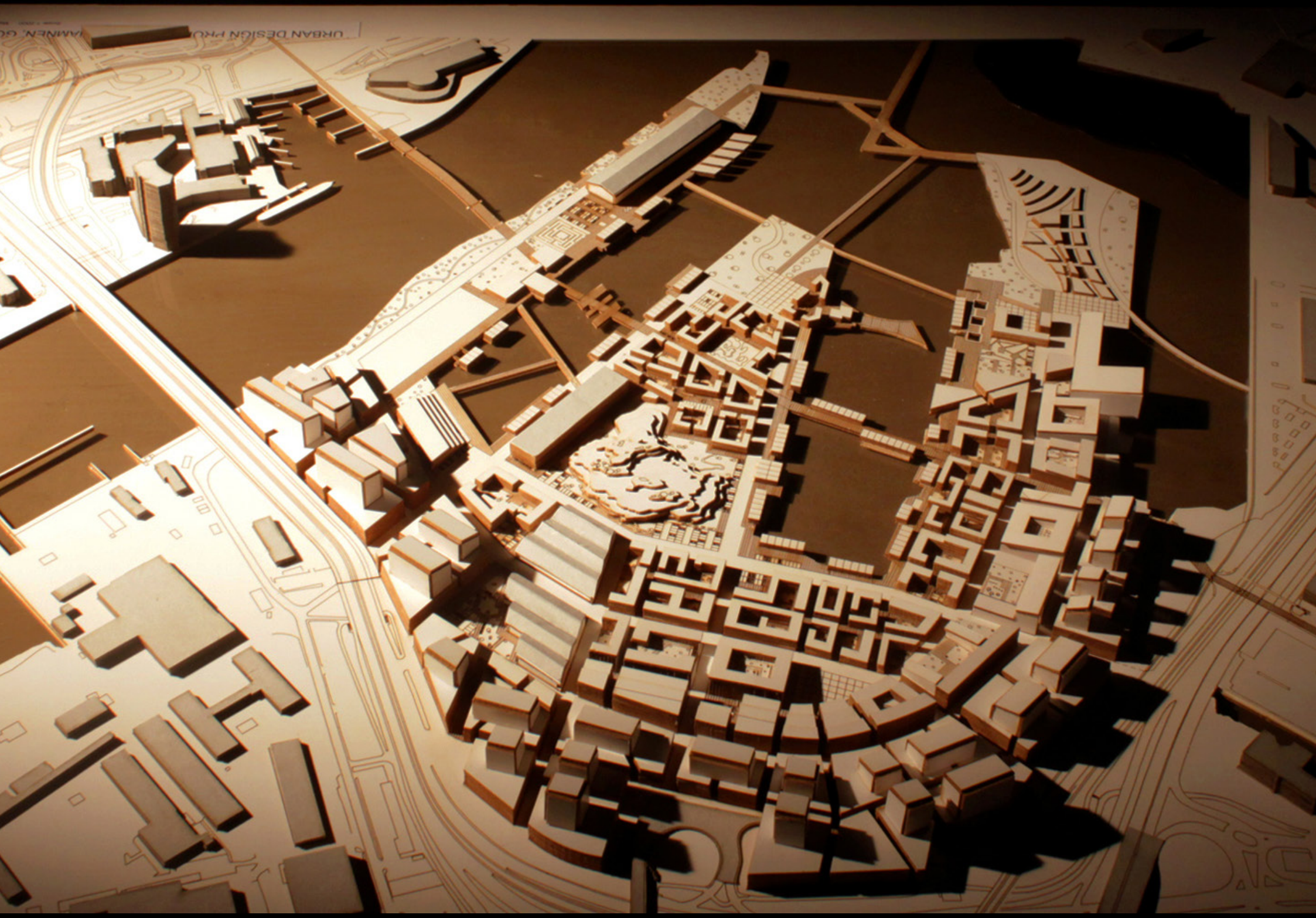

Enjoy Life, Enjoy The City !

An Urban Design Proposal of Frihamnen, Gothenburg, Sweden

Yu Liu
Master's Thesis at Chalmers Architecture

CHALMERS

MASTER'S THESIS

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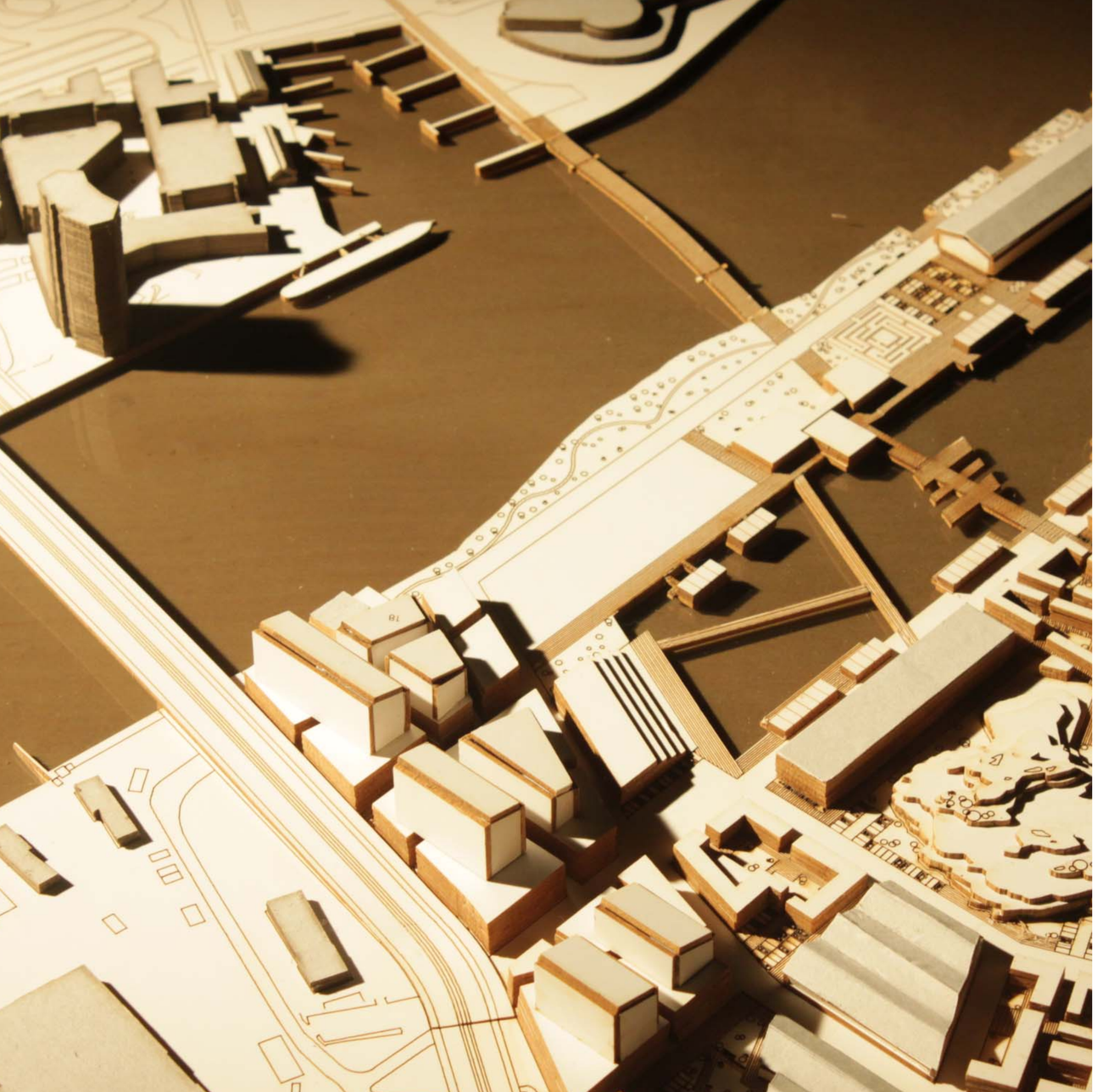


ABSTRACT

As the second largest city of Sweden, Gothenburg is transforming from an old industry harbour city to a new sustainable river city. Frihamnen, which is located at the heart position of Gothenburg, will become a crucial area for one of the future city centres. The main purpose of this thesis is to propose an urban design proposal that has a great vision of how Frihamnen will develop as one of the new public meeting places in the city to provide dynamic, diverse, green and healthy urban space for everybody, in order to provide a scenario for urban plan with an overall perspective for the future. The proposal of the thesis attempts to introduce a green belt slightly melting from the water wetland on the southwest to the public parks, green roofs, and courtyards of the piers on the northeast. And also by linking the current city centre from south side to future city centre by various way of using water front space, and supporting with residence, institutions, offices, campus, and also commercial shopping malls with restaurants, shops, cinemas, gyms and exhibition museums etc. to create a public meeting place that functions 24/7 as well as seasonally to encourage more citizens to enjoy the diverse, vivid and sustainable city life.

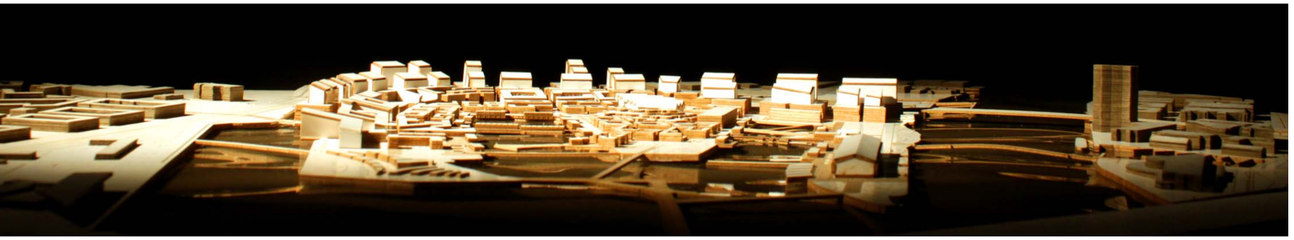
By referencing to the “Towards to an Urban Renaissance” by Urban Task Force, learning from experiences in UK, I got a general idea about how to attract people who are already living in urban peripheral area to get back to the city, By using the brown land to build up and support pleasant and mixed urban spaces. Also studying “River city Gothenburg - The Outcome of the International Workshop”, comparing proposals from different groups brought inspiration during my Master’s Thesis work. The proposal of this thesis sees the city centre of a series of islands rather than one continuously connected fabric as the planners and the workshop proposed. The interesting in this concept is how to leave the river side as an open space. Analysis from the study is illustrated and explained in the thesis as well.

To be able to do this, visiting the site and interviewing urban planning office and municipal company staff together with city life experience collecting in the beginning phase helped to establish the foundation and a well understanding of the city context. The thesis discusses the urban issues at different levels, such as city scale, district scale and building scale. This zooming in and out way of thinking offers the opportunity to plan the site as a whole urban area without losing human-dimension detailed design. The evolution of the physical models gradually tested the ideas of how to build the connection between the two riversides within the city centre area, how to use waterfront area as both challenge and opportunities to involve the future urban life, and how to create a human-dimensioned accessible future city centre based on a complex context situation.

The thesis will be presented at Chalmers and hopefully could be used by the city planning office or municipal companies, also as a reference for researchers, teachers and students. The final result will be presented as urban models in different scales, long urban sections and a booklet report, the most important thing is, hope the report may attract more interests concerning future city development from public, such as local citizens, foreign students and so on.

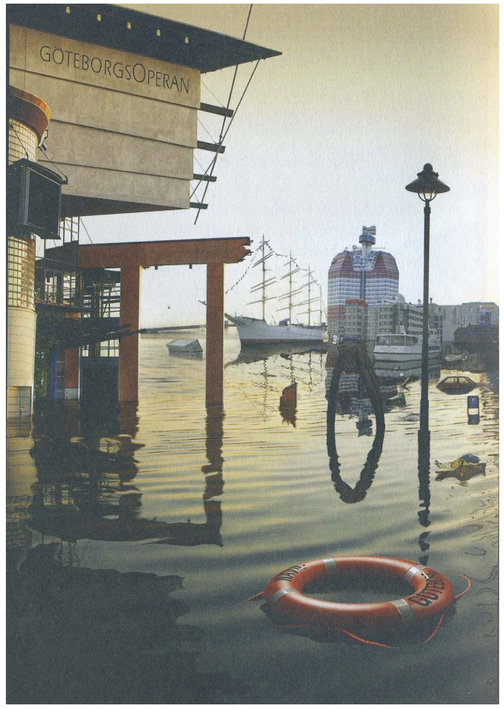
Key words:
Urban development, Urban Space, River City, City Centre, Gothenburg

Note:
River City Gothenburg - The outcome of the international workshop, Gothenburg, November 2011
Towards an urban renaissance / final report of the Urban Task Force, Rogers, Richard George, London: E & FN Spon, 1999



“Nothing is experienced by itself, but always in relation to its surroundings, the sequences of events leading up to it, the memory of past experiences.”.....

/Kevin Lynch - THE IMAGE OF THE CITY



Introduction of GOTHENBURG city

- West coast of Sweden
- Urban density 1,200/km²
- 2nd largest city in Sweden
- 937,000 inhabitants (metropolitan area)

What kind of city Gothenburg is ?
What kind of city Gothenburg will be?

Before & Now — Future

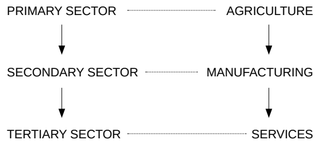
As a harbour and shipyard city, Gothenburg was one of the first Swedish cities that experienced, in a fundamental way, the process of structural change that is often called "post-industrial".

FROM INDUSTRY TO POST-INDUSTRY CITY

Gothenburg has a long industrial history, with large manufacturing plants, such as shipyards, automotive and ball bearing industries. While during the process of the industry transformation, more and more factories and harbour warehouses are abandoned. Then how to reuse the old industry and harbour site?

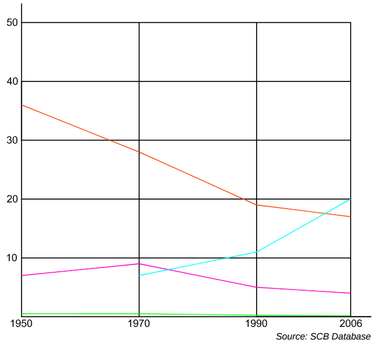
In social science, it is commonly argued that economically advanced societies have experienced a transformation from Industrialism to post-industrialism. Productions becomes oriented towards services rather than goods, then comes the new stage such as the "service", "knowledge" or "information" society. In this case, the employment changes are often taken as main indicators during the process.

Daniel Bell's theory
Before him, others had assumed a continued employment shift, from agriculture to manufacturing and then to services. A distinction is hence often made between a primary, a secondary and a tertiary sector.



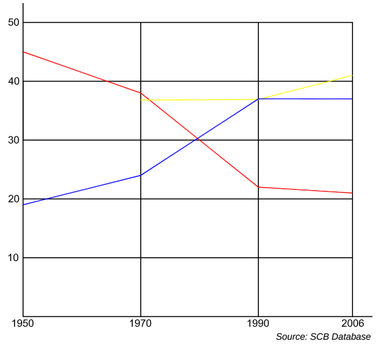
Bell emphasized that the growth of the service sector is to some extent due to requirements in the production and distribution of goods. Transports, finance and insurance are typical examples.

Another point from Bell is that with rising incomes, people become increasingly tend to spend money on activities such as travels, entertainment, eating in restaurants and sports. Besides, they are also interested in improvements in health care, education and environment.



Employment of Gothenburg in 1950, 1970, 1990, 2006 Bengt Furåker analyses the employment developments in Gothenburg at his article "A Post-industrial city?"

Agriculture
Manufacturing
Construction
Finance, real estate & insurance

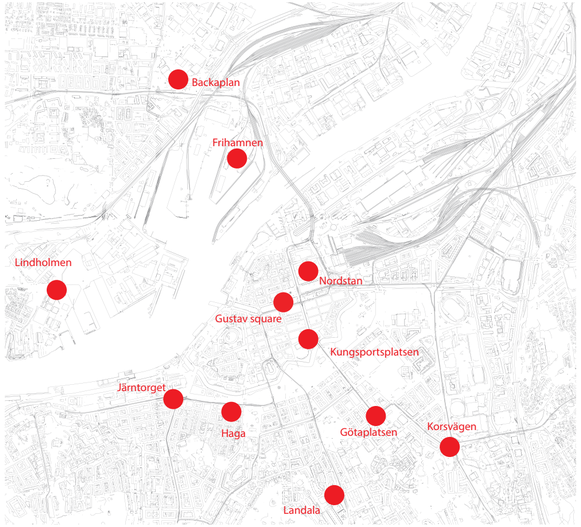


Suitable function of Frihaminen in a Post-industry city
How to define the new functions in a post industry city centre – Frihaminen?
How to add the post-industry city feature to the city centre – Frihaminen?

1 Agriculture
2 Manufacturing
3 Construction
4,5 Trade, transport & communication
6 Finance, real estate & insurance
7 Education, research, health & social care
8 Personal & Cultural services
9 Public administration

1-3
4-6
7-9

?



!

MONO-CENTRIC CITY VS POLY-CENTRIC CITY

Among mega cities such as Paris or Shanghai, the mono centre of the city normally could not afford such huge populations at big urban region.
So the sub centres appear during the urban development to support the nearby daily service for citizens.

Comparing to metropolitan, Gothenburg is a relevant small city, although it has its own old city centre surrounded by canal, still the public meeting places are to some extent distributed over on both sides of Göta river, mainly at the south, existing as poly centres in the city.

FRIHAMNEN - ONE OF THE FUTURE POLY CENTRES IN CITY

Formed by certain reasons, these poly centres play deeply important role, as crucial nodes supporting citizens' activities. A small square, an old historical street with handcraft shops, a high technology science park, a street full of cafe and restaurant, a big shopping mall block etc.

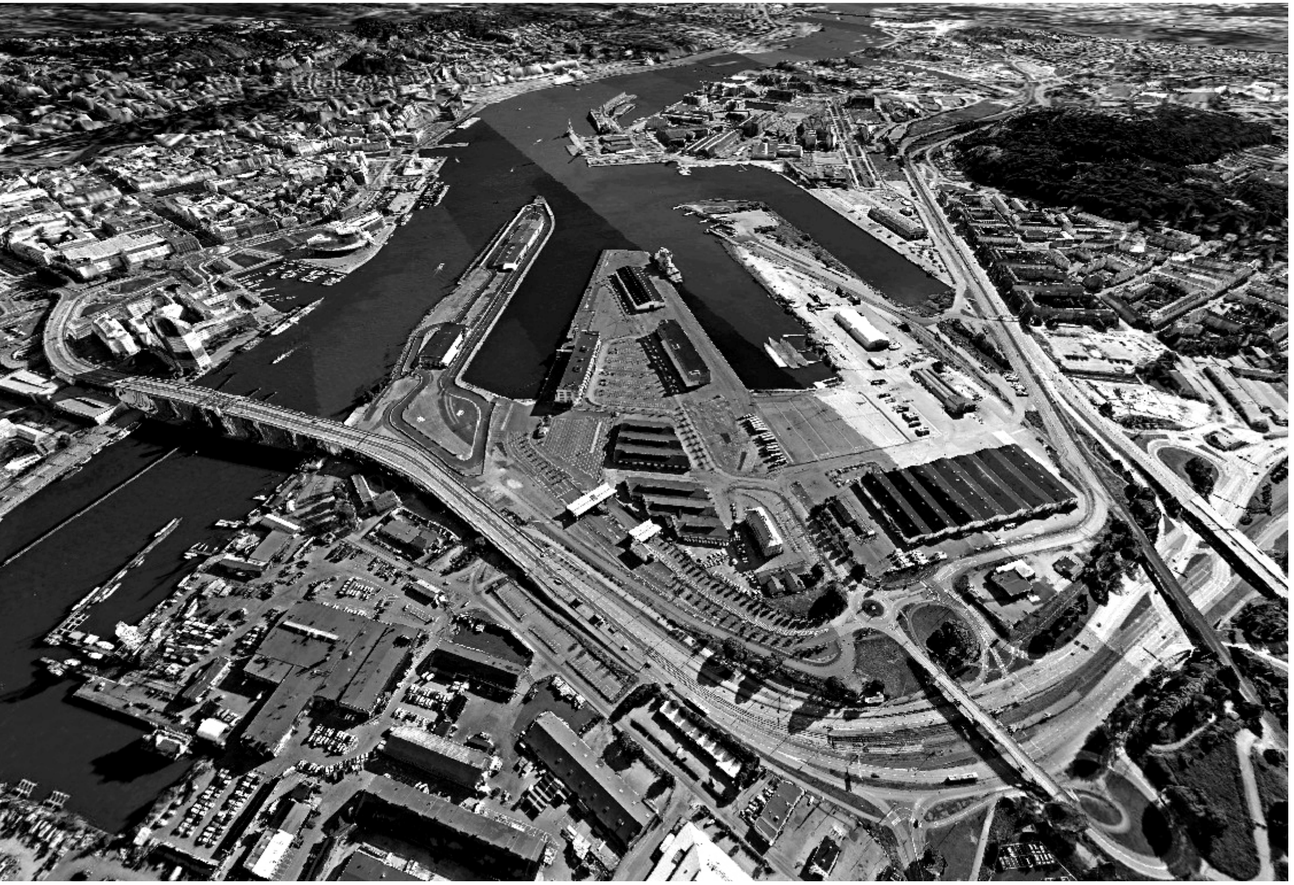
Further more, there are different streets to connect populations and business centres together. By vehicle road, such as trams lines, buses, ferries; by small scale streets mainly used by bicycle and pedestrian.

This gradually formed the main road, the small paths during the development of the city. Besides, ensures there are good accessibility and convenient transportation in between the poly centres.

According to their function and target group, they have different size of service radius to serve certain numbers of nearby people.

Frihamnen will function as one the poly centres in future.

Introduction of FRIHAMNEN



SITE FRIHAMNEN ! WHY ?

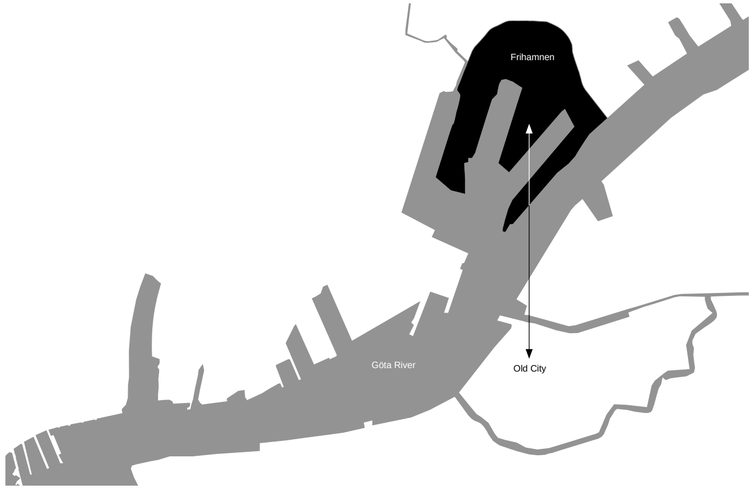
- It is said that river is the soul of city, such as La Seine of Paris, Thames of London, however gothenburg city developed from Göta River. As a harbour city, trading and industry were the tradition, thus river plays even more important role here.

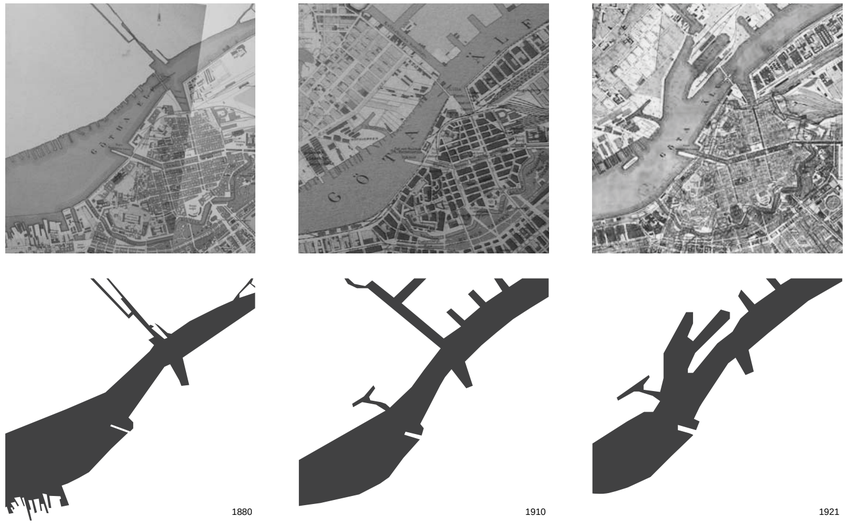
- Frihamnen is a former harbour area along Göta River, situated at central position of the city. It contains 3 piers for loading goods before. The 3 piers give unique shape to Frihamnen, it looks like a dragon foot, thus making it distinguished in the satellite photo over Gothenburg city.

- On the other hand, it provides more opportunity to integrate the land with water, creating interesting waterfront areas when compared to the other areas near the river.

- Meanwhile, there are not so many people who are living, studying or working here. These piers are somehow empty, with a few dispersed factories, parking lot, and large non-used flat ground.

- A big contrast showing up between empty Frihamnen and old city centre area, that includes commercial malls, shopping streets, culture institutions, administration offices and so on.





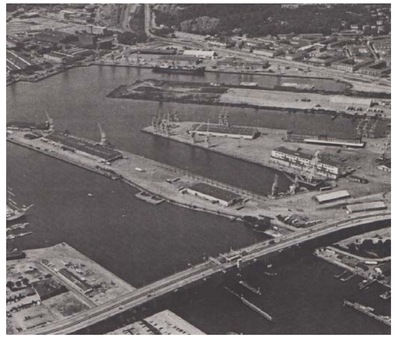
EVOLUTION OF FRIHAMNEN

On southern side of the river, the urban fabric is slightly changed, especially old city inside of canal. While on northern side, the waterfront area developed a lot:

- Around 1880, Frihamnen used to be a wetland.

- In 1922, the land was filled in and piers of free port were built. And the free port was utilized until 1996.

- From 1980s, industries and harbour activities started to move out, at the same time, the planning and development of Norra Älvstranden started.



FRIHAMNEN consists of three piers: South Frihamnspiren or Line pier, Northern Frihamnspiren and Kville pier.

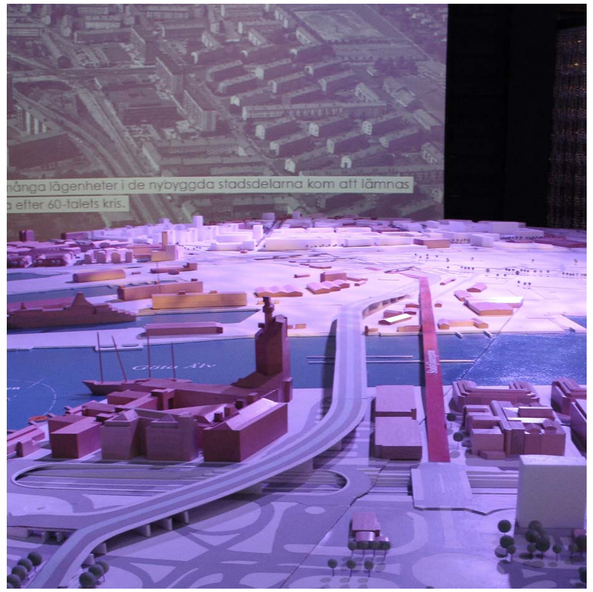
Line pier, which is the easternmost, served until the end of the 1990s as a port for Sweden's banana import of custom-built boats.

Northern Frihamnspiren, which is the middle, is additional site for DFDS Seaways ferry to Newcastle.

Kville pier, which is the westernmost, is additional space for rail ferry Stena Scanrail, which operates on the route Gothenburg-Frederikshavn.

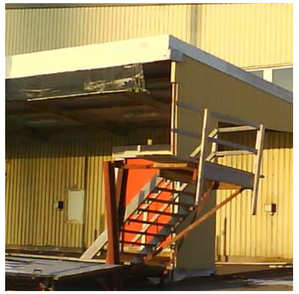
City museum exhibitions of Gothenburg city future

"Where do you want to live in the city?"

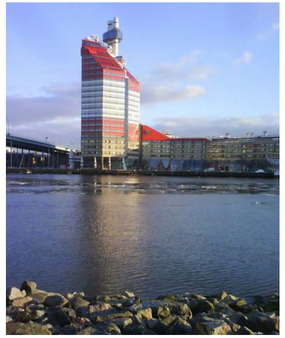


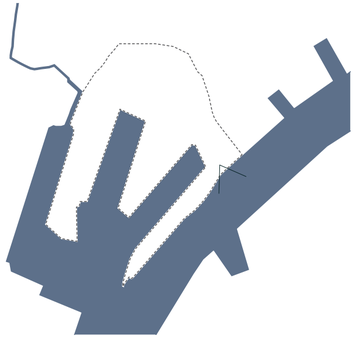
Urban planning office - New Göta bridge showing on city model

LOCAL ACTIVITIES OF GOTHENBURG CITY DEVELOPMENT



STUDY TRIP ON SITE



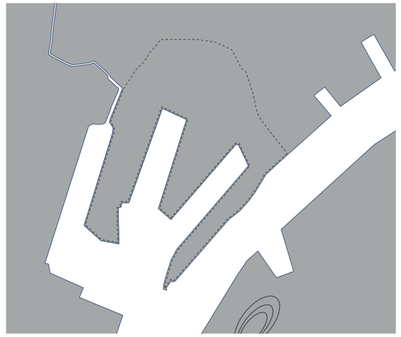


WONDERFUL WATERFRONT

Frihamnen enjoys an excellent location in Gothenburg.

The water is a consistent feature which goes through and breeds the City. The fringed river line offers multiple opportunities for buildings with a nice water view.

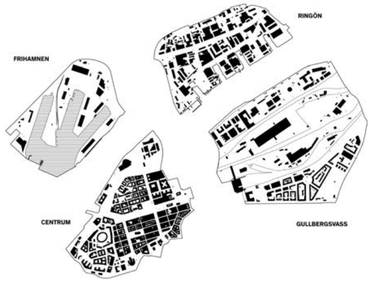
The future development of Frihamnen provides the possibilities of experience the city from riverside, placing outdoor recreational activities along the water and inviting people to make use of their fortunate setting.

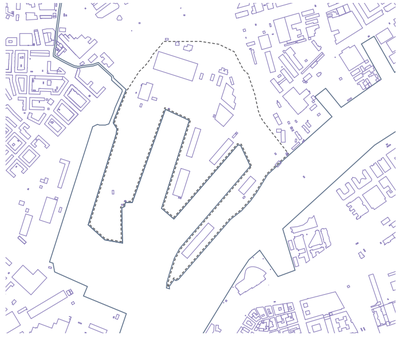


FLAT TOPOGRAPHY

Frihamnen has a flat feature once referred to its typography.

Compare with some other area which are built upon landscape contours in the city, Frihamnen is primarily situated on plain. The flat character provides a big open space near the river.

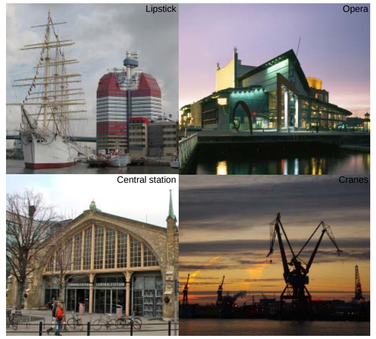


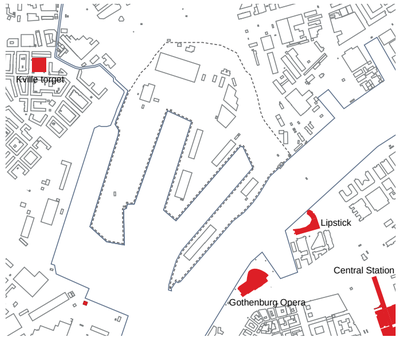


RELATIVELY EMPTY VOID

There is no urban structure here before, so it requires new urban fabric to connect frihamnen with the other nearby city neighbourhood. Besides it is rather big area.

Nowadays, there are offices, warehouses and factories on piers.

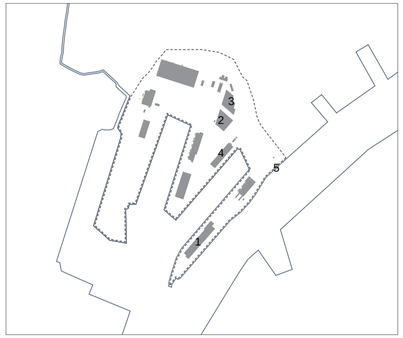




LANDMARKS

As other cities, Gothenburg has some famous landmarks, including the lipstick, central station, opera and cranes, which is speaking the language that Gothenburg is an industry city and has some old well protected traditional buildings.

These four see sights are located near Frihamnen area, which becomes a potential visual attraction.

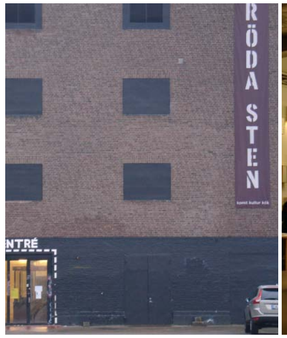


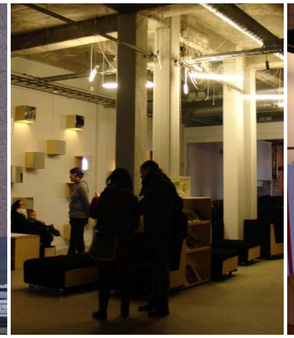
PRESERVING HERITAGE

Gothenburg has succeeded in preserving some heritage buildings in the city.

The old buildings add character to the streetscapes and encompass the history and culture of the city. There are some good examples along the Göta River, such as Röda Sten Art Centre that previously was a boiler house, Quality Hotel transferred from an old shipyard.

Some heritage buildings should be converted as part of the developments in Frihamnen, while they are mainly warehouses and sheds.

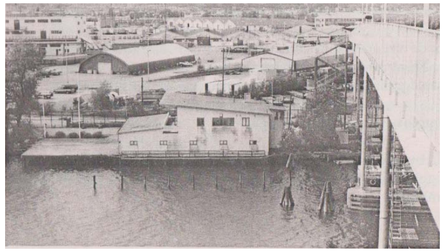




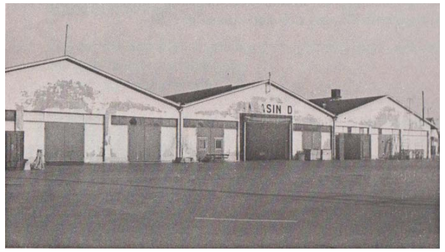
Röda Sten art museum

Quality hotel 11

4 Skjul 107



5 Roddklubben



2 Magasin D

WHAT TO KEEP ON SITE?

1 Customs House
Wooden building. Characteristic landmark from the 1920s

2 Magazine D
Built in 1938

3 Office
At the entrance, from 1938

4 Sheds 107
An important focal point from the little boom was built in 1944

5 Rowing club
Built in 1942 in the functionalist style and is still in use. It has a kulturhistorikt value memory of the extensive boating which occurred on the river.

SURROUNDING SITUATION

The site of frihamnen is about 92 hectares and it is defined by
South: Göta river
North: Highway Lundyleden
East: Götaälvbron & Hjalmar Brantingsgatan highway
West: Lindholmen area

The two highways isolate this area from the other neighbourhood.

Bus station
City Major Road
Tunnel
Main Road
Old harbour Railway
Ferry

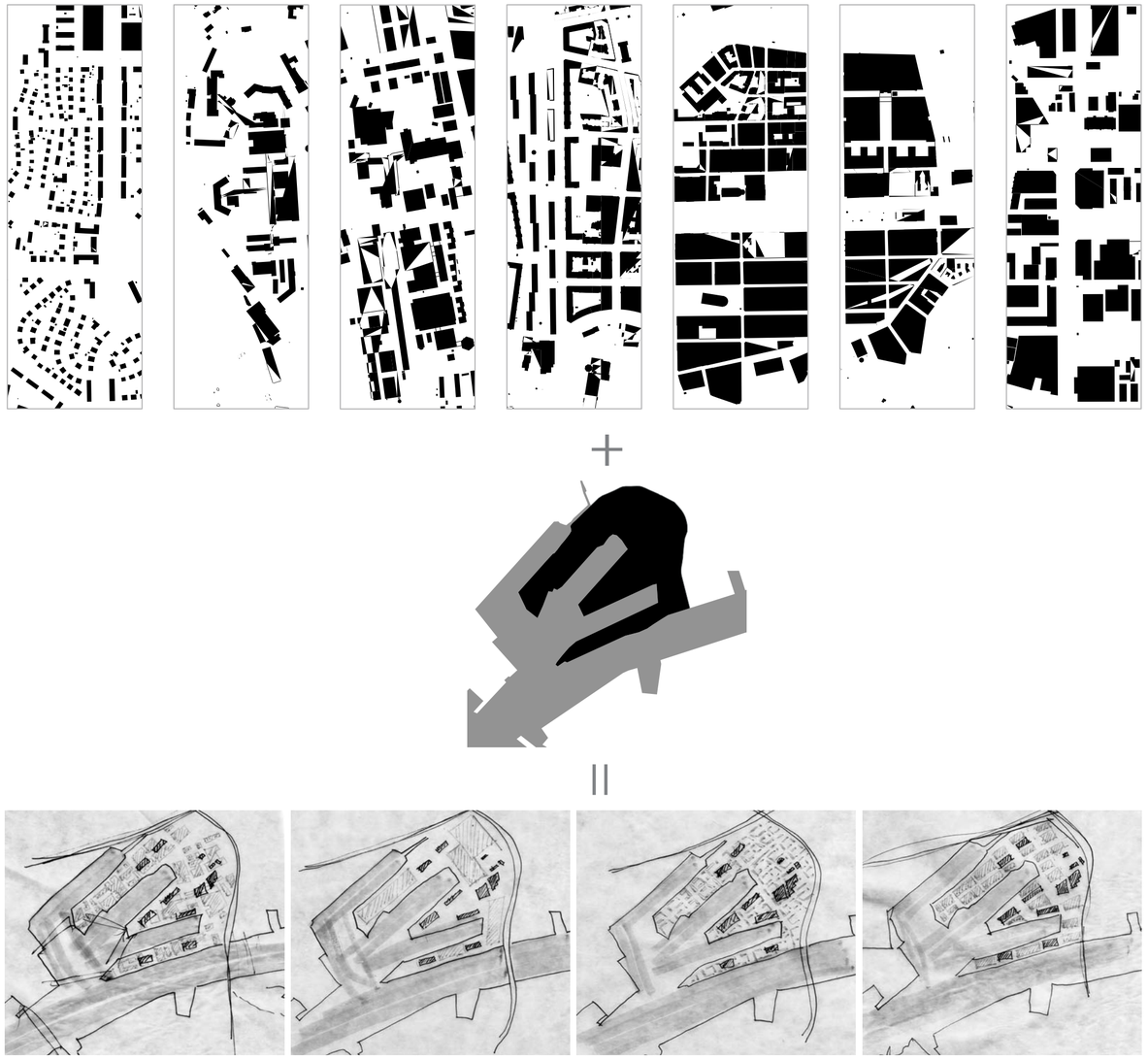
TRANSPORTATION & ACCESSIBILITY

If we look at the connection how frihamnen linked to the city through public transportation, we find that:

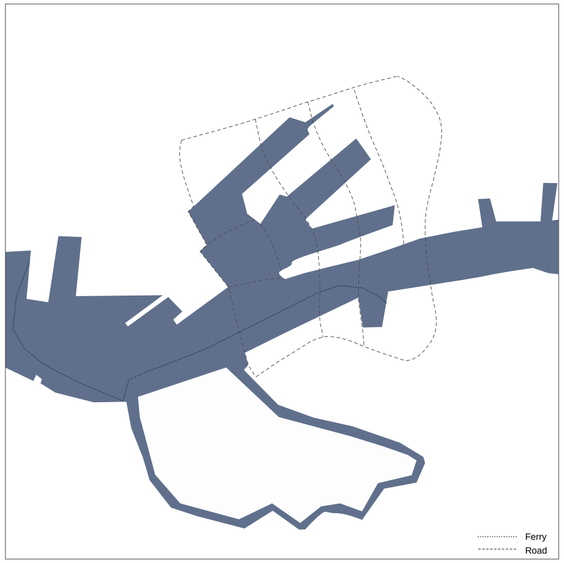
- The city major road create big barriers around frihamnen.

- Almost all the tram lines, main road for buses and cars and also ferry lines are only passing by frihamnen, but none of them really go through this area. Except the old harbour rail way which is nearly abandoned today.

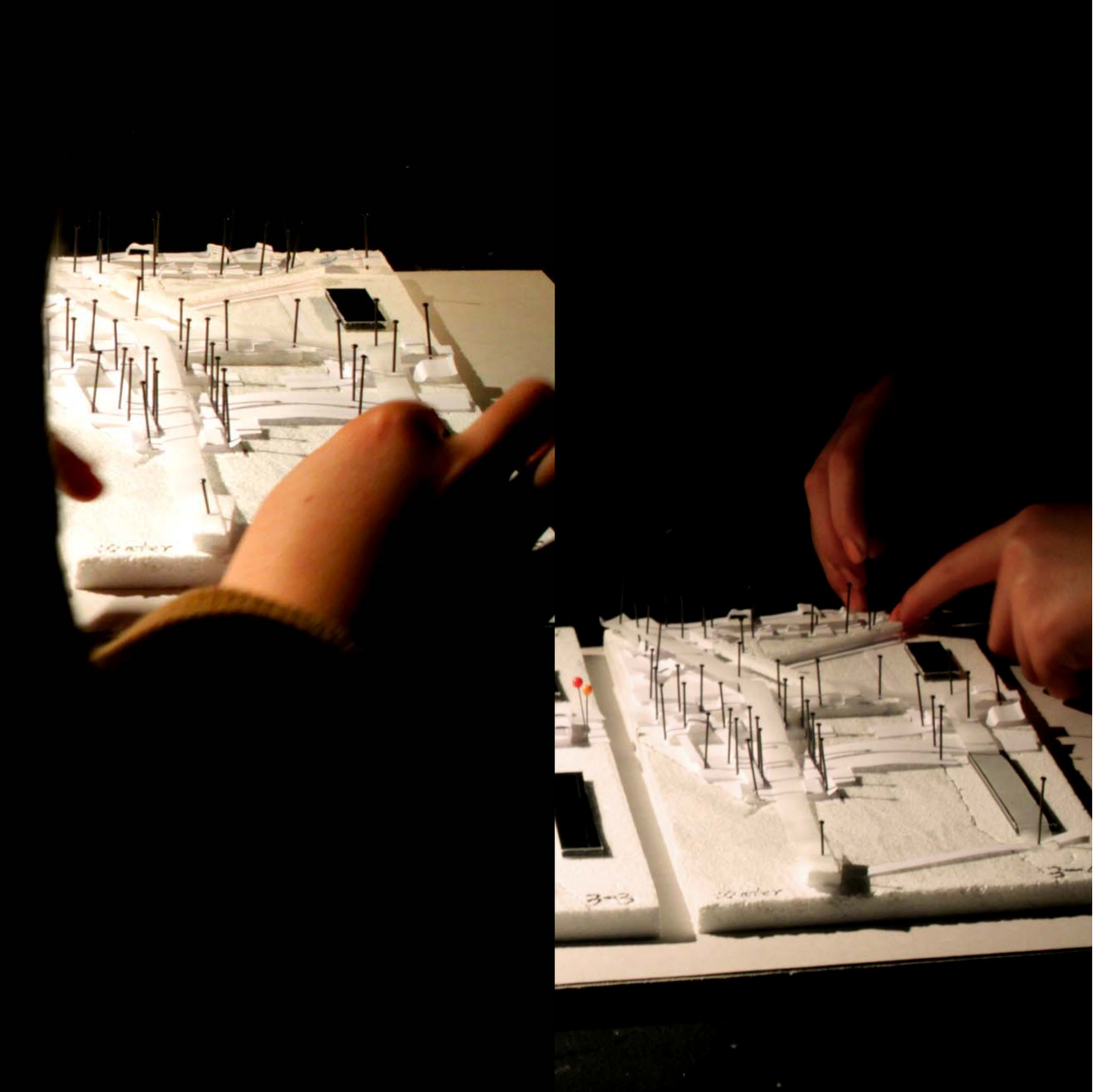
- It is also hardly accessible by bike or walking, though so close to city centre and there are some big public transportation stations not far such as Hjalmar brantignsplatsen.

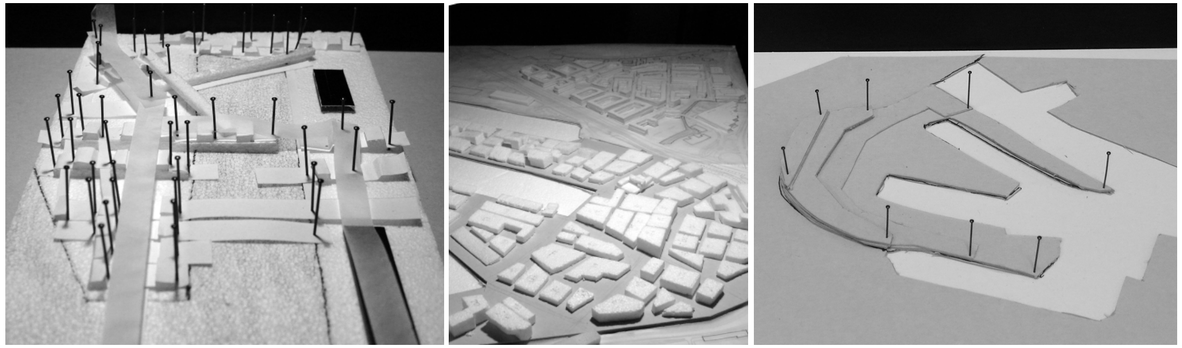


TYPOLOGY STUDY FROM CURRENT GOTHENBURG CITY AREA
The start point to think about scale and density

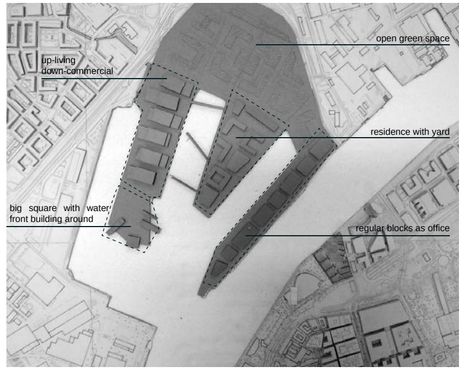


SKETCH THE POSSIBILITY OF CONNECTIONS BASED ON CURRENT CITY TRANSPORTATION
The start point of a pedestrian link and a infrastructure vehicle link in design proposal



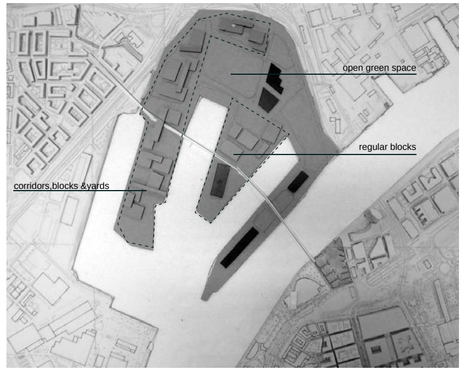


Physical MODEL Study

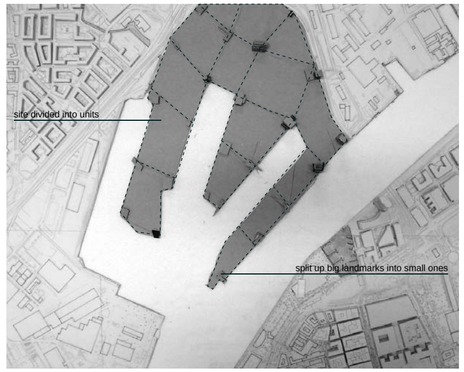


MODEL STUDY 01
"+" Method is to add volume on an empty site.
For example buildings, parks, bridges...

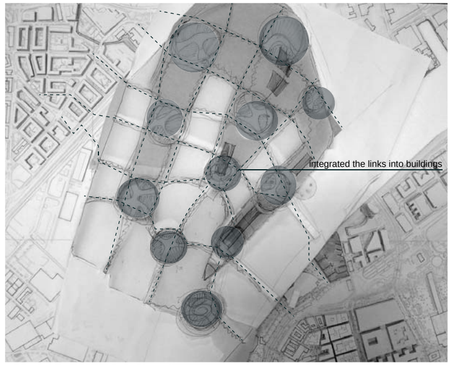
1-1
First model aiming at getting familiar with the site by thinking what kind of area it should be according the urban context around.
The scale of the buildings is big with fewer connections.



1-2
Considering the factories or warehouses conserved, building up a link though the whole site, creating different space feeling by building the second floor in various way.
The volumes of buildings are still large, the boundary between the land and the water hasn't been well developed.

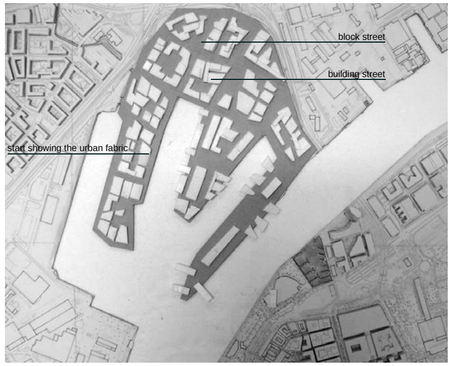


1-3
Dividing site into relevant average unit area, creating small scale interesting volume on the corner of each unit to link them rather than building a high rise landmark of the whole site. Also considering building heights within the site, should be lower on the river side and higher on the big bridge side.
Density of the buildings in this proposal should be enhanced, in addition, more connections should be established.

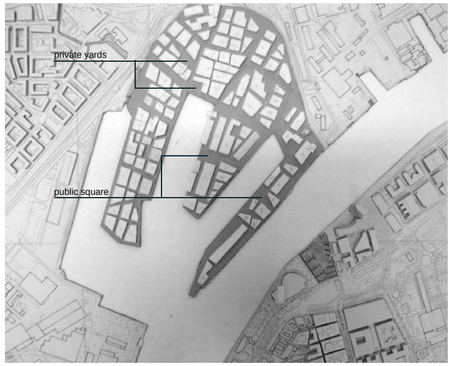


MODEL STUDY 02
"-" Method is to reduce some parts from a whole big volume.
For example streets, squares, courtyards...

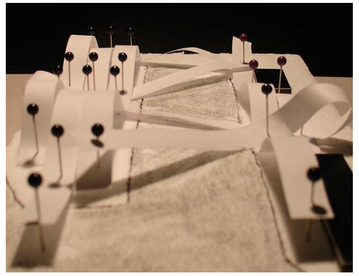
2-1
This model tried to develop the idea of links, also see how it could be integrated in to buildings which fit this area.
The volumes are mostly the same height, the density is not enough though. It seems that the round shape doesn't really fit the existing urban fabric around.



2-2
Using "-" method, cutting out the streets, and let some area free to be square, there are more urban fabric characters displayed here.
Couldn't see enough design regarding to buildings height, and the areas are relevant average.

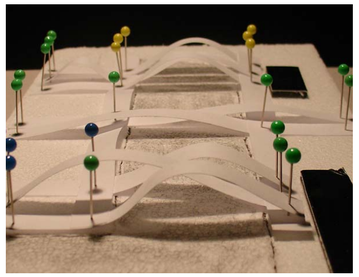


2-3
Develop the 2-2 urban fabric model by creating more courtyards and squares in between, considering private and public quality in urban spaces.
The urban fabric is slightly lost here.

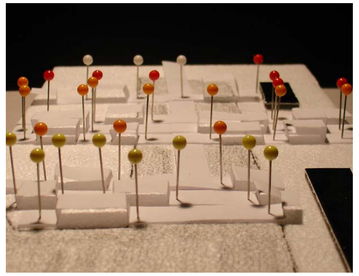


MODEL STUDY 03
Focusing on the relationship between the river and piers

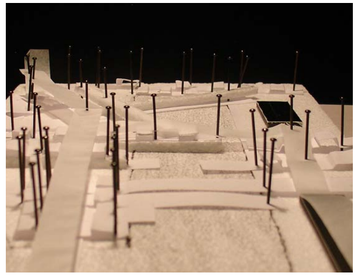
3-1
Testing how the flow from the riverside can be integrated into the water.
The size of the building is too general.



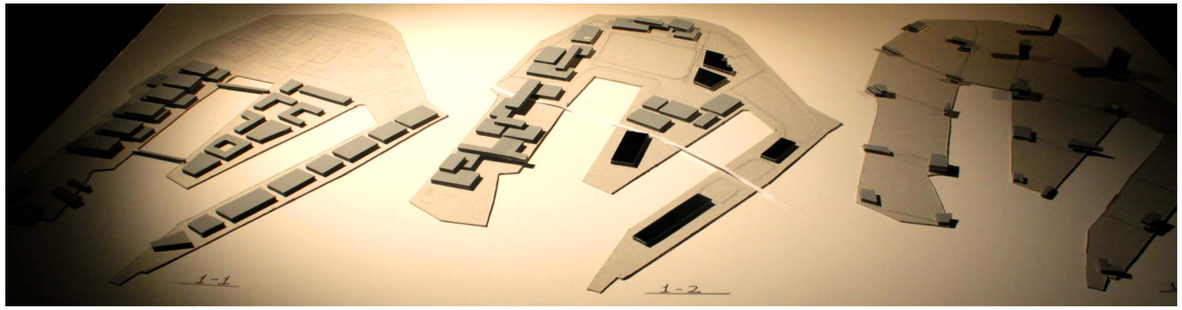
3-2
Lower the height of the volume on land, tend to shift to inhabitant bridge.
The size of the building is a little bit general.

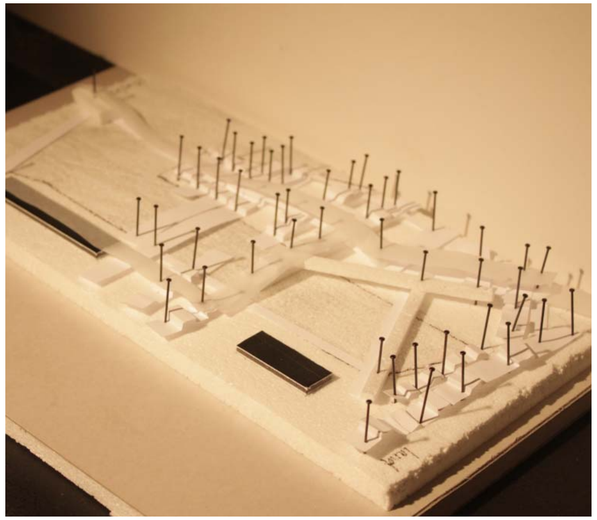


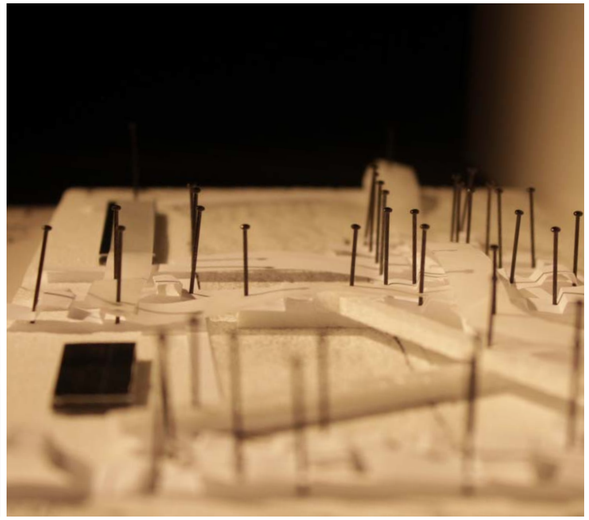
3-3
Precise the volume by making them smaller, considering the edges and boundaries around water front area.
The size of the building is getting correct and similar to the real one, but the connection could be more diverse.

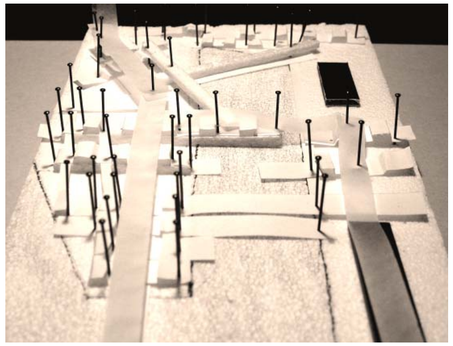


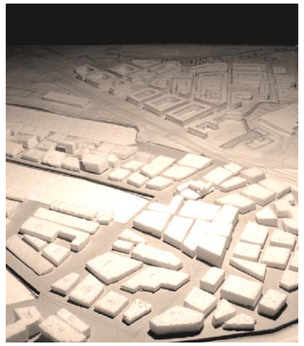
3-4
The result model based on evolution models 3-1 to 3-3, including various of connection ways, also in different ground levels, besides adding a glass corridor as the second skin of several buildings on site.

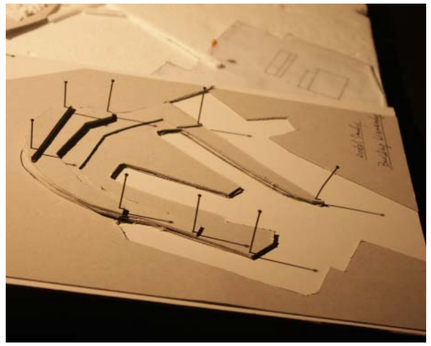












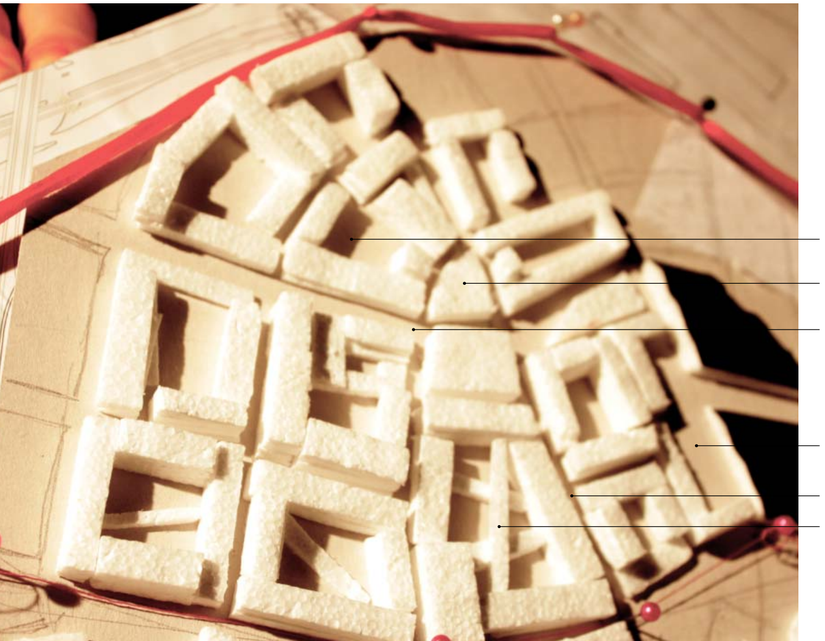
An urban space is like a theatre, it provides the stage of daily life for citizens, visitors.....

WHAT IF?
A good public urban space integrated social context, including immigrants and native, rich and poor, youth and elderly...
Supposing people with different background will use this urban space, could it support the requirement during daily life?

Varid activity requires diverse space, to take the advantage of Model group 1-3, there are some experimental practice in Model 4, which leads to the Frihamnen urban design proposal.

The street patten is not horizontal nor veritcal, instead it partly attempts to create some curved alleys, that allows people to experience "Medieval streets" in the modern urban space.

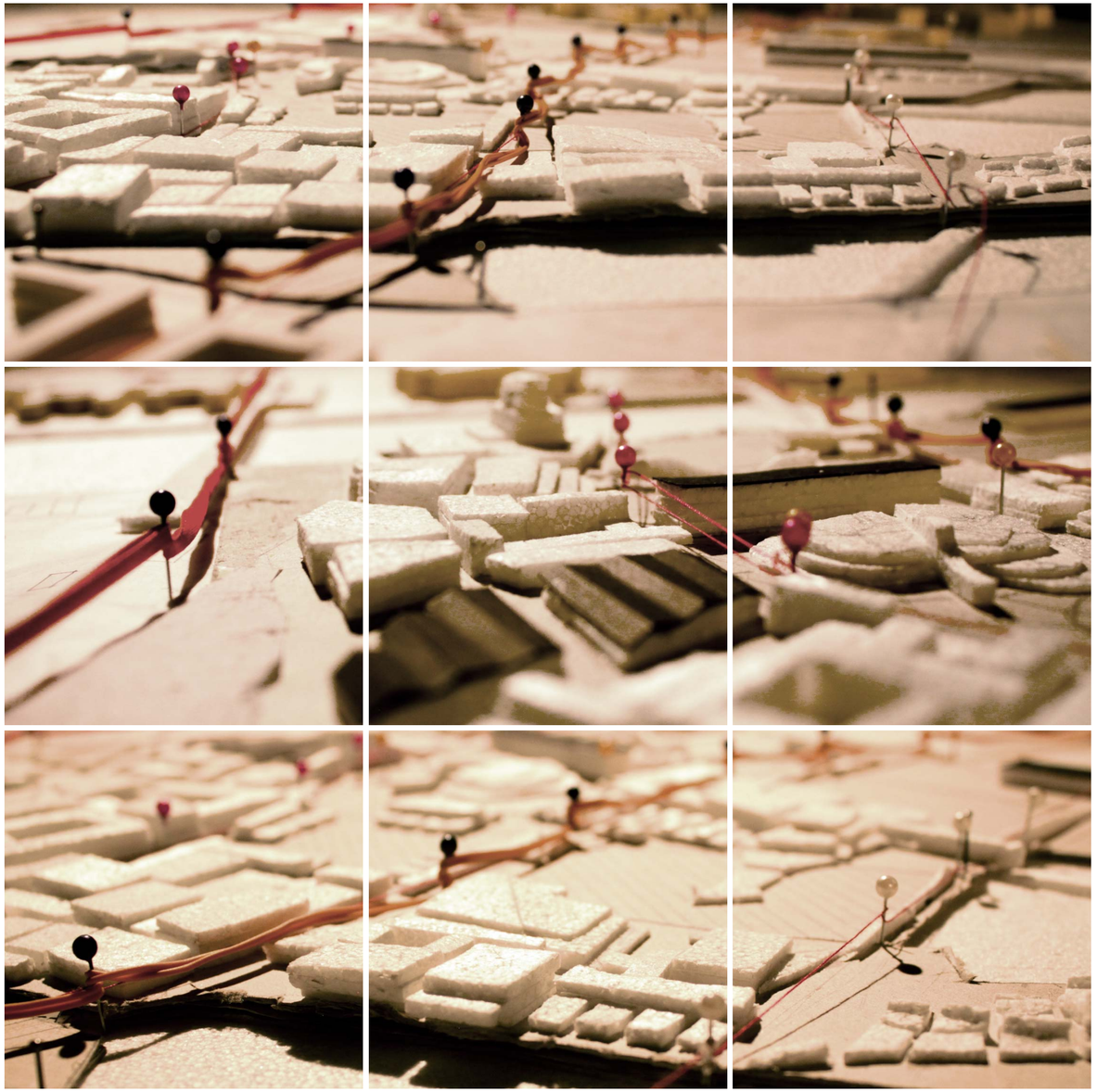
Big streets, narrow paths, closed courtyards, semi-opened public green space, connected corridors, totally opened squares....

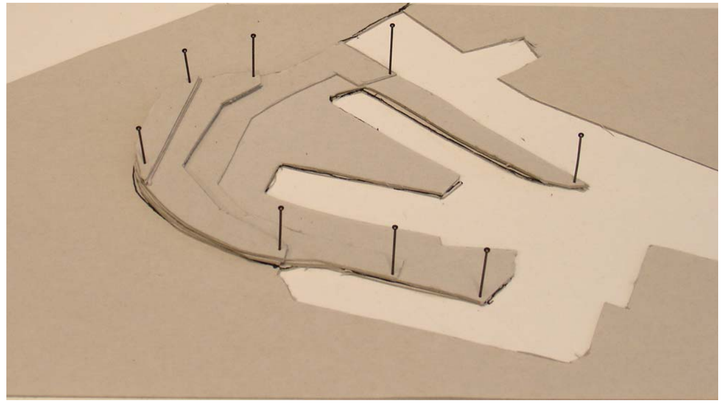


MODEL STUDY 04

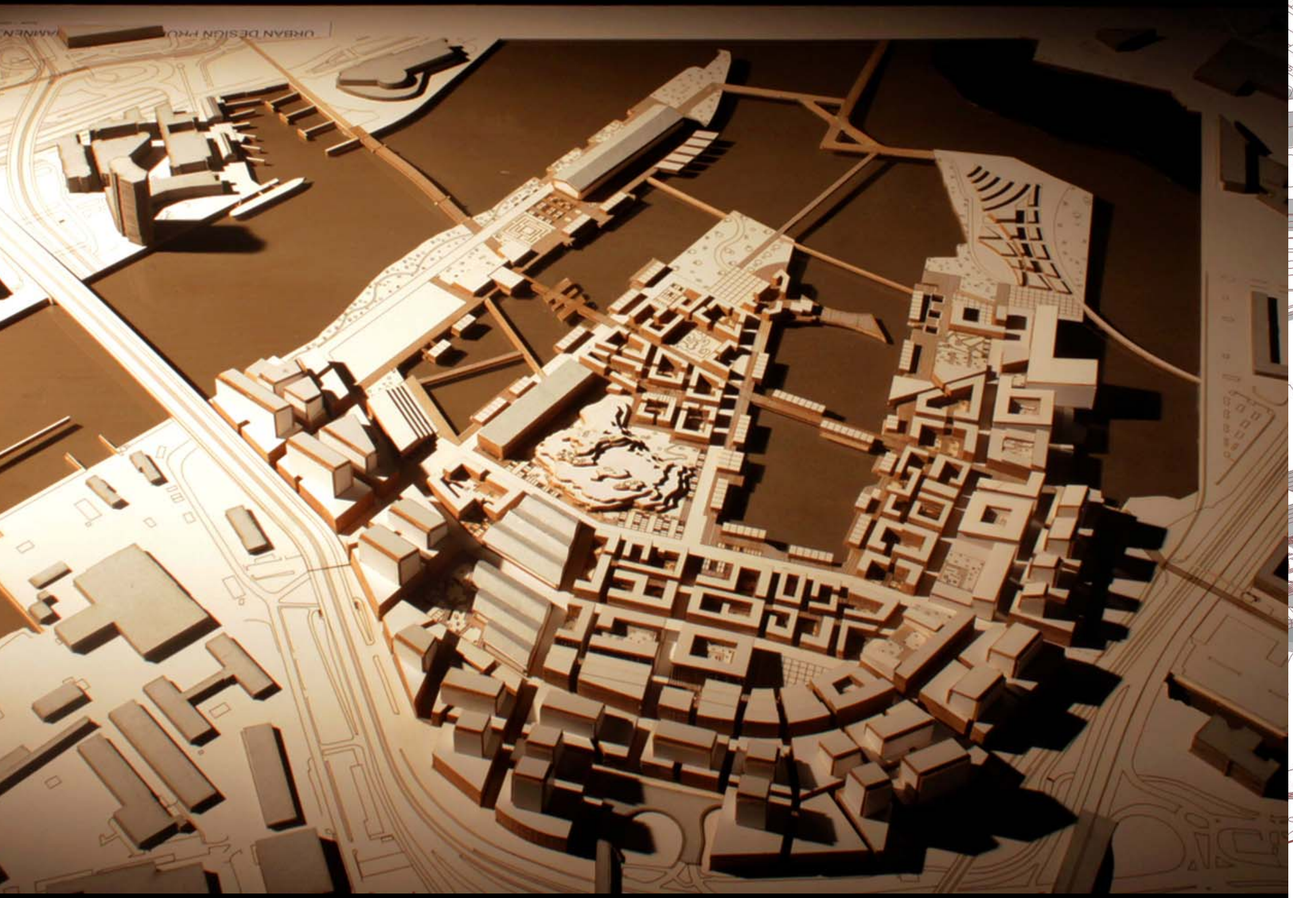
This is a summary model based on previous 3 groups.
It starts forming the proposal of Frihamnen

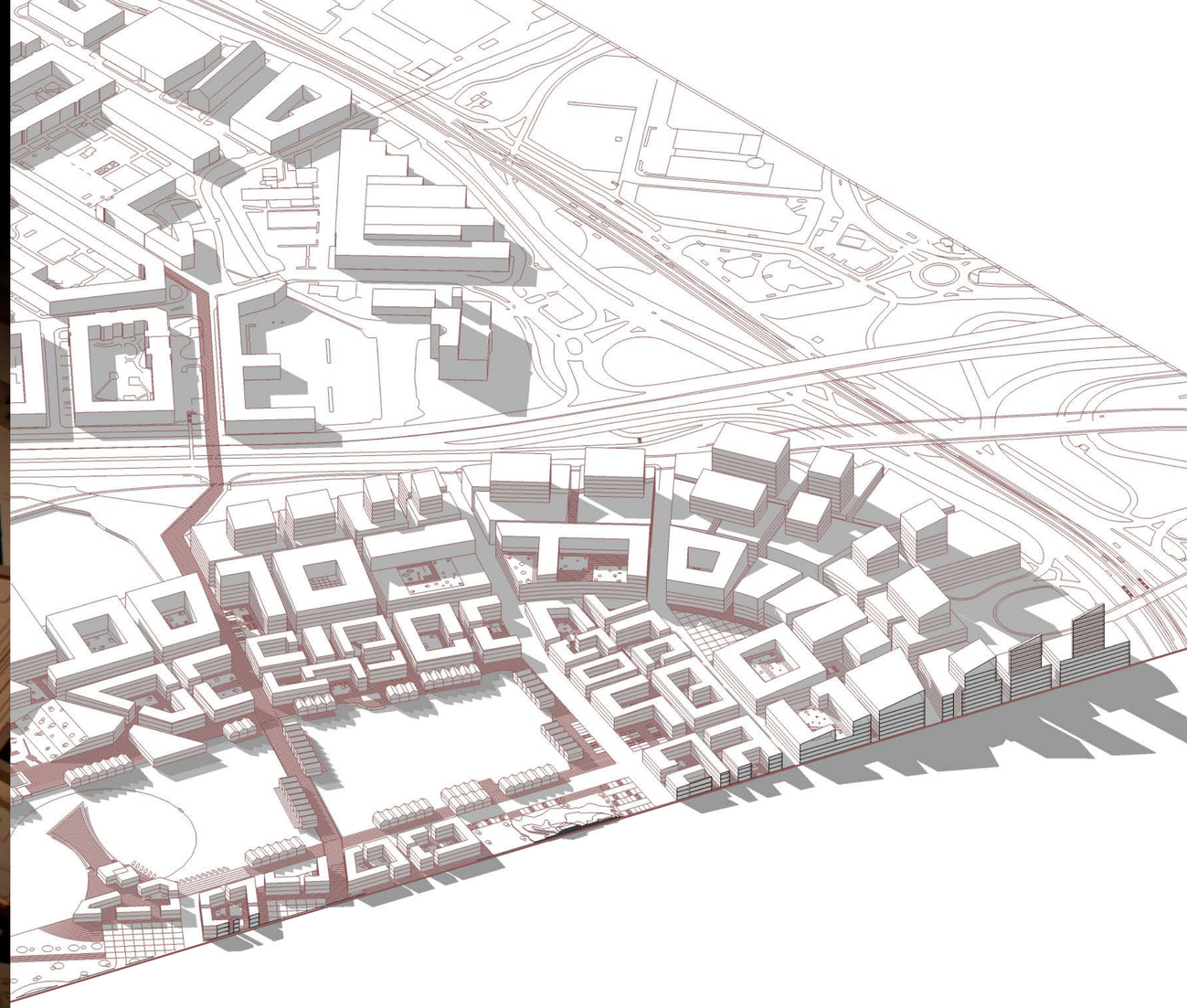
This outcome obtains certain quality features as follows:
- diversity of urban life based on different ways of urban space usage
- height generating from near the riverside quite lower to new bridge side much higher
- private and public are mixing in this proposal
- connections between two sides of river and between piers
- interesting ideas to achieve distinguish water front space
- successfully preserving old valuable buildings, and integrated them with new ones



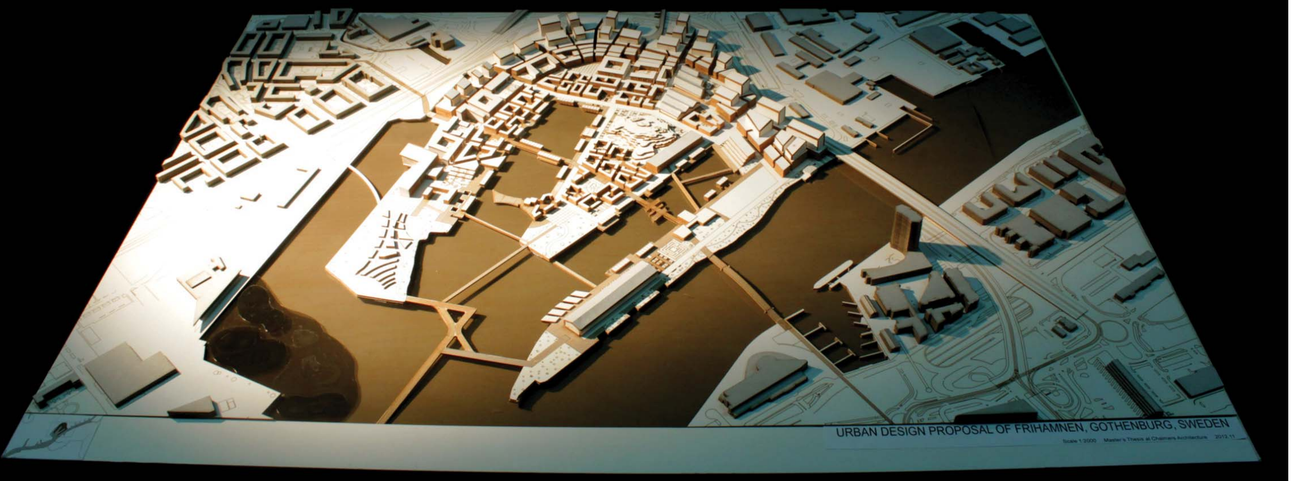


MODEL STUDY 05
Hierarchy of buildings on site

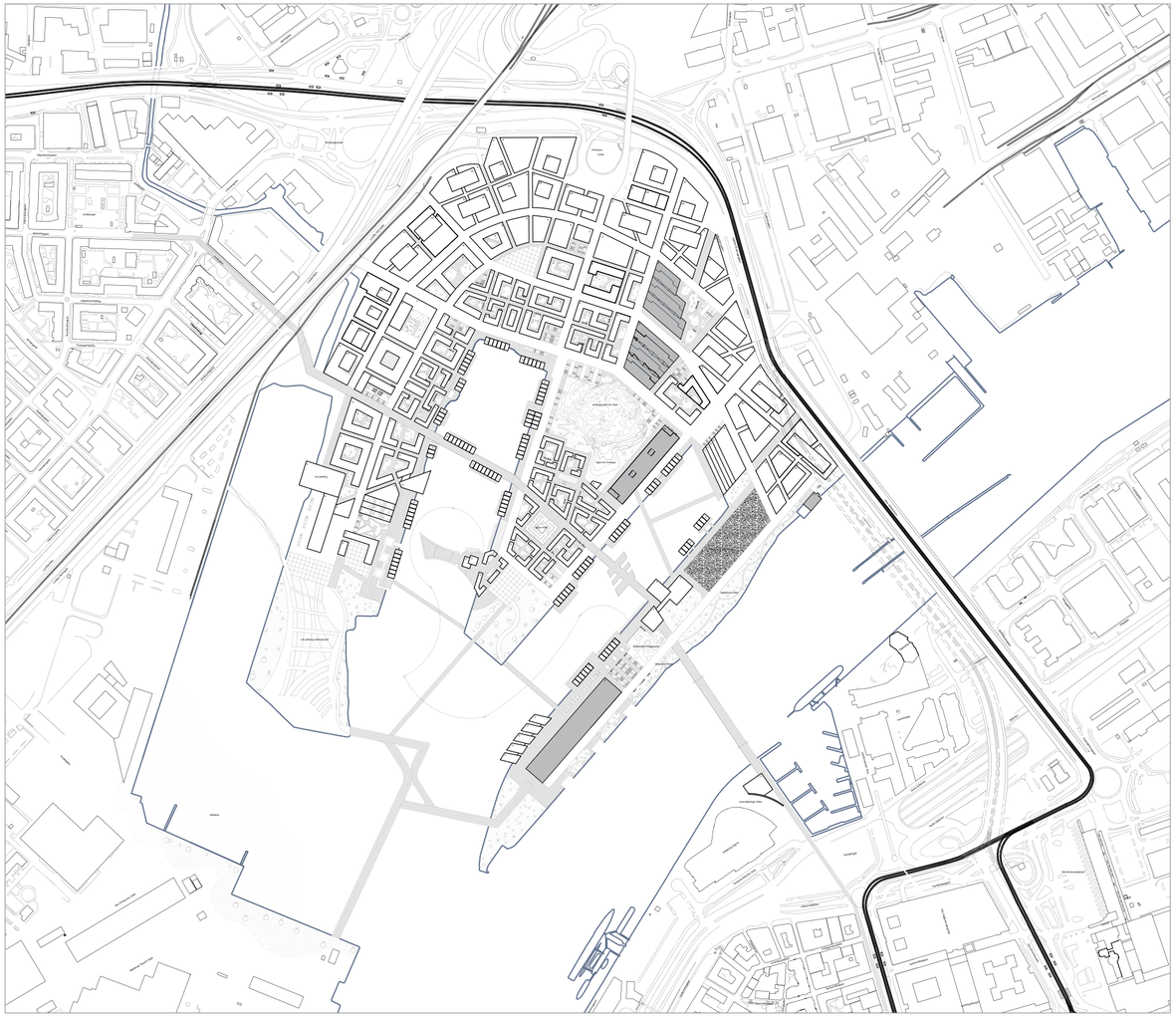




Design PROPOSAL



Proposal MODEL Scale 1:2000

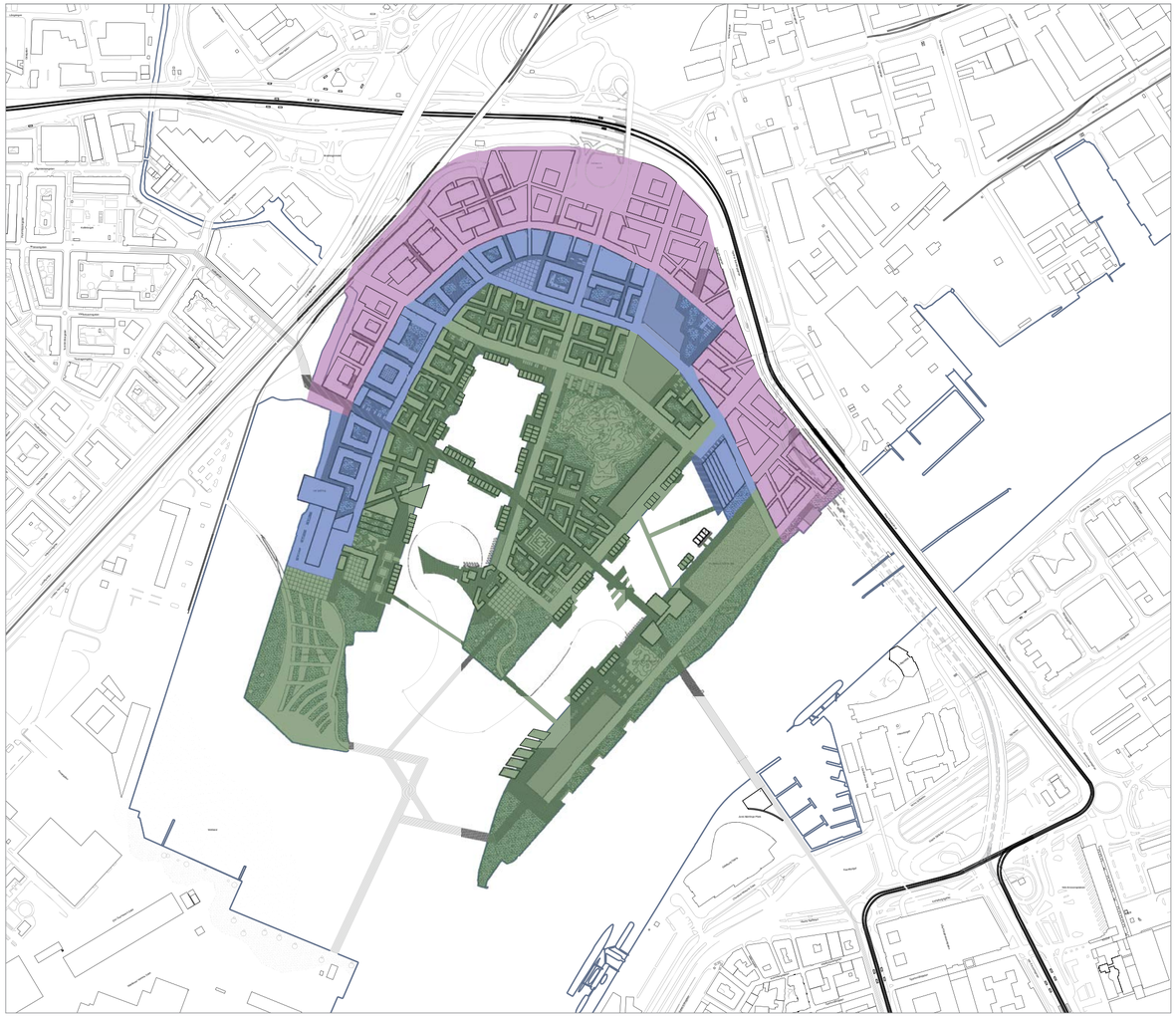


Preserved buildings

PLAN

Site area: 39.0 Ha
Footprint area : 15.6 Ha
Total building area: 84.4 Ha
Building footprint area to site area ratio coverage = 40%
Building area to site area ratio coverage= 216%

40% ensures that the concept provides more open and green space within certain area to meet the aim in the beginning
216% presents the building density in certain area, towards the dense-mixed-used urban structure and serve more people in a limited space with advantages in social sustainability

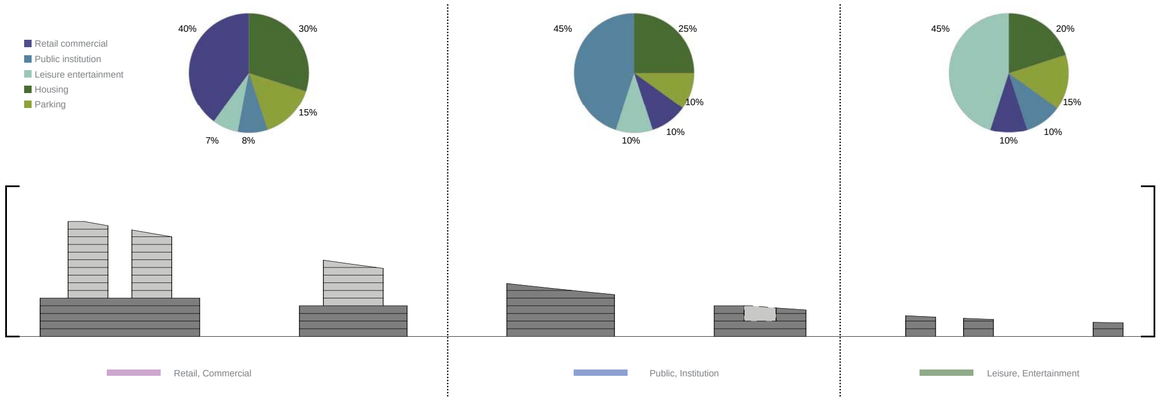


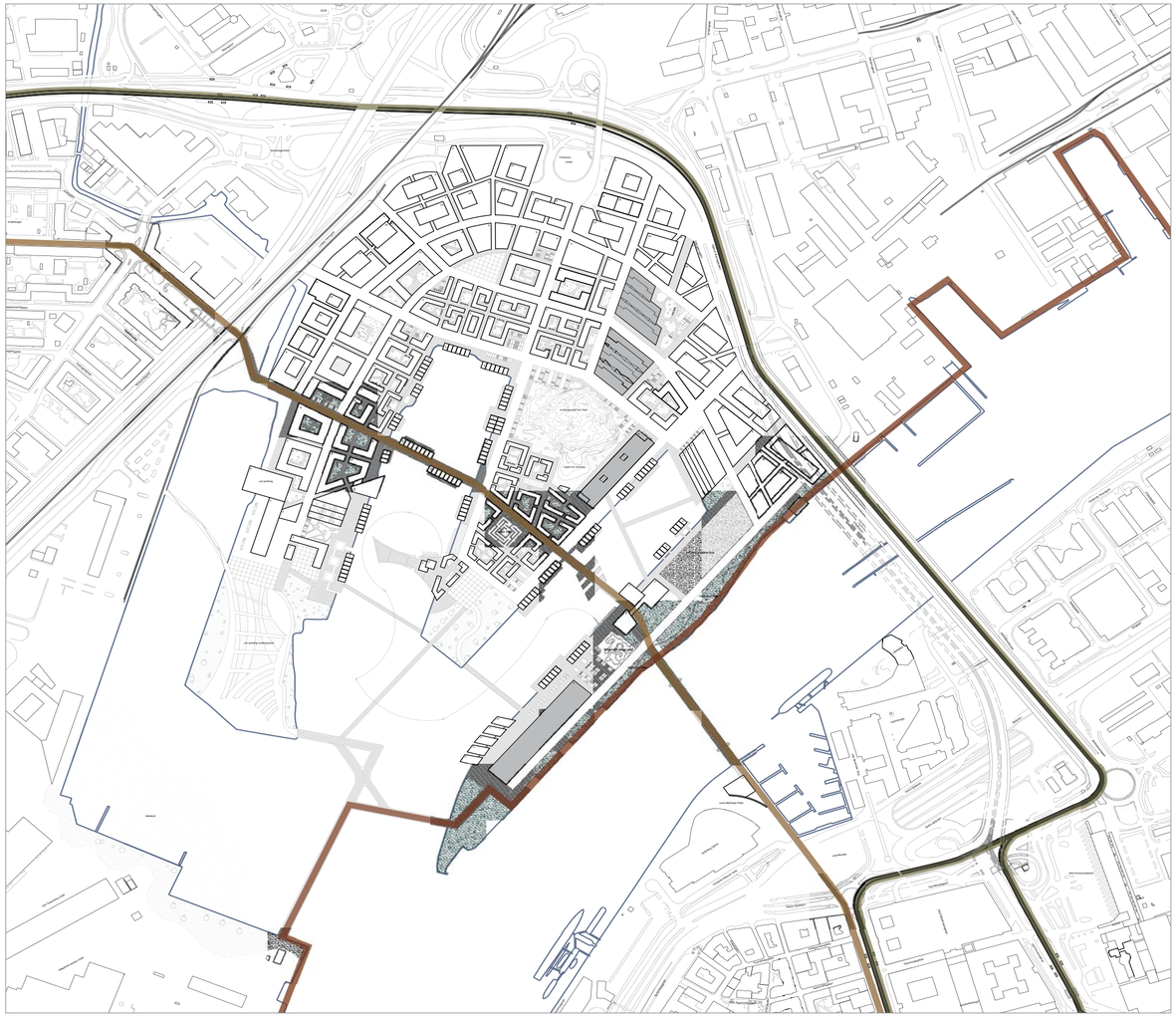
Retail, Commercial
Public, Institution
Leisure, Entertainment

MIXED-USE URBAN STRUCTURE - 3 BANDS

The indication for function of building is the mainly percentage, but there are other properties such as residence are mixed in between.

Mixed-use urban structure





- Vehicle connection
- Pedestrian connection
- Waterfront connection

MAIN CONNECTIONS

Be able to become one of the poly centres, tight connection and good accessibility are required.

- Vehicle connection is the infrastructure link which mainly including New Göta Bridge to support the heavy transportation of tram, bus, car, bike and pedestrian from other side of river.
- Pedestrian bridge links Opera with Kvilletorget together and also in a big scale, connects city main street Avenyn and Lindholmen area where nowadays a large flow moving in between.

- Skyline of Vehicle connection

- Skyline of Pedestrian connection

Parking inside the building

Parking underground

Parking outdoor

PARKING AREA

Three main parking types include: near vehicle connection on north, cars can be parked at the several bottom floors of commercial malls; understand the two green parks; and near square, courtyards, outdoor parking is provided.
To encourage bicycle riding, many bike stations are settled in Frihamnen, not only around public meeting space for visitors but also on more private courtyards for inhabitant.

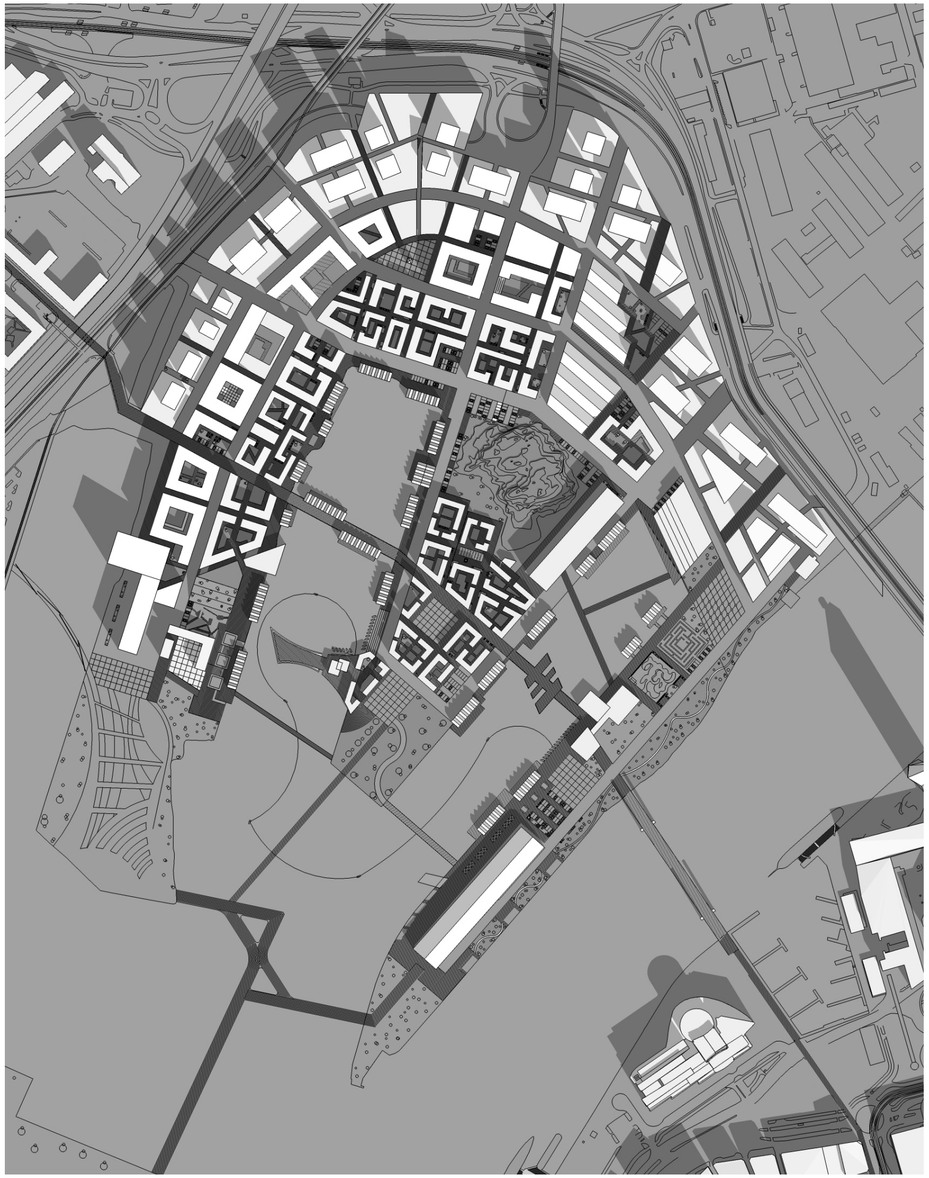
Green yard

Green park / Wetland

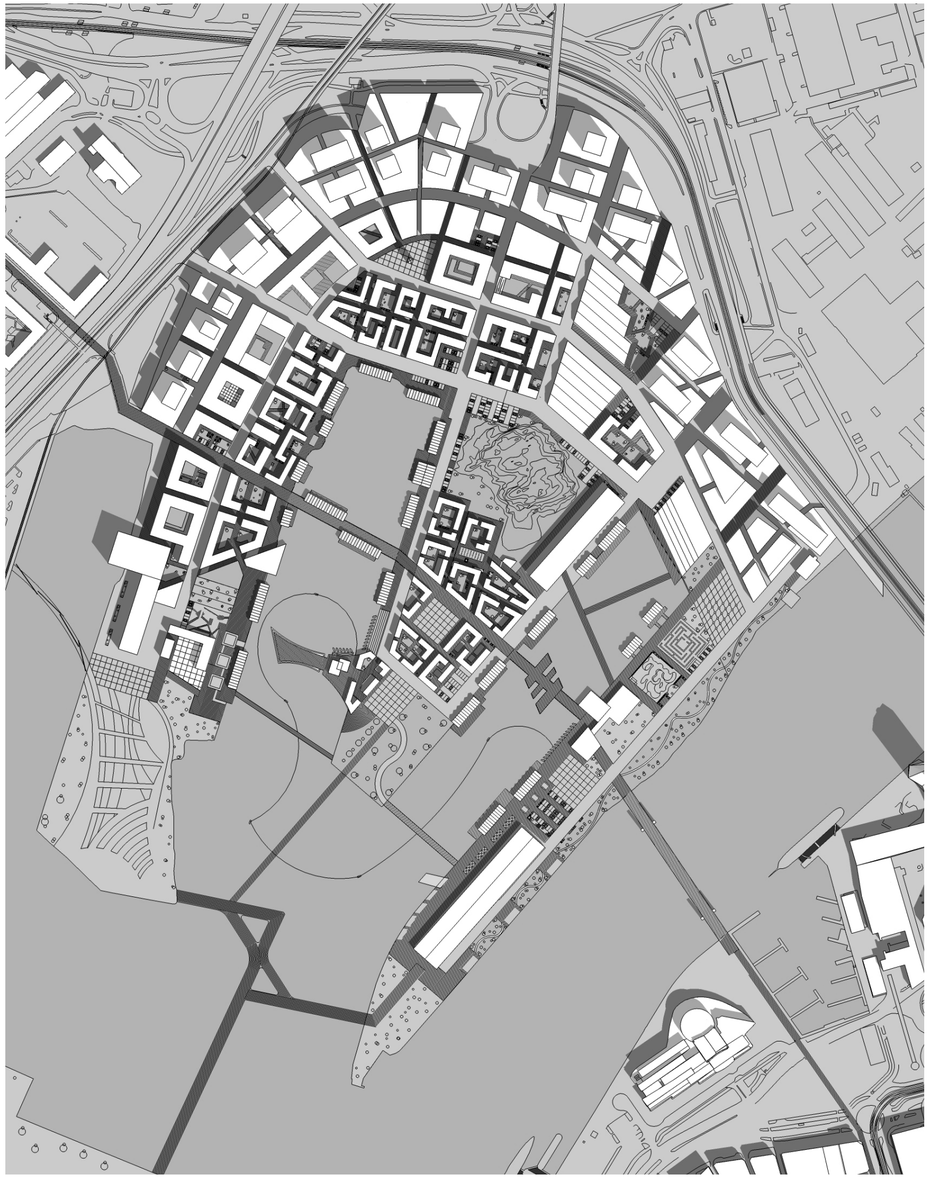
Waterfront park

GREENERY

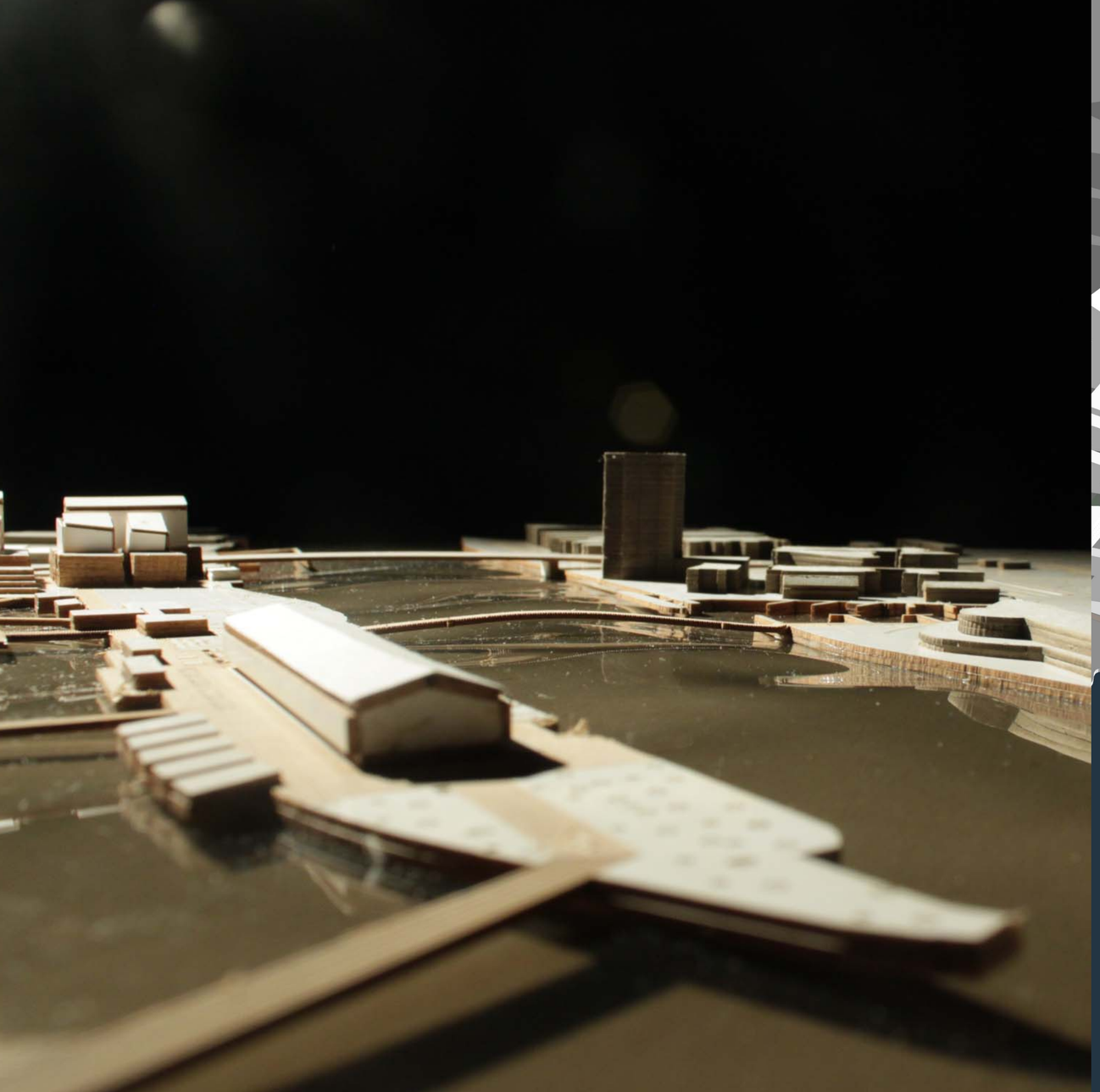
A wetland is provided on south to enhance the biodiversity in urban space; two green parks bring more nature circumstance into this area; there are also waterfront parks along the river side for jogging, having a walk; green roofs give opportunities to grow plants in vertical space; besides almost in all the courtyards, there is small gardens where people can have their own local food growing.

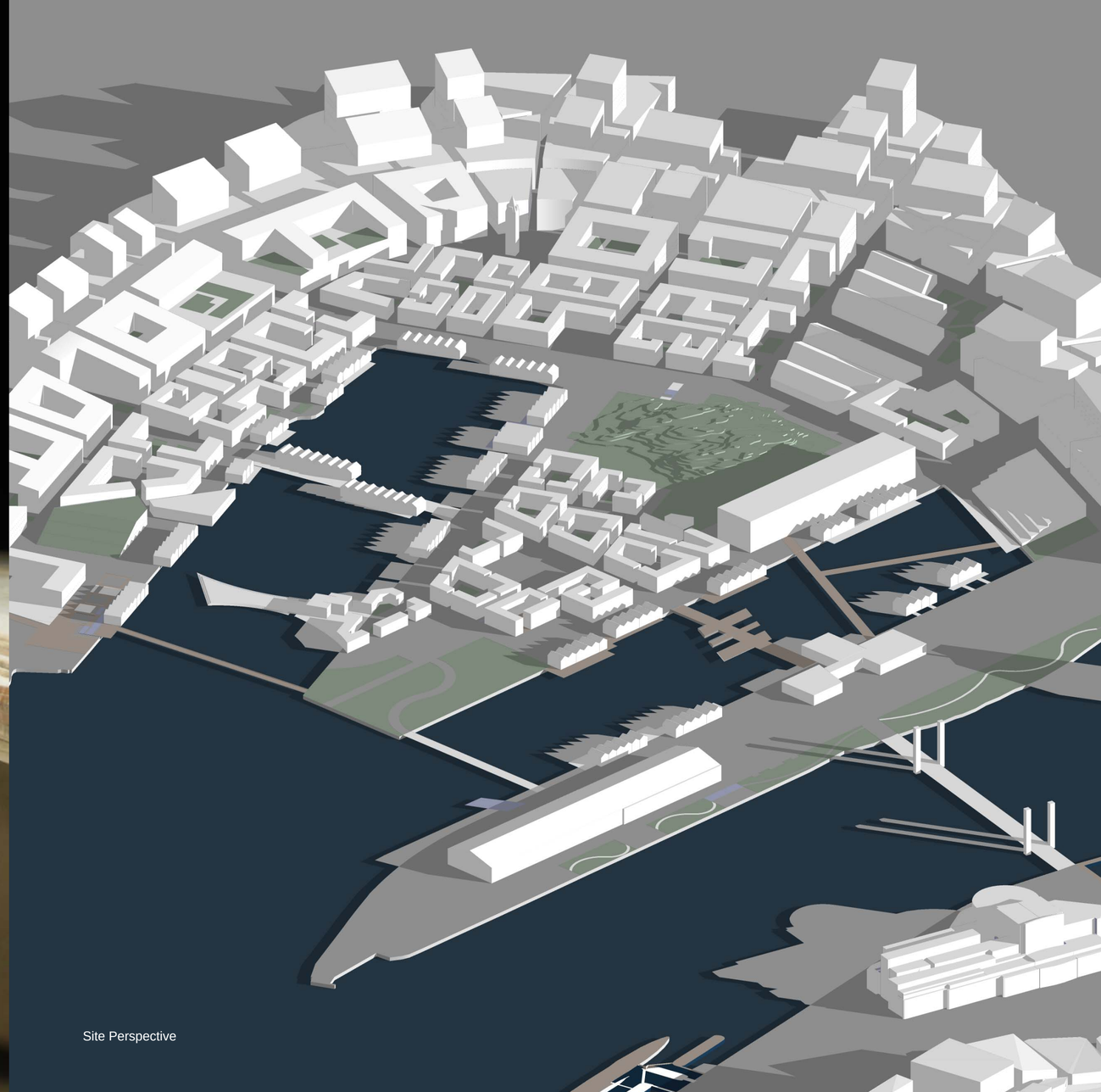


Sun study in spring equinox

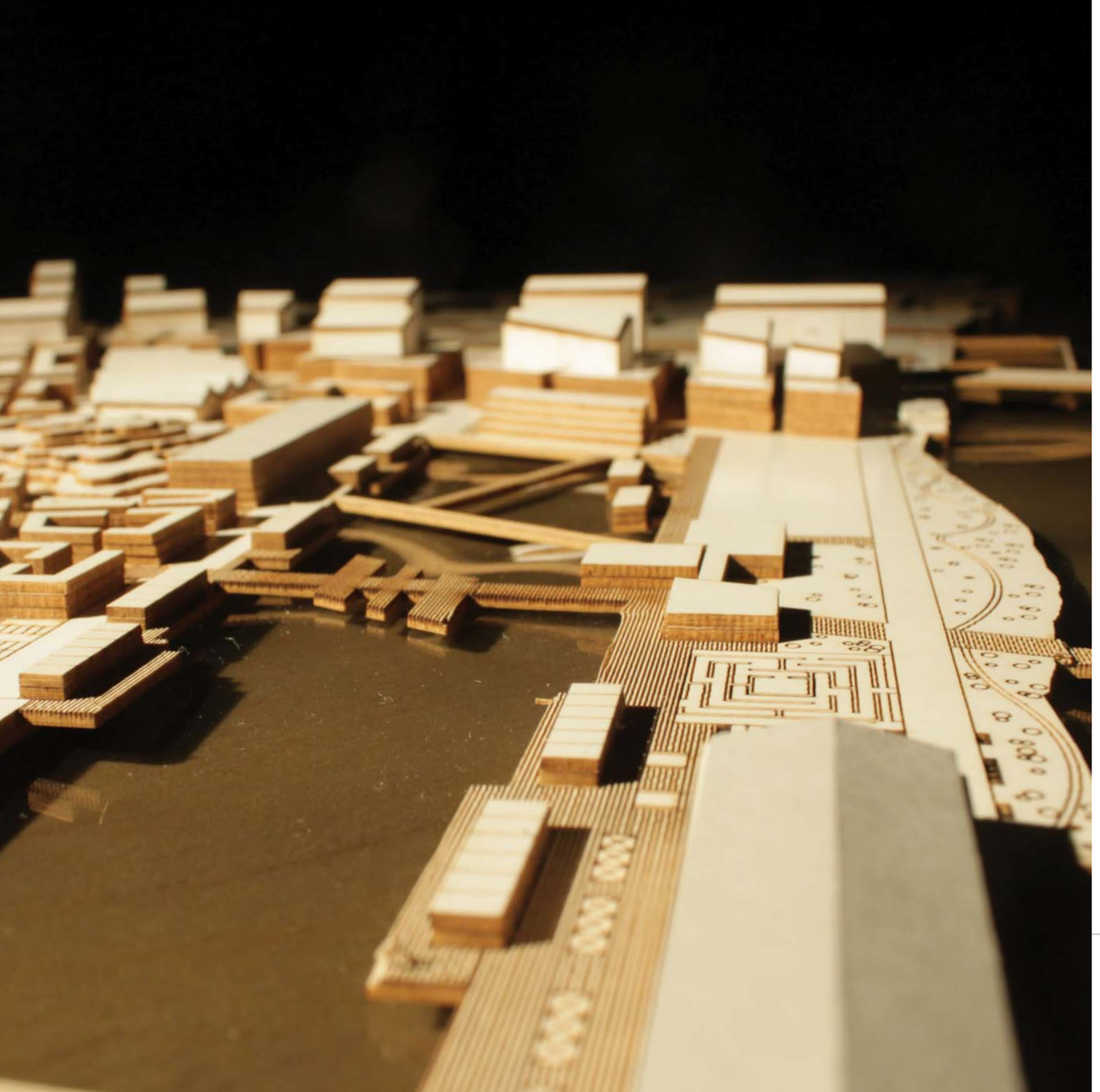


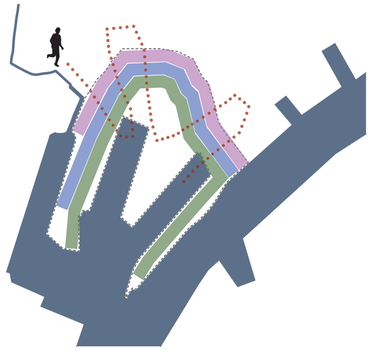
Sun study in autumnal equinox





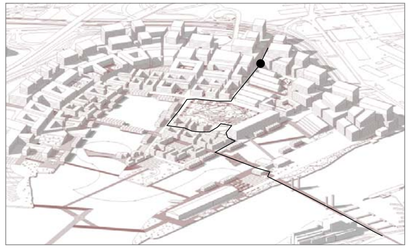
Site Perspective





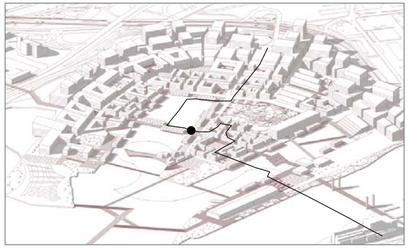
DIVERSE URBAN SPACE EXPERIENCES

The hierarchy of the volume creates the various urban space experiences for visitor and inhabitant when travelling within this area.

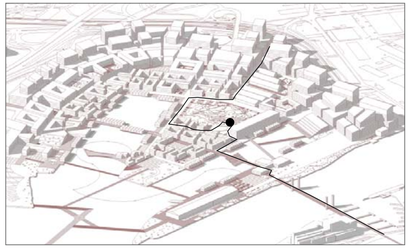


Yu is studying at Chalmers as an international student, her friend Mauro came to see her from Portugal. They rent two bikes to visit Gothenburg on weekend, passing by Frihamnen.

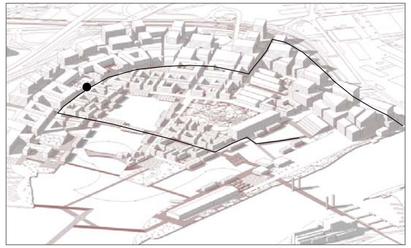
M: Oh, look! Yu, what are they doing here?
Y: Hmm...It looks like street art. Normally there are some art events happening nearby the museum.
M: Ah, museum, is it that one with funny graffiti on the wall?
Y: Yeah! This modern art museum was transformed from an old warehouse. Would you like to have a look inside?
M: Sure, let's go!!...



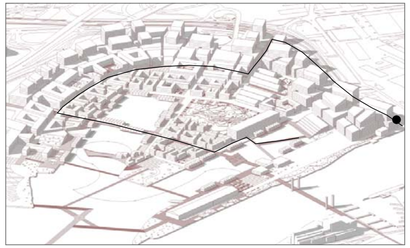
M: What a nice square! You see many children are playing.
Y: Yeah, the column square is designed by an artist actually.
M: I really want to try skateboard now.
Y: Oh, you are playing skate board?! How Cool!! Let's rent one from the sport shop nearby...



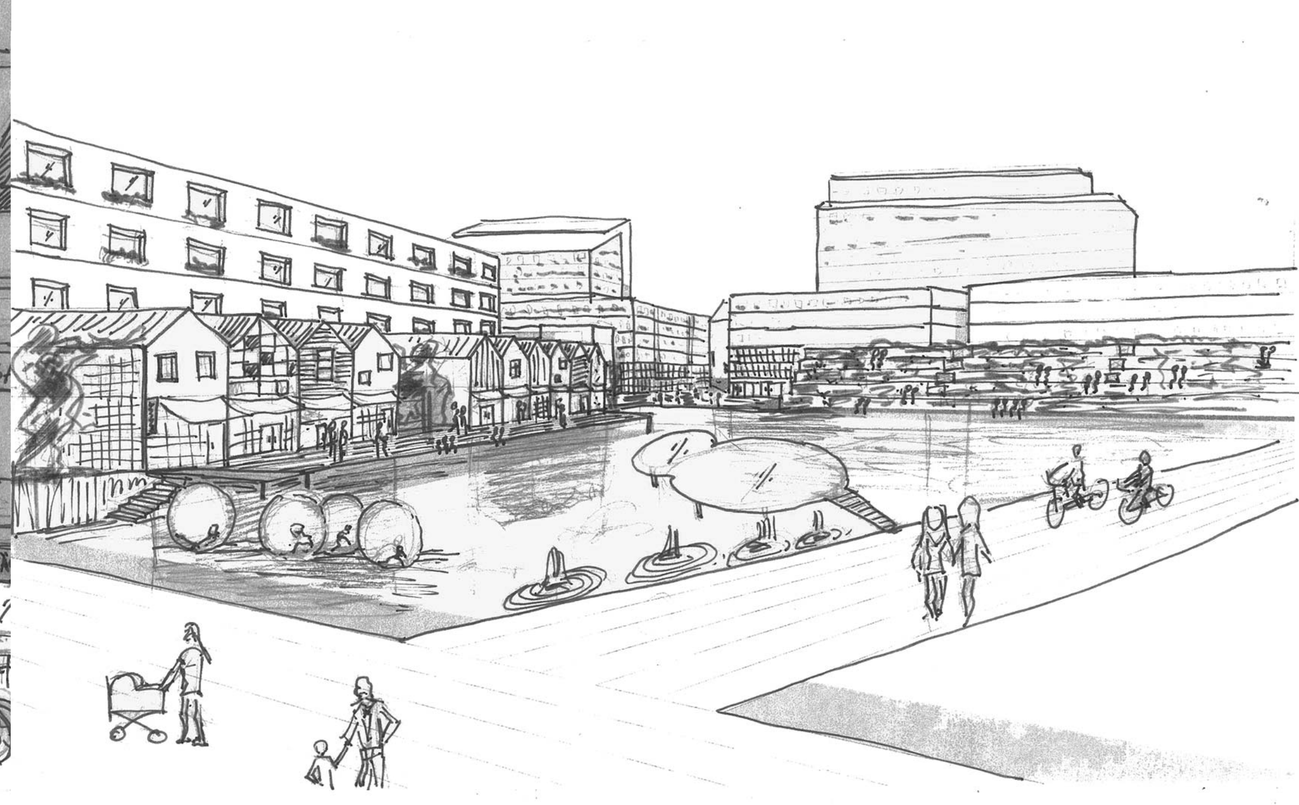
M: Yu, do you know which movie is going to be shown tonight?
Y: Hmm, as I remembered, it is a documentary called “China” by Jia Zhang Ke.
M: Sounds interesting! Is Gothenborg film festival an annual event? Seems it is quite popular, See many people are already sitting around!
Y: Yeah! It holds every summer for 3 weeks, and this open-air cinema surely becomes active place during the festival. Let’s start having food.
R: Great! I am getting hungry. Oh, “China” starts, hush...

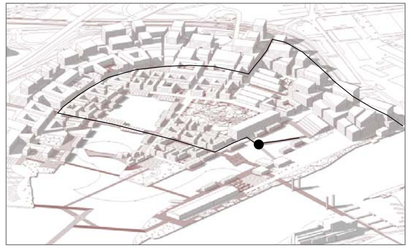


Malin comes and picks up her daughter Anna from preschool.
A: Hej, mama, are we going home now?
M: Yes, did you have a nice day today?
A: Very good, I was on a plane today!
M: Oh, on a plane? Where?
A: Yes, we saw green trees on the house roof, we saw cars and people and.....
M: Ahhh, you mean you were standing on the balcony to looks down the street, fun! Taking Mama next time when you are flying again!

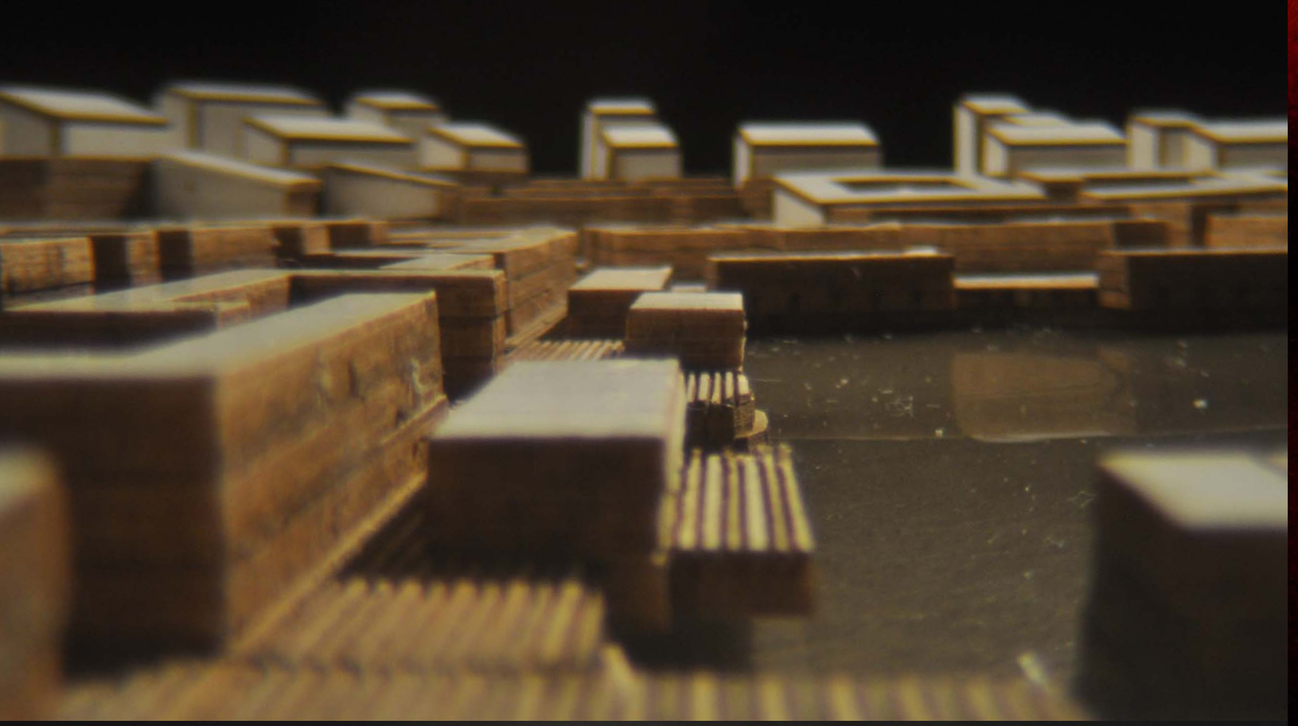


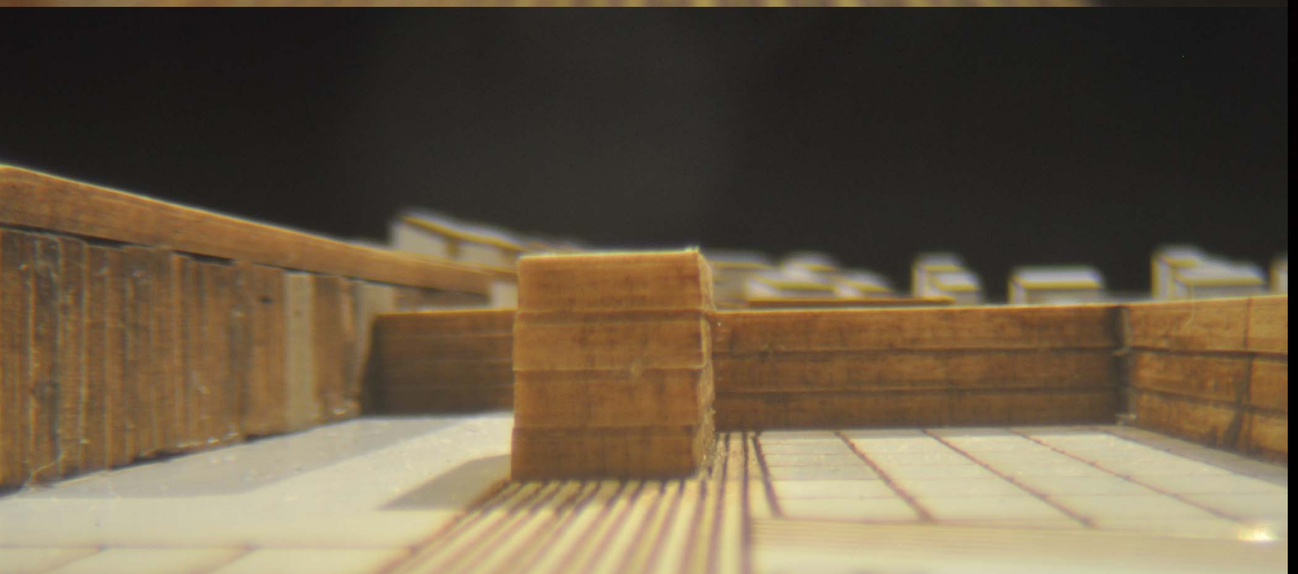
Malin's husband Jonas is on the way home, calling her
J: Hej, Malin, I am driving on the way home. Have you picked up Anna already?
M: Hej Jonas, yes, we are at home now, but can you bring some vegetable from super-market?
J: Sure, I am near the shopping mall now. I will just park my car and go into Willy's on the 3rd floor.
M: Great!! Waiting you at home then, see you soon.





After supper, they go out to have a walk with Anna
J: It is really cool to walk near the water in hot summer.
M: Yes, I also like the soft music with the colourful spring on water. What a nice life we are having!
A: Look, mama, papa, "rabbit and wolf"!!!
J & M: #&/???
A: There, there, on the glass stage in water!
M: Ahh, a children playing show there, let's go to see what happened…





METHOD

Various methods and approaches have been used during the thesis process

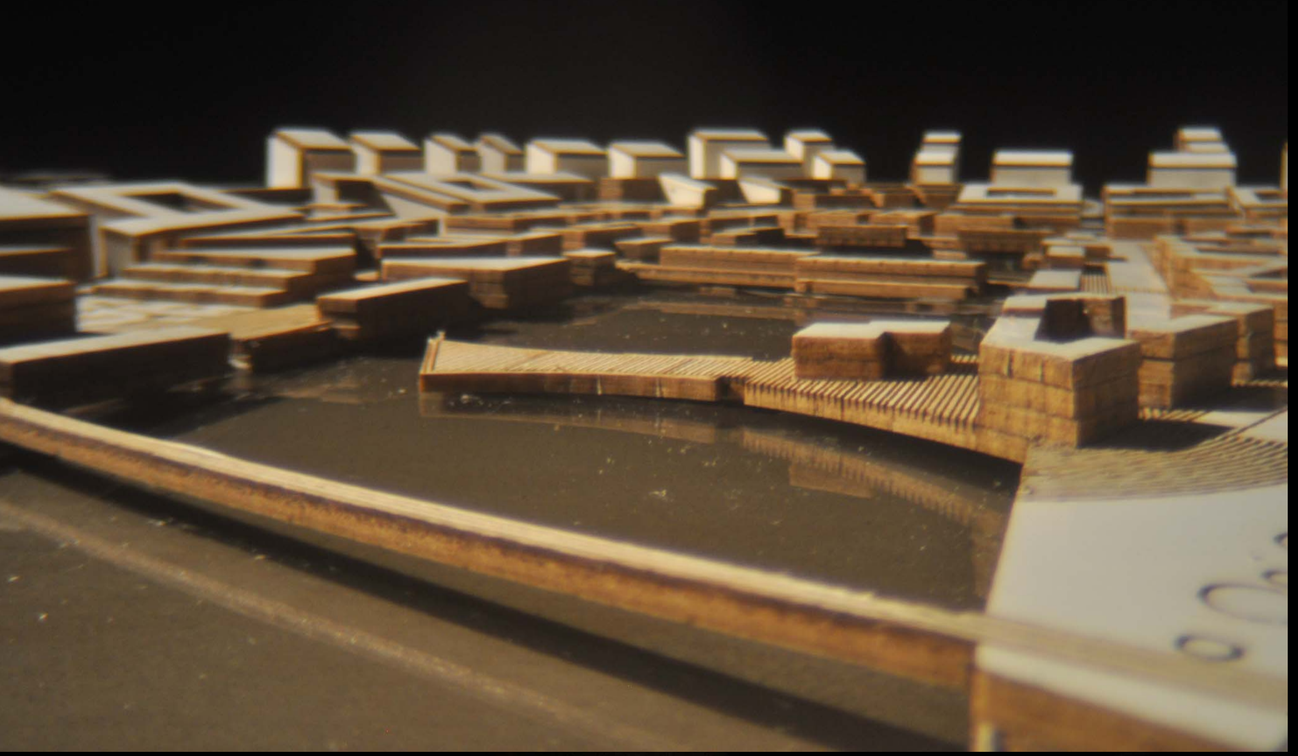
COLLECTING IMAGE
To take one day per week to go round the city could help build the local urban impression, it also accumulates the mind map of a city and makes it more and more clear.

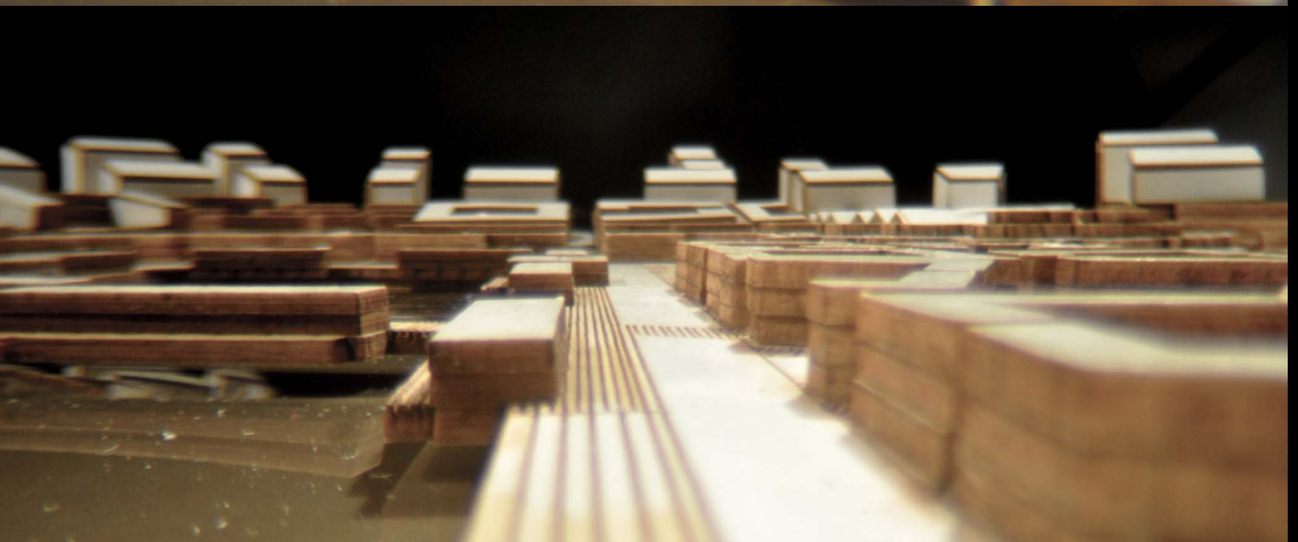
STUDY TRIP
Having study trip on site including its surrounding environment at the early stage gives more accurate dimension feeling of an urban area.

PHYSICAL MODEL
Physical models are useful tools to experiencing different scales of urban area, seeing and creating urban fabric on direct 3D dimension. Shortage and challenge could as well as be explored according to the suitable models.

INTERVIEW
Visiting urban planning office and municipal company and interviewing the stuff there, helps to get an whole vision of the city future development base on the governmental policy view, inspiring from urban planning ideas of a top-down perspective.

SKETCH DIARY
By rising questions such as how people use the urban space, what sort of urban space is more popular by citizens and why, sketching in one paper per day can be a good way to catch the flashing ideas during thinking process.





SUMMARY

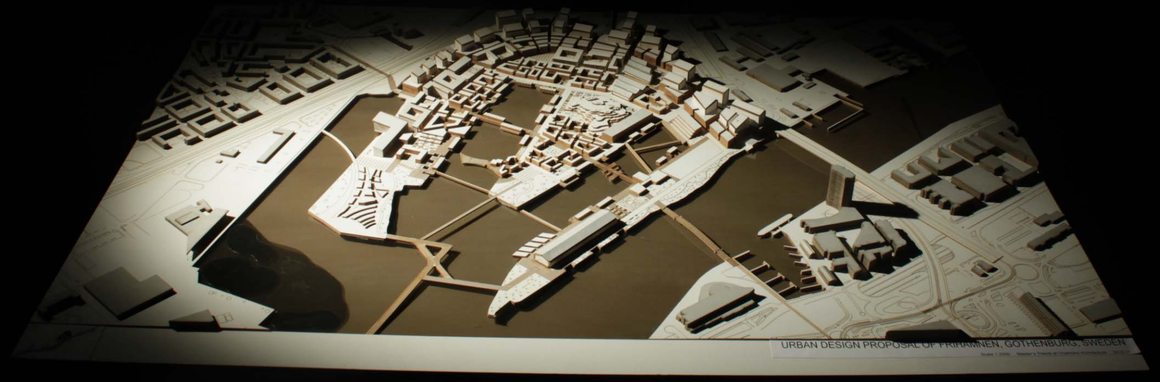
As we all know that Gothenburg is expanding, Frihamnen, was a typical industry site before, though located at the heart position of Gothenburg, still relevant empty today. In addition, Gothenburg has the character as a poly-centric city, could Frihamnen to be developed as one of the city centres supporting diverse, sustainable city life both locally and globally?

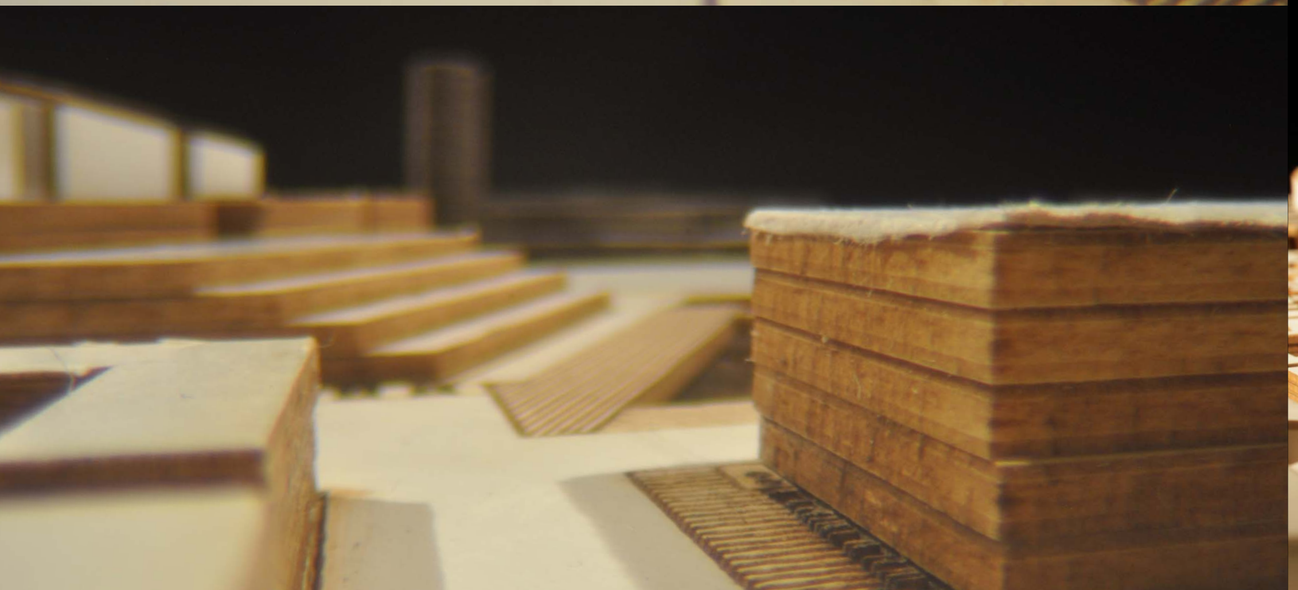
The “Enjoy life, enjoy the city“ urban design project answered the question!
The proposal of thesis sees the city centre as a series of islands rather than one continuously connected fabric as the planners from international workshop proposed during 2011 summer. So it tries to do the opposite, taking this such big empty urban void that has no urban structure before as the challenge, proposed small scale pedestrian link near the water front, meanwhile most of the urban large public buildings near infrastructure road. The interesting point of thesis proposal is how to leave the river side as an open space.

By doing this, the three bands urban structure are created, when people come to this area, it is unavoidable to crossing over the bands, so that obtain diverse urban space experience.

The thesis supposed to be a frame work for urban development, and could be enhanced by different architecture forms further more regards to individual building design.

I hope the design proposal could support diversity urban life meanwhile achieve certain urban density. I am willing, in future, Frihamnen will become a comfortable river room for citizens and visitor to enjoy life, enjoy the city, besides become a new window to open Gothenburg to the world.





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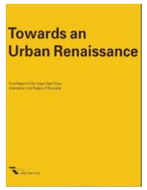
THROUGH MY DESIGN PROCESS, MAINLY REFERENCED BOOKS

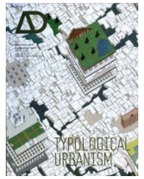
RiverCity Gothenburg - The outcome of the international workshop

This book documented the international workshop of design the rivercity goteborg during the summer of 2011, there are totally eight proposals from various teams, most of the team tried to link the city centre with Frihamnen area by building more buildings to continue the urban fabric. I also used it as a background book to know more about river side on Göteborg in the future.



Towards an urban renaissance / final report of the Urban Task Force

As the name of the book, Urban Task Force was trying to figure out the new way of city planning towards an urban renaissance based on UK background. The main idea is encouraging building mixing use in urban life, also explain the important role of the city centre that it should attract people which moved out from urban space to suburb going back to the lively downtown and enjoy the urban life there. Also utilizing the brown land to increasing the density of the city at the same time reduces occupying the farm land.



Typological Urbanism

The book is one of “Architectural Design” magazine 01/2011, discussed the relationship bout Type, Typology and the City. “As buildings are independent from their function and evolve over time that means a functional reduction prevents other knowledge that can be obtained from type by considering it as belonging to a group of formal, historical and sociocultural aspects.”

An architecture of dissolution

Japanese Architect Kengo Kuma raises his idea of dissolution architecture by writing this book. He brings forward his opinion about the way of seeing architecture, buildings should create a harmony and comfortable cosy feeling for people, especially in the public building, it should establish a close relationship between human and nature.

IMAGE SOURCES

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Page 6
Picture source: Researching Gothenburg: essays on a changing city (2010) Page 154.

Page 7
Picture source: http://en.wikipedia.org/wiki/File:Blank_map_of_Europe_cropped.svg

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Page 10
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Järntorget, Backaplan, Landala, Korsvägen- http://maps.google.se/

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Picture source: http://sv.wikipedia.org/wiki/Frihamnen,_G%C3%B6teborg

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Picture source: http://www.hitta.se/

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Old Map Source: U+A studio from Chalmers Architecture Master programme of Architecture.

Page 18
Picture source and Relevant information:
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Page 22
Picture up source: RiverCity Gothenburg - The outcome of the international workshop, 2011. Page 31.
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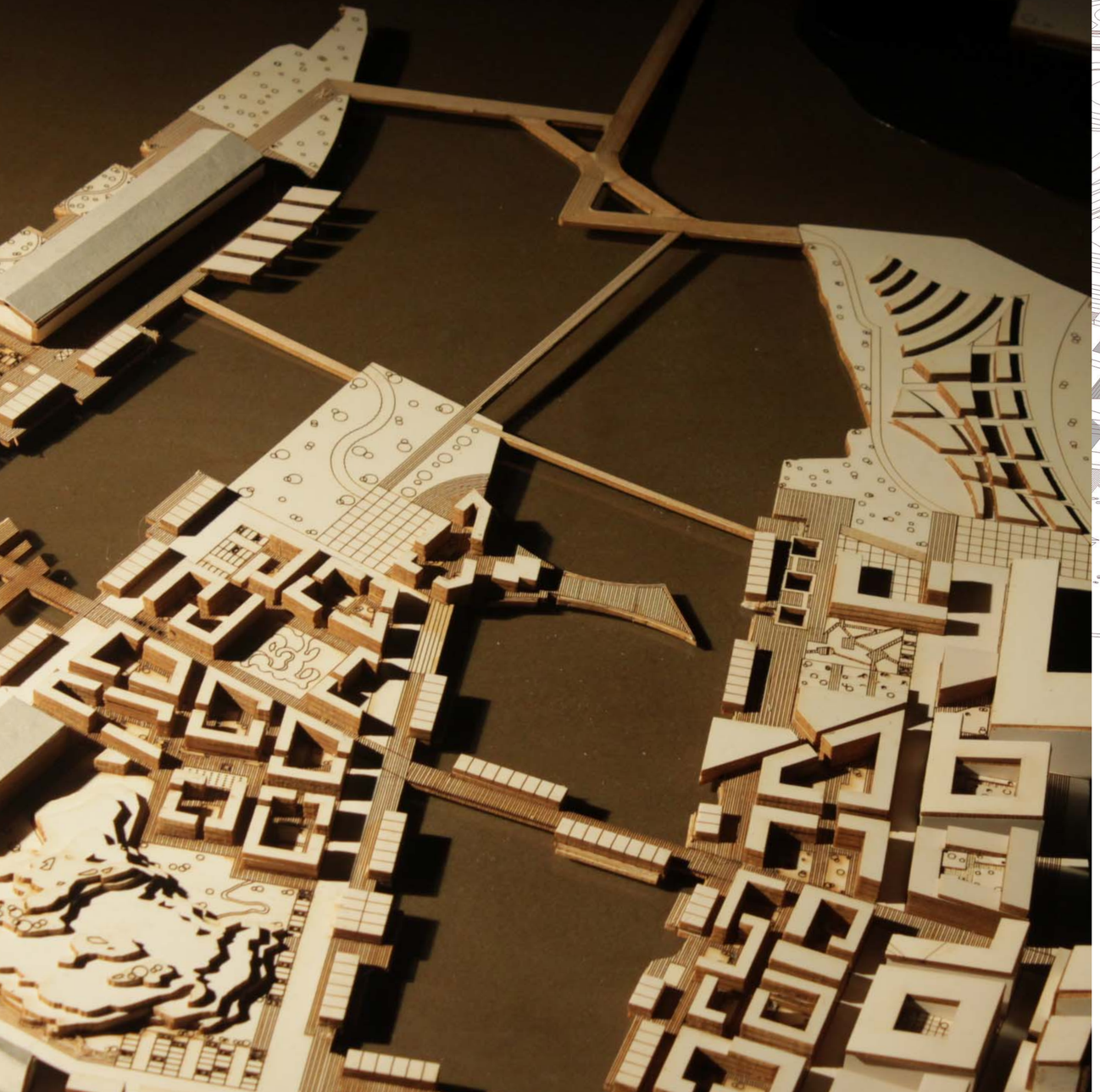

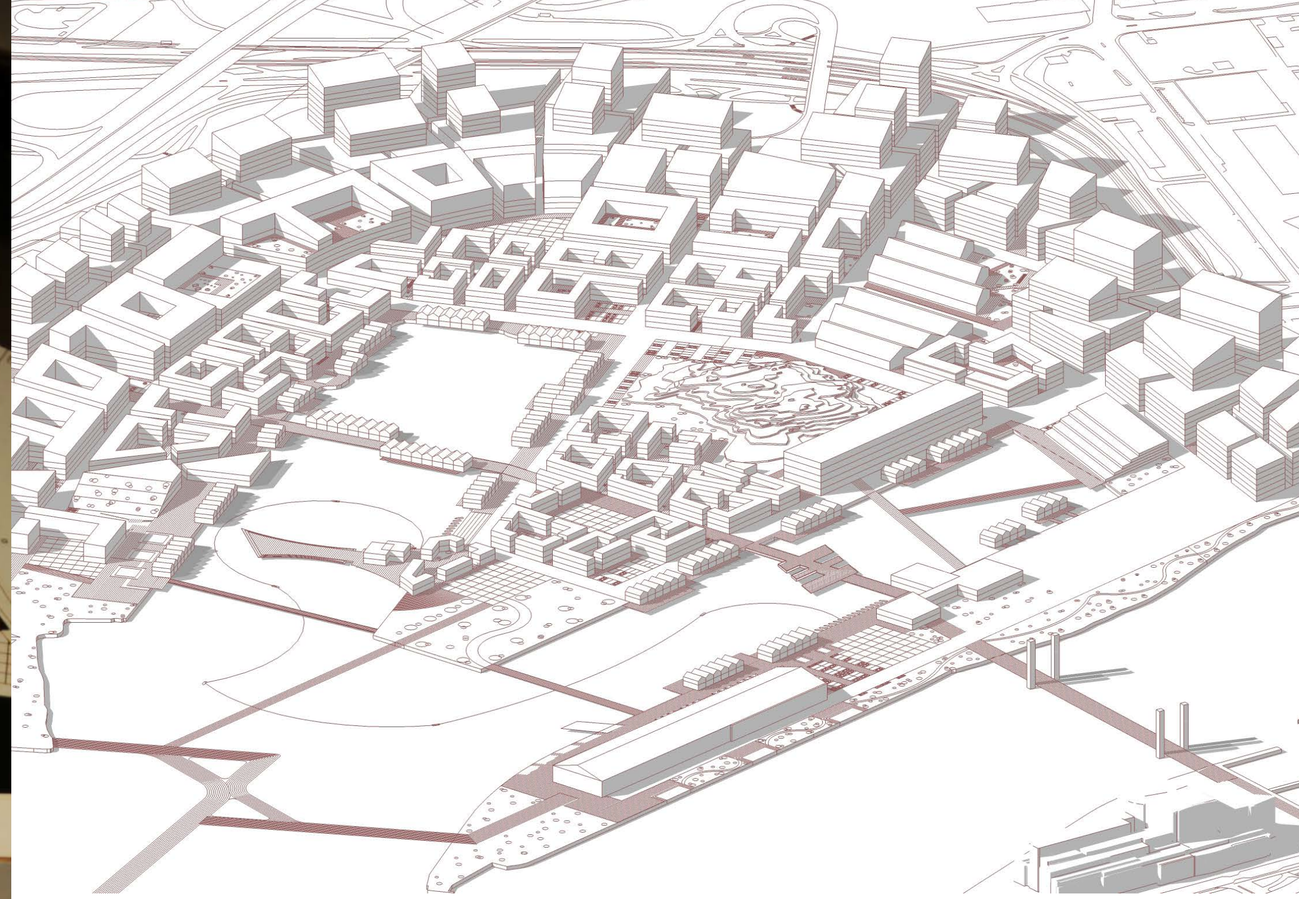

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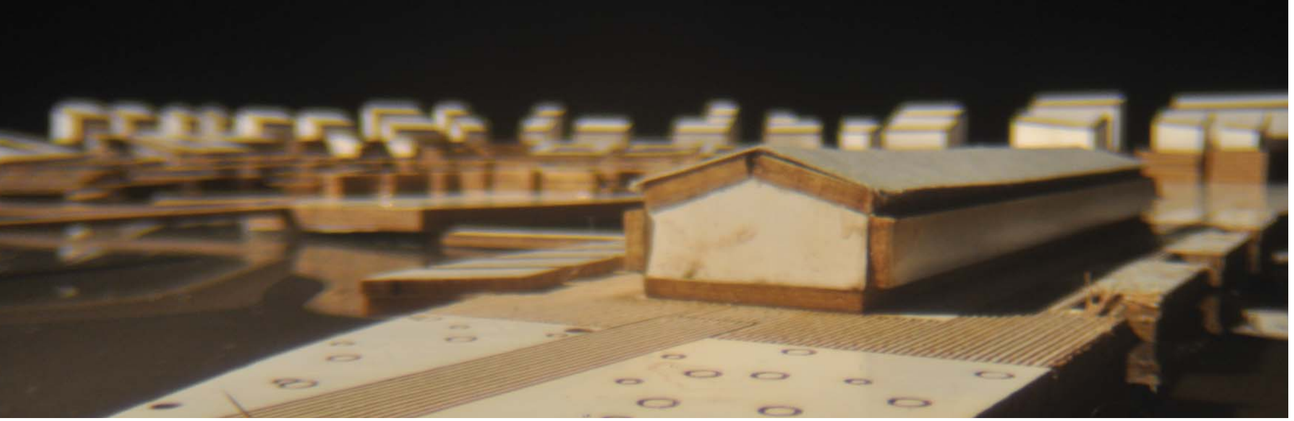
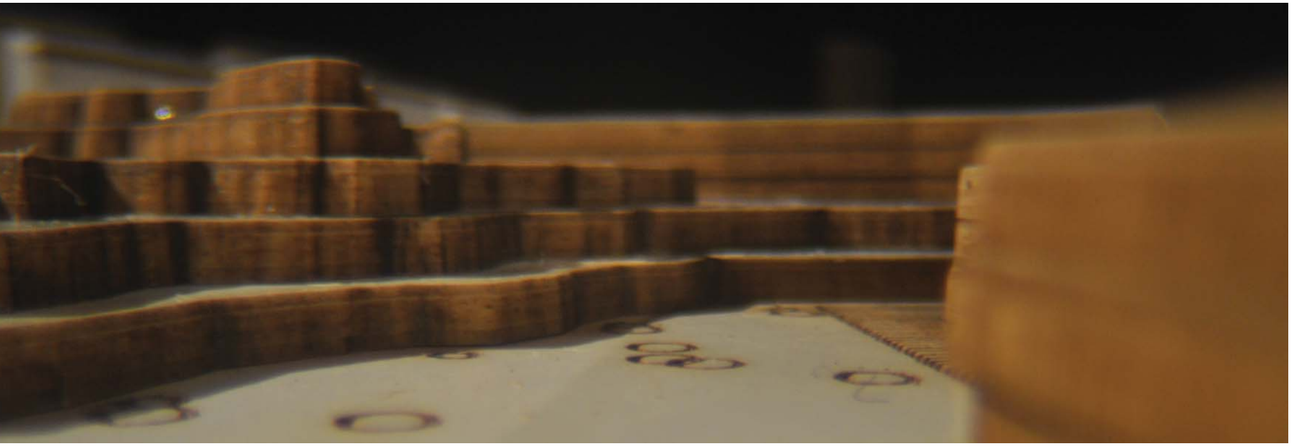
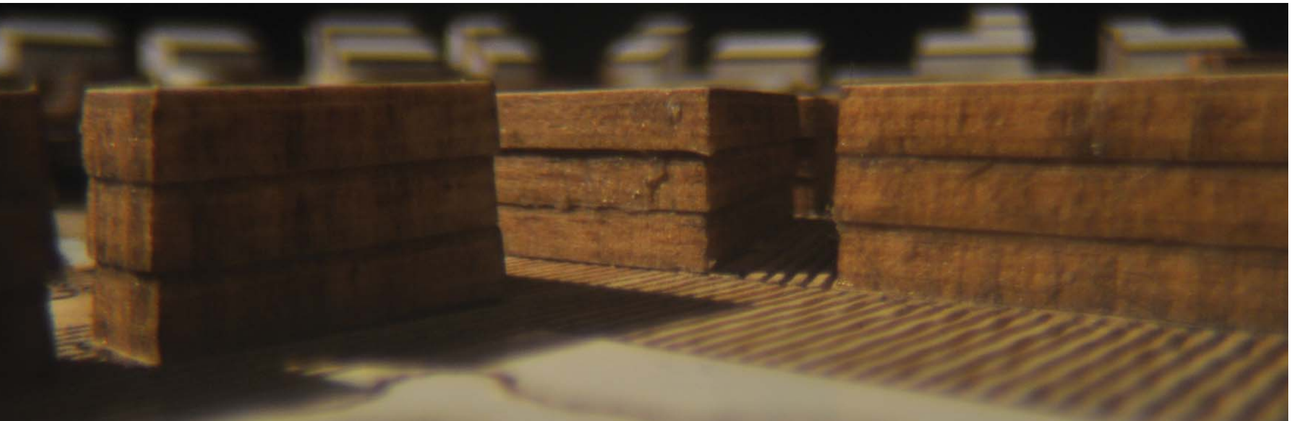
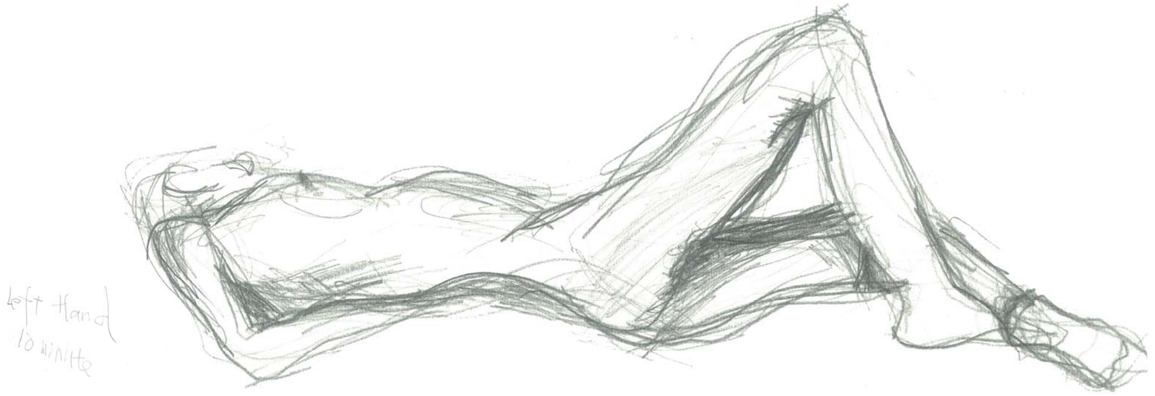
Thank you Björn Gross and Lena Hopsch, for your sincere advices and relevant information to contribute my project.

And also thanks to everyone who shared their opinions and knowledge to help with the thesis.









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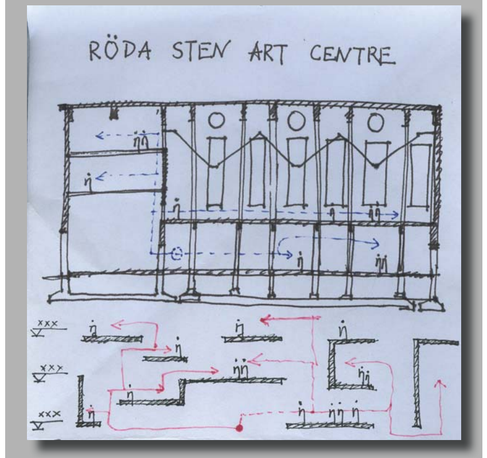

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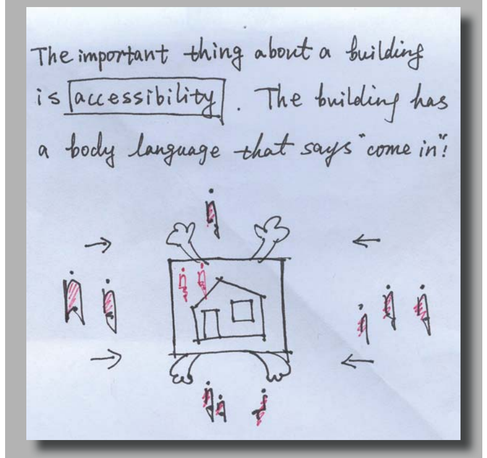

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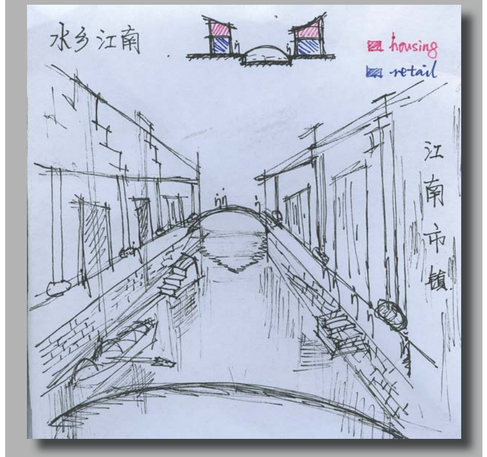

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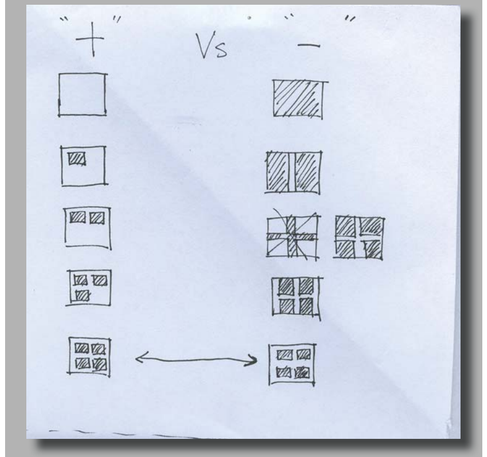

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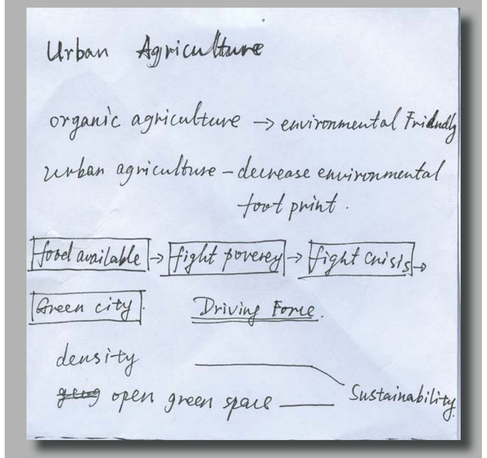

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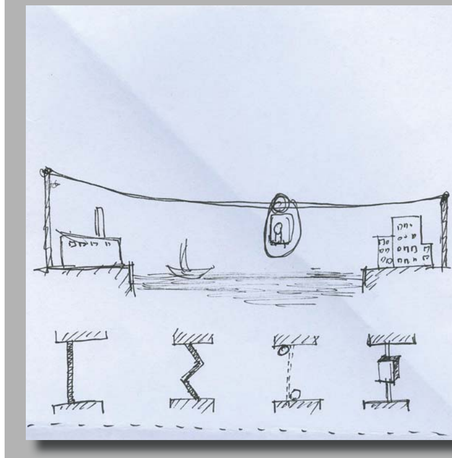

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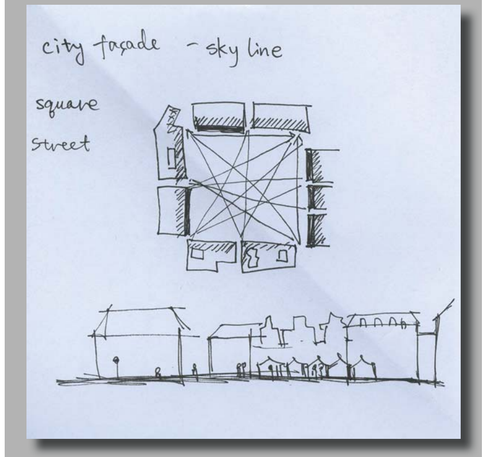

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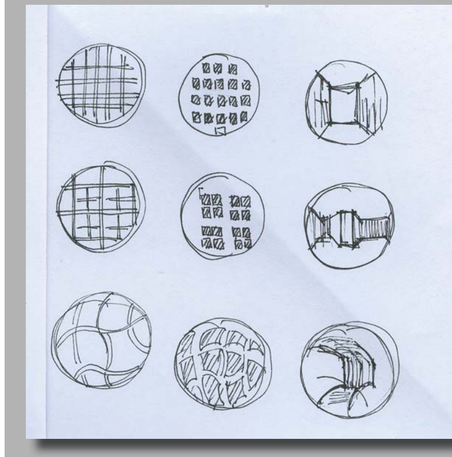

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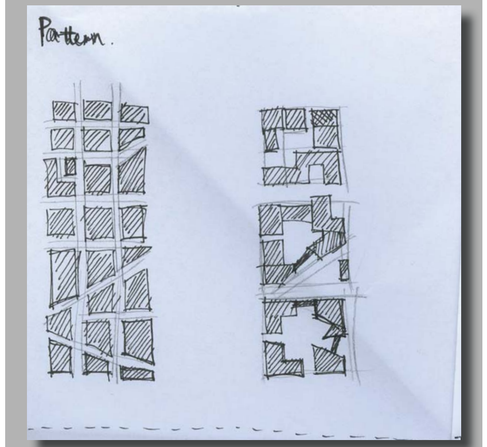

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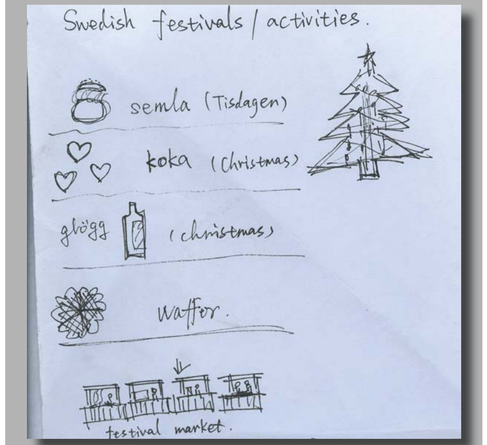

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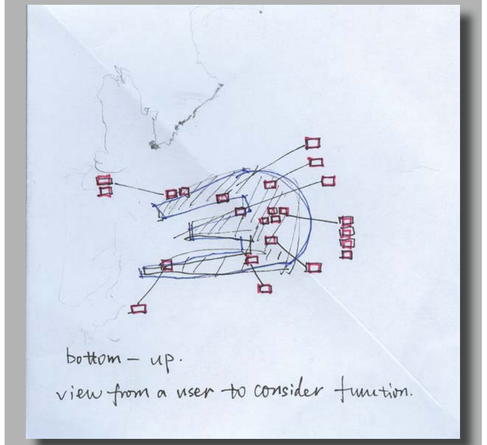

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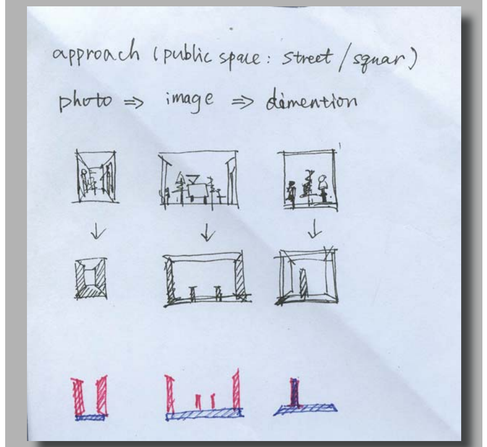

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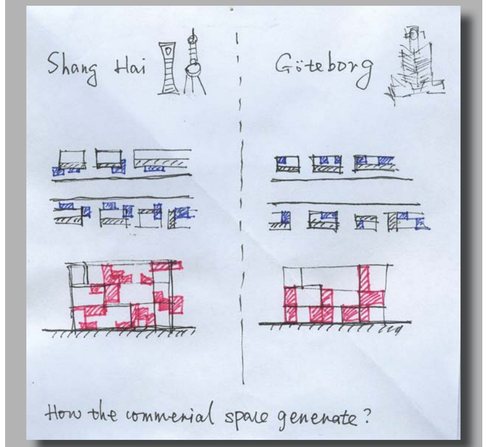

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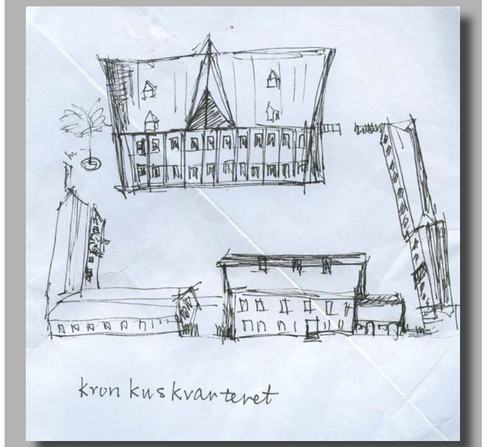

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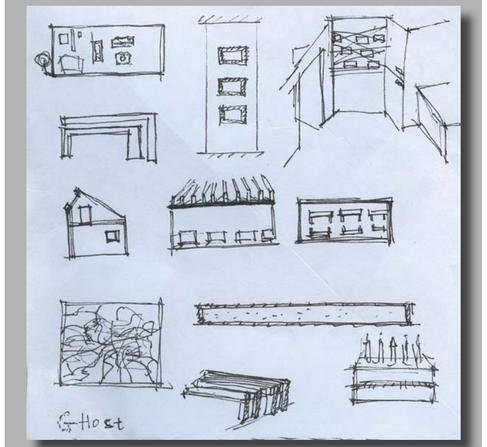

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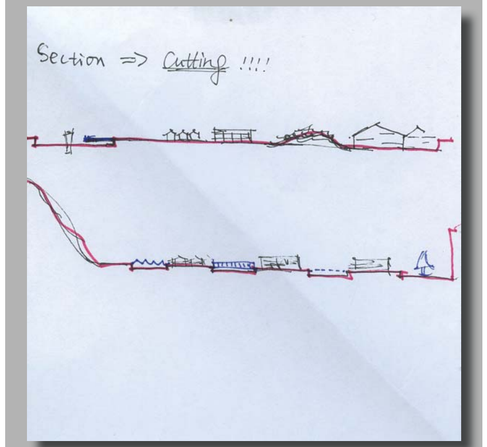

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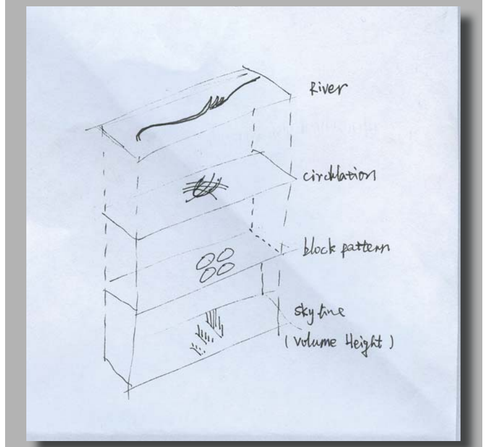

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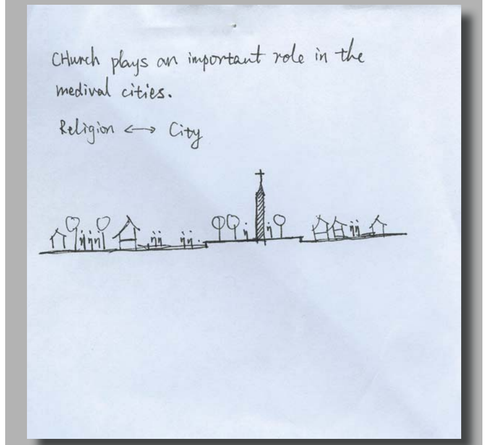

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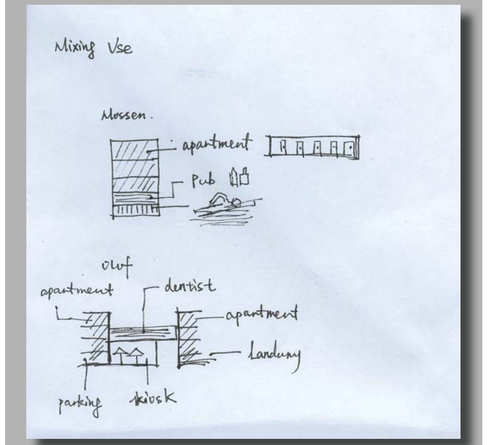

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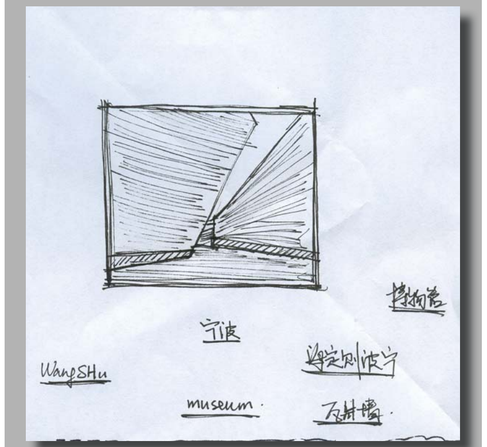

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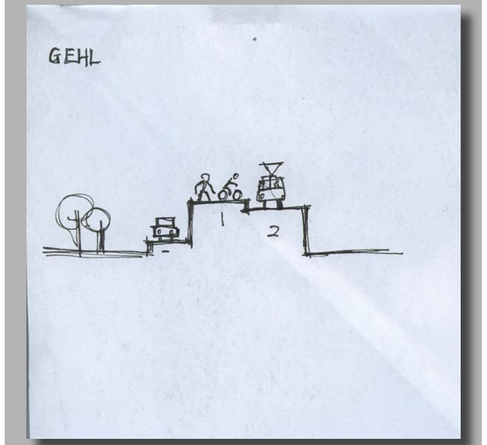

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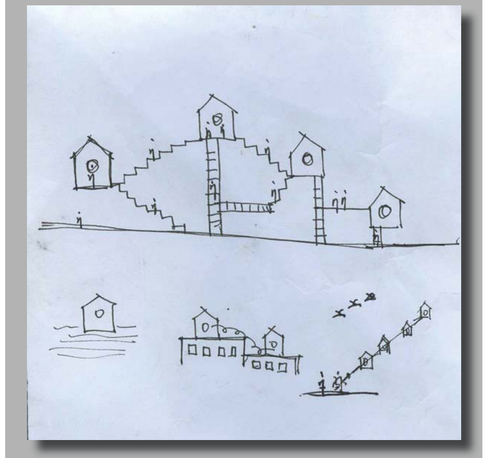

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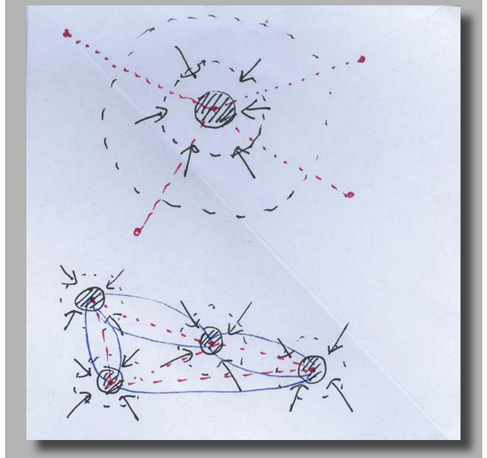

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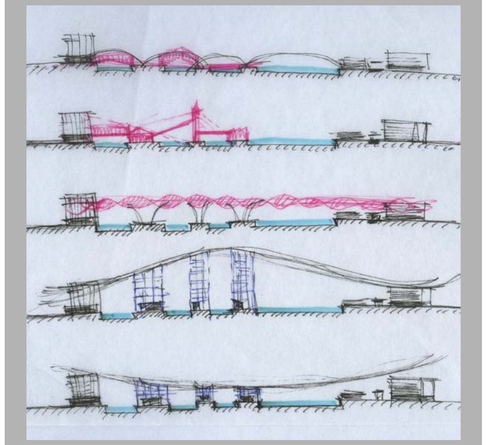

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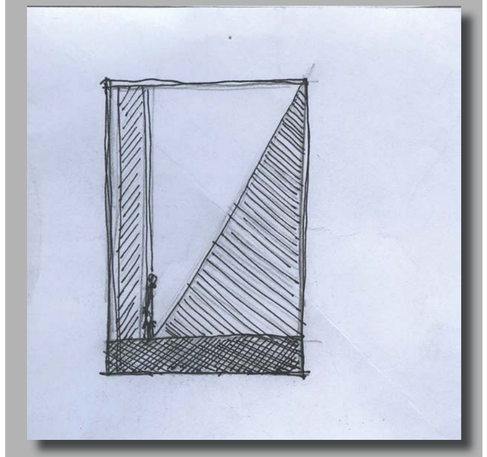

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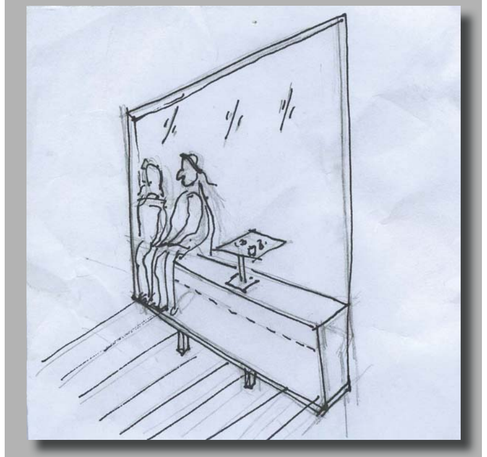

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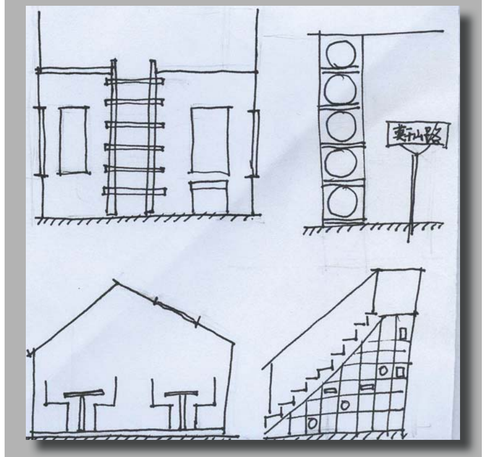

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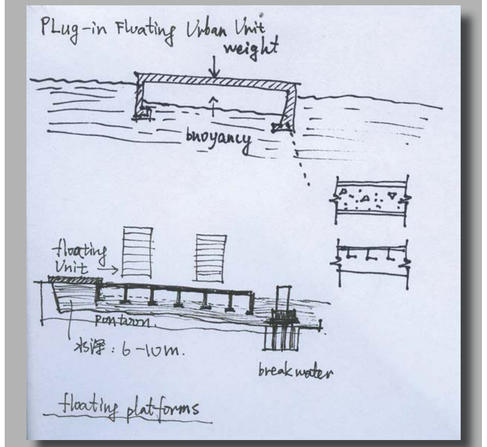

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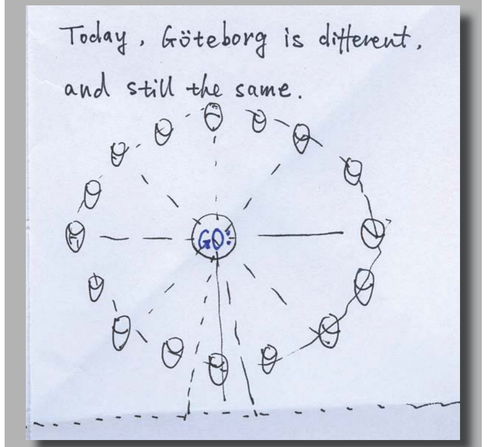

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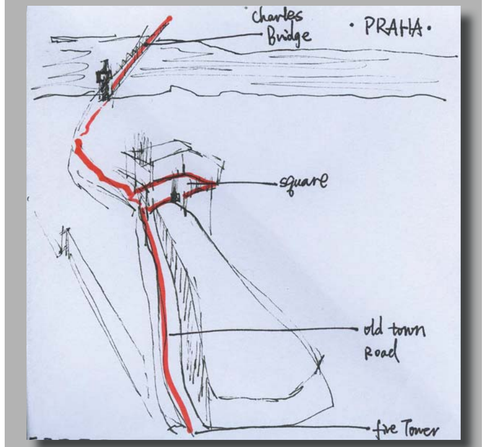

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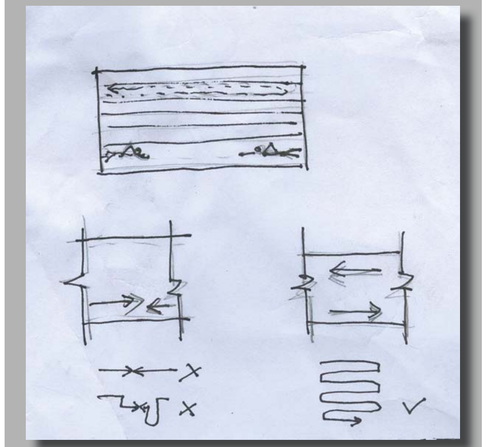

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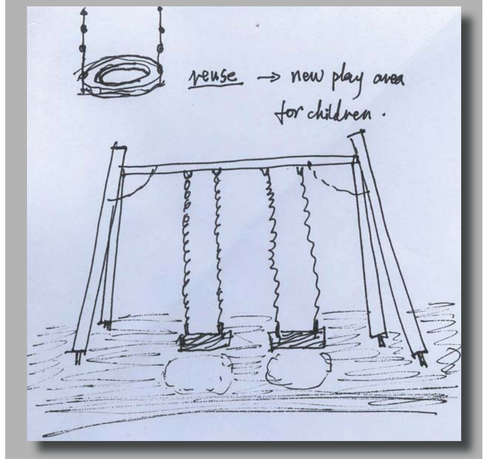

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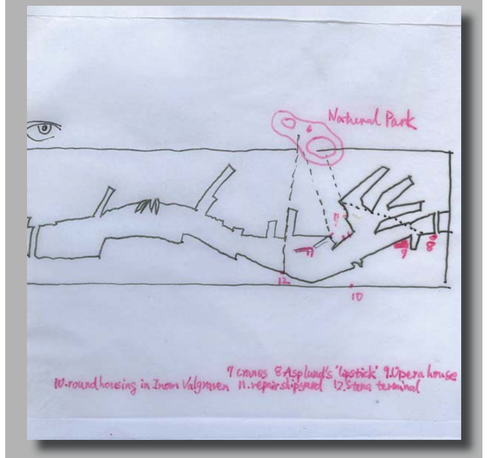

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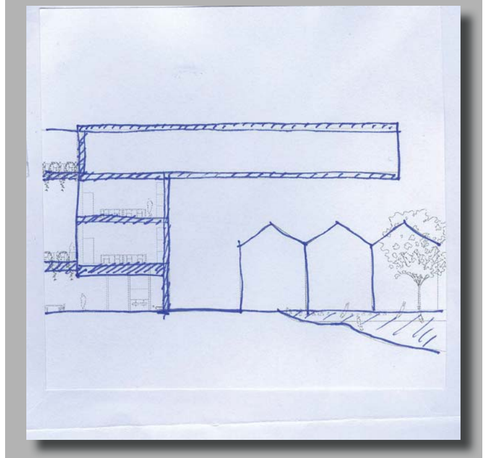

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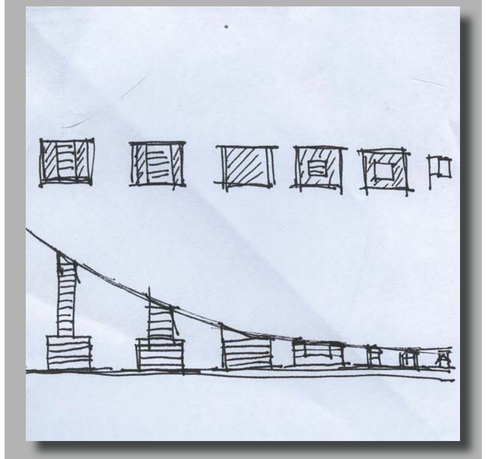

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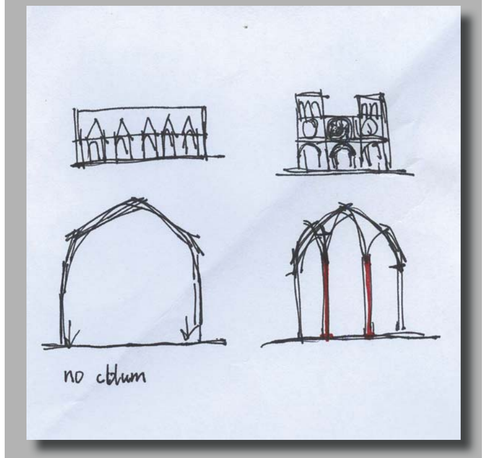

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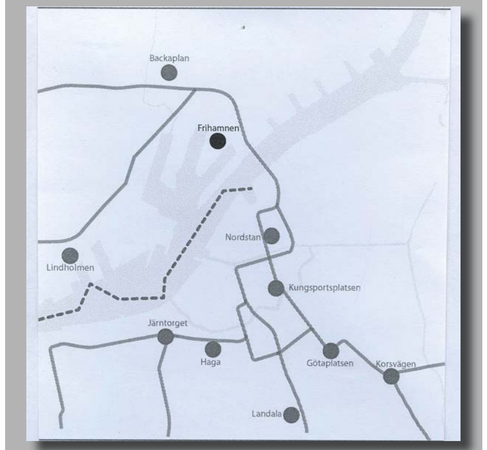

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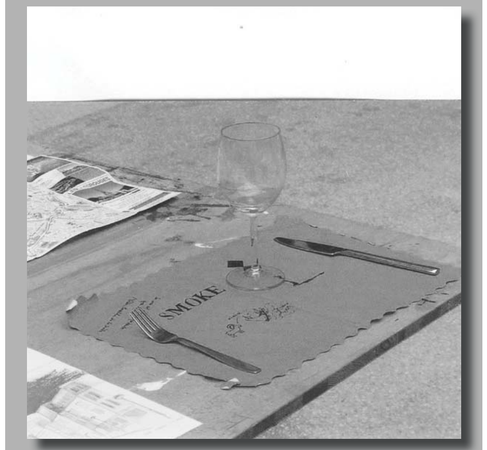

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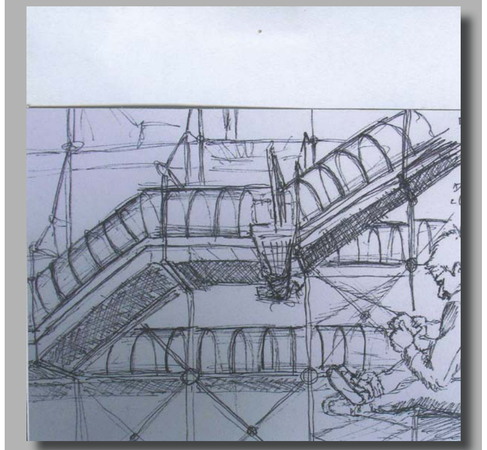

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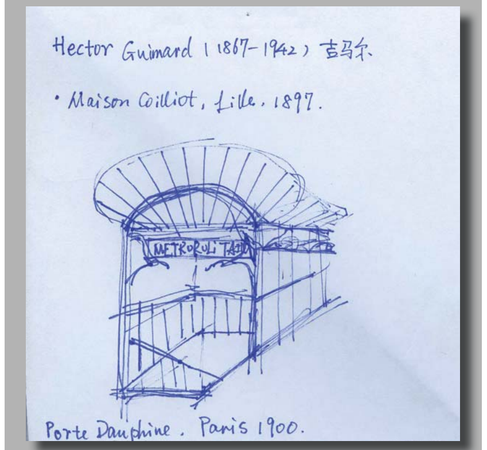

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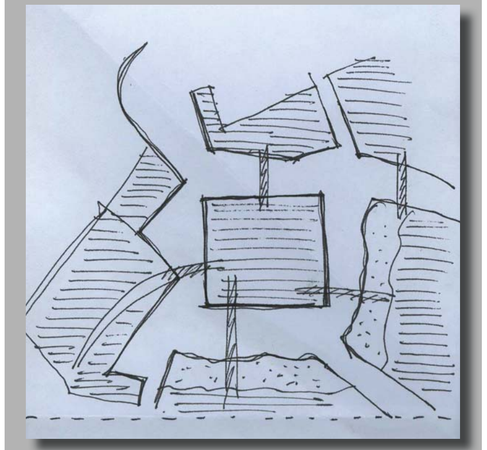

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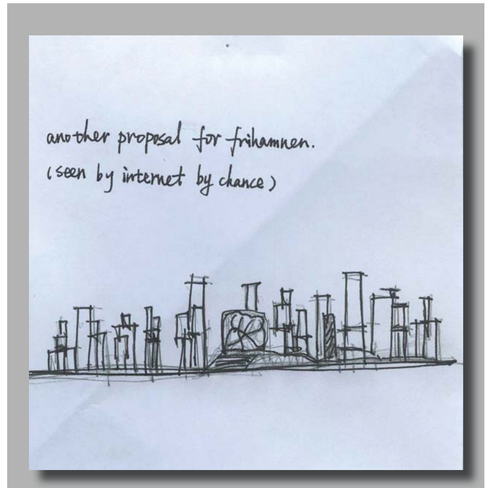

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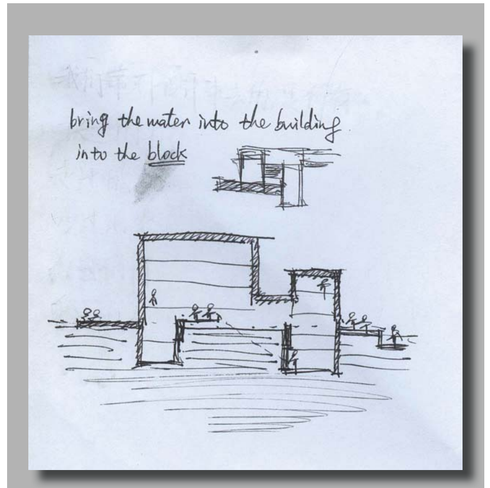

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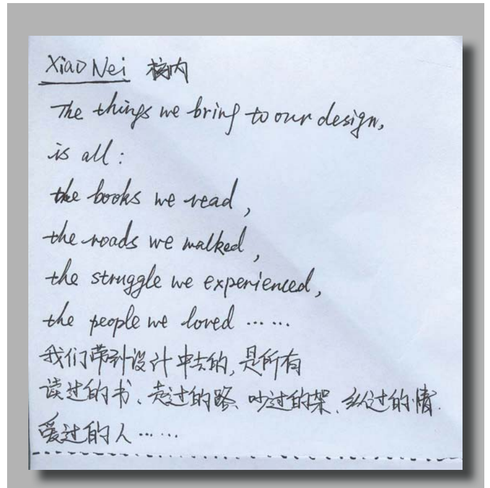

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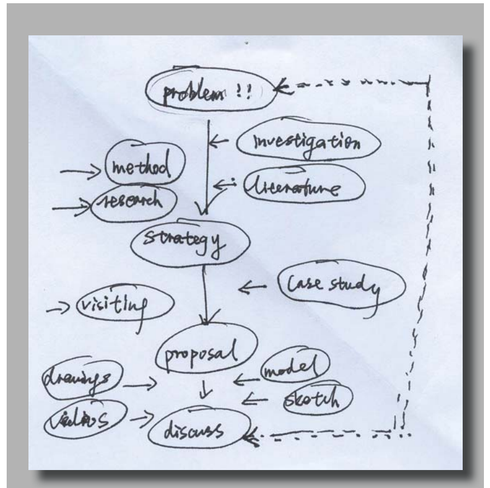

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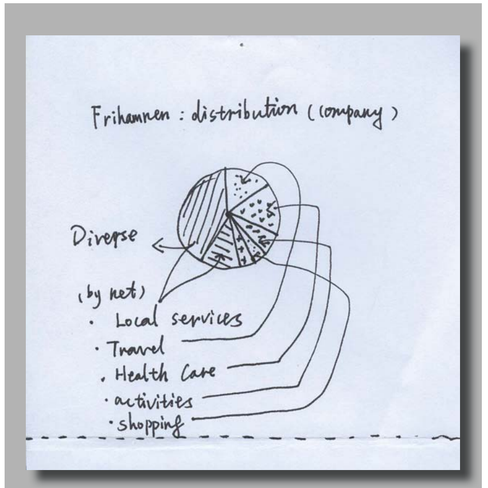

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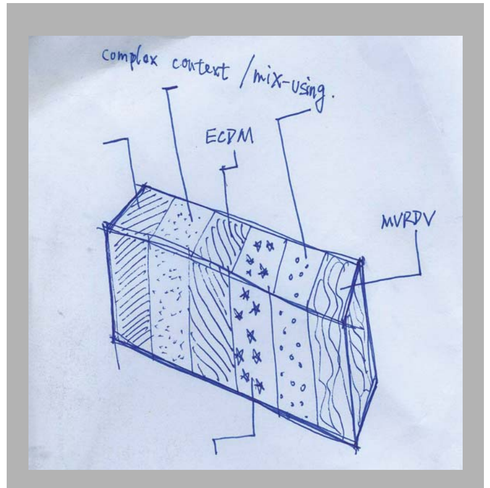

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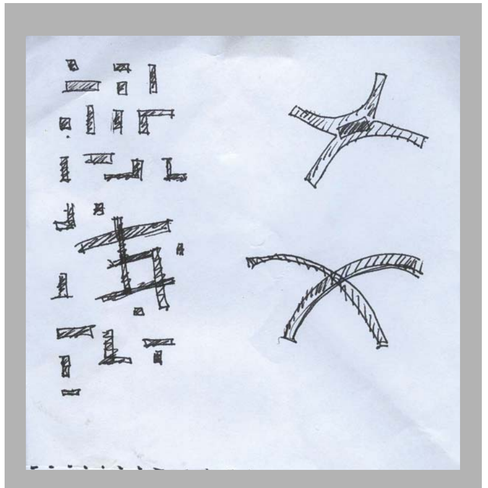


2012.05.11

PLAN 1:2500

Preserved buildings

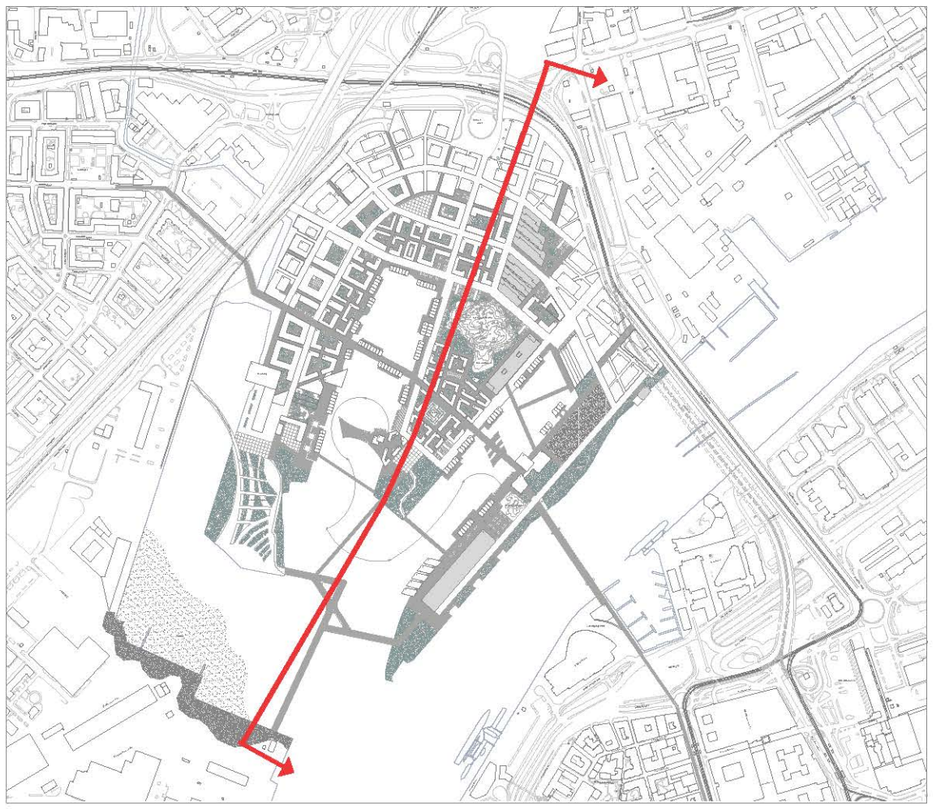
Site area: 39,0 Ha
Footprint area : 15,6 Ha
Total building area: 84,4 Ha

Building footprint area to site area
ratio coverage = 40%

Building area to site area
ratio coverage= 216%

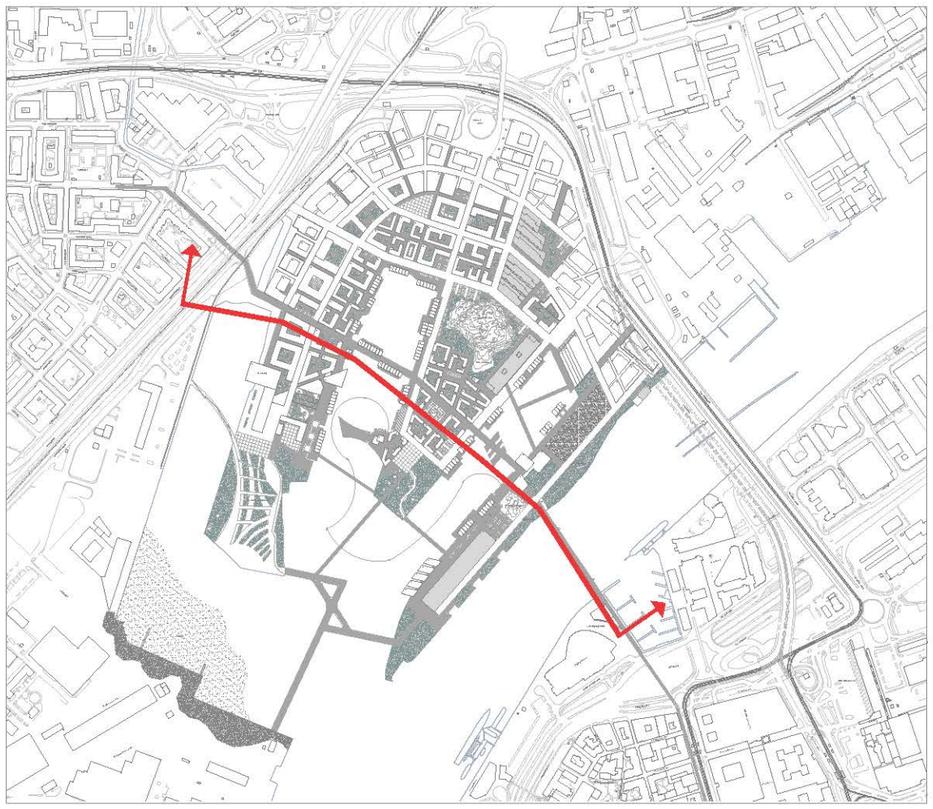
SECTION A-A
1:250

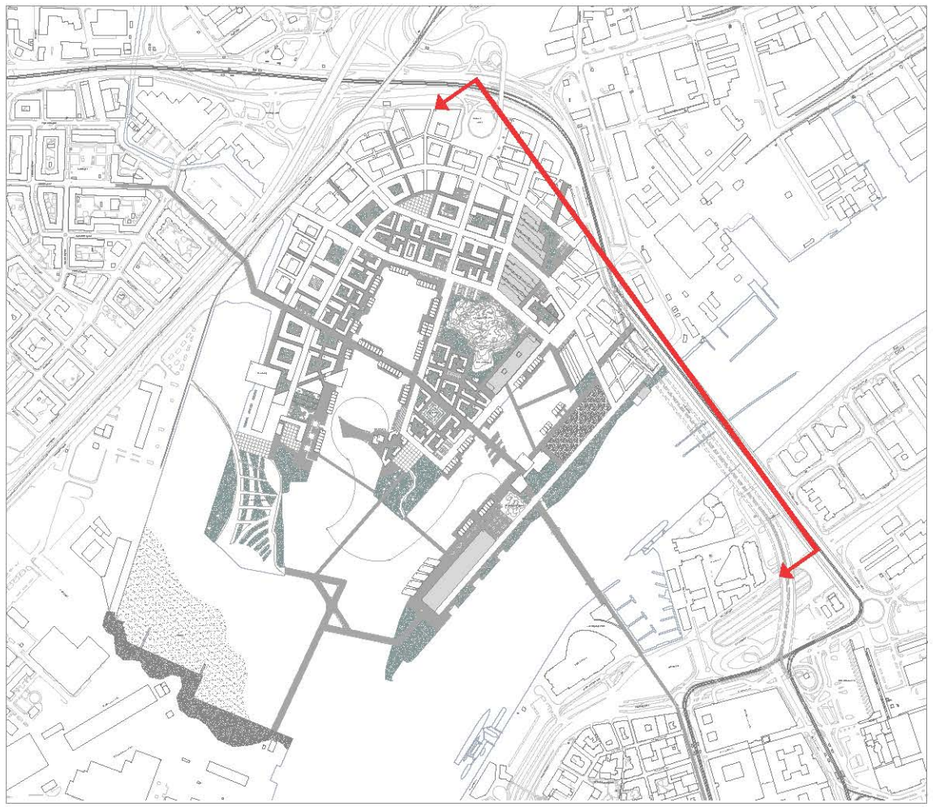
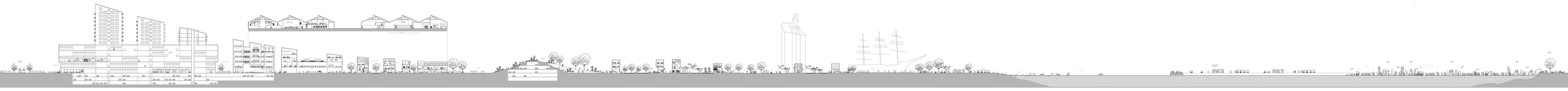
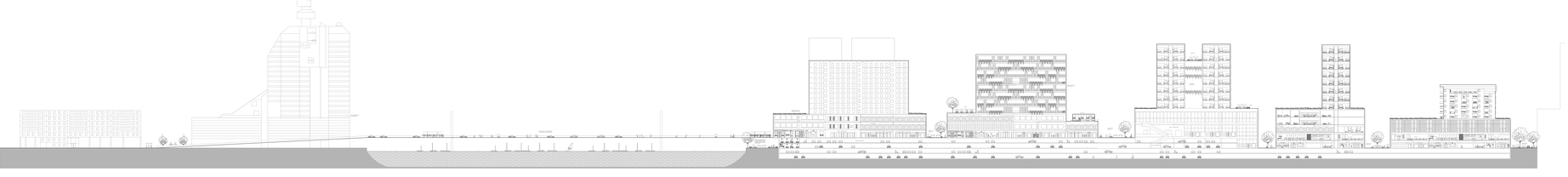
URBAN FABRIC HIERARCHY CONNECTION



SECTION B-B
1:250

PEDESTRIAN CONNECTION



SECTION C-C
1:250

VEHICLE CONNECTION