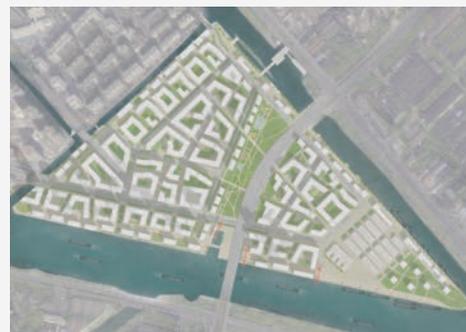


# Urbanization and Locality in the City of Wuxi



MARTIN PROMINSKI &  
FANG WANG (EDITORS)

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## INTRODUCTION

In 2016, Peking University and Leibniz University of Hanover established the Sino-German Joint Laboratory on Urbanization and Locality Research (Project Leaders: Prof. Dr. Fang WANG and Prof. Dr. Martin Prominski). The laboratory deals with the question of identity in urban areas. The ongoing research-project "Urbanization and Locality: Preserving and developing identity in large-scale urbanization processes with urban landscapes along canals as case studies" examines the characteristics and preservation of locality in rapid urbanization areas along urban canal landscapes in Germany and China\*. This project starts from the assumption that current urbanization projects look more and more the same. They do not address the local character of the site (*genius loci*) which leads to urban areas with a low identity. Those new districts make them difficult for the inhabitants to identify with their environment, which decreases the quality of living. The project aims to develop alternatives and asks: What are the characteristics for locality in urban areas? What are characteristics of a dynamic understanding of locality, avoiding museumization? How can these characteristics be addressed in the planning and design process to achieve a balance between locality and rapid urbanization?



▲ Fig. 1: Group foto taken in Wuxi, October 2016

To address these questions, urban canal landscapes are chosen as the subject for studying the dynamic relation between urbanization and locality because they have a specific character by rich historical layers, at the same time they are currently facing a high pressure by urban transformation processes with the risk of uniformity. To develop applicable principles for future urbanization projects with a high identity, case studies from Germany and China are chosen because both countries represent the different phases of mature versus rapid urbanization. This leads to different urbanization approaches, which supports the creation of research results with a wide applicability.

In China, the Grand Canal from Beijing to Hangzhou is chosen as case study area because so many culturally and naturally diverse cities along its 1776-kilometer stretch are confronted with a change towards a more and more uniform appearance. By studying different concepts of locality in two case study cities in North (Tianjin) and South China (Wuxi), principles which are applicable to planning and design processes were developed. They will support future projects to achieve an urbanization which preserves and develops the local character.

This brochure focuses on the City of Wuxi. The research team visited Wuxi two times in August and October 2016. The city of Wuxi was very supportive and the team got a guided city tour by the city planning department and detailed presentation on the Grand Canal.

The brochure starts by analyzing the history of the Grand Canal of China and the urbanization process of Wuxi. After a boat tour and extensive walks along the Grand Canal in Wuxi, the team documented the different spatial character of the canal and its adjacent buildings and open spaces in 15 sections. Based on this spatial analysis, a "Locality Matrix" has been developed to document the found characteristics of locality along the Canal in an abstracted and transferable way. These "typologies" illustrate the urban layout and relations between open and build space along the Grand Canal as well as the proportions and characteristics of canal banks.

On the basis of the Locality Matrix, this brochure presents five different designs for a case study area in Wuxi which were developed by Master Thesis students in Landscape Architecture as well as Urban Design and Bachelor Thesis students in Landscape Architecture and Environmental Planning, all studying at the Leibniz University of Hanover and guided by the research team. The chosen project area is situated in the eastern center of Wuxi on a crossing point of the Old and New Grand Canal of China. The working task aims to find different approaches and strategies for designing locality along the Grand Canal by creating a balance of open and built space, while considering the high urbanization pressure and local characteristics.

The aim of the following five design-proposals is not to be "realistic" by integrating all economic, legal or other constraints. Instead, they should serve as a generator of ideas for creating a new urban area which is in harmony with the Grand Canal. The five proposals develop relations between the canal and the built space which are specific for Wuxi, expressing a way to transform Wuxi's great history of the Grand Canal into the future.

We hope this is inspiring, please enjoy the read.

Martin Prominski

*\* This project is funded by the Sino-German Center for Research Promotion in Beijing, a joint-venture of the National Natural Science Foundation of China (NSFC) and the German Science Foundation (DFG). Project partners are Peking University (Prof. Dr. Fang WANG, Prof. Dr. Bihu WU, Prof. Dr. Shuangcheng LI) and Leibniz University of Hanover (Prof. Dr. Martin Prominski, Prof. Carl Herwarth von Bittenfeld, Prof. Dr. Rüdiger Prasse).*

## URBANIZATION

Historically, China has always been an agricultural society with only few large cities (Ren 2013, 13). When Mao Zedong took over the political power in 1949, only 10 percent of the Chinese population lived in urban areas. Thirty years later, this number increased to slightly less than 20 percent, so that the society in 1979 consisted of 80 percent rural residents (Ibid.).

With the decease of Mao Zedong in 1976, the following reformation of the Chinese economy and the increasing openness to trade in 1978, an unstoppable process of never seen industrialization has begun (Campanella 2008, 281). After a period of prioritizing the development of villages, the Chinese government shifted its course towards the destruction of old towns and the extensive construction of high-rise cities with wide traffic arteries (Münc 2004, 44).



▲ Fig. 2: Construction site in Beijing

Within four decades, the share of the urban population as part of the total population increased from less than 20 percent in 1978 to more than 55 percent today (United Nations 2016). The urban population increased by 450 million people during this time. This means, that currently 750 million people are living in Chinese cities today – until 2050, this number is expected to increase by further 250 million people to above one billion people (Ibid.).

From the 1990s onward, driven by foreign direct investments, countless factories were established in the Chinese cities, which attracted the surrounding rural population (Ren 2013, 25). Searching for jobs and a better life in general, parts of the rural population migrated to the cities, thus bringing urbanization to a new level. This enormous urban development is not only noticeable among the mega cities like Beijing or Shanghai. Even though the largest Chinese cities experienced high growth and already evolved to global metropolises, it is much rather the smaller cities, relatively unknown outside of China, that make up the highest part of the entire Chinese population.

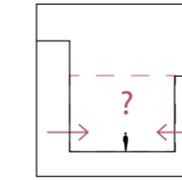
Probably every Chinese city has deeply changed due to the urbanization over the last 20 years. Yet, in contrast to other fast growing cities, especially in Africa and South America, Chinese cities do not grow in an informal way. China does have enough resources to create living space of more or less high quality. Therefore, Chinese cities are not characterized by poverty but rather by an architectonic poorness, non-placeness and a disparity of living space and public space offside the city centers (Sheperd 2016).

Ipsen identified five significant results of the Chinese urbanism of the last 30 years (Ipsen 2004, 28–29). First, a specific relationship of centre and periphery with high income disparities which causes large-scale migration from the countryside to the cities (Ibid.). Second, a social segmentation of city dwellers and rural population, even after the latter have moved to the cities (Ibid.). Third, a fragmentation of the cities with enclosed rural islands as a result of communist land-ownership structures (Ibid.). Fourth, wide roads as spaces of circulation and fifth, a placelessness caused by generic cities (Ibid.).

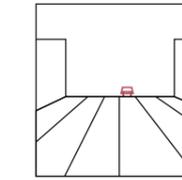
Münch argued that this new urbanism, with its gated communities which seem generic and

westernized, is still based upon traditional Chinese urban form and social structures (Münch 2004, 44). Chinese cities of the imperial period did not legally differ from villages (Ibid.). They were organized in "cells" of families living in walled courtyard houses, which again were bundled as walled quarters (Ibid.). Everything inside was space and everything outside non-space (Ibid.). According to Hassenpflug, this distinction is still preferable to the western distinction of private space and public space for reading Chinese cities (Hassenpflug 2009, 31–32). He argues that the western public space is characterized by a civil society, democratic processes and participation, which in China are less developed than local communities and their dichotomy of inside–open and outside–non–open (Ibid.). This is still apparent in gated communities, which are closed to the inside but provide communal functions and a strong sense of community and identity to the inside, just like their predecessor models of courtyard houses (Ibid. 58).

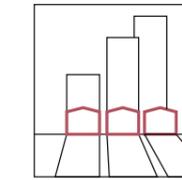
Fences, walls and exclusion have always been a tradition in Chinese cities. The most well-known example is the ‚Forbidden City‘ in Beijing – the prototype of exclusive living space. Also the traditional residential building, the ‚Siheyuan‘, delimited its inner space through its inwards directed construction from the public – additionally, multiple of these houses were united to a quarter and walled in (Huang und Low 2008, 185). The fencing of residential quarters thus still creates a sense of community among the residents in China. Today it is obviously less a question of excluding people than creating a common identity among the inhabitants of the respective neighborhood by the symbolism of the enclosed internal space. Due to the physical demarcation to the outside world, residential districts can also be marketed as a specific brand. With the help of a more or less ‚concise‘ english-speaking name, charged with exoticism and positive visions, a strong and promising image is generated and the ‚product‘ is advertised. Apartments are no longer merely housing, but presenting a viable lifestyle at the same time. Thus, every new residential area becomes a separate brand and creates a collective identity shared by the inhabitants of the specific housing complex (Hassenpflug, 2009, 75). The concept of the inner courtyard is of great importance in China and has traditionally ensured social cohesion in the neighborhood (Ibid. 72). Even today, neighborhood courtyards



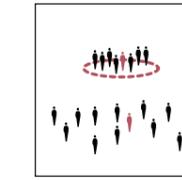
no concept of public space, housing extended into open space



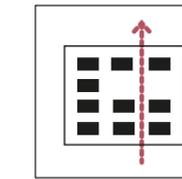
wide roads reflect the dream of car ownership



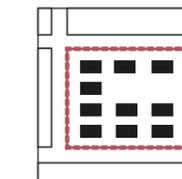
city and its »society« are based upon village communities



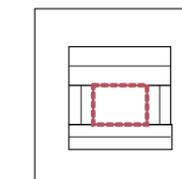
communities stronger than society



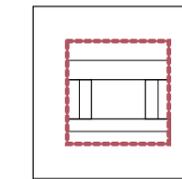
north-south orientation of buildings



identifiable neighborhoods (gated communities)



introverted spaces: courts



blind facades to the outside

▲ Fig. 3: Chinese urban patterns

within the gated communities have a strong social integration force and support the formation of neighbourly identities (Ibid. 71). Nevertheless they are exclusive and thus dividing the Chinese society into many small and separated units.

Another consequence of the open – non–open dichotomy is the uninhibited appropriation of street space by the population, which really is just an extension of housing functions into the open space vacuum, creating proto–public spaces (Hassenpflug 2009, 31–32). Typical for Chinese urbanism, both in traditional courtyard houses, but even more in modern gated communities, is the orientation of the apartment blocks and towers to the South, for reasons of light and air (Ibid. 52–53). The massive roads in between the gated communities, seen from a Chinese cultural standpoint, are not a problem, since they are outside of the community and within the non–space (Münch 2004, 45). Hassenpflug mentions that using public space outside of housing areas has actually no tradition in China (Hassenpflug 2009, 101). Only ‚infrastructural constraints‘ such as bridges or crossroads were used in the former Chinese city as what we today understand as public spaces: places of social contact and everyday life (Zhang 2004, 102f). Furthermore, the enclosed residential areas of the Chinese middle class are also a hindrance to lively public spaces (Ibid. 128). These quarters offer their residents an exclusive green space, comparable to a small park. If these courtyards additionally include furniture such as gym equipment or playgrounds, there is no more need to leave these areas to pursue appropriate activities.

#### NEW URBAN GUIDELINES

Although the Chinese Urbanism of the last 30 years is still based upon traditional societal values, it caused several issues. The streets, despite their enormous dimensions, are still often clogged because traffic is bundled in only few roads (Shepard 2016). The sidewalks along gated communities have no street life (Ibid.). Buildings are built quickly, cheaply and energy–inefficient (Ibid.). Their generic appearance caused a loss of city character (Ibid.). Other problems include unlimited expansion and environmental degradation. To counter these pro-

blems, different guidelines were proposed. One set of 12 guidelines, called “Green and Smart Urban Development Guidelines and Smart Urban Development Guidelines”, was published by the China Development Bank Capital (Shepard, 2016). With a similar ambition China’s State Council proposed 30 urbanization guidelines. They include the creation of a denser street network by opening gated communities, setting urban growth boundaries, building more mixed–use areas, increasing public transport and public green space, improving construction quality and creating more resource efficient structures (Shepard, 2016).

#### GUIDELINES OF ECO-CITY PLANNING

The China Academy of Urban Planning and Design and some other relevant institutions were commissioned by the Ministry of Housing and Urban–Rural Development of the PR China (MOHURD) to draw up the “Technical Guidelines of Eco-City planning”. The guidelines were published on the Chinese Eco-City Website as a draft in April 2016 (CSUS 2016). These guidelines intend to promote the construction of Eco-Cities in China, to explore the mode of sustainable cities, and to provide some instructions for further urban planning and urban design. They include guidelines for “green spaces”, “green infrastructure” and “green humanity”. Several land–use standards for the macro and micro level of the city are given and should be implemented in future city development.

#### Future land–use standards on the macro level:

The development area should be restricted to limit the expansion of the city while the urban layout should be compact (CAUPD et al. 2016). The density of the district should be decided in dependence of the capacity of public transportation. The city should establish transit oriented areas. 50% of the citizen should live in transit oriented areas in the future, in order to decrease the dependency on private mobiles (CAUPD et al. 2016). Big mono–functional areas are inadvisable. The residential area in the city should be mixed with commercial use, recreational uses and office spaces (CAUPD et al. 2016).

#### Future land–use standards on the micro level:

The block–structure should be at a smaller scale and appropriate for pedestrians. Residential and commercial mixed–used areas, smaller than 2 ha, should make 70% of the city. Commercial and office mixed–used areas should not be larger than 1 ha. Residential areas should ideally not be bigger than 2 ha, and should in no case be larger than 5 ha. The roads inside big blocks should be opened for the public (CAUPD et al. 2016).

Each residential area should have one commercial point and one kindergarten within 300 meters distance, a clinic, a primary school, a supermarket and a playground within 500 meters and a middle school and a food market within 1000 meters. All these facilities could be combined with the buildings in the residential areas (CAUPD et al. 2016).

In summary, all these new guidelines call for major changes in regard to future Chinese urbanization projects, where the preservation of historical structures as well as the enforcement of city character and locality in future projects play a crucial role within these processes.

## HISTORY OF THE GRAND CANAL OF CHINA

The Grand Canal of China was constructed since 605 BC onwards (Unesco 2017). With its overall length of 1800 kilometers it is the longest artificial waterway in the world and connects Beijing in the North with Hangzhou in the South (Ibid.). The canal has always been a route to transport commodities from one town to another, yet it had a cultural function as well: Chinese emperors often used the canal to visit distant towns and to discover its local customs and practices (Johnson 2014). Many cities along the Canal rose, grew and developed, such as Tianjin, Dezhou, Cangzhou, Jining, Wuxi, Yangzhou and Hangzhou (Chen 2013, 3). All these cities were reliant on the Grand Canal, whose expansion also was adapted to the local water transportation and different water systems. Thus the Grand Canal generated a variety of different city characteristics (Ibid.).

With the rapid urbanization of China, the canal and its waterfronts have changed a lot. Old buildings along the canal have been demolished, isolated and huge residential buildings with fences around have taken their place. What once was the pulse of the city is now nothing more than sterile scenery (Johnson 2014). But still there are some smaller spots left where locality can be found. Analyzing these existing potentials and adopting them for future urban design proposals is the major task of the research project group.

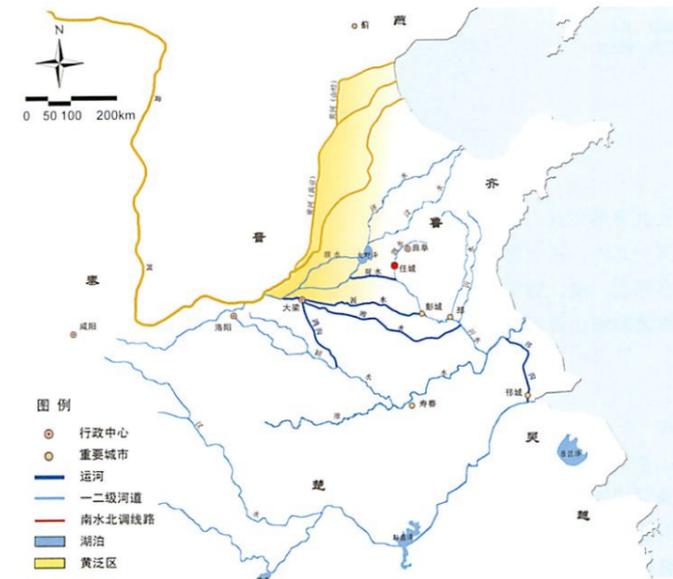
On the following pages a description of the historical genesis of the Grand Canal is given.



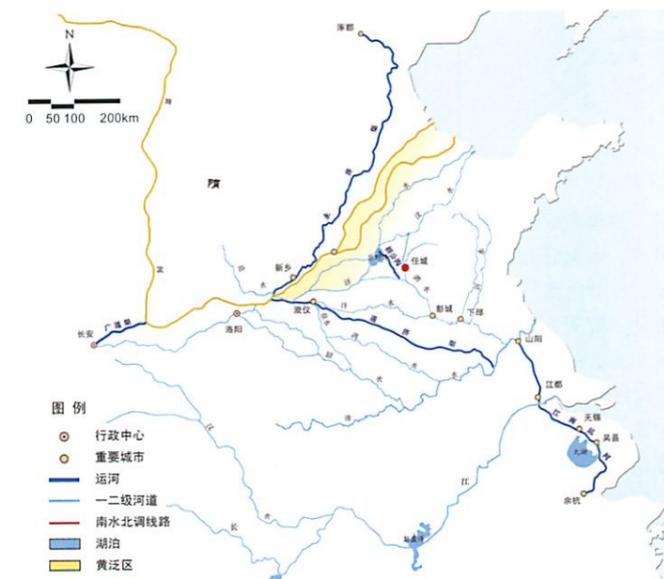
▲ Fig. 4: The Grand Canal in Wuxi

### THE HAN CANAL UNDER WU

The first sections of what later became the Grand Canal of China were built during the late Spring and Autumn period in the Kingdom of Wu (Harrington 1974, 17). Confucius (551–479 B.C.) reports in his writings about the construction of this first section (Gardar 1903, 8). The digging of the Han Gou (邗沟, Canal of the Han) aimed to connect the Yangtze River at Zhenjiang with the Huai River and was started in 486 B.C. (Ibid.). Its purpose was the transport of goods and war junks (Harrington 1974, 21).



▲ Fig. 5: The Grand Canal under Wu



▲ Fig. 6: The Grand Canal during Sui dynasty

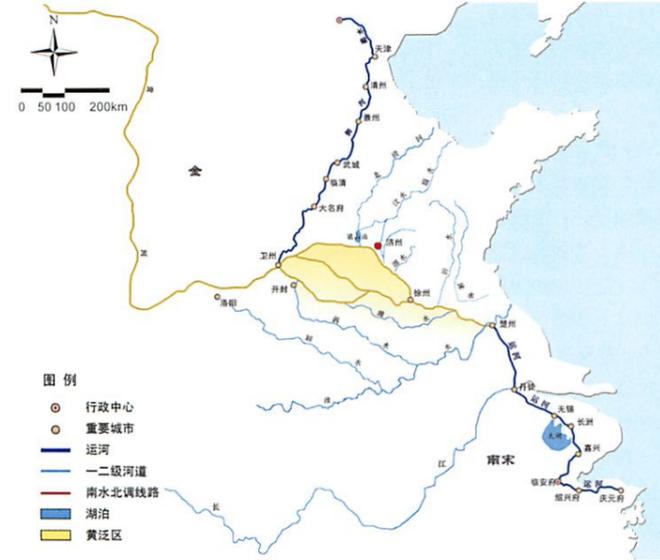
### SUI DYNASTY

During the Sui dynasty under the reign of Yang Jian (541–604 A.C.) and his son Yang Guang (569–518), an extensive canal network was constructed, for the first time connecting Beijing to China's South (Ibid., 26–27). Around the year 605, Yan Guang ordered the construction of the Tongji Canal, which connected Luoyang with the Yellow River and the Huai River, as well as the reconstruction of the Han Canal (Ibid.). To protect the river banks and to provide shade, large amounts of willow trees were planted along the new canals (Ibid., 27–28). In 608, he ordered the construction of the Yongji Canal to connect from the Yellow River to the North, approximately where Beijing is now situated.

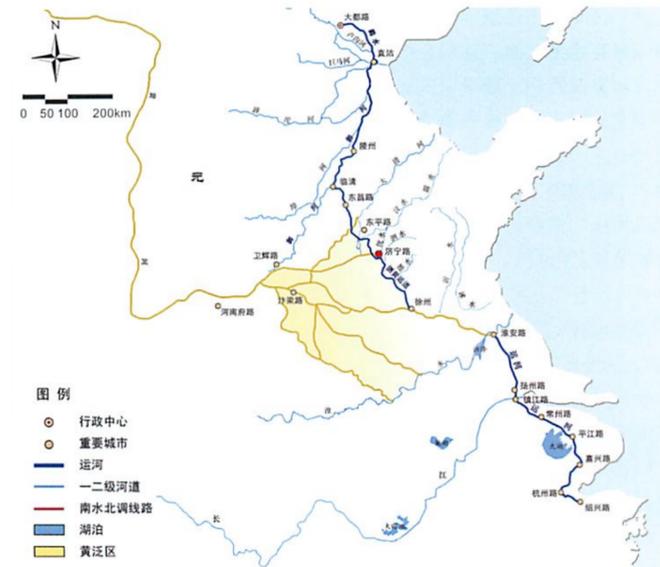
Also during this time, the Canal was extended further to the ocean in the South (Gardar 1903, 12).

### TANG, SONG AND YUAN DYNASTIES

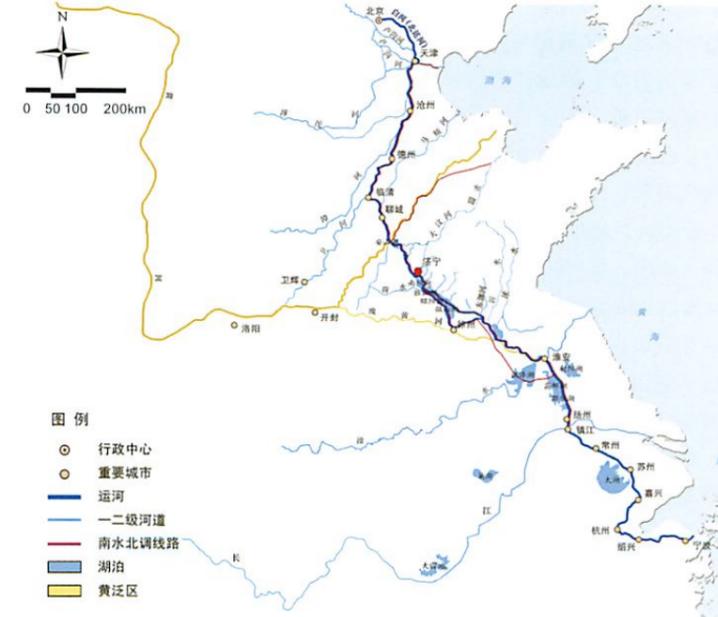
During the Song dynasty, Hangzhou on the Chientang was the capital of the empire (Gandar 1903, 12). This changed with Kublai Khan and his Mongol armies conquering China and moving its political center to Beijing (Harrington 1974, 34). As a consequence, the Grand Canal was rebuilt and especially the northern section re-routed (Ibid.). The yellow river had changed its course radically in 1194 and made a new route for the canal necessary (Ibid., 36). The new canal went from Beijing southwards, crossing the Yellow River and joined the old waterway near Huai'an (Ibid.). Construction was completed in 1289 (Ibid.). A road parallel to the canal ran along its whole course (Ibid.). This was the first time in history that there was a canal connecting Beijing to Hangzhou directly along a north-south axis. (Ibid.) It was also during this time that Marco Polo travelled China (Ibid.).



▲ Fig. 7: The Grand Canal during Song dynasty



▲ Fig. 8: The Grand Canal during Yuan dynasty



▲ Fig. 9: The Grand Canal during Ming dynasty

### MING AND QING DYNASTY AND 20th CENTURY

In 1414, during the Ming Dynasty the Canal was renovated almost entirely, it was deepened and 15 locks were installed. (Harrington 1974, 34). In the mid-17th century, China was conquered by the Manchus, who established the Qing dynasty (1644-1912) (Ibid., 41). During this time, Tianjin became an important port for international trade (Ibid.).

From 1800 on, the Grand Canal and the Yellow River were neglected as a result of corruption and inefficiency (Ibid., 45). From 1851 to 1855 the Yellow River changed its course once again radically, damaging sections of the Canal (Ibid.). Its condition deteriorated further due to ongoing neglect (Ibid.). Low water levels, silted up sections and malfunctioning locks made the canal less attractive for trade, and dealers started to prefer shipping by sea (Ibid., 45-46). The building of railways lessened the importance of the canal further (Ibid.). The southern sections of the Canal which are situated on a plain were not affected as much by these problems as the northern parts. The canals of Suzhou, Wuxi and Shanghai remained in use and these cities became industrialized (Ibid., 47).

During the politically troubled years from 1912 to 1949, the canal remained neglected (Ibid.). The bad situation of the canal only changed with the founding of the People's Republic of China and the communist regime, starting in 1949 (Ibid.). The waterways of China were subsequently renovated and improved (Ibid.).

In 2014, the Grand Canal of China was listed as a UNESCO World Heritage Site (UNESCO 2017).

## HISTORY OF WUXI

Wuxi is a city with a history of 3,000 years. The City is located in the Jiangsu province and is about 120 kilometers away from Shanghai.

With an overall population of 1.46 million in 1996, Wuxi has grown vastly over the last twenty years and today has a population of about 4.8 million people. This means that Wuxi has a growth rate of more than 300% in about two decades. Simultaneously the urban area has spread likely as much as the population growth. What once was rural had become industrial areas and is today shifting into huge residential districts. Nevertheless, the city has retained some of its original locality along the old parts of the grand canal.

Wuxi is one of the birthplaces of China's modern industry and commerce, as well as the hometown of many important businessmen, who played essential roles in building modern Shanghai commerce since the early 20th century. (Zhuang et al. 1988, 3). Relying on the nearby Yangtze River and ancient Grand Canal, it had been a port city with the busiest rice and cloth market in China before the 19th century (Yang 2009, 6).

Since the end of the 19th century, the early dependence on river transportation and access to water for production created an extensive concentration of waterfront industrial buildings, warehouses, and wharf structures along the Grand Canal in Wuxi (Zhuang et al. 1995, 839).



▲ Fig. 10: The historical area of Wuxi along the old Canal

FROM SPRING AND AUTUMN PERIOD TO SUI DYNASTY (BEFORE 619)

Wuxi is the oldest city in the Jiangnan region. It was the capital city of Wu Kingdom at the end of the 11th century and therefore birthplace of the Wu culture (Li 2008, 15).

The Han canal was built under the King of Wu Kingdom in 486-484 BC. Due to the construction of the Han canal, Huaihe River and Yangtze River were connected and a water network surrounding Wuxi was formed.

While the construction of the Grand Canal started in Sui dynasty, the Han Canal was used to be the initial Grand Canal in Wuxi (Zhuang et al. 1995, 14).

► Fig. 11: Map of Han canal

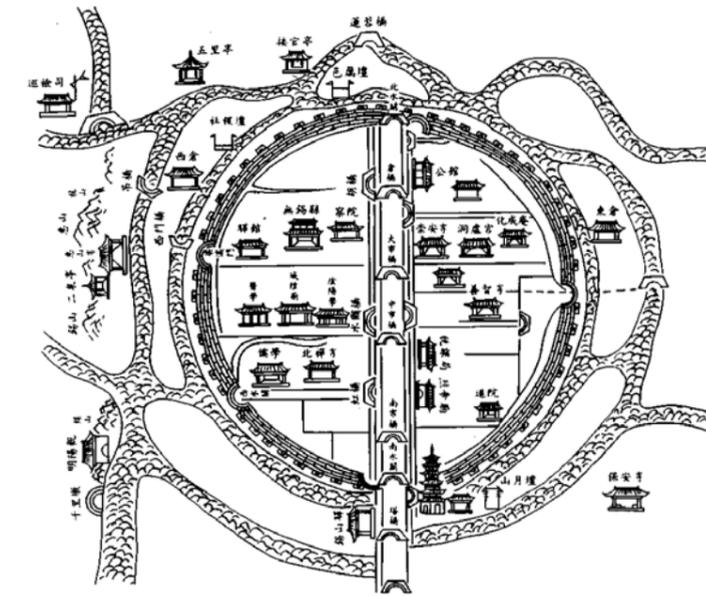
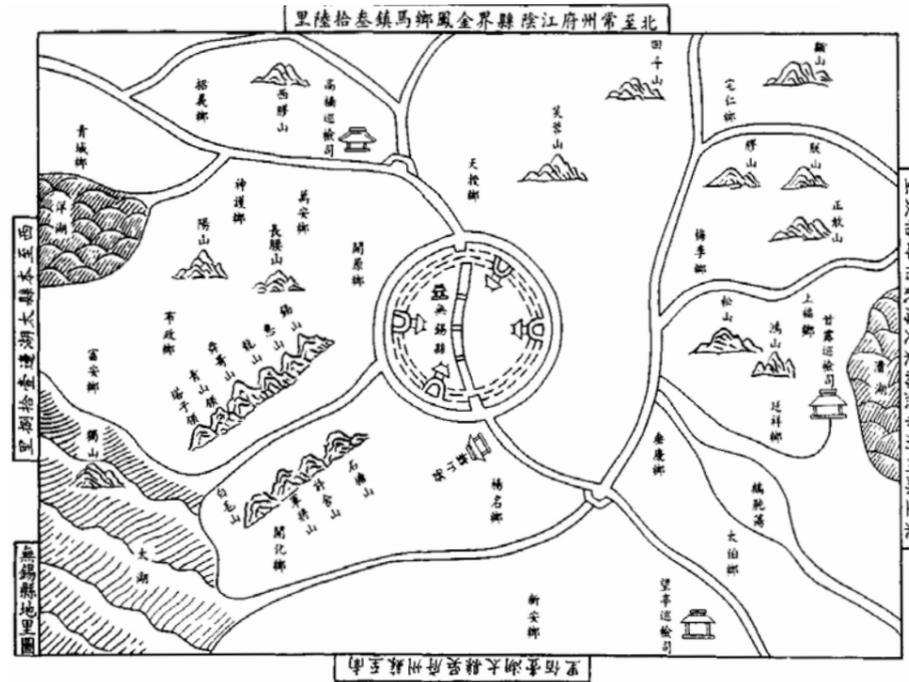


TANG DYNASTY (619-907) AND SONG DYNASTY (960-1279)

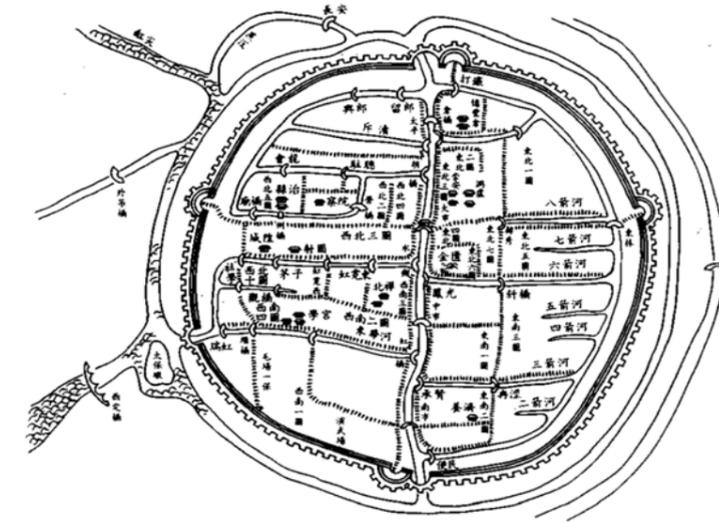
During the Tang and Song dynasty, which are well known as the „agricultural period“, Wuxi became an important economic city in the Jiangnan region, relying on its superior natural conditions and convenient waterway transportation.

The Grand Canal (Han Canal) passed through Wuxi in the middle of the city. Walls with four gates at each cardinal direction surround the city center (Zhuang et al. 1995, 124).

► Fig. 12: Map of Wuxi in 1268



▲ Fig. 13: Map of Wuxi's city centre in 1494



▲ Fig. 14: Map of Wuxi's city centre in 1689

MING DYNASTY (1368-1644)

Since the Ming Dynasty, Wuxi continued developing rapidly. At the late Ming dynasty the development of handcraft industry flourished, what made Wuxi to become a famous port for trading goods.

Because of Wuxi has a rich production of high quality rice, the City became an agricultural center as well. A rice terminal as well as a significant national rice market were established. Therefore more houses were built in the historical centre and a new gate was opened at west of city center (Zhuang et al. 1995, 124).

QING DYNASTY (1644-1912)

In Qing dynasty, three other significant economic sectors began to grow: cloth, silk and financial business.

Since then there was a prosperous and bustling scenario with lively market and busy water transportation along the Grand Canal, which laid an excellent foundation for the development of Wuxi's modern national industry and commerce (Yang 2009, 5-6).

During Qing dynasty, more canals and bridges inside the walls were built to improve the existing water system. Also the city center became more dense in terms of housing.

## MODERN INDUSTRIAL DEVELOPMENT

After 1842, Wuxi's industrial development grew rapidly. Relying on its superior natural conditions, Wuxi's four significant economic sectors grew in strength (rice, cloth, silk and financial business) (Yang 2009, 6).

The construction of a railway between Shanghai and Wuxi was completed in 1906 and Shanghai became a global economic center. The water transportation based on Grand Canal was gradually replaced by sea transportation. Due to the high cost of building factories in Shanghai, some national entrepreneurs had the foresight to set up factories in Wuxi as a starting point of investment. Wuxi offered much cheaper land prices but similar convenient transportation conditions as in Shanghai (Zhuang et al. 1995, 3).

Since the end of 19th century, the dependence on river transportation and access to water for production created an extensive concentration of waterfront industrial buildings, warehouses and wharf structures alongside the Grand Canal in Wuxi. With more and more factories located in Wuxi, the city has gradually become a new economic center in the Jiangnan area. Thus, Wuxi can be described as one of the cradles of Chinese modern national industry and commerce.

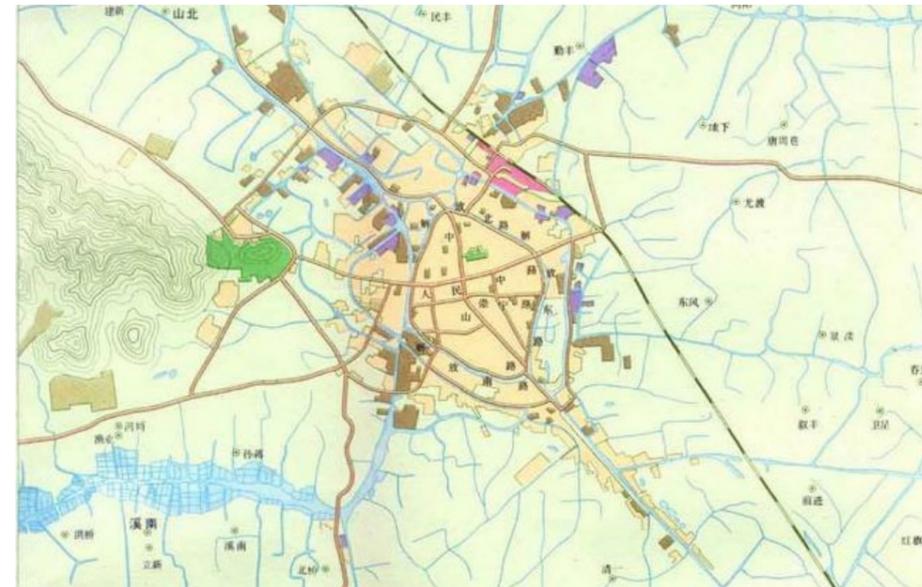
Before Japan's occupation of Wuxi in 1937, Wuxi was one of the six major industrial cities in China. However, almost all the factories were destroyed in 1937 and the years after, from which Wuxi heavily suffered.

After winning the war against Japan, the entrepreneurs continued building factories along the ancient canal and destroyed the ancient walls. Later a wide ring-road was built here. With the reconstruction after the war, Wuxi's industry developed rapidly (Wang 2002,1). Reforms and an opening up policy were implemented, so Wuxi became a core centre for both light and heavy industry. The city centre of Wuxi began to spread outward the "ring" of the canal.

Because of the growing ship traffic and limited space of the ancient Grand Canal, a new 100 meters wide canal was built at the West side of Wuxi in 1983 (Zhuang 1995, 1555 ).



▲ Fig. 15: Map of Wuxi in 1916



▲ Fig. 16: Map of Wuxi in 1956

Fig. 17: City centre of Wuxi and course of the canal in 1619



Fig. 18: City centre of Wuxi and course of the canal in 1956



Fig. 19: City centre of Wuxi and course of the canal in 1963

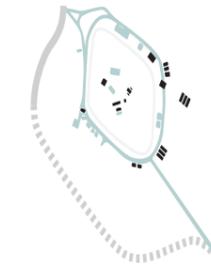
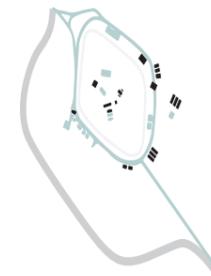


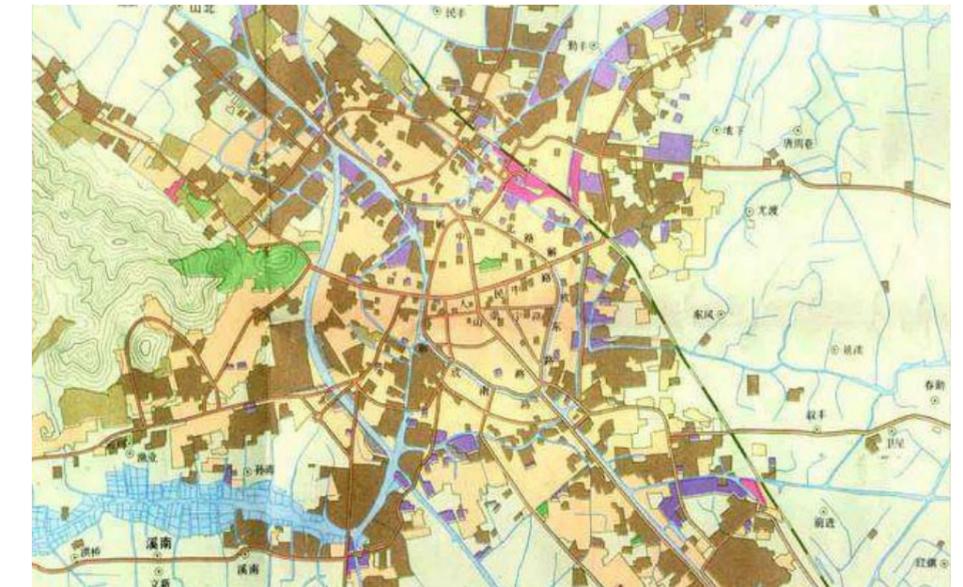
Fig. 20: City centre of Wuxi and course of the canal in 1982



Since 1992, Wuxi New District (WND) has evolved to be one of the major industrial parks in China. It attracts a large number of overseas investments. Wuxi has gradually become a large-scale, high-level modern industrial city in China's coastal areas. With its rapidly developing industry Wuxi became one of China's top 50 cities with broad strength (Yang 2009, 7). Wuxi ranked top 14th city in China and 2nd in Jiangsu Province, even exceeding the GDP of the provincial capital, Nanjing (WMBS et al. 2016).

Today, the ancient Grand Canal is a distinctive, various and plentiful historical heritage corridor. The ancient city centre and industrial buildings nearby the ancient Grand Canal were well protected and partly transformed into tourism function.

Although the transportation function of the ancient Grand Canal is no longer available, the area nearby is an open air museum, subtly telling about the history of the Grand Canal to local residents and tourists



▲ Fig. 21: Map of Wuxi in 1982

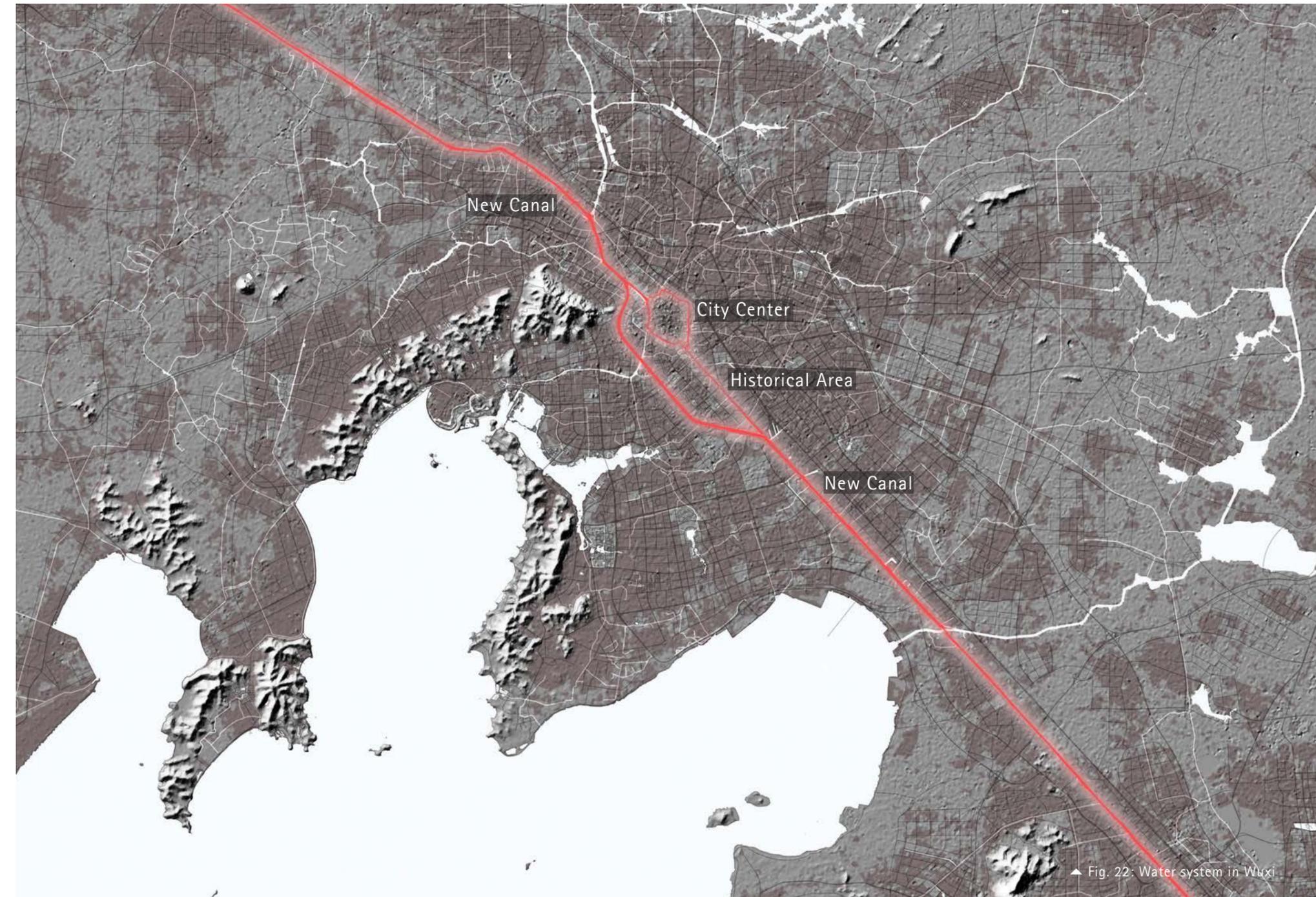
## LOCALITY

One of the objectives of the new guidelines for urban developments in China is to enhance the city character, or in other words, the city's locality.

This can be achieved by preserving and converting existing site qualities and by integrating the design within the bigger urban and geographical context (Prominski 2016, 24-25). While both of these strategies are useful, this publication focuses on a third one, which is the adaptation of traditional local building patterns.

During a field trip to Wuxi in October 2016, a wide spectrum of situations along different sections of the Grand Canal was collected. They were simplified, distilled and broken down. Negative and positive aspects along the different canal sections were also discussed and are shown in several sections of the canals and its surroundings.

The final result is a "locality matrix" with schematic diagrams of typical situations and patterns, which was then used during the design process of each proposal for the chosen new urbanization site in Wuxi.



▲ Fig. 22: Water system in Wuxi

## HISTORICAL AREA ALONG THE OLD CANAL

In the historical area, the buildings were built either directly on the canal or with only a very narrow street space in between. Behind the waterfront buildings there is always a commercial street on both sides of the river. The upper floors of the buildings in these zones are mostly used for housing.

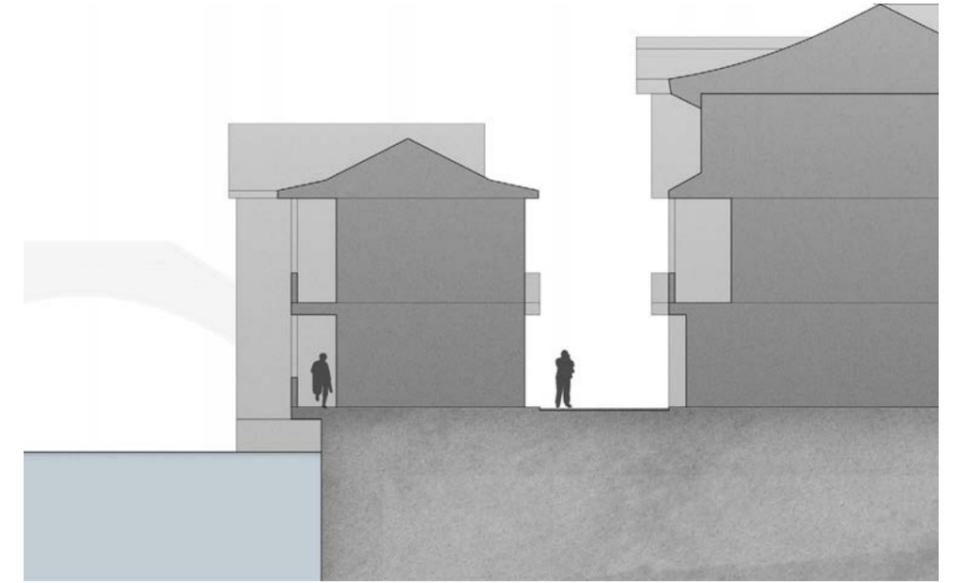
There are many water accesses built as steps in different forms. They either connect the houses directly to the water or are in between the houses to connect to public space to the water.



▼ Fig. 23, 24, 25, 26: Impressions of the historical area

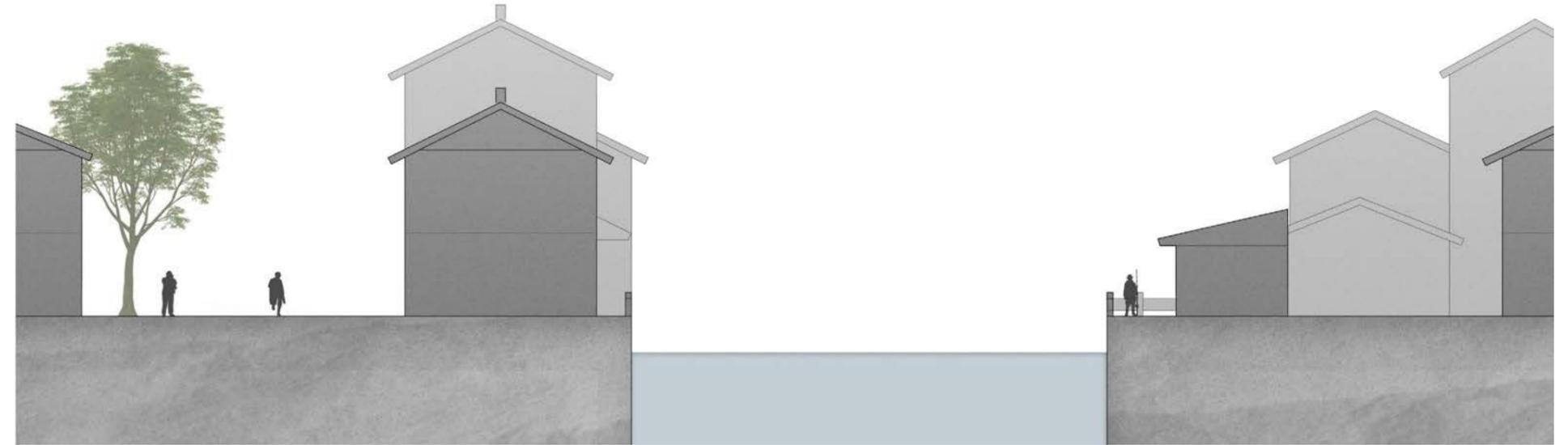


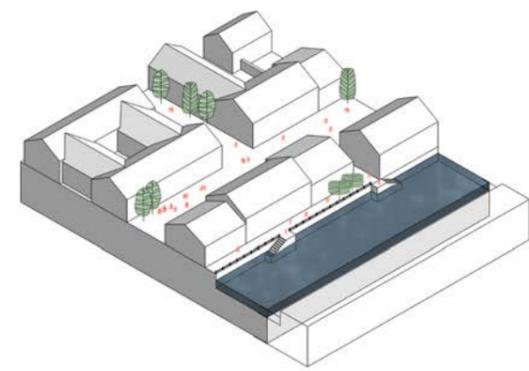
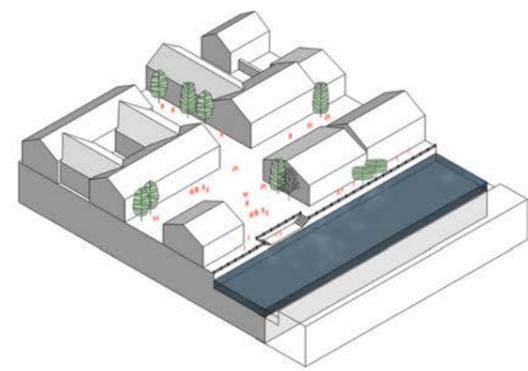
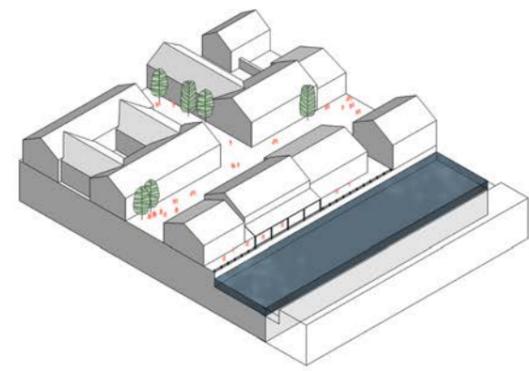
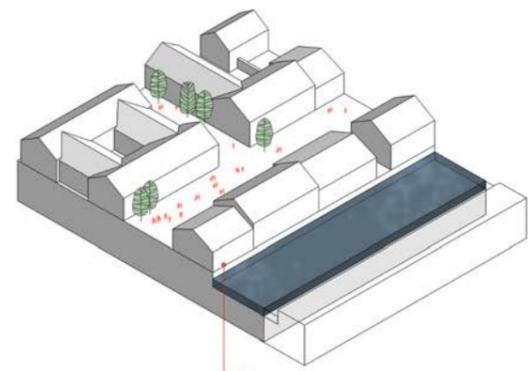
▲ Fig. 27: Section of the old canal



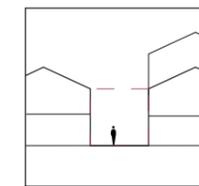
▲ Fig. 28: Section of the old canal

▼ Fig. 29: Section of the old canal

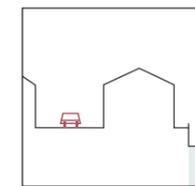




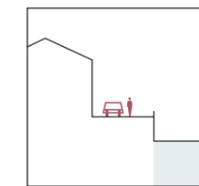
▲ Fig. 30: Axonometric drawings of the historical section of the Grand Canal in Wuxi



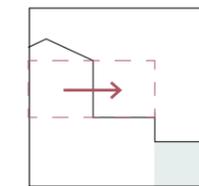
low rise buildings (2-4 stories) with narrow streets



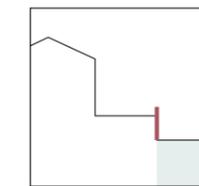
roads in the second row from the canal



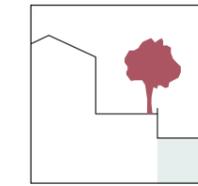
road as a shared space



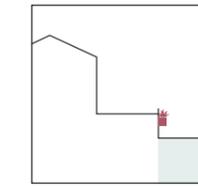
road as extended living room; no transition



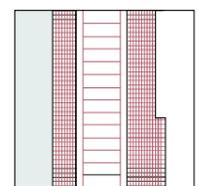
vertical canal bank with a low wall



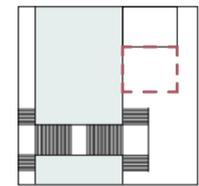
individual trees create spaces



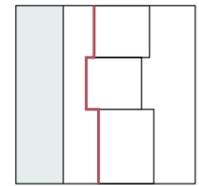
extension via plant containers



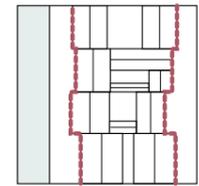
separation with slow and fast pavings



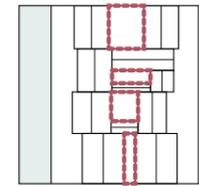
spaces at bridges



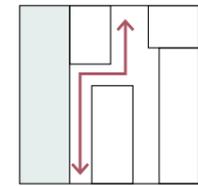
setbacks create structured edge



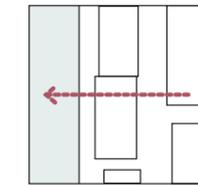
outer edge ground floor level: small shops and gastronomy



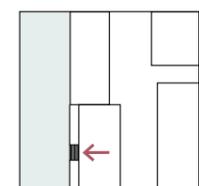
small, private courts between buildings primarily living



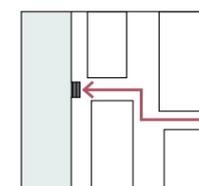
building blocks vary between direct to the canal and setback



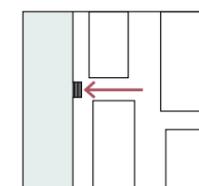
omitted north-south orientation along canal



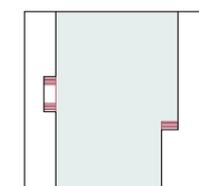
water access from the house



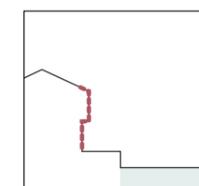
T-sections; no continuous axes to water access



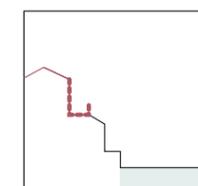
passage between building blocks to canal access



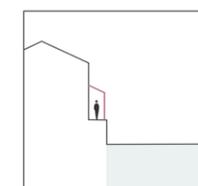
high variety in water accesses



cantilevered building sections



terraces on higher floor



arcades to the canal

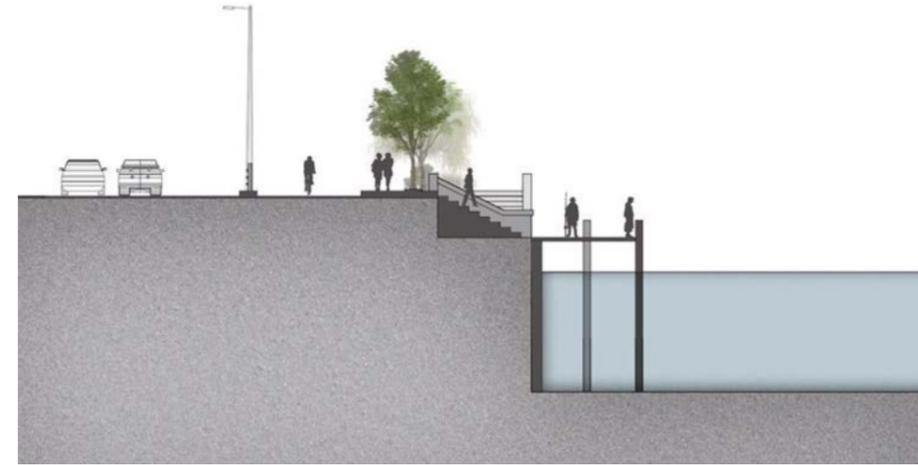
▲ Fig. 31: Local urban patterns at the old canal

CITY CENTER ALONG THE OLD CANAL

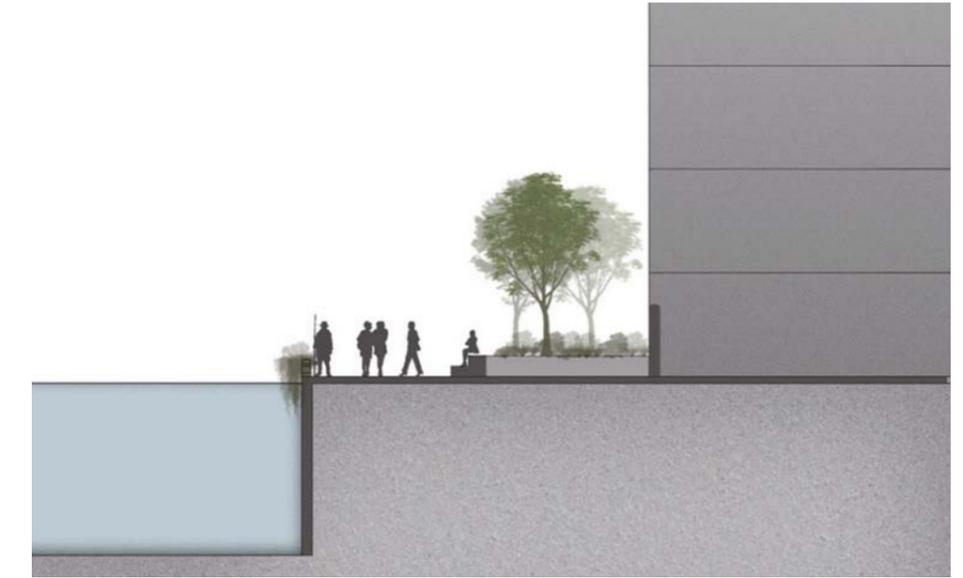
This part of the old canal surrounds the city center. Along the canal, most of the buildings are residential. The housing blocks are facing south, the canal is north-south oriented, so most of the buildings are perpendicular to the river. The ground floor has no contact with the water or waterfront space, because the residential areas are fenced off. Despite the pleasant waterfront open spaces, this section appeared rather dead because of the lacking connectivity to the adjacent housing blocks.



▼ Fig. 32, 33, 34, 35: Impressions of the canal near the city centre



▲ Fig. 36: Section of the old canal near the city centre



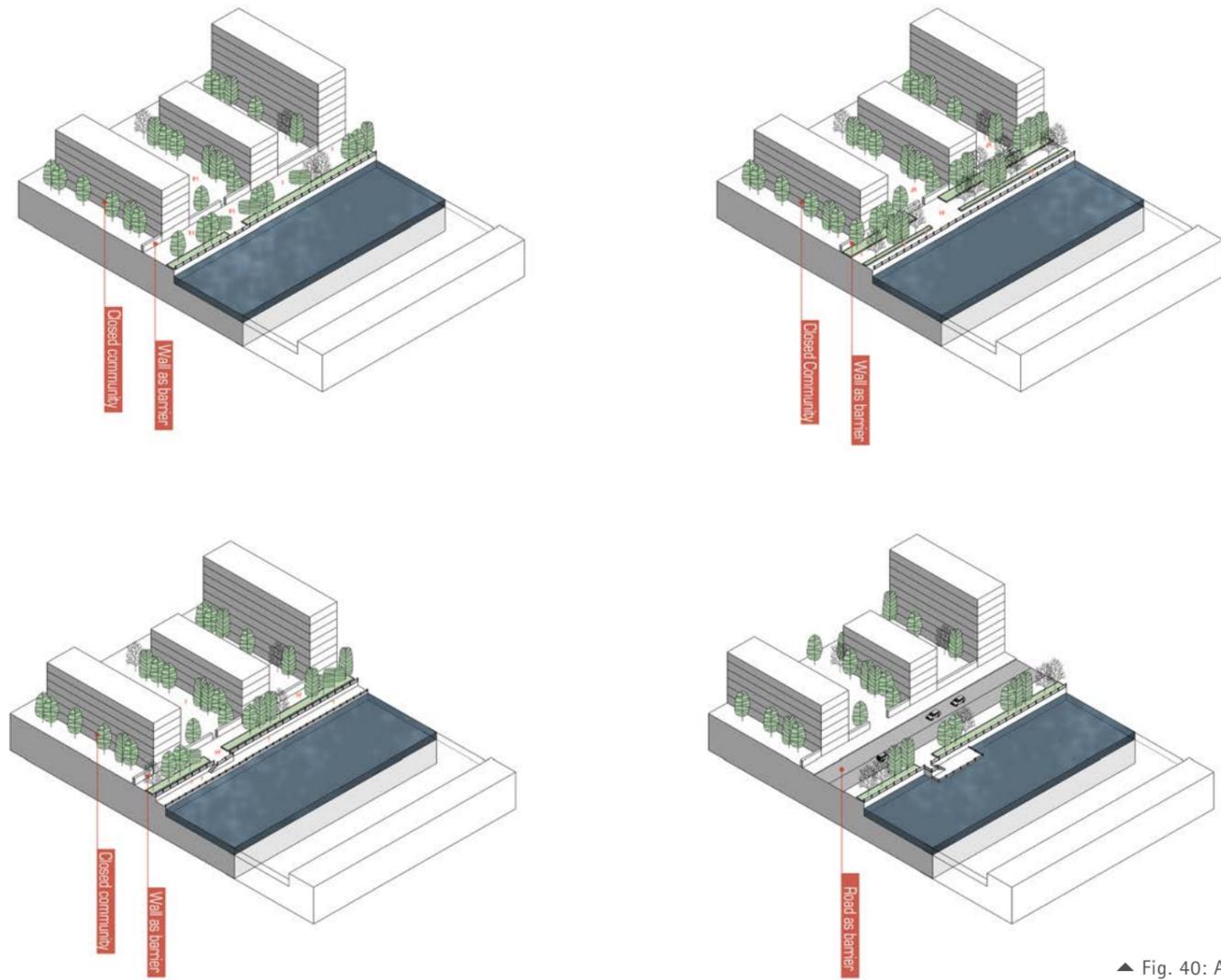
▲ Fig. 37: Section of the old canal near the city centre



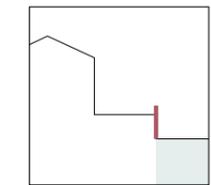
▲ Fig. 38: Plan of the old canal near the city centre



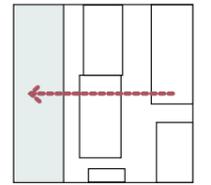
▲ Fig. 39: Plan of the old canal near the city centre



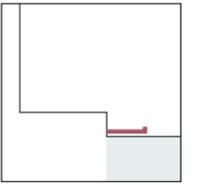
▲ Fig. 40: Axonometric drawings of the Grand Canal near the city center of Wuxi



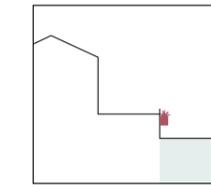
vertical canal bank with a low wall



omitted north-south orientation along canal



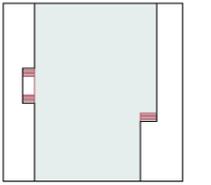
second, lower path



extension via plant containers



pavilion buildings at water accesses



high variety in water accesses

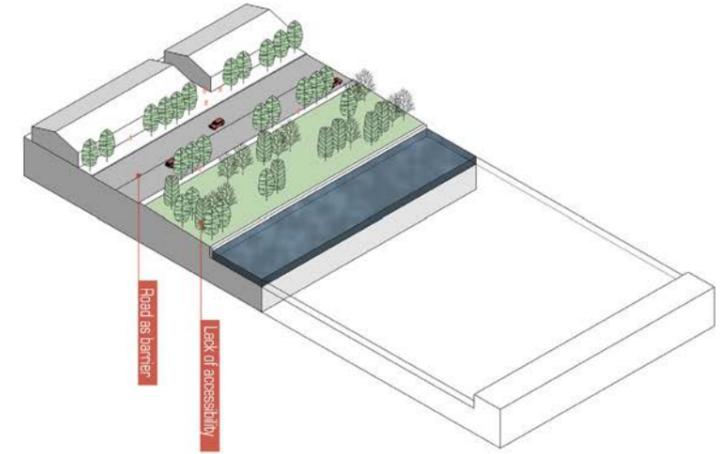
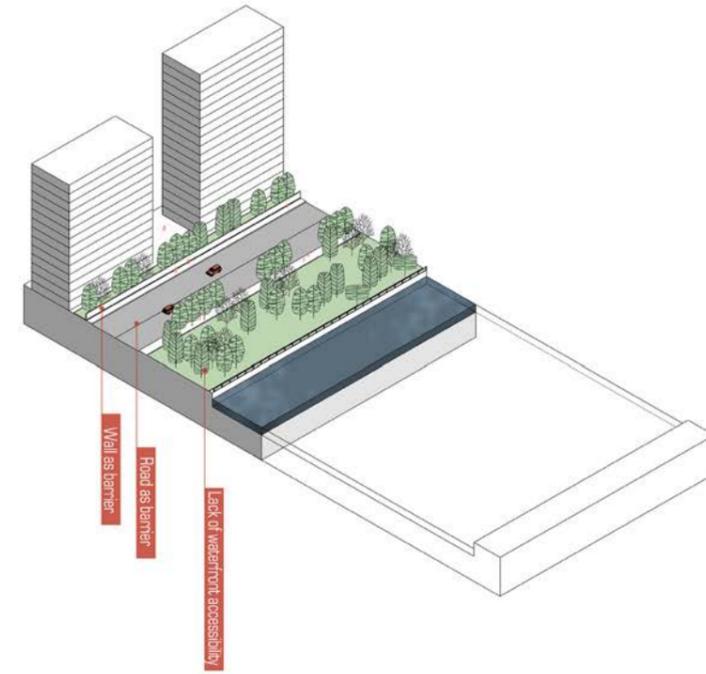
▲ Fig. 41: Local urban patterns of the old canal

URBAN AREA ALONG THE NEW CANAL

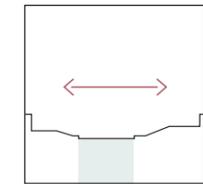
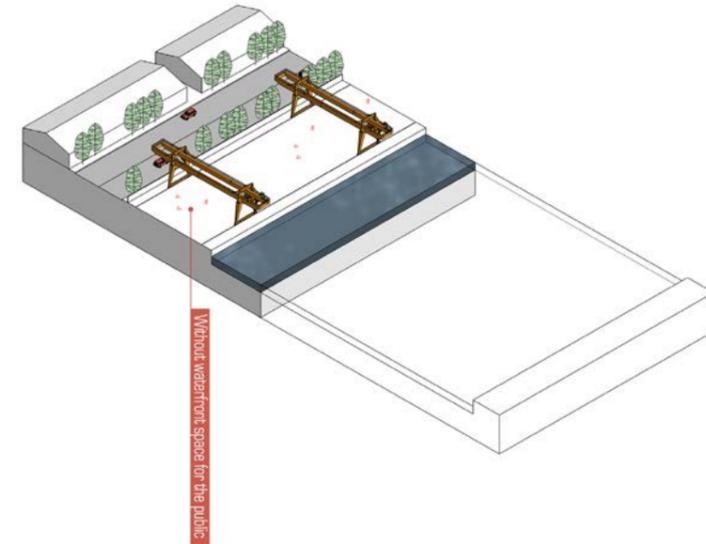
The new canal is almost 100 meters wide. Nearby there are two highways with green belts next to the canal. The open spaces only have ornamental purposes and are disconnected from the neighboring areas because of the wide road.



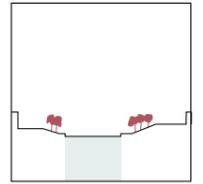
▼ Fig. 42, 43, 44, 45: Impressions of the urban area along the new canal



▲ Fig. 46: Axonometric drawings of the new section of the Grand Canal in Wuxi



vast, generous spaces

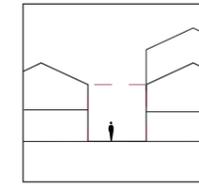


high number of trees, often in several rows

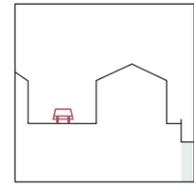
▲ Fig. 47: Local urban patterns along the new canal

LOCALITY MATRIX

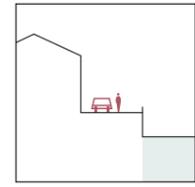
All local patterns that were collected during the field trip in October 2016 are summarized here. As mentioned before, each single pattern can be found at various spots along the canals of Wuxi. Not every local pattern principally has to be positive, so it is important to think about how and why to adopt local patterns to a design proposal.



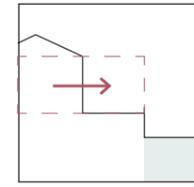
low rise buildings (2-4 stories) with narrow streets



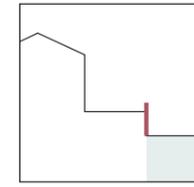
roads in the second row from the canal



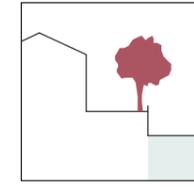
road as a shared space



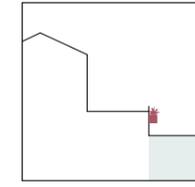
road as extended living room; no transition



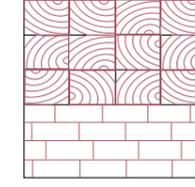
vertical canal bank with a low wall



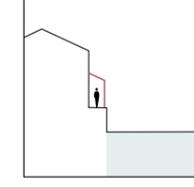
individual trees create spaces



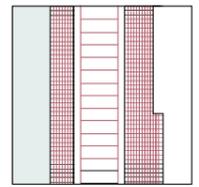
extension via plant containers



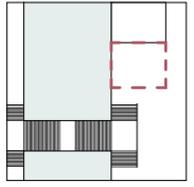
construction materials: bottom bricks, top timber



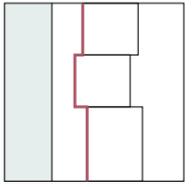
arcades to the canal



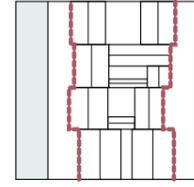
separation with slow and fast pavings



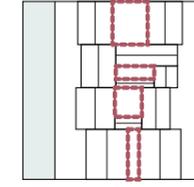
spaces at bridges



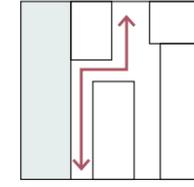
setbacks create structured edge



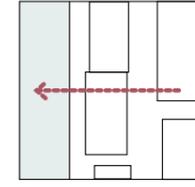
outer edge ground floor level: small shops and gastronomy



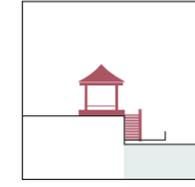
small, private courts between buildings primarily living



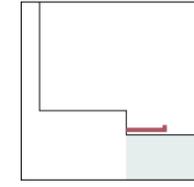
building blocks vary between direct to the canal and setback



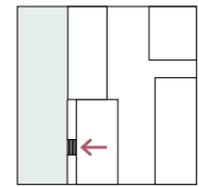
omitted north-south orientation along canal



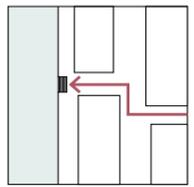
pavilion buildings at water accesses (city center)



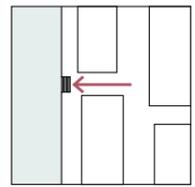
second, lower path (city center)



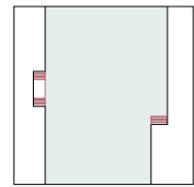
water access from the house



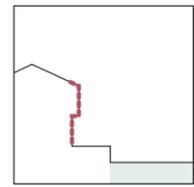
T-sections; no continuous axes to water access



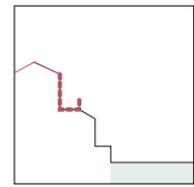
passage between building blocks to canal access



high variety in water accesses



cantilevered building sections



terraces on higher floor

▲ Fig. 48: Locality Matrix

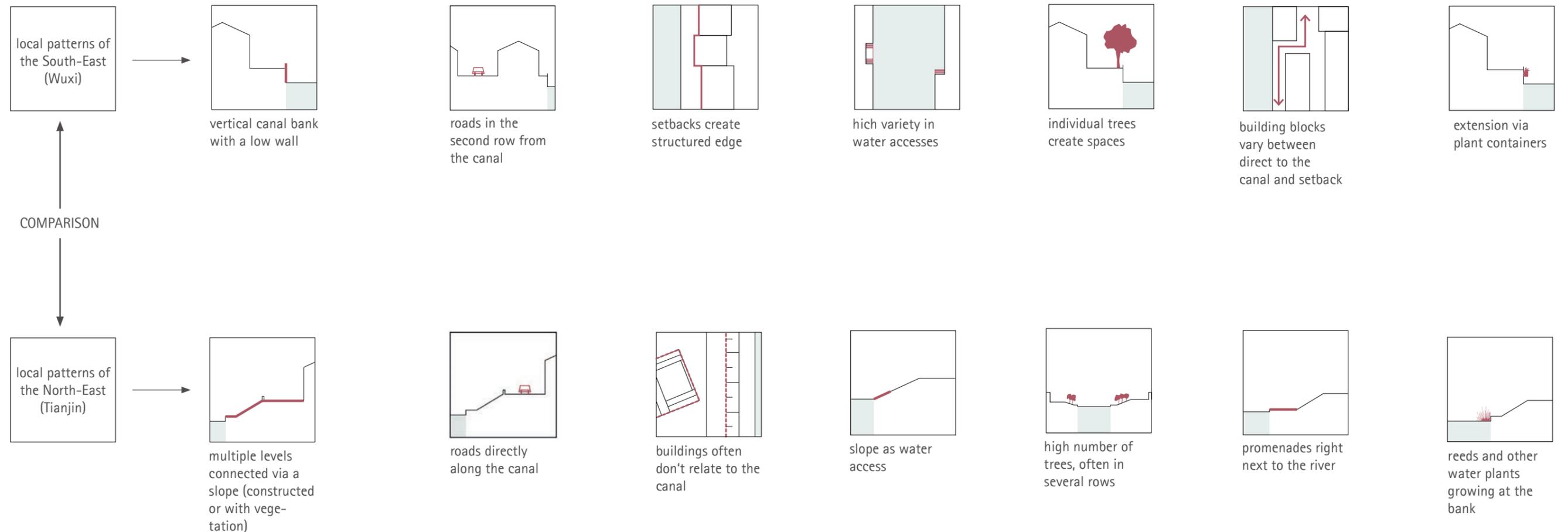
### DESIGNING WITH LOCALITY - THE INTENTION BEHIND IT

During the field trip in October 2016, the Chinese cities Tianjin and Wuxi have been visited to collect and study the different characteristics of locality along the Grand Canal in both cities. All these local patterns and typologies along the Grand Canal were abstracted and depicted in the locality matrix (as shown before).

With this matrix, the project group got the tool to compare canal typologies of the North-East of China with the South-East and could develop several designs with a specific local character for each of the two cities.

According to the intention of the research project, some of the local patterns of Wuxi and Tianjin can be declared as clearly contrary, while others are more subtle and not that obvious. But if all local patterns are taken into account, a wide spectrum of definite differences of canal typologies between the North-East and the South-East of China can be determined.

As this brochure wants to convey, designing with locality may be a key factor in future urban design practices in China. It could help to prevent Chinese Cities from looking the same everywhere, in favor of keeping and even strengthening the unique characteristics and local patterns of Chinese cities in general.



▲ Fig. 49: Comparison between canal patterns of the South-East and the North-East of China (extracts)

## SITE INTRODUCTION

The project site in the south of Wuxi with its 314,000 m<sup>2</sup> extension is currently shifting away from an industrial use to a continuation of the adjacent use: residential districts. Large areas are already fallow, only a few warehouses and a large number of different cranes can be found as relicts of the metal industry.

The project area is enclosed by water to all its sides and shows different characteristics depending on how wide the specific canal system is. At the eastern tip of the project area, the old section of the Grand Canal converges with the newly-built section, which is heavily frequented by cargo ships and is ~100 meters wide. At its western edge the project site is framed by a small side canal (~15 meters wide), which separates the project area from the adjacent residential district.

The Northwestern part of the site was a factory area, but has recently turned into a wasteland which is used for vegetable gardens and informal small-scale agriculture, presumably by inhabitants of adjacent housing areas.



▲ Fig. 50: Western area of the project site

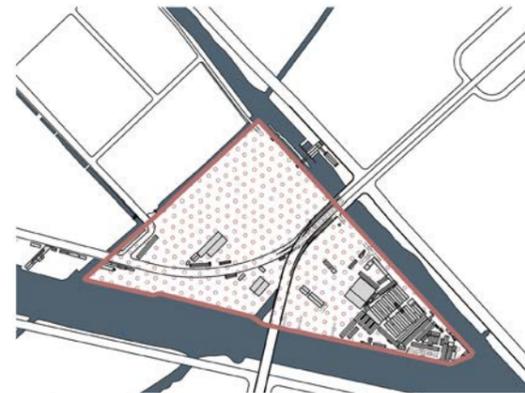
## SITE ANALYSIS

The project site in Wuxi is situated at the junction of the historical Grand Canal with the wider canal which was built more recently to bypass traffic and to mitigate changes of the water level. A lock in the old canal and a weir in the side canal canal regulate the water level within the city of Wuxi.

Currently, a medium-sized road runs from the West to the northern edge. Also in the North, a four-lane high road runs up to the southern edge of the project area. This high road separates the site into two parts. Another road arcs through the site and connects to the high road with several ramps at the bank of the old canal.

The banks of the northern canal are currently used by the so called ‚Boat-People‘ to land their boats and spent days or weeks of waiting for their cargo loading. There are, however, neither suitable infrastructures nor the possibility to run errands in the surrounding area, so the waiting Boat-People are in some way isolated amidst the city.

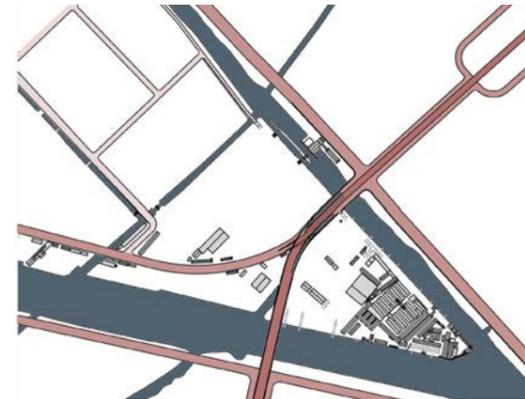
The adjacent areas consist of mono-functional housing apartment blocks and towers to the west and industry on the opposite banks of the old and new canal.



▲ Fig. 51: Boundaries of the project site



▲ Fig. 52: Current land use



▲ Fig. 53: Street network



▲ Fig. 54: Collage of the current Situation



▲ Fig. 55: Map of Wuxi and location of the project site

## DESIGN

On the following pages, five design proposals are shown. Each of these proposals was made within the research project 'Urbanization and Locality along the Grand Canal of China' and have been Bachelor or Master theses in the field of Landscape Architecture (except 'Patterns of Particularity', which was joint thesis of a student in landscape architecture and a student in architecture).

Master theses (only extracts are shown here):

Patterns of Particularity - by David Obernberger (Supervisors: Prof. Dr. Martin Prominski, M.Sc. Kendra Busche) and Christopher Korsch (Supervisors: Prof. Carl Herwarth von Bittenfeld, Dr. Joachim Rosenberger)

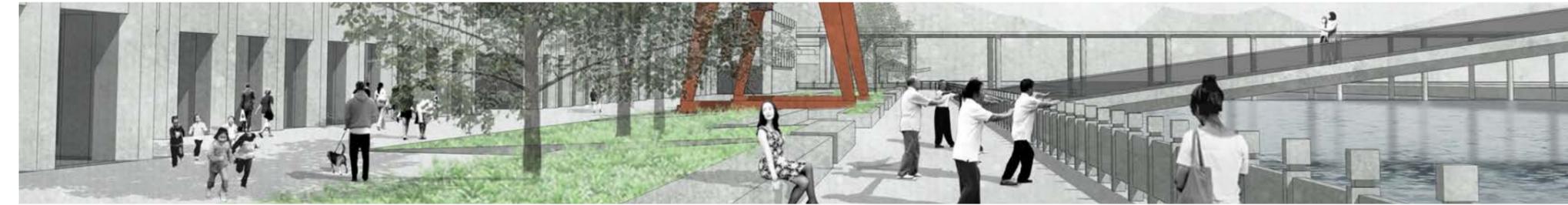
Navigating Urbanization - by Han Mai (Supervisors: Prof. Dr. Martin Prominski, M.Sc. Kendra Busche)

Urbanization and Locality along the Grand Canal of China - by Siyu Lin (Supervisors: Prof. Dr. Martin Prominski, M.Sc. Kendra Busche)

Bachelor theses (only extracts are shown here):

Canal of Contrasts - by Benjamin Kasten (Supervisors: Prof. Dr. Martin Prominski, M.Sc. Kendra Busche)

Rediscovering Diversity - by Niels Niemeyer (Supervisors: Prof. Dr. Martin Prominski, M.Sc. Kendra Busche)



## URBAN JOINT WUXI

By David Obernberger and Christopher Korsch

The aim of this master thesis was to propose new modes of designing urban developments along the Grand Canal of China under consideration of locality.

It is in the interest of the Chinese government to reinforce the cities characters. To be able to do this, it is necessary to understand what contributes to the local character.

By the comparison of the sections of the Grand Canal in Wuxi, we could identify the differences and concluded that they make the local character. In Wuxi canal banks are always vertical edges, whereas in other Cities we find slopes for instance. It makes sense to use these patterns in new design proposals to strengthen their local character.

In the design proposal, it was shown how the adaptation of building patterns could be used to strengthen the local character of new urban developments.



▲ Fig. 56: Masterplan

The intention is to develop the site in two parts with different narratives while providing a park with shared functions in between and attractive pedestrian connections along the canal banks. The tip should be converted to a highly mixed creative quarter which should return some of the importance of the grand canal as a mode of cultural exchange. The very tip will become a symbolic entrance gate to the city.

The western part should be developed as a mid-density housing mixed use quarter, for which new urban typologies can be proposed that are inspired by local building traditions and provide attractive open spaces while accommodating an adequate number of inhabitants. A park, which also lies along a green network that was proposed by the government of Wuxi, offers shared functions for the two parts. Sports facilities are bundled underneath the high road, which provides shelter from extreme weather. During the site visit there was almost no traffic on the road underneath the high road and to the ramps. Because of this and to increase connectivity along the canal bank, the ramps should be removed. Another existing road not far from the site can serve as a short bypass. The public transport to the site should be reinforced by offering bus stops and a landing for boats from the city center.



▲ Fig. 57: Diagram of design intentions



◀ Fig. 58: Removal of ramps and bypass



◀ Fig. 59: Public transit network

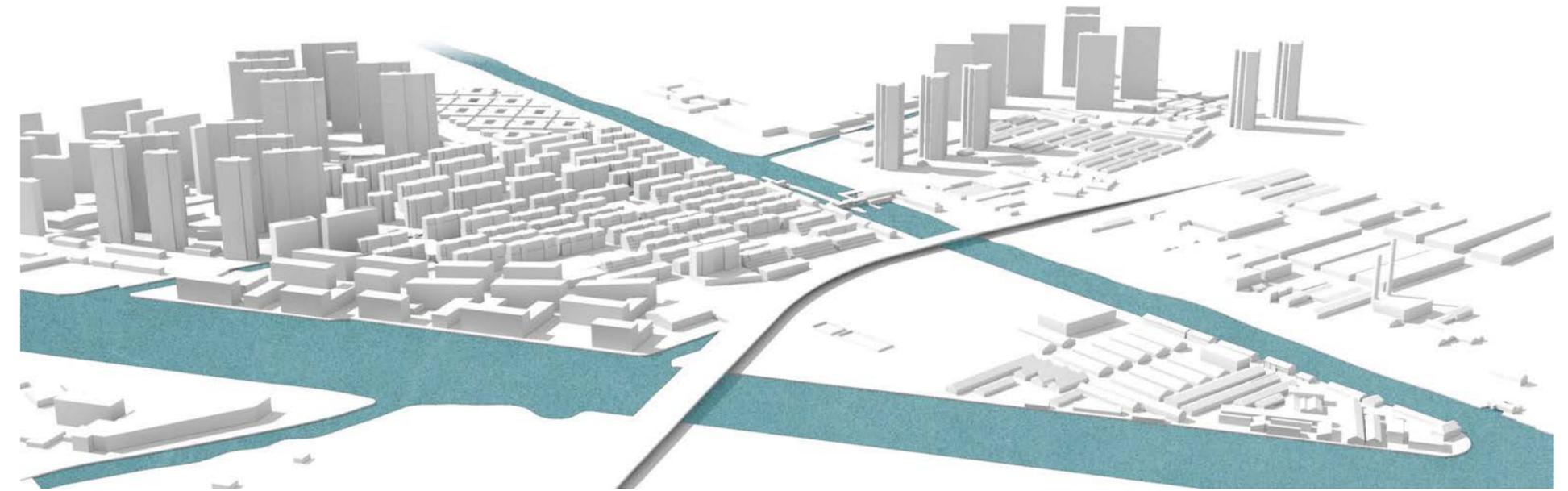
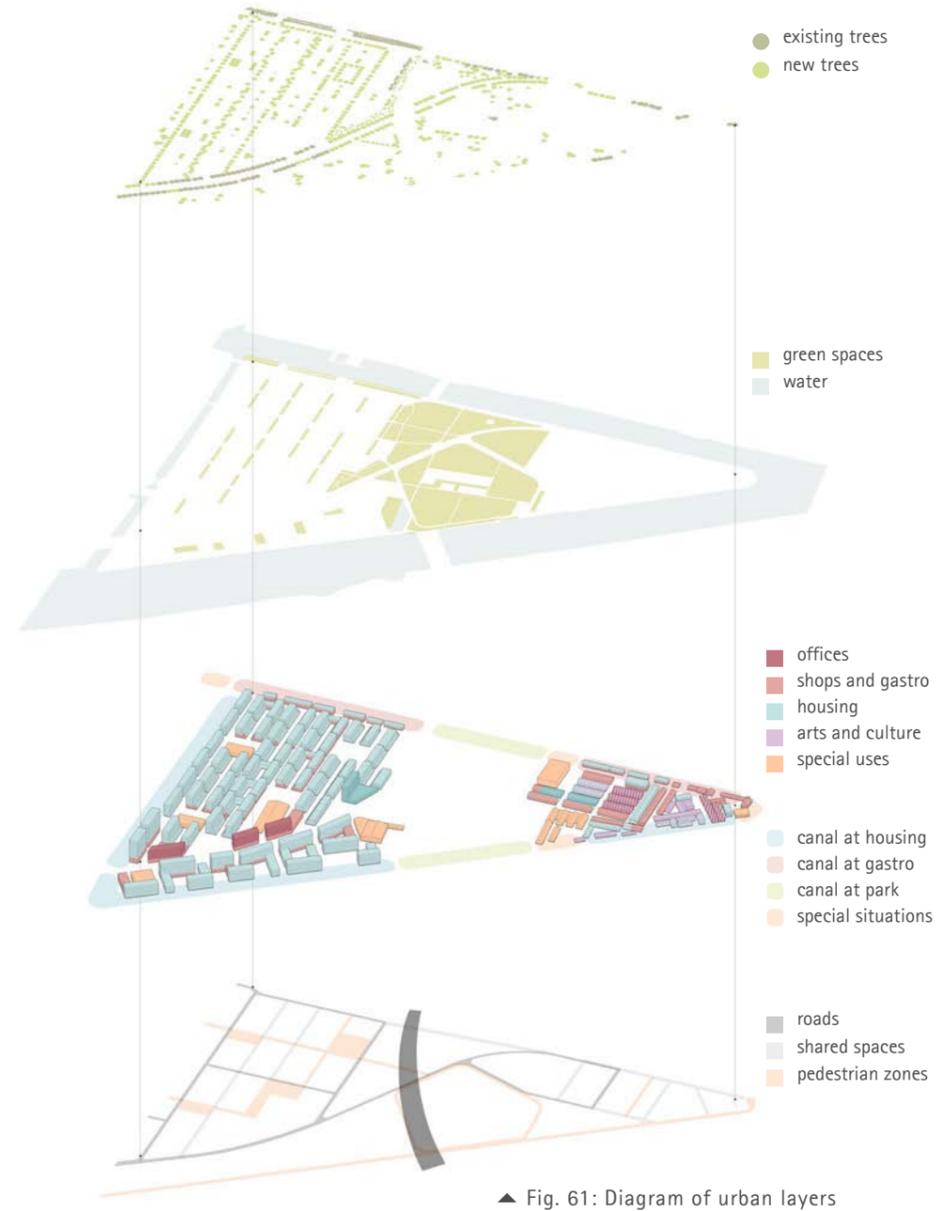


◀ Fig. 60: Park along green network

The ramps of the high road are removed, the existing road on the site is extended eastwards towards the tip. It is substituted by residential roads and shared spaces.

A network of pedestrian zones and places connects the site. The housing area is mixed with small commerce and gastronomy along the main road, parallel to the old canal banks and along selected pedestrian zones. Buildings with special functions supplement the quarter.

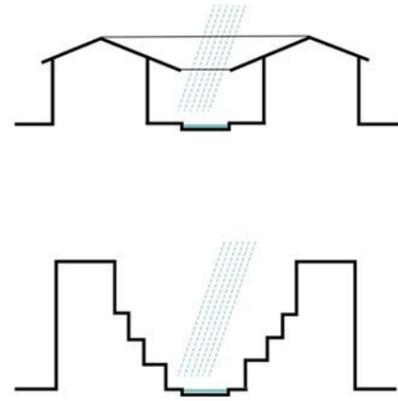
The area south of the road is built upon with apartment blocks that are oriented towards the new canal. The existing structures in the tip are filled in with new buildings to improve the urban form. The area is a diverse cultural quarter with a high mix of uses. The proposal offers open spaces of different hierarchies: a large public park, semi-public communal courtyards and small private courts and balconies for the apartments. The existing trees on the site are almost entirely kept, noteworthy are the rows of *Cinnamomum camphora* along the existing road and the grove of willows at the lock.



▲ Fig. 62: Bird's eye view of the urban design proposal

DETAIL 1: NEW HOUSING

A new typology was developed by stacking the traditional courtyard house and organizing the buildings in a grid. To the inside, the buildings are terraced and provide courts for the living units. The big courts between to buildings are used like their historical model for the retention of rainwater. They serve as communal spaces, providing a sense of community similar to gated communities, but on a smaller scale. The design of these courts is just as manifold as those of the historic courts, ranging from simple water basins to stone gardens and planted courts, providing individual identities to the building blocks. In some points, the grid is broken up by existing or proposed buildings with special, community functions.



▲ Fig. 63: Transforming the traditional houses of Wuxi



▲ Fig. 64: Section of detail area 1



▲ Fig. 65: Plan of detail area 1



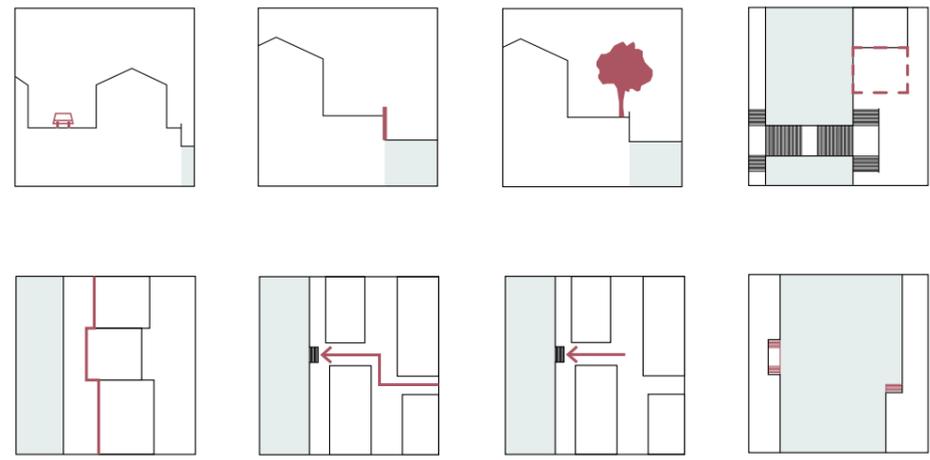
▲ Fig. 66: Axonometric drawing of the proposed housing typology

**DETAIL 2: BRANCH CANAL**

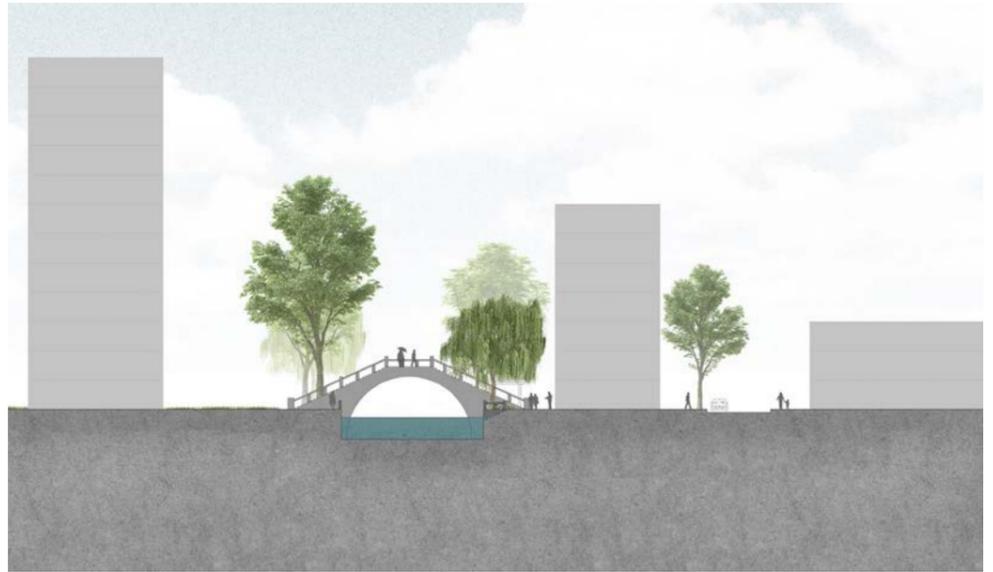
The buildings along the branch canal have similar floor plans like the new housing typology but are not terraced. They create a vis-a-vis to the existing apartment blocks on the opposite side of the canal.

The open spaces are inspired by the canal banks in the old city. A proposed bridge connects the site with its neighbors.

Water accesses, the materiality of the paths, the balustrades, planting areas, the pavilion at the foot of the bridge as well as the spacing of trees and selection of species are references to typical canal sections in Wuxi.



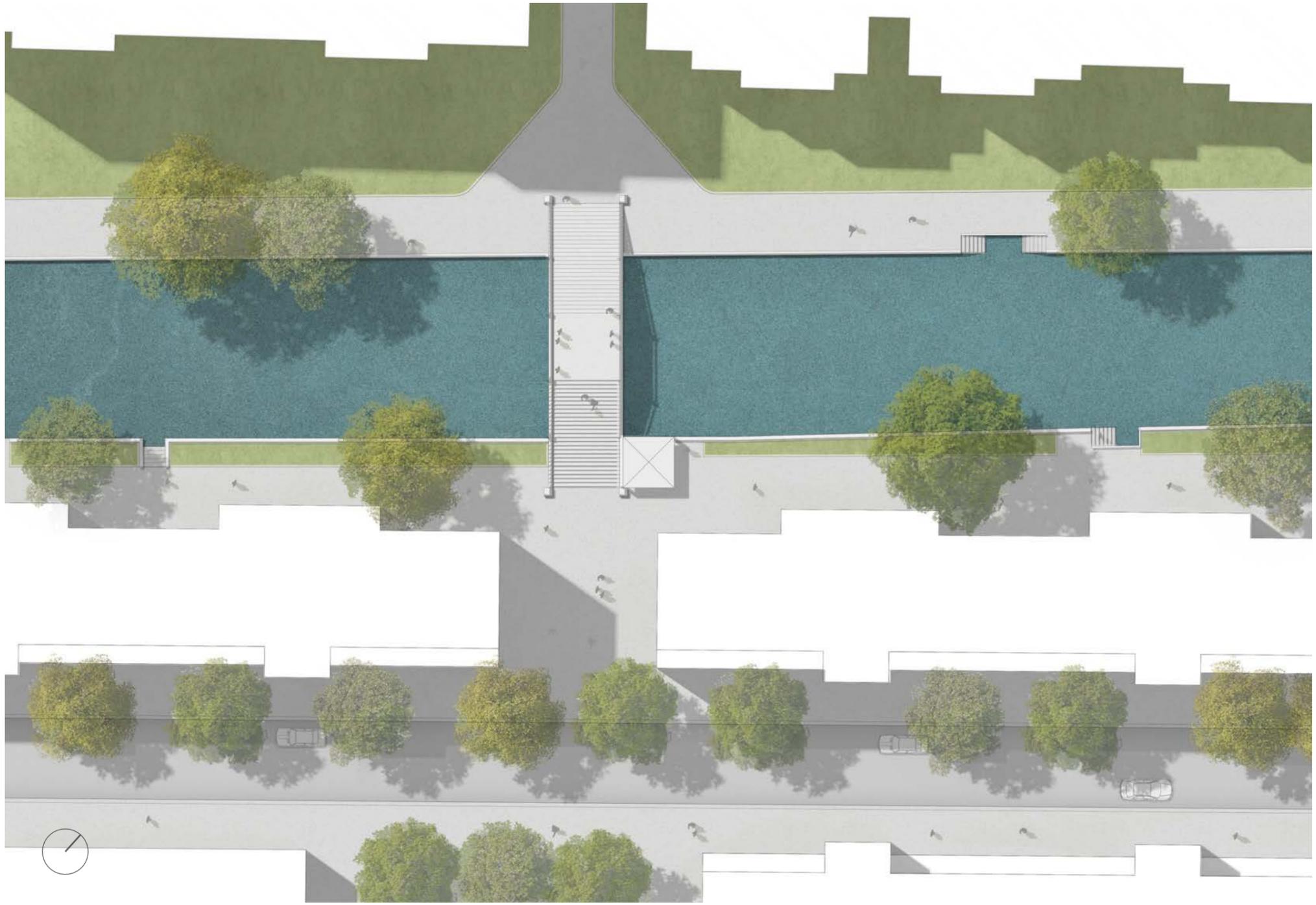
▲ Fig. 67: Local patterns adapted for the design



▲ Fig. 68: Section of detail area 2



▲ Fig. 69: Perspective of detail area 2

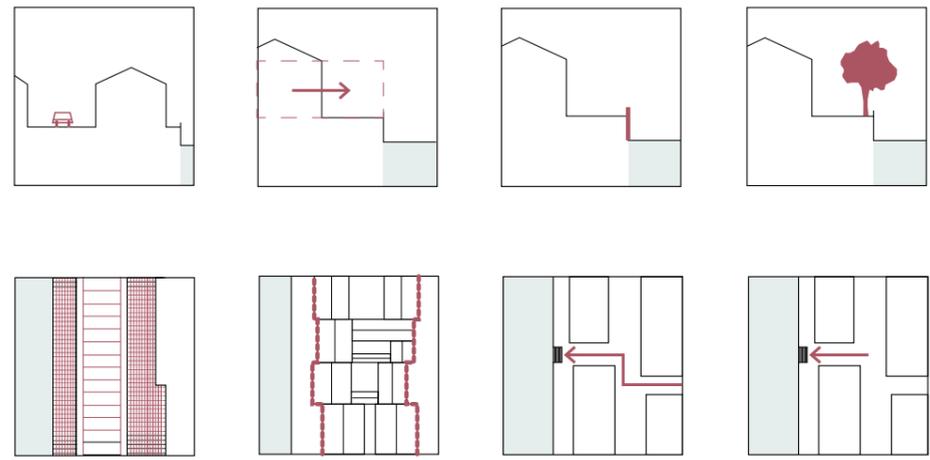


▶ Fig. 70: Plan of detail area 2

DETAIL 3: THE LOCK

The attractive lock is integrated into the urban design and no longer fenced off. A row of two to three story houses with gastronomy and small commerce on the ground floor and housing in the upper floors is built between the road and the canal.

The spaces underneath the existing willow grove along the canal are used by cafes, as it is the case in the old city.



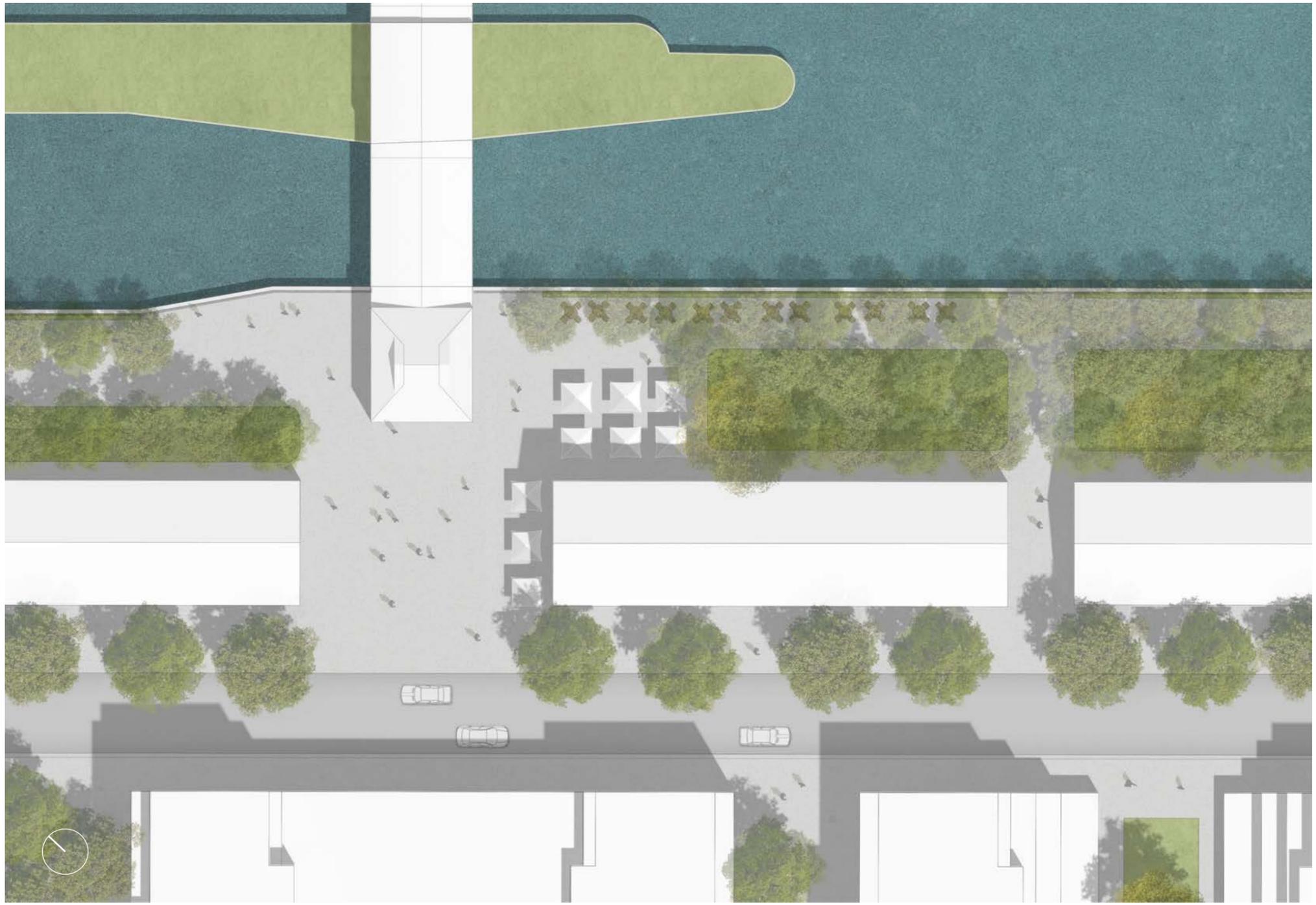
▲ Fig. 71: Local patterns adapted for the design



▲ Fig. 72: Section of detail area 3



▲ Fig. 73: Perspective of detail area 3



▶ Fig. 74: Plan of detail area 3

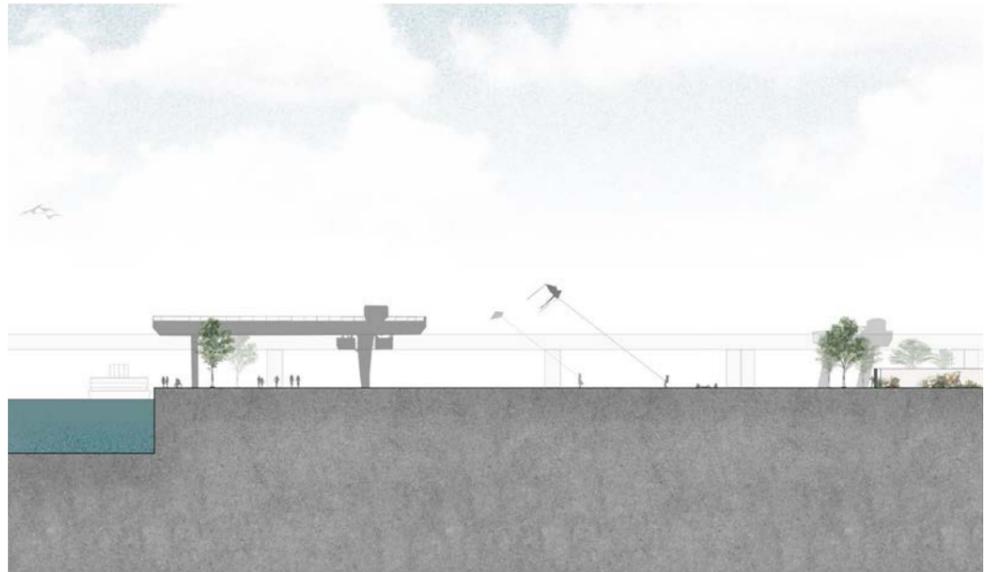
DETAIL 4: THE PARK

In between the new residential area and the cultural quarter, a new park forms an activating buffer and a link within the proposed green network of the city. Industrial relics like container gantries are kept.

In the southern part and underneath the high road, which provides shelter from extreme weather, sports facilities are bundled. These uses connect the two canals underneath the high road. Within the outside walls of two former buildings, small traditional southern Chinese gardens are built. Other typical elements like pavilions are integrated into the park's design.



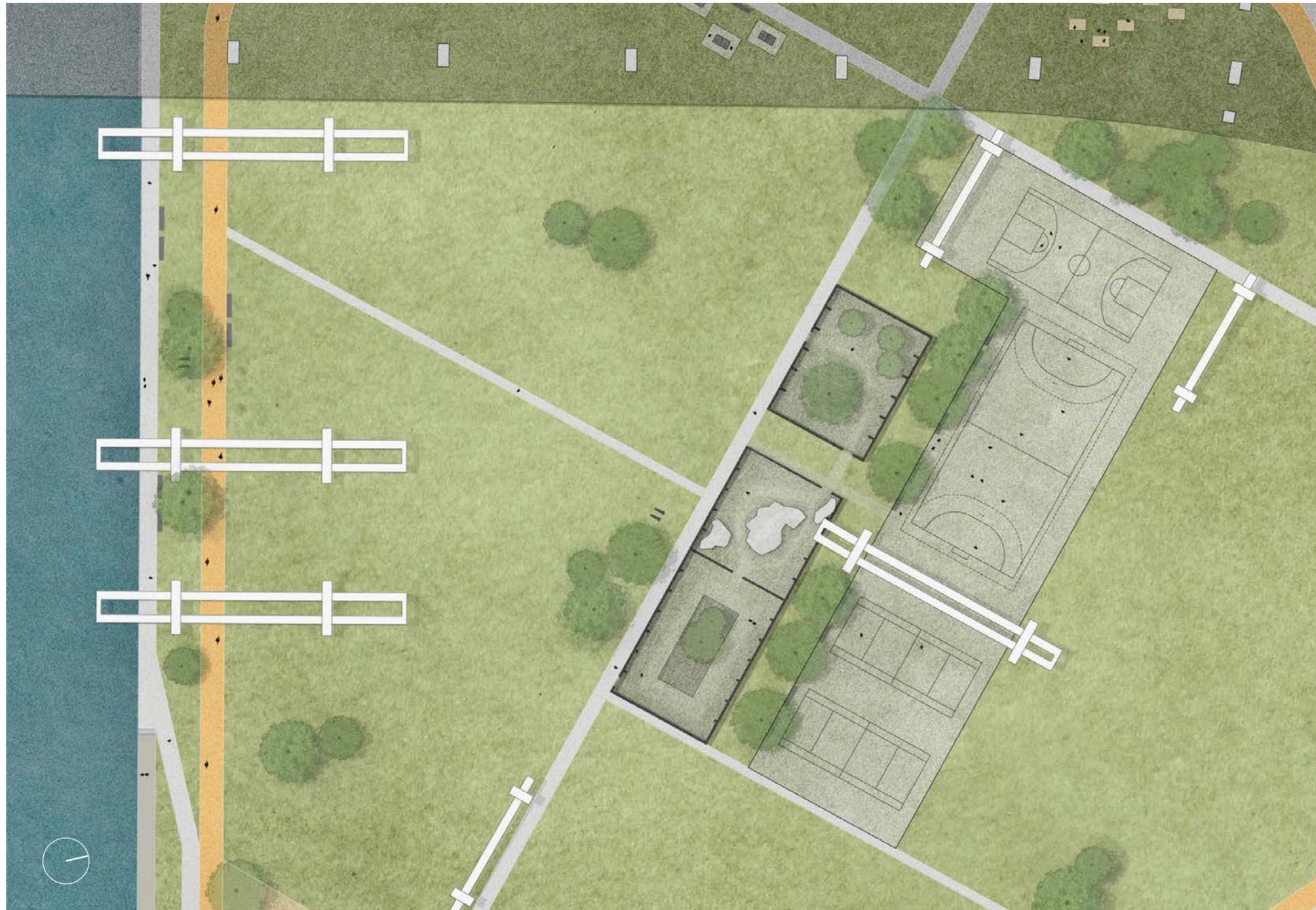
▲ Fig. 75: Perspective of detail area 4



▲ Fig. 76: Section of detail area 4



▲ Fig. 77: Perspective of detail area 4

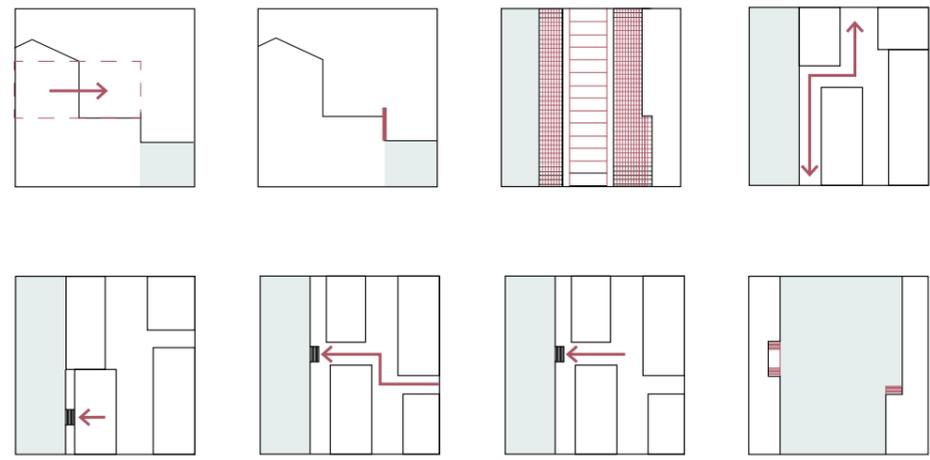


▶ Fig. 78: Plan of detail area 4

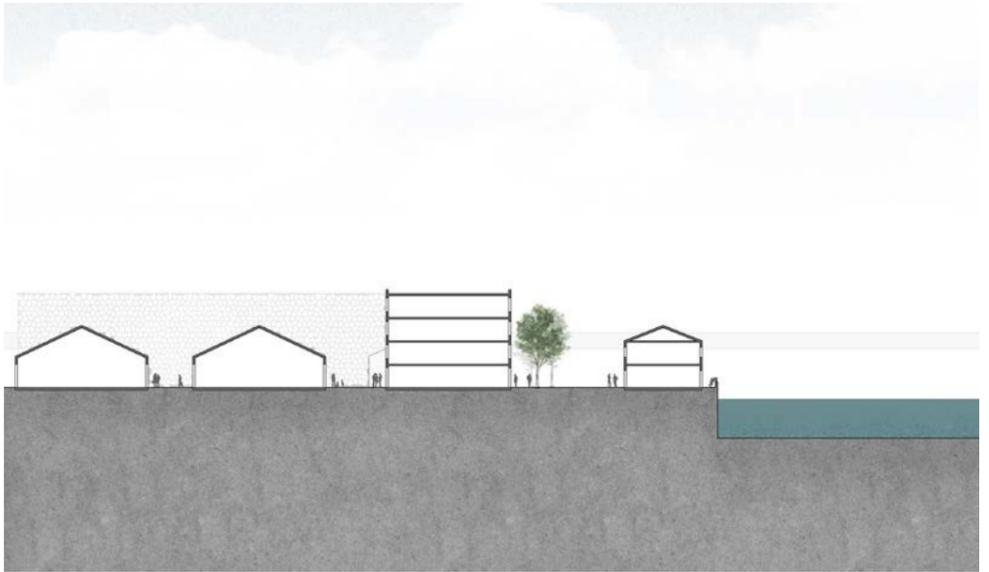
**DETAIL 5: CULTURAL QUARTER**

At the tip where the new and the old canal meet, the old industrial buildings are converted for artistic and cultural uses. The area is highly mixed with ateliers, studio, office and gallery spaces, alternative forms of housing and educational facilities, temporary housing for skippers and a canal museum.

New buildings along the canal edge supplement the existing structures and create spaces that are similar to the water alley in the old city, with houses built directly or almost directly on the canal bank and the street in the second row of the buildings.



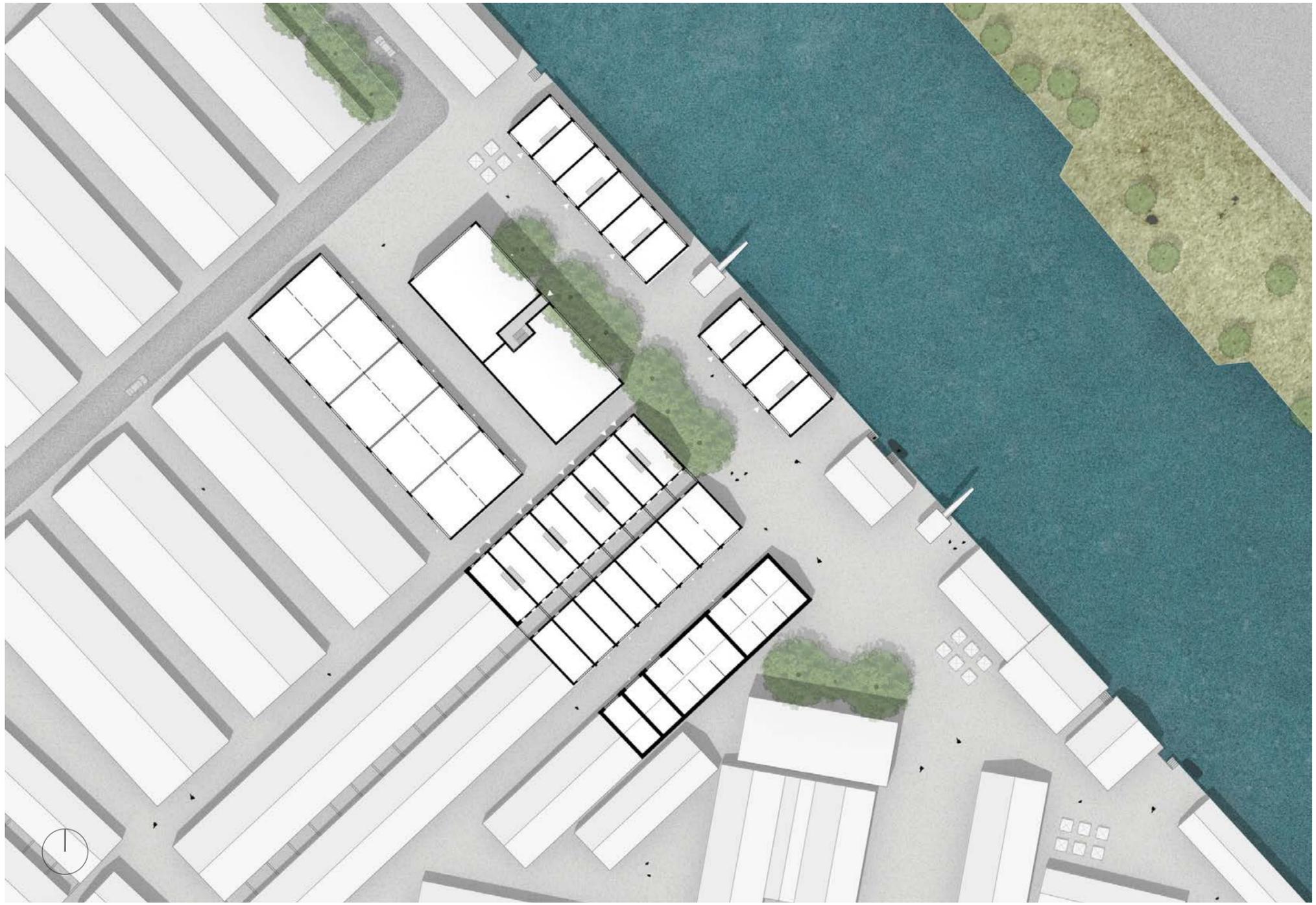
▲ Fig. 79: Local patterns adapted for the design



▲ Fig. 80: Section of detail area 5



▲ Fig. 81: Perspective of detail area 5



▶ Fig. 82: Plan of detail area 5

## NAVIGATING URBANIZATION

By Han Mai

This master thesis proposes new urban patterns along the Grand Canal, which adopt the local character of the city, in order to reverse the alienated relationship between the people and the Grand Canal.

By activating the Grand Canal through a new established water bus system, the urban area alongside will receive the prosperity like in old times, so that the lost Grand Canal will be brought back to the daily life of the people. The water transport system is established according to the water network of the city. The new urban design is following the new and old local urban patterns. The waterfront space design is according to the analysis of the sections of the Grand Canal in Wuxi.

By comparing the locality in the city and by transferring it to the design, the local characters will be shown more clearly and it could strengthen the impression of the site.



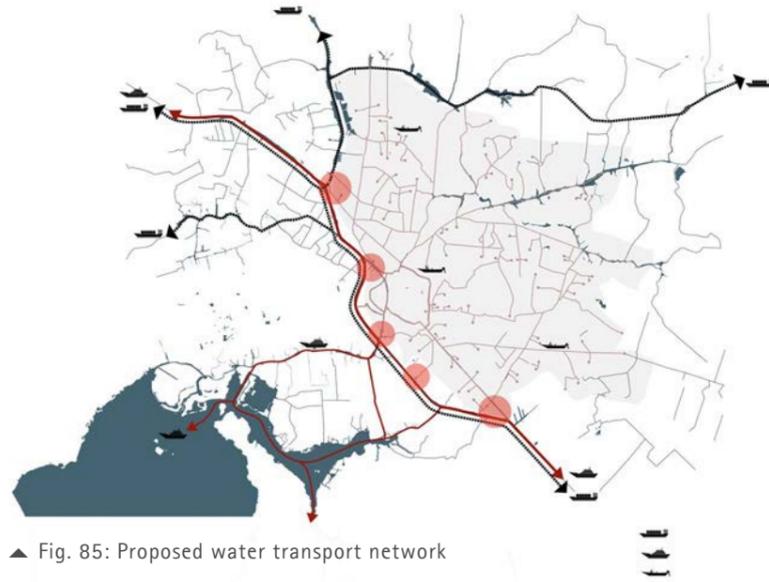
WATER BASED PUBLIC TRANSPORT SYSTEM

28% of Wuxi's city area is covered by water (WMBS et al. 2016), including a dense river network. The new Grand Canal is located to the West of the city center, but the old Grand Canal course is still preserved around the city center as a ring. It is also connected to many small rivers, which flow into every area of the city. This river network is also linked to the Taihu Lake in the southwest of Wuxi, where many ancient Chinese attractions can be visited.

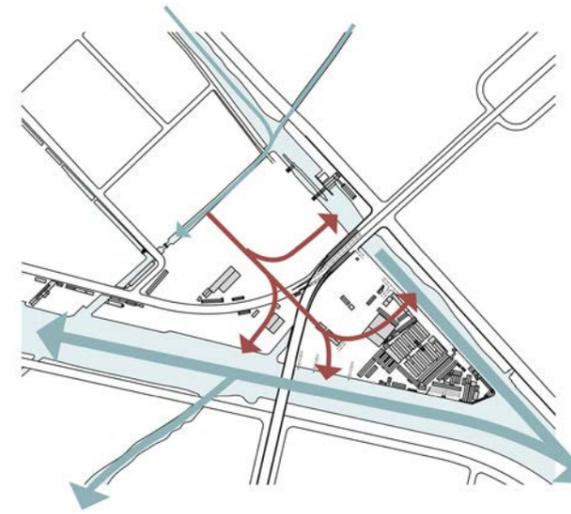
Considering this water condition, Wuxi is an appropriate place for a public water transport system, which serves not only tourists but also citizens of Wuxi. Inside the flood control encirclement, the dense small rivers could be used as water taxi routes, because the small water taxi's are flexible enough to navigate in those narrow environments. Outside, long distance water bus routes are proposed, connecting to Suzhou, Changzhou and Taihu Lake. Between the water taxi network and the long distance routes of the water bus, five transit areas near the intersection of the new Canal and the small rivers of the encirclement are proposed for the transfer. These areas would be revived by the transit and become new urban hubs, which are adapting to the water transport and being combined with other transport systems in the future.



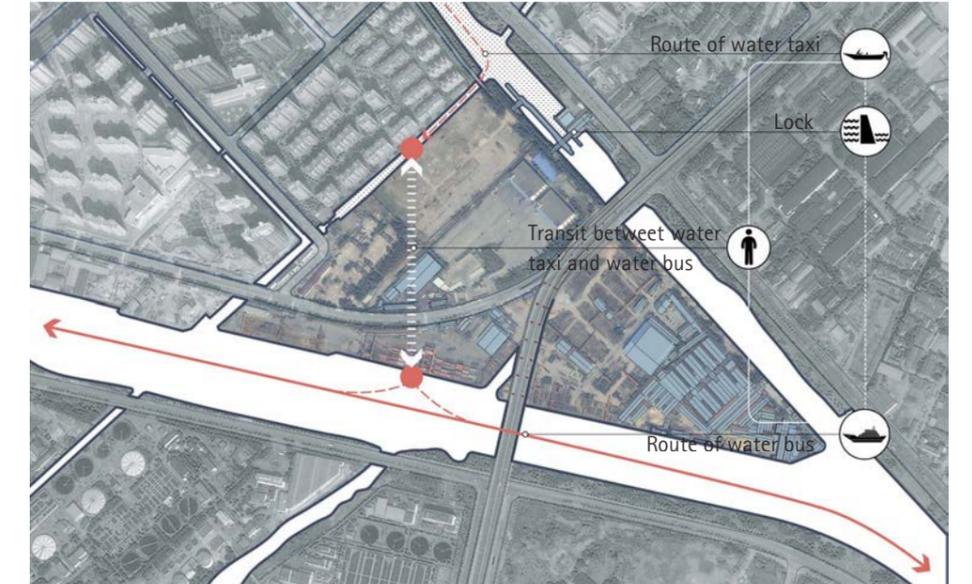
▲ Fig. 84: Existing water transport network



▲ Fig. 85: Proposed water transport network



▲ Fig. 86: Suggested organisation of the transit route

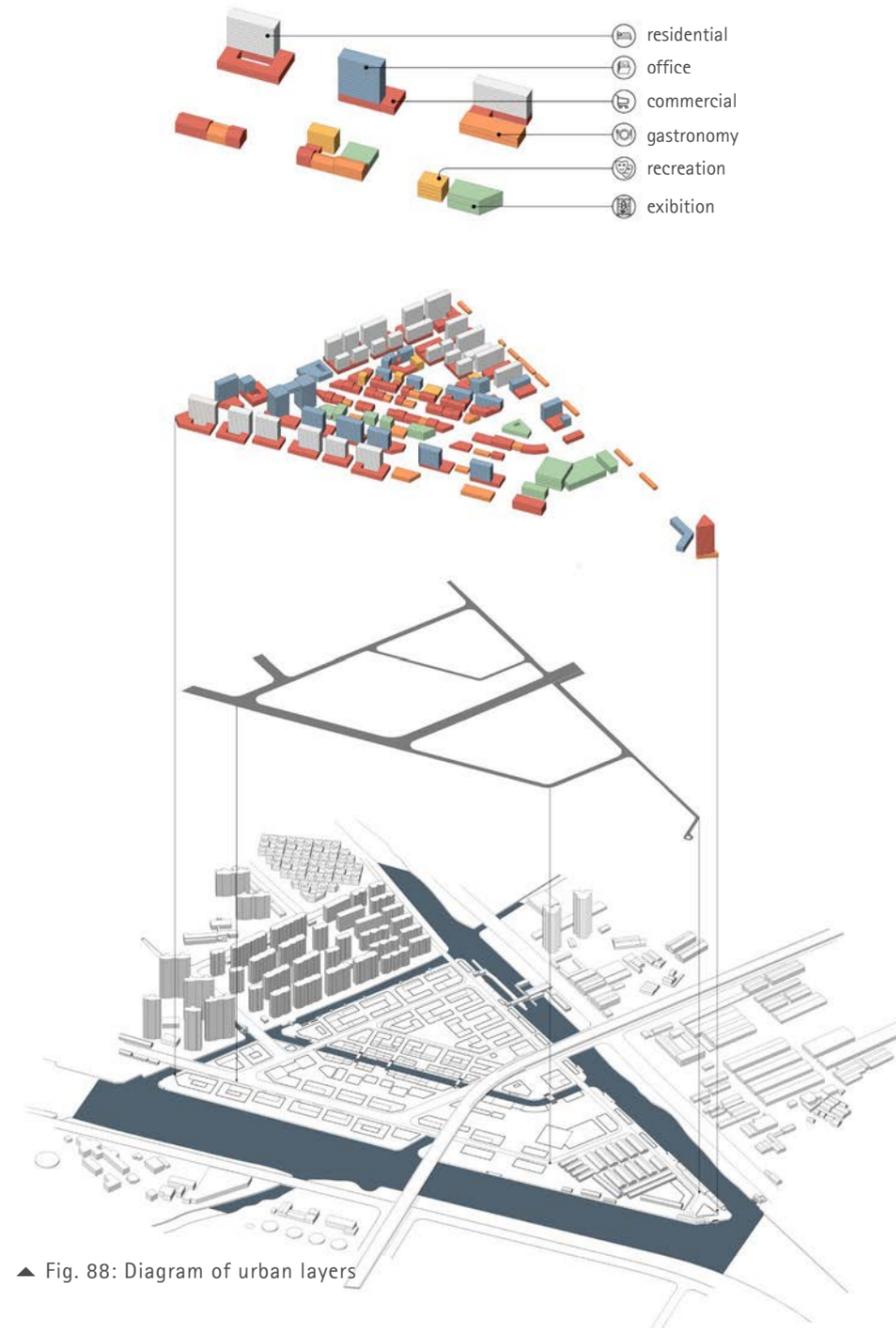


▲ Fig. 87: Suggested organisation of the transit route

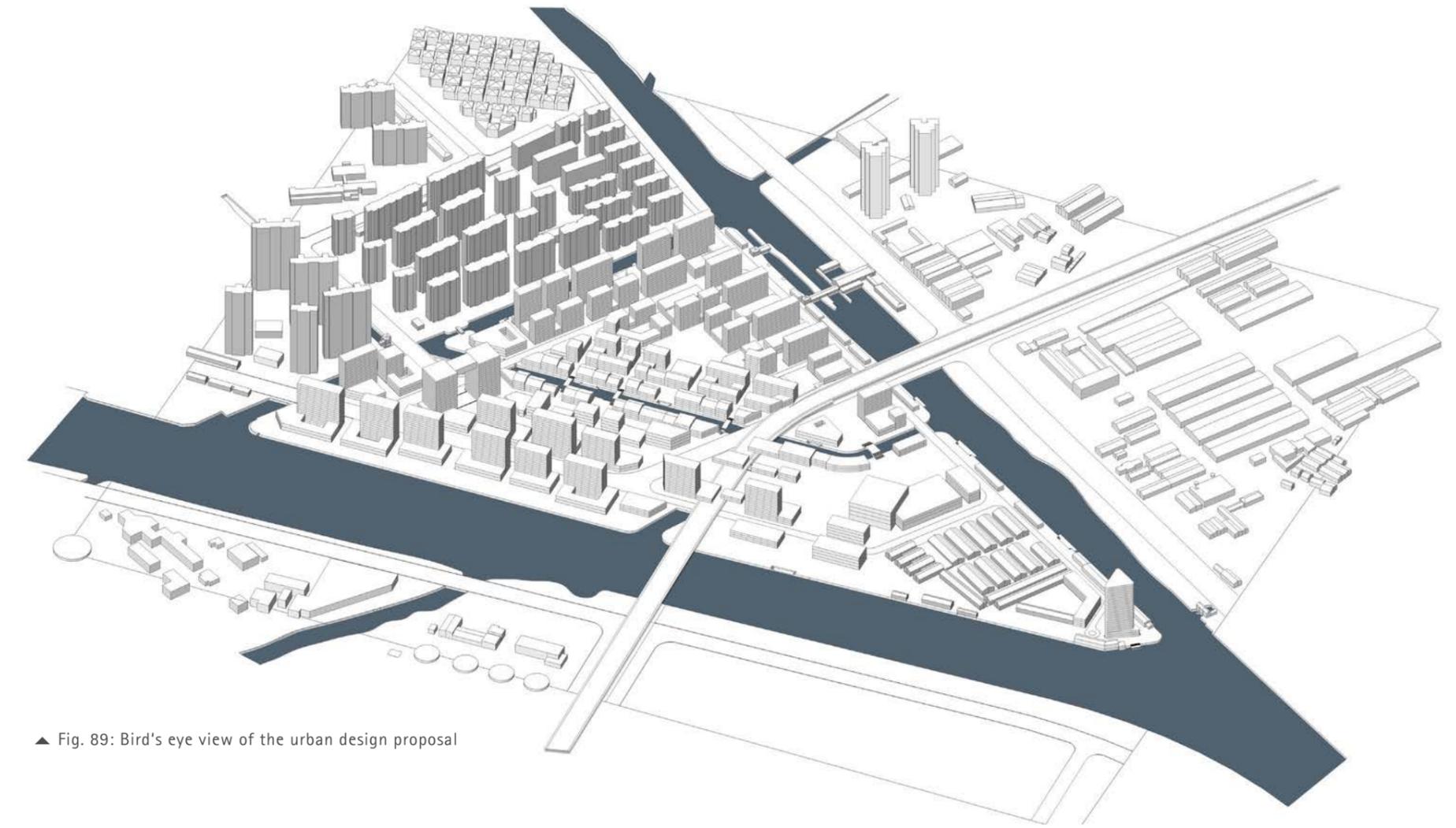
Peter Calthorpe has proposed 3 basic models of TOD communities: urban transit village TOD, neighborhood transit village TOD and community transit village TOD (Calthorpe 1993, 77). The scales of them depend on the capacity of the transportation. Around the transport station the commercial center and office area should be located. Next to these areas, the residential areas should be located (ibid.).

Many urban designers have developed these models, making them adapt to the Chinese Cities. They include "mode of commercial-office urban TOD transit village", "mode of residential urban TOD transit village" and "mode of neighborhood urban TOD transit village" (Ibid., 154-155). The site in Wuxi could refer to the second mode.

The layout of the land use on the project site will adapt to the TOD models and the typologies of the buildings could comply with the guidelines of the eco-city (see chapter 'Urbanization'). The urban design contains lots of different programs for the daily life. While fulfilling their daily life, people can use the water public transport or the pedestrian priority footpaths.



▲ Fig. 88: Diagram of urban layers

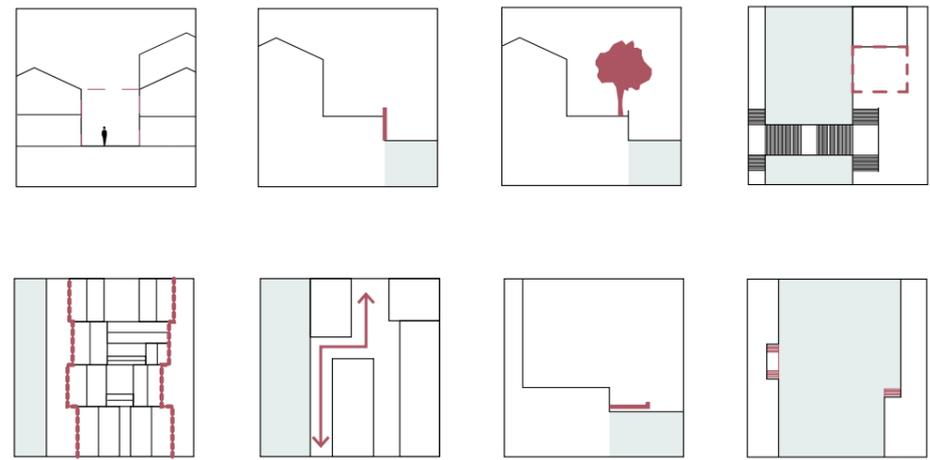


▲ Fig. 89: Bird's eye view of the urban design proposal

**DETAIL 1: THE NEW SMALL CANAL**

The new small canal, which is the main water way, is located in the commercial core of the district. Referring to the historical area of Wuxi, the modern small buildings are proposed to be built close to the canal. Only the north side of the canal can be built with a narrow open space for the public to enjoy the sunshine during days with sunny weather.

Behind the first row of buildings beside the canal are the pedestrian commercial streets. The people who walk on the street can get to the waterfront space, the piers or to the water bus through some gaps and squares.



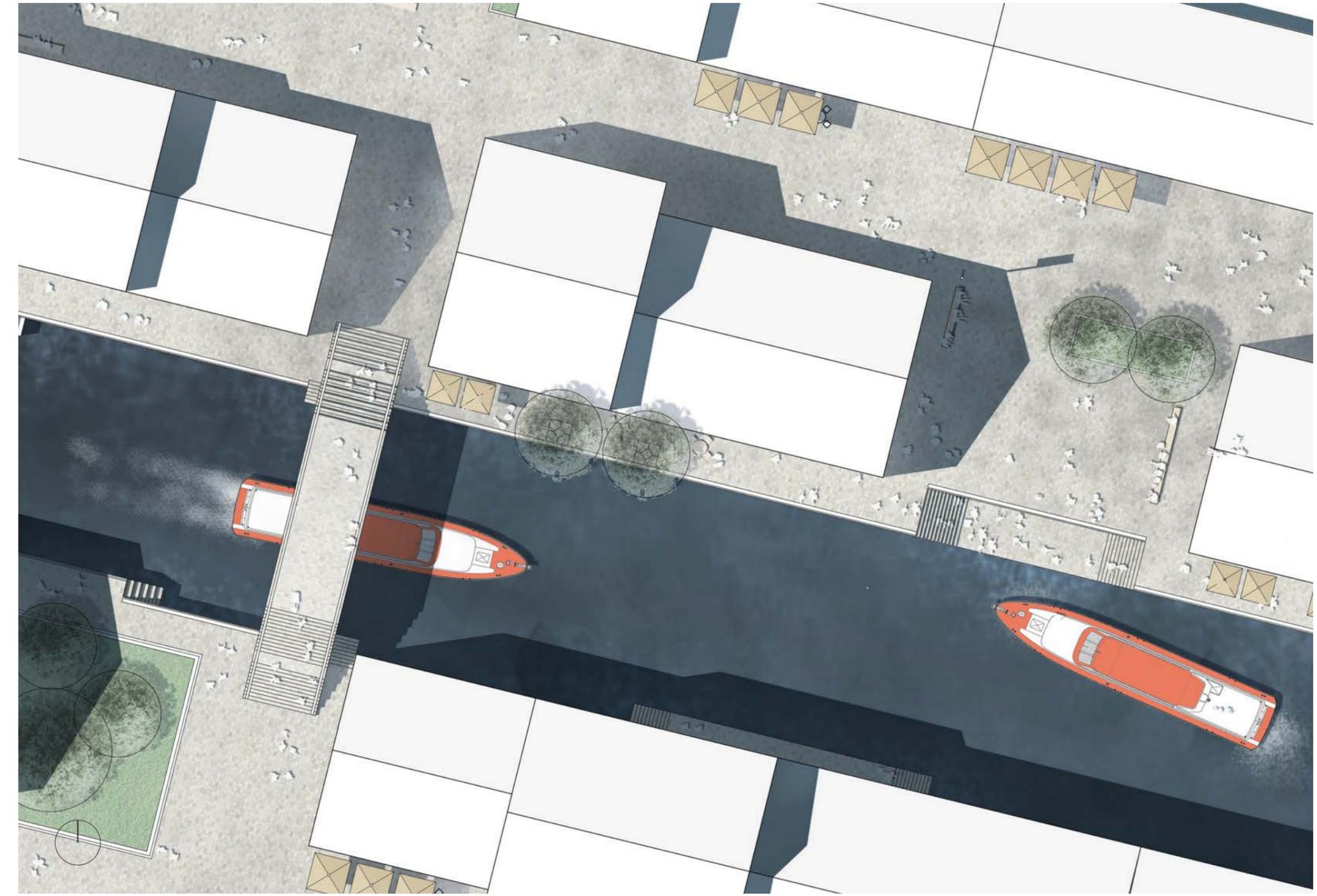
▲ Fig. 90: Local patterns adapted for the design



▲ Fig. 91: Axonometric view of detail area 1



▲ Fig. 92: Perspective of detail area 1

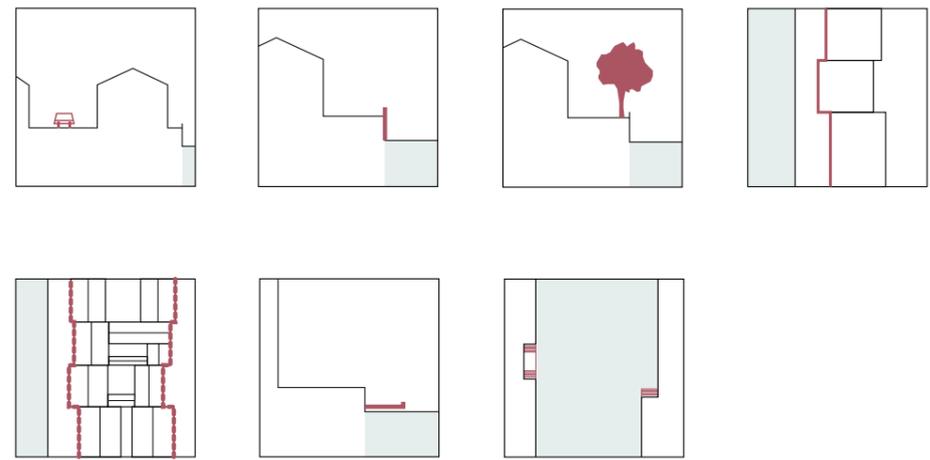


▶ Fig. 93: Plan of detail area 1

DETAIL 2: THE SMALL CANAL IN THE NORTH

This small canal could be the terminal of the city internal water taxi. It is located along the residential block. The passengers get off the taxi on the pier, go into the transfer center for the transfer, and then get on the water bus again. The residents of this district could get off the water taxi on the other piers beside this small canal to avoid the crowds.

The bank of the small canal has two levels, which is adapted from the bank type of the city center of Wuxi. The lower level is close to the water to provide people spaces for leisure time. The higher level connects with the buildings, of which the first floor is for shops or restaurants.



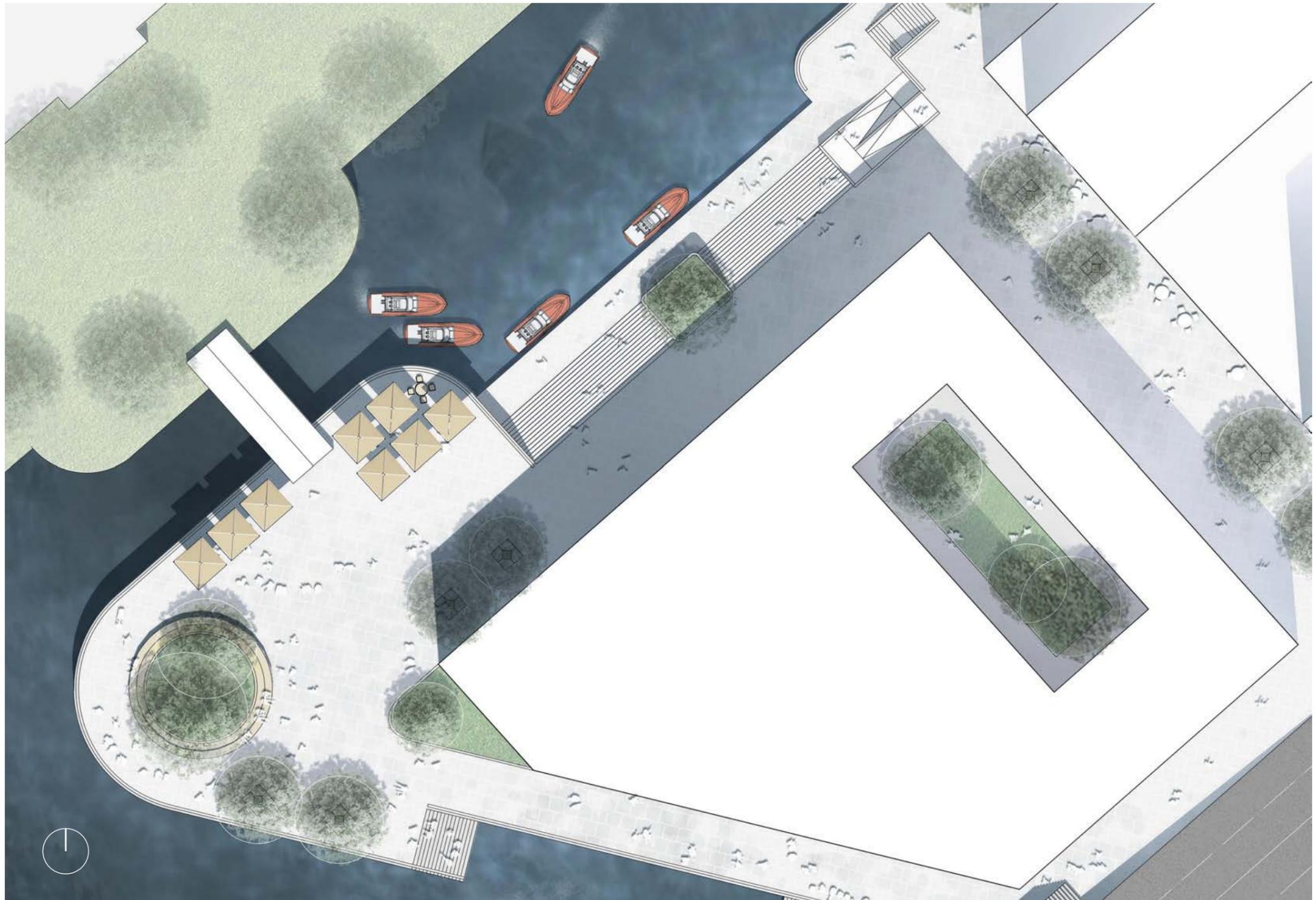
▲ Fig. 94: Local patterns adapted for the design



▲ Fig. 95: Section of detail area 2



▲ Fig. 96: Perspective of detail area 2



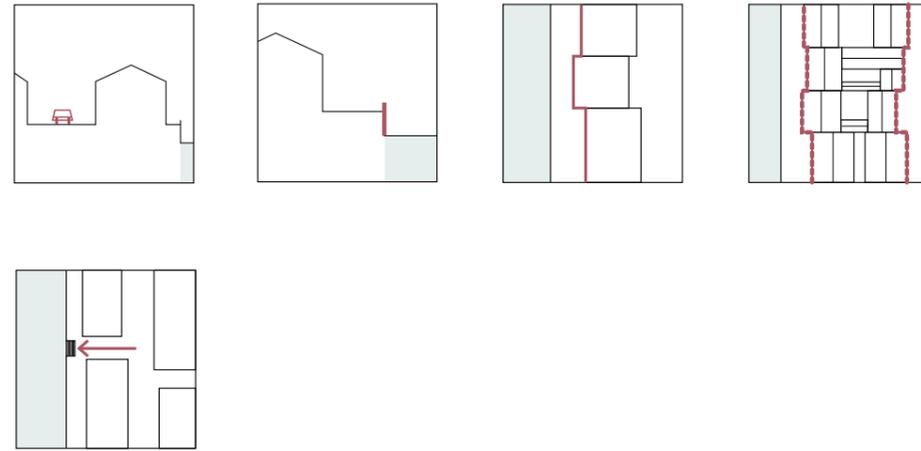
▶ Fig. 97: Plan of detail area 2

DETAIL 3: WATERFRONT SPACE ALONG THE NEW GRAND CANAL

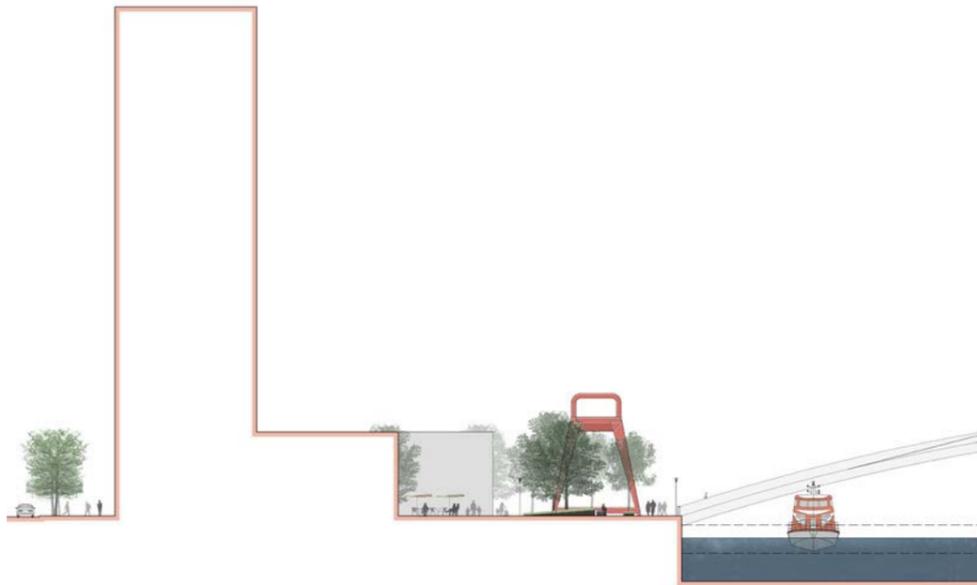
This open space is also in the residential area. The first and second floors of the buildings are for commercial use. Therefore this place could be a small park for the resident or the public, or just an open space along the canal, where the people could take a walk after dinner.

The form of the bank is adapting the bank in the city center of Wuxi, but it is a little wider, because the waterfront spaces along the new canal are normally 50m wide (including the 20m wide city expressway).

On the bank, the cranes of the logistic company could be preserved as sculptures.



▲ Fig. 98: Local patterns adapted for the design



▲ Fig. 99: Section of detail area 3



▲ Fig. 100: Perspective of detail area 3



▶ Fig. 101: Plan of detail area 3

## URBANIZATION AND LOCALITY ALONG THE GRAND CANAL OF CHINA

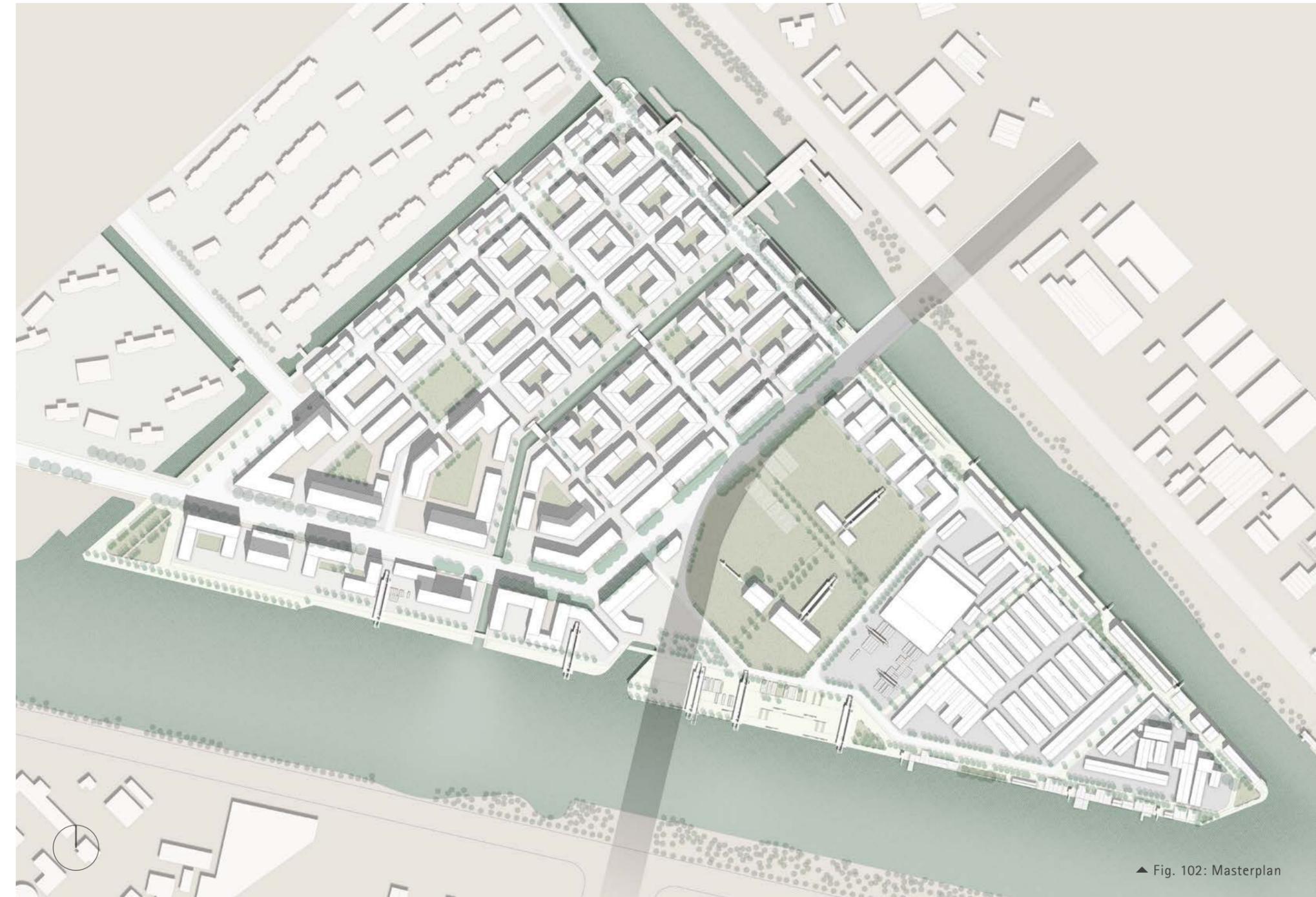
By Siyu Lin

This master thesis addresses the dynamic process of locality and adapts it to the design proposal.

With the initial urban planning in Wuxi, the project site is integrated into the existing urban and Grand Canal context. Moreover, the adaptable local characteristics from existing structures are taken advantage of and were used within the design process.

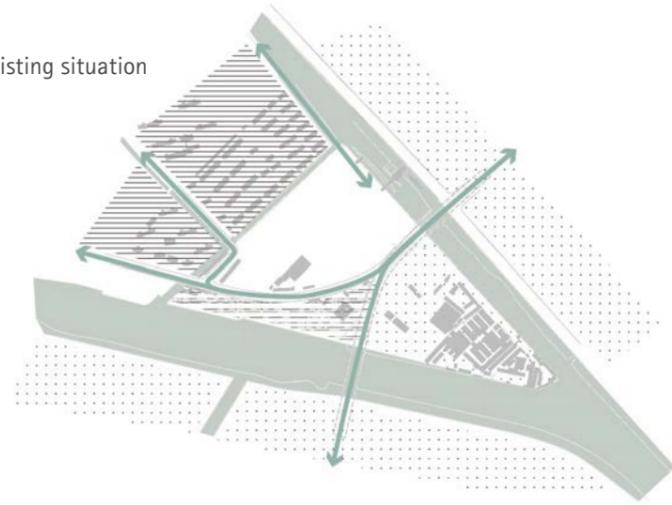
Additional issues are also combined with local characteristics, for instance the issue of storm-water management and shared street concept.

Through strengthening and adapting local patterns, the people of Wuxi will be able to recognize the Grand Canal once again. Various activities are encouraged taking place in the multifunctional riverfront open space. As a result, even the locality, such as public open spaces along the Grand Canal, that it slowly disappearing in times of the rapid urbanization, is revitalized by people's activities.



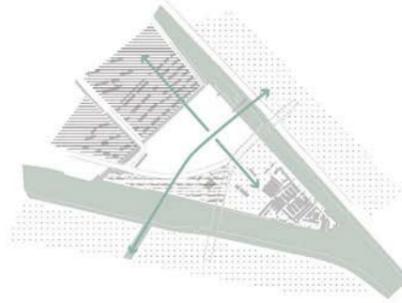
▲ Fig. 102: Masterplan

existing situation

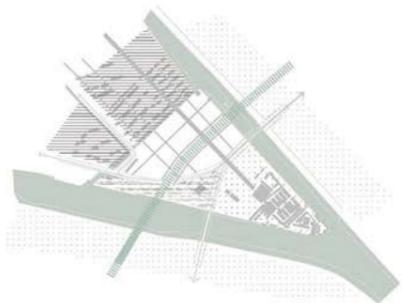


▲ Fig. 103: Existing Situation

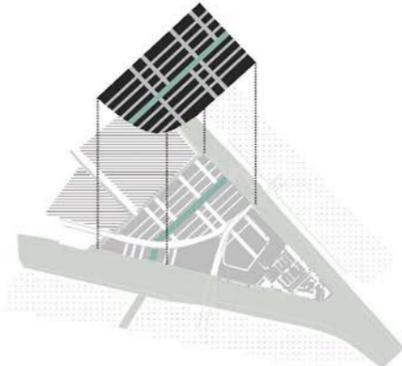
create new connections



adjust to the existing urban structure

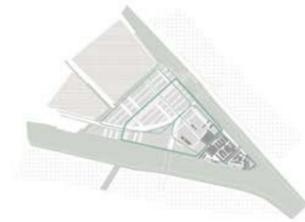


add a transformed traditional pattern

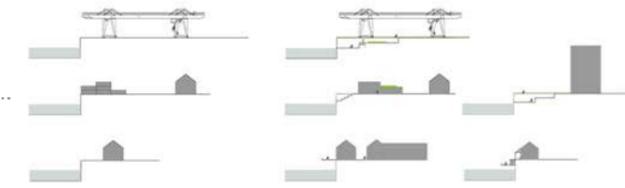
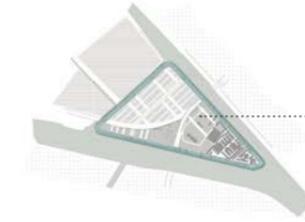


▲ Fig. 104: Concept Development

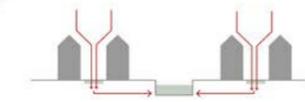
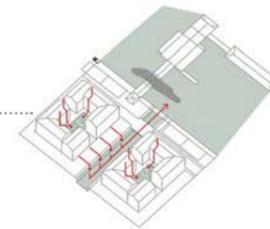
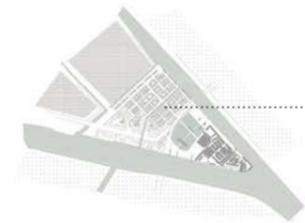
traffic network and riverfront promenade



making water accessible and adopting Wuxi's locality

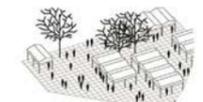
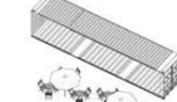
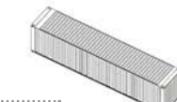
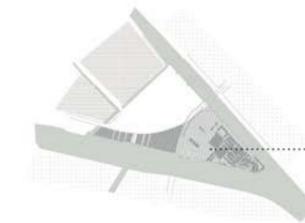


new community with traditional pattern  
adding stormwater management:  
transforming the principle of stormwater management in traditional residence to the design



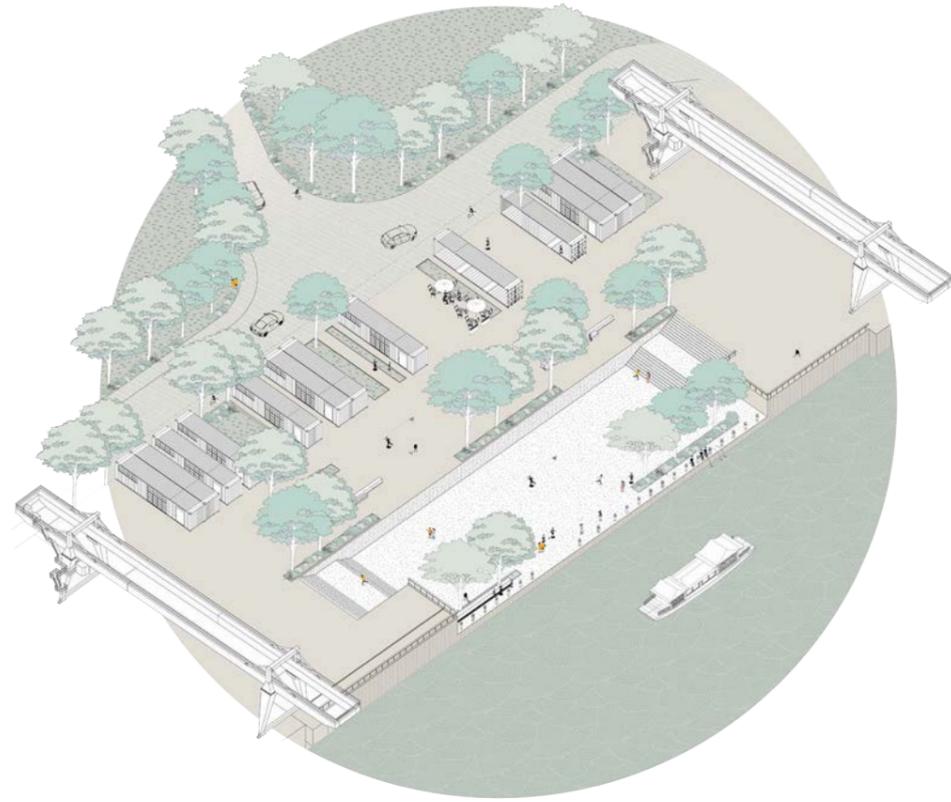
revitalization through local daily activities

- transforming existing industrial elements
- multifunctional plaza

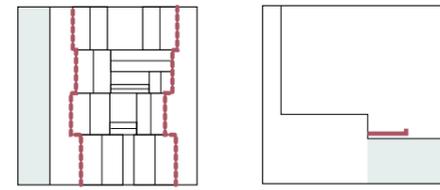
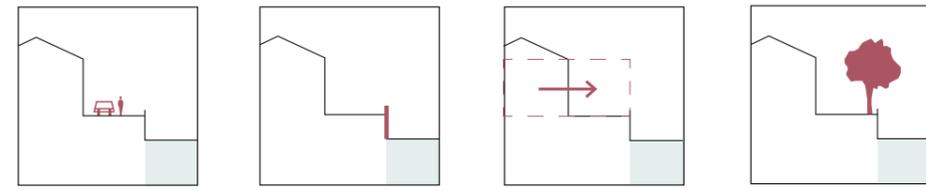


▲ Fig. 105: Methodology

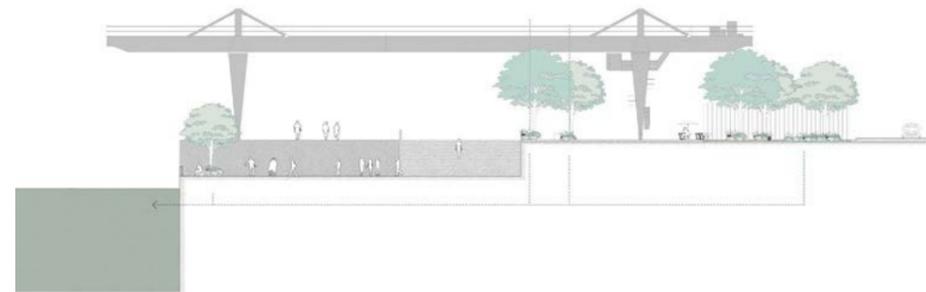
DETAIL 1: The former industrial area along the wide canal



▲ Fig. 107: Axonometric drawing of detail area 1



▲ Fig. 106: Local patterns adapted for the design

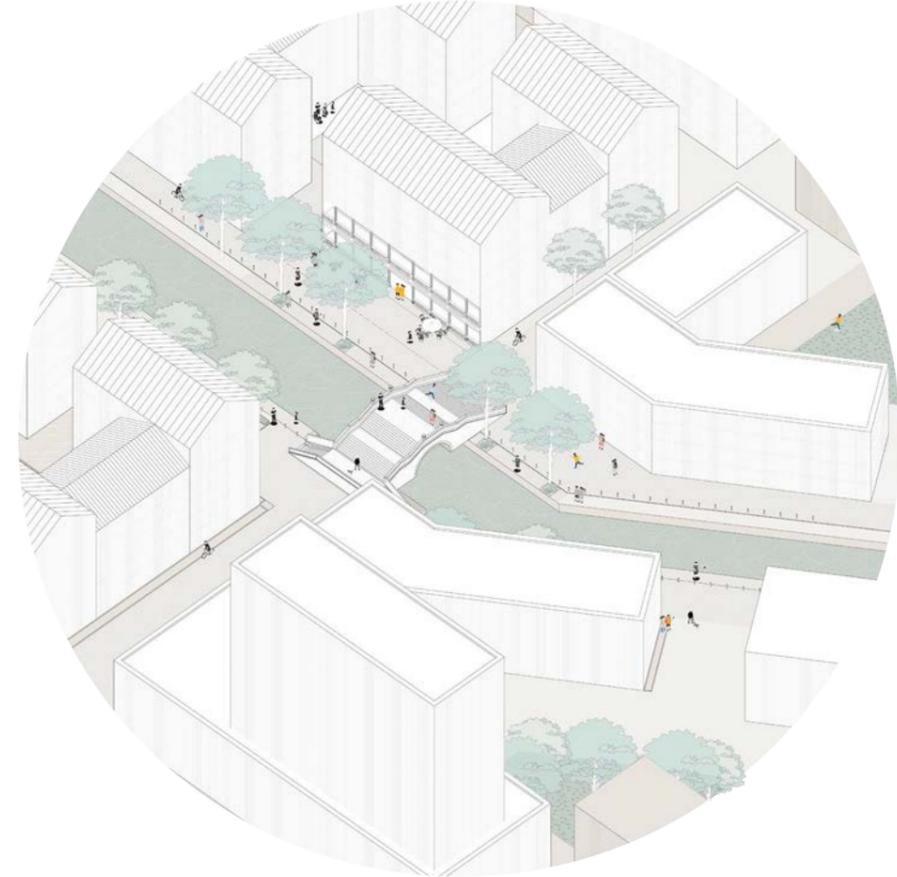


▲ Fig. 108: Section of detail area 1

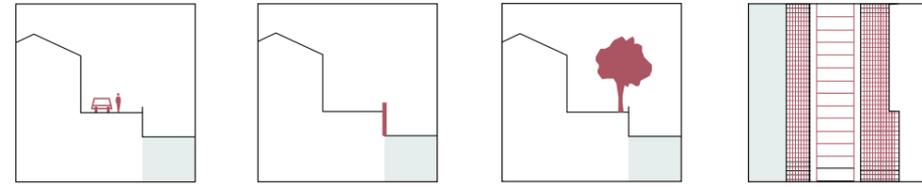
▶ Fig. 109: Plan of detail area 1



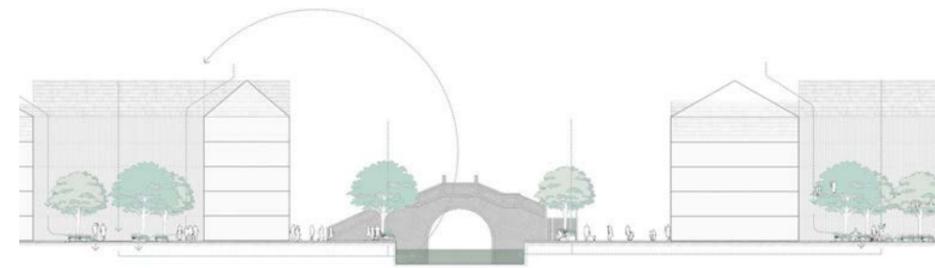
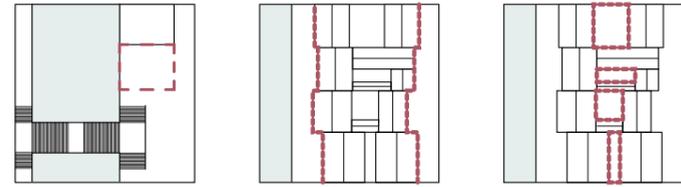
DETAIL 2: The area along the newly constructed canal



▲ Fig. 111: Axonometric drawing of detail area 2

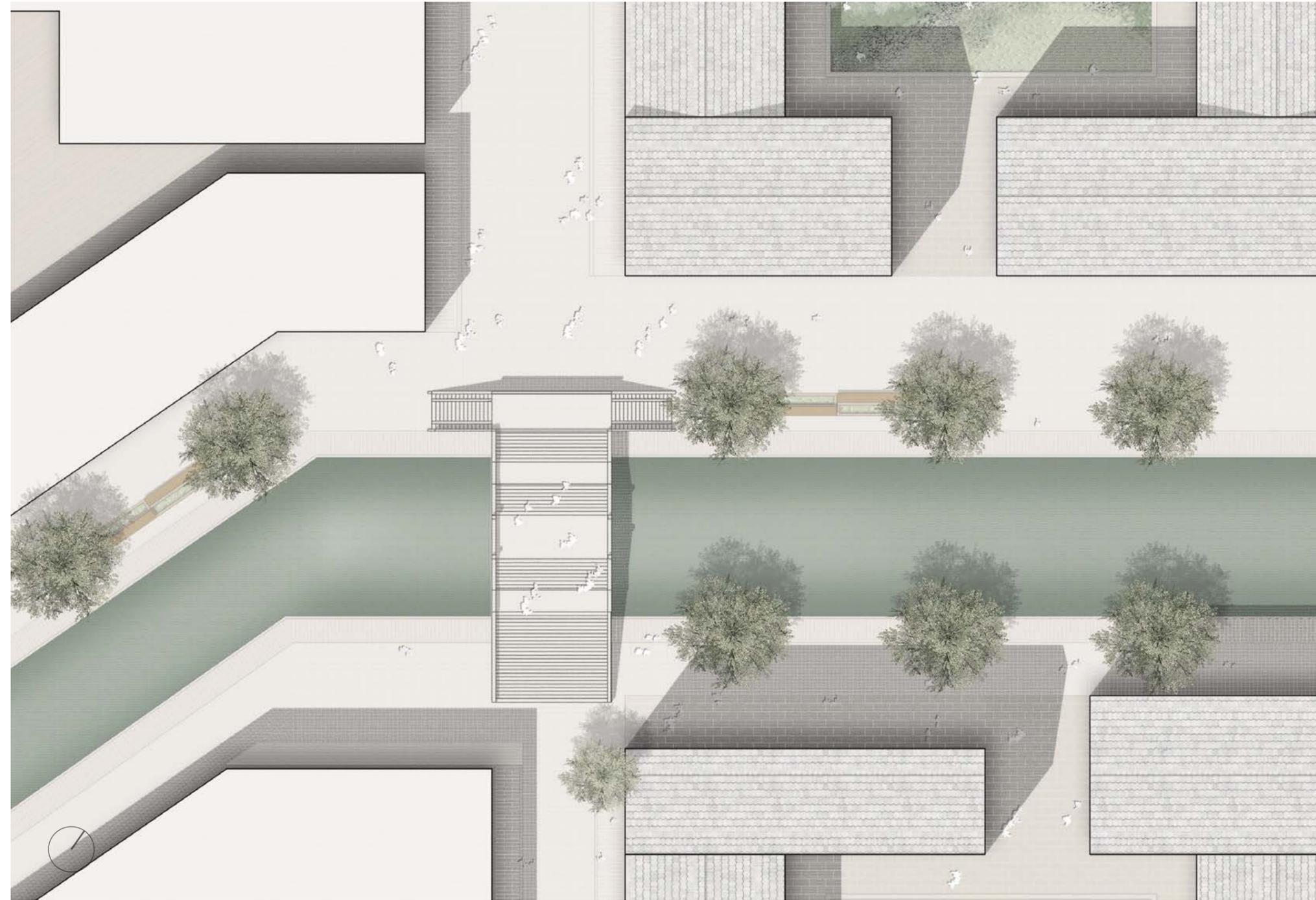


▲ Fig. 110: Local patterns adapted for the design



▲ Fig. 112: Section of detail area 2

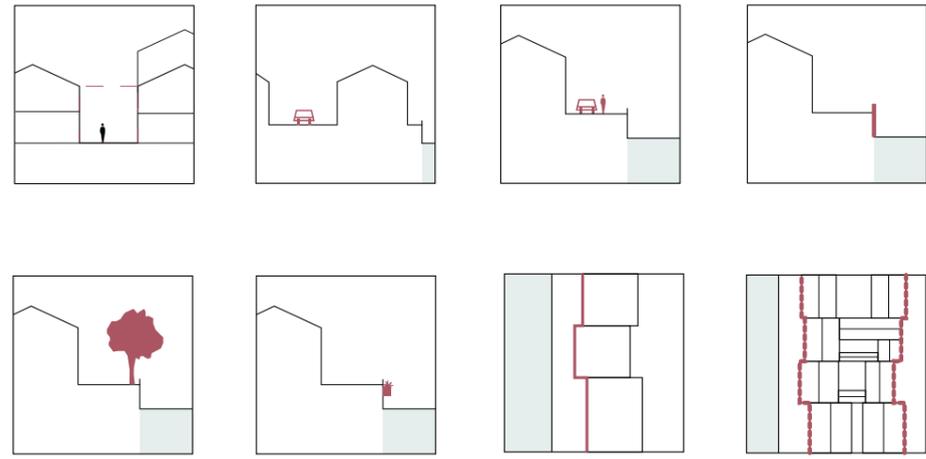
▶ Fig. 113: Plan of detail area 2



DETAIL 1: The area along the small canal in the North



▲ Fig. 115: Axonometric drawing of detail area 3



▲ Fig. 114: Local patterns adapted for the design



▲ Fig. 116: Section of detail area 3

▶ Fig. 117: Plan of detail area 3



## CANAL OF CONTRASTS

By Benjamin Kasten

This bachelor thesis addresses the fact that the project site is surrounded by three canals, each giving the open spaces nearby a different atmosphere, quality and purpose.

Local patterns both from the historical areas of Wuxi and also from the project site itself were adapted and incorporated into the design to strengthen and revitalize the connection of the city to the Grand Canal.

The urban design focuses on establishing a mixed and diverse structure and program. It gently adds elements such as urban gardening, spaces for creativity and leisure. Dense city structures within the inner district are broken up on several spots to provide an adequate amount of open space for the people living here.



## CONCEPT

The very different characters of the four areas of the site should be transferred to the design. Thus, four distinguishable areas along the canal should be developed, each with a different character, style and adapted locality. These differences are derived from the different characteristics of the project site. The site is split up into four sections, all with varying characteristics and atmosphere.

These sections are:

I  
This area is dominated by industry. Aluminum and steel is waiting to get charged and shipped away. The canal is 120m wide and heavily used by cargo ships. The other side of the canal is characterized by ornamental vegetation, pipelines and a big power supply line. Big bridges are visible to the left and the right. The hard materials and big infrastructure elements give this place an industrial atmosphere.

II  
The canal in this area is only 15m wide. Both canal sides are dominated by wild plants and are not accessible. On the other side, there are residential buildings with 5-10 floors. The atmosphere is private, some of the residents use the area for urban farming.

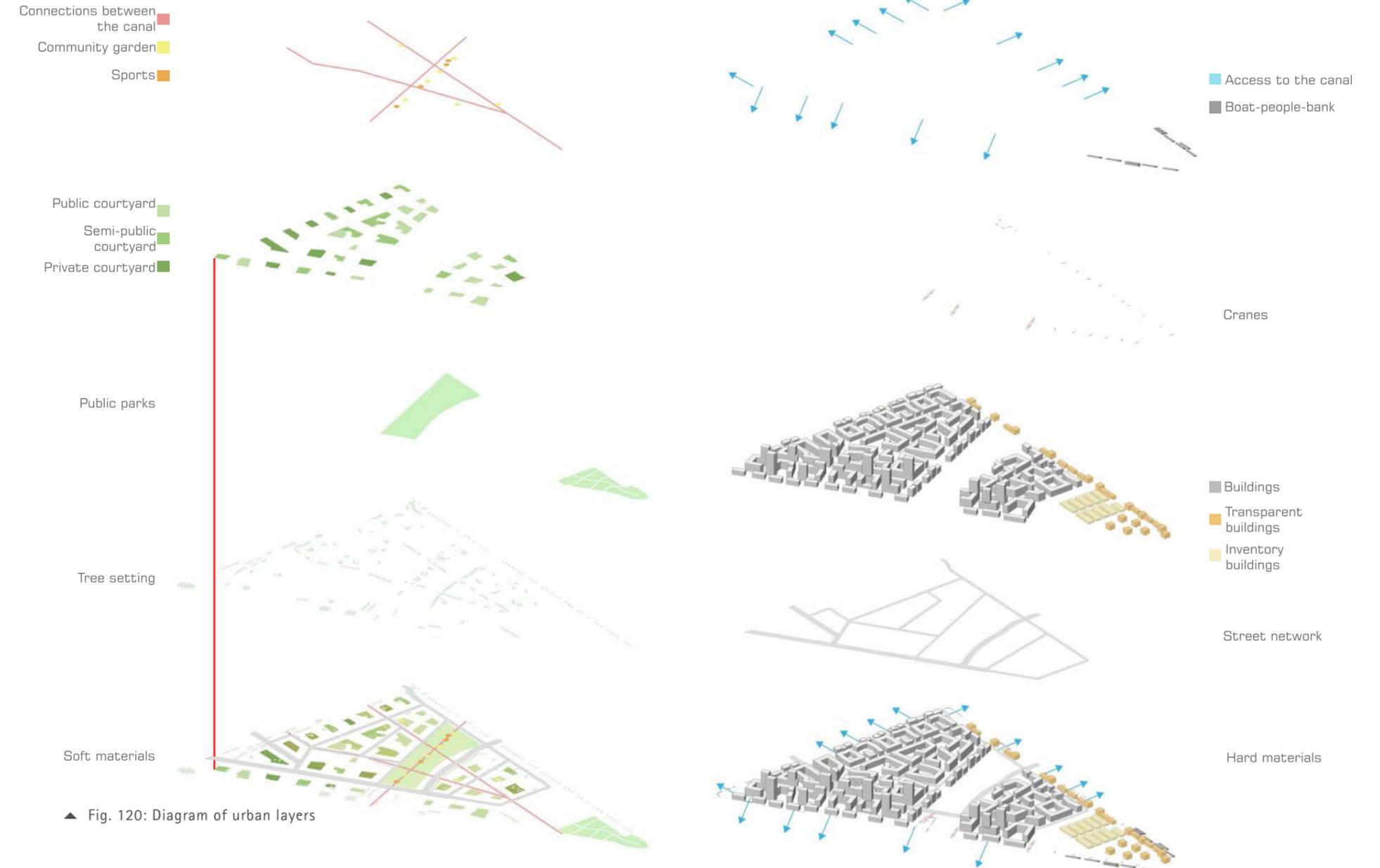
III  
The most significant element in this area is the lock. The northern canal side is dominated by willow trees, some residential buildings and a vertical canal bank, which is partially broken. All this gives this area an idyllic and open atmosphere.

IV  
This big area is isolated from the rest of the project site by a big highway. It is used for light manufacturing industry. Big cranes at the canal in the South and a number of small cranes at the smaller canal in the North are witnesses of this. Boat people land and live here. The atmosphere is also industrial, but in a completely other way compared to area I. It is slower, more communicative and more individual due to the diversity of buildings and different kind of small cranes.



▲ Fig. 119: Concept sections

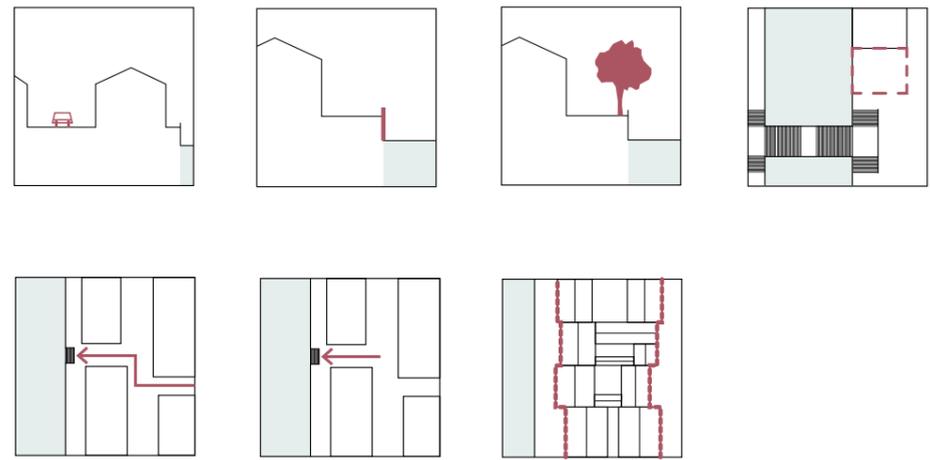
## URBAN DESIGN



▲ Fig. 120: Diagram of urban layers

DETAIL 1: THE BUSINESS DISTRICT

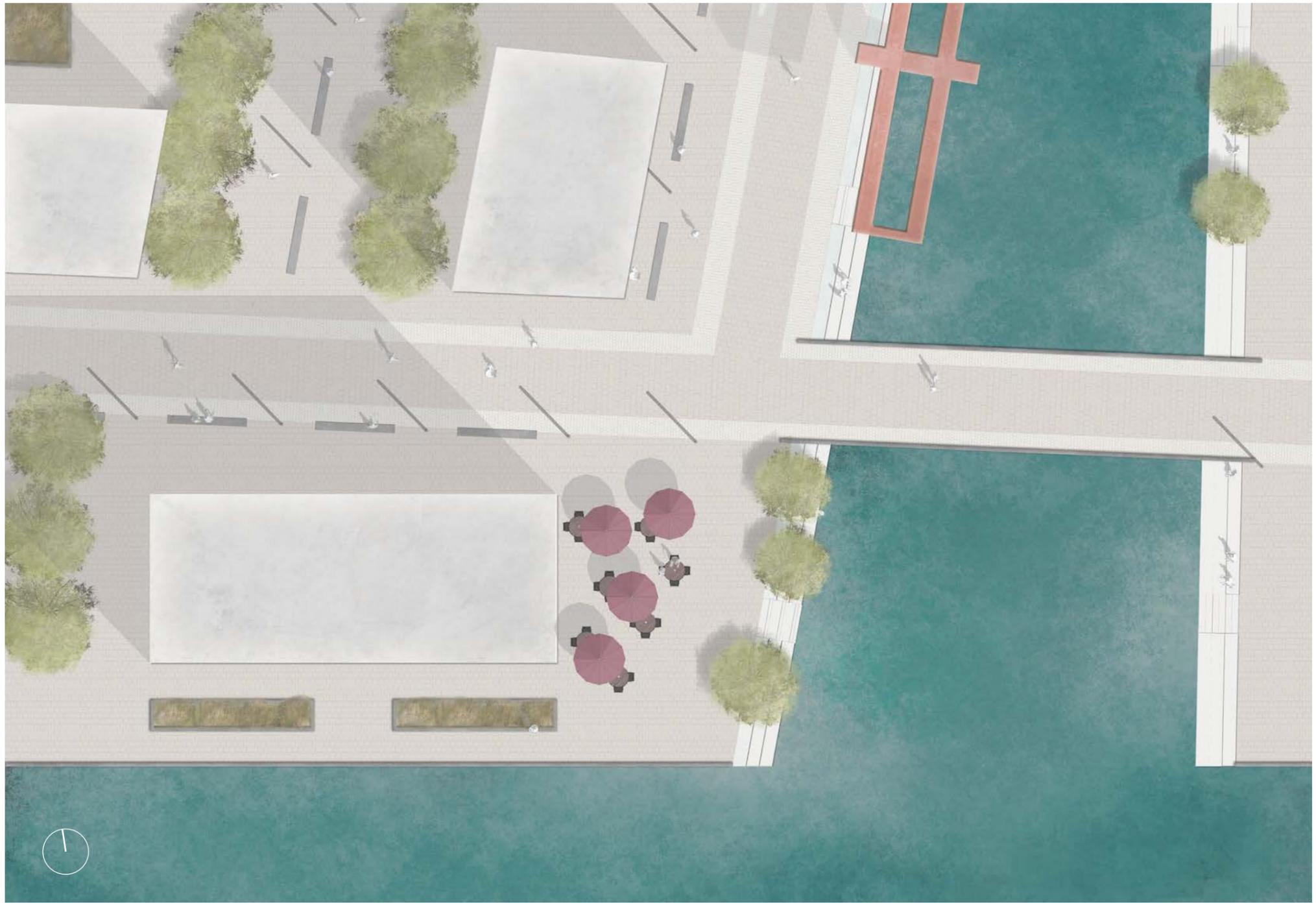
A high density business district. Hard materials dominate the area. Open spaces are mainly public squares. The space invites for a quick stay. Office workers as well as the people living here can take a break at the canal.



▲ Fig. 121: Local patterns adapted for the design



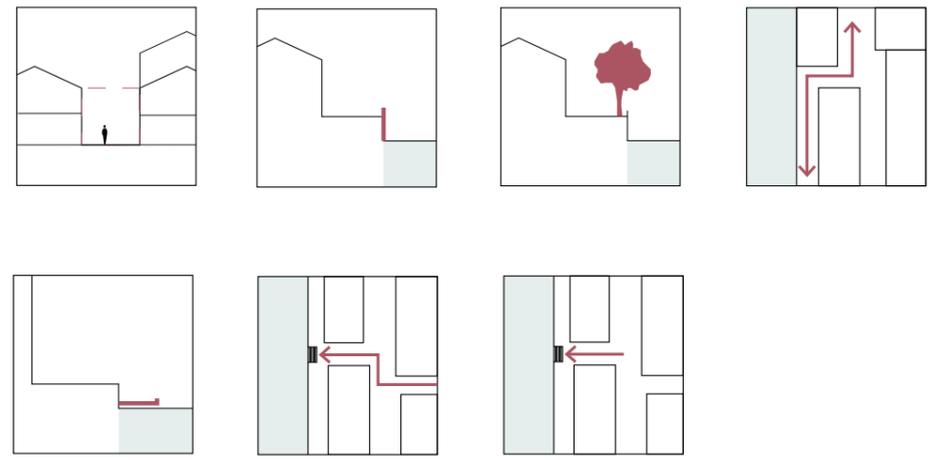
▲ Fig. 122: Section of detail area 1



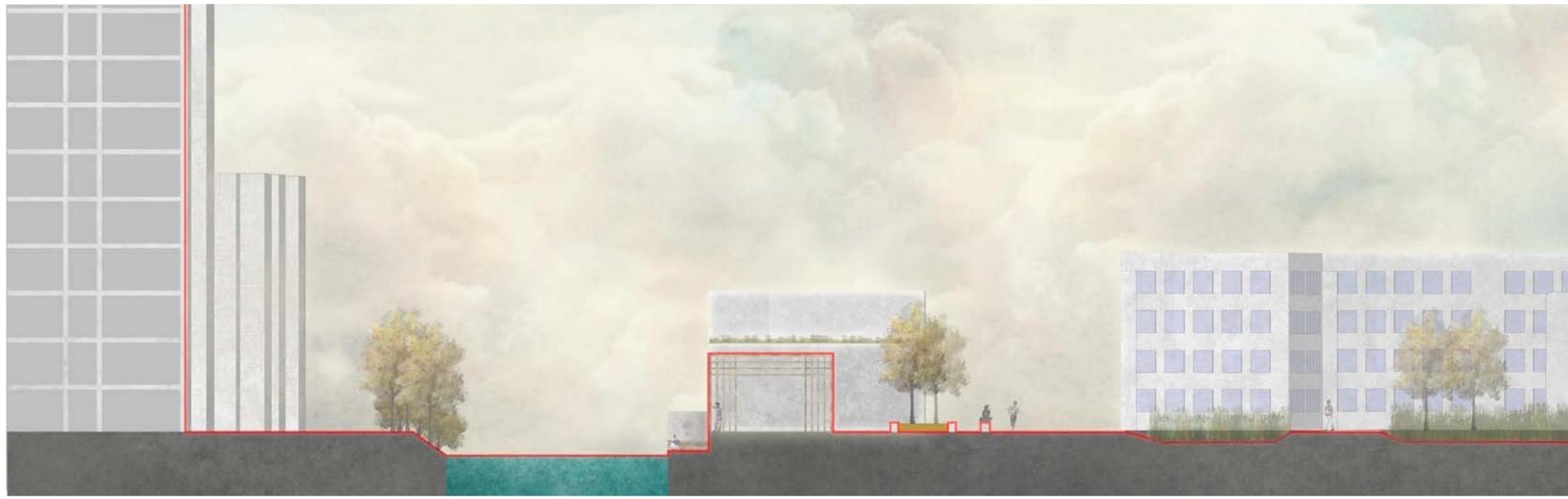
▶ Fig. 123: Plan of detail area 1

DETAIL 2: THE PRIVATE SPACE

The open space belongs first of all to the residents. The character is intimate and private. Access to the water is hidden behind trees or pavilions. The buildings have a maximum height of four stories. The courtyards are either private or semi-public. Community gardens at the canal balustrade invite inhabitants to help shaping the open space.



▲ Fig. 124: Local patterns adapted for the design



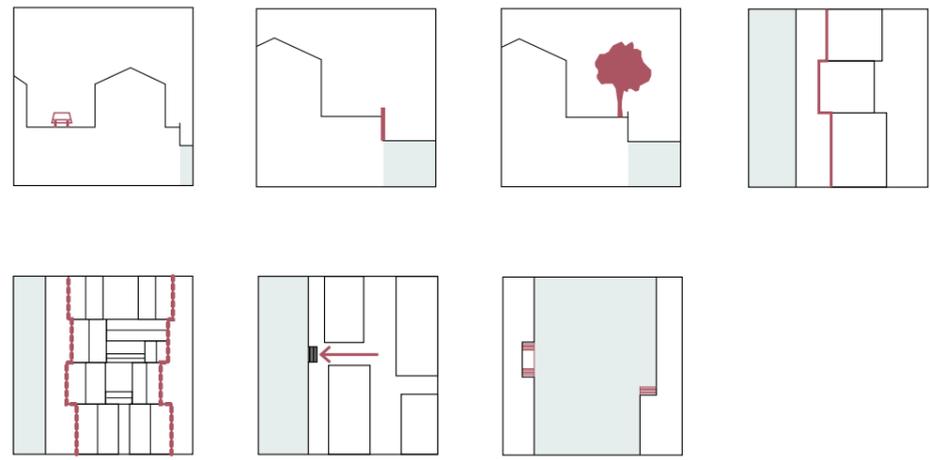
▲ Fig. 125: Section of detail area 2



▶ Fig. 126: Plan of detail area 2

DETAIL 3: THE OPEN SPACE

This area is characterized by its openness. The buildings in the first row are 2-3 storey glass structures with a wooden framework. This keeps the open impression. In the first floor are shops and cafés with small offices or apartments above. Remaining cranes are reused as decorative elements along the promenade. The water gate can be seen from a distance along a road axis.



▲ Fig. 127: Local patterns adapted for the design



▲ Fig. 128: Section of detail area 3

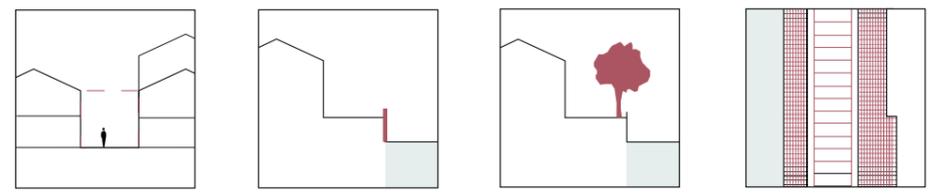


► Fig. 129: Plan of detail area 3

DETAIL 4: THE CREATIVE CAMPUS

The tip of the project site is a creative campus that is meant to strengthen the identity of the canal. The glass-wooden structures proceed into the campus area and will be used for creative offices. In the future, the so called 'Boat-People' can also dock here and the remaining buildings will continue to be used as warehouses.

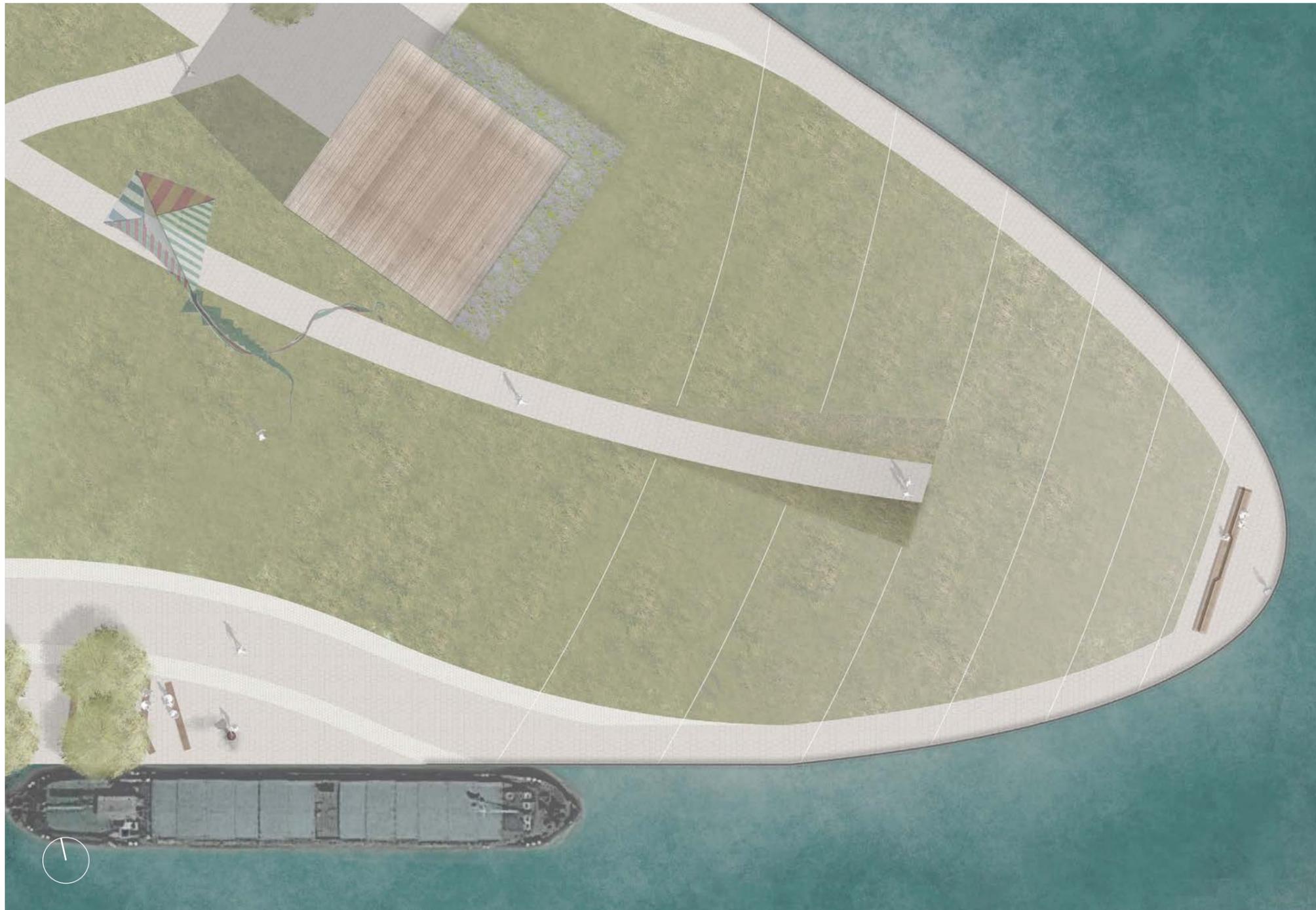
The end of the tip has the shape of a bow from a ship. It works as a viewpoint. Inside, there is a small auditorium. Workshops and exhibitions open for the public are intended to bring people from different social backgrounds together. Because this is what the Grand Canal always did and should also do in the future: connect people.



▲ Fig. 130: Local patterns adapted for the design



▲ Fig. 131: Section of detail area 4



► Fig. 132: Plan of detail area 4

## REDISCOVERING DIVERCITY

By Niels Niemeyer

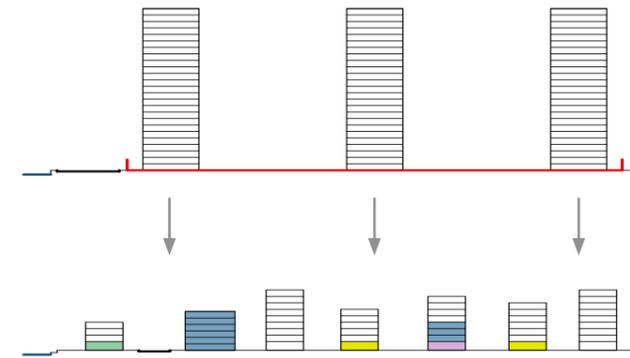
The concept for the design proposal tackles incidents and negative tendencies in modern Chinese urban development in order to reverse them. The principle of exclusion, the neglect of the embankments along the Grand Canal and the often indistinguishable and non-local character of the city should be addressed in this bachelor thesis. Its title (Rediscovering Divercity) stands for the goal that the design proposal should offer a heterogeneous cityscape with diverse open spaces and various waterfronts with both a unique and local character. Therefore local patterns, seen during the field trip to Wuxi, were adopted and incorporated into the design proposal. In this context, also aspects of urban development, landscape architecture and social life are taken into account while the concept of diversity is rediscovered and adopted to the design aswell.



Shrinking the Scale:

The residential towers that currently dominate nearly the entire cityscape should be shrunk to a smaller size, in order to be able to generate a higher structural density and thus to add more public life to both the streets and open spaces of the city.

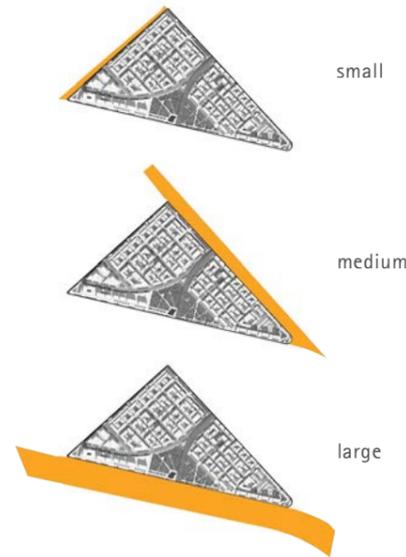
In this case, higher density but lower height of the buildings ensure a mixed city space, where all elements, such as buildings, open spaces, roads and footpaths together form a diverse and heterogeneous overall pattern.



▲ Fig. 134: Shrinking the scale

Adapting the locality to the context and specific scale:

With the background of the three different canal scales, the locality of Wuxi's canal sections should be adapted accordingly. This means that not every local aspect is also reasonable or appropriate to use for designing the three different sections of the canal. Taking the catalog of the locality seen in Wuxi into account, each canal should have its own character and uniqueness as it has its own scale. For example, the area along the small canal in the west requires a different design than the large waterfront at new section of the canal in the south. So, depending on the size of each canal, the design and adopted locality will be differentiated.

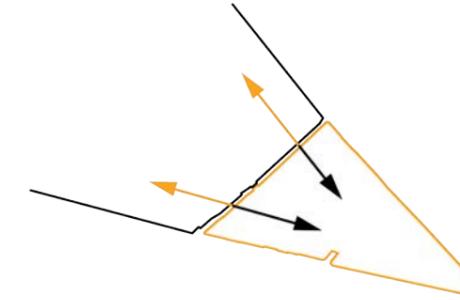


▲ Fig. 135: Canal scale

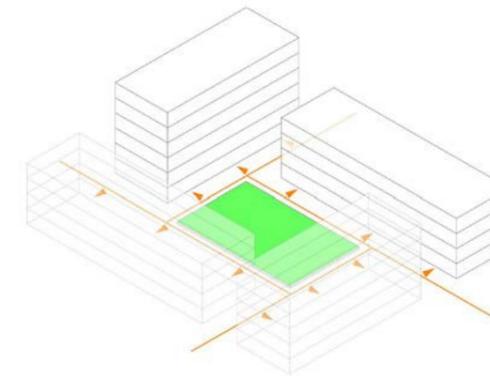
Bringing people together:

The integration of the Boat-People into the urban context as well as the continuation of the use of workshops in parts of the district is intended to strengthen the social fabric and mix people of different income levels. Thus, the neighborhood, unlike many other neighborhoods around, is not exclusively designed for the Chinese middle class.

In addition, the neighboring residential district is to be opened and integrated into the context of the new neighborhood. This is to counteract the isolation of the Chinese city landscape. Furthermore, the trend of gating neighborhoods is not to be continued. Indeed, the newly developed block structure have courtyards as well. But these Courtyards work different, since they are much smaller than their counterparts at the large gated communities. These smaller courtyards are not gated and therefore they are semi-public. Because of their smaller size, they cannot offer such as many activities as the counterparts are able to (but still enough to not be unnecessary). But this is not a downside actually: by shorten their potential, people are compelled to use public spaces for activities such as going for a walk in the park. So daily routines won't mainly take place at one's home or the courtyard but at the public open spaces of the district. The varied and diverse range of different open spaces, especially along the canal, should invite people to spend their time outdoors. The purpose is to establish a great number of urban spaces, which the inhabitants can identify with.



▲ Fig. 136: Concept of connecting both districts



▲ Fig. 137: Concept of Courtyards

GREEN SPACE

The most obvious green space is the park area in the South, extending on both sides of the highway. Two additional smaller green spaces are located at the north-western lock as well as at the tip in the east of the area. In addition, there are several semi-public and public areas that can be used for communal gardening. Furthermore, most of the residential blocks have semi-public courtyards.

PROGRAM

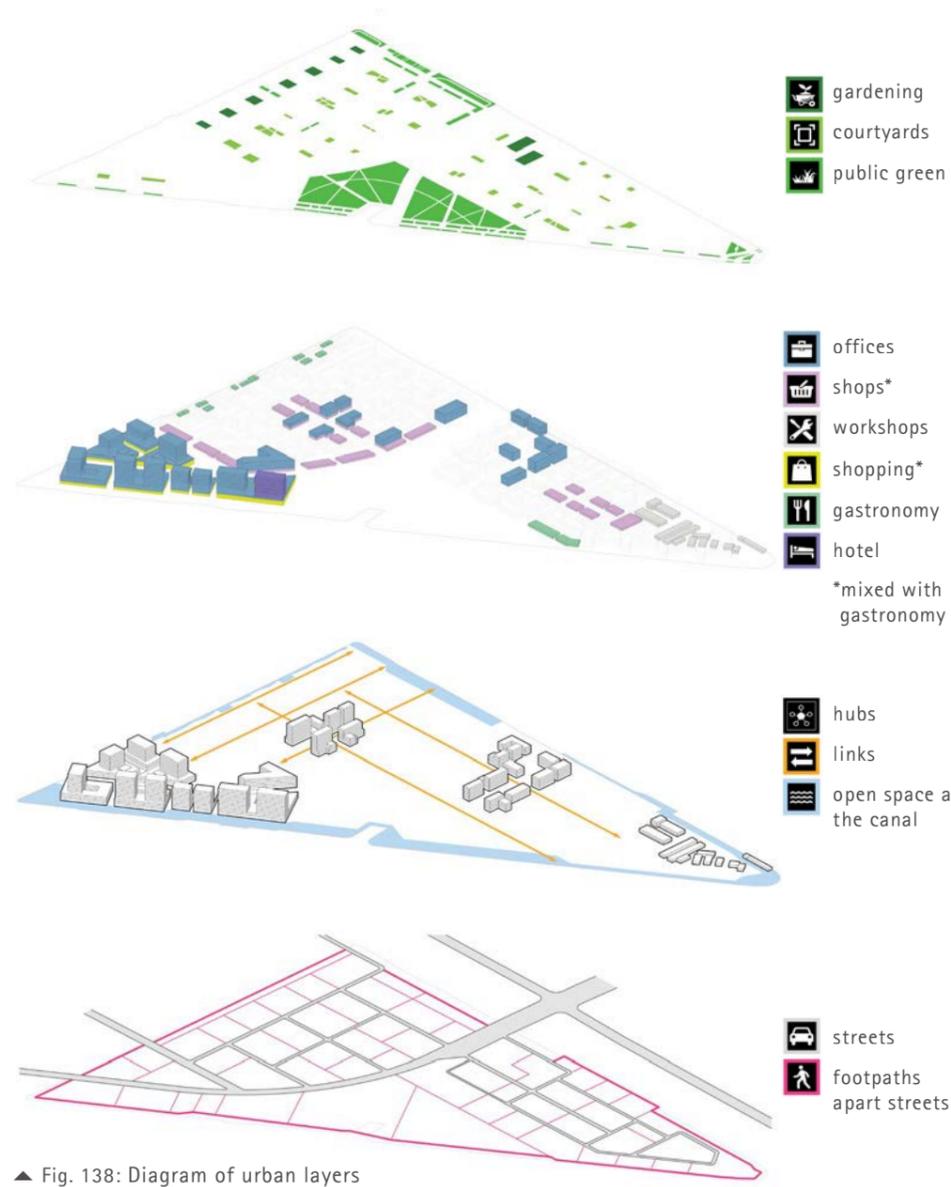
The program of the district refers to the design of a heterogeneous and diverse city landscape as it is itself also varied and mixed. Some buildings are mainly used as offices or for shopping, while most of the buildings are residential buildings (non-colored) with a different program at their groundfloor. To adopt the local character of the old/small sized canals in Wuxi, several food stores and bars/cafes are located in the low rise buildings along the small sized canal.

HUBS, LINKS, FRAMES

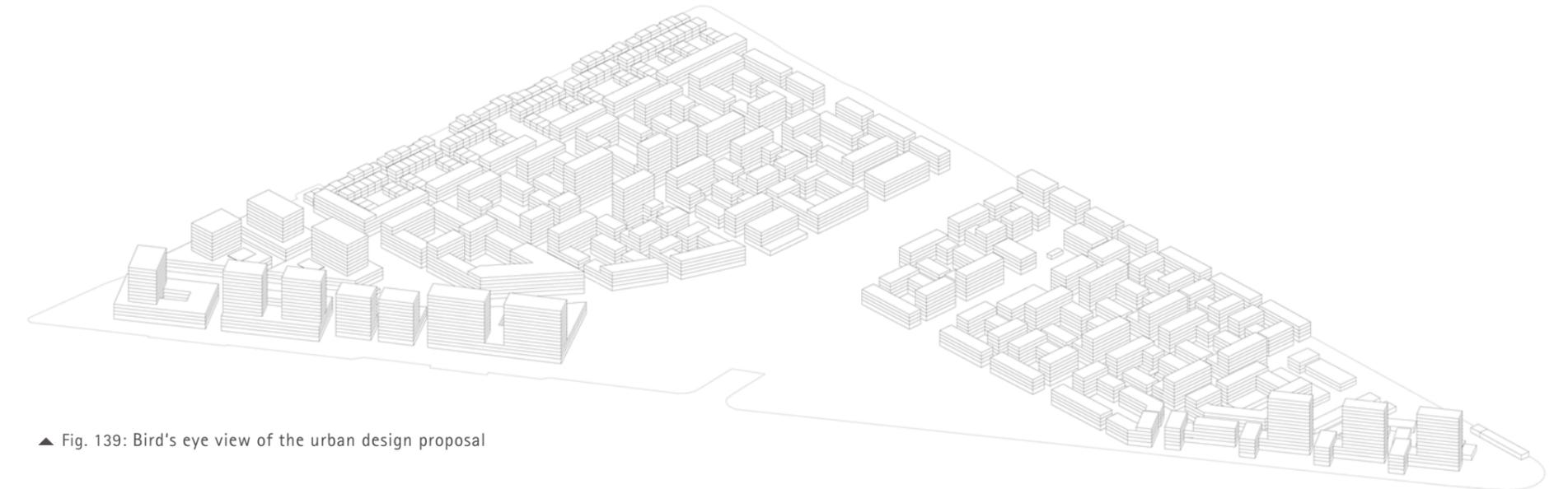
There are four different city hubs, each having a specific character and program. The one in the South-West can be defined as the main business and shopping district, while the eastern hub can be characterized as the 'workshop' of the district. Important areas are connected by infrastructure, such as the long alley or certain streets. People can walk along the canal at every site of the district, turning the canal into the biggest open space area.

GRID FRAMEWORK

The footpath framework has been designed much more dense than the street framework. The idea is to weaken the importance of owning a car and to walk or go by bike or scooter instead. To make this comfortable, there are many footpaths apart the streets, so people do not need to walk besides cars all the time. Another benefit is that such a dense framework allows short distances since people do not have to walk around larger blocks.



▲ Fig. 138: Diagram of urban layers



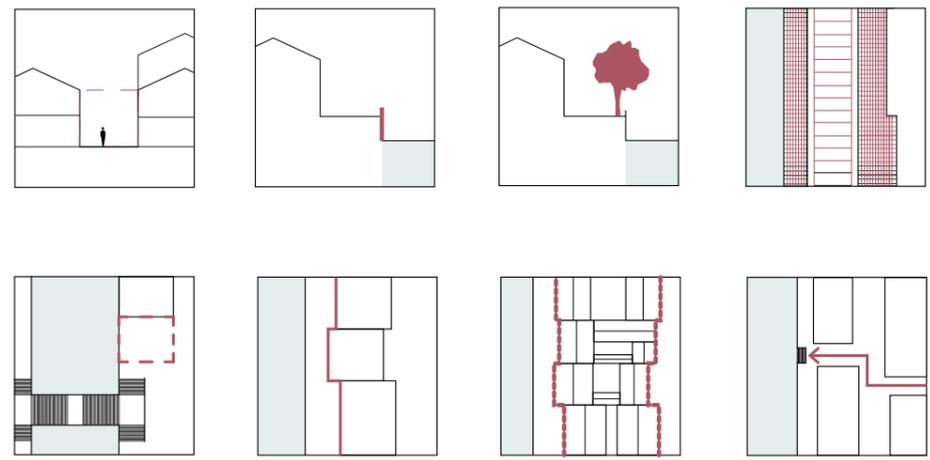
▲ Fig. 139: Bird's eye view of the urban design proposal

**DETAIL 1: THE SMALL CANAL**

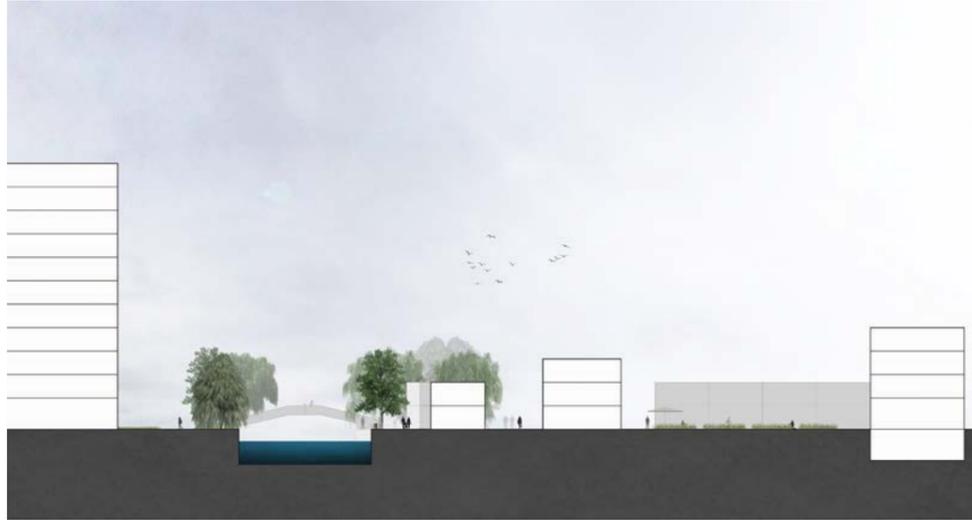
This area is small-scale and has a local character, comparable to several locations in the historical districts of Wuxi. The buildings here are two or three stories tall and are placed near to the canal.

What the open space lacks in vastness, it has in intimacy and options for appropriation. A few stairways near the small bridges admit direct contact to the water level, while the rest of the footpath is accompanied by a small wall as one of the typical and local elements along the historical canal in Wuxi.

With the tall buildings nearby, the contrast between tall and flat buildings is clearly visible and creates a unique tension.



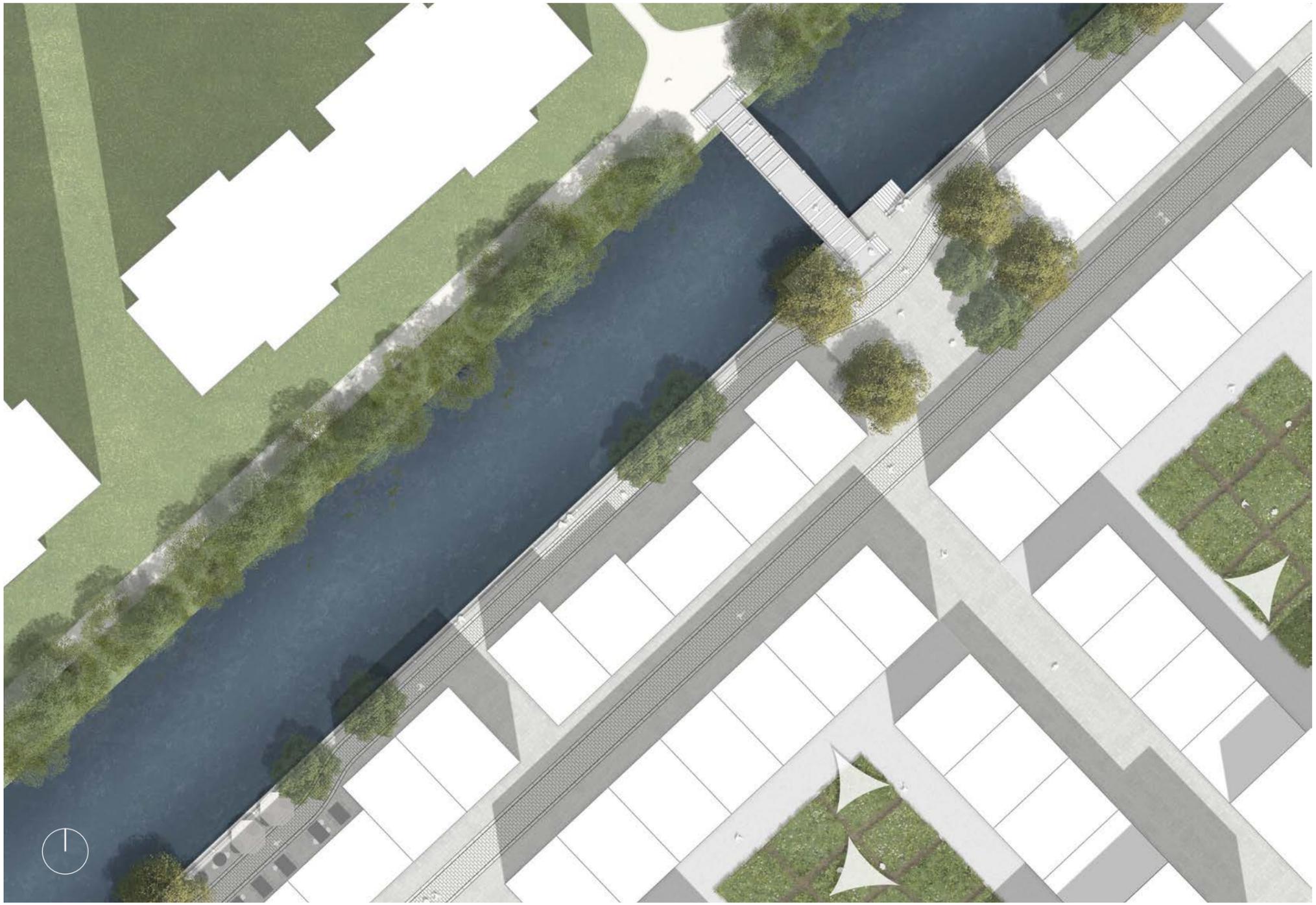
▲ Fig. 140: Local patterns adapted for the design



▲ Fig. 141: Section of detail area 1



▲ Fig. 142: Perspective of detail area 1

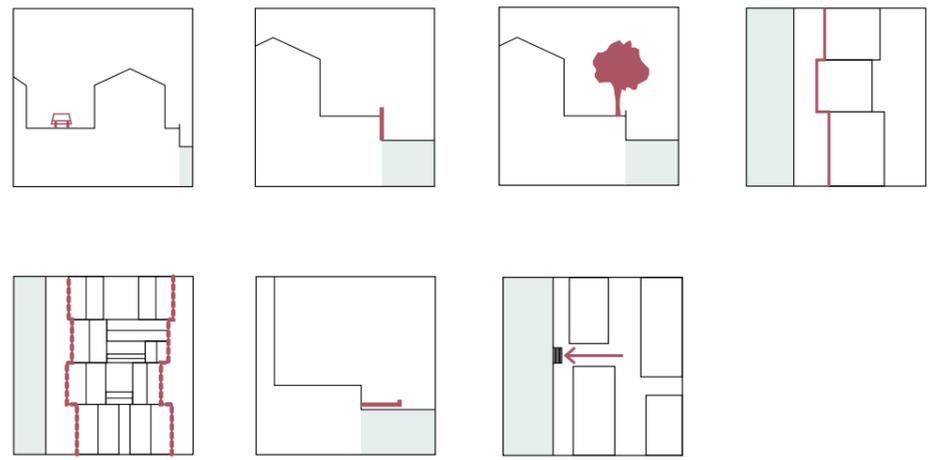


▶ Fig. 143: Plan of detail area 1

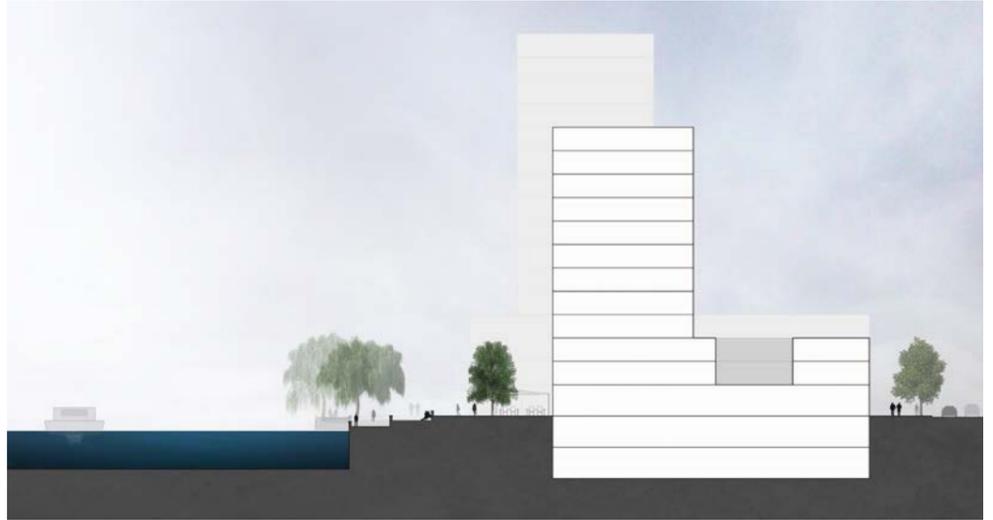
DETAIL 2: THE URBAN PROMENADE

This area can be characterized as the most urban canal section of the design and forms the waterfront of the related hub nearby. It has various urban features such as its program (shopping, hotel, workplace), its size (wide urban promenade along the canal) and the size of the buildings around. The size of the promenade as well as the size of the buildings has been fitted to the vast extent of the new canal.

Nevertheless, this section comes up with some locality such as multiple footpath levels next to the canal or small walls along the water edge.



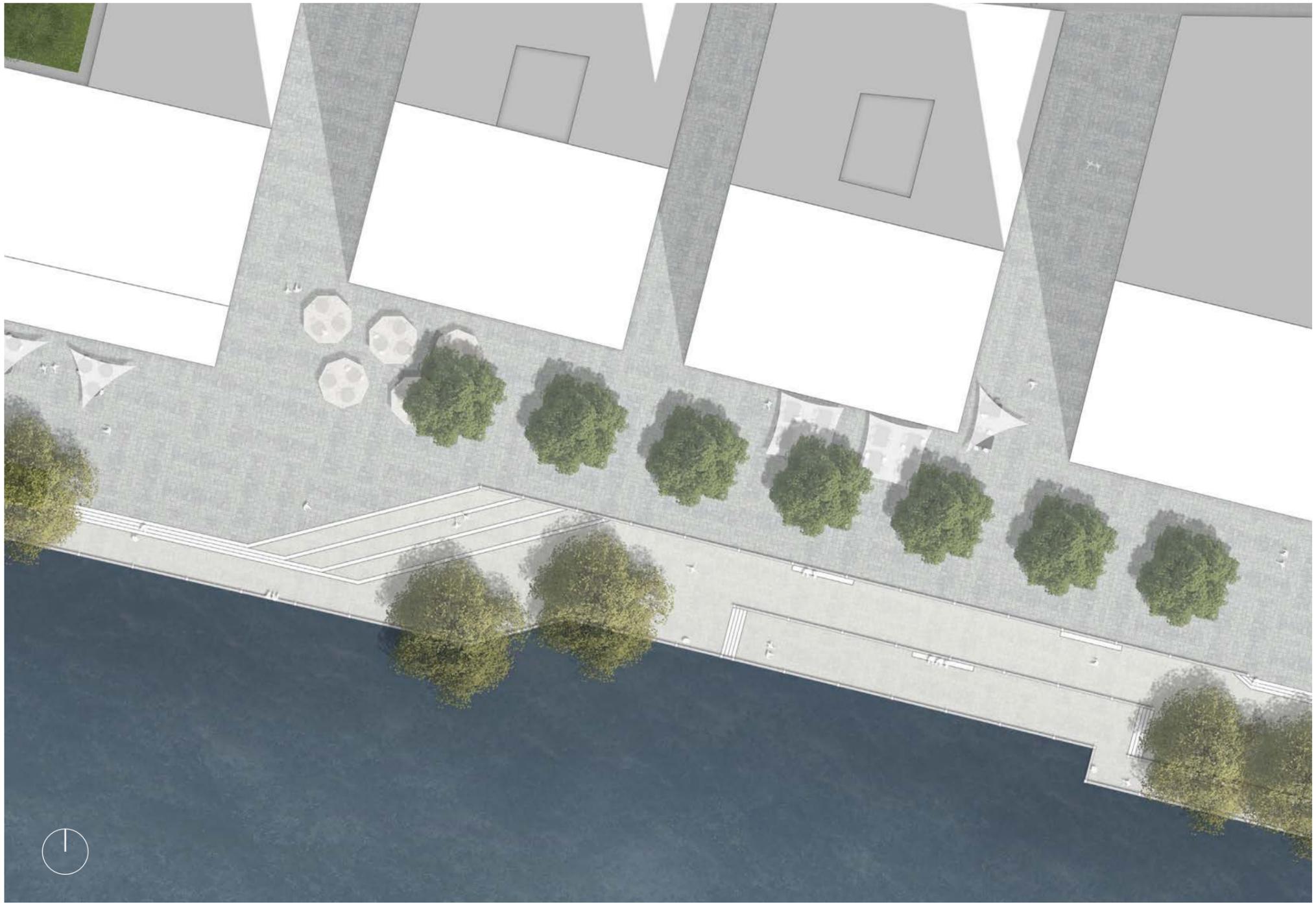
▲ Fig. 144: Local patterns adapted for the design



▲ Fig. 145: Section of detail area 2



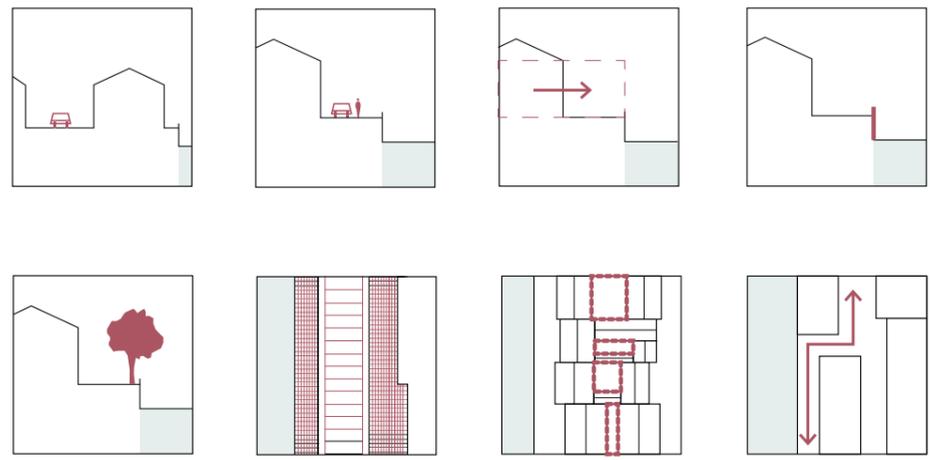
▲ Fig. 146: Perspective of detail area 2



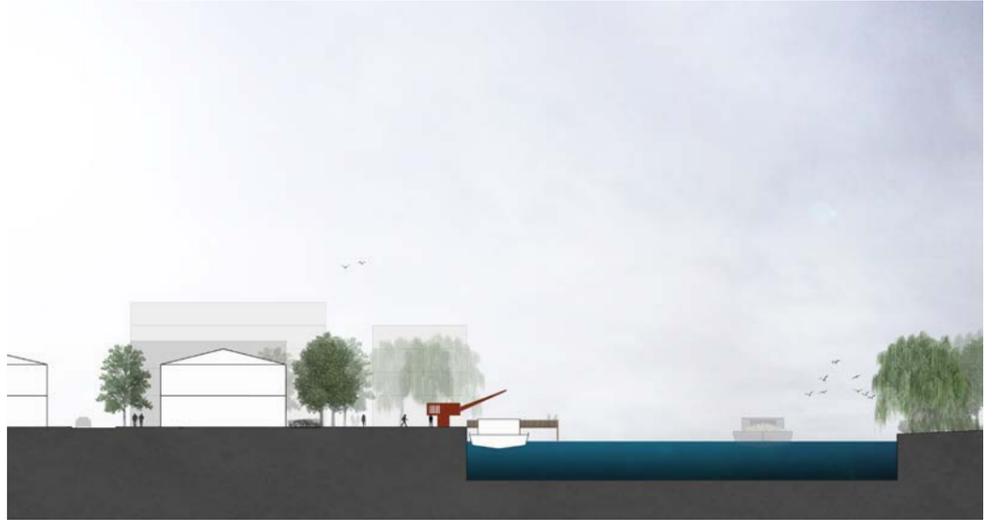
▶ Fig. 147: Plan of detail area 2

DETAIL 3: THE WORKSHOP UND ‚DO IT YOURSELF‘ AREA

This site can currently be characterized by ‚hard working men‘ and warehouses. To adapt this unique character for the new design, not all of the old buildings will be replaced. Several of them should be saved and transformed into workshops such as car or bike repair centers or self-administrated tool rental, so the Boat-People and all other habitants can borrow tools here or employ several repair services. People who are not working here are also welcome and can discover the special atmosphere of workplaces next door to residential areas and the Boat-People living at their boats.



▲ Fig. 148: Local patterns adapted for the design



▲ Fig. 149: Section of detail area 3



▲ Fig. 150: Perspective of detail area 3



▶ Fig. 151: Plan of detail area 3

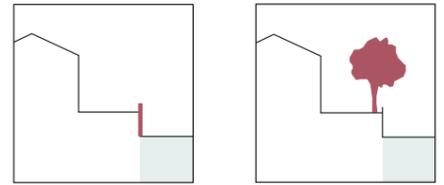
DETAIL 4: THE PARK

The Park as the one wide green area is the counterpart to the dense city structures and therefore is an important part of the open space concept.

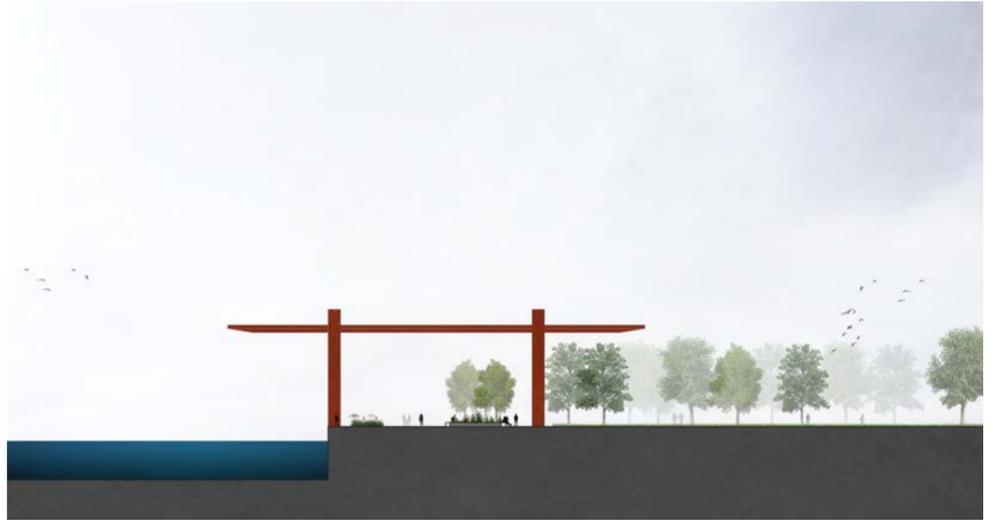
The park integrates the area below the highway and establishes an open space that works independently from the weather. By adding elements such as basketball fields, table tennis and several other play equipments, diverse sports facilities are given which can be used even at really hot days or during heavy rain.

To adapt some of the locality of Wuxi, there are three footpaths next to the canal, each with a different character: a narrow footpath directly at the gap of the canal, a wider promenade nearby and a third footpath behind raised beds.

Furthermore, existing industrial objects will be saved as relics. In this particular case, some of the existing cranes will be integrated into the design of the park to provide a special property and to conserve some of the project site's character and locality.



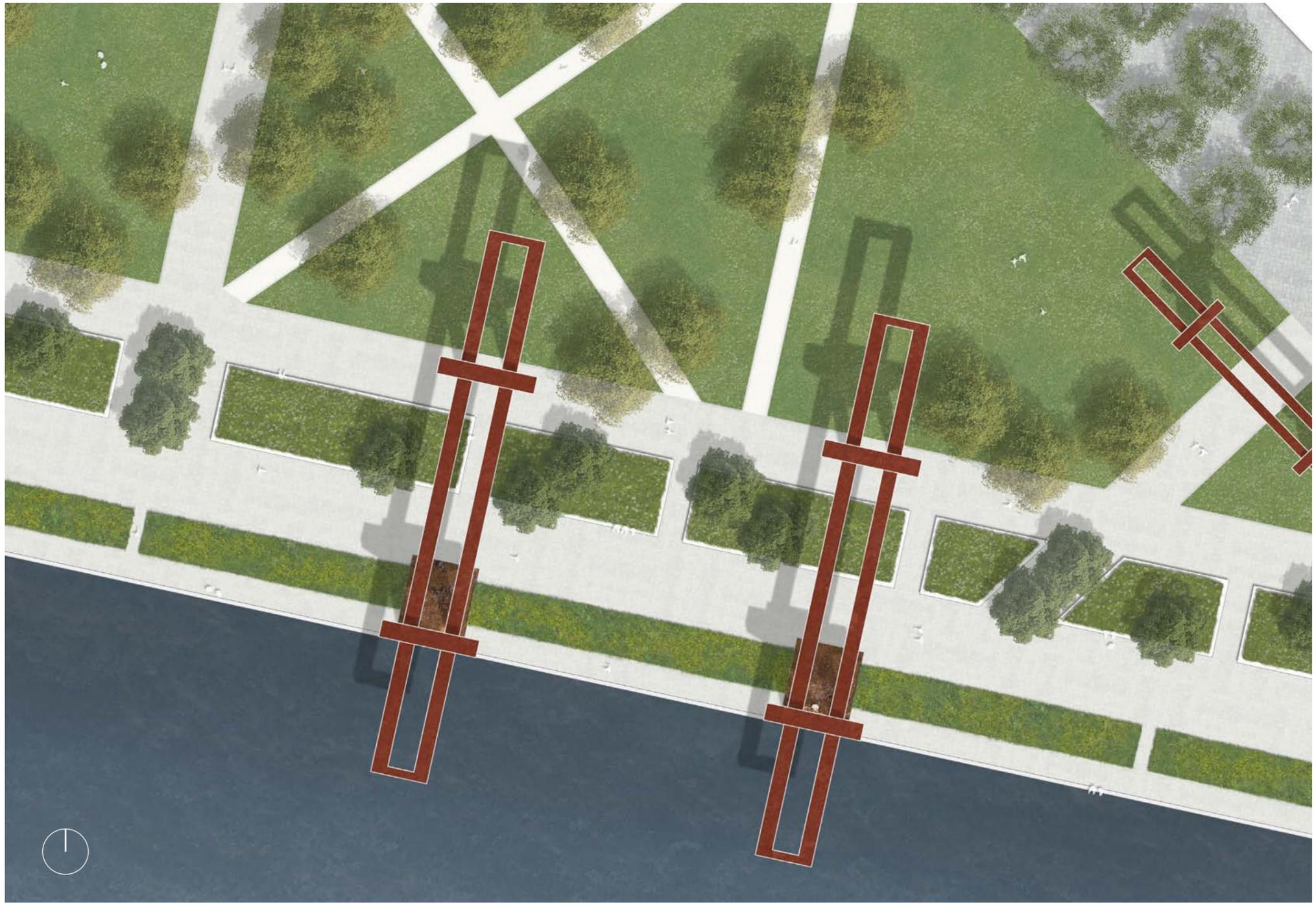
▲ Fig. 152: Local patterns adapted for the design



▲ Fig. 153: Section of detail area 4



▲ Fig. 154: Perspective of detail area 4



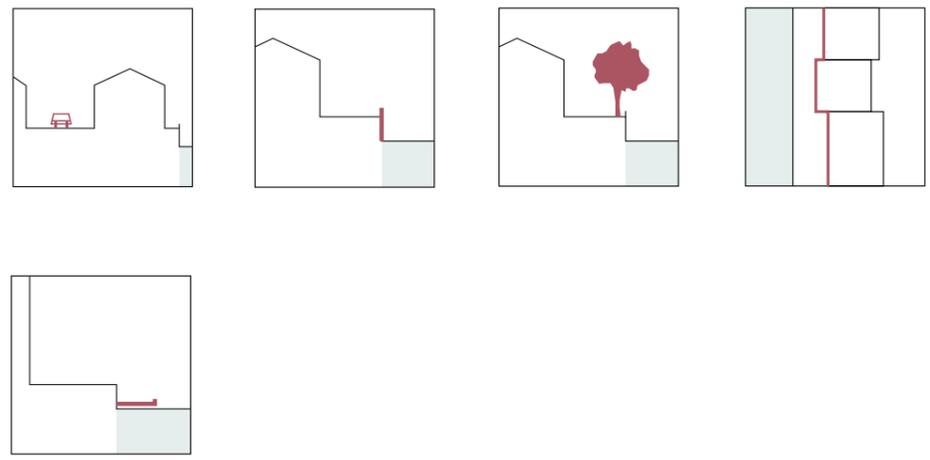
▶ Fig. 155: Plan of detail area 4

DETAIL 5: THE TIP

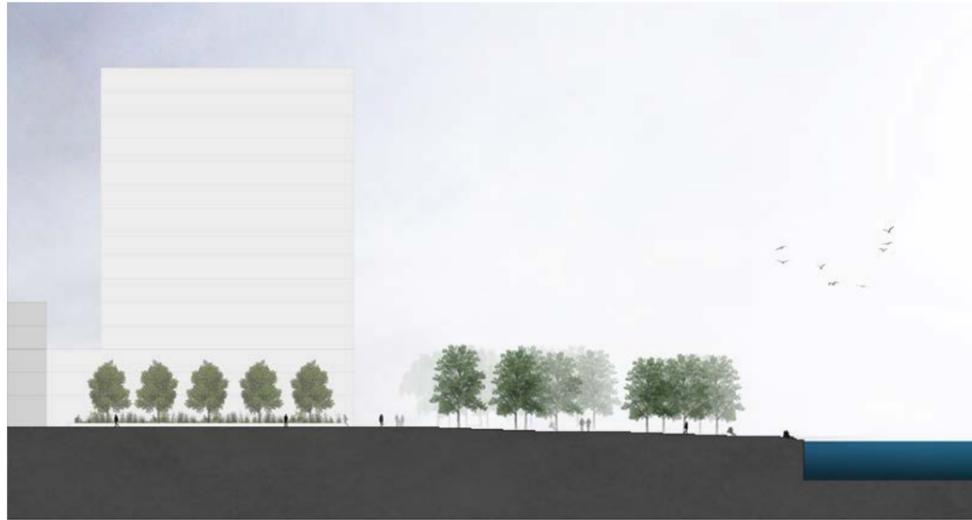
The tip of the project site is a really prominent location since the old and new section of the Grand Canal converge here.

The design admits people to walk down to the water level through the broad steps and enjoy a unique view along the Grand Canal and its high frequency of passing boats, while resting under the trees or sitting in the sun.

A small pavilion surrounded by trees offers some privacy and quietness. Alternatively, it can be a buddhistic shrine where people can spend an few minutes praying.



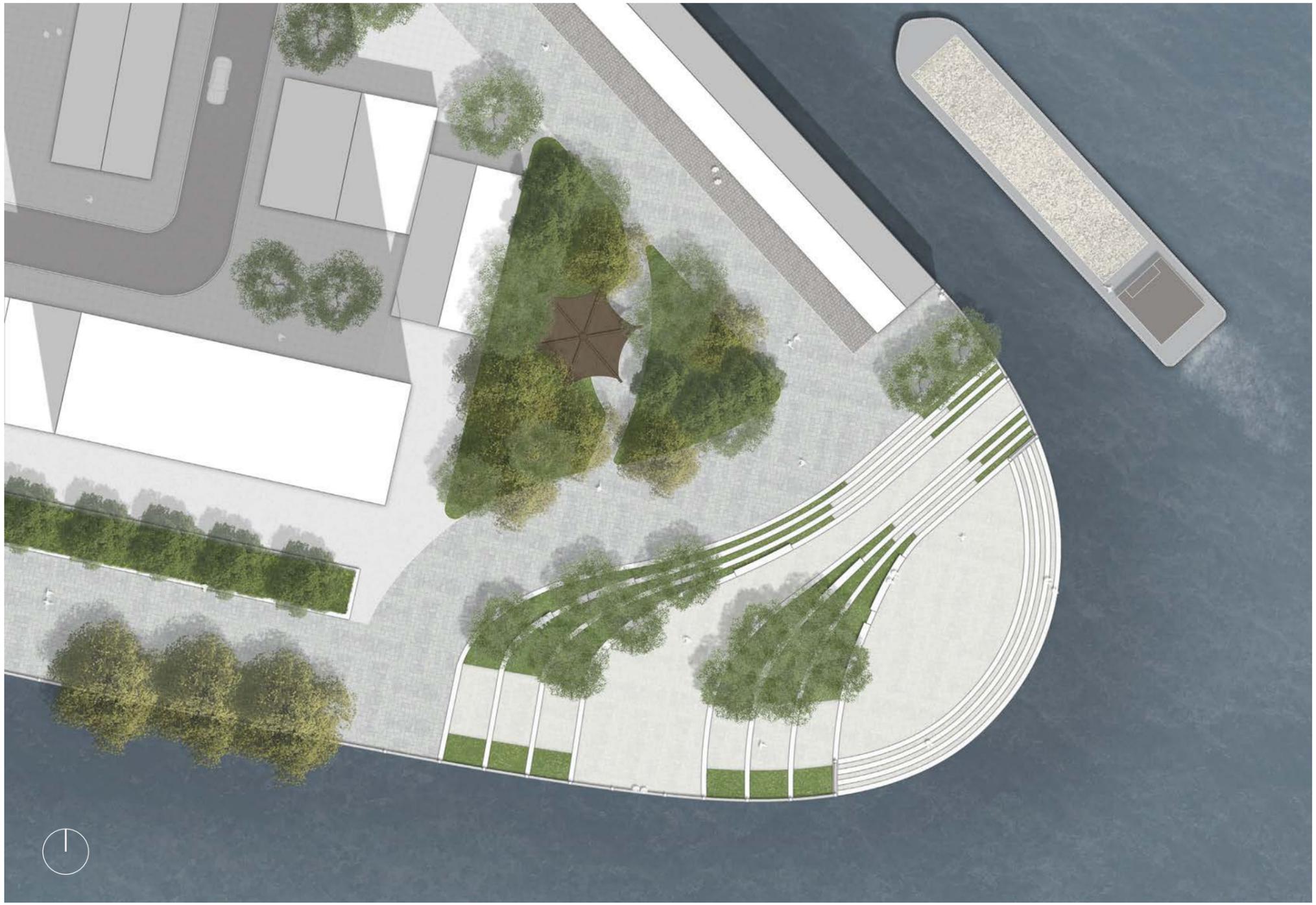
▲ Fig. 156: Local patterns adapted for the design



▲ Fig. 157: Section of detail area 5



▲ Fig. 158: Perspective of detail area 5



▶ Fig. 159: Plan of detail area 5

## TABLE OF FIGURES

All figures except the following were made by the project group.

Fig. 3: Drawing by project group, based on: Hassenpflug, Dieter. 2009; Ipsen, Detlev. 2004;

Huang, Youqin, und Low, Setha M.. 2008; Münch, Barbara. 2004.

Fig. 5: Xi 2012: 31

Fig. 6: Xi 2012: 32

Fig. 7: Xi 2012: 32

Fig. 8: Xi 2012: 32

Fig. 9: Xi 2012: 32

Fig. 11: Author unknown. Accessed on March 3, 2017. [http://www.chuanwenhua.com/upload-file/month\\_1206/201206191001251058.jpg](http://www.chuanwenhua.com/upload-file/month_1206/201206191001251058.jpg)

Fig. 12: Zhuang et al. 1995: 126

Fig. 13: Zhuang et al. 1995: 128

Fig. 14: Zhuang et al. 1995: 129

Fig. 15: Author unkonwn. Accessed on March 3, 2017. <http://s13.sinaimg.cn/middle/4d64c8dcg6642fbd70f0c6t690>

Fig. 16: Author unkonwn. Accessed on March 3, 2017. <http://s15.sinaimg.cn/middle/4d64c8dcg6642fbf5c6de6t690>

Fig. 21: Author unkonwn. Accessed on March 3, 2017. <http://s1.sinaimg.cn/middle/406290f5gb22d39c50a30t690>

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