Shaping the Future of nfrastructure

Regeneration of Renmin viaduct neighbourhood on the basis of balancing Mobility and Livability

GUANGZHOU, CHINA

P5 PRESENTATION

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RESEARCH

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REFLECTION& DISCUSSION

01 MOTIVATION

1 Motivation DRAMATIC PHENOMENON

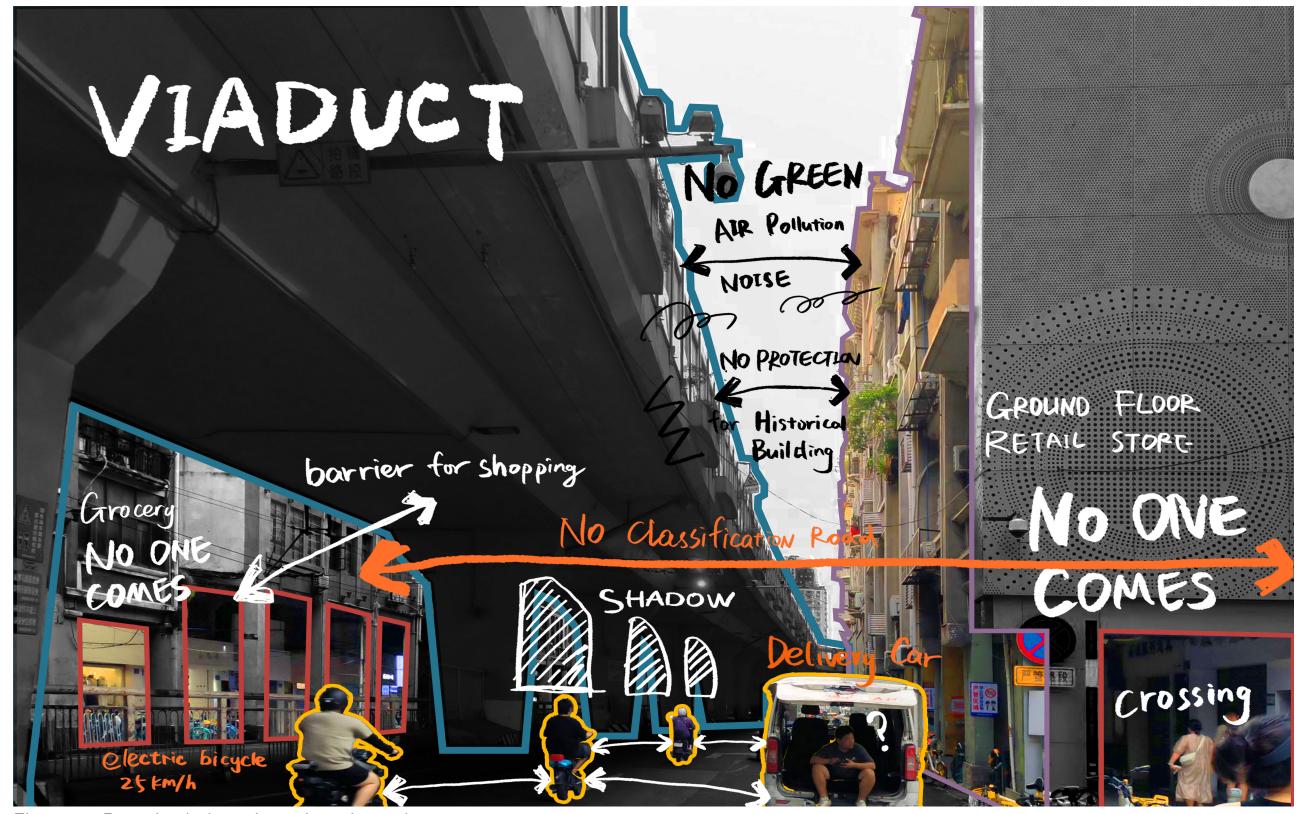
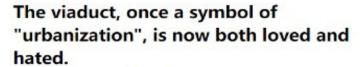


Figure 1.1: Renmin viaduct view, photo by authour

1 Motivation NEWSPAPERS&ARTICLES







The viaduct was once a symbol of urban "modernization". Picture/N

Viaducts have become symbols of the urban landscape urbanization, and have changed functions in the previourban development. The criss-crossing and well-dense we express the mixed praise and criticism of modern people entanglement between love and hate.



Is it a city's "landmark business card" or a "focal obstruction"? ——Survey on urban bridge construction in my country

September 20, 2016 10:20:31 Source: Minima News Agency

Kinhua News Agency, Beljing, September 29th: From the time when it was built, tens of thousands of people flocked to the bridge to experience it and it became famous throughout the country, to the "constant calls for demolition" now. The buge differences encountered by the Guangzhou Remmin Read Viaduct in the past 30 years are a profile of the historical changes in the development of my country's urban bridges.

2016

The Renmin Road Viaduct, the country's first urban viaduct, went from being cheered by thousands to questioning its demolition

red dust dining table 2025-05-28 08:04 Jiangsu

2023

The Renmin Road Viaduct in Guangzhou is an indispensable presence among China's flyovers, although it is not as well-known as bridges such as the Hong Kong-Zhuhai-Macao Bridge or the Wuhan Yangtze River Bridge. This is because the Renmin Road Viaduct is the first viaduct in China and can be called the starting point of modern transportation in Chinese cities.



prosperous commercial street in Juangzhou is now in decline. Did it lose to the viaduct or to the times?





Renmin South Road is located in Yuexiu District, the old city of Quangzhou, and reaches the Pearl River in the south. It was once the most prosperous commercial center in Guangzhou and the first underground shopping street in Guangzhou. The original casualty pedestrian bridge was born. There were many shops and hotels around it. Then, The once very lamous Guangzhou Cultural Park (a park visited by many national licaders).

Afarii

Like to shere good things

There are so many visducts in the old town of Guangzhou! Walking on the road, it feels so depressing! When I look up, my view is blocked by viaducts on the first, second and third floors in all directions. It's uncomfortable! Moreover, it is easy to go the wrong way when going to the navigation for the first time. Some people even cannot understand the navigation on, which makes them feel irritable!

Maybe this is the current situation in the old towns of most big cities! Without the viaduct, traffic would be congested, and the roads in the old city were originally planned to be too small. #2023New Knowledge Youth Conference

of share of collect Wreport

of number of city bridges: nou, I have crossed more han you have walked more

and observe the distribution of the number of bridges in the city. Among sout hern cities, 10 have 100 bridges, namely Guangzhou with 1,112 bridges, Shenz hen with 940 bridges, Wuhan with 347 bridges, Chongqing with 347 bridges, K unming with 258 bridges, Chengdu with 245 bridges and Nanjing with 215 bridges.

When will the viaduct on Renmin Road in Guangzhou be de molished?



Figure 1.2:News of the Renmin Road Viaduct Collage, (SOURCE:Xinhua News, August 20, 2016)

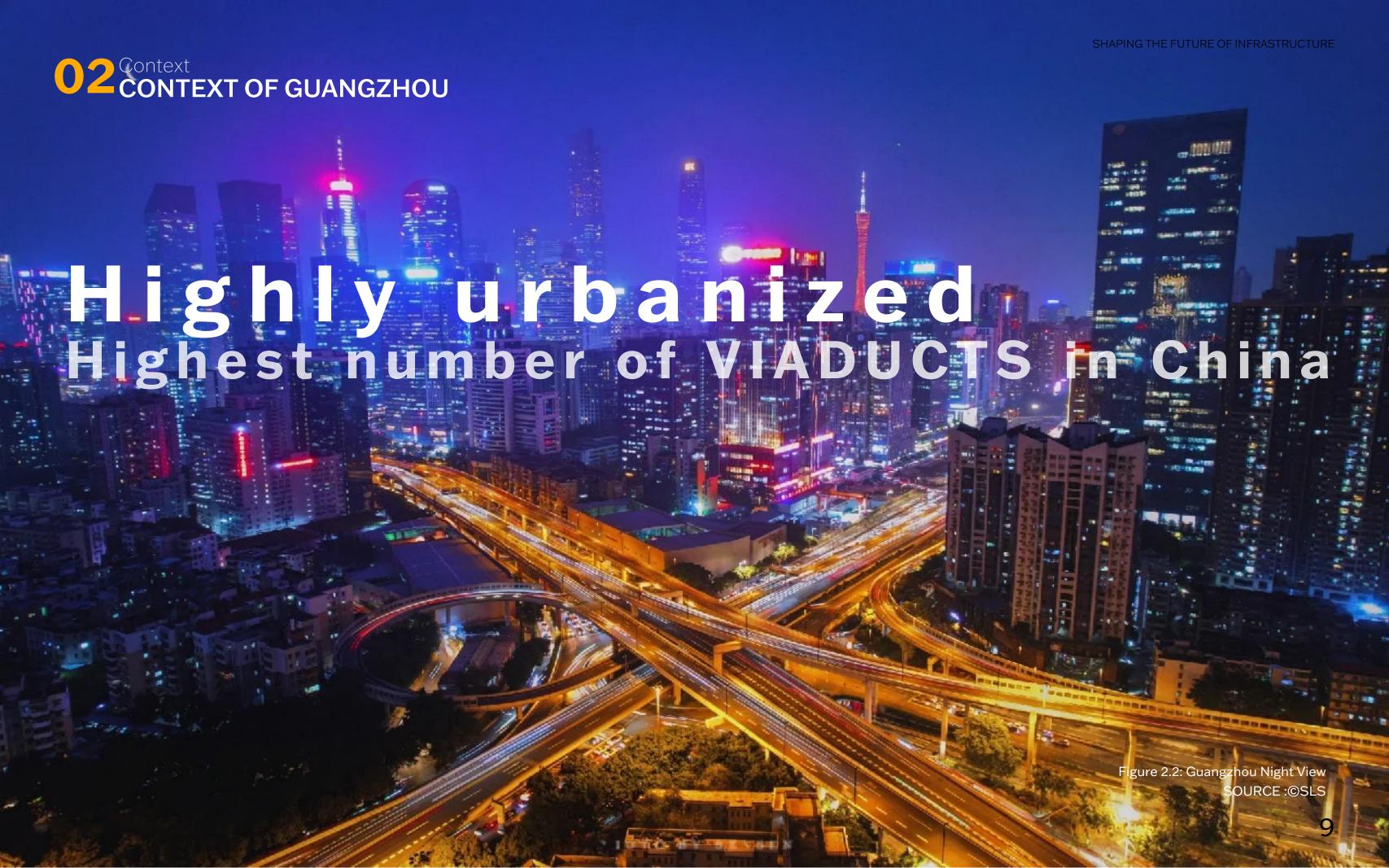
The quandary remains: Should the Renmin Road Viaduct be demolished or preserved?

02 CONTEXT

O2 Context CONTEXT OF GUANGZHOU



Figure 2.1: Geographical map of Guangzhou, Guangdong Province, China, SOURCE: ©Shu-Wen Su, Dong Wang



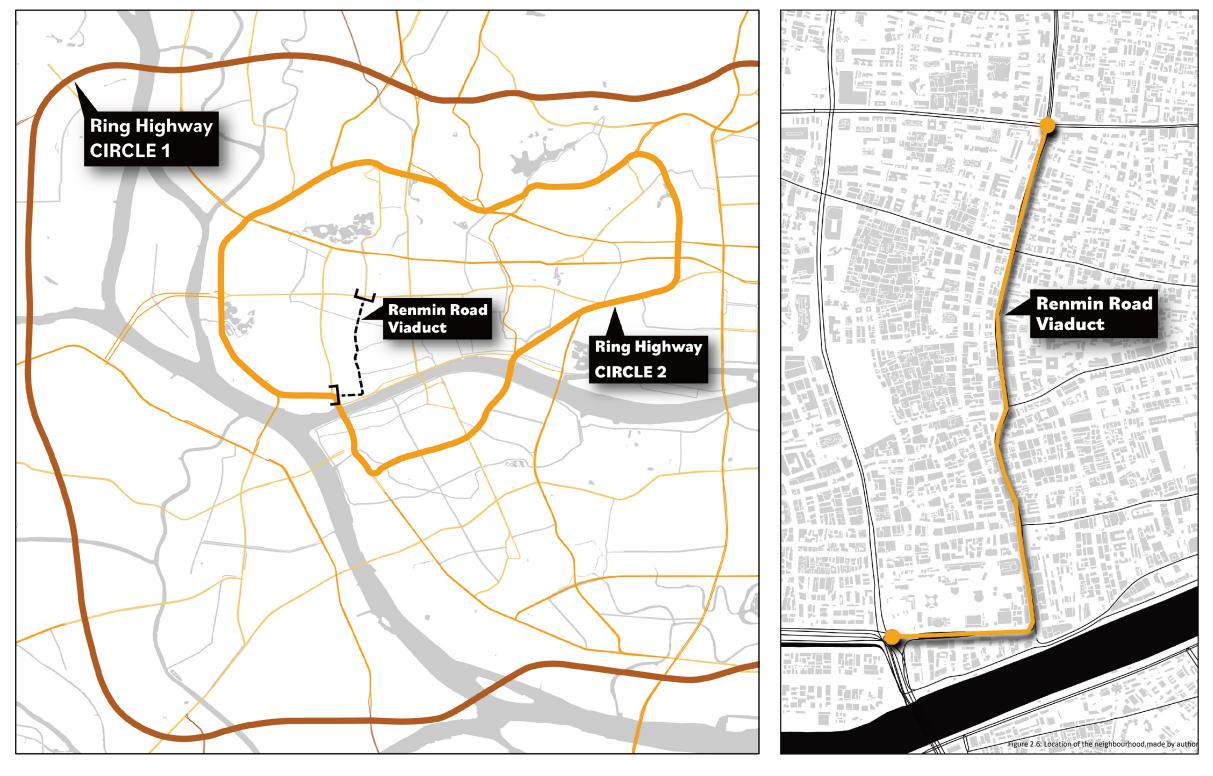


CULTURE& HERITAGE





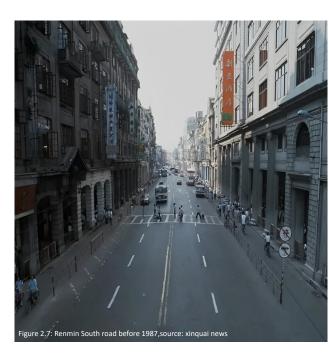
O2 Context RENMIN VIADUCT NEIGHBOURHOOD



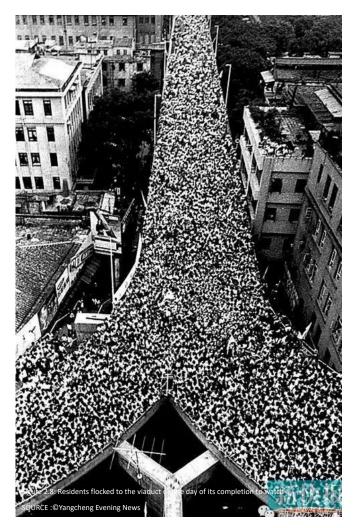
Renmin viaduct neighbourhood, GUANGZHOU

02 Context DEVELOPMENT OF THE VIADUCT

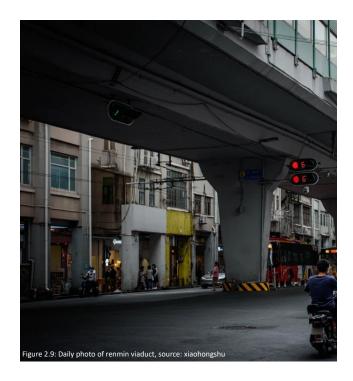
Development of the Renmin viaduct



Before 1987
The Commercial Street, center of Guangzhou, dining, entertainment, shopping, the "Wall Street" of Guangzhou.



On September 20, 1987 the People's Road Viaduct was opened for sightseeing, shocking the whole city.



For now this concrete has transitioned into a negative element within this densely populated city.

?

The future of Renmin viaduct

A viaduct as a gathering of conflicts, rapid urbanization, living quality, oppsite with future mobility...

03
PROBLEM
FIELD

O3 Problem Field CONVENTIONAL MOBILITY MODE

Heavy vehicular traffic system

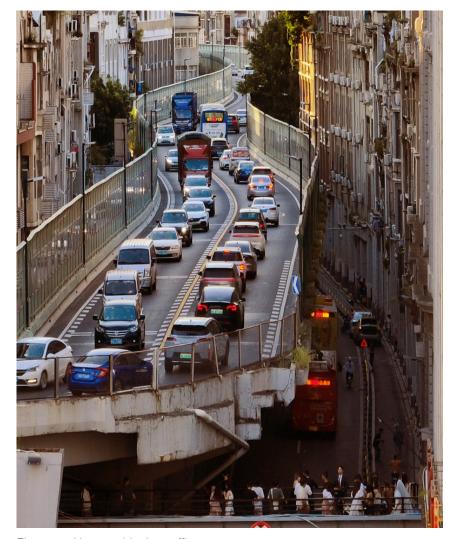
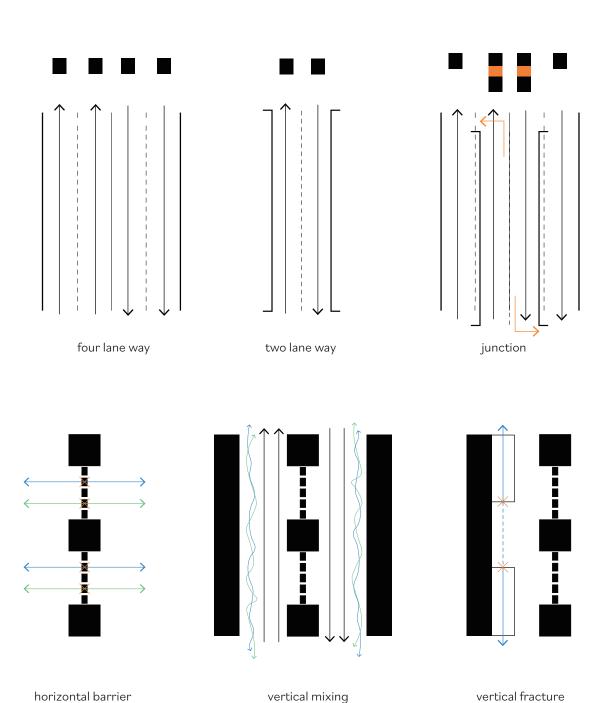


Figure 3.1: Heavy vehicular traffic SOURCE: ©Xiaohongshu

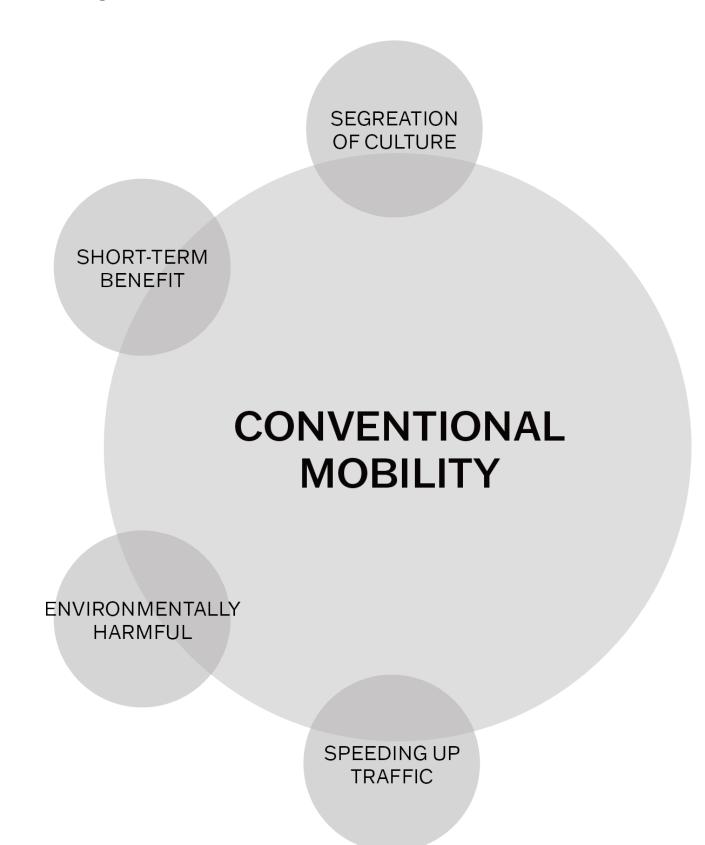
Incomplete non-motorized transportation systems



Figure 3.2: Incomplete non-motorized transportation SOURCE: ©Xiaohongshu



O3 Problem Field CONVENTIONAL MOBILITY MODE

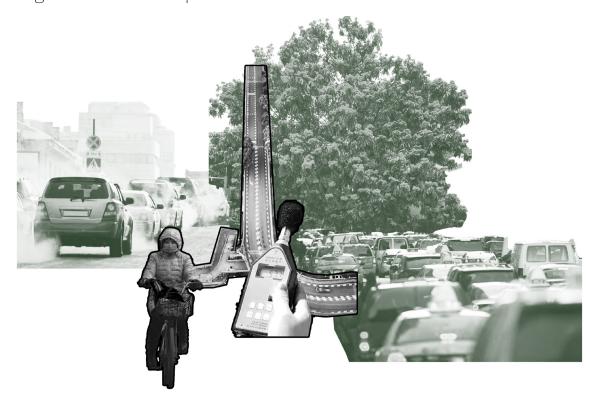


O3 Problem Field LOW LIVABILITY NEIGHBOURHOOD

Low open space quality



High environmental pollution



Commercial decline

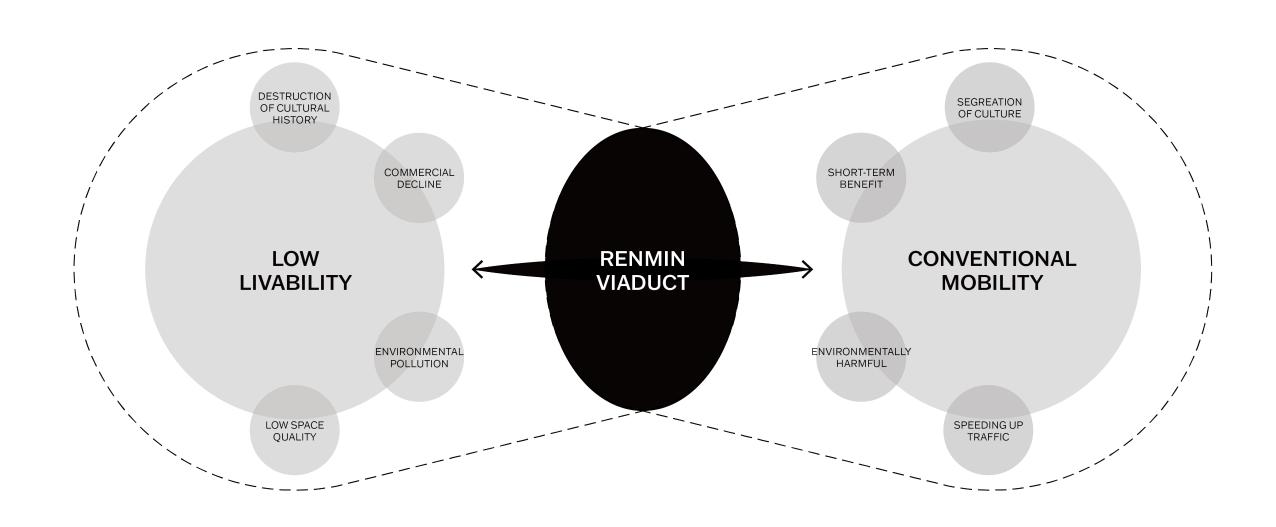


Destruction of cultural history



O3 Problem Field LOW LIVABILITY NEIGHBOURHOOD

DESTRUCTION OF CULTURAL **HISTORY** COMMERCIAL DECLINE **LOW LIVABILITY ENVIRONMENTAL POLLUTION** LOW SPACE QUALITY



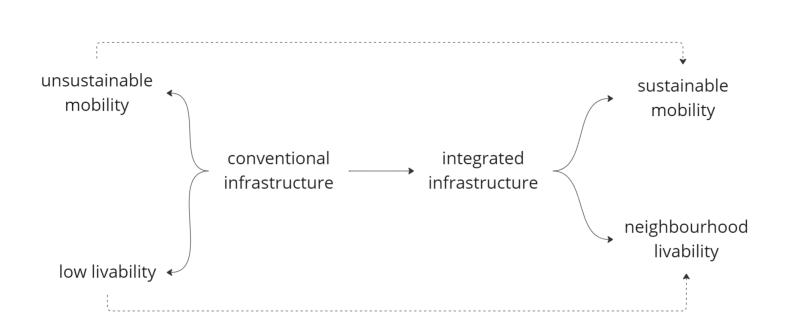
PROBLEM STATEMENT

04 METHODOLOGY

Research question

How can we achieve a sustainable mobility transformation by integrated infrastructure, while simultaneously improving the neighbourhood livability to regenerate the Renmin Viaduct area in Guangzhou?

Research aim



This project aims to repurpose the Renmin Viaduct to regenerate the neighborhood. It will serve as a catalyst for the revitalization of the surrounding neighborhood, transforming from a negative urban element into a positive engine for development. As a key factor contributing to the issues in this area, it will be changed from a singular infrastructure to an integrated infrastructure. By redesigning the viaduct, mobility and livability of the neighborhood on both sides of the Renmin viaduct will be improved simultaneously, including retailed commercial revitalization, better open space, preservation of heritage, and greenery improvement.

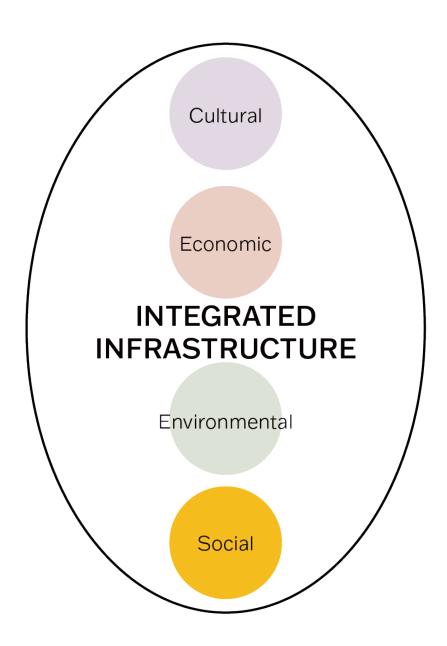
Main theory 1: Sustainable Mobility



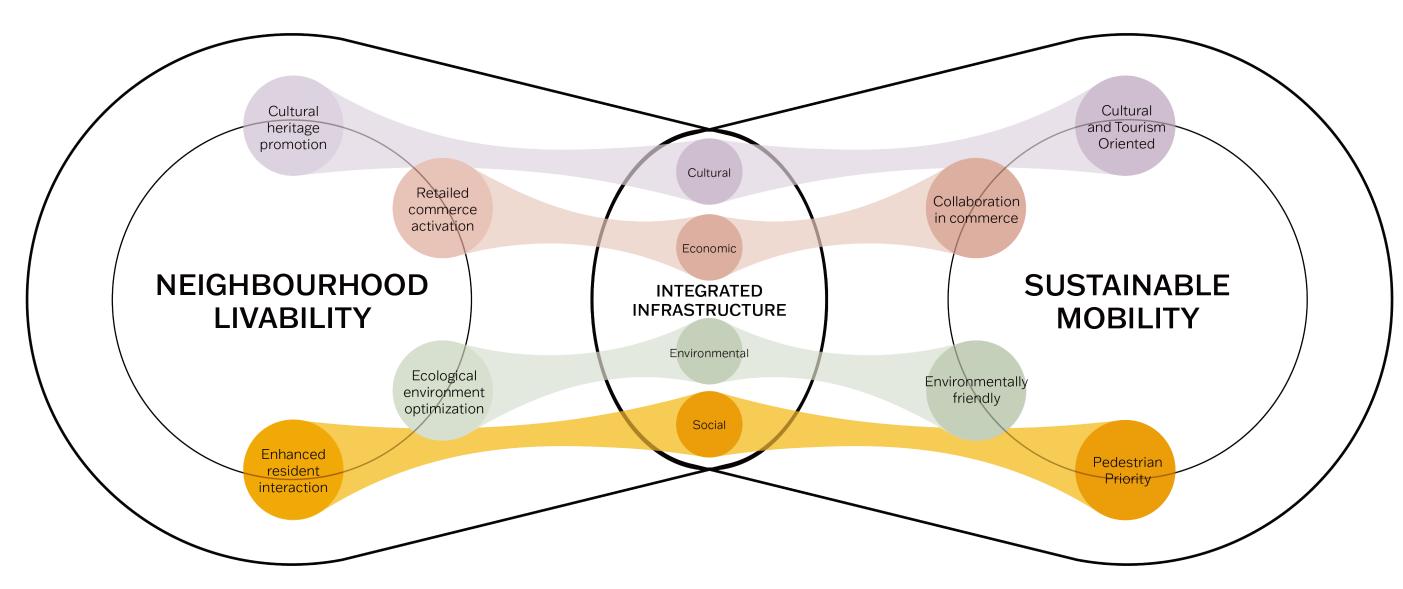
Main theory 2: Neighbourhood Livability



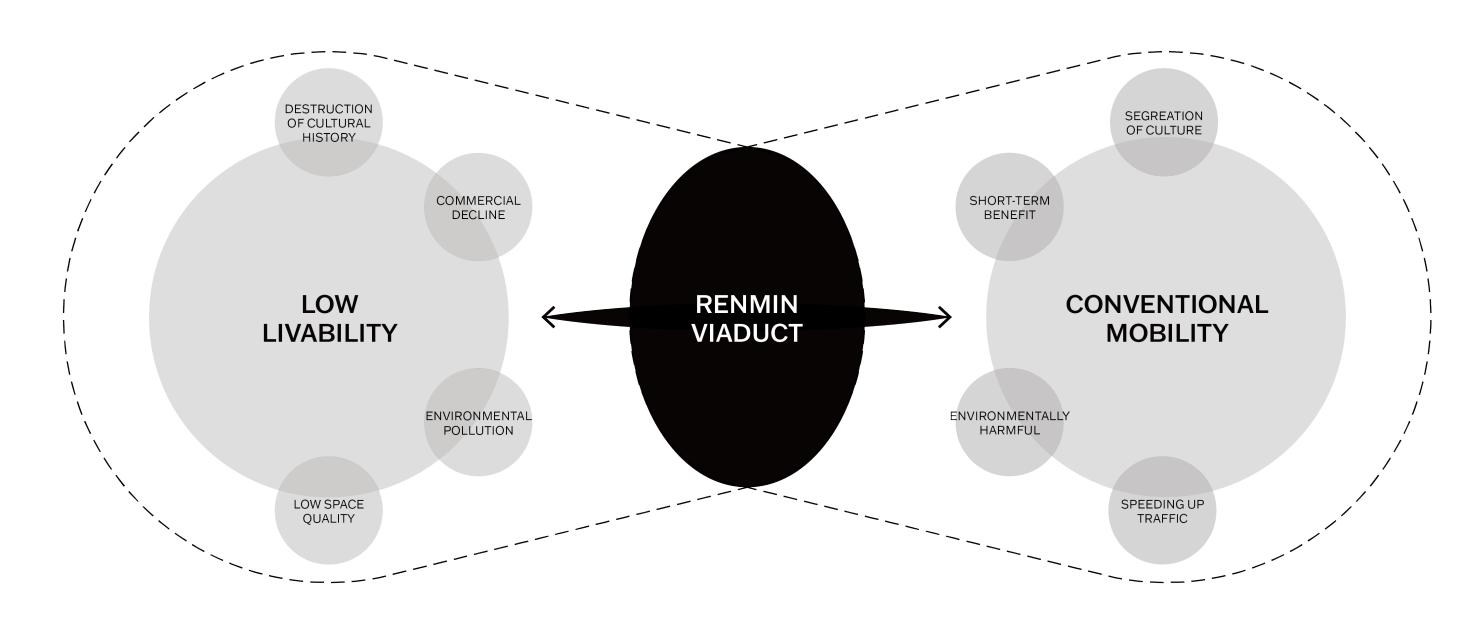
Main theory 3: Integrated Infrastructure



Methodology CONCEPTUAL FRAMEWORK

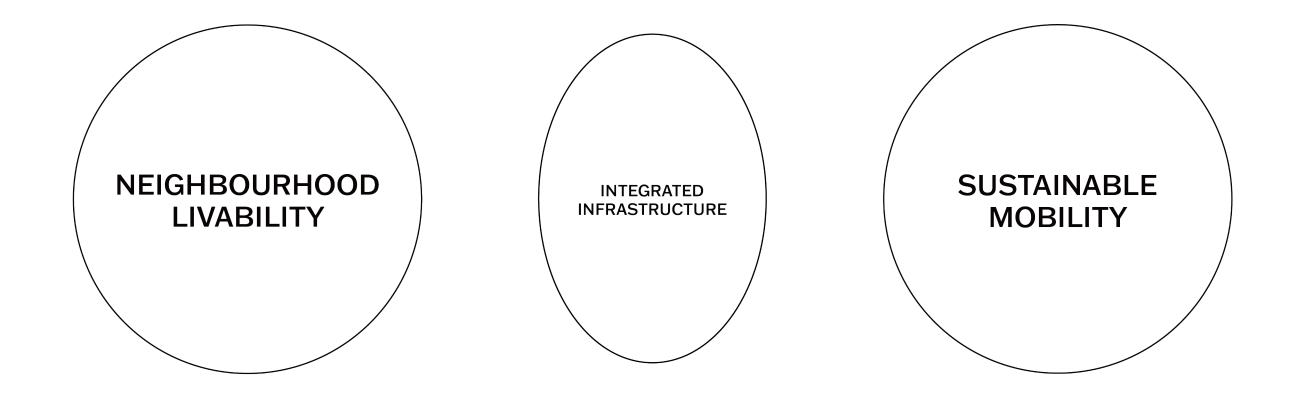


CONCEPTUAL FRAMEWORK



PROBLEM STATEMENT REVIEW

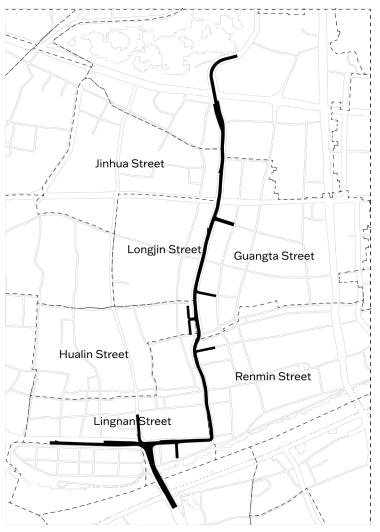
05 ANALYSIS



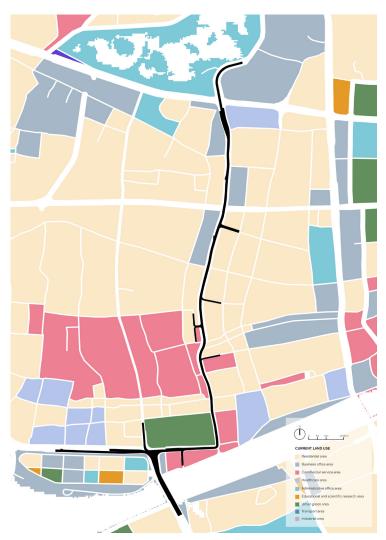
3 analysis topic

O5 Analysis BASIC INFO OF RENMIN VIADUCT NEIGHBOURHOOD

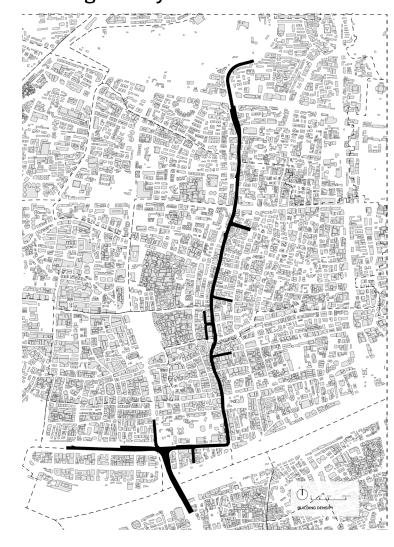
Street administrative boundaries



Current land use



Building density



Current Transportation

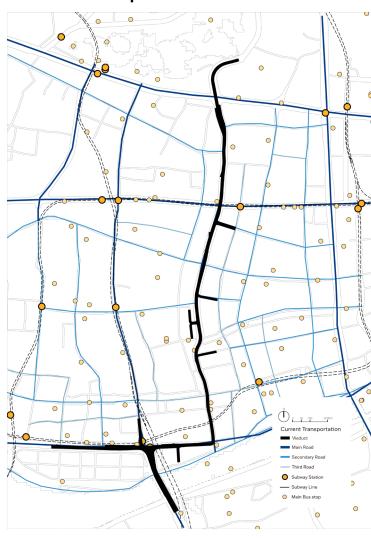
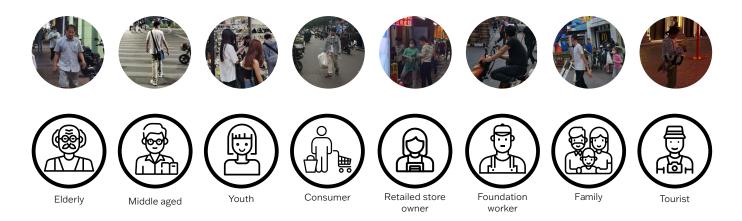


Fig.5.1-4 baisc information of renmin viaduct neighbourhood, made by author

O5 Analysis BASIC INFO OF RENMIN VIADUCT NEIGHBOURHOOD

Portraits of people

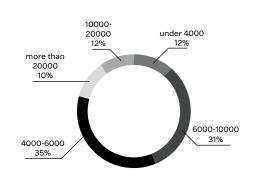


Age composition of the population

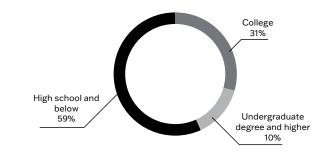
Youth 13%

Middle aged 24%

Income level of the population



Education level of the population



Occupation of the population

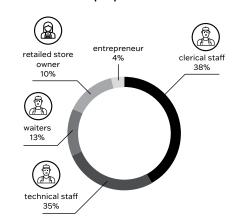
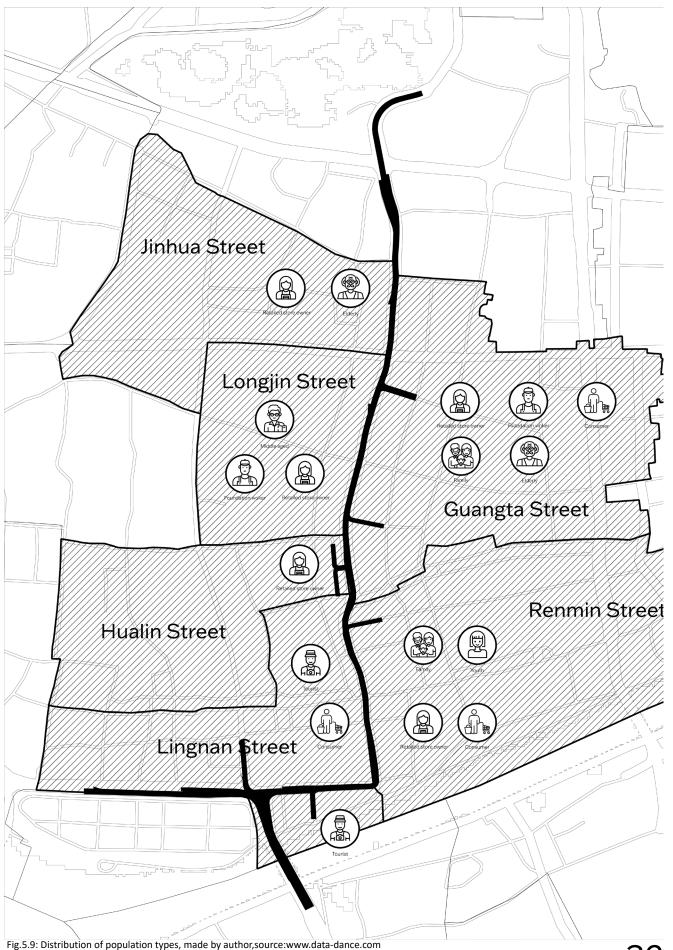


Fig. 5.5-8: age, education, income, occupation information of renmin viaduct neighbourhood, made by author, source: www.data-dance.com



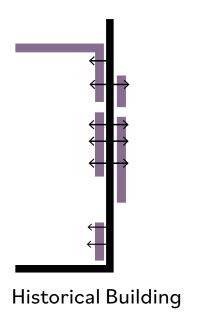
SHAPING THE FUTURE OF INFRASTRUCTURE

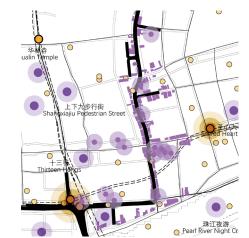
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SHAPING THE FUTURE OF INFRASTRUCTURE

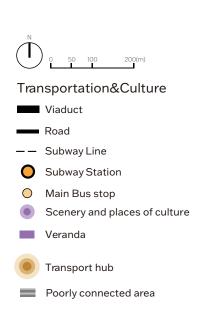
O5 Analysis SUSTAINABLE MOBILITY ANALYSIS

Cultural and Tourism Oriented





The area with the lowest synergy between transportation and cultural tourism

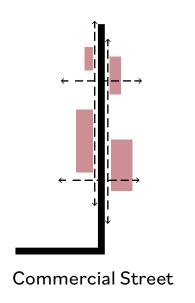


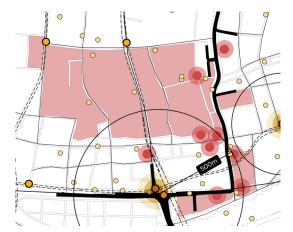


SHAPING THE FUTURE OF INFRASTRUCTURE

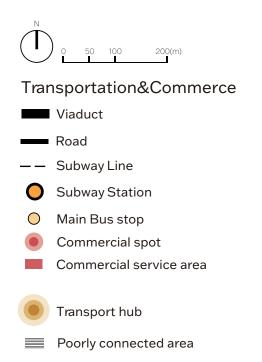
O5 Analysis SUSTAINABLE MOBILITY ANALYSIS

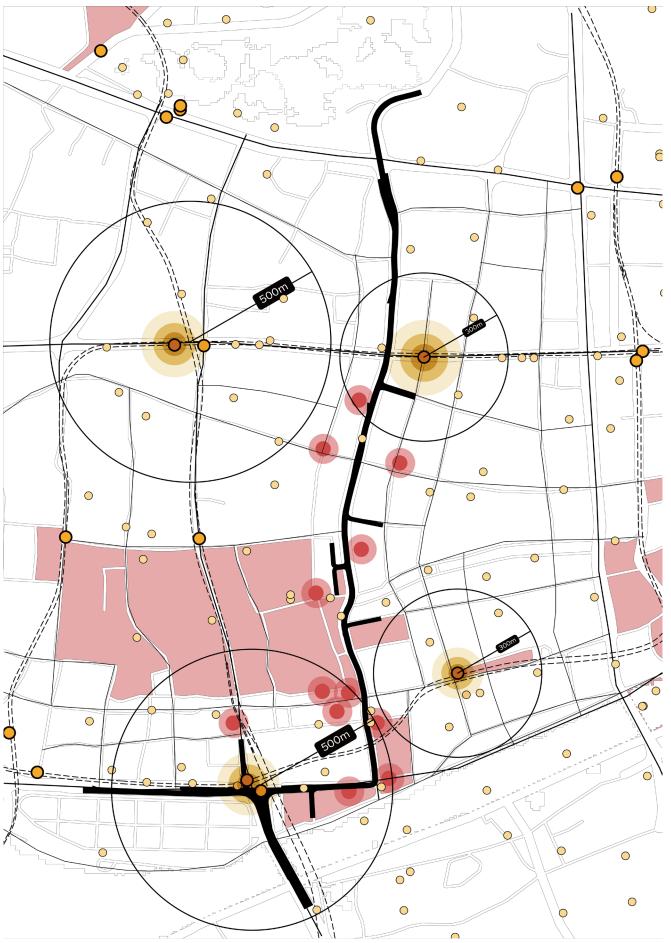
Collaboration in commerce





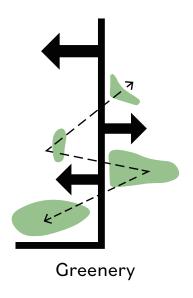
The area with the lowest synergy between transportation and retailed commerce





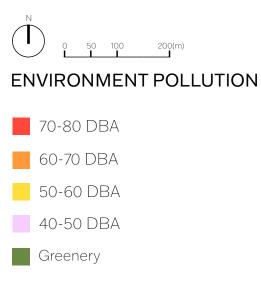
O5 Analysis SUSTAINABLE MOBILITY ANALYSIS

Environmentally friendly





The areas with low green coverage and noise pollution

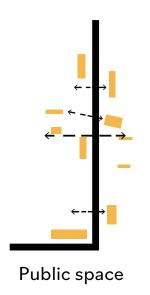




SHAPING THE FUTURE OF INFRASTRUCTURE

O5 Analysis SUSTAINABLE MOBILITY ANALYSIS

Pedestrian Priority





Percentage Distribution of Current Daily Transportation Modes and Future Prediction

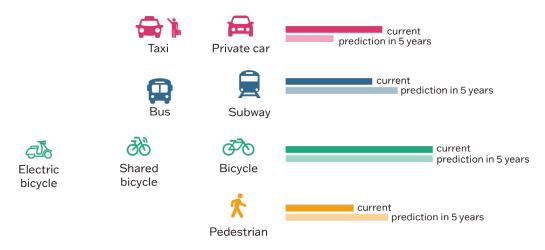
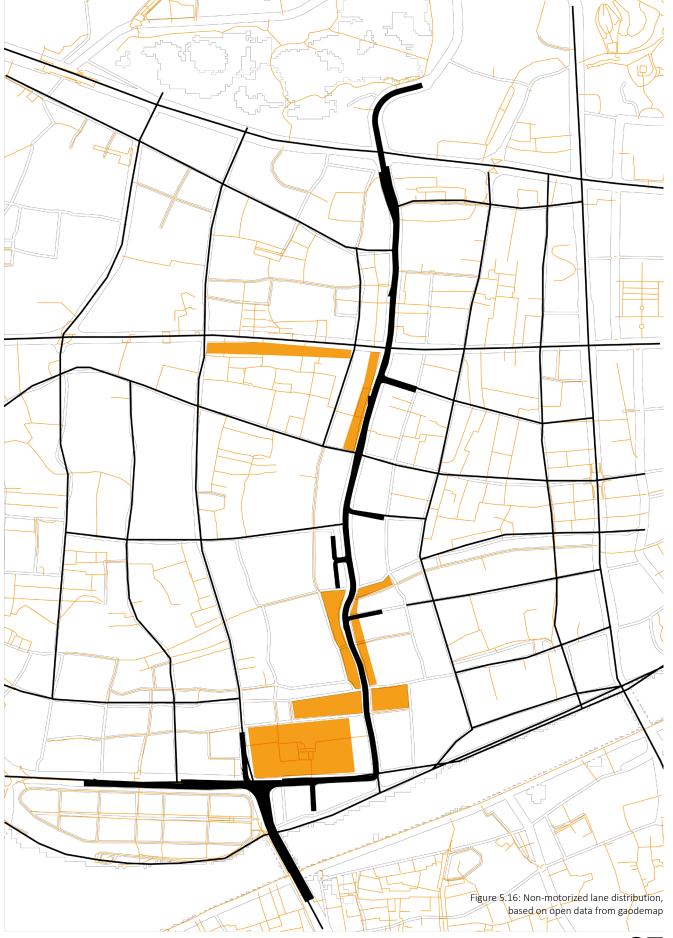


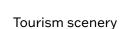
Figure 24: Renmin viaduct neighbourhood travel model, made by authour bsed on guangzhou transport development annual report 2022, Guangzhou Municipal Bureau of Planning and Natural Resources, Guangzhou Institute of Transportation Planning





O5 Analysis NEIGHBOURHOOD LIVABILITY ANALYSIS

Cultural heritage promotion









沙面 Shamian



圣心大教堂 Sacred Heart Cathedral



华林寺 Hualin Temple



上下九步行街 Shangxiajiu Pedestrian Street



十三行 Thirteen Hongs



粤海关 Yuehaiguan Mesuem



珠江夜游 Pearl River Night Cruise

Core portection area



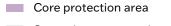
Oldest cultural street



Low construction quality







Secondary protected area

Oldest cultural streetGeneral old cultural street

— Newer cultural street

Low construction quality

Average construction qualityGood construction quality

Tourism scenery

Scenery and places of culture

Viaduct



SHAPING THE FUTURE OF INFRASTRUCTURE

O5 Analysis NEIGHBOURHOOD LIVABILITY ANALYSIS

Retailed commerce activation

Percentage of business types

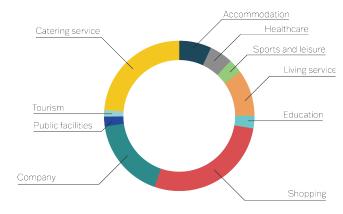


Figure 5.24: Percentage of business types, made by authour bsed on guangzhou transport development annual report 2022, Guangzhou Municipal Bureau of Planning and Natural Resources, Guangzhou Institute of Transportation Planning

Lowest quality



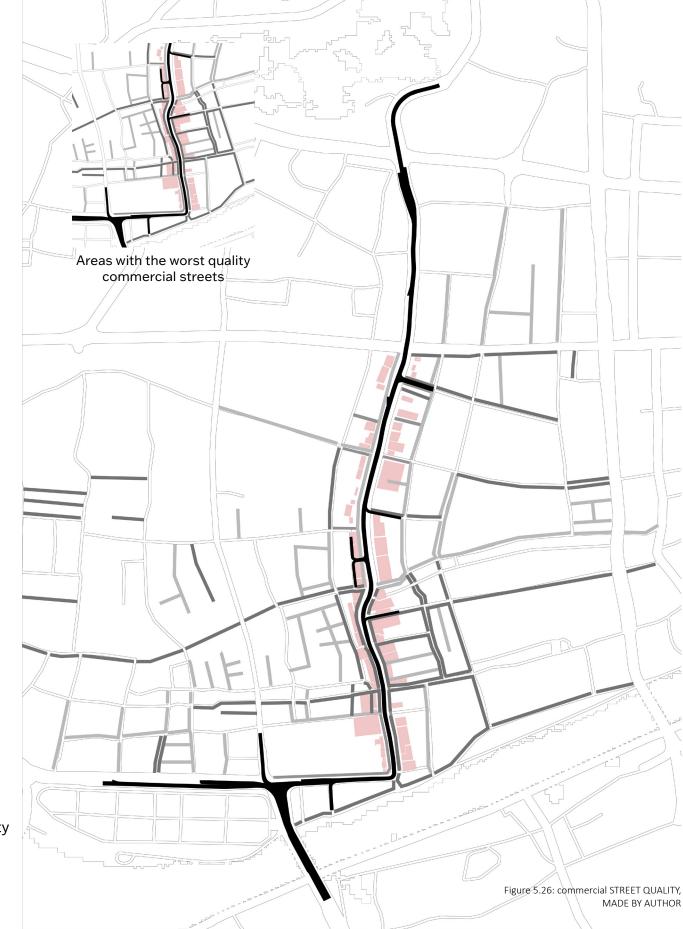












O5 Analysis NEIGHBOURHOOD LIVABILITY ANALYSIS

Ecological environment optimization

Good greenery





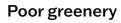


Average greenery













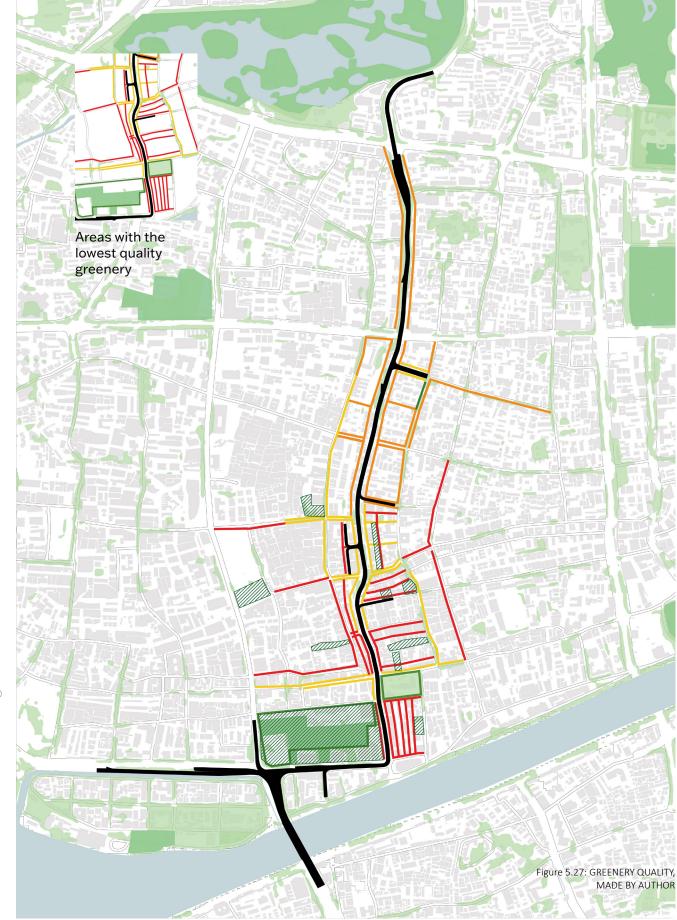


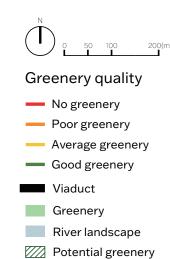
No greenery











SHAPING THE FUTURE OF INFRASTRUCTURE

O5 Analysis NEIGHBOURHOOD LIVABILITY ANALYSIS

Enhanced resident interaction

Good quality









Bad quality











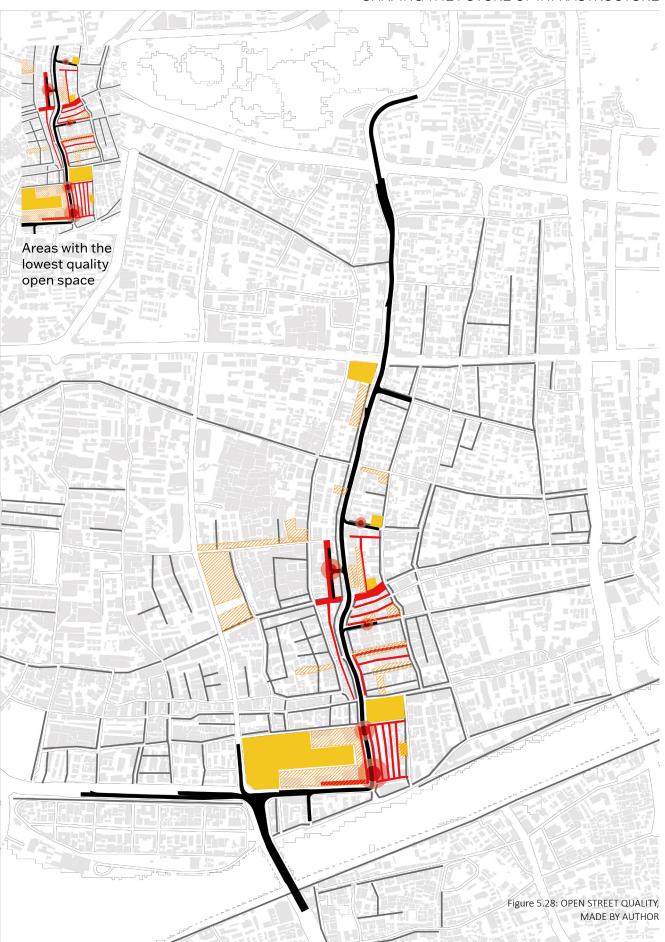




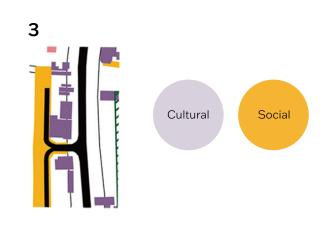






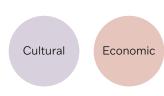


O5 Analysis INTEGRATED INFRASTRUCTURE ANALYSIS











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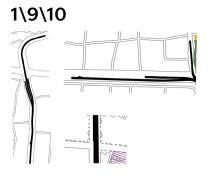


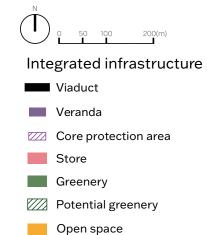


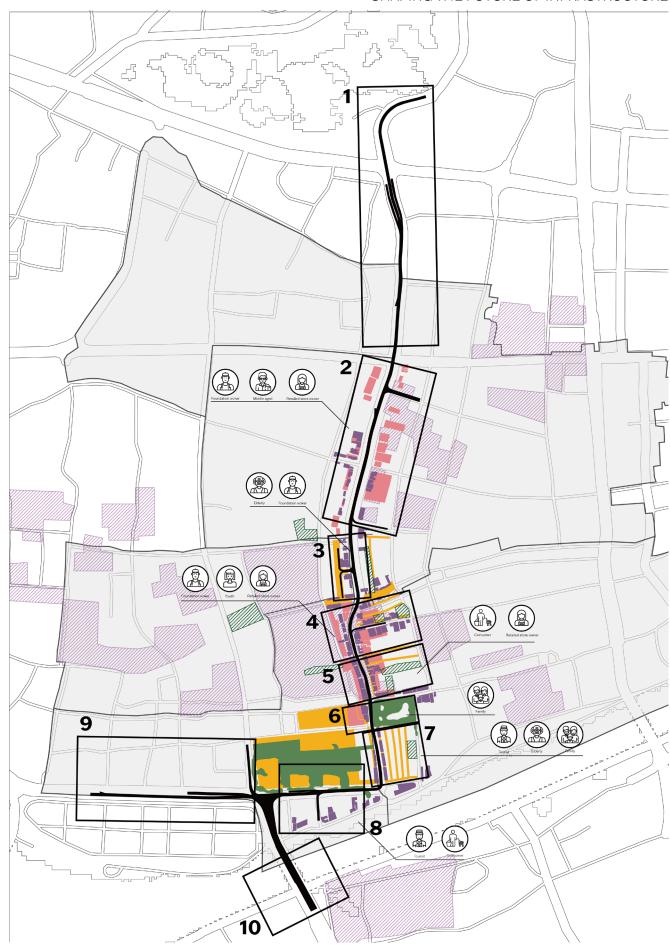


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05 Analysis CONCLUSION

SUSTAINABLE MOBILITY ANALYSIS



The area with the lowest synergy between transportation and cultural tourism



The area with the lowest synergy between transportation and retailed commerce



The areas with low green coverage and noise pollution



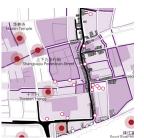
Lowest Pedestrian Convenience Areas







NEIGHBOURHOOD LIVABILITY ANALYSIS



Highest cultural richness but Lowest space quality Areas



Areas with the worst quality commercial streets



Areas with the lowest quality greenery



Areas with the lowest quality open space

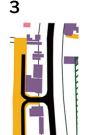








INTEGRATED INFRASTRUCTURE ANALYSIS



Social





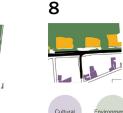


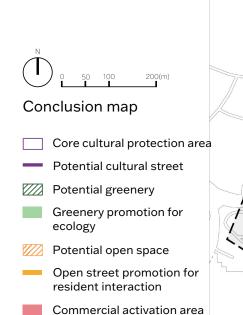




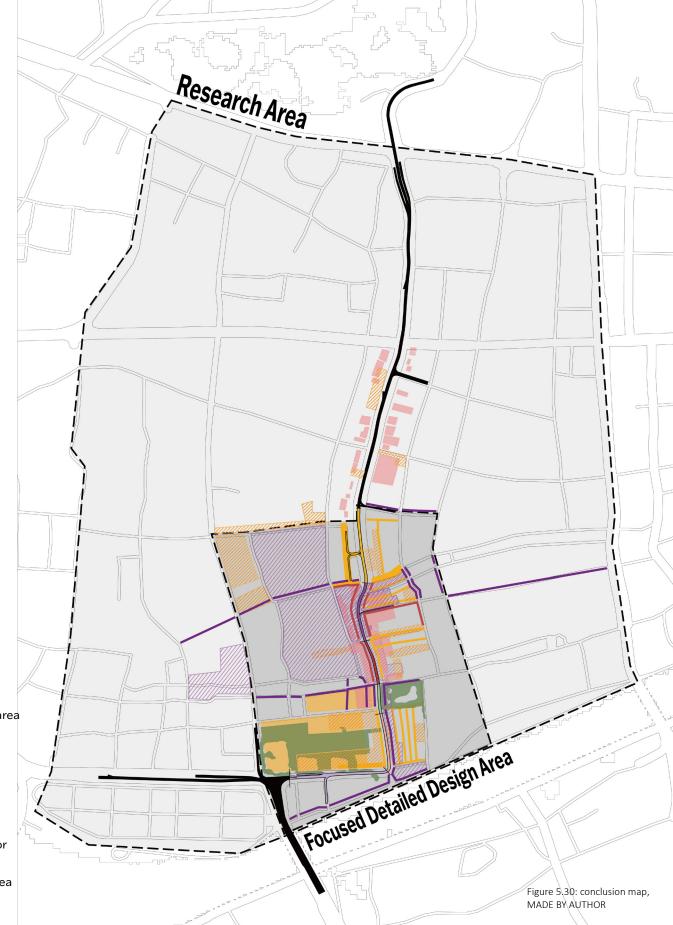






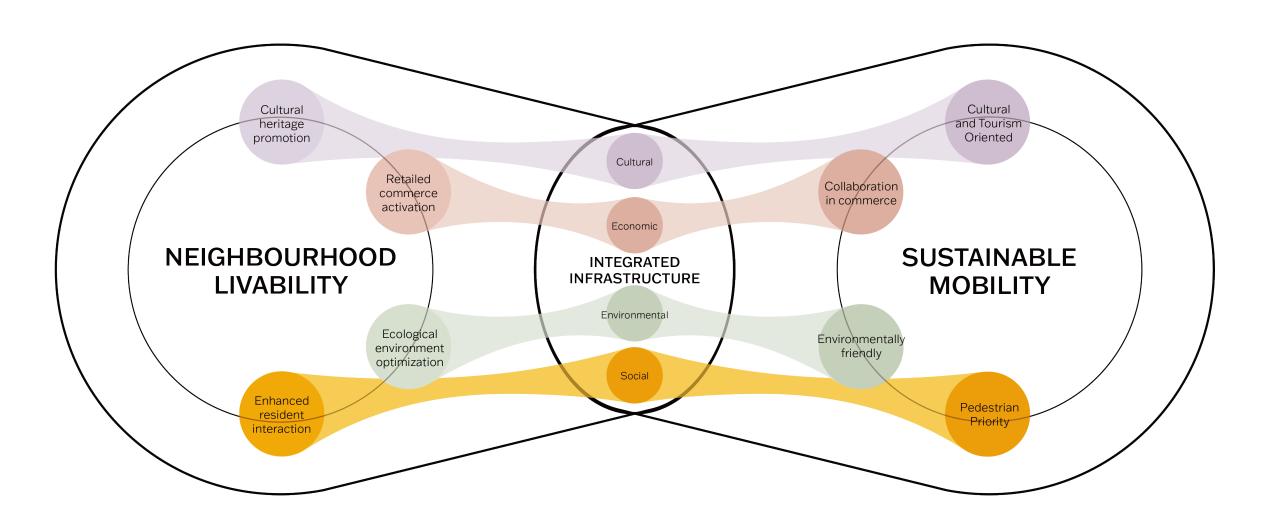


 Potential retailed commercial street

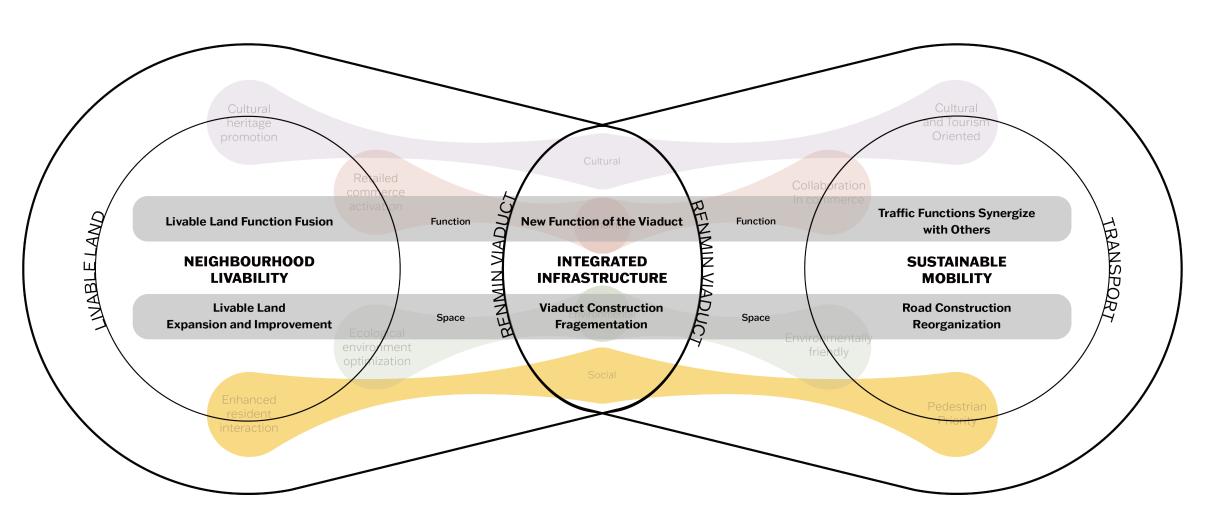


06 DESIGN

PROPOSAL

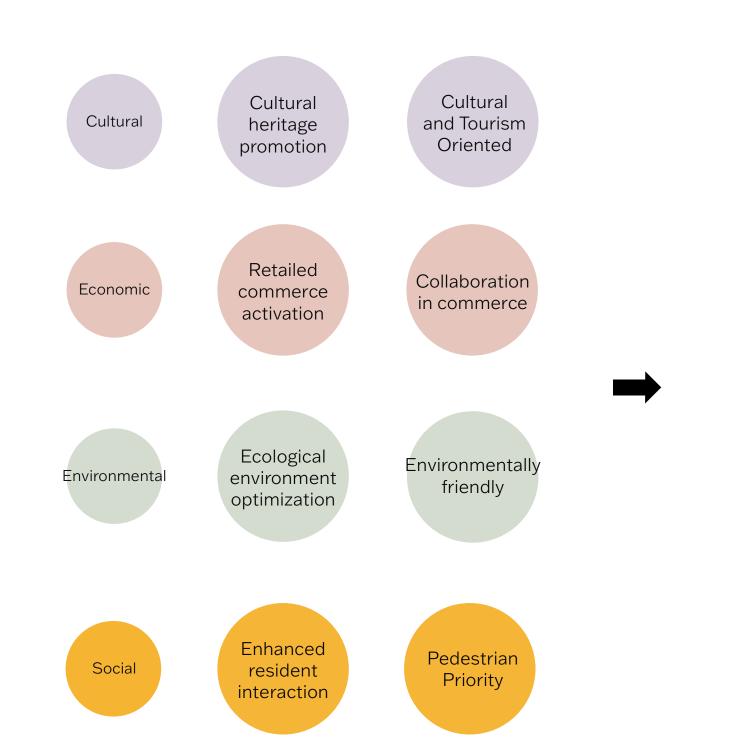


Conceptual framework



Design framework

O 6 Design proposal DESIGN FRAMEWORK



NEIGHBOURHOOD LIVABILITY

Spatial Strategy: Livable Land Expansion and Improvement

Functional Strategy: Livable Land Function Fusion

SUSTAINABLE MOBILITY

Functional Strategy: Traffic Functions Synergize with Others

Spatial Strategy: Road Construction Reorganization

INTEGRATED INFRASTRUCTURE

Functional Strategy: New Function of the Viaduct

Spatial Strategy: Viaduct Construction Fragementation

O 6 Design proposal DESIGN FRAMEWORK

NEIGHBOURHOOD LIVABILITY

Spatial Strategy: Livable Land Expansion and Improvement

Functional Strategy: Livable Land Function Fusion

Strategy

SUSTAINABLE MOBILITY

Functional Strategy: Traffic Functions Synergize with Others

Spatial Strategy: Road Construction Reorganization

INTEGRATED INFRASTRUCTURE

Functional Strategy: New Function of the Viaduct

Spatial Strategy: Viaduct Construction Fragementation

Design approach reference:

street design infrastructure design viaduct reconstruction

TTLE EETS TRATED

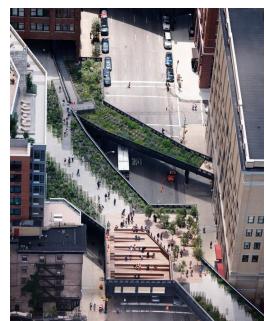






https://nacto.org/publication/urban-street-design-guide/





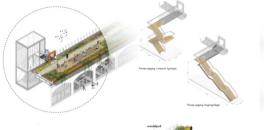




Caoyang Centennial Park, Shanghai , Liu Yuyang Architects, 2021



SEOULLO 7017 SKYGARDEN, Seoul, MVRDV, 2017





HOFBOGEN PARK, Rotterdam, 2014

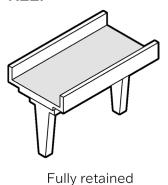
Design proposal STRATEGIES FOR FUNCTION&SPACE

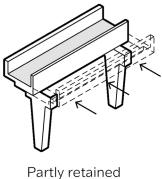
01 INTEGRATED INFRASTRUCTURE

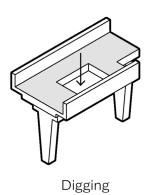
Spatial Strategy: Viaduct Construction Fragementation

For Viaduct Surface

KEEP

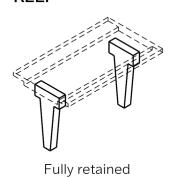


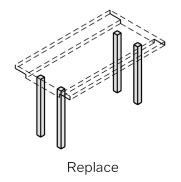


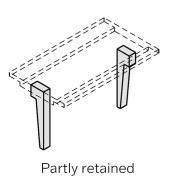


For Viaduct Column

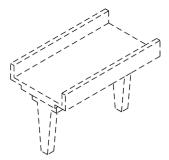
KEEP



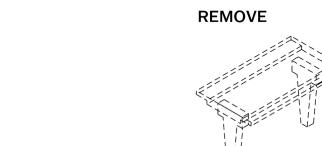


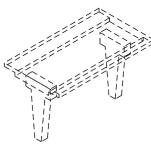


REMOVE

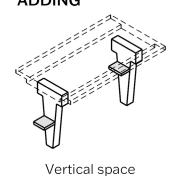




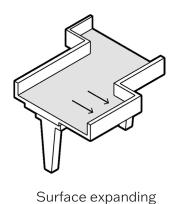


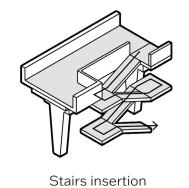


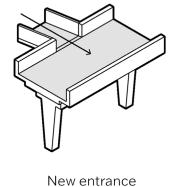
ADDING



ADDING



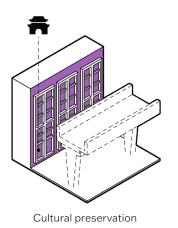


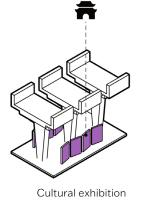


O 6 Design proposal STRATEGIES FOR FUNCTION&SPACE

01 INTEGRATED INFRASTRUCTURE

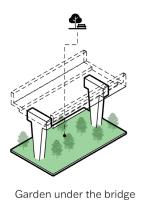
Functional Strategy: New Function of the Viaduct

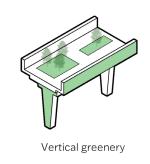






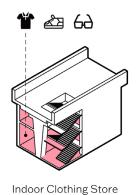


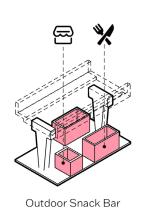


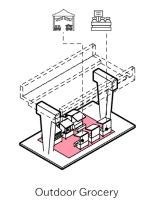






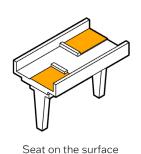


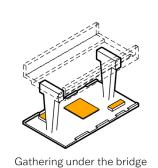
















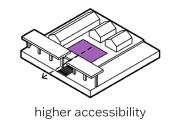
O 6 Design proposal STRATEGIES FOR FUNCTION&SPACE 02 NEIGHBOURHOOD LIVABILITY

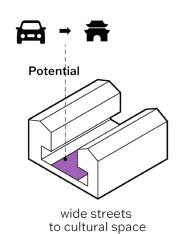
Spatial Strategy: Livable Land Expansion and Improvement

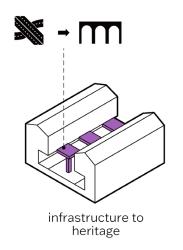
Cultural heritage promotion





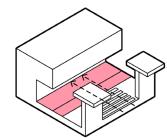




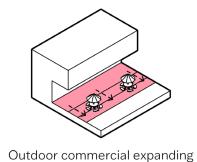


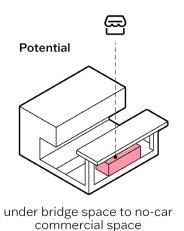


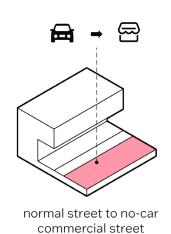
COMMERCIAL SPACE AROUND VIADUCT Current



Higher accessibility







Design proposal STRATEGIES FOR FUNCTION&SPACE

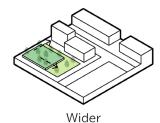
02 NEIGHBOURHOOD LIVABILITY

Spatial Strategy: Livable Land Expansion and Improvement

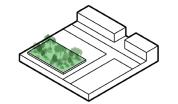
GREENERY AROUND VIADUCT

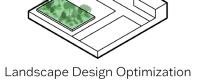
Current

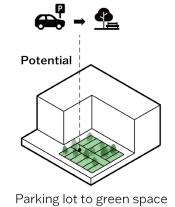


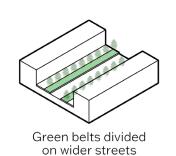


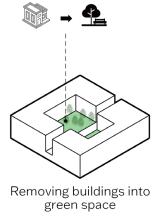






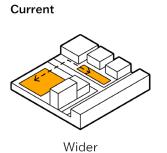




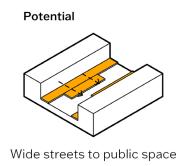


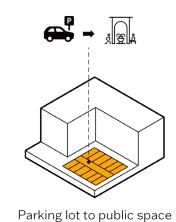
OPEN SPACE AROUND VIADUCT

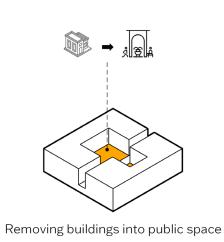








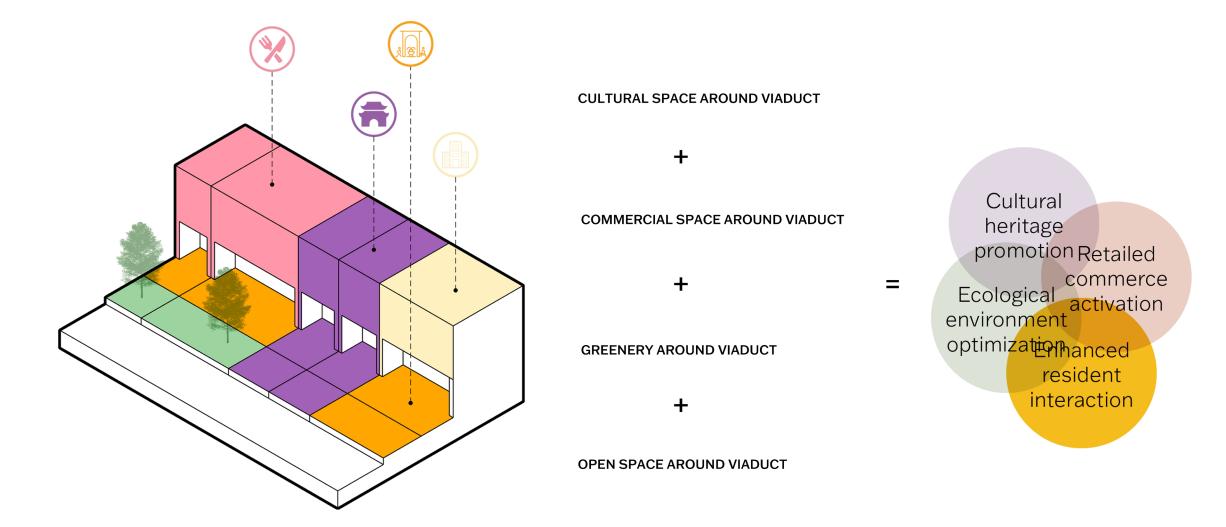




O 6 Design proposal STRATEGIES FOR FUNCTION&SPACE

02 NEIGHBOURHOOD LIVABILITY

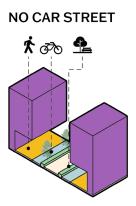
Functional Strategy: Livable Land Function Fusion

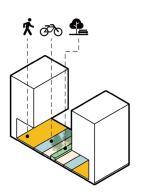


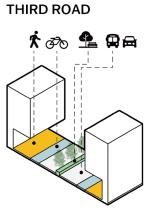
O 6 Design proposal STRATEGIES FOR FUNCTION&SPACE

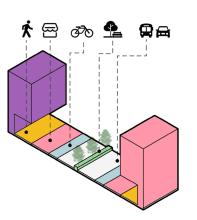
03 SUSTAINABLE MOBILITY

Spatial Strategy: Road Construction Reorganization

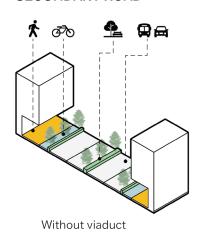


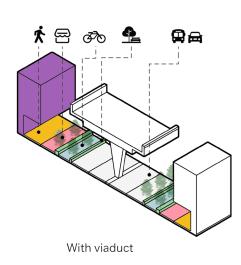


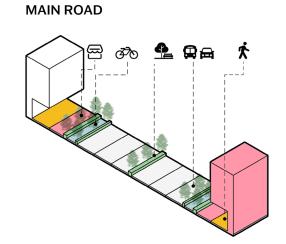




SECONDARY ROAD





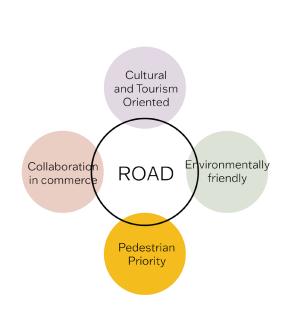


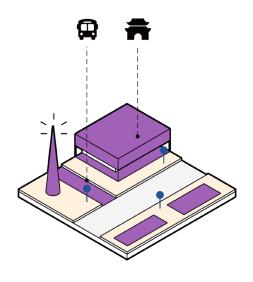
Cultural and Tourism Oriented Collaboration in commerce

Environmentally friendly Pedestrian Priority

O 6 Design proposal STRATEGIES FOR FUNCTION&SPACE 03 SUSTAINABLE MOBILITY

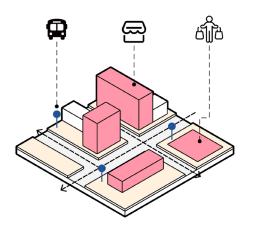
Functional Strategy: Traffic Functions Synergize with Others





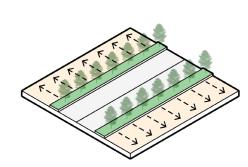
Building cultural landmarks around transportation nodes or important transportation hubs in the city





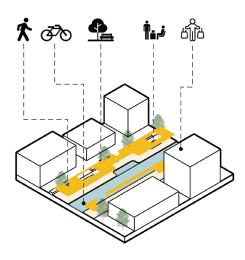
Connecting commercial centers to major public transportation hubs and providing easy access to public transportation services allows residents and tourists to easily reach commercial areas and reduces the use of private automobiles.





Environmentally

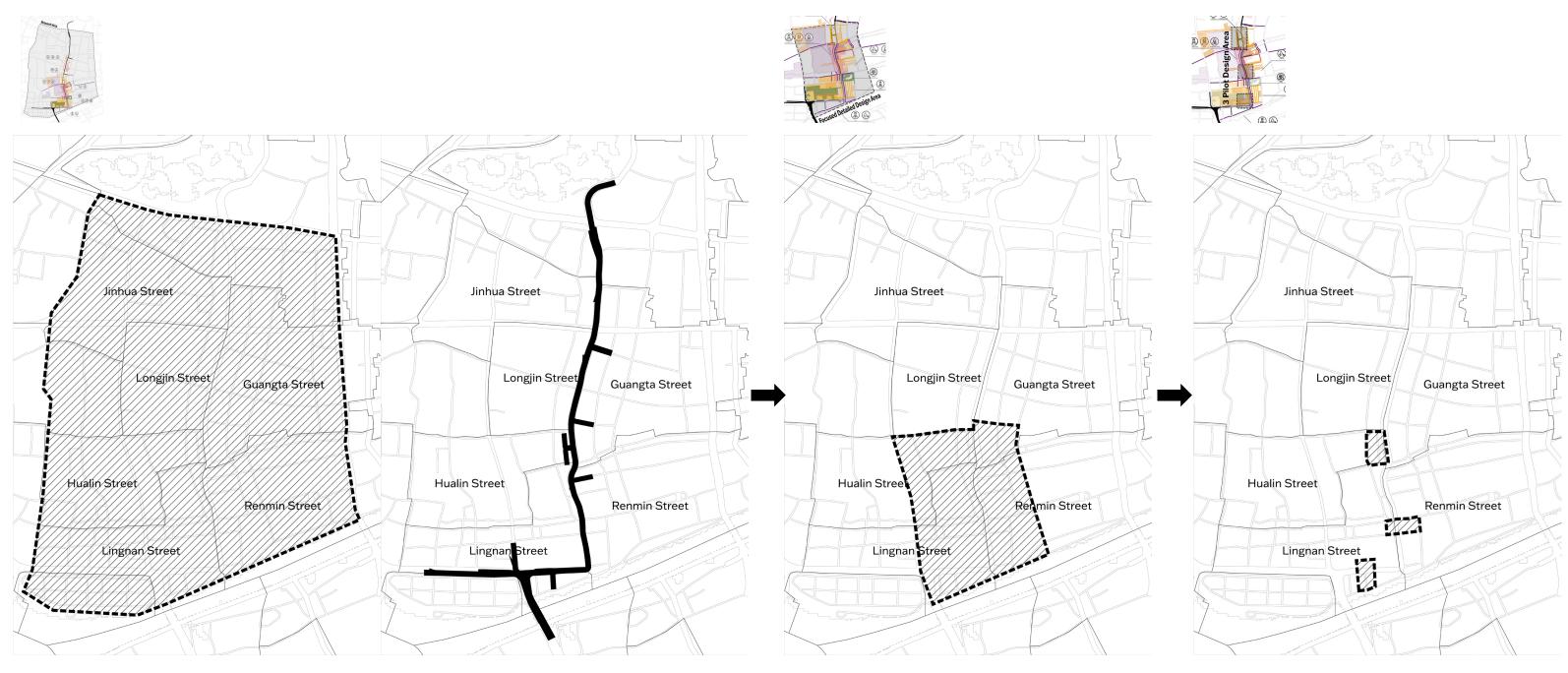
friendly



Design and renovation of commercial areas to make them more walkable and bikeable, including construction of sidewalks, bike lanes, additional landscaping, improved intersection design, etc.



O 6 Design proposal STRUCTURE OF DESIGN OUTCOMES



Transportation planning for Renmin Viaduct and surrounding roads

LIWAN & YUEXIU DISTRICT SCALE

Master plan & Design implementation for Renmin Viaduct reconstruction area

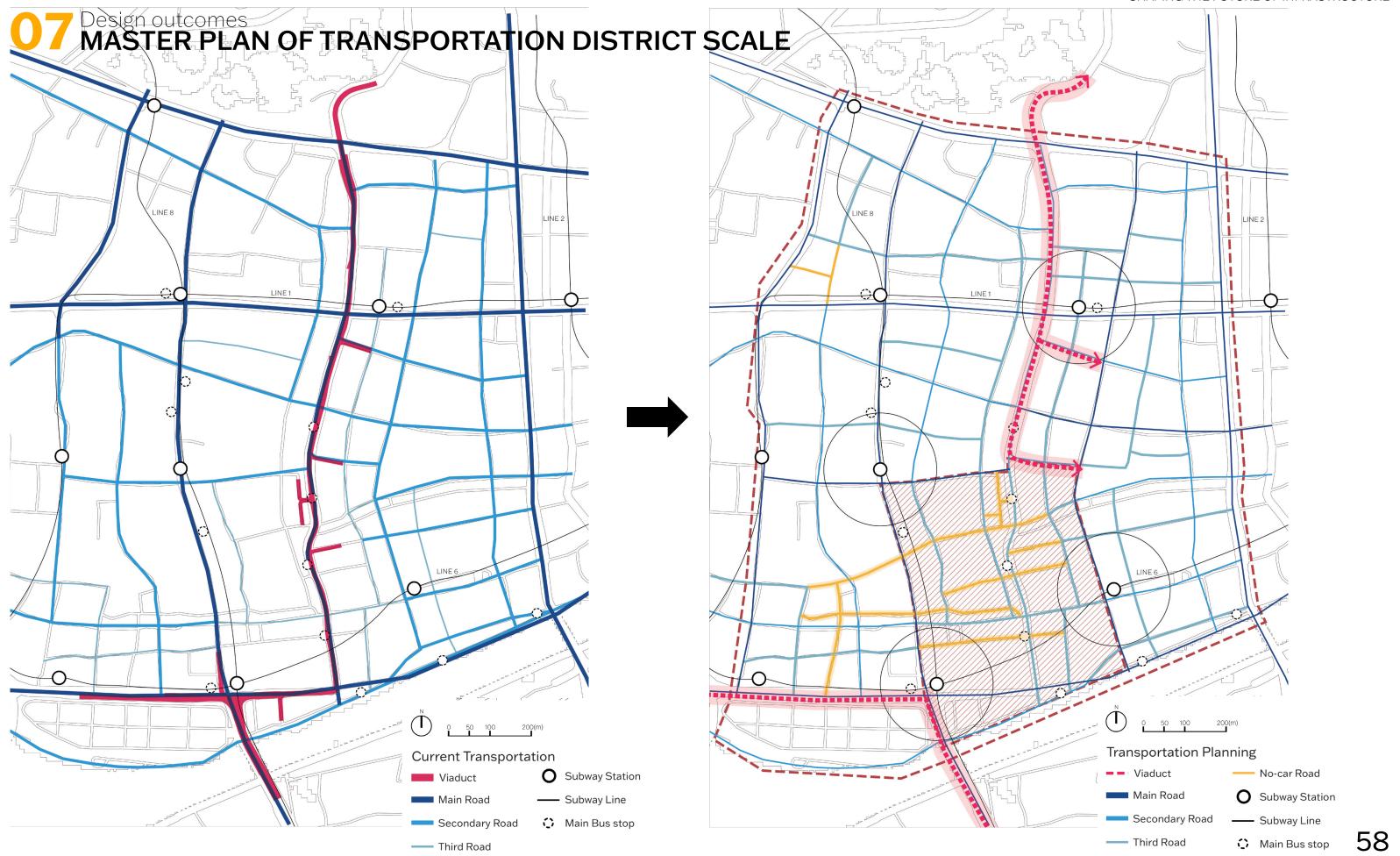
RENMIN ROAD NEIGHBOURHOOD SCALE

Detailed testing for 3 streets with different qualities

STREET SCALE

07 DESIGN

OUTCOMES



7 Design outcomes MASTER PLAN OF TRANSPORTATION DISTRICT SCALE

SUSTAINABLE MOBILITY

Functional Strategy: Traffic Functions Synergize with Others

more traffic flow.

Spatial Strategy: Road Construction Reorganization

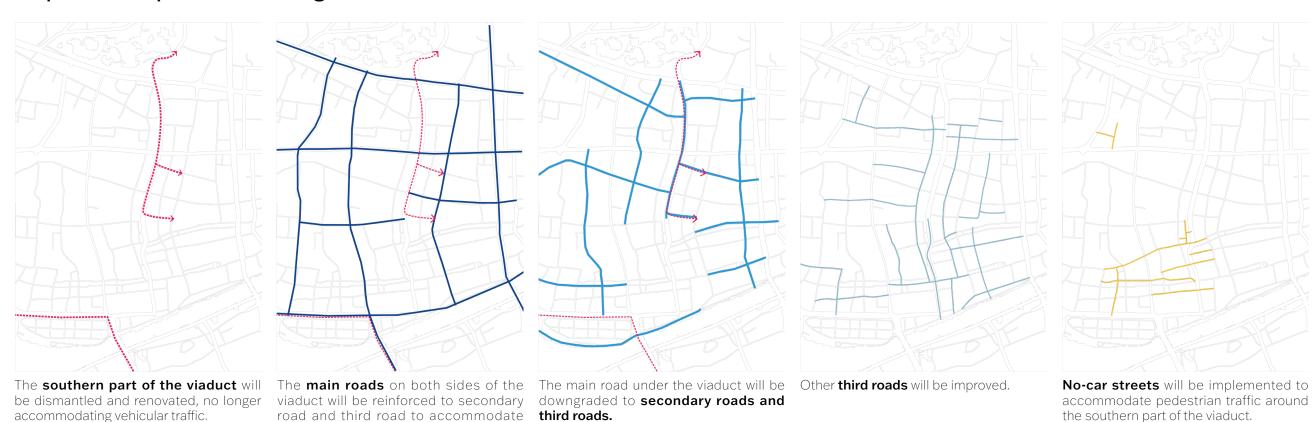








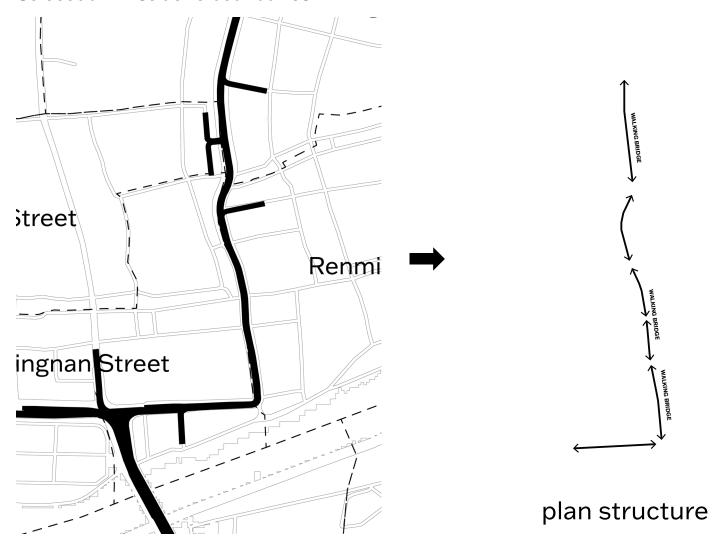
Proposed Transportation Planning

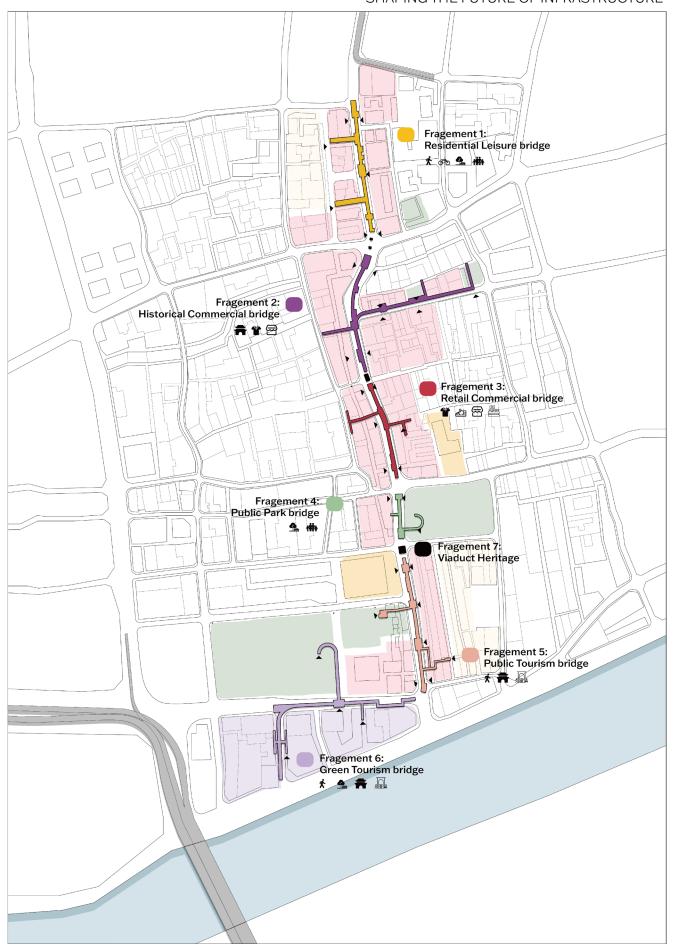


SHAPING THE FUTURE OF INFRASTRUCTURE

7 Design outcomes IMPLEMENTATIONS FOR NEIGHBOURHOOD SCALE Integrated infrastructure plan

Street administrative boundaries



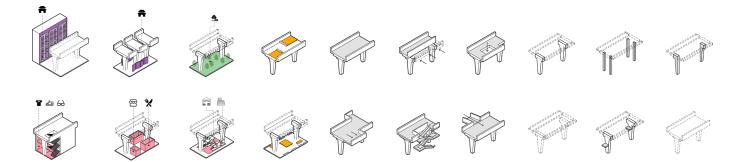


Integrated infrastructure plan

INTEGRATED INFRASTRUCTURE

Functional Strategy: New Function of the Viaduct

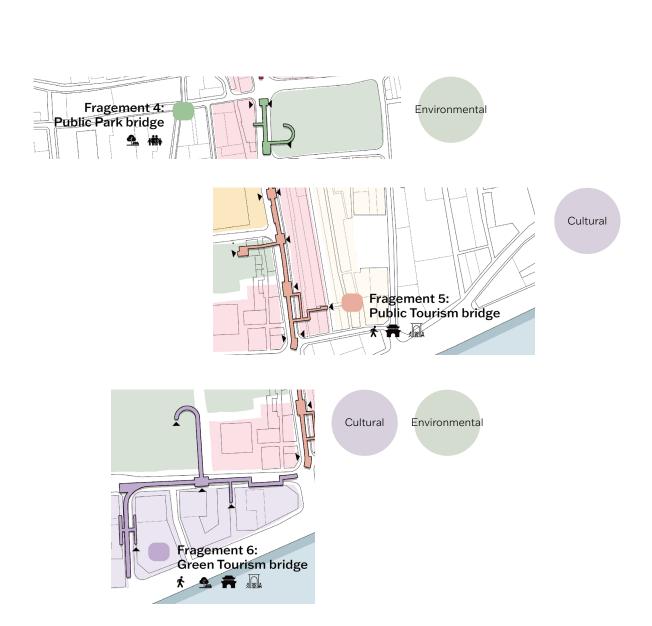
Spatial Strategy: Viaduct Construction Fragementation









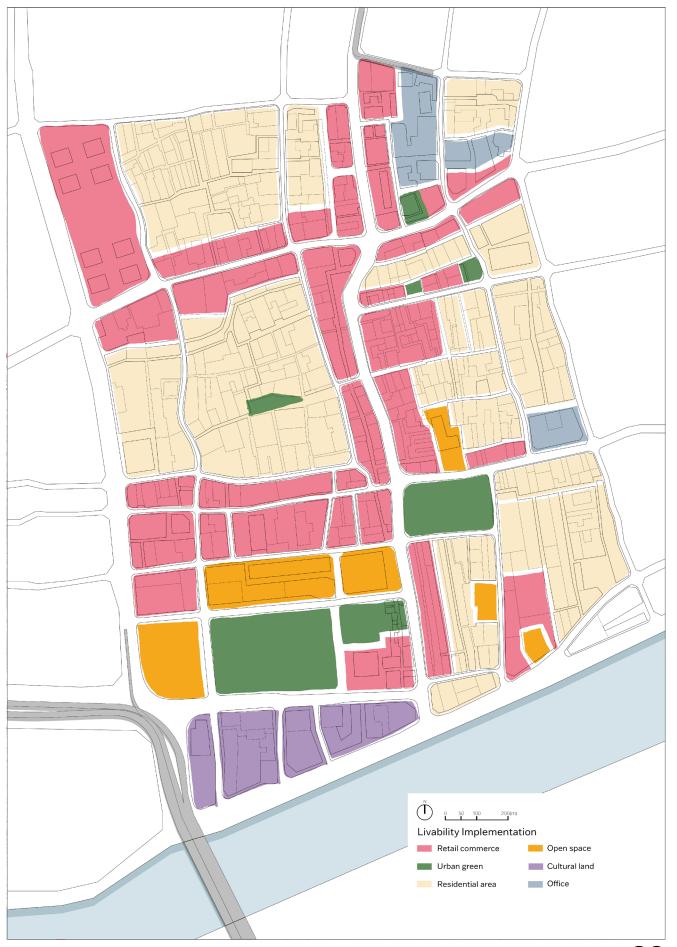


SHAPING THE FUTURE OF INFRASTRUCTURE

7 Design outcomes IMPLEMENTATIONS FOR NEIGHBOURHOOD SCALE

Neighbourhood livability plan





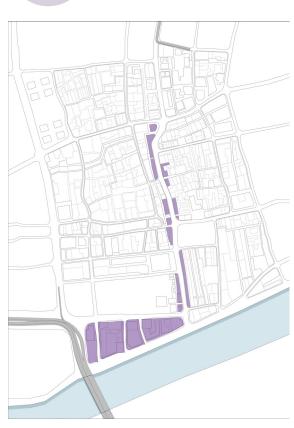
Neighbourhood livability plan

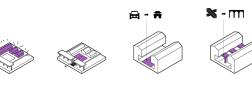
NEIGHBOURHOOD LIVABILITY

Spatial Strategy: Livable Land Expansion and Improvement Functional Strategy: Livable Land Function Fusion

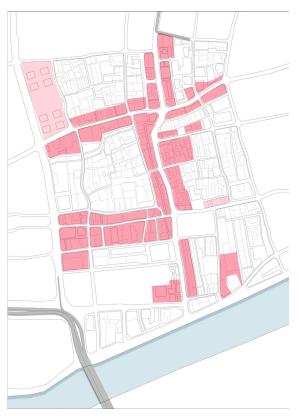








































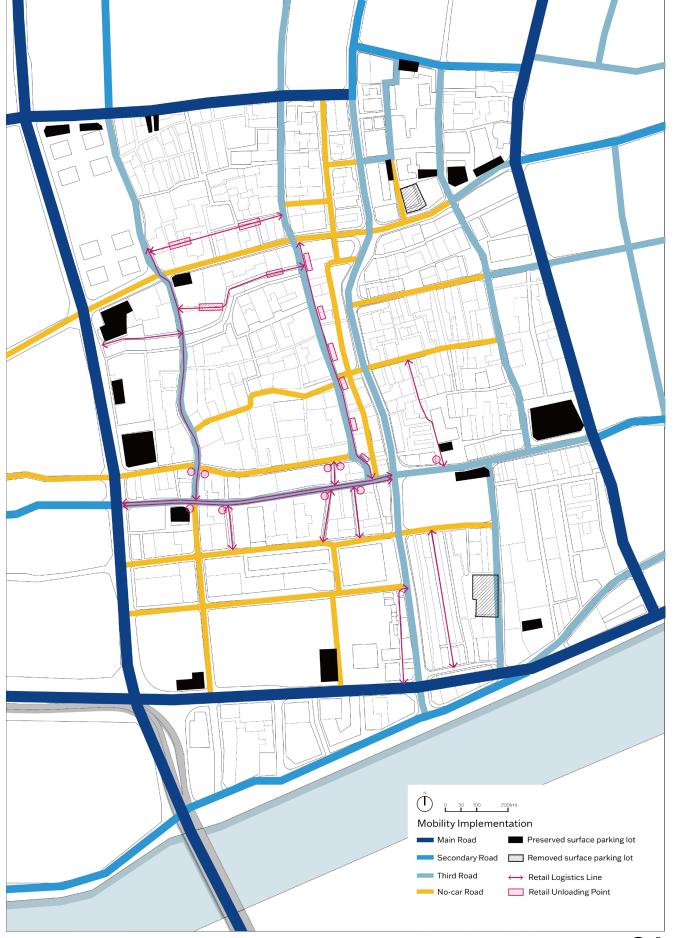




SHAPING THE FUTURE OF INFRASTRUCTURE

O7 Design outcomes IMPLEMENTATIONS FOR NEIGHBOURHOOD SCALE Sustainable mobility plan

Current Transportation plan structure

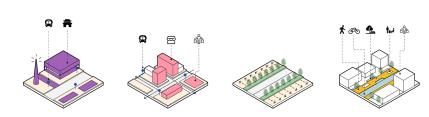


Sustainable mobility plan

SUSTAINABLE MOBILITY

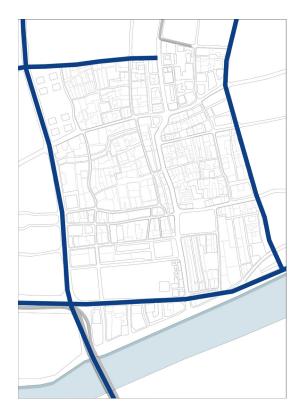
Functional Strategy: Traffic Functions Synergize with Others

Spatial Strategy: Road Construction Reorganization

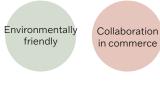


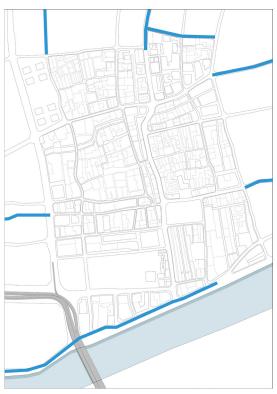


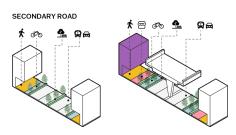








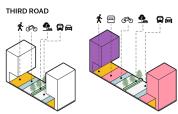








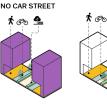








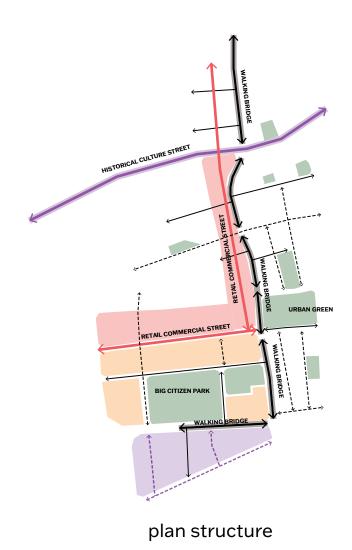




Conclusion master plan

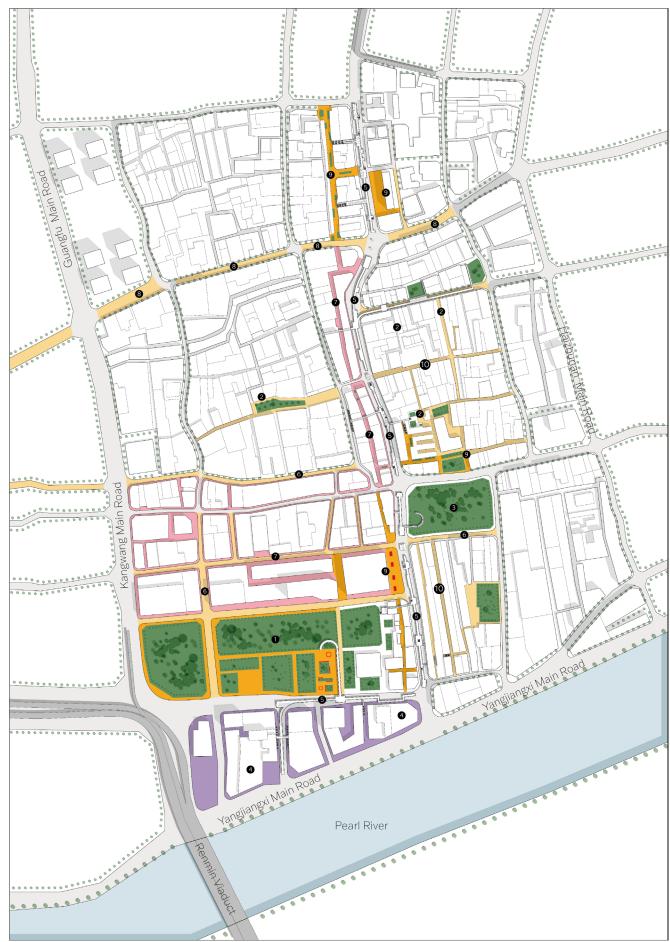


Conclusion master plan



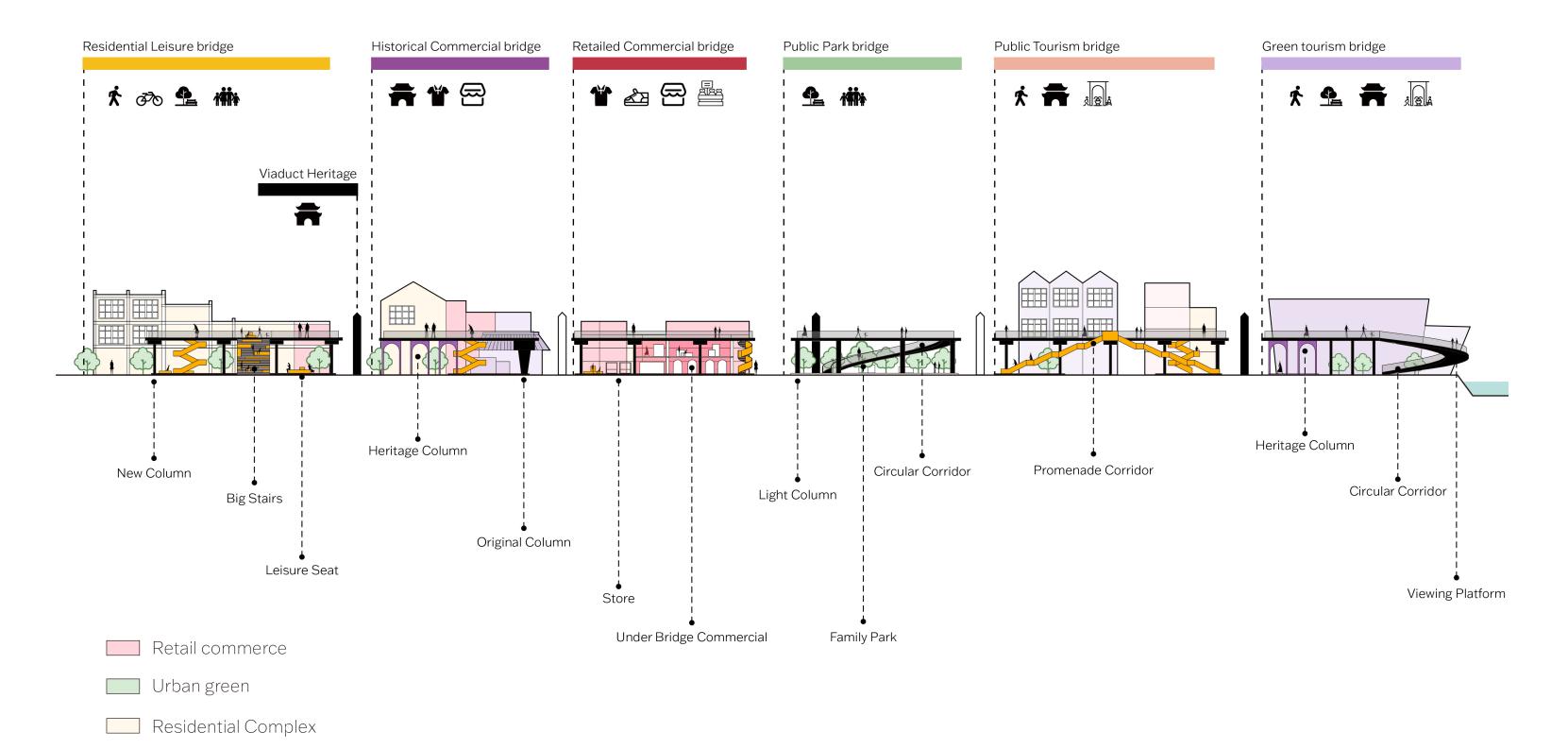


- 1 City Park
- 2 Pocket Park
- 3 Family Park
- 4 Cultural Scenery
- 5 Walking Bridge
- 6 No-car Street
- 7 Retailed Commercial Street
- 8 Historical Culture Street
- 9 Residents Square
- Residents Living Street



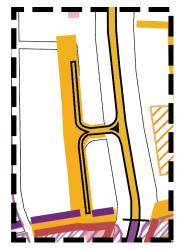
Conclusion scheme section

Cultural Heritage



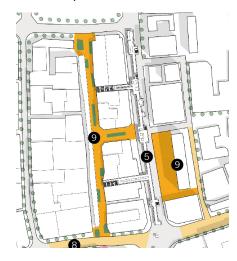
Site 1: Residential leisure

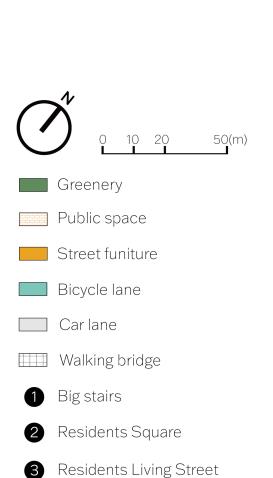
Status quo



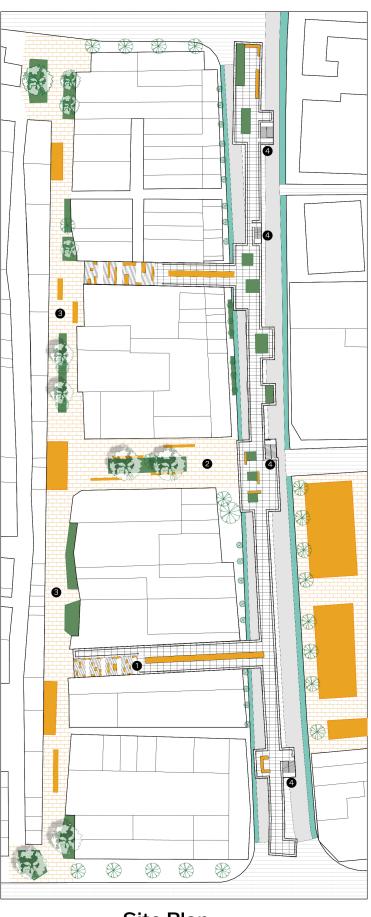


Master plan

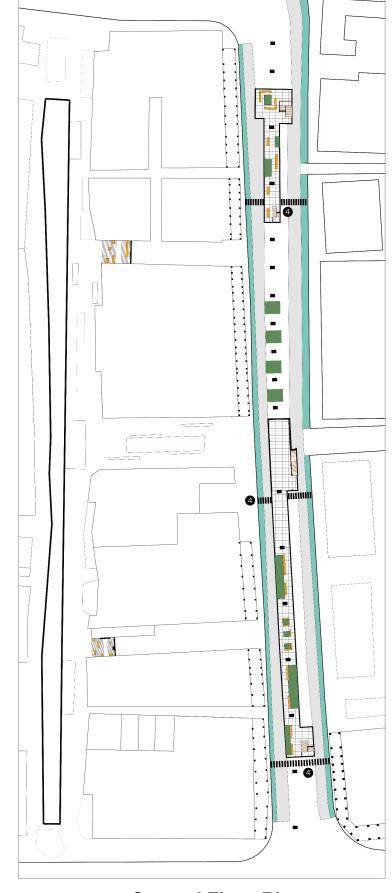




4 Exit&Entrance

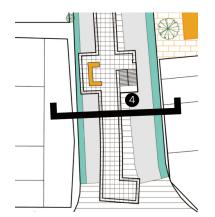


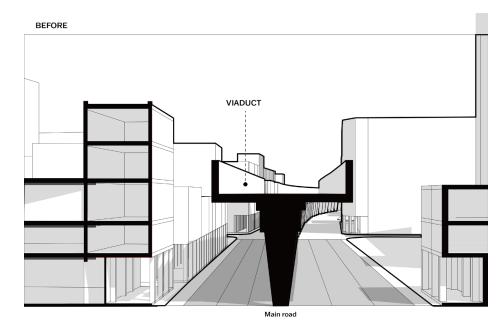
Site Plan

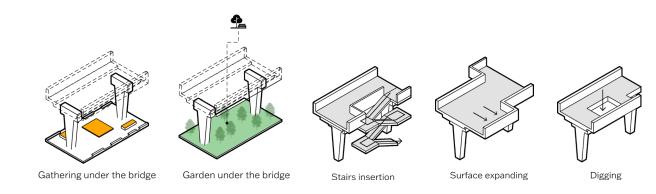


Ground Floor Plan

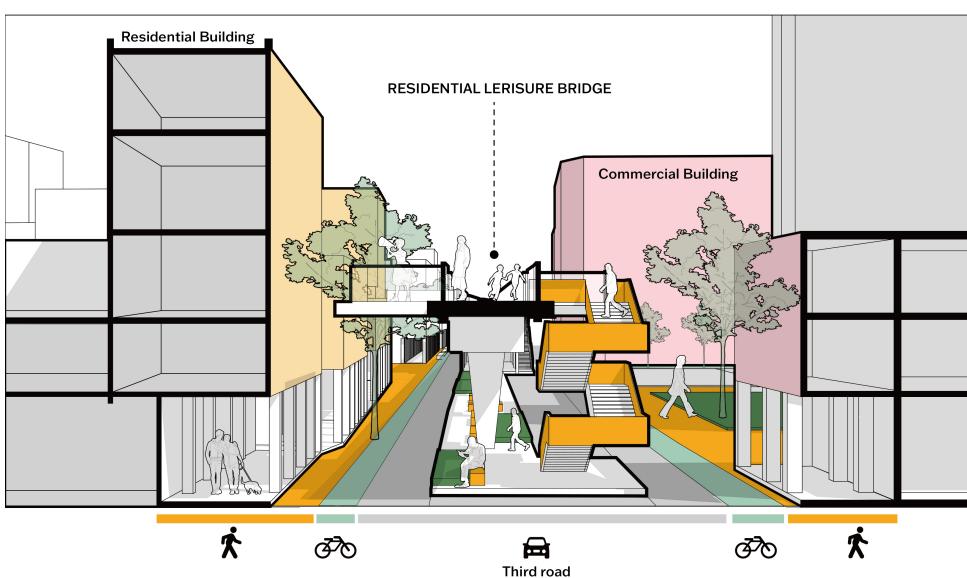
Site 1: Residential leisure



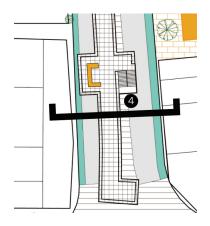




AFTER



Site 1: Residential leisure



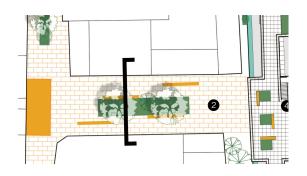
status quo



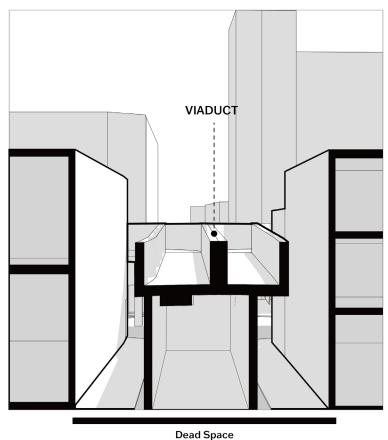




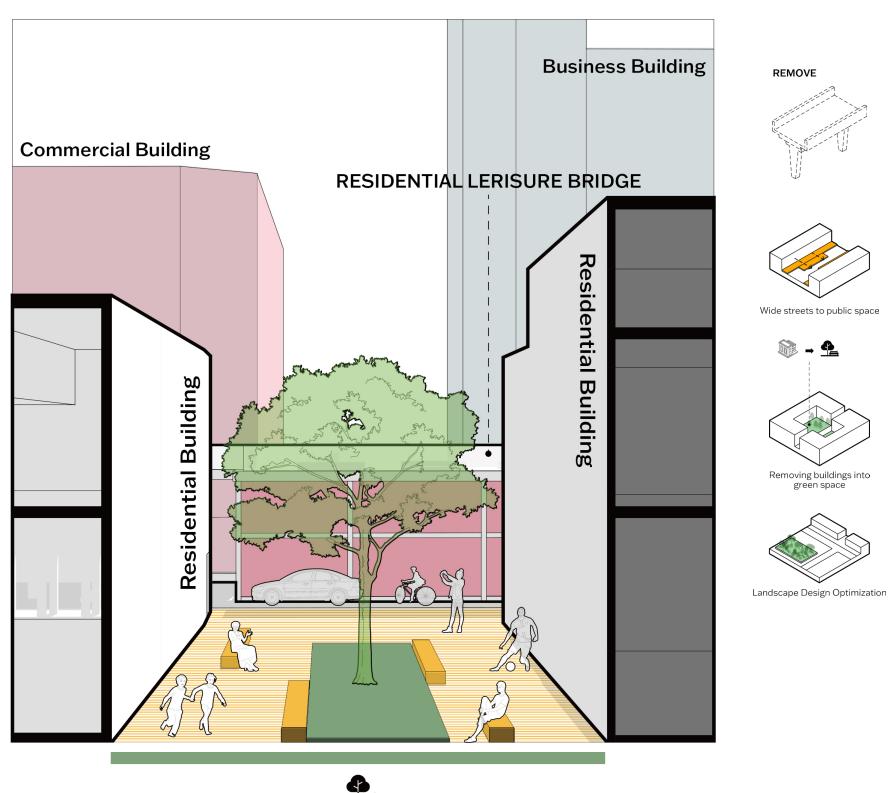
Site 1: Residential leisure



BEFORE

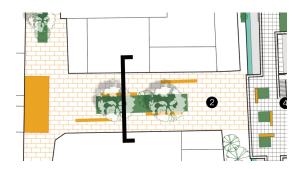


AFTER



Porket Park

Site 1: Residential leisure



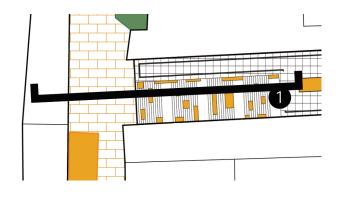
status quo

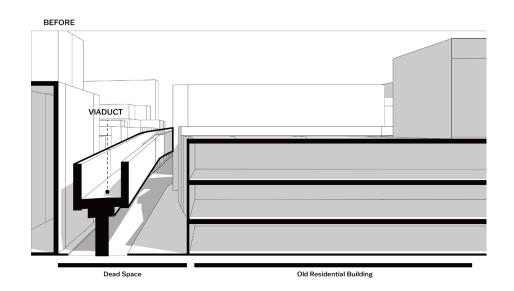


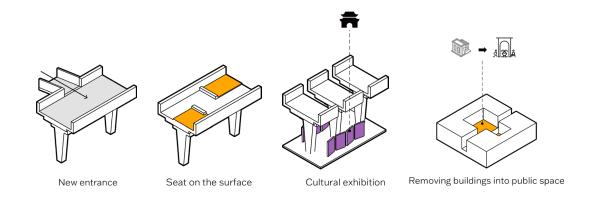
ideal

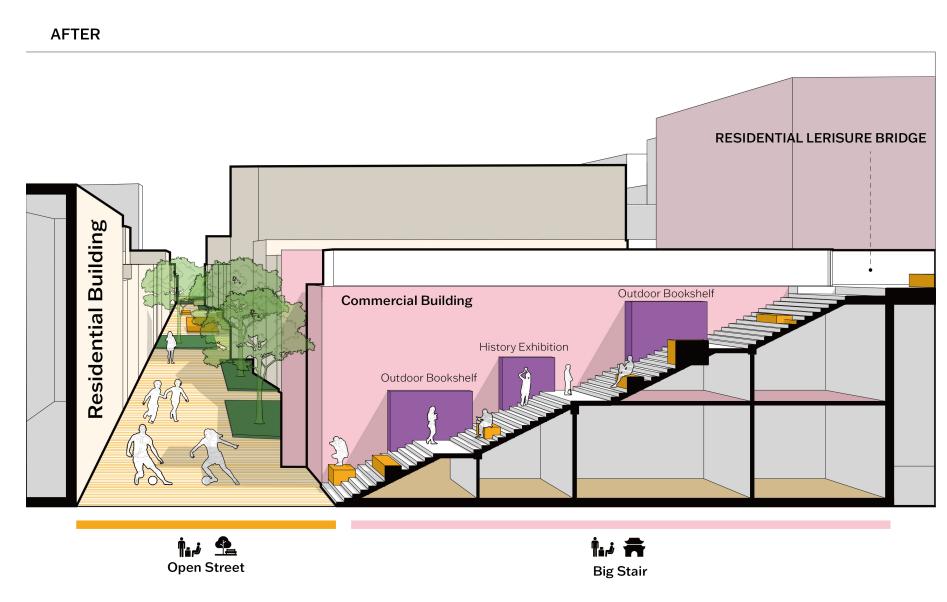


Site 1: Residential leisure

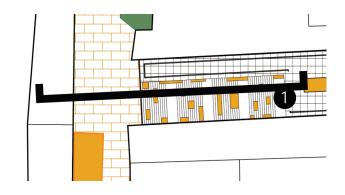








Site 1: Residential leisure



status quo



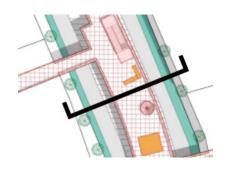
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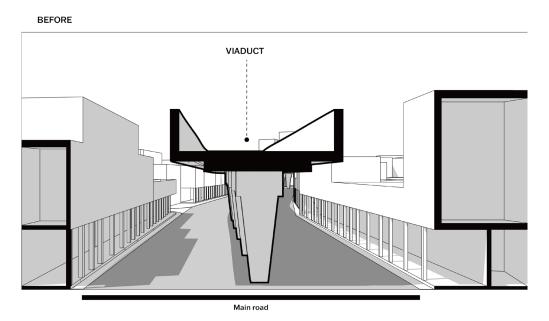


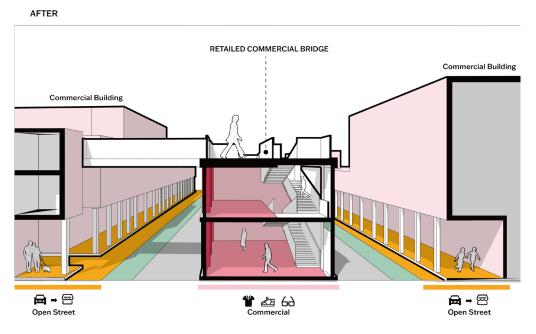
Site 2: Retailed commerce

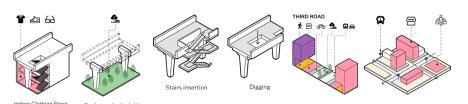
Status quo Master plan Greenery Public space Street funiture Bicycle lane Car lane Walking bridge 1 Big stairs 2 Residents Square 3 Commercial Street 4 Exit&Entrance **5** Commercial shop 6 Rooftop garden Site Plan **Ground Floor Plan**

Site 2: Retailed commerce









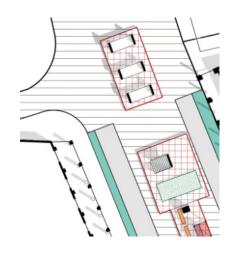
status quo

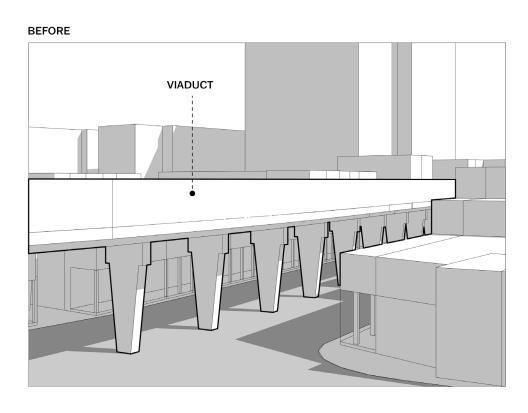


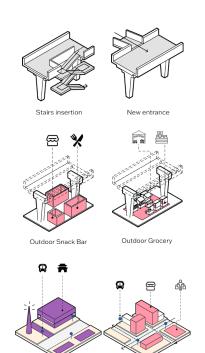
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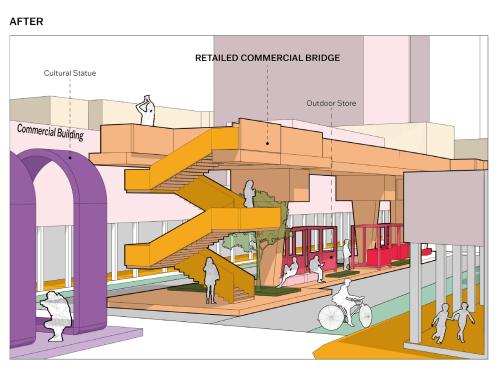


Site 2: Retailed commerce









status quo

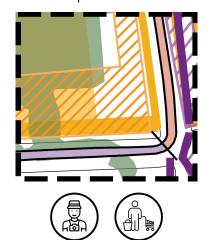


ideal



Site 3: Public Tourism

Status quo



Master plan

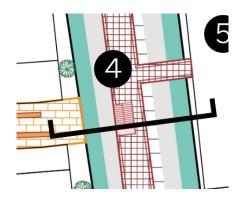


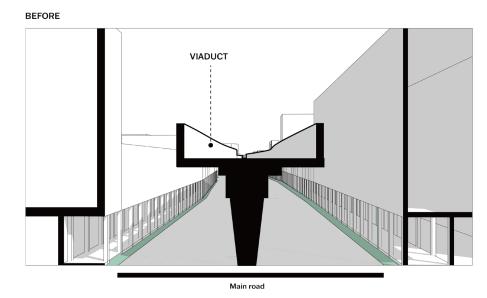


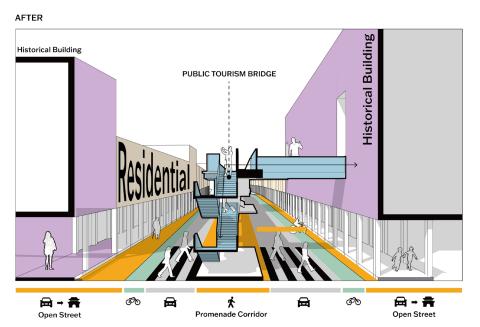


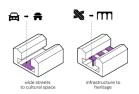
Site Plan

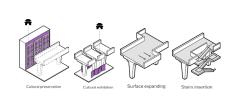
Site 3: Public Tourism











status quo

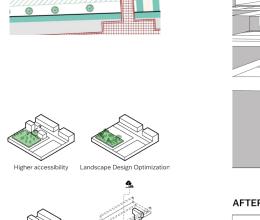


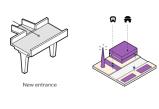
ideal



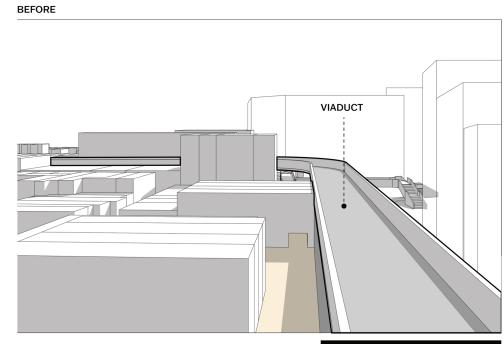
Site 3: Public Tourism



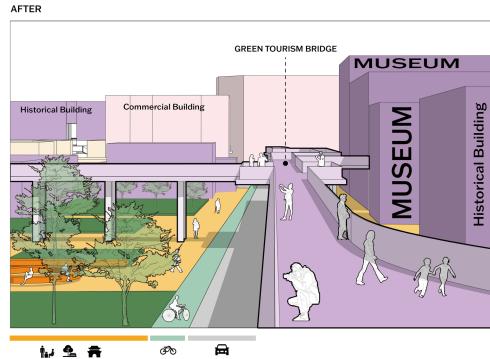








Main road



status quo



deal



08 REFLECTION& DISCUSSION

Social Relevance

Enhance traffic efficiency

Improve the quality of life for local residents

Scientific Relevance

Redefine viadcut as important public spaces and proposes effective reuse strategies

Provide valuable insights from both domestic and international examples

Ethical Consideration

Challenge current economic interests of investors and real estate developers

But for long-term development

Aligning with government policies

Limitations of the chosen methodology

Communication with the people in the site

Stakeholders involved

How the European methods could be more perfectly practiced in a Chinese site



THANKS FOR ATTENDING AND EVERYONE WHO HELPED ME!