

# DENSIFY GOTHENBURG:

with mixed-use building design



*Master thesis at Chalmers Architecture*

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MPARC  
2012.5.24

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# ABSTRACT

With the development of Gothenburg, the population is increasing and results in the demand of buildings and construction of city. Comparing to expanding Gothenburg and building satellites cities, densifying Gothenburg is of more social and environmental sustainability and sense of community.

Located at the south side of Göta älv, the site including the area from the Opera in the north down to Järntorget in the south, connecting with central Gothenburg. The main road passing by the site used to be high-speed way supporting the transportation. However, given the fact that the traffic passing by the site declined sharply after the construction and use of Göta Tunnel, most of the site is now occupied by traffic and parking. Therefore, it is an ideal place to densify and innovate Gothenburg.

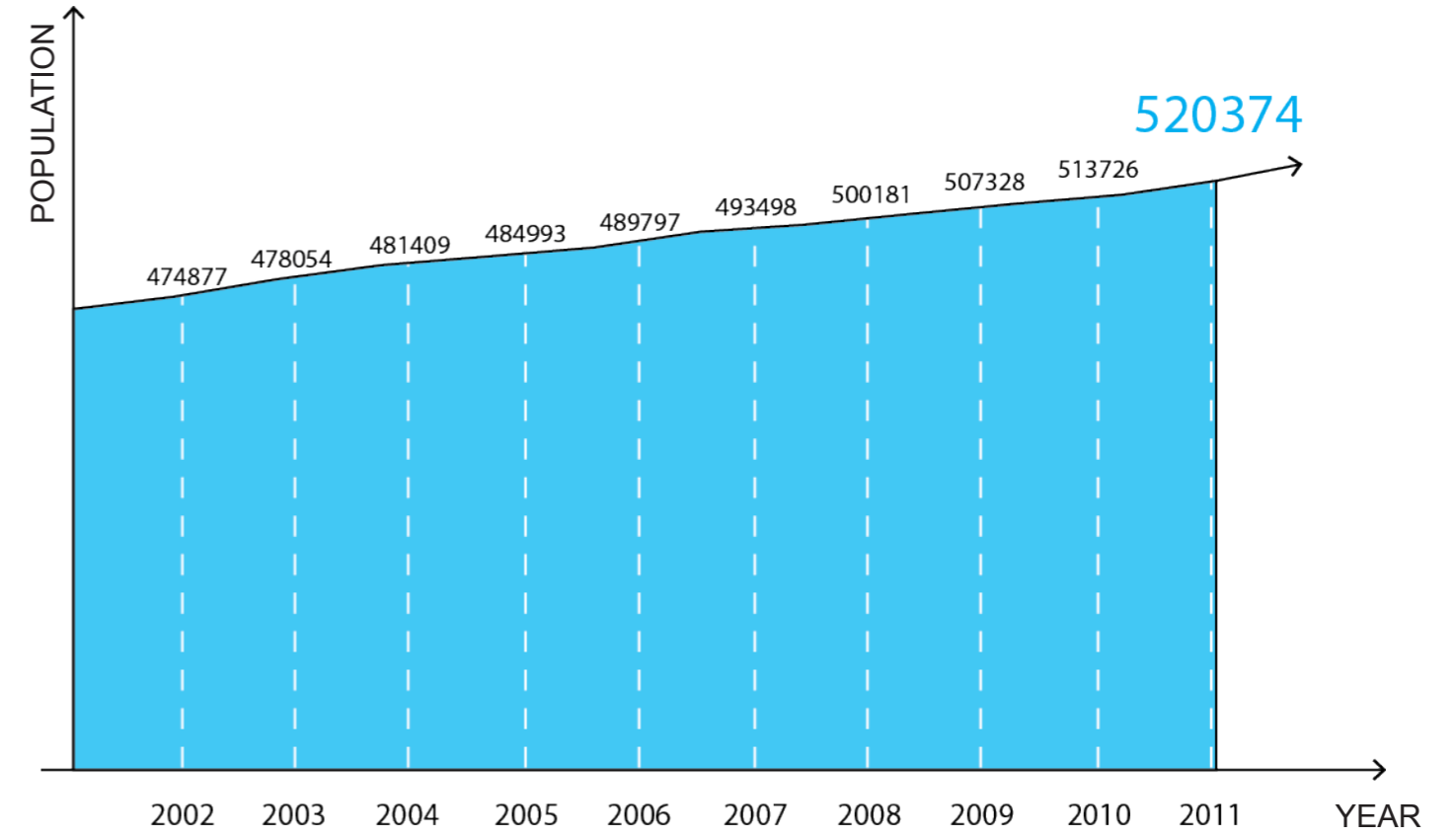
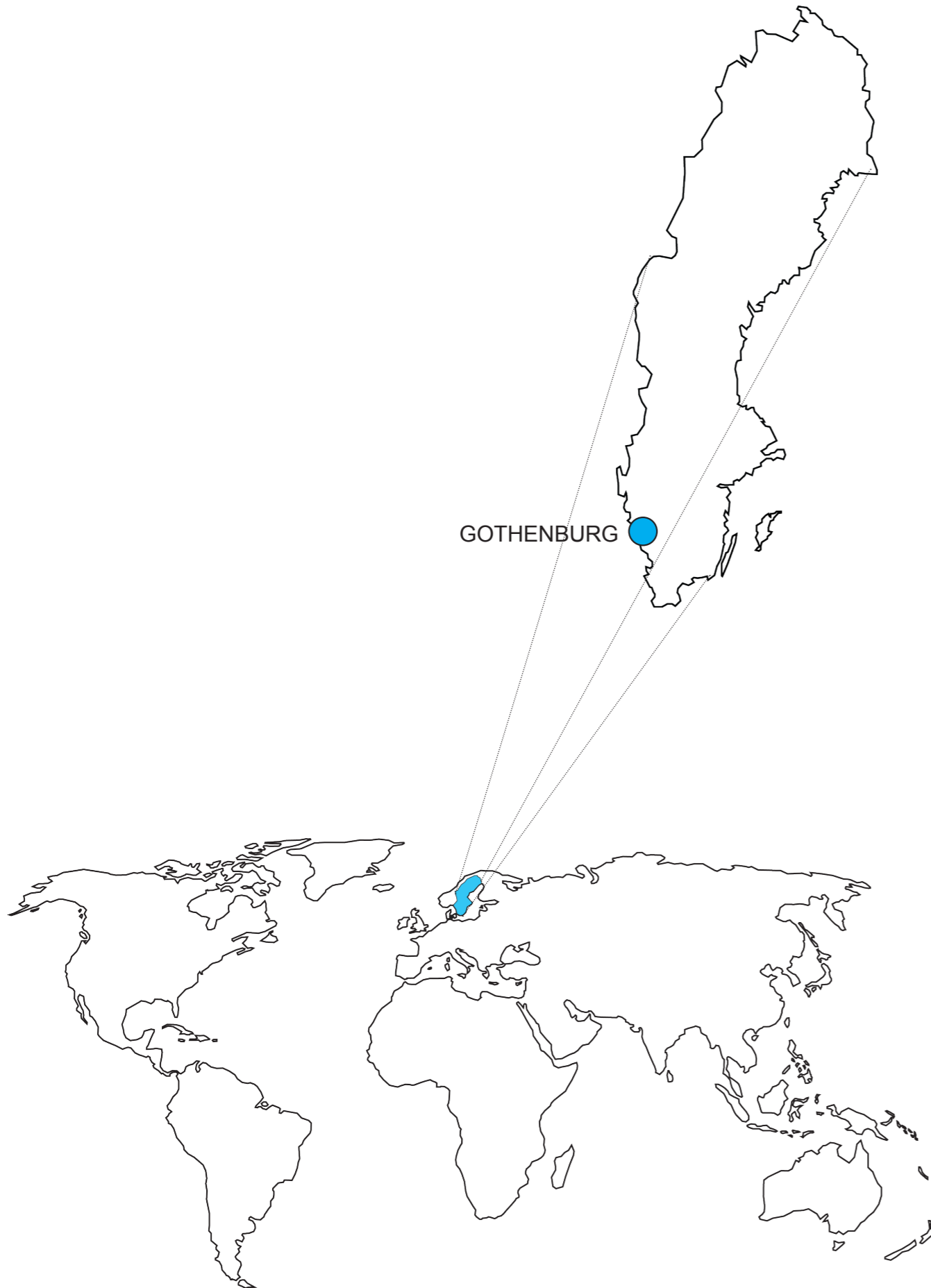
With the goal to densify this area efficiently and also with high quality, the traffic is rearranged at first, which integrating the land for future design and also introducing tramline, bicycle path to scale down this area. Then, new public buildings are settled within the space between the Opera and Ship Museum which extend the public function of the city, while the southern district is component by public squares, green space, commerce and housing, creating a new city corridor and leisure space as the connection between commercial center Nordstan and characteristic Haga District. Finally, one building with the city corridor passing through is designed to fulfill the proposal.

As outcomes of my thesis, one urban proposal is designed to echo the premises of the site, the demand of housing and also the life and activity in the central Gothenburg. Besides, one building proposal is also developed as a inspiration to handle the relationship with building, city, and nature.

## KEY WORDS

GOTHENBURG DENSIFICATION, URBAN REVIVAL, HOUSING DESIGN,

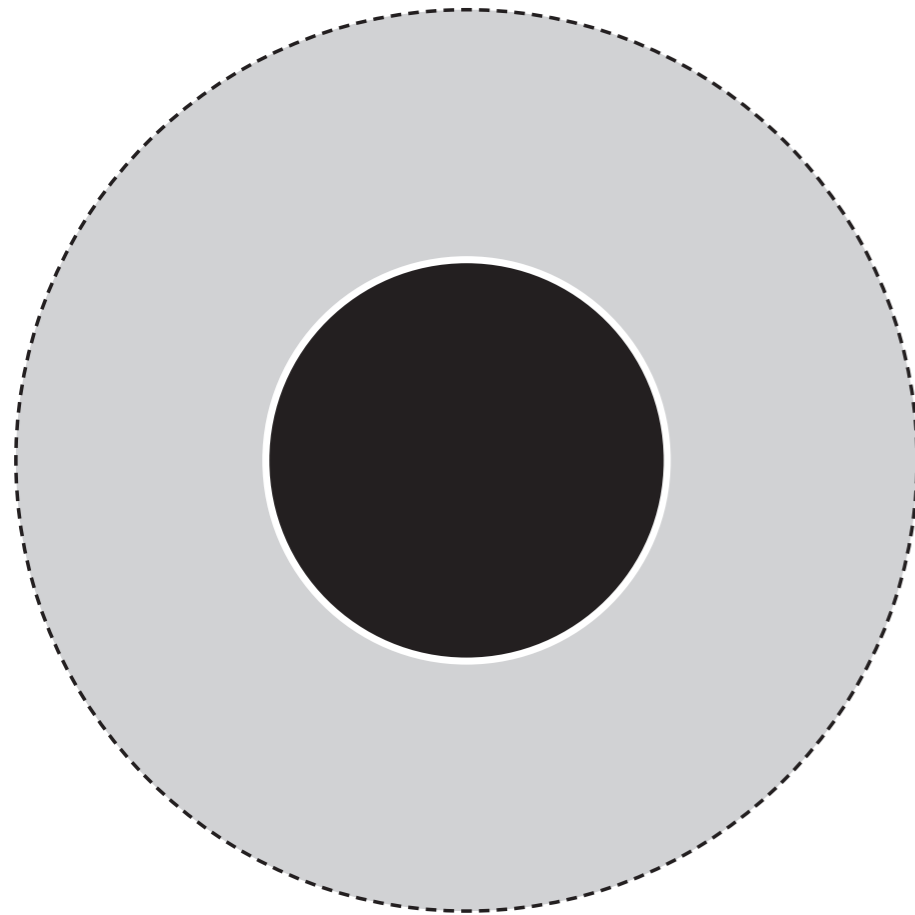
# WHY



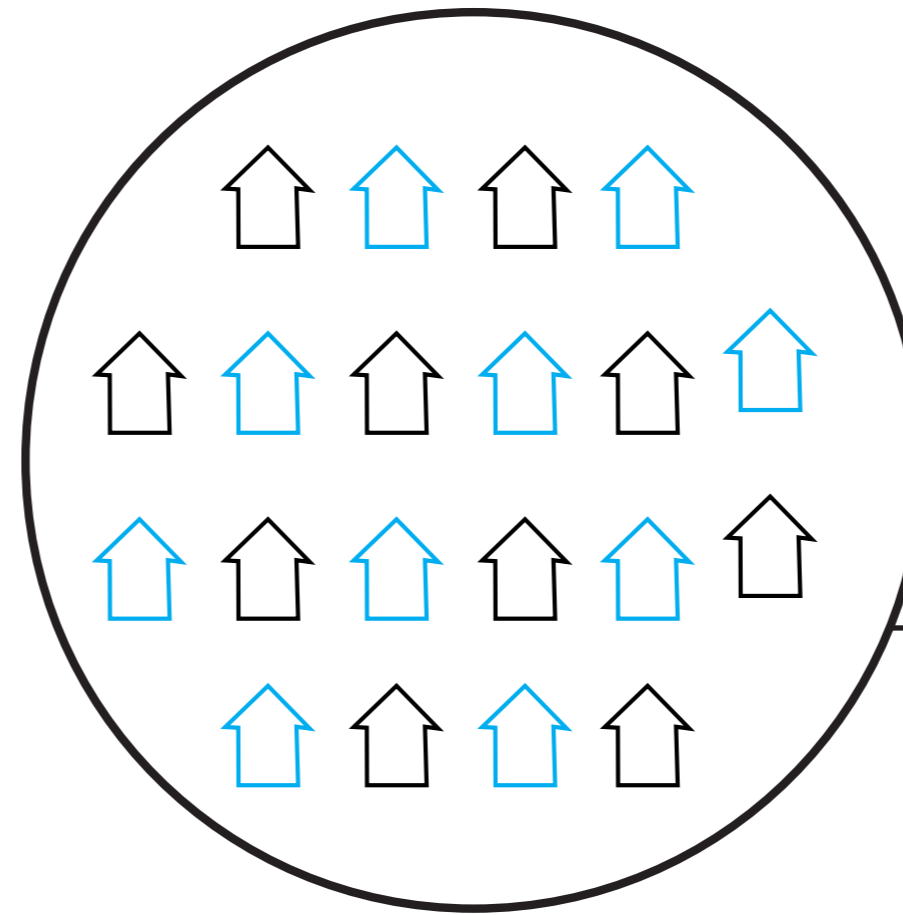
As the second biggest city in Sweden, Gothenburg is attracting more and more people which results in the population increasing every year (shown below). At the same time, more buildings are demanded for this increasing population. Based on this situation, how to get space for the increasing population and building demand becomes an important question.

# HOW

## EXPANSION



## DENSIFICATION



## SUSTAINABILITY COMMUNITY

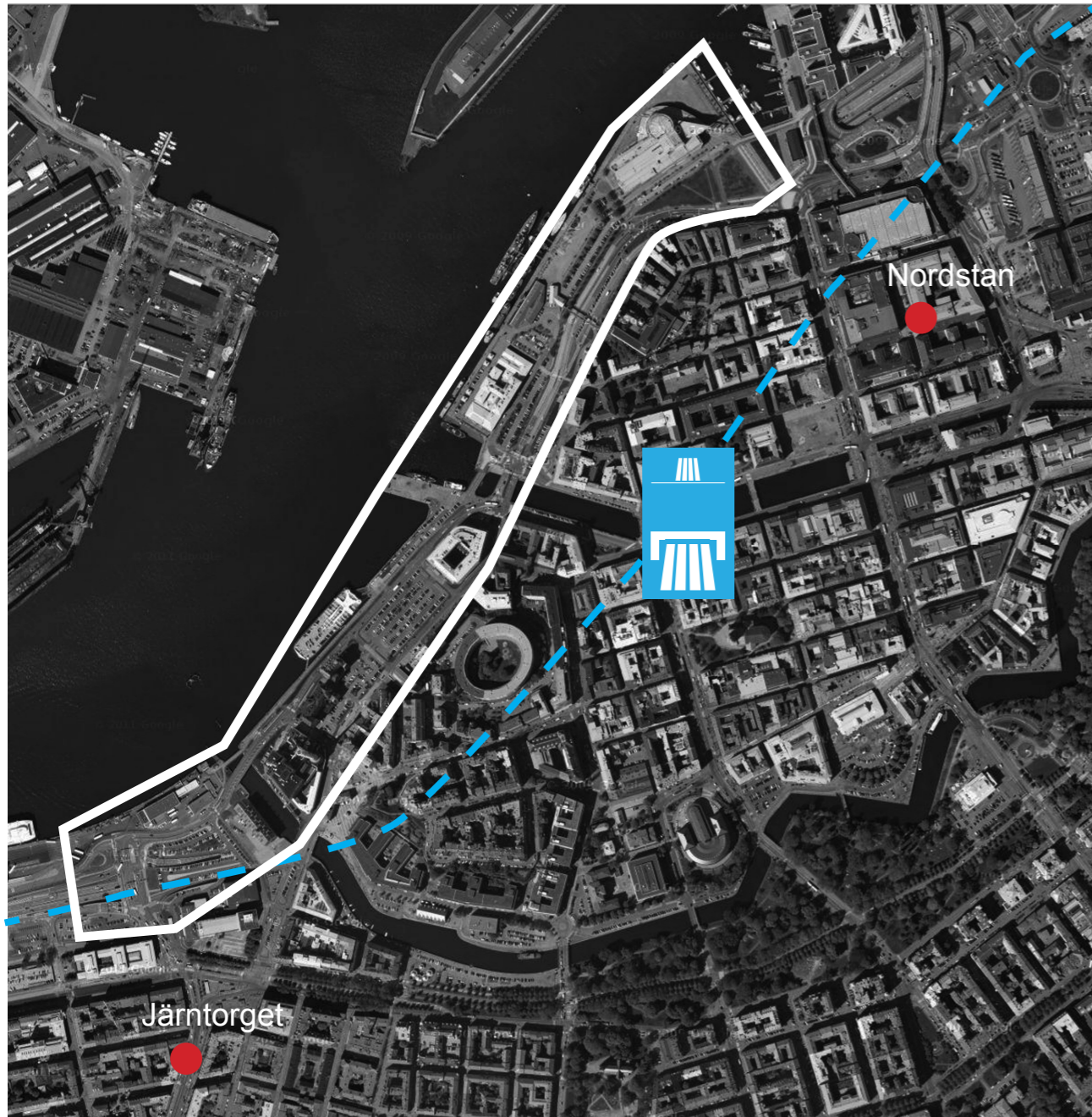
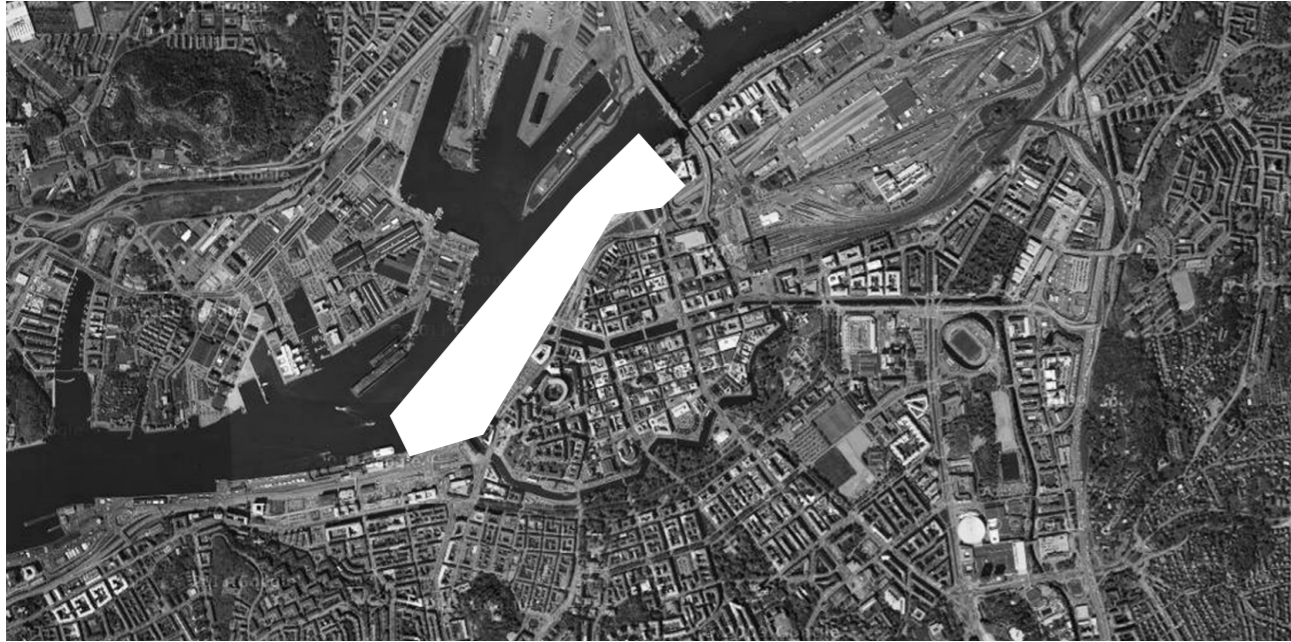
In my opinion, there are two ways to get more space from the city: expansion, and densification.

The former one is expand the area, while the other one is to densify the city within existing area.

By comparison, densification can contribute more to the social, environmental, and economic sustainability, and it also can do good to enhance the sense of community.

Therefore, densification is my choice to balance the city and the nature.

# WHERE to DENSIFY



## Location

Located at the south side of Göta älv, the site including the area from the Opera in the north down to Järntorget in the south. Beside the site is the central district, which is also the living centre for the whole city.

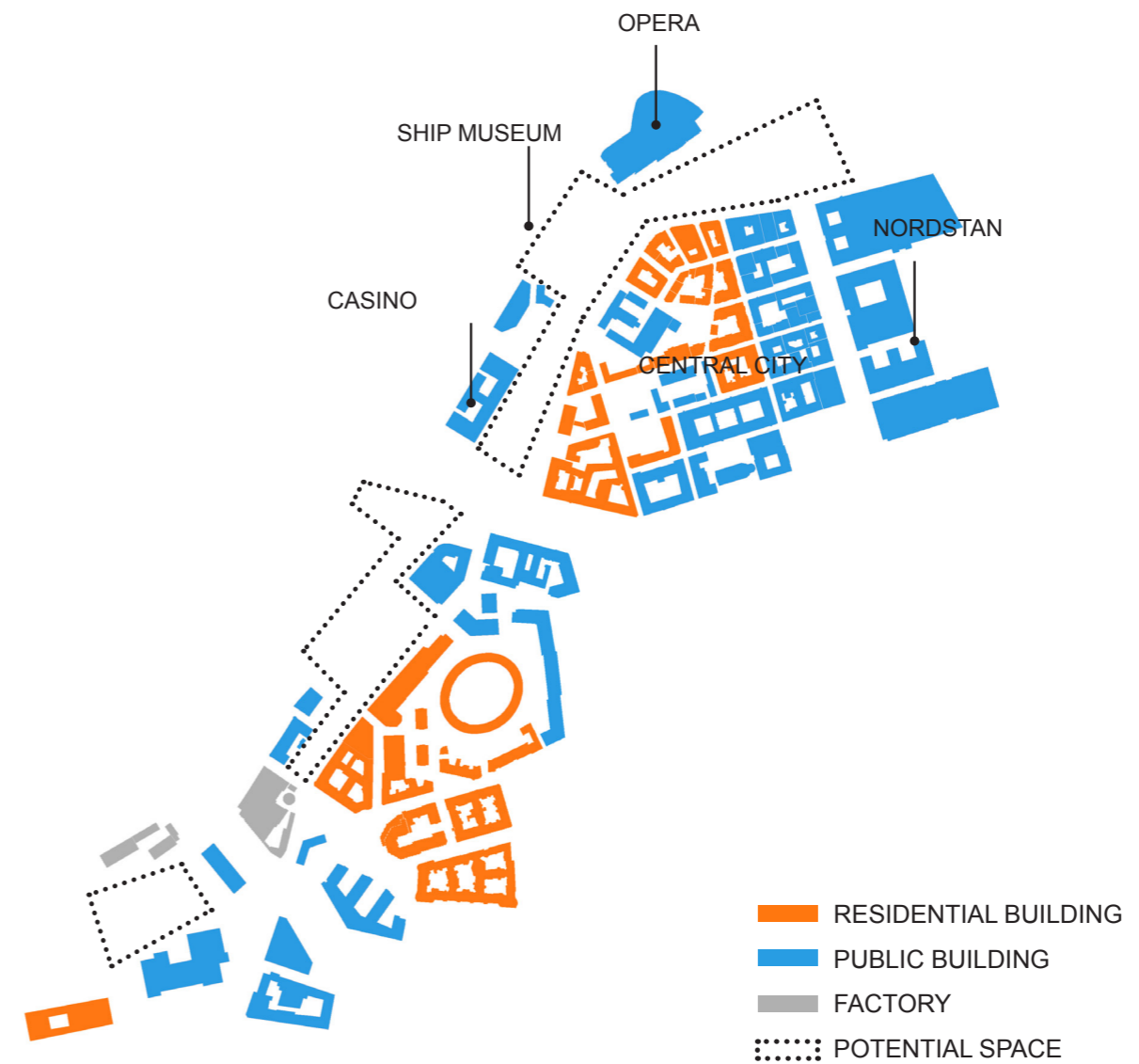
Geographically, the site is quite close to Nordstan, the busy commercial centre, and Järntorget, which is famous for its wooden houses, bars, restaurants. Besides, it also connects the beginning and the ending of Göta Tunnel. The main road going through the site used to be the main transportation route, but now it is replaced by Göta Tunnel.

To densify the city, this is an ideal and interesting site to reinvent.

# Site Density Analysis



EXISTING BUIDINGS



## BUILDING TYPE

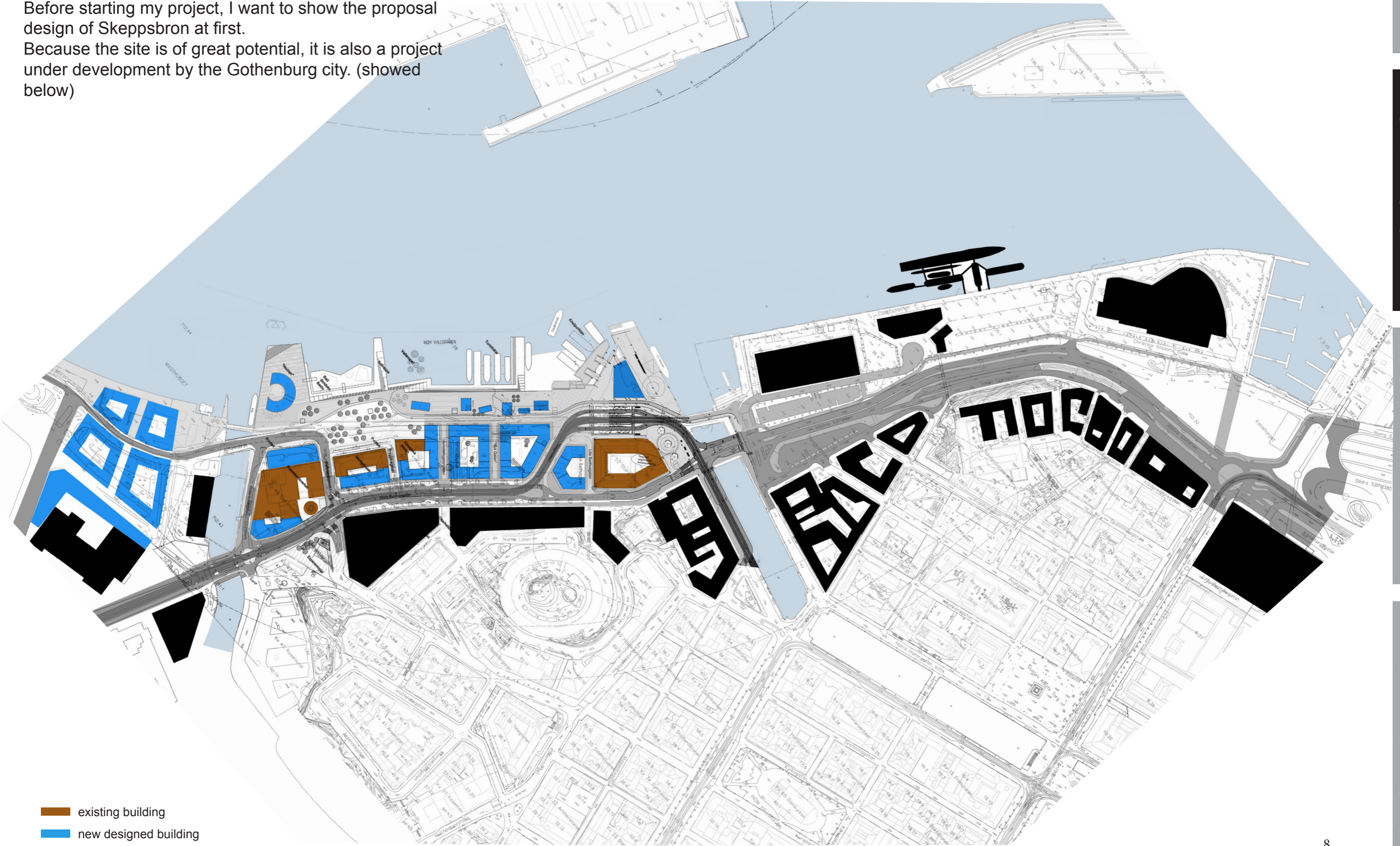
By comparing the density of city centre beside it, there are only few public buildings in the site (the Opera, Casino, Ship museum etc). The big space between them are occupied by parking and transportation.



# Skeppsbron

By Älvstranden Utveckling AB  
September, 2011

Before starting my project, I want to show the proposal design of Skeppsbron at first. Because the site is of great potential, it is also a project under development by the Gothenburg city. (showed below)





## ADVANTAGES

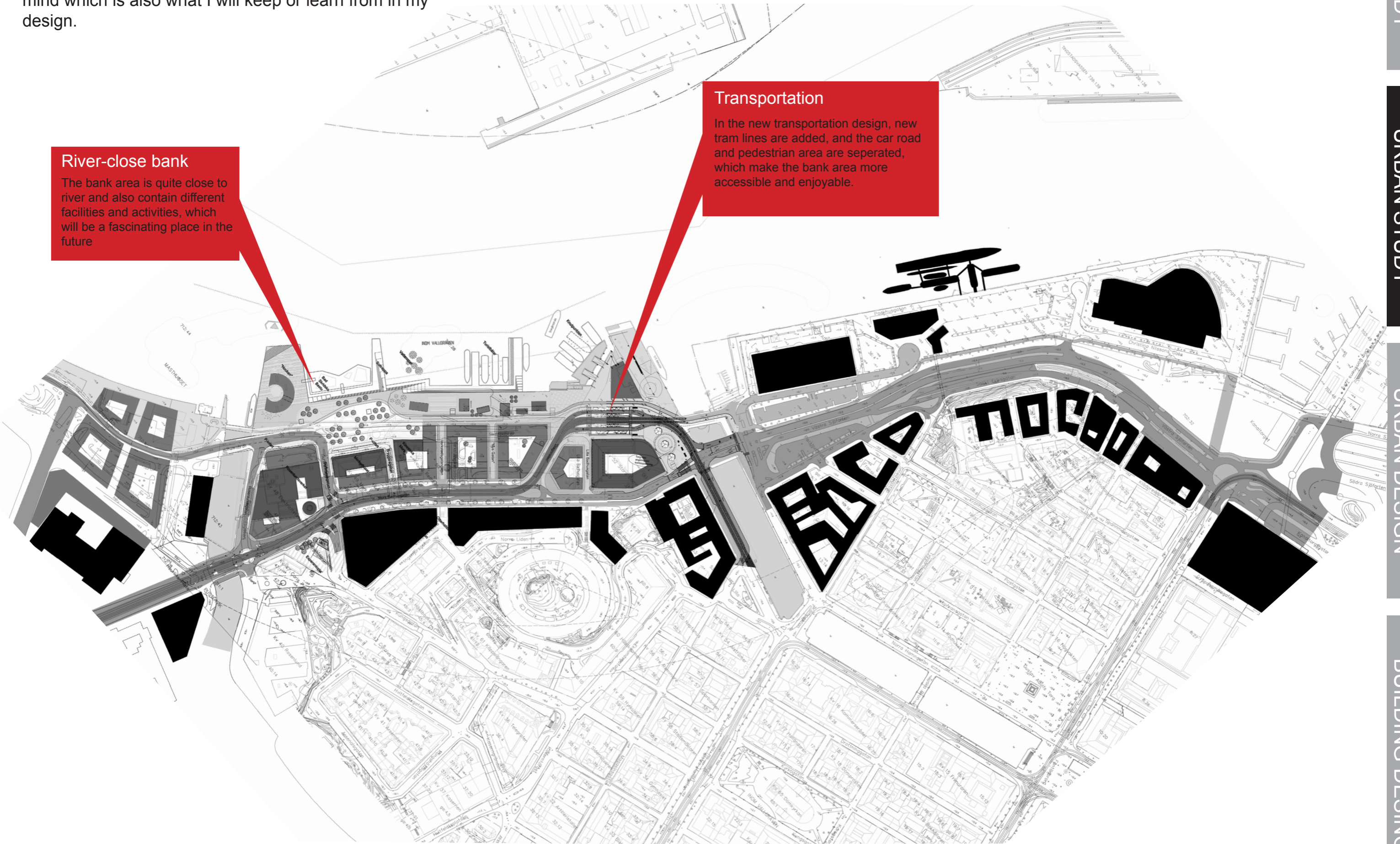
The red box shows the good points of the plan in my mind which is also what I will keep or learn from in my design.

### River-close bank

The bank area is quite close to river and also contain different facilities and activities, which will be a fascinating place in the future

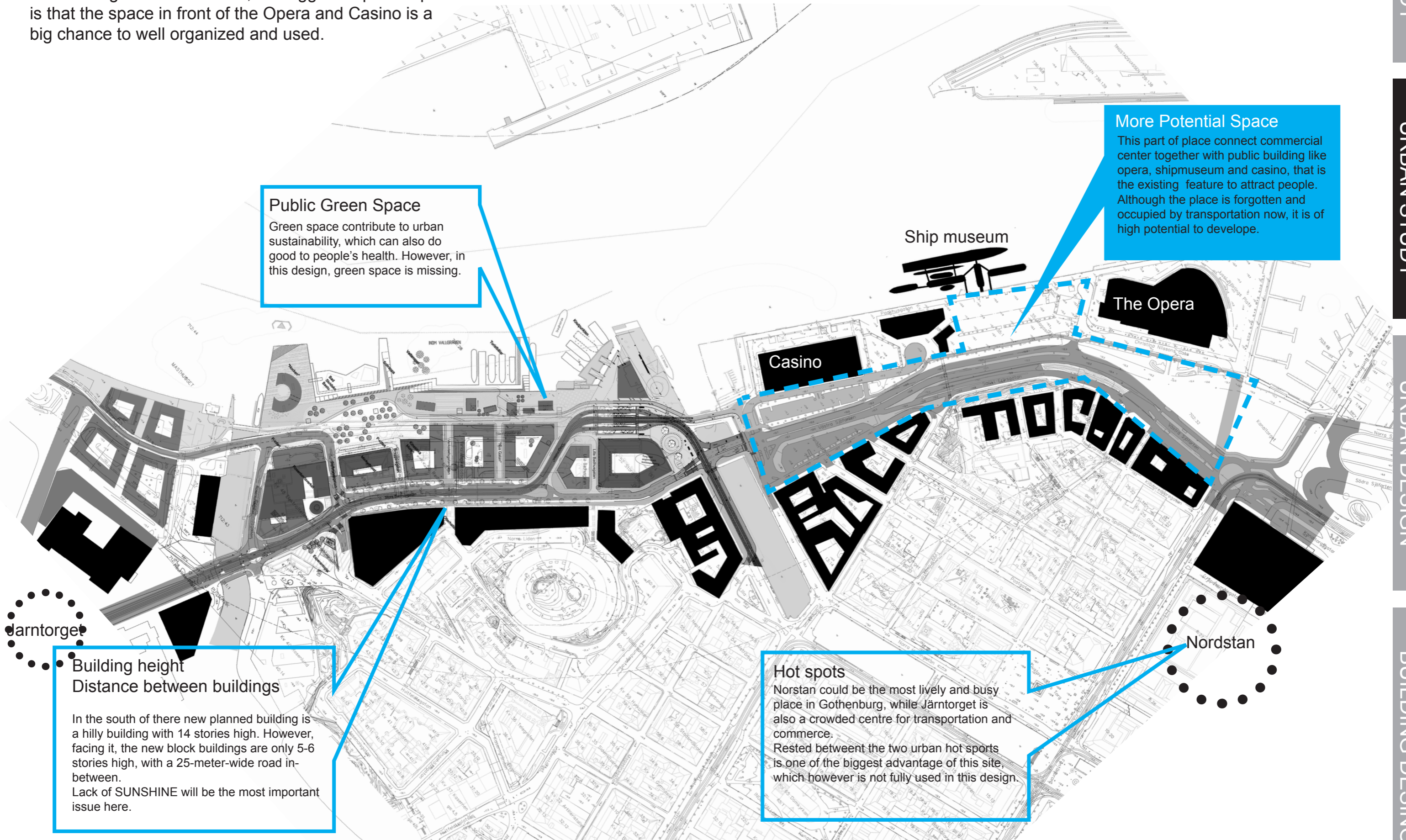
### Transportation

In the new transportation design, new tram lines are added, and the car road and pedestrian area are seperated, which make the bank area more accessible and enjoyable.



## DISADVANTAGES

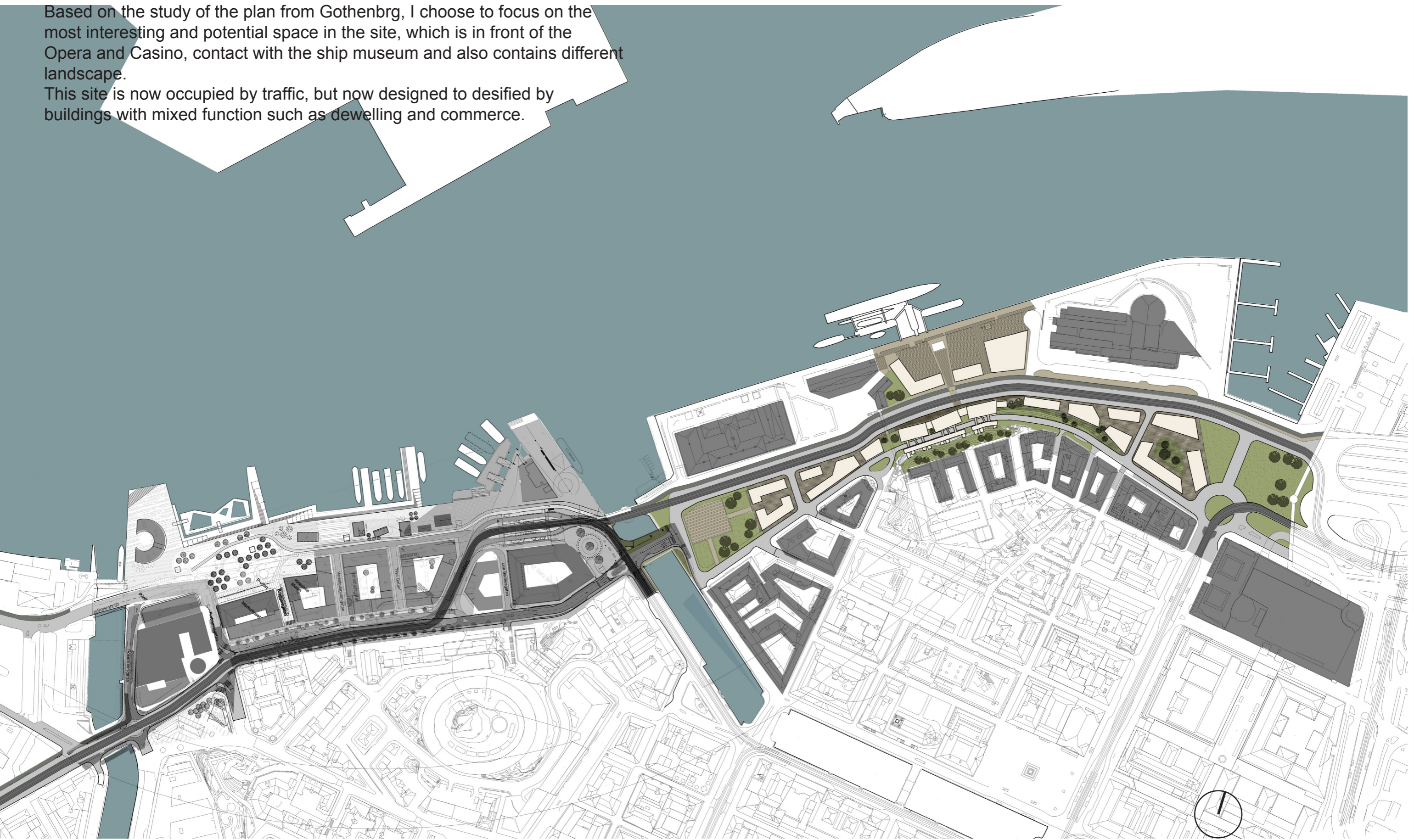
The blue boxes are showing what I think should to be better designed. Within them, the biggest important point is that the space in front of the Opera and Casino is a big chance to well organized and used.

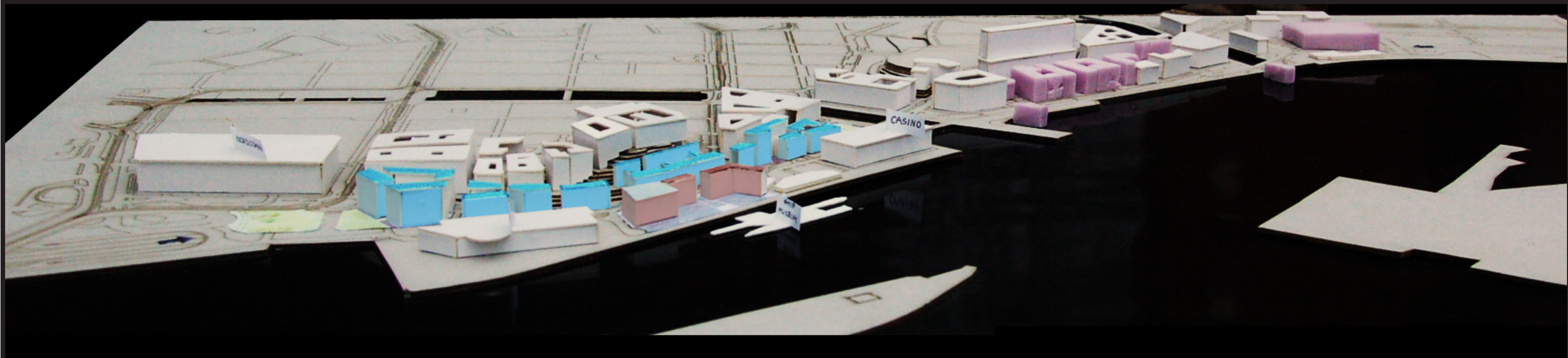


# URBAN DESIGN

Based on the study of the plan from Gothenburg, I choose to focus on the most interesting and potential space in the site, which is in front of the Opera and Casino, contact with the ship museum and also contains different landscape.

This site is now occupied by traffic, but now designed to be desified by buildings with mixed function such as dwelling and commerce.



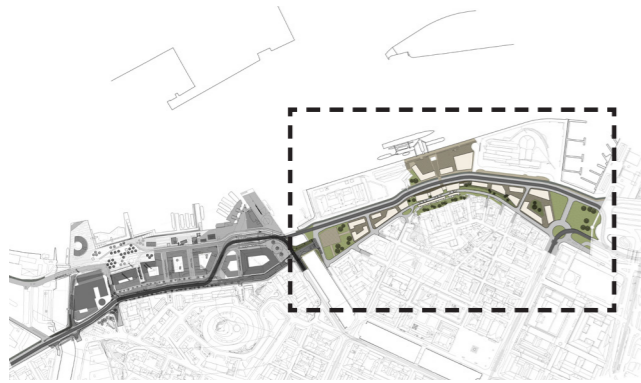


PRESTUDY

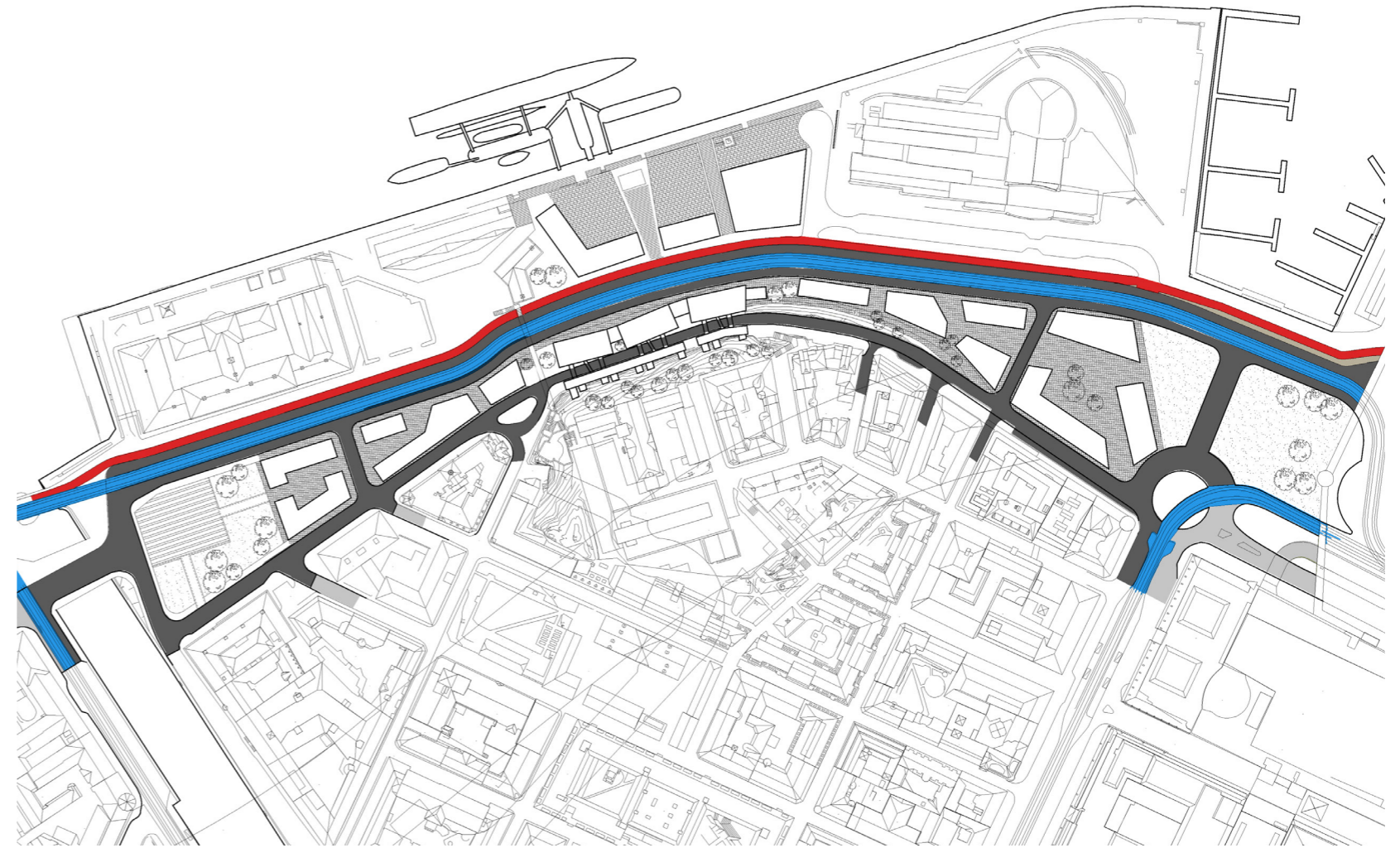
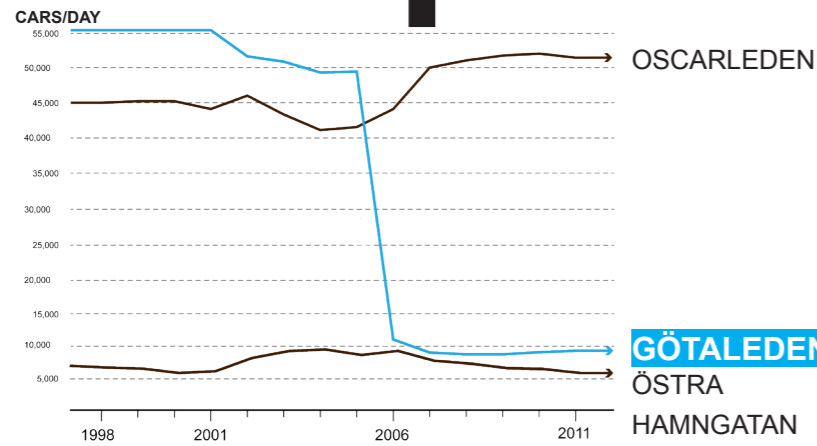
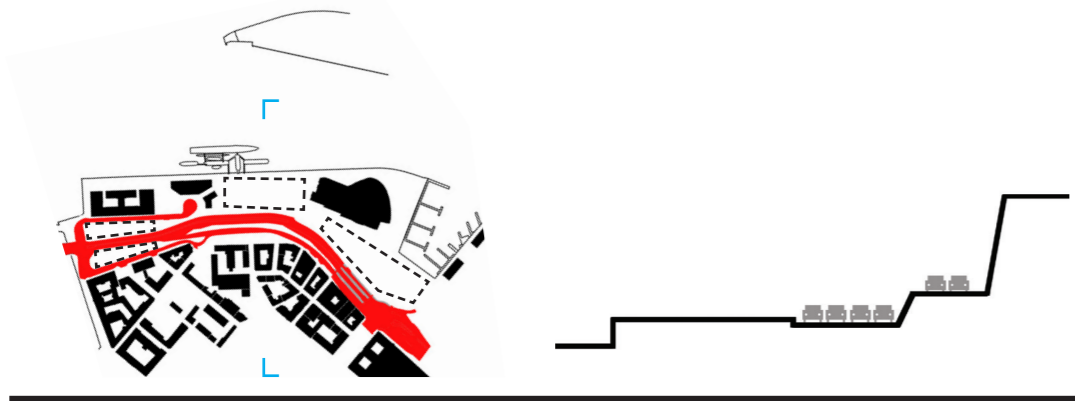
URBAN STUDY

URBAN DESIGN

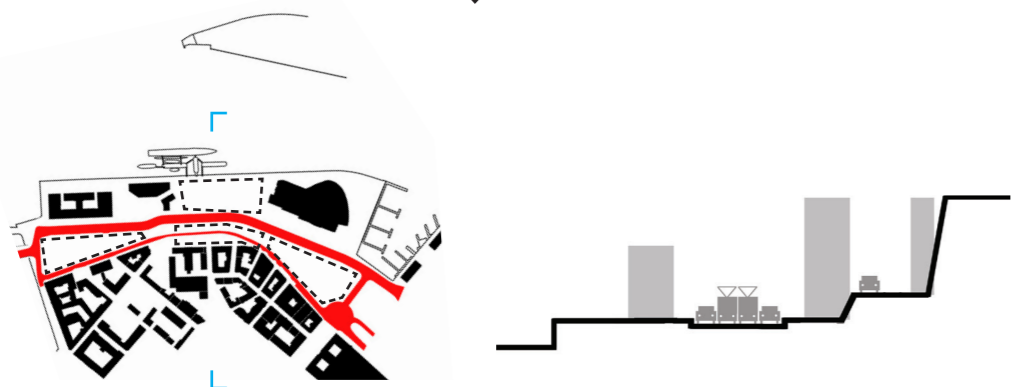
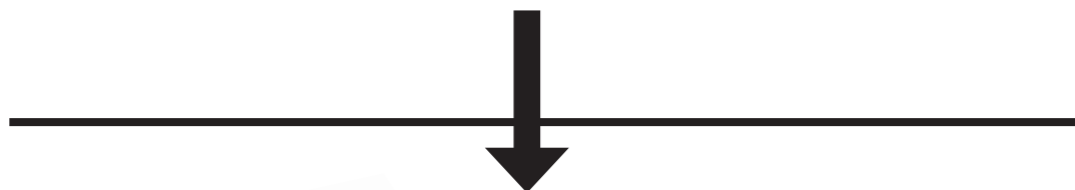
BUILDING DESIGN



Urban Design Analysis  
**TRAFFIC**



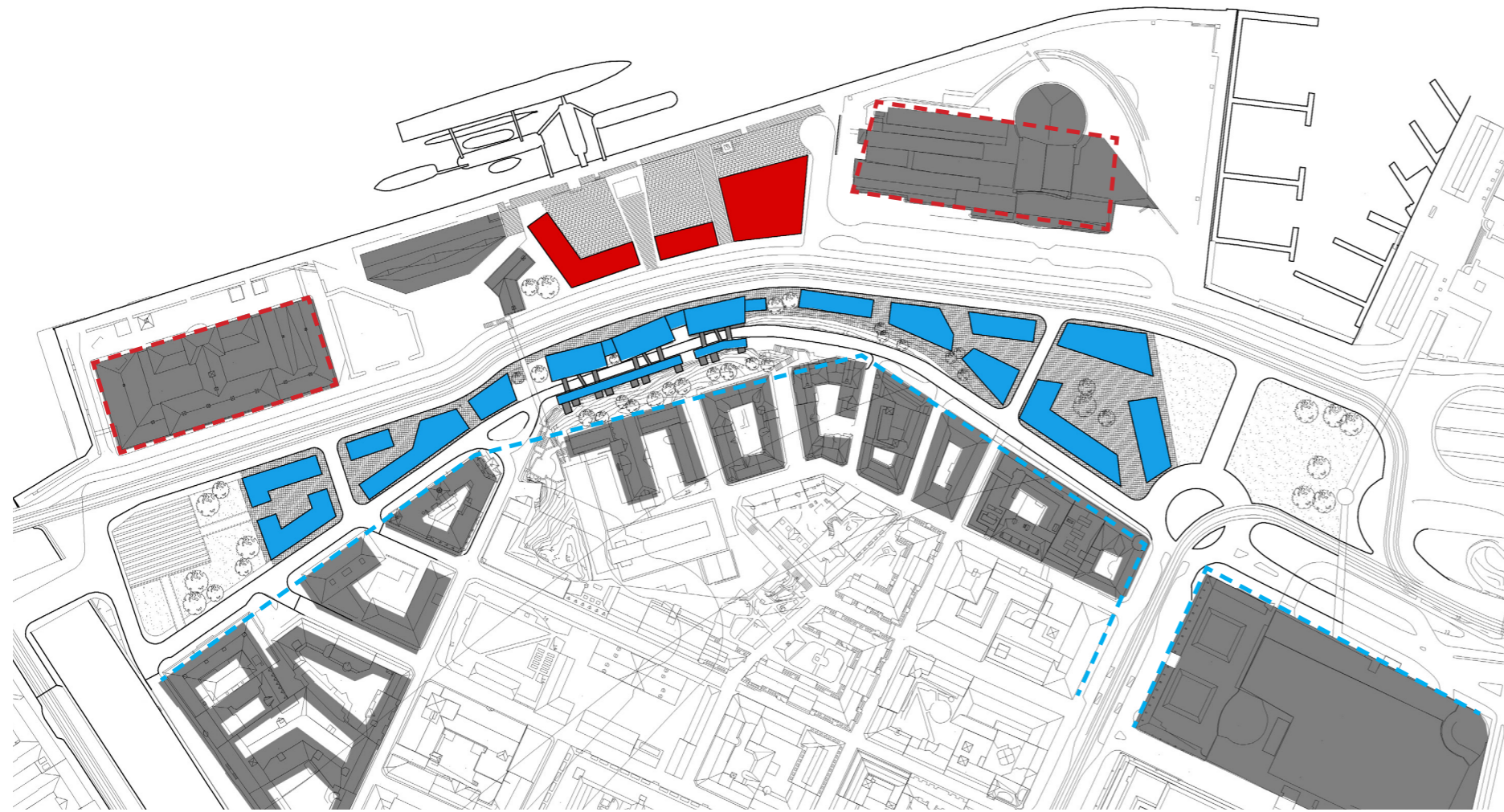
- tram line
- bicycle path
- car road



**TRAFFIC REARRANGEMENT**

In my master plan, the precondition is the traffic.  
 In the original site, existing traffic is occupying almost the whole site, dividing the place into small pieces, which are hard to use.  
 By study of traffic statistics, I found the traffic in the site decreased sharply after the build and use of Göta Tunnel. Therefore, it is possible to change the position and width of this road.  
 By moving the road upward, leaving the space intergrated, it is better to use the space.

Urban Design Analysis  
**FUNCTION**

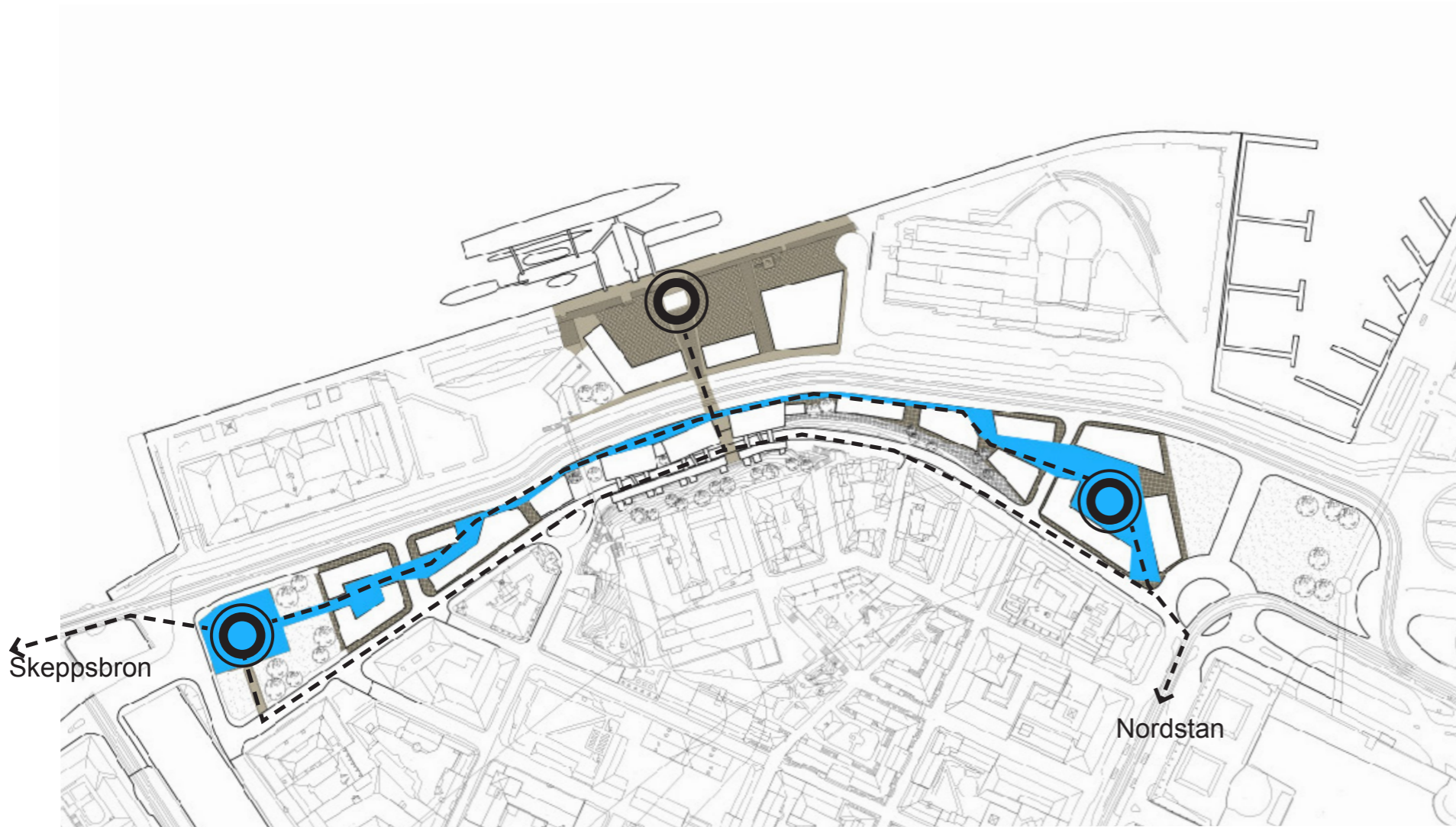


- mixed housing with public function in the groundfloor
- public building with cultural function

As the extension of the city centre, most of the new buildings are of mixed function, with commerce or public function in the ground floor or first floor, while the upper floors are housing. It extends the function of the city centre part, creating a new facade and street space.

Meanwhile, since the opera, casino and ship museum are located closely, the buildings within them are more open and public, with museum, library or other cultural function, making a public function area.

Urban Design Analysis  
**PEDESTRIAN STREET**



Public square

The most important part is the design of the inner street.

This street breaks down the big block, forming inner yard and also outer street space, which not only contributes to forming the sense of community, but also links the whole site.

It fulfills the gap between city centre and the new Skeppsbron, creating a continue walking path, attracting people to discover and enjoy the city life.

Urban Design Analysis  
**PUBLIC SQUARE**



Public Square

By studying the urban structure, I found the public squares are always set beside the main road, near the junction of two roads or beside the important public building. Therefore, the public square in my design in following this rule, as the extension of city structure.



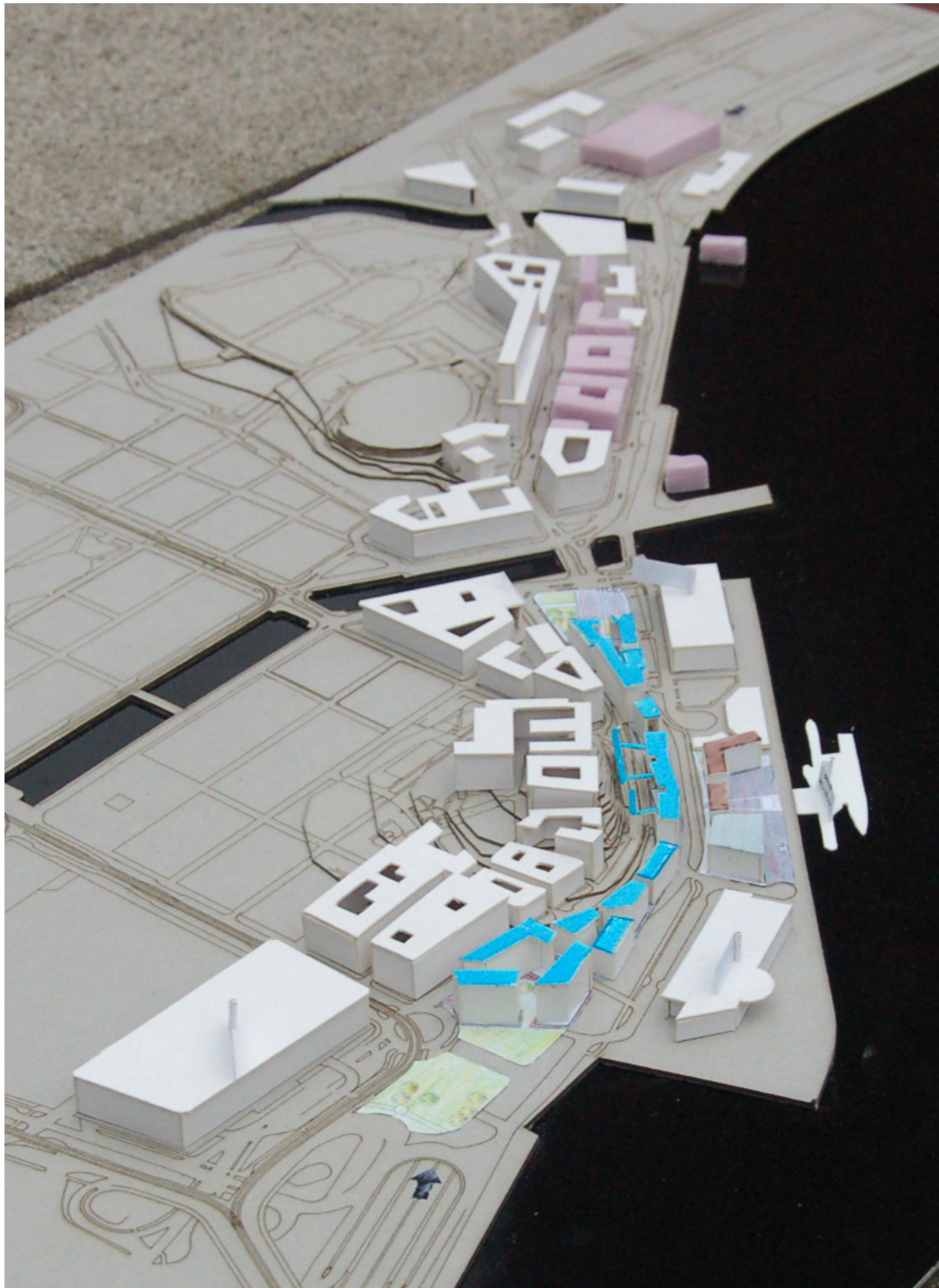
## Urban Design Analysis PUBLIC GREEN SPACE



Green parks

From the background of the city, it is quite easy to find that most of the green space is beside the river, or near the main public architecture.

As in my design, there are mainly two public green space located at the two ends which are close to the river and also the Opera and Casino. They are serving for the whole city, while small yards among buildings are welcoming and quiet.



Construction Indicators

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Site Area: 52,000 SQM

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Construction Area: 9,600 SQM

Gross floor area: 38,200 SQM

public function area: 16800 SQM

Housing area: 21400 SQM

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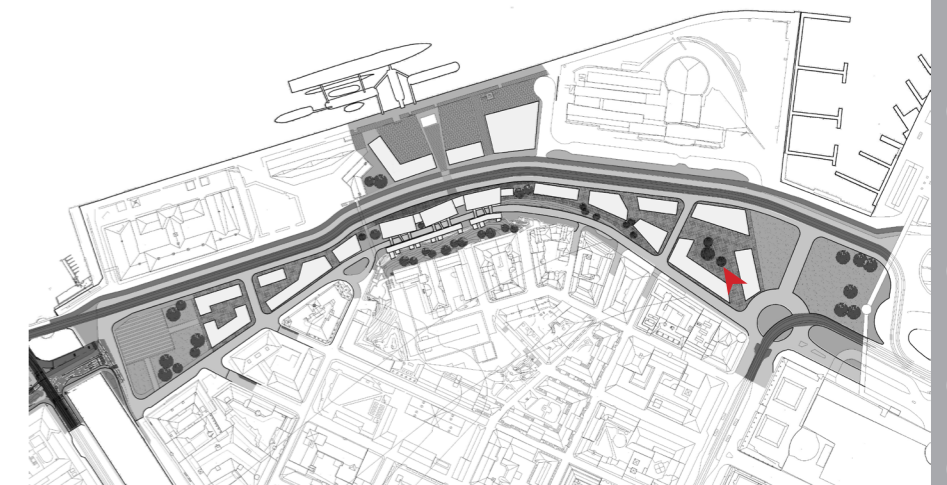
Estimated resident population: 430 persons

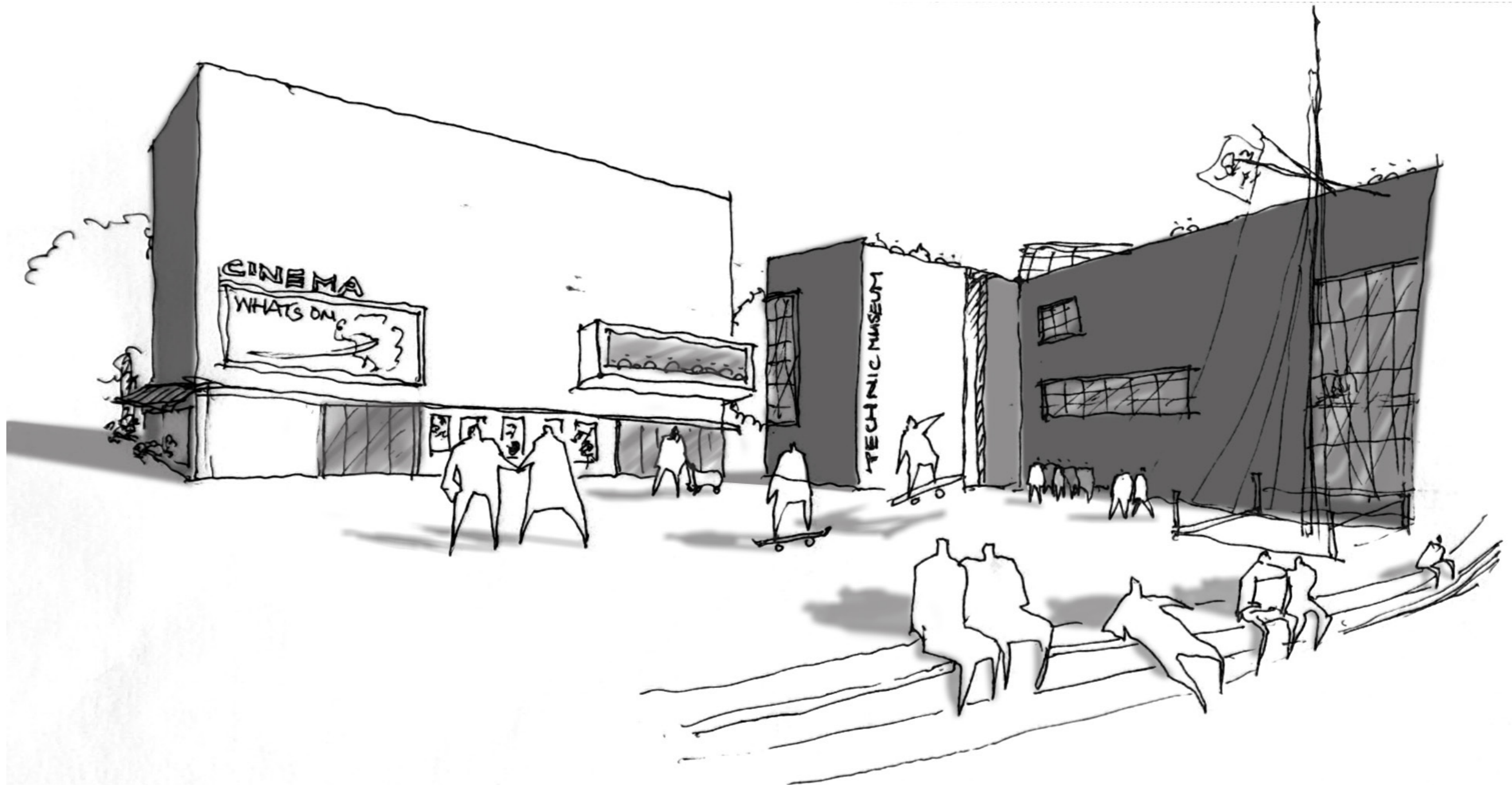
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### INNER YARD

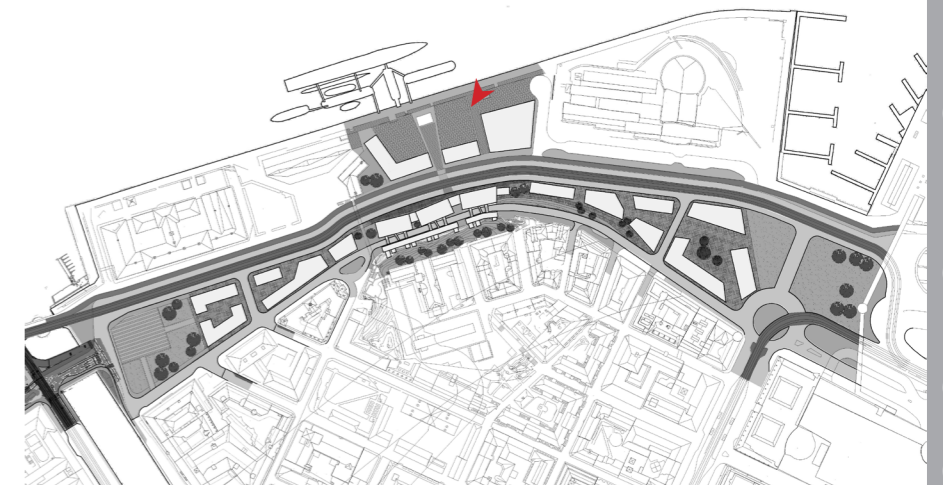
The inner yard can strengthen the sense of community. People are living on the upper floors, while having retails on the ground floor. It is also quite convenient to take a walk or walk the dog in the yard.





#### PUBLIC SQUARE

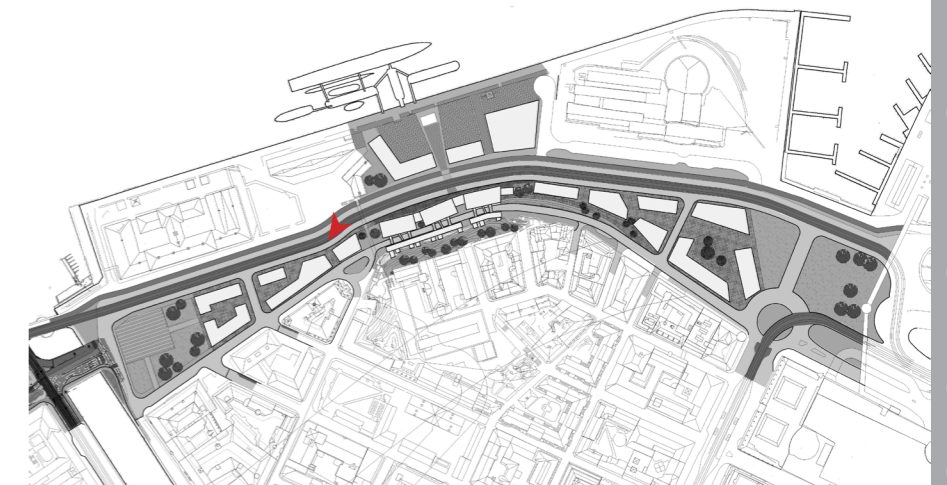
It shows the square among the public buildings. People can get together here to see a movie or visit the museum. But maybe the most relaxing way is just sitting in the sunshine, reading, talking or resting.

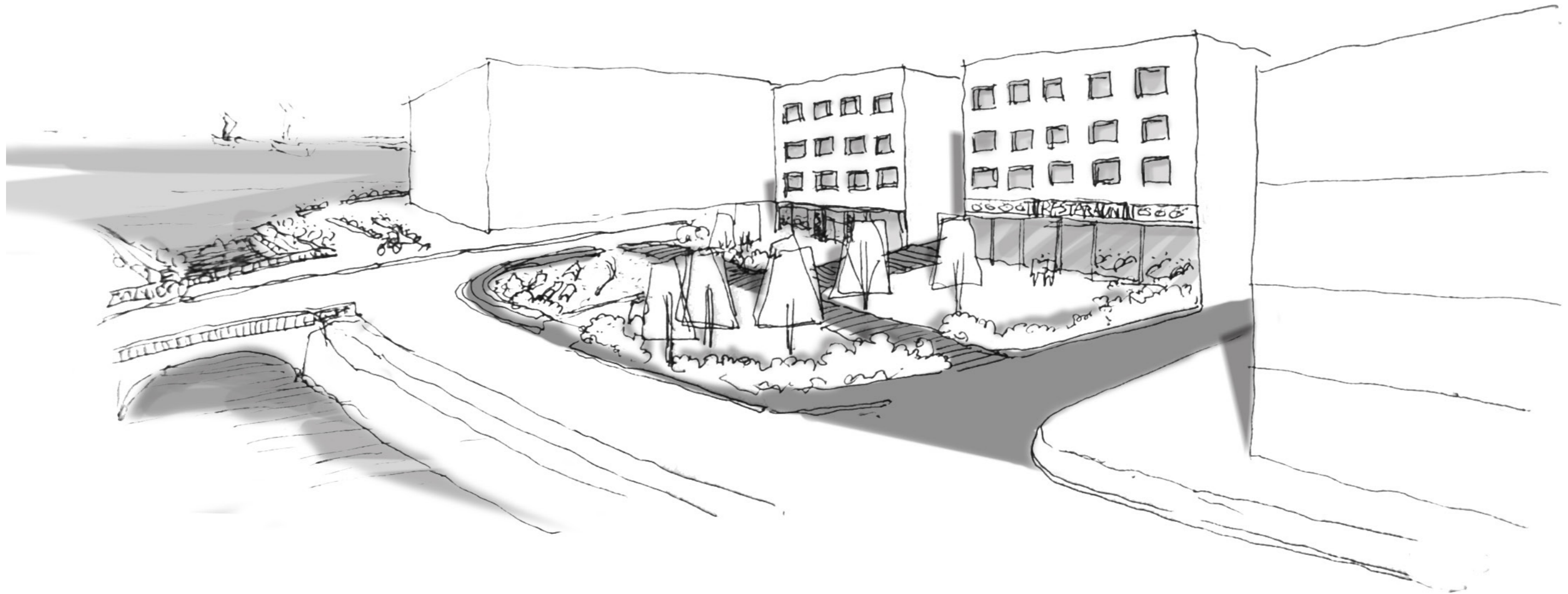




### STREET CORNER

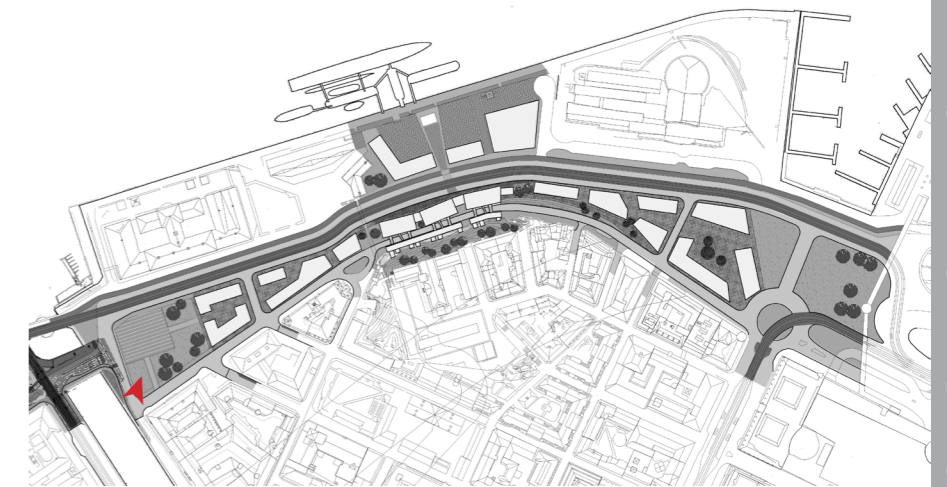
People have a new place go shopping or having coffee. The new urban street is narrowed down to make the scale smaller, while with the tramline, it is more livable and sustainable.



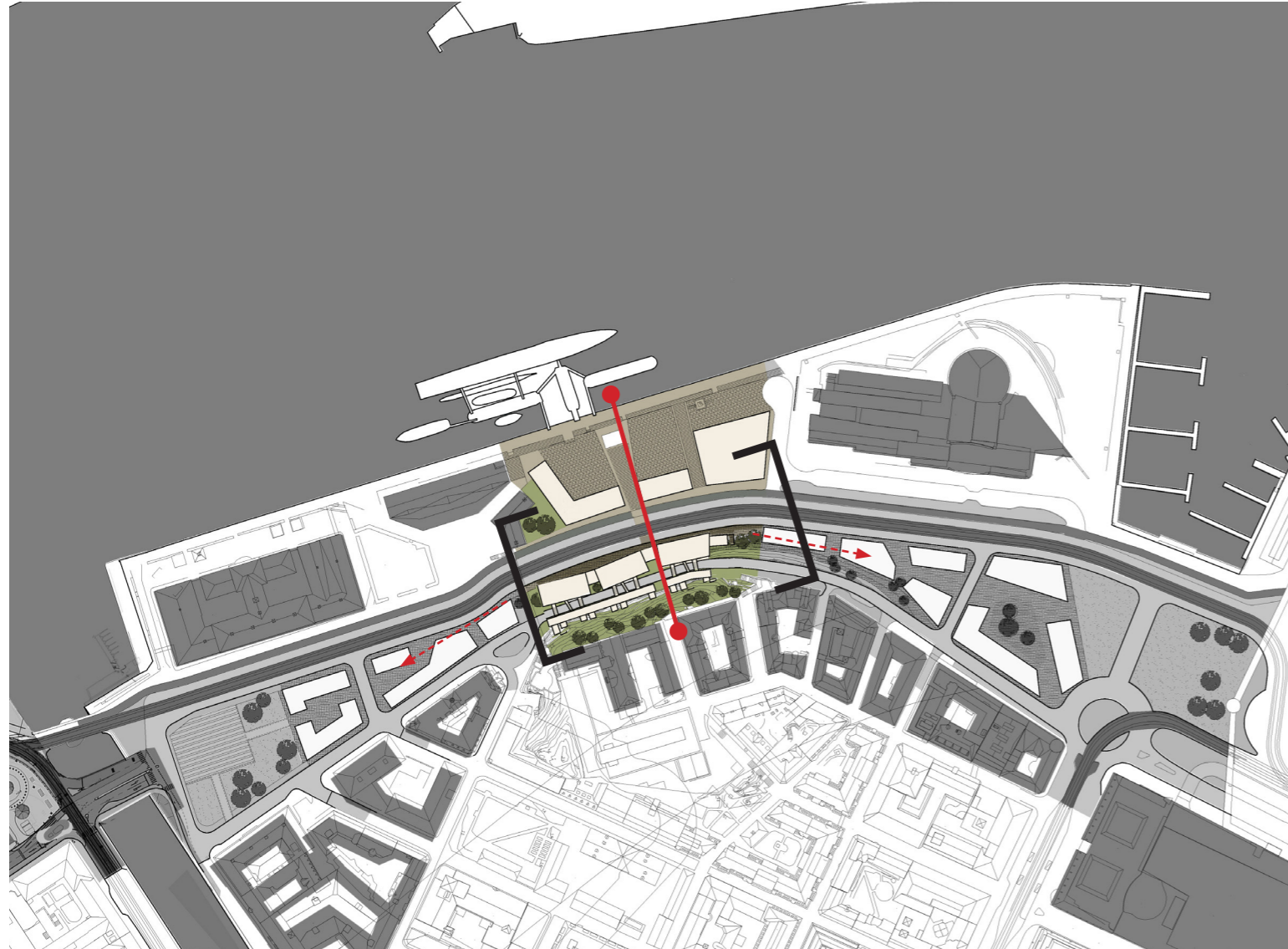


### SQUARE CORNER

In this square, you can choose to sit on the grass, enjoying the sunset, to have a walk in the pedestrian street, or to have a wonderful lunch with green and river close to you.



# ARCHITECTURE DESIGN



In the whole site, this district is quite interesting. It is in the middle of the site, connecting to the other buildings, and it is also very close to the river and the hill which contains topography.







# INSPIRATION

## STREET



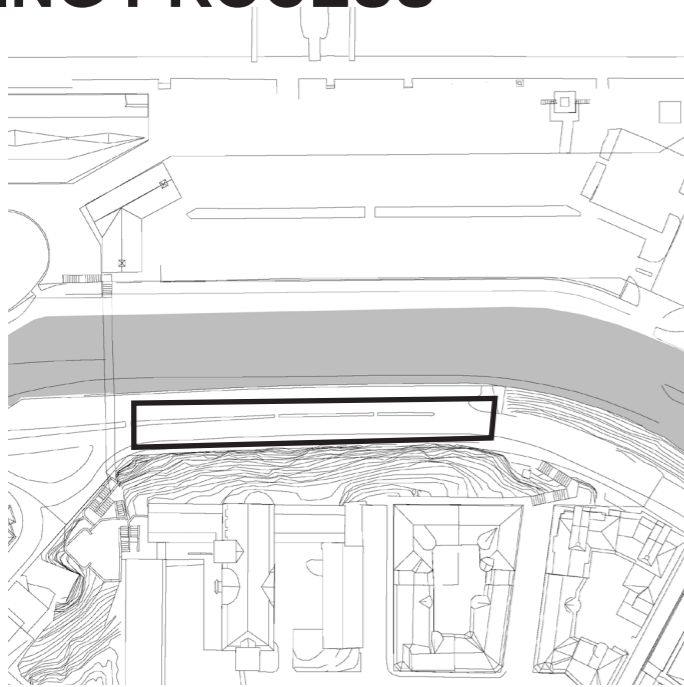
Typical commercial alley in Gothenburg.  
URBAN, SOCIAL, LIVELY

## ROCK



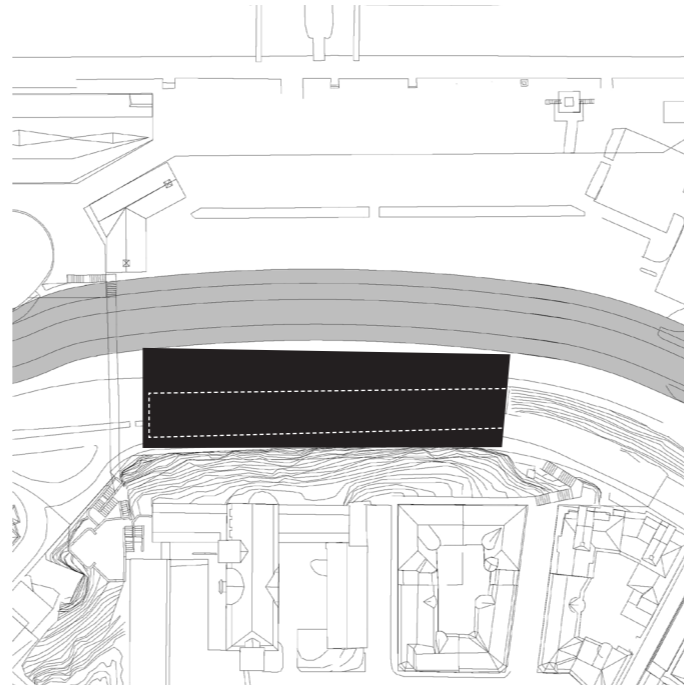
Rocky wall in my site.  
NATURAL, SIMPLE, COLD

# SHAPING PROCESS



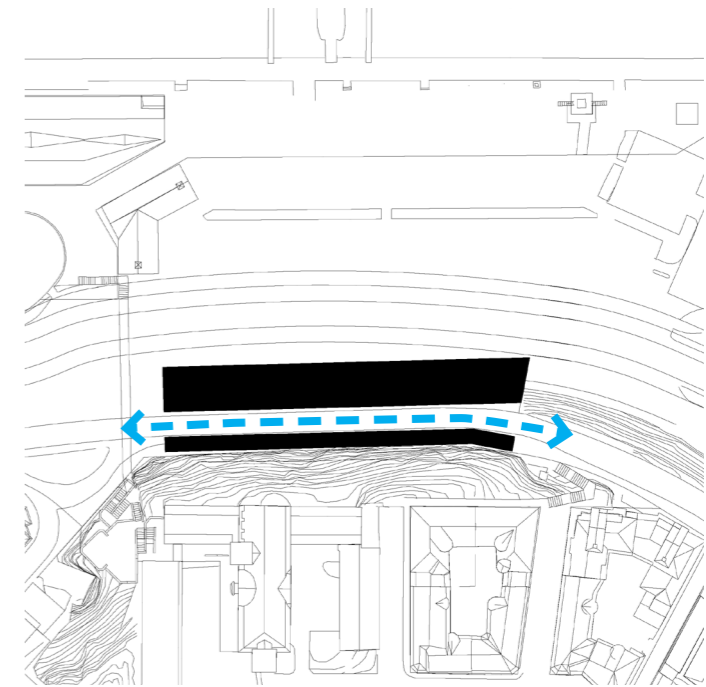
## ORIGINAL

The gap left is impossible to use to build, and the width of the road is unwelcoming for people to stay there.



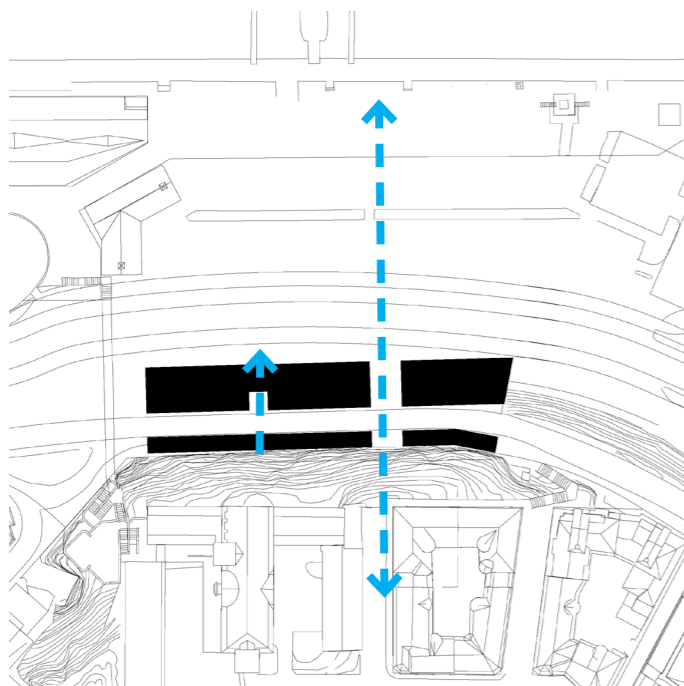
## MOVE-TOUCH

By moving the road upward, the space left can be used. To be able to touch the rock and also connect to the main road, I make the basic volume occupy the whole site.



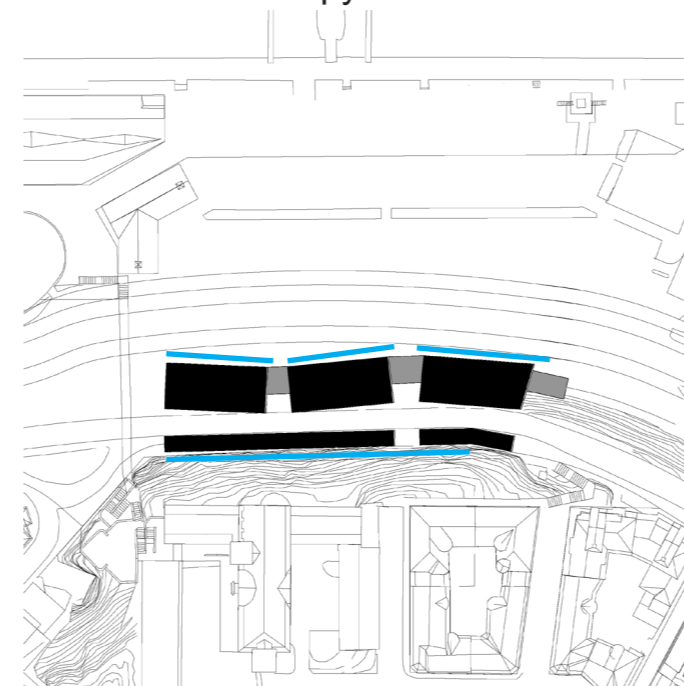
## SPLIT

To achieve the typical street scale and also to make the building accessible from another altitude, one road crossing the volume split it into two volume.



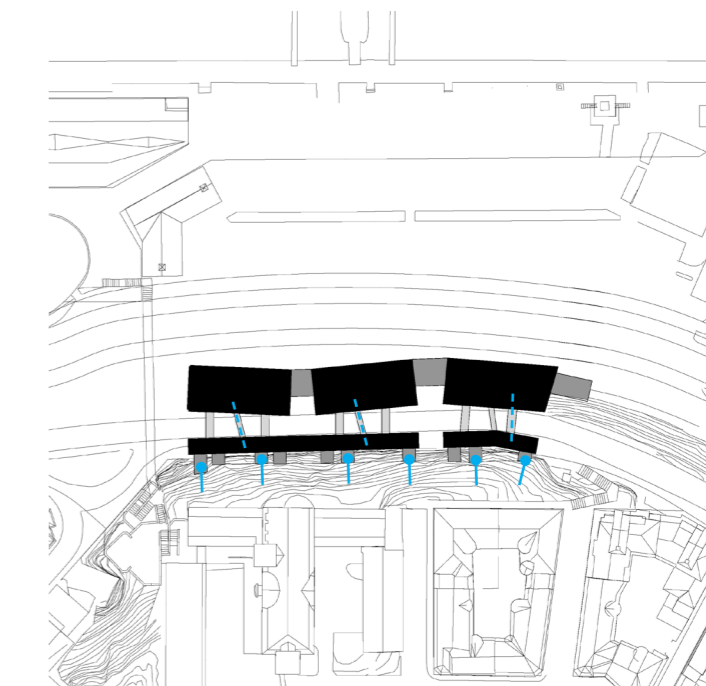
## BREAK

To enhance the communication from the hill down to the road and then to the river bank, a pedestrian path goes across the site. Besides, another break is made to introduce natural light into building. Therefore, the buildings are divided into three parts.



## FOLD

To form the street scale, the parts facing the road are folded, while on the other side, to contrast with natural rock steep, the parts next to it keep straight.

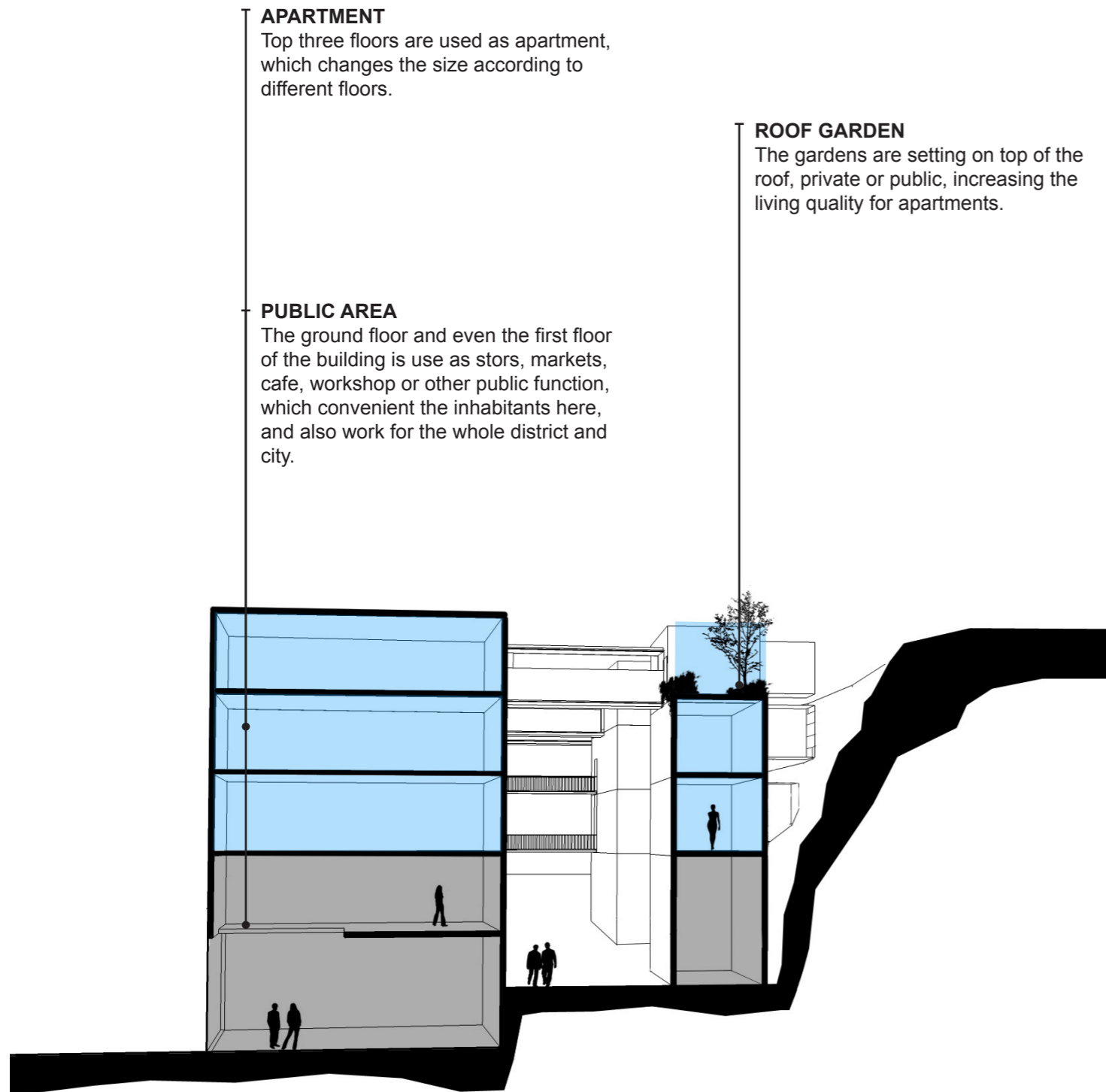


## CONNECT

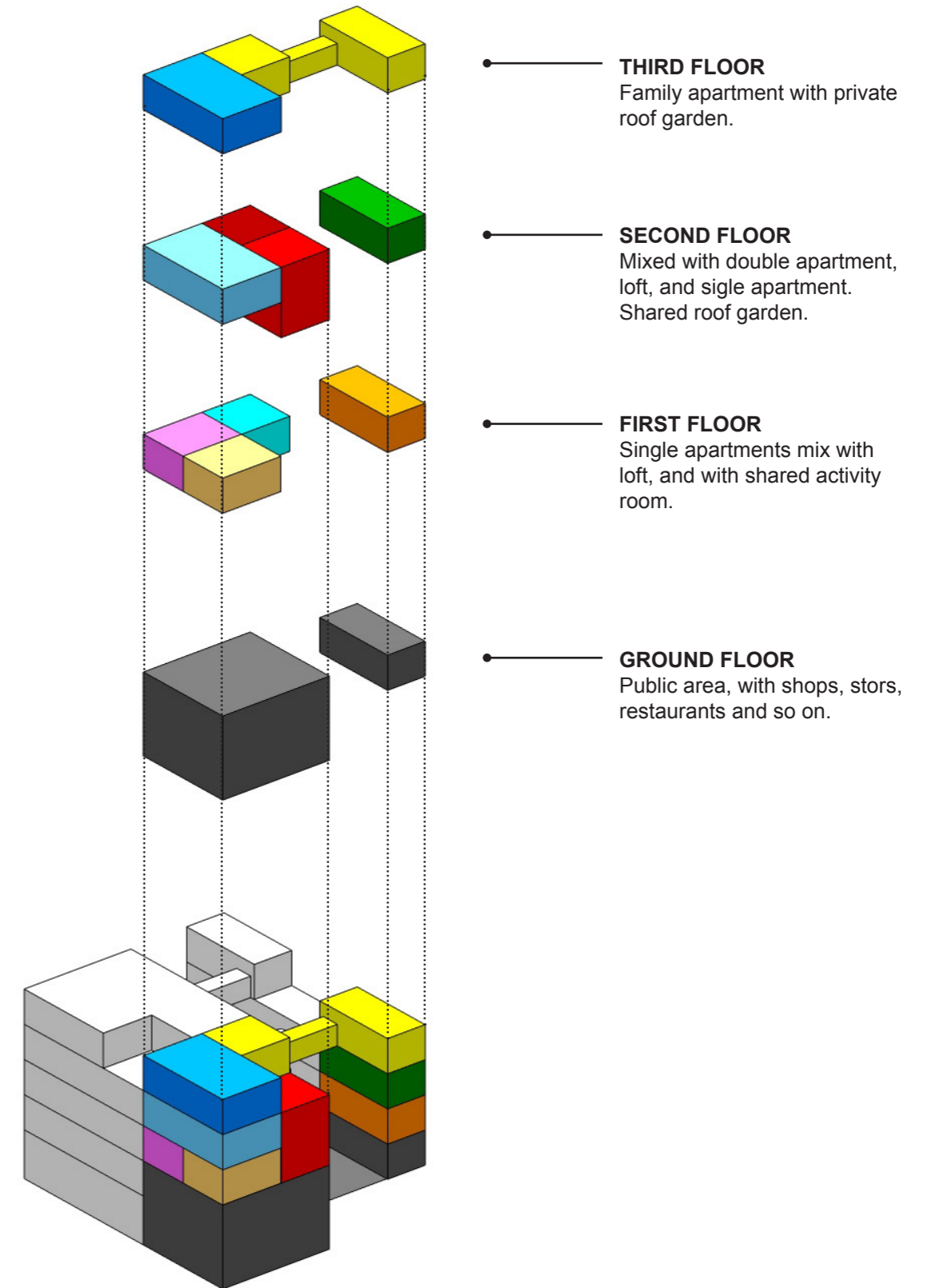
Some boxes are pushed out from building to the steep to getting more close to the rock and also creating interesting space. Even though the road split the building, bridges created upon the street connect the two parts together to be a whole building.

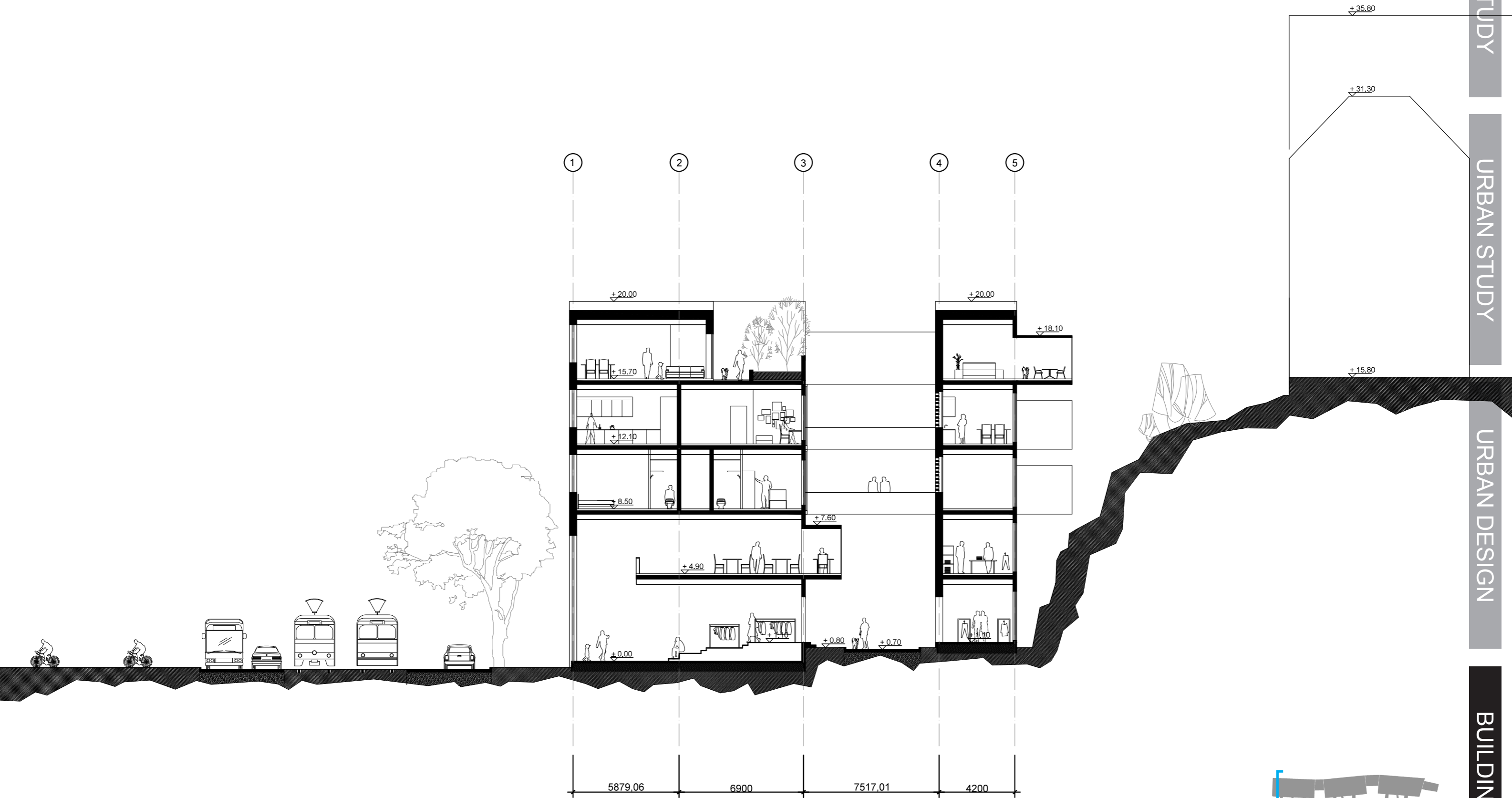


## FUNCTIONAL PARTITION

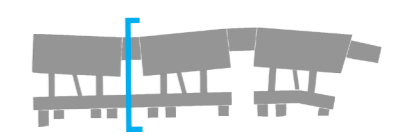
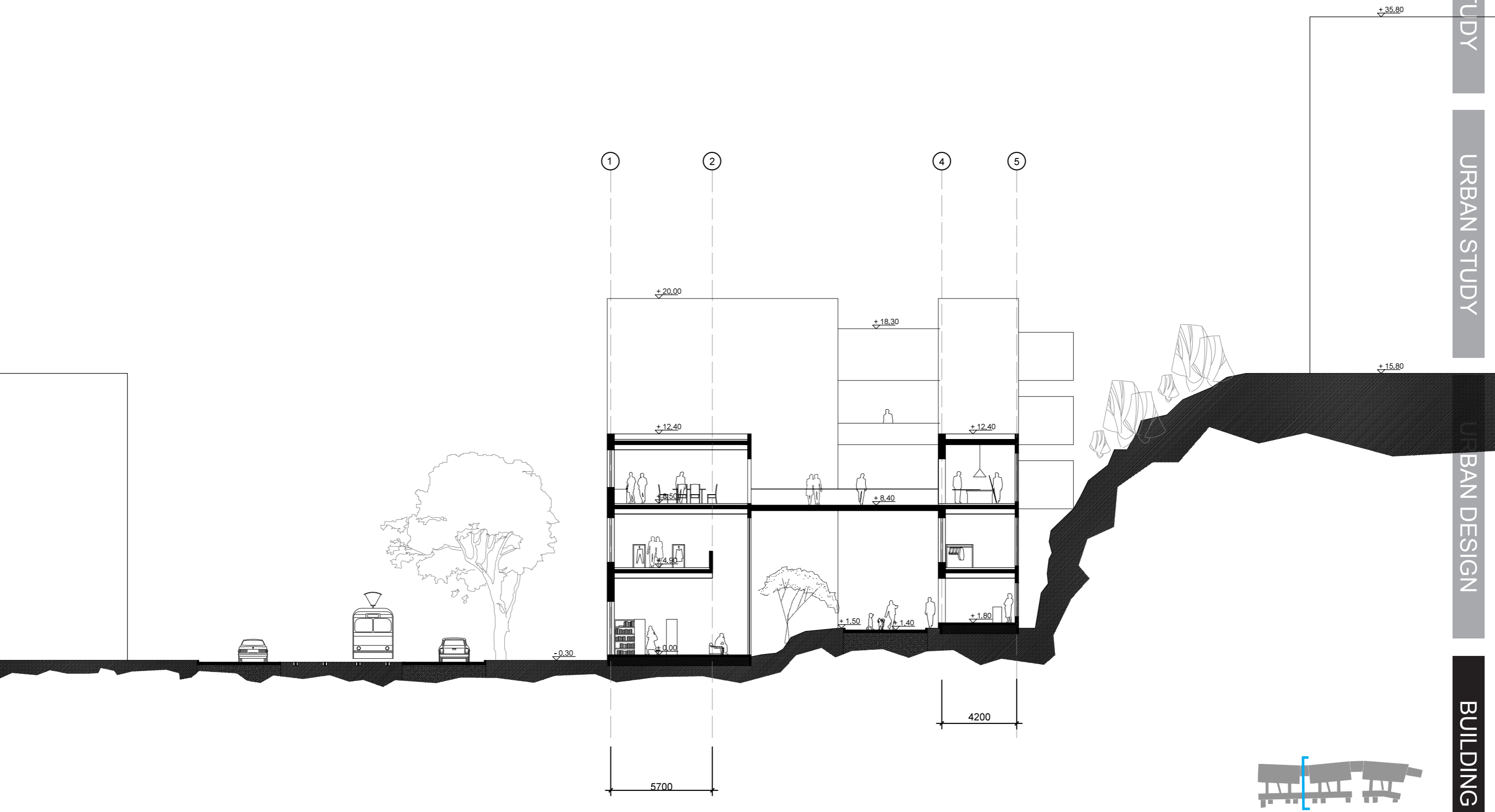


## COMPONENT

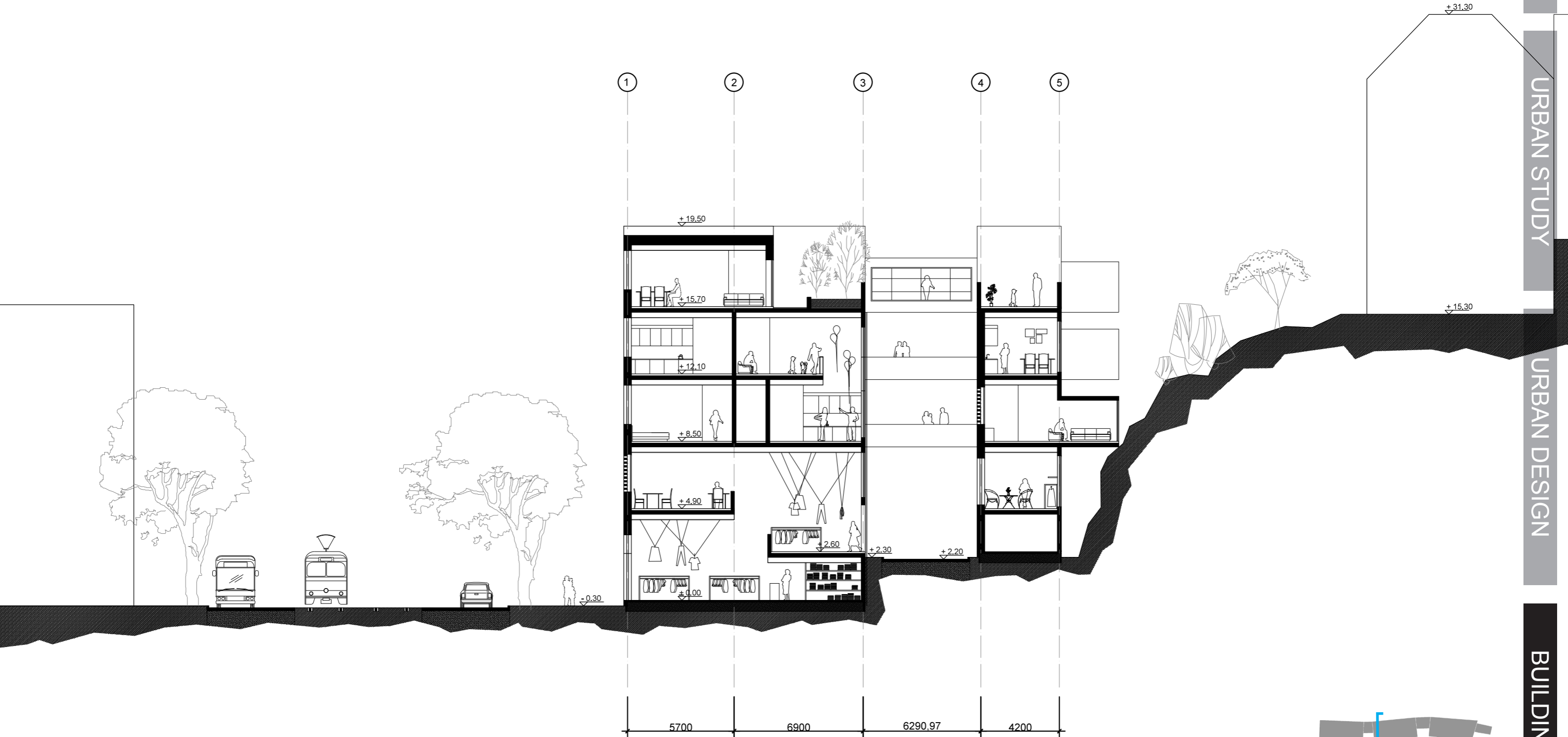




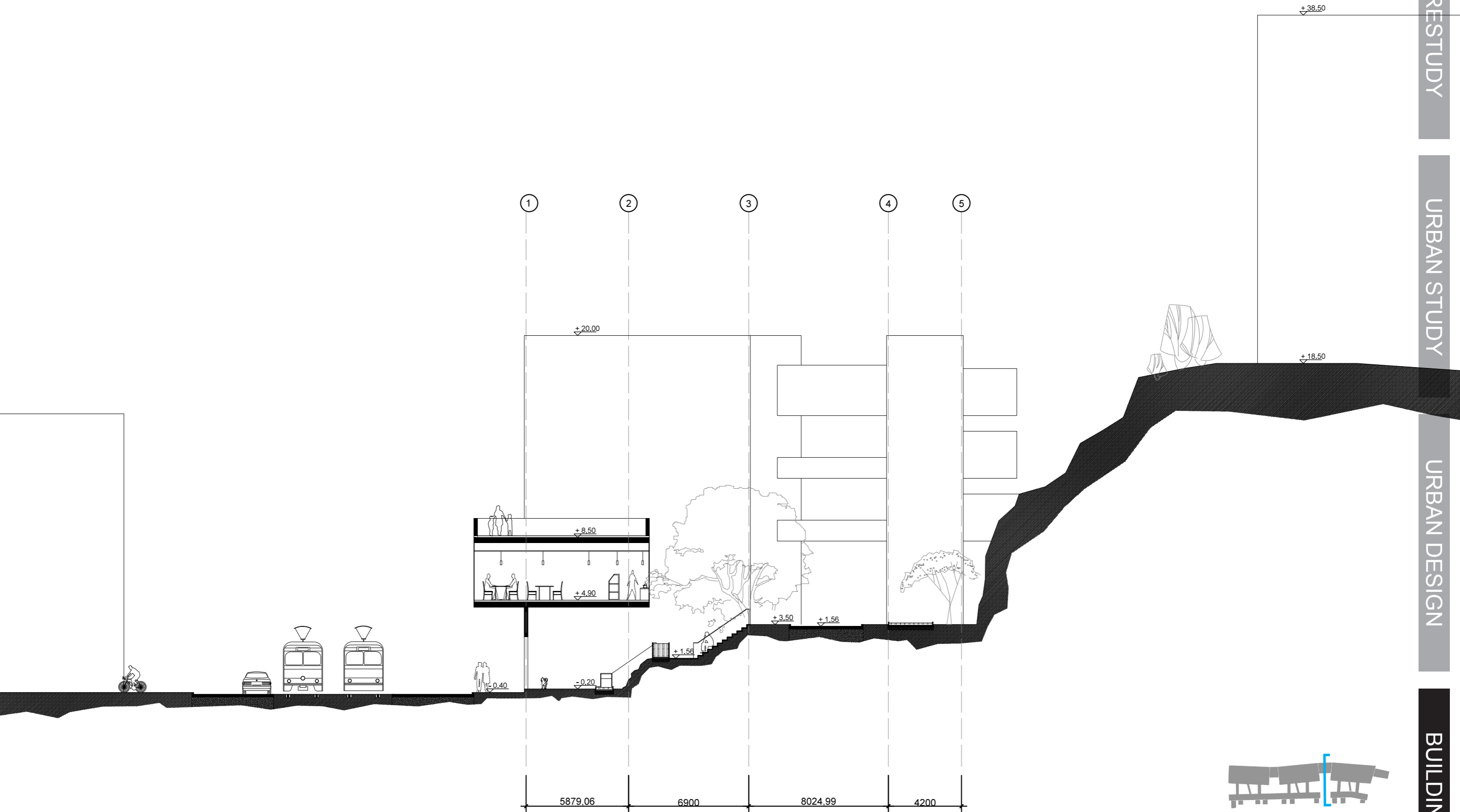
SECTION A-A



SECTION B-B

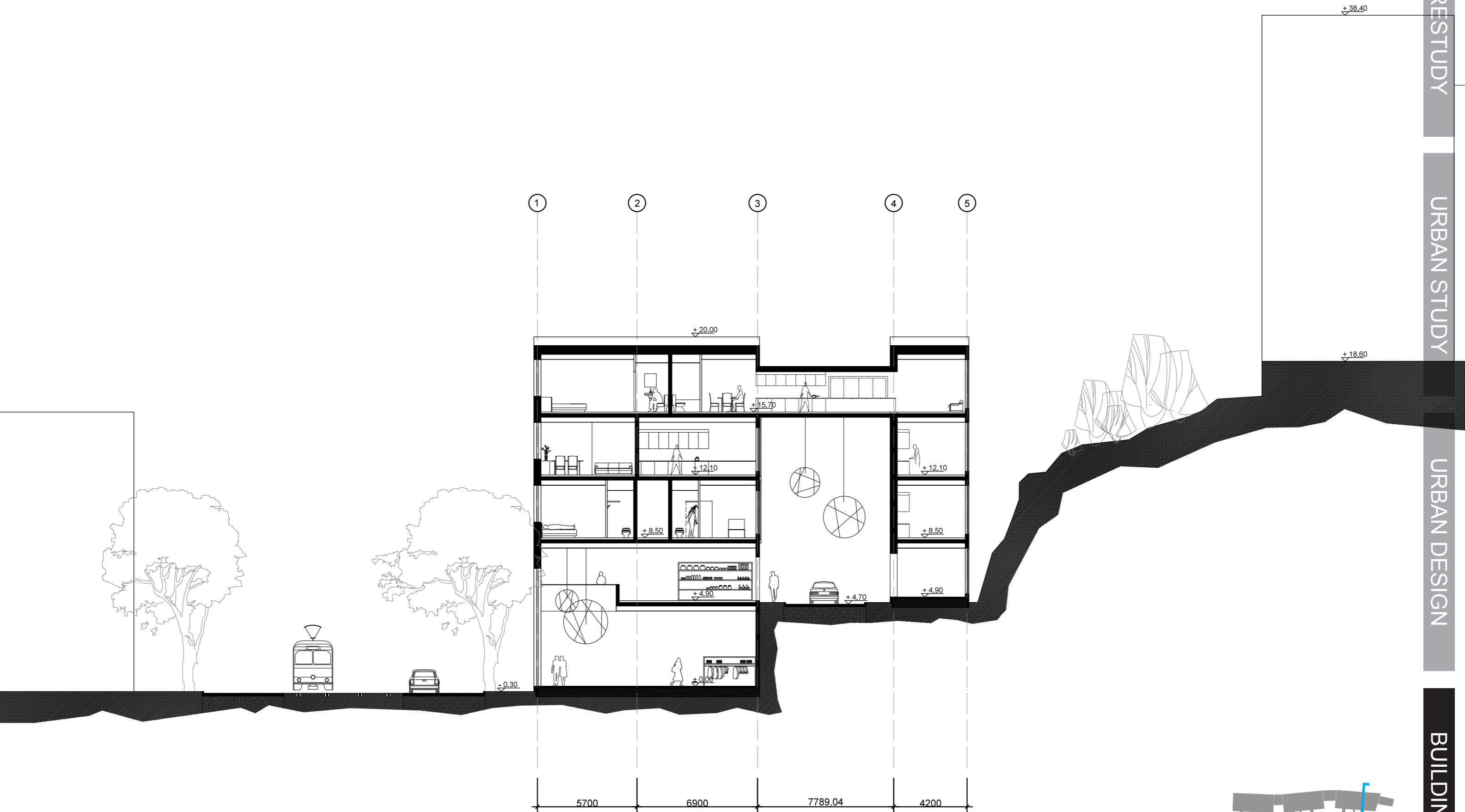


SECTION C-C  
31



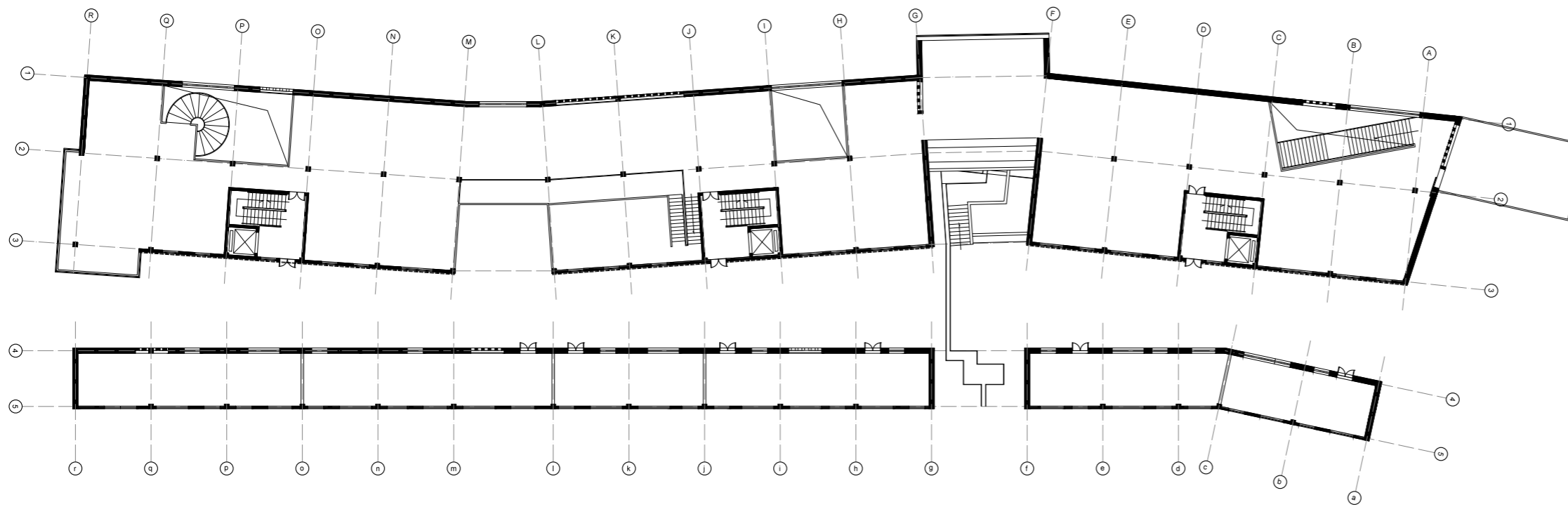
SECTION D-D





SECTION E-E

PLAN- retail, commerce

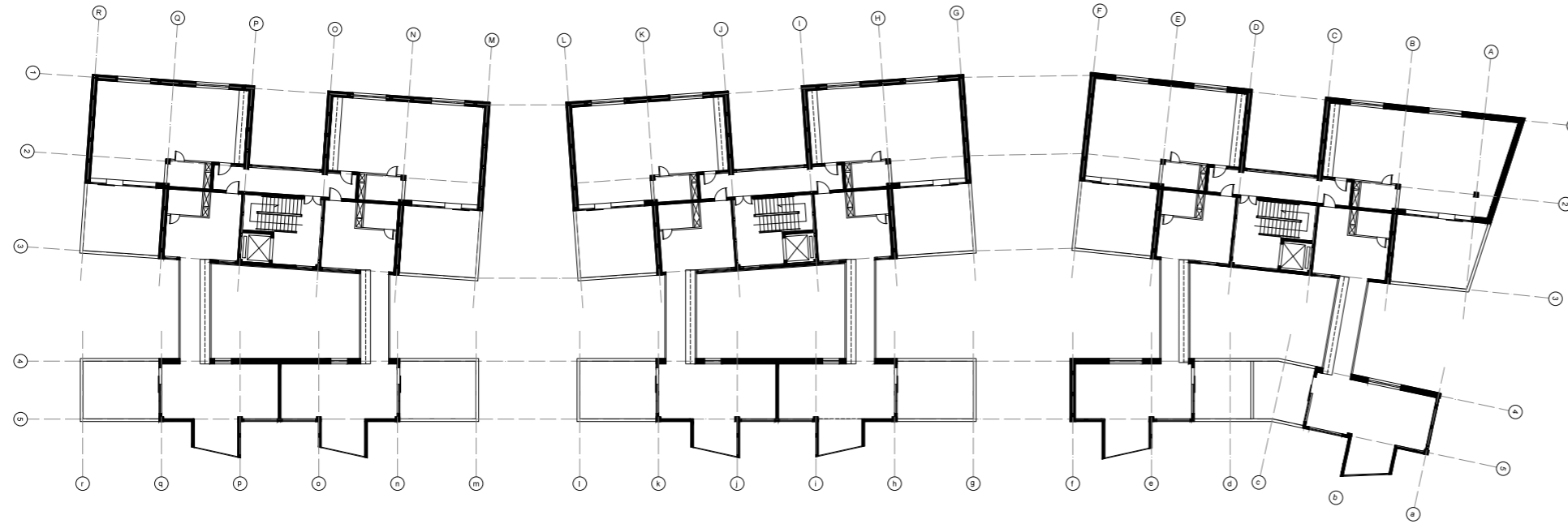


First Floor Plan  
1:400

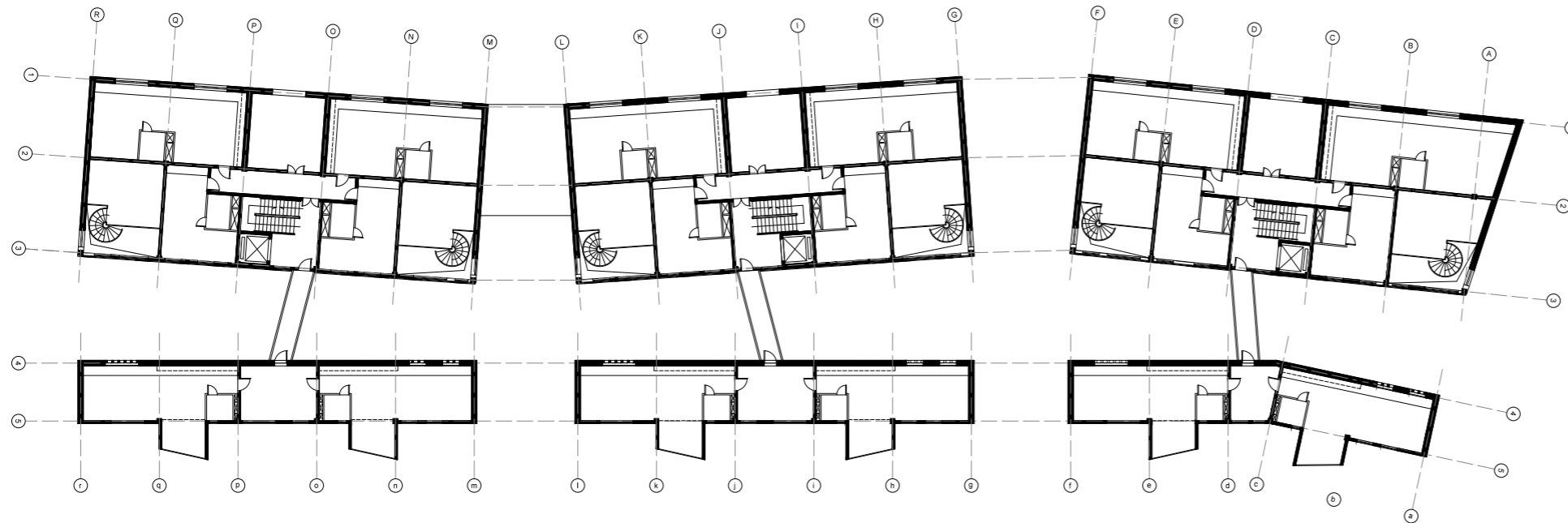


Groundfloor Plan  
1:400

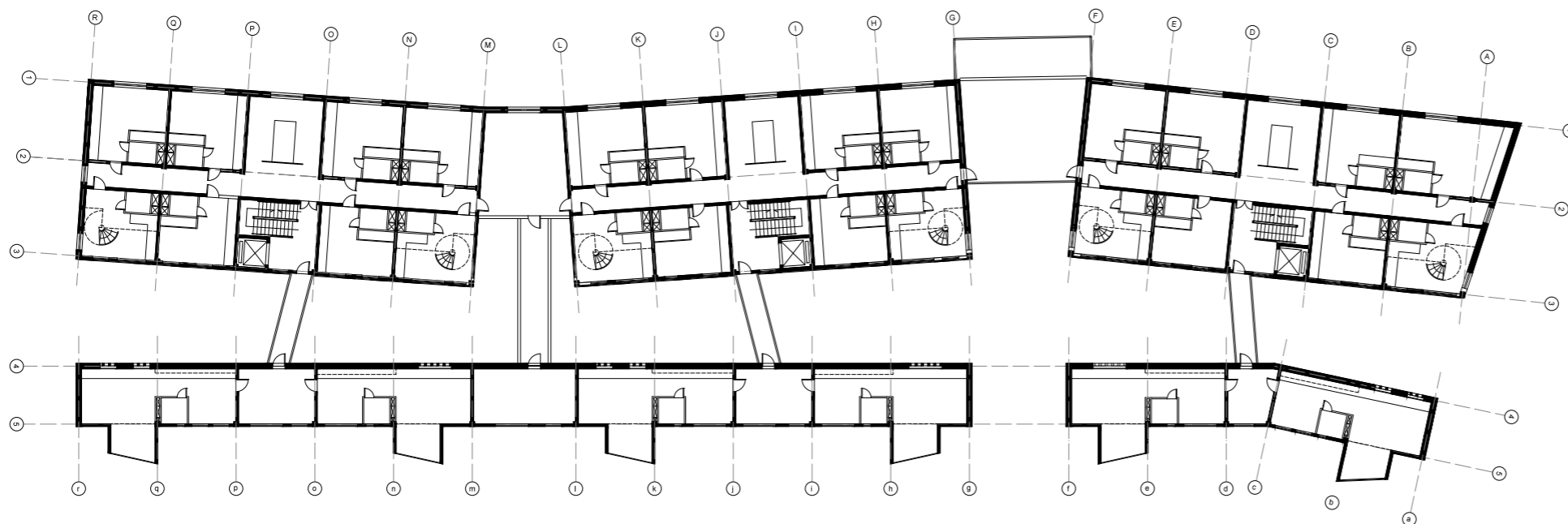
PLAN- apartments



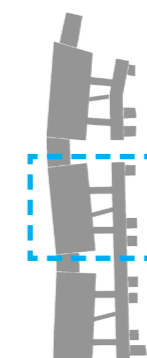
top floor plan  
1:500



Third Floor Plan  
1:500



Second Floor Plan  
1:400



- Shared space
- Extra private space

## SWEDISH ARCHITECTURE

Rådhuset by Gunnar Asplund



exterior



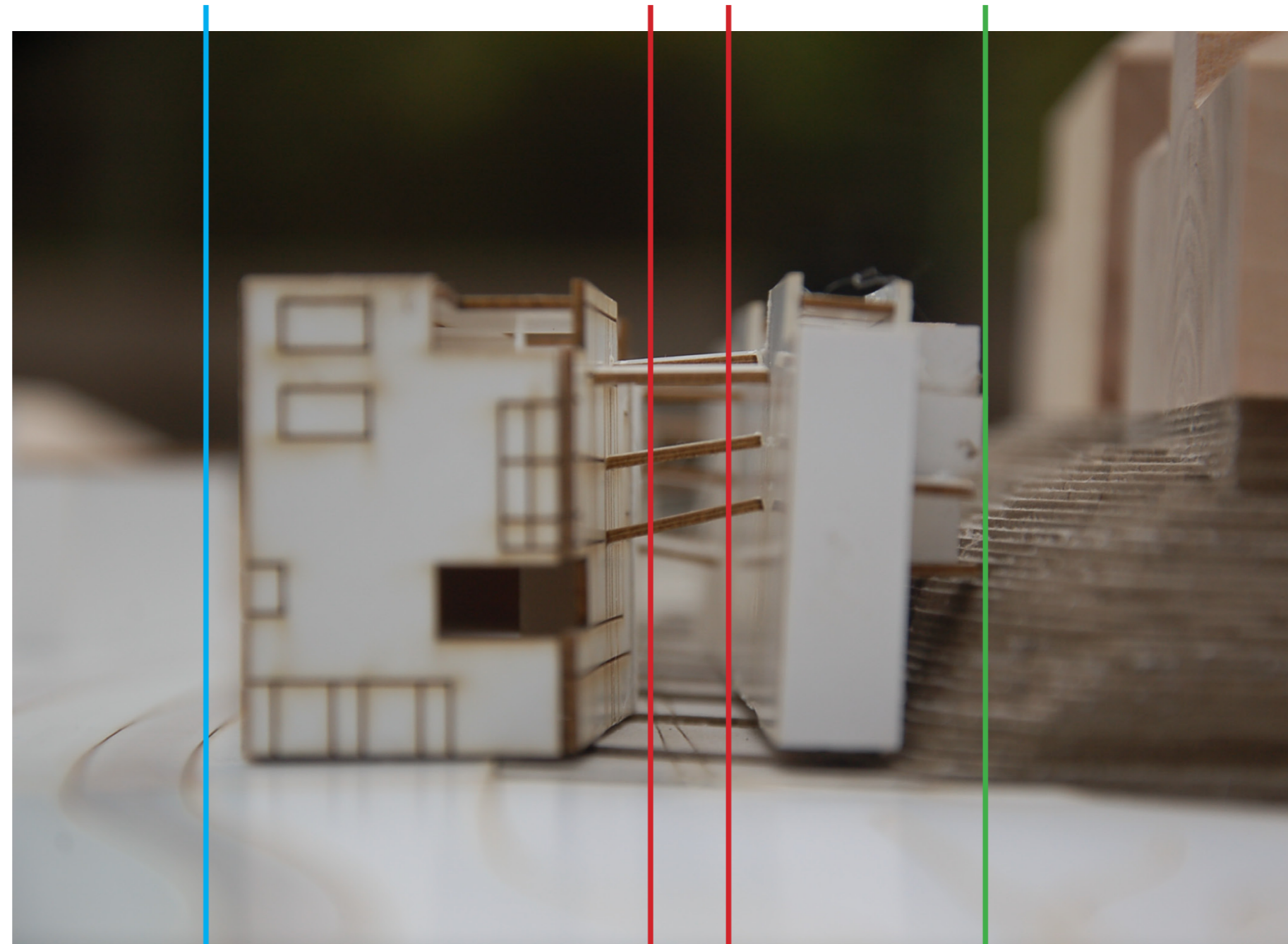
interior

The new extension of Rådhuset designed by Asplund is quite famous in Sweden.

It is just the ideal Swedish building in my mind: the exterior is ordinary or maybe boring, while the interior is fantastic and impressing.

This contrast and difference make the building very interesting, and that is also what I want to show in my building.

## FACADE STATUS

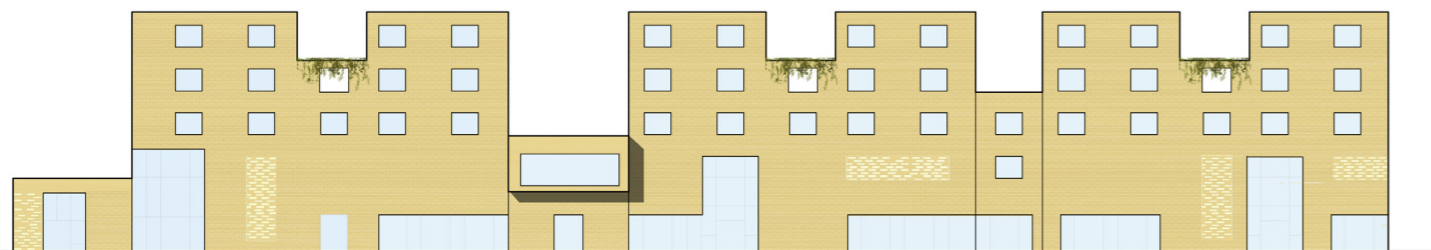
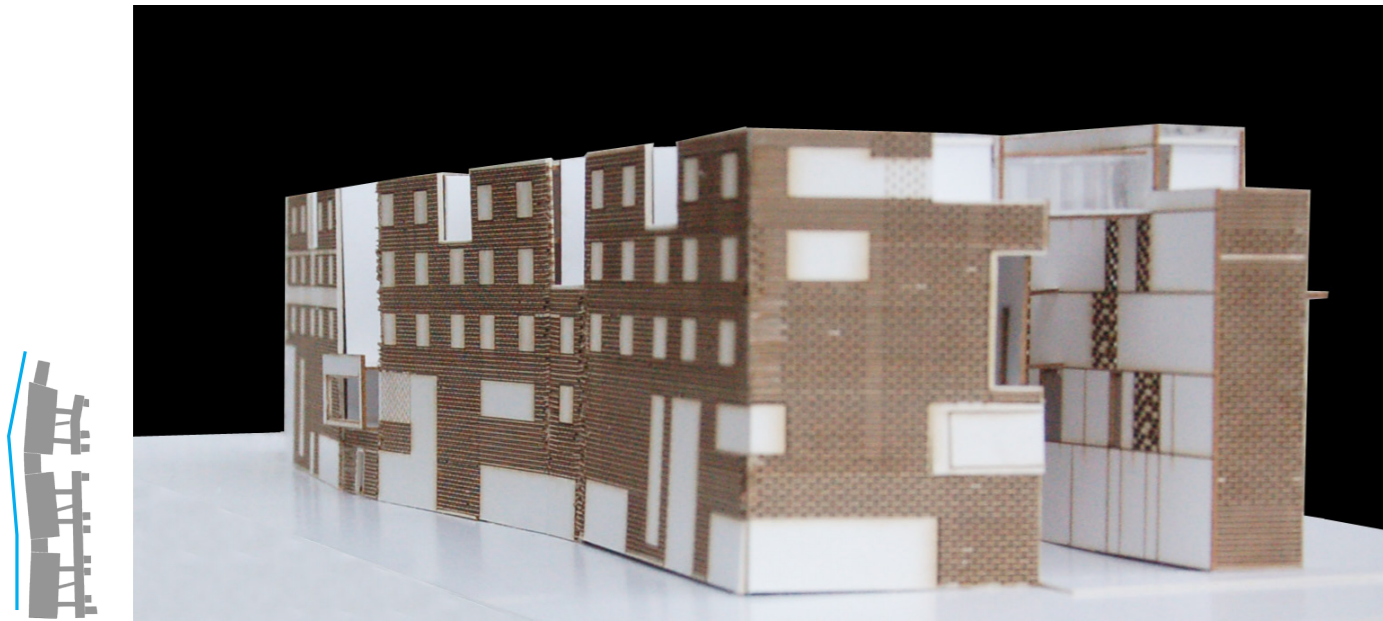


Gothenburg City  
public  
busy

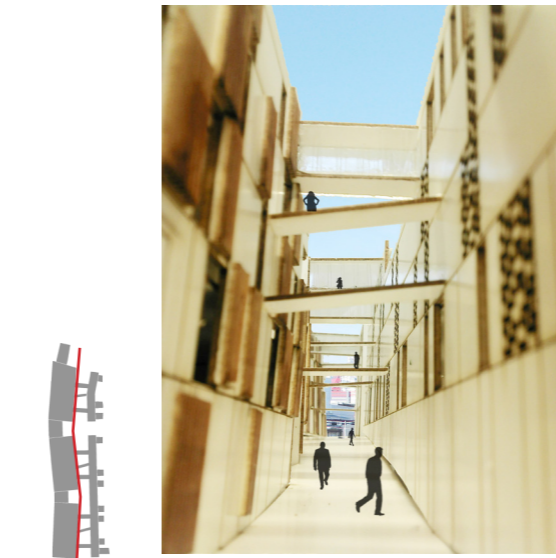
Inner Street  
semi-public  
lively

Rock terrace  
private  
quite

## FACADE STATUS

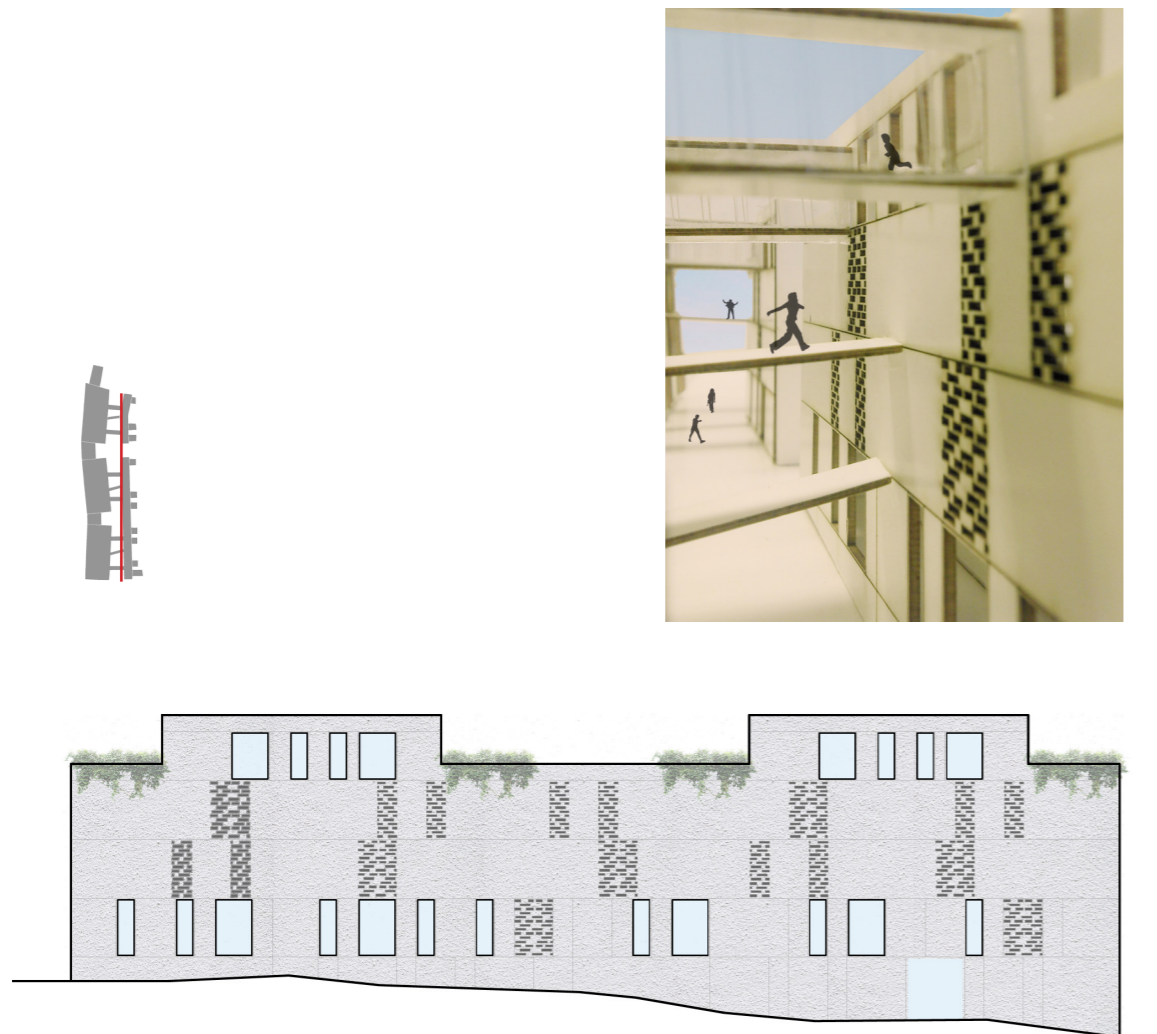


The facade facing the city is designed with yellow brick, the Gothenburg Brick, to extend the urban texture. However, the window opening of commerce and housing shows the different scale and pattern.

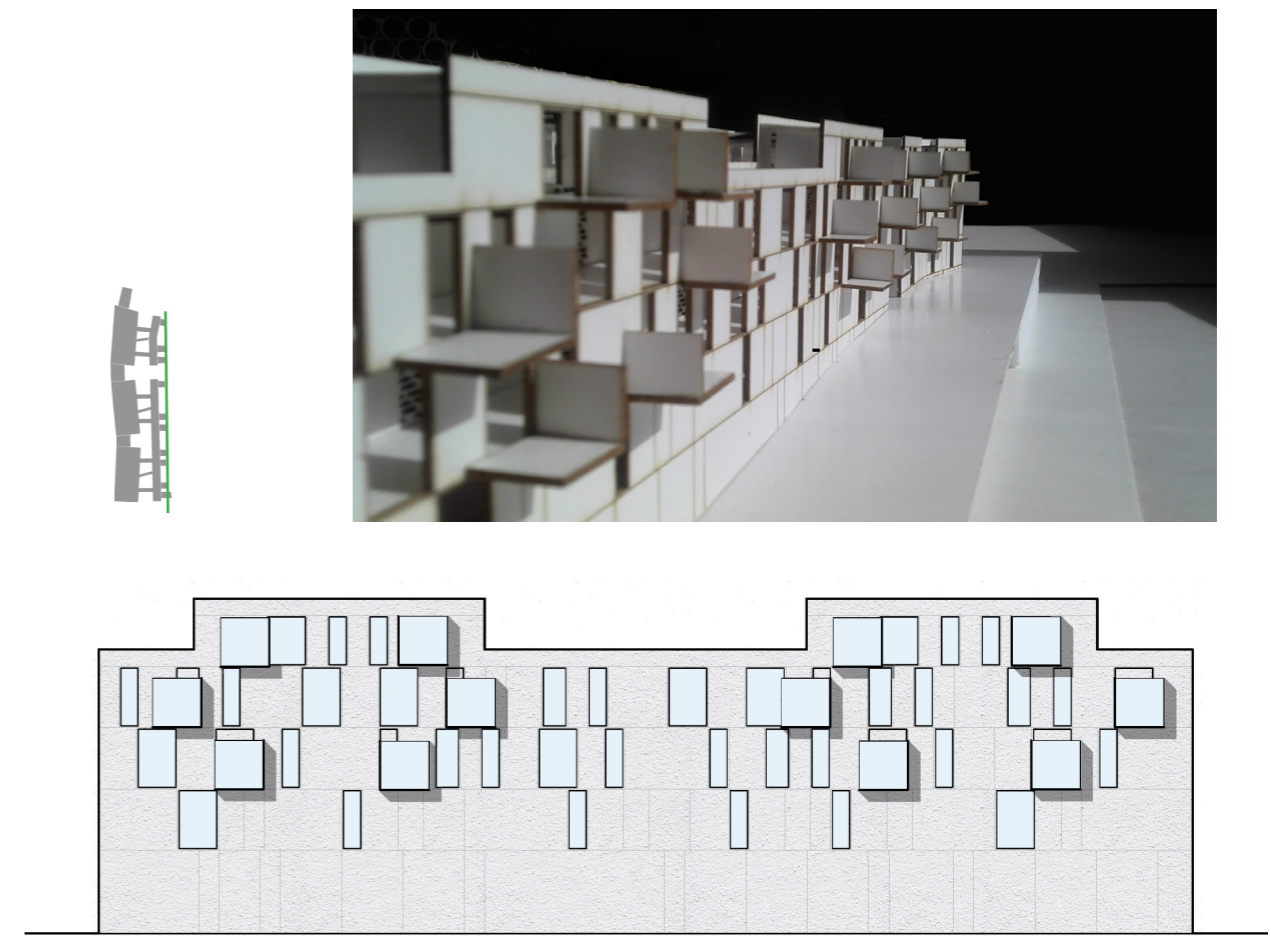


While the inner facade is totally different, to enhance the contrast between the out and the in. This facade is totally open. The wooden board is not only for sunshine, but also for visual problem.

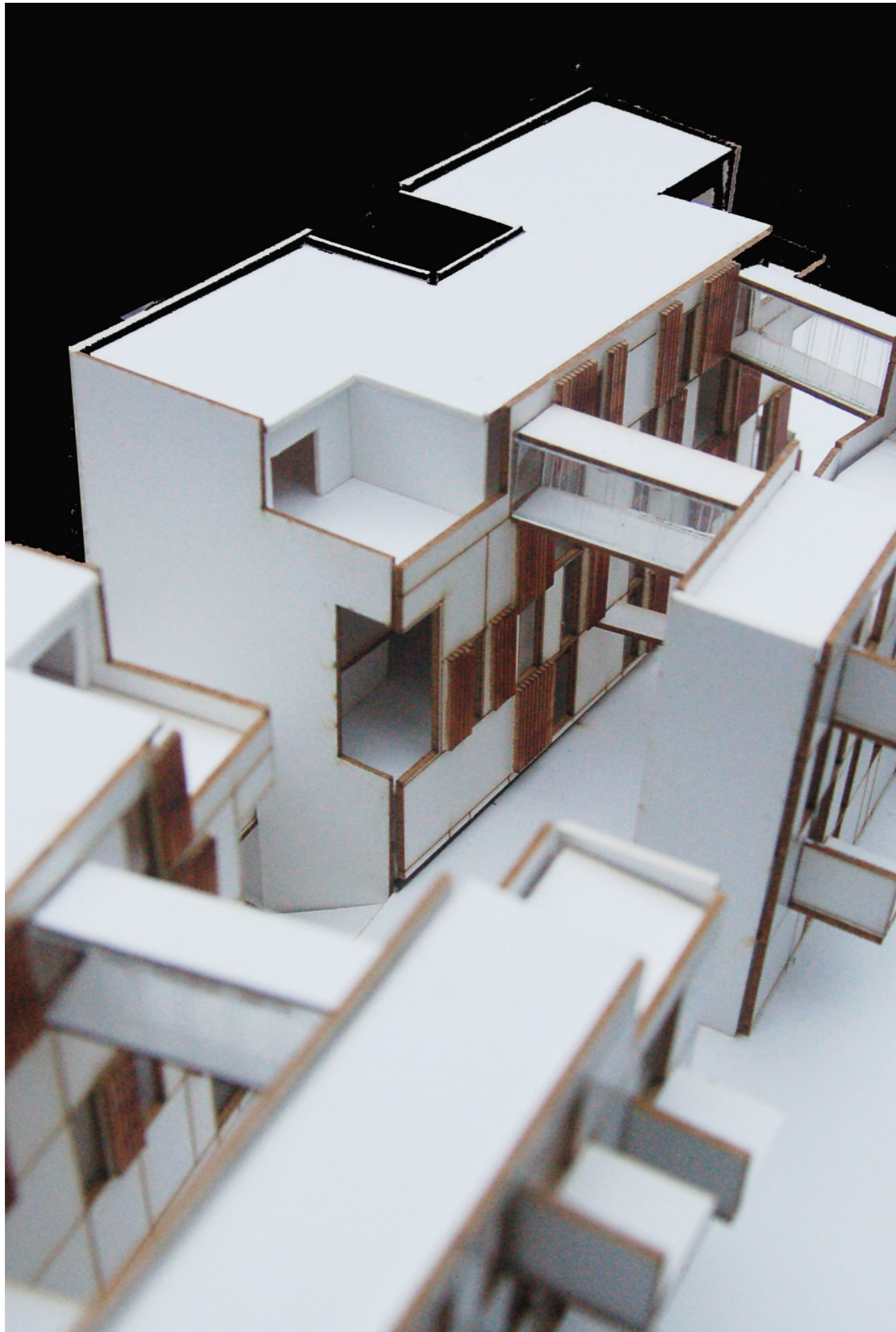
## FACADE STATUS



This inner facade is semi-open, with small opening and brike pattern which can not only echo with the urban brike facade, but also solve the visual problem.



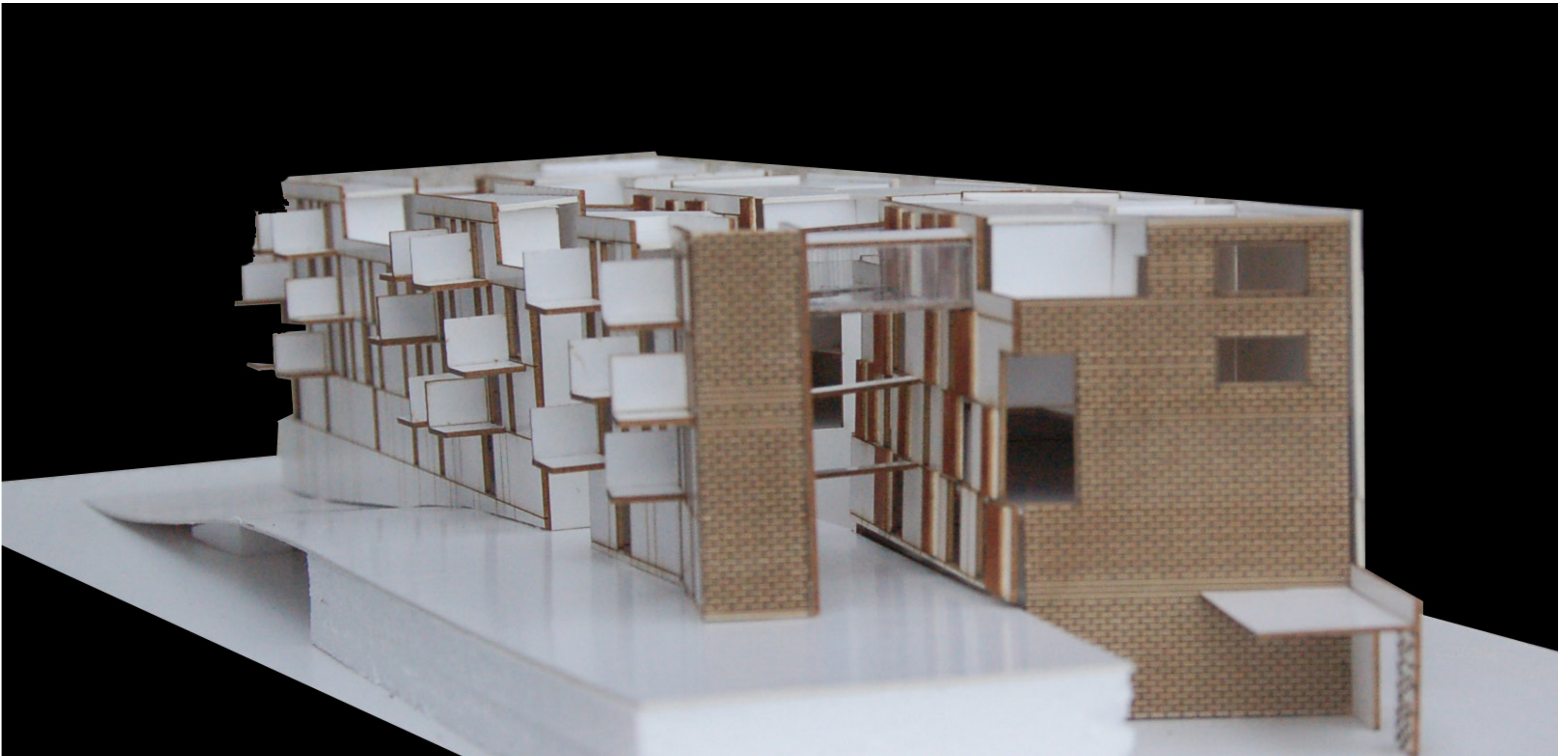
The facade facing the rock is totally open but also quite, with private balconies connect to the hill.







# TACK!



## SUMMARY

This project start from urban scale to densify Gothenburg by rearranging the space, designing mixed-use buildings and forming public space. The mixed-use building can creat value for the city and make sure the security for public space, while the public function can serve the building and also make the sense of belonging.

Then in the architectural phase, one building is designed, attampting to fulfill the proposal getting from urban design. To desnsify the city, and at the same time to creating the sense of community.