

# Student housing on water

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## Abstract

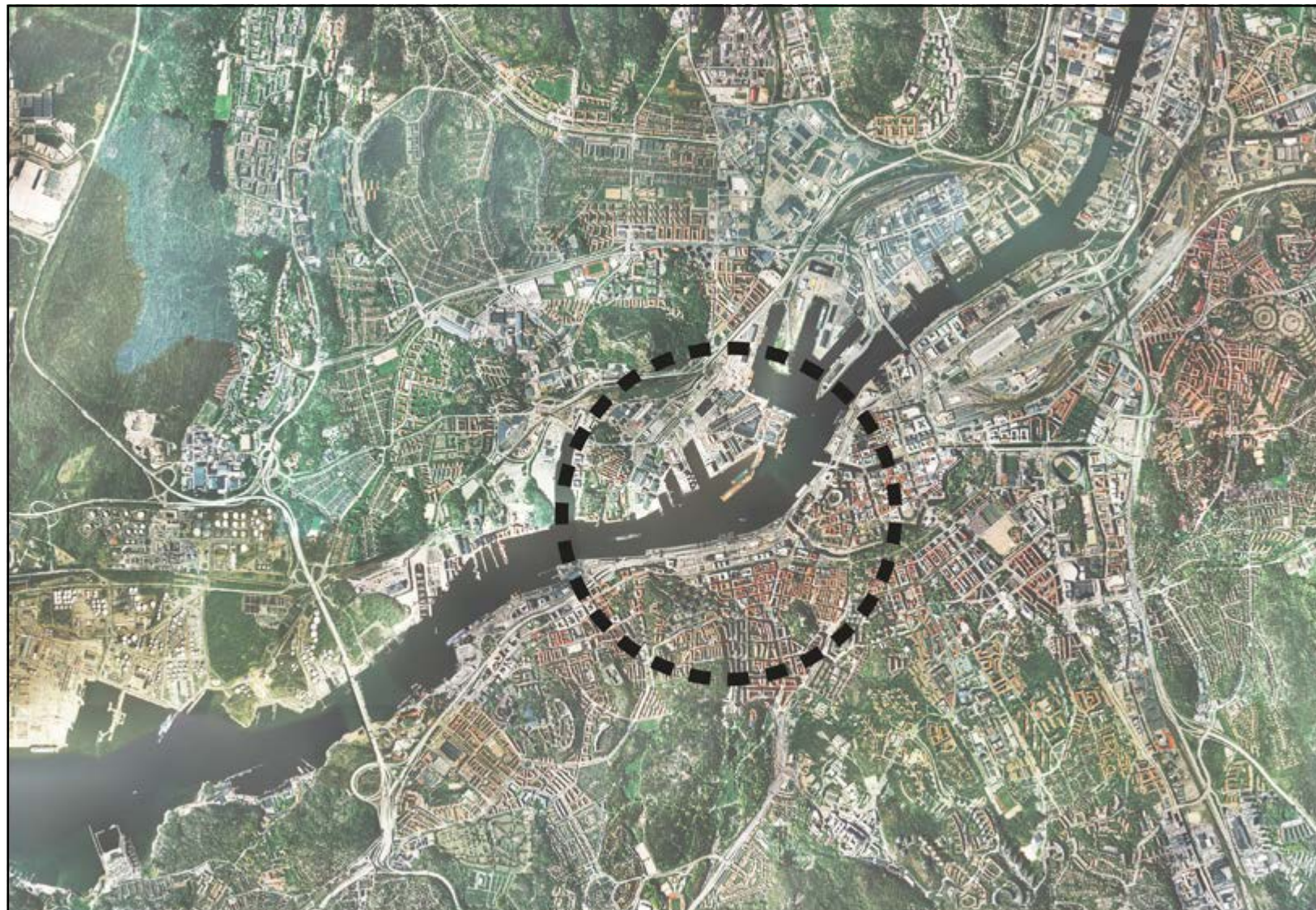
*A current issue in Gothenburg these days is increasing housing shortage, especially among young people and students. There is a shortage of small apartments in the inner city. Very few studios have been built and the ones that were built are almost too expensive to rent for a student. A densification of the city is needed but it is difficult finding plots for enough new buildings in the city center. One possibility would be to extend existing houses, another to take a step out onto the river.*

*When we begin to build on Södra Älvstranden new ideas need to be tested to achieve the city's vision namely to "offer all inhabitants a good housing to a reasonable cost in a safe and healthy environment". A diverse socioeconomic population will offer a wider range of activities, shops and services enriching the city life. Students in this central district will increase diversity and give new life to the quays.*

*According to UN's climate panel the sea water levels will rise with 70 cm till the year 2100. The water levels in Göta Älv can rise up to 1,8 meter when there is an incoming storm from the west combined with high water levels in the river. The expected raised water levels therefor open to flexible, floating constructions in the harbor and it also opens for a new way of utilizing the quays.*

*Floating houses will result in lower square meter cost since building on water are rather cheap and no groundwork is needed. Building permits for building on water "vatten rätter" are mostly given for five years, and may be renewed, which is suitable for this kind of mobile buildings and also for student flats.*





## Subject

In my thesis I have focused on exploring the possibility of building floating homes in the central parts of Gothenburg. The city is a port town but the people of Gothenburg have now a very limited access to the quays along the river. These areas around the river is now in the planning stages and a major challenge is to cope with future expected sea level rise causing flooding. The city struggling like many other large Swedish cities with housing shortages especially among young people and there are few areas in the city for new buildings. To solve the situation with high water levels in the river and lack of housing there is a need for new types of housing. Floating homes.

## Implementation

I've been through building models, both physically and in computer studied the possibilities for a socially sustainable waterfront promenade. I have designed floating student housing in a central location where they can contribute to the extension and densification of the city to the waterfront.

## Method

I have divided my work into two parts. One exploratory part and a design proposal. During the first part of the project I have been in contact with a number of people from Älvstranden, Stadsbyggnadskontoret and Real Estate Department to form an opinion about the housing situation around the quay in Gothenburg. I have met the architect responsible for the area Norra Masthugget for a review of their process to see how long they been in the planning of the area. I have by reading articles and opinion pieces got a broad picture of the possibility of floating homes in Gothenburg in the present situation. The last months there has been of debate in the media about building on water which has created interest among the public. Since my subject also deals with student housing and housing shortage among students, I have read about the new rules for small student housing and interviewed students.

## Main questions

Will floating houses become a common sight, one among other forms of accommodation even in Sweden?  
 Could the concept of floating houses become part of the solution when we face future problems with rising water level?  
 Is this an environmental sustainable alternative?



Normal water level today



+ 1.8 meter



+ 2.8 meter

## Raised water levels

According to UN's climate panel the sea water levels will rise with 70 cm till the year 2100. The water levels in Göta Älv can rise up to 1,8 meter when there is an incoming storm from the west combined with high water in the river. The expected raised water levels therefor open to flexible, floating constructions in the harbor and it also opens for a new way of utilizing the quays.

Above you can se pictures from different water levels in the harbor. The third image shows the future expected level when it's extreme weather.





Marina del Ray, Santa Monica, USA , foto Jessica Axelsson



The Sphinxes, architect Neutelings Riedijk, Huizen, foto [www.forum.citiesxl.com](http://www.forum.citiesxl.com)



Foto, India, [www.houseboats.itsgroups.in](http://www.houseboats.itsgroups.in)

## Living on water

Different forms of floating homes have existed all around the world at all times. In America, India and South East Asia housing on the water has a long tradition. Sometimes these housings have become floating districts. Holland is the country in Europe we most often associate with floating houses and there they are a matter of course. So far this way of living is unusual in spite of the fact that most of our big cities are situated by waters and have to deal with rising water levels and floods. In recent years more and more municipalities consider the possibility of building on water. There are a couple of good Swedish examples of floating houses worth mentioning: the houseboat harbor Pampas Marina in Stockholm, Sjögången with floating apartments in Karlstad and the floating hotel next to the restaurant Salt and Sill on Klädesholmen. A few converted barges functioning as homes, offices and conference rooms are found in Göteborg, but very few houseboats built only for housing.

## Living on water in Sweden

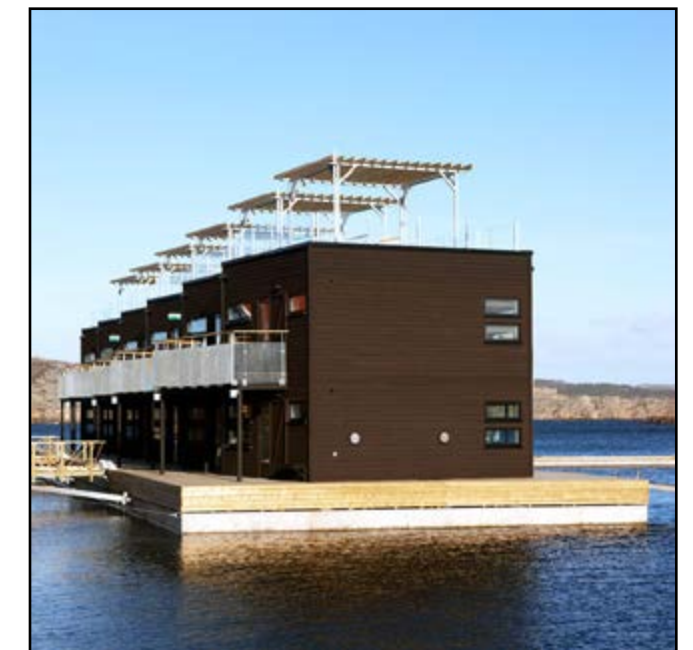
There are a couple of good Swedish examples of floating houses worth mentioning: One is the the houseboat harbor Pampas Marina in Stockholm, another is Sjögången with floating apartments in Karlstad and on the west coast floating hotel next to the restaurant Salt and Sill on Klädesholmen. In Gothenburg there is only a few houseboats built only for housing.



Pampas Marina, Stockholm, photo [www.pampas.se](http://www.pampas.se)

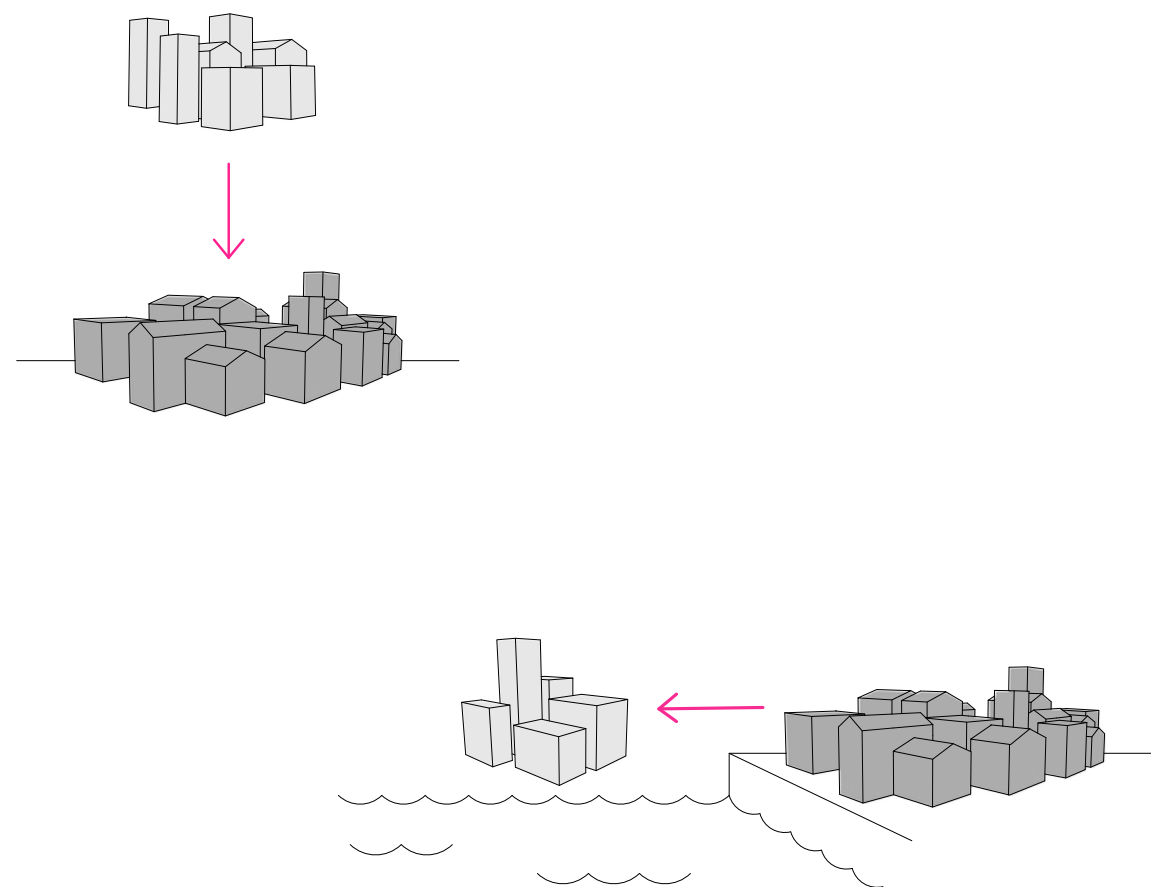


Sjögången, Karlstad, Sweden, photo [www.kbab.se](http://www.kbab.se)



Hotel Salt och Sill, Klädesholmen, photo from study visit





## Housing shortage in Gothenburg

A current issue in Gothenburg these days is increasing housing shortage with high rents as a result. Especially among young people and students is the situation in the inner city urgent. A densification of the city is needed but it is difficult finding plots for enough new buildings in the inner city.

One possibility would be to extend existing houses, another to take a step out onto the river. The land and foundation costs along the river are expensive and the city needs to invest in new types of housing.

Building on the water opens for a new way of utilizing the quays. Floating houses will result in lower square meter cost since building on water (vatten rätter) are cheaper and no groundwork is needed.

Floating homes can also be mobile and changeable. Building permits for water rights are mostly given for five years, and may be renewed, which is suitable for student flats.



## A mixed population is needed in Älvstaden

There is a shortage of small apartments for the young in the inner city. Very few studios have been built and the ones that were built are almost too expensive to rent for a student.

Since the year 2000, 22 092 homes have been produced in Gothenburg municipality, most of them on Eriksberg and Lindholmen on Norra Älvstranden. These apartments are spacious and expensive. People living in these new areas belong to those who have the highest median income in Gothenburg.

When we begin to build on Södra Älvstranden new ideas need to be tested to achieve the city's vision namely to "offer all inhabitants a good housing to a reasonable cost in a safe and healthy environment". There should be "different housing in different parts of the city to enable the citizens to choose within their neighborhood". New housing areas need to be planned carefully in order to become socially and economically sustainable.

A diverse socioeconomic population will offer a wider range of activities, shops and services enriching the city life. Students in this central district will increase diversity and give new life to the quays.





## Norra Masthuggets quay

For my project, I have chosen to mainly look at the harbor area below Järntorget, Norra Masthugget but other port areas in the center of Gothenburg can become possible sites for floating homes.



Photo [www.landgangen.se](http://www.landgangen.se)

## The area

The area Norra Masthugget is ranging from Järntorget to Stigbergsliden and between the Första långgatan and the river.

Throughout history Gothenburg has been a shipbuilding and industrial harbor with the water/river as its main asset. Long ago there was hustle and bustle in the harbor but now that industries and port activities have moved elsewhere or been shut down, the harbor area along Södra Älvstranden has become inaccessible for people in the city. Cargo space for the ferries and heavy traffic limit the access.

In recent years there has been discussed more frequently that the city need to be connected to the water again, and that city development along the quays must be promoted.

Last fall, it became clear that Stena Lines in a few years leaving Masthuggskajen paving the way for urban development towards the water.



Photo, [www.gp.se](http://www.gp.se)





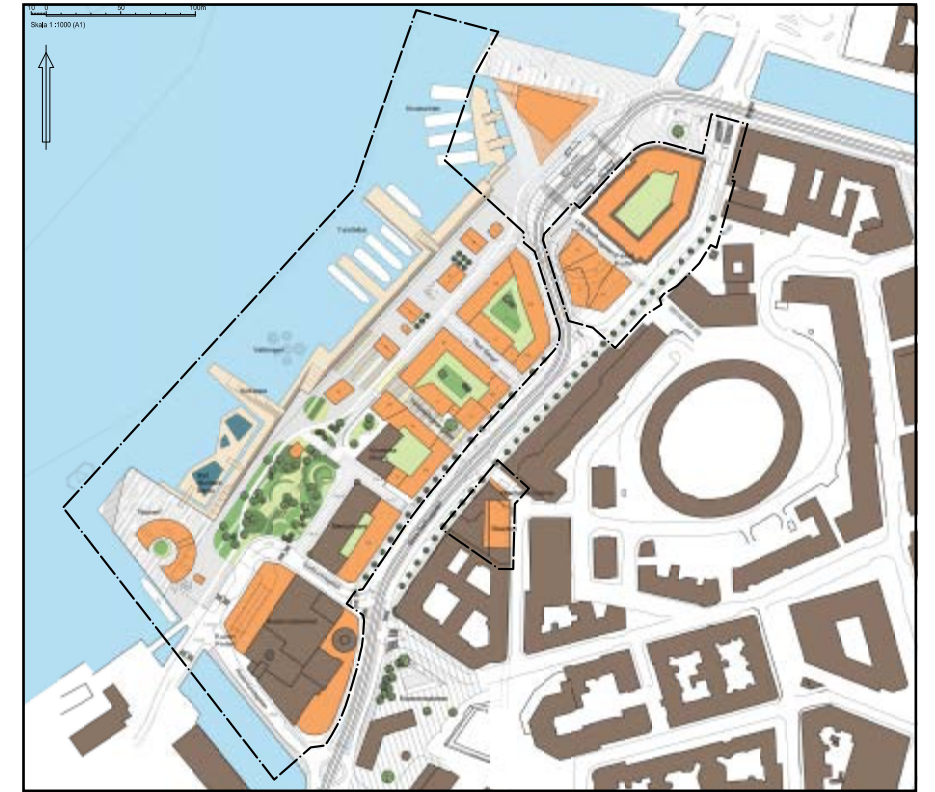
Norra Msthugget, drawing, Stadsbyggnadskontoret

## NORRA MASTHUGGET

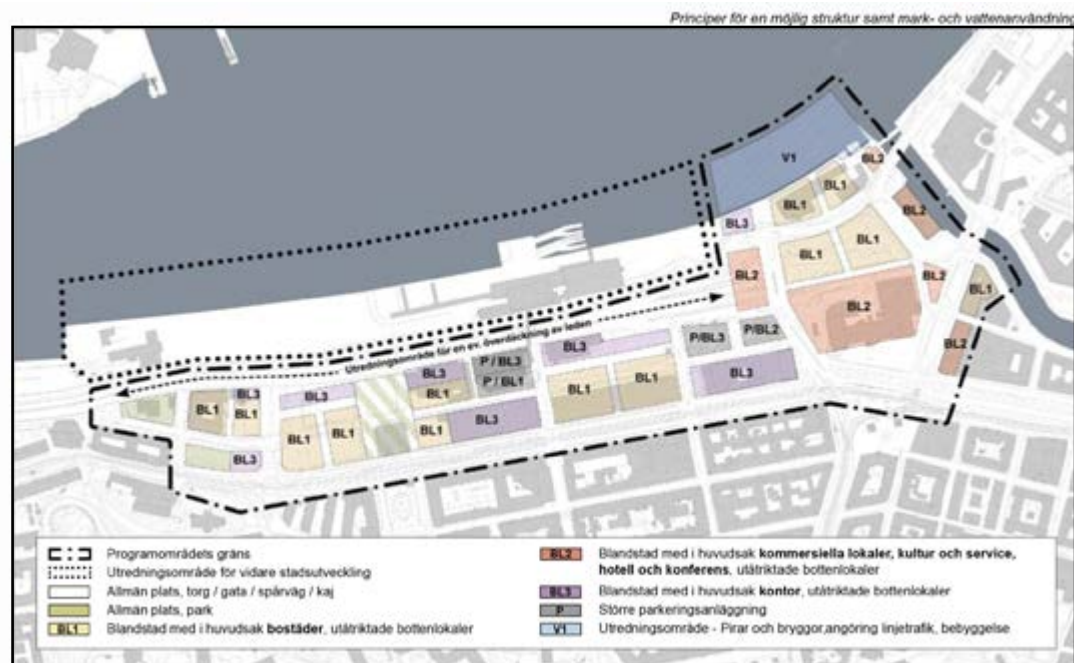
Norra Msthugget is still in a planning stage but the idea is that the boardwalk will continue from Skeppsbron and new blocks will be built with different activities in the ground floors. The quay will be broadened and also be raised. The city's vision on the web speaks about a diversity of housing, offices, commerce and events teeming with life. The rich cultural offer around Järntorget continues down towards the river and makes the district well attended both by inhabitants and visitors from afar. In the future this part of the city will be a nice mix of local life and city pulse linking the cozy Linné and Majorna to the inner city. This autumn a decision was made whereby Stena move from Msthuggs kajen, beginning in 2019. This fact pays the way for a city development towards the water from Långgatorna and Järntorget down to the river.

## SKEPPSBRON

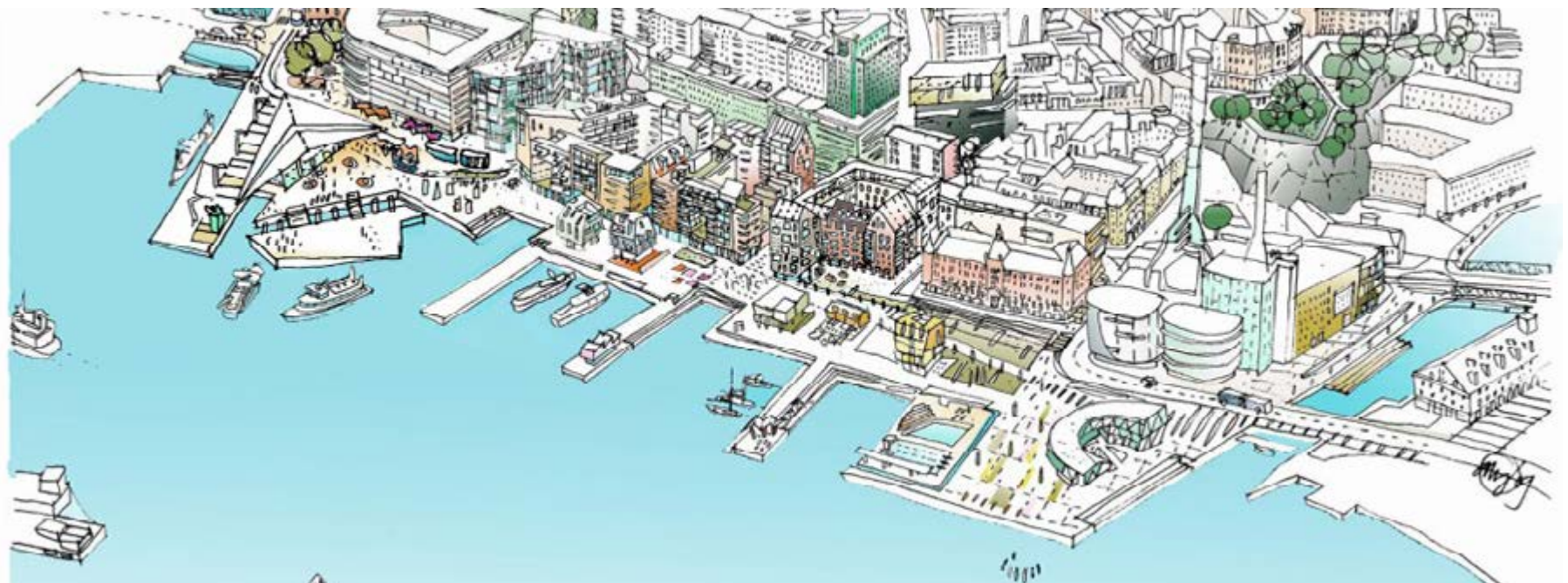
The area east of Norra Msthugget, Skeppsbron, is today primarily used as a car park but is to be plotted with housings and offices. Skeppsbron will become a lively quay- and boardwalk with parks, shops, cafes and a swimming-pool.



Skeppsbron, Illustration plan, Stadsbyggnadskontoret



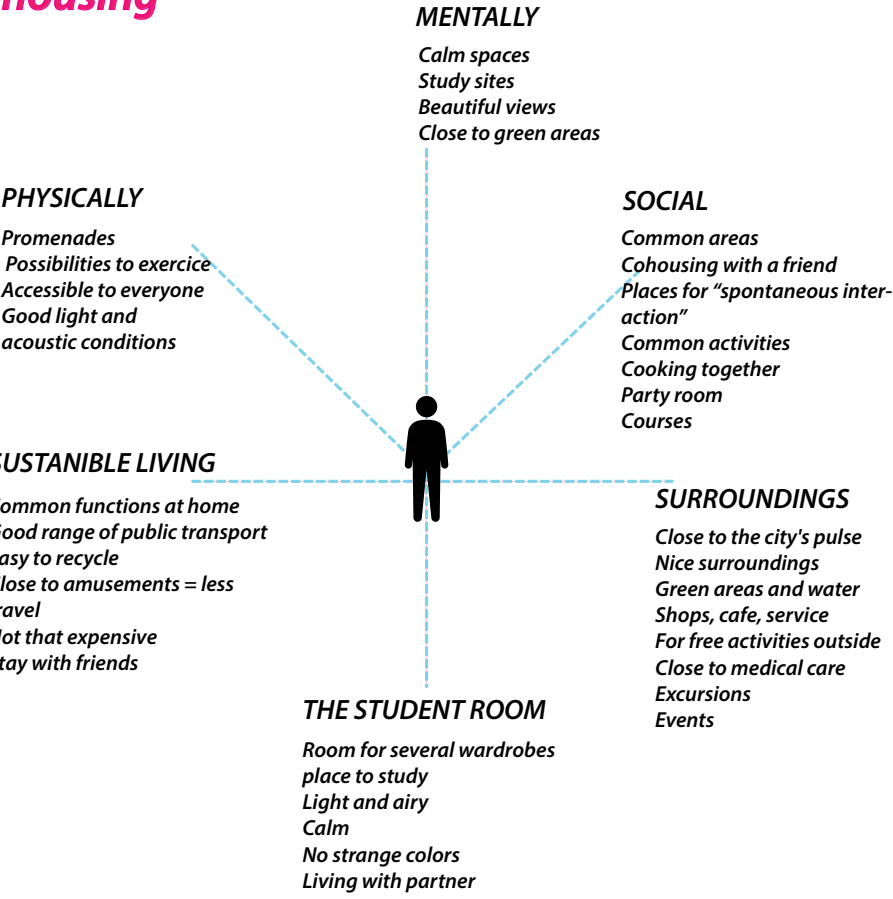
Norra Msthugget, drawing, Stadsbyggnadskontoret



Skeppsbron, drawing, Stadsbyggnadskontoret



A good student housing



Student living in a new way

I have interviewed people around me who are or have been students in various fields and asked them about what they think is important in student housing. The results of the interviews became part of the foundation for my further work with the planning of the student housing and it’s location in the city.

I saw an article in the newspaper, *Mitt i Östermalm*, that was about that many students want to stay with a friend for socializing and to bring down costs. It agreed well with my ideas and thoughts about student living. Shared apartments became one of my keynotes for a social and environmentally sustainable student living.

New-built student studios are very expensive due to the many square meters required for an apartment equipped with toilet, kitchenette, sofa and bed. From this summer and onwards it will be possible to combine different functions in student housings in order to minimize square meters. Today you don’t need to have space for both sofa and bed. The studios must still be fully accessible. The reduced housing area needs be replaced with common living areas in other parts of the building. This construction rewards cohousing and results in a square meter smart living. Many students prefer to live together to reduce cost of living according to one inquest. Collective homes will be a cheaper alternative since you share hall, kitchen and toilet/bathroom. This way of housing is common in most European countries among young people but rarely so in Sweden. One problem in Sweden seems to be a demand for new types of contracts concerning collective housing.



A collection of articles from spring 2014 from Göteborgs Posten and Mitt i Östermalm that all deals with questions, opportunities and problems concerning new buildings and housing shortages in Sweden.





## Why Norra Masthugget?

The inner city is at a walking distance from Norra Masthugget. As a student you have access to good public transport, culture events, nightlife, outdoor living and most of the colleges/universities in the city. There are also plenty of evening open stores and restaurants and there are parks in the neighborhood. A Student Housing in this central location will offer diversity and enriches the city life.

## Urban strategy

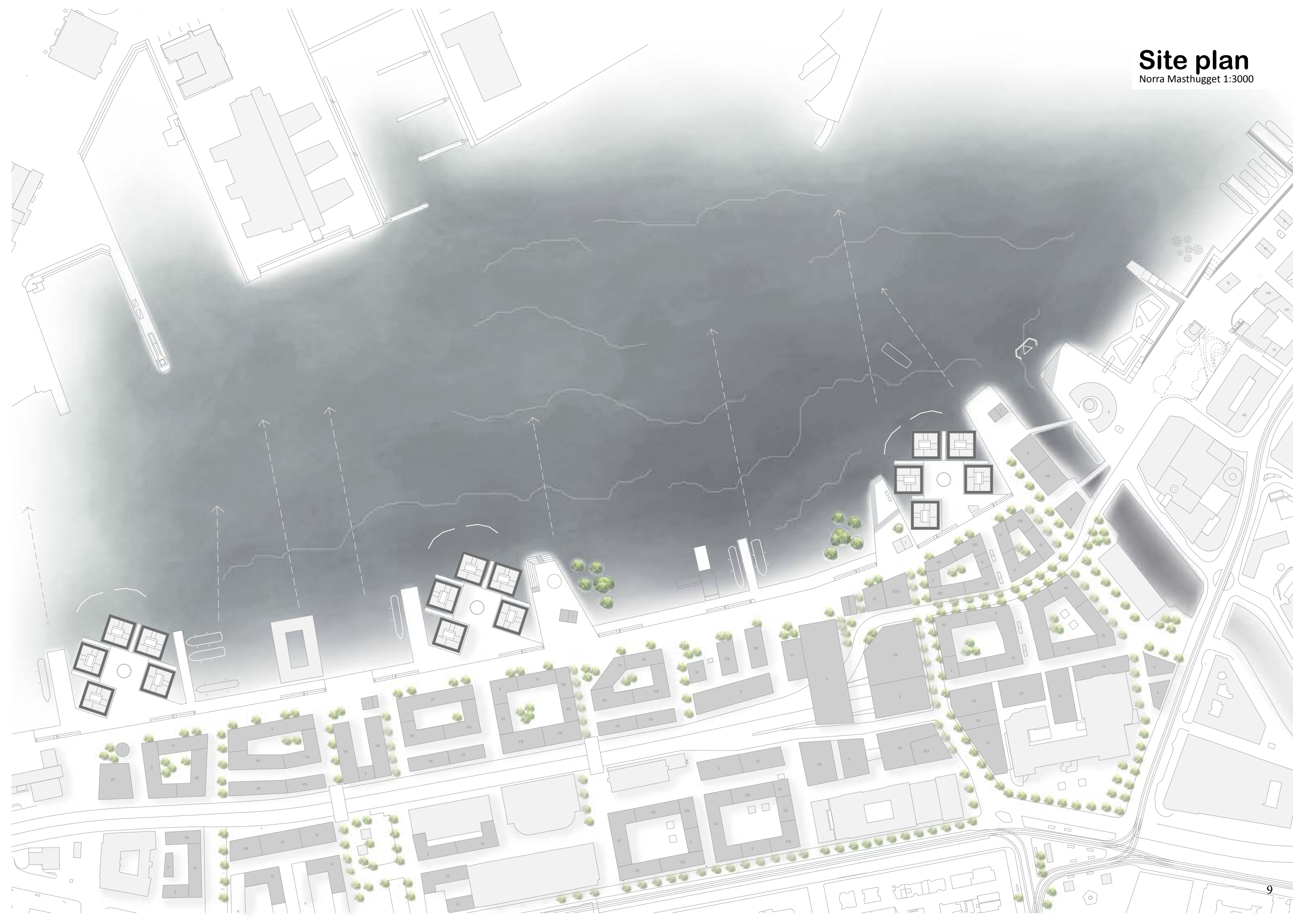
I want to create a sustainable, lively area around Norra Masthuggets quay by designing small, floating and partly movable housing for students in a central location in Gothenburg. The homogeneous population in the area will be mixed up with students with different backgrounds from different cities and countries.





# Site plan

Norra Masthugget 1:3000





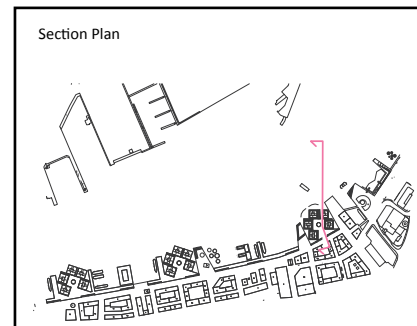
## Vision and Proposal for Norra Masthuggets Quay

With my proposal, I want to make Masthuggskajen enjoyable and accessible to all people of Gothenburg.

I have designed residential blocks along the whole quay with small squares, kiosks and pavilions and a broad waterfront promenade for various types of activities.

The student housing is placed in groups of five along the quays and makes the area vibrant and lively, both day and night, and provides security.

The new promenade will be used by the residents of the area but also become a destination for picnics and outdoor workouts. At the quay, there should be plenty of seating facilities near the water, playground, barbecue, outdoor gym, floating parks, cafes etc.



View from the top terrace



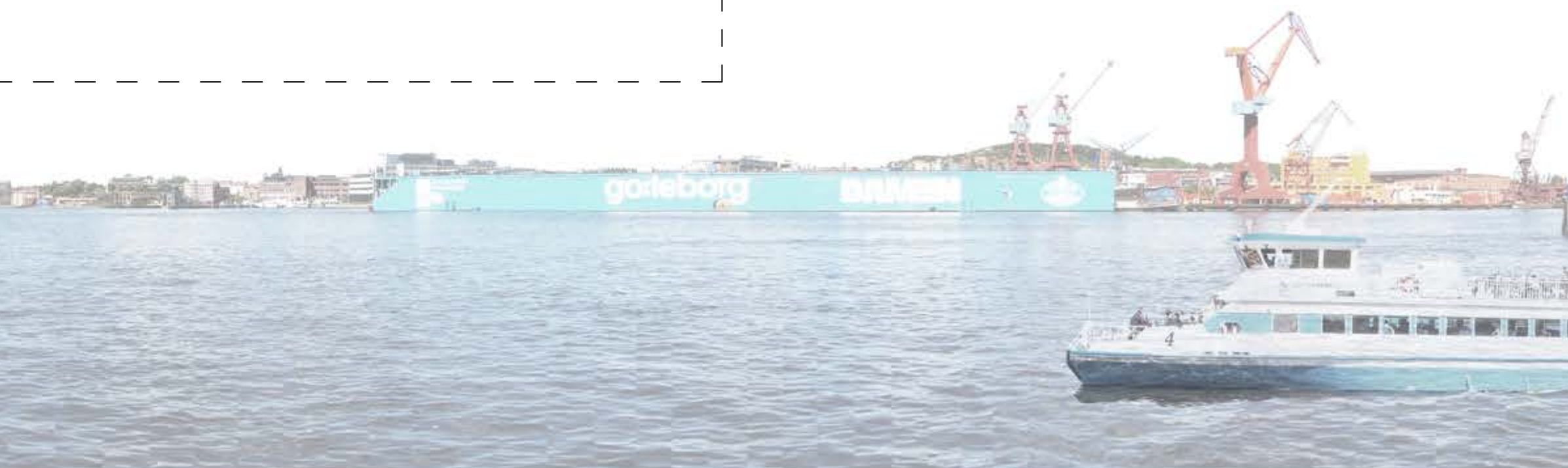
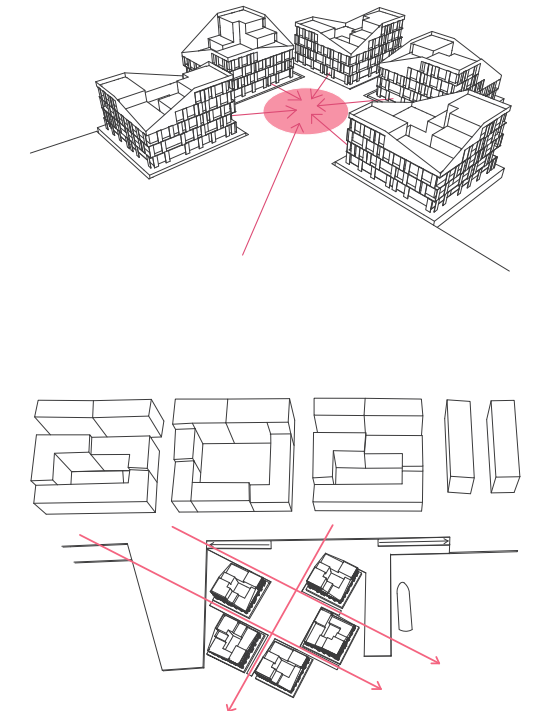




The floating squares between the student houses will be cozy with plants and benches. In the summer the squares are partly used for the cafes and restaurants located in the buildings' ground floors, but here is also room for other activities.

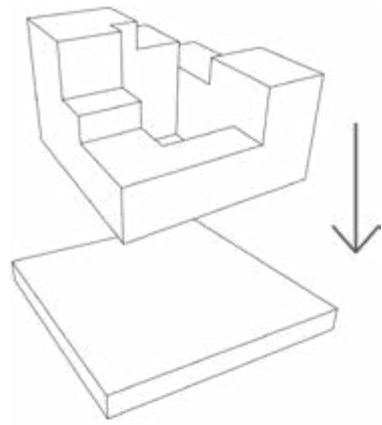
## The floating quarter

The contact between the quays and the floating houses is important. There is sightlines from the quays to the river. The floating houses are moored to a central floating public square which is reached from the quay via ramps.



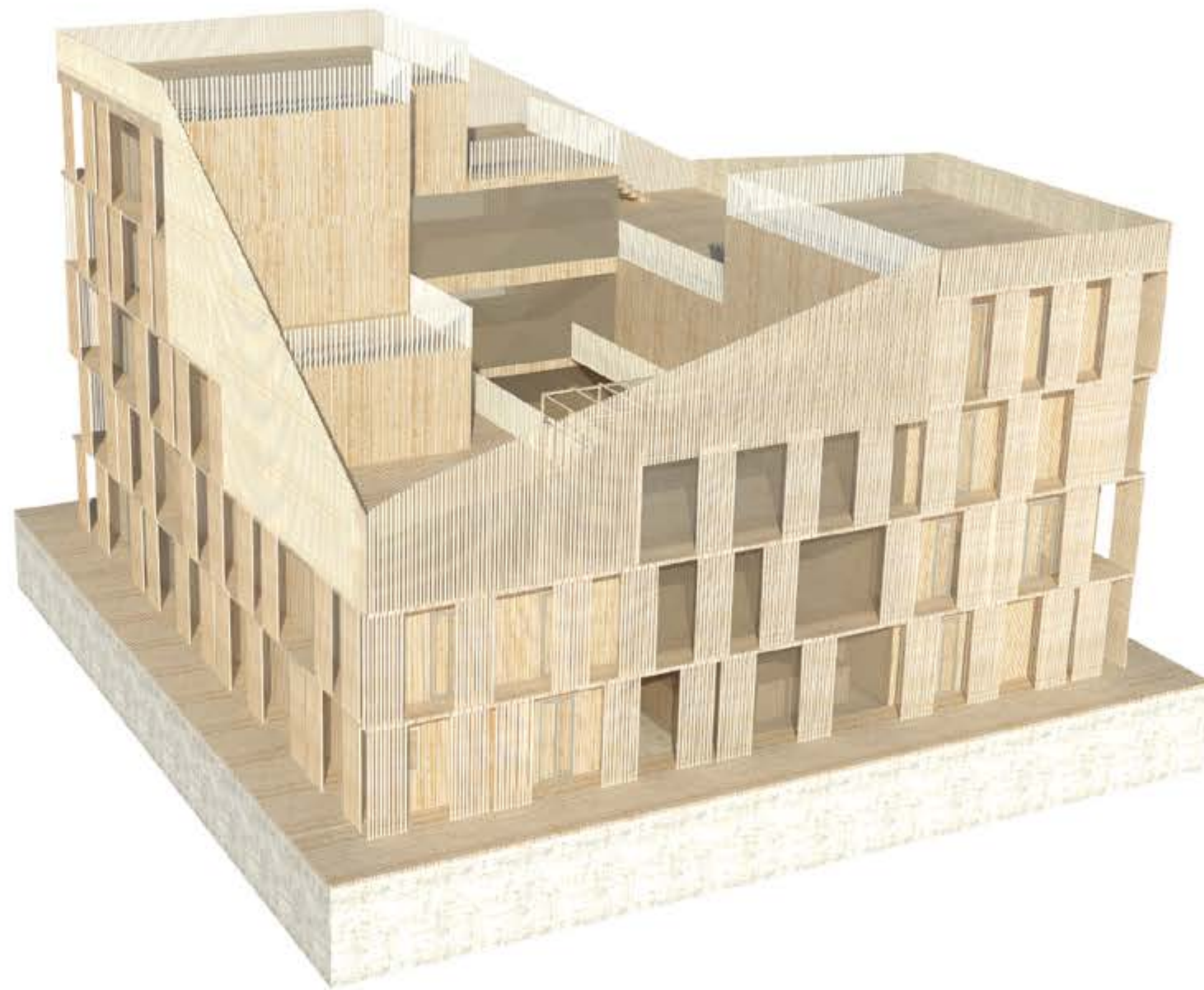
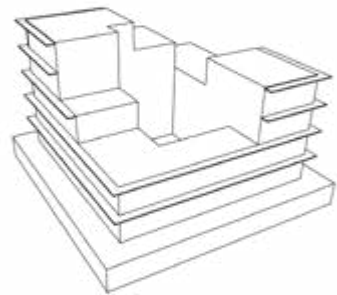
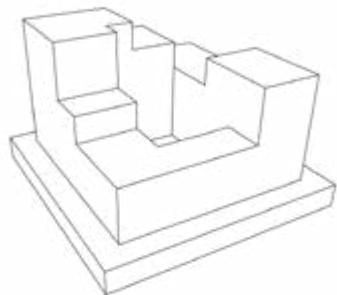
Section 1: 300





## Design concept

The house is built on a floating concrete pontoon with an open atrium in the center. Around the building runs balconies with sliding sunshade. The fence that runs around the building's terraces is sloping from different angles and protects against wind.



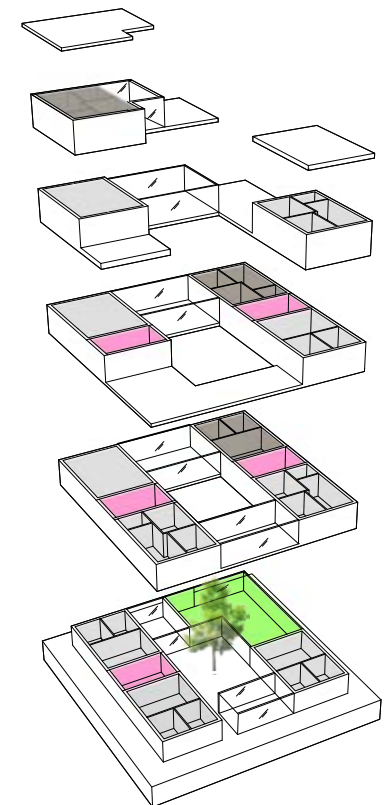
## Design strategy, the houses

Each house consists of homes for 1-5 persons, common areas/ functions and terrace decks.

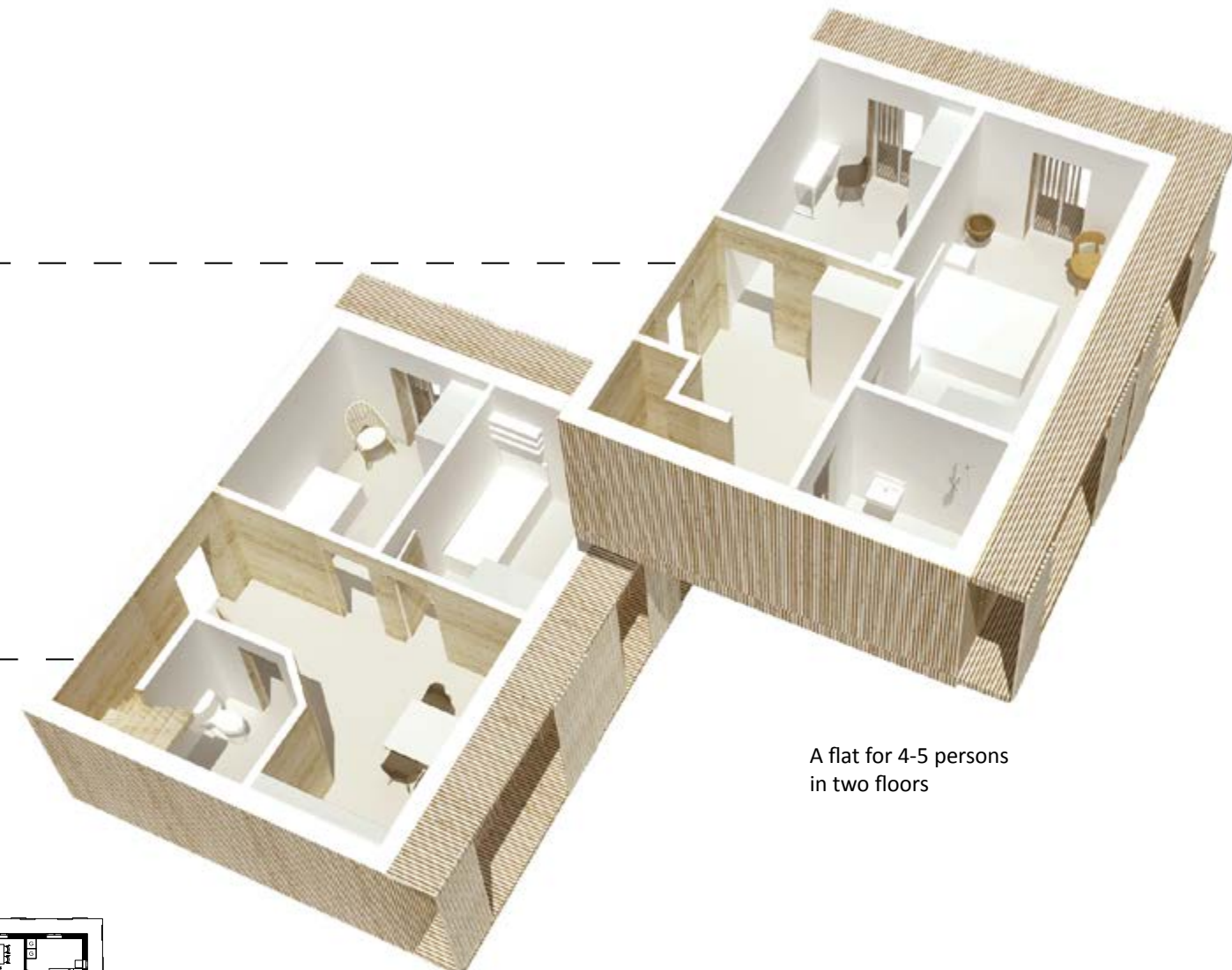
### Program for the floating houses

- 17** apartments for up to **34** persons
- A total of **740** square meter area (**21** square meter per person)
- + 88 square meter rentable area
- 5 apartments suitable for 4-5 persons
- 2 apartments for 2 persons
- 5 apartments for 1 person
- 1 laundry
- 1 study room
- 1 shared kitchen with dining spaces
- 1 lounge
- 1 glazed green room
- 6 terrace decks for company and growing plants, 3 of them accessible, 1 of these could in wintertime turn into a winter garden.
- 1 atrium, in the winter covered with a transparent roof
- 1 rentable ground floor 88 square meter

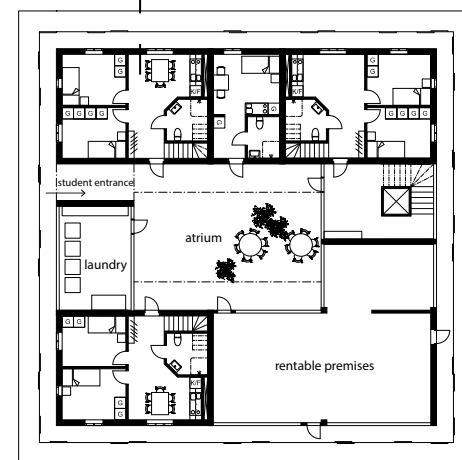
- 4-5 persons
- 2 persons
- 1 person
- rentable space



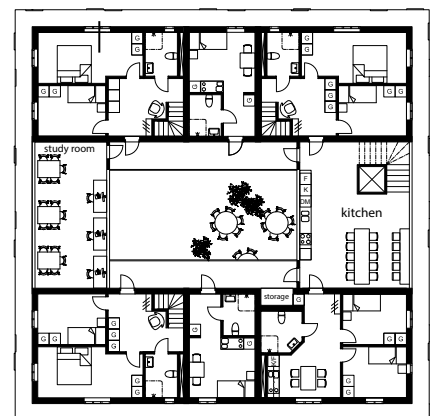




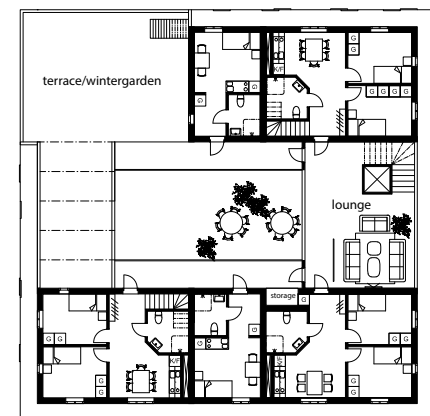
A flat for 4-5 persons  
in two floors



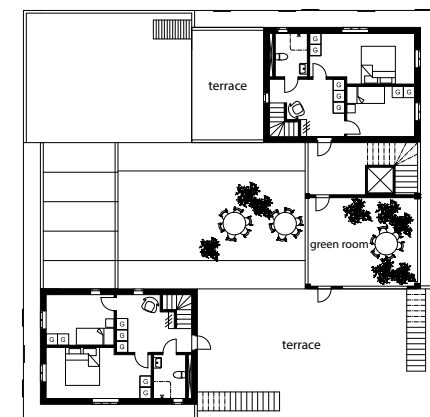
GROUND FLOOR



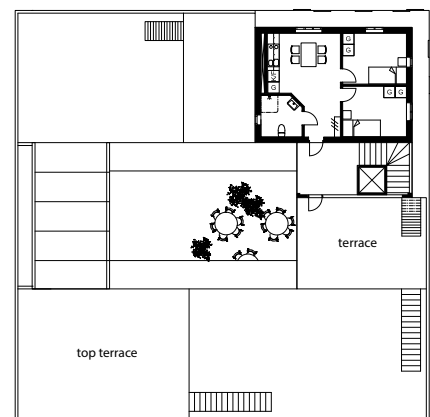
1 FLOOR



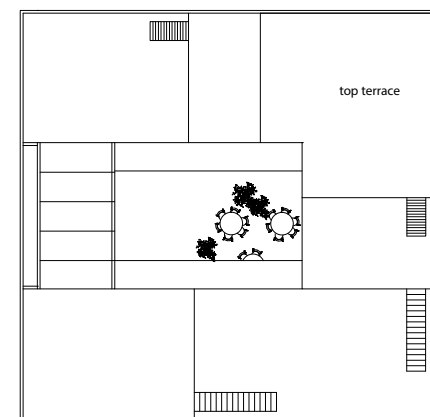
2 FLOOR



3 FLOOR



4 FLOOR



TOP TERRACE

Plans 1: 200

## The flats

All flats and common rooms have large windows and glazed doors to the balconies which surround the whole building on the outside. The balconies add extra space to the small rooms and gives the possibility to take some steps out, put out a chair or planting flowers. The Common areas are open and bright with a view of the river or the quay.



## Discussion/Summary

This project is meant to be an inspiration for new thoughts and ideas into the discussion of floating buildings. I believe that floating houses and premises can enrich the harbor area in many ways. Situated in the right places floating houses will give life to the quays, help increase safety during night time and become an exiting complement to the neighborhoods without blocking accessibility.

In some cases the view towards the river will be broken but if the houses are carefully placed these new floating houses will add a new dimension to the city.

For example flats with shorter contracts, shops, event-space and cafes floating structures will be suitable because of its flexibility/mobility.

In my thesis I have explored the possibility of floating homes in Gothenburg and my hope and conclusion is that the floating buildings in the future will become a common element among other buildings in the city. Rising water levels, the need for flexibility in building and high foundation costs near the river are all reasons for an increased use of the river.

### Thanks a lot!

Håkan Rönnblad for photos of the harbor, Eva Bohwalli and Ulla Karlsson for proofreading and to my supervisor Jonas Lundberg and examiner Sten Gromark.



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