A POSSIBLE METHODOLOGY FOR URBAN REGENERATION PROCESS. URBAN RAILWAYS DISMANTLED AREAS IN TORINO AND ZAGREB.

A POSSIBLE METHODOLOGY FOR URBAN REGENERATION PROCESS.
URBAN RAILWAYS DISMANTLED AREAS IN TORINO AND ZAGREB.

Politecnico di Torino
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Alla mia famiglia che, da sempre,
mi ha rivolto la più nobile forma d'amore:
la libertà di scegliere.

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00

ABSTRACT

The dismantled railway areas are urban voids where social and functional connections and interactions experience an abrupt interruption. Characterized by strong margins, they constitute missing pieces within the compact city. From the perspective of urban regeneration, the potential is to carry out stitching works, defining the terms through which these areas can integrate with the existing context. The considerable dimensions of disused railway areas allow for effectively balancing the full-empty ratio from a formal standpoint and the built-park ratio from a functional perspective. Italian and European examples clearly demonstrate that, in these cases, there is an opportunity to meet the minimum built requirements prescribed by zoning plans without sacrificing the vision of large urban parks. Given the large-scale nature of these interventions, the objective is to start with an urban strategy and then integrate the project elements with corresponding existing elements, so that the masterplan is a result of consolidated urban logics or those suggested by the city's structure. The ultimate goal is to define a general methodology on how to approach disused railway areas in the city center, starting from the analysis and design of two case studies: the former Vanchiglia railway yard in Turin and the Gredelj area in Zagreb. The comparison between the two cities and the two project areas is particularly effective due to many common elements: an industrial past with consequent deindustrialization, a regular urban grid consistent with territorial planning tools (PRG in Turin and GUP in Zagreb), and the proximity of the disused railway area to the city center. The opportunity to compare two similar areas has allowed for the adoption of similar strategies, leading to the definition of guidelines for a possible methodology for disused railway areas in the city center. However, the different contextual conditions of the two cities have resulted in project variations that have influenced the outcomes.

01

INTRODUCTION

URBAN RAILWAYS DISMANTLED AREAS

In the contemporary urban evolution, abandoned railway areas often represent an overlooked yet potent resource for **urban regeneration**. These forsaken lands stand as tangible reflections of the evolution in transportation systems and the shifting economic and social needs of cities. This study aims to delve into the pivotal role that abandoned railway areas play in the context of contemporary architecture and the redefinition of urban spaces. Through a comprehensive analysis, it will explore the transformation process of these territories from disused railway infrastructures into new dynamic hubs of social, cultural, and economic activities.

Zagreb and **Turin** share rich industrial histories characterized by dynamism and development, including well-established railway networks that played a crucial role in their economic growth. However, as times have changed, many of these railway infrastructures have lost their original relevance, becoming disused areas that now present challenges and opportunities for urban regeneration. In Zagreb, the disused railway areas are largely concentrated around the central station, **Gredelj Zone**. Once vital for production and maintenance of trains, these areas have transformed into unused spaces, offering vast potential for urban revitalization. Gredelj Zone itself has been a subject of debate for redevelopment into a multifunctional center, integrating spaces for offices, residences, and commercial activities. In Turin, the disused railway areas have a closer association with the automotive and manufacturing industry. For instance, Torino **Vanchiglia Station**, better known as Vanchiglia freight yard, was a large freight yard in the city, used to serve the numerous industrial activities in the area.

Both cities are facing the challenge of redeveloping disused railway areas to reinvent the urban fabric and meet modern community needs. These spaces offer a unique opportunity for creating new neighborhoods, parks, sustainable infrastructures, and cultural centers, thus contributing to economic revival and urban innovation.

WHY A POSSIBLE METHODOLOGY?

The proposed **methodology** should not be understood as a set of guidelines applicable to any disused railway area, but rather to a specific category, namely those located within the compact city. This focuses attention on a series of considerations necessary from both a formal and functional standpoint, which are not interchangeable with those that would need to be made if the area were peripheral to the urban center due to differing densities and services. Although there exists a general methodological approach to addressing urban issues that appears adaptable to different areas, the **specificities** of each area cause variations in the effectiveness or application of such strategies. Developing a methodology for dealing with dismantled urban railway areas is crucial for several reasons. A structured methodology provides a **systematic approach** to transforming these areas into functional spaces that meet the evolving needs of the community. It helps maximize their potential for urban development and regeneration. Establishing a methodology ensures clear and consistent **guidelines** for managing these areas. This promotes uniformity, streamlines decision-making processes, and ensures better consistency in redevelopment projects. A well-defined methodology involves engaging stakeholders and the local community. This enables a more comprehensive understanding of **community needs**, allowing for their integration into the redevelopment plans. Dismantled urban railway areas often pose unique challenges, such as **environmental contamination**, obsolete infrastructure, or accessibility issues. A methodology tailored to these challenges can strategically address them, devising specific solutions. A methodology centered on sustainability can foster urban regeneration while considering **environmental, social, and economic aspects**. It encourages balanced and long-term urban growth.

02

CASE STUDIES OVERVIEW

COMPARABLE INFORMATION

TURIN

COUNTRY: Italy
REGION: Piedmont
AREA: 130,01 km2
ELEVATION: 239 m
WEATHER: 2ºC / 22ºC
POPULATION: 1 792,163 (total)
886 837 (urban)
DENSITY: 6,800 in./km²

ZAGREB

COUNTRY: Croatia
REGION: Zagreb region
AREA: 641 km2
ELEVATION: 122-1 035 m
WEATHER: -3 °C / 27 °C
POPULATION: 806 341 (total)
1 087 550 (urban)
DENSITY: 1 200,79 in./km²

ABOUT TURIN

The city is located in the vast Po Valley, one of the largest alluvial plains in Europe, crossed by the Po River, which divides the city into two parts. Historically, the northern Italian territories within the Po Valley share a strong inclination towards industrial activities, thanks to the favorable geographical layout of the region, the presence of navigable rivers like the Po, efficient infrastructure and transport connections, and the existence of large resource-rich cities such as Turin, Milan, and Bologna, which have formed real industrial clusters. During the Industrial Revolution in the 19th century, the Po Valley became one of the main industrial hubs in Italy. Access to raw materials, the availability of labor, hydroelectric power, and proximity to European markets contributed to the industrial boom. Turin played a prominent role in this revolution, becoming a significant manufacturing center. The city was known for its textile industry but gained particular fame in the 20th century for the automotive industry. Fiat (Fabbrica Italiana Automobili Torino), founded in 1899 by Giovanni Agnelli, became one of the world's leading automobile manufacturers. The presence of Fiat attracted numerous other companies in the sector, contributing to the establishment of a major automotive district. After World War II, Italy experienced a period of rapid economic growth known as the "economic miracle." Turin played a crucial role in this era of prosperity, with strong industrial development, urbanization, and an increase in the standard of living. Towards the end of the 20th century, the automotive industry in Turin faced a crisis due to changes in the global market and new environmental requirements. The deindustrialization of Turin was a complex and gradual process. Automation and the evolution of production technologies led to increased efficiency but also reduced the need for labor in some industries, significantly impacting employment levels in the industrial sector. Additionally, the oil crisis of the 1970s had repercussions on the global automotive industry. Turin's automotive companies, heavily dependent on the oil sector, experienced negative consequences. The phenomenon of deindustrialization affected not only Turin but the entire Europe, starting from the 1970s and 1980s. It was characterized by a decline in industrial production and a transformation of the economy towards tertiary sectors, such as services and technology. It is not only an economic-production phenomenon but also an urban one because the functional loss of extensive city areas led to the abandonment of large industrial sectors. To address the issue in Turin, various initiatives were undertaken, including urban redevelopment and industrial reuse programs.

Ex scalo Vanchuglia. Source: AtlasFOR.

RAILWAY AREAS IN TURIN

The Municipality of Turin, in the 1980s, began to focus on the reorganization and enhancement of the city's railway system, paying particular attention to abandoned areas near the railways. The objective was to improve the logistical infrastructure and the quality of life in the surrounding neighborhoods. The general urban plan of 1993, developed by architects Vittorio Gregotti and Augusto Cagnardi, proposed the transformation of the "Central Spine" into a sort of urban backbone. The first step involved burying the city's railway, allowing for the redevelopment of the elevated areas. This included the creation of a new avenue, the "Viale della Spina," and the covering of the railway passage, encouraging the reorganization of surrounding spaces with new services, parks, residences, and road connections. The project was divided into four areas of urban transformation, known as Spina 1, 2, 3, and 4, which outlined the intervention areas along the Central Spine's route.

SPINA 1

The path of the Central Spine begins at largo Filippo Turati, in the southern area of Turin. The initial stretch, between largo Turati and largo Orbassano, hosts the Clessidra Park, still incomplete, which overlooks the Zappata junction, now underground, connecting railway lines from various stations. The construction of the Torino Zappata station is planned in this area. Continuing towards corso Vittorio Emanuele II, the path crosses corso Mediterraneo and corso Castelfidardo. In the stretch of corso Castelfidardo, the Avenue traverses the structures of the recent expansion of the Polytechnic University of Turin, bridged by a two-point bridge structure. A square of the Polytechnic will be built on the west side, surrounded by university buildings with facilities and entertainment structures. The building on the west side was previously the headquarters of General Motors Powertrain Torino, now owned by PUNCH Torino S.p.A. In the same area, west of corso Castelfidardo, the buildings of the former Officine Grandi Riparazioni (OGR) have been recovered, now used as classrooms, laboratories, and a canteen for Polytechnic students. The recovery began in 2011 and in 2013 the OGR-CRT Company acquired the OGR, starting a major redevelopment project that concluded in 2017. The OGR was inaugurated in 2018 and during the COVID-19 pandemic, they were used as a field hospital.

SPINA 2

Spina 2, one of the most complex sections of the project, extends along the entire Corso Inghilterra, from Corso Vittorio Emanuele II to Piazza Statuto.
The Avenue runs alongside the new To-

La Spina Centrale.
Source: Divisione Urbanistica ed Edilizia privata, settori Progetti di Riassetto Urbano, Comune di Torino.

rino Porta Susa station, located between Corso Inghilterra and Corso Bolzano, accessible from both sides. This station, which replaced the historic facility in Piazza XVIII Dicembre, has underground tracks and an above-ground passenger building in the shape of a transparent semicylinder, occupying the section from Corso Giacomo Matteotti to Piazza XVIII Dicembre. After Porta Susa, the avenue passes under Piazza Statuto through an underpass. In the same area, RFI's project also includes the construction of a 100-meter skyscraper. However, RFI has never submitted a definitive project for the skyscraper, while in the meantime the insurance group Fondiaria Sai has expressed several times its intention to build its own directional center on the areas of Spina, which could arise either in place of the one planned by RFI or in the area of Spina 1 in the triangle between Corso Lione, Corso Mediterraneo, and Via Rivalta.

SPINA 3

The Spina 3 area is the largest of the project, covering over one million square meters and is one of the main interventions of the Turin Urban Plan, with total investments of around 800 million euros. It stretches along Corso Principe Oddone to Piazza Baldissera. This area is further divided into seven macro-zones, corresponding to industrial buildings abandoned around the eighties: the three old steel plants of the former Fiat Ferriere, later known as Teksid (Valdocco, Vitali, Valdellatorre), the former Michelin factories, Paracchi, Fiat Nole, Ingest, and the Officine Savigliano. Together, these areas form the Dora Park, covering 450,000 square meters, with guidelines defined by architect Andreas Kipar and the design entrusted to the Peter Latz and associates studio. Facing the Environment Park, on a portion of the Michelin area (approximately 100,000 m²), the Dora Shopping Center was inaugurated in 2003, featuring the multiplex cinema The Space and the hypermarket Ipercoop along with a shopping gallery and multi-level parking. The area is situated between Via Livorno, Via Treviso, and Corso Umbria.

SPINA 4

La Spina 4, the final stretch of the Central Spine, extends along the axis of Corso Venezia, starting from Piazza Generale Antonio Baldissera and ending near Corso Grosseto, ultimately crossing through Sempione Park. The redevelopment concerns the area bounded by Corso Vigevano, Via Stradella, Corso Venezia, Sempione Park, and Via Francesco Cigna. From a logistical standpoint, the burying of the passageway has entailed the widening and lengthening of Corso Venezia, in line with the rest of the Spine Boulevard, which in its final section connects to the highway interchange for Caselle. This serves as a northern access point for the city, facilitating a smoother and faster connection between downtown Turin and Caselle Airport. Sempione Park, on the other hand, has undergone significant changes due to the ongoing works, particularly on its western side (an integral part of Borgo Vittoria), which already houses the recent Torino Rebaudengo Fossata station. On the eastern side, however, it will be the terminus of Line 2 of the Turin Metro.

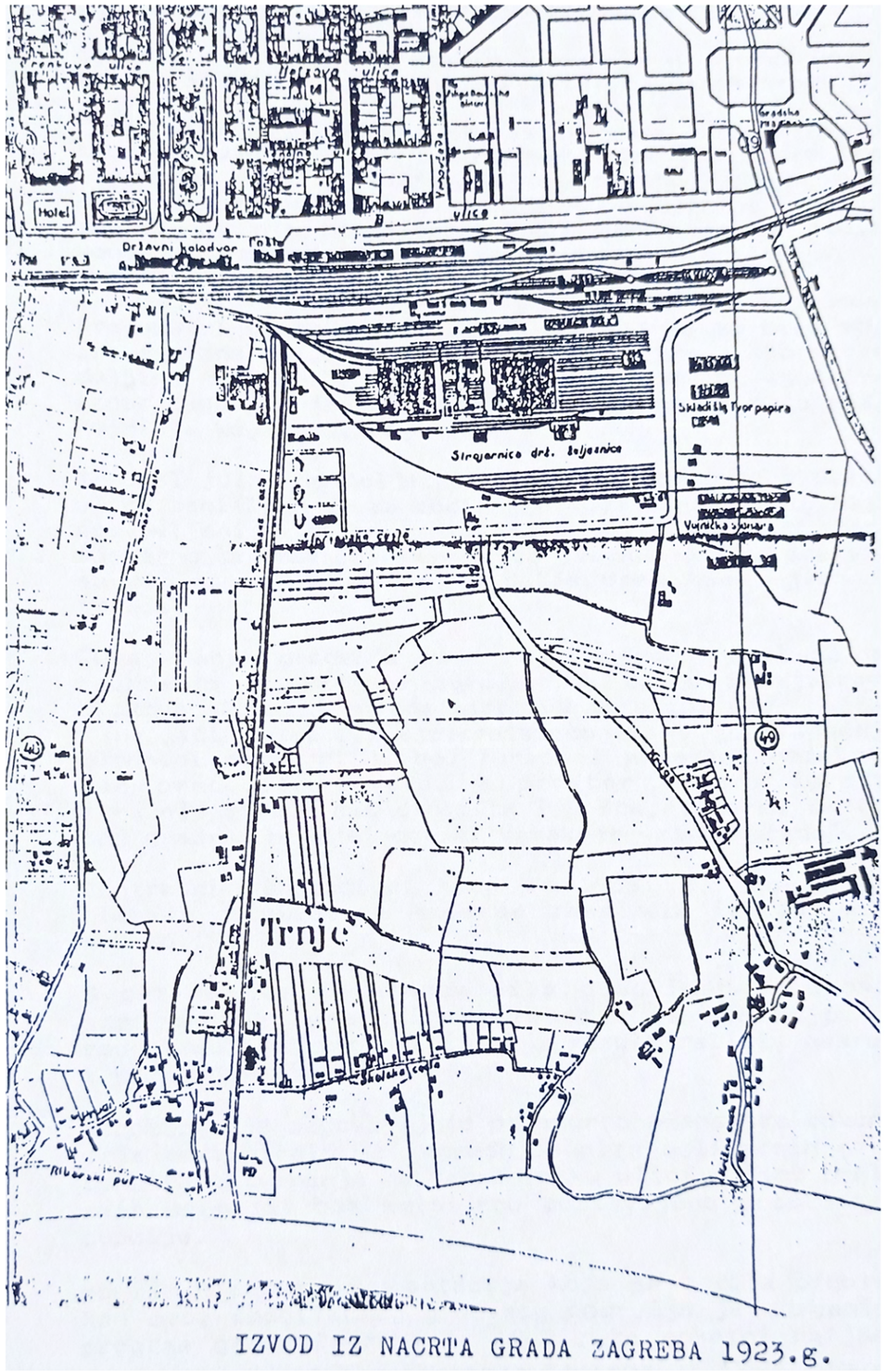
ABOUT ZAGREB

Zagreb is situated at an altitude of 120 meters above sea level, between the southern slopes of Mount Medvednica and the northern bank of the Sava River. Its favorable location in the southwestern part of the Pannonian Plain, which extends to the Alps, the Dinaric Mountains, the Adriatic Sea, and other regions of the Pannonian Plain, makes it an important hub for trade between Central Europe and the Adriatic. Its significance for trade, concentration of industries (including steel, electrical appliances, textiles, chemicals, pharmaceuticals, leather, wood, and paper processing, etc.), scientific institutions, and industrial tradition determine its predominant economic position. During the 19th century, Zagreb gained even more importance. In 1862, the first railway line connecting it to Zidani Most (Slovenia) and Sisak was opened, followed the next year by the construction of a gas processing plant. The first half of the 20th century saw significant expansion of the city, with the suburbs of Stara Peščenica to the east and Črnomerec to the west being built before the First World War. After the war, neighborhoods for the working class were developed between the railway line and the Sava River, while residential areas were established on the southern slopes of the mountain called Medvenica. Following the war, Zagreb experienced another major phase of urban growth, with a large industrial center created to the southeast. The industrial history of Zagreb has been influenced by various factors over the centuries. During the 19th century, with the opening of the first railway lines and the development of manufacturing industry, the city began to transform from a commercial and administrative center into an important industrial hub. One of the crucial moments was the opening of the first railway line in 1862, which connected Zagreb to Zidani Most (in Slovenia) and Sisak. This railway connection greatly improved the transportation of goods and people, fostering the development of industry and trade in the region. During the early 20th century, Zagreb experienced significant industrial expansion, with the construction of gas processing plants, textile factories, steel mills, and other manufacturing industries. This period also saw the creation of industrial and residential suburbs, with the construction of neighborhoods for the working class.
After the Second World War, Zagreb became an important industrial center in Yugoslavia, with the establishment of large industrial complexes producing a wide range of products, including machinery, electronics, textiles, chemicals, and more.

Source: extract from the Urban plan 1898.

RAILWAY AREAS IN ZAGREB

In the 19th century, Zagreb experienced significant expansion due to the construction of a railway connecting it to Zidani Most and Sisak, followed by the establishment of a gas processing plant. During the first half of the 20th century, the city continued to grow, with the development of suburbs and residential neighborhoods. After World War II, Zagreb underwent further urban development, including the creation of a large industrial center to the southeast. One of the most dismantled railway area in Zagreb is certainly the complex of the Hungarian Railways Workshop - today the State Railways Workshop and the “Janko Gredelj” Factory. Conceived at the time of the construction of the Central Station, it was built mostly in the period from 1894 to 1911 as a technological infrastructure for the operation of a part of the then Royal Southern Railway which connected Budapest with the Adriatic ports. The complex is located east of Zagreb’s central station, along the railway that cuts the city into two parts. It served the function of train production and maintenance and is now abandoned due to the relocation of production activities to the outskirts of the city. This is because, at the time of its construction in 1893, the directives of the Basic Regulation of 1865 were followed, which envisioned Zagreb as a city of 40-50,000 inhabitants. However, the demographic growth in the following years was much greater, leading to unplanned urban expansion. Even today, it is evident in the city’s layout that the railway divides the city into two parts, separating the planned northern part, consisting of a grid of blocks, from the irregular southern part because the urban plan at that time did not foresee expansion towards the south. The future treatment of the urban railway directly impacts the quality of the urban public transportation system, pedestrian, and cycling corridors. Considering the importance of adhering to modern European initiatives in sustainable mobility planning in cities, it’s vital to explore solution variants that will improve transportation links by adequately representing different modes of movement. A report from the Faculty of Architecture at the University of Zagreb provides an overview of three possible scenarios for railway treatment. Once peripheral, the central part of the city (Donji grad) is now separated from the settlements built to the south by the railway route, along with associated industrial complexes, most of which have closed and seen reduced production capacity. The reconstruction, revitalization, and conversion of abandoned industrial plants and strategic urban projects of Paromlin and Gredelj directly depend on the treatment of the city railway.



Source: extract from the Urban plan 1923.

SCENARIO 1

The existing situation, namely the railway with its field-level connected structures, impedes any serious intention and modification in terms of strategic transportation, urban connections, and integration. For such variants, significant financial investments are not easily planned, except for maintaining and improving railway viability. The city's skyline remains threatened; there's an acoustic impact equivalent to the economic valuation of land value, and pedestrian integration with the city center reduces to overpasses, underpasses, and the underground commercial gallery near the central station, providing pedestrian connection over the railway.

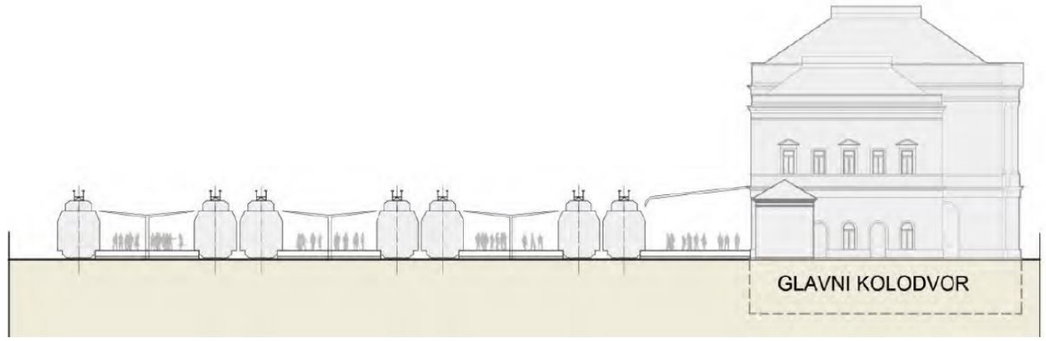
SCENARIO 2

The hypothesis of elevating the railway line above ground level frees up a vast area currently occupied by the railway, allowing for more significant road connections and natural links between road and pedestrian paths intersected by current railway traffic. However, raising the railway still doesn't allow optimal use of expansive and attractive areas, considering the characteristics of areas affected by railway overpass construction. Noise, still prevalent, jeopardizes immediate city structures, and noise would increase significantly due to the nature of overpass construction. This second variant doesn't solve visibility and environmental issues in the railway area, and the economic value of land immediately adjacent to the railway depends, among other things, on the noise produced by railway traffic.

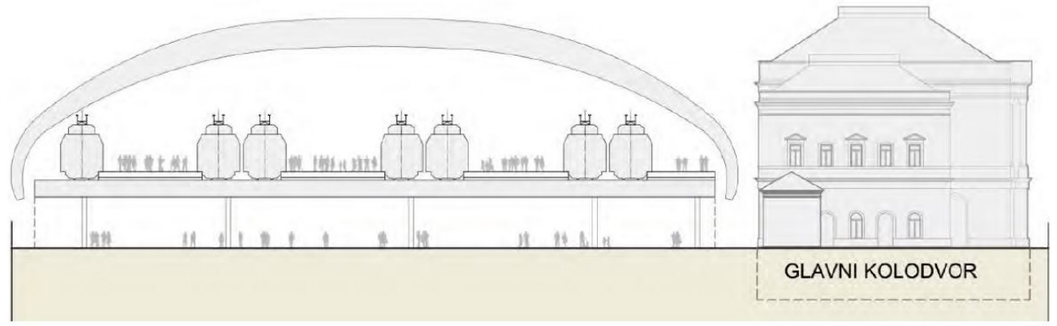
SCENARIO 3

The third hypothesis of burying railway traffic clearly imposes a high-quality, long-term city integration strategy, freeing up attractive public, building, and green areas, enhancing urban quality along existing and future constructions directly along the railway corridor, resolving noise issues, and opening perspectives, in short, an optimal scenario for urban railway treatment.

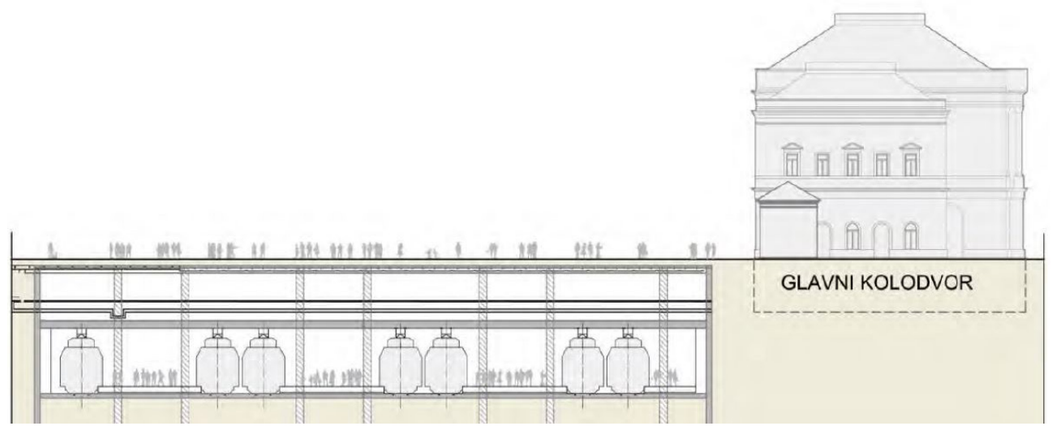
The financial structure and funding provision, as well as realization times, are longer compared to the hypothesis of elevating the railway above ground; however, introducing underground railway metro is made possible by permanent, high-quality solutions for strategic city territory development.



SCENARIO 1: Main station - cross-section - railway at ground level
Source: The urban architectural study for the development of the space from Dr Franje Tudman square to Kresimir Cosic square 2010.



SCENARIO 2: Main railway station - cross section - railway above ground level
Source: The urban architectural study for the development of the space from Dr Franje Tudman square to Kresimir Cosic square 2010.



SCENARIO 3: Main Railway Station - Cross Section - Railway Below Ground Level
Source: The urban architectural study for the development of the space from Dr Franje Tudman square to Kresimir Cosic square 2010.


EX SCALO VANCHIGLIA
PARCO DELLA CONFLUENZA
PARCO DEL MEISINO
PARCO COLLETTA

GREDELJ ZONE

LENUCI'S HORSESHOE

EX SCALO VANCHIGLIA

GREDELJ ZONE

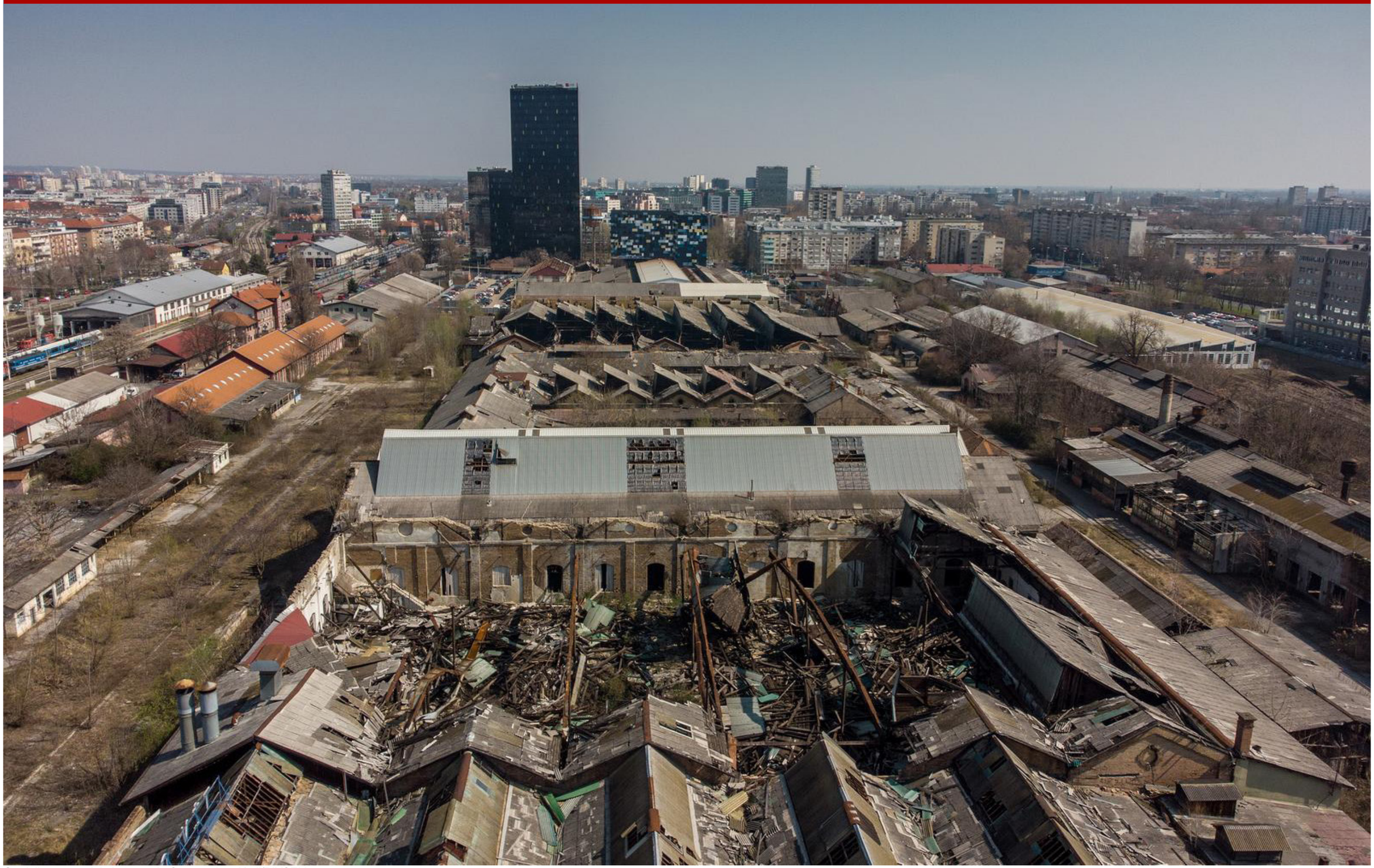
24 min
19 min
7 min

16 min
12 min
12 min

EX SCALO VANCHIGLIA

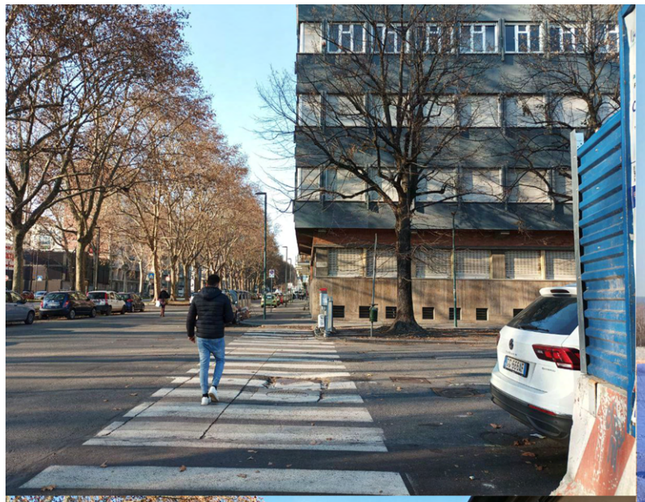
Ex scalo Vanchiglia seen from Corso Novara. Source: Google earth.

GREDELJ ZONE



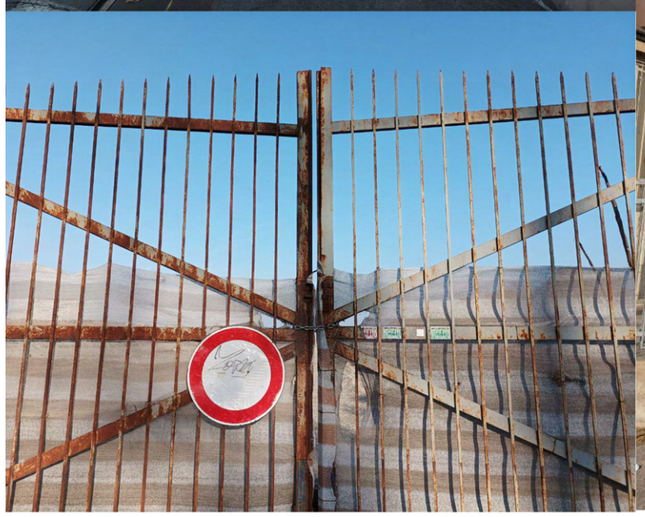
Gredelj zone, aerial photograph. Source: Igor Kralj/PIXSELL.

SCALO VANCHIGLIA SITE INSPECTION



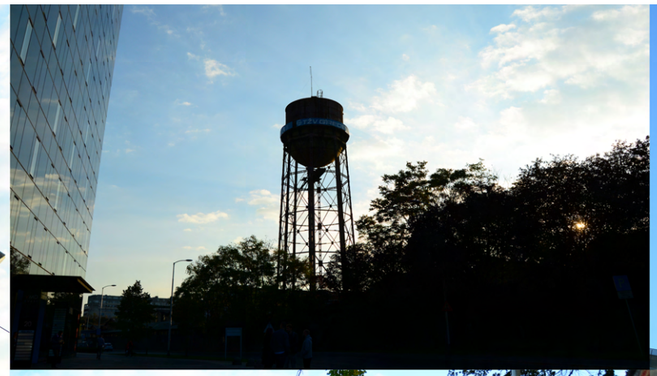


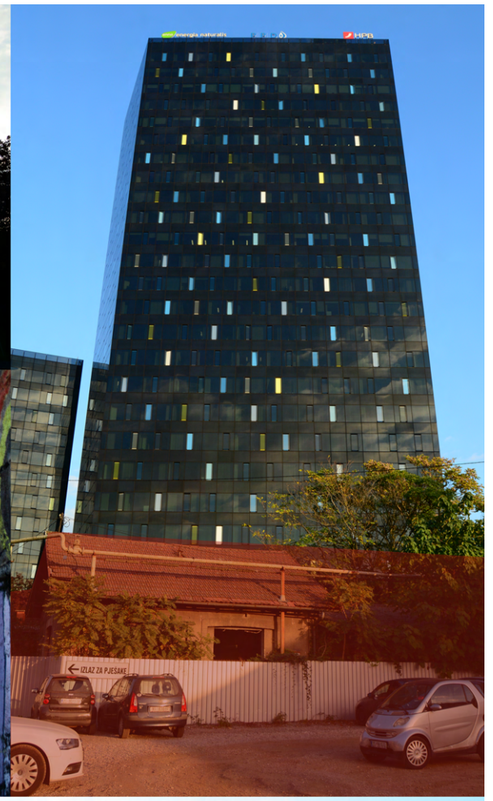


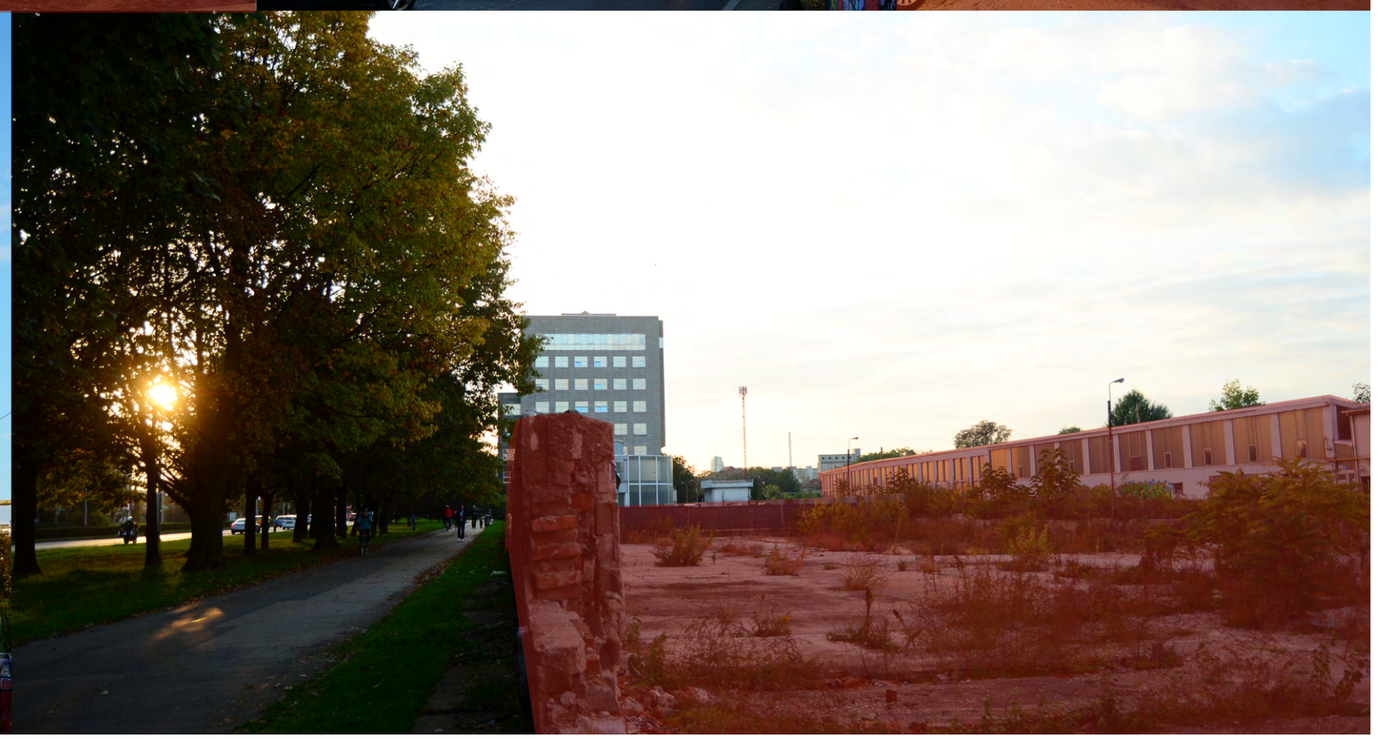



Pictures taken by the author.

GREDELJ ZONE SITE INSPECTION



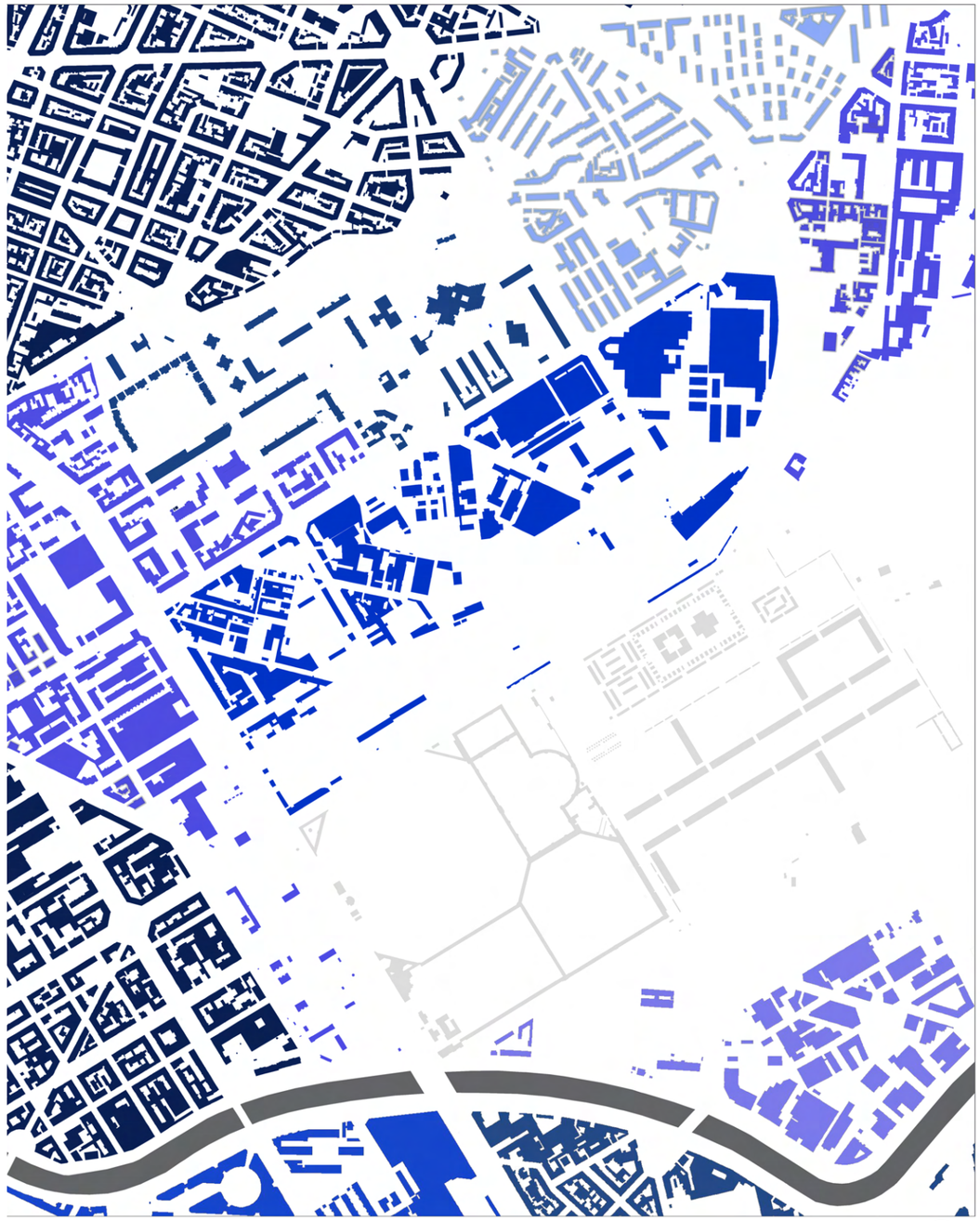




Pictures taken by the author.

MORPHOLOGICAL ANALYSIS_TORINO

250 m



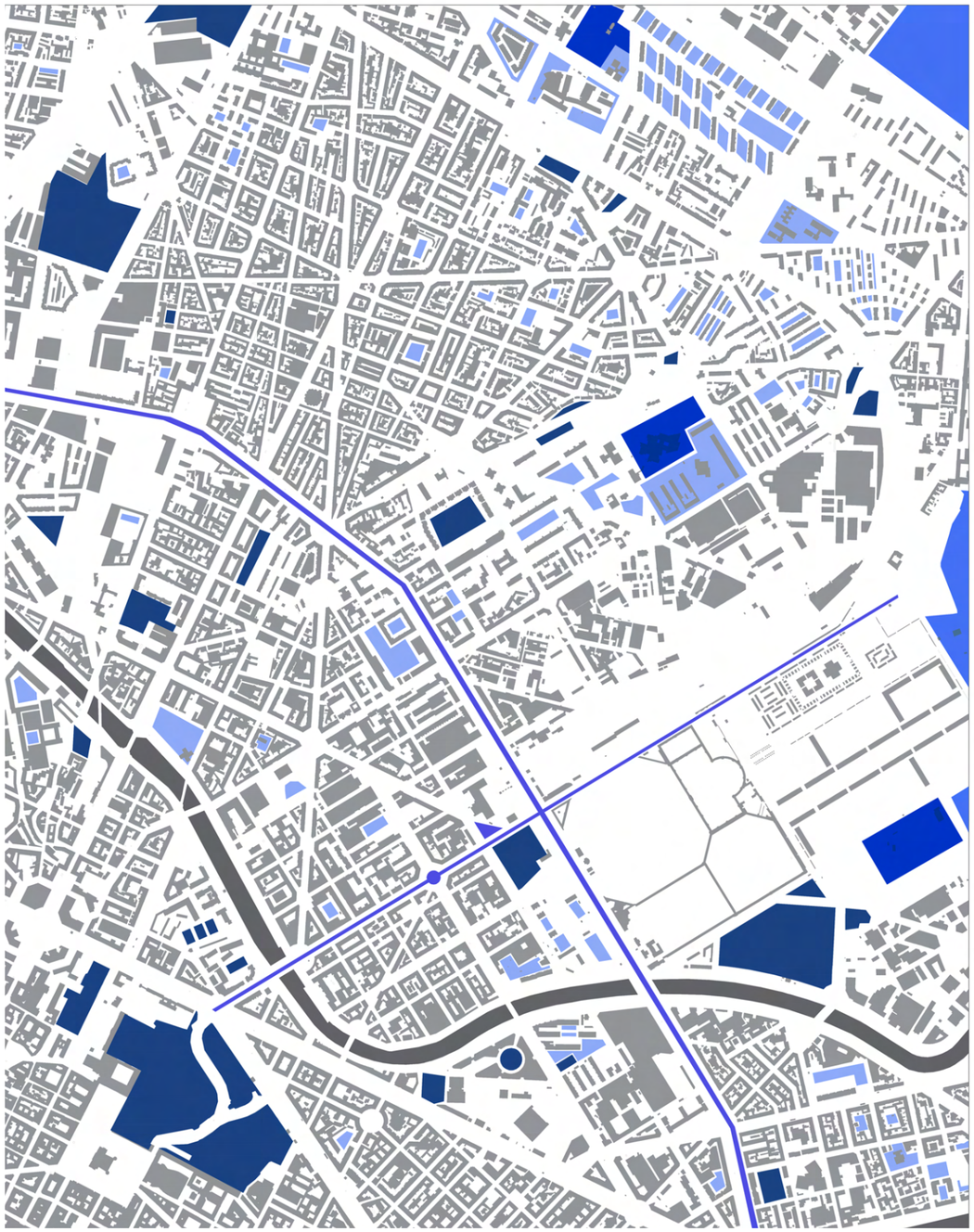
MORPHOLOGICAL ANALYSIS_ZAGREB

250 m

GREEN ANALYSIS_TORINO

FOREST
PARK
PRIVATE AREA
BOULEVARD
FLUIAL GREEN
SPORT AREA
CULTIVATIONS
WATERWAYS

250 m

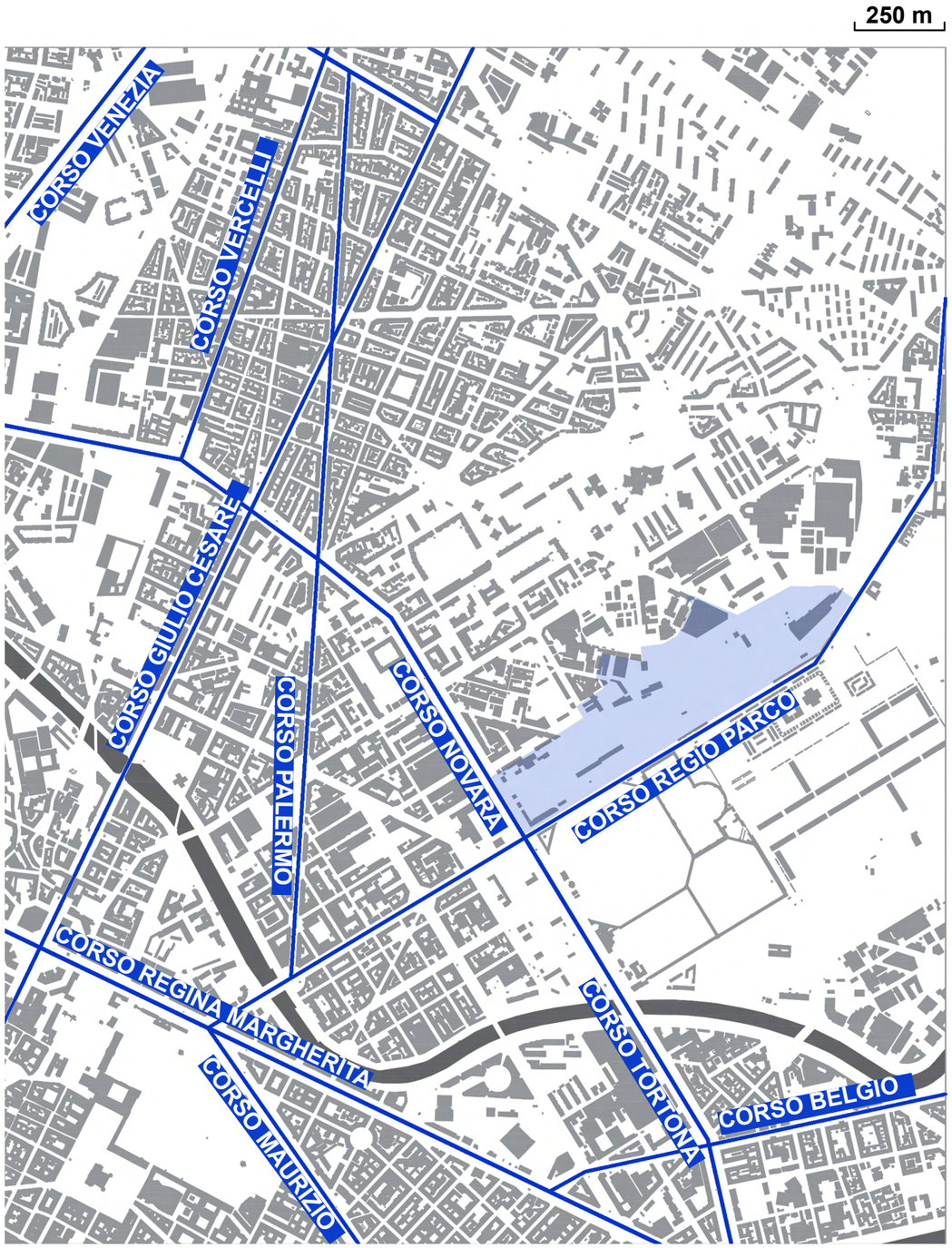


GREEN ANALYSIS_ZAGREB

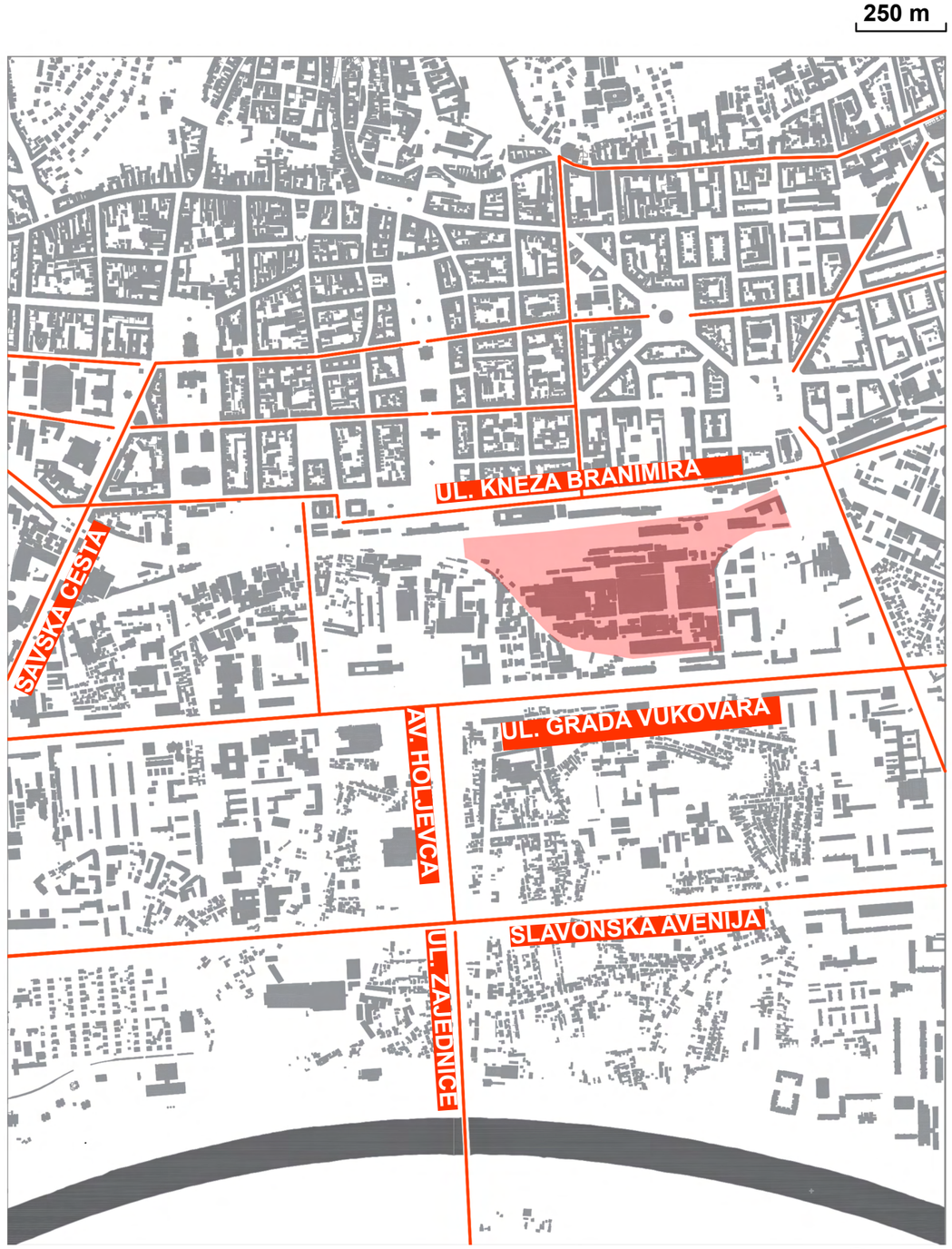
FOREST
PARK
PRIVATE AREA
BOULEVARD
RIVERSIDE
SPORT AREA
CULTIVATIONS
WATERWAYS

250 m

MAIN STREETS_TORINO



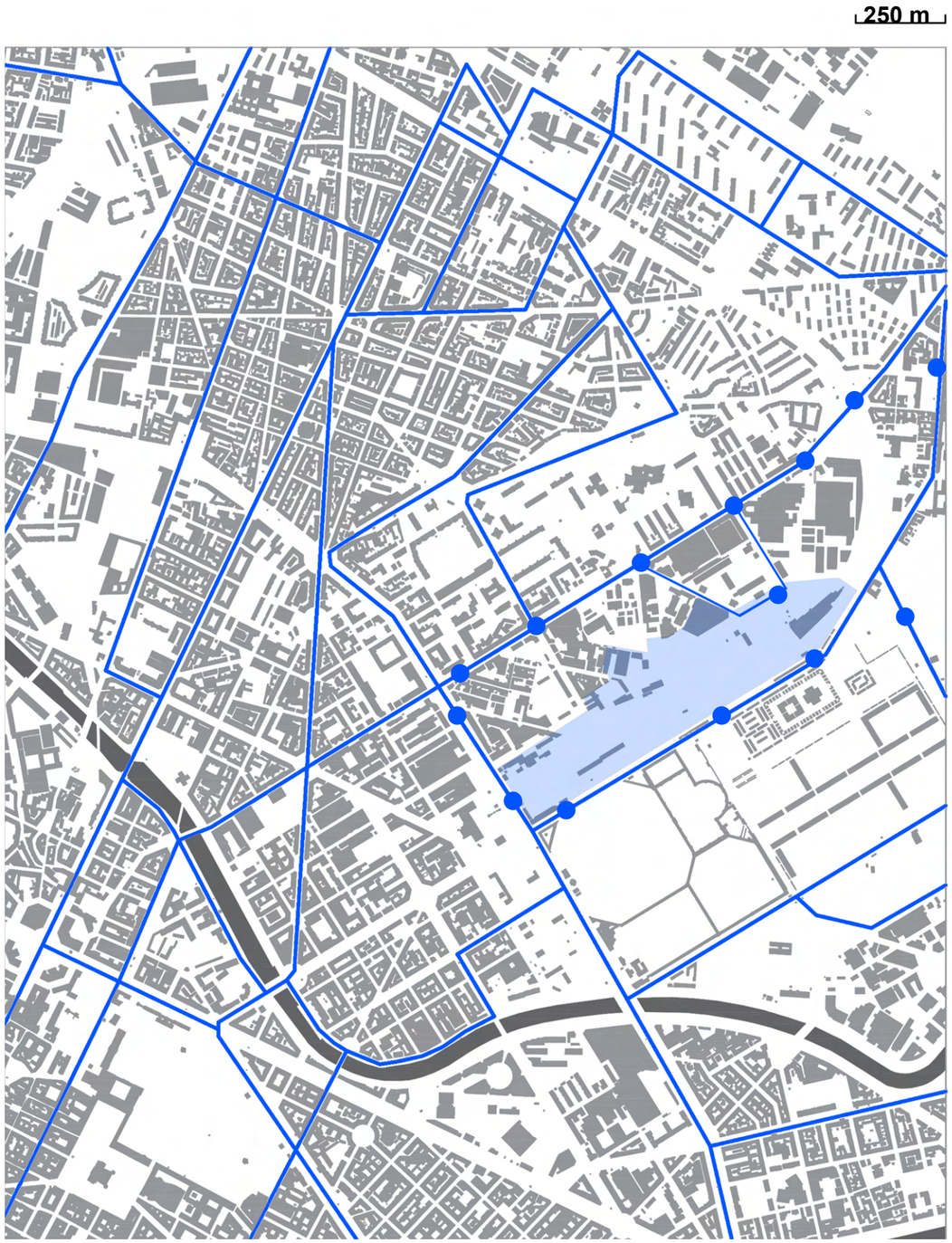
MAIN STREETS_ZAGREB



CYCLE PATH_TORINO

CYCLE PATH_ZAGREB

TRANSPORTATION_TORINO



TRANSPORTATION_ZAGREB

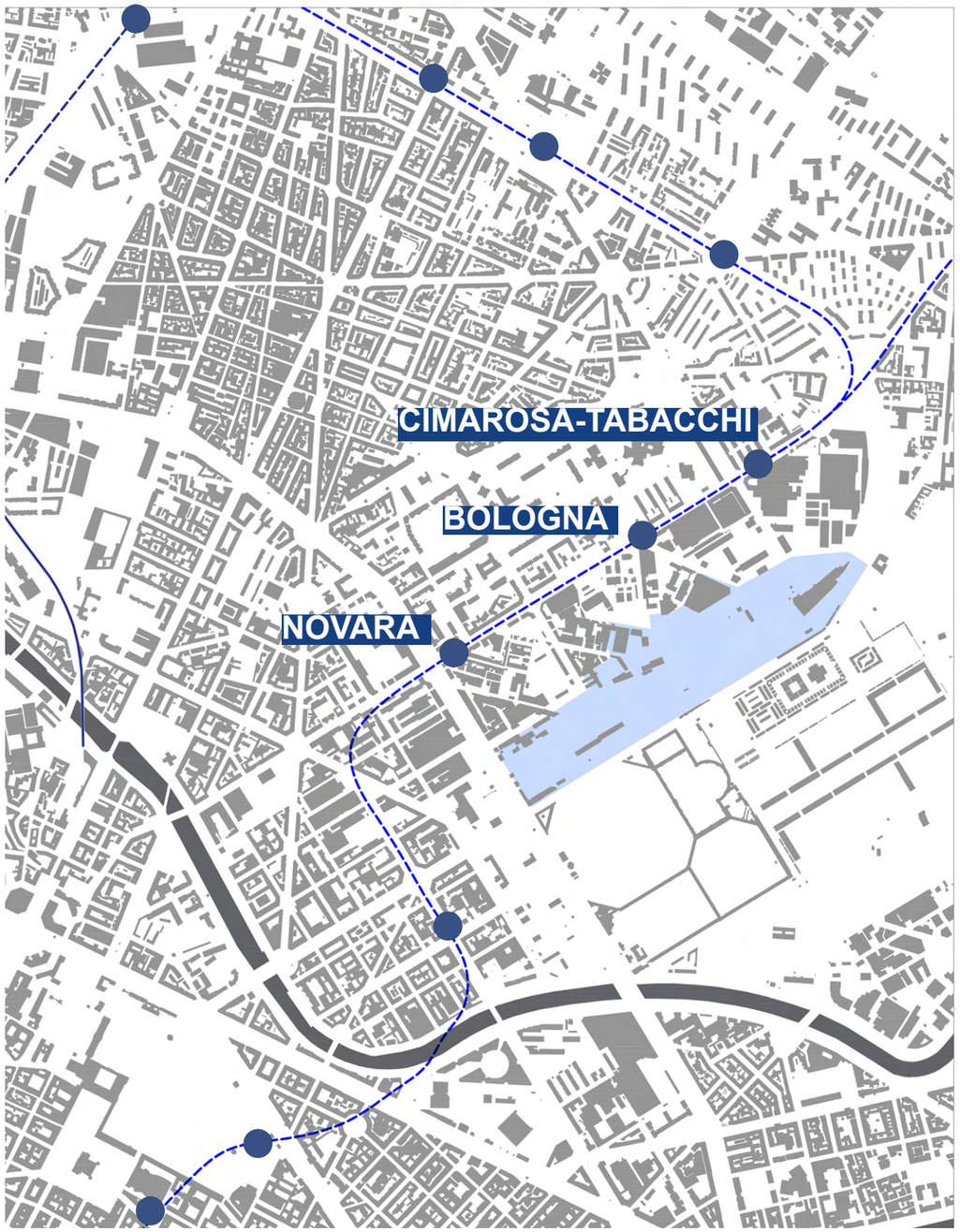
TRANSPORTATION_TORINO

EX RAILWAYS AREA CIRIÈ LANZO

UNDERGROUND RAILWAYS

FUTURE METRO 2

250 m



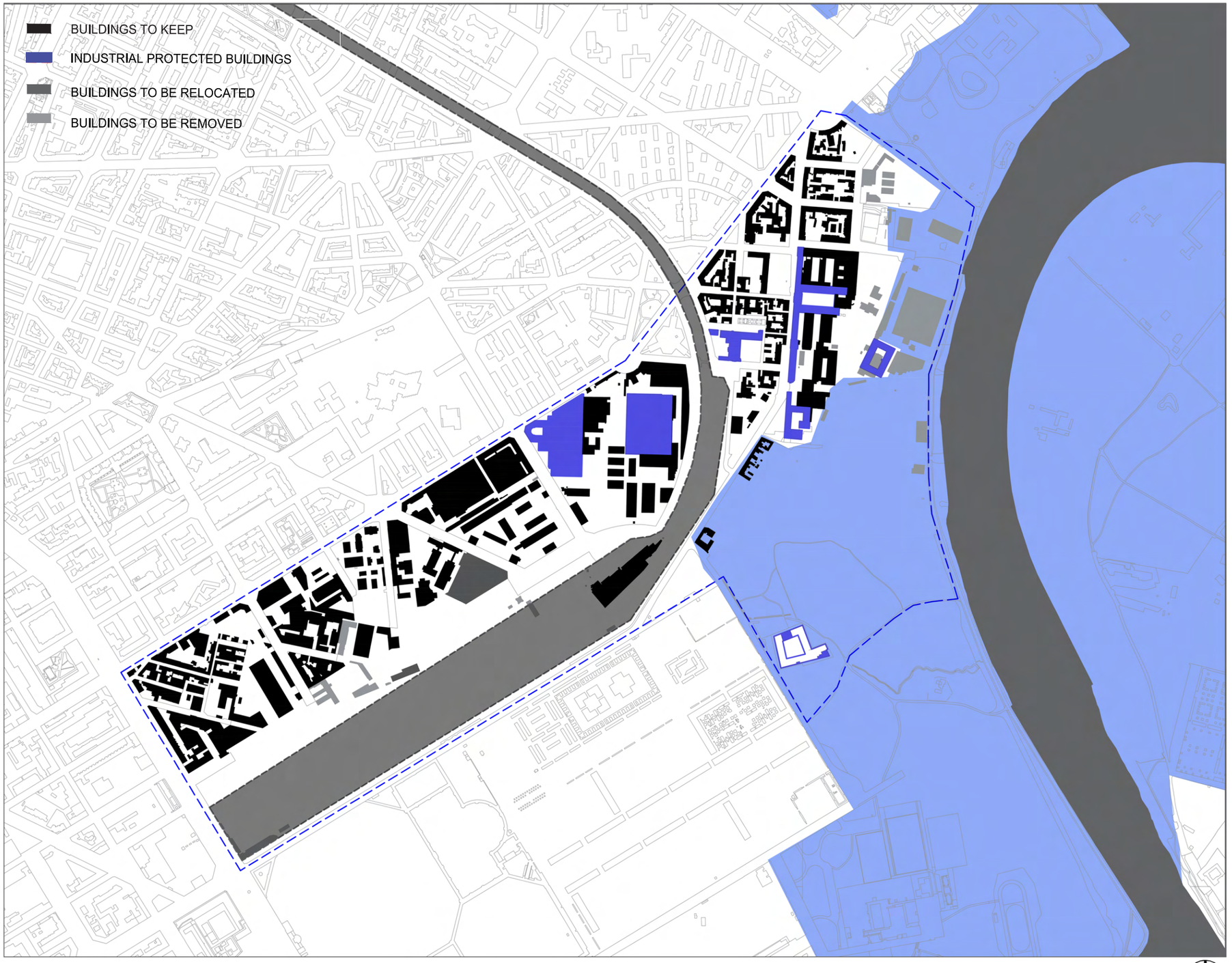
TRANSPORTATION_ZAGREB

RAILWAYS

TRAIN STATION

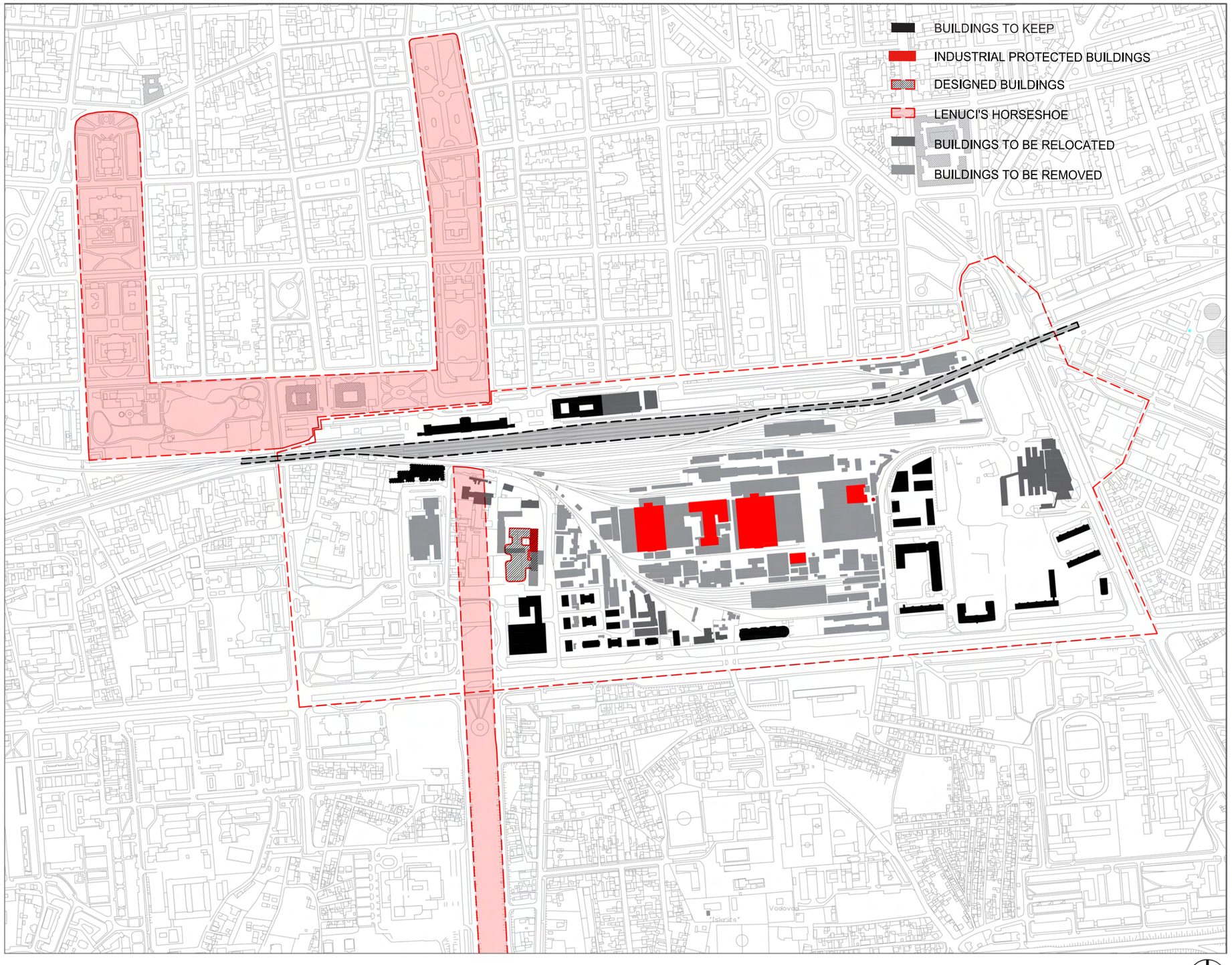
250 m

EXISTING SITUATION



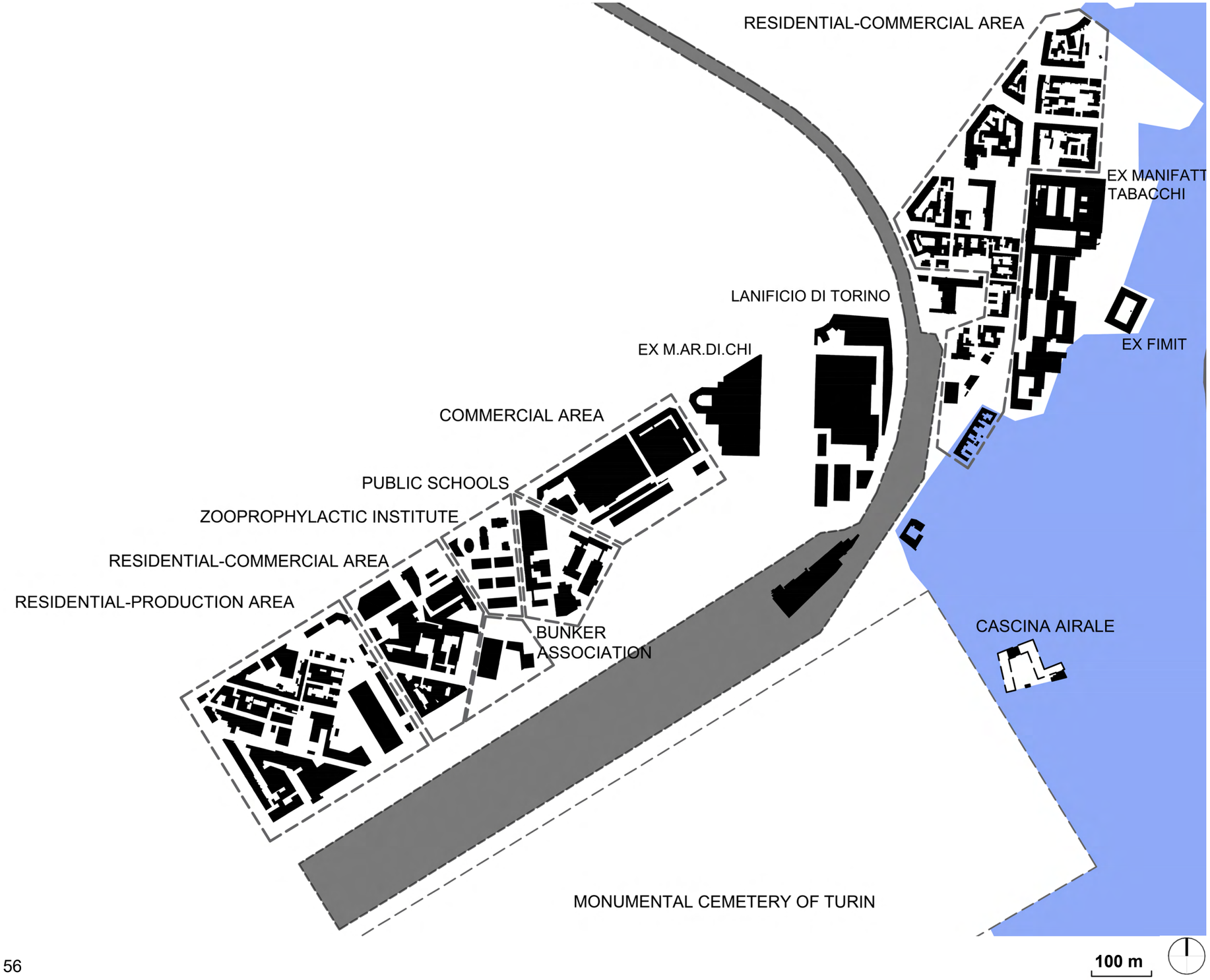
These are areas located within a historically peripheral fabric that offer considerable potential for development and opportunities for urban enhancement and revitalization. They are marked by the presence of a productive past and still characterized today by a mixed fabric with the presence of productive activities. These are areas developed from the second half of the nineteenth century outside the customs boundary of 1853, in a territory marked by the presence of the infrastructural constraints of the Turin - Novara railway line, built also in the second half of the nineteenth century, and the first nucleus of the City's General Cemetery, already initiated in the first half of the nineteenth century. The road network of the nineteenth-century expansion developed according to its own patterns, distinct from the surrounding urban fabric, resulting from these constraints and signs of even older territory, including extra-urban road networks and waterways. The Vanchiglia Railway Yard was built at the beginning of the last century. Its layout already appears in the map of the Regulatory Plan of 1906 but can be dated to the subsequent years; indeed, it only appears as built in maps after 1910. Its location was strategic to serve one of the city's main industries, the eighteenth-century Tobacco Manufacturing Plant, and the industries that were settling in the northern part of the city. The Vanchiglia Railway Yard was served by a connection to the railway line to Milan, built in a trench, which is now disused.

EXISTING SITUATION



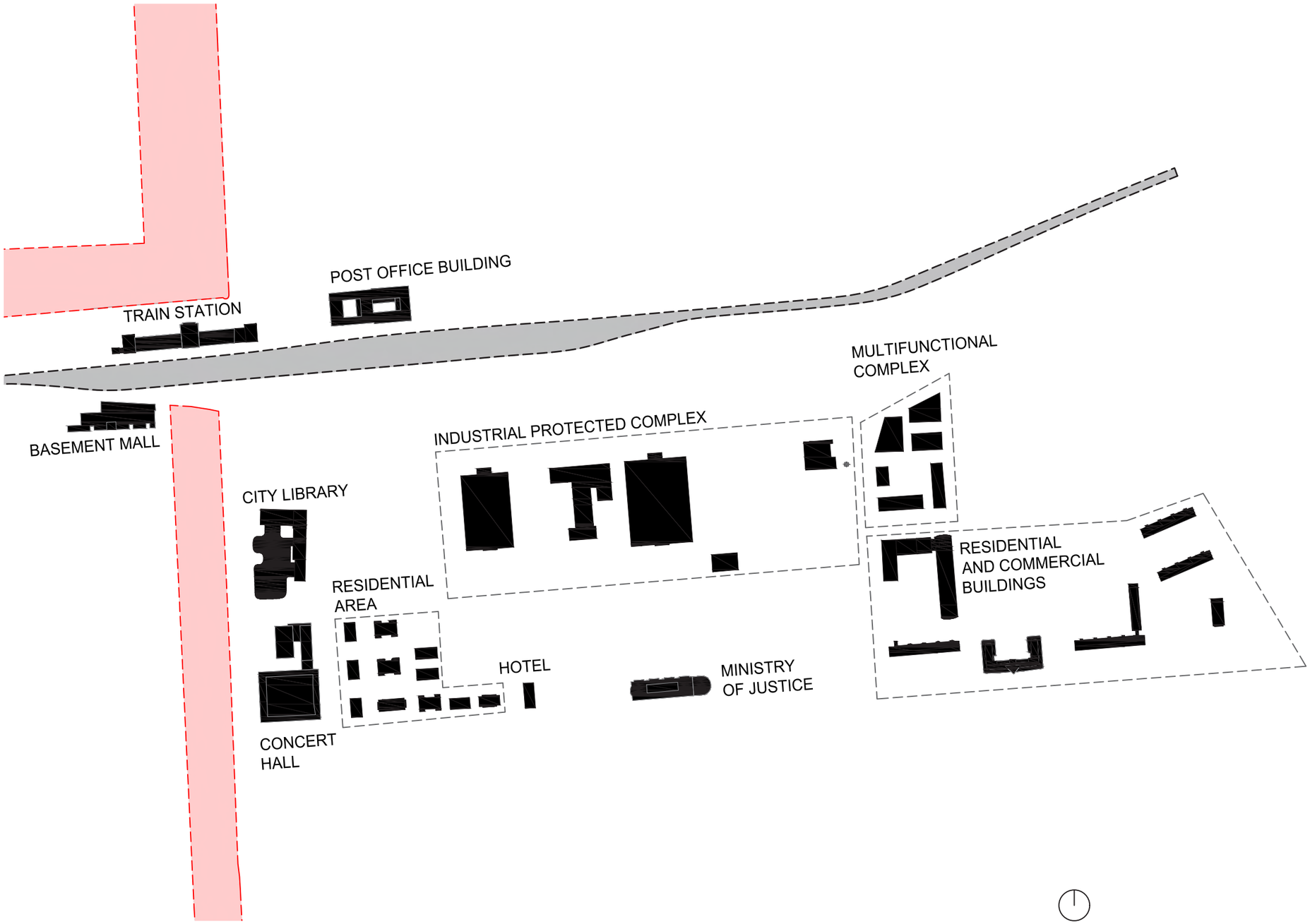
The reurbanization of the former mechanical workshop area of the Hungarian Royal State Railways, later known as the “Janko Gredelj Factory,” is one of the most significant territorial development issues in the city of Zagreb. The facility, originally designed for locomotive maintenance and parts production, was functionally linked to the station, which was situated on the outskirts of the city when it was built. Today, both the station and the industrial zone are located in the city’s narrow center. The factory’s operations continued even after the collapse of Austria-Hungary between the two world wars, and after World War II, when it was renamed Janko Gredelj, it underwent a process of modernization and growth. Since its relocation to a new site in 2011, the abandoned factory buildings and the entire area have been in urgent need of a solution. Two particular factors must be considered: firstly, the significance of the location, and secondly, the protection of an ancient industrial plant partially preserved with equipment dating back to its inception, which holds cultural heritage status.

BUILDINGS TO KEEP



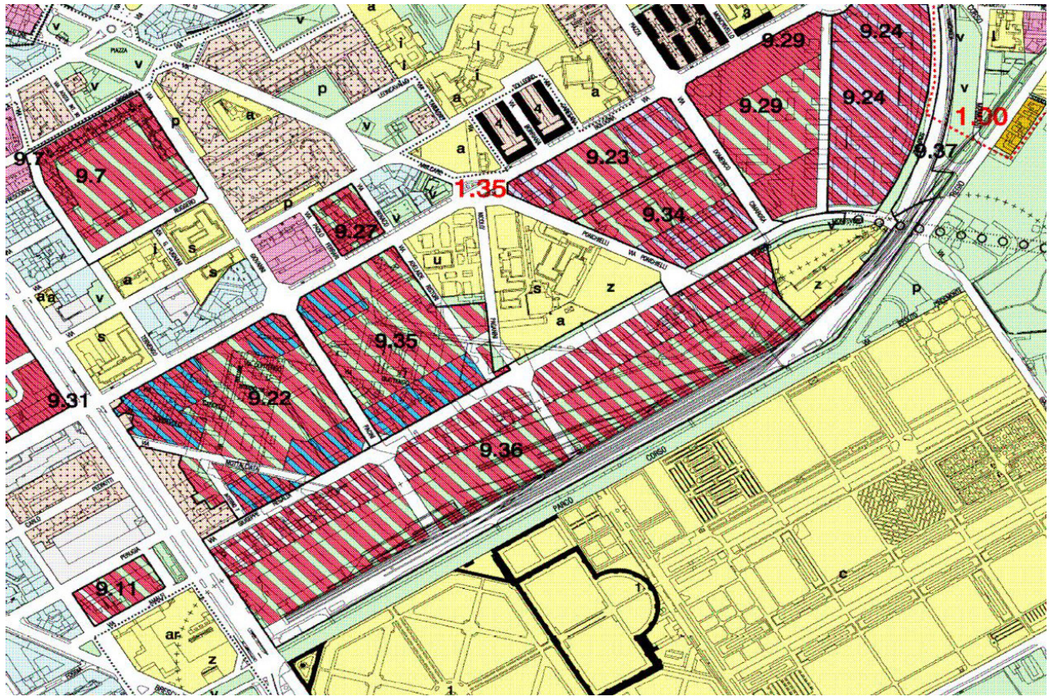
In the first half of the nineteenth century, the construction of the initial nucleus of the City's General Cemetery began, and in the second half, the route of the Turin-Novara railway line was established. These works, significant both for the sanitary-hygienic character of the former and for the interregional road connections of the latter, effectively constituted, along with the customs boundary of 1853, true barriers to the development of the entire northeastern sector of the city. They hindered relations with the rest of the territory and contributed to the construction of a community within the community, facilitated by the Fordist model of dividing the city into parts. It will be necessary to plan land uses that encourage the so-called "house-shop" settlement model, which is already partly present today. The aim is to orient towards the preservation not only of landscape and environmental values but also of economic and social ones, as they are useful elements of cohesion and identity. In this perspective, it is worth mentioning the Zooprophylactic Institute and the school complex composed of the Bodoni and Beccari Schools of the Province. Of notable importance is a portion of the real estate complex formed by the former M.AR.DI.CHI. barracks (Artillery and Chemical Defense Management Warehouse), located between Via Bologna and Via Cimarosa.

BUILDINGS TO KEEP

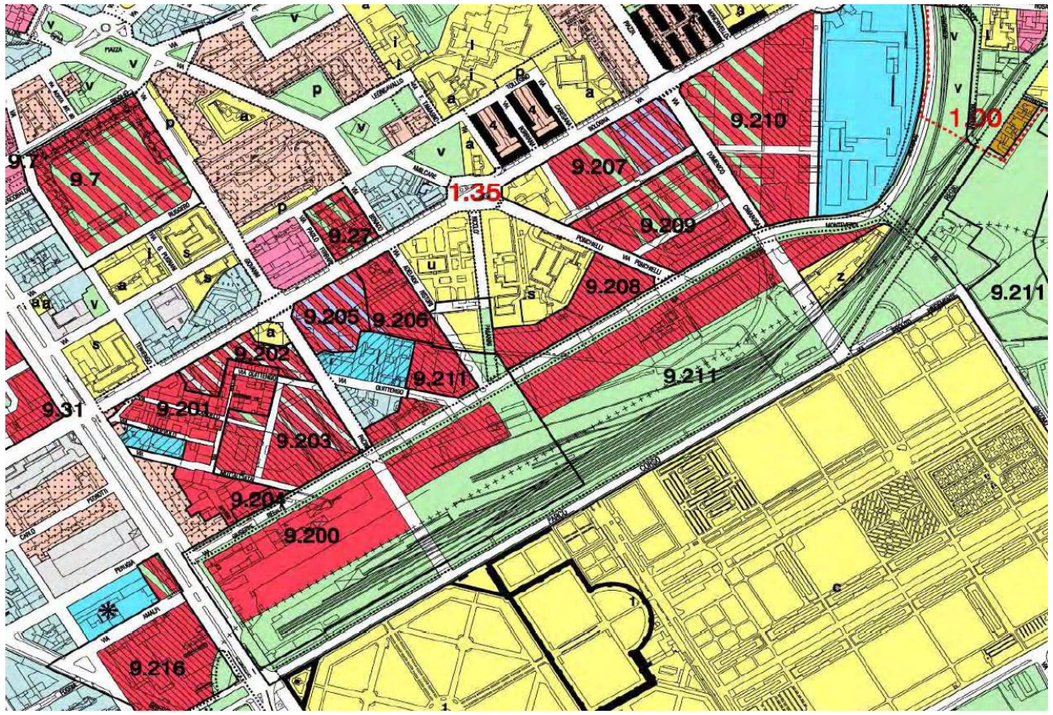


The area of the former “Janko Gredelj” factory and mechanical workshop is now an underutilized area with limited access and usage possibilities. The architecturally well-designed spaces of the workshops and residential complexes at the time of their creation are now degraded and devastated by subsequent interventions that have progressively undermined the architectural design and the simple qualities of the original conception. The area in question is located in the central part of the city, near the main north-south axis. To the north of the area are the railway line and the Central Railway Station. To the west of the covered area is another strategic/urban project, the Paromlin industrial complex, and the concert hall “Vatroslav Lisinski.” The southern part of the area consists of the historic residential settlement of the Railway Colony (to the southeast) with several high-quality architectural realizations along Vukovar Avenue: the Palace of Justice, the Aqueduct Administrative Building, and a multi-residential building. To the east of the area are residential buildings, the bus station, and the new residential-commercial complex VMD on Strojarska Street.

PRG GUIDELINES



Area di Scalo Vanchiglia ed ex Trincea Ferroviaria. P.R.G. TAVOLA N. 1. AZZONAMENTO – STATO ATTUALE

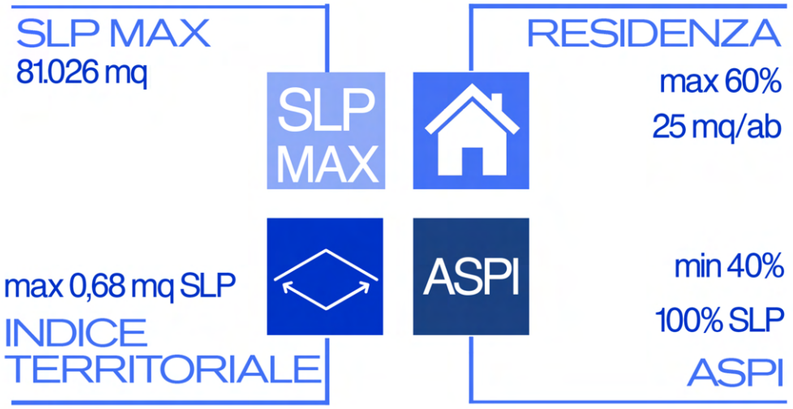


Area di Scalo Vanchiglia ed ex Trincea Ferroviaria. P.R.G. TAVOLA N. 1. AZZONAMENTO – VARIANTE

1.1	**Zone urbane di trasformazione:** (denominazione ambito)
	Viabilita'
	Servizi
	Impianti Sportivi
	Continassa – Ambito di riqualificazione
	Concentrazione dell'edificato, destinazione d'uso prevalente:
	Residenza
	Attivita' terziarie e attrezzature di servizio alle persone e alle imprese
	Residenza – Attivita' terziarie
	Attivita' produttive
	Attrezzature di interesse generale (Universita', Casa della Musica, ecc.)
	Attivita' ricettive
	Commercio: grande distribuzione
	Eurotorino - Parco tecnologico
	Lingotto – Centro polifunzionale
	Servizi zonali (art.21 LUR):
I	Istruzione inferiore
a	Attrezzature di interesse comune
v	Spazi pubblici a parco, per il gioco e lo sport
p	Parcheggi
am	Mercati e centri commerciali pubblici
ar	Servizi tecnici e per l'igiene urbana
	Servizi sociali ed attrezzature di interesse generale (art. 22 LUR):
s	Istruzione superiore
h	Attrezzature sociali, sanitarie e ospedaliere
v	Parchi pubblici urbani e comprensoriali

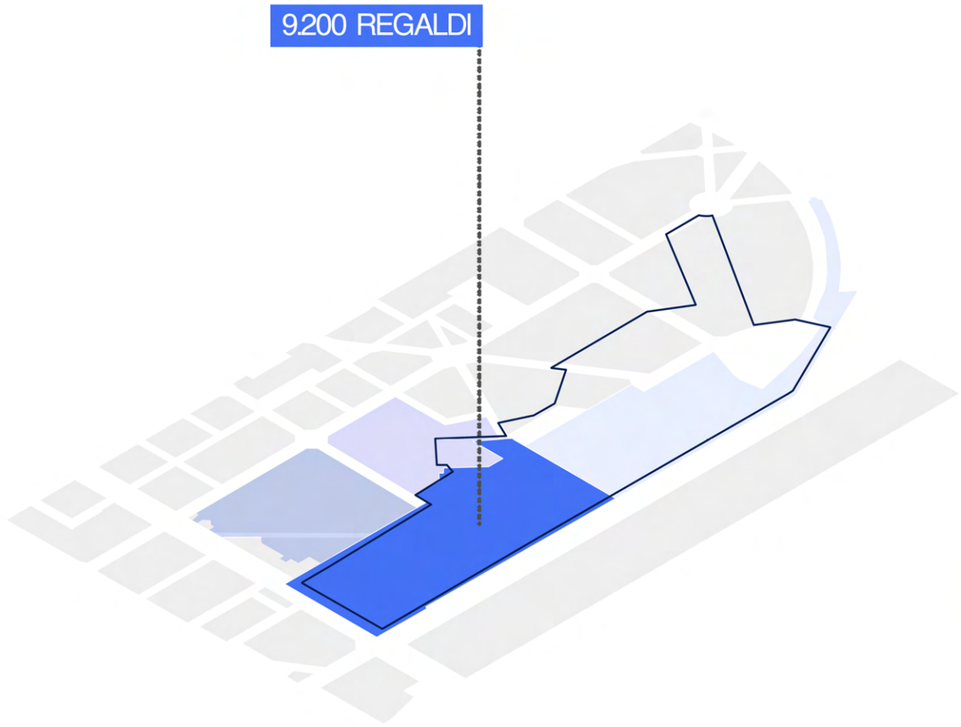
The Preliminary Project of Structural Variant No. 200 was approved by the Municipal Council of the city of Turin through Resolution dated July 22, 2010, with the aim of modifying certain parts of the General Regulatory Plan (P.R.G.) by Gregotti and Cagnardi, a plan that has defined and regulated the city's transformation since 1995. Variant 200 represents one of the largest urban conversions in Italy and the most important urban transformation project initiated in Turin after the Olympics. Its purpose is precisely the recovery and refunctionalization of disused areas, enhancing and requalifying public areas also by attracting investors. The intervention concerns the development of the North-East area of the city, an area that in the coming years will be a true urban laboratory and which will involve over 900,000 square meters of surface area, largely assigned to public use. The areas involved in the transformation are three: Spina 4, the former Vanchiglia railway yard, and the railway embankment of Corso Sempione, which will be occupied by Metro Line 2.

9.200 REGALDI

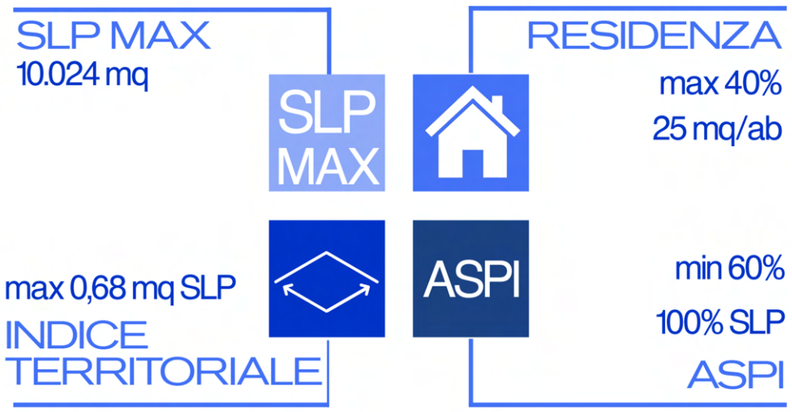


SERVIZI:
Parco per gioco e sport
Parcheggi

1000 mq di piazza tra Regaldi, Ristori e Paganini

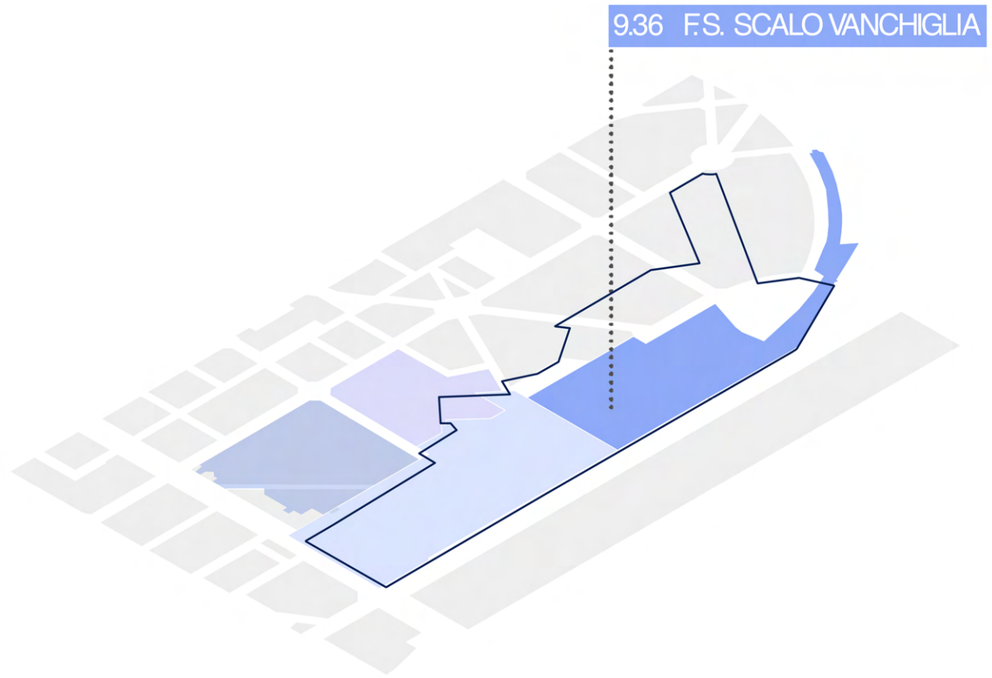


9.36 SCALO VANCHIGLIA

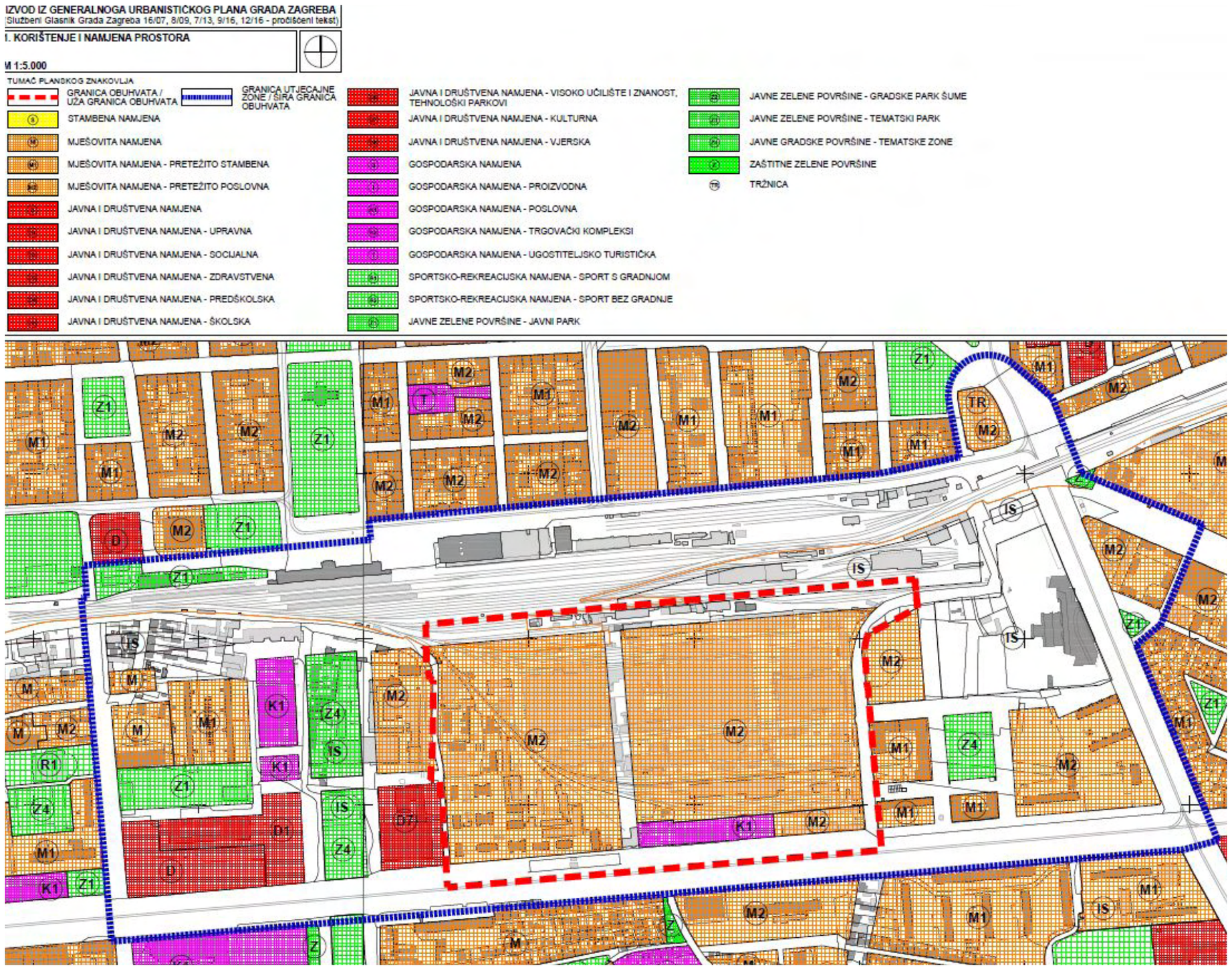


SERVIZI:
Residenze universitarie
Spazi pubblici a parco, gioco, sport
Parcheggi

NUMERO MAX. DI PIANI: 6 f.t.



GUP GUIDELINES

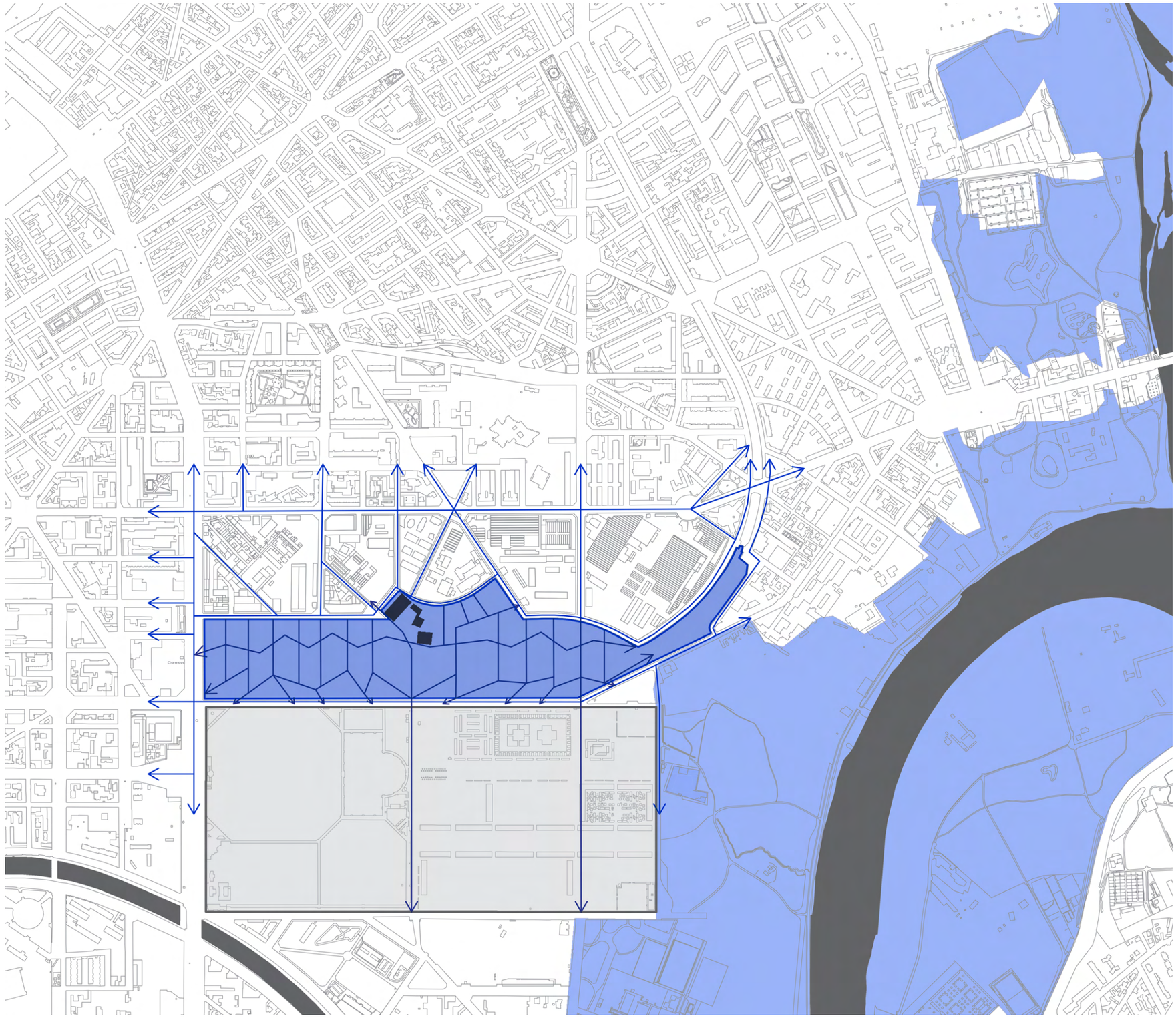


In mixed-use areas, primarily commercial, existing and planned buildings are commercial (offices, shops, restaurants, and facilities that do not interfere with residential construction as the fundamental purpose of the city) residential. In these areas, mono-functional buildings (for business, public and social purposes, exceptionally residential) can also be constructed. On the surfaces designated for mixed-use, predominantly commercial, it is possible to create open spaces and provide for: housing with associated services, public and social purposes, markets, city department stores, hotels, sports and recreational activities, public garages, parks, and playgrounds for children, special purposes, and other purposes that complement the fundamental purpose of the area but do not interfere with it.

03

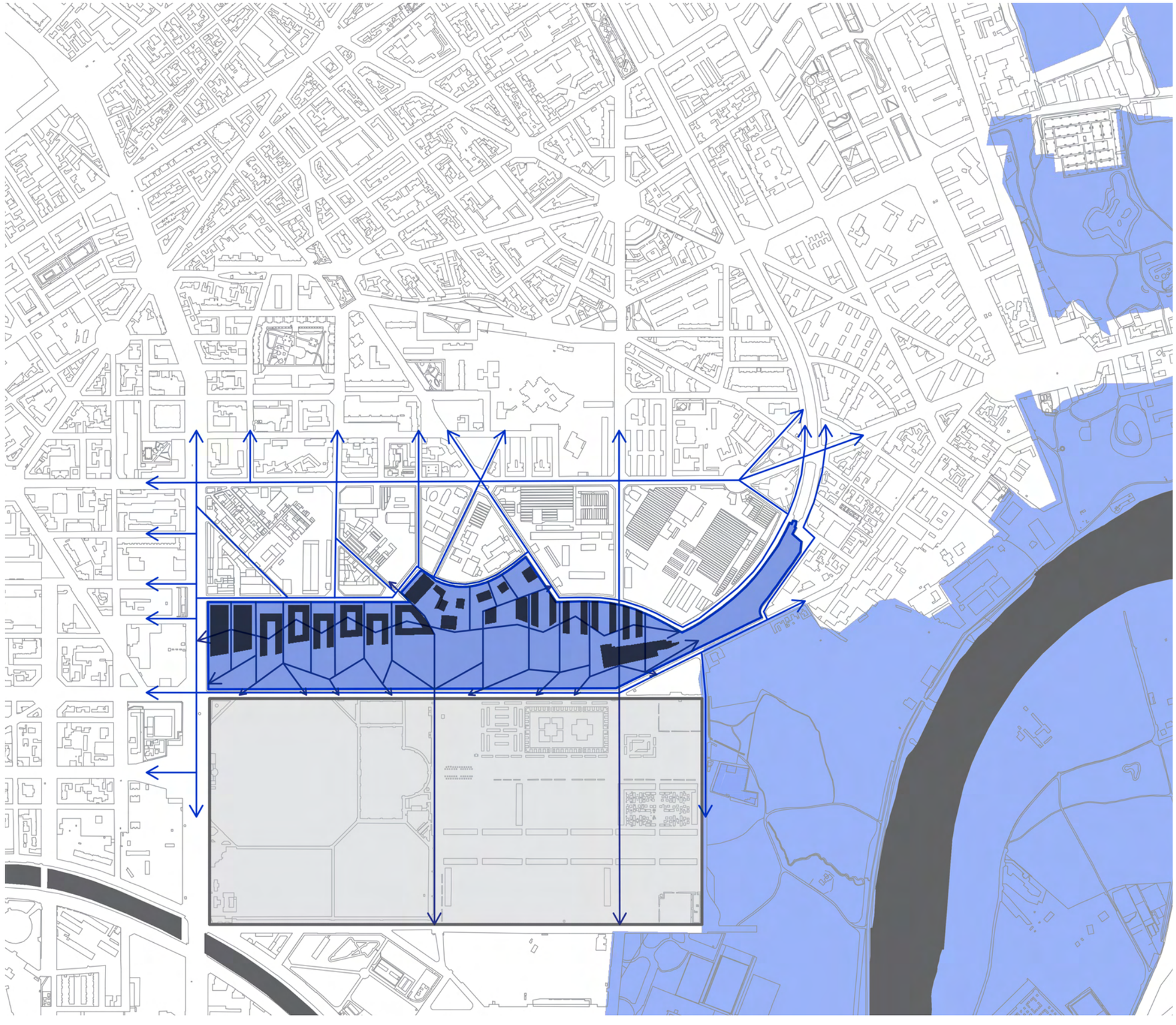
SITE-SPECIFIC

SCALO VANCHIGLIA URBAN STRATEGY



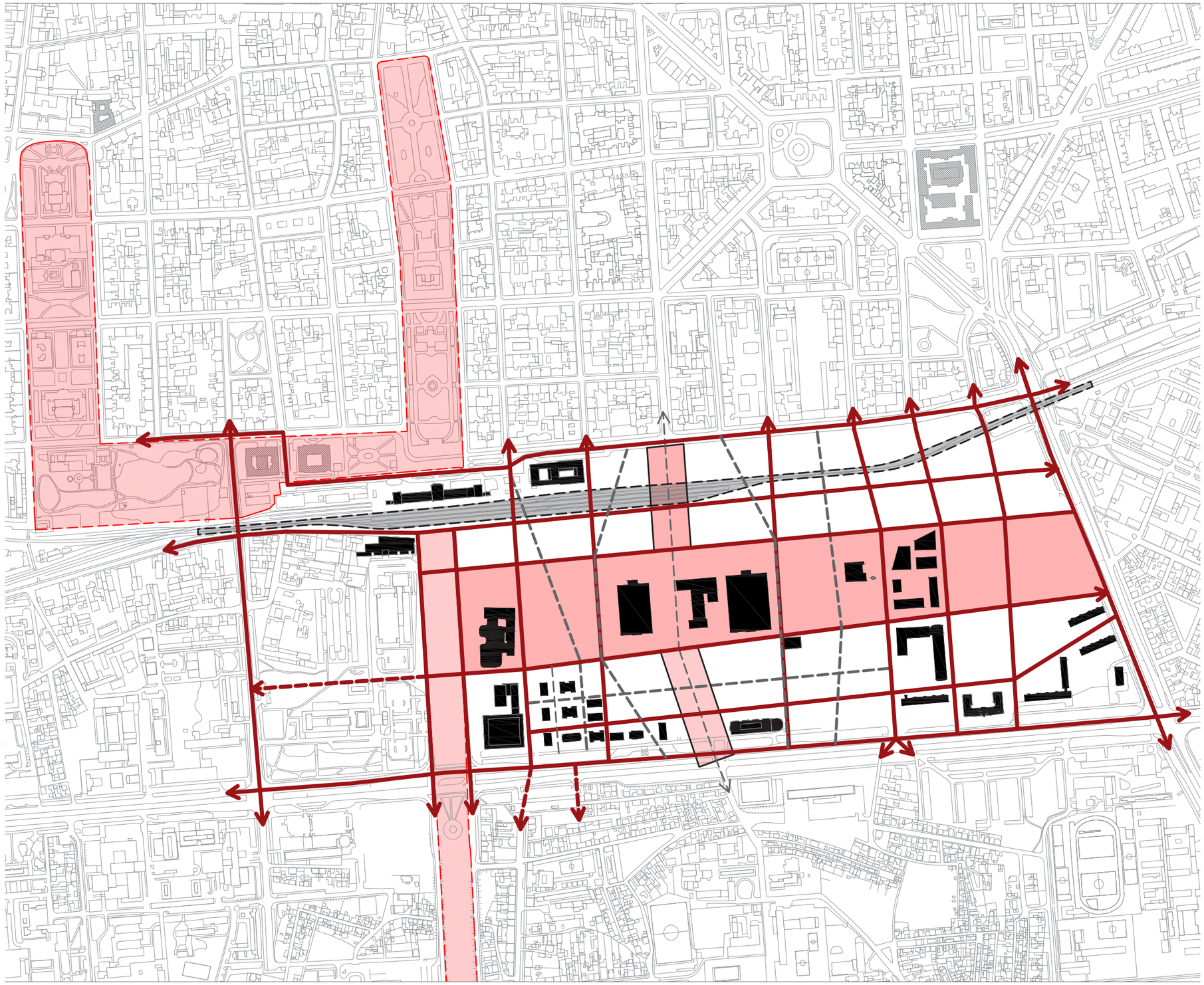
The urban-scale strategy of the master plan follows the guidelines of the “Torino Città d’acque” program, approved by the Municipality in 1993, an ambitious plan for the recovery of the riverbanks surrounding the city, transforming them into a single river park spanning 70 square kilometers with a total area of 17 million square meters. This innovative intervention aims to connect the four main rivers that run through Turin - the Po, the Dora Riparia, the Stura, and the Sangone - creating an integrated system of river parks. These parks will be linked by a network of pedestrian, cycling, nature, and educational paths, offering citizens and visitors the opportunity to explore and enjoy the natural beauty of the city and its waters. In addition to facilitating the connection between the rivers, the project aims to preserve and enhance the distinctive environmental and architectural features of each watercourse. Furthermore, the plan extends to a territorial scale, envisioning the creation of a transition zone that connects the city parks in the urban center with those in the more extensive hilly and peripheral areas. This transition continues to the regional parks in the peri-urban area, which are connected via the so-called “Corona Verde” to the agricultural and forest context of the foothill valleys. It is within this vision that the urban strategy of the master plan fits, which envisages the extension of the parks located at the confluence of the Po and the Stura, namely Parco della Confluenza, Parco Pietro Colletta, and Parco del Meisino (the

URBAN STRATEGY WITH NEW BUILDINGS



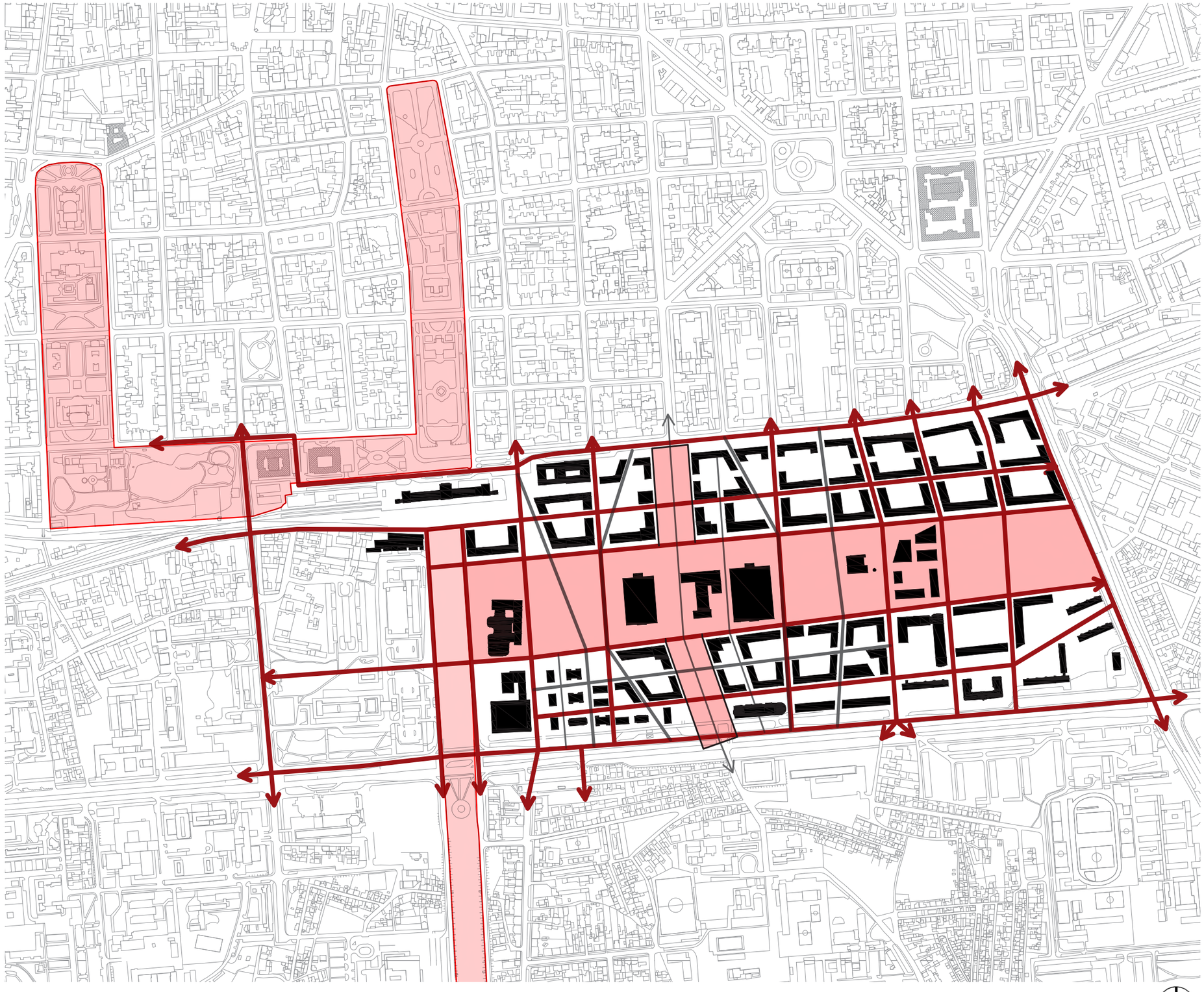
latter beyond the Po), into the urban void of the former Vanchiglia freight yard, delineating that linear park that blends well with the cemetery boundary and with the potential extension of the park along the Sempione-Gottardo road (the so-called “trincerone”), not the subject of the thesis but of the current study on the metro line 2 route.

GREDELJ ZONE URBAN STRATEGY



The founding regulation of Milano Lenuci for the area from the railway line to the Sava River in 1907 proposed for the first time a solution for a railway node in line with the city's development. Since then, all territorial planning documents of Zagreb have addressed the issue of the railway dividing the city, namely, resolving the interrupted north-south communication. The central axis of the city, an extension of Zrinjevac and the eastern part of Lenucij's horseshoe, has been an integral part of all Zagreb and Tmja urban plans since the General Regulatory Plan of 1936. Public, social, and commercial structures are planned around it, connecting the oldest parts with the newest parts of the city in a continuous whole. For several years, there has been ongoing discussion on how to address the railway as a technical transport system in Zagreb's city center. The general consensus is that it is necessary to level the railway to improve communication between the parts of the city that developed around the railway line after its construction, and to modernize the railway's function within modern transport solutions. In this case, the urban-scale strategy of the master plan must necessarily start from what is Lenuci's horseshoe and its extension southward, as already envisaged by the current General Urban Plan (GUP), given the presence of a prominent green axis along Hrvatske Street, corresponding to the eastern arm of the horseshoe, from which it diverges due to the presence of the railway at the central station. Indeed, conside-

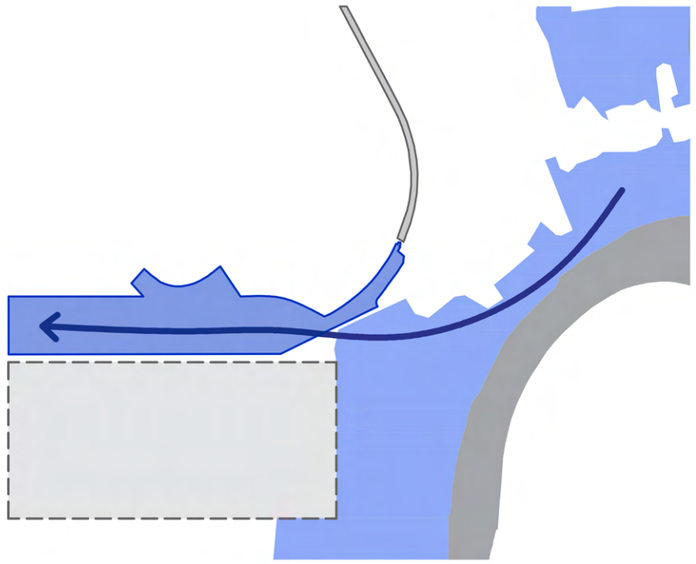
URBAN STRATEGY AND NEW BUILDINGS



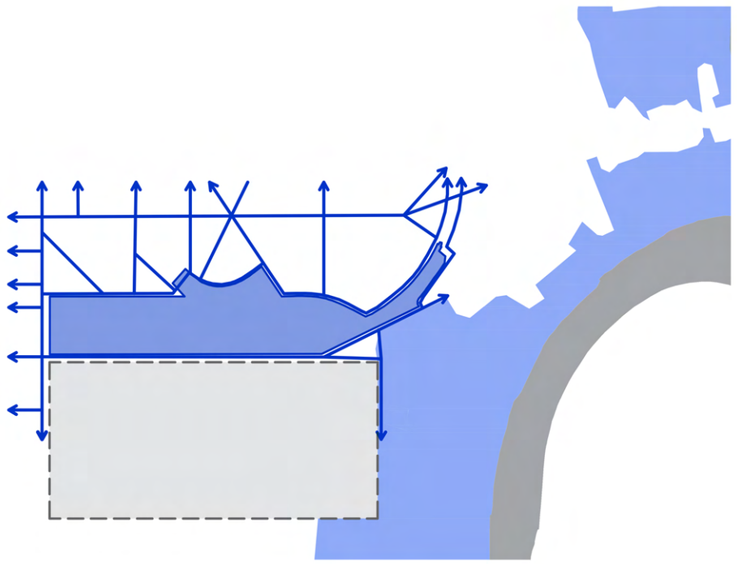
ring the hypothesis of an underground railway, the extension of the horseshoe southward and then again eastward allows for the creation of a park system that consistently reinforces Zagreb's traditional layout, combining a park hosting a public building. Similarly, the park in the project area brings together the future municipal library of Paromlin, the central market, the railway museum, the sports center, the nursery school, and the existing complex of Strojarska towers into a single strip.

SCALO VANCHIGLIA URBAN STRATEGY

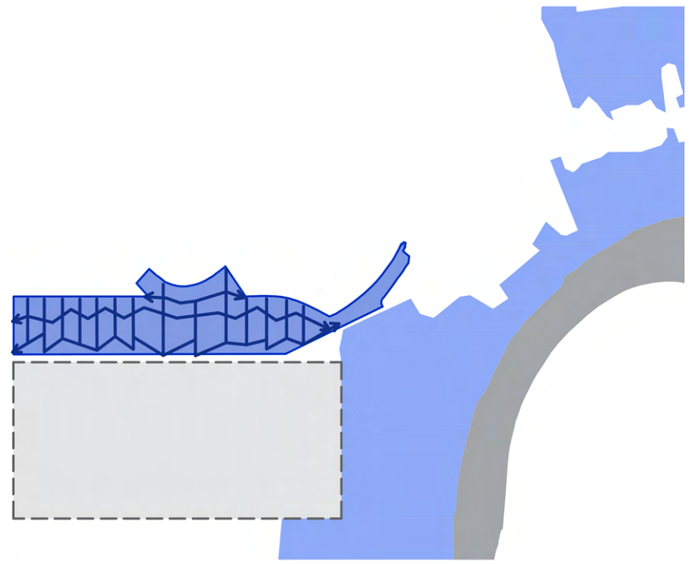
EXTENSION OF LENUCI'S HORSESHOE



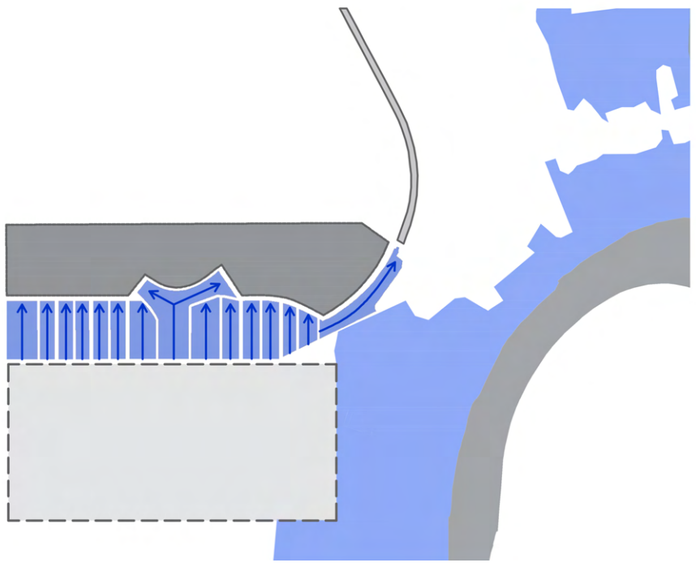
DRIVEWAY SYSTEM



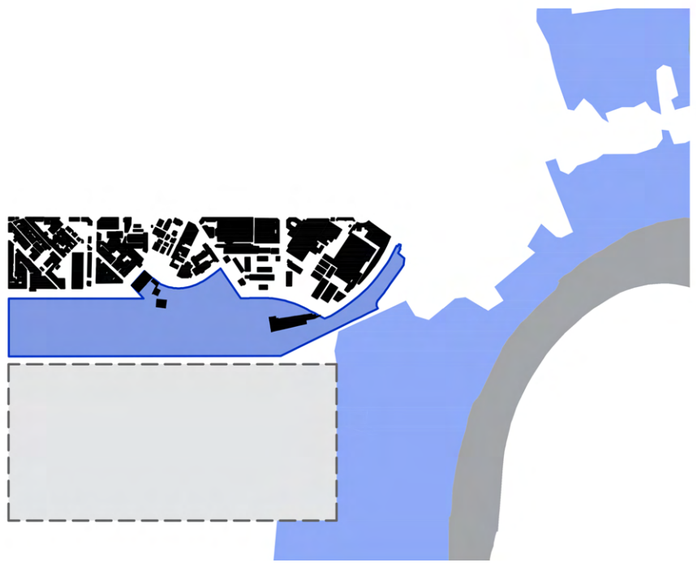
SYSTEM OF PEDESTRIAN AND CYCLE PATH



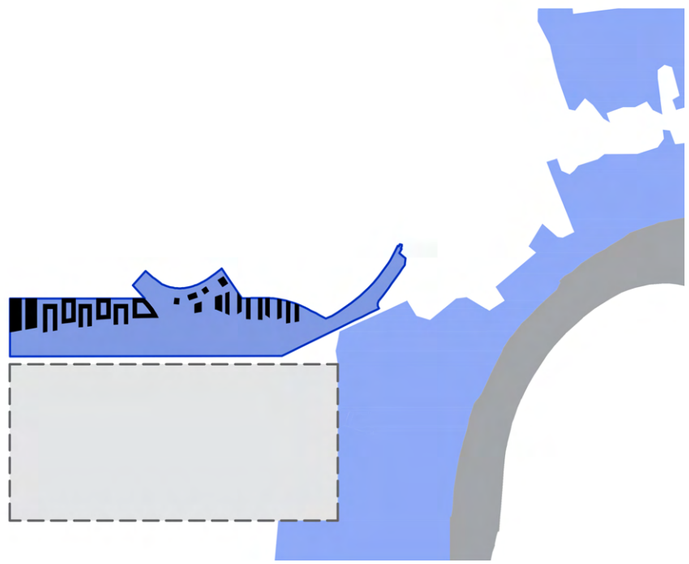
RELATIONSHIO BETWEEN PARK AND BUILDINGS



EXISTING BUILDINGS

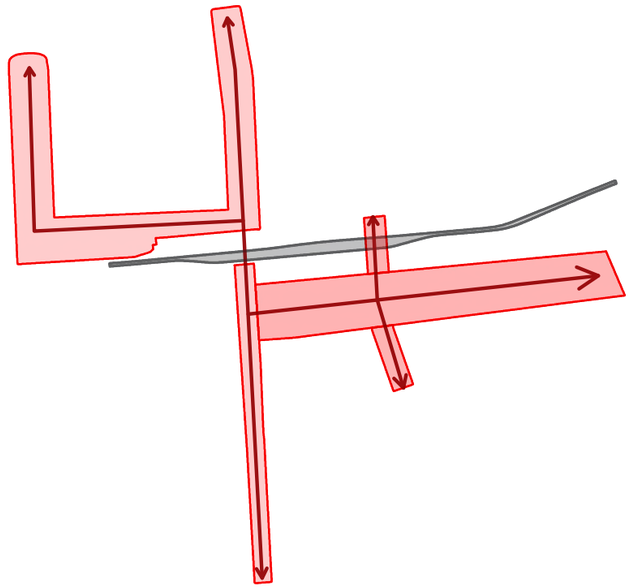


NEW BUILDINGS

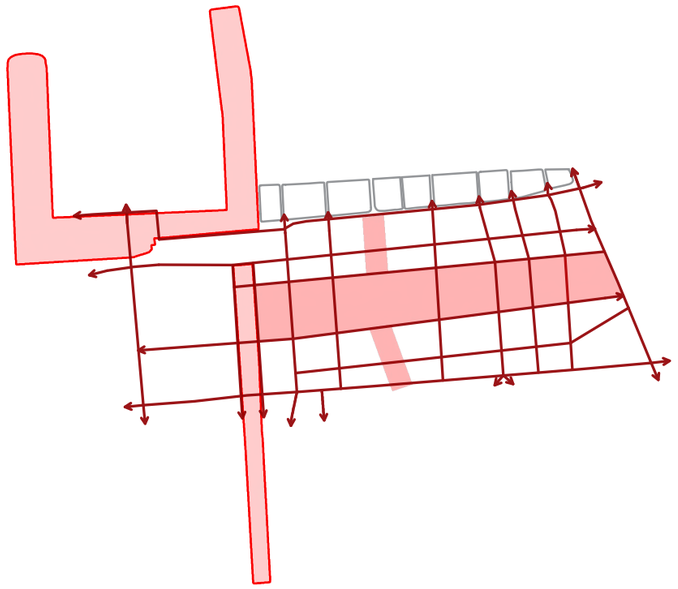


GREDELJ ZONE URBAN STRATEGY

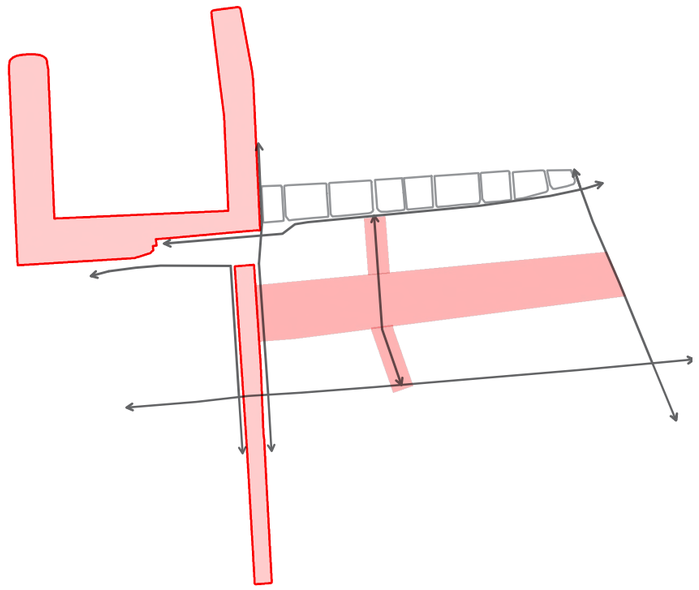
EXTENSION OF LENUCI'S HORSESHOE



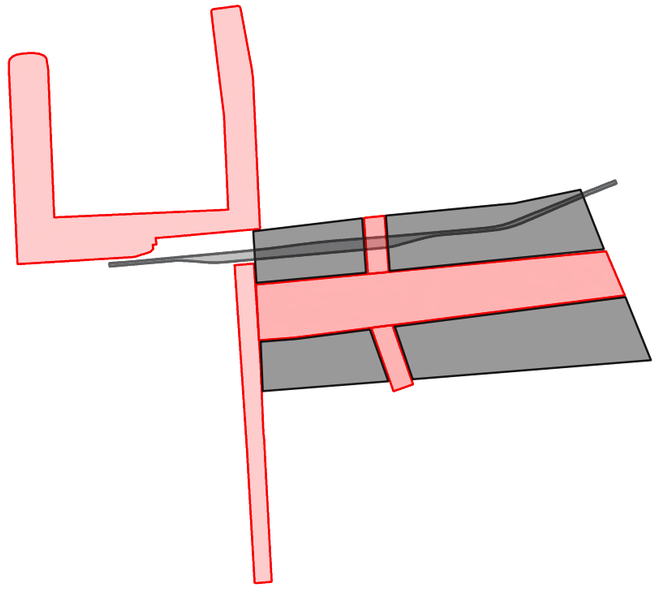
DRIVEWAY SYSTEM



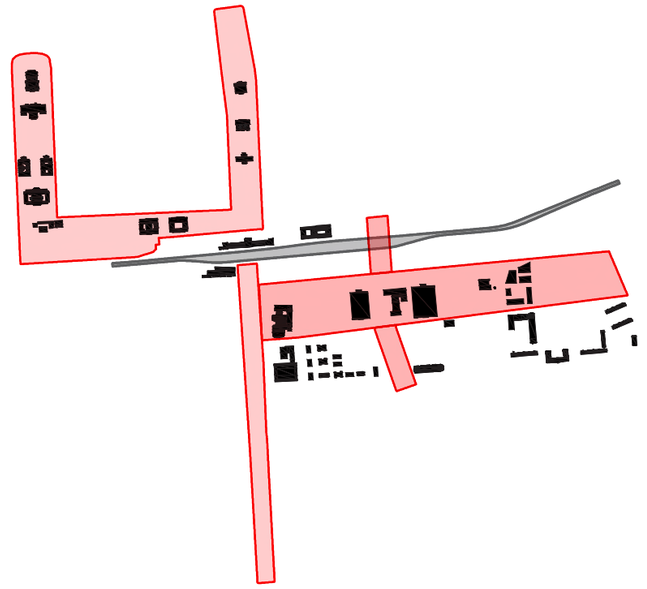
SYSTEM OF PEDESTRIAN AND CYCLE PATH



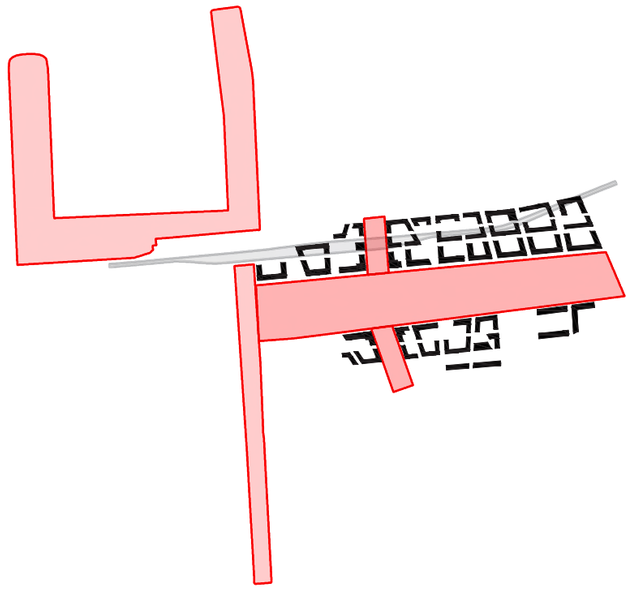
RELATIONSHIO BETWEEN PARK AND BUILDINGS



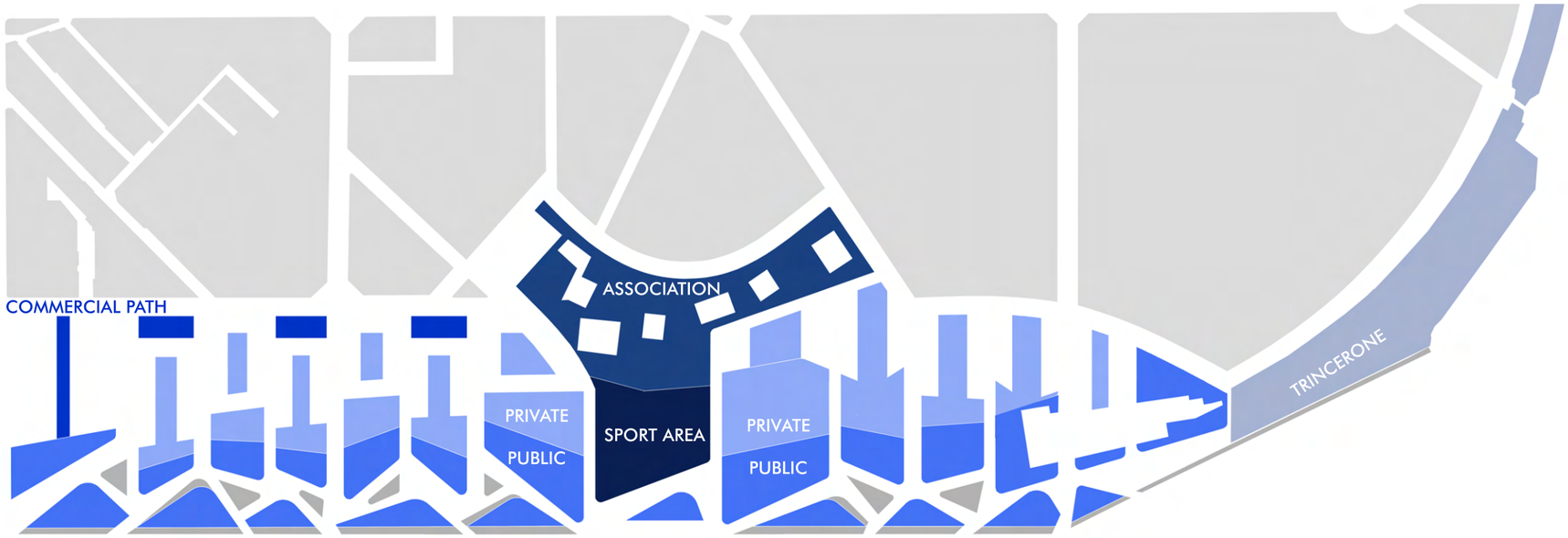
EXISTING BUILDINGS



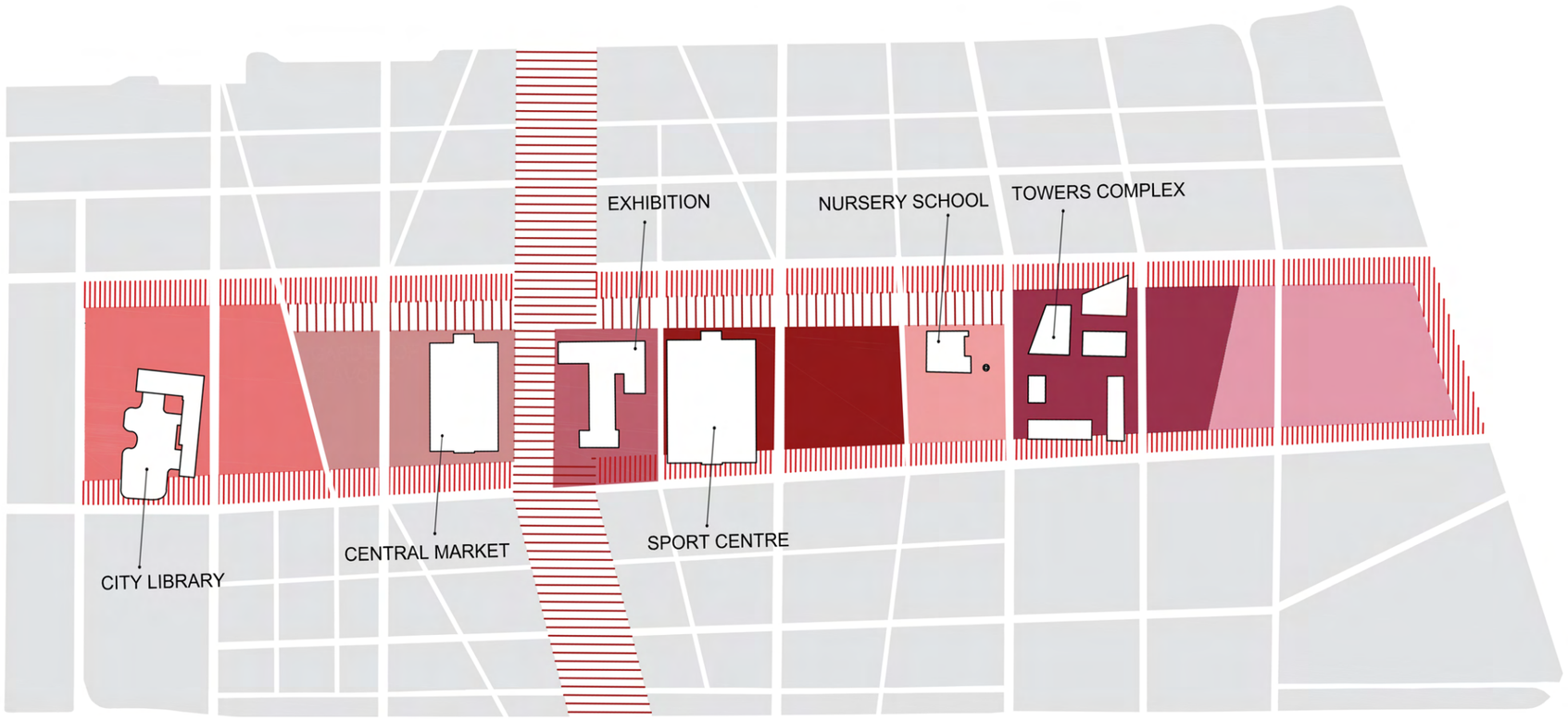
NEW BUILDINGS



TORINO URBAN PARK CONCEPT



ZAGREB URBAN PARK CONCEPT



The urban park in Turin follows a linear layout to comply with the cemetery buffer zone, with some nodal areas where the distance from the wall is reduced for urban planning reasons. At the center of the park, there are two key areas for the masterplan: spaces for existing associations and potential new associations, along with a sports area that divides the surrounding buildings. Along Corso Regio Parco, artificial hillocks have been created to mitigate the view of the cemetery wall, and stretches of the canal have been maintained, restoring its historical function. Green areas are divided into public spaces, semi-private areas such as urban gardens, and private areas corresponding to building courtyards. In the case of Zagreb, the park is inserted as a void within an area filled with blocks. It consists of two bands: the longitudinal one (an extension of Lenuci's horseshoe) and a minor transversal band that serves to reconnect the northern part to the southern part of the city. Consistent with Lenuci's horseshoe, the park hosts buildings, and the area around it follows the same theme of use. Starting from the west, in fact, there is the municipal library, winner of the competition for the repurposing of the Paromlin industrial building with the adjacent reading garden. Then, there's the central market with the square hosting the outdoor market, the railway museum with an outdoor area for art installations, followed by the sports center with sport space outdoor, the nursery school, and the existing tower complex.

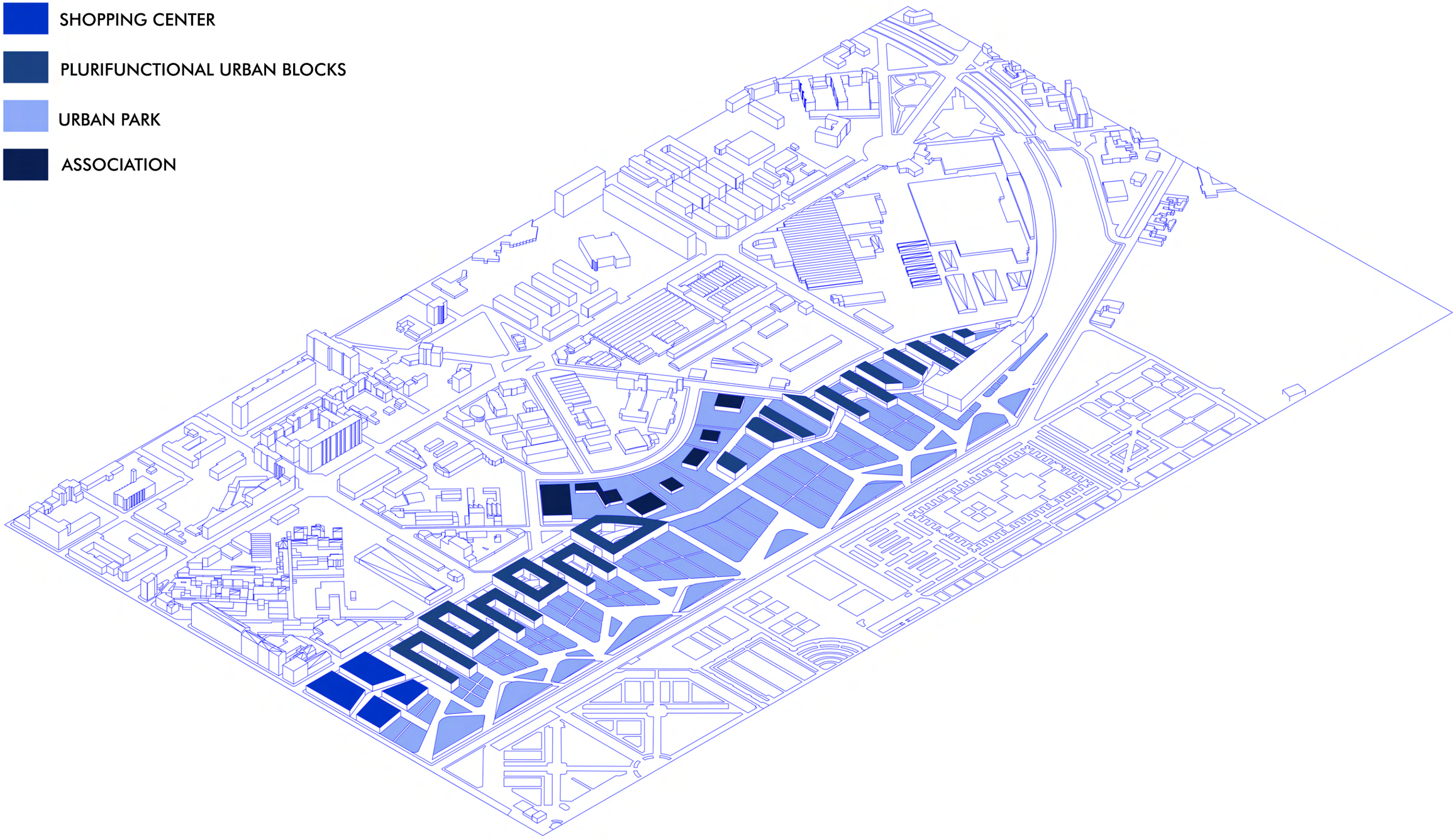
SCALO VANCHIGLIA PROGRAM

SHOPPING CENTER

PLURIFUNCTIONAL URBAN BLOCKS

URBAN PARK

ASSOCIATION



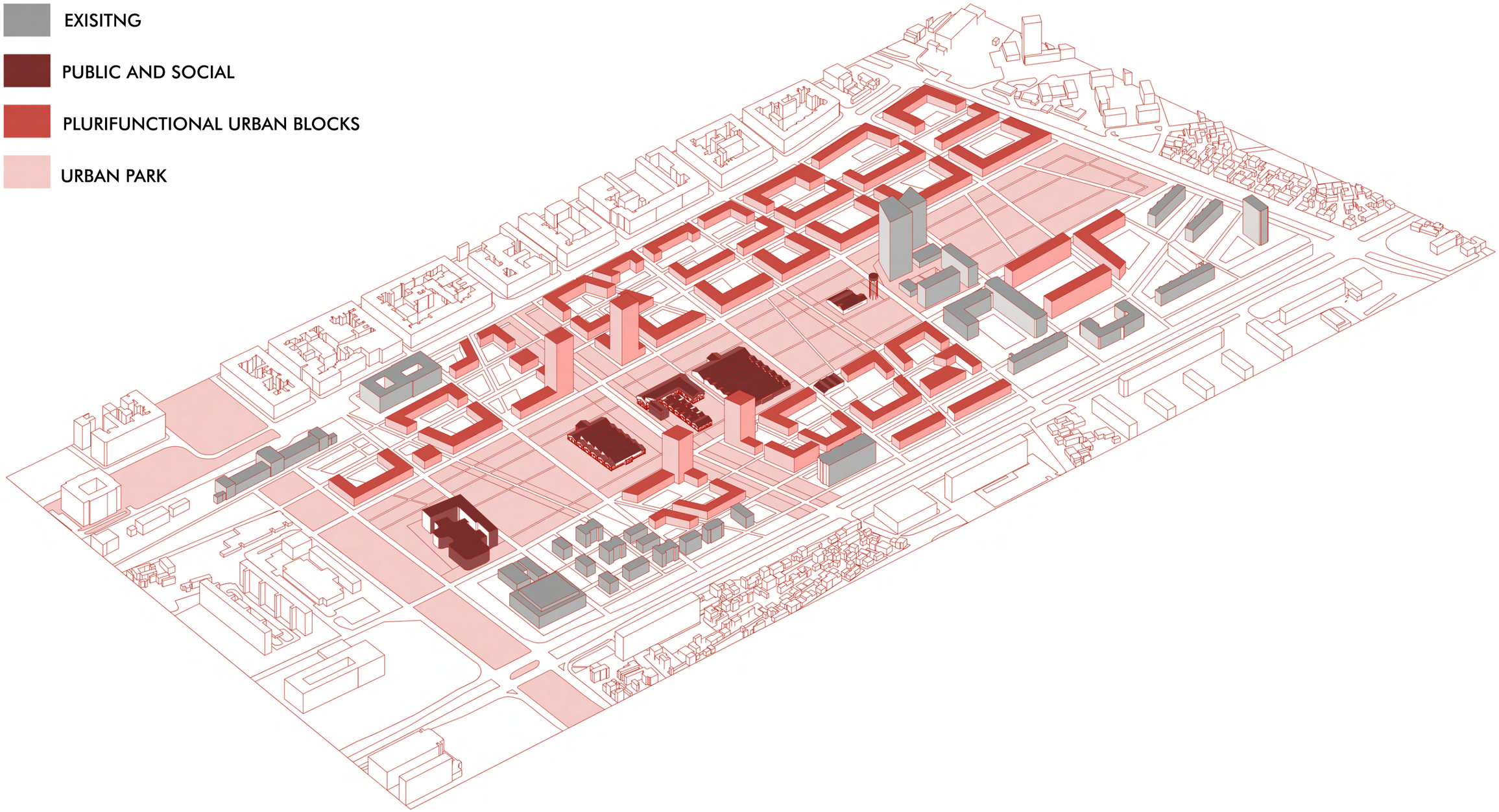
GREDELJ ZONE PROGRAM

EXISITNG

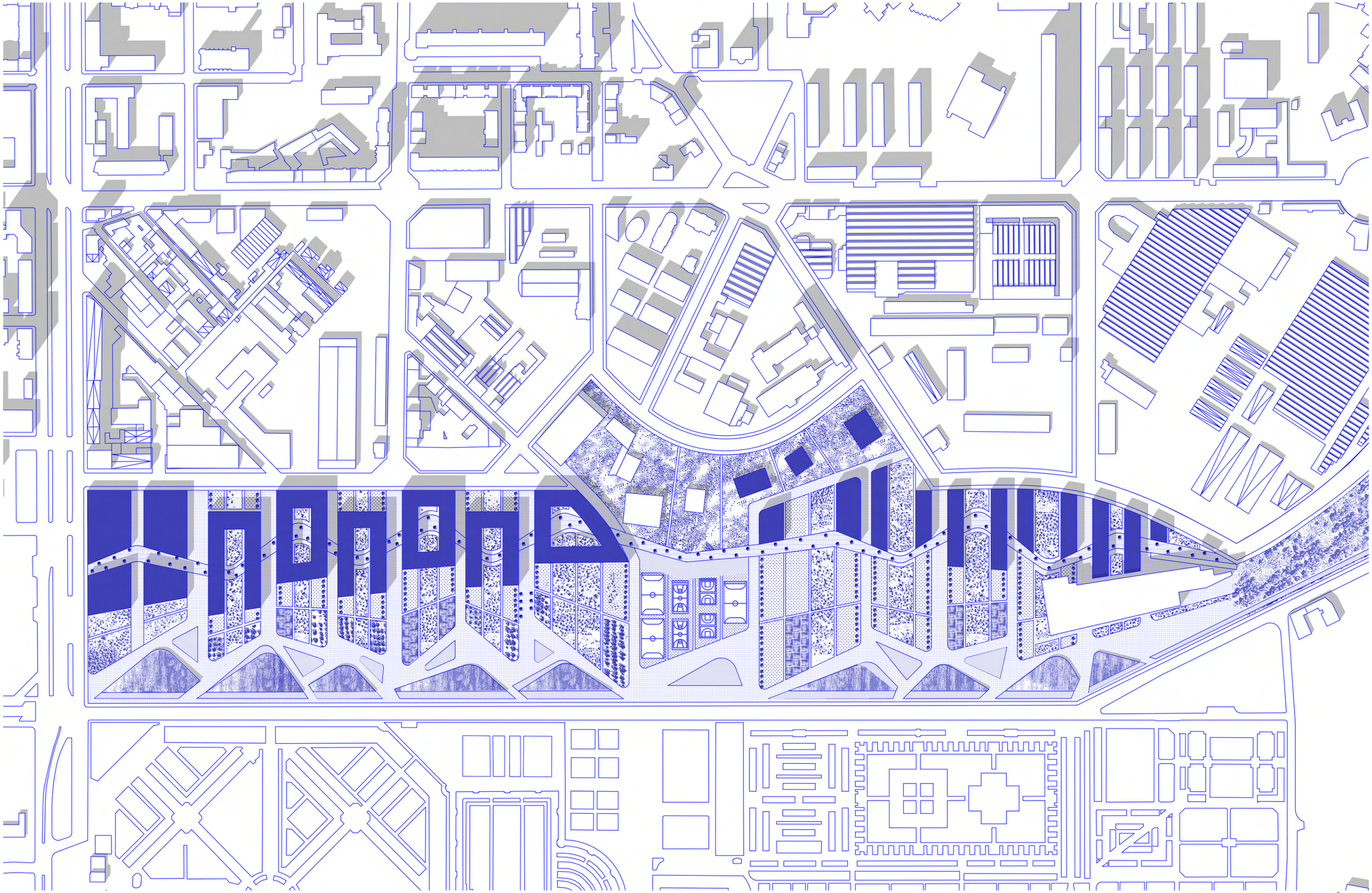
PUBLIC AND SOCIAL

PLURIFUNCTIONAL URBAN BLOCKS

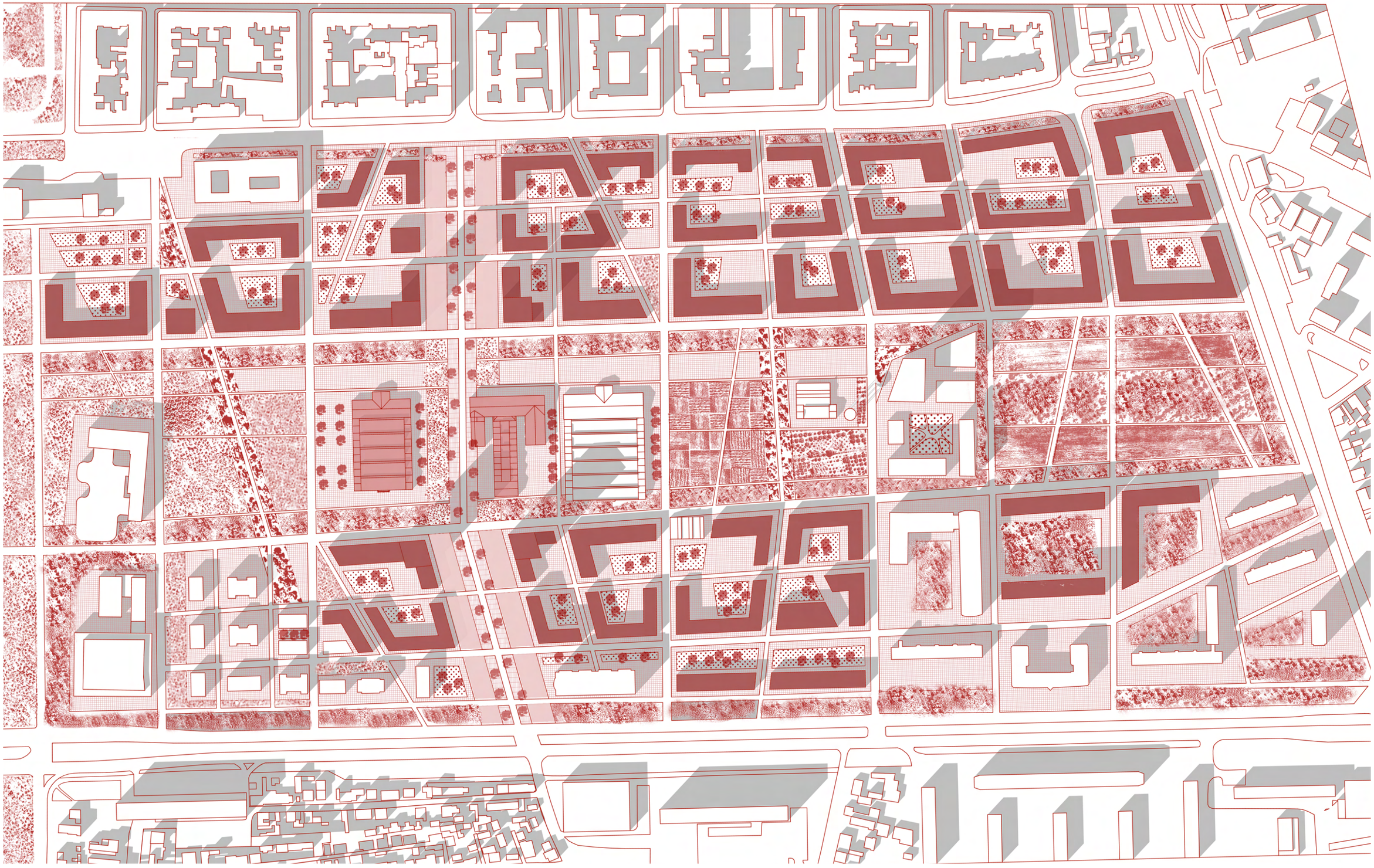
URBAN PARK



EX SCALO VANCHIGLIA MASTERPLAN



GREDELJ ZONE MASTERPLAN

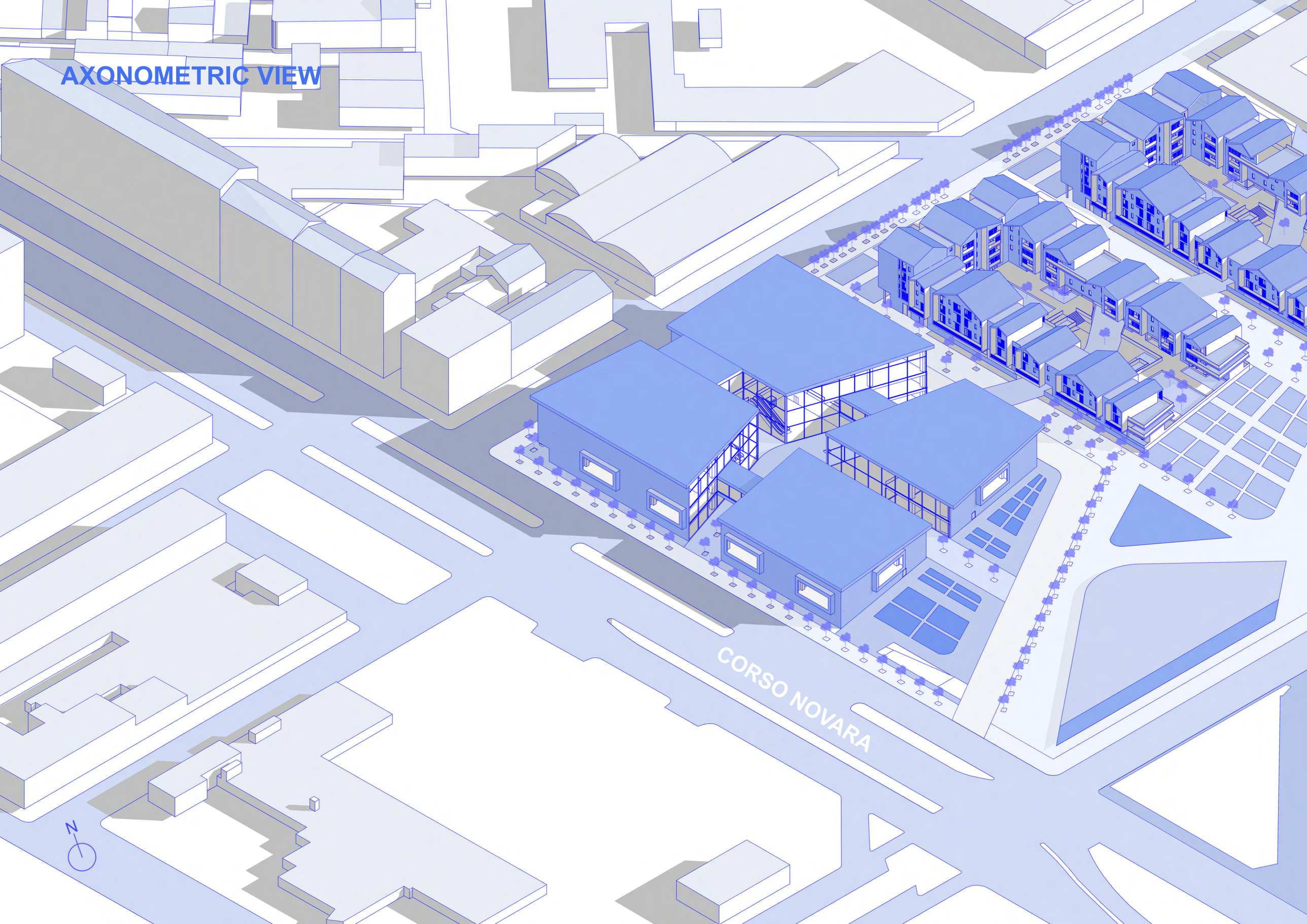


04

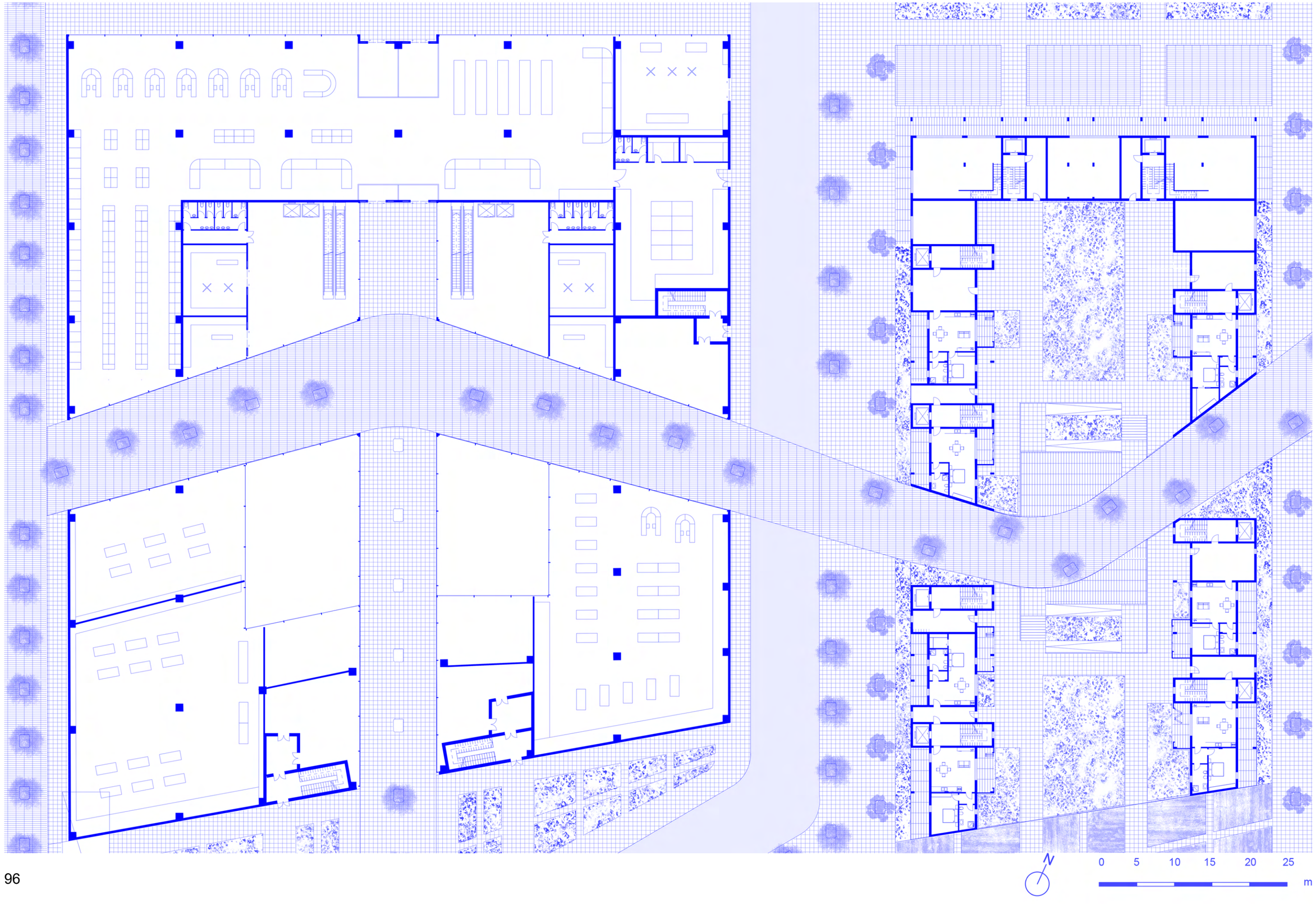
PROPOSALS

TURIN
SCALO VANCHIGLIA

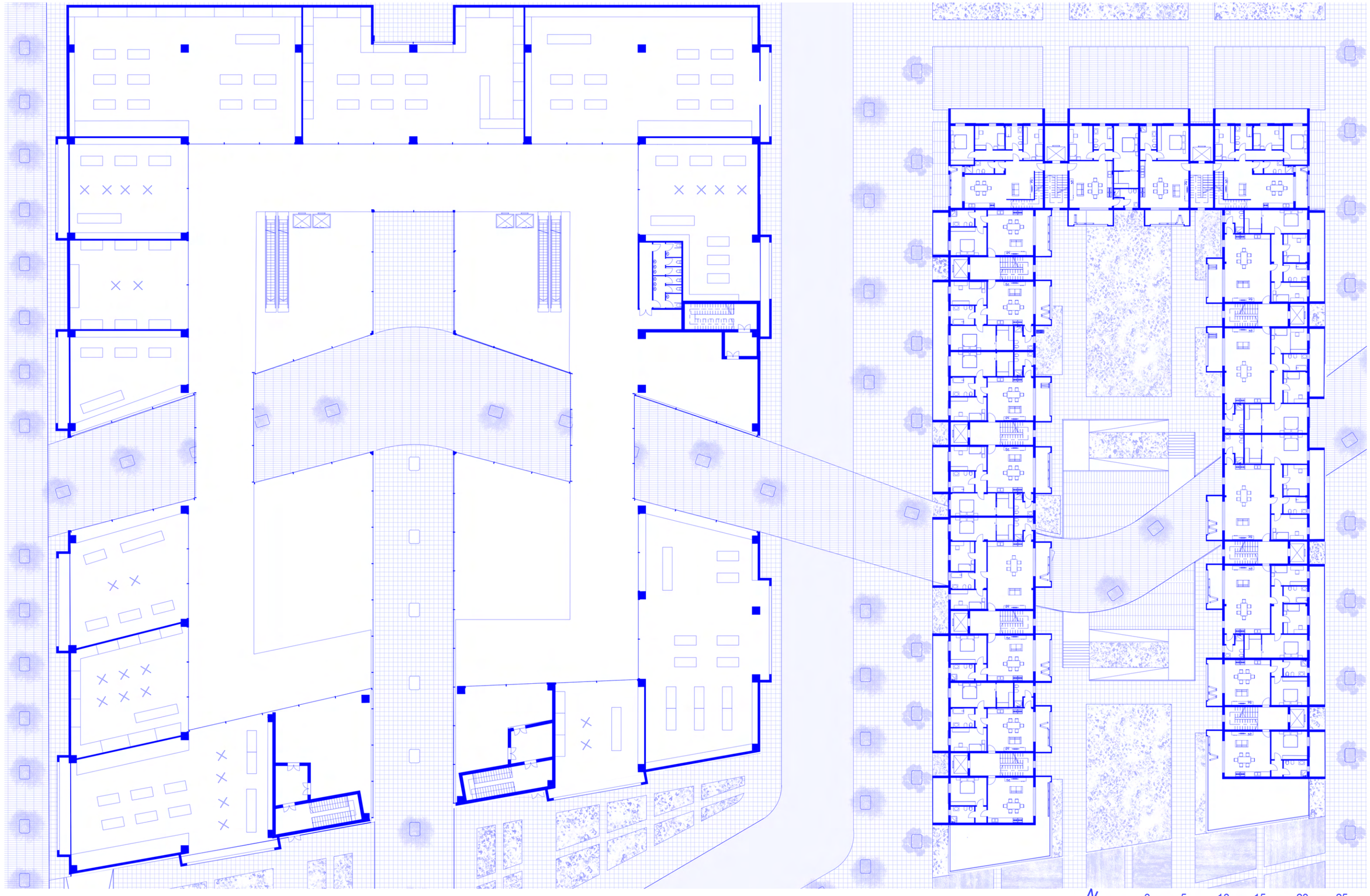
AXONOMETRIC VIEW



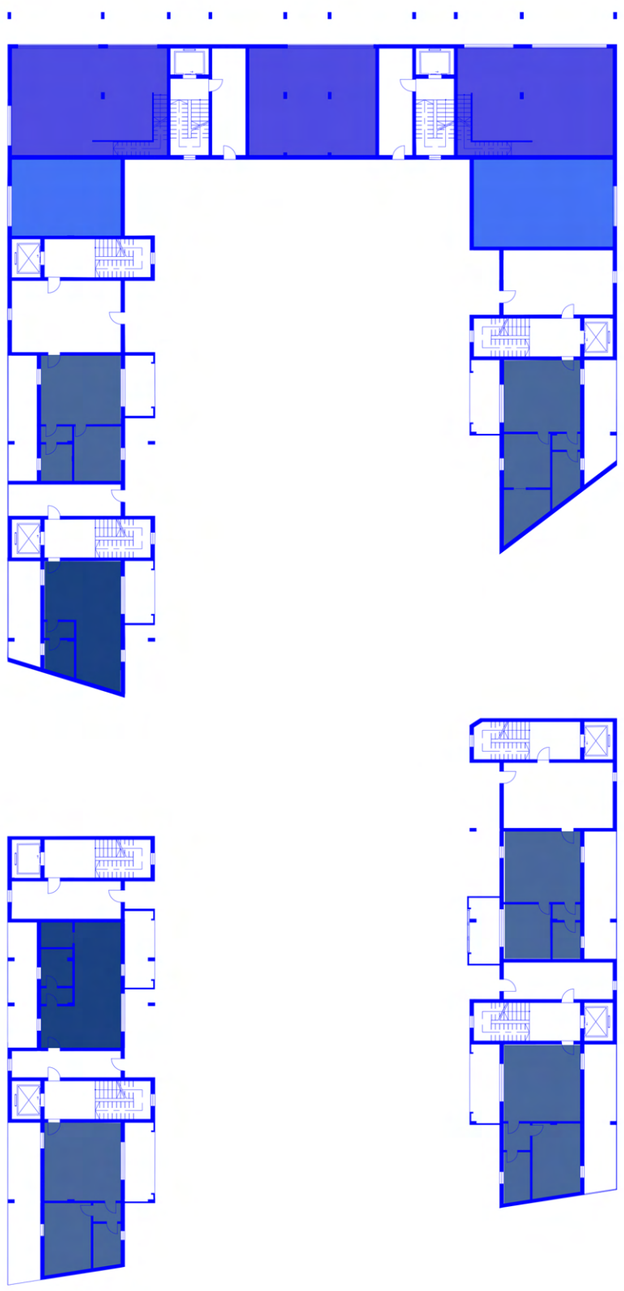
GROUNDFLOOR

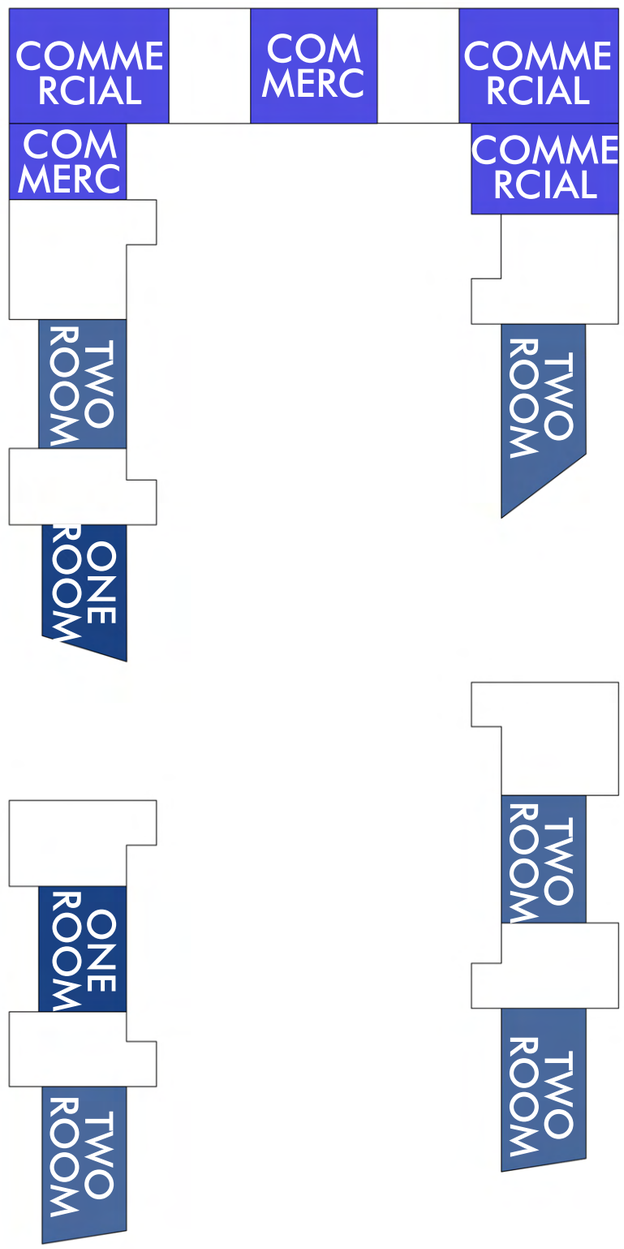


TYPE PLAN

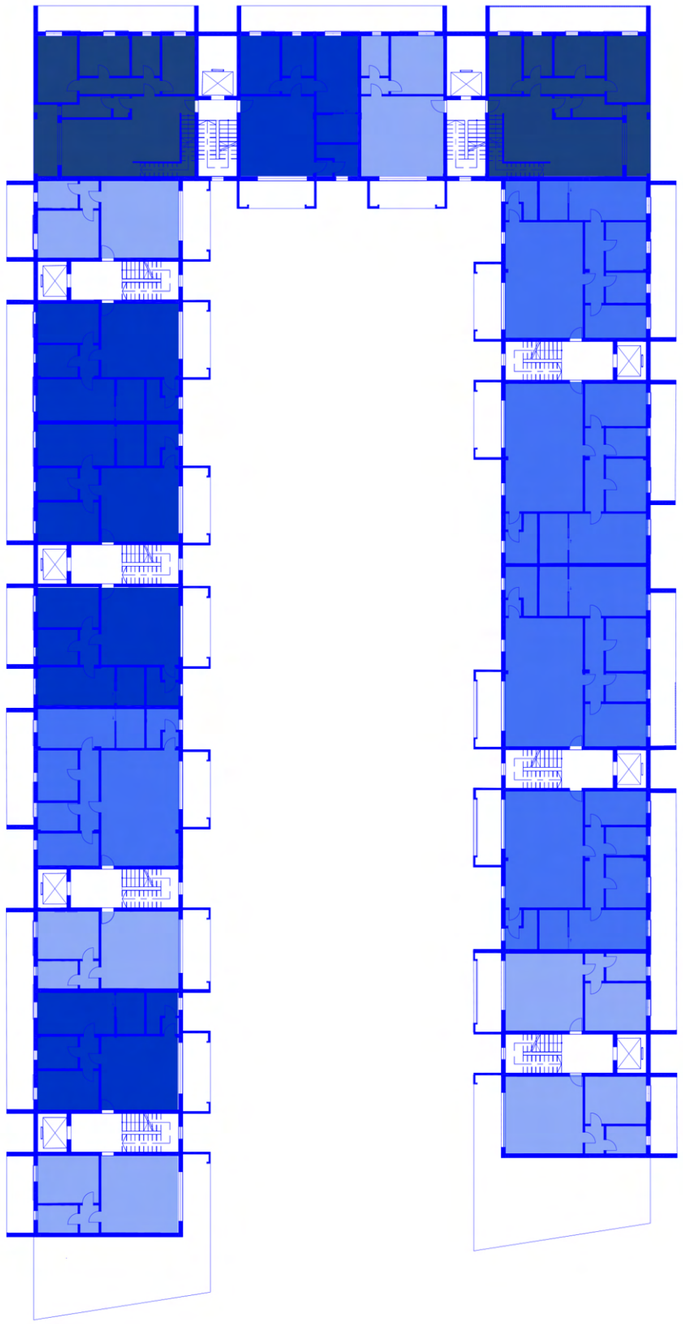


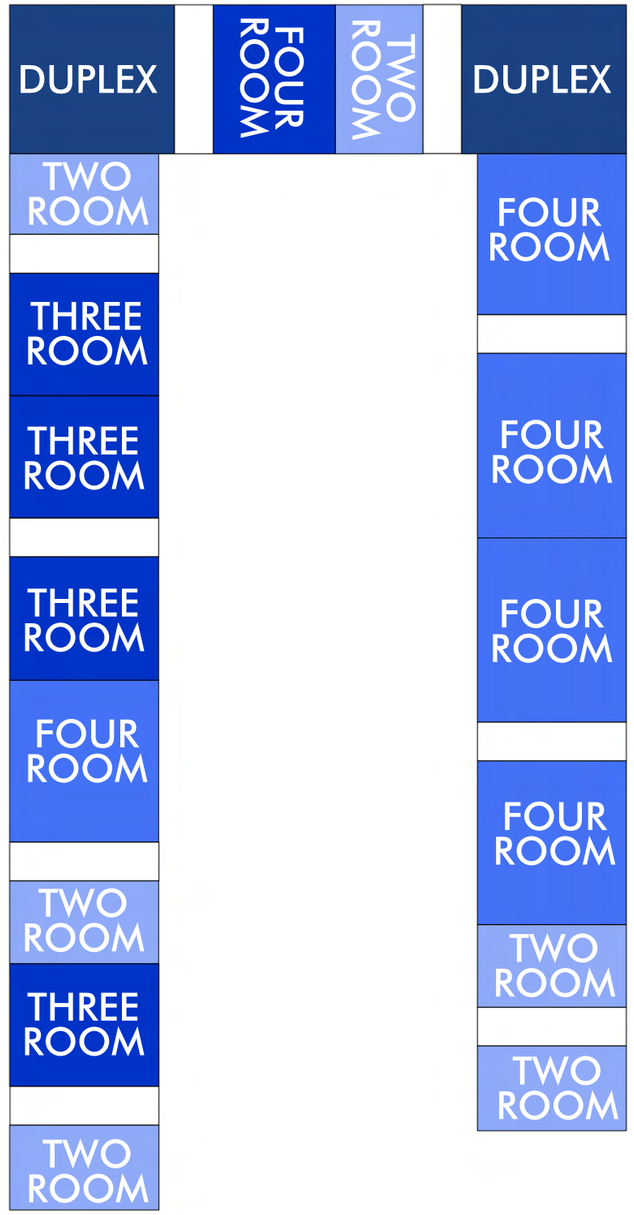
GROUNDFLOOR COMBINATION





TYPE PLAN COMBINATION

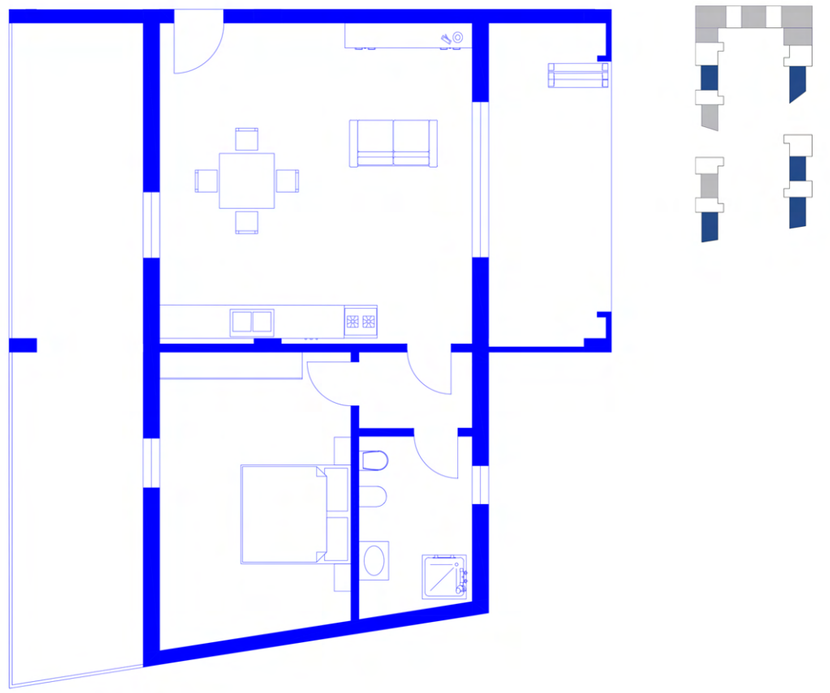




TYPES OF APARTMENTS_GROUND FLOOR

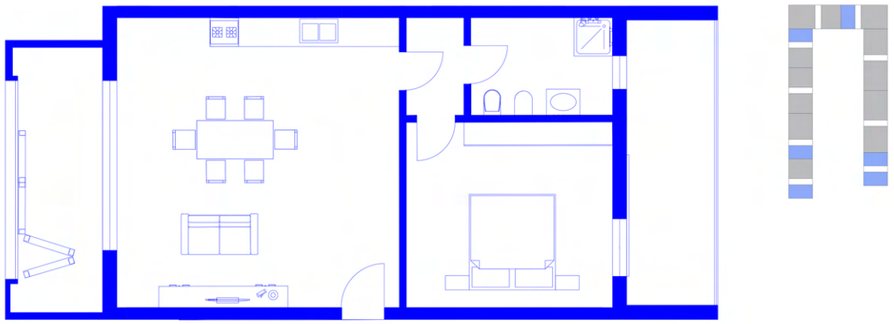
STUDIO APARTMENT 50 sq m

TWO-ROOM APARTMENT 65 sq m



TYPES OF APARTMENTS_TYPE PLAN

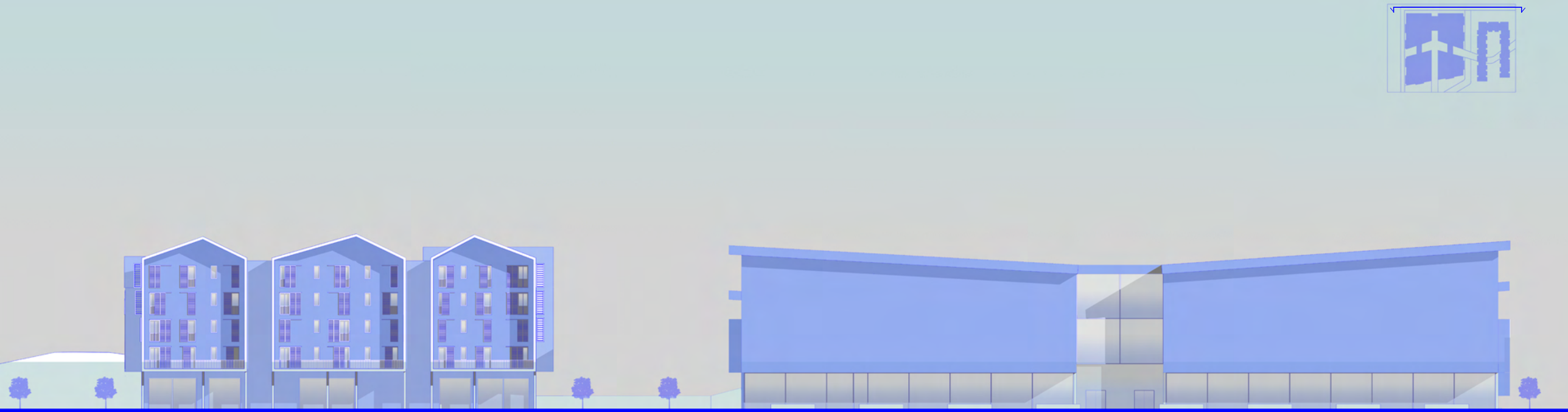
TWO-ROOM APARTMENT 58 sq m



DUPLEX APARTMENT 120 sq m

FOUR-ROOM APARTMENT 120 sq m

THREE-ROOM APARTMENT 90 sq m



COMMERCIAL STREET_G. REGALDI

0 5 10 15 20 25 m

CORSO NOVARA

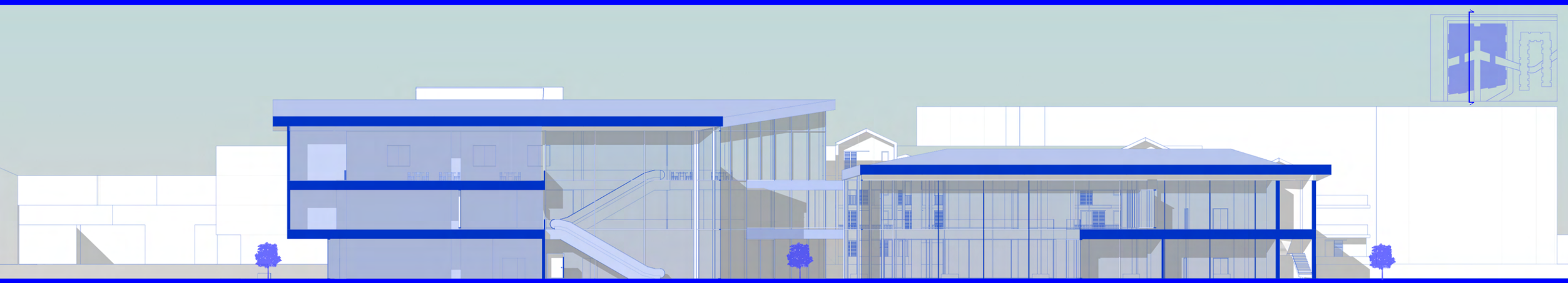
0 5 10 15 20 25 m

SECTION A-A’

0 5 10 15 20 25 m

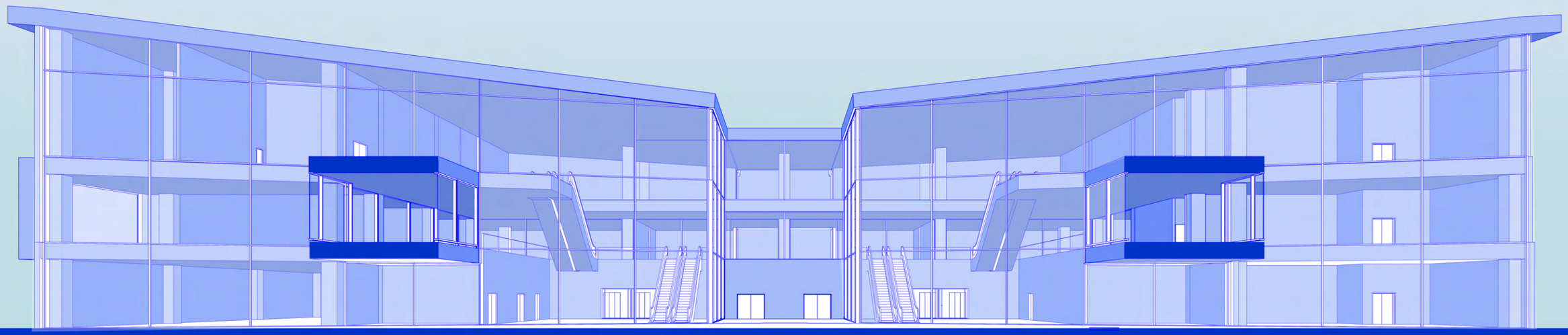
SECTION B-B’

0 5 10 15 20 25 m



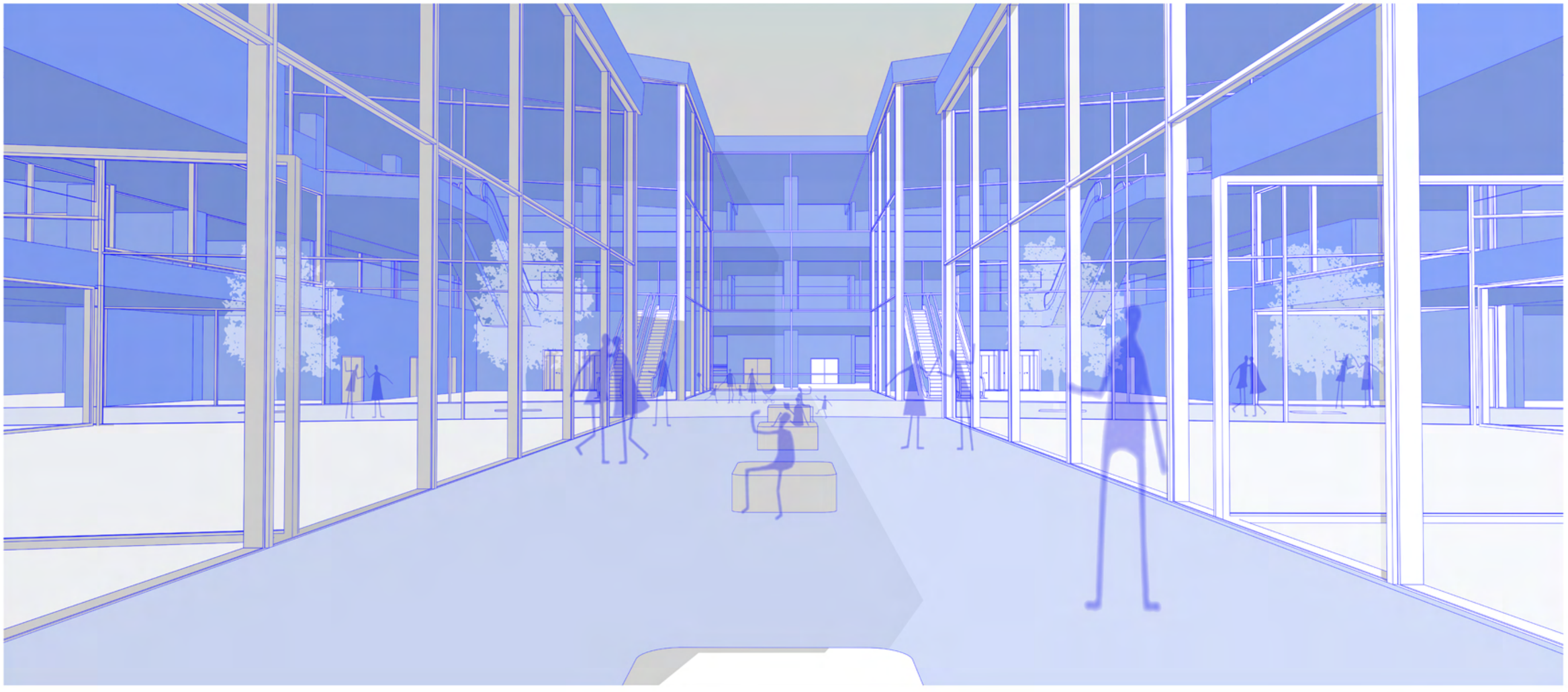
SECTION C-C’

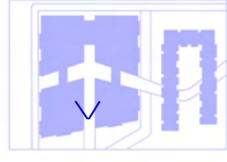
0 5 10 15 20 25 m

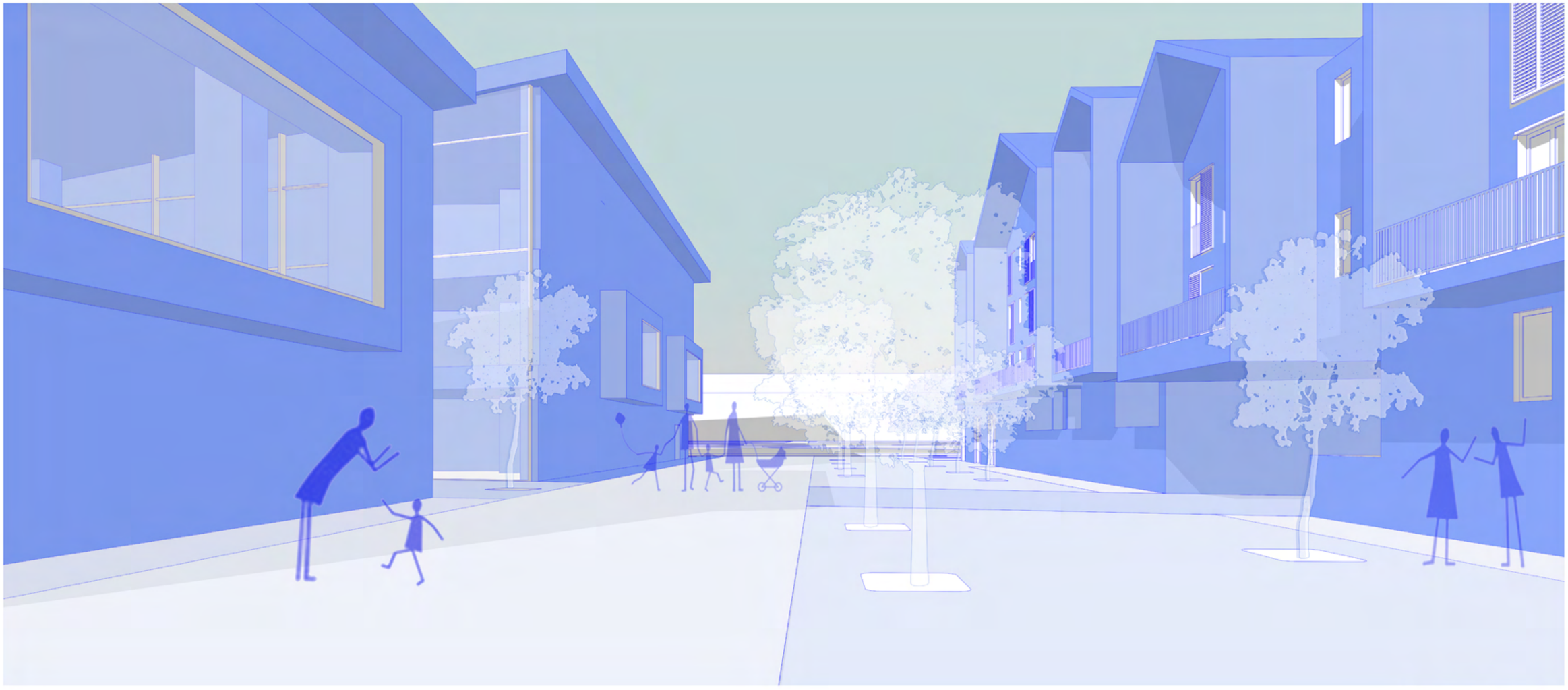


PERSPECTIVE SECTION

0 2 4 6 8 10 m





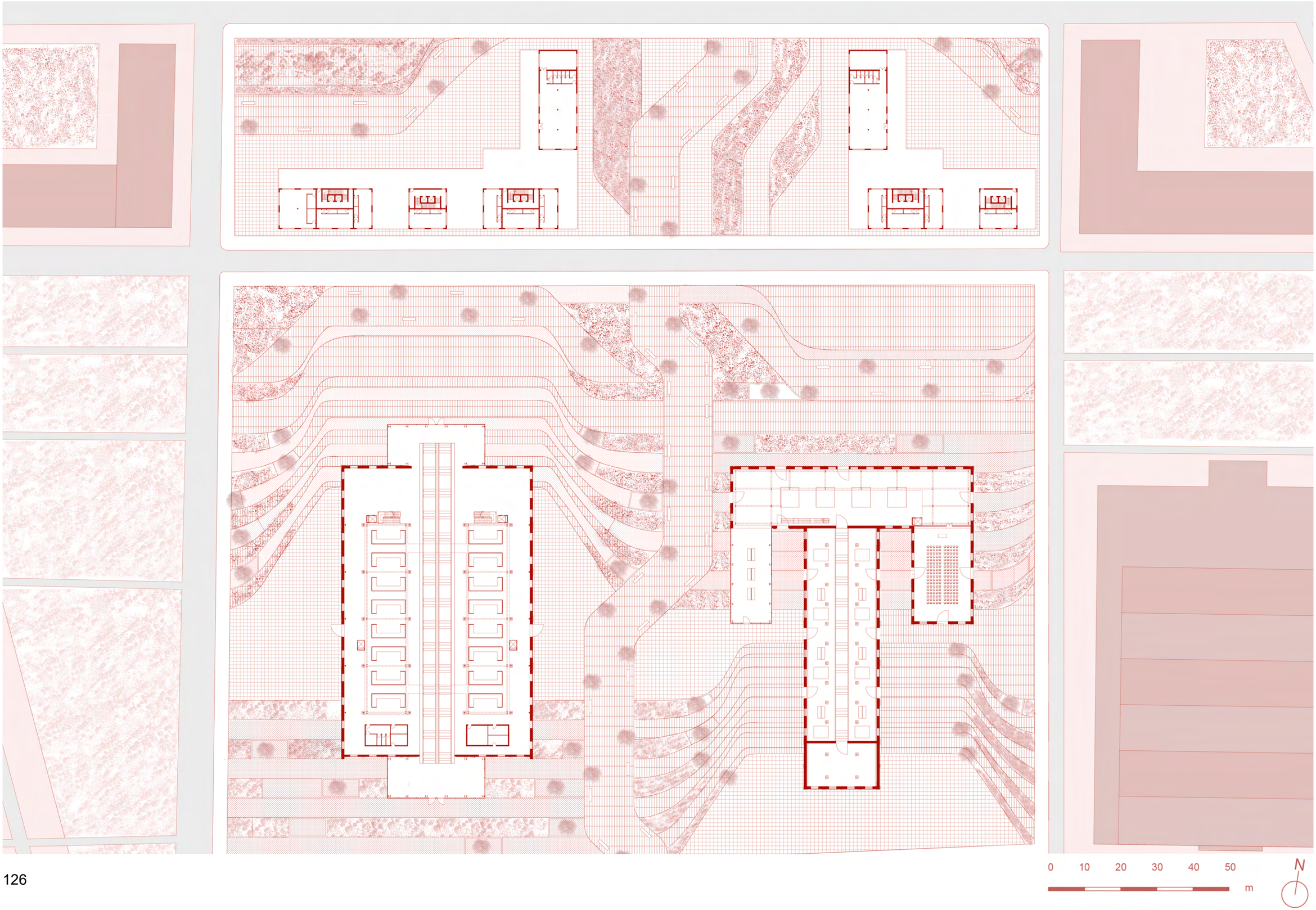


ZAGREB
GREDELJ ZONE

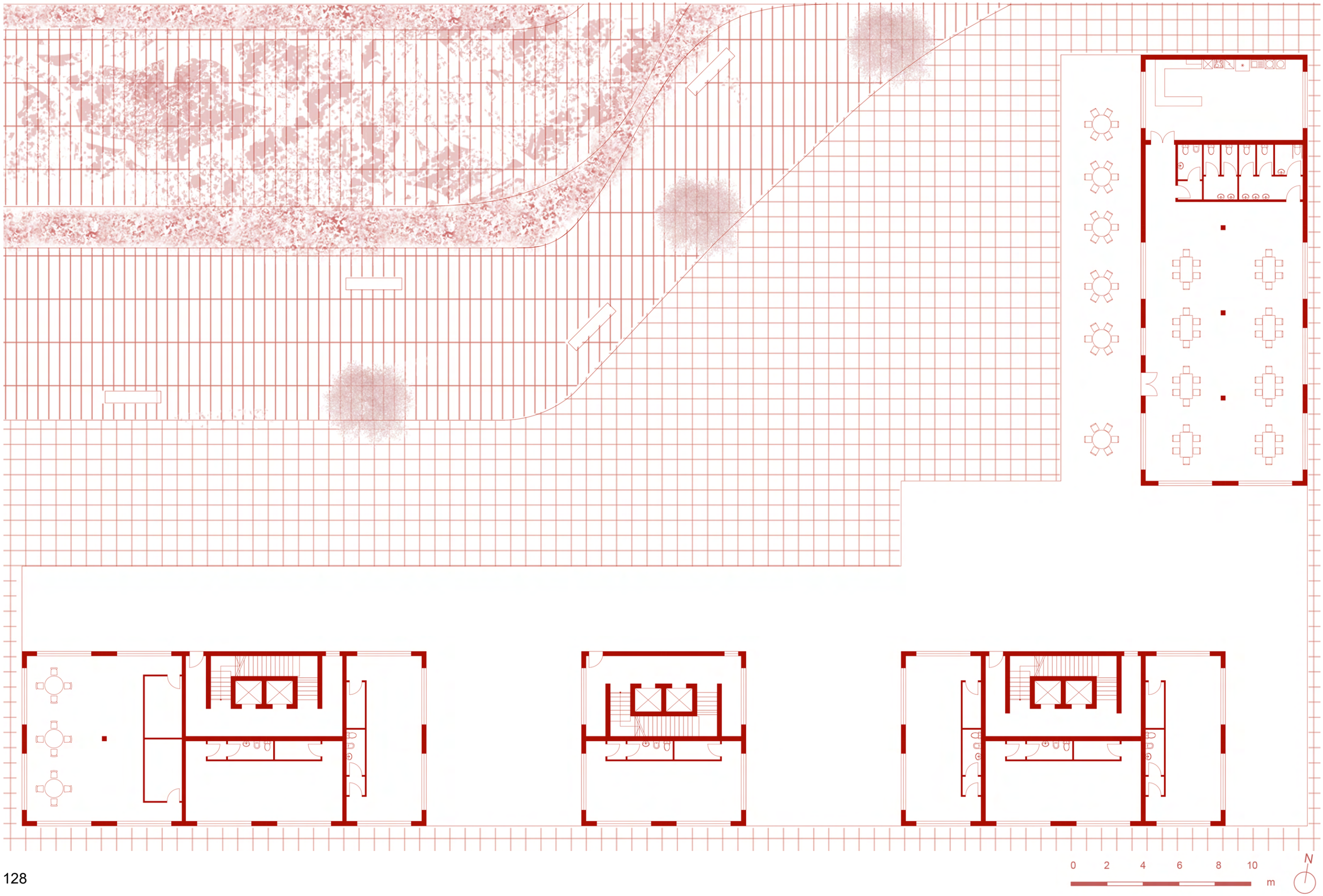
AXONOMETRIC VIEW

UL. BRANIMIRA

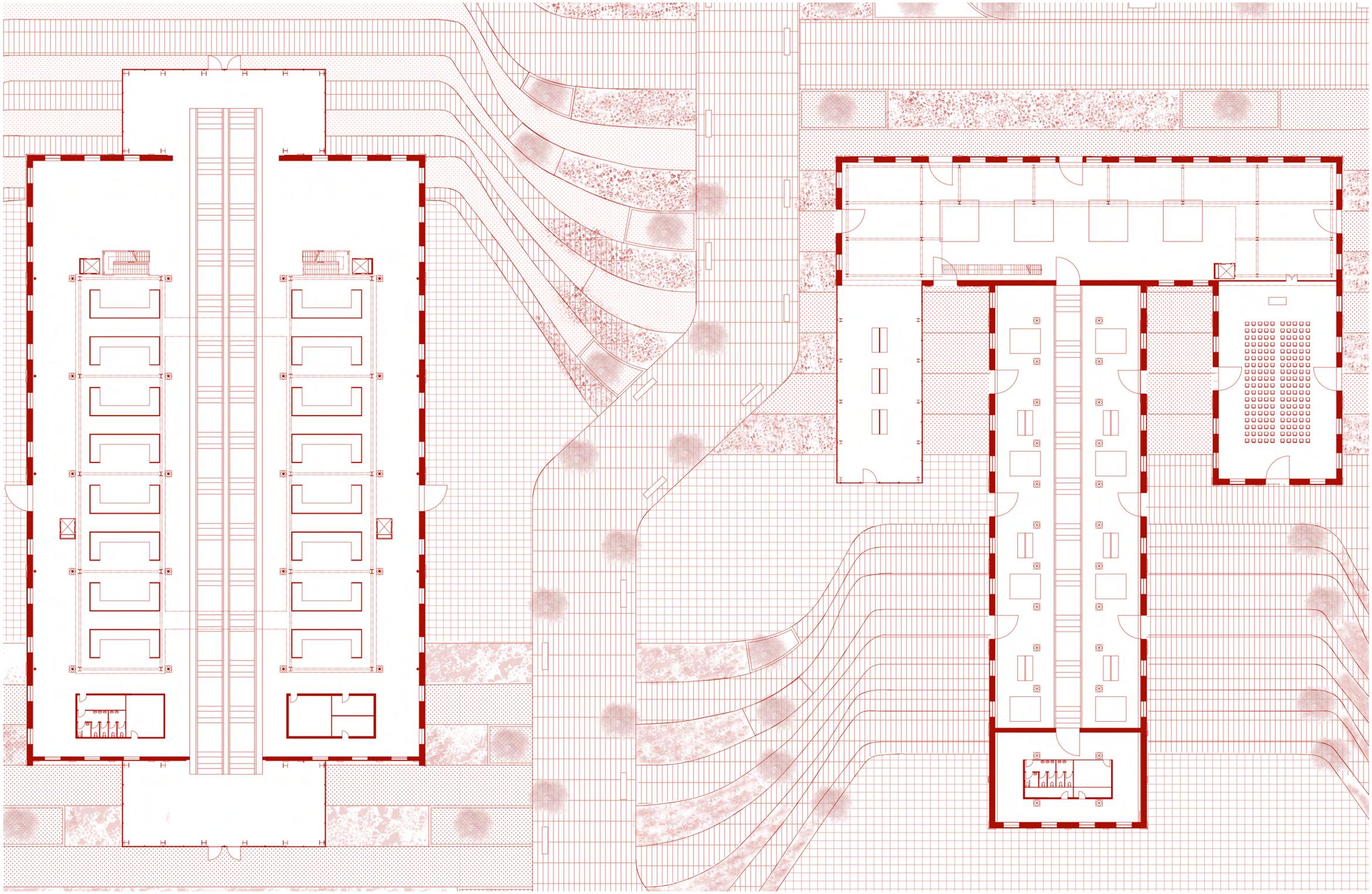
GROUNDFLOOR



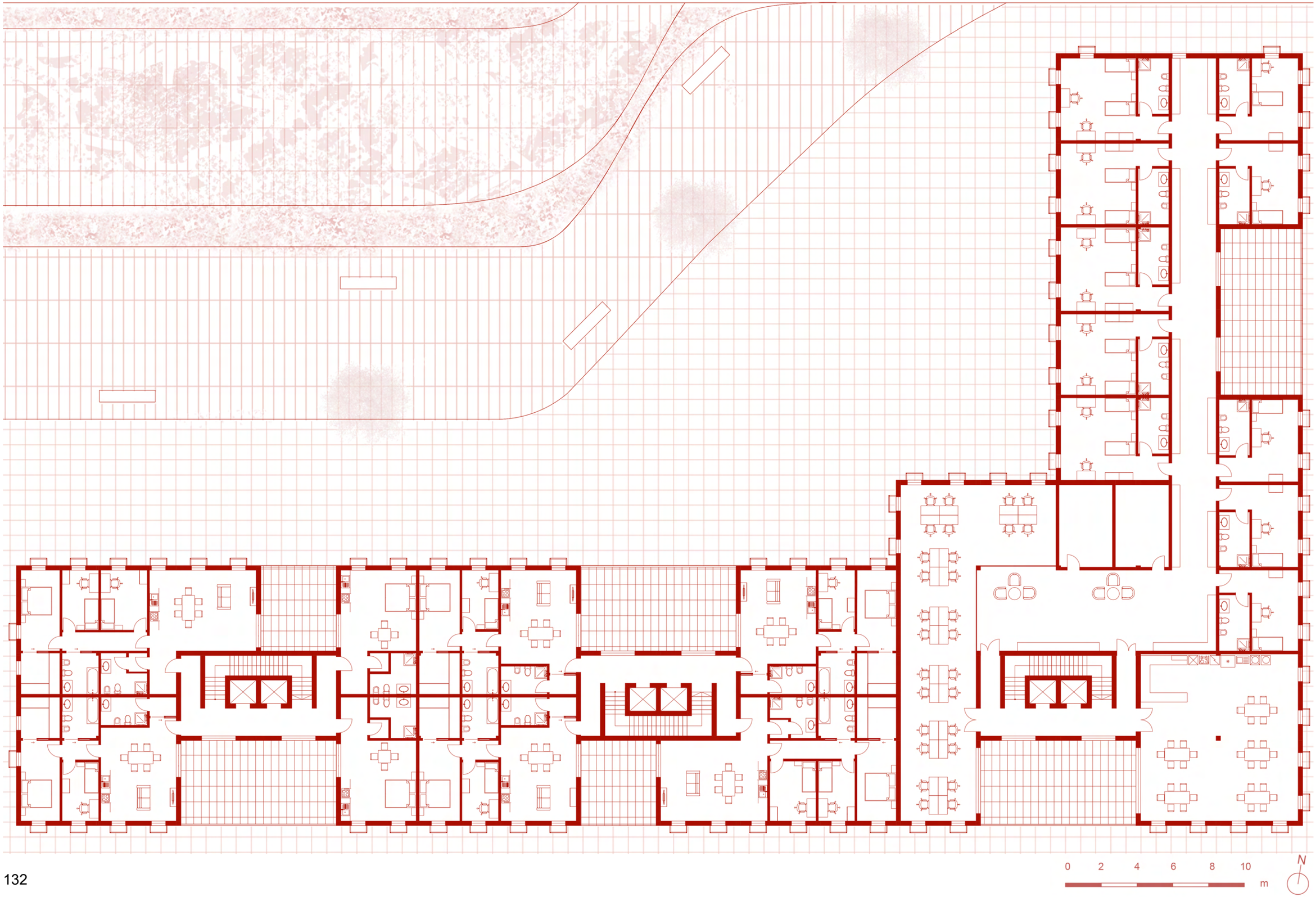
URBAN BLOCK GROUNDFLOOR



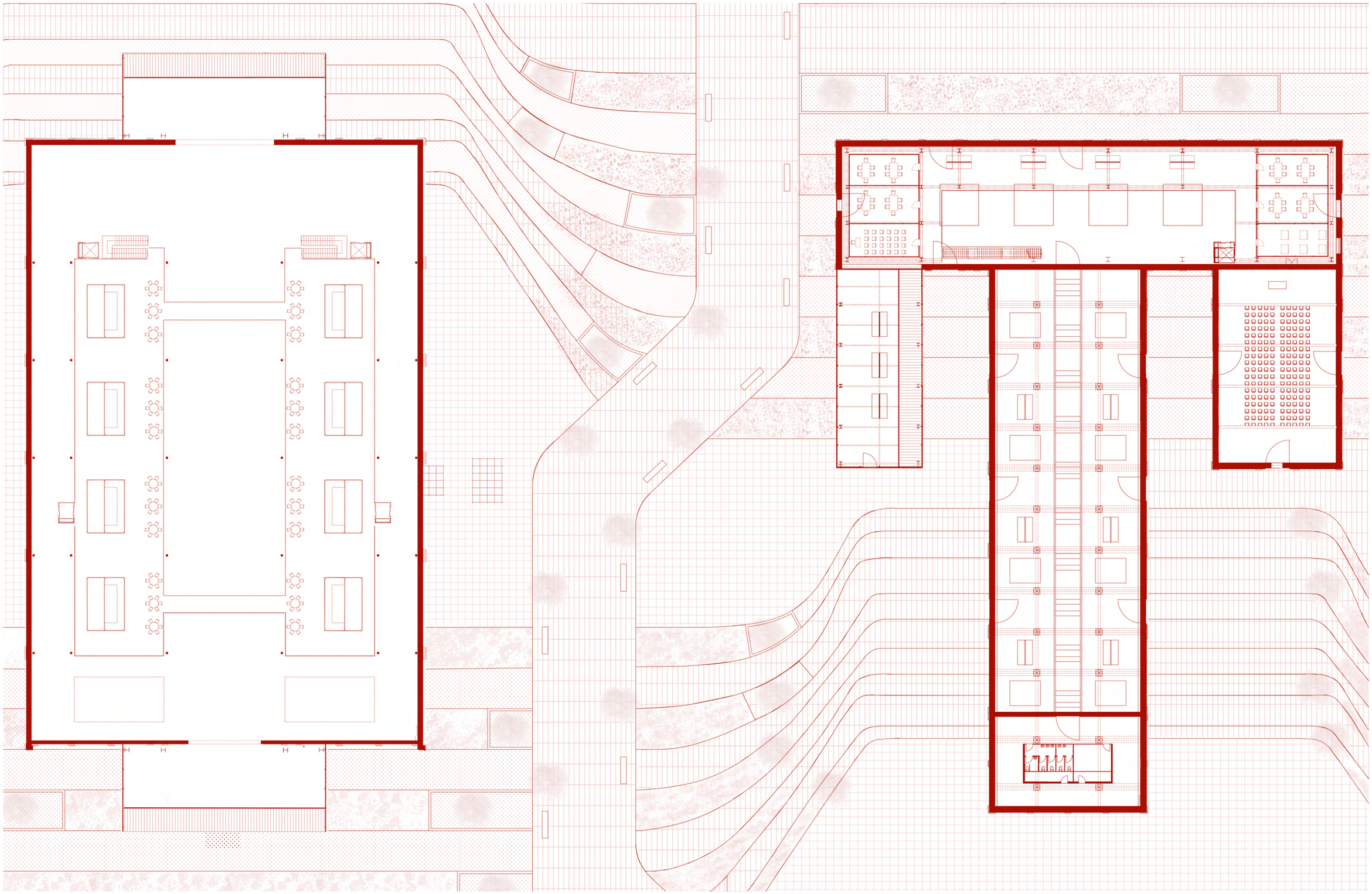
MARKET AND MUSEUM GROUNDFLOOR



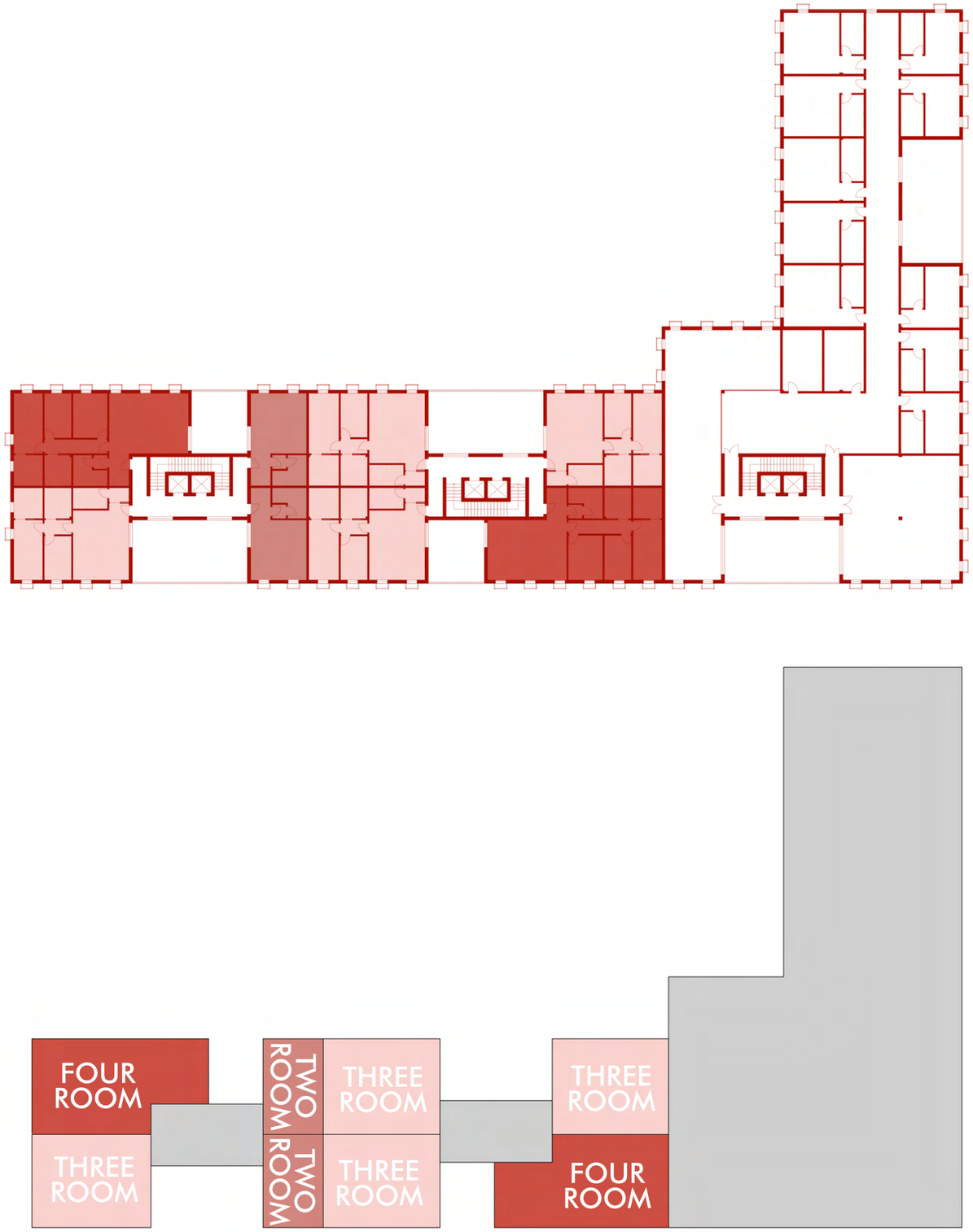
URBAN BLOCK TYPE PLAN



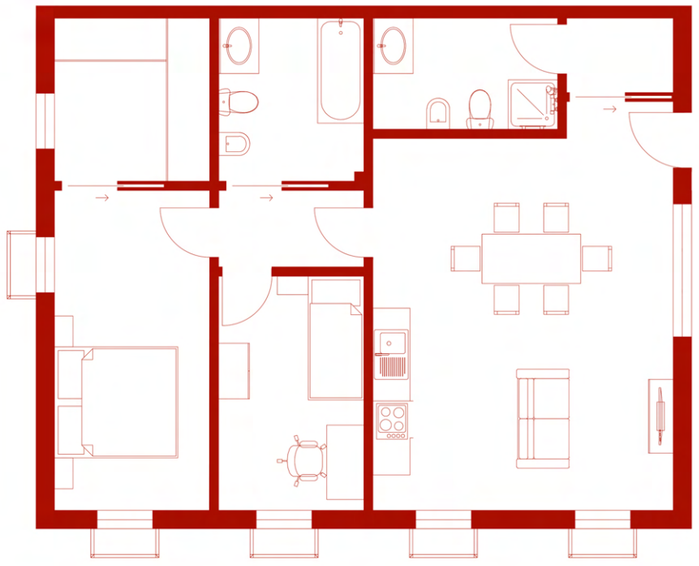
MARKET AND MUSEUM FIRST FLOOR

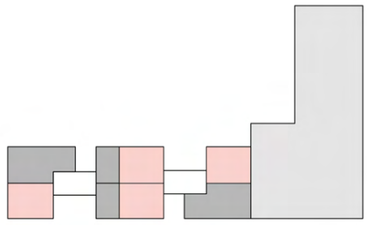


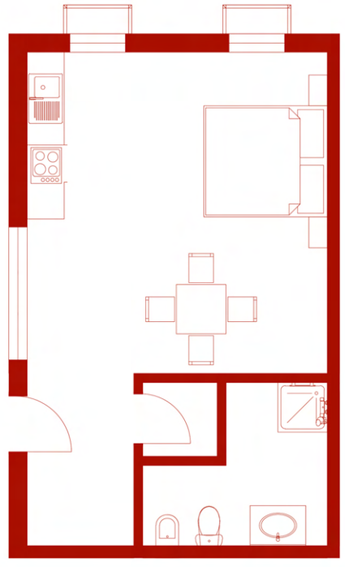
TYPE PLAN COMBINATION

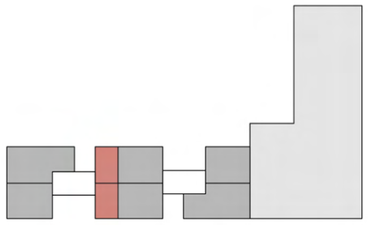


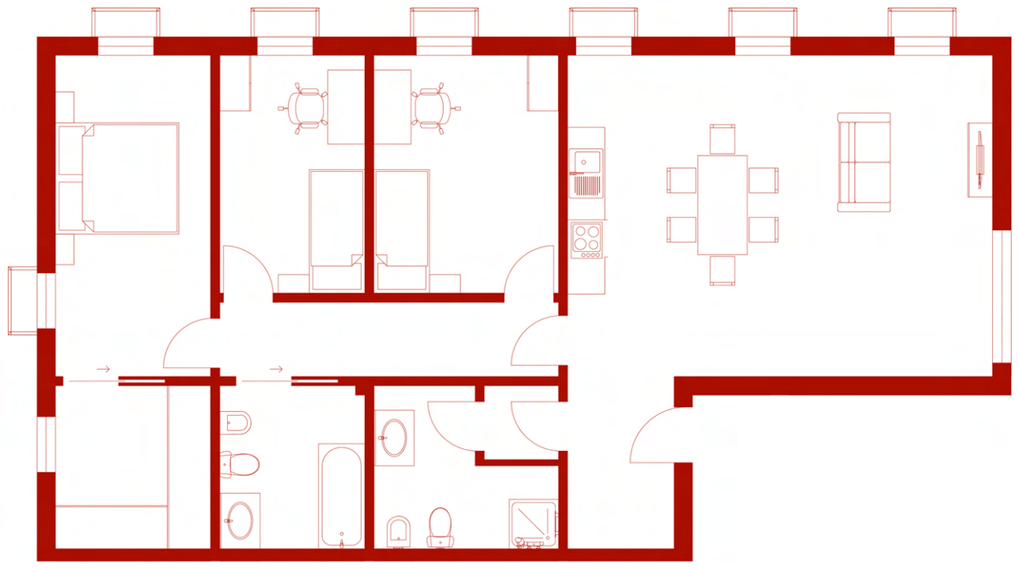
TYPES OF APARTMENTS_TYPE PLAN

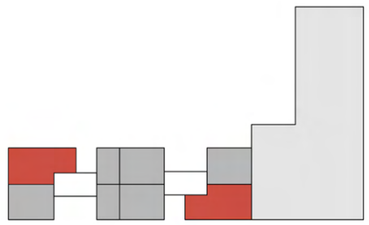








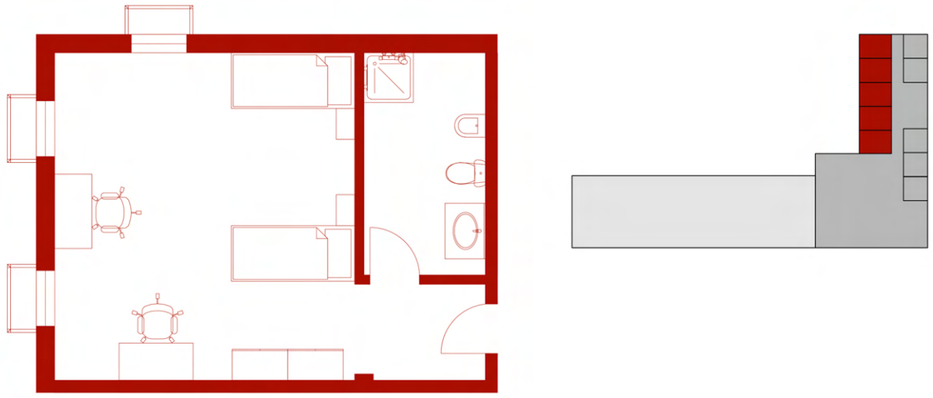


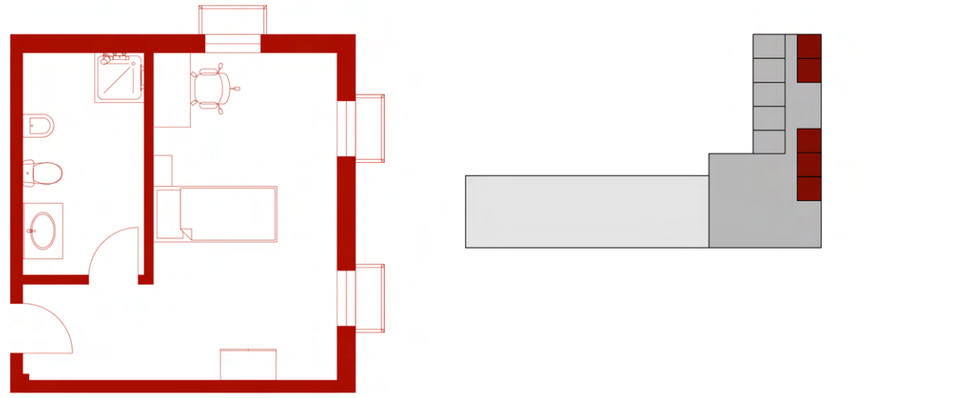


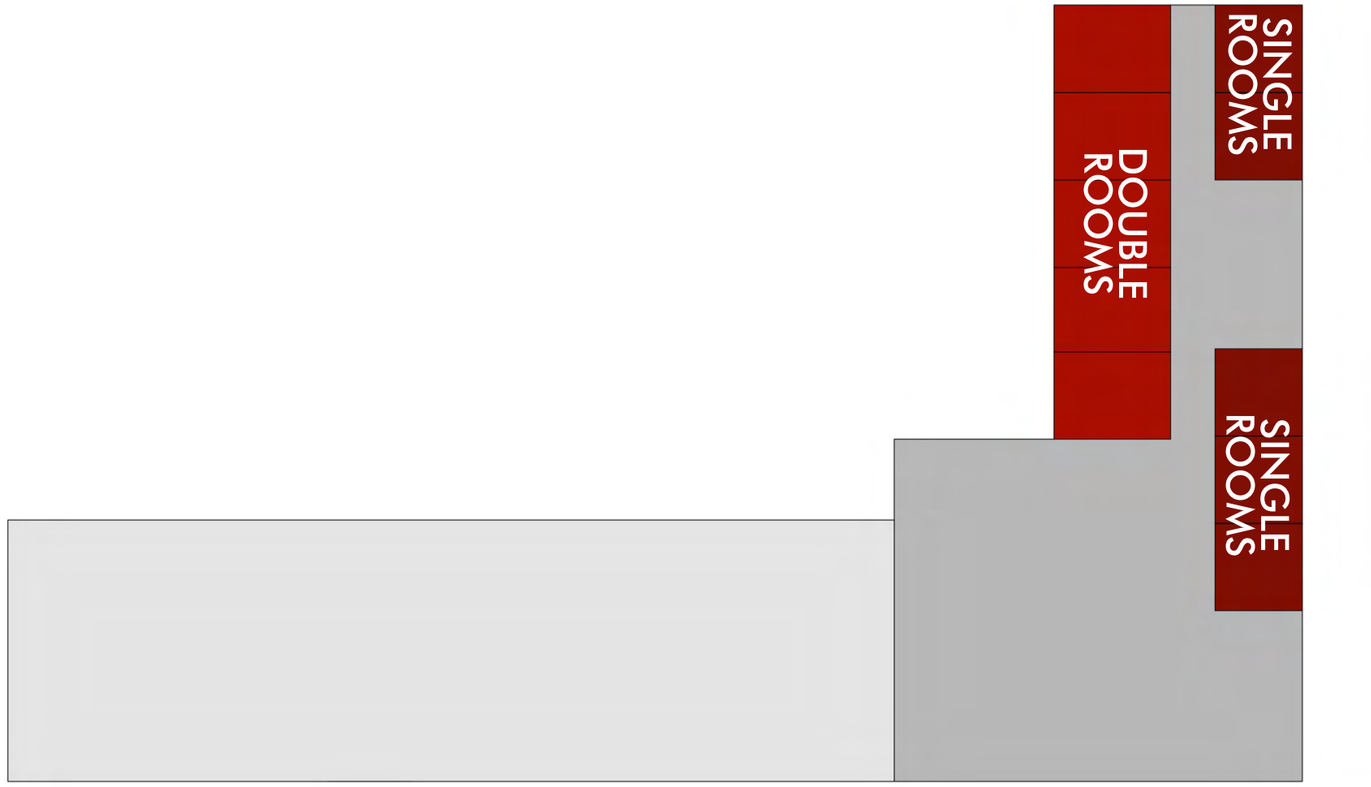
0 1 2 3 4 5 m

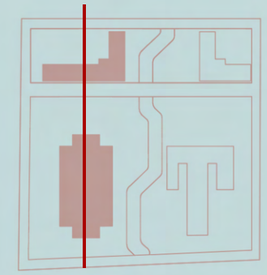
N

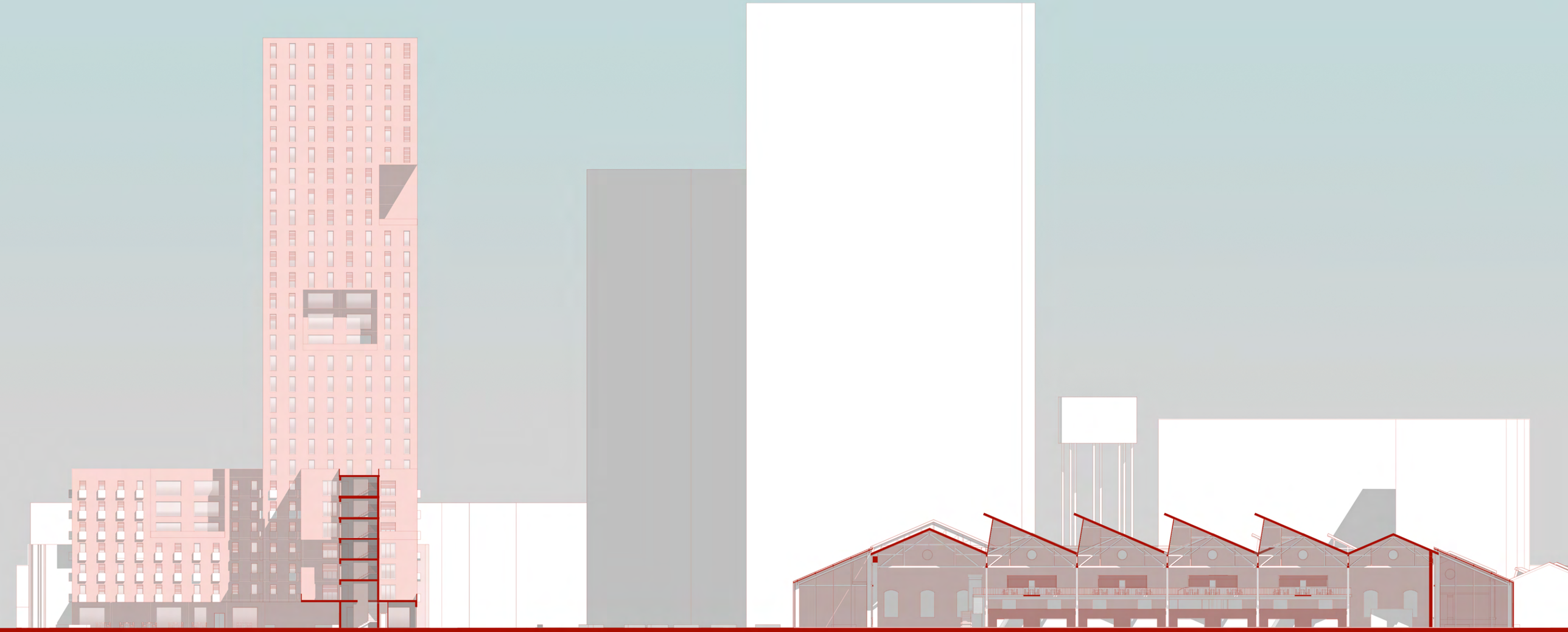
TYPES OF STUDENT ROOMS_TYPE PLAN







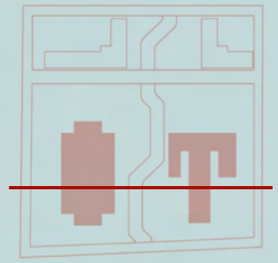




SECTION A-A’

0 5 10 15 20 25 m

N

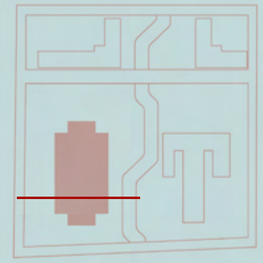


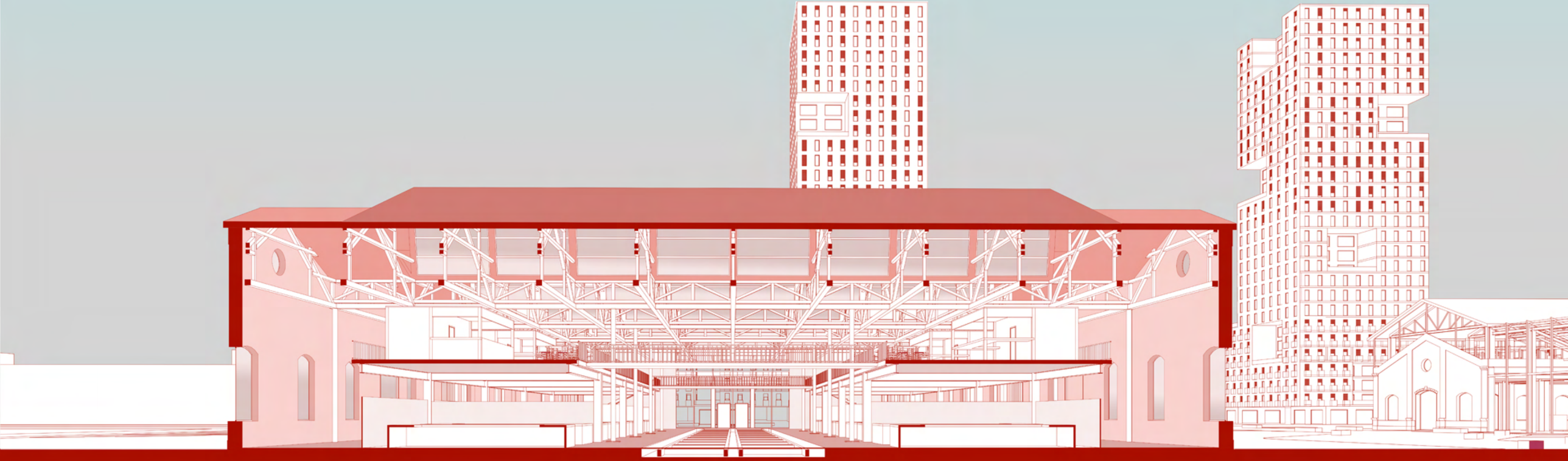
SECTION B-B’

0 5 10 15 20 25

m

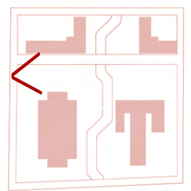
N

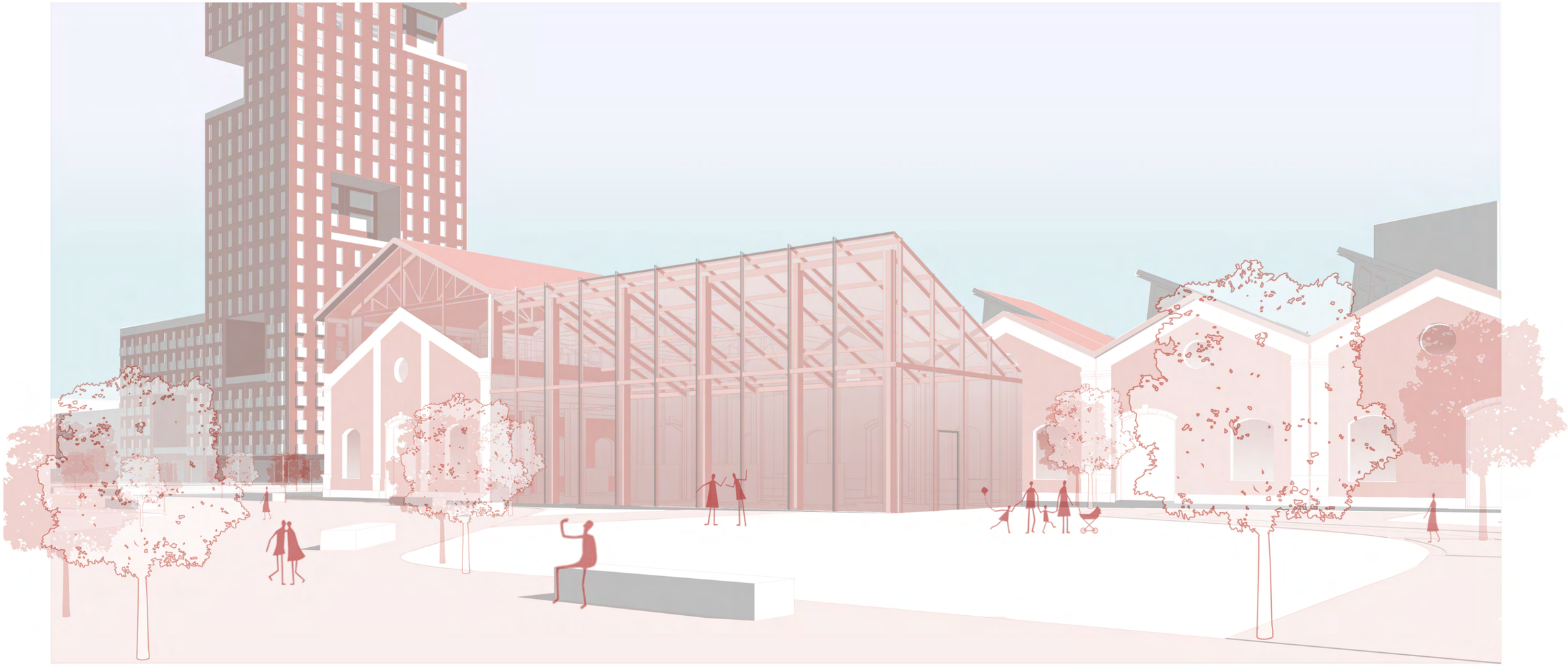


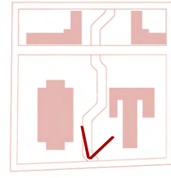


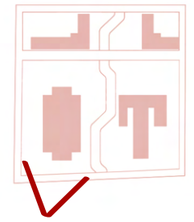
PERSPECTIVE SECTION

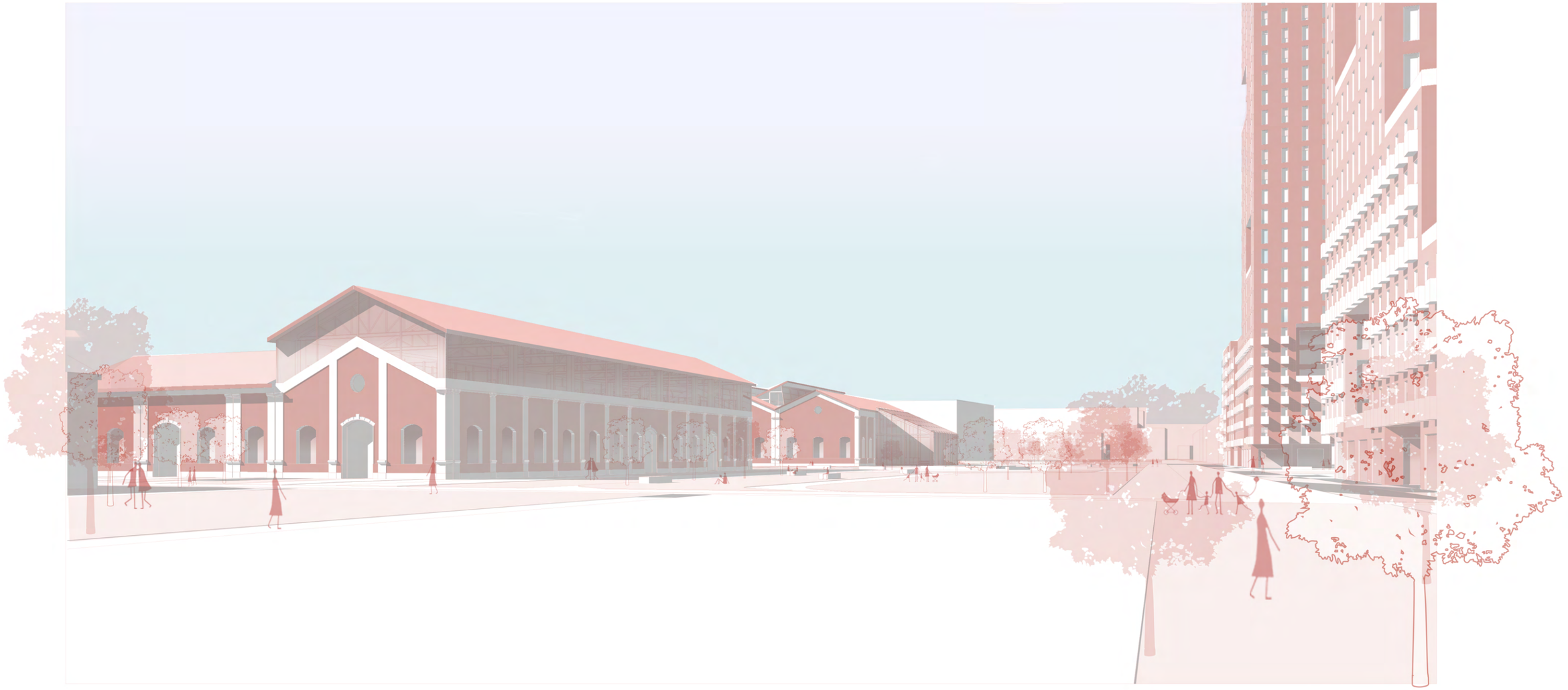
m

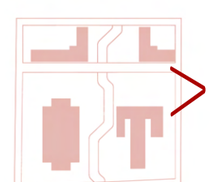






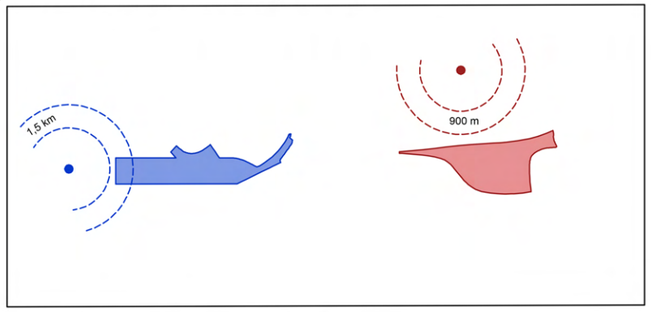
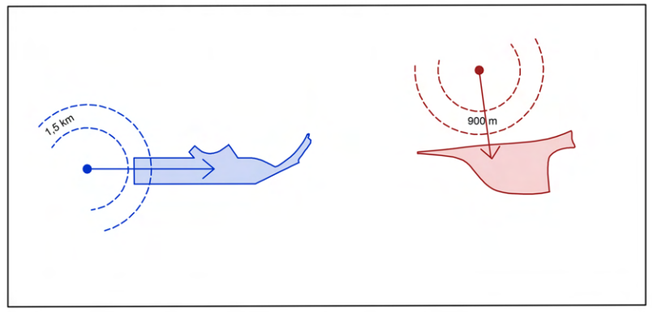
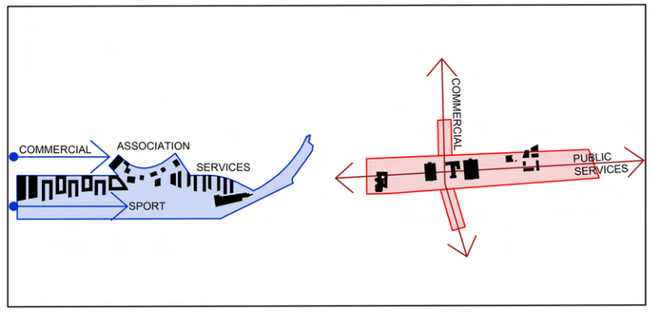
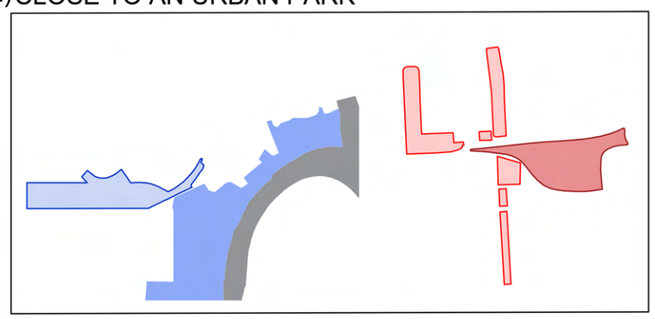
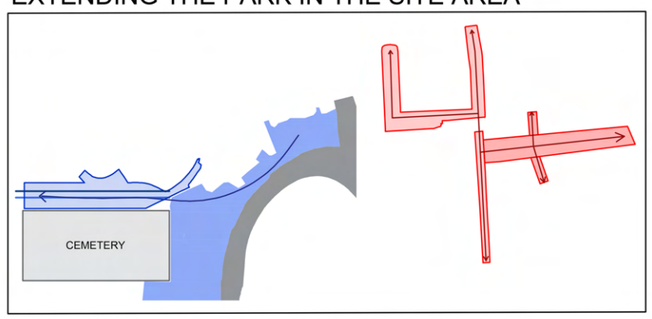
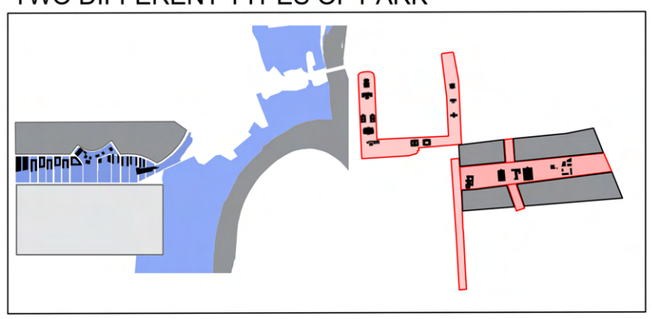
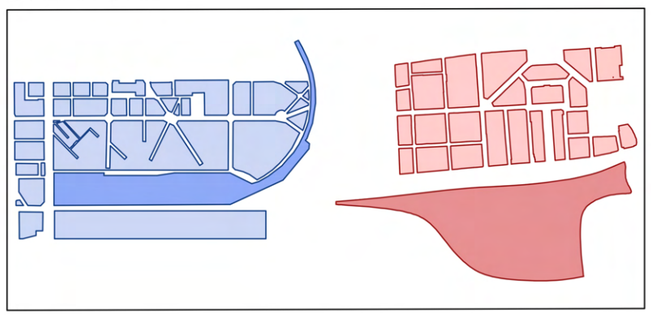
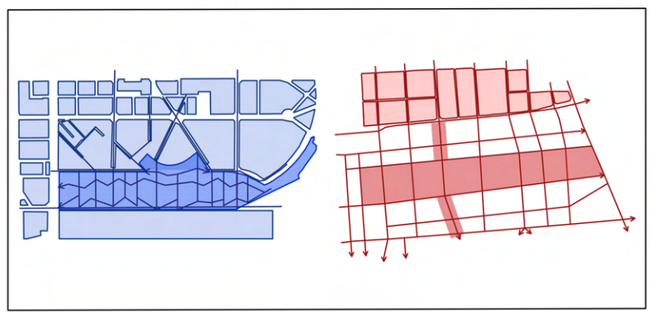
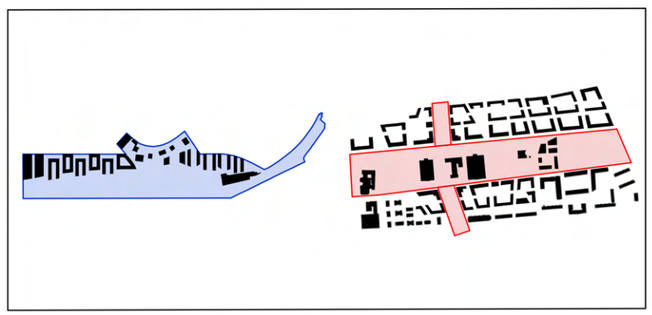
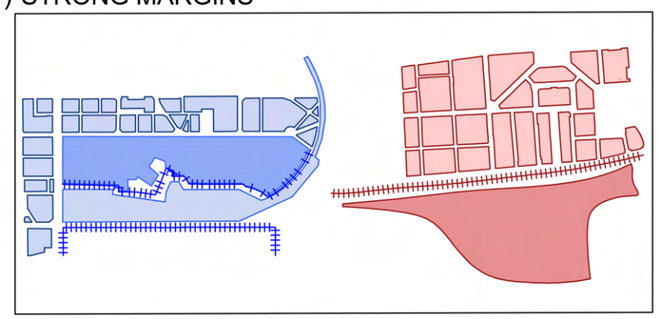
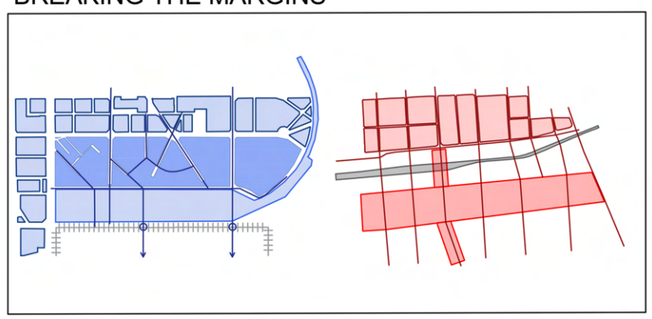
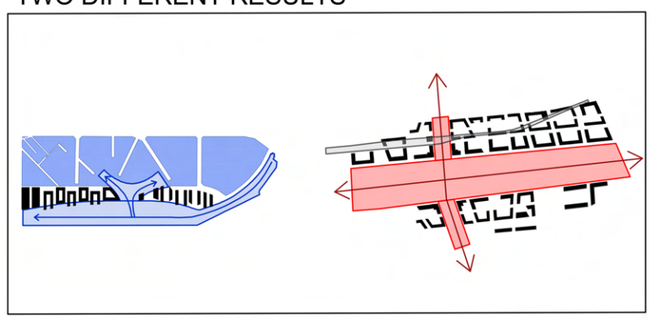


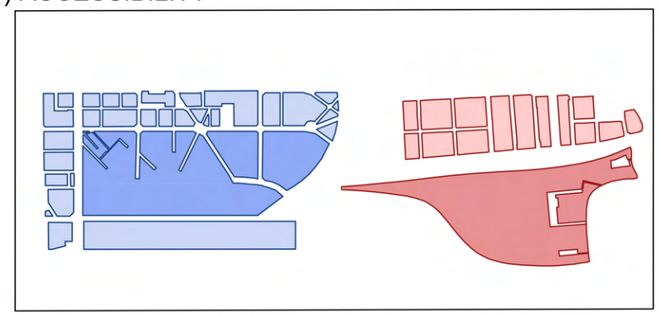
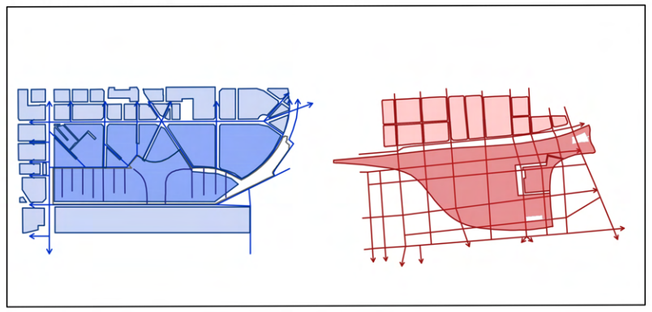
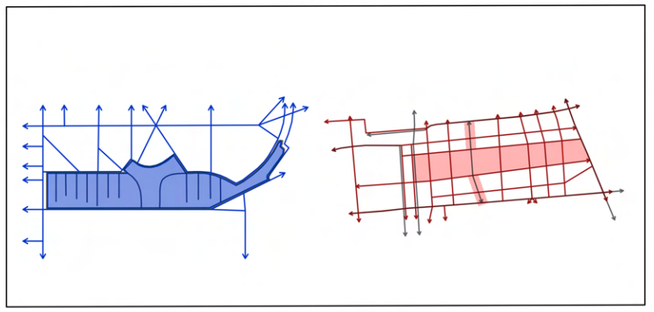
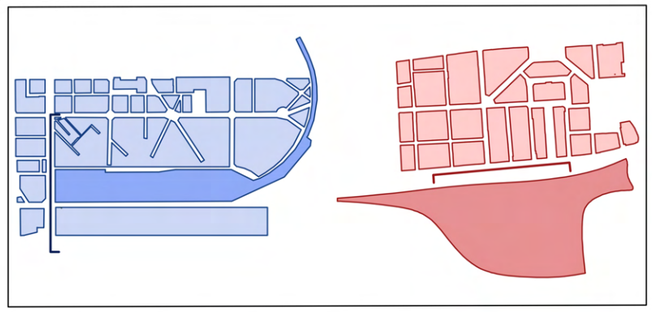
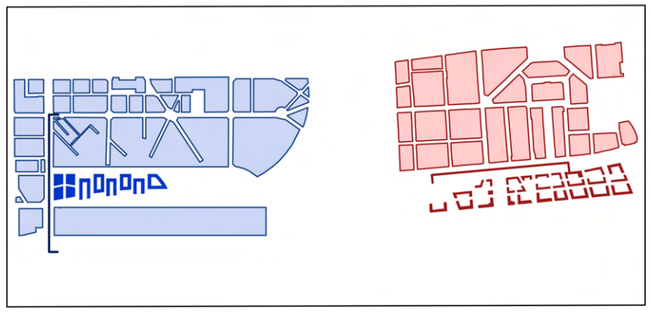
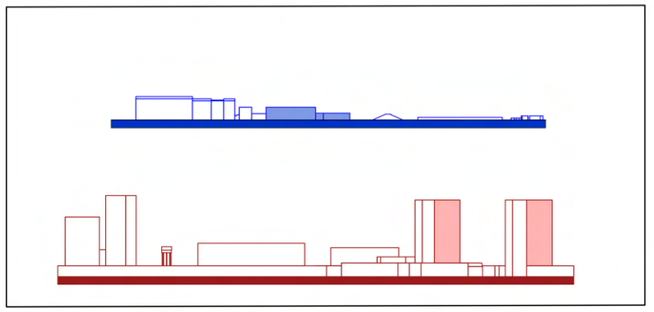
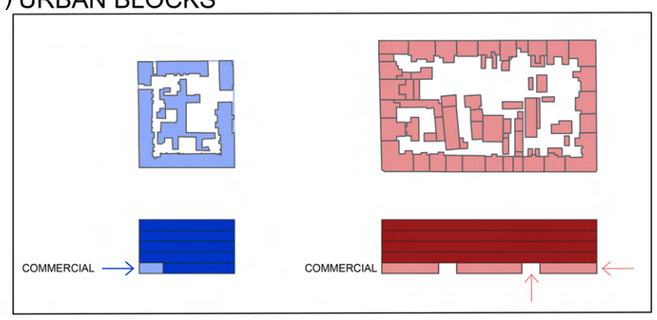
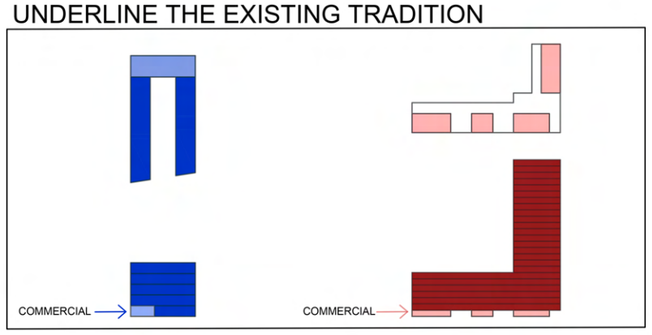
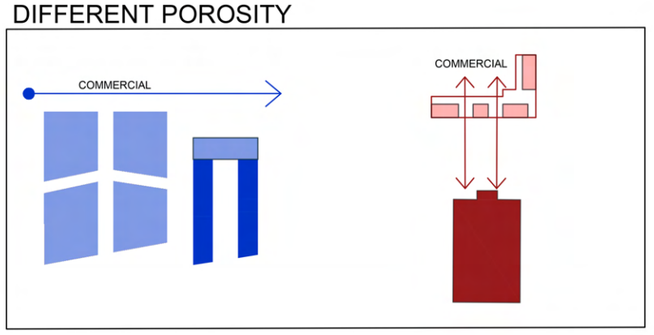
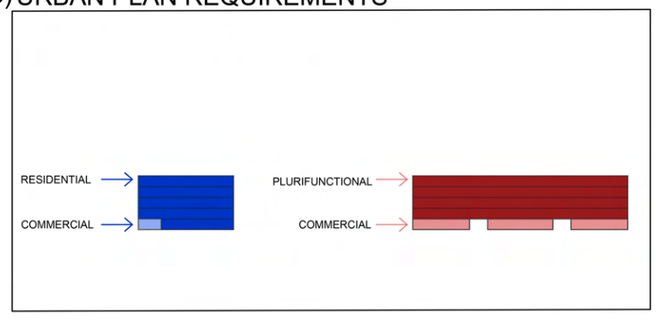
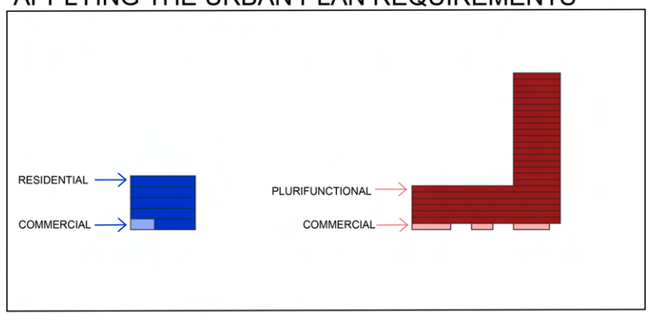
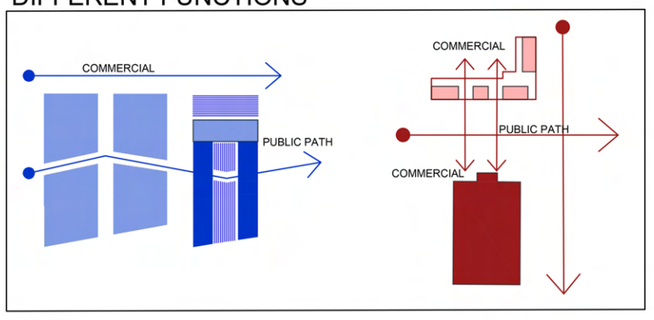




05

METHODOLOGY AND CONCLUSION

FEAUTURES	STRATEGIES	OUTPUTS
(1) CLOSE TO THE CITY CENTER 	CREATING ATTRACTIVE AREAS 	TWO DIFFERENT ATTRACTIONS 
(2) CLOSE TO AN URBAN PARK 	EXTENDING THE PARK IN THE SITE AREA 	TWO DIFFERENT TYPES OF PARK 
(3) URBAN GRID 	EXTENDING THE GRID IN THE SITE AREA 	TWO DIFFERENT TYPES OF BLOCKS 
(4) STRONG MARGINS 	BREAKING THE MARGINS 	TWO DIFFERENT RESULTS 

FEATURES	STRATEGIES	OUTPUTS
(5) ACCESSIBILITY 	ADDING NEW ENTRY POINTS 	DIFFERENT ACCESSIBILITY 
(6) VISIBILITY 	PERSPECTIVES 	TWO DIFFERENT PERSPECTIVES 
(7) URBAN BLOCKS 	UNDERLINE THE EXISTING TRADITION 	DIFFERENT POROSITY 
(8) URBAN PLAN REQUIREMENTS 	APPLYING THE URBAN PLAN REQUIREMENTS 	DIFFERENT FUNCTIONS 

METHODOLOGY

The outcomes of the design process of the two case studies are characterized by similar urban regeneration strategies but differ in formal, typological, and functional characteristics. This happens because, despite the many common features between the two sites (railway yards, disconnected urban voids, industrial context, proximity to a city center, grid urban layout, presence of strong edges such as the cemetery in Turin and the railway in Zagreb), the outputs are influenced by the specific requirements of the respective urban plans (PRG and GUP) and by the specific characteristics of the place that justify and reinforce choices made to maintain continuity with the territorial tradition.

· The first case (1) in the methodological table shows how, despite both project areas being close to the city center (within 1.5 km), the flows generated by urban regeneration are different: in the case of Turin, the attractive flow would be mainly commercial, given the presence of the shopping center overlooking Corso Novara, which would act as a catalyst for commercial/production activities on Via Regaldi; in the case of Zagreb, the main attractive flow would derive not only from commercial activities but also from the continuity of the Lenuci Horseshoe, a succession of squares and parks designed in a U-shape by engineer Milan Lenuci at the end of the 19th century, which houses public buildings: by extending the eastern arm to the south and then again to the east, the same pattern is outlined in the masterplan.

· The urban voids generated by the railway yards are interesting opportunities to insert green lungs into the compact city, and in this case, the two resulting parks differ in characteristics and origin: in the case of Turin, the urban strategy is to extend the Colletta Park into the void to create a linear park along Corso Regio Parco and to ensure respect for the cemetery with the insertion of artificial hills to limit the view of the cemetery wall; in the case of Zagreb, the park is represented, as already described in the previous point, by a succession of blocks housing the public buildings of the masterplan.

· Point (3) of the table shows how, despite the strategy in both cities being to extend the urban grid to the respective voids, the resulting composition of blocks is quite different: in the Vanchiglia yard, the space occupied by the built environment is linear and in an intermediate position between the existing context and the cemetery buffer zone intended for the park, creating a discontinuous front both above (along Via Regaldi) and below, to comply with the PRG guidelines that suggest avoiding a clear separation between built and park areas; in the case of Gredelj, the contrast between blocks and park is sharp, with the latter being an urban void carved out from the mass of the blocks.

· In both cases (4), there are strong margins in the peripheral strips of the two project sites: Scalo Vanchiglia is characterized by the presence of the wall, as well as the cemetery space, on the southern border of the area, while to the north, the irregular context of existing buildings creates a discontinuous front; in Gredelj, the most evident and problematic margin is given by the presence of the railway that divides not only the project area but the entire city in two; resolving the margins leads to different results as in Turin there is a partial connection of the project with the context to the south and north; in Zagreb, however, the choice to place the railway underground ensures that the masterplan fits perfectly in continuity with the context.

· In the existing situation, both projects address accessibility issues to the site (5), where the few accesses are limited to the presence of parking lots in Gredelj yard, while they are nonexistent in Scalo Vanchiglia; however, the choice of accessibility for the project in the three different forms of vehicular, bicycle, and pedestrian crossing is quite different between the Turin and Zagreb projects, as in the former case, the area is accessible only to pedestrians, with the exception of private accesses for residents in underground parking lots and access for loading and unloading goods at the perimeter of the shopping center; in Zagreb, accessibility has been ensured for vehicular, bicycle, and pedestrian traffic because the area is crucial in addressing traffic issues in the city and especially along Strojarska Street.

· In both cases, the urban voids of the two former railway yards give rise to “missing perspectives” within the most important road axes facing the areas. The design of the two sites also stands out for the visibility (6) it generates on the two most important roads bordering the two areas: Corso Novara in Turin and Branimira Street in Zagreb. In the former case, the visibility of the built front on the avenue is the result of a gradual increase in height, from the minimum height of the cemetery wall and then the entrance to the park, gradually increasing from the two different heights of the shopping center to the nine above-ground floors of the tallest building in the adjacent block; in the latter case, the skyline that emerges is strongly marked by the presence of two towers approximately 85 meters high, totaling 26 floors, in line with the heights of existing towers in the context.

· Regarding purely architectural considerations (7) and (8), significant differences can be easily observed despite the two cities having a regular urban fabric that has been incorporated into the project. It

is important to specify that the reference blocks of the two cities are both courtyard and rectangular, but they differ in both size and permeability: the Croatian block has much larger average dimensions compared to the Turin one, and furthermore, although both host commercial activities on the ground floor, the Turin block has access to activities only along the perimeter of the block with the interior being privately owned by residents; in Zagreb, on the other hand, in addition to the accesses to the shops directly from the outside, the blocks often have entrances into the courtyard where other commercial and/or productive activities are located, making the interior of the courtyard accessible to the community. These different porosity gradients are also reflected in the project. Hence the differentiation of the ground floor theme which, for specific territorial reasons, translates into the design proposal with a Turin-style courtyard interior accessible to residents, except for the central open path during daylight hours, distinct from the commercial axis located externally to the courtyards; in Zagreb, instead, some portions of the ground floor of the block are emptied to ensure direct passage between the park area and the internal courtyard where the commercial activities face.

CONCLUSION

The outcomes of the design process, in the uniqueness of the two case studies, can be the subject of a reflection that starts from the two specific examples to arrive at general considerations, applicable to other similar case studies. Starting from the premise that the methodology this thesis aims to identify is not applicable to any disused railway station, but rather to railway stations in compact cities, it can be easily deduced that the regeneration of such large areas can be planned systematically, in a process where area analysis, urban planning guidelines, and considerations related to the *site-specific* theme can lead to a design strategy that ranges from the urban scale to the building scale, with a logical and formal coherence justifying the actions. Although the two intervention areas are within the European context, with a comparable industrial and railway history, there are urban strategies and specific characteristics that influence the design outcomes. If we were to summarize the process into three categories (starting characteristics, applied strategies, and obtained outputs), it would be clear that, on one hand, the characteristics of the two areas are often similar since two comparable cities were chosen, and the strategies of urban regeneration are assimilable to the same applicative principle and formal rigor; on the other hand, the obtained outputs are different from each other. This does not mean that the methodological process leads to unexpected results, but it aims to demonstrate how the effectiveness of the proposed strategies applied to similar comparison elements maintains a general scientific validity without excluding the specificities of the two case studies, rather emphasizing their peculiarities. This happens because the inductive reasoning, which starts from the two particular cases to arrive at general considerations, does not demonstrate its effectiveness starting from the formal characteristics of the obtained results, but from the rules applied throughout the entire process, of which the final design proposals are the consequence. This clarification fits coherently into the urban-scale design vision and beyond, where there is no unique effective design proposal, but there are valid criteria applied with different gradients. The design process, therefore, is always the combination of formal choices that can be distinguished from each other despite considering the same analyses and data collected. The methodological process, therefore, is not based on univocal cause-effect laws admitting a single possible outcome but leaves room for all possible variations and paths the process can take because the effectiveness of the method depends not on the outcomes but on the coherence and rigor of the principles applied.

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