

**CITIES IN
THE POST-
INDUSTRIAL
TURN**

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Promoting a new centrality through the reuse of the former
Tangshan Steel and Iron Plant

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Promoting a new centrality through the reuse of the former
Tangshan Steel and Iron Plant

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Table of contents

0. Abstract	8	
1. Intentions and methods	002	4. Tangshan: from the cradle of modern industry to a BTH node050
1.1 Objectives	003	4.1 Tangshan industry development054
1.2 Purpose	003	4.2 Tangshan earthquake; rebuilding the city059
1.3 Significance	004	4.3 Transitioning Tangshan066
1.4 Limits and framework	005	China’s Resource Based Cities066
1.5 Case studies as tools	005	Tangshan: a typical Chinese Resource Based City in transition072
2. Global context: a preliminary Literature Review	008	CASE STUDIES S074
2.1 From Industrial Society towards Post-Industrial Society	009	Ertong076
2.2 Deindustrialisation	011	Dora Park080
2.3 Reuse as a responsive exercise	014	529 Power Station084
	CASE STUDIES XL - L018	5. Strategies for Post-Industrial Tangshan088
	Zollverein Park020	5.1 Introduction to the site094
	Bethlehem Steel Development024	Site choice criteria094
	Shougang Steel Development028	Current layout analysis094
3. China’s turning point	032	5.2 L: New centralities100
3.1 China’s double face: the “World Factory” and the Post-Industrial shift	033	5.3 M: Fragmenting the block110
3.2 Deindustrialisation in China	037	5.4 S: Tang-hub120
	CASE STUDIES L - M040	5.5 Tang-strip164
	798 Art Zone042	5.6 Green-strip168
	Dahua Textile Mill046	
		6. Conclusions172
		References178
		Bibliography178

0. Abstract

Since the Opening Up reform started by Deng Xiaoping in 1979, China underwent a period of rapid economic development. This shift transformed and brought one of the poorest country around the globe to be one of the main largest economies in the world in today's times. As imaginable, this innovative economic changeover caused innovations and adjustments within the society and the Chinese physical environment. Major Chinese cities, indeed, commenced their mutation and adaptation process to accomodate the new products of the recent Chinese economy and society. As a consequence, the former urban spaces designed to adhere the socialist ideology and the industrial production, started to be turned into spaces which could face the innovative standards and market mechanisms of the post-reform period (Bonino, Hamama, et al., 2021). The rise of the service industry sector from only the 22% accounted by the end of the nineteen seventies to more than the half of the entire gross domestic product (GDP) of China in 2015 leaded expeditious development of

infrastructure, urbanization and the rising of per capita income. Hence, most of Chinese cities become tangible outputs of the national turnabout from "cities of production" to "cities of consumption" in the post-industrial period (Bonino, Hamama, et al., 2021). As a consequence of this process, many industrial buildings in different cities throughout China are facing one main fate: abandonment - due to the relocation of production activities - and sometimes demolition (Ma, 2015). Former Chinese industrial buildings, indeed, are undergoing a severe and fast destruction taking advantage of the high land value within the city. Deindustrialisation, therefore, is a raging process nowadays and, especially in Northeast China area, cities under transition face issues as pollution, abandonment and spaces awaiting for reactivation and reuse. As an urgent call for urban planners and designer, this thesis work focus on the so-considered cradle of modern Chinese industry and which is currently on its turning point in transforming into a post-industrial city:

Tangshan. Subsequently an historical and spacial analysis of the industrial development of the city, the aim of this work is to provide a possible design solution against industrial abandonment which is able to reuse the modern Chinese industry areas and buildings as major bearer of principals of contemporary civilisation. The theory bearing the planning action and design intervention pursues the discourse put forward by André Corboz in 1983 upon the territory as Palimpsest. The urban territory is interpreted as a parchment where the traces of previous marks introduces by several territorial actions do not disappear but rather come to light both in their materiality and on a symbolic level as memory and collective imagination (Governa, Memoli, 2011). Harnessing the potentials of architectural design, this work will pursuit the improvement of the life quality within the East Dou He river area, emphasising its the sense of place and improving the environmental efficiency of Tangshan and promoting a new centrality within the periphery of the city.

1. Intentions and methods

1.1 Objectives

This work of thesis aims to provide a better understanding of the actual situation of those transitioning former industrial cities in China providing an alternative solution to the rapid demolition of the unused industrial buildings by now. Through the reuse of these abandoned industrial buildings, this research offers a possible development for minor cities in China - as Tangshan, indeed - which are currently turning towards a post-industrial society and, therefore, modifying their urban layout in order to address the requirement of this shift.

Consequently, this work intends to raise awareness about the relevance of the collective memories of city's inhabitants and the potentiality of the reuse of the industrial legacy. The design outcomes want to foster a major sense of belonging towards the place, and promote a new centrality which can act as a potential catalyst of new contemporary (tertiary) industrial programs that can attract citizens and economies.

1.2 Purpose

This work aims to respond to the actual shift towards the post-industrial society and related changes in the urban layout through urban and architectural designs which reuse former industrial buildings, spaces and infrastructures.

Following the research part, where the major issues of post-industrial society are investigated both on a general and on a local scale, a masterplan design on a neighbourhood level will anticipate and set the base for the reuse of a building complex of the relatively close industrial period which recently ceased its production and relocated it outside of the main original urban area.

Exploiting the potentialities of architectural design through the reuse, this thesis work aims to improve the life quality within the Dou river eastern area, increasing its sense of place, fostering the collective memory of Tangshan inhabitants and improving its environmental efficiency.

Furthermore, on the specific case studied within this thesis, and its singular location in the urban layout, the design prompts the suggestion of a new centrality

for the city. This new centrality, however, should not be intended as a segregated cluster on the outskirts of the urban core, but rather as an integrated and well connected functional part of it. As a consequence of being connected to the city, the design aims to break the impenetrable boundary which once separated the industrial spaces and the rest of the city, opening up the site to citizens and inserting new programs abreast of the times.

1.3 Significance

Numerous modern Chinese cities based their development on a demolition and replacement process of its parts (De Pieri, 2015), especially when the subject refers to former and already obsolete industrial buildings. As sustained by design firm Sasaki Associates, usually Chinese cities tend to promote their appearance blending rich and ancient spaces and histories with recent contemporary architecture and ignoring, sometimes, that strong period of modern industrialism which characterises China and its production.

Particularly in recent times, however, local and foreign scholars, as well as authorities, showed their interest into the preservation and reuse of industrial buildings as a responsive strategy to not only safeguard the tangible and intangible heritage related to the industrial period, but also to promote new spaces - usually possible due to the dimensions of the industrial buildings - for new contemporary uses and programs to foster social economical and environmental general benefit. This work of thesis aims to prove that the reuse

of those industrial structures and spaces is a valuable tool in order to respond to the still ongoing process of transition for several cities towards the post-industrial society, still preserving and underlying the collective memory of the previous industrial period. The research, inter alia, aims to provide sustainable design solutions which are able to face the ecological scars left behind by the previously productive industrial buildings.

The drawings present within this thesis have been fundamental and important tools for the entire development of this work. Beyond the traditional architectural drawings, which aim to display and explicate the several design strategies applied on the selected project site, a particular emphasis is reserved for a series of schematic drawings which serve to conceptualise more general and broader ideas into simple and abstract figures. The choice to opt for schemes and diagrams is due to simplify the readings of the contents, as well as to conclude and summarise the findings. Except for selected drawings which are mostly related to the chosen case studies, all drawings

present along the work have been conceived and drawn first-hand by the author.

1.4 Limits and framework

It is of the utmost importance, however, to contextualise the time and space along which this work of thesis has been carried out. Due to the global pandemic situation and the national travelling constraints both in China and Italy, the entire research was conducted remotely from Turin (Italy). As such, the impossibility to conduct an on site visit and inspection of the project area firsthand played a crucial role especially for the final part of the work regarding the building design.

Fundamental, however, for the outcome of the entire process were the online resources and information available and the books archive at the Architecture Library of the Politecnico di Torino, both useful for the general topics and the specific case of the city and the site. Nevertheless, it is important to state that the research has been marked by the scarce online availability of information especially related to Geo-data. Furthermore, discussions and confrontations with experts and researchers, as well as a photographic survey held by a local researcher, have been no less important. A particularly

close attention has been paid towards the final achievements of the combined workshop between the Massachusetts Institute of Technology (MIT) and the Tsinghua University (THU) in 2019 focusing on Tangshan and its transition towards a Post Industrial society.

1.5 Case studies as tools

In order to deepen understanding the practice of redevelopment of industrial legacy, the research part is flanked by a series of case studies worldwide developed, ranging from the late Eighties of the Twentieth century to the contemporary times.

Most of the case studies, such as the Zollverein Park in Essen indeed, show how the adaptive reuse of former industrial buildings and lands with a conservative approach and small but relative transformations (Robiglio, 2017) can promote social, environmental and economic benefits. To cite another sample of case study, as openly expressed by the architects from Sasaki Associates, responsible for the masterplan development of the 798 Art District in Beijing, their mindset was focused on a practice which could counteract the demolition of unused buildings. The action against demolition can be considered in fact as a maverick attitude towards what was the main policy for development especially within Chinese megacities (Ma, 2015) (De Pieri, 2015).

As a sustainable act, these projects run towards a

densification of new activities within the consolidated urban pattern of our contemporary cities. Especially during recent years, many cities promoted policies to reuse the industrial space spread through the city in order to avoid the enlargement of its urban fabric. Torino Dora Park development and the Potrero Power Station general masterplan in San Francisco are effective examples to demonstrate the potentiality of adaptive reuse as a tool to re-propose and activate former areas preserving the collective memory of citizens and reducing the expansion of the city's "grey" space.

The case studies analysed are developed through various scales in order to better understand the approach to the subject and provide a more comprehensive view of the techniques applied. From the building scale of the Shougang Group Ertong Plant in Beijing to a more neighbourhood scale of the Bethlehem Steel Development in the Lehigh Valley, the developers demonstrate how through architectural design and a sustainable land use, former industrial objects and lands can be reused and repurpose to

respond to the contemporary post-industrial society demands.

As the paragraph title suggests, these case studies act as tools for the entire writing of this thesis work which provided not only a deeper understanding of former industrial buildings and areas reuse practices, but also suggested interesting planning and design cues which have been adopted and adapted for the final design.

More specifically, along the work, three main sections have been inserted based on the spatial extension of each single case study. Hence, chapter 2, 3 and 4 are accompanied, respectively, by XL-L case studies, L-M case studies and S case studies. Below are listed the motivations for which each case study has been selected.

The XL-L case studies have been chosen in three different contexts - Germany, United States and China, as a matter of fact - around the world firstly because of their extension, but also because of their location on the fringe of the city in relation to the urban core.

The Zollverein Park in Essen, can be considered as a meaningful sample of brownfield

regeneration especially in relation to the peculiar complete preservation of the industrial buildings and spaces and the promotion of new contemporary functions to attract visitors. Nevertheless, a great attention has been paid towards the spatial arrangement of spaces and programs, as well as the enhancement of the open public spaces and the vegetated areas.

The Bethlehem Steel Development, near Philadelphia, shows how the reuse of the existing building stock in a performative way - not solely aimed at the musealisation of it - can introduce new economies and encourage and rehabilitate community engagement with new programs.

The Shougang development, instead, is a contemporary Chinese sample which best suits the actual condition of the chosen design site in Tangshan. Because of its colossal dimensions as well as its location not-so-central compared to urban core area, the Shougang complex development is the best contemporary showcase of the actual transition towards the Post-industrial society. It represents a new type of regeneration which differs from

the "traditional" artistic districts so far promoted by promoting new emerging industries as catalysts for citizens. Shougang becomes a new cultural landmark in Beijing, playing a key role for an efficient infrastructure system expansion able to connect the regenerated district to the rest of the city, but also promoting itself as a new cultural and recreational complex, capable of conveying the actual changes in society and economy.

The L-M case studies have been chosen according to two principal criteria; being developed in China and being located within the consolidated urban pattern of the city. As results, the 798 Art District represents one of the first example of industrial regeneration in Beijing which contrasts the total demolition in favour for the development of new residential areas, while the Dahua Textile Mill in Xi'an suggests differentiated and innovative reuse design solutions applied to the existing buildings according to specific criteria.

Finally the S case studies have been chosen according to the specific design actions applied at the building scale. Three strategies have been

extracted and subsequently implemented in the reuse design of the Tangshan Steel Factory Plant buildings. The first strategy, recognised within the Ertong General Machinery Plant in Beijing - aims to reuse most of the existing building without exceeding its morphology. The insertion of new volumes inside the original shed is enabled especially by the flexibility of the existing structure layout and the derived internal spaces. This strategy grants the insertion of contemporary programs as a possible answer to the shift in society. The second strategy drawn from the regeneration design of Dora Park in Turin, reveals the existing structural frame as a skeleton, opening up the space previously contained and promoting new dynamism. The remaining skeleton acts, therefore, as the host for new uses and functions for the users. The third strategy applied in the final design is well emphasised in the sample of the 529 Power Station in San Francisco. In this case study, the original building acts as a supporter for a new overlying element. This reuse action allows the preservation of the underlying block and, at

the same time, it creates a new dialogue between the existing and the intervention, enhancing the heritage of the past and promoting the dynamics of the changing society.

2. Global context: a preliminary Literature Review

2.1 From Industrial Society towards Post-Industrial Society

As known as notable, the cities we live in are a dynamic phenomenon which always transforms itself according to the various changes in society and economy. Recently, one of the most worldwide tangible outcomes of this dynamism is provided by the improvement of communication and information technologies that firstly occurred in the most industrial advanced Western countries along the last five decades (Mercadal, 1991). Scholar Kevin Gotham describes the period we are living in as a period of posts- according to all the post-definition proposed by contemporary scholars related to various fields (Gotham, 2001).

The post-industrial society has been used as a concept by several experts from different fields to characterise the development stage reached by some societies, developed in their economic and social structure, which corresponds to the usual development condition subsequent to the industrialisation process derived from the industrial revolution.

In the contemporary debate the term post-industrialism is used in relation to different and several subjects and takes

into account different factors. The term was introduced by sociologist Daniel Bell in his 1976 masterpiece “The coming of Post-industrial society” as a depiction of the various shifts within the social structure from a manufacturer-based economy to a service-based economy which occurs within the arising post-industrial world (Bell, 1976). He focuses on the dynamism of the patterns related to economic employment, arguing that the employment rate will significantly increase within the service and new technology sectors compared to the other sectors in the economic structure, confirming its predominant role within the economy. The post-industrial society, therefore, is that peculiar stage which the society achieves when the service and tertiary industry sector produces more revenue if compared to the previously leading manufacturing and secondary industry sector.

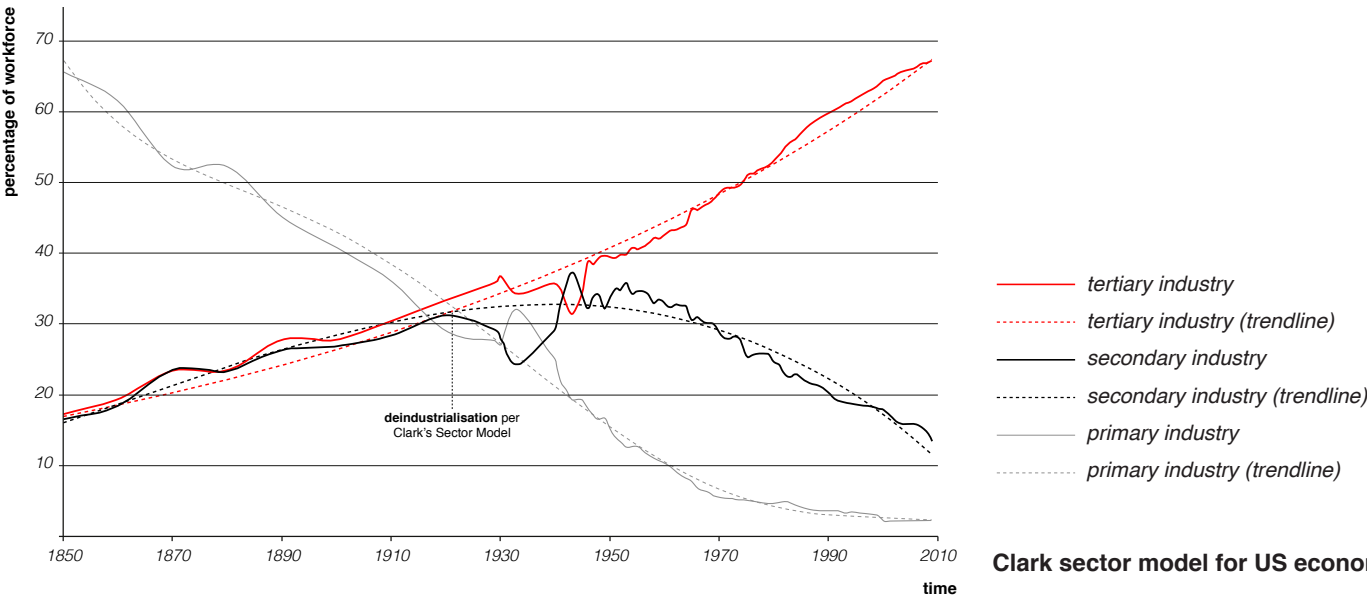
From the Sixties till now many countries impeach a collapse and disappearance of the traditional heavy industry, both in the large scale and in the smaller one. In addition to the employment supply for the cities’ inhabitants, these industries covered considerable urban land and their downfall, therefore, not only brought unemployment among citizens, but also left behind notable physical relics as hints of the industrial decline (Carter, 2016).

The depletion of the manufacturing activities from the built environment can be considered among the most distinguishable symptom of the industrial restructuring; a period severely defined by the abandonment of those urban-industrial districts, the growth of the service sectors, the reorganisation of housing markets and the increasing marginalisation of the unemployed underclass (Neumann, 2016) (Lynch, 2021).

As a result of this shift in society, governments, local authorities and scholars realised that in order to keep up with the times, cities must adapt to re-create themselves, providing solutions and contributing to the progression of urban society as well as the achievement of new urban quality and innovative competitiveness

(Bonino, Hamama, et al., 2021). Concerning the improvement, cities should provide their dwellers with public services which could be able to accomplish their claims.

From the Eighties of the twentieth century in Europe, indeed, the post-industrial renovation triggered many social and economical adjustments prompting the adoption of innovative cultural policies and basing on what scholar John Howkins described in 2001 as a creative economy to replace the manufacturing economy which exemplify the 19th and the beginning of the 20th centuries (Bonino, Hamama, et al., 2021).



Clark sector model for US economy

2.2 Deindustrialisation

The deindustrialisation could be considered as one of the several consequent phenomena of the shift from an industrial to a post-industrial world (Jiang, Wang, 2006). The issue, already presented in several literature masterpieces, refers to the consistent decline of industrial capacity in developed former industrial areas. As described by scholars Barry Bluestone and Bennett Harrison in “The Deindustrialisation of America” at the beginning of the Eighties, the term refers to an extensive loss of investment in the nation’s productive efficiency (Strangleman, Rhodes, 2014).

Undeniably, the term deindustrialisation is firmly used in academic literature and it usually depicts the reduction or loss of industrial jobs related to those traditional industries related with the industrial age (Strangleman, Rhodes, 2014).

During the latter half of the twentieth century, numerous countries and places of the industrialised West (Berger, Wicke, 2017) - and some developing countries as China, for instance, still are in the process - were affected by this process. Former industrial

cities became catalysts for innovative service employment and induced the manufacturing field less appealing to possible employees. As a result of this phenomenon, various factories and employment were relocated elsewhere, leaving behind real urban voids within the city (Ciaramella, Celani, 2019). The deindustrialisation, therefore, can be interpreted as the process through which a country, or a city as well, tends to curtail and transfer its manufacture industrial activity elsewhere, moving its interest and promoting the development of more tertiary industries activities such as services, informations, research and transportations, to name a few. Several centres related to the manufactory started to shut their doors moving out from urban cores while the remainder started to be mostly automated with a consequent decrease in the sector employment.

As a direct consequence of the rise of innovative service industries such as finance, trade, technology and culture, the proportion of traditional manufacturing industries developed during the industrial period rapidly declined. Furthermore, due to the expansion of urban land during the urban development, water towers, furnaces, stocking spaces and every other building typology related to the previous industrial society

and urban layout, which were originally located at the fringe of the urban area and gradually enclosed it as an industrial belt, were a major cause for urban environment pollution (Jiang, Wang, 2006). In addition, urban deindustrialisation might also be an intrinsic consequence of the unprofitability of urban centres according to the global export requirements. Since the scale of transport is already on a world level, industrial areas may find more suitable locations in proximity of major railway lines, highways or commercial ports (Jiang, Wang, 2006).

The switching off of the lights inside those buildings, therefore, turns these now obsolete buildings and their related lands into what the architect Ignasi de Solà Morales expressed as *terrain vague*¹ in 1996. Territories of abandonment, “interior islands voided of activity [...] converted into areas that are simply un-inhabited, un-safe, un-productive”² where the absence of any usage or functions deals with the intrinsic nature for promises and hopes, turning them into lands and buildings full of possibilities to be modified in order to generate innovative urban scenarios or simply to host new functions inside.

1. The author borrows the term *terrain* from French as considered more suitable rather than the term *land*. The French term, indeed, implies a more urban quality as it refers to the minimum plot used for cities construction. *Vague* stands for something that is uncertain, indefinite as well as empty, waiting for some actions which can attribute a new sense of place. The emptiness, as described by the author, is a term which provides a double reading; being empty collects both the absence of any use as well as the expectancy of future reuse developments.

2. Ignasi de Solà Morales, *Terrain Vague*, in “*Quaderns*” n. 212, 38-39.



2.3 Reuse as a responsive exercise

Despite the negative aspect of deindustrialisation, the process of displacement and abandonment of the former industrial buildings produces in our urban environments several opportunities for both planners and developers. As many more countries move towards a post-industrial society, higher awareness has been put into the reuse as a sustainable solution to these industrial “voids” left, which can counteract the urban sprawl and revitalise the contemporary cities we live in (Bonino, Hamama, et al., 2021).

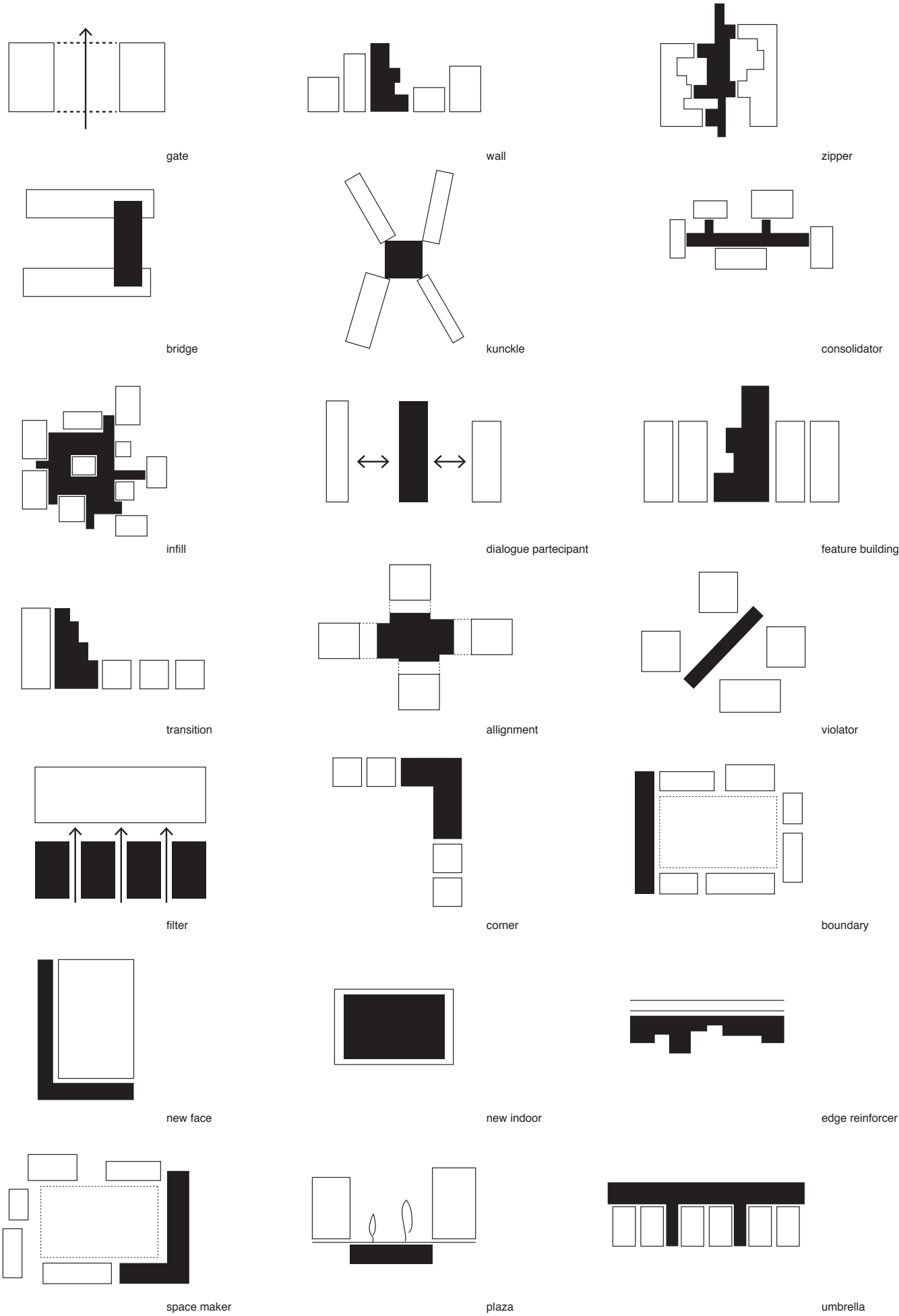
The reuse, though being relatively recent as a term, is a widely discussed concept and spread practice. As an alternative active action against demolition, many architects, planners and authorities promoted the actuation of policies and practices which insist on the reuse of the existing structures (Bonino, Hamama, et al., 2021) in order to preserve the industrial legacy and promote and foster new bonds between the urban environment and the new society. It is considered as a responsive tool aiming to reimagine new economies and to revitalise existing cities and communities

(Lynch, 2021).

Scholar Matteo Robiglio, in his research work “Re-Usa: 20 American stories of adaptive reuse” provides a concise definition of what the concept of (adaptive) reuse means, explaining that it consists in providing and adapting an or several innovative functions, which are updated to the new social and market demand, to an existing building which lost its original one (Robiglio, 2017), proposing a minimal, yet effective, transformation and prompting the conservation and valorisation of the existent.

However, what is fundamental to remember is that every building, regardless of its own scale, is inserted within a precise and singular context which could not be put aside from the general discourse around the reuse. As a consequence, as pointed out by other scholars, the process of reusing former buildings ought to be observed and studied within a wider context and should not only focus on the single - or a complex - abandoned building (Cozzolino, Moroni, 2019). In the phenomenon of the city, the industrial areas or districts are usually developed as urban islands which appear not really bound to the transitioning urban layout. The industrial reuse, therefore, not only aims to develop a strategic design plan addressed to building, but also acts on a wider social

Schematic adaptive reuse strategies



and environmental context (Cozzolino, Moroni, 2019) and enhance the threefold dialogue between the existing building and its relevance for the collective memory, the new programs inserted within and the surrounding context intended as a complex of social, economical, environmental factors.

Furthermore, this practice is far from being a mere technical strategy, but rather a complex process which tries to modify the tangible and intangible dynamics of contemporaneity. The adaptive reuse approach tries to identify within minimal interventions an ad hoc transformation of existing buildings and sites to suit the needs of the contemporary social and economic conditions. Despite the promotion of a new life of the building and a design which can modify the pre-existence, this methodology acts as a tool to promote the historic and cultural values of a site (Lynch, 2021).

This aim raises awareness about the interpretation and the relation with already existing resources within the building environment and promotes a more sustainable growth of contemporary cities³.

As professor Martina Baum points out, existing building legacy in the urban environment is not only a material and economic resource. They are also related to citizens’ lives and take a leading role in defining

the urban identity. Acting as resulting outputs of the society’s requirements and changes along the human settlement timeline, buildings can be considered as a concrete symbol for the identity of a place (Baum, 2012).

3. United Nation Sustainable Development. Goal 11: Make cities inclusive, safe, resilient and sustainable. <https://www.un.org/sustainabledevelopment/cities/> . Consulted 28 Jan 2022.

Andy Warhol Factory - one of the first samples of adaptive reuse

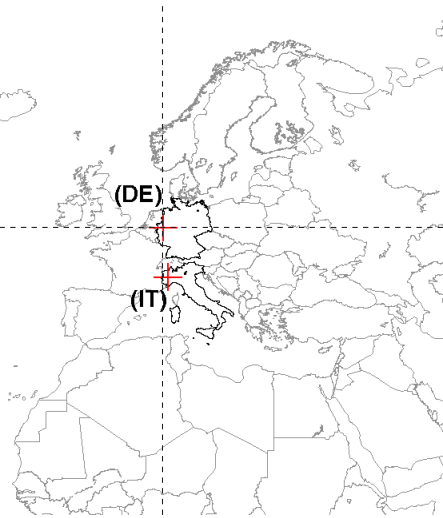


CASE STUDIES

XL

L

Zollverein Park



ARCHITECT: OMA
LOCATION: Essen, Germany
YEAR: 2001 - 2010
STATUS: Completed
PROGRAM: Masterplan -
Park, Museum, Commercial,
Education



The Zollverein industrial complex in Essen, Germany started to be productive in 1847 and for the following forty years, with a day-to-day production of 12,000 tons of coal and an area of 100 hectares, was deemed as the largest industrial facility in the Ruhr area and the entire Europe. It is situated on the northern side of Essen, within the hydrographic basin of the Ruhr spanned by the Emscher River from east to west. The Zollverein mine constructions commenced in 1847 when Franz Haniel acquired thirteen contiguous coal basins. The site presents buildings with a distinct historical value in the "Neue Sachlichkeit" (new objectivity) style, enhancing clear symmetries, red brick facades and a steel structure, with a characteristic parallel alignments to release the crossing of the machinery for the coal extraction. Along the 1970s crises which affected the mining and steel sectors, the entire industrial district of Zollverein suffered severe consequences such as mass unemployment and difficulty of redevelopment for an intensely infrastructured area. As a result of the general crises, on 23 December 1986 the Zollverein structure was finally dismissed. Immediately after the dismissal of the industrial site, the question about the future development of the industrial plant raised up in the general land management discourse. The Consortium of Mining Companies, owner of the area, opted for the demolition of the structure, but the efforts to preserve the manufacturing site,

its architectural objects, and its social history and value seemed much stronger than a few days before the disposal, Zollverein was officially recognised by a ministerial decree as a Monument of the city of Essen. As early as 1987, indeed, several proposals were put forward to preserve the Zollverein site and promoting it as a catalyst for social and cultural transformations. Declared a UNESCO World Heritage Site on the 12th December 2001 as an outstanding sample of European manufactory industry, in the same year, the site became the protagonist of a masterplan which aimed to transform it into a cultural park. An international competition entrusted the Dutch architect Rem Koolhaas with the masterplan for the recovery of the entire area. The masterplan created by Koolhaas (OMA studio) aimed at converting the entire area into a large natural and exhibition space by completely recovering and restoring its industrial architecture. It was driven forward in collaboration with heritage specialists and conservationists, and was finalised in 2010, but parts of the cultural park was opened in 2006. The masterplan displays as a ring of activities surrounding the historic site with new paths and the extension of the existing highway through a tunnel serve the site allow easier access for visitors. The former industrial rail tracks present within the site which connect the main buildings are kept and designed as public spaces while the former sky bridges previously

used for the transportation of coal and other raw material are opened for visitors, who can also visit a former mine 1,000 m deep. The proposition of new and contemporary uses on the periphery of the site permits the original buildings to keep their grandeur and visual impact on the users. Within the surrounding necklace of new program which surrounds the Zollverein complex, new uses are inserted to guide, inform and attract. The design and construction of the new buildings and the renovation and redevelopment of the existing buildings for a new general program accommodate several functions, with the majority connected to the art and culture industry. Tri-annual and quinquennial manifestations will attract visitors and generate an influx of events and ideas. The masterplan concept relies on a peculiar principle: the preservation and conservation of the several architectures through the introduction of new contemporary functions. The park plays as a catalyst for innovations and fosters the development of a new cultural environment within the entire Ruhr region basing on a process of restructuring the local economy, promoting the redevelopment of the area and new development perspectives for the local community. The factory regeneration project explicates a radical process of reconversion of the production through the culture industry. The mixture of uses and functions promote alternative and innovative economies compared to the former mainly based

on the industrial production. As a consequence, new employment opportunities are introduced and it becomes one of the most influential creative clusters in the entire Ruhr region. The function played by culture industry has therefore sustained a new type of development for the local context by favoring new type of employments, ensuring a sustainable development and a transformative process that is in line with the history and the culture of the place. The visitors centre, the Ruhrmuseum and the Metaform are inserted within the site's most notable building: the Kohlenwäsche, a dismissed facility for collecting and sorting coal. The current use is inserted within the industrial complex without removing any machine present that dominates the pre-existence. Hence, the outcome is a new industrial monument which merges contemporary functions together with the existing social and historic context.

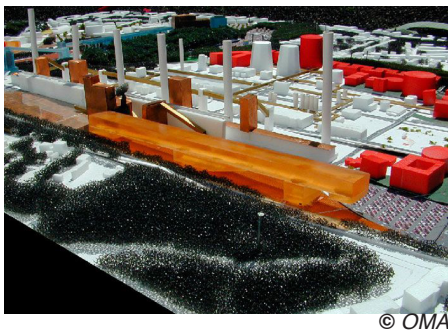
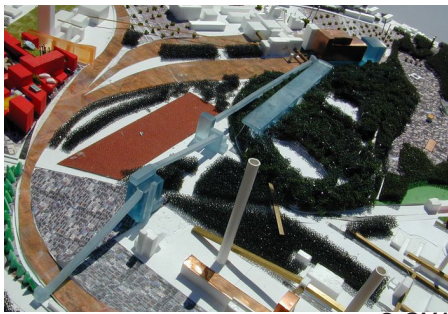
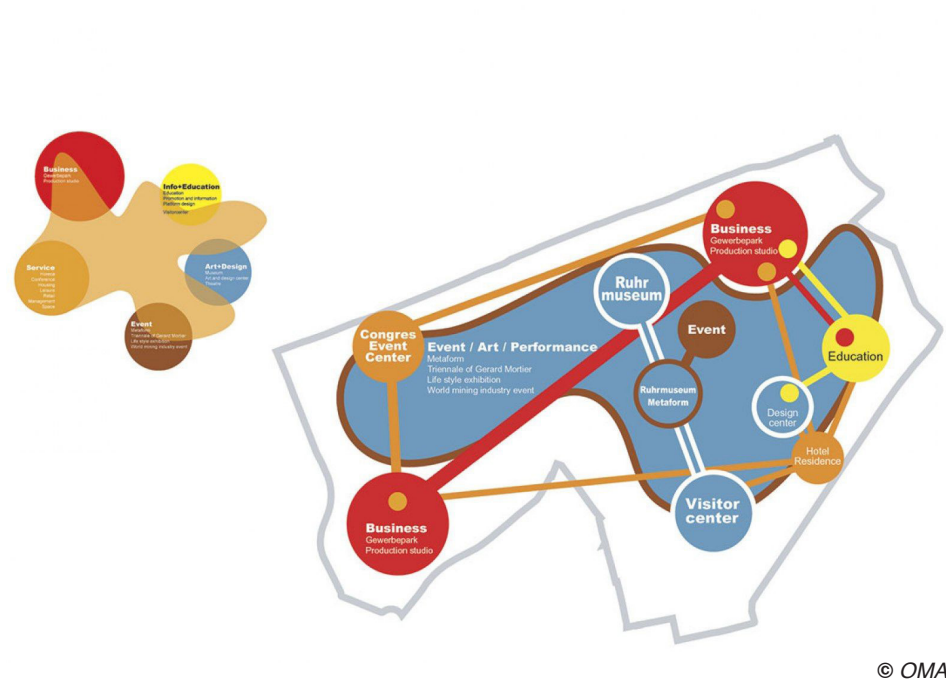


this page
 top: plan view of Zollverein industrial park.
 central left: the industrial buildings appear as monuments surrounded by nature
 bottom left: cycling path upon the former rail tracks used for transporting raw material
 bottom right: walking and running path flanking the industrial remains

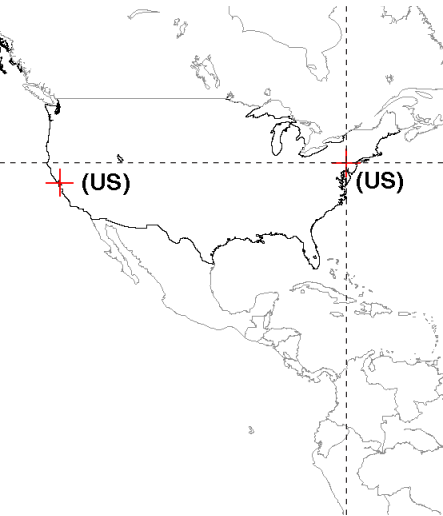


the result is an industrial monument that combines modern use with historic context.

Rem Koolhaas



Bethlehem Steel Development



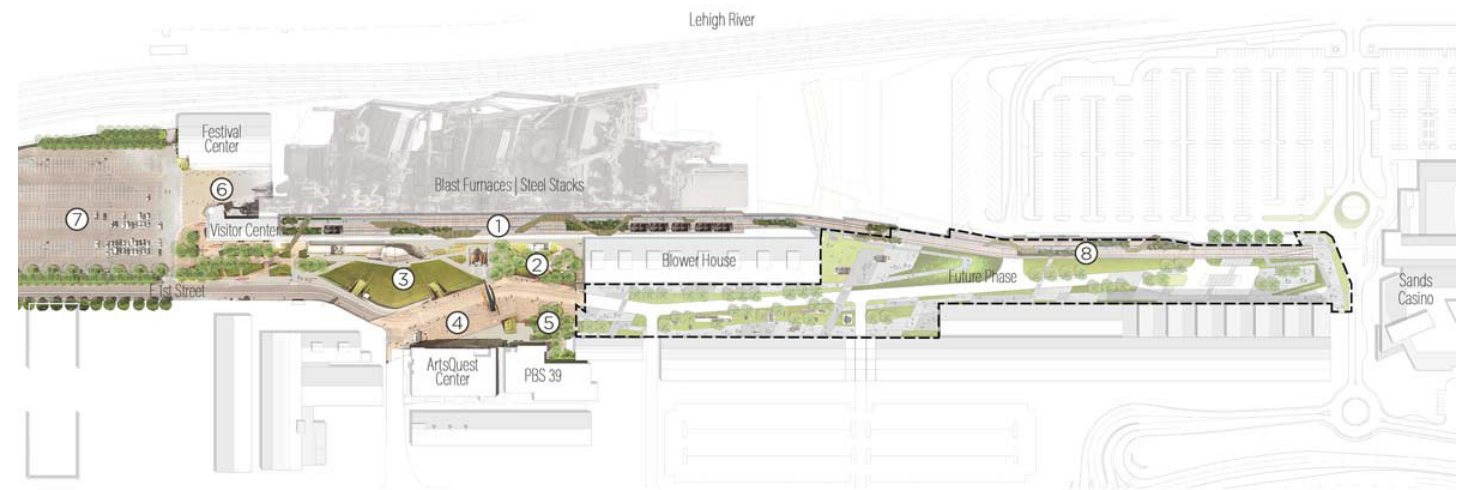
ARCHITECT: WRT
LOCATION: Bethlehem, United States of America
YEAR: 2000 - 2016
STATUS: Completed
PROGRAM: Masterplan - Park, Concert and event hall, Commercial, Education



The Bethlehem Steel Corporation started to be operative in 1857 as powerhouse which served several facilities both on the local and on the global scale. It is located in the homonymous city in Pennsylvania's Lehigh Valley, with a land expansion of almost 7.3 sqkm on the Lehigh River. In 1995, the Bethlehem Steel Corporation ceased its steel production and shut the factory, leading to the end of a tradition which shaped the neighborhood and their families, that blue-collar culture inprinted within numerous inhabitants collective memory. As a good example of city in transition, the former steel plant and its related spaces around it wnderwent a vast and worth-of-attention regeneration process. As integrated part of the masterplan for the redevelopment of the Bethlehem Steel Plant , the municipality contributed, together with Bethlehem Steel Company and other investors in promoting an overall plan to trasform and reuse a 135-acre plot for both commercial and cultural use. The site's refuntionalisation, indeed, presents itself as a comprehensive project, converting the former steel mill into a new space for concerts, performances, and various cultural activities along the entire year. The existing industrial site presented, as to be expected, several environmental challenges, as, for instance, the persistence of soils which could not be penetrated neither severely modifiable, if not for isolated cases. Extended

areas of original built stock foundations were dismissed, those pervious coverings were substituted with impervious ones, and specific materials and technologies were applied to minimise the stormwater runoff. To increment the site biomass, new plantations are introduced within the site especially in those areas where none was present beforehand. On the social and community level, the project has the general aim to produce a green town for future uses and events to persue a new contemporary and future urban life to Bethlehem as supportative part of the general regional development initiatives. The succedd factor of the project lies in its contribution to the sustainability of the community within the neighborhood, encouraging private investments and development in for those other abandoned facilities and sites in proximity to the campus, yet also strenghtening the already present businesses within the neighborhood. The project signed by the architecture studio WRT serves as a base for the Bethlehem visitor center, and aims to enable the existing and future nonprofit partners, as the Lehigh Valley's public television studio or ArtsQuest - which built its representative space in the heart of the industrial park and hosts several indoor programs like festivals, visual arts, education, and so forth -, for instance, to broaden their public programs. Those, now cooperate with freshly initiated nonprofits associations to ensure and foster the landscape maintenance, obtain funding,

and assist contemporary and new services to visitors. The project accomplishment, together with the ongoing dedication deriving from the city, make sure that this urban and regional redevelopment is not just contemporary, yet also sustainable with a particular regard on the environmental impact. With the re-proposition of a new cultural and social connection amidst the historic centre of Bethlehem, the Lehigh River, its University institutions, and the strong presence of the tangible industrial heritage of the valley, the masterplan project represents an innovative landscape architecture and planning typology for medium, post-industrial cities, aiming to continue in contributing to the economic recovery plan for the entire former industrial city, redeveloping the abandoned industrial facilities present within the area. The design project is one of the primest samples of re-proposing new economic and social values which could be found within those several site samples of American Rust Belt.



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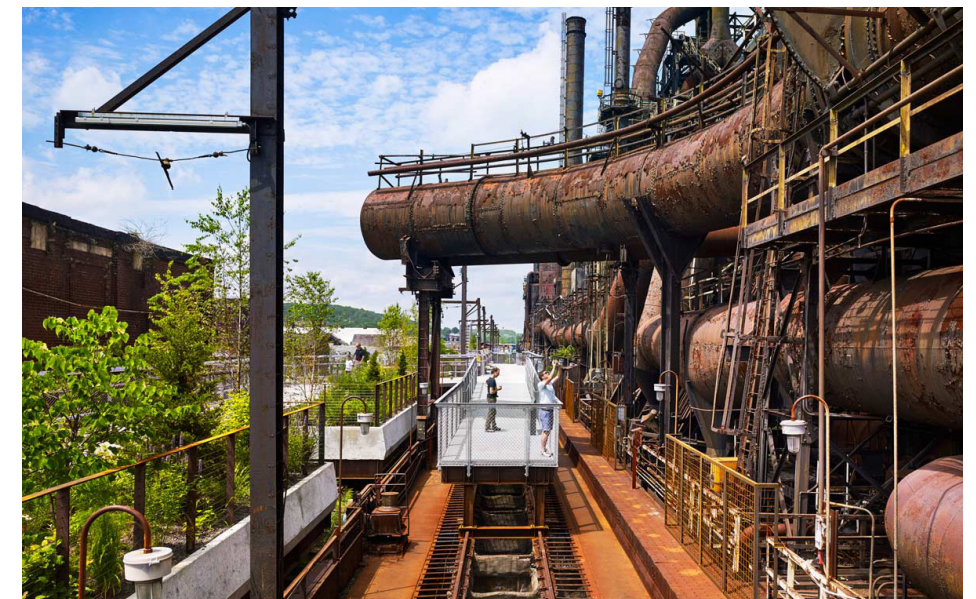


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top: plan view of Bethlehem industrial site - 1. Hoover-Mason Trestle Park Phase-1, 2. Picnic Grove + playground, 3. Levitt Pavillion, 4. ArtsQuest Plaza, 5. PBS39 Plaza, 6. PNC Plaza, 7. Flex Parking, 8. Hoover-Mason Trestle Park Phase-2
central left: the industrial site becomes a catalyst for the citizens
bottom left and right: the elevated path which allows visitors to observe from another perspective the industrial elements.

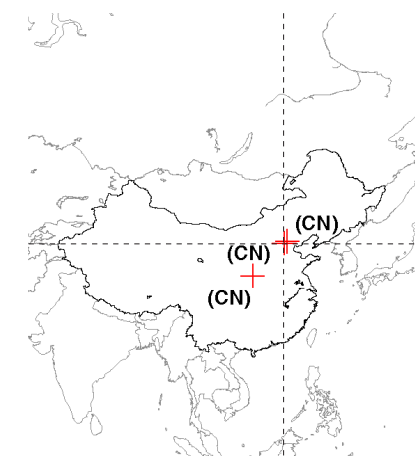


a new landscape typology for small, post-industrial cities, and will continue to contribute to the extensive economic resurgence of this former factory town.

WRT



Shougang Steel Development



ARCHITECT: WRT
LOCATION: Bethlehem, United States of America
YEAR: 2000 - 2016
STATUS: Completed
PROGRAM: Masterplan - Park, Concert and event hall, Commercial, Education

The former steel manufacturing site of Shougang, situated on the east side of the Yongding River and flanked by Shijing mountains on the north side, is an emblematic Pekingese sample of a large industrial area, at the fringe of the urban core, which experienced the shift towards the post-industrial society through the reuse and transformation of a typical extensive manufacturing site into a contemporary bustling urban area. It lies on the western end of the Chang'an Avenue, one of the principal axes in Beijing, playing a key role as part of the River Cultural Belt, as well as an fundamental functional node on the regional scale of the Beijing Urban General Plan. The former industrial settlement displays a series of benefits as, for instance, its strategic location in Beijing and the internal spatial layout, its relevance on the history and culture of the capital, but also as a meaningful implementation of Beijing functional positioning. The old industrial buildings and machineries express the former flourishing industrial period within the contemporary urban context. Extending its surface for about 8.5 km², the site is split into the northern and southern districts by the extension of the Chang'an Avenue itself. Because of the former Beijing Olympic games in 2008, due to concerns over the environmental pollution, the decision to reduce and subsequently relocate the entire production in Caofeidian (Tangshan) was taken, conducting to the total shutdown of the urban site in 2010. Notwithstanding,

subsequent to its abandonment for about a decade, the new Olympic game 2022 have been a consistent incentive to initiate a real careful redevelopment plan for the entire area, leading the Shougang industrial district to be recognised as an industrial heritage park through the promotion of new contemporary functions for the entire city. In contemporary times, indeed, there is an increasing awareness related to the importance of the Maoist industrial buildings and estates for the society development and a following willingness by the Government to define innovative and proper guidelines towards the existing building heritage. The Shijingshan District, conforming to the city masterplan, is envisioned as a touristic and entertainment area in Beijing which implements the contextual spatial resources present in the site, as well as high-tech industries, innovative cultural and creative industries and several high-end services, with the general aim to convert the site from a intensive polluted area into a series of contemporary environmental friendly urban districts which actively respond to the cultural and industrial shift occurring in Beijing and, more generally, in China. For what concerns the functional planning of the entire Shougang area, basing the main idea of the Municipal Party Committee and the Municipal Government, which promote Shougang as “a demonstration zone of green transformation and upgrading of traditional industry, innovation highland of high-end industry in Western

Beijing and creative base of post-industrial culture and sports”, sport, digital intelligence and cultural creativity industries, combined with diverse industrial ecologies - consumption upgrading, intelligent scene, green financial service - form a new industrial system generating a model of “three industries, three ecologies and one society”. All the design projects comprised under the masterplan program aim to achieve a positive impact on the greenhouse gas emission through several factors such as energy consumption, transportation facilities and waste management, to pursue the general demand to reduce carbon in the surrounding communities. The extension towards the West of Chang'an Avenue, which occurred in 2019, running through the future park, split the entire Shougang site in two parts, namely the Northern District and the Southern District. As highlighted within the most recent Beijing City Master Plan 2016-2035, the entire area will be developed into six new different urban districts, where preservation, reuse and renovation of the former industrial legacy, especially in the northern district, are the leading actions for the future of the site. The adaptive reuse, indeed, prompts cultural preservation as well as the environmental safeguarding, providing an efficient and integrated land use into city planning. The master plan focuses on enhancing the unique collective memory of the site,

by eliminating precise and unnecessary industrial amenities and creating a dialogue betwixt the former industrial stocks and the surrounding natural elements. More specifically, in reference to the “Detailed Planning of North Zone of New Shougang High-end Industry Comprehensive Service Park”, finally properly approved in November 2017, the comprehensive master plan for the development provides the promotion of five different areas. Those areas are listed as follows; Winter Olympics Square, Shijingshan Landscape Park, Industrial Heritage Park, public service supporting area, and urban reconstructed innovation works. The primary intention is to provide a new vitality into the Shougang Park as a good practice for urban planning actions applied on contemporary cities in transition. The reuse of the industrial heritage targets for the most part some traditional buildings highly connected to the industrial past of the site as, for instance, Xishi Silo, Powder-processing Workshop, Gas Workshop, Coal Workshop, Coal Station, No.3 Star Furnace and Xiuchi Pond, Frit Workshop, and Coking Workshop. Taking as a reference those designs which have been already initiated - or concluded - it is possible to recognise three main strategies to enhance the existing. A first approach tends to operate directly on the original structure, altering the external shell or the internal level layout, and it can be seen applied to some proposed buildings such as the West Ten

Winter Olympic Plaza or the Shougang Park Hotel. A second strategy aims to maintain the spatial, structural and morphological characteristics, adding new volumes which will contain some of the spaces related to the new inserted functions. Some samples of this tactic can be identified within the Holiday Inn Express or the Shougang Oxygen Factory. Lastly, a more respectful approach towards the original volumes can be observed for the operations done on the Clean Coal Workshop and the No. 3 Blast Furnace, where new functions are inserted within the existing buildings and letting users to observe the contrast between the old industrial elements alongside the new programs. In contemporary times, the former steel productive site is turning into an innovative ecological area, and the planned industrial park, intended as a catalyst for high-end industries, becomes an innovative landmark for the urban regeneration in Beijing.



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**Shougang
park as an
amazing
example
of urban
planning and
renewal.**

Thomas Bach, IOC President



© Arup

this page
top: aerial view of the predominant industrial heritage in the Shougang district
central right: no. 3 blast furnace museum by CCTN design. A showcase of integral preservation of the industrial building stock
bottom left: Shougang Holiday Inn Express by China Architecture Design and Research Group. The adaptive reuse strategy aims to create a dialogue between the new block and the existing building located under it.
bottom right: Visitor centre in the former Oxygen Factory designed by Polytechnic of Turin. A new concrete and glass structure and volume have been designed and inserted in the existing structural frame. Being suspended it opens up the ground level to the public.



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© China Room, Polytechnic of Turin

3. China's turning point

3.1 China's double face: the "World Factory" and the Post-Industrial shift

During the three decades from the fifties to the seventies of the twentieth century, due to several policies and the general thought of "Production First, Livelihood Second" of the Communist party, China prompted a rapid industrialisation development which provided cities - and then the entire country - a feature of industrial urbanism. When the country faced the world economy with the opening up policy in the late Seventies, numerous foreign companies outside of China, due to the cost-effective land and labour at that time, established their manufacturing sites there (Zou, 2012). However, despite the fast process of industrialisation in China, within the same historical period, some Western developed countries were already transitioning to a post-industrial society as the new rising of innovative technologies and services overpassed the already obsolete traditional resource-based industry.

As a consequence of what was occurring inside and outside of the country, together with the adoption of the opening up of the country in 1978 and the shift from a planned economy to a socialist market economy,

China had to deal with both processes of industrialisation and post-industrialisation, adopting notable alterations in the industrial development both in policies and in spatial terms (Liu, 2015).

From that moment on, therefore, the industrial restructuring turned to be a fundamental central node for Chinese economic development, even though the country was still proceeding with its process of industrialisation. Several policies were, indeed, introduced to promote the restructuring, highlighting the high tech and service industries (Liu, 2021).

The Development Zone, for instance, was one of these economic policies initiated by the central government in 1984. It designated, within some peculiar cities, indicated zones where ad-hoc business policies, related to industries and enterprises, could be applied in vision of an innovative industrial development engaging foreign investments and sustaining the domestic economy growth. Hence, these Development Zones act as protagonists for the economic growth of the country and, as part of cities' urban area, they provide a considerable input for urban development.

The rampant improvement of the innovative cultural and service industries emphasised the turning point from a production system purely based on



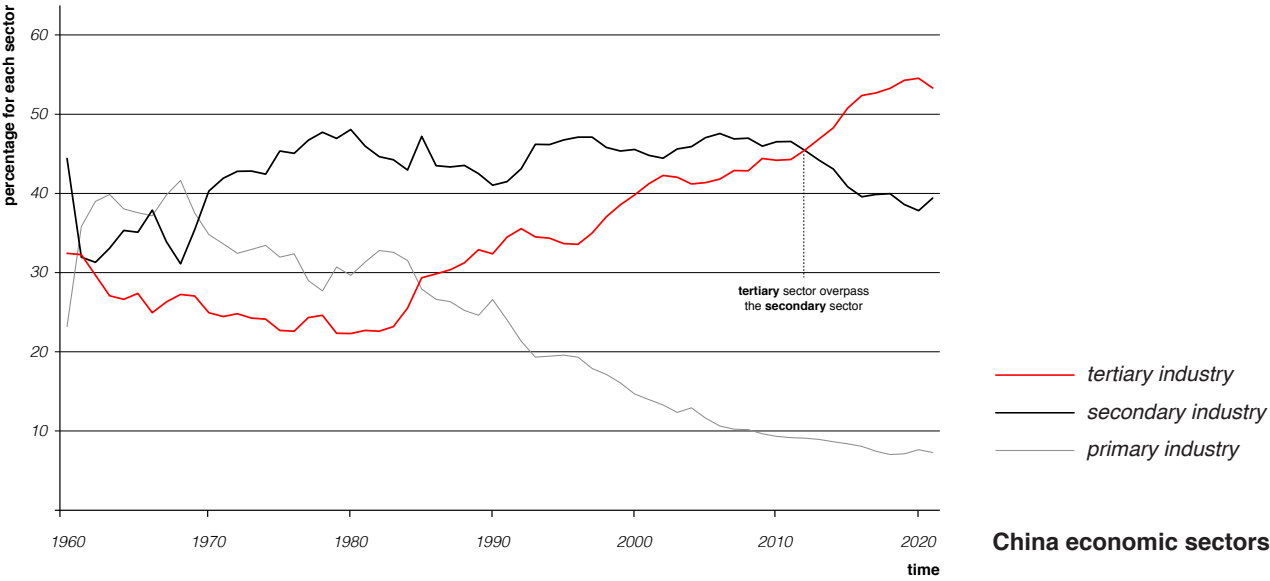
manufacturing (which provided the infamous form of “Made in China”) to a production industry system mostly developed on services and cultural activities (Bonino, Repellino, 2021).

Along with the birth of new development zones across China to hatch new industries, the Government decided to shut down (Gillette, 2018) or relocate the activities of several old-style factories of traditional manufacture industry, with a particular regard to polluting ones present in urban areas, to other parts of China (Bonino, De Pieri, 2015). As a consequence of various reasons, which included higher land costs within urban centres, ascending labour costs and the promotion of new environmental policies, the government moved several industries towards more convenient settlements

across the country (Zou, 2012). It was the relocation of many companies, which till then were settled within cities proper urban areas, that promoted the rise of the innovative service industries - including retail, research, culture, transport, along with others.

The efforts put in several years after the opening up policy of the country, promoted the almost equalisation of the GDPs of industry and services⁴ allowing to label China as a post-industrial society (Bell, 1976).

4. The Service Sector: The Post-Industrial Future is Nigh. The Economist. 19 Feb 2013. <https://www.economist.com/analects/2013/02/19/the-post-industrial-future-is-nigh>. Consulted 13 Dec 2021.



3.2 Deindustrialisation in China

As the main output of the turn of the economy in China consequently its late Seventies policy, numerous cities endured major changes and reforms which transformed these settlements from “cities of production” to “cities of consumption” (Bonino, Hamama, et al., 2021). Major cities became symbols for the economic profit, and the new market oriented reform deeply impacted their redevelopment. Different former factories built previously to the Opening up reform, which were already embedded in the urban area, were abandoned and demolished to leverage the high land value (Bonino, De Pieri, 2015) (Gillette, 2018). Due to the contemporary process of industrialisation and post-industrialisation occurring in China from Deng Xiaoping 1979 reform, although some Development Zone started to be built within cities in order to hatch innovative new industries, various industries, initially located in megacities as Beijing or Shanghai during the Nineties, were relocated or ceased their function, leaving possibilities to redevelopment into new industries or other service and urban functions (Liu, 2021).

These two main actions profoundly changed the image of major cities throughout the country symbolising the shift from an industrial to a post-industrial society. Within those years of profound changes and regeneration of the cities, innumerable industrial facilities were eliminated to leave the floor for innovative industries (Ma, 2015). As noted by different scholars, compared to European debates produced especially during the Eighties and Nineties of the Twentieth Century, China remains behind the already emergent discourse on the protection of the industrial heritage (Xu, 2012).

However, some shifts in thinking might be visible in the Chinese context after the beginning of the Twenty-first Century. In Beijing, for instance, the redevelopment of brownfields became a fundamental priority among government developing policies especially based on profit and environmental considerations. The reconsideration of the previous industrial legacy promoted the rising of innovative creative industries districts where art, culture and media triumphed among the others (Bonino, Repellino, 2021). Started in Beijing and then spread to other cities according to their impact on the world economy, the brownfield redevelopment was not considered as a mere

change in the land-use as it was considered in the prior decade. The contemporary meaning of the term also covers the environmental factor, including the de-pollution of former contaminated lands and a low-carbon development, yet the protection and reuse of the industrial heritage, the re-employment of industrial workers and the production of innovative communities not segregated as former danwei.

Furthermore, during the 18th National Congress of the CCP⁵, which occurred in 2012, new strategies for industrialisation, agricultural modernisation and urbanisation were put forward. In 2014, the National Plan of New Urbanisation implemented those policies to promote the transition from an economy-oriented planning to a human-oriented. These policies fostered the importance of balancing the urban and the rural areas through a rational and sensible city layout and an efficient and sustainable land-use. Moreover, the coordinated regional development replaced the former city-oriented mindset aiming to promote more balanced clusters of cities. This regional development played a fundamental role for the replacement of industries from one city to a more favourable one, while the brand-new cultural and creative industry found its suitability in former industrial lands.

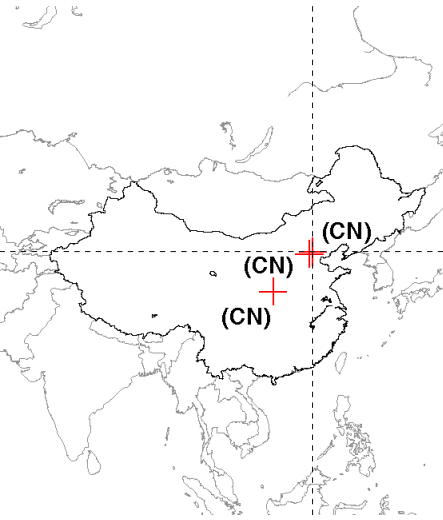
5. Chinese Communist Party



CASE STUDIES

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ARCHITECT: Sasaki Architects
LOCATION: Beijing, China
YEAR: 2006
STATUS: Completed
PROGRAM: Masterplan
- Museum, Art Galleries,
Commercial, Education and
Workshops



Located amid the Airport of Beijing and its downtown, the 798 Art Zone might be considered as a meaningful sample of former industrial spaces and facilities reuse as blueprint for the relatively recent transition towards a society based on the service industry rather than on the manufacturing one. Antecedently the China Opening Up reform and the marketisation of the national economy, Chinese S.O. (State Owned) industries and factories were recognised by their number. In Beijing, for instance, the 798 factory, operative from the 1957, once produced weapons components. However, its building site, today, stands out as one of the most influential epicentre of the country’s ascending art community. The contemporary art district is situated on the northeast side of Beijing, around ten kilometres north of Beijing Sanlitun diplomatic area, and covers approximately 600,000 sqm, surrounded by Jiuxianqiao North Road on the north side, Jiuxianqiao Street on the West, Wanhong Road on the south side and Jiuxianqiao East Road to the East. Despite its contemporary cultural and economic resonance, what makes this part of the Chinese capital city relevant within the current discourse on the result of the shift within the society towards a post industrial lifestyle and economy, is its opposition to the general demolition occurred throughout the country for those buildings which were not considerate worth of

preservation. As a common action occurred especially at the turn of the 1990s and the 2000, the 798 district faced demolition to make space and pursue the spread and shared concept of building in vertical. The strategic location of the area between the Capital Airport and downtown made the district highly likely to be demolished in the context of China’s real estate bubble. As sustained by the design firm Sasaki, author of the masterplan for 798 Art Zone, the Chinese government considered the existing Bauhaus-style industrial building a low density waste of public space. Notwithstanding the contemporary Beijing urban layout might appear as a synthetic arrangement of contemporary architecture and ancient historical buildings and sites, indeed, it tends to do not take into account the mid-century industrial period worth of enhancement. However, the art and culture industries did not make their first appearance within the site only with the regeneration project masterplan. Charmed by the peculiar architectural features and its ample areas, numerous artists and designers started to settle their workshops there since the beginning of the 2000. In 2000, for instance, the Dean of the Department of Sculpture set his own studio. It was only in 2006 that, to avoid the complete demolition and annulment of its cultural and historical value, a government-led consortium of a pension fund for former factory workers and a Belgian philanthropist commissioned Sasaki Associates to produce a masterplan

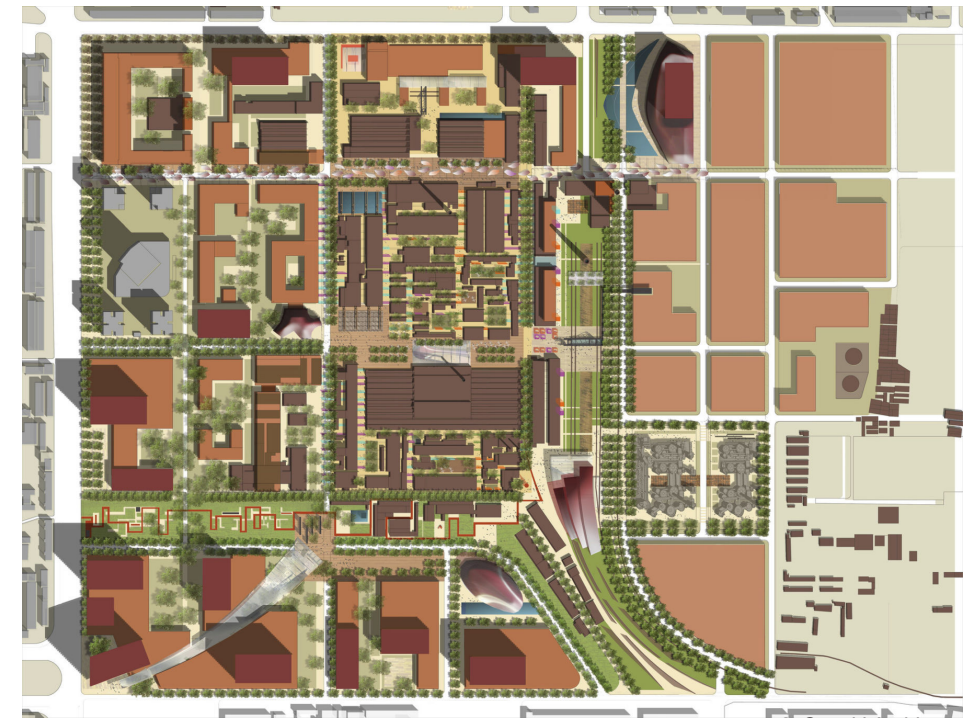
which could repurpose the district as a source of revenue while solidifying its place as an influential force in China’s art scene. What started as an informal agglomeration of artists’ studios and offices has now turned into one of the most influent spotlight of contemporary Beijing culture and society, only preceded by the forbidden city and the great wall for number of visitors. The proposed masterplan aims to emphasise the artistic and unconventional vein of the site merged within its industrial buildings, featuring the entire district into one of the most peculiar and distinctive neighbourhoods. The work prompts arts and culture as the two main protagonists for the entire urban district, suggesting several strategies to make the district more relevant and connected within the context of the city, still maintaining the features of its historic industrial aesthetic and relevance and encouraging many more artisans and artists to comply with the 798 district community. In order to consolidate this principal aim, the master project - mostly pedestrian-centred oriented - goes beyond the mere preservation of the site and its existing building factories by static programs such as museums or galleries. Innovative creative industries as media, advertising, fashion design, animation and software design, to name a few, make sure that the regeneration of the site following the contemporary social and economic trends. Additional new and profitable

functions such as the main contemporary art museum - the Ullnes Center for Contemporary Art -, galleries, restaurants, hotels, conference facilities, entertainment venues, parks and plazas for performances and leisure portrait the contemporary profile of the urban post-industrial society through its former industrial historical period. Together with the actualisation of the proposal, indeed, the dismissed buildings and amenities are turned into museums and galleries, while open spaces and “secret” courtyards resurface as stages for contemporary artists sculptures and high-fashion shows. Other former legacies of the Chinese industrial period, - e.g. gasworks, rail tracks, and cranes - are safeguarded, and the existing pedestrian-centric streets and pathways creates hallways which detach the district from capital’s heavy and congested traffic. As one of the world’s most crucial cultural districts in Beijing and overall China, the 798 Arts District does not stop its evolution and regularly hosts important worldwide exhibitions by leading local and international forces.

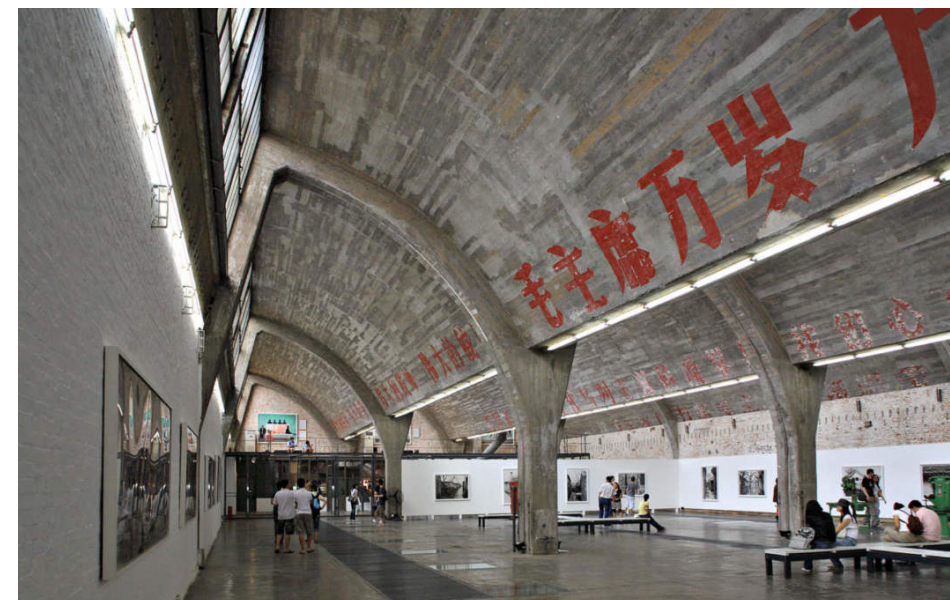


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top: plan view of 798 art zone
central left: empty buildings are converted into art gallery
bottom left: the conservation of the historic industrial aesthetic
bottom right: diagram proposed by the design firm on the main transformative actions and the relations with the context



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preserving the character and spirit of the district while infusing it with additional revenue-generating programs

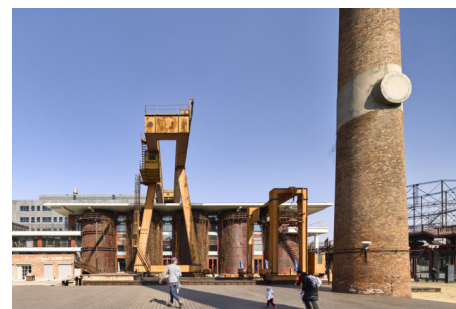
Sasaki Associates



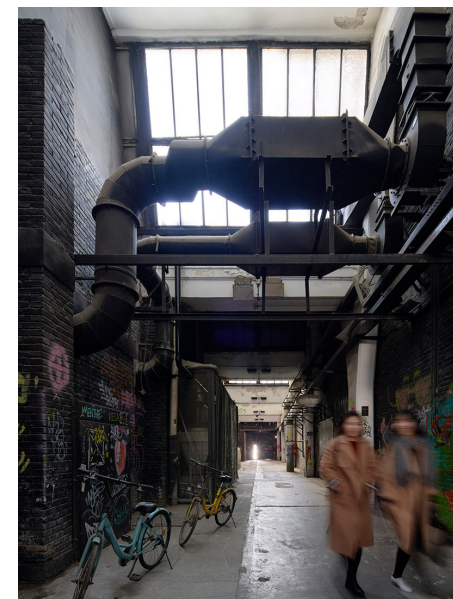
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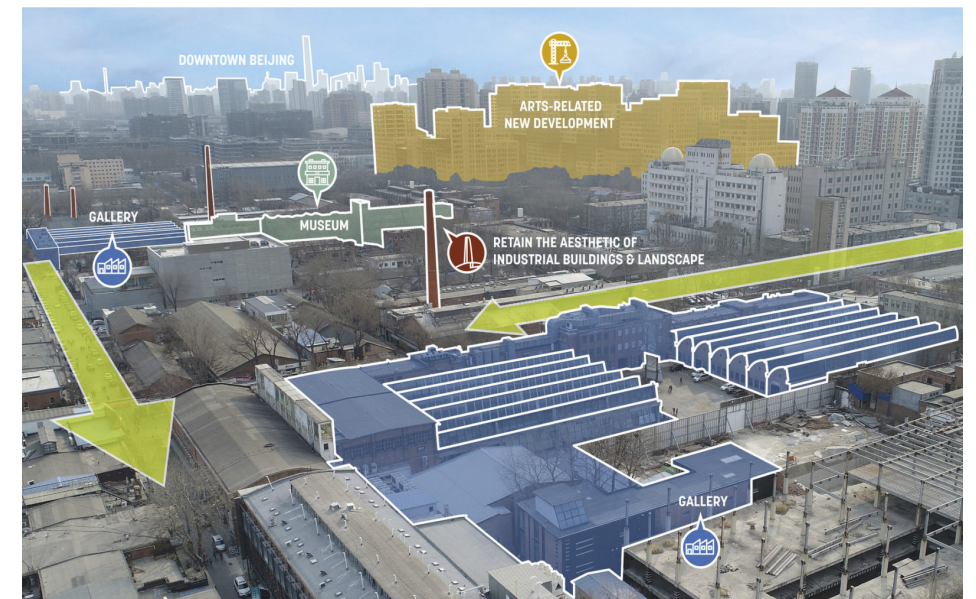
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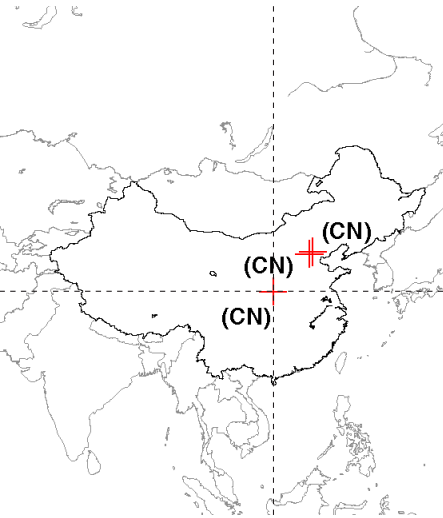


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Dahua Textile Mill



ARCHITECT: Cui Kai, Wang Keyao, Zhang Rubing and Aurelien Chen
LOCATION: Xi'an, China
YEAR: 2014
STATUS: Completed
PROGRAM: Museum, Galleries, Commercial, Theatre



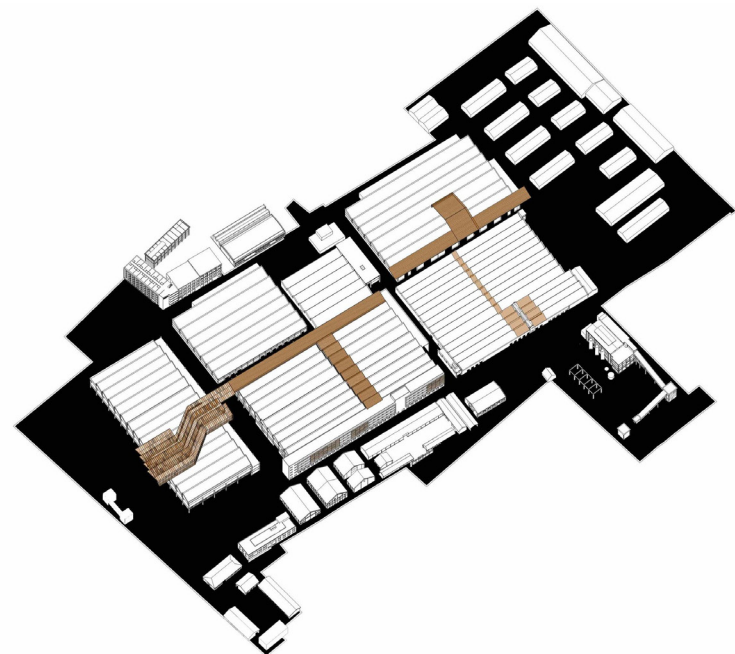
The Dahua Cotton Mill factory was founded in 1935 as the first modern factory related to clothing manufacturing throughout the entire northwest China. It stands adjacent to the Tang Dynasty Daming Palace, a wide-ranging ancient complex which was built in 634 but subsequently torn down and its ruins have been restored as a UNESCO World Cultural Heritage Site. Following several decades of accelerated urban development activity in China and substantial demolition strategies, however, a revitalisation and regeneration project signed by Cui Kai, together with Wang Keyao, Zhang Rubing and Aurelien Chen challenges - as witnessed by the architects themselves - our responsibility as architects and planners. In 2014, indeed, the already abandoned 89,000 sqm textile mill plant was reused and adapted to become stage for a new museum, theatre space, and various retail and office spaces. The renovation strategy aims to emphasise the building and site historical traces, and the related collective memories, by promoting them as the key elements of the entire design. They become not only urban landmarks, yet, they also provide a new proper identity to the recently designed spaces still preserving the *raison d'être* of the place. This project represents a proposal for a new sustainable development for the contemporary and Chinese City. By the elimination of several urban boundaries and the design of a wide variety of new accessible public spaces, the city becomes more porous

to its inhabitants. Through these kind of interventions, the former factory can regenerate and adapt to new contemporary uses and become multifunctional. Its dilapidated walls are truthful signs of the past industrial period and relevance, and provide inhabitants and visitors a sensitive and poetic way of experiencing their city, as expressed by the authors of the project. To rethink and re-functionlise such a high-density and extended factory into a new attractive public space for several art-related activities and creative offices, the concept design proposal distinguished the singular buildings with different ages and treated each of them with a different and proper design method. For the elder ones, which correspond to the smaller and separated brick-timber buildings, an addition strategy is utilised to add some small-scale structure to the existing one to link several functional spaces and program the courts into new cafés, restaurants and other contemporary service facilities. Those massive structures built in recent times, instead, are re-evaluated enhancing their remarkable serrated skylights. Through a subtraction strategy, the original industrial auxiliary rooms are displaced by streets and plazas, which form a new pedestrian system that invites citizen to enter the culture park for culture activities. Situated at the entrance to the dismissed industrial site, the so-called 'N1' building block is the scene of major transformations. Recognising and keeping the building's vast open interiors

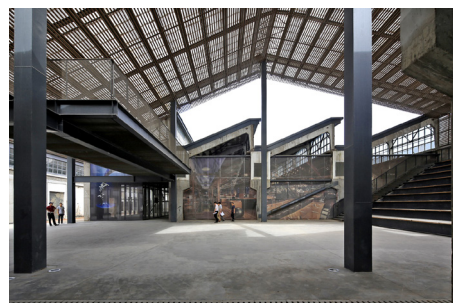
as flexible and multi-functional spaces the roofs became the new key site for the entire design work. After several studies, a clearance along the edge of the complex enable the creation of a new urban plaza and reveals the peculiar shape of the industrial sheds that were hidden heretofore. Thereafter, a covered arcade through the building was created, linking different key parts of the former industrial site. The contemporary steel roof spanning across the complex relies onto the original column grid below, with a significant structural challenge. The original horizontal partitions are removed, revealing the concrete columns and horizontal beams, while new, prefabricated steel beams are lifted within the new exposed open space. This operation, in such tight confines and without damaging the original structure, was extremely challenging. The transformation of the original roofscape was enhanced in order to create differently scaled settings within the entire complex and to readjust the amount of natural light entering the building; creating a sort of path to tie the extensive building together which can guide visitors along the central arcade.



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© China Architecture design group land-based rationalism D.R.C



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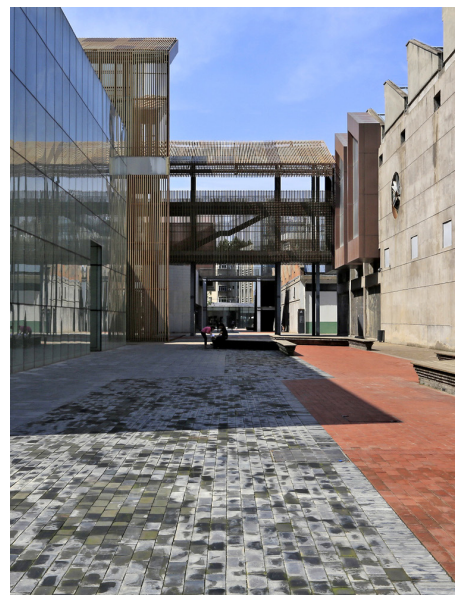
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top: aerial view of the Dahua textile Mill
central right: interior image. The contemporary steel roof spanning across the complex relies onto the original column grid below
bottom left and right: exterior views of the factory. The new addition fits within the surrounding contextual buildings, still highlighting the separation through the different materials



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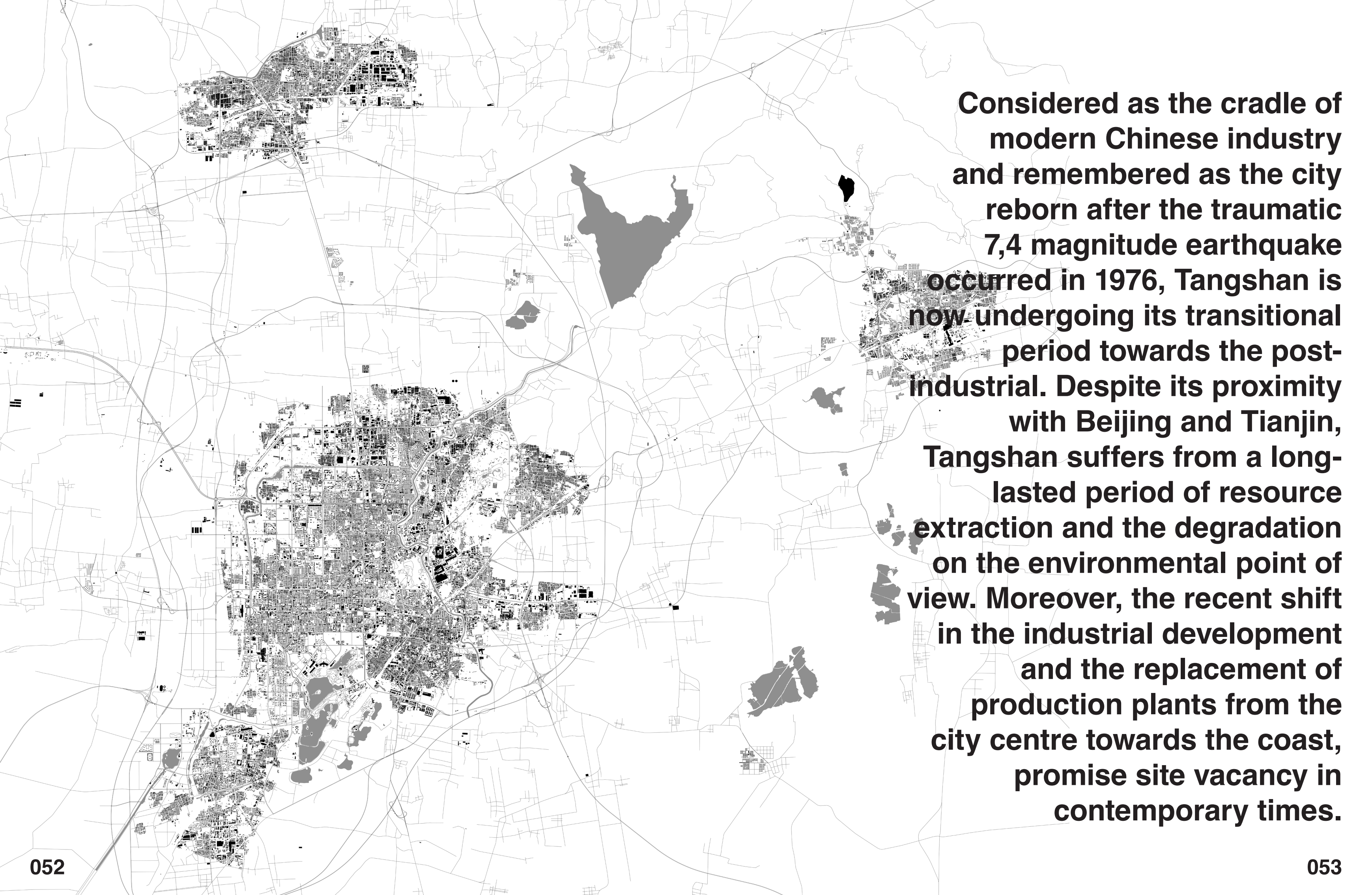


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4. Tangshan: from the cradle of modern industry to a BTH node



Considered as the cradle of modern Chinese industry and remembered as the city reborn after the traumatic 7,4 magnitude earthquake occurred in 1976, Tangshan is now undergoing its transitional period towards the post-industrial. Despite its proximity with Beijing and Tianjin, Tangshan suffers from a long-lasting period of resource extraction and the degradation on the environmental point of view. Moreover, the recent shift in the industrial development and the replacement of production plants from the city centre towards the coast, promise site vacancy in contemporary times.

4.1 Tangshan industry development

The industrial development in Tangshan started previously the foundation of the city itself. By 1881, indeed, the Kailuan Coal Mine was built and production began, opening up the first Chinese coal mine in the entire country. As an efficient production site, the mine needed an effective transportation infrastructure, therefore, it developed along the river and the Tangxu railway, which was built with the main purpose to move coal from the actual Tangshan urban area to Xuzhuang. Further implementations to the railway system enlarged the network of production and Tangshan started to assume more notoriety among various cities, while its population continued to grow and spatially expand.

It was in January of 1939 that Tangshan was formally established as a proper city.

Along the Forties, a period heavily characterised by precariouspeace,the government established in Tangshan several military related plants, such as the Tangshan Power Plant, the Guanghai Paper Mill, the National Steel Company, the Bauxite company and the Gold Mine, exploiting the richness

of natural resources present in Tangshan. Simultaneously to the enlargement of the production area within the city, commerce continued to enlarge and develop especially towards the south through the railway infrastructure. Hybrid businesses started to take shape and first Japanese goods began to appear within the Tangshan market. Nonetheless, Tangshan’s financial sector already started its rapid ascent and provided the city the title of “Little Tianjin” (Chen, 2011).

However, this straight raising period showed its crisis after the Second Sino-Japanese War (1945). Within the newly born country, flanked by its socialist transformation, the Great Leap Forward and the Cultural Revolution, the development of the city went through a series of ups and downs.

Soon after the founding of the People’s Republic of China, however, the government prompted several policies to enhance the national industrial development and Tangshan already saw the results within 8 years. The initial total industrial output of Tangshan in 1949 accounted for 112 million yuan; by 1952 it accounted for 301 million yuan; by 1957 it gained a total output of 598 million yuan, almost 5,3 times the one produced in 1949. The state owned economy gradually established a dominant role within the ownership of production, and the dominance

by primary industry in GDP started to decline due to the rise of the secondary and tertiary industries.

However during the Great Leap Forward which lasted from the 1958 till 1965, several changes within the economical development structure of Tangshan were visible; the secondary sector, which was dominant till the 1962 with a 56% of the total amount of GDP share, decreased to the 40% in the successive year, and continued its decline till the 1965, dropping to the 37.6%.

Notwithstanding the major earthquake that occurred in 1976, which produced a general decrease of the comprehensive agricultural and industrial output, a new change in the industrial structure of the city occurred and showed a growth in proportion for the secondary industry GDP, and a respective gradual loss in proportion for the primary and tertiary sectors. Many industries, indeed, placed numerous mines and factories within the city and resumed their activities. By 1978 the total industrial output in Tangshan reached 3.2 billion yuan, overpassing its historical record.

Along this period major internal changes within the manufacturing sector took place, with a general shift from a dominant coal production to a simultaneous multitude of industries as cooking, metallurgic

and machinery, to name a few.

Soon after the earthquake and the Opening up policy, as a consequence of the various policies promoted by the Communist Party, Tangshan economy started to flourish again and rapidly. During the Eighties, the city’s industries started to test the expansion of the enterprise autonomy and numerous forms of profit retention. Since 1986, the economic development of Tangshan continued to rise exponentially from 6.7 billion yuan to 129.5 billion yuan in 2003, with an industrial structure that still was dominated by the secondary industry constantly increasing, flanked, however, by a timid rise of the tertiary sector.

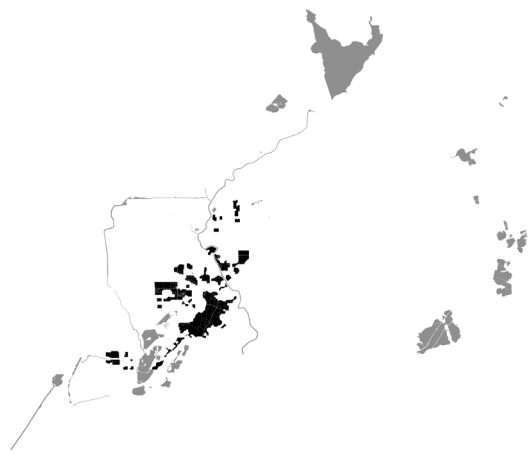
Nevertheless, the metallurgic industry conquered the hegemony among the other developed industries present within the Tangshan industrial sector. By 2003, indeed, the proportion of the metallurgic industry reached 66.8% in the city’s total industrial structure and by 2007 the total economic structure of Tangshan kept seeing the dominance of the secondary industry with a 57,4% of the total share.

Nowadays, the city of Tangshan and its industrial economy displays a fundamental role within the economic development in the Jing-Jin-Ji⁶ Metropolitan region and, in particular, to the Caofeidian harbour area which symbolises

6. Beijing - Tianjing - Hebei Metropolitan Region (BTH)



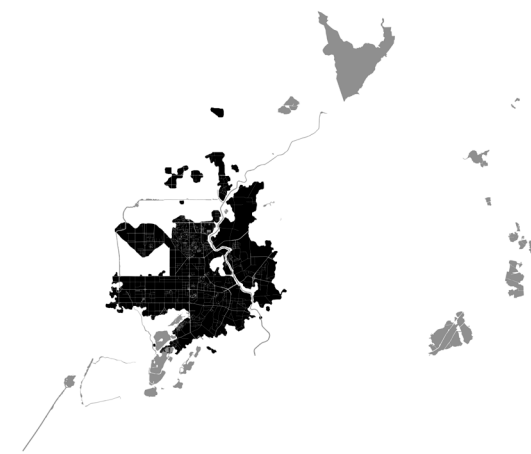
1901



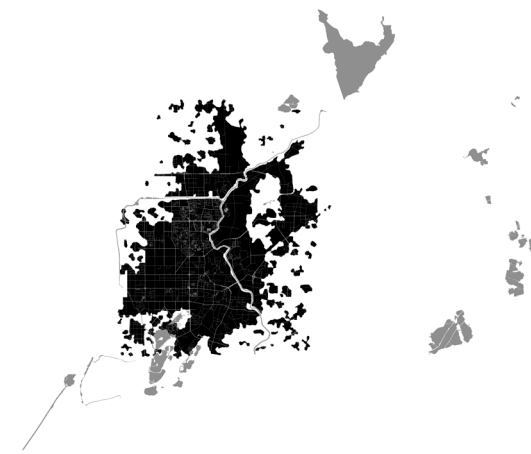
1958



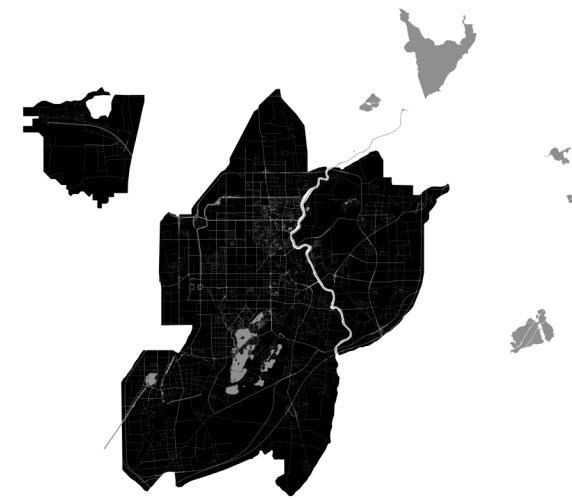
1976



1985



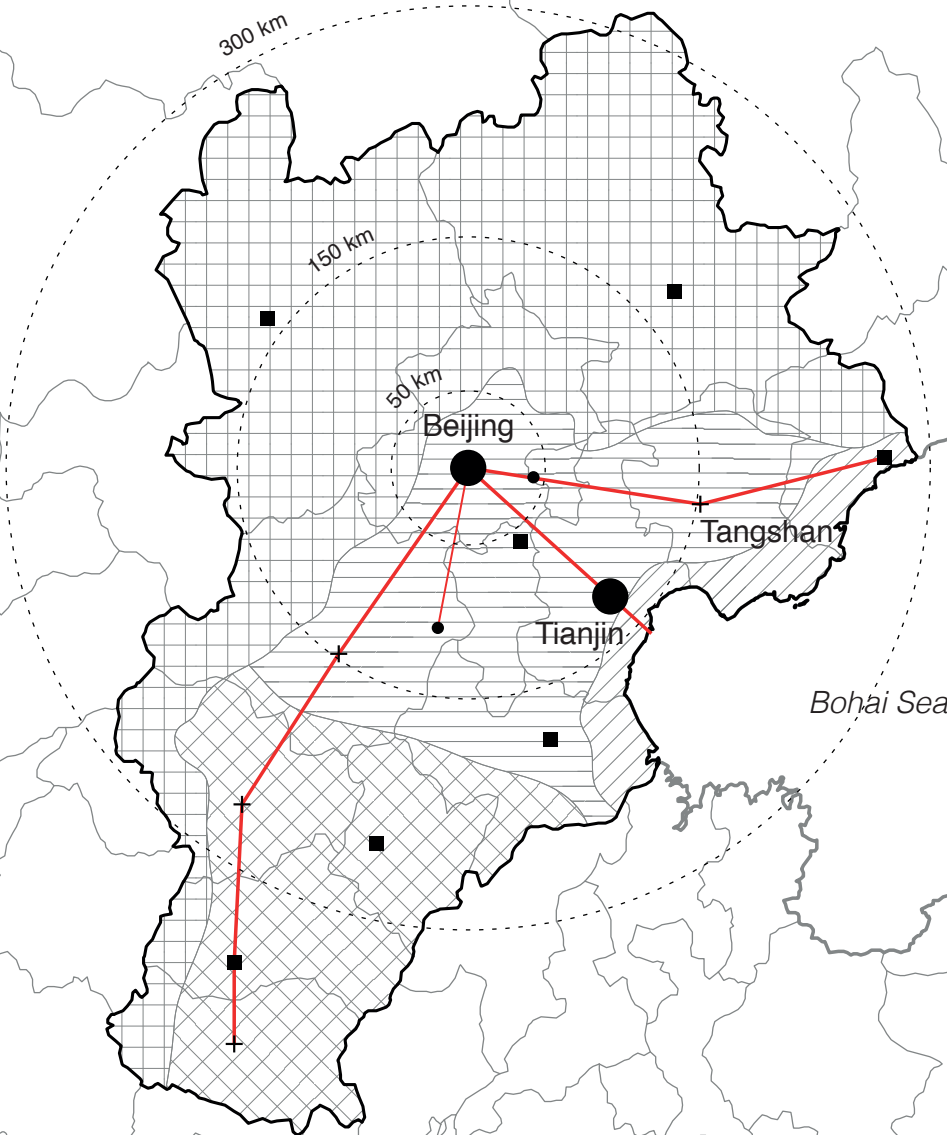
2008



2018

the industrial background and relevance of Tangshan within the industrial business.

Being part of China’s national capital region, as well as the largest urbanised region in Northeast China, raises new challenges for the future development of Tangshan.



- northwest ecological containment
- eastern coastal development
- central functional core
- southern functional expansion
- primary urban core
- two wings: sub-centre and new area
- nodal city
- regional central city

BTH (Beijing-Tianjin-Hebei) region planning

4.2 Tangshan earthquake; rebuilding the city

When the earthquake occurred in Tangshan in 1976, not a single building structure remained unaffected and more than half of the entire percentage of industrial and residential buildings were razed to the ground (Hou, 1996). Due to the fact that the city did not suffer from any earthquake before 1976, the majority of buildings and infrastructures were not designed anti seismic (Li, 2017). If it was not for the detection of various seismological centres around the globe, the natural catastrophe would have never been known to the rest of the world. Indeed, For the two following years Tangshan was closed to foreigners, and in almost ten years the city was unbelievably rebuilt into a new functioning centre which continued to pursue and enhance the secondary industrial economy according to its tradition even before the earthquake.

The dependence on the industrial economy of the city of Tangshan dates back to the Qing dynasty when, because of its great supply of natural resources, it became one of the most important and populous industrial centres in the entire

Hebei. Within the Five-Year Plan proposed by Mao along 1953 and which highlighted a centralised economy and heavy industry extensive development, numerous SO industrial enterprises based in Tangshan. As a direct consequence, the urban pattern of the city followed the Maoist economic reform, and Tangshan experienced the typical spatial and social organisation based on the danwei (单位). The term might be translated into “work unit”, and each of them was intended and designed as a contained city in miniature which contained distinguished yet adjacent facilities as residential areas and industrial and work facilities, but also schools, medical facilities and recreational and gathering spaces. Along this period, new residential and administrative multi-storey buildings were erected within the brick single storey landscape present in the city and Tangshan started to appear as a physical reflection of the Maoist heavy industrialisation period (Chen, 2021).

In line with the promotion of the mobilisation of the masses and self-reliance, the Chinese government did not accept any foreign support regarding the recovery from the natural disaster and the majority of the tales spread after the earthquake were principally about the efforts and strength of the Chinese society.

However, when Deng Xiaoping reached the power in 1978, he abandoned many ideals of the Maoist ideology, enhancing reforms which could bring China to be competitive within the international community. He believed that the country could not improve by only relying on national self-reliance, but rather to take inspiration and learn from western methods in various fields - technology, economic and scientific to name a few.

As a consequence, the planning of the new Tangshan became a pragmatic exercise rather than a symbolic act to celebrate the party, a focus on rebuilding a new city rather than a particular ideology. For the first time, the Comprehensive Plan of Tangshan of 1976 transferred planning decisions from politics to experts of the urban planning field. Several technicians and academics from Tsinghua University, Beijing University and Tongji University were moved to Tangshan in order to properly evaluate the city's reconstruction. Due to the actual ruined condition of the city and based on its previous poor design, experts agreed on the fact that it was not possible to use the old Tangshan as a starting point for the reconstruction. The main intention was a large-scale demolition as a base to build and plan a modern and earthquake-resistant Tangshan, improving its living environment and

recognising its dominant role as coal and steel production for the entire region (Chen, 2021).

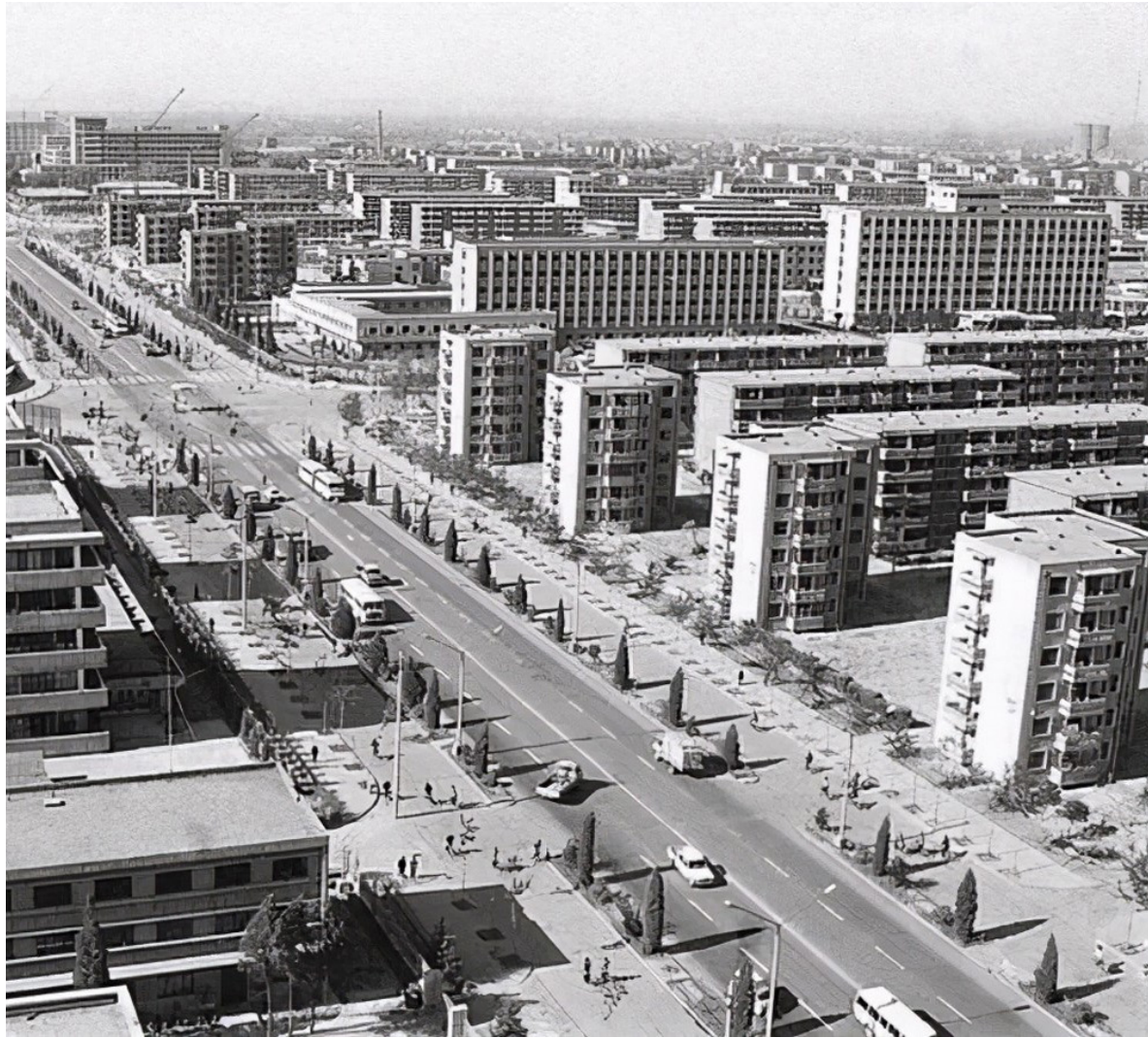
On the practical point of view, the new comprehensive Plan of the city increased the number of streets, expanded the green and public spaces enlarging the area of the city, reduced the population density and divided the city into three main areas: the central district and the main financial and residential core, the industrial district on the east side of the river to preserve those industries critical to the national economy and a new urban area in Fengrun. The main residential areas were separated from the industrial settlements from a green belt, enhancing the living conditions and responding to the heavy pollution characteristic of the previous times. It is clear, however, that the rebirth of Tangshan did not aim to delete or overpass the high industrial output and development of the city prior to the natural disaster. As a demonstration of this, experts decided indeed to rebuild Tangshan on its ruins rather than moving it somewhere else precisely because of the natural land resources available in the original location. The previous Kailuan Mine, the Tangshan Steel factory and the Power Plant, together with some machinery and pottery industries remained (Li, 2017).

With the urgency to house more than 730.000 inhabitants

in new houses, the government adopted a uniformed housing typology to speed up the reconstruction, substituting the old brick fabrics for concrete. The result of this priority produced a homologated housing landscape in Tangshan, with nearly alike concrete building typology which, however, provided a more socialist appearance among other modern Chinese cities. During the year of the Opening Up policy and the market reform, the city of Tangshan grew in line with the Chinese economic expansion (Li, 2017).

However, in 1982 the council decided to cut down the scope of the comprehensive plan because of economic reasons and shortage of funding and many goals were not achieved. Moreover, the major part of the factories were rebuilt mostly in the same place they were standing before the earthquake, producing not so many changes within the urban land use and zoning, promoting residential areas adjacent to industrial facilities and factories. Nevertheless, the results achieved in Tangshan made the city a cause of pride for the entire nation as a demonstration of the ability to rise from the earthquake dust, and promote an innovative urban planning and development as a perfect showcase of the political and social change occurring in China.





4.3 Transitioning Tangshan

China’s Resource Based Cities

Whenever the discourse takes into consideration resource based cities, it intends those urban agglomerations where forestry, mining and other industries relied on natural limited and not renewable resources, are the preeminent industries (Ruan, Wang, et al., 2020). Widespread across China, these cities play a crucial role addressing the arrangement of a complete independent national industrial system in the entire country and strengthening its economic development. All resource based cities are a typical Chinese outcome of the industrial period throughout the entire country which played a significant role in urban and regional development (Chen, 2011) (Chen, Li, et al., 2013). Due to the large scale industrial development and the expanded profiteering of the natural resources, most of the resource based cities built an industrial structure in which the majority of the urban employment is concentrated in a single industry sector. This strong dependence from a single industry sector, however, causes limitations in

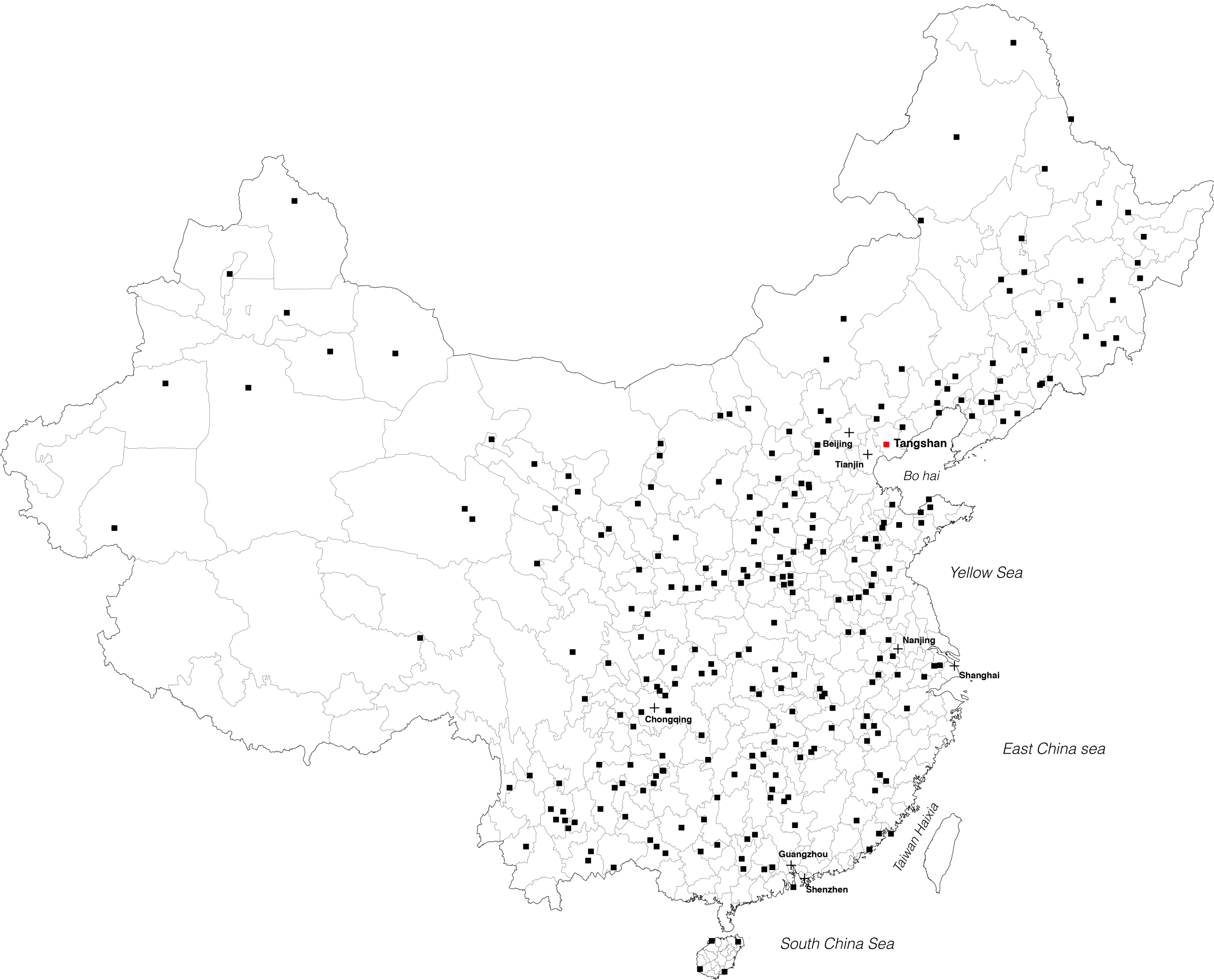
other manufacturing industries development, but also avoids the parallel affirmation of other industrial sectors - the primary and the tertiary, indeed (Ruan, Wang, et al., 2020). Nevertheless, despite the fact that some of the resource based cities display internal high income levels, their strong reliance on natural and exhaustible resources underlines the intrinsic unsustainable nature (Chen, Li, et al., 2013). According to scholar Yungang Liu, those cities differ from other cities or urban agglomerations in China according to the fact that these unique urban settlements prospered and gained interest due to their resources and not by the consistency of functions. He further deepened his research categorising these cities according to three main aspects. Firstly, the large-scale development based on natural resources settled within the actual city location before the foundation of the city itself. The city, intended as a formalised and registered agglomeration of buildings and services, is therefore a subsequent phenomenon to the resource settlement. Secondly, their ascendance is mostly related to the development of large scale resources development enterprises. Thirdly, cities can be classified as resource based cities according to the on-going strong dependence from resources even after the

Administrative status of resouce based cities in China

foundation of the People Republic of China. Transportation, commerce and other modern industries are usually consequences of the dominant resource-base development. The “dominant” attribute is well explained by Chauncy D. Harris who tried to identify mining cities as those agglomerates where the employment rate of its population reached 15 percent in the resource industry of the total urban population employed (Li, Yu, et al., 2019) or that the resource industry output accounts more than the 10 percent of the total industrial output of the city (Liu, 2017). In 2013, the State Council classified 262 resource based cities throughout the national boundaries, which have been later broken down into four different categories according to their actual stage of industrial development. Growth, Mature, Recession and Regeneration are the main four categories

utilised. As visible in Table XX, almost 45% of the total amount of the resource based cities recognised by the Government are prefecture-level cities, half of which is on its mature stage (Ruan, Wang, et al., 2020). As the recent and ongoing industrial shift of the country is afflicting not only big cities but also secondary cities with particular regard on those on the coast, architects and planners, flanked by the general attention paid by the different municipalities and the Government, are putting more attention towards the renovation of industrial districts and buildings within those resource based cities which are already modifying their industrial structure. As a contemporary open question, more importance is given to the redevelopment of those industrial districts present in resource-based cities and which profoundly affected its economic development, the social condition

ADMINISTRATIVE LEVEL	STAGE				TOTAL
	<i>Growth</i>	<i>Mature</i>	<i>Recession</i>	<i>Regeneration</i>	
Prefecture-level city	20	66	24	16	126
County-level city	7	29	22	4	62
County (autonomous)	4	46	5	3	58
District	/	/	16	/	16
TOTAL	31	141	67	23	262



major cities +
resource based city ■

262 China resource based cities

and played a decisive role in the urban layout organisation and its environmental status.

How to develop a sustainable land use of industrial districts and how to (re)use industrial buildings have become some principal inquiries within the contemporary debate on architecture and urban planning.

Tangshan: a typical Chinese Resource Based City in transition

Every moment along the urban development of Tangshan city is deeply influenced, or has relations with resources extraction activity and heavy industry production. Taking back the characteristics of Chinese resource based cities within Liu’s theory, it was subsequent the establishment of the Kailuan Coal Mine and the Mining Bureau, that the contemporary city of Tangshan started its urban development.

As a consequence of the presence of industry, all the infrastructure related to transportation were built. The richness in mineral resources attracted numerous factories to establish within the area, with a successive immigration of farmers from Guangdong, Shandong and Hebei itself and

with a consequent rapid increase of the total population. The attractiveness of the site produced an echo for establishment of other facilities related to industry such as warehouses and workshops, and at the foundation of the PRC, Tangshan counted a population of more than 140.000 inhabitants. After 1949 the city of Tangshan was still relying on coal resource industry and metallurgic industry and by 1976 Tangshan already developed an urban area of 51,4 square kilometres. Till contemporary times, although the shift in the leading role between the coal mining industry and the metallurgic industry, the contribution in the development of the second industry sector is undeniable.

However, with the turn of the twenty-first century the main issues faced by Tangshan city were related to its own heavy industry development. The extensive land use for industrial plants, the serious pollution complications and a monotonous lifestyle guided by industrial employment (Li, Lan, et al. 2017) were obstructing the production of an environmental and sustainable city according to its historical period and contextual geography.

Flanked by the planning of built projects out of the established city - as Caofeidian or Nanhu, for instance -, the guidelines promoted by the 16th Congress of the CP prompted the adjustment

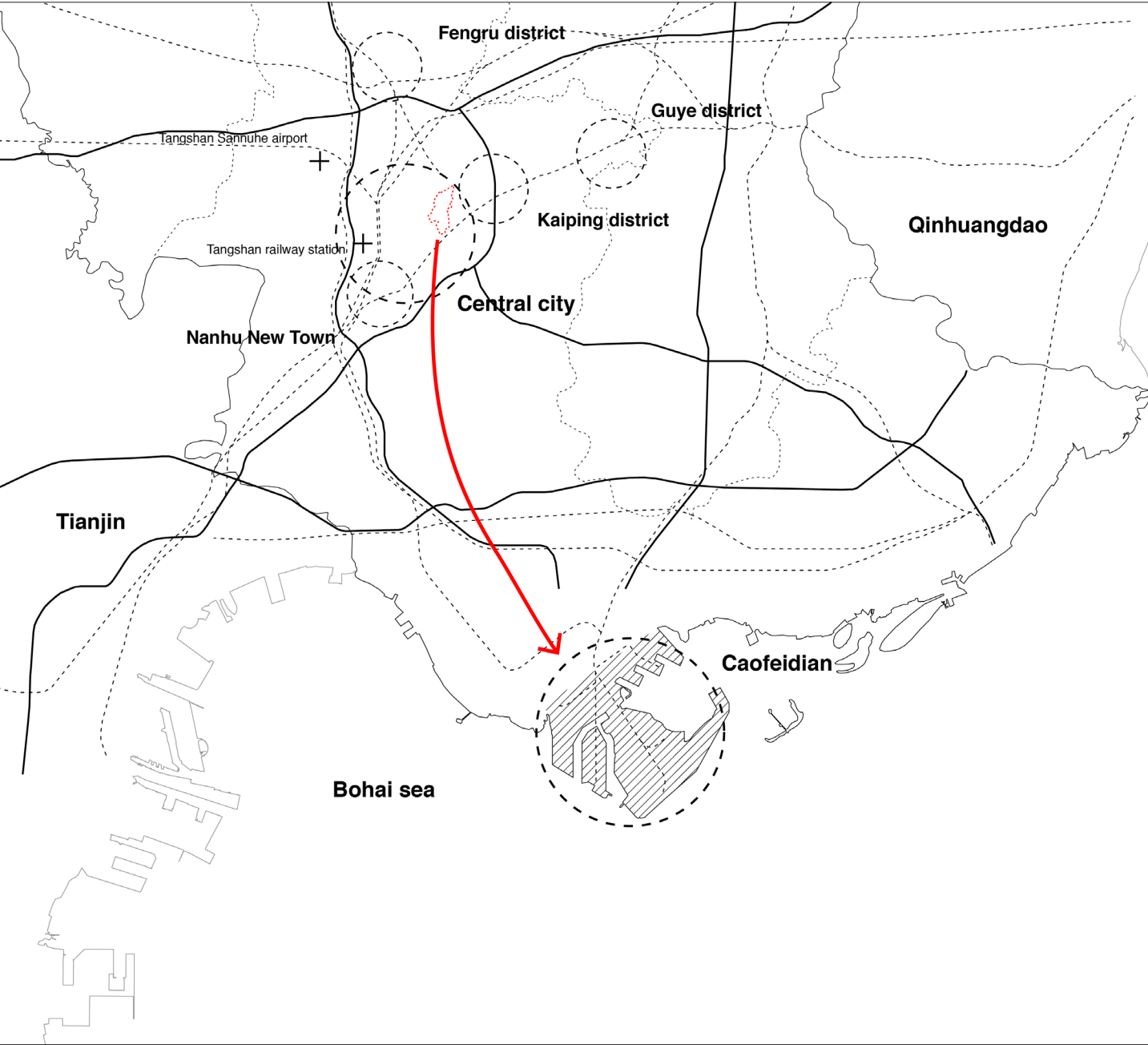
of the city’s inner built space. Some of the 36 factories which were planned to move from the city were replaced by different land-uses⁷ as commercial, cultural or residential areas (Li, Lan, et al., 2017).

As notable, the city planning is finally moving towards a deindustrialisation of the city urban area and a subsequent

more sustainable land-use. Planners and architects, together with institutions are called to design in a more sustainable way, recycling land and resources, updating to the contemporary industry but still flexible to new adaptations and can foster the production of public spaces as showcases of the evolution of urban development.

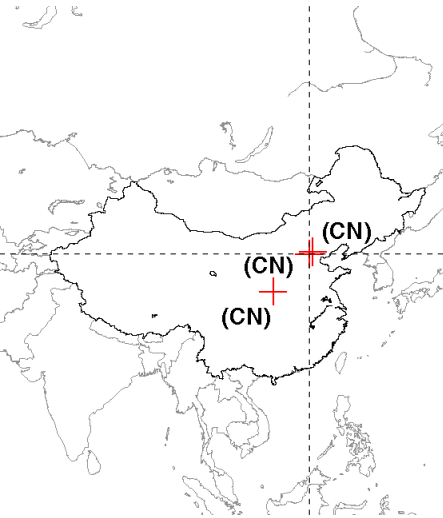
7. The Qixin Cement factory, for instance, was moved out of the city proper urban area in 2008 and the previous industrial building was then turned into a museum with surrounding area repurposed with cinemas, bar, hotels and more.

0 10 20 km
railway
planning area boundaries
dou river east side
highways ———
industrial land /////
Tangshan city planning 2010-2020.
Caofeidian as the new industrial area
of the city



CASE STUDIES

A large, bold, dark gray letter 'S' is positioned on the right side of the page. It is a simple, sans-serif font with a thick stroke.



ARCHITECT: Thomas Herzog
LOCATION: Beijing, China
YEAR: 2009 - 2012
STATUS: Completed
PROGRAM: Offices



The Ertong Plant in Beijing, generally used as a shortcut to intend the Shougang Ertong General Machinery Plant, was one amongst the eight machinery plants in the entire China which undergone a huge redevelopment due to the changing needs of the contemporary society and economy. Several buildings related to the production on the east side were razed and different clandestine residential communities settled within the administrative limits were dispossessed. The building presented itself as a large, two-span block with a mixed steel and concrete structure with its southern side completely closed by a typical brick wall with a scarce presence of openings. The northern side, instead, was characterised by a crane runway partially covered by its roof. The overlying roof was supported by a series of triangular steel trusses and, due to the absence of any central raws of columns in the middle and the considerable height, the internal layout of the building hall appeared imposing but poorly naturally lit. All these characteristics were hints for the German architect and professor Thomas Herzog and his concept design which intends the building original shape as a environmental shell with glazed roof openings, as a reference to those typically European passages developed during the Nineteenth century. The free internal layout, moreover, provides the perfect environment to the insertion of

different uses as offices, bars and cafes, shops and other services which could respond to the contemporary changing needs of the urban society. The addition of a low rise building to the south increases the usable area. New building parts are added and infilled within the preserved and maintained industrial characters and structure. Using this approach, the new spaces designed inside are adapted to the original construction which can be preserved and enhanced as construction heritage for the collective memory of the not-usually celebrated heavy industry period of China. The fact that the volumes inside are inserted as autonomous spaces and structure from the original shell envelope result as an environmental benefit because of the reduction of insulating materials and and lighter structures. As defined by the same architect, the general design concept is a sort of matryoshka, a “house in house” system. The new inner spaces designed for working and leasure not only take advantages by the environmetal theoretical system, yet they provide a new and innovative urban identity to the neighbourhood.



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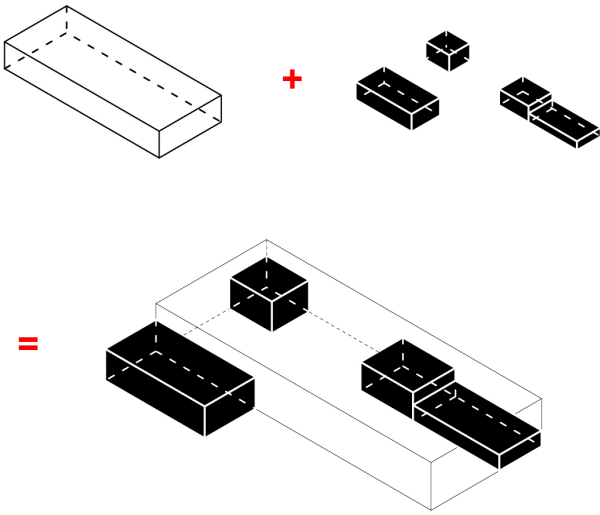


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this page
top: abandoned factory in 2011
central left: the northern gate of the
production area
bottom right: production area and the
spontaneous vegetation



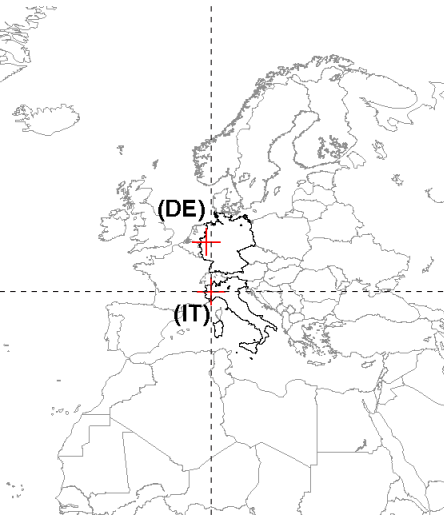
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© Thomas Herzog



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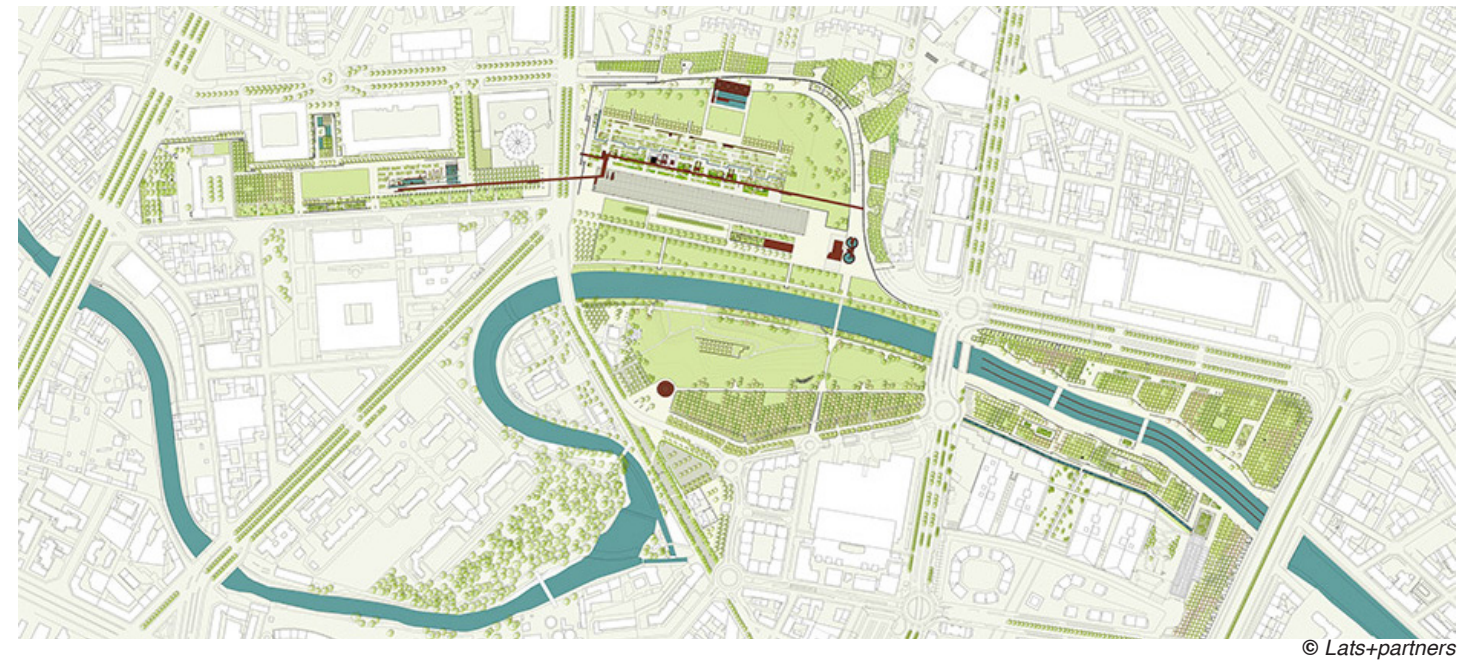
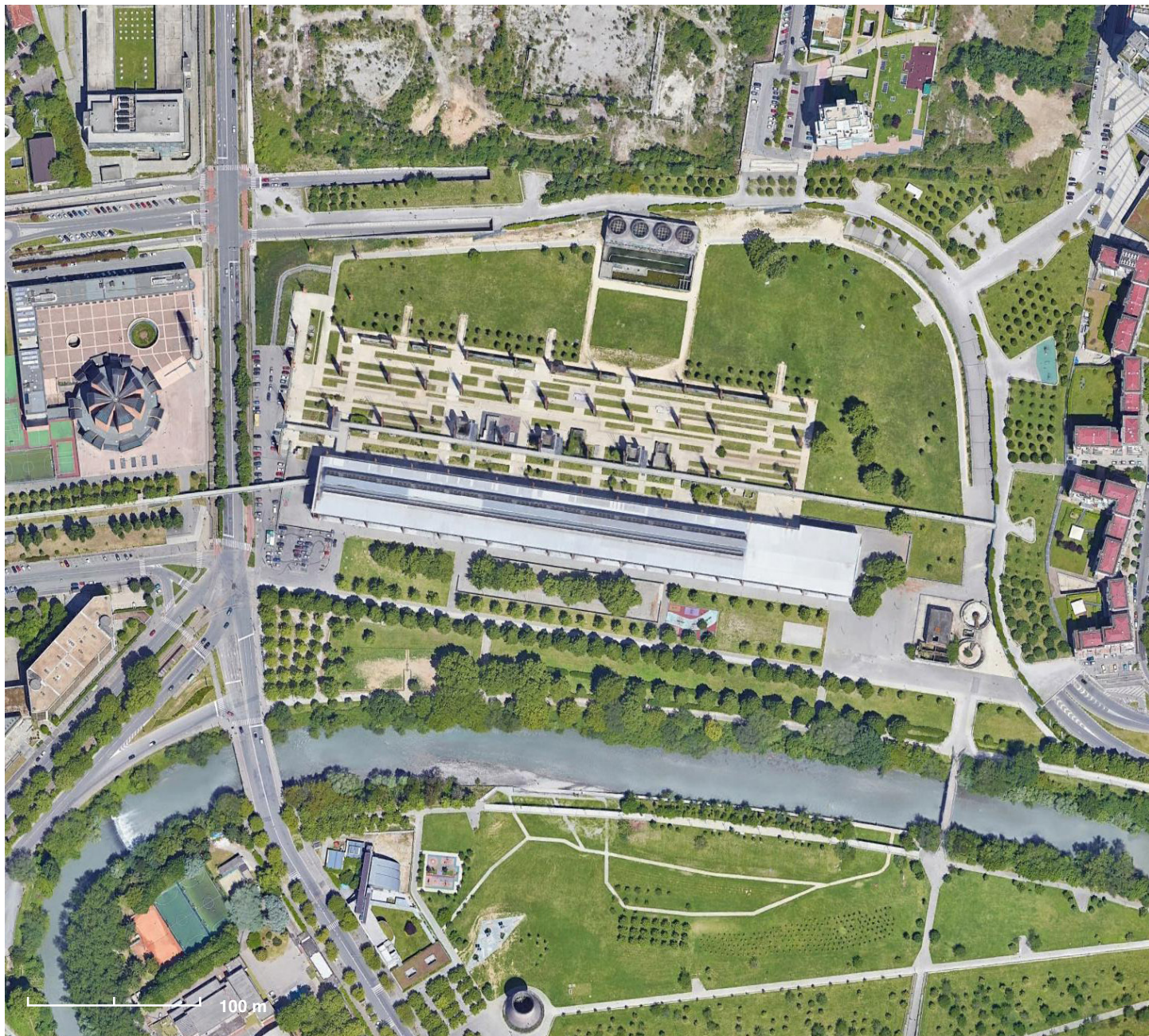


ARCHITECT: Latz+Partners
LOCATION: Turin, Italy
YEAR: 2004 - 2012
STATUS: Completed
PROGRAM: Masterplan - Park

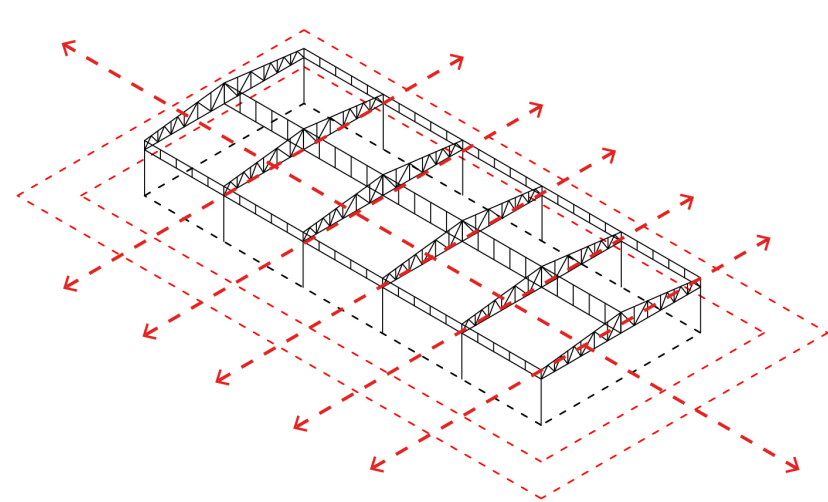


During recent years, Turin oriented its urban planning and development towards a model which could be able to reuse and complement its former industrial spaces dotted through the city. Comparatively to other European realities, the city, indeed, aims to use the former industrial spaces and buildings to host its new activities, rather than do not enlarge its urban fabric. The adaptive reuse and regeneration projects are tools to re-activate abandoned spaces preserving the collective memory of citizens, as well as to reduce the spread of grey space of the city, time and money. The main urban renewal programme was launched in the 1998 to regenerate those former and abandoned industrial area aiming for new uses. The planning followed the main development axis named as Spina where the inclusion of the industrial heritage promoted a new understanding of the city landscape which reflects the post-industrial shift of the society. The aim of the project presented in 2004 by Latz+Partner aimed to incorporate and improve the identity of the former industrial site to promote a local innovative park experience. The park is organised in five different areas which are differentiated according to the type and quality of the industrial remains. A series of ramps, paths, bridges and steps link the different zones and the adjacent neighbourhoods interspersed by different ruins and vegetation. The industrial skeleton becomes the host for the public everyday life of

the city as well as catalyst for special activities throughout the year. The principal idea behind the project, indeed, reveals the main action to preserve and reactivate the city’s notable tangible and intangible industrial heritage and to strengthen the local identity and the memory of the place. The park, therefore, results a successful example related to the preservation of the urban industrial legacy which is adaptively reused as an infrastructure to service the neighbourhood and the entire city likewise. The imponent steel structure of the previous Vitali steel mill represents the main urban park landmark and its dynamic epicentre. The flourishing endemic vegetation and the public life find their performative stage under this former industrial roof. The remaining structures of the former building hall, together with the existing roof, turn into a covered multi-functional event open space. A wide skybridge promenade passes adjacent the residential area proposed in the general masterplan. This innovative way to reuse the existing industrial legacy within the urban context not only provides open public space for its citizens, yet ensure a complete freedom in usage and temporary events still enhancing the collective memory of that distinctive industrial period.



this page
top: total masterplan for Dora Park
central left: the industrial ruins
become the main feature of the
surrounding park
bottom right: view from the
multifunctional covered space.



emptying

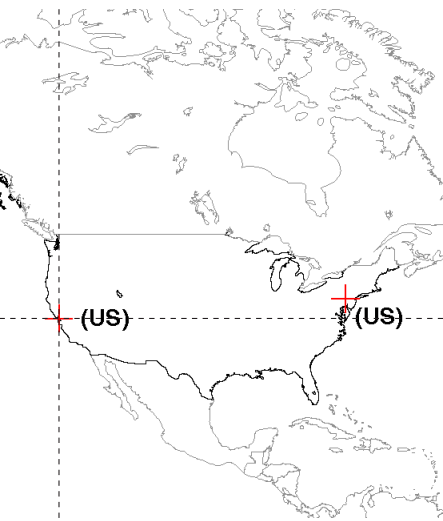


After the outer skin and large sections of the roof had been dismantled, the 30-metre high red steel columns now look like a “futuristic jungle”.

Lats+Partners



529 Power Station

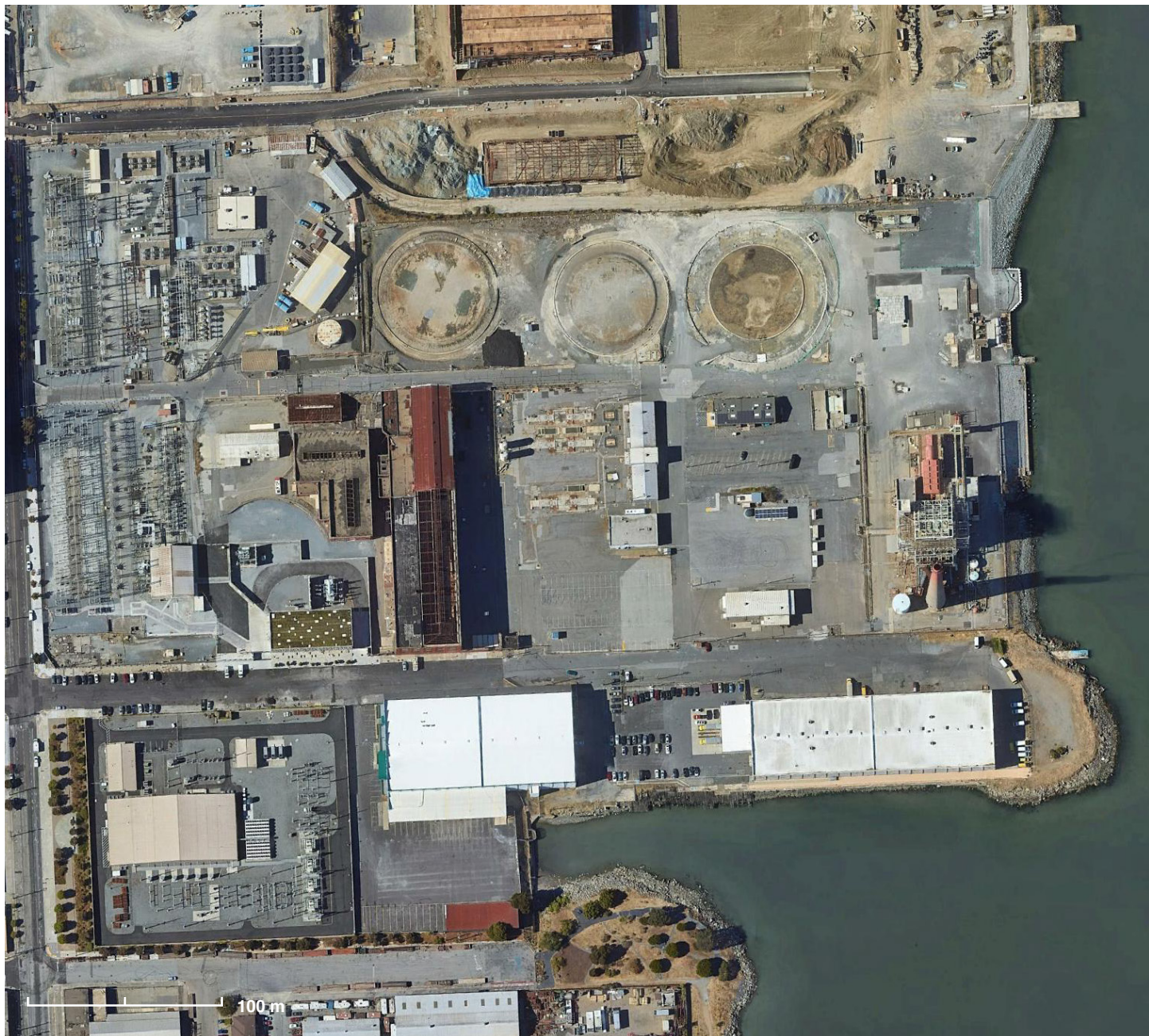


ARCHITECT: Herzog & De Meuron, Adamson Associates architects
LOCATION: San Francisco, United States of America
YEAR: 2019 -
STATUS: Ongoing
PROGRAM: Office, commercial



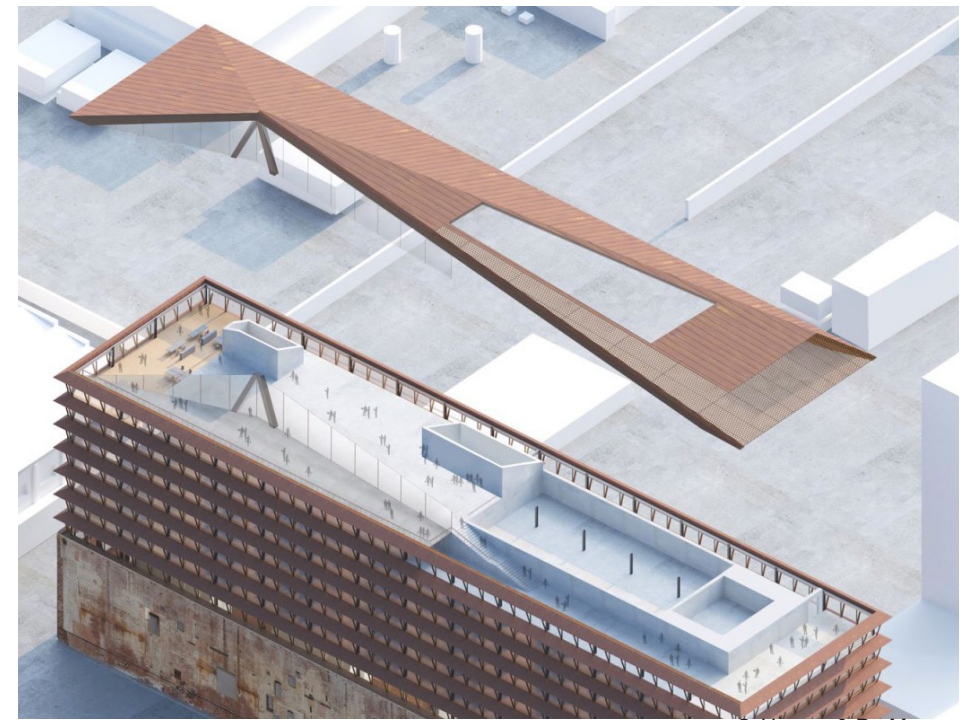
Located within a dismissed industrial park site in San Francisco, the 529 Power Station is a recent project signed by the Swiss architecture firm Herzog & De Meuron in collaboration with the local studio Adamson Associates Architects. The adaptive reuse project aims to transform the existing red-brick fabric also known as Station A, built at the beginning of the 20th-century, into offices and workspaces, safeguarding the original turbine hall space. The imposing foundations in concrete will support the covering new lightweight steel-framed addition on top of the existing hosting new programs related to offices and smart workspaces. The platforms which were previously used to support the machinery for power generation are designed to accommodate several gathering spaces which will overlook to the open Turbine Hall. Facade details together with innovative natural ventilation strategies and the efficient and light structure of the new addition will aim to supply toward the general goal of sustainability in repurposing this heavy industry monument. The prevailing material used, together with the existing bricks, will be a painted metal which match in colours with the existing along the lower volume. In addition, a new metal railing placed on the terrace at the fifth floor and low-iron glass for the opening with a copper or bronze shading devices for the new upper volume facade. The emphasis put on the contrast between the existing structure and fabric and the new

rested volume is fundamental for the success of the project, and helps the user who is inside or solely passing by the building to be reminded of the memory of the industrial past of San Francisco. The 63 metres tall redevelopment is going to provide around 35,000 square meters for new contemporary functions, of which 30,000 square metres will be addressed to host office spaces across the second floor and the twelfth floor. An addition of around 5,000 square metres will be designed across the underground and the ground levels. A dedicated parking for bicycles will be inserted on the site. The entire building footprint itself measures around 130 metres long, similar in dimension to an entire city block in SoMa and is inserted within a bigger general Potrero Power Station masterplan along San Francisco’s Dogpatch waterfront. The entire masterplan aims to connect the former industrial neighbourhood to the San Francisco Bay, enhancing the city’s industrial past through through the insertion of new programmes.



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this page
top: axonometric view of the roof lied on the new block
central left: elevation of the 529 Power Station. The new block sits on the existing, promoting a strong connection between new and old
bottom left: view of the project. The lower part of the new building remains almost solid, while the new added part appears more porous
bottom right: axonometric drawing of the building and the surrounding context



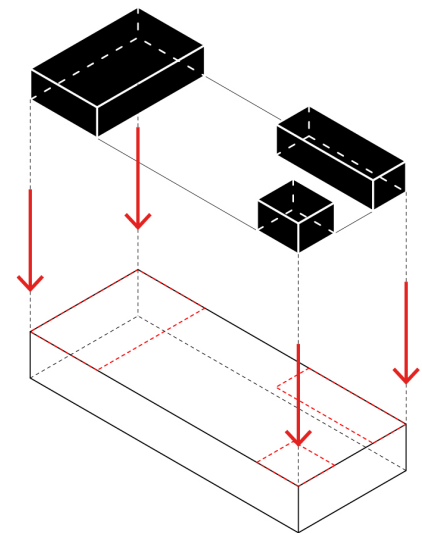
© Herzog & De Meuron



© Herzog & De Meuron

The reinvention of Power Station will bring new life to a significant building from the city's colorful past.

Jason Frantzen, H&DM senior partner



installing



© Herzog & De Meuron

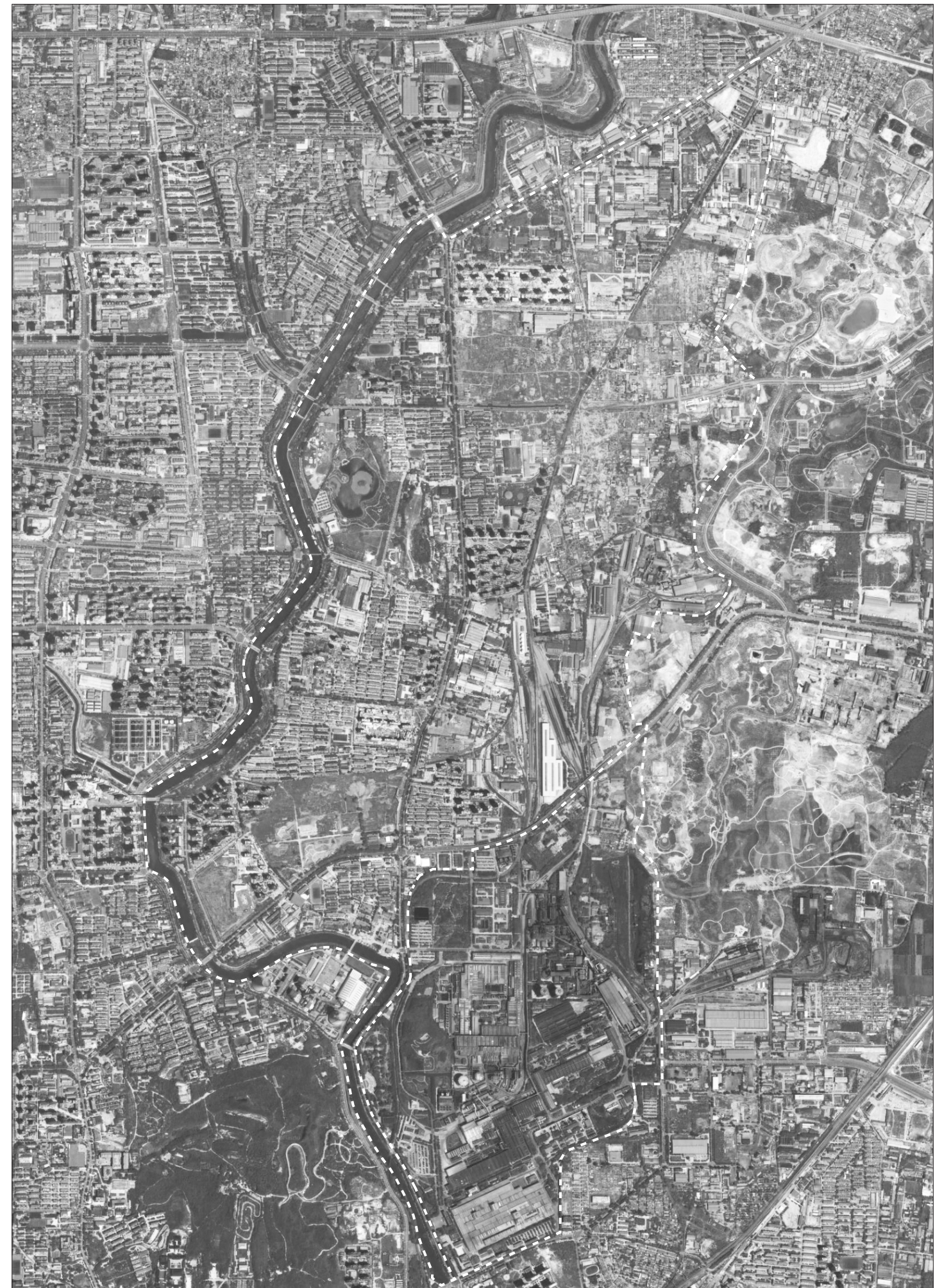


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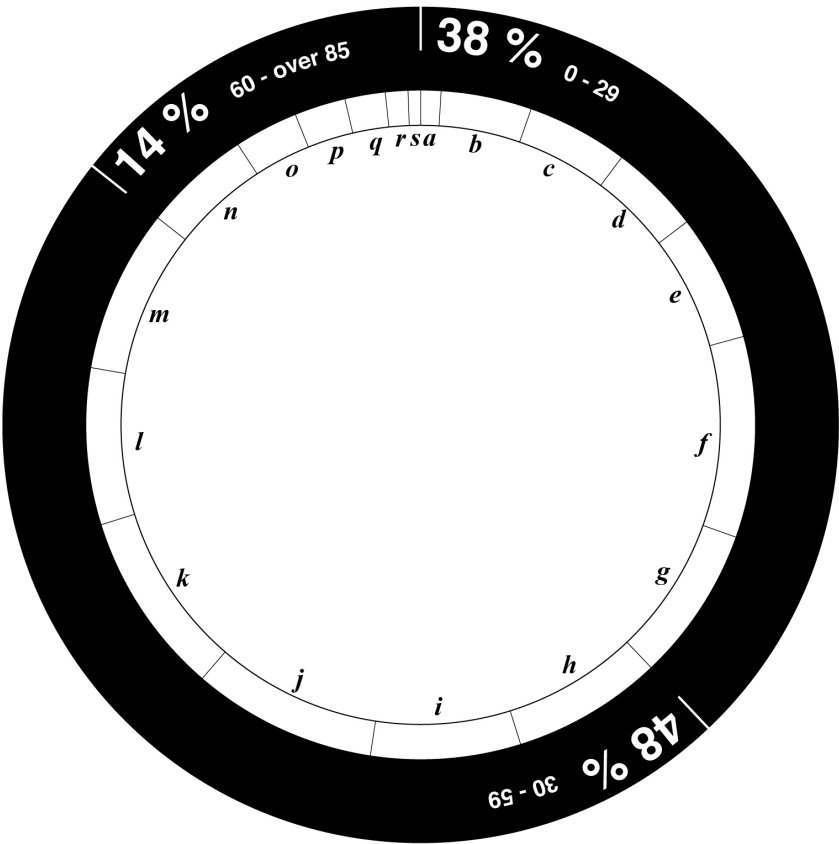


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5. Strategies for Post-Industrial Tangshan



Tangshan is a city remarkably known for its industrial development and the East side of the Dou river is an incredible showcase of it. Extending for an approximately area of 11 km², the district lies just next to the urban core area of the city, between the river infrastructure on the West and the already-in-construction Dong Hu Forest Park on the East.



a_under 0	0,98%
b_1-4	4,38%
c_5-9	4,90%
d_10-14	4,37%
e_15-19	6,12%
f_20-24	9,70%
g_25-29	7,47%
h_30-34	7,26%
i_35-39	7,23%
j_40-44	8,91%
k_45-49	8,86%
l_50-54	7,56%
m_55-59	7,88%
n_60-64	5,19%
o_65-69	3,08%
p_70-74	2,47%
q_75-79	1,95%
r_80-84	1,09%
s_over 85	0,60%

7.717.983 inhabitants



5.361.775 with education

1.111.717 university education level

1.209.047 high school education level

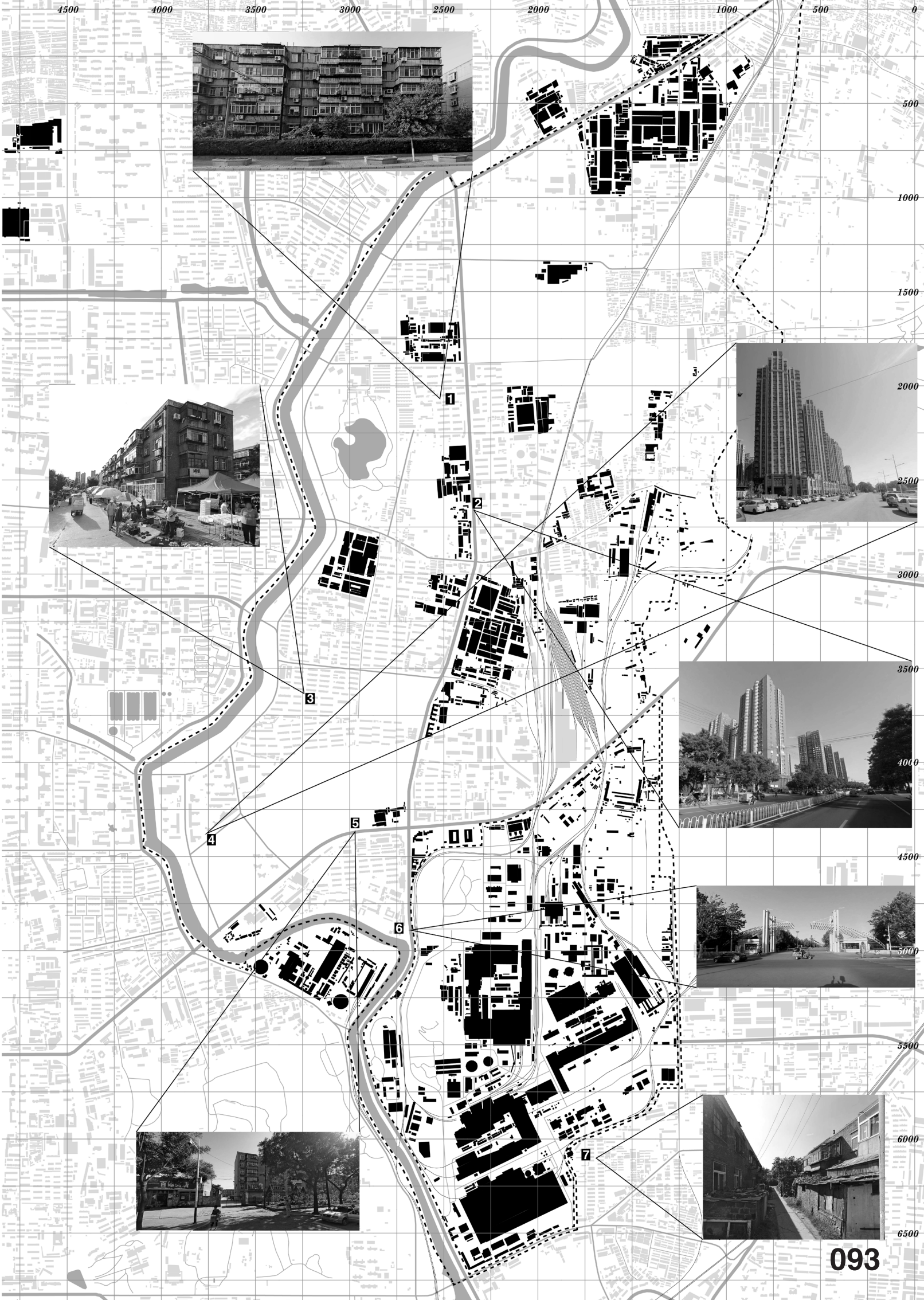
3.041.011 junior high school education level

69,47%

14,40%

15,67%

39,40%



5.1 Introduction to the site

Site choice criteria

According to the aim of this work of research and in line with the Tangshan masterplan, the East side of the Dou river best suits the requirements.

Firstly its intrinsic nature and former aim of development produced a large scale proper industrial district which is nowadays facing industrial relocation and abandonment according to the transition to a post-industrial society and in vision of the main government guidelines on a sustainable urbanism.

As a consequence of this practice, many industrial relics left on the ground represent emerging spaces awaiting for a sustainable redevelopment. The reuse of these former factories, indeed, could not only bring economic and environmental benefits to the city and its inhabitants, but also it can foster the importance of the industrial heritage and provide new public spaces fostering the well-sought sense of place.

Secondly, major problems concerning the past long-term activity of industrial spaces such as environmental pollution

and ecological degradation are hints for a comprehensive future development which could re-establish the eco-system and adaptively reuse the former industrial land for innovative public amenities and spaces.

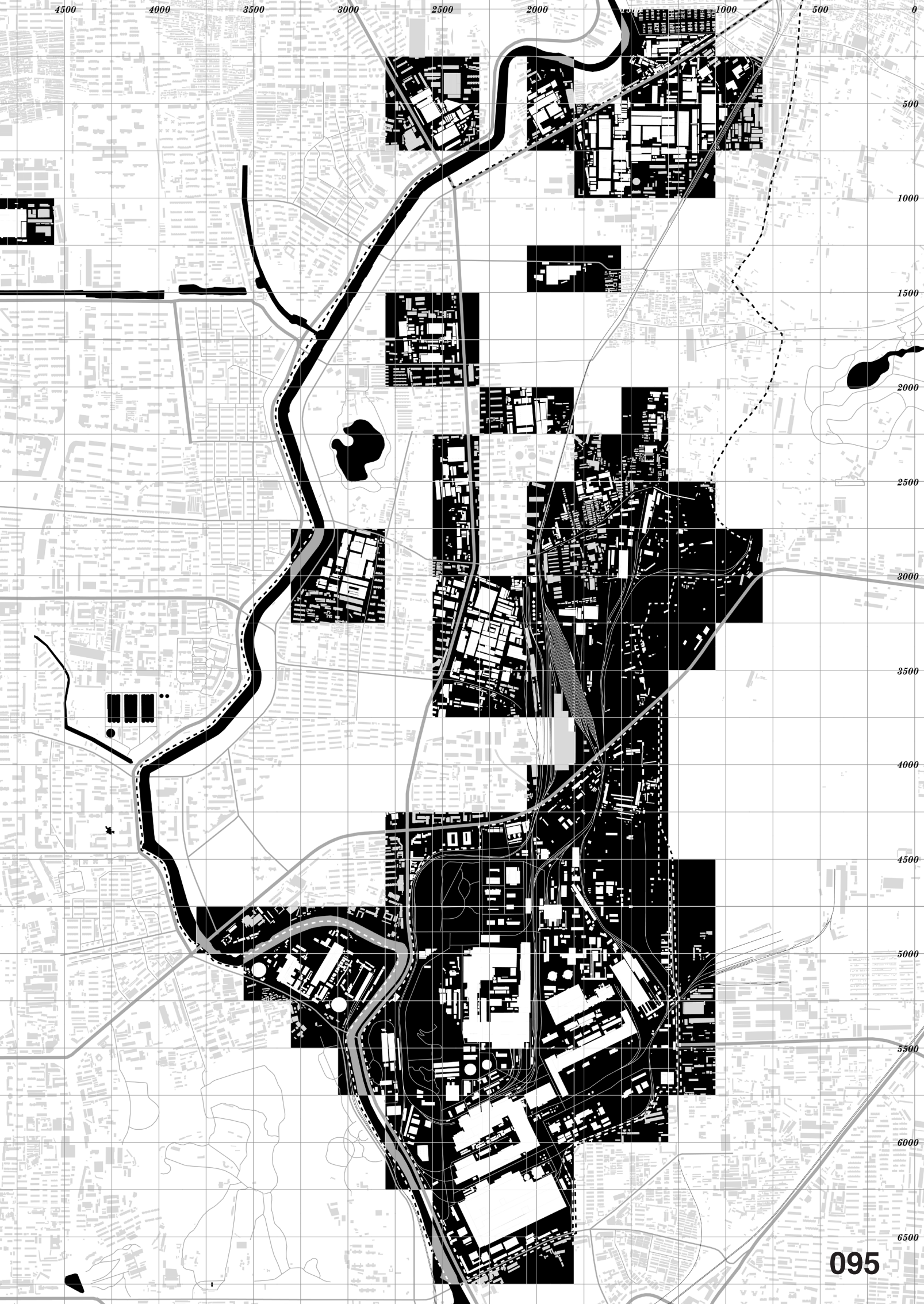
Thirdly, the proximity to the city centre might be a challenging factor as well as a possibility to reactivate the neighbourhoods with innovative and public activities open to the rest of the city.

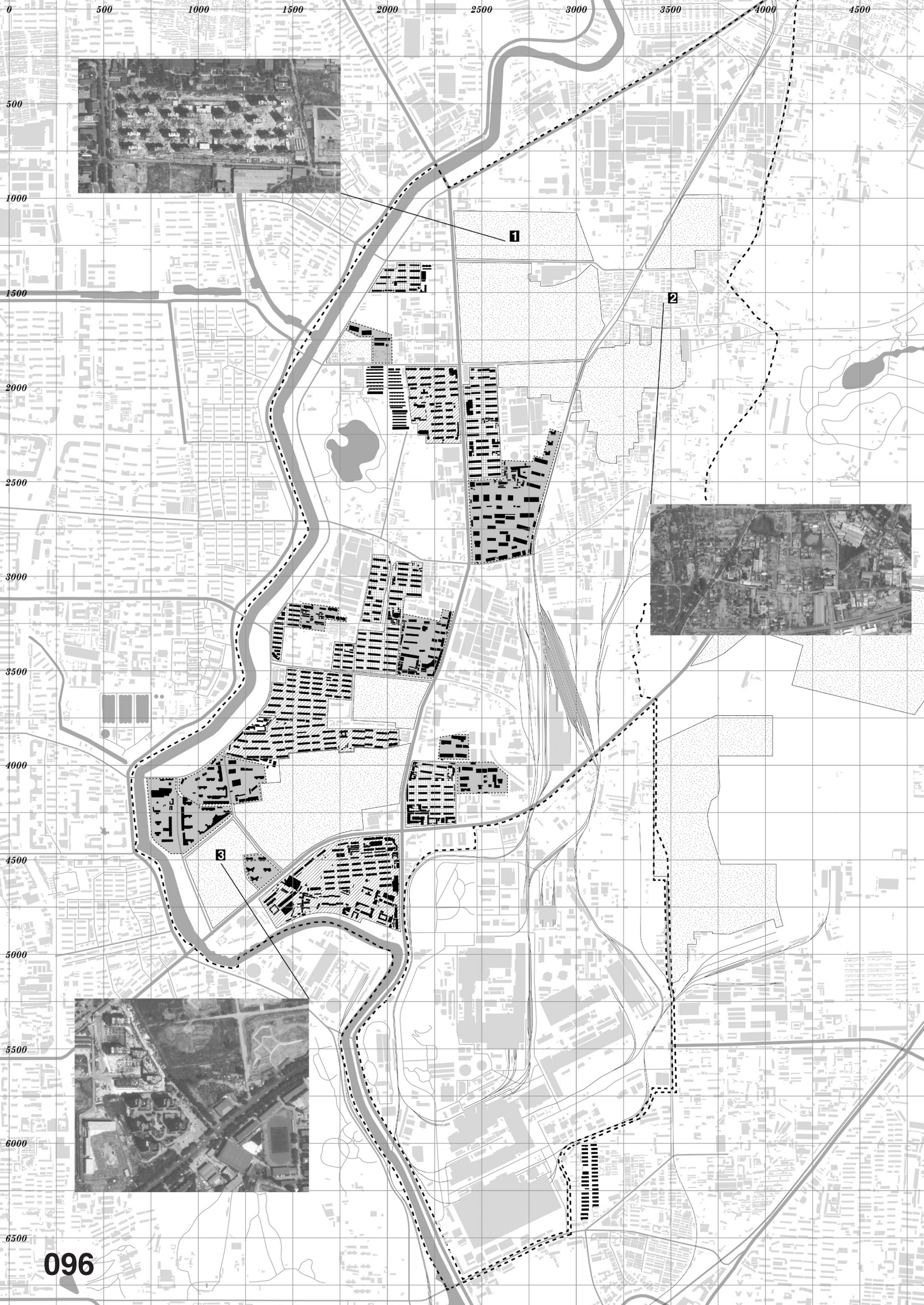
Current layout analysis

According to GIS data and satellite analysis, the site is in the middle of its transitory process, well expressed also by construction sites and demolished areas.

The major part of the housing typology present within the district appears as a patchwork of residential building blocks agglomerations mostly characterised by a monotonous east-west oriented design, a scarce presence of public open spaces and, often, segregated between each other through a recognisable, but not always visible, boundary. The peculiarity of this typical Chinese urban landscape emerged during the socialist period, along which the entire society was organised in danwei (work unit). As a spatial manifestation of the societal structure, these

Dou river East side - industrial footprints





work units appear enclosed and usually gated, aiming to reduce consumption and usually providing a generational housing and job placement. Especially because of the urgency for rapid housing constructions after the 1976 earthquake, indeed, numerous danwei-like not gated and low rise complexes were built within the district.

However, new residential areas, characterised by the conglomeration of high rise towers, are adjacently built to small and large scale industrial extraction sites and buildings, as well as to the existing danwei compounds present in the site. This new residential typology can be considered as the physical expression of the general directions undertaken by contemporary Chinese real estate.





On the contrary, kilns, furnaces and other industrial facilities are emerging as real landmarks within the site, as a representation of the real identity of the site.

Two main streets cut the district almost perpendicularly from north to south and from west to east, respectively Gang Táo lù - Bīn hé lù and Jiàn huá dōng dào. The north-south axis, due to the extension mostly in vertical of the site, acts as a major spine which binds all the parts together and to which secondary roads are intersected.

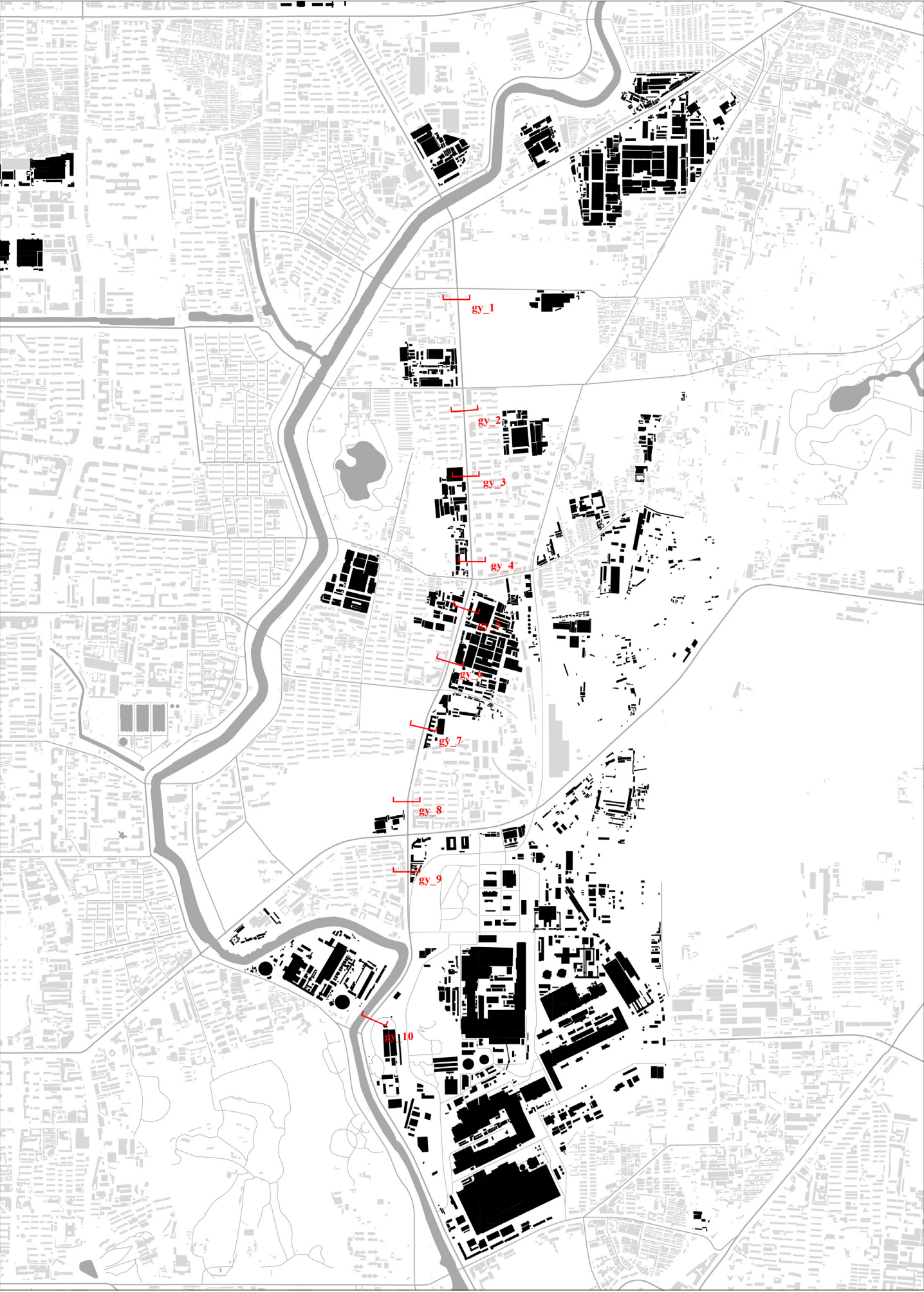
As an adding potential value

to the site, a railway track crosses the site from north to south linking extraction sites and processing factories to other major cities such as Beijing or Tianjin.

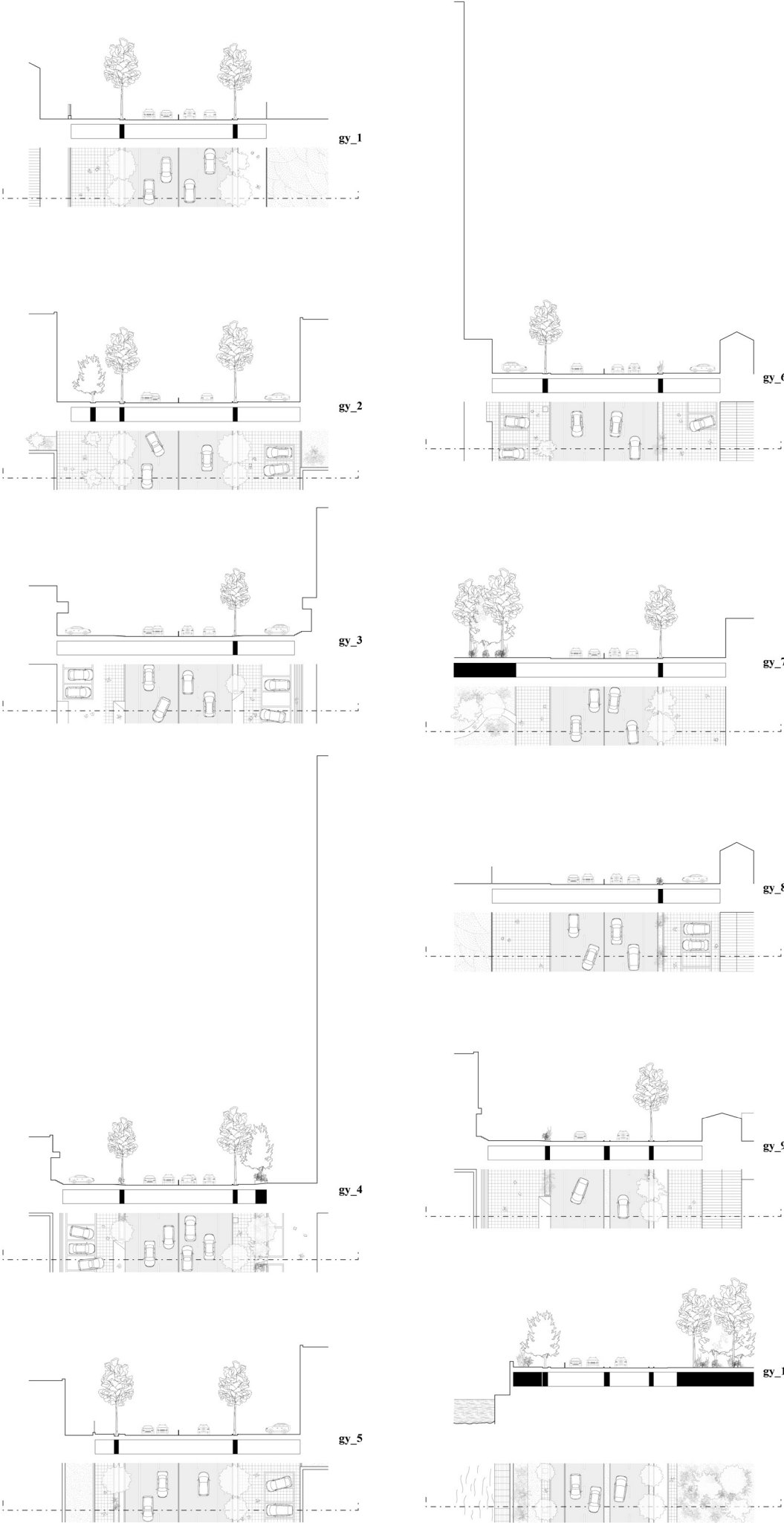
The presence of major public spaces in the entire area is scarce and consists with the Porcelain Park laying on the east bank of the river and located on the north-west side of the site, and a green belt which skirts the site along the Dou river on the east side, connecting the Porcelain Park with Dachangshan Park on the west side of the river.

-  *sustained danwei housing*
-  *danwei housing remnants*
-  *contemporary residential area*
-  *developing area*

Dou river East side - residential typologies

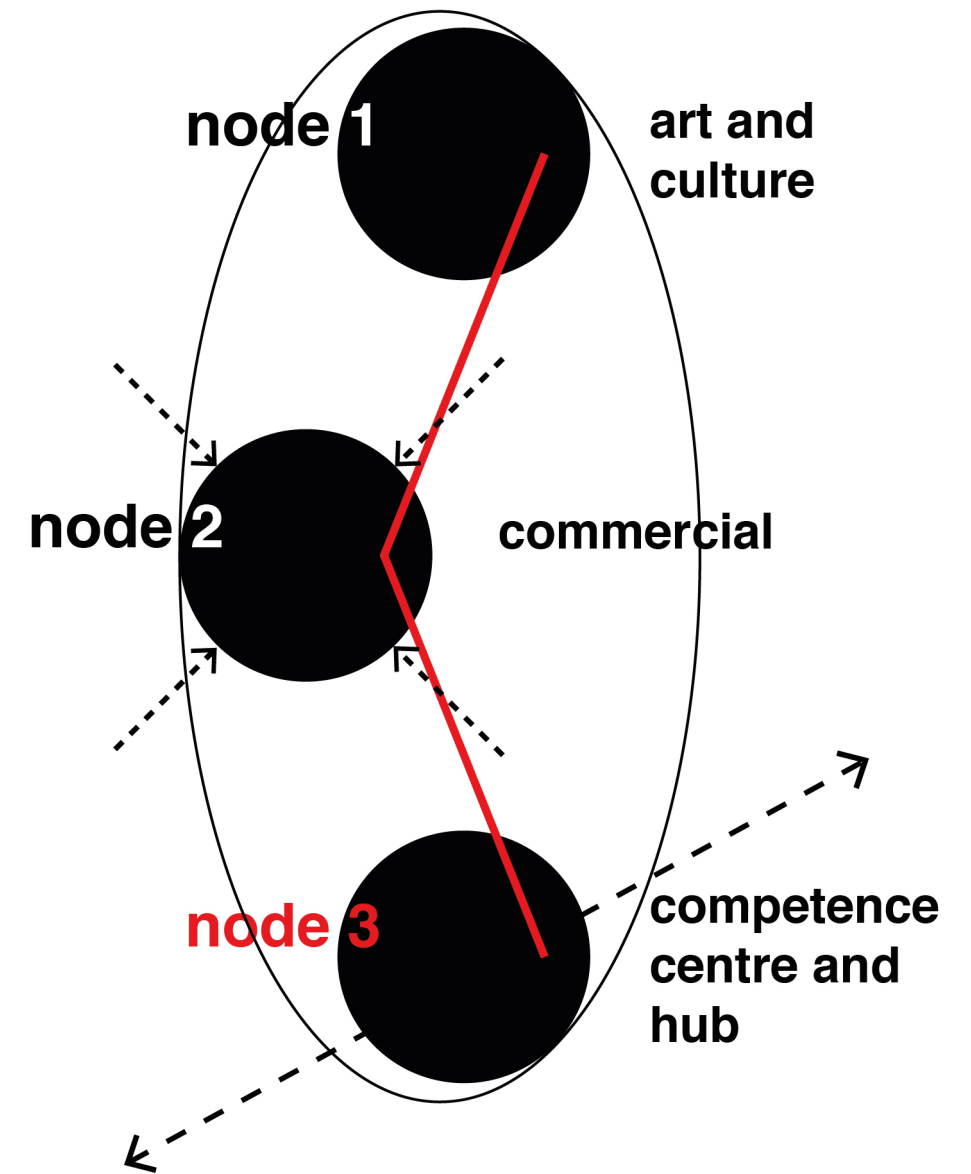


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5.2

L: New centralities

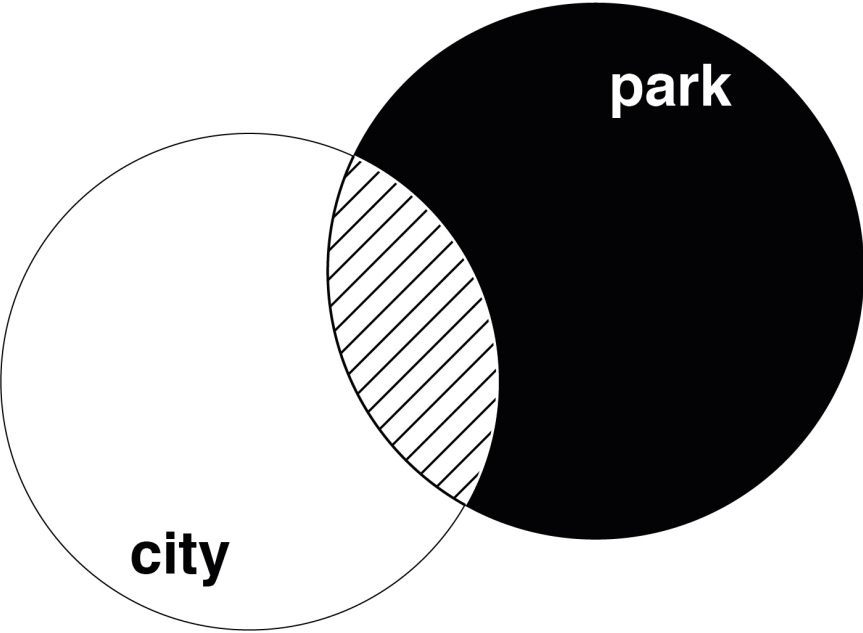


2017).

Despite their relevance on the economic and urban development within the Chinese context, the industrial parks built along the Eighties and Nineties were characterised by homogeneous planning and urban functions, other than started to feel the various contemporary strains within the society. Together with the new shift from a socialist economy towards a new proper Chinese market oriented one and the ongoing ICT industry development, indeed, these industrial parks, which were usually considered a national pride symbol, were not able to respond to the contemporary new demands. Hence, the research and renovation of industrial parks in China has become nowadays a central topic within the contemporary debate about the city planning,

During the second part of the Eighties, China went through a flourishing period related to the planning and construction of numerous industrial parks across the country. In order to expedite and promote industrial development, numerous industrial parks were built during that period.

Thereafter, these newly constructed industrial parks across the country became among the most influencing drivers within the national economy and brought a considerable contribution to the country's urban and economic development (Zhao, Bi, et al.,



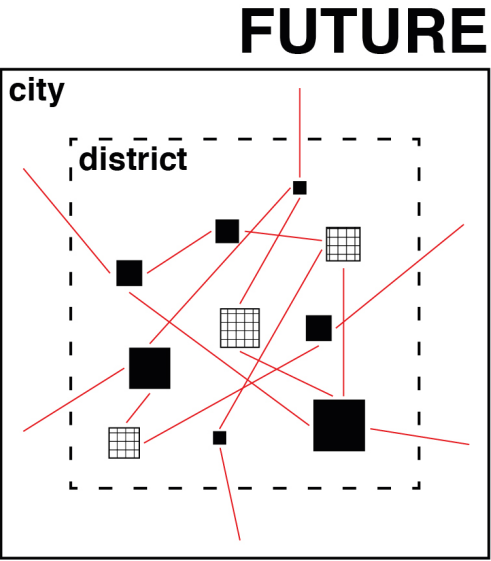
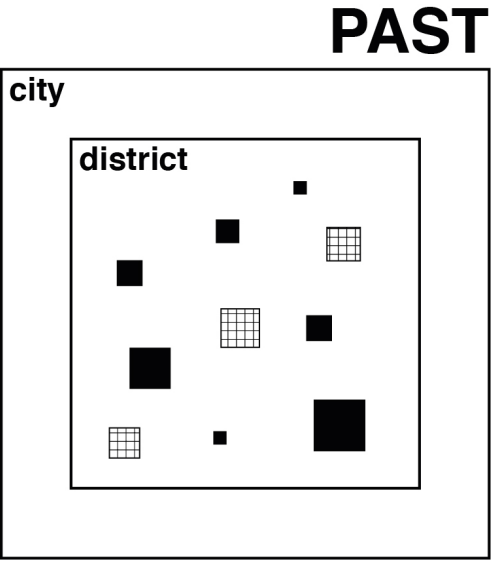
accompanied by the promotion of new concepts that deal with the integration of the city and the industry in contemporary urban settlement (Luo, Yin, et al., 2011).

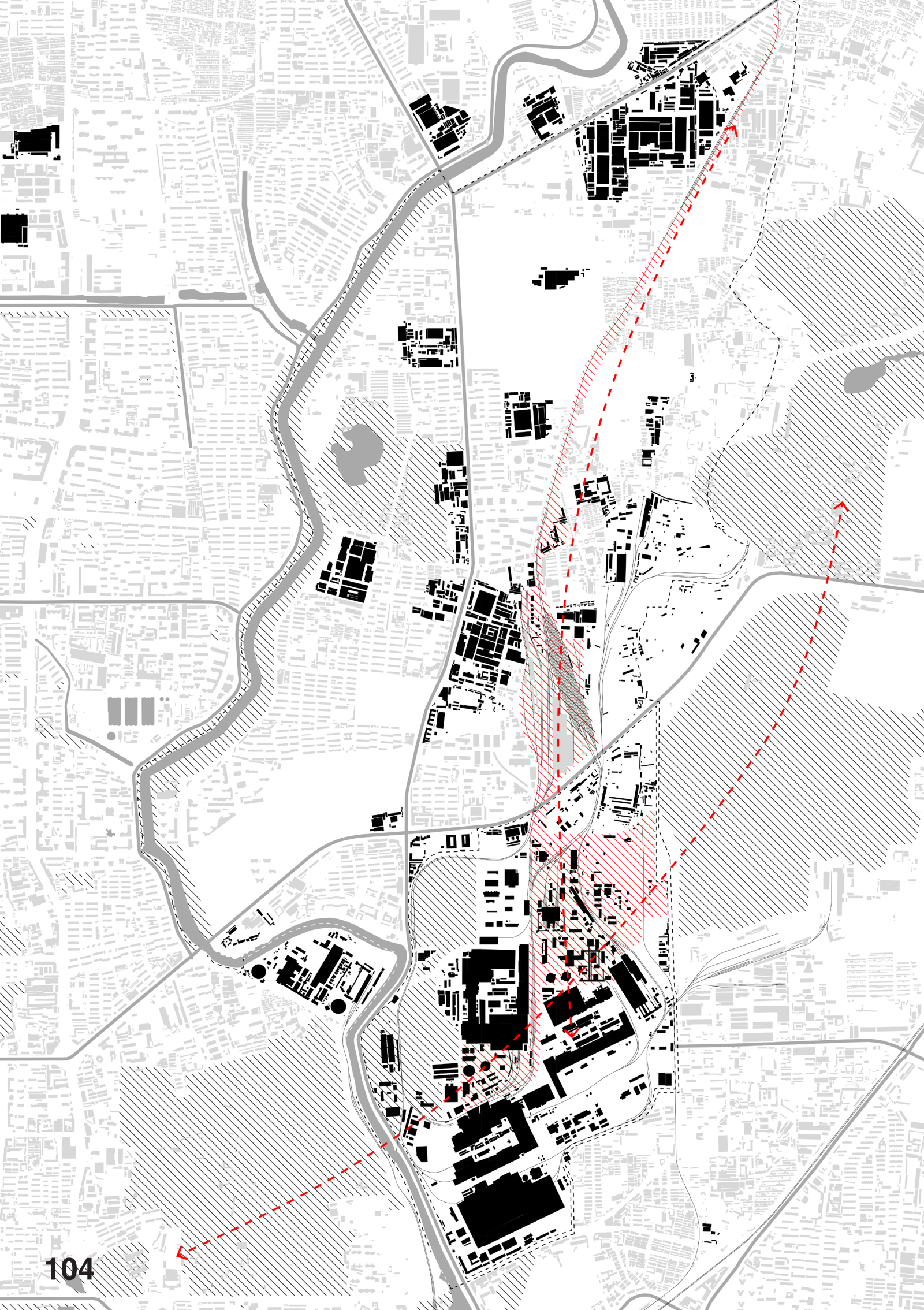
As sustained in previous paragraphs, the city of Tangshan is now facing its turning point regarding the urban transformation.

The general shift and move towards the post-industrial city, society and economy, as well as the relocation of industrial production sites outside of the city in vision of a more environmentally sustainable urban development, generate a massive challenge and opportunity to review and then promote an innovative model of urban development. Within this scenario, the actual industrial and production buildings and infrastructure might be evacuated and leave the city with

an abundant number of areas awaiting for development.

However, the promotion of the well-established real estate development might not be the suitable choice, especially in a district like the aforementioned Dou river east side. The peripheral location, enhanced by the physical separation of the river from the centre, and the scarcity of social and public spaces and services for its inhabitants, do not depict the best urban platform where the conventional real estate housing development might be a sustainable choice. This model of development, actually, will mostly produce a monotonous dormitory area and provide it with a characteristic patchwork pattern. A new direction on the target and methodology is needed to bear long-term economic, social and environmental benefits to the





Dou river East side - vision for the main green infrastructure

8. The skilled middle class population started to move on the outskirts of the cities as attracted by suburban areas higher life standards. Consequently, this mass movement brought to the development of a series of supporting facilities as commercial, tertiary industries as well as offices and administrative facilities, reducing the commute distance from the residential area

district and the city of Tangshan. As a bearing principle of this work of thesis, the adaptive reuse of these buildings - once become obsolete (Abramson, 2016) - is considered the best practice approach for the changing society's demand, promote the re-birth of the district (Lami, 2020) and the implementation of a new centrality within the urban periphery of Tangshan.

However, as sustained by scholar G. Setti, it is not merely the buildings that need to be recovered and repurposed, but the land itself. The word "land" is interpreted as a fragile complex system of networks and services, rather than its literal surface significance, that needs to become stable (Setti, 2015). Accordingly, to guarantee the best productive scenario and pitch a new centrality to the city of Tangshan, the district needs to properly take in new networks and services along the reuse

process. The former industrial buildings need to be taken in consideration with the supporting land, considering them as a complementary part of a major system, rather than separated islands.

Considering the concept of Edge City developed by J. Garreau at the beginning of the Nineties within the North-American context, the intent of the action on the large scale is to suggest a new prototype for new urban centrality on the periphery of a city. Accordingly, Edge cities might be intended as urban complexes which encompass several urban facilities as residential, employment, public transportation and recreational spaces (Garreau, 1992). However, while the proper Edge cities rose from the residential suburbanisation process⁸, primarily in the US along the Fifties and Sixties (Zhao, Bi, et al., 2017), the action on the



Dou river East side district take into consideration and reuse the industrial palimpsest to promote new economies, implement new urban services and prompt a new kind of urbanity in a district originally characterised by one ruling economy and the presence of dormitory residential buildings in the surrounding.

On the practical side, the action takes into consideration the hypothetical future where all the secondary industrial activities abandon the site and leave the district with empty buildings awaiting for development. Three main nodes are highlighted on the northern, central and southern side of the district and then connected through the reuse of the actual cargo rail line which limits the district on the eastern side.

The northern node (node 1) is the former first porcelain factory present in Tangshan and, as a fundamental part of the society's intangible heritage, it needs to be preserved. However the preservation does not mean the static conservation or its nostalgic "musealisation", but the adaptation of its practices and spaces to the new society needs and market demand. Consequently, node 1, focusing on art and culture, proposes new spaces where the production of porcelain can meet the educational and recreational purposes, making contemporary private practices and some

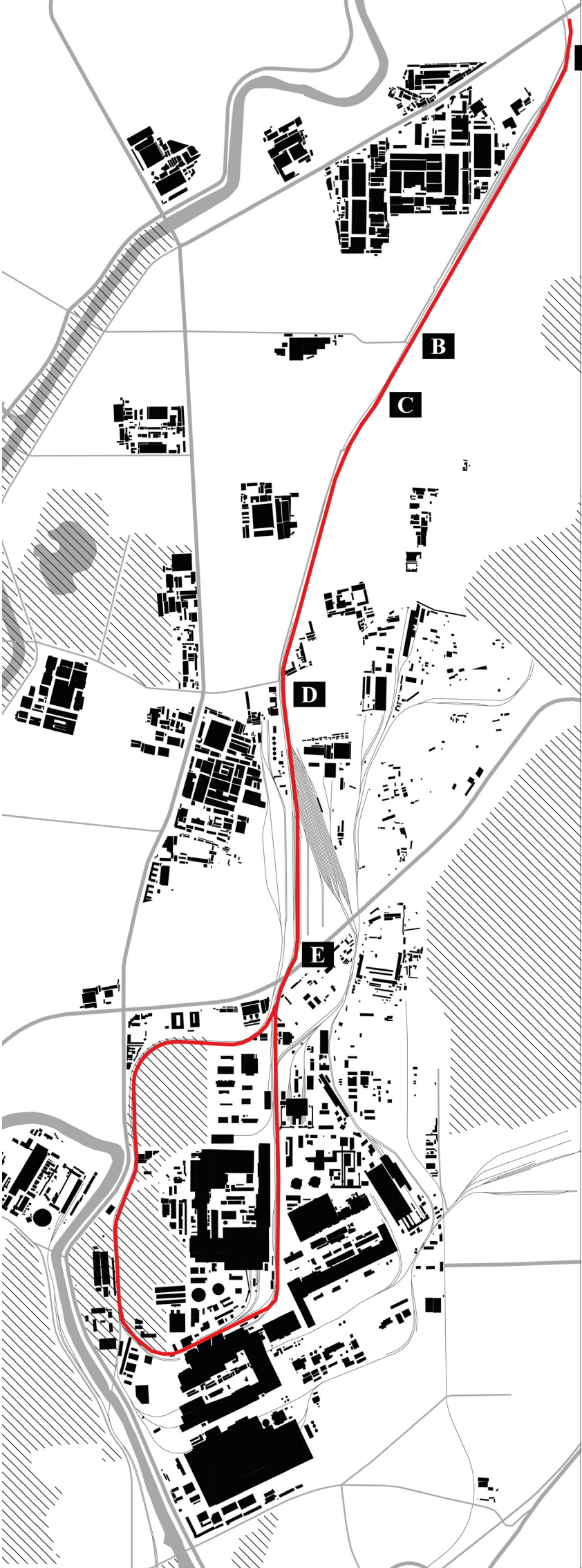
spaces open and available to the public.

The potentiality of the central node (node 2) lies in its strategic location. As situated in the middle of the district it will host mostly commercial activities which will be easily accessed by the surrounding residential communities.

The southern node (node 3) comprehends the Tangshan steel factory and the thermal power plant on the west bank of the river. Due to its strategic location, this node does not only represent the biggest in expansion among the identified three, yet it also represents the contenting ring to connect the main green infrastructure of the city from the west to east side. It will represent a new centrality within the urban context and therefore will host diverse functions which will integrate the public and the private spheres. The new mixed node will host innovative functions related to the recreation, education and employment of citizens and much more.

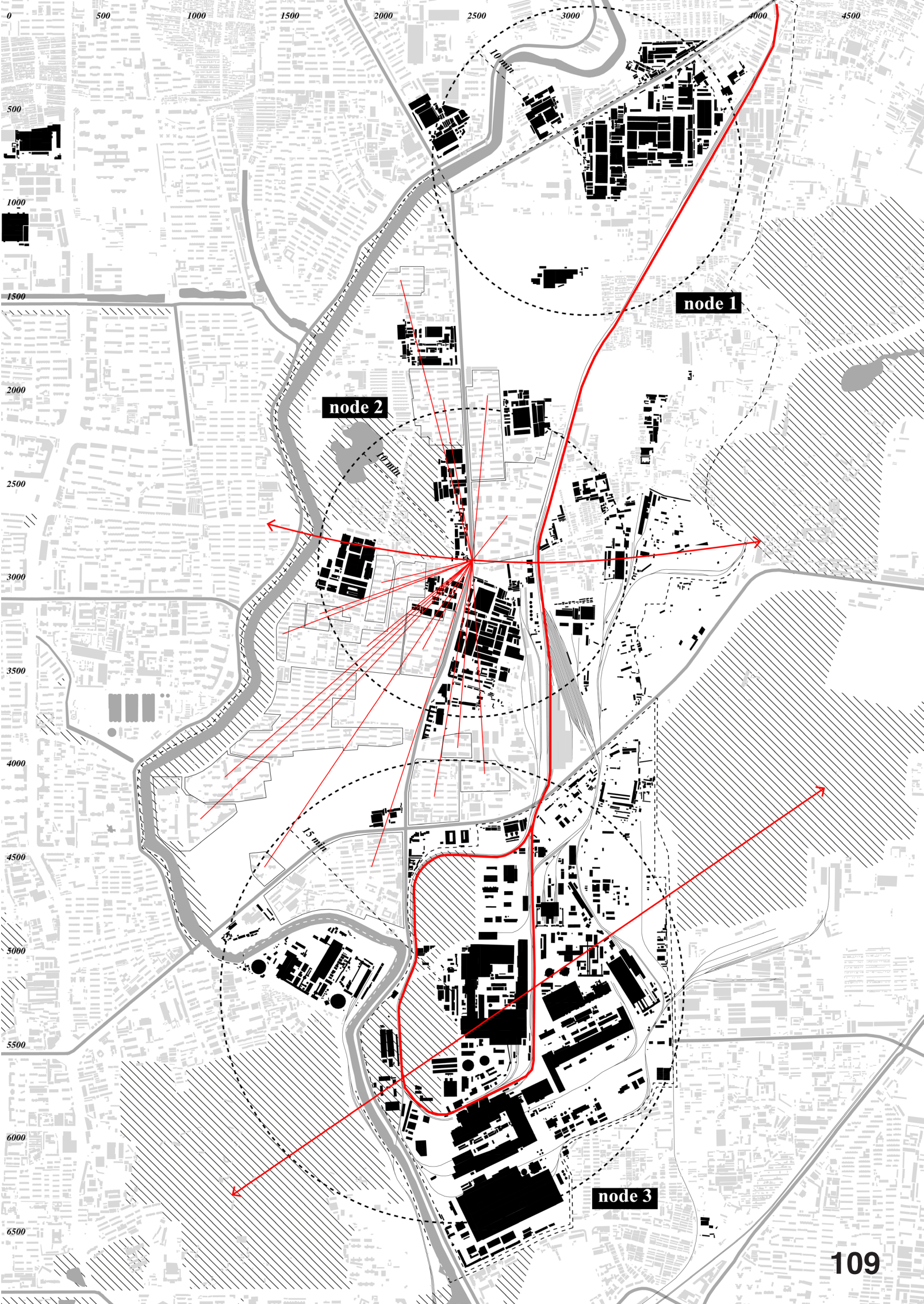
To support the integration amidst the three nodes on the large scale, the repurposing of the dismissed cargo railways, as innovative and additional urban transportation infrastructure, is laid. The major part of the urban railwaysystemhasbeendesigned and built together with the city which hosts it, and therefore the reuse and transformation of

Dou river East side - reuse of the former railway track



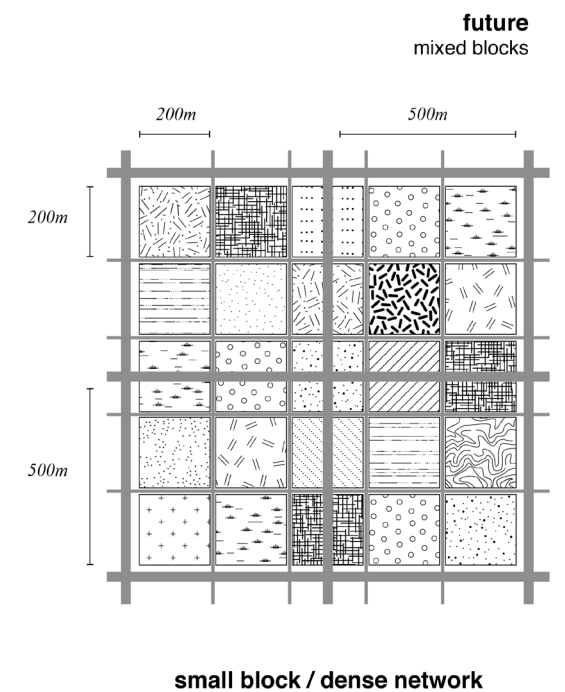
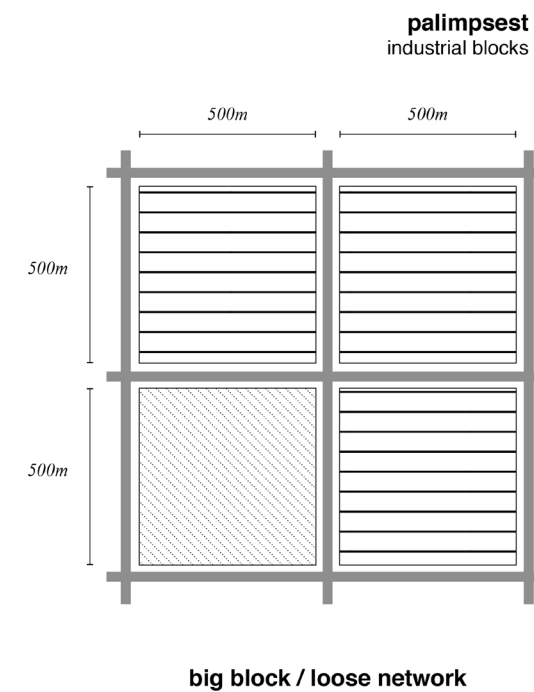
those abandoned paths into new rail transit systems and a major linear park is highly promoted. In addition, the reuse of the abandoned tracks plays a positive role enhancing the economic development and improving the liveability of the neighbourhood. The reuse of the tracks might take into consideration several factors throughout the economic, environmental, and social spheres (Dai, Xia, et al., 2020).

Dou river East side - comprehensive strategic master plan



5.3

M: Frag- menting the block



Within the contemporary urban planning and development discourse, super blocks and their affiliated loose road networks are one of the main prevalent issues affecting Chinese contemporary cities (MOHURD, 2016). These super blocks are usually contained within considerable dimensions ranging from 300 up to 500 metres interspersed by wide section roads corridors. These, furthermore, are usually enclosed by a combination of boundaries with different degrees of public accessibility (Kan, Forsyth, et al., 2017). Accordingly, this layout, proper of high density cities, is interpreted as mainly auto-centric, and thus often reported as pedestrian and bicycle unfriendly. Hence, residents living inside super blocks usually experience scarce transit accessibility, and unpleasant travel distances to walk or cycle.

Aiming to address this inconvenient issue, a relevant number of scholars and planners are paying more attention and moving towards the development of a more ecologic road network highlighting denser fine-grain grids of smaller scale roads, with smaller scale blocks and more

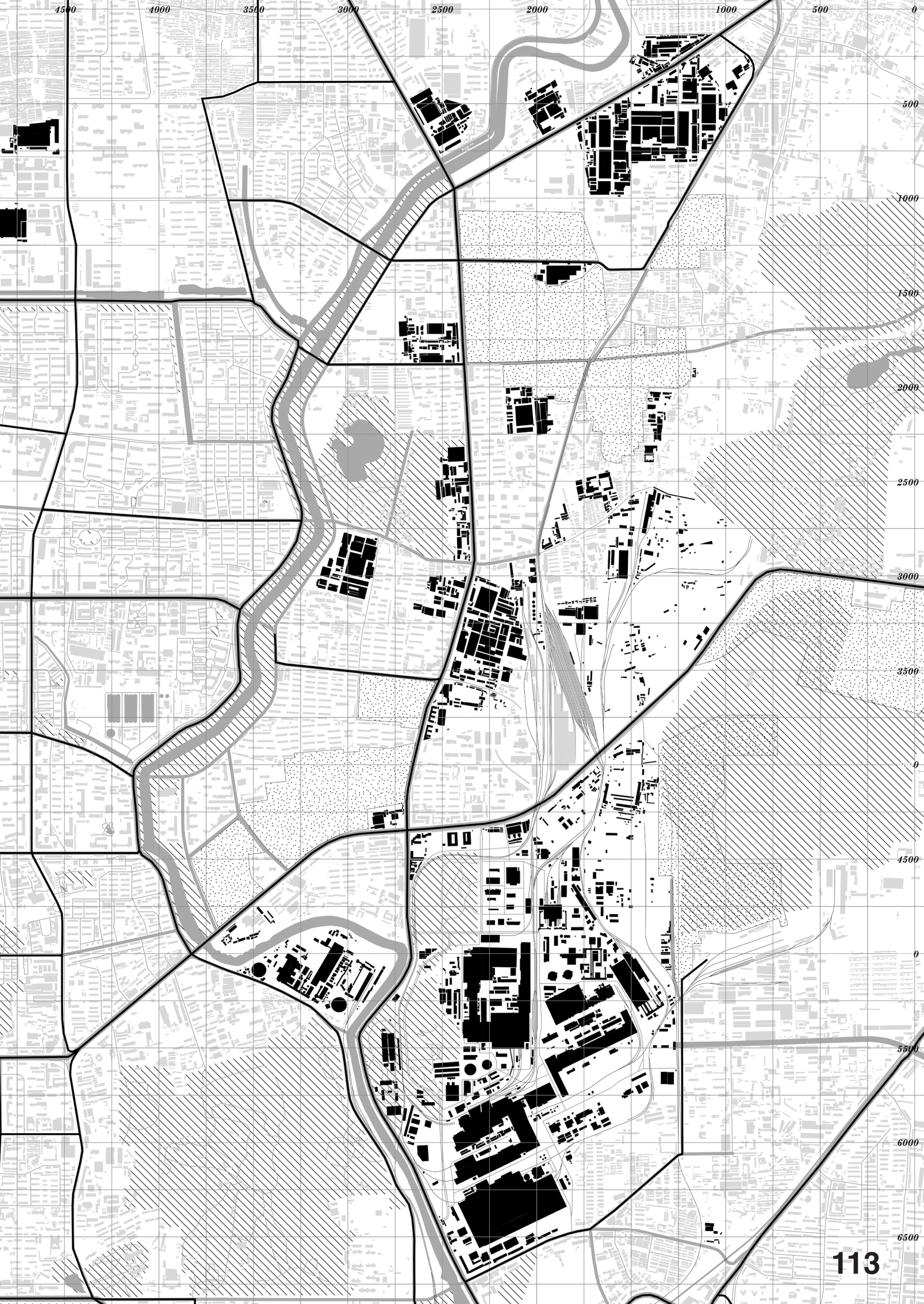
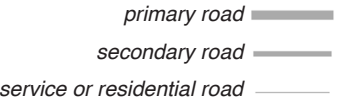
proposals are addressed to be more pedestrian and bicycle oriented (Calthorpe, Yang, et al., 2014) (Wang, Li, et al., 2015) as a strategy to provide the built environment a more human scale.

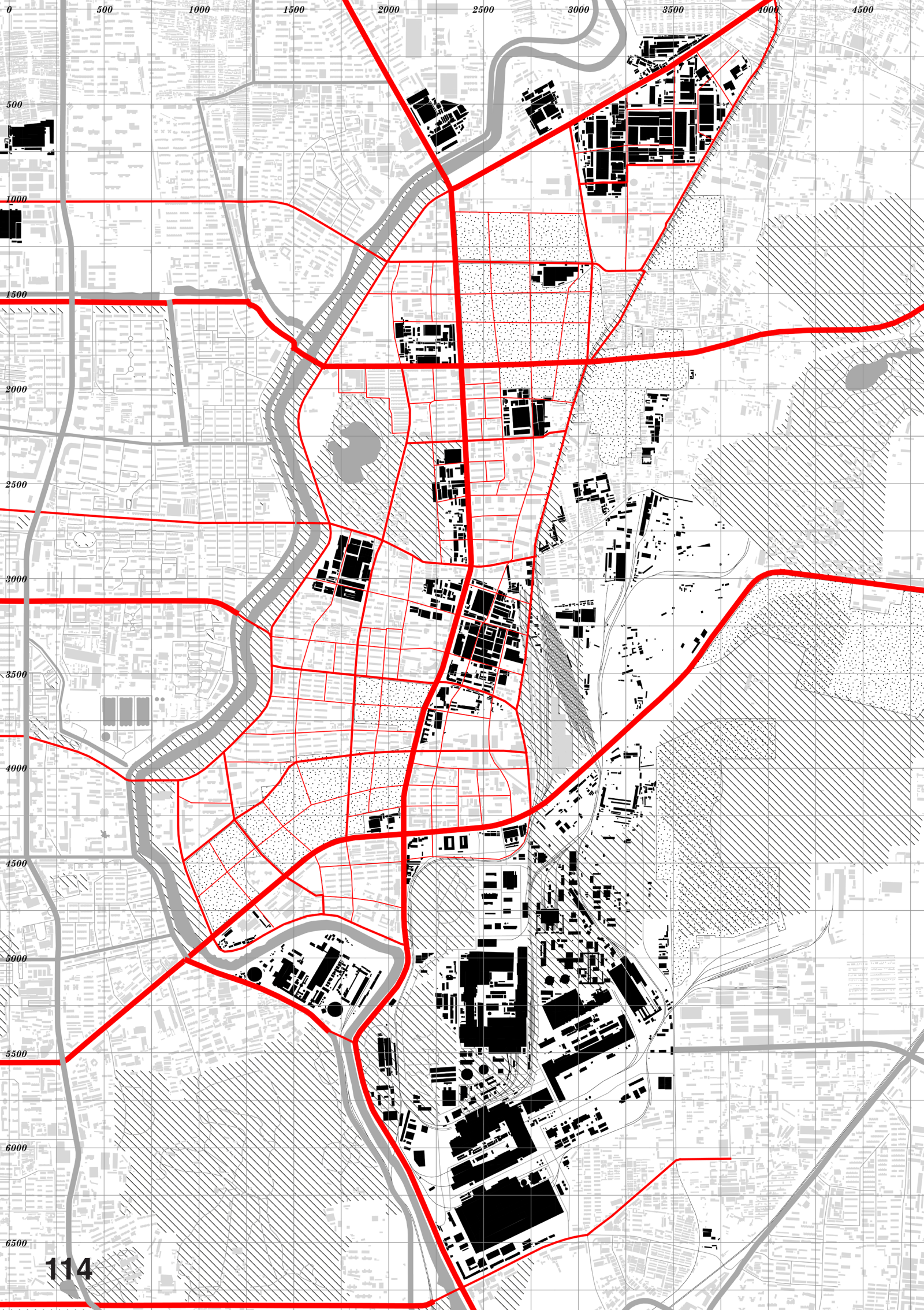
Already within the NYC context along the 1960s, Jane Jacobs stated that smaller blocks could facilitate more social interactions and promote livelier neighbourhoods. As reported within the introduction of chapter nine in The Death and Life of Great American Cities (1961) “Most blocks must be short; that is, streets and opportunities to turn corners must be frequent.”. She advocates how the production of smaller blocks might benefit pedestrian choices possibilities and, therefore, enlarge interaction and commerce opportunities (Jacobs, 1961).

Peter Calthrope shares the concept of minimising the dimensions of urban blocks and neighbourhoods to prioritise pedestrian movements rather than cars’ reliance (Calthrope, 1995), promoting thereafter one of the main principle for low-carbon urban planning and design (Calthorpe, Yang, et al., 2014) which could emphasise the human-scale layout and control the traffic related carbon emission impact (Luo, Wang, et al. 2011) (Wang, Li, et al., 2015).

Since the increasing land use for roads within cities will

Dou river East side - existing road layout





proposed primary road
proposed secondary road
proposed service or residential road

Dou river East side - vision for the new road layout

decrease the government income from public-private land transfer and boost public construction costs, Wang, Li et al.'s work of research (2015) also argue that innovative cost-sharing mechanisms between public and private sectors might restructure the costs and create the potential optimise cost-benefit scenario (Wang, Li, et al., 2015).

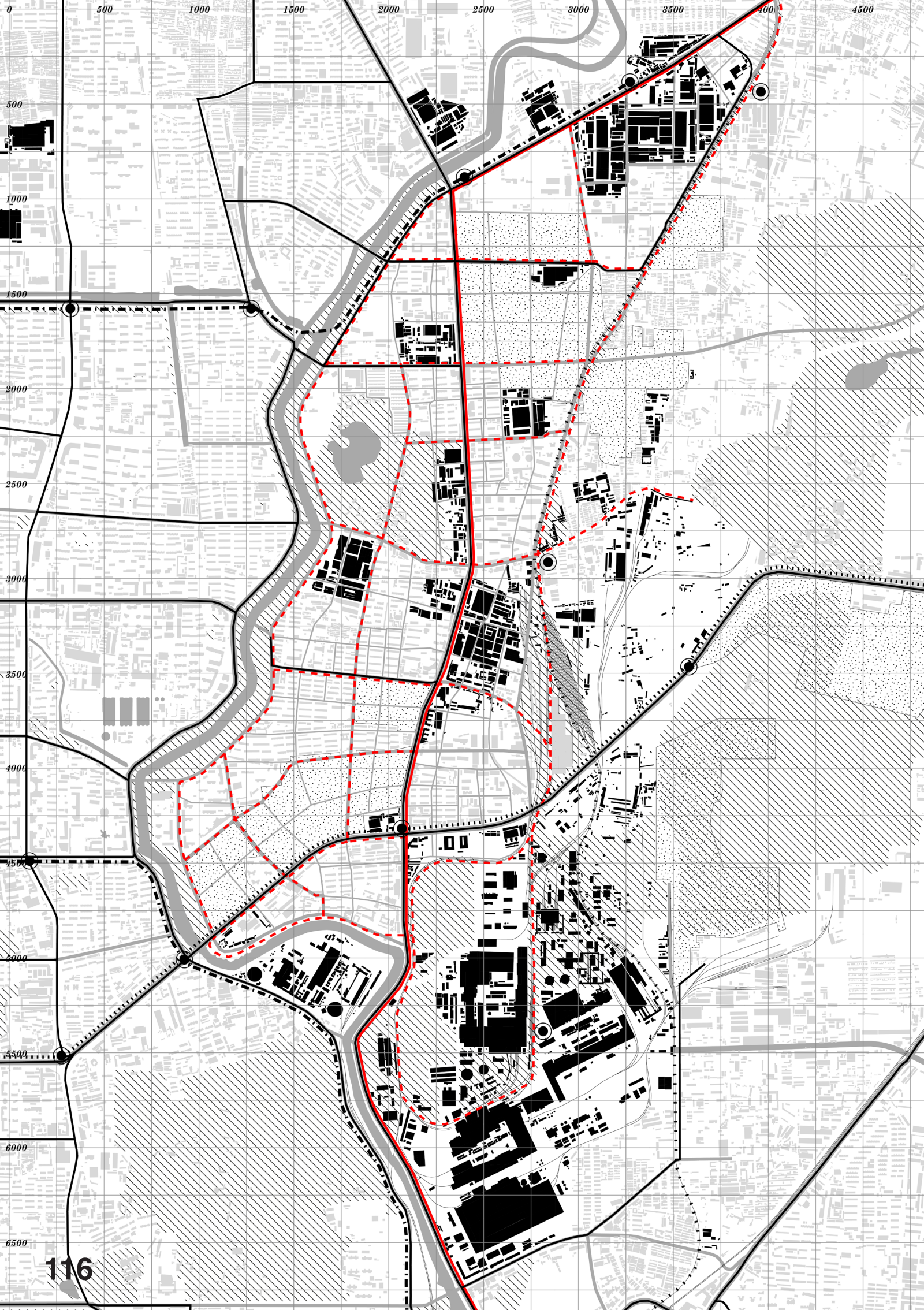
Focusing on the city of Tangshan, with particular attention on the Dou river East side, the urban layout appears to be fragmented by several blocks with different dimensions, and it coherently represents the raison d'être of the district main industrial function. The site, designed and planned mainly for industrial production and sparse residential areas, appears indeed characterised mainly by big blocks and a loose road network, neglecting any urban life and characters to the district. The presence of big industrial platforms and relatively wide residential blocks do not allow any interactions between residents, hence it might be one plausible cause for urban congestion and carbon emission pollution.

To fulfil the main aim of this work of thesis and promote a new urban centre which is still integrated and connected to the rest of the city on the west side of the river, a new, yet coherent road network is carried out as an implementation of the existing

one. The emphasis of the planning is on the proximity with the reduction of the dimension of the urban blocks and the densification of the road network within the district.

A primary artery road network is implemented on a 1 kilometre grid and hosts the main public transportation. As regard the public transportation, the main means of transportation are bus lines; a planned elevated light railway which connects the main rail station to the Donghu Forest Park crossing the district from west to east along Jiànhuá Road and with a planned stop at the at the intersection with the vertical spine (Gāngyáo - Bīnhé Road); a planned underground subway line which aims to cross Tangshan city in vertical and connects the district with the Nanhu Ecocity Park.

Two secondary artery networks of narrower roads are then developed following two grids, respectively of 500 metres and 200 metres. Due to the scale of this secondary network, new cycling paths are then implemented in order to promote a more environmentally friendly transportation modality that can reduce the carbon emission imprint. In order to avoid the rise of social problems, the road planning is drawn down according to the existing residential layout, avoiding major building demolitions and adapting it to the urban fabric palimpsest of

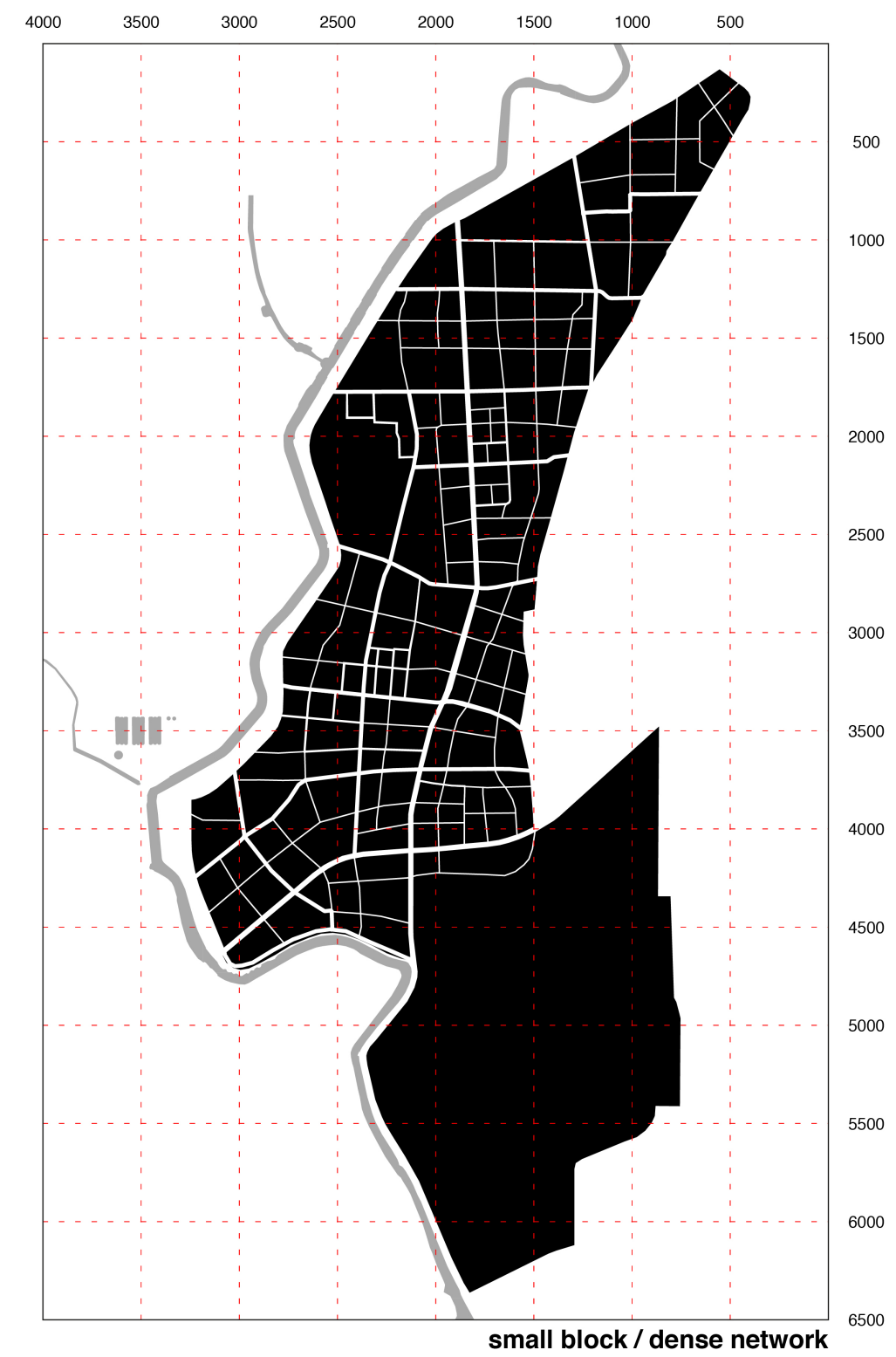
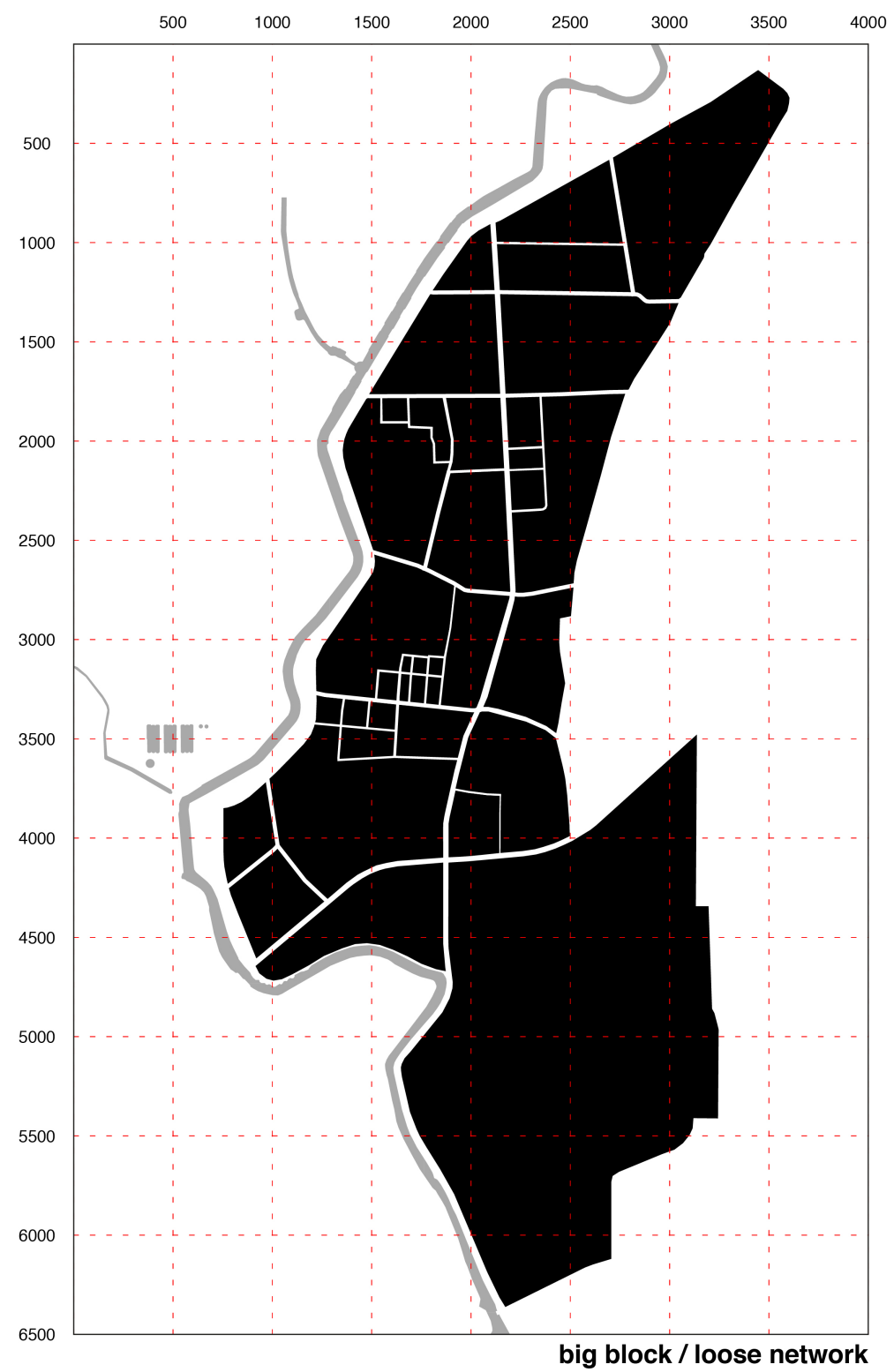


- planned stops
- planned elevated tram line
- . - . - . planned underground subway
- existing bus line
- existing cycle lane
- - - - - proposed cycle lane
- proposed tram line

Dou river East side - vision for the urban transportation adapted on the new road layout

the existing housing properties.

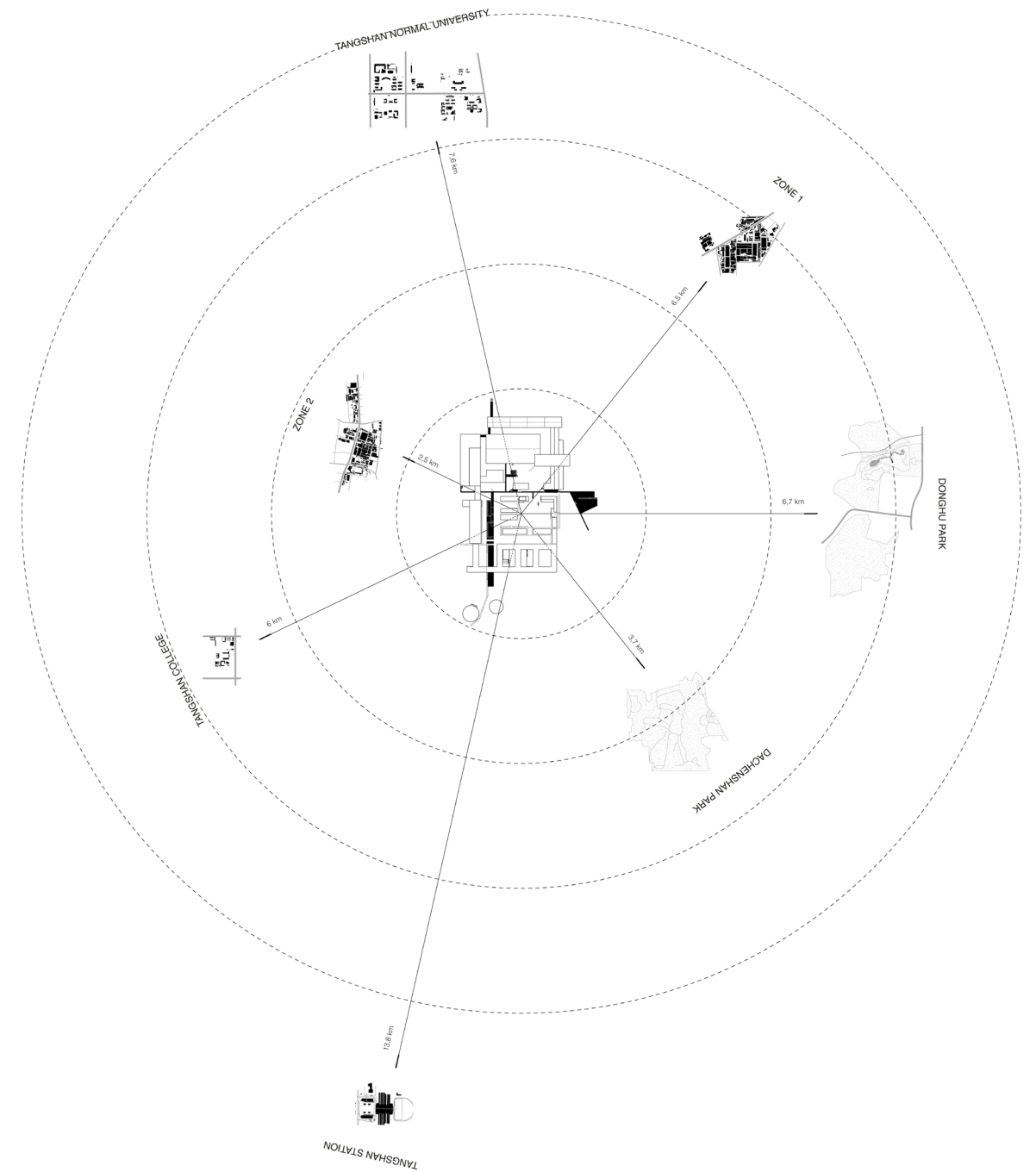
As a result, the former industrial big block present within the district appears now unpacked in smaller blocks which enable developers and planners to reuse the existing buildings and import new economies.



5.4

S:

Tang-hub



As a showcase of the industrial development of the city of Tangshan, the Dou river east side results featured considerable and spread industrial settlements and a series of stopgaps surrounding residential neighbourhoods. From north to south, the analysed district appears distinguished by the rest of the city especially because of the presence of manifold industrial buildings and their related spaces with different scales and targets. Still, things are evolving and mutating nowadays.

Tangshan Steel Factory, located on the south side of the chosen site is a perfect sample of the contemporary process of deindustrialisation of Tangshan. Since the economic reform and opening up of the country, the Tangshan Iron and Steel company has profoundly increased its production becoming one of the most worthy of notice of steel manufacturing state-owned enterprises throughout China.

However, on the 20th of August 2020 the Hebei Iron and Steel Group Co., Ltd, henceforth referred as its acronym HBIS Group, officially stated that the Tangshan Branch would have been dismissed and relocated

from the actual semi-central urban location in Tangshan.

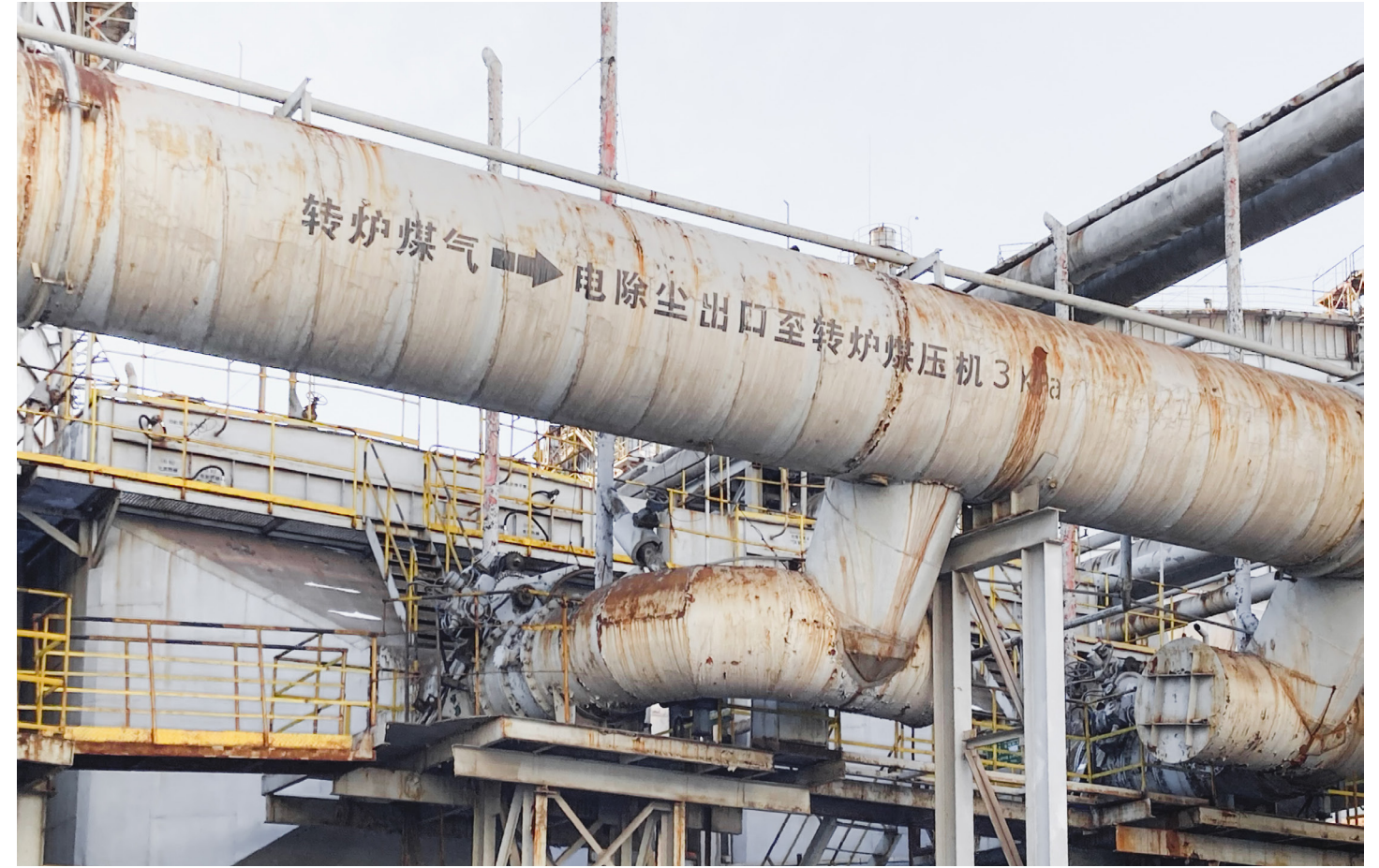
Starting to be productive from 1943, one of the most profitable iron and steel factories in China was shut down after 77 years, and in 2020 was relocated to Caofeidian. Despite the loss of occupation for its workers, due to its heavy activity, Tangshan Steel Factory bequeaths the city deeply contaminated soils due to the coal storage within the site, with high toxicity for inhabiting them. However, its strategic location on the fringe, betwixt the urban core - on the west and south-west side - and the outskirts makes it a potential place for a new centrality for the neighbourhood and the city of Tangshan itself. Its metaphorical and physical “in-between” position emphasises the general aim to overcome the visible physical segregation among the privateness of the production and industrial functions and the remaining part of the urban environment.

To provide a contemporary reasonable land use and management of the site, as well as to generate initial guidelines for the architectural design, a coherent study of the major future flows of people coming from and to the city has highlighted, according to the main urban areas people are coming from or going to, two main representative entrances for the urban part on the west side of the factory -

0 100 200 m

Tangshan steel factory - plan status quo

















respectively on the north-west side and on the south-west side. On the right side of the rolling Mill, a new general directive path, instead, is conceived to guarantee the connection to the designed industrial park and the already planned Donghu Forest park towards the East.

Along with these three main general directions, three main parking areas are identified. The two existing parking lots located on the West side and in proximity of the main previously highlighted entrances, after being enlarged are reused as general parkings for any kind of vehicles, while a new covered area, reserved only for buses, is proposed on the east side of the courtyard block. These facilities not only acts as parking lots, yet, with regard to the first two areas, they are intended as interchange nodes for users between the automobile transport and the public transportation system, while for the third one, the covered new parking area is intended to be a new terminal hub for bus with all the related services inserted in the existing buildings nearby. The choice not to opt for any parking plots flanking the internal streets, although it may seem inconvenient at first, is justifiable on the general achievement to mostly rely on the public transportation rather than on the private car. Nevertheless, a multilevel underground parking, still well connected to

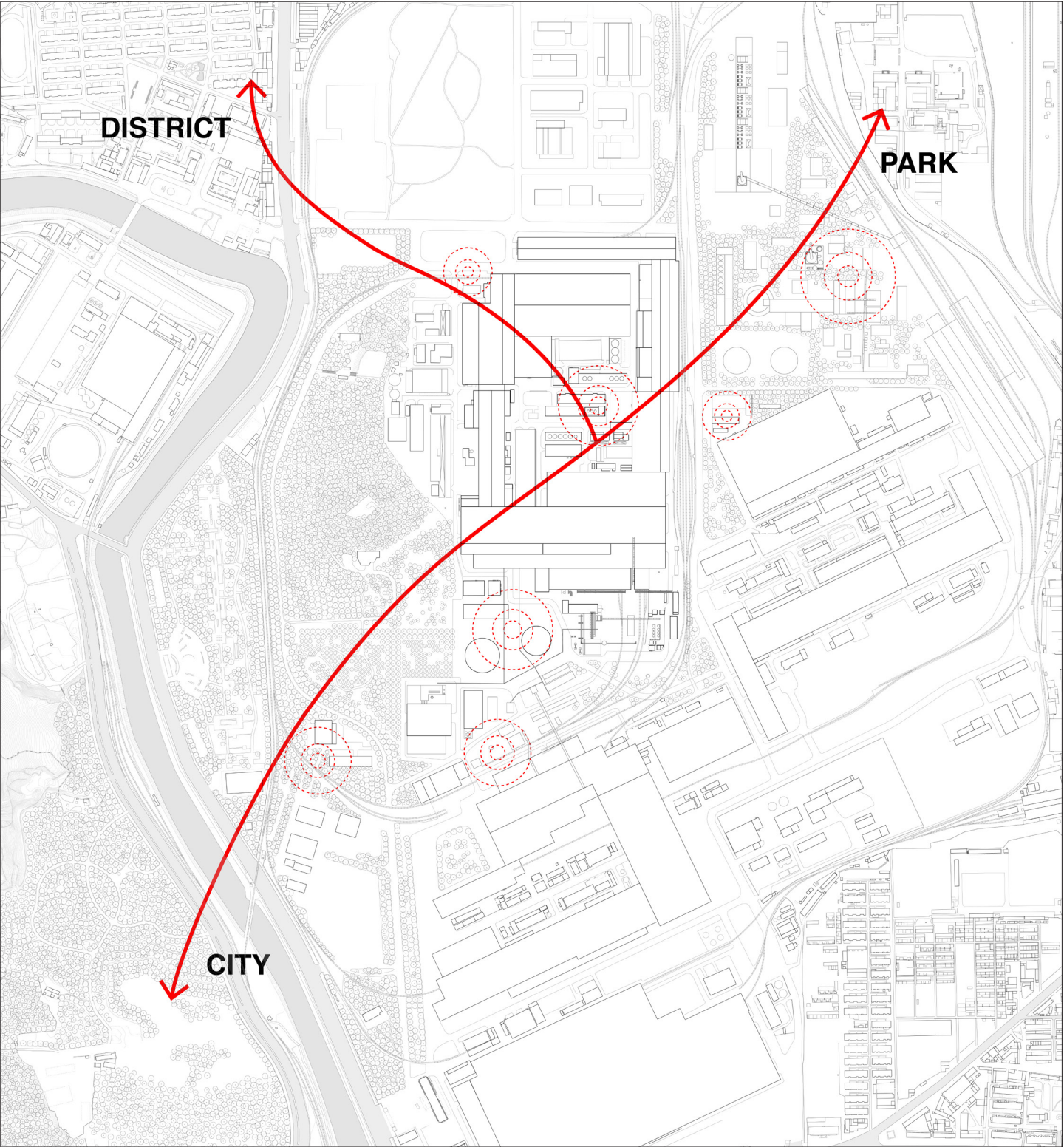
the external part of the site, is designed inside of the courtyard. The general idea lies in the differentiation of the functionality of the Tanghub for pedestrians and for private vehicles. The general idea for a sustainable development, indeed, visualises the new hub for Tangshan only as an arrival - and departure - point, mostly crossable therefore by pedestrians and through public transportation.

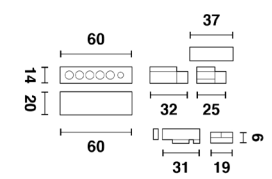
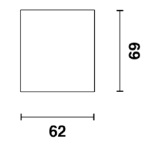
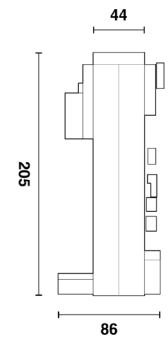
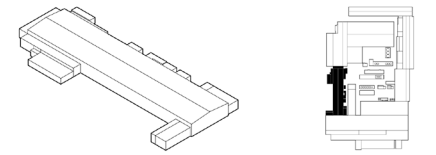
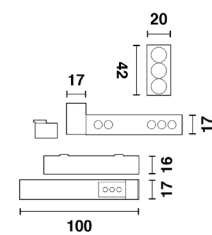
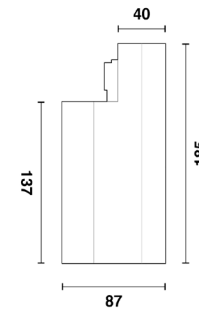
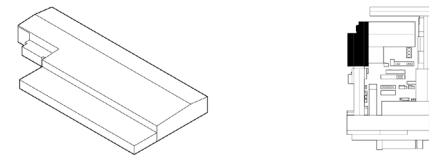
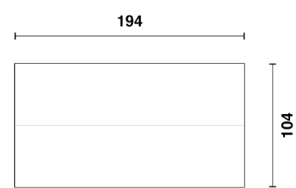
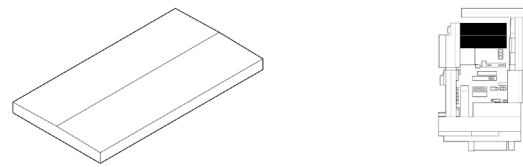
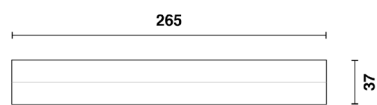
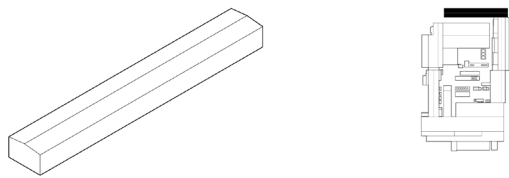
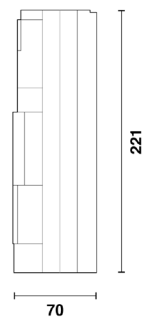
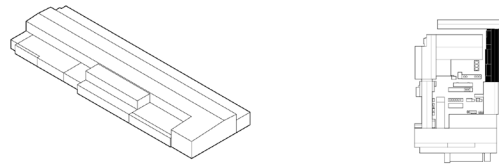
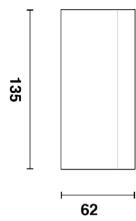
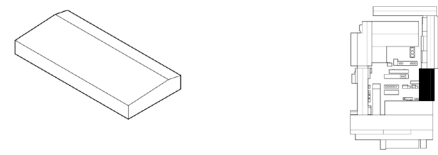
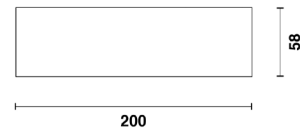
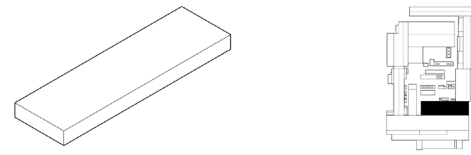
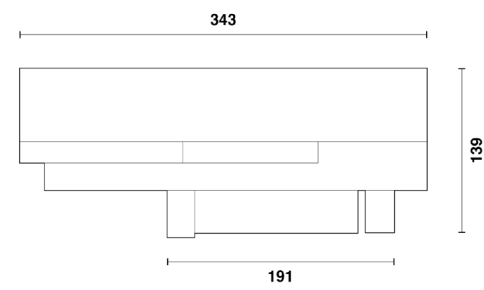
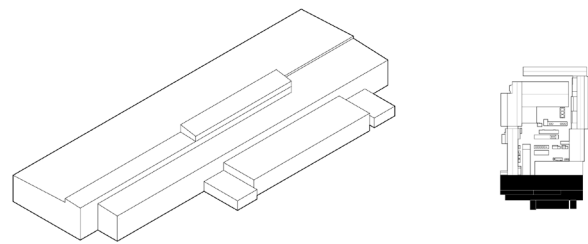
According to its original program, spaces related to this factory developed on a large scale, both on the indoor and outdoor level, occupying an overall size of 3.5 square kilometres on land. Its remains notwithstanding, due to the physical extension on the city land, are an intrinsic expression of the city soul and its inhabitants lives. This clear collective memory within Tangshan inhabitants, together with the remarkable environmental impact - in case of complete demolition - make the building the best test subject to be reused and reprogrammed according to the changing needs within the society.

The general aim of the design, therefore, is to envision a new future for the existing fabric through the introduction of contemporary programs which might introduce social, economic and environmental benefits to the city, still preserving its inherent collective memory regarding the great and influential industrial

0 100 200 m

Tangshan steel factory - major flows diagram





past of Tangshan. To confirm and enhance the powerful historical and cultural significance of the Tangshan Steel Plant, following some well established sample of post-industrial urban and architectural development, the project properly fits within the anti-demolition discourse. Tangshan Steel Factory transforms itself to Tanghub. From a building industrial complex leading the secondary industry in Tangshan, to a new innovative hub for creative industries, leisure activities and cultural and educational spaces. Placing itself as a new centrality on the outskirts of the city, Tanghub displays the possibilities and the need of reusing former industrial structures and spaces in a performative way. To performatively reuse means to not only preserve the building as a museological ruin, but to maintain its relevance in the urban environment promoting new activities ahead of the contextual times.

Focusing on a preliminary visualisation of the entire factory, what stand out are its dimensions; because of the previous target of production, building sizes are extremely considerable and discouraging for any other function which differ from the original.

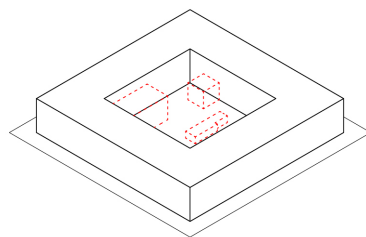
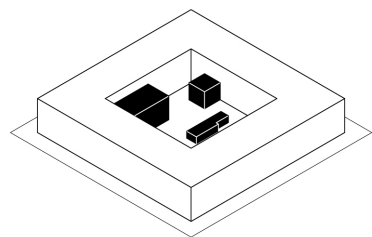
Because of that, the preliminary strategy used within this work of thesis aims to review the intrinsic and direct

association between buildings and architectural design. The buildings ensemble, therefore, is initially seen and interpreted not as a mere architectural object to be re-programmed, but rather as a former industrial urban block which needs to be revised in its dimension throughout urban planning devices and expedients. As sustained within the previous paragraph, industrial blocks are usually distinguished by considerable dimensions which do not provide them any human-friendly characteristics. Accordingly, a series of schematic actions on a more urban scale and level are proposed in order to provide more urban characteristics, avoiding un-human spaces and addressing towards a more sustainable mixed land use.

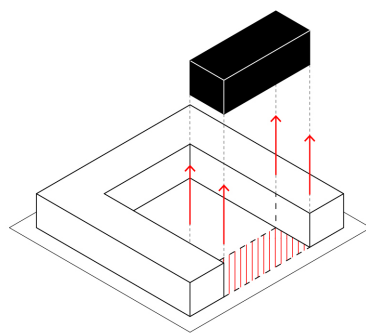
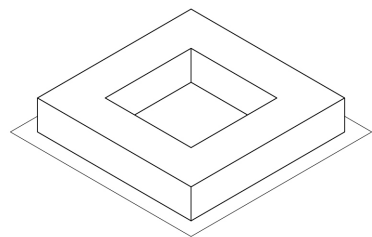
As first, some previous auxiliary buildings were demolished. The open spaces left by the removal of these smaller buildings ensure more public open space, enable users to move more freely within the site and provide better visual and physical connection within the site and with its surrounding context. Subsequently, to provide more connection to the surrounding environment and to the city itself, some selected parts of the courtyard block have been completely opened. This particular action not only physically reveals part of the existing steel and concrete structure, yet it metaphorically

opens the site to visitors, more precisely on the south side and on the east side, revealing two of the principal accesses to the site. The first attempt to open the site to the public and break the continuous rule of the original block perimeter, is emphasised by the so called “unpacking” action. As previously mentioned, the block is seen not as a single building which only needs to be refurbished, but as a proper urban device. As such, to guarantee more human-like dimensions and proportions, the original industrial block is broken up into several smaller blocks through public streets. Despite this action might lead to a detachment from the original concept of the courtyard typology, the majority of the openings occur on the ground floor level, and leave the original concept continuity on the upper levels. The change of the program within the buildings, sign of a dynamic and changing society, needs to be emphasised by the fabric itself. New additions, out of the structural framework scheme, aim to highlight the coexistence of the old and the new and to promote a new dialogue between the former industrial period of the city and the new interest of the society upon the emerging service industry. These new additions within the site, in addition to being a container for new and contemporary service related uses, acquire significance on the

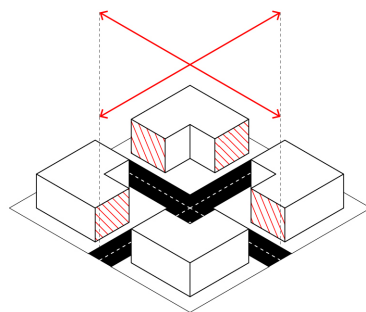
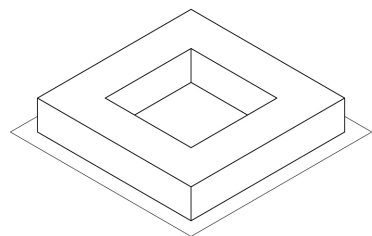
urban level of the site itself. More specifically, a new elevated block hosting the office headquarter and smart work places, welcomes visitors and workers within the covered entrance plaza on the north-west side of the block. A cultural centre located in the centre of the courtyard, not only represents the insertion of the cultural industry within the former industrial environment, but it also serves as a central catalyst capable of attracting people as well as an urban backdrop which defines the spaces. A second overhanging block is designed as a connective bridge upon the existing building structure. The new internal spaces are intended to be a mixture of public and private functions and the peculiar overhanging morphology provides an interesting panoramic spot to observe the industrial park located on the east side of the block. To conclude a proper design based on the urban level, a preliminary zoning operation is carried out and will stand as a leading base for the future development of each building. Following the general concept of Tanghub as a new anchor point within the urban environment, more commercial and leisure related functions are displayed on the south side of the block in vision of a bigger flux of visitors moving from the city to the outskirt park, while offices, research and education related programs are more present on



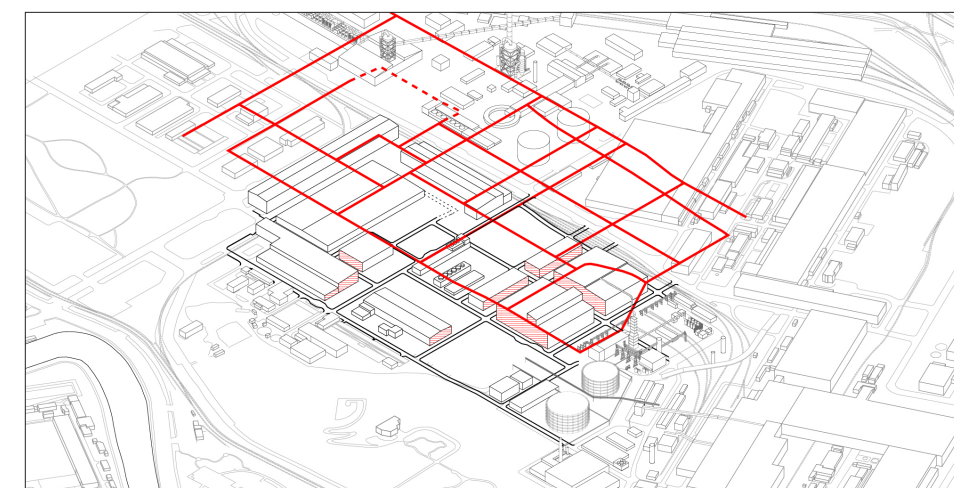
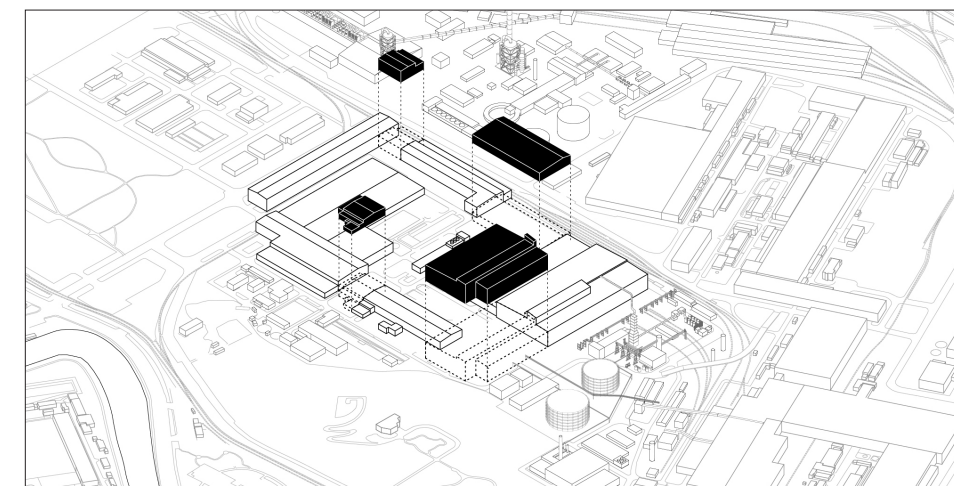
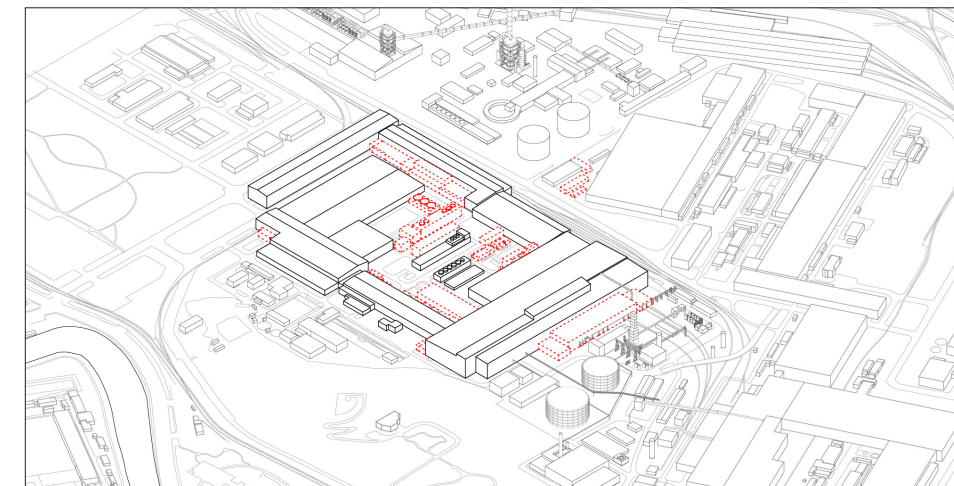
a. demolishing

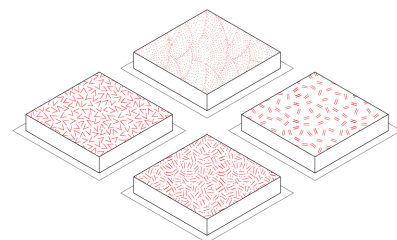
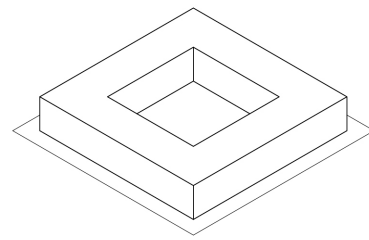


b. opening

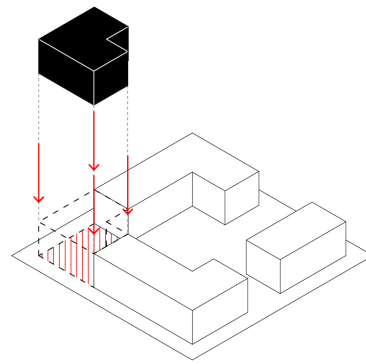
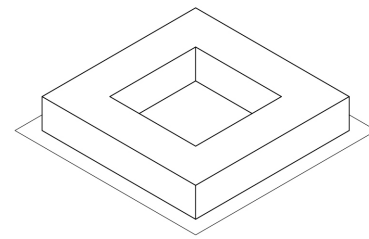


c. unpacking



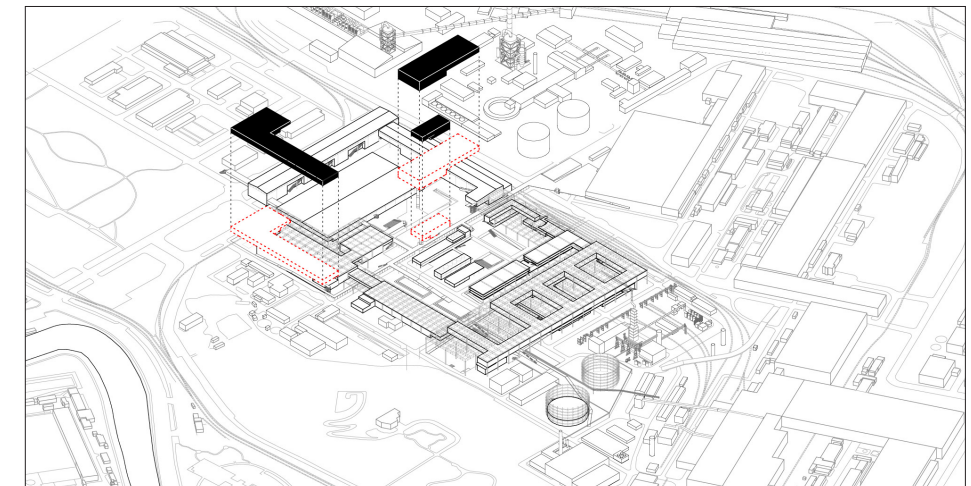
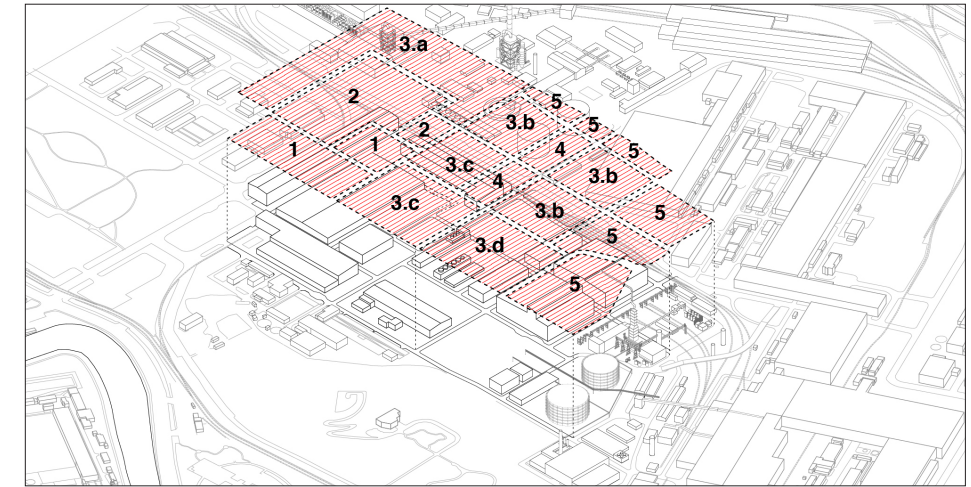


e. zoning



d. densifying

- 1. office
- 2. culture
- 3.a mixed use (research + education)
- 3.b mixed use (residential + commercial)
- 3.c mixed use (office + commercial)
- 3.d mixed use (residential + sport)
- 4. commercial
- 5. open space (linear park + heritage park)



the north side of the site, in order to be connected to the resting two main nodes of the general master plan but still connected to the city through the public transportation system.

On the building scale, major structures, however, are preserved and reused for innovative purposes which aim to open for the first time the former heavy industrial site to the public. However, the actual building typology and conditions do not permit a complete adaptive reuse of the entire legacy as it is. Innovative ways and interpretations of reuse are, consequently, laid out. Based, indeed, on the considerable amount of reuse and redevelopment of industrial spaces for post-industrial demands, three general methodologies are chosen and subsequently applied to each building of the Rolling Mill. The actual condition of the existing buildings, in fact, reveal the original internal program for the complex.

As this part of the entire Tangsteel complex was related to the several industrial processes related to the rolling of metal, the internal layout appears mostly free of partitions, spatially punctuated by imposing concrete pillars supporting a series of triangular steel trusses. Because of this structure typology, the space inside appears flexible and open with, if present, only one or two rows of pillars passing

through the aisle. Nevertheless, the enclosed spaces appear mostly dark with scarce natural lighting coming from the facades. These, indeed, run along the building complex as a ribbon which does not welcome the sight from the outside. Few smaller openings, probably present only for safety and air circulation reasons, crown the white and blank enclosing walls.

As a primary general step applied to every building, which reflects the above characteristics, the existing roofs and facades are removed in order to guarantee more natural lighting inside the spaces. The buildings then are analysed and scheduled according to their location and to the function - or amount of functions they are going to host - in order to find one the best reuse methodology among the three previously selected.

More specifically, these three reuse actions on the existing buildings might be classified as installing, emptying and inserting.

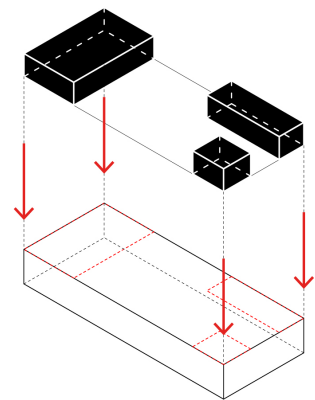
The first technique, only applied to one precise building, reuse the original building as a supporter for a new overlying element. This action allows the preservation of the underlying block and, at the same time, it creates a new dialogue between the existing and the intervention. The new overhanging block might be different in shape, materials and dimensions, but being situated on top of the existing one reveals a marked correlation

among the two, and manifests the fil rouge of the changes within society. The leading concept at the root of the project, indeed, lies on the principal action to preserve and reactivate Tangshan tangible and intangible industrial heritage, strengthening the local identity and the memory of the place. In addition, the new appearance provided to the chosen existing building, affects also the surrounding public open space. More specifically, the application of the strategy at the north-west corner of the site, together with its morphology, in addition to becoming a visible urban landmark, generates a new dynamic open space underneath, through the opening of a new entrance plaza.

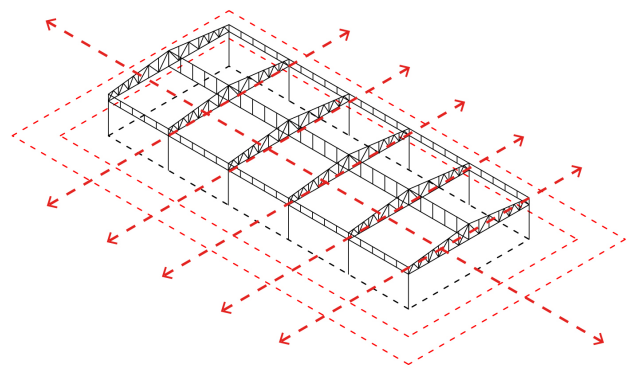
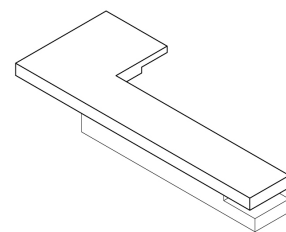
The most used methodology for building reuse in the Tanghub design is what has been denoted as “emptying”. By emptying the building, the only remaining part is the original load bearing structure. Because of the new functions these buildings are going to contain, as well as because of the location within the site, the reuse of these structures as supporting elements is not convenient both on the economical and on the technical level. The new functions, indeed, might provide a different load distribution and the internal layout of the new programs might need more human scale dimensioned spaces which do not correspond with the original purpose of the existing structures.

Nevertheless, their demolition is not recommendable likewise from the point of view of sustainability especially on account of its costs and the disposal process of the construction materials derived from it. The openness resulting from this action enhances the publicness of the ground space and promotes a more dynamic ground crossing by the users who can still appreciate the remaining of the former industrial structures. The remaining skeleton acts as the host for the public life for the citizens, yet it behaves as a catalyst for new contemporary programs.

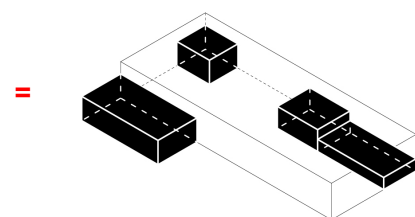
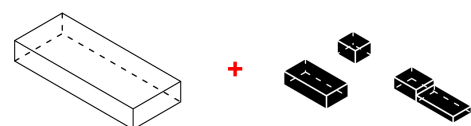
The third strategy adopted in the design aims to preserve most of the existing building without exceeding its original shape. The insertion of new volumes inside the original shed is enabled especially by flexibility generated by the existing structure layout and the derived internal spaces. The internal open space, in addition, grants the insertion of different new uses and services which respond to the actual changing demand of the post-industrial society. New building parts are included within the original industrial morphology. Through the application of this approach, the new interior designed spaces are adjusted to the existing construction which, in turn, can be preserved and promoted as construction heritage to promote the collective memory of the former heavy industry period for the city.



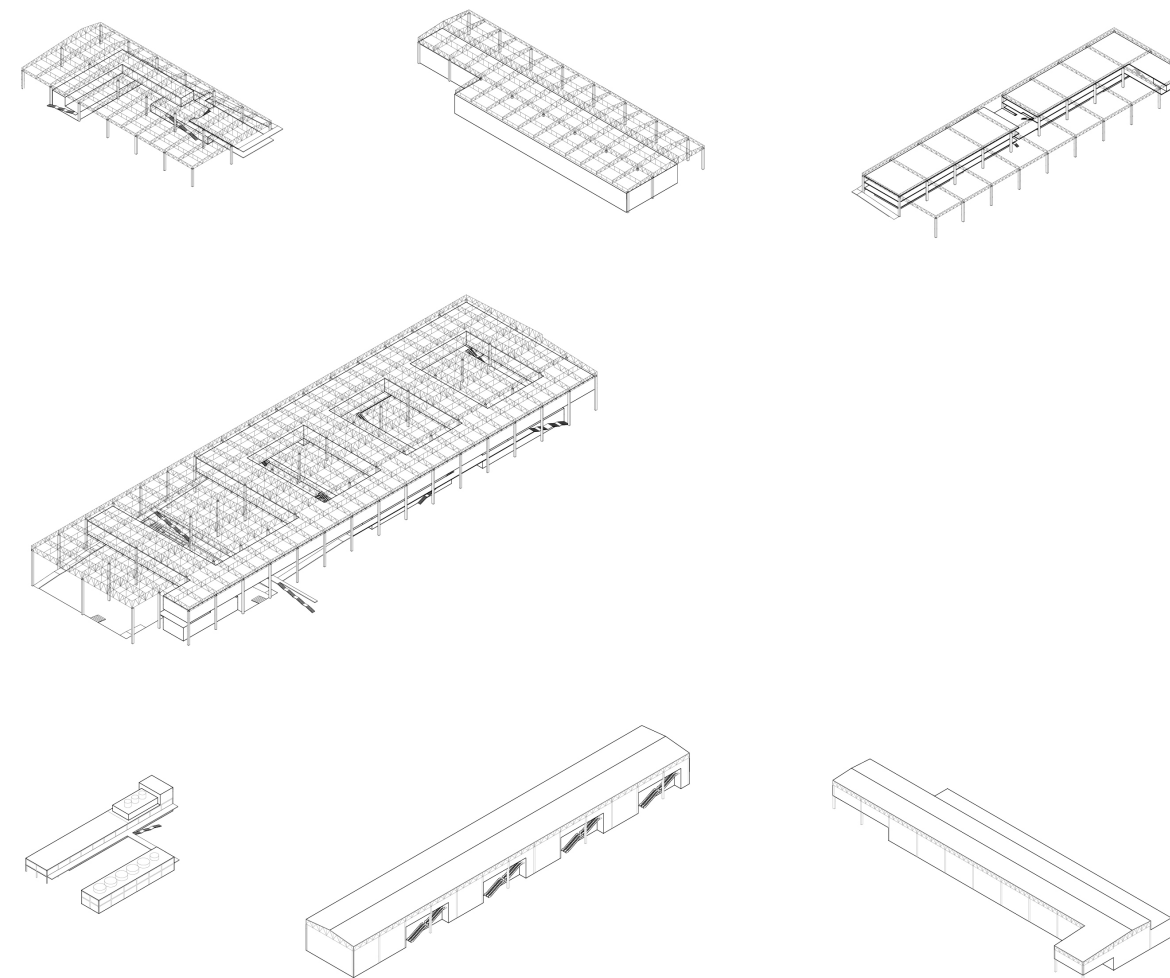
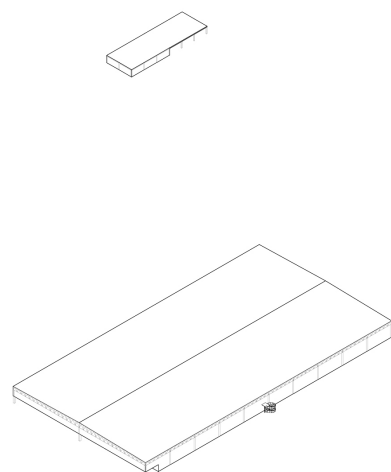
installing



emptying



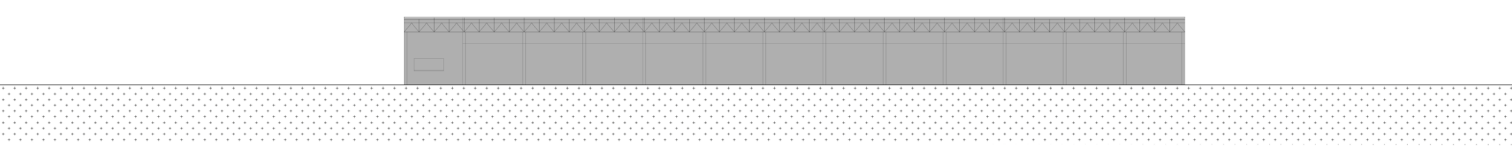
inserting



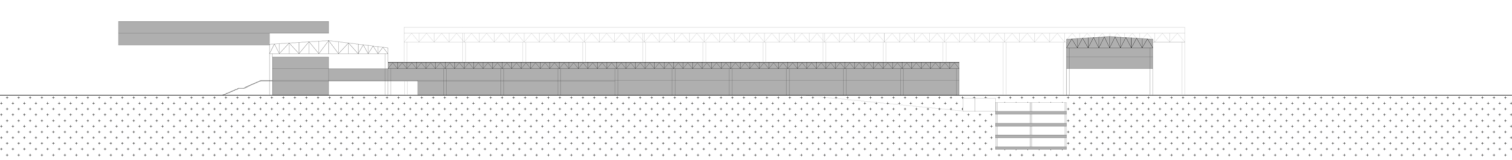
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Tangshan steel factory - ground floor
masterplan

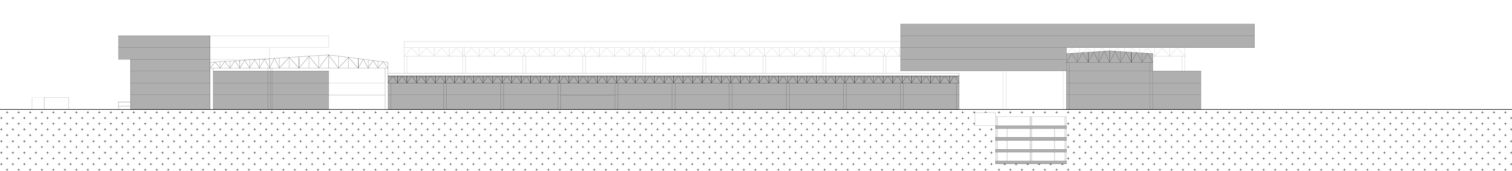




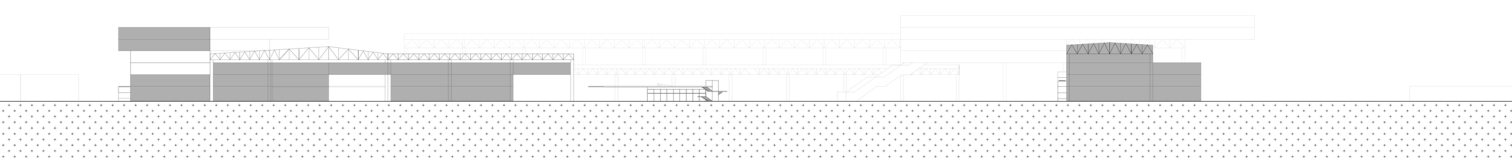
t(a).1



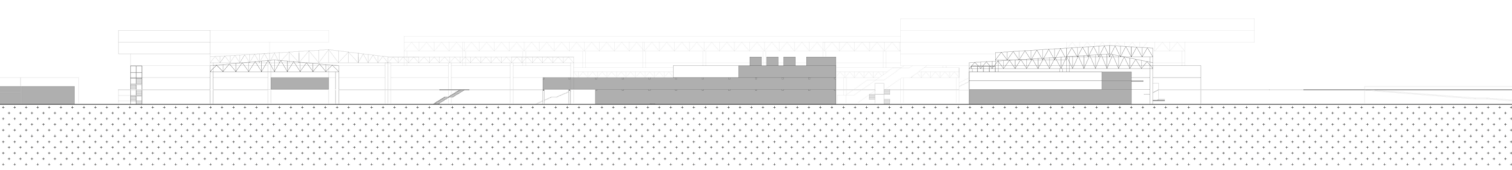
t(a).2



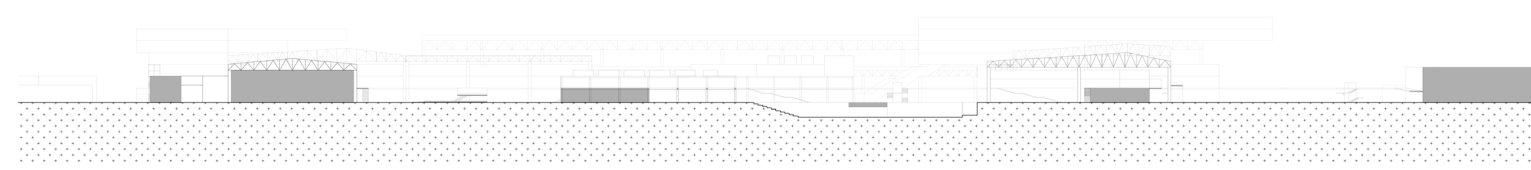
t(a).3



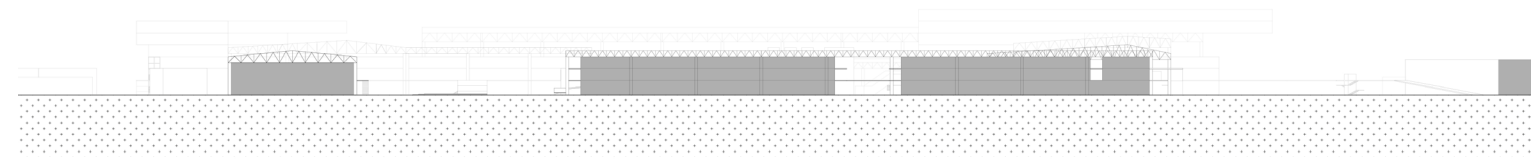
t(a).4



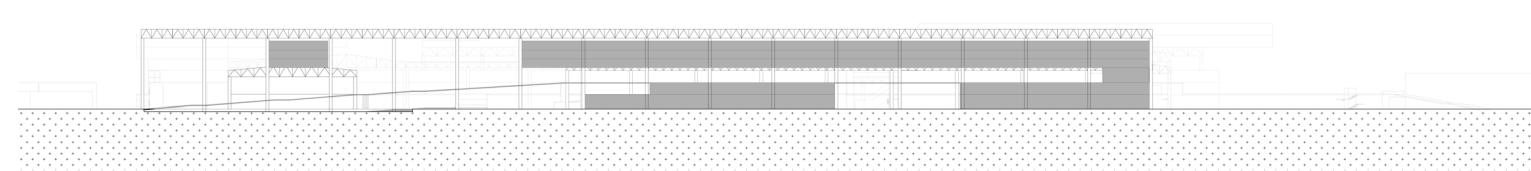
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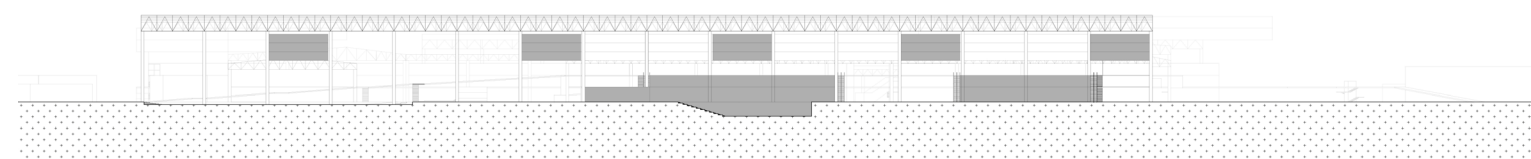
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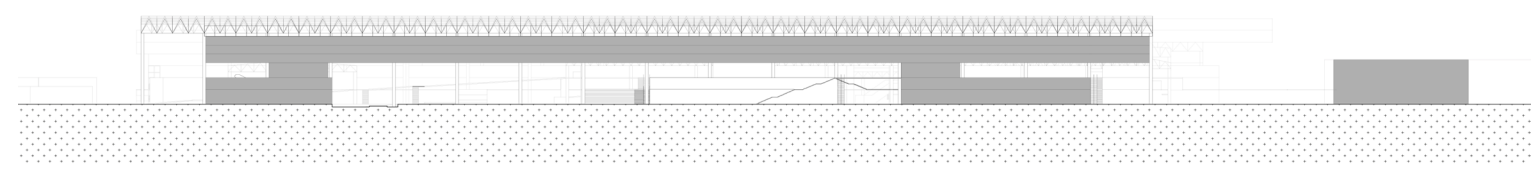
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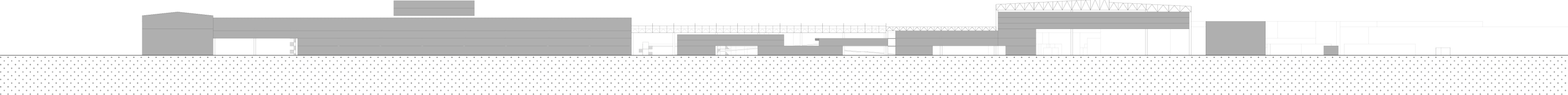
t(a).8



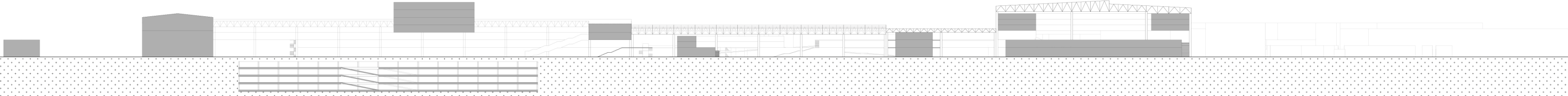
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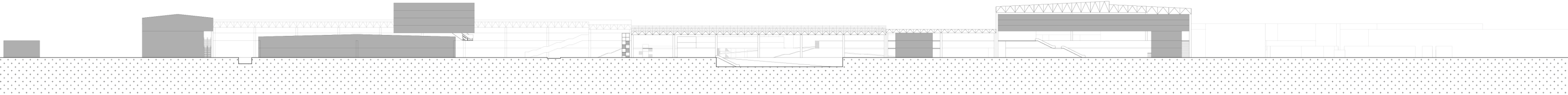
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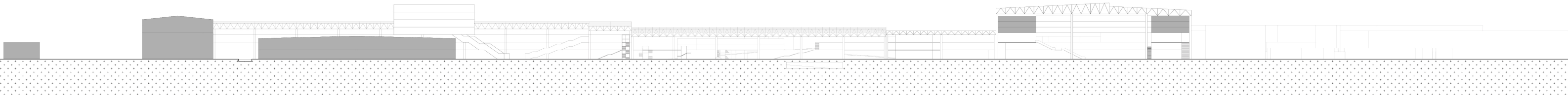
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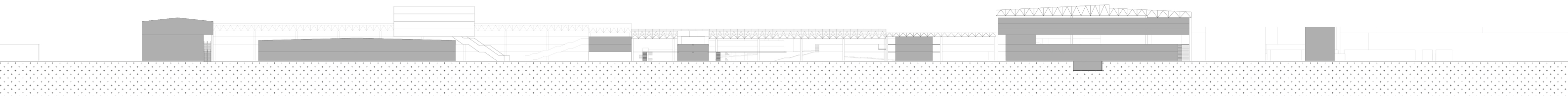
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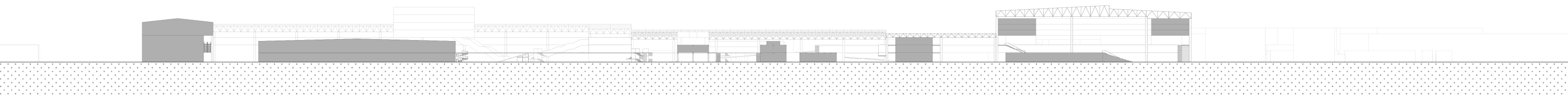
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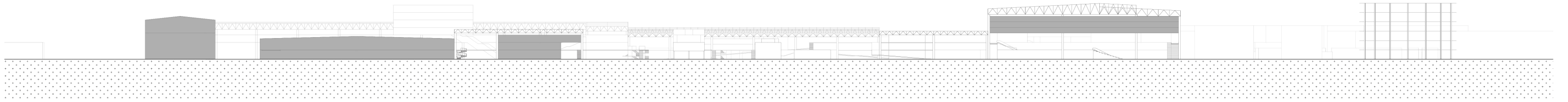
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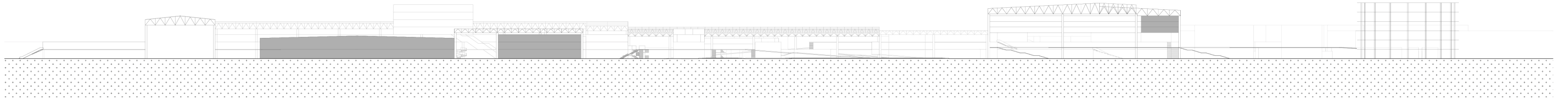
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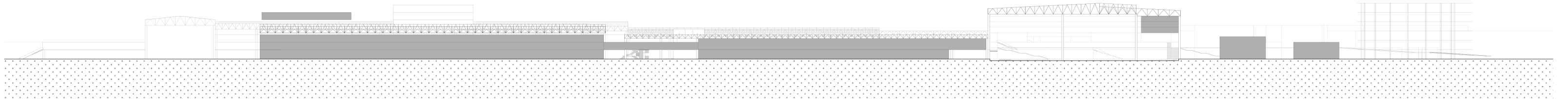
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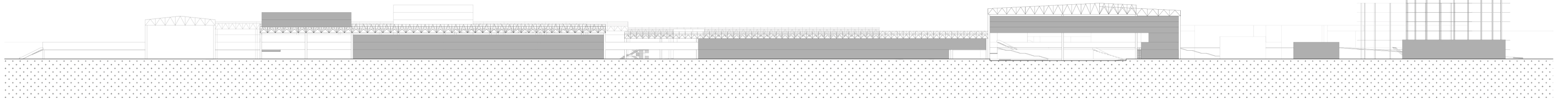
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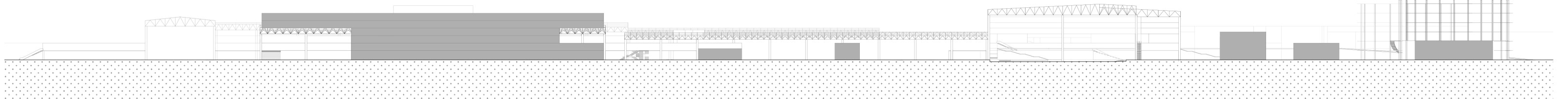
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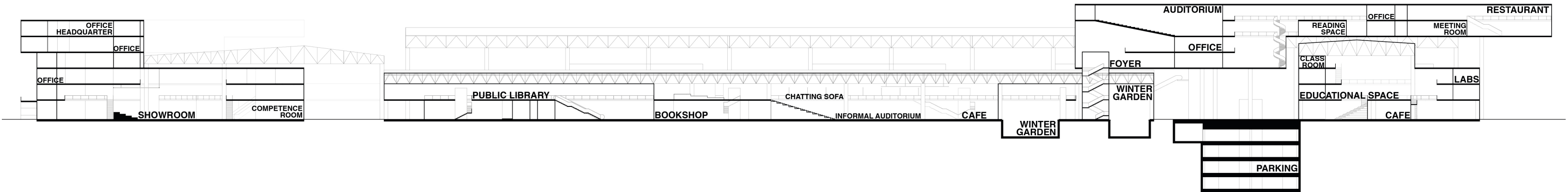
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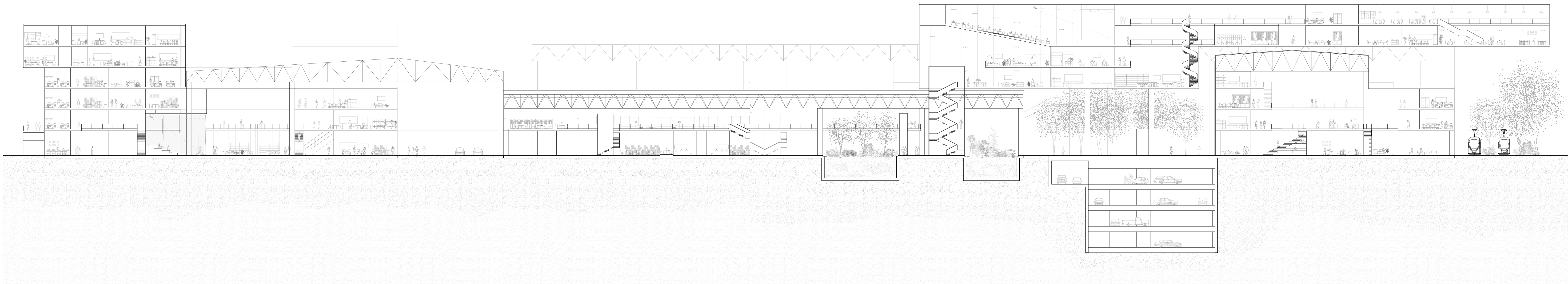


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I(a) .11





5.5 Tang-strip

Taking back the conceptual flow of people highlighted in the initial part of the design process to reuse and reprogram the Rolling Mill of the Tangshan Steel factory, the design strategy aims to visualise it to reinforce the connection with and within the site. As a connective path that moves through the site and connects the three main access points, the conceptual path materialises itself as a pedestrian and cycling strip.

This first strip, which strongly characterises the conceptual and physical design, develops itself on different heights, going from the ground level up to 5 metres high, varying its width according to the needs and the location. The entire elevated lane is supported by two rows of slender rounded pillars and a series of ramps, staircases, lifts and escalators are deployed along the path, connecting the ground open space to the new elevated public space. The alternation in elevation of the designed device does not aim to separate it from the ground floor, yet to connect it and to make it as a proper extension of it. The moment in which, mostly in front of certain buildings, the elevated path

goes down to the ground level, becoming part of it, it expands its pathway borders and opens up in a series of representative open plazas in front of the designed new buildings and programs.

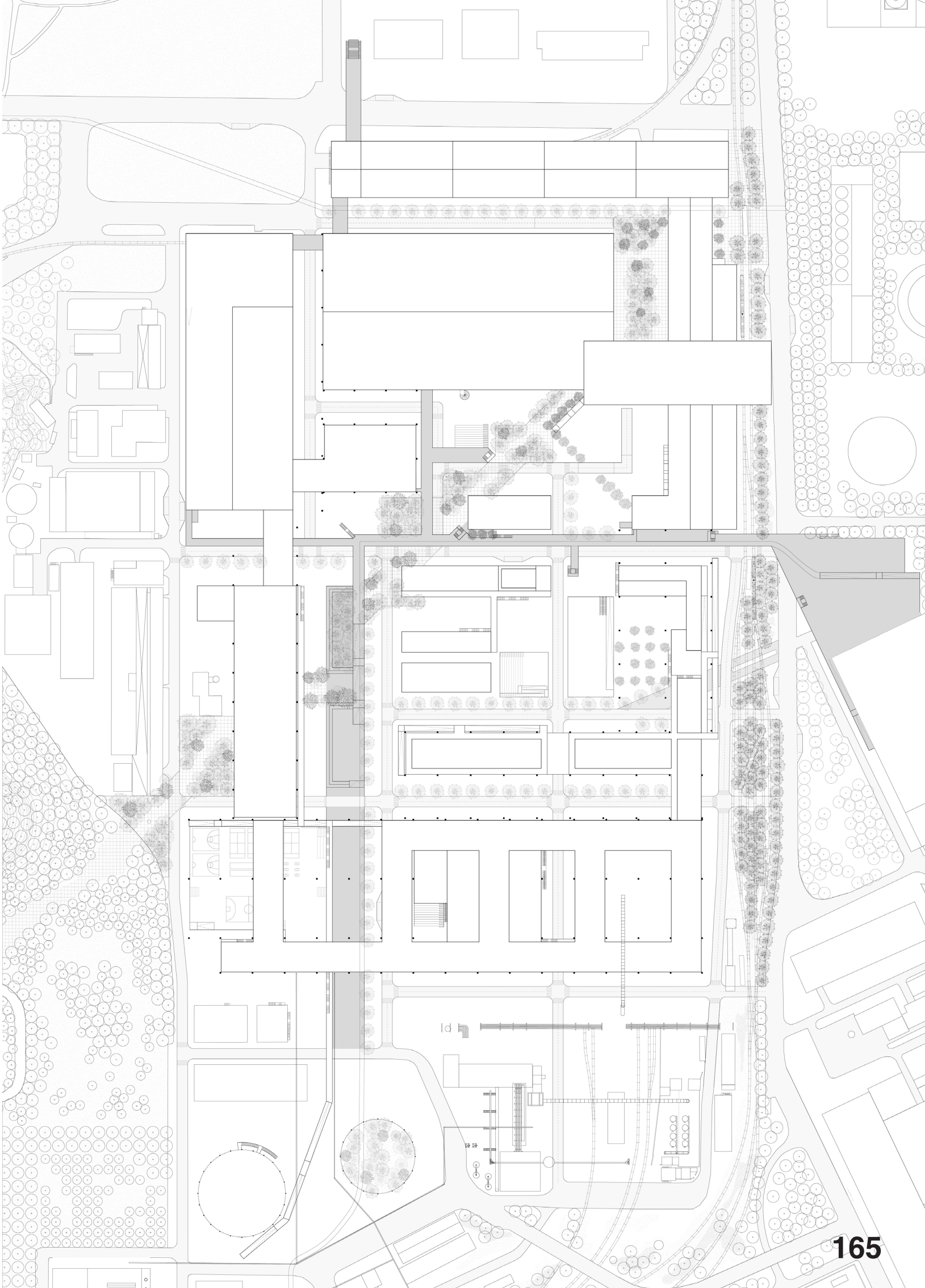
The strip, therefore, designs and passes through diverse new spaces, yet becoming a direct and tangible project and transformation experience. It represents a proper tool for the project action, aiming to connect to the pre-existence and establish a dialogue with it, complying with the palimpsest and generating new contemporary scenarios.

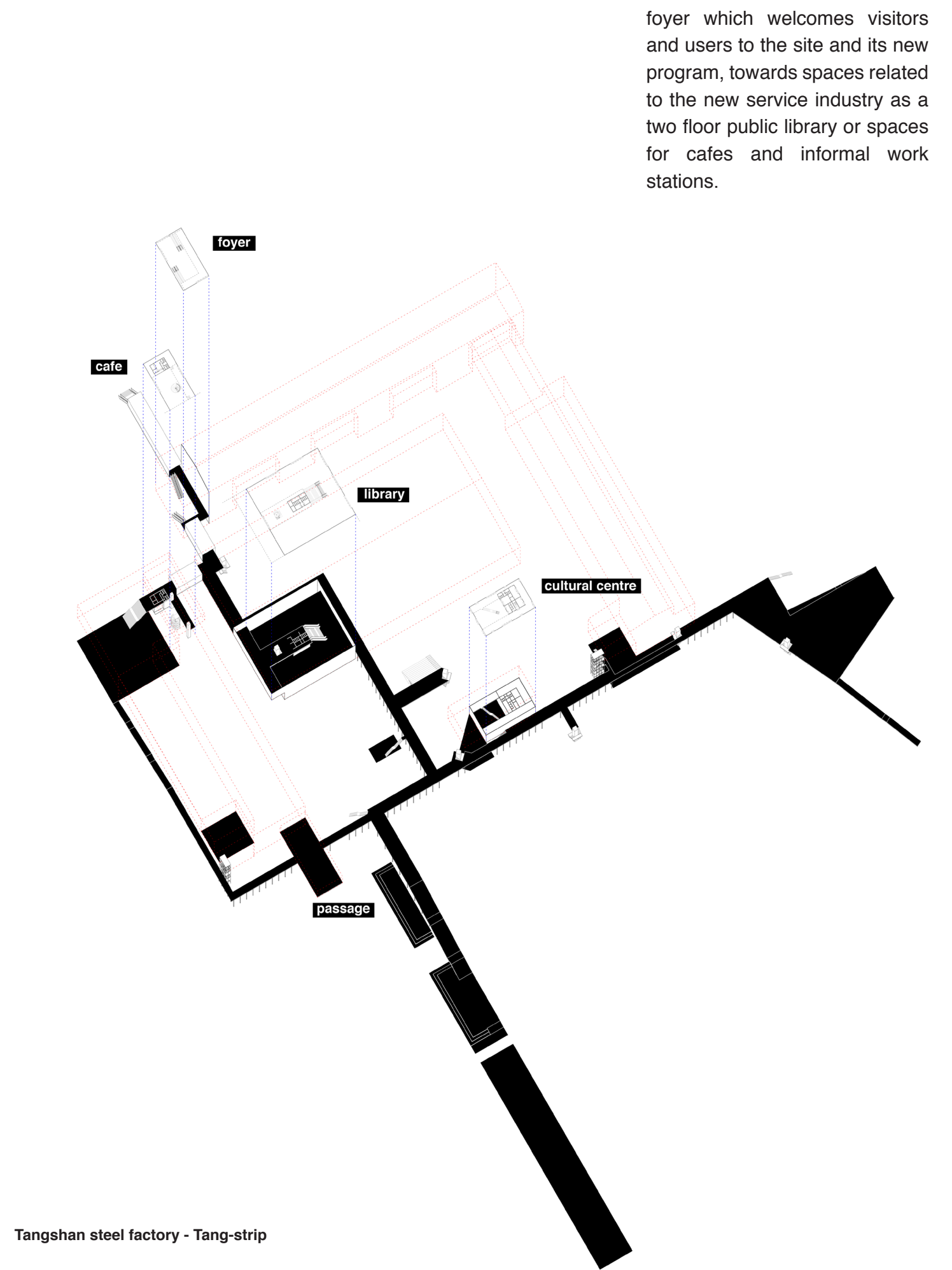
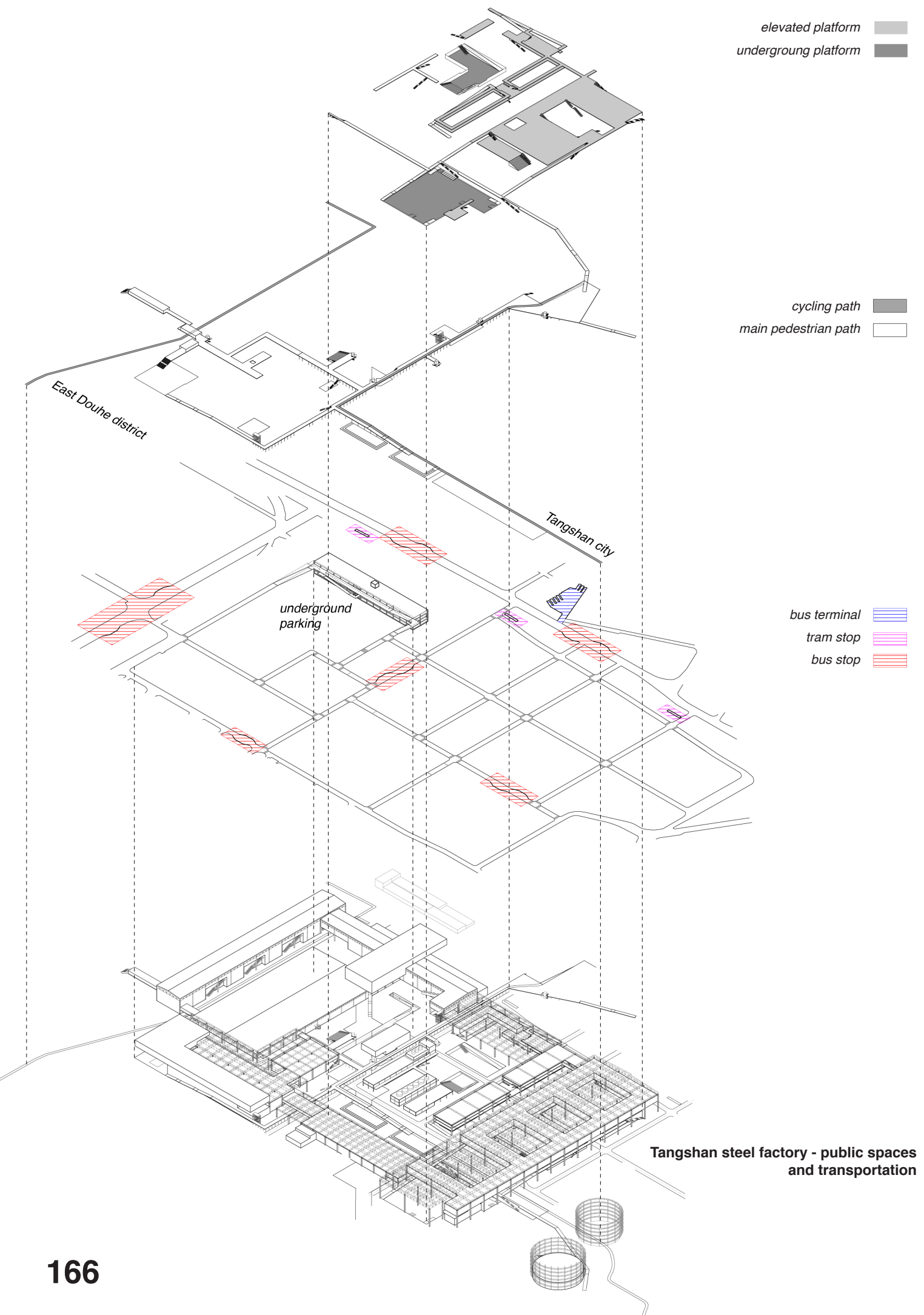
The presence of this element within the design, for its part, emphasises the bilateral relationship between old and new; on one side, the building pre-existence becomes the major constraint on the morphology of the new parts, on the other, the new designed elements allow the expansion of the space originally belonging to the existence.

To allow a more dynamic experience for the strip intended as a path, over and above articulating along the perimeter and in between buildings, it becomes part and parcel of the buildings developing new spaces within them. Despite the principal purpose of the strip as a connector between external points to the courtyard block, it assumes particular programs and spatial configurations at the intersection points with some buildings. From an entrance

0 50 100 m

Tangshan steel factory - roofing masterplan





foyer which welcomes visitors and users to the site and its new program, towards spaces related to the new service industry as a two floor public library or spaces for cafes and informal work stations.

5.6 Green-strip

Being in between, makes it a potential connective point through the east side and the west side of the city, and moreover, its location in line the main public green areas axis of the city of Tangshan - more specifically with Donghu Forest Park on the east side of the factory and Dachangshan Park and Nanhu Park on the west and south-west side - encourages the activation of the former industrial machinery part as a park connector within the general urban system. (park diagram_image)

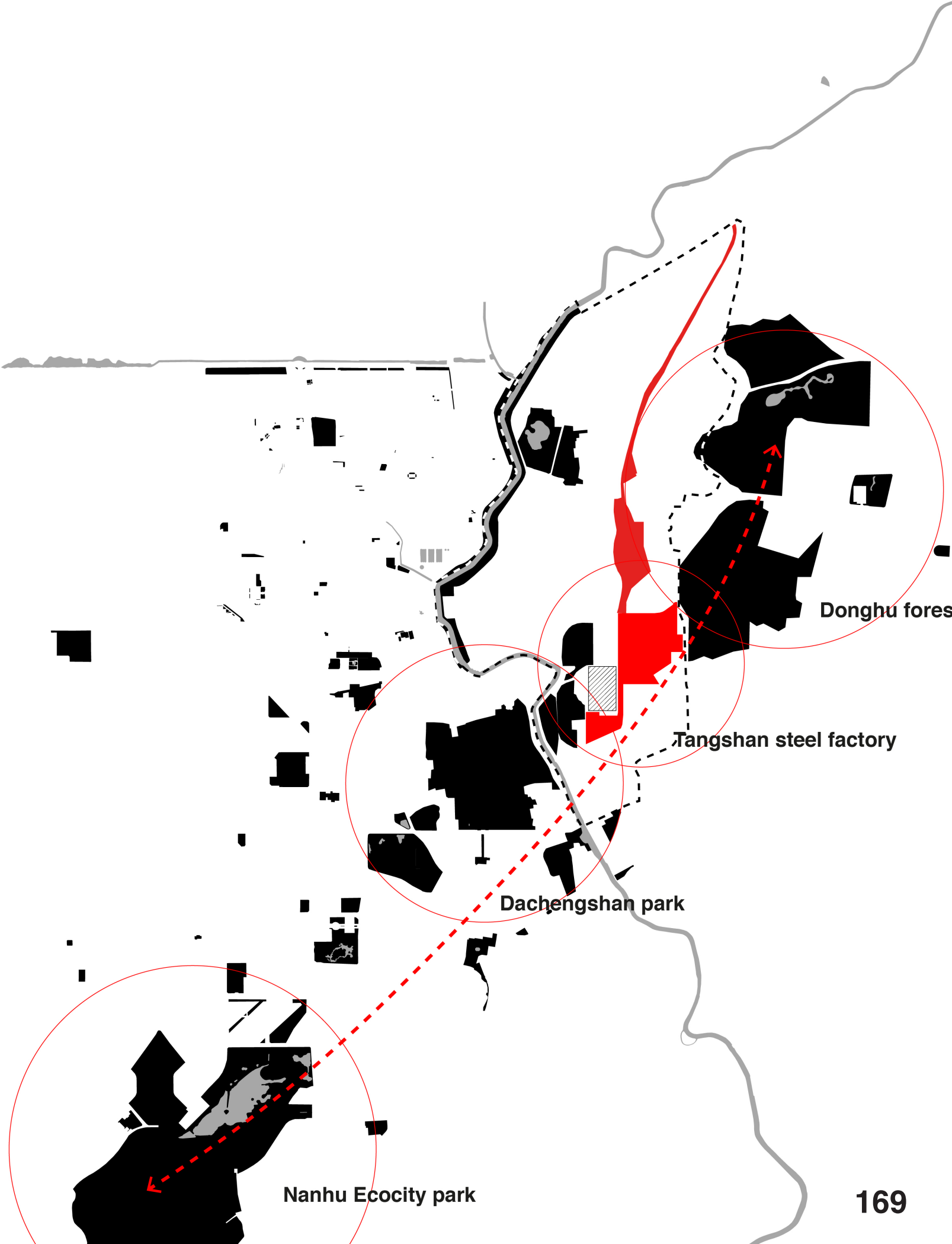
To enhance its potential location, a diagonal green strip crosses the courtyard-type building block and serves as a first device to open up the site from south-west to north-east. The diagonal direction of the new proposed strip not only serves as a connective path for the general city park diagram, but it also breaks the imposed orthogonal grid typically present in the majority of the Chinese cities. Notwithstanding, this linear new device does not appear as a complete imposing element on the existing fabric, yet it becomes part and parcel of the urban green infrastructure, filling the gap previously taken

up by the most relevant and largest industrial area of the city. Its identity is characterised by the succession of vegetated biotopes and differently paved surfaces along the segment.

Furthermore, the diagonal system is amortised by the several different spaces it creates within the site. As previously mentioned, the system does not want to appear as an external device which does not interact with the surrounding context and the new designed spaces. Its borders, indeed, still following a diagonal general direction, appear as broken lines which communicate with the street and building disposition, generating green pocket spaces and vegetated paths within the existing vast courtyard. As a binder connector, the buildings become integrated elements of the green strip, and avoid that monotonous mono-directional feeling provided by an urban corridor.

The path is intended as an urban instrument which can accompany and entertain people, and hence the design is conceived more as a sequence of both open and enclosed spaces rather than a linear and continuous path. To achieve this aimed result, the strip is diversified along its way, assuming different shapes, becoming integrated part of certain buildings and characterised by different physical connotations and

Tangshan steel factory - urban green infrstrucre missing link





Tangshan steel factory - green-strip

programs.

On the south-west and on the north-east corners, for instance, the green strip acts as an access point into the courtyard block. Respectively, the former is conceived as an enclosed space within an existing building that welcomes people within the former Rolling Mill. The latter, instead, closer to the developing Donghu Forest park, aims to connect the enclosed block towards the east side and the new planned industrial park. To pursue the connection, both visually and physically, the entrance is envisioned as an open plaza obtained from the opening up of the building portion located at the corner while keeping the upper part of the building developing over.

Additionally, an urban winter garden, located approximately at the centre of the courtyard, is proposed. The new program derives from the intersection of the designed green strip and the existing building stock, generating a contemporary dialogue between vegetation and the built environment. New planted endemic flora, including trees, shrubs and bushes, accommodates and integrates with concrete pillars and steel triangular roof structures, generating new indoor public scenarios for the post-industrial city. This new interaction, if observed in a more abstract and critical way, can be interpreted as

the sought relationship among the site and the existing urban green infrastructure.

6. Conclusions

The Post-Industrial transition is still an ongoing phenomenon. New cities around the world, with a particular regard for those settled in emerging countries such as China and Latin America, are currently experiencing this major shift in society that major European and North-American cities went through at the beginning of the Sixties. Industry and its related economy is mutating from a more secondary manufacturing sector towards a tertiary one mostly based on services and new technologies.

Along with this societal and economical shift, the spaces related are mutating to respond to contemporary needs. Urban planning and architecture, therefore, need to modify their approach and produce suitable design for the changing reality of the contemporary industry.

Tangshan, located around 150 kilometres from Beijing, appears as the best sample to take into consideration regarding the actual dynamics and its contemporary transition towards a post-industrial society. The city of Tangshan, if compared to megacities like the close Beijing or Tianjin, appears as a secondary city without great

relevance in the national context. However, as other similar smaller cities around China, Tangshan not only actively participates in the economic development on a regional level, but it is also influential on the national scale due to its activity and economy related to industrial production.

However, even cities like Tangshan, considered as the cradle of the modern Chinese industry can not escape the transition towards the Post-industrial society. One of the first aspects which has been affected by this shift is the urban life and layout, especially in those areas of the city vigorously characterised by the spaces related to industrial development.

As a demonstrative sample of the city of Tangshan, the East side of the Dou river reveals not only the glorious industrial past, but also the numerous challenges arising from the contemporary times. Extended industrial buildings and facilities dominate the district, only separated by modest residential neighbourhoods. The precise differentiation betwixt the imposing industrial buildings and facilities and the smaller residential buildings - mostly represented by the two main typologies of the market rate housing and the socialist danwei -, demonstrates the steadily segregation existing between the urban functions. The almost mono-functional character of the

district and the presence of the river, makes this neighbourhood an isolated and detached part of the city. Furnaces, silos and several industrial machineries appear as actual urban landmarks on the chosen site, representing a valuable industrial heritage.

As a responsible answer from architects and planners, this thesis fits within the general discourse against the demolition of the industrial heritage, reusing it as a regenerative tool in which new contemporary functions and programs can respond to today's shift of society and economy. The choice to approach the research topic to the Chinese environment, especially within those secondary cities throughout the country, makes this work of thesis a proper contemporary approach example. The reuse and enhancement of the existing industrial asset, as explored throughout this thesis, acts as a performative tool on the city level, on the district level and on the building level. The relevance of this project, indeed, is the general consideration of the existing building not as a mere isolated object to reuse, but as part of a bigger system and an area that needs to be included within its urban context.

Together with the contemporary process of deindustrialisation and displacement, the district loses its *raison d'être* within the urban context, transforming it into an anonymous and detached

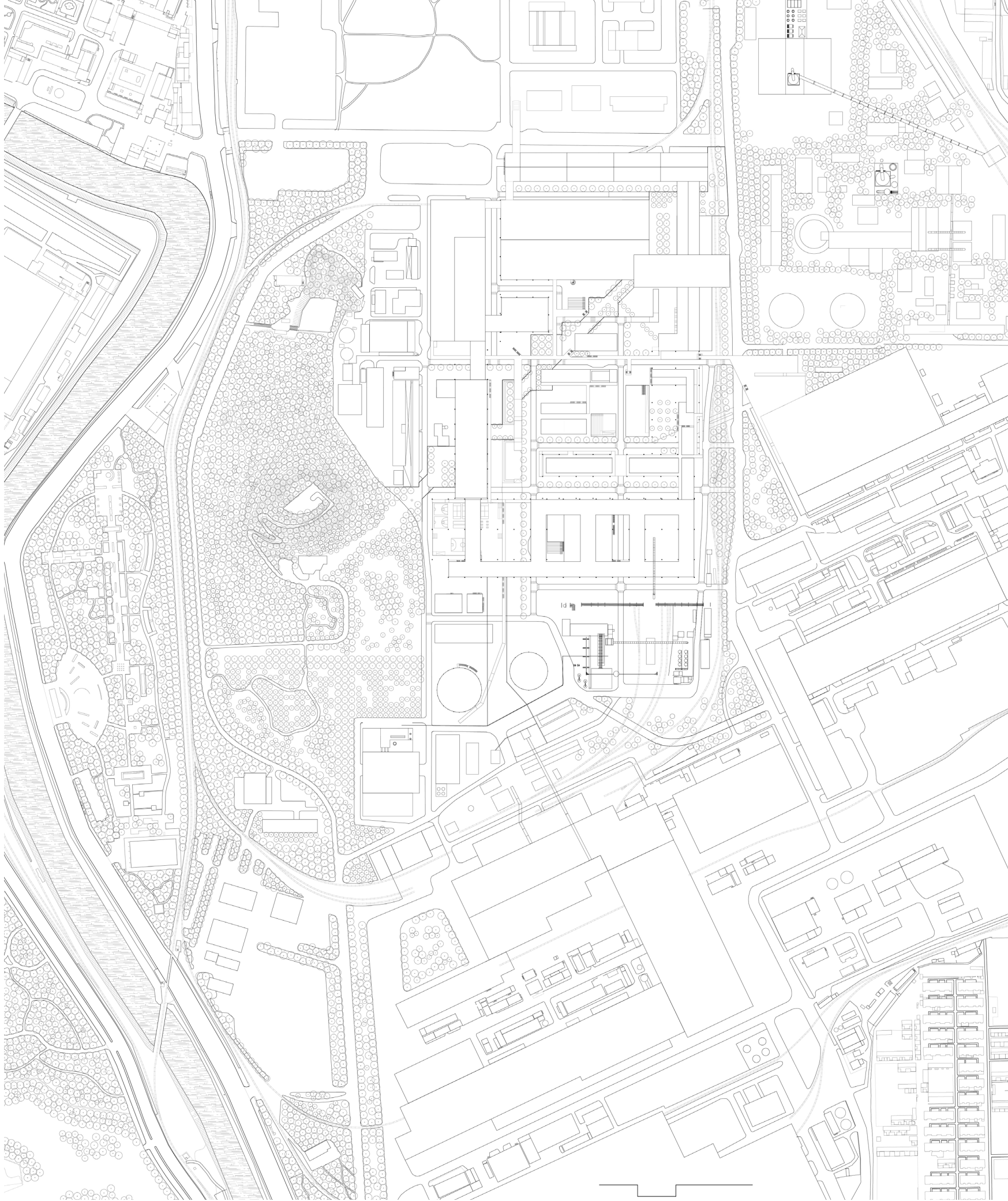
residential district at the periphery of Tangshan. Accordingly, the project aims to reactivate and connect the district to the rest of the city through two main visible elements. The design foresees a green strip, that is a series of vegetated spaces, which crosses the site and connects the main green areas and parks of the consolidated urban core with its new expansion areas, helping to enhance the urban green infrastructure. On the other hand, the "Tang-strip", which characterises the architectural design of the former Rolling Mill of Tangshan Steel Factory, connects the city of Tangshan with the northern side of the East Dou river district and the future Donghu Forest Park on the East.

Furthermore, the connection to the city is favoured not only through physical elements, but also this work produces a new network of users and spaces which enable new flows of people and knowledge from and to the district.

On the district scale, the identification of three main nodes and a connective line in the examined area, which reuse respectively the existing industrial buildings and the former industrial rail tracks, goes against that typical principle of segregation spread throughout the industrial period.

Beyond placing new contemporary programs within each node, the project

0 100 200 m
Tangshan steel factory - overall view



actively responds to the need of creating more and diverse job opportunities, reduced by the displacement of the manufacturing sector.

On the building level, the design experiences different approaches to physically and functionally re-propose the existing building, providing the finest approach for each building and avoiding unconscious and severe demolition. The work of thesis, through the design strategies, indeed, promotes the preservation and enhancement of the collective memory related to a period which has not been always considered worthy of relevance.

Overall, this work of thesis redevelops this piece of the city through the reuse of the existent former industrial legacy and promotes it as a new centrality well integrated within the contemporary dynamics of a typical city during its transition towards a post industrial society.

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P062-063
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P064
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P124-137
Yixin Zhang, Tangshan steel factory, photographic reportage, February 2022

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Marco

Cities in the Post Industrial Turn

Promoting a new centrality through the reuse of the former
Tangshan Steel and Iron Plant