

*A staycation
destination on the
island Rörö*

IN BETWEEN

*by Anna Virén
Chalmers University of Technology
Department of Architecture and Civil Engineering*

*Supervisor: Björn Gross
Examiner: Mikael Ekegren*

Abstract

Thanks to...

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CHALMERS

In Between - A staycation destination on the island Rörö
A thesis work by Anna Virén

Supervisor: Björn Gross
Examiner: Mikael Ekegren

Chalmers University of Technology
Department of Architecture and Civil Engineering
MPARC
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The demand for sustainable vacation alternatives are growing and we talk more and more about the impact of frequent flying. As a result of this, more people are looking for getaway options closer to their homes. Along with this, the search for extraordinary experiences and unique destinations are still intense.

So question is, can you make it easy to travel responsible and create a unique and new experience that does not require a flight trip or even access to a car? This question is investigated through the design of a nature hotel in between nature and the community, close to a reserve where minimal impact is preferred.

The island Rörö is located on Sweden's west coast, only about an hour from Gothenburg. Although the island has no bridge from the mainland, it is easily accessible by public transport and even bike. On Rörö you will find a Nature reserve with a unique flora and fauna and a dynamic and magnificent landscape which overlooks the undisturbed horizon.

The site for the projects lies on top of the island where an empty plot with a supported plan and proposal for a nature hotel already exists. This thesis will propose another vision of what the place could be where nature, the unique experience and simplicity will be in focus.

The plot is challenging in many ways; you can only access it by foot, the terrain are in some areas very uneven and steep and it is located on one of the island's highest peaks, an exposed situation where you traditionally would not build. This project is a proposal of how you can tackle these challenges in a humble way, and make as little as possible impact on the actual surface of the rock and the visitors and local residents' experience of the nature reserve.

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Me



Me, 1997 on Kalvsund where I grew up

Bachelor
Chalmers University of Technology

Internship
Wingårdhs, Göteborg

Master
National University of Singapore
Chalmers University of Technology MPARC

I grew up and lived my 20 first years on a small island in Bohuslän, close to Rörö. As I started to study architecture I also noticed how I criticized many of the newly built houses and areas on the island and areas around it. I saw that the goal was to achieve as much sea view as possible, but to what price?

Since I've moved from the island I have traveled a lot, visited and lived in many places and taken unlimited plane trips to capture new experiences, sometimes only for a weekend. I know that I'm not alone with this behavior, and I understand that this is not a sustainable way to continue. Therefore, I with many others, have started to see that you might not have to travel that far to experience something new and exciting.

I hope this project can be an addition to one of those places in the close proximity, a staycation destination, that makes you discover someplace new just around the corner of your home. I will also investigate how you could build in a more humble way, and maybe still achieve that sea view.

My earlier projects includes a wind shelter in a similar context, a hotel and a sauna. The experience I gained from all of these projects where I mainly worked with wooden buildings can hopefully be used in this thesis.

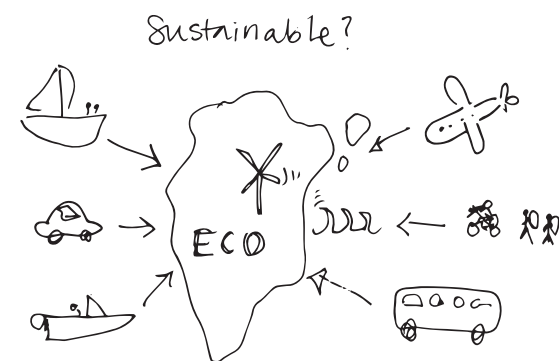
I have also taken a course in climate simulation and analysis which will be very helpful when studying a context that is highly affected by the weather.

The project

PURPOSE & AIM

The aim with this project is to investigate how you can create unique architecture inspired by the Bohuslän context, its buildings and materials. The project will investigate how you can preserve and be humble to the landscape and at the same time give the visitors an unique experience of the nature reserve and understanding of responsible travel.

This project will promote an alternative destination for visitors in the southern part of Bohuslän and will have a slightly different focus than the existing hotels and B&B.



FOR WHO?

The target group are active travelers who want to gain new experiences without the need to travel far away. The visitors are prepared to and will feel excitement about a stay in an unique west coast context with limited comfort. The visitor reaches the place by public transport, bike, or kayak and stays for a few nights. The destination might be one stop on a longer journey along the Swedish west coast. The visitor will rent kayaks and explore uninhabited islands nearby, walk in the nature reserve, cook their food outdoors, use the sauna and perhaps participate in a yoga or retreat program.

DEFINITIONS

Eco tourism: The International Ecotourism Society defines ecotourism as responsible travel to natural areas that helps to conserve the environment and the well being of the local people.

Making the project a eco-tourism destination means that it should make no damage to or wear out the site and also contribute actively to nature preservation and local culture and stimulate the visitors curiosity and respect for the place.

Staycation: According to the Urban Dictionary a staycation is a vacation spent near your home or in your own country where you enjoy things that the local environment has to offer. This is rather than flying to overseas and create carbon footprint and spend lots of money.

Questions

How can you create an unique place for tourists in an environment where minimal impact is preferred?

How can you identify the challenges and qualities of the context and use this for the building's and visitor's advantage?

How can you with the material, placement and foundation of the building cause least possible impact on the ground and experience of the reserve?

How can this place be used during different seasons, promoting the staycation idea all year around?

How

METHODS

Program and placement on site

Iteration 1 - Terrain investigation and visible impact of placement
Iteration 2 - Investigation of outdoor spaces in between settlements from references and study trip
Iteration 3 - Analysis of wind, sun and microclimate on layout

Shape, form and rooms

Iteration 1 - Shape inspiration from nature, and adjusting to terrain
Iteration 2 - Interior and exterior spaces, views and sightlines
Iteration 3 - Interior and exterior spaces, daylight and shadow analysis

Parallelly with iterations

Studies of sustainable materials and building techniques - from reference images, books and by site visits.

Case studies and visits of reference projects of

- Hotels
- Sustainable materials and building techniques
- Topographical fitting
- Nature exhibition halls
- Buildings in coastal context

Time plan

	Field studies & Site visits	Program size & Context	
JANUARY		Physical site model	Studies & Interviews of local needs
FEBRUARY	Topographical analysis + volume studies	Material studies & Construction	Climate analysis + form
MARS	Site fitting + form	First draft + vision collage	MID TERM SEMINAR
APRIL	Connection to big context	Drawings	Detailed construction
MAY + JUNE	Concept diagrams	Final visuals	FINAL SEMINAR & EXHBITION
		Final presentation work	

Context

THE ISLAND

”Allt är präglat av havet och de västliga vindarnas dominans; men naturen är fantastisk och anpassar livet efter möjligheten. Bara inte människan lägger sig i för mycket och tror att hon är herre till och med över livet, kan vår ö behålla sin särart och skönhet i tusentals år framåt”
- Alf Lundgren

Rörö is the northernmost island in the municipality of Öckerö and located in the province Bohuslän. You get to the island either by your own boat or from Hisingen by two ferries via the islands Hönö, Öckerö and Hälsö.

The island inhabits about 250 people all year around, and many more during the summer months. On the island you can find a primary school and a supermarket and in the summer also a café and fish market. In the port you can also find one of the base stations for the Sea rescue service.

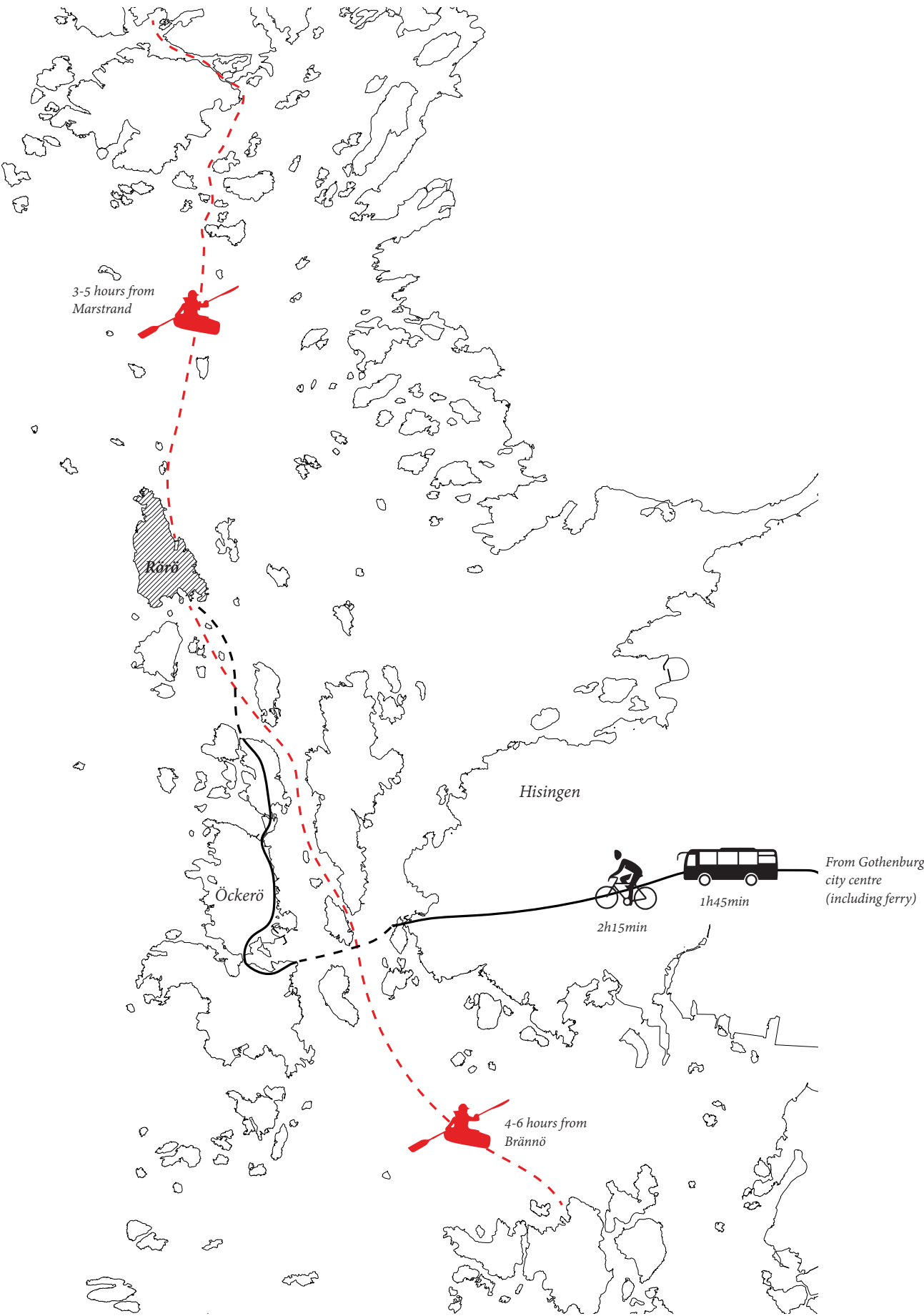
The habitation is concentrated to the south-east, where the settlements are protected relatively well from the wind. Characteristic for the island is the rocky terrain with many smaller ponds in the valleys in between and a big ice margin on the west side. The bedrock consists mostly of gneiss.

The name Rörö comes from the word ”Rör” which in Bohuslän and means reed which is still growing in the south-west part of the island and its ponds.

The island is inhabited since the 16th century when the island belonged to Norway and the people made a living from the fishing of herring. The island have since then been an attractive place to live because of the rich pastureland and great fishing grounds.



LOCATION & TRAVEL TIMES



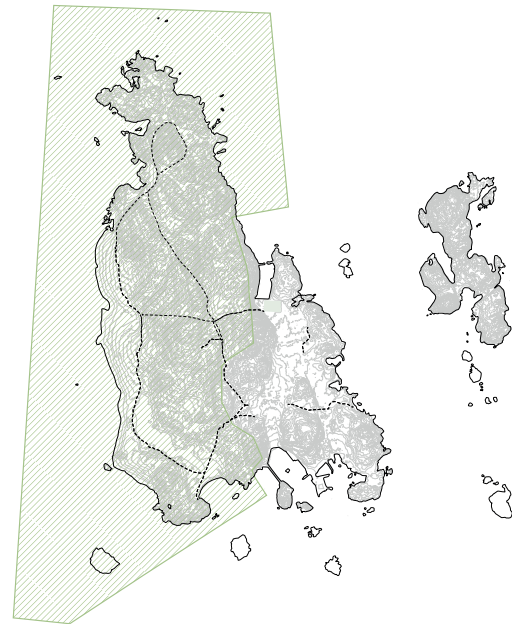


RÖRÖ



Rörö, November 2018





NATURE RESERVE

About two thirds of Rörö, the northern, western and southern parts are included in the nature reserve. The reserve covers 182 hectare of land and also 728 hectare of water. The reserve are included in the EU's ecological network of protected areas, Natura 2000.

The terrain is relatively easy walked with signed paths that are suitable for both shorter and longer hikes through the open and powerful landscape. Sea thrift and Heather gives a nice touch of color in the grey landscape.

The variation between different grounds such as sand, shell gravity, and bare rocks causes a unique flora that includes many watchable species that are rare in the Bohuslän area. The island is also an important resting place for birds.

During the summer the nature reserve are well visited by bird watchers, joggers and visitors with their backpacks packed with lunch or coffee. During the winter there are less visitors, and mostly just the inhabitants of the island who are enjoying the landscape.

From the reserve on the west side of the island you can overlook the horizon and you also have a 360 degree view where you can spot Carlstens Fortress on Marsstrand, the Pater Noster Lighthouse and Gothenburgs northern archipelago.

In 2012 a restoration started of the nature reserve through the GRACE project, where one of the goals were to recreate a well developed pasture. Today there are sheep and Icelandic horses in the reserve.

In the reserve there are a few ancient remains. There is a labyrinth located inside Sandviken which is 12 x 17 meters big. There are also some remains of temporary houses that were used during the fishing season.



View from the site over the nature reserve in November 2018

Plants and birds that can be spotted in the reserve



Heather



Oysterplant



Shag



Black-Legged Kittiwake

THE ARCHITECTURE OF BOHUSLÄN

The architecture in the old settlements in Bohuslän are shaped for a living where the ocean was the main provider for food, transportation and work. Almost every residence contained the four key objects; the home, the boathouse, the pier and the boat.

The specific placement of the buildings were not ruled by laws, regulations or boundaries. The materials and building techniques available at the time did not allow a placement that was exposed for the wind or on a poor foundation. The settlements were often placed sheltered by a hill or on the east side of an island. The gable was directed to the west so that the cooling from the wind was minimized. Close proximity to your boat was prioritized over a great ocean view and by building dense you created shelter from the wind where you could prepare for fishing and live your life.

The early settlements were cots with a round or oval shape or just screens that gave shelter from the wind.

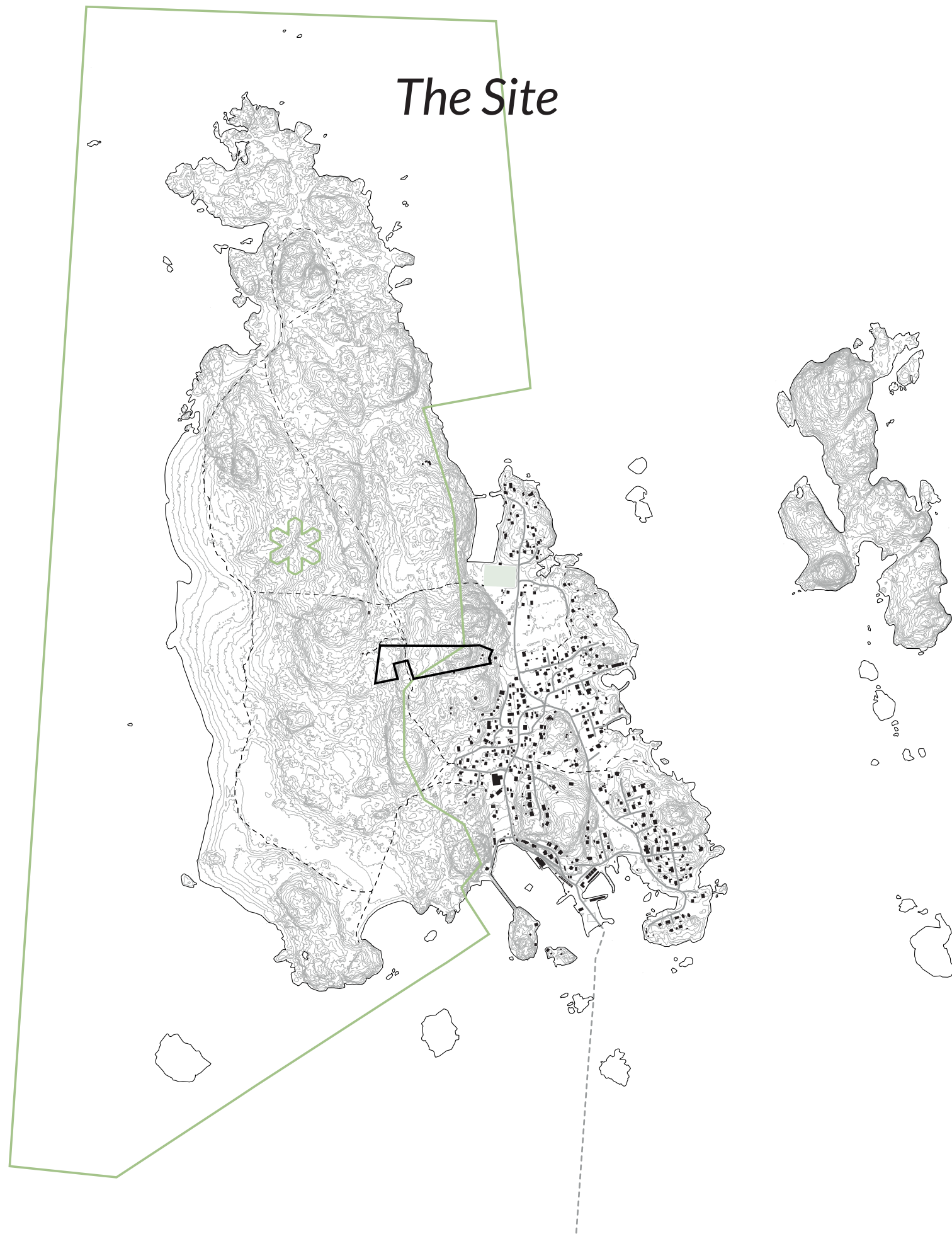
In the 18th century the buildings became square shaped and made with a timber frame. The facades were out of wood panels which were painted red or left untouched.

There were traditionally few typologies and after the middle of the 19th century the new steam powered saws made wooden details more accessible and the architecture most people now days sees as "typical Bohuslän" was now created.

In the beginning of the 20th century the house were painted in dull ochre oil paints which later turned into white or lighter colors. The roofs were traditionally sloping by 30-40 degrees and covered with mud brick. The residential houses were built upon a stone base to even out the terrain and prepare for the timber frame.



Bebyggelse på Rörö och Stora Kornö



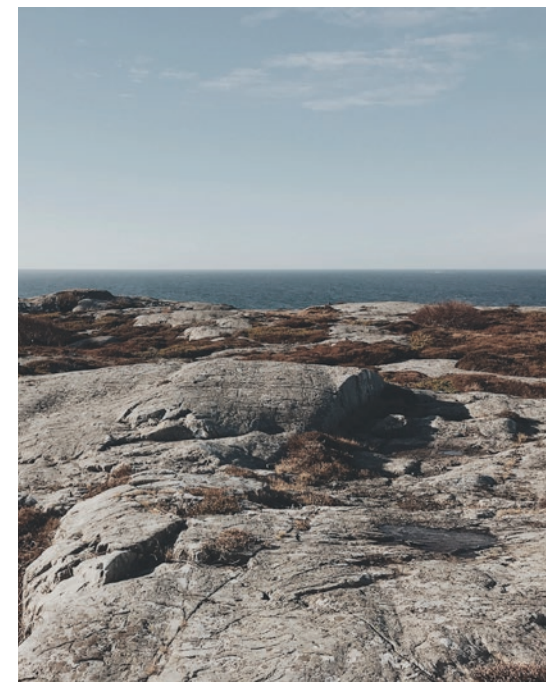
WHAT IS THIS PLACE?



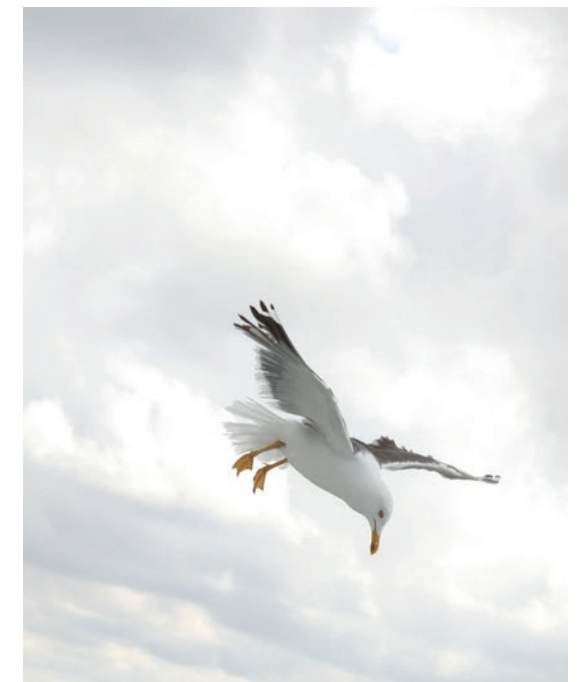
Heather



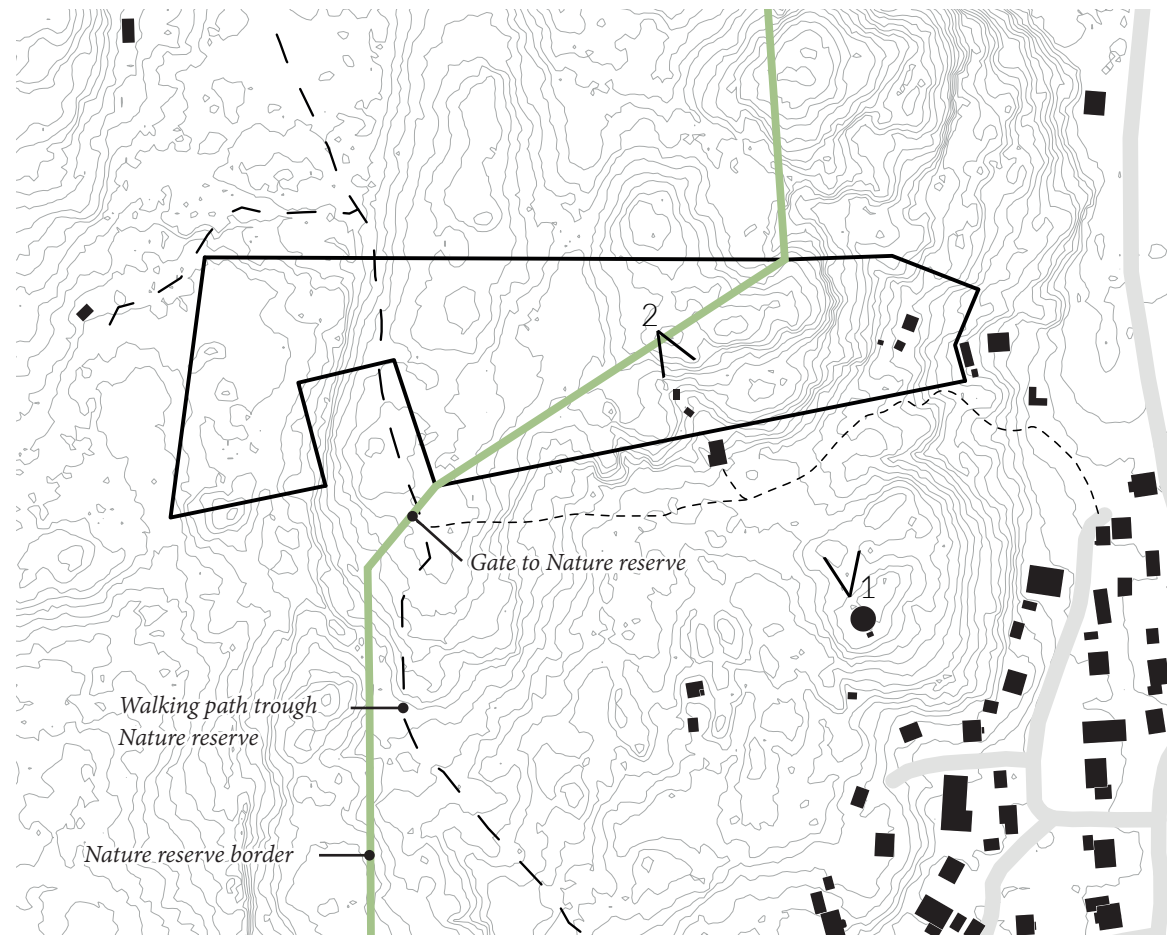
Rock



View



Wind



The plot Utmarken is challenging in many ways. Half of the plot is located in the Nature reserve and can not be developed. The remaining part of the plot is topographically challenging and very steep towards the community in the south east.

There is a small walking path that leads along the plot in the south from the community to the nature reserve. This path is considered as a possible entry to the site in the investigations.



View 1: Looking at the site from the water tower



View 2: From the site over the community to south east

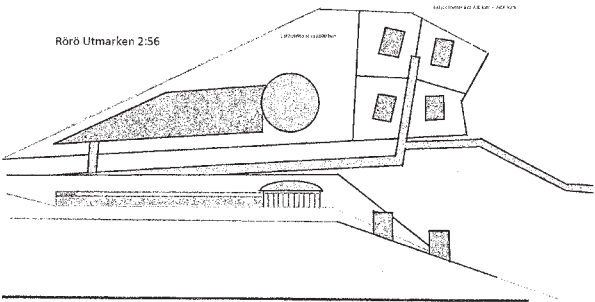
EXISTING PROPOSALS & RELATION TO THIS PROJECT

The initial proposal for a nature hotel on Rörö, *Project Klarbär*, was made by Kenneth Atterfors (among others) and intended to make both new job opportunities and four new housing units. The hotel itself are meant to be a one storey building with an area about 1500m² big. To construct the intended road, and to make the entire hotel accessible, there is need for blasting work.

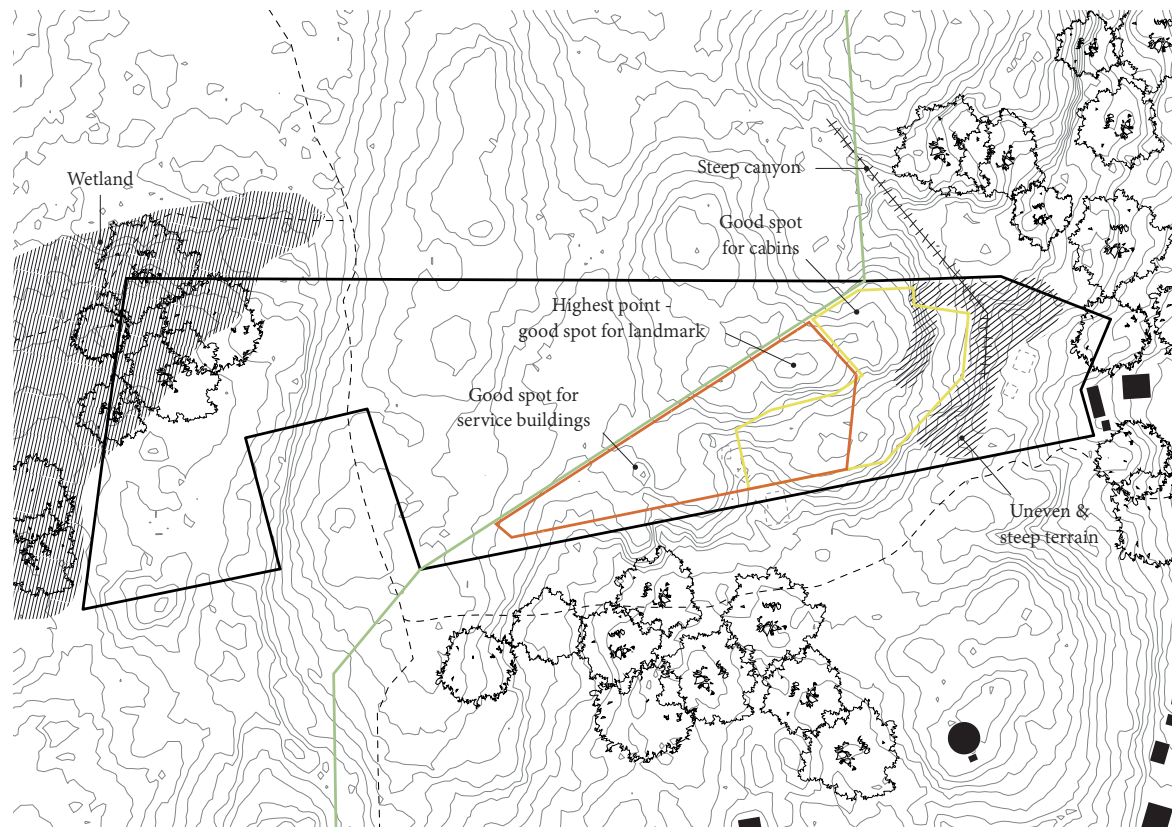
Attefors suggests that the hotel should have at least 50 beds, to cater about a busload of people for conferences.

The second proposal for the site; *Defined by Nature* was made as a thesis work by Anna Cajmatz and Lina Sjöqvist (2018). This proposal consists of a larger building about 500m² big and 15 smaller buildings (å 24m²) that make up the hotel rooms. The main building is made accessible by a road from south east and placed close to the community at the east part of the site.

Both of the proposals are accessible and since my proposal for a hotel at this site will not be, I instead intend to focus on how you could minimize indoor space and place the buildings so that you could enjoy the outdoors and the view all year around. The program is somewhat smaller, which I think is motivated both for production costs and impact on the landscape. It could still cater a smaller conference with the assumption that the guests will cook their own food and are seeing the nature experience as the main attraction, not their hotel room.



Project Klarbär plan and section



TOPOGRAPHY & ZONES

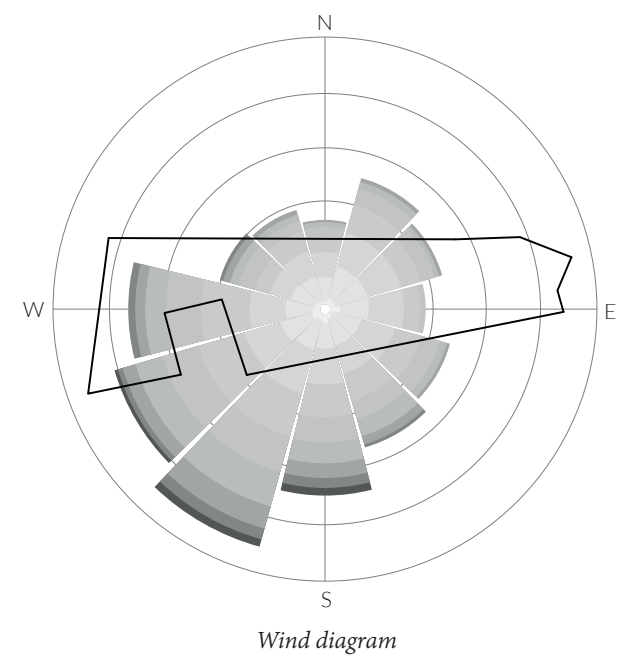
Towards the east of the site the terrain is very steep, rocky and partly crossed by a deep canyon that is difficult to cross. If you want to place buildings at this part of the site, you must also design the outdoor spaces since you can not find a flat surface in the terrain.

From the strip in the middle of the plot along the border of the nature reserve you'll have both good views over the reserve, ocean and also easier access due to the relatively flat and even terrain. This area I identify as a good spot for the service buildings where easy access for a larger flow of people are desirable.

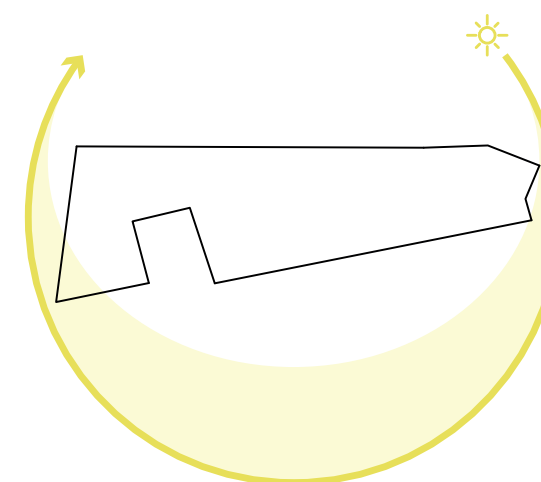
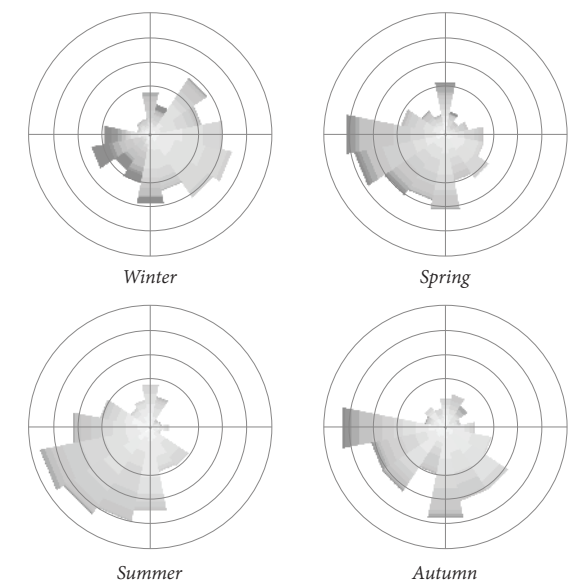
The area marked with yellow I identified as the most ideal spot for cabins to be located in. In this area they do not disturb or are disturbed themselves by the service buildings, the access are relatively easy and the view possibilities are good.

VIEW, WIND & SUN

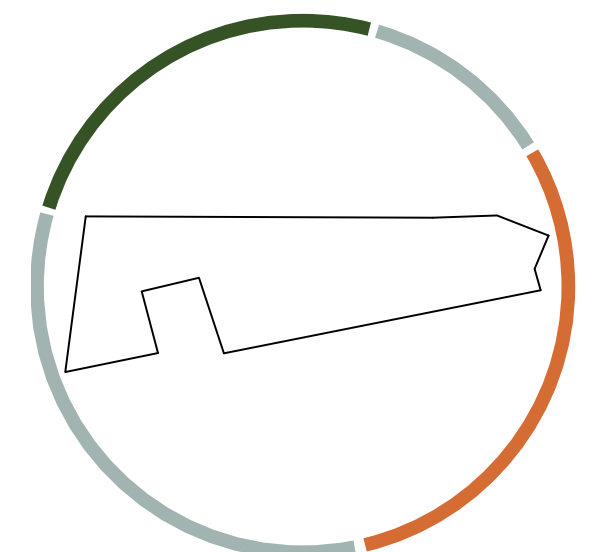
The view, wind and sun analyses will guide the future layout proposals where finding good sight-lines, views, sheltered outdoor spaces and places to enjoy the sun is important, especially in our climate. The wind rose are based on weather data from Vinga weather station located 15 km south of Rörö in the same coastal context.



0,5 m/s >16,5 m/s



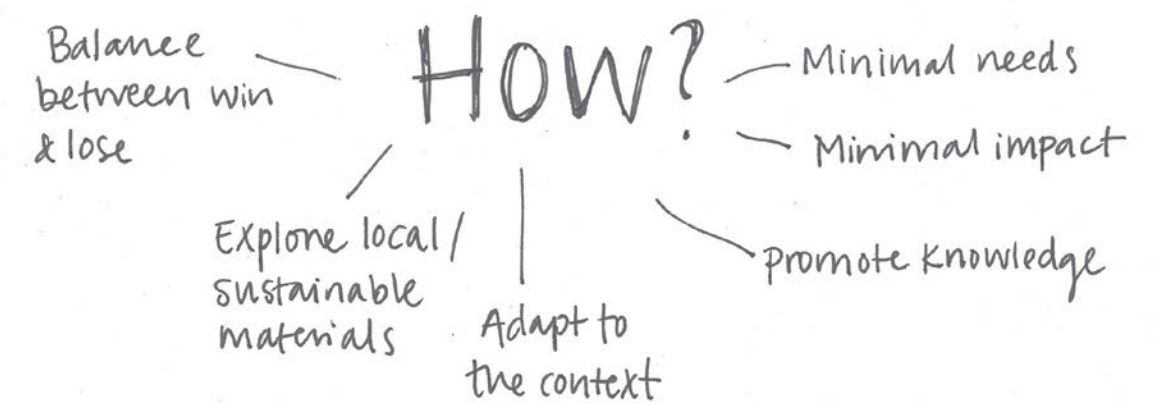
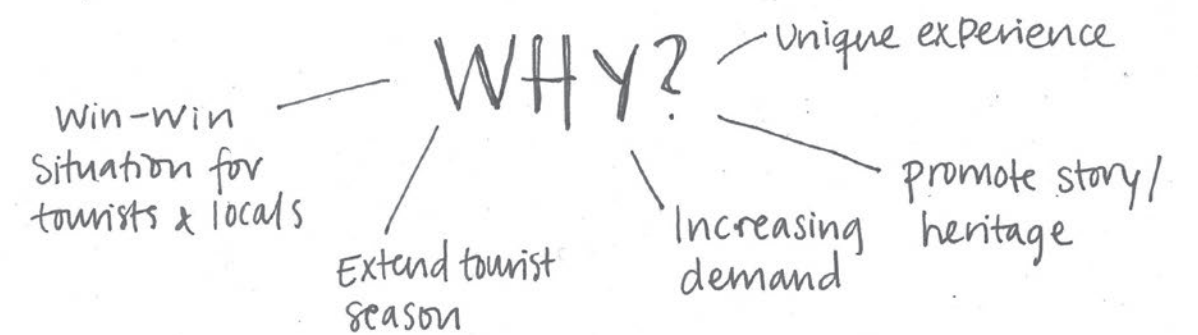
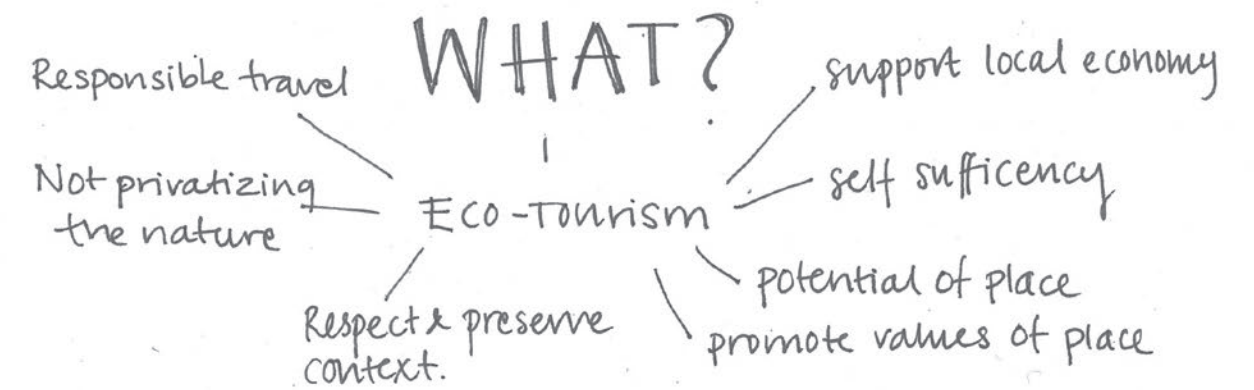
Sun diagram



View diagram

- View towards nature and sea
- View towards nature and rock
- View towards community

Process



Program

Buildable plot area	9700m ²	To make the program support the eco-tourism the facilities will provide simple spaces for our basic needs and as much as possible of the extra space will be placed outdoors.
Public building	total 164m²	
Reception + Staff facilities	20m ²	
Café / seating area	40m ²	
Exhibition area + lobby	104m ²	
Nature Cabins	total 147m²	Public and service buildings will be facilitated with electricity and running water. The cabins and sauna will be heated by a wood burning stove and lights will be powered by solar panels.
2 bed cabins	6 x 6,7m ²	
4 bed cabins	5 x 10m ²	
6 bed cabins	4 x 14,3m ²	
Landmark	total 27,5m²	The public and semi-public spaces has open plans to ease multifuntional use and different activites at low versus high-season.
Observation deck	19m ²	
Sauna	8,5m ²	
Service buildings	total 63m²	
Common kitchen	42m ²	
Bath house	21m ²	

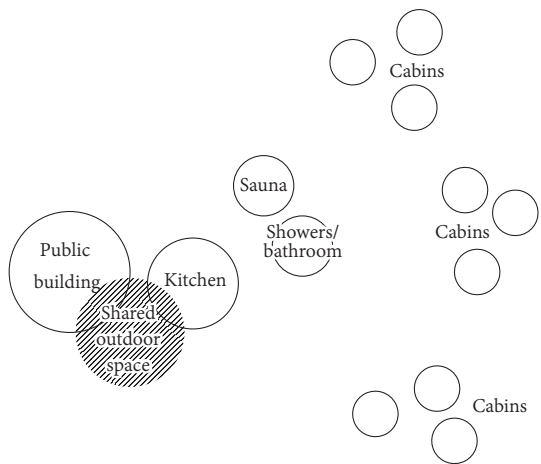
Public - daily open for all visitors, can be partly booked for conferences etc.

Semi-public - accessible for overnight guests, may be booked by external visitors

Private - only for overnight guests

RELATIONSHIP & PROXIMITY

Schematic illustration over proximity between the facilities. The public building with highest flow of people will be placed close to the enterence and work as a barrier for the daily visitors towards the semi-public buildings and the private cabins. The kitchen is placed close to the bulbic building to ease the use for catered events, conferences etc. The bath hose with showers and toilets are placed close to the sauna.



WHY A SCATTERED LAYOUT?

In the thesis work *Naturum Sommen* from 2005 Giulio Gioro redesigns an existing naturum. Giori tries with his proposal to create architecture that invites people to explore the surrounding landscape and inspire contact with nature.

Giori suggest that by dividing the project into different smaller buildings it makes the project less about the "one" building and more about the whole experience of an area and the relationship between the structures and landscape. Giori makes the different parts coherent by the choice of material and their framing of nature.

The method Giori is working with where he divides his project into different experiences and still keep them coherent is inspiring me and working with different ways and locations to frame the views is something I think can help gain something to the experience of the visitors.

Program references

RESERVATETS EKOSTUGOR - NORDKOSTER

In the nature reserve on the north-east side of Nordkoster you'll find seven eco-cabins. The cabins were built in 1997 and are self sufficient. The lights are powered by solar panels attached to the facade and the cabins are heated by a wood-burning stove. The cabins are about 20m², with two bunkbeds, cooking possibilities and a composting toilet. The fridge and stove are runned by gas and water must be heated on the stove.

In a separate service building you'll find hot water and showers (also solar powered) and power outlets where you can charge your electronic devices.

All materials in the cabins are carefully selected and the facades are treated with green vitriol which makes the cabins blend in well with the landscape.

The cabins are only rent out from May-October, but according to the owner, it is possible to use the cabins all year round since they are well isolated. The only problem is that the water pipes might freeze during winter.

The cabins show that it is possible to build in a nature reserve, although according to the owner there was a long and hard process behind the building permit. This project also show that there is a high demand for a destination like this, the cabins are fully booked over the summer months already early in the year, mostly by scandinavian tourists. (Reservatet Nordkoster, 2019)



SHELTER BY THE SEA - FYN, DENMARK

Located at 19 locations on and around the island Fyn in Denmark lies in total 50 shelters designed to strenghten the active outdoor profile of the area. The shelters come in five different typologies and are designed by LUMO architects. Three of the typologies are sleeping shelters which can be booked online and rent out for a low cost all year around. The largest shelter are in three different levels and can house up to 8 people. (ArchDaily, 2015)

As a complement to the sleeping shelters, there is a larger "kitchen shelter", where you can cook your food over a open fire, or arrange picnics for school classes. There is also a lavatory shelter and a sauna shelter.

The shelters appear as asymmetrical bodies with angled lines and are clad with large wood chips treated with black-pigmented wood tar oil. The interior is of untreated pine. (ArchDaily, 2015) All of the shelters, except from the sauna are not isolated and there are small circular openings in the walls for fresh air and outlooks.

I visited three of these locations which all had different amount and typologies of the shelters, optimized to suit the specific place.

These shelters shows that you can create a coherent visible impact of the differnt typologies when you are consistant in your choice of material and expression (angeled lines and circular perforations).

On two of three visited locations visitors were staying overnight or actively using the shelters, this in the beginning of April, which shows that places like this are used and needed, not only during summer months.



FORDYPNINGSROMMET FLEINVAER, NORWAY

Fordypningsrommet by TYIN Tegnestue is a scattered hotel program on an island in Norway. The ten houses are built to enhance inspiration and de-stress in a beautiful context.

The scattered program means that the facilities are constrained to different buildings, in one building you sleep, in another you cook your food and in the third one you can use the bathroom.

The entire program consists of five sleeping huses (ten beds in total), a bath house, a sauna, a indoor / outdoor kitchen and an observation tower.

This project shows that there is a high demand for destinations like this, all year round. It also shows that guests travel here for the experience rather than the full service, and are prepared to live with limited facilities and cook their own food.

A program like this also works great for conferences, artist retreats and team building getaways.



Fordypningsrommet - photo by Pasi Aalto

Access & Visibility

No matter how carefully you place the buildings in a landscape, the problem still remains on how to create careful access to the site. Usually you blast, fill in and build the roads with blasted stone and gravel which you cover with asphalt to fulfill the demands of a fully accessible road. The roads are also placed higher than the surrounding ground to ease water runoff. Using this methods are both visually and physically damaging the rocky landscape.

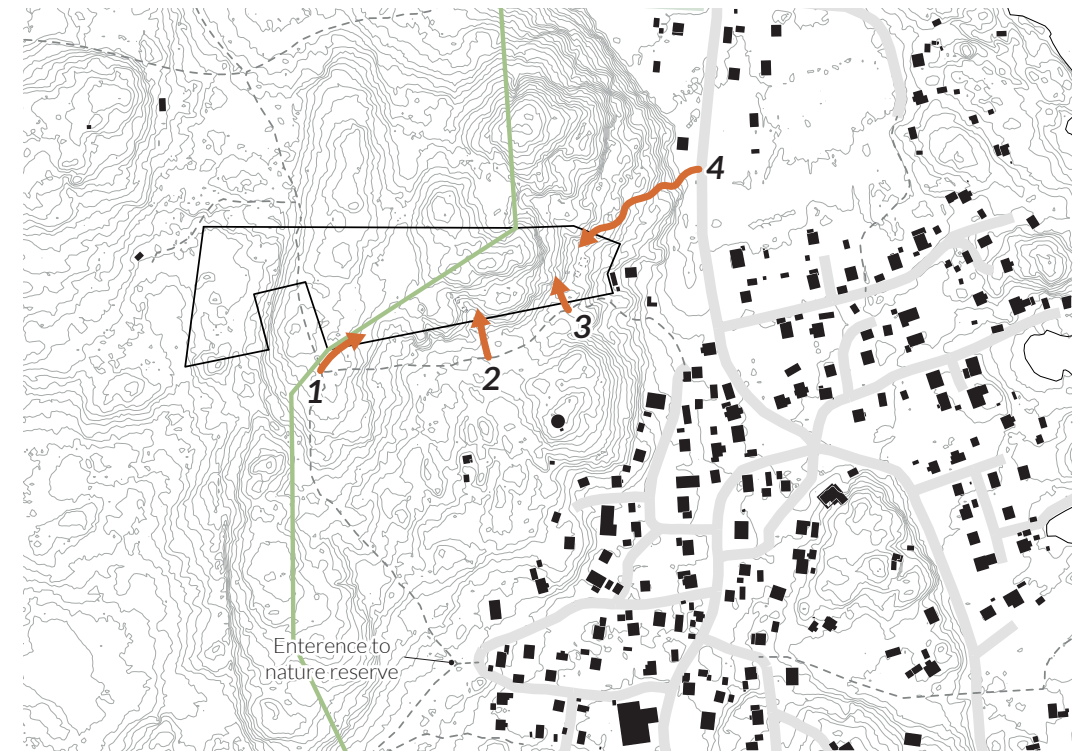
In the thesis work Naturum Sommen from 2005 Giulio Gioro redesigns an existing naturum. Here Gioro debates if the Naturums really are necessary to get a better experience of the surroundings. One of the main requirements for a naturum is its universal and absolute accessibility and the definition of something "being accessible" is not really characteristic for the wild nature.

I agree that the nature should be kept wild and untouched to the point that a building makes no permanent scar on the ground or the wildlife around it. Access to the site does in this case have to compromise with blasting works, poor building locations and long ramps since the terrain is very steep. The program I'm planning for might not be fully accessible, and that is because the care for the landscape needs to be prioritized. The nature reserve itself are not fully accessible and since these buildings are meant to promote careful visits to the reserve the full accessibility is not motivated.

When it comes to visible impact in the landscape one important reference that debates how you should create design in a context like this is To build with cautiousness in the coastal landscape of Bohuslän by Maria Pettersson which is a thesis work done at Chalmers in 2013.

In the thesis work Pettersson presents that the traditional way to build in Bohuslän is not upon the hills, and the situations where you place buildings on a higher elevation in the landscape is a rather new advent. Traditionally the silhouette of the mountain is kept untouched and are visually dominating over the architecture with exceptions from landmarks such as lighthouses, beacons and pilot lookouts.

I've further investigated how the silhouette is affected from different viewpoints. I find it most important that the silhouette should not be disturbed when you are enjoying the nature reserve, but at the same time the site should not be completely hidden so that no one will find it.



POSSIBLE ENTRANCES TO THE SITE

Four alternative entrances to the site are considered and tried out. All the options, except for number 4 are connected to existing foot-paths that are not fully accessible. Unfortunately it will be hard to create a fully accessible entrance to the site without blasting, very long ramps or huge visible impacts in the landscape.

If you had to make a fully accessible entrance, entering the site at point 3 or 4 would be preferred, but this would result in a less beneficial placement for a public building located at the entrance, since it would have limited views, would be less visible for by-passers and create a dead end and no direct access to the reserve because of the difficult terrain.

The best option for my program, if you'll accept that this site is not going to be fully accessible, is entrance 1. Placing a public building close to this entrance will attract many by-passers since it is clearly visible from the main foot-path leading through the reserve. With this option there would be no dead end, just a small detour and the visitor can continue along the path through the reserve whenever they wish.

MAKING VISUAL IMPACT

It has been very important to study the visual impact of the buildings placed on the site related to my thesis question "How can you with the material, placement and foundation of the building cause least possible impact on the ground and experience of the reserve?".

If you want to attract visitors to an exhibition centre or café, the building needs to be visible and inviting. At the same time, if the humble approach should be followed the buildings should not dominate in the landscape and disturb the silhouette of the rock, especially not when you are exploring in the nature reserve.

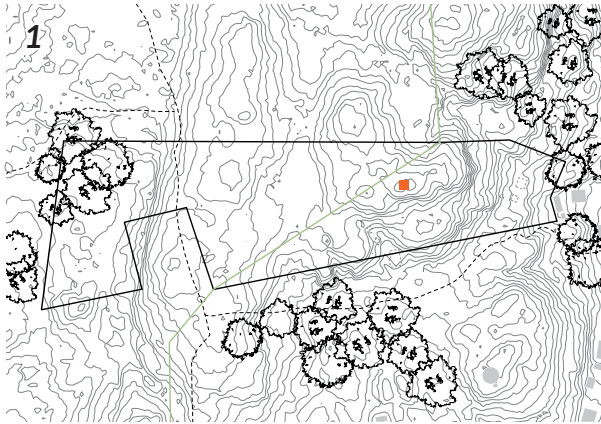
As mentioned earlier, the only dominating buildings placed high up on the rock in the coastal context are landmarks and look-outs. Rörö has no landmark today, apart from an old radio-mast foundation, and therefore I've decided to make the site visible and attract curios visitors from a greater distance with a landmark.

But, even if the landmark is visible from a great distance, when you are approaching the site, you should also be able to see the public building. At the same time, you want the guests of the nature cabins to get some privacy from the many visitors to the reserve, so the cabins placement would preferably be more hidden.

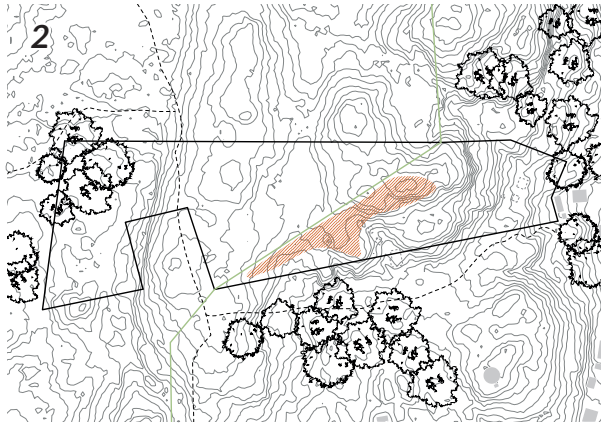
To find good locations for the different types of buildings, important viewpoints are chosen, and areas that are visible/not visible from these locations have been mapped out.



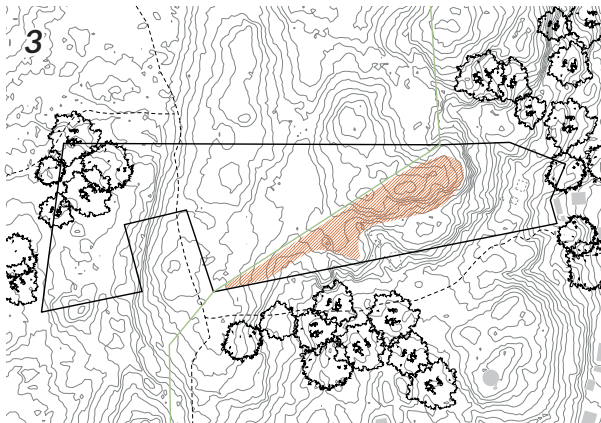
- 1. Port
- 2. Crossroad where you choose path towards the nature reserve
- 3. Entrance to the nature reserve
- 4. Entrance to the site
- 5. Main foot-path in the nature reserve.



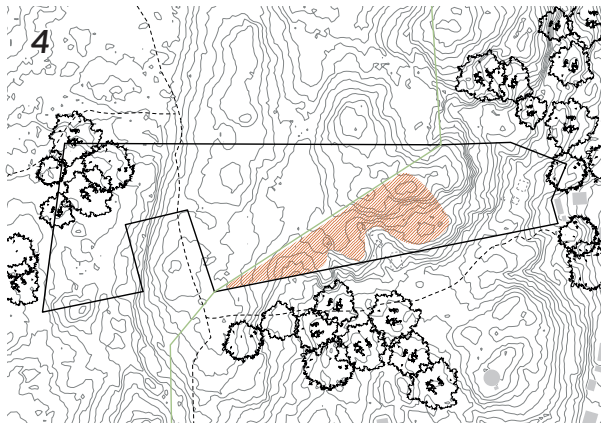
The landmark will be visible from the port where many guests arrive by their own boats to Rörö in the summer months. Making the landmark visible from this point could possible draw curious visitors from the up onto the island.



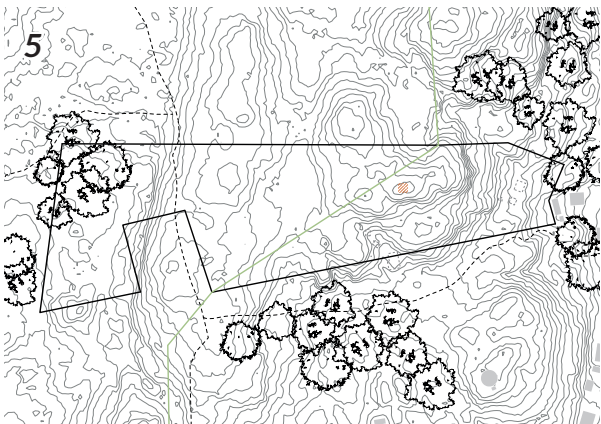
From the crossroad where you choose path towards the nature reserve, the highest part of the plot, and also the area closest to the reserve border will be visible. Placing a public building in this area would make it easy for the visitor to choose direction when approaching the site.



From the entry to the reserve it is also important that the public building would be visible so that the visitor could orient themselves. The visitor could choose between taking the path either to left or right at this point, and if you'll be able to at least partially see the public building it might attract new by-passers.



At this point the service building needs to be clearly visible, but there's also a chance that the cabins would be apparent, and the privacy could be disturbed. In a case like this it is therefore preferred if the cabins could "hide" behind the public building and only be visible if you continue into the site.



From the main path in the nature reserve, you don't want any buildings disturbing the full nature experience. From this path no buildings on the site would be visible, beside from the landmark that could be seen from a few places along the path and used for orientation.

The In Between Spaces

TO CAPTURE THE ESSENCE

Sara Altby tries to capture the essence of the architecture in Bohuslän in her master thesis *Småhus vid Bohuskusten* from 2004. Altby points out that when designing and building houses along the coast in Bohuslän it is easy to miss the things in the traditional architecture that really attract us since we can not always tell exactly what it is that appeals to us and instead we just mimic the surface like form, material and details.

Altby argue that you must have a deeper understanding of the local building traditions to be able to reinterpret the architecture to something that can contribute to the context and tell something about the present time. Altby points out that the buildings in the old fishing settlements are not done by architects but still should be seen as architecture since they are built with great consciousness.

The topography, climate and material resources have created a framework for the traditional Bohuslän architecture, but what's really played an important role is the way of living and social values. The buildings are placed irregularly very close in a way that shelter each other from the wind, creates spots where the sun can shine trough and peek-holes to the sea. A walk in between the buildings are full of surprises and you don't know what's around the next corner.

Even tough the settlements are very dense, private spots and corners are somehow created and the spaces in between are outdoor spaces with great qualities. Traditionally these spaces has been an important part of social life, spaces where you can meet, hang out and work. There are seldom borders that marks different territories, and the private spheres are often very small, maybe just the staircase that leads up to the door.

By study trips I've further investigated how the qualities of the small outdoor spaces that can be created in between the buildings and how these can contribute to views, shelter and places for social interaction. Allocating indoor spaces to the outdoor could in my mind contribute to a more sustainable design with material demand and energy consumption in mind.

STUDYING THE SPACES IN BETWEEN

During a study trip to Tjörn; Rönnäng, Bleket, Åstol, Mossholmen and Klädesholmen both newly built areas and the traditional buildings were studied and analyzed in the aspects of private and public spaces, placement of entrances and placement of different outdoor spaces, their form and function.

Private and public - new versus old

The tiny roads that leads between the houses on Klädesholmen and Åstol lies closely to the entrances and minimal outdoor spaces. The roads are public, but there are so many of them that you could probably find more privacy on some side of your house if you would like to.

The narrow roads are Kept on Åstol, but since they implemented a car ferry in the 60's and later a road bridge in the 80's many of the narrow roads have been broadened and you can see older buildings with newly added fences for privacy.

The narrow paths leads down to the pier in between the boat houses, and aside from the fishermens equipments blocking your way sometime, the paths down to the pier ar for public access.

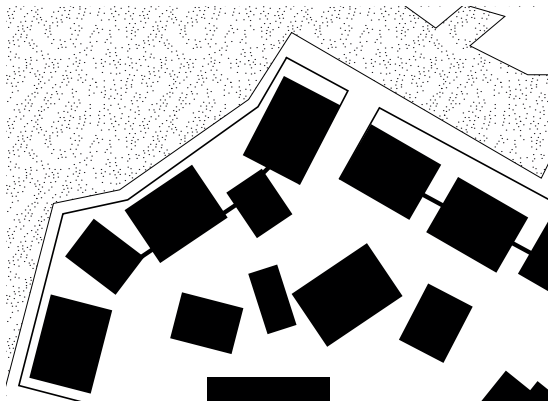
I also studied and analyzed four newly built areas; Kv Ingo, Kv Nordvåg and Kv Santoni on Mossholmen and Brf Rönnängs Brygga in Rönnäng. I found that all of the projects have seeked inspiration for placement from the traditional buildings along the coastline, but the scale is bigger and the small passages in between the houses and sometimes even the piers along the water are made private.



Public access are cut off by a fence between the dwellings and the pier at Rönnängs Brygga



A wooden fence is put up in the gaps in between the buildings at Kv Nordvåg and gives only the residents access to their private pier.



Plan - scale 1:1200

Plan over Rönnängs Brygga, a newly built area in Rönnäng. The access between the buildings are blocked by gates except from a few public passages and the pier are separated from the buildings by a fence.



Plan - scale 1:1200

Plan over Åstol's harbour where the small gaps leading in between the buildings down to the pier is visible. The scale of the boat houses are of course much smaller, men even the dwellings one step further up from the seafront are smaller in scale. No fences are put up and all of the paths are public.

Placement of entrances and outdoor spaces

Looking at the older buildings on the visited islands, the outdoor spaces and entrances for buildings in exposed locations are often placed towards north, east and south-east, sheltered by either buildings or the rock wall.

For newer buildings the views towards the sea controls the placement of the outdoor areas. Walls built only to function as shelters from the wind are put up, and often no advantage is taken of the buildings placement itself.



The new buildings in front of the picture have their terraces towards west to capture the sea view while the boathouses and older buildings in the background have outdoor spaces and sheltered piers towards the south-east.



Placement of entrances to dwellings along a street on Klädesholmen.



The entrances to the buildings which are exposed by wind from west are placed towards east and the boathouses are sheltered by the rock.

REFLECTIONS & ESSENCE RULES

Although the spaces and settlements studied does not have the same preconditions as my project, you can still learn from how you traditionally have built in Bohuslän. Therefore, I've put together a list of "essence rules" that have helped me guide my design forward.

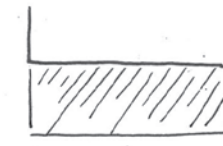
- Do not disconnect paths with buildings or fences, create possibilities for everyone to move freely in nature
- Place entrances sheltered from the wind
- Create different types of outdoor spaces so that there is always a place sheltered from the wind and a place where you can enjoy the sun at different times of the day.
- Create peekholes and sightlines from outdoor spaces.

DEFINITION OF OUTDOOR SPACES

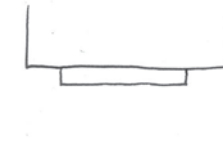
By looking at different outdoor spaces I've found during my study trips, I categorized them into three groups. Low-, Semi- and High-defined spaces. To create interesting and multifunctional outdoor environments the goal has been to implement spaces from all of the three categories in my design. A variety of spaces will enable outdoor use in all kinds of weather and also create different levels of privacy.



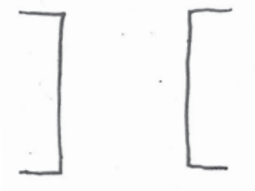
Prominent roof



Wooden deck



Bench



In between two buildings



Corner



Open corner



Narrow corner

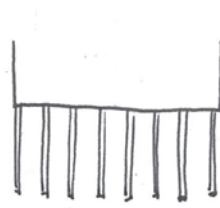
Low-defined outdoor spaces

These are configurations that I've defined as outdoor spaces. They are however not very closed or defined spaces and it can sometimes be hard to tell when you are in the space or when you are outside of it.

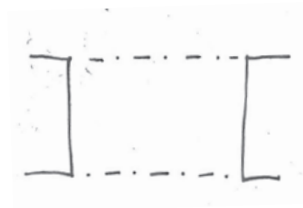
Placing & adapting the building to the landscape



Arcade



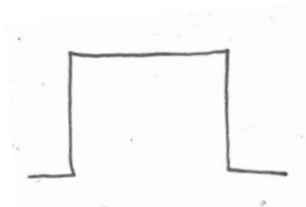
Pergola



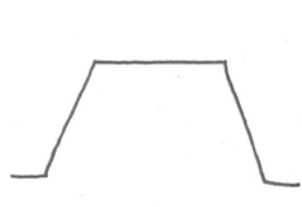
Roof between two buildings



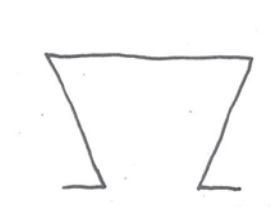
Covered corner



Alcove



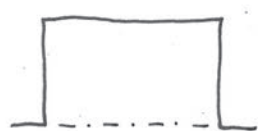
Open alcove



Pointy alcove

Semi-defined outdoor spaces

These spaces are more defined than the "low-defined" outdoor spaces. Still, the borders to the spaces are a bit blurry.



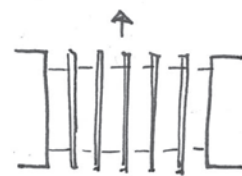
Covered alcove



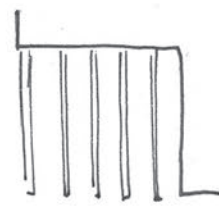
Covered alcove with columns



Two directional pergola



Pergola between two buildings



Corner with pergola

High-defined outdoor spaces

These spaces are high defined and you clearly know when you are inside the space.

CAREFULNESS IN BOHUSLÄN

The coast of Bohuslän are protected by Swedish law and the entire coast are of national interest for its nature and cultural values. The concerned area is the archipelago with a seafront about three kilometers wide. The coast of Bohuslän is one of the "national landscapes" which are specially mentioned for its unique environment and value for the entire nation. (Länsstyrelsen, 2000)

Bohuslän has both geological and biological values that affects the outdoor life and tourism. According to the environmental code, all development in Bohuslän should respect the communities, ancient remains, and habitation and the original landscape with influences from earlier generations should be visible.

This is one of the reasons why I want the buildings to be as carefully placed in the landscape as possible, no blasting work should be done at the site and the entire constructions should be able to remove without leaving any visible traces.

HOW TO PLACE AND ADAPT THE BUILDING TO THE TERRAIN?

In the thesis work *To build with cautiousness in the coastal landscape of Bohuslän* Pettersson points out that today, many rock surfaces are blasted away to create space for roads and buildings that stand upon a foundation of concrete slabs. This creates big scars in the landscape that needs to be fixed with concrete walls and other fill ins since the rocks are never replaceable if you perform blasting to it.

Traditionally the buildings were adapted to the landscape with minimal reshaping. The old communities are placed in a limited area between the hills and the seafront. The ground surface are optimally used and the terrain is deciding the placement of the buildings and the small paths and stairs leading across the landscape.

Pettersson suggest that the architecture in the archipelago should be treated differently when placed visible on a hill, and maybe instead of working with traditional shapes and color schemes get inspiration from the bald landscape and the formations of the rocks.

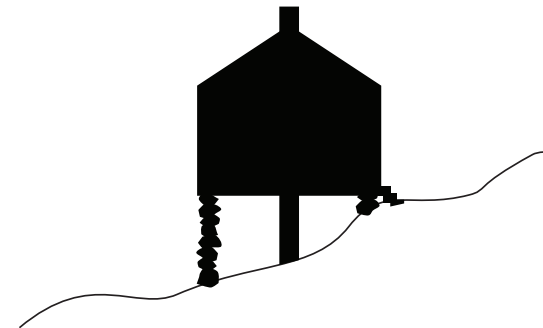
To connect with the traditional architecture the writer also suggests that you could get inspiration from the simplicity in the older architecture where every house is unique and individually shaped and adapted to the context.

I will further investigate how the rocks and landscape can inspire the form of the architecture and show different ways to place the building on the ground and how much it will actually affect the surface.

FOUR FOUNDATION PRINCIPLES IN A ROCKY TERRAIN

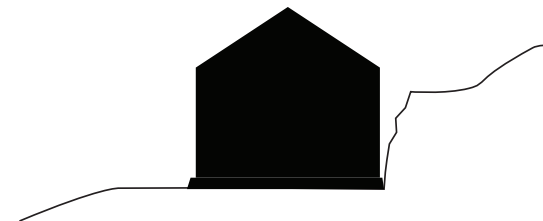
Traditional foundation

In early foundations stacked unprocessed stone from the site was used. The foundations were kept low only to even out the ground. Later, cutted blocks of granite were used and the foundation could be up to one storey high. These foundations give a nice transmission from the rock surface and the building are raised form the moist ground and creates good ventilation around the building. The traditional buildings were not as well insulated as today's houses and a stacked chimney in the middle of the house caused the waste heat to transfer out into the basement and dried out the moist.



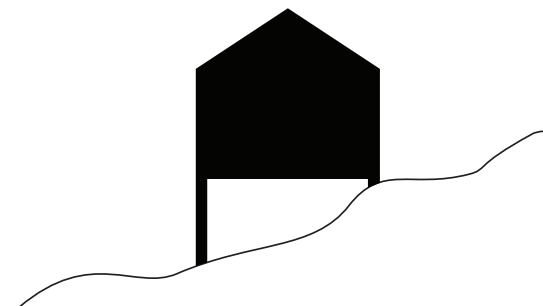
Slab foundation

A slab foundation is suprisingly often used, even in a rocky terrain, often because of the modular houses that are not adapted to a uneven surface. Blasting works are done to create a flat surface that are neccessary for a slab foundation and this creates big scars in the landscape that are "hidden" by walls and fill ins.



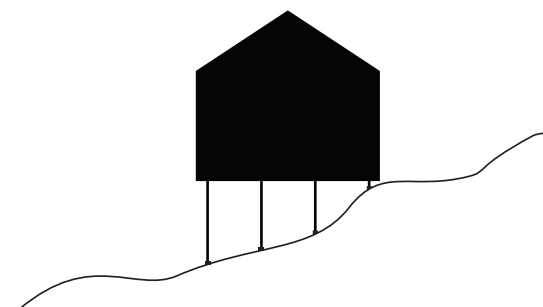
Crawl space foundation

Could be built straight on the rock surface. The lower part connecting to the rock are casted in concrete or made of stacked blocks. This foundation needs good ventilation and planning for water runoff. This could be a sustainable solution in the aspect that the building could be removed with barely visible traces.



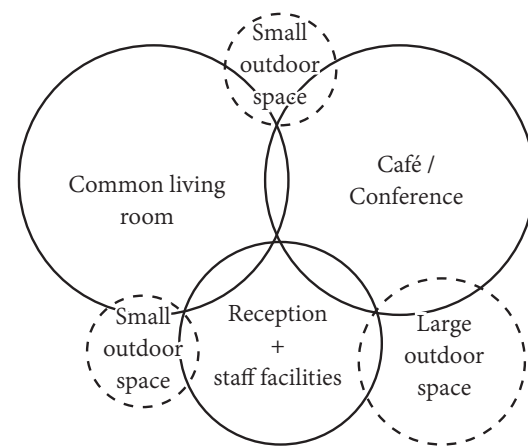
Plinth-course foundation

The building rests on pillars that can be made out of different materials. Armoury are drilled into the rock. The undersurface of the house needs to be treated as a facade. Very low impact on the envirnment ecept for the armoury. The entire surface underneth the house can be kept untouched.



Public building + common kitchen

PROGRAMS



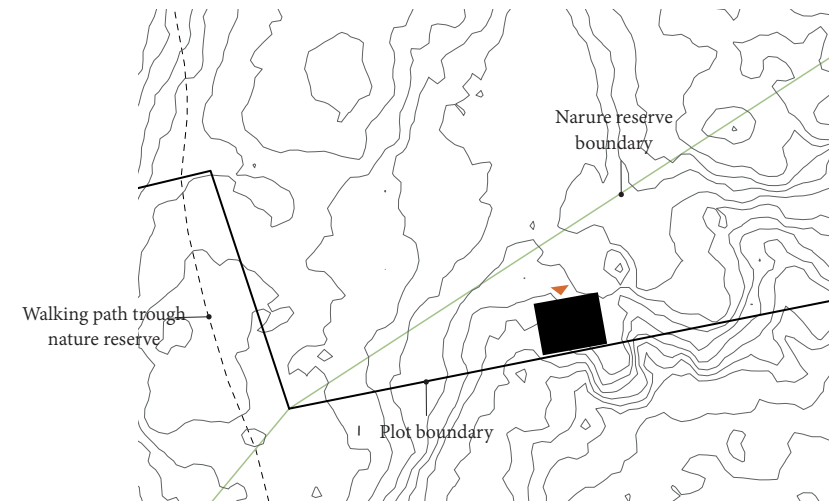
Schematic illustration over preferred relationship between the functions in the public building

The public building should welcome both overnight guests as well as daily visitors to the reserve. The ideal placement of the building are therefore as close as possible to the nature reserve waking path so that the visitors can stop by on the way trough the reserve.

The entrance should be visible from the walking path, but preferably sheltered from the strongest winds from west and south-west.

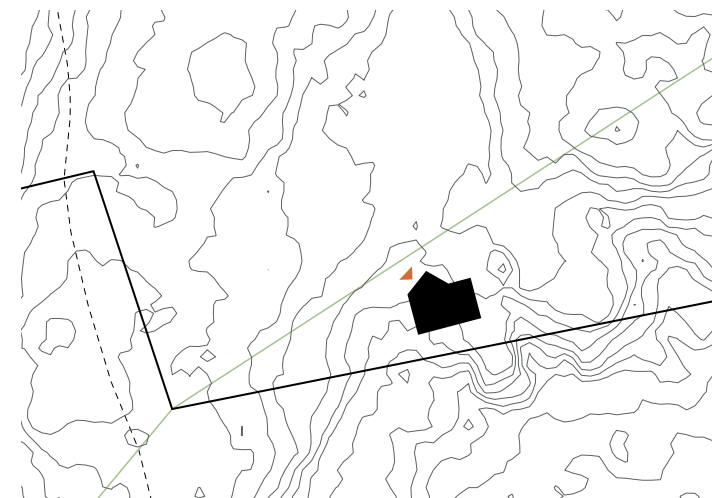
The common kitchen should cater the overnight guests, and provide them with cooking facilities. The common kitchen should also be available for catered events and conferences and preferably be located closely to the public building.

EXPLORED PLACEMENT & SHAPE ALTERNATIVES (A selection)



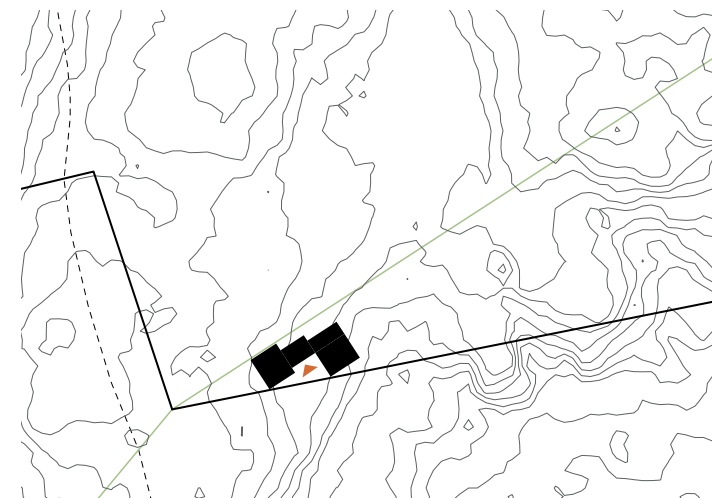
Placement 1 + Sheltered entrance

- Entrance barely visible from the main walking path
- No defined outdoor spaces



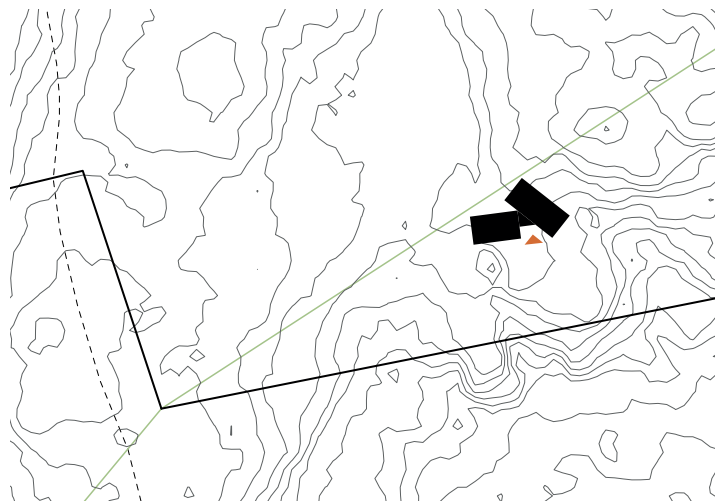
Placement 2 + Clearly visible entrance from the walking path

- Very exposed entrance situation
- Sunken down placement, no views over the reserve



Placement 3 + Sheltered entrance + Defined and sheltered outdoor space towards south-east + Volume is broken down into smaller pieces - not as massive impression + High location with views over the reserve

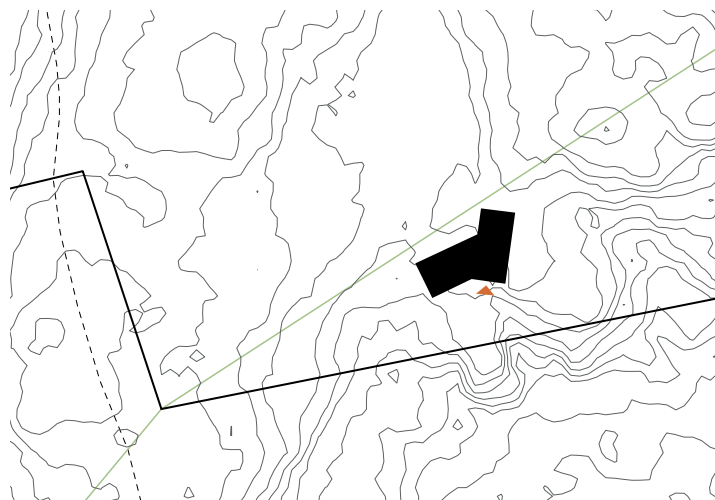
- Building has no clear direction
- Building is placed too close to the plot boundary, changing the location would cause limited view towards the reserve and a more hidden entrance.



Placement 4

- + Good views over the reserve
- + Sheltered and defined outdoor space in front of the entrance

- Entrance might be hard to spot from the reserve path
- Disturbed sightlines inside the building



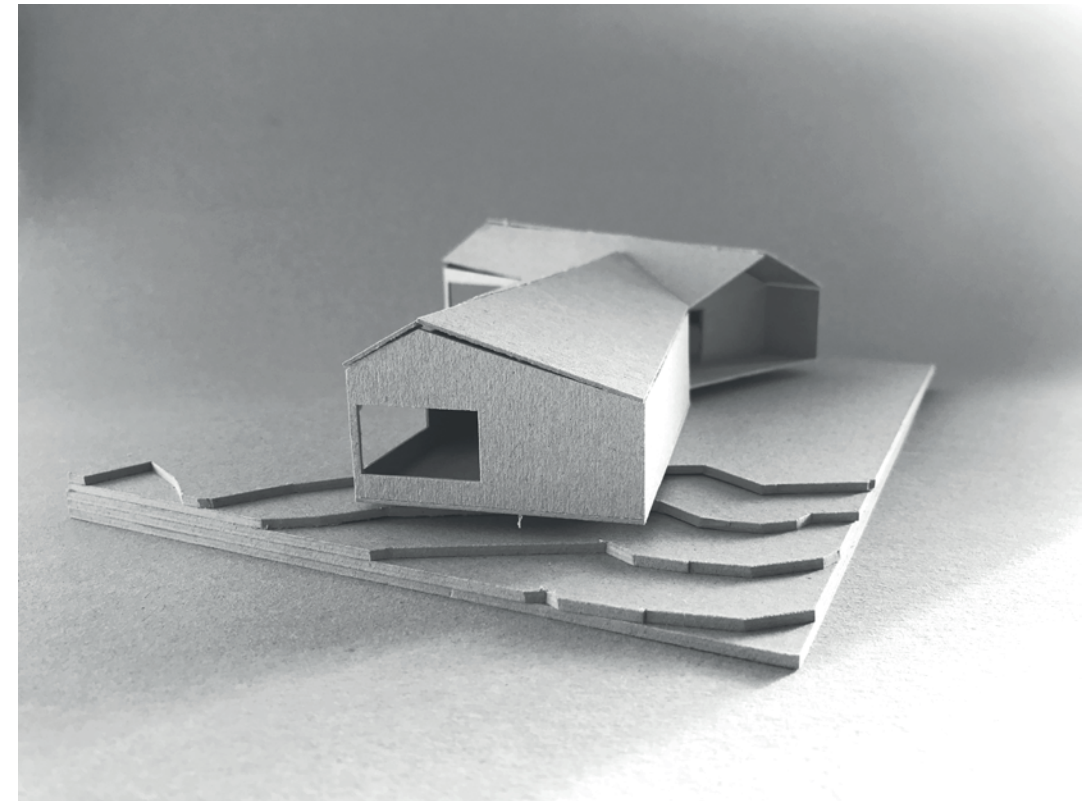
Placement 5

- + Good views over the reserve
- + Clear directions and sightlines
- + Sheltered entrance that are visible from the reserve path
- + Different outdoor spaces that are sheltered depending on the direction of the wind

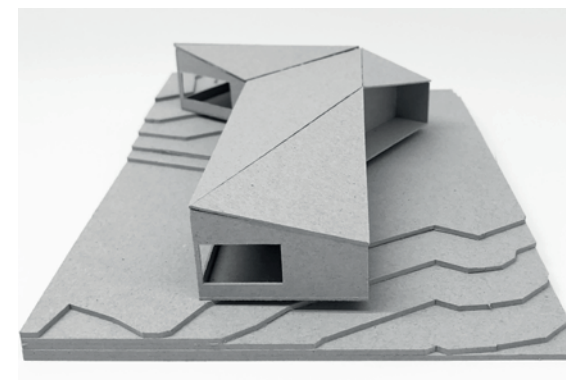
- Not as defined outdoor spaces

Conclusion

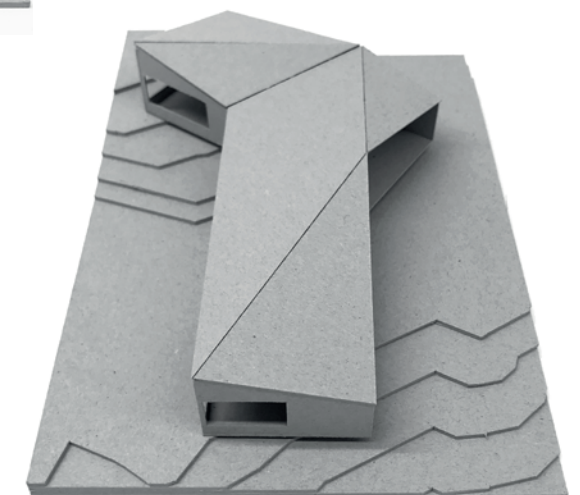
The proximity to the walking path needs to compromise with the opportunity for good views over the reserve. There is also a compromise between a sheltered entrance and a clearly visible entrance. I've chosen to proceed with Placement 5 since I feel like the compromises are possible in this proposal.

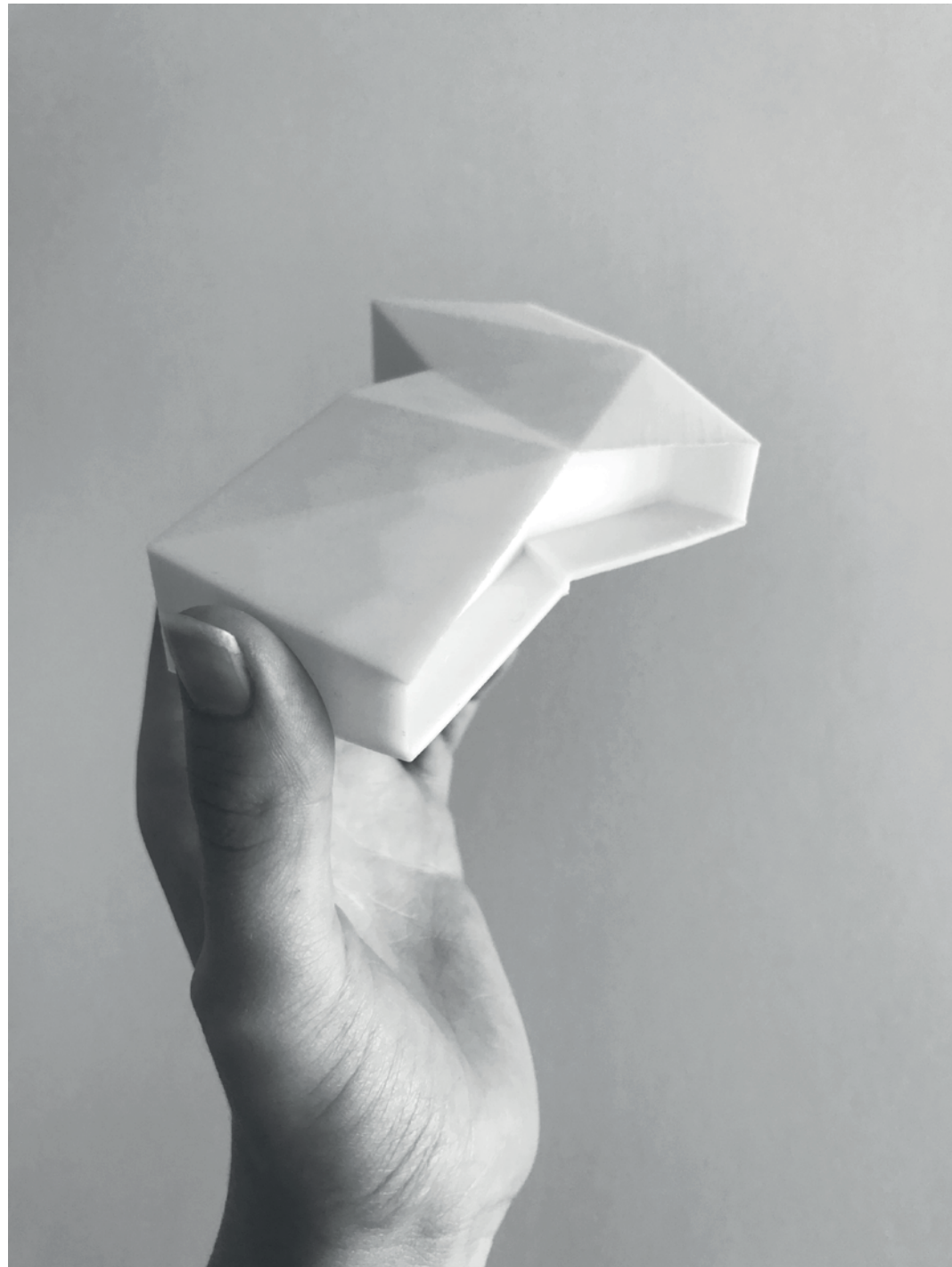


Earlier concept model where the entrance are marked out with a recessed gable. The roof is still a "standard" roof but with a slight rotation of the ridge.



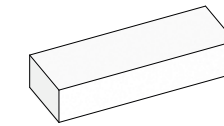
First concept model of a folded roof. The entrance are still recessed in the same way as in earlier model, creating a small outdoor space in front of the entrance. The facade opposite to the entrance are still very flat and uneventful with almost no visible roof angles.



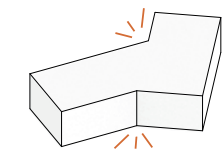


First 3D print of the full recessed facade that creates a larger protected outdoor space by the entrance and creates shading for the glazing towards the interior.

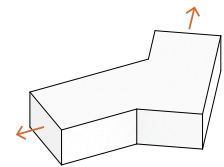
PUBLIC BUILDING DESIGN CONCEPT



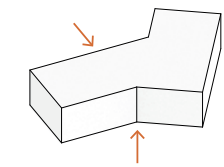
Base shape



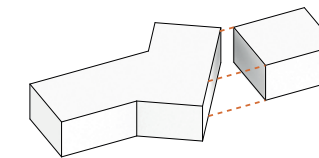
The shape is bent



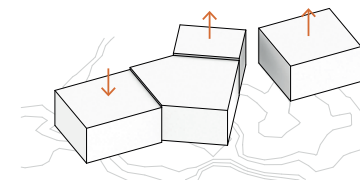
The bend creates new directions and views



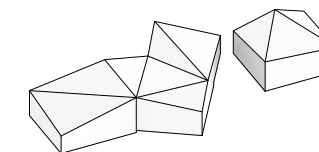
The wide angles are leading the visitors into the building



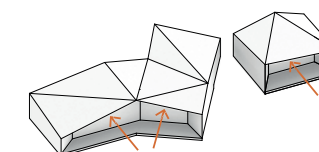
The base shape is extended to suit a larger program



The buildings are broken up into different zones and adapted to the terrain

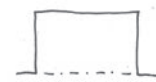
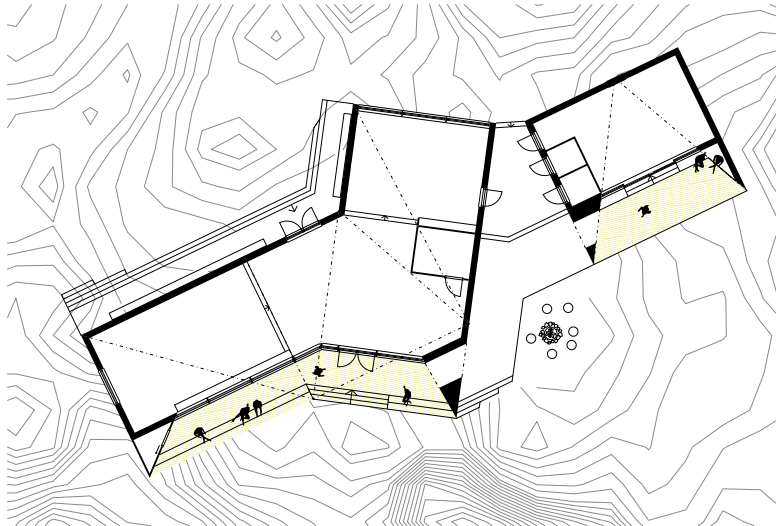


The roof is folded to blend in with the rocky landscape



The entrance facades are recessed to create a sheltered entrance space.

OUTDOOR SPACES PUBLIC BUILDING + COMMON KITCHEN

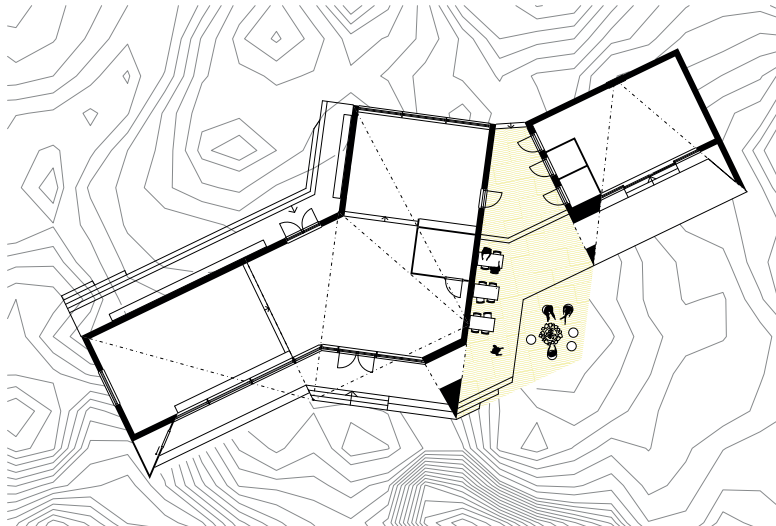


*Covered alcove
High defined outdoor space*

The entrance spaces

Sun: Mid day on October - April

This place is great for visitors seeking sun and shelter from the wind in spring and autumn. It also provides shade for the visitors on hot summer days!

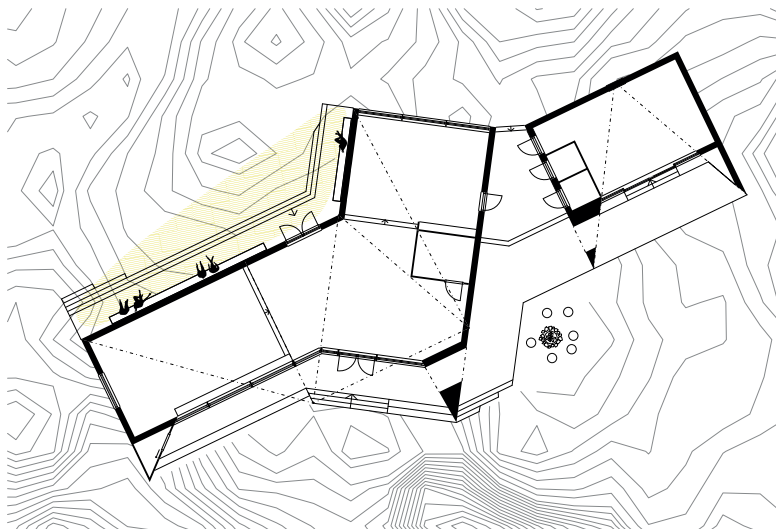


*In between two
buildings + deck
Semi defined
outdoor space*

The deck

Sun: Until 17:00 all year!

In this place you can almost always seek shelter from the wind, a perfect spot for picnic in the sun!



*Open corner
Low defined outdoor space*

The view benches

Sun: From 12:00 april-september

In this place you can find shelter on windy summer days, an afternoon spent on a bench in the sun will give you a magnificent view of the landscape and sunset.

The landmark

SAUNA AND OBSERVATION DECK

The landmark will be placed on the highest peak of the site and house a sauna and observation tower. The sauna will overlook the reserve and the observation deck will have a 360 degree view of the island.

When designing this building the idea is to find inspiration from existing landmarks in the Bohuslän area, such as pilot lookouts, beacons and lighthouses. Today, the island does not have a "real" landmark, only an old radio mast foundation than can be seen from the sea and the reserve.

EXISTING STRUCTURES ON HILLS AND LANDMARKS IN BOHUSLÄN

Lighthouses

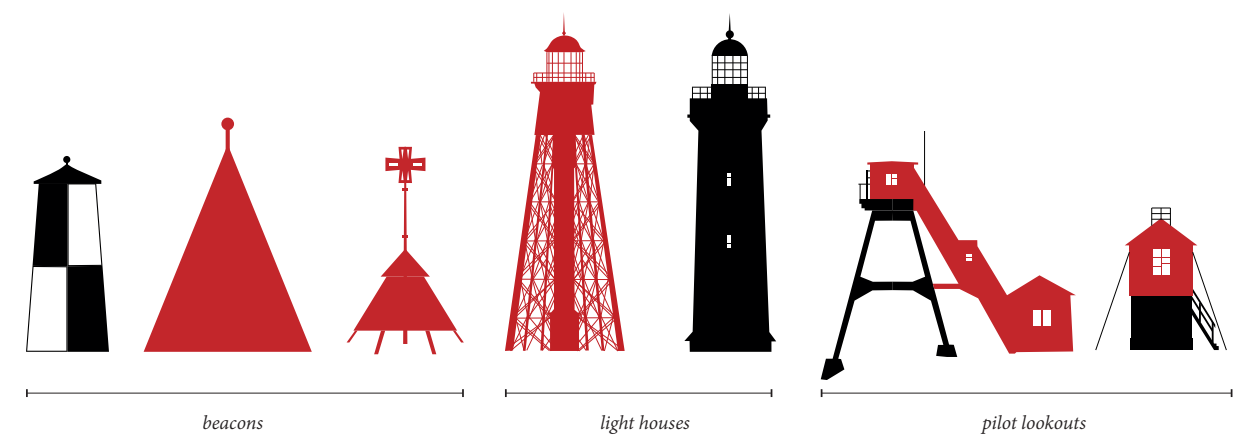
A tower, building, or other type of structure designed to emit light from a system of lamps and lenses and to serve as a navigational aid for maritime pilots at sea or on inland waterways.

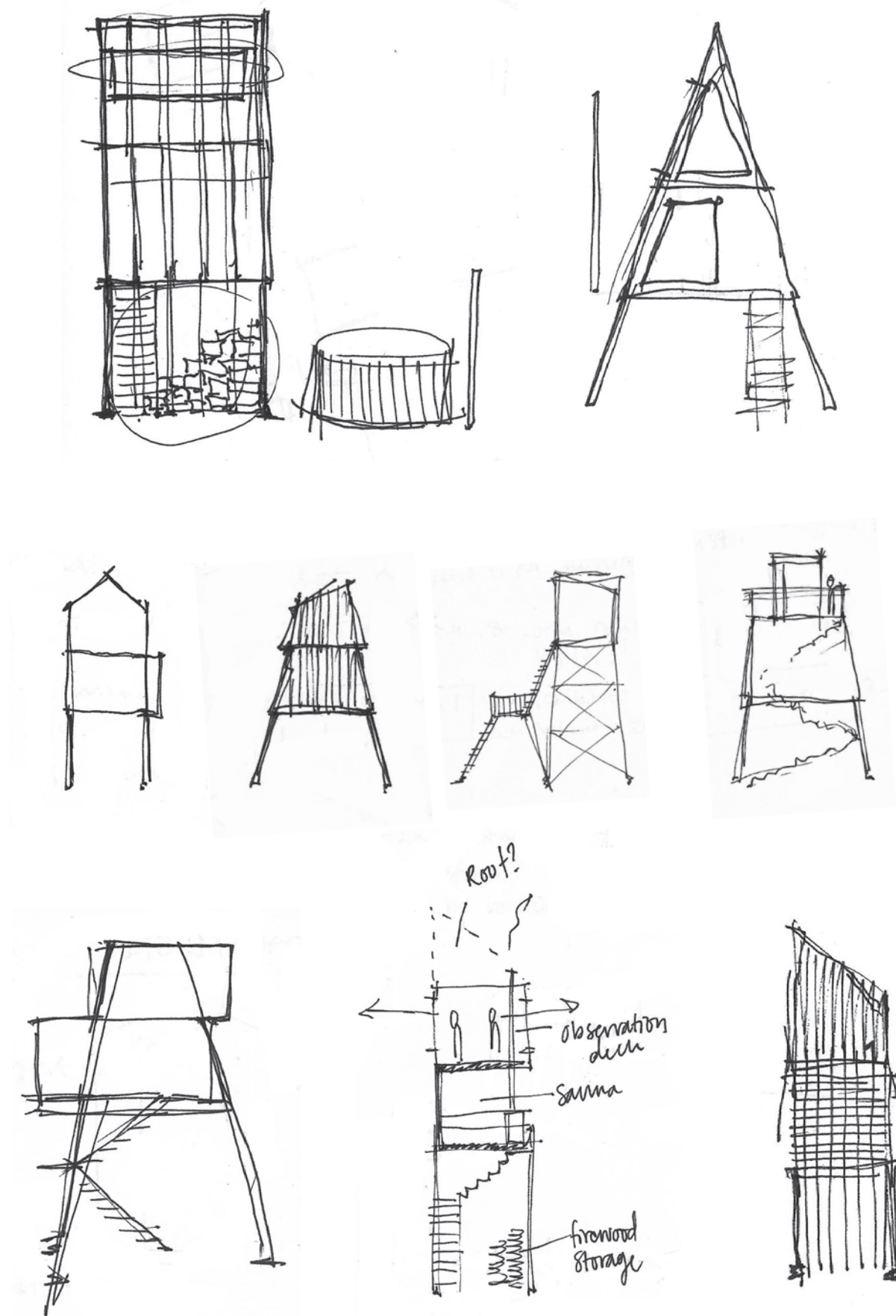
Pilot lookouts

In the mid of the eighteenth century when herring-fishing was the main living in Bohuslän Pilots were needed to steer the incoming and outgoing ships. A pilot lookout were placed on a high peak on the island so that the pilot had a good view over the approaching ships.

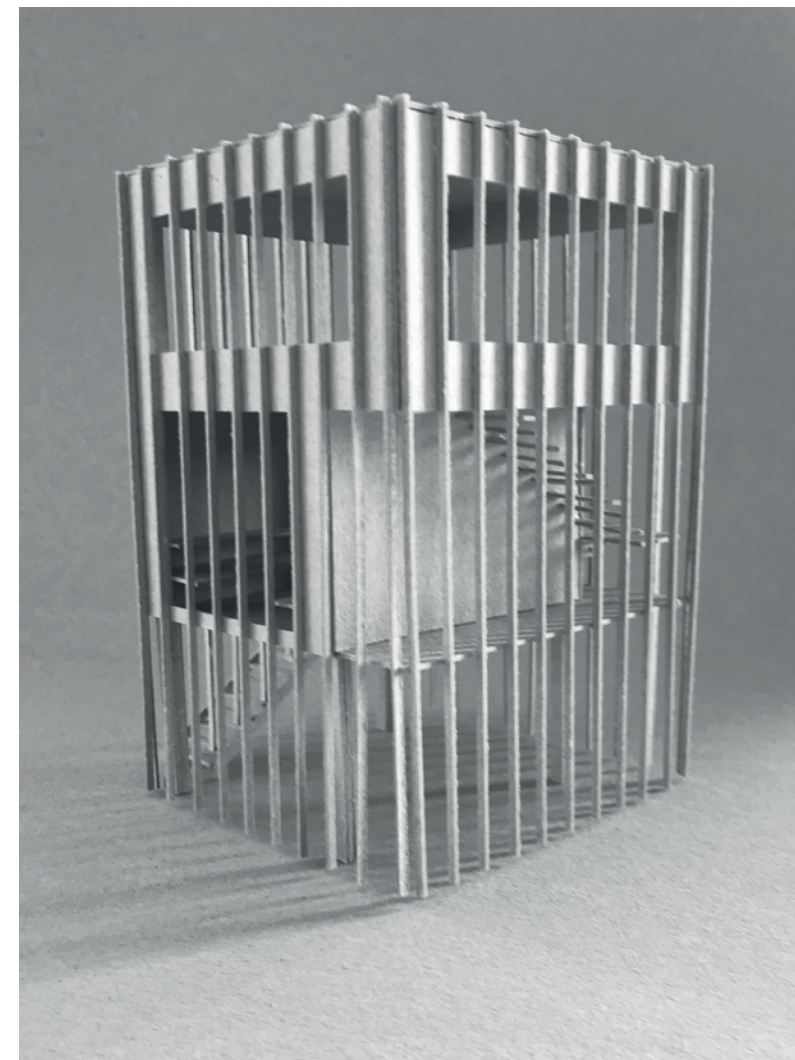
Beacons

The beacon is an predecessor to the lighthouse and are designed to be spotted from a great distance. The beacon are used for navigation and were traditionally portrayed on the nautical charts to help the navigator.





Sketches made with inspiration from existing landmarks in the area



Process model of sauna tower with storage space for wood at the bottom, sauna in the middle and observation deck at the top. Shape & proportions inspired by the existing radio tower foundation at Rörö.



Existing radio tower foundation found in the Nature reserve at Rörö.

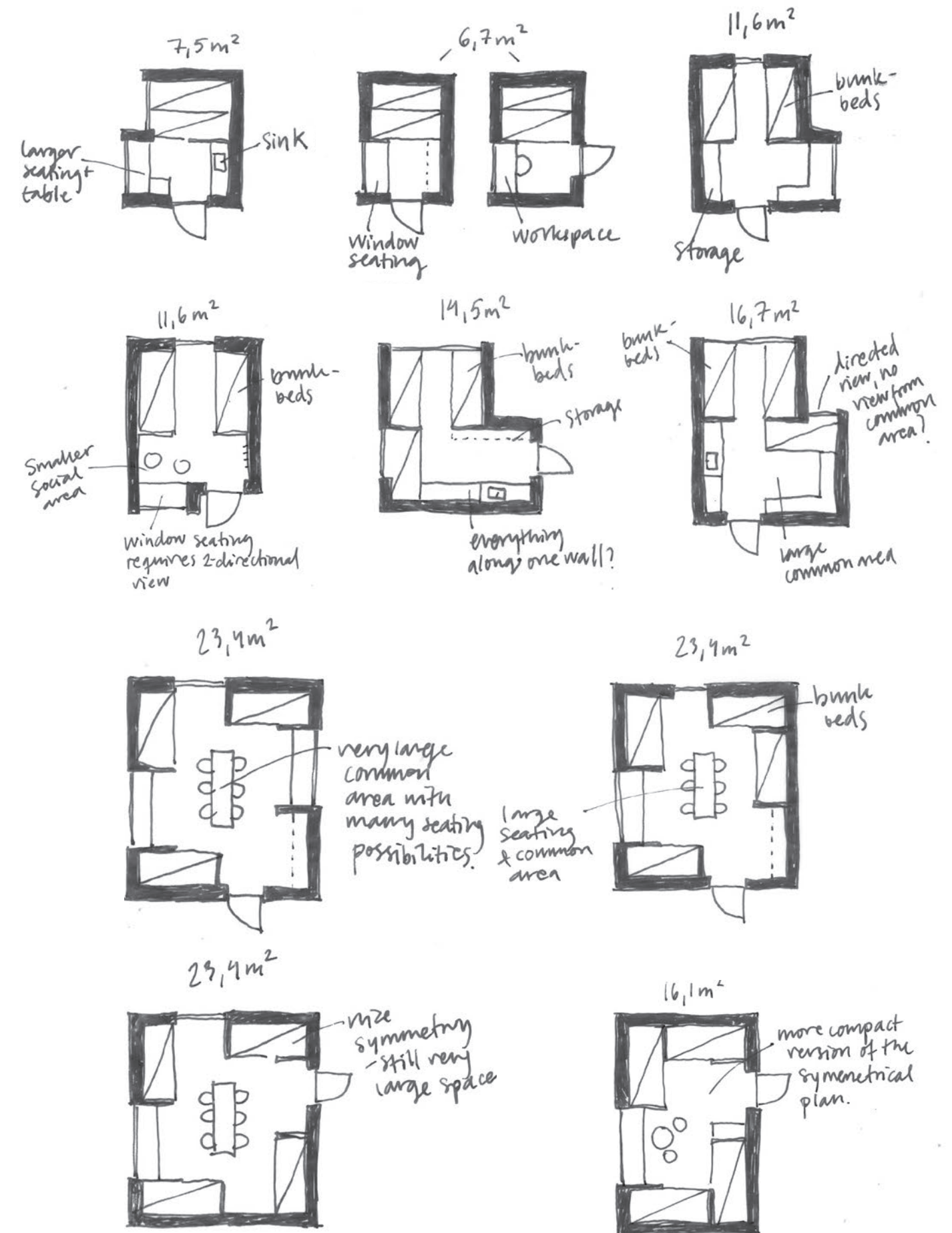
Cabins

To cater the various needs of the visitors, cabins in different sizes, with different number of beds, facilities and amount of social space are tried out in the following sketches. The conclusion is that if you want to minimize the visual impact from the outside, the space needs to be minimized. Instead of a big social area in the cabin, it is suggested that the other service buildings can be used for gatherings.

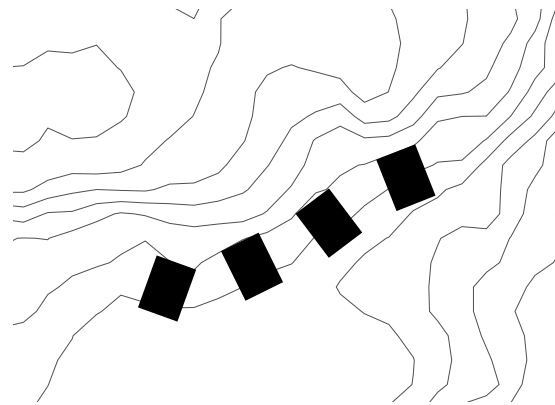
To use the space more effective, bunkbeds are used in most cases (except from the smallest two-bed cabins).

A decision was made not to connect the cabins to the water system, heat them up by fire burning stoves, and provide power for lights with solar panels attached to the roof. In this way the cabins could be placed more freely in the landscape.

Looking at different alternatives for cabin placement, I found that if you want to maximize the views towards many directions, but still create a sheltered and defined outdoor space, a grouping of the cabins are the best alternative. Grouping cabins of different sizes could also make the perception of the cabins less massive.

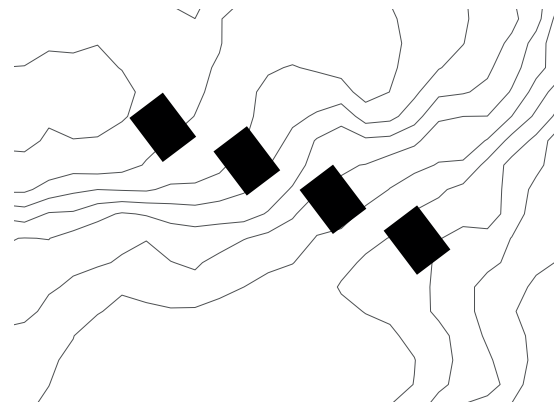


CABIN PLACEMENT



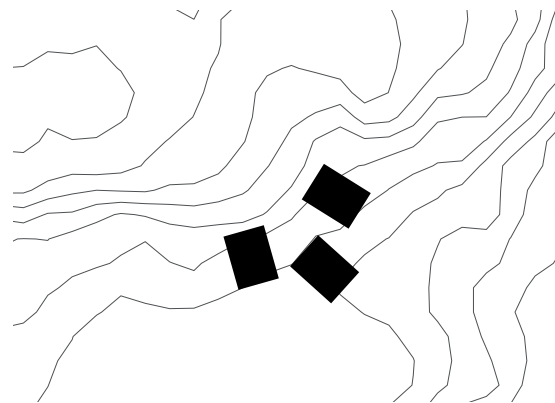
Along the contours

Placing the cabins along the contours will give them views that are often limited to just one direction. If seen from a distance the cabins can be perceived as one long building, or a "wall", however, this placement will make it easier to build a path that leads directly to all of the cabins. Low defined outdoor spaces can be created in between the cabins.



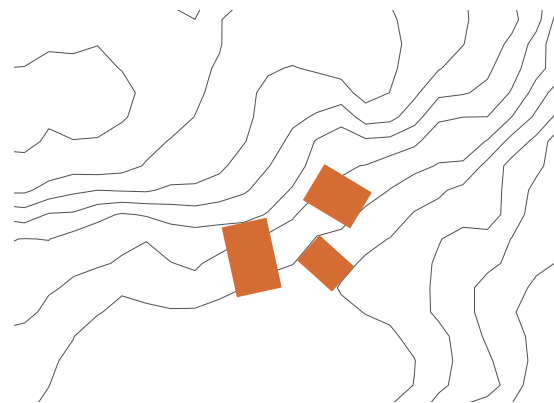
Across the contours

Placing the cabins across the contours will make it possible to maximize the views towards any direction. If you want a direct path that leads to all the cabins this can be a stair. The outdoor spaces created in this case are almost non-existing or very low-defined. The "wall" perception is still a risk in this case, depending on the height differences.



Grouped together with cabins of same size

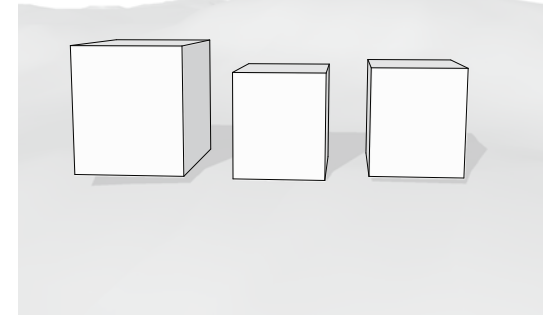
Grouping the cabins could create a defined outdoor space and sheltered entrance possibilities. Depending on how you place the group you could at least get two or more undisturbed views. The group could be perceived as one larger building from a distance if the cabins are of same height and size. The cabins would be adapted to the terrain individually or as a group depending on the steepness of the terrain.



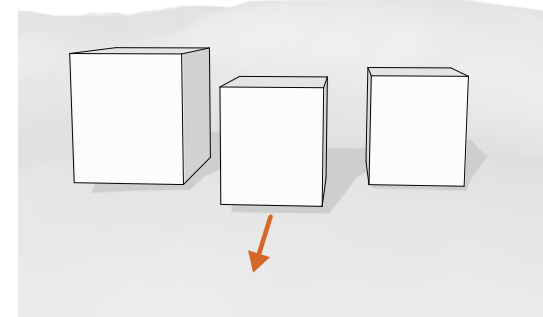
Grouped together with cabins of different size

When grouping cabins of different size you will get a defined outdoor space, and perhaps even better shelter possibilities since the larger buildings can be placed as a barrier to the prevailing wind. The view possibilities are still good and from a distance the volumes could be perceived as more natural when they are of different sizes - just like the rocks!

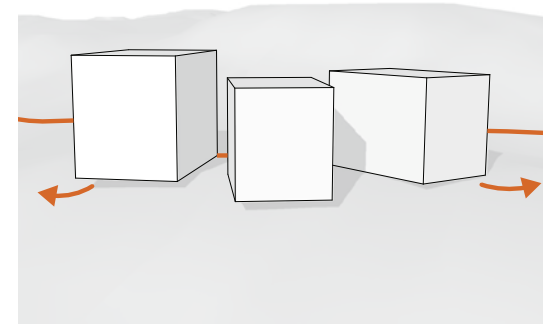
CABIN DESIGN AND PLACEMENT CONCEPT



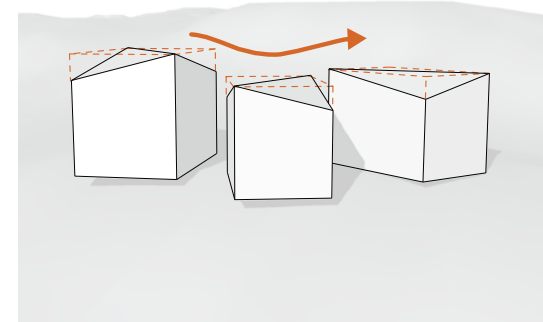
Three cabins of different size are grouped together and placed along a contour line.



The middle cabin is pushed out to create a sheltered entrance space in between the three.



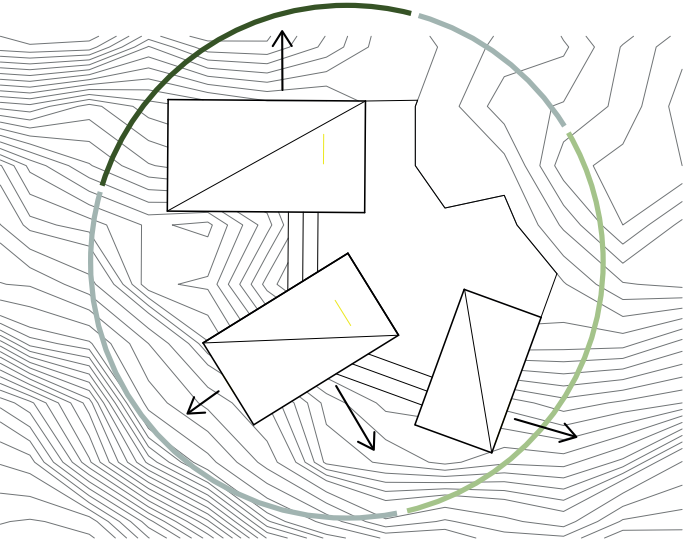
The cabins are adjusted to the contour line and rotated outwards to maximize the view.



The roof of the cabins are cut inspired by the shape of the rock.

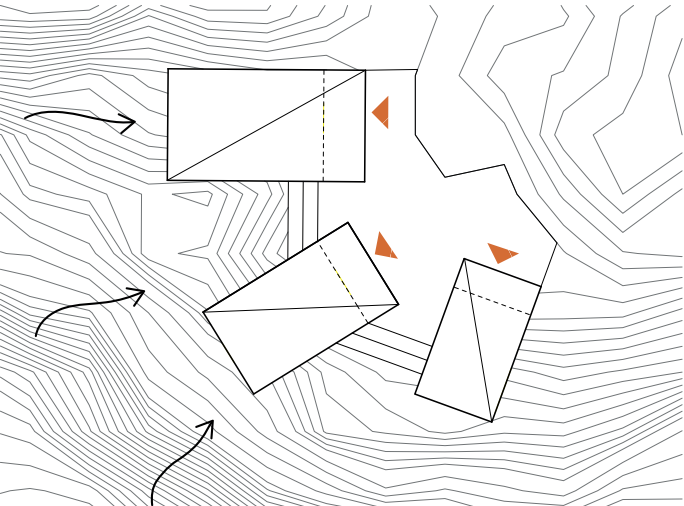
WIEWS & OUTDOOR SPACES

(Representative group of cabins)

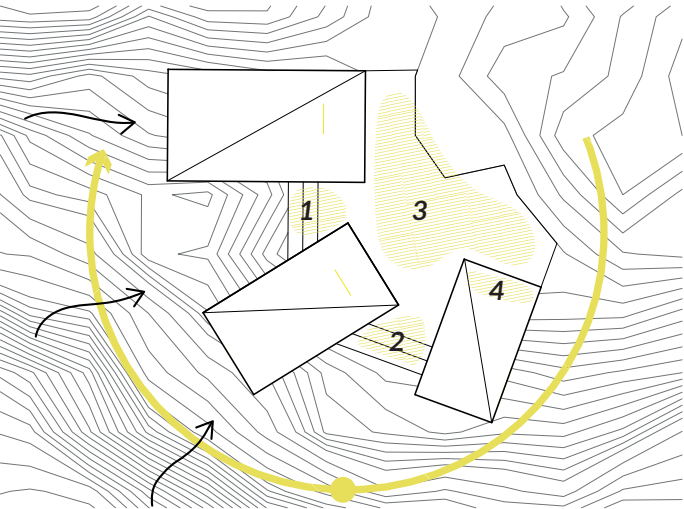


- View towards nature reserve
- View towards nature reserve + sea
- View towards sea and community

When placing the larger windows, the gables are avoided since the clean shape and "carved out of the rock" feeling would be disturbed, the windows are instead "hidden" in between the buildings in a way that still maximizes the views.



The enterences are placed sheltered from the prevailing wind (south-west to west) and to assure shelter in other wind conditions the entrance facade is also recessed.

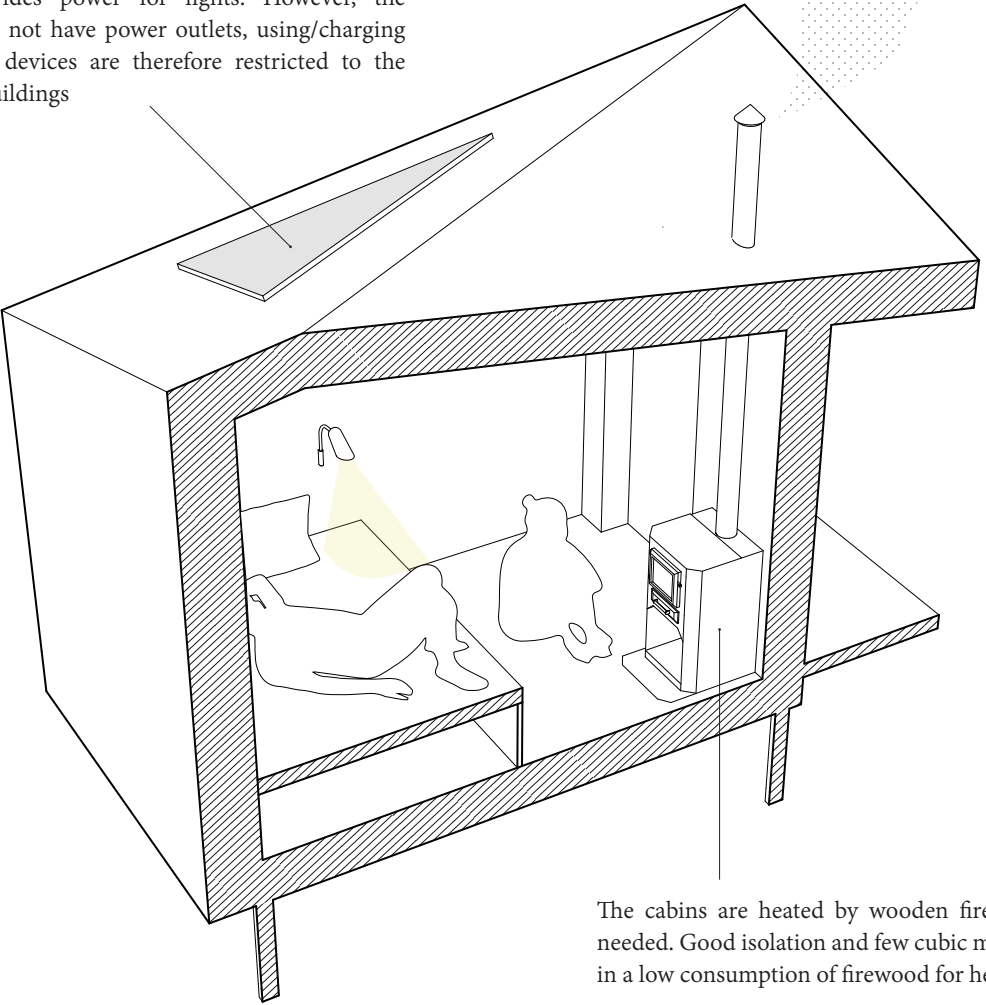


- 1: West steps - sun all day from mid March-May and mid August-October
- 2: South steps - sun 12:00-15:00 all year
- 3: Deck - sun until 14:00 all year
- 4: Enterence - sun until 11:00 April-October

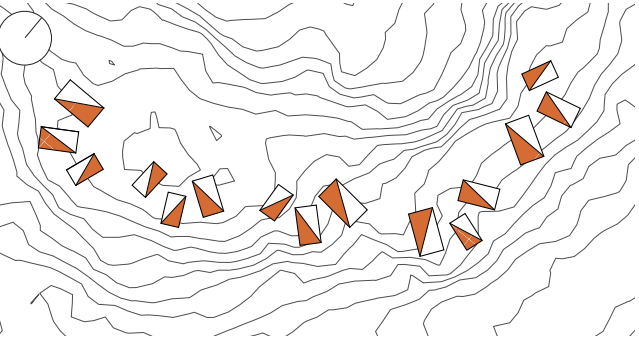
The spaces in between the cabins are designed so that you should always be able to find a sheltered spot, preferebly in the sun in spring and autum, and perhaps in the shade on a hot summer day.

ENERGY SYSTEMS

Solar panels are mounted to the roof of the cabins and provides power for lights. However, the cabins do not have power outlets, using/charging electrical devices are therefore restricted to the service buildings



The cabins are heated by wooden fired stoves if needed. Good isolation and few cubic meters result in a low consumption of firewood for heating.



A radiation analysis are made with grashopper and ladybug to see which areas of the roof that are exposed to most radiation, and therefore most suitable for solar panels.

User scenarios

Creating a facility that is flexible and can be used all year has been one of the main goals with this project. To fill this place during the summer months might not be the biggest challenge, but who and how should you attract during the winter months?

While in the summer the place is occupied by smaller individual groups of people who spend most of the time outdoors, the place needs to have enough space to cater larger groups for conferences, retreats or events all year around.

The open plan in the largest building will allow for both bigger and smaller groups and could be partly screened off for more privacy.

The cabins are well isolated and can be used all year around, and the sauna would perhaps be most appreciated during a cold winter storm.

Following different scenarios and target groups have been simulated to show how this place can be used, all year around!



The family

Duration of stay: 5-8 hours
Time of year: Spring - Autumn



The active couple

Duration of stay: 1-2 days
Time of year: All year



The friends

Duration of stay: 3-4 days
Time of year: Summer



The team builders

Duration of stay: 3-4 days
Time of year: Autumn-Spring



*Arrives to the island by bike
(and ferry)*



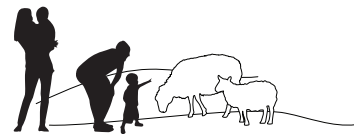
Arrives to the island by kayak



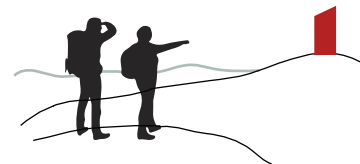
*Arrives to the island by public
transport*



*Arrives to the island by
chartered bus*



Visits nature reserve



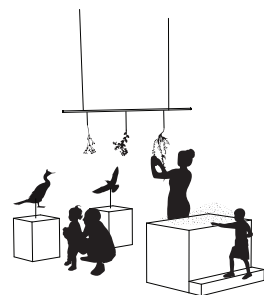
Explores the nature reserve



Enjoys the archipelago



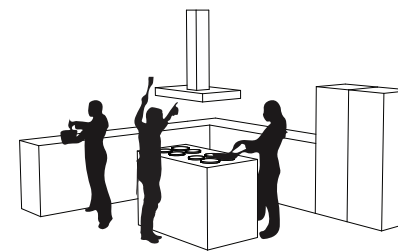
*Participates in team building
activities*



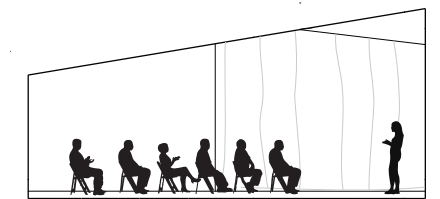
*Explores temporary exhibition
in public building*



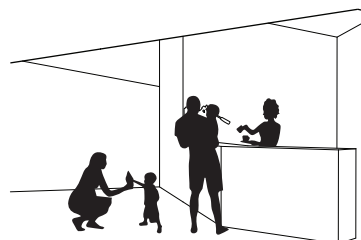
Cooks food outdoor



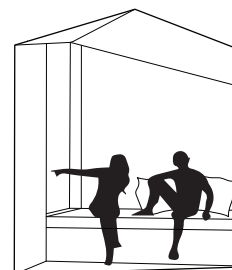
*Cooks food in the common
kitchen*



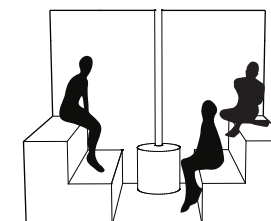
*Reserves the facility for
lectures and workshops*



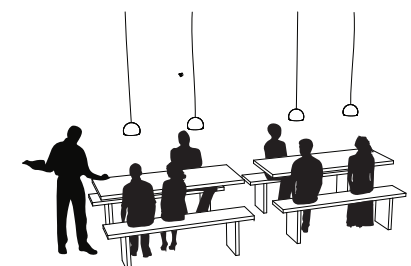
*Gets ice-cream and coffee in the
café*



Relax in cabin



Spends the evening in the sauna



*Hires catering service for com-
mon kitchen*

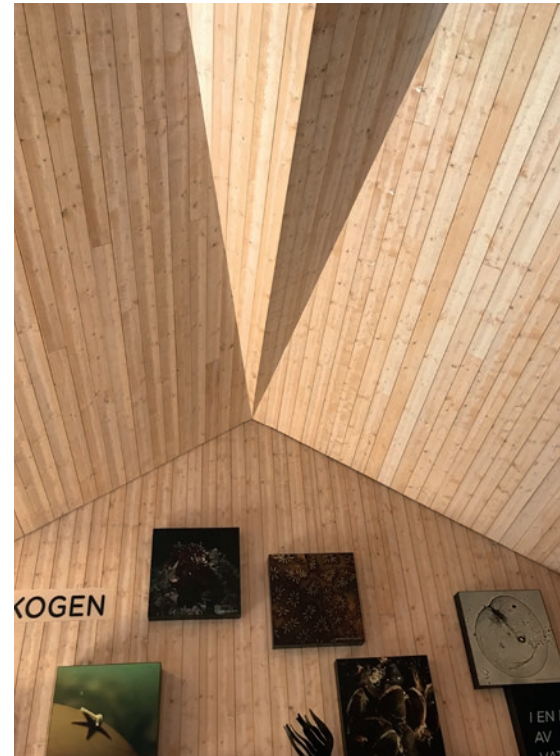
Design & Material references

NATURUM KOSTERHAVET

WHITE Architects

By splitting up the roof and create "false gables" the architects have created a building that gives a impression of small scale, but holds masses that is much larger than the other buildings nearby.

The shape is complex and the ridges run at diagonals which is visible in the interior and creates an unique space.



WADDEN SEA CENTER

Dorte mandrup

The roof overhang on the courtyard of Dorte Mandrups Wadden sea Center in Denmark are creating a small twist to the building's simple lines and at the same time gives shade to the big glazed openings leading into one of the exhibition halls.

Here the tips of the roof panel are beveled to create that sharp pointy edge, the same technique that are used for the public building and common kitchen in my program.



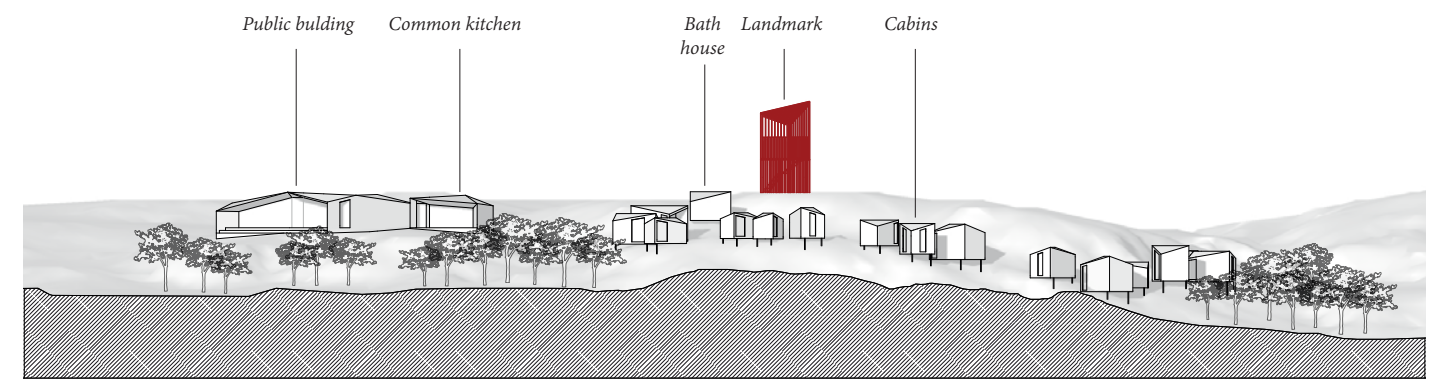
COMMUNITY CHURCH KNARVIK

Reiulf Ramstad

The building has a folded timber structure visible both on the inside and outside and are placed in a environment with low vegetation and bare rock, just like the context on Rörö. You get the feeling that the building has almost been carved out from its craggy surrounings, although the tower creates a landmark for the town.



Proposal



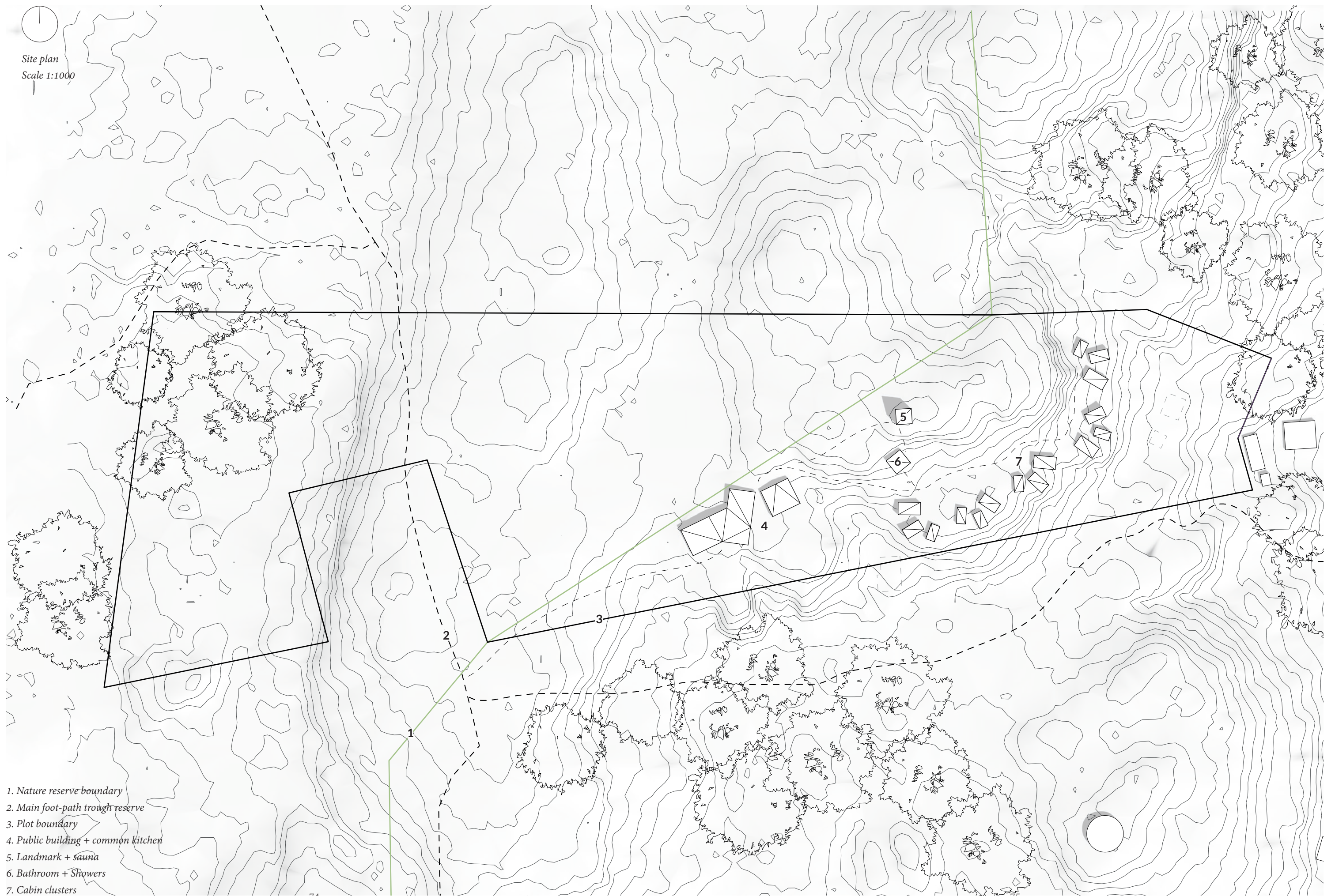
Elevation
Scale 1:1000



Approaching the site from the nature reserve



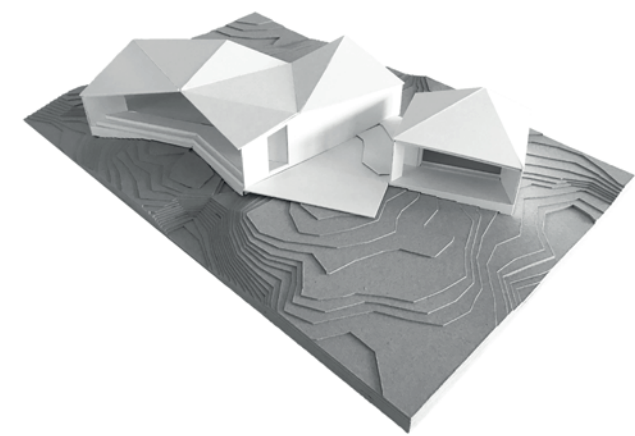
Site plan
Scale 1:1000



1. Nature reserve boundary
2. Main foot-path through reserve
3. Plot boundary
4. Public building + common kitchen
5. Landmark + sauna
6. Bathroom + Showers
7. Cabin clusters



*Physical model of site
(made in scale 1:500)*



Public & Service buildings

The public building will be the first building you'll meet, regardless if you are a guest of the hotel, or just taking a stroll in the reserve. This building holds the reception, a small café and a larger social space. It is connected to the common kitchen available for the overnight guests.

The purpose of this building is to serve all types of guests and provide a space where you also can enjoy the reserve from the inside on a cold and rainy day. The building has an open plan that creates flexibility and allows conferences and events to happen.

The common kitchen and the bath house are serving the guests with cooking possibilities, toilets and showers. While the common kitchen are located next to the public building to ease the use of all the larger spaces together for events, the bath house are located closer to the cabins and the landmark with its sauna.



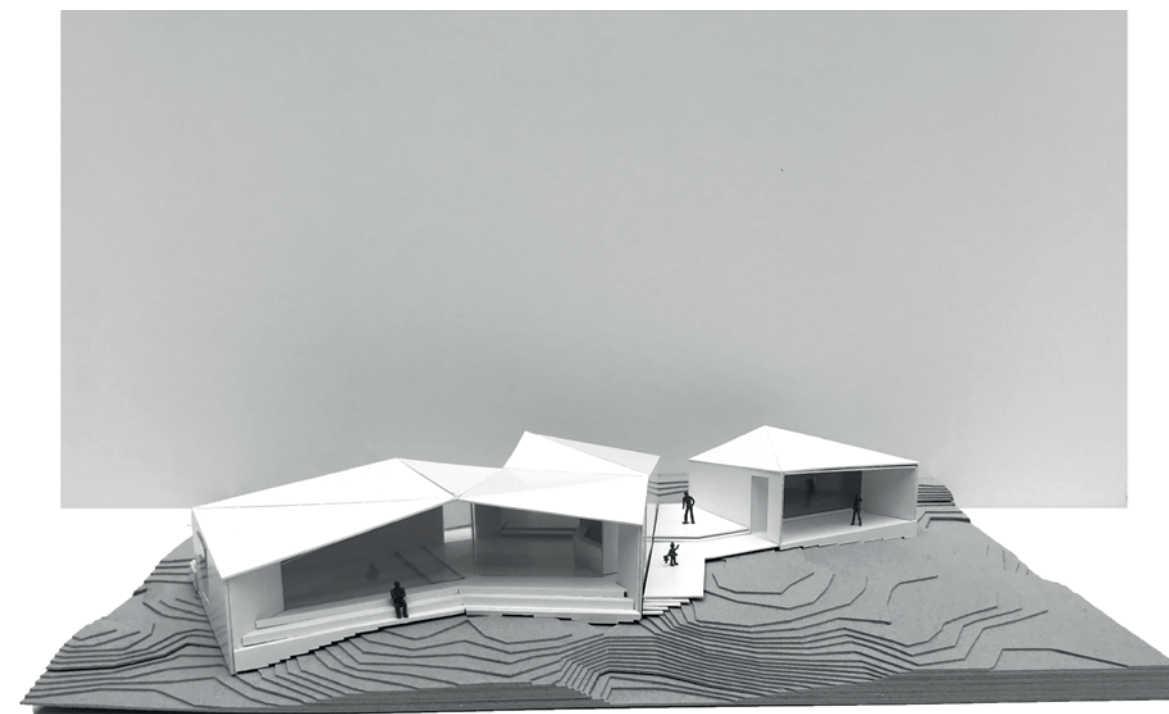
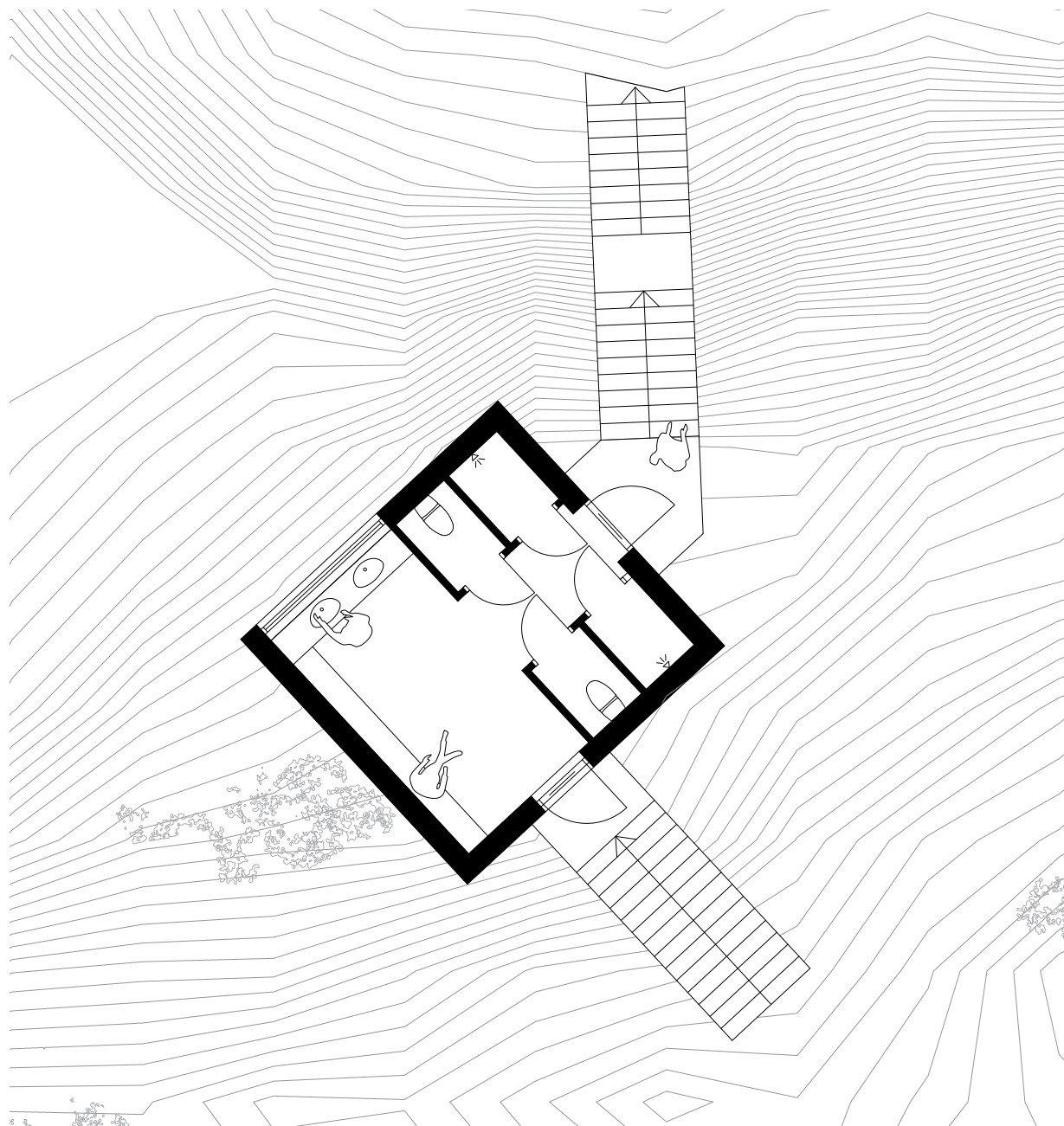
Public building & Common kitchen 164 + 42 m²

Scale 1:100

1. Exhibition hall
2. Reception / Coffee bar
3. Seating / Conference area
4. Common kitchen

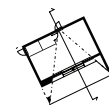
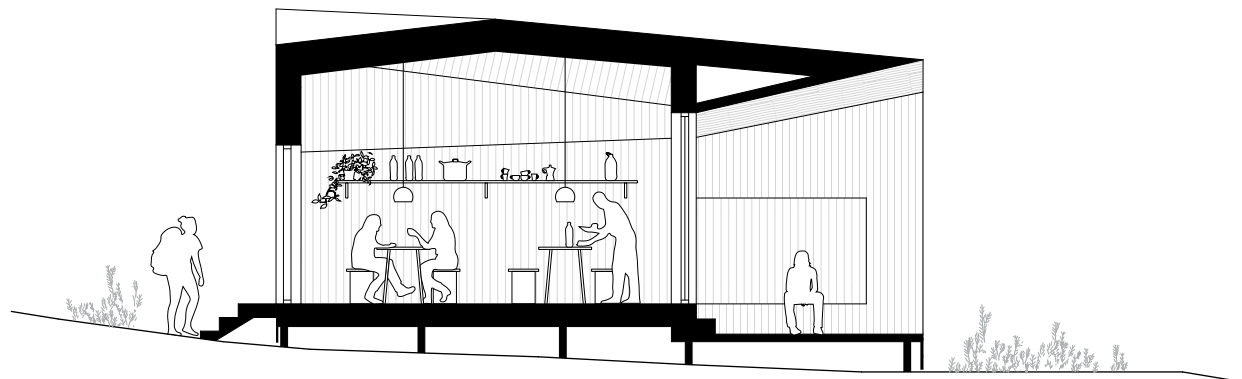
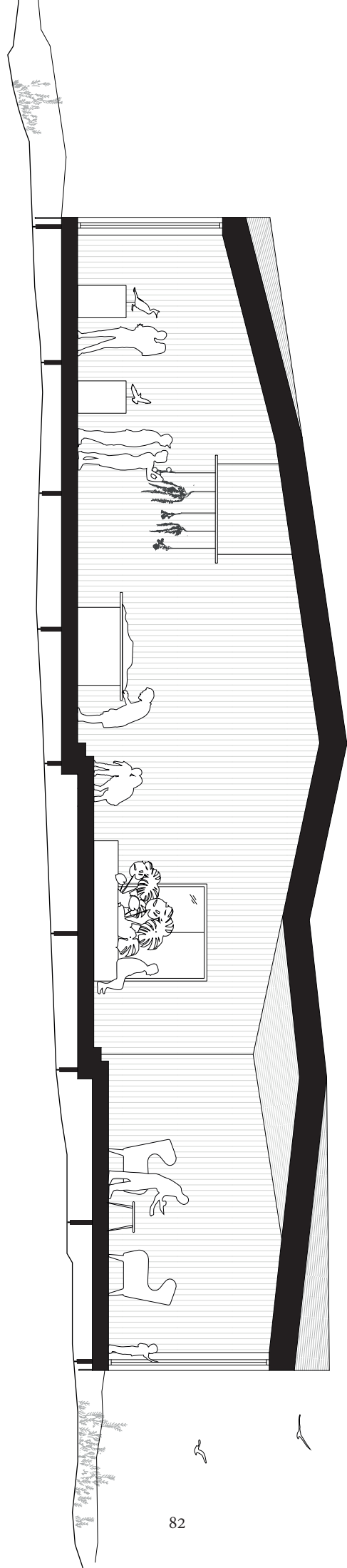
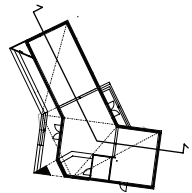


Bath house 21 m²
Scale 1:100



Physical model of public building & common kitchen
(made in scale 1:100)

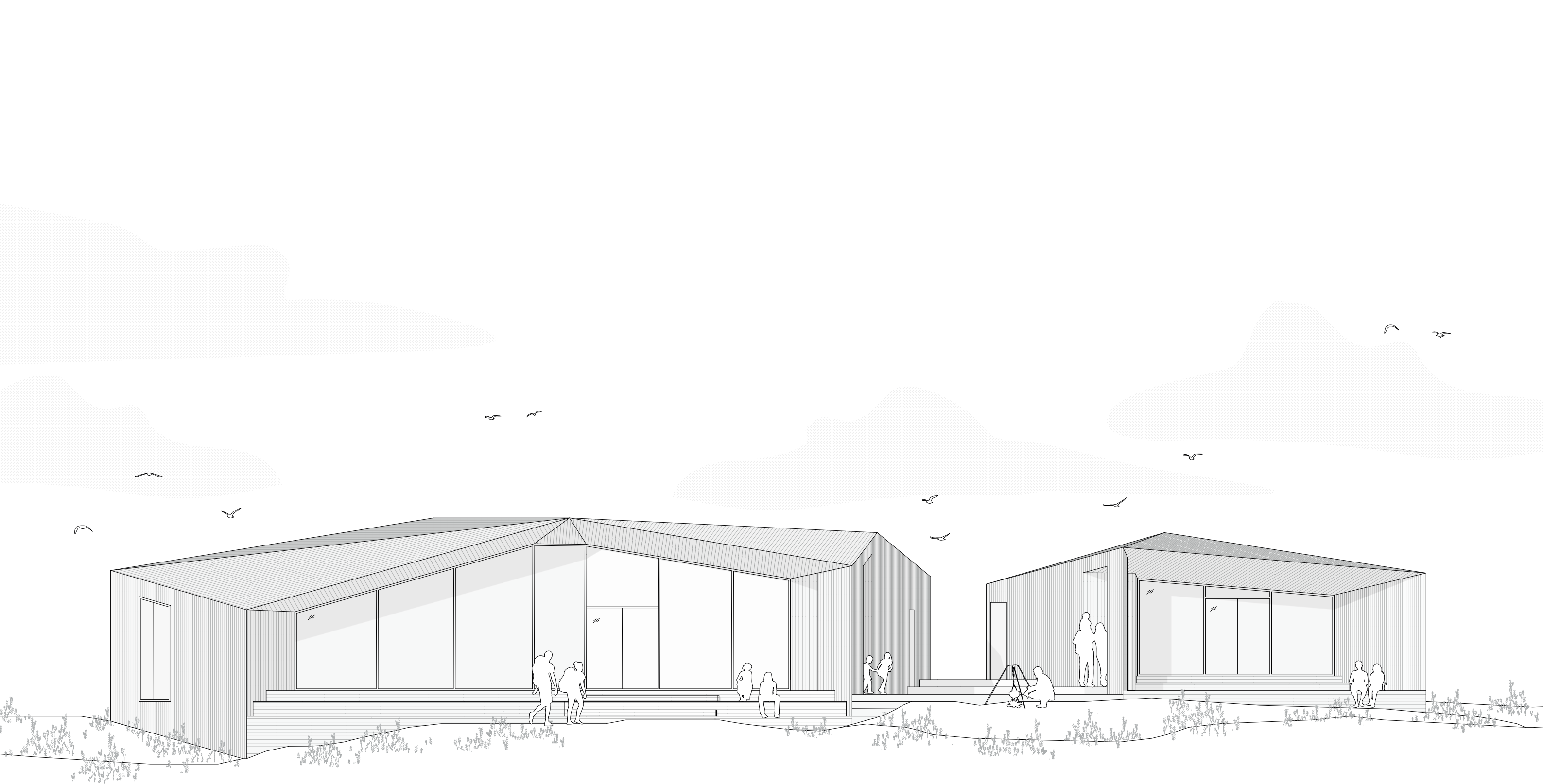
Section public building (with temporary exhibition & cafe)
1:100



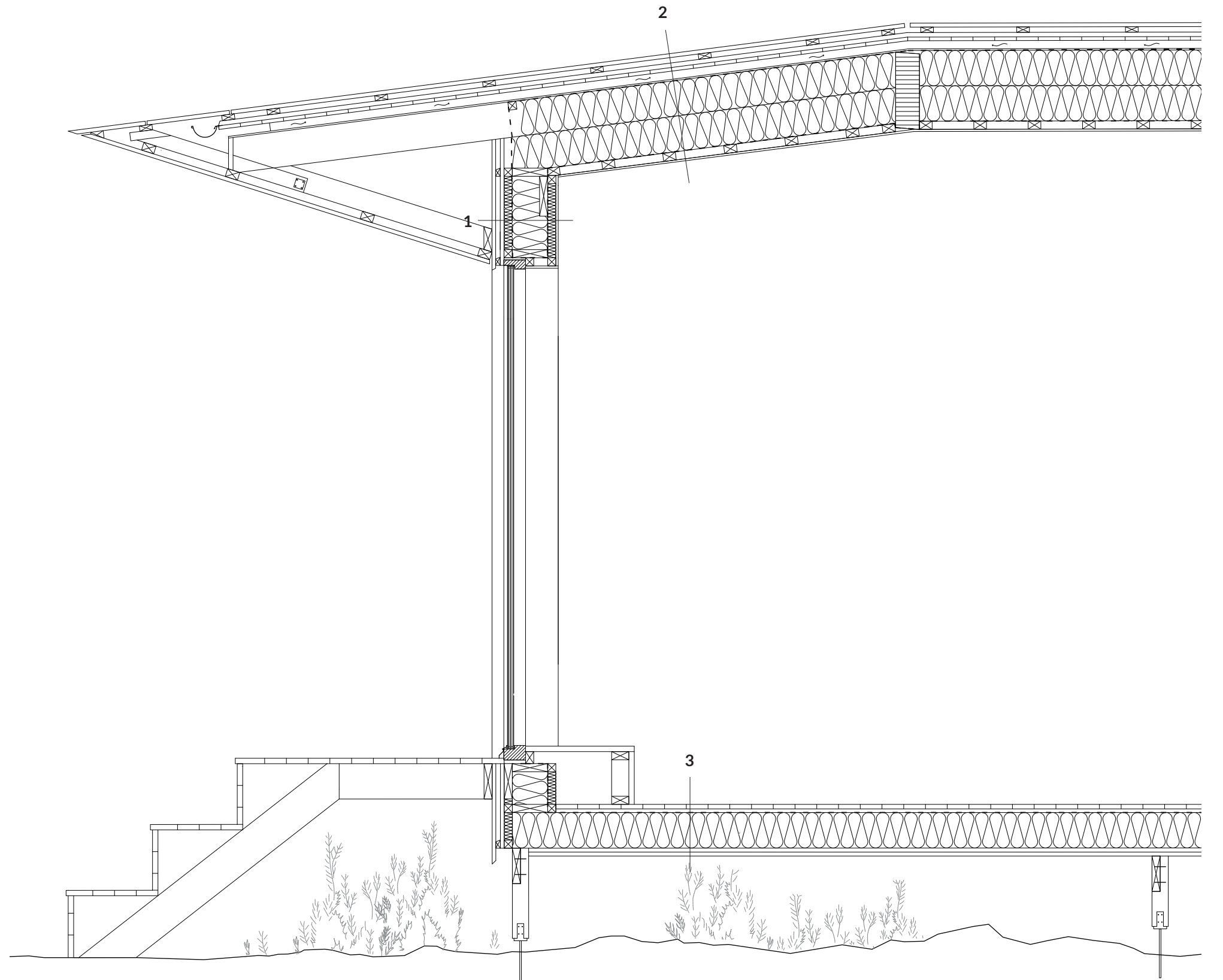
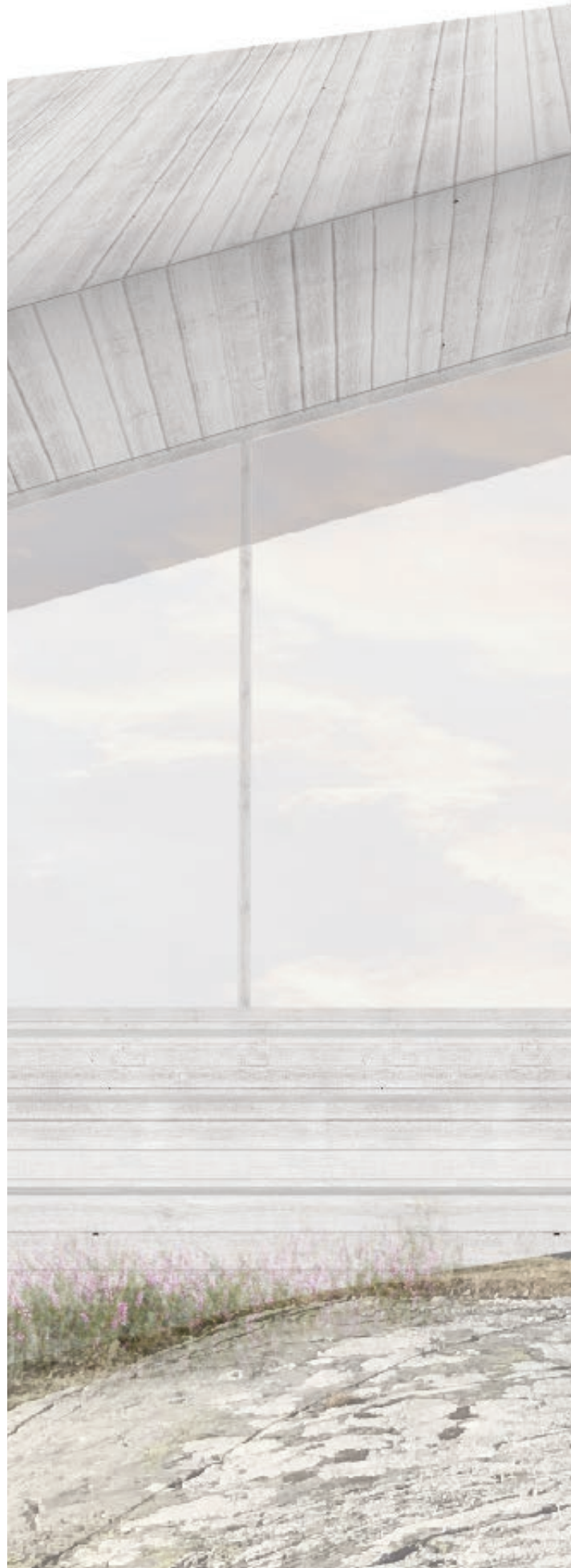
Service kitchen section
1:100



Interior view from entrance



Elevation public building + common kitchen
1:100

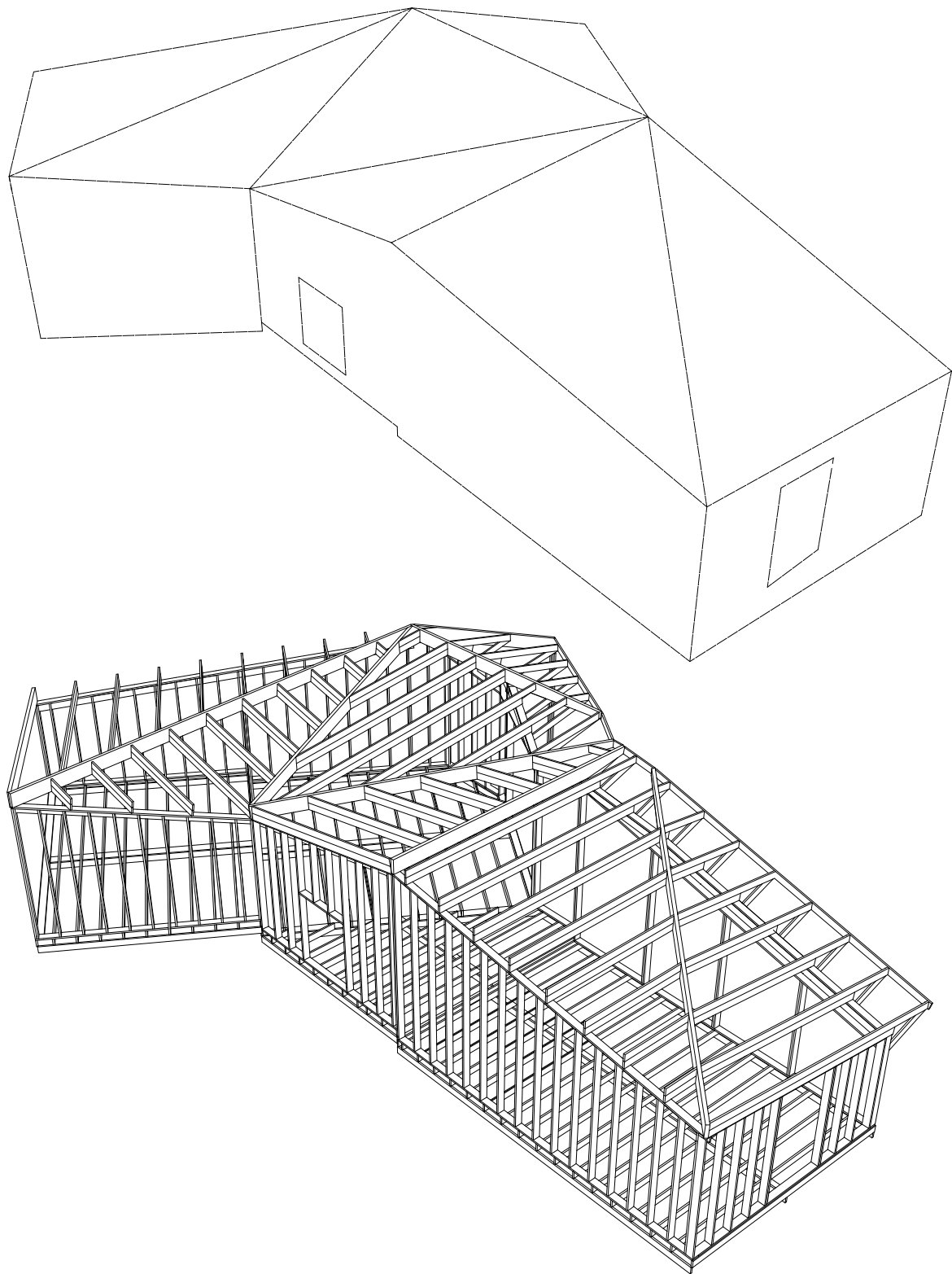


Detail + facade concept
1:25

- 1** 22x95 mm pine wood boarding
(treated with green vitriol)
22 mm battens + ventilated cavity
22 mm battens counter battens
Weatherproofing membrane
45 mm insulation
195 mm insulation between 45x195 mm battens
Vapour barrier
45 mm battens + service layer
18 mm white pigmented pine wood panel

- 2** 22x95 mm pine wood boarding
(treated with green vitriol)
28 mm counter battens
25 mm battens
Roof paper
20 mm tongued and grooved board
45 mm air gap
Sealing layer
195 mm insulation between 45x195 mm battens s1200
195 mm insulation between 45x195 mm counter battens
Vapour barrier
45 mm battens + service layer
18 mm white pigmented pine wood panel

- 3** 25 mm pine planks
20x45 mm battens
Vapour barrier
220 mm insulation in between 220x45mm battens s600
22x70 mm battens + ventilated cavity
22mm pine wood panel



CONSTRUCTION DIAGRAM

The building has a standard timber frame construction, but with diagonal ridges that creates the folded roof. Horizontal beams which provides extra support for the roof construction runs over the larger glazed areas in the facade.

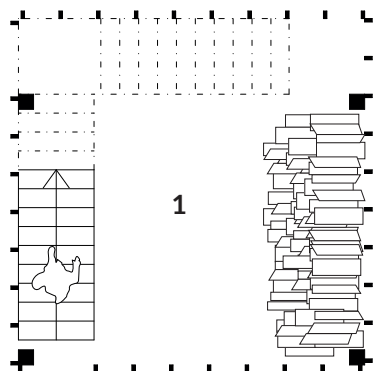
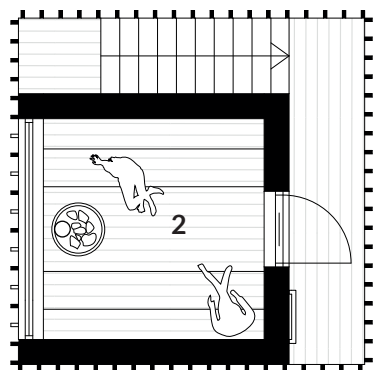
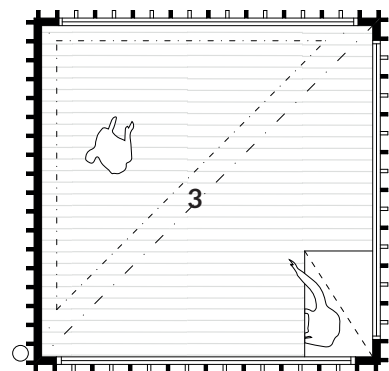


The landmark

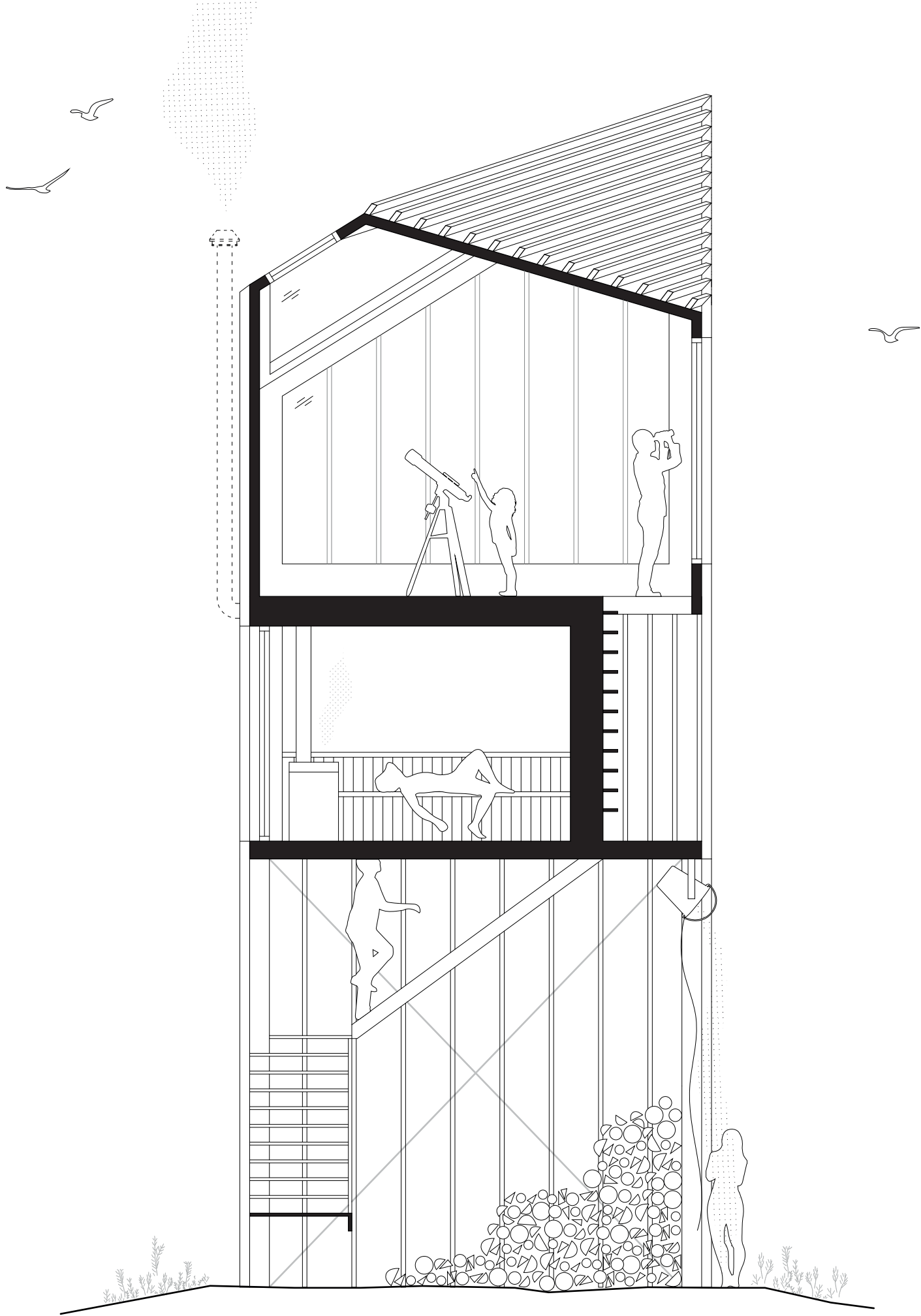
The landmark stands on the highest point of the site and gives the visitors a panoramic view over the reserve and surrounding archipelago. The building holds a sauna and an observation deck, which with its unique placement and design could be an attraction itself and also serve the local residents of the island.



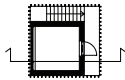
The landmark
Scale 1:100 (A4)

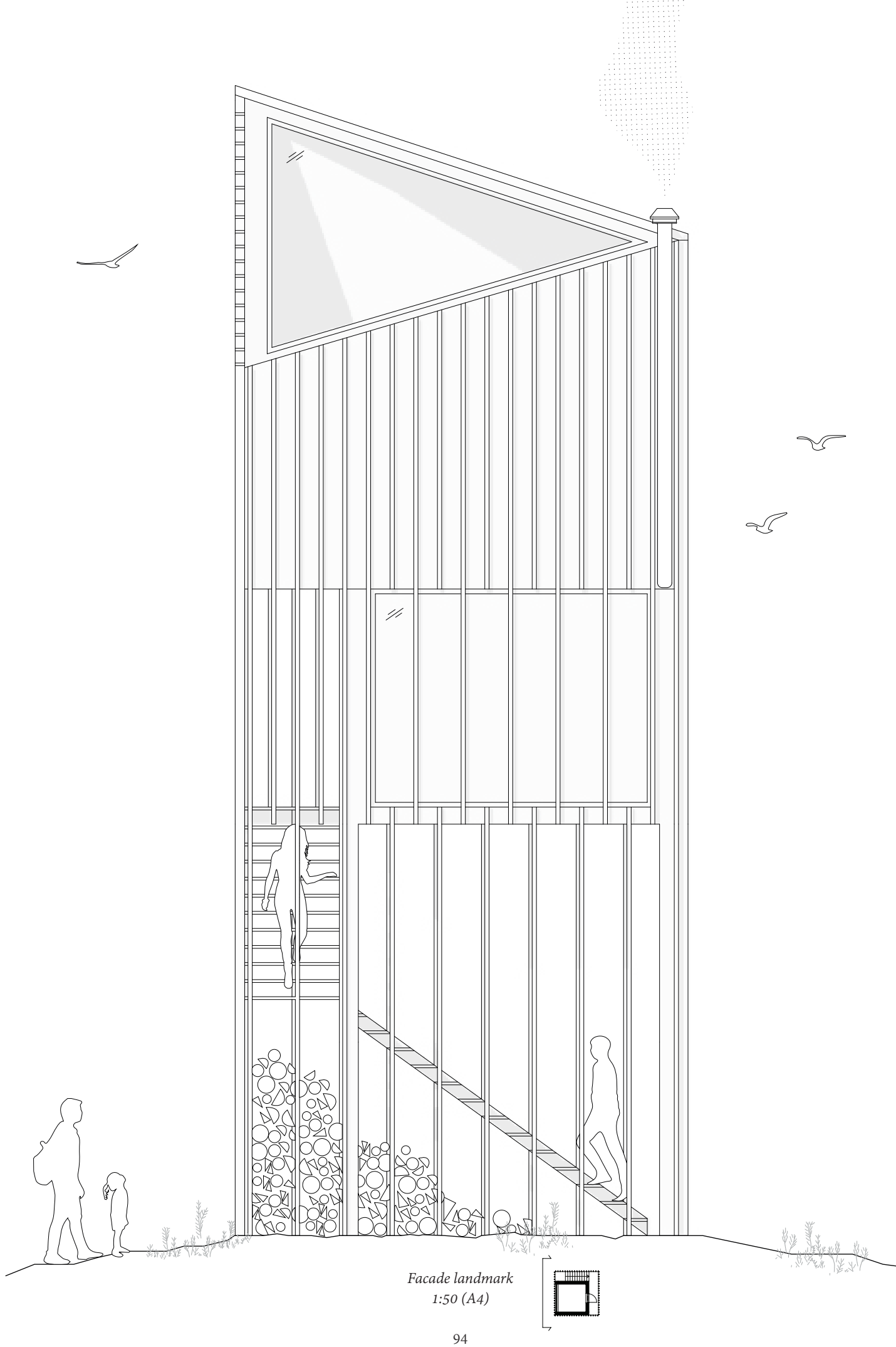


- 1. Level 1 - firewood storage
- 2. Level 2 - Sauna
- 3. Level 3 - Observation deck



Section landmark
1:50 (A4)

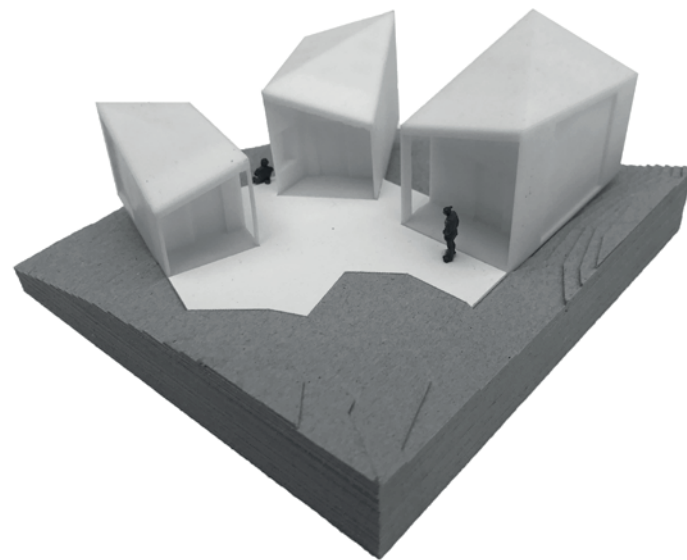




Exterior
Panel treated with red pine tar



Interior (sauna)
Spruce panel



Cabins

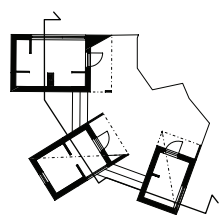
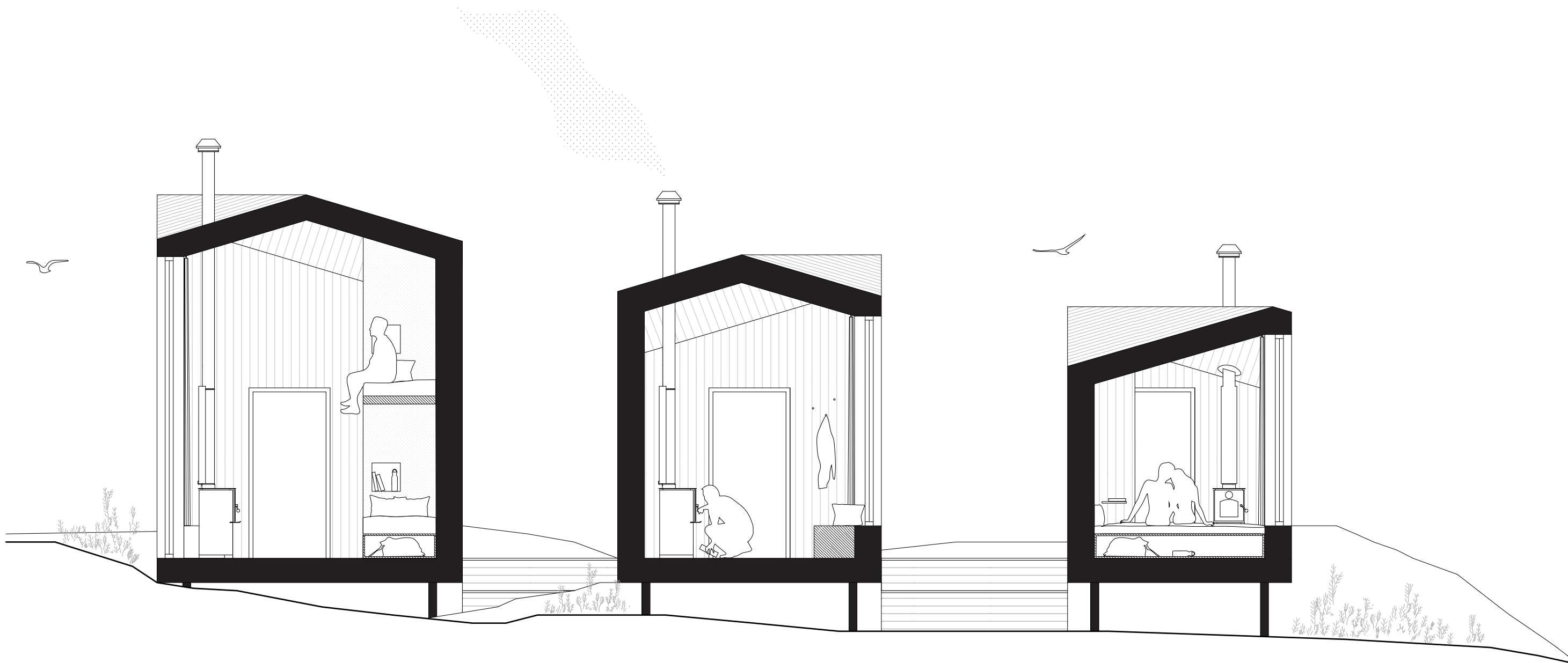
There are a 15 cabins that house up to 56 overnight guests. The main purpose of the cabins are to provide rest for the guest, a quiet place where you can sleep and wake up to the view of the nature.



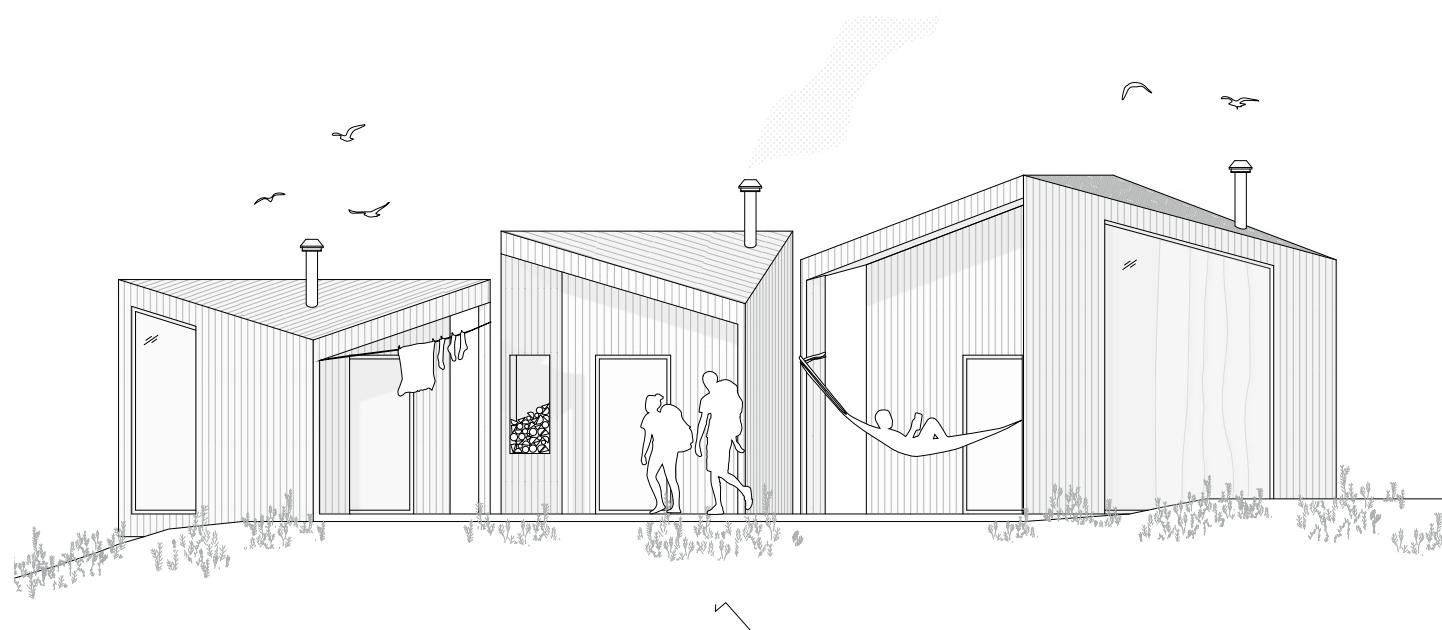
Cabins
Scale 1:100 (A4)



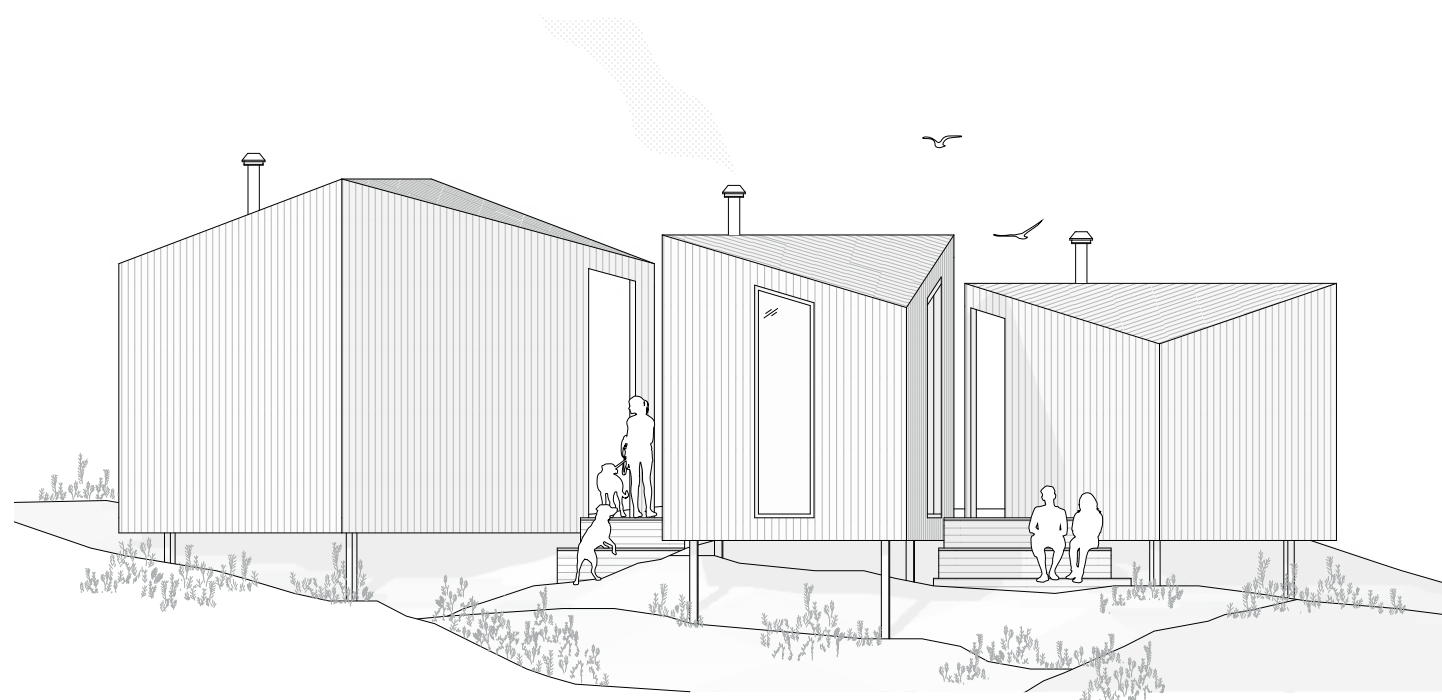
- 1. Large cabin - 14,3 m² (6 people)
- 2. Medium cabin - 10 m² (4 people)
- 3. Small cabin - 6,7m² (2 people)



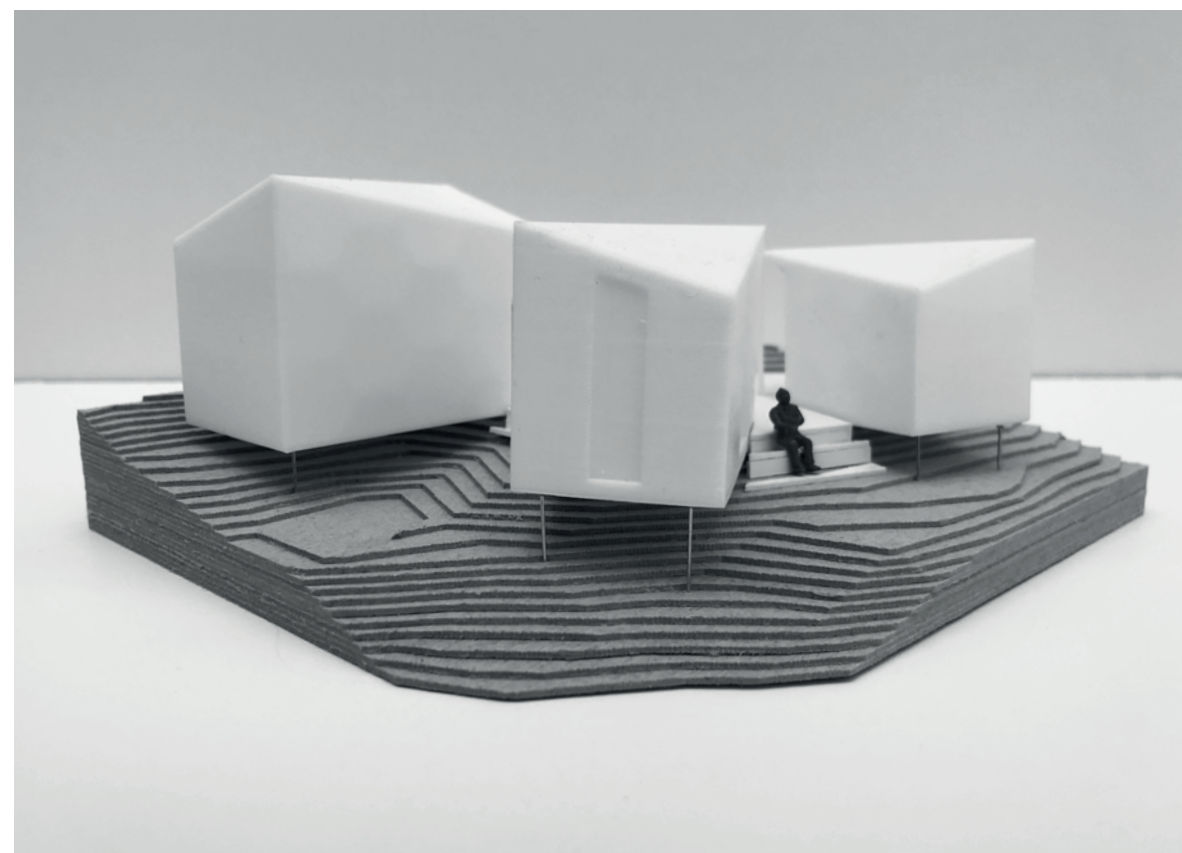
Section cabins
1:50



*Cabin elevation from north east
1:100*



*Cabin elevation from south west
1:100*



*Physical model of cabins
(made in scale 1:100)*



Conclusion

Finding balance between creating something unique and creating something that is buildable, humble to the surrounding nature and not too expensive has been one of the biggest challenges in this project. The plot, which has a varying topography have also limited the possibilities, but perhaps it is also the difficult terrain that has contributed the most to the design. If the site would have been completely flat, adaption to the landscape which has been a main goal for the entire project would have in a way been more difficult.

I think this site would benefit from a small scale program, and to make this possible and at the same time cater lots of visitors, you would need to use the outdoor spaces for communication and this hopefully strengthens the nature experience for the visitors.

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Images

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