Defined by nature

an exploration of how a hotel can be designed with the experience of nature in focus

Defined by nature

- an exploration of how a hotel can be designed with the experience of nature in focus

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Masters thesis at Chalmers School of Architecture
Department of Architecture and Civil Engineering

Architecture and Urban Design and
Architecture and Planning Beyond Sustainability

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Travelling to Rörö from Gothenburg includes taking two different ferries.

Abstract

The purpose of this master thesis has been to design a hotel with a humble approach to nature.
This is done by highlighting the qualities that nature offers and make viewpoints on Rörö more available to a wider range of people. The aim for the hotel has been to create spaces that enhances the experience of spending time in nature and thereby offers its visitors a richer experience.

The site for the proposal is located on Rörö, an island with about 270 permanent residents in the outer part of the northern archipelago, Öckerö municipality. The plot has been preliminary approved for the exploitation of a hotel, a development that is supported by the residents on the island. Apart from the location, which is special in itself, Rörö has a unique flora and fauna that is protected in a natural reserve covering more than 50% of the island's area.

There is an existing proposal that has been taken into consideration by the municipality. This proposal presents a large establishment, with a new building complex that demands extensive blasting work which will make a big and permanent impact on nature.
In contrast to this, this thesis investigates how the building can be adapted to the landscape, rather than letting the landscape transform to meet the demands of the building.

The rocky land and the unique nature has been identified as characteristic key elements, which both have been leading factors in the process. References and study trips to see how working with nature in terms of connection, materiality and framing have also been important in the development of the project.

The ambition has been to exhibit a proposal with a high level of detailing, to showcase more precise how the design is functioning. The aim has been to find high quality solutions that can be implemented in a wide range of projects and in that way, stretch beyond this implementation.

View from the natural reserve over Apelvik

Acknowledgments

Björn Gross and Mikael Ekegren for tutoring and important input during the process. Ulla Antonsson for valuable advice during the final seminar.

We would also like to thank Åke E:son Lindman for permission to use his photo material, Kenneth Attefors for information about the plot and current proposition, and friends and family for help and support along the process.

Ernst Hawermans stipendiefond and
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Authors

We, the authors behind this project, met during our bachelor studies at Chalmers. After three years of studies together we applied for different masters programs, but continued to work together at the office where we did our internships. Approaching the final semester and the masters thesis we joined up again in discussions about potential subjects to work with. The subject and approach have been formed from our different perspectives and with the circumstances on the plot on Rörö in mind.

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The rocky ground of Rörö shaped the concept of the project.

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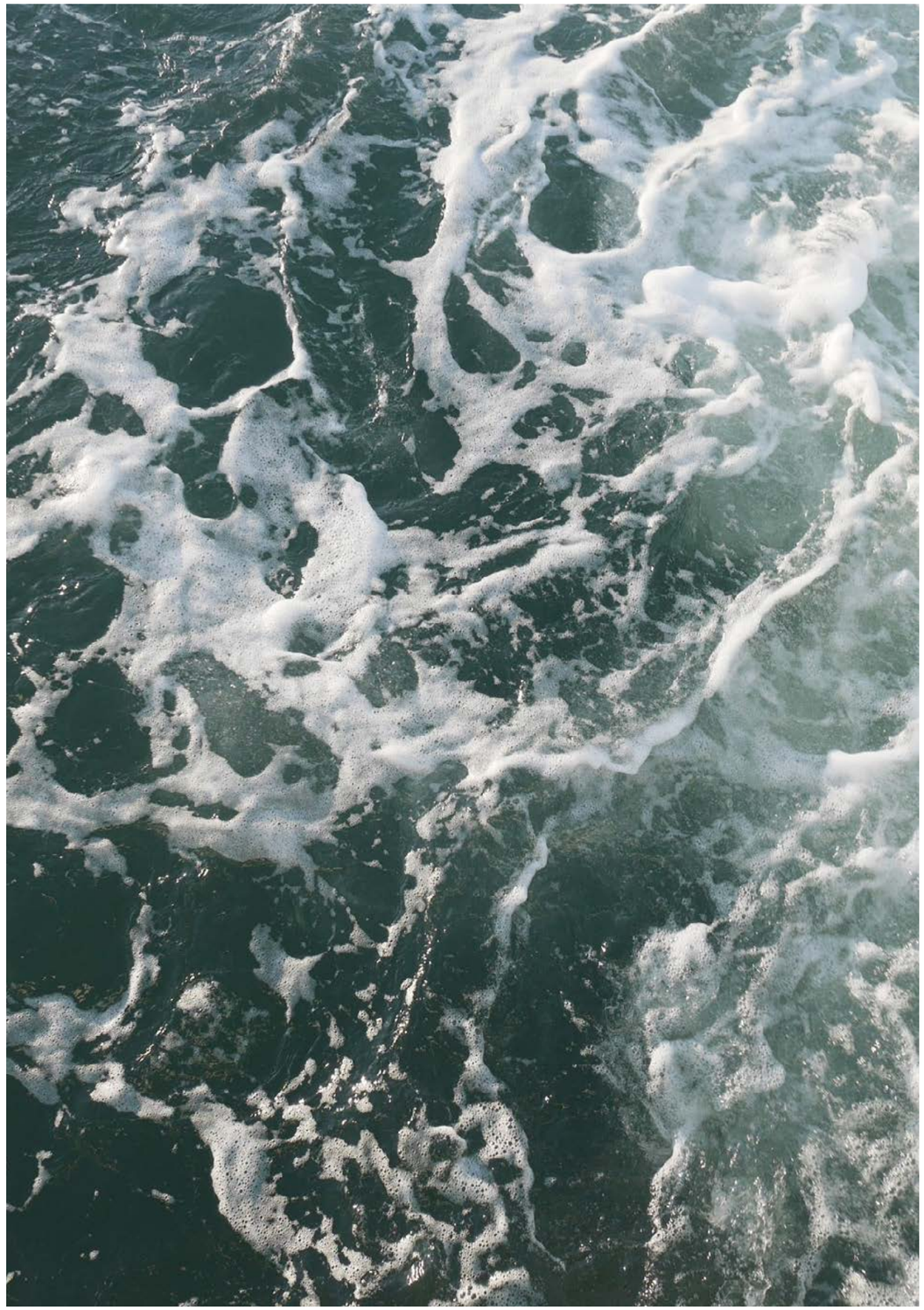


The ocean is always present on Rörö.

01 .
INTRODUCTION

// background

Proposal from the landowners

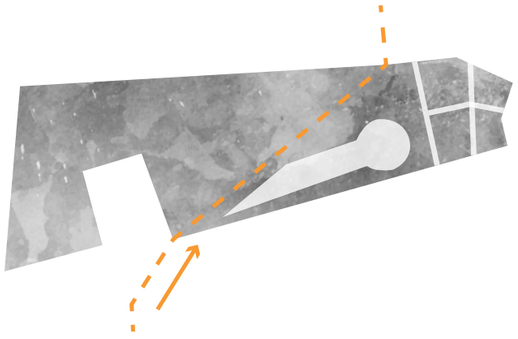
The site for the proposal Utmarken 2:56 is for sale (december 2018) with a preliminary planbesked* from the municipality of Öckerö. The ambition is to build a nature hotel on the plot. The plan process is planned to start in 2028.

We have talked to Kenneth Attefors, who is one of the plot owners and the initiator of the project. A nature hotel is according to him a hotel for tourists interested in nature and the natural reserve on Rörö. In this definition, the visual appearance of the hotel is not included.**

In the current proposal, four plots are assigned for villas and will be sold to finance the hotel, which is planned to consist of 50 rooms. The size is set to be able to host conferences and larger groups. To access the hotel a new road is planned from the south, along the border of the natural reserve. The cost of the road is estimated to 6-7 million SEK. A hotel complex of this size is estimated to create 10 full time jobs plus extra part-time jobs during high season.

The project idea was born during a workshop on the island, where the inhabitants were brainstorming what they could do to develop the life on Rörö. A nature hotel was according to Kenneth a well appreciated idea that engaged the participants.

The size of the implementation and the location of it, implies a large amount of blasting work. In the end, the finalized project will probably imply a structure that will affect the appearance and the permanent impact of the landscape to a large extent.



The graphic is showing the whole plot in grey, the border towards the natural reserve in orange and the hotel and proposed villa plots in white.

* see glossary, p. 19
** this definition is not consistent to the definition used in our proposal

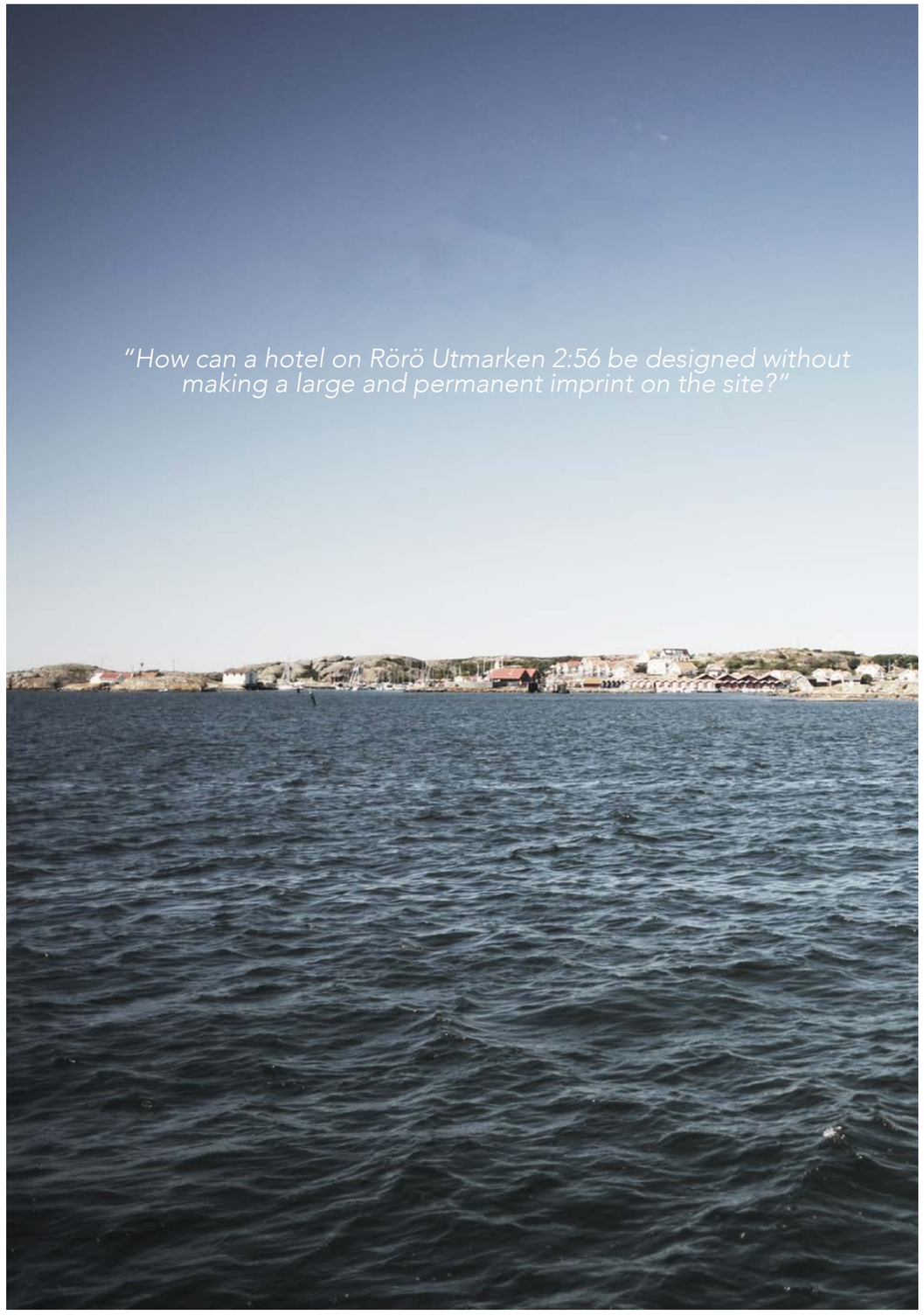
View from the plot down towards the village.

// purpose and research question

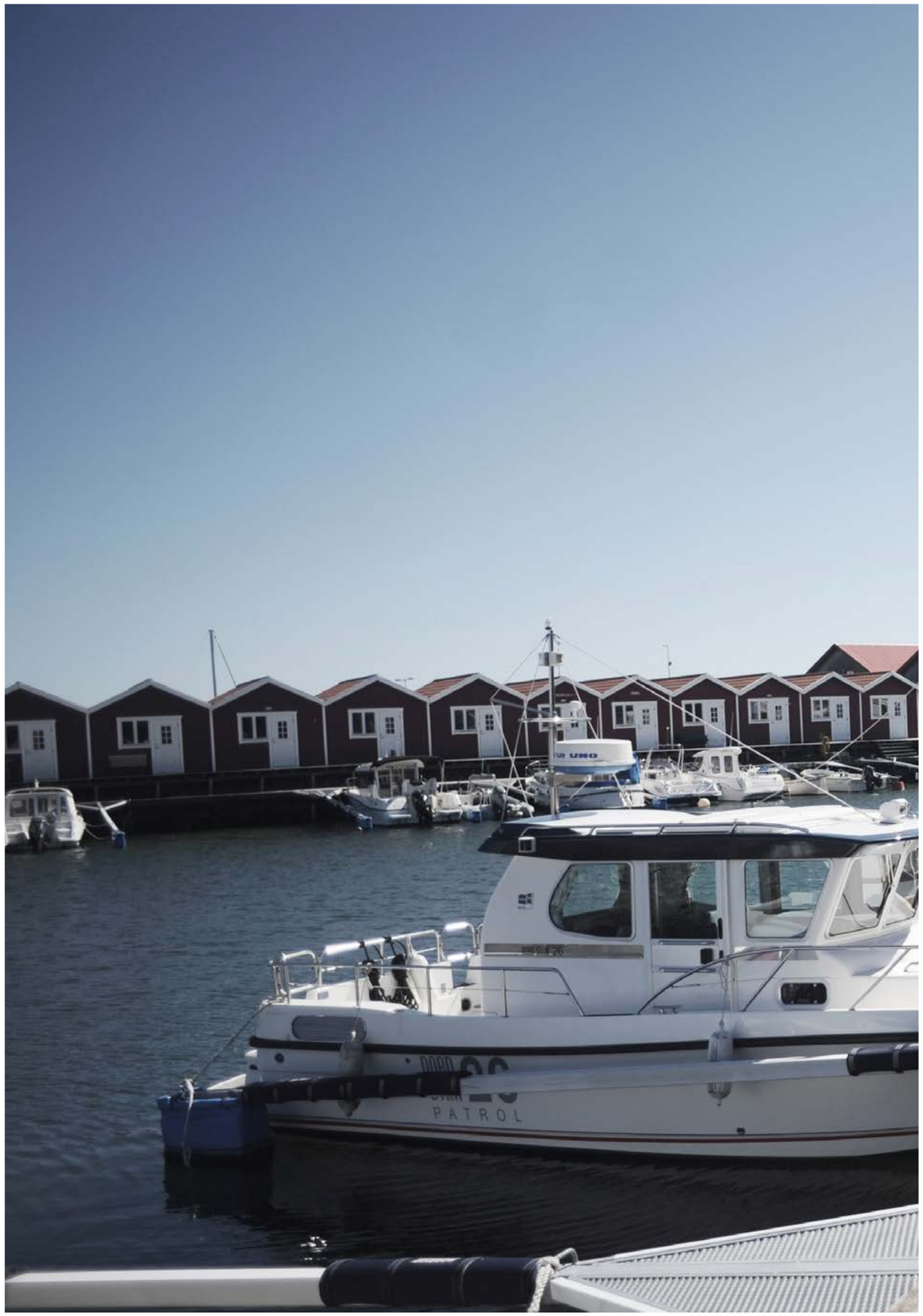
The aim of this thesis is to investigate how a new building complex in a difficult landscape can be designed with a humble approach to nature.

In addition to this, we wish to explore how a building complex on a plot like the one on Rörö, can highlight qualities on the site and make these accessible for a wider range of people.

Hopefully, this thesis can be an input in the debate on Rörö, about how to develop Utmarken 2:56 further.



Approaching the island by boat.



The harbour is the natural meeting point, gathering private boats, tourists, fishermen and the sea rescue team.

// methods and reading instructions

How we have worked

Our process started with mapping of interesting references and studies of these. The projects have been located both in the area, other places in Scandinavia and abroad. Study trips have been of importance to see built projects, but we have also studied photographic material and drawings.

Along the way, focus have shifted more towards the actual design of our proposal, but we have worked hard to let the two enrich each other along the whole process.

In addition to site visits, hard work have been put into sketching and model building to get to know the plot and understand its possibilities and limitations.

Disposition of the report

The report is divided into chapters, where the first one presents the background of the project, information about the site, the nature of the surrounding areas and its built environment, history of Rörö, climate and so on. This part makes it easier to understand the project and the process leading up to the design proposal.

The background is followed by a reference chapter, where we present projects we have seen and been influenced by.

The next part explains the design investigation and process, including program, layout development, material research and desired spatial qualities. The final design proposal is presented in the last part of the report, showing drawings, model photos and visualisations.

Each chapter could be read individually, but in order to get the bigger picture and fully understand the project, it is recommended to read all chapters. All images are drawn, photographed or in other ways designed by the authors, unless otherwise is stated.

Glossary

Nature hotel -
a hotel that is adapted to its surrounding nature and aims to enhance a natural experience

County administration -
Länsstyrelsen, which is the representatives of the government in each county

Planbesked -
a planbesked implicates that the municipality's intention is to start a planning process for a specified area

Delimitations

In this master's thesis, the project has been carried out with the starting point in an existing plot. We have chosen to work within the limits of this plot and with consideration to its regulations.

The project is not developed in collaboration with a developer nor business partner. This means that functions as the restaurant kitchen e.g. may not be designed in a way that correspond to actual needs. The thesis does neither include the economical perspective.

02.
SITE AND CONTEXT

// historical view

Population, occupation and culture

Rörö has been populated since at least the 16th century, when the first Norwegian document is dated (Olofsson, 2010). Then, and during many years to come, people here lived of fishing and small scaled farming.

In 1658 Bohuslän and Rörö became Swedish. Over the years, the population grew, but the main occupation among the inhabitants were still fishing and small scale farming. Due to the location close to Marstrand, Rörö has from a historical perspective been an important harbour, for example when it comes to the selling of herring.

From the middle of the 18th century and until 1810, herring salteries (sillsalterier) and train oil cookeries (trankokerier) was common in the Öckerö archipelago. A big example could be found on Rammen, an islet east of Rörö. The fishing for herring and the industry connected to it attracted workers and a lot of people moved out to the islands during this period. This did not only result in an increased population, but also the establishment of many pubs. On Rörö there were a number of pubs from the middle of the 18th century until the middle of the 19th century.

During the 18th century new occupations besides fishing occurred, among these maritime pilots was especially common on Rörö. They had a station on the island during centuries, but was in 1917 replaced by the ocean rescue team. Sweden's largest rescue boat and its crew was then stationed on Rörö.

In the later part of the 19th century, when the ban on religious gatherings at home was abolished, independent churches were established in the area. Up until then the church of Sweden had been dominating on the islands.

In the later part of the 20th century the islands in the Öckerö archipelago got car ferries. Some islands were later also connected with bridges, but Rörö is still depending on a small car ferry.

Building traditions

The building traditions in Bohusläns coastal areas varies, but according to Bohusläns museum, it's probably the placement of the buildings that is the most characterizing. They are often tightly put close to the water with the mountain as a protective back. Families rarely owned their plot and the possibility to farm was limited, but the fish in the ocean was free and therefor important. The disposition of buildings that is described above is not as visible at Rörö today as it might be on other islands in the region.

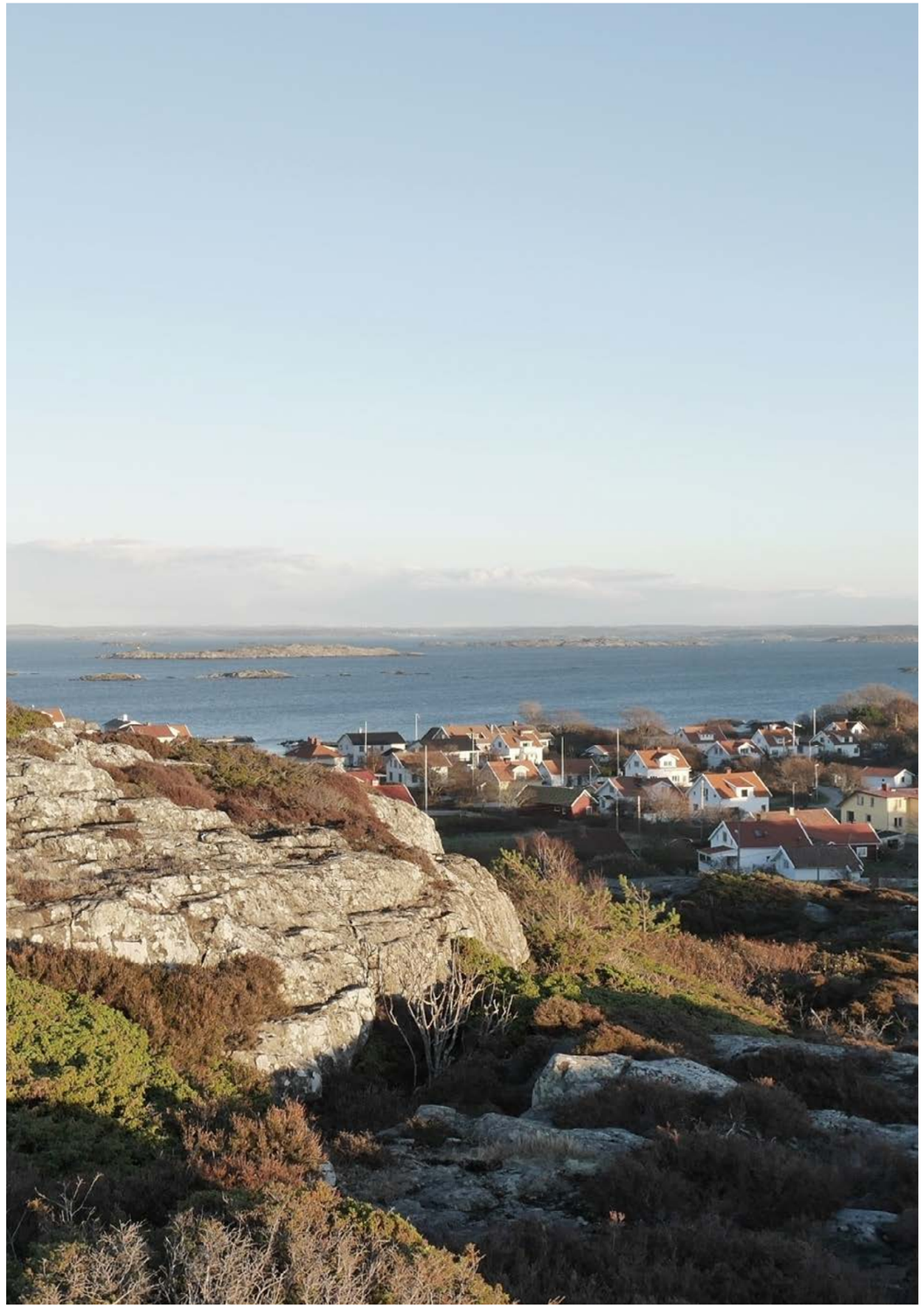
The village on Rörö has been divided in two registers dating long back (Sjögren, 1981). The first part, which is in the south, was until 1937 owned by the crown. The area has after the selling been divided into plots and buildings supporting the fishing industry has appeared here. The second part is in the north and has probably been used mostly by farmers. After 1937, no new areas have appeared on Rörö, but densification of the existing ones have occured. This has mainly been done on farming land close to existing buildings.

The populated area on the island has always been located to the weather protected area in south east. Up until the 1930's the population and the amount of buildings on the island increased at the same pace with approximately 5 residents per house. After 1930, the amount of buildings increased more than the population, due to a large number of summer houses.

Up until the 1950's most houses were built in a "traditional" way, with a wooden structure, light coloured facades and roof tiles, making the houses distinguish from the nature on the island. In the harbour areas buildings were often placed upon the rocks. If there were changes in levels, it was solved with a cellar with stone walls. Many houses had an attic. One theory of why this is, is that the high and light structures should be visible from the ocean, since most of the workers was working out on the sea and wanted to be able to spot their home when approaching the island.

In the older buildings on Rörö and other buildings in the Öckerö region, a lot have changed over the years. During the 1950's and 60' many facades were covered with asbestos cement sheets. Older windows have often been changed for new ones and roof tiles have changed regarding type. In many cases, most of the changes in the Öckerö region were made in the harbour areas, and less in farming buildings. The reason for this was that the fishermen often had better economy than the farmers.

In the 1960's a change occurred and catalogue houses started to appear on the islands. These were



View over villas on Rörö's northern area, seen from the plot where our project is located.

often one level and could be built in other materials than wood, e.g. brick. In the 1970's the sizes of new built houses were increasing and differences in level was often handled by making the houses partly earth sheltered rather than building it up with a cellar.

Sjögren also writes that many of the older houses in the Öckerö region have transformed over the years. Some have changed materials as mentioned above, while others have been expanded to meet new living standards. The introduction of the car traffic also had consequences for the way people built houses on the island. Especially the need to be able to take the car all the way to the house have influenced where and how the buildings can be placed.

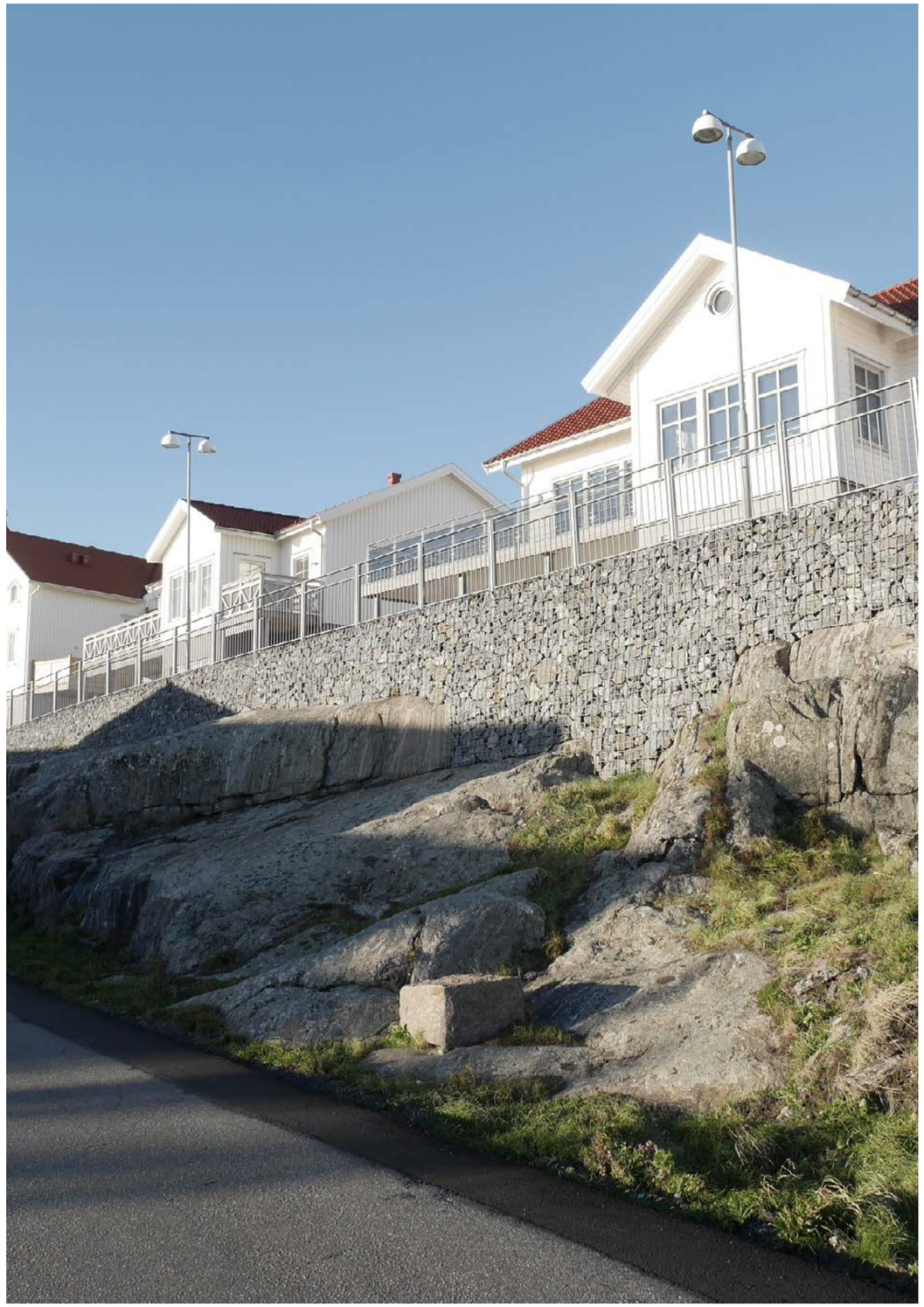
In addition to Sjögrens inventory from the Öckerö region in the 1980's, we found a cluster of newer buildings close to the harbour during our visits on the island. These can be divided in economic buildings supporting the fishing industry and housing. The houses are designed in a style referring back to the wooden villas of pre-1950's, although they don't have the same detailing and materials as the originals. The connection to the ground is also different and the plots have been transformed with large scale stone walls to create a flat surface to build upon.

When approaching Rörö by boat, you mainly see the southern part of the village (see pictures on the next pages). Upon arrival to the island there is an area with small connected boat houses, painted red. These are quite new. In the harbour area, there are also larger buildings to support the harbour industry. These are varying in colour and form, but most of them are modern and probably also built after Sjögrens inventory.

On the right side of the harbour, out on a small peninsula, an area with mainly older white villas is situated. These villas have gable roofs and dormer windows. The roof cladding is mainly made of red tiles. The majority of these houses probably date back to before the 1950's, but you do see new additions in between the old houses.

Moving from the harbour in the direction of our plot, there is a local store and a newly built area. The new houses are placed up on high gabions and are made in a classic style to match the old white villas on the peninsula.

Behind the new houses, a more varied area is laid out. In close connection to the water, there is a restaurant and a recreational area with a playground and space for boules. Most houses are still white, but you can also see red and light yellow ones. In this area brick buildings also occur. In addition to residential housing, there is services such as a library and a school.



New villas on Rörö.

Natural reserve

Stora hamnholmen

Utmarken 2:56

Variated villa area with white, yellow and red colours (2)

The dock. Various harbour facilities, variating colour and sizes (3)

New villas, white coloured (1)

New, small connected boat houses, painted red (3)

Variated villa area with white, yellow and red colours (2)

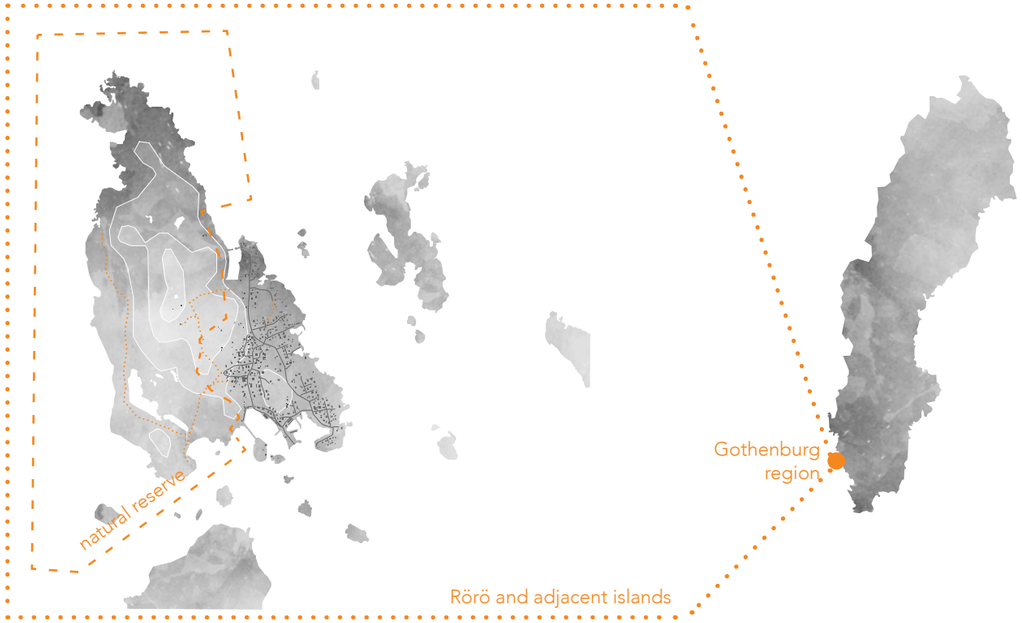
Villas, mainly white coloured with red tile roofs

(1)

(2)

(3)

// location and transportation



All travel options to Rörö includes travelling by two different ferries between the islands. This means that travel time differs depending on arrival time at the dock and departure time of the ferries.

Leaving mainland from Lilla Varholmen, the boat crosses over to Hönö Pinan. From here you travel on land to Hälsö Burö dock, where the second ferry leaves for Rörö.

The proposal promotes that all cars are left on Hälsö, before taking the last ferry trip to Rörö.

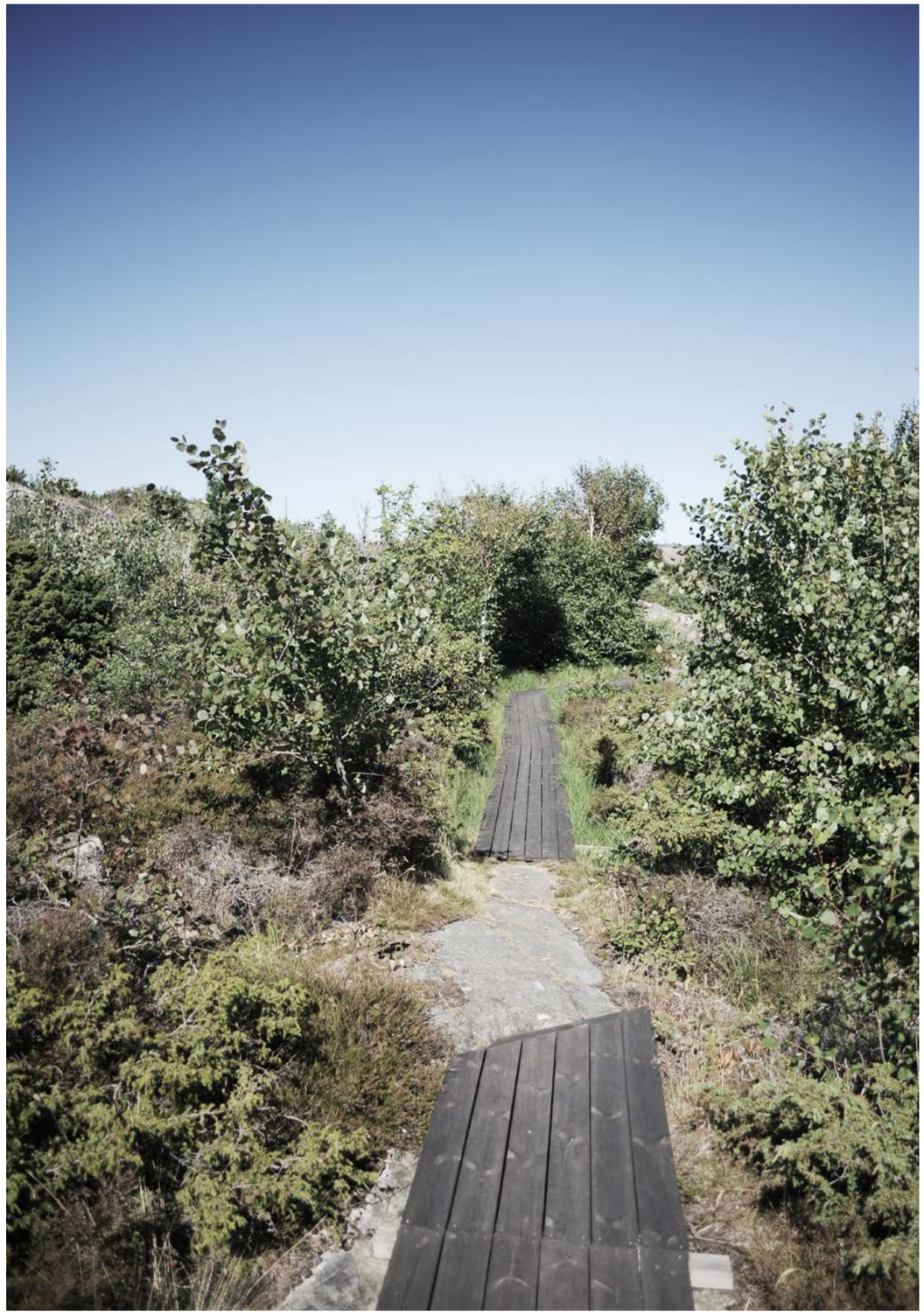
Travel by car
approx. 1:40+ hours

Travel by bus
approx. 1:45 hours

Travel by bike
approx. 2:10 hours

All travel times are counted from Gothenburg central station.

In the village, most houses are white with red tile roofs.



The higher up and the closer you get to the natural reserve, the more of the rock is visible.

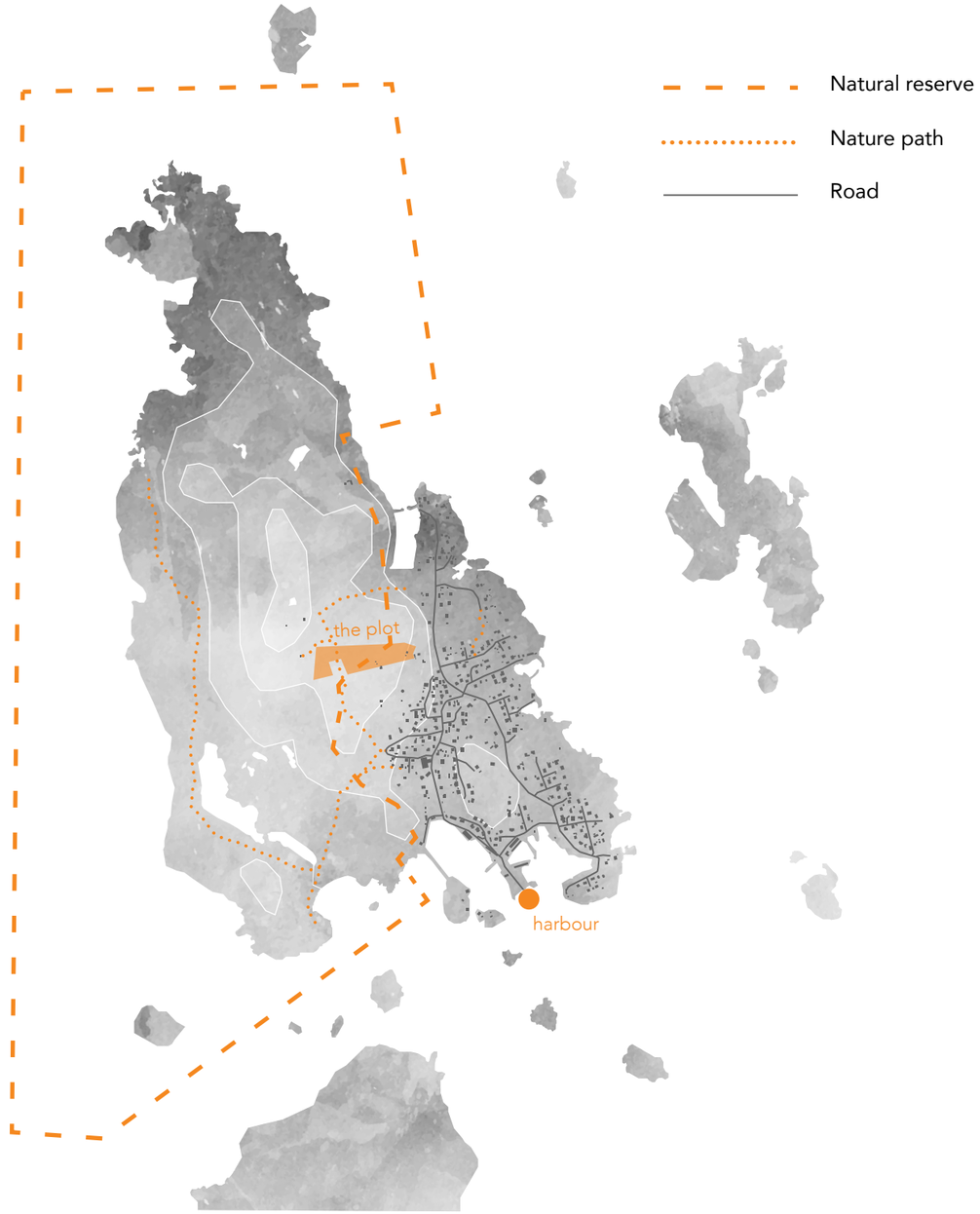
// the plot

Location on Rörö

The plot on Rörö is located in the middle of the island, above and a little bit behind the village. The distance from the harbour is approximately 1 kilometer and it takes about 10 minutes to walk. On the way you pass a store, an activity area with a playground, a restaurant and space for boule playing, a school and the library. You also pass the main entry point to the natural reserve. If you take a right when you enter the natural reserve here, the path will pass the plot.

The lower, eastern part of the plot is adjacent to the village. The western part of the plot is part of the natural reserve. The later limits the buildable area of the plot.

The topography of the plot is variated and holds some of Rörö´s highest points. With a 360degree outlook, the views are as breath-taking as the wind can be intense.



// preconditions and type of nature

Natural reserve
Natural reserves are a common way to protect natural areas in Sweden and there are about 5000 reserves around the country (Höjer, 2018). The function of the reserves is to preserve valuable nature. A natural reserve can be formed by a municipality or county government.

A natural reserve is marked out by poles with a sign showing a white snow flake on a blue background. Signs with information provide the visitor with information about the nature, but also states what's allowed and what isn't within the reserve. Each reserve is unique and what is allowed and not can differ between reserves.

The reserve on Rörö
On Rörö, the bigger part of the island is a natural reserve, covering both the island and surrounding water (Länsstyrelsen, 2018). Following is not allowed to do within the reserve:

- make fire
- usage of motorized vehicles
- put up tents or caravans
- pick flowers or dig up plants
- ball games
- take away or move stones from the shingle field

During some parts of the year the area is used as pastureland and animals like horses and cows are grazing in the reserve.

Natural elements on Rörö
The nature on Rörö is defined by its location in the outer part of the archipelago. The island has because of its location few trees but quite a lot of lower vegetation like bushes, with juniper as a frequent specie. The most dominant element is rock and the islands bedrock consists of a large variety of different types (www.lansstyrelsen.se). Mafic rocks have through weathering become an important habitat for a rich and special flora.

In the southern, less hilly part of the island there is moorland with two small lakes called Stora and Lilla Ers vatten (big and small Ers water). Around these, a reedy area forms a good habitat for birds.

Apart from more common species and animals, you can also spot a lot of red listed and protected types on Rörö. Among these you find:

Birds
Eider, sandwich tern, black-legged kittiwake and black guillemot

Frogs and reptiles
Natterjack

Insects
Six-spot burnet, silver andrena, small blue, hesperia comma, lythria cruentaria and niobe fritillary

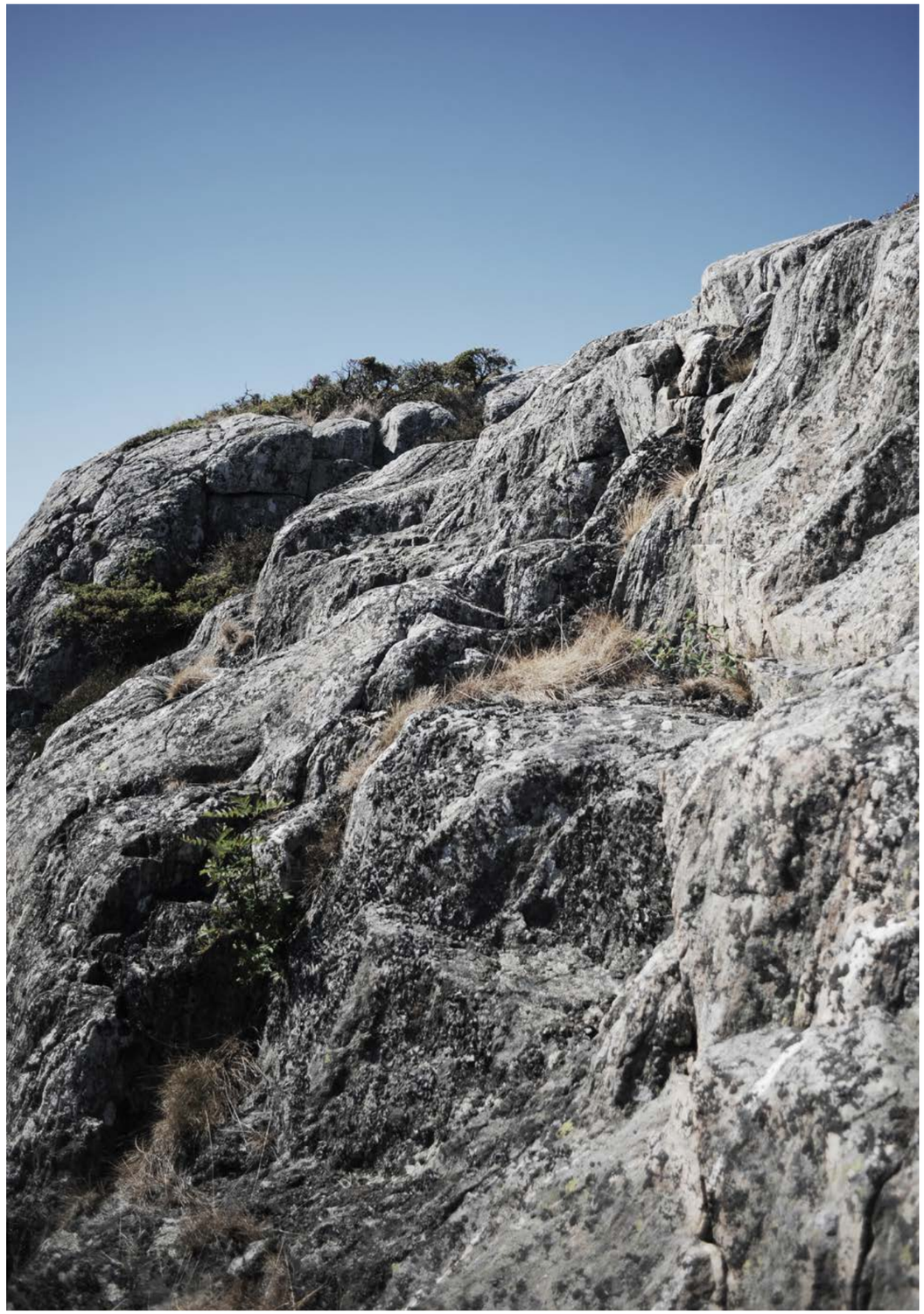
Plants
Hyoscyamus niger, rumex conglomeratus, crassula aquatica, lysimachia minima, kustgentiana, ljungögontröst, marrisp, mertensia maritima, carex punctata, lythrum portula, atriplex laciniata, carex vacillans, chaffy sedge, heath spotted-orchid and kärrmaskros

Mushrooms
Splendid waxcap

For animals and plants with no English translation, the Latin or the Swedish name has been used.

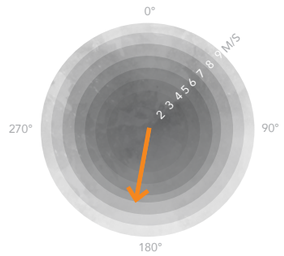
From the natural reserve you can see the open ocean.

Juniper is almost the only thing growing on the plot.

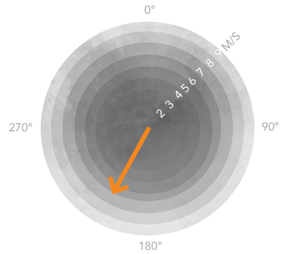


The most common type of rock on Rörö is a grey with white elements, it is called “Gnejs”.

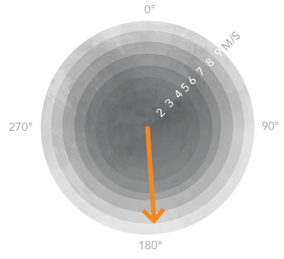
// wind and sun studies



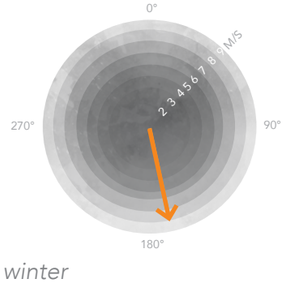
spring



summer



fall



winter

Wind measurements

According to data, wind mainly comes from the north and varies a bit in strength between spring / summer and autumn / winter.

The measurements have been collected from SMHI's weather station at Vinga, which is the closest station in the archipelago of Gothenburg. We are aware that the information therefore can differ a bit from the reality on Rörö. Winds might also behave slightly different over time.

The winds presented in the diagrams are average values. This means that the exact direction varies but are often close to the directions shown here.

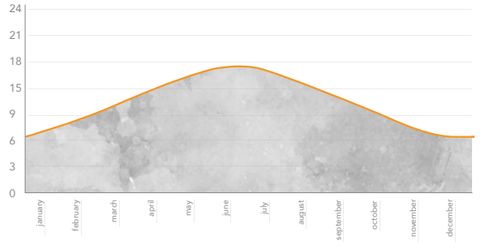
Day length

The graph is based on data from SMHI and is showing how the length of the day differs over a year in Götaland. Since the data is covering a large area, local difference may occur.

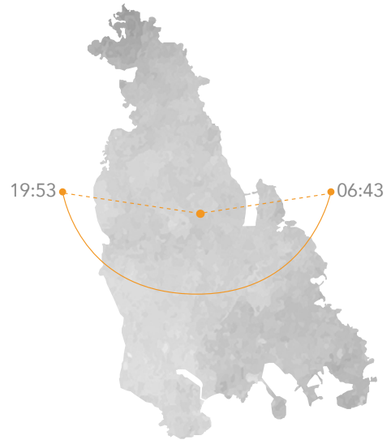
In a year-perspective the day length differs over seasons in a way that is typical for Scandinavia. During winter, the shortest day is approximately 6 hours, while a day in summer can last up to 18 hours.

Sun position

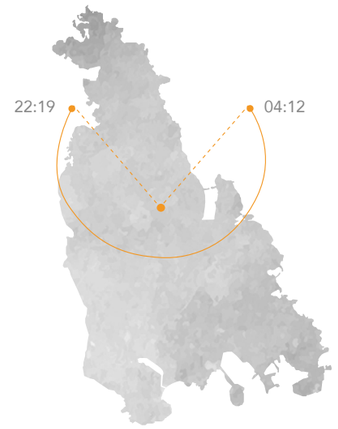
The maps on the next page shows the curve of the sun. It stands high in mid-day during summer and low during winter.



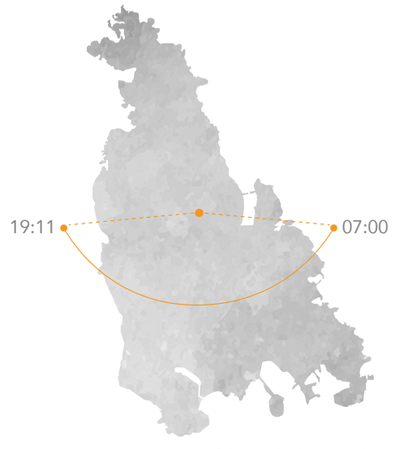
Wind and sun according to data from SMHI (http://opendata-catalog.smhi.se). Sun paths according to data from application sun position. Author's own copyright on diagrams.



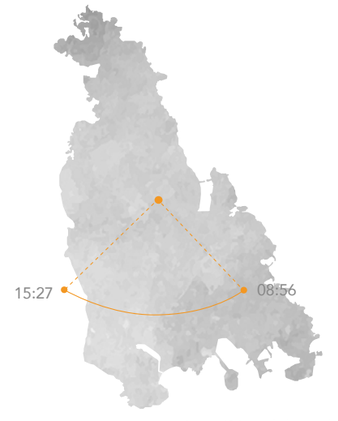
spring (20th of march)



summer (21st of june)



fall (23rd of september)



winter (21st of december)

// activities and current accomondations

Activities in the archipelago

There is a wide range of activities on and close to Rörö, both for residents and guests. Most activities run through summer, but some of them are also available during spring and/or fall. Winter is the time when there is least to do on Rörö.

Potential for development

Today, a lot of the activities in the area is located on other islands. Fishing tours have for example their departure from another island. This is something that can change if more tourists are staying on Rörö.

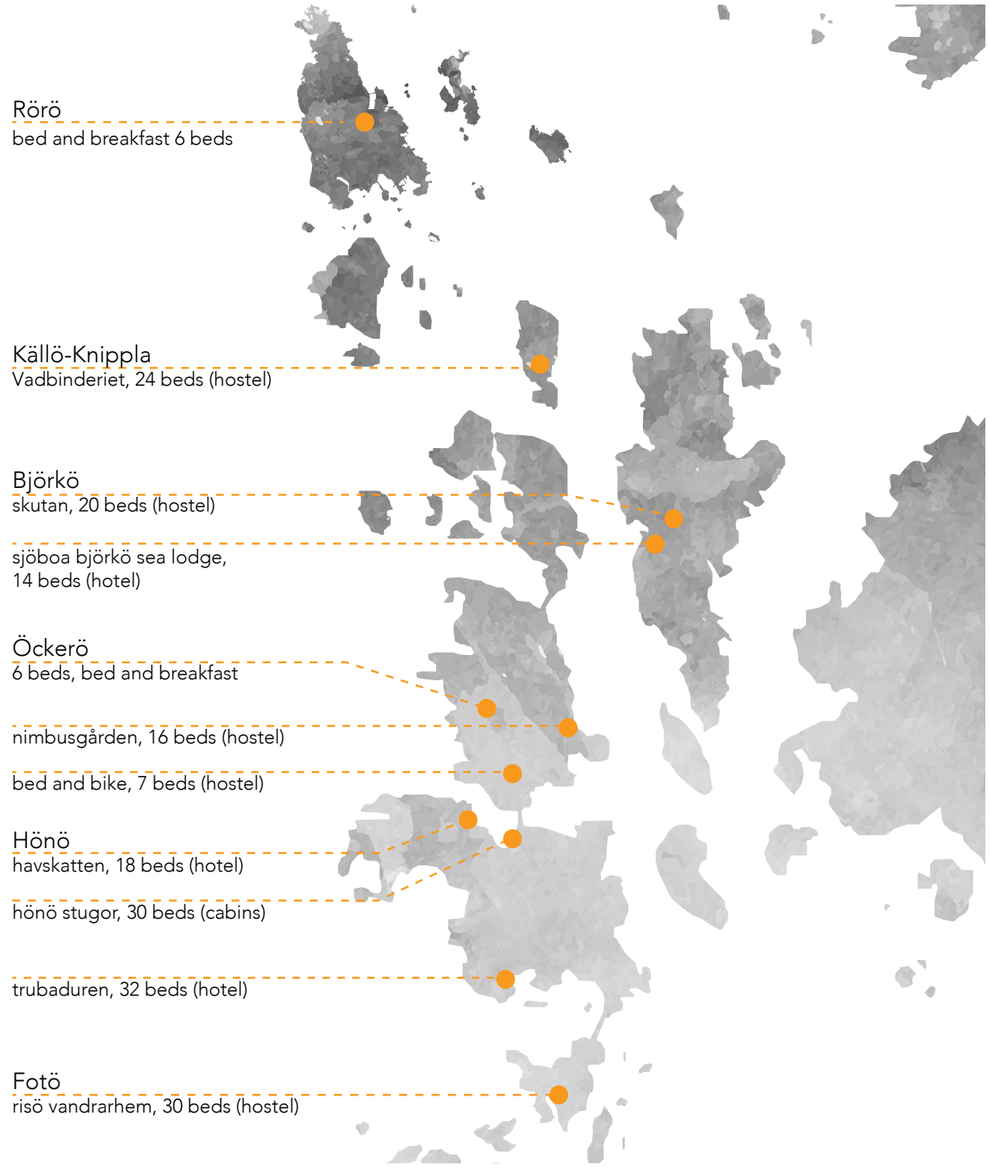
The main need for development is activities during the winter season. During the dark winter months there is little to do, both for residents and visitors.

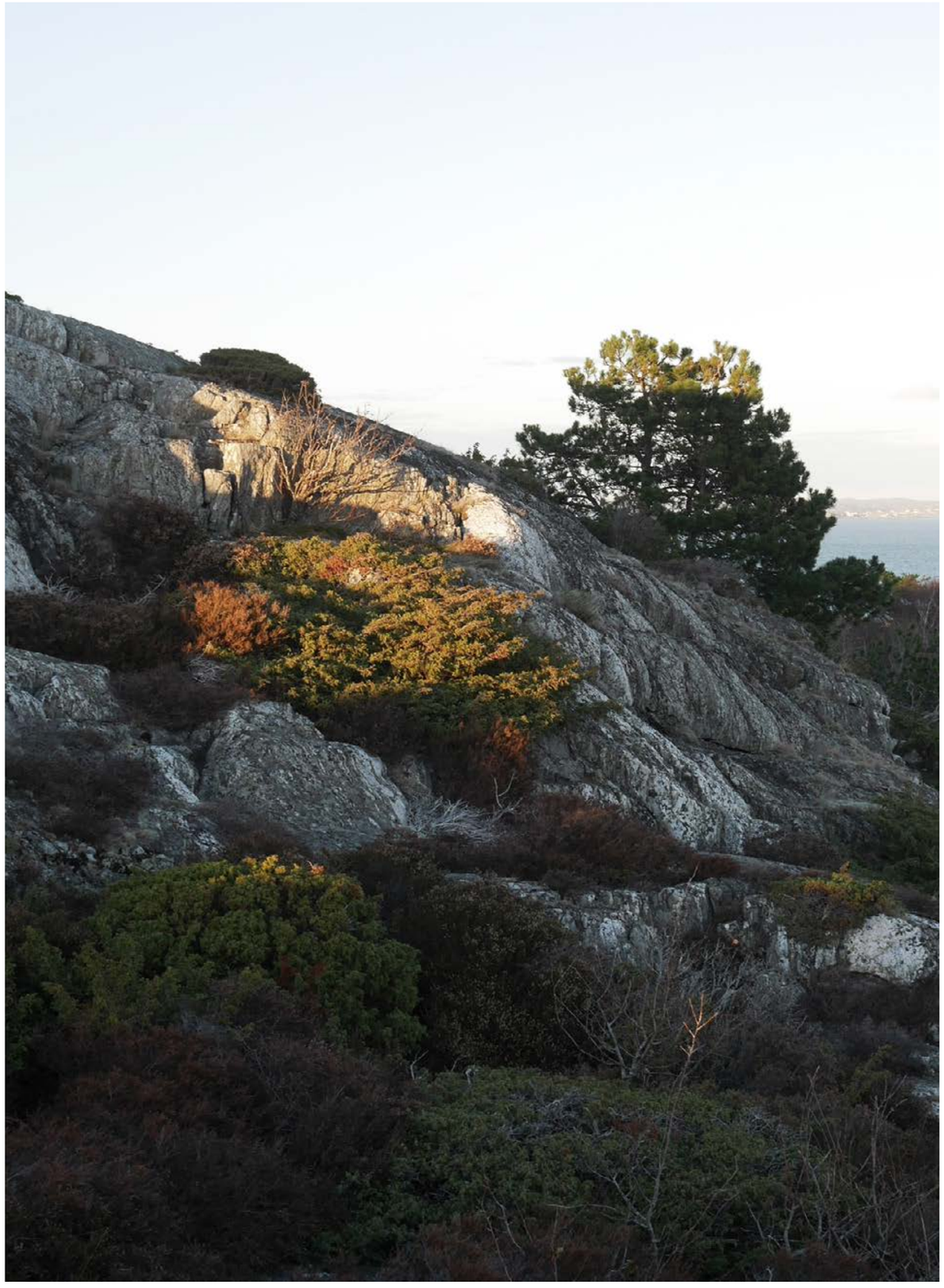
Where to stay

The existing accommodations in the area is mostly focused to the southern islands. On Rörö, there is one small bed and breakfast with six beds (three rooms) at the moment.

Most accommodations in the area are hostels and bed and breakfasts. They have in average around 14 to 30 beds.

In addition to these accommodations, there is also cabins and apartments that can be rented through sites like Blocket and Air b n b.





Sunset on Utmarken 2:56 in october.

// summary

It is, from our point of view, important to maintain the character of the site and not change it, but rather embrace it. For us, this means working with the topography, natural elements and natural qualities.

Although most villas are painted white with red tile roofs, Rörö has quite a large variation in its building stock which, as we see it, can permit new additions. But we do believe that it is important to work in the same scale and typology as existing buildings on the island.

The accommodations in the area is today quite limited with mainly hostels, bed and breakfast and private rentals in terms of cabins and apartments. We see that more exclusive alternatives are lacking, especially in the northern part of the archipelago, where Rörö is situated.

Most people who choose to visit Rörö do so with the intention to visit the natural reserve. Many of them are here to watch birds - which is why the location on the central part of the island is interesting. The plot is situated in close connection to the natural reserve, offering a close contact between the hotel and the reserve.

When investigating activities on and close to Rörö we found that most of them are appearing during spring, summer and fall. In winter time there isn't that much to do for a visitor, nor a resident. We have therefore discussed the possibility for the hotel to complement the range of activities over the year.

We see that the target group for the project mainly is middle aged. A group who wants to be close to nature and experience something through their accommodation, but who also appreciate comfort and great service. They are a group who used to go hiking and stay in tents but who now aren't comfortable with sleeping directly on the ground.

03 .
REFERENCES

Fritidshus Kyrkesund

Kyrkesund, Sweden

The houses in Kyrkesund from 2013 are mainly built in wood, including construction, facade and indoor materials. We were mainly inspired by how these buildings meet the ground. As the picture is showing, the architect has chosen to let the top layer of the panel continue down to meet the ground and in some cases follow the mountain below. We also see a quality in using the same approach when designing the outdoor railing.

architect: Mattias Gunneflo

Vega cottage

Vega, Norway

The Vega cottage was built in 2012 and is located in the northern part of Norway. The landscape is harsh and barren and the building materials are chosen to blend in and sustain the weather of the location. We were inspired by how the buildings fit into the landscape and also by how they are built with limited impact on the ground.

architect: Erik Kolman Janouch, Victor Boye Julebäk

House on a cliff

Sweden

The building is located in an area with older, wooden holiday houses. Situated on the top of a cape it's overlooking the surroundings and is designed to interplay with nature. We were inspired by how the architects worked with coverage of the plinth foundation.

architect: Petra Gipp Arkitektur and Katarina Lundeberg

Tree hotels

Harads, Sweden

Up in northern Sweden various architects has been invited to design dethatched hotel rooms, in which the guests can enjoy both the hotel and the nature surrounding it. The project has been a real success with publicity and guests from all over the world. At this moment the hotel has seven uniquely designed rooms located in the woods and a guest house with nine rooms (suitable if you are on a lower budget).

The project functions as an inspiration for our project as principle, with rooms scattered out in the nature. We were also inspired by the simplicity in cube designed by Tham Videgård.

architect: Tham Videgård

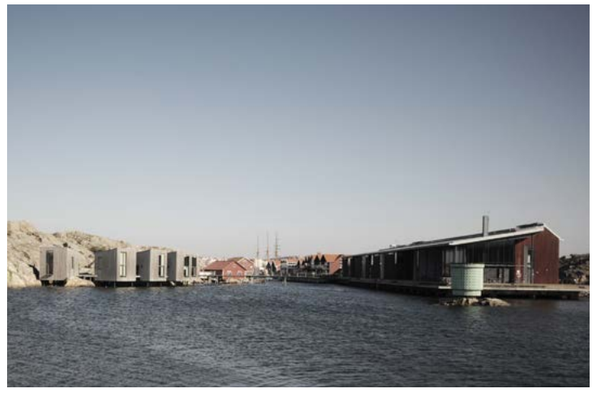
// study trip Skärhamn museum and guest ateliers

Background
Nordiska akvarellmuseet i Skärhamn (the Nordic museum of watercolour) is designed by Danish architects Niels Bruun and Henrik Corfitsen after a contest (akvarellmuseet.org). The museum was opened in 2000. In 2004, an extension of 400 sqm was added, designed by Tengbom arkitekter. Today the museum is 2400 sqm. The building has a load bearing structure of concrete and steel and a red wooden facade with grey and blue additions.

Opposite the main building, located on Blockholmen, there are five guest ateliers. These are primarily designed for artists and researchers, within the field of art. Each of the ateliers are 52 sqm and holds a studio space, a small kitchen, living room, two single beds and a view towards the sea. The buildings are oriented with the main window towards the water, which reduces the ability for people passing by to look into the houses.

Architect: Niels Bruun and Henrik Corfitsen
(competition 1st prize)
Extension designed by Tengbom arkitekter.

Reflection
The guest studios in Skärhamn are a humble addition to the colourful museum. The project is highly relevant as reference to this thesis as it adapts to the surrounding nature rather than taking it over. Nature is highlighted as the main attraction and inspiration for the visiting artists.



// study trip Japan

Tokyo
27/9
Tama art university library / architect Toyo Ito
Musashino art museum and library / architect Sou Fujimoto

28/9
Shibaura house / architect Kazuyo Sejima
Archi depot / museum
Rainbow chapel / architect Kubo Tsushima Architects

Kyoto
29/9
Kyoto imperial palace / heritage building, architect unknown

30/9
Bukkoji temple and machiyas / heritage building, architect unknown
Higashihonganji temple / heritage building, architect unknown

1/10
Garden of fine arts / architect Tadao Ando
Kyoto botanical garden / architect unknown
Times building / architect Tadao Ando

Naoshima island
2/10
Chi chu art museum / architect Tadao Ando
Lee Ufan museum / architect Tadao Ando
Art house project, Minamidera / architect Tadao Ando
Naoshima ferry terminal / architect Sanaa

Teshima island
3/10
Teshima art museum / architect Ryue Nishizawa

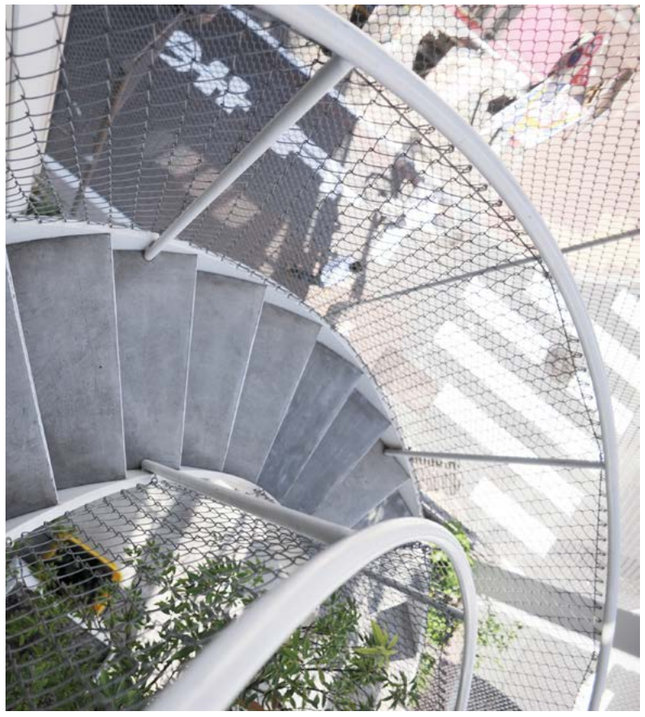
Kyoto
4/10
Inariyama / temple, architect unknown

5/10
Villa Katsura / heritage building, architect unknown

Tokyo
6/10
National museum of western art / architect Le Corbusier

7/10
Church of christ / architect Fumihiko Maki
Capsule tower / architect Kisho Kurokawa
Prada store / architect Herzog de Meuron

On the following pages you will see a selection of photographs from our trip and the projects we saw and found most interesting.

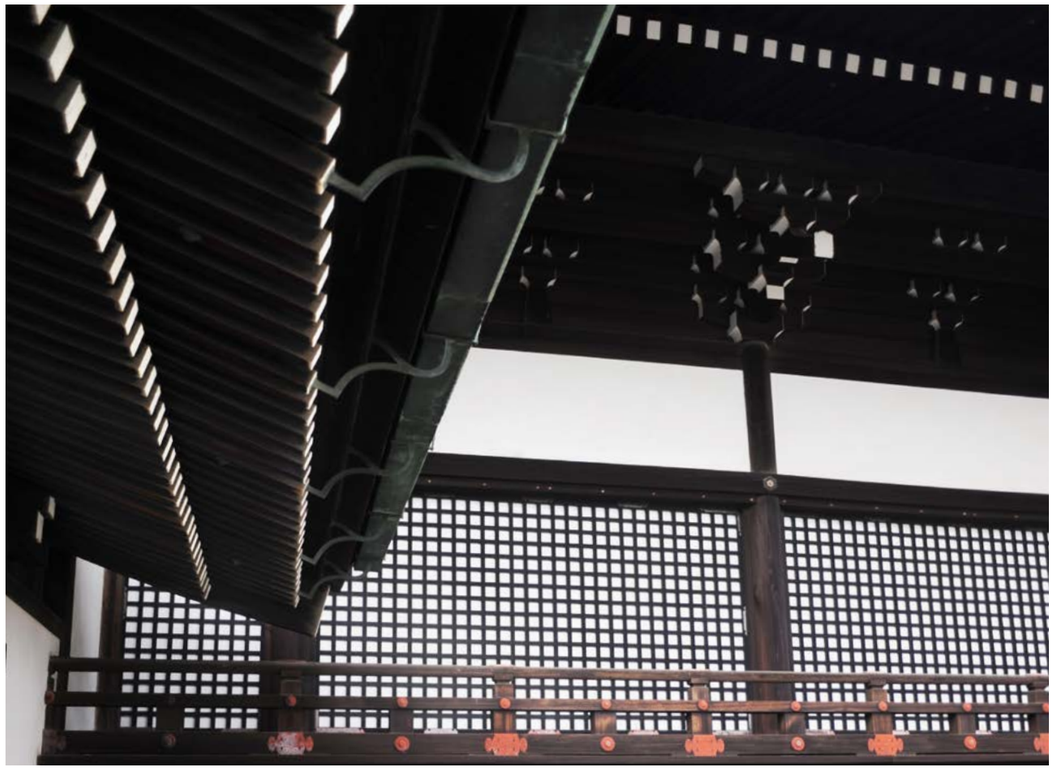


Shibaura house

Tokyo

Shibaura house is located in central Tokyo and is open to the public with a café, shared office space and rooms for larger events. We were inspired by how the outdoor spaces are intermixed into the volume and how the vertical communication is working with stairs separated from the elevator.

architect: Kazuyo Sejima

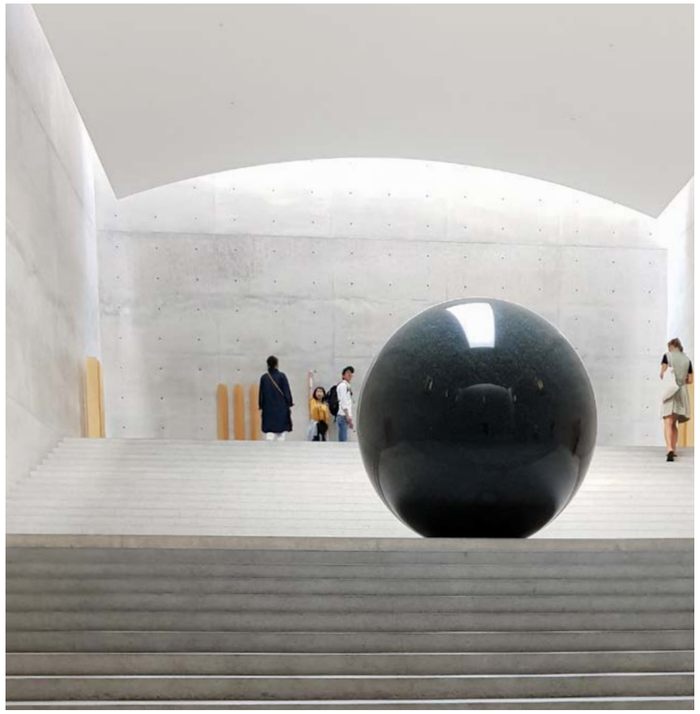


Imperial palace

Kyoto

The imperial palace is a large building complex with a wide range of different buildings, located in a big park in central Kyoto. Here we found inspiration in beautiful details, such as wooden eaves, facade elements and plinth foundations.

architect: unknown



Chichu art museum

Naoshima island

In the Chichu Art Museum, Tadao Ando plays with light and the outdoors in an exquisite way. In relation to our project we found the connection between indoors and outdoors and passages under the bare sky inspiring, but also how diffuse light in exhibition spaces is designed.

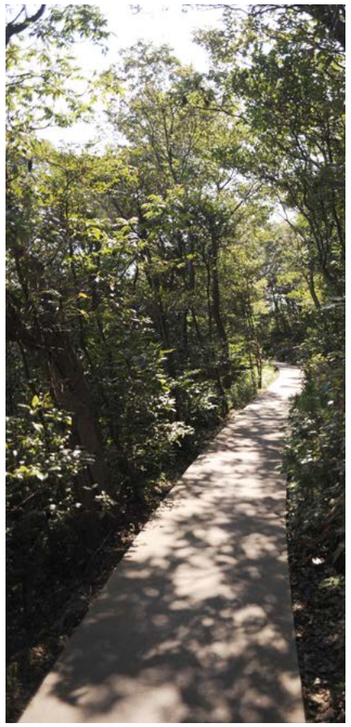
architect: Tadao Ando

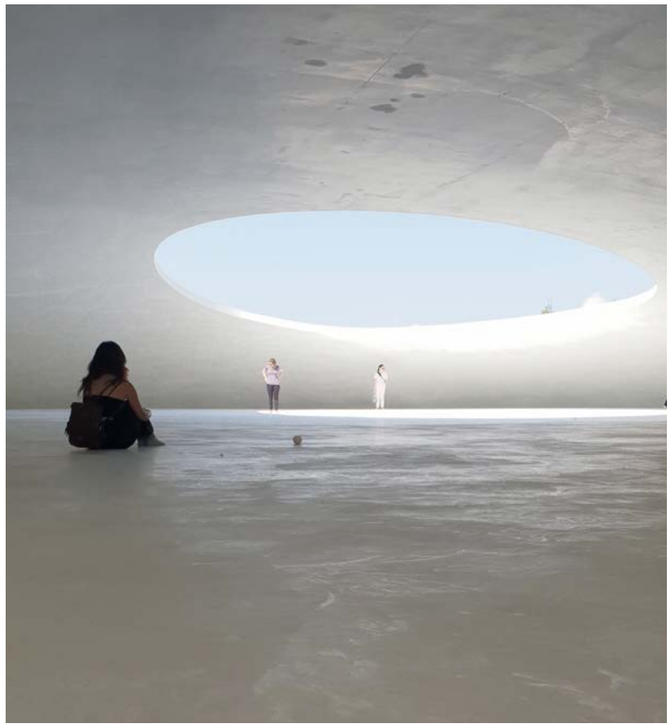
Minamidera,
Art house project

Naoshima island

Minamidera is a new wooden building containing artwork by James Turrell. The design of the building is very strict and the movement through it controlled and fully incorporated with the art work. We liked the layout of the building, the diffuse hints on the outside of what's inside and the wooden detail of the eaves. The architecture is in a very nice way supporting the art and is thereby creating a stronger experience.

architect: Tadao Ando





Teshima art museum

Teshima island

The art museum at Teshima island holds one single installation. The building was designed in close colaboration between the architect and the artist. To get from the ticket counter to the exhibition, there is a choreographed walk through dense nature on a walkway, that seems to hover over the ground. At the entrance to the artwork, we felt excited and in close contact with nature. We were inspired by the way the walk through the landscape put us in the right mood to get the most out of the art installation.

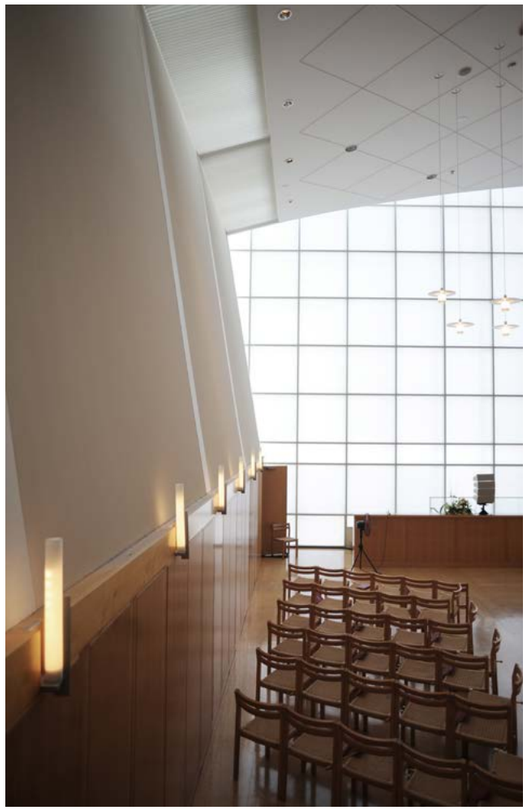
architect: Ryue Nishizawa

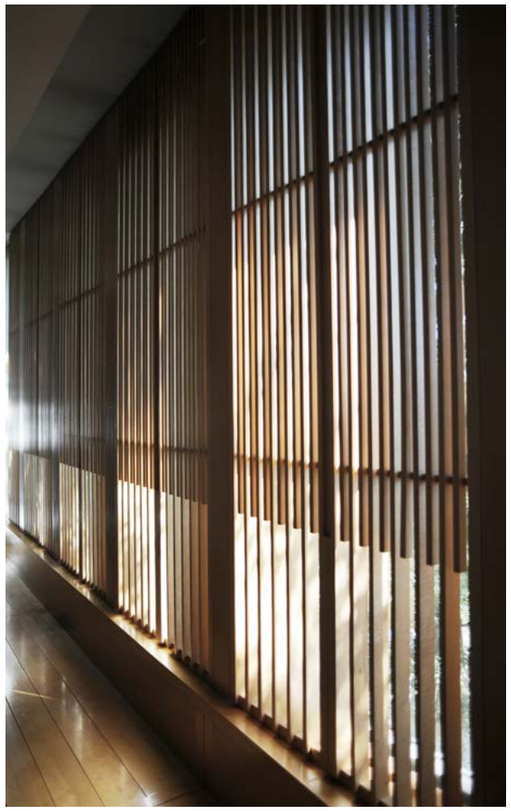
Villa Katsura

Kyoto

Villa Katsura imperial villa was established by prince Hachijō Toshihito in 1579. It consists of a main building and multiple small buildings scattered out in a large Japanese garden. Everything is created with a very impressive craftsmanship. Important features in many of the buildings is the framed views and relation to the outdoors, something we wanted to bring with us in to our project.

architect: unknown





Church of Christ

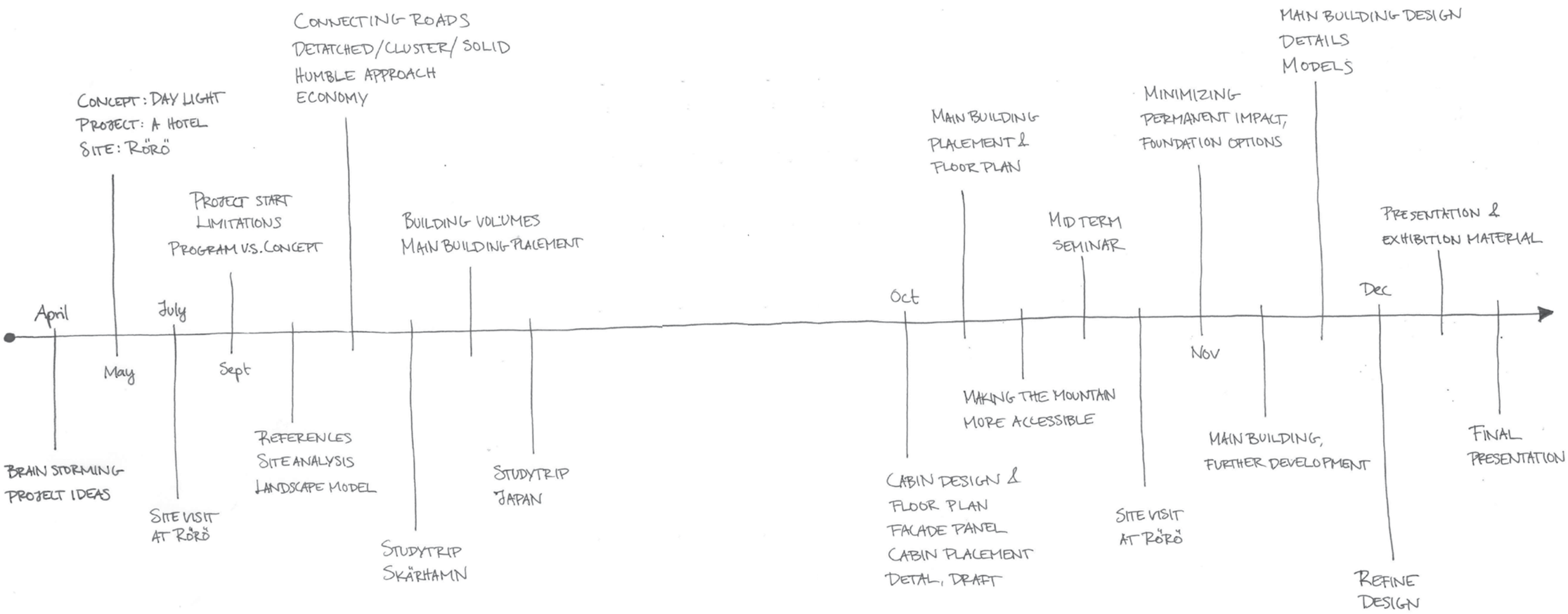
Tokyo

In this church, the architect has worked with natural light in several interesting ways and in combination with different materials, mostly concrete and wood. We found the roof light in the entrance, the diffuse light in the main hall and the wooden panels in front of windows beautiful.

architect: Fumihiko Maki

04 .
PROCESS

*// process timeline**



*The aim of the timeline is to visualize the process. It has of course not been as straight as it might look, but it is roughly showcasing in what time different choices has been made.

// access to the main building

01. A southern connection
In the proposal that has been handed in to the municipality for a “planbesked” a new road is proposed from the south. The road connects to Moringsvägen and continues along the border of the natural reserve. The road opens up for the possibility to exploit the area between the road and the village.

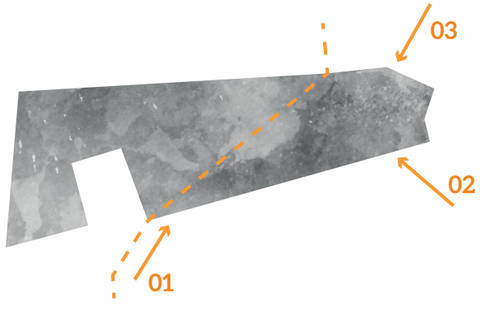
For our project, this would give the opportunity to place the main building on a higher level, overlooking the natural reserve and the village. A southern road would mean a relatively large impact on the landscape.

02. An eastern connection
A connection from east would imply an extension of Liavägen. This extension would exclusively serve the hotel.

For our project it would make a localisation of the main building to the lower part of the plot possible. This can reduce the visibility of the building from the village but also lead to a reduced outlook.

03. A northern connection
A connection from the north would imply a connecting road to Apelviksvägen. The consequences would to a large extent be the same as with an eastern connection.

A combination
By combining alternative 02 and 03, a turning point outside the hotel can be avoided.



The area in between the plot and the village is bushy and a bit difficult to access.

// foundation of a building

The foundation of a house can simply put be constructed in three different ways. The alternatives are a slab, a crawl space or a plinth foundation. A combination of these is also possible. What type of foundation you choose, will have a big effect on the ground, but also on the aesthetics of the building and technical risks such as moisture e.g..

Concrete slab

To use a concrete slab is very common today, from small to large scaled buildings. The concrete slab is put on a thick layer of gravel. The insulation around the slab usually consists of cellular plastic or some other non-biodegradable material.

Since the concrete slab is standard today, it is easy to pair with pre-fabricated buildings or modular houses on the market. The foundation method also enables entry points on an equal level, in relation between in- and outdoors.

In a rocky landscape, or as in this case on a mountain, this type of foundation often implicates large amount of blasting work. In most cases, the blasting can't be done exclusively underneath the building, but also affects the ground around and close by the building. The materials used when constructing a concrete slab are in relation to other alternatives high in emissions and the global warming potential.

Crawl space

The crawl space foundation can be built directly on a bedrock. The stones in the bottom are cast in concrete and the rest of the wall is usually cast either in concrete or with Leca-blocks. Older houses often have these type of foundation done with natural stone. The height of the foundation can be varied depending on the circumstances. It's important that this kind of foundation is well ventilated and that surface runoff does not flow towards it to avoid problems with moisture and mould.

This alternative is in most cases gentle towards the landscape, since it doesn't necessarily implicate blasting work. To create flat surfaces around the building, filling can in some cases be done instead of blasting.

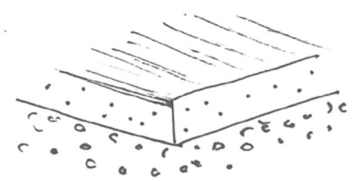
The choice of materials affects the environmental impact.

Plinths

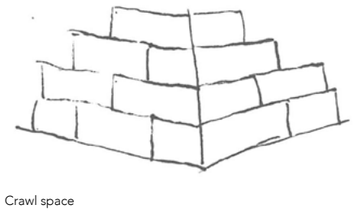
A foundation constructed with plinths elevates the beams of the bottom floor from the ground and does in this way create a fifth facade where moisture needs to be kept out of the construction. The bottom of the pillar is usually made in concrete or steel and is placed in dug or pre-drilled holes when the construction is used on a mountain.

This method is the most gentle in relation to the landscape, since the buildings can be removed, leaving only the bore holes.

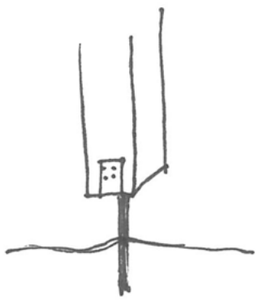
The elevation from the ground can however lead to other problems, for example the possibility to make the building accessible. Depending on the material used in the plinths the environmental impact differs. Wooden pillars are for example better than reinforced concrete or steel. However, the volume of polluting materials can in this case often be lower than in other options, which is positive.



Concrete slab



Crawl space



Plinths

// choice of materials

Facade and roof panels

The facade is cladded with a wooden panel, naturally grey in its appearance. The options for this look is multiple. The wood can be left untreated to let it become grey naturally or it can be treated with one of the options available on the market today. Some treatments to choose from are: Kebony (furfural and heath treated), Organowood or Sioo:x (silicon treatment) or iron sulphate treatment can be used.

One reason to use one of the treatments and not let the wood become grey all by itself, is that it can result in a more even look but also create a more resistant facade. In the natural process, the areas that aren't fully exposed to weather doesn't get greyed in the same speed as exposed areas. But this difference in the facade can occur also in a treated facade.

When choosing a specific treatment, consideration should not only be taken to the aesthetics, but also to the environmental effects of the products. Wood as cladding material reduces the climate impact of the building, since wood has a low global warming potential value in relation to other materials. But what type of wood that is used and how it is treated will of course still be of importance.


Naturally aged wood panel


Kebony


Sioo


Organowood


Iron sulfate

// facade detail

The outer exterior panel will continue down and meet the ground when a cabin is placed in a slope. In this scenario, we want the panels to be perceived as an extension of the house, covering the foundation.

In some cases, the exterior panel will also continue over windows. The panel should here cover but not block the outlook too much.

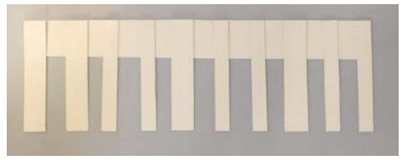
In relation to our ambition, it was important to find the right dimensions, since the dimensions of the exterior panel will be the same in both scenarios.

Result of test

We tested several alternatives and moved forward with number 5. That version provides cover but also offers outlook. At the same time as the dimensions of the panel creates a more vivid look.

Panel 01
base board 120 mm
cover boarding 45, 70 mm
cover rate approx. 45 %

Panel 02
base board 120 mm
cover boarding 45, 70, 95 mm
cover rate approx. 53 %



Panel 03
base board 95 mm
cover boarding 45, 70 mm
cover rate approx. 50 %

Panel 04
base board 95 mm
cover boarding 45, 70, 95 mm
cover rate approx. 60 %

choosen alternative

Panel 05
base board 70 mm
cover boarding 45, 70 mm
cover rate approx. 60 %

Panel 06
base board 70 mm
cover boarding 45 mm
cover rate approx. 50 %

// main building, sketches

01.
The building is resting directly on the mountain and on plinths. A vertical connection connects the village to the the natural reserve.

Direction: across hight curves

+ low amount of blasting work
+ accessibility to a higher point
+ outlook from a higher point
+ possibility to create an interesting structure under the building

- large volume
- visually a large inpact in the landscape
- complicated

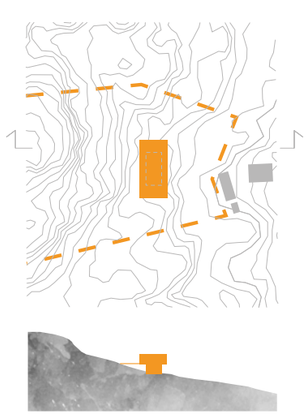
choosen alternative

02.
The buidling is placed in the lower part of the plot and is by blasting adapted in level. It has at least two floors.

Direction: along hight curves

+ compact

- blasting work is required
- close to neighbours
- limited outlook

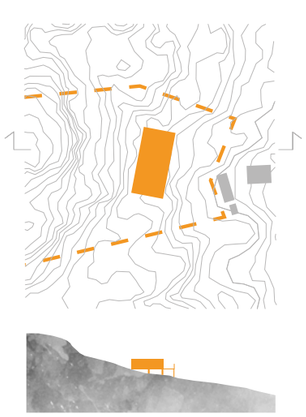


03.
Is by blasting adapted in level, but has a minimized entrance floor. Connects to the mountain in the upper floor.

Direction: along hight curves

+ reduced footprint
+ connection to the mountain

- spaces underneath the building that is hard to utilize
- complicated
- not correspondent to the building typologies on the island

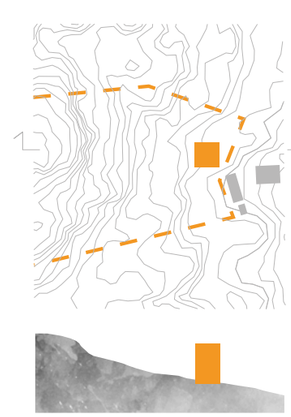


04.
The buidling is in one level and is elevated on a plinth foundation.

Direction: along hight curves

+ reduced footpring
+ no blasting recuired

- limited outlook
- exposing the foundation
- difficult to create an accessible entrance



05.
The footprint is minimized by making the building in multiple levels.

Direction: unclear
+ reduced footprint
+ outlook from a higher point

- increased space for vertical communication
- complicated
- not correspondent to the building typologies on the island

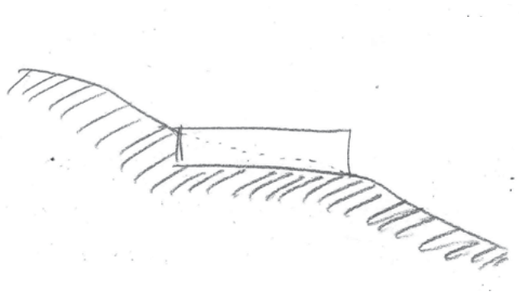
// main building , placement and layout

Placement along the contour lines

In an early stage of the process we pictured the main building in the lower part of the plot, since this part is the flattest part. In this case we placed an accessible hotel room in connection to the building, since the mountain still would be un-accessible for disabled guests.

We choose to not continue working with this location. The main reasons for this were:

- no outlook over Rörö from the main building
- the mountain would still be as un-accessible as it is today
- a high amount of blasting work or an elevated but still low situated building.
- a high lever of discernment between different types of guests.



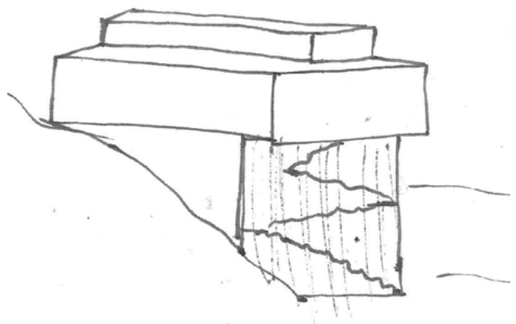
Placement across the contour lines

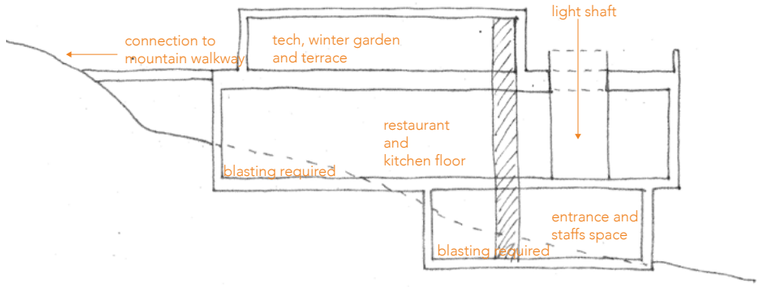
Instead, we choose to continue to work with a building placed across the contour lines. This was done to:

- create a restaurant with an outlook over Rörö
- make the mountain more accessible for a larger group of people
- make the experience of each cabin alike, no matter if the room is accessible or regular

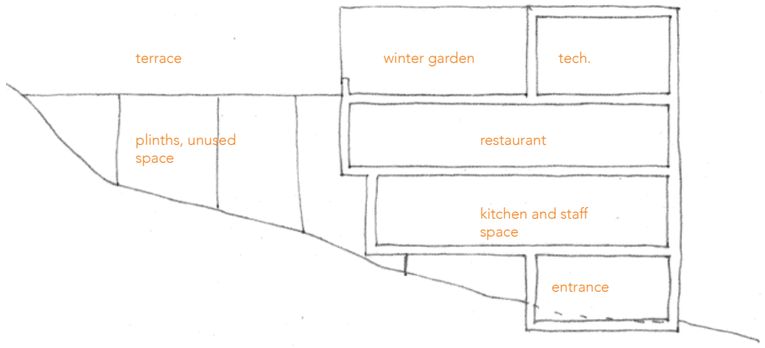
The sketch to the right is from an early stage and is showcasing the importance and possibility of a vertical connection indoors.

choosen alternative

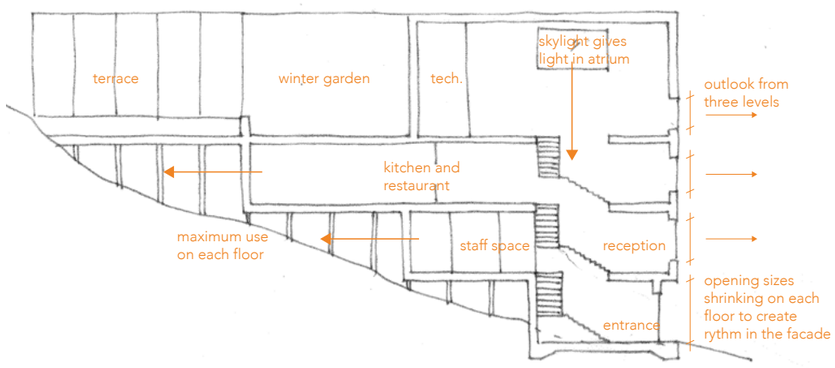




01.
Three leveled building that demands extensive blasting work. Each level is different in its height.

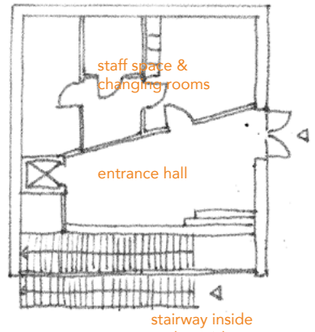


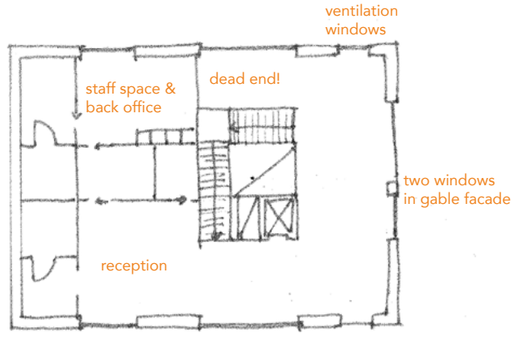
02.
Four leveled building that stands almost free from the mountain, leaving a lot of space behind/under the terrace. Functions such as kitchen and restaurant is separated.

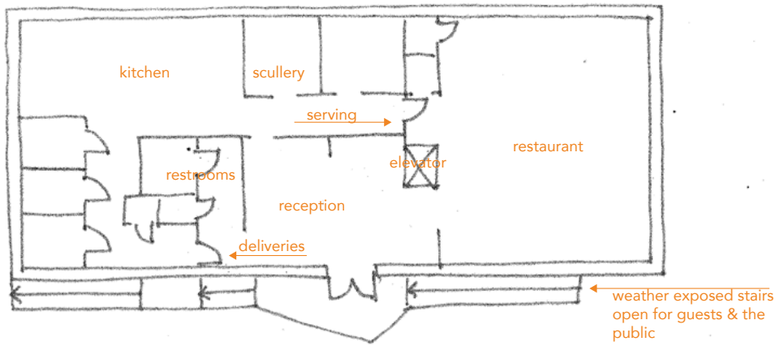


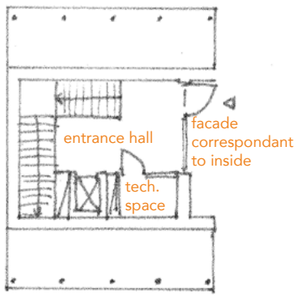
03.
Each level is stretch out to adapt to the slope, without blasting work. The top floor offers a view towards the ocean.

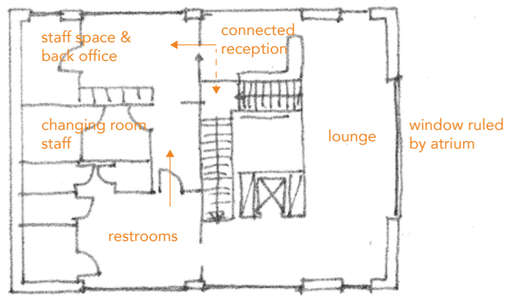
// main building, sketches

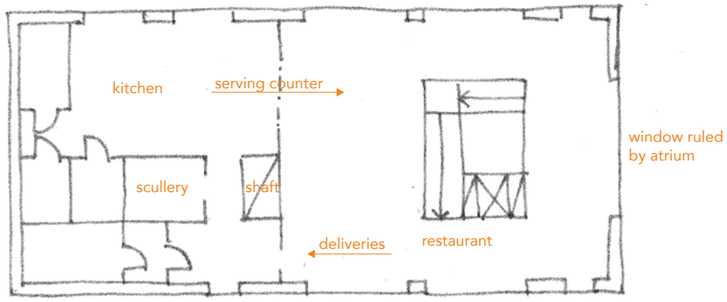








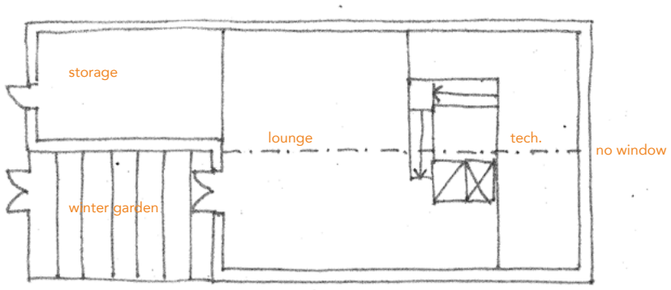


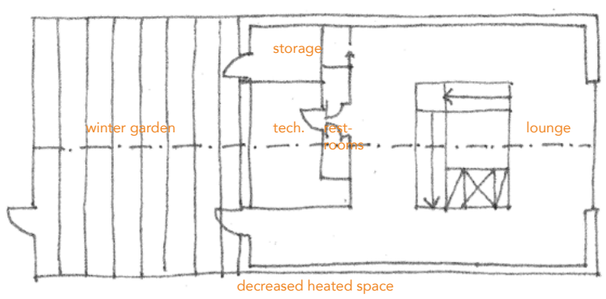


Level 1

Level 2

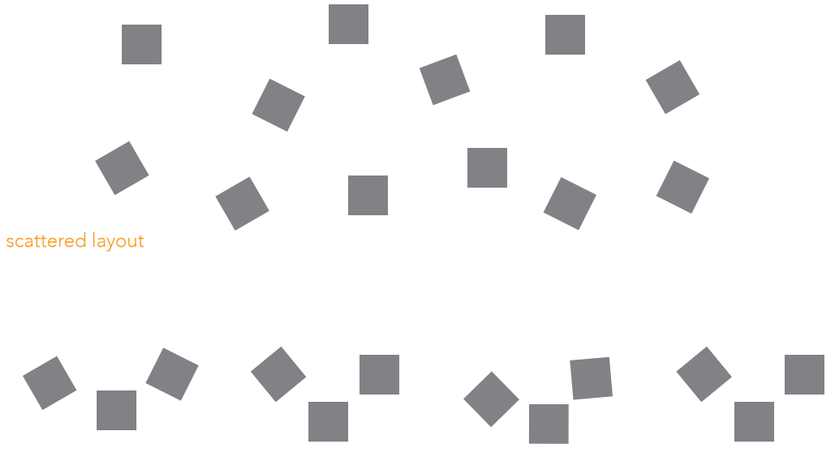
Level 3





Level 4

// main building, sketch-models



scattered layout

grouped layout

attached layout

conventional layout

// cabins, disposition and type

01. Scattered layout
freestanding rooms

+ high level of privacy in each room
+ unique position of each room
+ easier to intergrate in the landscape
+ possibility to expand gradually

- possibly an increased need for walkways
- possibly more complex installations

02. Grouped layout
room grouped in three

+ potential for wind protection on patios
+ framed views between buildings
+ lower amount of walkways
+ less complex installations
+ possibility to expand gradually

- lower level of privacy
- possibly a larger visual impact in the landscape

03. Attached layout
rooms attached in groups of three

+ less need for walkways
+ less complex installations
+ less wall area

- lower level of privacy
- a larger visual impact in the landscape

04. Conventional layout
all rooms in one building

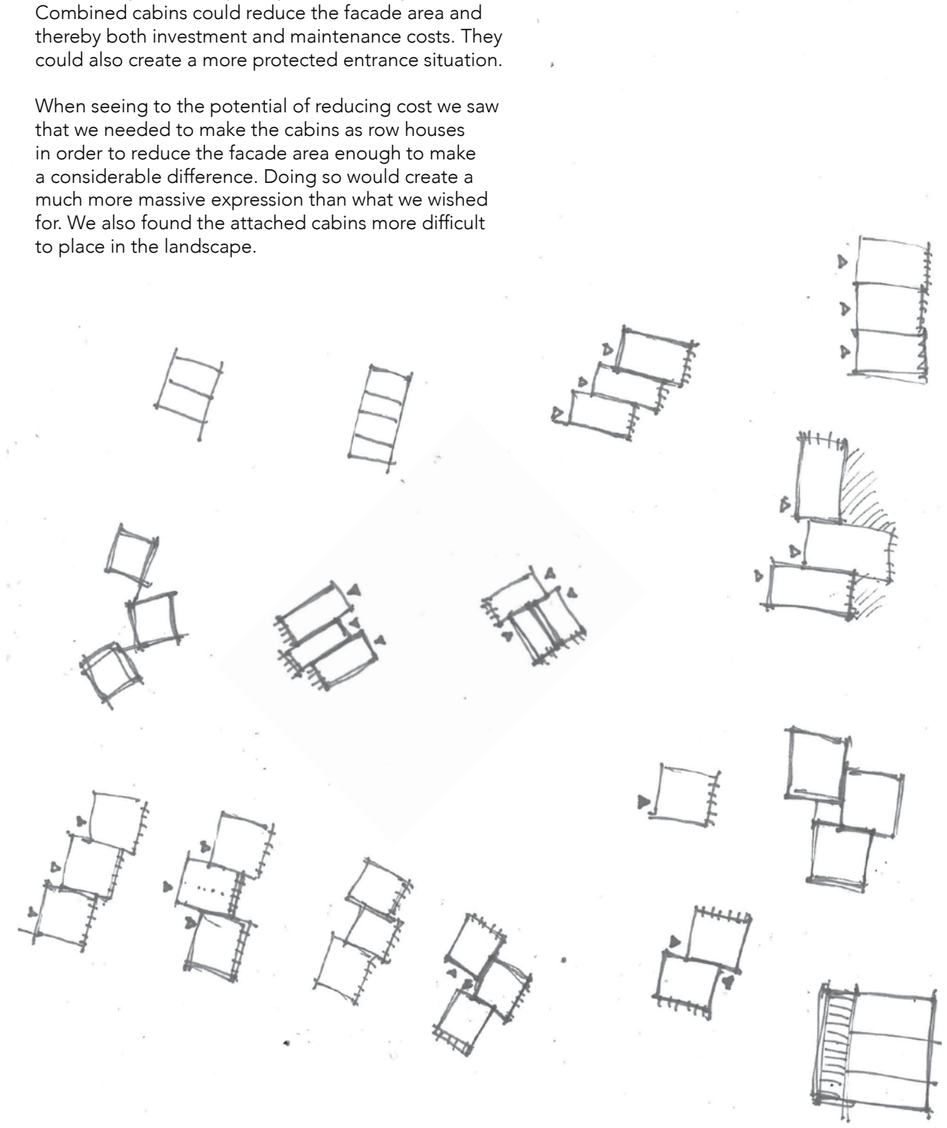
+ economical
+ no need for walkways
+ ordinary installations

- natural experience left out
- a big impact on the landscape
- blasting work required

// cabins, sketches of attached buildings

We investigated how cabins could be combined, considering outlooks, privacy and efficiency. Combined cabins could reduce the facade area and thereby both investment and maintenance costs. They could also create a more protected entrance situation.

When seeing to the potential of reducing cost we saw that we needed to make the cabins as row houses in order to reduce the facade area enough to make a considerable difference. Doing so would create a much more massive expression than what we wished for. We also found the attached cabins more difficult to place in the landscape.

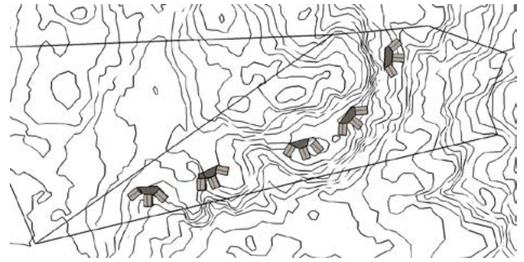


// cabins, placement in the landscape

01. Clusters
groups of three

+ potentially easier to accomplish accessibility
+ framing views between buildings
+ gradual expansion is possible

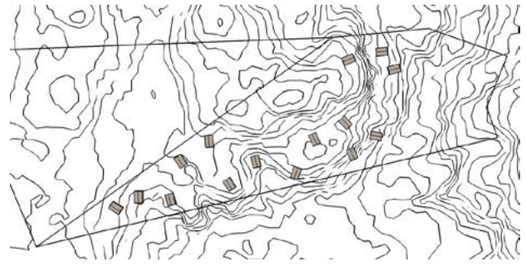
- heavier impression in the landscape
- less connection to the surrounding nature
- less private



02. Scattered
all cabins spread out

+ possibly a higher level of nature experience for guests
+ high level of privacy is possible
+ gradual expansion is possible

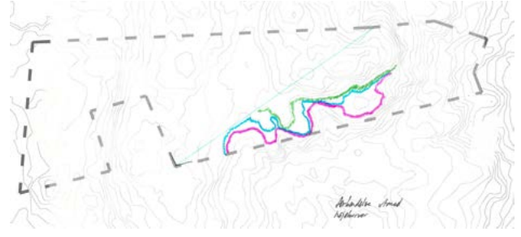
- longer distances
- less practical
- more complex installations
- less accessible
- large amount of walkways and stairs needed



Conclusions
Both alternatives have positive and negative consequences. Discussing them, we decided to merge them. Our ambition was to use the higher level of accessibility and less complex installations from the first version and the less heavy impression of the second.

Along the contour line
To accomplish this we decided to scatter the cabins along one contour line and not all over the plot. This way we reached a more scattered layout, where walking paths and installations are less complex.

The sketch shows three alternative contour lines. We decided to move forward with the blue alternative, since we could fit the cabins in the best way along this one.



// cabins, building form

Roof and volume
The roof of the building is what will be most visible from afar. We elaborated with different pitches to see what effect is has on the volume. Some roof types are more present on the island today. The most common type is the classic gable roof, which is used both on buildings for housing and on fishing huts. At an early stage, we chose to exclude the roof types that we don't see fit the buildings shape and/or don't fit the context.

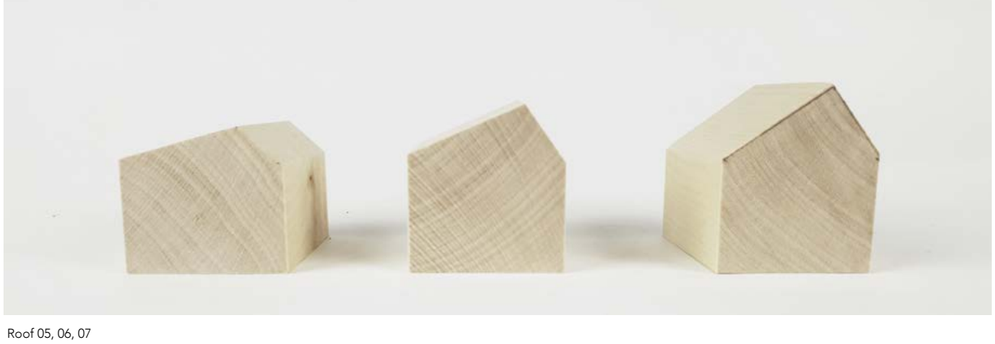
Classic gable roof
We decided to test the classic gable roof further in model studies and try out different angles, see model 01-04. From a low inclination to a steeper variation. This roof type is present on the island today and is historically anchored to the Swedish building tradition.

Offset gable roof
As a further development of the gable roof we did versions that were offset from the central line, see models 05-07. These types were also variating in height and inclination. The offset gable roof is more modern in its idiom.

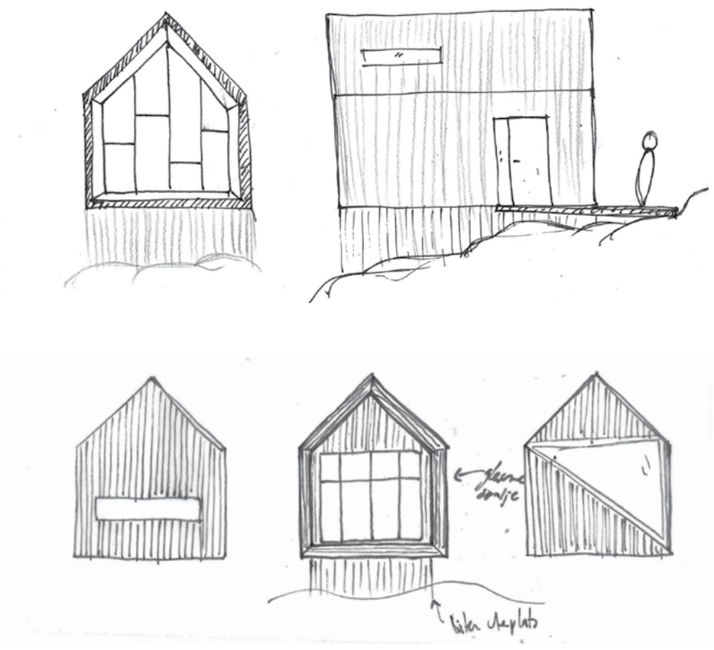
Result of test
From the test we could see that less inclined roofs created a building form that felt pressed down, while the roofs with high inclination felt tall. The tallest version is however very high which might not be suitable considering the location, since they then would pop up too much.

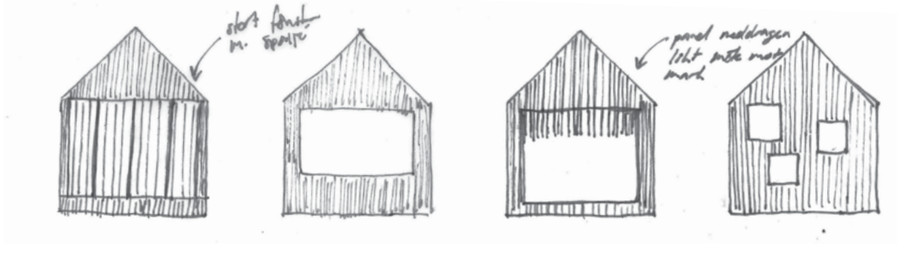
We decided to continue working with roof number 03 for the cabins and the main building.

Roof 01, 02, 03, 04


Roof 05, 06, 07

// cabins, sketches





// cabins, sketches

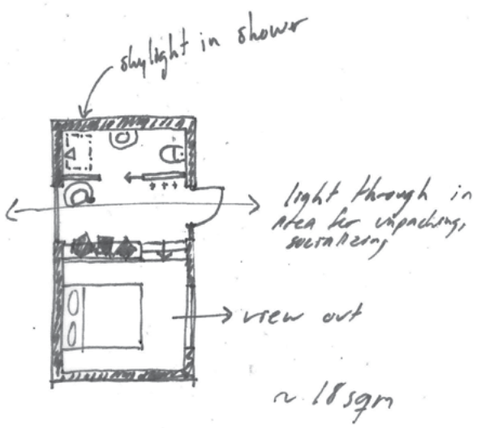
The aim with the cabin has been to create a simple but still luxurious hotel room. We have worked to create space for social interaction as well as for rest and sleep.

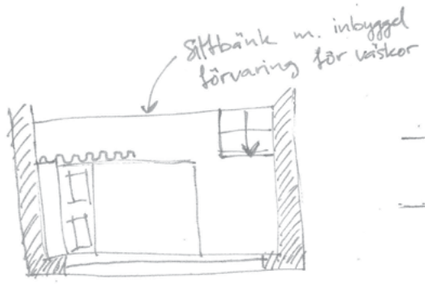
We investigated the sizes of hotel rooms at an ordinary hotel in Sweden and found the following sizes on Scandic's* website.

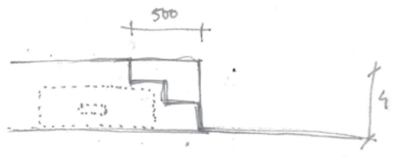
single room: 12-15 sqm
double room: 18-20 sqm
superior: 26-28 sqm
suite: 35-44 sqm

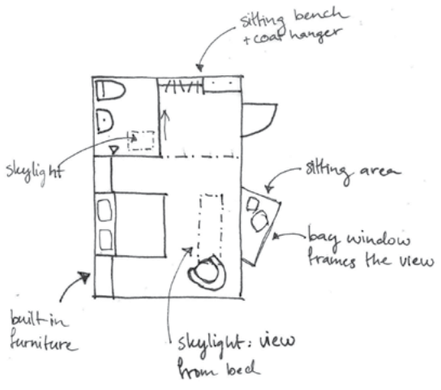
In the beginning of the project we discussed the possibility to use a wider range of cabin types, to be able to offer different levels of standards like in an ordinary hotel. This idea was later on put aside, to make the project more cohesive.

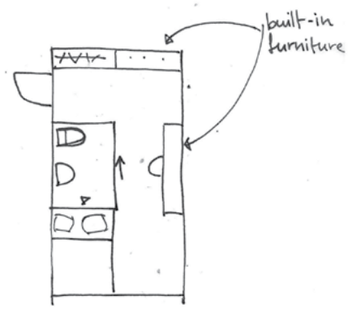
* Scandic is one of the larger hotels chains in Sweden.

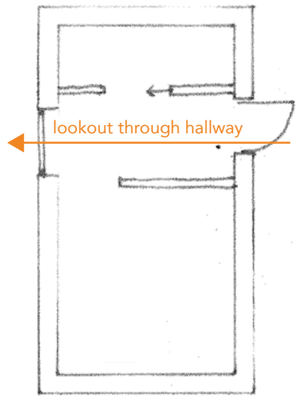


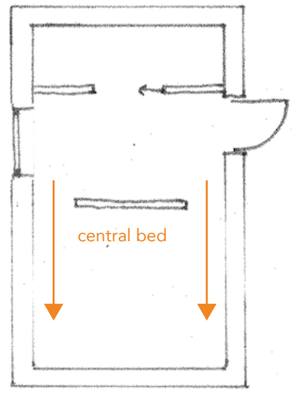


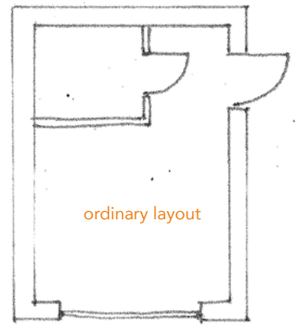


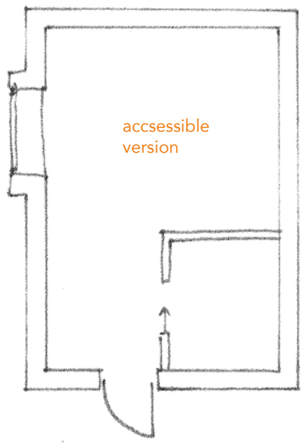


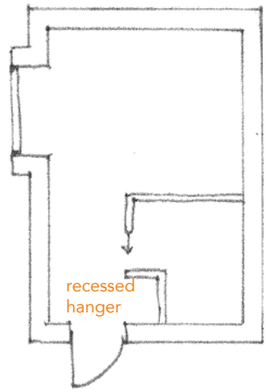


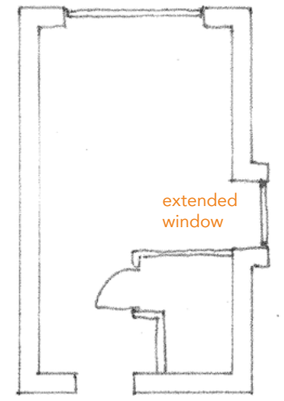


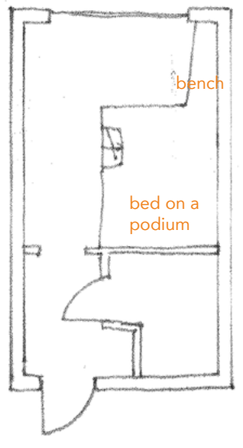


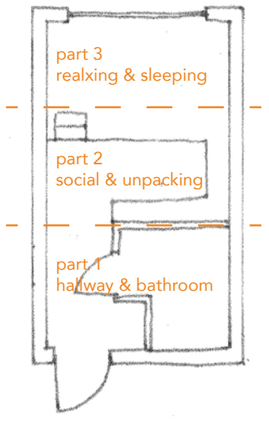


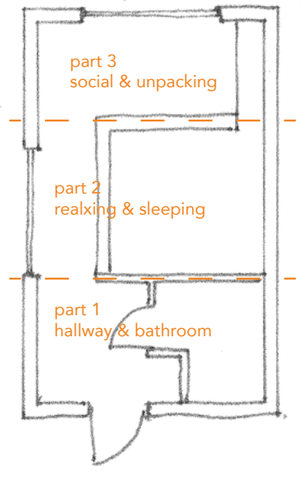












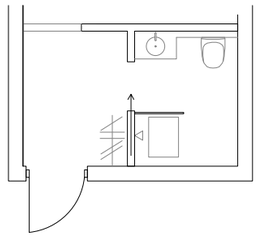
// cabins, plan and model sketches

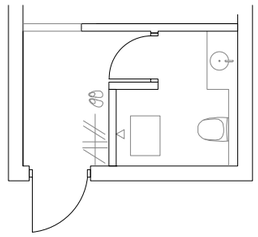
Bathroom layout
We wanted to limit the space in the bathroom, but we also wished to design a luxurious space to take a hot shower after a long day outdoors. To create this, the relation to the hallway and it's spaces became important.

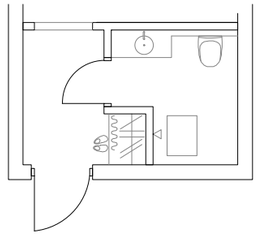
Light in bathroom
One idea that lived on from an early sketch regarding the bathroom was a skylight above the shower. This window will let light into the whole room and thanks to the location create a unique effect together with the water from the shower.

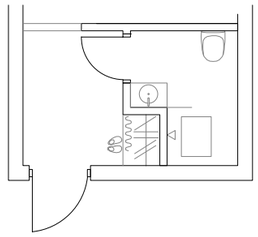
We did model studies to test the light condition with different types of skylights. Four sizes with a variation of "tubes" leading the light down to the shower was tested and can be seen on the next page.

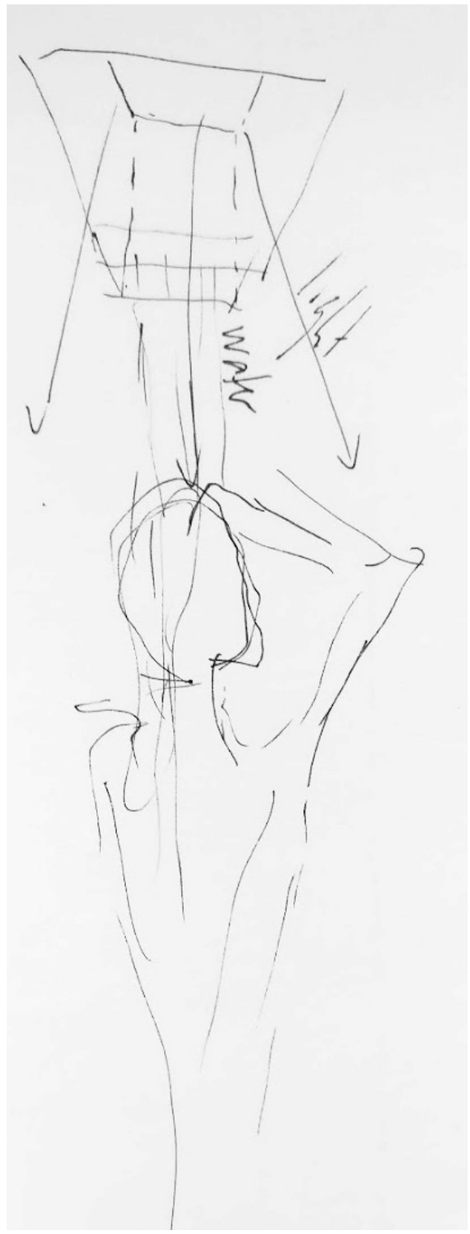
01. small window and large tube
02. large window and tube
03. medium window and tube
04. small window no inner ceiling











01.

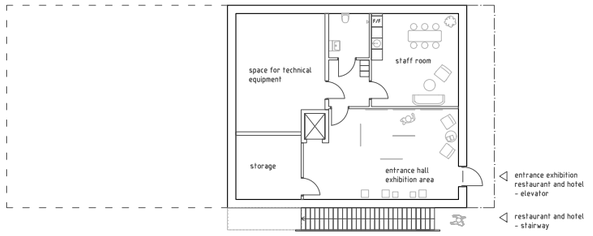
02.

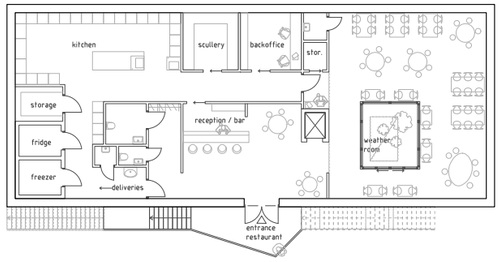
03.

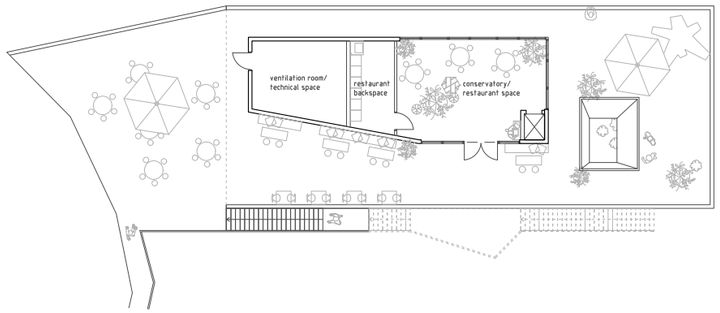
04.

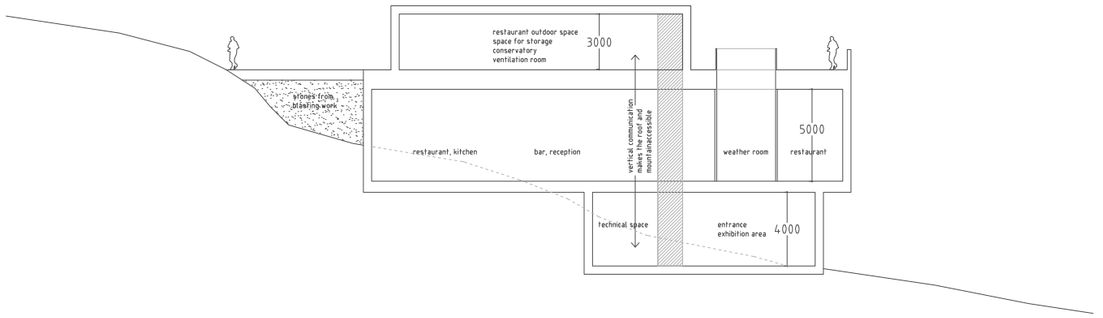
05 .
MID-TERM DESIGN

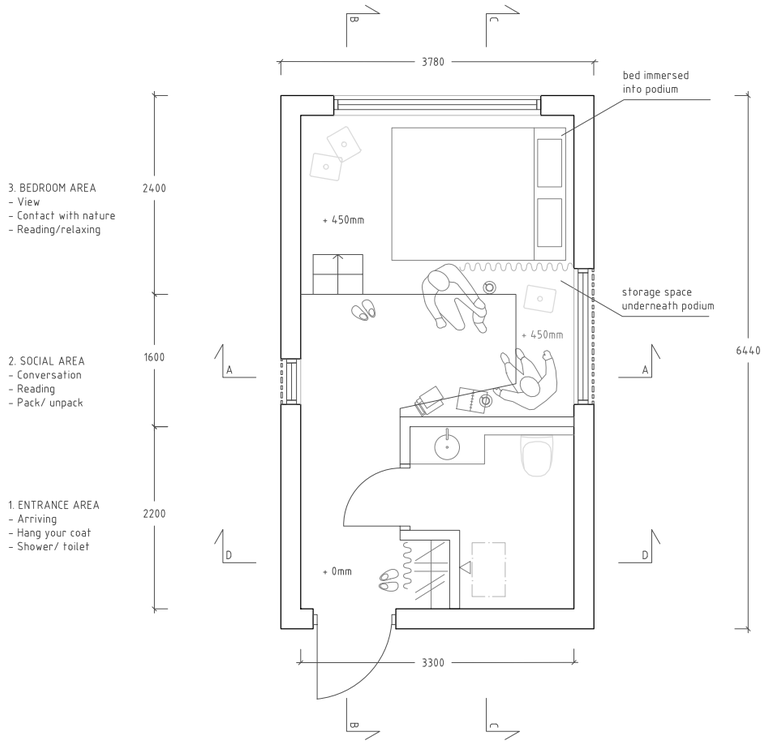
// proposal mid-term seminar

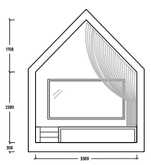








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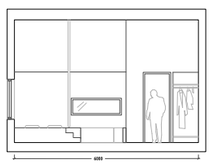
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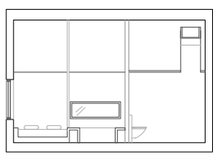
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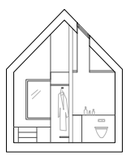
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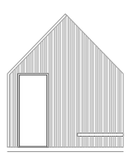
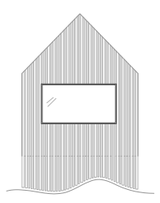




// comments from mid-term seminar

concept
you are consistent with nature and movement, but there are some gaps - try to fill them!

clarify the concept

cabins
the cabins have a distinct character

the panorama window is a given

is the layout of the cabin plan optimized? is the bed in front of the window the best option?

test other parameters for the placement of cabins

define the character of the materials

main building
make the main building correspond to the cabins

work with the entrance point to,
how does one meet the building?

why is the stairway outside? is that a good solution?

great potential in working with the vertical movement

the main building is program-based at this stage, develop the design

06 .
PROPOSAL

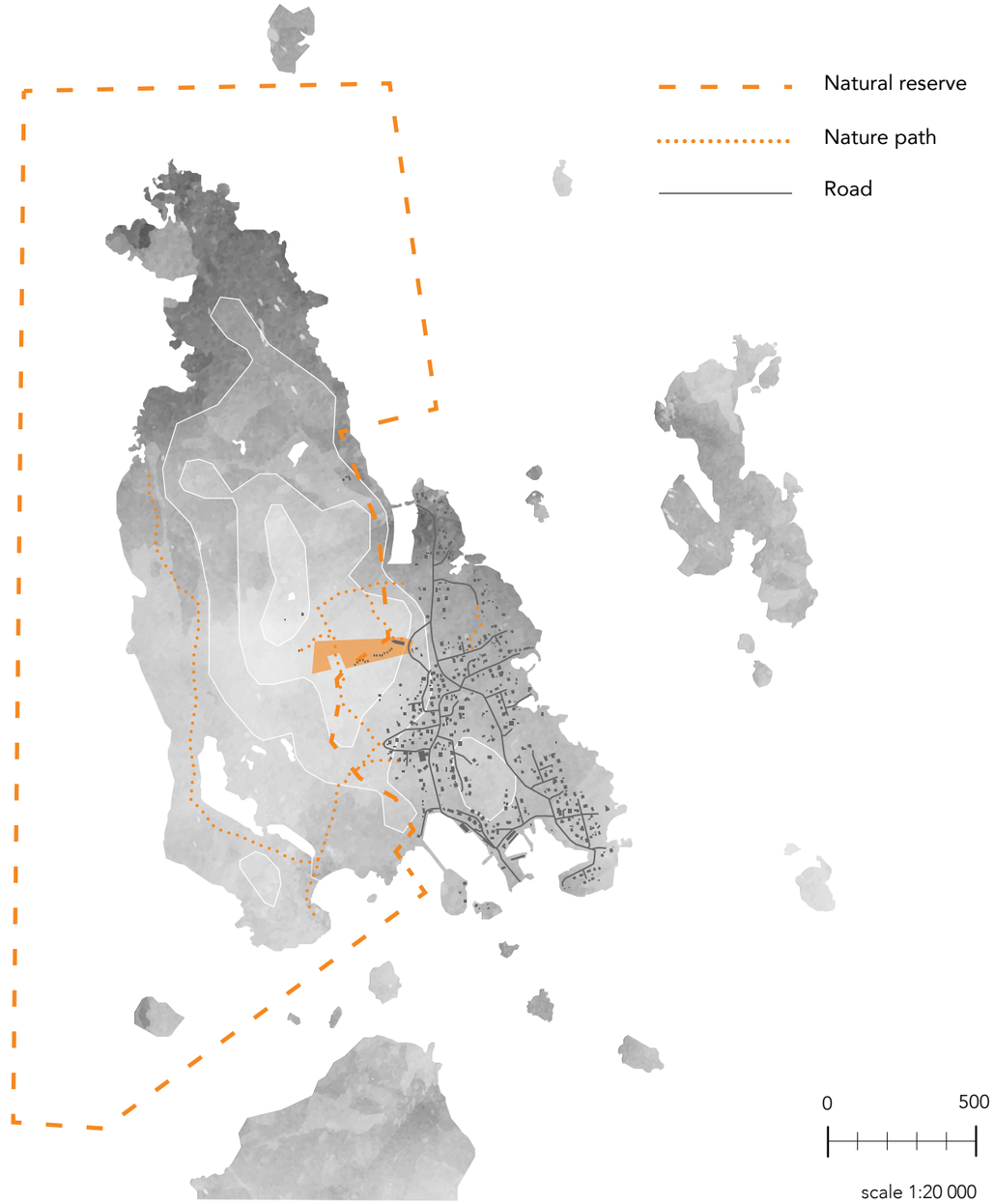
// site location

The plot is located in the middle of the island, above and sort of behind the village. The western part of the plot is part of the natural reserve, which limits the buildable area. The topography is varied and has some of Rörö´s highest points.

There are many reasons to place this project in the middle of the island and not along the shoreline. First and foremost the main attraction on Rörö is the natural reserve, which is a large part of the plot.Second, this plot is not affected by shoreline protection laws, which limits building along the water. Neither is it in direct danger of increased sea levels.

We believe that a hotel in this location also can function as a complement to other typical hotels in the archipelago area.

The hotel will in addition its obvious functions, also make the access up on the montain and in to the natural reserve easier. Today this higher part of the island is difficult to access if you're not in good physical shape. By connecting the hotel's exterior walkway with existing paths on the island, the hotel makes it easier to move around outdoors on Rörö.



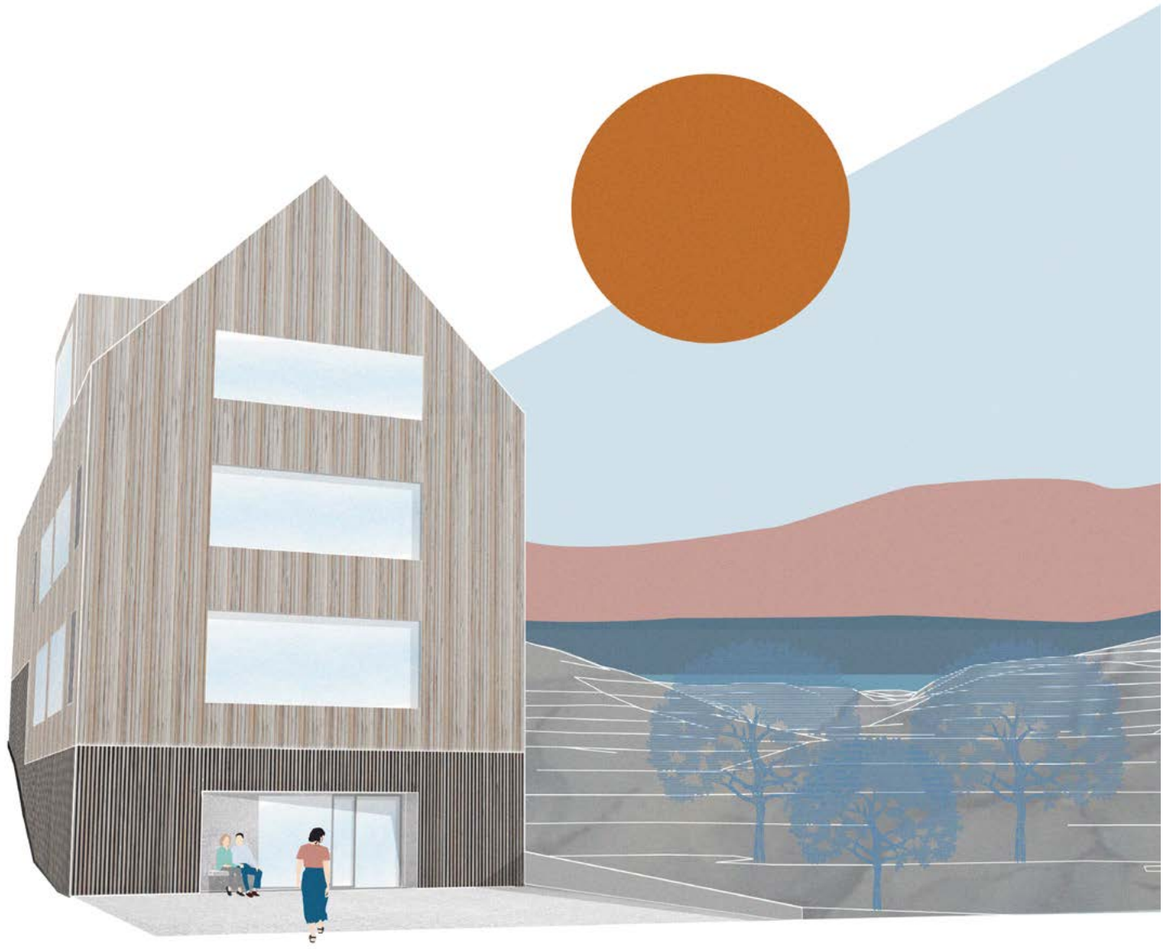
// site plan

The hotel consists of a main building which holds the public areas and 15 cabins. The main building is the first thing the vistor will meet when walking here from the village.

The cabins are placed along one specific contour line and are connected by a common walkway, making each cabin easy to access no matter your physical abilities.

When moving around outdoors, you are exposed to weather, which creates a sharp contrast between being inside and outside. As a visitor at this hotel you will have to move around outdoors!

site plan, scale 1:1000



The main building

Arriving at the hotel, the gable facade is in focus, with a rhythm of change between the window on each floor. The mountain in the background frames the building, which has a wooden facade that creates a subtle variation of materials in the landscape.

// main building

The volume of the main building is placed across the contour lines to enable the movement from the village up on the mountain.

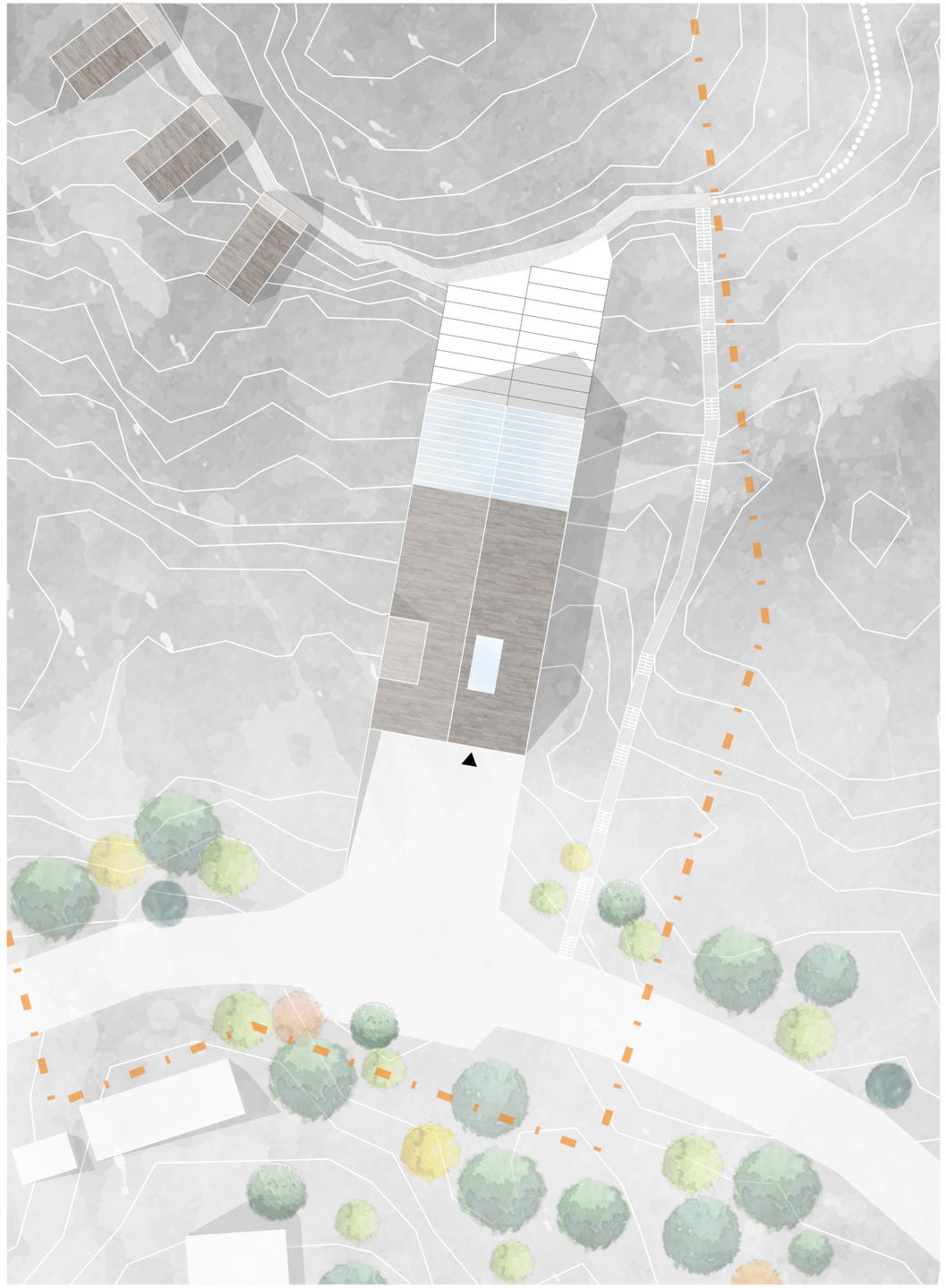
To minimize the blasting work on the site, the building has a small imprint on the first level. The upper levels grows as the mountain gives it more space.

The entrance floor is heavy in its structure and appearance with concrete as the main material, to blend into the mountain.

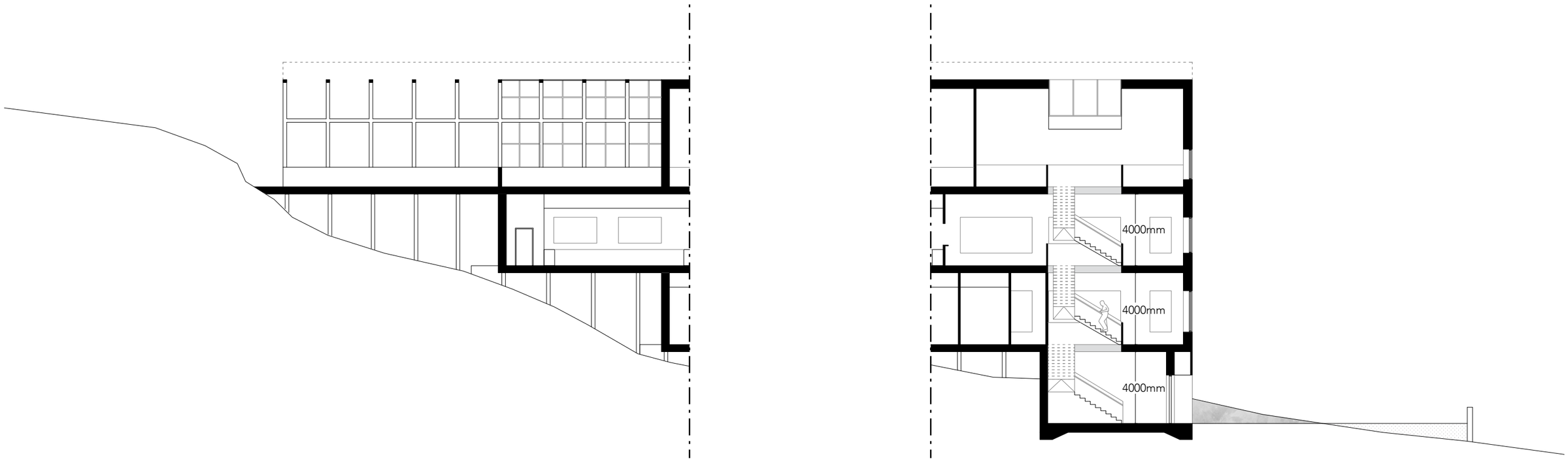
When moving up in the building, the structural and visual appearance changes from heavy to light. Level 2-4 is constructed in wood. On level two there is a reception area, restrooms and space for staff. Level three offers a restaurant and kitchen. Level four has lounge space and a winter garden.

The winter garden can be used by the restaurant to extend the seating area, or to host events like weddings and conferences.

A terrace connects the winter garden to the mountain and the walkway. It is designed so that people who can't move around freely on the mountain gets the chance to experience the views and the nature from this higher point.

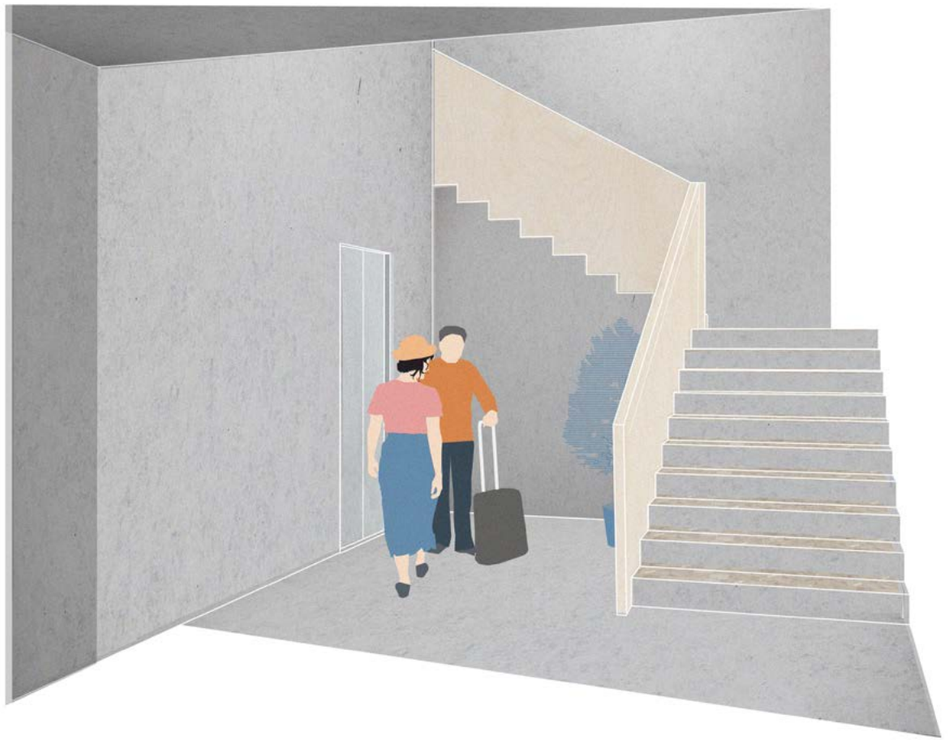


site plan, scale 1:400



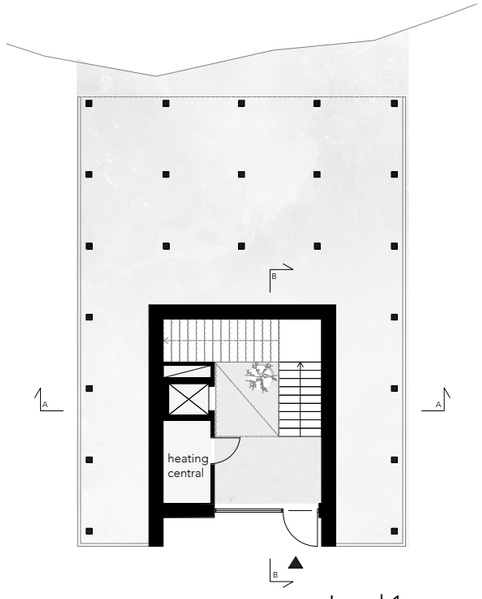
0 5 10

section B-B, scale 1:200



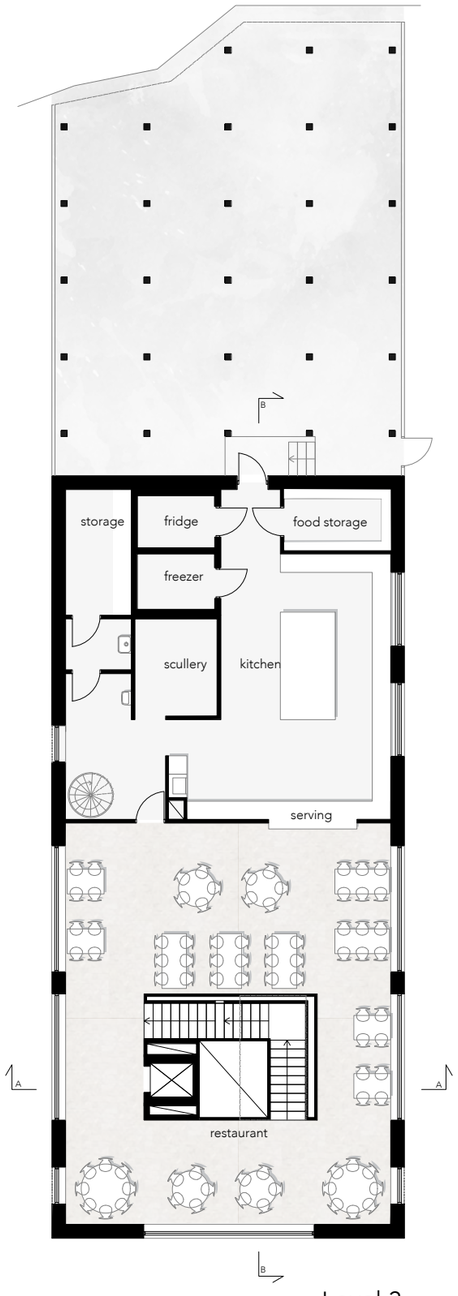
Entrance hall

In the entrance hall, the staircase is the centerpiece with a wooden rail leading the guest up to the reception. The room opens towards the sky in an atrium, letting the light fall through the staircase.

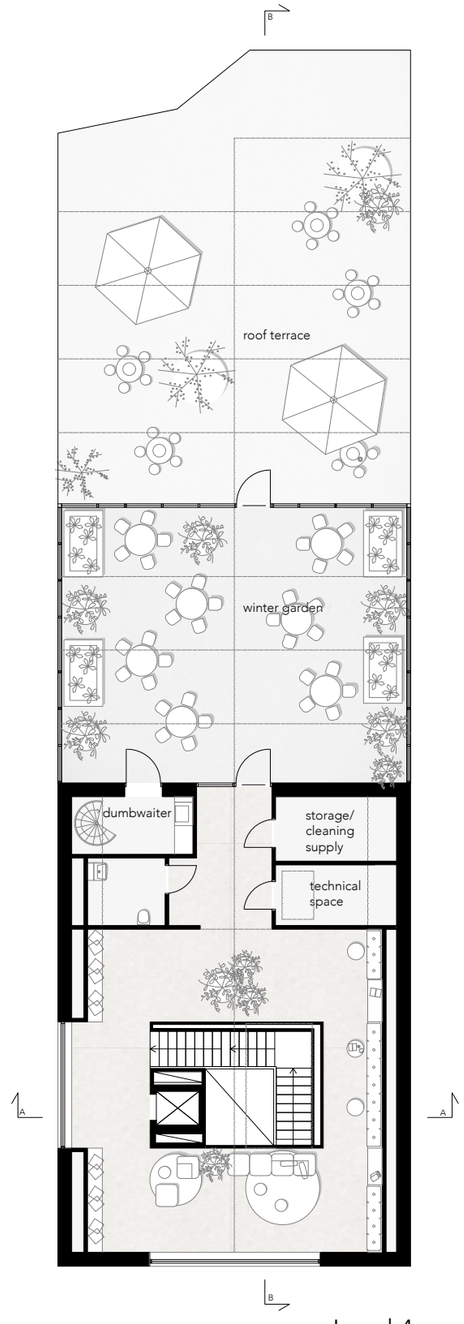


Level 1

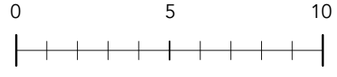
Level 2



Level 3



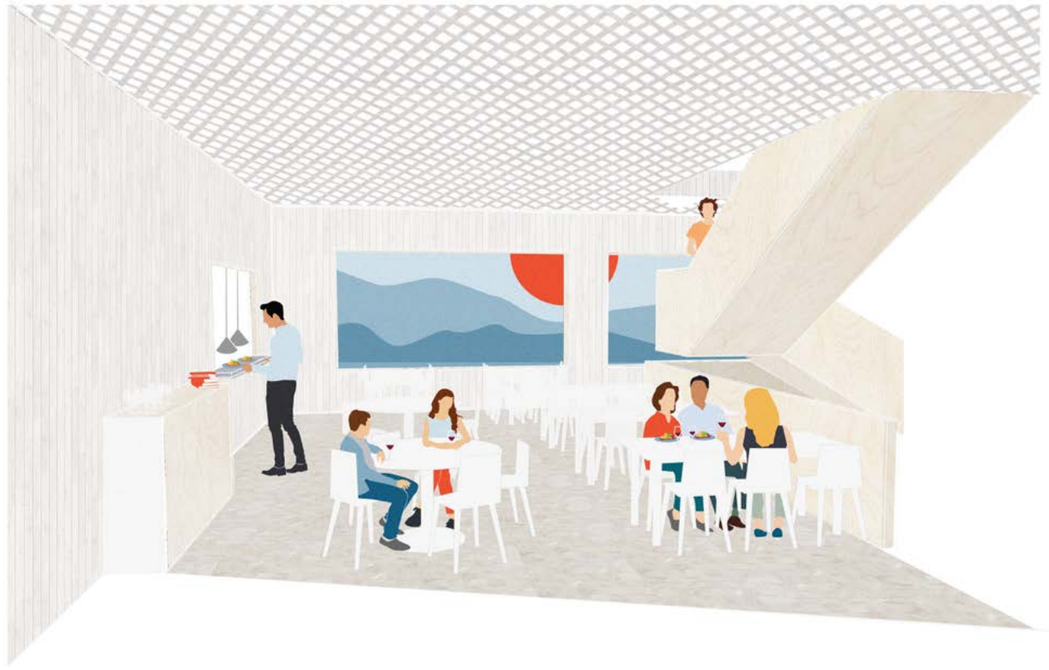
Level 4

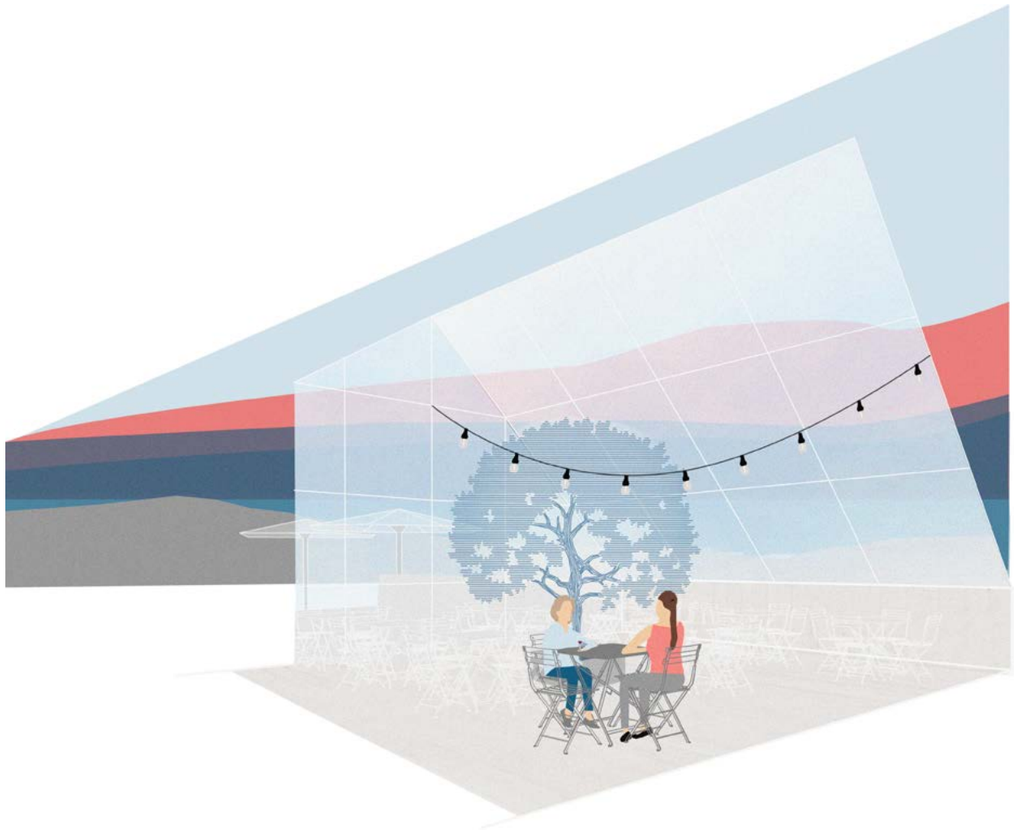


floor plans, scale 1:200

Restaurant

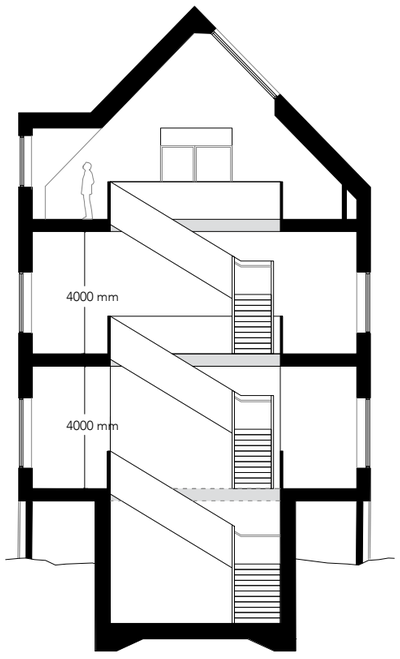
In the restaurant there is plenty of space and different places to sit. The room has a warm, but still modern, interior. Delicious scents from the opening in the kitchen wall gives you a hint of what is on todays menu.

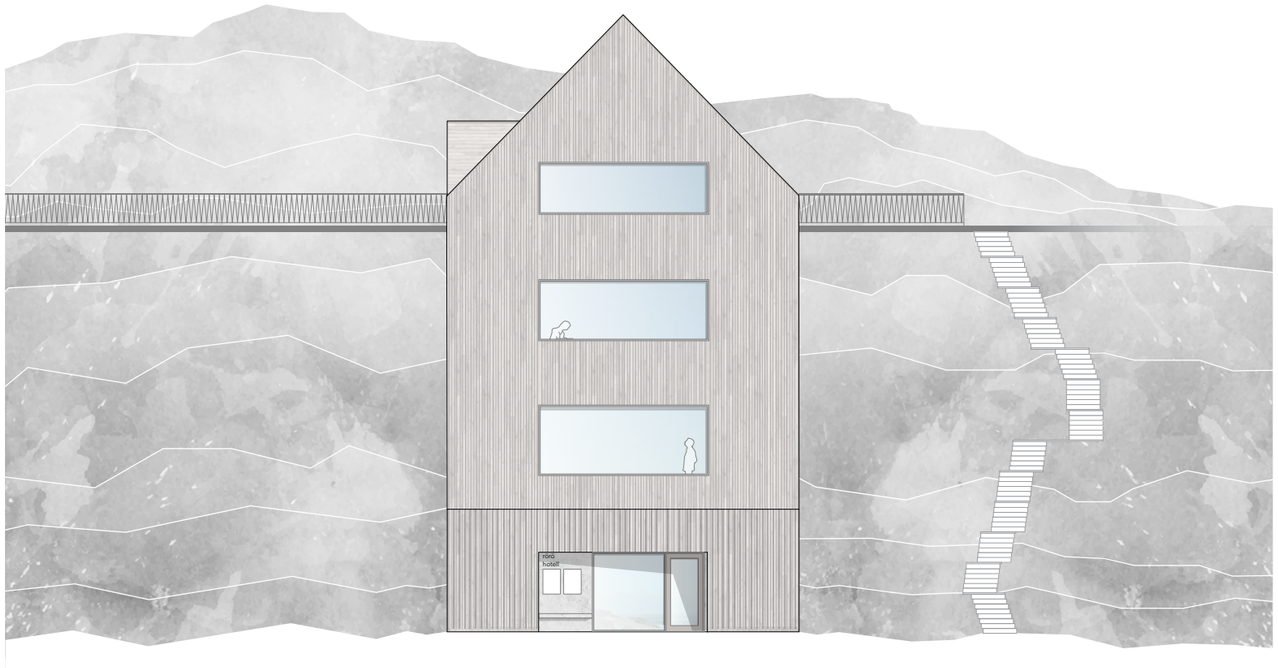




Winter garden

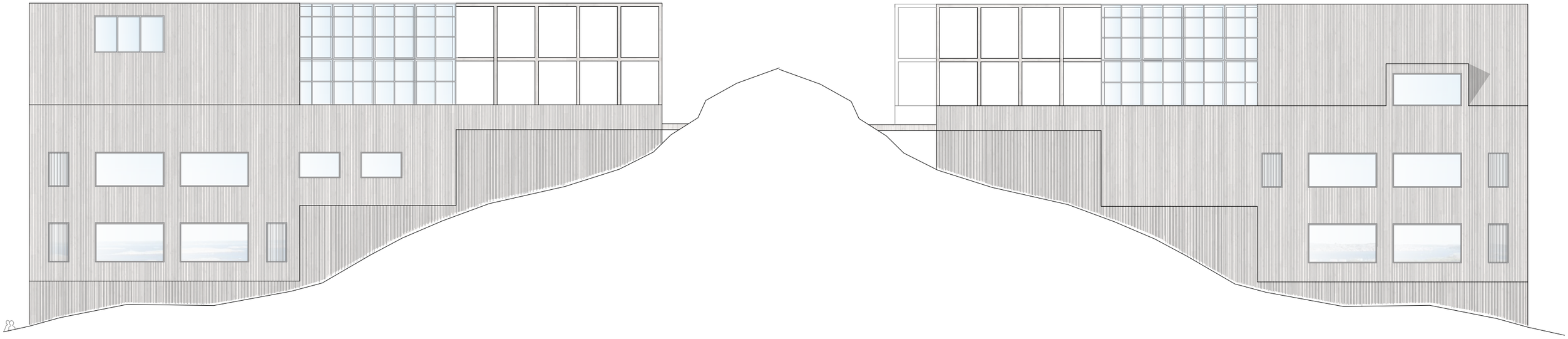
The winter garden prolongs the summer season. This is a place for relaxation with a nice view over Rörö. Here you can enjoy a glass of wine or your evening tea all the way through october.





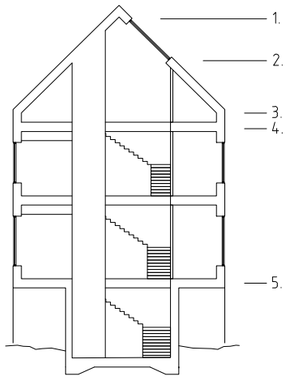
0 5 10

section A-A & east facade, scale 1:200



0 10 20

north & south facade, scale 1:400



1.

2x21 mm	exterior panel
20mm	battens
20mm	counter batten
2 mm	roofpaper
20 mm	tounged and grooved board
45 mm	air gap
1 mm	wind barrier
250 mm	insulation + constructive structure
45 mm	insulation
18 mm	birch plywood white pigmented

2.

remote controlled skylight

3.

2x21 mm	exterior panel
22mm	battens
22mm	counter batten
100 mm	foam glass insulation+ downpipe
195 mm	insulation + constructive structure
1 mm	vapour barrier
45 mm	insulation
18 mm	pine wood panel white pigmented

4.

30 mm	wood block floor
20 mm	floor underlay
2 mm	sound deadening foil
220 mm	insulation + constructive structure
75 mm	insulation
18 mm	wood board

5.

30 mm	wood block floor
20 mm	floor underlay
2 mm	sound deadening foil
220 mm	insulation + constructive structure
70 mm	insulation
28 mm	studs
12 mm	birch plywood

steel mounting
black painted battens

0 0.5 1

main building detail, scale 1:25

The cabins

The cabins are placed along the same contour line which makes them easy to access. When walking towards your cabin, the view over the village and the ocean is beautiful.

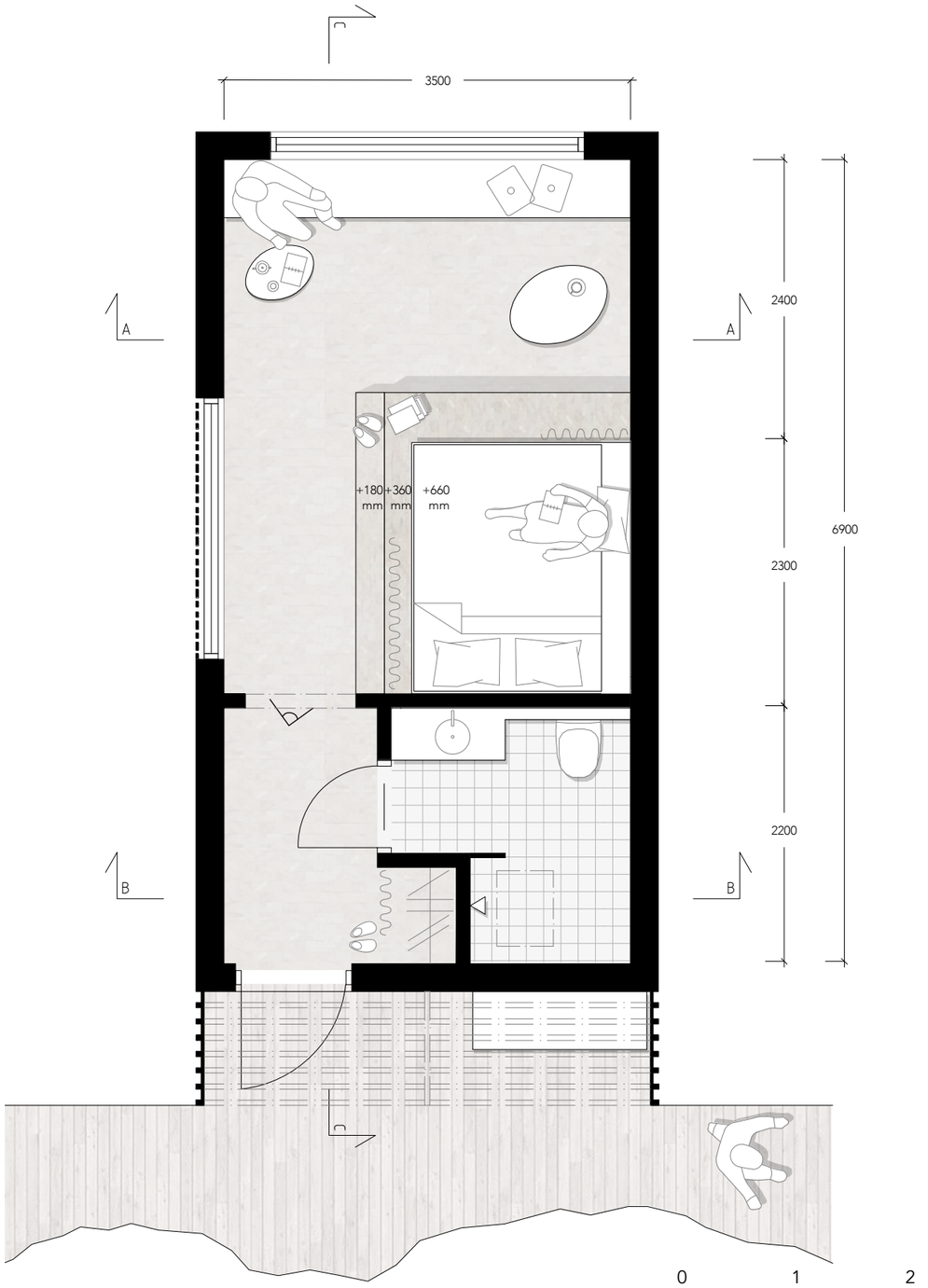
// cabins

The cabins are the private spaces of the hotel. This is a place for rest after a windy day out in the natural reserve, at the same time as you can enjoy the view of the village from here.

Upon arrival to your cabin, the entrance gable is sheltered by a pergola. There is a bench to put down your belongings or sit down for a moment. With no windows, the entrance gable won't reveal what is going on inside the room.

The interior of the cabin is divided in two parts. The first part is the entrance and the bathroom. There is space to hang your coat and you are offered a hunch of what's to come moving into your room.

The ceiling height in the hallway is lower to create a contrast when you step into the next room. Inside the room there is a bed and a seating area, both site-built. From here, the panoramic window present an outlook over the village. The window to the left of the bed is partly covered, to create a more private feel. There are plenty of space for unpacking, socializing and reading. To be able to shield off the bed from morning light and make it more private, curtains can be used.



floor plan, scale 1:50

Inside a cabin

After a day out in the natural reserve, you can relax in your cabin. Why not take the time to write down the experiences from the day so far?

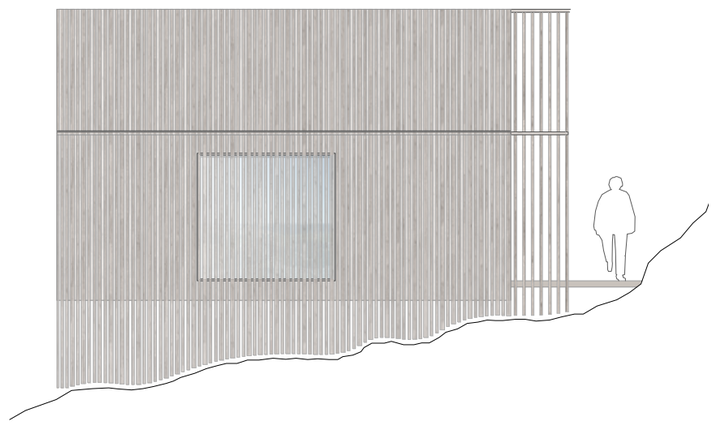
// cabin exterior

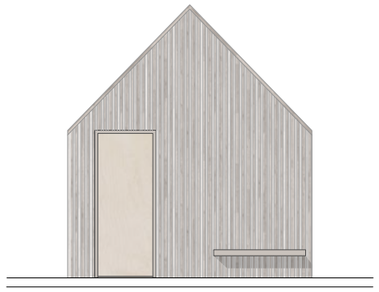
The cabins are made in a wooden structure and cladded with a wooden panel. The top panel is continuing down to meet the mountain and is also covering the window that is exposed to people walking on the common walkway.

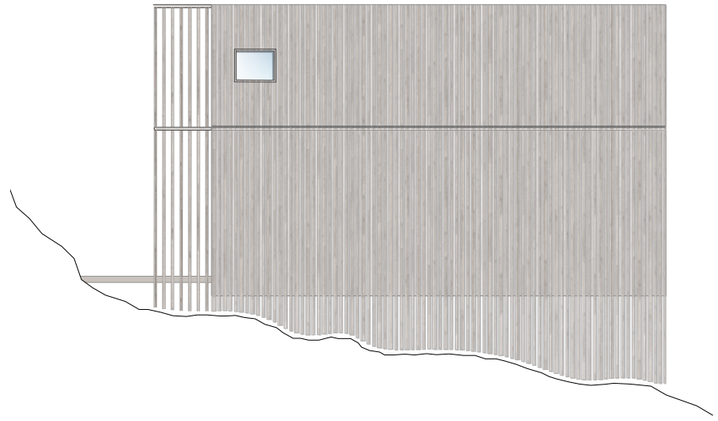
The dimensions of the panel is chosen to create enough distance between the laths for outlook through the windows, but also enough coverage to hide the foundation below the house.

The panel is also continuing up on the roof. Here, the gutter is as well only covered by the top panel. The aim is to create the feeling of one volume, rather than separate parts.

The pergola that shields the entrance of the cabins is a continuation of the top panel and creates a semi-private space in front of each cabin.

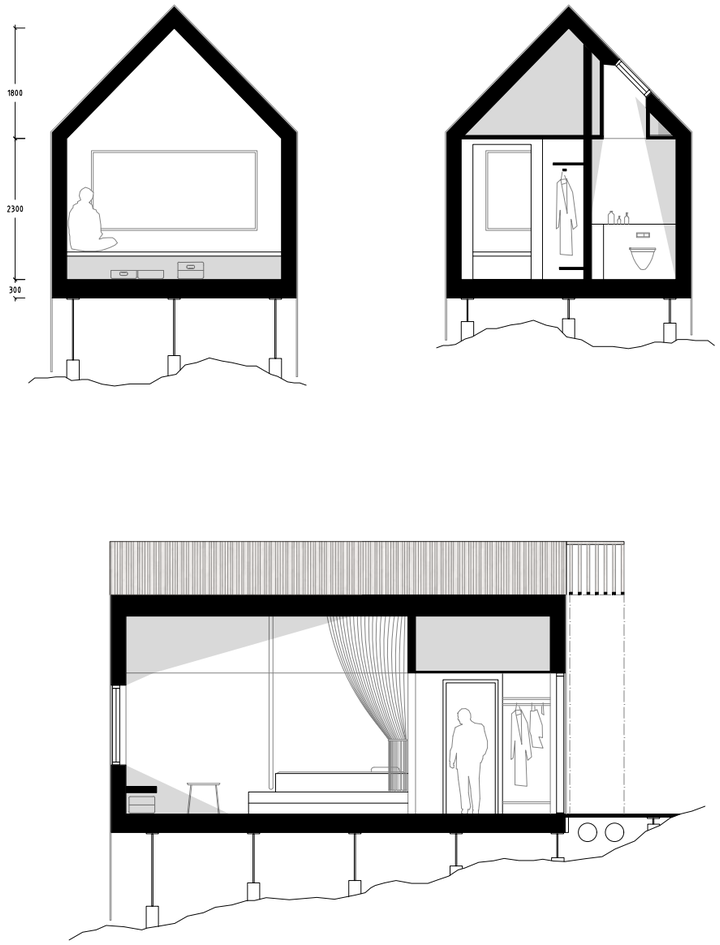






0 1 2 3 4 5

facades, scale 1:100

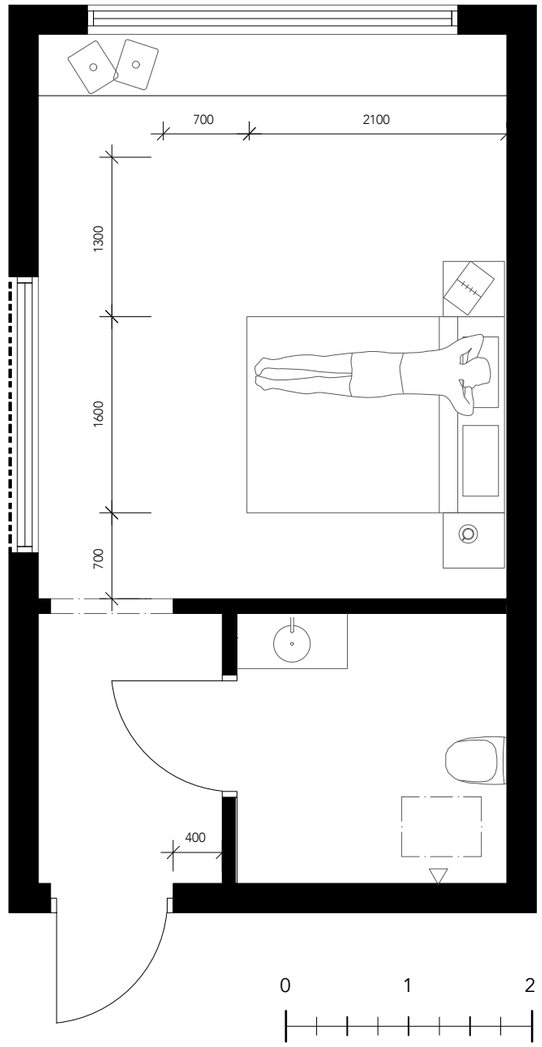


0 1 2 3 4 5

sections A-A, B-B & C-C, scale 1:100

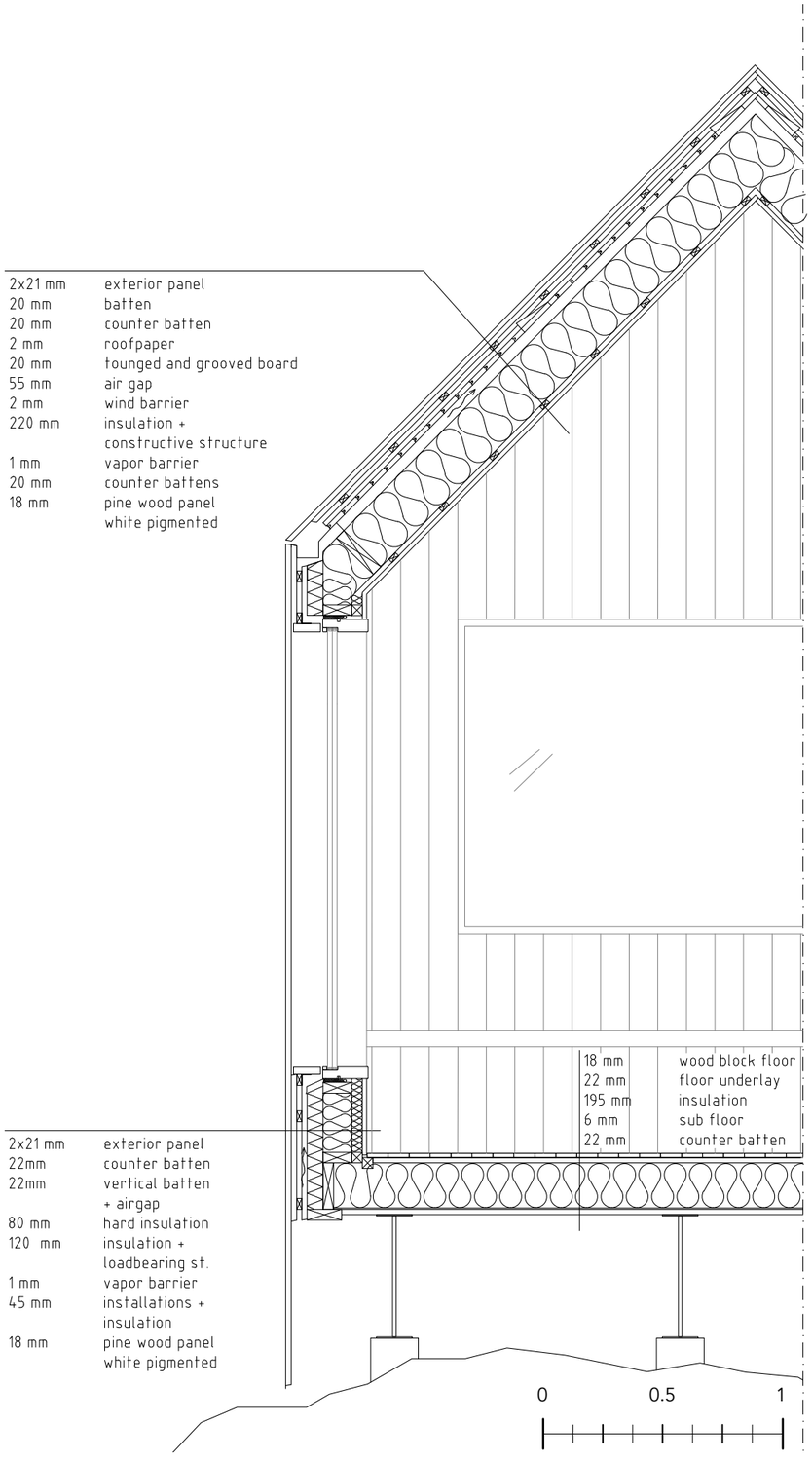
// accessible layout

To answer towards a broader public and to fulfil regulations concerning accessibility, two of the cabins will have an alternative layout. In this cabins, the measurements are slightly different and the podium is replaced with a regular bed, so that people who are depending on a wheelchair or other aids, also can have a comfortable stay at the hotel.

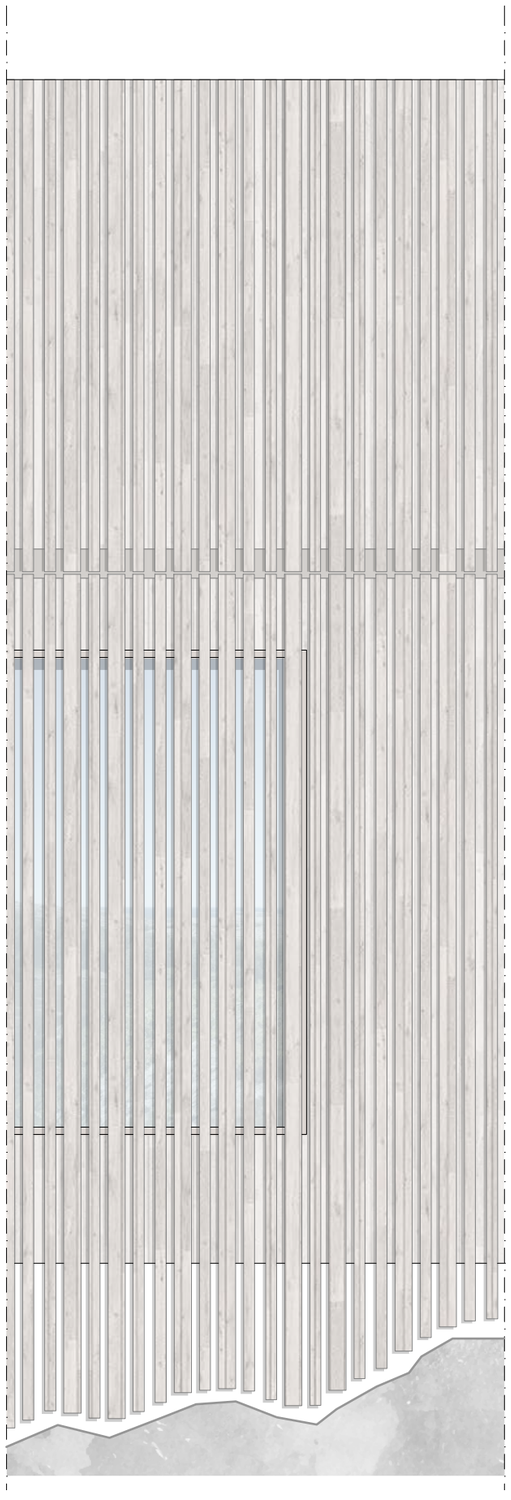


0 1 2

floor plan, scale 1:50



cabin detail, scale 1:25



facade material: greyed wood, either non-treated or treated

inner wall and ceiling: white pigmented wooden panels

flooring: white pigmented wood block floor

// program summary

Main building

Entrance	15	sqm
Reception	56	sqm
Restaurant	115	sqm
Lounge	93	sqm
Restrooms	37	sqm
Staff space	44	sqm
Kitchen	109	sqm
Storage	20	sqm
Technical space	23	sqm
Total area	512	sqm

Unheated space

Winter garden	100	sqm
Roof terrace	124	sqm
Total area	224	sqm

Cabin

13 rooms	24	sqm
Total area	312	sqm

Accessible cabin

2 rooms	26	sqm
Total area	52	sqm

Total heated area	876 sqm
Total unheated area	224 sqm

// landscape model 1:500

// main building model 1:200

// cabin model 1:50

// detail model 1:20

07.
REFLECTIONS

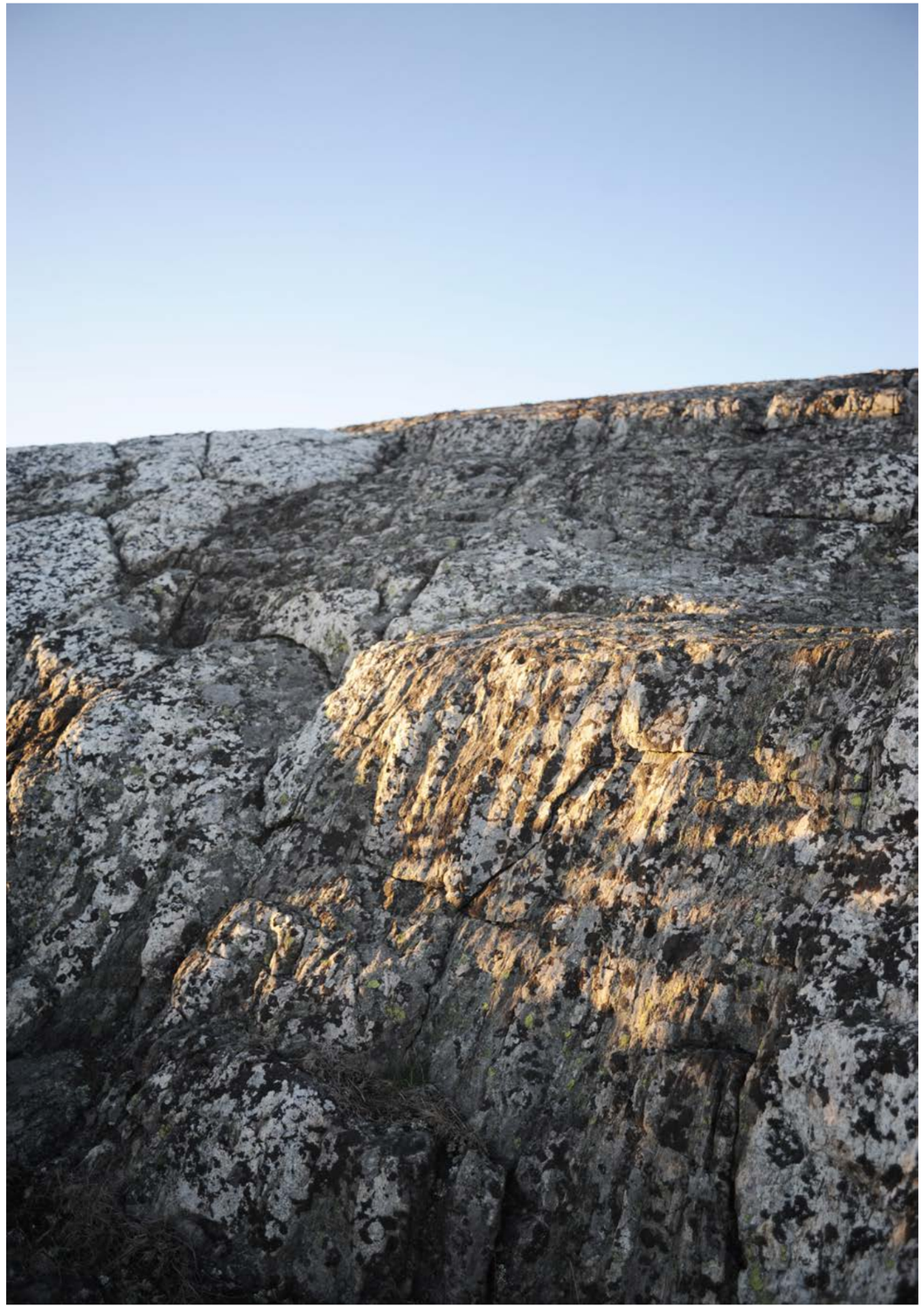
// reflection

The research question in this master's thesis has been "How can a hotel on Rörö Utmarken 2:56 be designed without making a large and permanent imprint on the site?".

The conclusion from the project is that a building complex on this site must be much smaller than what the plot owners are hoping for. The reasons to not do a larger implementation is primary because of the type of nature on the plot, which is mainly exposed bedrock, but also due to the location, existing building typologies and the scale of the island. We believe that a hotel at this location must adapt to the nature and see it as a resource, which is what we have aimed for in our proposal.

In our implementation, we have chosen a loosened structure, with the hotel rooms spread out along one contour line. This is done to create a less heavy impression, but also to make the stay at the hotel an experience of nature. To minimize the permanent imprint on the ground, the buildings are mainly placed on pillars. We believe that this strategy is a suitable way to go, if a hotel is to be developed on this plot.

To the ongoing discussion on Rörö, this master's thesis adds another perspective of how to develop the site.



Afternoon sunlight falling on rocks on Rörö in october.

08.
REFERENCE LIST

// reference list

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