

ARCHITECTURE IN STONE

Sensor booklet, diploma spring 2017
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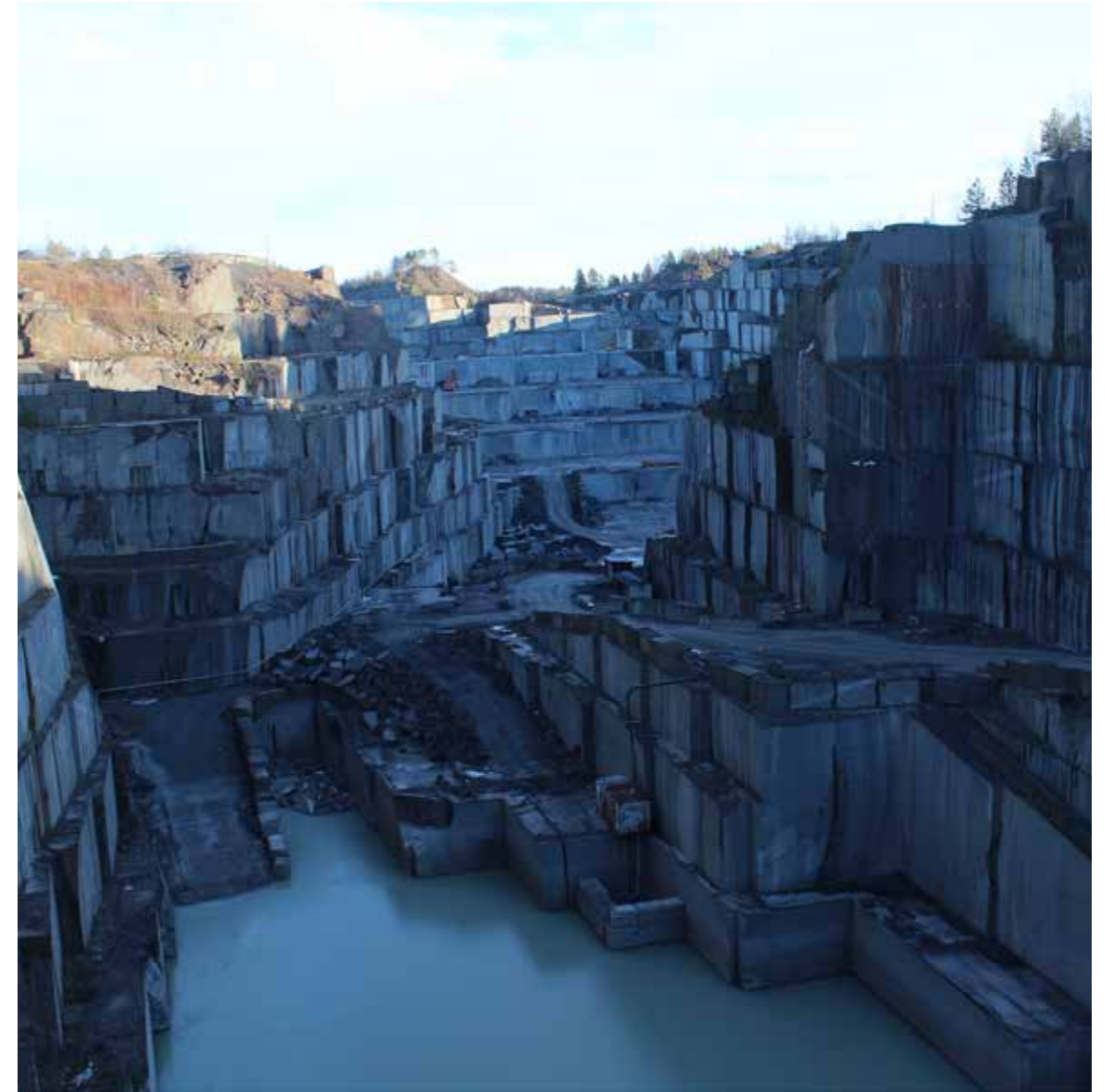


ARCHITECTURE IN STONE

An active quarry is a constantly changing landscape. Its raw and edgy character express an ongoing conflict between nature on the one hand, and human influence on the other. This inspired the design of a building carved out of the rock by the diamond wire saw, a technique used in the quarrying process.

The approach of the project was to make a factory producing building- and paving-stones from waste material provided by the quarry, and to show the characteristics and potential of the available stone in the architecture.

The larvikite rock dates back 300 million years. The crossover of architecture and nature in this building therefore pushes the concept of time to the forefront. It raises the question of what the site used to be, what it is now and what it might become in the future.



The site: Klåstad Larvikite quarry in Larvik, Norway.

THE ROCK

I became curious about rock as building material after a visit to a schist factory during a master course last year. I began imagining what kind of spaces I could potentially create of stone in present day architecture; with stone as the main constructive element, not just as a decorative element.

After many conversations with stone enthusiasts, I was recommended a visit to Lundhs AS in Larvik for viewing the Larvikite stone quarries and visit a stone factory. I chose to continue working with the larvikite stone, unique to Norway. It is a very hard and dense stone similar to granite (more information about the characteristics of larvikite can be found in the pre-diploma on p. 20).

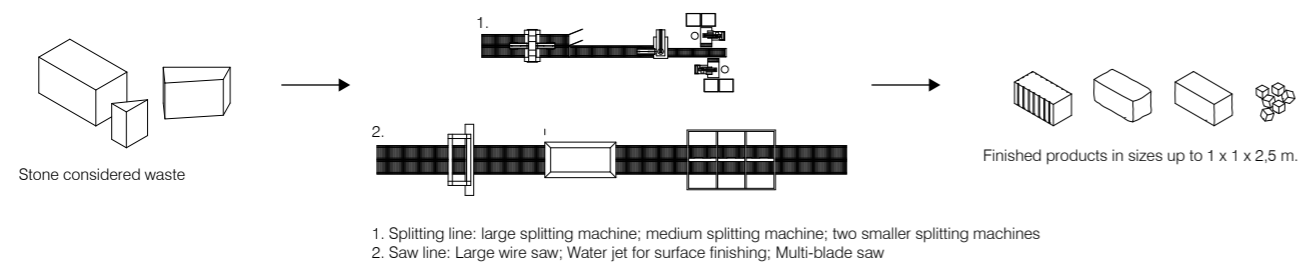


The type of larvikite rock at the chosen site

THE PROGRAM

My visit to larvik put me in contact with a company producing buildingstones out of waste material from the quarry. I decided to make this the function of the factory. I see it as a missing link of all the processes happening on site, considering the average waste prosentage from quarries are 50 % of extracted stone.

The factory producing building- and paving-stones from waste material:

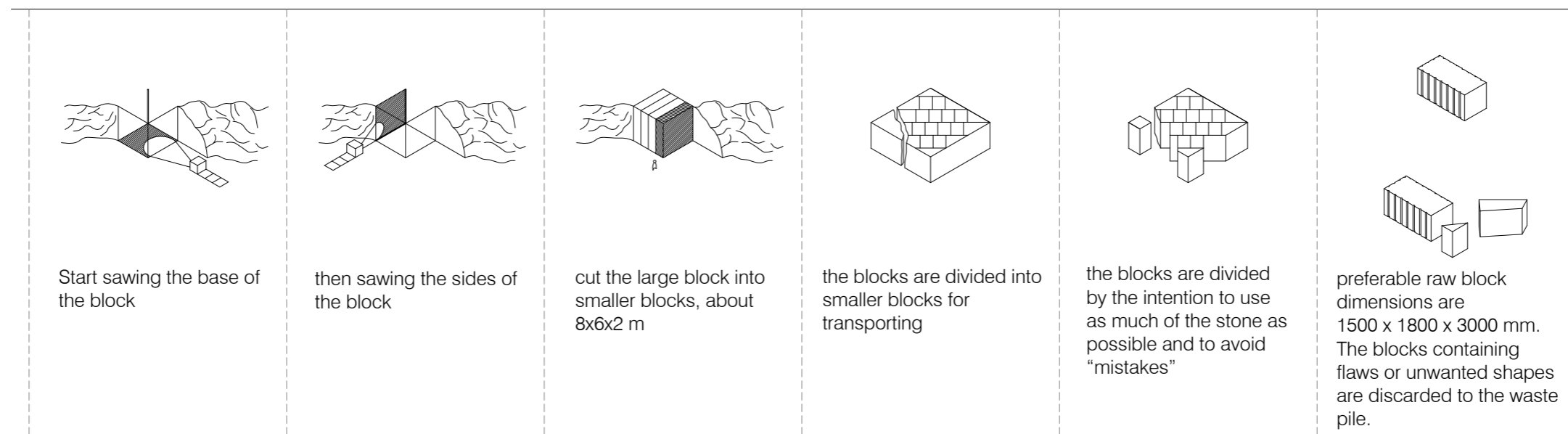
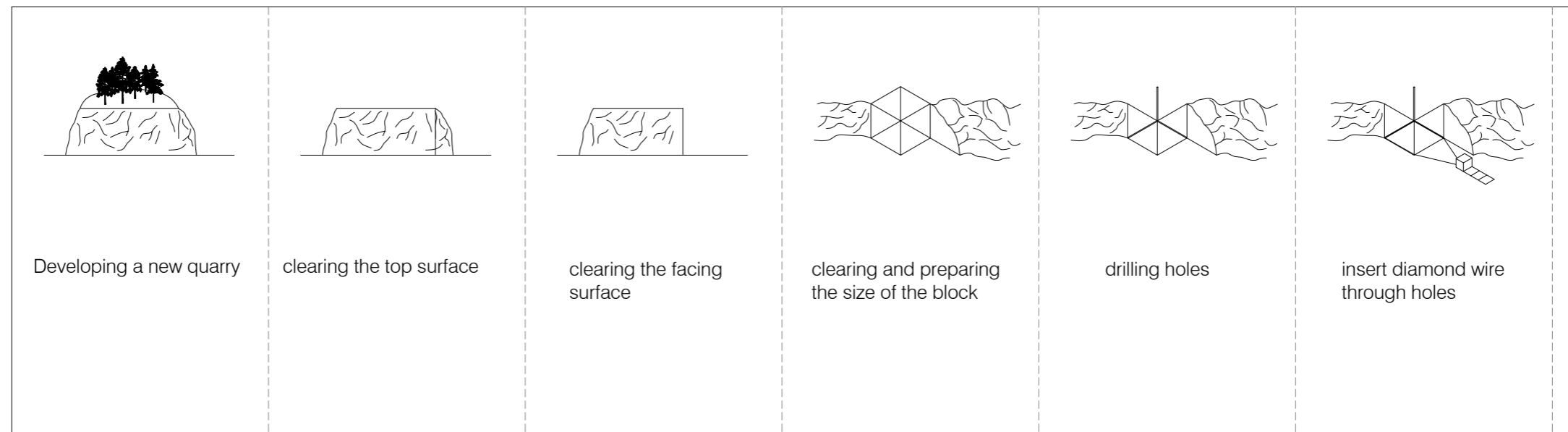


- 1. The proposed stone factory
- 2. Quarry waste-pile
- 3. Workshops and storage of "raw-blocks"
- 4. Gravel production from waste material
- 5. Garage

Situation map 1:5000



The Quarry extraction process



THE UNDERGROUND QUARRY

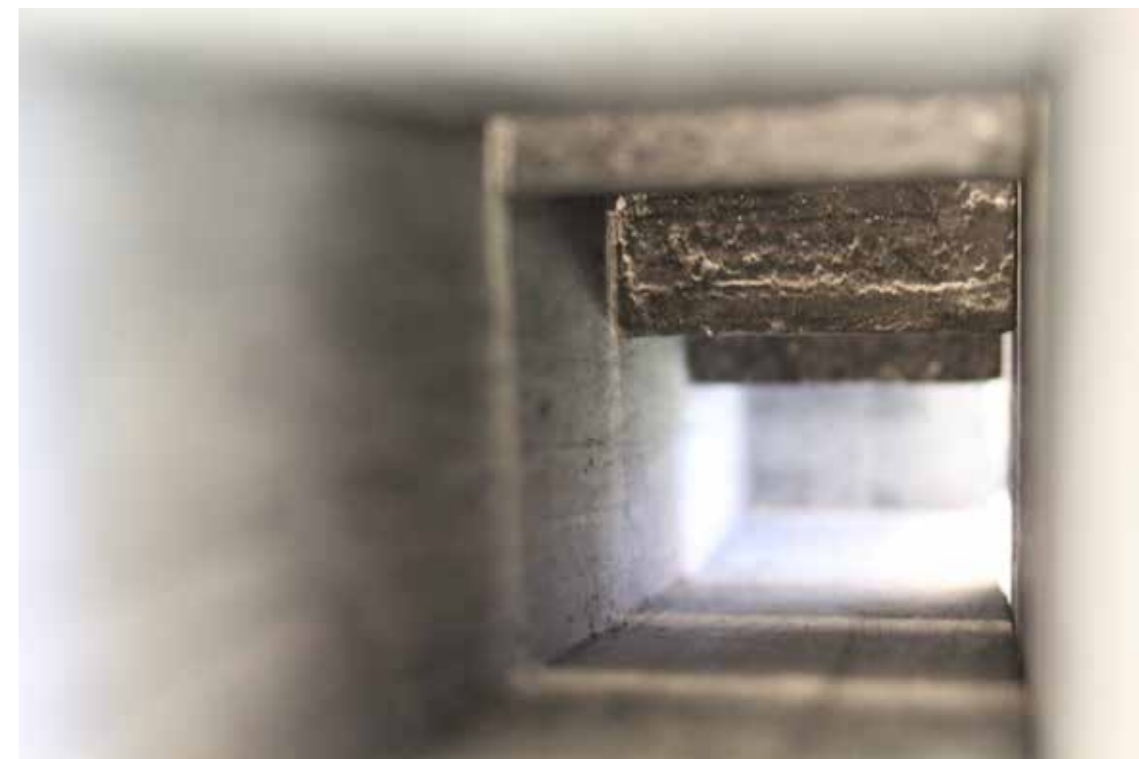
There are two ways of developing and running a quarry. There is the open casket quarry as my site in Klåstad, and the underground quarry. The underground quarry became the architectural reference of my project.

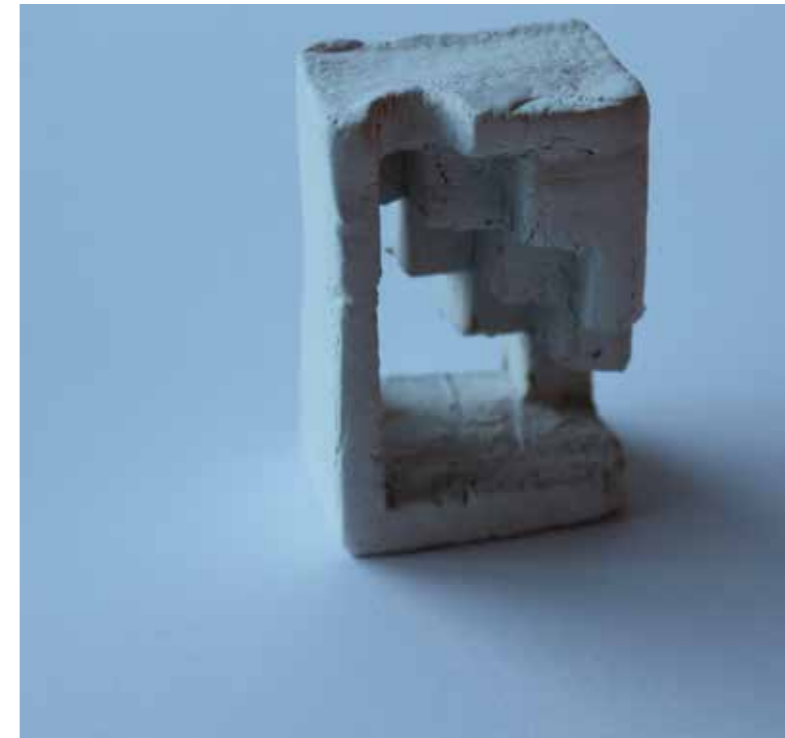


Yule marble quarry, Colorado USA.

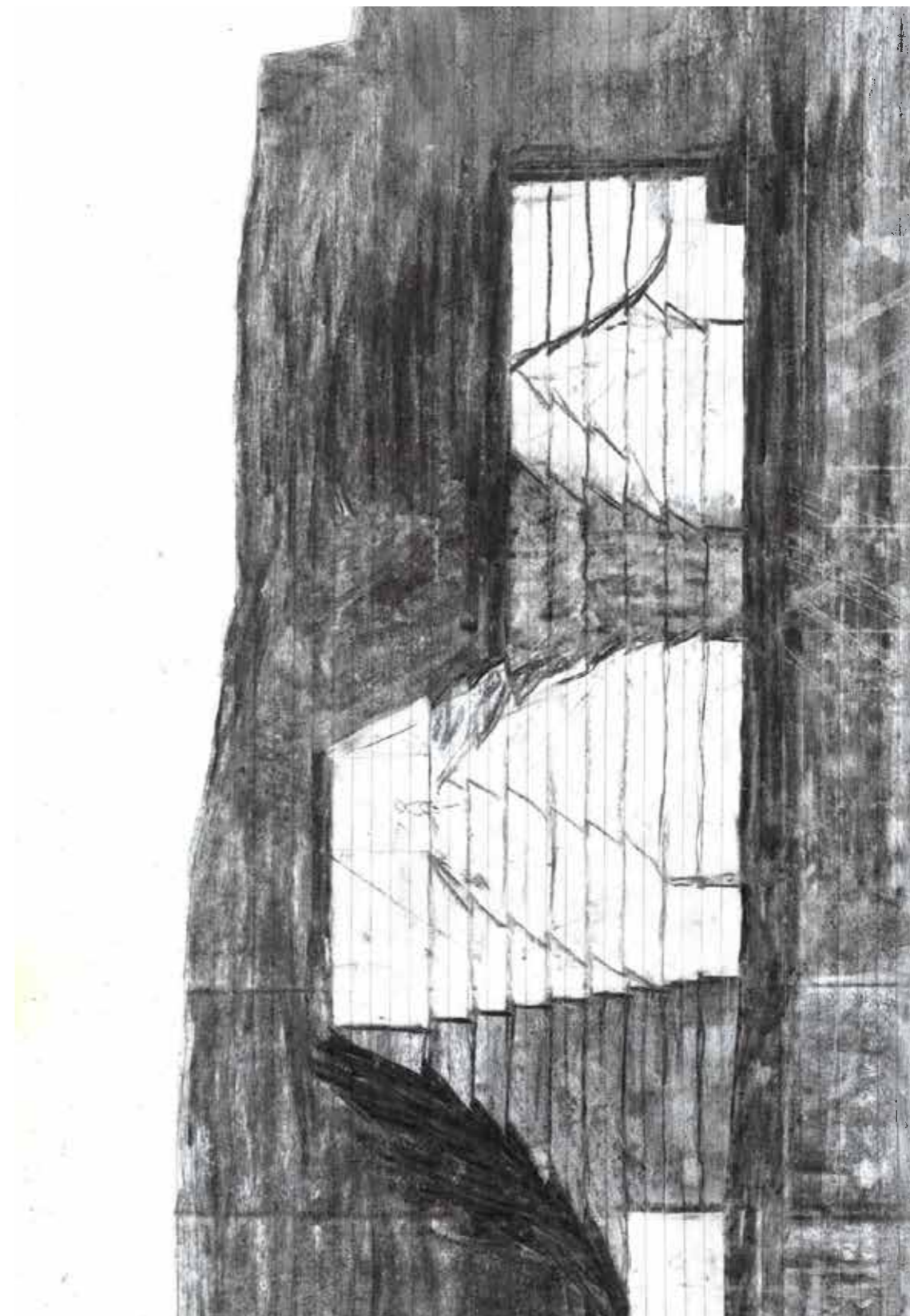
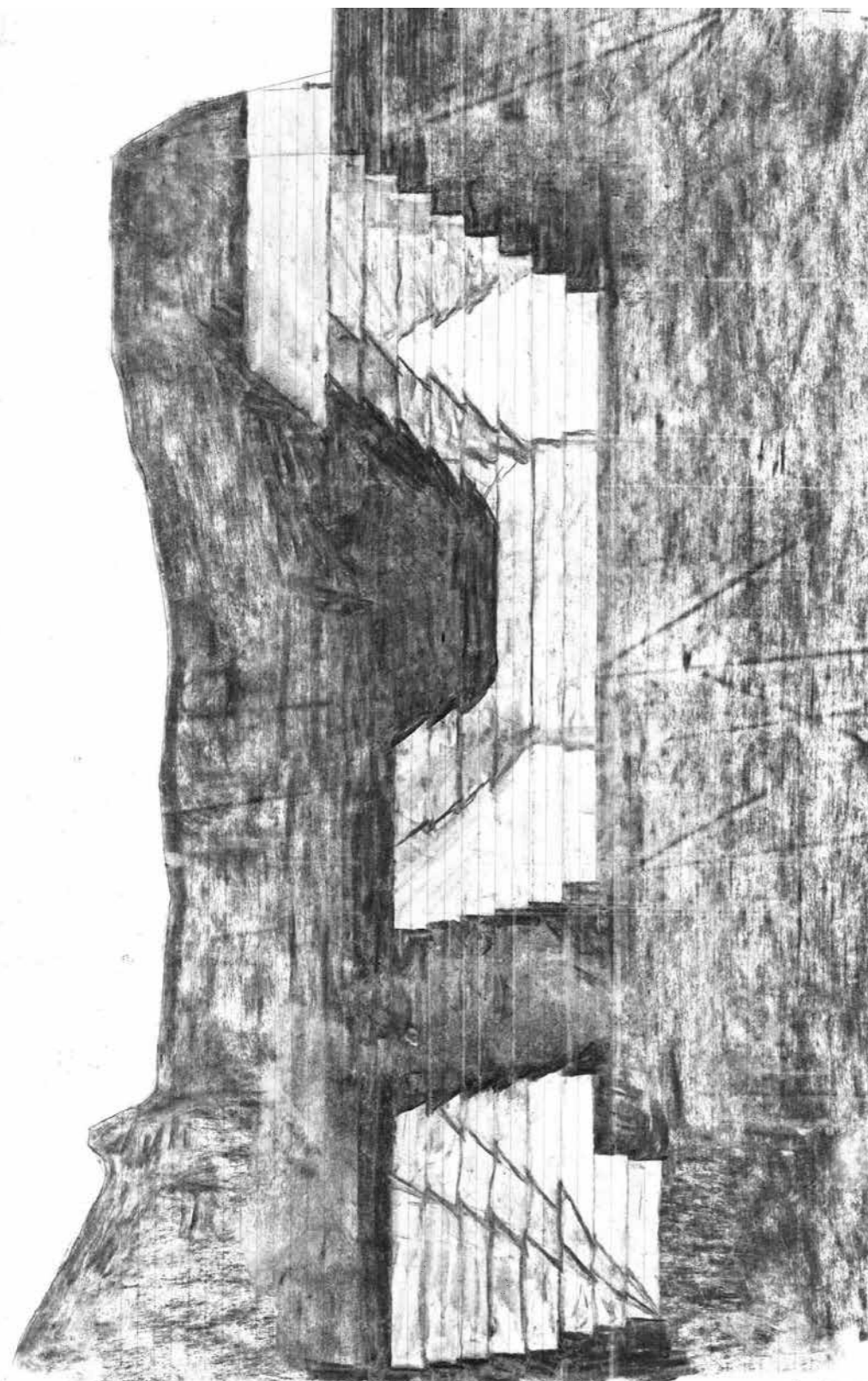


Making models and charcoal sketches investigating how to cut out spaces with the diamond wire saw:





Sketches rotated 90°

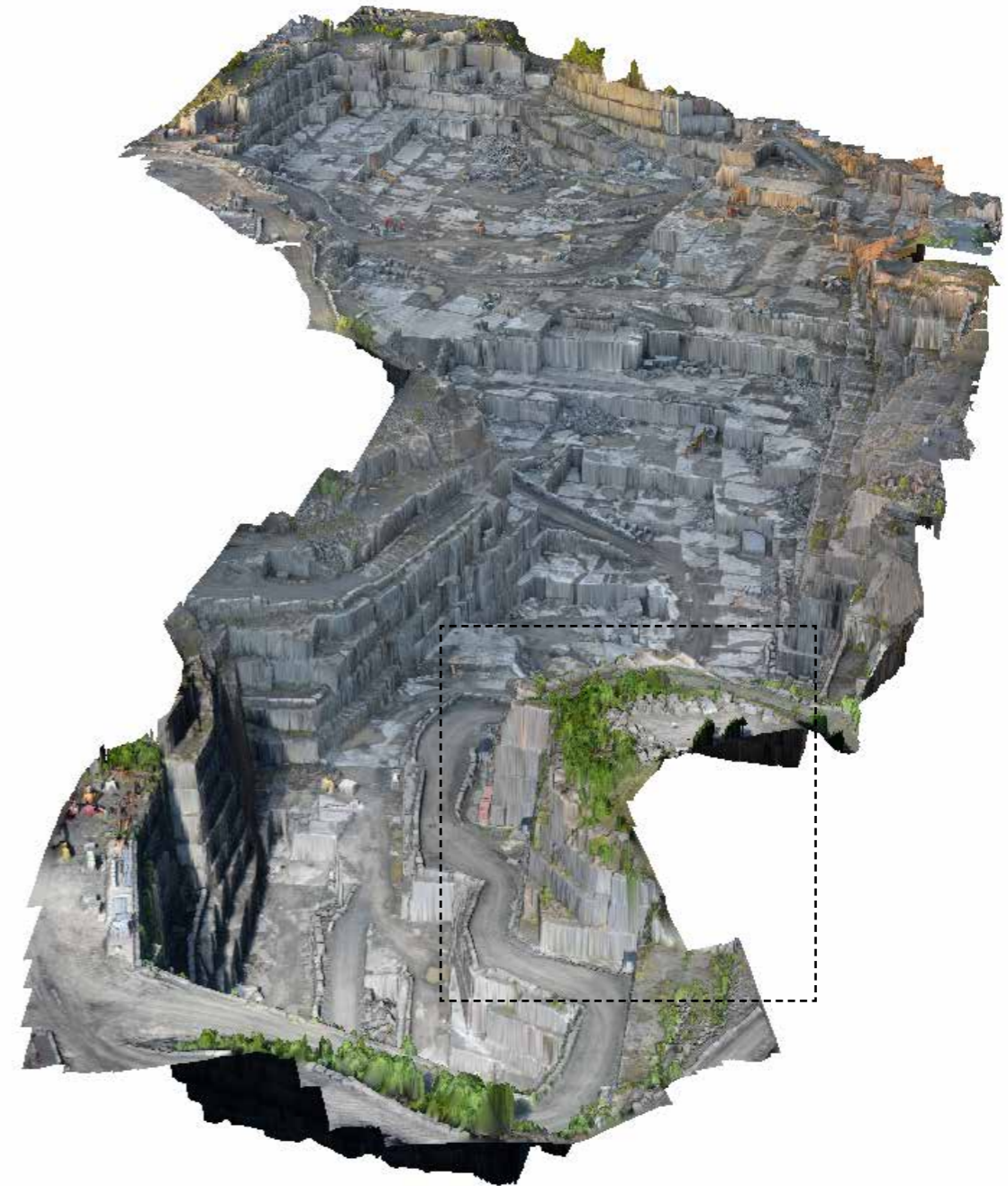


THE SITE

The dotted line to the right show the positioning in the quarry. The factory entrances go onto the ramp leading up from the quarry. The position was chosen to make a connection from the top and down to today's bottom of the quarry. Another important parameter was sunlight as the spaces I create will be very deep and dark.



Klåstad quarry, picture owned by Lundhs AS

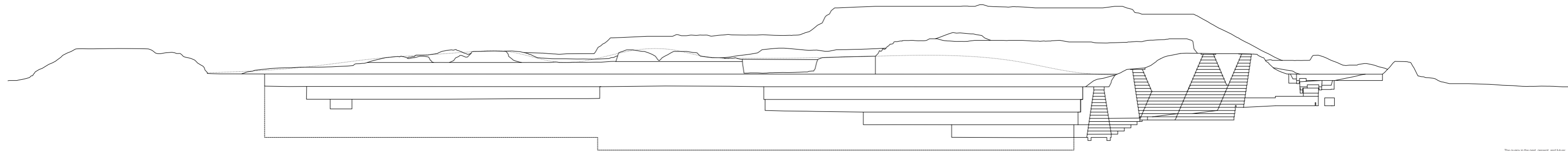


3D model of the quarry mapped by a drone, by Aerial geo survey

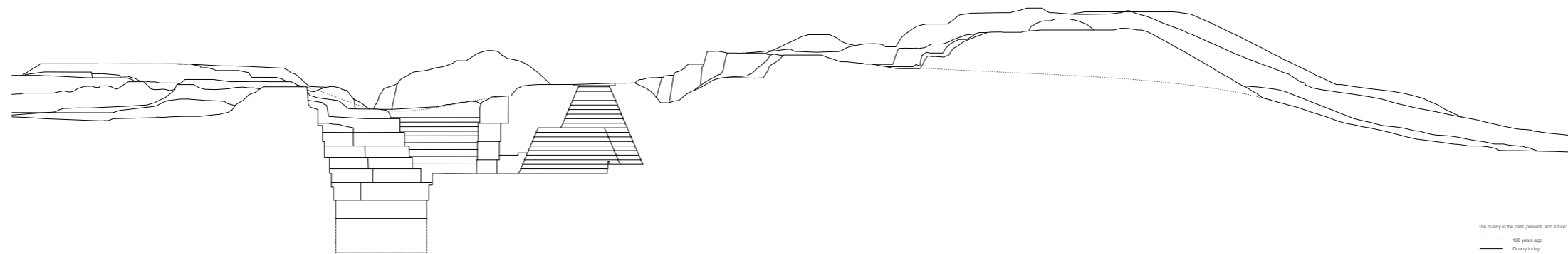
THE PROJECT

The spaces are constructed by using the diamond wire saw to create an architecture in direct relation to the human made landscape. The function; the stone factory with its machines and infrastructure, is in this project put as a layer on top of the spaces in stone; that alone create a timeless atmosphere.

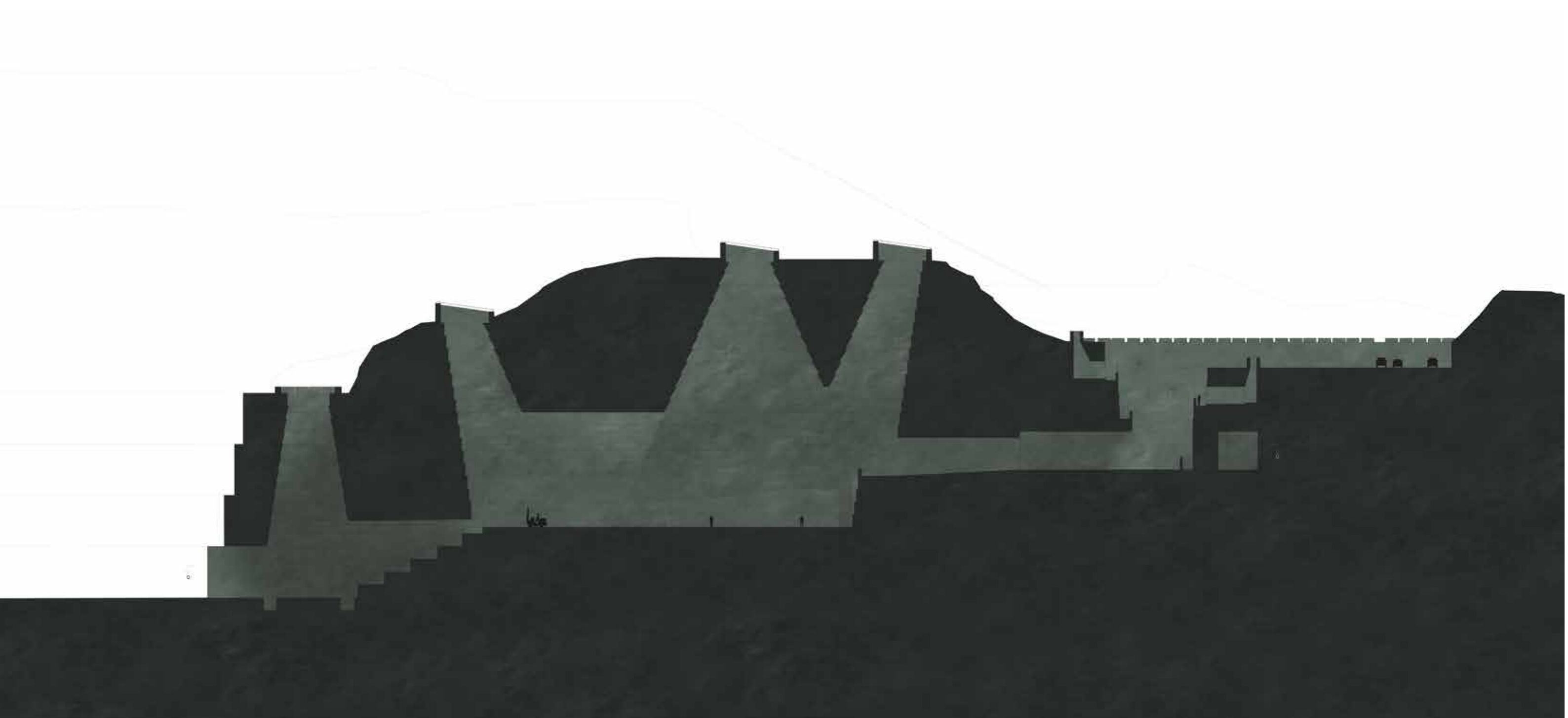
The drawings of sections below show the quarry in past, present and future.



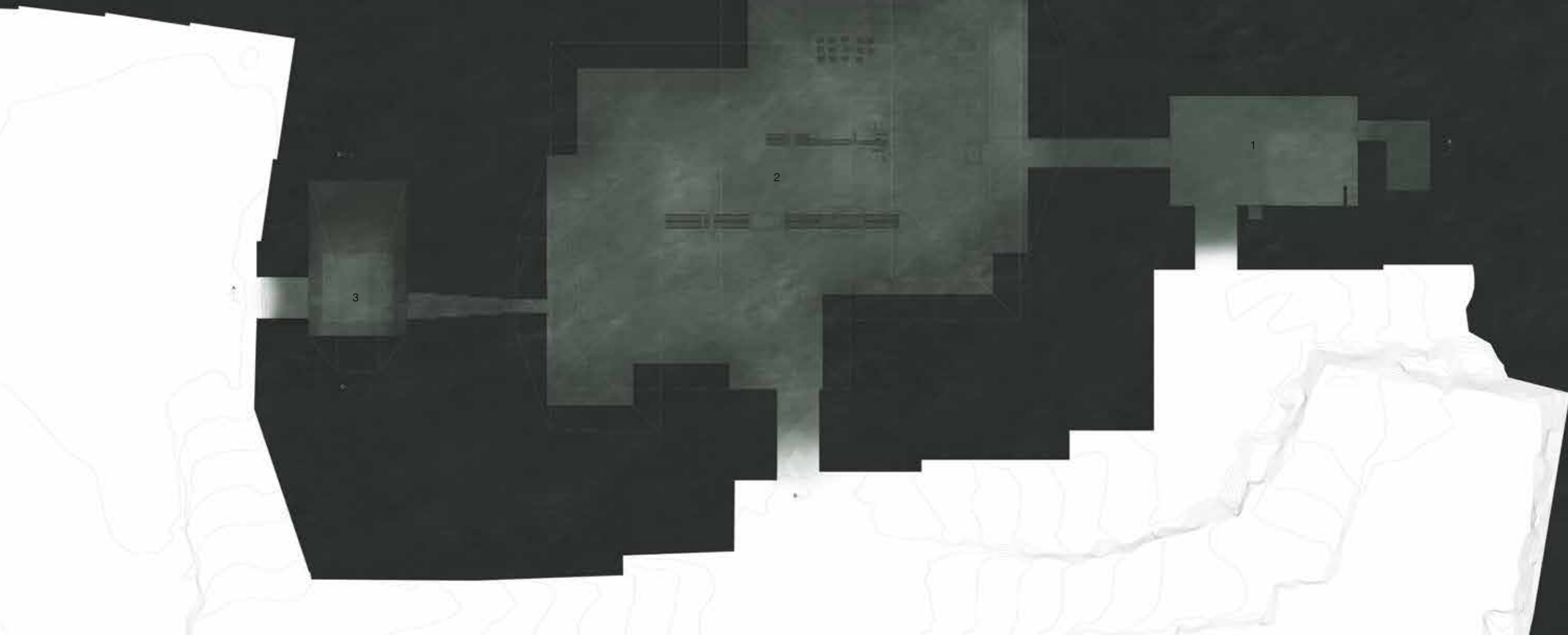
The quarry in the past, present, and future:
..... 100 years ago
———— Quarry today
- - - - 100 years in the future
1:500



The quarry in the past, present, and future:
..... 100 years ago
———— Quarry today
- - - - 100 years in the future



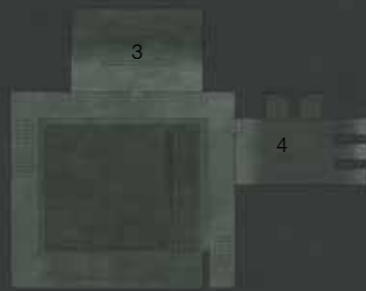
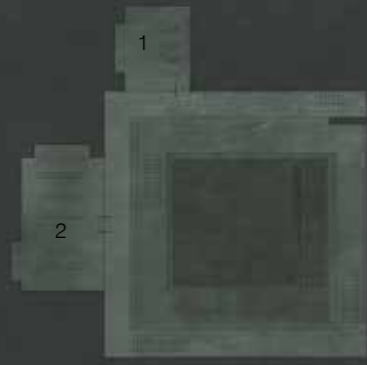
Section AA, no scale



- 1. Storage underneath administration part of the building
- 2. Production hall
- 3. Space for collecting water used in working with stone.

Plan DD, no scale



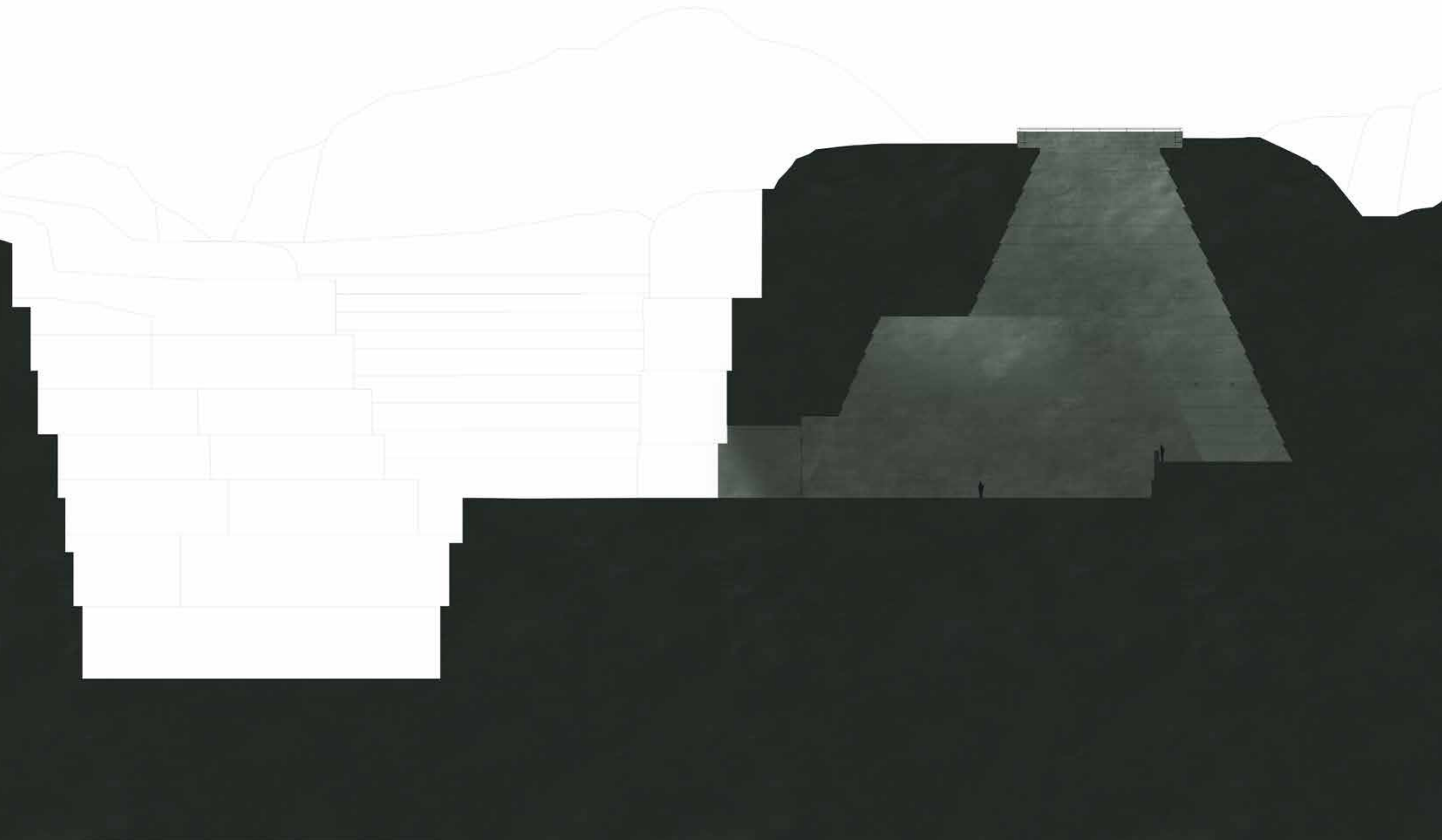


- 1. Office
- 2. Kitchen
- 3. Meetingroom
- 4. Changing rooms and bathrooms

Plans of administration, no scale



Section CC, no scale



Section BB, no scale



Entering the factory from the quarry



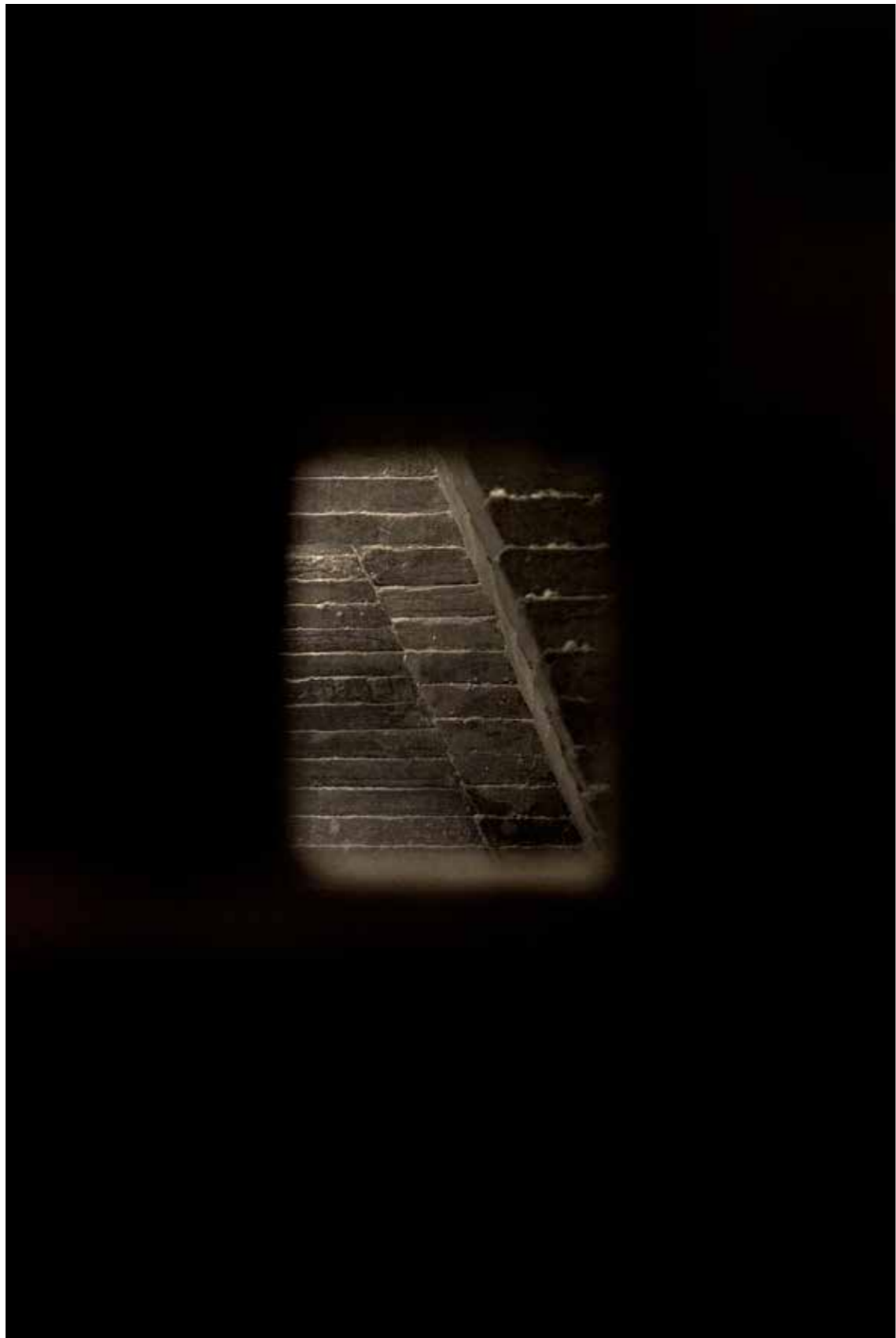
Entering the administration, viewing the light openings to the production hall



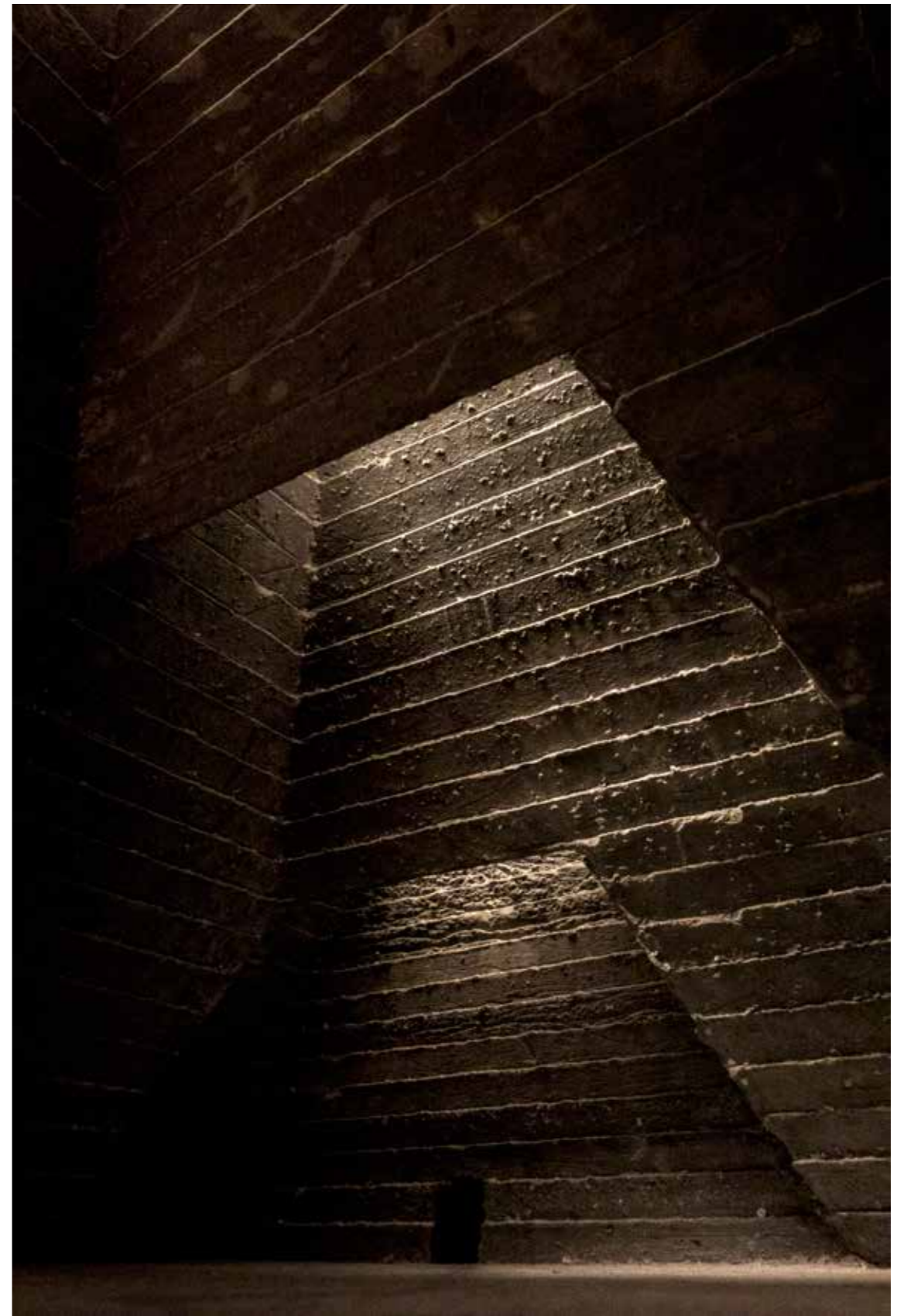
Entering the water dam space



The water dam space



Entering the production hall



The production hall