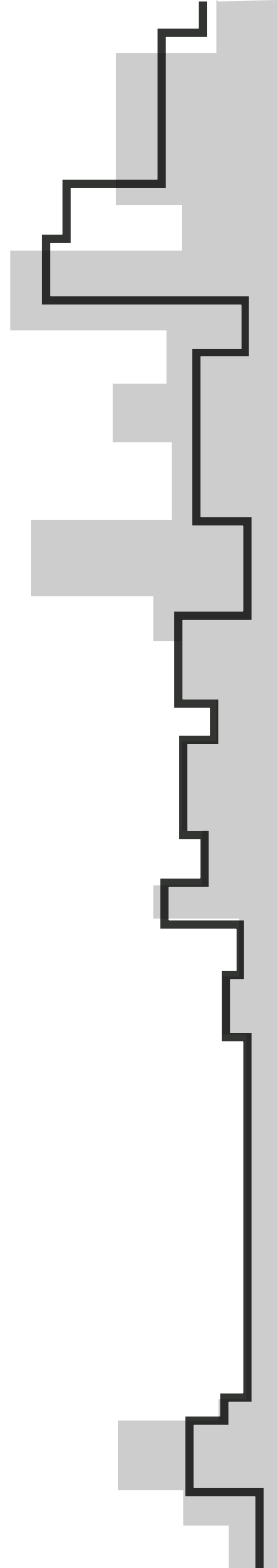


REGENERATION SAIGON'S PORT





An aerial photograph of a city, likely Rotterdam, showing a river (the Scheldt) flowing through the urban landscape. In the background, several tall industrial chimneys or towers are visible against a hazy sky. The foreground shows a mix of residential and commercial buildings along the riverbank.

Graduation Lab Urbanism

AR3U100

Urban Regeneration Studio

Mentors

Dr. ir. Paul Stouten

P.L.M.Stouten@tudelft.nl

tel: +31 (0)15 27 83872

Prof.dr.ir. V. J. Meyer

V.J.Meyer@tudelft.nl

tel: +31 (0)15 27 85963

Ir. I. Inge Bobbink

I.Bobbink@tudelft.nl

tel: +31 (0)15 27 81884

Internal Examiner

Ir. R.C. Bollen

R.C.Bollen@tudelft.nl

tel: +31 (0)15 27 83977

Master student in Urbanism

Pham Thi Thanh Thao

Student ID :1530917

tphamthithanh@student.tudelft.nl

tel: +31 (0)68 16 56803

Contents

| | |
|-----------------|---|
| MENTORS | 2 |
| CONTENTS | 3 |
| ACKNOWLEDGEMENT | 5 |
| INTRODUCTION | 8 |

| | |
|---|----|
| Chapter 1: BACKGROUND OF THE HO CHI MINH CITY | 11 |
| 1.1 Location | 13 |
| 1.2 Ho Chi Minh city context | 14 |
| A. City data | 15 |
| B. History of the city's urban development and waterfront | 17 |
| C. Urban growth and population | 21 |
| D. Economic, industry and demands | 23 |
| E. Society, employment | 27 |
| F. Culture | 28 |
| G. Flooding | 29 |
| 1.3 The port in Ho Chi Minh City | 33 |
| 1.4 Relationship between Ho Chi Minh city and the port | 36 |
| 1.5 Problem statement | 38 |
| 1.6 Aim of the graduation project | 47 |
| 1.7 Research question | 48 |

| | |
|---------------------------------------|----|
| Chapter 2: METHODOLOGY | 49 |
| 2.1 Methods | 51 |
| A. Method 1: Literature review | 52 |
| B. Method 2: Comparative case studies | 53 |
| C. Method 3: Collecting Data | 57 |
| D. Method 4: SWOT Analysis | 58 |
| E. Method 5: Planning cycle | 60 |
| 2.2 Schedule | 61 |
| 2.3 Relevance | 62 |
| A. Societal relevance | 62 |
| B. Scientific relevance | 62 |
| Chapter 3: THEORY | 63 |
| 3.1 Concepts and definitions | 65 |
| 3.2 Theoretical framework | 66 |

| | |
|---|-----------|
| Chapter 4: URBAN STRATEGY | 71 |
| Main strategies | 74 |
| Strategic plan | 75 |
| Master plan | 76 |
| 4.2 Strategy to improve connections between city and its waterfront | 77 |
| A. Infrastructure linkages | 78 |
| B. Urban spatial connections | 83 |
| (1) Regain the soft edge by increasing the greenery of the urban waterfront in order to create an ecological zone in inner city | 83 |
| (2) Redevelop spatial edge of the city centre waterfront | 85 |
| 4.3 Strategy to improve the accesses to the river | 88 |
| 4.4 Strategy to develop an attractive waterfront as a liveable place for living, working and leisure | 90 |
| A. Developing a new waterfront residential and complex official zone with mix-income urban neighbourhood | 90 |
| B. Redeveloping waterfront residential with already built-up block in low-income urban neighbourhood | 91 |
| 4.5 Strategy to avoid flooding | 92 |
| 4.6 Implementation phases | 96 |

| | |
|--|-----------|
| Chapter 5: STRATEGIC PROJECT | 99 |
| 5.1 Strategic projects | 100 |
| Master plan | 101 |
| Layers | 102 |
| 5.2 Zone 1 | 105 |
| 5.3 Zone 2 | 111 |
| 5.4 Zone 3 | 119 |
| 5.5 Zone 4 | 125 |
| Chapter 6: EVALUATION AND CONCLUSION | 128 |
| 6.1 Evaluation | 129 |
| Comparing waterfront development in ho chi minh city with in London & Shanghai | 129 |
| Use of saigon river | 131 |
| Enhance quality of spatial environment | 131 |
| The social dimension and participated communication | 133 |
| 6.2 Conclusion | 134 |
| Appendix | 135 |
| <i>Case study</i> | 135 |
| <i>Theory</i> | 143 |
| <i>Bibliography</i> | 155 |

Acknowledgement



I gratefully acknowledge the invaluable support, guidance and assistance from my supervisors Paul Stouten, Han Meyer and Inge Bobbink throughout the project. Their comments, feedback and huge knowledge have helped me to overcome many difficulties to manage the project from initial concepts to final work.

I am deeply grateful to the Vietnamese Government for providing me with the scholarship to study in Delft University of Technology, which gives me an opportunity for the professional development of my career at the University of Architecture in Ho Chi Minh City.

I would like to express my great thanks to my parents with all their loves and understandings. Especially, I want to thank my dear husband for all his support and encouragement. He has been always by my side, sharing with me all my challenges and joys both in my study and my life.

I also would like to thank the Urban Regeneration Studio's teachers and to all my friends for sharing my experience in the Netherlands.

REGENERATION SAIGON'S PORT

*Renewal an outdated port area to strengthen waterfront redevelopment of the water city
Ho Chi Minh City - Vietnam*

The speed and intensity of changes in relations between city and port of port cities over last century as a result of globalization have been remarkable. Port cities are affected by technologies innovation and changes in factor of production and distribution. As a result, some cities divided into the city and the port. Many port cities around the world are faced with old outdated ports in inner city area after removing the port to near the sea. The layout and activities of these outdated ports are increasingly conflicting between natural and urban environment that result in cutting off the city from the water. In fact, some port cities are confronted with large abandoned docklands and industrial areas.

However, vacant old port areas provide opportunities of waterfront redevelopment project and it is clear that the waterfront development is a major factor in the physical, property and economic development of port cities. Waterfront is a unique phenomenon and urban waterfront development was concerned with. The nature of the waterfront may encourage the view that it provides a unique realm for urban development. The decline of old ports and allied transport and industrial areas has allowed the public to regain access to an 'urban edge' which is generally endowed with social meaning (Breen, 1994).

Consequently, port cities require changing in urban strategy to adapt to the new urban conditions. They need to create a new vision and new living conditions, adapting for growing densities and identity challenges. These cities are engaged in the search for new opportunities for old harbor areas and are involved in transformation towards an attractive, lively and distinguished city.

The word '*waterfront*' is identified as the urban area in direct contact with water. These areas in riverside/seaside cities correspond usually to the area occupied by port infrastructures and port activities, abandoned and vacant natural lands which were never used, or squatter and unorganized small scale industries developed along the water edge. *Regeneration waterfront* creates both challenge and opportunities to reshape urban spatial and encourages economic and social improvement. The renewal of urban waterfronts can be seen as a keynote of economic development in post-industrial cities around the world (Millsbaugh, 2001). The transformation of waterfront towards a distinctive city, regained its unique characters and identity image, coming back to the cultural living closed with water of a water city.

The research tends to build up the concepts and designs for "Regeneration Sai Gon's Port" project in Vietnam. The project focuses on transformation Sai Gon waterfront when port relocated to near the sea. The case in Ho Chi Minh City, Vietnam, since the city was established in 1698, the port located along the Saigon River and the main canals have been recognized such as the most attractive areas and important parts of urban fabric. Besides, these areas remained a rich cultural that dates back to the history of the city itself. Currently, the development of Ho Chi Minh city demands on the new relations among ports, city and landscape. The outdated port in inner city causes serious problems due to the existing of brown field sites near city centre, which brings a poor quality of city's images and urban environment. In addition, the city has been disconnected from Saigon River by industrial barriers and lacks waterscapes, although Ho Chi Minh City has rich characteristic and historic potential related to water.

The old port determines the development of urban functions near the water, sometimes blocking the specific atmosphere and characters of the city. Therefore, the old port requires relocation to available sites near the sea and transformation of these areas into a liveable urban development. Structural patterns and functional spaces are designed based on local characters, cultural and historic background and conceptions. The regeneration of an old port area in Ho Chi Minh city is used as a strong tool to improve the image and unique identity of a water city.

The outcome of this project is a strategic plan and urban spatial design of transformed Sai Gon's waterfront into a distinctive urban area. The question is how to reorganize urban form and spatial of an old port area into a new urban redevelopment in order to regain its waterfront? The waterfront redevelopment of Ho Chi Minh city will be attracted the city rebuild economic, social, spatial structure and cultural growth, expecting to strength their competitive position. The approach of the project rediscovers relations of waterfront and its city to solve the conflict in current urban fabric and old port areas located in inner city. Waterfront redeveloped project as a major asset for the urban community which can bring new life into unattractive urban areas and create a wide of new economic and social opportunities.

Specifically, the project aims to regain the distinctive port city and to enhance a new lively urban environment as an attractive place along the Sai-Gon River. The main approaches will be achieved by answering these key questions:

- (1) What are characteristics of a port that tend to change a relationship between the city and port?
- (2) What are waterfront transformation roles to redevelop socio-economic, reshape urban spatial and enhance its distinctive image. How is waterfront transformed towards an appropriate urban structure?
- (3) What experiences can be learned from the transformation of waterfront in Asian and Europe countries to build up the concepts of waterfront regeneration?

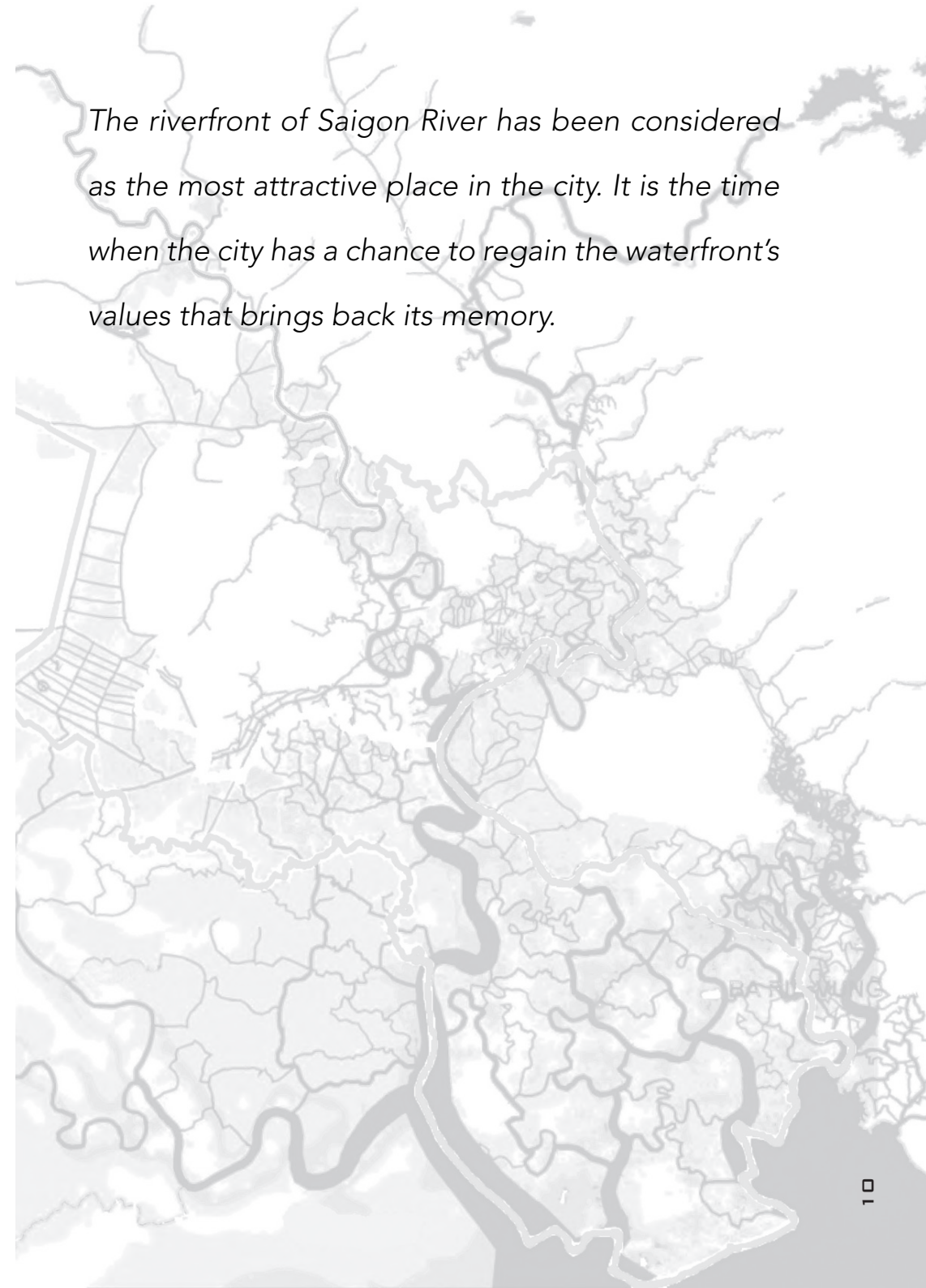
Seven main meditations form the structure of the graduation project and provide a mechanism for thinking about particular aspects of waterfront redevelopment. The paper is firstly structured to deal with the Ho Chi Minh city context in chapter 1. It presents the city's data and relations between the city and the port, the challenges and opportunity of Ho Chi Minh city in term of regeneration waterfront.

The next aspects are addressed by methodology and theory to work with this project. The forth is an answer of urban strategy for how waterfront's regeneration enhances urban space-making quality and spatial structure of the water's edge. It includes four main strategies:

- (1) Improving and creating connections from city to its waterfront
- (2) Strengthening and regaining public accesses to the river and canals
- (3) Developing an attractive waterfront as a liveable place for living, working and leisure
- (4) Facing today's ecological and environmental issues, flooding protection and water management are vital factors related to future urban development in term of sustainability. Waterfront regeneration deals with water risks to contribute a better living environment, creating value for city development.

The fifth chapter presents the references which are using to develop the ideas of this project. The final chapter indicates a conclusion and an evaluation of how the re-use of waterfront spaces provide a unique opportunity to gain attractive urban revitalization, place the identity and remaking images of the water city. What are differences of waterfront project between Ho Chi Minh city and London and Shanghai?

The riverfront of Saigon River has been considered as the most attractive place in the city. It is the time when the city has a chance to regain the waterfront's values that brings back its memory.



Chapter 1





Ho Chi Minh City profile

1.1 LOCATION

Vietnam is the easternmost country on the Indochina Peninsula in South-East Asia. Ho Chi Minh City is located in South of Vietnam of from 10100 to 10380 N and from 10620 to 106540 E. Its total land area is approximately 2,095 km².

Ho Chi Minh City (Saigon) is the largest city in Vietnam. It was once known as Prey Nokor, an important Khmer seaport prior to annexation by the Vietnamese in the 17th century. Under the name Saigon, it was the capital of the French colony of Cochinchina and later of the independent state of South Vietnam from 1954 to 1975. In 1976, Saigon merged with the surrounding province of Gia Định and was officially renamed Ho Chi Minh City. The city center is situated on the banks of the Sai Gon River, 60 kilometers from the South China Sea.



1.1



1.2



1.3

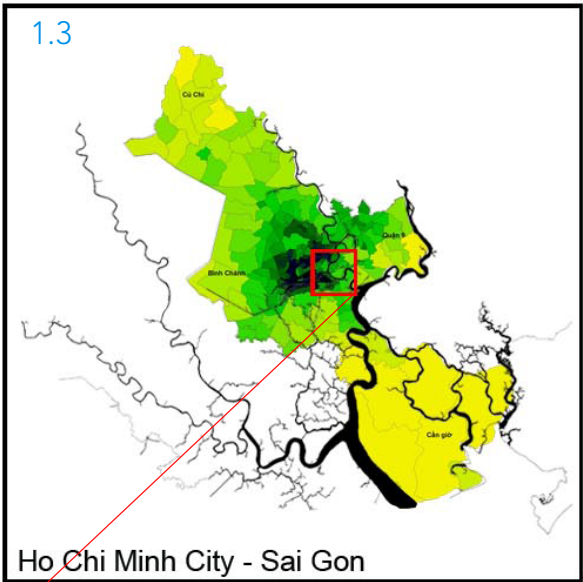


Figure 1.1-1.4 Location of Ho Chi Minh City and Sai Gon River, source: www.googlemaps.com, 2010

1.2 HO CHI MINH CITY CONTEXT

Situated in the South of Vietnam, Ho Chi Minh City is the country's biggest and most dynamic city. It receives a lion's share of national resources and interest in terms of the huge necessary infrastructure investment and development. Since 1986, the renovation policy triggered the so-called 'industrialization and modernization' process which created momentum and impetus for social transformation and radical economic development in Vietnam (O' Rourke, 2004). Accordingly, Ho Chi Minh City has become an important hub for political, economic and cultural activities (Ha and Wong, 1999). However, the city's rapid annual economic development has burdened urban services, infrastructure and facilities, such as traffic, water supply and drainage systems (People's Committee of Ho Chi Minh City, 2002).

The city has gone through more than 300 years historically for urban development and is now a major commercial center and the most dynamic city in Vietnam. Ho Chi Minh city plays a primary role in promoting the social and economic development of both the eastern and western parts of southern Vietnam, and of entire country; it also provides an essential link joining Vietnam to Southeast Asia, to the whole of Asia, and to the rest of the world.

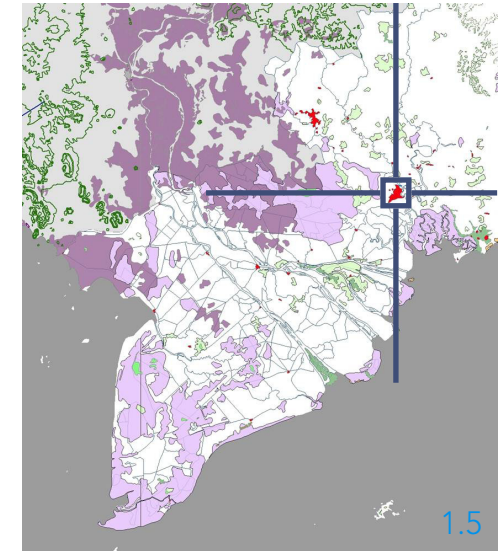


Figure 1.5 Ho Chi Minh City in Mekong Delta

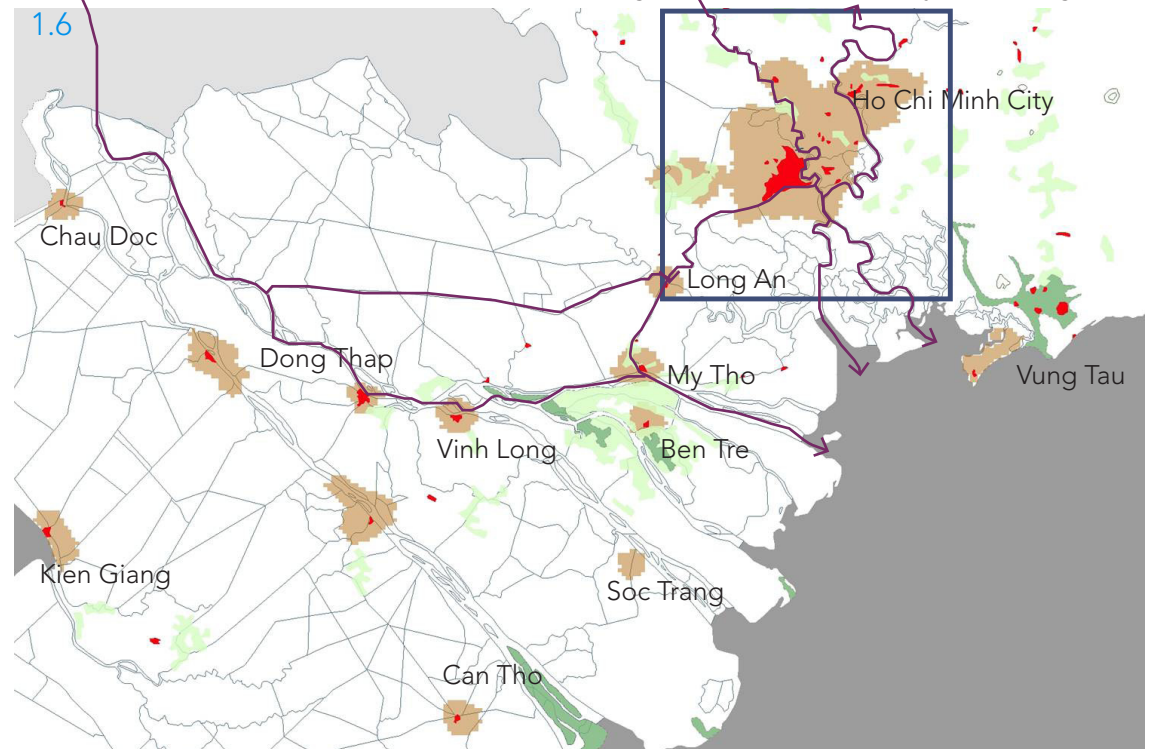


Figure 1.6 Ho Chi Minh City and the satellite city

A. CITY DATA

| | |
|--------------------------------------|--|
| Area | 209,554 ha / 64% of agriculture and forest land in 1997 / 59% of agriculture and forest land in 2006 |
| Urban area | 4,410 in 2001 / 5,315 in 2006 |
| Population | 6,347,000 persons in 2007 with 85% living in urban area / the most rapidly growing urban population in the country / 1.15% growth in 2005 |
| Migration | 2.0% growth in 2005 |
| Employees | 2,267,000 in 2001 / 2,676,00 in 2005 |
| Job placement in a year | 198,000 in 2001 / 234,000 in 2005 |
| Unemployment rate in urban area | 6.04% in 2001 / 6.54 in 2002 / 6.13 in 2003 / 6.0% in 2004 |
| Rivers and canals | 15% of the City's land use |
| Economic | over 23% of national GDP in 2006 / rapid economic growth 11.3% between 2000 and 2007 / income earning opportunities attract migrants from throughout Vietnam |
| Industrial and services sectors | grow rapidly, at 11.9% and 11.1% respectively / 46 % and 53% of GRDP in 2007 |
| Agriculture and related activities | grow slowly, at 4.8% / 1.4% of provincial output in 2007 |
| Roads and other transport facilities | around 3%, low figure does not reflect the strategic importance of the transport network to the functioning of the City |
| Public transport | 3.7% using |
| Land for industry and commerce | 5% of the City's land use |
| Parks | 90 in the City / 969 ha / around 0.5% of the City's land use / 1.5 m ² per person / very low proportion of open space in the urban area |
| Poverty | poverty rate of 0.5% in 2006 / number of poor in the City is still high at between 30,000 and 40,000 persons / high rate the number of households living in inadequate housing and poor environmental conditions |
| Flooding | affecting 971,000 people / 12% of population |



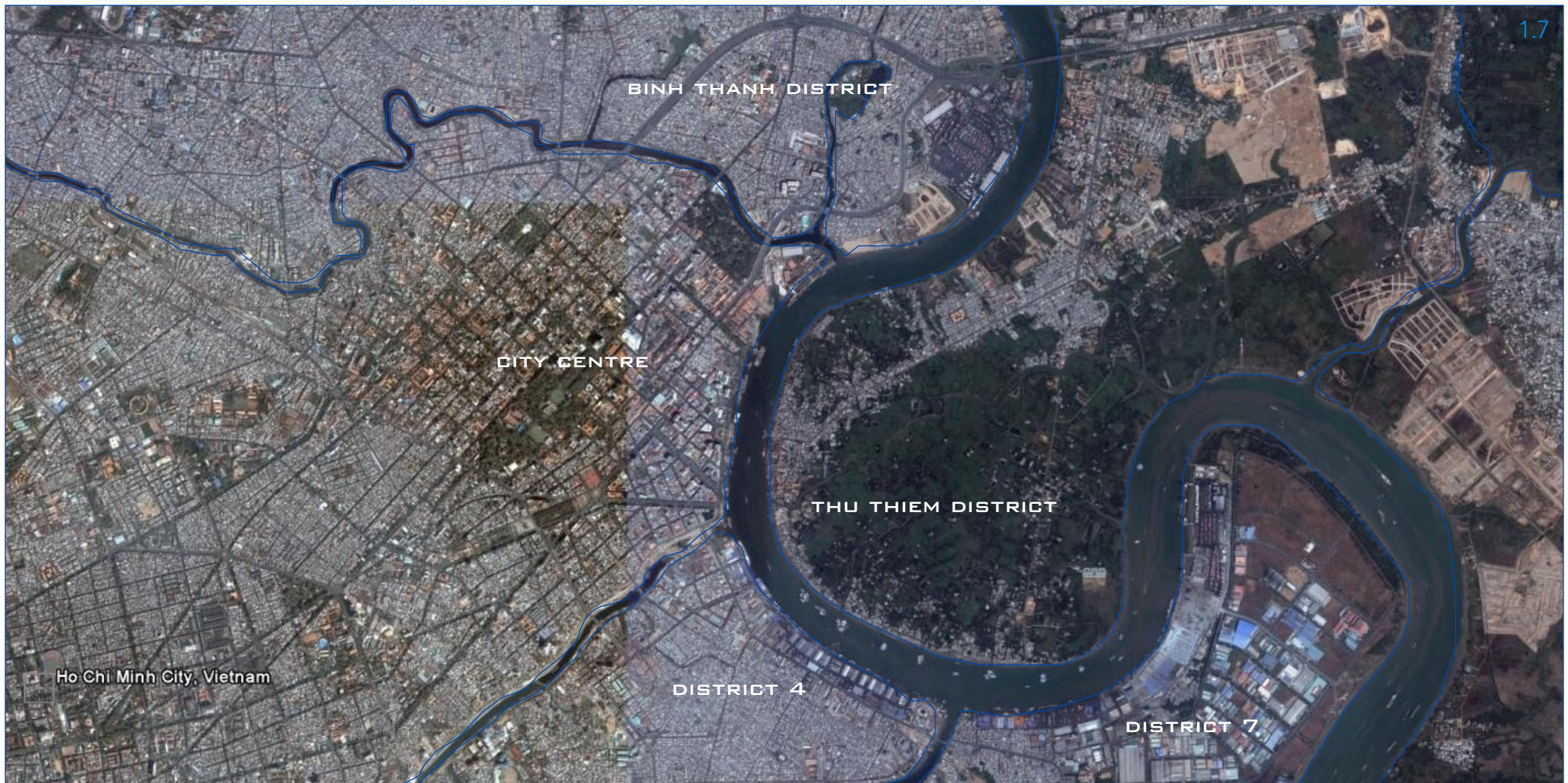


Figure 1.7 Aerial view of Sai Gon river and Ho Chi Minh City



Figure 1.8 Built-up along Sai Gon river

B. HISTORY OF THE CITY'S URBAN DEVELOPMENT AND WATERFRONT

Ho Chi Minh city found in 1968 on the old Khmer city of Prei Nokor with initial name- ' Sai Gon'.

Since 1772, Saigon has become a 'thành phố' (city) in its very literal sense .The noun "thành phố" in Vietnamese language is composed of two components (Vu, 2006).

'Thành' constitutes an inhabited place surrounded by protecting wall. Saigon was protected on the South and the East, by the Saigon River and Ben Nghe canal, but on the North and the West. Ban Bich wall was built 1772 by running 8 km long using Thi Nghe canal as an natural ditch protects Saigon on the North side. A narrow waterway follow the wall connected the Thi Nghe canal and Ben Nghe canal make the inner Saigon "enfolded" by water features (Le, 2003).

'Phô" means a fixed place of commercial interests. Both of them have a tight relationship with water. The trading of rice and other agriculture products concentrated in this centre made Saigon the capital of Southern region. The activities based on the water-base transportation from Mekong Delta and foreign merchants from China and other countries (Le, 2003).

The first fort was built on the year 1790 by the first king of Nguyen dynasty. Although built with the Vauban model, it had the nick name "Turtle Fort" for its shape and the Feng-shui philosophy. Its location was chosen due to its strategic location to the region and the sea but also natural protective water features at the smaller scale. It was razed in 1835 by Minh Mang, the second king of Nguyen dynasty after a rebellion.

Since defense was the main purpose of the fort, there were only two small ditches that connected the fort to Saigon River. The shoreline of Saigon riverbank as well as the two canals on the North and the South were still in their soft natural condition.

The second fort was built in 1836 as a replacement of the first fort, which was more vulnerable to attack. This degraded military position of the city also reduced its political position (Le, 2003). It is located at the northeast corner of the former "Turtle Fort" and also had a nick name for itself, the "Phoenix Fort". The fort can be framed within the four current streets : Phan Dinh Phung Street, Nguyen Binh Khiem Street, Mac Dinh Chi Street, Nguyen Du Street. It was burned down to ash in 1859 by the French army.

Figure 9. The Vauban model and nick name "Turtle Fort" for its shape and the Feng-shui philosophy. Source: *Centre des Archives d'Ostre-Mer in Aix-en-provence, France*



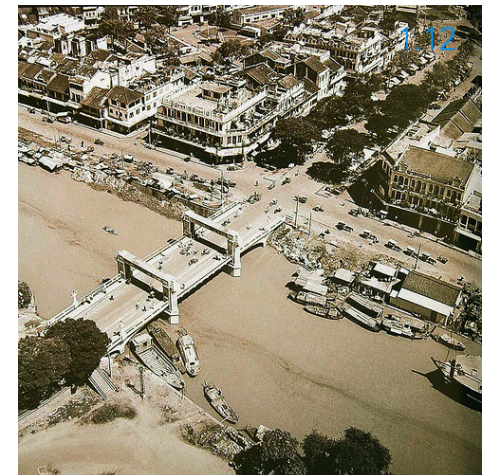
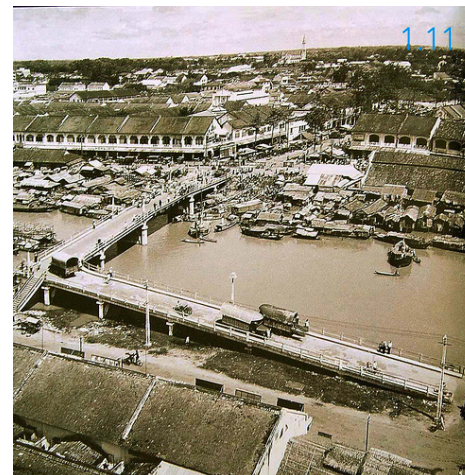
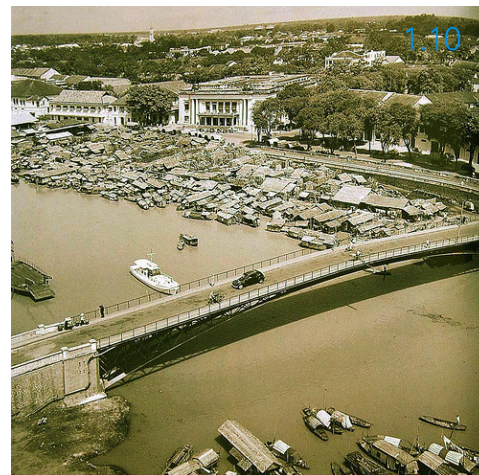
“Citadelle de Saigon”, as the French named it, has less defense function. Instead, several inner waterways were dug out so that small boats could penetrate to the land for trading activities. Some of the main canals correspond to nowadays boulevards Nguyen Hue, Le Loi, Ham Nghi that forms the “Golden Triangle” in the city center. The navigable rivers and canals have served in the past as an important route into the city, often being the main approach to city (Moughtin, 2003). Ho Chi Minh City’s canal-based urban form is an illustration of this unchanged dependency on the city’s abounding river systems. This unique urban life, with its water-based socio-economic structures that include port-boat-market activities processes a rich cultural and religious diversity that dates back in history (Vu, 2006).

Gradually, all the inner land canals were filled up as the commercial activities were up-scaled. Those small ditches were not suitable for big vessels and barges. Small boat trade was moved farther to the other part of the city. As soon as the market located close to the canal was removed (due to its total damage from a fire), the last inner land canal as shown in the map (which is currently Nguyen Hue Boulevard) was filled. Its whole waterfront was dedicated to the bigger ships for international trading instead of small boats for local needs (Hiep, 2007).

Throughout history, the waterfront of Saigon has been transformed several times. The place once was nothing but a fortress in the middle of marsh land is nowadays the most economic developing city of the country.

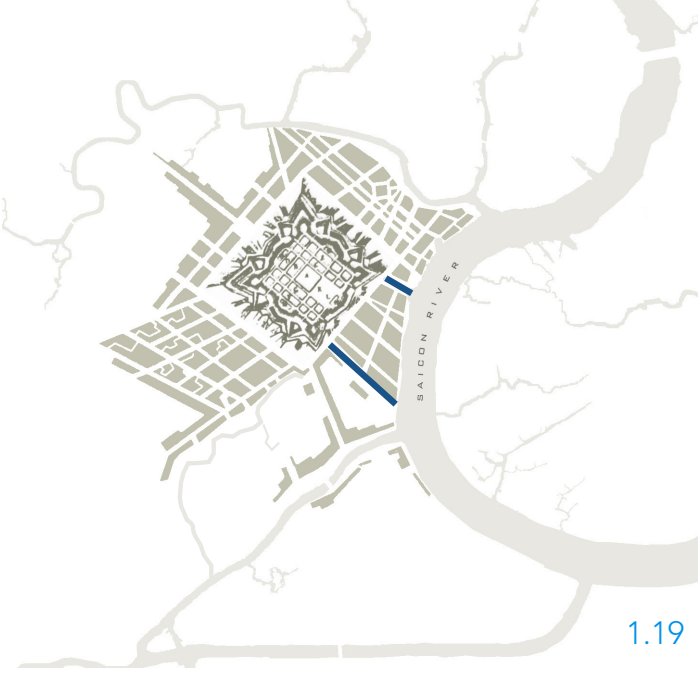
The water system was exploited for different uses but has never been exploited as a public amenity. Canals were dug out, low land was filled in, natural shoreline became hard edge but fundamentally, this was the use on the landside that determined the type of the contact between water and land through different period. Uses changed, but new forms always inherit something to grow from the basis of the old infrastructures.

Figure 1.10-1.12 The city’s water-based socio-economic structures include port-boat-market activities. Source: *Centre des Archives d’Outre-Mer in Aix-en-provence, France*



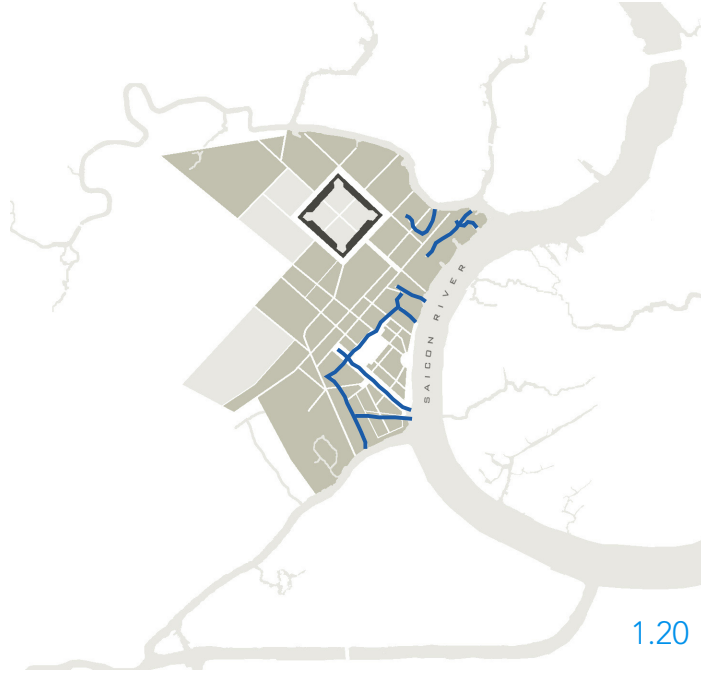
The city found on the old Khmer city of Prei Nokor

Ban Bich wall was built 1772 by running 8 km long using Thi Nghe canal as an natural ditch protects Saigon on the North side



1.19

Two small ditches connected the fort to Saigon River



1.20

The second fort was built in 1836

1698

The first fort was built on the year 1790 by the first king of Nguyen dynasty and it was the Vau-ban model- name "Turtle Fort" for its shape and the Feng-shui philosophy

Source: *Centre des Archives d'Outre-Mer in Aix-en-provence, France*



Port-boat-market activities in canals

1795

1815



Port-boat-market activities in canals.

Source: *Centre des Archives d'Outre-Mer in Aix-en-provence, France*

1867



1898 - The last inner land canal which is Nguyen Hue boulevard today



1898



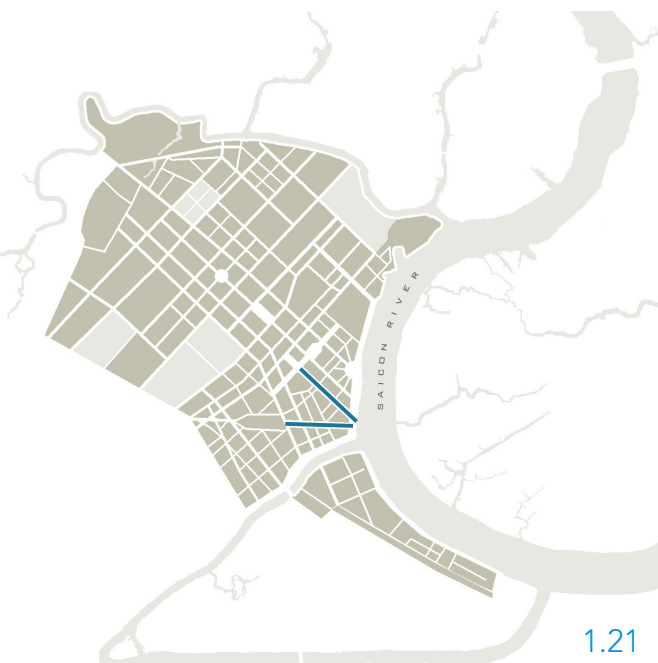
1965



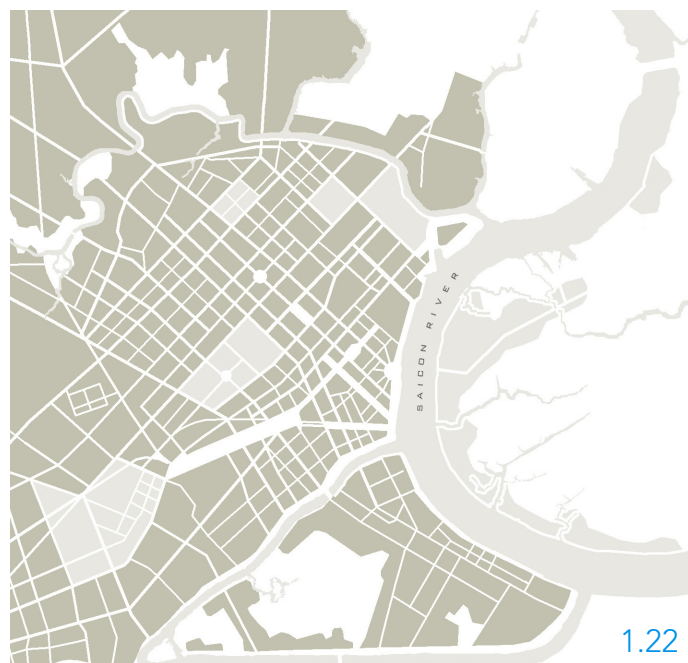
Sai Gon in 1950s



2010



1898 - The last inner land canal



1965 - The city grew and filled up inner land canals, harbour areas locked and were a barrier between the city and the river



C. URBAN GROWTH AND POPULATION

The uncontrolled urban expansion and land use change brought about by urbanization go along with an excessive change of natural land cover to sealed surfaces, the removal of natural retention and infiltration areas for precipitation, increased traffic volumes, and increased emissions related to transportation and industrial production. In addition to the population growth, the settlement area of Ho Chi Minh city has more than doubled in the past 20 years (Tran & Ha, 2007). As a result of the mostly spontaneous land occupation, the adequate provision of technical and social services often lag behind in the marginal settlements on the outskirts as well as in inner city slums, causing considerable negative effects on the environment and urban society of Ho Chi Minh city (Wüst, 2002).

Rapid urbanization has transcended the management capacity of governments in developing countries. Since the renovation policy launched in 1986, Ho Chi Minh City, Vietnam, has experienced the fastest urbanization and industrialization process. Because the strength of economic growth, Ho Chi Minh City has attracted an increase in the number of migrants from rural areas (Gubry and Le, 2002).

After reunification in 1975, the demography and the population pattern of Ho Chi Minh City have dramatically changed. Its population has doubled over the last 25 years from 2.5 million in 1975 to 5.17 million people in 2000.

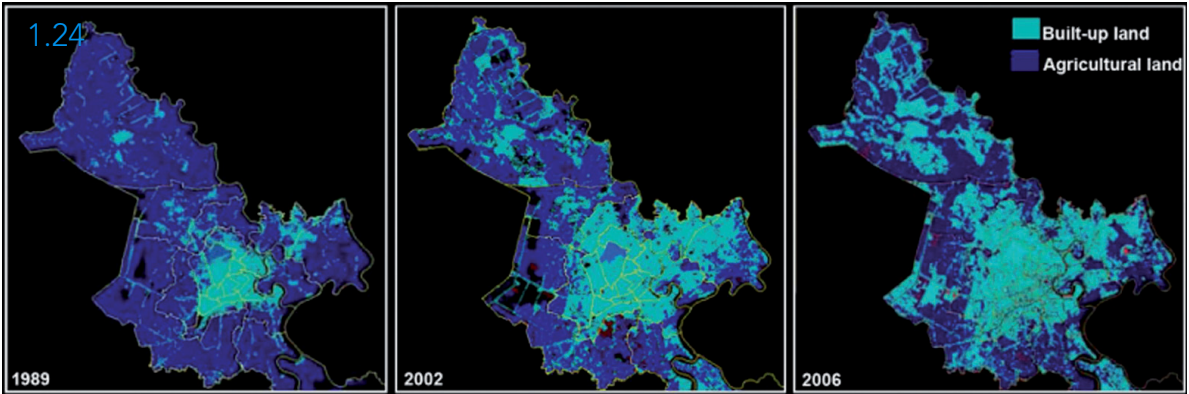


Figure 24. Urban land cover change in the central and northern part of HCMC (Tran & Ha, 2007)

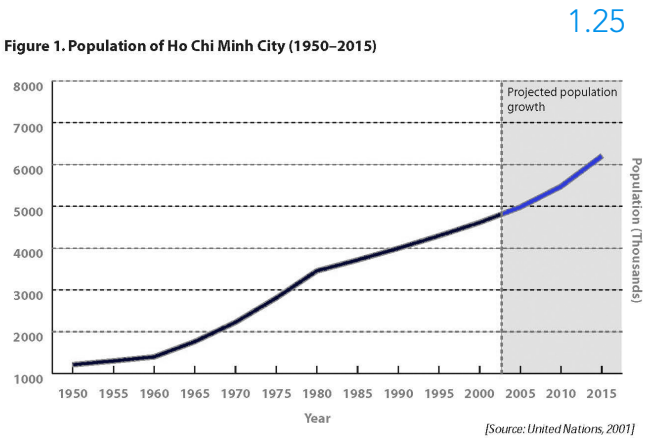


Figure 25. Population of Ho Chi Minh City, source: Ho Chi Minh City Statistic Department, 2007

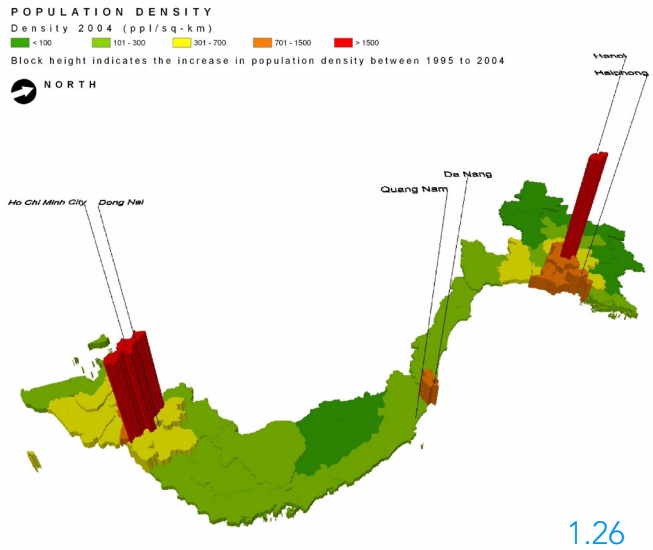


Figure 26. Comparison population of Ho Chi Minh city with other cities and provinces, source: Ho Chi Minh City Statistic Department, 2007

By 2004, the population figure has accelerated to 6.1 million people, accounting for 7% of the country's population in which 5.2 million inhabitants live in urban Districts and 0.9 million people in outlying Districts (Ho Chi Minh City Statistical Office, 2005); People's Committee of Ho Chi Minh City, 2006). Furthermore, the UN Population Report (2001) estimated that the urban population of Ho Chi Minh City will reach 6.2 million people by 2015 with a rate of urban growth of 2% (United Nations Population Division, 2002). However, by 2005, its urban population exceeded 6.2 million (Ho Chi Minh City Statistical Office, 2007), the United Nations prediction in next 10 years reached 10 million. This will result in pressures on urban services and the environment. Most commonly, securing adequate water sources, ensuring basic human needs and managing water resources will pose a formidable challenge to the city government.

The settlement area has more than doubled in the past 20 years. The population of the city has mainly increased and uncontrolled urban sprawl has developed. One of the main reasons for migration has been the prospect of generally better income opportunities in the urban region for mostly unskilled workers (UNDP/UNPF, 2005). Such opportunities could be found in the emerging factory compounds and industrial Zones, and also in the informal economy. In most cases, the migrants initially found shelter in the widespread so-called boarding houses, rental and shareable small housing units, which are generally considered to be a transitional housing solution and are in many cases overpriced.

URBAN PRESSURE

Population development and urban expansion has serious pressure. In general terms, it is estimated that 50% of the buildings along the River require renovation. On the environmental level, only 13% of the road network is considered in good condition; the drinking water conveyance network is adulterated by numerous deterioration and very low proportion of open space in the urban area. This implies great challenges: how to create quality of life, jobs, attractive residential neighbourhoods and good facilities?

Particularly the existing expanded city center is now under very high redevelopment pressure. The present city center, however, is too short of urbanized structures and functions to become the core of a megalopolis of advanced commerce and service. The city and its center are needed to meet the worldly standard requirements of living environment, urban activities, investment, and redevelopment.

It is estimated that Ho Chi Minh city will have a population of approximately 10 million by 2025. Under the present urban infrastructure of the city, the living conditions will be deteriorated and traffic will be paralyzed by additional population and urban activities. Ho Chi Minh city is faced with lists of defects: traffic congestion, depressed housing, inadequacy and miss-distribution of open spaces and the jumble of houses and industry. The serious defect is city sprawl and so many of the defects in the centre.

In fact, uncontrolled developments have brought various urban problems, including insufficient urban services and degradation of landscape or amenity. Many factors varying from infrastructure to landscape will have to be comprehensively coordinated with each others by definite principles of urban planning from now on. Development so far apt to be less-regulated has to be carefully carried out on the balance between restrictions and encouragement.

Figure 27-30. Uncontrolled urban development in Ho Chi Minh city, source:www.flickr.com



D. ECONOMIC, INDUSTRY AND DEMANDS

Social and economic growth since the renovation policy launched in 1986, Ho Chi Minh City has witnessed remarkable economic growth, evidenced by GDP growth rate in 2004 reaching 11.6% and 18.5% in comparison with the whole country (People’s Committee of Ho Chi Minh City, 2006) . Despite accounting for only 0.6% of Vietnam’s total area and 6.6% of the country’s total population, Ho Chi Minh City made an important contribution to Vietnam’s GDP in 2000. Not surprisingly, Ho Chi Minh is one of the most concentrated urban populations in the world (Drakakis-Smith, 2000) and one of the most dynamic urbanized areas in the South-east Asian region (Bolayet, 1997). This city just accounts for 0.6% land area, 7.5% population of Vietnam nevertheless accounts for 20.2% GDP, 27.9% industrial output and 34.9% FDI projects in this country in 2005 (Statistics on the city’s official website, 2005). In 2005, this city had 4,344,000 laborers, of which 130,000 are over the labor age norm (in Vietnam it’s 60 for male and 55 for female workers (Ho Chi Minh City Economics Institute, 2005). In 2009, GDP per capita reached 2,800 USD, compared to this country’s average level of \$US 1042 in 2009.

| Economic growth of Ho Chi Minh City, 2001–2005 | | | | | |
|---|-------|-------|-------|-------|-------|
| | 2001 | 2002 | 2003 | 2004 | 2005 |
| Total growth rate (%) | 116.2 | 115.1 | 115.1 | 114.7 | 114.5 |
| GDP growth (%) | 9.5 | 10.2 | 11.2 | 11.6 | 12 |
| GDP growth (in comparison with the whole country’s GDP, %) | | | | | |
| | 17.6 | 18.0 | 18.4 | 18.5 | 20.2 |
| Total industrial production (in comparison with the whole country, %) | | | | | |
| | 29.4 | 29.6 | 29.4 | 28.8 | 27.9 |

Table 1. Economic growth, 2001-2005
Source: Ho Chi Minh City Statistic Department

Economic in Asia Regional Context

The city located fronting the South China Sea and the commercial heart of Vietnam, is becoming an emerging world-class city. It is rivaling other neighbouring countries to become the gateway to South East Asia and to greater China and India. Already, the city economy is experiencing one of the highest rate of growth due to the increase of foreign investment and interest in Ho Chi Minh city as a commercial and financial hub of South East Asia.

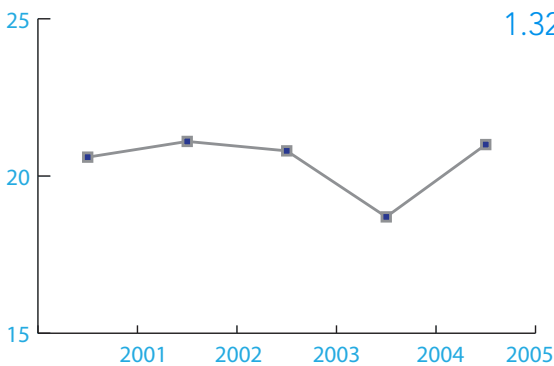


Figure 32. Foreign Investment
Source: Ho Chi Minh City Statistic Department, 2007

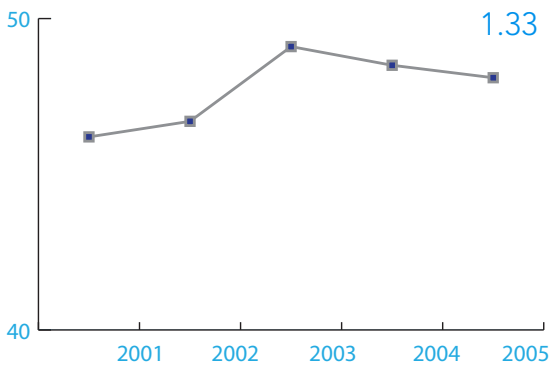


Figure 33. Industry and Construction
Source: Ho Chi Minh City Statistic Department, 2007

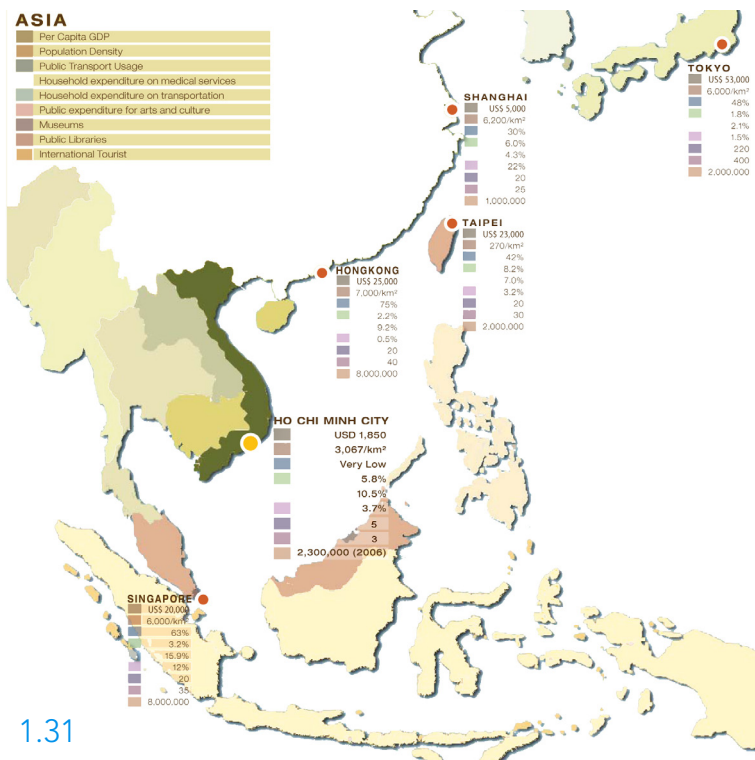


Figure 31. Comparison of Regional Hub Cities, Source: Ho Chi Minh City Statistic Department, 2007

South and Central Vietnam Context

Located at the edge of the Mekong Delta to the South, the city is well positioned as the point of entry to the 3rd largest rice producing area in the world. The Mekong Delta – the rice bowl of South East Asia, has historically and continuously depended on Ho Chi Minh city as the point of contact with the world, and through which trading, export and import has taken place. The proximity to the existing and the future airport, and efficient regional highway also provides strong connections between Ho Chi Minh city to major cities outside the city in support of manufacturing, light industry, import and export.

In Ho Chi Minh city Context

City's land area of 853 hectares and a water area of 77 hectares. The city become a unique international world class city and is a center of satellite cities.

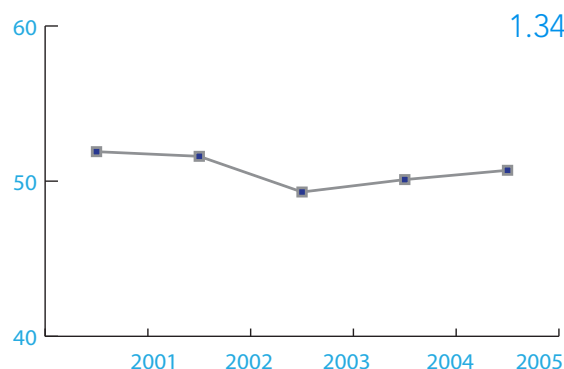


Figure 34. Services
 Source: Ho Chi Minh City Statistic Department, 2007

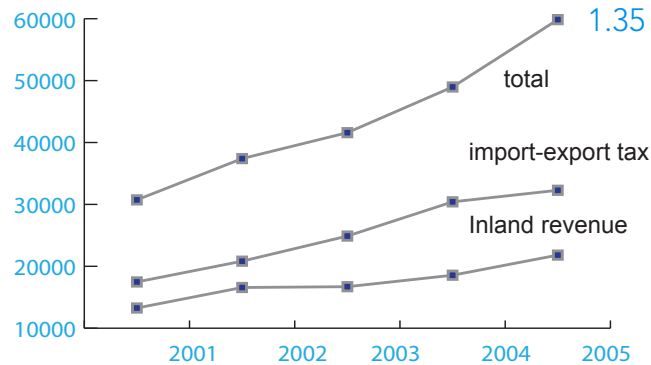


Figure 35. Tax revenue (VND billion)
 Source: Ho Chi Minh City Statistic Department, 2007



Figure 36. Tourism services revenue (VND billion)
 Source: Ho Chi Minh City Statistic Department, 2007

DEMANDS

Economic Demands:

Strong economic growth is fueling an office market boom in Ho Chi Minh city, with demand being driven by local business expansion, industrial growth, and foreign direct investment.

Housing Demands

Population is increasing rapidly because the city's role in the national economy has attracted a large number of migrants from other provinces to work, live, and study due to housing market is highest in Vietnam. In addition, increased financing options by commercial banks in the form of 10-15 year loans has grow the apartment market. Home buyers can be supported up to 70% of the total value of the apartment. The support of commercial banks has particularly stimulated the middle income apartment market, and this is expected to continue in the future.

Population, migration and new financing mechanisms have boosted residential transactions in Ho Chi Minh city. Strong economic growth has also resulted in higher standards for residential projects – the following graph illustrates % of households with different levels of monthly salaries.

The transition toward a market system for the allocation of urban space has resulted in economic competition between private households and investors for urban space. Urban development is now particularly influenced by land markets. During the 1990s in particular, private households were the biggest and most important producers of living space (Quang, 2002). Besides formal housing production, up to 80% of the total private construction took place without any regulation or permit, due to the weak political control of free-market forces and the deficient planning and licensing system in Vietnam. In Ho Chi Minh city, it is estimated that more than 50% of residential buildings were built without an official permit (Phat, 2002). Further, a severe backlog of land use certificates has developed as the Ho Chi Minh city authorities have offered only 25 percent legal land deeds for total 979,000 households up to the year 2002 (Lanh, 2002).

The main important reason is the fast economic growth, especially of the private sector, which resulted in improvements in living standards and income, and consequently increased demand for real estate for housing and business (CIEM, 2006). Moreover, consumption was not longer the only motive for buying a house in the course of the economic development. House ownership became a status symbol, a way of defining oneself, and an investment for the future (Phe, Huong Hu, 2002). Since 2004, the real estate market has remained stagnant, especially in the segment of moderately priced houses and apartments as well as in the market for small building plots and scattered houses. On the demand side, potential sellers and potential buyers have reached to a peak.

Tourism & Hotel Trends :

Tourism growth and hotel room demand are a significant market opportunity for Ho Chi Minh city.

Development of Household Incomes

As a result of the economic boom, the urban expansion in Ho Chi Minh City has increased dramatically. According the market research company TNS (2009), the number of households with a disposable income of US\$251-500 has increased from 31% to 55% from 1999 to 2008. The number of households that have an income of more than 425 euro even increased by five times to 37% in the same time period.

Amount of Living Space

In terms of housing typology it is also shown that the detached villa type is very landconsumptive and should therefore be strongly restricted in favour of a future sustainable urban development of Ho Chi Minh City. The small alley houses which have mostly been erected within low-rise – high density neighbourhoods during the phase of spontaneous urbanization in the 1990s apparently offer a sound ratio of living space/capita. This is also the case for the apartment house typologies, though there indirect costs e.g. for elevators and land consumption of the surrounding area are not included. Surprisingly, the shophouse typology reveals a rather extensive use of living space which might be too resource-intensive, if replicated on a larger scale in terms of the future spatial development. In general, the housing typology strongly relates to the amount of living space which on its part strongly influences the overall energy consumption related to housing as will be described further on. Therefore a well-balanced mix of housing typologies within densely-built neighbourhoods' areas should be thought upon by urban planning concerning the future development of Ho Chi Minh City. (Source: Fifth Urban Research Symposium 2009)

1.37

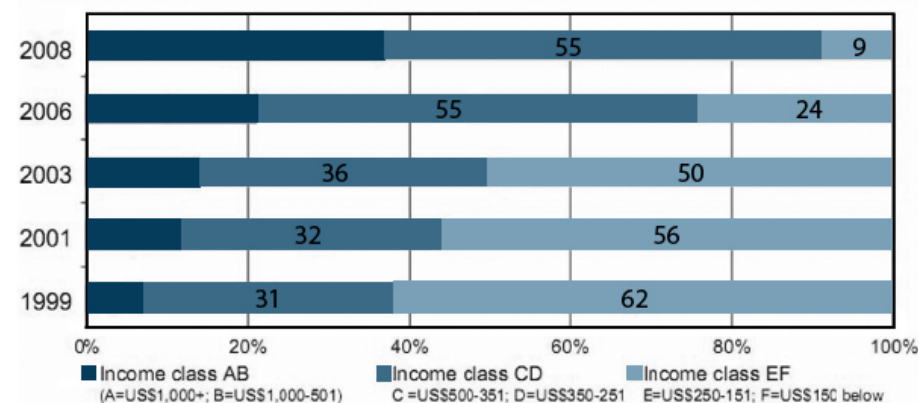


Figure 37 . Development of Household Incomes in Ho Chi Minh City

Source: TNS 2009; VietCycle Population – 15-45 years; n=1,000

1.38

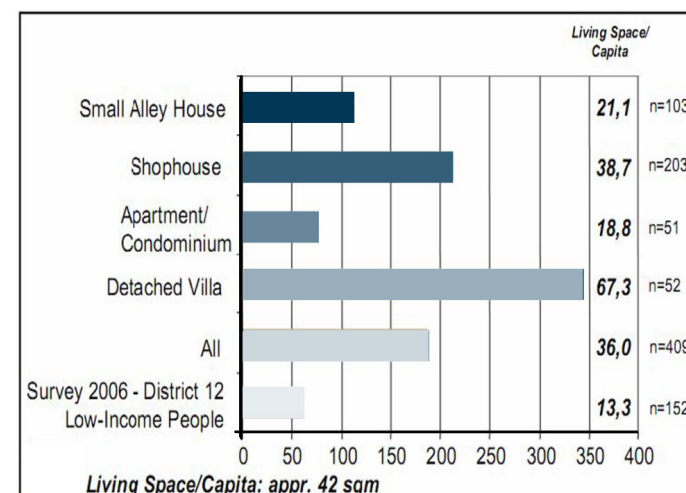


Figure 38 . Amount of Living Space related to House Type

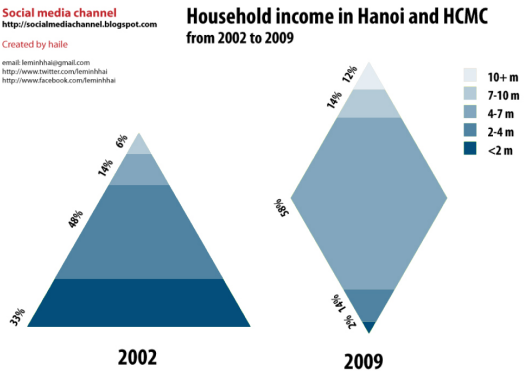
Source: Survey 3/2009 of Fifth Urban Research Symposium, 2009

E. SOCIETY, EMPLOYMENT AND POVERTY

Society

Social developments have shown certain improvement, with establishment of communities and governance system that are relevant with the growing market economy and globalization. There are, however, still limits and setbacks from the old agricultural rural system and war-time society. This traditional way of life sustains not only in people’s daily life, work and traffic but also in the governmental regulation and management activities (Ho, 2009).

Household income of 58% of citizens in Ho Chi Minh City is from 152.000-266.000 euro (3/2010)



1.39

Figure 39. Household income in Ha Noi and Ho Chi Minh City, source: Nielsen Vietnam Omnibus, 2008

Poverty

In 2006, Ho Chi Minh city had an overall poverty rate of 0.5% and the number of poor in the city is still high at between 30,000 and 40,000 persons. Most of neighbourhoods which located along Sai Gon River are overloaded because of city expansion as well as crowded population and immigrants from other provinces and cities. Following the research project led by the SSRC’s Vietnam Program and sponsored by the Ford Foundation, urban poverty has risen in Ho Chi Minh City, particularly among migrants.

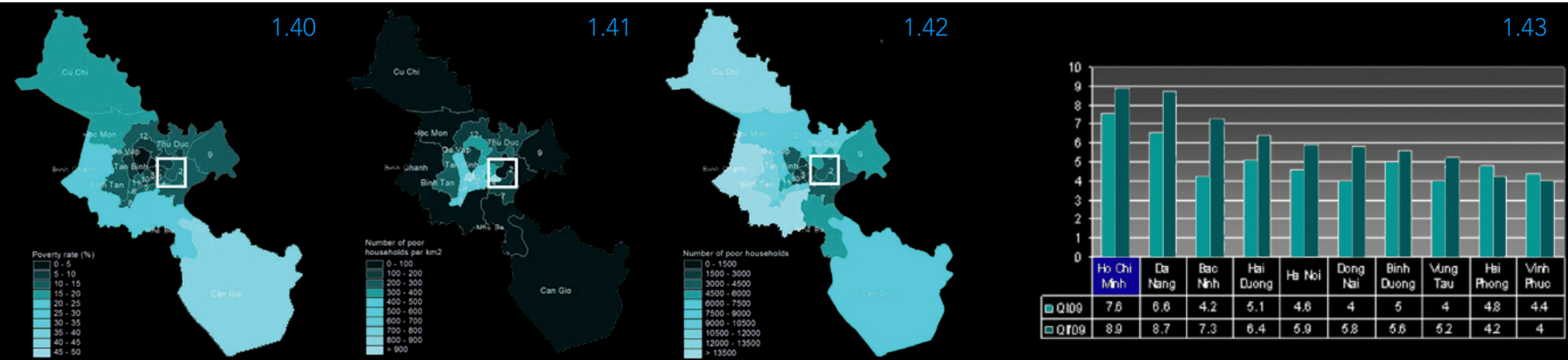


Figure 40. The poverty incidence
Source: Ho Chi Minh City Statistic Department

Figure 41. Poverty density, Source: Ho Chi Minh City Statistic Department

Figure 42. The number of poor households
Source: Ho Chi Minh City Statistic Department

Figure 43. Application index in high-labor demand of Ho Chi Minh City, source: Ho Chi Minh City Statistic Department, 2009

F. CULTURE

Living culture

The attractiveness of historical and cultural heritage of the city has to be emphasized as one of the most important factors to be taken into account in studying the future vision of the city. The city enhances the attractiveness by harmonizing with the historical assets established before and during the French occupation.

Following the research of Vu (2006), Vietnam is one of many Southeast Asian countries whose first civilizations were founded at water intersection areas or along rivers. Over time, water-based urban forms have evolved with distinctive cultural layers. Ho Chi Minh city- formerly Sai Gon, Gia Dinh provides a prime example of this canal-based development in Vietnam. Since its founding in 1698, Ho Chi Minh city has been a water-based city where canals along with rivers and their subsystems have been the main routes of commuting and commerce. The original functions of the canal system have changed little despite the development of roadways and other more convenient means of transport: the city's canal-based urban form still retains its unique water-based social economic structures including port-boat-market activities and canal handcraft villages, processing a rich cultural and religious diversity. The project rethinks the distinctive valuable of the canal urban-based cultural heritage hidden in the insignificance. In fact, today urbanization and globalization has greatly destroyed much urban cultural heritage in Asian developing cities and cultural living is being impacted, and often threatened with destruction. The authenticity of many historically significant neighbourhoods of traditional culture is vanishing.

"When we lose a historic place, we lose a part of who we are "

(<http://www.nationaltrust.org/History is in our hands>, 2003)

Historical architecture

However, there are historically buildings left along the river and form essential factors or the town scape of the city which are indispensable to the aesthetic and cultural Sai Gon waterfront. Thus, these buildings and the historical landscape near them have to be conserved.



Figure 44. Canal handcraft villages and port-boat-market activities



Figure 45. Houses have struction adapt to floods



Figure 46-47. Living with water

G. FLOODING

Data

Ho Chi Minh City is located only 50km from the sea, in an area which is heavily influenced by the tidal water.

Topography data:

Highest elevation: +10 meter / Lowest elevation: +0.5 meter / 60% area is below +1.5 meter / Current max tide level: +1.48 meter

Rainfall Average: 2000 mm/year / Max: 200 mm/day / Max: 50 mm/ hour

Upstream flow Average: 4,000 cms / Max: 20,000 cms

Tide Semi-diurnal / Max: +1.48 meter / Min: -1.2 meter

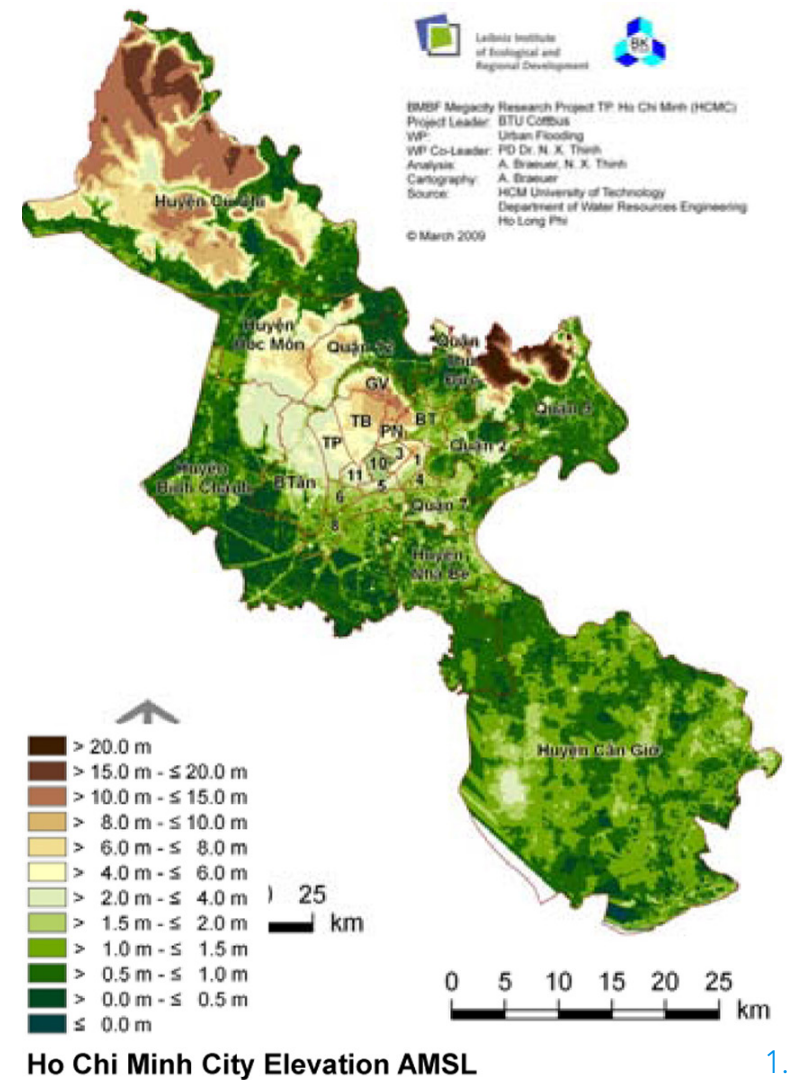
Land subsidence Average velocity > 6mm/year

Current Problem

A significant part of Ho Chi Minh City is regularly flooded due to a combine of tides, storm surge, rains, floods and man-made structures. The City has evolved with regular flooding several times each year and 154 of the city's 322 communes and wards have a history of regular floors, covering close to 110,000 ha and effecting some 917,000 people or 12% of the City population. The rise of sea level with the climate change effect. Vietnam ranks among the top 5 most impacted countries. (World Bank report WPS4136 2/2007)

Ho Chi Minh City suffer waterlog problems

- A. Heavy rain caused floods
- B. Flood due to combined effect of tide and water release by upstream areas
- C. Flood due to combined effect of tide and land subsidence



1.48



A. HEAVY RAIN CAUSED FLOODS

Heavy rain caused floods: Ho Chi Minh City's rainy season from May to November has annual rainfall exceeding 2,000mm, namely during the flood season. Rainfall maximum is 200mm/day and maximum rainfall intensity is about 50mm/hr. Heavy rains flooded many streets causing traffic jam and environmental pollution. Hundreds of houses were flooded by 30- 40 cm and water receded after three or five hours (Le,2009).

Main reasons:

- Rapid urbanization and infrastructure works are degrading, which leads to obstruction of the drainage system. Due to a lack of sewers in the new suburban district and many newly-built streets don't have drainage systems yet. Therefore, the flood waters are difficult to be released out of the central area of the city, which might easily cause the water logging.
- Lack of proper governance on infrastructure making, the widespread fill-up of branch of rivers due to the existing shanties along the canal all over the city.

| Period | 1952-1961 | 1962-1971 | 1972-1981 | 1982-1991 | 1992-2002 |
|--------|-----------|-----------|-----------|-----------|-----------|
| Counts | 0 | 1 | 2 | 3 | 4 |

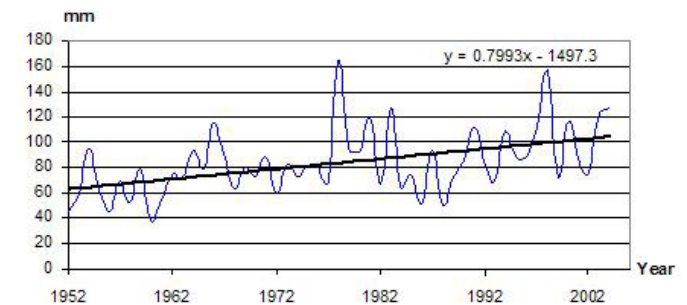
Counts of 3-hour rainfall events with volume >100mm

Temperature change

Rainfall is increasing in Ho Chi Minh City is strongly correlated to temperature and could be explained by theory of Heat Island Effect

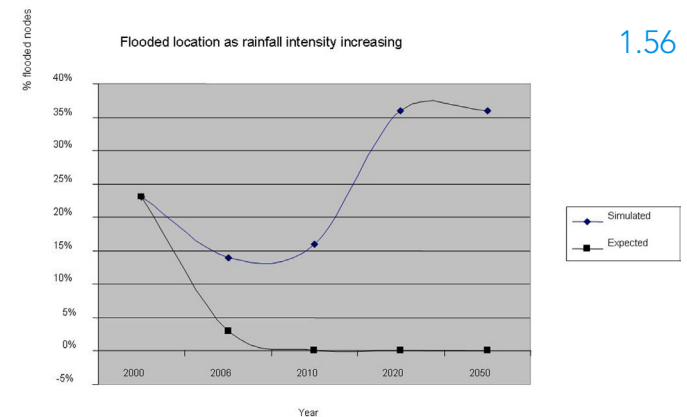
Yearly max volume of 180-min rainfall events
Tan Son Nhat station

1.55

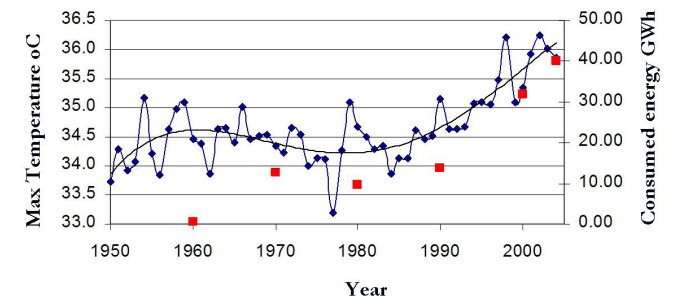


Flooded location as rainfall intensity increasing

1.56



1.57 Max Temperature and consumed energy in HCM city



B. FLOOD DUE TO COMBINED EFFECT OF TIDE AND WATER RELEASE BY UPSTREAM AREAS

Following Le(2009) a large number of urbanized zones are situated at a very low elevation and along the canals; the hydrographic system of Ho Chi Minh City is subjected to the influence of the semi-diurnal tidal flow regime, with considerable seasonal variations. Residents in many wards suffered water logging of between **0.4-0.5m**. On the other reason, flooding may be caused by water release by the Tri An and Dau Tieng reservoir on the upper Dong Nai and SaiGon river, where the water level reached 22.68m. The excess water was to be released at the rate of **300m³/s**. The Ho Chi Minh City 's government make a proposal for a project to build the three embankments that are planned to be 200km in length and will be raised along the SaiGon river's banks. These measures will reduce the threat of future flooding as climate change causes sea levels to rise. In the case that climate change could cause sea levels to rise by **70 cm**. Without dikes, about **300 km²** of land in the city could be flooded.



Figure 58 SaiGon and DongNai River System. Source: Triet et al (2001)

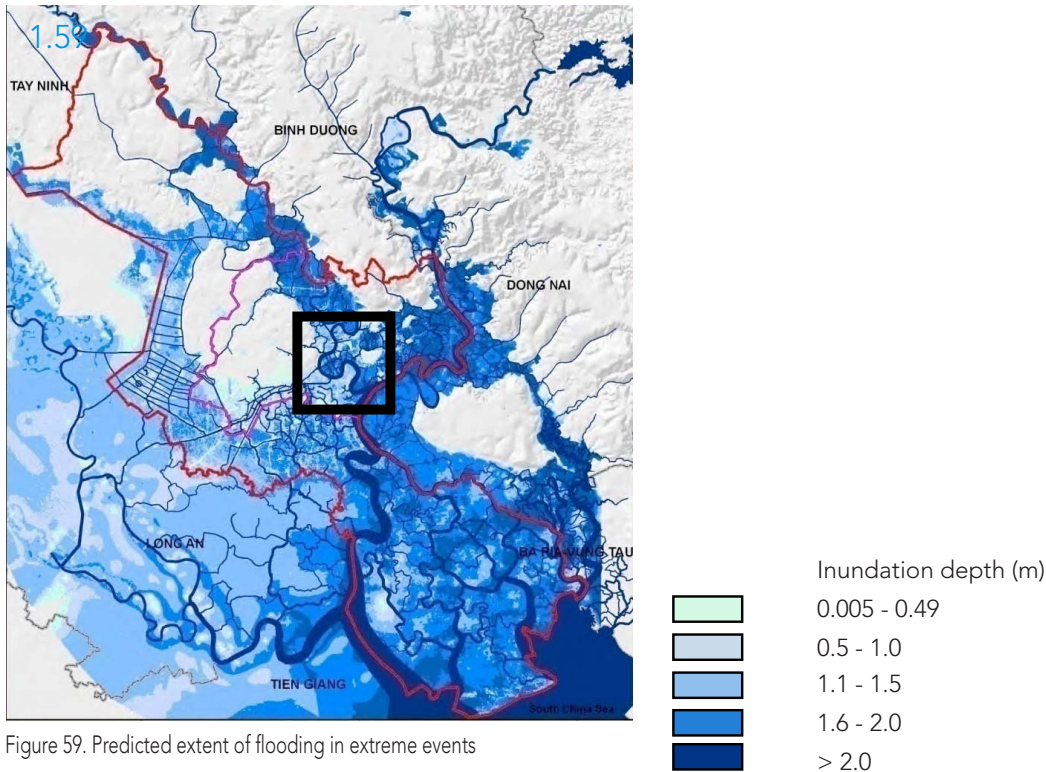
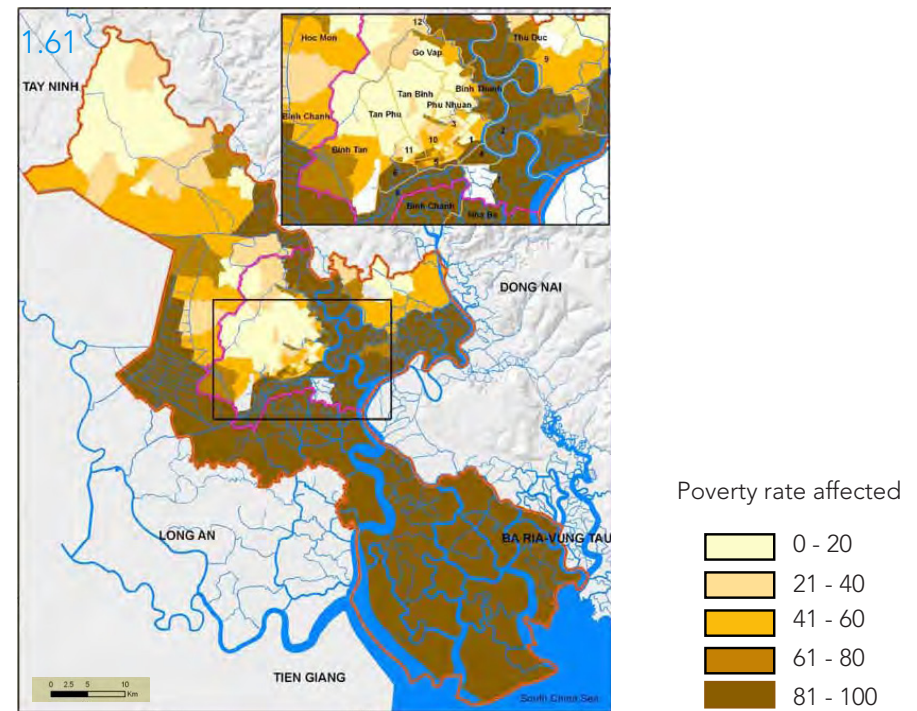
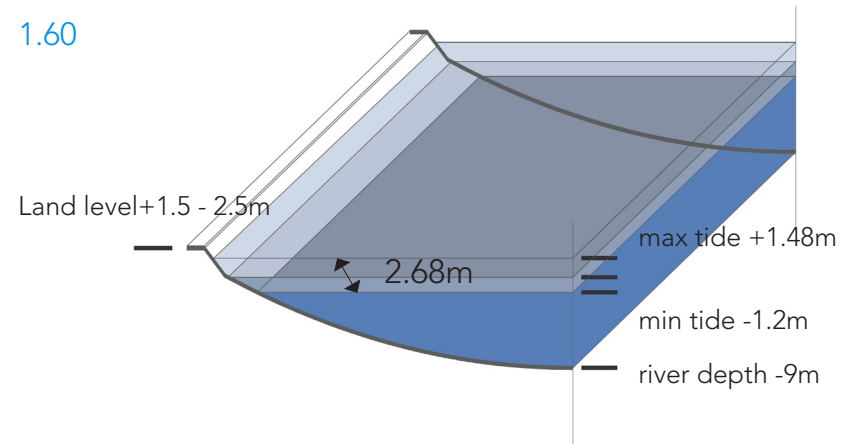


Figure 59. Predicted extent of flooding in extreme events

C. FLOOD DUE TO COMBINED EFFECT OF TIDE AND LAND SUBSIDENCE

It is clearly to see that the land subsidence has caused so dangerous situation in flood prevention now in Ho Chi Minh City and the ground water still plays a non-replaceable role in water supply for the city. Rapid increase of ground water use started in 1990 when Ho Chi Minh City were urbanized with some new districts, people and the industries used ground water as the main water resource. Ground water exploitation was estimated at about 650,000 m³/day (in 2005) and the expansion of surface water works in city has not met this rapid increase. Besides, until now free of charge ground water and uncontrolled exploitation has increasingly augmented the exploitation rate. Ho Chi Minh City locates at the soft soil, the ground water use was in a large scale, ground water level decreasing (>20m from 1990 until now) caused deform of soil which makes the ground level goes down. The more ground water use the more land subsidence will happen and land deformation at the rate of few centimeters per year can be measured at the heavy ground water pumping stations. Land subsidence (average velocity > 6mm/year) has resulted in tides moving into low-lying areas that were previously above high-tide levels (Le,2009).

1.60



Poverty rate affected by extreme flood in 2050

1.3 THE PORT IN HO CHI MINH CITY

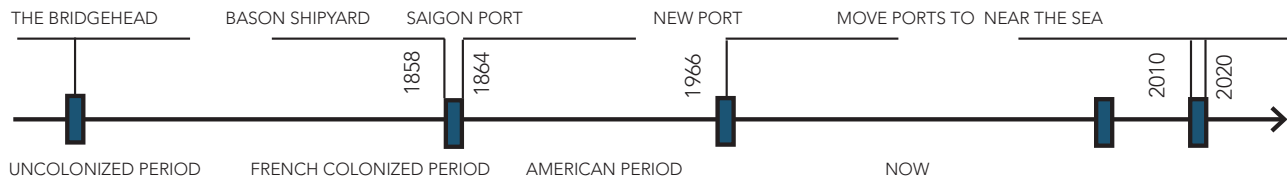
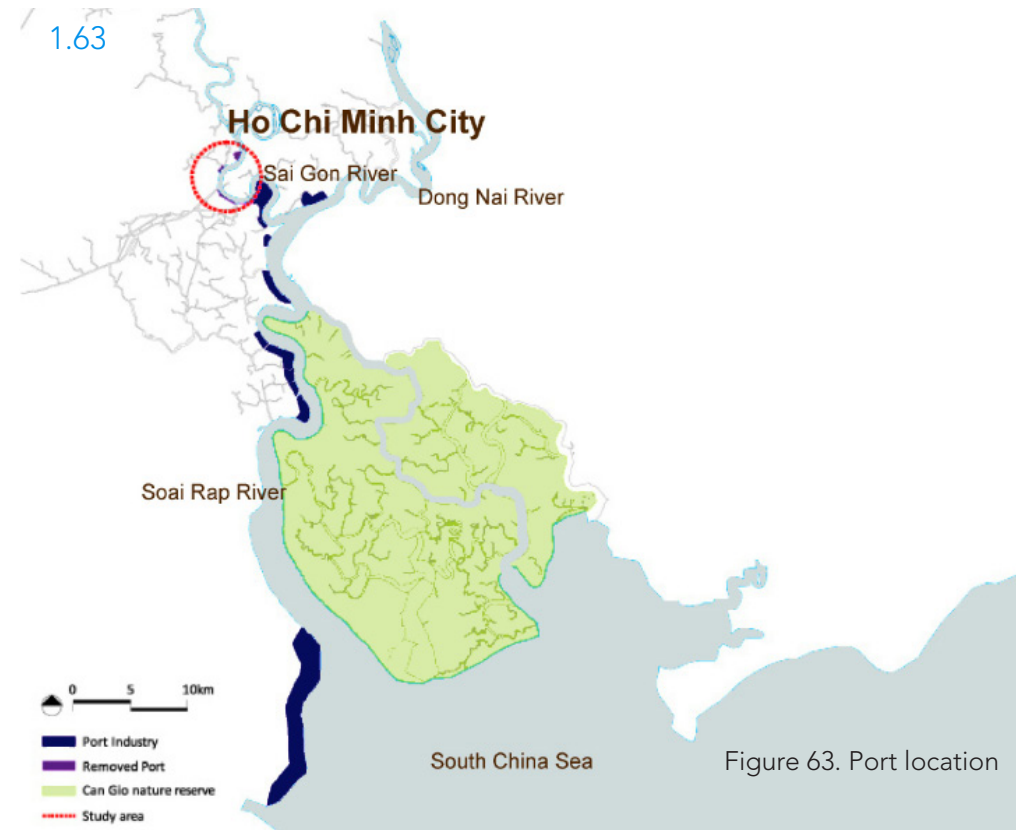


Figure 62. Time line of establishment and expected to relocation of ports

From the 17th to the 21st, the port of Ho Chi Minh City – Sai Gon Port is the most important hub in entire region. Through times, the layout and activities of port-area is increasingly conflicting with interests concerning the natural and urban environment. The port area is not only industrial area in the City, where industries committing nuisance but also is annoying urban activities areas. Additionally, the changing technology, energy source and logistics resulted into new demands on the scale and size of port. The old port has become too small for the demands of the times, in consequence, Sai Gon Port is moving to rural area and near the sea.

The City includes 6.5km of Saigon Riverfront area from Saigon Bridge to Te canal, is not a homogeneous space but a product evolving by time. It consists of different components which located from North to South: the New Port, the Bridgehead, the Bason Shipyard, the City Center Waterfront and the Saigon Port.



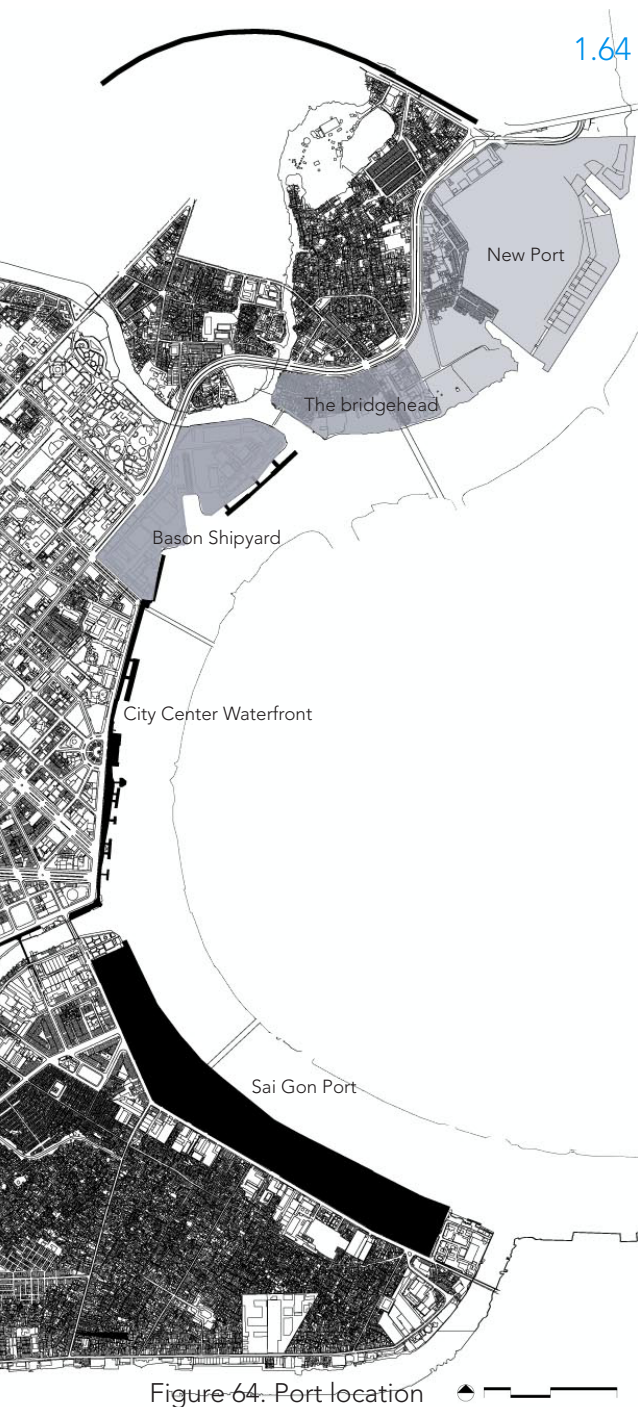


Figure 64. Port location

New port

The primary purpose of New Port was to take over the handling of all U.S. military cargo that was presently being handled at the Saigon port. Construction of New Port started in 1966 and took fifteen months to complete, costing the United States at least \$50 million dollars "...on an area of approximately one hundred acres (approximately 40ha) of land that had once been part rice-paddy and a swampy, mangrove-covered area, which at high tide was covered by water." To reclaim the wildness, great quantities of rock and sand were brought in by barge and truck for fill.

According to Richard Tregaskis, author of *Southeast Asia: Building the Bases*, to form the shallow-draft section of the port, 1,144 piles were driven. Some 500 of these piles averaged 135 feet deep. New Port is constructed from two million cubic yards of fill, of which about 3,000 cubic meters of this was delivered by sampans. 18,000 cubic yards of concrete was required for the staging deck, 4,050 steel piles, for a combined length of 107 miles and 35 miles of structural steel.

During the second night of the Tet Offensive of 1968, the American 71st battalion engaged the North Vietnam troops as they were trying to take control of the New Port Bridge (presently Saigon Bridge). Finally, the North Vietnam troops were repelled and unsuccessful in their mission marking one the most human-lost attack to the city during the war against the US. War wounds have healed but still have already been carved into the history of the country. The image of the port once supported the invading American army has the strength of reminding the next generations of this period of the history.



Figure 65. New Port, source: www. maps.google.com (2010)



Figure 66. The bridgehead, source: www. maps.google.com (2010)

The bridgehead

The new Thu Thiem bridge finished in late 2007 visually runs directly to the middle of this piece of land and divide it into two parts. It locates next to the confluence of Saigon River and Thi Nghe canal. This is the only part of the riverfront where the shoreline is still remains soft. On contrary, Thi Nghe canal all its length was already hard embanked, gone with it is the disappearing of the entire water-marsh ecosystem. This is one of the reasons causing urban flooding in HCMC nowadays.

Bason shipyard

It was first constructed in 1858 by the French. Bason Shipyard is one of the largest and more established ship-repairers in Vietnam. The shipyard has more than 130 year's experience in ship-repair and ship-building. Managing the redevelopment of this historical precinct requires references to the past in relation to the proximity of the Botanic Gardens, and the monastery, to the motorway, and to its history as a port. The site works till current with its original three logics (functions) that are represented by three main features: the graving dry dock, the ware houses and the pier. Not to argue about their inherent beauties, their values are questioned to meet the modern requirement of the new condition (Hiep, 2007).

City center waterfront

The city center waterfront has gone through various transformations. The contour of water's edge changed according to the landside activities. Materially, there is not so many things to small finger-piers nowadays. The narrow green strip houses several activities : café, ferry quay, restaurant, high-speed canos, and other informal public activities. The value of this area does not lie in physical factors but in the relation with the historic center. With the development,of Thu Thiem in the east side, the site from the backyard to the foreground of the city (Hiep, 2007).

Saigon port

Built since 1864, Saigon Port has played an important role in foundation and development of Saigon as the city was established to an important export-import base for French colonists in French Indochina. The port is programmed to be removed in the 2020. Because of the proximity to the city center, the land price in the District 4 is the second highest in Ho Chi Minh City. The vacant surface is at the risk of being built up (Hiep,2007).



Figure 67. Bason Shipyard
Source: www. maps.google.com (2010)



Figure 68. City centre waterfront
Source: www. maps.google.com (2010)



Figure 69. Saigon port
Source: www. maps.google.com (2010)

1.4 RELATIONSHIP BETWEEN HO CHI MINH CITY AND THE PORT

Development of the city and port

Sai Gon Port is a central port serving the economic development of Ho Chi Minh city and the southern part of Vietnam. Saigon Port was a small fishing village called Prey Nokor in a swampland before Vietnam annexed the territory in the 17th Century. Before annexation, it was inhabited by the Khmer people for many centuries. Then, founded in 1860 under the French, is the major seaport in southern Vietnam with a 130-year history of outstanding performance in the country's economic development. With its long history and continued development, SaiGon Port has had outstanding achievements in port operations through decades of servicing the large community of port users and shareholder. In 2006, the city announced a plan to shift Ba Son Shipyard, Saigon New Port, Saigon Port, Tan Thuan Dong Port and VegePort from the inner city to larger premises elsewhere so they could handle more and larger vessels. The relocation of Ho Chi Minh city ports from the city center to the suburbs were to be finished by 2010. In fact, Saigon Port, which consists of Nha Rong and Khanh Hoi ports, is set to move to a 100- hectare area in Nha Be and the Cai Mep-Thi Vai port complex to the southern Ba Ria-Vung Tau Province. Ba Son Shipyard, which finished clearing a 95- hectare area in Ba Ria-Vung Tau Province for its new facilities in 2008, said it was still awaiting government approvals to raise capital, possibly by transferring or leasing out its current property. Ho Chi Minh city People's Committee has recently approved the zoning plan under which Ba Son Shipyard will be cleared to build a complex including offices and hotels, according to a local newswire. Saigon New Port has shifted to its new site in District 2's Cat Lai and to the capital for equipment for its new project, Cai Mep Thuong Port, in Ba Ria-Vung Tau.

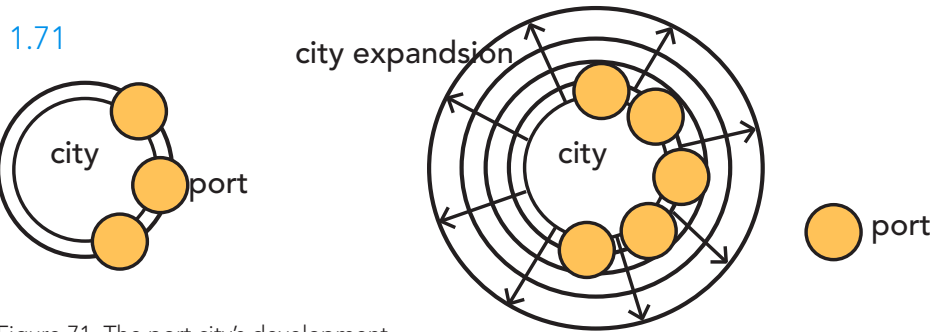


Figure 71. The port city's development

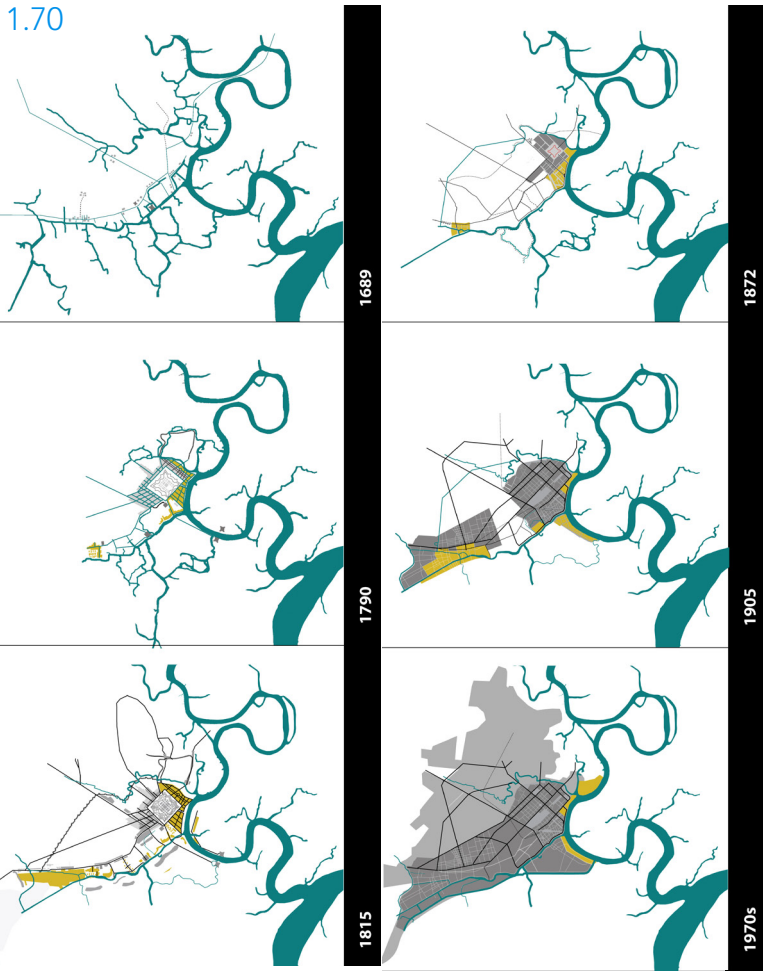


Figure 70: The port develop with the city's expansion and from history

CHANGE RELATIONSHIP BETWEEN THE CITY AND THE PORT

New Port, Ba Son Shipyard, and Saigon Port - are located along the west bank of the Saigon River. Due to the requirement of urban planning, the ports are planned to be re-located outside of this area to Cat Lai, Hiep Phuoc and Vung Tau Province. They are the steps preparing for the new urban planning on the west and east side of the river. The decision to build four new bridges solves the connection problem that prevented the city to cross the river for decades. From Saigon Bridge on the north, the vacant space available for the city spreads 6.5 km long until Te Canal on the south. Waterfront industries have cut civic life off from the water. Converting these sites could be outstanding improvements in the health of city by returning these vital locations to the public domain.

1.72

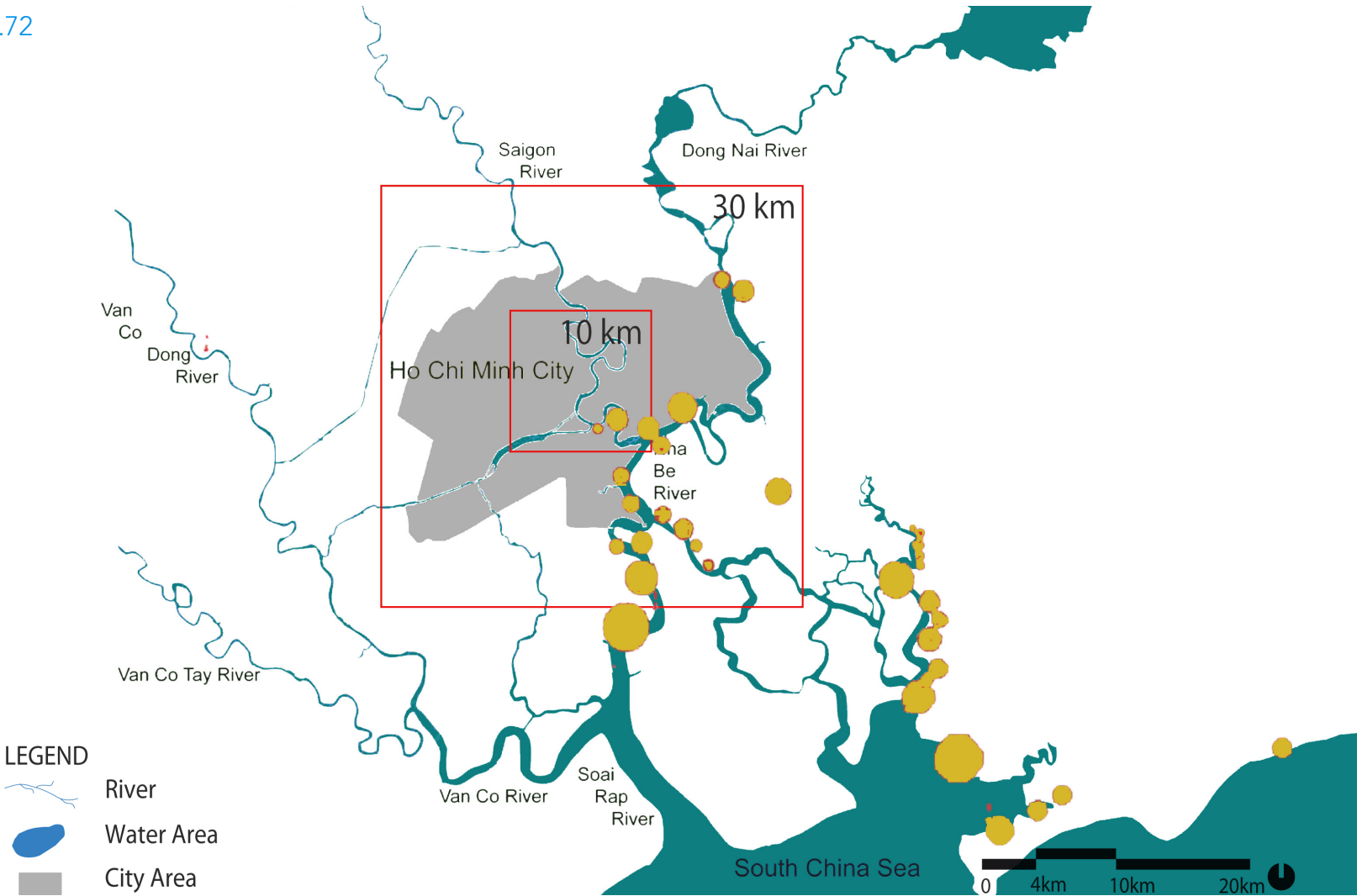


Figure 72. The port develop with the city's expansion and from history
Source: *Centre des Archives d'Outre-Mer in Aix-en-provence, France*



1.5 PROBLEM STATEMENT

Sai Gon Port in Ho Chi Minh city as many port cities around the world are faced with an outdated port in inner city area, which illustrates separated evident between the port city and port on a global scale. The layout and activities of the outdated port is increasingly conflicting between natural and urban environment that result in cutting off the city from the water. In fact, the city is confronted with large abandoned docklands and industrial areas along Sai Gon River.

The main problems have addressed along Sai Gon River with 6.5 km of length of waterfront. The riverbank is clearly giving way to urban sprawl, bad living environment, nondescript river-scape, no accesses and flooding.



Figure 74. Living environment of neighbourhoods along Sai Gon river, source: Do (2008)

Firstly, living environment of neighbourhoods along Sai Gon river is a serious problem. There is no green space and playground for children inside the neighbourhoods. Housing patterns are extremely dense with little floor area available per household. In fact, most of houses in this area are independent housing styles. These houses are narrow and deep. They are built by owners along streets and are not controlling architecture and planning, which includes many issues inside the neighbourhoods. The boarding house units and the individual houses were mostly erected spontaneously and often completely lacked technical infrastructure and transport connections. This has resulted in precarious living conditions for the inhabitants and in environmental problems for the city. Another is housing conditions were worse while housing demand was peaking; therefore, many people still live densely in small space, inadequate housing and poor environmental conditions are increasing.

Secondly, open public spaces to the river are closed by industrial barrier. There is less green space and unattractive parks on the edge of river. Only 10% residents participate in public space and very low number of people involve open space (HCM City People's Committee, 2010). Sai Gon River offers a great opportunity to develop waterfront although currently not much people access to public space along Sai Gon River.



Low accessibility: open public spaces to the river are closed by industrial barrier and highway

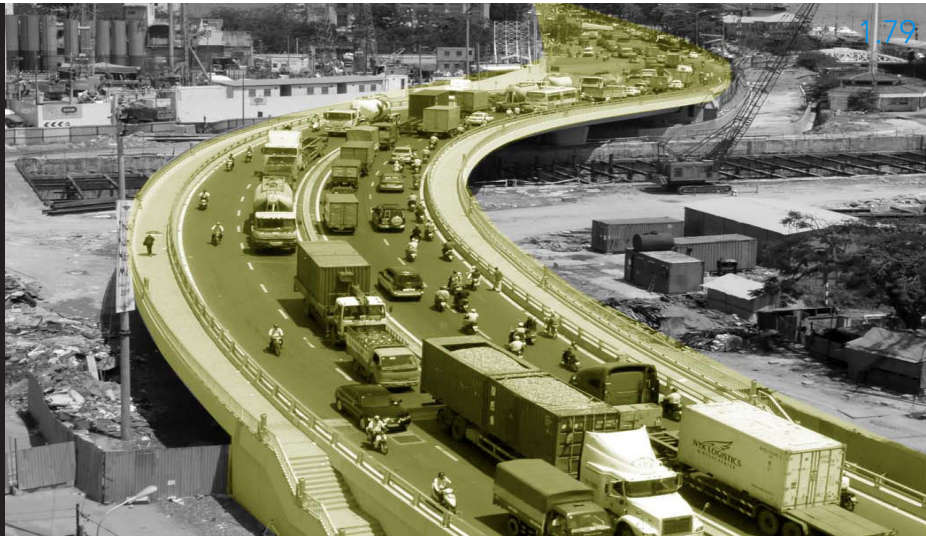


Figure 79-80: Existing Ton Duc Thang highway - 6 lines, source: www.googlemaps.com

In addition, port located in inner the city and flow of goods passes through the city addressing pressure on infrastructure as well as urban environment. Main road, Ton Duc Thang Street, where trucks delivery goods have cut off the connection between city and water. People are afraid of crossing through a heavy highway to Sai Gon River. For accessibility, existing points to the river are often almost impossible to find. In city center, city and river is divided by heavy highway with high speed and trucks running between settlements and the river. Access to the riverbank is blocked in various locations by industrial installations or port.

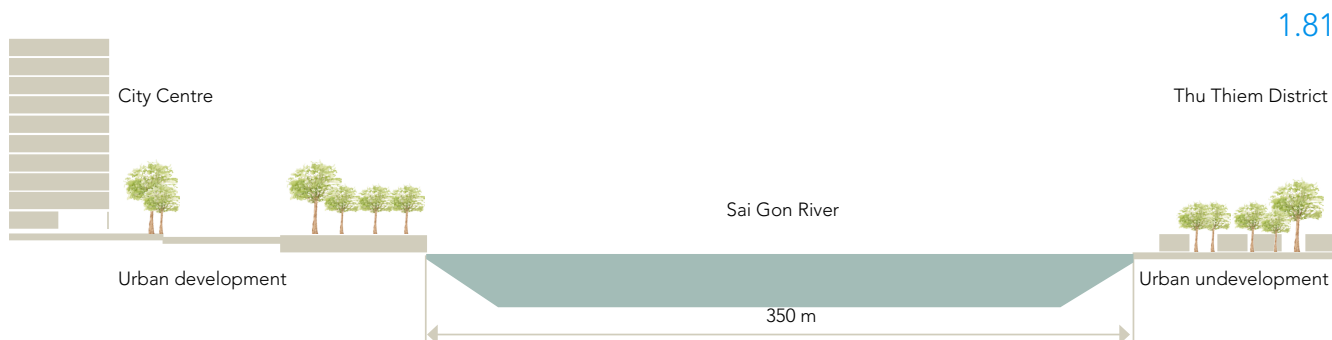


Figure 81: Unbalanced urban development between two sides of river

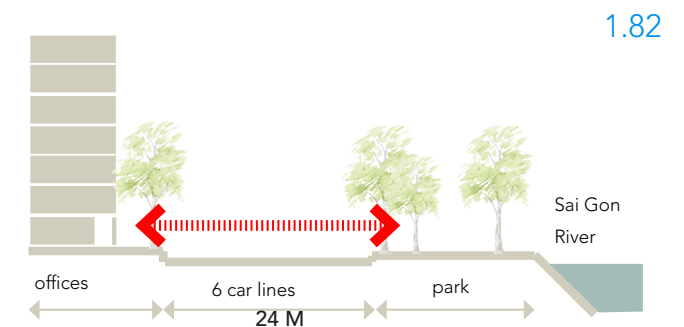


Figure 82: Highway in between city centre and Sai Gon river



1.83

Missing connectivity of two sides of the river causes unbalance of urban development between West and East of riverbank



1.84

Figure 83. Unurban development of East-bank of Sai Gon river

Source: [www. maps.google.com](http://www.maps.google.com)

Figure 84. Urban development of West bank of Sai Gon river

Moreover, missing connectivity of two sides of the river causes unbalance of urban development between West and East of riverbank. Only four main streets can come from city center to Sai Gon river and two bridges connect the center to another side of River - Thu Thiem District. Thus, two sides of the river are low connectivity, which is one of a reason why Thu Thiem District still is undeveloped and poor although Thu Thiem has great opportunity to develop as a modern district.

In architecture, at present the city offers a scattered image of buildings spanning a history of more than 250 years. There are many kinds of facade of buildings which located along Sai Gon River. They mix French architecture and modern architecture. Some blocks are built to adapt with offices and shops requirement. Almost any block of the city contains a mix of new row houses with 3 to 12 floors, old shop houses and villas – the latter now most often hidden behind recent shop extensions. There are a big difference of urban density between city center and other districts. Sai Gon riverbank currently is clearly giving way to urban sprawl. Urban reality is characterized by large industrial facade, office buildings, road and nondescript housing developments



Figure 85. Ho Chi Minh city suffers many serious floods and poor water quality
Source: World Bank report WPS 4136 2/2007

Ho Chi Minh city suffers many serious floods. Residents along the river are affected by flooding when high tides combine with prolonged and heavy rainfall. The city has evolved with regular flooding several times each year and 154 of the city's 322 communes and wards have a history of regular floors, covering close to 110,000 ha and effecting some 917,000 people or 12% of the city population. The reason is many canals were narrowed, shallowed and filled up. Hard surfaces from the built areas is increasing due to the uncontrolled urbanized process combine with climate change effect. According to report of Ho Chi Minh city Adapting with climate change, by 2050, the number and areas of communes that are affected in part by flooding increases, especially around the central elevated parts of the city. In fact by 2050, most districts will have an increased risk of flooding in part or in whole in an extreme event.



Figure 86. Risk flooding area in Ho Chi Minh City
Source: World Bank report WPS 4136 2/2007

Being the biggest urban agglomeration in Vietnam, Ho Chi Minh City has already faced water stresses and challenges in water resource management. On the other hand, water quality in surface waters, canals and groundwater sources in Ho Chi Minh city is poor and often does not meet the national biological and chemical water quality standards. Degradation of water quality results from domestic solid waste being dumped into the canals and from discharge of untreated or poorly treated effluent from domestic and industrial users. Poor dredging of drainage canals and inadequate canal maintenance works also effect water quality. Following Ho Chi Minh city Adaption to Climate Change Study Report, 75% of residents in the city have access to clean water. Problems are rivers and canals didn't keep free flowing and clean; and low-income residential areas is effected by human activities and no control local communities to clean water, no management to protect water quality.

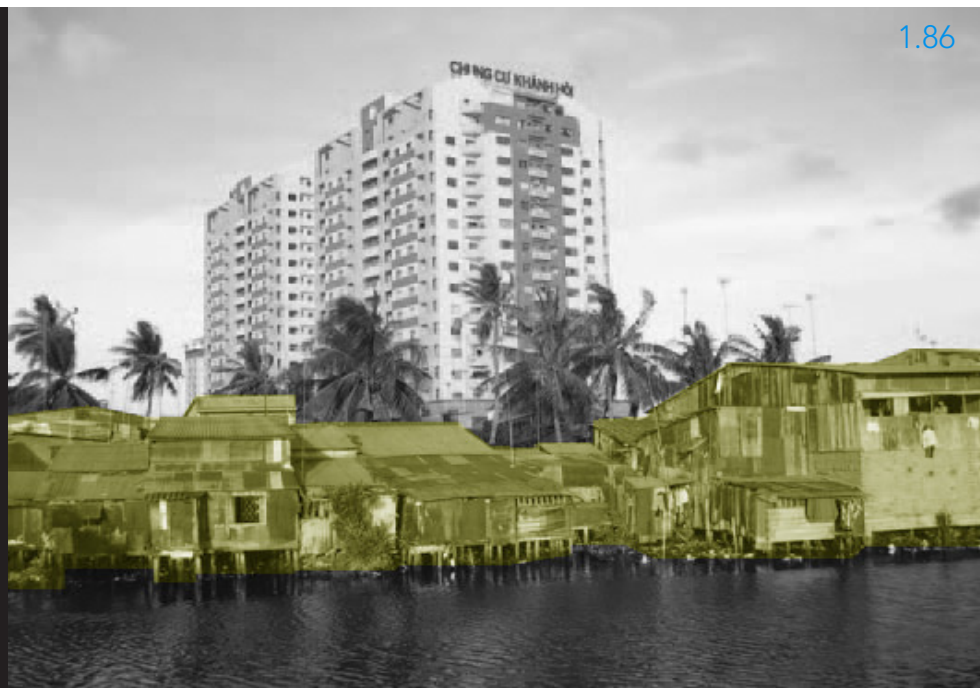


Figure 86. Slums located along canals of Ho Chi Minh, source:www.flickr.com

Finally, the rapid urbanization and modernization in Ho Chi Minh city has result in losing its own identity and characteristic image of the city. Water is a distinctive spiritual that characterize the urban structure of city for a long time. Since its founding in 1698, the city has been a water-based city where canals along with rivers and their subsystems have been the main routes of commuting and commerce. The original functions of the canal system have changed little despite the development of roadways and other more convenient means of transport: city's canal-based urban form still retains its unique water-based social economic structures including port-boat-market activities and canal handcraft villages, processing a rich cultural and religious diversity . However, the current city is lack of identity, connectivity, amenity and activity of a water city due to the bank of river is located by industry of port. The image of built fabric and life along Sai Gon River is currently muddled use of land, lose its identity and images.





1.87



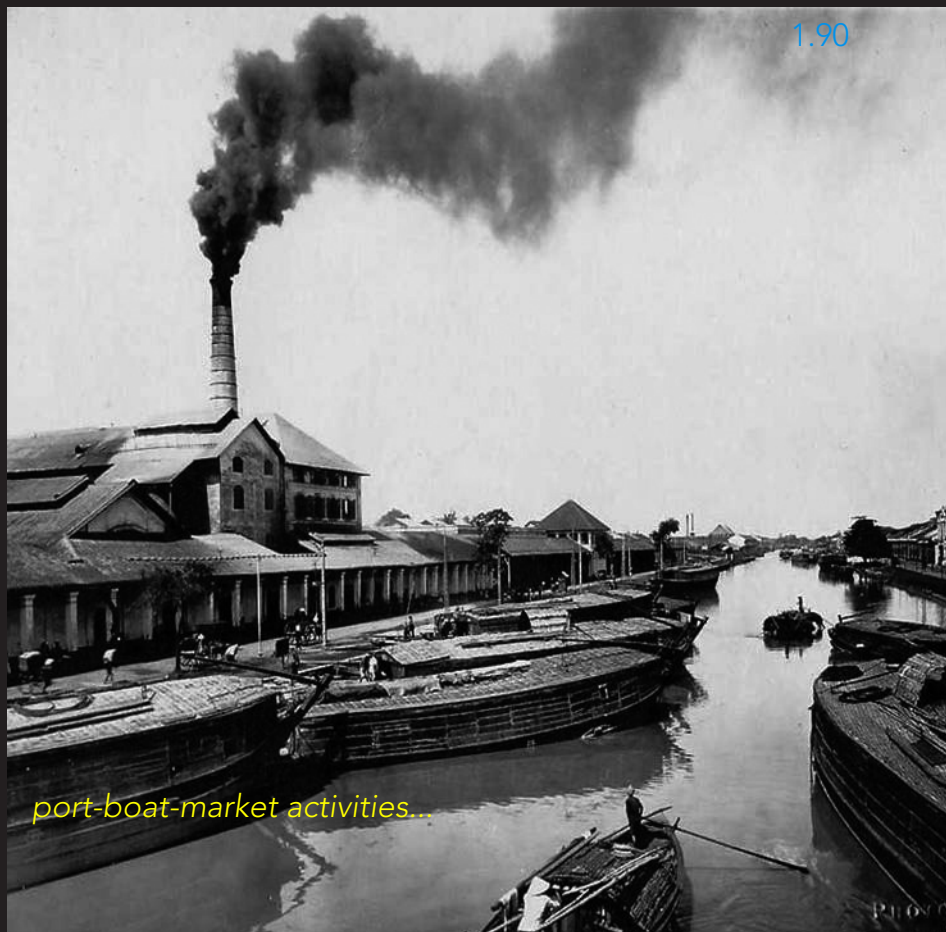
1.88

1.89



local small business...

1.90



port-boat-market activities...

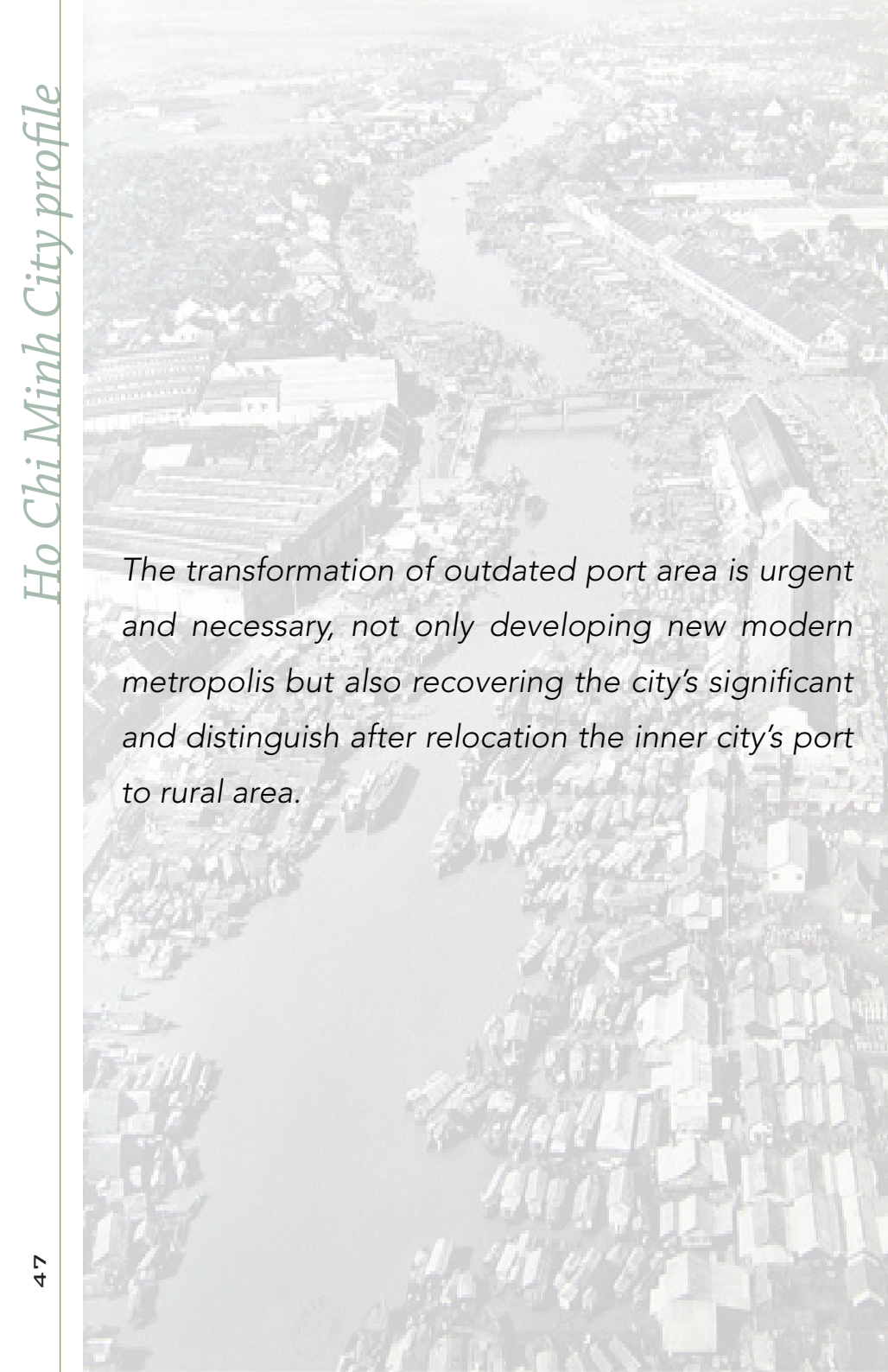
1.91



the port city...

...problems in today ...





The transformation of outdated port area is urgent and necessary, not only developing new modern metropolis but also recovering the city's significant and distinguish after relocation the inner city's port to rural area.

1.6 AIM OF THE GRADUATION PROJECT

In order to find a solution to what was defined in the problem statement; the main approach of this project is search for strategic plan and spatial functional qualities of Sai Gon waterfront when regenerating an outdated port area into attractive and lively urban development. The regeneration process aims to modify the urban fabric and to suit new conditions, social requirements and demands (Stouten, 2004). Therefore, basing on the current trends and demands of the city results in existing urban environment and problems, the regeneration will bring a new life for riverside to the city. This project's aim bases on the changing relationship of the city and Port as well as losing the role of port in the city following the policy of Government. However, the transformation of outdated port area is urgent and necessary, not only developing new modern metropolis but also recovering the city's significance and distinguishness when relocation the inner city's port to rural area.

The project research the changing in the urban strategy of a port city tends to offer a contribution towards envisioning a new pattern of re-development for the city. The approaches are engaged in the search for new opportunities to involve the transformations of old port area to attract business and investment. More specifically, the project discusses the way to improve the current situation along the River where has a great impact on the urban environment, identity and the image of the city itself. The final product is a riverside redevelopment which is promoted and supported by strategic plan and spatial functional qualities of the water city. This aim adds value and possibilities to adapt new requirement of the port city to strengthen a liveable urban area in the city centre. This research also rediscovers the waterfront's role into the city's spatial and regains its distinctive characters.

1.7 RESEARCH QUESTIONS

This project will deeply research the problems and find solutions of an outdated port area in order to regain the distinctive waterfront of the port city and enhance a new lively urban environment as an attractive, sustainable and safe place. The main approaches will be achieved by answering these research questions to get an efficient way. The main research question that should be answered is the following:

What kind of strategic plan and urban design are needed for regeneration of an old port area to strengthen a livable urban environment along the Sai Gon River in Ho Chi Minh city, Vietnam?

Sub-research questions:

Numerous questions underlie the pursuit of my research. They are presented in table 1, together with their corresponding conceptual tools and research method

1. What are characteristics of a port that tend to change a relationship between the city and port?
2. What experiences can be learned from the transformation of waterfront Europe cities to apply the principle for Sai Gon Riverside?
3. What are conceptions and programs of planning Sai Gon riverbank to achieve attractive and lively urban development to create the distinguished water city?
4. How does the new transformation area create the balance and connection between two sides of Sai Gon River? How can the new transformation area improve the access points and orientation towards the River?
5. What plans can solve the flooding effects and water pollution on Sai Gon River?
6. How can the regeneration of an old port enhance the image and unique identity of Ho Chi Minh city?

Chapter 2



Methodology

2.1 METHODS

In this chapter I will address the methodology and organize the process in order to find the way to achieve the final goal. Firstly, the diagram 2 list the organization in a logical process, which introduced as a methodology to achieve the main goal of this thesis plan.

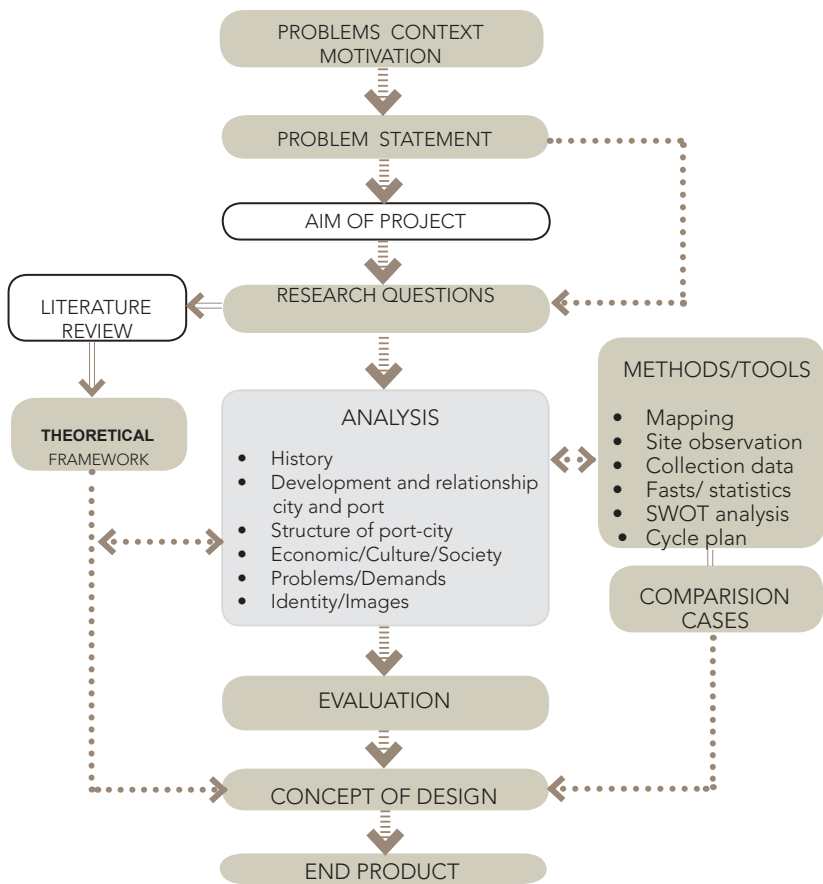


Diagram 2: Framework of the graduation project

To answer the main and subresearch questions, the research will be discussed basing on list of five methods: first, the theoretical framework; second, comparison case study; third, methods study by combine mapping, site observation and collecting data; fourth, SWOT analysis of the Ho Chi Minh City and the port and finally, plan cycle (diagram 3). Following is a description of the various methods that are intended to be used during research. For each of these methods a description in depth how the the method is put to use and the approaching behind it.

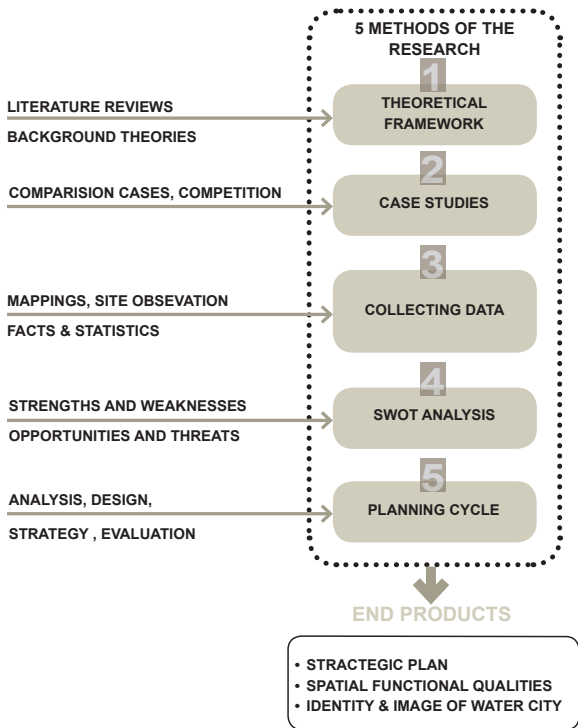


Diagram 3: Methods of the research

A. METHOD 1: LITERATURE REVIEW

The theoretical framework includes literature reviews and background theories of urban regeneration context to contribute the concepts of regeneration waterfront. In order to approach of this research I will fully review literature from Meyer (1999), Tatjer (2001), (Marshall,2001) in search for the concepts of regenerating industrial areas into an attractive and liveable urban environment, creating new spatial economic condition, local community involvement and high quality of living. The literature reviews will deeply research efforts of waterfront redevelopment to regain the distinctive port city and to enhance a new lively urban environment as an attractive place. The main approaches will be achieved by answering these key questions. What are characteristics of a port that tend to change a relationship between the city and port? What are waterfront transformation roles to redevelop socio-economic, reshape urban spatial and enhance its distinctive image. How is waterfront transformed towards an appropriate urban structure? What experiences can be learned from the transformation of waterfront in Asian and Europe cities to build up the concepts of waterfront regeneration?

The main results of literature reviews process deal with the conception of relations between the city and port, the challenges and opportunity of port cities in terms of regeneration of the waterfront. The next aspect is addressed by waterfront redevelopment which has transformed local economic and improve social community. The third is an answer of how waterfront's regeneration enhances urban space-making quality and spatial structure of the water's edge? In addition, waterfront's revitalization regains the city's identity and image. Finally, facing today's ecological and environmental issues, flooding protection and water management are vital factors related to future urban development in term of sustainability. Waterfront regeneration deals with water risks to contribute a better living environment, creating value for city development.

Goals of literature reviews:

1. Urban regeneration concepts
2. The city and the port relationships
3. Waterfront regeneration concepts

RELEVANT LITERATURE

CARMONA, M. (Ed.) (2003a) Globalization Urban Form & Governance, The response of city ports in the Northern Hemisphere, Alfa-Ibis Network, Delft, DUP Science.

CARMONA, M. (Ed.) (2003b) Globalization Urban Form & Governance, The response of city ports in the Southern Hemisphere, Alfa-Ibis Network, Delft, DUP Science.

MALONE, P. (Ed.) (1996) City, Capital and Water, London, Routledge.

MARSHALL, R. (Ed.) (2001) Waterfront in Post-industrial Cities, London and New York, SPON PRESS.

MEYER, H. (1999) City and Port, Transformation of Port cities London, Barcelona, New York, Rotterdam, Rotterdam, International Books.

STOUTEN, P. (Ed.) (2009) Reader Studio Urban Regeneration, Delft.

VU,H.(2006) Canal-side highway in Ho Chi Minh city, Vietnam, Issues of urban cultural conservation and tourism development, GeoJournal 66, pp165-186

B. METHOD 2: COMPARATIVE CASE STUDY

The research finds successful waterfront projects as a source of inspiration for waterside planning and development in search for the concepts of design to apply for Ho Chi Minh city case. This method focuses on learning from a good example. "Quality cannot only- and not primarily - be described in words. Quality reveals itself mainly in built examples" (Bodenschatz, 2005). The research was chosen as the criterion of good project, which comprises design for planning and building on riverside sites in London - Carary Wharf project. The case study build up the concepts of design spatial that could give ideas and inspiration to conceive waterfront redevelopments. Learning from good experiences from case study is not a question of copying and transposing designs indiscriminately.

The results of this method are visualization and argumentation of what are good and bad experiences of urban regeneration waterfront. London and Shanghai are chosen as main cases to research for this part. The case in London focuses on story of regeneration process along Thames river and one waterfront project - Carary Wharf. Pudong project is an another case of redevelopment of waterfront in Asian countries. This part is developed in details in the comparison of urban spatial in Evaluation and conclusion chapter and case studies are explained in below pages and in appendix 1.



HO CHI MINH CITY, SAIGON RIVER

Project name: Regeneration Sai Gon's port

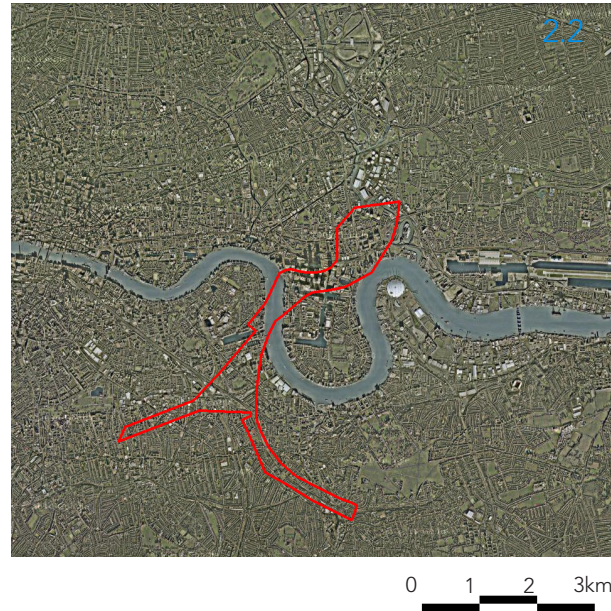
Main programme: Office, apartments, leisure, green public spaces

Land area: 160 ha

Time line: 2011-2035

Approach: Redevelop Sai Gon's waterfront as an attractive place along the river for future demands of unique living, leisure and working environment.

- Regain public accesses to the waterfront and link-ages of two sides of the river
- Protect flood and combine flood defense with ecological corridor system along the river
- Enhance local cultural identity and images in order to provide a distinctive waterfront



LONDON, THAMES RIVER

Project name: Canary Wharf, London

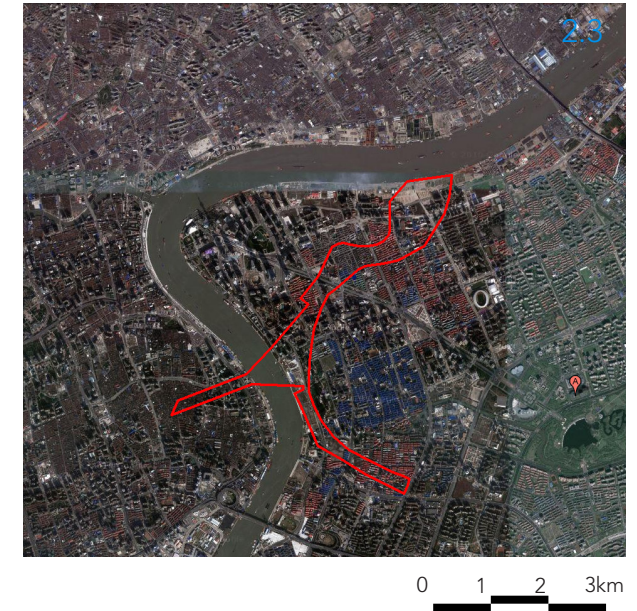
Main programme:

- Office and apartment
- The international finance centre is created as a dynamic business community in West India Docks
- Two thirds of space will be landscape open space with a public piazza twice the size of Trafalgar Square
- Place shops, restaurants, cafes, health centres and leisure facilities, making it a mainstream area in the busy capital city

Land area: 1,725 ha

Time line: 1980-1998-2010

Source: Meyer, H. (1999). *City and Port, Transformation of Port Cities*
London, Barcelona, New York



SHANGHAI, HUANGPU RIVER

Project name: Pudong New Area, Shanghai

Main programme: Office, apartments, leisure, retail, exhibition/congress, industrial buildings, port, docks and warehouse, airport.

Land area: 52,200 ha, among which:

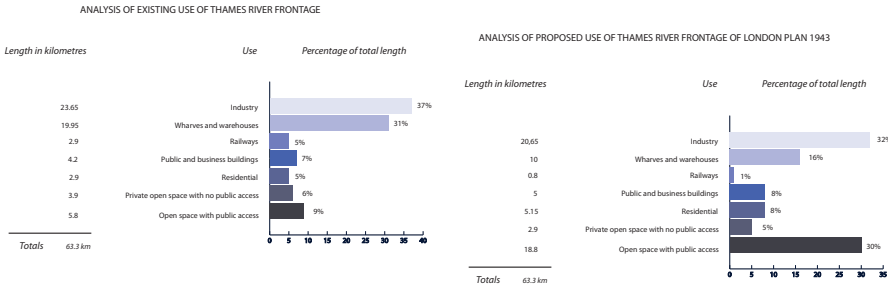
- Lujiazui Functional Zone 4,277 ha;
- Waigaoqiao Functional Zone 9,713 ha;
- Jinqiao Functional Zone 7,486 ha;
- Zhangjiang Functional Zone 11,531 ha

Time line: 1990

Source: Zandbelt & vandenBerg, 2005; Sun, 1999; SPNASB, 2005

REGENERATION’S WATERFRONT

LONDON



The international finance centre at Canary Wharf in the West India Docks created the most comprehensive and coherent dynamic business community in Europe. It occupies a site of 29ha and is designed to provide buildings totaling more than one million square meters of office accommodation. Two thirds of the space will be landscaped open space with a public piazza twice the size of Trafalgar Square.

The Canary Wharf Development Company will develop 22 major buildings with retail and leisure facilities. There will be two 400 - bed hotels, 6500 car parking spaces and a series of interconnected landscaped courtyards, parks and plazas.

Wharf is a thriving and popular business district located in the middle of London. This elite shopping area is home to a great range of shops, restaurants, cafes, health centers and leisure facilities, making it a mainstream area in the busy capital city. One of the latest residential developments in the area is incorporating eco-friendly aspects into its construction, in a unique and exemplary bid to help the environment.

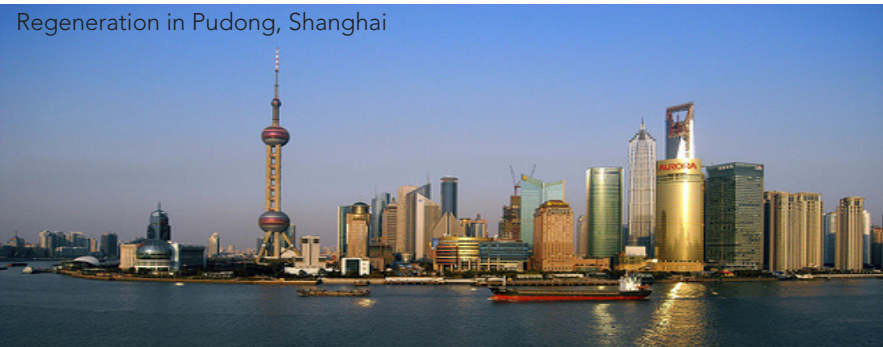


Source: www.letsbuypropertyin.com/green-building-in-canary-wharf

SHANGHAI

Shanghai’s waterfronts are an important aspect of the city’s morphology. There are 697 square kilometers of water area and more than 3,000 rivers, creeks and streams in the metropolitan area of Shanghai. The city’s industrial activities have heavily polluted many of these waterways. However, as part of the general urban improvement of the city there has been a concerted effort to improve the quality of these water systems (Marshall R.,2001).

The Pudong covers some 200 square miles of land and includes some 2.5 million people. With the opening of the Pudong, the Huangpu shifted from being the eastern edge of the city to becoming the center of the city. It now exists as the join between Puxi and Pudong, the old and new Shanghai. The scheme focuses on the redevelopment of port properties now that major port functions have shifted to the Yangtze River. Currently only a small section of the waterfront on the Huangpu is accessible and the primary motive of the plan was to extend this accessibility to make the waterfront an asset for all. The redevelopment aims to make the waterfront the heart of the city’s cultural, social and civic life. The waterfront has, for a very long time, been looked at as a nasty, polluted environment by the residents of Shanghai. With the relocation of many industries and stricter environmental controls the water quality has improved to a point where people once again desire to be at the water’s edge (Marshall R.,2001).



COMPARISON OF COMPETITIONS

According Vietnam Government policy the old port inner City will be relocated during ten years to near the sea. The outdated port area which located closely with city center has opportunities to involve transformation into new urban development. As a result, there is the competition: "Conceptual urban design competition for the existing expanded center of Ho Chi Minh City" in 2007 and eight international competitors have participated.

These regeneration projects are examined as studying experiences for researching an example strategic plan of my project. They show how urban river landscapes can be designed and what development of future visions can be concerned for urban space along the Sai Gon river. This part is a look at three projects in the competition to discuss experiencing similar challenges in search for solutions and a suitable future plan.

Figure 2.4.. Project of Korn



View from Sai Gon River, design new urban in New Port area

Figure 2.5. Project of RTKL



New redevelopment along Sai Gon River

Figure 2.6. Project of HCM City University of Architecture



C. METHOD 3: COLLECTING DATA

This method focuses on the formal and functional description of the city context in the general analysis on the basis of photographs, historical pictures, statistics, data and maps.

Mapping:

The aim of mapping is to look at the relationship between the city and the port, the city and water structure from history to current in along the river. It discusses several types of maps which are used as support of design decisions. In addition, in order to towards a strategic plan and design, making maps to collecting data is an important method. The method addresses the making of maps comprises not only collecting data, but also to descriptive study.

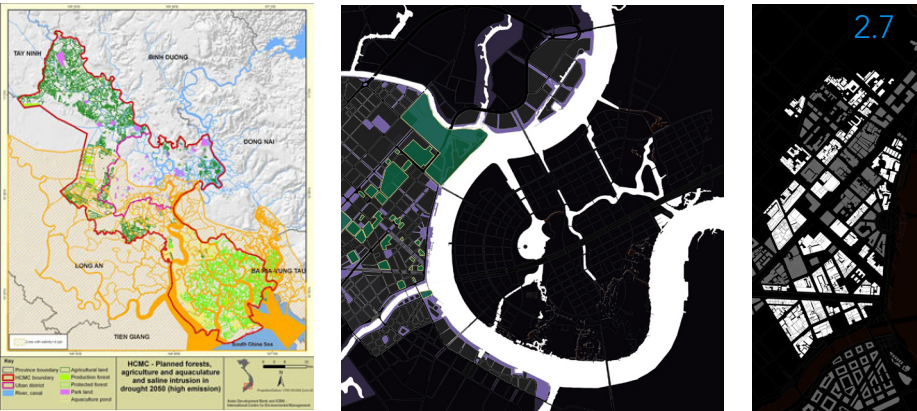
- Maps at different scales of the city (regional scale and in details)
- Maps of relations of the city and the port
- Maps of relations of road networks, natural elements, housings, landscapes, flood protection and functions
- Cross sections

Site observation :

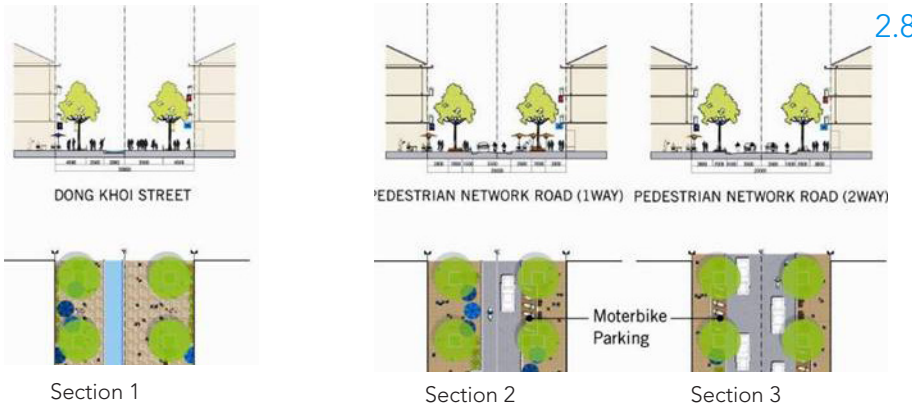
It is important method to understand the problems and find a relationship between mapping and facts, statistics by taking a field trip at the research site. In this field trip I completed finding information by directly observed riverbank and city centre. In this part, photographs of current situation are results of visitting the Sai Gon river and the port in Ho Chi Minh city.

Facts & statistics :

Studying and analysis by statistic and data to understand the means and statistical tests for observation. This method is used for analysis and support for SWOT analysis.



Maps in reginal scale Maps in local scale Maps in details



Section 1 Section 2 Section 3

Figure 2.7-2.8. Maps and sections, source: drawing by Niken, 2007

D. METHOD 4: SWOT ANALYSIS

SWOT is a planning tool used to understand the strengths, weaknesses, opportunities, and threats involved in analysis part in the project. It involves specifying the objective of the project and identifying the internal and external factors that are supportive or unfavourable to achieving that objective.

SWOT analysis is a strong tool for analysis Ho Chi Minh city situation and the port. This method is a vital tool to define main problems, challenges and potentials of the Sai Gon waterfront and the city. The analysis explores the realities on site to highlight the values and logistics of the project. This method also finds out the demands of the city for the development of future vision. SWOT focuses on main aspects: houses and buildings, public and green spaces, transportation and accessibility, connectivity, urban fabric, identity and image, floods and water management, architecture.

Strengths

- Economic development / Investments / a mega-city
- Population and labors
- History / local communities

Weaknesses

- Houses and buildings / quality of living / poverty
- Open spaces and green spaces
- Traffic / connectivity / accessibility
- Riverbank's architecture and landscape / lost cultural images

Opportunities

- Houses and buildings in terms of needs to improve quality of living environment
- Embankments are needed publicly accessible and communities deal creatively and productively with many demands on riverbank.
- Architecture and landscape improve the urban 'face'

Threats

- Flooding and water management
- Climate change

The SWOT Matrix

The project researched the SWOT matrix towards a concept of strategic plan

S-O strategy - pursue opportunities that is a good fit to the city's strengths

W-O strategy - overcome weakness to pursue opportunities

S-T strategy - identify ways that using the strengths reduce external threats

W-T strategy - establishes a defensive plan to prevent the city's weaknesses from making it highly susceptible to external threats.

SWOT / TOWS Matrix

| | Strengths | Weaknesses |
|---------------|----------------|----------------|
| Opportunities | S-O strategies | W-O strategies |
| Threats | S-T strategies | W-T strategies |

Table 3. SWOT / TOWS Matrix

As a result of SWOT matrix, a concept of strategic plan should be focused on:

S-O strategy - searching for high quality living urban environment and accessibility to the river

W-O strategy - redeveloping ecological zone of the Sai Gon River, green corridor and riverscapes

S-T strategy - Flooding protection

W-T strategy - Enhancing local identity and image

S-O strategy - Searching for high quality living urban environment and accessibility to the river. New residential development and nearby public space is introduced. Besides, a solution to link between neighbourhoods and water should be designed in order to provide attractive and safe pedestrian routes to access to river sides.

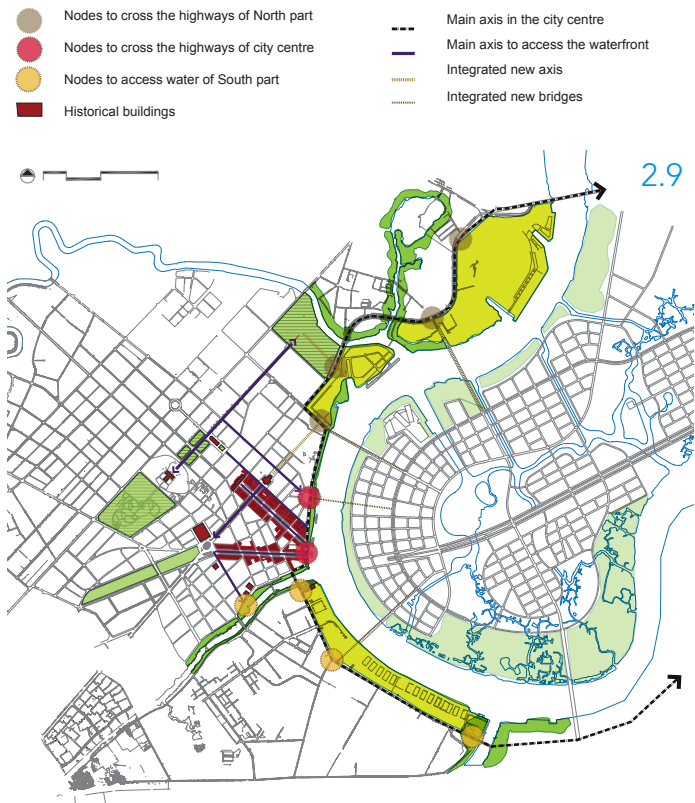


Figure 2.9. Strategy for improving quality of living environment and important nodes for accessibility

W-O strategy - redeveloping ecological zone of the Sai Gon River, green corridor and riverscapes, that are attractive, environmental friendly, enhance recreation and tourism, and improve sustainability and safety.



Figure 2.10. Strategy for ecological zone with green corridor connecting two sides of the river

S-T strategy - finding the ways to reduce flood risk and improve the spatial quality of the urban environment. Developing the plan with expanding rainwater storage capacity, rapid removal of excess rain is necessary. Water storage in urban parkland where the ecology can flourish and recreation is possible.

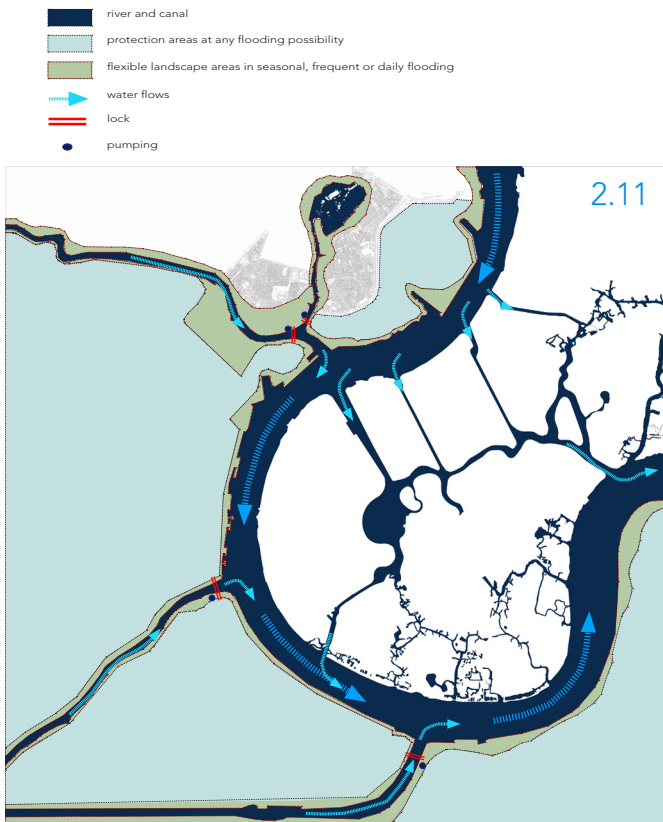


Figure 2.11. Strategy for flood protection

E. METHOD 5: PLANNING CYCLE

The project uses the cyclical thinking and working method - the planning cycle (Roozenburg and Eekels, 1991).

The basic cycle comprises the following phases: analysis-evaluation-strategy-design. The cycle has great symbolic and practical significance in present-day thinking in urban design and planning (Hulsbergen and Kriens, 2007). It is important to focus on phases and actual questions:

Analysis:

- What is guiding the research?
- What is the project looking for?
- What does the research want to achieve?
 - Strengths and Weaknesses
 - Opportunities and Threats
- Which problems are crucial?
- Which locations are crucial?

What , how and why?

Design

- What can it be compared with?
- What can be learned from it?
- What is structure?

Where and why?

Evaluation

- Has the goal been achieved?
- Has the result envisaged been realised?
- Is the whole well-organised and complete?
- Has the cycle been completed?
- Are the texts and drawings legible?
- Is it a responsible process?
- What lesson can be learned?
- What would you do different next time?

Strategy

- What are the important and less important aspects?
- What now and what later?
- What steps do you propose to take?
- Who are the political and social actors?
- What are the strategic aspects?
- What are in globally and in a critical detail?

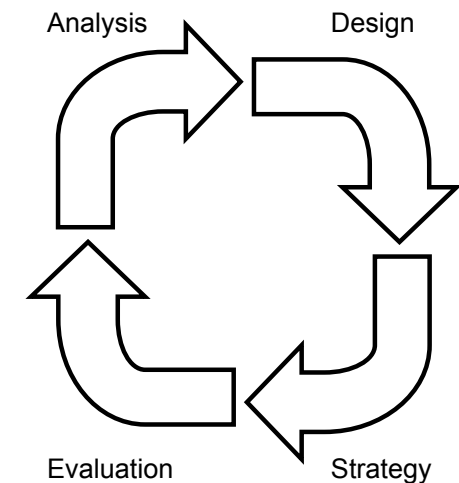
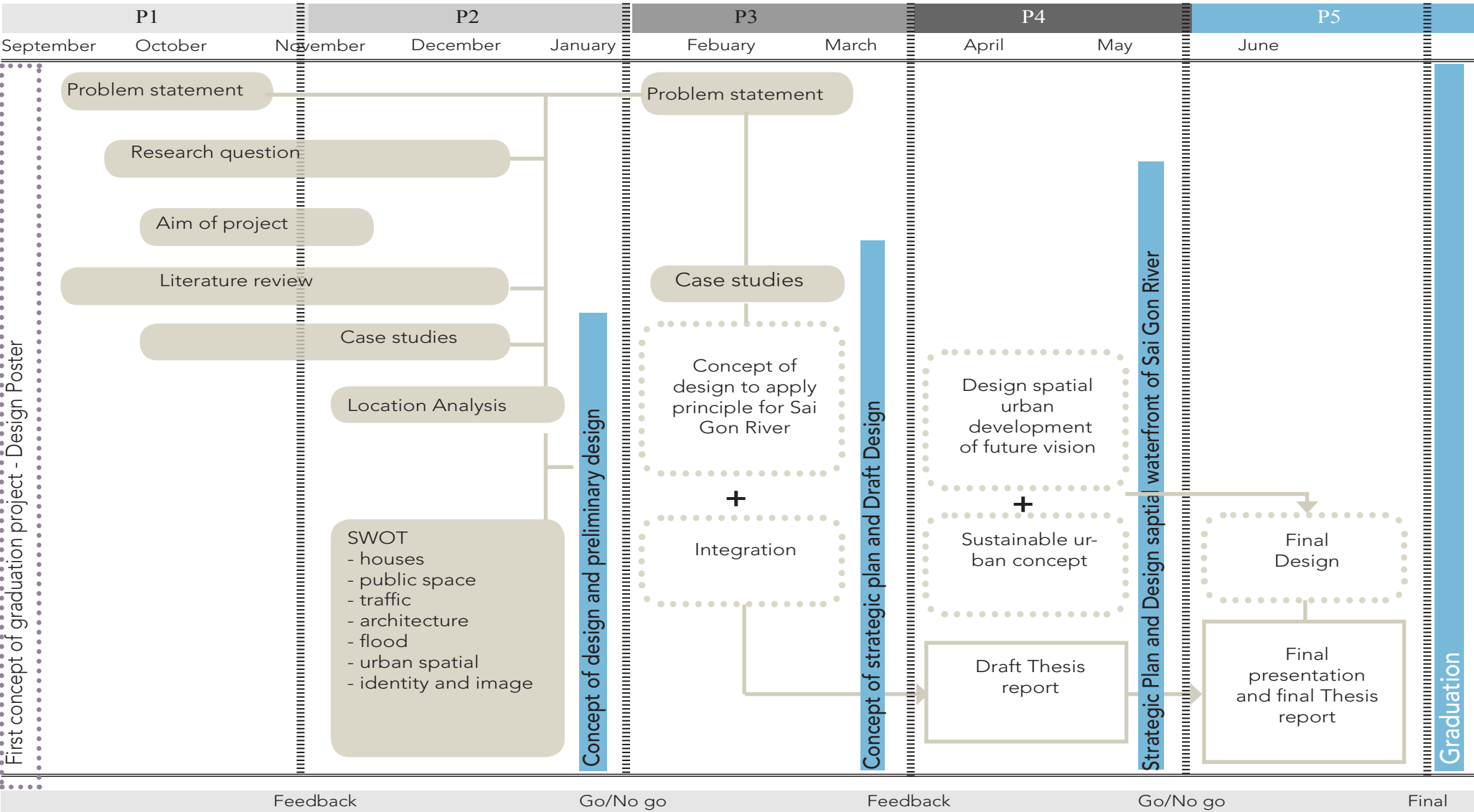


Figure 51. Planning cycle in education
(Roozenburg and Eekels, 1991)

The method provides a framework and demands of the project. This method helps to avoid confusion in working by building up an cyclical thinking and working in order to get an approach for the graduation project.

2.2 SCHEDULE

The schedule indicates an overview of the steps, process and phasing of products. The phasing of this project bases on presentation moments and the actions which should be developed during the research process. The graduation project will take one year which starting at the beginning of September 2009 and finishing with the final presentation in June 2010.



2.3 RELEVANCE

A. Societal Relevance

This project aims at the solution of pressing societal challenges of current existing situation to redevelop an old port area in inner the city. The regeneration to achieve a sustainable urban environment as an attractive place for high quality of living, working and open space related with water. In fact, there is already a huge demand from society asking for transformation an old port area along Sai Gon River. In addition to research from analysis of Ho Chi Minh city, socio-economic conditions have remarkably changed, which has improved citizen's income level. It is expected that this situation will continue and accelerate by considering the current growth trend. This sort of change will affect the people's demands or lifestyle, and exultantly need to provide better living environment. Moreover, relocation of old port brings potential for transformation this area for new urban development. What is missing in city centre and what programs will be applied for an old port area is a main question of this project. The other concerning is the relationship between spatial, structure of new transformation and social context. The design of regeneration bases on distinctive characters, reality and significance of the port city. How to recover the city in distinguish and modern metropolis to achieve usability, value and adaptability with social demands is a question for the final approach which want to regains its identity and images.

B. Scientific Relevance

The outcome of this research will be reflected in both general and academic debate about what is strategic plan of regeneration which can apply in old port area in Ho Chi Minh city. Firstly, policy of Government about relocation old port and time of moving the port is very important. Secondly, in order to find what are programs and functional facilities necessary for new urban development to create new images and in search new identity for the city. Another contribution to the academic field will be the innovative approach towards regeneration purpose. Urban transformation aspect is a strong tool to get goals of the project.



Figure 2.12. Relevant books

Chapter 3



La cité aux mille ponts

Theory

3.1 CONCEPTS AND DEFINITIONS

It is pertinent to discuss definitions of conceptions in the research questions in order to understand what they means and encompasses. Firstly, urban regeneration can be classified in a number of ways, but for the purpose of this project, Turoks (2005) said that regeneration aims enhance skills, capacities and aspirations to enable ‘people, business and place’ to participate in and benefit from opportunities. Regeneration also aims to improve economic competitiveness in terms of business performance to create more local jobs and prosperity. To attract both people and business, regeneration aims to improve the general appeal of a place. According to Tallon (2010), dimensions of urban regeneration can be broadly describe as economic, social and cultural, physical and environmental, and governance-related in nature.

Approaches to urban regeneration

| Dimension | Concern |
|-------------------------|---|
| Economic | job creation, income, employment, skills, employ ability, development |
| Social/ cultural | quality of life, health, education, crime, housing, quality of public services |
| Physical/ environmental | Infrastructure, built and natural environment, transport and communication |
| Governance | Nature of local decision-marking, engagement of local community, involvement of other groups, style of leadership |

Secondly, key theme of the project is the concept of ‘liveable urban environment’. Newman (1999) identified “liveable” is about human requirements for social amenity, health and well-being and includes both individual and community well-being. Following Pacione (1990), “liveable urban environment” is about quality of life in the nation: the degree to which its provisions and requirements fit with the needs and capacities of its citizens.

It is important to understand the concept of regeneration waterfront to revitalization of a liveable urban redevelopment. The word ‘waterfront’ is identified as the urban area in direct contact with water. These areas in riverside/seaside cities correspond usually to the area occupied by port infrastructures and port activities, abandoned and vacant natural lands which were never used, or squatter and unorganised small scale industries developed along the water edge. The renewal of urban waterfronts can be seen as a keynote of economic development in post-industrial cities around the world (Millspaugh, 2001). Waterfront redevelopment is related to the recent changes in the urban economies of port cities due to global forces and information society (Tatjer, 2001). Moreover, waterfront projects are related to the new conception of cities and its management, that is, to create spaces in the city for the location of companies, houses and attractions for investors, citizens and investors. Hoyle, Pinder and Husain (1988) said that “skillfully done, waterfront renewal can bring new life into dead and dying urban areas and can create a wide of new economic and social opportunities”.

3.2 THEORETICAL FRAMEWORK

In formulation of a theoretical framework for researching and scope of this project it is necessary to briefly some concepts about urban regeneration. Urban regeneration, in general, can be considered as developing a vision and approach in a complex urban context which includes a variety of spatial scales, sectors, actors and disciplines. Urban regeneration needs to respond to changing context with new economic concentrations in cities that are accompanied by new markets for new population groups within the existing urban population (Sassen, 1992). This situation is sometimes in conflict with the living conditions of specific groups of the urban population trapped in economic difficulties, excluded from opportunities and rights enjoyed by socially integrated members of their communities (Mingione, 2004). Two basic concerns have become part of the agenda in all new strategies for urban regeneration, namely the search for lasting solutions and an integrated approach to physical, environmental, social and economic programs. The main aspect that should be derived from the theoretical framework is knowledge of history, development, structure and relationship between the city and port; and port city. It is also require understanding the reason why the port was becoming outdated and result in division the city and port and how to redevelop a old port area. In the approach of this research I will review three books and a journal. Firstly, the city and Port book of Meyer (1999) as a main theory review, which will be researched for the transformation of Port cities in Europe. These port cities are evident to illustrate the transformation of old ports or docklands area can recover the character, identity and image of the city to create new development areas as a successful urban environment.

The second one is Globalization Urban Form and Governance No.9 , edited by Carmona (2003) which is collection of numbers of literature from Faculty of Architecture in TU Delft. In this book is reviewed the changing structural conditions of port cities, the new demands and the new functions that emerge and in the way in which port cities are dealing with the new challenges. The third one is city, capital and water book which is edited by Malone (1996). This book examines the economic and political forces behind a number of waterfront developments and provides an overview of waterfront projects. In that about thirty waterfront projects were examined at the conference, it is clear that the waterfront is a major factor in the physical and economic development of many cities. Moreover, a journal of Vu (2006) , "Canal-side highway in Ho Chi Minh city, Vietnam, Issues of urban cultural conservation and tourism development" develops the idea of the cultural factor in my projects. This article focuses on how to revitalize the urban cultural identity that is possessed by the canal system and to enrich it as a contemporary valuable layer in the city's dynamic regional development, it is critical to implement cultural conservation and tourism in the development of canal-side transportation and supplementary projects in the canal vicinity.

The theories help me achieve the argumentation for my hypothesis, which will contribute the logic methods to get final goals and concentrate the approached interventions.

The details of theory paper is presented in appendix 2.

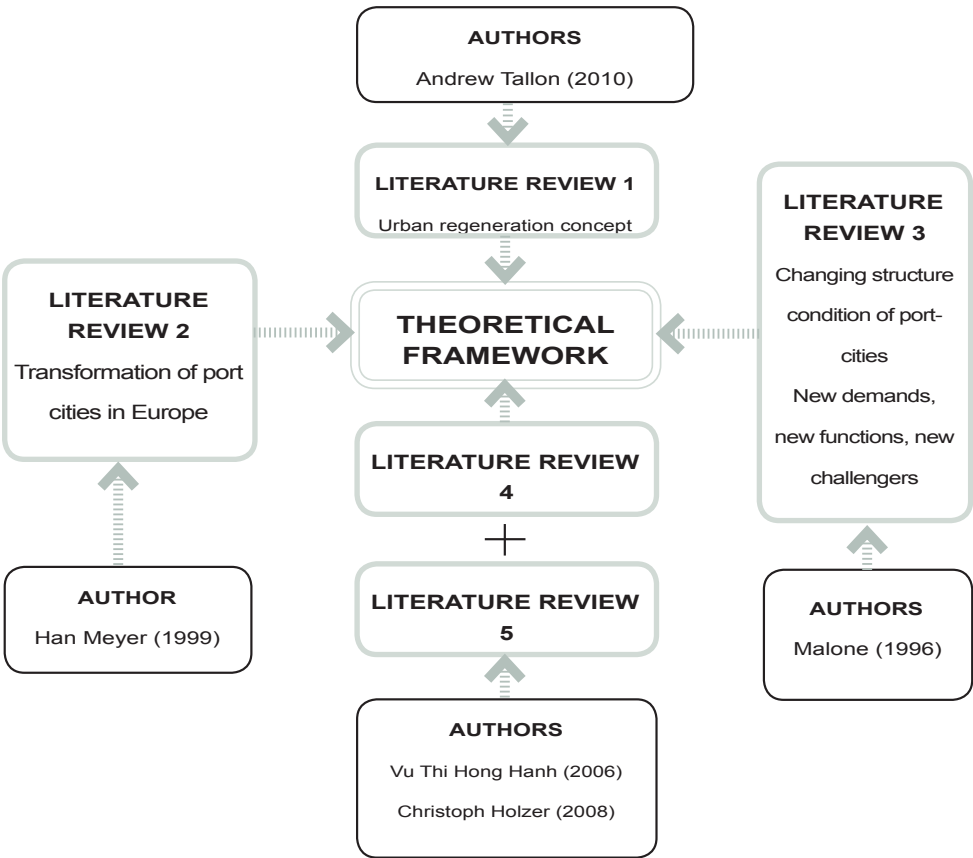


Diagram 1: Theoretical framework

Abstract of the theory paper:

A Port City Regains Its Waterfront

Regenerating outdated port area and strengthening the unique characters of a water city

The paper discusses waterfront redevelopment when regenerating outdated port areas in order to attract the port cities rebuild economic, social, spatial structure and cultural growth, expecting to strength their competitive position. The scope of the research firstly focuses on relations of port and city to find solutions of conflict in current urban structure and old port areas located in inner city. Waterfront redeveloped project as a major asset for the urban community which can bring new life into unattractive urban areas and create a wide of new economic and social opportunities. The research measures an evaluation of how the re-use of waterfront spaces provide a unique opportunity to gain attractive urban revitalization, place the identity and remaking images of the water city.

In order to approach of this research I will fully review literature from Meyer (1999) to build up argument of transformed outdated port areas to redevelop urban waterfront and improve spatial structure of port cities. In addition, the paper of Tatjer (2001) regards an analysis and a framework of socio-economic dimension in the waterfront redevelopment. The third one is Waterfronts in Post-industrial Cities (Marshall,2001) introduces an overview of waterfront projects in search for programs of regenerating industrial areas into an attractive and livable urban environment, creating new spatial economic condition, local community involvement and high quality of living. The outcome of the paper will be summarized three literatures to build up a significant concept of redevelopment waterfront and results tend to the question how waterfront feature creates strongly a distinguish water city? The purpose of paper contributes argument to involve the regeneration of Sai Gon Port project in Ho Chi Minh City, Vietnam.

Key words – waterfront redevelopment, port city, outdated port, urban regeneration, water city, transformation waterfront.

1.1 CHANGING RELATIONSHIP BETWEEN THE CITY AND THE PORT

During the last century, the characters and scale of the port have been modified because of changing technology such as containers, ship-building and logistics resulted into new demands on sizes of port-terminals, which illustrates separated evident between port city and port on a global scale. Globalization has significant changed the traditional role of ports and increase competition in international trade. Particularly, the technical advancements combined with the requirements of containerization, have shifted the basing points for global water transport away from previously historic waterfronts. With this passing, the relationship between water and the generators of economic wealth has changed (Marshall, 2001). It requires that the port is relocated to available places in order to adapt with international debate on the redevelopment of port areas. As a result, port-city relationships have changed enormously in Western countries from industrialization to post-industrialization to post-modernism (Norcliffe, 1996), leading to a global phenomenon in waterfront redevelopment and concerning physical planning and urban renewal in the 1970s and 1980s (Hoyle, 2000).

Many ports and cities on the world have been completely separated and ports lost its central position as adapting to changing conditions and competition. Waterfront redevelopment solves the problems of old port area in inner cities, caused conflicts in urban condition. Although the waterfront has been usurped by giant ports and extraneous uses, such as warehouses, factories and transportation in last century, waterfront transformation revitalizes the attraction of the water sites. Since the 1970s, numerous waterfronts have undergone a reorientation from 'brown fields' or 'green belts' to commercial, residential and recreational areas (Sairinen, 2006). It can be said that "contemporary urban waterfront redevelopment and regeneration projects represent today an international undertaking in urban planning and politics waterfront regeneration (Feldman, 1999).

1.2 PROBLEMS OF THE PORT CITY

Waterfront has historically been the staging points for the import and export of goods. Therefore, location accessed to the water was a competitive advantage to many ports and industrial area. The edge between city and water, between the production site and its transport basing point, was the most intense zone of use for port and industrial areas in the nineteenth-century city. The wealth of cities was based on their ability to facilitate the need of industrial capital to access waterfront resources (Marshall, 2001).

However, the creation of this wealth brought with it environmental degradation and toxicity, which today characterize these urban spaces. In recent years, when these urban spaces are reconsider, these old port and industrial sites in inner city exist significant issues as spaces of urban redundancy and brown-field, waiting for redevelopment. The re-use of obsolete port space along the waterfront is a major concern to many cities in their revitalization efforts. Moreover, area surrounding the port almost is an urban sprawl because of industrial space as a place of dirty and messy, unsettled houses and highways are built along the waterfront and destroy these valuable city assets.

Main problems of waterfront of most cities throughout the world are contributed as following:

- (1) Globalization and technological innovation in post World War II period led to abandonment and deterioration of thousands of acres of industrial land across waterfront
- (2) Consistent pressure to redevelop central city areas and historic preservation
- (3) Society issues related with local inhabitants
- (4) Heightened environmental awareness and water management

1.3 REGENERATION OLD PORT AREAS TO STRENGTHEN URBAN WATERFRONT DEVELOPMENT

The transformation waterfront is a unique opportunity for cities to reconnect with its water's edge. The sites of port and industry in history are now attempt to re-center activity in urban space, to reposition concentrations of activity, to make contemporary urban waterfront interesting visibility. Indeed, through changes in technology and economics and the shifting of industrial occupancies, the waterfront has become a tremendous opportunity to create environments that reflect contemporary ideas of the city, society and culture. The question for this opportunity is how should that redevelopment occur? What is the relationship of waterfront sites to contemporary city making? How can make connection between older city centers and the water's edge?

Transformation of waterfront urban development have changed local economic and social community

The renewal of urban waterfronts can be seen as a keynote of economic development in post-industrial cities around the world (Millspaugh, 2001). Waterfront redevelopment is related to the recent changes in the urban economies of port cities due to global forces and information society (Tatjer, 2001). Moreover, waterfront projects are related to the new conception of cities and its management, that is, to create spaces in the city for the location of companies, houses and attractions for investors, citizens and investors. Hoyle, Pinder and Husain (1988) said that "skillfully done, waterfront renewal can bring new life into dead and dying urban areas and can create a wide of new economic and social opportunities". Therefore, the transformation of waterfront provides a widespread opportunity to gain new uses lands for commercial, recreational and residential areas.

Urban waterfront regeneration can deeply encourage community involvement when inhabitants can join in public spaces. Social impact depends on the interests and how people use waterside areas for residence, place of work, or recreation are associated with waterside areas for housing, industry, commerce, transport, and a variety of leisure and recreational facilities. Water-scape can play a worthy role in the creation of a part of social and public spaces environment systems. Public contribution in creation of waterfront spaces is important to encourage human activities in the waterfront and human contact to water. The riverfront accessibility and visual preparation are the prerequisites of public utility, society and landscape issues which should be answered by some arrangements (Faizi and Khakzand, 2008).

Waterfront regeneration enhances urban space-making quality and spatial structure of the water's edge

The transformation has inevitably influenced the spatial structure of port cities. In addition, waterfront is applied a new urban renewal as a new "urban quality" that can offer higher living standards and revitalization of public community. Historically, the former structures of port cities are defined basing on characteristics of physical, continental trade and port activities. In fact, the city has always had a strong relationship with its harbour which had important roles in shaping spatial structure of urban development. In the City and Port (Meyer, 1999), structure of port city is defined by characters of port's roles to the city. From "once a physical and social barrier in the city", water structure has become "an axis of urban development for the entire city region" (Vegara, 2001). Waterfront redevelopment changes spatial structure and remaking urban environment to transform the abandonment of vast port zone, buildings deserted, and productive plants closed with the relative problems of deterioration of both a physical and social nature of relevant portions of the urban fabric.

Chapter 4



Urban Strategy

The strategic plan as a tool for development

Strategic plan plays a role to improve current situation by transformation of waterfront urban development in order to change local economic and social community. The renewal of urban waterfronts can be seen as a keynote of economic development in post-industrial cities around the world (Millspaugh, 2001). Waterfront redevelopment is related to the recent changes in the urban economies of port cities due to global forces and information society (Tatjer, 2001). Moreover, strategic plan of waterfront redevelopment is related to the new conception of cities and its management, that is, to create spaces in the city for the location of companies, houses and attractions for investors, citizens and investors. In fact, waterfront redevelopment is an expensive and sensitive process. Hoyle, Pinder and Husain (1988) said that "skillfully done, waterfront renewal can bring new life into dead and dying urban areas and can create a wide of new economic and social opportunities". Therefore, the transformation of waterfront provides a widespread opportunity to gain new uses lands for commercial, recreational and residential areas.

The strategic plan develops a centre of community participation

Transformation of Sai Gon's waterfront provides more social benefits for local inhabitants and employment opportunities to the city, which contracts people from surrounding areas to redevelopment zone. The benefits on social status aspects focus on:

(1) Public and private partnerships can involve improving local employment as well as local community, as 'provide training and support services to local people would help to raise the share of local jobs going to local people' (MacGregor and McConnachie, 1995).

(2) Urban waterfront regeneration can deeply encourage community involvement when inhabitants can join in public spaces. Social impact depends on the interests and how people use waterside areas for residence, place of work, or recreation are associated with waterside areas for housing, industry, commerce, transport, and a variety of leisure and recreational facilities.

Waterfront regeneration transforms urban space-making quality and spatial structure of the water's edge

From "once a physical and social barrier in the city", water structure has become "an axis of urban development for the entire city region" (Vegara, 2001). Waterfront redevelopment changes spatial structure and remaking urban environment to transform the abandonment of vast port zone, buildings deserted, and productive plants closed with the relative problems of deterioration of both a physical and social nature of relevant portions of the urban fabric. Regeneration waterfront zone focus on two aspects:

(1) Culture: a significant number of activities linked to previous and original uses to keep alive the memory and preserve a meaningful trace of the identity of these places

(2) Economy - society: the public and private interests

- A specialized area of residence and associated activities
- A encourage public functions as public domain (headquarters of local government offices, museum structures, public library)
- A typical management of the private sector (hotels, commercial structures, entertainment venues)
- A joining traditional public spaces (plazas, roads, parks, cycle tracks and walking paths) and those controlled by the private sector (gardens, clubs, playing fields)
- An "actors" managing the services on the waterfront to recreate the typically urban mix of public and private activities.

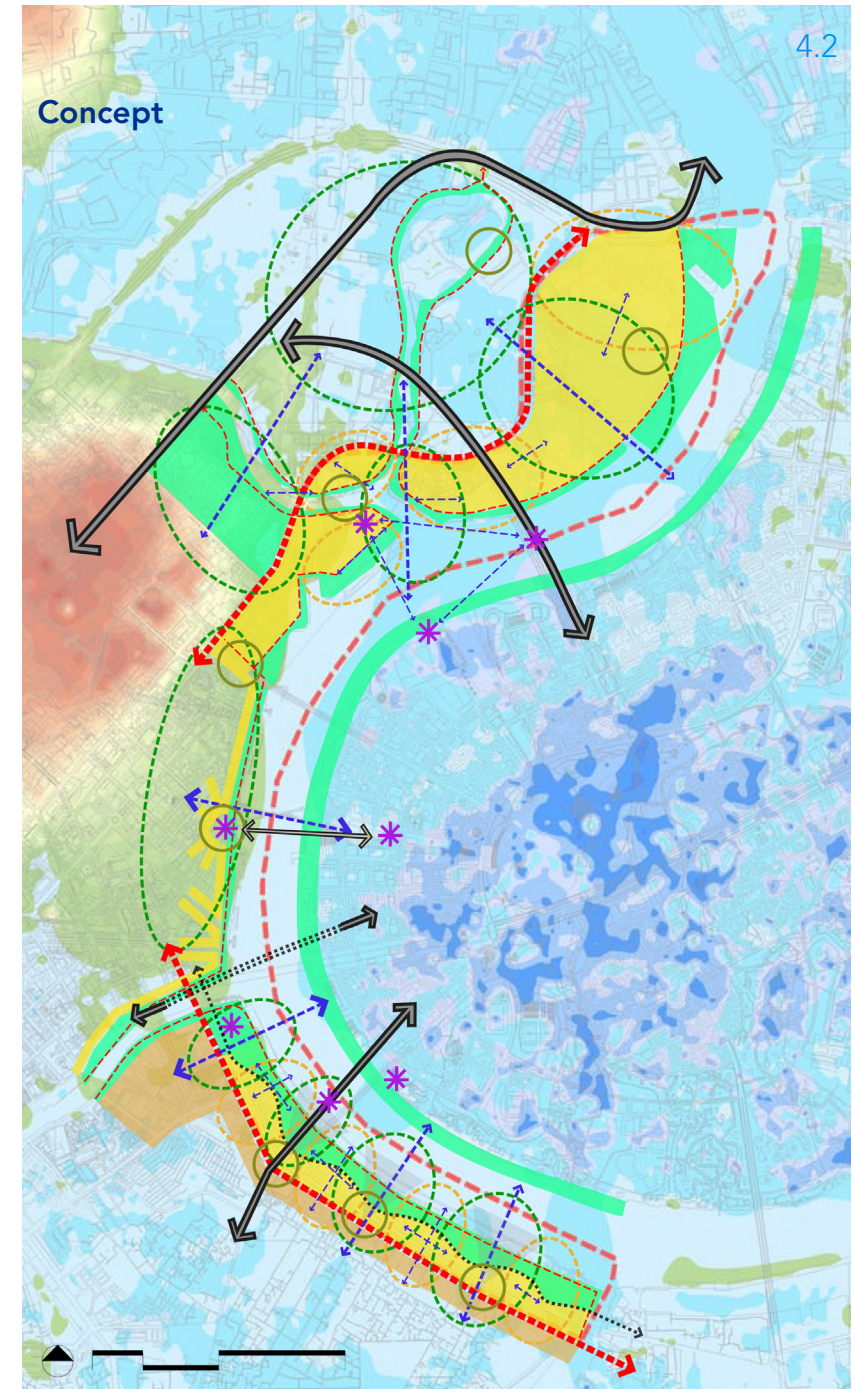
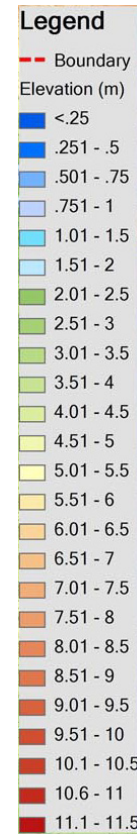
4.1 MAIN URBAN STRATEGIES

The approach of strategic plan of waterfront redevelopment of an outdated port area to enhance an attractive, sustainable and safe urban environment. The planning requires the achievement of a long-term high quality results of waterfront regeneration.

Firstly, improving and creating connections from city centre to its waterfront is the most important task in the city, which brings inhabitants towards the river. Besides, strengthening and regaining public accesses to the river and canals is the second strategy. The regeneration aims to provide an attractive waterfront as a liveable place for living, working and leisure and find the way to protect the city from floods.

DEVELOPMENT MAIN APPROACHES:

- Bring the city back to the river and recover the historical value of the city
- Use the attractive locations along the river for future demands of unique living and working environment.
- Regain public accesses to the waterfront and linkages of two sides of the river
- Protect flood and combine flood defense with ecological corridor system along the river
- Enhance local cultural identity and images in order to provide a distinctive waterfront



STRATEGIC PLAN

Strategic plan is built by three results which contributes the concepts of development goals; firstly, the analysis existing problems of the Ho Chi Minh city; second, the potentials, current and future demands; and finally, knowledge of an overview about transformation projects of the port city.

Strategic plan plays a role to improve current situation and promote commercial investments and housing opportunities in order to adapt with the demands of economy, housing markets and population growth.

In addition, the new transformation of a old port and shipyard area creates the connection from city centre to reach the river as well as linking between historical centre in the West bank to new district in the East bank of Sai Gon River. The plan aims to rediscover waterfront revitalization as a unique opportunity for cities to reconnect with its water's edge.

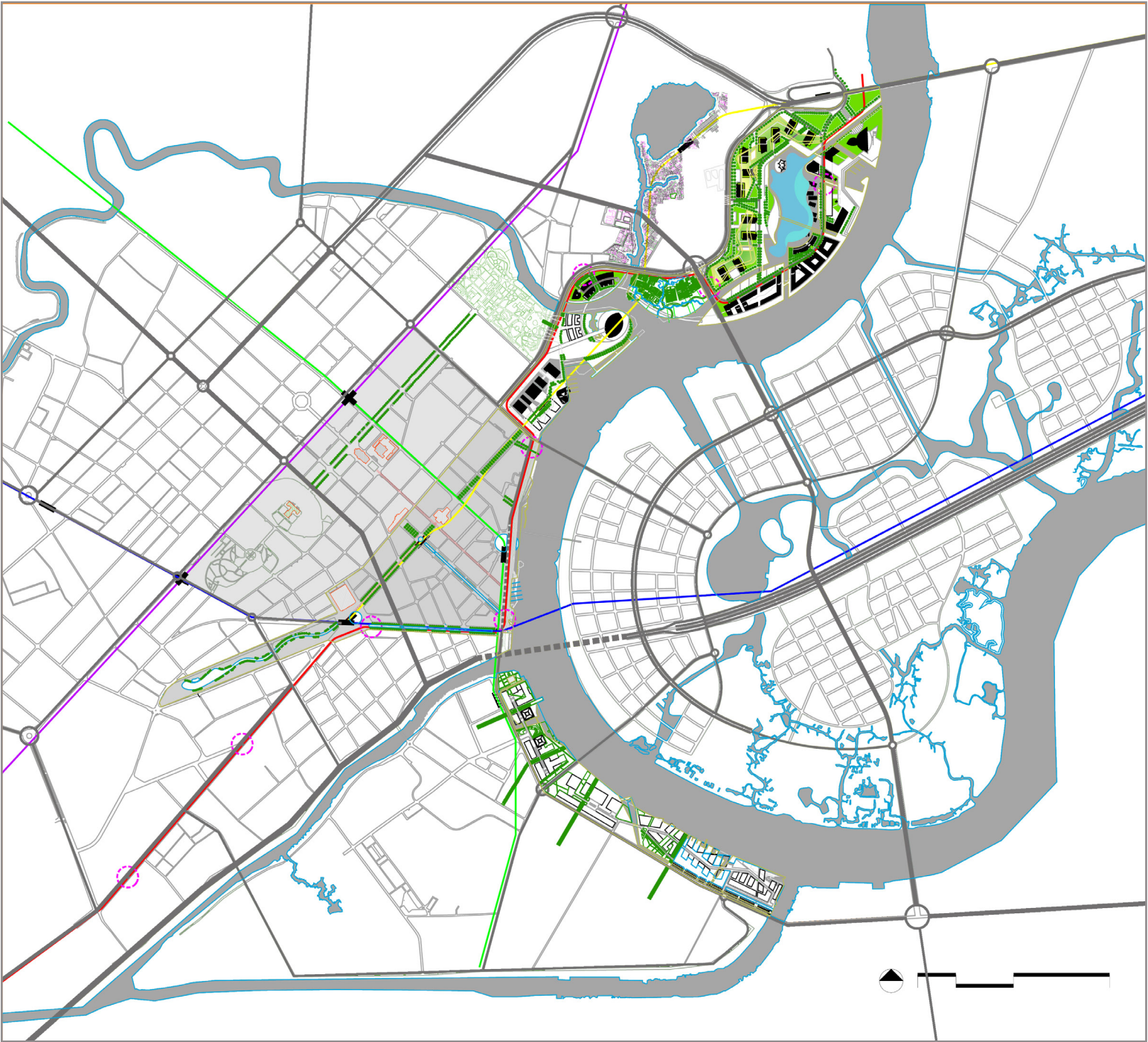
Particularly, strategic plan aims to enhance the integration of mix-use functions in living, working and leisure facilities and open spaces as well as encourage river frontage as a main factor to strengthen people friendly spaces. Besides, the plan encourages local community participation and improve social network. It concerns to historical, cultural and local concept to design for forms, fabric and functions of sustainable city. New urban environment is introduced with residential waterfront which mixed with public space closely to water. More specifically, strategic plan provides public intervention links to the demands of the local community and improve cultural heritage values.

Regeneration waterfront must cope with numerous issues in relation with water. Water has always been a threatening factor; therefore, urban waterfront redevelopment must deal with controlled and managed water, which offers certain urban development value for settlements. Climate research scientists predict the onslaught of frequent major flooding which can no longer be stemmed by economically viable means. It became clearly evident that consideration of the need for creating new flood planes and controlled water can lead to whole new transformation projects.

Finally, the current identity of the city is one that has many fragmented 'moments'. The strategic plan provides a catalyst for transforming the city's identity from historic preservation to new cultural and community facilities link to water to reconnect the city fabric and its waterfront. The transformation Sai Gon waterfront has the ability to shape an image for the city, to add value to city economies, and create desirability. When port city shifts from industrial to service economies, a major aspect of its success will be in the quality of their urban environments. The waterfront plays a critical role remade the image of the city. The main characteristics of the waterfront area can be considered as strengths to redevelop watersides. The environmental, cultural or historical of a specific area create the values of waterfront where have significance to the visual, social and cultural identity of local community.

MASTER PLAN

- Legend
- water
 - transportation system
 - tram line
 - tram stops
 - green space
 - city centre area
 - buildings
 - Metro line 1
 - Metro line 2
 - Metro line 3
 - Metro line 4
 - Highway



4.2 STRATEGY TO IMPROVE CONNECTIONS BETWEEN CITY AND ITS WATERFRONT

A. Infrastructure linkages

It is clearly an unsustainable traffic system in terms of congestion and pollution because of increasing private transportation uses. Private and motorbikes uses are accounted for 73% of total traffic on street in Ho Chi Minh City. Therefore, the increased use of public transport is encouraged by all design measures as a strategy for sustainable mobility. This strategy encourage a better public transport uses as metro, tram and water taxi system to achieve a clean environment and high quality public transport. Importantly, there will be increased space for pedestrians and bicycles by redesigning existing street with planes for biking and walking.

B. Urban spatial connections

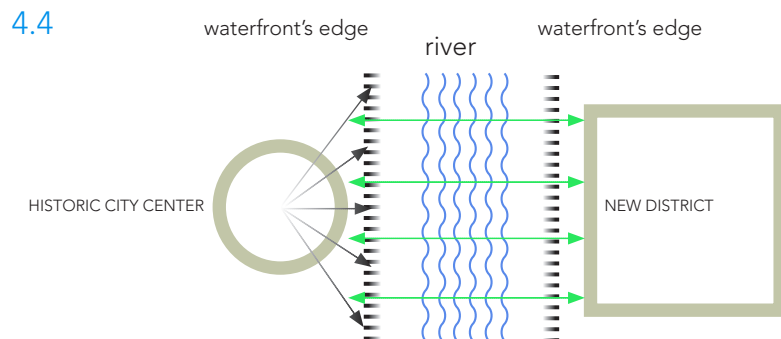
Redeveloping the waterfront's edge includes both preservation of historic waterfront and new waterfront development. "The historic waterfront comprised not only buildings, but also structures, dock walls, historic artifacts and signs of different materials and periods" (Barry, 2001). This strategy improves the links of historic fabric and old structures of the city to the river.

Main goals:

1. Design an alternative highway to link city centre to other districts
2. Propose the public transport system:
 - Underground space networks
 - Tram system
 - Water taxi
3. Redesign street with bicycling and walking paths

Main goals:

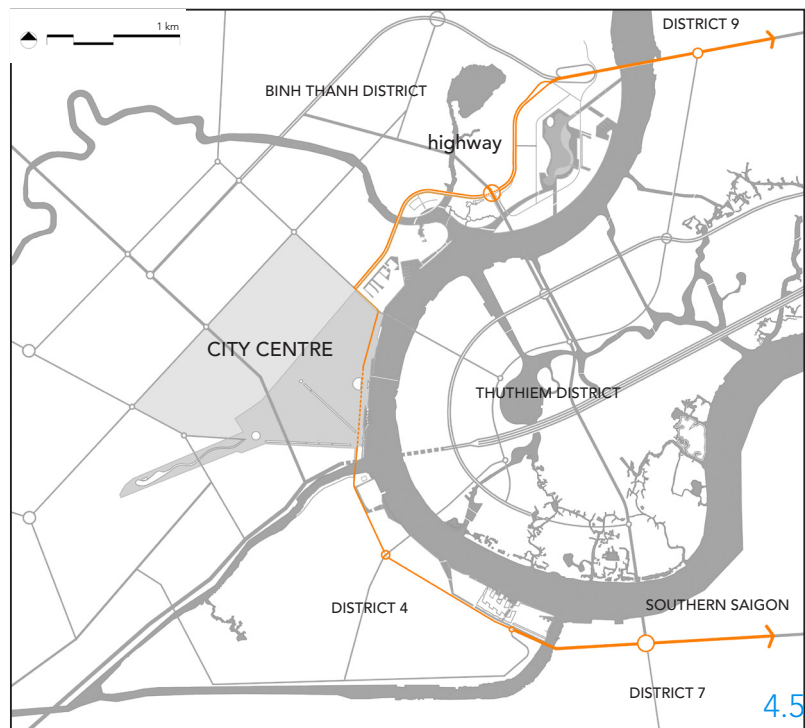
1. Regain the soft edge by increasing the greenery of the urban waterfront in order to create an ecological zone in inner city
2. Redevelop spatial edge of city centre waterfront
 - A. Historic preservation: Rediscovering the value of heritage and local identity by remaking connections between historic city centre to waterfront
 - B. New urban functions of waterfront development to create better connection of the city and water



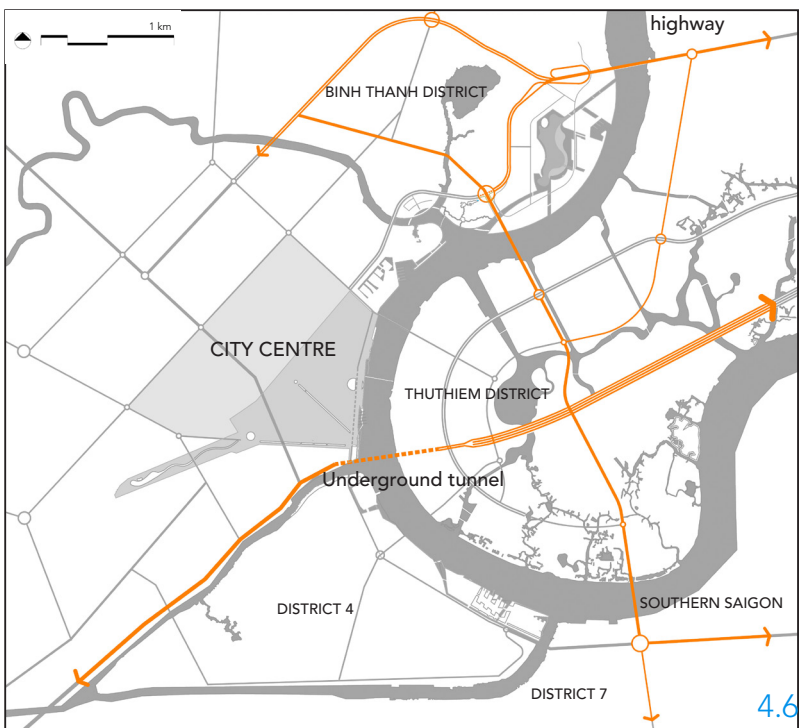
A. INFRASTRUCTURE LINKAGES

To reduce the heavy traffic through the center of the city, an alternative highway and new roads are designed to connect the city centre and other districts. New highway is designed to take pressure off in the city centre and to create a better connection to Thu Thiem District and regional links from city to other cities.

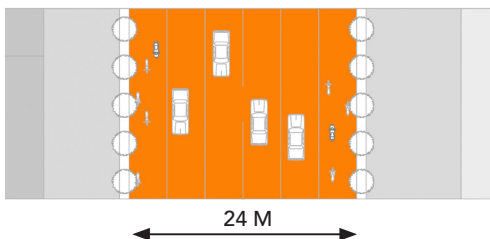
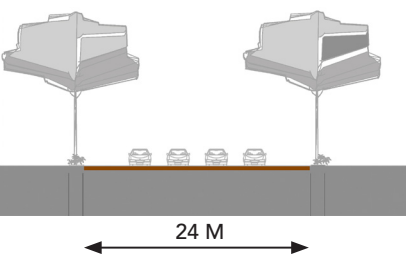
Before



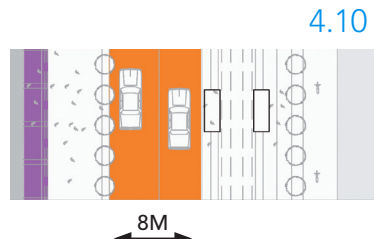
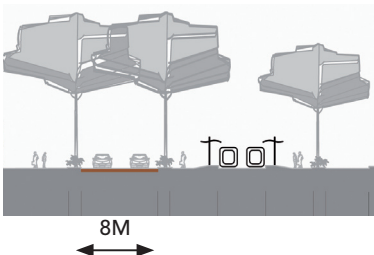
After: Alternative main highways in inner city



Existing Ton Duc Thang highway - 6 lines



Reducing traffic on Ton Duc Thang highway into 2 lines



PROPOSED PUBLIC TRANSPORT SYSTEM

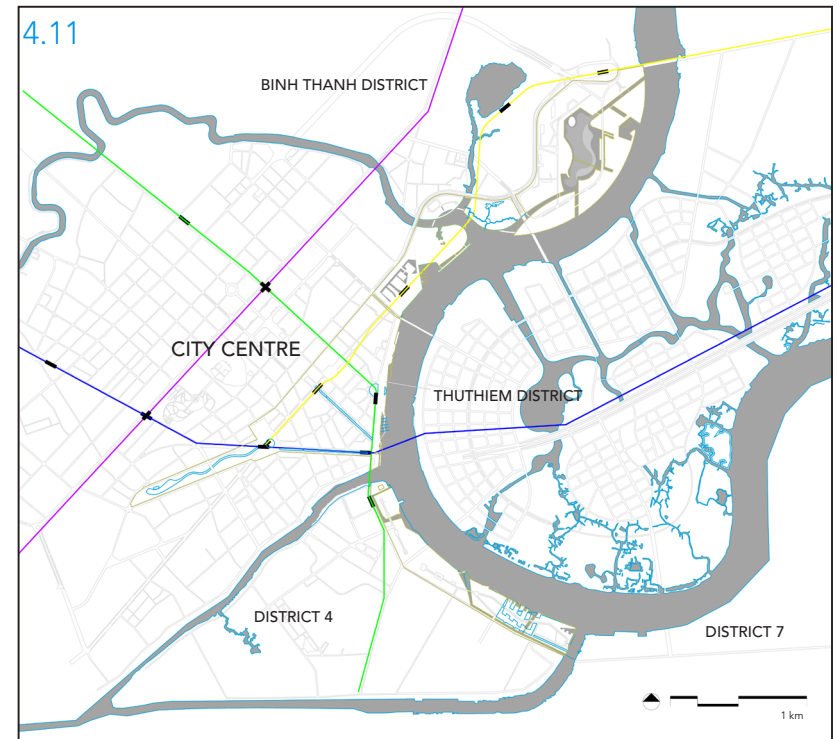
Traffic jam in Ho Chi Minh city will be solve partly by encouraging public transport. Proposed a variety kinds of public transport is needed in order to decrease the private transport by cars and motorbikes in the city centre. Underground space network, tram system and watertaxi are designed as the choices for future development of mobility in city centre.

- Develop underground space network as metro lines to decrease private transport by cars and motorbikes
- Create tram line along the waterfront to connect the city centre to other district
- Water-taxi
- Securing safe and comfortable pedestrian space

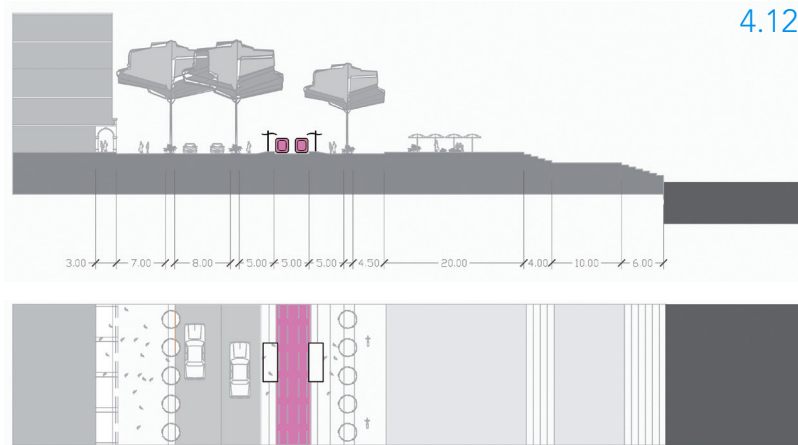
UNDERGROUND SPACE NETWORKS

Legend

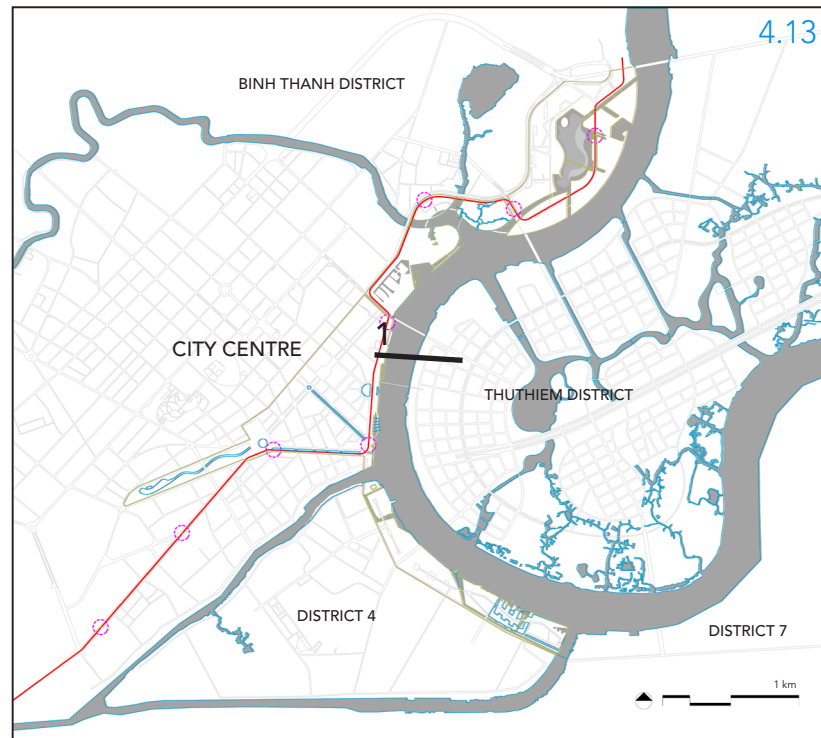
- Tram line
- Metro line 1
- Metro line 2
- Metro line 3
- Metro line 4
- Highway



TRAM SYSTEM

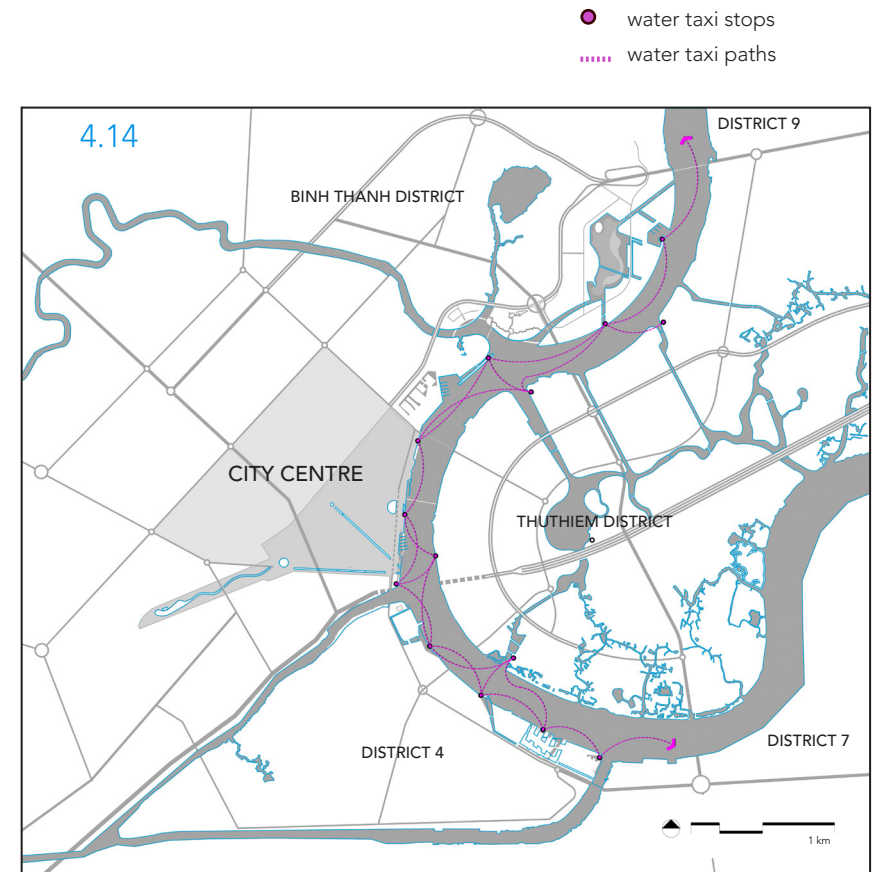


Tram line on Ton Duc Thang highway - Section 1-1



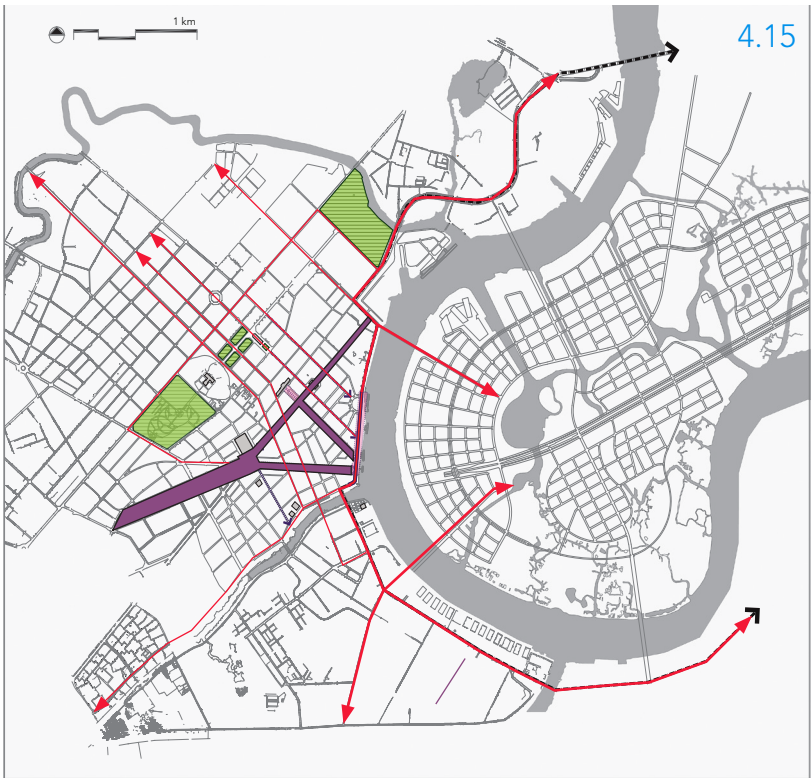
WATER TAXI

Water-taxi is generated for long-term public transportation in the city as regards urban quality related with water. The water-taxi produces one kind of transport to connect city centre to other places on the riverbank.



CYCLING AND WALKING SYSTEMS

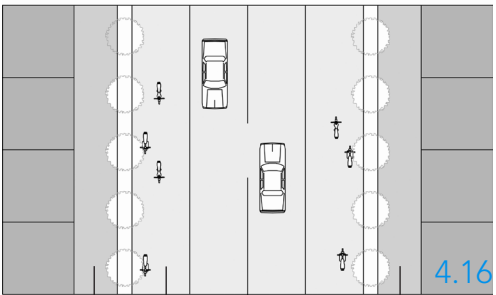
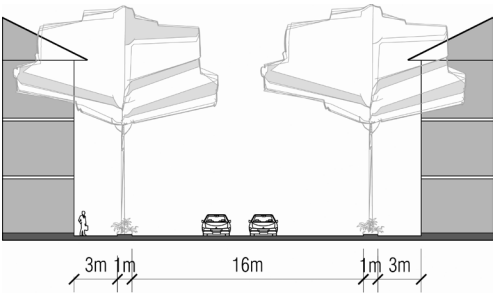
Redesigning streets provide more spaces of cycling and walking is needed for a sustainable mobility, which separate pedestrian space from vehicle traffic. This plan establishes pedestrian and cycling network in order to link new growth areas to central city .The walkways along the river is intervention to encourage a maximum of inhabitants of the city to access to water. The new Saigon River waterfront offers a friendly active pedestrian space with countless attractive points and entertainment opportunities.



Developing a pedestrian zone connects from city centre to waterfront in order to create distinctive avenues with cultural heritage value. To secure pedestrian space and comfortable to local inhabitants and foreigners, the plan concerned to separate the pedestrian space with vehicle's ways. In addition, the design arranges attractive sidewalks as public square and shops along street.

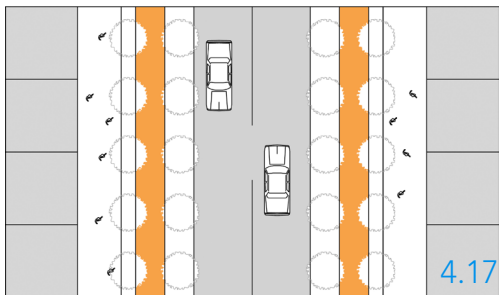
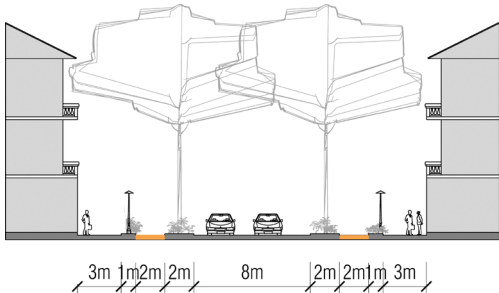
Cross section of Ton Duc thang street in Southern part

Before



low quality path for pedestrian unsafety for cyclists because of heavy traffic on highway low quality path for pedestrian

After: spaces for bikes and pedestrians



Streets with separated cycle and pedestrian paths give safe and comfortable space to users.

RECREATE THE RELATION BETWEEN CANALS AND PEDESTRIAN PATHS

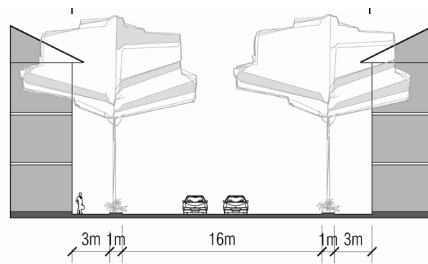
History: canals and business activities



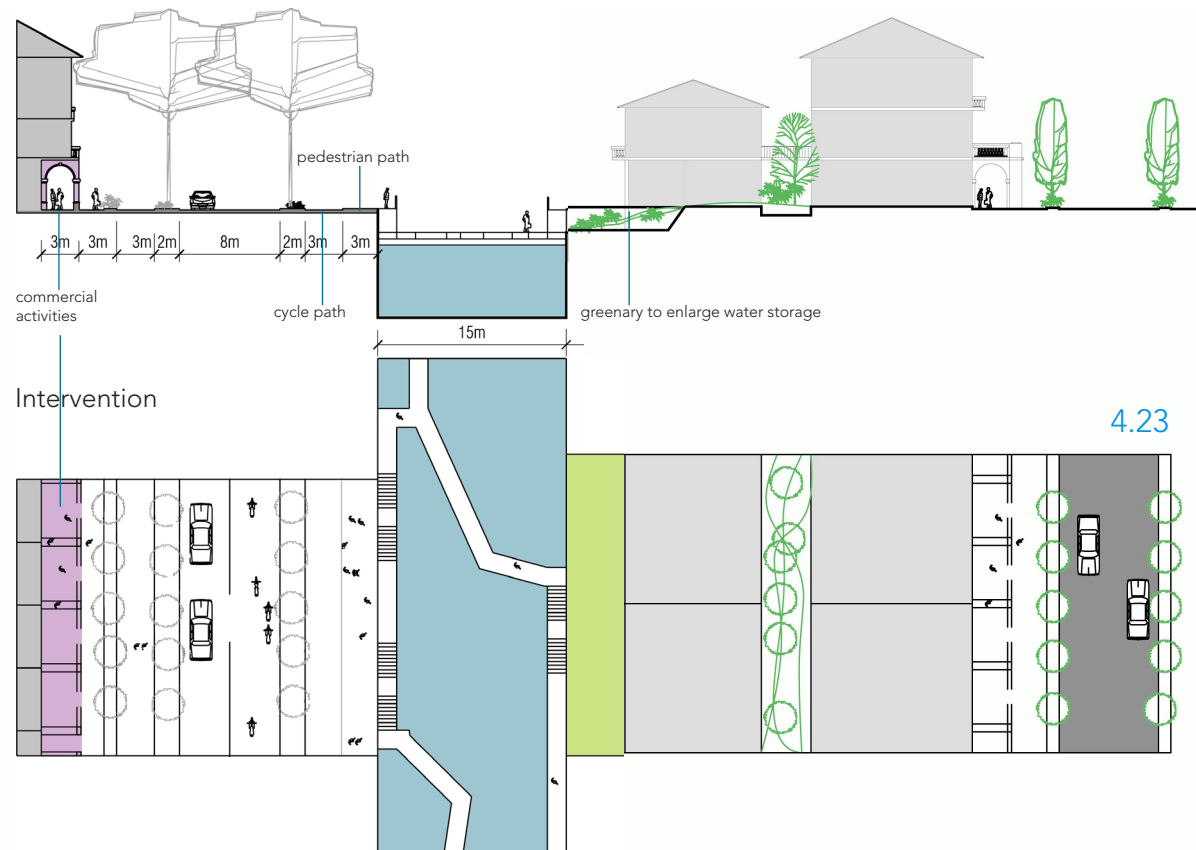
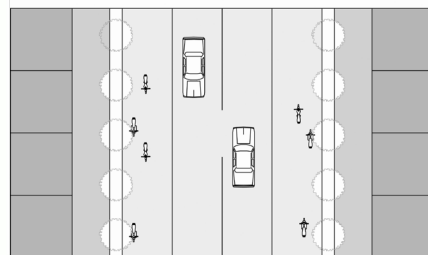
Now: canals and unattractive uses



Future: new canals connected with pedestrians and activities: The plan establishes landscape and pedestrian walkways along canals and waterways to improve the walkability and access to waterfront.



Existing

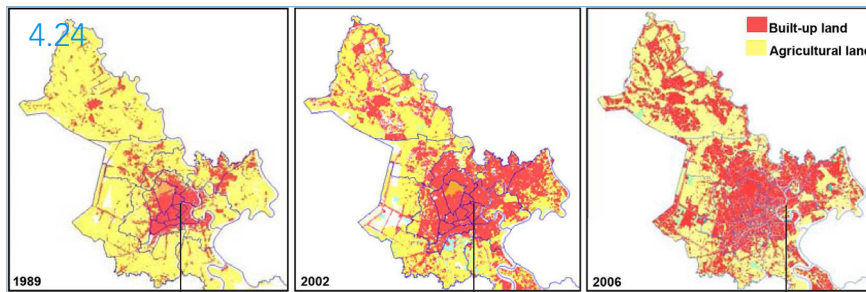


Intervention

B. URBAN SPATIAL CONNECTIONS

(1) REGAIN THE SOFT EDGE BY INCREASING THE GREENERY OF THE URBAN WATERFRONT IN ORDER TO CREATE AN ECOLOGICAL ZONE IN INNER CITY

Demand

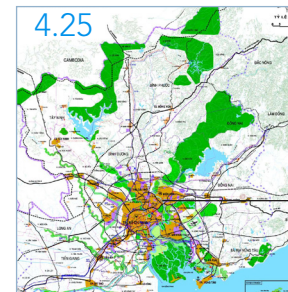


Urban land cover change in the central and northern part of HCMC (Tran & Ha, 2007)

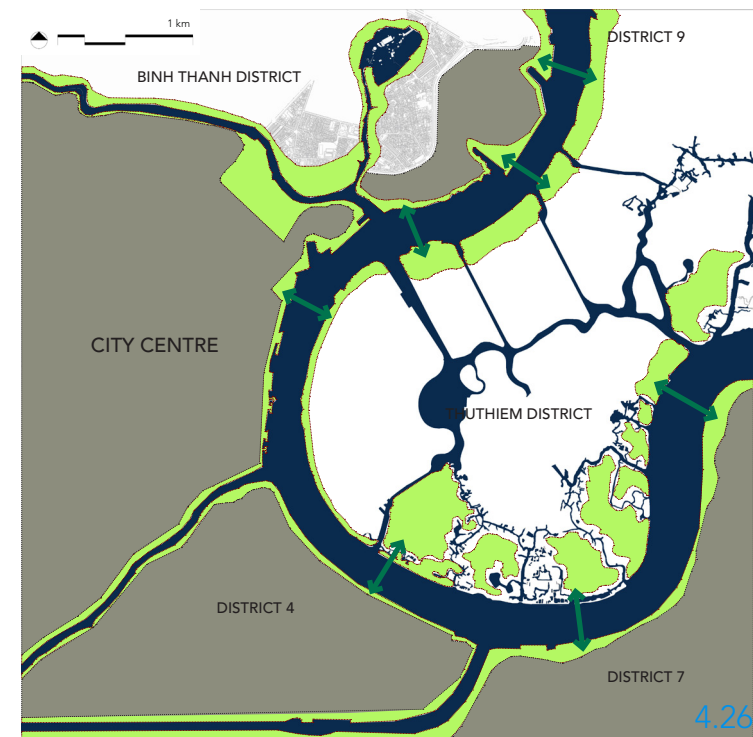
Lack of ecological considerations

Green spaces play a vital role in providing a nature balance for a crowded city to enhance culture landscape by public parks along the river. Urban green space along the river is contributed as valuable and diverse recreational and leisure zone. The green belt link the waterfront from city centre to surrounding neighbourhoods as well as to another side of the river. Open spaces and green spaces is designed high quality public spaces with safeguard and sustain qualitative open space to water. Besides, the project redesigns water-capes and public spaces along its waterfront to shape network of green belt of an ecological zone in inner city. Green corridor connects green public space along the river and it also provides public squares to encourage public participation.

Redeveloping ecological zone of the Sai Gon River, green corridor and riverscapes, that are attractive , environmental friendly, enhance recreation and tourism, and improve sustainability and safety.



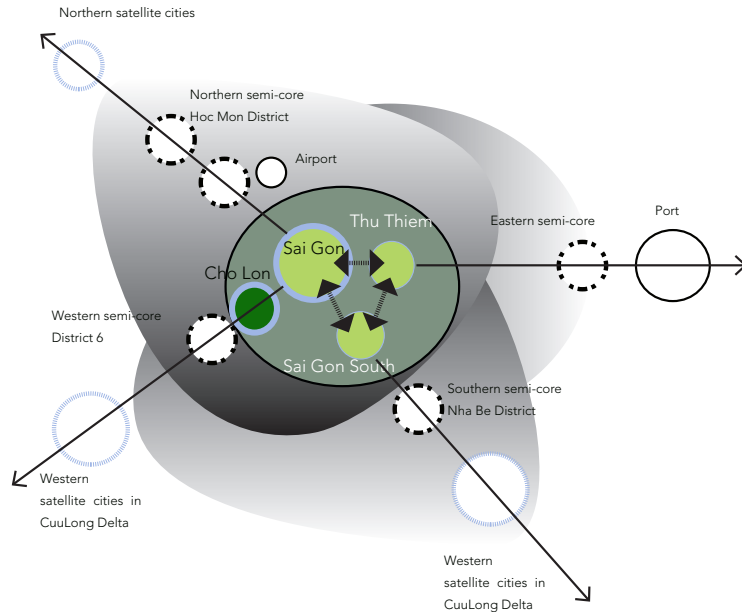
Need for green space and green corridors along the Sai Gon river



Legend

- river and canal
- built-up areas
- flexible landscape areas (green - open spaces)
- green connection

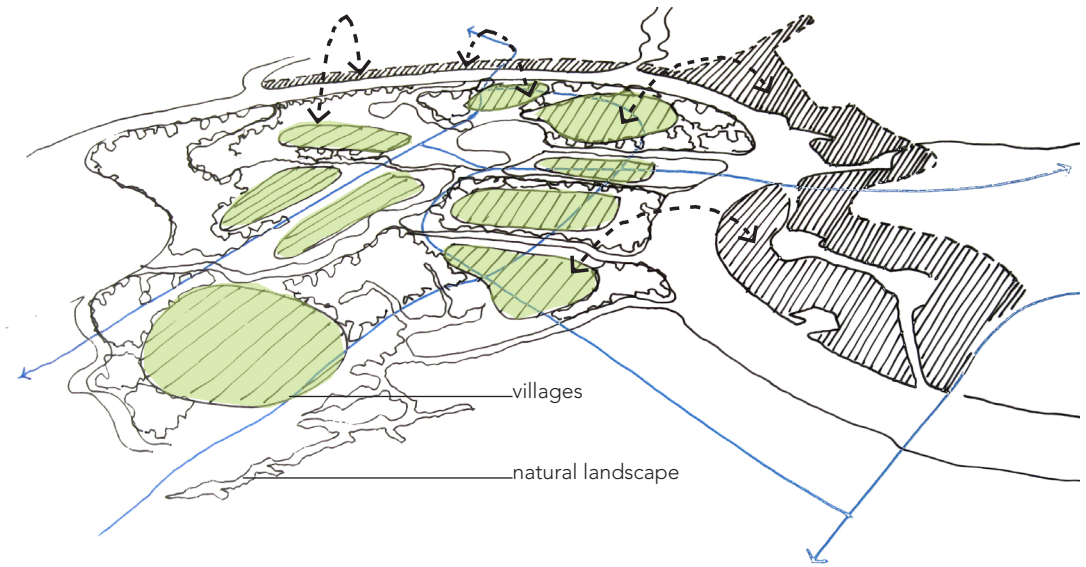
RELATION OF THE CITY CENTRE TO THU THIEM DISTRICT



Conceptual location of semi-core and satellite cities

Ho Chi Minh City has faced to a vast increasing population with a population now 7,123,340 (Census 2009 on April 1, 2009). To meet this need, the city and governments require developing new urban centers in South of Vietnam. The project is proposal an ecological zone of inner city centre in Thu Thiem District and a new City Center in District 7 - Saigon South project where located large-scale of residential, official and commercial areas. In December 2007, Phu My Hung New City Center completed the 17.8 km 10-14 lane wide Nguyen Van Linh Roadway linking the Saigon port areas, Tan Thuan Export Processing Zone to the National Highway 1 and the Mekong delta area. In November 2008, a brand new trade center, Saigon Exhibition and Convention Center, also opened its door. Other projects include Grandview, Waterfront, Sky Garden, Riverside and Phu Gia 99. Phu My Hung New City Center received the first Model New City Award from the Vietnamese Ministry of Construction (Vietnam the key real estate market in Asia, 2010).

IDEA TO DEVELOP THU THIEM DISTRICT AS A RURAL AREA



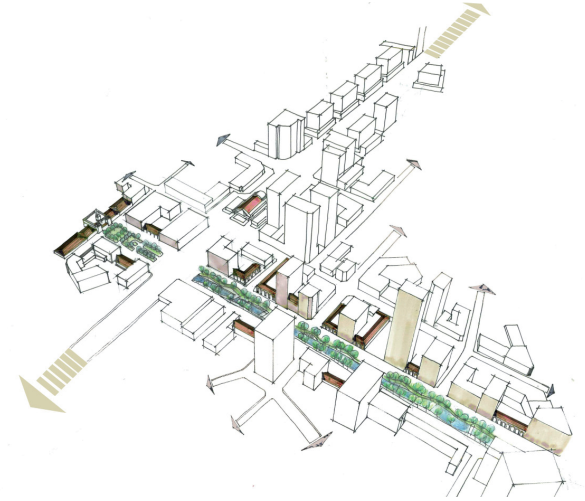
Therefore, develop Thu Thiem district as an "open" system, which allows for tidal fluctuations and high water events through the design of natural and man-made canals, lakes and mangrove areas. Thu Thiem district provides an image of natural area, created high quality of environment in city centre with friendly urban environment.

REDISCOVERING THE VALUE OF HERITAGE AND LOCAL IDENTITY BY REMAKING CONNECTIONS BETWEEN HISTORIC CITY CENTRE TO WATERFRONT

4.27

This map shows the city of Rotterdam, with the city grid and water bodies. The Rotterdam School of Management is highlighted in orange. The map includes a scale bar (0 to 1 km) and a north arrow.

Regain historic value by transformation the main axis toward the river



facade of brown minimal
 style urban roof garden
 balconies green by aluminum
 and green by balconies
 and roof garden with
 RE-PLANTED HISTORICAL
 LANDSCAPE PLANTING CITY
 HALL BUILDING

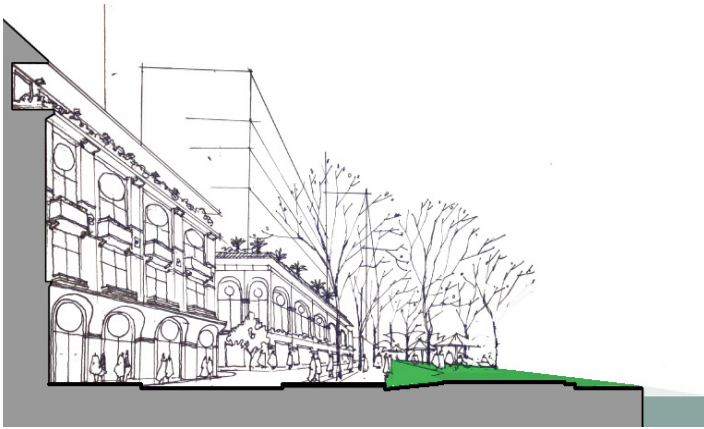
city hall

The urban strategy has research for future development of waterfront in Ho Chi Minh city, which regain historic canals as a water system of a modern water city. The canals in Nguyen Hue Boulevard provide a cultural image of the city to inhabitants, which rediscovers the spirited images of distinctiveness of the city. This proposal also want to develop historic commercial axis in the city centre, which develop main axis in order to link the heritage buildings and to connect the city centre towards the river.

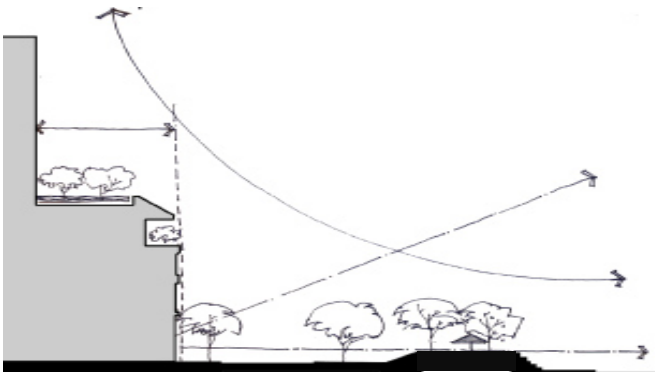
SPATIAL EDGE IN THE CITY CENTRE WATERFRONT

The edge of the West-bank is needed improvements in terms of functions and redesigning river-bank to meet the requirements of its users. It includes attractive places for both local people and tourists.

Concept

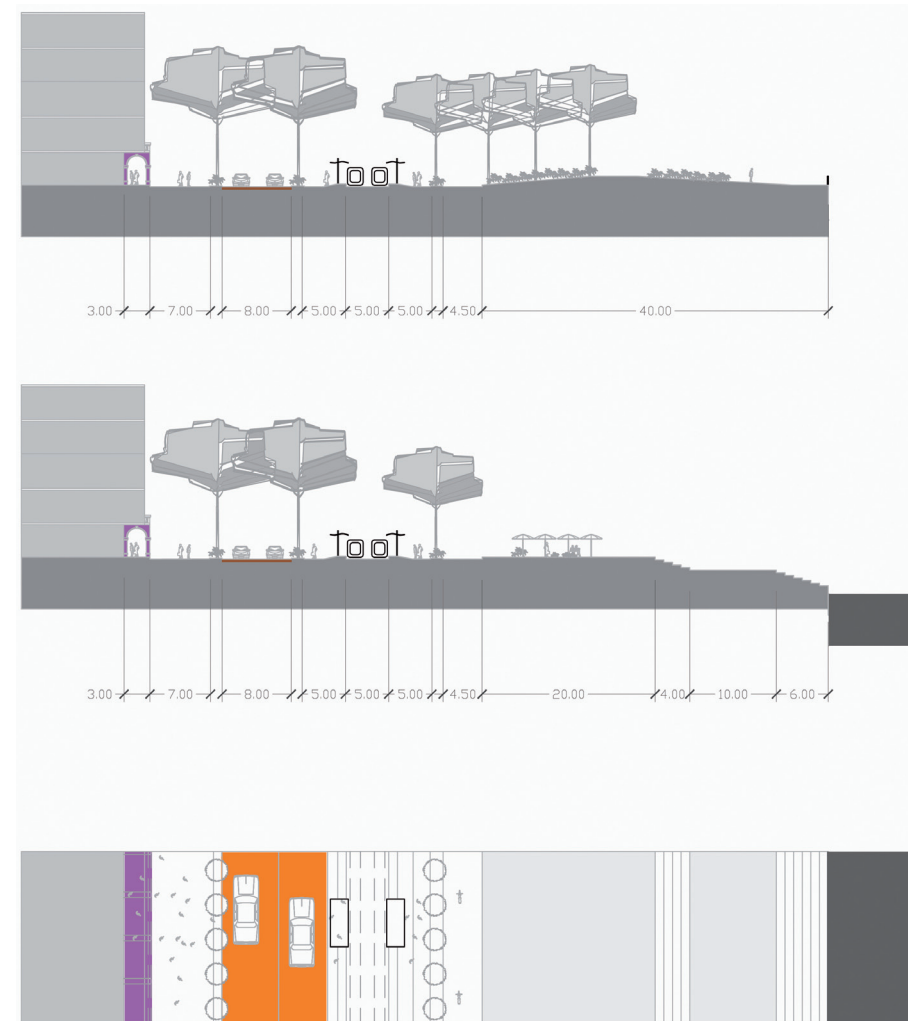


Idea to produce uniform streetscape



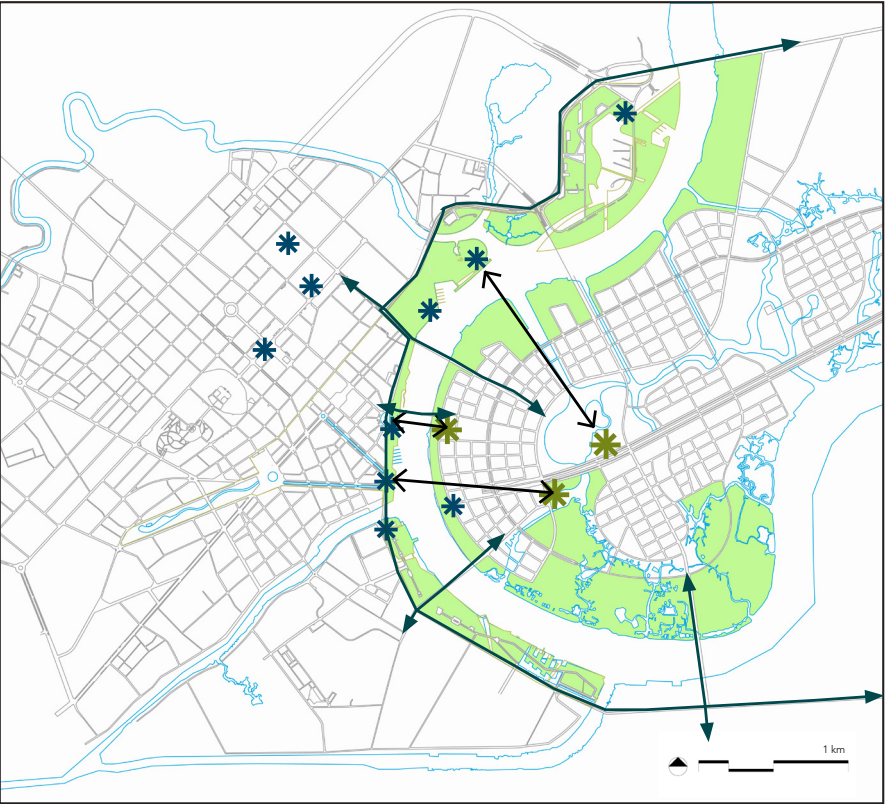
Ton Duc Thang highway

Section of Ton Duc Thang highway



LINKAGES FROM WEST TO EAST OF RIVER BY NODES, PATHS, EDGE, LANDMARKS

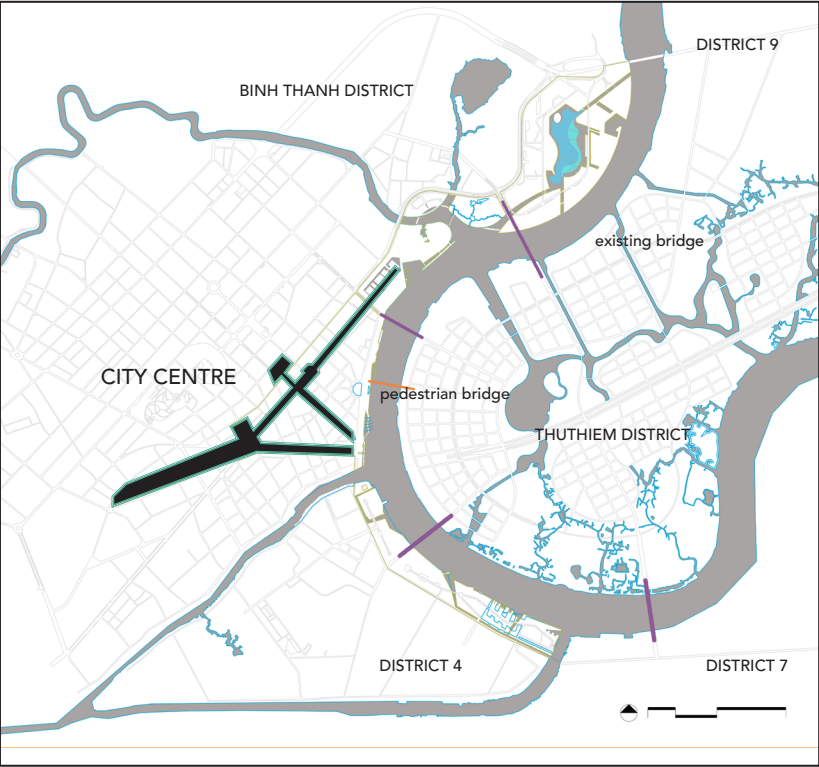
Nodes and landmarks as points of Public Square closed to water, enhancing community involvement and attracting people to the riverbank. Especially, people are living in city whose have an opportunity to go for walks along the river. Public Square on waterfront plays important roles to indicate strong points in order to encourage the attractive visions and to enhance the city image.



- * Landmark in Westbank
- * Landmark in ThuThiem
- Waterfront Edge
- ↔ Vista
- ↔ Path

BRIDGING THE RIVER

To connect two sides of the river focusing in both physical and spatial linking. New bridges connect from city centre to Thu Thiem District to connect low-income neighbourhoods on East-bank of Sai Gon River with the city centre. The bridges include the pedestrian path and it is a link two green belts of the river.



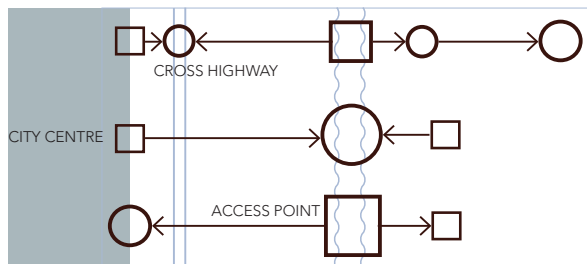
Bridges make new connections between two sides of river

4.3 STRATEGY TO IMPROVE THE ACCESS POINTS AND ORIENTATION TOWARDS THE RIVER

To solve the problem of existing points of access to the Sai Gon river are often almost impossible to find and lacking attractiveness, this strategy improve the speaking orientation towards the river by create important points of access and riverside locations. Breaking the barrier of highway running between settlements and riverbank is considered as a vital approach.

Main approaches:

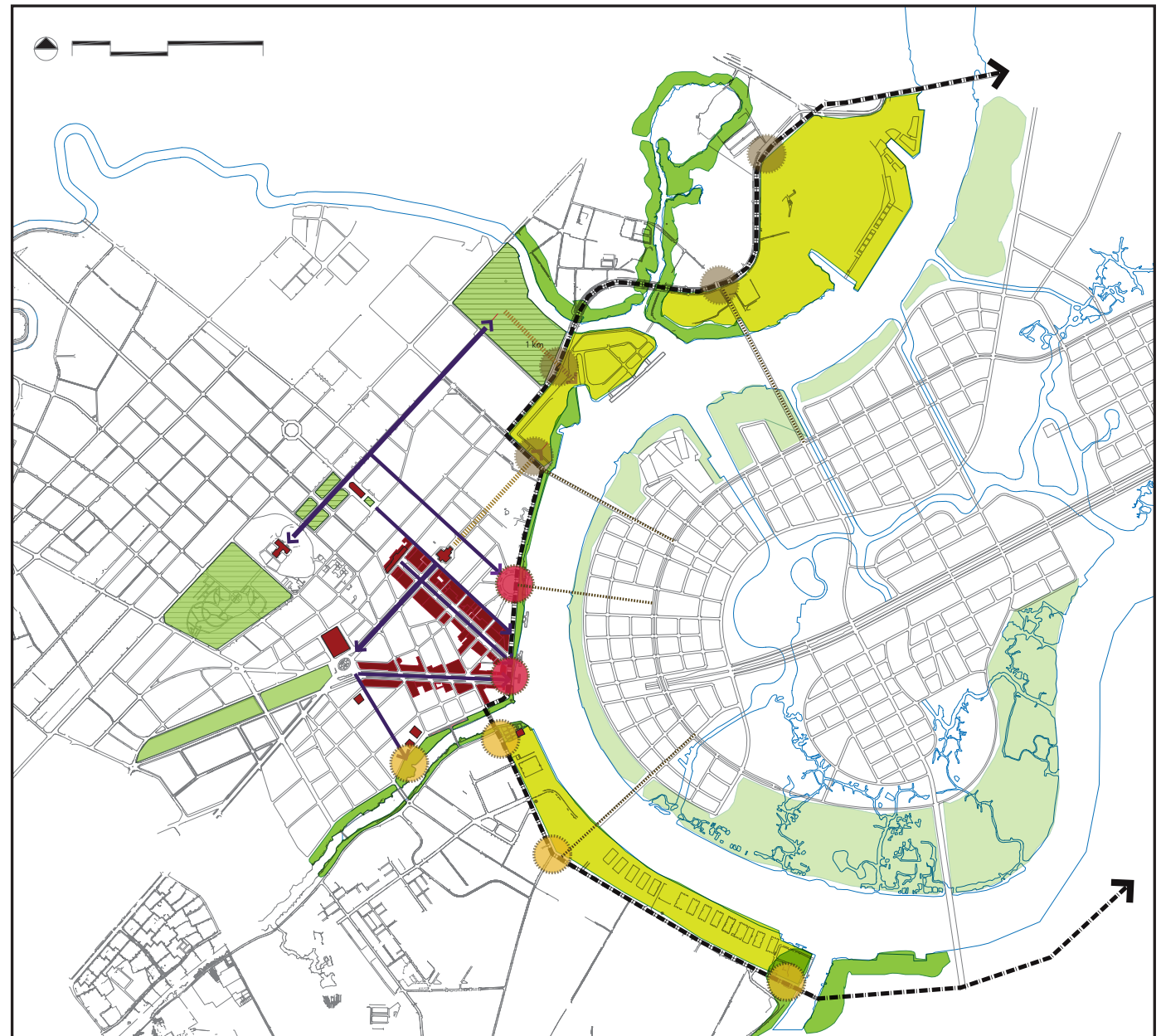
- Enhance main axes from historical city centre with a sense of heritage and history
- Crossing the highways to the waterfront
- Creating new public spaces as a access points



Legend

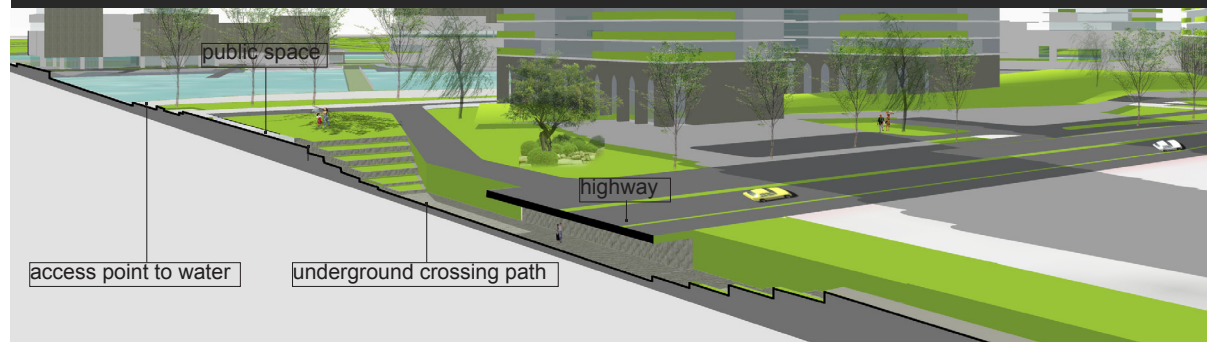
- Nodes to cross the highway of Northern part
- Nodes to cross the highway of city centre
- Nodes to access water of Southern part
- Historical buildings
- Main axis in the city centre
- Main axis to access the waterfront
- Integrated new axis
- Integrated new bridges

ENHANCE MAIN AXES FROM HISTORICAL CITY CENTRE WITH A SENSE OF HERITAGE AND HISTORY



CROSSING THE HIGHWAYS TO THE WATERFRONT

A. Node to cross the highways of the Northern part by underground crossing path



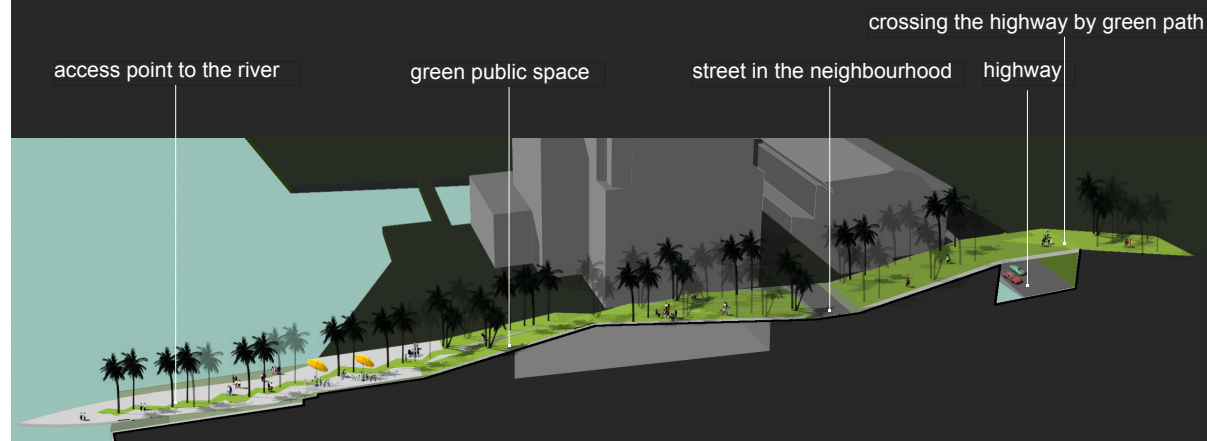
Node A: Node to cross the highway of Northern part

B. Node to cross the highways of the former Bason shipyard as a building to connect parks



Node B: Node to connect green space

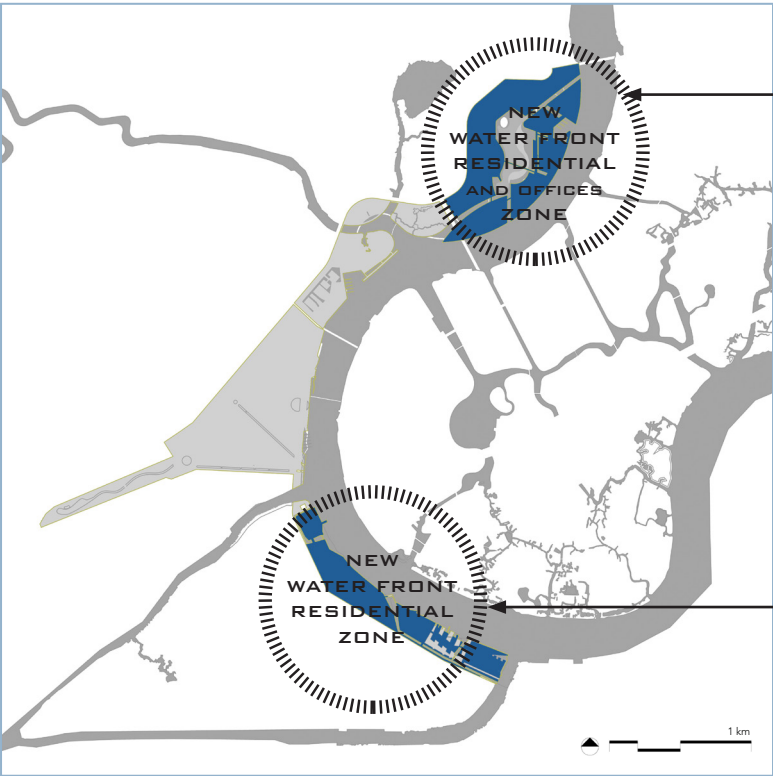
C. Node to cross the highways of the Southern part by covering green path



Node C: Node to access water of Southern part

4.4 STRATEGY TO DEVELOP AN ATTRACTIVE WATERFRONT AS A LIVEABLE PLACE FOR LIVING, WORKING AND LEISURE

A. Developing a new waterfront residential and complex official zone with mix-income urban neighbourhood



Goals

ATTRACTIVE PLACE TO LIVE AND WORK

HIGH QUALITY LIVING URBAN ENVIRONMENT

- Living near water
- Living with nature

ACCESSIBILITY TO THE RIVER

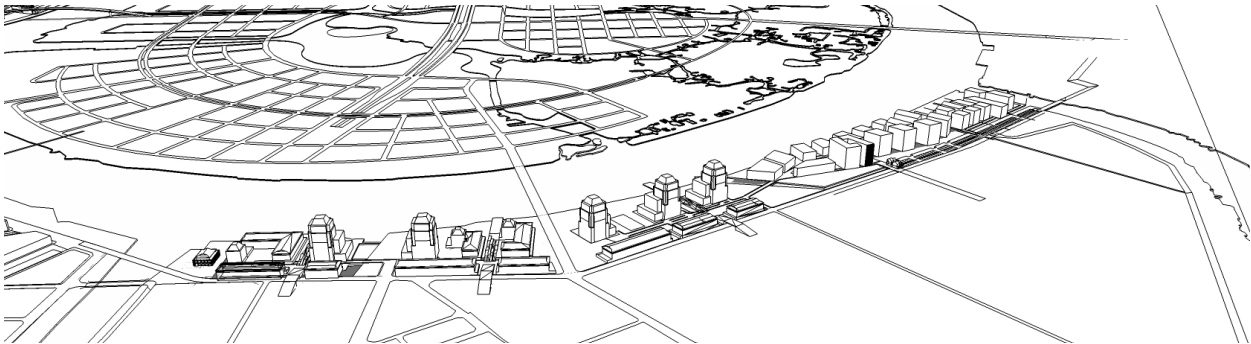
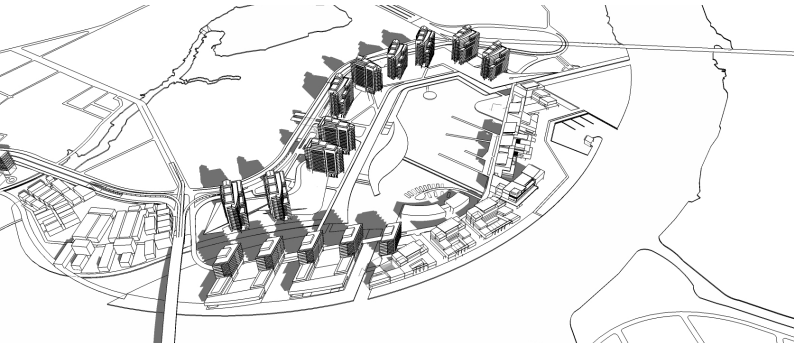
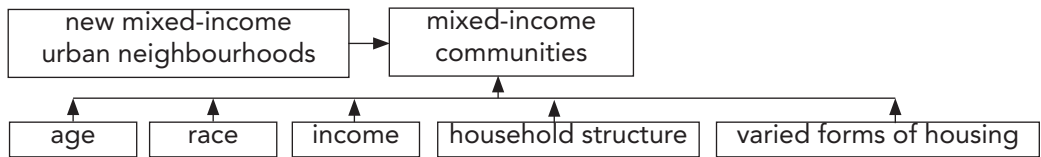
- Link between neighbourhoods and water
- Safe pedestrian routes to access to river sides

NEARBY PUBLIC SPACE

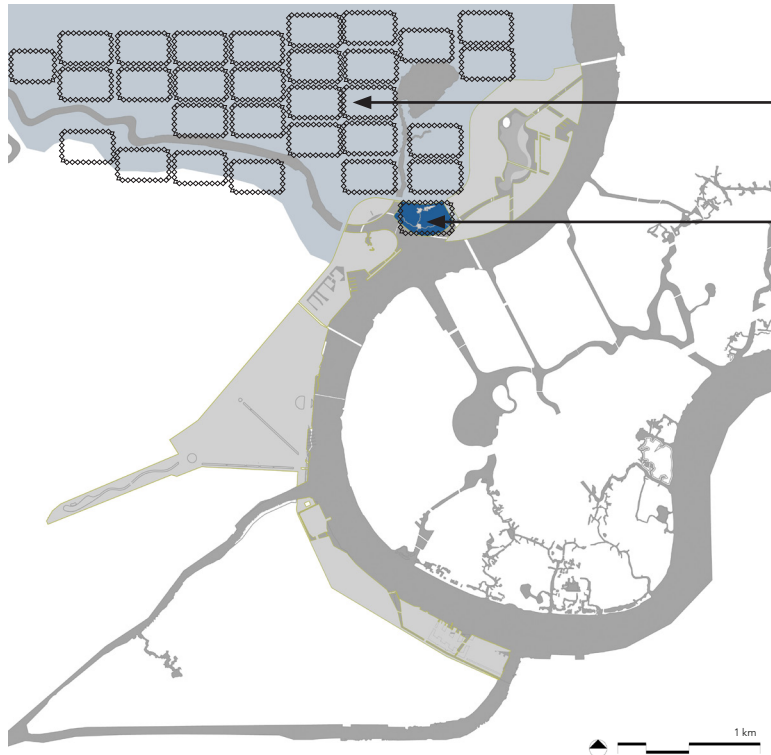
TPOLOGY WITH LOCAL CHARACTERS

- Traditional character of surrounding neighbourhoods

Definition



B. REDEVELOPING WATERFRONT RESIDENTIAL WITH ALREADY BUILT-UP BLOCK IN LOW-INCOME URBAN NEIGHBOURHOOD



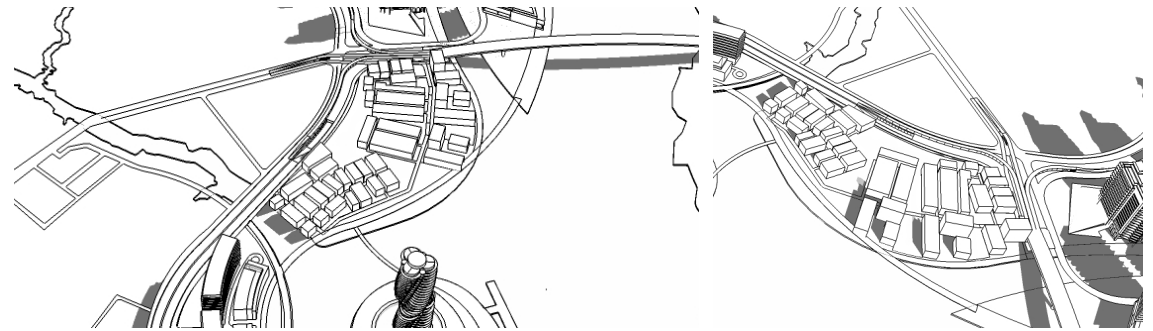
Goals

OPPORTUNITY AND NEED TO TRANSFORMATION

TRANSFORMATION EXISTING NEIGHBOURHOOD

Improving living environment in the neighbourhood

Integrating green and water as main elements of the neighbourhood



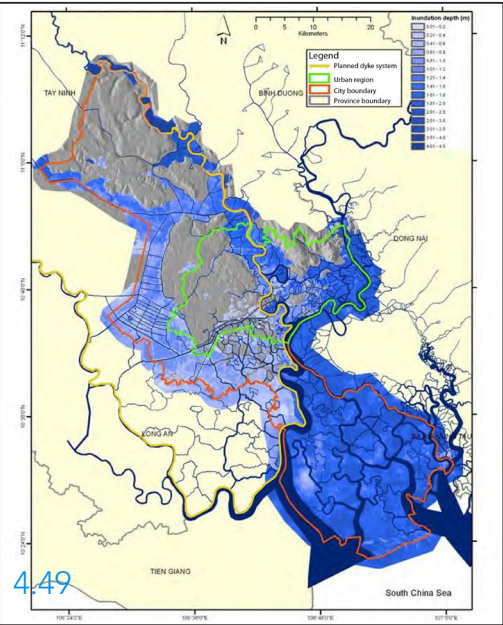
Existing neighbourhood in Ho Chi Minh city now is actually dense built-up. The strategy approach wants to redevelop for the long term benefits of its local citizens. The transformation redefines relationship between residential area towards the river and canals. The redevelopment of existing neighbourhood improve urban spatial quality with the image, identity of life in Ho Chi Minh city.

The design provides high-quality open spaces between existing housing blocks and enhances the characters of houses in Ho Chi Minh city. It reduces challenging problems of extremely dense houses in the neighbourhood. It shows structure of green and blue areas as main elements of the neighbourhood. Water and open space is connected with green corridor along the river . Neighbourhood provides access to the water and spaces for recreation and pedestrians.

4.5 STRATEGY TO AVOID FLOODING

To deal with climate change issue, waterfront redevelopment prepares to live with and in the water. The task requires a preparing both the flood plans and technical construction to achieve sustainable way and to improve safety from the sea side, the river side, or both. Water issues are not just a matter of quantity but also quality (Groot, 2006). The pollution of water is increasingly in day-to-day activities, affected directly to living environment along water sites. Regeneration waterfront along Sai Gon River is needed to cope with numerous issues in relation with water. Water has always been a threatening factor; therefore, waterfront redevelopment project deals with controlled and managed water, which offers certain urban development value for settlements. Finding the ways to reduce flood risk and improve the spatial quality of the urban environment is needed in the project. Developing the plan with expanding rainwater storage capacity, rapid removal of excess rain is necessary. Water storage in urban parkland where the ecology can flourish and recreation is possible.

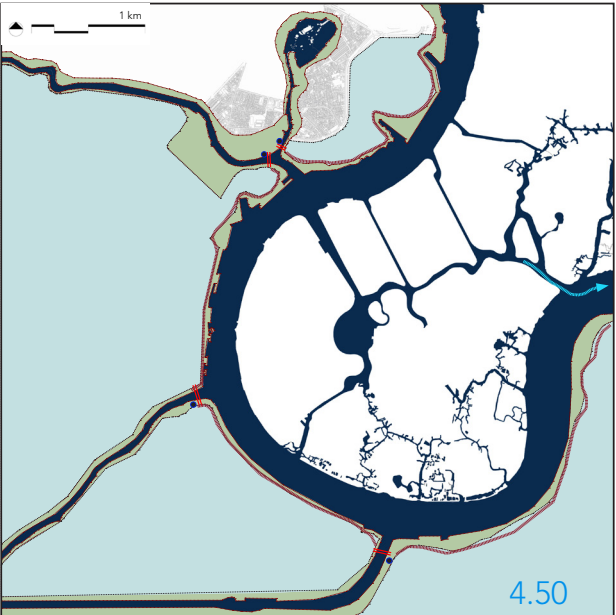
Reduce flood risk from tide and upstream



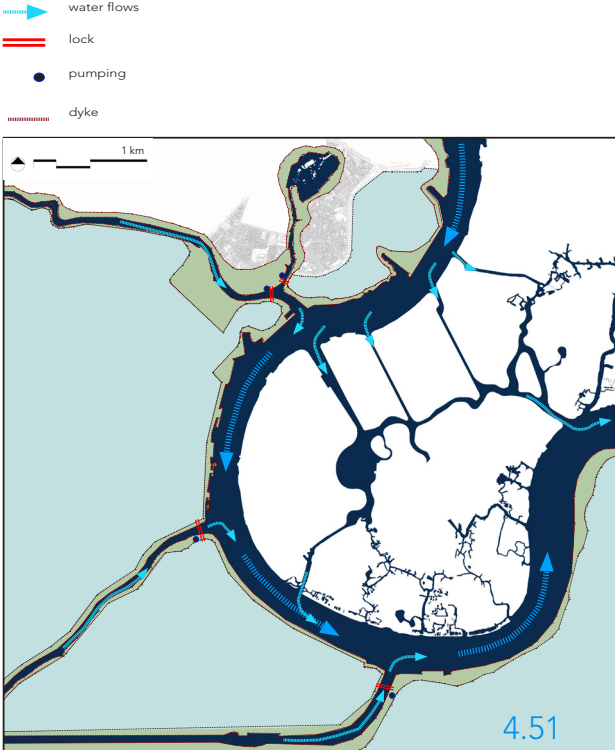
Extreme flood 2050 with planned dyke system in city scale

Legend

- river and canal
- protection areas at any flooding possibility
- flexible landscape areas in seasonal, frequent or daily flooding



Dyke system



Lock locations

REDUCE FLOOD RISK FROM TIDE AND UPSTREAM

Water management and water storage strategy

- 1. Expanding the water storage capacity
- 2. Collecting and using rainwater instead of drinking water

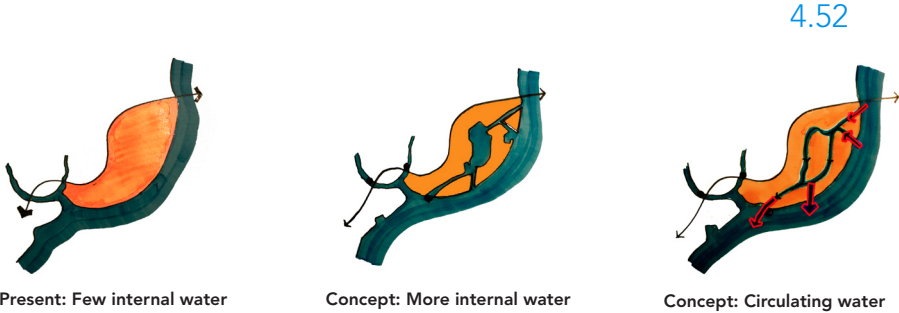
Water in historic city centre

Reopening canals that have been filled in presents, which is an oppotunity to create more surface water

Water in the canals

Additional suface water capacity by recreate a widening existing canals. The space along the canals can replace by greenery. The transformation create new attractive functions along canals by pedestrian lines and effective public spaces near water.

Water in the neighbourhoods

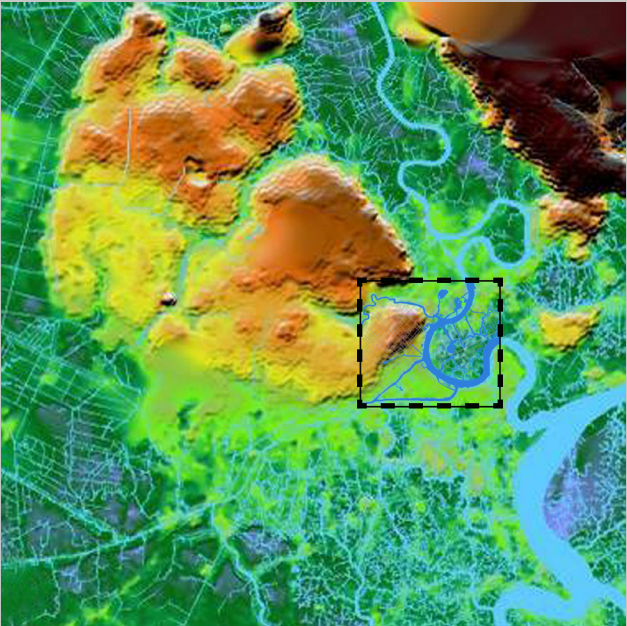


Underground water storage

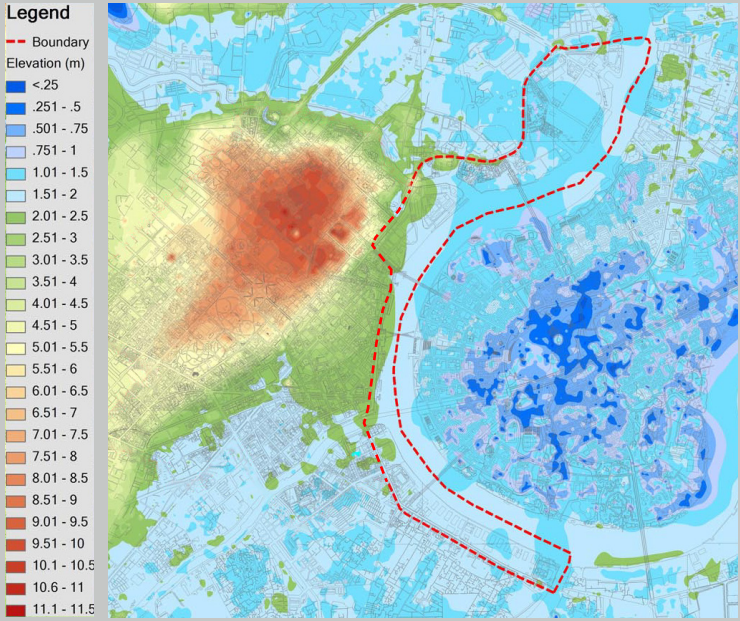
Water can storage underground or buildings or streets to reuse rainwater

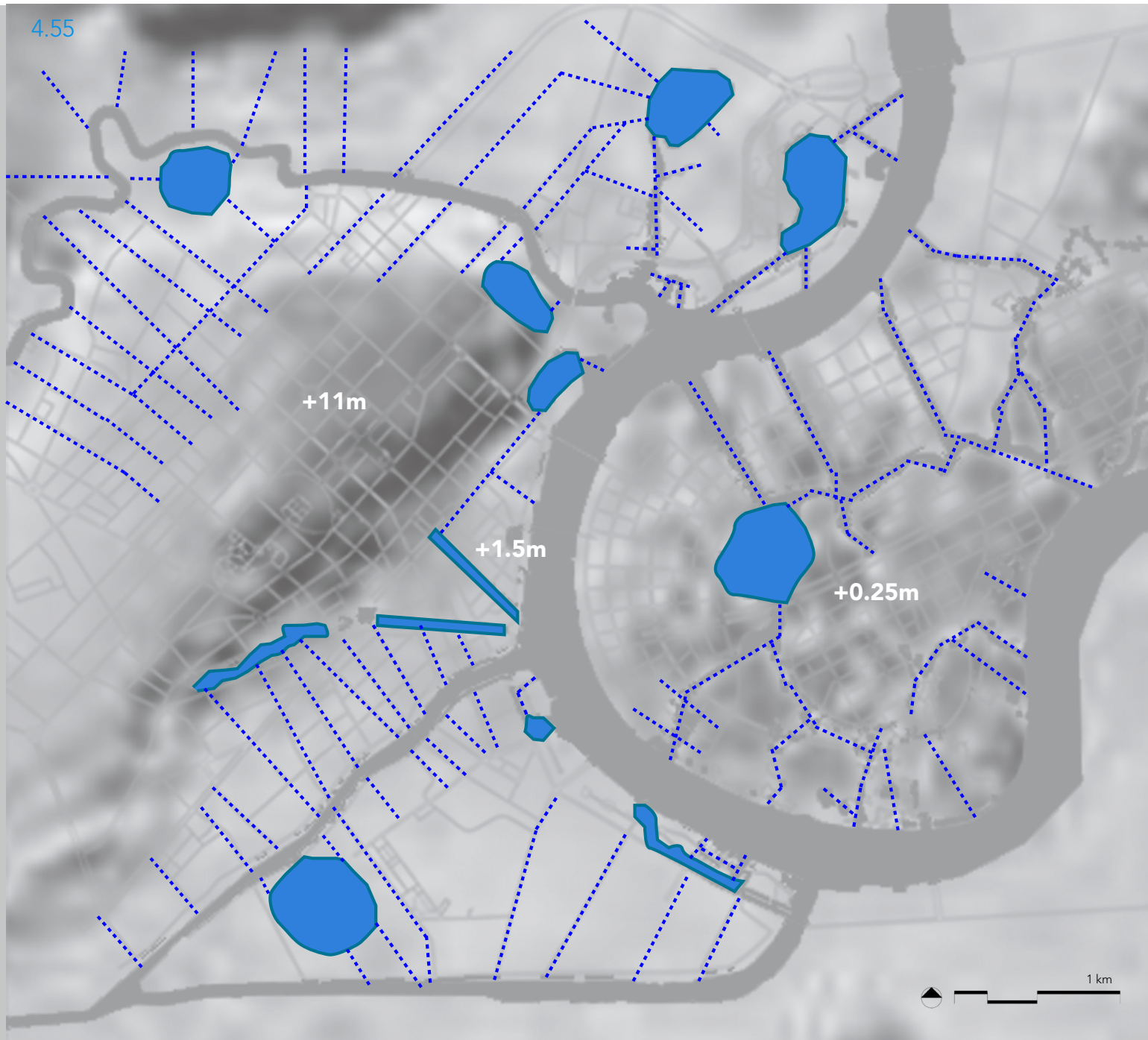
CREATING OPPOTUNITIES FOR WATER STORAGE AND NEW CANALS AS “ MORE ROOM FOR WATER” IN INNER CITY CENTRE

4.53



4.54





It is needed to create new canals and transformation existing canals in order to provide “more room for water” in inner city. Avoiding flood in city centre must keep low density urban in the East bank and maintain Thu Thiem as an “open” system, which allows for tidal fluctuations and high water events through the design of natural and man-made canals, lakes and mangrove areas.

Legend

- new canals
- new water storage

4.60

4.6 IMPLEMENTATION PHASES

Phases I (2011-2015)

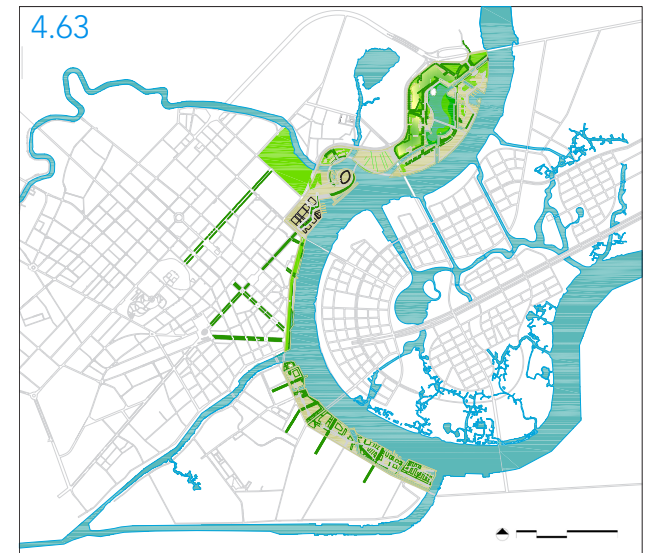
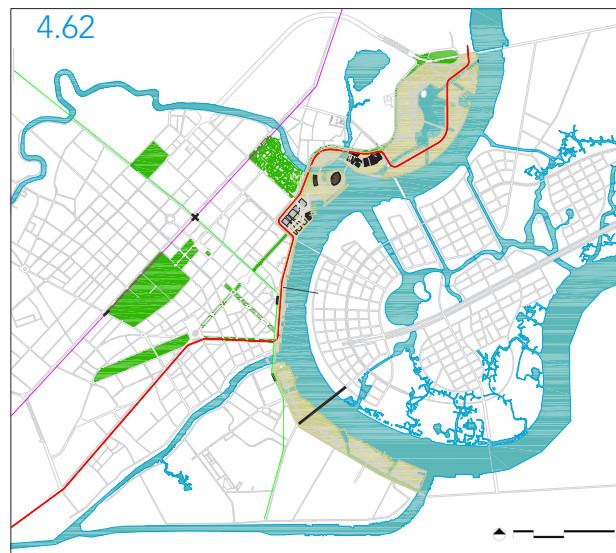
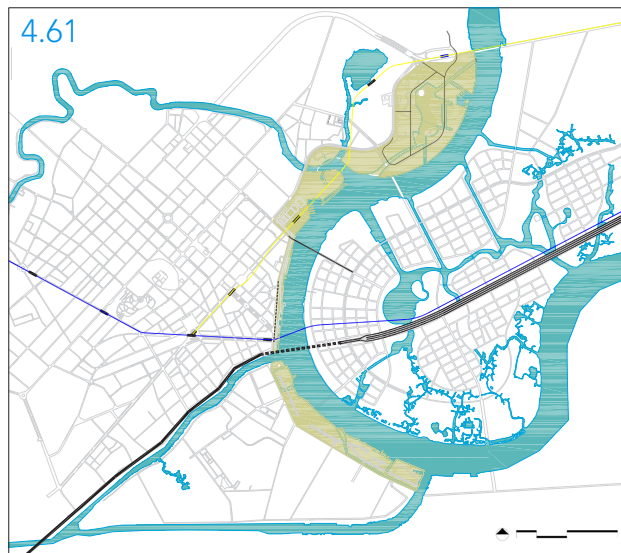
- Enhance the connection from city centre towards the river by transformation Nguyen Hue and Ham Nghi boulevard
- Completed main infrastructure to connect city centre to other districts and Thu Thiem district.
- Enlarge existing canals and start to regain filled-up canals and improve water quality in canals and river
- Start to build two metro lines and developing principal roads in residential riverside zone.
- Start to select and improve the existing neighbourhood along the river and canals

Phases II (2016-2025)

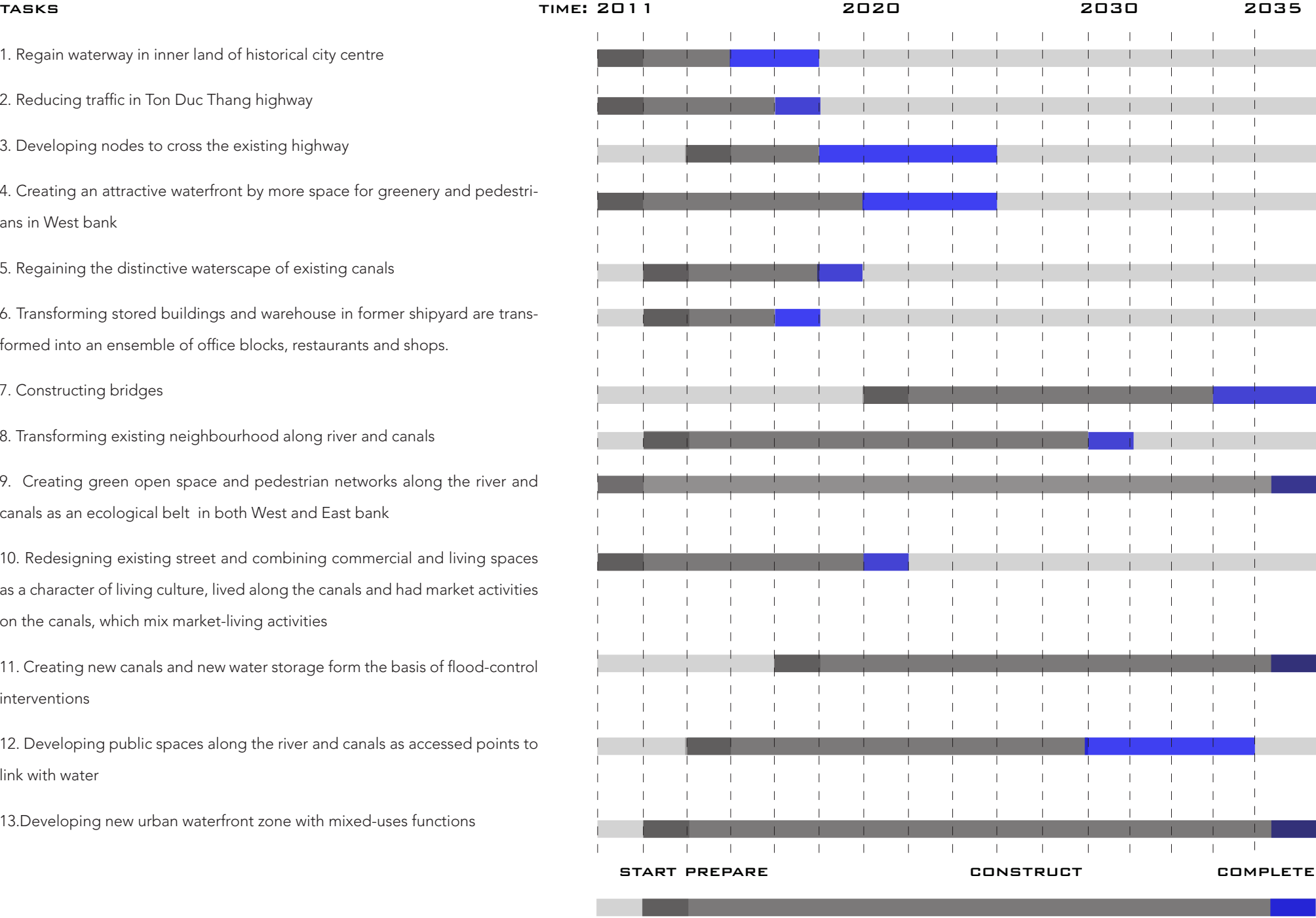
- Start to build tram line to connect historical city centre with other districts and transformation the existing road system. Especially, the Ton Duc Thang highway is redeveloped with separated space for cyclists and pedestrian
- Developing nodes to cross the highway towards the river and forming landscape axis and landmark points to access to the river
- Start to build three bridges to Thu Thiem including a pedestrian bridge
- Start to develop waterfront residential of both Western and Eastern bank

Phases III (2026-2035)

- Spreading to renewal of neighbourhoods along canals to create ecological zone of both two sides of river and canals
- Landscaping green corridors and ecological zone
- Completion of quality facilities and space in new neighbourhood.
- Completion the residential zone in Eastern bank with villages living with water and natural landscape
- Completion the strategy to reduce floods and high quality of water as well as water management.
- Providing attractive recreation and leisure on Sai Gon's waterfront

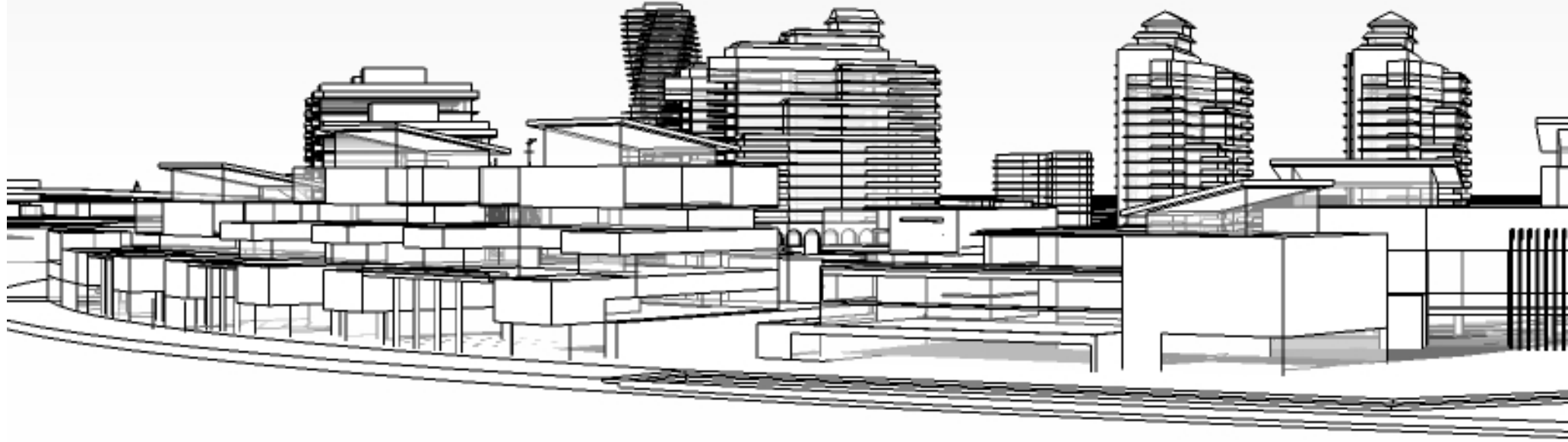


4.6 TIME LINE



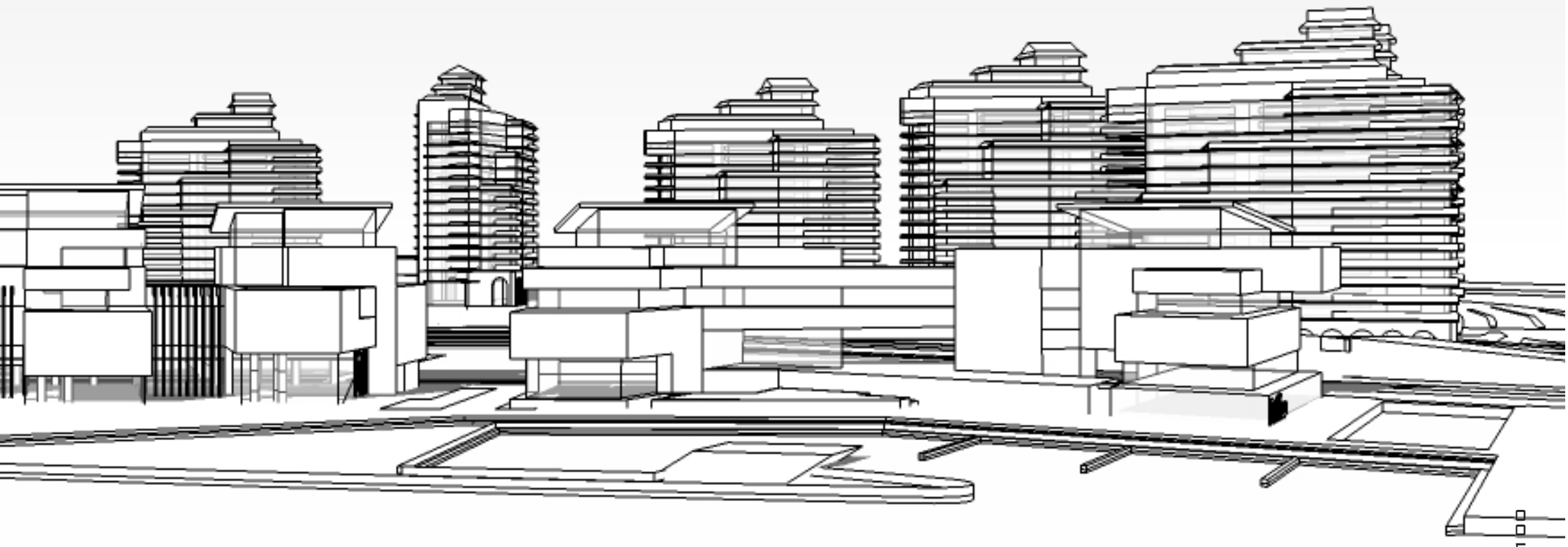


Chapter 5

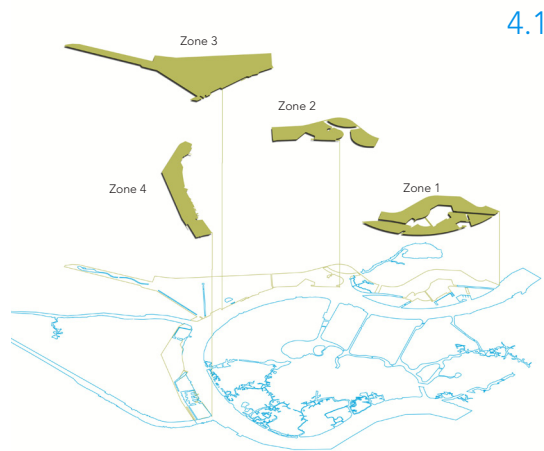


Strategic Project

The current situation along the banks of the Sai Gon river is discussed and explored for a possible plan of redevelopment spatial riverfront. The design of redevelopment Sai Gon waterfront located in old port area must enhance an attractiveness of riverside. Innovation planning and implementation strategy must be applied in the field of sustainable development and public interests. This research develops framework conditions for future riverbank development to enhance local people used the city's public waterfront and places for living and working. Moreover, revitalization Sai Gon waterfront rediscovers the cultural living and reshapes spatial urban structure to strengthen unique view of Sai Gon River.



5.1 MASTER PLAN



Zone 1

Developing a new waterfront residential, official and commercial area with attractive complex neighbourhood and high quality of the urban environment

Zone 2

Transformation of the existing houses and buildings improve living environment and encourage community participation through the pedestrian network and public squares near the river.

Zone 3

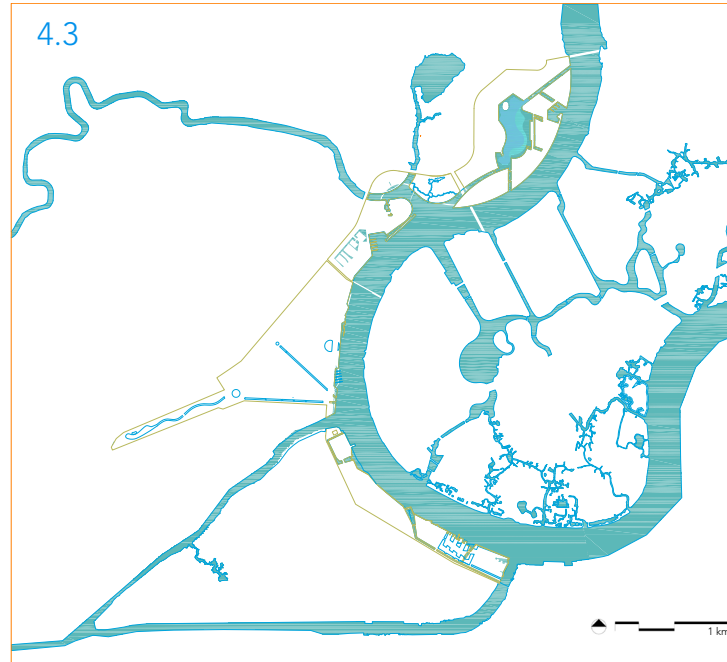
Regaining water value in inner city in both urban spatial and historical spirit

Zone 4

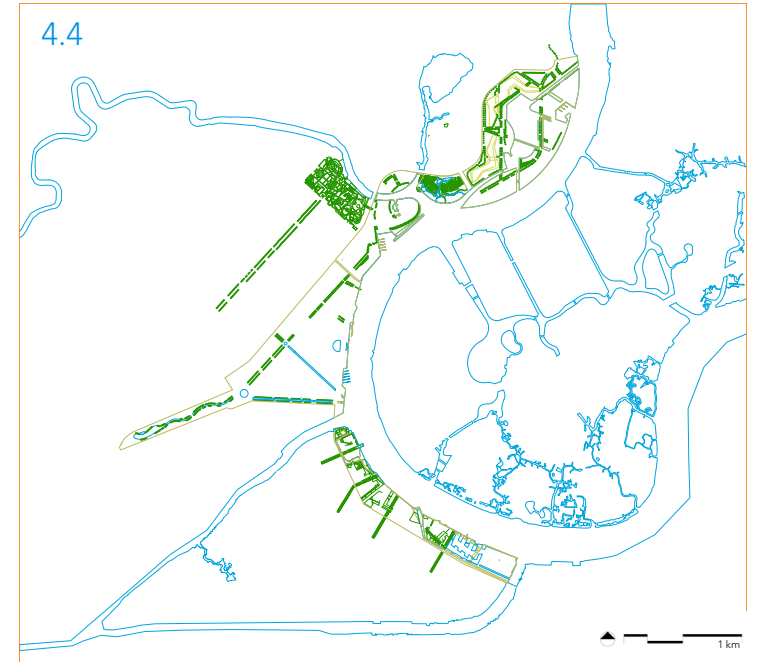
Developing a new waterfront residential area



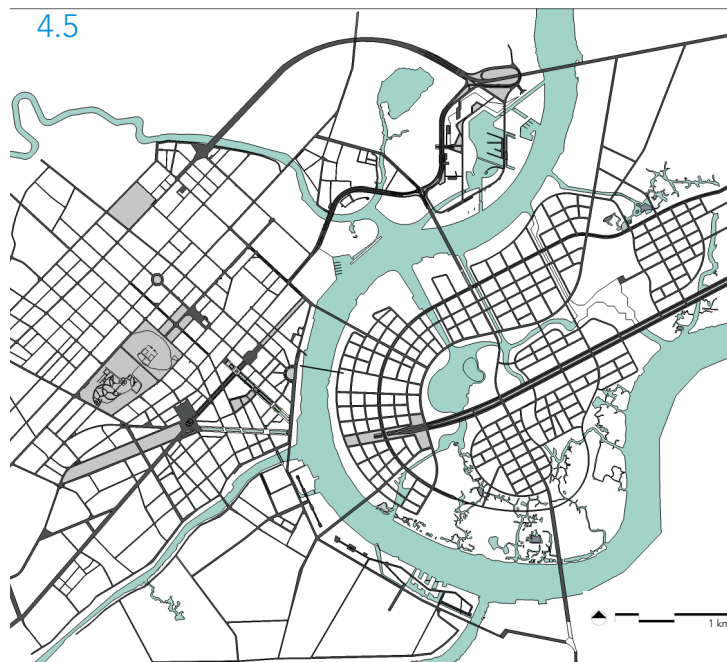
LAYERS



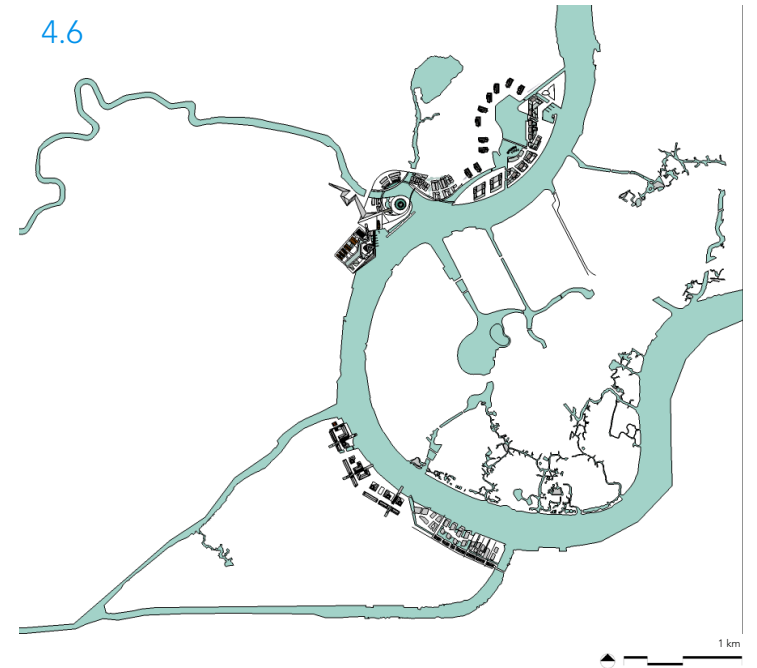
Water



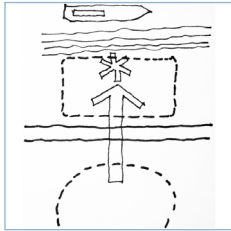
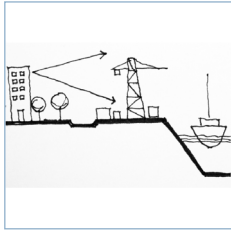
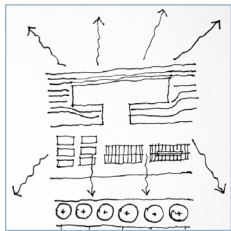




Green



Infrastructure



Buildings

| Urban Strategy | Objectives and tasks | Problems to be solved |
|---|--|---|
| 1. Improving and creating connections from city to its waterfront | <ul style="list-style-type: none"> -Bring the city back to the river by both infrastructure linkages and urban spatial connections (nodes, paths, edge and landmarks) - Recovering the historical value of the city and enhancing local cultural identity and images through passages to river - Increasing the greening of the urban waterfront in order to create an ecological zone in inner city |  <p>poor connection to waterfront</p>  <p>industrial barrier</p> |
| 2. Strengthening and regaining public accesses to the river and canals | <ul style="list-style-type: none"> - Regaining public accesses to the waterfront - Enhance main axis from historical city centre with a sense of heritage and history - Crossing the highways to the waterfront - Creating new public spaces as a access points along the river |  <p>lack accessed points to river</p>  <p>low visions to river</p> |
| 3. Developing an attractive waterfront as a liveable place for living, working and leisure | <ul style="list-style-type: none"> - Using attractive location along the river for future demands of unique living, working and recreation environment - Developing a new waterfront residential and complex official zone with mix-income urban neighbourhood - Redeveloping waterfront residential with already built-up block in low-income urban neighbourhood |  <p>less an attractive waterfront</p>  <p>Poor living environment</p> |
| 4. Combining solutions of flooding protection with improving urban environment | <ul style="list-style-type: none"> - Flood protection and combining flood defense with public space - Expanding the water storage capacity - Collecting and using rainwater instead of drinking water - Adding new water storage by transforming existing canals |  <p>flood risks</p> |

Implementation approaches

1. Reducing traffic in the main highway from 6 lanes into 2 lanes, creating an attractive waterfront by more space for greenery and pedestrians
2. Bridging the river by one pedestrian bridge and other three bridges using for cars and motorbikes
3. Regain waterway in inner land of historical city centre and rediscovering cultural heritage value
4. Creating green open space and pedestrian networks along the river and canals as an ecological belt

5. Breaking down barriers and opening up access by nodes to cross the existing highway
6. Regaining the distinctive waterscape of historical Sai Gon
7. Developing public spaces along the river and canals as accessed points to link with water

8. Transformation of the existing buildings and houses:

8.1 Stored buildings and warehouse in former shipyard are transformed into an ensemble of office blocks, restaurants and shops.

8.2 Transformation of existing neighbourhood along river and canals

9. Developing new urban waterfront zone with mixed-uses functions

- Combining commercial and living spaces as a character of living culture, lived along the canals and had market activities on the canals, which mix market-living activities

- Place for living: new residential area along the river and provides "living with nature"

- Place for working: new commercial official buildings

- Place for leisure: shops, restaurants and cafe near to waterfront and access easily by contact directly with pedestrian paths and encourage pedestrians and outdoor activities

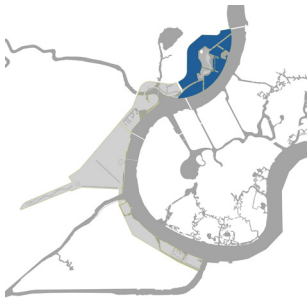
10. Transformation canals and new water storage form the basis of flood-control interventions

Location



ZONE 1 - NORTHERN PART

Developing an attractive waterfront as a liveable place for living, working and leisure



Program for the integrated development of Northern part

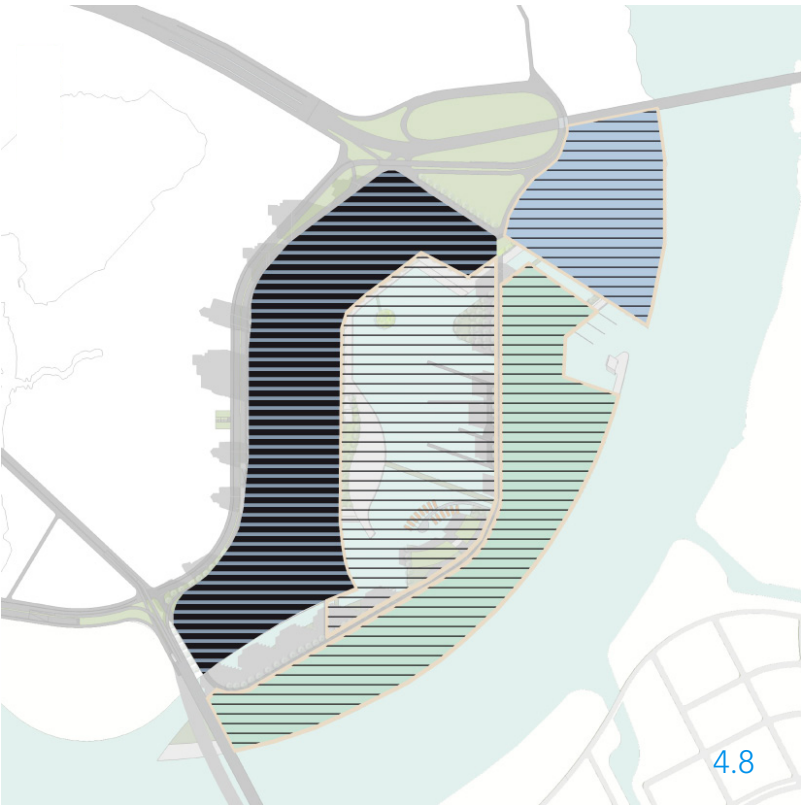
| Land Use Information | | (Hectares) |
|-----------------------------|--|------------|
| Site area | | 104.5 |
| Land | | 79.5 |
| Water | | 25 |
| Buildings | | 25.5 |
| Streets and surface parking | | 23 |
| Landscaping and open space | | 30 |
| Maximum number of floor | | 18 |

| Buildings area | | Square meters |
|--|--|---------------|
| Use | | |
| Office & Commercial | | 200,000 m² |
| Retail, restaurant and service | | 30,000 m² |
| Residential | | 50,000 m² |
| Hotel & recreational and entertainment | | 10,000 m² |
| Others | | 7,000 m² |

| Residential information | | Percentage of housing units |
|-------------------------|--|-----------------------------|
| Unit type | | |
| Studio | | 15 % |
| Single family | | 10% |
| Large family | | 20% |
| Apartment | | 48% |
| Floating house | | 7% |

Land use

- park and open landscape
- high-density residential, official and commercial area
- low-density residential houses
- water and landscape

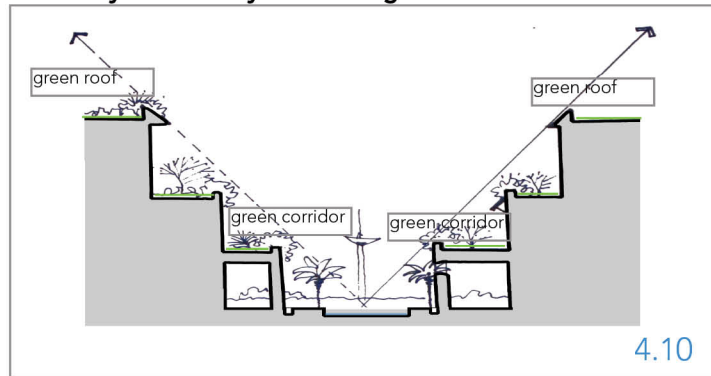


CONCEPT OF URBAN SPATIAL

Creating the window and public spaces to the river

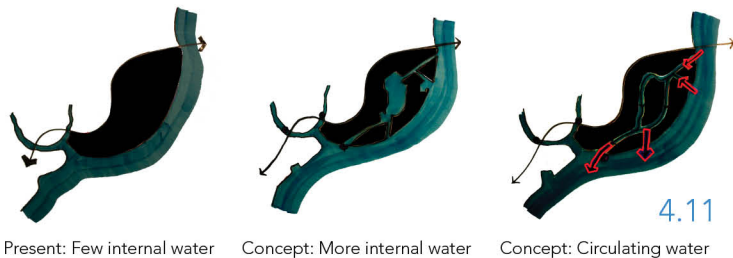


Greenery of balcony and roof gardens



CONCEPT OF WATER MANAGEMENT

Water as a main element of the neighbourhood



PLAN

Complex building blocks: Office & Commercial and residential

Cultural park

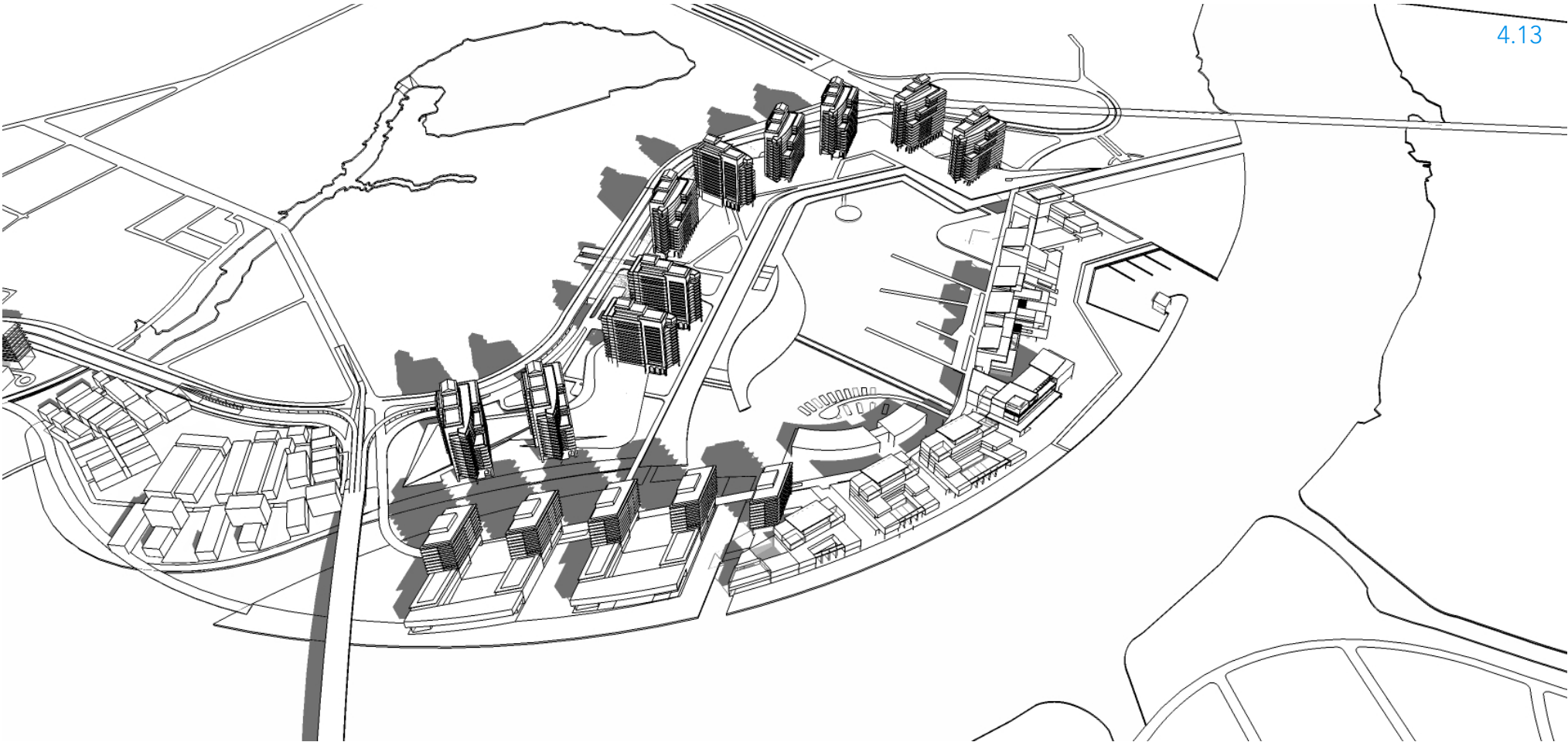
Waterfront residential blocks for large family and apartment

Recreational activities

Public square

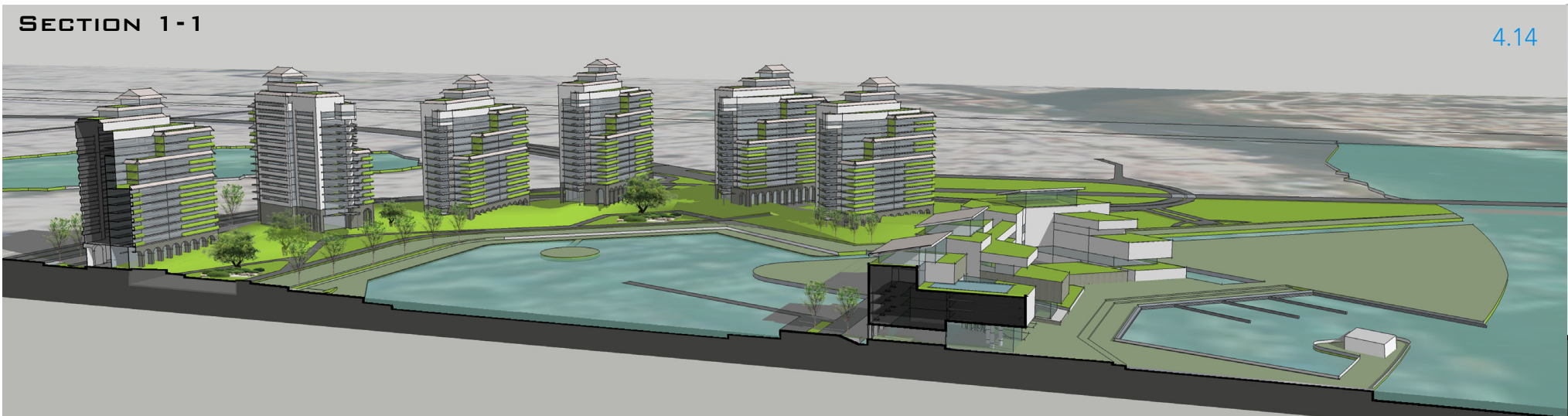
Waterfront residential blocks for large and single family



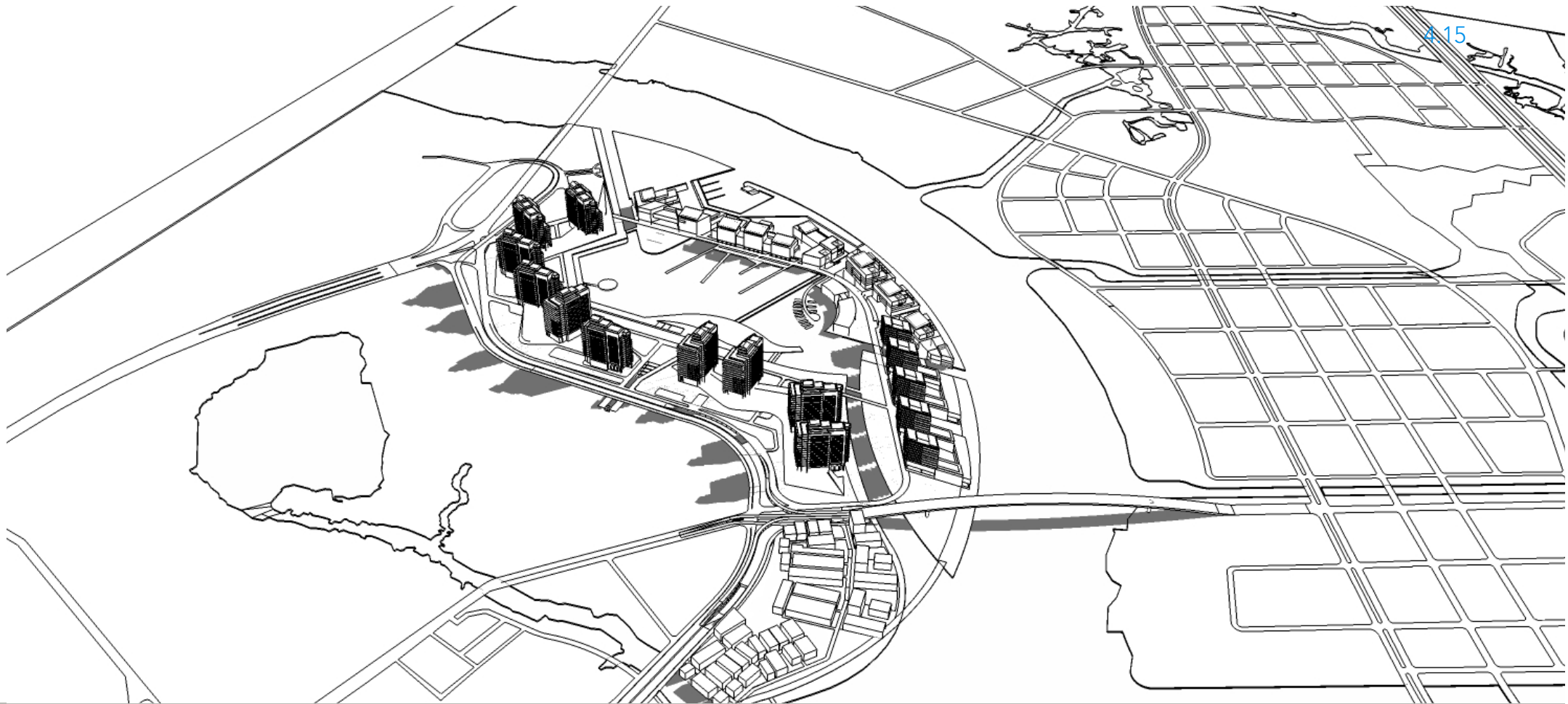


4.13

SECTION 1-1



4.14



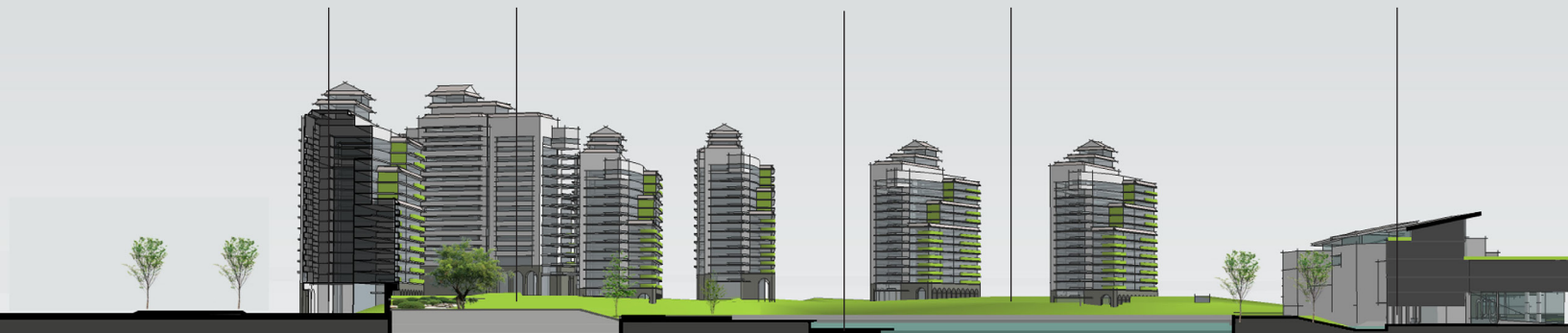
4.16

commercial space underground parking car public square

green space as a dyke

window to the river

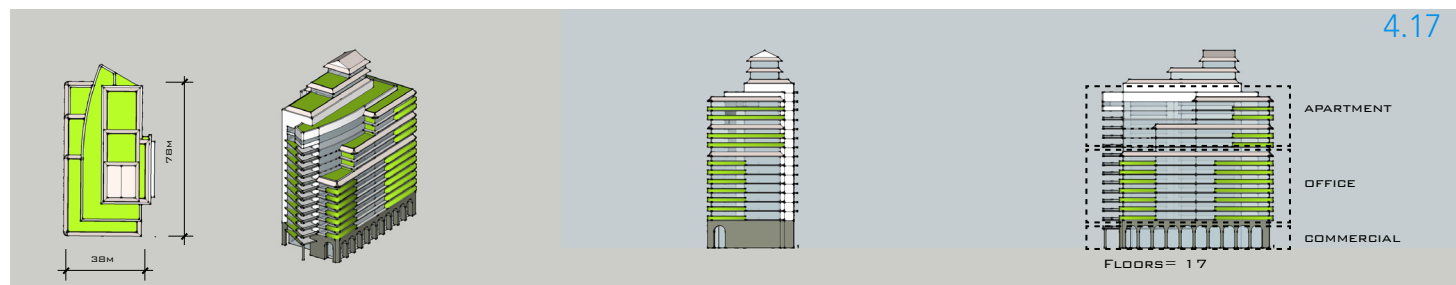
pedestrian path



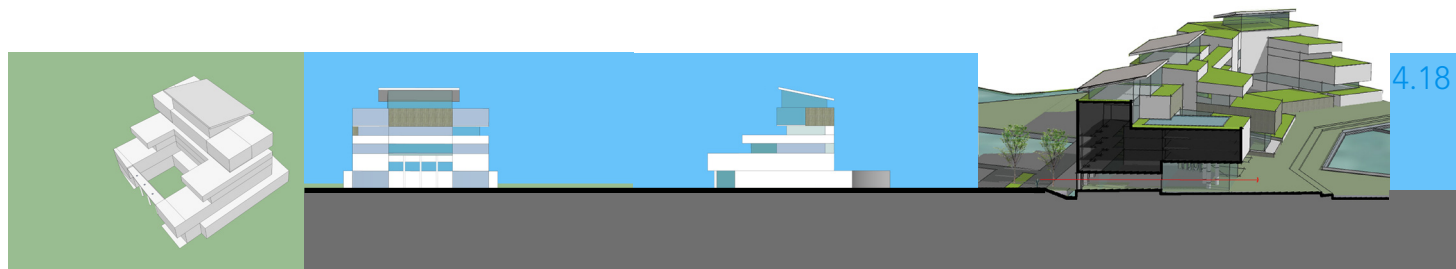
TPOLOGY

Proposal special typology of waterfront residential development is used to link visually the location towards the river. Landscaped viewing as the vantage points to reach to water. The new buildings and their out-door spaces create a high quality of living environment.

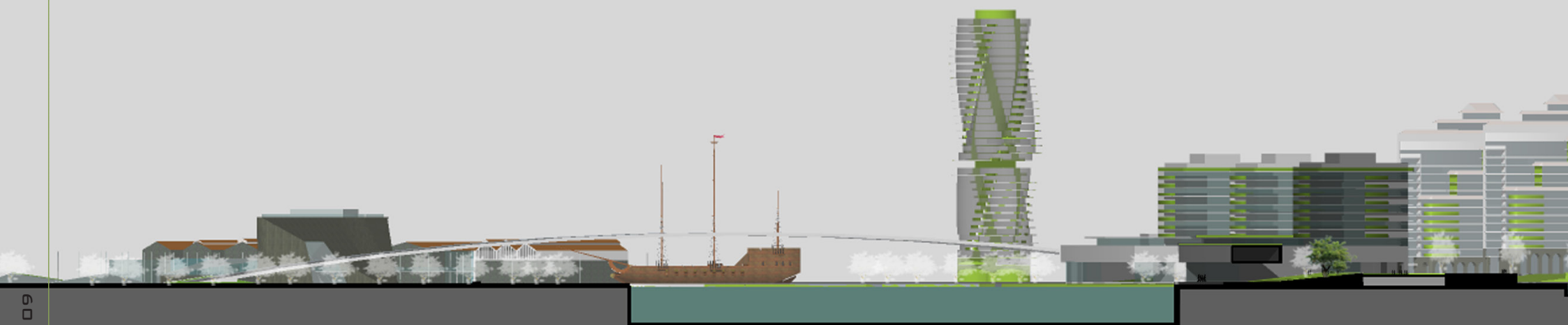
COMPLEX BUILDING BLOCKS: OFFICE & COMMERCIAL AND RESIDENTIAL



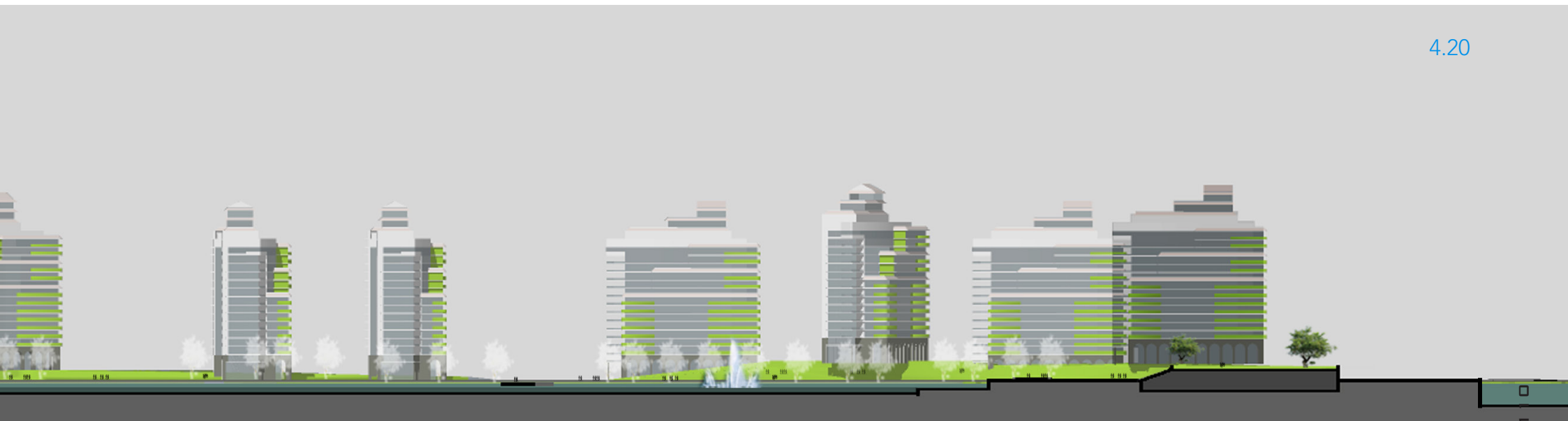
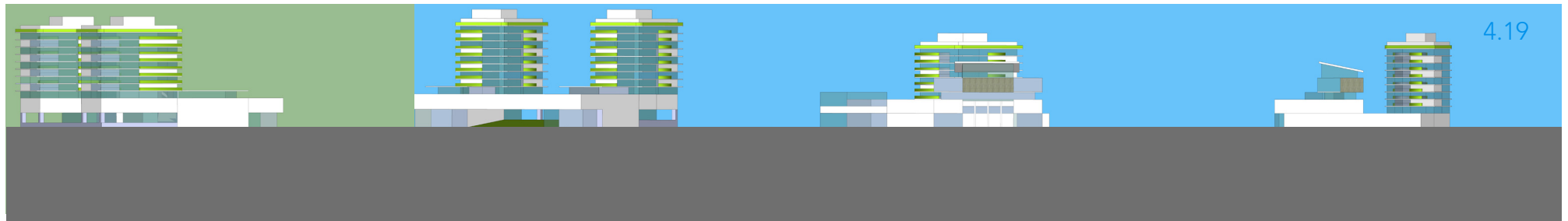
WATERFRONT RESIDENTIAL BLOCKS FOR LARGE FAMILY AND APARTMENT



SECTION 2-2



WATERFRONT RESIDENTIAL BLOCKS FOR LARGE AND SINGLE FAMILY



ZONE 2 - THE FORMER BASON SHIPYARD

Transformation of the existing buildings and houses



Program for the integrated development of former Shipyard area

Land Use Information

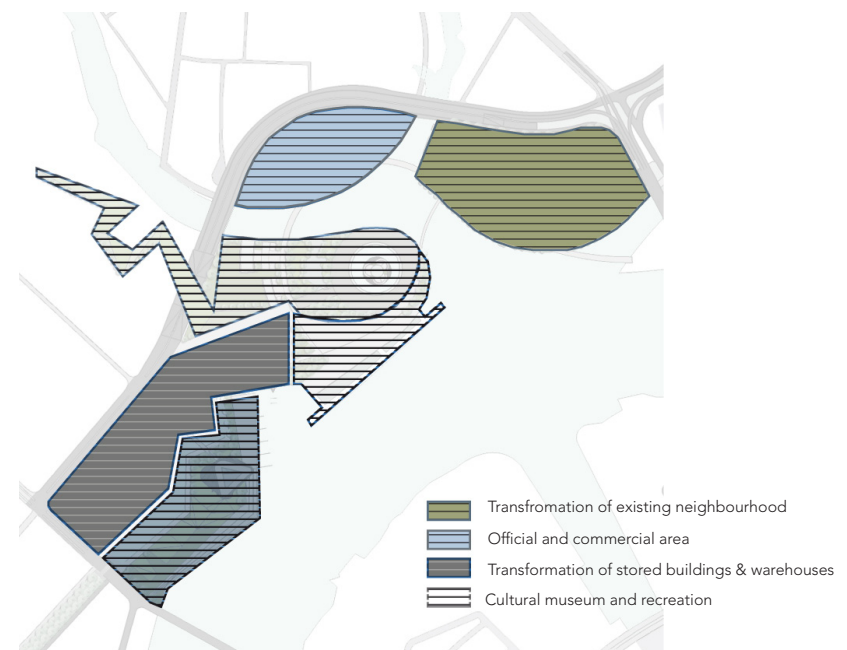
| | (Hectares) |
|-----------------------------|------------|
| Site area | 45.8 |
| Land | 27.8 |
| Water | 18 |
| Buildings | 15 |
| Streets and surface parking | 5.8 |
| Landscaping and open space | 7 |

Buildings area

| Use | Square meters |
|--------------------------------|------------------------|
| Terminal ware house | 20,000 m ² |
| Office & Commercial | 200,000 m ² |
| Retail, restaurant and service | 80,000 m ² |
| Residential | existing houses |
| Recreation and entertainment | 20,000 m ² |
| Cultural museum | 18,000 m ² |

Land use

4.21



ZONE 2 - THE FORMER BASON SHIPYARD

Transformation of the existing buildings and houses



Program for the integrated development of former Shipyard area

Land Use Information

(Hectares)

| | |
|-----------------------------|------|
| Site area | 45.8 |
| Land | 27.8 |
| Water | 18 |
| Buildings | 15 |
| Streets and surface parking | 5.8 |
| Landscaping and open space | 7 |

Buildings area

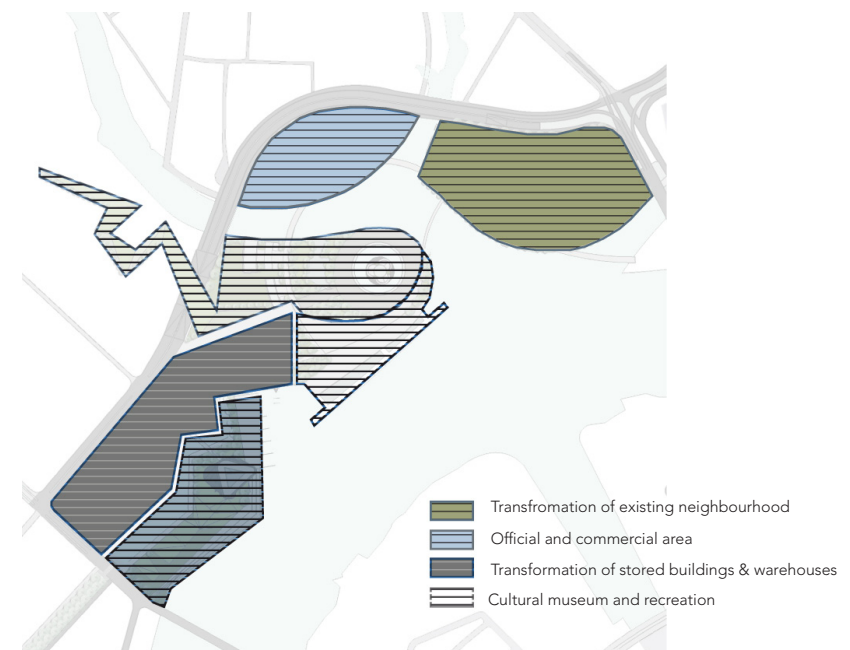
Use

Square meters

| | |
|--------------------------------|------------------------|
| Terminal ware house | 20,000 m ² |
| Office & Commercial | 200,000 m ² |
| Retail, restaurant and service | 80,000 m ² |
| Residential | existing houses |
| Recreation and entertainment | 20,000 m ² |
| Cultural museum | 18,000 m ² |

Land use

4.21

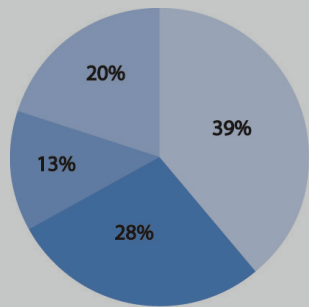


Aerial photos of former Bason shipyard

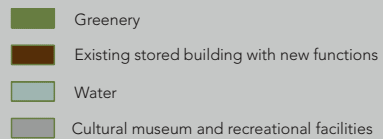
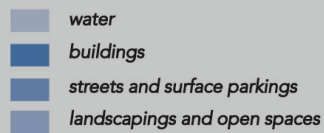


4.22

Summary land use



4.23



4.24

STRATEGIC PROJECTS

Part A:

Transformation of the existing buildings and houses:

A.1 Stored buildings and warehouse in former shipyard are transformed into an ensemble of office blocks, restaurants and shops.

A.2 Transformation of existing neighbourhood along river and canals

Part B:

Breaking down barriers and opening up access by nodes to cross the existing highway

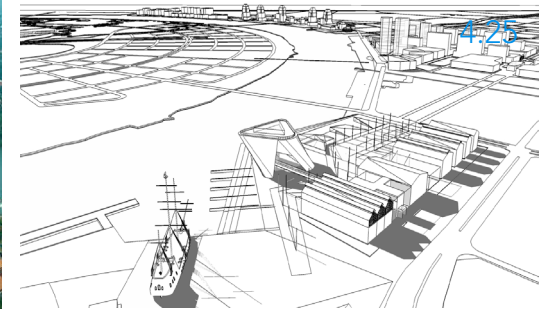
A.1 REUSING STORED BUILDINGS AND WAREHOUSES TO BECOME COMMERCIAL BLOCKS, RESTAURANTS AND SHOPS

Existing



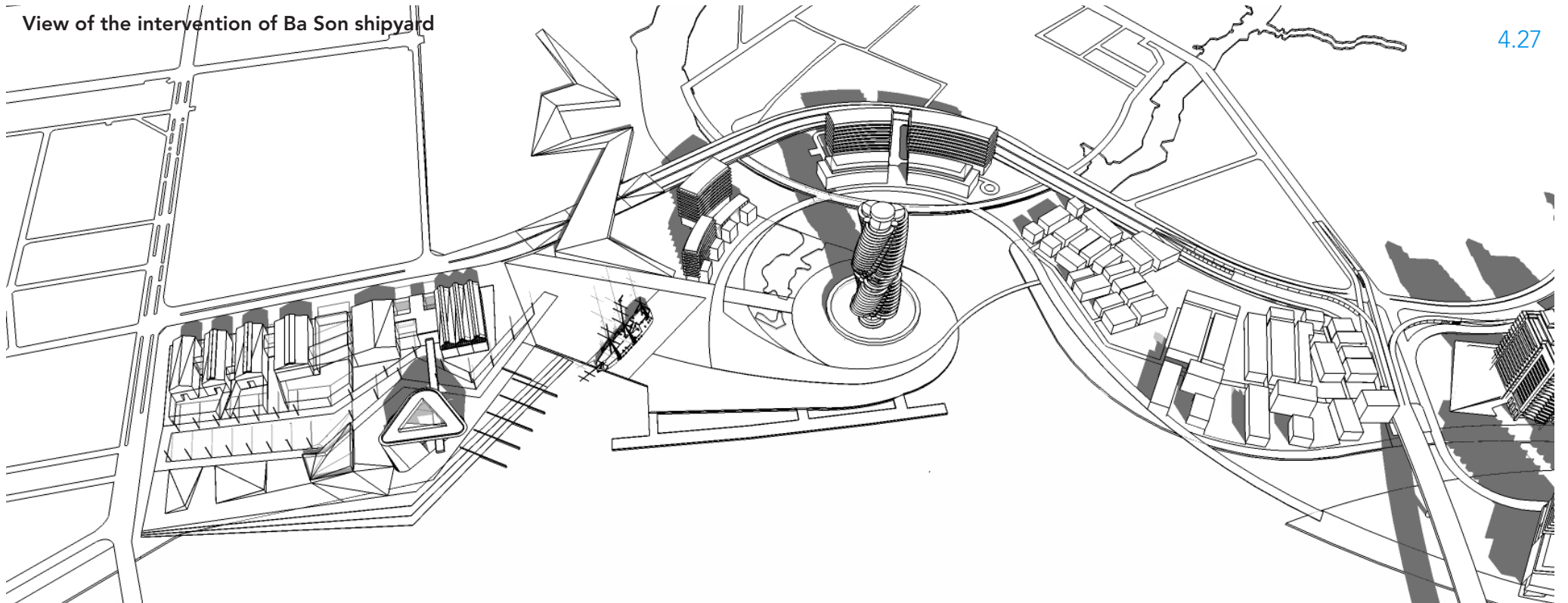
4.25

Intervention



4.25

View of the intervention of Ba Son shipyard

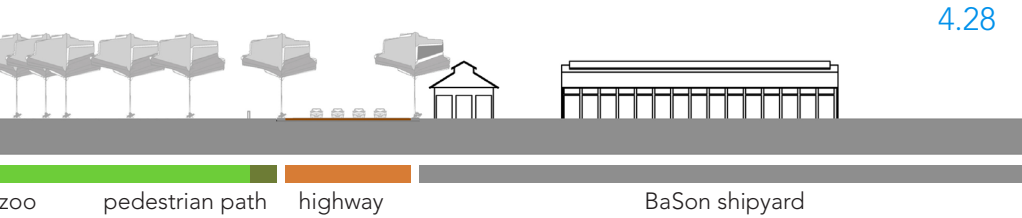


4.27

PART B:

BREAKING DOWN BARRIERS AND OPENING UP ACCESS BY NODES TO CROSS THE EXISTING HIGHWAY

Section of limited accessibility to Basonshipyard because of a highway



Proposal crossing the highway and reuse stored building and warehouses



Bird-view of the transformation of warehouses and stored buildings in the former BaSon shipyard



A.2 TRANSFORMATION OF EXISTING NEIGHBOURHOOD ALONG RIVER AND CANALS

Problems existing built-up blocks

1. Housing patterns are extremely dense with little floor area available per household. These houses are narrow and deep
2. House units were mostly erected spontaneously and often completely lacked technical infrastructure and transport connections
3. No green space and playground for children inside the neighbourhoods
4. Poor environmental conditions of houses



Aerial photos of typical built-up blocks



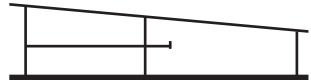
Existing built-up blocks

TYPICAL BUILT-UP BLOCKS

Rudimental



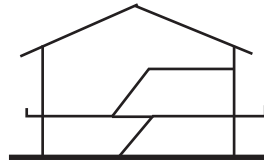
4.32



Traditional shop-house



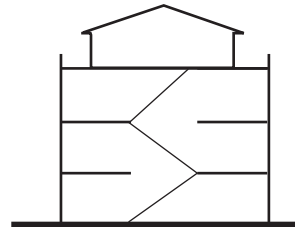
4.33



New shop-house



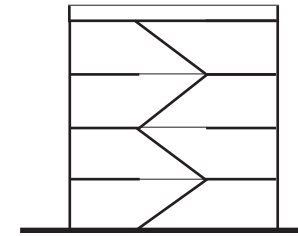
4.34



Row-house



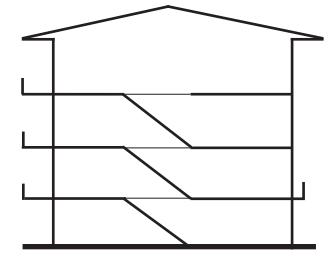
4.35



Villa



4.36



Floors: 1-2
Material: wood, brickwork, construction modes
Architecture: non-description
Type: residential
Access: street, canal
Length: 6-20m - Width: 2-6m

Floors: 2-3
Material: wood, brickwork, reinforced concrete
Architecture: narrow and deep
Type: shop on the outside periphery borders to street, shopping, selling, working, residential
Access: street and in part back alleys
Length: 12-20m - Width: 4-8m

Floors: 1-5
Material: reinforced concrete, brickwork, glasswork
Architecture: narrow and deep
Type: shop on the ground floor, residential
Access: street
Length: 6-20m - Width: 2-6m

Floors: 2-5
Material: reinforced concrete, brickwork, glasswork
Architecture: narrow and deep
Type: residential
Access: street
Length: 12-20m - Width: 4-6m

Floors: 1-4
Material: reinforced concrete, brickwork, glasswork
Architecture: French style
Type: residential
Access: street
Length: 14-20m - Width: 8-12m

Dense houses with no planning and no controlling in architecture

TRANSFORMATIONAL FUNCTIONS

1. Reformation of small and old houses or buildings to improvement of residential environment
2. Improvement of narrow or blind passages inconvenient for access and disaster prevention
3. Securing larger open space and improve transitional spaces between private and public space
4. Creating safe and comfortable residential environment and townscape

5. Preventing the residential environment from becoming worse

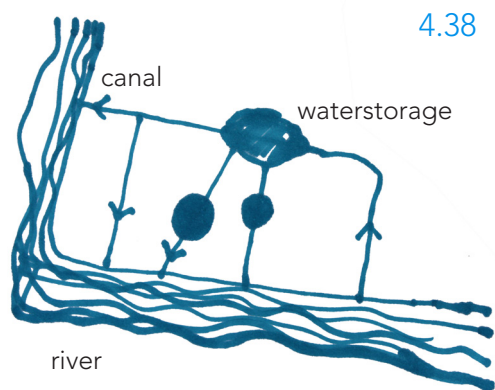
In local scale, select houses to transform and provide enough technique for changing functions:

1. Transformation existing houses with roof garden and patio in between of house. Using green roof collects rain water in order to reuse rain water for non-drink purposes.
2. Collection of lands and floors is being worse in order to transform into common-garden and open space inside neighbourhoods. Green and blue corridor provides the "open window" to water from neighbourhood.
3. Enlarging water storage capacity in the neighbourhood

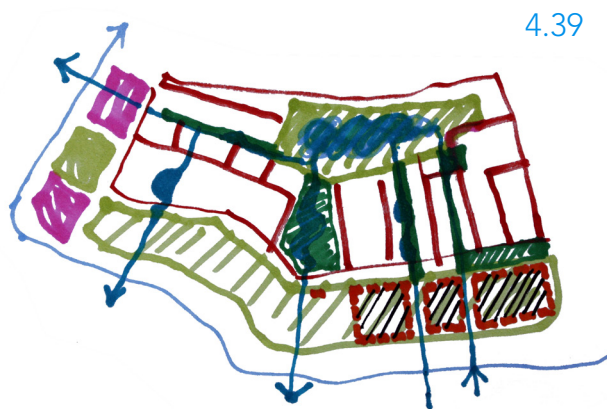
Existing neighbourhood in the densely built-up area redevelops for the benefits of its local citizens. The transformation redefines relationship between residential area and waterfront. The redevelopment of existing neighbourhood produced a new urban quality with the image, identity and quality of life in Ho Chi Minh city.

The design creates high-quality open spaces between existing housing blocks and enhances the character of houses in Ho Chi Minh city. It solves the challenging problem of extremely dense houses in the neighbourhood. It shows structure of green and blue areas. Water and open space is connected with green corridor. Neighbourhood provides access to the water and spaces for recreation and pedestrians.

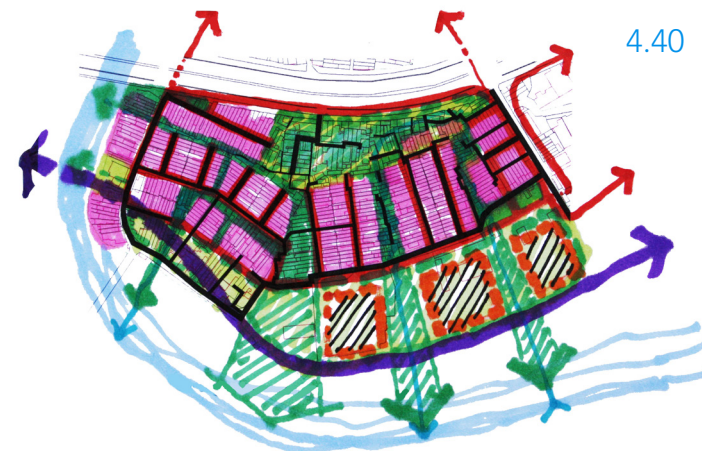
CONCEPT



Circulating water and new water storage



Improving accessibility in neighbourhood



Creating green and blue corridor as a window to water



4.41

Creating high-quality open spaces between existing housing blocks

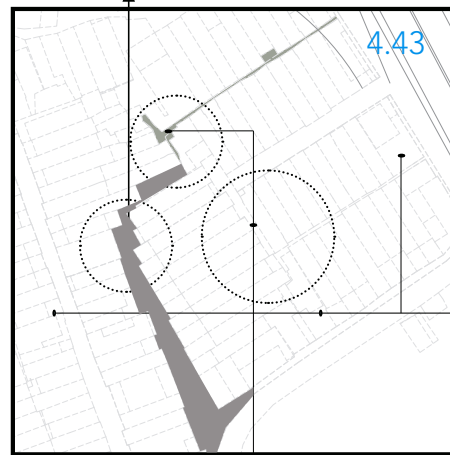
IN SCALE - 100Mx100M



4.42

Proposal transformation existing housing block

Pedestrian space is deteriorated and attractiveness of roads is lowered



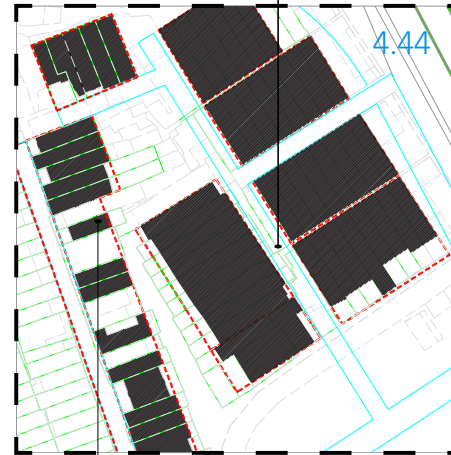
4.43

Narrow passages are of problems in access, disaster prevention, ventilation, hygiene

Townscape is disturbed by extraordinarily tall or scale-out buildings



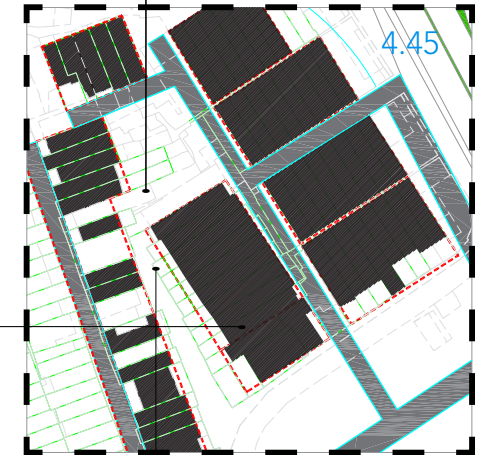
To improve pedestrian space and accessibility by clear passages and furnishing sidewalks



4.44

To select houses with enough constructed conditions in in-block streets in order to transform and provide techniques for changing functions

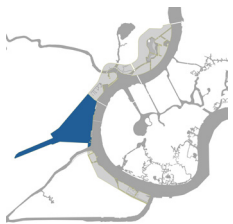
To collect worst houses for common space, creating new green and waterstorage to prevent an overload of the amount of rain water caused floods



4.45

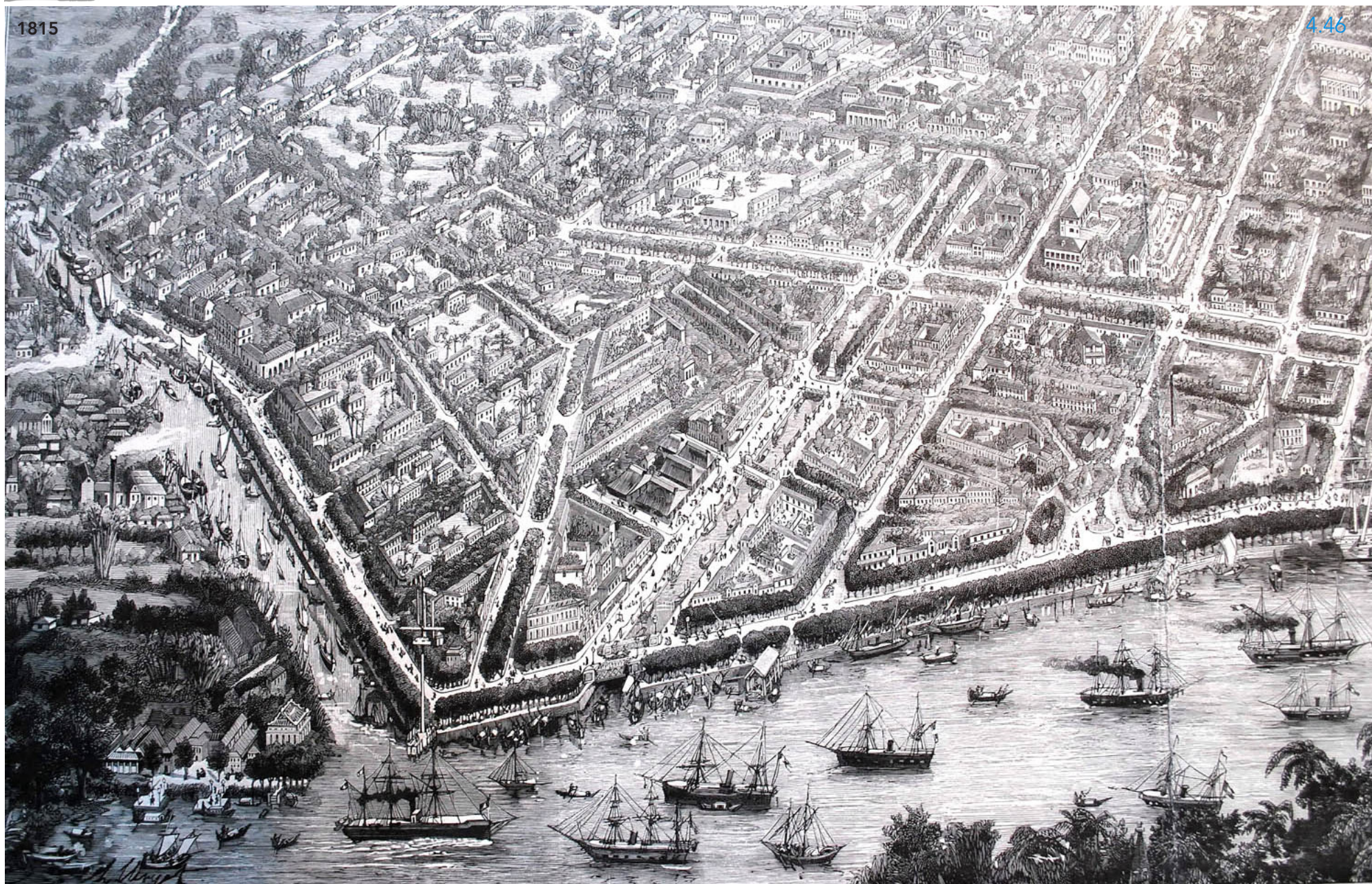
To reduce with lower density neighbourhoods

To produce orderly townscape, becoming an attractive residential area



ZONE 3 - CITY CENTRE WATERFRONT

Rediscovering main historical axes from city centre to waterfront



A HISTORIC WATER CITY

Ho Chi Minh City- formerly Sai Gon, Gia Dinh was a water city with canal-based development. Since its founding in 1698, the city has been a water-based city where canals along with rivers and their subsystems have been the main routes of commuting and commerce. The original functions of the canal system have changed little despite the development of roadways and other more convenient means of transport: the city's canal-based urban form still retains its unique water-based social economic structures including port-boat-market activities and canal handcraft villages, processing a rich cultural and religious diversity. Nowadays, inhabitants partly forgot the spirited images and distinctiveness of the water city it loses the historic values. This project aims to rediscover what "we have almost forgotten how to build cities" (Davey, 1999) and to rediscover waterfront from historic city centre towards the river. This is a way to recreate the image of a water city, to encourage economic investments, to attract people participates into public space and involves community.

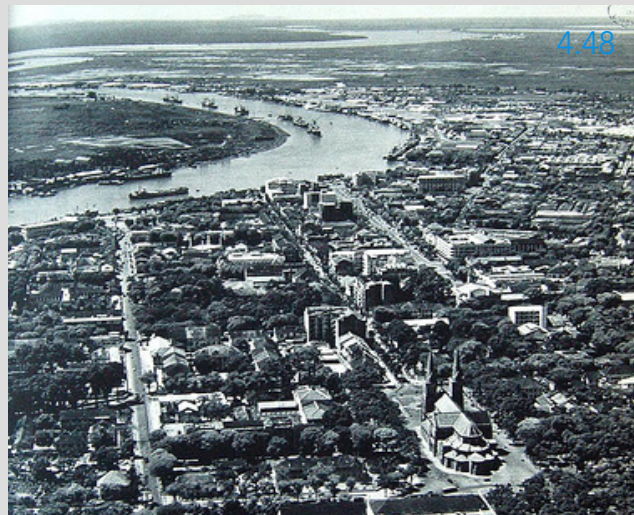
History

1862



Canal in Nguyen Hue Boulevards in history

1950



Filled up canal in Nguyen Hue Avenue since 1870

Now

2010



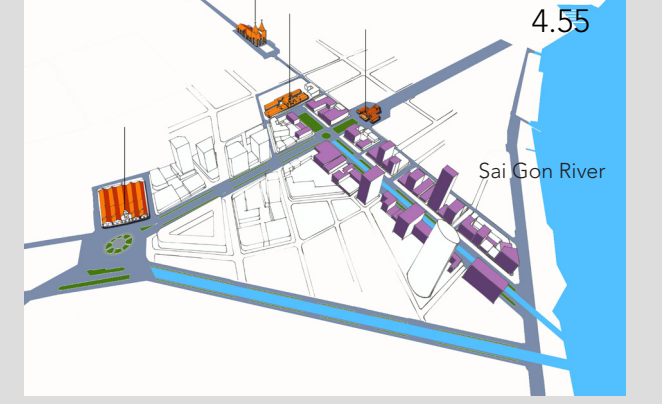
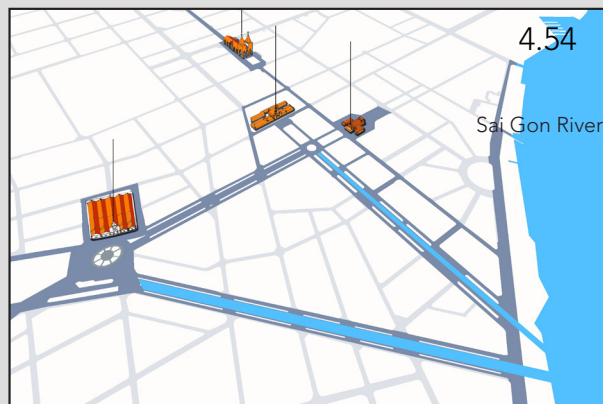
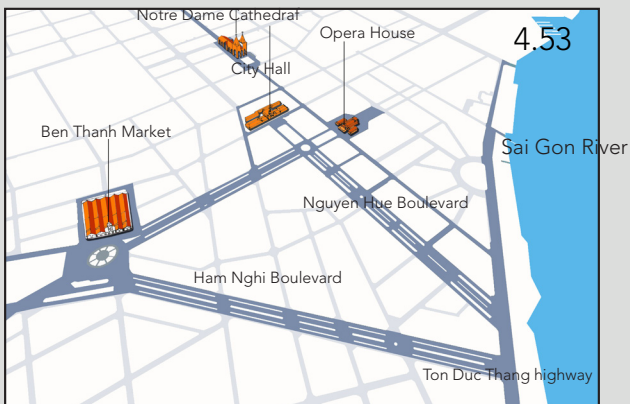
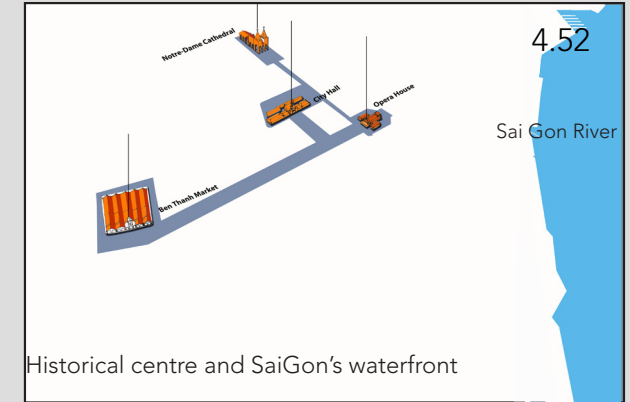
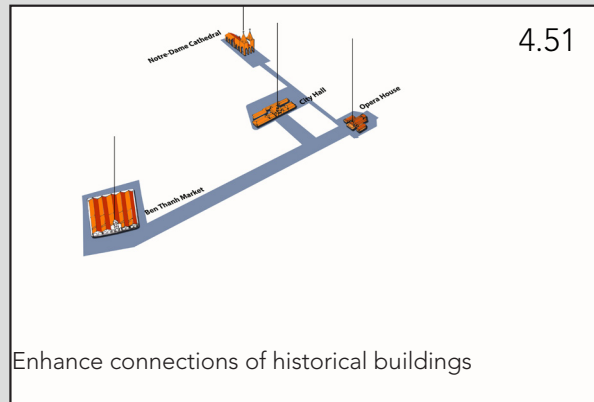
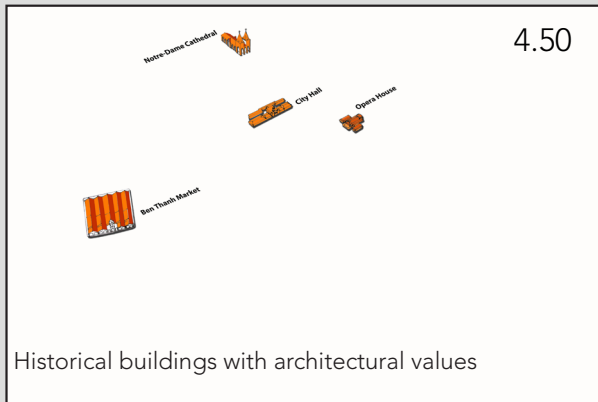
Main boulevard in city centre

DESIGN NGUYEN HUE & HAM NGHI BOULEVARD AS THE HISTORICAL AND CULTURAL AXIS

Rediscovering main historical axes from city centre to waterfront

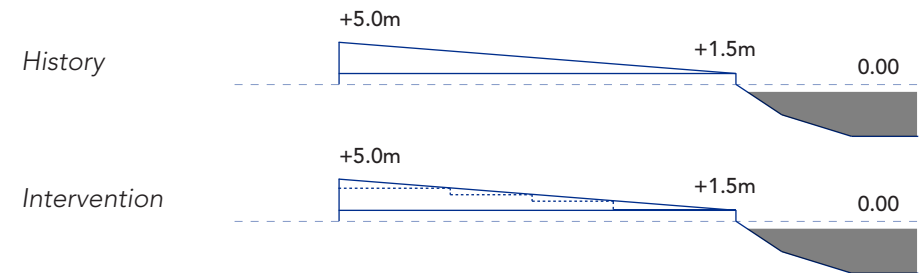
1. Growing interest in culture heritage and attractiveness of historic city centre
2. Renewal interest in city is created by encouraging new mixed-use and walkable city centers as well as integrating pedestrian flows and open spaces.
3. Rediscovering traditional main streets and form the heart of public communities by lively axis that mixes shops, restaurants, music, street fairs and other attractions designed to attract people of different ages, races and cultural background.
4. Becoming a centre for sustainability by creating economic and social value. These axes encourage public and economic benefits of investments.
5. More water in the historic city centre

Design Context

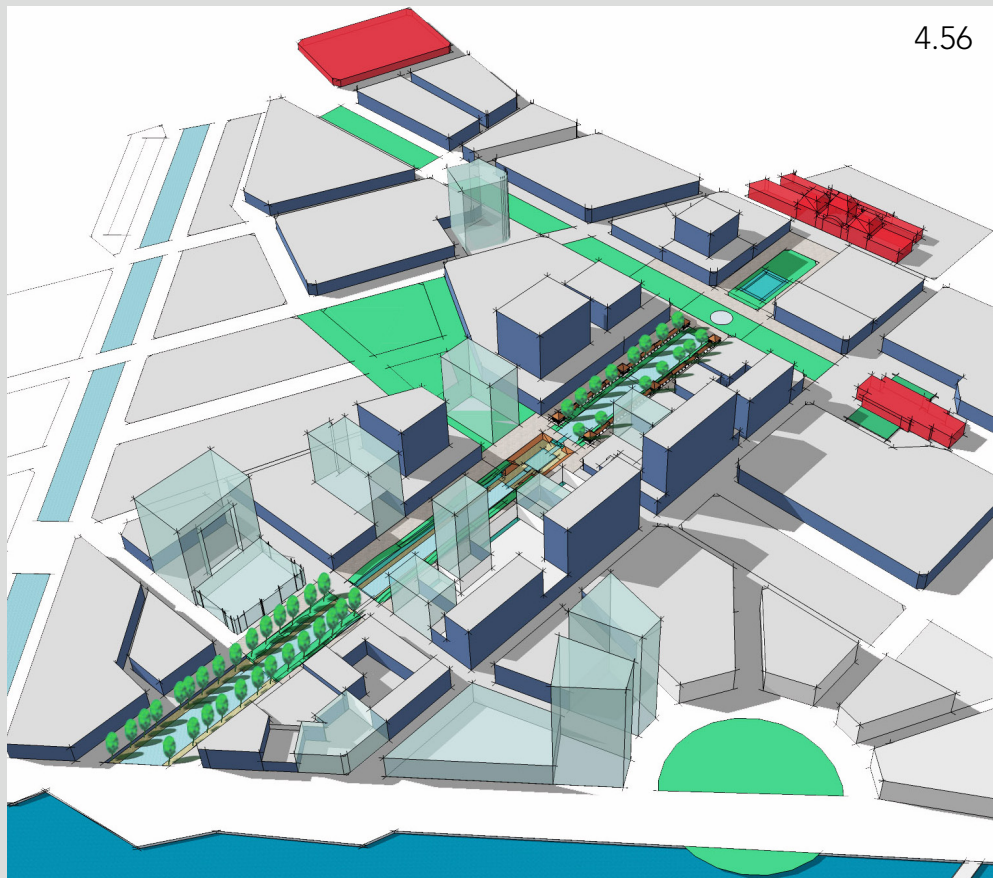


REMINDED THE FORMER WATER IMAGES AND CULTURAL LANDSCAPE

Elevation of Nguyen Hue Boulevard



View of Nguyen Hue Boulevard



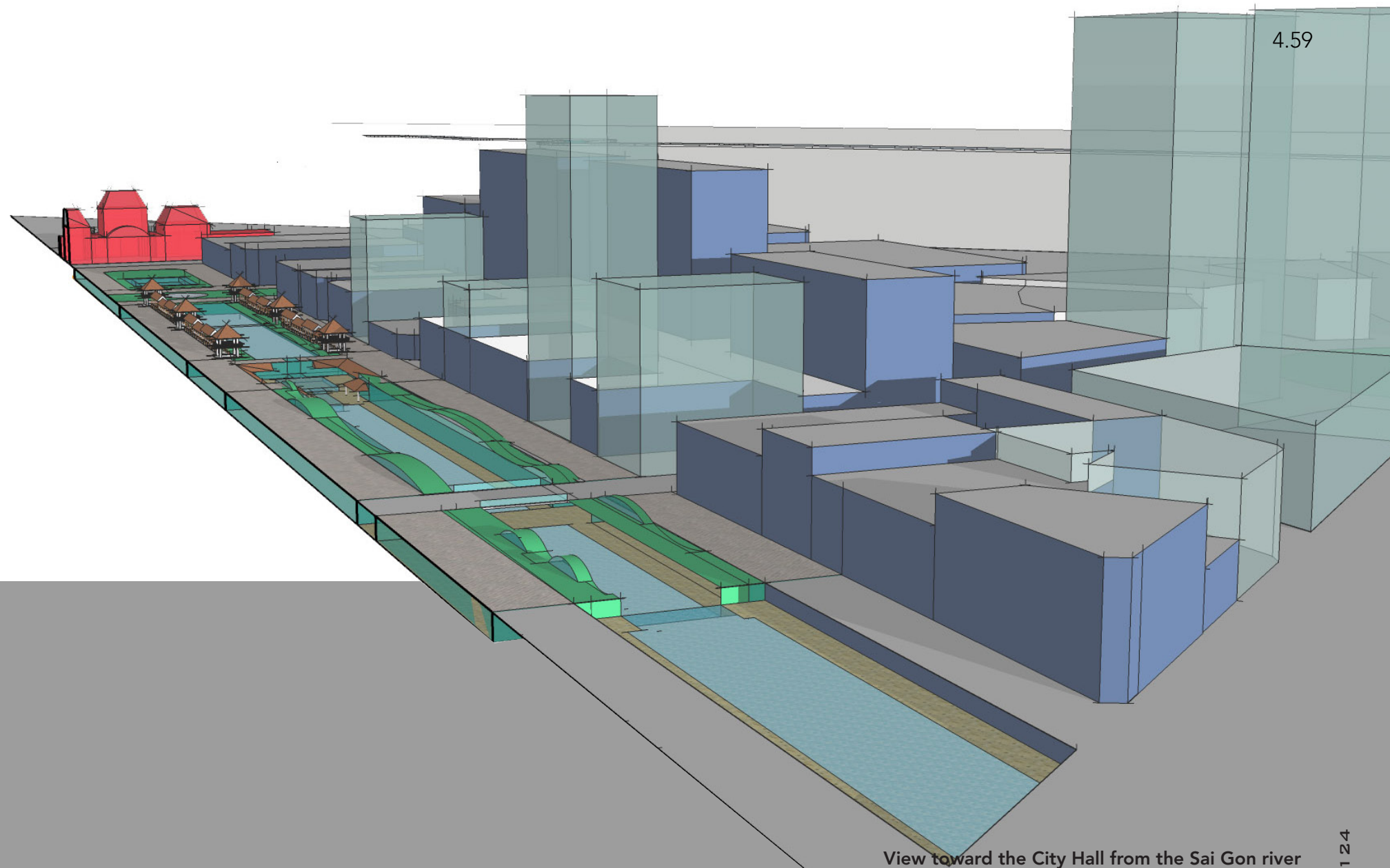
Plan of Nguyen Hue Boulevard



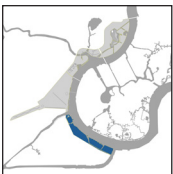
View toward the river from the historic city centre



SECTION 3-3



View toward the City Hall from the Sai Gon river

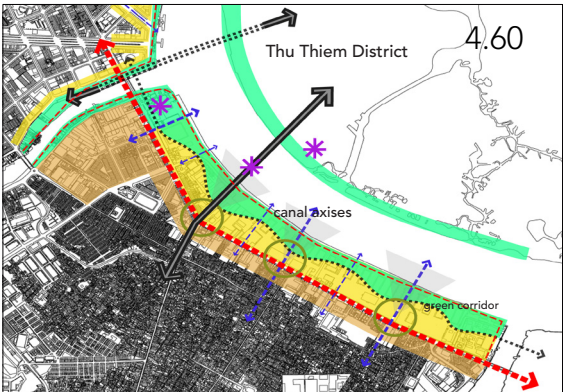


ZONE 4 - SOUTHERN PART

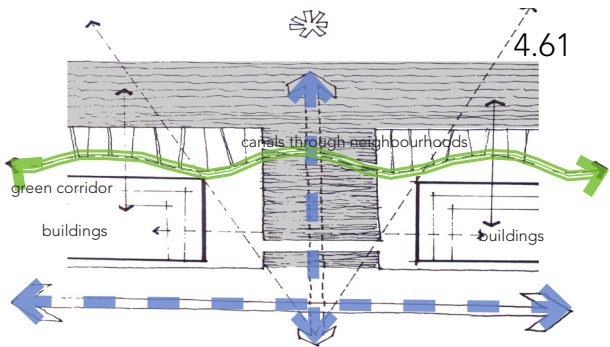
Developing an attractive waterfront as a liveable place for living, working and leisure

CONCEPT

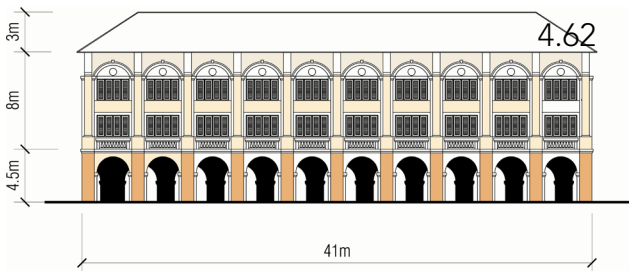
(1) Regain canals in inner land and circulating water



(2) Green corridors for pedestrians



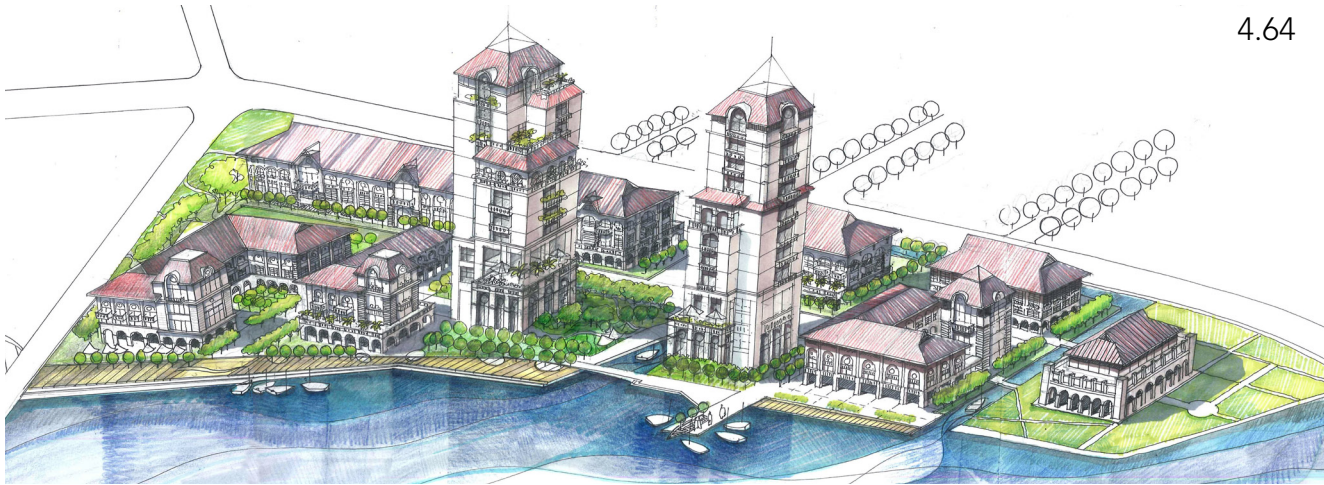
(3) Local characters of architecture



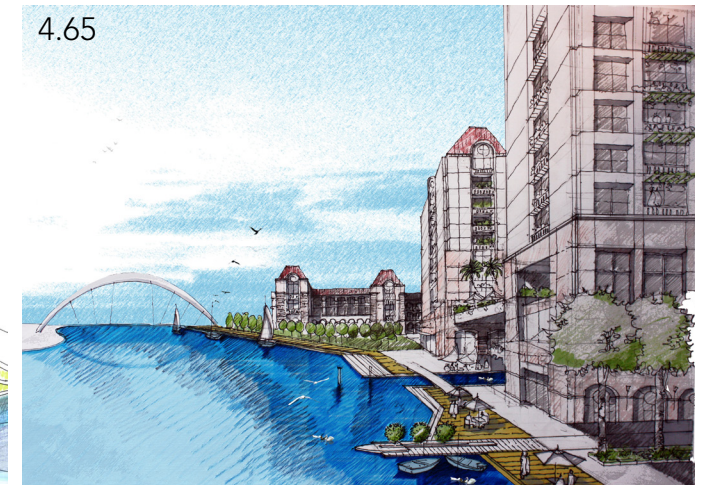
PLAN



REGAINING HOUSING WITH TRADITIONAL FORM AND MODERN FORM, DEVELOPING A CLOSE CONNECTION OF HOUSING TO WATER



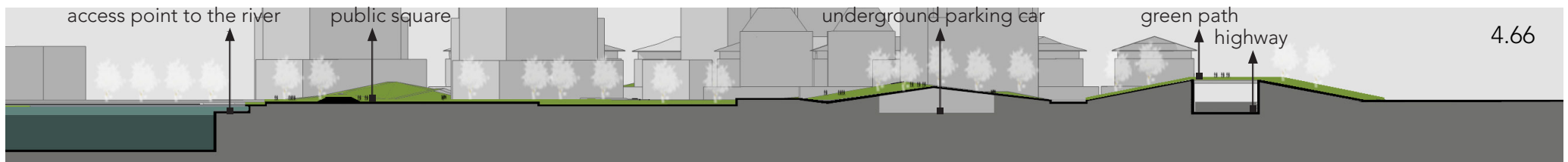
Providing an unique neighbourhood with the distinctive local charateristic architecture



View across the Sai Gon river, looking toward the city

The waterfront in zone 4 provides as a residential zone including two complex building blocks with maximum 12 floors and waterfront residential blocks. The design creates a pedestrian river bank as a main connection of recreation space, public access points and apartment closed to water.

Creating a better connection between the new waterfront residential areas and old city fabric is the approach of the project with green public space corridor. The form of this connection is the crossing the highway and toward the river by covering greenery on Ton Duc Thang highway. This project also creates the meet of access points and windows toward waterfront, encouraging a more friendly environment and public participation.



Section

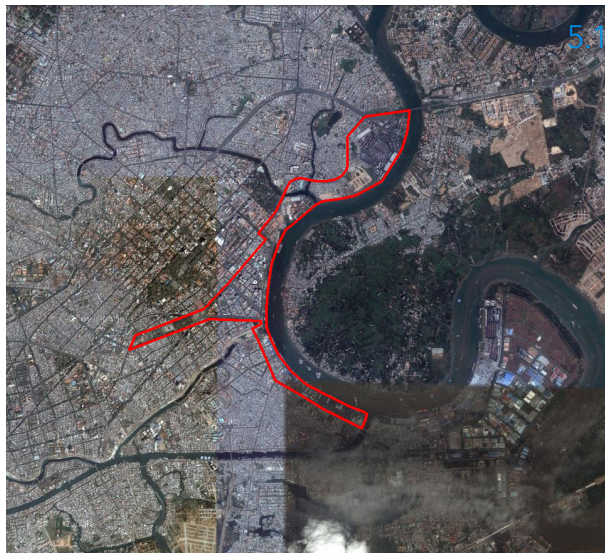
Chapter 6

Evaluation and Conclusion

6.1 EVALUATION

COMPARING WATERFRONT DEVELOPMENT IN HO CHI MINH CITY WITH IN LONDON & SHANGHAI

Ho Chi Minh City, SaiGon River



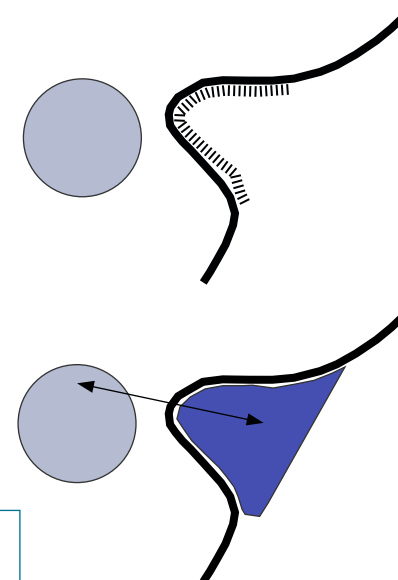
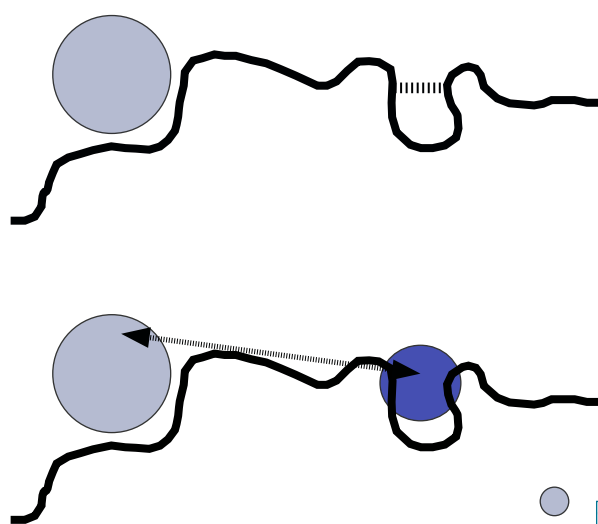
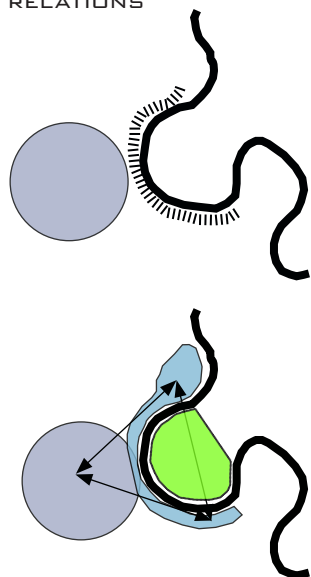
Canary Wharf, Thames River



Pudong, Huangpu River

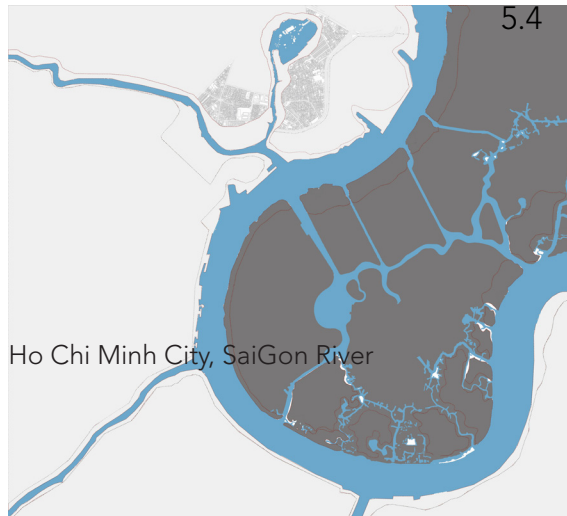


SCALE & RELATIONS

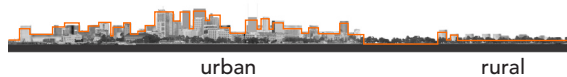


- city centre
- new centrality
- waterfront intervention

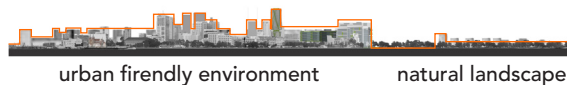
URBAN SPATIAL



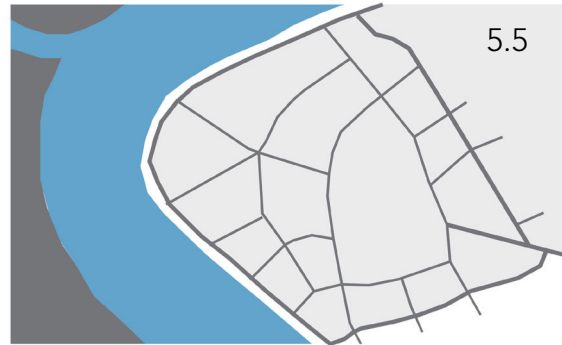
BEFORE



AFTER



Waterfront project provides a friendly urban environment with attractiveness, safety and sustainability. The transformation encourages local community and participation with creating high quality natural landscape of East bank. The project enhances local characteristic landscape along the river and regains the own senses of self and feelings.

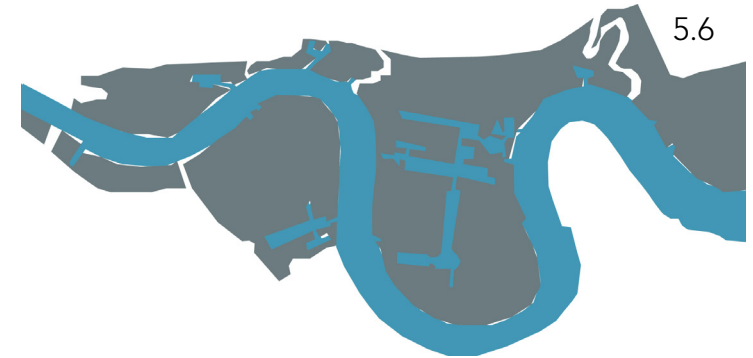


NOW



urban with high-rise office towers

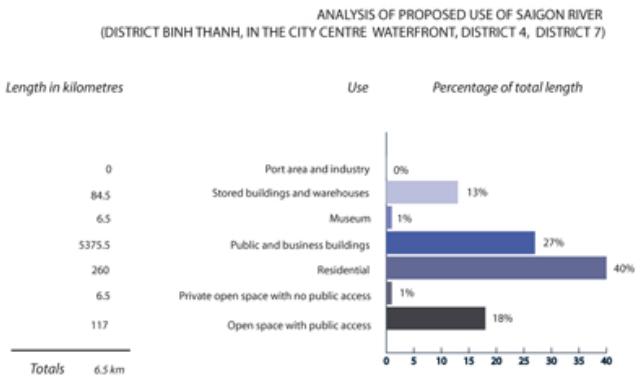
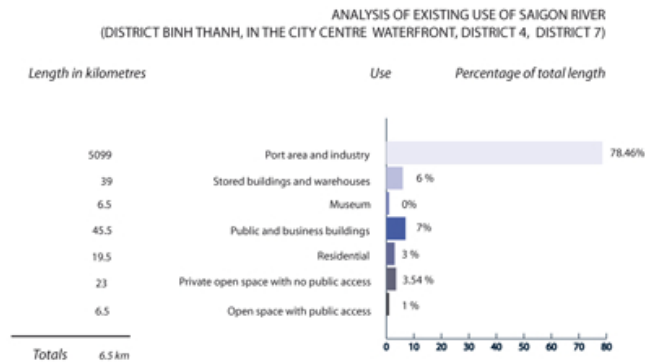
Shanghai has invested to develop as one of the world's biggest metropolises. Therefore, Huangpu waterfront provides the new identity as a new face to the world as a main approach. The Pudong is the new Shanghai, became a new centrality as an international business center with many new high-rise office towers. Pudong was developing with very large-scale project and high density buildings. The historic city centre in Puxi is also a major focus of renewal efforts, however, it didn't provide a better connection from historic city centre toward its waterfront.



The Canary Wharf project created a new centrality of London with development of high density official and residential buildings directly related to water basins within the docks. However, it did not reached a connection with the city centre although the project aims restoration of the historical visual axis from Greenwich to the Church at Limehouse as an important option for developing Isle of Dogs with both clear structure and a place in the urban context.

The project provides a new transportation system, which link to the city and the whole world such as rail line, new airport, and new water bus in order to provide good traffic structure for the sake of accessibility and connectivity. However, the project did not focus on urban spatial and relationships of waterfront project with surroundings.

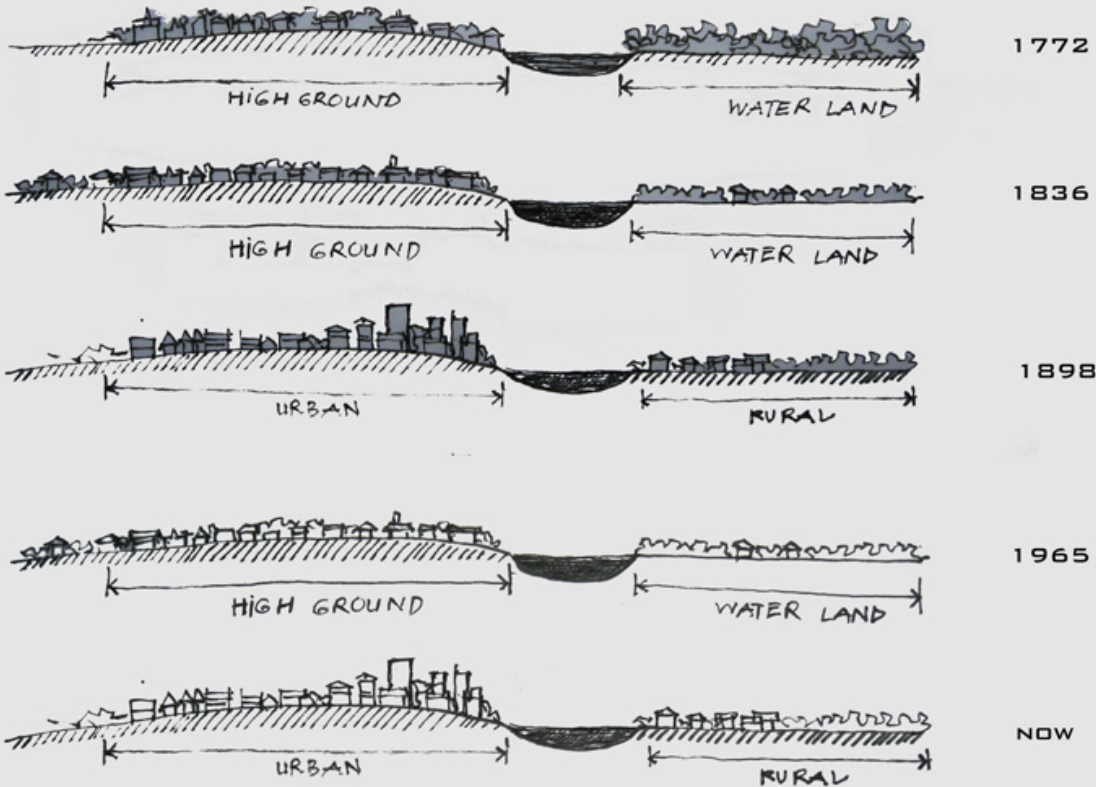
USE OF SAIGON RIVER



Waterfront project has transformed existing use of the Sai Gon river from charactered industrial riverbank into an attractive waterfront with a friendly urban environment. The waterfront is intervented with residential, of- ficial and open space with public access toward water.

ENHANCE QUALITY OF SPATIAL ENVIRONMENT

5.11



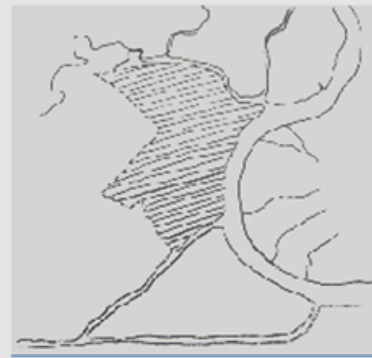
Historically, the city enhances a local ecosystems regarding natu- ral landscape along the Sai Gon river. For future the city develops as an ecologically sustainable urban development to maintain its spirit and sense.

URBAN EXPANSION OF HO CHI MINH CITY



1772

5.14



1836

5.13



1898

5.14



1965

5.15

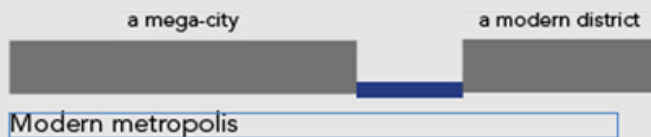


NOW

5.16



PROPOSAL URBAN SPATIAL FOR WEST & EAST BANK OF THE RIVER



???



5.17

THE BEST SOLUTION

To give ecological considerations to the urban development in terms of healthy and safe environment, harmony with nature, and preservation of green and water



Proposal for east bank of the river

5.18

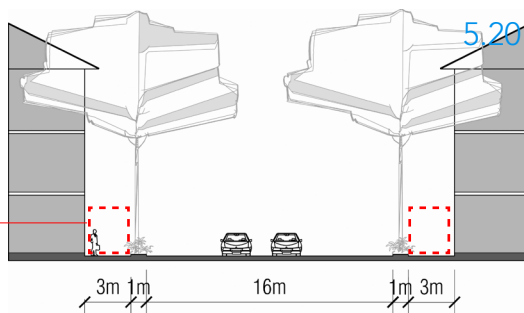
THE SOCIAL DIMENSION AND PARTICIPATED COMMUNICATION

Improving local communication is a long-term approach. The riverfront redevelopment creates more easily accessible and connectable, which requires not only structural and spatial urban, but also services and facilities towards the needs of special target groups. The design focuses more on small business with local shopping which can help to attract local characters for inhabitants. Moreover, green public square create a lively local recreational site on the riverfront which reflects the need of local residents and tourists.

The project concerns to increasing local economic and raising local jobs, creating social and cultural diversity, encouraging transit use, and supporting a more environmentally sustainable city.



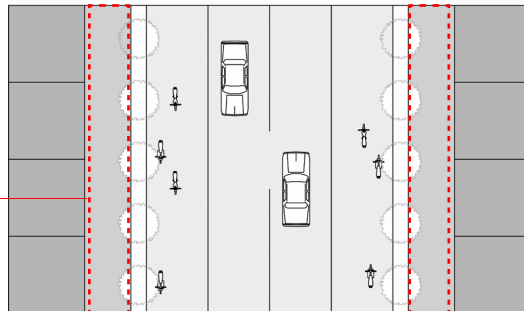
5.19



5.20



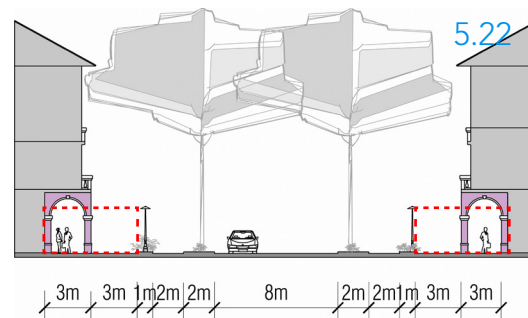
5.23



BEFORE



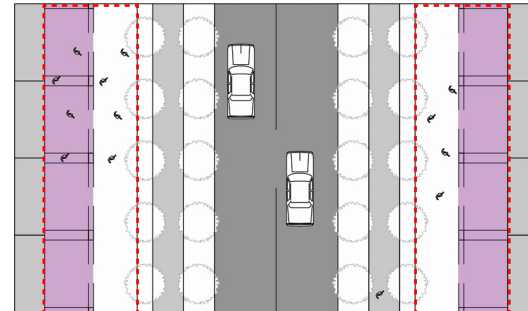
5.21



5.22



5.24



More space for local business
AFTER

REFERENCES

Local business on street

BEFORE

6.2 CONCLUSION

"When we lose a historic place, we lose a part of who we are "

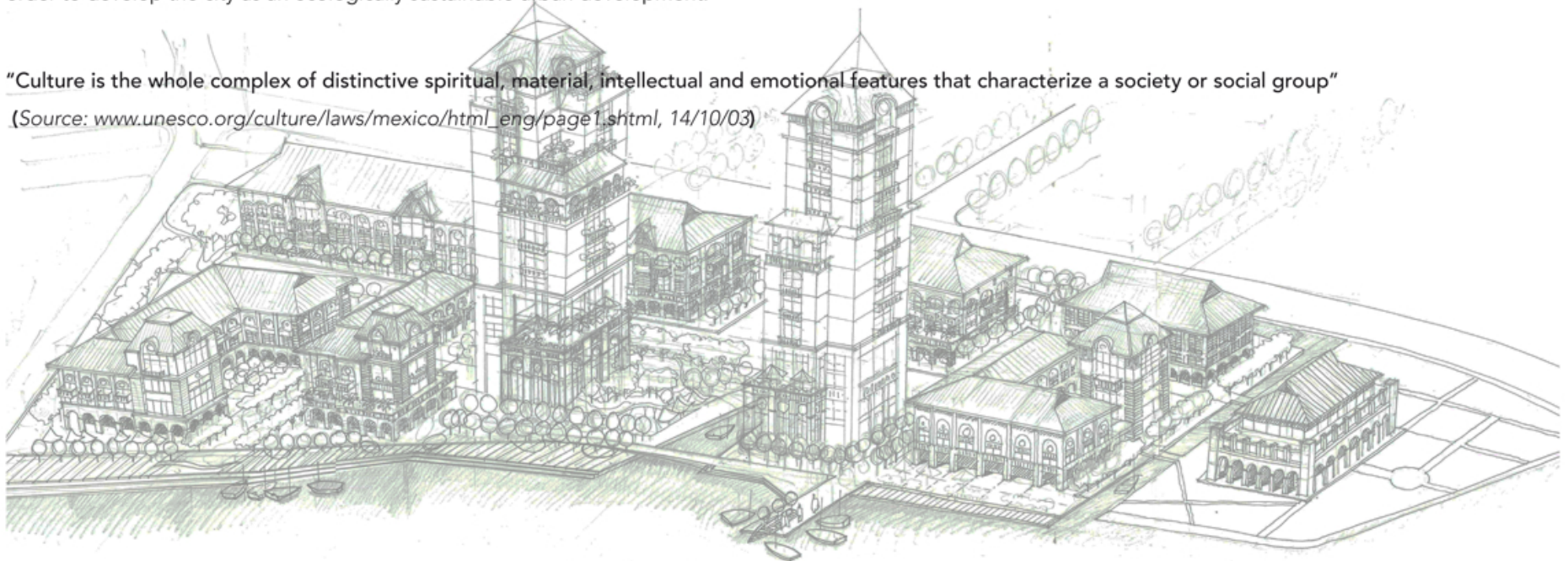
([http://www.nationaltrust.org/History is in our hands](http://www.nationaltrust.org/History%20is%20in%20our%20hands), 2003)

When a port city shifts from industrial to service economies, a major aspect of its success will be in the quality of their urban environments. The waterfront plays a critical role remade the image of the city. The main characteristics of the waterfront area can be considered as strengths to redevelop watersides. The environmental, cultural or historical of a specific area create the values of waterfront where have significance to the visual, social and cultural identity of local community. The project also rethinks the distinctive valuable of the water city. In fact, today urbanization and globalization has greatly destroyed much urban cultural heritage and cultural living is being impacted, and often threatened with destruction. Therefore, redevelopment waterfront as a chance to regains its cultural image and identity of water city as a unique and distinguish characteristics.

The current identity of the city is one that has many fragmented 'moments'. The project provides a catalyst for transforming the city's identity from historic preservation to new cultural and community facilities link to water to reconnect the city fabric and its waterfront. The tranformation Sai Gon waterfront has the ability to shape an image for a city, to add value to city economies, and create desirability. The waterfront plays a critical role remade the image of the city. The project is not only enhancing the social and economic health of its community as well as the health of local and global ecosystems but also regarding the social and economic aspects of sustainability in order to develop the city as an ecologically sustainable urban development.

"Culture is the whole complex of distinctive spiritual, material, intellectual and emotional features that characterize a society or social group"

(Source: www.unesco.org/culture/laws/mexico/html_eng/page1.shtml, 14/10/03)



Appendix 1: Case study

The redevelopment of the water's edge of port city generates unique opportunities and challenges for many greater projects. The London projects presented here have shown how London Docklands are successfully in creating an unique environment features, new commercial and residential areas along the old docks. Shanghai is a example of how the waterfront can provide opportunities for the creation of a new identity and a new expression of what the city is and wants to be (Marshall, 2001) and the Singapore urban planning project was implemented by enhancing the distinctiveness of the city by making an exciting corridor capitalizing on the waterfront while conserving the unique historical characters.

LONDON, CANARY WHARE PROJECT

- History, development of city and port
- Docklands development
- The main aims to review and compare the transformation in London Docklands
- The meaning of Canary Wharf - Isle of Dogs project
- Urban project
- Literature review: Meyer, H. 1999. City and port: Urban planning as a cultural venture in London, Barcelona, New York, and Rotterdam: changing relations between public urban space and large scale infrastructure

SHANGHAI, PUDONG PROJECT

- The Shanghai context
- Redevelopment of the Shanghai waterfront
- Literature review: Marshall,R. 2001. Waterfront in Post-Industrial Cities

CITY AND PORT HISTORY

Early History

The port of London has been a major international port since its establishment by the Romans in 50s AD and become of a vital importance in the history of the UK and the British Empire. The period from 1500 to 1800 witnessed the growth of world wide English trade and established London as its financial centre. Although this trade was created and controlled by the merchants of London, it was served by the inhabitants of the riverside areas east of the City known as London Dockland. The building and manning of an increasing number of ships stimulated the growth and transformation of the Dockland area, particularly between London Bridge and Blackwall.

It was here that the demands of the industrial and commercial revolution transformed sparsely populated rural areas into a densely packed urban and industrial Port of London. In the end of 18th century, it was the beginning of a new period in the life of the Port. In the 19th century was an exciting period of dock construction which was to revolutionize the position of London as a trading centre of the world.

Twentieth Century Era

In 1889 The Dock Companies combined to form the London and India Docks Joint Committee. Shipping was continually getting larger and to allow its passage up the Thames River had to be dredged and deepened. The thriving conditions which prevailed in the docks immediately after the First World War prompted the PLA to extend the Albert Dock by the construction of George V Dock. This was virtually the end of major dock building in the area, but a number of warehouse and jetties were constructed later. After the heavy bomb damage of the second World War, there were a major efforts of reconstruction in the dockland. By the early 1960s trade reached a new peak. Over 100 ships a day were using the Royal Docks and the port as a whole was handling over 65 million tones of cargo a year. Within a period of two years, there was a revolution in shipping technology and cargo handling. These technique included containerization and roll-on-roll-off terminals which meant that large numbers of Dockers were no longer necessary. Ships were no longer willing to take a day coming up river to London and the old docks start to close. Debates on the future of the Port and Docklands have been going on since the late 1960s. The old Docklands offer a major opportunity for regeneration and improvement of life in East London (Naib.S.K.A,1990)

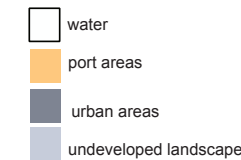
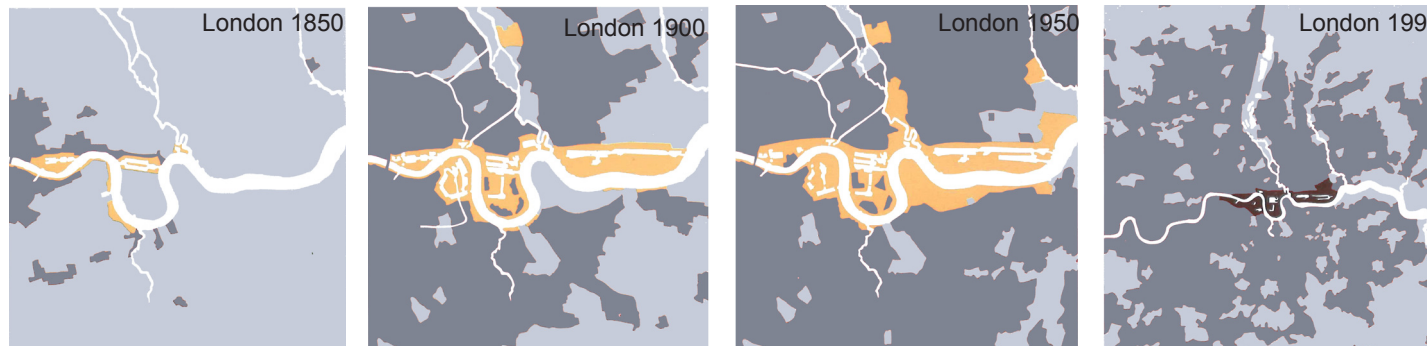
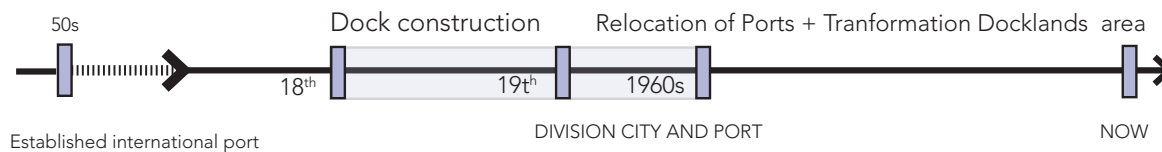


Figure 1. Changing relations among urban areas, port areas, undeveloped landscape, water and harbor area due for conversation, Source: Meyer,H.(1999). City and Port, Tranformation of Port Cities London, Barcelona, New York, Rotterdam (pp.60-61)

DOCKLANDS DEVELOPMENT

In July 1976, the committee published the Docklands strategic plan which marked a major step towards redevelopment of the area. The overall object of the strategy was "To use the opportunity provided by large areas of London's Docklands becoming available for development to redress the housing, social environmental, industrial, economic and communications deficiencies of the Docklands and parent boroughs and thereby to provide the freedom for similar improvements through east and inner London". Despite considerable effort, new industry did not take the place of the old and 8,500 jobs were lost between 1975 and 1980. Thus a shrinking population found itself isolated among wide tracts of derelict land and buildings.

In 1981 the London Docklands Development Corporation was created and charged with the regeneration of the area. The corporation is a statutory body appointed and funded by central government. A comprehensive programme of land acquisition, housing and infrastructure provision has transformed Docklands into a major growth area in London. Projects already completed include Billingsgate Fish Market, Cannon Workshops, Teltscher Brothers Wine Complex and various business parks.

New prospects for the Thames and Docklands

The new Greater London Council wished to reopen the discussion on the development of Docklands: the Docklands area was to be used as more than a remedy for the shortage of housing, employment and public verdure; the importance of the area to the East Enders' sense of identity was to play an equally major role in the council's new plan. At the same time, a search began for new ways to link Docklands with other parts of London. The solution proclaimed the Thames a spatial element capable of playing a role as a connective, integrative factor within the socio-cultural diversity of the city of London.

The Thames Plan provided for the transformation of debris-strewn riverbanks into green recreation areas. Special attention was paid to the river's relationship with historical landmarks and cultural facilities, without losing its unique identity.

Political Transformations

Not only did the substance of plan development differ from that of the previous period; method and decision-making different as well. One difference that plays a major role in the grave political tension affecting Docklands is the drastic change in political persuasion found in London's East End. The new Docklands area has transformed the city of London not only spatially, but also politically.

Spatial Transformations: Four Stages of Urban Plan Development

In 1981, the London Docklands Development Corporation (LDDC), one of two special Urban Development Corporations, was established. The main LDDC's task was to develop a Docklands strategy that would help government investment in the area to generate an abundance of private investment. No clear picture existed of the way in which the use of such investments. In the period between 1981 and 1995, four different spatial strategies were applied to Docklands:

First stage: A balanced urban planning concept fails. In the first years from 1981 to 1983, David Gosling proposed urban planning concepts for Isle Dogs in four different concepts:

Second stage: An urban plan restricted to the scale of an enclave

Third stage: the development of a new centrality – canary wharf

Fourth stage: a posteriori urban planning – toward a new relationship

THE MAIN AIMS TO REVIEW AND COMPARE THE TRANSFORMATION IN LONDON DOCKLANDS

London Docklands are now recognized as the largest and most successful urban regeneration in the world and utilizing the redundant dock water areas as unique environment features, new commercial and residential projects are emerging along the old docks. The old docklands, often located close to the city centre are no longer used for port activities and offer a major opportunity for regeneration and economic revival (Naib.S.K.A,1990).

Researching the planning concept of Canary Wharf - Isle of Dogs

- Development of high-tech industry directly related to water basins within the docks
- Restoration of the historical visual axis from Greenwich to the Church at Limehouse as an important option for developing Isle of Dogs with both clear structure and a place in the urban context
- Development focuses on privatizing the waterside along the docks and the river

Strategy focus on three aspects:

- Economic transformation
- Transportation links to benefit the area's accessibility
- Urban plan - the creation of an integrated spatial entity of buildings and open space



Figure 2. A general view of the Isle of Dogs and the proposed building from Greenwich, source: Olympia and York



Figure 3 . A view of the development looking east from the river Thames, source: Naib.S.K.A (1990) London Docklands, Past Present and Future, Ashmead Press Ltd., London

THE MEANING OF CANARY WHARF - ISLE OF DOGS PROJECT

First of all the project encourage investments and running businesses to attract companies located there receive generous subsidies (frequently over 50 percent of their expenditures) when they make investments. Creating enterprise zones was to reinforce Docklands' attractiveness as a location for advanced, relatively light and clean, industry; and a place with a pleasant housing environment in the immediate vicinity for those employed by this industry. Building and business-establishment regulations for the enterprise zone on the Isle of Dogs were issued primarily to prevent large-scale development and industry associated with danger and pollution. Urban planning tasks were limited to the preservation and repair of existing streets.

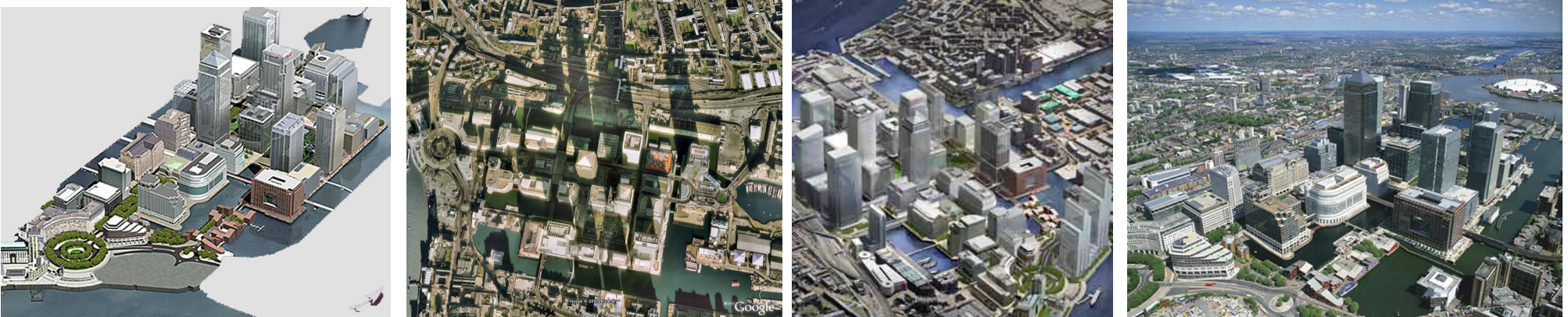
However, the disappearance of docks and docks-related industry, followed by the arrival of new business has caused an enormous shift in the socio-economic structure of Docklands, the net result of which has been the loss of thousands of jobs.

Secondly, providing the area with a new transportation system, which link to the City and the whole world such as rail line, new airport, and new water bus in order to provide good traffic structure for the sake of accessibility.

Thirdly, housing projects, new office buildings and new complexes are designed with a great deal of attention to size, building heights, desired housing types, use of materials and colors as well as the quality of outdoor space. Housing design should take maximum advantage of the spatial qualities unique to harbor quays and riverbanks, and should also emphasize the distinct character of individual areas. Developing new housing complex combines to their own facilities, community parks.

Finally, the project creates a new centrality in Docklands: a core that would represent aspirations permeating the entire Docklands area and set the stage for the area's new urban image.

Figure 4. The Canary Wharf Project on the Isle of Dogs, source: www.flickr.com



City data

| | |
|--|--|
| Area | Land area: 6,340.5 km ² |
| Density | 2145 person/sq.km |
| Number of municipalities | 18 districts and 1 county |
| Total population | 17.42 million (2004) |
| Annual growth | 1.8% |
| Urban population (% of total population) | 81.2% |
| Population growth | 12.83m in 1990 / 13.22m in 2000 / 13.52m in 2004 |
| Population density | 2,133 person/km ² 21,610 person/km ² in center |
| Economic indicators | Gross Domestic Product (GDP) 745.03 billion yuan (US\$ 89.98 billion) GDP per capita 55,307 yuan GDP growth 13.6% per annum |
| Number of contracts | Foreign Direct Investment (FDI) 4,334 |
| Contractual FDI | US\$ 11.69 billion |
| FDI absorbed | US\$ 6.54 billion |
| Total value of foreign imports and exports | US\$ 160.03 billion / exports US\$ 73.52 billion / imports US\$ 86.51 billion |
| Municipal tax revenues | 332.51 billion yuan (US\$ 40.16 billion) |
| Registered unemployment rate urban areas | 4.5% |
| Housing | Number of households 4.91 million / Average household size 2.8 persons |
| Disposable income per capita (p/a) | Urban 16,683 yuan / Rural 7,337 yuan |
| Floor space per capita residents downtown | 20.4m ² |
| Per capita net floor space | Urban 14.8 m ² / Rural 59.8 m ² |
| Investment in urban infrastructure | 67.26 billion yuan |
| Length of sewer pipelines in urban areas | 6,469 km |
| Volume of coal gas supply in urban areas | 2.4 billion cu. m. |
| Length of paved roads | 11,825 km |
| Public green areas | 10,979 ha |
| Health | Life expectancy at birth 79.7 years Number of doctors per 10,000 population 32 Number of hospitals/medical centres 489 Number of hospital beds 85,000 |

Source: Chen.Y, Hu.H (2009) *Shanghai, China, Planning through Projects Moving from Master Planning to Strategic Planning*, Amsterdam, The Netherlands



Figure 5. View toward Pudong and Lu Jia Zui, Shanghai
Source: Shanghai Statistic Yearbook, 2005

Shanghai, like many cities in the world, depends on its port for its existence and growth. Shanghai experienced a big boom in the development of its port and downtown area. Between 1990 and 2000, Shanghai started with the transformation of its port as well as the vast waterfront area.

Specifically, the Huangpu river as a symbol of city, has been the life line of the city, shaping the culture and personality of Shanghai. Shanghai is an actual example of Bird's Anyport model (Bird.J, 1971) states that old ports are required to expand and new ports are required to be established because of the tremendous increase in maritime transportation and increase in the size of ships. Therefore, Shanghai identified a pressing need for both old port's expansion and the building of new ports near the sea, at the mouth of the Yangtze River and Hangzhou Bays. However, the development of old port has reached such a level of saturation that there is no room left for further growth. This common quandary for port cities results in a looser or weaker connection between the development of the port and the city. Shanghai have to create new functions and insert "new blood" into the often-obsolete waterfront of the old port. Pudong New Area redevelopment is a distinct example of a solution for the redevelopment of docklands of an old port. Shanghai waterfront revitalisation is a great experience in search of a new identity and image of a water city.

Source: Chen.Y, Hu.H (2009) *Shanghai, China, Planning through Projects Moving from Master Planning to Strategic Planning*, Amsterdam, The Netherlands

Urban Project

PUDONG NEW AREA DEVELOPMENT PROJECT

Program

Pudong transformation project was started before 1990, at which time the district contained a mixture of harbour-industries, low-quality housing, inadequate infrastructure and vast stretches of farmland. In the 15 years between 1990 and 2004, more than 70 million m² floor area were constructed.

Program

| | |
|----------------------------|----------------------------------|
| 45 million m ² | Housing |
| 9.6 million m ² | Factory buildings and warehouses |
| 3.4 million m ² | Commercial buildings |
| 4.8 million m ² | Office buildings |

Pudong New Area

The regeneration of the Huangpu River is the larger waterfront development and will significantly change the nature of the city. With the opening of the Pudong, the Huangpu shifted from being the eastern edge of the city to becoming the centre of the city. It now exists as the join between Puxi and Pudong, the old and new Shanghai. The scheme focuses on the redevelopment of port properties now that major port functions have shifted to the Yangtze River. Currently only a small section of the waterfront on the Huangpu is accessible and the primary motive of the plan was to extend this accessibility to make the waterfront an asset for all. The redevelopment aims to make the waterfront the heart of the city's cultural, social and civic life. The waterfront has, for a very long time, been looked at as a nasty, polluted environment by the residents of Shanghai. With the relocation of many industries and stricter environmental controls the water quality has improved to a point where people once again desire to be at the water's edge.

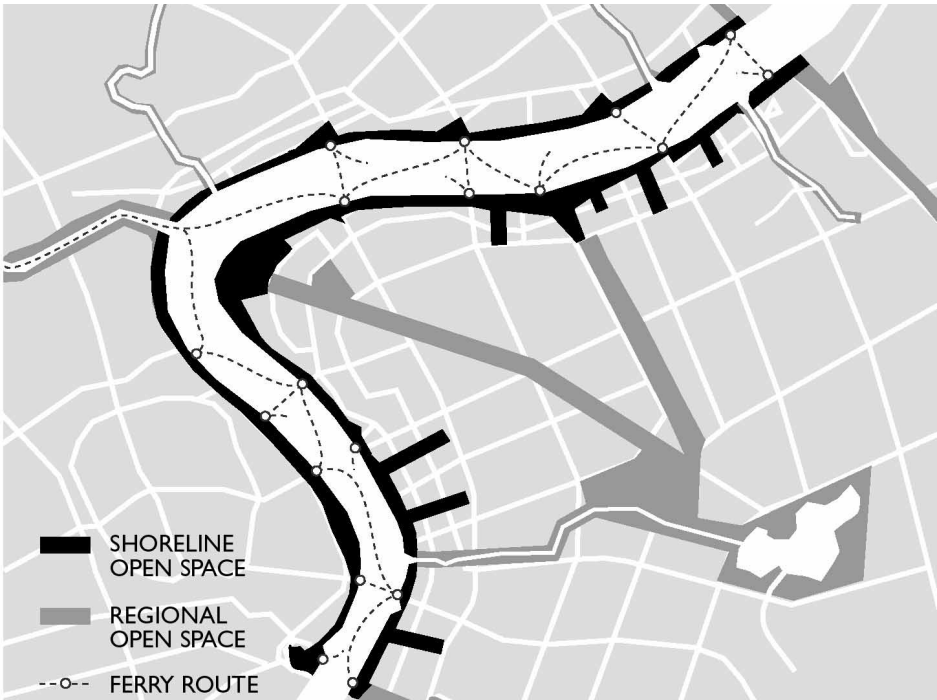


Figure 6. Design Master Plan, Shanghai

The plan aims at extending the visual and physical linkages from the water to the city. This is achieved by extending streets and neighbourhood parks to link the waterfront to a larger system of regional parks and open spaces. In addition, access and connections in the city are extended by the location of transit terminals adjacent to the waterfront and the incorporation of extensive pedestrian networks. Movement on the water creates another level of vitality on the river. River ferry, coastal ferry and ocean ferry terminals are incorporated into the plan. The success of the scheme lies in the creation of a series of distinct neighbourhoods with specific characteristics to lend them identity. These include the Crescent, a large cultural gathering space, Pier 16, a coastal passenger terminal, and a Resort Area (Marshall,2001).

A Port City Regains Its Waterfront

Regenerating outdated port area and strengthening the unique characters of a water city

Abstract – The paper discusses waterfront redevelopment when regenerating outdated port areas in order to attract the port cities rebuild economic, social, spatial structure and cultural growth, expecting to strength their competitive position. The scope of the research firstly focuses on relations of port and city to find solutions of conflict in current urban structure and old port areas located in inner city. Waterfront redeveloped project as a major asset for the urban community which can bring new life into unattractive urban areas and create a wide of new economic and social opportunities. The research measures an evaluation of how the re-use of waterfront spaces provide a unique opportunity to gain attractive urban revitalization, place the identity and remaking images of the water city.

In order to approach of this research I will fully review literature from Meyer (1999) to build up argument of transformed outdated port areas to redevelop urban waterfront and improve spatial structure of port cities. In addition, the paper of Tatjer (2001) regards an analysis and a framework of socio-economic dimension in the waterfront redevelopment. The third one is Waterfronts in Post-industrial Cities (Marshall,2001) introduces an overview of waterfront projects in search for programs of regenerating industrial areas into an attractive and livable urban environment, creating new spatial economic condition, local community involvement and high quality of living.

The outcome of the paper will be summarized three literatures to build up a significant concept of redevelopment waterfront and results tend to the question how waterfront feature creates strongly a distinguish water city? The purpose of paper contributes argument to involve the regeneration of Sai Gon Port project in Ho Chi Minh City, Vietnam.

Key words – *waterfront redevelopment, port city, outdated port, urban regeneration, water city, transformation waterfront.*

Waterfront regeneration is one of the most important urban redevelopment in last fifty years. Waterfront sites provide remarkable opportunities for redevelopment on large, highly centralized and therefore visible locations (Marshall, 2001). In fact, urban waterfronts have the potential to create new uses in place of the abandoned property in the outdated port and industrial areas.

In 1999 Peter Davey expressed a widely held view in an article devoted to the public realm that “we have almost forgotten how to build cities”, a feeling of disappointment toward the contemporary city. In fact, ports, industrial areas and highways of yesterday are built along the waterfront have destroyed the valuable city assets. The former industrial waterfront areas of many cities now exist as underutilized parcels, separated from the physical, social and economic activity of the rest of the city (Marshall, 2001). However, although the waterfront is an urban amenity, a special place in the city, it is also a relatively recent significant urban and social issues. Attitudes toward the transformation of waterfront have concerned significantly over the last fifty years. The urban waterfront tells us many things about the way we make, and think about, cities (Marshall, 2001). Waterfront regeneration is a way to recreate the image of a city, to encourage economic investments, to attract people participates into public space and involves community.

The paper will deeply research efforts of waterfront redevelopment to regain the distinctive port city and to enhance a new lively urban environment as an attractive place. The main approaches will be achieved by answering these key questions. What are characteristics of a port that tend to change a relationship between the City and Port? What are waterfront transformation roles to redevelop socio-economic, reshape urban spatial and enhance its distinctive image. How is waterfront transformed towards an appropriate urban structure? What experiences can be learned from the transformation of waterfront in Asian and Europe countries to build up the concepts of waterfront regeneration?

Five main meditations form the structure of the paper and provide a mechanism for thinking about particular aspects of waterfront redevelopment. The paper is firstly structured to deal with the relations between the city and port, the challenges and opportunity of port cities in term of regeneration waterfront. The next aspect is addressed by waterfront redevelopment which has transformed local economic and improve social community. The third is an answer of how waterfront's regeneration enhances urban space-making quality and spatial structure of the water's edge? In addition, waterfront's revitalization regains the city's identity and image. Finally, facing today's ecological and environmental issues, flooding protection and water management are vital factors related to future urban development in term of sustainability. Waterfront regeneration deals with water risks to contribute a better living environment, creating value for city development.

2 Regenerating old port areas rediscover waterfront’s opportunity of a water city

2.1. Changing relations between Port and the city

During the last century, the characters and scale of the port have been modified because of changing technology such as containers, ship-building and logistics resulted into new demands on sizes of port-terminals, which illustrates separated evident between port city and port on a global scale. According to economic Kondratieff’s so-called ‘long-wave theory’, the entire period encompassing the 19th and 20th centuries can be divided into five following phases (see illustration 1)

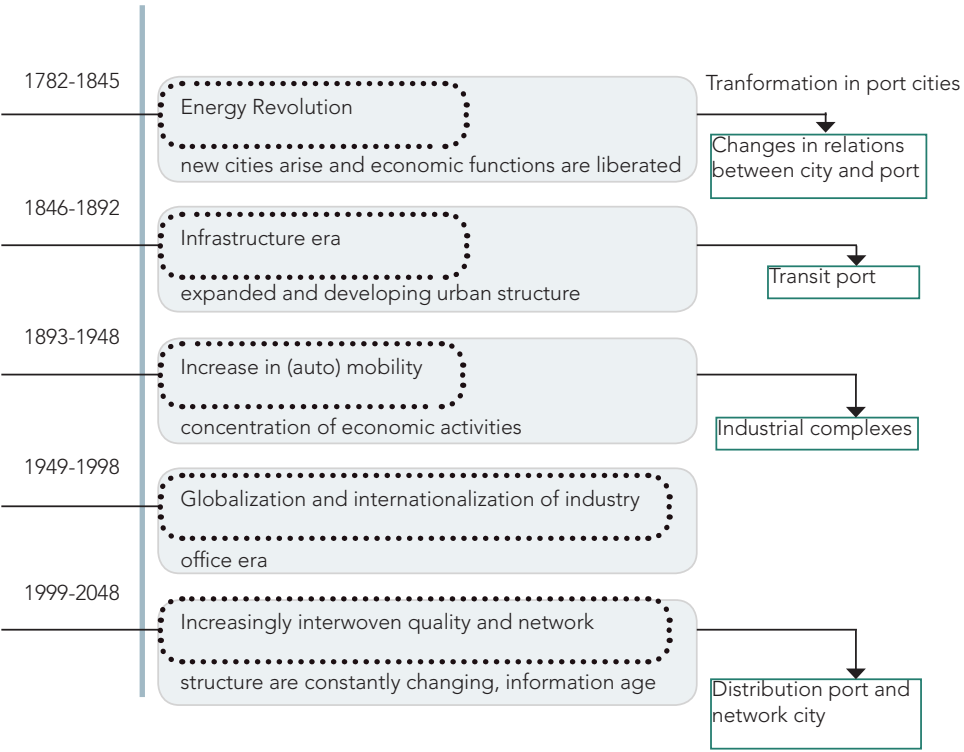


Figure 1 Five phrases of transformation of port city (Meyer, 1999)

Globalization has significant changed the traditional role of ports and increase competition in international trade (Figure 2). Particularly, the technical advancements combined with the requirements of containerization, have shifted the basing points for global water transport away from previously historic waterfronts. With this passing, the relationship between water and the generators of economic wealth has changed (Marshall, 2001). It requires that the port is relocated to available places in order to adapt with international debate on the redevelopment of port areas. As a result, port–city relationships have changed enormously in Western countries from industrialization to post-industrialization to post-modernism (Norcliffe, 1996), leading to a global phenomenon in waterfront redevelopment and concerning physical planning and urban renewal in the 1970a and 1980s (Hoyle, 2000).

Changing factors affecting port environments

| Category | Phenomenon | Result |
|--------------------|---|---|
| Shipping alliances | Large shipping companies have propelled mergers, take-overs and alliances for consolidation of these shipping lines’ leading role in the market in order to maximize market shares and minimize running costs | Shipping liners now provide global networks, whereby one mega-carrier or an alliance can move goods freely around the global market |
| Larger vessel size | Larger container ships are mainly built to achieve economies of scale | Due to the depth limits of container ports, fewer ports are able to serve the giant transoceanic vessels directly |
| Intermodality | Inland intermodal hubs enable containers to be shipped longer distances across continents to establish a connection with a port | The hinterland and foreland of the port are expanded. This further encourages the globalization of port management and operations |

Figure 2 Changing factors affecting port environment (Song, 2003)

Three main reasons of Western ports have undergone earlier

(i) Location

Economies of scale have influenced transport revolutions. The impact can be seen through mega-ships, mega-terminals (Rodrigue et al., 1997), and containerization (Notteboom, 1997). These trends have altered the location factors of port activities, which increasingly require deep sea, large open space, and efficient transport, pushing these activities out of the city or making them disappear altogether. However, containerization has privileged existing port cities, with few exceptions, that are located close to shipping lanes and away from urban settlements and markets (Laem Chabang, Gioia Tauro, Tanjung Pelepas). Some major container ports are closely located to both maritime corridors and global cities, such as Felixstowe (London) and Port Klang (Kuala Lumpur).

(ii) Cost

Economies of scale have influenced the location patterns of industries. Particularly, manufacturing industries need to reduce costs to maintain their competitiveness in the world market. However, Western countries have already reached high labour, rental, and transport costs. Under these circumstances, manufacturing industries have been obliged to move overseas. The volume of local cargoes has been rapidly reduced. As a result, ports have decreasing functions within their surrounding cities.

(iii) Business environment

Economies of scale have indirectly impacted the living conditions in the city environment. Governmental institutions and independent associations are increasingly concerned with environmental issues and seek to maintain a high standard of living in terms of air and water quality, landscape, heritage, and shore amenities. In this respect, waterfronts bring both traffic congestion from ports and unique spaces for daily relaxation and consumption. This has encouraged ports and related industrial or logistic activities to shift from the inner city to outer areas. Simultaneously, obsolete port and industrial areas provide a good opportunity for use as special spaces, along with optimal income of waterfront development (Hoyle, 1988).

Figure 3: Three main reasons of ports have undergone earlier (Lee, 2007)

In order to research of regeneration waterfront of ports cities, the paper look at real evidence from the particular case of numerous examples from around the world, from the past to the present day, might be used to illustrate the sequence outlined in Figure 4.






| STAGE | SYMBOL | PERIOD | CHARACTERISTICS |
|-----------------------------------|---|----------------------------------|---|
| I Primitive port/city |  | Ancient/medieval to 19th century | Close spatial and functional association between city and port |
| II Expanding port/city |  | from 19th to early 20th century | Rapid commercial/industrial growth forces port to develop beyond city confines, with linear quays and break-bulk industries |
| III Modern Industrial port/city |  | mid-20th century | Industrial growth (especially on refining) and introduction of containers/ro-ro require separation/space |
| IV Retreat from the waterfront |  | 1960 s-1980 s | Changes in maritime technology induce growth of separate maritime industrial development areas |
| V Redevelopment of the waterfront |  | 1970 s- 1990s | Large-scale modern port consumes large areas of land/water space, urban renewal of original core |

Figure 4 Evolution of the port-city interface (Hoyle, 1989)

2.2. The challenge of waterfront because of abandonment of the old port in inner city

In recent years, the relations between the city and ports have changed. Many port cities around the world are faced with old outdated ports in inner city area. The layout and activities of these outdated ports are increasingly conflicting between natural and urban environment that result in cutting off the city from the water. In fact, some port cities are confronted with large abandoned docklands and industrial areas. They need to create a new vision and new living conditions, adapting for growing densities and identity challenges.

In addition, waterfront has historically been the staging points for the import and export of goods. Therefore, location accessed to the water was a competitive advantage to many ports and industrial area. The edge between city and water, between the production site and its transport basing point, was the most intense zone of use for port and industrial areas in the nineteenth-century city. The wealth of cities was based on their ability to facilitate the need of industrial capital to access waterfront resources (Marshall, 2001). However, the creation of this wealth brought with it environmental degradation and toxicity, which today characterize these urban spaces. In recent years, when these urban spaces are reconsidered, these old port and industrial sites in inner city exist significant issues as spaces of urban redundancy and brown-field, waiting for redevelopment. The re-use of obsolete port space along the waterfront is a major concern to many cities in their revitalization efforts.

Moreover, area surrounding the port almost is an urban sprawl because of industrial space as a place of dirty and messy, unsettled houses and highways are built along the waterfront and destroy these valuable city assets.

Main problems of waterfront of most cities throughout the world are contributed as following:

- (1) Globalization and technological innovation in post World War II period led to abandonment and deterioration of thousands of acres of industrial land across waterfront
- (2) Consistent pressure to redevelop central city areas and historic preservation
- (3) Society issues related with local inhabitants
- (4) Heightened environmental awareness and water management
- (5) Public urban renewal and related assistance

2.3. A priceless opportunity to develop urban waterfront

Vacant old port areas provide opportunities of waterfront redevelopment projects and it is clear that the waterfront development is a major factor in the physical, property and economic development of port cities. Waterfront is a unique phenomenon and urban waterfront development was concerned with. The nature of the waterfront may encourage the view that it provides a unique realm for urban development. The decline of old ports and allied transport and industrial areas has allowed the public to regain access to an 'urban edge' which is generally endowed with social meaning (Breen, 1994).

Marseille-Fos illustrates very clearly the concept of a plurality of development zones and points within a modern city-port region (Figure 5). The retreat from the waterfront which began in 1844 has led to the development of a vast city-port planning region, yet the entire port complex is still controlled from a point close to the shore of the old port, which is now almost entirely given over to recreational water use as a result of the redevelopment of the original small harbour which still provides the focus of the urbanized area (Hoyle, 1989).

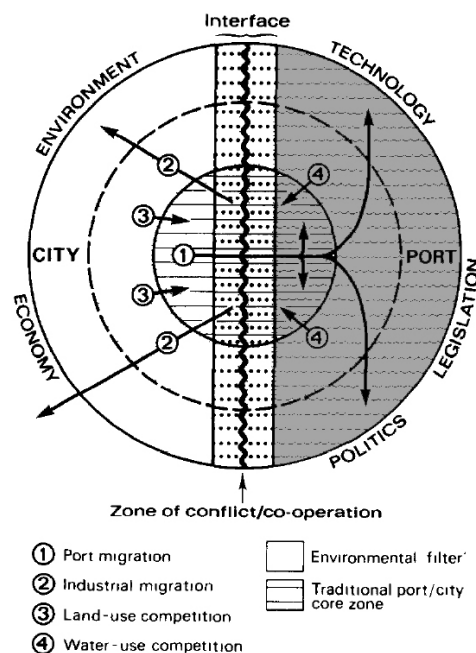


Figure 5 Waterfront redevelopment: factors and trends (Hoyle, 1989)

Waterfronts not only provide us with remarkable opportunities for projects but also for ways of thinking about contemporary space-making in the city (Marshall, 2001). The transformation waterfront is a unique opportunity for cities to reconnect with its water's edge. The sites of port and industry in history are now attempt to re-centre activity in urban space, to reposition concentrations of activity, to make contemporary urban waterfront interesting visibility. Indeed, through changes in technology and economics and the shifting of industrial occupancies, the waterfront has become a tremendous opportunity to create environments that reflect contemporary ideas of the city, society and culture. The question for this opportunity is how should that redevelopment occur? What is the relationship of waterfront sites to contemporary city making? How can make connection between older city centers and the water's edge?

03 Transformation of waterfront urban development have changed local economic and social community

3.1. Economic transformation

The renewal of urban waterfronts can be seen as a keynote of economic development in post-industrial cities around the world (Millsbaugh, 2001). Waterfront redevelopment is related to the recent changes in the urban economies of port cities due to global forces and information society (Tatjer, 2001). Moreover, waterfront projects are related to the new conception of cities and its management, that is, to create spaces in the city for the location of companies, houses and attractions for investors, citizens and investors. In fact, waterfront redevelopment is an expensive and sensitive process. Hoyle, Pinder and Husain (1988) said that "skillfully done, waterfront renewal can bring new life into dead and dying urban areas and can create a wide of new economic and social opportunities". Therefore, the transformation of waterfront provides a widespread opportunity to gain new uses lands for commercial, recreational and residential areas. In addition, the waterfront has yielded tangible social, recreational and environmental benefits, and powerful interests have raised its political and economic status. The waterfront has also been a target for investment in an era which saw the expansion of finance capital and global economy (Amin & Thrift, 1992). The waterfront may mirror economic change as developers attempt to draw rents from lucrative or expanding sectors of the economy. Whether in terms of development or occupying capitals there is a sense that the waterfront absorbs rising players in national and international economic frameworks (Malone, 1996). Before it slid into bankruptcy, London's Canary Wharf symbolized the city of finance capital and the 'yuppie' culture that fed on the expansion of the financial sector and the global economy (Whimster, 1992). Later, in London and elsewhere, the waterfront that provided a stage for the rising economies of the 1980s became symbols of recession and stasis. It is clearly that the waterfront is remarkable in that it can be endowed with economic, political, social and even cultural significant (Malone, 1996).

3.2. Social community transformation

Hoyle, Pinder and Hussain (1988) explain that in urban development there is a conflict between social versus commercial objects and they point to the waterfront redevelopment as an explicit illustration of this conflict. It is clearly that the redevelopment waterfront in inner city areas concentrates acute social problems.

Based on an analysis of social impacts of earlier SIA-studies and urban waterfront studies, the social dimension of urban waterfront regeneration can be divided into four categories: resources and identity, social status, access and activities, and waterfront experience.

The social dimensions of urban waterfront planning

Resources and identity

- Main characteristics and strengths of the area
- Opinions of the environmental, cultural or historic values
- Significance to the visual, social, and cultural identity (city image, community identity)

Social status

- For whom (social, age or ethnic groups) are the housing and service areas planned and built?
- Role of social/private housing
- Segregation and/or gentrification processes

Access and activities

- Are the waterfront areas accessible to the public?
- What kinds of activities are possible? "Water dependency"
- Easy or difficult approach to waterfront?
- Traffic and parking questions; waterfront routes

Waterfront experience

- Presence of water (sea, lake, river, etc.)
- Restorative experiences, importance of visual messages, physical touch, tastes, voices, moving in the space, sense of transition as identification

Transformation waterfront provides more social benefits for local inhabitants and employment opportunities to the city, which contracts people from surrounding areas to redevelopment zone. The paper only focuses benefits on social status aspects, these are:

- (1) Public and private partnerships can involve improving local employment as well as local community, as 'provide training and support services to local people would help to raise the share of local jobs going to local people' (MacGregor and McConnachie, 1995).
- (2) Urban waterfront regeneration can deeply encourage community involvement when inhabitants can join in public spaces. Social impact depends on the interests and how people use waterside areas for residence, place of work, or recreation are associated with waterside areas for housing, industry, commerce, transport, and a variety of leisure and recreational facilities.

Waterscape can play a worthy role in the creation of a part of social and public spaces environment systems. Since a general part of social interactions of man forms in open spaces, considering community values that can enrich such spaces is necessary (Thompson,2000). Public contribution in creation of waterfront spaces is important to encourage human activities in the waterfront and human contact to water. The riverfront accessibility and visual preparation are the prerequisites of public utility, society and landscape issues which should be answered by some arrangements (Faizi and Khakzand, 2008). The Kop van Zuid redevelopment can be considered clear example which provides social benefits both for the inhabitants of the surrounding areas and good effort to achieve commercial success.

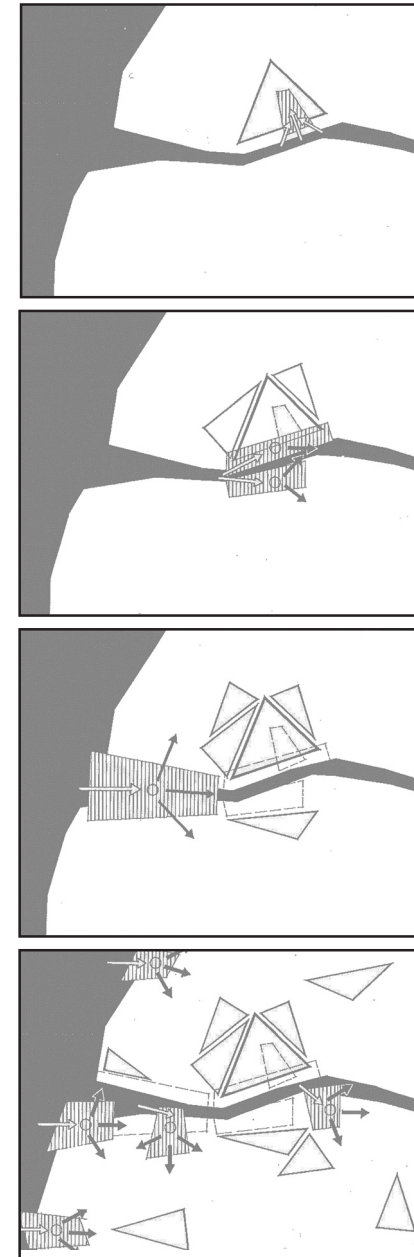
Figure 6 The social dimensions of urban waterfront planning

04 Waterfront regeneration enhances urban space-making quality and spatial structure of the water's edge

Started at the end of the twentieth century, economic globalization, transport revolutions and expansion of port area have redefined the roles of ports, required a new approach towards relocation port and reshaped urban planning of waterfront. The transformation has inevitably influenced the spatial structure of port cities. In addition, waterfront is applied a new urban renewal as a new "urban quality" that can offer higher living standards and revitalization of public community.

4.1. Former urban structure of the port city

Historically, the former structures of port cities are defined basing on characteristics of physical, continental trade and port activities. In fact, the city has always had a strong relationship with its harbour which had important roles in shaping spatial structure of urban development. In the City and Port (Meyer, 1999), structure of port city is defined by characters of port's roles to the city (Figure 7). In addition, according to Gleave (1997), the research outlines briefly the growth of the city and its spatial structure of port city. McGee's (1967) introduced model of the Southeast Asian city shaped urban area focused on the port zone having a complex pattern of concentric zones overlain by sectors (Figure 8). It suggests relationships between certain functions expressed as zones in the urban area. The relationships between the port and commercial zones and between the port and government zones are important for the purpose whilst the relationship between government and high status residential areas suggests the possibility of indirect effects of port activities on residential structure. Further, the imperfections of the model raise issues about its validity in the developing countries outside Southeast Asia and about the role of individual characteristics of particular places in shaping urban structure.



Entrepot port: port within an enclosed city. Goods are stored and traded in the city. Quay is also a public street. To the middle of the 19th century

Transit port: port along side an open city. Flow of goods passes the city. Division of city and port has begun. From the end of the 19th century

Industrial port alongside a functional city, both as autonomous phenomena. Goods are processed in the port area. From the mid-twentieth century.

Distribution port and network city. The port is rediscovered by the city as a part of the urban landscape; the city is discovered by the port as a potential nerve center for logistic organization and telecommunication.

Figure 7 Structure of port city (Meyer, 1999)

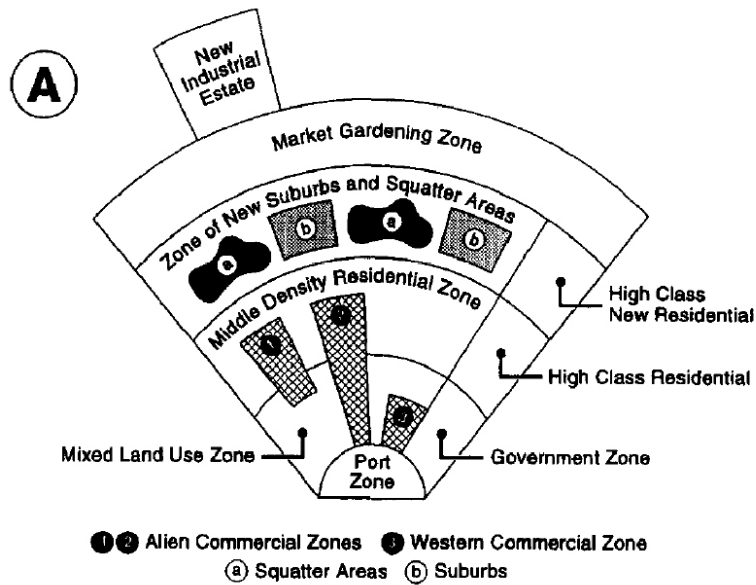


Figure 8 McGee's model of the spatial structure of the Southeast Asian city. Sources: McGee (1967) and Sommer (1976)

Moreover, the research of Gleave (1997) defined Sommer's (1976) model idealizes African port-city structure and is dynamic, postulating structural change as cities pass from the traditional to colonial and then to post-colonial eras (Figure 9). Rather than postulating a zonal structure overlain by sectors, it draws attention to relationships and the way they have changed through time. Important here is the much increased significance of port activities in the colonial and post-colonial periods. In addition, it repeats the relationships identified in the McGee model whilst implying a relationship between port and industrial areas in the colonial period that is intensified subsequently.

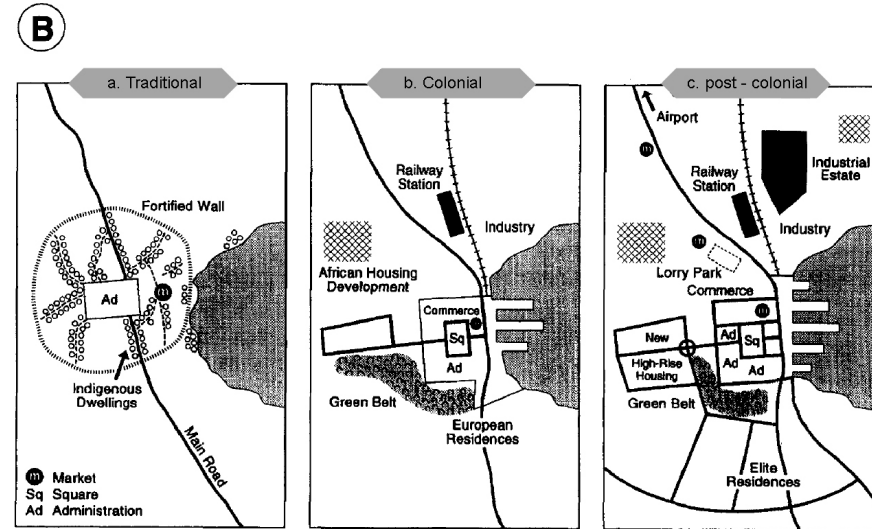


Figure 9 Sommer's model of African development (McGee ,1967) and (Sommer ,1976)

4.2. Waterfront regeneration transforms urban space-making quality and spatial structure of the water's edge

From "once a physical and social barrier in the city", water structure has become "an axis of urban development for the entire city region" (Vegara, 2001). Waterfront redevelopment changes spatial structure and remaking urban environment to transform the abandonment of vast port zone, buildings deserted, and productive plants closed with the relative problems of deterioration of both a physical and social nature of relevant portions of the urban fabric.

In fact, waterfront of the former port city was a place where obtained many issues. Regeneration waterfront have redesigned former port zone and industrial areas leading to a significant contributions of commercial and entertainment zone or living zone or both. Bruttomesso (2001) said that the redeveloped zones are a place including multiple activities and mix of functions referring to the different sectors of the principal urban activities (economic-productive, residential, pertaining to culture and leisure, mobility). Regeneration waterfront zone focus on two aspects:

(1) Culture: a significant number of activities linked to previous and original uses to keep alive the memory and preserve a meaningful trace of the identity of these places

(2) Economy - society: the public and private interests

- A specialized area of residence and associated activities
- An arrangement of productive activities
- A encourage public functions as public domain (headquarters of local government offices, museum structures, public library)
- A typical management of the private sector (hotels, commercial structures, entertainment venues)
- A joining traditional public spaces (plazas, roads, parks, cycle tracks and walking paths) and those controlled by the private sector (gardens, clubs, playing fields) Port zone is redesigned with specific programs to contribute new functions, buildings and public space. The reshaped urban environment closed to water has transformed former structure of port city, encouraging residents to access waterfront. - An "actors" managing the services on the waterfront to recreate the typically urban mix of public and private activities.

In addition, waterfront regeneration transforms urban space-making quality and spatial structure of the water's edge. In terms of the physical-functional urban aspects, redeveloping the waterfront becomes a challenge in the quest to enhance urban quality in the "construction" of the image of the modern city Bruttomesso (2001).

Waterfront transformation in port zone

Urban space-making quality

- high quality of residential areas with low and high density housing
- waterscapes and public spaces along its waterfront, landscape feature of cultural and historical significance, attractive and lively landscape
- strengthen public image to lead people too the city's cultural heritage sites
- vision quality, image enhancer

Urban spatial structure

- Connectivity and accessibility : re-establish pedestrian networks, redesign road system, establishment of new points of access to the water
- Public space: open space network, shaped network of green belt, green space, local recreation and leisure use
- Building typologies, materials, facilities allowing communities to experience the element of water
- Urban morphology combined with flood protection
- Restructing of waterscapes

Figure 10 Waterfront transformation in port zone

When port and industrial zone is replaced into commercial, residential and leisure area, the waterfront redevelopment is transformed urban structure through changing the urban functions, resulting in:

(1) Opening up the waterfront to the public

- Redevelop the border zones between city and water

(2) Development of accessibility to the waterfront

- Pedestrian access to link the city centre and water

- High-level accessibility by public transport to reach easily to water

- Well operations of possible intersections of pedestrian routes with roads to access the waterfront easier, safer and more pleasant.

(3) Limitations on vehicle traffic:

- Waterfront is the city's main pedestrian zones

(4) Upgrading waterborne transport needs to be effected

(5) Highlighted by the environmental and urban features of the waterfront, to emphasize the unusual nature of this urban zone

(6) Ensuring the quality of the water in the recovered waterfront zones.

Specifically, along the waterfront sites, public spaces and new buildings in new plans are designed to encourage public involvement and accessibility to the water.

05 Waterfront's revitalization regains the city's identity and image

The urban waterfront has the ability to shape an image for a city, to add value to city economies, and create desirability (Millspaugh, 2001). When port city shifts from industrial to service economies, a major aspect of its success will be in the quality of their urban environments. The waterfront plays a critical role remade the image of the city. Bilbao and Shanghai are two remarkable experiences of how the waterfront has become the stage for a new expression of city aspirations and how a waterfront can provide opportunities for the creation of a new identity.

The main characteristics of the waterfront area can be considered as strengths to redevelop watersides. The environmental, cultural or historical of a specific area create the values of waterfront where have significance to the visual, social and cultural identity of local community. The paper also rethinks the distinctive valuable of the water city. In fact, today urbanization and globalization has greatly destroyed much urban cultural heritage and cultural living is being impacted, and often threatened with destruction. Therefore, redevelopment water front as a chance to regains its cultural image and identity of water city as a unique and distinguish characteristics.

"When we lose a historic place, we lose a part of who we are "(<http://www.nationaltrust.org/History> is in our hands, 2003)

06 Regeneration waterfront deal with flood protection and water management

In fact, regeneration waterfront must cope with numerous issues in relation with water. Water has always been a threatening factor; therefore, waterfront redevelopment projects must deal with controlled and managed water, which offers certain urban development value for settlements. Climate research scientists predict the onslaught of frequent major flooding which can no longer be stemmed by economically viable means. It became clearly evident that consideration of the need for creating new flood planes and controlled water can lead to whole new transformation projects.

To deal with climate change issue, waterfront redevelopment prepares to live with and in the water. The task requires a preparing both the flood plans and technical construction to achieve sustainable way and to improve safety from the sea side, the river side, or both. Water issues are not just a matter of quantity but also quality (Groot, 2006). The pollution of water is increasingly in day-to-day activities, affected directly to living environment along water sites.

07 Conclusions

Many ports and cities on the world have been completely separated and ports lost its central position as adapting to changing conditions and competition. Waterfront redevelopment solves the problems of old port area in inner cities, caused conflicts in urban condition. Although the waterfront has been usurped by giant ports and extraneous uses, such as warehouses, factories and transportation in last century, waterfront transformation revitalizes the attraction of the water sites. Since the 1970s, numerous waterfronts have undergone a reorientation from 'brown fields' or 'green belts' to commercial, residential and recreational areas. It can be said that "contemporary urban waterfront redevelopment and regeneration projects represent today an international undertaking in urban planning and politics waterfront regeneration (Feldman, 1999).

Regeneration waterfront creates both challenge and opportunities to reshape urban spatial and encourages economic and social improvement. There are many successful waterfront redevelopment projects bring great benefits to local residents and enhances a good accessibility and connectivity to water. Specifically, the transformation regains its unique characters and identity image, coming back to the cultural living closed with water of a water city.

The research tends to build up the concepts for "Regeneration Sai Gon Port" project in Vietnam. The project focuses on transformation Sai Gon waterfront when port relocated to near the sea. The case in Ho Chi Minh City, Vietnam, since the city was established in 1698, the port located along the Saigon River and the main canals have been recognized such as the most attractive areas and important parts of urban fabric. Besides, these areas remained a rich cultural that dates back to the history of the city itself. Currently, the development of city demands on the new

relations among ports, city and landscape. The outdated port causes serious problems due to the existing of brown field sites in city centre, which brings a poor quality of city's images and urban environment. In addition, the city has been disconnected from Saigon River by industrial barriers and lacks water-scapes, although Ho Chi Minh City has rich characteristic and historic potential related to water. The old port determines the development of urban functions near the water, sometimes blocking the specific atmosphere and characters of a water city. Therefore, these old ports require relocation to available sites and transformation of old port areas into a liveable urban development. Structural patterns and functional spaces are designed based on local characters, cultural and historic background and conceptions from this research in theory paper as well as sustainable urban development criteria. The regeneration of an old port is used as a strong tool to improve the image and unique identity of a water city.

- BASSETT K., HOARE T. (1996) The emergence of postmodernism on the urban waterfront, *Journal of Transport Geography* 4 (2) (1996), Scopus
- BREEN A., RIGBY D. (1994) *Waterfronts: Cities Reclaim their Edge*, McGraw-Hill, New York
- CHARLIER, J. (1992) Structural change in the Belgian port system, *Maritime Policy and Management* 15
- BREEN A., RIGBY D. (1996) *The New Waterfront: A Worldwide Urban Success Story*, McGraw-Hill, New York
- BRUTTOMESSO, R. (Ed.) (2001) *Complexity on the urban waterfront*, London and New York, SPON PRESS.
- CAPEL-TATJER, L. & BRITO, M. P. D. (Eds.) (2001) *Urban Management in Europe towards a sustainable development*, The Netherlands, Erasmus University Rotterdam.
- CARMONA, M. (Ed.) (2003a) *Globalization Urban Form & Governance*, The response of city ports in the Northern Hemisphere, Alfa-Ibis Network, Delft, DUP Science.
- CARMONA, M. (Ed.) (2003b) *Globalization Urban Form & Governance*, The response of city ports in the Southern Hemisphere, Alfa-Ibis Network, Delft, DUP Science.
- CHAN, R. C. K. (Ed.) (2006) *The creation of global-local competitive advantages in Shanghai*, Routledge.
- CHEN, Y. (2007) *Shanghai Pudong, Urban development in an era of global-local interaction*, IOS Press, Delft University of Technology.
- COOK, A., MARSHALL, R. & RAINE, A. (Eds.) (2001) *Port and city relations: San Francisco and Boston*, London and New York, SPON PRESS.
- CRESWELL, J. W. (2003) *Research Design Qualitative, Quantitative, and Mixed Methods Approaches*, Lincoln, SAGE.
- GORDON, D. (1997) Financing urban waterfront redevelopment, *Journal of the American Planning Association* 63 (2) Gran Canaria, London and New York, SPON PRESS.
- GUNN, S. & MORRIS, R. J. (Eds.) (2001) *Identities in Space, Contested Terrains in the Western City since 1850*, Great Britain, MPG Books Ltd, Bodmin, Cornwall.
- HEALEY, P., DAVOUDI, S., MO'OTOOLE, TAVSANOGU, S. & USHER, D. (Eds.) (1992) *Rebuilding The City*, E & FN Spon.
- HOOIMEIJER, F., MEYER, H. & NIENHUIS, A. (2005) *Atlas of Dutch water cities*, Amsterdam, SUN.

- HOYLE, B.S. (1988) Waterfront redevelopment and the city port economy, *Maritime Policy and Management* 15
- HOYLE, B.S. (2000) Global and local change on the port–city waterfront, *Geographical Review* 90 (3) Scopus
- HOYLE, D.A. (1988) *Revitalising the Waterfront: International Dimensions of Dockland Redevelopment*, Belhaven and London
- MALONE, P. (Ed.) (1996) *City, Capital and Water*, London, Routledge.
- MARSHALL, R. (Ed.) (2001) *Contemporary urban space-making at the water's edge*, London and New York, SPON PRESS.
- MARSHALL, R. (Ed.) (2001) *Modern ports and historic cities: Genoa and Las Palmas de*
- MARSHALL, R. (Ed.) (2001) *Waterfront in Post-industrial Cities*, London and New York, SPON PRESS.
- MEIJERS.E.J, ROMEIN.A & HOPPENBROUWER.E.C (2003) *Planning Polycentric Urban Regions in North West Europe; Value, feasibility and design*, Haveka, Alblasterdam, DUP Science.
- MEYER, H. (1999) *City and Port, Transformation of Port cities* London, Barcelona, New York, Rotterdam, Rotterdam, International Books.
- MILLSPAUGH, M. L. (Ed.) (2001) *Waterfronts as catalysts for city renewal*, London and New York, SPON PRESS.
- NORCLIFFE G., BASSETT K., HOARE T. (1996), *The emergence of postmodernism on the urban waterfront*, *Journal of Transport Geography* 4 (2) Scopus
- SHAW, B. (Ed.) (2001) *History at the water's edge*, London and New York, SPON PRESS.
- SIDJANIN, P. (2001) *A Cognitive Framework For An Urban Environment Design Tool*, Den Haag, CIP-GEGEVENS KONINKLIJKE BIBLIOTHEEK.
- SONG, D. W. (2003) *Port co-operation in concept and practice*, *Maritime Policy and Management*, Scopus
- STOUTEN, P. (Ed.) (2009) *Reader Studio Urban Regeneration*, Delft
- STOUTEN, P. (2004) *Rotterdam: The Mismatch between the Port and the City*

WEBSITE

www.railway-technology.com/projects/vietnammetro

www.ou.edu.vn/english

www.eng.hochiminhcity.gov.vn/eng/news

www.eng.gov.spb.ru/figures

www.flickr.com

www.googlemaps.com

www.vietnamnews.vnagency.com.vn/Economy

www.mofahcm.gov.vn/vi/tintuc_sk/tulieu

www.vnbusinessnews.com/2008/12/ho-chi-minh-city-attracts-record-fdi-in.html

www.pso.hochiminhcity.gov.vn