

---

**Rotterdamse Academie van Bouwkunst**  
**SEMESTERSTUDIO: ARTIS ISLANDS**

PERSONAL POSITION	P.01
ANALYSIS OF THE NATIVE LANDSCAPE	P.02
MATERIALS AND PATTERNS	P.04
REFERENCE	P.05
1. IMAGE   SITUATION 1:500	P.06
2. ENTRANCE AND CIRCULATION	
SITUATION 1:200	P.07
PERSPECTIVE	P.08
3D SECTION A-A	P.10
3D SECTION B-B	P.11
CURRENT/NEW SITUATION	P.12
FLOORPLAN LOWER LEVEL	P.16
FLOORPLAN UPPER LEVEL	P.18
3. NATURAL AND BUILT ENVIRONMENT	
RESEARCH	P.20
SECTION A-A	P.22
SECTION B-B	P.24
4. ATMOSPHERE	
IMPRESSIONS	P.26

## IT IS A WAY OF THINKING

Today teaches us that man and nature maintain a **difficult relationship**. While one admires the beauty of both flora and fauna, on the other hand, the arteries of this earth are impacted with undisturbed violence.

Many people are **not aware** (or do not want to realize) that this nature is inextricably linked to our health. We need all those ecosystems with its magnificence to breathe and live.

Likewise, the tropical rainforest is an ecosystem on which humans exert **considerable pressure**. The term 'deforestation' is used in mind when naming this landscape.

The large-scale biodiversity that is housed here is being put to the test and needs a helping hand. Only man can offer that helping hand, precisely by not reaching out that hand.

But unfortunately this is not the reality of such a growing society. Still the hard fact is that **humanity can recover and safe** the ecosystems by consider itself as a **guest of nature**.

That is why **campaigning and education** is an extremely important means of combat. We must learn to provide ourselves with food and needs without harming nature.

As a designer, I can bring this problem to light by **conveying a certain message**, to raise awareness among people. A small story of a larger whole, which can **slightly restore the connection** we lost between man and nature. I realize that it is a **difficult task** to do with a design, but it is about **that one person** who will feels addressed.

I also thing that the small details of a design will remain in people's minds, and the big picture will become a vague memory. That is why I have to portray it in this.

In this case it concerns the design of an animal enclosure in which the endangered sun bear will be housed. The very first and most important here is to let this animal **develop and evoke its natural behavior for the best welfare**. The second step is to offer the visitors a certain interaction that makes them feel connected to the animal and its (natural) habitat. This can be achieved by bringing the landscape **into harmony** with the architecture and **let take over it**.

This way can lead to the story being told successfully and to the previously mentioned sense of consciousness. After all, it is all 'a way of thinking'.

Text by Martin van der Vijver

"Give nature the space to regain itself"



## THE TROPICAL CLOUDFOREST OF SOUTHEAST ASIA *and the sun bear*

The natural landscape of the honey bear is, next to the mountain rainforest, the tropical cloud forest. The **trees** in this cloud forest grow only **2 to 10 meters high**. The **undergrowth here is very dense and impenetrable**, and consists largely of mosses and ferns. The soil here - unlike in lower forests - is usually fertile.

The honey bears (120-150cm and 30-60kg) which habitats here, have a stature which suits their **arboreal lifestyle** and allows them to move easily through the trees. They are good climbers because of their **large sharp curved claws** and spend most of the day **resting in the tree**. They have even been observed making sleeping platforms high above the ground out of branches and leaves.

Unlike most other bears, the Malayan bear is mainly active at night. What is striking about this predominantly black (sometimes gray or rust-colored) bear is the bright white or yellow, crescent-shaped spot on the chest.

They are **omnivores** and their menu includes small mammals, birds, insect larvae, termites, eggs, fruits, young shoots, other vegetable and honey. They mainly eat bee larvae, termites and worms. With their claws they can easily open bee nests so that they can reach the honey with their **long tongue**. In addition, **digging** is also one of their characteristics when looking for food (foraging).

The bears have **poor eyesight** and a **well-developed sense of smell and hearing**. Due to myopia, the Malaysian bear does not always know what is happening and can **sometimes suddenly attack**.

In the rainforest, the bears **forage in the trees, on the rocks and on the ground**. They are therefore **moving a lot**, making it important for zoos to pay close attention to food. Solutions are **creative search places** where the bears have to find their food.

Other animals that live in the tropical cloud forest include the clouded leopard and birds of paradise.

The tropical mountain rainforest and cloud forest (of Southeast Asia) features: - fewer trees grow here than in the lowland rainforest; they reach an average height of 30 to 40 meters. **The undergrowth is much denser**. The **plant species are often endemic** and grow on a **fairly barren and rocky soil**.

- **dense vegetation** and **constant cloud cover** the bright sun during the day and at night they prevent the heat of the day from escaping.
- **Large amount of rainwater evaporates** due to the warm climate and then **rain down again** on the rainforest.



## CHARACTERISTICS OF THE TROPICAL CLOUD FOREST

The tropical cloud forest in word (and visualization) summarized:

Visual aspects:

- the density of the vegetation ensures that the view does not reach far
- smooth mossy rocks and soft soil (suitable for digging)
- vegetation grows on all surfaces (including rocks)
- light and shadow effects through the many trees that let little light through
- damp and foggy atmosphere
- height differences, both style and bland (sightlines mostly up-down or down-above)
- open (water) places and waterfalls in the middle of the dense forests.
- streams of water often descend in rocky terrace form.

Architectural aspects:

- many different lines; vertical, horizontal and diagonal
- ferns form a blurry view to the background
- waterfalls as a curtain for the setting behind
- cracks and seams formed by nature create depth in the image
- height differences can be bridged by rocks
- water makes its way through everything
- mostly coarse textures (trees and rocks) on a large scale
- refined textures at a short distance (like the structure of the foliage)
- narrow paths between the (high) dense vegetation (as if it were a kind of wall)
- small glimpses here and there
- treetops form a visual pattern
- rainforest shows very "front scene and back scene"



The choice of materials refers to the solid elements of the rainforest. Textures which can naturally be affected by weather influences over time. Pastel colors are used to accentuate the green color of the surrounding and penetrating vegetation. It also fits perfectly within the urban context of Artis.

The main texture is rammed earth, which has a couple of sustainable characteristics. It is made-up of 100% organic natural materials (clay, sand and gravel). It is a strong, adaptable and a building technique that goes back thousands of years.

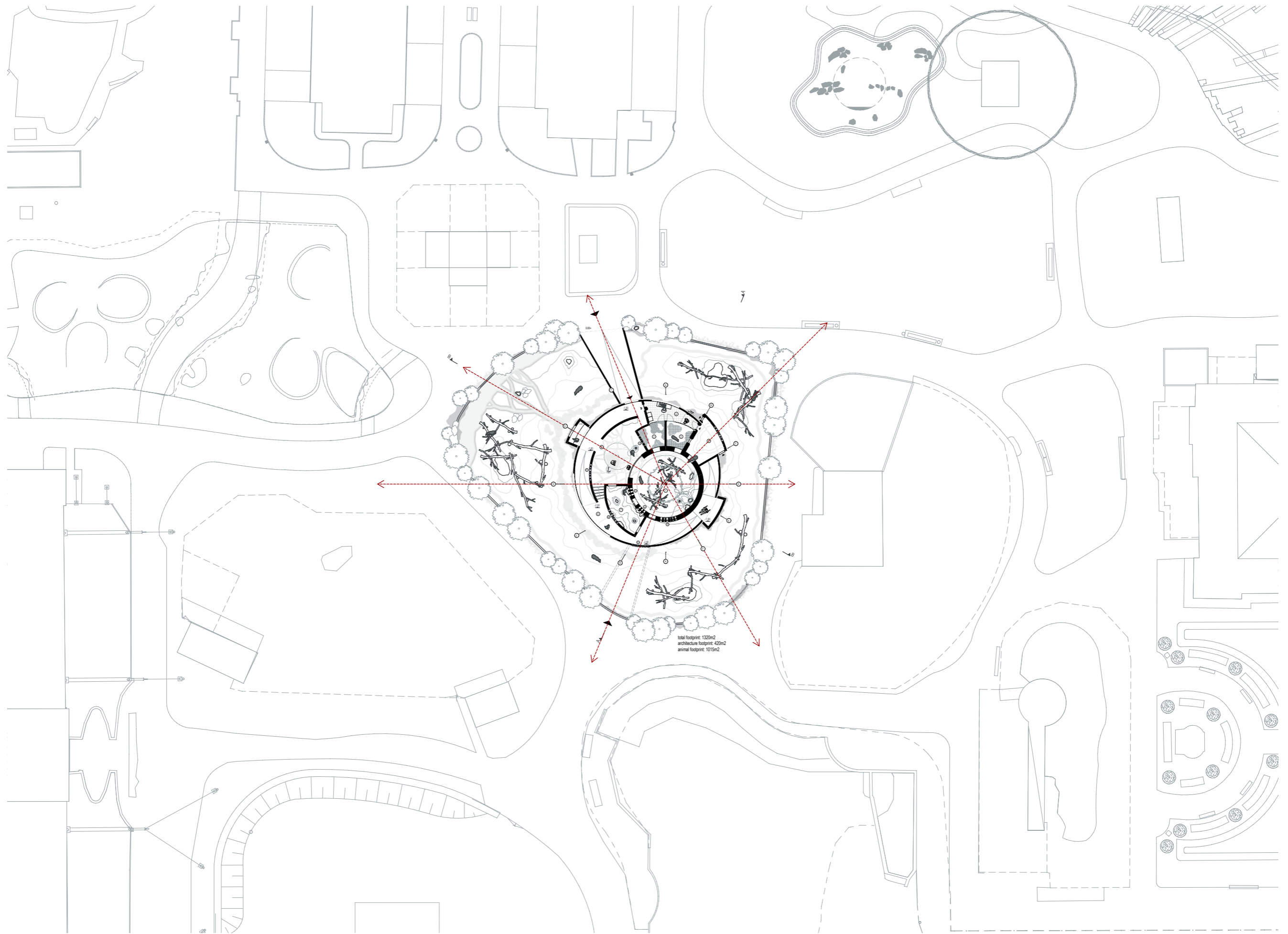
Due to the thickness, the daytime heat created by the sun gets buffered and stored in the walls. This prevents the indoor areas from overheating. Temperatures remain balanced. In the evening, the walls give the stored daytime heat back, created balanced indoor temperatures at night as well.

The result is an environment surrounding and comforting people and animal by mother nature.



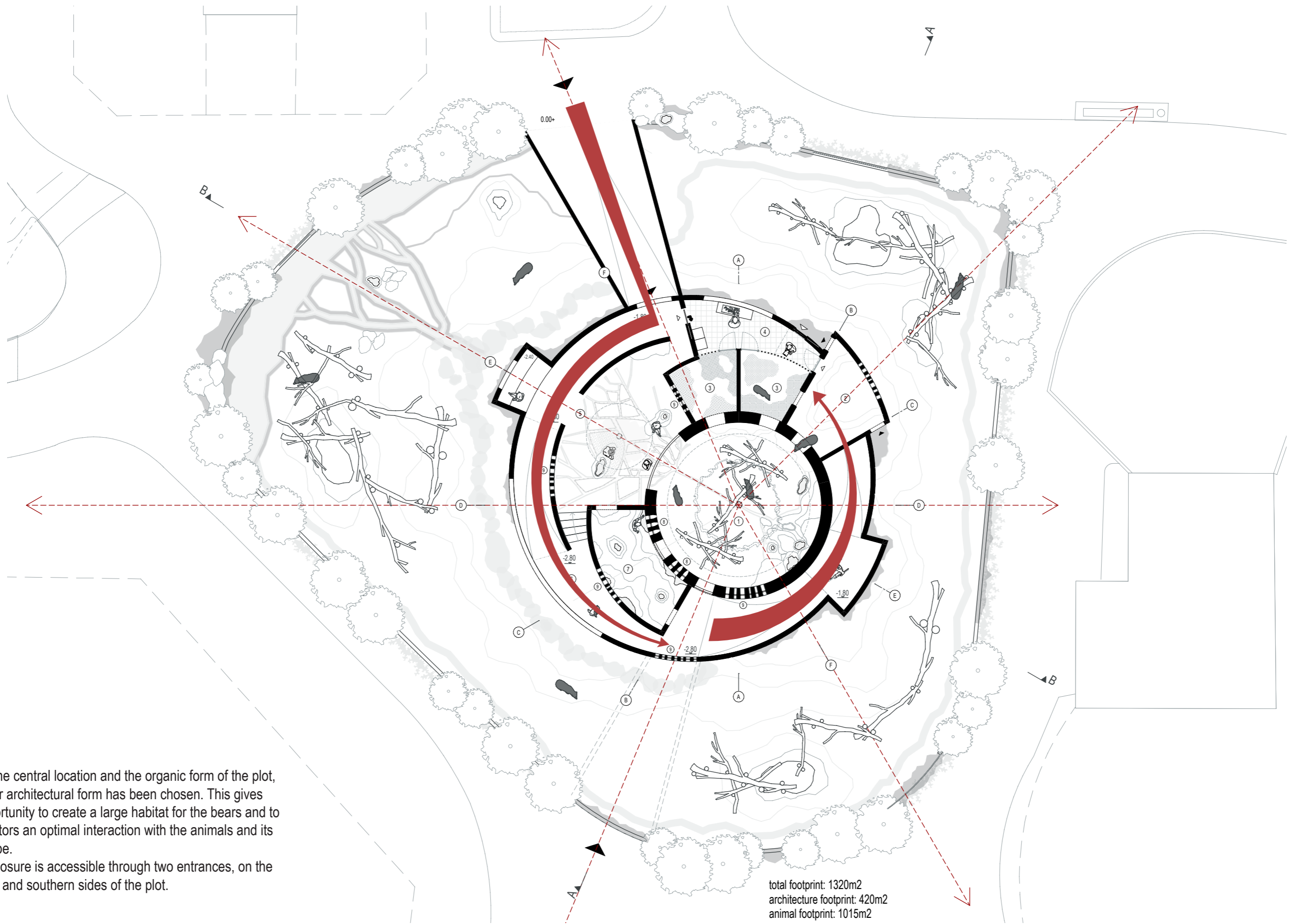
credits: Waterlinie Museum Fort bij Vechten | Anne Holtrop | Bunnik, The Netherlands





total footprint: 1320m<sup>2</sup>  
architecture footprint: 420m<sup>2</sup>  
animal footprint: 1015m<sup>2</sup>

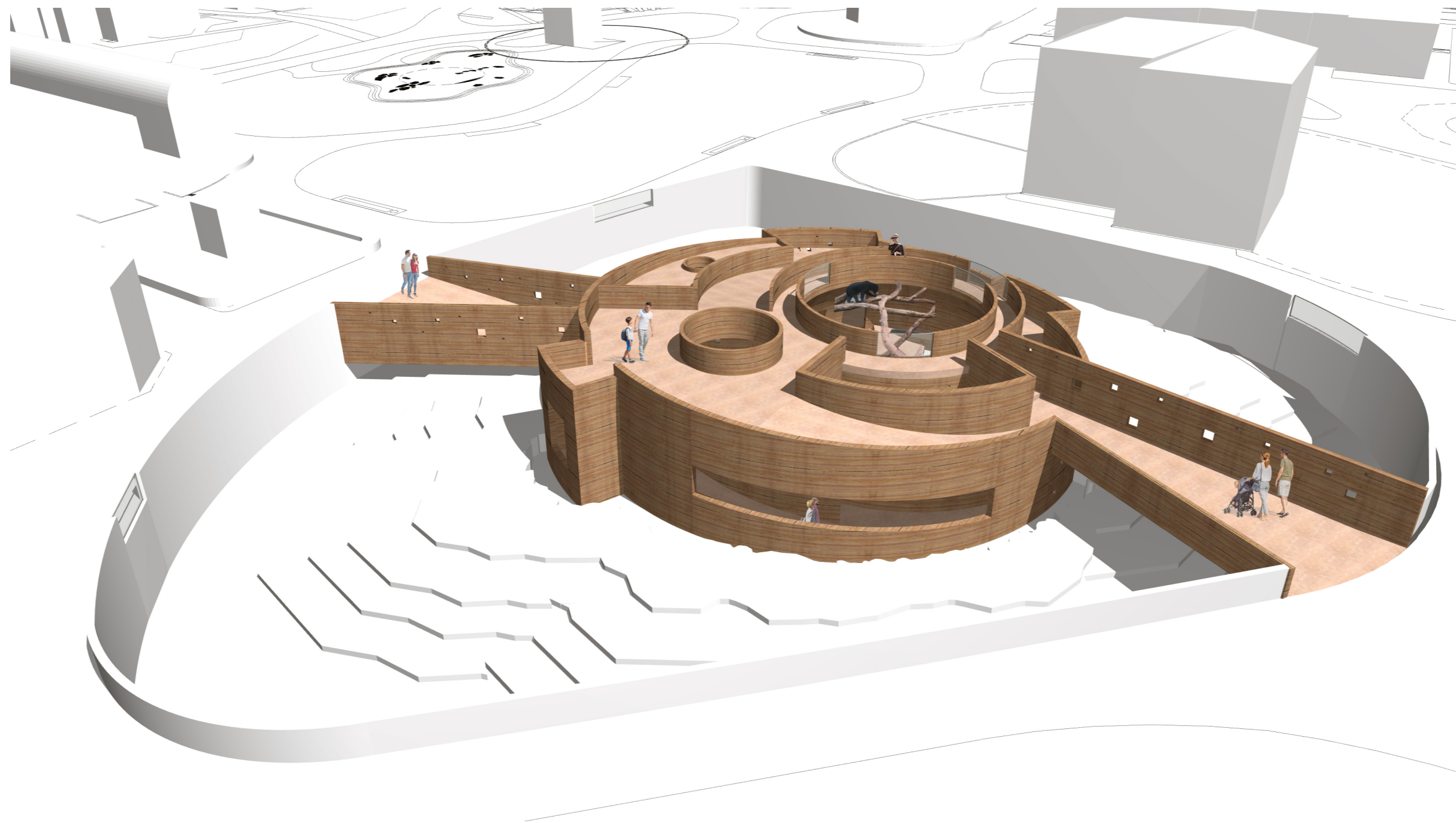


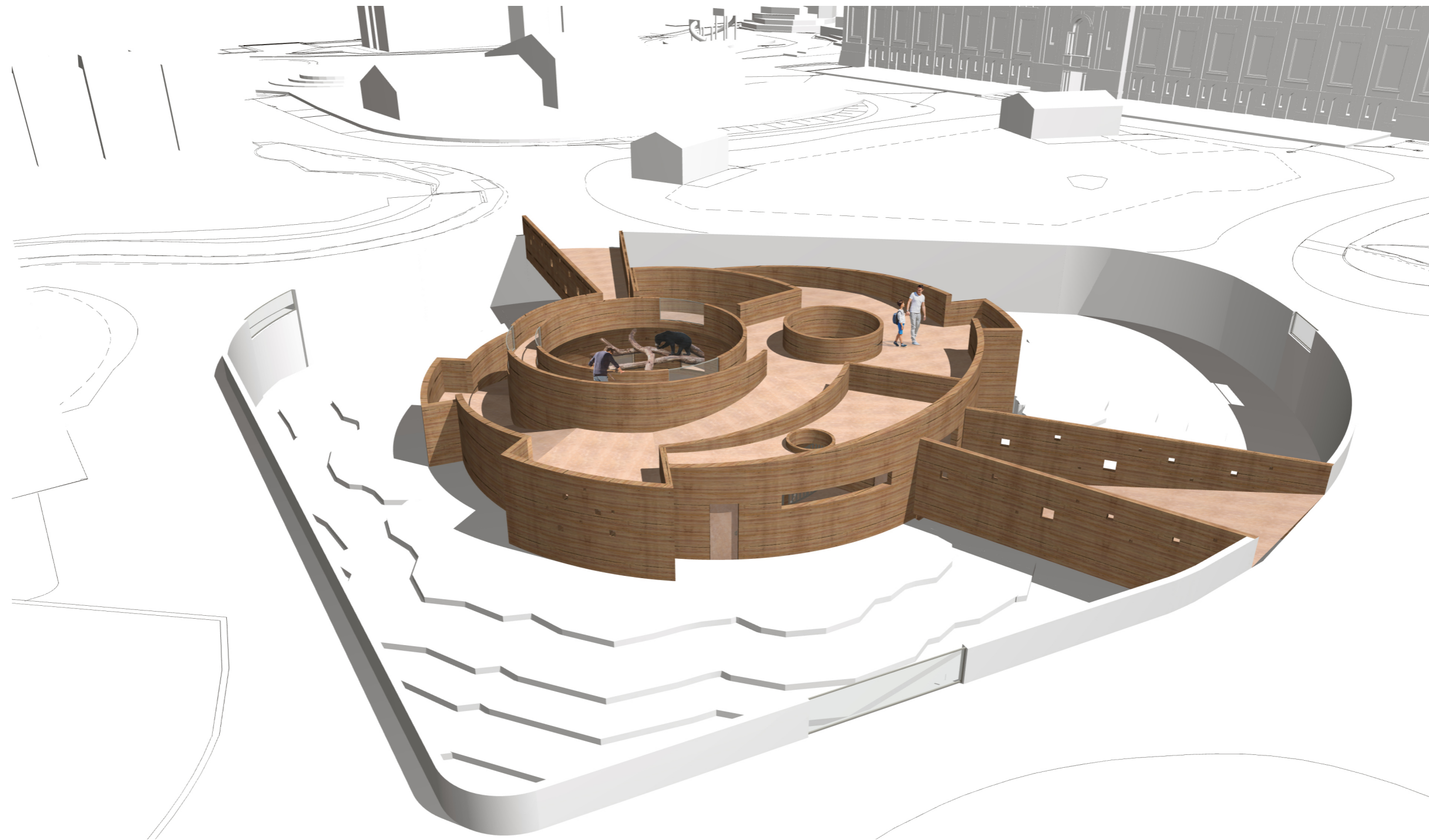


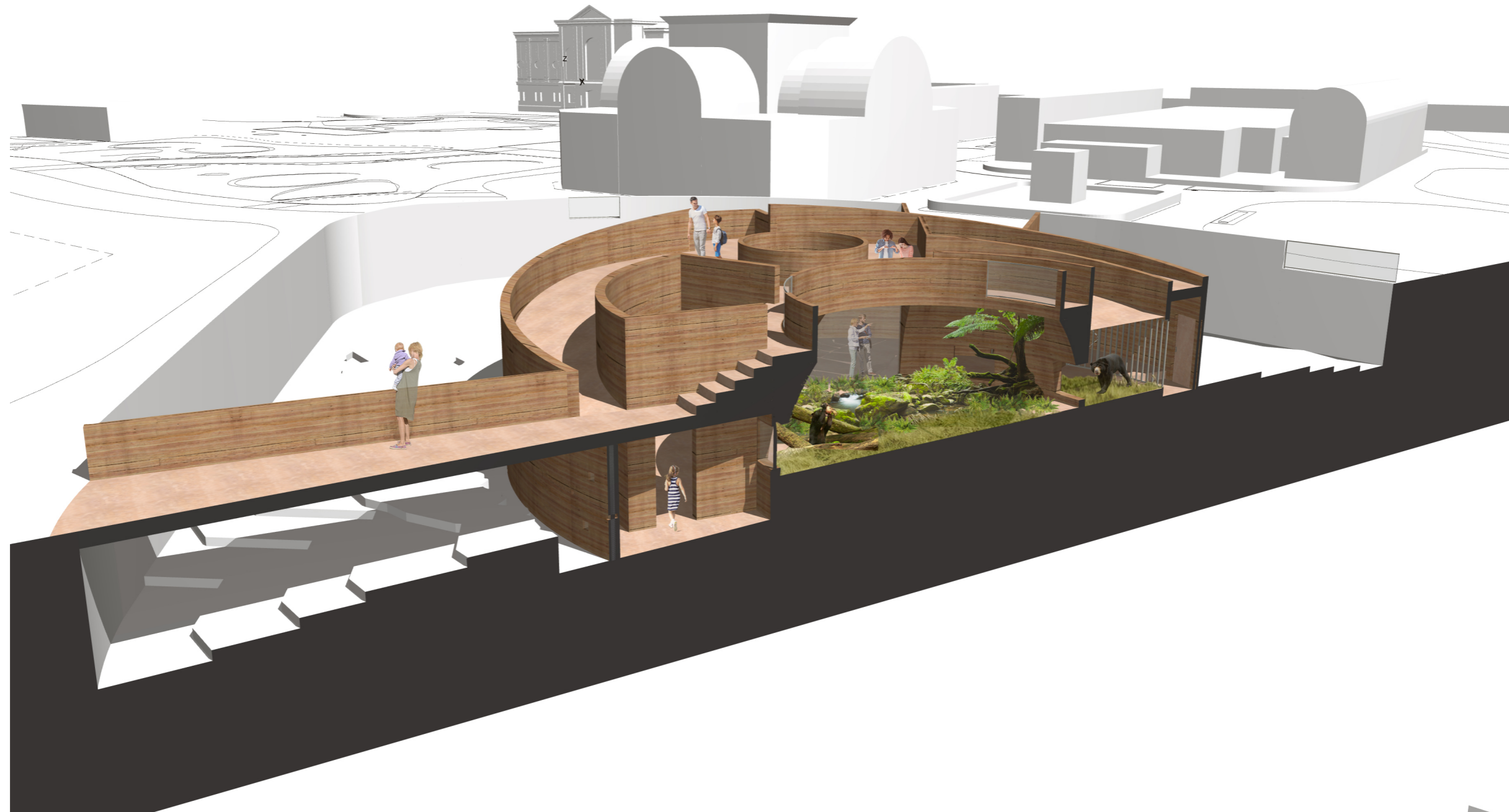
Due to the central location and the organic form of the plot, a circular architectural form has been chosen. This gives the opportunity to create a large habitat for the bears and to offer visitors an optimal interaction with the animals and its landscape.

The enclosure is accessible through two entrances, on the northern and southern sides of the plot.

total footprint: 1320m<sup>2</sup>  
 architecture footprint: 420m<sup>2</sup>  
 animal footprint: 1015m<sup>2</sup>







The enclosure consists of a number of different layers, all formed from the central semi-hidden area, the "Rock shelter".  
 The architecture is separated from this section by arched (cantilevered) walls.  
 A local moat provides a natural-looking separated distance on the outside.  
 Since the design is sunk into the soil, there is a direct separation from the main path. These will be covered with raised artificial rockwork. Behind this an extra natural separation is created by means of the existing green borders, trees and plants.





Artis Royal Zoo, Amsterdam - view of the current situation [north]



Artis Royal Zoo, Amsterdam - view of the north entrance

The northern entrance is on the route from the elephant enclosure and the accompanying bridge. The earthy colored walls, which differ in height, invite visitors to continue their route in this enclosure. The sun bear printed on the walls and the views of the climbing treetops immediately show which animal enclosure is involved.



Artis Royal Zoo, Amsterdam - view of the current situation [south]

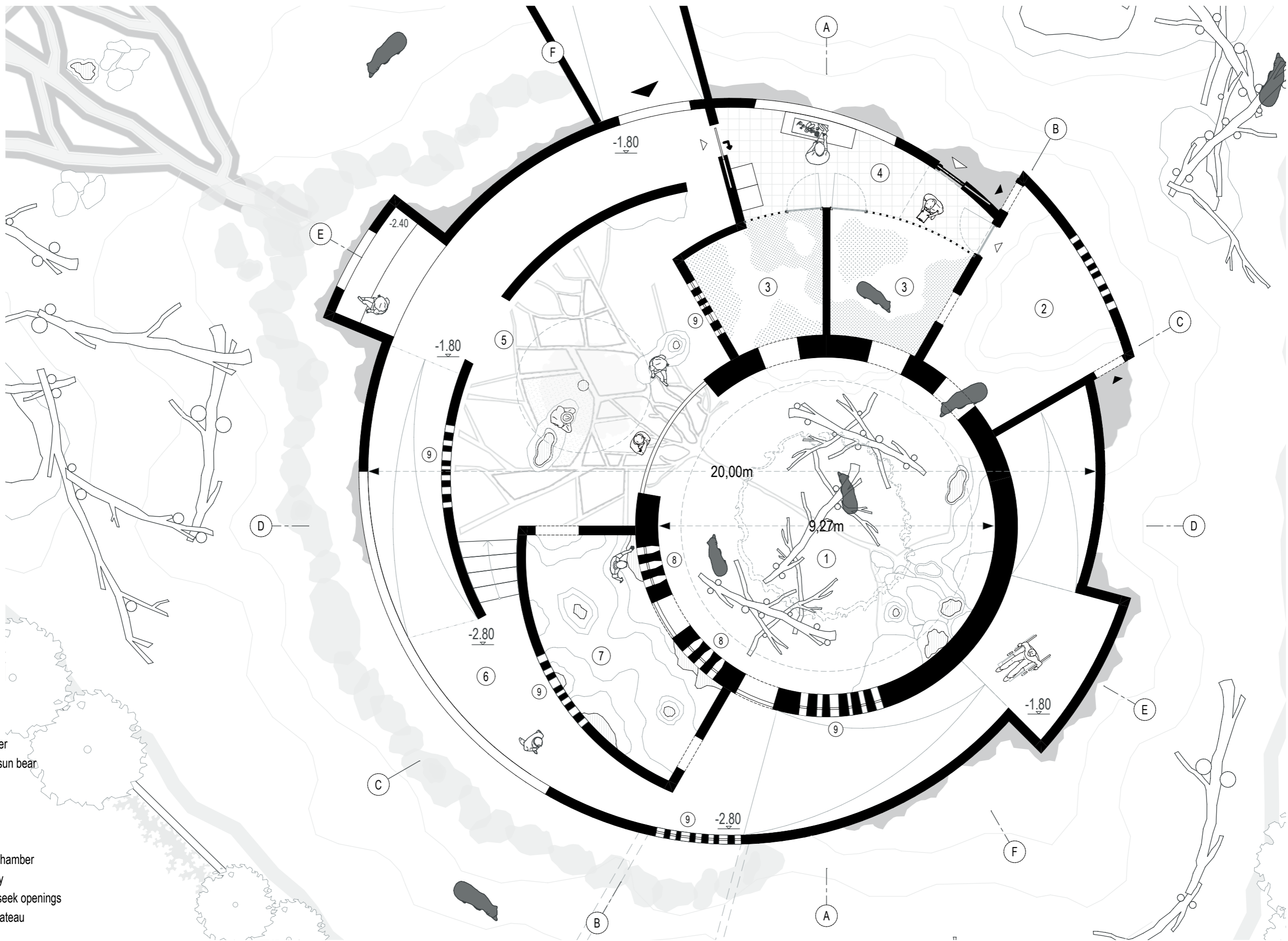




Artis Royal Zoo, Amsterdam - view of the south entrance

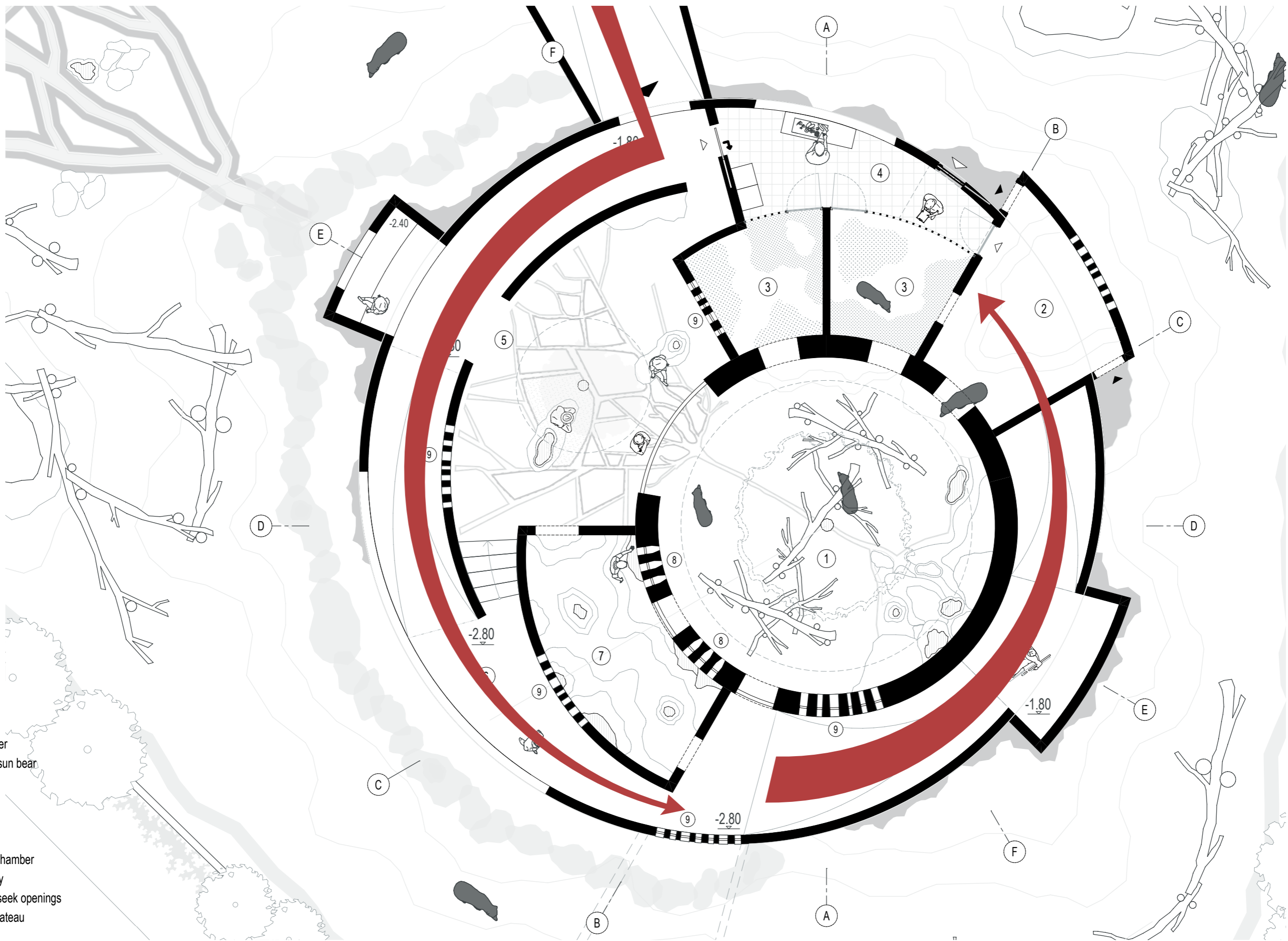
The southern entrance is at the crossroads of several routes. It is visible via narrow paths and therefore provides interesting views. The descending slope can emerge any time when you walk around a certain corner.

The alternation of open boundaries and dense vegetation makes for an exciting encounter with the enclosure.



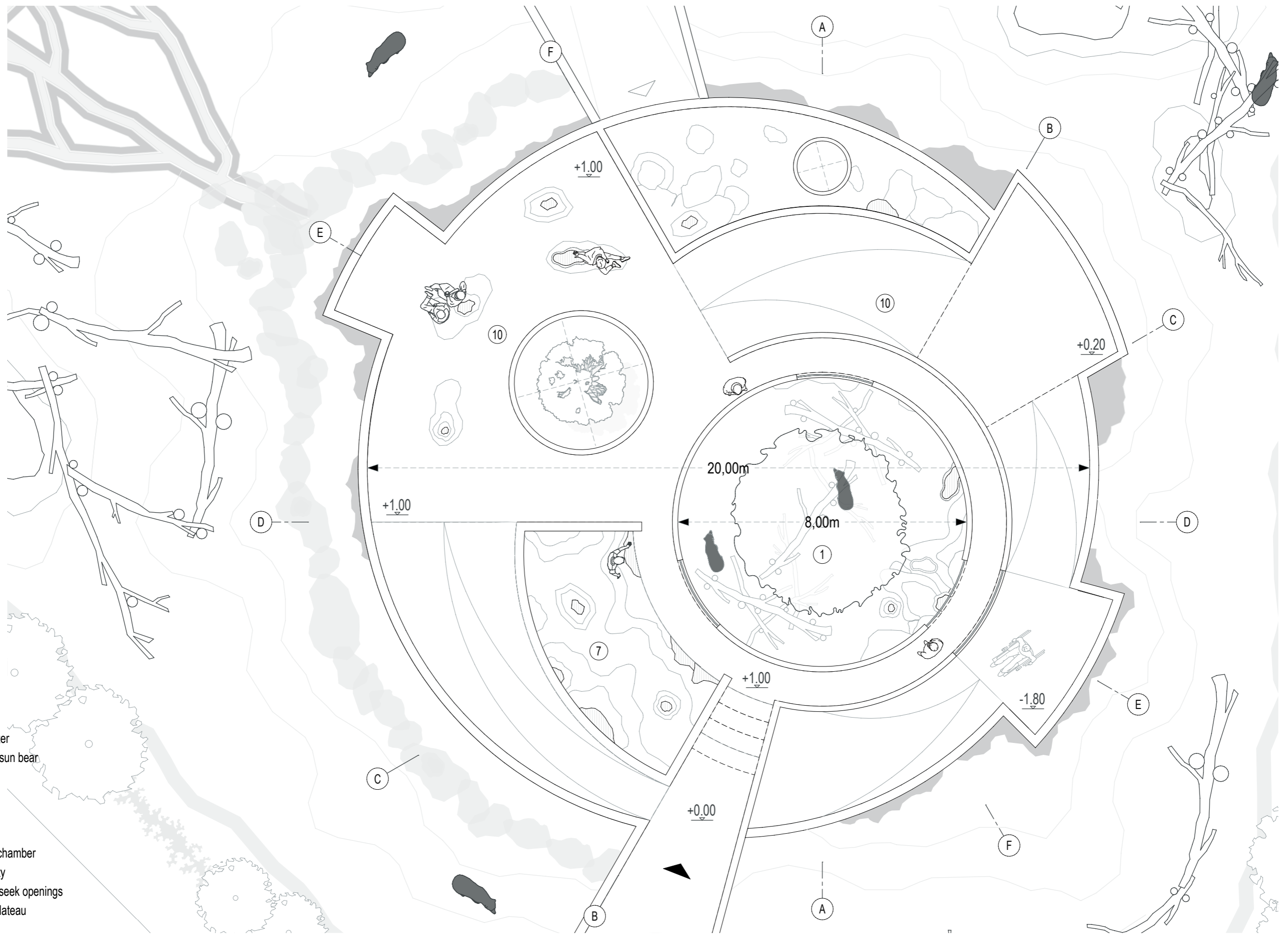
- ① rock shelter
- ② entrance sun bear
- ③ shelters
- ④ logistics
- ⑤ big hall
- ⑥ gallery
- ⑦ climbing chamber
- ⑧ food cavity
- ⑨ hide and seek openings
- ⑩ viewing plateau





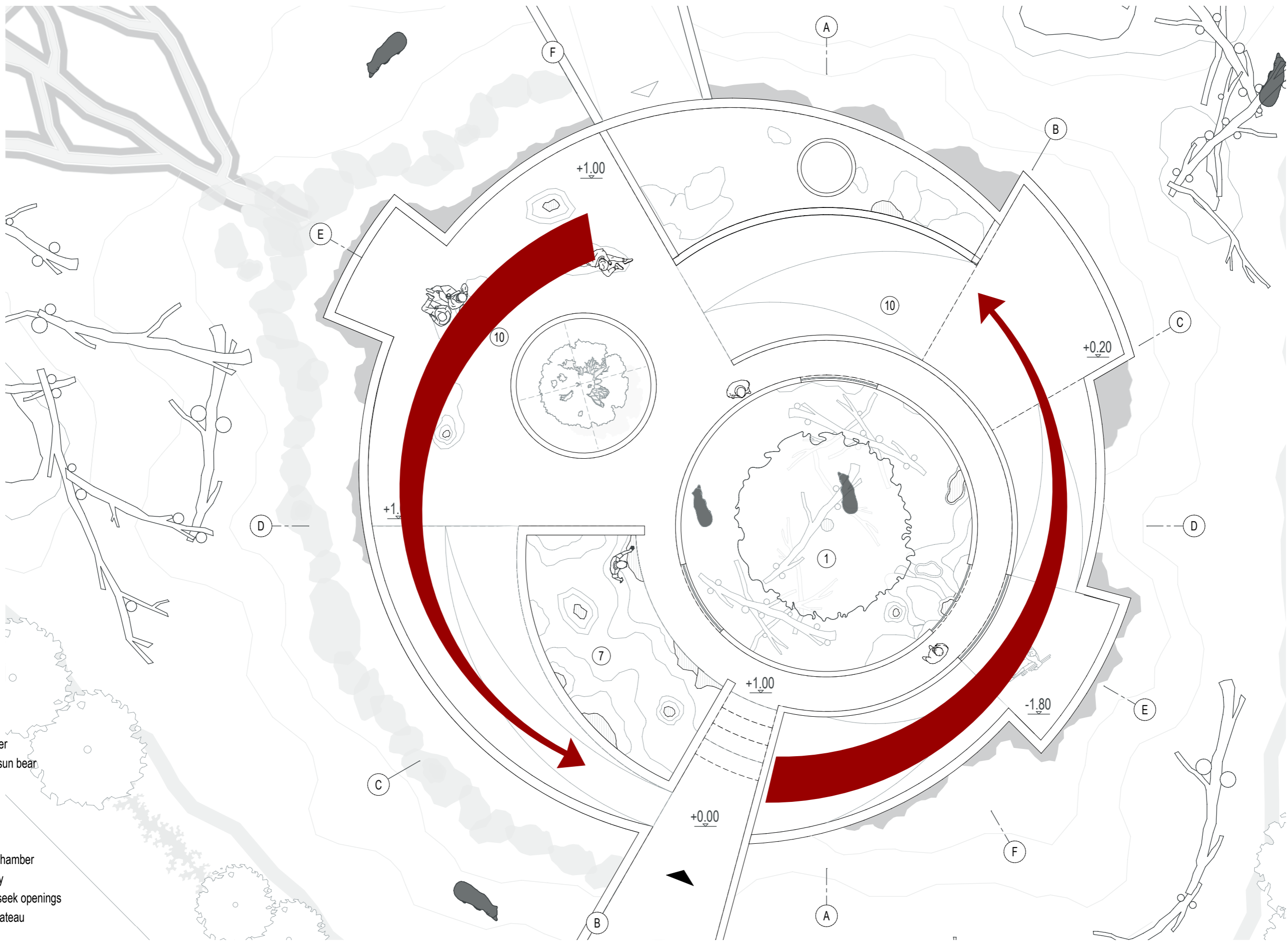
- ① rock shelter
- ② entrance sun bear
- ③ shelters
- ④ logistics
- ⑤ big hall
- ⑥ gallery
- ⑦ climbing chamber
- ⑧ food cavity
- ⑨ hide and seek openings
- ⑩ viewing plateau





- ① rock shelter
- ② entrance sun bear
- ③ shelters
- ④ logistics
- ⑤ big hall
- ⑥ gallery
- ⑦ climbing chamber
- ⑧ food cavity
- ⑨ hide and seek openings
- ⑩ viewing plateau





- ① rock shelter
- ② entrance sun bear
- ③ shelters
- ④ logistics
- ⑤ big hall
- ⑥ gallery
- ⑦ climbing chamber
- ⑧ food cavity
- ⑨ hide and seek openings
- ⑩ viewing plateau





Replication

credits: Marina One | Gustafson Porter + Bowman | Singapore

1. Here, the rainforest is used as a replication into the design. The enclosure seems like a piece of natural environment, plucked from South East Asia and descended here. Between the 'dense' leaves and foliages you can see the human made elements. That is the moment where the imagination of the visitors changed into reality.



Citation

credits: Ilawa Forest | Landscape Architecture Lab | Poland

2. Here, the rainforest is used as a citation into the design. Characteristic elements of this landscape have been placed in the enclosure design. Examples from the image include the Kapok tree, a flowing stream, various sized rocks and the dense fog/moisture. The rest of the enclosure landscape has no further relationship with the rainforest.

For the representation of the landscape in the enclosure, research has been conducted into the natural landscape of the honey bear through four categories; replication, citation, adaptation and abstraction.

The choice for one or more of these variants is based on the development and evocation of the animal's natural behavior. Then it is necessary to consider what the possibilities are within a certain plot/area.



Adaptation

credits: Stovnertarnet | LINK Landskap | Oslo, Norway

3. Here, the rainforest is used as an adaptation into the design. Also some characteristic elements of this landscape have been placed in the enclosure design, but the difference with 'citation' are the human hands which are clearly visible.

Examples from the image include the wooden columns as a reference to the many trees, and the artificial rockwork as a reference to the rocky, slippery soil of the rainforest.



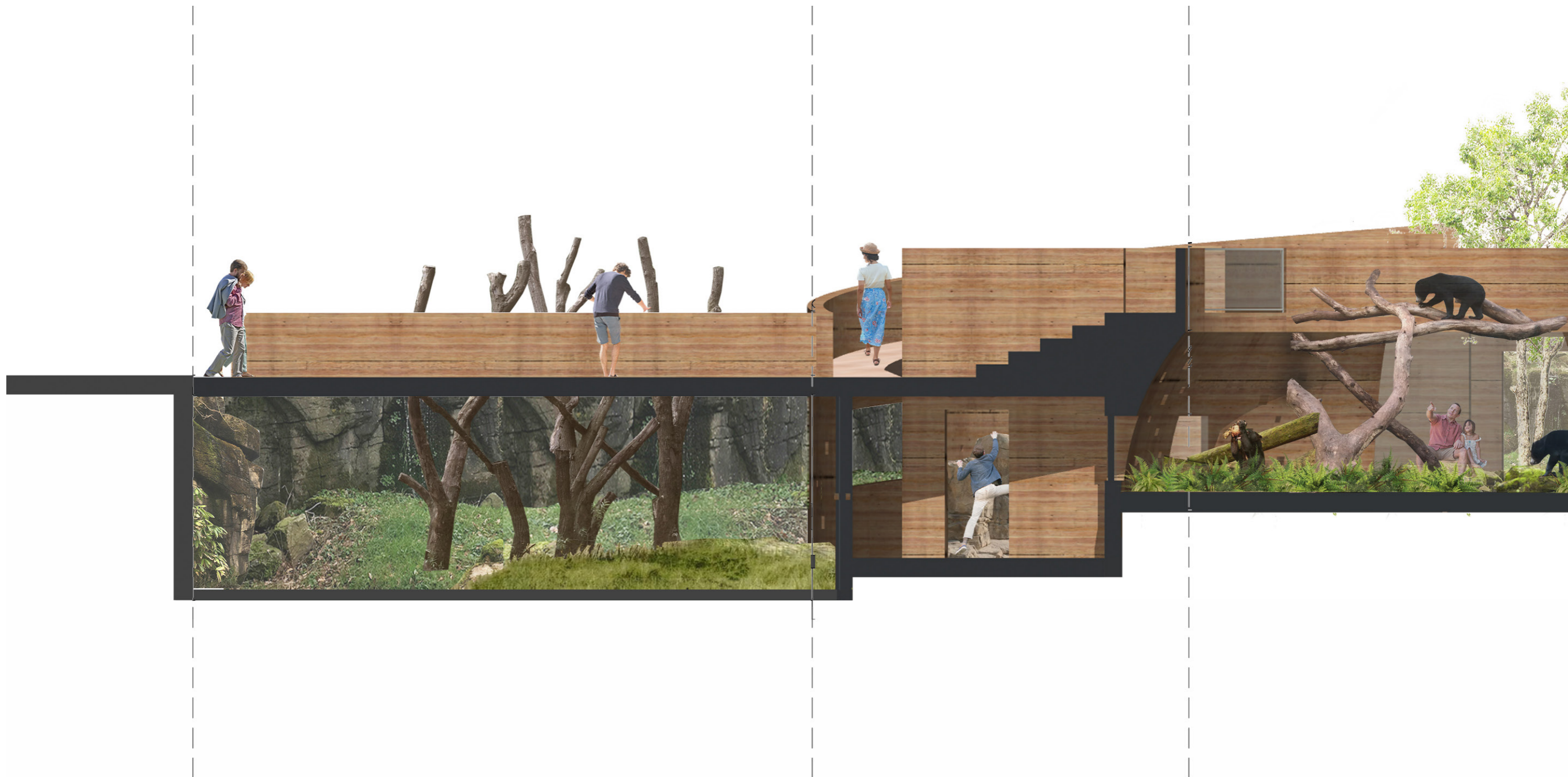
Abstraction

credits: Velenje City Center | Enota | Slovenia & Play Landscape be-MINE | Carce LA + OMGEVING LA | Belgium

4. Here, the rainforest is used as an abstraction into the design. The enclosure seems like an artificial and abstract form of a levelling landscape. The visitor needs an explanation to understand that this refer to the environment of the rainforest.

The landscape design must give the reason that an animal can breed a relationship with its environment (affordance). From there, it is possible to see what influence the animal has inside and outside the enclosure (agency).

The research has shown that in the (climate) conditions of Artis (thinking of size), the representation of the landscape becomes a mix of 'citation' and 'adaptation'.



The circular shape of the design offers the opportunity to form the landscape both in and around the visitor route. The layerdness creates an alternation between landscape and built environment. It results in a better connection between human and nature.

For the bears this provides a variety of leveling movement, hiding and fouraging space, with a lot of opportunity for climbing (affordance).





The many openings of the design provide optimal light, while the various sizes and shapes provide a varying effect and atmosphere.



◀ moat ▶

outside area of the sun bear

▶ moat ▶

◀ "Big Hall"  
landscape of the visitor



"Rock shelter"  
semi-hidden landscape of the sun bear

Slope to the view deck

outside area of the sun bear

moat



Impression of the "Big hall"

This is the first large space that visitors will find when they enter the southern entrance. The large window gives a one-on-one interaction with the animals. Because the landscape is extended from this semi-hidden area into this space, the experience and ambiance is enhanced.

By bringing visitors into contact with the landscape of the bear, reference is made to the culture of Southeast Asia, where ecological use of nature by human in their daily lives is often still made.





Impression of the "Rock shelter"

The clay walls can be provided in specific places with small holes and openings in which bees or other insects can be housed. In addition, larger openings are again an opportunity for smaller animals to take up residence, such as bats and birds. This increases biodiversity inside and outside the residence.

The bears, in turn, can be enriched by finding food in these openings. This stimulates a natural behavior (agency).





Impression of the "Gallery"

The gallery offers a panoramic view of the surrounding leveling landscape where the bears can do well with enough room to move, climb and foraging (affordance). The light provides a nice ambiance by contrasting the colorized rammed earth walls en concrete floor.



Impression [section] of the "Climbing chamber"

Visitors can have fun at the many small openings behind which insects or other small animals hide. In addition, the long tongue of the honey bear can also appear when it is looking for honey in the hidden feeding spots (agency).

What also makes this space special is that visitors can imitate the main character trait of the bears, namely climbing. It provides an adventurous route, which is an extra enrichment for the children.

Living and moving in nature!



