Den-City

Revitalize Former Industrial Riverbank In Shanghai

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Huangpu River, Source: https://www.flickr.com

INDEX

1. Introduction

1.1 Context 9
1.2 Problem Field & Analysis 16
1.3 Problem Statement 24
1.4 Project Aim 25

2. Methodology Chapter

2.1 Research Question & Method &Outcome 28
2.2 Research Method 30
2.3 Research Framework 32
2.4 Roadmap and Time Planning 24

3. Theory Chapter

3.1 Urban Form 29
3.2 Urban Vitality 40
3.3 Urban Identity 42
3.4 Place Quality 44
3.5 Affordance 46

4. Analytical Chapter

4.1 City scale 52
4.1.1 Urban Form 54
4.1.2 Density Type 58
4.1.3 Activity and Movement 68
4.1.4 Perception and Image 72
4.1.5 Conclusion 76
4.2 Local scale 78
4.2.1 Case Introduction 80
4.2.2 Urban Form 84
4.2.3 Activity and Movement 88
4.2.4 Perception and Image 89
4.2.5 Density Distribution Study 90
4.2.6 Quality of Density Type 92

5. Design Action

5.1 Design action from Fieldwork 96
5.2 Quality Vision with 3 Concepts 98
5.3 Identity Design Action 100
5.4 Network Design Action 102
5.5 Mixed-use Design Action 104

6. Design Site Analysis

6.1 Design location 108
6.2 Shanghai Ambition 112
6.2 Vision with 3 Concepts 115
6.3.1 Identity 115
6.3.2 Network 133
6.3.2 Mixed-use 147

7. Design

7.1 Vision 156
7.2 Neighbourhood Scale Design Evolution 160
7.3 Block Scale Design Evolution 168
7.4 Design Outcome 174
7.5 Quality of Design 178
7.6 Conclusion 194

8. Reflection

Reference 200
Appendix 202

1. INTRODUCTION

Source: Google earth 2019 (edited by author)
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1.1 CONTEXT

1. Shanghai's Development

Shanghai lies in the southern part of the Yangtze river delta. Since the economic reform in 1978, shanghai has experienced rapid growth and development. In the past three decades, Shanghai has been one of the fastest growing cities in the world. Today, Shanghai is growing bigger and bigger, the urbanised land area in 2010 was almost three times that of 1987. The whole Shanghai have almost 6,340.5 square kilometers but half of the land has been occupied for construction. (Figure 1)

The Central Government had issued in the Shanghai master plan for 2035 that, the total land planned for construction shall be controlled within 3, 200 square kilometers (Shanghai master plan for 2035). It means Shanghai will not expand itself, because that Shanghai will not have more land to develop. In the next 20 years, Shanghai will go through a turning point in its development path and enter the stage of inventory planning. At this stage, densification will be act as a main role in the way to achieve development of Shanghai.

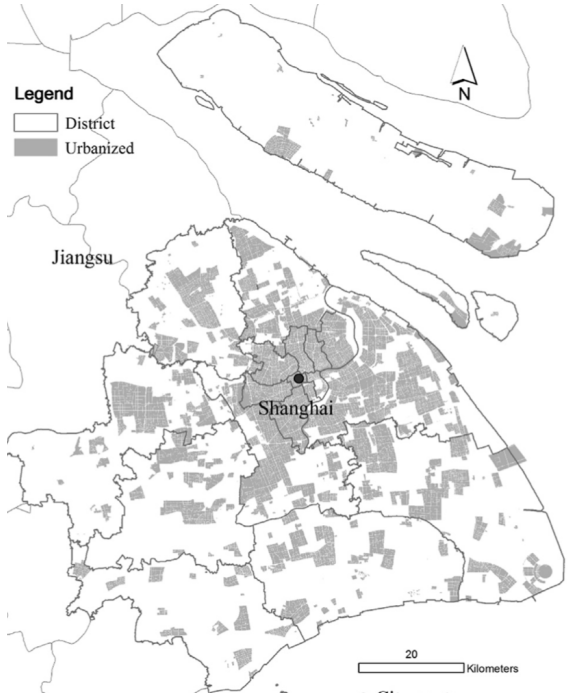
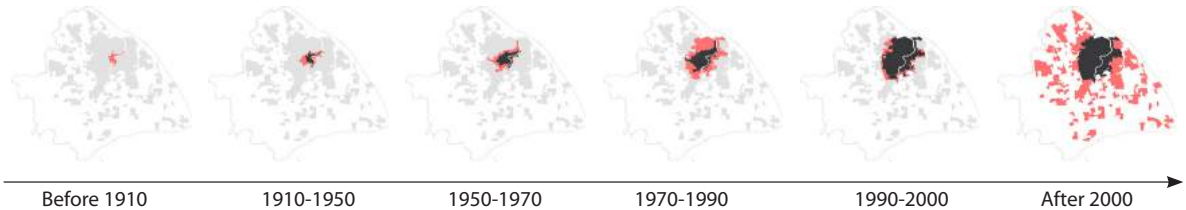


Figure 1: The map of Shanghai, China (Source: Qiu, et al., 2015)

Development of Built Up Land



Increased Land
Land
Current Land

1.1 CONTEXT

2. Vision 2035: Reduce the inefficient use of the post-industrial areas

As an internationally important industrial and commercial city, the industrial land area in Shanghai occupied 18.51% of the total construction area, up to 361.63km^2, which is nearly four times the world's metropolitan New York and London(Zhang, 2015).

At the same time, due to the demand for economic growth, many industrial areas in the city center have moved to the city fringe. These decaying post-industrial areas are always in desperate need of renewal. (Figure 2)

Now, Shanghai is at the end of the rapid urban expansion. To cope with the challenges of insufficient construction land, continuous population growth, and environmental resource constraints, Shanghai will actively explore the transformation path of sustainable development of high-density mega cities.

According to the requirements of the 2035 vision, optimize the use of land, actively promote the subsequent development of land stock, reduce the inefficient use of the post-industrial areas.

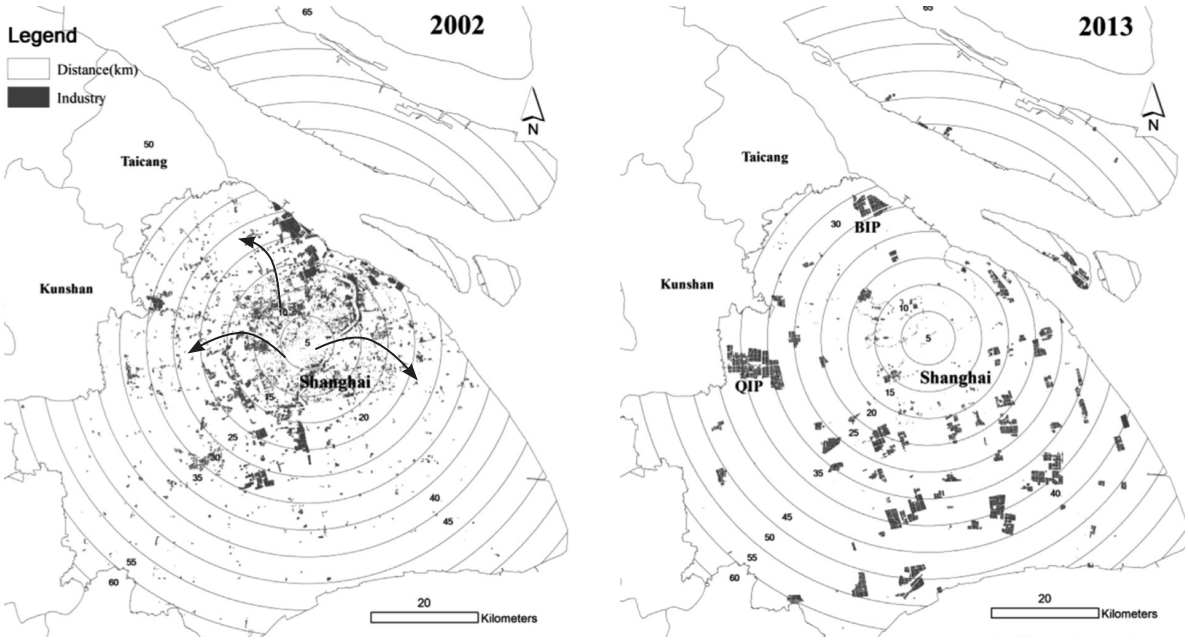


Figure 2: Spatial distribution of industrial firms in Shanghai (year 2002 and 2013) (Source: Qiu et al., 2015)

3. Most of the city's post-industrial space concentrated along the Huangpu River

The Huangpu River, the main river flowing through the urban area, was once a gathering place for industrial production activities. It witnessed the history of urban industrial development (Zhang, 2013).

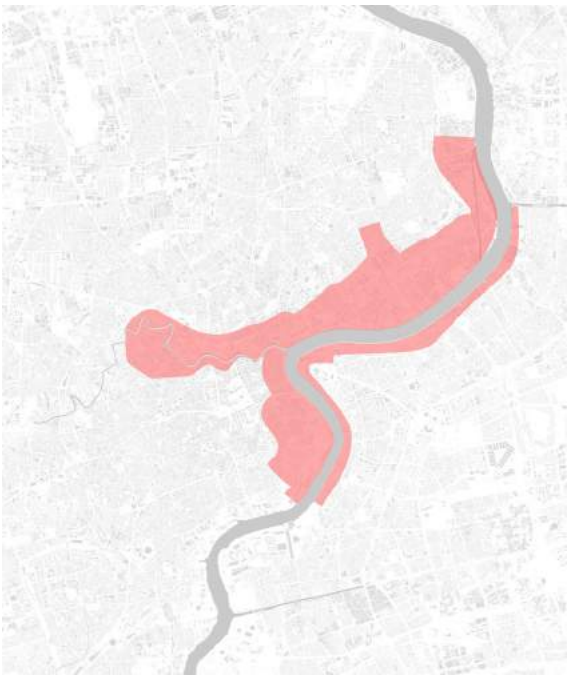
In the new century, the dense industrial warehouses along the Huangpu river have been moved away from the city center. Soon later, the waterfront becomes post-industrial land that needs to be transformed. A large number of global cities, including Sydney, London, and New York, are renewing their waterfront (Kaya, 2017). Renovate and reuse abandoned industrial sites, docks and warehouses, and rebuild waterfront walkways, public spaces, green belts, parks, and cultural landmarks. Similar to other global cities, Shanghai put the priority on the urban renewal project on both sides of the Huangpu River. In 1990, the State Council declared Shanghai Pudong as a new special economic zone. With the east bank's construction, the Huangpu river became the geographical center of Shanghai, which changed the asymmetric development pattern of Pudong and Puxi.

Both sides of the Huangpu river have become the focus of urban redevelopment. Continuous investment has triggered an unprecedented construction boom. And soon, densification is shown along both sides of the riverbank. A large number of high-rise buildings and new areas have emerged with the clean-up of shanty towns and industrial facilities. What is the quality of the densifying riverfront? The quality of density is the most important characteristic of the urban built environment. So when the author wants to study the relationship between density and quality, these Huangpu River riverfront become the research areas.

Huangpu riverside once a gathering place for industrial production activities, Source: https://xueqiu.com/3100686462/130641356

1.1 CONTEXT

Huangpu Riverfront Historical Development



1843 - 1949

Under the national and foreign trade, Urban space gradually developed along Huangpu river.

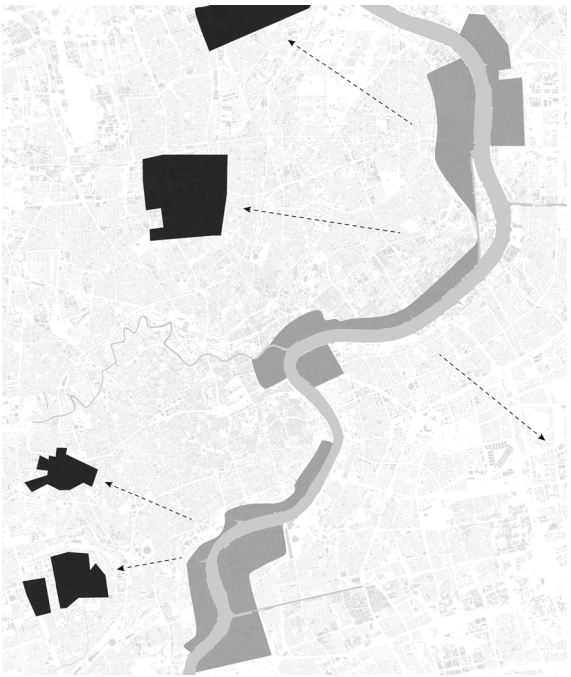
1949 - 1990

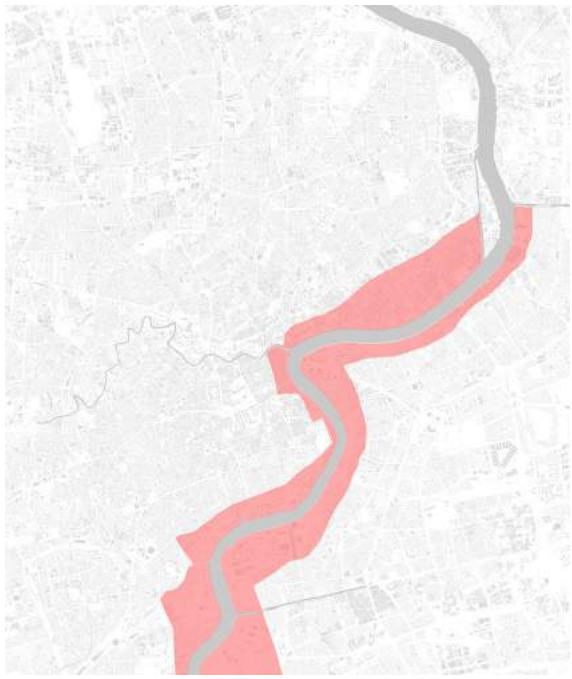
Rapid expansion of riverfront industrial area

Commerce&facility

Industry

Heavy industry



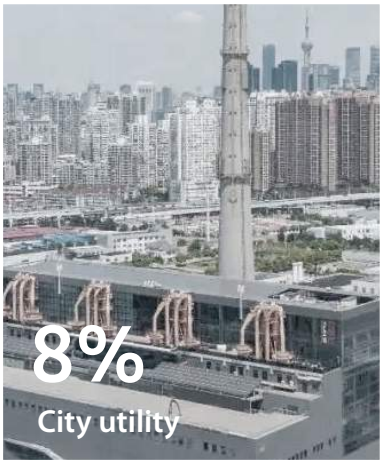


1990 -2002

Heavy industry moved to the suburban, the Huang-pu riverfront become abandoned

2002 - Now

Urban regeneration along riverfront the mordern urban functions



Type of hitorical industrial building in riverfront. Source: http://www.logon-architecture.com/shanghai-huangpu-river-industrial-legacy/

1.1 CONTEXT

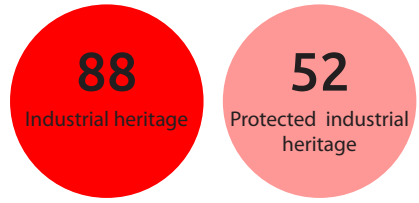
The remaining industrial buildings along Huangpu River

Despite the urban transformations, numerous buildings from Shanghai's industrial history still exists and are protected by the government along the river.

Along the core section of Huangpu riverfront, there are many industrial heritage buildings. Whereby 52 are listed as protected industrial heritage buildings by the city government (Shanghai Planning and Land Resources Bureau, 2015). There are also 88 riverside industrial buildings have not yet been classified as formal cultural relics, but are recognized as cultural relics because of their historical and architectural significance (Shanghai Municipal Administration of Cultural Heritage, 2009). During the regeneration, Some of the urban industrial building are maintained quite well, while some of them are turned down.

Currently, 90% of the traditional industrial buildings along the Huangpu River were built before 1937. However, due to different historical stages of Shanghai, these buildings are also with diverse characters.

In this project, the industrial elements are tangible things to reminds people the history and have values to create the identity of the place. It is necessary to understand how these elements affect people's perception and image of the riverfront.

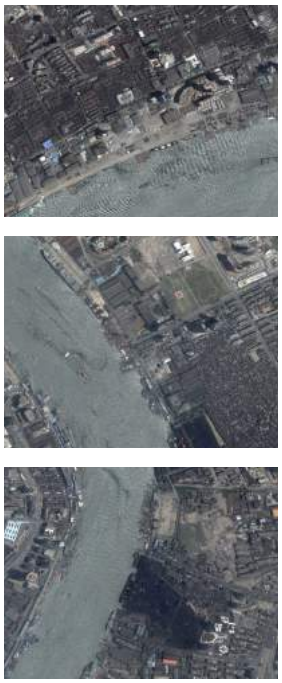


1.2 PROBLEM FIELD & ANALYSIS

Pursuit high density

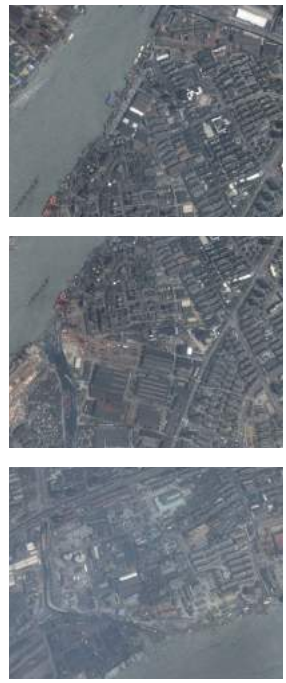
Shanghai has realized that increasing the density of buildings in the riverfront district can become a new growth point of the Shanghai economy. In the continuous retreat and temporary encirclement of the old city, the new Central Business District (CBD), high-market-level neighborhoods, and financial and commercial centers have been developed on both sides of the Huangpu river. Huangpu river began to enter the era of real estate.Comparing the map in 2000 and the map in 2020, we can see a large number of new buildings.

Take real estate (both commercial and residential) as an example. According to an incomplete statistics, there are more than 80 projects appeared along the Huangpu River since 1996. Besides There are also countless projects under construction and planning. The developer make use of the location strength to sell the property at a higher price.



Googlemap, 2000

Googlemap, 2020



Googlemap, 2000

Googlemap, 2020

But in this pursuit of high density to sell more prices, the pursuit of efficiency has accelerated the development of the project. As a result, the developers have no time to learn from successful international projects substantially, reflect on the previous realized projects, conduct research on the undertaken projects, or systematically build local designers capacity (Ge &Hausleitner, 2017).

They just established homogeneous forms to achieve high FSI and complete the green space rate index, while ignoring the quality of the space and their identity. This redevelopments have not only resulted in tremendous loss of old urban tissue, but consequently also loss of social structures (Cai, 2018).

Market-oriented real estate cause a generic city
(Source: www.flickr.com)

Unused green
(Source: http://m.jfdaily.com/news/detail?id=132320

Huangpu riverfront block

1. Linong neighbourhood: FSI=1.5

1. The bund compact block: FSI=3.7

3. Industry land: FSI=0.6

4. Open space with gallery: FSI=0.15

5. Industry land: FSI=1.53

6. Slab type neighbourhood: FSI=1.9

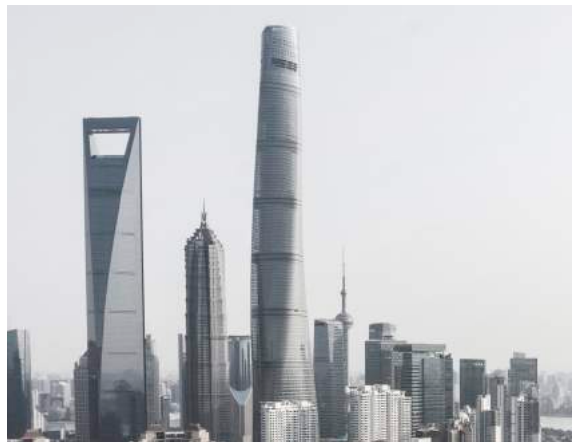
7. Open space with gallery: FSI=0.2

8. High-rise office building: FSI=2.9

9. High-rise residential neighbourhood: FSI=3.4

10.High-rise residential neighbourhood: FSI=2.6

11. High-rise office building: FSI=2.8



12. High-rise office building: FSI=19.5

1. Linong neighbourhood: FSI=1.5

Quality: Active, spontaneous formed shared streets

2. Slab type neighbourhood: FSI=1.9

Quality: Active ground floor activity street

3. High-rise residential neighbourhood: FSI= 2.6

Quality: Large block surrounded by walls

1.2 PROBLEM FIELD & ANALYSIS

Density and Quality

Density is widely discussed in urban theory. Many scholars have proposed the relationship between density and space quality. Densities can be too low where they fail to generate vitality and are too high to produce standardized buildings, regimented layouts, and large development footprints(Montgomery, 1998). When we discuss how to make the most of the floor space to accommodate the growing population during the rapid development period, we only focus on quantity rather than quality.

This has led to a situation happened in Shanghai where some low-density areas are more active and lively, while high-density areas are quiet. These phenomena allow us to observe the spatial quality problems of riverfront renewal: homogenous typology, single functional blocks, inhuman blocks, and lack of historical disconnection.

Spatial quality problems

Single function

During that quickly developed time, The real estate led development model always show a single function in the block scale. That is because of a system of modern planning regulations in China. Under the Chinese planning regulations (The Standing Committee of the NPC, 2007), that each plot should be designated with single land use type and the acceptable range of Floor Area Ratio, building height and etc. that pays more attention to the capacity and economic benefits of development projects (Ge &Hausleitner, 2017).

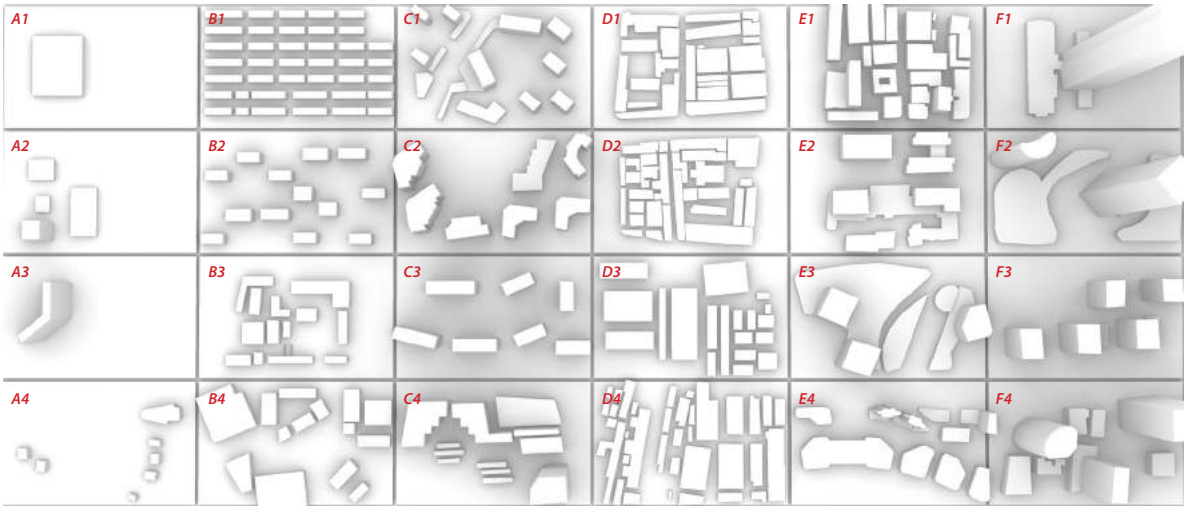
Thus, it is easy to see that within a large block area defined and controlled, there is only one residential, commercial, or office function, and there is no interaction between these superblocks. Such large blocks are widely criticized for the fragmentation of land use and the destruction of urban vitality(Ge &Hausleitner, 2017).

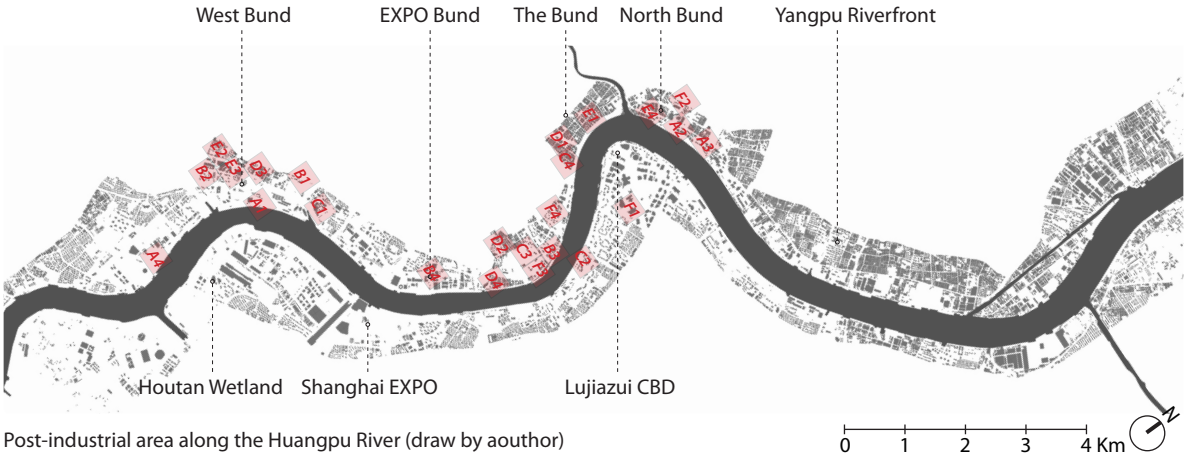
Besides, from the perspective of the urban scale, the overall function of the riverside area is still insufficient. Although over time, people have recognized the value and continuity of local identity in the process of urban renewal. The government slowly protects some of the industrial buildings that witness Shanghai's old industrial memory. But most of these factories are still designed for cultural use. More diverse programs like education, technology, and service are still insufficient.

Inhuman blocks and low accessibility

The post-industrial waterfront was once a large enclosed factory with winding alleys, and the roads from the city to the waterfront are often dead-end. Therefore, the longitudinal connection between the city and the waterside is very weak, and there is no transversal traffic road.

After the regeneration, The inhuman scale of bigblock still did not attract people. The accessibility of vehicles and public transport remains low. Walking experience is also unpleasant.





Post-industrial area along the Huangpu River (draw by aouthor)

1.2 PROBLEM FIELD & ANALYSIS

Quality of Density

Recent years, urban development in China is facing a turning point, from the low-quality expansion to focus on the quality and vitality of urban development, and the efficient use of land.

As the Shanghai Riverside becomes increasingly dense and will continue to develop, our urban designers must rethink the spatial qualities created during the densification process. We need to consider how to make our urban environment more livable, promote a walking experience and a more active lifestyle.

Today, in China's density research, many are only concerned with the number of FAR (floor area ratio). Density, when we understood it merely as the number of inhabitants or dwellings per surface unit, is a quantitative measurement that "poorly reflects the spatial properties of an urban area" (Berghauser Pont & Haupt, 2010). In that case, we could find a specific density allows for multiple spatial configurations, but the spatial quality is quite different.

Many researches have studied how to shape the urban vitality of riverside space through abundant pulic space activities in China. However, few people have pay attention to density opportunities. Therefore, the author hopes to bridge this gap and explore the relationship between density and urban quality.

1.3 PROBLEM STATEMENT

Density and quality are two aspects that need to be considered in the current urban environment of Shanghai. In the process of rapid urban development and transformation, densification has brought many urban problems:

1. The rapid construction of homogeneous building types leads to a generic city.
2. China's planning laws have created many single-function communities which decrease the people's interact and urban vitality.
3. The sparse street network leads to in-human blocks and poor accessibility from the inner city to the riverside.
4. Lack of identity and the heritage

The urban planning of Shanghai has entered the construction stage of the stock area, and the urban environmental quality has become an important proposition. It appears that the built environment, public space, and building, can improve the perception of density and quality. Improving urban vitality and identity through reasonable urban density is a gap that China's environment needs to explore.

1.4 PROJECT AIM

In the situation of lacking space to develop, this project aims to explore how we can make use of the inventory post-industrial area along the Huangpu river(Shanghai). Furthermore, at the same time, To improve the urban vitality and design with the identity.

Based on the current development situation, this project will give in-depth consideration of how to shape the good quality riverfront space, To be more specific:

1. This project will analyze the urban tissue of the core riverfront section to understand the space's role and the densification potential.
2. Optimize urban density and explore how to design and plan diverse spatial forms and mixed activities to shape vibrant urban space.
3. Identify and design with the riverfront identity.
4. Link the riverfront to the other part of the urban tissue.

2. METHODOLOGY CHAPTER

2.1 RESEARCH QUESTION & METHOD & OUTCOME

Main Research Question

How to improve the place quality (urban vitality and identity) in the post-industrial riverfront along the Shanghai Huangpu River by understanding and modifying urban form during the densification and intensification process?

Sub Research Question

Concept

What is the urban vitality and identity means?

How to measure on the urban form?
How to anaylse the human behavior?

How can urban form link to urban quality(urban vitality and identity)?

Analyse

How is the urban form in the shanghai riverfront post-industrial area?

How do people interact with the environment?

What is urban vitality&identity in different riverfront space? (Built-up area and open space)

Design

How to densify in a mixed-use neighborhood along the river to archive the urban vitality& identity?

How can the design be evaluated regarding to the quality?

Method	Outcome
Literature review	Define the vitality and identity performance
Literature review	A set of measurement to quantify urban morphology and learn human behavior
Literature review	
Spatial analyse, Quantified description of urban form	A series of mapping and drawings show the urban form.
Case study, Human behaviour mapping	Pattern language, Human behavior study(attractors, people flow, interaction on site research
Field work, Talk with people	Identity map & urban vitality map
Scenario design, Research by design	General design strategy and a specific design test
Assessment	Selected a series of indicators for urban vitality and evaluate the design

2.2 RESEARCH METHOD

The main research question is divided into four parts of sub-research questions. This paragraph explains how and which methods are used in each part.

Theoretical Approach

The first part will focus on the theoretical approach: literature review. In this section, the conceptual framework will attempt to establish a comprehensive understanding of the relationship between urban form and the quality of place (urban vitality and identity).

Spatial Analysis Approach

The second part will be done through spatial analysis. Firstly, The measurements on urban morphology from theory are used to compare the case project on both sides of the Huangpu River. It gives us a preliminary concept of density and set the density scenario for the project. Secondly, What urban vitality and identity means in practice will explore through field investigation, literature review, and comparative study. It will lead to a matrix of urban vitality and identity factors later. Based on the above two parts, a design framework will be elaborated. Besides, spatial analysis and fieldwork on the project site help us understand the current situation of the site, and what the urban vitality and identity means for the site. This analysis will allow us to understand the potential of the site, which will be elaborated into the specific design vision of the site.

Design Guided Approach

The third part will focus on the design method of the project and finally answer the research questions. The design will include scenario urban design and design test. It will be the final result of this graduation project.

Assessment Approach

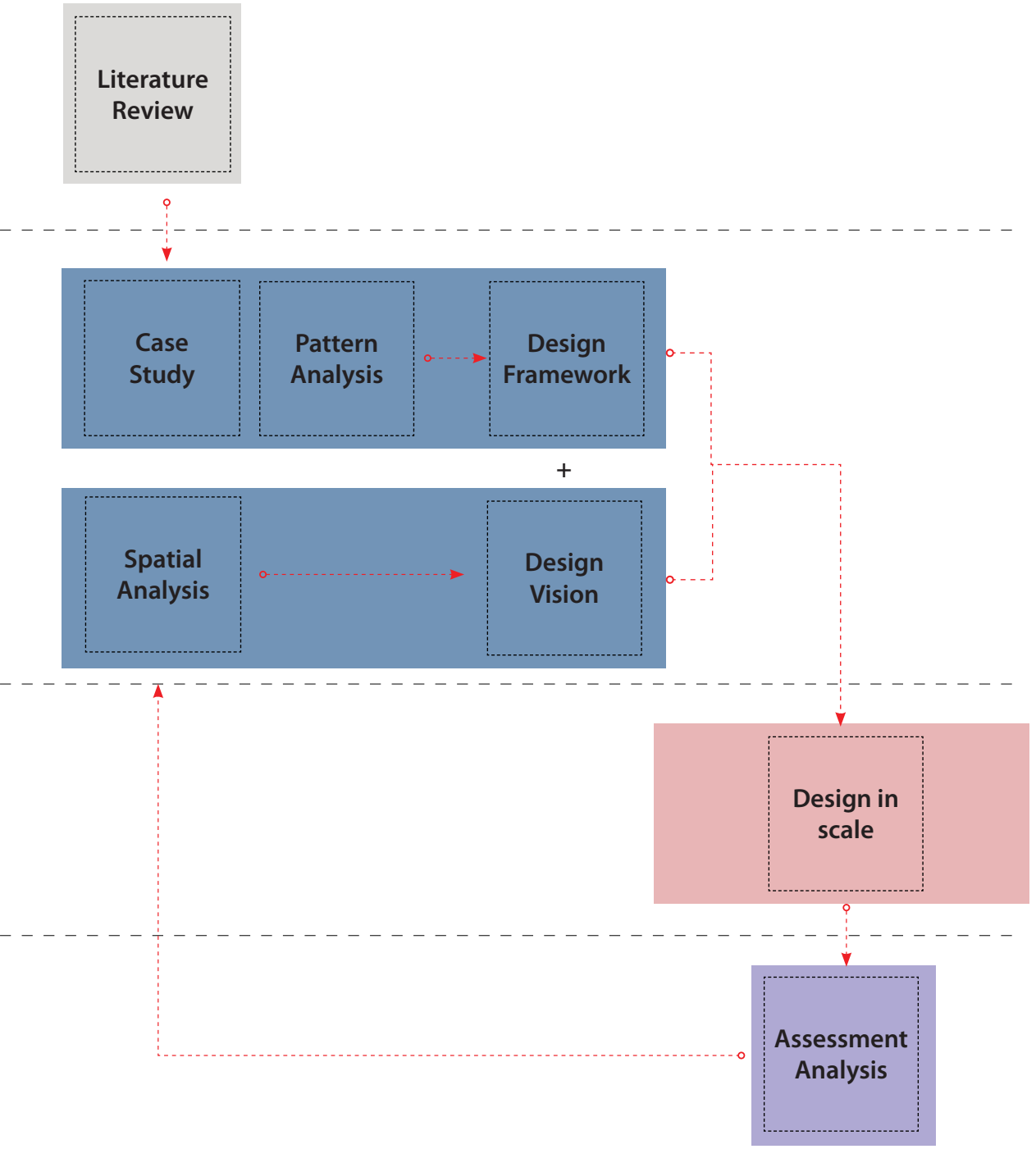
At the end of the study, a set of indicators will be used to reflect on the design results.

Theoretical Approach

Spatial Analysis Approach

Design Guided Approach

Assessment Approach


Literature Review
Case Study
Pattern Analysis
Design Framework
+
Spatial Analysis
Design Vision
Design in scale
Assessment Analysis

2.3 RESEARCH FRAMEWORK

Location

Research from scale

City scale — Neighbourhood Scale — Local Scale

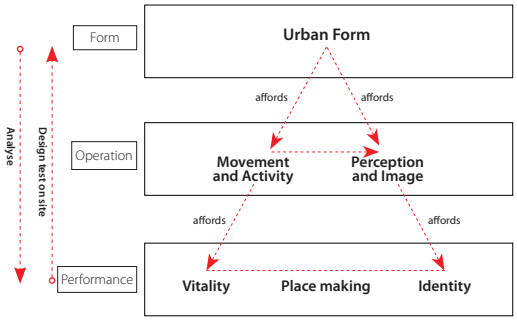
Problem Analysis

- A generic city.
- Single-function communities.
- Inhuman blocks and poor Accessibility.
- Lack of urban vitality and identity

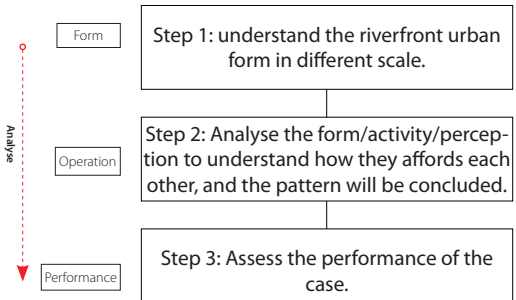
Research Question

How to improve the **place quality**(urban vitality and identity)in the riverfront post-industrial area along the Shanghai Huangpu River **by understanding and modifying urban form** during the **densification and intensification process**?

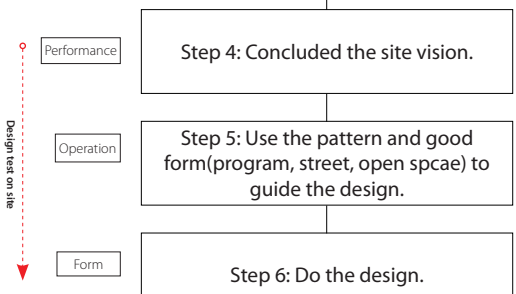
Theoretical Framework



Analysis

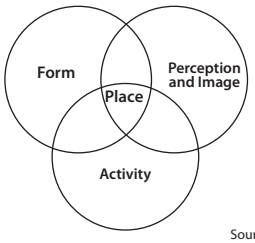


Design

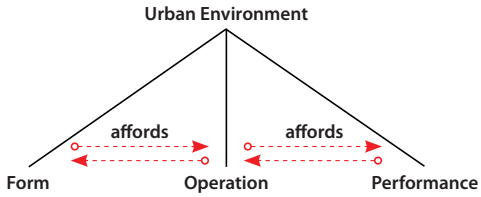


Assessment

Evaluate after design



Source: Montgomery (1998).

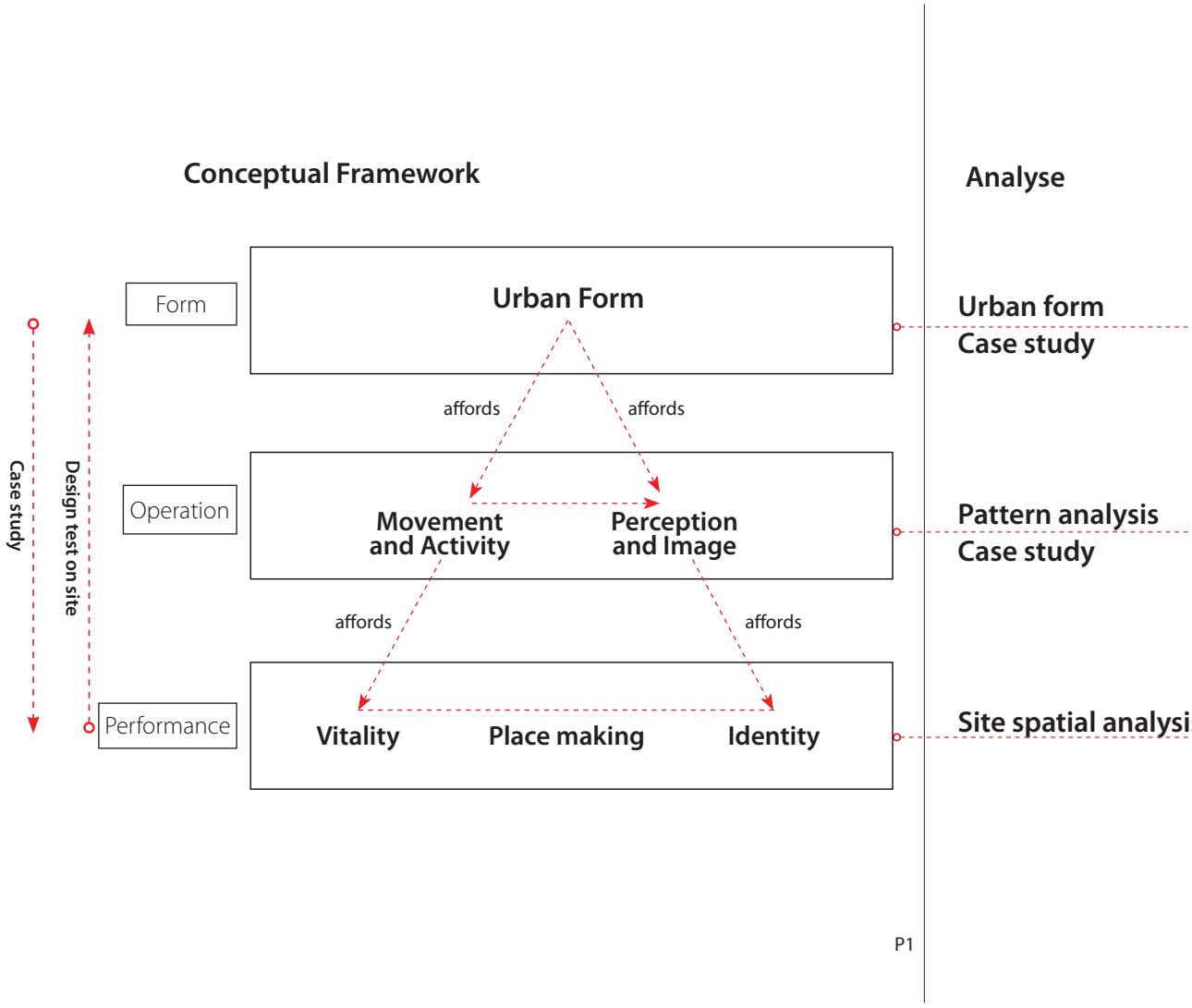


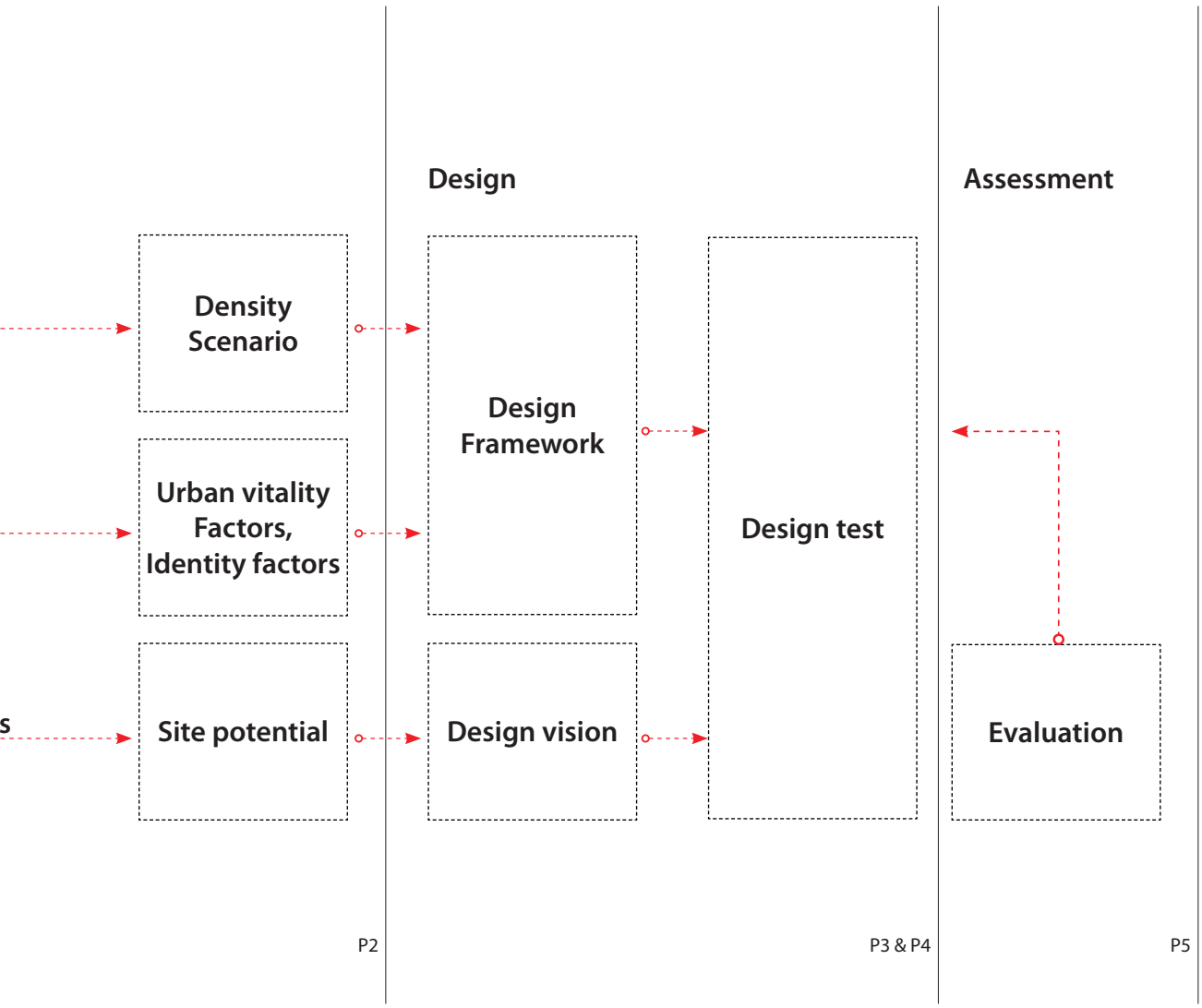
Source: Adapted diagramm from Guney (2008)

Big scale → Micro scale

	Riverfront scale	Neighbourhood scale (10-15 mins walk)	Eye level
Urban Form	- Density type - FSI, GSI, Block size - Street network	- Street network(with nearby urban fabric),(street type) - Street network accessibility - Block morphology	- Characteristic of building (fascade) - Street profile
Movement and Activities	- Public transport - Land use - Distribution of riverfront attractors - Type of movement (Demographic composition)	- Program proportion - Movement for diverse people (residences, workers, students, tourists) - public semi-)	- Types of activities for diverse people
+ Perception and image	- Riverfront heritage distribution - Perceived physical elements (Image map)	- Image map for memory aspect (Historical heritage's role) - Image map for social aspect - Image map for sensory aspect	- local identity in photos

2.4 ROADMAP AND TIME PLANNING




Design
Assessment
Density Scenario
Urban vitality Factors, Identity factors
Site potential
Design Framework
Design vision
Design test
Evaluation
P2
P3 & P4
P5

3. THEORY CHAPTER

1.Urban Form and Density

Density can play a very relevant role in determining to which extent these physical aspects are present in urban environments. A theoretical background on the concept of density is also required to understand the urban form.

2. Place Quality

Place quality is important for our designers to pay attention. It is the criterion that determines whether our space is good or bad. It is related to many aspects

3. Urban Vitality

The question of what is good form and what makes or does not make lively urban life is different in different situations. Scholars, planners, and researchers have dedicated to the vitality over the past decades.

4. Urban Identity

Urban identity is the whole qualifications, which allows urban areas to be the city and distinct it from other cities. The image is not only a physical or visual element, but is also a mental analysis of all the components of the city, which reflects the way we use and access our cities.

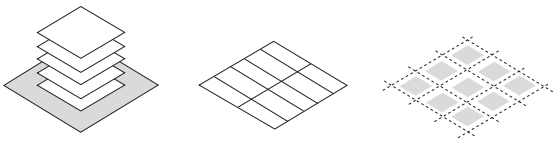
5. Affordance

To bridge the gap between urban form and place quality, the author use the theory from Alexander Tzonis(1992) to understand how does the urban form organization contribute to the urban vitality and identity. The word "affordance" can help to combine the concept mentioned above

3.1 URBAN FORM

Urban morphology

The term morphology was first introduced by Goethe, who pointed out that "morphology is a science dealing with the very essences of forms" (Bullock, Stallybrass and Trombley, 1988). The research objects are actual physical form and its structure (Duan, 2008). Today, the urban morphology is used in the built environment and considered as the science of urban form and structure(Cai, 2018). "In urban morphology study, Urban form is often defined by three fundamental physical elements: buildings and their related open spaces, plots or lots, and their streets." Moudon(1997, 7) first described, "The smallest cell in the morphological analysis is the combination of the individual parcel and its buildings and open space." Therefore, the later morphology study all focused on these elements.



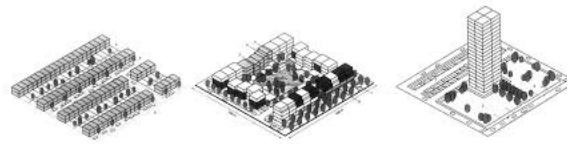
Three basic elements of urban space

There are a lot of different schools of urban morphology studies to learn about our built environment. Qualitative schools focus on the historico-geographical approach of MRG Conzen and the typological process approach based on the work of Muratori (Oliveira, 2016). Kropf (2009) claims, "They identify types as cultural entities rooted in, and specific to, the local process of cultural development". Quantitative schools such as the work of "the grid as generator" (Martin and March,1972), "Spacematrix"(Berghauser Pont and Haupt, 2010) and "Space Syntax" (Hillier, 1996). Compare the two types of studies, as noted, "The historic-qualitative study brings us an understanding of how urban areas have evolved, but not support more precise comparisons or tie such descriptions to their performance." Therefore, to describe the type of today's complex and diverse urban environment, quantitative methods can play a more critical role.

Density

Spacematrix is a quantitative research tool that builds up the relation between urban morphological types and density, which is understood as a multivariable phenomenon. It includes the following variables: Floor Space Index(FSI), Ground Space Index(GSI), Open Space Ratio(OSR), and Layer(L). FSI expresses the intensity of an area. The GSI express the compactness. OSR helps to understand the openness and the pressures on the non-built space. Meanwhile, L expresses the average number of the floor in the area.

Based on these variables, we can understand that the same FSI block can have different sizes of open Spaces and building heights. This allows us to quantify the spatial environment, which is a way of relating density to environmental quality.



Three areas with 75dwellings per hectare(Fernandez Per & Mozas 2004:206-207)

3.2 URBAN VITALITY

Urban vitality in literature

Scholars, planners, and researchers have dedicated to the urban vitality over the past decades. However, the concept of urban vitality has not been clarified yet. Urban vitality is an adjective that is often applied to describe good urban planning or design. It is always a vision that we would like to archive. Thus, Zhou (2012) also described that "Urbanity, urban quality, urban liveliness, and urban life all contain a similar meaning to urban vitality."

Jane Jacobs(1961) is the head pioneer for urban vitality. She proposed that urban vitality requires successful street life, which particularly associated with safety and walkability. "An intricate sidewalk ballet" of diverse people walking around during the day and night boosts urban vitality. Through her observation, the conclusion is that the place becomes vital and lively when the urban fabric includes many urban planning principles, including small blocks, mixed-use program, old buildings, and development intensity. Influenced by Jane Jacobs (1961), Montgomery (1998) made a more systemic theory that related the urban vitality to the urban design. He found that "vitality is what distinguishes successful urban areas and others."

"It refers to the numbers of people in and around the street (pedestrian flows) across different times of the day and night, the uptake of facilities, the number of cultural events and celebrations over the year, the presence of active street life, and generally the extent to which a place feels alive or lively."(Montgomery,1998)

Cullen (1961) emphasized on the physical design. He proposed a set of spatial aspects that are considered essential to understanding a townscape, such as the way the building open to space, the entrance, the vistas, decorations and features, and the landmarks. While talking about activities, Gehl (2010) divided it into three categories, functional activities, social activities, and optional activities. How the built environment supports these activities determines in a great impact on the urban vitality.

Based on the definitions stated above, As a conclusion, Mainstream like Jacobs (1961), Montgomery (1998), Cullen (1971), and Gehl (1996) hold the opinion that urban vitality is mainly based on life in the streets and the various activity occurs between buildings and spaces. Their ideas focus more on activities, people, images, and uses. This vision requires us to understand human behavior on the street and how they interact with the built environment.

On the other hand, Lynch (1987) defines "vitality as the degree to which the individual can acquire his/her nutrition, safety and ergonomic needs from the environment; above all his/her survival"(Işiklar, 2017). It shows that urban vitality is not all the same. Different people have their own needs, which turn out to become different types of vital environments from varied people's perspectives. There are two main clusters of physical communities.

Method to analyse activity

In previous studies, numerous scholars have attempted to measure activity through empirical observations and surveys to understand humans interacted with their built environment. A remarkable example is what Jan Gehl(1996) did in several city centers across the world. His work combined the qualitative evaluation and quantitative measurements of the variation of the use of public space over time, such as where people walk by, where they would like to choose to sit, stand or have a talk. Whyte (2001) also observed that the sun, trees, and water have the capacity to attract people towards public spaces in different ways. At that time, the collected data is limited and time-consuming, and the work to evaluate these principles are always on small scales. In recent research, more and more automatically-generated data have been employed to understand human users interact with urban space. By applying a computational way to the concept of urban vitality, researches like Sulis et al. (2018) used an extensive data set sourced from social networks to calculate urban diversity as the variations of human dynamics in places.

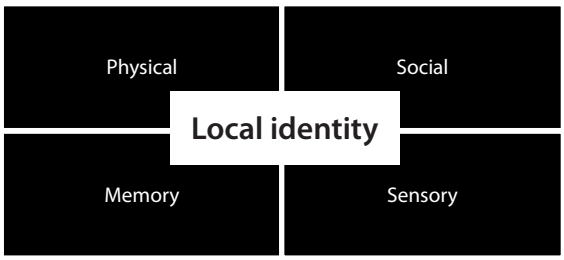
Jan Gehl(1996)

3.3 URBAN IDENTITY

Urban identity in literature

architecture and urban square. In that case, we have to reflect on what identity is. In this project, the former industrial area in Shanghai has a strong historical and industrial character identity. In the contemporary age, the new urban identity may be defined by other elements, like museums, landmarks, high-rise buildings. This project aims to develop an identical spatial language to achieve the city with its own identity.

Relph (1976) defined place as an entity that gained its meaning through its historical continuity, unique character, and opportunity to rest. According to many Dredge and Jenkins(2003), The concept of identity could be identified with different physical scales, from national to regional to urban and local identity. Well, for us, local identity is the scale which mainly focuses on urban parts and neighboring settlement. Furthermore, focus on people involved in the narrative scale of the area. (Y. Shao, 2014) The elements of the identity are not only the physical appearance of the venue but also sensory experiences such as sound and smell (Manley and Guice, 1998). According to Shao(2014), the local identity comprises four aspects: the physical, social, sensory, and memory.



Source: Aspects of local identity(Y. Shao, 2014)

Method: image map

In the 1960s, Kevin Lynch introduced his idea about the image of cities and categorized the city into five elements, the path, node, district, landmark, and edge. From his theory, we can perceive the city in a more rational way.

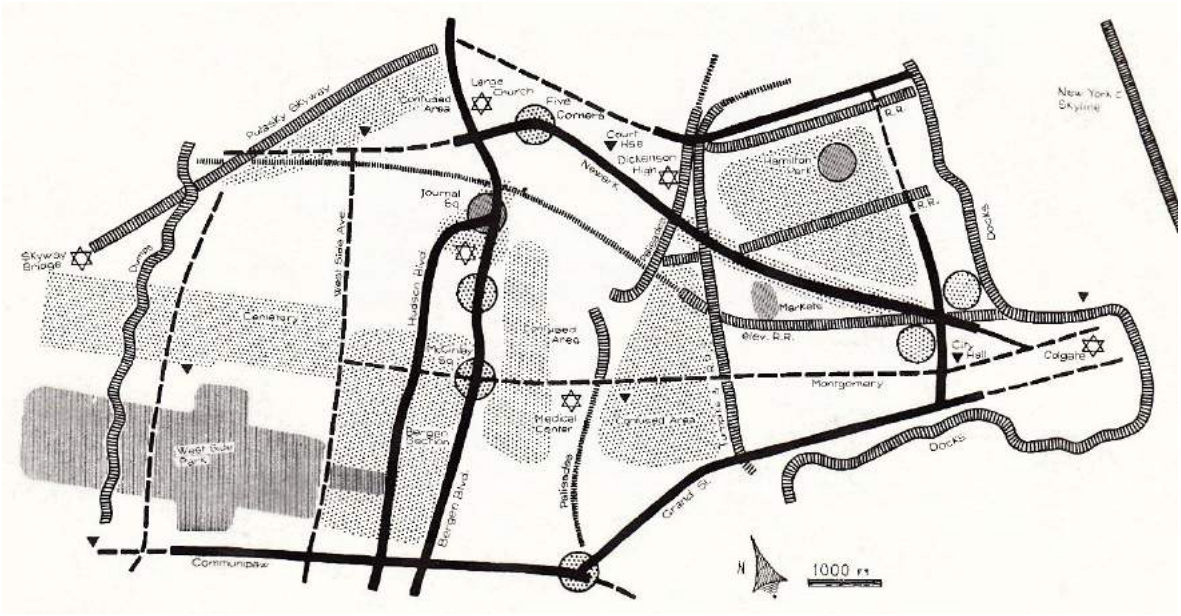
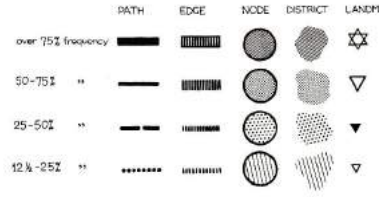


Image Map of The City (Kevin Lynch,1960)

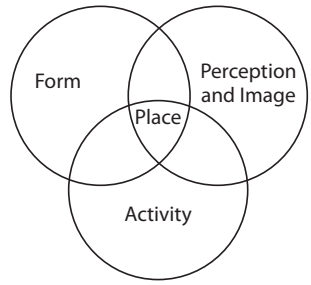


3.4 PLACE QUALITY

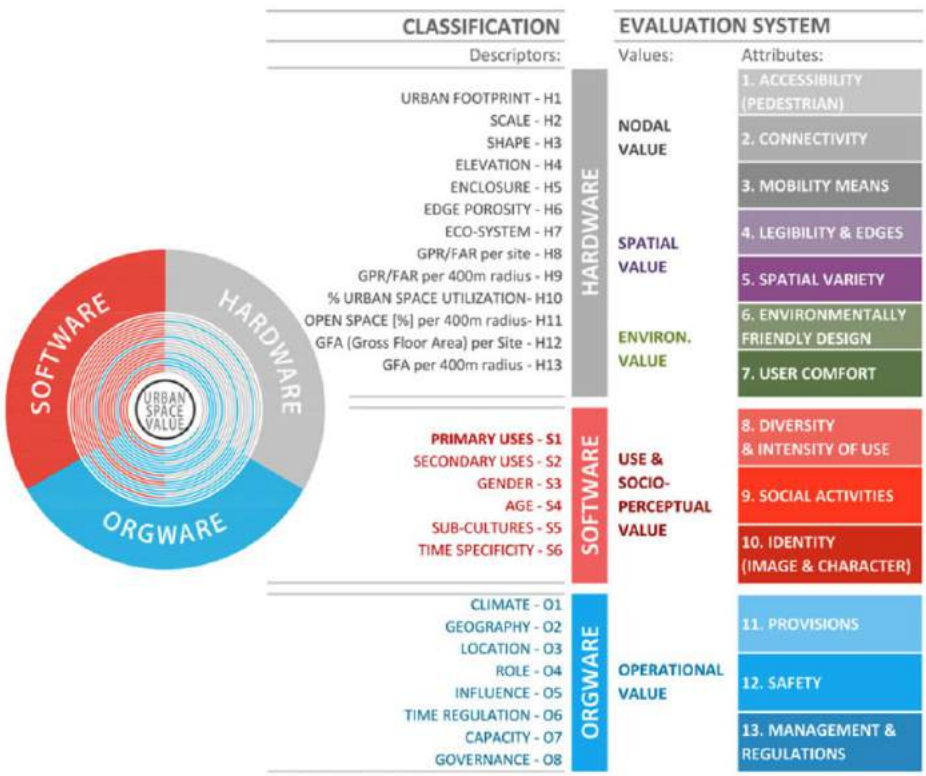
Place quality in literature

Montgomery(1998) elaborate that a prosperous urban place are combined by three essential elements, physical space, sensory experience, and activity. So urban vitality and identity are two concepts related to place quality.

I.S. Cho et al. (2015) concluded an urban space framework for urban environment quality in a high-density context. They divided the framework into three key components that shape urban performance: HARDware(mainly refer to physical space), SOFTware(included the social and uses value), and ORGware(related to management aspect).

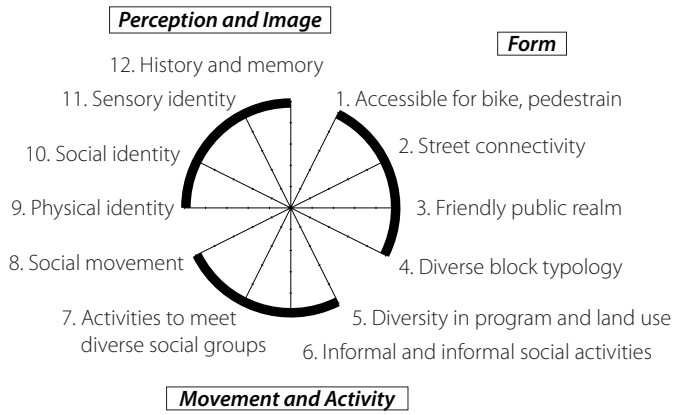


Source: Montgomery (1998).



Source: Urban space framework: HARDware, SOFTware and ORGware from I.S. Cho et al. (2015),

Building upon the literature review, the author built up the place quality framework. The framework is based on the three key elements that shape urban place and then developed it into 12 attributes.



place quality framework concluded by th author

Form

1. Accessible for bike, pedestrain

2. Street connectivity

3. Friendly public realm

4. Diverse block typology

Movement and Activity

5. Diversity in program and land use

6. Informal and formal social activities

7. Activities to meet diverse social groups

8. Social movement

Perception and Image

9. Physical identity: legibility path, landmark...

10. Social identity

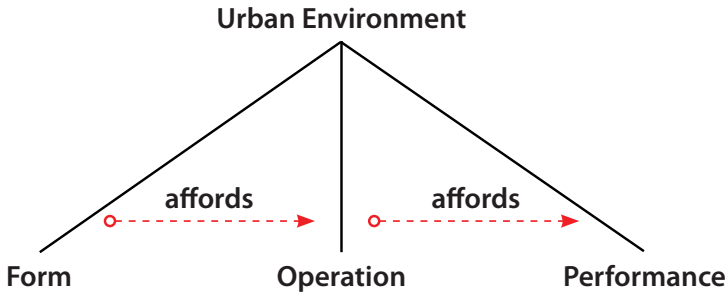
11. Sensory identity

12. History and memory

3.5 AFFORDANCE

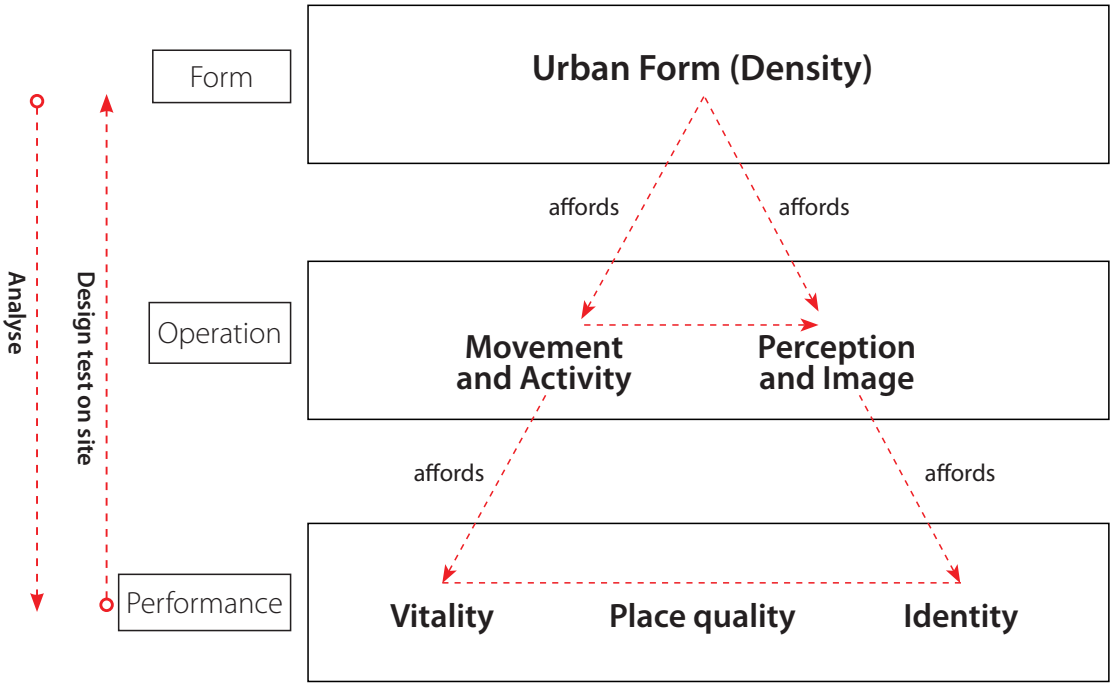
The Relation

Space can limit human behavior in space through its constraints and limitations, but it can also be changed and transcended by people at the same time. The word "affordance" can help to combine the two concept mentioned above and answer the question of why the urban form organization contributes to place quality. Tzonis (1992) proposed, "Form, operation, performance, and context are interrelated." Influenced by Alexander Tzonis(1992), Antoniou, Guney, and Paudyal (2008) explained in their affordance model that urban form could contribute to the operation and reached a successful performance. Vice versa, if we find out the expected performance – we can test the operation and then the form. We could understand the "operation" as potential behavior that happened according to the built environment and the "performance" as the quality urban environment we designers want to achieve. Kropf and Malfroy (2013) insisted that "the built environment is an enormous set of indices of the human activity that created them." In conclusion, the urban vitality of a successful space may depend on the external situations that can be applied to human behaviors. Human activity may result from urban form.



Source: Adapted diagram from Guney (2008)

CONCEPTUAL FRAMEWORK



Conceptual Framework, draw by author

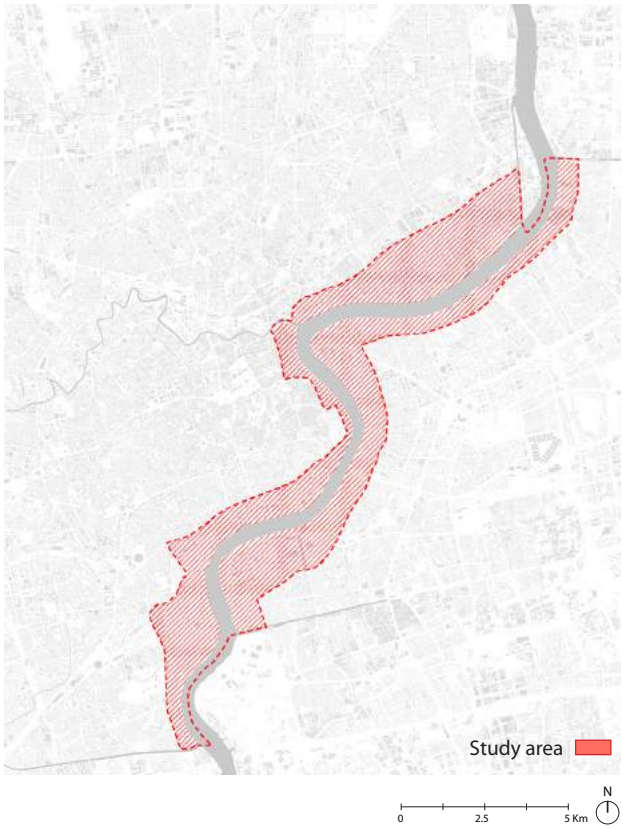
4. ANALYTICAL CHAPTER

ANALYTICAL FRAMEWORK

Analyse from scale

City scale

(Huangpu Riverfront)



Local Scale

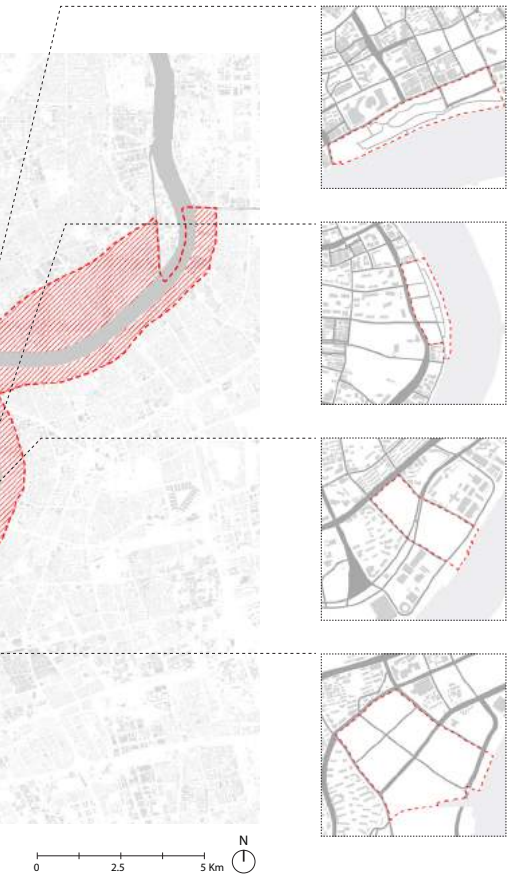
(4 Case : relation with nea

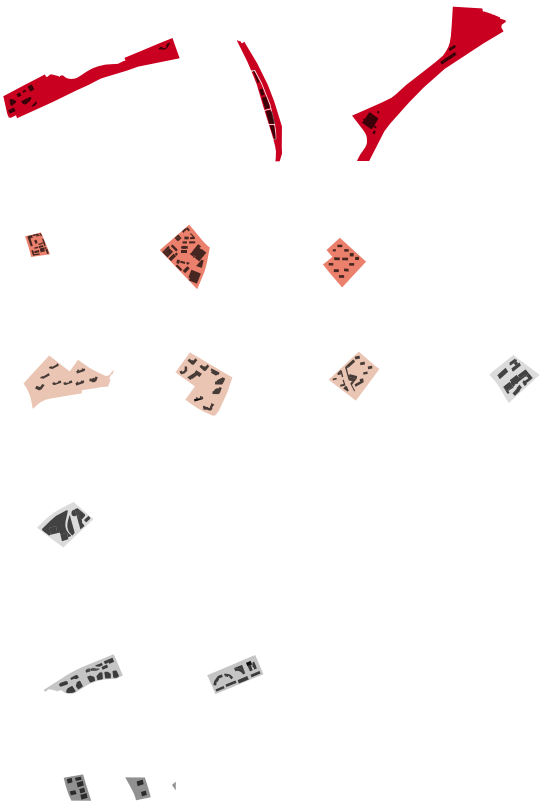
This chapter aims to understand the existing urban spatial density type as well as their quality along the Shanghai Huangpu River at three different scales. It helps us to understand the relationship between urban density and environmental quality in the context under study.

Micro Scale

(Block)

rby neighbourhood)





City scale

4.1 CITY SCALE

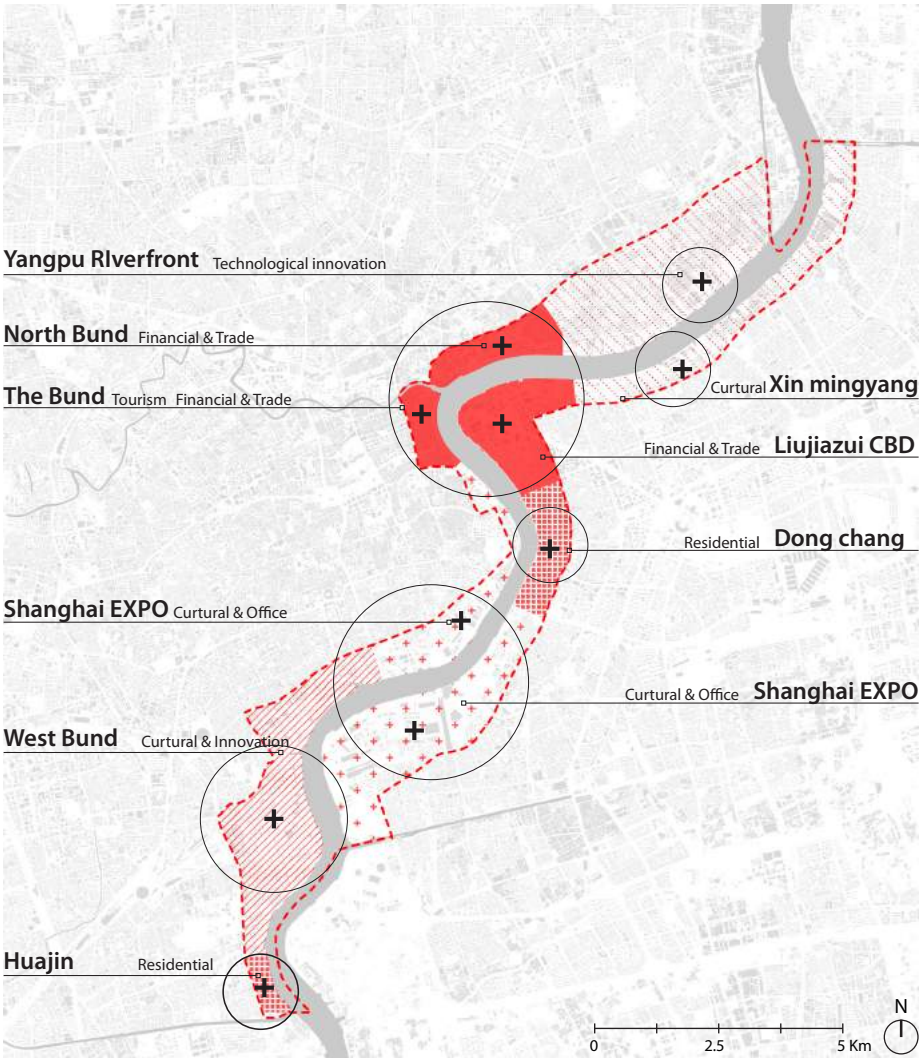
Analyse Framework

The purpose of this chapter is to analyze the urban form (including blocks, street networks, open spaces), urban vitality, people's perception and images of Huangpu River Research Area on a large scale. At the city scale, we study the core section of the Huangpu River.

At the same time, in order to classify the urban form types, the author collected the density index of urban blocks, and generated related urban form types based on it. Finally, six density types of blocks are generated, which can then be analyzed in depth.

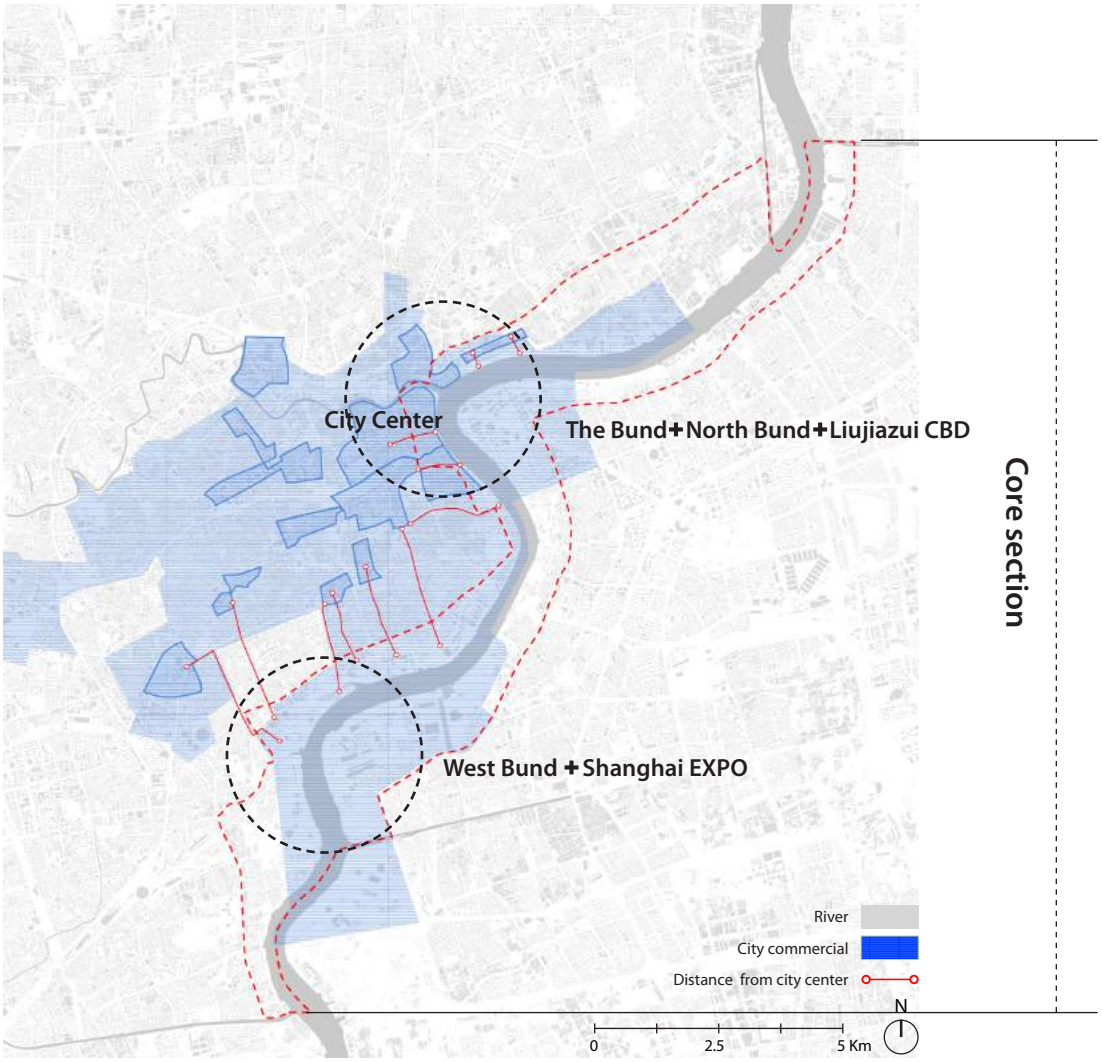
4.1.1 URBAN FORM

Riverfront vision



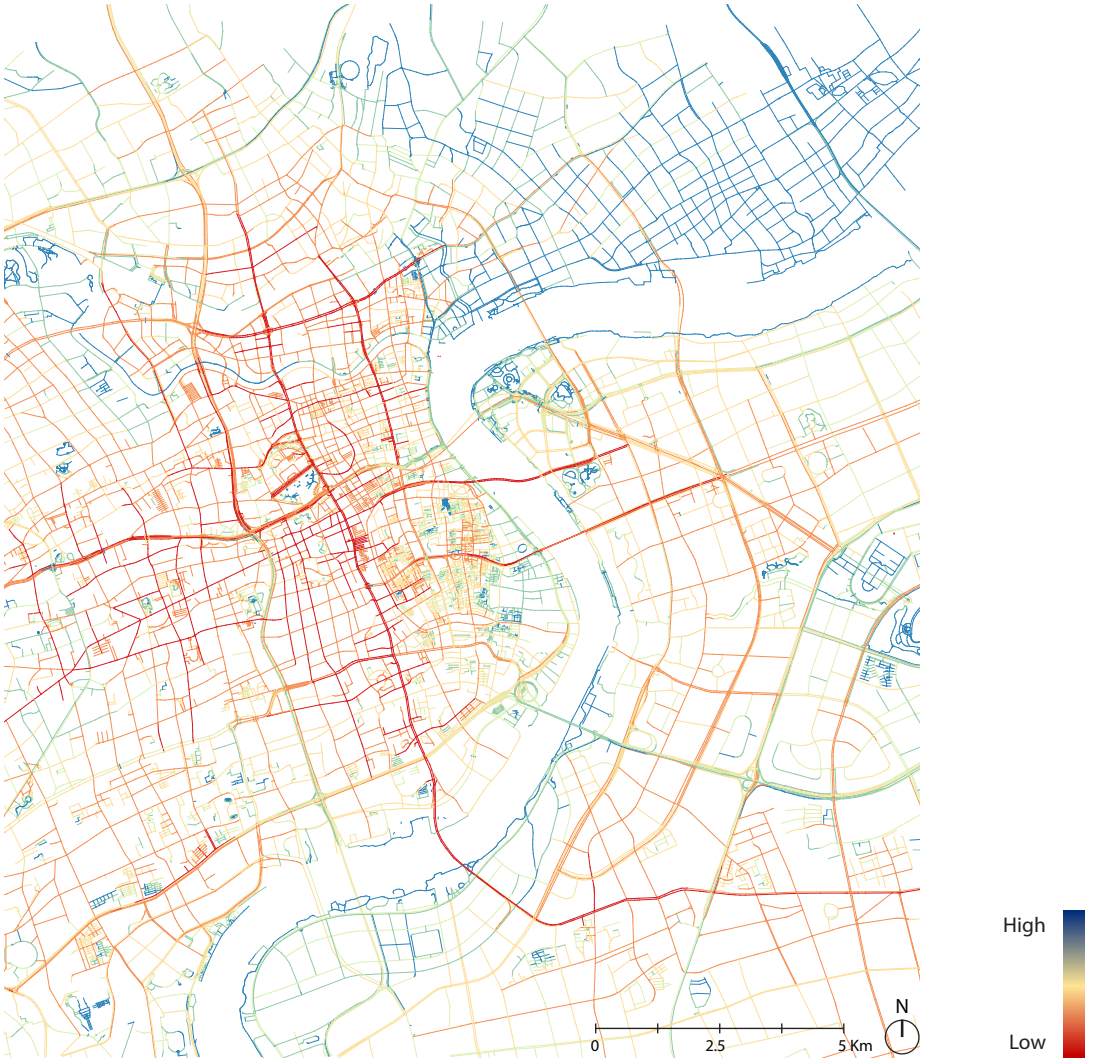
According to "The Development plan for Huangpu river" by Shanghai planning and land resource administration, the core section of the Huangpu River carries the core functions of global urban finance, culture, and innovation. When They are planning the vision, each section is differentiated and positioned with different characteristic and functions.

Position



During this core section of Huangpu riverfront, there will be two cores. The first is the core related to the inner-city center, which is consist of Lujiazui, the bund and north bund area. It will further gather global urban function. While the other is going to build the core area of the cultural function of West Bund riverfront and Expo area and lead the global concentration of innovation, creativity, cultural and other urban functions

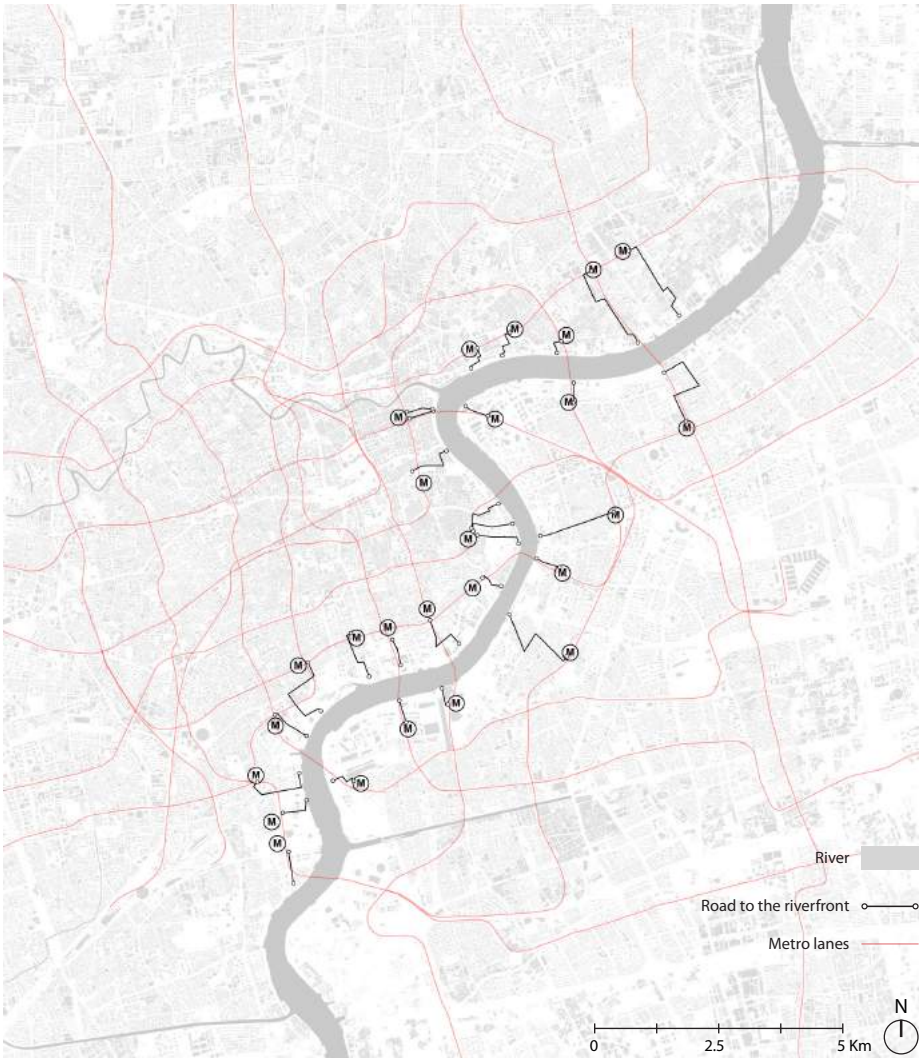
STREET CONNECTIVITY



Draw by the author and Jian Yuan

The street is an important element in cities. For Shanghai's street network, as we can see in the Space Syntax analysis, the roads in the riverfront area suffer the weak accessibility, and there is potential to improve the accessible level.

CONNECTION WITH METRO STATION

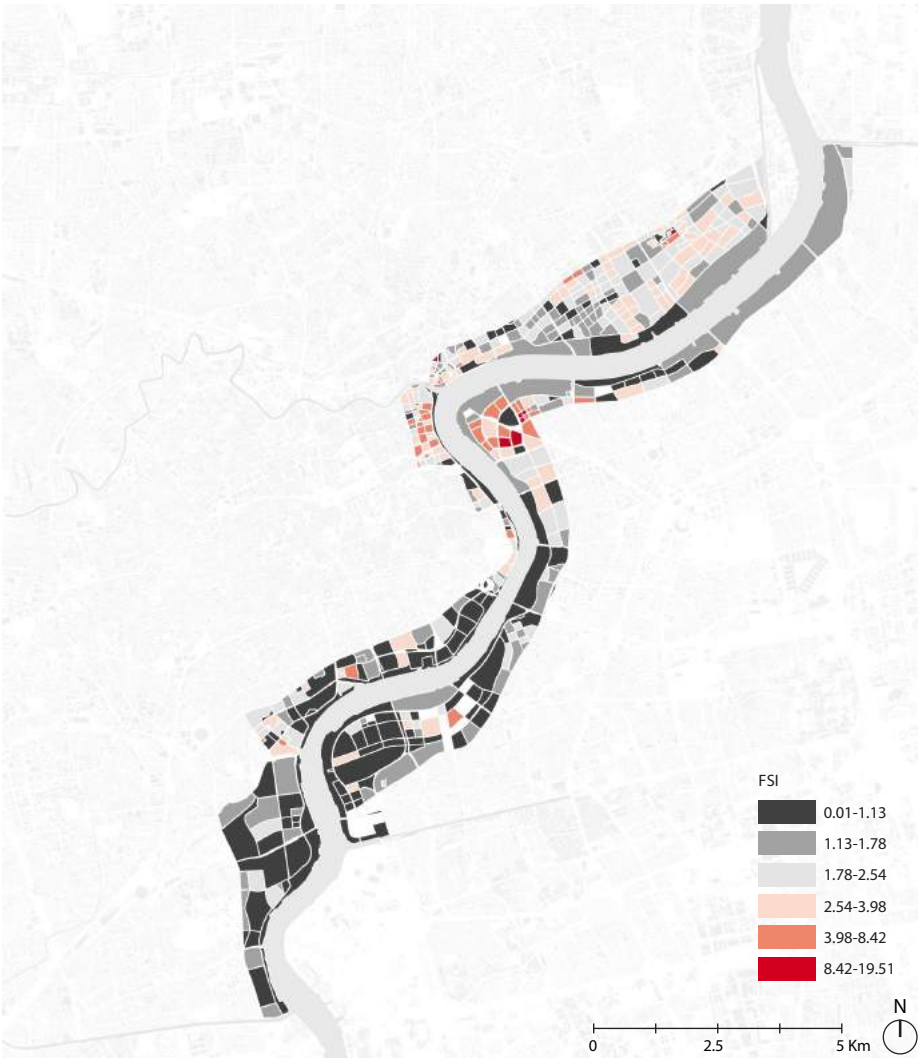


Speaking of public transport accessibility, the distance mapping to the subway station shows the walking distance is quite long, and walking experience is not good for pedestrians.

4.1.2 DENSITY TYPE

Study of FSI/GSI

FSI: Floor Space Index

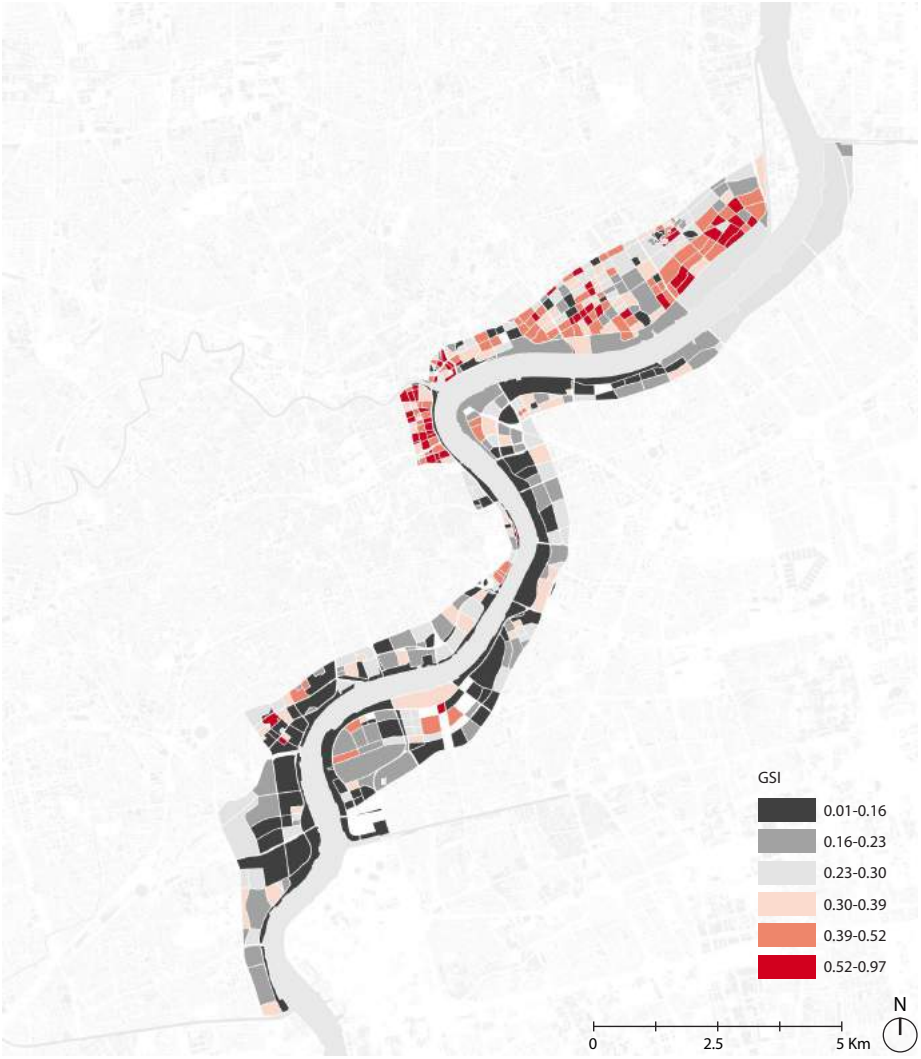


To better underatnd the density, we use the quantitative research tool "Spacematrix"(Berghauser Pont and Haupt, 2010) to build the relation between urban morphological type and density.

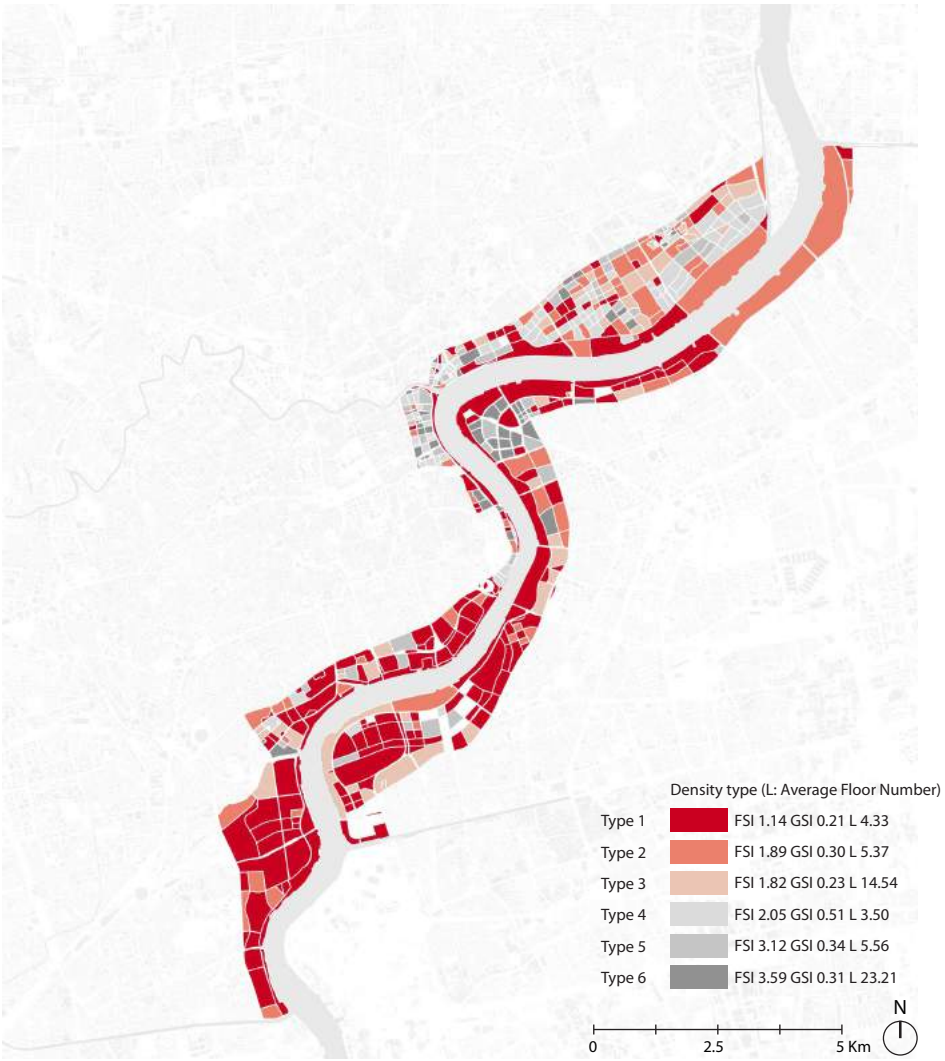
This method consists few steps:(Hausleitner and Berghauser Pont, 2017)
1. Define the aggregation units
2. Select a set of density varients
3. Calculate the varients data per units
4. Organise the information per units in a statistical progam
5. Distinguish the density type by manual method

Specifically speaking, the author first calculated the FSI(floor space index), GSI(gross space index) and L(Layer) data of all the urban blocks in research area in QGIS. Then, based on the FSI and GSI and L figures of each block units, she utilized SPSS Data Analysis methodology (IBM, 1968) to analyze the data. In the end, six density types of the block were generated, and they can be deeply analyzed afterward.

GSI: Ground Space Index



GENERATION OF DENSITY TYPOLOGY



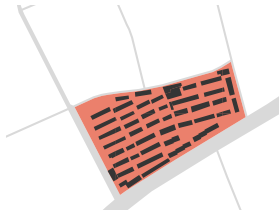
After the cluster, we can found out 6 different type of blocks. The same as the Spacematrix's way of naming clusters, the six types are: 1). low-rise spacious building super blocks; 2). mid-rise strip type; 3). high-rise spacious point-strip type; 4). low-rise compact strip type; 5). mid-rise compact block type.6). high-rise compact point type.

Type 1

Open block with low-rise point

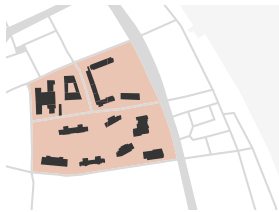
Type 2

Mix of mid-rise and low-rise type



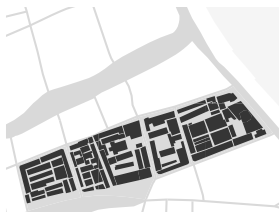
Type 3

High-rise spacious point type



Type 4

Low-rise compact type

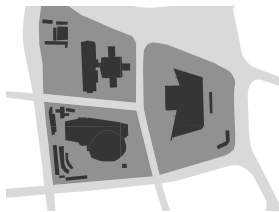


Type 5

Mid-rise compact block type

Type 6

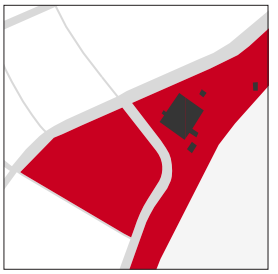
High-rise compact point type:



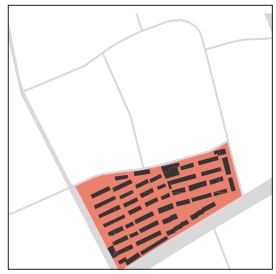
DENSITY TYPE

Type 1: Open block with low-rise point

Public Facilities



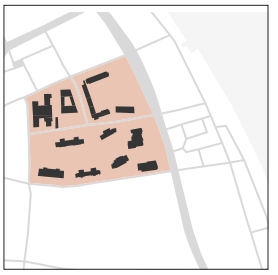
Type 2: Mix of mid-rise and low-rise type

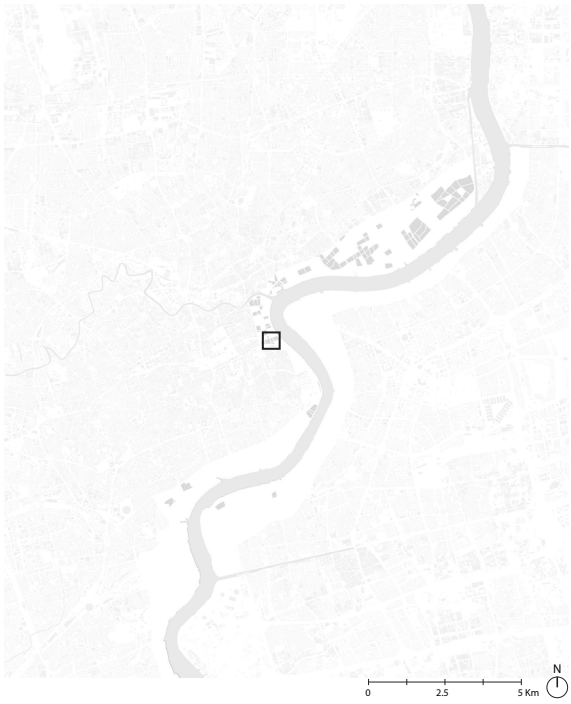


DENSITY TYPE

Type 3: High-rise point type

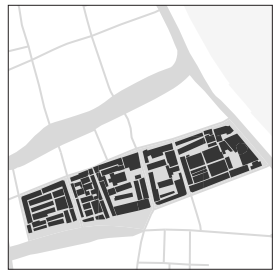
Residential

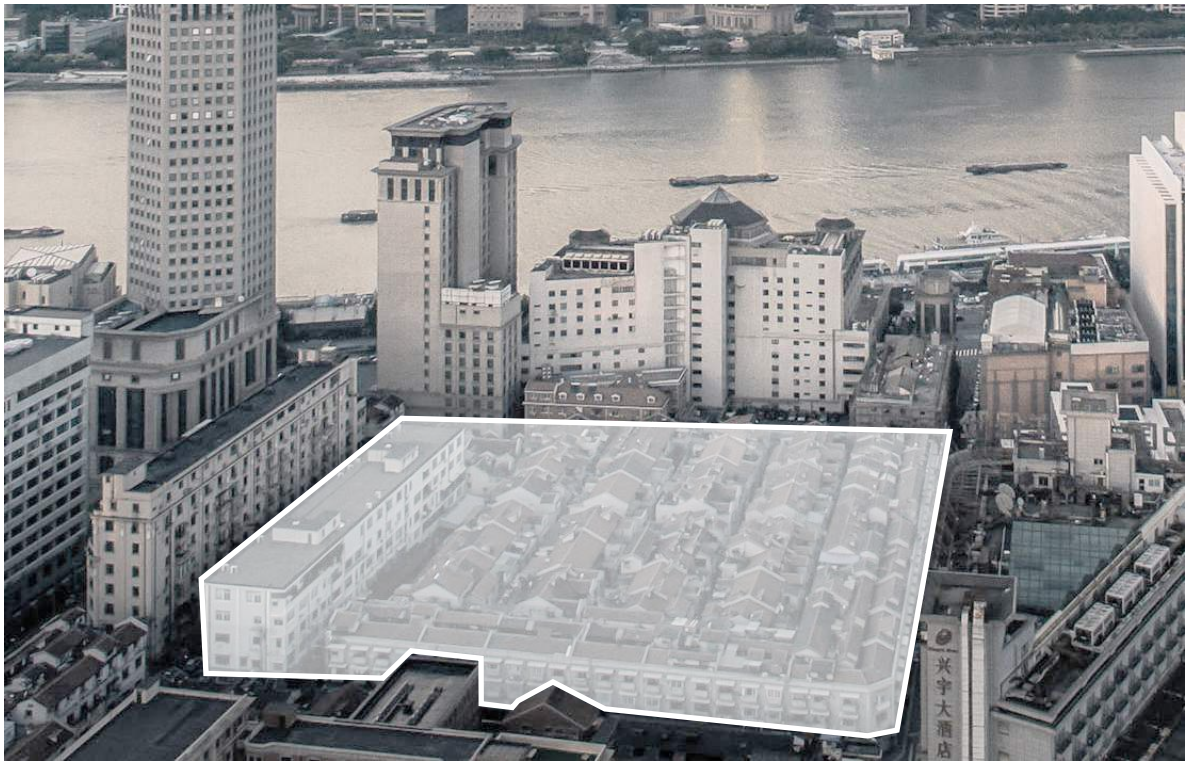




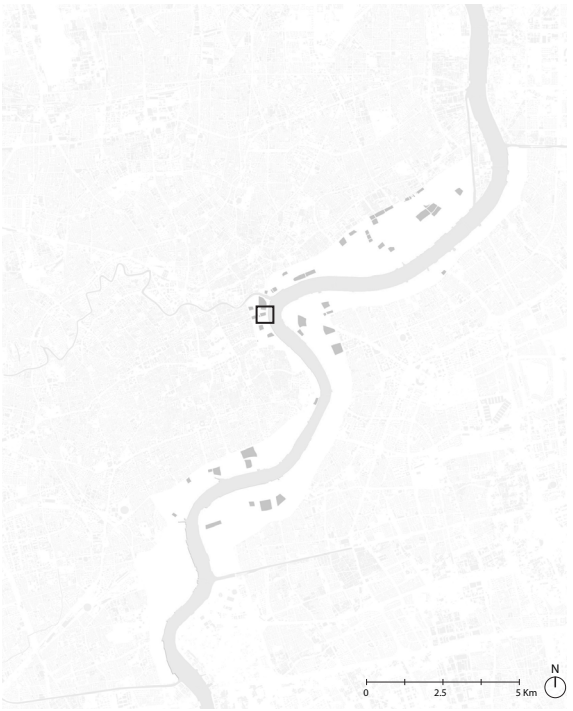
Type 4: Low-rise compact type

Residential



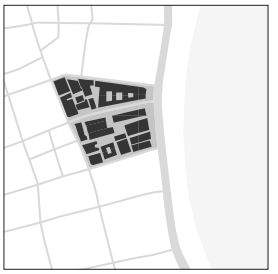


DENSITY TYPE



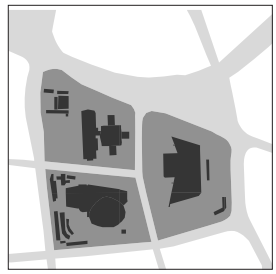
Type 5: Mid-rise compact block type

Commercial & Office



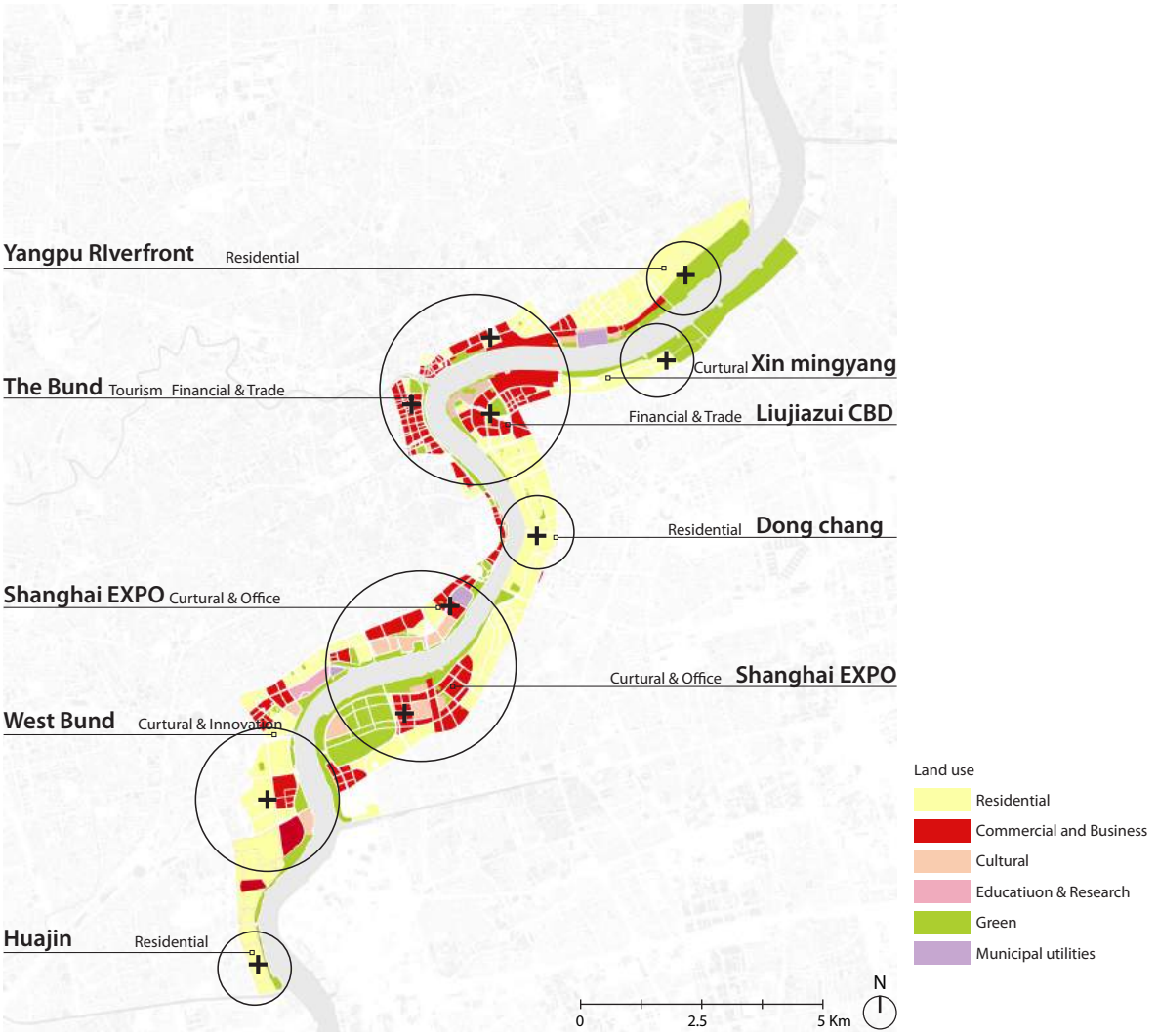
Type 6: High-rise compact point type:

Commercial & Office



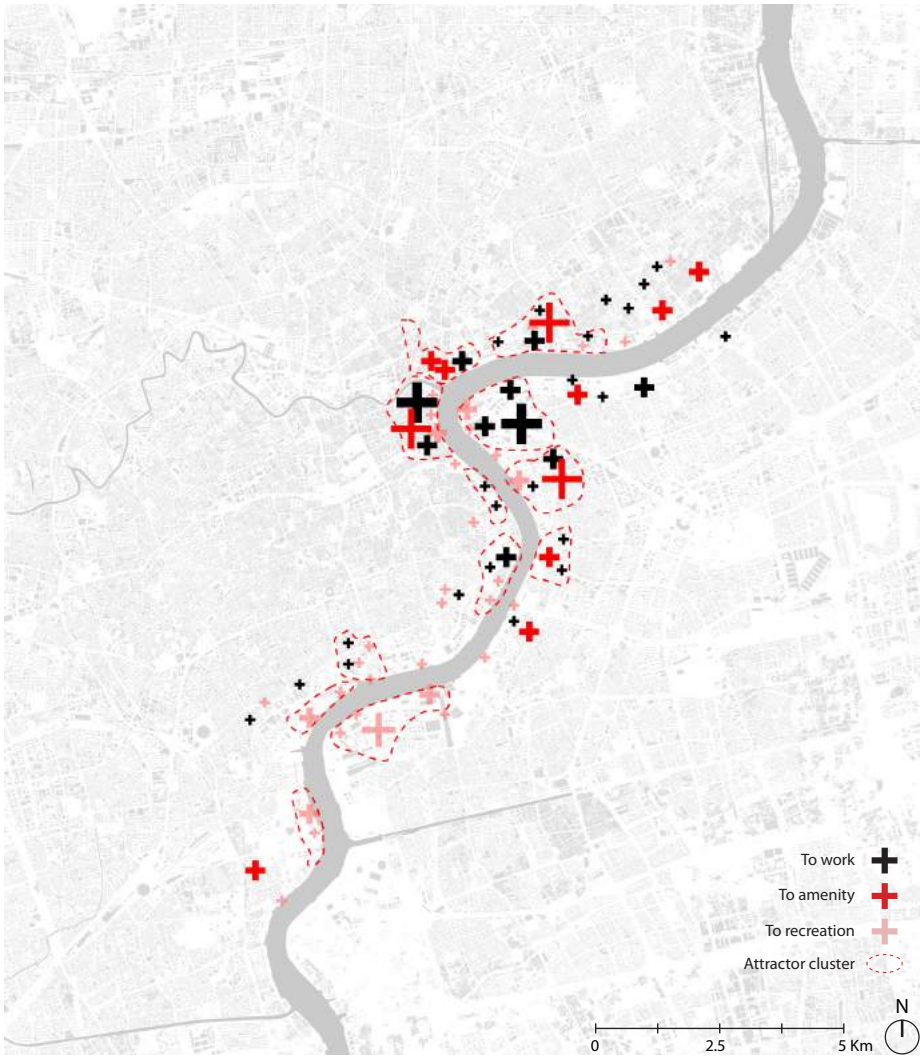
4.1.3 ACTIVITY AND MOVEMENT

Land use



From the land-use analyse, we can conclude that the riverfront district has two types: one is mainly residential, like the Yangpu riverfront and Dongchang riverfront. While the other is mainly consist of commercial and cultural exhibition functions, like Liujiazui, The Bund, the Expo district and the West Bund district. According to the functions, we can also understand who will go to the river?

Attractors



Who go to the riverfront

Different attractions along the river affect people's activities. According to the program analysis, we know that there are three primary purposes for people to go to the riverside. Traveling between home and office or school will be a daily activity. This activity is necessary activity, it is very based on efficiency rather than space quality. Moreover, going to convenience facilities is a purposeful activity. Travel to recreation space will pay close attention to space quality.

To work

Business workers

To amenity

Business workers

Nearby residence

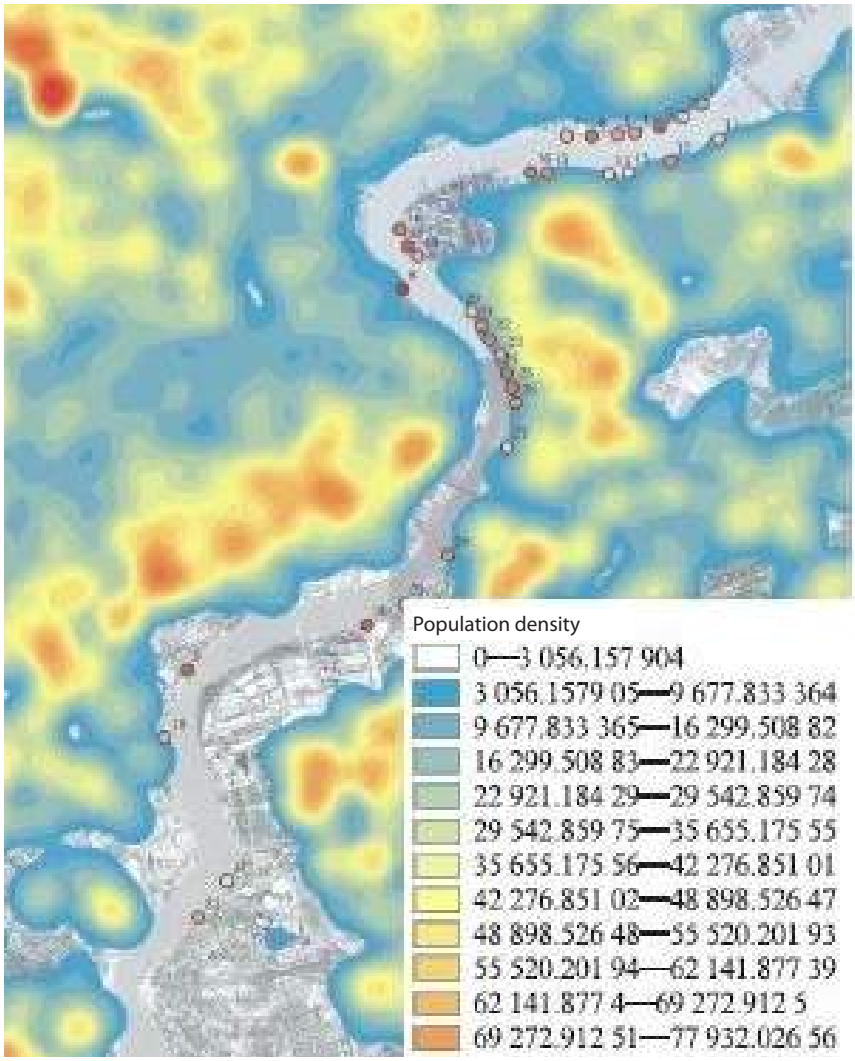
To recreation space

Business workers

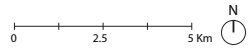
Nearby residence

Citizen from other part

Population density



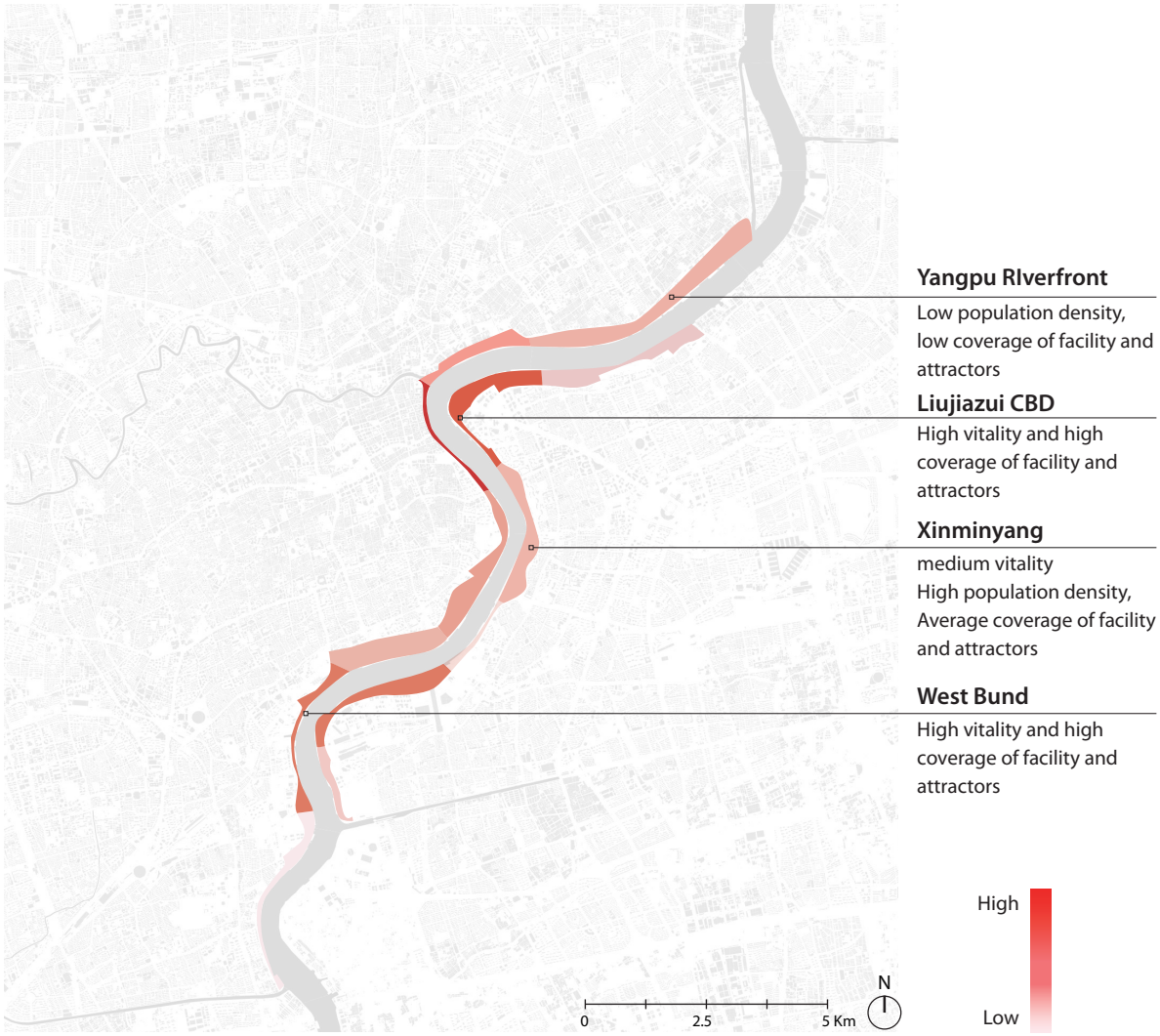
the population density mapping from Ma and Wang(2018)



Population density affect riverfront vitality

The number of facilities and the total population in the hinterland have a great impact on the vitality of riverfront(Ma and Wang, 2018). In areas with high population density in hinterland settlements, the vitality of waterfront spaces is also high. Because of the development of the areas on both sides of the Huangpu River, the service targets include surrounding residents and tourists. Therefore, in the high-population areas of the hinterland, there are relatively many residents who can reach the waterfront in 15 minutes.

Urban vitality

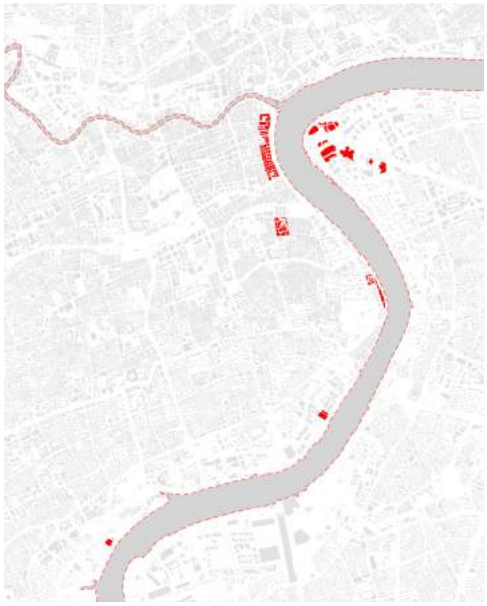


the vitality mapping from Ma and Wang(2018), redrawn by the author

From the vitality mapping, we could understand more about the different character of each section

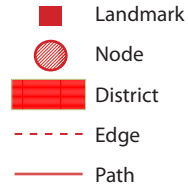
4.1.4 PERCEPTION AND IMAGE

Landmark



District

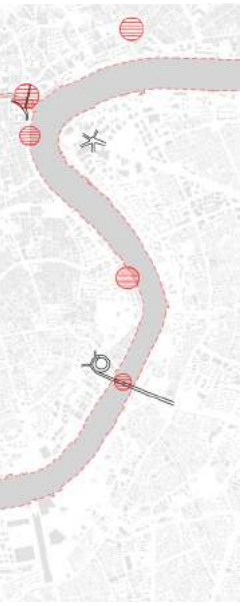
No

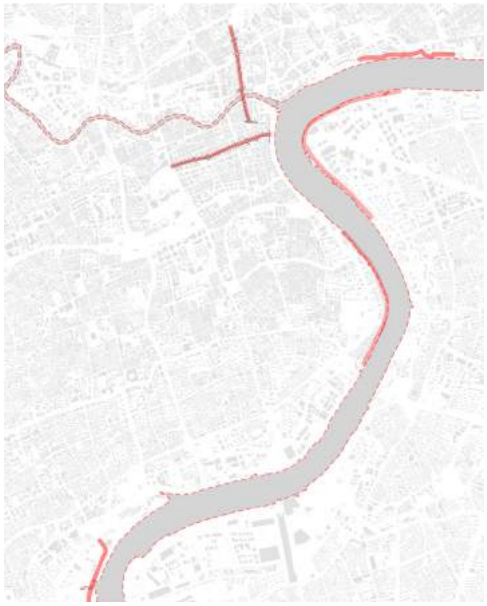


ode

Path

Edge





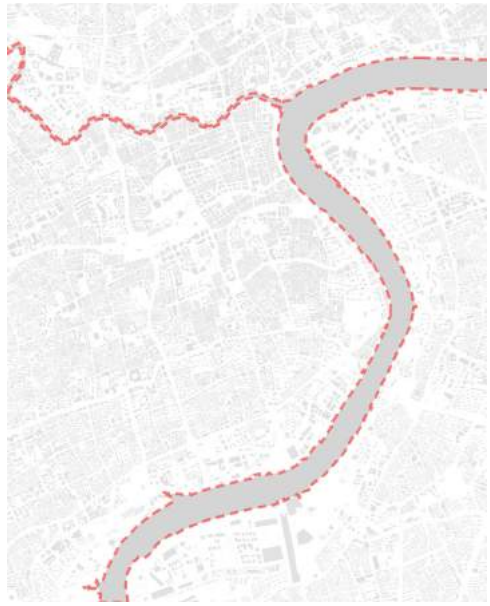
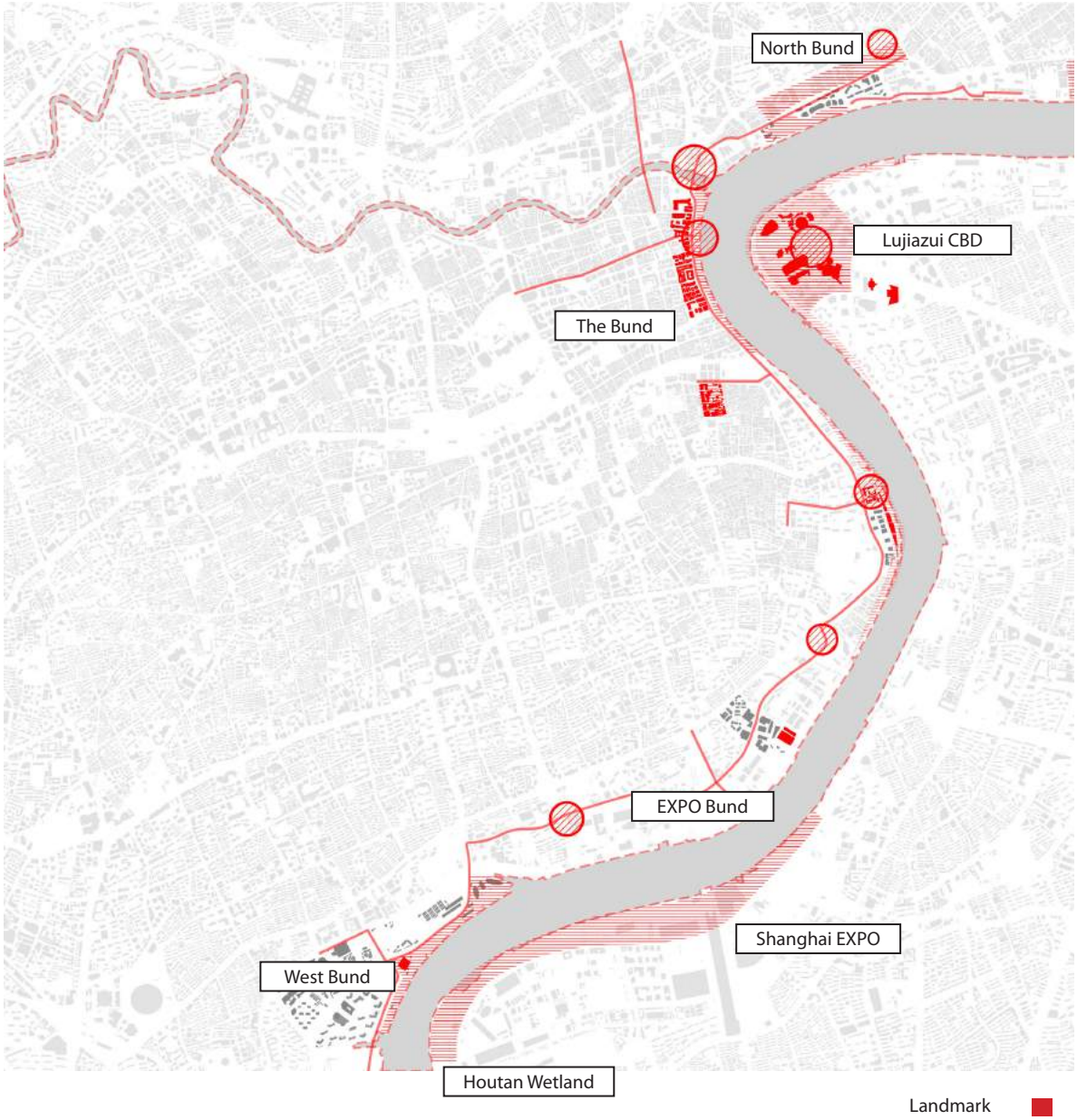
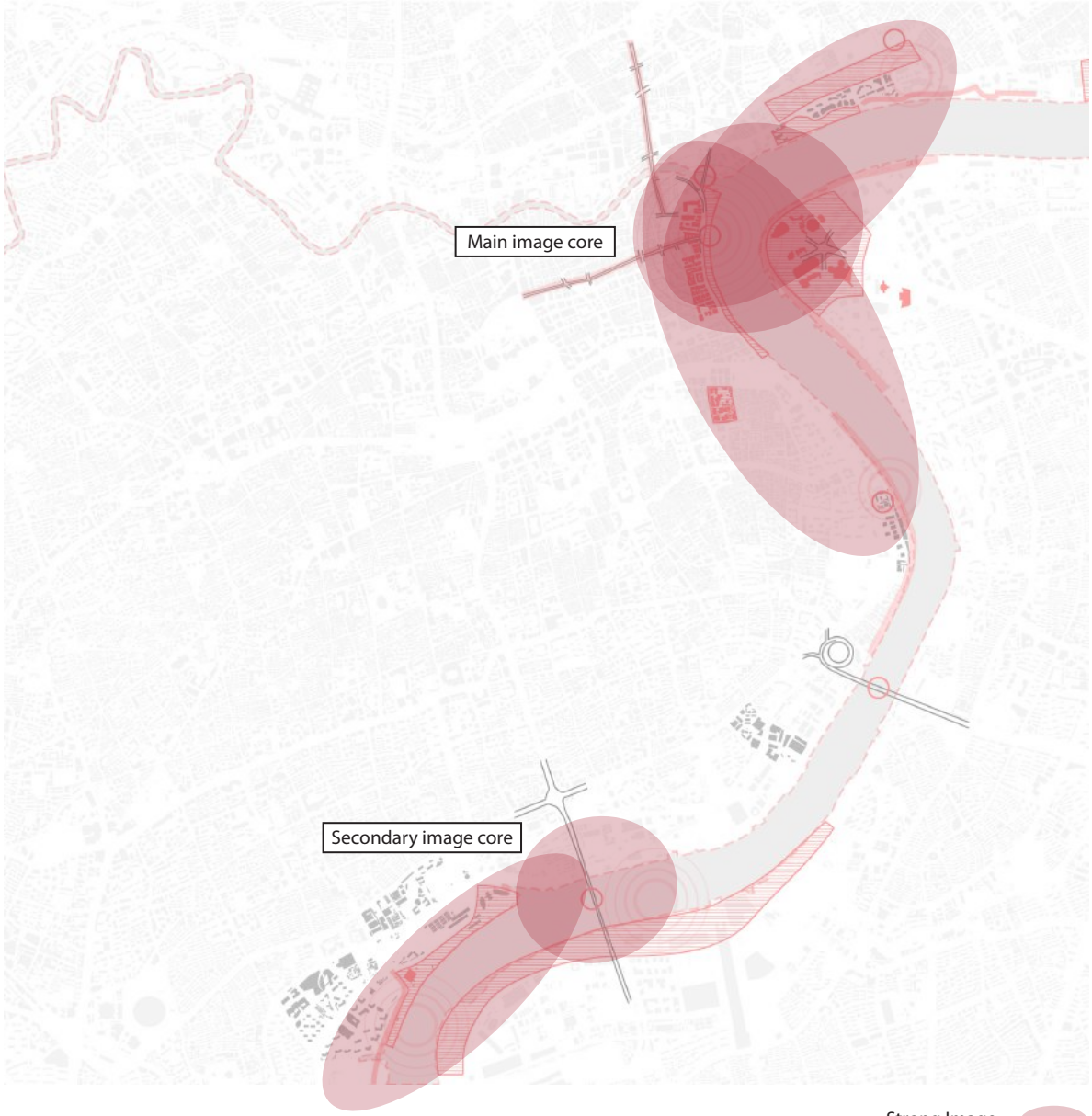


IMAGE MAP (FROM KEVIN LYNCH)



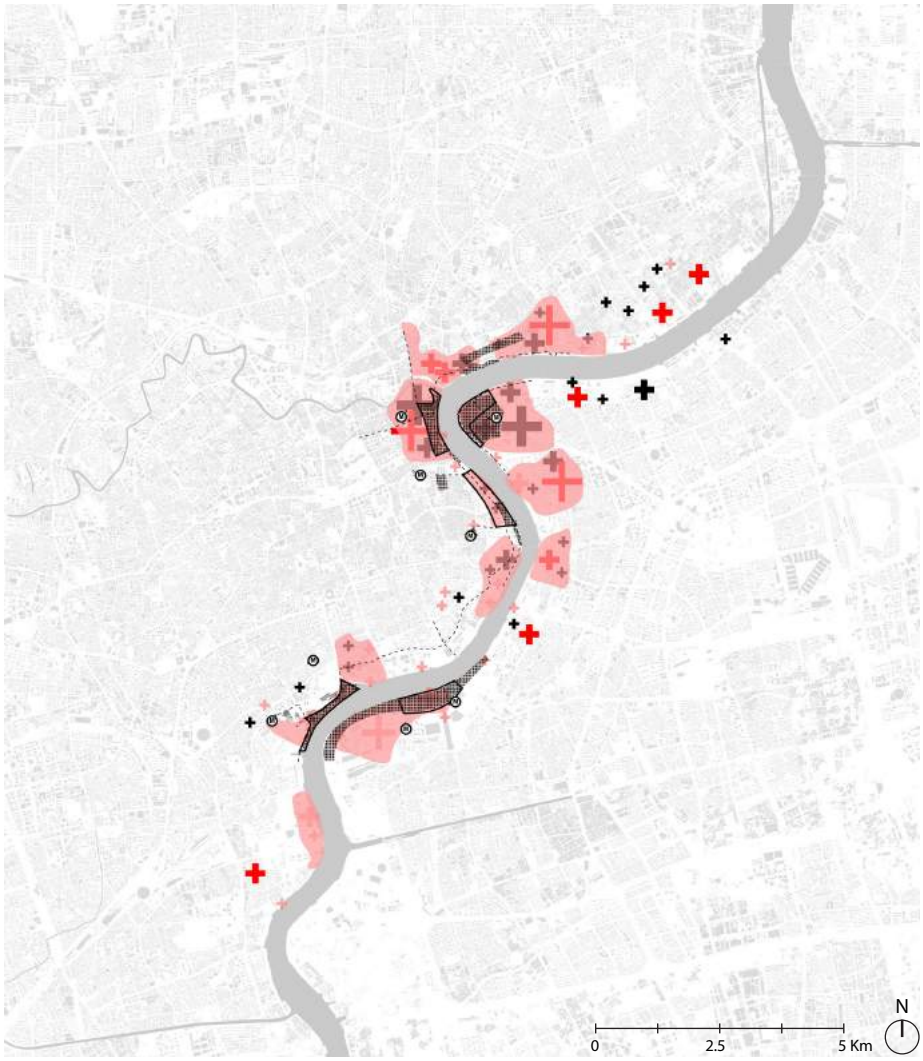
Thanks to Kevin Lynch's methodology, we can reasonably interpret the city into nodes, districts, paths, landmarks, and edges. In the paper, Huanhuan Sheng(2019) divided these five urban elements according to the traveling data. Then, we can recognize the citizens' understanding of identity along the Huangpu River. This mapping is interpreted by author.

CONCLUSION MAP



The image of the riverfront is still a fragmented rather than continuous structure, and the spatial development is unbalance. The image core could be formed in the area where the nodes connected together and strengthen the image.

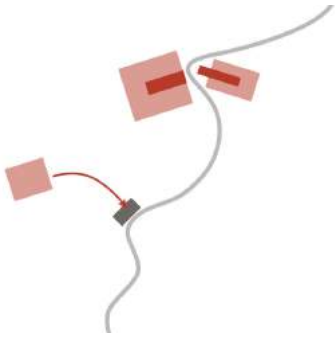
4.1.5 CONCLUSION



High vitality district have the overlap area with attractor clusters and strong identity district

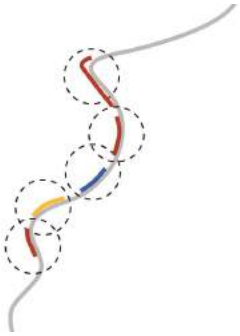
High vitality are always link well with nearest transport station and the hiner city

What contribute to the riverfront place quality?



1. Network : Well link with hinterland

The link from the hinterland neighborhood and facilities to the riverfront is essential to bring the vitality to the riverfront.



2. Mixed-use with diverse program and people

The characteristics of the hinterland in different regions of the riverside are different, and the economic and social vitality of the hinterland are also different. The number of facilities and population density of the hinterland will affect the vitality of the riverside space.

3. identity

The riverfront will develop a strong perception and image when the city nodes are connected and gathering. and create an influential landmark based on the place identity

Local scale

4.2 LOCAL SCALE

Analyse Framework

This chapter takes advantage of the author's field-work in Shanghai. By observing behaviors and conducting interviews with residents, the quality drivers in public spaces can be classified by different density types. By studying the dynamic attractors, we can understand how the design at the local scale activates public spaces and creates high-quality spaces for the city.

From the city scale analyse, we could underatand the quality place along the river, as well as the river-front density typology. But how these density type are organised and what quality will it create ?

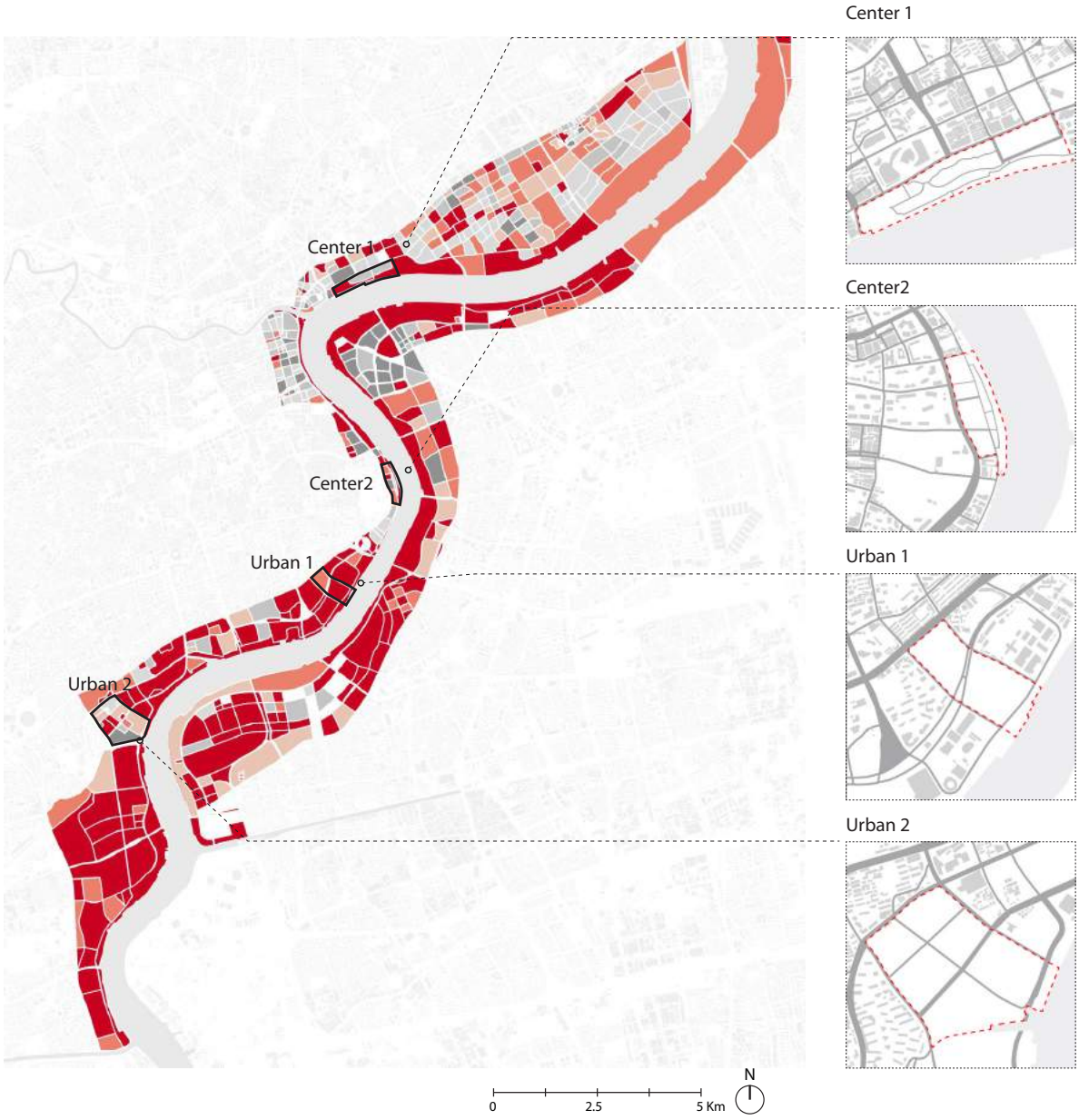
In local sclae, we could deeper understand by the case study:

1. How the density type organize?
2. What quality will it create?
2. why they attract people?
3. How people perceived these case blocks?

4.2.1 INTRODUCTION TO CASE

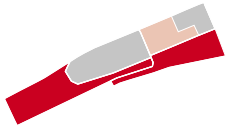
Local Scale

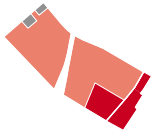
(4 case : relation with nearby neighbourhood)

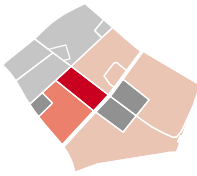


Building+Block

Density distribution







Selection of Case Study Areas

From the density type we gained from the above analysis, we can see all the form types of urban blocks along the Huangpu River. In the mapping, the author selected 4 cases that contain diverse density types to analyze.

Density type

Type 1
Type 2
Type 3
Type 4
Type 5
Type 6

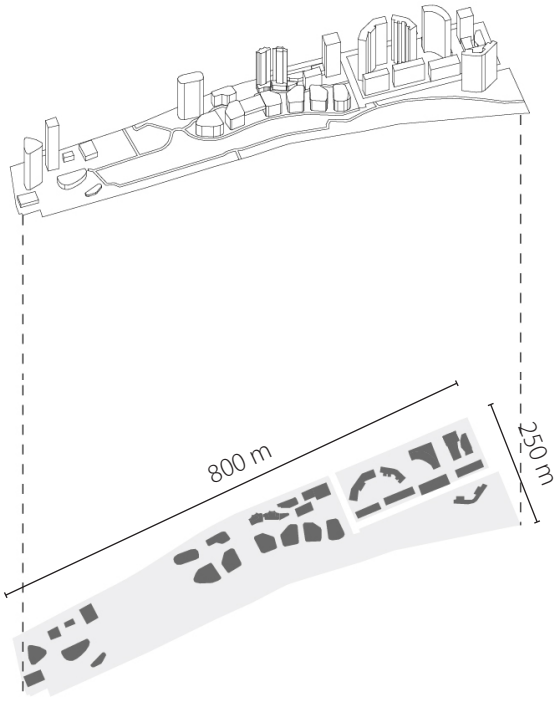
Case 1: North bund

The North Bund in Shanghai is famous for the highrise office buildings. For this area, the quality of public space can help the riverfront to increase vitality, but lacking mix function may cause people to pass by the buildings quickly.

Total

468.100 m²

FSI: 1.89



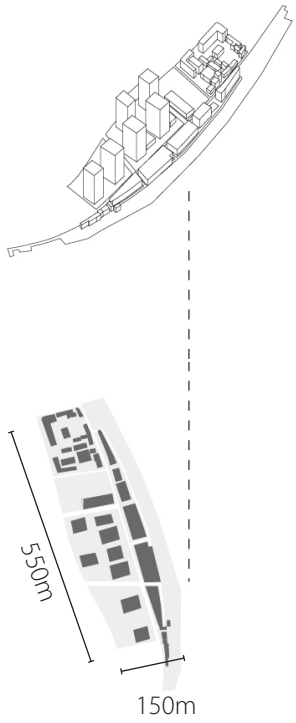
Case 2: Old dock

The old dock was once an industrial area that suffers from pollution and poor accessibility. After the urban regeneration that launched by the Shanghai government, old neighborhoods were transformed into the neo-classical cultural campus can historical factory buildings were maintained. Moreover, with the newly built high rise offices, this old dock has become a densified hybrid city area that enjoys its new life.

Total

228.600 m²

FSI: 2.1



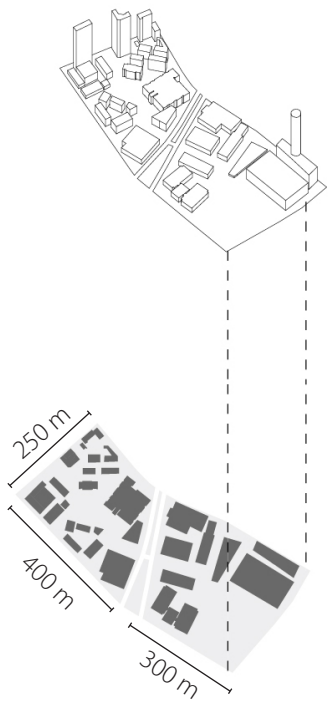
Case 3: Shanghai Expo district

The Shanghai 2010 World Expo district is in a former industrial site. Through urban renewal, this district was transformed into new areas that contain high-rise residential buildings, art & cultural buildings. It serves all the citizens in Shanghai as a new cultural center. But the population density in this district is low, so it is still not really vital.

Total

308.900 m²

FSI: 1.9



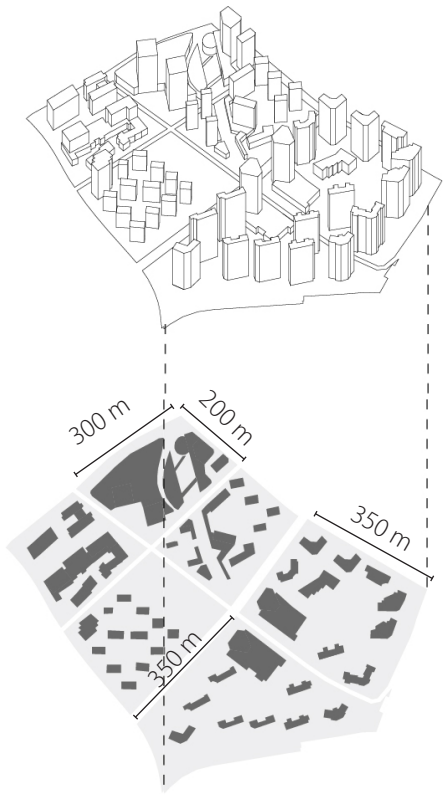
Case 4: Xuhui neighborhood

The Xuhui Neighborhood mainly consists of highrise residential communities with some commercial and office complex. The composition of urban programs in quite typical in the context of Shanghai City. The residential part is relatively private and not as vivid as the commercial part. But the mix of program and intervention of public space in those neighborhoods can be the activist of vitality.

Total

1394.200 m²

FSI: 3.9

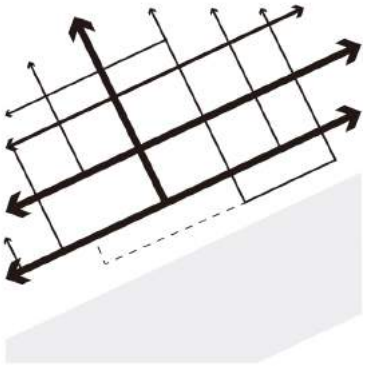


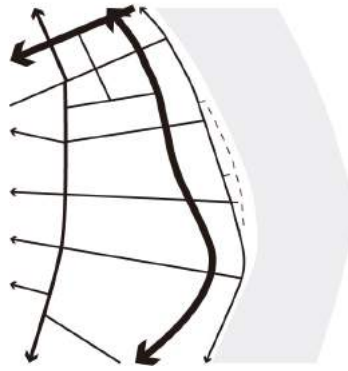
4.2.2 URBAN FORM ANALYSE

Case 1: North bund

Case 2: Old dock

Streetnetwork



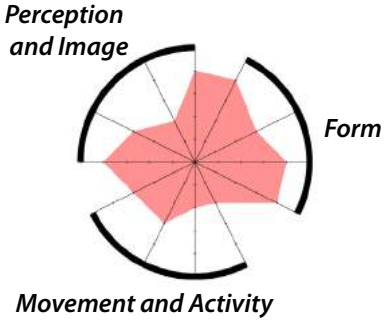


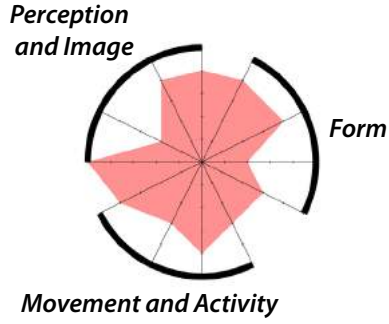
Open space

Public

Semi-public

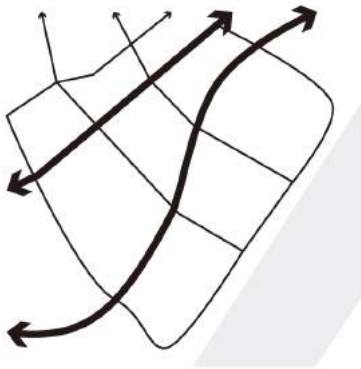
Quality assessment

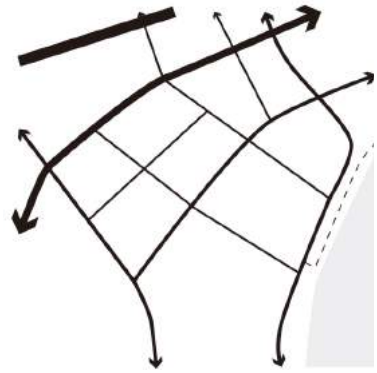


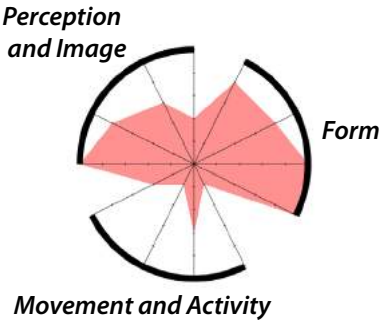


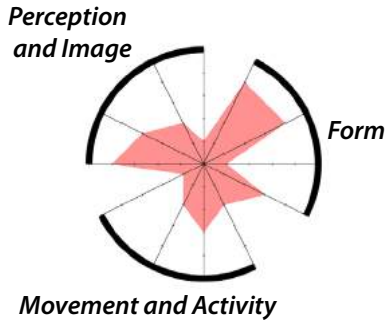
Case 3: Shanghai Expo district

Case 4: Xuhui neighborhood









PROGRAM MIX STUDY

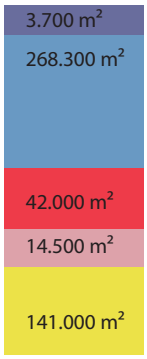
How to archieve program mix?

Case 1: NORTH BUND

Total

468.100 m²

FSI: 1.89



0.7%
Educatiuon & Institution

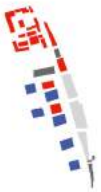
57%
Office

9%
Commercial

3%
Cultural

30%
Residential

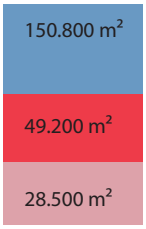
Case 2: OLD DOCK



Total

228.600 m²

FSI: 2.1



65%
Office

21%
Commercial

13%
Cultural

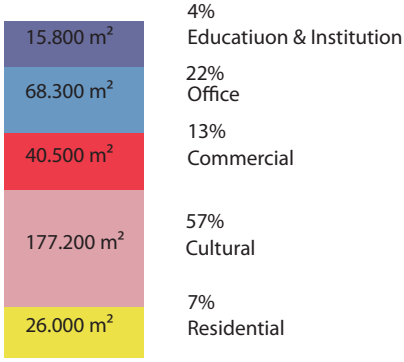
Residential
Commercial
Culture
Office
Educatiuon & Institution
Historical building

Case 3: EXPO DISTRICT

Total

308.900 m²

FSI: 1.9

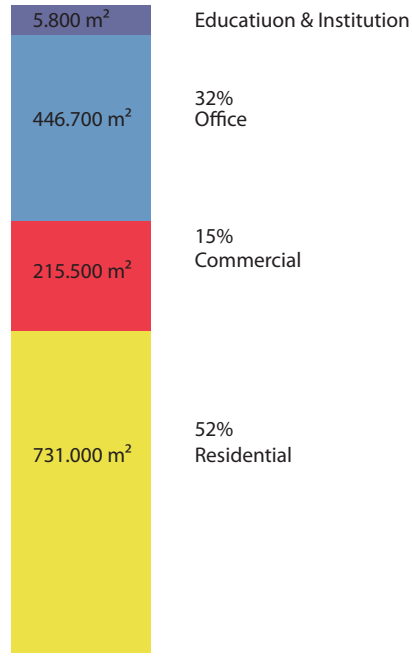


Case 4: Xuhui Neighborhood

Total

1394.200 m²

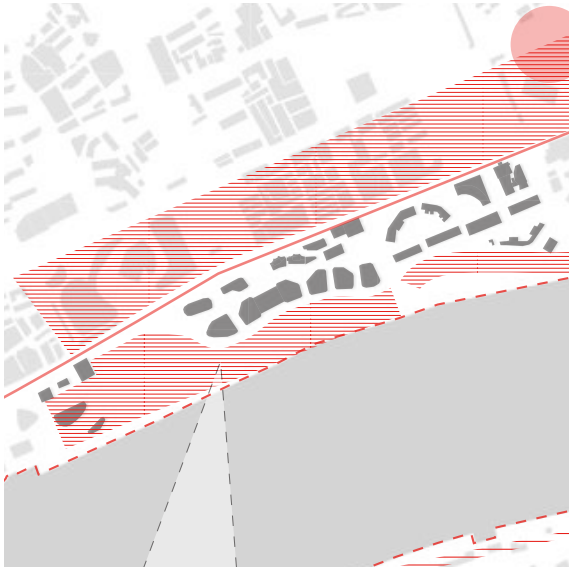
FSI: 3.9



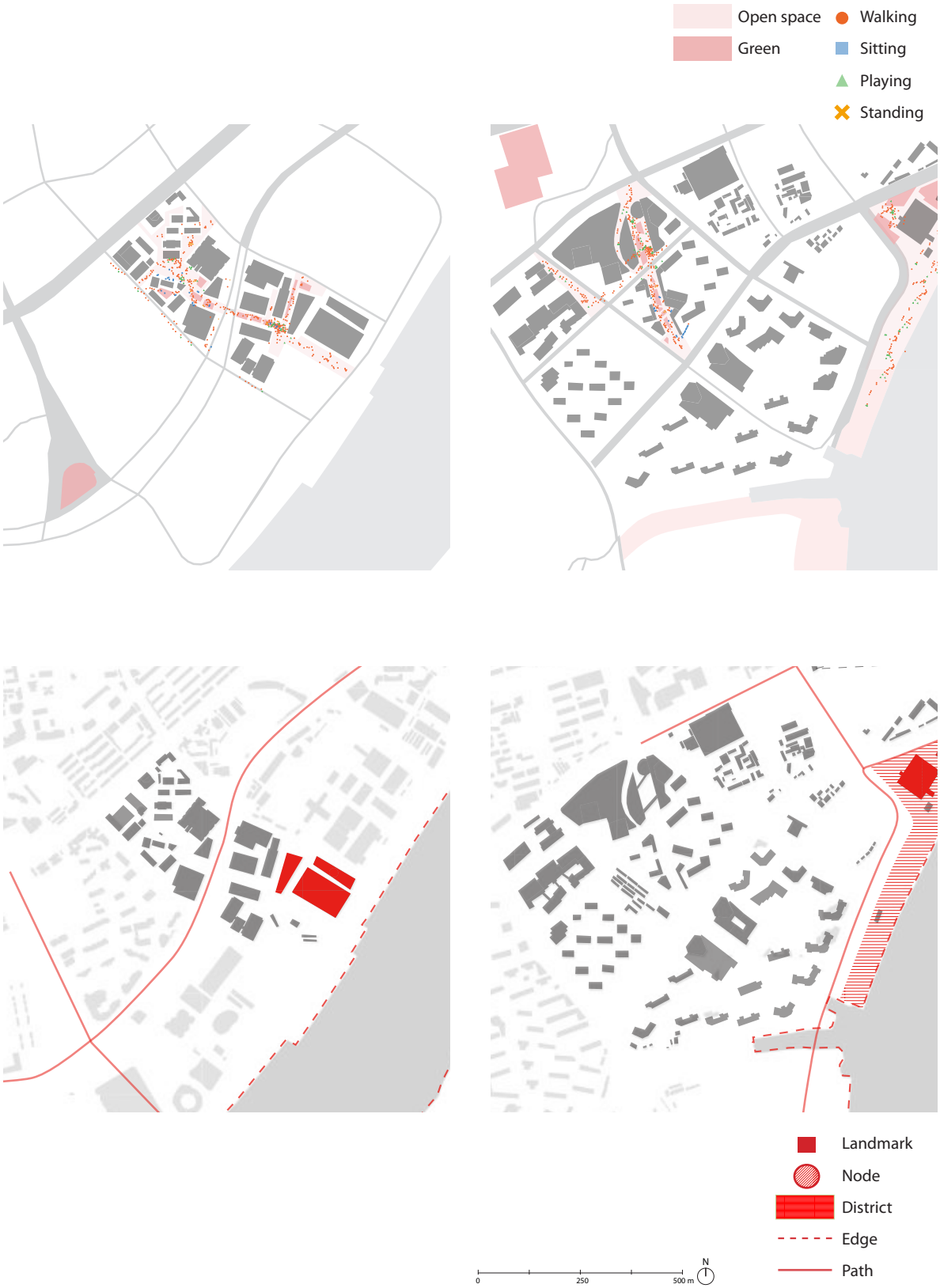
4.2.3 MOVEMENT AND ACTIVITY

Time-lapse analysis

Perception and image



4.2.4 PERCEPTION AND IMAGE



4.2.5 DENSITY DISTRIBUTION STUDY

How does the density type mix?

Block organization

Compare four cases, the first and second cases consist of small size blocks, and the third and fourth cases consist of large size blocks.

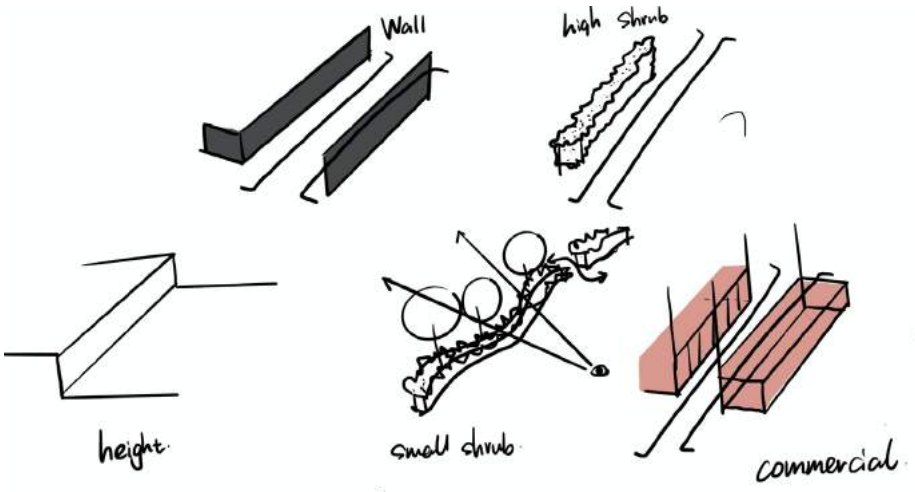
It is clear that each block contains a morphological type, and there is no significant difference between their edges and their interiors. Their combination forms a more different block. While large blocks are always divided into small blocks, types 1, 2, and 3 almost take away the whole superblock, among which the small points of type 1, 2, and 3 are sparsely distributed along the edge.

The results show that small blocks tend to be dense and compact, while the decline of FSI and GSI in superblocks reflects the common misconception that the density of towers is higher than that of low-rise buildings.

Small block

Big block

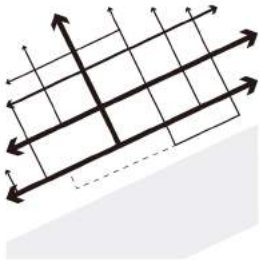
5 type of situation between the block

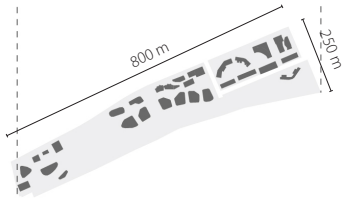


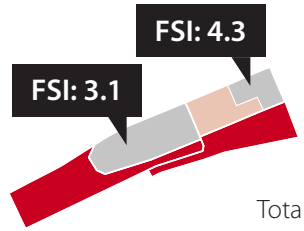
Density type

Type 1
Type 2
Type 3
Type 4
Type 5
Type 6

Case 1: North bund

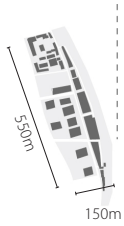


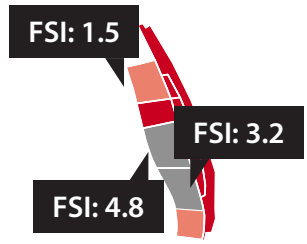




Total
468.100 m²
FSI: 1.89

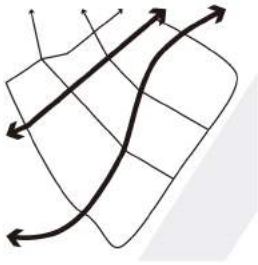
Case 2: Old dock

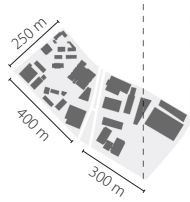


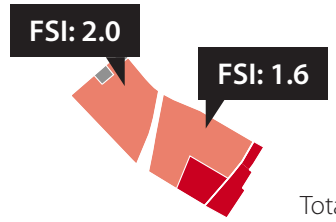


Total
228.600 m²
FSI: 2.1

Case 3: EXPO district

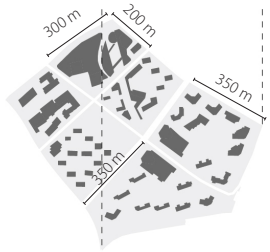


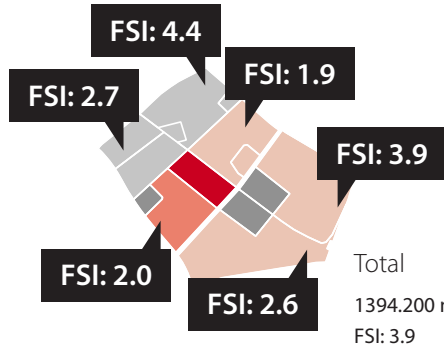




Total
308.900 m²
FSI: 1.9

Case 4: Xuhui neighborhood





Total
1394.200 m²
FSI: 3.9

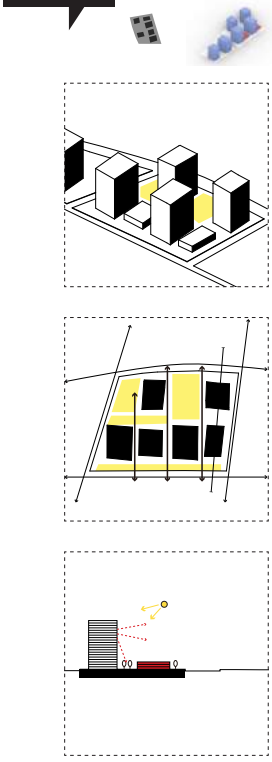
4.2.6 QUALITY OF DENSITY TYPE

Small size block

Medium size block

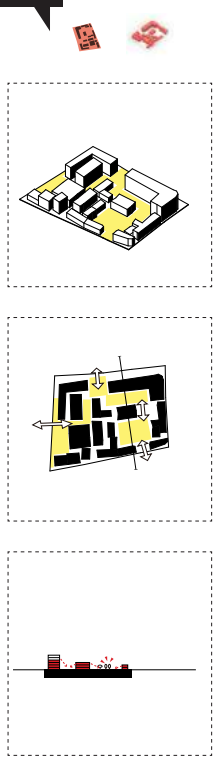
F3

FSI: 4.8



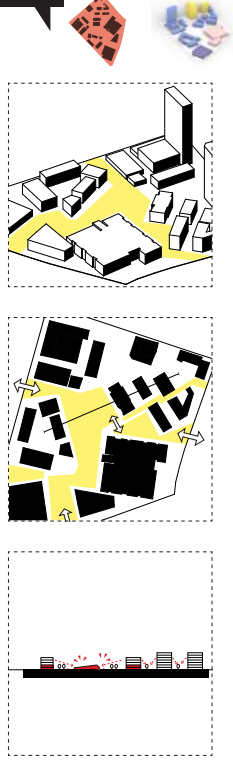
B3

FSI: 1.5



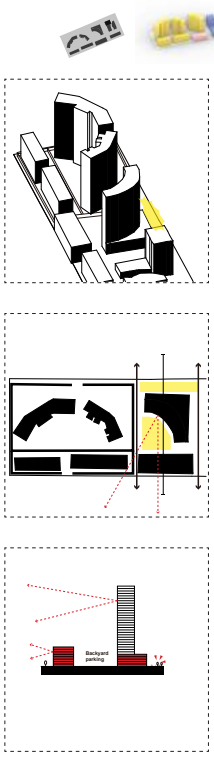
B4

FSI: 2.0



FSI: 4.3

E2



High-rise compact point

Mix of mid-rise and low-rise type

mix of high-rise and mid-

Program: Business priority

Small size block, Open space at the edge of block which not been used. **People move** along street small open space

Program: Commercial

Small size block. Street oriented and open space in the middle of block. **People move** along street and inside the block. Reduce the entrance to maintain the continuity of the streets

Program: Mix

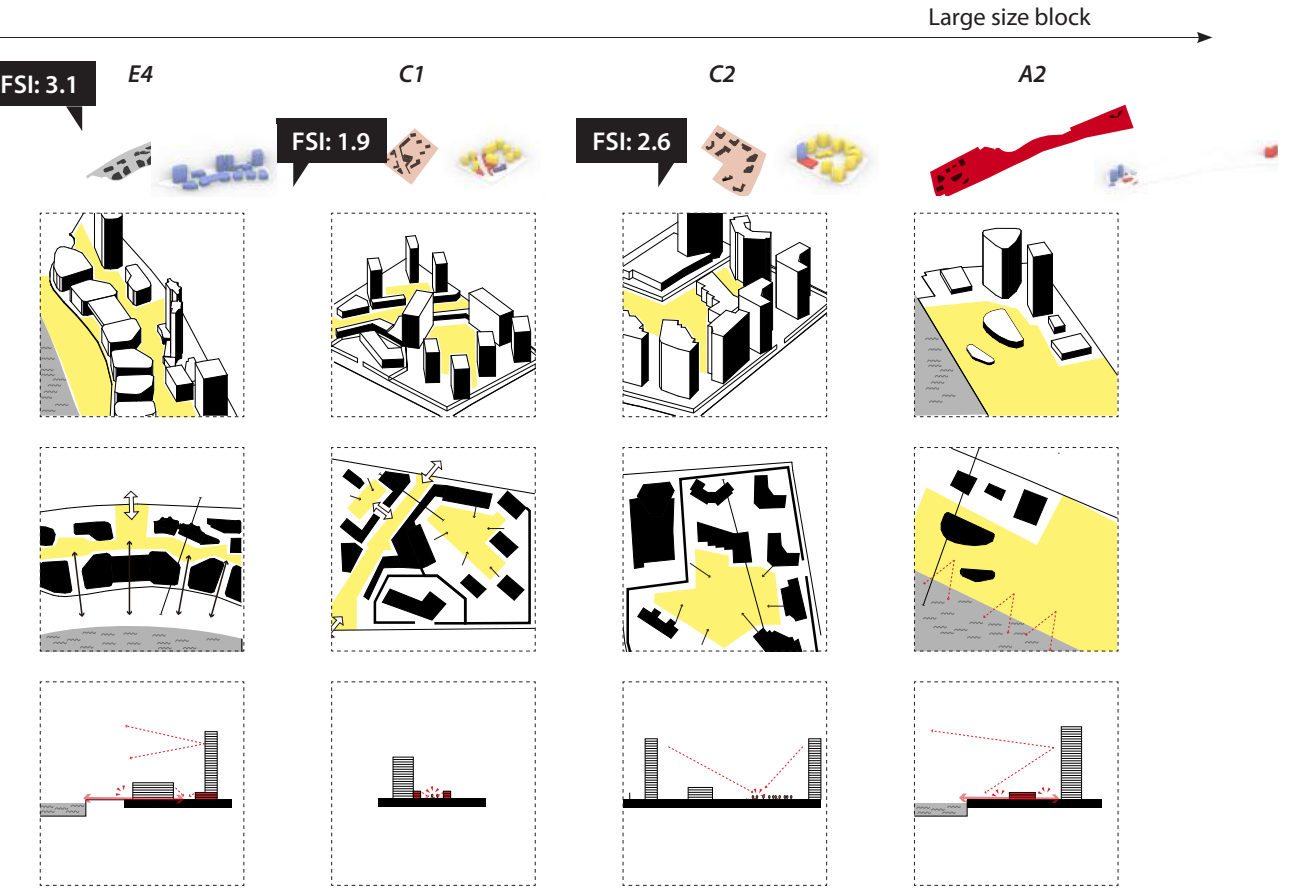
Big size block. Building concentrate into groups and create active public street inside the block. **people move** inside block, street not active.

Program: Mix

Medium size block. **Open space at the edge of block** which not been used. People **move** along street.

What is the quality of these density type ? How people use the block? density typology relation with program?

By analyzing the form, vitality and image from local scale of the 4 case distrcit, we can answer the above questions and understand the relationship between density types and their quality. At the same time, density types and program also have some relationship



-rise compact block type

Program:
Business priority
Medium size block
Building concentrate into groups and create public street inside the block. **People move** along active public street inside the block other than the street

High-rise point type

Program: Mix

Medium block
Building concentrate into two groups with walls and inbetween them are active public street.
Within the groups are the collective open space for residents only.

Program:
Living priority

Big size block. Building scattered in the block. the wall are built to keep the sense of community. the large green space inside the block are used for residents living inside only.

Open block with Low-rise point

Program: Mix

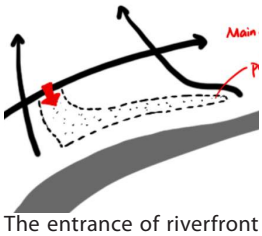
Big size block. low-rise building with large open space. **People gathering** in the entrance, the playground, the pedestrian route, and attract building.

5. DESIGN STRATEGY

5.1 DESIGN ACTION FROM FIELDWORK

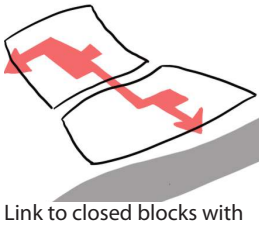
Through the fieldwork study, some design action also can be concluded and categorized into three aspects: the form, activity, and perception. more specific explanation and drawing from fieldwork is shown in the appendix.

Form

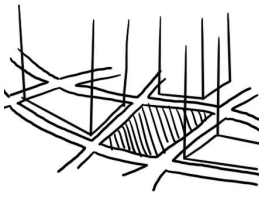


The entrance of riverfront public space link well with main street

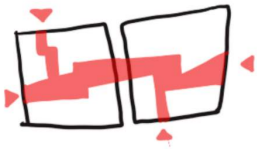
Semi-public fascade increase the vitality



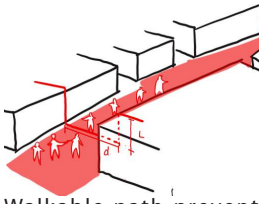
Link to closed blocks with public path



Flexible space can used for temporary programs

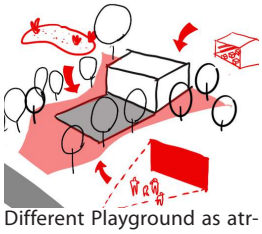


Maxing pedestrain porosity

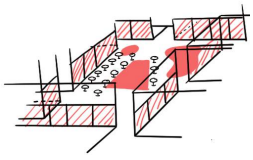


Walkable path prevent from cars with nice scale

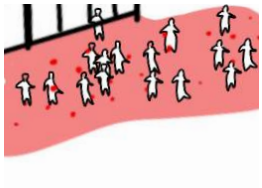
Activity



Different Playground as atrractors



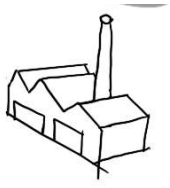
Enclosed courtyard with cafe, small scale business



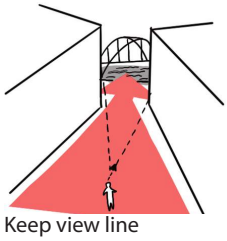
A density of living and working population

Perception

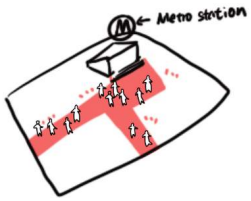
Keep open riverfront view



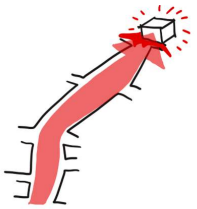
Transform historical warehouse and keep memorable buildings



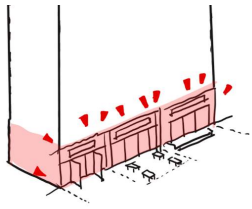
Keep view line



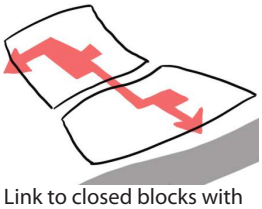
Public transport stop link with block space



Highlighting public space which lead the people move to important buildings

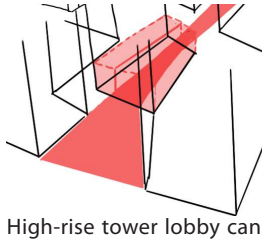


Active fascade can attract people

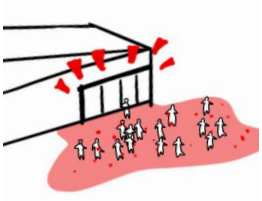


Link to closed blocks with public path

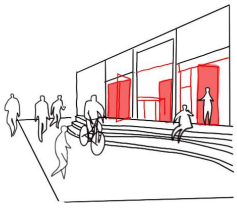
Enough parking



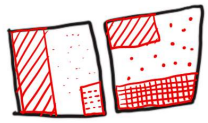
High-rise tower lobby can open to the public



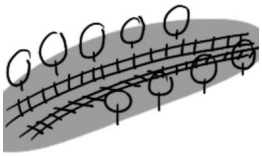
The territory in front of the public buildings is attractors



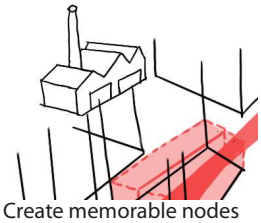
Mixed-use building the groundfloor entrance atrracted informal activities



Mixed-use zonning



Leave history memory by landscape



Create memorable nodes

Imagable building and place

5.2 QUALITY VISION WITH 3 CONCEPTS

From the riverfront analysis shown in the previous chapter, we could conclude the three concepts that contribute to Huangpu riverfront place quality: Mixed-use with the diverse program and density, network well link with the hinterland, and keeping the place identity.

Furthermore, theory helps us formulate eight quality criteria more specifically. According to 8 criteria, we summarize the design actions to achieve the quality vision in the following pages. Those design actions come from fieldwork and case studies.

Place quality conclude from theory

Form

1. Accessible for bike, pedestrain
2. Street connectivity
3. Environmental Friendly public realm
4. Diverse block typology

Movement and Activity

5. Diversity in program and land use
6. Informal and formal social activities
7. Activities to meet diverse social groups
8. Social movement

Perception and Image

9. Physical identity: legibility path, landmark...
10. Social identity
11. Sensory identity
12. History and memory

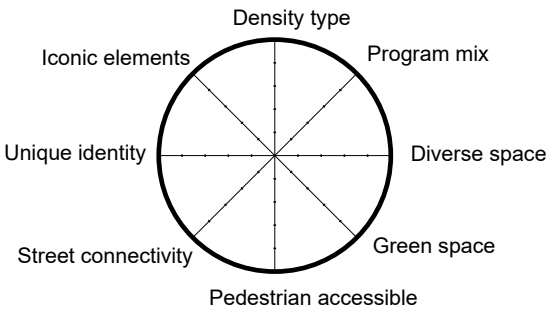
3 concepts

Mixed-use

Street connection

Identity

Quality criteria



Vision

Mixed-use

- Mix different density typology
- Diverse urban program and land use
- Diverse public space
- Green space

Street connection

- Public transport priority accessible
- Network well connected with surroundings

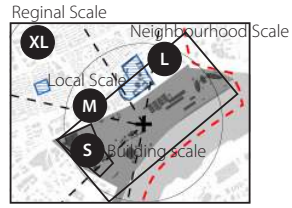
Identity

- Create unique zones with identity
- Maintain iconic elements

Scale of intervetion

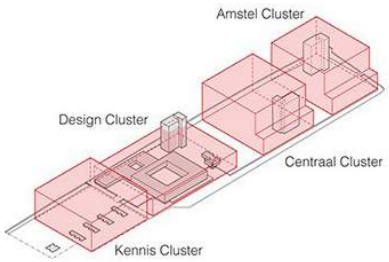
D	L	M	S
P	L	M	S
S	L	M	S
G	L	M	S
A	L	M	S
N	L	M	S
U	L	M	S
I	L	M	S

Quality riverfront mixed-use district



IDENTITY DESIGN ACTION

How to create identity?



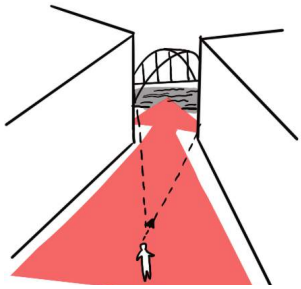
Souce: https://lola.land/projecten.php?id=105

Quality Scale

U L

Subdivide the design area into clusters with specific qualities and limitations so that each block is different and has its own identity

Come from case study, Bajes Kwartier, Amsterdam, The Netherlands, OMA [P. 204]

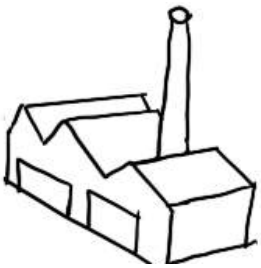


Quality Scale

I L

Keep the view line in site

Come from Shanghai filedwork [P. 199]

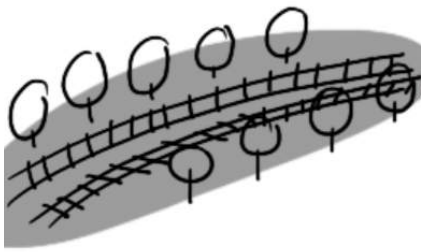


Quality Scale

I L

Preserve the old industrial existing building transformed to a signature building

Come from Shanghai filedwork [P. 201]



Quality Scale

I L

preserve the existing landscape: The existing harsh infrastructure and lost ecosystems will be transformed into a complex of repaired ecosystems and people friendly resilient urban structures.

Come from Shanghai filedwork [P. 196]

Quality to archive

Quality Scale of intervention

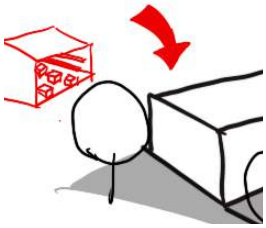
U L

U Create unique zones with identity

I Maintain iconic elements

Design action descriptive explaination

Where the design action come from

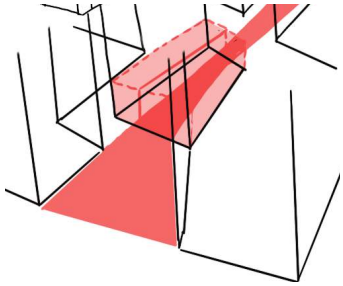


Quality Scale

I M

Use new technology into the community

Come from case study, Bajes Kwartier, Amsterdam, The Netherlands, OMA [P. 204]

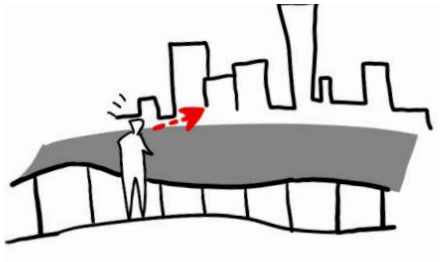


Quality Scale

I M

adaptive re-use buildings and materials

Come from Shanghai filedwork [P.197]



Quality Scale

U M

shape the skyline

Come from Shanghai filedwork [P. 198]

Quality Scale

I S

Keep the traditional cultura in Shanghai

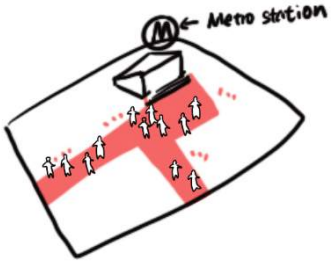
NETWORK DESIGN ACTION

Quality Scale

N XL

The district will be well connected internally and to the rest of the city

Come from case study, HS Kwartier The Hague [NL], KCAP [P. 204]



Quality Scale

A L

Create walkable path link with public transport stop.

Come from Shanghai filedwork [P. 200]

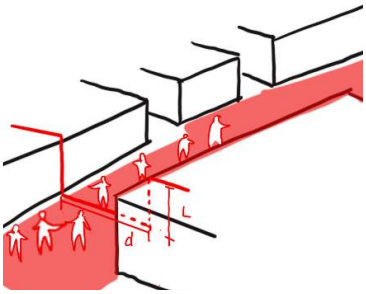
Source: HS Kwartier The Hague [NL], KCAP

Quality Scale

A XL

Create urban axes to link with surrounding. At the same time the green public spaces will give the corridor an open character.

Come from case study, HS Kwartier The Hague [NL], KCAP [P. 204]



Quality Scale

N L

Give priority to using public transportation and reduce the number of roads used for cars. Make it easier to walk, ride a bicycle, or use personal travel equipment.

Come from Shanghai filedwork [P. 202]

Quality to archive

A Public transport priority accessible

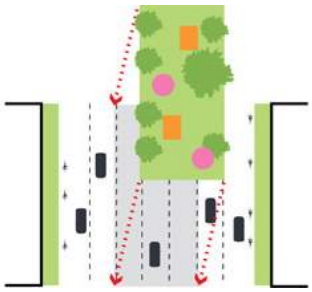
N Network well connected with surroundings

Quality Scale of intervention

A **L**

Design action descriptive explaination

Where the design action come from

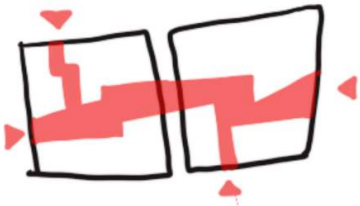


Quality Scale

A **S**

make street as valuable public space: green street

Come from case study, Jurong Lake District Singapore [SG], KCAP [P. 204]



Quality Scale

A **M**

Maxing pedestrain porosity

Come from Shanghai filedwork [P. 200]

Quality Scale

N **S**

Street oriented typology

Come from case study, VDMA, OMA [P. 204]

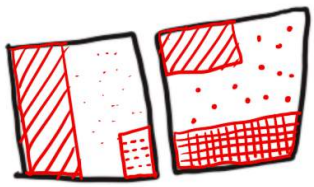
Quality Scale

A **S**

Develop smart parking concept in building

Come from case study, Jurong Lake District Singapore [SG], KCAP [P. 204]

MIXED-USE DESIGN ACTION

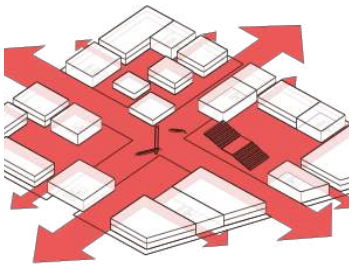


Quality Scale

D L

Mixed density type and building typology

Come from Shanghai filedwork [P. 203]

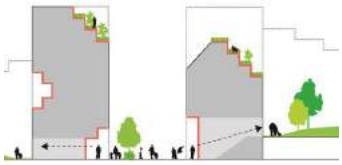


Quality Scale

D L

Creating flexible podium typology: The porous ground floors, court yards and through-block pedestrian links create generous public spaces that encourage interaction, networking and a lively public realm.

Come from case study, Jurong Lake District Singapore [SG], KCAP [P. 204]

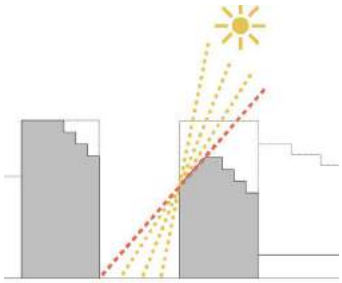


Quality Scale

G S

Horizontal and vertical relief maintains the human dimension and add green space

Come from case study, HS Kwartier The Hague [NL], KCAP [P. 204]



Quality Scale

S S

Creating a varied street scene with lots of daylight and sunlight for all buildings.

Come from case study, HS Kwartier The Hague [NL], KCAP [P. 204]

Quality to archive

D Mix different density typology

P Diverse urban program and land use

S Diverse public space

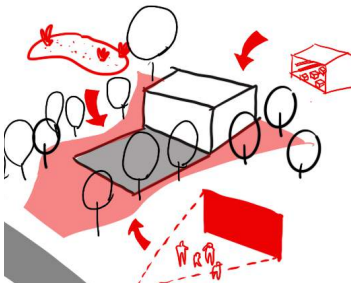
G Green space

Quality Scale of intervention

D L

Design action descriptive explaination

Where the design action come from

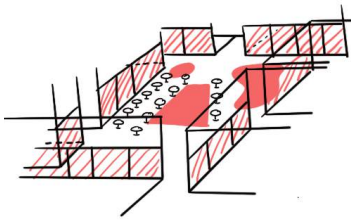


Quality Scale

S M

Nodes with different public program and Different programmed public space.

Come from Shanghai filedwork [P. 196]

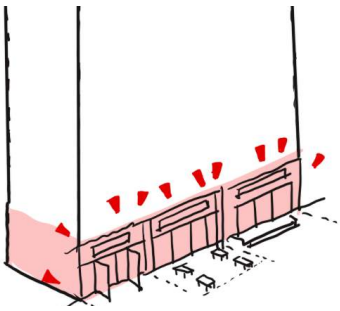


Quality Scale

S M

Pop-up event spaces, Modular building systems

Come from Shanghai filedwork [P. 198]

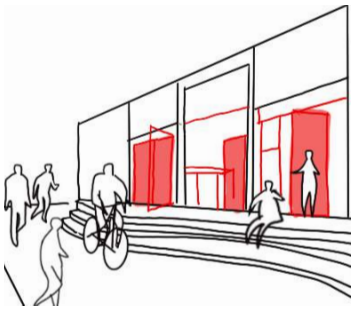


Quality Scale

P S

Mixed-use building: The first five to six floors are mainly aimed at a shared experience. From shared spaces for residents to public spaces catering for visitors.

Come from Shanghai filedwork [P. 202]



Quality Scale

S S

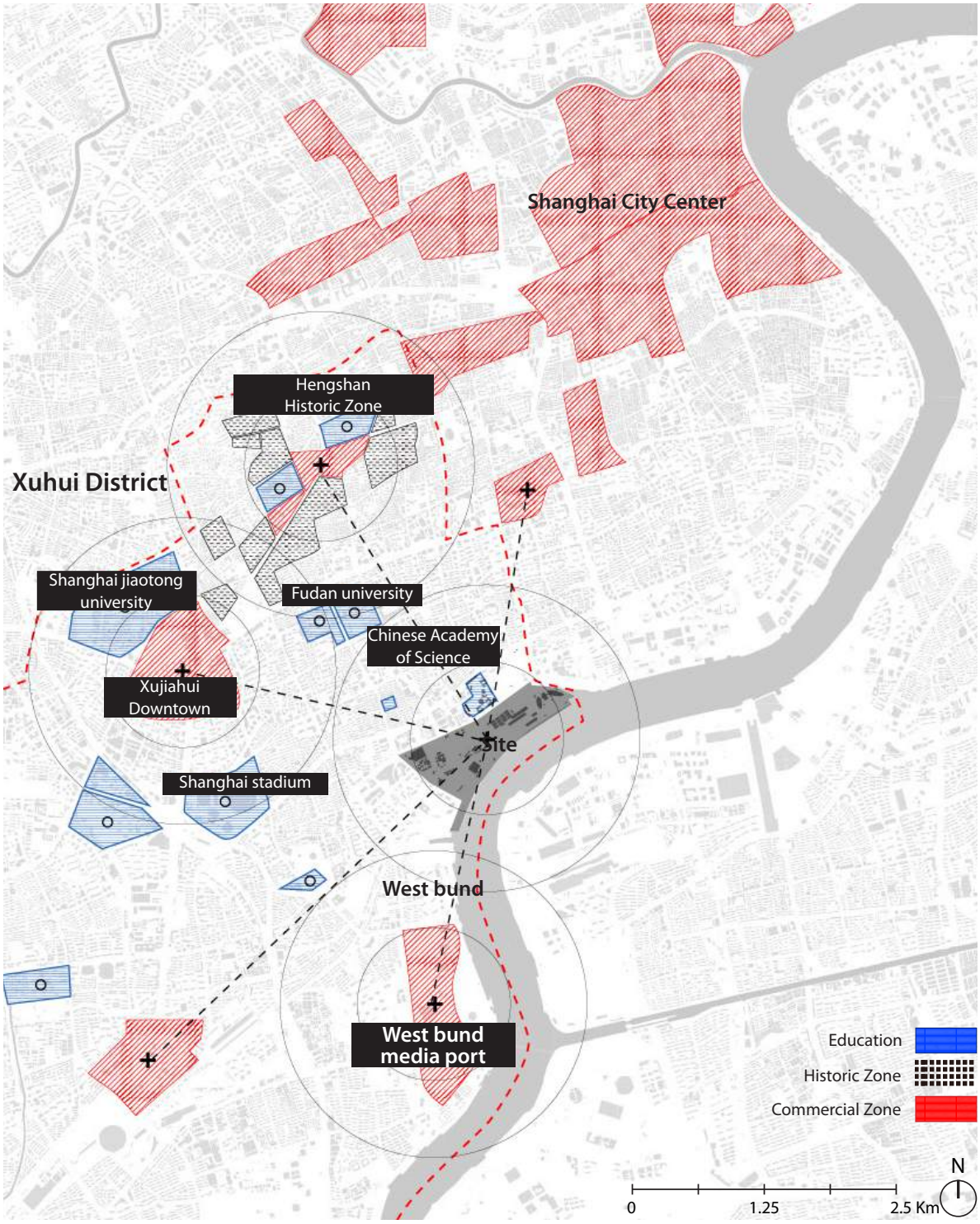
Vibrant plinths

Put the public program on the groundfloor, entrance will atrract informal activities

Come from Shanghai filedwork [P. 197]

6. DESIGN SITE ANALYSE

6.1 DESIGN LOCATION



Design location

This chapter shows how the theory brought into practice. In order to do that, One of the districts in Shanghai west bund, Xuhui District, has been selected as the design location.

Xuhui district, the most significant area of downtown Shanghai. It has abundant resources ranging from historic blocks, modern malls, renowned universities to waterfront open space. The district also has the oldest workers village in Shanghai.

The site is located in the riverfront area in Xuhui District, which is named West Bund. As an origin for the national manufacturing industry in the 20th century, the West Bund started to transform from an industry-intensive area to a modern urban waterfront. The first step is to cut-through a continuous public open space to support the city living in 2008.

Furthermore, in the vision 2035, Shanghai planned to build the West Bund into an iconic zone guided by the "planning-based, culture-oriented, eco-based, and technological-innovation-driven" development.

Commercial Zone

Historic Zone

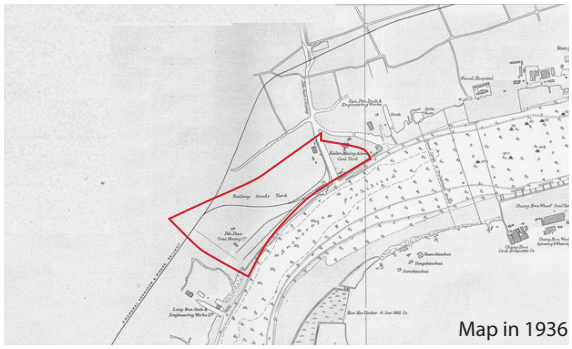
Education & University

Xujiahui Downtown

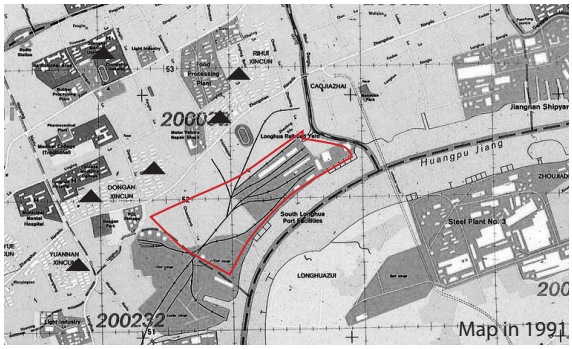
Hengshan Historic Zone

Shanghai jiaotong university

HISTORICAL DEVELOP



Phase 1: The site is used to be the Nanpu railway station, which is first built in 1907 and is one of the earliest railway stations in Shanghai.



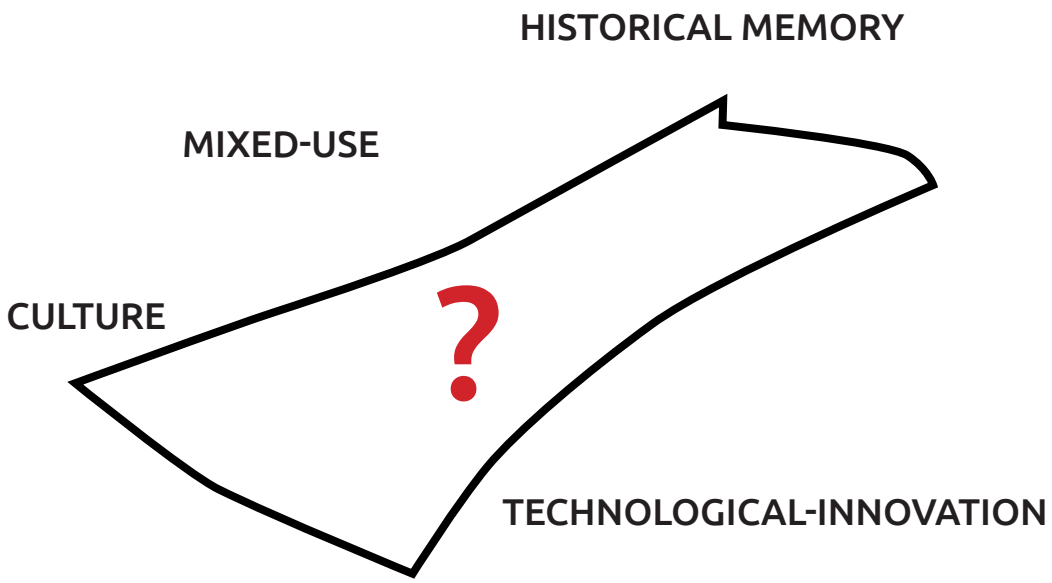
Phase 2: As the station is used to support passenger and freight transportation until Shanghai's new south station was completed in 2009. And there are more workers village show up nearby

Phase 3: In the context of the redevelopment of brownfields on both sides of the Huangpu river before the 2010 Shanghai World Expo, the station was closed.

Phase 4: In 2016, the Shanghai government planned the 45km public space along the Huangpu River. Today, The riverfront district is going to redeveloped guided by the cultural and technological goal.

6.2 SHANGHAI AMBITION

How can site contribute to the Xuhui District, innovation and cultural background?



From Shanghai government

Shanghai planned to build the West Bund into an iconic zone guided by the "planning-based, culture-oriented, eco-based, and technological-innovation-driven" development.

1. Make full use of Xuhui District's abundant resources in Science and Technology, the advantages of cultural and artistic in the west bund, and the advantages of waterfront location to form a world-class financial industry development platform a new growth pole for Shanghai's international financial center.

2. Led by science and technology, integrating business and commerce, financial services, living and cultural leisure, and creating a vibrant mixed-use city district.

culture and leisure

Work space for start-ups

technological- innovation office

Living space afforded by diverse people

public space

sustainable space

1

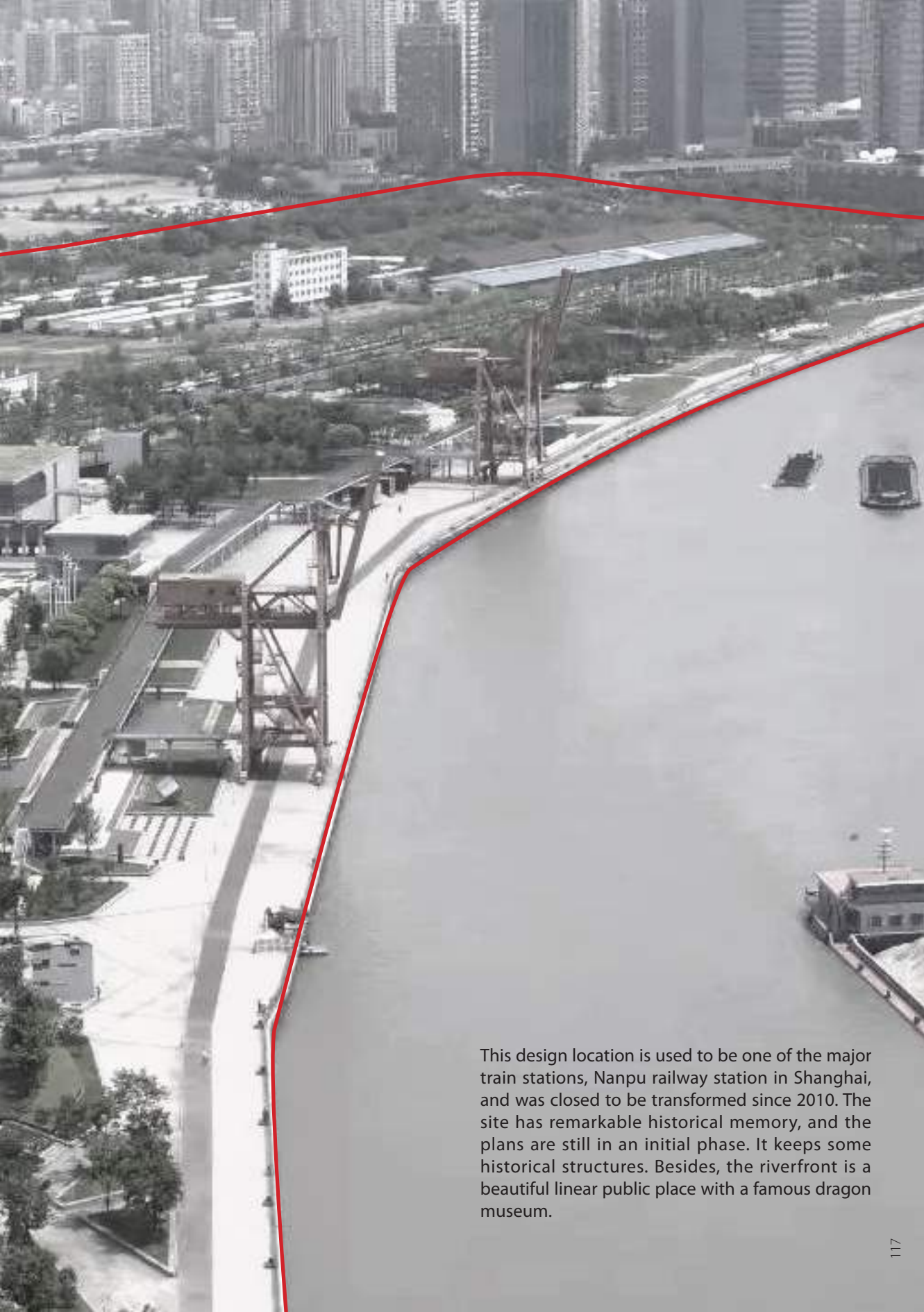
IDENTITY

In this chapter, the author studies how the heritage in the site contributes to identity.

The author first obtained tangible elements through the method of Kelven Lynch. Then analyze their qualities and the social and sensory identities associated with them.

Then, use design actions, such as maintaining the famous view line, enhancing the structure of essential structure on the site, retaining the landscape to put it into the design process. Historical buildings will be transformed into cultural spaces, and new buildings will be built simultaneously. The existing landscape will also be transformed into a complex of restored ecosystems and human-friendly resilient urban structures. At the same time, people's emotions and memories will also maintain an invisible structure.

In addition to this, the author also studied how to create the personality of different blocks in this chapter. It will create a variety of new attractors, programs, and density to meet the needs of diverse people and create a sense of community.

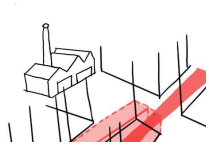


This design location is used to be one of the major train stations, Nanpu railway station in Shanghai, and was closed to be transformed since 2010. The site has remarkable historical memory, and the plans are still in an initial phase. It keeps some historical structures. Besides, the riverfront is a beautiful linear public place with a famous dragon museum.

EXISTING STRCUTURE IN SITE

Maintain iconic elements

Before preserving these old industrial building and transforming it into a signature building, We need to investigate their value to preserve



Quality I

Scale L

Construction time of existing buildings

Built before 2000

Built between 2013-2020

N

0 500 m 1000 m

①

Westbund camp

The temperaror camp remain some modular building for creative function and one sports center.

②

Long museum

a attractor for people go for a cultural visit.

③

Two red structure from the railway station, which is a important landmark and memorable structure for these area.

④

Xing museum

Two green structure and a warehouse from the railway station, which is a important landmark for these area.

⑤

A historical protect building. The architecture is in bad condition, but it is meaningful to be need to be reconstruct and add new function.

⑥

Empty warehouse

The two floor warehouse, which have strong character. potential to keep the structure and add new functions

⑦

The Nanpu railway station wall

The used division wall across the block which is meaningful

⑧

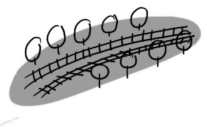
Xuhui police station

the used factory building, two of the 1 floor flat , one 6 floor slab which have potential to be transform

EXISTING LANDSCAPE

Keep existing fabric as landscape

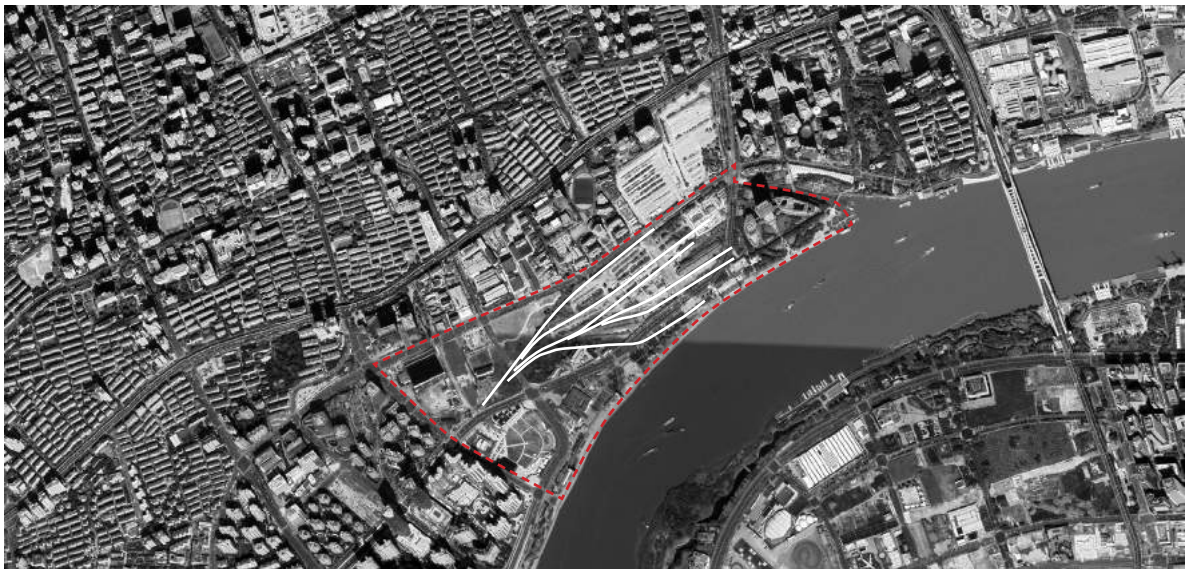
Retain the existing railroad layout:
The existing train tracks are a significant memory of the site. It will be transformed into a restored linear green belt and linear buildings, which contain various programs and people-friendly public spaces.



Quality I

Scale L

Map in 2009

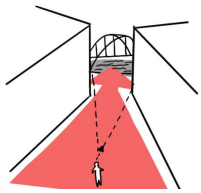


Map in 2020

PEOPLE'S PERCEPTION OF LANDMARK

The landmark

After analyzing existing site landmarks, we will be able to maintain the view line to remind people of their memories and identity. Therefore, when people wander in this community, they will feel a sense of attachment.

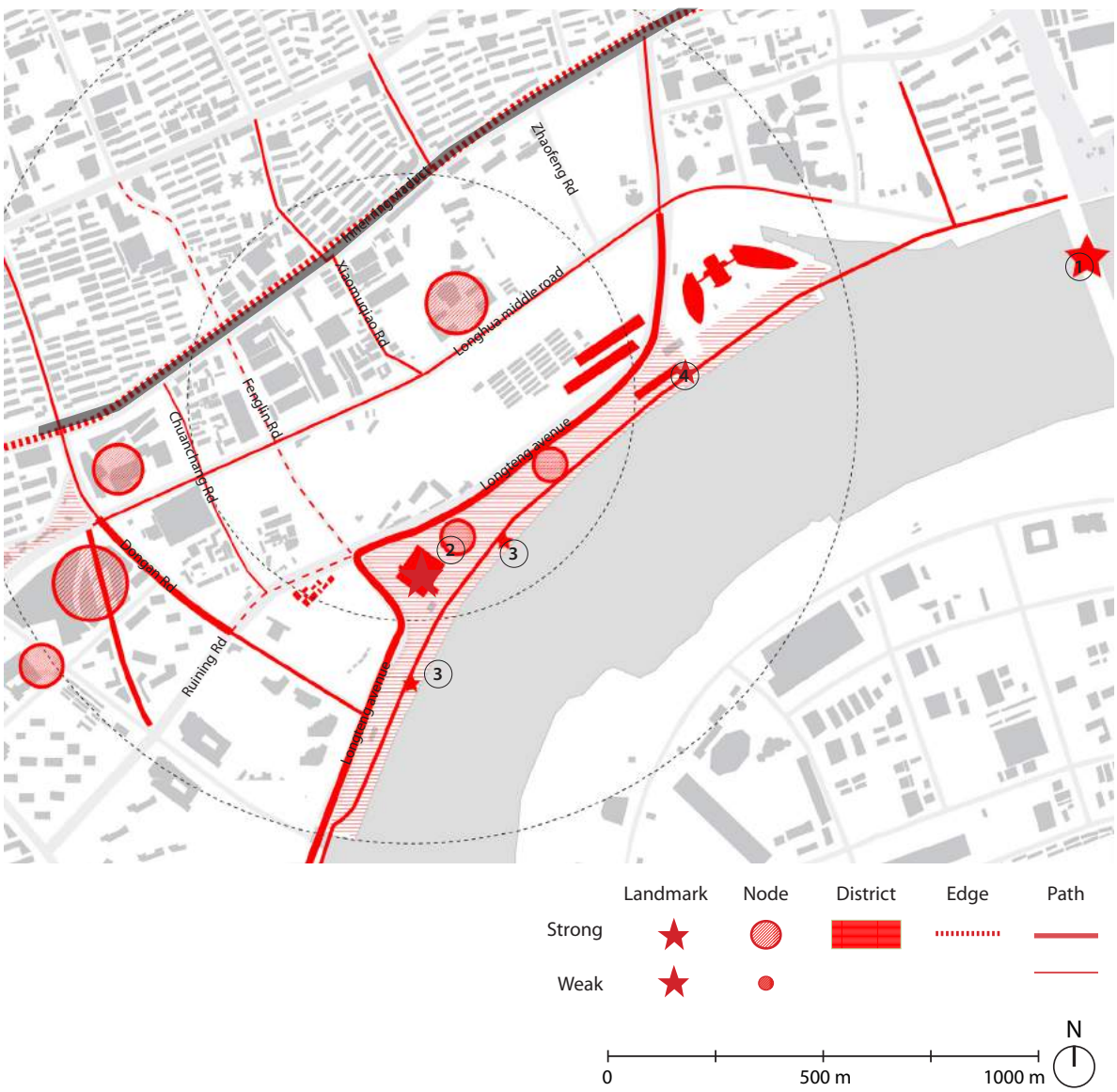


Quality

I

Scale

L



Physical aspect	Social aspect	Sensory aspect	Memory aspect

Landmark 1

The Lupu bridge, The riverbank can always view the Lupu bridge

Landmark 2

Long museum is a famous modern art muserm. It attracted people all around Shanghai. The sensory problem is the way from public transport node to museum is not clear.

(2) ⟶ Active the street where people come, introduce nice pedestrain road connect the attractor and the public transport node

Landmark 3

The crane landmark can be seen from Dongan road and Longteng avenue as a view guide.

(3) ⟶ Strength the view guide once people enter the district

Landmark 4

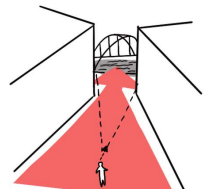
The green crane landmark is location along the river, is not as high as the landmark C, so it can not be seen from distance.

(4) ⟶ Strenghth the view guide once people enter the district

VIEW LINE

The potential view line

Landmarks are unforgettable memories. They remind people of the district identity through the process of keeping the view and creating exciting paths towards landmarks.

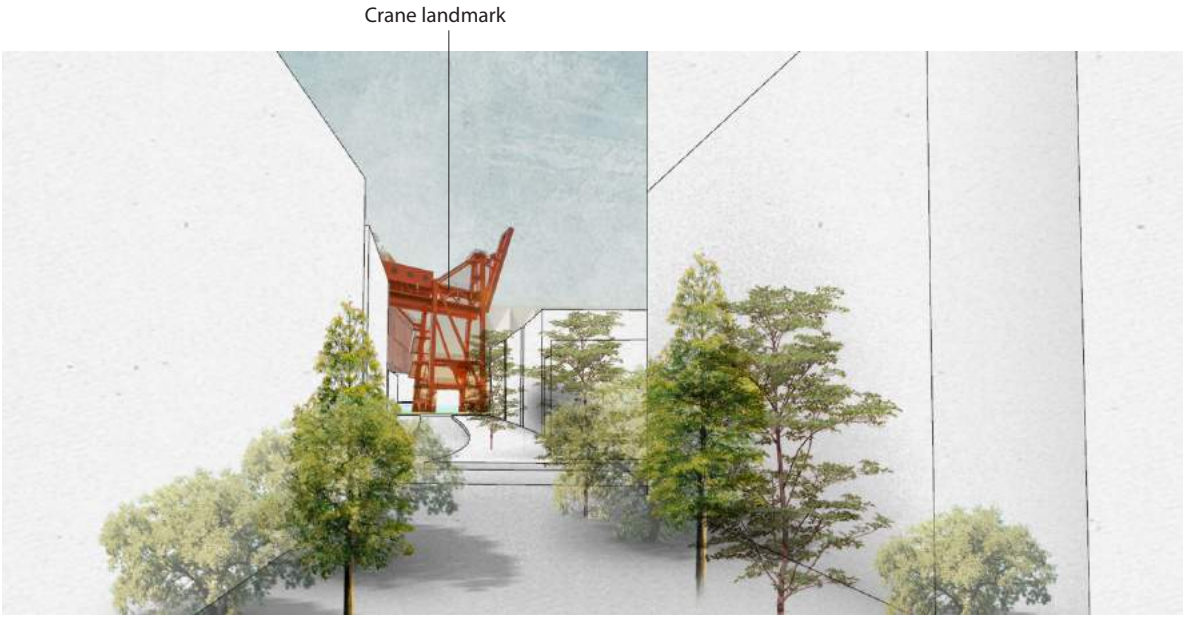


Quality

I

Scale

L



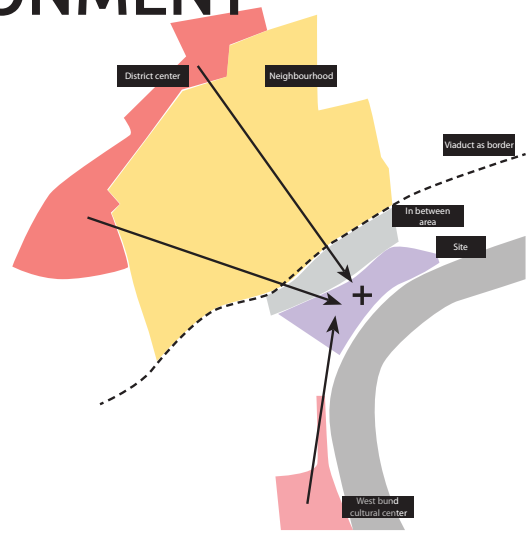
(a) View front point a1 and a2

(b) View front point b

SURROUDING ENVIRONMENT

Existing surrouding environment

The surrounding has abundant resources ranging from historic blocks, modern malls, renowned universities, the oldest workers village to cultural center. In order to use the surrounding facilities, four types of corridors were established to represent business, technology, residence, and culture

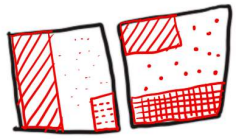


Office
Commercial
Cultural
Education
Living priority
Residential

0 500 m 1000 m N

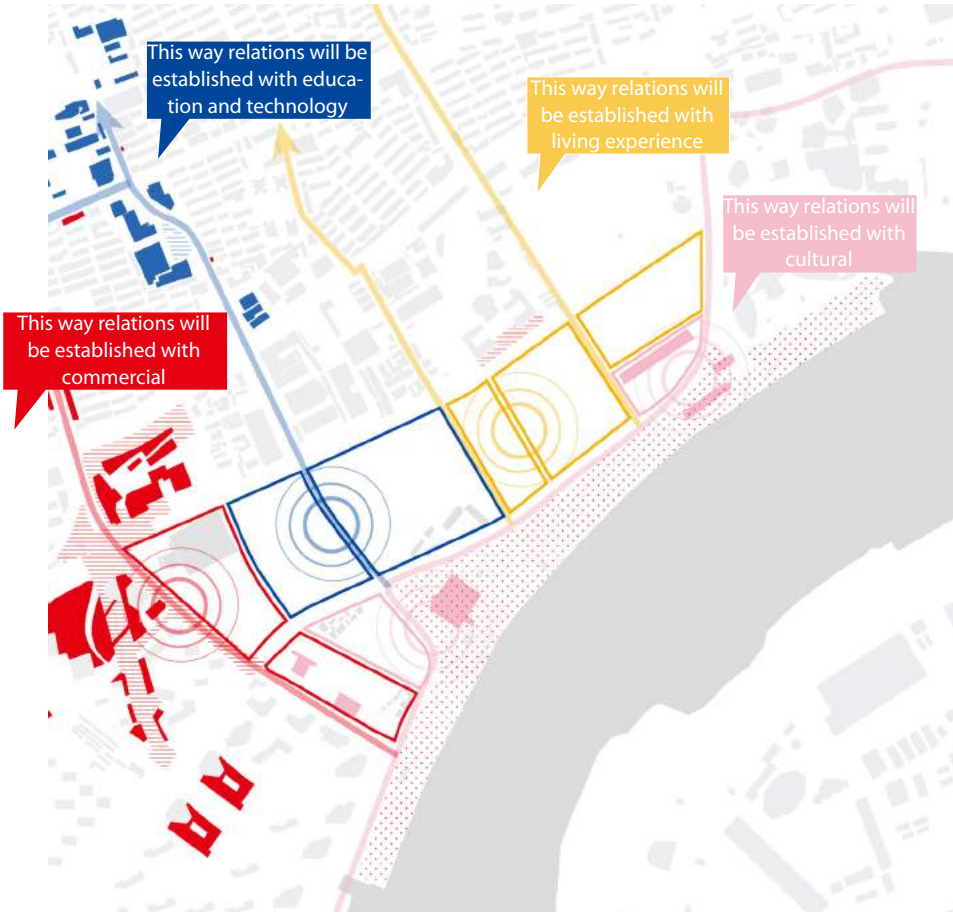
Create identity zones

Subdivided the site into zones which have been assigned specific qualities and limitations

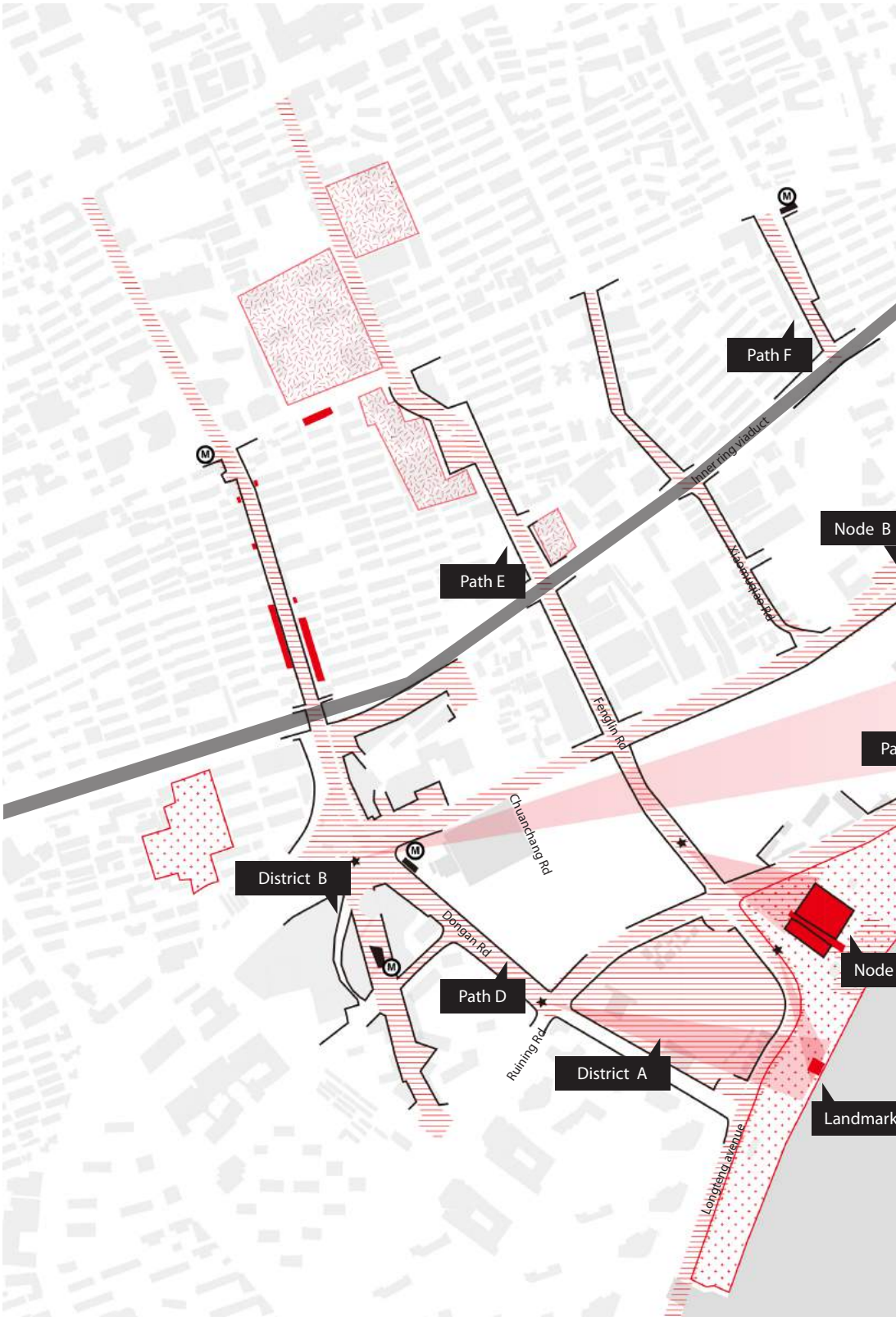


Quality: I

Scale: L



LOCAL IDENTITY CONCLUSION MAP



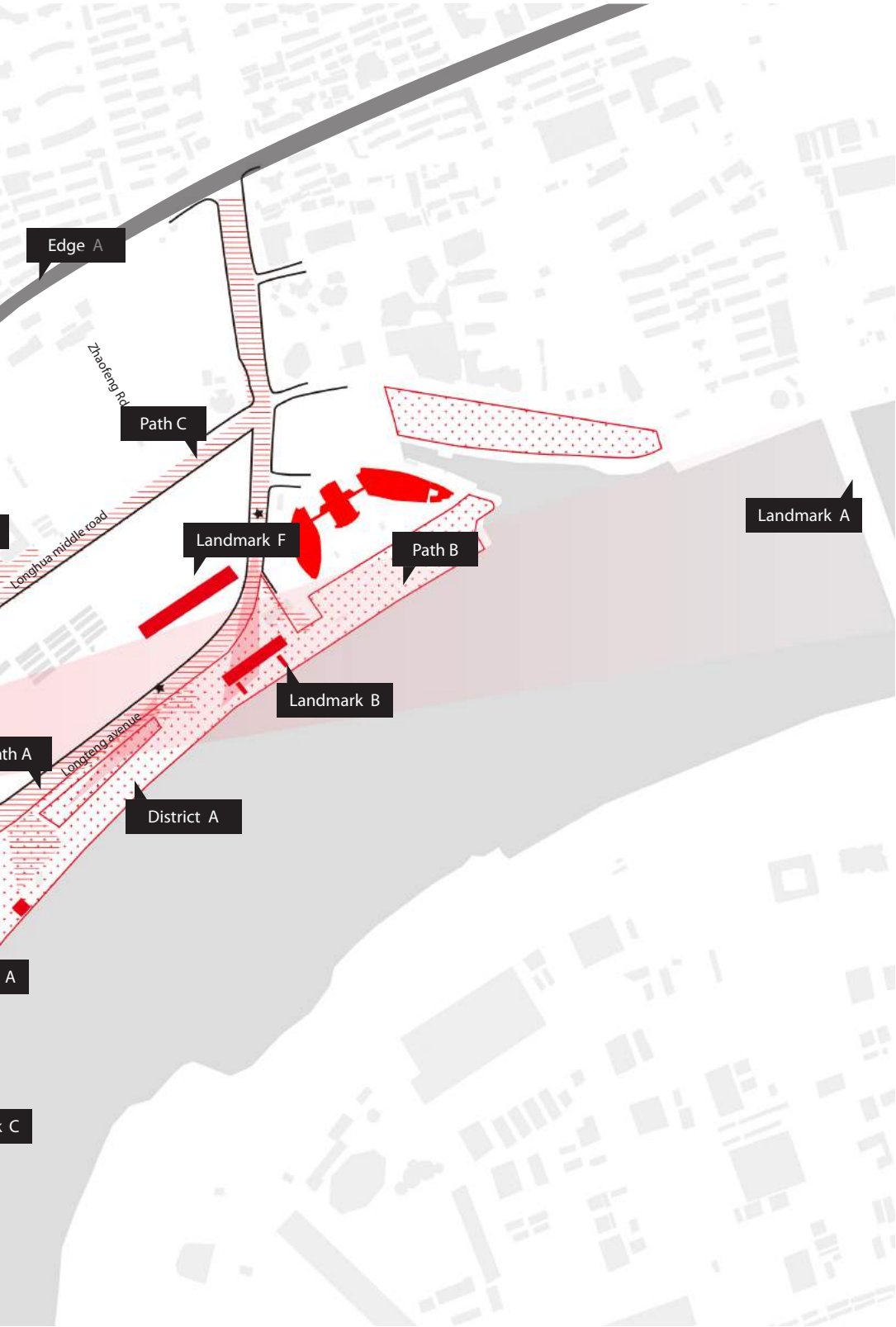
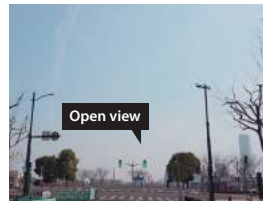
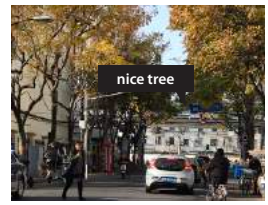
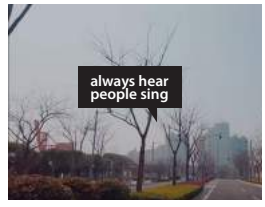

Edge A
Zhaofeng Rd
Path C
Longhua middle road
Landmark F
Path B
Landmark A
Landmark B
Longteng avenue
District A

PHOTO MATRIX

	Physical aspect	*Social aspect*	*Sensory aspect*	*Memory aspect*
Path A				
Path B				
Path C				
Path D				
Path E				
Path F				
Edge A				

	Physical aspect	Social aspect	Sensory aspect	Memory aspect
Landmark A				
Landmark B				
Landmark C				
Node A				
Node B				
District A				
District B				

2

NETWORK

The new riverfront district should be closely connected to the larger environment on the city scale. Apart from that, easily accessible by different modes of transportation and a good walking experience also contribute to the network.

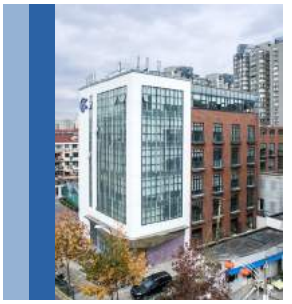
Around the site, there are abundant resources, ranging from historic blocks, modern shopping centers, famous universities, the oldest workers' village to the cultural center. In order to connect with the surrounding facilities, four types of connections will be created: ways of connecting with business, education, and technology, residence, and culture. Let the corridor be a place where young professionals and students, residents, and visitors come together. An environment that provides inspiration and encourages interaction.

In response to the Shanghai municipal's vision of creating a unique urban image through dense high-rise buildings, the building density will be higher along the connected streets. It will create a diversity of activities and street spaces for an enjoyable walking experience.

URBAN AXES

How to adjust the walking experience?

Path E



Path D

Path F

Path A

Hospital
Office
Commercial
Cultural
Grreen
Education
Industry
Residential

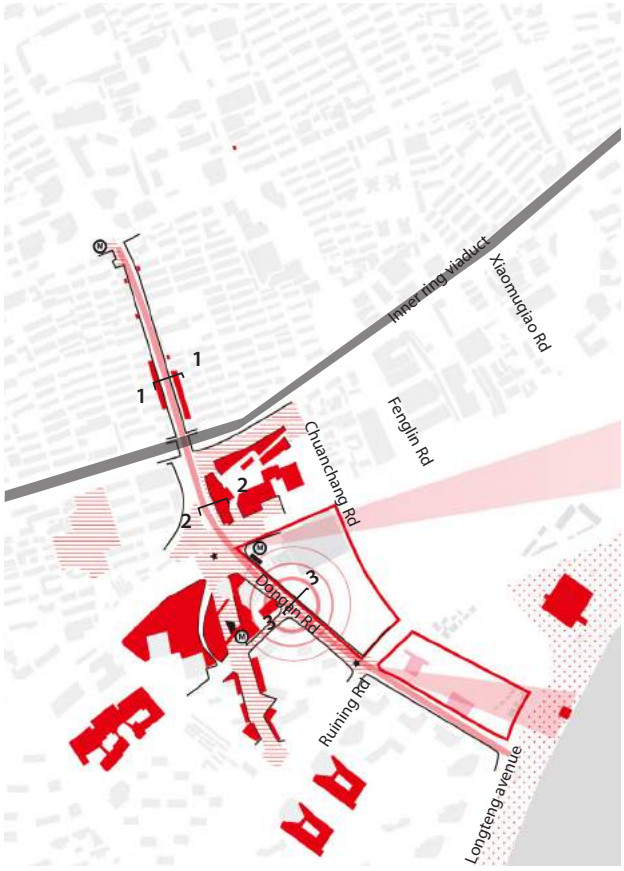
0 250 m 500 m N

URBAN AXES

Commercial corridor

Path D Dongan Road

This road has distributed with commercial malls and groundfloor stores. This corridor will be established with a commercial atmosphere and market to serve the daily life of the residents. meanwhile, keep the social and sensory identity of the path.

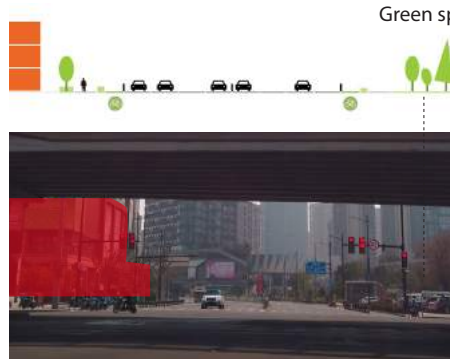


Commercial

Section 1-1

Problem: The private community wall breaks the continuity of public identity.

Section 2-2



Problem: Overly wide streets will reduce the business atmosphere and relationship with the small park on the other side of the road.

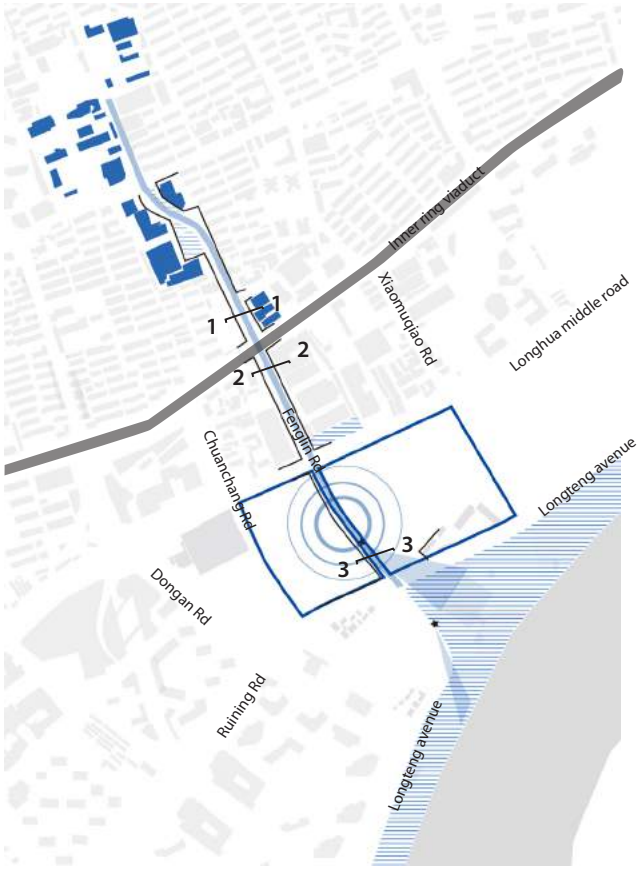
Section 3-3

Problem: street size are nice, low density and low degree of mixed-use. there need new development

technological corridor

Path E Fenglin Road

This road has already distributed with technology office and education institutions. Therefore this way relation will be established with education and technology. At the same time, the green public spaces will give the area an open character. Moreover, make it a breeding ground for new ideas.



Education& Office

Section1-1

Problem: low degree of mixed-use on the groundfloor, make the public realm not active

Section 2-2

Problem: low density and low degree of mixed-use. need new development

Section 3-3

Problem: low density and low degree of mixed-use. there need new development

URBAN AXES

Living corridor

Path F Damuqiao Road

This road is a typical one that connects the surrounding community to the riverfront, along which are residential neighborhoods. Some of the residential buildings along the street have continuous shops on the ground floor, which attract vivid life. We hope to set up pocket parks and living facilities on this connection for residents' daily lives so that residents can walk to the river naturally.

Residential

Section 1-1

The buildings are arranged along the street to create a good street atmosphere, the pedestrian space is relatively small and some areas are occupied by the expansion of the store

Section 2-2

No buildings along the street create a good street atmosphere. potential to introduce the mixed-use building arrange along street

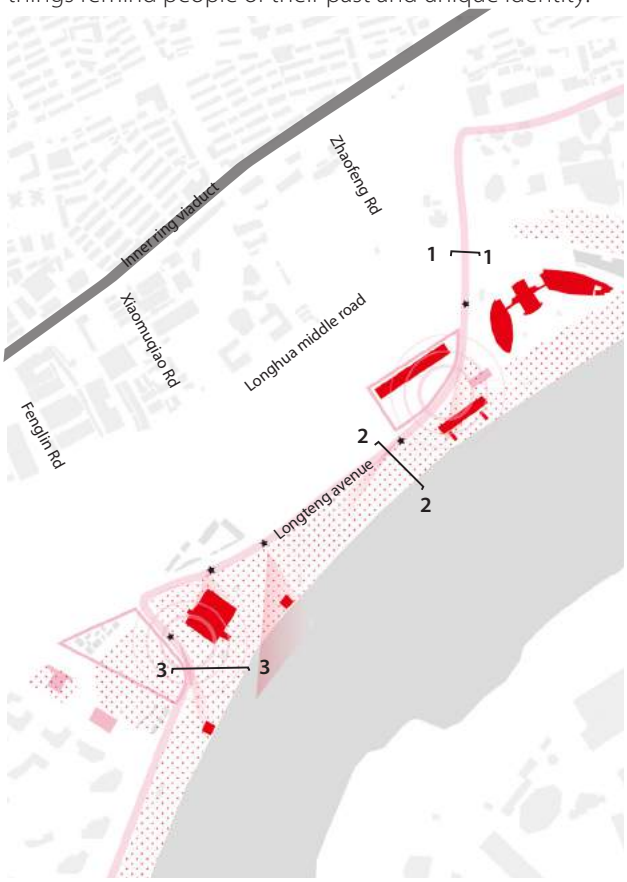
Section 3-3

Problem: When this road meet the visduct, the road is stop

Cultural corridor

Path A Longteng avenue

Longteng Avenue is close to the river, with a nice water view and good green space. There are many art galleries along this street, attracting people from all over the city. Walking on this road, the orange tower crane, the high sea tower standing on the riverbank, the iron pier head used to tie the rope when there used to be the dock. These things remind people of their past and unique identity.



Cultural

Section1-1

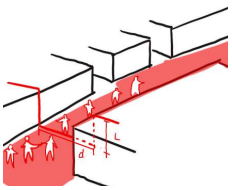
Section 2-2

Section 3-3

NETWORK

Well link with urban fabric

Make the district well connected to a bigger context and is easy to access from different transportation mode



Quality I

Scale L

5 mins' walking

Existing street network

Bus stop

Add street

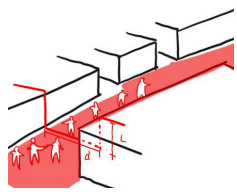
Metro Station

N

0 500 m 1000 m

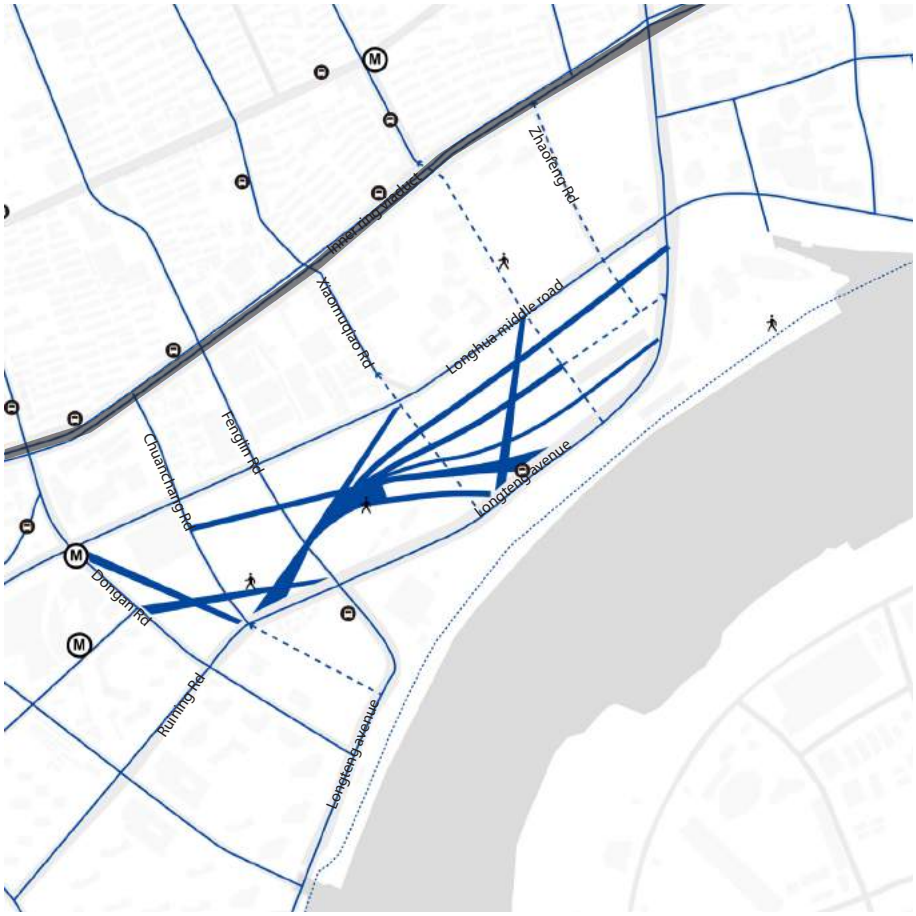
Accesssible from different transportation mode

Give priority to using public transportation and reduce the number of roads used for cars. Make it easier to walk, ride a bicycle, or use personal travel equipment.



Quality I

Scale L



New road

Car & Bicycle road

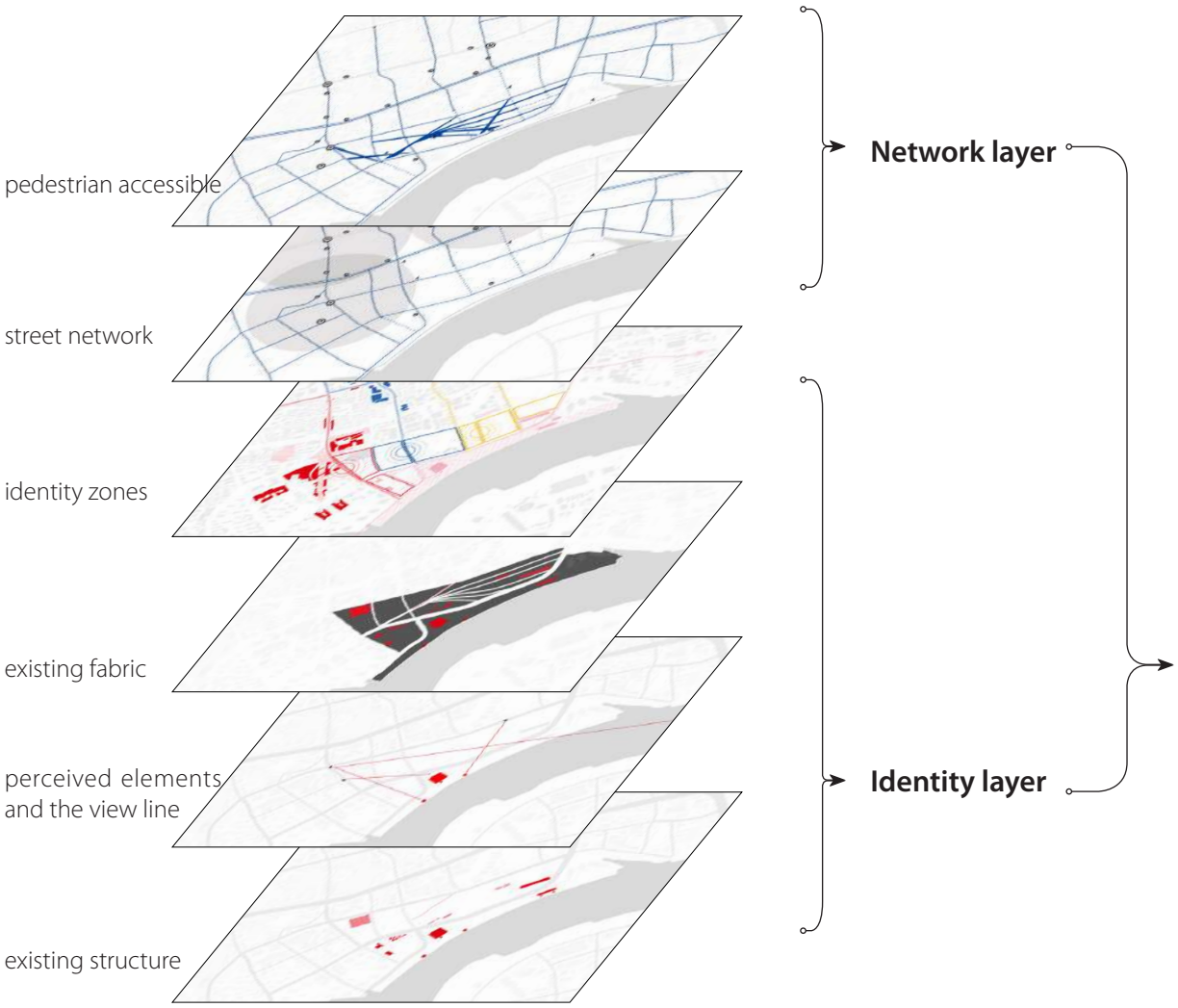
Pedestrain road

N

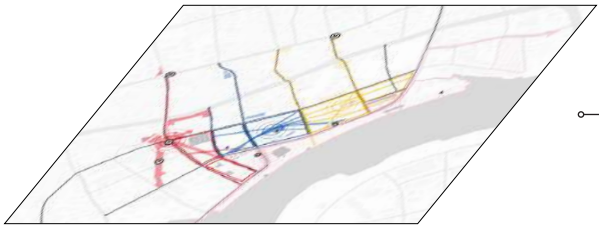
0 500 m 1000 m

MAIN SPATIAL FRAMEWORK

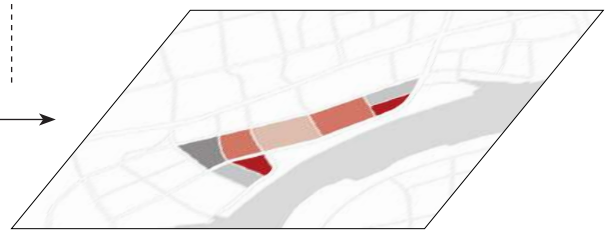
Combining the analysis of the network layer and the identity layer, we can draw a large-scale main spatial framework. And it helps us understand the diverse spatial qualities of different blocks and helps us to propose density distribution



Quality guided the density type and their program

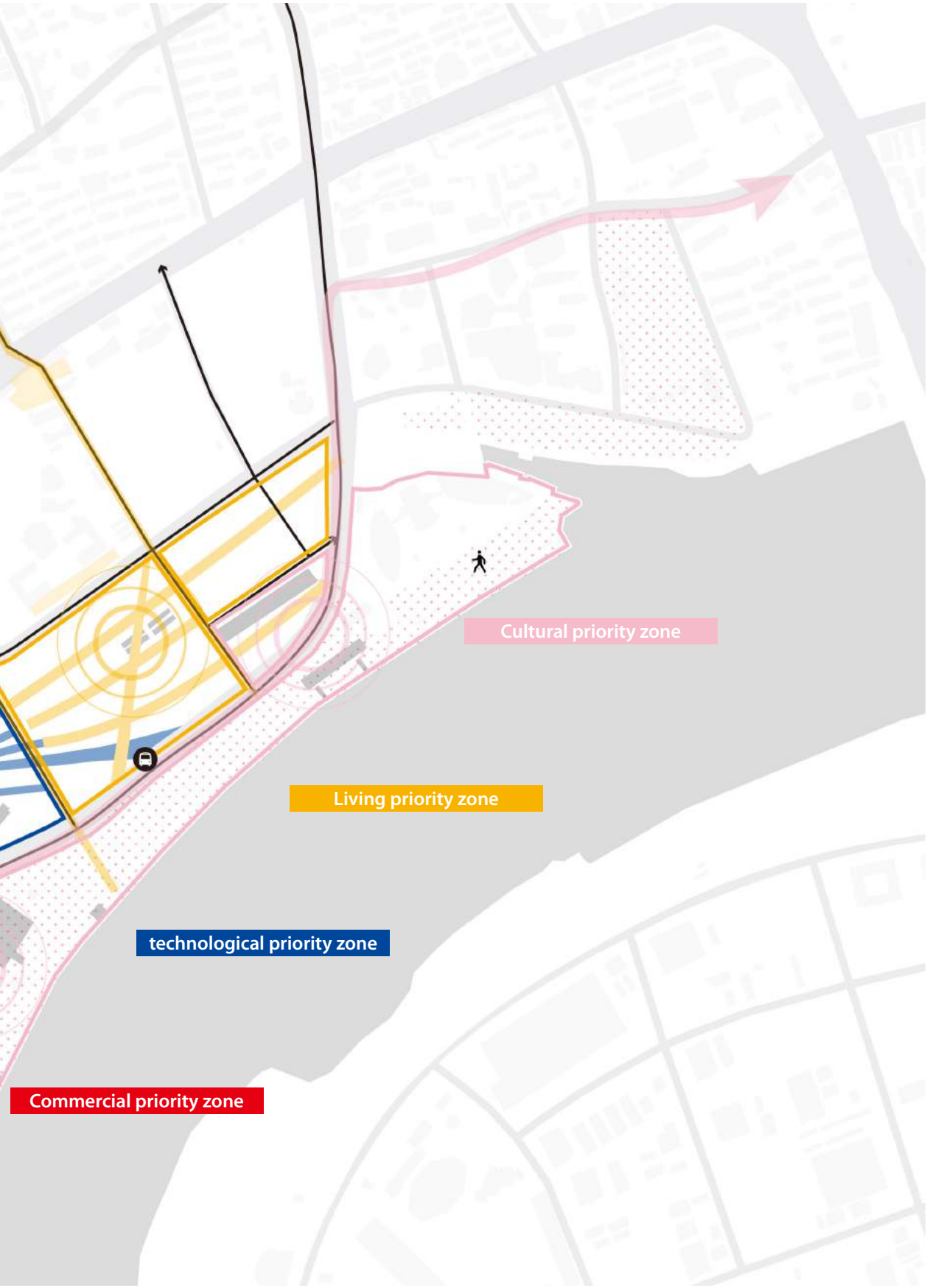


Main spatial framework



Density type

MAIN SPATIAL FRAMEWORK


Cultural priority zone
Living priority zone
technological priority zone
Commercial priority zone

3

MIXED-USE

Speaking of creating a vibrant community that is mixed-use and serves a diverse group of people. The first should be of high density. High density and population gathering will bring vitality to the place. In addition to high density, the combination of different facilities and housing will produce an economy of 18/7, full of vitality during the day and night. Program mixing will attract different target groups at different times of the day, which will improve the quality of life. In that case, high-tech people, start-ups, office workers, students, residents, and cultural visiting citizens will meet and communicate. Adding green space for people to spend some time and including appropriate content in street-level programs will further improve the quality of life. At the same time, extending activities from public spaces to ground-level programs will also improve the quality of life (for example, using the ground floor for public programs such as restaurants, gyms, workshop spaces, etc.)

PROGRAM DIVISION FROM GOVERNMENT

residential population: *2.3w*

Total

Floor space:1080.000 m²
Block area: 320.000 m²
FSI: 3.0-4.0

Cultural <4% Cultural: 40.000 m²

Educatiuon & Institution < 3%

Office 61% Office: 660.000 m²

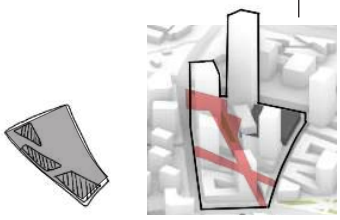
Commercial 18% Commercial: 150.000 m²
Hotel: 55.000 m²

Residential 17% Rental housing: 156.000 m²
Commercial housing: 28.000 m²
Social housing: 2.000 m²

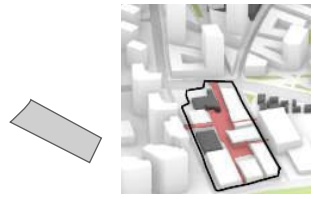
Parking Parking: 650.000 m²

This is the first possibility of the program proposed by the government. After the density design test, the author will re-propose a suitable building area and function distribution. Please refer to the report page *[P.166]*

DENSITY DISTRIBUTION



a



d

Quality: Business priority district: high density along the transportation node. Focus in making public street inside block to link with metro station and keep the view line

Density type: High-rise compact type with public street inside block

Quality: Business priority district:
Density type: Mix of mid-rise and low-rise type

Type 1 Open block with low-rise point

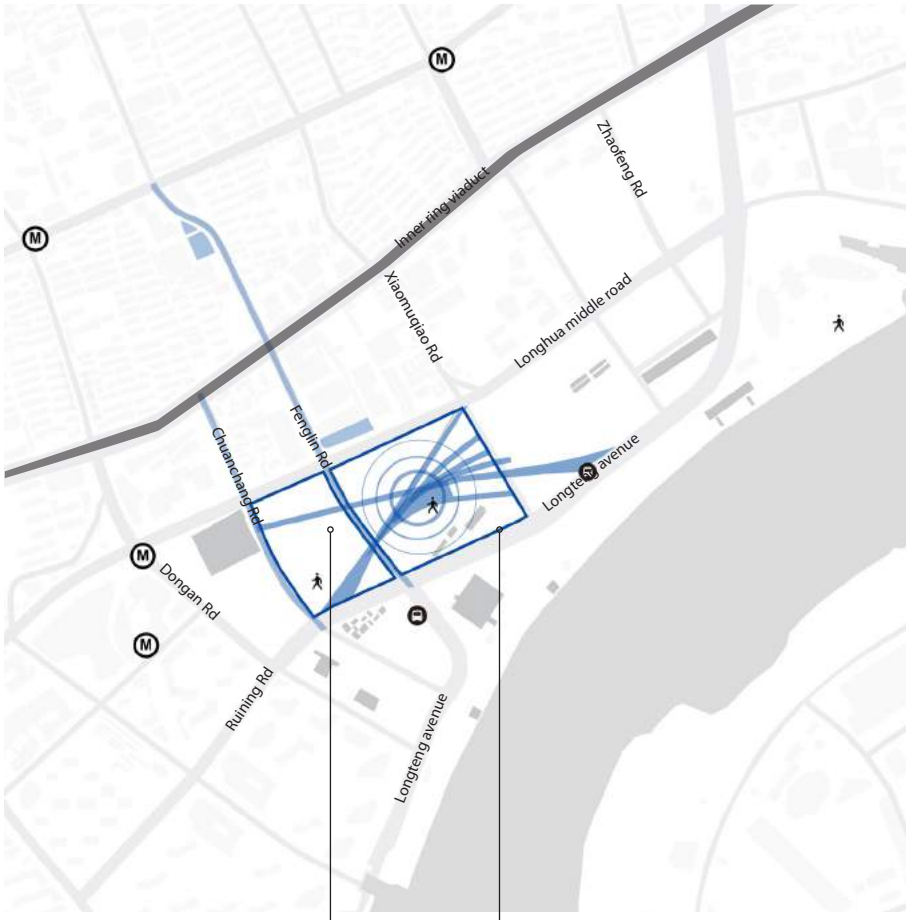
Type 2 Mix of mid-rise and low-rise type

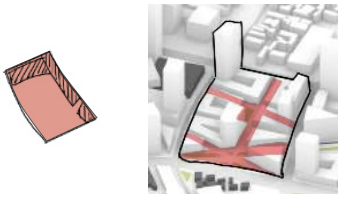
Type 3 High-rise spacious point type

Type 4 Low-rise compact type

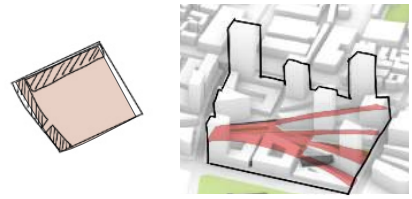
Type 5 Mid-rise compact block type

Type 6 High-rise compact point type:





d



j

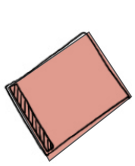
Quality: Office and instituation priority district: Focus on create street oriented block to enhance the relation between the site and the education district. Making block edge active with open space and shared ground floor space.

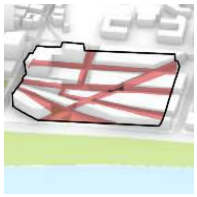
Density type: mix of high-rise and mid-rise type

Quality: Office and instituation priority district: as an innovation hub with large open space. public route will connect all cultural, retail, and open spaces in the urban hub at different levels

Density type: Mix of high-rise and mid-rise type

DENSITY DISTRIBUTION





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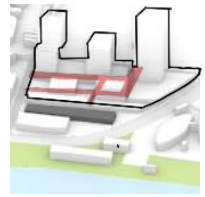


j

Quality: Living priority district:
To the riverfront, there are more residential and more quiet. create diverse landscape and playground for people inside the block

Density type: Mix of mid-rise and low-rise type

Quality: Living priority district:
There are high-rise along the street, and lower rise to the riverfront.

Density type: Mix of high-rise and mid-rise type

Type 1 Open block with low-rise point

Type 2 Mix of mid-rise and low-rise type

Type 3 High-rise spacious point type

Type 4 Low-rise compact type

Type 5 Mid-rise compact block type

Type 6 High-rise compact point type:

c

c

Quality: Cultural priority district:

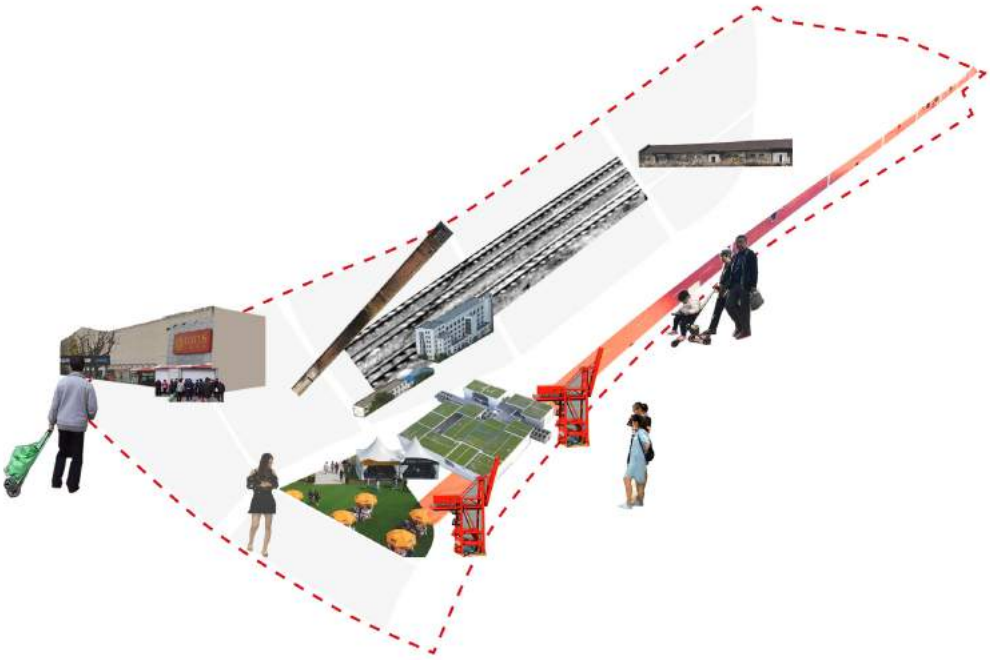
Density type: Open block with low-rise point

Quality: Cultural priority district:

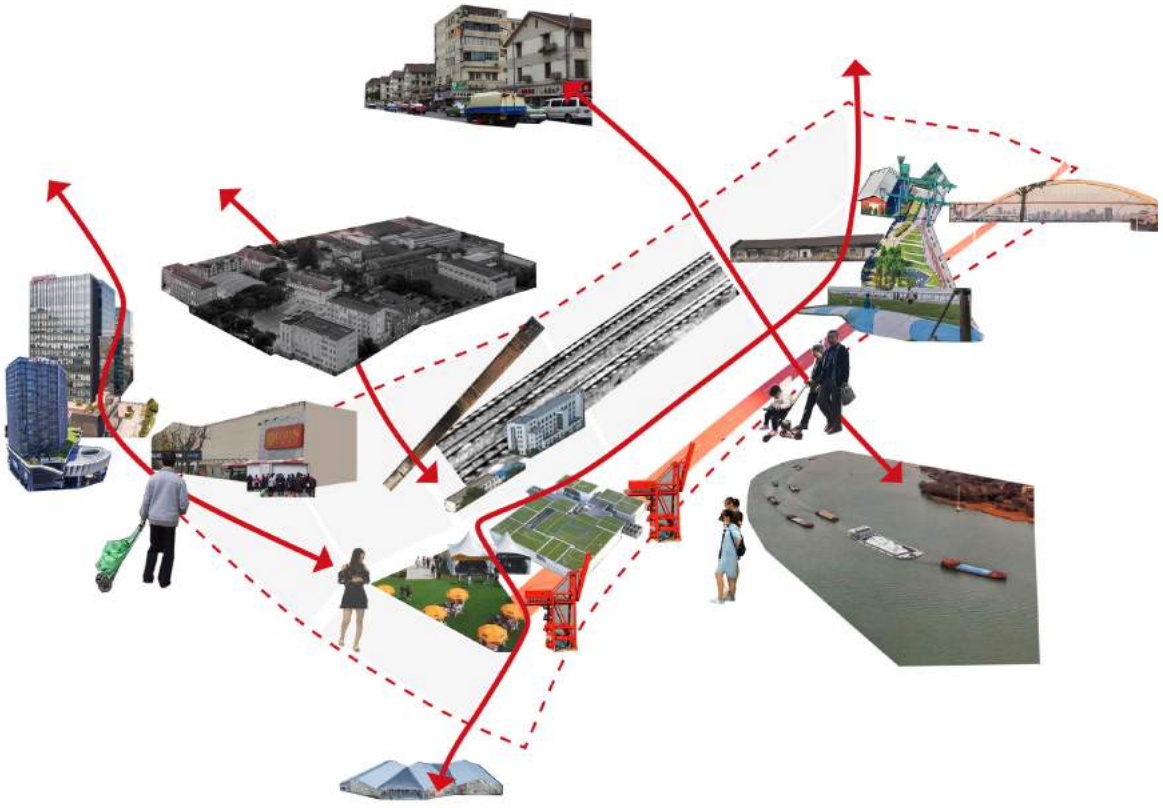
Density type: Open block with low-rise point

7. DESIGN

7.1 VISION



Existing city image as identity drivers



Impulse for riverfront and surrounding neighbourhood

Different blocks has its own identity

Diverse people

students and high tech people

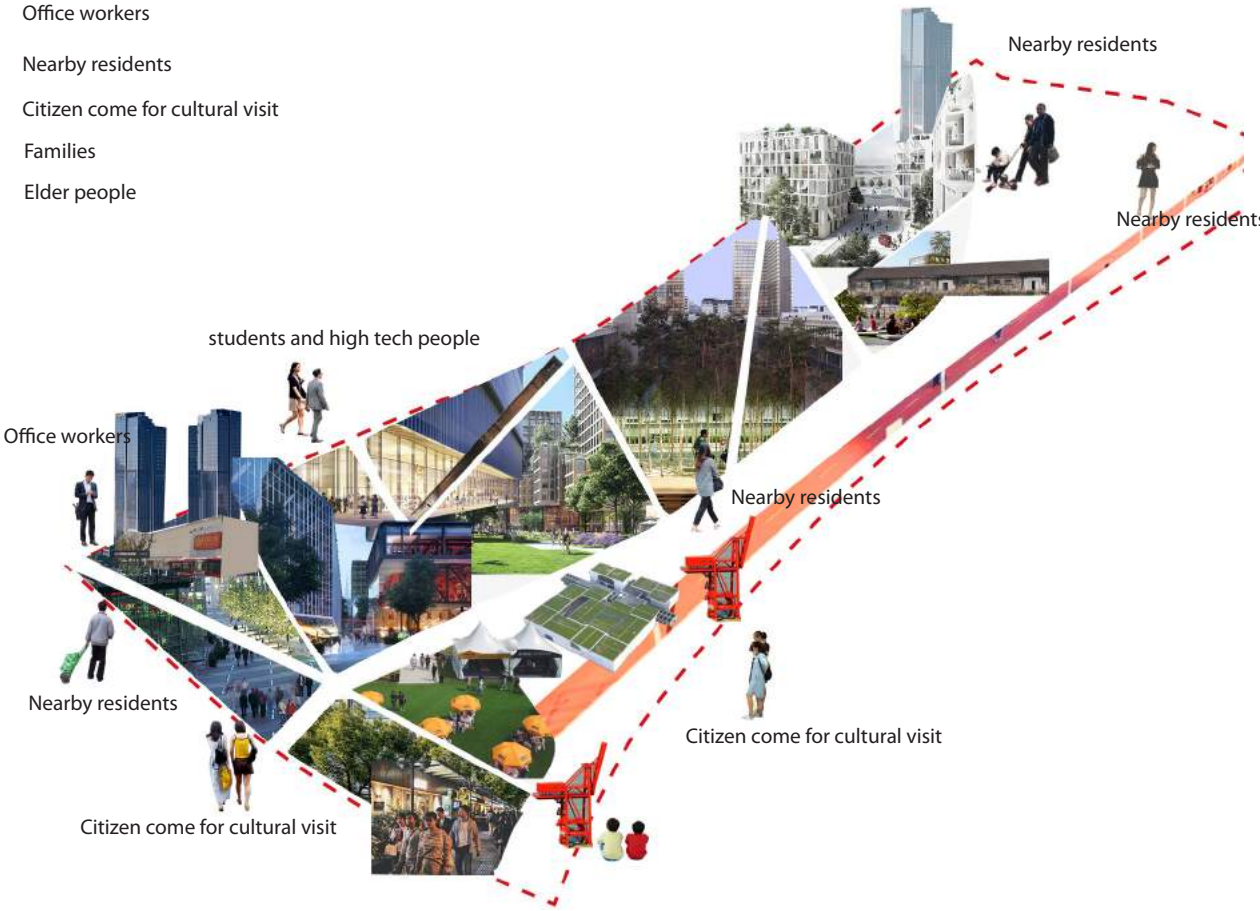
Office workers

Nearby residents

Citizen come for cultural visit

Families

Elder people



7.1 VISION

Make full use of Xuhui District's abundant resources in Science and Technology, the advantages of cultural and artistic in the west bund, and the advantages of waterfront location to form a mixed-use district.

Government

Nanpu Station is a very important place for Shanghai. I took the last photo before the demolition It is important to keep the historical memory.

Now, the landmark always remind me this history

Uncle Liu **62**

Citizen

We want it deliver high-quality public realm. So in the morning, we could use the area to walk or jog through the park on our way to work.

Miss Huang **32**

Office workers

A Place where young high-tech graduates can afford to live and work here. More opportnuity for start-ups.

Ming, and Ma **24**

Graduates and high tech people

Keep the important program for our life. The closure of the supermarket caused great inconvenience to the elderly and nearby residents like us, who could not skillfully use smart devices for online shopping.

Uncle Zhou and his wife **72**

Nearby neighbourhood residents

A vibrant district that deliver high-quality commercial space and cultural function which we could come to waste some time on weekends.

Miss Wu, Miss Zhang and Mr. He **20+**

Citizen come for cultural visit

deliver high-quality green space, quiet and safe.

Mr. Wang and his 6 year old son **38**

Residents

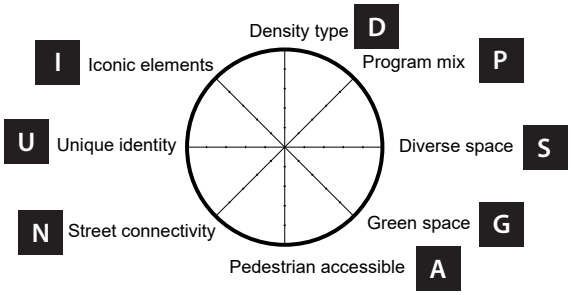
7.2 NEIGHBOURHOOD SCALE DESIGN EVOLUTION

Neighbourhood Scale

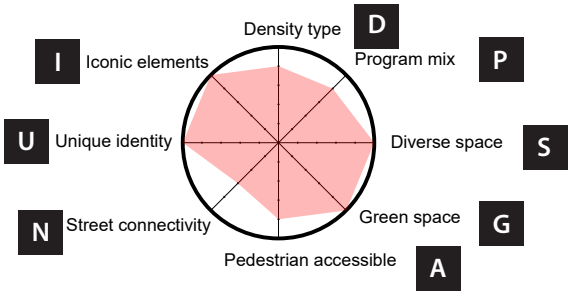
L

Design action

The eight quality guided the design evolution

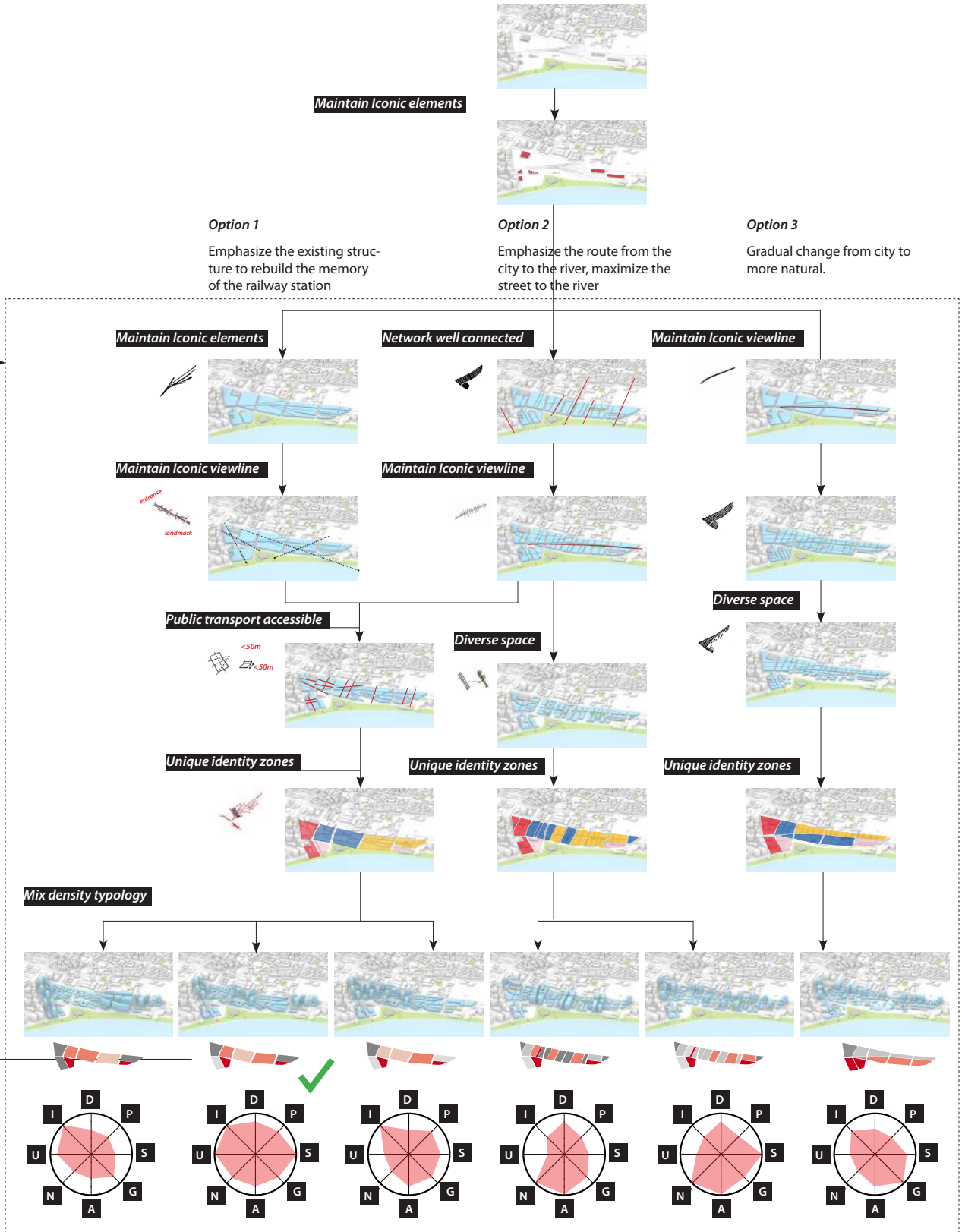


Evaluate the option



- Adjacent blocks have different density types to achieve diversity

- Quite well preserve the memory of the site by the railway fabric



Conclusion: Building high-rise buildings along the main streets can make full use of the waterfront conditions. But it should not be like a wall, so the densification might be distributed in non-adjacent blocks, creating the rhythm of the tower and the beautiful skyline. At the same time, this mix of different block densities can also bring identity within the blocks.

DESIGN OPTION 1

Quality Criteria
Maintain iconic elements

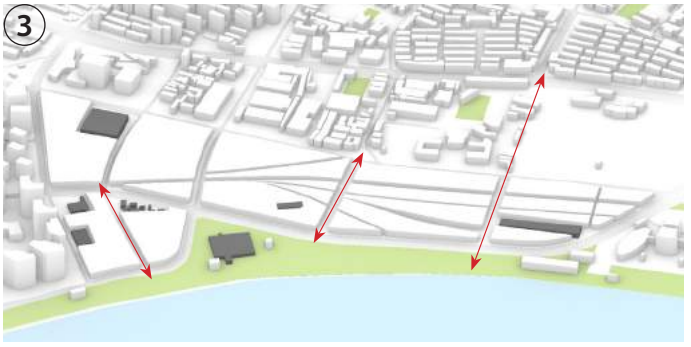
I

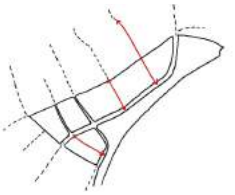
Step 1: Evaluate the existing building and landscape in site

Quality Criteria
Maintain iconic elements

I

Step 2: Keep the building, Use the railway track as new urban fabric. Extrude the volumes.

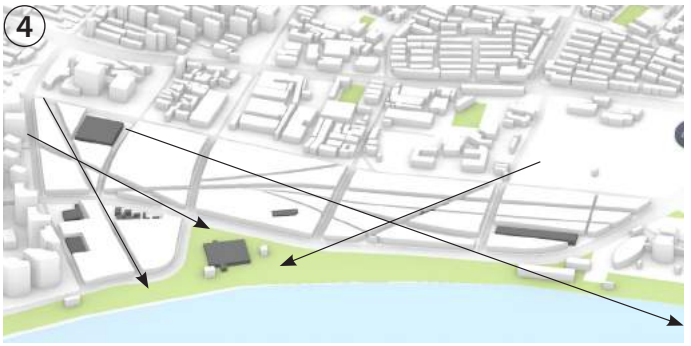


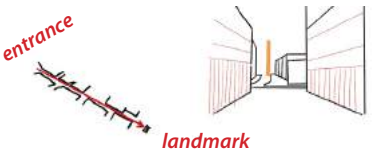


Quality Criteria
Network well connected with surroundings

N

Step 3: Add street for cars, making the network connect well with nearby urban fabric

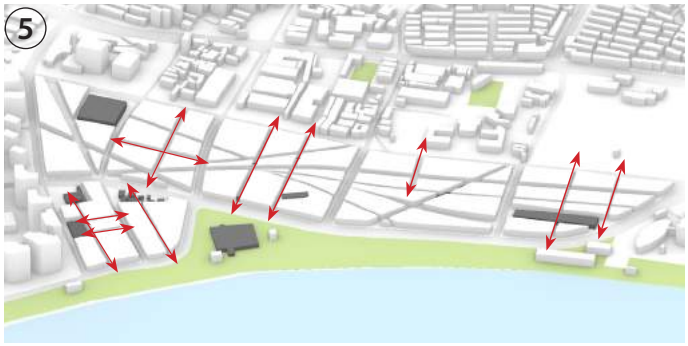


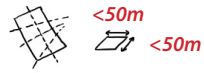


Quality Criteria
Public transport priority accessible

A

Step 4: add wider street for pedestrain to link the route from block edge with the landmarks keep the view line.

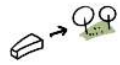




Quality Criteria **A**

Public transport priority accessible

Step 5: add more human scale street for pedestrain, increase the block permeablility



Quality Criteria **S**

Diverse public space

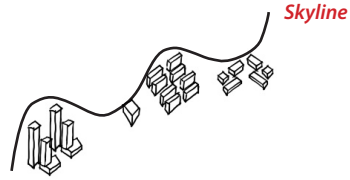
Green space **G**

Step 6: making the volume size feasible, some small size volume turn to green space. create diverse public space and different quality for different identity zones

Quality Criteria **U**

Create unique zones with identity

Step 7: create different quality for each identity block according to its mainly program, let the quality guide the density type

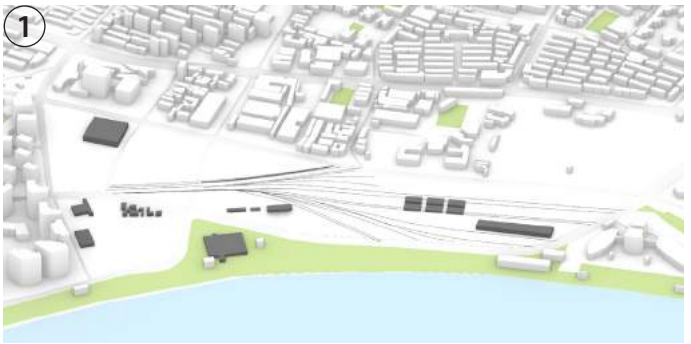


Quality Criteria **D**

Mix different density typology

Step 8: add high-rise building and play with density. shape the block and courtyard

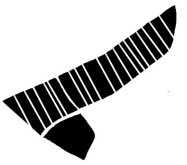
DESIGN OPTION 2: BARCODE



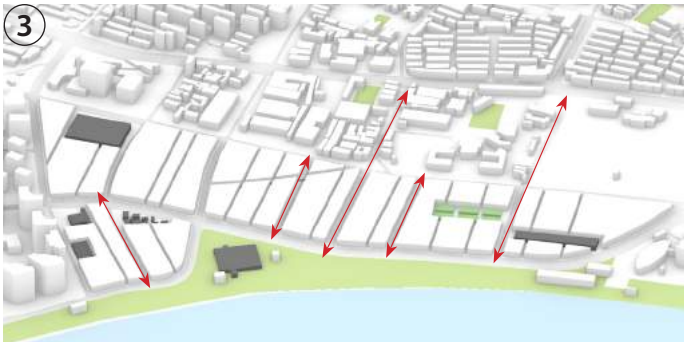
Quality Criteria
Maintain iconic elements

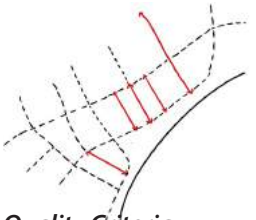
I

Step 1: Evaluate the existing building and landscape in site



Step 2: Keep the building, Extrude the volumes according to barcode fabric.

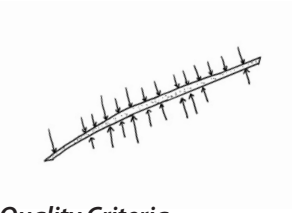




N

Quality Criteria
Network well connected with surroundings

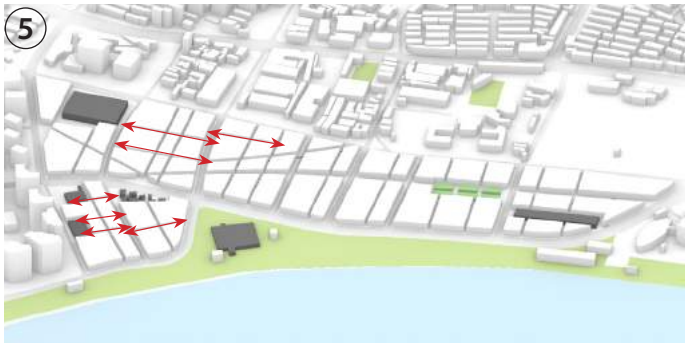
Step 3: Add street for cars, making the network connect well with nearby urban fabric

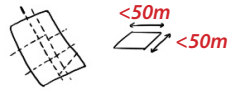


Quality Criteria
Maintain iconic elements

I

Step 4: add main corridor across the 6 blocks to keep the railway memory





Quality Criteria **A**

Public transport priority accessible

Step 5: To make the smaller block, add more street for pedestrain, increase the block permeablility

Quality Criteria **S**

Diverse public space

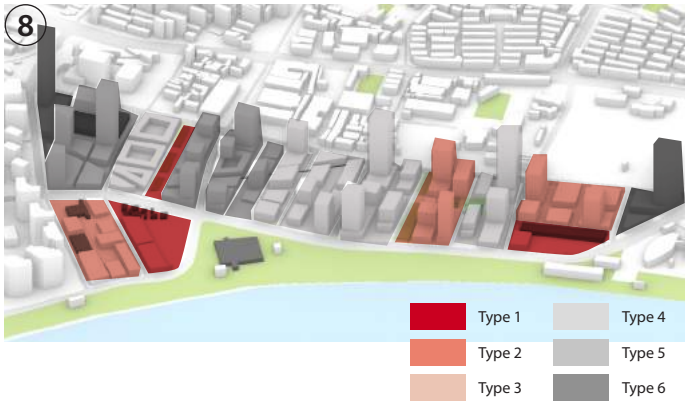
Green space **G**

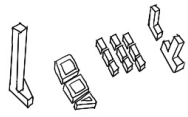
Step 6: making the volume size feasible, some volume turn to linear green park. Adjust volume to create diiferent size public space.

Quality Criteria **U**

Create unique zones with identity

Step 7: according to its mainly program, densify along the street,open space inside block. let the quality guide the density type





Quality Criteria **D**

Mix different density typology

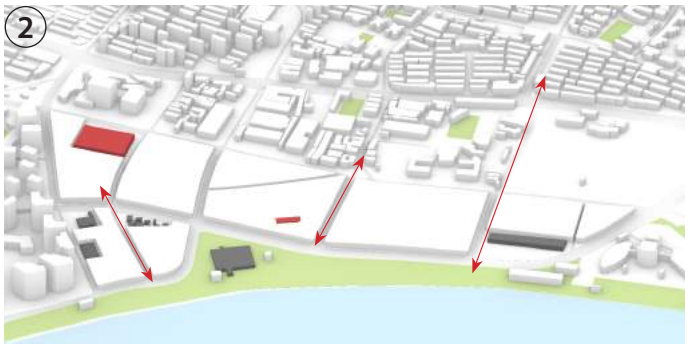
Step 8: add high-rise building and shape the scale block and courtyard

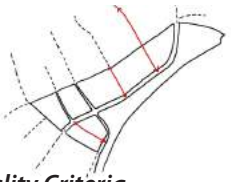
DESIGN OPTION 3 GRADIENT

Quality Criteria
Maintain iconic elements

I

Step 1: Evaluate the existing building and landscape in site





Quality Criteria
Network well connected with surroundings

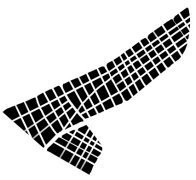
N

Step 2: Add street for cars, making the network connect well with nearby urban fabric

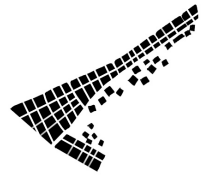
Quality Criteria
Maintain iconic elements

I

Step 3: add main corridor across the 6 blocks to keep the railway memory



Step 4: create grid fabric



Quality Criteria
Diverse public space

S

Step 5: Create gradient to make full use of waterfront conditions, and the transition from city to nature environment

Quality Criteria
Green space

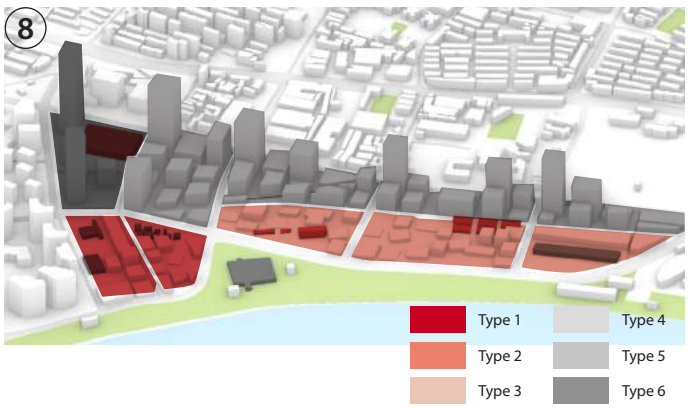
G

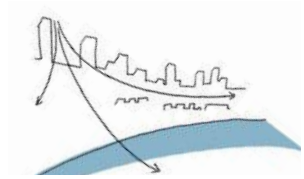
Step 6: making the volume size feasible, some volume turn to green park. Adjust volume angle to create diiferent size public space.

Quality Criteria
Create unique zones with identity

U

Step 7: cluster the business and living priority zones along the edge, the culture and technological space on the riverfront





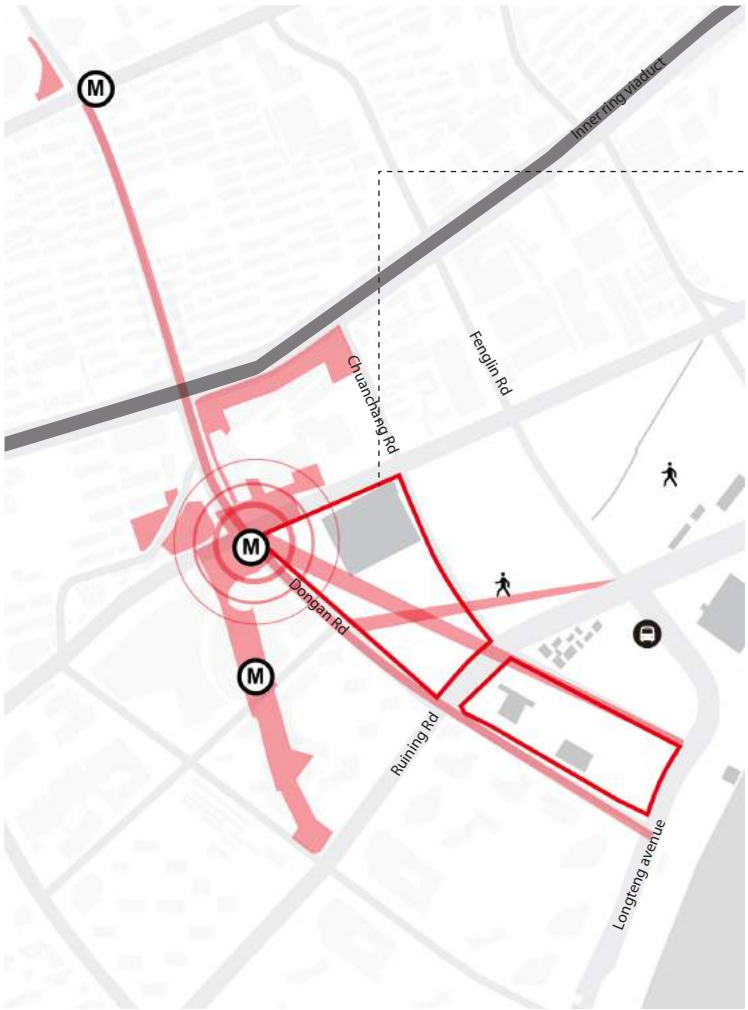
Quality Criteria
Mix different density typology

D

Step 8: add high-rise building and shape the skyline. let the quality guide the density type

7.3 BLOCK SCALE DESIGN EVOLUTION

The next scale is block scale, choose **block a** as an example to explain how the quality can be interpreted into design evolution in block scale according to the three concepts: identity, network and mixed-use.

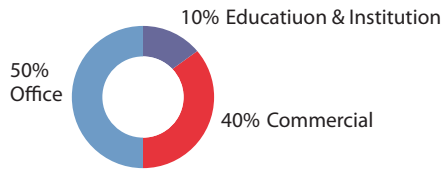


Block a

Floor space: 295.000 m²

FSI: 6.4

Program :



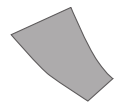
Quality:

Business priority district: high density along the transportation node. Focus in making public street inside block to link with metro station and keep the view line

Density type: Type 6

High-rise compact type
with public street inside block

high FSI
high GSI
high L



SCALE REFERENECE

Shanghai

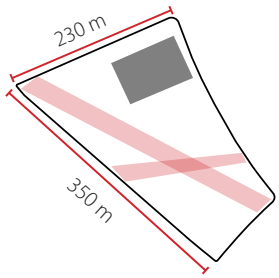
Choose the reference of other commerical district to check the suitable building typology and scale

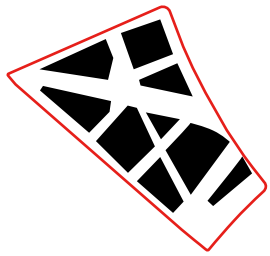
Berlin Potsdamer Platz

London canary wharf

Newyork

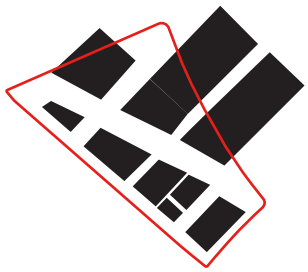
Rotterdam





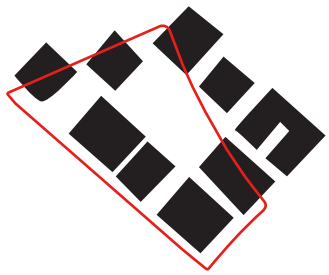
Berlin Potsdamer Platz

Building typology



Newyork

Building typology



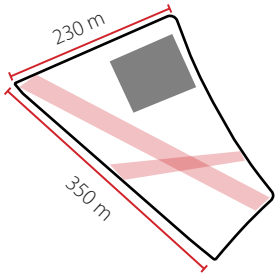
London canary wharf

Building typology

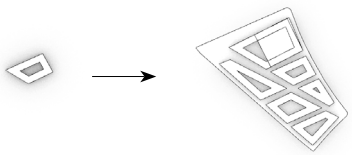
Rotterdam

Building typology

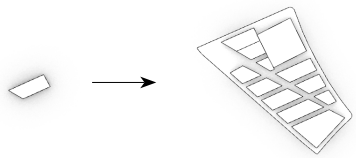
DESIGN EVOLUTION



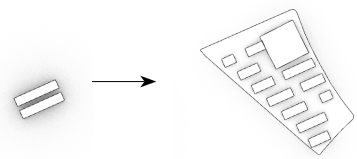
typology : courtyard



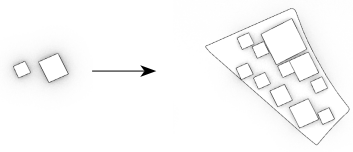
typology : trapezoid



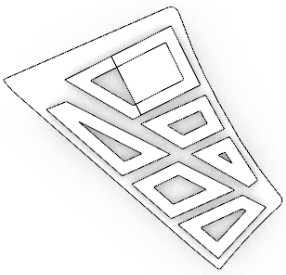
typology : stripe

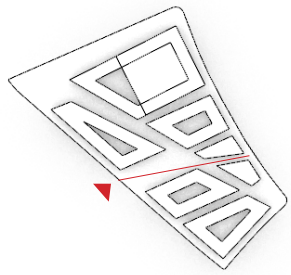


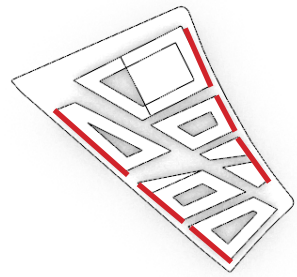
typology : square



Strength:
- Contribute to create active street
- Easy to mix program in one block
- different public space environemnt in the courtyard
- Diverse ope space







Step 1: choose typology

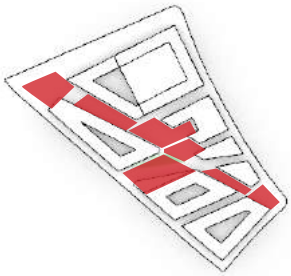
typology : courtyard

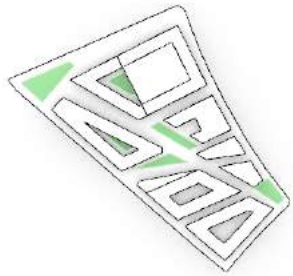
Step 2: Make the route accessiable from public transportation node.

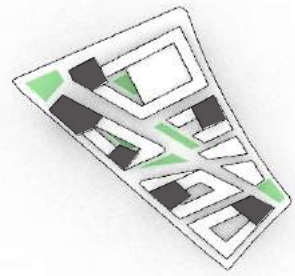
Quality Criteria
Pedestrian accessible

Step 3: Create street oriented block and minimize the break along the street

Quality Criteria
street connectivity







Step 4: open some courtyard to create diverse public space

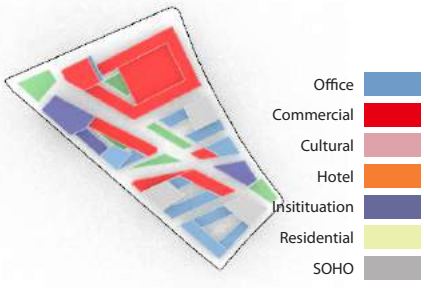
Quality Criteria
Diverse space

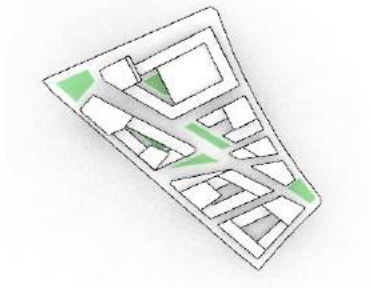
Step 5: Add diverse size green space, from public to private green

Quality Criteria
Green space

Step 6: Add high-rise building to increase FSI

Quality Criteria
density





Step 7: Mix the program in building

Quality Criteria
Program mix

Step 8: refine and reorganize the memory of individual and group. Bring identity to the place

Quality Criteria
identity

7.4 DESIGN OUTCOME

PROGRAM DIVISION

residential population: *2.3w*

Total

Floor space:1560.000 m²
FSI: 4.5

Cultural ~~<4%~~ 5% — Cultural: 78.000 m²

Educatiuon & Institution ~~<3%~~ 5% — Instituation: 78.000 m²

Office ~~61%~~ 45% — Office: 780.000 m²

Commercial ~~18%~~ 25% — Commercial: 252.000 m²
Hotel: 60.000 m²

Residential ~~17%~~ 20% — Rental housing: 260.000 m²
Commercial housing: 50.000 m²
Social housing: 3.000 m²

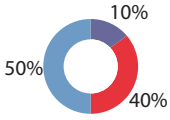
Parking — Parking: 650.000 m²

Program	Block a	Block b	Block c	Block d	Block e	Block f	Block g	Block h	Total area
total floor area (*10³ m2)	295	167	320	300	280	32	36	130	1560
Cultural (*10³ m2)						0.8	0.6	0.2	73.2
education (*10³ m2)	0.1	0.1	0.1				0.1		81.8
office (*10³ m2)	0.5	0.8	0.8	0.2	0.3	0	0.1	0.6	762.7
commercial (*10³ m2)	0.4	0.1	0.1	0.2	0.2	0.2	0.2	0.2	322.3
residential (*10³ m2)				0.6	0.5				320

Total

Floor space:1560.000 m²
FSI: 4.5

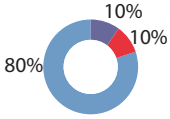
Type 1
Type 2
Type 3
Type 4
Type 5
Type 6



Block a

Floor space:.295.000 m²

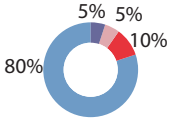
FSI: 6.4



Block b

Floor space:167.000 m²

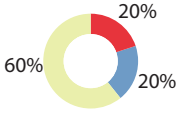
FSI: 3.8



Block c

Floor space: 320.000 m²

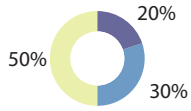
FSI: 4.4



Block d

Floor space: 300.000 m²

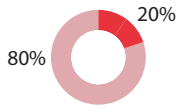
FSI: 4.0



Block e

Floor space: 280.000 m²

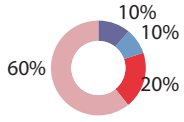
FSI: 7.0



Block f

Floor space: 33.000 m²

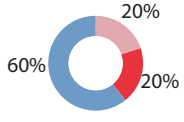
FSI: 2.0



Block g

Floor space: 36.000 m²

FSI: 1.5



Block h

Floor space: 130.000 m²

FSI: 3.6

7.5 QUALITY OF DESIGN

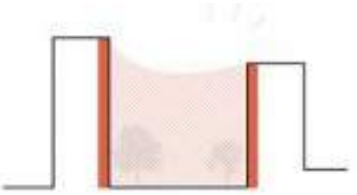
Quality Criteria
Pedestrian accessible

Maxing pedestrain porosity. Roads will be narrower and beautifully landscaped, making it easier to walk, cycle or use personal mobility devices.

Bus stop
Metro station exit
Entrance
Pedestrian movement

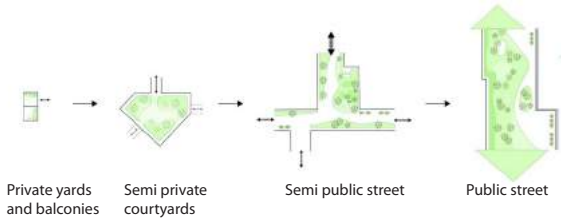
Quality Criteria
Street connectivity

Make the street connect well with nearby fabric. Create street oriented block, gateway elements in the main city structure. and minimize the break along the street



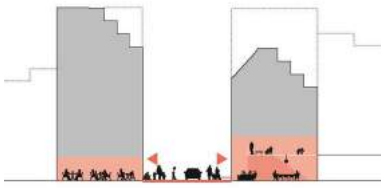
Quality Criteria
Green space

There are the open spaces in the different scales from private and balconies to semi-privare courtyard, to semi public street and public street.



Quality Criteria
Diverse space

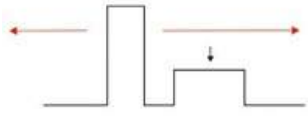
the ground level program is strongly visible and interacting with the open space. So in this distrcit, The first five to six floors are mainly aimed at a shared experience. From shared spaces for office workers to public spaces and catering for visitors.



7.5 QUALITY OF DESIGN

Quality Criteria
density

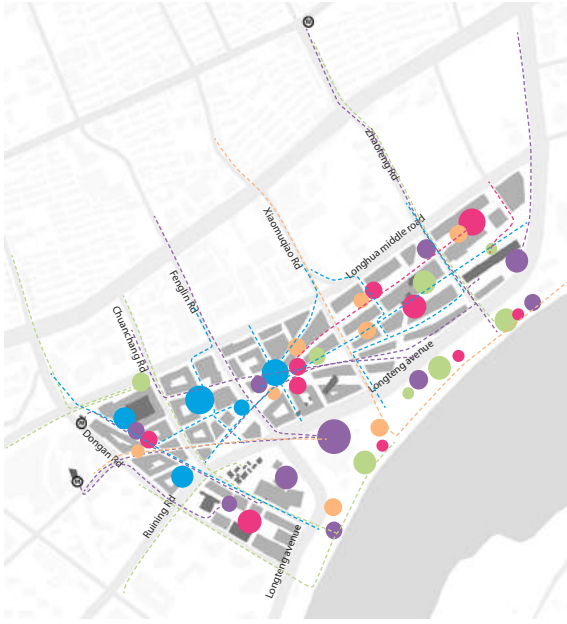
High-rise volumes and the ambitious architecture support the construction of a remarkable lakeside city. and the higher tower are centralise at the the edge of the block, while the more lower rise building towards the riverside.



Unique views towards the lake

Urban highlights at each courtyard

High-rise volume



Quality Criteria
identity zones

Each block have its own identity but they could serve diverse people:
office workers,
hotel guests,
visitors and
other nearby residents.

Quality Criteria
Program mix

Each of block has its own program mix, not only mix on the land use, but also mix in the building.
For example, ***Block a***: consisted of 42% Commercial, 8% instituation, 30% office and 20% SOHO which means new typology of co-working and working-living.

Program: Block a

- SOHO
- Institution
- Office
- Commercial

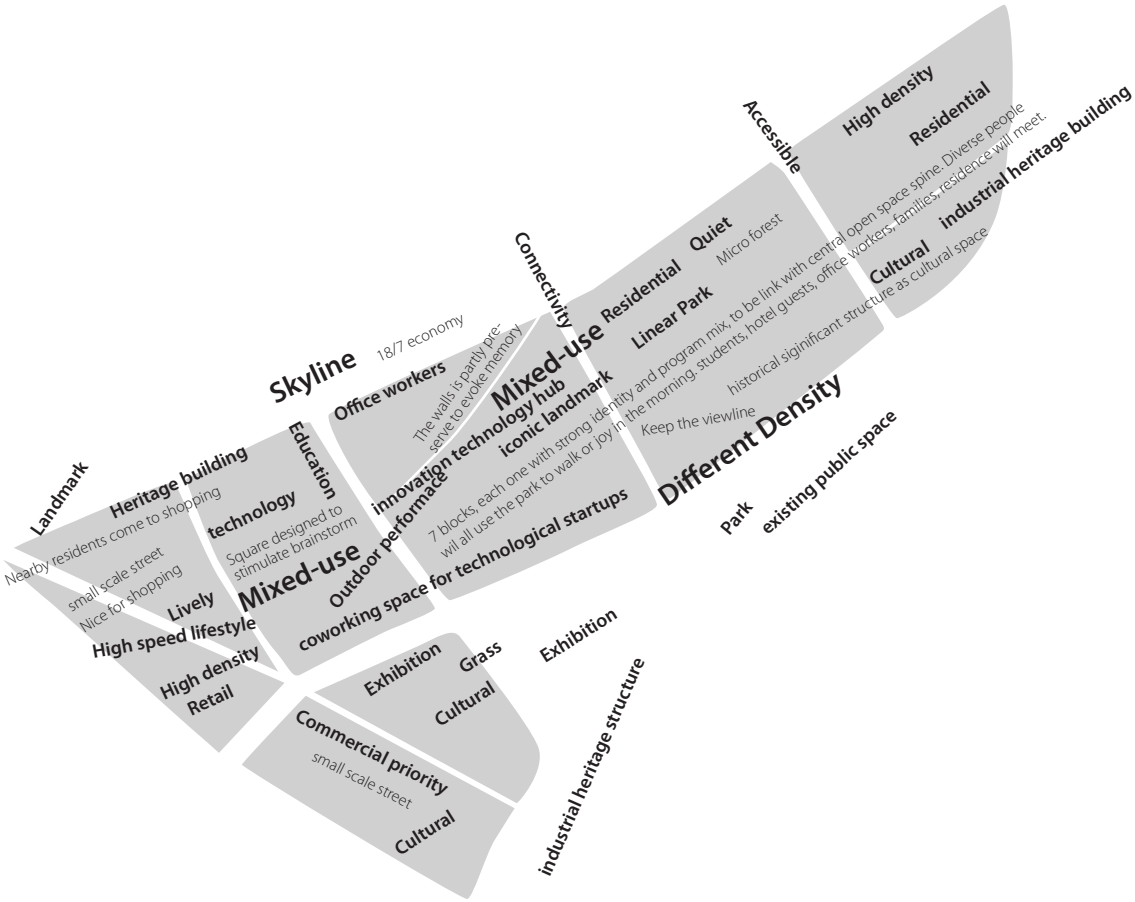
Quality Criteria
Iconic elements

Talking about preserving iconic elements, it is crucial to not only think about the reconstruction of the existing structure but also maintain the historical place's intangible identity by keep the railway track fabric and create a set of new landmarks.

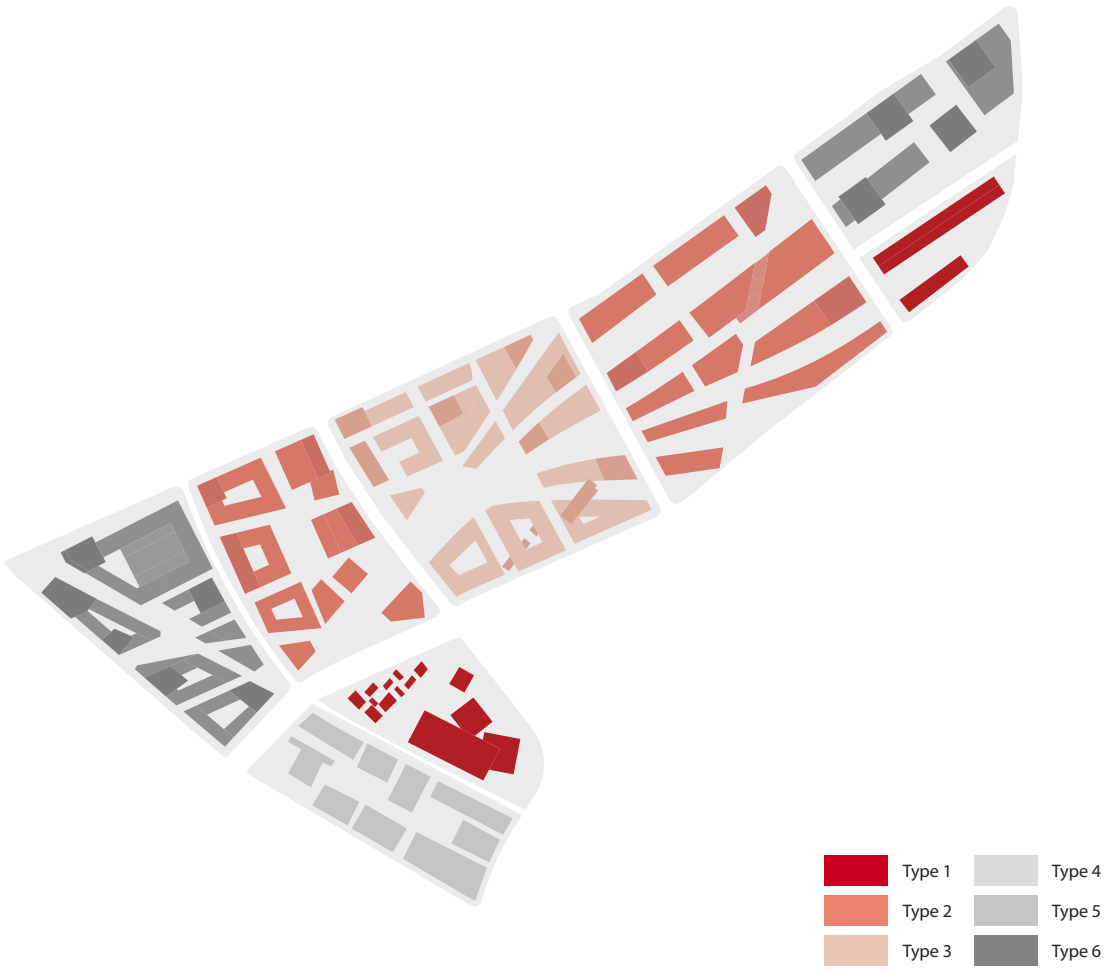
- Existing landmark
- Newly-built Iconic elements

7.6 IDENTITY OF EACH BLOCK

Quality



Block typology



7.6 IDENTITY OF EACH BLOCK

This used to be the Lotus Supermarket which is quite important for our life. especailly to the elderly and nearby residents like us, who could not skillfully use smart devices for online shopping.

Nearby residents Zhou:

A vibrant district that deliver high-quality commercial space and cultural function which we could come to waste some time on weekends.

Citizen come for cultural visit

a Reconstruction warehouse

b preserve the intangiable identity of the historical place in the public space design

the shape of lamps is taken from this elements

transform is into sculpture

transform is into sculpture

transform is into the pattern of paving

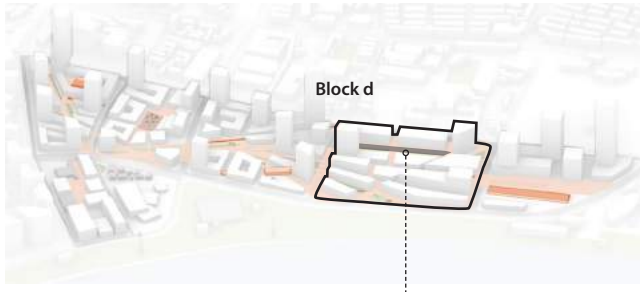
c preserve the inconic structure and viewline

deliver high-quality public realm

Office workers

A Place where young high-tech graduates can afford to live and work here. More opportnuity for start-ups.

students and high tech people



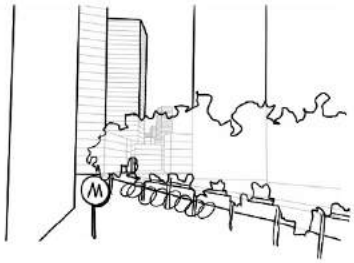
deliver high-quality green space, quiet and safe.

Residents Wang and his 6 year old son

MOVEMENT

Citizen come for cultural visit

1



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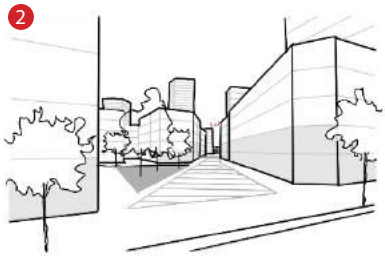

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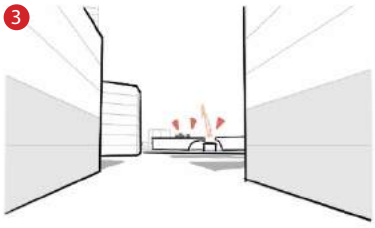


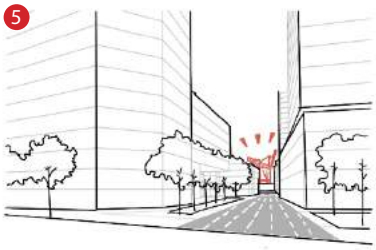
4

We could get off from Longhua Middle Road metro station, and walking to the Long museum to see the exhibition!

Miss Wu, Miss Zhang and Mr. He **20+**

Residents

5



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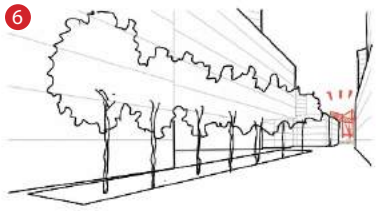

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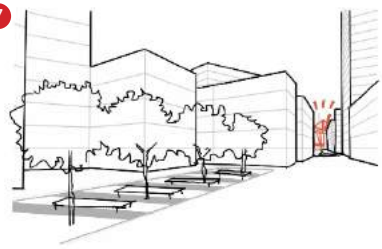

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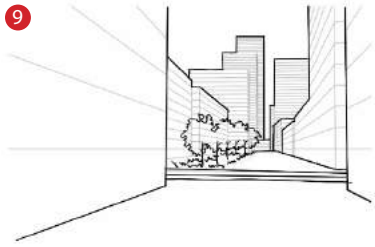
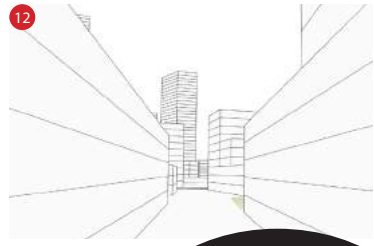


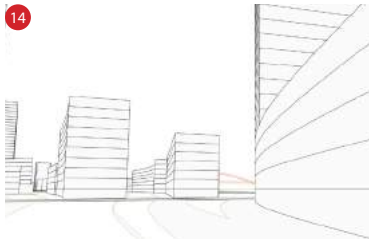
I am a primary school student, everyday my father pick me up from school and we would walk back home through a commercial zone and an innovation square

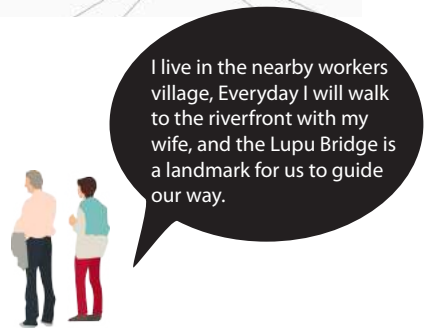
Mr. Wang and his 6 year old son **38**

MOVEMENT

Nearby neighbourhood residents

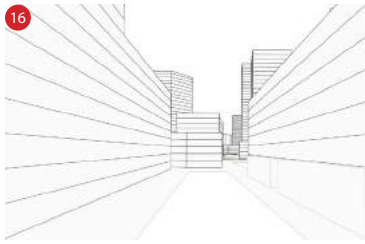


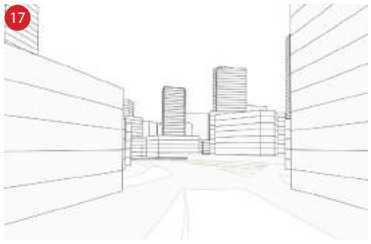


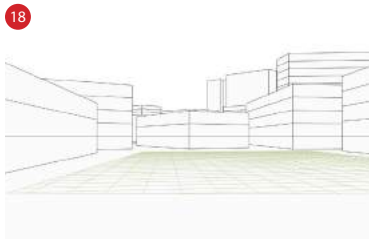


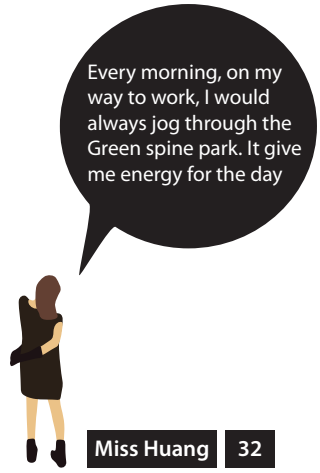
Uncle Zhou and his wife **72**

Office workers



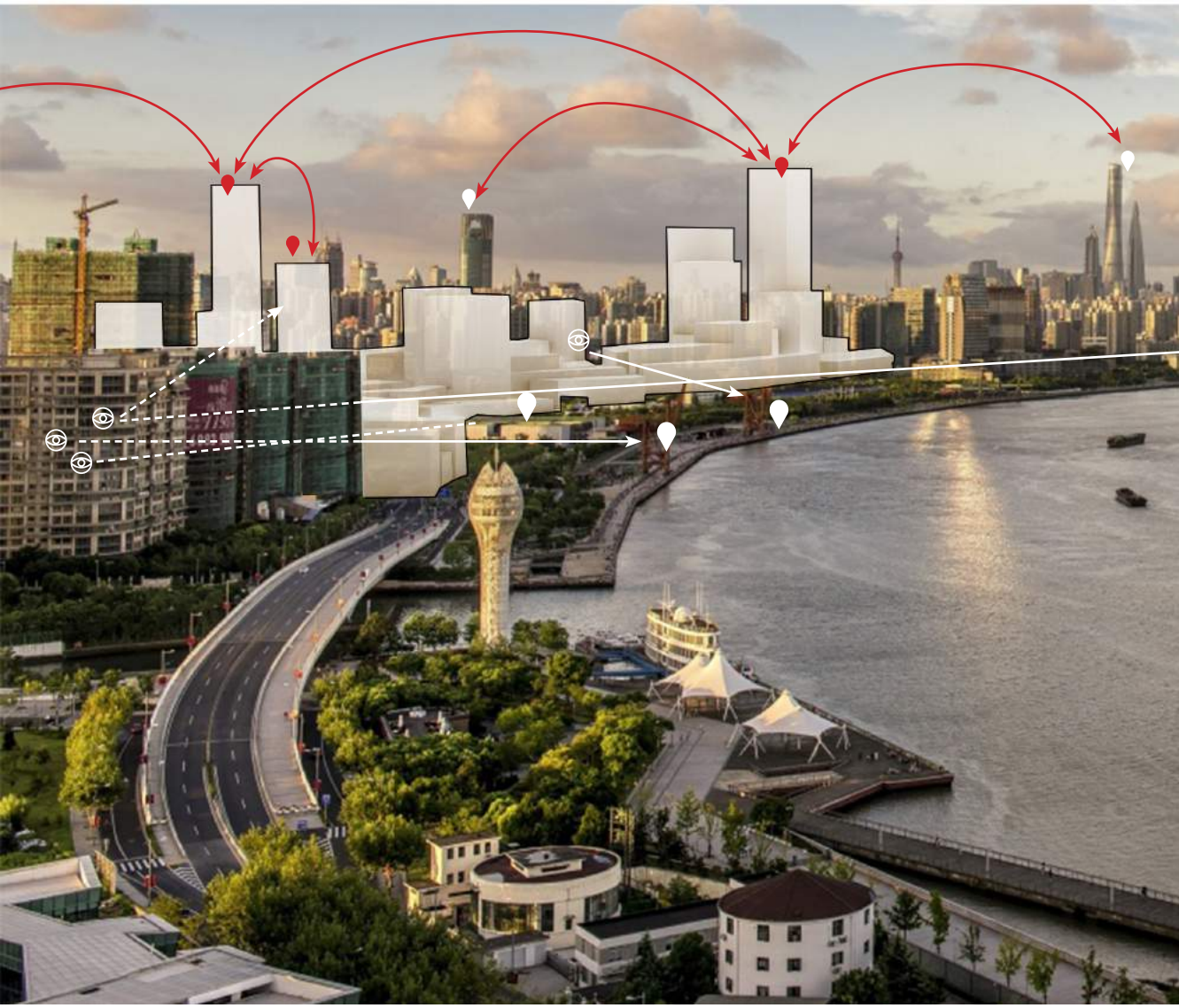






Miss Huang **32**

VIEW FROM RIVERFRONT



Existing landmark

Newly-built landmark

View line

CONCLUSION

How to improve the place quality (urban vitality and identity) in the post-industrial riverfront along the Shanghai Huangpu River by understanding and modifying urban form during the densification and intensification process?

- Because of the increasing pressure on land in many cities around the world, densification is an important task on the agenda. This approach is help us to understand the planning density requirement(FSI) more deeper. and minimize the apperance of homogenious neighbourhood.

- Density forms can play a role in creating quality urban Spaces, helping to create more diverse environments and serve diverse populations. This is important today to reduce the negative impact of single value real estate in the Chinese environment.

- Although I already did different options to respond to the design site, but still, with the help from parametrac program, we urban designer and architects can investigate more unprecedented community form.

- The identity and historical heritage are important elements for us to create a dialog between the present and the history of the site. and create a attractor for people to gathering. Not only the tangible elements, but also the story and memory can help in create quality post-industrial riverfront.

- The design should design from scale. and built up the connection between community and the city.

- The design is a highly optimize scenrio, it does not redlect the finanical feasible.

8. REFLECTION

REFLECTION

Aspect 1

the relationship between research and design

Tudelft urbanism education focuses on the combination of research and practice design. The process begins with a research question, a theoretical understanding of the concept. And then, the theoretical framework will guide the rest of the analysis. Later, The strategy or vision concluded from the analysis will be applied to the design. At the beginning of the research process, my difficulty is that I always think that this theory-analysis-design-present is a linear development process. I have been stuck in the process of applying theory to analysis. I was wondering if I need to complete all the analysis before proceeding to the next design.

But later, I understood that we had to switch back and forth between analysis and design. We can choose a location to put the analyzed strategy into practice. Moreover, providing multiple possible options and comparing the test results also helps to verify that our analysis. For example, in this project, the large scale vision for the development of the Riverfront District is 1. Archive a mixed-use neighborhood with different density type, 2. linking well with the nearby fabric and 3. Create the identity for different neighborhoods within. To achieve that, a specific set of design operations can be used according to the quality we want to achieve in large scale. However, the different operation can lead to different design options and form diverse density organizations. From that, we have raised another question: how to mix different density types, how to mix public programs, and how to mix different characters and typology? The emerging problems bring us back to the analysis part.

In the design part, the current design is to solve current problems. However, it is also necessary to make suggestions on the adaptability of the city in the future. Its purpose is to predict future changes such as adaptive buildings, new modes of mobility, and blocks to be reused. Due to changes in trends, staring at current issues without considering the future may cost much useless effort without having a lasting impact. Apart from that, The district's vision is to create an innovation zone, so how to intervene in future strategies like to achieve the quality of the venue is another thing I need to add after P4.

Aspect 2

the relationship between your graduation (project) topic, the studio topic (if applicable), your master track (A,U,BT,LA,MBE), and your master program (MSc AUBS).

The project will focus on density and quality study across multiple scales. The author tried to discover the meanings of urban vitality and identity in the high-density riverfront post-industrial area in Shanghai. Furthermore, the results of analyzing later will help to create design decisions and guide design interventions. The goal of this graduation project to study and design with the urban form is precisely the focus of the Urban Fabric studio. Moreover, the topic of the "Design of the Urban Fabrics" studio is the density and intensity. Its purpose is to study urban density and intensity from the physical environment's perspective and its psychological, social, cultural, and economic structure. This project is very much focusing on the high-density Chinese city context, and trying to use the spacemate to related density with the urban morphology and then relate it with the place quality.

Although this project is based on urban forms study, the research area is in the post-industrial riverfront, where has a strong link to the historical heritage. So this project also investigates how historical heritage plays a role in the urban environment and how they are contributing to the identity part. Speaking of master track, since this project contains content of riverfront public space and the transformation of industrial buildings. This project can also link to other tracks like landscape and architecture in our master program.

Aspect 3

Elaboration on research method and approach chosen by the student in relation to the graduation studio methodical line of inquiry, reflecting thereby upon the scientific relevance of the work.

The two topics in my graduation project are density and place quality. First, I will form a conceptual framework through the literature review of related concepts such as "place quality," "urban vitality," "identity," "urban form," and "density." It contains a compre-

hensive understanding of the relationship between urban form and place quality (urban vitality and identity). Besides, this step can clarify the general analysis and design method of the research problem and guide me to analyze Chinese cities.

These two topics require a slightly different research method. "Place quality", "city vitality", "identity", etc., I will use the method of on-site observation to understand what is quality place means in the context of the Shanghai riverfront. The people's behavior, movement, and people's perception will learn by on-site analysis. While The content of "urban form" and "density" will be more focused on quantitive analysis. To find out their relation, I selected five mixed-use cases located along the Huangpu River. I analyzed how do different density blocks organized, how they are mixed functions, and what are their resulting spatial quality. So it is like a combination of quantitive method and quantitive way. For the design part, I also used the graduation studio's option design method, and evolution design process to try different ways to achieve the design outcome.

Aspect 4

The relationship between the graduation project and the wider social, professional and scientific framework

Scientific relevance

Chinese cities are faced with the challenge of densification, but they also want to improve the quality of urban space. In China, there is still relatively little research on the relationship between density and place quality. Many researchers pay attention to study how to create nice public spaces to bring vitality to the city. However, in addition to open space, urban design and building form can also influence the place quality. Therefore, in this graduation project, I will increase my knowledge in this aspect: relate the density and place quality, and take an urban renewal project in Shanghai riverfront as a case study. This graduation project will take advantage of the density typology research method Spacemate from Tu Delft to study the Chinese urban context. The project explores the form and spatial organization of Chinese blocks through the quantitative description of density typology. Besides, this project is trying to find out what kind of diversity can make a quality environment.

Societal relevance

This graduation project is designed to complement the study of urban renewal and spatial organization. In the context of Shanghai, China. The aim is to explore the various urban forms and functional frameworks that can improve the diversity and vitality of Chinese cities. By studying the daily activities of residents and combining with community participation, we could create an attractive urban space along the riverbank. Through this graduation project, we can fill the gap between the urban form under the background of Chinese blocks and the urban vitality led by Chinese culture. The results will help developers and planners/ designers to improve the diversity and vitality of Chinese cities in the future urban renewal plans.

Aspect 5

The ethical issues and dilemmas encountered in doing the research

This graduation project is based on the transformation of the industrial area along the Huangpu river in Shanghai. Since 1970s, the waterfront areas of global metropolises like London have undergone a process of transformation and development. In those cities, many post-industrial places have been transformed into residence, office, and leisure functions, which are favoured by investors and tourists. In this case, the waterfront may suffer gentrification.

However, the residents live in the neighborhood near the industrial areas are workers who have precious memories in the factory, and they have witnessed the development of the factory history. Tang Zilai (2018) believes, " When shaping a livable city, we must pay attention to let the community participate and slowly develop the regional characteristics." To relief the negative impact of urban gentrification, we need to involve these voices. Through fully mobilizing the extensive participation of the surrounding communities, We can dig deep into the historical and cultural background and identity of each part on the riverside.

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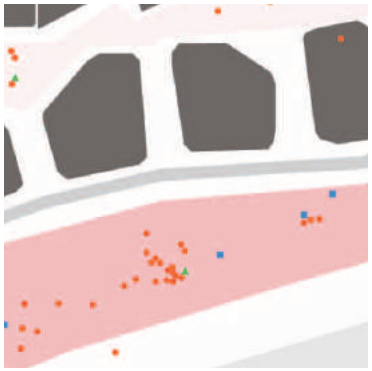
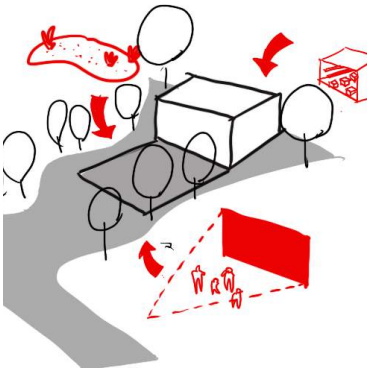
APPENDIX

Quality factors concluded from fieldwork

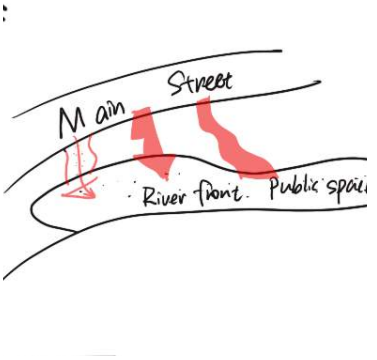
Shanghai, North bund (Case 1)
13 December, 2019 9:50

Place: Riverfront open block
Quality: Different Playground as atrractors in the riverfront

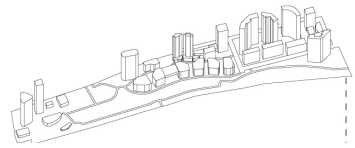




Place: Riverfront open block
Quality: The entrancr from main street to riverfront public space is attractive

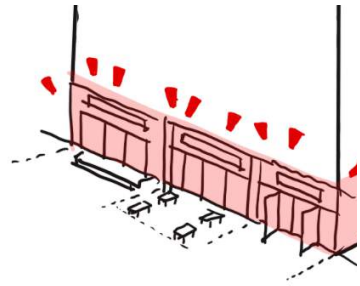


Open block with Low-rise point
Public facilities

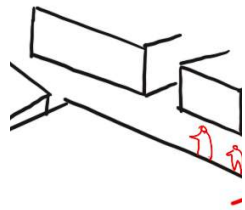


Shanghai, North bund (Case 1)
14 December, 2019 12:00

Place: The ground floor of a office building
Quality: The active groundfloor fascade make informal activity happens and diverse people meet



Place: Office building block
Quality: Office building without mixed-ed use and active groundfloor functions make people quickly pass by.



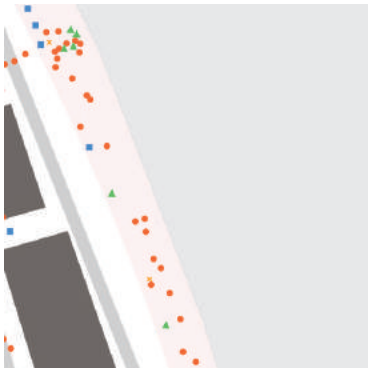
Mid-rise compact block type

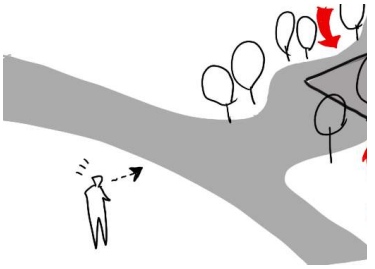
Commercial & Office

Quality factors concluded from fieldwork

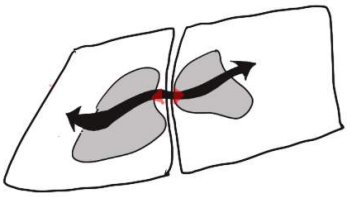
Shanghai, Old dock (Case 2)
13 December, 2019 12:30

Place: Riverfront open block
Quality: Open Views to make people stay

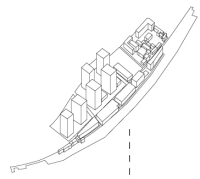




Place: Riverfront open block
Quality: One open space link to the entrance of another public space

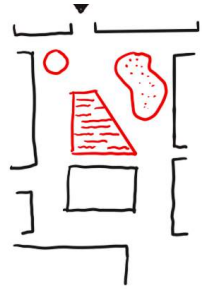


Open block with Low-rise point
Public facilities

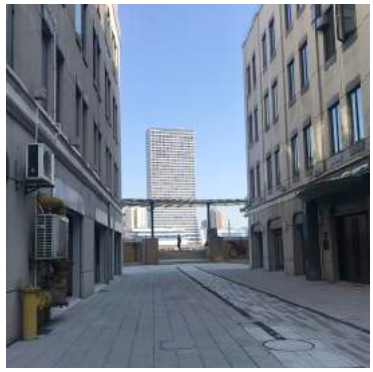


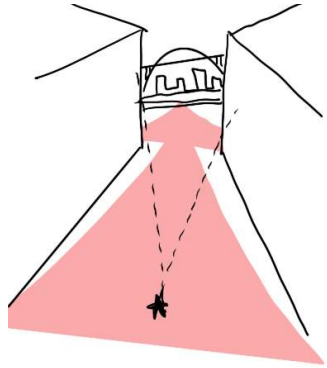
Shanghai, Old dock (Case 2)
15 December, 2019 12:50

Place: The mixed-use district
Quality: The enclosed courtyard with commercial function, and waterscape attract visitors, office workers to come for lunch



Place: The mixed-use district
Quality: Good Views to the landmark make people stay





Mix of mid-rise and low-rise type
Commercial& office

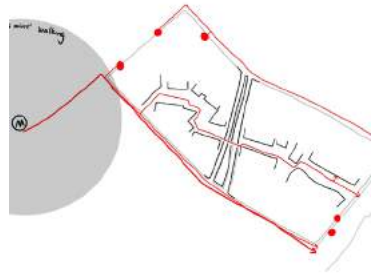
Mid-rise compact block type

Commercial & Office

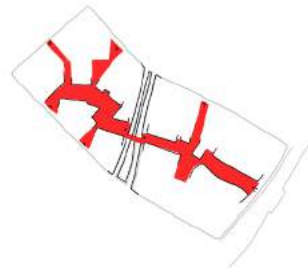
Quality factors concluded from fieldwork

Shanghai, Shanghai Expo district (Case 3)
14 December, 2019 12:50

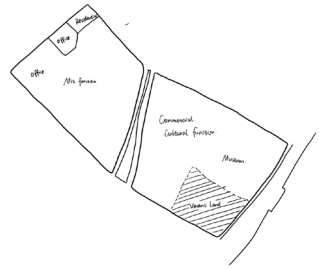
Place: Riverfront open block
Quality: Two block can connect together by open space, increase the opportunity people passing by



Place: Riverfront open block
Quality: The highlighting public space can access from every side of the block

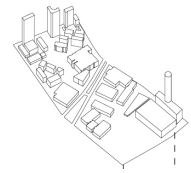


Place: Riverfront open block
Quality:Mixed-use make different people use the block



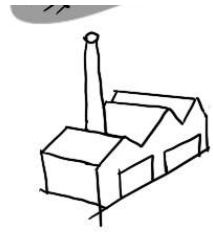
Open block with Low-rise point

Public facilities

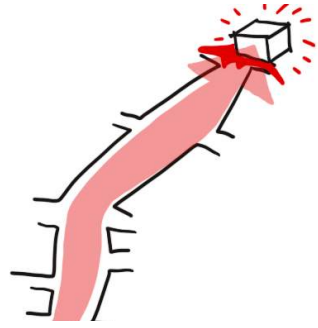


Shanghai, Shanghai Expo district (Case 3)
15 December, 2019 9:50

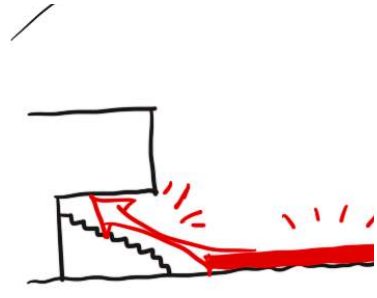
Place: The mixed-use district
Quality: the renovation of industrial buildisng



Place: The mixed-use district
Quality:In the end of the path is the gallery which attracted people



Place: The mixed-use district
Quality: Facade and small scale commercial increase the vitality



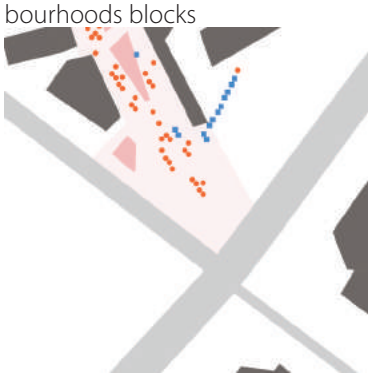
High-rise point type

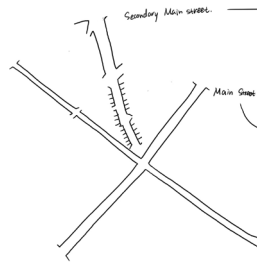
Residential

Quality factors concluded from fieldwork

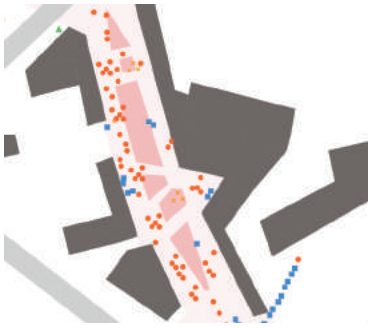
Shanghai, Xuhui neighborhood (Case 4)
16 December, 2019 17:50

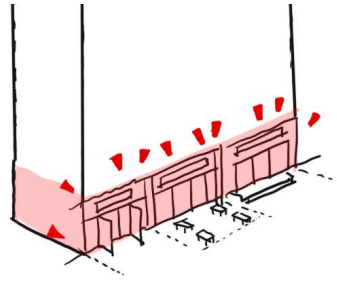
Place: High-rise residential neighbourhood
Quality: Highlight public space split closed neighbourhoods blocks



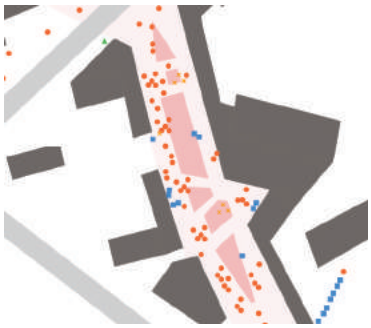


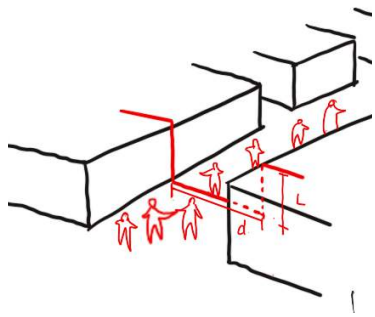
Place: High-rise residential neighbourhood
Quality:Active storefront and extended the territory outside the building

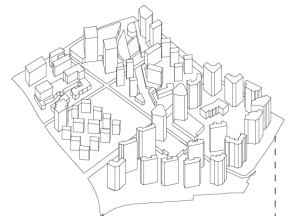




Place: High-rise residential neighbourhood
Quality:The nice scale of highlight public space

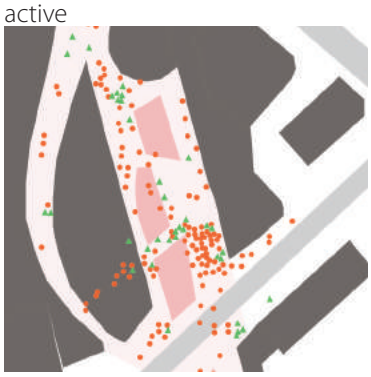


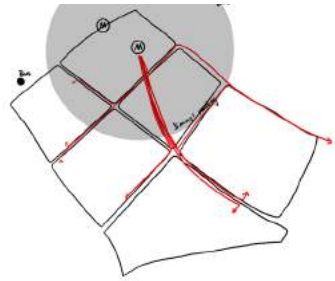




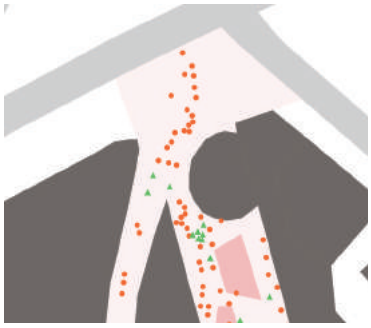
Shanghai, Xuhui neighborhood (Case 4)
17 December, 2019 9:50

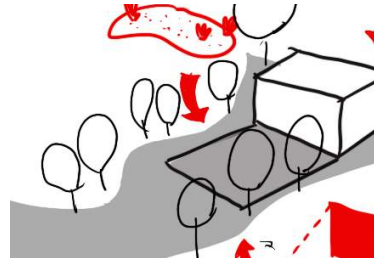
Place: The mixed-use district: Commercial and office
Quality: Open space link to the metro station is quite active



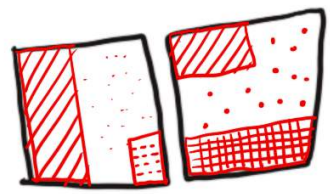


Place: The mixed-use district: Commercial and office
Quality: Enough green to make the space in good quality





Place: The mixed-use district: Commercial and office
Quality: High density and large amout of people make the place vital

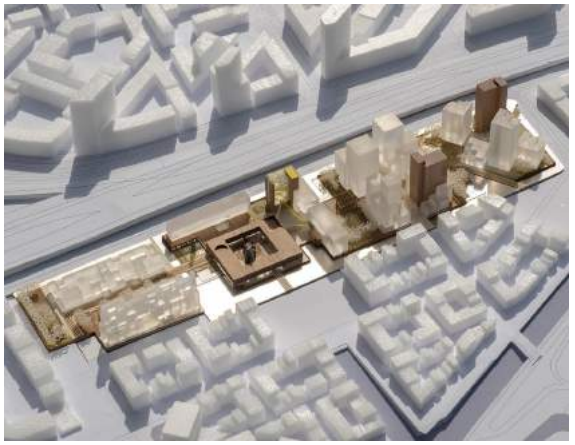


APPENDIX

Case study

HS Kwartier The Hague [NL], KCAP

Jurong Lake District Singapore [SG], KCAP



Bajes Kwartier, OMA

West Kowloon Cultural District, OMA

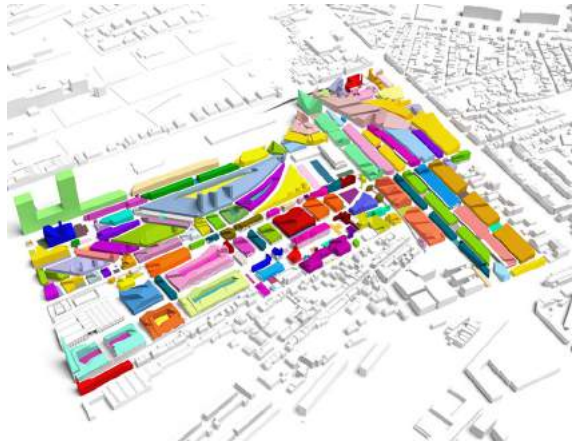
VDMA, Eindhoven, OMA

HafenCity Hamburg [DE], KCAP

Suzhou CreeK, Sasaki

Canary Wharf, SOM

Wijnhaveneiland Rotterdam [NL], KCAP



Bastide Niel, MVRDV

Viinikanlahti masterplan, Architecturestudio NOAN

Glasgow City Centre, MVRDV