonics of the impending design outcome. This part also explores the theoretical grounding leading towards a design methodology. The second part will identify the design development and its synthesis, tectonics and a concluding reflection assessment of the design's success or lack thereof.

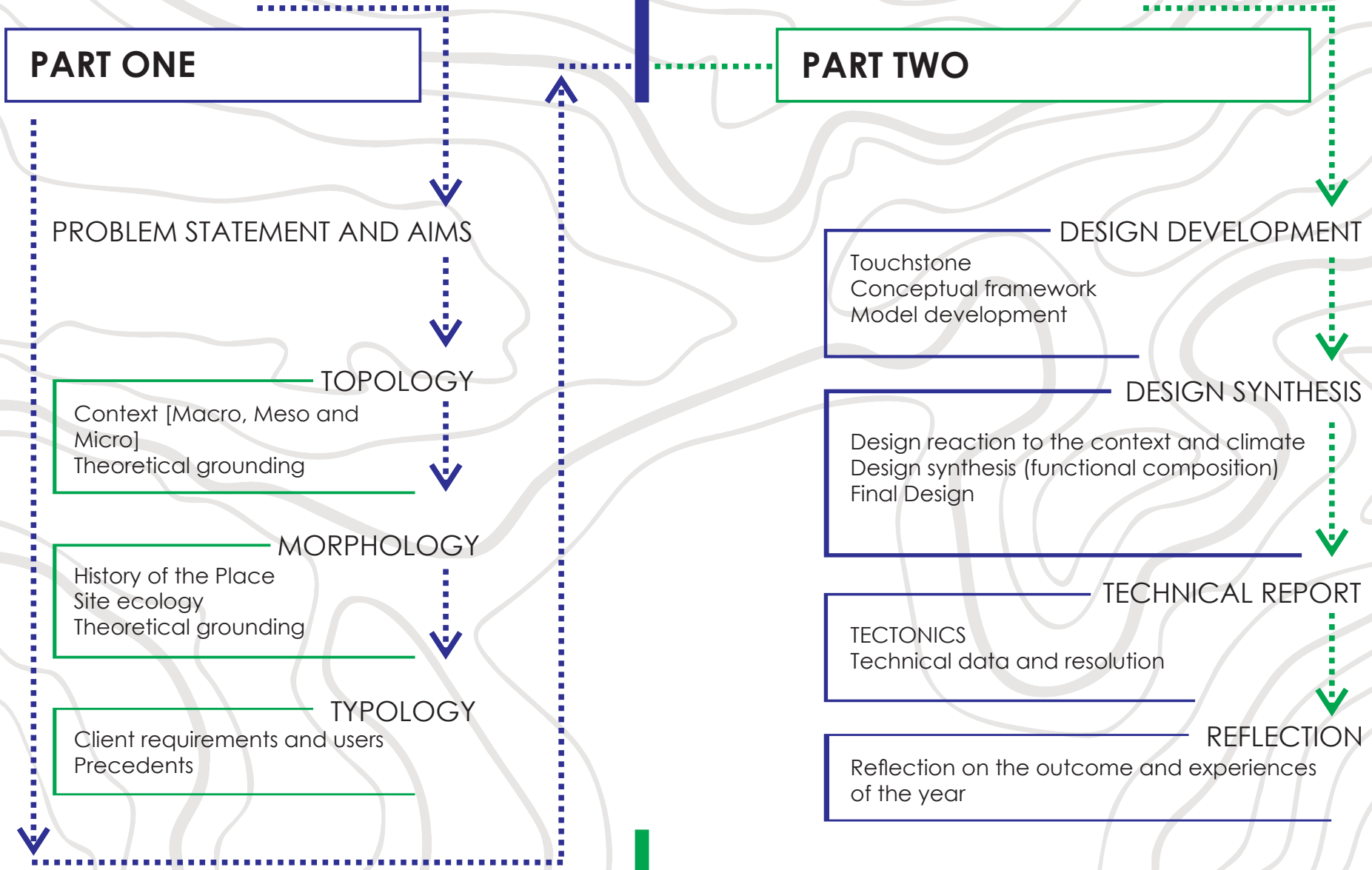
### **Key words and phrases:**

Identity, Patterns, Biophilia, Landscape Appreciation Centre, Maletsunyane Waterfall, Natural environment, Land art



Fig. 03  
Settlements in Semonkong  
within their mountainous  
context

# DOCUMENT FRAMEWORK



# PART 1

## LANDSCAPE APPRECIATION CENTRE

### GROUNDING

#### **CHAPTER 01 - PREFACE**

- 1.1. Introduction
- 1.2. Problem Statement and Aims
- 1.3. Research Methodology

#### **CHAPTER 02 – CONTEXT**

- 2.1. Introduction
- 2.2. Macro Context
- 2.3. Meso Context
- 2.4. Micro Context
- 2.5. Conditions on site
- 2.6. Conclusion

#### **CHAPTER 03 – HISTORY OF THE PLACE**

- 3.1. Introduction
- 3.2. Lesotho
- 3.3. Semonkong
- 3.4. Tourism and statistics
- 3.5. Conclusion

#### **CHAPTER 04 – SEMONKONG ECOLOGY**

- 4.1. Introduction
- 4.2. Semonkong Ecology
- 4.3. Conclusion

#### **CHAPTER 05 – PRECEDENTS**

- 5.1. Introduction
- 5.2. Giants Causeway Visitors Centre
- 5.3. Sancaklar Mosque
- 5.4. Warrumbungle National Park
- 5.5. Kavo Gkreko Visitor Centre
- 5.6. Natura Vive Skylodge Adventure Suites
- 5.7. Evans Tree House
- 5.8. E'Terra Samara
- 5.9. Inspirational Influences

#### **CHAPTER 06 - THEORETICAL GROUNDING**

- 6.1. Introduction
- 6.2. Biophilia
- 6.3. Conclusion

#### **CHAPTER 07 – CONCLUSION**

- 7.1. Introduction
- 7.2. The Client
- 7.3. The Brief
- 7.4. Accommodation list and facilities

# PART 2

## LANDSCAPE APPRECIATION CENTRE

### APPLICATION [MAKING]

#### CHAPTER 08 – DESIGN DEVELOPMENT

- 8.1. Introduction
- 8.2. Touchstone
- 8.3. Conceptual ideas
  - Fluidity
  - Fragments of Time
  - Fingerprint [Identity]
- 8.4. Conceptual Framework
- 8.5. Model and sketch development

#### CHAPTER 09 – DESIGN SYNTHESIS

- 9.1. Introduction
- 9.2. Functional composition
- 9.3. Response to climate and context [IDENTITY]
- 9.4. Theoretical application
- 9.5. Final design

#### CHAPTER 10 – TECHNICAL REPORT

- 10.1. Introduction
- 10.2. Technical data and resolution

#### CHAPTER 11 – CONCLUSION

#### CHAPTER 12 - REFLECTION

- 12.1. Reflection on the outcome and experience of the year

#### CHAPTER 13 – BIBLIOGRAPHY

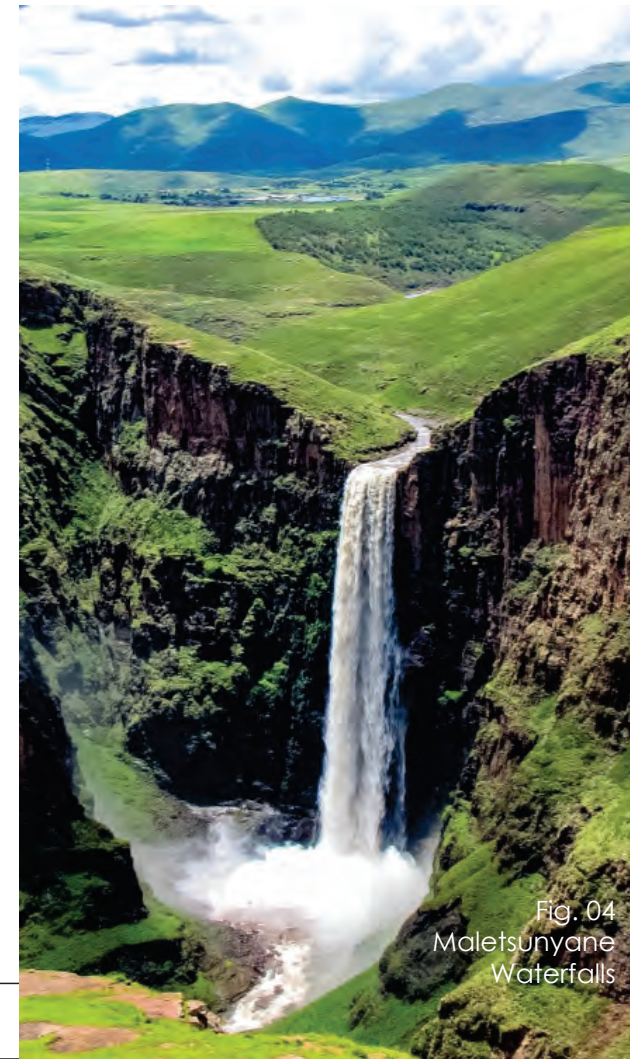


Fig. 04  
Maletsunyane  
Waterfalls

The **Maletsunyane Waterfalls** plummets at a height of 192m from a ledge of Triassic-Jurassic basalt and is one of the highest single dropping waterfalls in the Southern Hemisphere. It is found in the town of Semonkong (the place of smoke), which it was named after due to the misty cloud that the fall creates in the enormous gorge. This waterfall is the **main generator for the project**. Therefore the focus of this **Landscape Appreciation Centre** is not the building, but rather the context and landscape within which it is placed.

This architectural exploration aims to investigate **identity** as a conceptual theme to produce an appropriate and sensitive place for tourist and locals alike. The conceptual framework will take into account the **site, vernacular context and culture** of the Basotho nation in order to create a **meaningful place** that respects its surroundings.

This intervention aims to utilize the principles and benefits of **biophilia** as grounding for the proximity of the project to the waterfall and vast landscape.

*"The longest commercially operated single-drop abseil is one of 204m down the Maletsunyane waterfall at Semonkong lodge, Semonkong, Lesotho"*  
(Guinness world record, 2005)

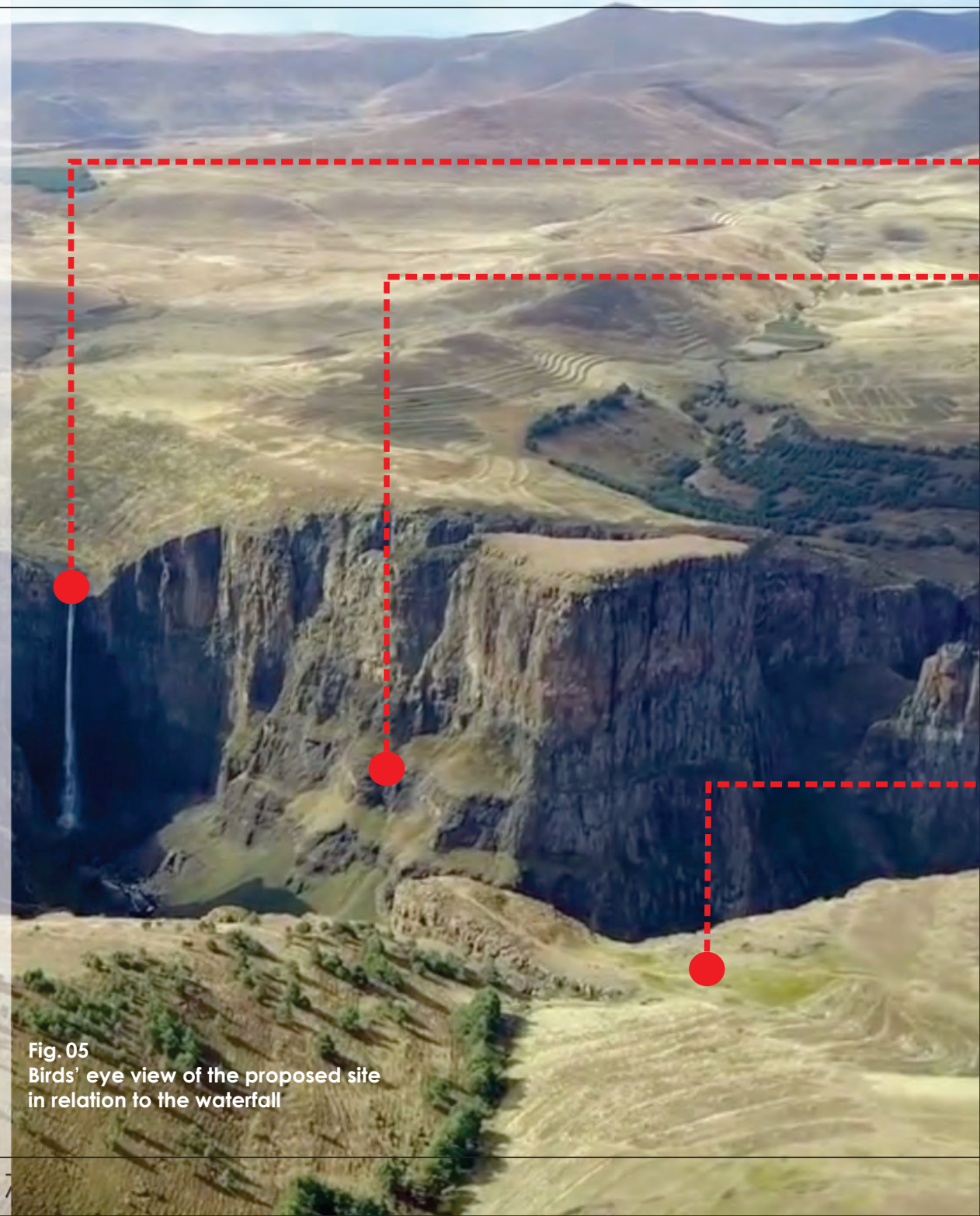
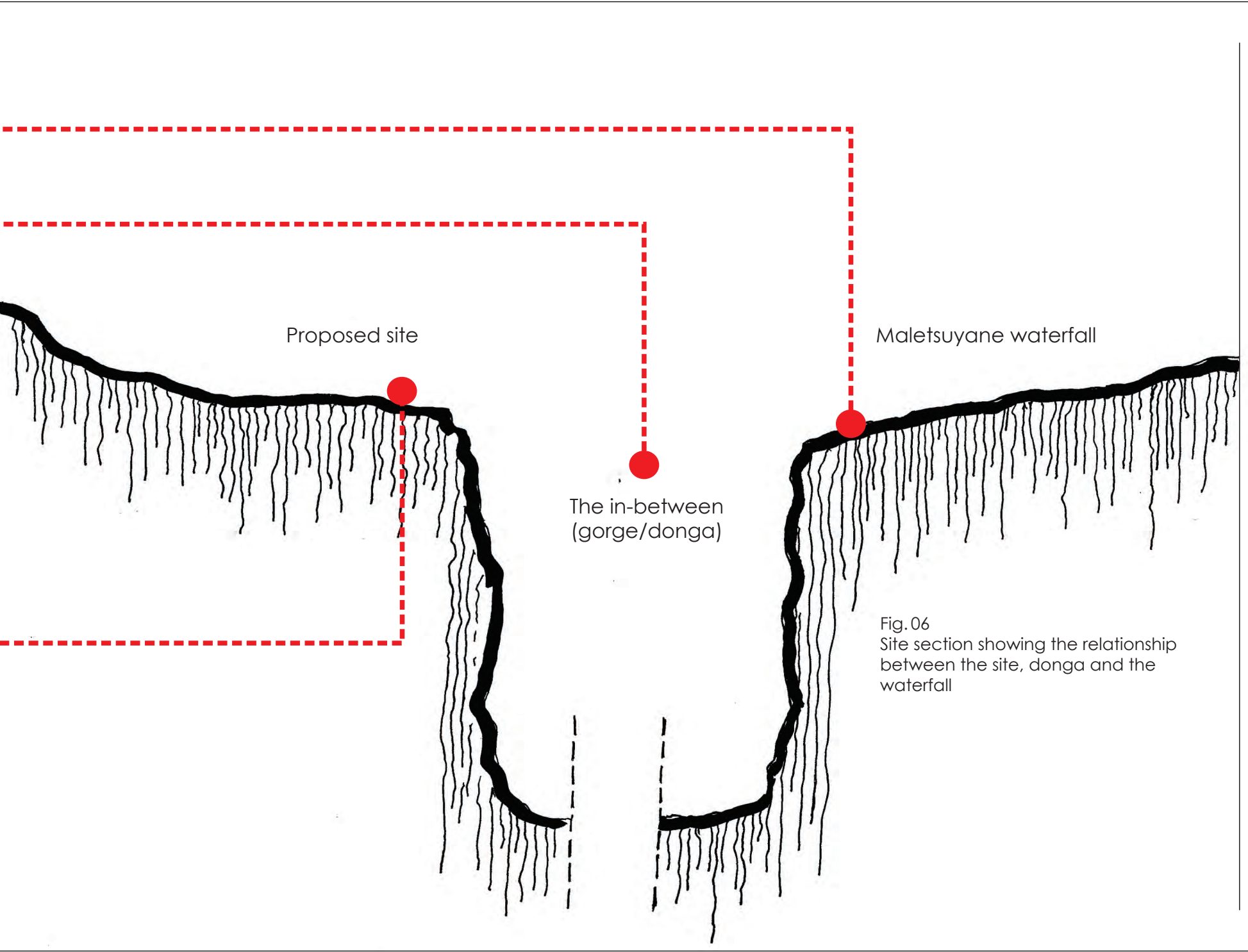
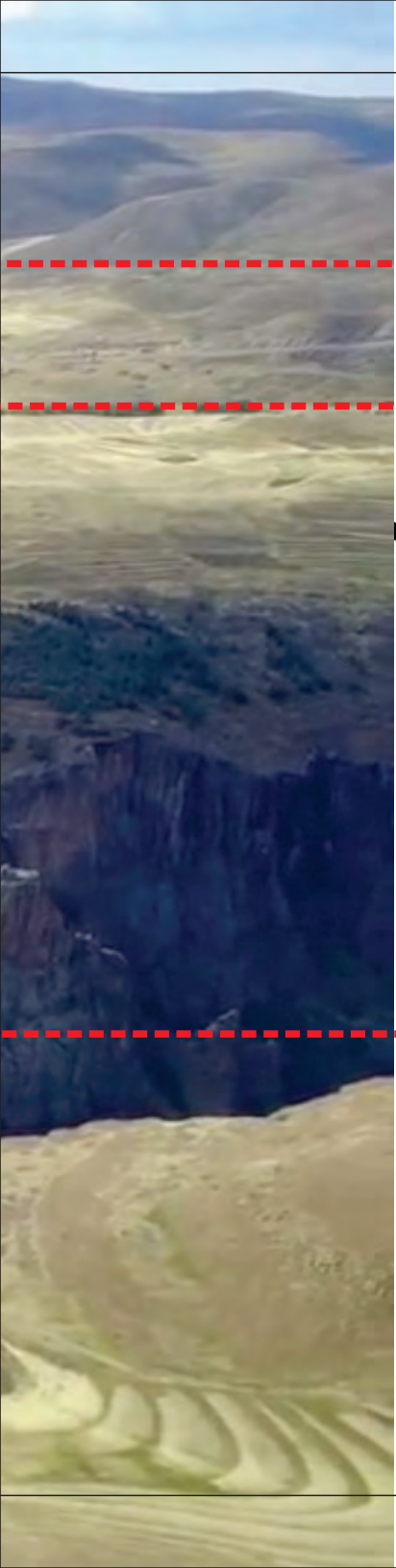


Fig. 05  
Birds' eye view of the proposed site  
in relation to the waterfall



Proposed site

Maletsuyane waterfall

The in-between  
(gorge/donga)

Fig. 06  
Site section showing the relationship  
between the site, donga and the  
waterfall

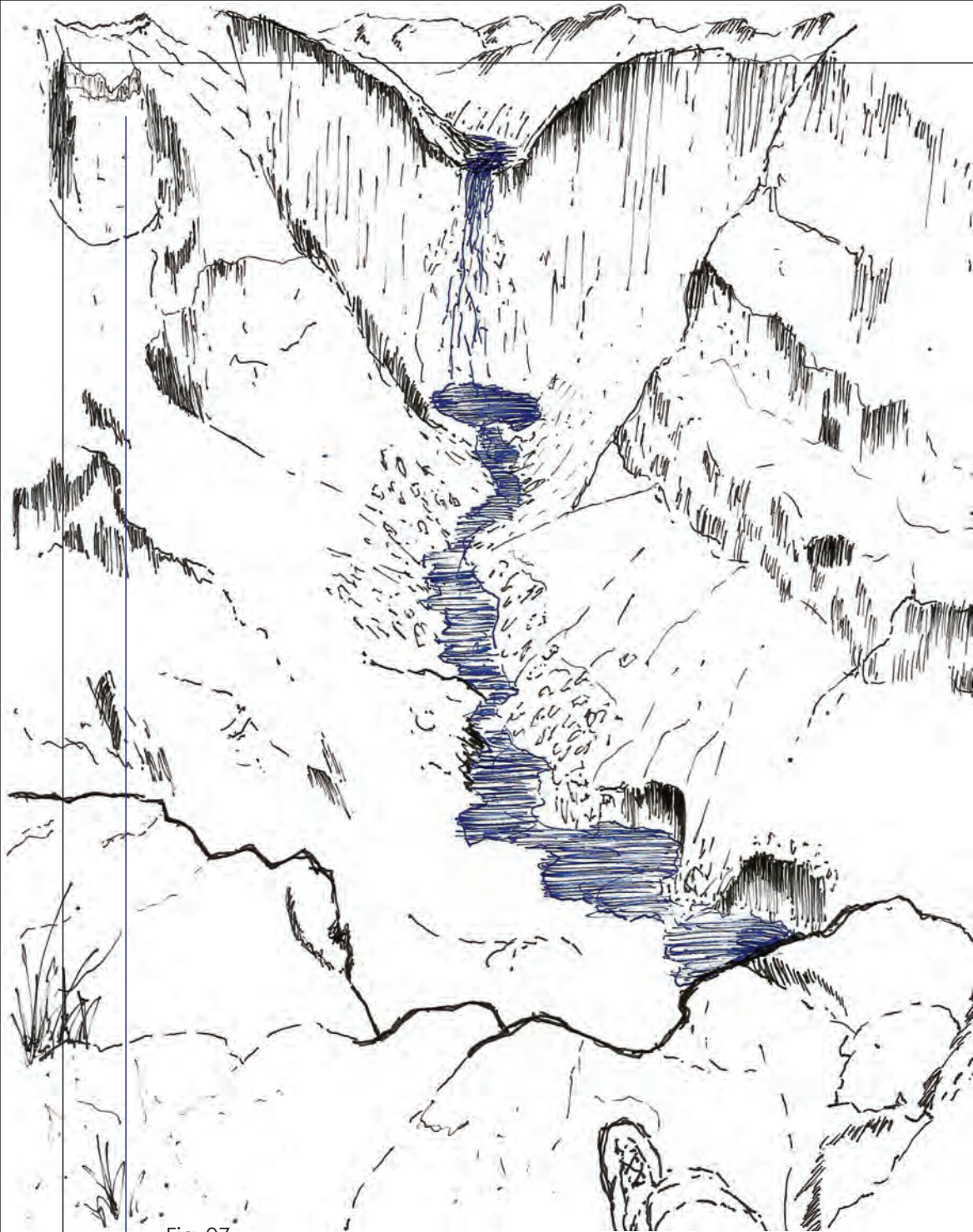


Fig. 07  
North view from the site looking towards the waterfall

## 1.2. PROBLEM STATEMENTS

### TOPOLOGY

- Due to the focus of this project being the landscape, the manner in which the building meets the ground becomes important
- How to integrate the building harmoniously with the site slope majestic surrounding

### MORPHOLOGY

- There are currently no pause spaces for people to enjoy the full grandeur of the site
- Due to the lack of buildings around the area, it is imperative to not impose on the landscape with forms and volumes of an alien nature

### TPOLOGY

- The closest sleeping and dining facilities are found at the Semonkong lodge, which is situated near the bank of the Maletsunyane River, approximately 4km away from the waterfall. This means that time spent around the waterfalls is limited due to the lack of accommodation facilities.

### TECTONICS

- How to latch onto a cliff in a sensitive manner
- How the structure addresses the slop of the site

## 1.2. AIMS

- The topographical aim is to investigate the site intensively so as to reach a design solution which 'disappears' within the landscape
  - A design solution which respects the landscape to create a meaningful place
  - To create a building which responds responsibly to the climatic conditions of the site
- 
- To create forms which relate to the culture and immediate context through an investigating of the Basotho identity
  - To study the vernacular architecture and utilize some of the local design motifs
- 
- One of the main aims for this project is to create an experience for tourist to explore the area through an exciting but sensitive architectural intervention
  - To create shelter and a resting place for those who journey to the Maletsunyane waterfalls
- 
- To provide sleeping pods hung from the building and on to the cliff to offer spectacular views to the falls
  - To produce a sustainable building which utilizes locally available materials and requires minimal mechanical climate control

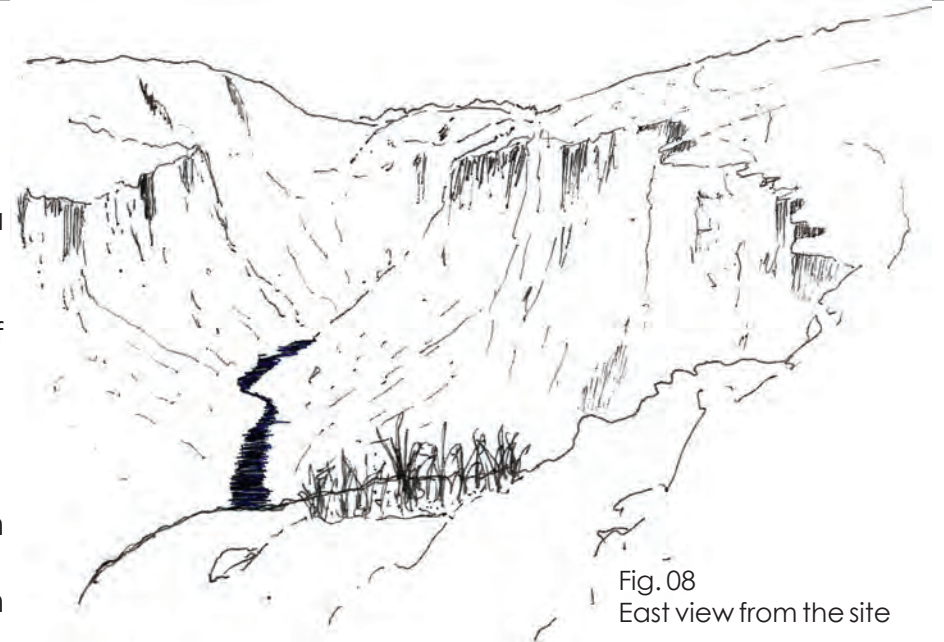


Fig. 08  
East view from the site

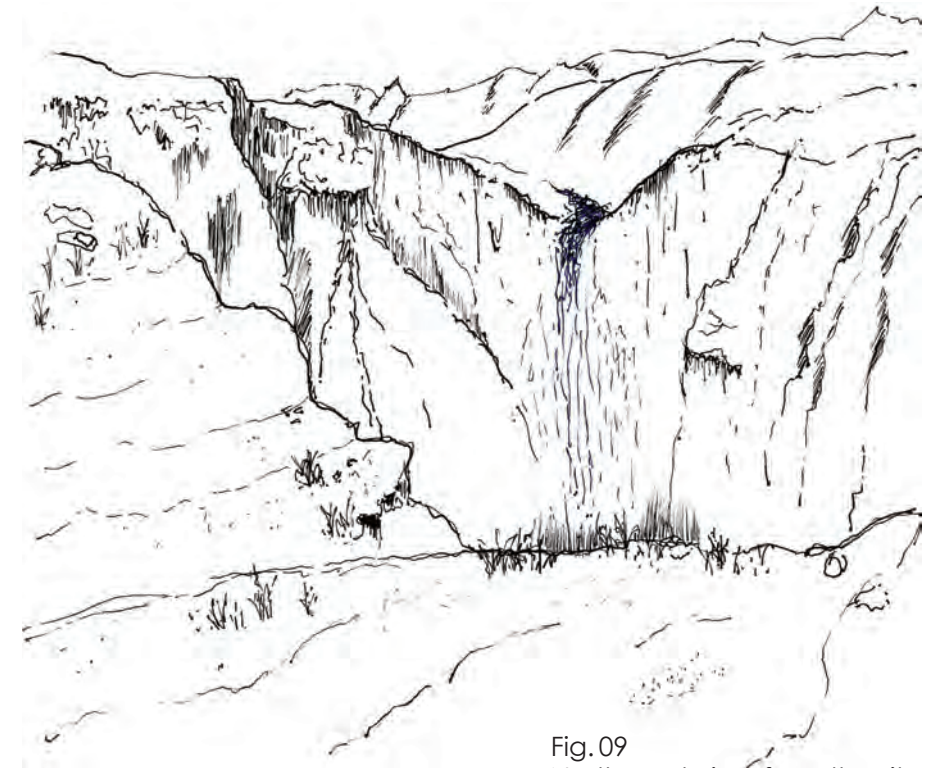


Fig. 09  
North-west view from the site

### 1.3. RESEARCH METHODOLOGY

The design and research methodology is formed around the following sources of knowledge in relation to architecture:

#### **The what** (Typology)

This refers to the classification and type of building

#### **The where** (Topology)

Investigating the landscape which the building is placed

#### **The how** (Morphology)

The study of the building form and volumes.

#### **The how** (Tectonics)

This refers to how the building is put together. The construction of the design as both a science and art.

#### **Analysis**

The Macro, Meso and Micro analysis. These are based on cognitive and quantitative data collected within the context.

#### **Site investigation**

- Cognitive analysis - The phenomenological experience of the site and its context.
- Quantitative data - This refers to the definite physical measurements of the site.
- Qualitative information - Conceptual and descriptive information such as light, noise and pedestrian movement patterns.

#### **Theoretical grounding**

Critical analysis of the literature discussed which supports the design

#### **Precedent and case studies**

Analysis of other architectural solutions with regards to the site, type of building, form and technologies used.



Fig. 10  
Maletsunyane Waterfalls from the proposed site

### Touchstone

An abstract interpretation of the initial idea. Captures the essence of the design concept and can be used to test the consistency of the initial idea.

### Conceptual framework

This is a culmination of ideas gathered from the touchstone, precedent studies and the design concept.

### Interpretive analysis

The author's interpretation and understanding of the themes discussed.

### Cognitive analysis

Personal experiences relevant to the themes and design synthesis.

### Creative and critical reflection

Reflection and interpretation of the writings used.

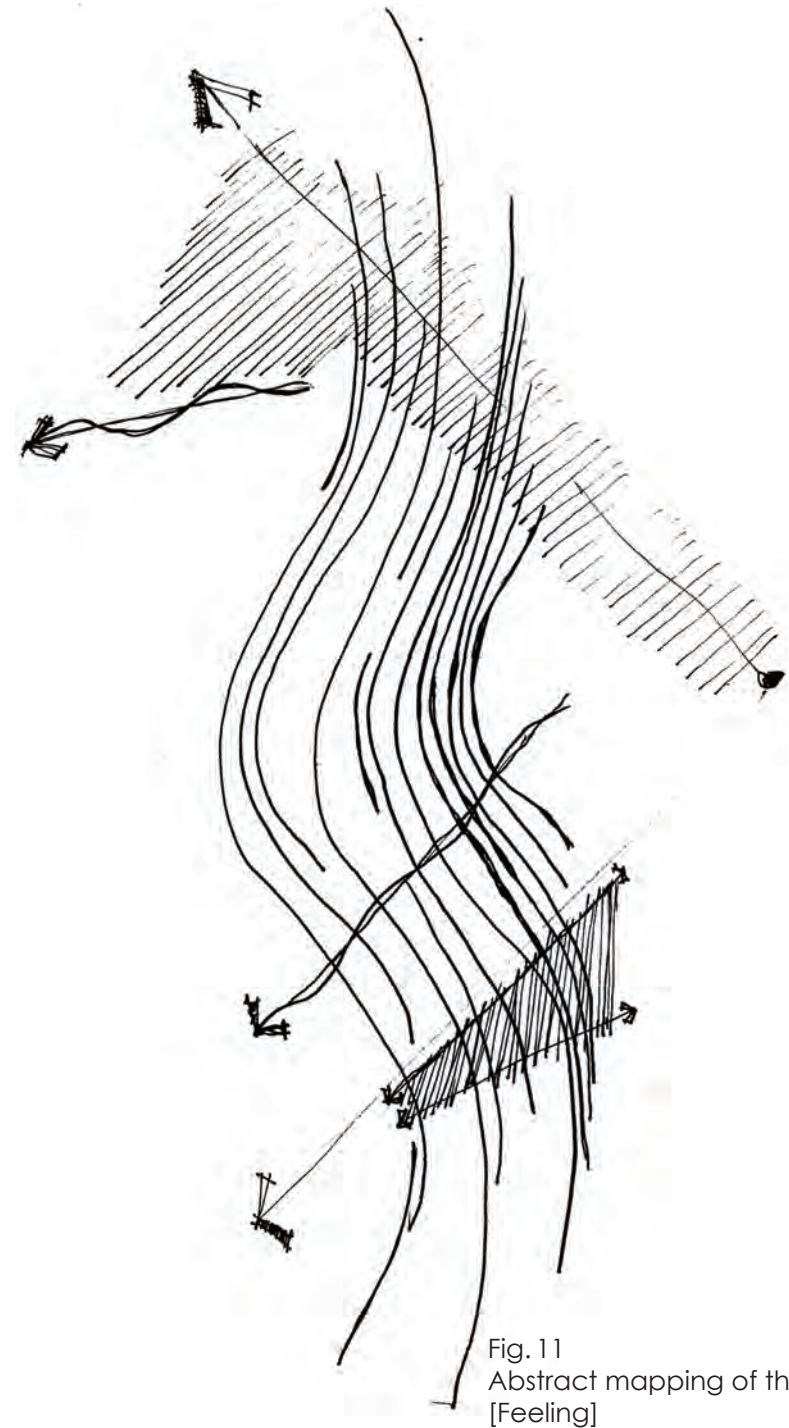
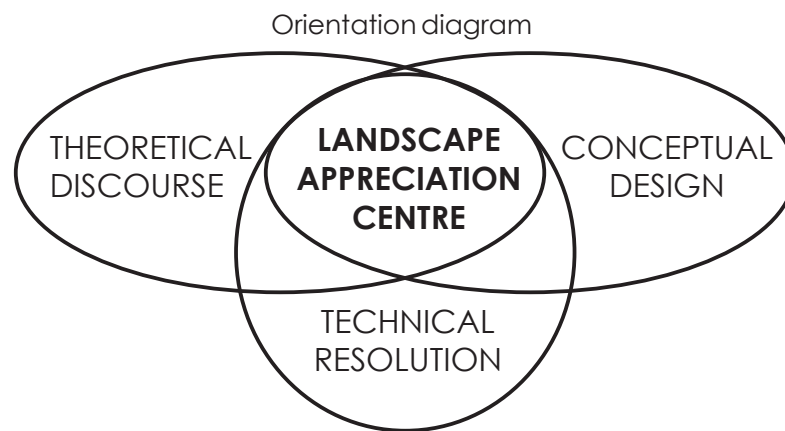


Fig. 11  
Abstract mapping of the site  
[Feeling]



- 2.1. Introduction
- 2.2. Macro Context
- 2.3. Meso Context
- 2.4. Micro Context
- 2.5. Conditions on site
- 2.6. Semonkong Climate
- 2.7. Conclusion

Fig. 12  
Scenic view from the site (online)



## 2.1. INTRODUCTION

This chapter is about the **location and context** of the proposed Landscape Appreciation Centre in order to give **orientation** of the site. It sets a framework for the possibilities in which the design can take by exploring and analyzing the conditions of the site from a macro scale to a micro scale. This is a crucial step for this project considering that it is situated in an almost remote and rural landscape. A thorough understanding of the site can determine important aspect of the design and assist in generating an appropriate Appreciation centre in the maluti mountain range of Lesotho.

## 2.2. MACRO CONTEXT

### Geography and location

Lesotho is an independent, sovereign and democratic country which is completely surrounded by the Republic of South Africa.



Fig. 13  
Map of Africa indicating the location of Lesotho within South Africa



Fig. 14  
Map of Lesotho showing the location of Semonkong

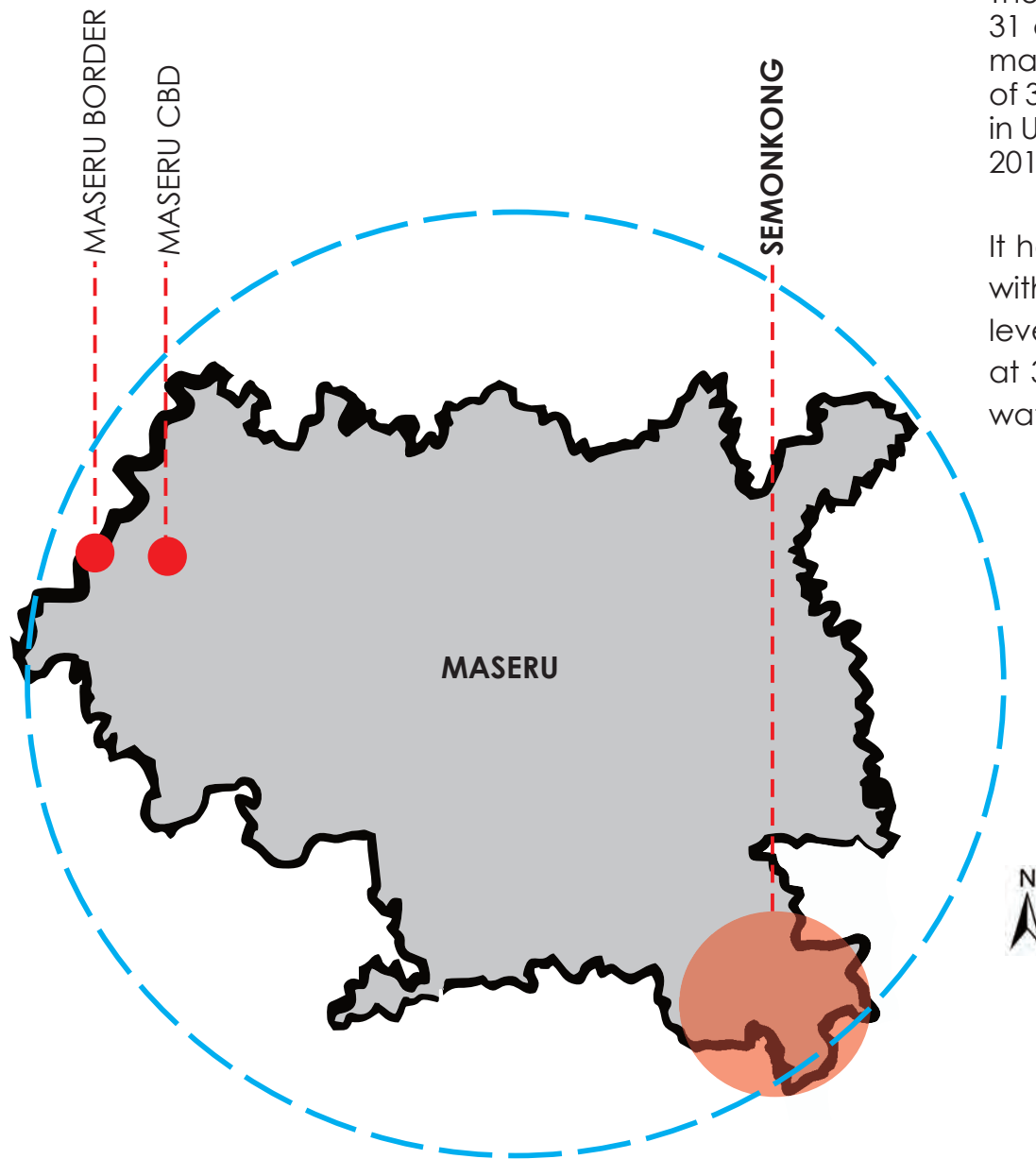


Fig. 15  
The district of Maseru

### Geography and location

The Kingdom of Lesotho is situated between latitudes 28 degrees and 31 degrees south and longitudes 27 degrees and 30 degrees east, making it completely outside the tropics. It has an approximate area of 30 555km<sup>2</sup>, which makes it a little larger than the State of Maryland in United States of America and about the size of Belgium (Stoddard, 2019: online).

It has rugged mountain ranges and is the only country in the world with all of its land being at altitudes higher than 1000m above sea level. Thabana-Ntlenyana is the highest mountain in Southern Africa at 3 482m elevation, while Maletsunyane is the highest single drop waterfall in Southern Africa at 192m (Stoddard, 2019: online).

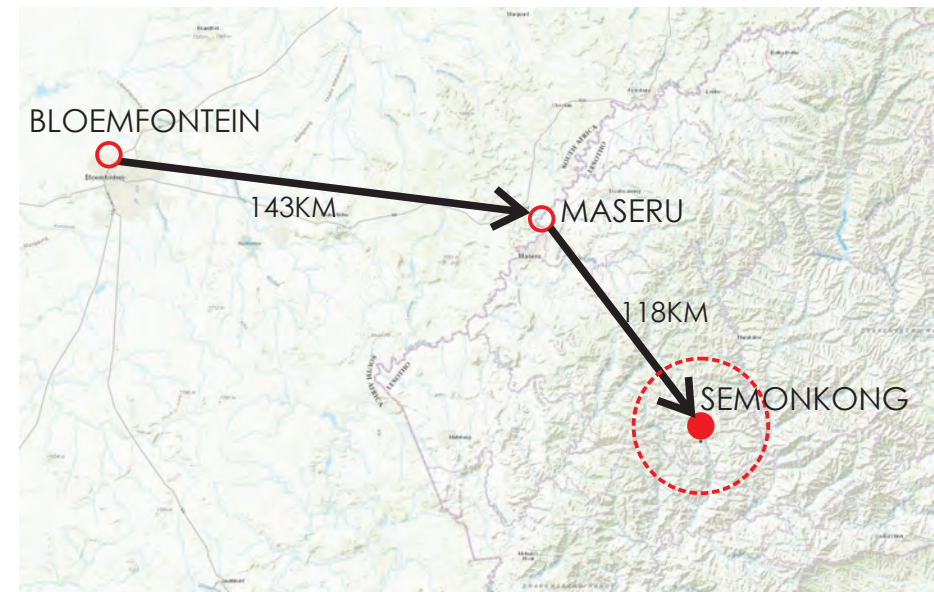


Fig. 16  
Map indicating the distances between Bloemfontein in the Free State and the proposed site in Semokong Lesotho

## 2.3. MESO CONTEXT

Lesotho can be accessed through South Africa by road, rail or air. It is an hour and a half by road from Bloemfontein and four from Johannesburg. A flight from Johannesburg to Lesotho takes one hour.

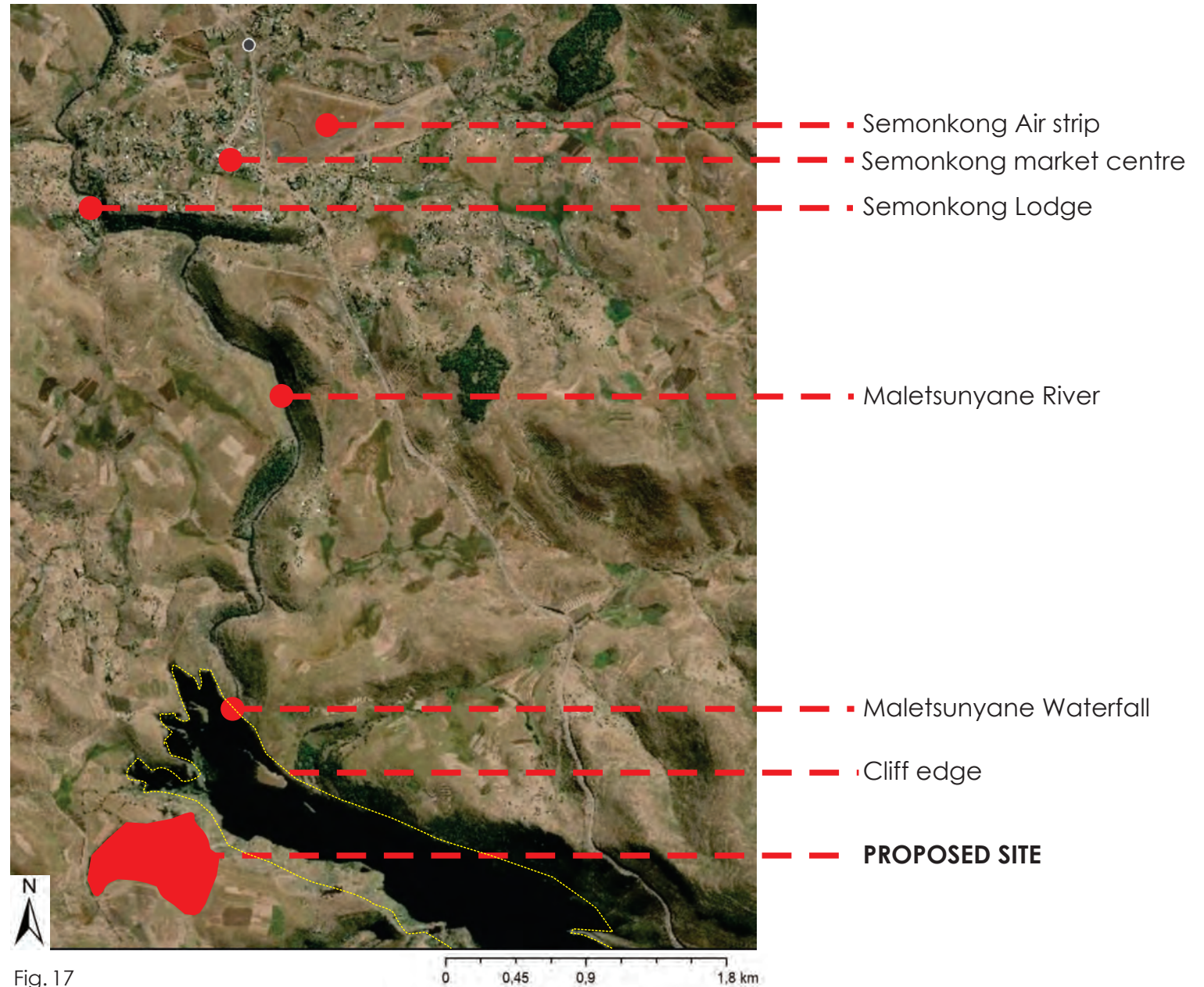


Fig. 17  
The town of Semonkong (Chief surveyor general, 2018)

### 2.3. MESO CONTEXT

SUNPATH, WIND DIRECTION, NOISE

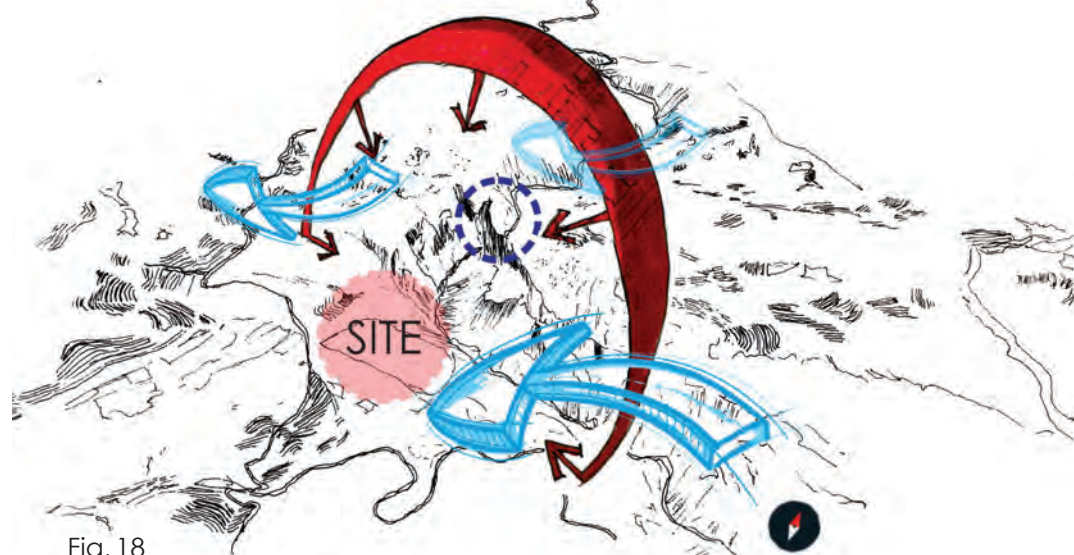


Fig. 18  
Site analysis showing wind and sun direction on site

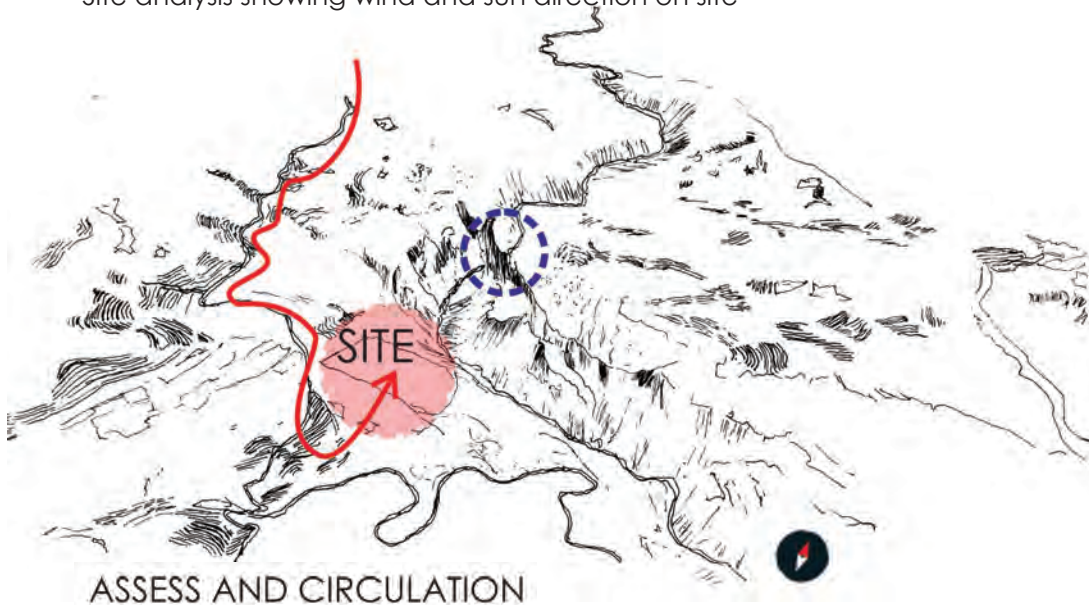


Fig. 19  
Birds' eye view site analysis showing the access route

Maletsunyane River

Adjacent village

Current  
abseiling point

Maletsunyane  
Waterfalls

PROPOSED SITE

Access route

Main entrance  
to site

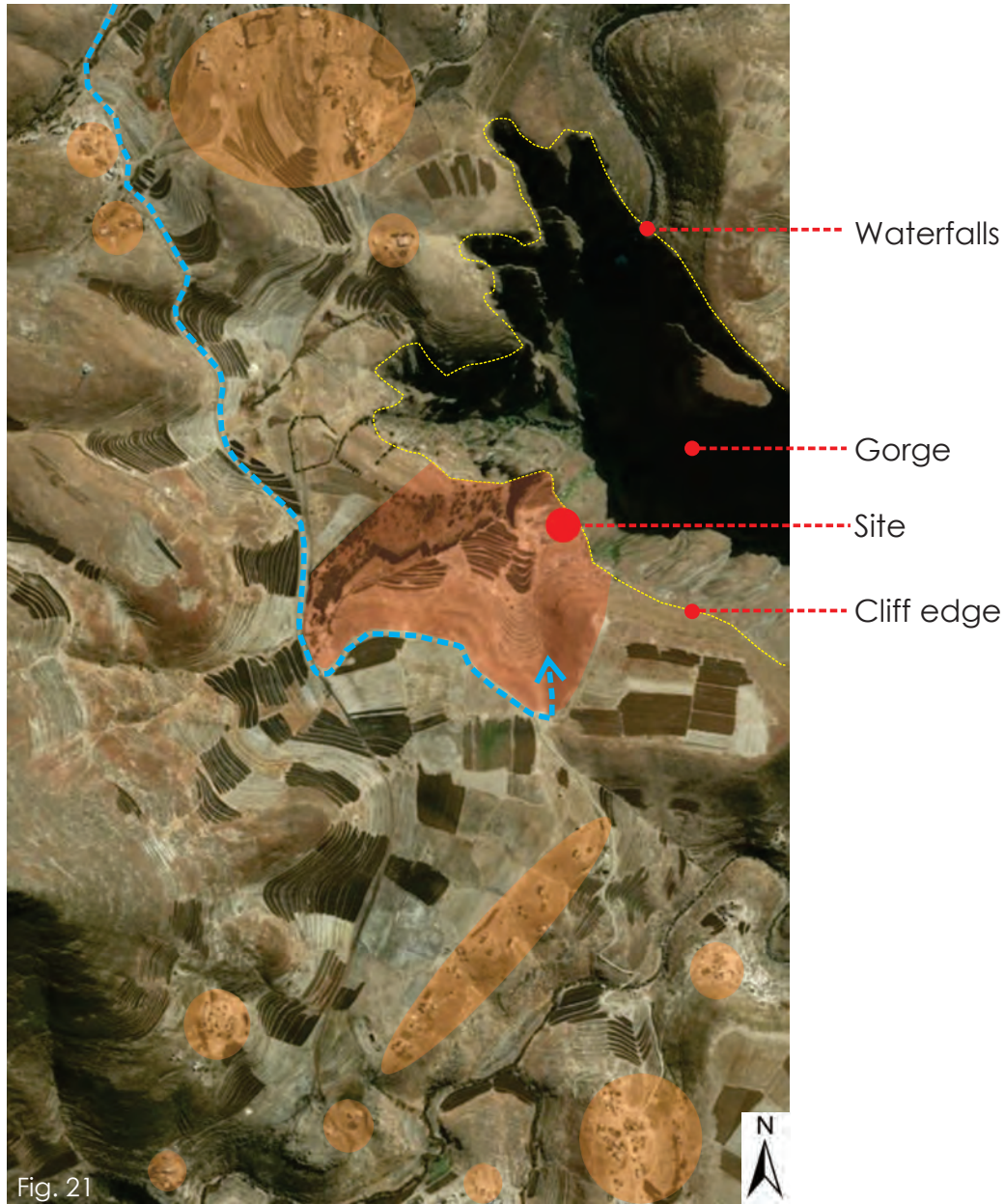
Man-made  
ploughing patterns



Fig. 20  
Meso analysis of site

### 2.3. MESO CONTEXT

#### Residential buildings



#### Farming locations



## 2.3. MESO CONTEXT

### Green spaces



Fig. 23  
Site analysis

Scale 1:20 000

### Valleys



Fig. 24  
Site analysis

Scale 1:20 000

### 2.3. MESO CONTEXT

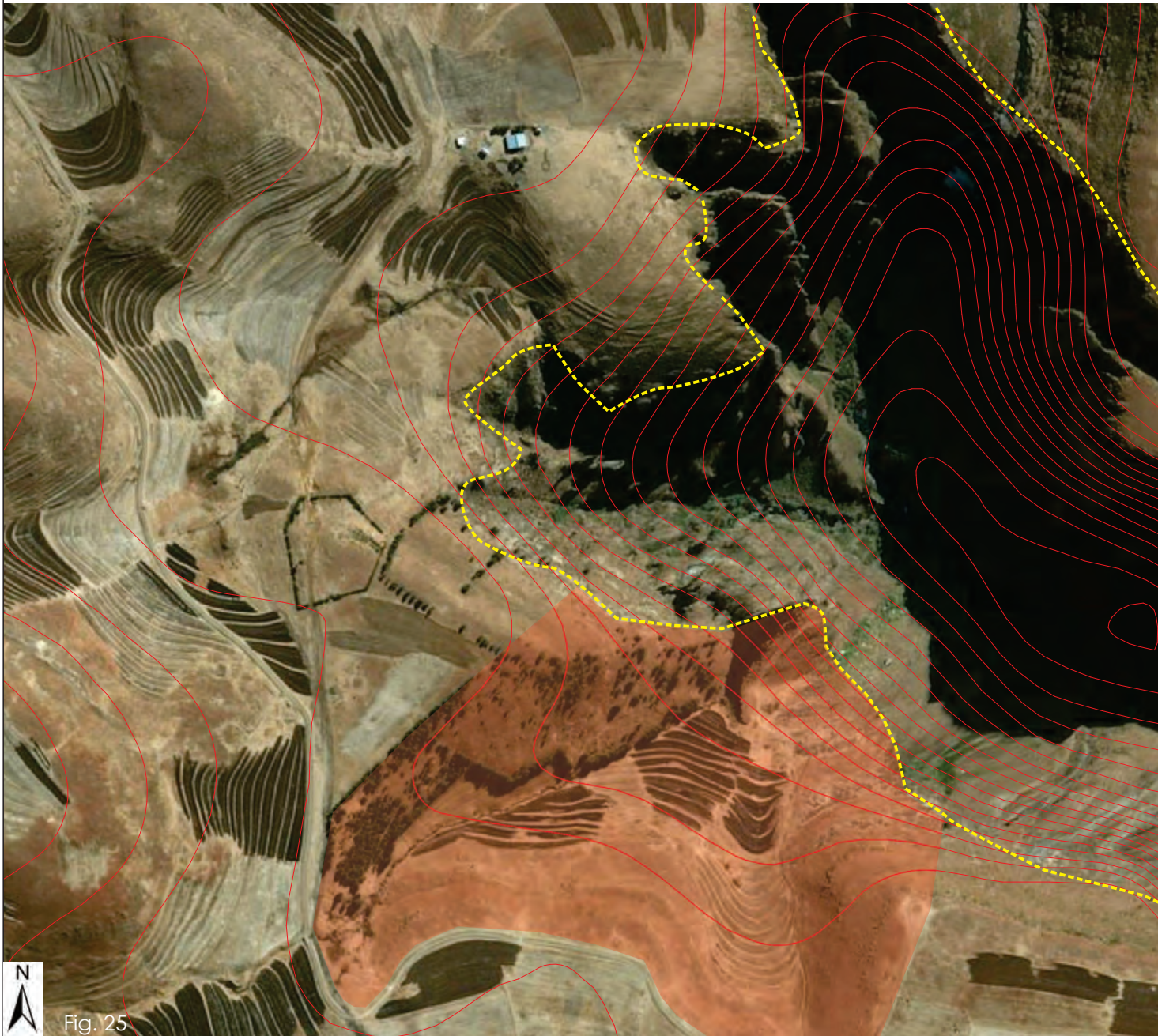


Fig. 25  
Site contours

02 - CONTEXT



Maseru is the capital city of Lesotho and is situated on the Caledon river separating Lesotho and South Africa.



Fig. 26  
Semonkong central market and trade



Fig. 27  
Semonkong central market and trade

Located in the District of Maseru is a community council called Semonkong, which translates to “place of smoke”. This place was established as a refuge for Basotho that were displaced by the Gun War in the 1880s.

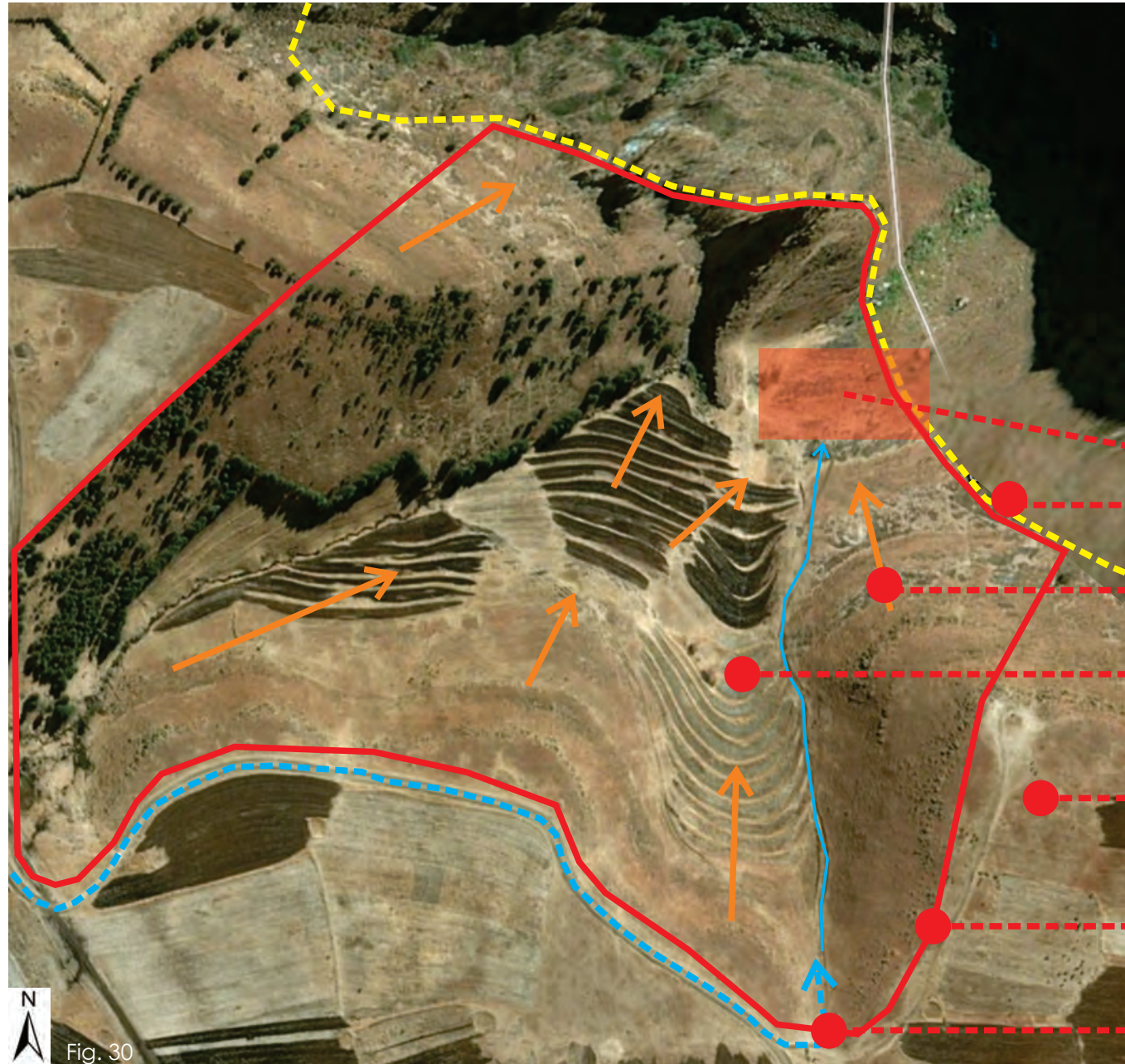


Fig. 28  
Semonkong locals at the proposed site offering horseback rides to visitors



Fig. 29  
Locals at the proposed site offering horseback rides to visitors

## 2.4. MICRO CONTEXT



### DISTANCE

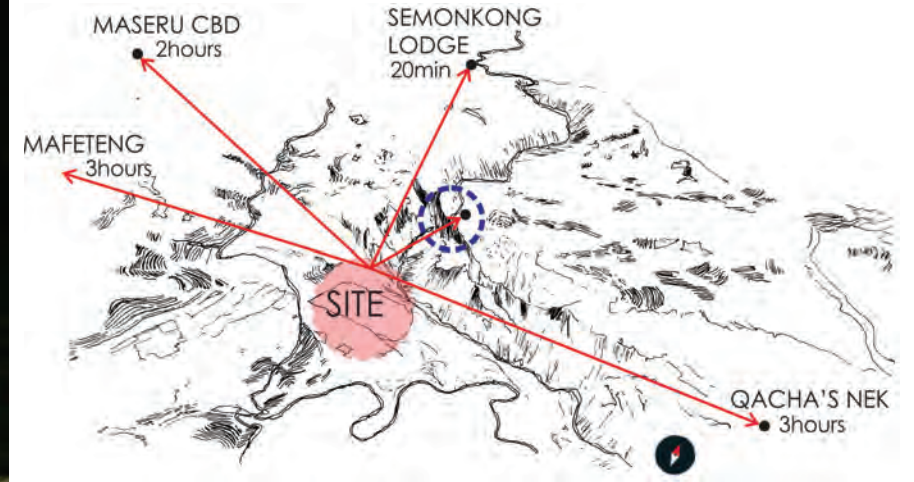


Fig. 31  
Site analysis  
sketch

Proposed position of the Appreciation Centre

Slope direction on site

Existing farming patterns

Hill top adjacent to the site. This creates drama as one approaches the Landscape Appreciation Centre

Site boundary

Vehicular site entrance is located toward the South-eastern corner of the site

02 - CONTEXT



Fig. 30  
Site analysis

Scale 1:5 000

## 2.4. MICRO CONTEXT

Maletsunyane  
Waterfall.  
Northern view from  
site

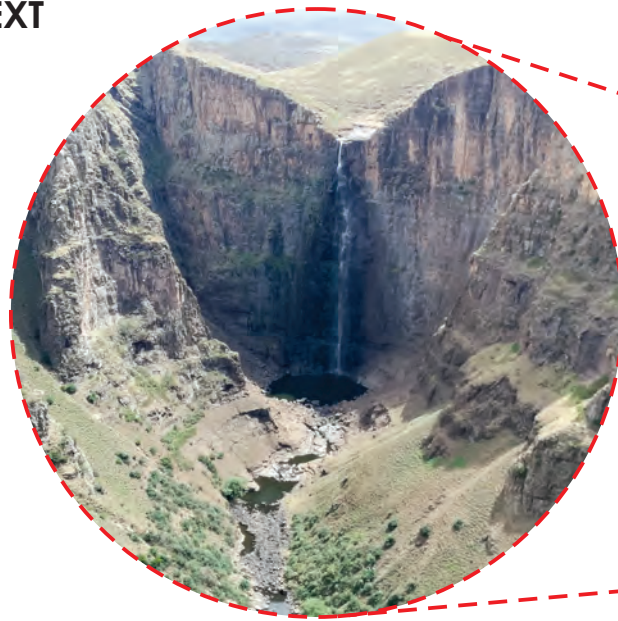
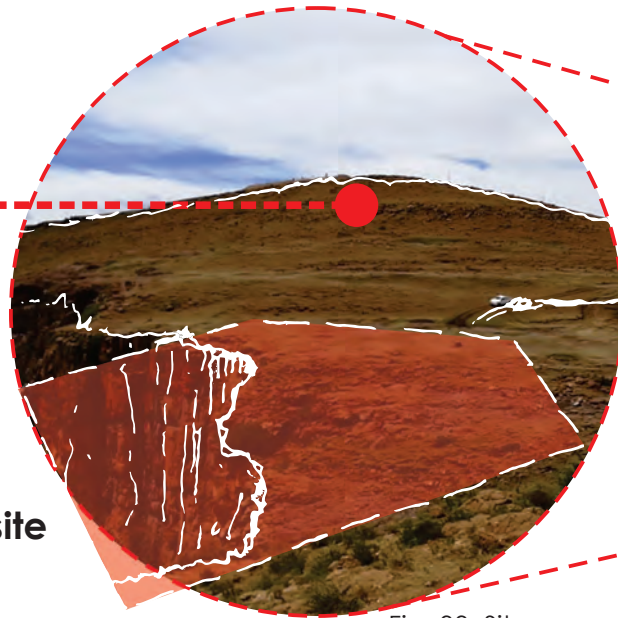


Fig. 32  
Gorge and waterfall  
view from site

Cliff edge



Proposed site

Fig. 33. Site

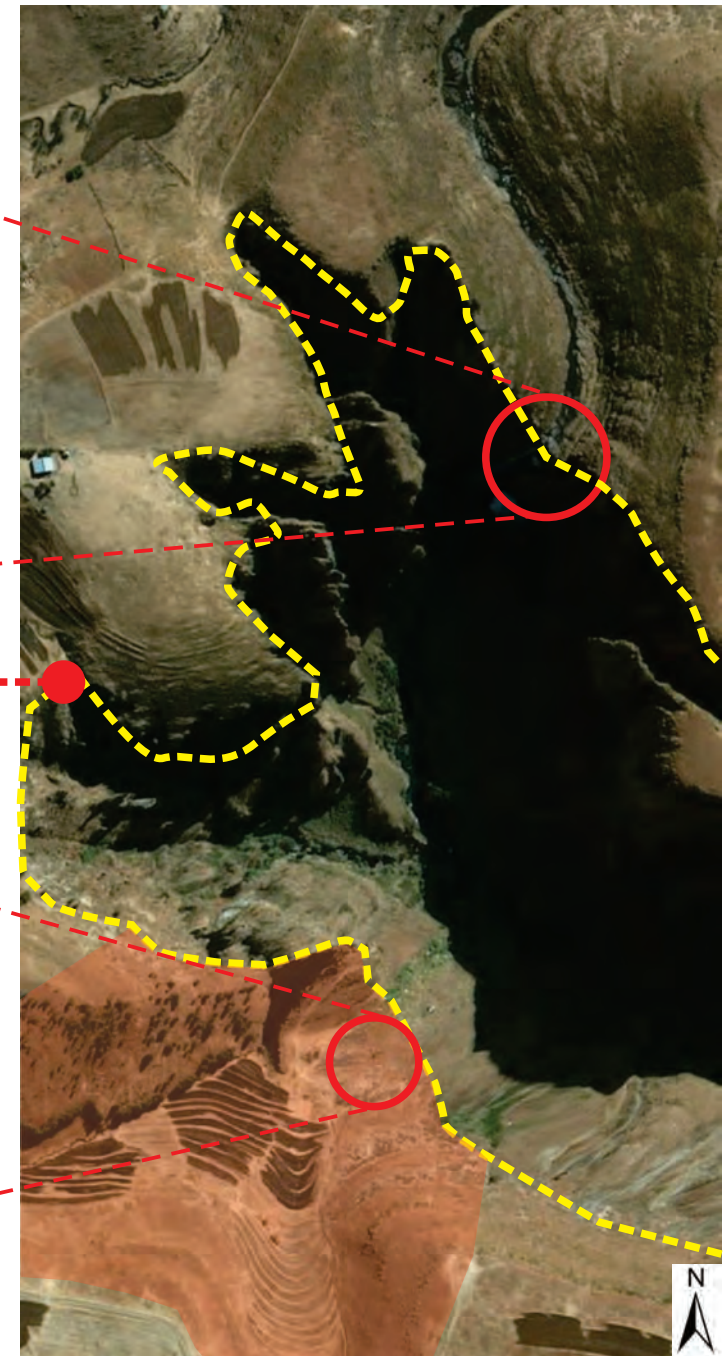


Fig. 34. Site map

## 2.5. CONDITIONS ON SITE

In the dissertation, **Landscape Appreciation Centre** refers to heritage and nature interpretation facilities aimed at evoking **feelings for nature**. It is about **communication between man and nature** rather than information. The intention is to assist visitors to form a positive and personal relationship with the cultural landscape and nature of Maletsunyane.

The Appreciation Centre is about enhancing the experience through the landscape.

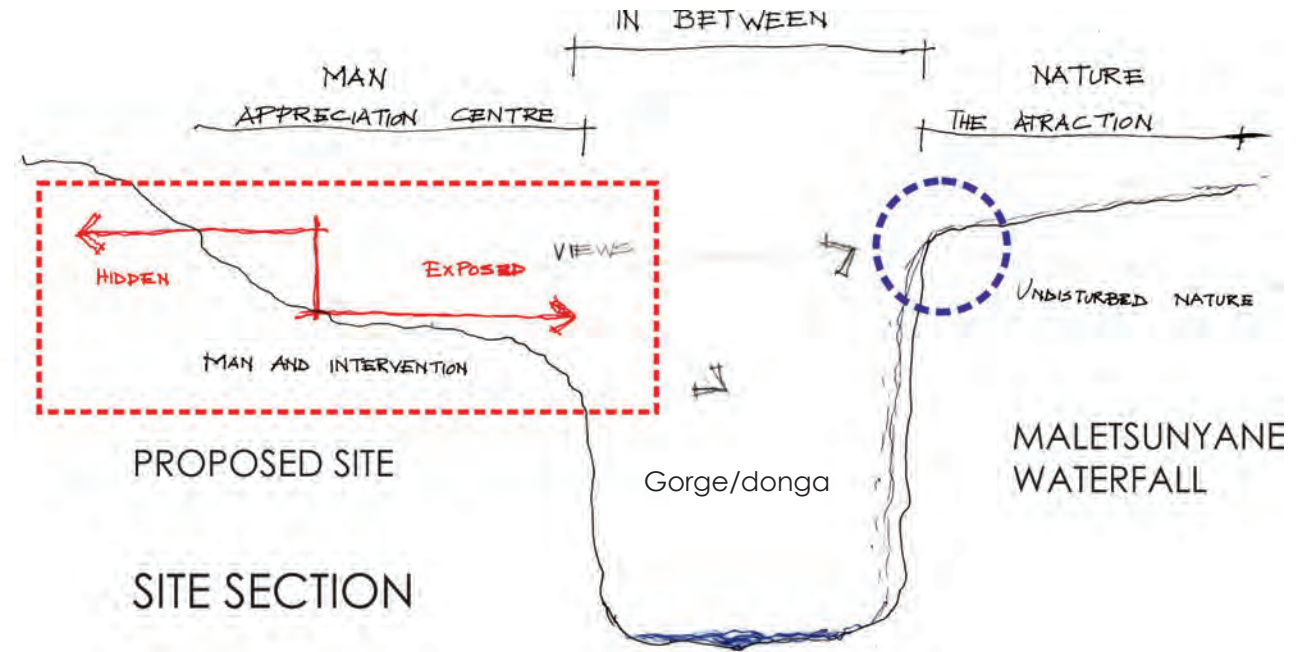


Fig. 36. Proposed site

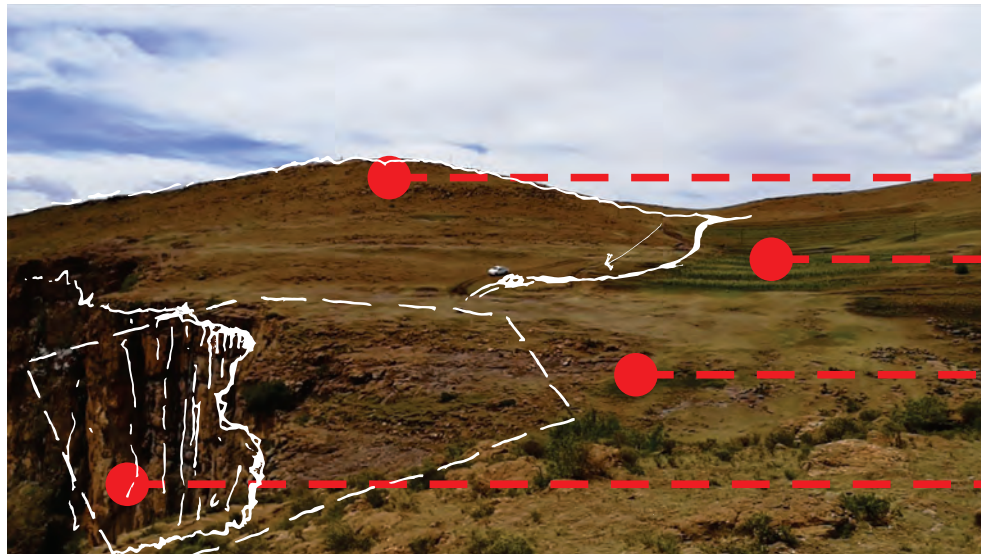


Fig. 35. Proposed site

Adjacent hill that hides the site as one approaches

Existing farming on site

Proposed site

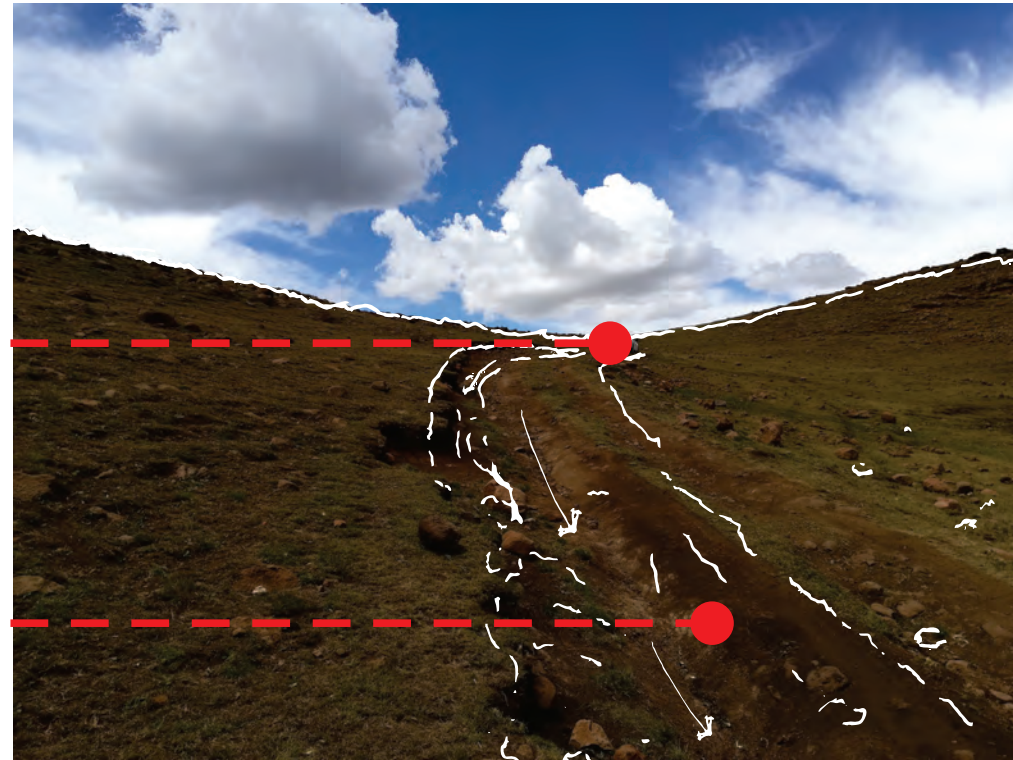
Proposed site for sleeping pods on cliff

## 2.5. CONDITIONS ON SITE

Fig. 37. South-east view from the proposed site

Approach to site

Existing vehicle road condition



Proposed site hidden by hill creating suspense and opportunity for drama as one approaches the cliff

Hill hiding the waterfall and proposed site

Existing vehicle road to proposed site

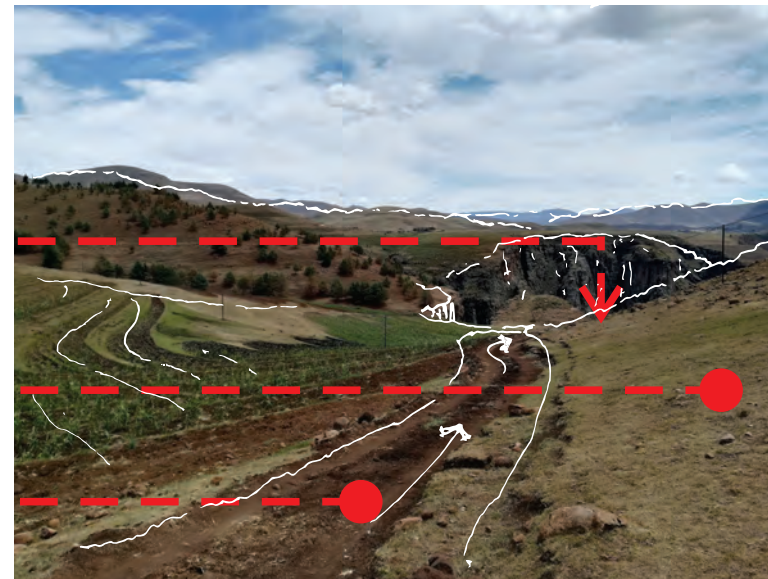


Fig. 38. Proposed site

## 2.5. CONDITIONS ON SITE

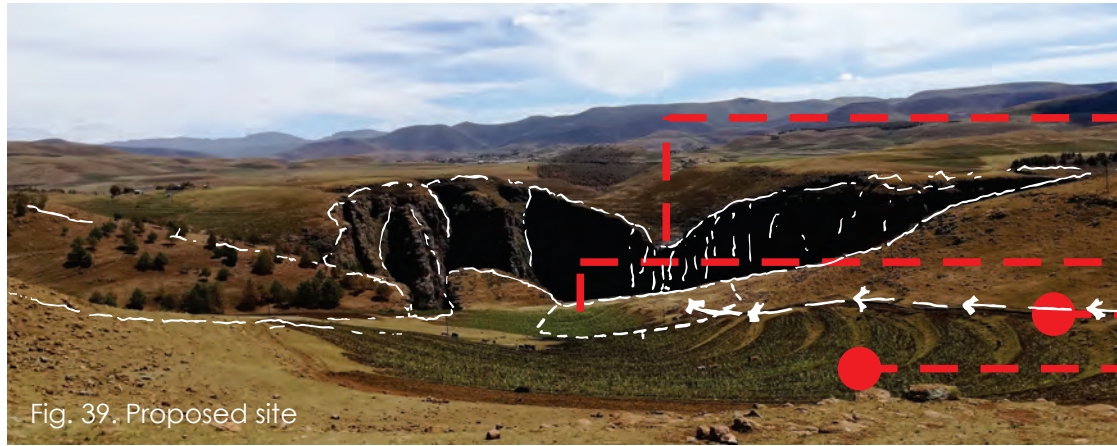


Fig. 39. Proposed site

Maletsunyane Waterfall

**Proposed site**

Access road

Existing farming on site



Fig. 40. Proposed site

Existing trees towards the west of the site

Cattle grazing portion of the site

Locals use this land for farming and agriculture

Large rocks on site which can be used for construction

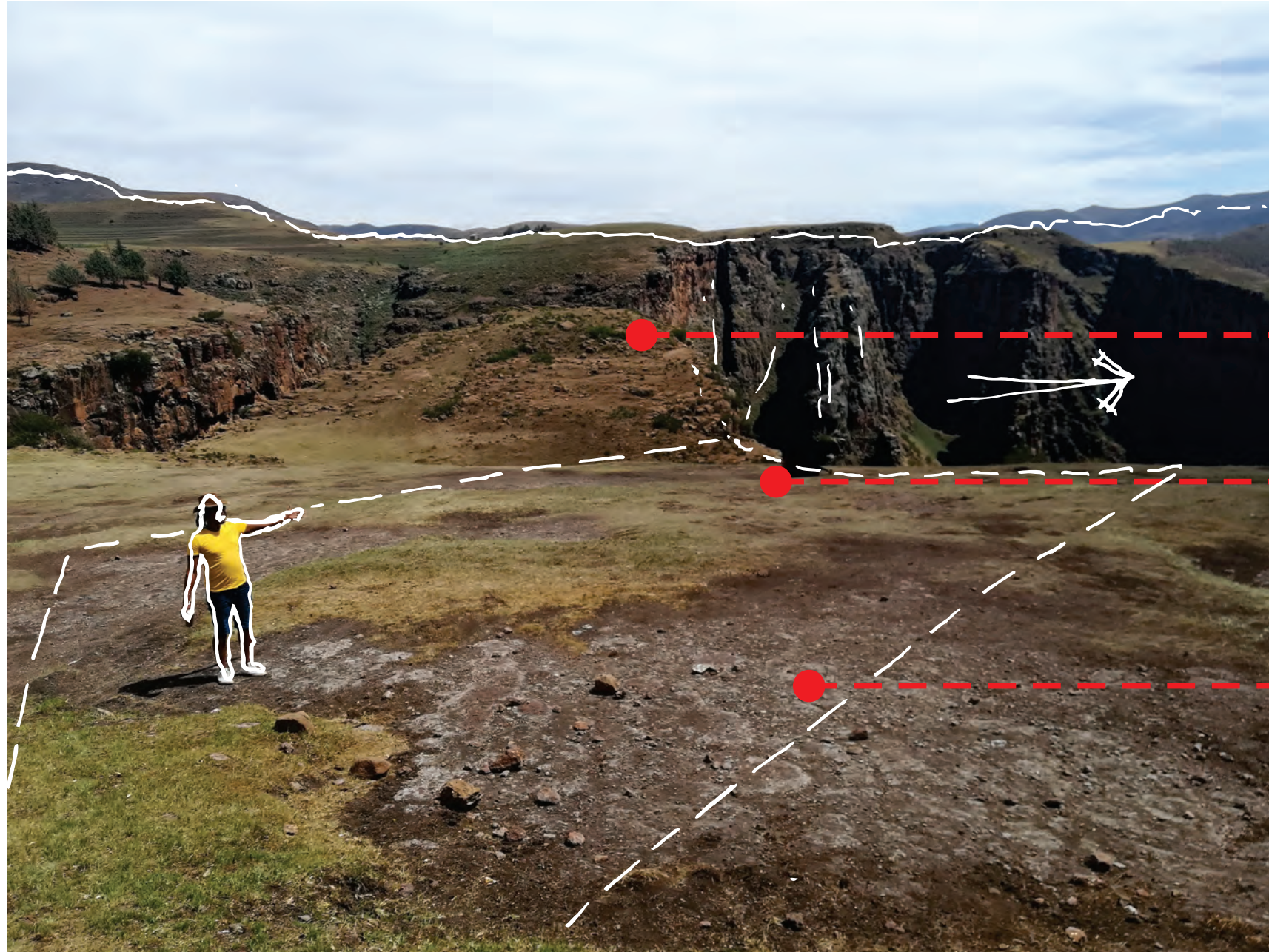
## 2.5. CONDITIONS ON SITE

Electricity available on site



Fig. 41. Proposed site main approach to cliff

## 2.5. CONDITIONS ON SITE



Existing hill convenient for viewing the waterfall with less obstructions

**Proposed site**

A combination of rock and soil on proposed site

02 - CONTEXT

Fig. 42. Proposed position of the Landscape Appreciation Centre.

## 2.5. CONDITIONS ON SITE



Fig. 43



Fig. 44



Fig. 45



Fig. 46



Fig. 47.



Fig. 48.

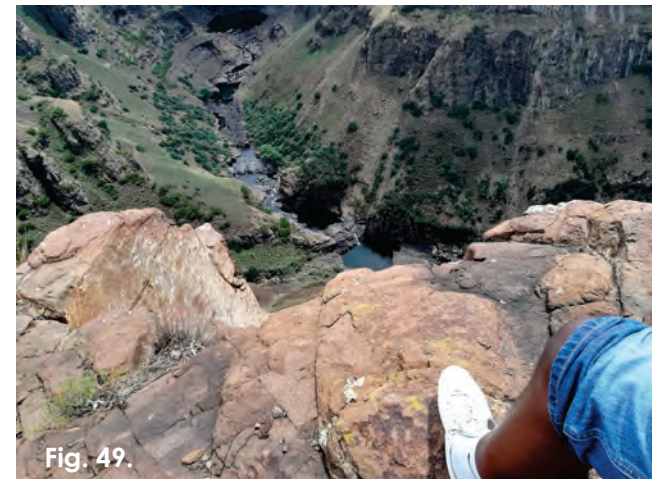


Fig. 49.

## 2.6. CONCLUSION

This chapter established the **orientation** and physical conditions on the site. This is imperative to understand for any architectural exploration in order to respond appropriately to the voice of the site and **genius loci**. The spirit of place serves as one of the main generators for the conceptual framework explored later in the design development chapter.

After exploring the physical attributes of the immediate context, the next chapter gives **background** on Lesotho as a nation and its people.

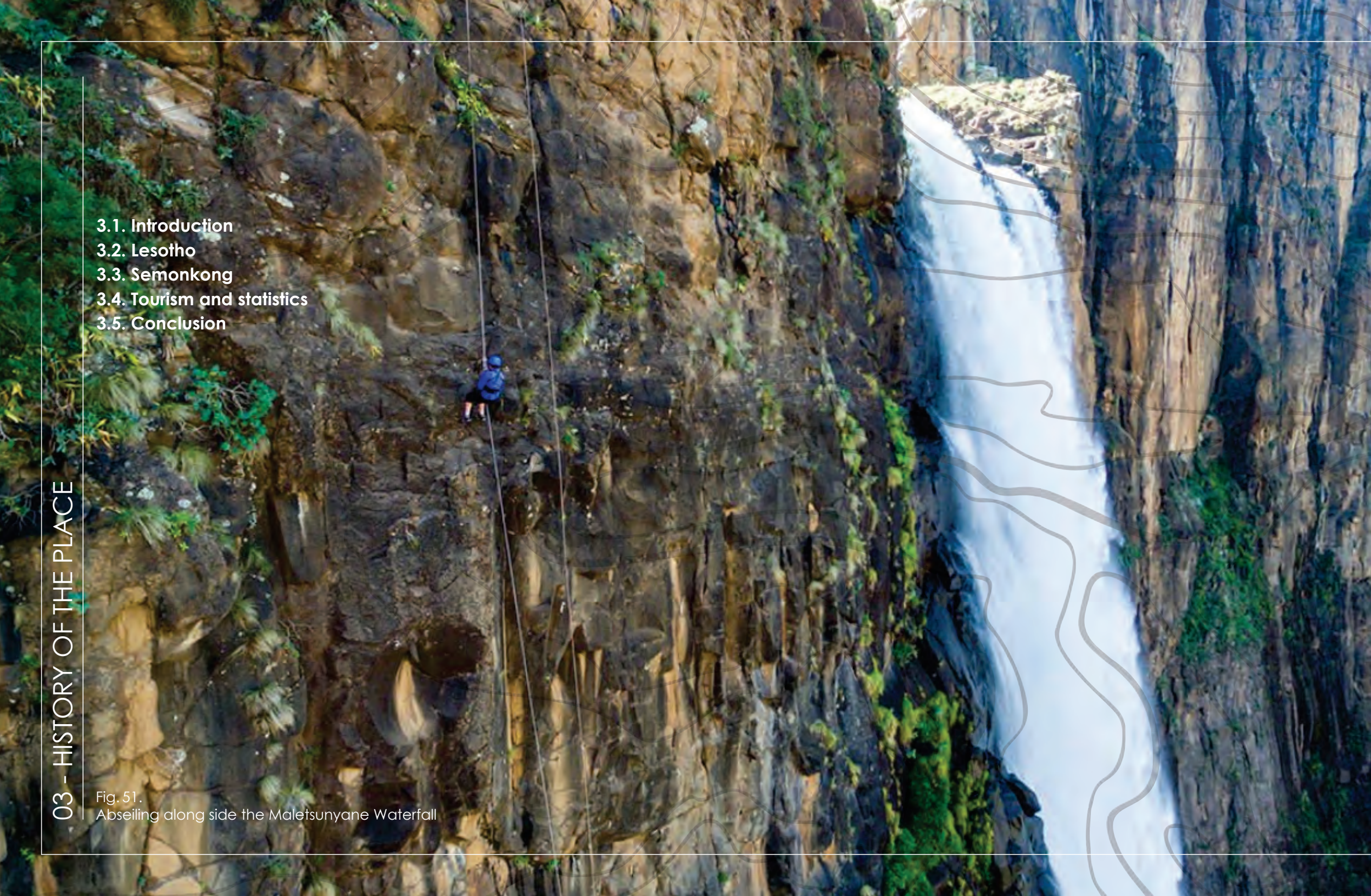




Fig. 50.  
West view from site (online)

- 3.1. Introduction
- 3.2. Lesotho
- 3.3. Semonkong
- 3.4. Tourism and statistics
- 3.5. Conclusion

Fig. 51.  
Abseiling along side the Maletsunyane Waterfall





### 3.1. INTRODUCTION

The following chapter is about the **history** of Lesotho and tourism statistics within the country. It identifies the **culture** of Basotho so as to provide a thorough understanding of the context. This chapter also details **Semonkong lodge**, which is the current tourist accommodation located an hour's hike away from the proposed site. **Time-lines** of relevant occurrences are also provided within this section.

### 3.2. LESOTHO

#### Identification

The Kingdom of Lesotho was previously called Basutoland and was formed by King Moshoeshoe I in the 1800s. These names both derive the Sotho language which was the predominant dialect used by the groups Moshoeshoe united to form this nation (Stoddard, 2019: online). Lesotho is also referred to as the “**Kingdom in the Sky**” due to its unique geographical height and impressive **rugged mountain terrain**.

#### Symbolism

The Basotho hat is a unique conical woven piece of **craftsmanship** which is derived from the shape of a mountain with a topknot located in Thaba-Bosiu. The shape of this particular mountain called Thaba Qiloane, became an essential symbol of Lesotho's **unification** because it is visible from the top of Thaba Bosiu, where King Moshoeshoe I protected and formed the nation. This indicate that Basotho draw their inspiration from the **natural environment** and context. This symbolic icon is also used on the national flag (Stoddard, 2019: online).

Another recognizable symbol representation of Lesotho is the brown **emblem** used in the 1987 to 2006 flag. This **nostalgic** icon comprised of a traditional Basotho shield, a club (knobkierrie), lance and thyrsus in the middle. The club, lance and shield are typical traditional objects for war, while the **thyrsus** was used as decoration. This presents an interesting hypothesis that Basotho have always been conscious of beauty.

Basotho are also identifiable by their distinctive wool **blankets** which they wear as cloaks. These are worn by both men and women in the culture. They are available in numerous colours and **patterns** mostly derived from their natural environment.



Fig. 52.  
Flag from 1966–1987



Fig. 53.  
Flag from 1987–2006



Fig. 54.  
2006 till present day



Fig. 55.  
Local resident of Semonkong heading to the market

Lesotho's remarkable scenery of rugged mountains, enormous gorges and exceptional waterfalls create an enticing tourist destination. Herd boys with their flocks, men on horseback, women in their colourful traditional dresses and picturesque villages all add to the unique spirit of place.

Fig. 56.  
Local resident of Semonkong offering horseback rides to tourists at the proposed site



### 3.2. LESOTHO

Time line of important events regarding the development of Lesotho

The river gorges contain drawings and illustrations which indicate that Lesotho was initially inhabited by Bushmen who roamed Southern Africa

King Moshoeshoe united the Sesotho-speaking inhabitants and created fortresses in the mountains

The country gained its independence and the Kingdom of Lesotho was established. The next king and head of state was Moshoeshoe II, the great-grandson of Moshoeshoe I, while Leabua Jonathan served as head of government prime head of state. The Basotho are bonded by a deep respect for the royal family and strong determination to remain independent, despite Lesotho having gone through political strife and change in the last thirty years (Stoddard, 2019: online).

Wars between different ethnic groups in Southern Africa destroyed many tribes. Moshoeshoe I gathered and protected the survivors into the highlands of what is now known as Lesotho, and then formed the present-day Basotho ethnic group.

After the Basotho people lost most of their territory due to a chain of wars, Moshoeshoe turned to Great Britain for protection and the remaining land became a British protectorate.

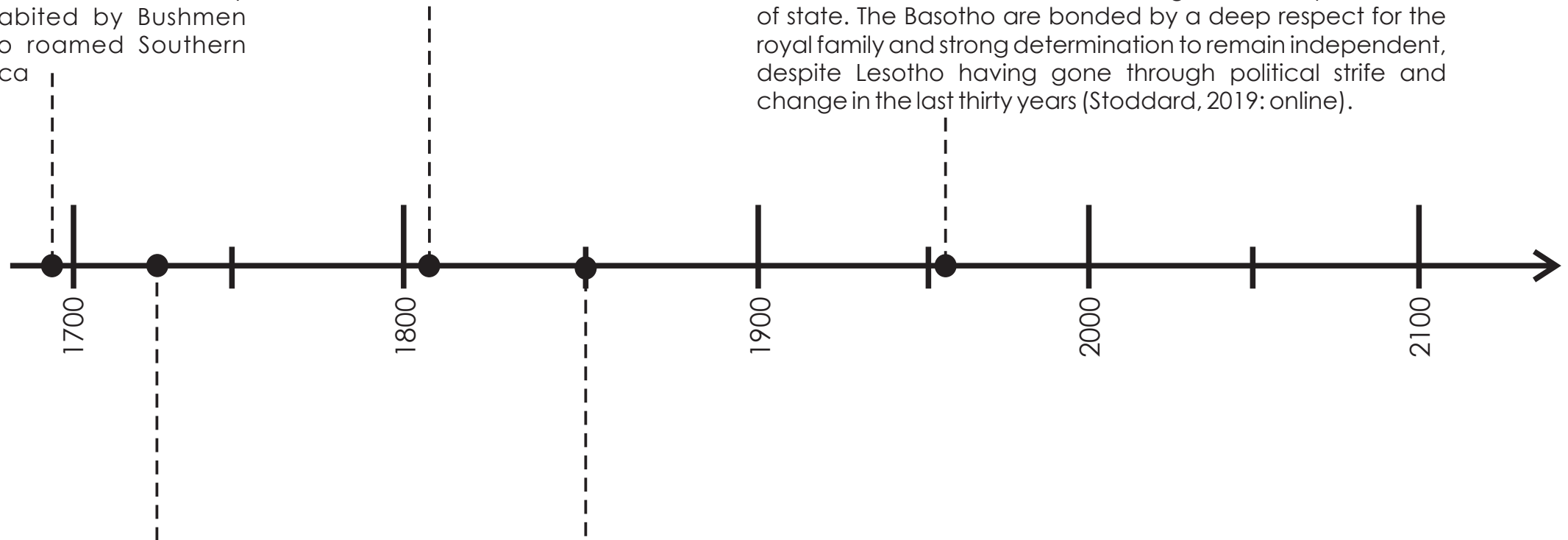


Fig. 57.  
Tourists posing on horseback with the Maletsunyane  
Waterfall as the backdrop





Fig. 58. The conical traditional Basotho woven hat

## 3.2. LESOTHO

### Architecture, urbanism and the use of space

More than 80 percent of the country's inhabitants live in the lowlands where the conditions of soil are more favorable for farming. One of the highest population densities is at the western border of Lesotho.

Maseru is located in this western region of the country with a population of four hundred thousand inhabitants. The main infrastructure and thoroughfare of this capital city was ruined in 1998 when a frenzy of looting and burning resulted from political conflict.

Most of the town has been rebuilt but numerous historical buildings were lost in the turmoil. Semi-urban regions are referred to as "camptowns" and possess a rustic appearance.

Some of the main camptowns include Leribe, with a population of three-hundred thousand; Mafeteng with over two-hundred thousand; Mhale's Hoek at one hundred and eighty thousand; Teyateyaneng with twenty-four thousand residents. Villages in Lesotho often have a population of less than 250 people.

**Traditional huts** are built out of thatched roofs and **mud walls** mixed with dung. Cattle krall (pen) is the center of family groups who construct their huts in a spaced manner around the pen. These rondovals (round dwelling) are frequently adorned with bright design **patterns** called 'litema' in Sesotho.

The plots of land between villages are owned in common by the people and allocated by the chief for family farming. Khotla is a meeting place found in each village which is used for conducting business and local trials.

Lesotho is unique with terrain that consists of high veld, mountains and plateau. The climate is temperate with hot summers and cool to cold winters. A long rainy season during the summer months (December to February) combined with freezing conditions in the winter (June to August) creates adverse travel conditions which isolate much of the highland areas. The abundance of rivers and waterfalls makes Lesotho valuable to South Africa's neighboring arid industrial areas.

### **Land Tenure and Property**

The king holds all land in trust for the nation of Basotho and may not be alienated. Regional chiefs assign lands to individuals, and married males generally have access to user rights. A 1979 act increases tenancy protection by documenting inheritance rights and allowing land to be mortgaged. The latest land act was updated in 2010 (Stoddard, 2019: online).

### **Trade**

Lesotho has trade relations with the United States, Botswana, Namibia, Swaziland, and Australia. Maize, shoes, construction materials, vehicles, petroleum products, machinery and medicines are the primary imported items. Exports include clothes, furniture, shoes and wool pieces.

Lesotho's government is a constitutional monarchy with Maseru's capital. The country is divided into ten districts.



Fig. 59. Typical Basotho hut with patterns called litema.

### 3.3. SEMONKONG

In 1990, Armelle & Jonathan Halse took over the management of the Semonkong Lodge of the Frasers Trading Company. Started by Syd Chaplain of Maluti Treks, the site on which the lodge stands was a popular camping base for **pony trekkers** and **fly fishermen** looking to catch the famed brown or rainbow trout. Today, on the banks of the Maletsunyane River, the lodge has expanded to 23 stone and quech quarters (Semonkong Lodge, 2019).

Deeply embedded in the Semonkong Village and just a stone's throw away from the village, the lodge is always busy with activity as the Basotho people go about their daily lives. The balcony outside the Duck and Donkey Tavern provides a fascinating view of Lesotho's daily life as the Basotho's ride gracefully past on their ponies in their straw hats and traditional blankets, accompanied by pigs, cats, goats and donkeys scuttling. They regularly transport food and supplies from Semonkong to their villages, often days away, and including large amounts of beer.

Semonkong lodge believes in **improving people's lives** within the local community, using the environment and its **sustainability** as the cornerstone of all operations, generating sustainable long-term income to as many people as possible through tourism. The activities they offer provide **jobs** & aim to **conserve** the environment (Semonkong Lodge, 2019: online).

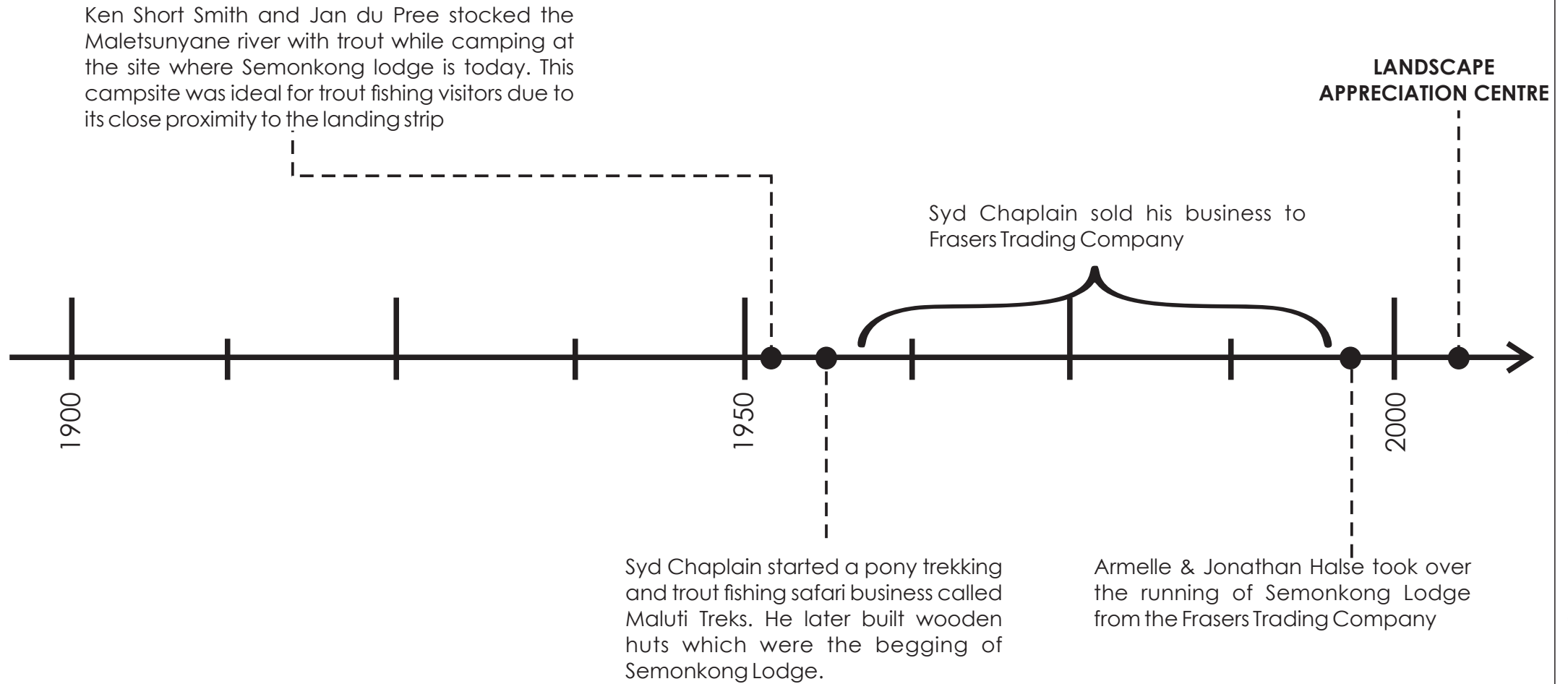
Semonkong Lodge offers a glimpse of life in "The Kingdom in the Sky", with activities such as abseiling and pony rides.

Fig. 60.  
Local residents of Semonkong offering horseback rides to tourists at the proposed site



### 3.3. SEMONKONG

Time line depicting tourism and trips of leisure to Semonkong





### 3.4. TOURISM AND STATISTICS

#### Places to visit

The Katse Dam is the most popular place for overnight visitors (tourists), at 15%, while 10% or more visit Afri Ski, Sani Pass and Semonkong. Thaba Bosiu is Botswana's most popular tourist destination in Lesotho while Semonkong is mostly visited by tourists from France, the United Kingdom and USA (Lesotho Exit Visitor Survey Report, 2017:15).

General **sightseeing** is Lesotho's most common overnight visitor activity representing 27% of all trips to the country. **Hiking** accounts for another 20% and **pony trekking** for 11%. All of these attributes are available at Maletsunyane but lack facilitation, giving grounding to the need for a Landscape Appreciation Centre.

The top six most popular activities for leisure are general sightseeing, hiking, skiing, **biking, rock climbing** and 4x4 trekking. Therefore, these are the clear activities on the leisure sector in Lesotho.

At different times of the year Lesotho provides very different activities. Monthly analysis shows explicitly the prominence of hiking in July-August, biking in November, fishing in January and rock climbing in June-August (Lesotho Exit Visitor Survey Report, 2017:17).

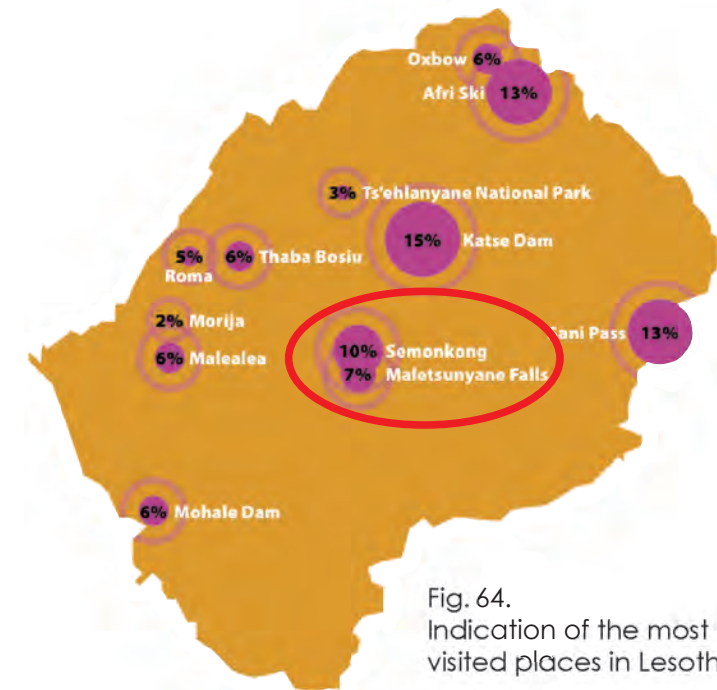


Fig. 64. Indication of the most visited places in Lesotho



Fig. 65. Arts and Crafts by Basotho

### 3.4. TOURISM AND STATISTICS

Maletsunyane river

Semonkong lodge

Semonkong lodge accommodation units



Fig. 66.  
Aerial view of Semonkong Lodge situated at the Maletsunyane river bank

#### Accommodation Types

While visiting Lesotho, 39% of all overnight guests stay at a hotel or lodge. About 33% live with family or friends and 10% stay in Bed and Breakfasts.

South African tourists are almost equally likely to stay at a hotel/lodge or with family and friends, while tourists from Botswana are much more likely to stay with family and friends.

Tourists from the International markets prefer their lodging in hotels or lodges (Lesotho Exit Visitor Survey Report, 2017: 19).



Fig. 67.  
Cycling in the rugged mountains of Lesotho

### 3.4. TOURISM AND STATISTICS

Accommodation units at Semonkong Lodge

Maletsunyane river



Fig. 68.  
Fishing at the Maletsunyane river

| Country of Residence | Total Visitor Arrivals | % Share |
|----------------------|------------------------|---------|
| South Africa         | 1,081,227              | 90.4%   |
| Zimbabwe             | 20,835                 | 1.7%    |
| USA                  | 10,026                 | 0.8%    |
| Botswana             | 8,972                  | 0.8%    |
| Germany              | 7,955                  | 0.7%    |
| Netherlands          | 7,856                  | 0.7%    |
| Swaziland            | 5,006                  | 0.4%    |
| UK                   | 4,970                  | 0.4%    |
| France               | 1,791                  | 0.1%    |
| Other                | 47,576                 | 4.0%    |
| Total                | 1,196,214              | 100.0%  |

(Lesotho Exit Visitor Survey Report, 2017)



Fig. 69.  
Tourists on pony rides through the mountains of Semonkong

### 3.5. CONCLUSION

In conclusion, this chapter **revealed the culture** of the Basotho people together with the qualities of the place which attract visitors. This chapter set precedence to why tourists visit Lesotho, and also details who does and when.



Fig. 70.  
Fishing at the Maletsunyane river



Fig. 71.  
Tourists on pony rides through the mountains of Semonkong



Fig. 72.  
Maletsunyane Waterfall

- 4.1. Introduction
- 4.2. Semonkong Ecology
- 4.3. Conclusion

Fig. 73.  
Indigenous spiral aloe found in Lesotho





#### 4.1. INTRODUCTION

This next chapter details the **plant and animal** life available at Semonkong. This acts as an extension of site **analysis** where understanding the context is imperative for both the theoretical grounding and spacial requirements. A clear understanding of the **fauna and flora** also gives reasons to why tourists can visit the area.

## 4.2. SEMONKONG ECOLOGY Fauna



Fig. 74.

Bearded vulture



Fig. 75.

Bald Ibis



Fig. 76.

Jackal Buzzard

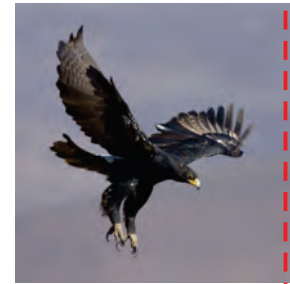


Fig. 77.

Black Eagle



Fig. 78.

Ground Woodpecker



Fig. 79.

Grey Rhebok



Fig. 80.  
Winter in Semonkong



Fig. 81.  
Winter in Semonkong



Fig. 82.  
Winter in Semonkong



Fig. 83. Winter in Semonkong

## 4.2. SEMONKONG ECOLOGY Flora

**Group:** Aloe Polyphylla

**Typical name:** Spiral Aloe

**Sesotho name:** Kharetsana

Endemic to Lesotho and the **National Flower**, an endangered crop. **Distinctive spiral** arrangement of the leaves in the clockwise and anti-clockwise direction, giving it a **strange symmetrical** appearance. The leaves are large with a greyish green colour, often smooth on the margins with greenish thorns. Legally protected, but not enforced (Semonkong Lodge, 2019: online).

**Value:** After a burial, in a mixture of water and aloe juice, one ought to wash their hands to remove all bad spirits.



Fig. 84. Spiral Aloe

**Group:** Dierama Robustum

**Typical name:** Hairbell

**Sesotho name:** Lethepo

1-2m in height, alone or in small clumps, 1600-2900m. Linear leaves. Inflorescence – on a thin, slender, nodding stem, 2-5 flowered spike. Pendulous flowers, white to pale pink or mauve flowers in the shape of a bell (Dec-Feb).

Widespread in high altitude grassland.

**Value:** Used for serotos (grass baskets). The stem can be used to play musical instruments like setolo-tolo and lekope.

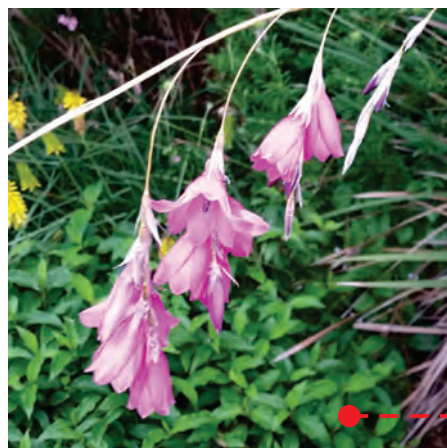


Fig. 85. Hairbell

**Group:** Dicotyledons – Cotyledon Orbiculata

**Typical name:** Pig's Ears

**Sesotho name:** Sereleli

This plant's succulent leaves are shaped like the ears of a pig. Red-bell shaped flowers (Nov-Feb). Inflorescence. The edge of the leaves is often red. Found on steep slopes and cliffs 2000-3000m.

**Value:** A vaccine for many illnesses, usually used for bites of bees and insects. Leaves infusion is good for an abscess in the ear and boils. Antiseptic qualities.



Fig. 86. Pig's Ears

**Group:** Monocotyledons – Kniphoa Caulescens

**Typical name:** Lesotho Red-hot Poker

**Sesotho name:** Khaputlane

Robust and mostly in large clusters, up to 3000m in marshes and wet cliffs. Blue-grey-green leaves of dense rhizome. Pink to red coral buds arranged at the top of a firm erect stalk in a tapering row. Pale greenish-yellow to translucent yellow flowers (Jan-Mar). Stems stand out (Semonkong Lodge, 2019: online).



Fig. 87. Lesotho Red-hot Poker

## 4.2. SEMONKONG ECOLOGY

### Flora

**Group:** Iridaceae – Iris Family –  
Moraea Huttonii

**Typical name:** Large Golden Vlei  
Moraea / Yellow Iris

**Sesotho name:** Tele

Broad, iris-like, bright yellow flower with darker, yellow-brown nectar marks close to the throat of the flower, with dark brown blotch on each crest style (Sep-Oct). Sweetly fragrant, in clumps along mountain streams and rivers.

**Value:** A beautiful garden flower.



Fig. 88. Yellow Iris

**Group:** Zantedeschia Aethiopica  
– Araceae

**Typical name:** Spotted-leaved  
Arum Lily

**Sesotho name:** Mohalalitoe

The leaves are triangular with broad basal lobes, either plain green or white-blotted. The flower is cylindrical, white or cream with a deep purple patch in the throat or without it (Nov-Dec). Green fruit and stems fall to the ground

**Value:** For kidney and bladder problems, roots are infused and taken internally as a gargle for sore throats and mouth ulcers (Semonkong Lodge, 2019: online).

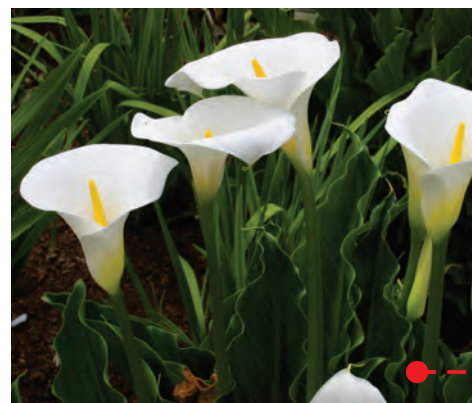


Fig. 89. Spotted-leaved Arum Lily

**Group:** Gladiolus Saundersii

**Typical name:** Saunders's  
Gladiolus / Lesotho Lily

**Sesotho name:** Mokhabebe

Long, robust, upright leaves. Inflorescence erect. Big and bright red flowers with a large white mark on lower tepals. Facing down and hooded. Endemic.

**Value:** Herdboys suck the flowers' nectar. It is also consumed as a salad.



Fig. 90. Lesotho Lily

**Group:** Monocotyledons –  
Merxmuellera Macowanii

**Typical name:** Mountain Grass

**Sesotho name:** Moseha

A perennial tufted grass with flat, yellowish to golden brown leaves. Spikes on the green grassland look yellow. Folded closely with age. Inflorescence.

**Value:** Items such as brooms, mats, pots, ropes and hats are made from this grass – the most popular of which is the iconic **Basotho hat** (Semonkong Lodge, 2019: online).



Fig. 91. Mountain Grass

## 4.2. SEMONKONG ECOLOGY

### Flora

**Group:** Euphorbiaceae – Euphorbia Clavarioides

**Typical name:** Lion's Spoor

**Sesotho name:** Sehloko

Consisting of densely crowded leaves, a perennial succulent producing convex strong cushions whose main stem grows underground. The roots are brownish to olive green, rounded at tops. The milky latex that characterizes this family gives a pungent smell to this species.

**Value:** Herdboys use the milky latex on their foot soles to heal cracks or chaff and chew the milky latex when it is dry. Heals body rashes and can be used with clay to heal pimples. Used for birdlime preparation (Semonkong Lodge, 2019: online).



Fig. 92. Lion's Spoor

**Group:** Mesembryanthemaceae – Delosperma Lavisiae

**Typical name:** Mountain Vygie

**Sesotho name:** Mabone

A delicious perennial herb found in rocky areas. Stems prostrate. Leaves with blunt tips are round to 3-angled. Inflorescence branch. Magenta flowers on the stalks (Nov-Mar). Endemic.

**Value:** Used as a bathwater cleaner.



Fig. 93. Mountain Vygie

**Group:** Mentha Longifolia

**Typical name:** Wild Spearmint

**Sesotho name:** Koena-ea-thaba

Perennial herb with long spiked leaves and quadrangular stems, with leaves of green or brown. It has a mint scent, raised in pyramid-shaped clusters of violet or white flowers.

**Value:** Sedative, used for colds and fever. Insect repellent. Basotho also place it in their noses to avoid the inhalation of cold winds, as well as nasal congestion.



Fig. 94. Wild Spearmint

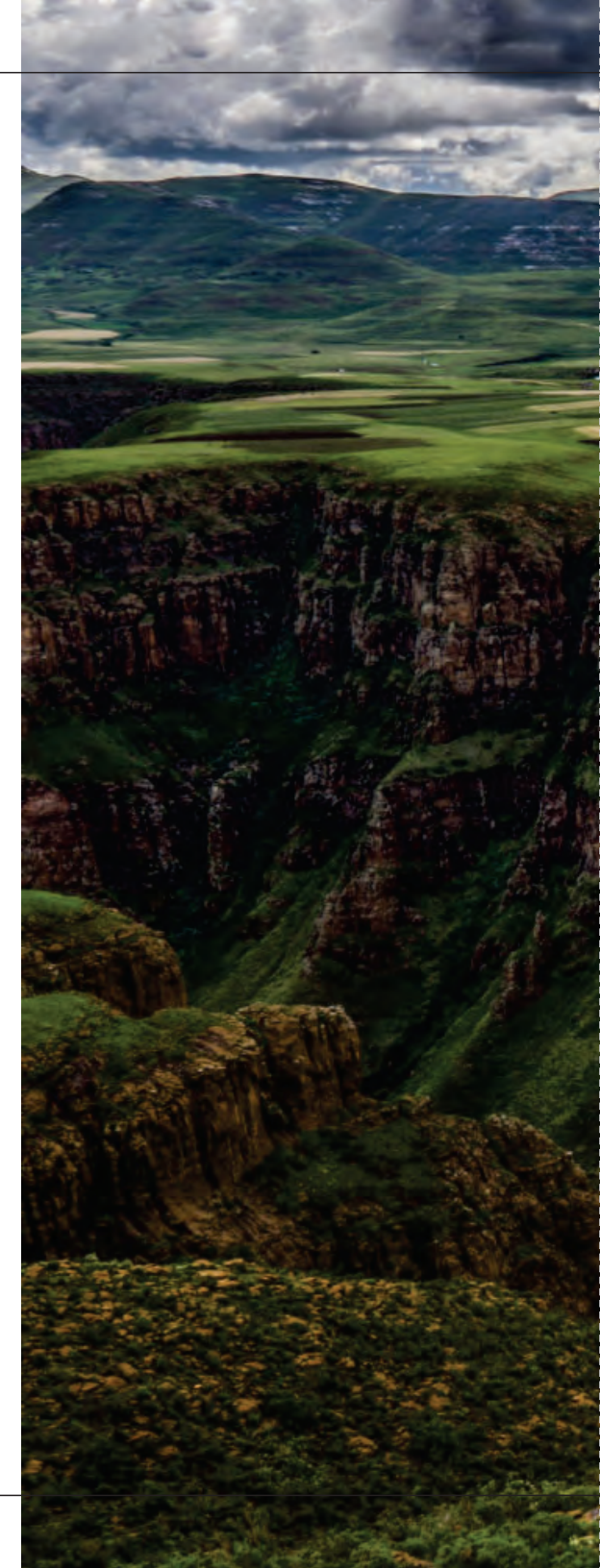




Fig. 95.  
Maletsunyane Waterfall

#### 4.4. CONCLUSION

This investigation into the ecology of Semonkong concludes the study of the context. It indicates the flora and fauna of the area to present reasons why tourists visit the place.





Fig. 96.  
Herdsboy in Semonkong

- 5.1. Introduction
- 5.2. Giants Causeway Visitors Centre
- 5.3. Sancaklar Mosque
- 5.4. Warrumbungle National Park
- 5.5. Kavo gkreko visitor centre
- 5.6. Natura Vive Skylodge Adventure Suites
- 5.7. Evans Tree House
- 5.8. Land Art
- 5.9. Inspirational Influences

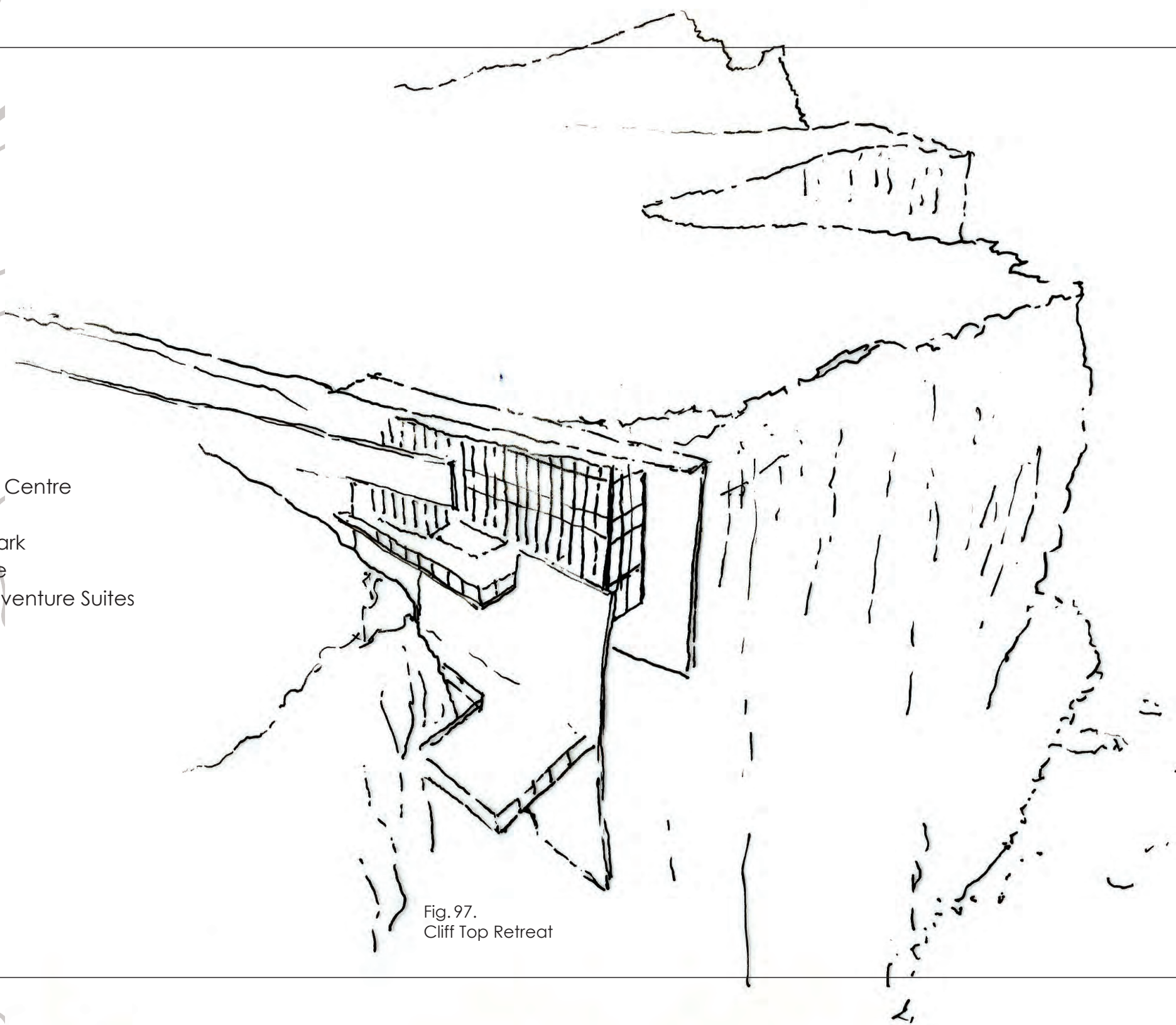


Fig. 97.  
Cliff Top Retreat



## 5.1. INTRODUCTION

The following chapter explores some of the precedent studies and influences that **inspired** the **design motifs** utilized within the Appreciation Centre design process. These precedents **inform** the **type** of building, **treatment of the site**, the **conceptual approach**, appropriate **materials** and **structures** to consider. **Land art** is also brought fourth due to its ability to capture the spirit of place in a sensitive manner.

## 5.2. GIANTS CAUSEWAY VISITORS CENTRE

### PRECEDENT OF TYPE

Heneghan Peng Architects

Completion: 2012

Location: Northern Ireland

- The outer stone mullions surrounding the visitor center **emulate** the volcanically shaped basalt columns of Giant's Causeway.
- Formed about 60 million years ago by the basalt lava process, the causeway is Northern Ireland's most popular **tourist attraction** and contains over 40,000 columns that descend from the cliff's foot into the sea.
- An exhibition rooms, a café, toilets and a gift shop are available.
- Described as "**Two folds into the landscape**". The first fold rises from the ground to create a building with a sloping grass roof, while the second folds down to form a parking lot and an entrance that reaches the level of the approaching road.
- "It is a carefully **sculpted intervention**," say the architects. "It is both **visible and invisible**; invisible from the cliffside yet recognisable from the land side."
- Visitors may climb the grassy roof, where skylights allow them to view the exhibition spaces.
- The Giant's Causeway visitor center is **experienced as an event** along the road to the Causeway and the coastline
- The building can be interpreted internally as a series of floor plates connected by a series of ramps.
- These floor plates allow the **various activities** of the building to **stream into one another**, providing a **fluid movement** for the visitor **through the building** (Frearson, 2012: online).

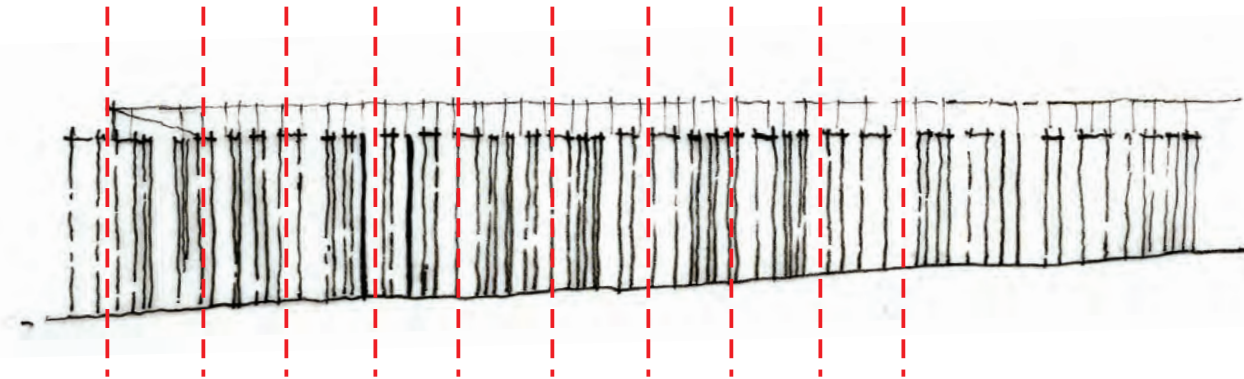


Fig. 98. Interpreting the verticality motif used to create a building that fits into its environment



Fig. 99. Giants Causeway Visitors Centre

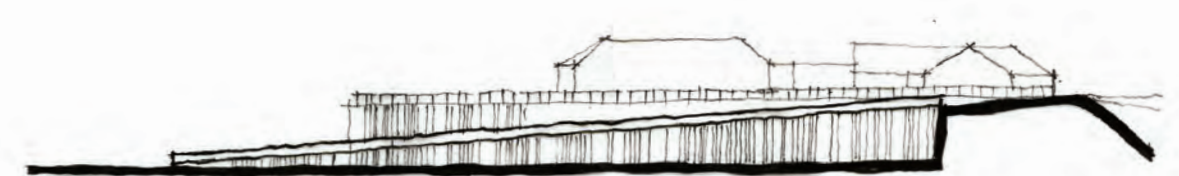


Fig. 100. Section through Giants Causeway Visitors Centre

## 5.2. GIANTS CAUSEWAY VISITORS CENTRE

### Points of note

- How **verticality** is used in reference to the context
- Movement through the building as an **experience**
- The idea to **mimic** the surrounding in order to appropriately settle the building in a sensitive manner
- The **duality** of being both visible and hidden

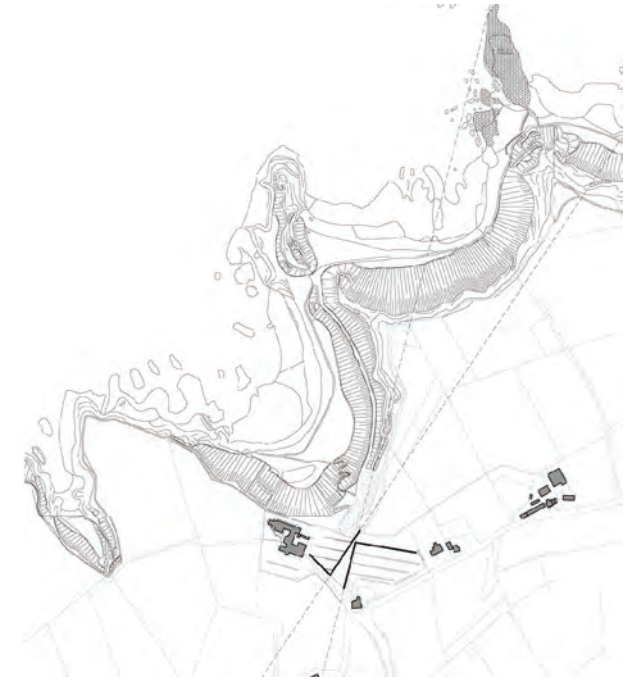


Fig. 101. Giants Causeway Visitors Centre layout within its context

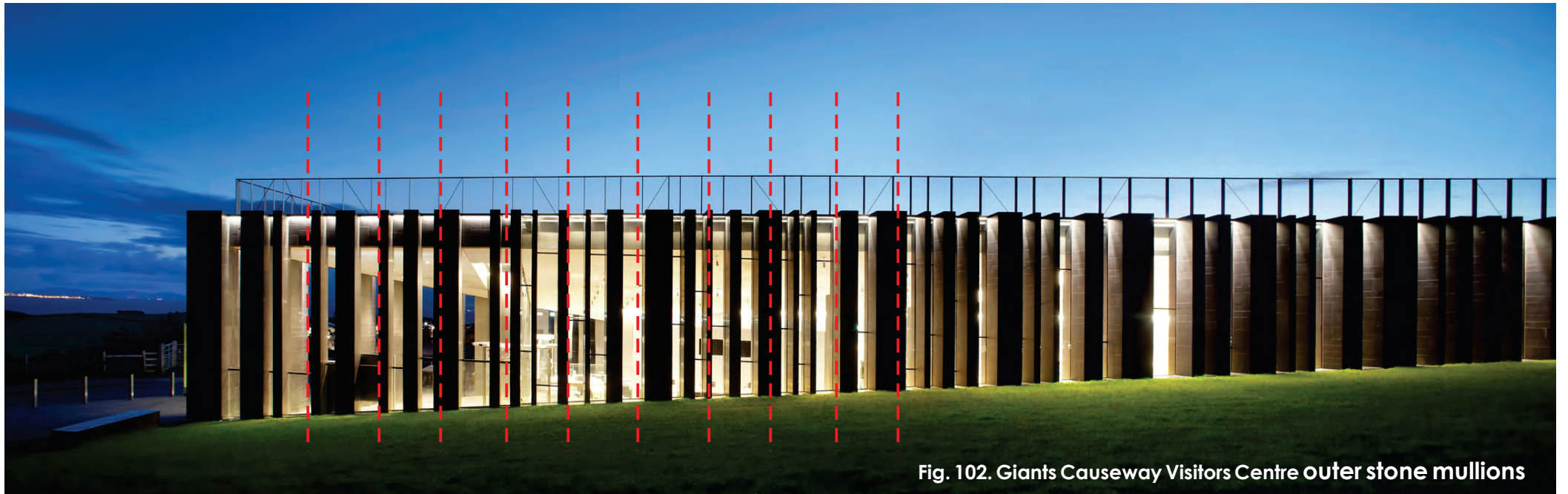


Fig. 102. Giants Causeway Visitors Centre outer stone mullions

### 5.3. SANCAKLAR MOSQUE PRECEDENT OF SITE

Architect: Emre Arolat Architects

Location: Istanbul

Completion: 2012

- The Sancaklar Mosque was constructed with a combination of light gray **stone** and reinforced concrete, which is set in a plaza made up of shallow **terraced steps**.
- Stone pieces put in the sloping ground **produce lines** of steep, earthen steps leading down to the sunken house.
- The structure blends entirely with the **topography** and the outside world as you **walk through the mountains**, down the hill and between the walls to reach the mosque
- The design continuously plays off of the **tension between the organic and manmade environment**.
- This **dual relationship** is strengthened by the contrast between the **natural stone** stairs following the **natural slope** of the landscape and the thick reinforced concrete **slab extending** more than six meters to form the canopy.
- The mosque's interior is a simple cave-like space, which becomes a **dramatic** and amazing place to pray and be alone with God (Mairs, 2019: online)



Fig. 103. Section through Sancaklar Mosque showing the dramatic roof

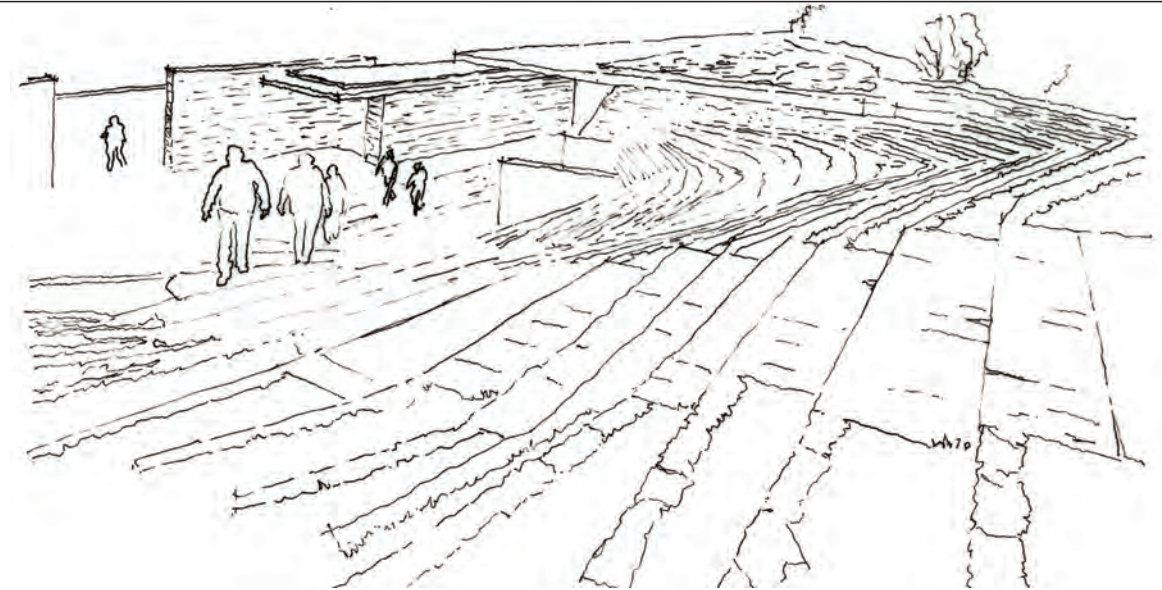


Fig. 104. Sancaklar Mosque terracing down with the slope of the site



Fig. 105. Sancaklar Mosque terracing down with the slope of the site

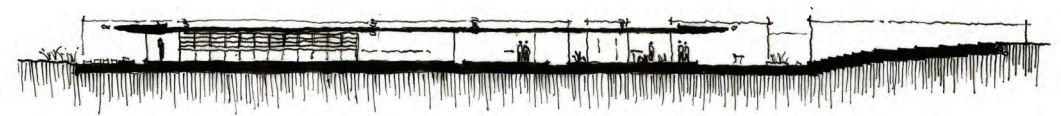


Fig. 106. Sancaklar Mosque section

### 5.3. SANCAKLAR MOSQUE PRECEDENT OF SITE

#### Points of note

- How the architecture **interacts and extends** into the landscape using stone
- How **movement** through the site can be manipulated by architecture
- How to **enhance** the duality between man and nature
- Using **drama** to evoke strong feelings and connect with nature

Fig. 107.  
Sancaklar Mosque nestled in the landscape



Fig. 108.  
Sancaklar Mosque interior



Beacon in the landscape  
Point of orientation

The hidden. Nestled withing the landscape



Fig. 109.  
Sancaklar Mosque site plan

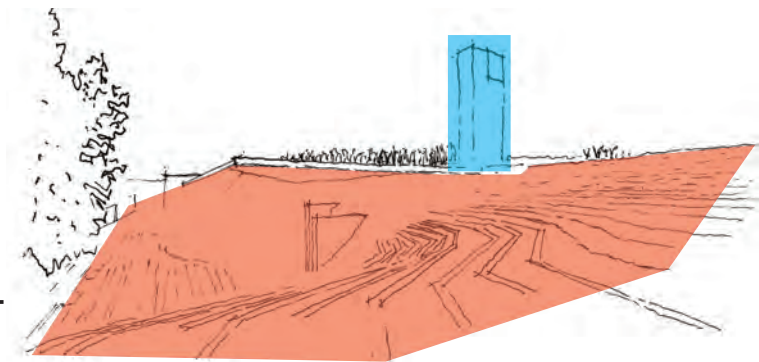


Fig. 110.  
Sancaklar Mosque

## 5.4. WARRUMBUGLE NATIONAL PARK PRECEDENT OF CONCEPTUAL APPROACH

TKD Architects

Location: Warrumbungle, New South Wales, Australia

Completion: 2018

- The new Warrumbungle Visitor Center **radically addresses** Warrumbungle National Park's **landscape and cultural heritage**
- Warrumbungle National Park is renowned for its **spectacular scenic beauty, rich biodiversity** and **geological quality**, formed by an ancient volcano that is said to be 13-17 million years old.
- The new Warrumbungle Visitor Center architecturally **interprets** the **geology of the site** through the key concept of **fracture; geological separation**
- With its strong **curving** walls clad in 700 square meters of sandstone, the building **reflects** the famous volcanic dykes and rock formations of the **surrounding area**.
- Geological, celestial and native relations are all part of the interior space **drama**.
- The main room offers **unhindered views** of the famous Breadknife and Beloungery Spire formations.
- The new design provides a number of outdoor **spaces for visitor interaction**, education and **quiet contemplation** which relate to the Warrumbungle National Park's unique setting.
- The new Visitor Center is a comfortable hub for National Park visitors to arrange lodging, access guest data sheets and charts, and register for the popular **trail walks**.
- It is also an immersive **exhibition area** to reveal and view park stories (TKD Architects, 2019: online)

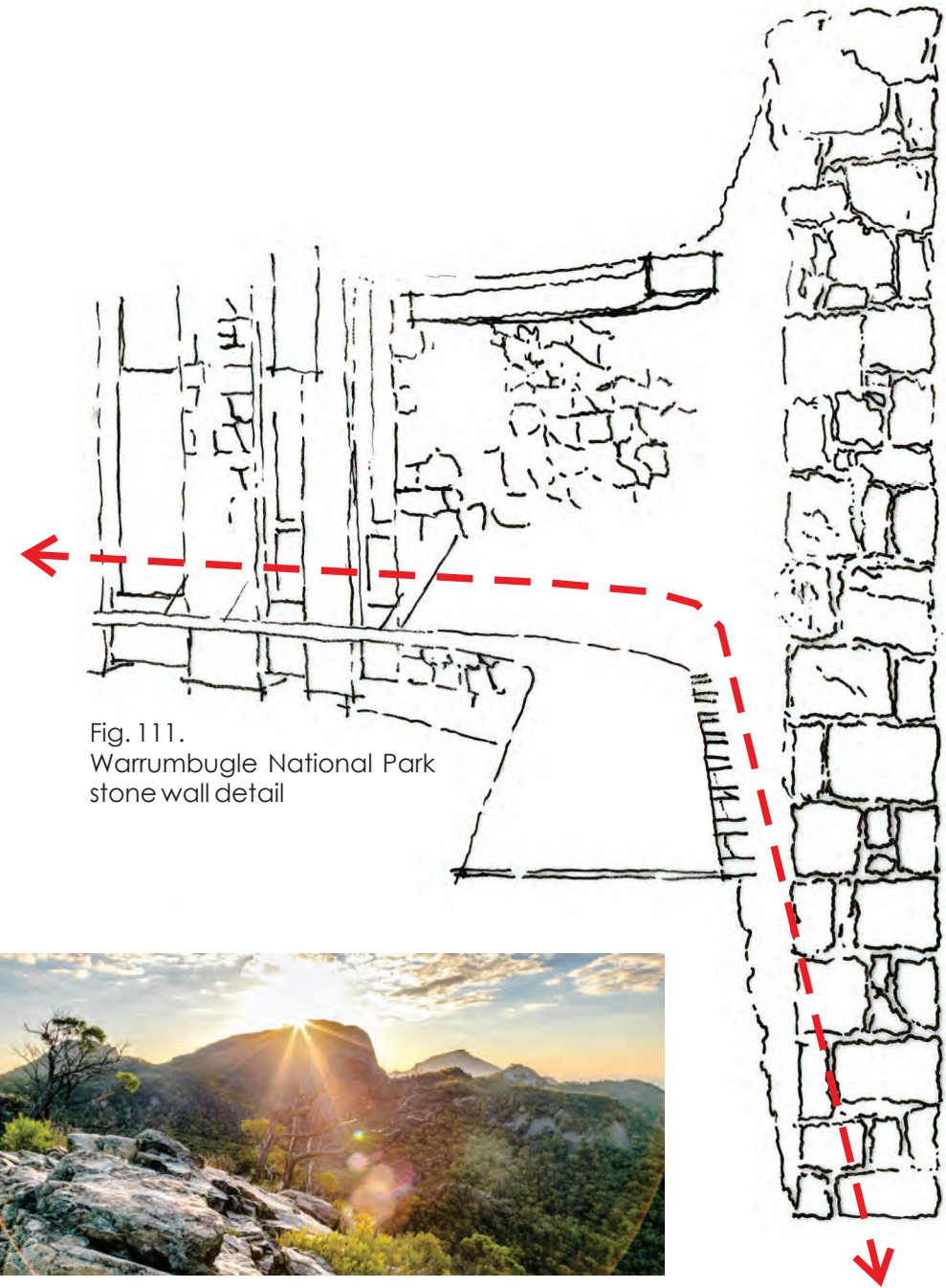


Fig. 111.  
Warrumbungle National Park  
stone wall detail



Fig. 112.  
Warrumbungle National Park context

## 5.4. WARRUMBUGLE NATIONAL PARK PRECEDENT OF CONCEPTUAL APPROACH

### Points of note

- Landscape and cultural heritage
- Fracure; geological separation
- Offer unobstructed views

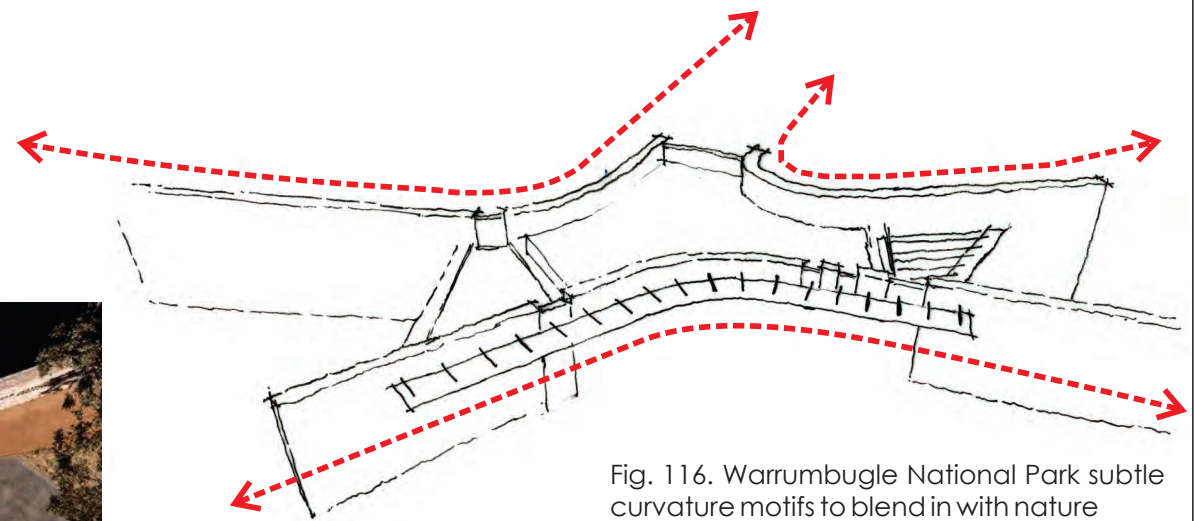
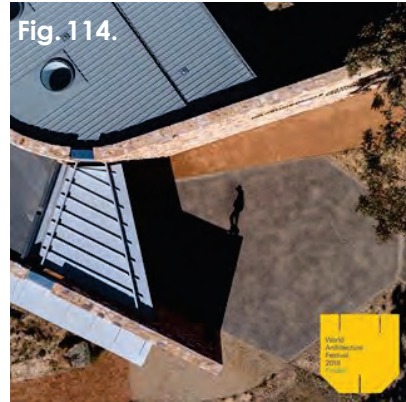


Fig. 116. Warrumbugle National Park subtle curvature motifs to blend in with nature



Fig. 115. Warrumbugle National Park approach to main entrance



Fig. 117. Warrumbugle National Park stone cladding

## 5.5. KAVO GKREKO VISITOR CENTRE PRECEDENT OF CONCEPTUAL APPROACH AND MATERIALITY

Architects: Marios Economides, Maria Akkelidou and Christina Nikodemou

Location: Ayia Napa, Cyprus

Completion: 2015

- Cape Greco's Environmental Information and Education Center is a specialized exhibition and educational hub aimed at shaping public **awareness** of the issues posed by the coexistence of a **fragile ecosystem** consumer society.
- This **provides tourists with knowledge** about the Cape Greco peninsula's land and aquatic habitats, and is a teaching centre for school children
- The project addresses issues of **suitability** of structure and typology in the sense of the site and architectural experience as a **multi-sensory perception of space**, space and scale. **Cape Greco's genius loci, its colours and materiality, served as a catalyst for the emergence of a philosophy of place-creation focused on the dialectics of the actual nature of the location and design as a building poetic** (Miesarch.com, 2015).

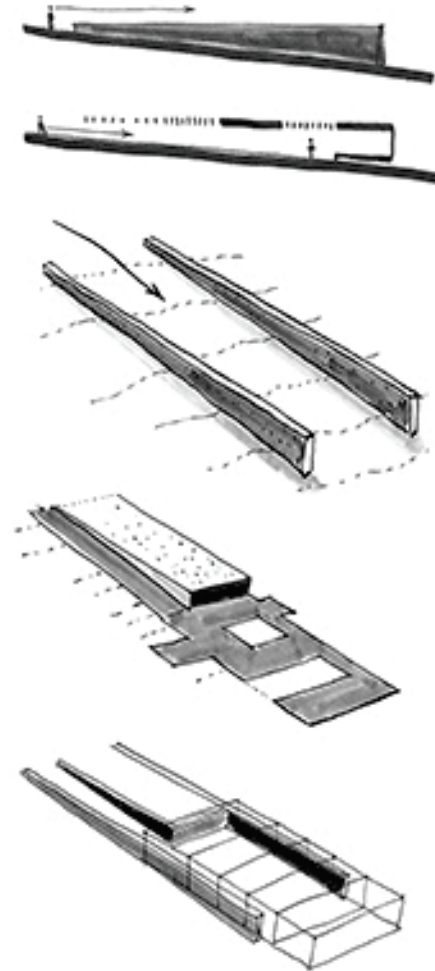


Fig. 119.  
Conceptual development of Kavo gkreko visitor centre



Fig. 120. Shaded courtyard

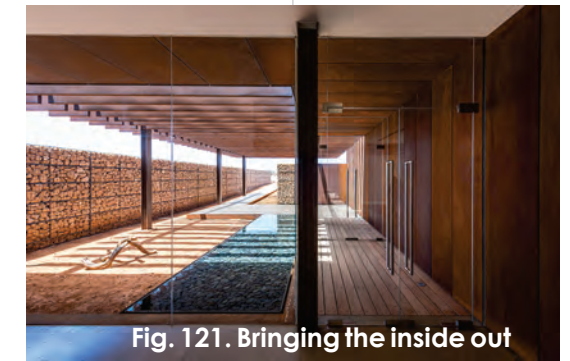


Fig. 121. Bringing the inside out

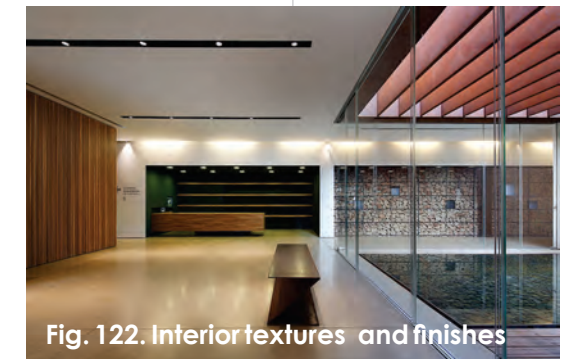


Fig. 122. Interior textures and finishes

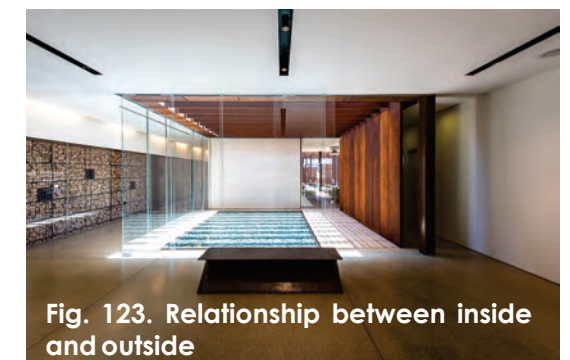


Fig. 123. Relationship between inside and outside

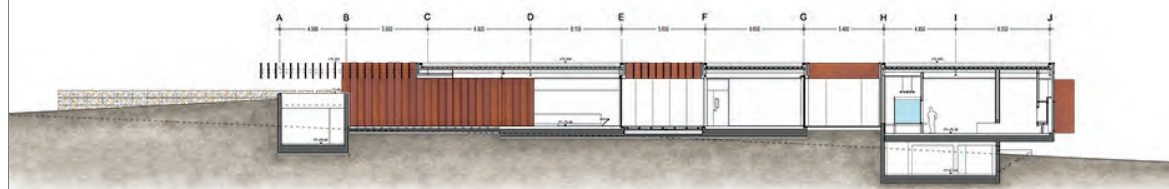


Fig. 118.  
Kavo gkreko visitor centre Section

## 5.5. KAVO GKREKO VISITOR CENTRE PRECEDENT OF CONCEPTUAL APPROACH AND MATERIALITY

- The building is a **vessel of the characteristics of the surrounding landscape**; at the same time, it is a **narrative of the essence of the landscape through its spatial and material synthesis**. The man-made area 'territory' is surrounded and separated from the surrounding landscape by the long **gabion walls** filled with **rocks** from the field.
- The natural topography slopes gradually inside the house, **intertwining** with its **spatial language** in a rich **narrative of motion and delay**, air, **light** and shade open and enclosed. The structure is introverted; the landscape is implicitly and **allusively exposed** to the tourist once inside, **reinforcing the dialectic between nature and the understanding of architecture** (Miesarch.com, 2015: online).



Fig. 124.  
Kavro Gkreko Visitor Centre in its context



Fig. 125.  
Kavro Gkreko Visitor Centre in its context

## 5.6. NATURA VIVE SKYLODGE ADVENTURE SUITES PRECEDENT OF TYPE (SLEEPING PODS)

Architects: Ario Ferri

Location: Cuzco, Peru

Completion: 2013

- Hangs 400 meters above the Sacred Valley of Peru on the side of a mountain
- Each of the three suites measure 8.5 m x 2.4 m with four beds, a dining area, a private bathroom and 300-degree views due to the design of **aluminium and polycarbonate**.
- One has to climb Via Ferrata or go on a zipline ride to get to the **sleeping suites**.
- **The approach is part of the experience aimed at immersing visitors in nature and engaging them in a very visceral way to their surroundings** (DiStasio, 2015: online).

- The **toilet** is situated facing the suspended structure's exterior wall. Such location gives the user a **spectacular view of the canyon** below.



Fig. 127.  
The sleeping suites on cliff



Fig. 128.  
Toilet in the suite with spectacular views



Fig. 129.  
Platform above suite for dining



Fig. 130.  
Multiple beds in one suite

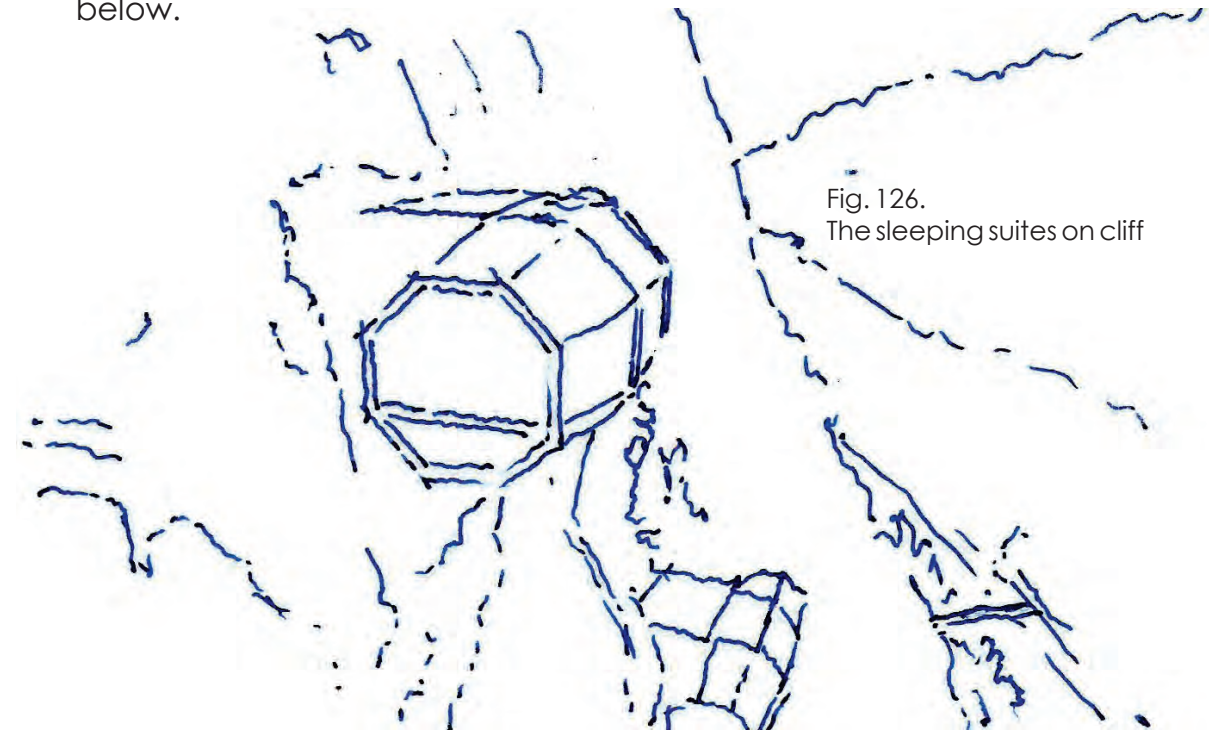


Fig. 126.  
The sleeping suites on cliff

**5.6. NATURA VIVE SKYLODGE ADVENTURE SUITES  
PRECEDENT OF TYPE (SLEEPING PODS)**



**Fig. 131.**  
View from above  
the suite



**Fig. 132.**  
View from inside  
the suite



**Fig. 133.**  
Night view of the  
canon from the suites



**Fig. 134.**  
Skylodge adventure  
suites



**Fig. 136.**  
Skylodge adventure  
suites



**Fig. 137.**  
Skylodge adventure  
suites



**Fig. 135.**  
Skylodge adventure  
suites



**Fig. 138.**  
Skylodge adventure  
suites interior

## 5.7. EVANS TREE HOUSE PRECEDENT OF MATERIAL AND STRUCTURE (SLEEPING PODS)

Architects: Modus Studio

Location: Hot Springs, Arkansas, United States

Completion: 2008

- This tree house is built with **steel and heat-treated pine**
- The design acts as an immersive, **educational experience** aimed at "returning kids to the woods"
- **It is designed to disguise itself in the scenery and be of the place's ecosystem – natural, and vibrant and enigmatic in nature, deliberately stimulating the imaginations of children about the forest.**
- Through **lifting the frame**, the team was able to **protect the earth** below, thus offering tourists a **feeling** of being among the canopies of the forest.
- The **frame** consists of 113 **ribs** – 10 of which are made of **steel**, while the others are made of **southern yellow thermal pine**.
- The method of thermalization requires the use of heat and steam to raise a yellow pine in the south. The method of thermalization requires the use of **heat and steam to increase the strength and sensitivity of a wood to the environment** (McKnight, 2019: online).

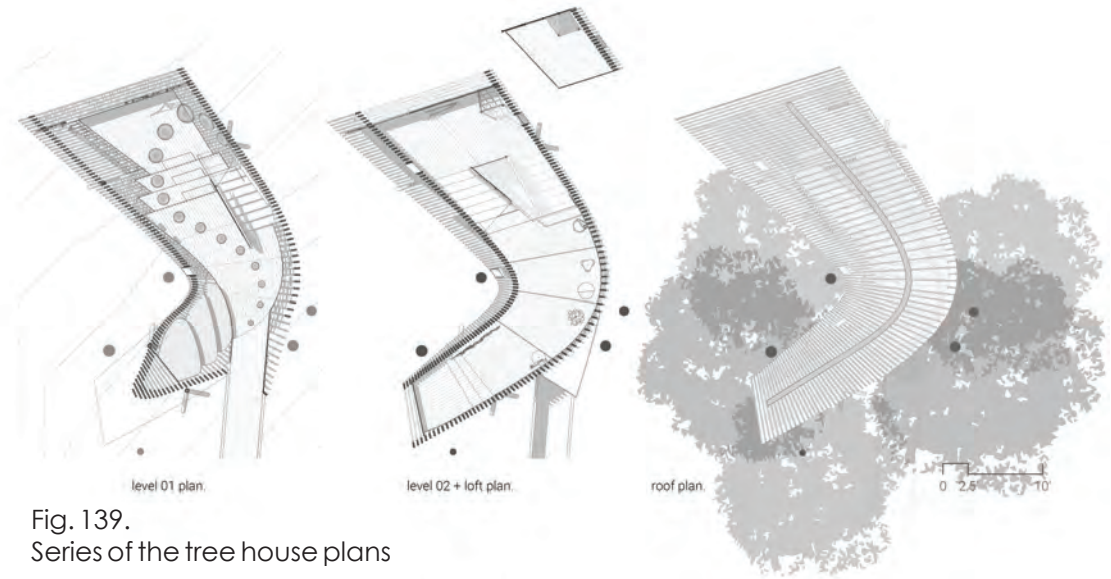


Fig. 139.  
Series of the tree house plans



Fig. 140.  
Interior of the tree house



Fig. 141.  
The tree house in its context



Fig. 142.  
The tree house frame



a place in the trees.



a space to play.



in a site rich with colors, forms, and textures.



a space that plays, squeezing between the trees.



pulled by the bridge and pushed by the trees.



balanced between rigid garden geometry and organic softness, while being connected to the site.

## 5.7. EVANS TREE HOUSE

### PRECEDENT OF MATERIAL AND STRUCTURE (SLEEPING PODS)

#### Points of note

- Using organic forms to fit into the landscape
- Finding innovative ways to manipulate wood for organic shapes
- Attention to how the structure meets the earth
- Patterns that blend with the context
- Frame structures are light and dematerialized

Fig. 143.  
The tree house frame  
elevated bridge as access



Fig. 144.  
Multiple levels inside the tree house

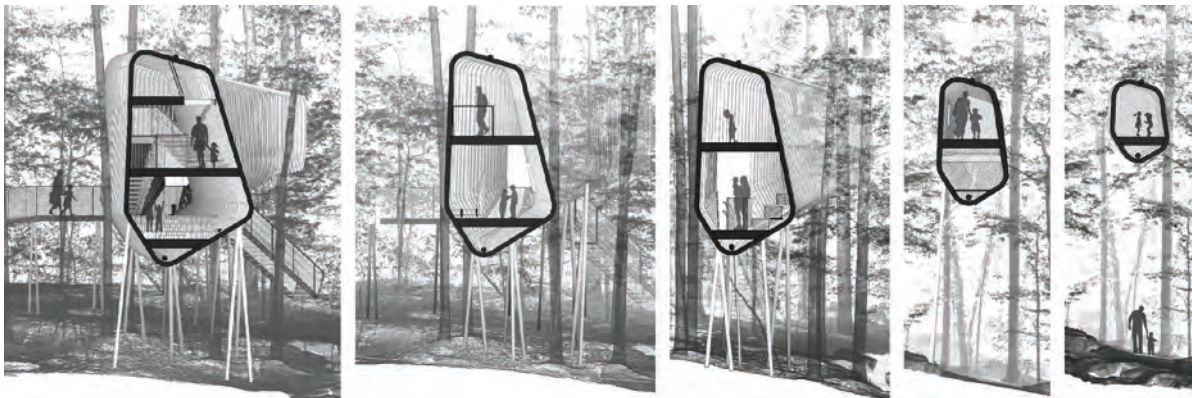


Fig. 145. Evans Tree House Sections

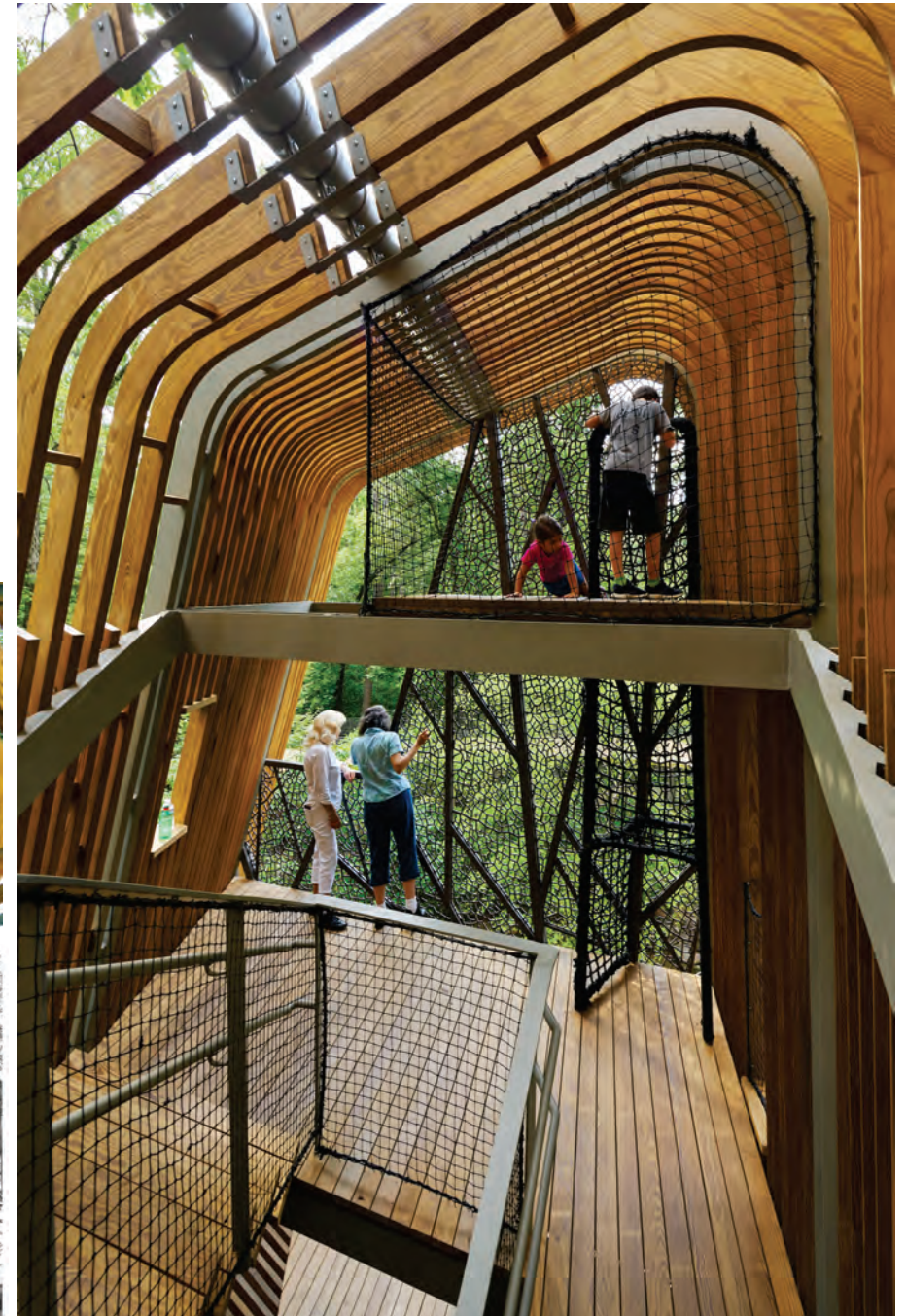


Fig. 146. Evans Tree House interior open to the outside

## 5.8. LAND ART

### Strijdom van der Merwe

- As a land artist, he uses the resources supplied by the designated location. The sculptural structures of Strijdom van der Merwe **take shape in comparison to the terrain**. It is a method of using water, sand, rocks, wood etc., to **interact with the natural world**.
- He shapes these components into **geometric forms** that interact with their surroundings, constantly changing until they are eventually destroyed.
- While not lamenting its disappearance, he **acknowledges the fragility of nature**, what remains is a physical picture, a **fragment of time**, and eventually the imagination.
- While a physical archive is physically all that exists, it also reminds us of an individual's ability to change the world, albeit frail, by accepting the ever-changing nature, actively contributing to it, thus moderating and embellishing the result (The Artists' Press, 2019: online).



Fig. 147.



Fig. 148.

## 5.8. LAND ART

### Strijdom van der Merwe

Patterns in the landscape



Fig. 149.



Fig. 151.

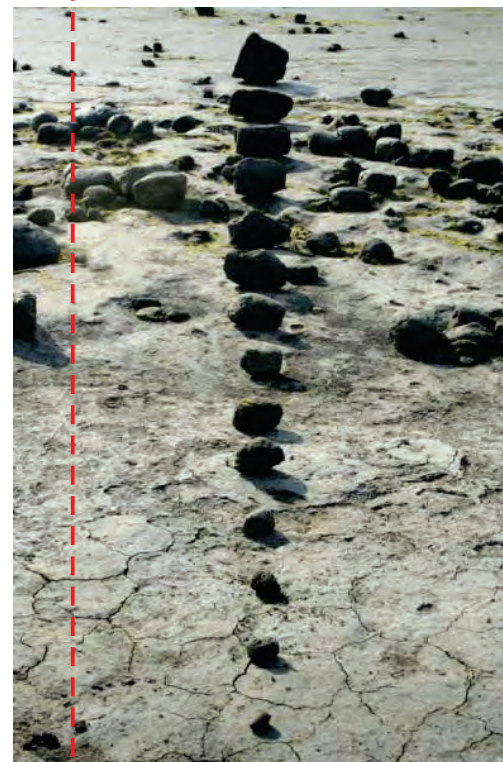


Fig. 153.



Fig. 154.



Fig. 150.



Fig. 152.



Fig. 155.

## 5.8. LAND ART

**Nina Faasen and Klara-Marie**

Den Heijer used wattle branches to create arches



Fig. 156.

**Leon Nigrini's** enclosure projects on the Tina Skukan Gallery grounds.

Site\_Specific / Cool Capital Nature Art Workshop

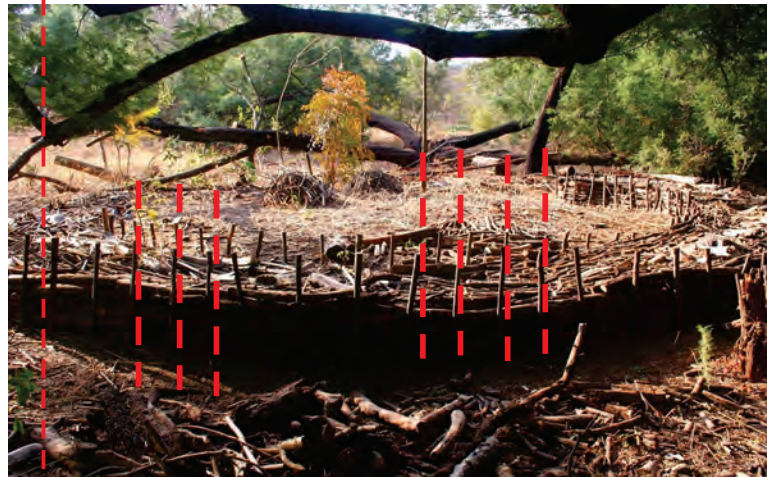


Fig. 157.

**Andrée Bonthuys** created using flowers and thorns, on a tree stump.

Site\_Specific / Cool Capital Nature Art Workshop

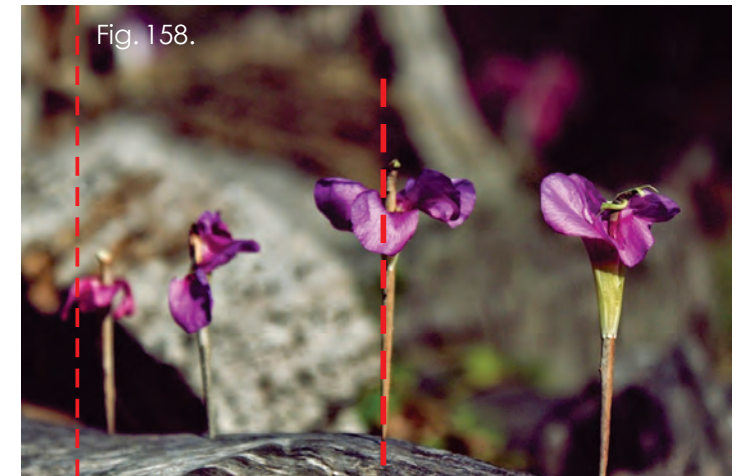


Fig. 158.



Fig. 159.

## 5.8. LAND ART



Fig. 160.

**Chris Lochner** used big, elongated **bark fragments** (which he had to generate mostly by splitting the bark into these tall figures), trapped in the bark-part of the work in the stream.

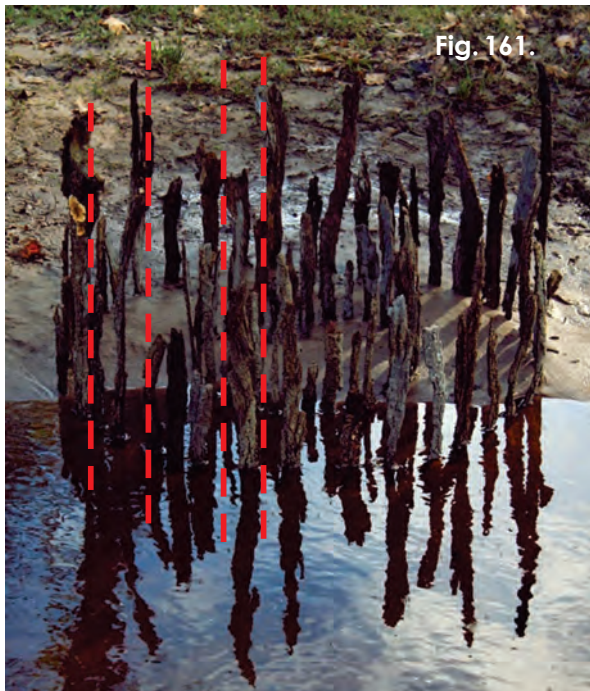


Fig. 161.

**Hokusai's Wave** by **Janet Ranson**, arranged by Site Specific artists in the Western Cape on Witsands Beach during the second land art gathering.

Fig. 162.



## 5.9. INSPIRATIONAL INFLUENCES

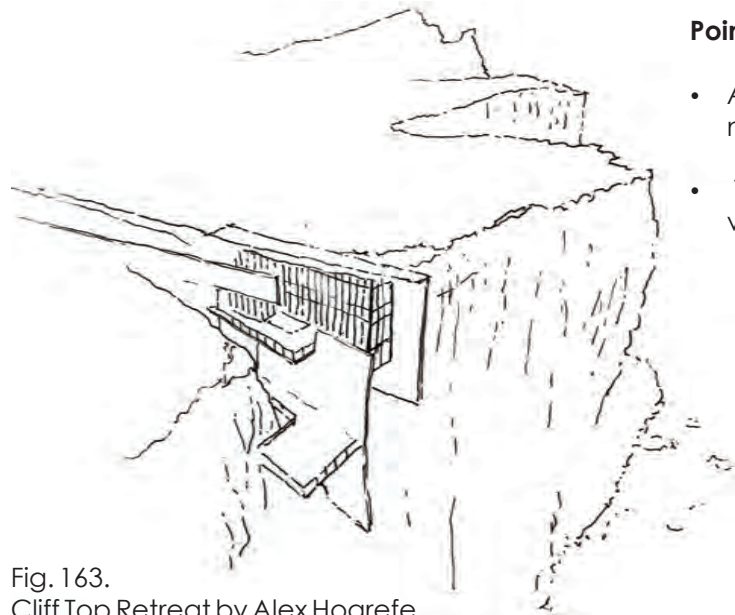


Fig. 163.  
Cliff Top Retreat by Alex Hogrefe

### Points of note

- Articulation of how the structure meets the earth
- The experience of taking the visitor on a ledge and over the cliff



Fig. 165.  
Cliff Top Retreat by Alex Hogrefe

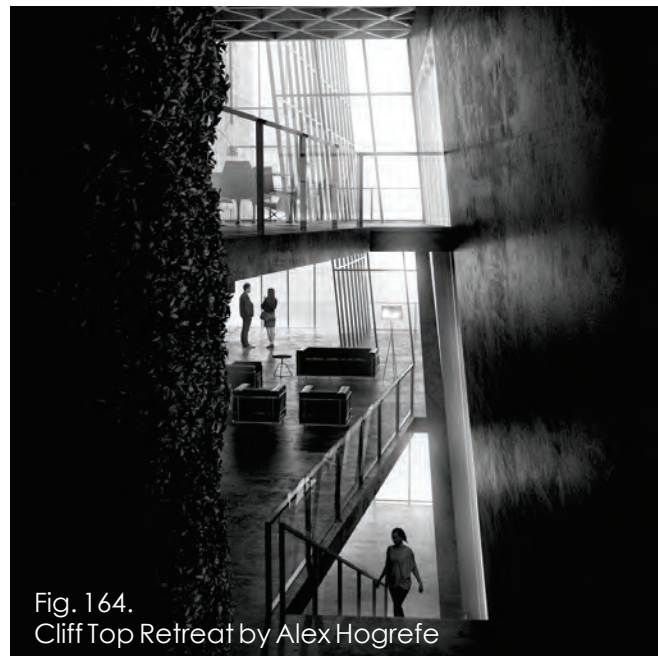


Fig. 164.  
Cliff Top Retreat by Alex Hogrefe

- Light-well creating remarkable transfer of light through the interior
- Interior textures. Attention to materials used in relation to light quality

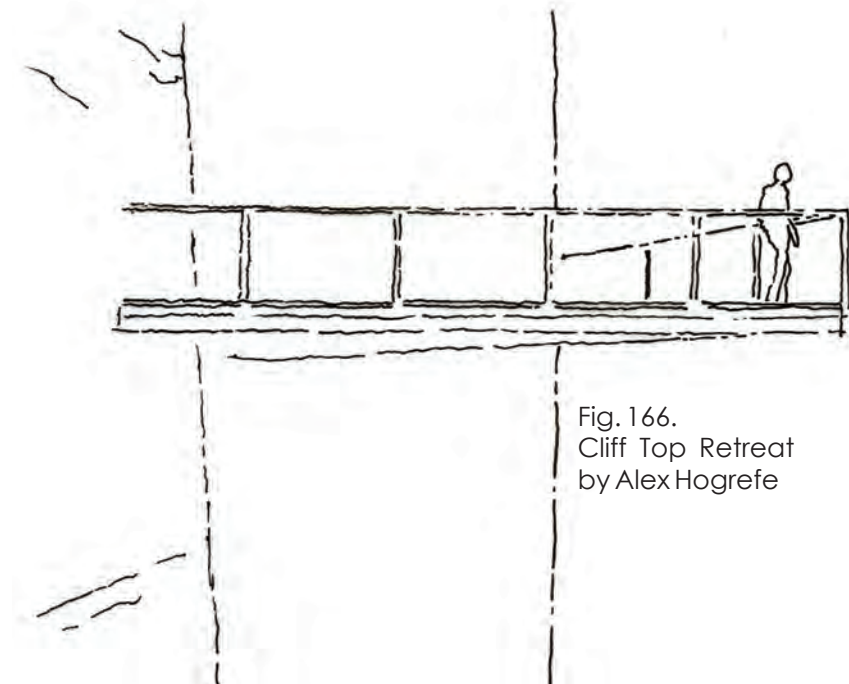


Fig. 166.  
Cliff Top Retreat  
by Alex Hogrefe

## 5.9. INSPIRATIONAL INFLUENCES



Fig. 167.  
E'terra Samara by Farrow Partnership Architects

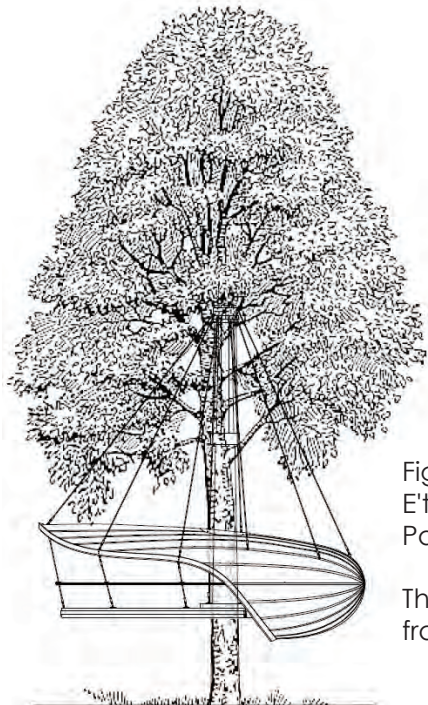


Fig. 168.  
E'terra Samara by Farrow Partnership Architects.

The idea of hanging a frame structure



Fig. 169.  
Glacier Skywalk in  
Jasper National Park



Fig. 170.  
Glacier Skywalk in  
Jasper National Park

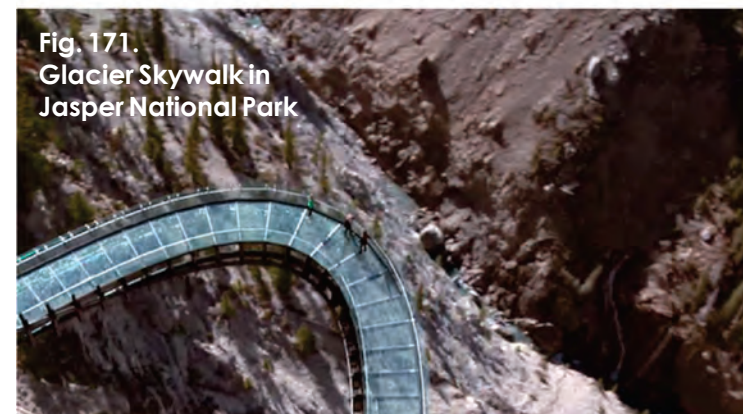


Fig. 171.  
Glacier Skywalk in  
Jasper National Park

## 5.9. CONCLUSION

This chapter covered the most influential precedent studies to the design of the Landscape Appreciation Centre. The investigation informed the type of building, landscape treatment and appropriate materials to be used within a similar context. Some presented fitting conceptual approaches to the Appreciation Centre.

With the design themes explored in this chapter, the next section investigates the **theoretical discourse** applied in the formation of the Maletsunyane Landscape Appreciation Centre.



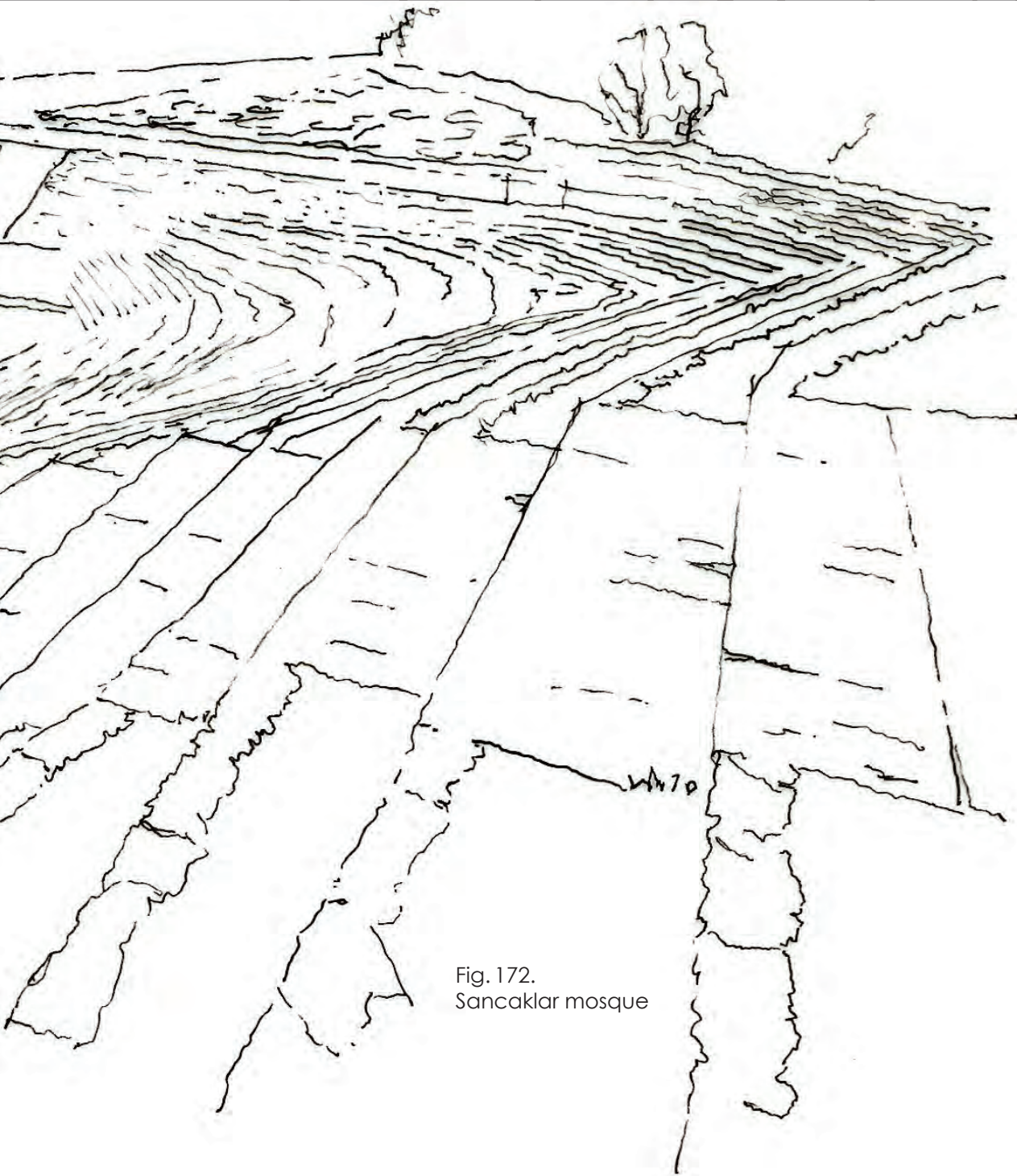


Fig. 172.  
Sancaklar mosque

6.1. Introduction

6.2. Biophilia

6.2.1. Defining biophilia and biophilic design

6.2.2. The history of biophilia in an architectural context

6.2.3. Benefits and principles of biophilia

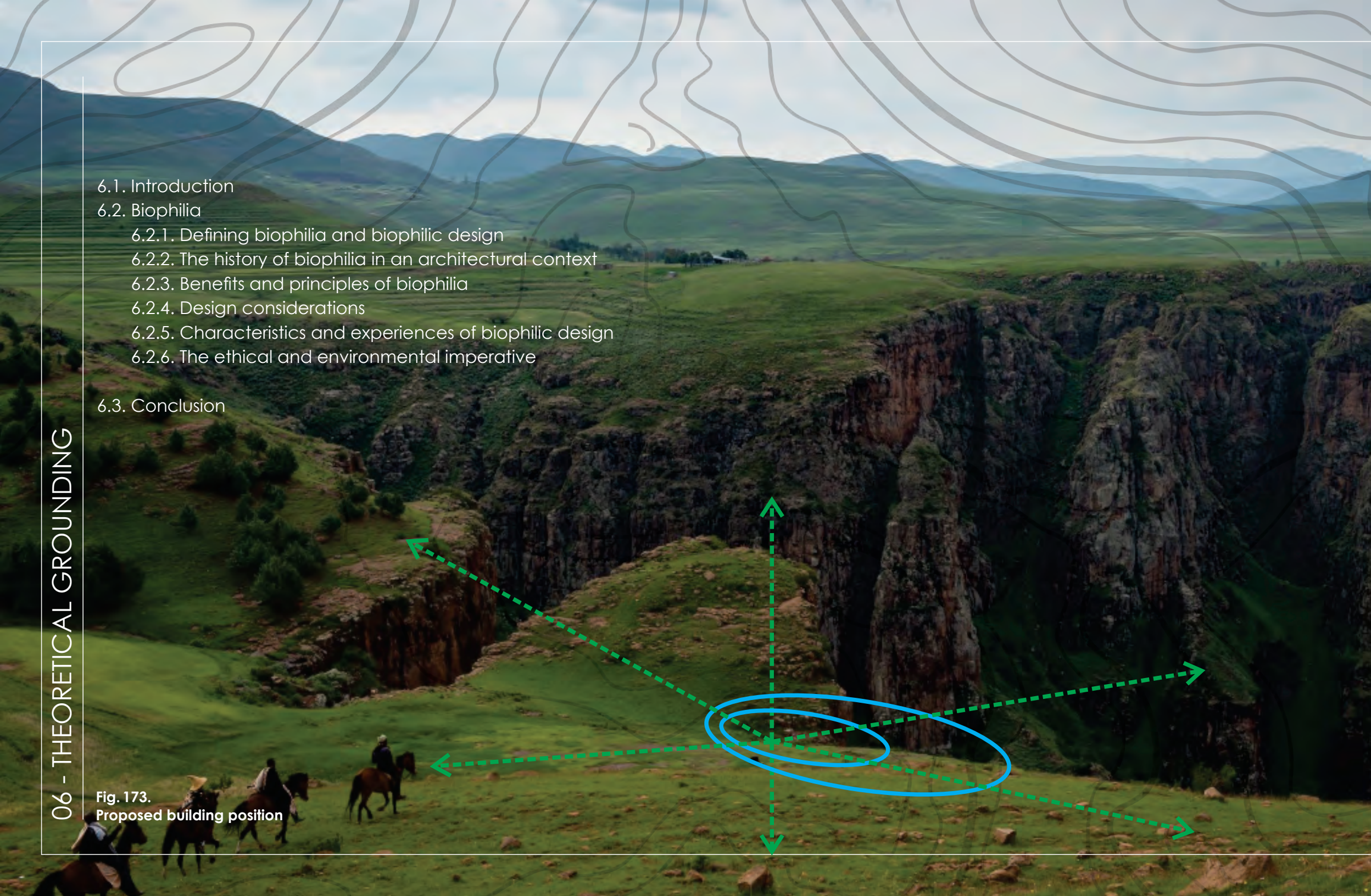
6.2.4. Design considerations

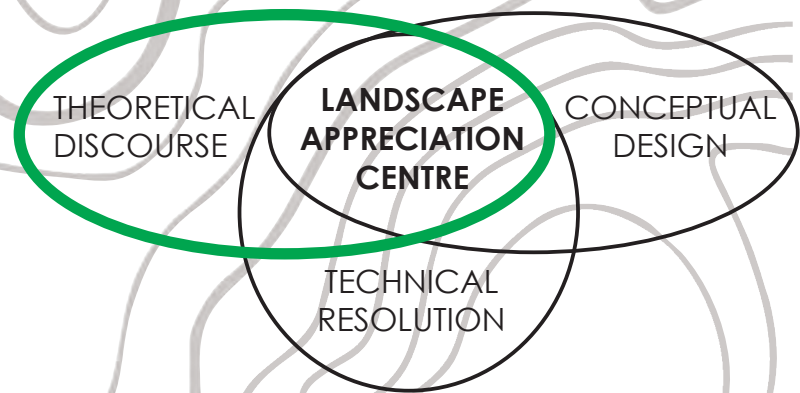
6.2.5. Characteristics and experiences of biophilic design

6.2.6. The ethical and environmental imperative

6.3. Conclusion

Fig. 173.  
Proposed building position





## 6.1. INTRODUCTION

This chapter delves into the definition of **biophilia** and biophilic design in order to present adequate **theoretical grounding** for a culturally and contextually appropriate Appreciation Centre in the Maluti mountain range of Lesotho. The **history** of biophilia will also be explored in the context of the built environment to trace how some of the most recognized and influential architects and artists have utilized this idea in the past. In addition to the history, **principles and benefits** of biophilia will also be highlighted, followed by possible **design considerations**. The **characteristics and experiences** of biophilic design are also put forth to get a thorough understanding of this theoretical underpinning and its influence in the context of Maletsunyane. This will then be concluded by an investigation into the environmental and ethical imperative presented by biophilic design discourse.

This theoretical grounding intends to articulate the connections between nature and the built environment so as to maximize the benefits of biophilia in a design application for tourists in Lesotho. In addition, it seeks to present a biophilic design framework that reflects the most important nature-health relationships in the built environment – those known to enhance our lives through a connection with nature.

## 6.2. BIOPHILIA

### 6.2.1. Defining biophilia and biophilic design

A social psychologist by the name Eric Fromm was the first to coin the term 'biophilia' in his book 'The Heart of Man' published in 1964 (Browning, Ryan and Clancy, 2014: 4). When dissected and carefully studied, the notion 'biophilia' is a combination of the words "bio", which refers to "life" or "being alive" and "philia", referring to the "positive emotion and attraction people have towards natural environments and certain living spaces". This idea is the opposite of phobia, which means a deep fear of entities that exist within the natural world (Kayihan, 2018: 2).

Biophilia is humanity's instinctive biological connection with nature. This idea explains why views to nature can improve our creativity; why the ebbing of tides and crackling fires fascinate us; why walking through parks and animal companionship possess soothing, recuperative powers; and why heights intrigue and instill fear or excitement in us. This theory can be seen as the underlying reason for some buildings and urban environments being favored over others (Browning et al., 2014: 4).

According to Kellert and Calabrese (2015: 3) the concept of biophilia requires an understanding of the evolution of human beings, where for over 99% of our species' existence, have developed biologically in adaptive response to the natural environment and not a man-made artificial one.

Most of what we consider normal today is of fairly recent. Large-scale food production started in the last 12,000 years; urban development, 6,000 years old; industrial production of goods and services, beginning just 400 years ago; and computer engineering, starting in the 19th century. The human body, brain, and senses developed in an environment not constructed and created by bio-centric or human beings.



Fig. 174.  
Camping by the riverside at Semonkong



Fig. 175.  
Man and nature

### 6.2.1. Defining biophilia and biophilic design

There is no substitute to nature, therefore it should be an integral part of design. **Close proximity to nature in built environment has a positive impact on the user.** The correlation and potential of nature and the built environment has not been tapped to the best of its limits (Gautam, 2017: 120).

Nature is a fantastic learning tool for humans, especially for nature as a source of architectural design inspiration. Biomorphic is one of the architectural response theories that branches out of biophilia and is primarily concerned with the world nature. This philosophy comes from the notion of nature's significance and is environmentally oriented (Ishomuddin, 2016).

Biophilic design can enhance our well-being and promote healing; reduce stress, boost cognitive function and creativity; increase the value of these attributes as the world population begins to urbanize (Browning et al., 2014: 4).

*"In every walk with nature one receives  
far more than one seeks."*

Muir, 1877

## 6.2. BIOPHILIA

### 6.2.2. The history of biophilia in an architectural context

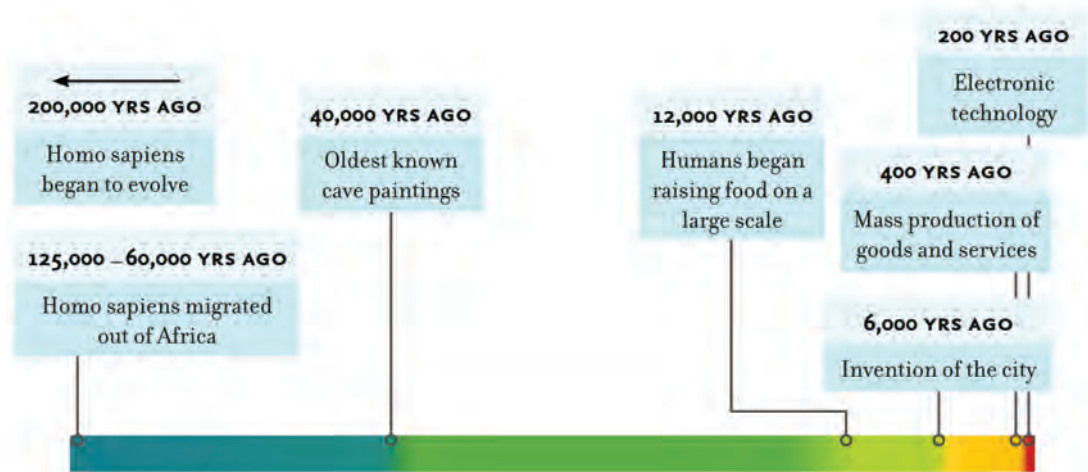


Fig. 176.  
The history and man's  
development

Nature patterns can be seen in the earliest human structures: stylized creatures typical of the Neolithic Göbekli Tepe; Egyptian sphinx and acanthus leaves beautiful Greek temples and their tale of Vitruvian origin; from the simple hut to the elegant, leafy Rococo filigrees. Animal and plant representations have been used for artistic or symbolic ornamentation for a long time. Cultures around the world have long taken nature into dwellings and public spaces beyond representation (Browning et al., 2014: 6). Classic examples include Spain's landscaped courtyards, plant and animal designs on mud huts in Lesotho, porcelain water bowls in ancient China, aviaries in Teotihuacan (former Mexico City), bonsai ponds in Japanese houses, papyrus ponds in Egyptian nobles' homes, cottage garden in medieval Germany, and Babylon's enigmatic hanging gardens.

The consistency of natural themes in historical structures and places suggests that biophilic design is not a new concept; rather, it is the organization of history, human intuition and neural sciences as a field of applied science that shows that connections with nature are vital to the maintenance of a healthy and vibrant existence. Before and even after the Industrial Revolution, the vast majority of people lived an agrarian life, living a great part of their lives in nature (Browning et al., 2014: 6).

### 6.2.2. The history of biophilia in an architectural context

Frederick Law Olmsted (1865) an American landscape architect concluded that "... **the enjoyment of scenery stimulates the brain without exhaustion and yet exercises it, soothes it and yet enlivens it; and thus, through the power of the mind on the body, allows the whole process the benefit of soothing relaxation and revitalization.**"

Victorian-era designers and artists including prominent English painter and art critic **John Ruskin** pushed back toward what they saw as modern cities' dehumanizing existence. They called for artifacts and structures representing the **craftsman's** eye and drawing inspiration from nature. Ruskin is said to have instructed the masons to use the surrounding countryside as inspiration in the construction of the Oxford Science Museum, and the effects can be seen in the incorporation of hand-carved flowers and plants that adorn the museum (Fig. 177).

Natural expression saw full effect in the late 19th century **Art Nouveau** projects. The exuberant crop of Architect **Victor Horta** laces through buildings in Brussels, the beautiful flowers that are lamps of Louis Comfort Tiffany, and the clearly biomorphic shapes of the buildings of **Leonardo Gaudí** still remain important examples.

In Chicago, with leaves and cornices portraying tree branches, **Louis Sullivan** developed intricate ornamentation. His protege, **Frank Lloyd Wright**, was part of **The Prairie School's** launching group.



Fig. 177.  
Oxford University Museum of  
Natural History



Fig. 178. Art Nouveau



Fig. 179.  
Louis Sullivan's Guaranty Building

## 6.2. BIOPHILIA

### 6.2.2. The history of biophilia in an architectural context

With his stained glass windows and design, Wright abstracted prairie flowers and plants. Like many in the **Craftsman** movement, as a decorative element, **Wright** used wood grain and brick and stone **texture**. Wright even allowed **interiors to flow through** houses in areas that had not been achieved before, providing positive viewpoint views of personal shelters. His early projects sometimes included interesting spaces such as the balcony over the **Fallingwater** cliff face (Browning et al., 2014: 7)



Fig. 180.  
Frank Lloyd Wright's Fallingwaters

*"...Biophilia is not a single instinct but a complex of learning rules that can be teased apart and analyzed individually. The feelings molded by the learning rules fall along several emotional spectra: from attraction to aversion, from awe to indifference, from peacefulness to fear-driven anxiety." Wilson, 1993*



Fig. 181.  
Hut at Semonkong

### 6.2.2. The history of biophilia in an architectural context

European Modernists removed a great deal of ornamentation from their structures, but like Wright, they **utilized wood grain** and **stone veining** as decorative elements, as well as **questioning the connection between interior and exterior**. The **Barcelona Pavilion** (constructed in 1929) by **Ludwig Mies van der Rohe** moved the idea of **volumes and glass** into play. His **Farnsworth House** (constructed in 1951) later **identified interior and exterior** much more simply by removing the elements from the **visual connection with nature** (Fig. 182).

**Le Corbusier's** Cité Radiant (unbuilt in 1924) may have contributed to catastrophic urban developments, but by positioning towers in a park surrounded by grass and trees, he sought to **bind urban residents to nature**. As the International Aesthetic took root, it spread glass structures everywhere; sadly, the houses, and particularly the interiors of commercial buildings, separated people from nature more and more (Browning et al., 2014: 7).



Fig. 182.  
Ludwig Mies van der Rohe's Barcelona Pavilion



Fig. 183.  
Ludwig Mies van der Rohe's Farnsworth House

## 6.2. BIOPHILIA

### 6.2.3. Benefits and principles of biophilia

Biophilic architecture aims to create a healthy ecosystem for people in the modern built environment as a biological organism that encourages nutrition, wellness and well-being for citizens. Successful application of biophilic architecture demands that certain basic principles be faithfully adhered to. Such concepts are important prerequisites to successful biophilic development training.

#### Biophilic design:

- Requires constant and consistent engagement with nature.
- Focuses on human modifications to the natural world that have **improved** the nutrition, **wellbeing** and well-being of humans over evolutionary time.
- Encourages an emotional connection to specific settings and places.
- Promotes **positive interactions** between people and nature which promote an enhanced sense of human and natural cultures ' connection and obligation.
- Encourages shared structural frameworks to be improved, intertwined, and incorporated.



Fig. 184.  
Semonkong landscape

## 6.2. BIOPHILIA

### 6.2.4. Design considerations

Biophilic architecture is designing for people as a biological organism, honouring mind-body systems as health and well-being measurements in the sense of what is locally acceptable and adaptive. Effective biophilic development draws from influential viewpoints – health conditions, socio-cultural norms and expectations, past experiences, rate and length of user experience, and user understanding and information processing – to create spaces that are stimulating, restorative, balanced, as well as integrative with the nature of the site and the environment to which it relates (Browning et al., 2014: 13). **Biophilic development should cultivate a love for place above all else.**



Fig. 185. Dining by the Maletsunyane river bank

### 6.2.4. Design considerations

#### LOCALLY APPROPRIATE DESIGN

- Climate, ecology and the vernacular
- Character and density: Rural, suburban and urban environments
- Scale and feasibility
- Culture and demographics

#### PLANNING FOR IMPLEMENTATION

- Identifying desired responses and outcomes
- Design strategies and interventions
- Diversity of design strategies
- Quality vs. quantity of intervention
- Duration of exposure and frequency of access

#### DESIGN INTEGRATION

- Interdisciplinary planning and design
- Biophilia as an environmental quality
- Multi-platform solutions
- Controlling for effectiveness
- Tracking and measuring efficacy

*“The problem of man and nature is not one of providing a decorative background for the human play, or even ameliorating the grim city: it is the necessity of sustaining nature as a source of life, milieu, teacher, sanctum, challenge and, most of all, of **rediscovering nature’s corollary of the unknown in the self, the source of meaning.**”*

*Ian McHarg*

## 6.2. BIOPHILIA

### 6.2.5. Characteristics [PATTERNS] and experiences of biophilic design

Biophilic architecture can be divided into three categories: **Nature in the Space, Natural Analogues and Nature of the Space**. It provides a framework for identifying and allowing a rich variety of strategies to be incorporated into the built environment. (Browning et al., 2014: 9). Just as cultural variations, backgrounds, health baselines and features of the built environment can have a different impact on the perception of space, so can the design pattern. A successful approach comes from **recognizing local conditions** and the **interaction between one space and another** and responding appropriately to the unique needs of a space and its expected client group and services with a mix of development interventions (Browning et al., 2014: 22).

#### 1. Nature in the Space and place

Nature in the Space discusses in a space or location the natural, material or ephemeral existence of nature. It covers plant life, water, air, animals, breezes, smells, fragrances, and other natural elements. Common examples include potted plants, flower beds, bird feeders, butterfly gardens, water features, fountains, aquariums, green walls and vegetated roofs in the courtyard gardens. The best nature in space encounters are accomplished by providing meaningful direct links with these natural elements, particularly through variety, motion and multi-sensory interactions (Browning et al., 2014: 9).

#### Presence of Water

It enhances a place's experience by seeing, listening and touching water.

The Experience (feeling of space)

A space with a good condition of the Presence of Water is spectacular and captivating. Fluidity, sound, illumination, proximity and accessibility all contribute to the relaxation and comfort of a space



Fig. 186. Maletsunyane Waterfall

## The Pattern

The prevalence of water pattern has emerged from studies on perceptual perception and positive emotional reactions to conditions including water elements; decreased anxiety, enhanced feelings of tranquillity and lower heart rate and blood pressure due to exposure to water characteristics; better attention and memory regeneration arising from nuanced, naturally fluctuating visual stimuli; increased psychological and physiological sensitivity and sensation by concurrently activating several senses.

The **aim** of the **Presence of Water pattern** is to draw on water's **multi-sensory qualities** to improve a place's environment in a way that is **calming, promotes reflection, improves mood, and reduces mental exhaustion.**



Fig. 187.  
Abstract interpretation of the site at Maletsunyane [FEELING]

## 6.2. BIOPHILIA

### 6.2.5. Characteristics [PATTERNS] and experiences of biophilic design

#### Visual Connection with Nature

A visual connection to nature is a view of natural elements, living systems and natural processes

The Experience (feeling of space)

A space with a good visual connection to nature feels whole, it captures ones' attention and can inspire or be relaxing. It can evoke a sense of time, climate and other living things (Browning et al., 2014: 9).

#### Connection with Natural Systems

Awareness of natural processes, including seasonal and temporal changes which characterize a healthy ecosystem.

The Experience (feeling of space)

Evokes a connection to a broader whole, mindful of seasonality and life cycles. Often the feeling is calming, enjoyable, profound and enlightening, and often expected.

#### Dynamic & Diffuse Light

Dynamic & Diffuse Light optimizes changing light and shadow intensities which change over time to create natural environments.

The Experience (feeling of space)

Conveys gestures of time and space that elicit intense and fascinating emotions, buffered with a sense of calm.

#### Non-Visual Connection with Nature

The sensory, haptic, olfactory and gustatory sensations which give rise to a purposeful and constructive connection to life, living systems and natural processes.

The Experience

A space with a good non-visual connection to nature feels fresh and well balanced; atmospheric environments are viewed as fluid and dynamic but at the same time familiar and comfortable, whereby noises, aromas and textures are reminiscent of being outside in nature (Browning et al., 2014: 11).

### Non-Rhythmic Sensory Stimuli

It applies to stochastic or ephemeral interactions with nature that can be objectively evaluated but can not be forecast accurately.

The Experience (feeling of space)

A space with good Non-Rhythmic Sensory Stimuli feels like one is **momentarily being deprived of something special**, something new, exciting, calming, and energizing. It is a short but welcome distraction.



Fig. 188.  
Spatial quality of site [FEELING]

### Thermal & Airflow Variability

Characterized as subtle changes in air temperature, relative humidity, skin-wide ventilation, and surface temperatures imitating natural environments.

The Experience

A space with strong variation in thermal & airflow feels pleasant, healthy, vibrant, invigorating and relaxed. The space offers both a feeling of versatility and control.



Fig. 189.  
Semonkong gorge

## 6.2. BIOPHILIA

### 6.2.5. Characteristics [PATTERNS] and experiences of biophilic design

#### 2. Natural Analogues Patterns

Natural Analogues investigates the evocations of organic, non-living and indirect nature. Objects, fabrics, colours, designs, sequences and **patterns found in nature occur in the built environment as artwork, sculpture, furniture, lighting, and textiles**. Mimicry of shells and plants, organic furniture and natural materials that have been manufactured and heavily altered (e.g. timber boards, granite tabletops) provide an implicit connection to nature: while they are actual, they are only comparable to the objects in their 'normal' condition. Through providing information resources in a structured and sometimes changing way, the best Natural Analog interactions are obtained. Natural Analogs contains three biophilic design patterns (Browning et al., 2014: 10).

#### Material Connection with Nature

Refers to **elements of nature that represent local ecology or geology in order to create a distinct sense of place by minimal processing**.

The Experience (feeling of space)

Feels rich, warm and natural, pleasing to the touch at times.

#### Complexity & Order

Complexity & Order is rich sensory data that follows a similar spatial structure to those found in nature.

The Experience (feeling of space)

As an interesting combination between dull and daunting, a space with strong Complexity & Order feels exciting and information-rich.

#### Biomorphic Forms & Patterns

These are **abstract parallels to patterns** which occur in nature that are contoured, **patterned, textured** and numerical.

The Experience (feeling of space)

Feels comfortable and interesting, possibly attractive, contemplative or even absorptive.

## 6.2. BIOPHILIA

### 6.2.5. Characteristics [PATTERNS] and experiences of biophilic design

#### 3. Nature of the place and space

Nature of the Space addresses nature's physical arrangements. This **involves our inherent and acquired ability to see our fascination with the potentially unsafe and mysterious outside our immediate surroundings**; elusive views and startling moments; and sometimes even phobia which causes assets when they include a trustworthy component of protection. The best quality of spatial interactions is accomplished by developing intentional and stimulating spatial arrangements combined with natural trends in space and natural analogues (Browning et al., 2014: 10).

#### Refuge

Refuge is a **space of refuge, from environmental conditions or the main activity stream**, where the person is shielded from the back or overhead.

The Experience (feeling of space)

A space with a good Refuge environment **feels safe**, offering a sense of **solitude and relaxation** – either alone or in small groups – for work, security, rest and recovery. A successful refuge space **feels** distinct and special from its surrounding environment; it can sound contemplative, welcoming and defensive in its physical features while overly disengaging.

#### Prospect

Prospect is a distance-free vision of tracking and planning.

The Experience (feeling of space)

Feels **open and free**, but gives a **sense of safety** and regulation, particularly when alone or in unfamiliar environments.

#### Mystery

The **possibility** of acquiring further knowledge by **partly opaque views** or other sensory tools that **encourage the person to venture further into the area**.

The Experience (feeling of space)

Mystery condition has a vivid **sense of anticipation** and provocation, giving the senses a sort of denial or **incentive** which **prompts one to explore the environment more**.

### 6.3. CONCLUSION

This chapter presents the theoretical discourse which informs the design and conceptual ideas. It presents a relevant theme to implement for the type of context the Landscape Appreciation Centre is set in.

*“Nature is a part of our humanity, and without some awareness and experience of that divine mystery man ceases to be man. When the Pleiades and the wind in the grass are no longer a part of the human spirit, a part of very flesh and bone, man becomes, as it were, a cosmic outlaw, having neither the completeness and integrity of the animal nor the birthright of a true humanity.” Henry Beston*





Fig. 190.  
Maletsunyane river

- 7.1. Introduction
- 7.2. The Client
- 7.3. The Brief
- 7.4. Accommodation facilities
- 7.5. Accommodation list

Fig. 191.  
Balcony at Semonkong Lodge overlooking  
Maletsunyane River and gorge





## 7.1. INTRODUCTION

The following details the client used for the Landscape Appreciation Centre at Maletsunyane Waterfall, Semonkong. It also explains the brief generated. This chapter also presents the accommodation facilities and list produce.

## 7.2. THE CLIENT

### LESOTHO TOURISM DEVELOPMENT CORPORATION

Promoting Responsible and Sustainable Economic Development through Tourism

Lesotho's brand of tourism aims at providing Lesotho with a clear and optimistic tone. The goal of the LTDC is to enable potential tourists to actively learn about their destination and schedule their trip.

#### MISSION

The LTDC provides leadership in the creation of a strong and competitive tourism sector that contributes to **sustainable economic growth**, employment, poverty alleviation and the **conservation of natural and cultural environments** through an efficient partnership in strategic marketing, research, product development, quality of service delivery and development of human resources with private and public sectors (Visitlesotho.travel, n.d.).

#### KEY FUNCTIONS OF THE LTDC

Promoting and developing viable and competitive tourism ventures that show high labor absorption ability.

Marketing and promoting Lesotho as a preferred destination for tourists (increased international tourist traffic market share) in such a way as to lead to additional foreign exchange production, strengthened payment balance and job creation.

Promoting and improving the flow of domestic tourism through the internal promotion of Lesotho's specific sales points with particular emphasis on heritage appreciation, traditional and cultural endowments, and sustainable environmental use (Visitlesotho.travel, n.d.).



### 7.3. THE BRIEF

Although Lesotho is known for its natural beauty, with some of the highest points on earth, the world still knows little about the spectacular scenery and an endless range of Lesotho's adventurous experiences.

It is therefore this project's aim to create a place which will **facilitate** and attract travelers to be around one of Lesotho's most **iconic scenery** at the Maletsunyane waterfall. This facility should offer **breath-taking views** to the place and a unique **experience** visitors will only get at Semonkong (Visitlesotho.travel, n.d.).



Fig. 192.  
Traditional Basotho blankets

## 7.4. ACCOMMODATION LIST AND FACILITIES

### NORTH WING

#### LOWER LEVEL

|                 |                  |
|-----------------|------------------|
| Sleeping pods   | 93m <sup>2</sup> |
| Mechanical room | 93m <sup>2</sup> |

#### GROUND FLOOR

|                        |                   |
|------------------------|-------------------|
| Reception              | 27m <sup>2</sup>  |
| Winter lounge          | 200m <sup>2</sup> |
| Toilets                | 50m <sup>2</sup>  |
| Observation platform 1 | 180m <sup>2</sup> |
| Control room           | 17m <sup>2</sup>  |

#### FIRST FLOOR

|                        |                   |
|------------------------|-------------------|
| Winter lounge          | 190m <sup>2</sup> |
| Balcony                | 35m <sup>2</sup>  |
| Observation platform 2 | 100m <sup>2</sup> |
| Mechanical room        | 18m <sup>2</sup>  |

#### ROOF TERRACE

|                        |                   |
|------------------------|-------------------|
| Roof garden            | 140m <sup>2</sup> |
| Roof observation point | 190m <sup>2</sup> |
| Storage                | 63m <sup>2</sup>  |

### SOUTH WING

#### GROUND FLOOR

|              |                  |
|--------------|------------------|
| Reception    | 23m <sup>2</sup> |
| Waiting area | 47m <sup>2</sup> |
| Foyer        | 27m <sup>2</sup> |
| Storage      |                  |

|                  |                  |
|------------------|------------------|
| Manager's Office | 18m <sup>2</sup> |
| Office 1         | 14m <sup>2</sup> |
| Office 2         | 16m <sup>2</sup> |
| Boardroom        | 44m <sup>2</sup> |
| Kitchenette      | 11m <sup>2</sup> |
| Toilets          | 84m <sup>2</sup> |

|                    |                  |
|--------------------|------------------|
| Water Tank storage | 37m <sup>2</sup> |
|--------------------|------------------|

|                            |                   |
|----------------------------|-------------------|
| Bicycle and equipment hire | 104m <sup>2</sup> |
|----------------------------|-------------------|

#### OUTSIDE SPACES

|                         |  |
|-------------------------|--|
| Staff nook              |  |
| Outside covered seating |  |

## 7.4. ACCOMMODATION LIST AND FACILITIES

### WEST WING

#### GROUND FLOOR

|                   |                   |
|-------------------|-------------------|
| Restaurant dining | 390m <sup>2</sup> |
| Bar               | 38m <sup>2</sup>  |
| Kitchen           | 58m <sup>2</sup>  |
| Service yard      |                   |

|                          |                   |
|--------------------------|-------------------|
| Curio shop               | 194m <sup>2</sup> |
| Art gallery              | 173m <sup>2</sup> |
| Arts and Crafts workshop | 121m <sup>2</sup> |
| Toilets                  | 108m <sup>2</sup> |
| Storage                  | 59m <sup>2</sup>  |

#### OUTSIDE SPACES

|                  |                   |
|------------------|-------------------|
| Outside deck     | 500m <sup>2</sup> |
| Garden courtyard | 116m <sup>2</sup> |

#### ACTIVITIES OFFERED

Hiking trails  
 Abseiling  
 Mountain biking  
 Fly fishing  
 Basotho horse racing  
 Pony treks  
 Maletsunyane Vertical drop ride (on cliff face)

### EAST WING

#### GROUND FLOOR

|             |                  |
|-------------|------------------|
| Foyer       | 19m <sup>2</sup> |
| Information | 18m <sup>2</sup> |
| Toilets     | 40m <sup>2</sup> |

#### FIRST FLOOR

|               |                   |
|---------------|-------------------|
| Accommodation | 153m <sup>2</sup> |
|---------------|-------------------|

#### SECOND FLOOR

|               |                   |
|---------------|-------------------|
| Accommodation | 153m <sup>2</sup> |
|---------------|-------------------|

#### OUTSIDE SPACES

|                 |                  |
|-----------------|------------------|
| Covered seating | 46m <sup>2</sup> |
| Water tanks     | 25m <sup>2</sup> |

Fig. 193.  
Maletsunyane Waterfall





Fig. 194.  
Maletsunyane Landscape  
Appreciation Centre **Parti** Sketch

- 8.1. Introduction
- 8.2. Touchstone
- 8.3. Conceptual ideas
  - Fluidity
  - Fragments of Time
  - Fingerprint [Identity]
- 8.4. Conceptual Framework
- 8.5. Model and sketch development

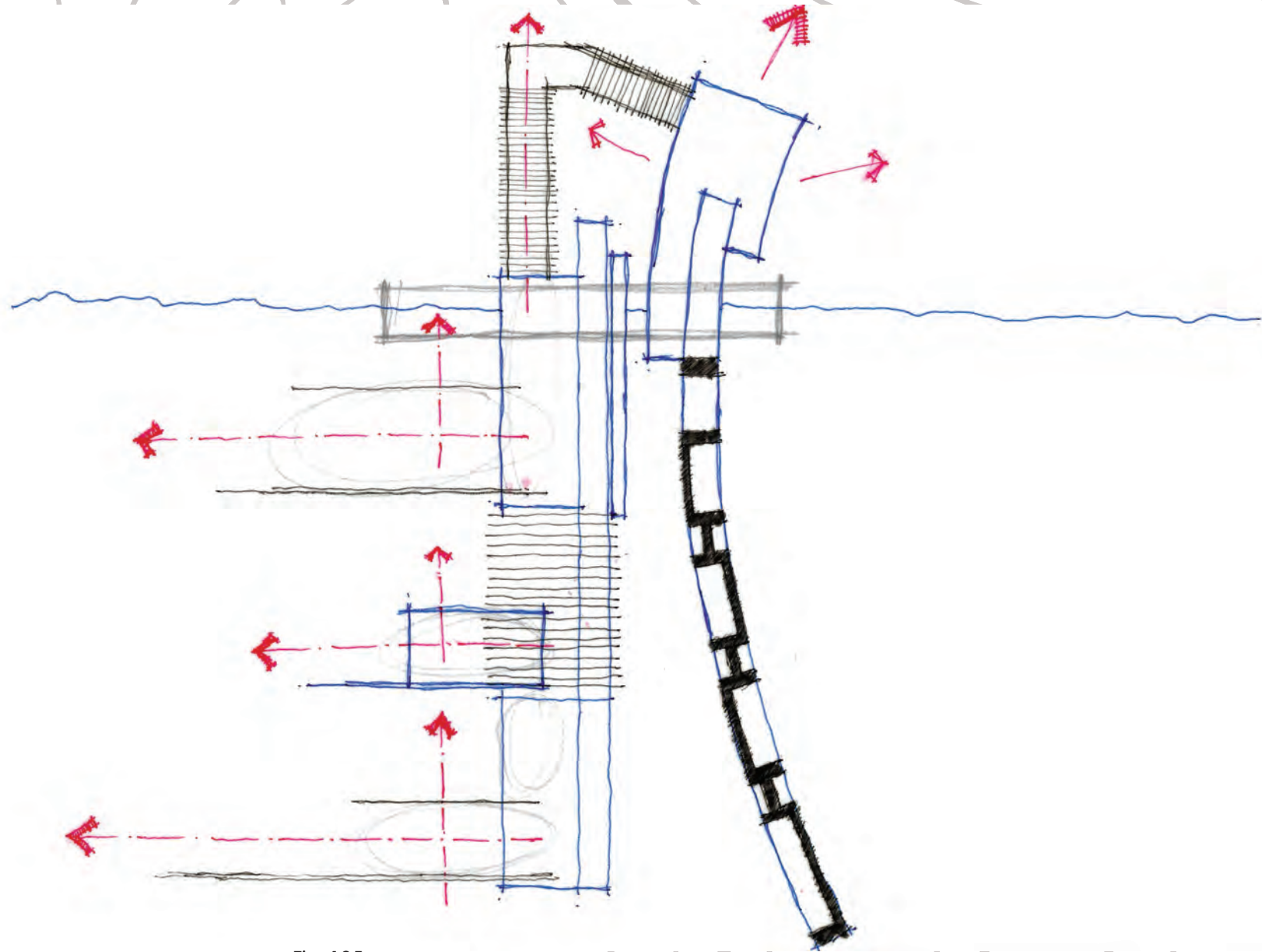
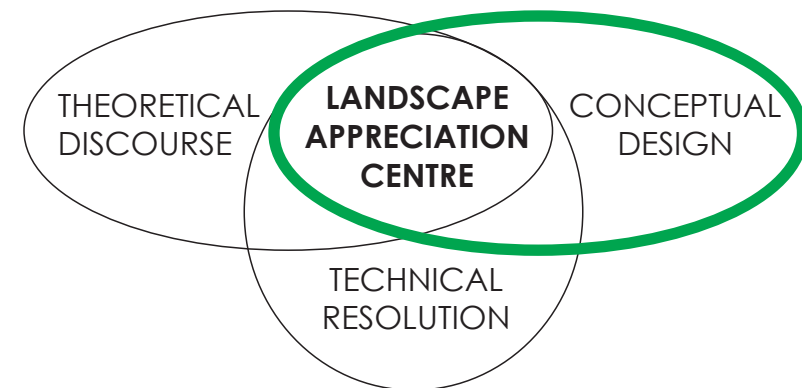


Fig. 195.  
Floor plan development sketch



## 8.1. INTRODUCTION

The next chapter is about the conceptual exploration and design development of the Landscape Appreciation Centre. It covers the touchstone for the project, the three initial conceptual approaches explored and indicates the one which was adopted for the purpose of this design. It then sets a more details and broader framework for the chosen concept. Sketches and models are presented to showcase the process the design went through.



## 8.2. TOUCHSTONE

This touchstone captures the **essence** of the design concept by the rocks submerged within water. The water is used as the **feeling** on site, with the rocks arranged by **man** as an indication of the intervention created at Maletsunyane. This arrangement is guided by the principles of creating **land art**. The separation of the rocks with glass indicates the **natural context** with the new intervention in the middle. The arranged pattern has significance due to the materials being the same as the undisturbed natural environment and **enhancing what already exists**, without imposing on the site.



Fig. 196. Touchstone - Land art



Fig. 197. Touchstone  
Presence of water



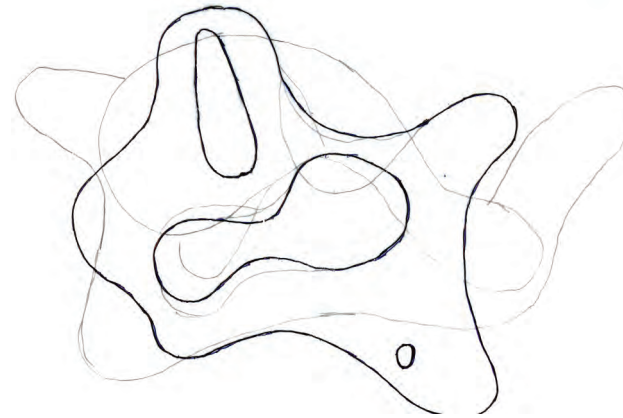
Fig. 198. Touchstone

### 8.3. CONCEPTUAL IDEAS

#### CONCEPTUAL APPROACH 1

Fluidity

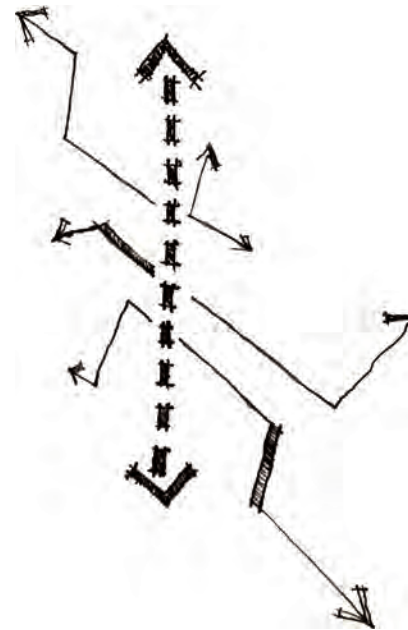
This conceptual exploration focused on the presence of water as a design generator. This idea was abandoned due to being one dimensional and direct as a concept.



#### CONCEPTUAL APPROACH 2

Fragment of time

This idea explored the temporal quality of the intervention dissolving and disappearing after a certain period of time. It relied on the history of what was to inform what could be, with regards to architectural form. This presented numerous problems which then led to the third conceptual idea.



### 8.3. CONCEPTUAL IDEAS

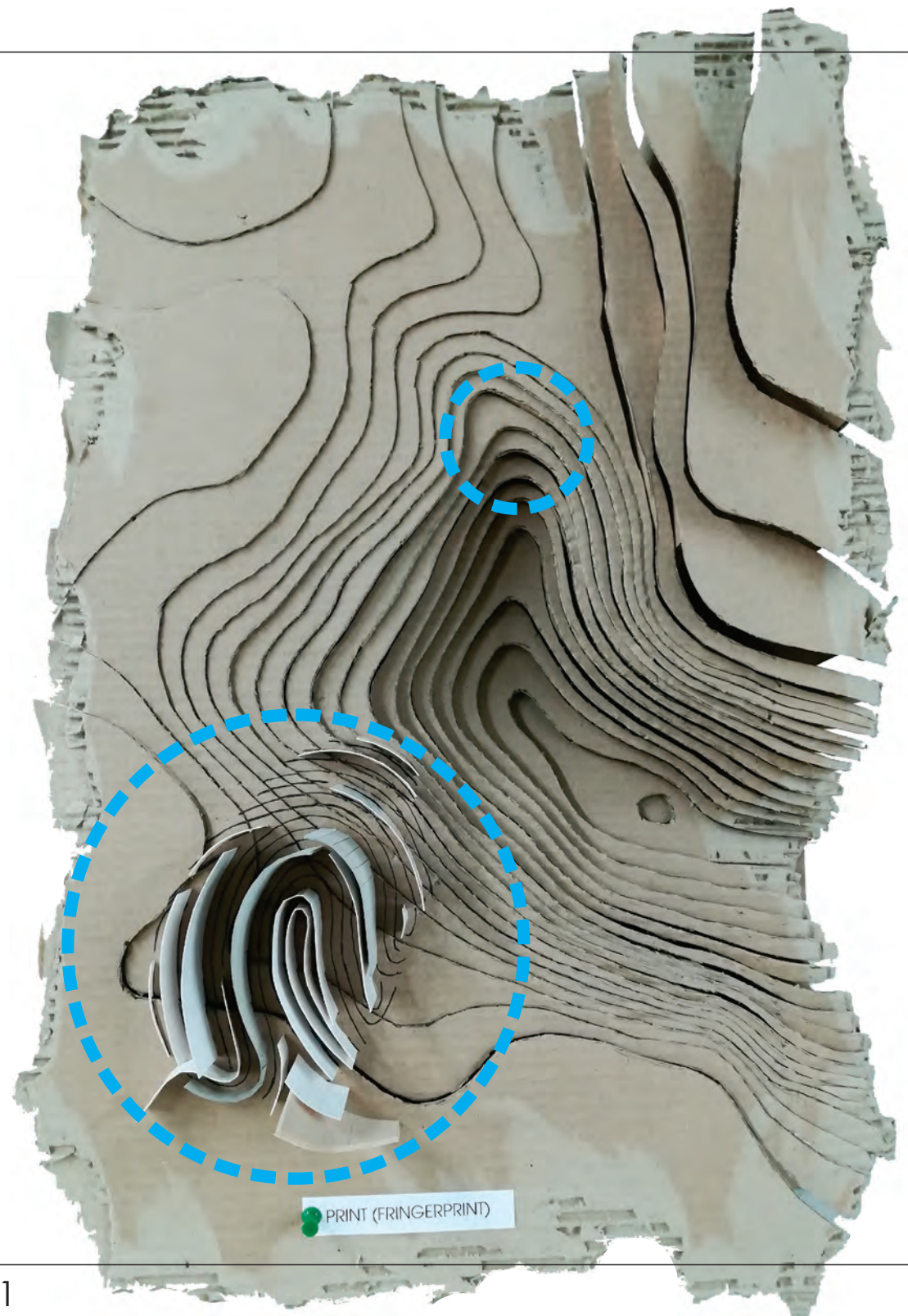
#### Identity

The adopted concept is **identity through the study of patterns**. This presented a broad idea which could include an investigation of the **site**, the **culture and traditions** of Basotho to create a more inclusive concept.

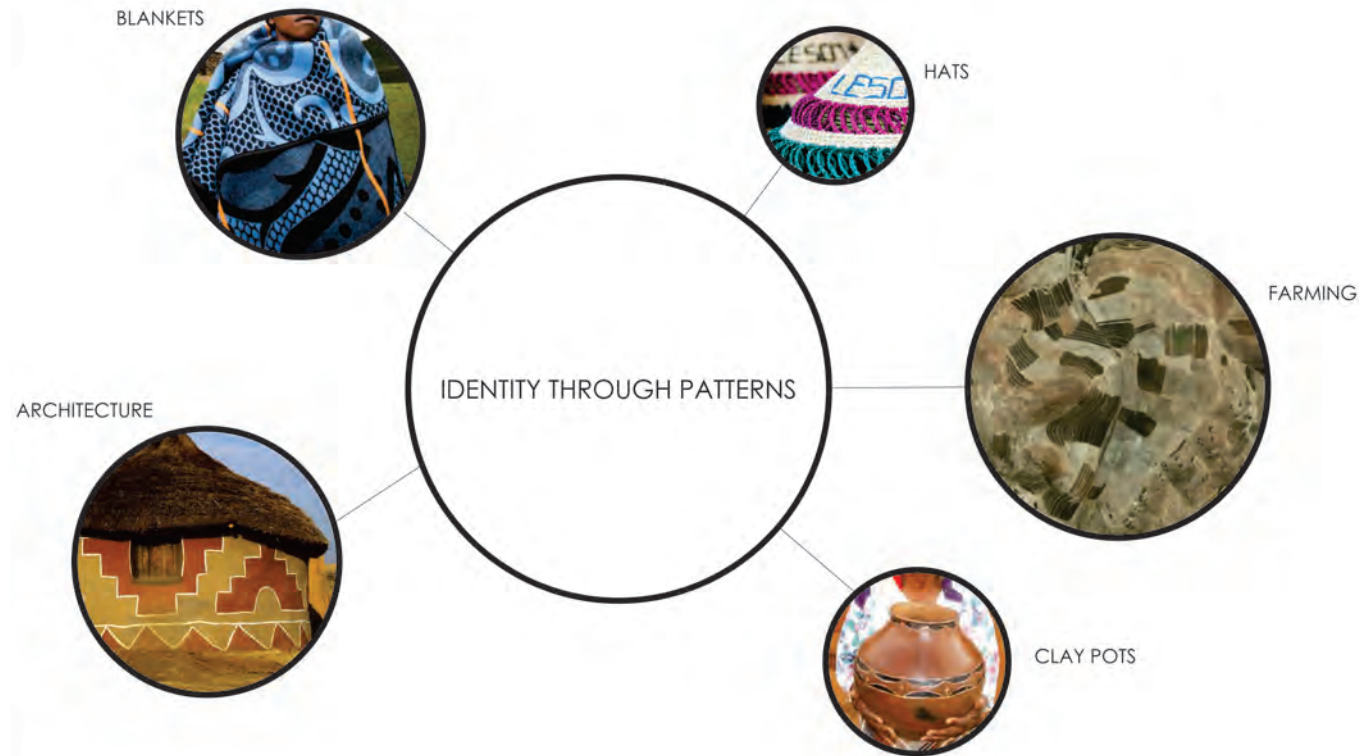
This idea takes clues from the site, such as the farming patterns created by the residents of Semonkong. This implies that the **immediate context** is considered and becomes part of the principle conceptual approach.

Identity through pattern in this regard also takes into consideration the patterns which form part of Basotho identity and tradition. These include patterns in their **architecture, nostalgic shield emblem, crafts and colorful blankets**.

This exploration assists in designing a **meaningful** piece of architecture which blends in with its context and relates to the locals.



## 8.4. CONCEPTUAL FRAMEWORK



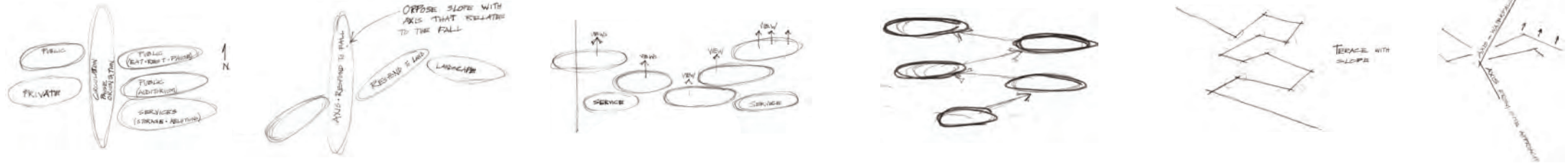
This conceptual approach also takes into consideration Lesotho's influence on Marvel's 2018 movie *Black Panther*. Traditional Basotho blankets are used in the film as the **border tribe** costume. These are used for their deep **historical** and **cultural significance**. The blankets in the movie are capable of emitting a **force field** which the border tribe use when defending the city of Wakanda.

This idea of protection and force field from the blankets is adopted in this dissertation to inform the **screens** protecting the building and simultaneously creates a **cultural reference to the site**.



### 8.5. MODEL AND SKETCH DEVELOPMENT

#### BUBBLE DIAGRAM DEVELOPMENT

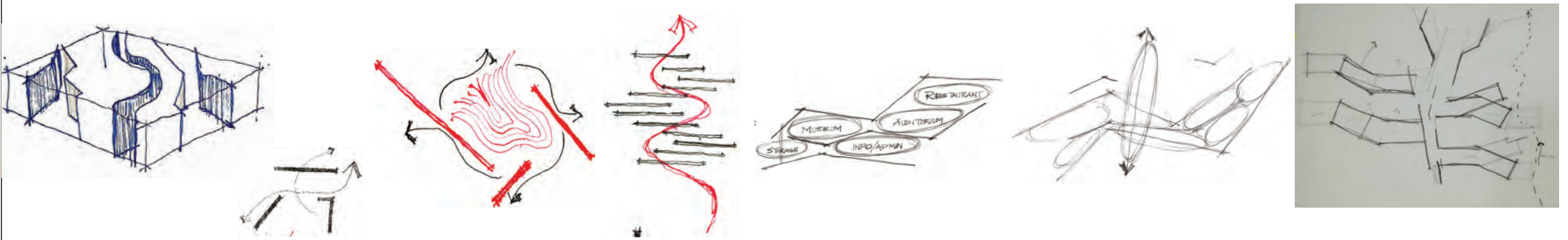


#### BUBBLE DIAGRAM DEVELOPMENT

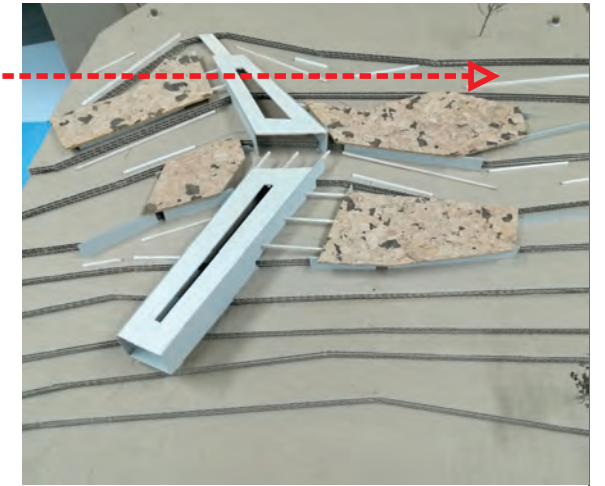
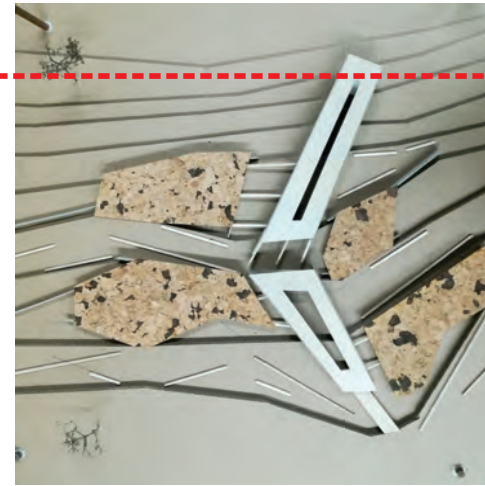
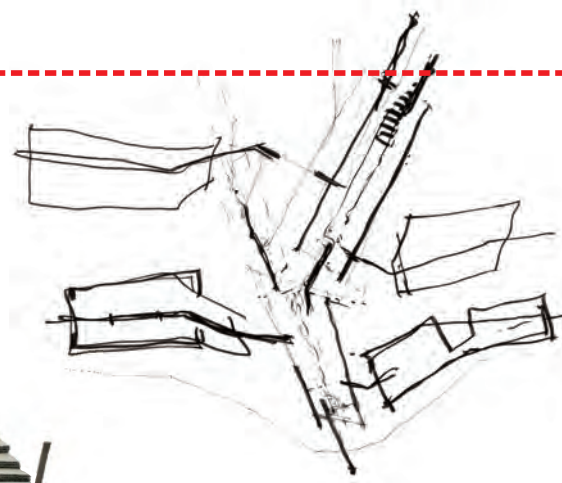
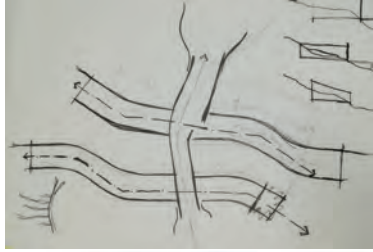


#### MOVEMENT INVESTIGATION

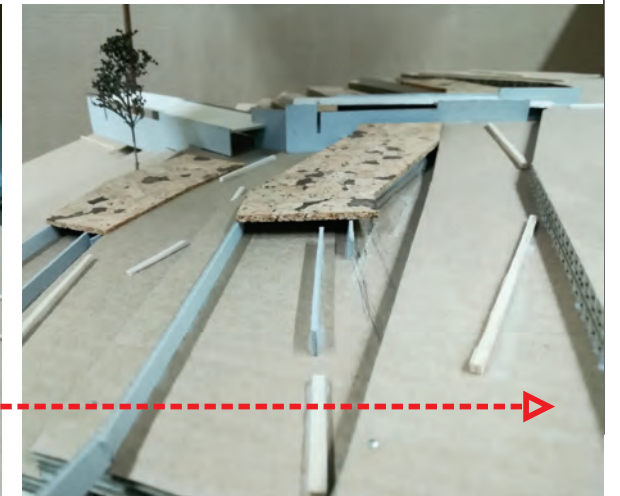
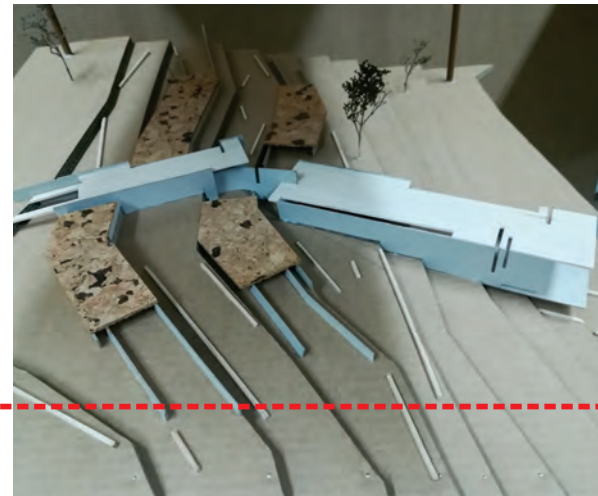
#### PLAN DEVELOPMENT [STAGE 1]



CONCEPT MODEL 1

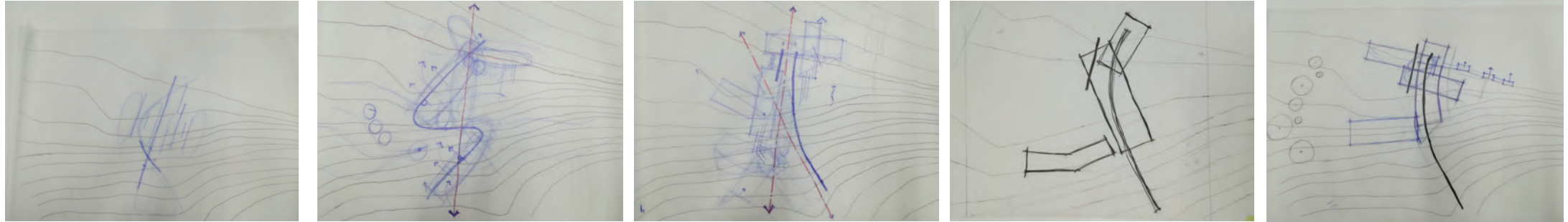


CONCEPT MODEL 2

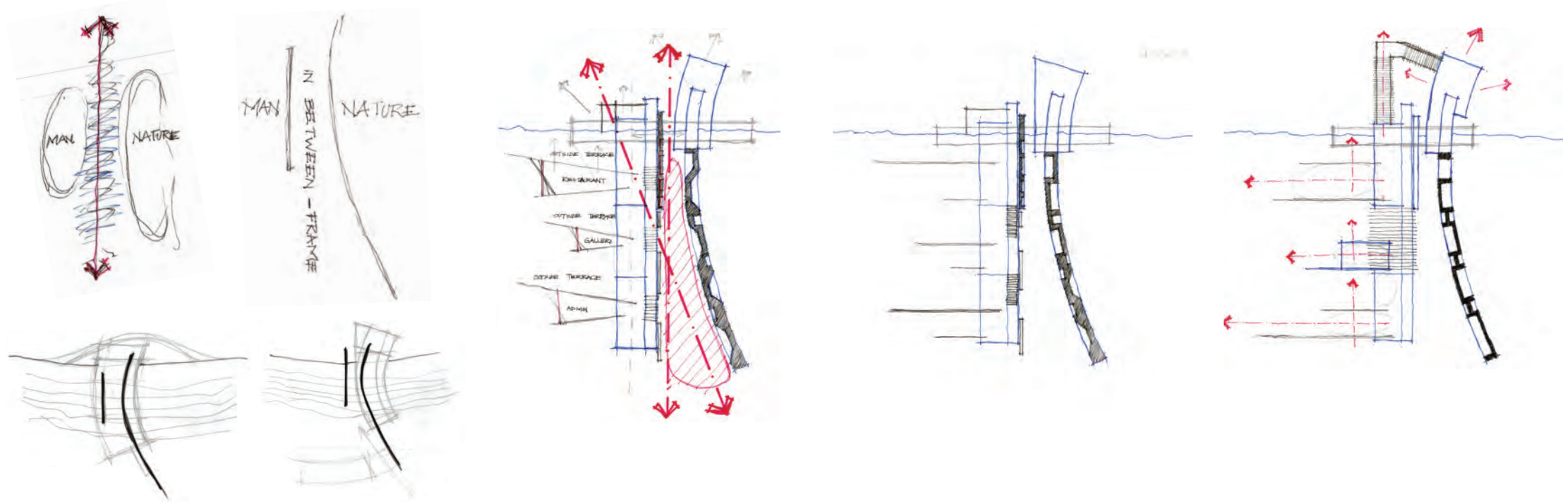


### 8.5. MODEL AND SKETCH DEVELOPMENT

#### PLAN DEVELOPMENT [STAGE 2]



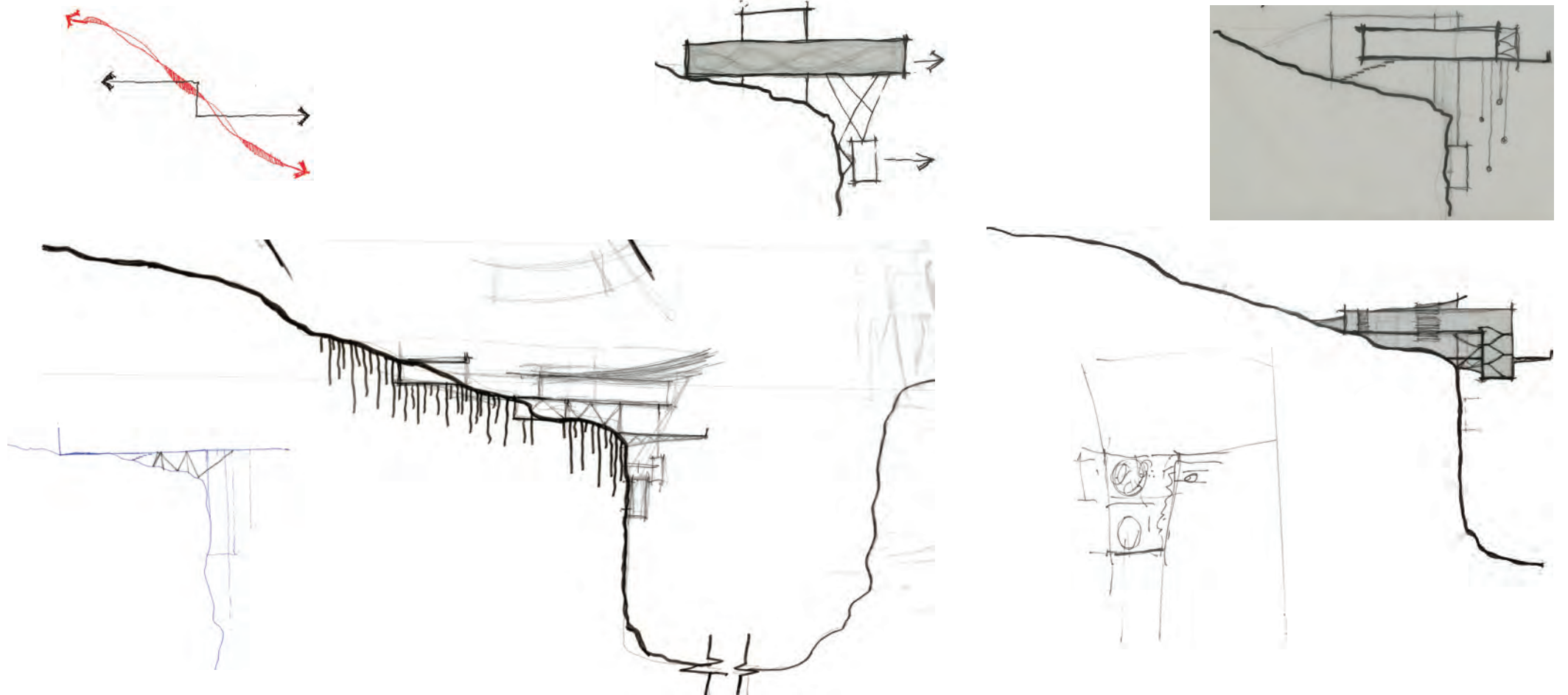
#### PLAN DEVELOPMENT [STAGE 3]



SECTION DEVELOPMENT

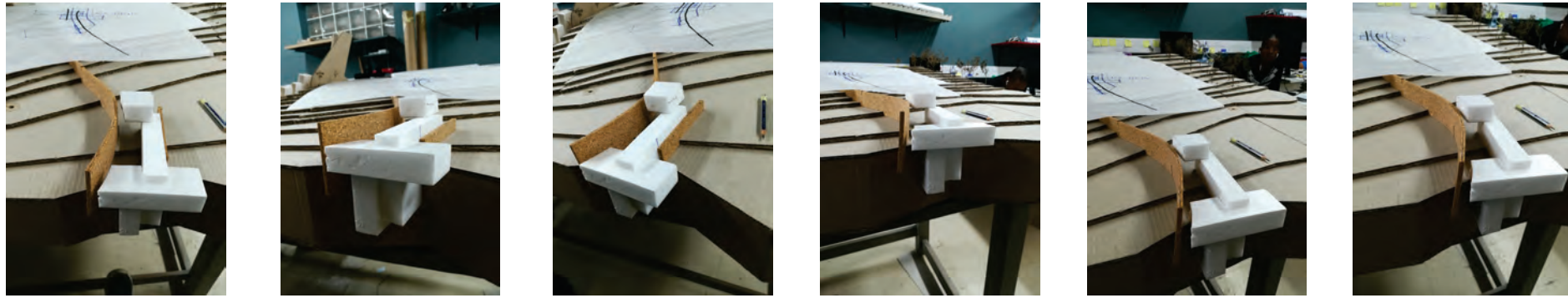


SECTION DEVELOPMENT



### 8.5. MODEL AND SKETCH DEVELOPMENT

#### CONCEPT MODEL 3



#### CONCEPT MODEL 4



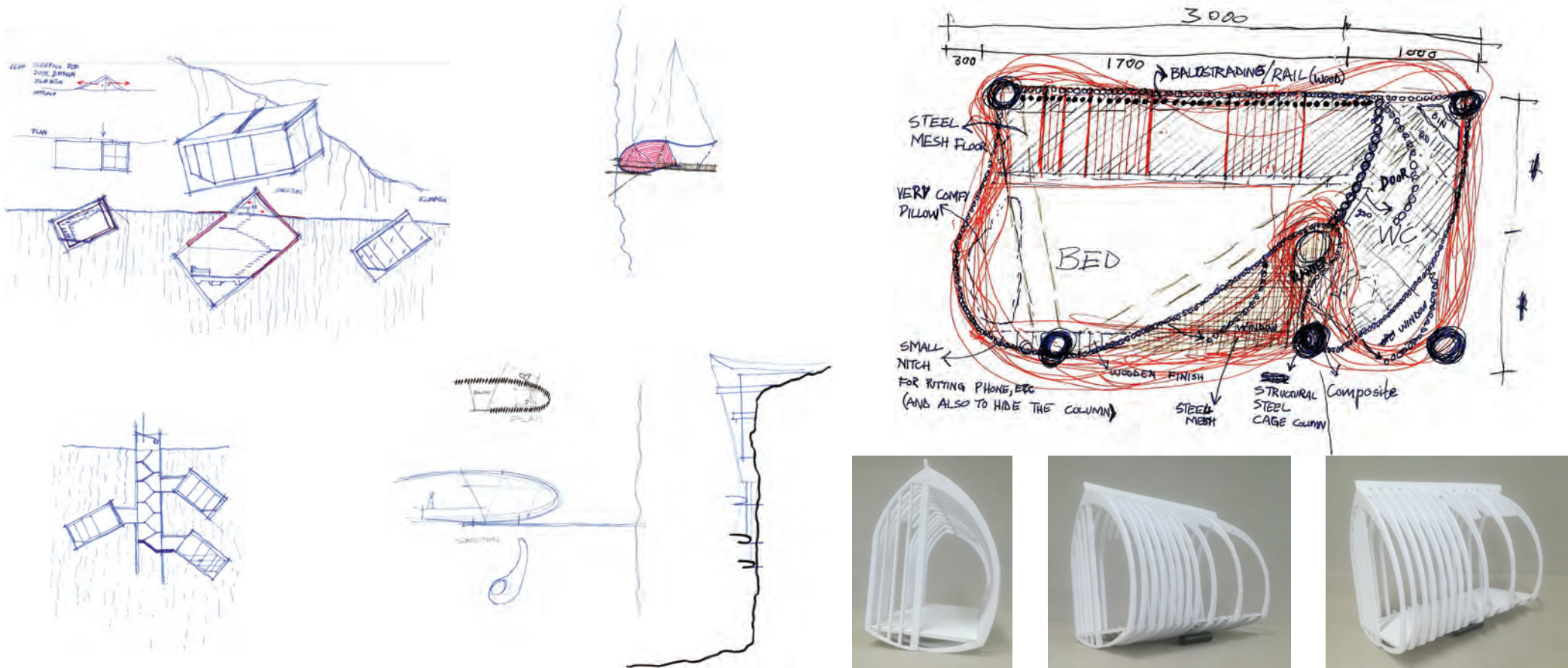
#### CONCEPT MODEL 5



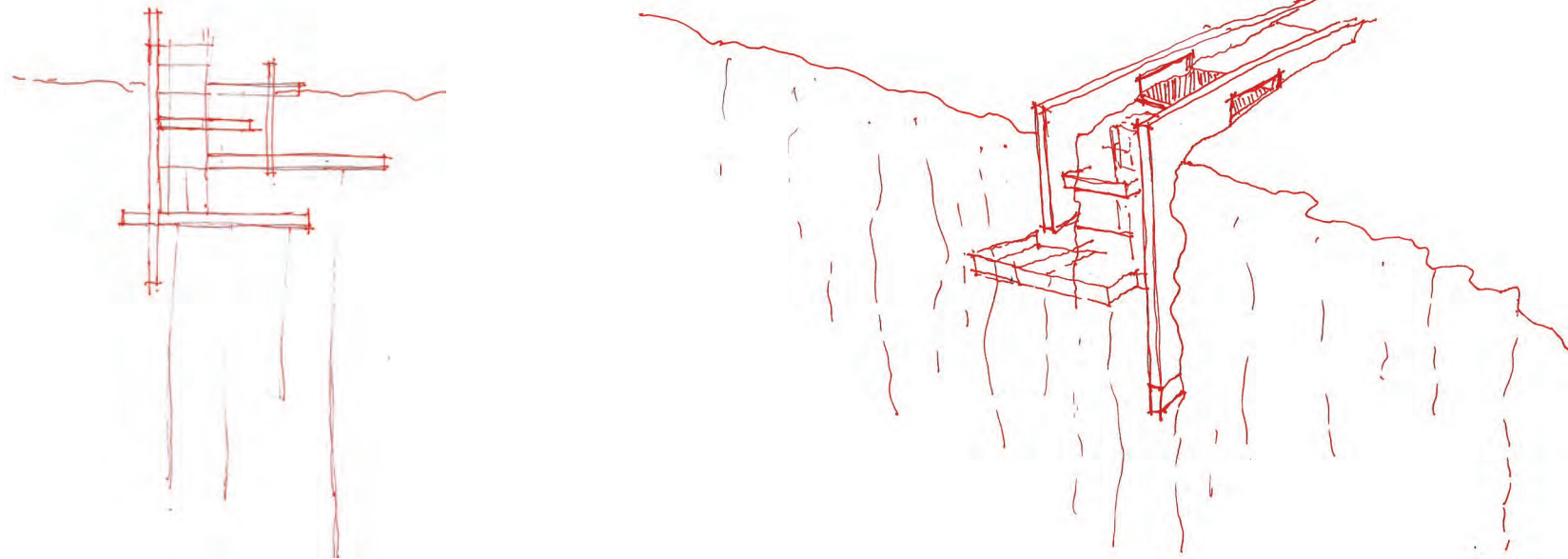
## CONCEPT MODEL 6



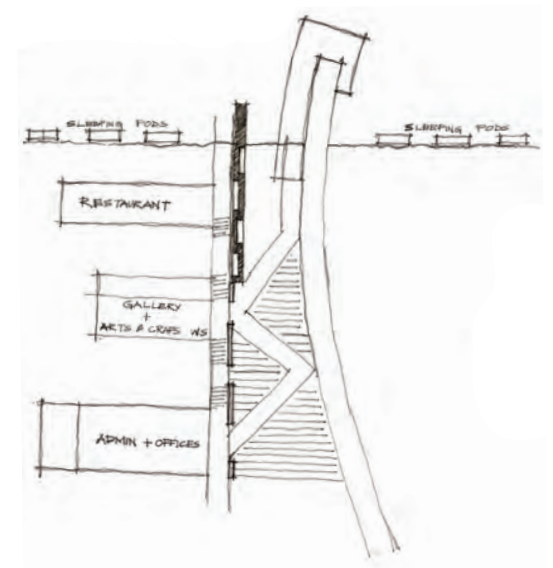
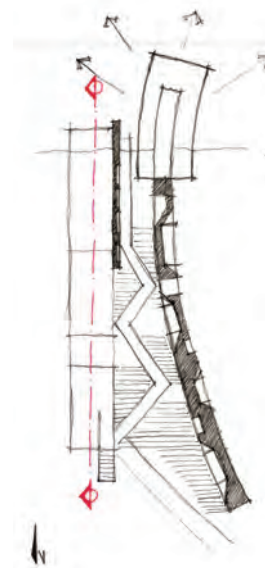
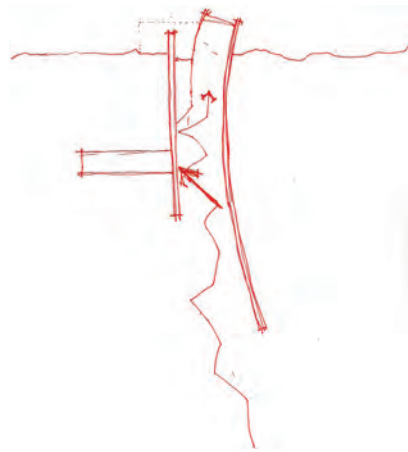
## SLEEPING POD DEVELOPMENT



### 8.5. MODEL AND SKETCH DEVELOPMENT



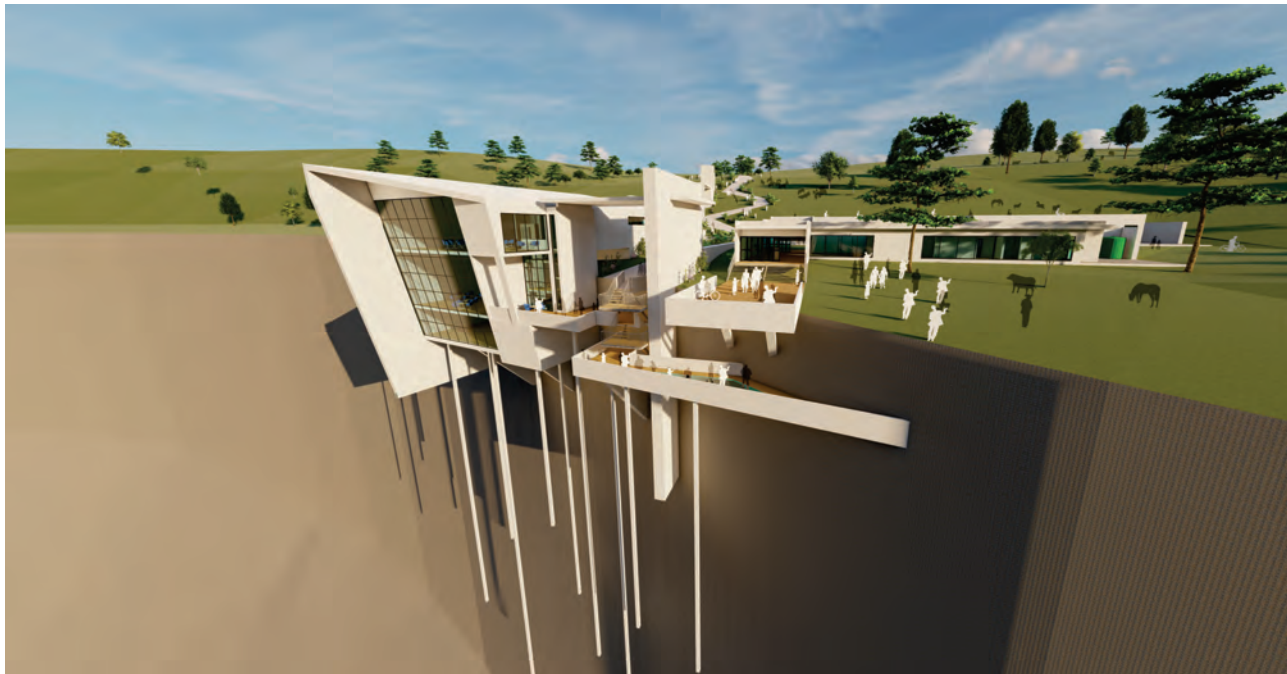
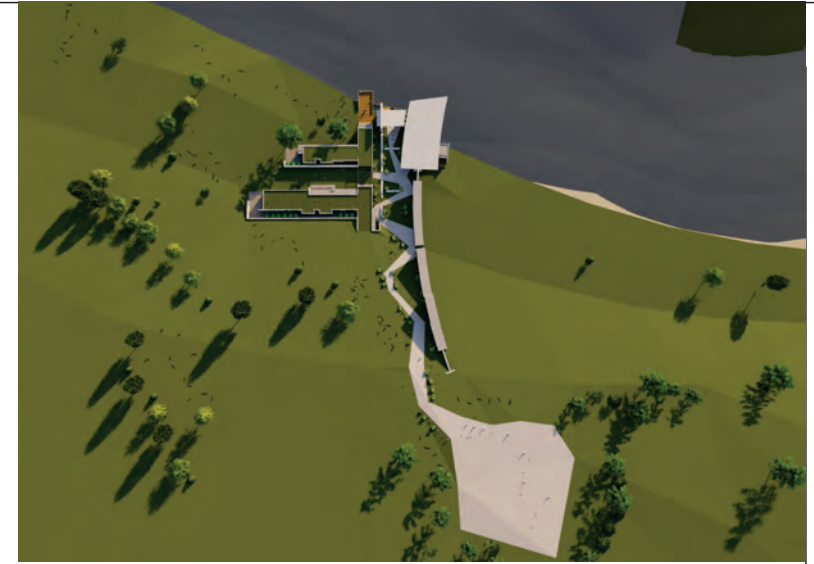
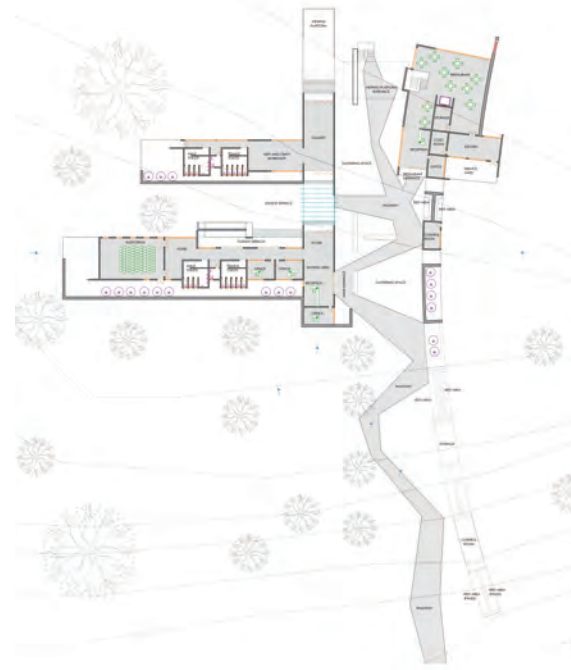
PLAN DEVELOPMENT [STAGE 4]



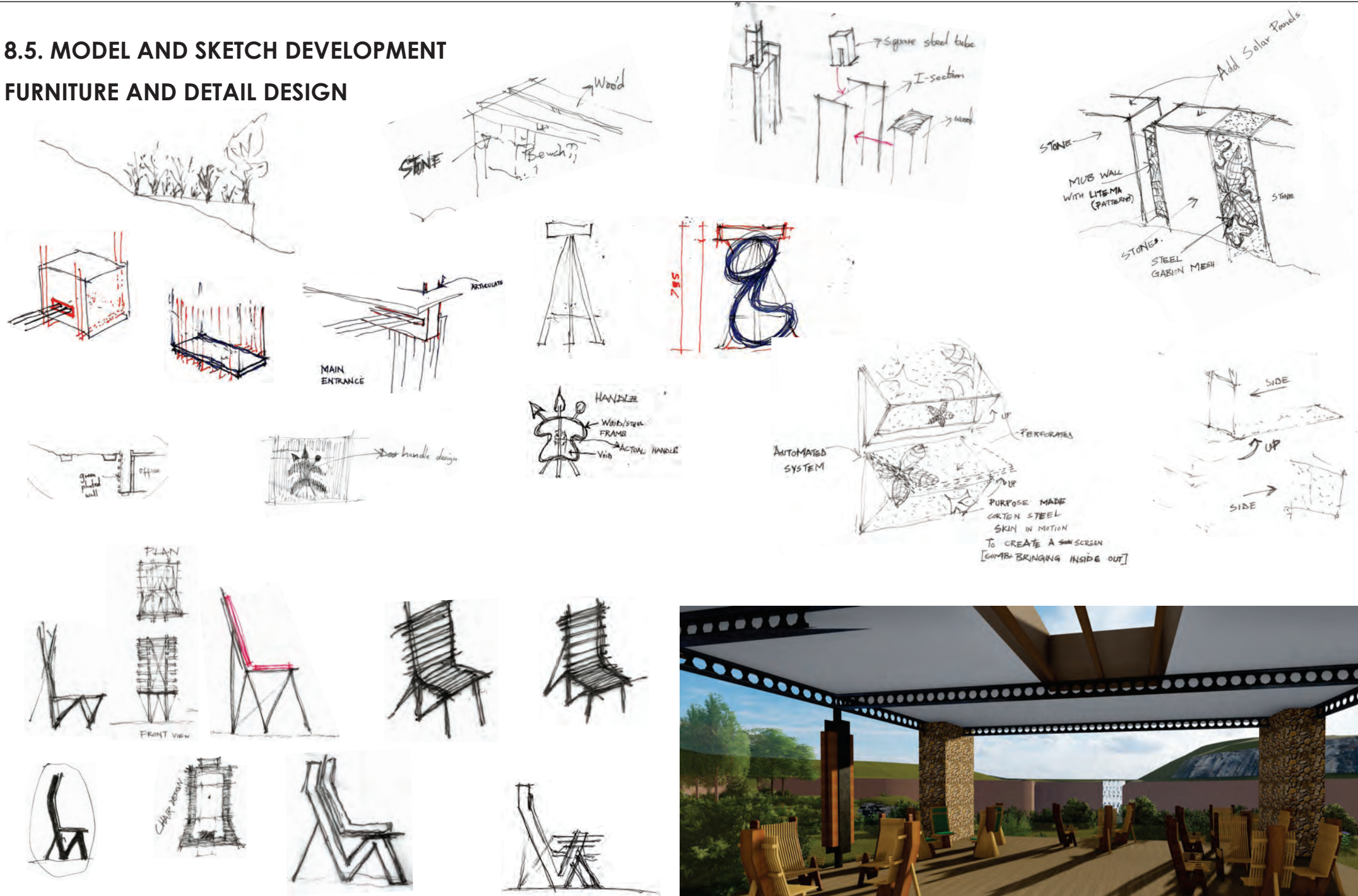
### CAD EXPLORATION 1

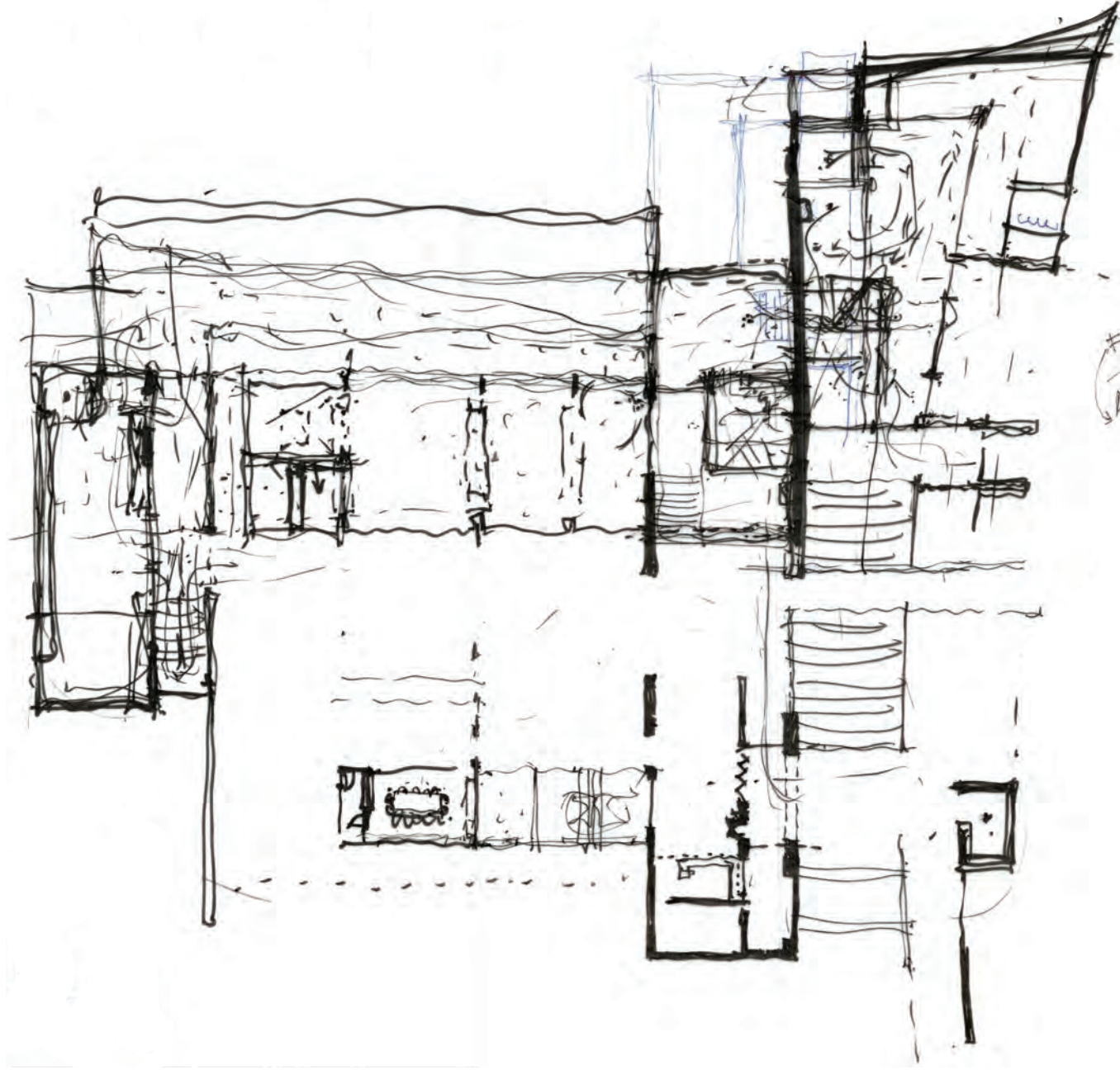
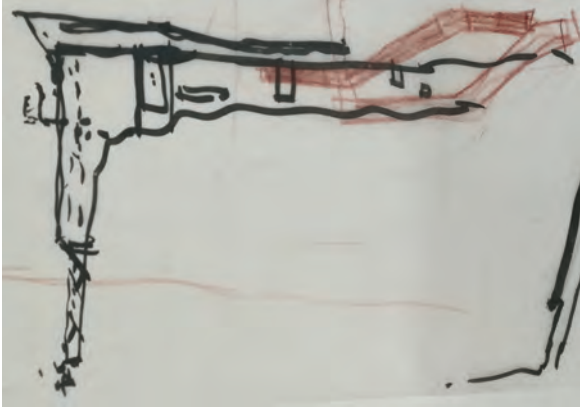
This exploration only took into consideration the slope on site but had very little reference to the spirit of the site and culture of Basotho. The result was an alien form which took attention away from the landscape and becoming an attraction itself.

This idea was abandoned due to its peculiar nature and lack of consideration to its context.



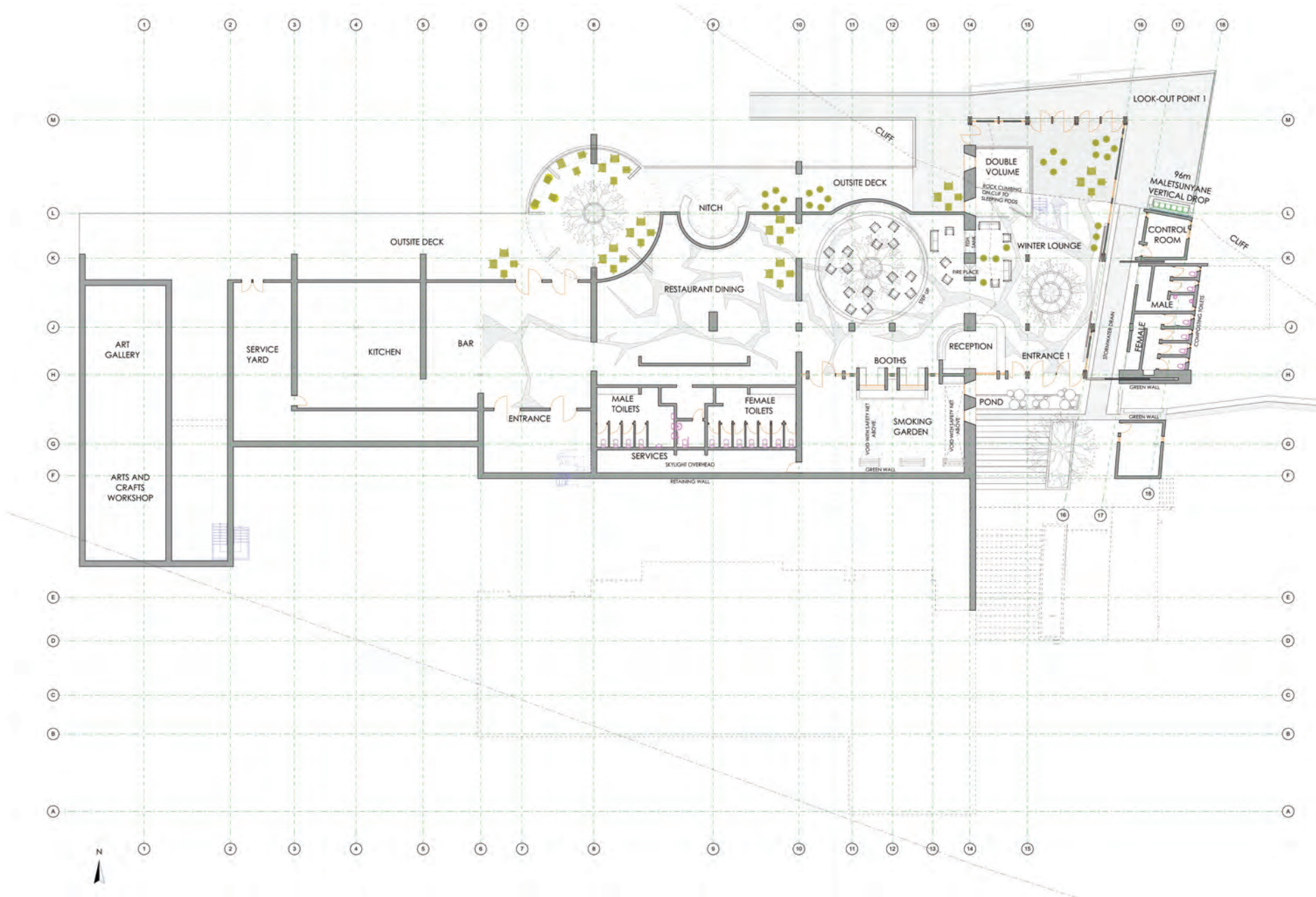
### 8.5. MODEL AND SKETCH DEVELOPMENT FURNITURE AND DETAIL DESIGN





# CAD EXPLORATION 2

## 08 - DESIGN DEVELOPMENT



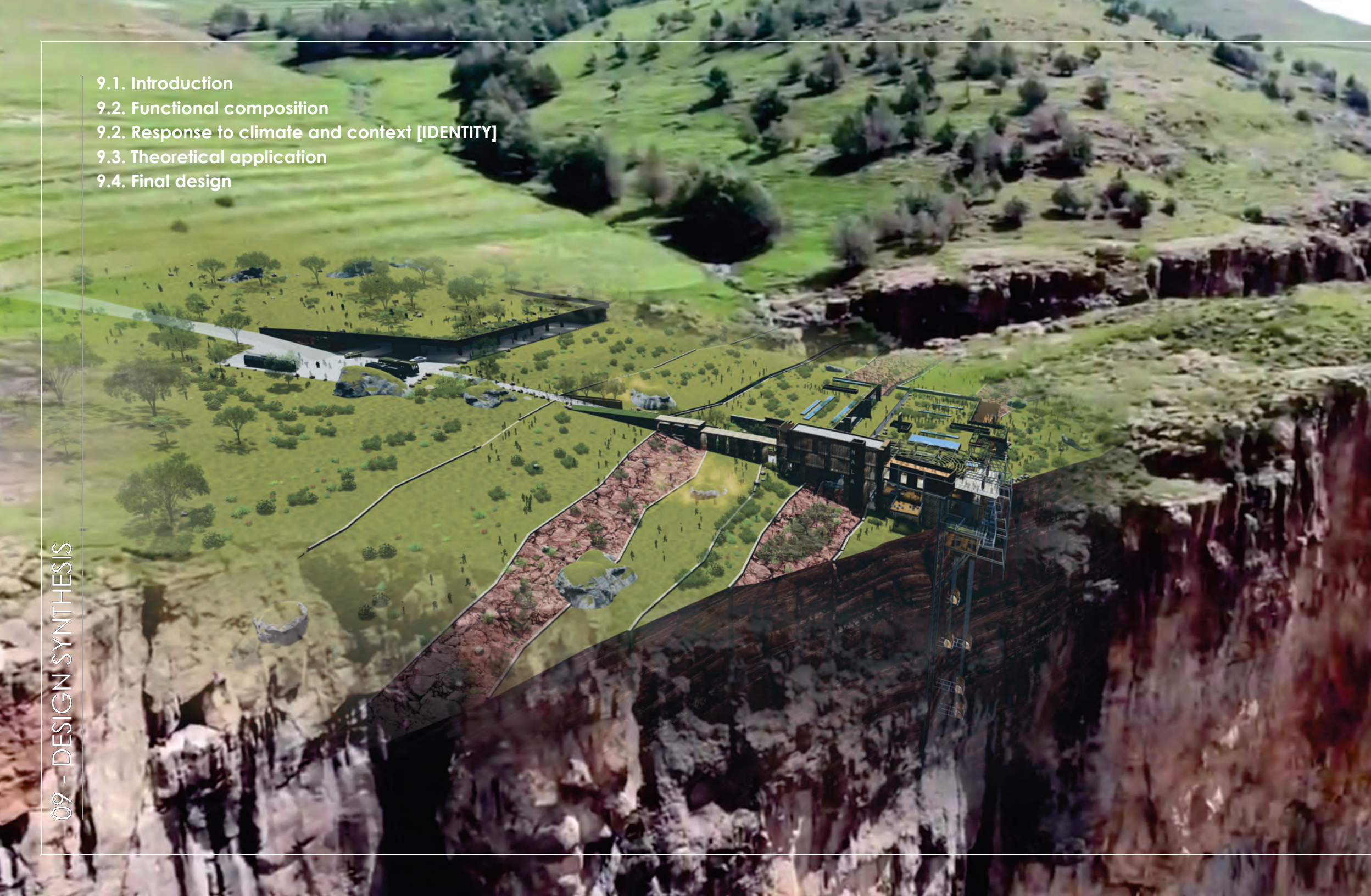


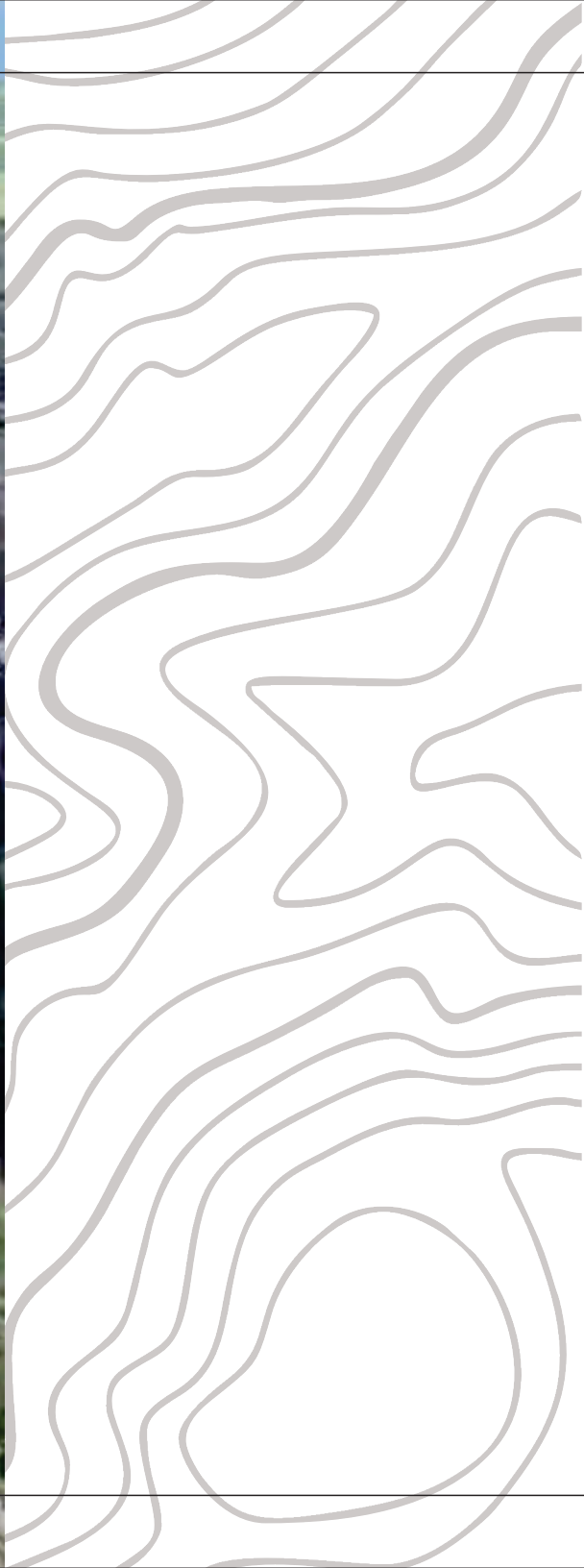


## DESIGN TOOLS AND REFERENCES

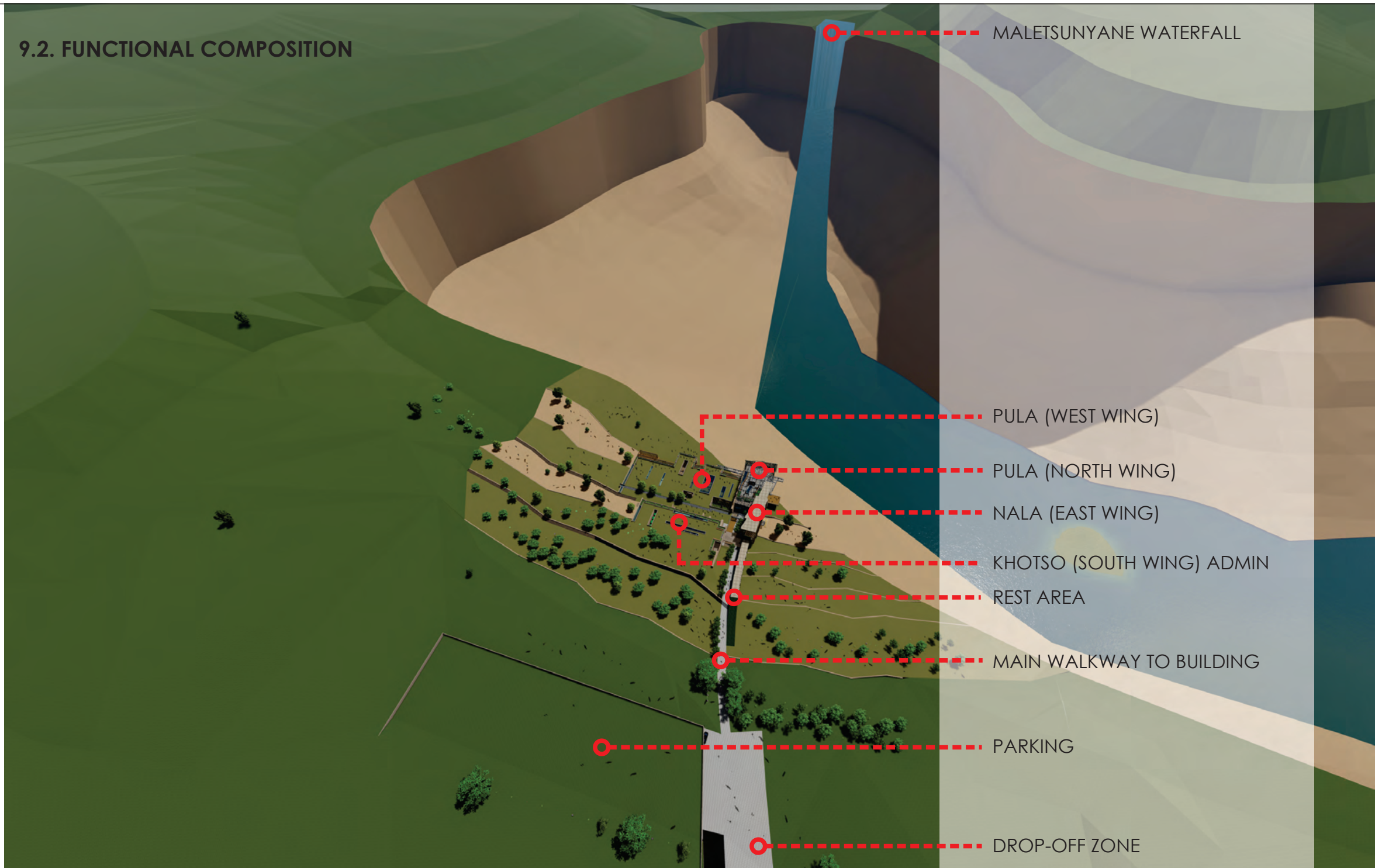
| TOOLS  | APPRECIATION CENTRE   |
|--|---|
| FIRST YEAR   | APPLICATION   |
| <b>HUT BUILDING:</b> <ul style="list-style-type: none"> <li>• Human scale</li> <li>• Earth construction</li> <li>• Genius loci</li> </ul> <p>DESIGN PRINCIPLES: PATTERN, Hierarchy, Datum, Transformation, Rhythm, Order</p>   | <ul style="list-style-type: none"> <li>• Focus on human scale through sleeping pods (hanging and in the big wall)</li> <li>• Using natural building materials found on site such as rocks, soil, sticks and wood</li> <li>• PATTERN, Hierarchy, Datum, Transformation, Rhythm, Order are all considered and used within the design process</li> <li>• The theoretical notion of spirit of place, plays a significant role within the designing of the centre</li> </ul> |
| SECOND YEAR  |   |
| <b>CULTURAL PAVILLION:</b> <ul style="list-style-type: none"> <li>• Steel construction</li> </ul> <b>TEA HOUSE:</b> <ul style="list-style-type: none"> <li>• Steel construction &amp; inspiration</li> </ul>   | <ul style="list-style-type: none"> <li>• Cantilever steel structure on a cliff</li> </ul>   |
| THIRD YEAR   |   |
| <b>THABA-NCHU PROJECT:</b> <ul style="list-style-type: none"> <li>• Designing public spaces</li> </ul> <b>DETAILING. ARTICULATION</b>  | <ul style="list-style-type: none"> <li>• How people experience walking towards and through the building. Planning.</li> </ul>   |
| FOURTH YEAR  |   |
| <b>THEORY &amp; ARCHITECTURE</b><br><b>DIALECTIC BEINGS (STUDENT RES PROJECT):</b> <ul style="list-style-type: none"> <li>• Biomimicry</li> </ul> <b>SPEAKING HILL (CAMPUS GALLERY):</b> <ul style="list-style-type: none"> <li>• Rhizome</li> <li>• Embodiment</li> </ul> <b>MINI THESIS (AQUAPONICS CENTRE):</b> <ul style="list-style-type: none"> <li>• Ecofeminism</li> </ul> | <ul style="list-style-type: none"> <li>• Biophilia</li> <li>• Biomorphic architecture</li> <li>• Embodiment</li> </ul>  |

- 9.1. Introduction
- 9.2. Functional composition
- 9.2. Response to climate and context [IDENTITY]
- 9.3. Theoretical application
- 9.4. Final design





## 9.2. FUNCTIONAL COMPOSITION





## 9.2. FUNCTIONAL COMPOSITION



PULA (NORTH WING)  
FIRST FLOOR

NALA (EAST WING)  
GROUND FLOOR

KHOTSO (SOUTH WING)  
GROUND FLOOR

PULA (NORTH WING)  
ROOF TERRACE



NALA (EAST WING)  
FIRST FLOOR

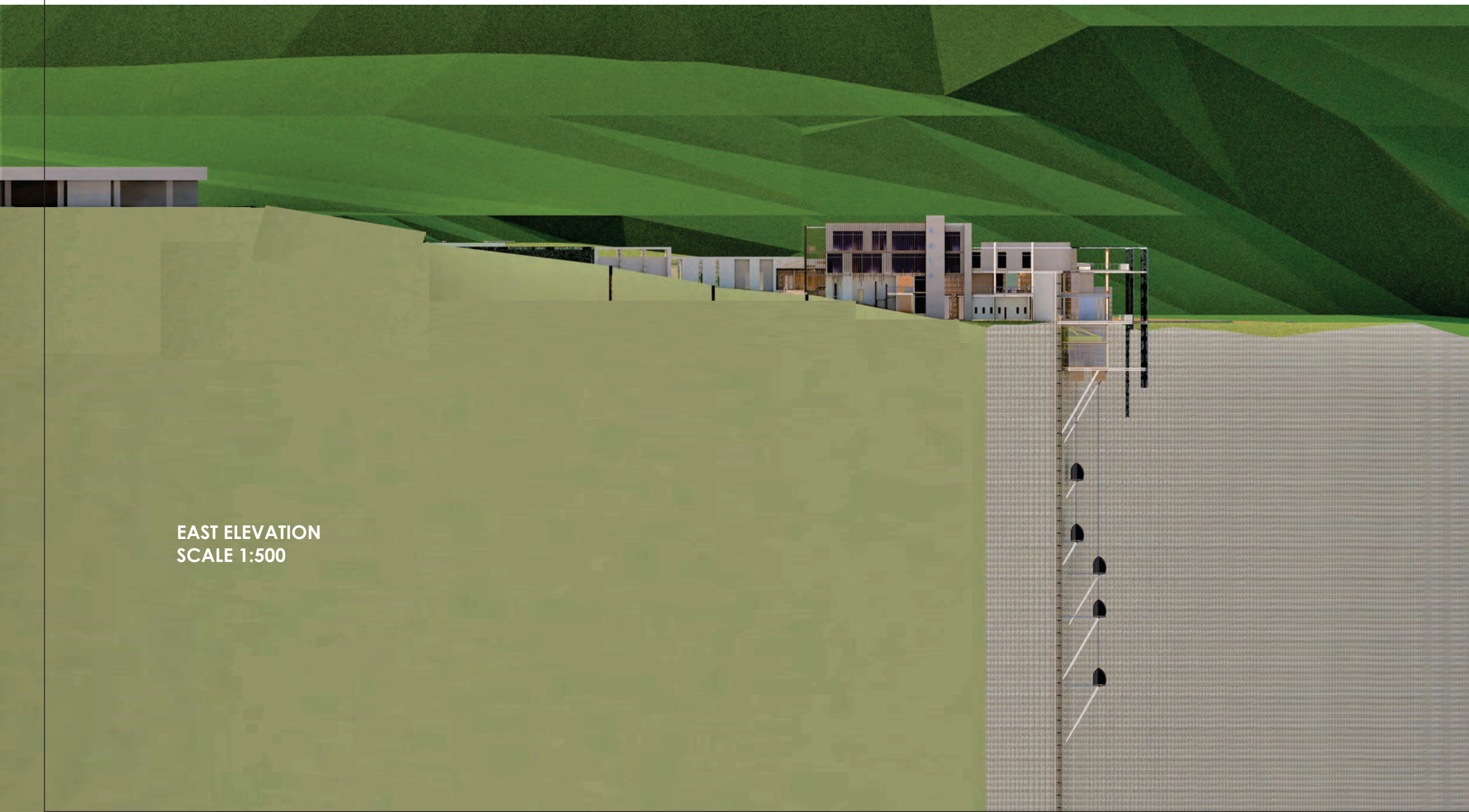


PULA (NORTH WING)



NALA  
(EAST WING)  
SECOND FLOOR

## 9.2. FUNCTIONAL COMPOSITION





SECTION A-A  
SCALE 1:200

## 9.2. FUNCTIONAL COMPOSITION

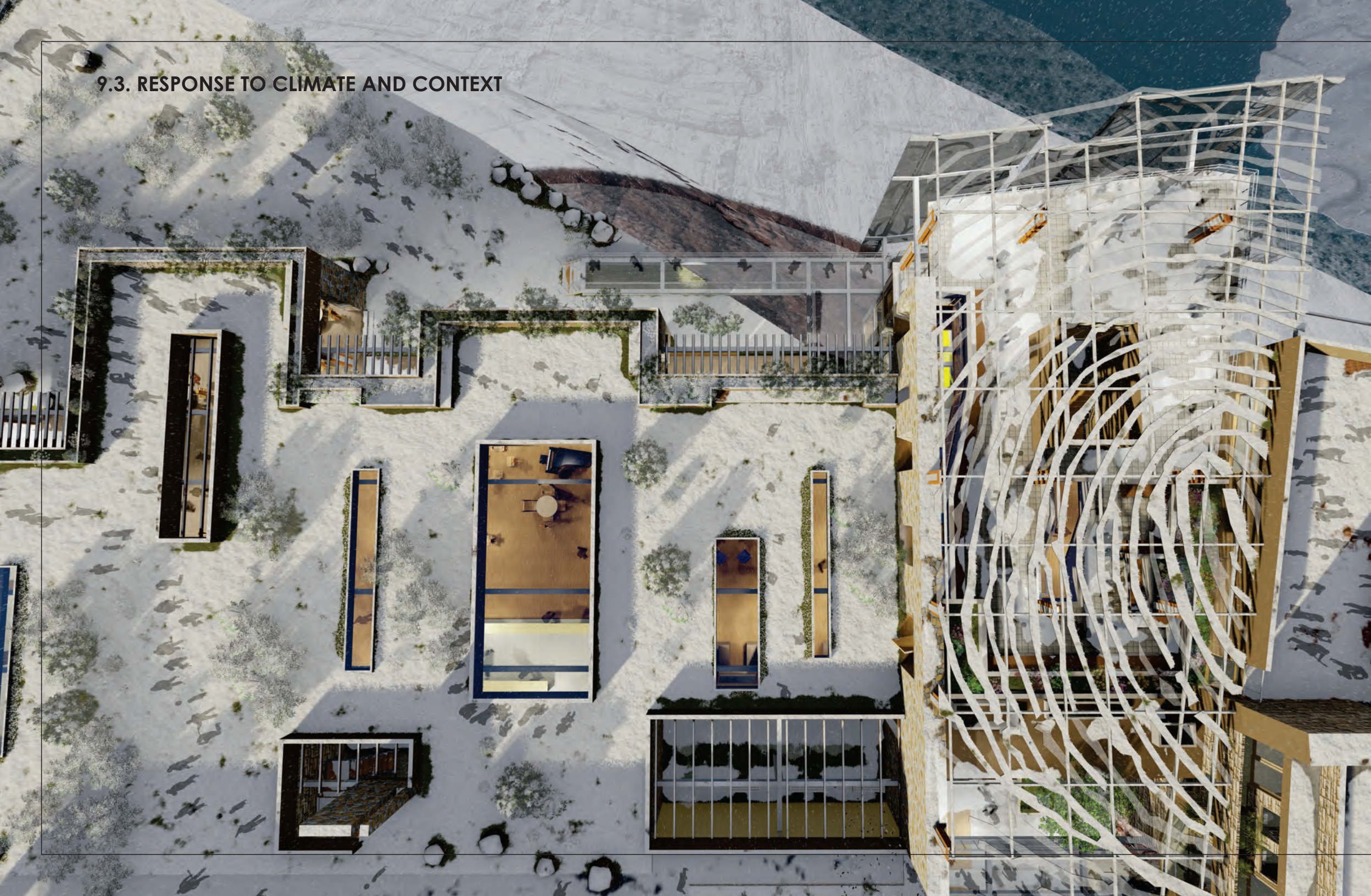


NORTH ELEVATION  
SCALE 1:200



SECTION B-B

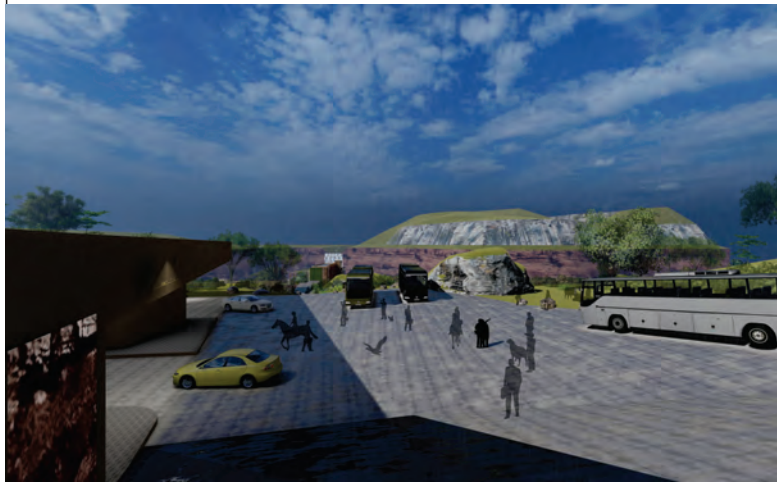
### 9.3. RESPONSE TO CLIMATE AND CONTEXT







Parking



Main approach to building

Main approach to building

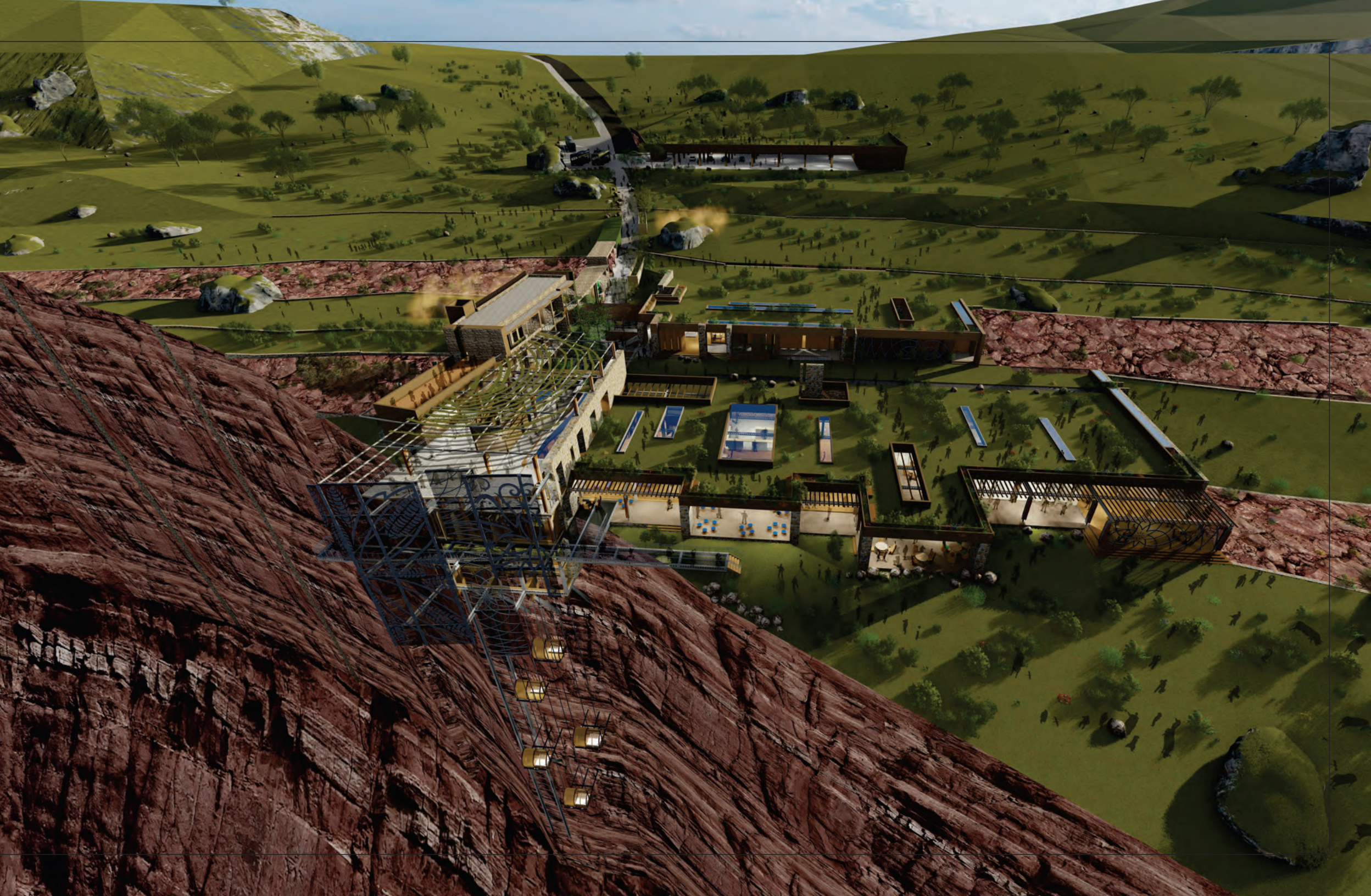


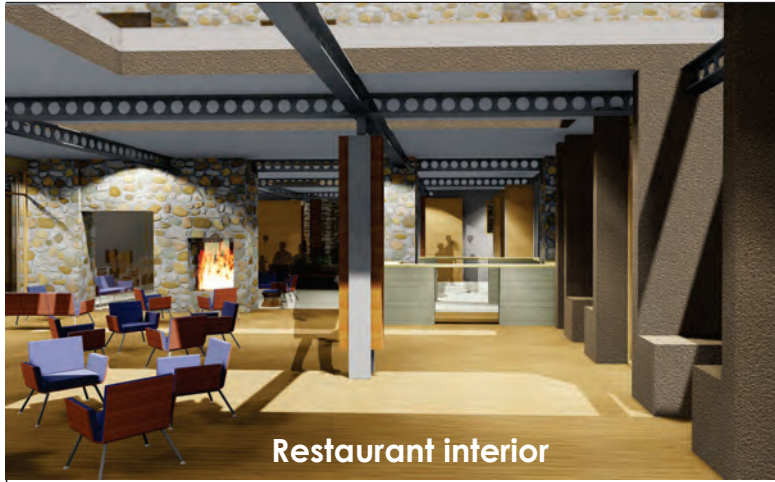


South Wing Entrance









Restaurant interior



Restaurant interior



Outside Deck



Outside Deck

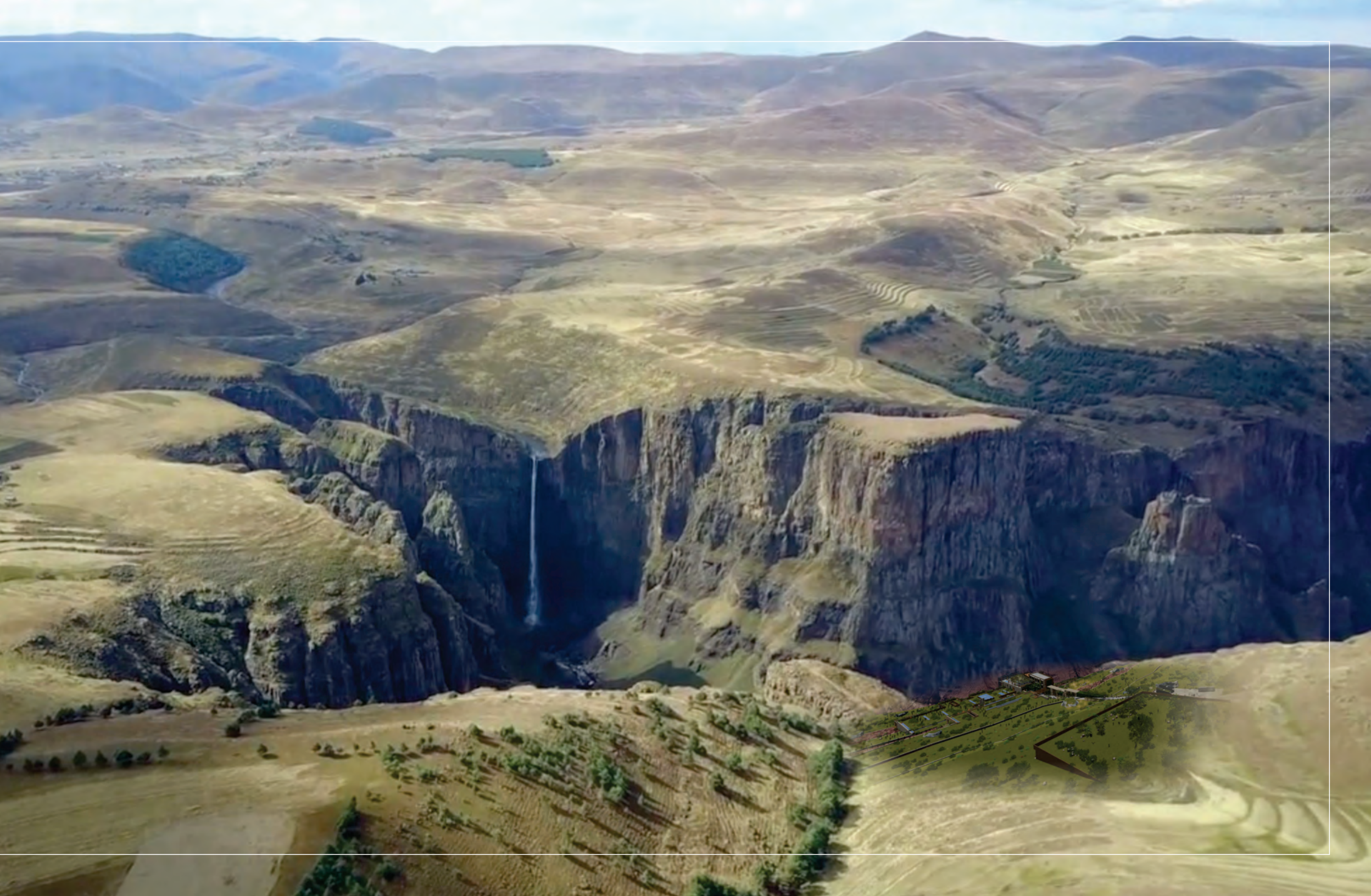


West Wing





9.5. FINAL DESIGN



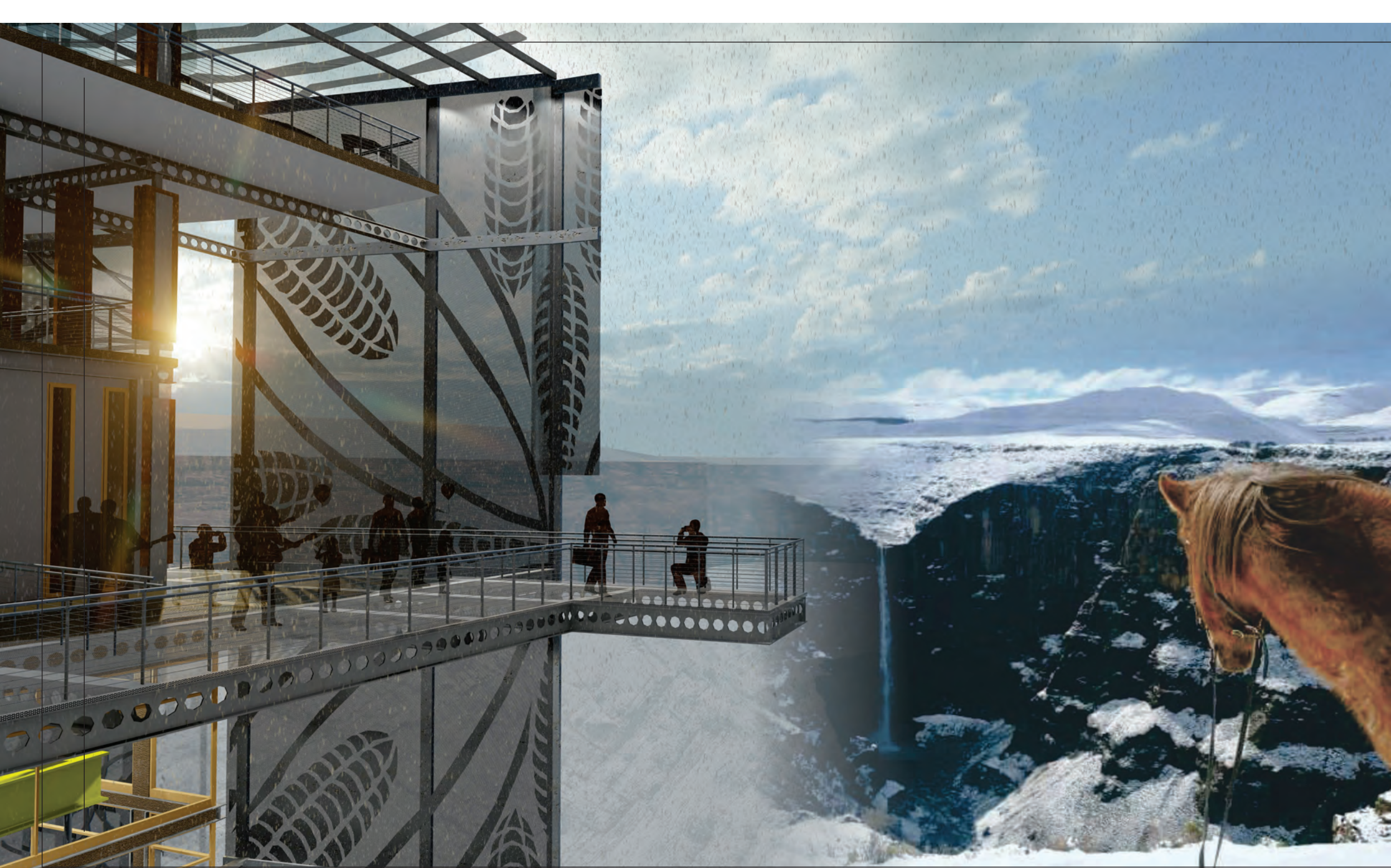




9.5. FINAL DESIGN [in progress]

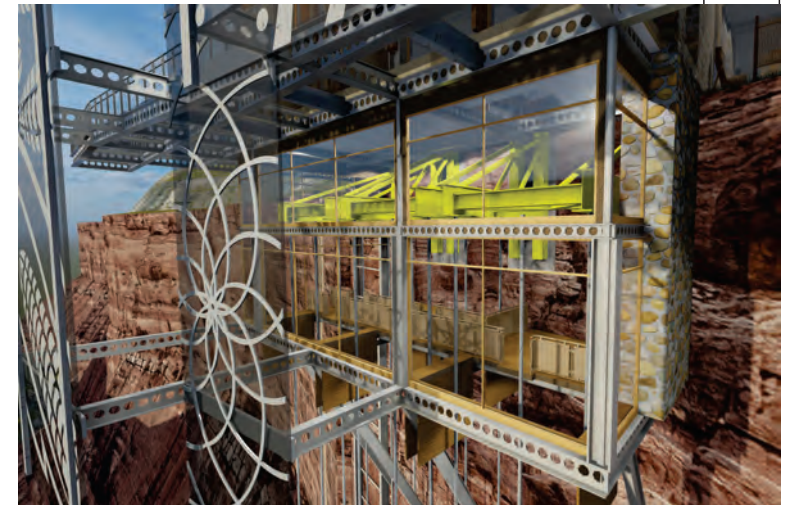
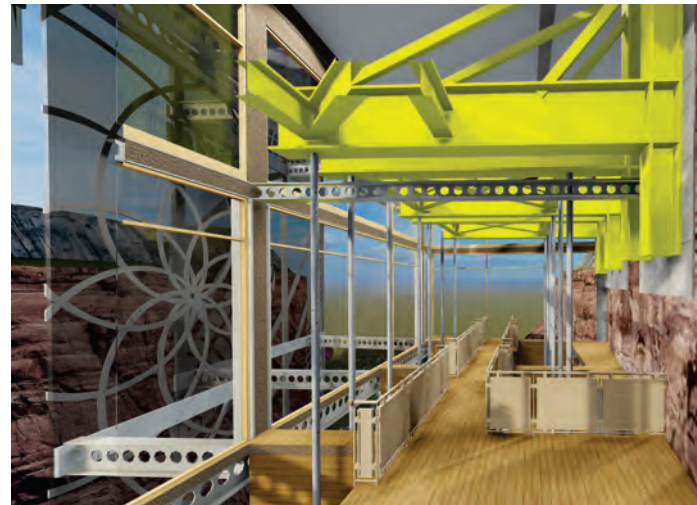
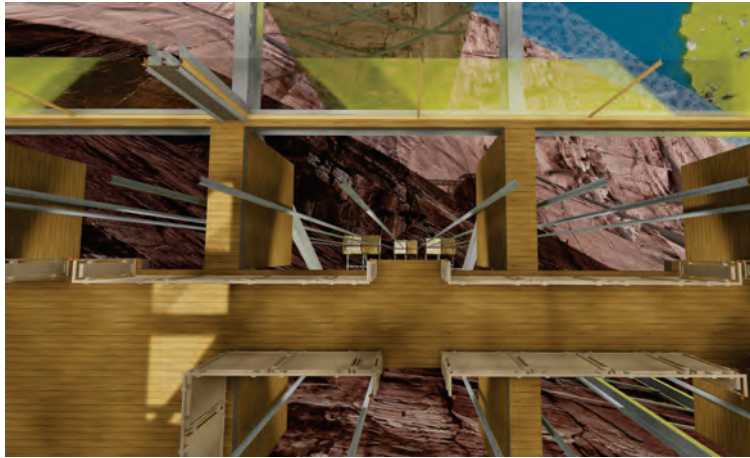


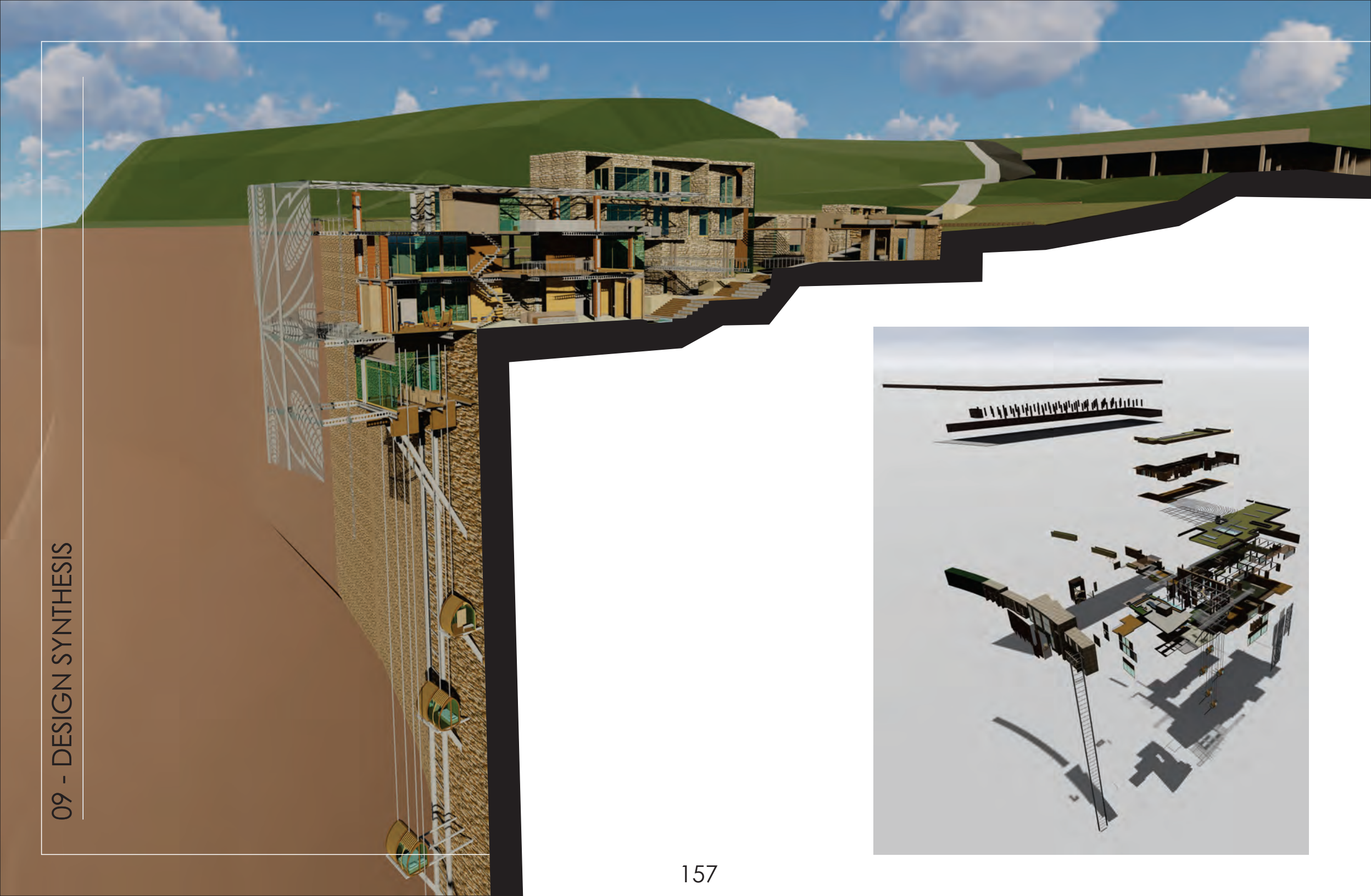


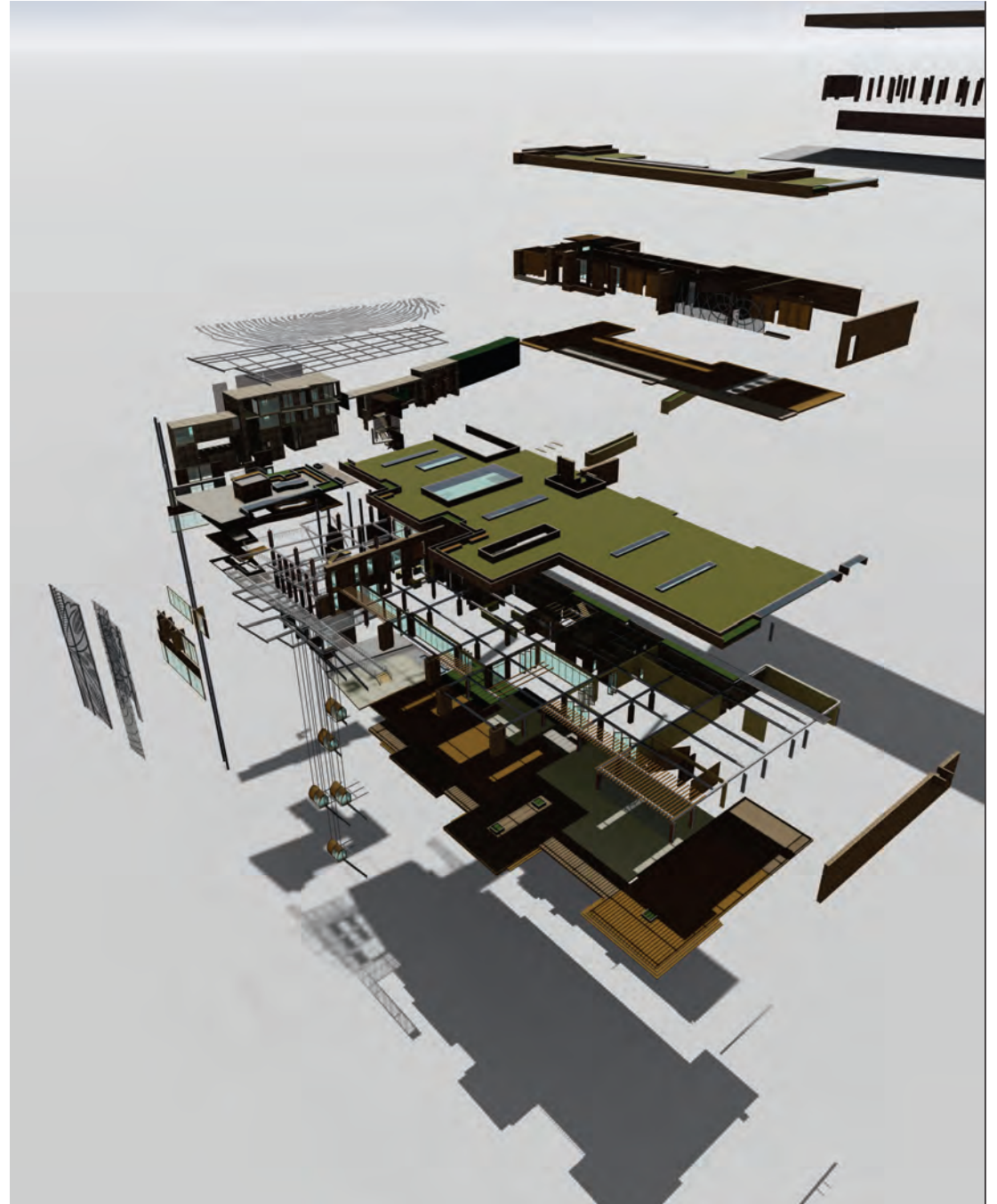
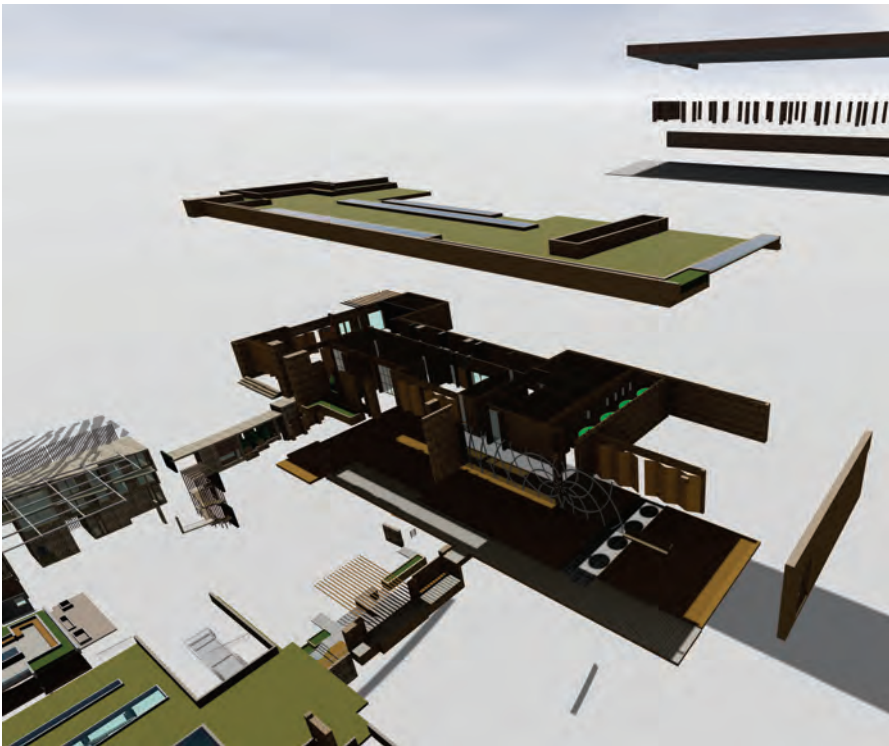
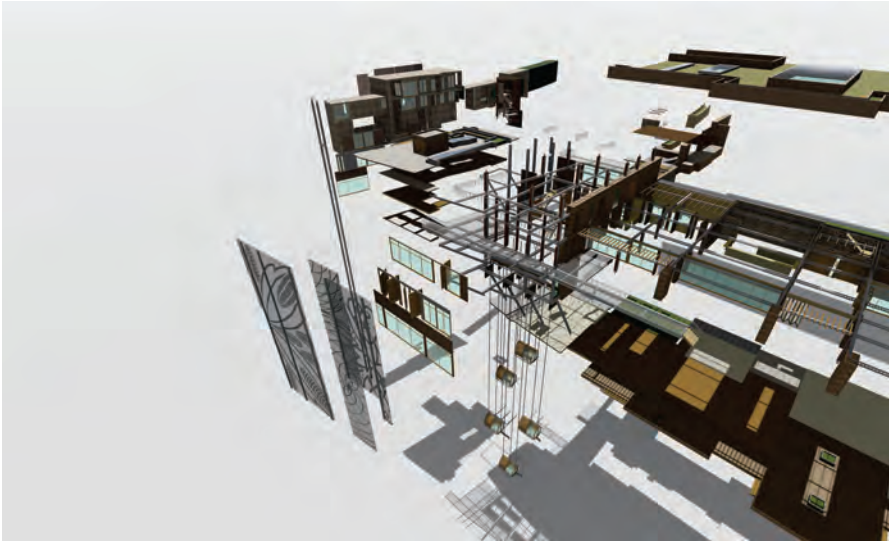


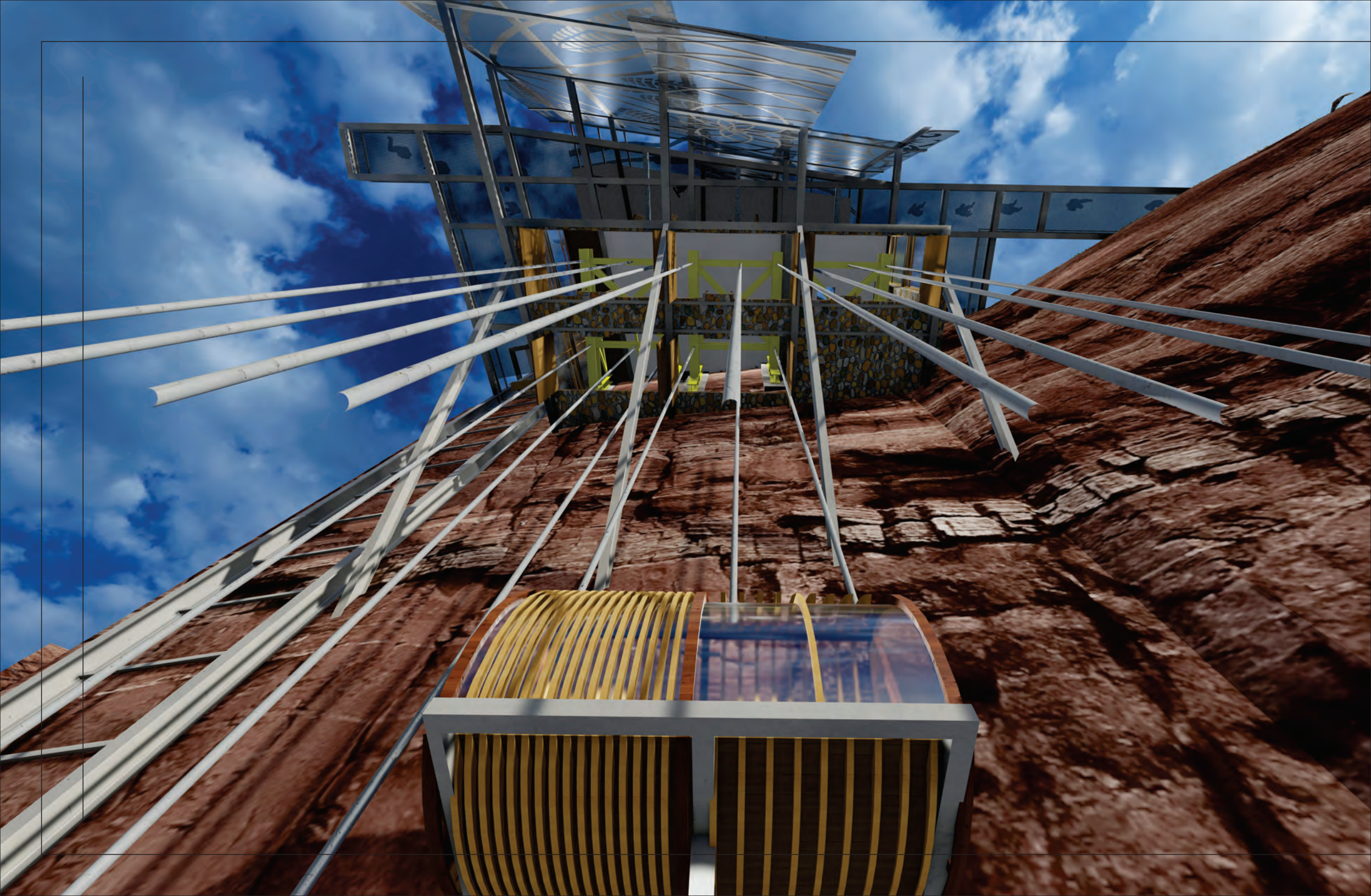


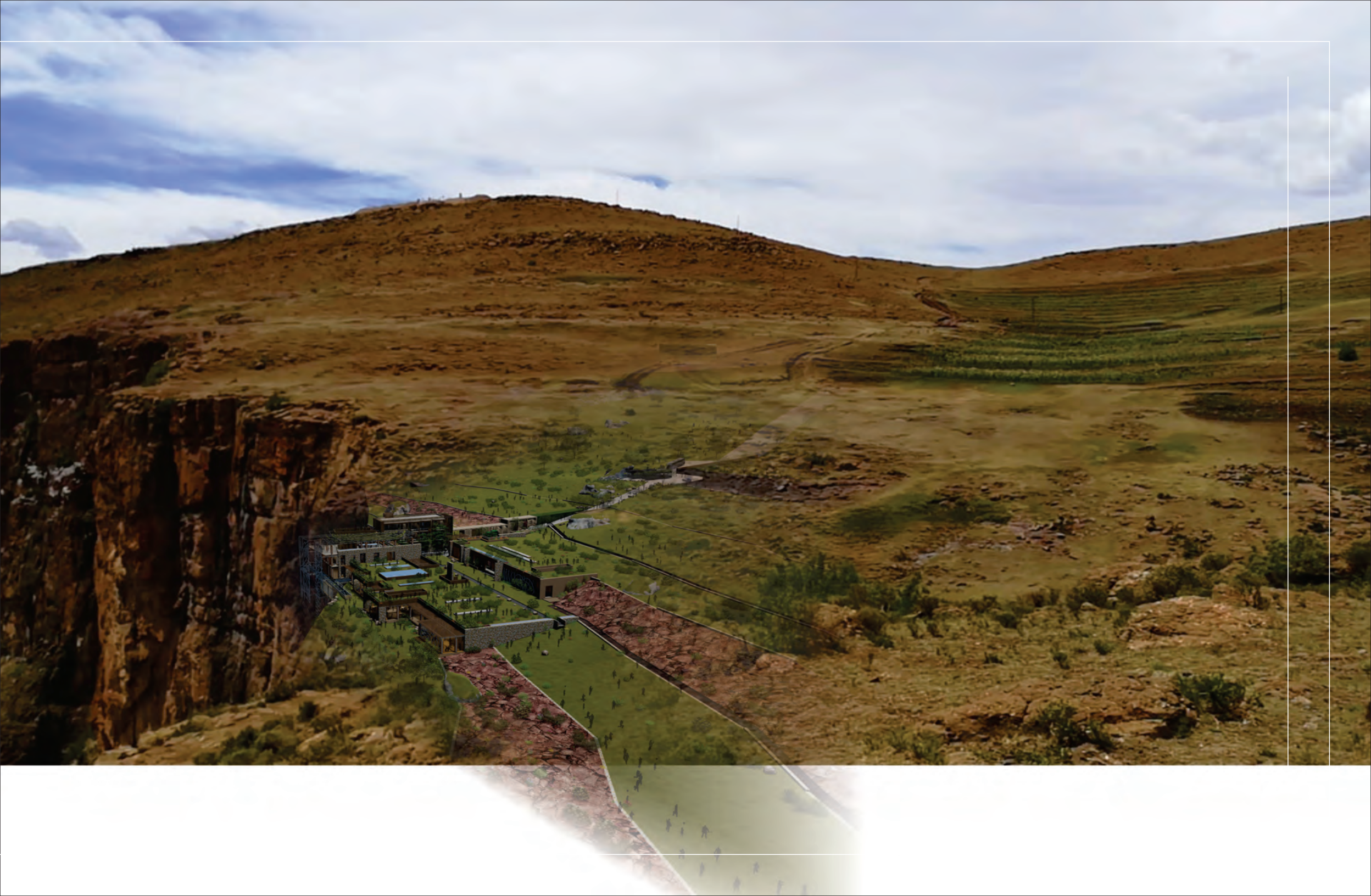


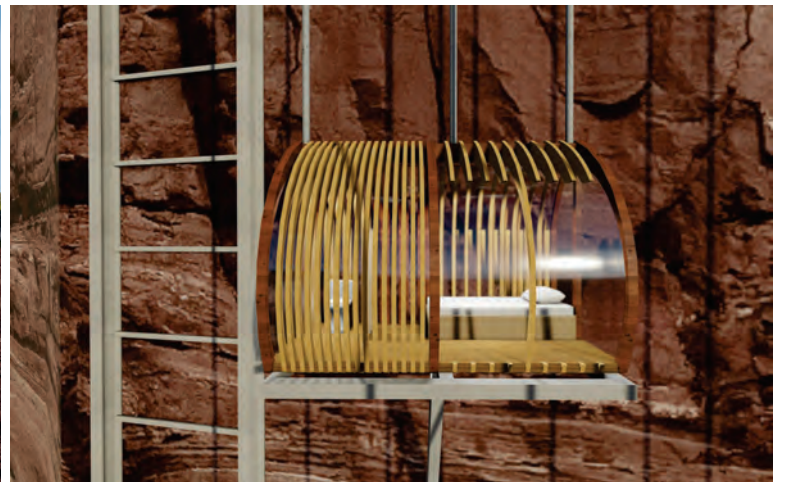
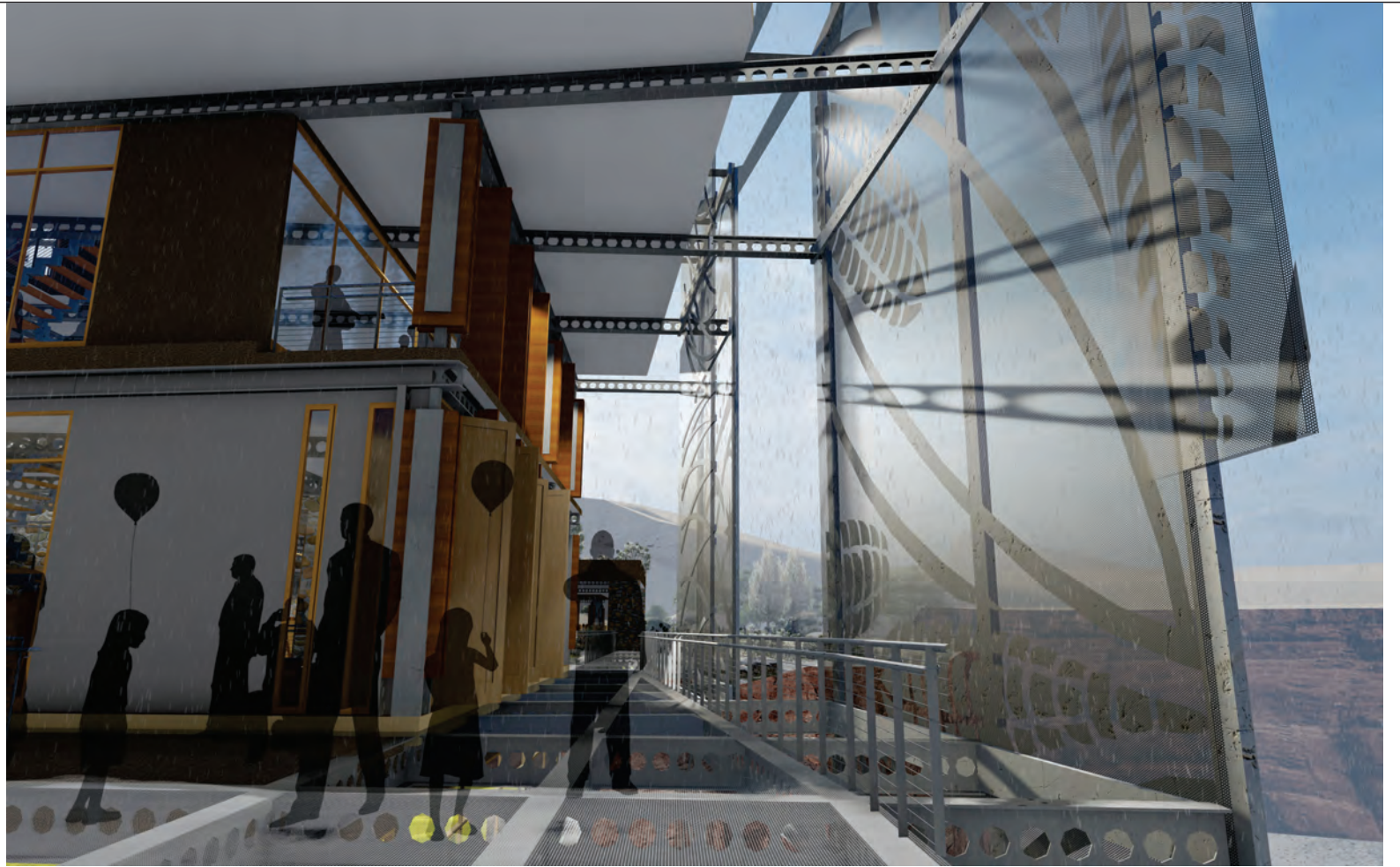
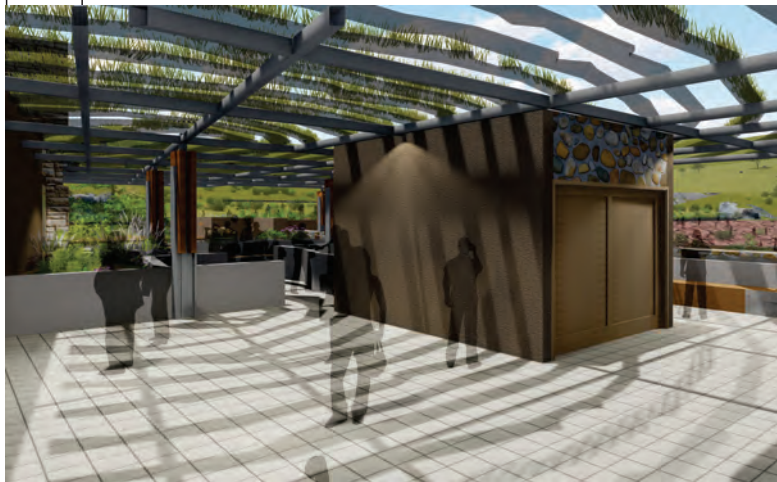
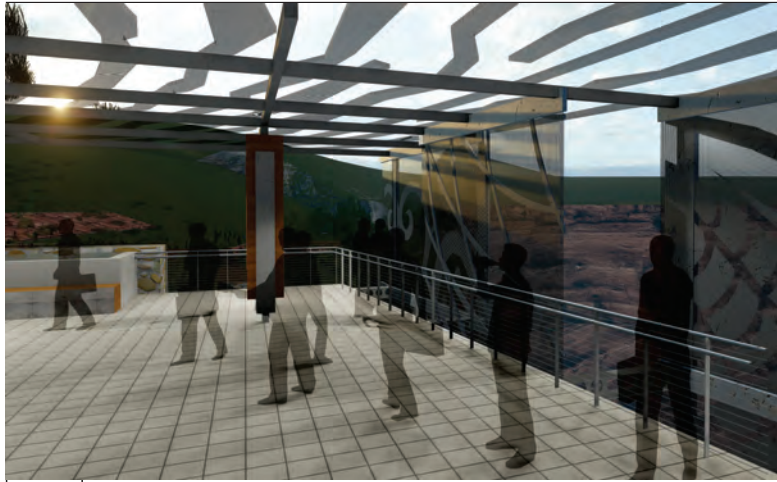










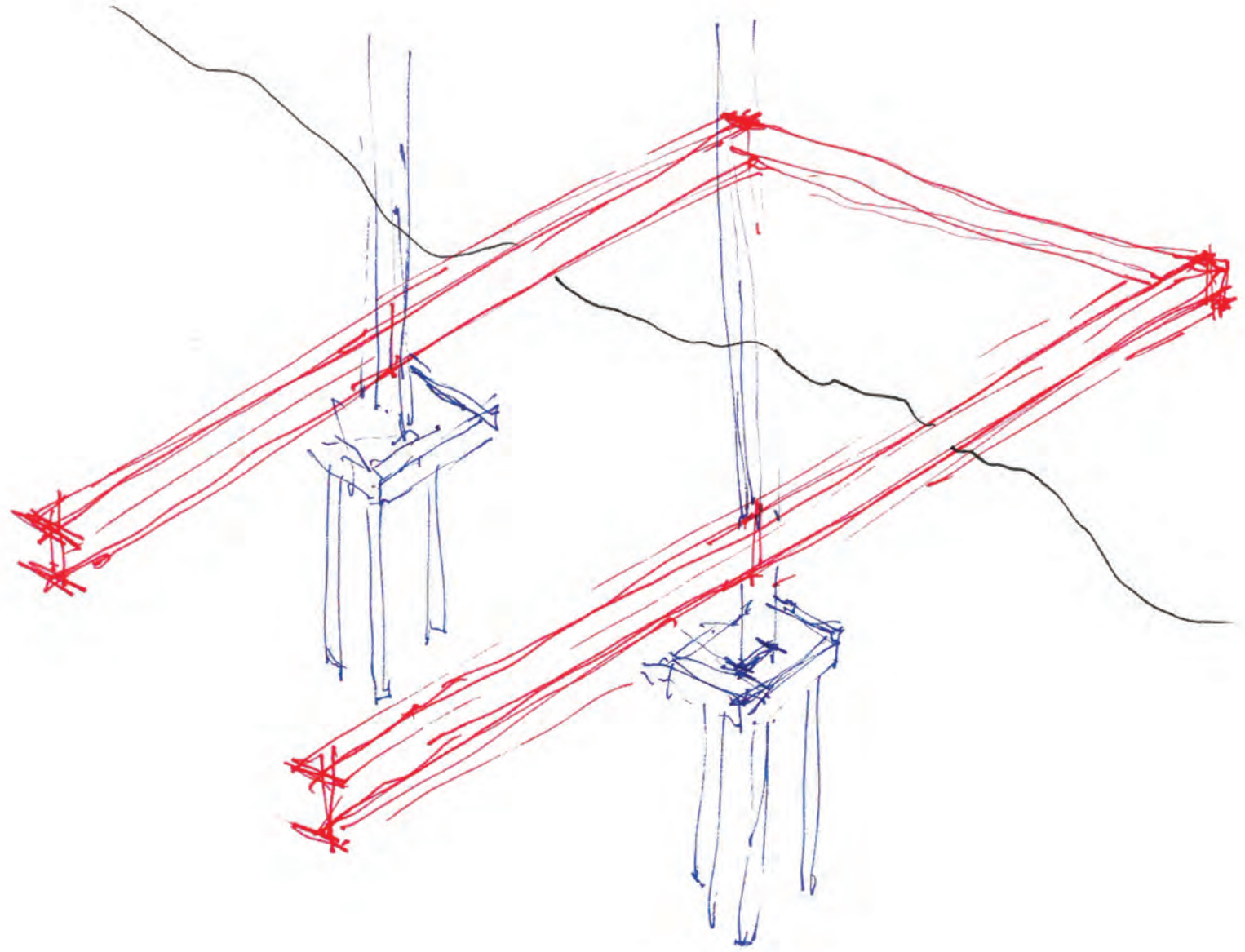


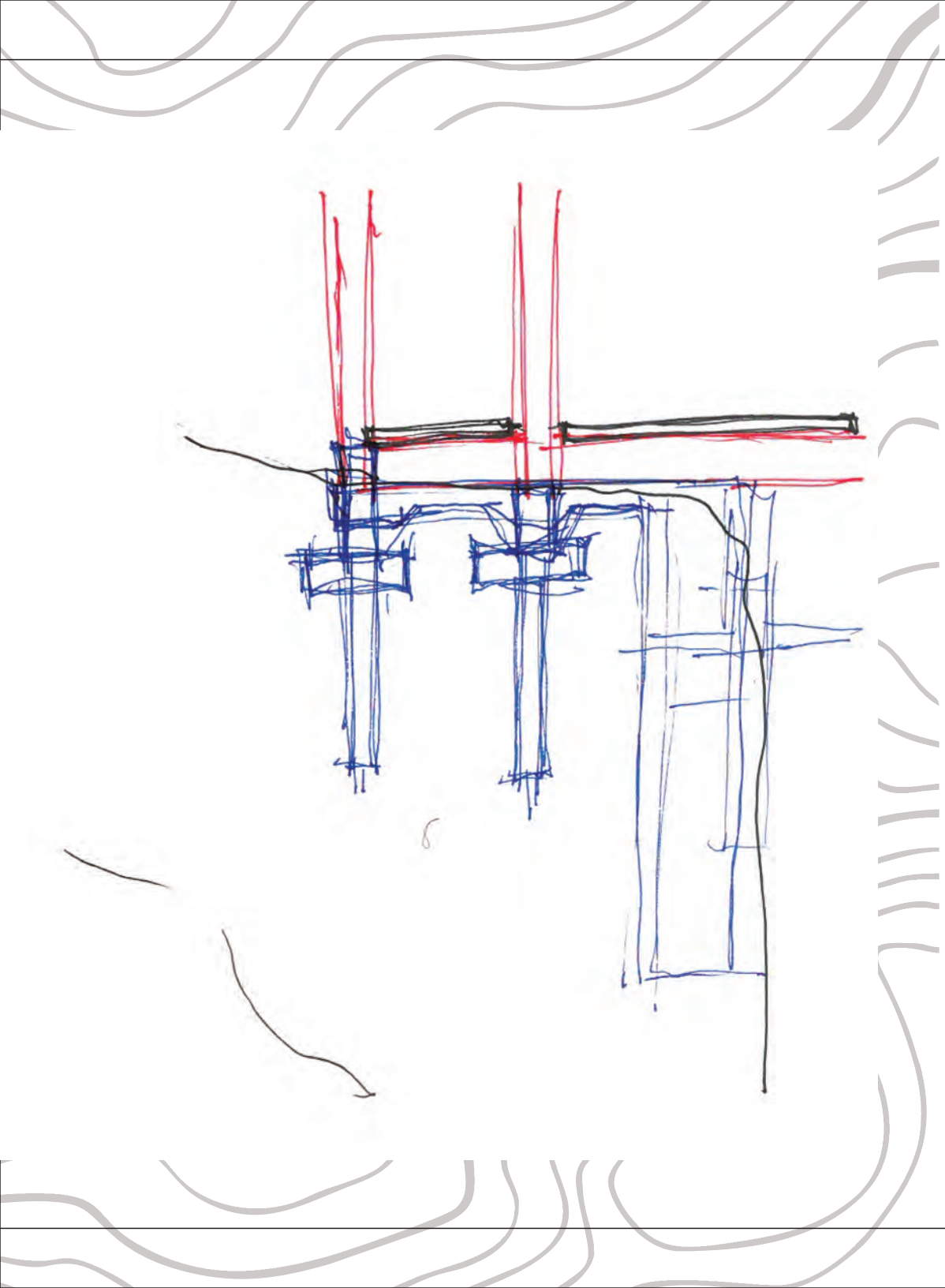


10.1. Introduction

10.2. Technical data and resolution

- Site information and Micro-climate
- Landscape Detailing and Site Planning
- Space and Utility improvement
- Form, Functions and Sustainability
- Materiality
- Circulation
- Structural systems

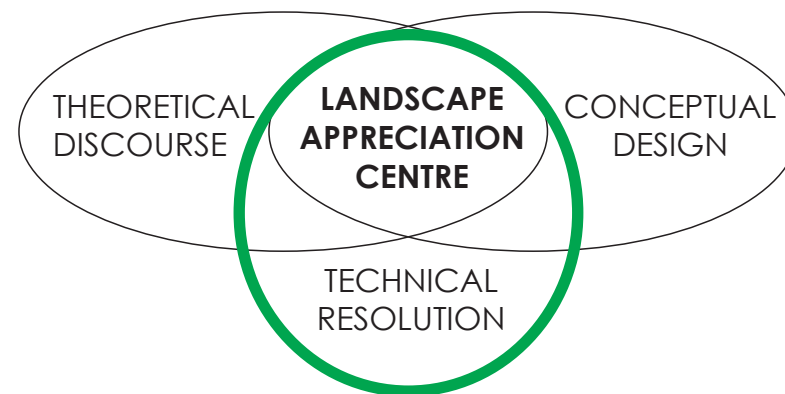




## 10.1. INTRODUCTION

Following the extensive design synthesis of the Landscape Appreciation Centre, this next chapter details the technical information and resolution of the project. The aim of this chapter is to substantiate the conceptual and theoretical design decisions in order to form a comprehensive project.

This report covers the climate conditions of Semonkong and geology of the site, landscape detailing, economic and sustainability imperatives, circulation, universal access, structural systems and then concludes with an investigation of applicable building services.



# 1. SITE INFORMATION AND MICRO-CLIMATE

## Micro-Climate

The general climate in Maseru and Semonkong is warm, temperate and mild (climate-data.org, 2019).

- The solid red line in figure .... indicates the mean daily maximum temperature for every month for Semonkong, while the mean daily minimum is indicated by the solid blue line.
- The dashed red and blue lines indicate hot and cold nights of each month of the past 30 years respectively (meteoblue, 2019: online)

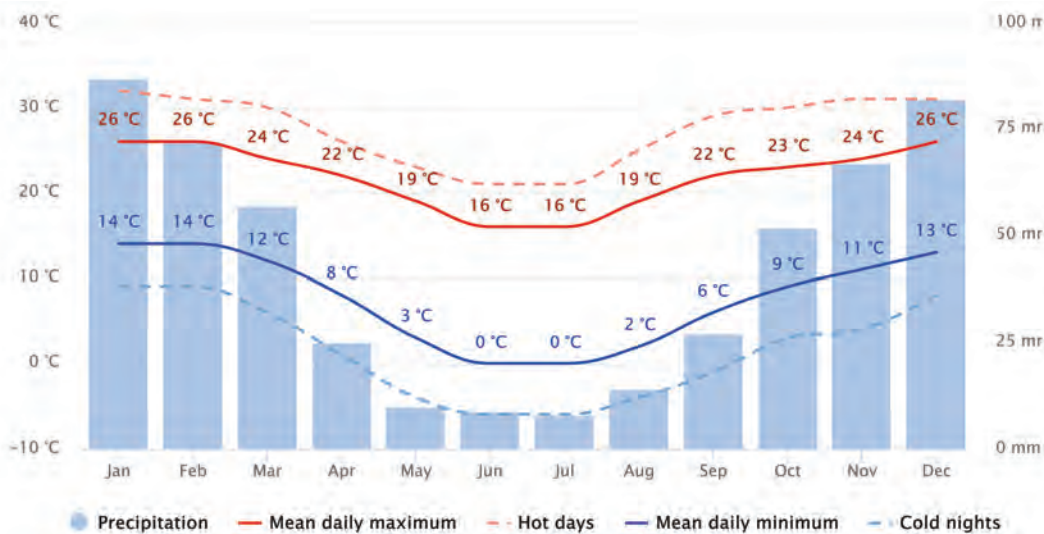


Fig. .... Average precipitation and temperatures (meteoblue, 2019)

- Fig. .... indicates the number of sunny, partly cloudy, overcast and precipitation days monthly.
- Days with more than 80% cloud cover are regarded as overcast, 80-20% cloud cover as partly cloudy and with less than 20% as sunny.

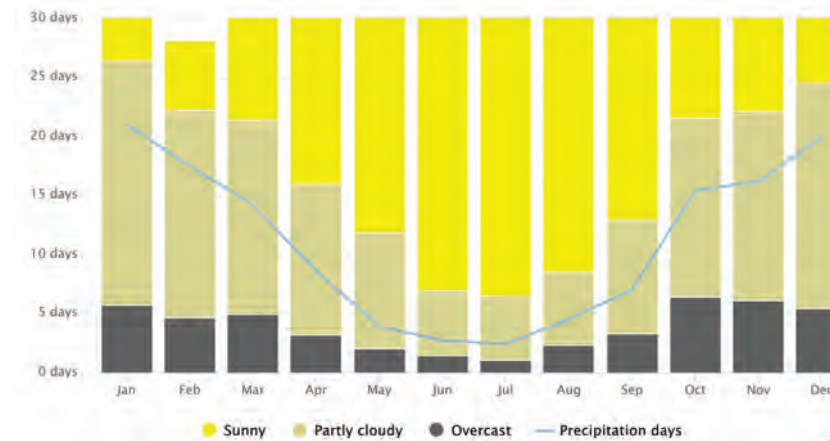


Fig. ... Sunny, partly cloudy and precipitation days (meteoblue, 2019)

The diagram below shows how many days in a month reach certain temperatures.

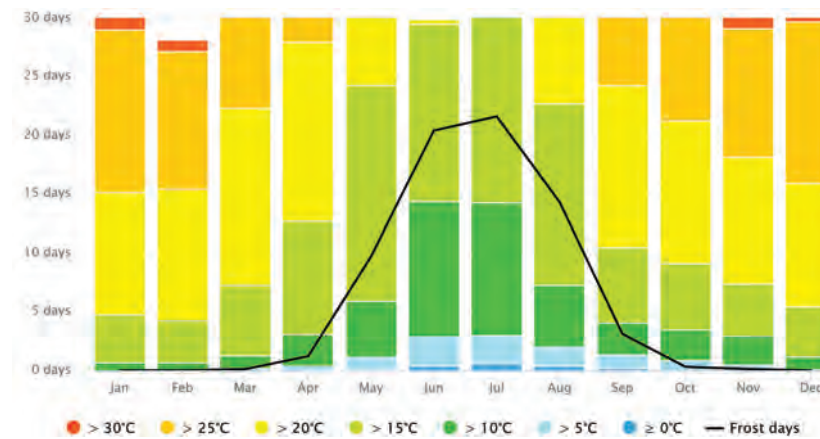


Fig. ... Maximum temperature diagram for Semonkong (meteoblue, 2019)

Fig .... is a precipitation diagram for Semonkong which indicates how many days per month, certain precipitation amounts are reached.

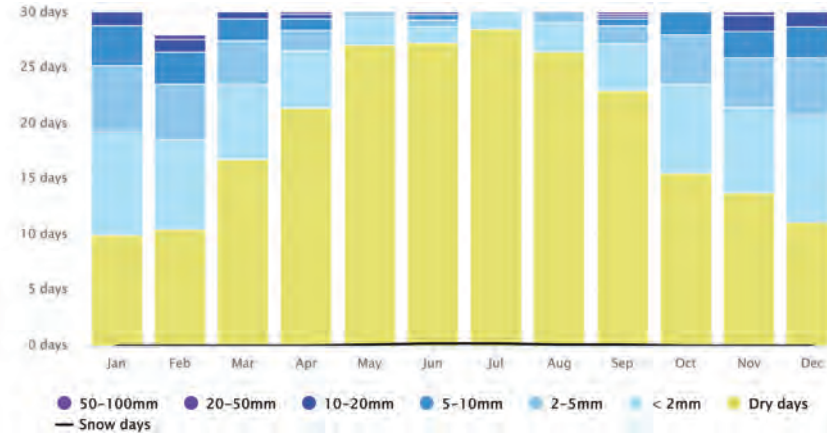


Fig. ...  
Precipitation amounts (meteoblue, 2019)

The following is a wind speed diagram for Semonkong and indicates days per month in which certain speeds are reached.

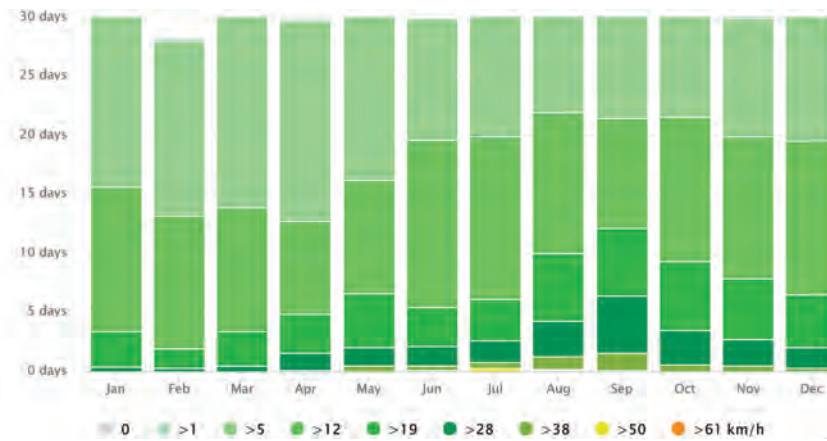


Fig. ...  
Wind speed (meteoblue, 2019)

The wind rose diagram below indicates the directions wind blows in Semonkong and for how many hour per year (meteoblue, 2019: online). This information is important to the technical resolution of the project in that it suggests the use of a screen to protect the building.

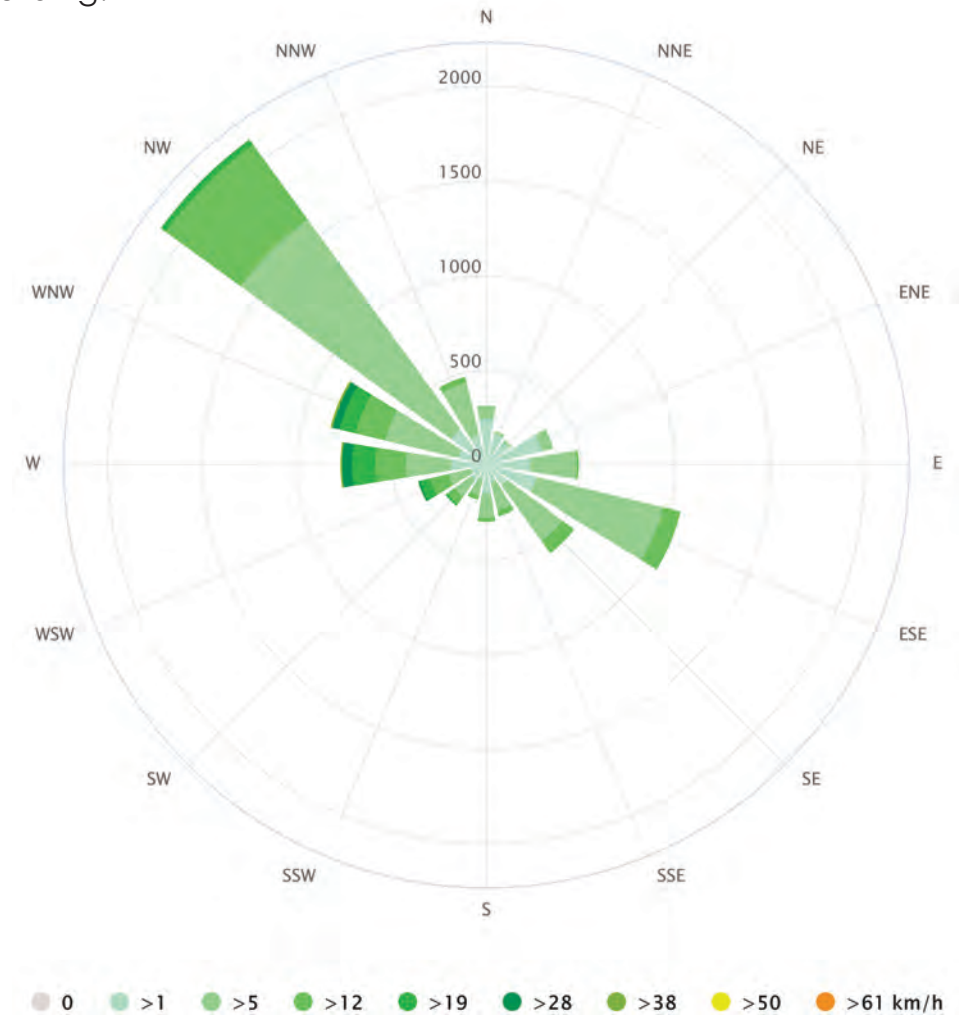


Fig. ...  
Wind rose (meteoblue, 2019)



## 2. LANDSCAPE DETAILING AND SITE PLANNING

### Site Access

The only vehicular access onto the site is from the south-east direction, which also happens to be the highest point of the site. Pedestrian access is available from the west, south and south-east directions.

There is no boundary wall or fence around the site to allow the local community free passage and to continue using the land for grazing of livestock. This is to maintain the current living quality for the locals and to offer a unique experience for visitors.

### Landscape Detailing

Subtle treatment of the landscape is of vital importance for this project. The building is connected with the landscape by a series of gabion walls that protrude by 300mm height and act as retaining walls on the sloping site. These help prevent further soil erosion on the site and visually enhance the experience of the area by mimicking the existing farming patterns as seen in the figures ... and ... below.

Planters are also added around the building to better integrate the architecture and contextual setting.



Fig. ...  
Site map indicating farming patterns that inspired the retaining gabion walls  
(Chief surveyor general, 2018)

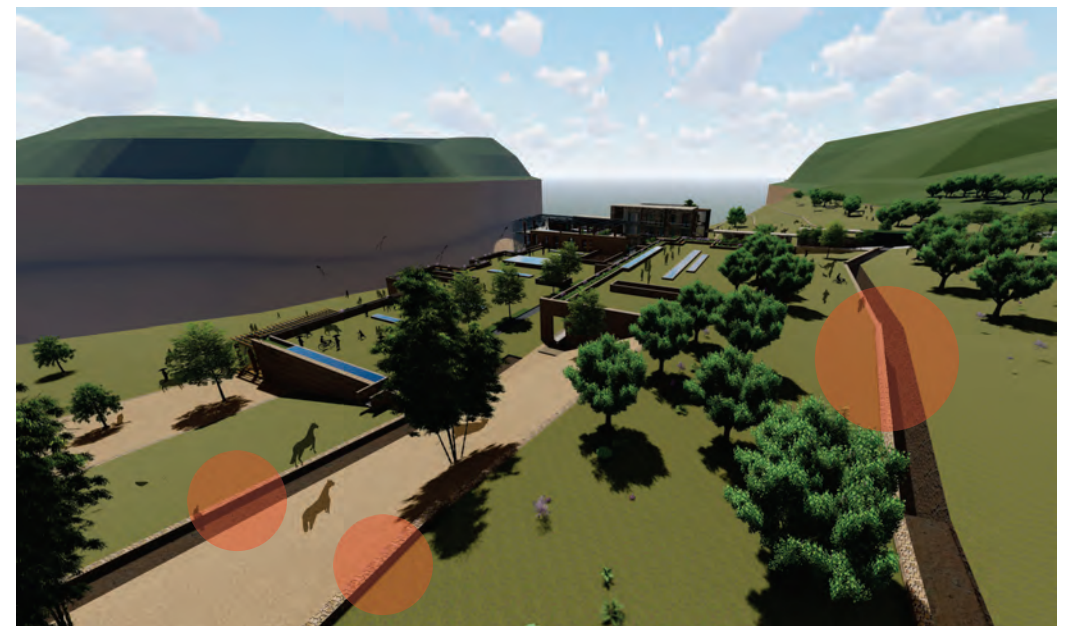


Fig. ...  
Retaining gabion walls detailing the landscape

### 3. SPACE AND UTILITY IMPROVEMENT

#### Moral and Economic Aspects

One of the most important aims of the project is to create jobs and income for the local community. The building will serve the residents of Semonkong in the following ways:

- Offer those who own horses a chance to capitalise on the increase of tourism by providing guides and rides around the site on horseback
- All working staff hired from the community
- The centre provides arts and craft workshops to empower the local community and exhibit the work for sale to tourists in the gallery

The bulk of the site is still used for farming to sustain the centre and feed the community. Vegetables used in the restaurant are also provided from farming on site.

### 4. FORM, FUNCTIONS AND SUSTAINABILITY

#### Form

The general morphology of the building is simple and emphasizes each function. The service functions are merged with the context and hidden with green roofs that read as one with the landscape, while the served spaces protrude out of the earth vertically.

This is to draw visitor's attention to the more prominent parts of the building which are mainly resting facilities. Fenestration is used in vertical strips to give reference to the vertical drop of the Maletsunyane waterfalls. This provides adequate light into the spaces with a rhythm that responds to its environment.

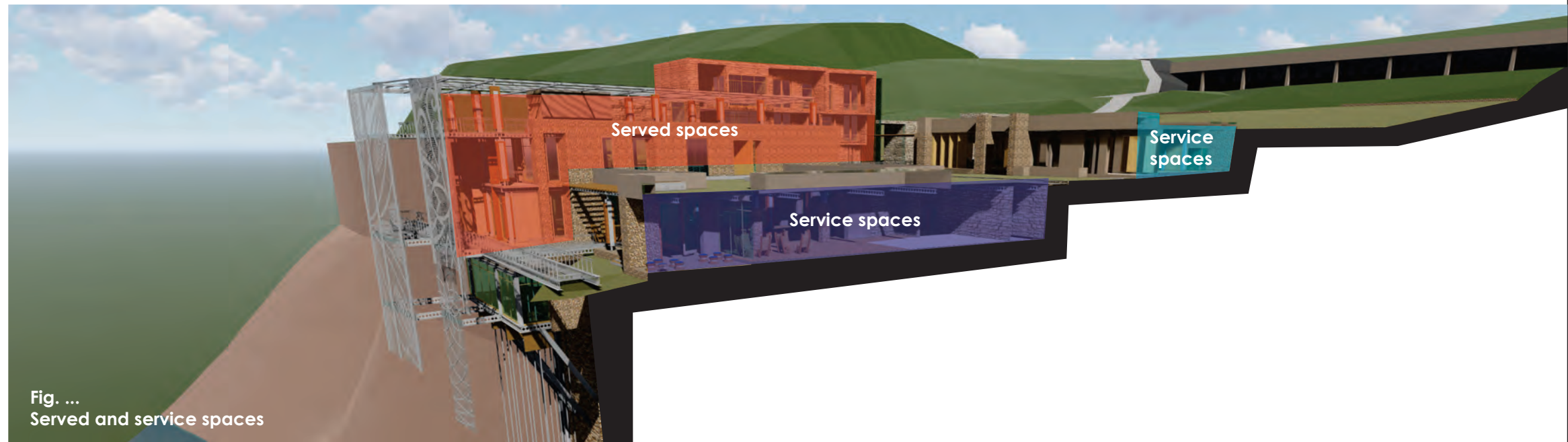


Fig. ...  
Served and service spaces

## Functions

- The Southern wing is the administration block with offices, a boardroom, ablution facilities and an equipment hire shop for visitors that wish to explore the area with bicycles.
- The Western wing houses the exhibition gallery, art and craft workshop, curio shop and restaurant.
- The Northern wing has a winter lounge on the ground and first floors, with a roof garden and terrace accessible for all visitors. This wing also has the sleeping pods on the Lower level floor hanging from the edge of the cliff.
- The Eastern wing has more accommodation facilities, maintenance rooms and storage.

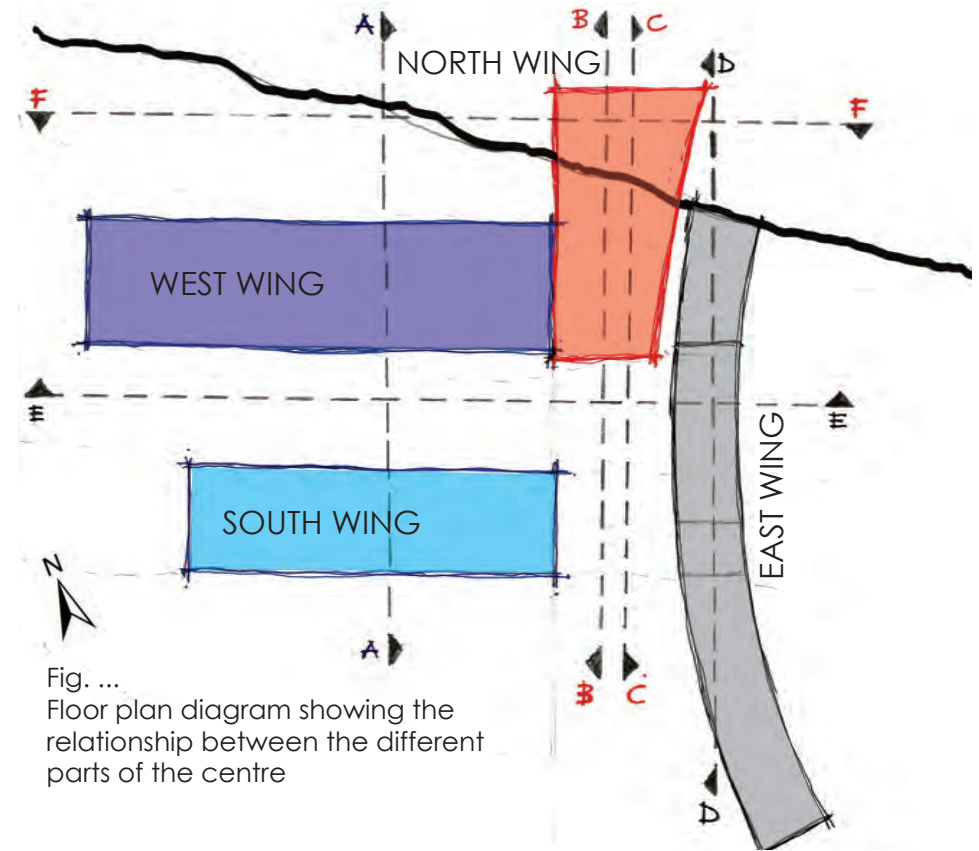


Fig. ...  
Floor plan diagram showing the relationship between the different parts of the centre

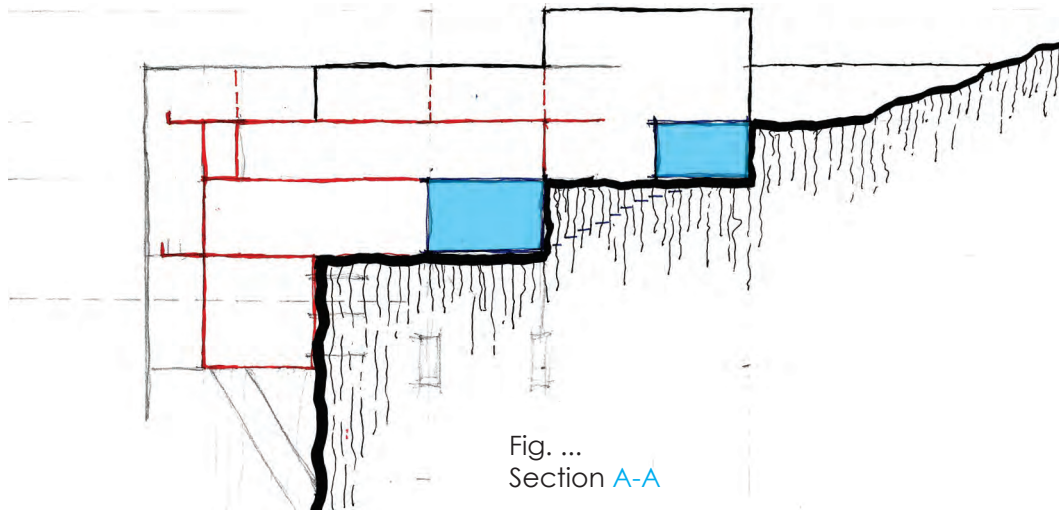


Fig. ...  
Section A-A

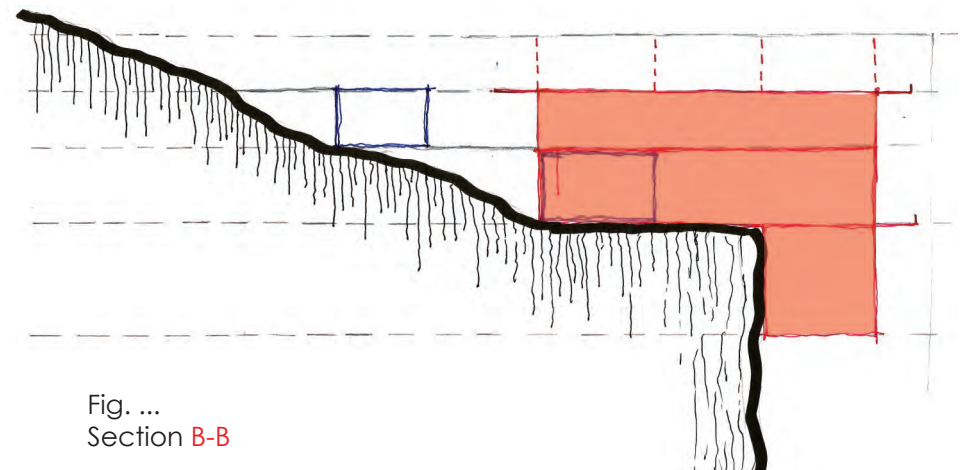


Fig. ...  
Section B-B

|           |         |
|-----------|---------|
| LEVEL 0.5 | 119 000 |
| LEVEL 0.4 | 116 000 |
| LEVEL 0.3 | 113 000 |
| LEVEL 0.2 | 110 000 |
| LEVEL 0.1 | 106 000 |
| LEVEL 0.0 | 100 000 |

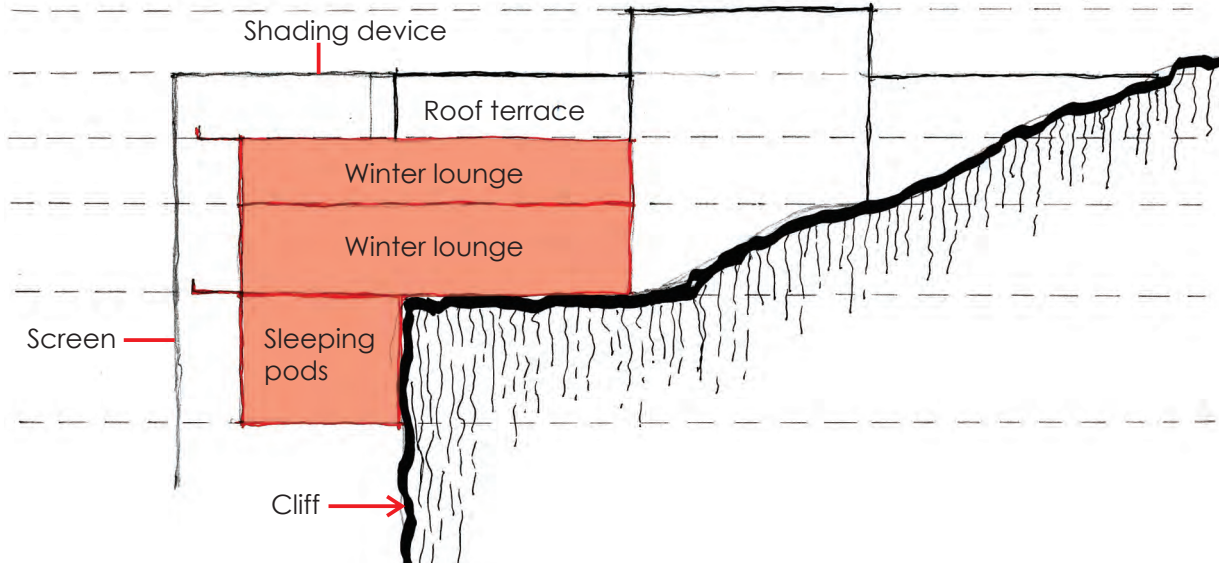


Fig. ...  
Section C-C

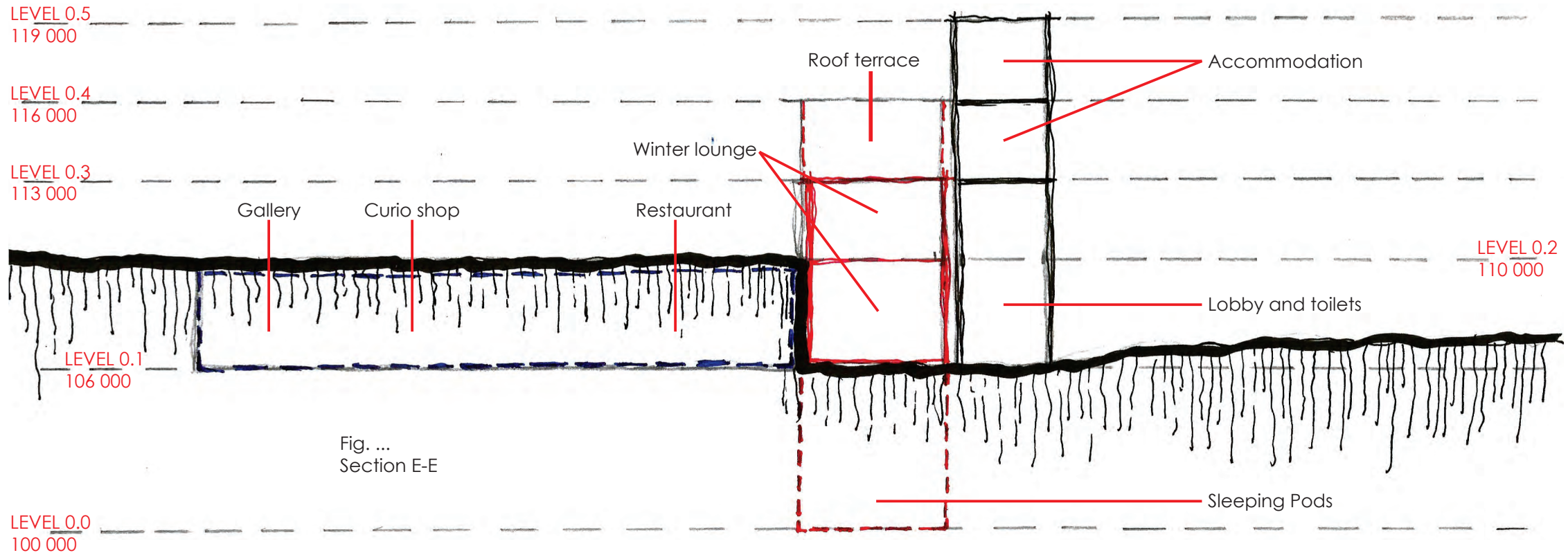


Fig. ...  
Section E-E

Fig. ...  
Section D-D

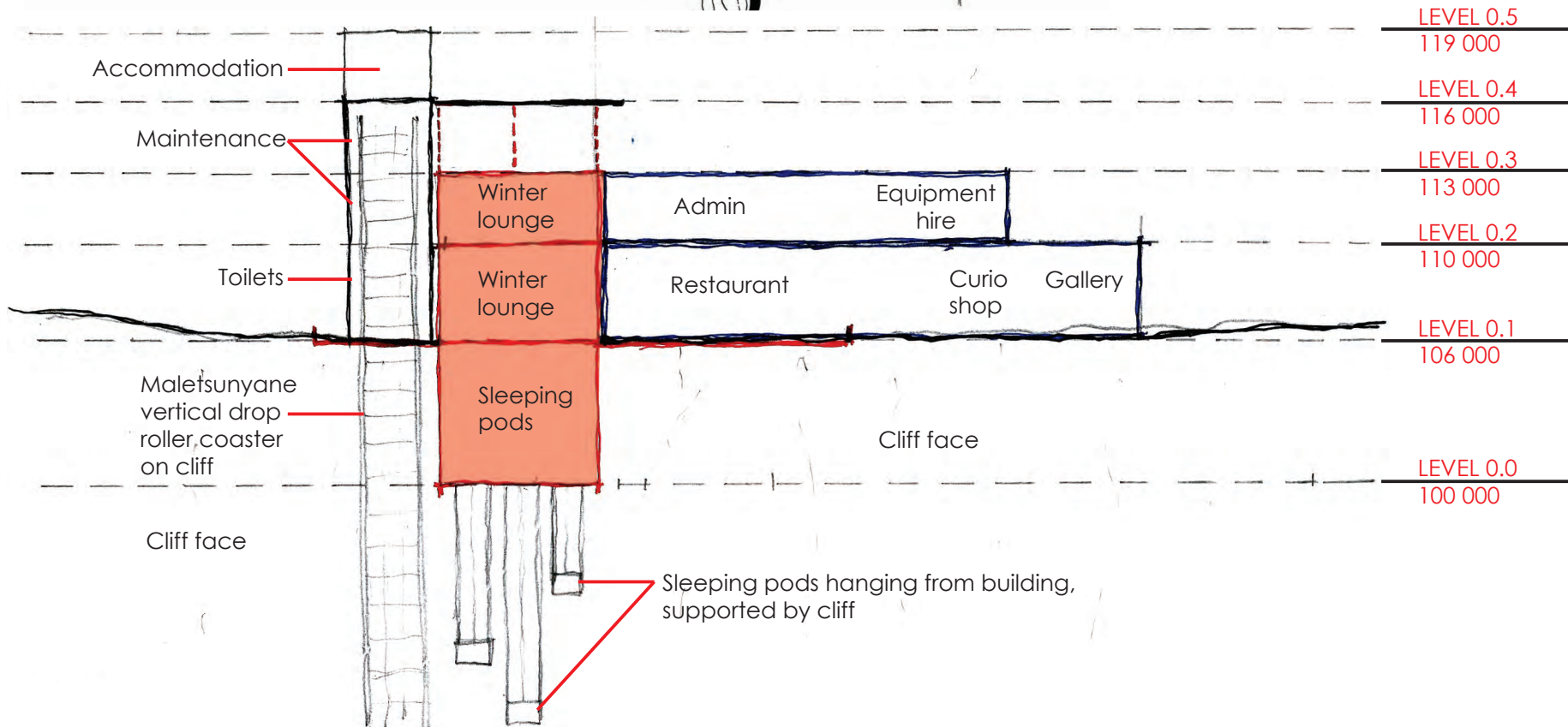
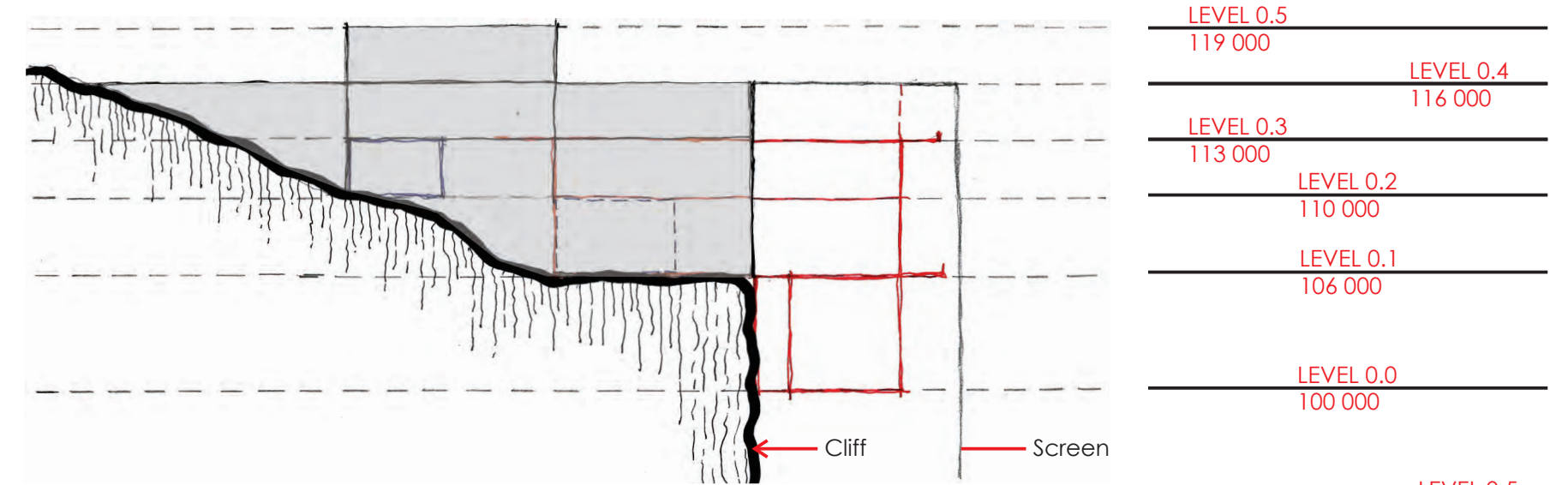


Fig. ...  
Section F-F

## Sustainability

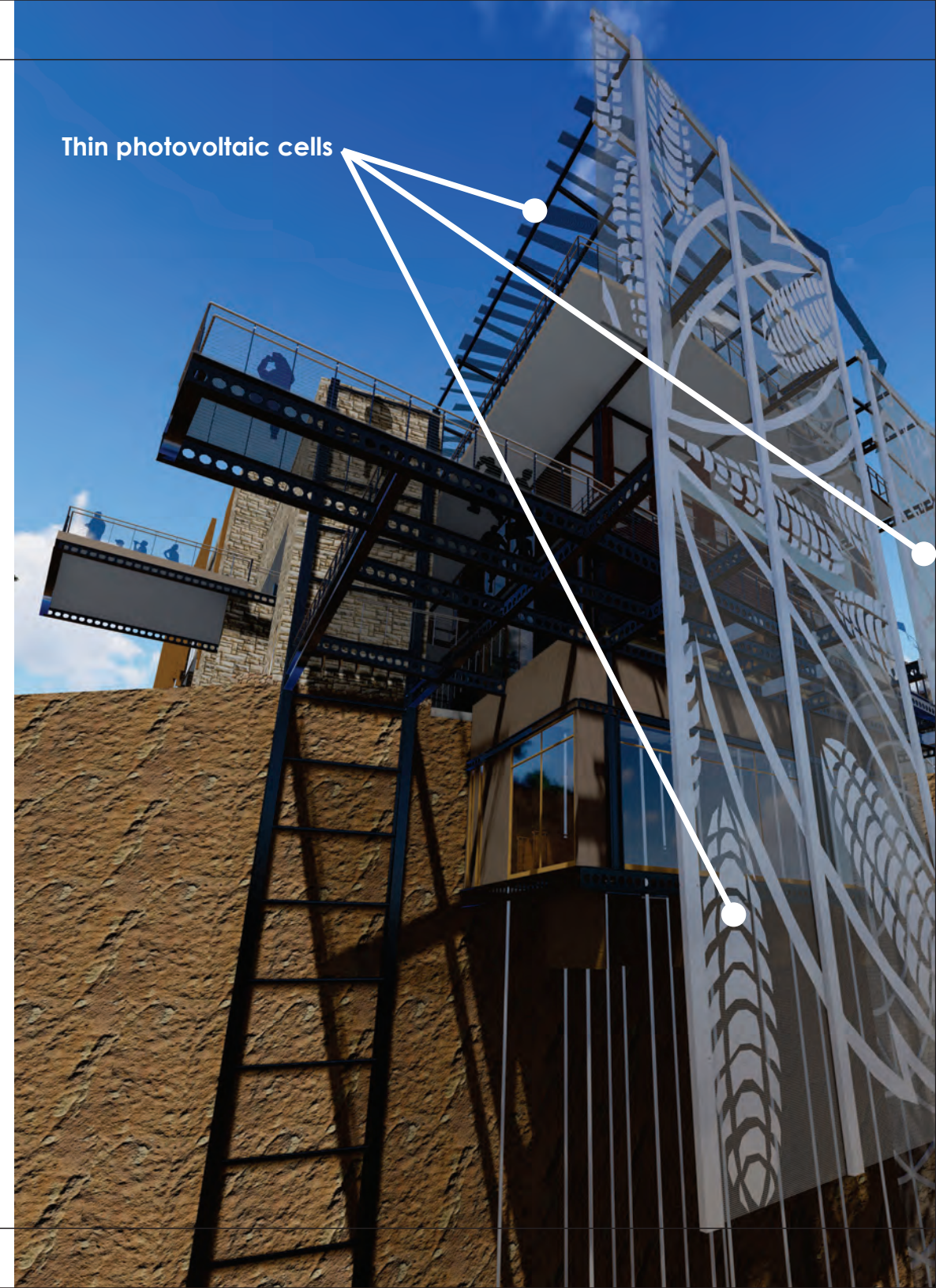
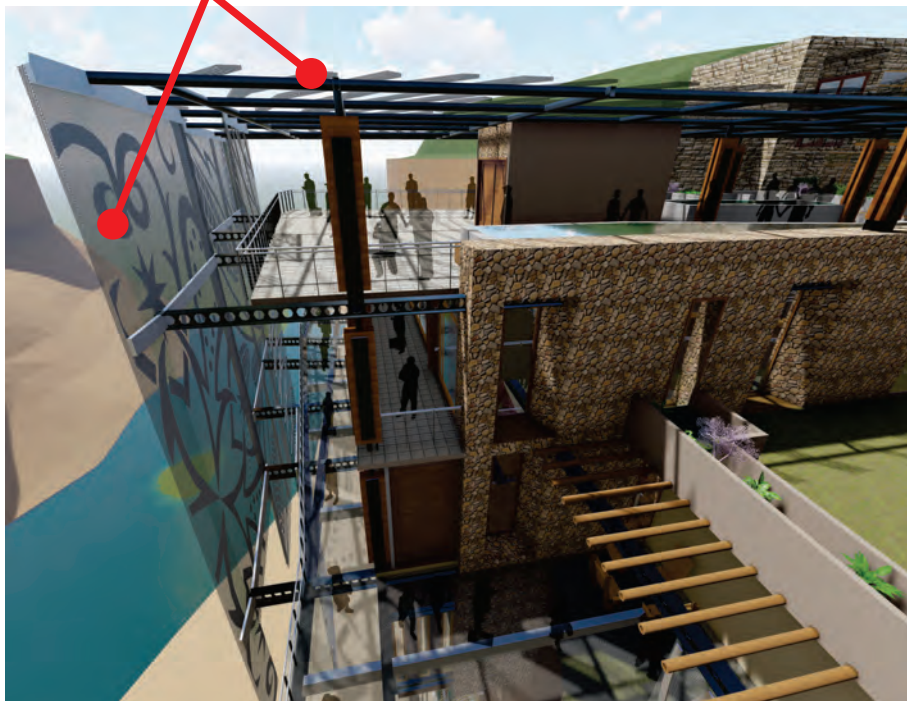
### 1. Analysis for design

#### Solar radiation

The three screens on the northern façade are fitted with thin film solar cells due to the high solar exposure. These photovoltaic cells contribute to the energy requirements of the building (Watts, n.d, pp 350). Copper indium gallium diselenide (CIGS) thin-film photovoltaic cells are used because of their efficiency. This is to help reduce the environmental impact while ensuring acceptable comfort conditions for the occupants of the centre.

This is a reaction of the sunpath studies that were made on site.

Thin photovoltaic cells



### Thermal performance

The use of exterior shade could significantly reduce the amount of energy needed in summer months to cool buildings in either temperate or warm climates. External shade avoids the movement of solar energy through a façade by collecting and conveying solar energy outside the building envelope (Watts, n.d. pp 357).

### Solar shading

The perforated screens on the outside of the building reduce the amount of direct sunlight on the façade. The efficiency of the shading screens depends on their opacity and has a significant impact on the amount of daylight entering the building (Watts, n.d. pp 366).

### Thermal mass

The term thermal mass is used to describe the building material's ability to retain excess heat. High thermal mass materials can absorb heat, store it and release it at a later time. Since these materials take a long time to heat up and cool down, they can be efficient in controlling temperature fluctuations in a building and help to maintain a stable internal temperature throughout the year (Watts, n.d. pp 380).

Large amounts of heat are stored in heavy materials such as concrete and brickwork and can be considered high thermal mass (Watts, n.d. pp 380).

Used in combination with an effective passive solar development strategy, thermal mass can help reduce energy consumption in mechanical heating and cooling systems and reduce the building's running costs (Watts, n.d. pp 380).

### 2. Low Energy material systems

#### Embodied energy

The energy embodied in a building material, together with its ultimate demolition and associated recycling, can be considered as the sum of the energy used in the manufacture of its components, transport, assembly on site. Based on a 50-year period, embodied energy currently accounts for only about 10 percent of a building's lifetime energy expenditure. The operating energy component levels are set to decrease significantly, however. This will be achieved by enhancing thermal insulation and a mixture of passive and active controls that regulate heat loss from ventilation and gain from solar heat. This would make the energy element embodied in a building even more important (Watts, n.d. pp 382).

#### Green walls

Green walls are living, self-regenerating cladding systems that make it possible to completely cover façades with vegetation. (Watts, n.d. pp 386).

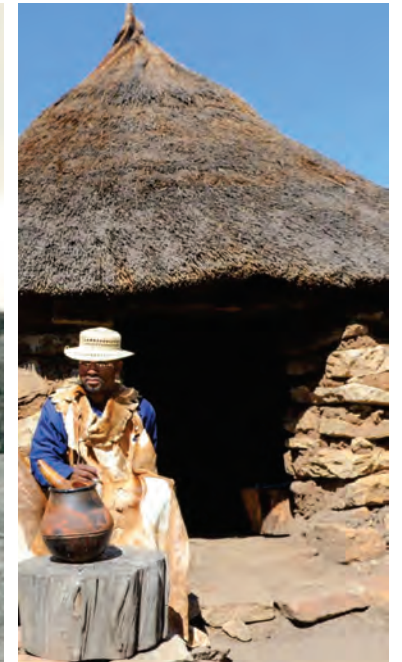
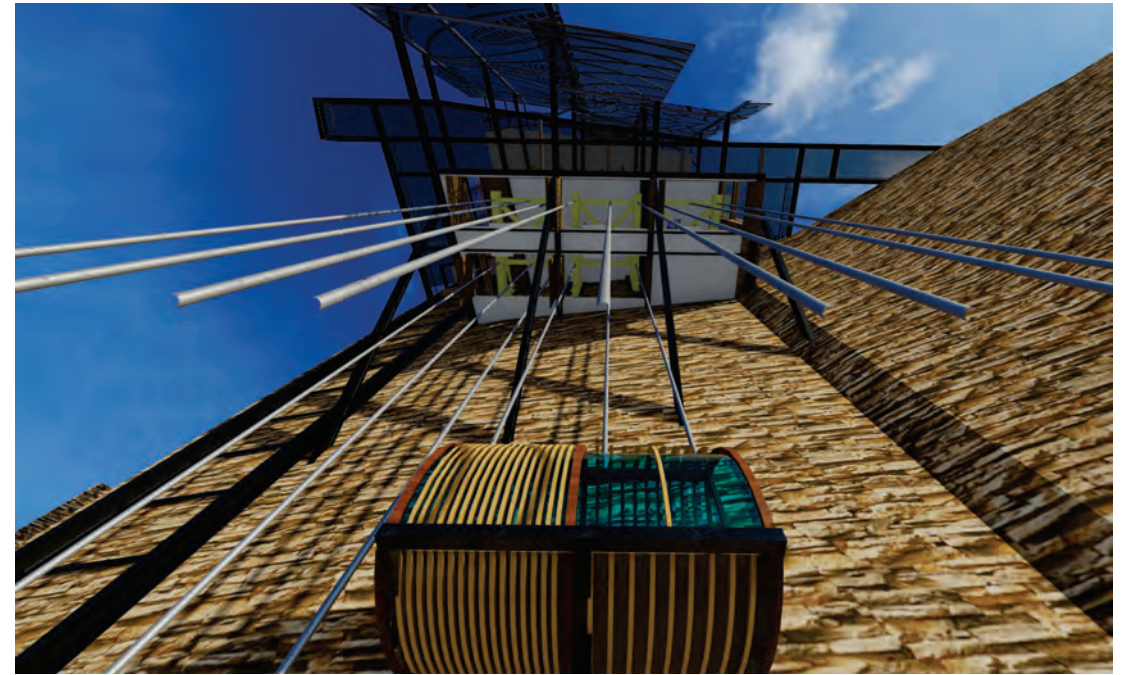
#### Advantages

- Visual comfort
- Can help regulate internal temperatures
- Can benefit the surrounding environment by altering local microclimate
- Helps with noise absorption
- Improved atmosphere through dust trapping effects and absorption of Co2
- Retention of rainwater
- Cooling effect as a result of evaporation
- Living walls are an excellent way of introducing biodiversity

## 5. MATERIALITY

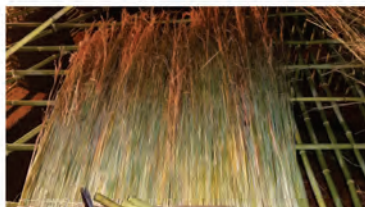
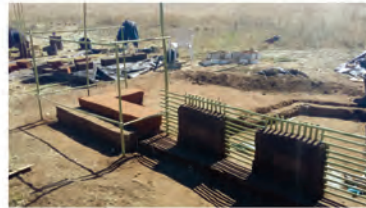
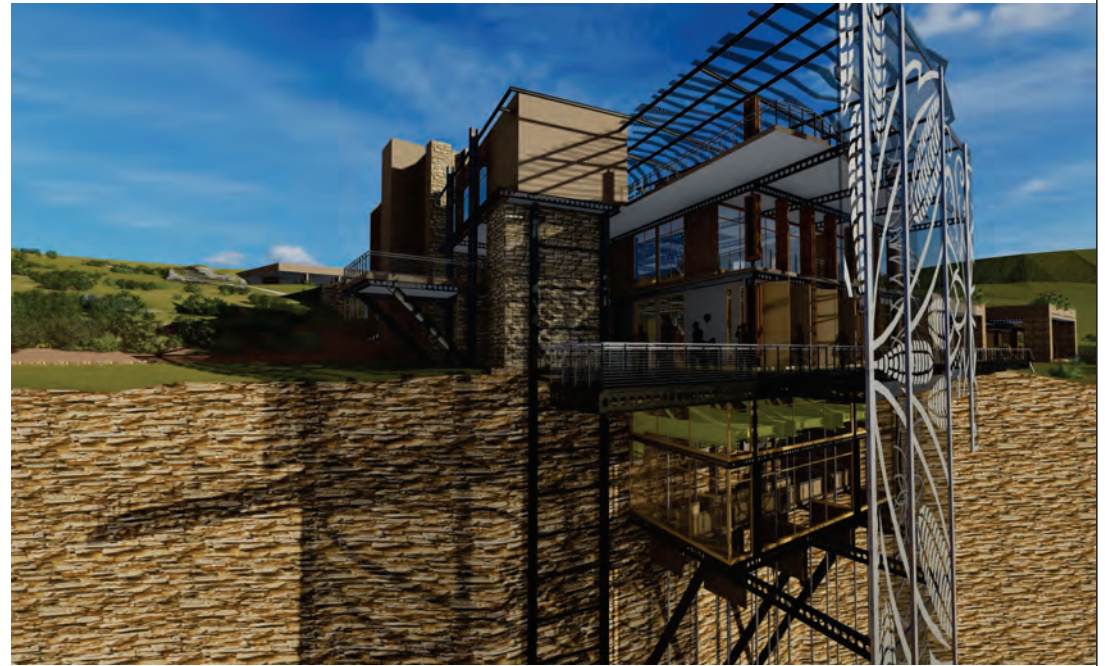
Theoretical and conceptual imperatives on material **selection** and **application**

- The exposed steel structure is reference to the vernacular architecture and context



## Technical and practical influences on material **use and detailing**

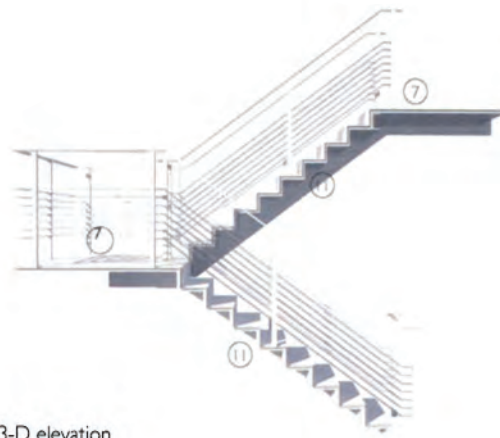
- First year Hut project informed the detailing, exposed structure and locally available material use



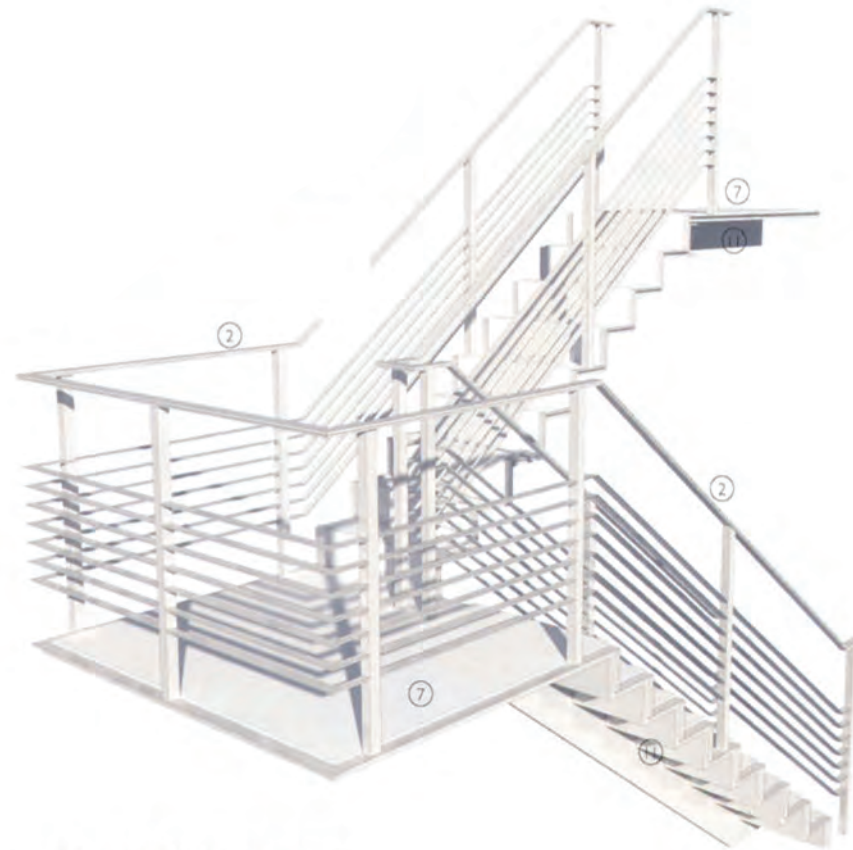
## 6. CIRCULATION

Vertical circulation

Stairs and elevators are used for vertical circulation.



3-D elevation



3-D view of folded steel plate stair



### Vycle

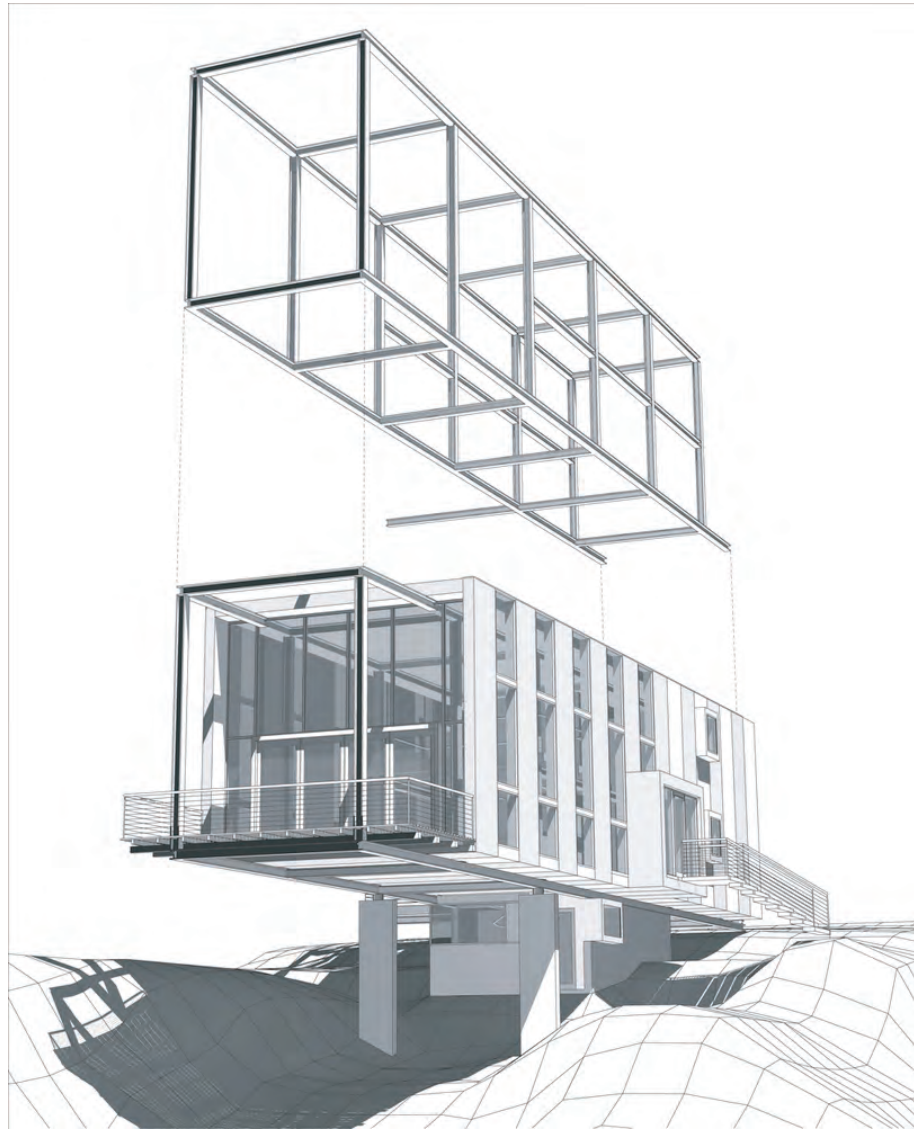
Vycle is a patent pending system that makes it convenient and fun for people to ride. The process is regulated by having the user's body as the only weight that can be overcome. The user will determine how much energy they want to bring up or down using a shifting system similar to how bicycles operate.

This system is used to get to and from the sleeping pods level below ground floor.

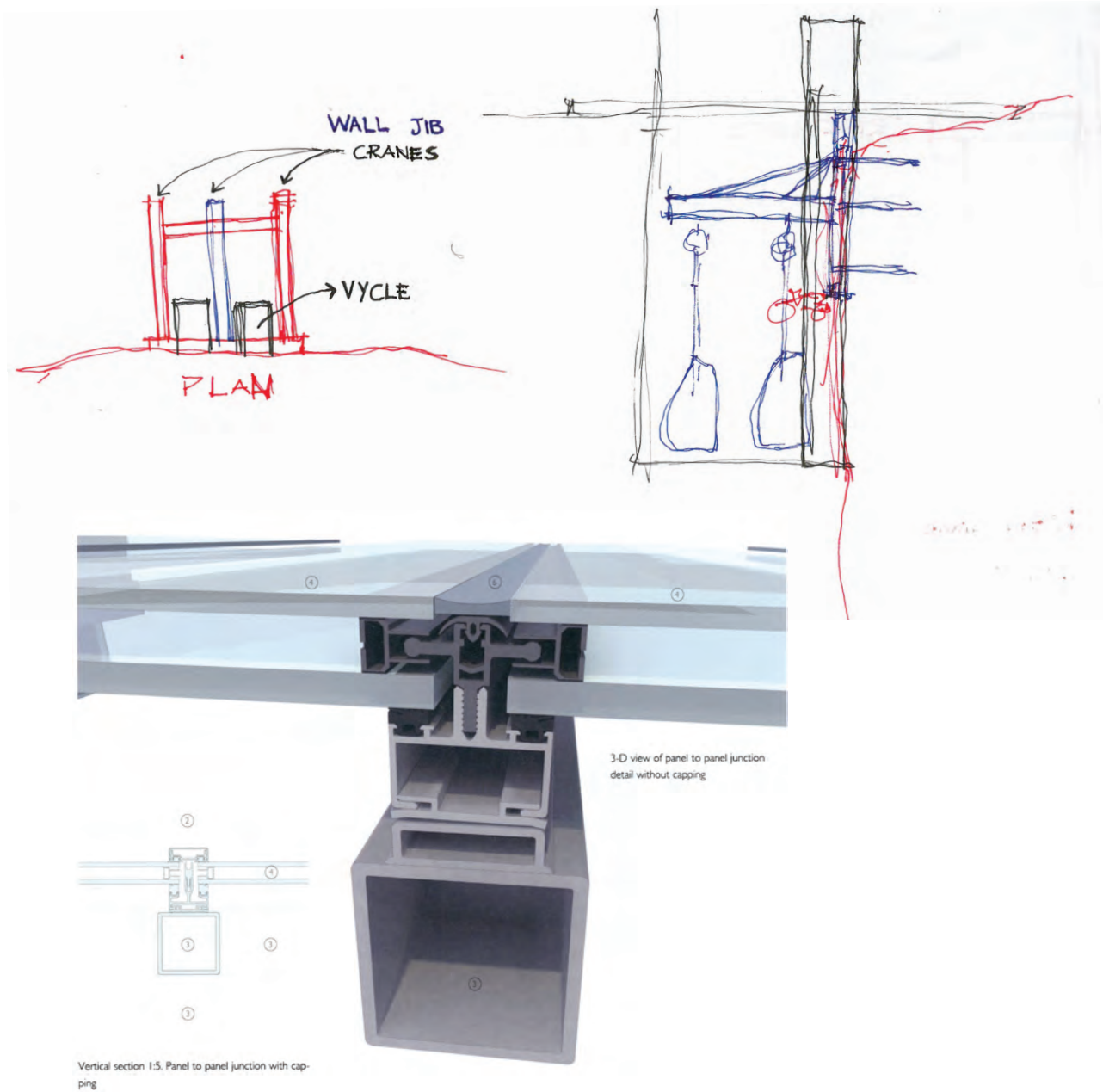


## 7. STRUCTURAL SYSTEMS

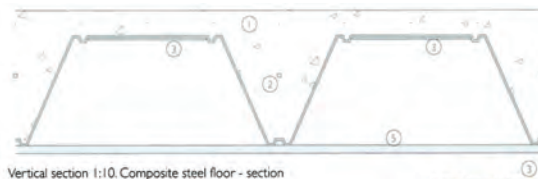
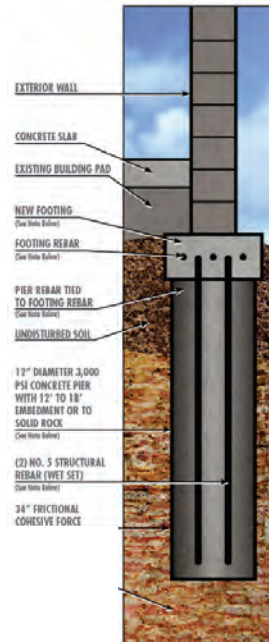
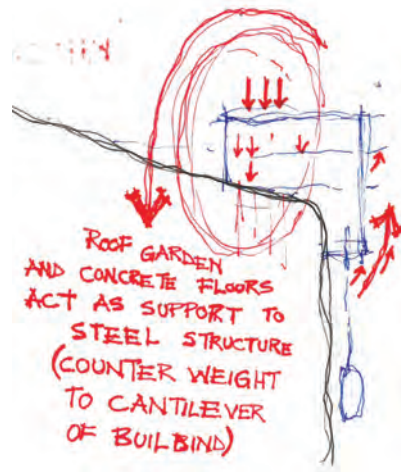
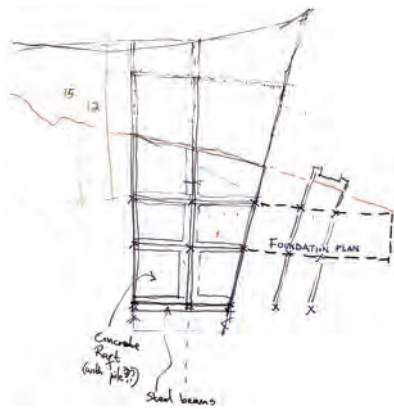
Main Structure



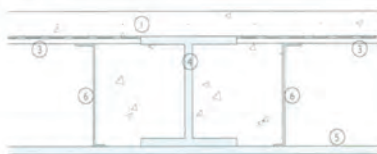
Secondary structure



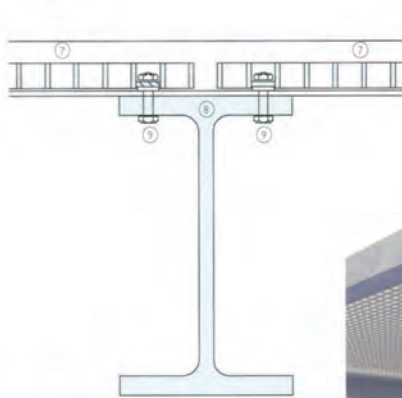
# Foundations



Vertical section 1:10. Composite steel floor - section through slab



Vertical section 1:10. Composite steel floor - section through steel beam



Vertical section 1:5. Steel mesh deck and support

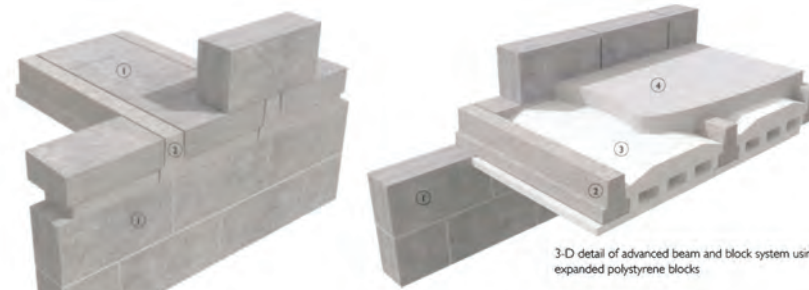


Finsbury Baracks, London, UK. Architect: Arnold & Boston Architects



3-D detail of underside of steel mesh deck

# Floors

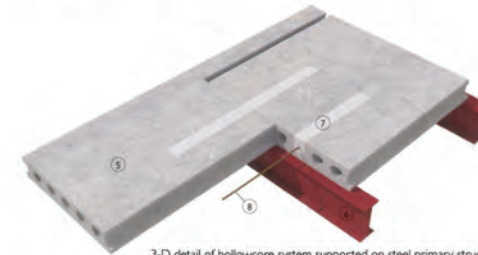


3-D detail of advanced beam and block system using expanded polystyrene blocks

3-D detail of traditional beam and block floor system

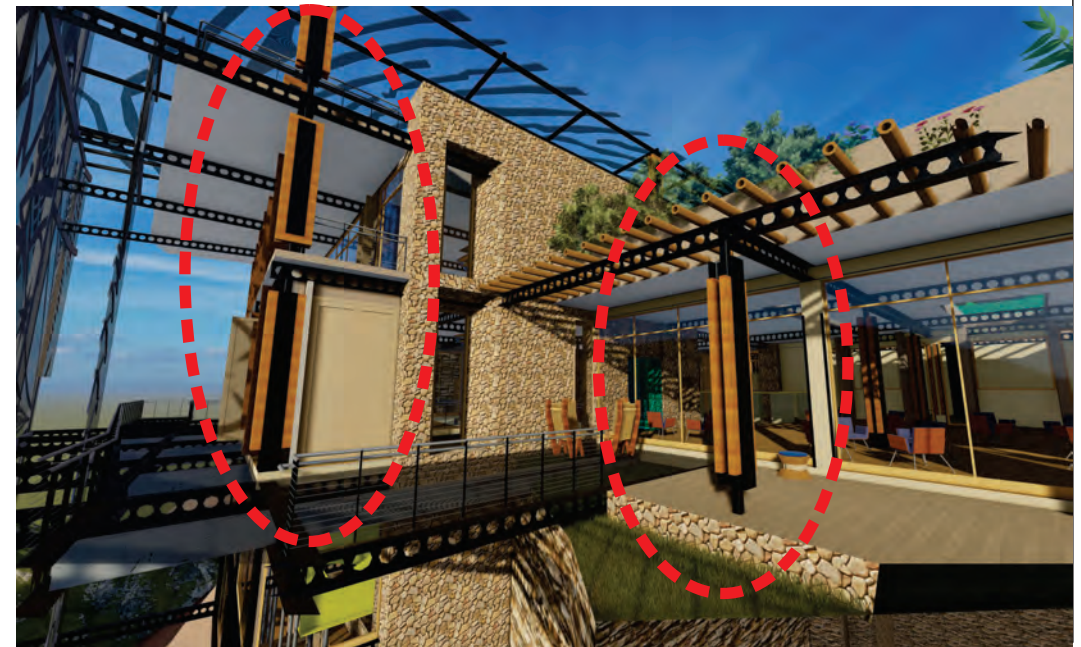
### Details

1. Concrete block
2. Prestressed concrete beam
3. Expanded polystyrene block
4. Structural concrete topping
5. Hollowcore slab
6. Primary steel structure
7. Structural concrete infill
8. Reinforcement tie



3-D detail of hollowcore system supported on steel primary structure

# Columns and Beams



## 7. STRUCTURAL SYSTEMS

**A typical ABUS feature**  
"Added-value" solutions from a single source

- Slip-rings**  
Power supply via slip-rings for infinite 360° slewing.
- Plug connectors**  
Equipped exclusively with plug connectors designed for rapid, trouble-free connection when installing and servicing. This saves time and ensures greater safety.
- Powered trolley**  
The electrically driven trolley moves at the push of a button.
- ABUS electric chain hoist**  
For reliable lifting from 80 kg to 4 t.
- Bolted end connection plate**  
For rapid mounting of the trolley without prior disassembly.
- Powered slewing gear**  
Electrically driven slewing for smooth travel.
- Safety pillar base**  
The specially designed pillar base with precisely welded ribs and internal support ring ensures safety and stability.

If you plan a jib crane with ABUS, there are really no limits. Everything you need to turn a single crane into a convenient complete solution is available – from a single supplier. This makes planning easier and helps cut costs – not only when buying your crane but also in the years which follow.

Because the whole is simply worth more than the sum of its parts, it also pays to take a close look at the performance features and cost advantages of ABUS extras, components and accessories.



Capacity: to 5 t  
Jib length: to 10 m \*)

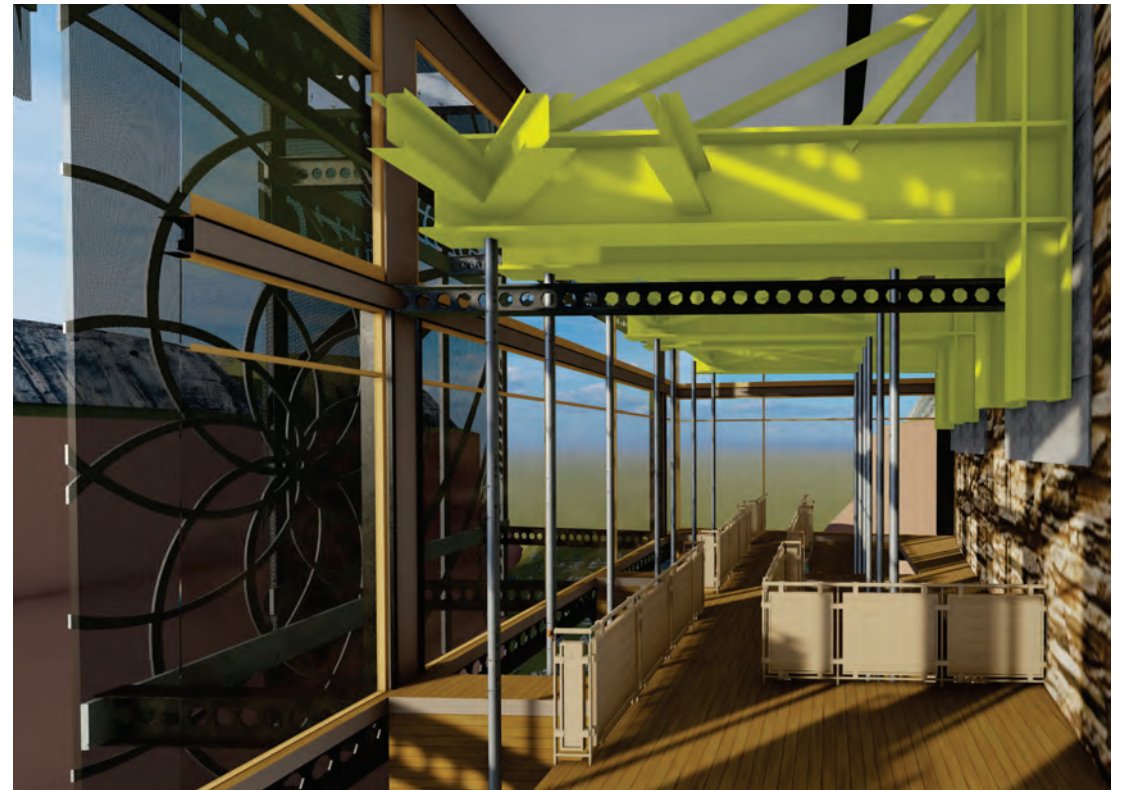


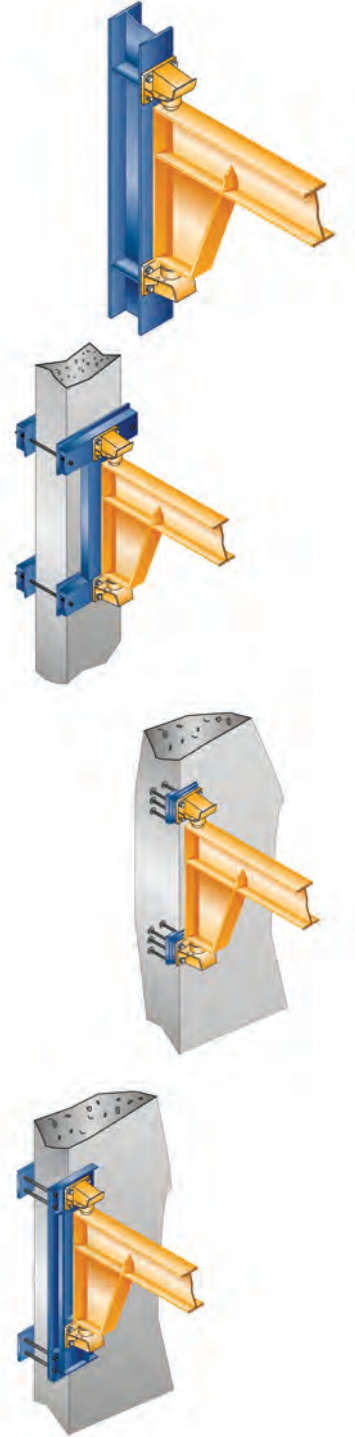
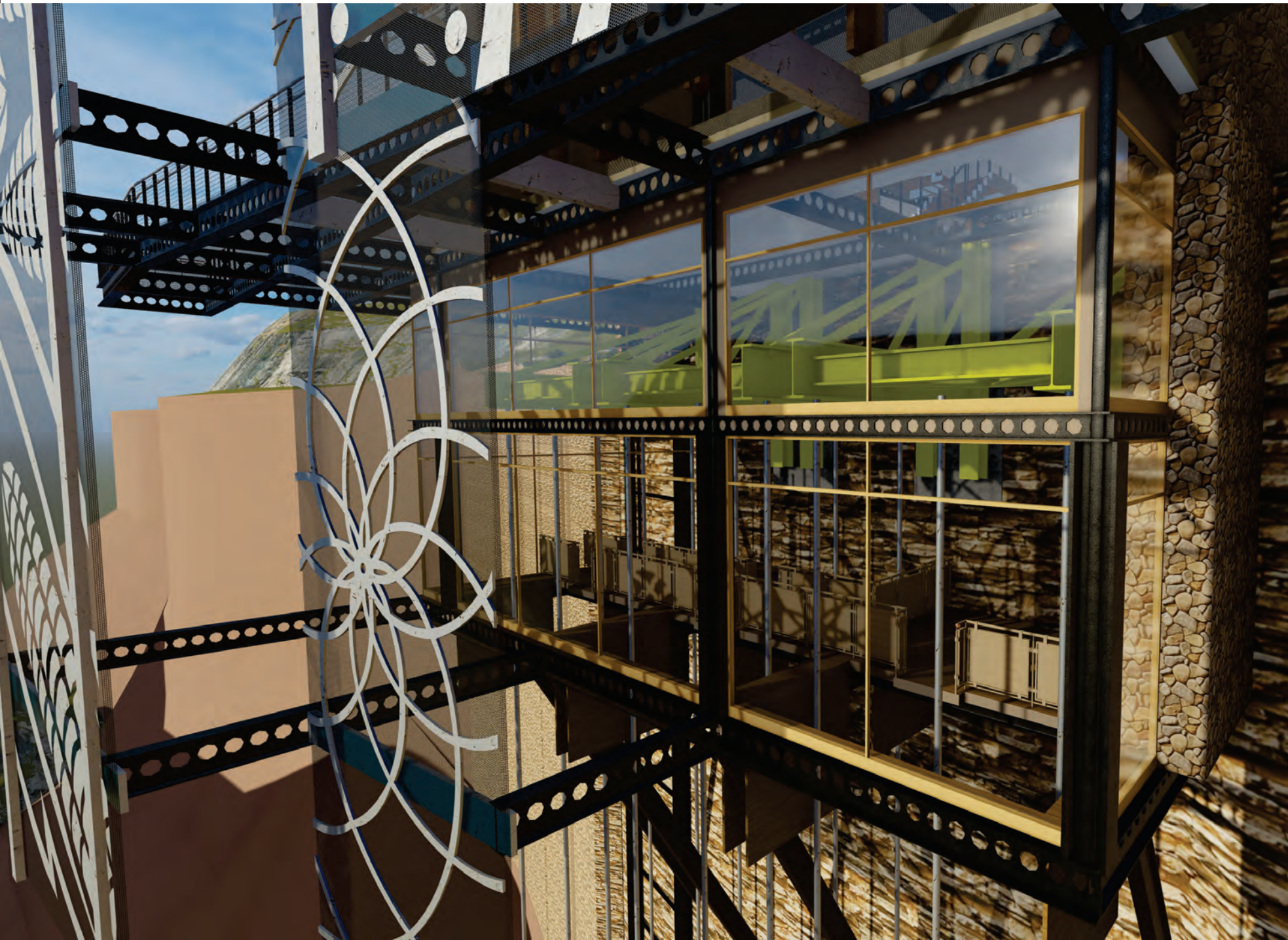
\*) depending on load capacity

with electric wire rope hoist

- light heavyweight design (DIN 15018 H2/B3)
- sturdy, with low-build profile section jib arm for optimised hook height
- easy installation of wire rope hoist trolley due to removable jib end plate and adjustable clamping buffers
- powered trolley, 2-speed
- powered slewing, 2-speed
- mobile control runs length of jib

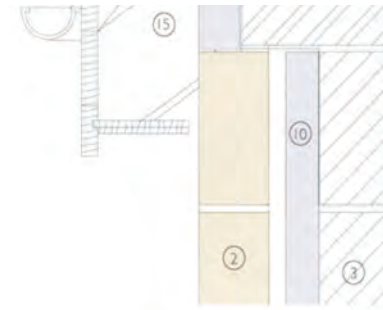
| Jib length | 5 m | 7 m | 8 m | 9 m | 10 m |
|------------|-----|-----|-----|-----|------|
| Capacity   |     |     |     |     |      |
| 1000 kg    |     |     |     |     |      |
| 1600 kg    |     |     |     |     |      |
| 2000 kg    |     |     |     |     |      |
| 2500 kg    |     |     |     |     |      |
| 3200 kg    |     |     |     |     |      |
| 4000 kg    |     |     |     |     |      |
| 5000 kg    |     |     |     |     |      |





## 8. STRUCTURAL SYSTEMS

### External walls



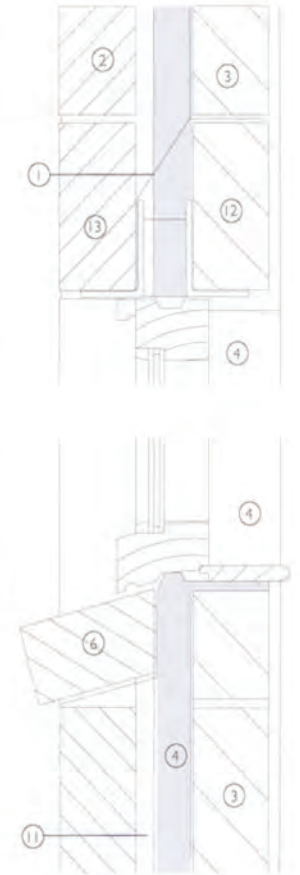
Section 1:10. Roof connection to stone faced cavity wall system

#### Details

1. Damp proof course (DPC)
2. Outer block wall (or 'leaf')
3. Inner block wall (or 'leaf')
4. Timber framed window
5. Precast concrete cill
6. Stone cill
7. Timber inner cill
8. Cavity closer
9. Internal plaster finish or dry lining/ drywall
10. Thermal insulation in cavity
11. Air cavity (sometimes omitted where insulation fills cavity)
12. Inner precast concrete lintel
13. Outer precast concrete/stone lintel
14. Stainless steel tie
15. Roof Construction
16. Floor Construction
17. Timber framed inner skin
18. Steel framed inner skin
19. Ground



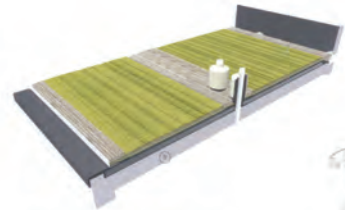
3-D view of timber window frame in stone cavity wall



Section 1:10. Typical window at cill and head

MCH\_ 173

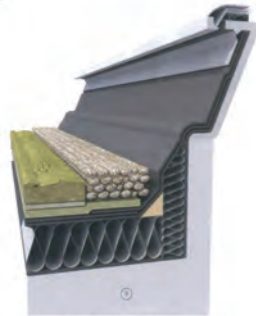
# Roofs



3-D overview of concrete roof with light (medium) planting



Section 1:10. Light planting. Rooflight upstand



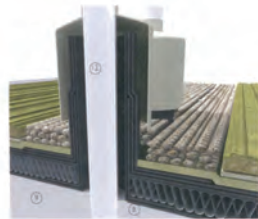
3-D detail of rooflight upstand in lightly planted roof



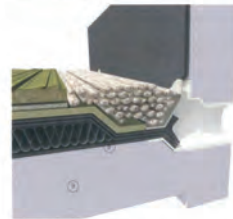
Section 1:10. Light planting. Pipe penetration



Section 1:10. Light planting. Two-way outlet



3-D detail of pipe penetration in lightly planted roof

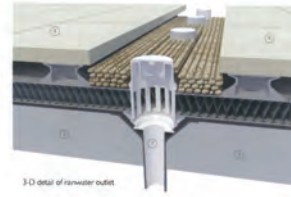


3-D detail of two-way outlet in lightly planted roof

MCH\_ 253



Vertical section 1:10. Rainwater outlet



3-D detail of rainwater outlet



3-D view of parapet and rainwater outlet



Vertical section 1:10. Parapet and rainwater outlet

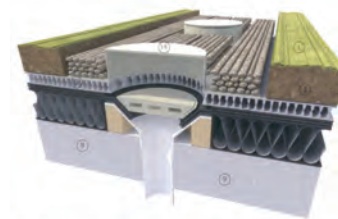
MCH\_ 243



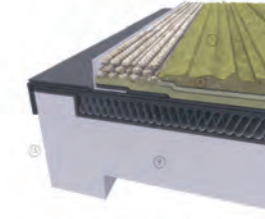
Section 1:10. Light planting. Rainwater outlet



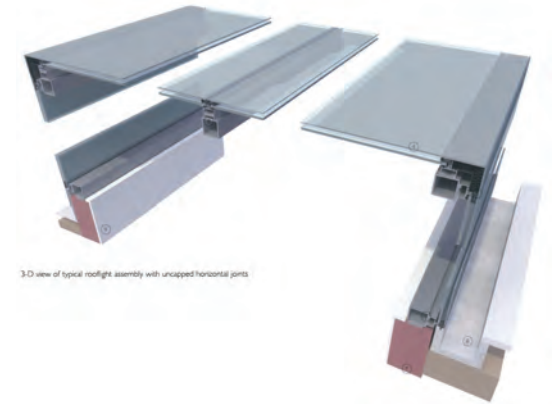
Section 1:10. Light planting. Low parapet junction



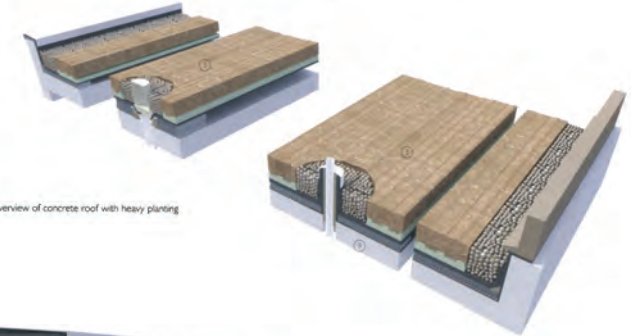
3-D detail of rainwater outlet in lightly planted roof



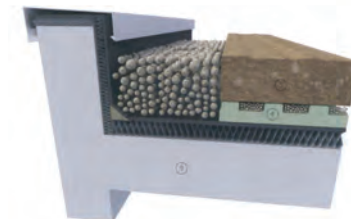
3-D detail of low parapet in lightly planted roof



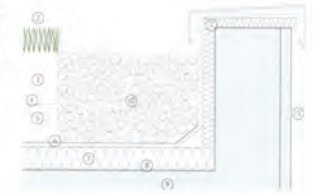
3-D view of typical rooflight assembly with uncapped horizontal joints



3-D overview of concrete roof with heavy planting



3-D detail of parapet junction in heavily planted roof

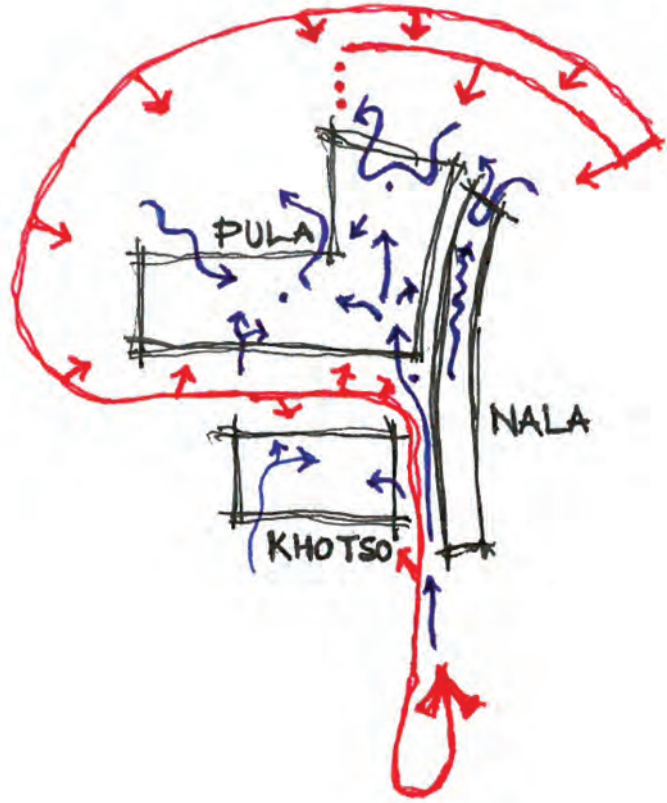


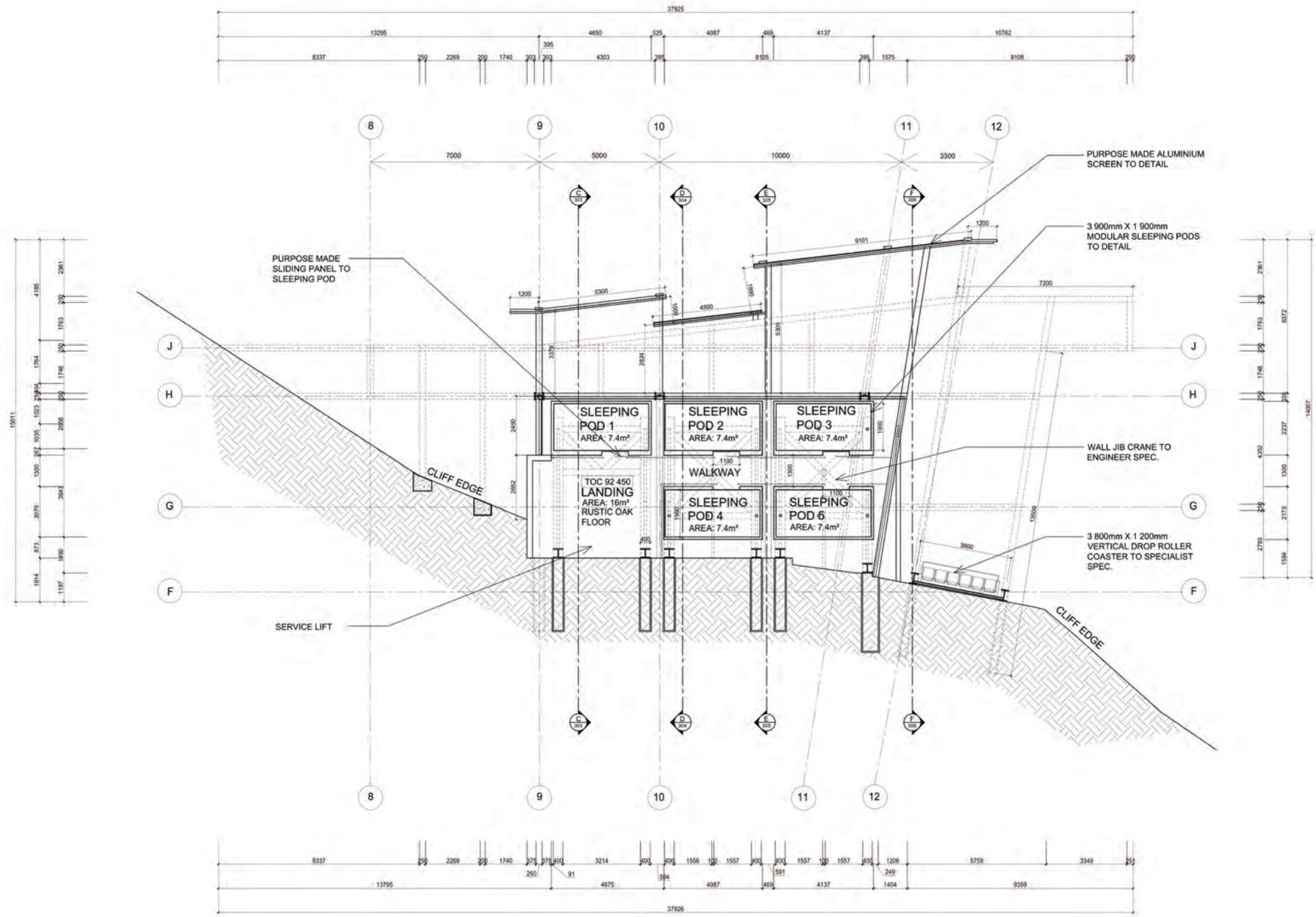
Vertical section 1:10. Heavy planting. Low parapet

## Details

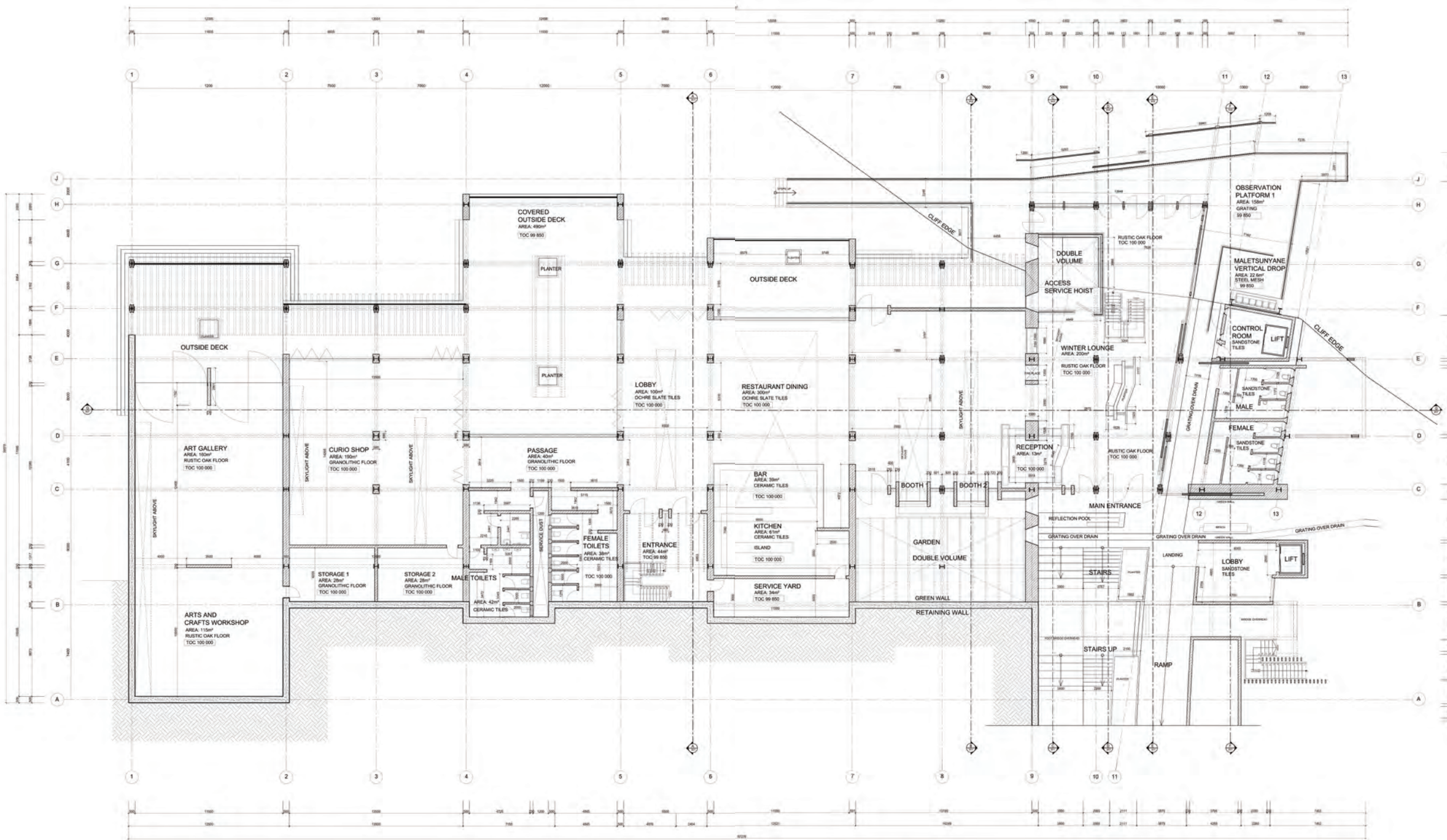
- |                        |                      |
|------------------------|----------------------|
| 1. Light vegetation    | 8. Vapour barrier    |
| 2. Heavy vegetation    | 9. Concrete deck     |
| 3. Soil/growing medium | 10. Smooth gravel    |
| 4. Filter sheet        | 11. Coping           |
| 5. Drainage layer      | 12. Pipe/ duct       |
| 6. Waterproofing layer | 13. Supply pipe      |
| 7. Thermal insulation  | 14. Rainwater outlet |
|                        | 15. Wall cladding    |

# CAMERA ROUTE



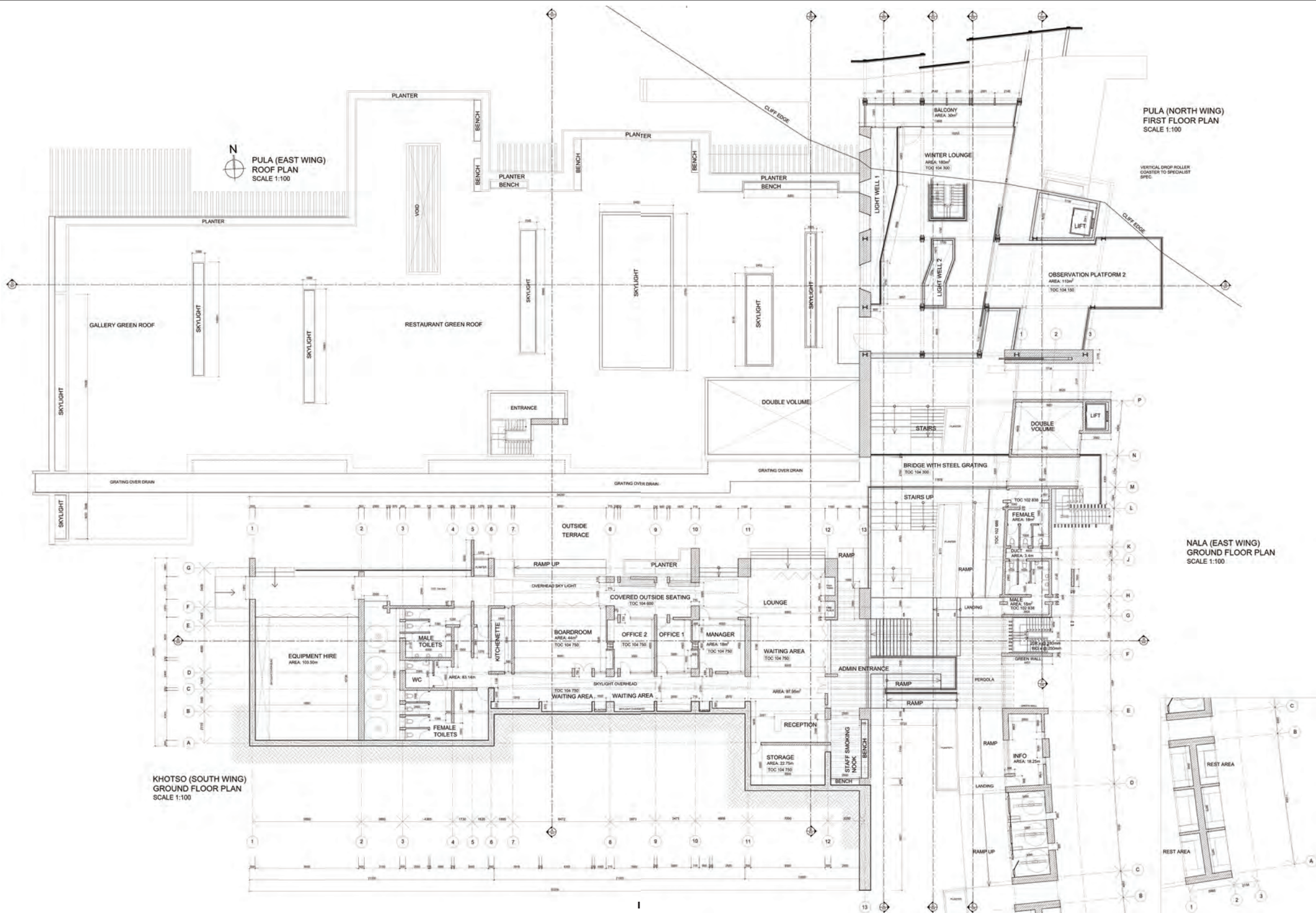


PULA (NORTH WING)  
LOWER LEVEL PLAN  
SCALE 1:100



PULA (WEST WING)  
GROUND FLOOR PLAN  
SCALE 1:100

PULA (NORTH WING)  
GROUND FLOOR PLAN  
SCALE 1:100



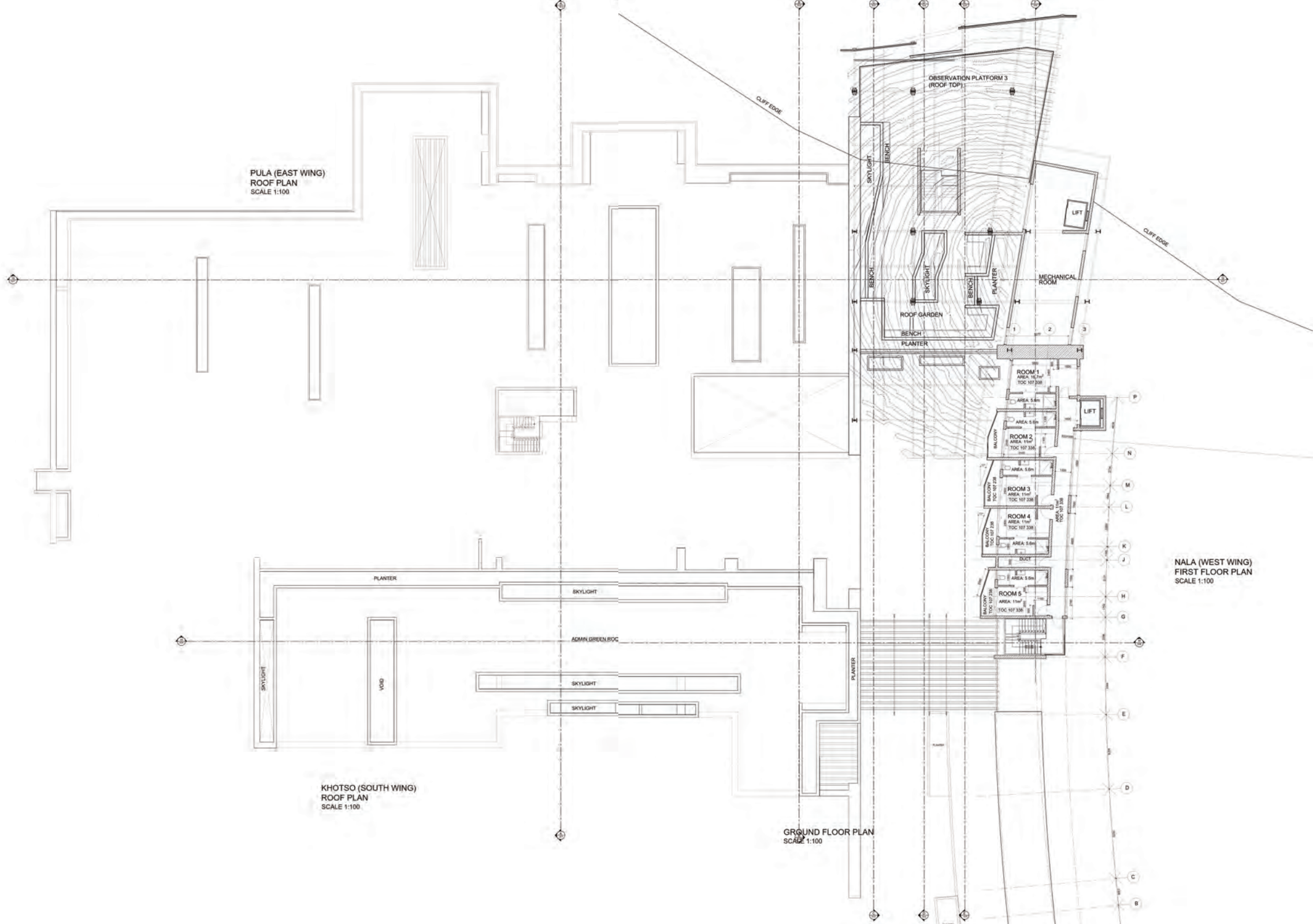
**PULA (EAST WING)  
ROOF PLAN  
SCALE 1:100**

**PULA (NORTH WING)  
FIRST FLOOR PLAN  
SCALE 1:100**

**NALA (EAST WING)  
GROUND FLOOR PLAN  
SCALE 1:100**

**KHOTSO (SOUTH WING)  
GROUND FLOOR PLAN  
SCALE 1:100**

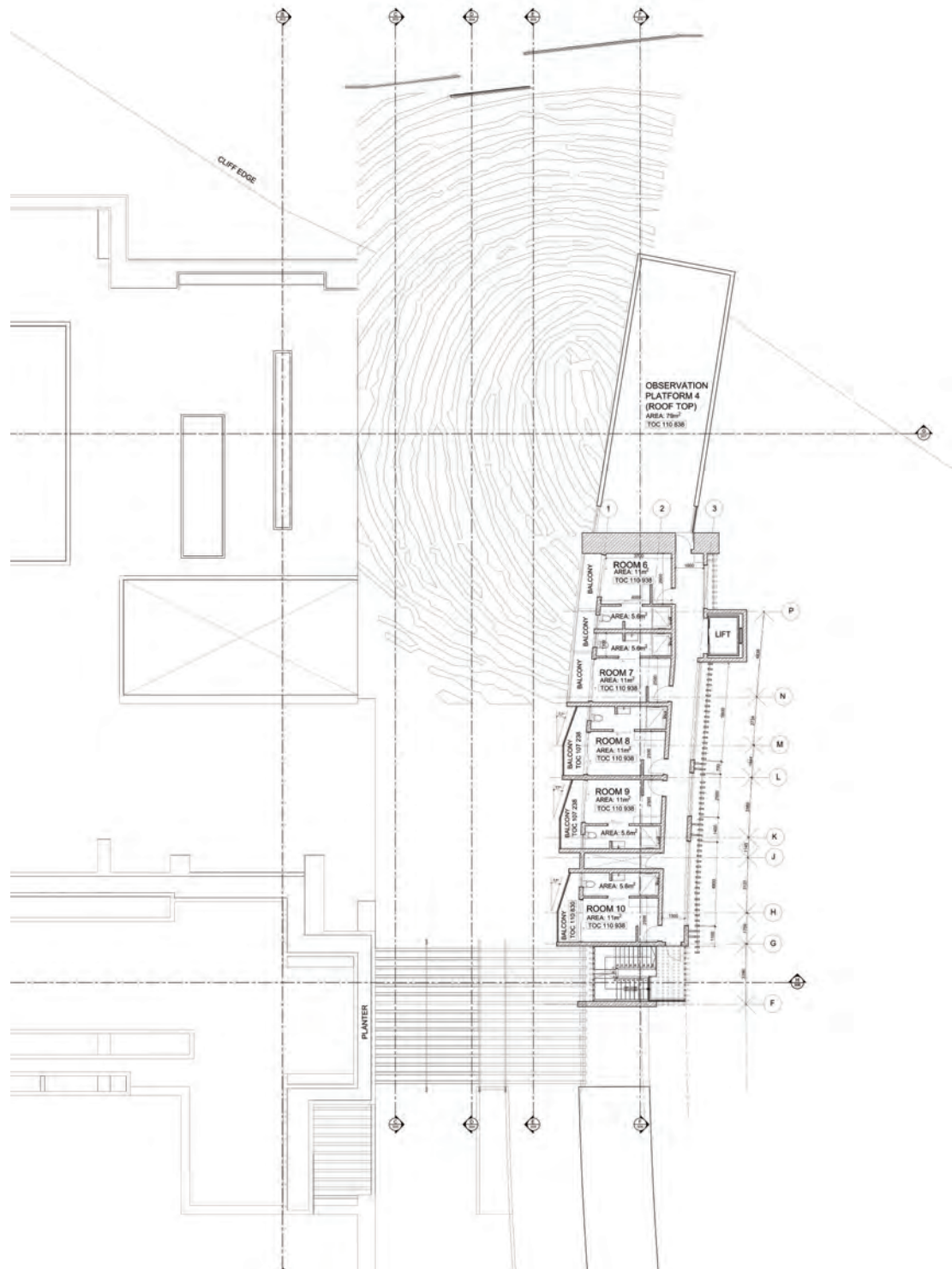
PULA (EAST WING)  
ROOF PLAN  
SCALE 1:100

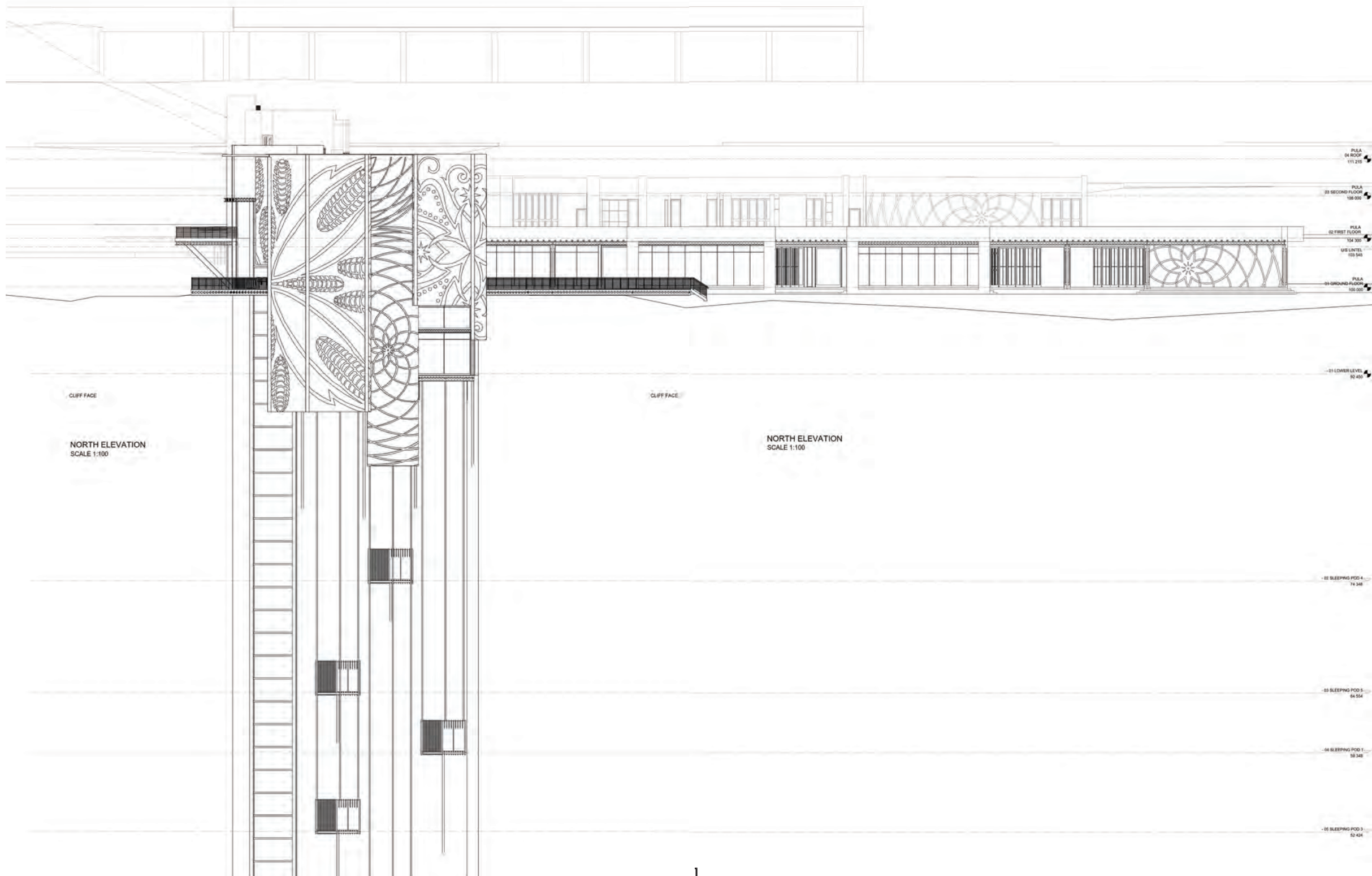


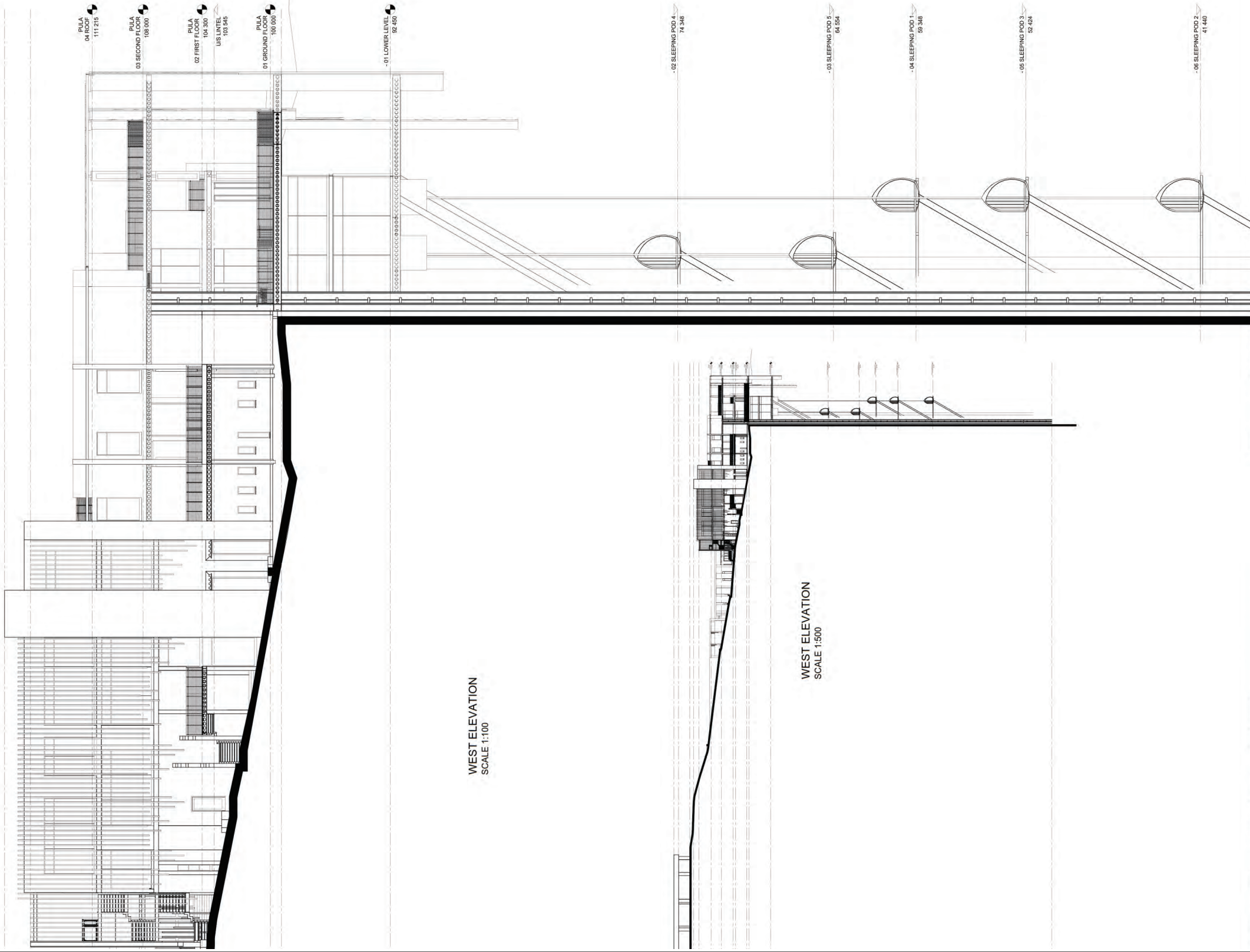
KHOTSO (SOUTH WING)  
ROOF PLAN  
SCALE 1:100

NALA (WEST WING)  
FIRST FLOOR PLAN  
SCALE 1:100

GROUND FLOOR PLAN  
SCALE 1:100





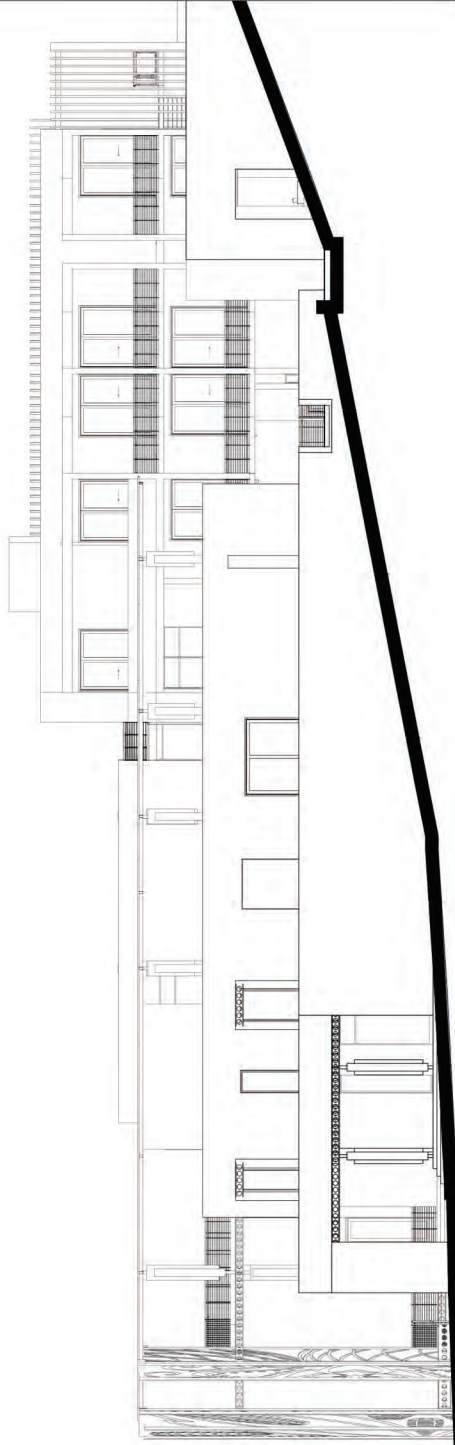


WEST ELEVATION  
SCALE 1:100

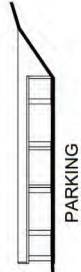
WEST ELEVATION  
SCALE 1:500

|                                |              |                              |  |                        |                           |
|--------------------------------|--------------|------------------------------|--|------------------------|---------------------------|
| SURNAME<br>MAKEKA              | NAME<br>MARC | STUDENT NUMBER<br>2014099762 | PROJECT TITLE<br>LANDSCAPE APPRECIATION CENTRE | DATE<br>19/11/2019     | PROJECT NUMBER<br>9122019 |
| DRAWING NAME<br>EAST ELEVATION |              |                              | SCALE<br>1:100                                 | DRAWING NUMBER<br>A202 |                           |

ERF



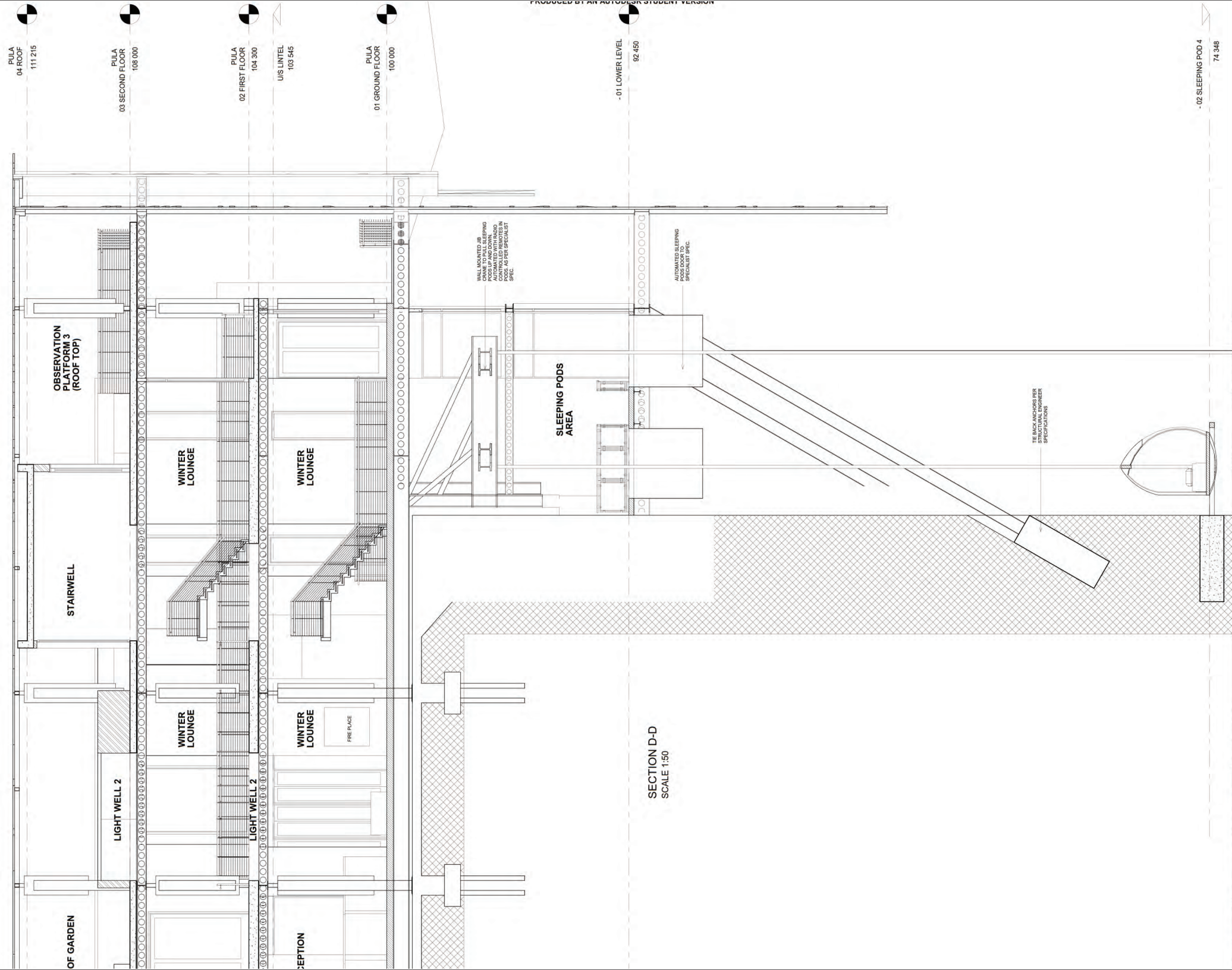
WEST ELEVATION  
SCALE 1:100



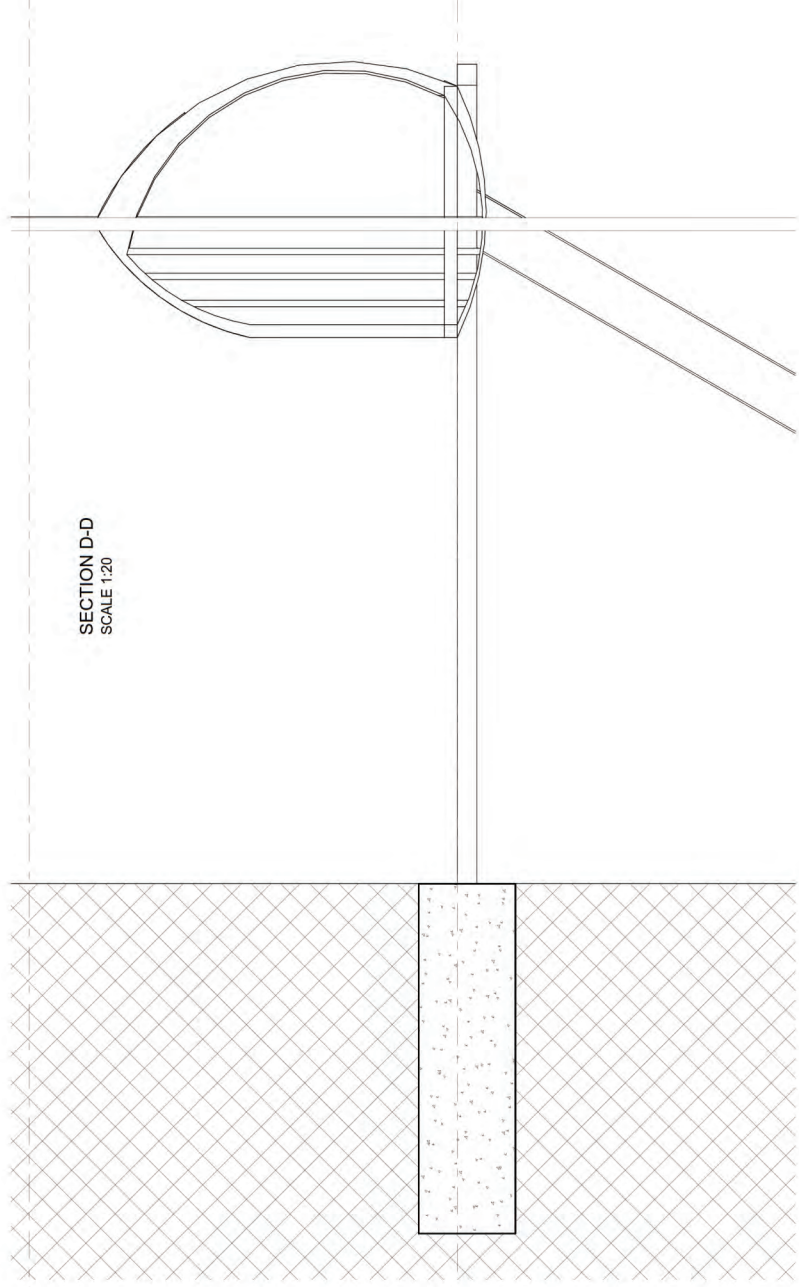
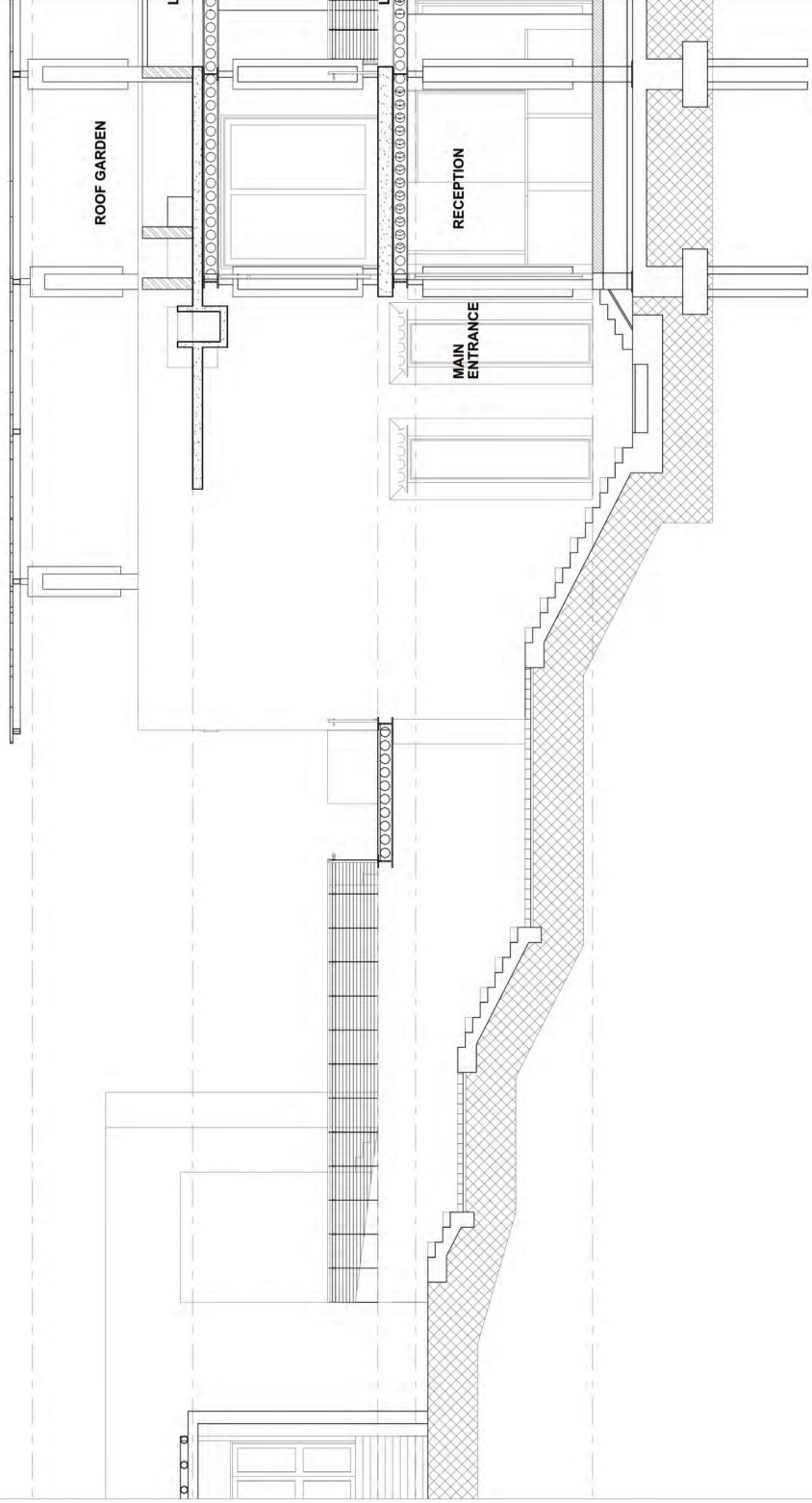
PARKING

WEST ELEVATION  
SCALE 1:500

| SURNAME        | NAME           | STUDENT NUMBER | PROJECT TITLE                 | DATE       | PROJECT NUMBER |
|----------------|----------------|----------------|-------------------------------|------------|----------------|
| MAKEKA         | MARC           | 2014099762     | LANDSCAPE APPRECIATION CENTRE | 19/11/2019 | 9122019        |
| DRAWING NAME   | DRAWING NUMBER | SCALE          | DRAWING NUMBER                | SCALE      | DRAWING NUMBER |
| WEST ELEVATION | ERF            | 1:100          | AZ03                          | 1:100      | AZ03           |

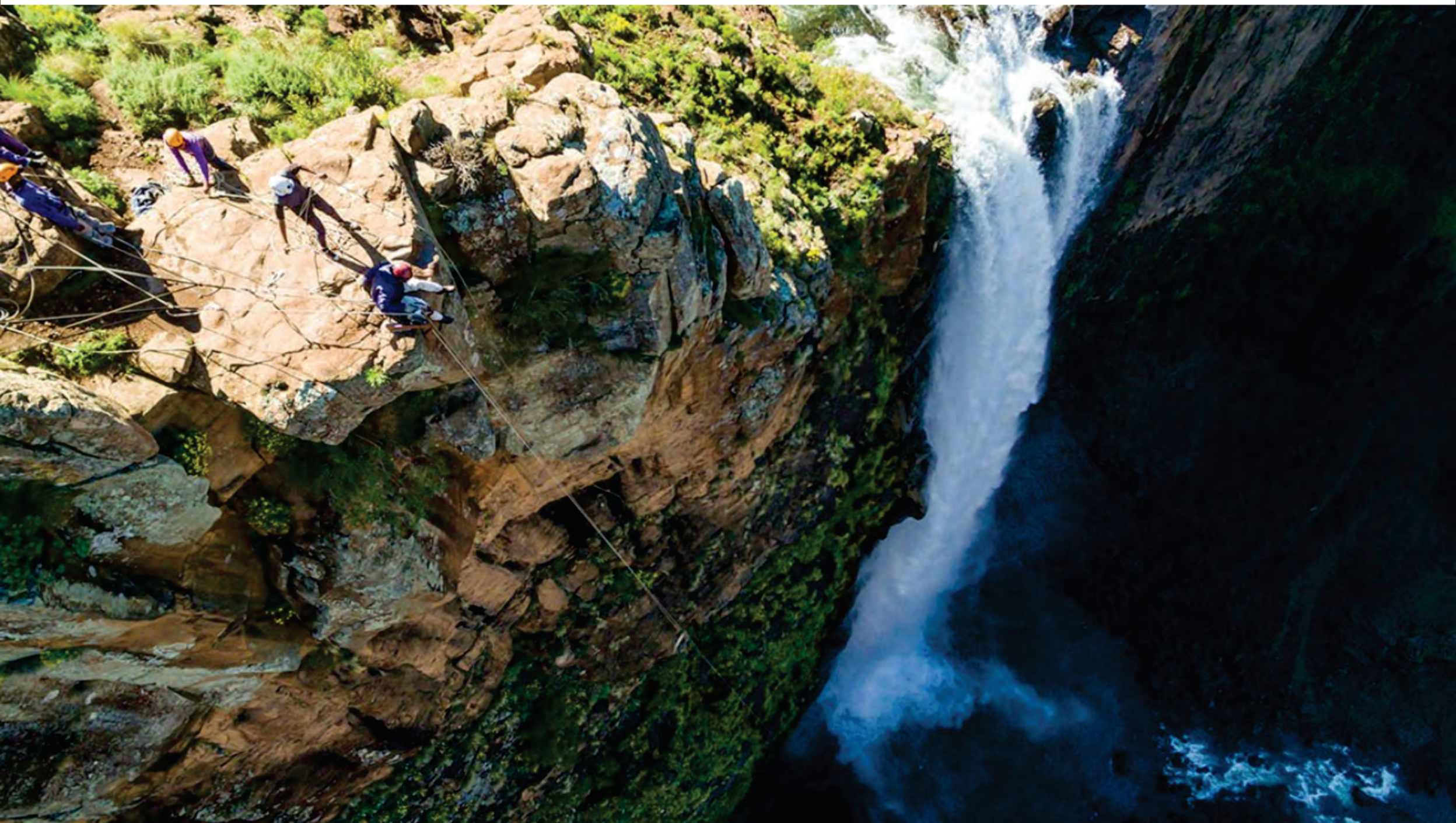


|              |      |                |                               |                |                |
|--------------|------|----------------|-------------------------------|----------------|----------------|
| SURNAME      | NAME | STUDENT NUMBER | PROJECT TITLE                 | DATE           | PROJECT NUMBER |
| MAKEKA       | MARC | 2014099762     | LANDSCAPE APPRECIATION CENTRE | 19/11/2019     | 9122019        |
| DRAWING NAME |      |                | SCALE                         | DRAWING NUMBER |                |
| SECTION D-D  |      |                | 1:100                         | A301           |                |
|              |      |                |                               | ERF            |                |



SECTION D-D  
SCALE 1:20

|              |      |                |                               |            |                |
|--------------|------|----------------|-------------------------------|------------|----------------|
| SURNAME      | NAME | STUDENT NUMBER | PROJECT TITLE                 | DATE       | PROJECT NUMBER |
| MAKEKA       | MARC | 2014099762     | LANDSCAPE APPRECIATION CENTRE | 19/11/2019 | 9122019        |
| DRAWING NAME |      |                | ERF                           | SCALE      | DRAWING NUMBER |
| SECTION D-D  |      |                |                               | 1:100      | A301           |



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