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ausgeführt zum Zwecke der Erlangung des akademischen Grades eines Diplom - Ingenieurs unter der Leitung

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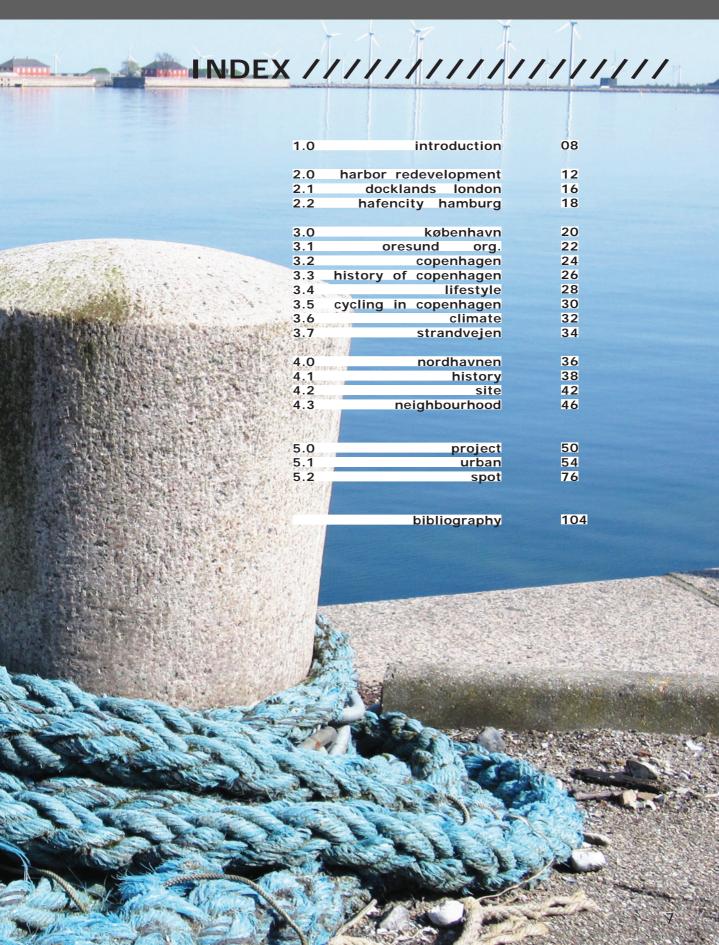
Carmen Deisenhammer

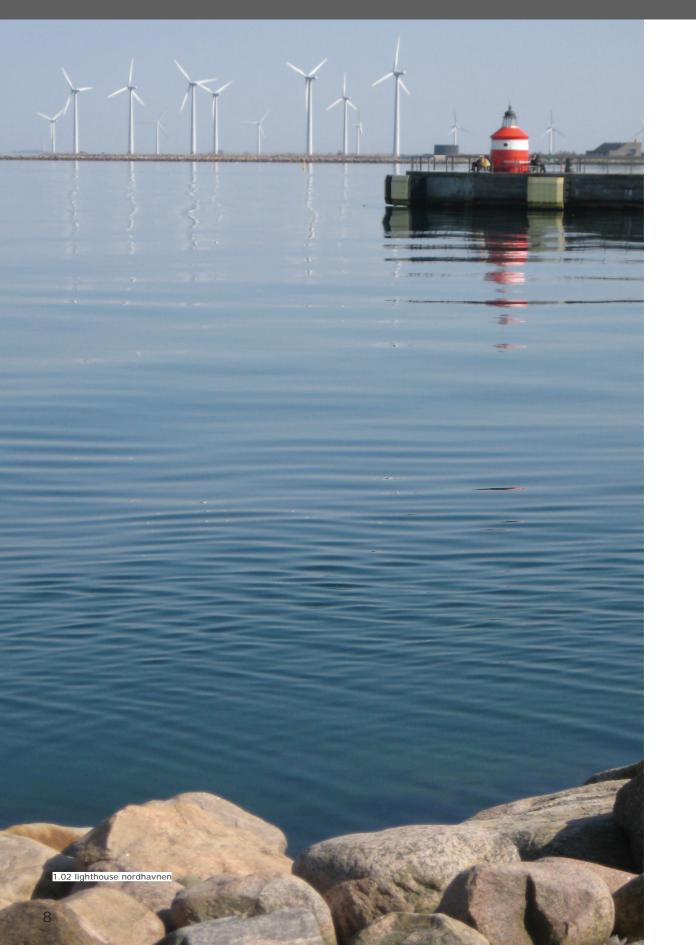
Matr.Nr. 0026757 Schulgasse 40/12 1180 Wien

Wien/Juni 2010

dedicated to my parents and everybody who didn't stop believing in me.
special thanks to anne und nicole.







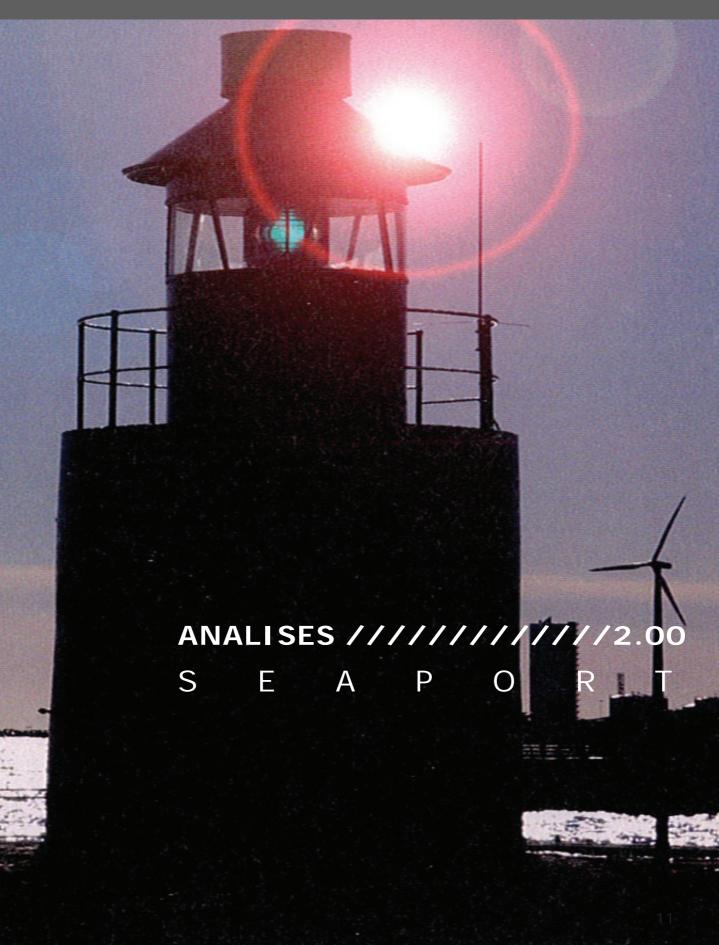
## INTRODUCTION /////////

## \*NORDHAVNEN

The project of the nordhavnen area new city as a trict of the european competition. was а part 10 Before that, in 2008 there was already a international ideas competition for the area. There was already а final judgement when I started to work. The realisation of the winning project will start in 2011.

Because of the special shape and the great potential, the site aroused my interest. Besides that I enjoyed getting to know Denmark and Copenhagen. It's a nice , fashionable city and I like the attitude of the people.





## ★ HARBOR REDEVELOPMENT

## Seaport

From the middle age till the middle 19th century in seaports like Hamburg, London, Barcelona,... harbors were an important component of these cities. The ports were included in the city walls and they were a part in the urban tissue. Buildings combined uses of living, economic, office and storage functions. Hoyle categorised **five phases** of the relation between harbor and city during the history. This was defined the **first phase** in the seaport development.

## Sailertown

During the boom of sailer shipping these districts got a special character. Exotic cultures and reloading points for foreign goods, rough seaman after a long, lonesome travel on the ship with a short stay. The horror and vice of prostitution districts were also attracting the civic audience. With the industrialization and expanding the world trading a change of the scale is coming up. In the second phase an expanding city harbor was generated. Steam machine, Steamships and railways revolutioned the trans-shipment center. The ships -fourth of their size-, the arrival time could be calculated and the reloading work was industrialized. The docks had to become bigger, deeper with more space on the landside and a connection to the railway for the further transportation. The functional connection between harbor, and livworking disbanded. The economic activities were located in the ing was city cenand bigger warehouses and silos were constructed near the docks. ter



# ANALISES ////////////2.01 HARBOR REDEVELOPMENT

The time of the Inter war years could be defined as third phase of the modern industrial port. The fast economic and the trading development were going hand in hand with the harbor enlargement and the industrializing. The electrification of the cranes made it possible that more and more reloading operations could be mechanized. With the new technologies ships became bigger and with more draft again. The mass motorization caused by the replacement of coal into oil were demanding different space and a new handling of cargo technologies. With the Bulk-Transport and a bit later the invention of container shipping, seaport moved to the suburbs of the cities and the musealization of the harbor and the navigation began. The amusement districts of the sailertown were opened for tourists and people with money of the midland. Film production companies found out that they could make good money with the maritime nostalgic. That was the beginning of the fourth phase. These traditional areals lost their utilization and the impact by the deindustrializing of the area. Because of the international competitive ship manufacturing plants moved to southeast asia. The fifth phase is defined by modern urban terminals and a suboptimum use of the harbor and bank areal. The relation city harbor is opening new possibilities. The closeness to the city and the location at the waterside accommodate a big potential for the revitalization.

Maybe one of the oldest revitalization projects are the London Docklands. [1]

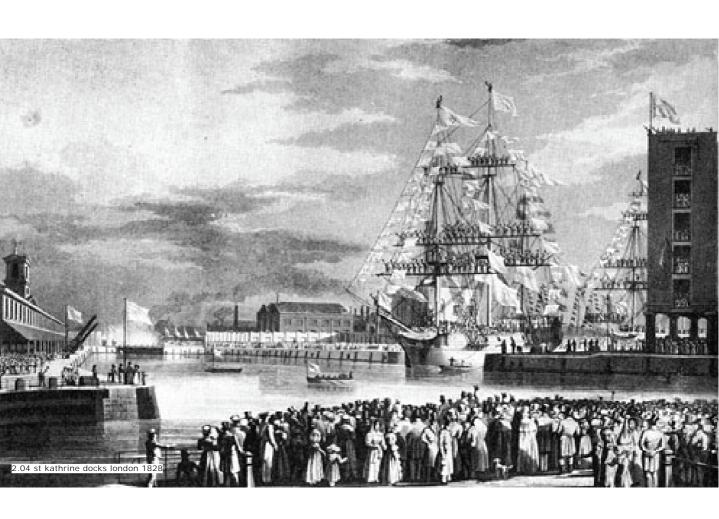


# ANALISES ////////////2.01 HARBOR REDEVELOPMENT

### ★ DOCKLANDS LONDON

"The Pool of London" as it's called as well was once the world's largest port. In 1974 The Dockland Joint Committee was founded and a "London Dockland strategic plan" generated. The aim was to create housing social / environmental employment and eliminate communication deficiencies of the dockland area. The plan stayed a vision. The PLA was the biggest owner of the area with financial problems. Because of the economic change hardly any companies would invest in this project. Two years later with a change of the government the area became the key of the experiment of the free economic market - especially the dogs became the flagship of deregulated, market oriented planning. In 1986 the London planning institution "Greater London Council" was abolished and the function of the urban development was given to the London Docklands Development Corporation - LDDC. The aim of a satisfying the local needs were soon replaced by the greater demand on offices and the expansion of London as a world trading center. An important sanction of the government was the "big bang" in the same year. The rigid regulates for entering - and trading conditions at the London stock exchange were reversed. International principals should come to the city and establish the metropolis as one of the tree dominating world cities. A big demand on office space was requested and office buildings were started to be constructed. Unfortunately at the end of the eighties a recession began and the demand on office spaces went down. In the Docklands up to 60 % of the departments were empty. 1981 80% of the estates were community housing 10% 1991 property residential, in the estate rate went up to 85%.

Over the past 3 decades, the population of the Docklands is more than the double and the area has become both a major business centre and an increasingly convenient residential area. Transport links have improved significantly, with the Isle of Dogs tube connection via the Jubilee Line Extension (opened 1999) and the DLR being expanded to Beckton, Lewisham, London City Airport, North Woolwich and Stratford. Canary Wharf has become one of Europe's biggest clusters of highrises and a renouncement to the financial dominance of the City. Even though most of the ancient wharves and warehouses have been demolished, a fews have been refurbished and converted into flats. Most of the docks themselves have survived and are now used as marinas or watersports centres. Large ships can - and sometimes still do - visit the old docks, all of the commercial traffic has moved down-river. The Docklands' redevelopment has, however, had some less beneficial aspects. The massive property boom and consequent rise in house prices has led to friction between the new arrivals and the old Docklands communities, who have complained of being squeezed out. It has also made for some of the most striking disparities to be seen anywhere in Britain: luxury executive flats constructed alongside run-down public housing estates. [2/3]



## ANALISES ///////////2.02 DOCKLANDS LONDON

facts
area / / / / / / / 22 km²
inhabitants / / / / 80.000
jobs / / / / / / 72.000

## **★ HAFENCITY HAMBURG**

The biggest european city development with direct а hamburg is currently under construction. tion to the city center of The same way as in other countries the requirements on harbor facilities changed during the sixties and the container shipping port went down the river. First ideas of the redevelopment of the new city district came up in the middle of the eighties and planning teams were requested to create ideas and concepts. In 1997 the senat and the bourgeoisie decides to redevelop the area into a mixed, intra urban quater for residential, culture, spare time, tourism, commerce and trade.

A big topic during the planning phases was and still is the high tide water-level. That's also why the distance between water-level and kais is quite big.

After masterplan competition in 1999 the redeveloping 2000 with hafen works could start in the grasbrook The quarters have been finished in 2005 sandtorkaj. As well as london also hamburg had a corporation for the development of the harbor but in difference to the london docklands development corporation the Gesellschaft für Hafen- und Standortentwicklung mbH is strictly controlling the commercialisation.

All in all the hafencity district should be fully developed within 20 to 25 years.



## ANALISES ////////////2.03 HAFENCITY HAMBURG

facts

area / / / / / / / 155 ha inhabitants / / 10.000-12.000 jobs / / / / / / 20.000

**ANALISES //////////3.00**K Ø B E N H A V N



3.01 map denmark

## The Øresund Org.

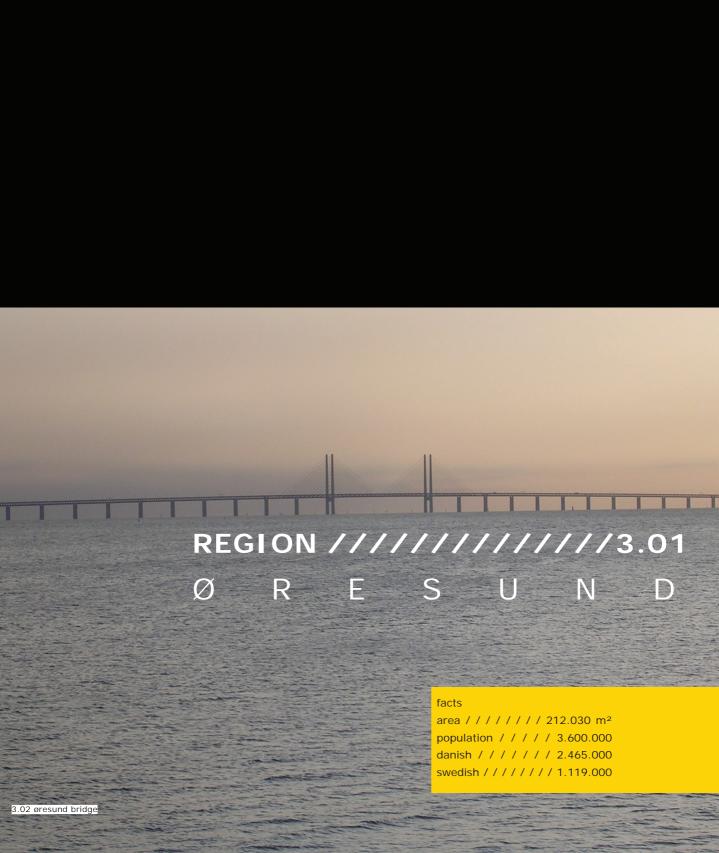
Together with Malmö in southern Sweden, Copenhagen is the center of the Øresund -in English called the Sound-Region with 3,6 million inhabitants. There were always strong trade links between Denmark and Sweden but in 2000 when the "Øresund Link" opened, the expression "Øresund Region" was firmly established. Today the two metropolitan areas can be considered part of one single region and can combine their potential to encourage region's position in relation to other cities in Europe.

The "Øresund Link" -a two track railway and four lane motorway- includes the cable-stayed Øresund Bridge which starts in the Swedish city, Mälmö and ends on the artificial island Peberholm (in English pepper island),were the link becomes the Drogden Tunnel that ends on the Danish island Amager. Another connection between the two countries are the ferries servicing the route between Helsingør and Helsingborg in the north.

The region is the second largest population concentration in Europe and an important hub for the economic activity in Scandinavia. In 1994, a total of 1.950 people commuted across the Sound every day, by 2007 the number has grown up to around 14.000 people.

The "Øresund Region" includes since 1993 a Øresund committee a regional forum for political cooperation which consists of politicians from both countries and work on eliminating national administrative boundaries. The Øresund University a forum for cross-border cooperation was founded in 1997 and expanded with the Øresund Science Region in 2002. A permanent platform for universities, industry and authorities in a- triple helix collaboration. the two In 2001 ports of Copenhagen and Malmö merged company Copenhagen Malmö Port AB. to one

In 2010 the Øresund University and the Øresund Science Region were combined under one single brand named "Øresund Org." [7/8]



## **★ COPENHAGEN**

Copenhagen is the capital of Denmark and the heart of Northern Europe. It's situated on two islands, Zealand and Amager. Today the city has about 500.000 inhabitants, but the population is expected to increase by 45.000 people by 2025. Since the late 1990s Copenhagen has changed in a positive direction, transforming from a city of industry into a city of knowledge. Both the number of jobs and the number of workplaces have gone up. It became a cool metropolitan city with international scope in the league with cities like Barcelona or Amsterdam. This is due to massive investments in infrastructure as well as culture and a wave of new successful Danish architects, designers and chefs.

An important factor of Copenhagen's development was the opening of the Øresund Link and the federation with Malmö to the Øresund Region. (see chapter "Øresund Org.")

## STANDARD OF LIVING

Copenhagen offers an excellent living standard based on education, health, economy, social conditions, culture and welfare with a low crime rate. It is the most bike-friendly city (see chapter cycling in Copenhagen) in the world and has a modern system on public transportation. The communal life takes place in the urban public spaces is one of the qualities of a city. In recent years there have been positive developments of Copenhagen in which a number of small and large lively and informal urban spaces have been created. The Øresund Region offers a wide Varity of beaches, marinas and forests. All beaches live up to international standards regarding the cleanliness of the water.

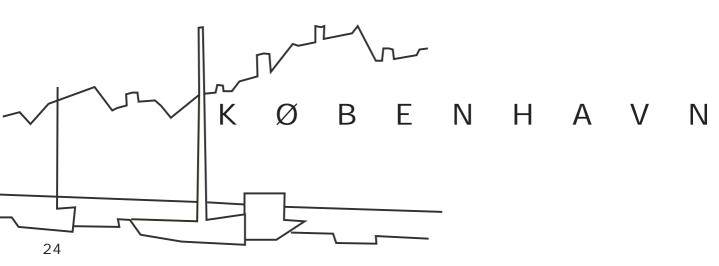
These the city is in different kind of rankings are facts ten mentioned among the Top cities o f World.

For Example in place 1 in the "Global Earning Ranking" published in People's Daily Online (http://english.peopledaily.com.cn/200608/13/eng20060813\_292730.html)

Copenhagen was also the winner of the Monocles "Most Liveable Cities" and "World's best Design City" (2008)(http://www.monocle.com/sections/edits/Web-Articles/Copenhagen/)

In 2008 in the Financial Times Ranking Top4 among European cities. (http://www.fdimagazine.com/cp/10/FDI\_052-055\_0208-2.pdf)

" A great Place to life" Denmark ranked Top 2 among European cities http://www.investindk.com/visArtikel.asp?artikelID=8130





## \* HISTORY

The city's history goes back to the age of the Vikings when it was a fishing village named "havn" (harbor) with functions like ferry station, harbor space and fish market. In the 11th century the village had already grown into a small town a church, а market, wells smaller houses. with large estate, and From the middle 12th century it grew on importance and the excellent harbor encouraged Copenhagen's growth until it became an important centre of commerce. At the beginning of the 15th century it became the capital of Denmark. During the reign of Christian IV, in the the 17th century, it got under an important city development and became an essential regional center. The boom of the preindustrial city was during the 2nd half of the 18th century. Copenhagen was the center of the Danish world trading. The harbor was expanded and lots of quays and warehouses were constructed. Because of the war and economical reason the development remained static till the middle of the 19th century. The restriction of the 1852 was abolished and the city could first develop on the outer side of the wallring which was constructed by Christian IV. The development of the metropolitan has started with the settling of the big manufactory company Burmeister&Wain the city and harbor were expanded. The increasing number of steamboats and their requests on deeper drafts made the competitive position of Copenhagen disease. Although their was a discussion the enlarge the port in the middle of the 19th century. 4 decades were passing untill the free port on the north side of the castell was established. [12/13] (see chapter nordhavnen history)



## **HISTORY /////////3.03**K Ø B E N H A V N

## $\star$ Lifestyle

Social life: People in Copenhagen can't imagine a good life without children as well as they won't disclaim having jobs. A reasonable policy and a confirmed pragmatism of the Danish make sure that things work out here, which would be a problem somewhere else. Also mentionable and a fact is that living in Copenhagen is that expensive that a family wouldn't suffice with just on income. wonder that a Bicycle -see chapter of cycling in Copenhagen- is status symbol of a city were social differences stay in the dark. "...who show of property and employment status, who rises himself from the others, this person is no longer one of us..." (cit. merian Kopenhagen Heft 10/2005 Jahreszeiten Verlag GmbH pp. 28) that's the main message of Jantes Law, the ten rules of the Danish social life. Jantes Law was defined by a writer called Aksel Sandemose at the beginning of the nineteen-thirties for a fictive city called Jante. Today community life is defined by these rules and those who rise themselves with goods or gestics become obnoxious. Equality is the principle of the Danish social life and community. Copenhagen citizens seem to be enviably relaxed, have a sense of light, love to go shopping and they are hardworking but not workaholics.

Winter –Copenhagen' is totally different than 'summer- Copenhagen'. Although there is a lot of entertainment like ice-skating at Tivoli, Christmas markets with Gløgg , during bleak wintertime with the long nights and although people know how the create the 'hygge' – the Danish comfortable atmosphere with candles- the wintertime is too long. Every spring the city awakes to it's real destiny.

Design and Architecture have a very high value among the Danish population. Back in the nineteen- fifties Poul Henningsen's lamp PH5, or Arne Jacobsen's chair "seven" were designed for everybody. A lamp which gives an optimum of light especially for the long Danish winter nights, or a robust, comfortable, flexible chair not just for offices, hospitals, schools, etc. ... . After the war people figured that this new furnitures were much lighter, and brighter than their old ones replaced them. That's when design became a thing for everybody. With the Opera of Sydney from Jørn Utzen or the Århuser city hall and the Radisson hotel by Arne Jacobsen, Denmark got, back in the history in the focus of the international architecture scene. Since 2007 policy is the national awareness "of the quality of architecture among the population" and an international position as a nation of architecture. "good architecture" is getting more and more in the focus of the intention, although its sometimes difficult to define the term but the discussion about demands and quality can help to meliorate architecture. A contrast to this modern development is the archetype a "parcel-hus" – one family home - which is still the desired form of living. [14/15/16]



LIFESTYLE /////////3.04

KØBENHAVN





## **★** CLIMATE

The geographic location of the Nordhavnen area is 55-56° North, 12-13° East.

The average winter temperature is about 0°C elsius and sometimes snow covers the ground and the state of $but it never lasts for long. The average temperature during summer time is a little below 20 ^{\circ} Celsius.$ The annual solar energy available per square meter of open surface areas facing south is around 900 kWh. (raging from 30-100 kWh in certain months) Generally winds are westerly or southwesterly but from February to May and from October to November they may also be from east or southeast . Wind energy: Because the fact Nordhavnen boardof that ers the water on three sides there is a great potential the wind . **Precipitation** averages 40 to month. between 70mm а

## Water Level

 $Calculations for climate change in the next one hundred years show that the water level of the Nordhavnen area will maximum rise 60cm and the level of land lowering will increase 10cm. \ [20/21]$ 

**CLIMATE /////////3.06**C O P E N H A G E N





**ANALISES //////////4.00**N O R D H A V N E N

#### \*HISTORY

The whole Nordhavnen area was constructed on reclaimed land. Its history reflects the different space and transport needs and diverse building styles for more than a century.

Along the coastline of copenhagen were a lot of small, local ports. The actual harbor activities took place inside of Toldbodbommen. The beginning of reclaiming the Nordhavnen was at the end of the 19th century when the harbor industry grew and the shipping traffic increased. Between 1880 and 1890 Nordbassint and the Basin Redhavn were established. When the Germans decided to construct a canal between Kiel and Elbe Hamburg was connected to the Baltic Sea and began to get in competitive position to Copenhagen. To keep the transit trade the free port - **Frihavnen** was established in 1891 and the harbor equipment was modernized with buildings and cranes.... The Inner Nordhavnen as it looks today was finished in 1930. The Area North of the Orientbassinet was established in the late twentieth century. Over the years many well-known companies were situated in the area, for example Nordisk Film later known as Billedvej and Riffelsyndikatet,... [23/24]



## HISTORY /////////4.01 N O R D H A V N E N



4.02 reclaiming land 1940



4.03 cranes with typical brickend warehouse 1950



4.04 dock 1960



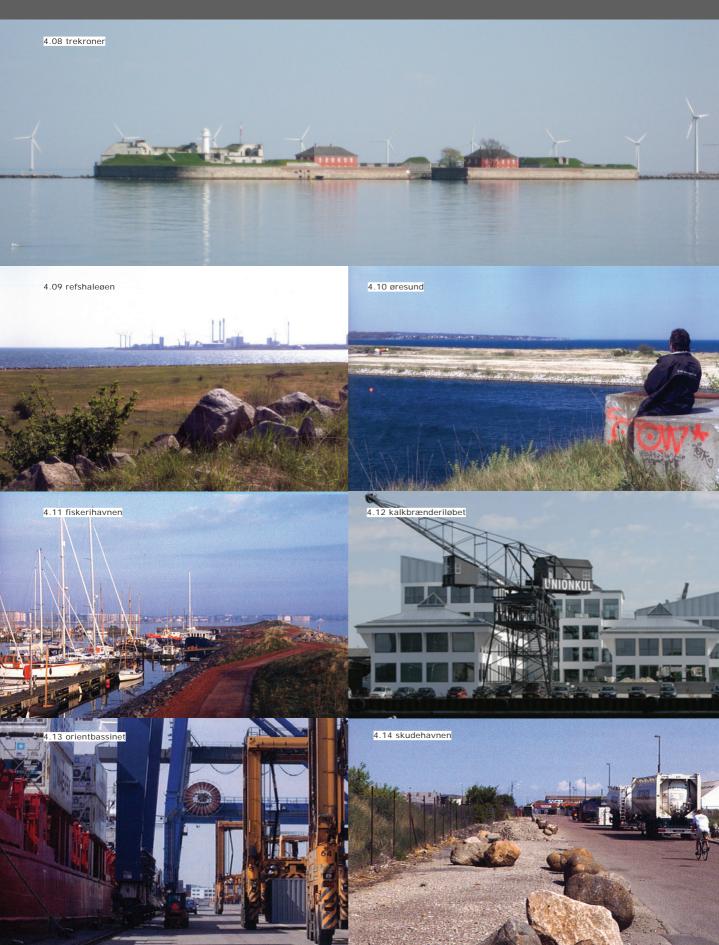
### <u>55 - 56° N 12 - 13° F</u>

#### ★ THE SITE

Generally the level of the landside is quite even with a characteristic harbor related shape. Because of the different stages of the development and the changing requirements on harbor infrastructure, the area provides varying urban scale. Especially in the Inner Nordhavnen zone is a big mix of es, high silo towers, newer office buildings, dense cluster of houses, huge cranes, wide areas with containers and big free spaces of fallow land. The first buildings are from the beginning the 20th century and are important for the cultural heritage. The Arhusgade is today occupied by create facilities like artists, designer,.... Besides the divers storage spaces there are other harbor enviroments like rails, special quay facilities and train engine sheds through the area.

Friskerihavnen is in the north part and accommondates a marina, a fisherman settlement and a small dockyard.













#### NORDHAVNEN - The neighbourhood

Østerbro city district boarders the Nordhavnen area on it's southwest side across the metro line and the ring road 2, a highly trafficked road from the center to the north of Zealand. The citizens of Østerbro have a higher level of education and higher incomes. The urban city structure is shaped by dense blocks of buildings, wide roads and large green areas on the outer – northern - side of the district.

Kalkbrænderihavnen the area has been changed over the last 10 years. The area is characterized by corporate headquarters of high architectural quality and by the 'Utzon Town' a number of distinctive buildings with white rendered facades.

Kalkbrænderihavnen and Svanemøllehavnen have two ports with landing stages for around 1.300 boats and a clubhouse. Svanemøllehavnen was constructed in the 1950 and is under redevelopment at present .

**Søndre Frihavn** is located on the southwest boarder of the Nordhavnen area. At the beginning of the 1990s the major urban development of this district has started. Today it offers a mix of housing and service trades located on piers with a wide open space around. The residents are in higher-income groups with few kids. Hardly elderly people are living there.

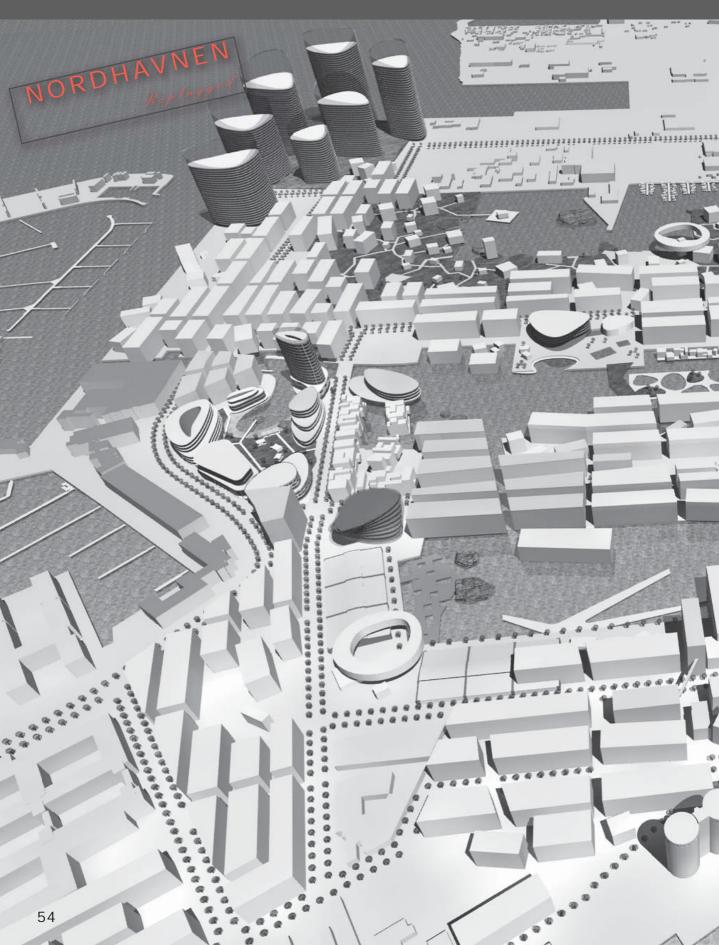


PROJECT //////////5.00

N O R D H A V N E N

## //KØBENHAVN/ AT THE WATER **VIBRANT** ///////// DYNAMIC // ////THE SUSTAINABLE C /////FULL OF URBAN LIFE/ ///// LIVING ///// W R B A N //////CITY THAT DO INTEGRATION/ KAJ///ORIENTBAS ///////COASTLINE OF SWED N A PORT THE SHIPPING//PO / / / / / / / / / C I CITY OF SUSTA





#### \*THE URBAN DEVELOPMENT CONCEPT

for  $m{\emptyset}$   $m{\mathsf{B}}$   $m{\mathsf{Y}}$  points out guiding principles for the spatial structure, the infrastructure, as well as social and ecological aspects of the future of the project area. Further more the atmoshere and character of the new city district especially the public spaces and amenities are depicted project aim o f the sustainable urban 111 dense urban area of Ø BY is a mixed use neighbourhoods which is located between Copenhagen center and the riveria coastal road along Øresund, which is a popular holiday destination and favored place to live.

will provode beachlife steps from your doorstep. main is to arrange different kinds of urban tissues and landscapes to create different kinds of urban conditions within an area of 60 hectares. urban life o f Ø ΒΥ will bе strongconnected with t h e water it's coastal atmosphere.

# PROJECT //////////5.00 DEVELOPMENT CONCEPT





planning area - first and second development stage



CONNECTION WITH CPH

connecting street with the østerbro city district



CONNECTION WITH CPH

pedestrian and bike bridge in planning

#### **AVENUE**

avenue as a circulation road for the main transportation in  $\ensuremath{\textsc{0}}$  by.

public bus transportation, two traffic lanes, two bike lanes and certainly pavements for pedestians.



WATERWAY - CONNECTION

public water bus transportation between the cph center and  $\ensuremath{\mathfrak{O}}$  by.



WATERWAY - CONNECTION

waterway access between docks and basins for water transportation.



WATERWAY - CONNECTION

international access to schweden and the open sea.

**PROJECT /////////5.01**C O N N E C T I O N S

METROLINE

underground tube - a longation of the existing line





#### CENTER OF Ø BY

infrastructure for the area

municipality, fresh fish and fruit market, art market, school,



#### CULTURAL AREA

information, exhibition and discussion point for the development  $% \left( 1\right) =\left( 1\right) \left( 1\right) \left($ 

concert halls, an artificial landscape and the land-marking existing silo towers



#### HIGH RISE

office towers for attracting international companies



#### CRUISE TERMINAL

office and terminal station for international cruise shipping

with a shopping mall



#### GREEN SPACE

different kinds of landscapes city beaches, urban agriculture, urban farming, nature reserve

**PROJECT /////////5.01**Z O N E S



#### ★ CITY OF THE SHORT DISTANCES

#### CONCEPT FOR THE SPARTIAL STRUCTURE

The area provides main focal points, a cultural center, a financial center and market and administration center. Further more throughout the area smaller centers - neighbourhood squares with the daily social and cultural infrastructure and a communication or event spot.

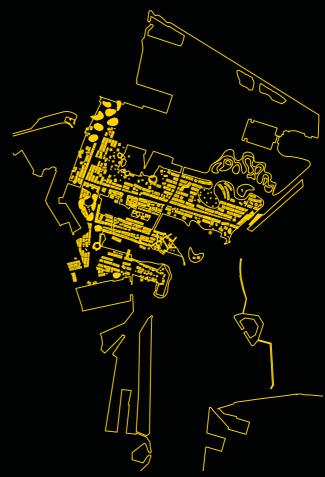
#### Open Space

The smaller streets in the district are just for bicycle traffic and provide an open space for communication. **Public and private spaces** like terraces without door furniture for having lunch, benches to watch the sungoing down, plants, kids playing soccer on the street,...

- a meeting point for the good neighbourhood.

**PROJECT /////////5.01**O P E N S P A C E





### ///Water

The lowest level in the area is the water level. It connects the area with the  ${\sf OPEN}$ 

Sea, with the cph city center and most important the docks and basins of the Ø BY. transportation level for water busses, water taxes ferries to malmö and the international cruise. **Besides** transportation the open space used for sports activities, housit's living for animals. ing, area

Except nordbassinet the water in the whole area has generally SWIM-ming water quality.

## ///City structure

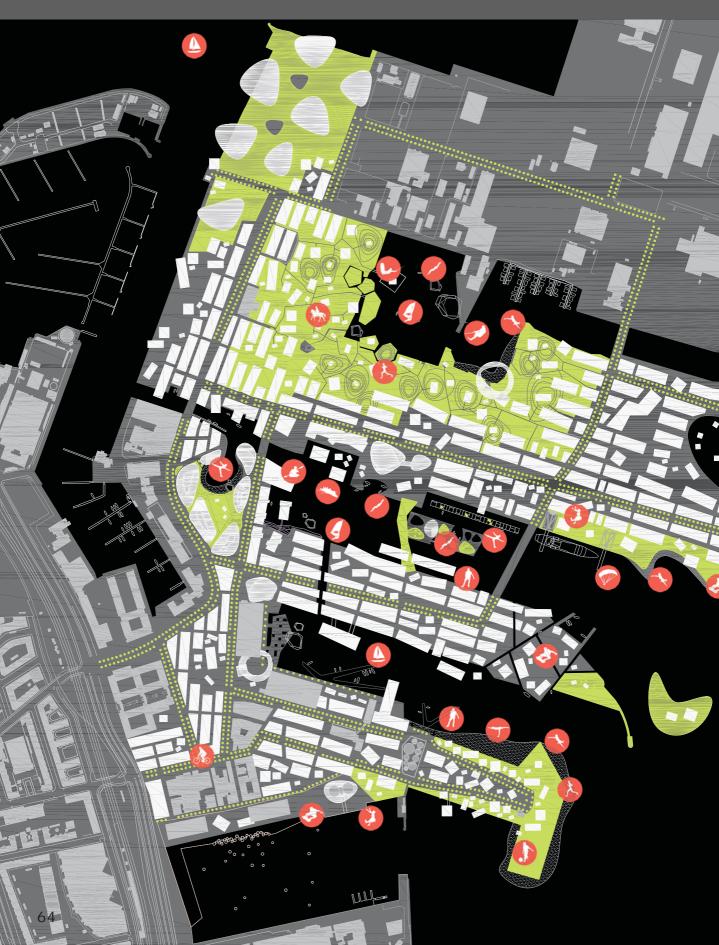
Because of the existing, charaterized land shape the developed urban tissue is dense and rigid versus the sea it's loosening off into a free and green space. The dense structure provides and vibrant, dynamic, vivid **City life**. A mixed use of housing, working and social cultural infrastructure are supporting a agil modern lifestyle in Ø BY.

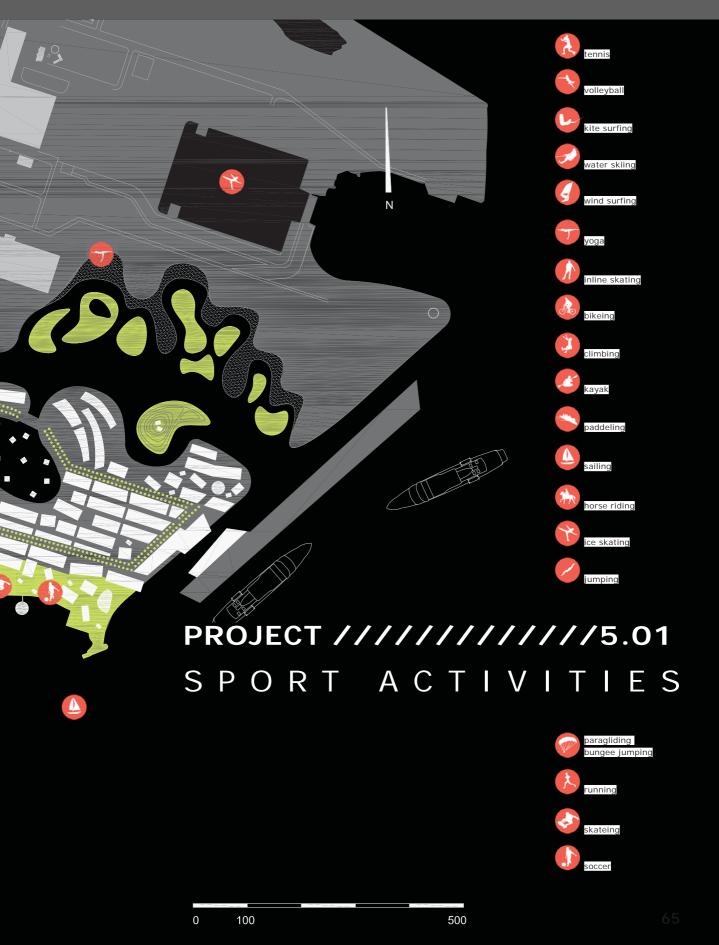


## LAYERS //////////5.01 URBAN STRUCUTRE

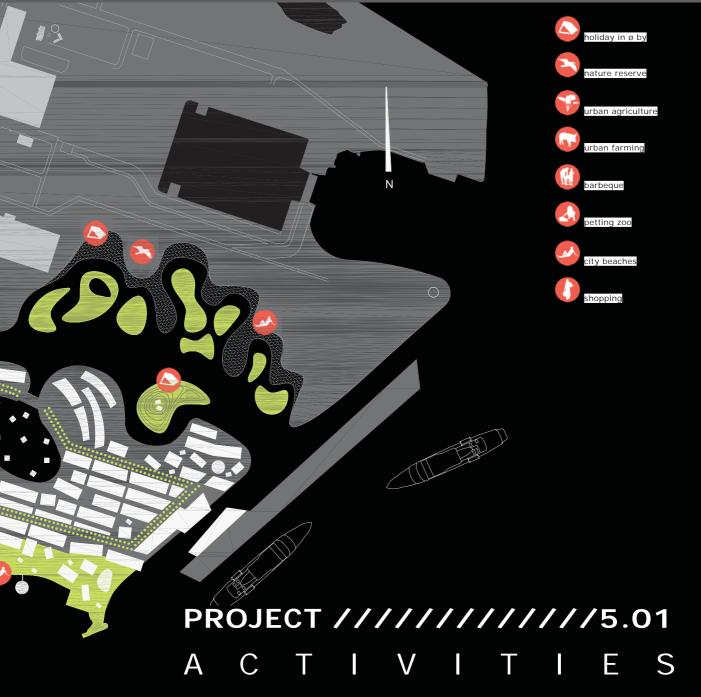
The AVENUE is a circulation street through the area. It's the main traffic road with two street lanes, 2 cycle lanes, parking and of course pavements. The rest of the roads should be kept free and out of cars, except handicappt people.

All over the new district will be a wide vardifferent ity of green and free areas. sustainable forms uragriculture ban or urban farming. islands, beaches, swimparcs, decks for `holiday BY`. ming





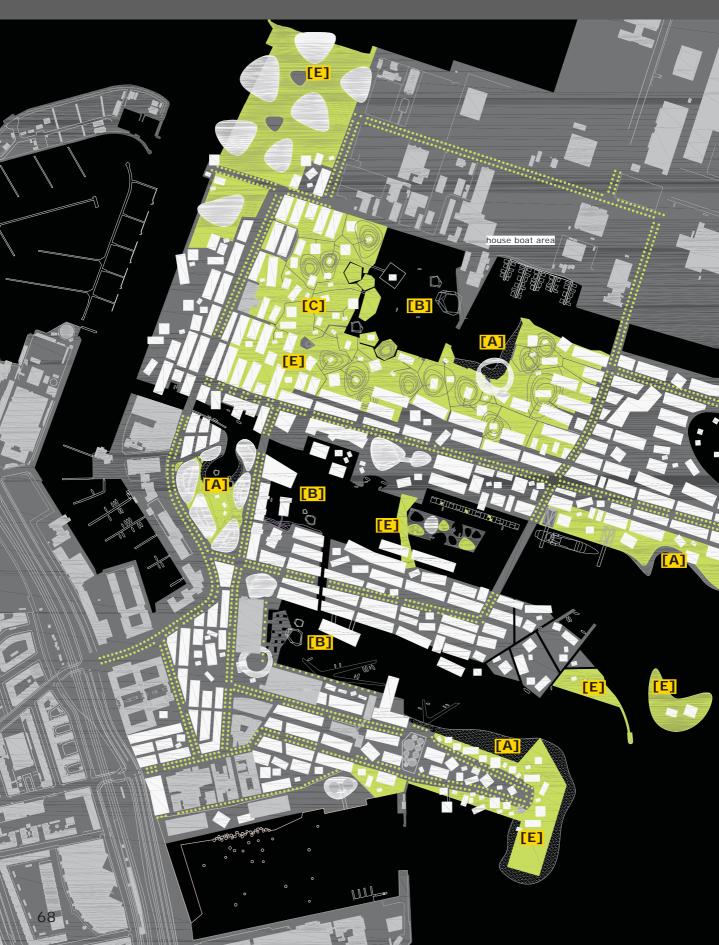




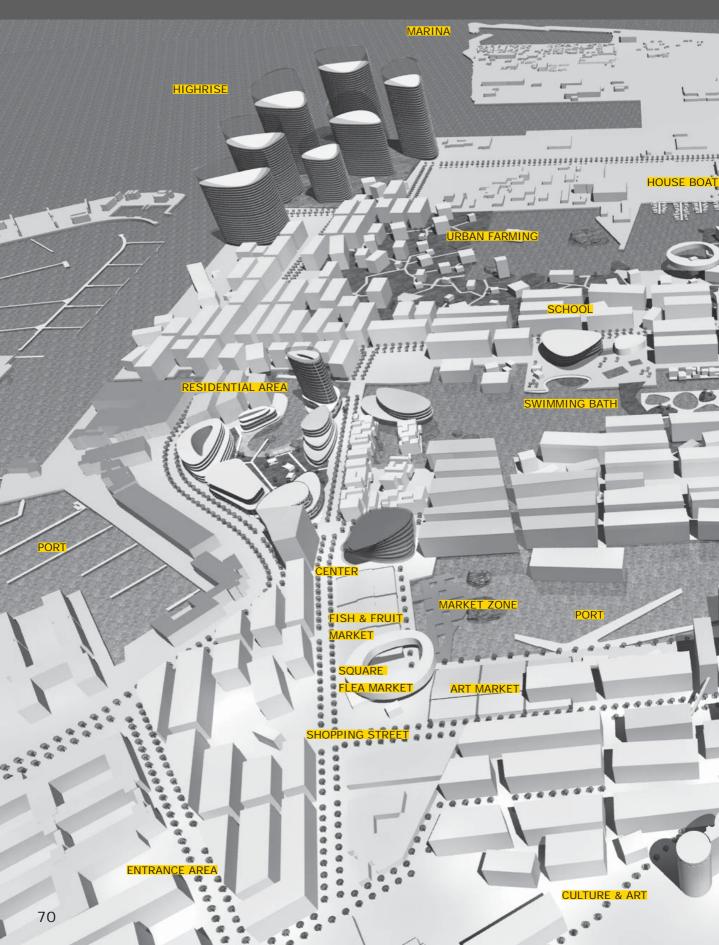
\* HOLIDAY IN Ø BY

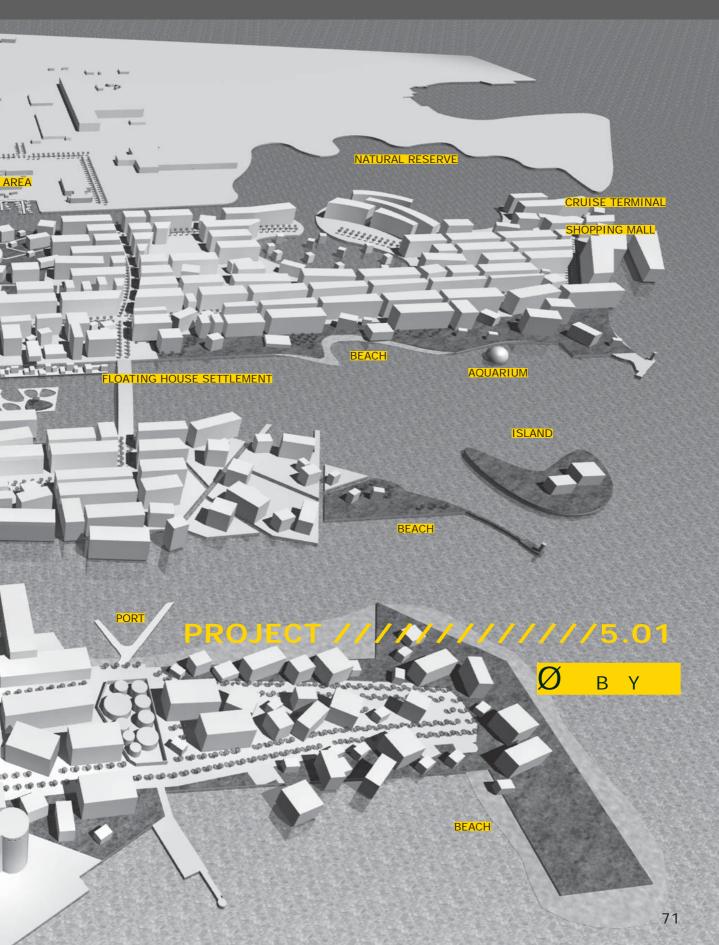
the coastal atmosphere and the different free space types should attract people to spend their holidays here. camping , or on a house boat, riding holidays or agrotourism.

0 100 500













PROJECT ////////5.02 SPOT - RESIDENTIAL

### [1]

#### [2]

#### \* LIVING IN Ø BY

Ø BY will provode

b e a c h l i f e

just a few
steps from
your doorstep.
The city beach
in the middle
of the residential area offers
a space for
neighbourhoodcommunication.

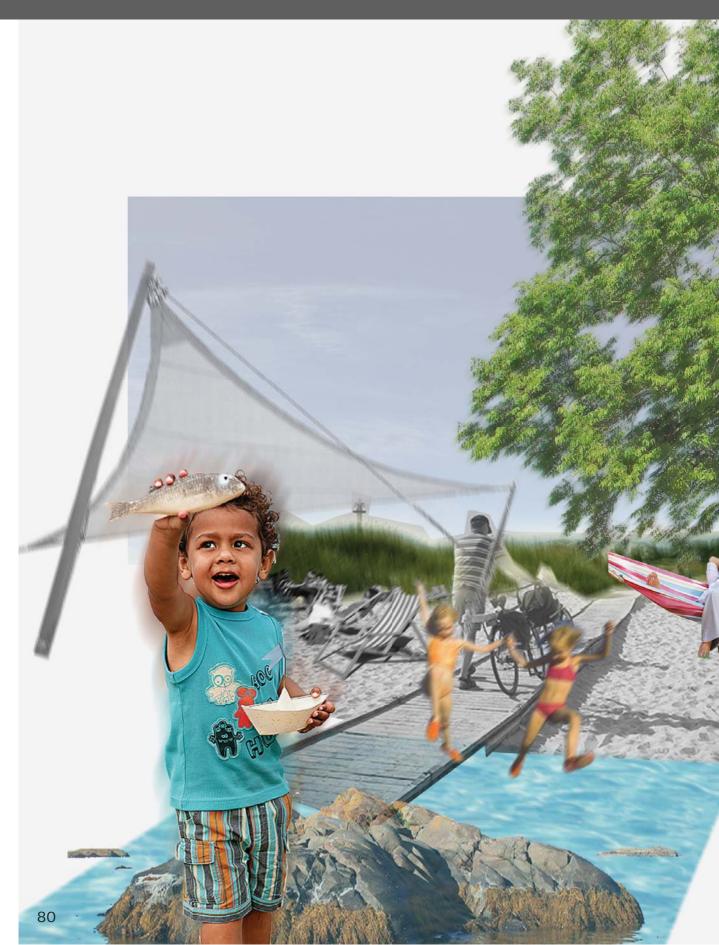
a community space for relaxing in hammocks, gardening, sunbathing, a visit at the sauna spot, kinds playing area, having barbeques



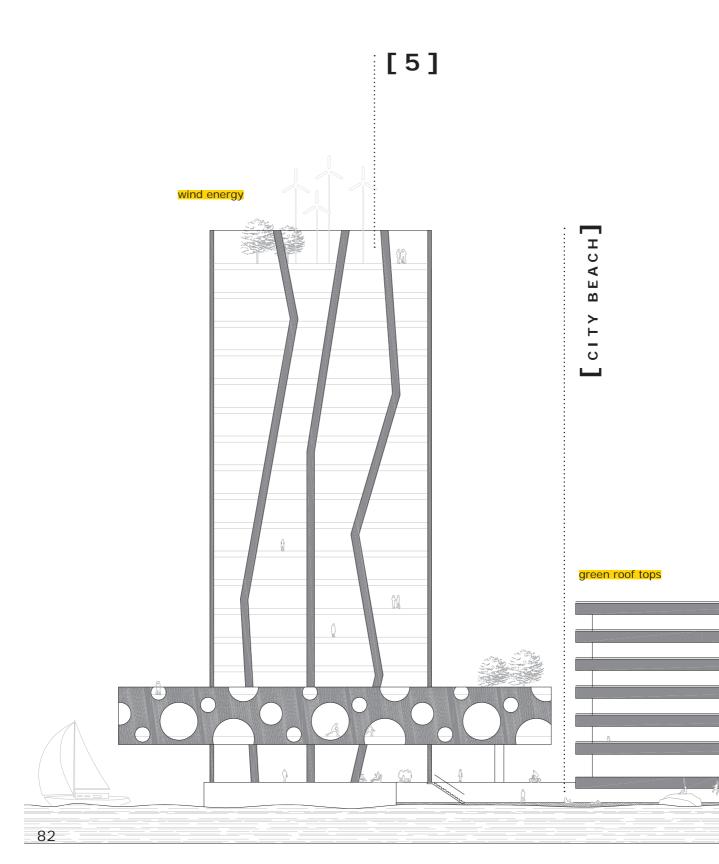




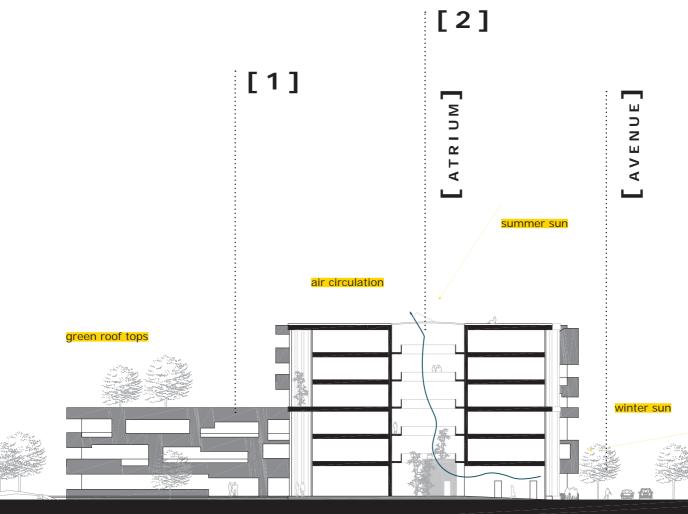








[4] BEACH HOUSE SECTION m 1:500 83







m 1:500



m 1:500 / / / / / m 1:200 41 flats with loggia / / / 82 m² atrium / / / / / / 430 m² infrastructure / / laundry room kindergarden / / / storage













kiosk

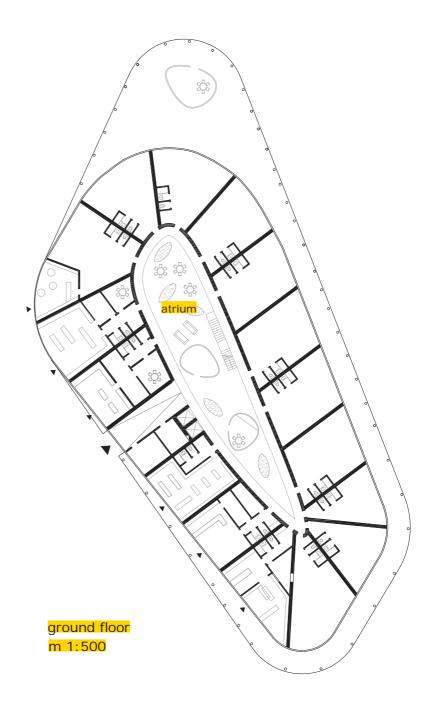
drugstore

<mark>pharmacy</mark>

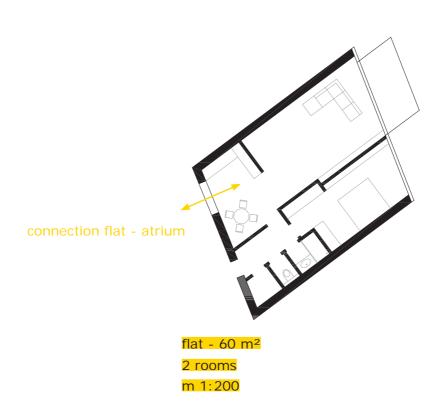
video rental shop

bakery

<mark>shoemaker</mark>













restaurant

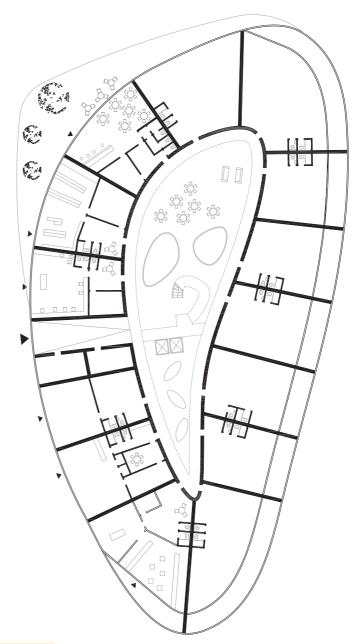
grocery

<u>hairdresser</u>

studio

boutique

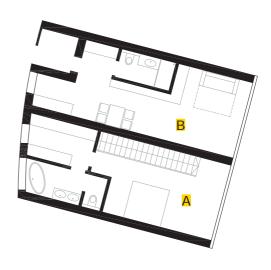
goldsmith jewellery <sub></sub>



ground floor m 1:500







flat A - 120 m<sup>2</sup>

2 floors

3 rooms

m 1:200

flat B - 35 m<sup>2</sup>

1 room

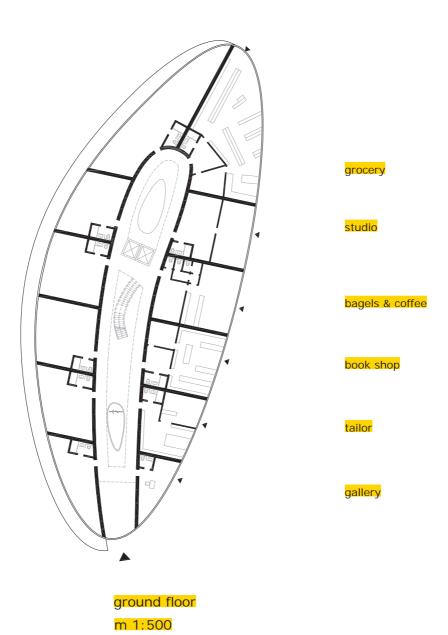
m 1:200

> m 1:500 / / / / / m 1:200 66 flats / / / / 120 - 35 m² atrium / / / / 550 m² infrastructure / / laundry room communication islands / storage

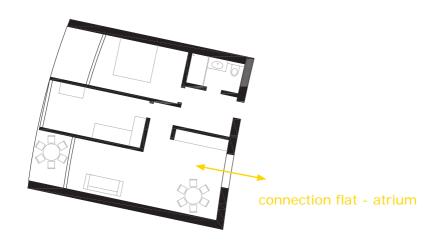












flat - 70 m<sup>2</sup>

3 rooms

m 1:200

## 

m 1:500 / / / / / m 1:200
42 flats / / / / / / 70 m²
atrium / / / / / / 300 m²
infrastructure / / laundry room
roofgarden / / / bikestorage



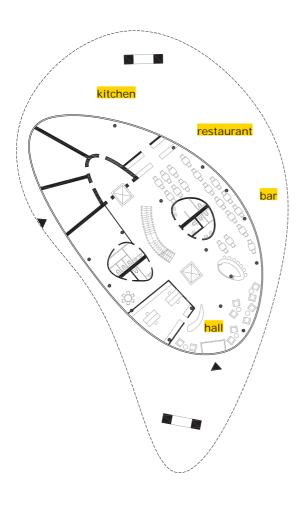


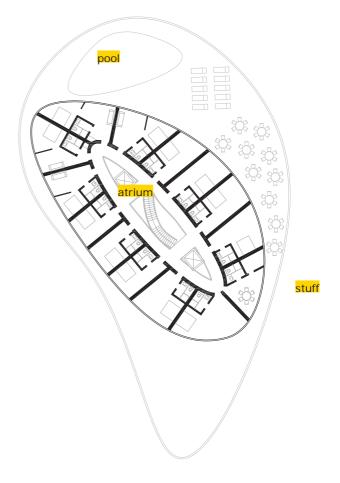












ground floor

m 1:500

standard floor plan

m 1:500

1 st floor entrance hall\_bar\_restaurant

2 nd floor fitness\_wellness area

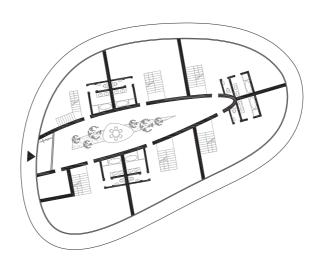
3 rd floor office\_restaurant\_outdoor pool

4 th - 16th hotel & bording rooms



m 1:500 / / / / / / / / / hotel / / / /bording house
169 rooms / / / 27-35 m²
fitness / / / pool / / bar
restaurant / /green roof top





ground floor m 1:500















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