

WATERSCAPES

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ARK128

Architecture and Urban Space Design

1.1 Hybrid Space

1.2 Growth Network

2.1 Problematized Waterfront

2.2 Waterfront prototype

3.1 WWaterscape superstructure

3.2 Waterscape project

INFRASTRUCTURE TYPE

TRAMTUNNEL
"filling the gap"

"an artificial underground passage, especially one built through a hill or under a building, road, or river", "A pass through a potential barrier."
Tunnels can be considered a human space but usually not a friendly one.
Dark, Dangerous, Peaceful, Powerful, Ugly, Dirty, Beautiful, Poetic, Unsafe.



HUMAN SPACE TYPE

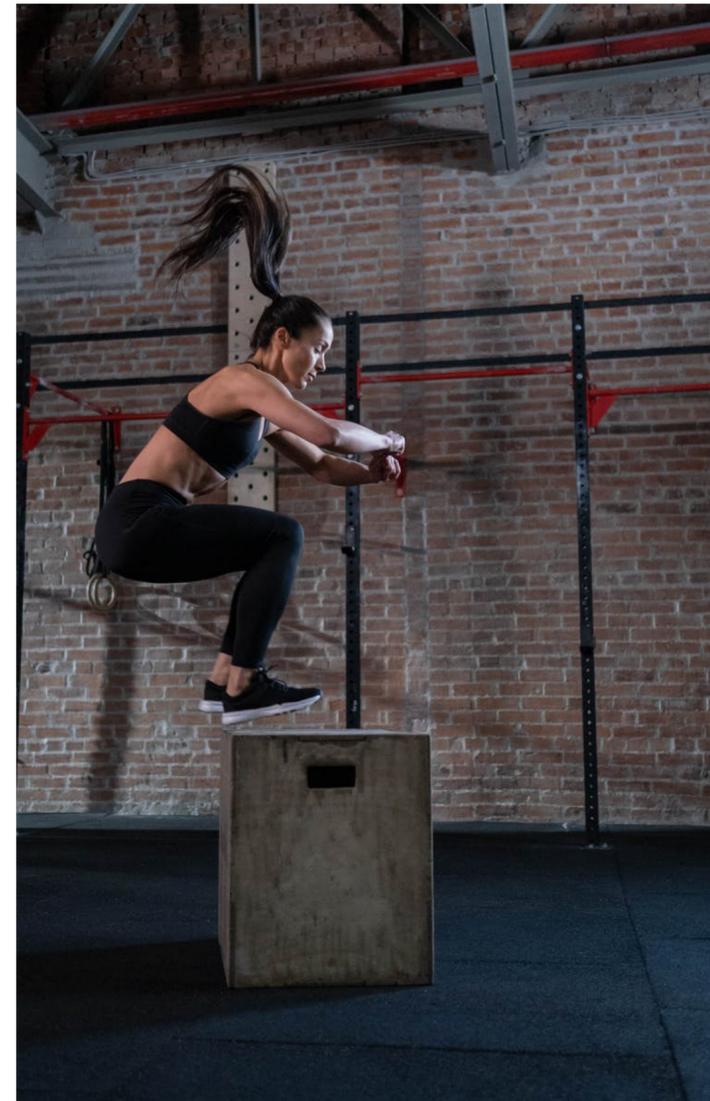
Activities, movement, stop and stay

People make unsafe spaces, People make safe spaces

Space for outdoor gym, skatepark, climbing

Movement in humans

Movement in shape



1.1 HYBRID SPACE

Frightening. Dark, Unfriendly.
Elegant, despite the dirt on the walls and the dark areas it contains.

A tunnel is many things.

The infrastructure element would be the tunnel, consisting of the walls, the roof and the shape.

The infrastructure agents started as simply being pedestrian but a tram or metro has more parameters to take into account.

The human space element is human activity.
The human space agent is humans as victims, humans as perpetrators.

Tunnel, more specifically a metro tunnel.
Not the areas where the metro stops but the space between where the metro passes by at a higher speed.

Humans and humans

Without putting too much emphasis on who is to blame and who's the victim in this. Humans do bad things to other humans.
Especially in spaces where no one is watching.

A tunnel is known for a number of things.
Crime is one of them, robbery, rape and abuse is just to mention a few.

So how do we start to make a change in these spaces?
How can we take these unsafe places and make them something else, perhaps even the opposite, safe.
Humans are the issue but humans can also be the solution.

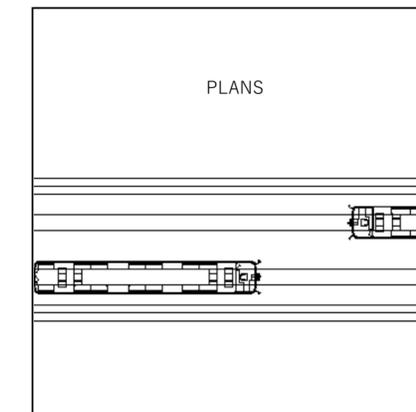
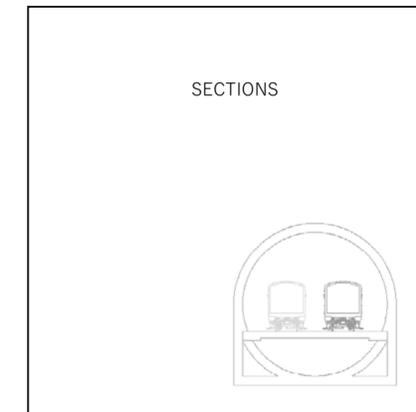
Human and vehicles

Our society moves faster and faster. Our vehicles follow the pace. We want to move from A to B as fast as possible without thinking about the consequences for the society as a whole.

That leads to another kind of insecurity created by humans. Our technology and our infrastructures support us in their direct purpose but it comes with a price of also putting us in danger.
A fast moving vehicle is not suitable to be around and is not to be underestimated in how its sharp edges can hurt our fragile human bodies.

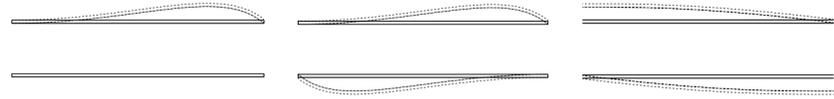
Safety can therefore be divided in two fields, the safety from each other and the safety from what we've created.

EXPLORING A GENERAL TUNNEL

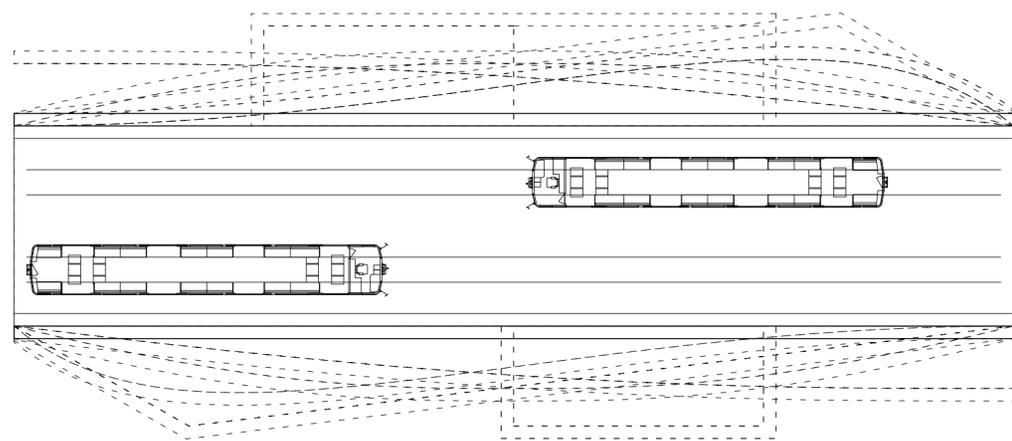
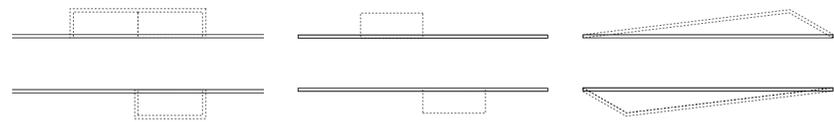


PLAN- SHAPE/WIDTH

Iterations with some level of curvature

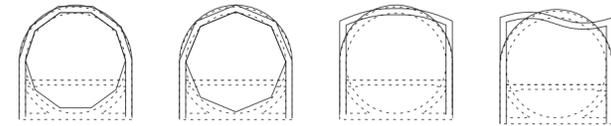


Iterations with some level of strictness

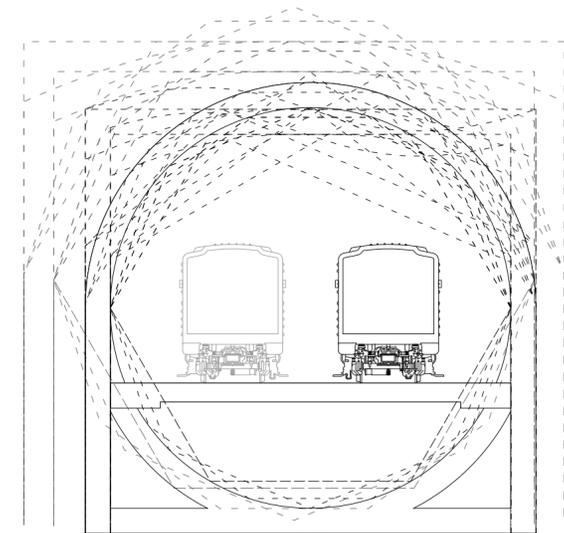
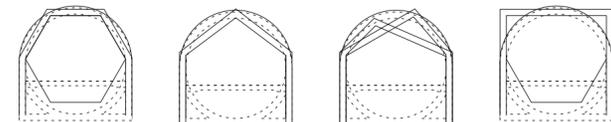


SECTIONS- SHAPE/HEIGHT/SIZE

Iterations with some level of curvature



Iterations with some level of strictness



VELOCITY

Using the same tunnel and the same amount of people changing the speed of the vehicle.

1.
The diagram shows normal stopping distance:

The picture shows a normal velocity where the human agents and the infrastructure agent already collide in their need and use of space.

2.
The diagram shows stopping distance when the velocity doubles:

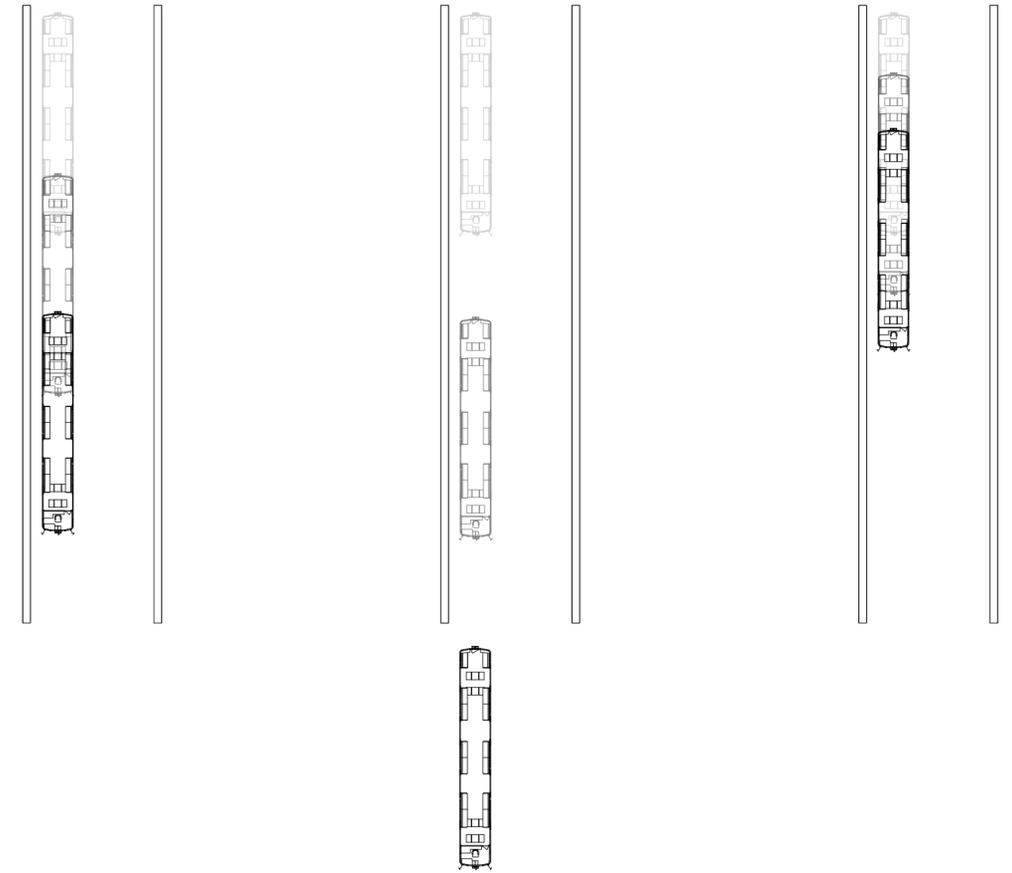
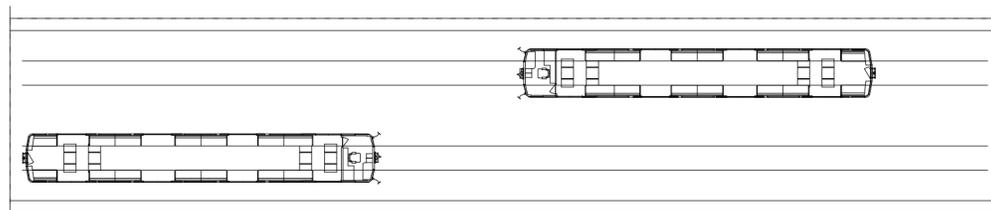
The second picture shows what happens if we were to speed up even more, which as suspected has only negative effects.

3.
The diagram shows stopping distance when the velocity split into halves:

The third picture shows what happen when the velocity is even lower, It's already a known fact that pedestrians and trains can co-exist on the street.

Conclusion:

By controlling the velocity of the vehicle the atmosphere and the sense of security can be changed.



NORMAL VELOCITY

VELOCITY x 2

VELOCITY x 1/ 2



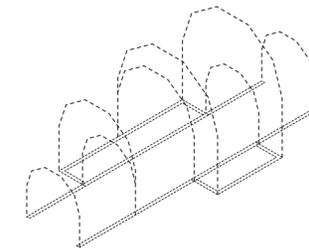
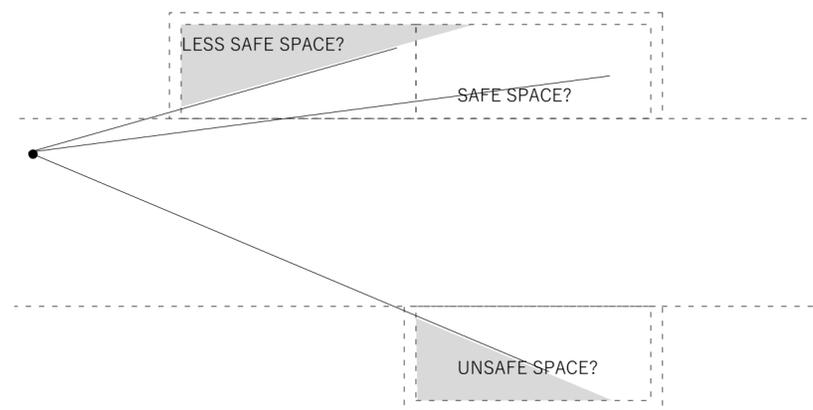
VISUAL OVERVIEW

Using the same parameters, the same plan and the same sections but exploring some iterations in lofting them together.

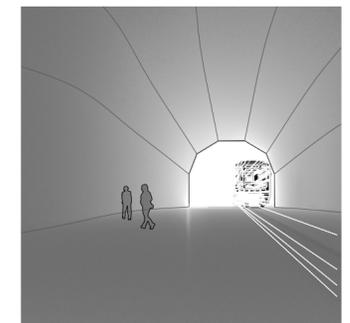
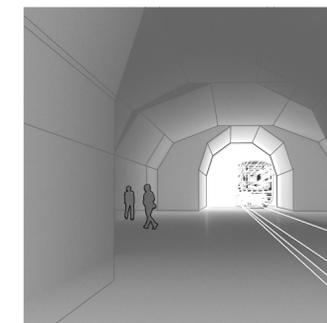
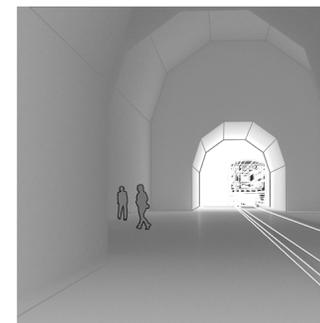
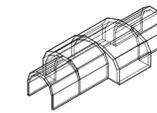
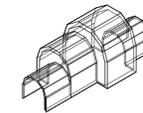
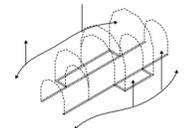
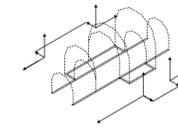
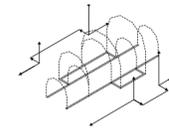
1. The first one is a strict shape with minimal curvature and a roof with a maximum height scaling together with the different scale on the sections.
2. The second one is the same group shape but letting the height be set at a maximum x.
3. The third one has a loose curvature that floats between the sections.

Conclusions:

By changing the visual overview the sense of security can be changed. Controlling the amount of hidden areas is therefore a tool for an architect to achieve more safety in different spaces.



1.



DENSITY

Using the same tunnel and changing the amount of human agents.

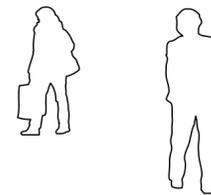
1. Less crowded areas naturally make more unsafe spaces.
2. More crowded areas naturally makes more safe spaces
3. More diversity makes

Conclusion:

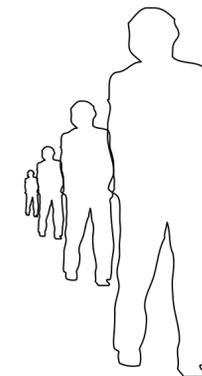
Controlling the density of humans and human activities is not simple and there is a need for other tools to attract people to want to stay in different spaces. It's important to attract a wide diversity of people staying in different areas to make it open for all people to use.



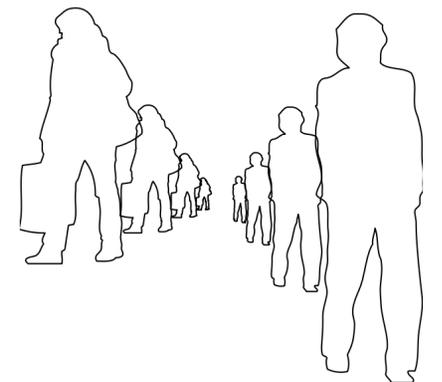
LESS CROWDED



MORE CROWDED



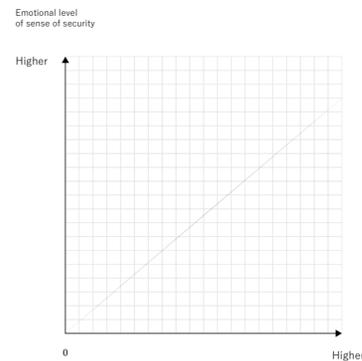
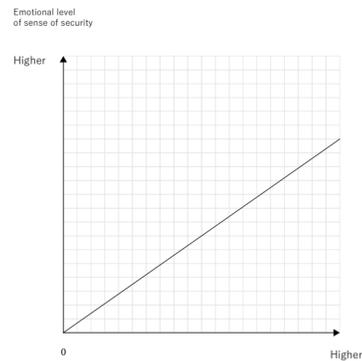
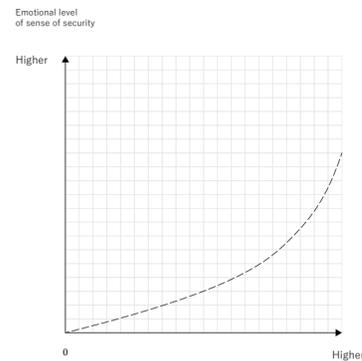
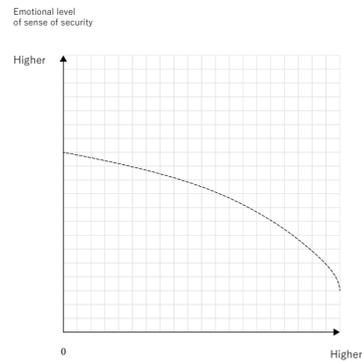
MORE DIVERSITY



HYBRID SPACE VARIATIONS

Creating a matrix with safety in one axis and velocity, visual overview, activities and human density in the other.

Human density is the parameter that is mostly dependent on the other parameters. Since there's no instant connection between the other except the resulting level of safety they are presented on their own.

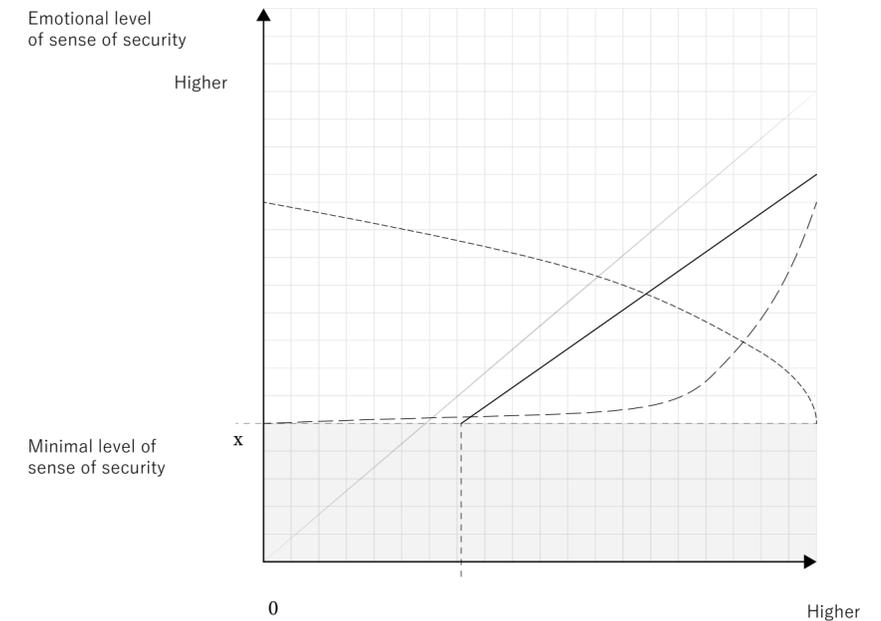


- Velocity of vehicles
- - - - Visual overview
- Activities
- Human density

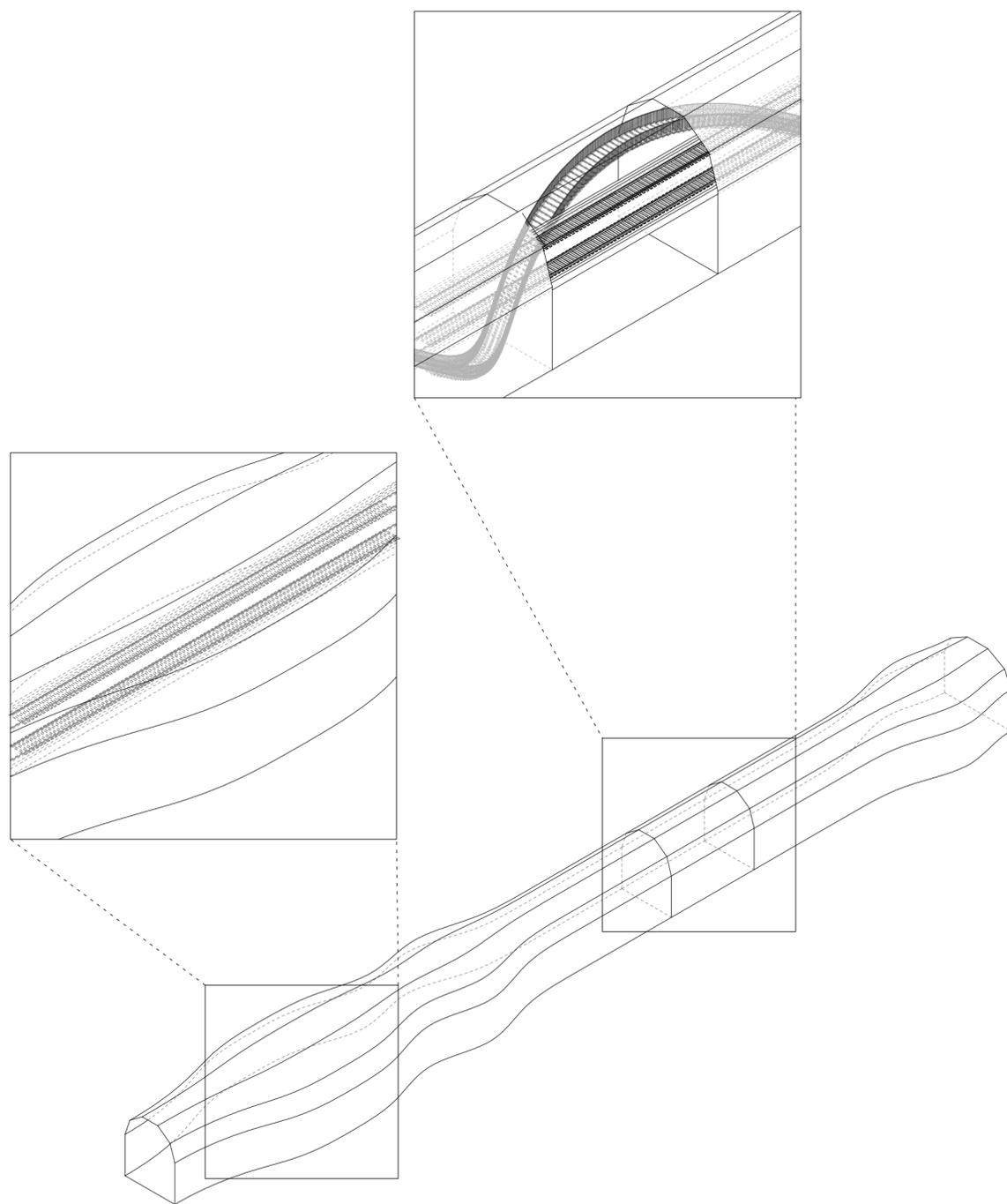
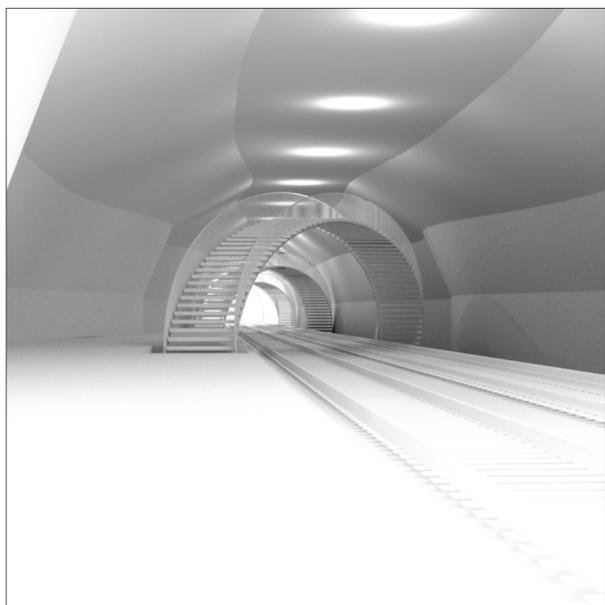
MINIMAL LEVEL OF SENSE OF SECURITY

The parameters are hard to control, but by setting a goal of a minimal level of security in the tunnels with the parameters that are able to change, some level of improvement can be made.

The optimization would be to set a maximum velocity for vehicles, a minimum of spaces with less visual overview and a minimum amount of possible human activities. The human density might then be increased as well since it's dependent on the other parameters.



- Velocity of vehicles
- - - - Visual overview
- Activities
- Human density

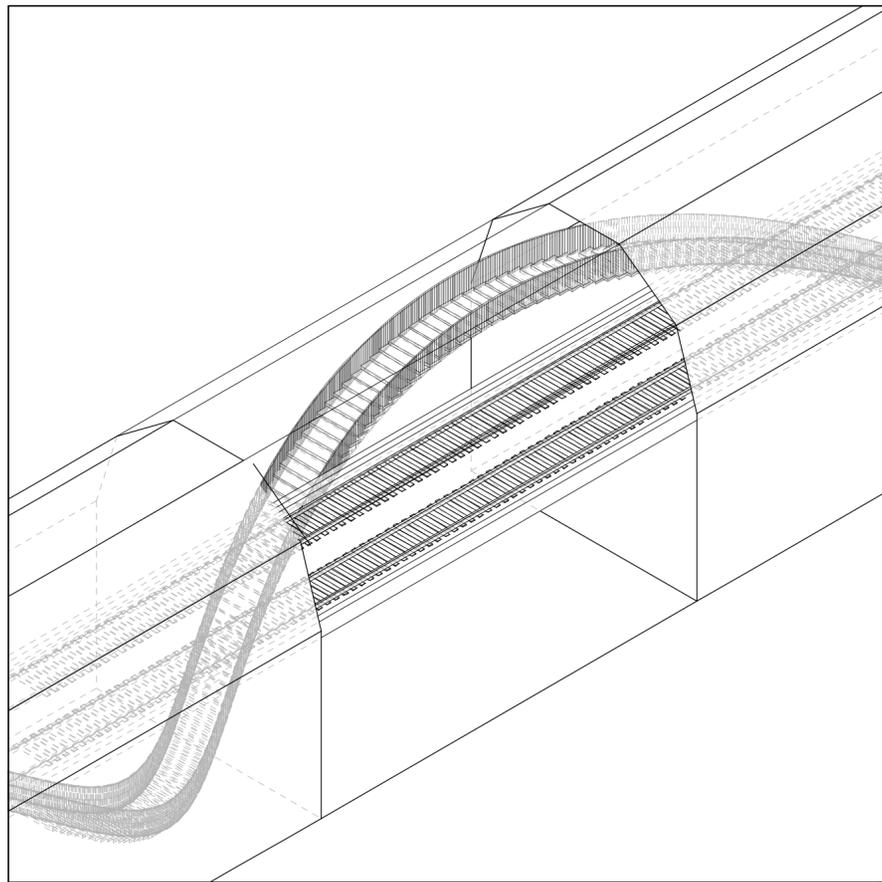


1. SPACES FOR WALKING

To create a better environment for being, the velocity of the vehicles could be decreased overall. Yet there are places where the speed could be higher and lower.

The are made for walking could have a higher velocity to match the pedestrians.

The spiral walkway should have no areas where there aren't great visual overviews in all directions. The material should also be relatively transparent for making the driver and the pedestrian able to have visual contact.



2. SPACES FOR STAYING

The spaces for staying will hold the activities. Different velocities on the vehicle could match different activities for either enhancing the experience or fulfilling the purpose of making the space feel and be more safe.

Examples could be:

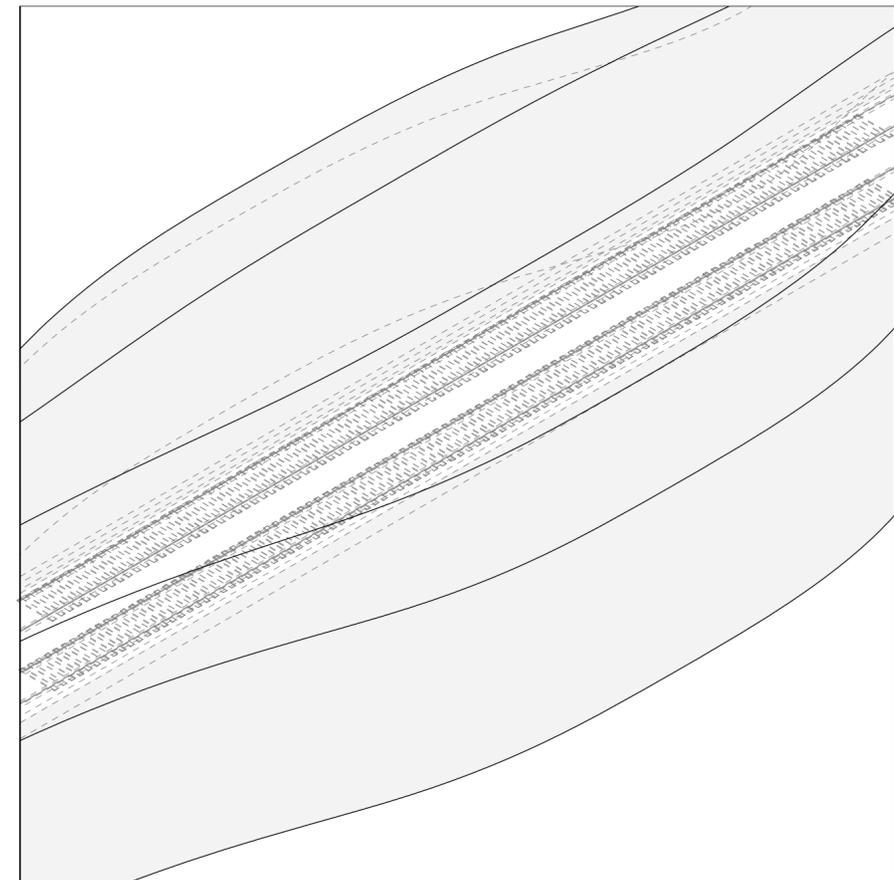
Gym - higher speed day time, lower speed nighttime (driver and passenger help create higher density and safer space)

Cinema- Lower speed to not disturb

Climbing- Higher speed depending of visitors

etc etc.

Places where visual overview is harder to achieve in relation to the activity that occurs. Can other tools be used? Perhaps mirrors or more light.



GYM/CINEMA/CLIMBING, /SKATEPARK/TEATER, DANCING, STUDYAREAS AND PLACE FOR MUSIC

1. 2 NETWORK GROWTH ANT COMMUNITY

The network growth would be exploring and merging the tunnels with each other. Using ant communities and their way of growing as an inspiration.

What happens when we let the tunnel system grow over ground level, or in water.

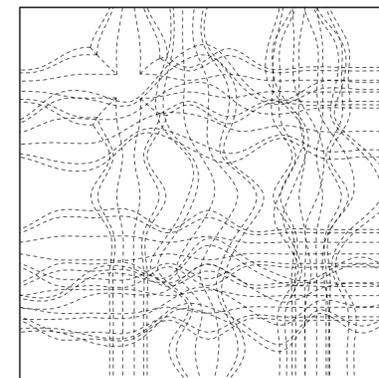
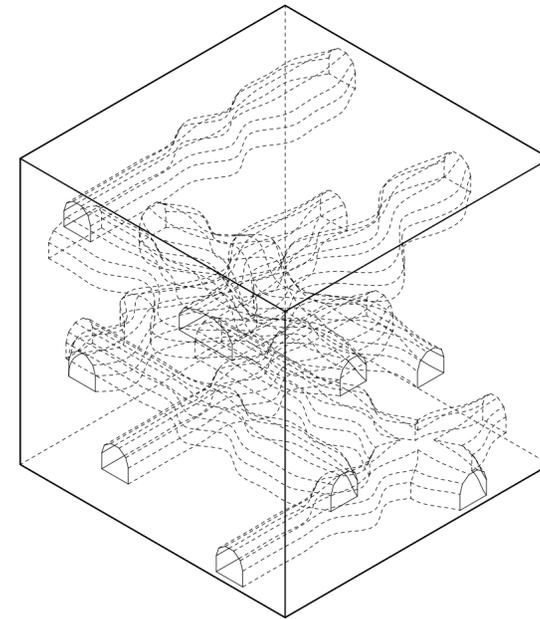
Can we let light in in different ways?

How to create a sense of "working together" as ants do. Perhaps use movement as energy resource by converting human movement to electricity.

Moving vertically, spirals in more natural forms.

Openings and pass throughs.

Using the exteriors for example art exhibition or light exhibition.



2.1 PROBLEMATIZED WATERFRONT



2.1.1 PROBLEMATIZATION



Ref 1 - Swedish America Line, 1915 onward
Bound for New York, the SS Stockholm first departed in 1915. As the emigration wave surged in 1923 the focus of the ocean liner was shifted to cruising - hence becoming a less popular event.



Ref 2 - Herring market of Gothenburg 1936
In the direct proximity to the sea, where the fish had been harvested.



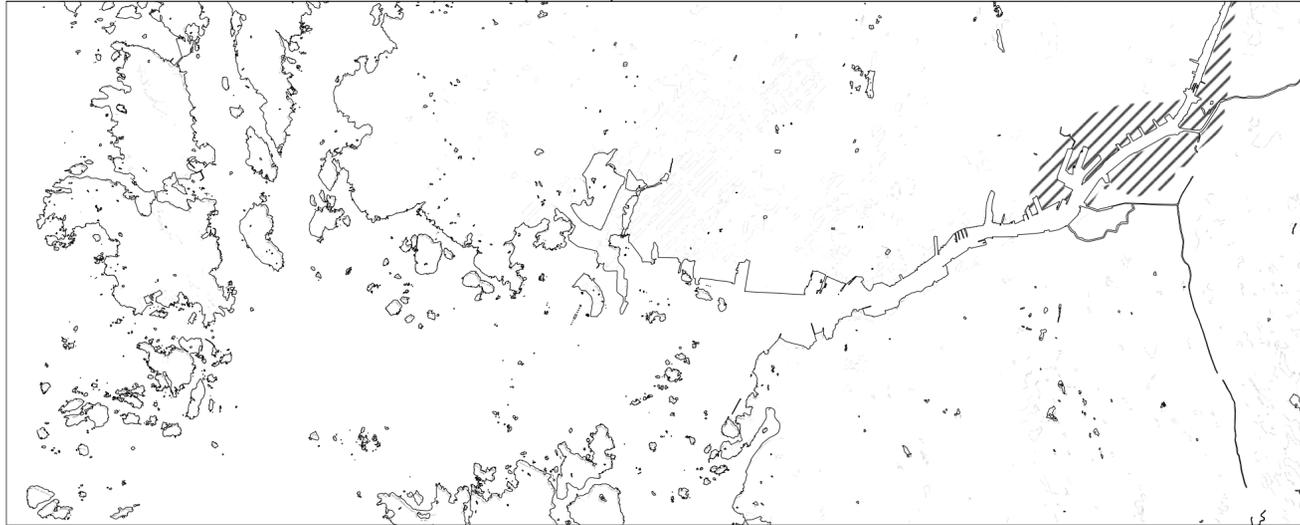
Ref 3 - Port of Gothenburg 2021
Access for the general public to the coastline is prohibited.

Problematization

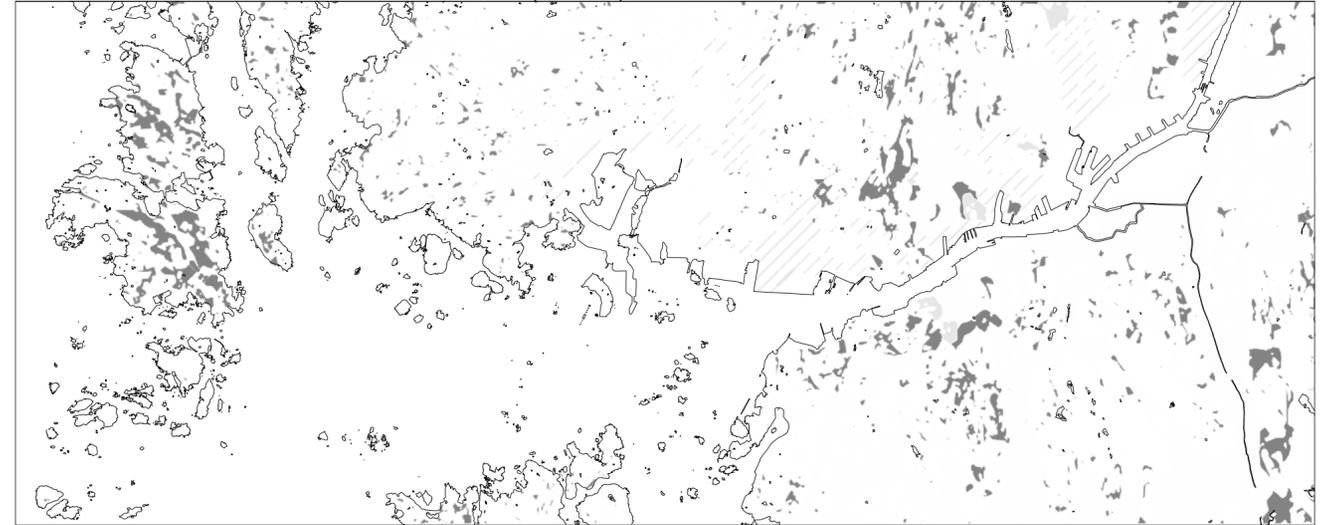
The coastline has lost its sense of event, but why? Due to a lack of connectivity caused by the vast industrial facilities where access to the general public is prohibited, such as the harbour, the coastline is no longer a public space. Therefore, the objective of this intervention is to reconcur the coastline by improving accessibility.

EARTH ELEMENT OF GOTHENBURG

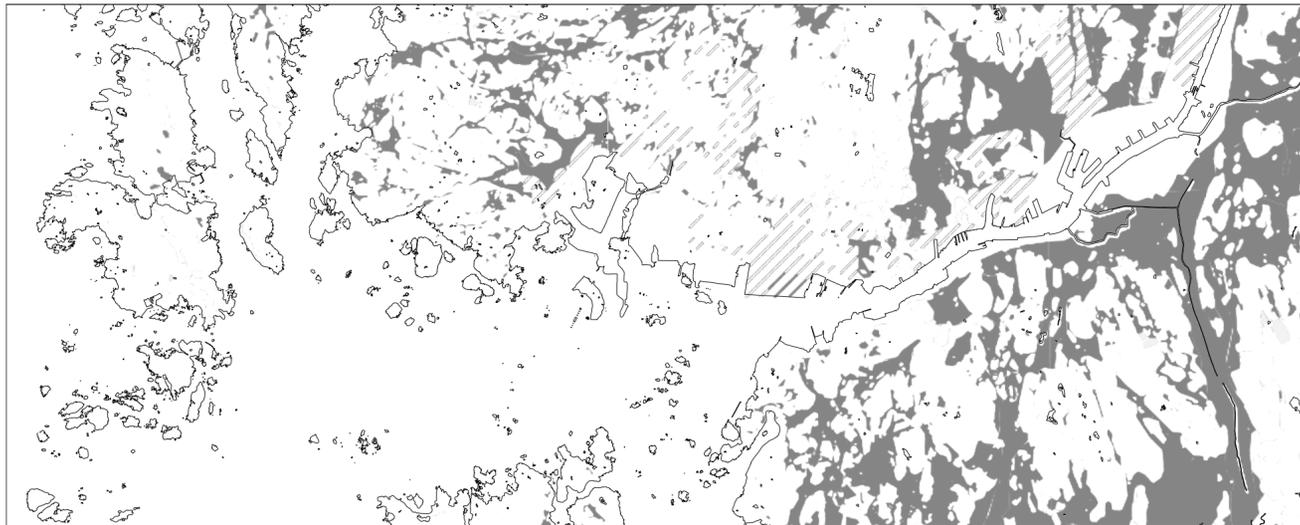
Phanerozoic diabase 1:100 000



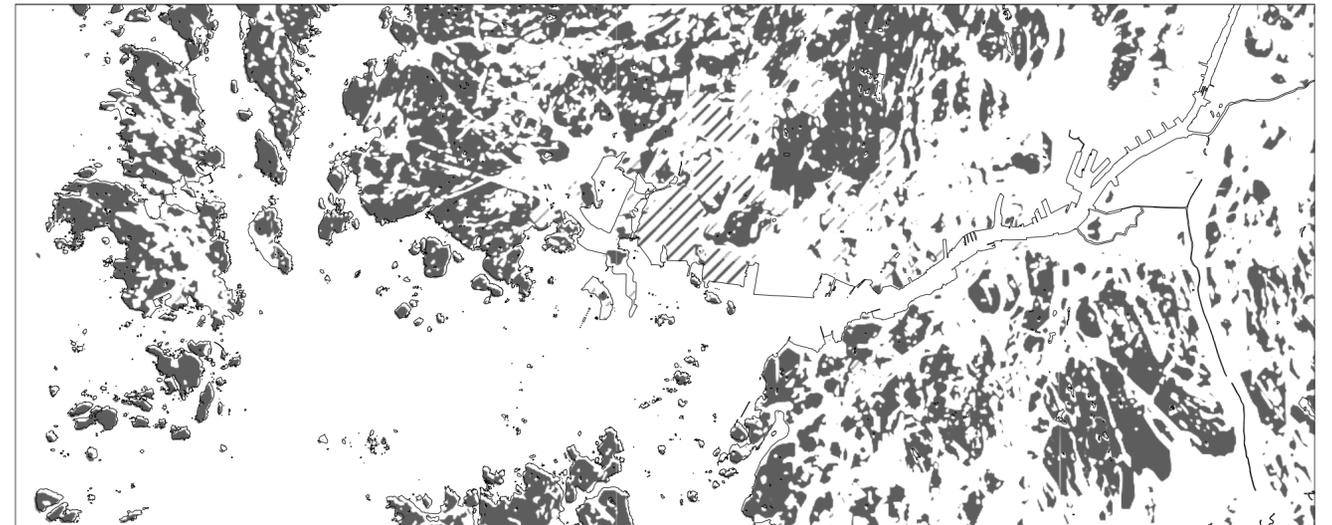
Ice river sediment and Postglacial sand-gravel 1:100 000



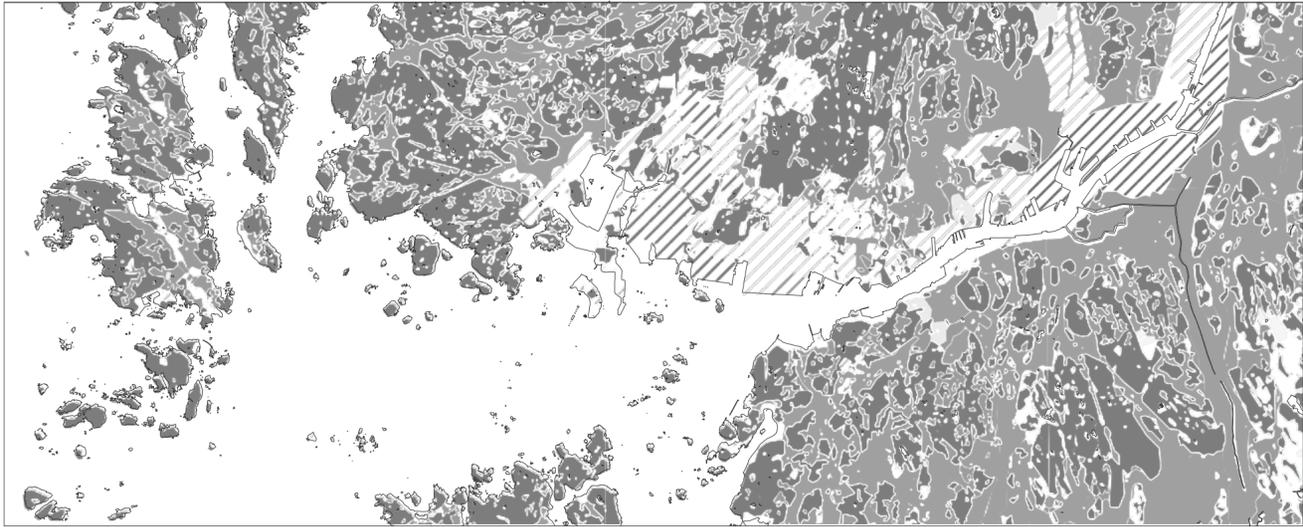
Clay -Silt 1:100 000



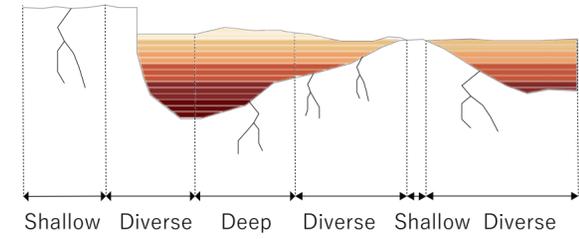
Bedrock 1:100 000



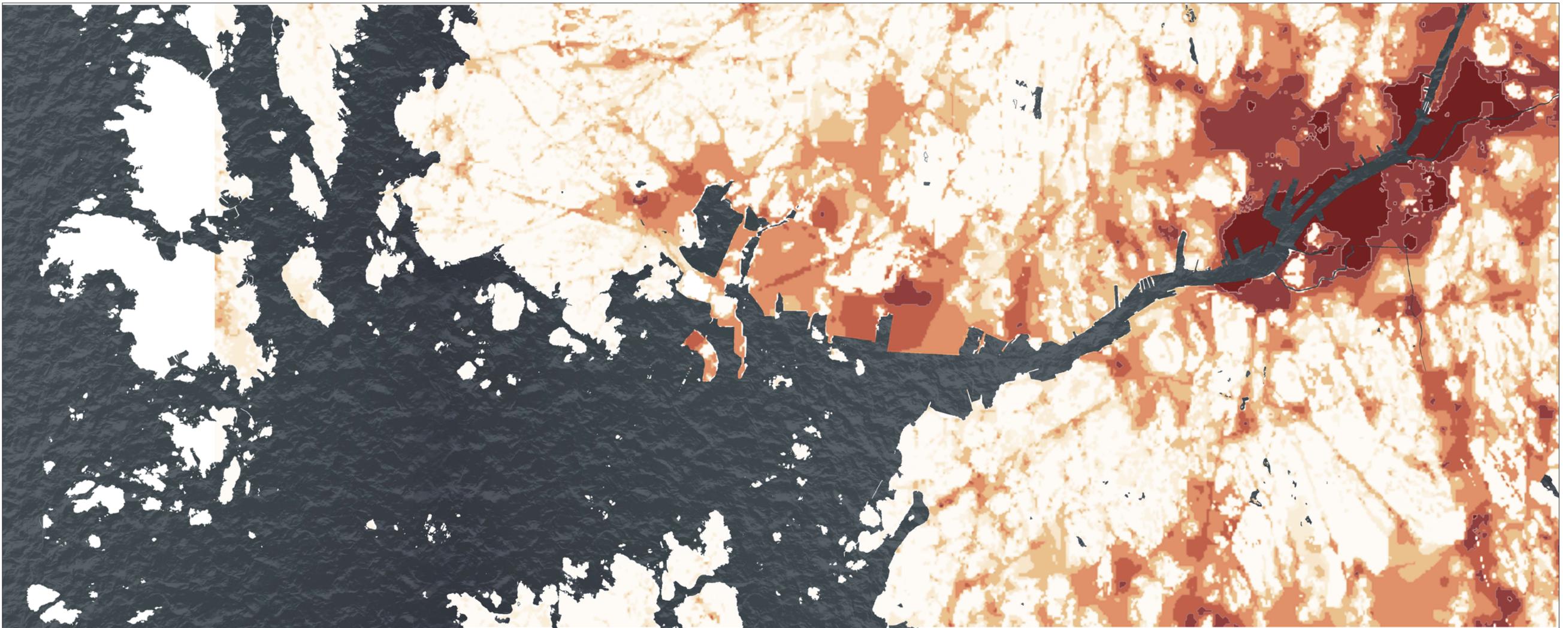
A tunnel through clay soil is usually more expensive than a rock tunnel.
The quality of the rock is important for the construction of tunnel.
If a concrete tunnels is built in soil, which largely consists of solutions and sediment-prone clay, an extensive foundation work and reinforcement measures is required.

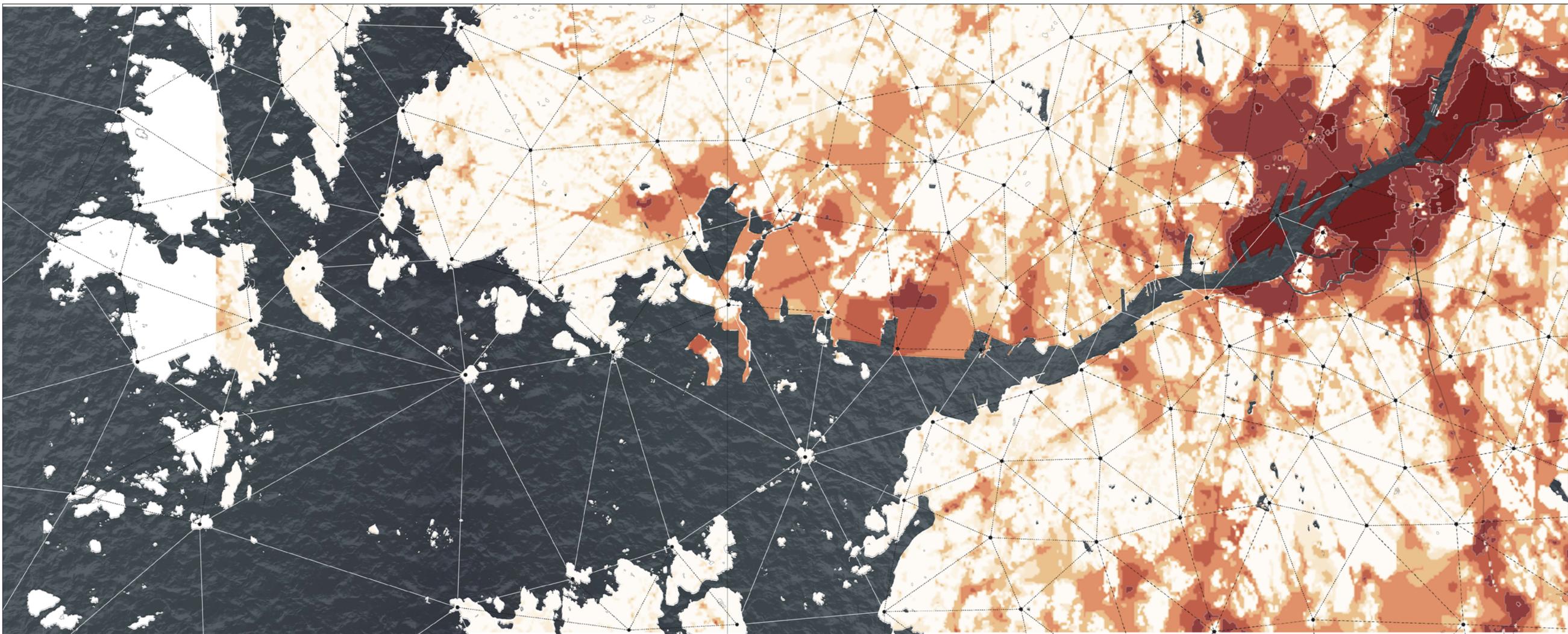
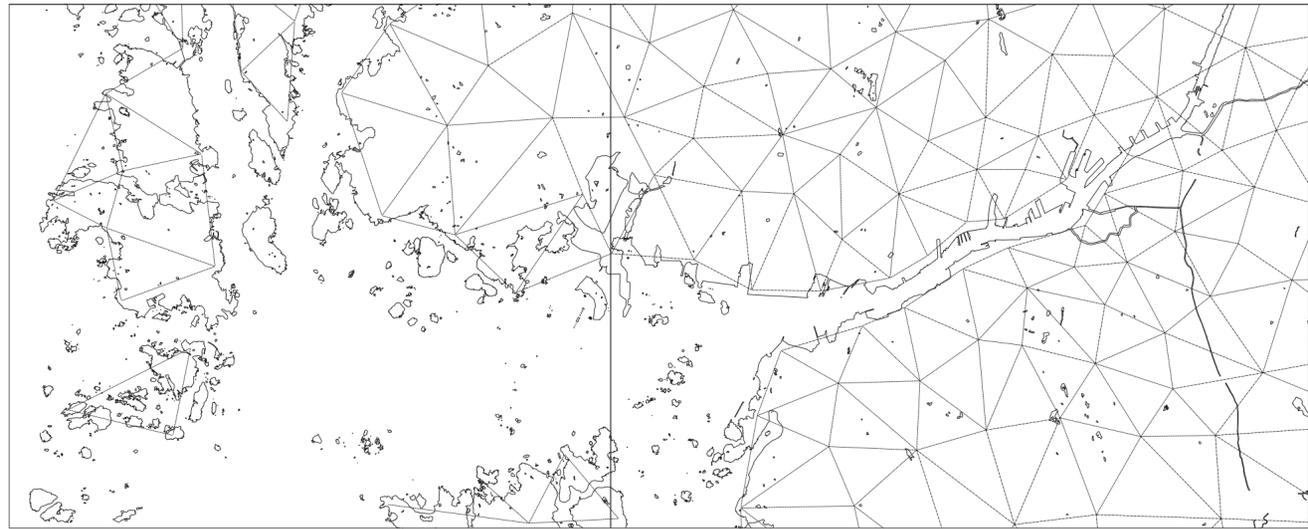
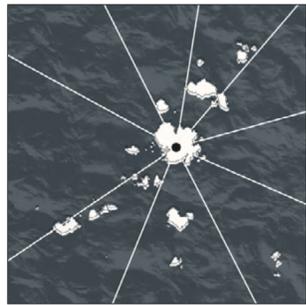
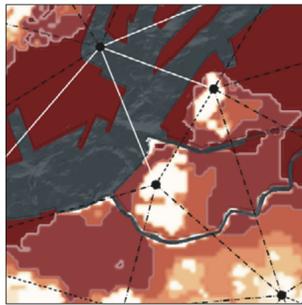
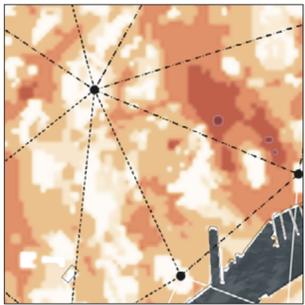


- 0-3
- 3-5 m
- 5-10 m
- 10-20 m
- 20-30 m
- 30-50 m
- >50 m

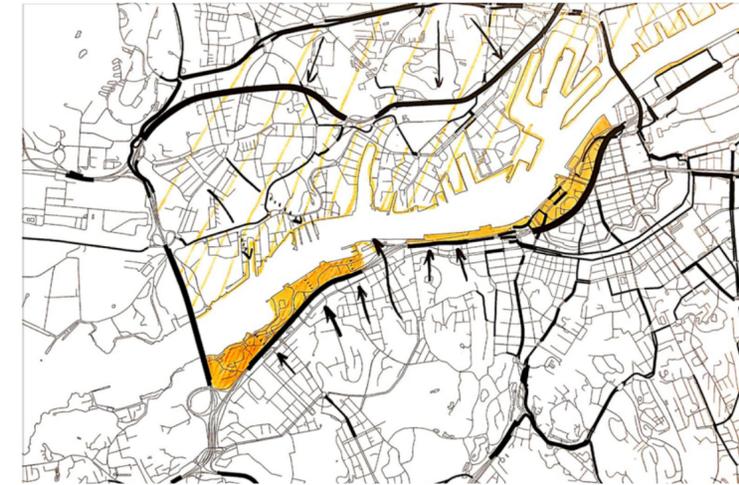


Principle sketch of how the variable soil depth occurs in the terrain.





2.2 WATERFRONT PROTOTYPE



Flows and discontinuities

From the first zoomout made and after studying different potential areas in the coastline, we have decided to be located in the surroundings of the Gota alv river, due to its high accessibility issue.

General problematization: Inherited pollution: after analyzing the historical background of Gothenburg, layers and layers of pollution have given a different perspective on what is the river and how to use it.

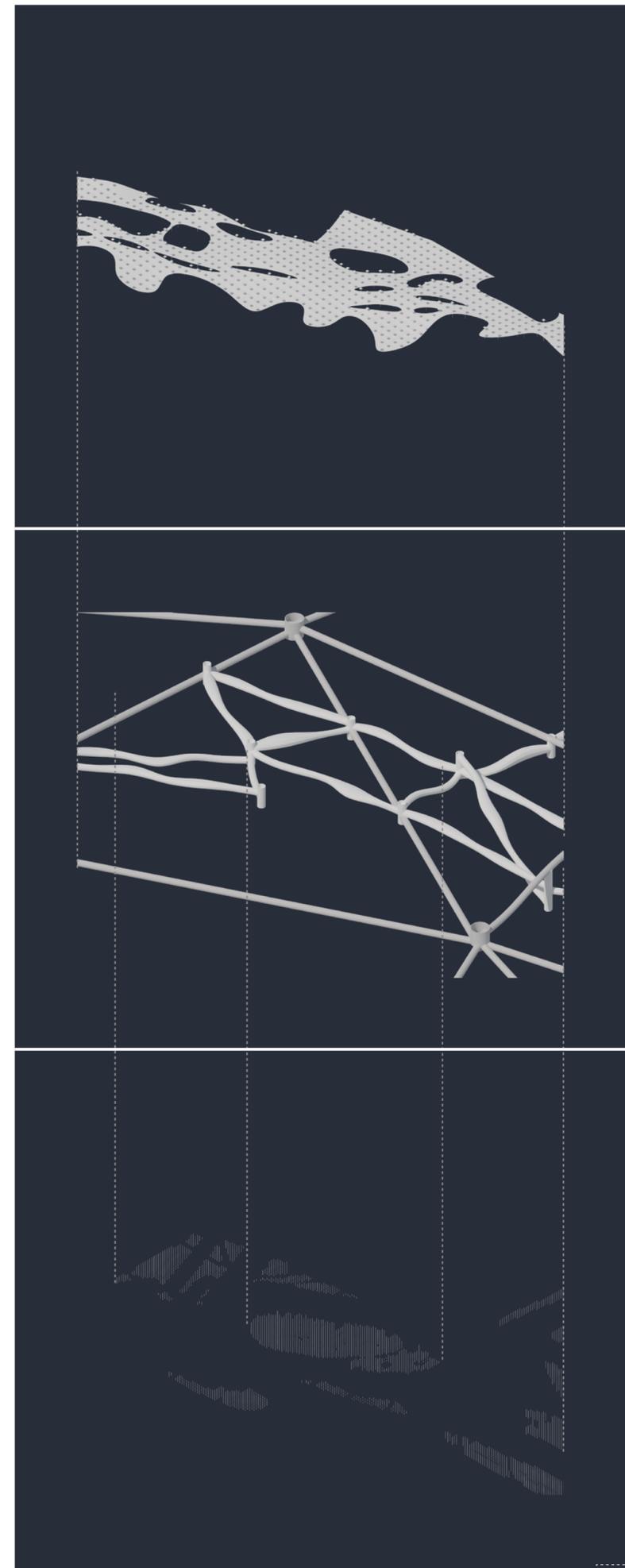
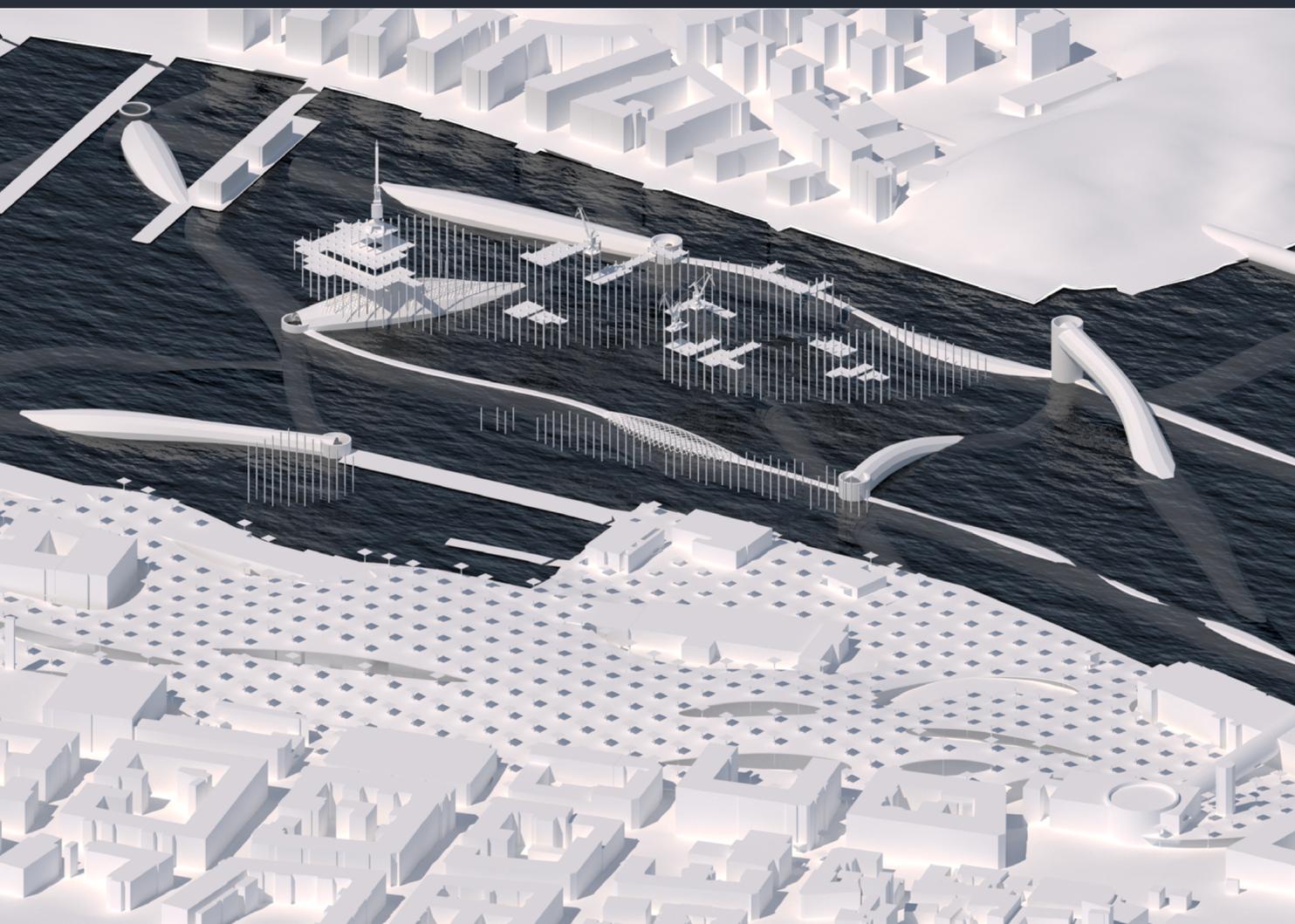
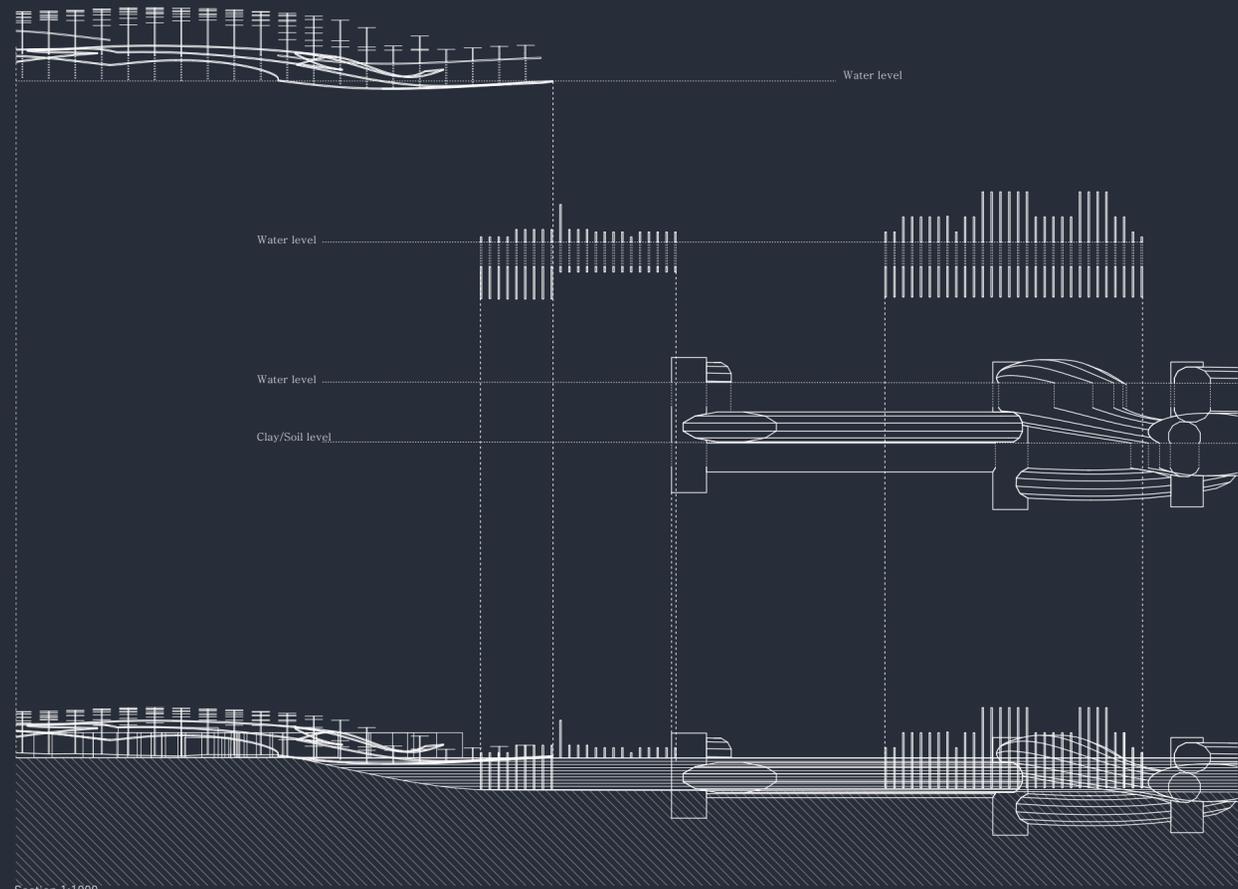
Concrete problematization: Accessibility to the coastline, to the river.

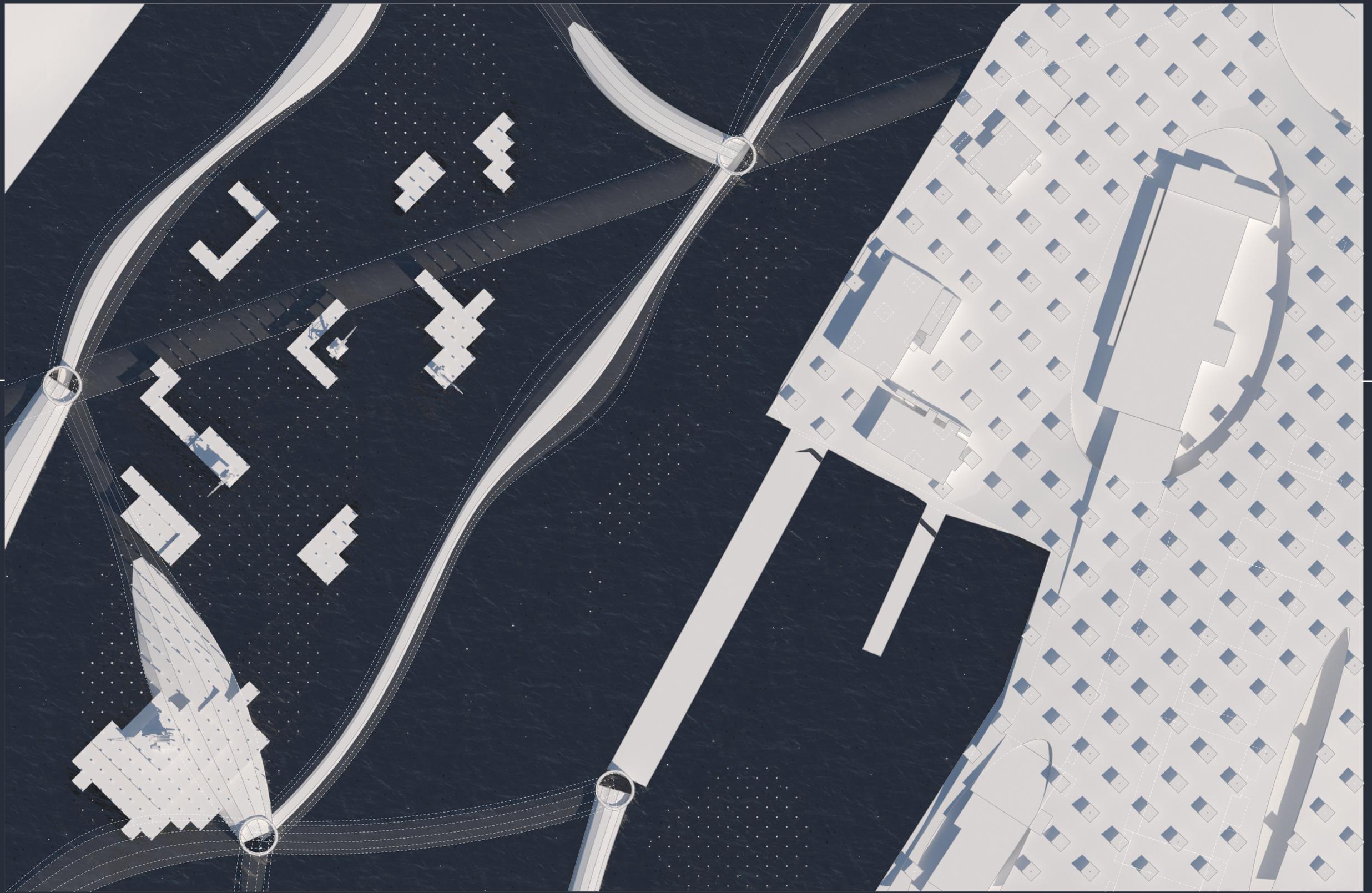


Fabric and discontinuities

We are therefore working with the idea of developing different scales of social interactions that change, evolve in function of the surrounding needs and morphologies. Creating a sequence of social experiences as well as atmospheres that merge and connect the surrounding discontinuities.

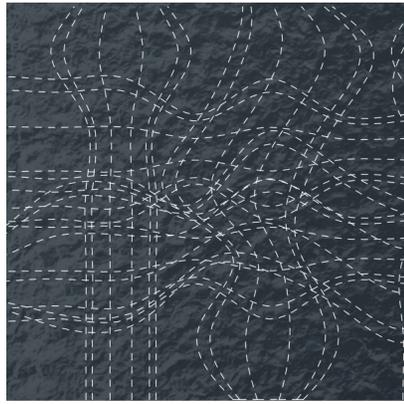
Different strategies: Through land, through water and through connections.



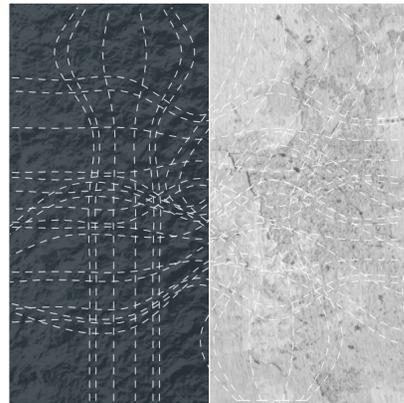


Plan 1:1000

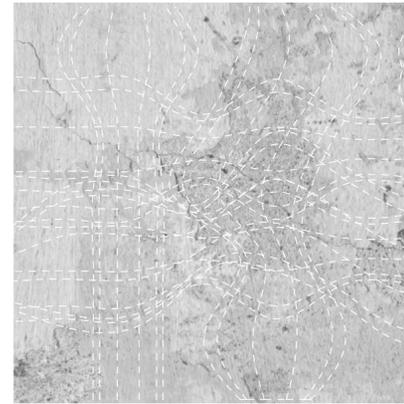
3.1 WATERSCAPE SUPERSTRUCTURE



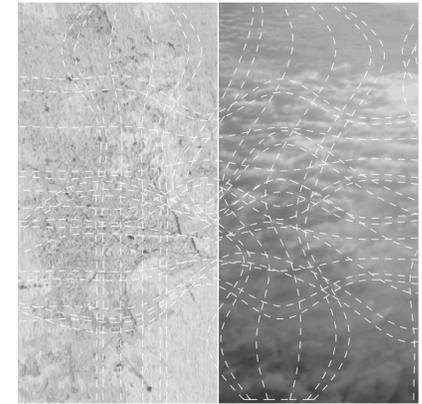
Tunnels in the sea
Location: Open water



Tunnels crossbreeding sea and land
Location: Harbour area

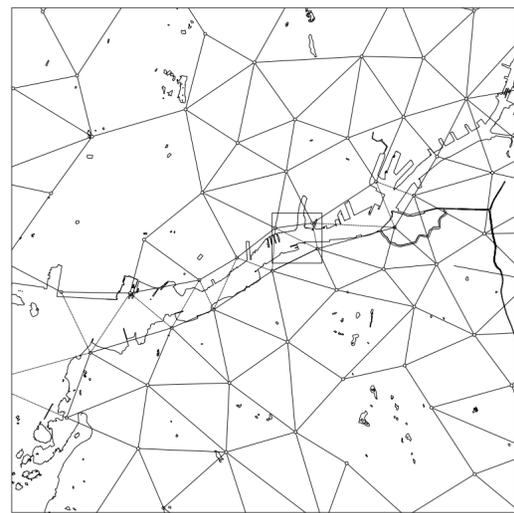


Tunnels on land
Location: Region of Gothenburg

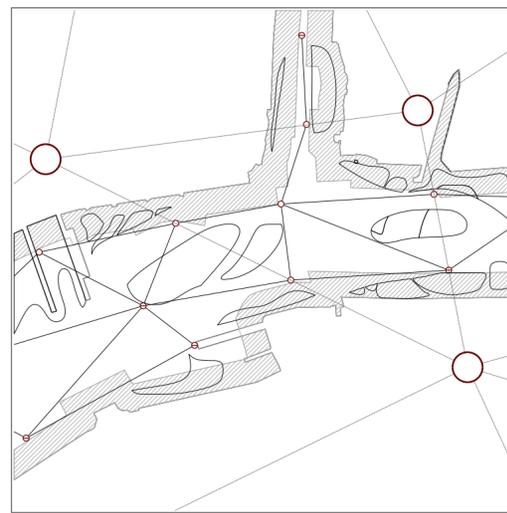


Tunnels crossbreeding land and sky
Location: Gothenburg inner city

	1.	2.
Network	Zoom out	Zoom in
Scale	1:100 000	1:10 000
Boundaries	Based on population and need of connections.	Based on distance from the shoreline and the rigs.
Type	Horizontal 2D-network	Horizontal and Vertical 3D-network
Use	Travel by tram, safe underground walkways	Travel...+ Activity Tunnels. Sport and gym activity



Large scale network



Small scale network

Activities	Requirements			
	Amount of space (m ²)	Lenght (m)	Height (m)	Location
Gym	M-L	-	6	Underground
Swimming	L	50	6-10	Underground
Skiing	L/(16 700m ²)	400/250	90/70	Under water
Climbing	S	-	15	Vertical/All
Skating	M	-	-	Underground
Parcour	S	-	-	All
Dancing	S	-	-	All
Iceskating	S	-	-	All
Racketgames	M	-	-	All
Sledding	S	-	-	All
Snowplayground	S	-	-	All
Gymnastics	M	-	-	All
"Long"-distance skiing	L	-	-	All

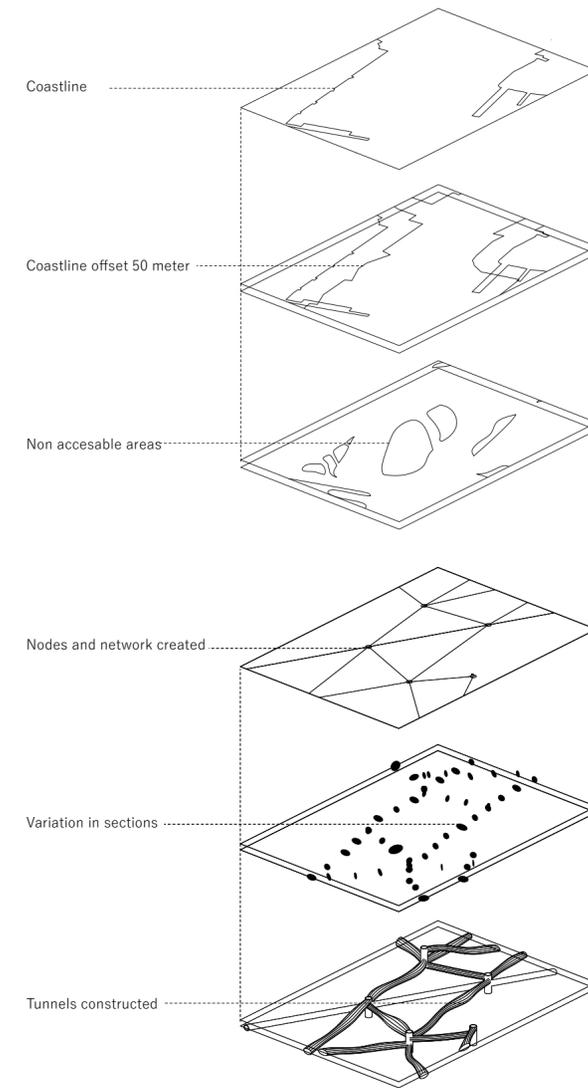
Different tunnels, different functions

Large network- Tramlines combined with city functions. Connected to the smaller network in the river.

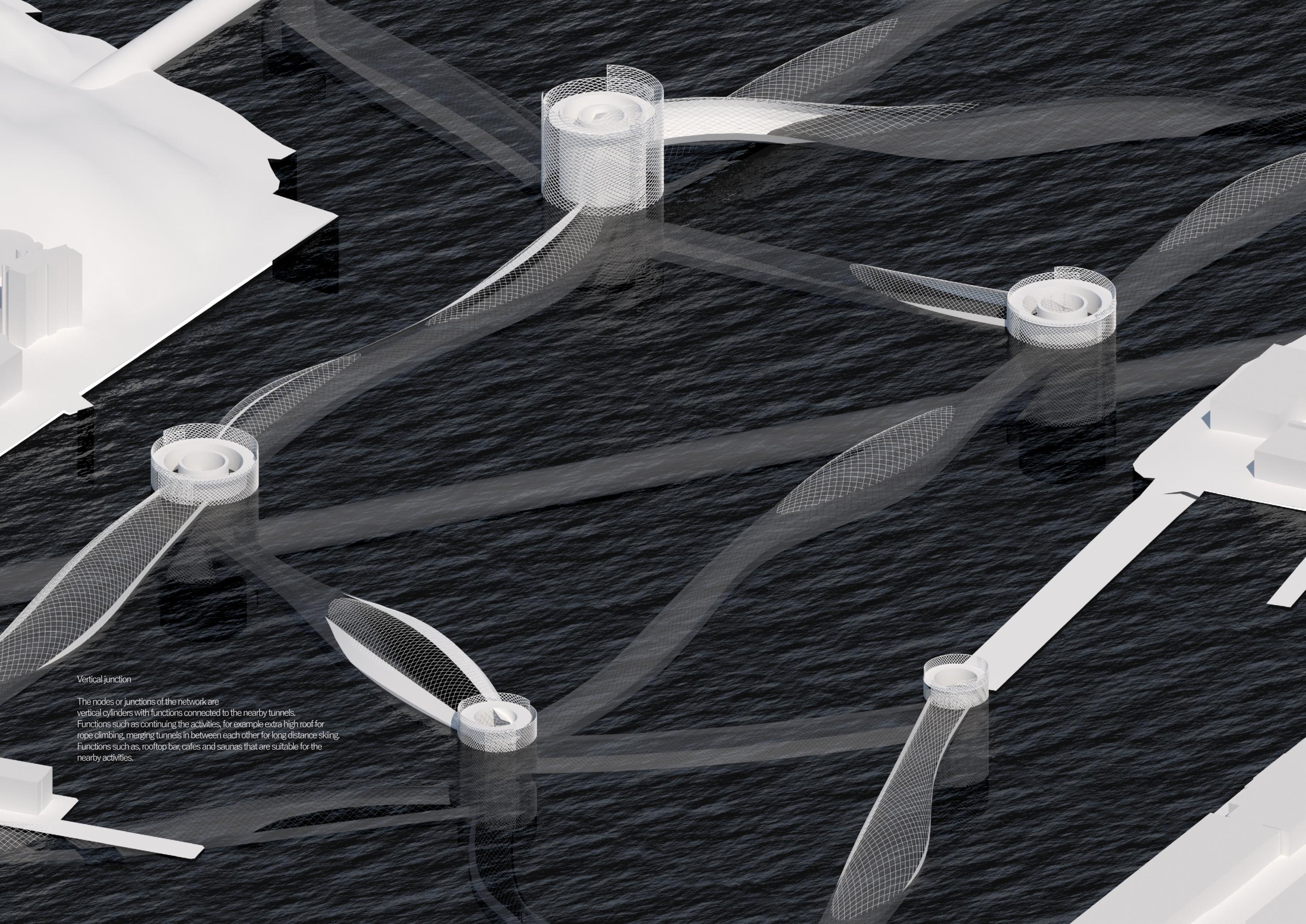
Small network- Tunnels with accessible walkways over the river with different functions in each tunnel.



3.1 WATERSCAPE PROJECT



Phase 3.2
Anna Högberg

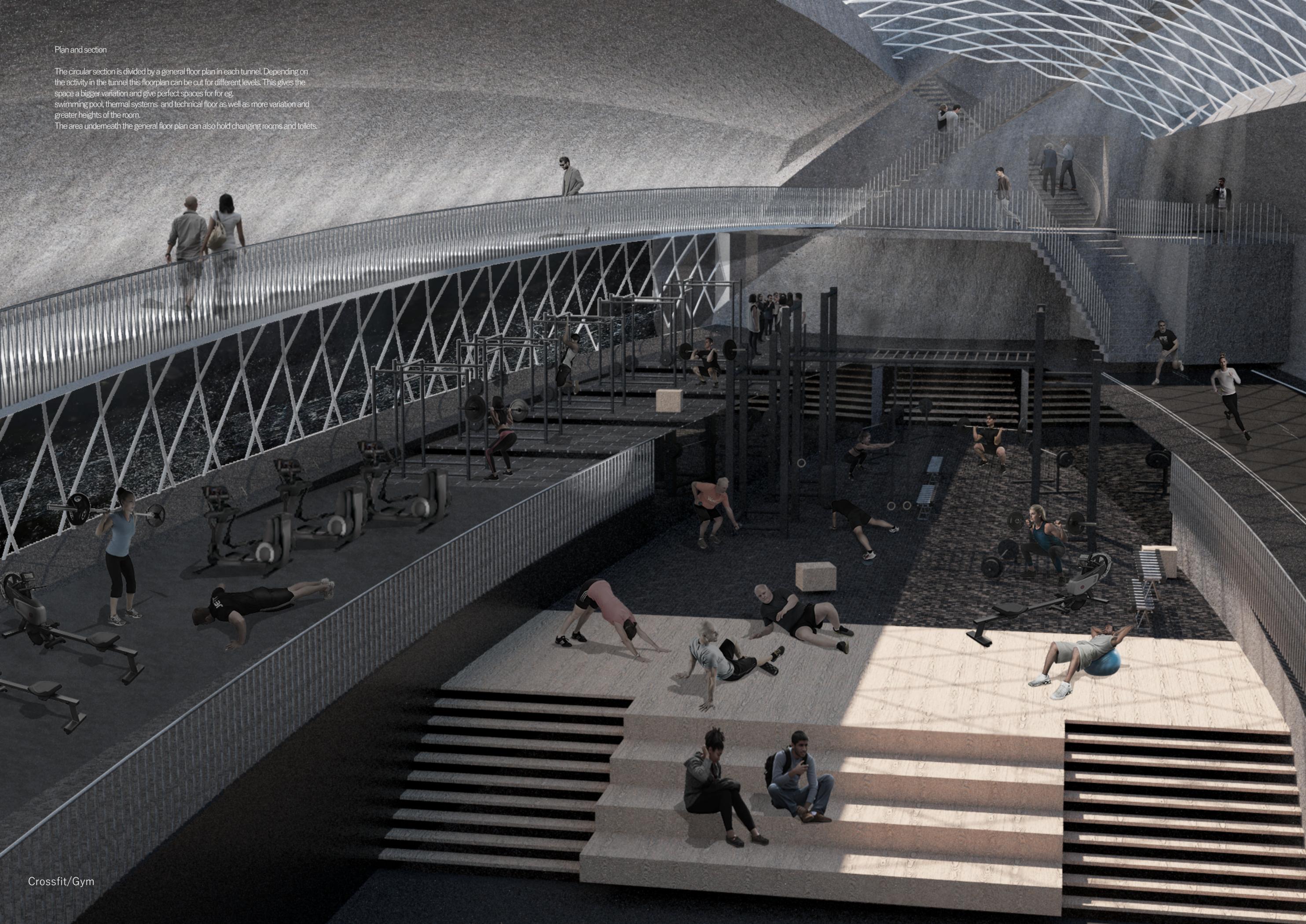


Vertical junction

The nodes or junctions of the network are vertical cylinders with functions connected to the nearby tunnels. Functions such as continuing the activities, for example extra high roof for rope climbing, merging tunnels in between each other for long distance skiing. Functions such as, rooftop bar, cafes and saunas that are suitable for the nearby activities.

Plan and section

The circular section is divided by a general floor plan in each tunnel. Depending on the activity in the tunnel this floorplan can be cut for different levels. This gives the space a bigger variation and give perfect spaces for for eg. swimming pool, thermal systems and technical floor as well as more variation and greater heights of the room.
The area underneath the general floor plan can also hold changing rooms and toilets.



Riverstation Northwest
Cross-tunnel skiing

Riverstation Northeast
Crosstunnel skiing

