

BUILDING FOR THE FUTURE

Revitalization of industrial landscape

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Spring 2020



BUILDING FOR THE FUTURE Revitalization of industrial landscape

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Master thesis

Architecture and Planning Beyond Sustainability

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Abstract

Turin is Italy's fourth largest city, and a major business and cultural center. It is also home to a significant part of the Italian automotive industry.

Technological progress and recent economic downturn have had a significant negative impact on Italian industries. The oil and car crisis hit the city in the 1970s and 1980s, and its population began to decline.

The population decline of the city has begun to reverse itself only in recent years. The city of Turin, which has a great industrial history, started a process of transformation from manufacturing city to reuse of abandoned factories for living, work and production in the first years of 2000. Many industrial heritage objects in Turin still have a potential for future use and are waiting for a new life. These structures once were places for production and development, but now are abandoned cathedrals, historical witnesses of the past.

This thesis project will focus on the revitalization of once thriving industrial area, former Ghia area in Turin. Ghia, a famous coach builder, moved here his activity in 1958, realizing the new factory on a plot severely damaged by World War II bombing.

The main topic of this thesis is the reuse of postindustrial spaces. The abandoned and isolated Ghia area needs ideas to be reconnected to the city. Connectivity, industrial heritage and functional integration are main issues that are analyzed and later addressed in the strategies on how to develop the area. The outcome is a proposal demonstrating a revitalization of the former industrial area which is furthered through refurbishment of existing, now abandoned, buildings and an

extension. Thoughts about sustainability and environmental design are incorporated into the design. Multiple new building practices and strategies are explored and used to create spaces that could unite usability, function, aesthetics, and comfort as well as meeting current regulations and requirements. The project deals with commercial, entertainment and educational facilities.

Industrial heritage, Economic crisis, Abandoned, Refurbishment, Revitalization

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Introduction

Thesis title

My idea is to convert existing buildings on the site into a hybrid building complex which would represent a mixture of urban elements. Not an exhibition space, not an information and communication hub, not a museum, but all of these things - a blend of urban marketplace and stage for presentations.

Hybrid building is not just about meeting the basic demand, comfort of working and living among people. Nowadays, it is to be designed in a fascinating interior space and engaged in their context. The intimacy of private life and the sociability of public life live inside the hybrid and generate continuous activity, making it a building that is operating full-time and that suits the world's changing demands and needs.

Hybrid buildings are more than structures that actually function. They are the building blocks of the city, the city of the future. They are more than just a trademark of the company which built them because they are publicly accessible. They represent added value for the city, reinterpreting the concept of public space. They reflect additional benefit for the city, reinterpreting the definition of public spaces.

Purpose and expected outcome

The intent of this thesis is to revitalize a once thriving industrial area in the city of Turin through adaptive reuse. I plan to retrofit an existing building in former Ghia factory area for a hybrid complex containing an exhibition and event center with a public access. I wish to increase the quality of this area by incorporating innovative architecture and sustainable solutions into the surroundings and transform it into a more inviting place.

Objectives and goals

The main objectives of this project are to refurbish the former industrial site considering all the requests, needs, obligations and potentialities that are present

in the area of intervention and create a place for events and free time activities. This thesis project will offer a solution which would bring the city of Turin one step closer to sustainable development and to show the ways to deal with similar issues in the future.

Being environmentally conscious is a main goal of this project through the retrofit of an existing area which is in great need. The offered site has a lot of potential and fits within the parameters of the thesis. The goal is to connect the environmental and social needs of the building complex in the downtown setting of Turin.

Thesis question

How can the former Ghia area in Turin be reconnected to the city, using architectural design and adaptive reuse methods?

Sub-questions

What types of facilities could the new building complex contain?

How can the Ghia area become a more inviting place for the public?

What strategies are needed to make the former industrial site functionally integrated and become a part of the city without losing its character and ties with the past?

Methods



Site visits



Interviews



Document and literature analysis



Case studies

To get knowledge and understand the character of the area, I have done several visits to the site during my exchange semester in Turin. I tried to experience the space by walking around, exploring surroundings, existing buildings, and taking pictures. Aspects I looked at were the existing building structure, materials, available open spaces, connections to the main roads and city center, existing flora and fauna.

The project is supposed to be adapted to the needs of people from all age groups and different occupations. Therefore, it is essential to hear an honest opinion of students, workers, seniors and even tourists visiting Turin. During my 5 month stay in Turin I interacted with local people a lot, which helped me build personal experience and opinion about life here.

During my stay at Polytechnic University of Turin, I asked professors to provide me with planning documents, historical maps, master plan and literature relevant to my thesis topic which helped to get a better understanding of the site and situation.

As the existing buildings on chosen site are severely damaged and have lost their character, I challenged myself to recreate the authenticity of them. For reconstruction of the existing buildings I used the original project drawings found in the historical archives of the city of Turin, historical pictures and

Introduction

photographs taken on site. Missing architectural details will be recreated based on surrounding buildings in the area.

Before and during the design phase a lot of time will be spent on a case study analysis. The heritage buildings will be screened to identify the adaptive reuse that is suitable as a reference for this project based on relevance to the thesis topic, problems and goals.

Delimitations

The topic of transforming the industrial landscape awakens many interesting and complex questions. The extent of these questions and issues makes it necessary to limit the thesis to the most important questions for the specific context. The research part has not been the main focus of this thesis, but a tool to identify the main aspects of function integration and industrial heritage. Issues like the new industrial revolution and ecology have been considered but not given any focus due to the limited amount of time.

The scope of work is limited by selection of one plot available on the site. The project will focus on façade preservation and transformation, exterior and open space design. The design solutions will be made taking into account the urban surroundings and the presence of other former industrial building on the site.

Industrial landscape

Industrialization has facilitated significant environmental changes: larger densities of urban areas and urbanization of the natural and rural setting. The town gained a new face of industry, and a new order. This changing landscape was illustrated by industry consolidation and the demands of a growing community, usually new staff in a new society that required new public facilities and infrastructure, thereby contributing to the image of the typical settlement of the 20th century.

Nevertheless, over the past decades globalization, deindustrialization, industrial relocation and economic (re)conversion has had a profound impact on old industrial areas all over the planet and made a huge array of obsolete industrial facilities and the numerous impacts, that are generated from them. The formal products of the modernist movement have become obsolete, forcing this generation to decide on the disposition of the last generation's industrial setting.

In recent years, several researchers have contributed to evaluating, documenting and developing remnants of the industrial society, in order to emphasize the necessity of taking post-industrial landscapes into consideration in the planning of the city, considering industrial heritage as a resource and as an integral part of collective identity. Landscape classification as industrial implied a holistic perception in which territorial and industrial infrastructures were analyzed from a functional, cultural and historical point of view.

The definition of industrial landscape is used to define and identify the existing industrial history materials in order to give them a new meaning, with the goal of providing a theoretical framework and a rational approach for both studying and intervening in these landscapes, to adapt them to modern production systems and new cultural uses.

Many towns and cities have gone through factory closing in recent decades. This sudden change of economy has caused the industrial landscape to be reenvisioned as no man's land between former industrial buildings and the

ascendant post-industrial economy. This reality adds to the fact that many countries are now experiencing numerous challenges caused by modern-day landscapes (e.g. industrial revolution), which are now in complete physical and functional crisis, contributing to the public's negative perception of these areas. However, the importance and value of industrial landscapes are now greater than ever, thanks to the announcement of the Nizhny Tagil Charter for the Industrial Heritage in 2003. This charter specifically stated that, as with all other visible and intangible manifestations, the buildings and facilities built for manufacturing processes, the processes and artifacts used within them and the towns and landscapes on which they are located are of fundamental importance. They should be researched, their past should be explained, their significance and sense should be evaluated and made clear to everyone, and the most relevant and characteristic examples should be identified, preserved and maintained for the use and benefit of today and the future, in accordance with the spirit of the Venice Charter (1964).

The spaces recognized and identified as industrial heritage, however, still face inappropriate appraisal of material, cultural resources and stereotyped ideas. Appearance has been and continues to be almost everything, as the industrial heritage appraisal is always rooted to aesthetic values rather than some other measure of function or history. In addition, the solutions developed for post-industrial landscapes are often disgraceful, and contribute greatly to the loss of buildings. Apart from that, they are frequently realized in isolated structures, which is a mistake, because the study and intervention in such landscapes should never be applied to one particular building, but to the entire industrial landscape.

While studying and redeveloping these landscapes, architects, designers and other planning professionals need to understand that post-industrial landscapes, usually part of ordinary or vernacular landscapes, reflect the passing of time, thereby reflecting timeline and cultural activities as part of people identity of people and a location. Such landscapes can be viewed as unique assets in this context, arising from the combination of natural landforms and buildings

that characterize a specific place or region. The awareness developments has continued to increase the importance of industrial landscapes and demonstrate the need to study and protect the remains of our industry from another point of view.

Adaptive reuse

"Adaptive reuse is a process that changes a disused or ineffective item into a new item that can be used for a different purpose. Sometimes, nothing changes but the item's use." - Australian Department of the Environment and Heritage.

Adaptive reuse is one of the restoration methods that can prevent the replacement of heritage buildings with the new building and retain the character of the site. The reuse of heritage buildings helps future generations to understand the building's significance as the heritage buildings reflect distinctive architectural, cultural, political and social characteristics of a particular period.

The adaptive reuse of a historic building should have minimal impact on the heritage significance of the building and its setting. Architects should gain an awareness of why the building has heritage status, and then pursue development that is sympathetic to the building to give it a new purpose. Adaptive reuse is self-defeating if it does not protect the heritage values of the building.

The most successful adaptive reuse projects designed in heritage are those that support and maintain the heritage significance of the building and incorporate a contemporary layer of value for the future. Sometimes adaptive reuse is the only way to take care of the structure of the building while better exploiting the building itself. When the building can no longer operate in its original use, the best way to retain its heritage value may be a new use through adaptation.

Benefits of adaptive reuse

Environmental. Adaptive reuse of buildings plays a big role in the sustainable development of communities. The environmental benefits are more important when adaptive reuse includes historic structures, as these structures give so much to the landscape and culture of the communities they belong to.

Some of the key environmental advantages of building reuse is the preservation of the embodied energy from the original structure. Embodied energy is the total energy required to harvest, process, produce and deliver the buildings. Its embodied energy is preserved by reusing buildings, thereby making the project much more environmentally friendly than a completely new construction.

Social. Historic buildings are preserved and reused with long-term benefits for the neighborhoods that value them. If done well, adaptive reuse will restore and retain a building's heritage value, and help ensure its survival. Rather of falling into disrepair through neglect, properly refurbished heritage buildings will continue to be used and admired.

Communities, governments and developers are exploring ways to reduce the expense of continuous urban growth and expansion. We are starting to recognize that the nature and design of the built environment in our cities and towns is essential to our living conditions and our effects on natural resources.

Communities are gradually realizing that the preservation of such locations and regions, including historic sites, will help future generations. Our lifestyle is improved not only by maintaining heritage buildings but also by turning them into places that are accessible and functional.

Economic. There are also financial savings to be made and returns from adaptive reuse of heritage buildings. Embodied energy savings by not demolishing a structure would only increase with the expected potential growth in energy costs.

Promoting innovation. The adaptation of heritage buildings pushes architects and designers to find creative approaches. As development pressures in our

cities rise, more heritage buildings are being restored, providing some excellent examples of innovative projects that preserve the importance of heritage.

Sustainable development

The project could be perceived in relation to social sustainability, authenticating and sustaining communities, maintaining memory etc., and in relation to environmental sustainability.

The sustainable retrofit practices for the suggested project started with the selection of the site itself. The site has great potential because of its proximity to the downtown. However, it has complicated access by private vehicles and public transportation. Therefore, cycling paths would be developed which could promote walking and biking.

The revitalization of industrial areas gives a chance to explore sustainable design. Industrial areas can very often be polluted with oils, heavy metals and other polluting materials which prevent the site from regaining its natural feeling. This is why when working with an industrial site, a designer must be highly aware not only of its aesthetic properties, but also of its environmental conditions.

The Offenbach harbor project in Frankfurt am Main provides an excellent example of how to turn a contaminated port into a sustainable district of the region. Flood management and water and soil remediation have been key strategies for developing a landscape that is environmentally friendly. This project is a pragmatic idea of how climate adaptation can be accomplished through integrated engineering in urban contexts.

The landscape architecture company Latz+Partner which was responsible for the design of Parco Dora in Turin had the goal to incorporate the individual character of each area, to strengthen and enhance them with new elements and create a unified park experience. The Parco Dora represents a new understanding of inner urban landscapes reflecting the transition of society

due to the positive inclusion of its industrial past. The company explains their understanding of post-industrial landscapes perfectly: “Our new conceptions must design landscape along with both accepted and disturbing elements, both harmonious and interrupting ones. The result is a metamorphosis of landscape without destroying existing features, an archetypal dialogue between the tame and the wild. Specific architecture for specific uses does not need to be built. The imagination lets the existing ones be re-interpreted and used in new ways”.



Figure 1. Offenbach harbor by Ramboll Group, Frankfurt am Main, Germany

According to the National Trust for Historic Preservation’s 2016 report “The Greenest Building,” saving a historic building for adaptive reuse “almost always yields far fewer environmental impacts than new construction when comparing buildings of similar size and functionality”. Through conserving natural resources and reducing the need for new materials, reusing existing buildings for the new project would benefit the environment. A building’s demolition consumes a lot of energy and releases huge quantities of greenhouse gases into the atmosphere. Additional energy is expelled during construction of a replacement facility. The refurbishment will reduce large amounts of waste, and make the most of the materials’ embodied energy.

The building complex designed for this thesis must additionally meet requirements that holistically benefit the health of the tenant through implementing universal design in which the design decision should be made

to make the building accessible and visitable, connected to the community, and available to open space. The building should also be a place for people of all age groups and people with different occupations.

This refurbishment project will also achieve sustainability from a cultural perspective. The abandoned area does not only the house the past of industrial processes, but it is also a sign of something that have characterized the landscape for years. The buildings are given a new use while the design must respect its past and its emotional ties with community members.

The adaptive reuse would give a new life to the site, rather than seeking to freeze it at a particular moment in time. This kind of adaptive reuse project will lead to the development of social and cultural resources, environmental sustainability and urban regeneration if successfully completed.



Figure 2. Parco Dora by Latz + Partner, Turin, Italy

Reference projects

In the next section of this booklet there will be several relevant case studies presented:

Coal Drops Yard, Heatherwick Studio, London, 2018

De Tjolomadoe, Airmas Asri, Indonesia, 2016

Hanzas Perons, Reinis Liepins + Sudraba Arhitektūra, Riga, 2019

Food Hall MOUT, Zecc Architecten, Hilversum, 2016

Shanghai 1862, Kengo Kuma and Associates, Shanghai, 2017



Coal Drops Yard

Architects:	Heatherwick Studio
Location:	London, United Kingdom
Area:	10 000 m ²
Project year:	2018
Function:	Shopping complex, public space

Heatherwick Studio reinvented two historic rail buildings from the 1850s as a new retail area with nearly 60 units, opening the area to the public for the first time.

In 2014 King's Cross Central Limited Partnership contracted the studio to fundamentally redesign the site. The pair of elongated Victorian coal drops was built to collect coal from Northern England by barge and cart for distribution across London. But the ornate cast-iron and brick buildings have been partially derelict over the years, housing light industry, warehousing, and nightclubs before partial abandonment in the 1990's.

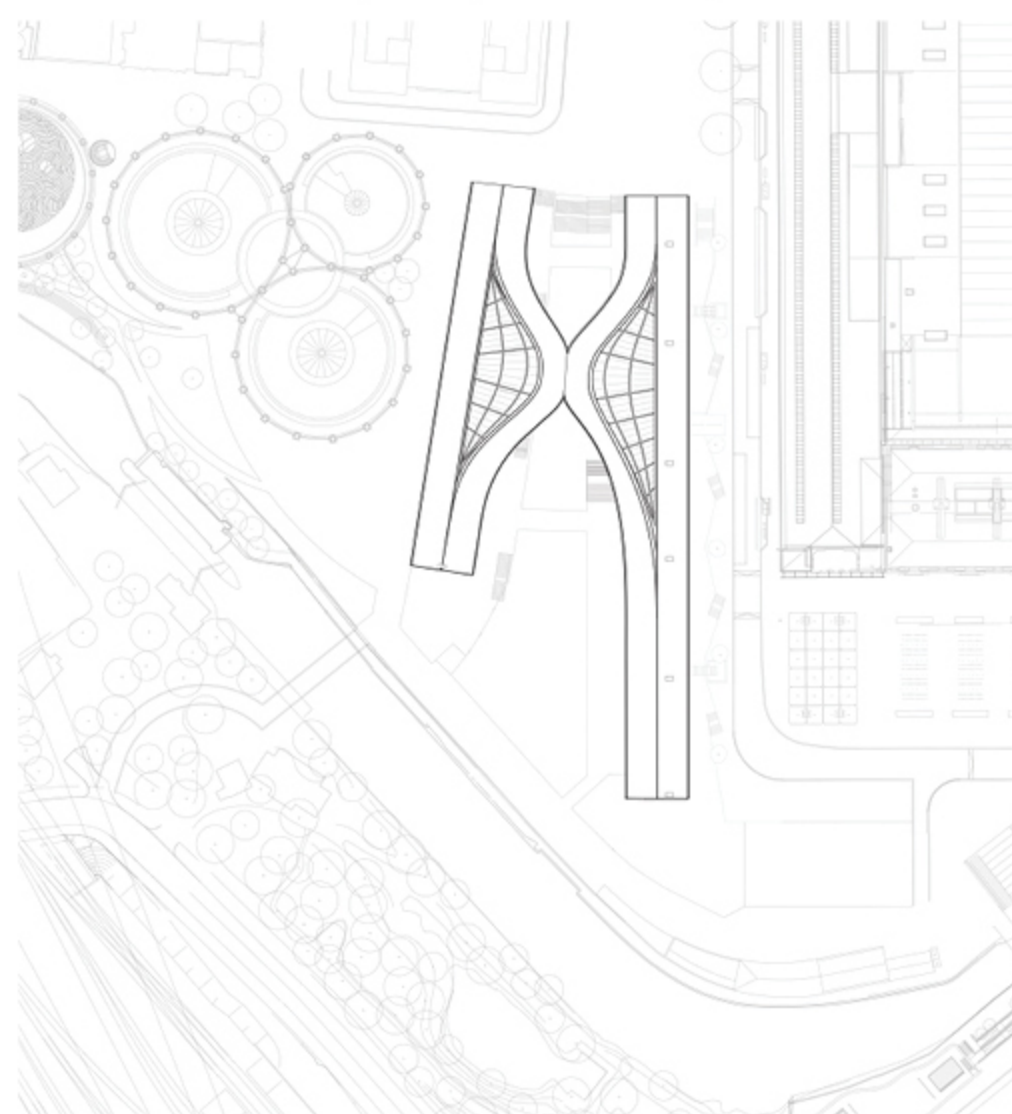
The goal was to turn the dilapidated structures and long, angular site into a vibrant shopping area where people could meet and circulate.

The design stretches the warehouse's inner gabled roofs to connect the two viaducts and define the yard, and to establish dynamic circulation patterns. The floating roofs, which are supported by a completely new and highly advanced freestanding structure interlaced throughout the heritage fabric, rise and grow until they meet each other. This creates a brand new floating upper floor, a big covered outdoor space and a center focus for the entire site.

The yard will become a modern permeable and iconic public space with entrances at both ends of the site, contributing to the greater transition of King's Cross as a lively area to live, work, and relax.

Relevance to my project:

- Functional program and public outdoor space, which improved quality of the area.
- Improved circulation between two buildings by adding a connecting bridge and transforming a roof.
- Preservation of existing building and its materiality.



Architects: Airmas Asri
Location: Indonesia
Area: 13 600 m²
Project year: 2016
Function: Cultural center

De Tjolomadoe was founded in Surakarta, Central Java, Indonesia in 1861 during the Dutch colonial period and is the first sugar factory in Indonesia. De Tjolomadoe is surrounded by fields of sugar cane. The sugar cane fields steadily decreased and disappeared after several government policies and land sales, and production is stopped due to manufacturer bankruptcy in 1997. The place has been used for several years as a meeting place for local artists, craftsmen, writers, and activists to interact and organize gatherings, exhibits, or performances.

Since the sugar cane fields no longer surrounded the area, it was not possible to reactivate the sugar factory. To make The Colomadu fully operate again, reprogramming the complex was necessary.

Airmas Asri was hired to redesign the building that needed to be saved as time and weather conditions led the building to a serious dilapidation.

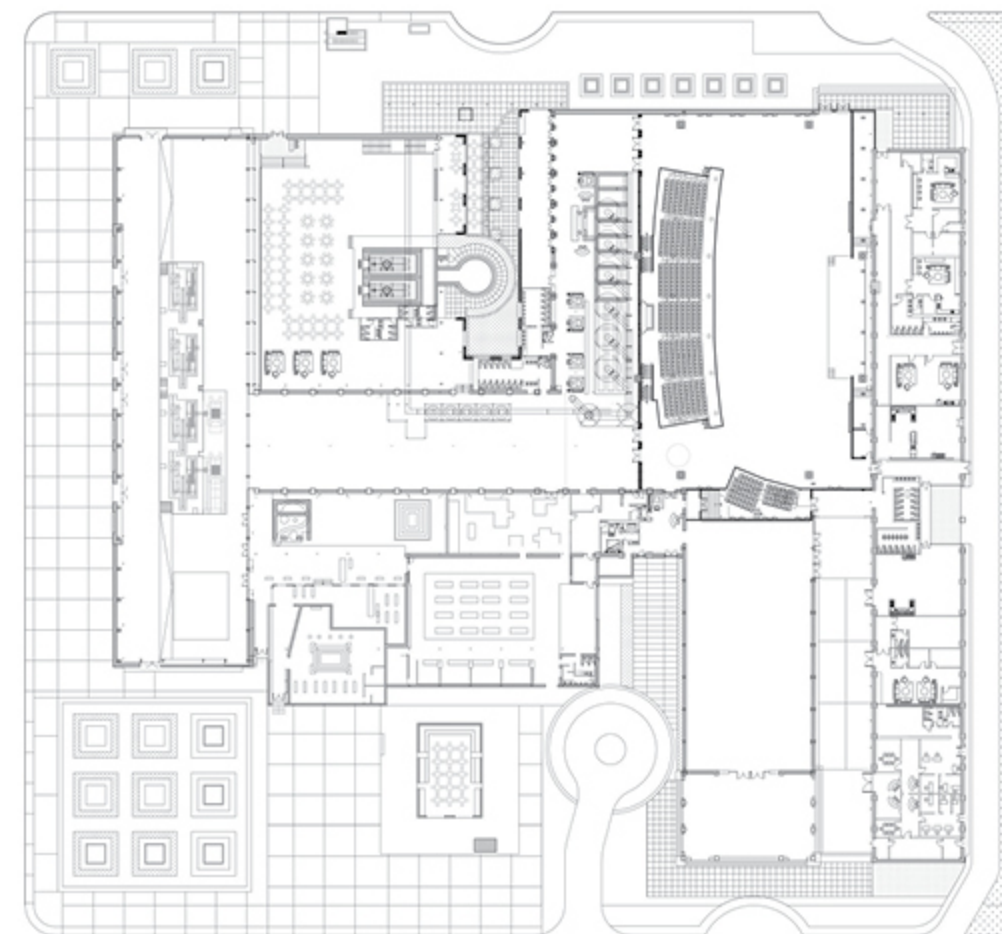
Many parts of the building survived and only needed retrofits of components such as windows, doors, awnings, roofing and gutters.

Many open air rooms are enclosed with glass walls to expose the giant machinery as a night time exhibition display.

The main steam kettle was kept as a display as its structure is attached to the main chimney and is too complicated to remove. The room is transformed into a restaurant.

Relevance to my project:

- Revitalization as the key of design strategy - the factory gains new different functions after design.
- Functional program which improved quality of the area.
- Preservation of existing building and its materiality.



De Tjolomadoe

Architects: Reinis Liepins, Sudraba Arhitektūra
Location: Riga, Latvia
Area: 4 426 m²
Project year: 2019
Function: Cultural center

Hanzas Perons – Sudraba Arhitektūra and Reinis Liepins' recent work is one of this kind, merging old and new components, where the elegance of heritage and innovative architecture blend in harmony, where appreciation for history is expressed through intricate contemporary solutions that give new life to the old.

The former warehouse building, dating back to the very beginning of the 20th century, is located on the outskirts of the historical center of Riga, in the area of an old freight station. This was once a major logistics hub with six train lines and about 15 warehouse facilities, but this one was the only one to survive to this day. The building was preserved and converted to a modern event and culture venue, the largest private cultural building in Latvia.

The design outcome may appear controversial. The historic building was enclosed and covered in the new steel and glass coat. The old brick and wood building has become a part of the interior. The coat concept helped to solve the additional spaces, technical and service premises in a very simple way. This new construction helped to fulfill strict energy efficiency requirements.

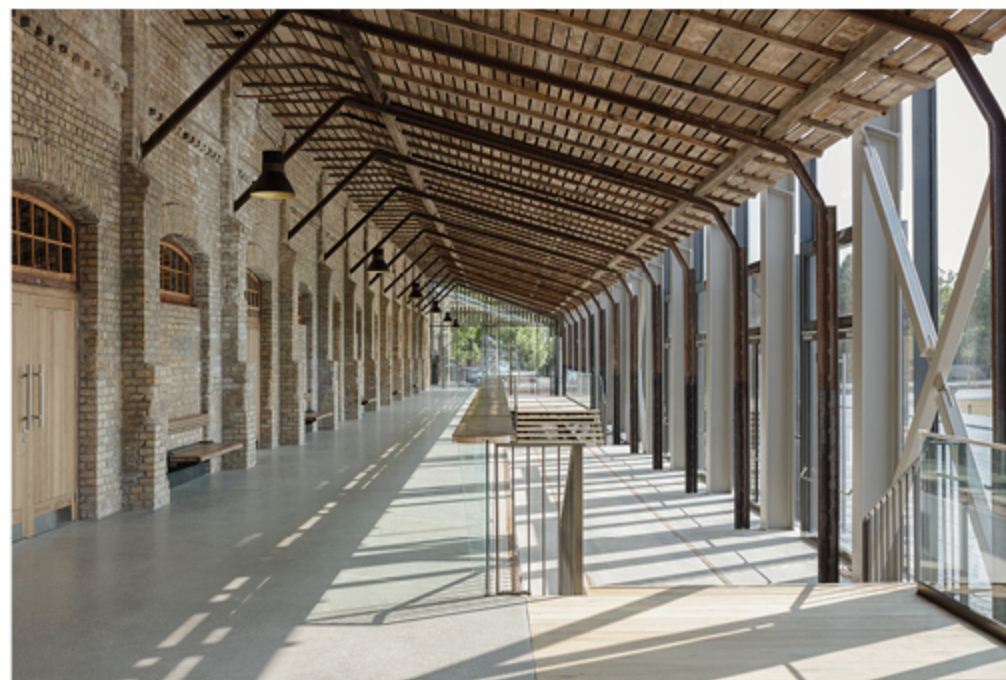
The old building with preserved textures and details is presented with a minimalist materiality of concrete, steel and glass which creates harmony and impressive poetic spaces. New details express modest references to the beauty of the railway and even the preserved track and platforms in the new building are cherishing the memories of the place.

Old warehouse converted to the multipurpose venue – for concerts, exhibitions and other gatherings now stores and deals with the cultural

'goods'. The main hall (1200 m²) could be divided into three different rooms, providing incredible flexibility.

Relevance to my project:

- Same original function - warehouse.
- Multi-purpose function.
- Preservation of existing building and its materiality.



Hanzas Perons



Food Hall MOUT

Architects:	Zecc Architecten
Location:	Hilversum, The Netherlands
Area:	1 025 m ²
Project year:	2016
Function:	Bar

The most unattractive building in Hilversum has been transformed into a food chain in the Netherlands that shines a light on its Art Nouveau bones.

Catering entrepreneurs Teus Kroon and Jerry de Vries are the brainchild of Mout Foodhall. The duo challenged Zecc Architecten with the adaptive reuse of the unloved former Eurobioscoop building, which was given the unflattering title by its new custodians.

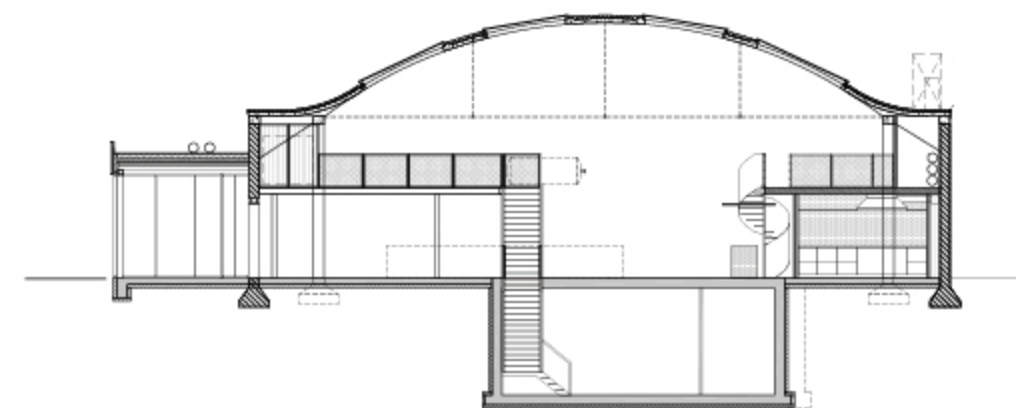
Built in 1912 in the style of Art Nouveau for the De Wit car maker, its original façade and roof were covered under the cladding layers of the 1970s and, according to the Dutch press, it was supposed to be demolished before Kroon stepped in.

Zecc took away additional modifications to the structure and revealed the undulating concrete roof, lined with skylights and flecks of historical paint. The original façade of the building was also reconstructed with the help of old photos.

The new interior of the building has an industrial vibe: walls, floors and the ceiling are all exposed concrete, and new metal pipework runs through the building.

Relevance to my project:

- Same original function - warehouse.
- Same roof structure - steel tie rods.
- Functional program, which improved quality of the area.
- Preservation of existing building and its materiality.



Architects: Kengo Kuma and Associates
Location: Shanghai, China
Area: 9 000 m²
Project year: 2017
Function: Retail, theater, multipurpose room

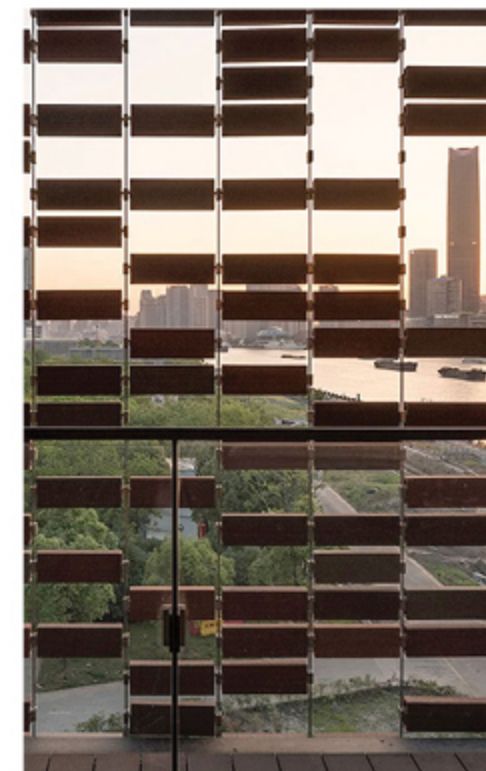
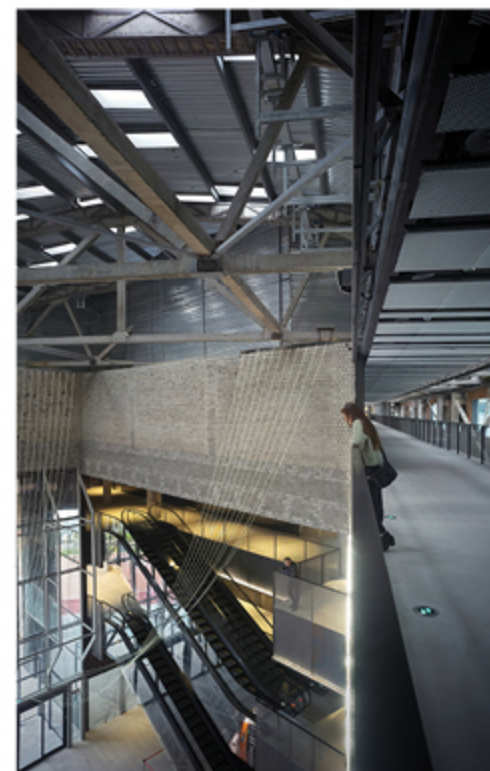
Kengo Kuma has reimagined a 1972 shipyard in the financial district of Lujiazui in Pudong, Shanghai, into a modern multi-use complex of 9 000 m², named Shipyard 1862. Behind original brick walls, the old shipyard was once defined by a 12 by 30 meter grid, which allowed massive interior spaces to hold ships. For this adaptive reuse scheme in an industrial style, Kuma was careful to maintain the structural and material integrity of the building.

On the North façade original brickwork was restored while the South façade was demolished years ago. Kuma designed a pixelated gradient brick scheme for the West facade that links the North and South by representing the unique restored weathered brick and recalling what no longer exists in a contemporary environment. Suspended by stainless steel cables, large clay bricks, in four shades of red, gradually fade in permeability toward the translucent South facade.

Inside, Kuma uses void space to highlight the verticality and monumentality of the building. An east-west atrium of five stories links two smaller north-south atriums that serve as connections between the city and the Huangpu Riverfront. From the 800 seat theater in the east wing, panoramic views of the Puxi skyline can be enjoyed, while the west wing houses commercial spaces.

Relevance to my project:

- Same original function - warehouse.
- Same wall structure - concrete framing with brick infill.
- Functional program, which improved quality of the area.
- Preservation of existing building and its materiality.
- Creative way to match new materials with existing ones - new shading system from clay bricks.



Shipyard 1862

Turin

Turin is a city and an important business and cultural center in northern Italy. It is the capital of Piedmont and of the Metropolitan City of Turin, and was the first Italian capital from 1861 to 1865. The city lies mainly on the west side of the Po River, in front of the Susa Valley, and is surrounded by the western Alpine arch and Superga Hill. The population of the city is 875,698 (31 December 2018).

The city used to be a major European political center. From 1563, it was the capital of the Duchy of Savoy, then of the Kingdom of Sardinia ruled by the House of Savoy, and the first capital of the Kingdom of Italy from 1861 to 1865. Turin is sometimes called “the cradle of Italian liberty” for having been the birthplace and home of notable individuals. Although much of its political importance and significance had been lost in World War II, Turin, along with Milan and Genoa, became a major European crossroads for industry, trade and commerce, and is part of the famous “industrial triangle”. Turin is ranked third in Italy for economic strength, after Milan and Rome. With a GDP of \$58 billion, Turin is the world’s 78th richest city by purchasing power.

Turin is also home to much of the Italian automotive industry, with the headquarters of Fiat, Lancia and Alfa Romeo.

The city has a rich culture and history and is renowned for its various art galleries, restaurants, churches, palaces, opera houses, piazzas, parks, gardens, theaters, museums and other venues. Turin is well known for its Renaissance, Baroque, Rococo, Neo-classical, and Art Nouveau architecture. Many of Turin’s public squares, castles, gardens and elegant palaces such as the Palazzo Madama, were built between the 16th and 18th centuries. A part of the historical center of Turin was inscribed in the World Heritage List under the name Residences of the Royal House of Savoy. What is more, the city is home to museums such as the Museo Egizio and the Mole Antonelliana which in turn hosts the Museo Nazionale del Cinema.

The city also hosts some of Italy’s best universities, colleges, academies, lyceums

and gymnasiums, such as the University of Turin, founded in the 15th century, and the Turin Polytechnic.

Turin is well known as the home of the Shroud of Turin, the soccer teams Juventus F.C. and Torino F.C., and as host of the 2006 Winter Olympics.



Figure 3. Map of Italy

Economy of Turin

Turin developed in the early twentieth century as a Fordist city, which signaled a change from a service-based economy to an industry-based economy. Turin’s



Figure 4. Piedmont region

economy depends heavily on its automobile and aerospace sectors in the vein of many Fordist economies. The car industry has been the city’s biggest employer since before the 1970s, and almost all exports from Turin are produced goods. The city serves as headquarters for Fiat (Fabbrica Italiana Automobili Torino; Turin Italian Automobiles Factory), which has since been acquired by its parent company, the London-based Fiat Chrysler Automobiles corporation, the world’s seventh-largest automotive business. A major Fiat factory still operates in Turin.

Turin has since diversified its economy and is moving to a retail sector. In Turin, which ranked third in number of innovative start-ups and firms in the information systems sector, the technology and innovation industries are booming, and have some of the most patent applications to the European Patent Office. In 2008 the city generated a GDP of \$68 billion, ranking as the world’s 78th richest city by purchasing power, and 16th in Europe. Turin accounts for 8 percent of Italy’s GDP.

SWOT analysis

Strengths

- A broad variety of traditional financial, non-financial, internationalization services offered by numerous public and private institutions for enterprise development
- The Italian Chamber of Commerce adapts to the growing demand from foreigners and has built instruments and researched targeted measures to promote initiatives by foreign citizens
- A strong entrepreneurship culture in the region
- Entrepreneurship is a reasonable way to extend residence permits for immigrants

Weaknesses

- A small number of migrants and ethnic minorities use the available resources
- Projects have no significant effect on the situation of the target groups
- Mainstream company support programs cannot respond to the specific

needs of ethnic minorities

- No specific credits open to ethnic minorities for business growth
- Lack of information sharing on services available for migrants and ethnic minorities
- A very small amount of women and young migrants are entrepreneurs

Opportunities

- Growing use of mainstream services by ethnic minorities for enterprise development
- Diversification of areas of ethnic entrepreneurs’ activities
- Focusing more on women and young people in difficulties with entrepreneurship

Threats

- Non-identification of migrants with mainstream services

Site and its history

The triangular shaped block, that interrupts the orthogonal grid of Crocetta and San Salvario neighborhoods, is a historically important place for the industrial identity of Turin, influencing the city from the beginning of the XX century.

The first footprint of the industrial plant was set in the 1908. In this year the Gaia-Garrone foundry built its headquarters.

In the 1912 the property built a low building facing Bertini Street.

In the 1915, when nearby Mattè-Crucco engineer started to build the Lingotto factory, the foundry which produced mostly steel components for cars, began the first of four important expansions.

The increasing industrial production required more industrial spaces for the Garrone factory. To do so, in the 1919, Porcheddu started the second expansion of the complex, that resulted in an extension of 6 more spans of Bertini street building.

The following year, the same designer was responsible for the most considerable expansion of the industrial complex of the foundry Carlo Garrone.

Between the 1945 and the 1950 the reconstruction of the bombed buildings was completed.

During economic growth period, the triangle between the two railroads became one of the cores of industrial production in Piedmont region.

In the 1958, the architect Nicola Diulgheroff designed the new headquarter of Carrozzeria Ghia, automotive company founded in 1916 in Turin by Giacinto Ghia and the Gariglio family as Carrozzeria Ghia & Gariglio.

These factories worked through some changes in property and production until the mid-1990s.

Now the area is completely abandoned, the spaces turned into shelters for homeless people, drugs and crime.

The General master plan of the city of Turin (Figure 1) identifies the plot formerly occupied by the Ghia factory with the code 13.4 (around 15 000 m²). It borders south with Via Agostino da Montefeltro and forms an irregular triangle between two branches of the railway coming from Porta Nuova station. Via Egeo, coming from Corso Dante, connects it with the city. It is crucial to mention that only the plot 13.4 will be used as a site for this thesis project.



Figure 5. Former industrial area plots marked with codes 13.4, 13.5 and 13.6

Only the former foundry (plot 13.5), is now partly occupied by Toolbox, a co-working space which was established in 2009 and covers the area of 6 000 m² from 10 000 m² available in this plot.

The main uses set by the master plan are housing and facilities, along with the indication of east and west pedestrian connections prolonging Via da Montefeltro over the railroad. The master plan states the areas involving the whole site of OSI-Ghia (13.4 + 13.5 + 13.6):

- Gross floor area < 51,597 m² (equal to the existing one)
- Dwellings < 30,016 m² (58% of GFA).
- Facilities for people and companies > 21,581 m² (42% of GFA).

According to the master plan, the plot 13.5 and 13.6 are supposed to be converted to residential areas, whereas the plot 13.4 is marked as an area for public services and facilities.

For this project I decided to work only on the plot 13.4 containing 3 buildings with a gross floor area of 4 680 m² will be used for this project. In my view, this plot with existing buildings has more potential for adaptive reuse project and further analysis of it could lead to a proposal which is both economical and eco-friendly.

In 2008 Mellano Associati proposed a transformation of the whole area. In the same year Mario Cucinella proposed an intervention including design school, library and student housing. Unfortunately, the sub prime crisis and its consequences changed the conditions dramatically, making it impossible to get funding for these projects. These days, the Ghia area is still abandoned and waiting for the better times.

Case of the Ghia area

The city of Turin is still in the process of transformation from industrial capital into a center of innovation, culture and quality of life. The Ghia area has a high potential for urban regeneration, with its strong industrial past and abandoned buildings available for new community ventures, but it has reached a critical stage. After a few unsuccessful attempts to redevelop the area, the authorities are still waiting for a more convincing solution.

It is common that industrial landscapes, such as Ghia area, are viewed to a certain extent to be places of no aesthetic value or places that are scarred for life and will never regain their natural beauty. And here is the challenge. The designer carries the mission of changing the popular belief that abandoned facilities such as factories cannot be anything but ugly. Another challenge is to keep to the existing structure and expect that it will be successfully adapted for new functions.

Reinventing functions may not only create new cultural and leisure hubs for

surrounding communities but also open up new economic possibilities.

This thesis project is the challenge to convince the society that aesthetically unacceptable industrial areas which currently have more disadvantages than advantages can be transformed into more pleasant spaces with different functions. The adaptive reuse would give a new life to the site and could contribute to the building of social and cultural capital, environmental sustainability and urban regeneration.



Figure 6. Historical picture of Ghia factory



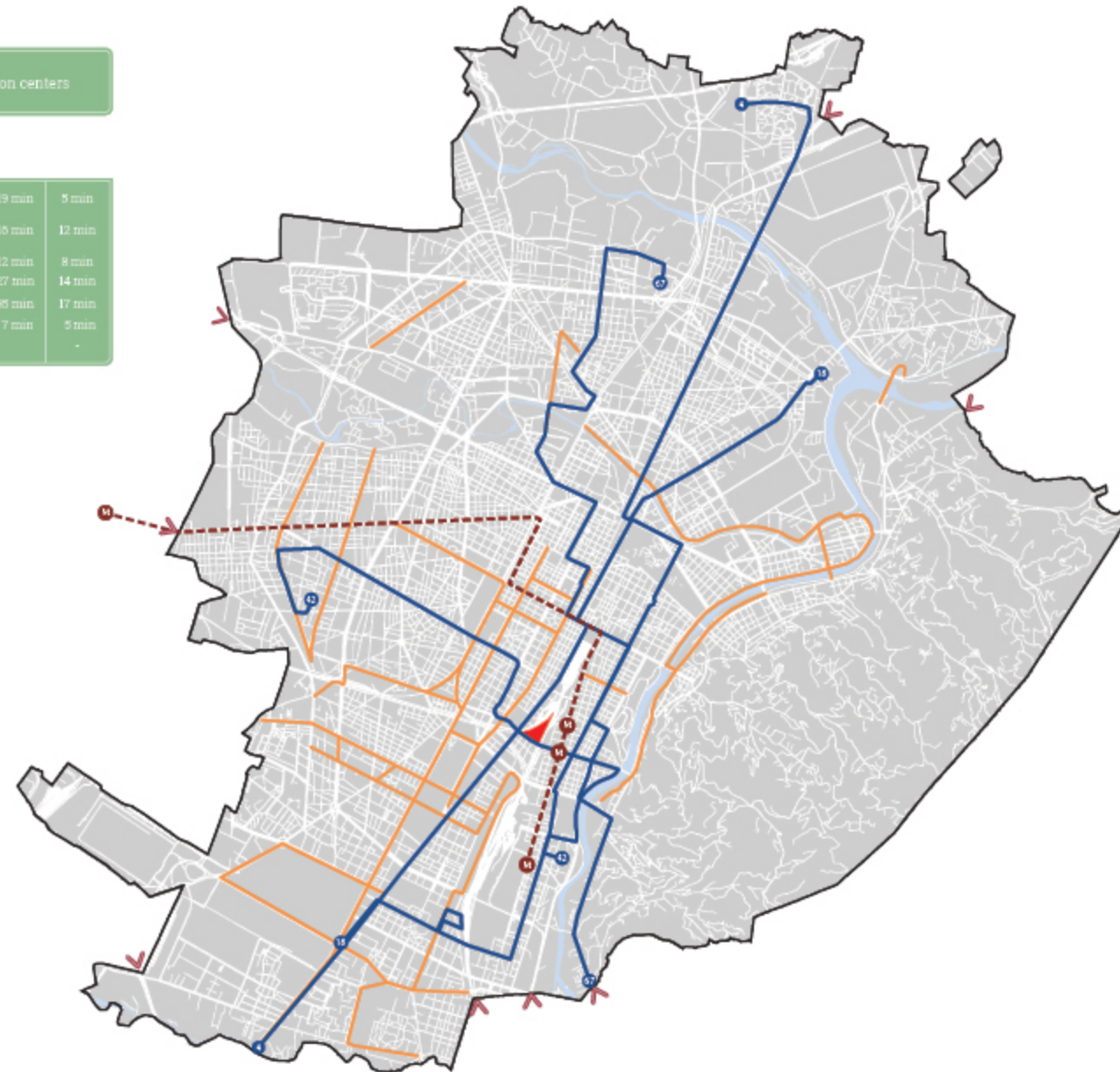
Figure 7. Mario Cucinella proposal

Analyzing data and research already conducted by other institutions, such as the Urban Center, I found it interesting to do a deeper investigation related to the lack of residences and other services for university students and cycling path system. It appears that even though the total number of not local students in the city is 41 000 (Urban Center, 2019), only around 3 000 spots are available from both public and private housing providers.

Distances from education centers

Castello del Valentino	28 min	19 min	5 min
Politecnico di Torino	30 min	16 min	12 min
Economia	25 min	12 min	8 min
Palazzo Nuovo	45 min	27 min	14 min
Campus Einstein	55 min	36 min	17 min
Polite-Langosco	30 min	7 min	5 min
Biotechnologie	5 min	-	-

*related to the project area



- Transport**
- Bus
 - Metro
 - Main accesses to the city
 - Cycling paths

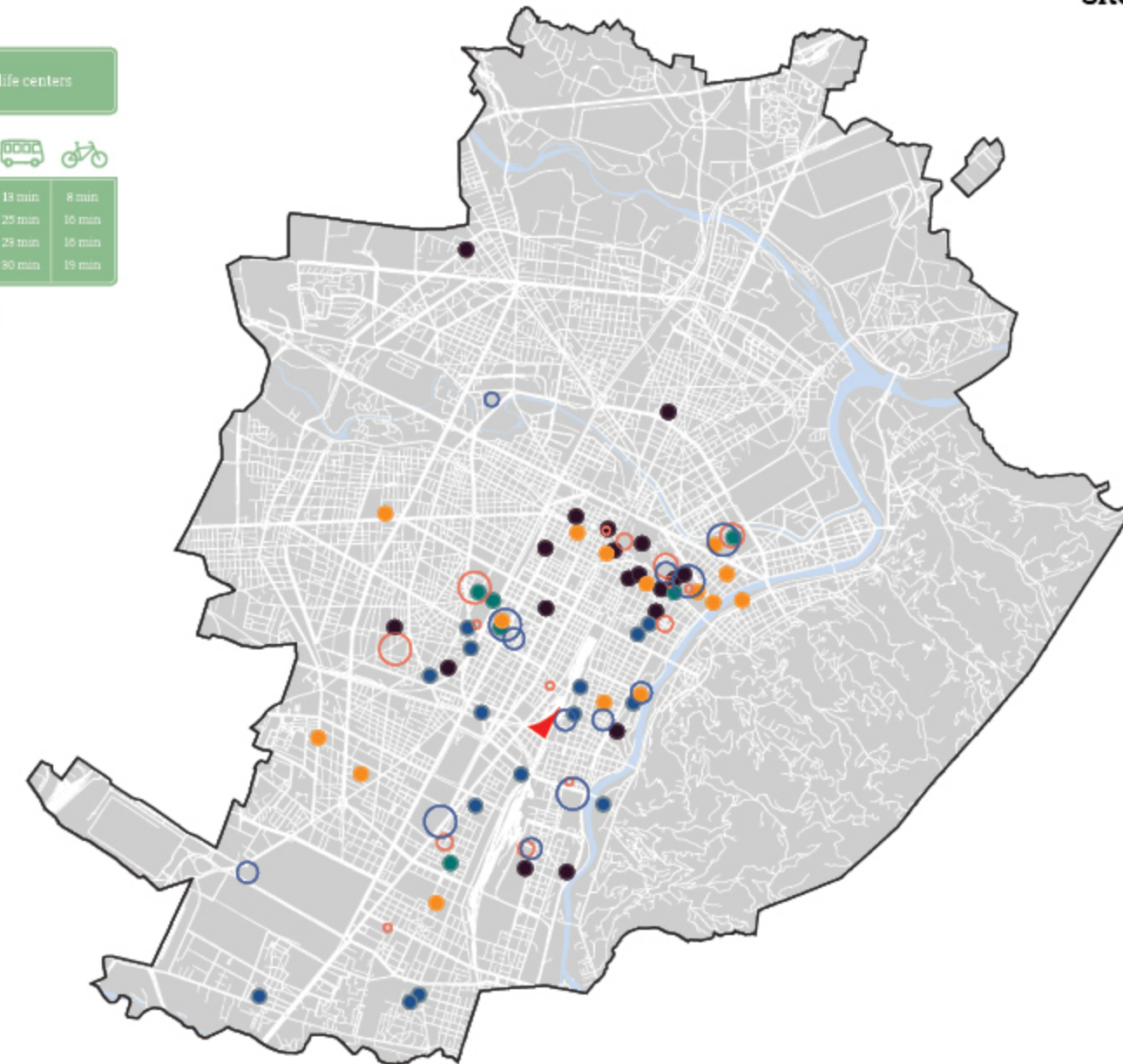
The transport analysis represents how the central physical role and the good flow of public transports within the area is contrasting with the fragmented cycling path system, resulting in disconnections and not being used at its maximum potential. The area is well connected to the university centers, their services and the main nightlife zones.

The transformations happening in the surrounding areas, such as the new building of the Biotech Department, the restoration of Nizza street and the new construction of the Architecture Campus offer more design inspirations that could encourage projects and actions in the near future.

Distances from nightlife centers

San Salvario	20 min	13 min	8 min	
Piazza Vittorio	45 min	25 min	16 min	
Quadrilatero	40 min	23 min	16 min	
Vascaiglia	53 min	30 min	19 min	

*related to the project area



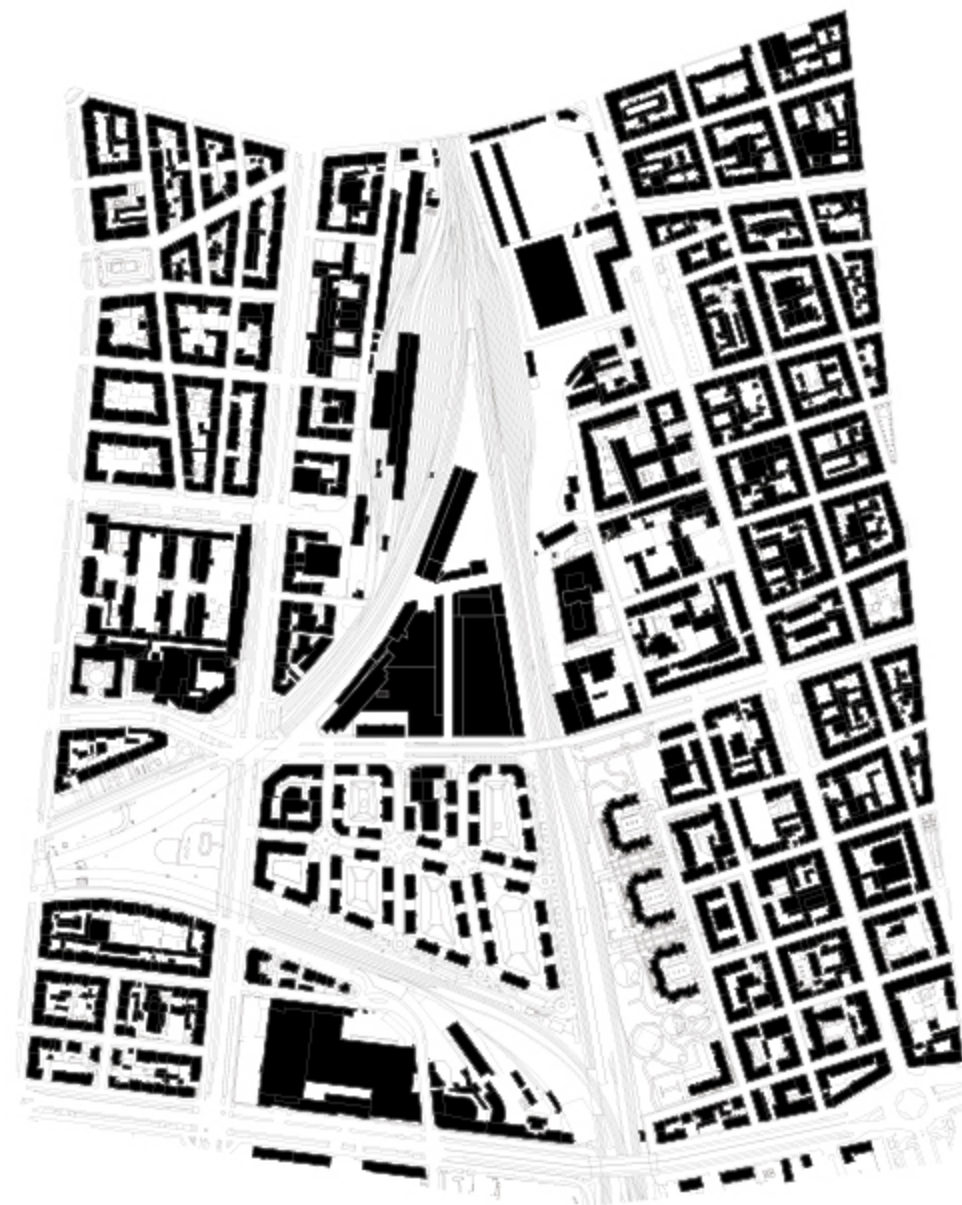
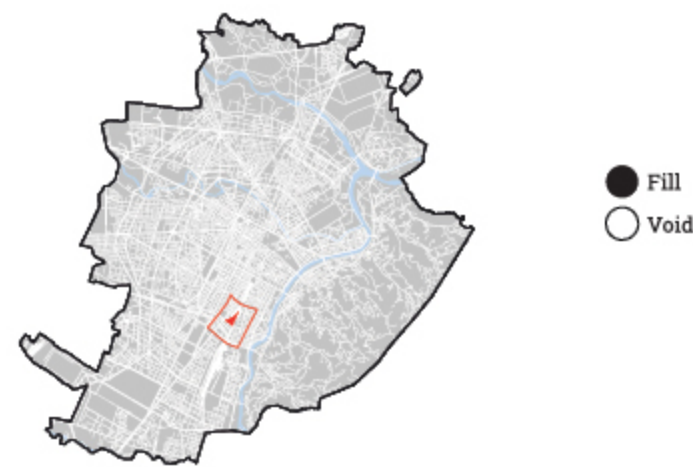
- Universities**
- Size of the centers based on number of users, footprint
 - area, and accessibility
- Student accomodation**
- >400
 - 200-400
 - 100-200
 - <100
- Services**
- Cultural
 - Sport
 - Dining Halls
 - Libraries/Study rooms

Fill | Void

Turin at a glance is a grid. The fourth largest city in Italy, it's distinguished from the others by the rigidity of its plan, an inheritance from its origins as a Roman military camp.

This analysis shows that the area is densely built. What is more, the build-up area of the former OSI-Ghia site appears to be greater than 2/3. Only the North Ghia part looks quite empty, thanks to the clean-up of the industrial waste done in 2009.

The area is between Crocetta and San Salvario neighborhoods. The presence of the railroads interrupts the regular urban grid, resulting in huge area used only for train traffic.

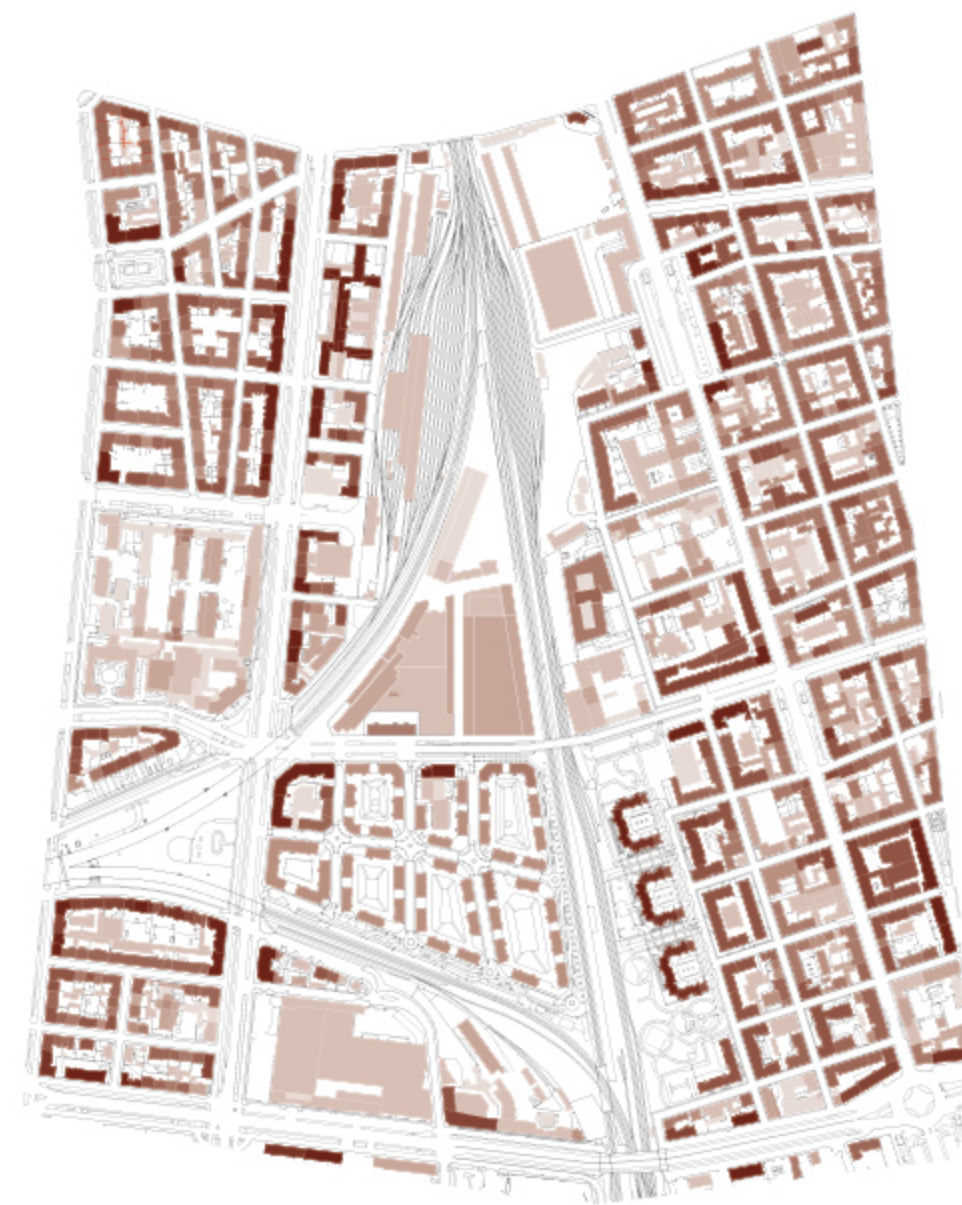


Building heights

The building height analysis shows that the average height of the area is around 7 floors.

Regarding to the OSI-Ghia area, the maximum height is 3 stories.

The height of the buildings adjacent the project site makes possible to have a free view, from the last floor of the buildings, only towards the North, the hill of Superga. This means that if we want to increase the visibility from the newly designed building, an addition of more floors is necessary.



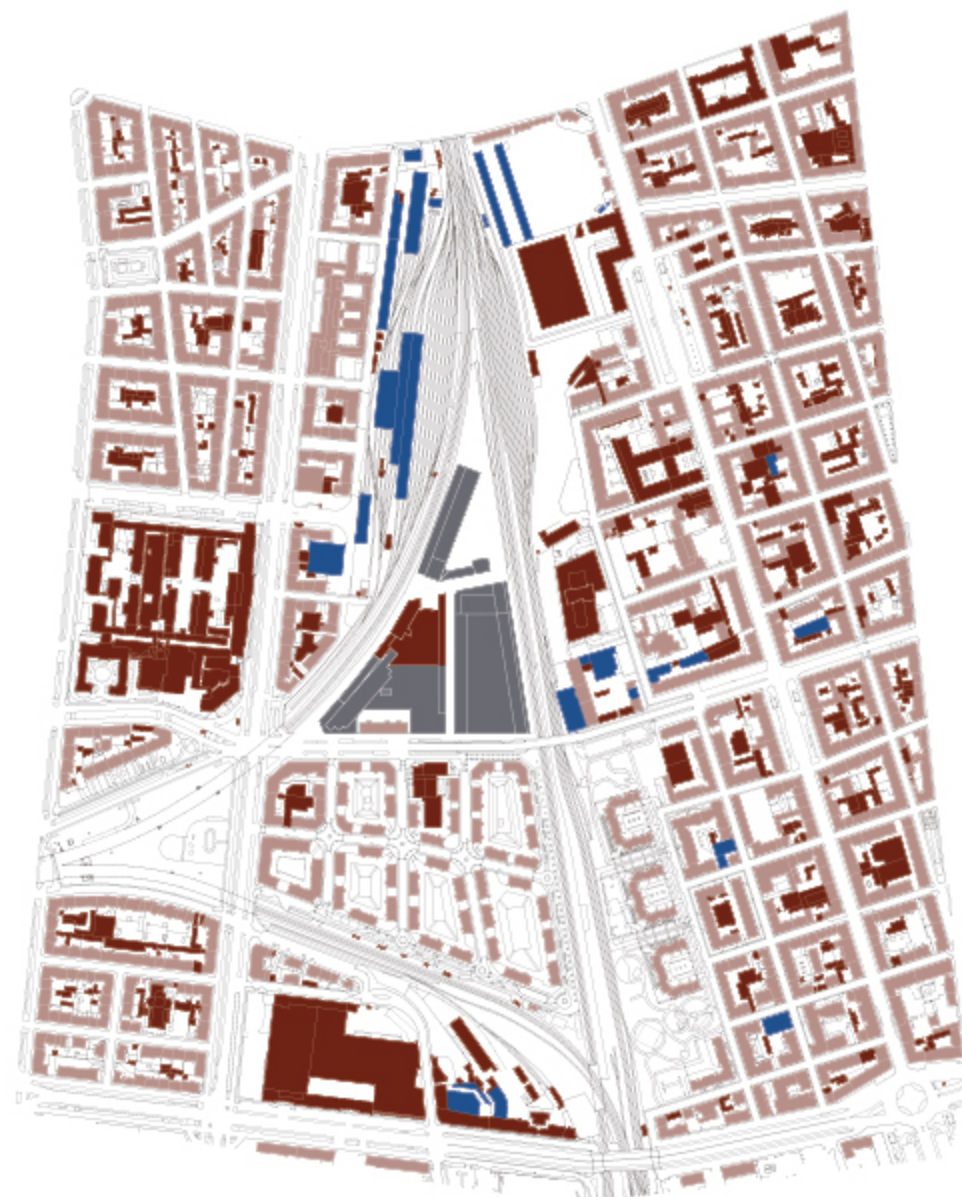
Functions

From this analysis we can see that most of the buildings in the area are residential with commercial facilities on the ground floor.

In regards to the public services, it is important to mention the Mauriziano Hospital building, the office tower Atc on Dante Boulevard and "La Stampa" headquarters on the East side of the Turin-Genoa railroad branch.

Furthermore, the Biotech. Department on Nizza Street and its future expansion plays an important role for the project area. The only industrial area is on the North side, which contains railroad storages.

- Residential
- Services
- Industry
- Abandoned



Green areas

From the green area analysis we can see the significant domination of "Clessidra" Park on South-west and "Muratori" park on South-east sides. There are two green areas next to the two railroads, "Scalo Vallino" on the East side and Jonio street on the West side.

The Arquata residential block on the other side of Dante boulevard contains both private green areas and public green trees next to the railroad.

The project site has no green areas, which suggests that they could be introduced in the new project.

- Private green areas
- Public green areas



Transportation

The presence of two railroad branches breaks the orthogonal urban grid that characterizes the city of Turin, organized on a hierarchy of main streets, urban block streets and local streets. Turati and Dante boulevards are significant for the project site.

The area can be easily reached by public transport, buses 4 and 42, and two metro stations are quite close. On the other hand, there is a lack of cycling paths in the area.

- Main streets
- Urban streets
- Local streets
- Local street closed
- Cycling paths
- Planned cycling paths
- Ⓜ Bus
- Ⓜ Metro



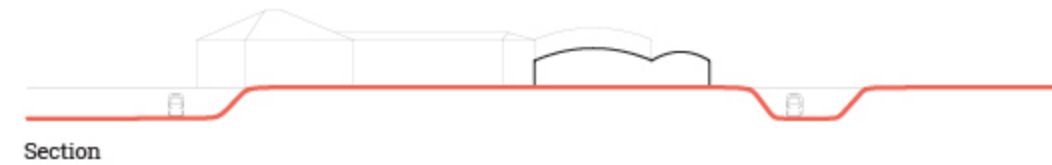
Accessibility

This analysis demonstrates accessibility issues on the site.

The presence of the two railroad branches and the Dante boulevard bridge limits accesses to the project site. The two closed side streets and the underpass of Dante Boulevard has a negative impact on the road network of the area.

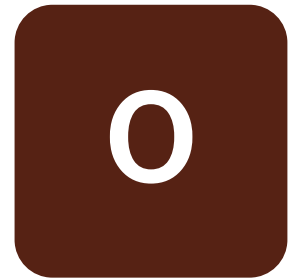
The building morphology and density has a unfavorable impact on the perception of the area, displaying it as a single element, which seems to be isolated. The barriers in the area prevent free circulation inside it.

In the section we see that there is a height difference of around 5 m between existing train tracks and the site. It is a barrier blocking the access to the site, but at the same time it protects the site from noise.



- ▽ Closed vehicular access
- ▽ Open vehicular access
- ▲ Closed pedestrian access
- ▽ Open pedestrian access
- ▲ Closed mixed access
- Public/private limit
- Barrier
- Bridge
- Infrastructure barrier
- ⊗ Closed underpass





- Historically important place for the industrial identity of Turin
- Close to the city center
- Accessible by public transport
- Huge existing structures which can be reused

- Poor accessibility
- Lack of green areas
- Densely built
- Surrounded by railways: noise and air pollution
- Unattractive area for residential purposes

- Creating workplaces, spaces for leisure and educational activities
- Establishment of green areas
- Connecting newly designed building with its function in the past and city's pride - automotive industry

- The site will still be isolated
- Other existing buildings on the site will stay as dominant buildings



Figure 8. Interior of Ghia hangar



Figure 9. Ghia car



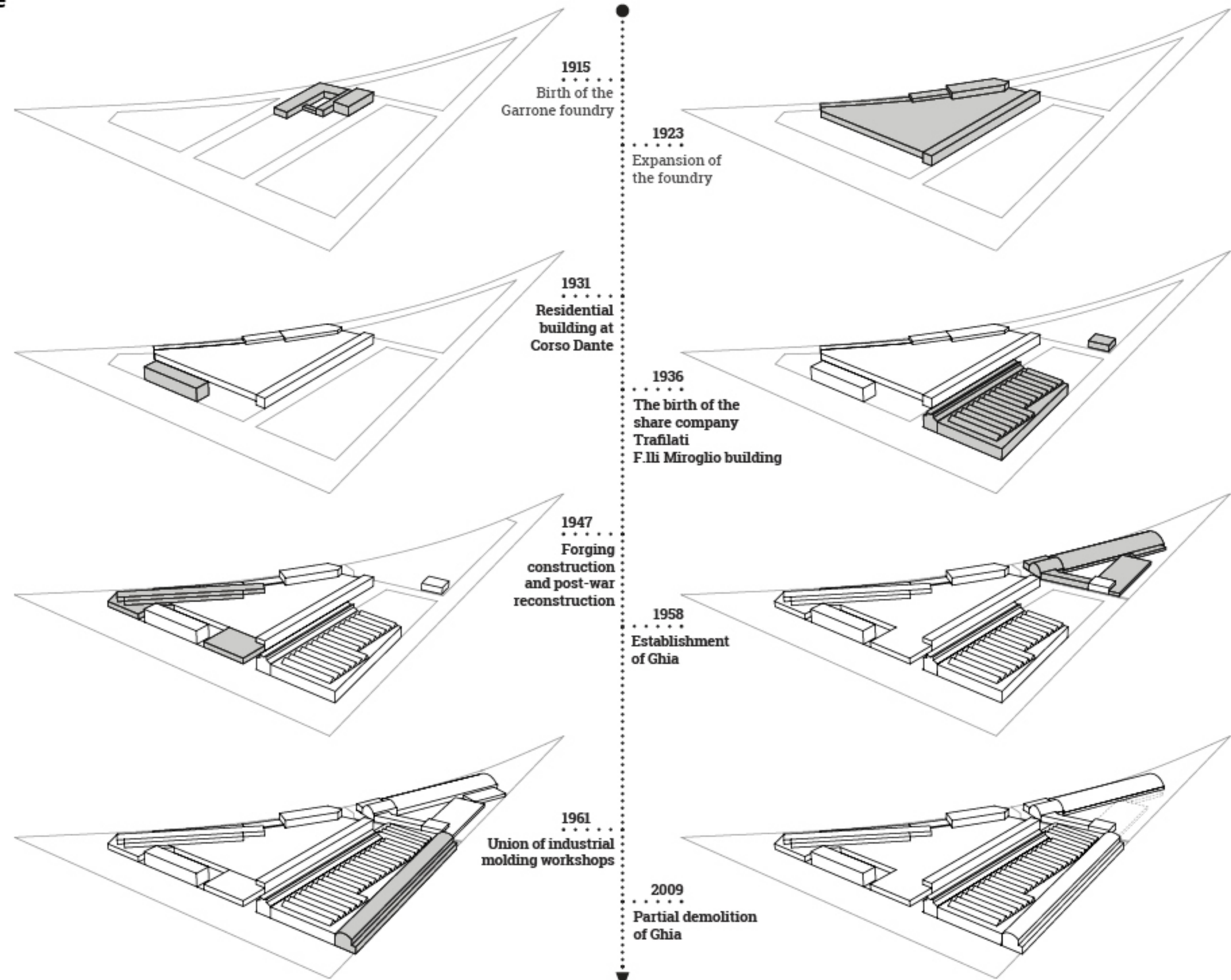
Figure 10. Current situation of Flli Miroglio building



Figure 11. Gate leading to Ghia hangar



Figure 12. Current situation of Ghia hangar



Buildings on the site

- A1 Model workshop
- A2 Executive offices
- A3 Dining halls
- A4 Smithery
- A5 Factory
- A6 Bertini West
- B1 Bertini East
- B2 Cathedral
- B3 Press department
- B4 Press department
- B5 Office OSI
- B6 Courtyard OSI
- C1 Hangar Ghia
- C2 Office Ghia
- C3 F.lli Miroglio building

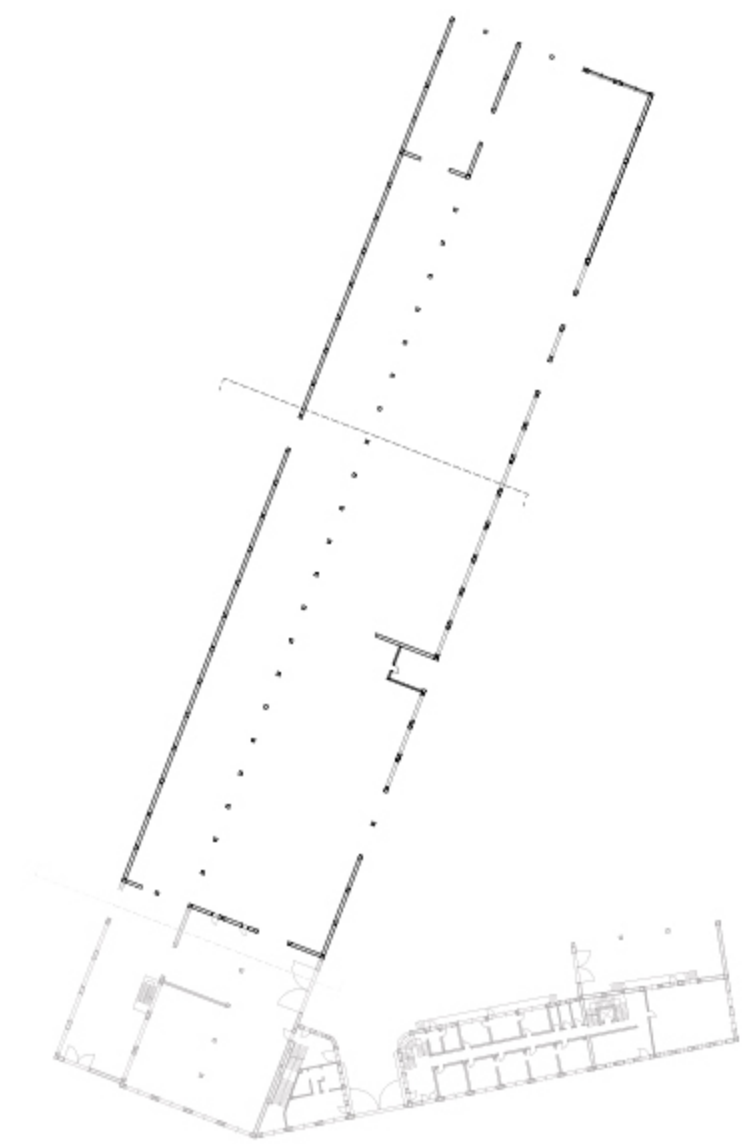
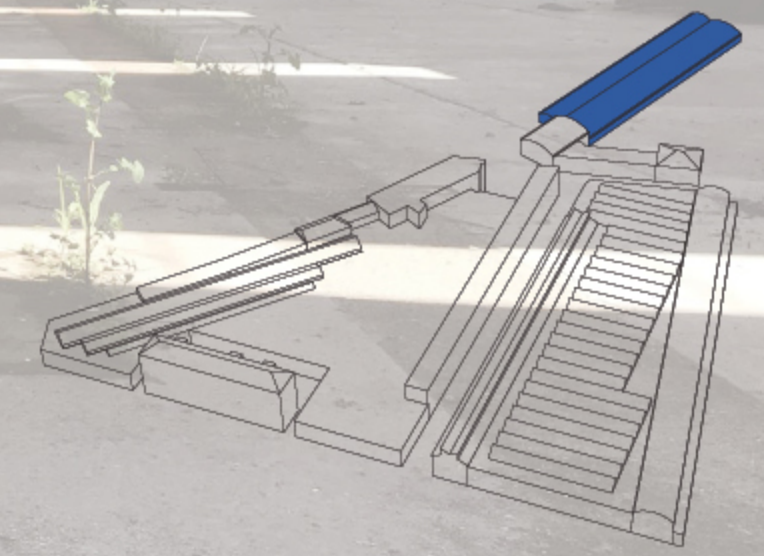


Buildings

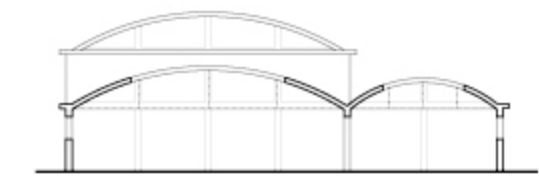


Hangar Ghia

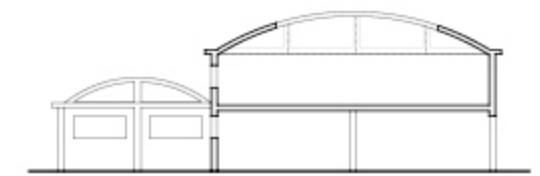
Urban area:	Ghia
Year of construction:	1958
Architect:	Arch. N. Diulgheroff
Gross floor area:	3 968 m ²
Number of floors:	1-2
Previous function:	Offices, conference hall, design workshops and warehouses
Current function:	Abandoned
Owner:	Serenissima SGR
Pedestrian access:	Via Montefeltro
Driveway access:	Via Montefeltro
Structure:	Concrete beams and columns
Infill:	Brick masonry
Roof type:	Vaulted



Ground floor plan



Section

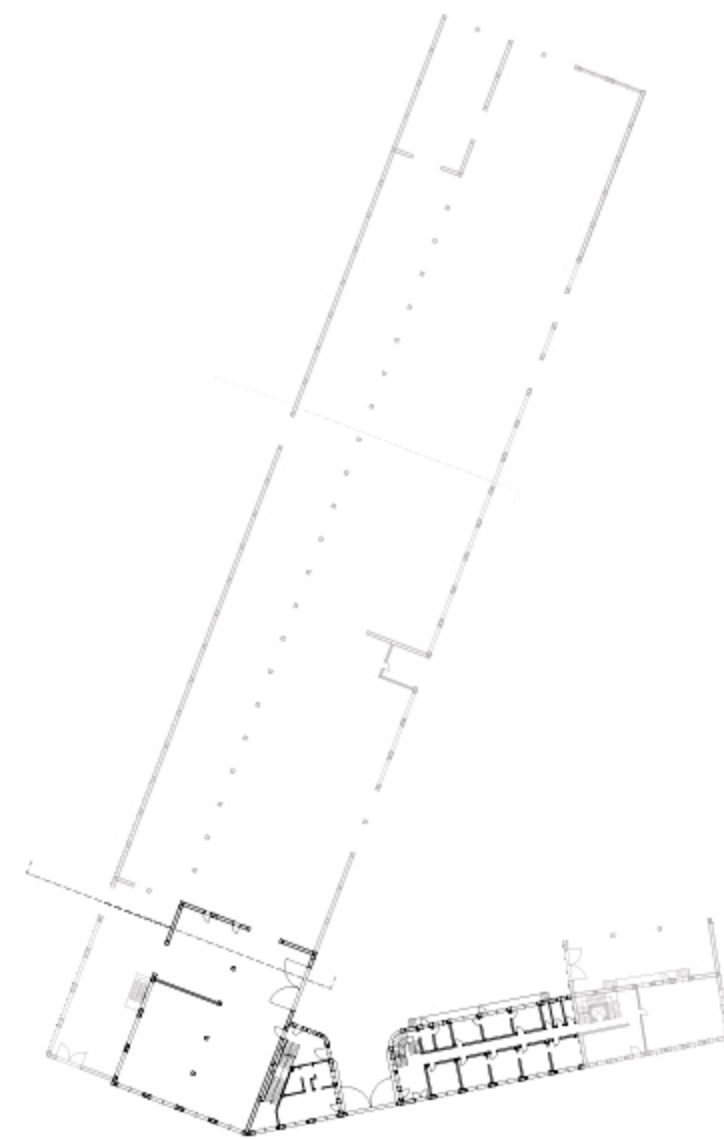


Section

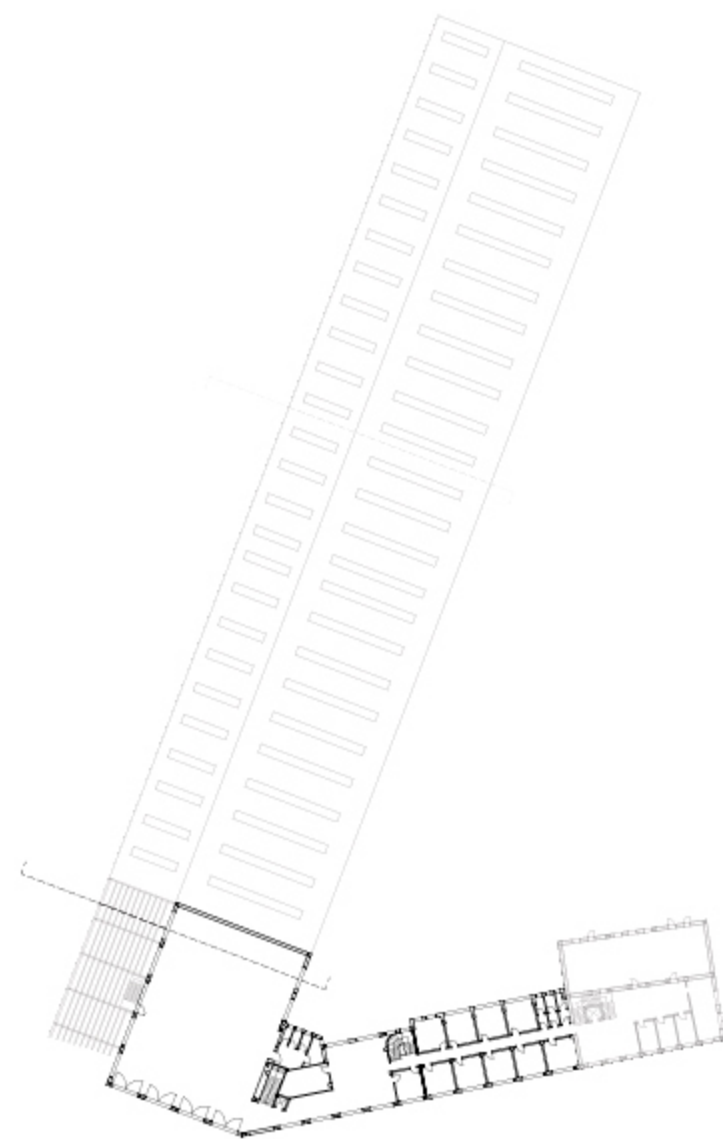


Office Ghia

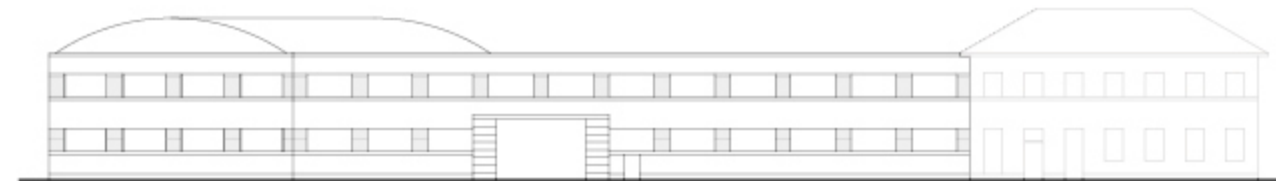
Urban area:	Ghia
Year of construction:	1958
Architect:	Arch. N. Diulgheroff
Gross floor area:	407 m ²
Number of floors:	2
Previous function:	Offices
Current function:	Abandoned
Owner:	Serenissima SGR
Pedestrian access:	Via Montefeltro
Driveway access:	Via Montefeltro
Structure:	Concrete beams and columns
Infill:	Brick masonry
Roof type:	Pitched



Ground floor plan



First floor plan

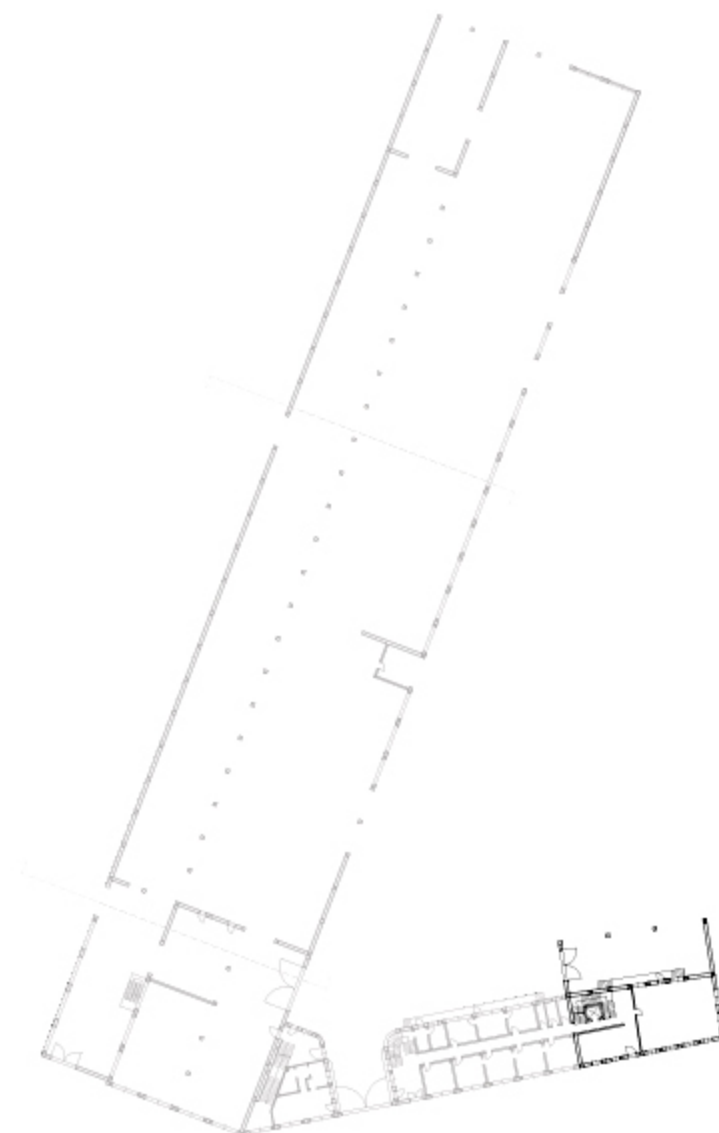


Elevation Via Montefeltro

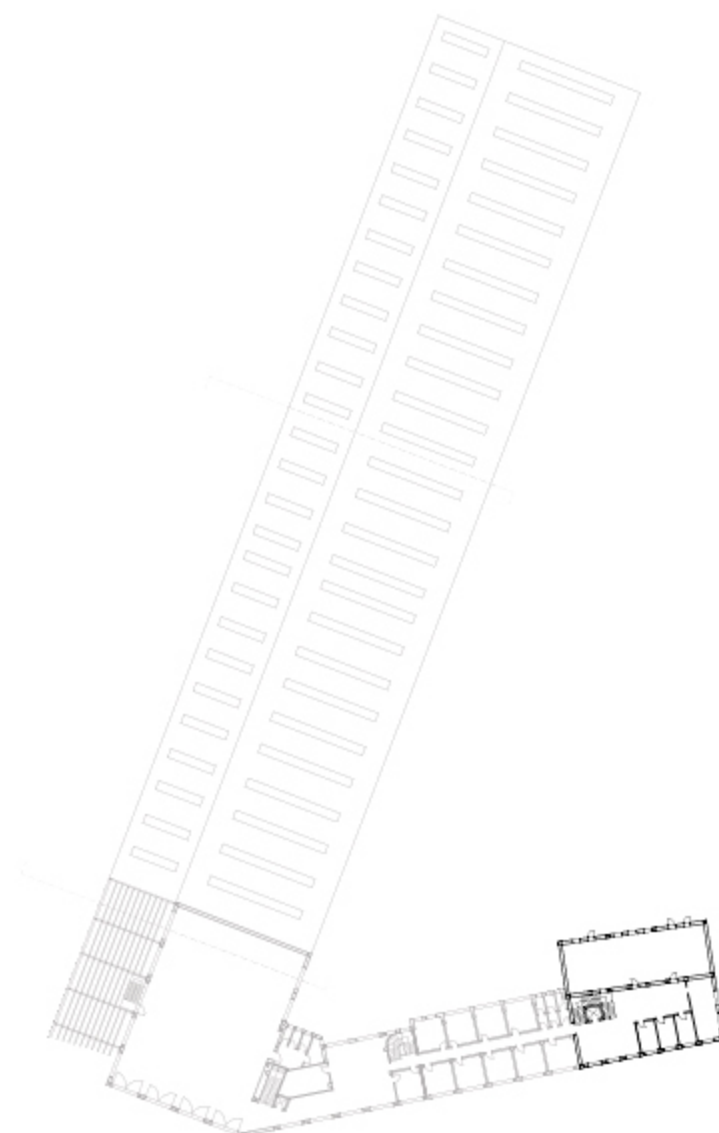


F.lli Miroglio building

Urban area:	Ghia
Year of construction:	1936
Architect:	unknown
Gross floor area:	304 m ²
Number of floors:	2
Previous function:	Offices
Current function:	Abandoned
Owner:	Serenissima SGR
Pedestrian access:	Via Montefeltro
Driveway access:	Via Montefeltro
Structure:	Concrete beams and columns
Infill:	Brick masonry
Roof type:	Pitched



Ground floor plan



First floor plan




Elevation Via Montefeltro




Materiality



Ghia hangar:

Walls:  White plaster


Roof:  No material found

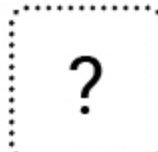
Ghia hangar:

Walls:  White plaster

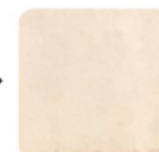
Roof:  Stainless steel


Office Ghia:

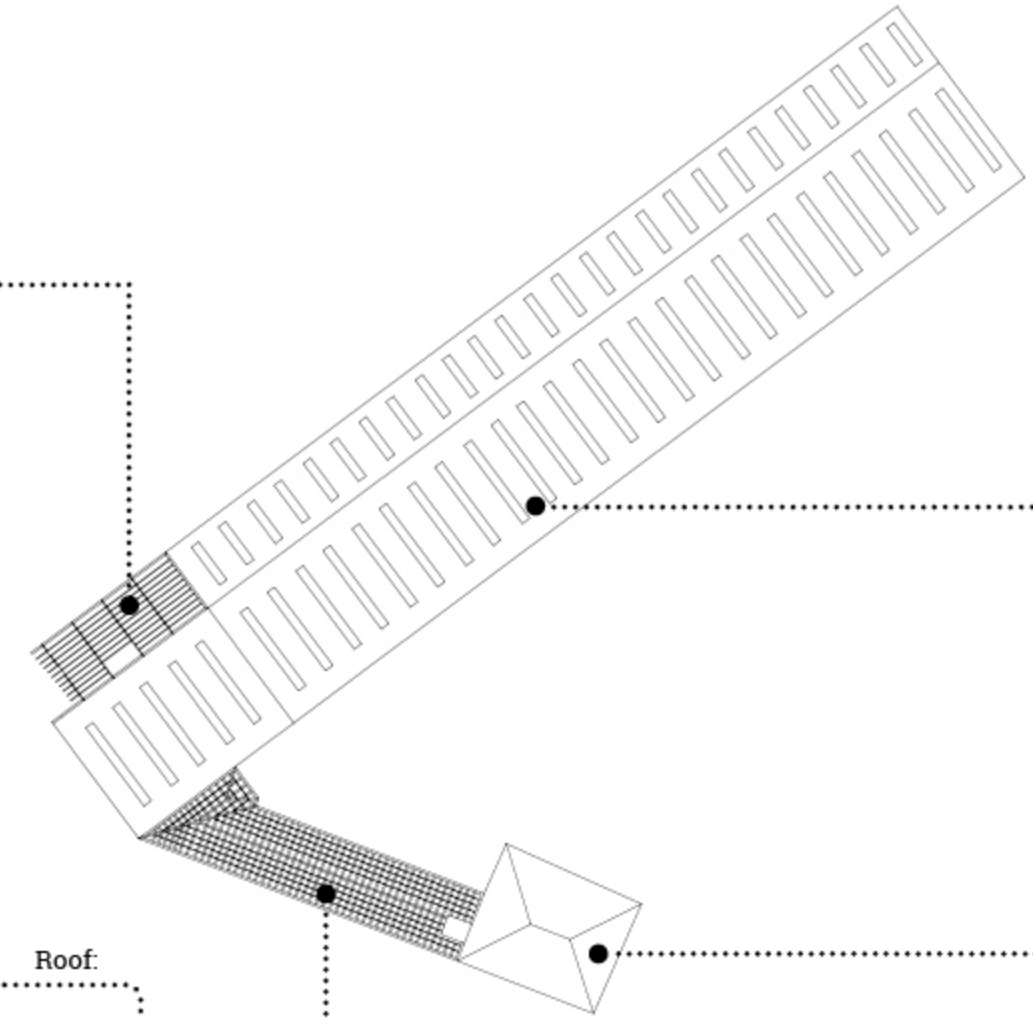
Walls:  Clay bricks

Roof:  No material found

Flli Miroglio building:

Walls:  Beige plaster

Roof:  Clay tiles



Strategies for Ghia area

- Revitalize the former industrial area and reconnect it to the city.
- Increase the quality of the area and transform it into a more inviting place.
- Provide solution which would bring Turin one step closer to sustainable development and to show the ways to deal with similar issues in the future.
- Cultural sustainability. The area does not only the house the past of industrial processes, but it is also a symbol of something that has characterized the landscape for years. Therefore, this feature has to be preserved.



Connect to the city center



Design which respects the past



Improve quality of the site



Meeting places & activities

Strategies for architectural design

- Refurbishment of existing buildings and introduce one more additional building.
- Add more greenery and open spaces to hang out.
- Hybrid building - not an exhibition hall, not an information and communication center, not a museum, but all of these things in one place.
- A full-time working building complex with multipurpose spaces which fits world's changing needs and requirements.
- Preservation of existing façade materials and structural components.
- Reuse of post demolition leftover.

Building program

Turin has a long history and tradition of designing and manufacturing motor vehicles; Fiat, Lancia, Iveco, Pininfarina, Bertone, Giugiaro, Ghia and Cisitalia were all founded here. Therefore, my proposal is to reuse an existing structure located in the Ghia area and convert it to a hybrid building complex dedicated for vintage cars which were manufactured on Ghia site, and representing a mixture of urban elements. Not an exhibition hall, not an information and communication center, not a museum, but all of these things under one roof - a combination of urban marketplace and stage for presentations.

A very important task of this project is to make the building publicly accessible, to make it more than just a trademark of the company that built it. This hybrid building should be more than a functional shell, it should represent added value

for the city, reinterpreting the concept of public space.

As I mentioned earlier, my project will be located on the plot 13.4 which contains several existing structures.

The total floor area of the new complex will be around 6 000 m² and it will contain exhibition space, showroom, auditorium, offices, restaurant and café, gift shop and outdoor spaces just to hang out.

6 000 m² indoor space, **4 000** m² outdoor space

3 user groups



tourists



scientists & researchers



residents of Turin

8 types of facilities



showroom



exhibition space



forum / auditorium



restaurant



café



gift shop



offices



outdoor space

Volumes

The main design challenge was to find a common language for the wide variety of uses. Inspired by the flexibility and strong yet neutral character of industrial buildings, I decided to keep all buildings on site and design one more building to complete the required program.

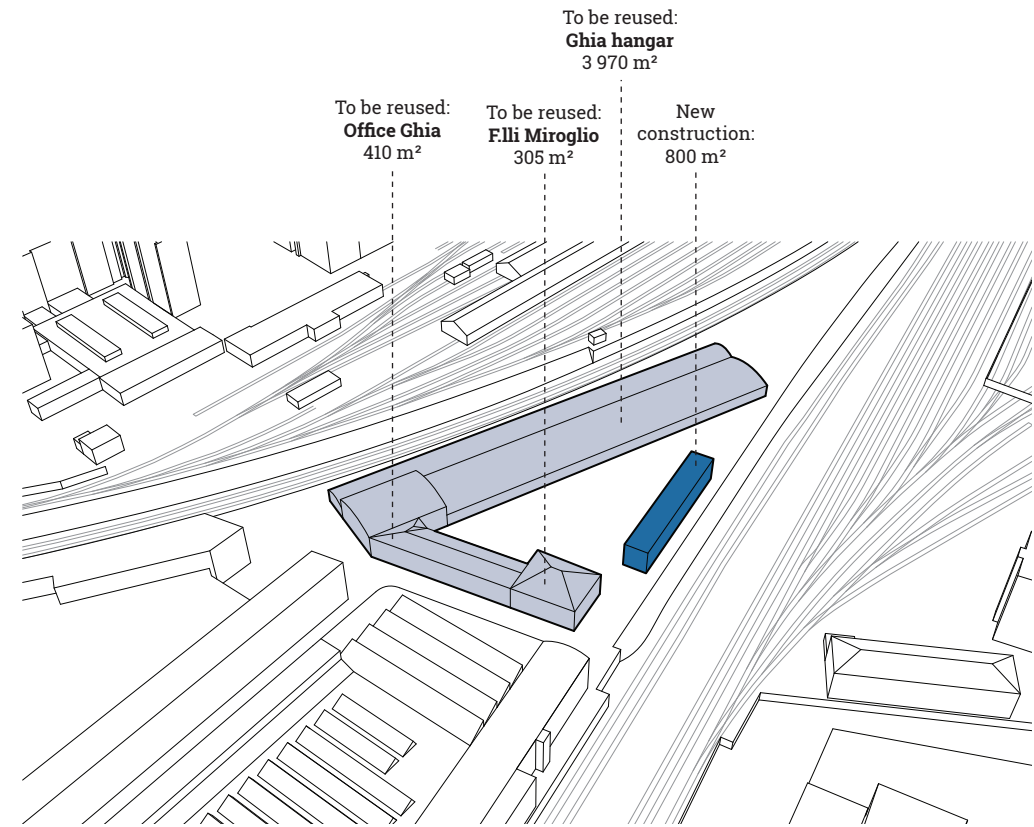


Figure 13. Buildings on the site

All 3 existing buildings on site will be preserved: Ghia hangar will be used as a main exhibition space, showroom and auditorium, Ghia office and F.lli Miroglio buildings will be used for administration, workshops for preparation of exhibits and offices which could be rented out by other companies. The new building will act as a buffer to reduce the noise pollution coming from the train tracks and will form a safer and cozier courtyard. This building will be used as a café, a restaurant and a gift shop. It will have a separate entrances and independent working hours. The new arrangement of the buildings on the site follows the footprint of the former factory complex which was partially demolished 2009.

Courtyard

The courtyard design is based on the location of entrances to each building. Diagonal paths connects entrances. The paths, platforms, seating and other hard structures on site will be built from broken concrete which is still available on the site after the partial demolition. The walkways from broken concrete will create a stable, porous traffic surface that rainwater can filter through. This technique will contribute to storm water management by reducing the amount of runoff water from the buildings.

The floor finish pattern in the exhibition hall is also based on path network. The floor pattern creates an illusion of paths entering the building and emphasizes a feeling of an open space. What is more, it makes the orientation in the building complex easier - it helps visitors to find different facilities and entrances / exits.

The site is currently surrounded by a fence which is assembled from precast concrete elements and varies in height. The height on the West side of the site is around 1,20m, whereas on the East it reaches 2,0m. It works as a barrier blocking the access to the site and preventing people from crossing the train tracks. This fence will be modified on the East and will serve as an additional noise buffer for the site and buildings on it. The fence on the most northern part of the site, the dead-end, will be knocked down and the triangular shaped area will become a small forest.



Figure 14. Fence surrounding the Ghia site



Figure 15. Foundation floor leftover

The existing buildings contain windows and doors which are not widely used in today's world because of maintenance and security issues. They will be replaced with new ones with better energy performance and easier maintenance.

It is important to mention that Ghia hangar has unique steel tie rod roof structure which should be renovated and preserved. Steel tie rods solve the age old problem of roof construction; they hold the walls from bending out as the roof is loaded with wind or snow. However, it is not commonly used nowadays.

In order to complement the brick façade of Ghia office, I designed a shading system for the new restaurant building - a pixelated gradient wall comprised of 3 different shades of clay bricks supported by stainless steel cables. The colors of the façade match the clay tile roof of F.lli Miroglio building and balances out the ratio between all colors on the site. The brick shading system gradually fades in permeability from the opaque façade towards the transparent façade.

Materiality

The existing façade will be reconstructed based on historical pictures and the materials will be maintained.

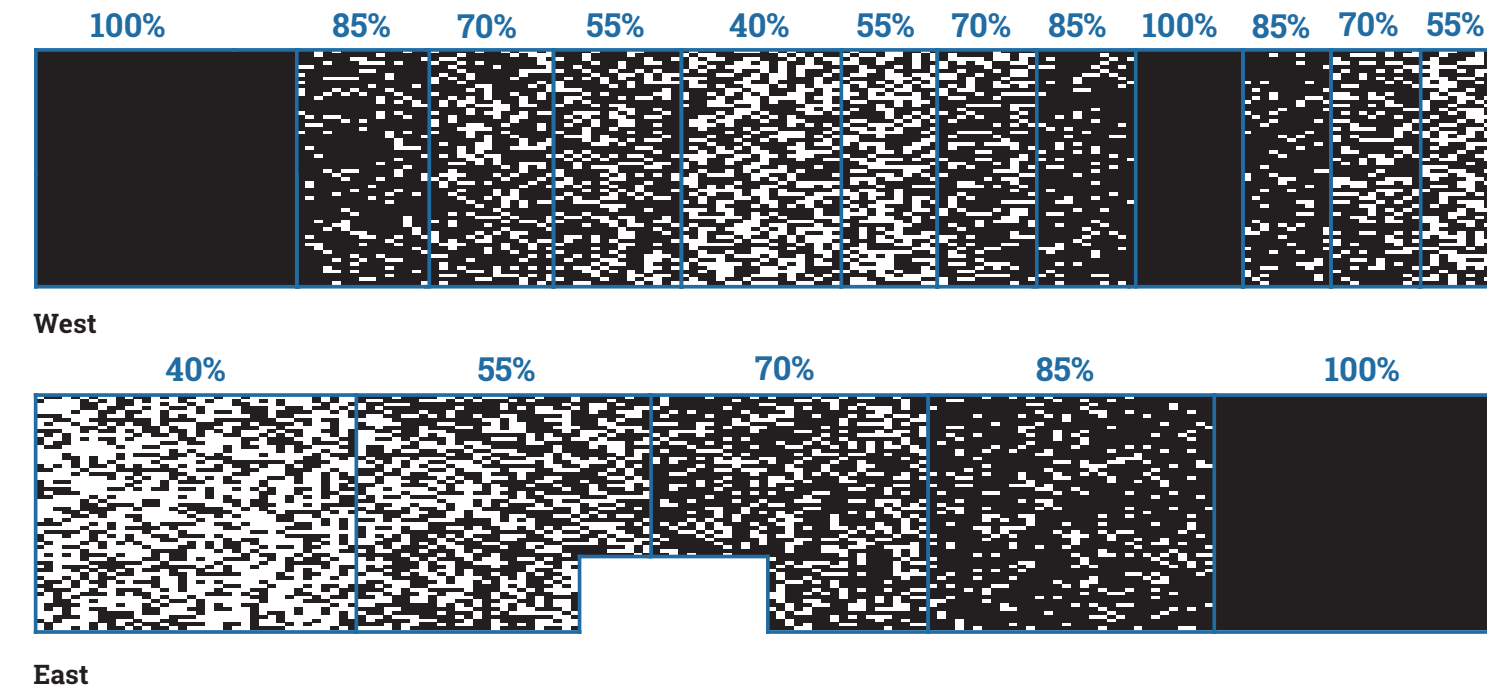


Figure 16. The amount of tiles in the shading system

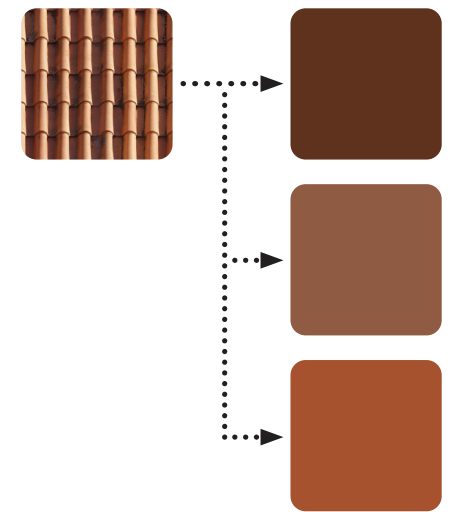
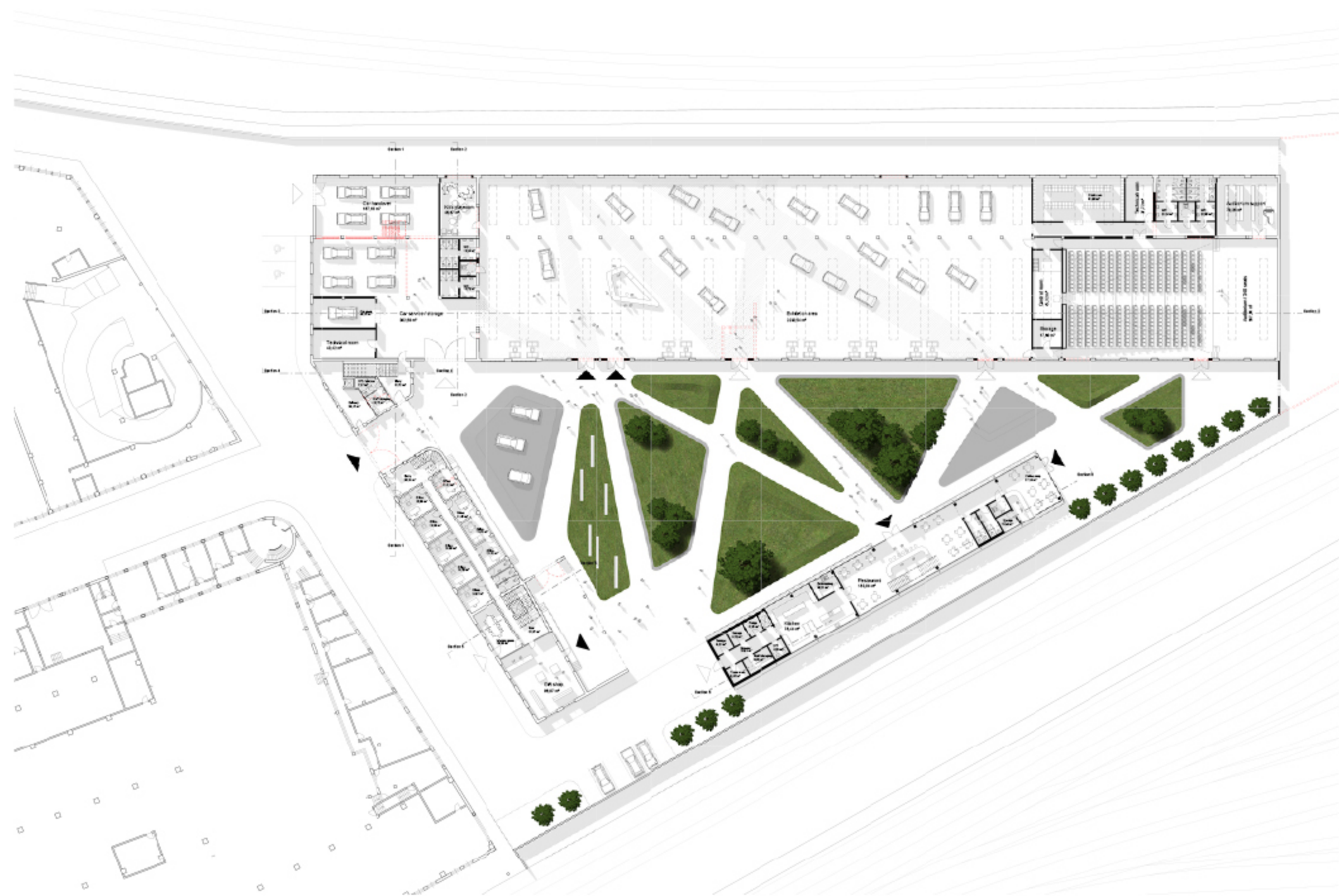
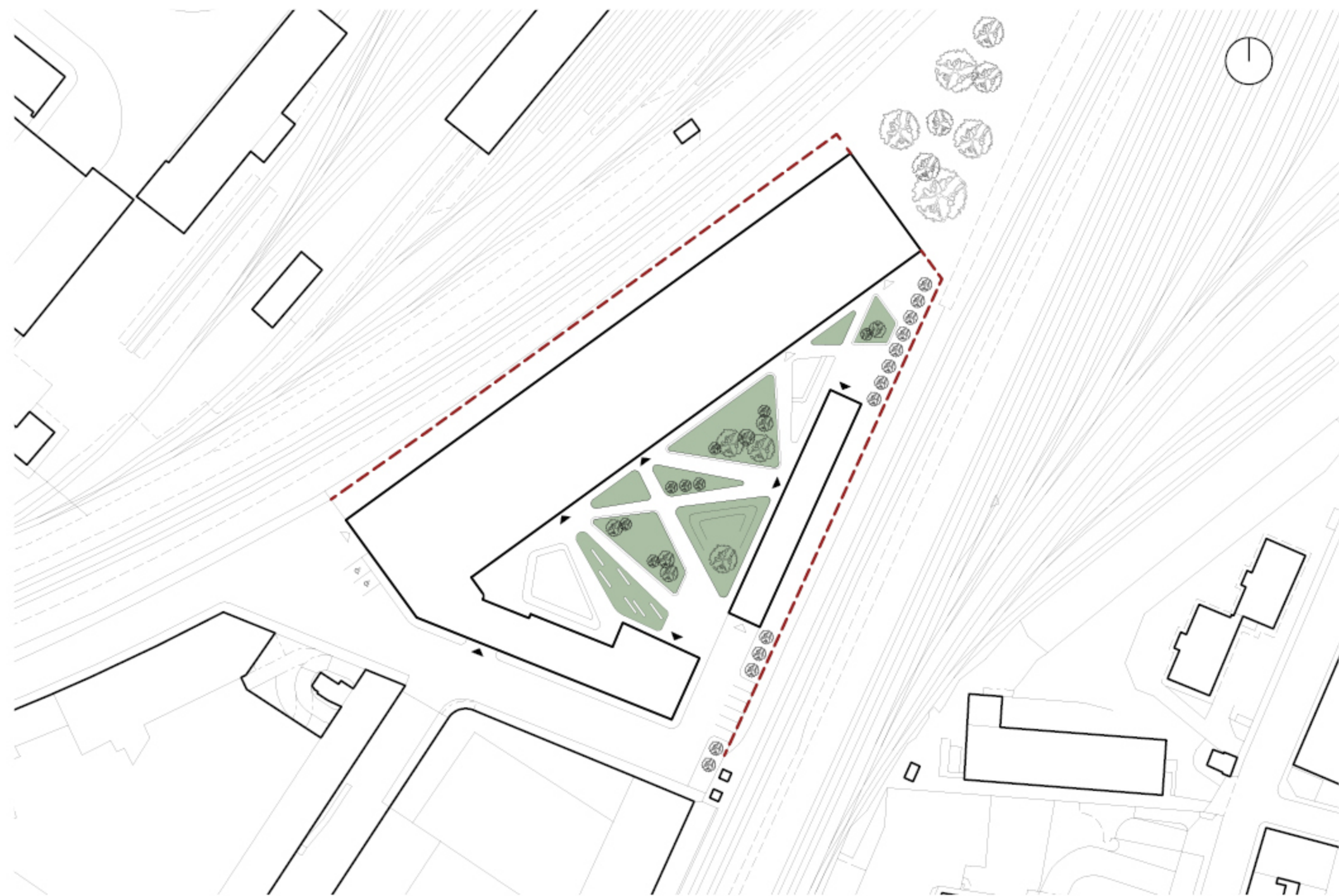
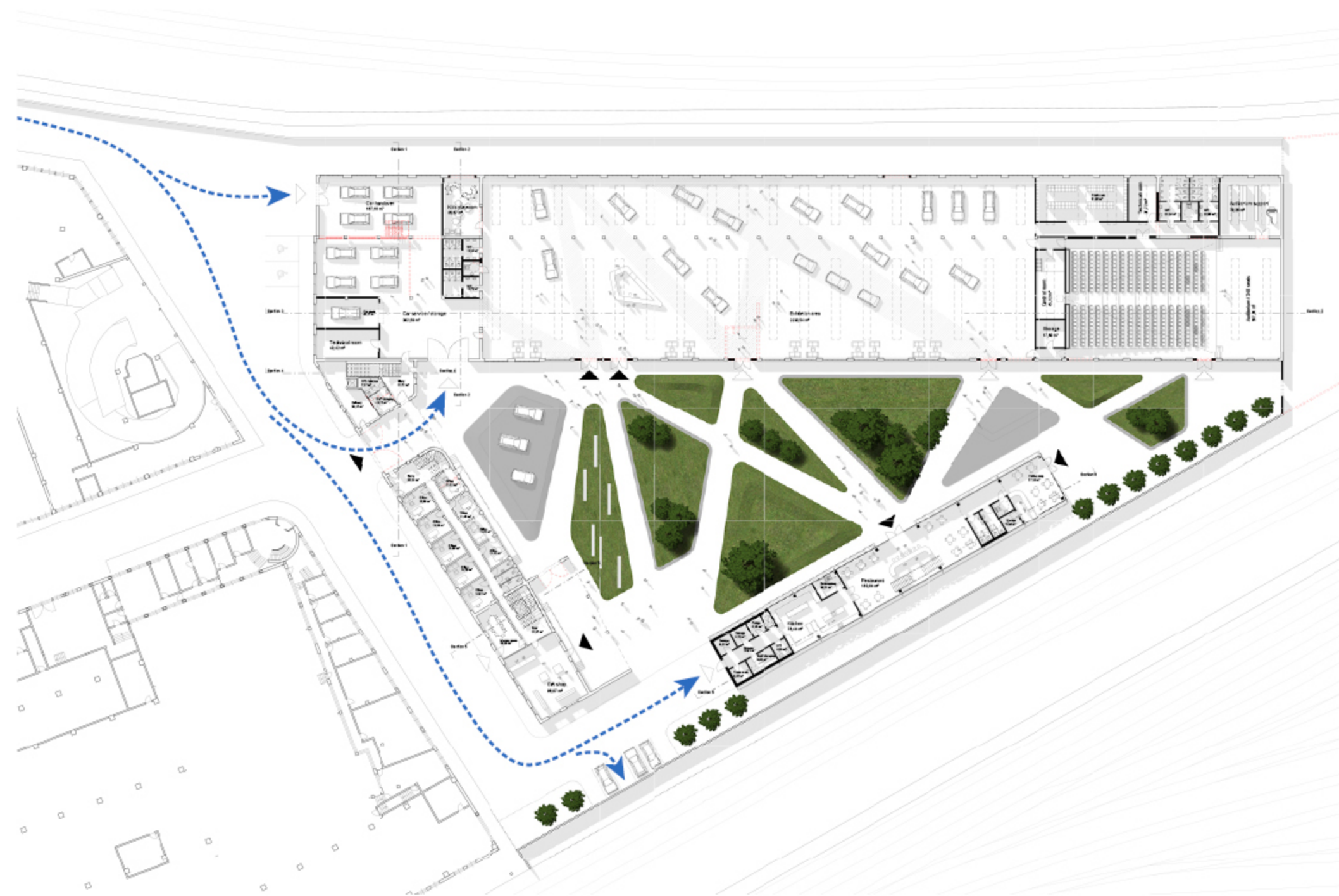
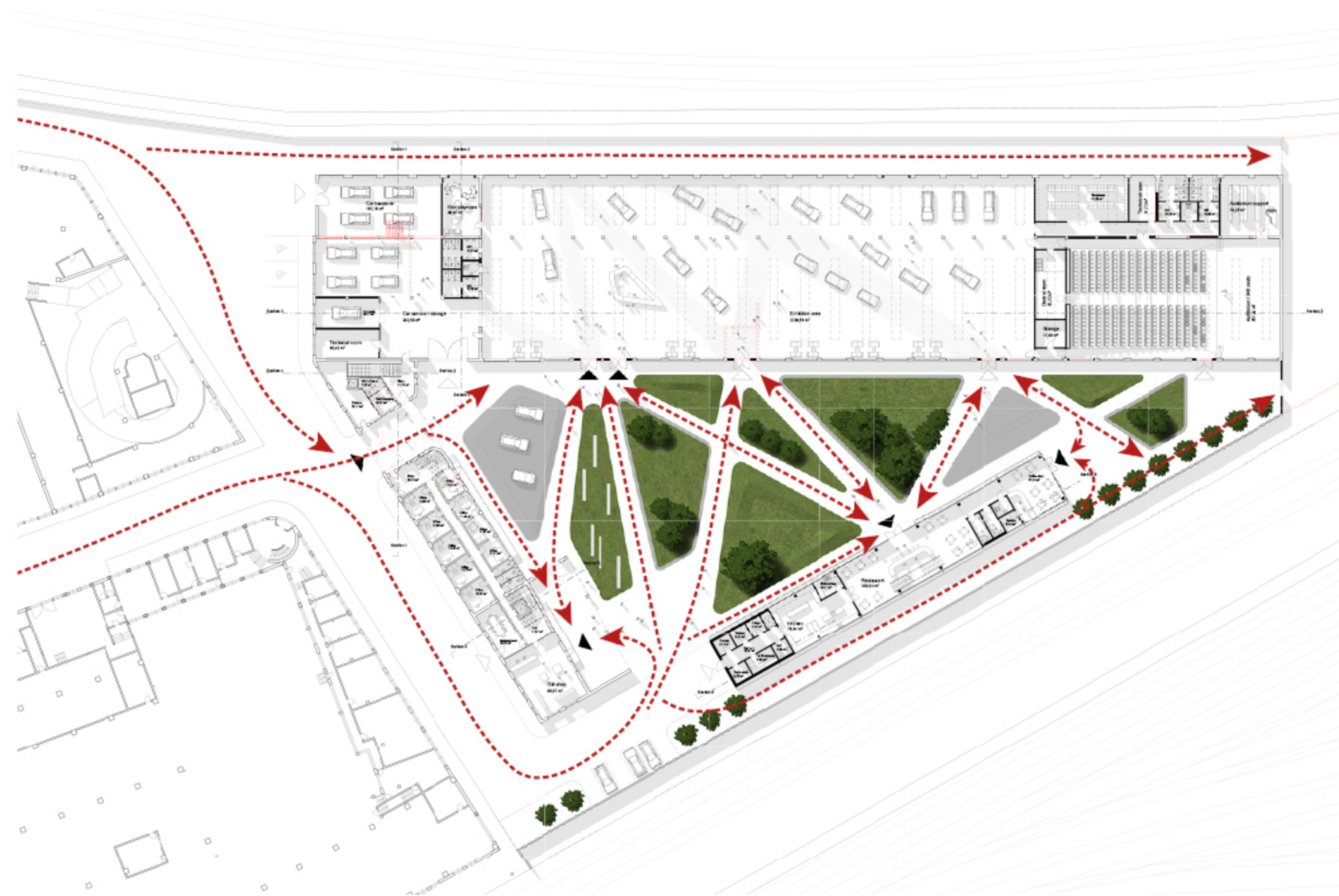
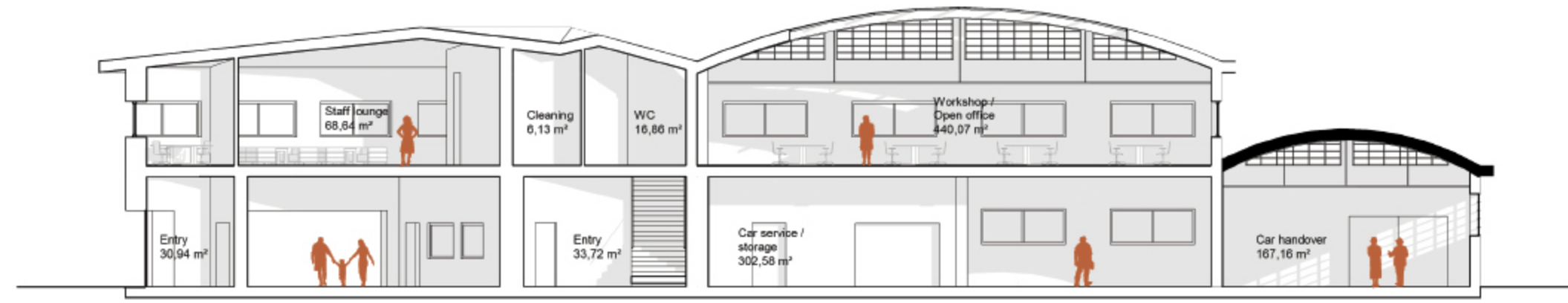
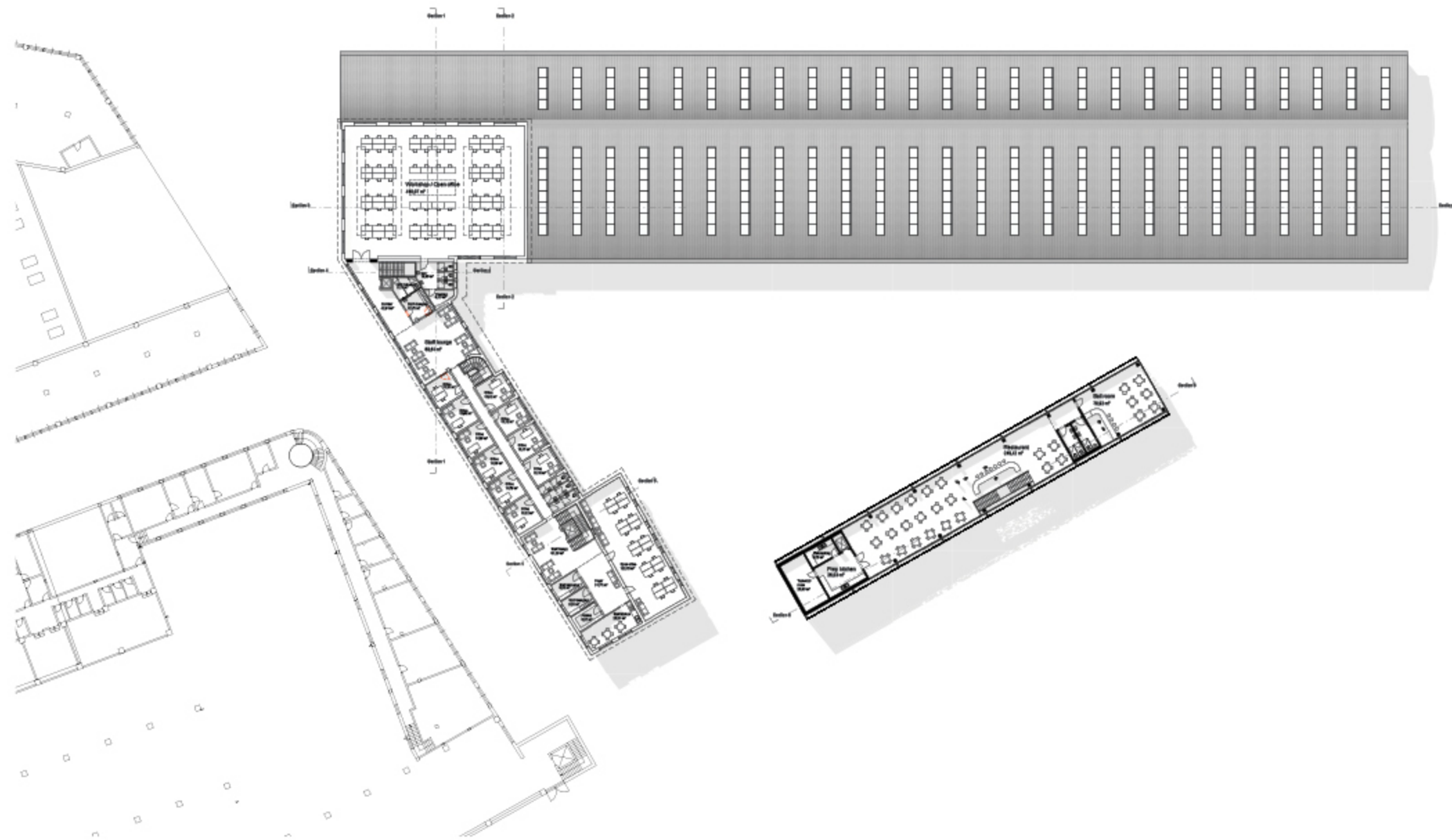


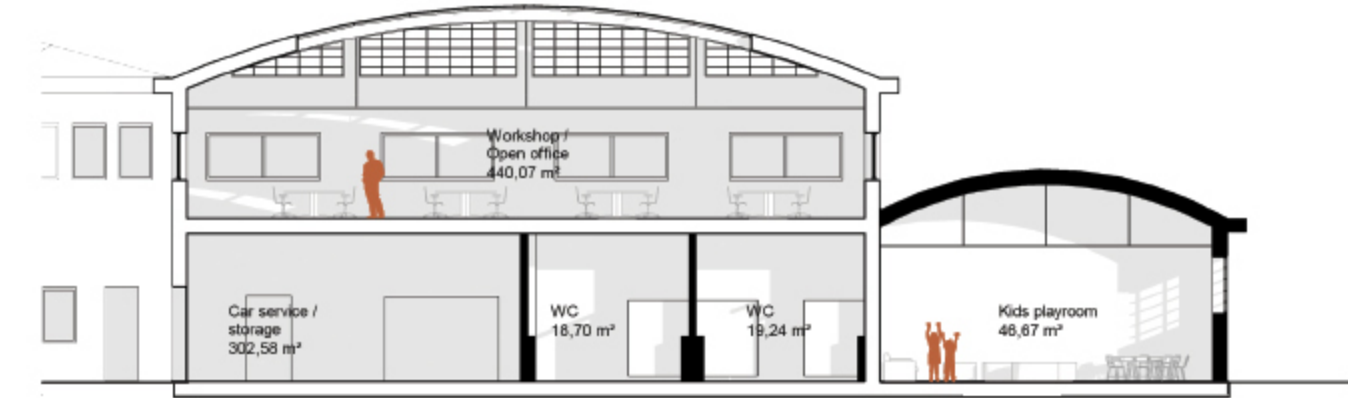
Figure 17. Tile color selection







Section 1



Section 2



Section 3



Ghia hangar South



Ghia office South



Ghia hangar West



Ghia hangar East



F.lli Miroglio building South

Façade transformations

Ghia office gate

Originally Ghia office gate was used to bring cars to the other buildings on the site and to prevent public access. I decided to remove this gate and convert it to the main entrance to the new building complex. The removal of the gate makes the site more welcome and accessible.

The double door of administration building is replaced with modern glass door. The windows are replaced with new ones with less division, as in the authentic drawings by the architect.

The original granite cladding around the entrance is preserved as it emphasizes the purpose of this gate.



Ghia office gate - entrance to the courtyard (existing situation)

F.lli Miroglio building entrance

The double wood door of F.lli Miroglio office building is replaced with a modern single glass door. It brings more light to the building and improves the accessibility.

The original granite cladding around the entrance is preserved as it emphasizes the purpose of this gate. The windows stay as in the original drawings.

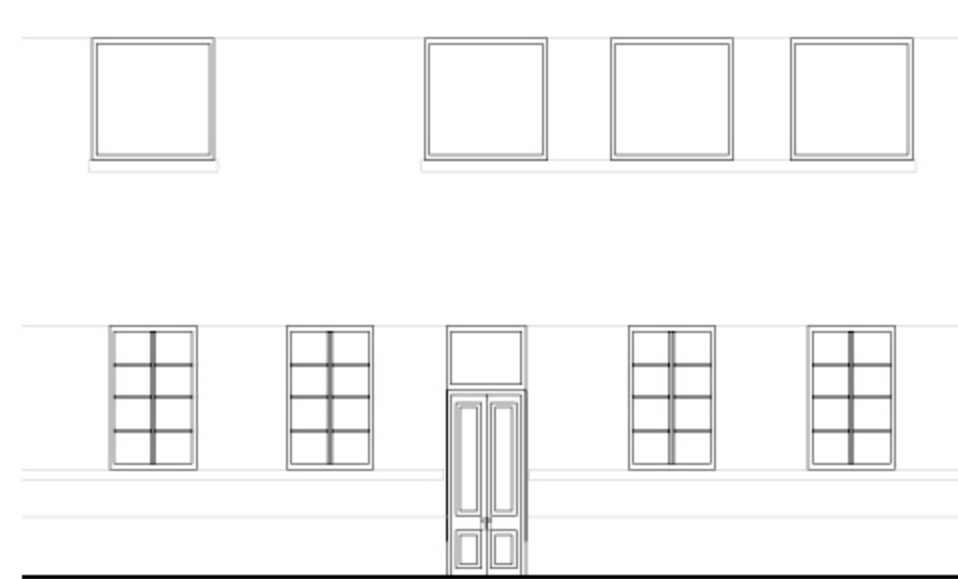


Ghia office gate - entrance to the courtyard (after transformation)

Ghia hangar entrance

The Ghia hangar is converted to an exhibition hall which needs more entrances. Therefore, more double glass doors are introduced.

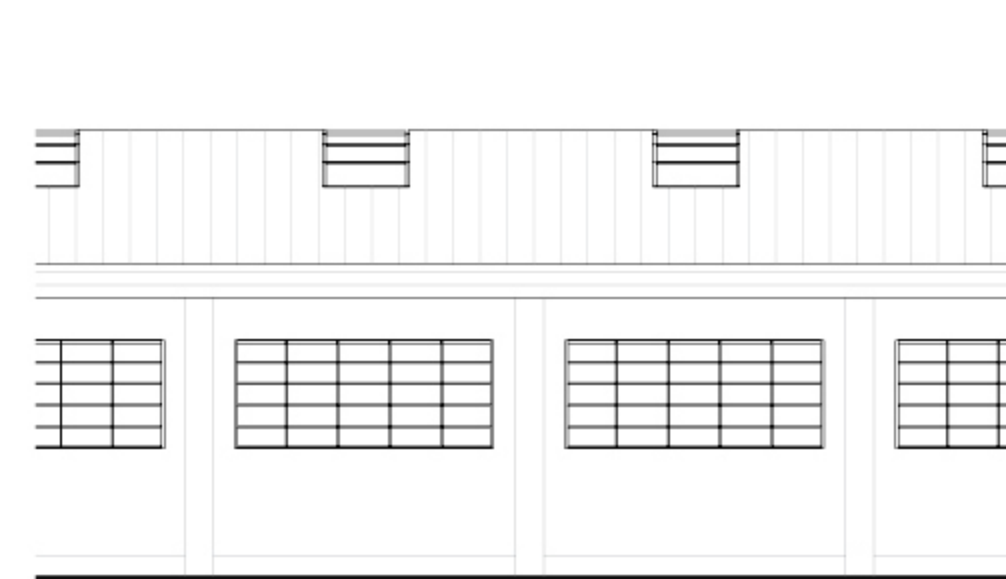
Façade transformations



F.lli Miroglio building entrance (existing situation)



F.lli Miroglio building entrance (after transformation)



Ghia hangar - entrance to the exhibition hall (existing situation)



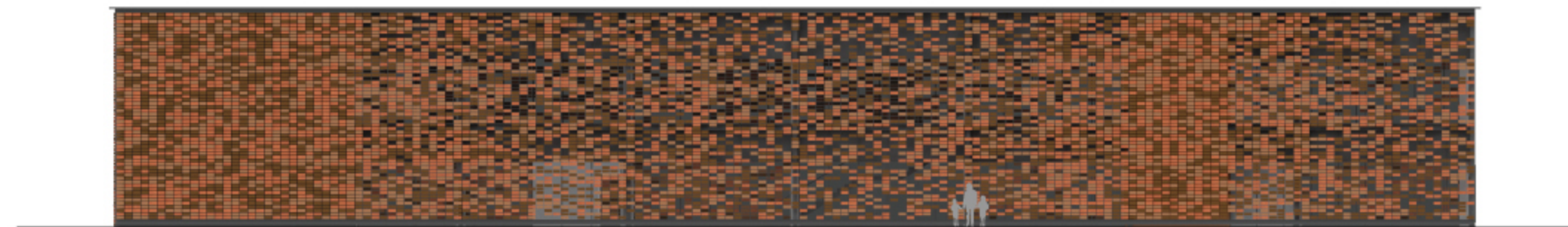
Ghia hangar - entrance to the exhibition hall (after transformation)



Section 6



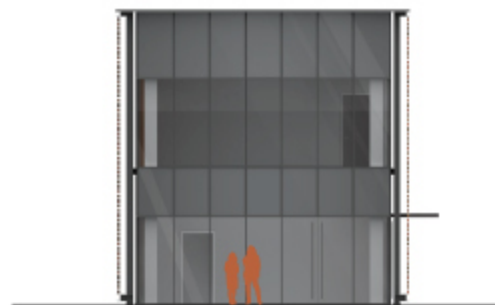
West elevation



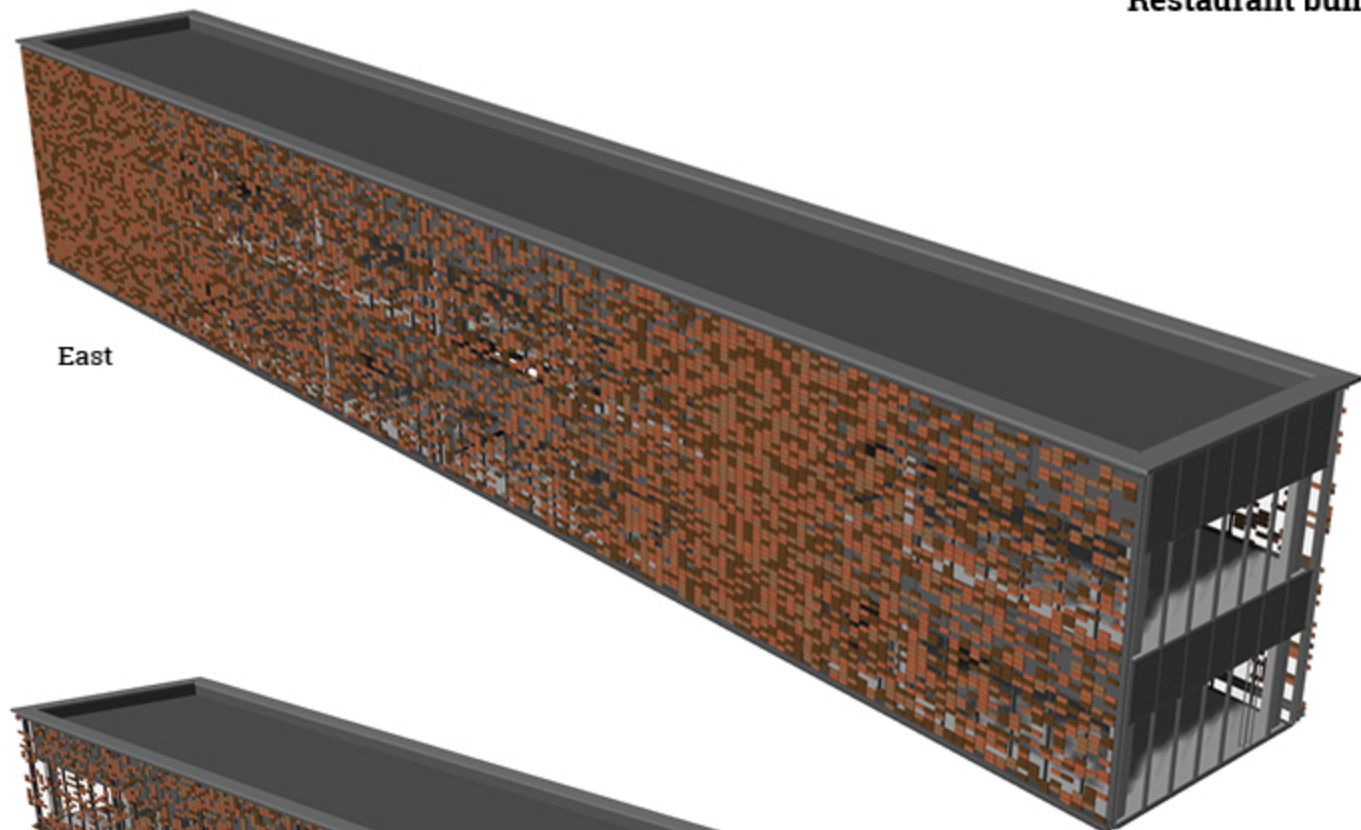
East elevation



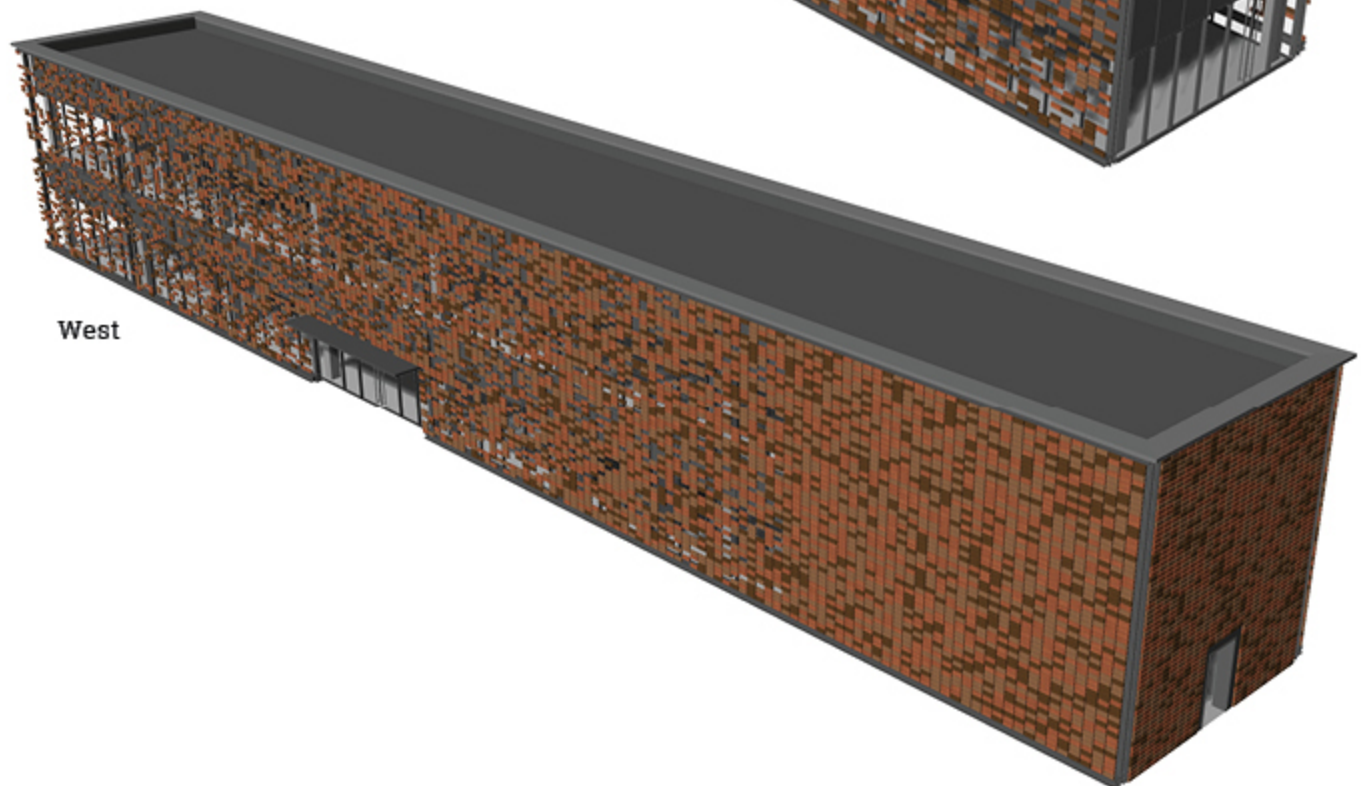
South elevation



North elevation

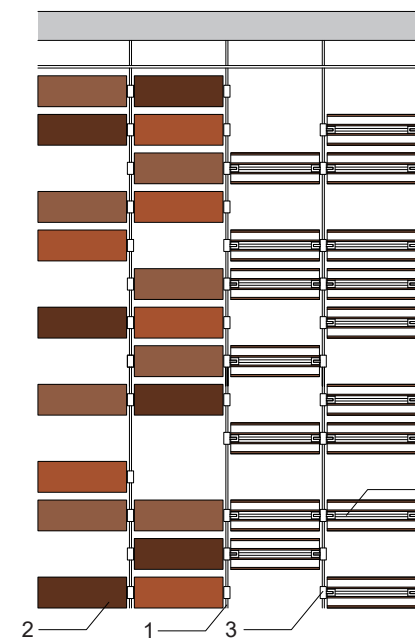
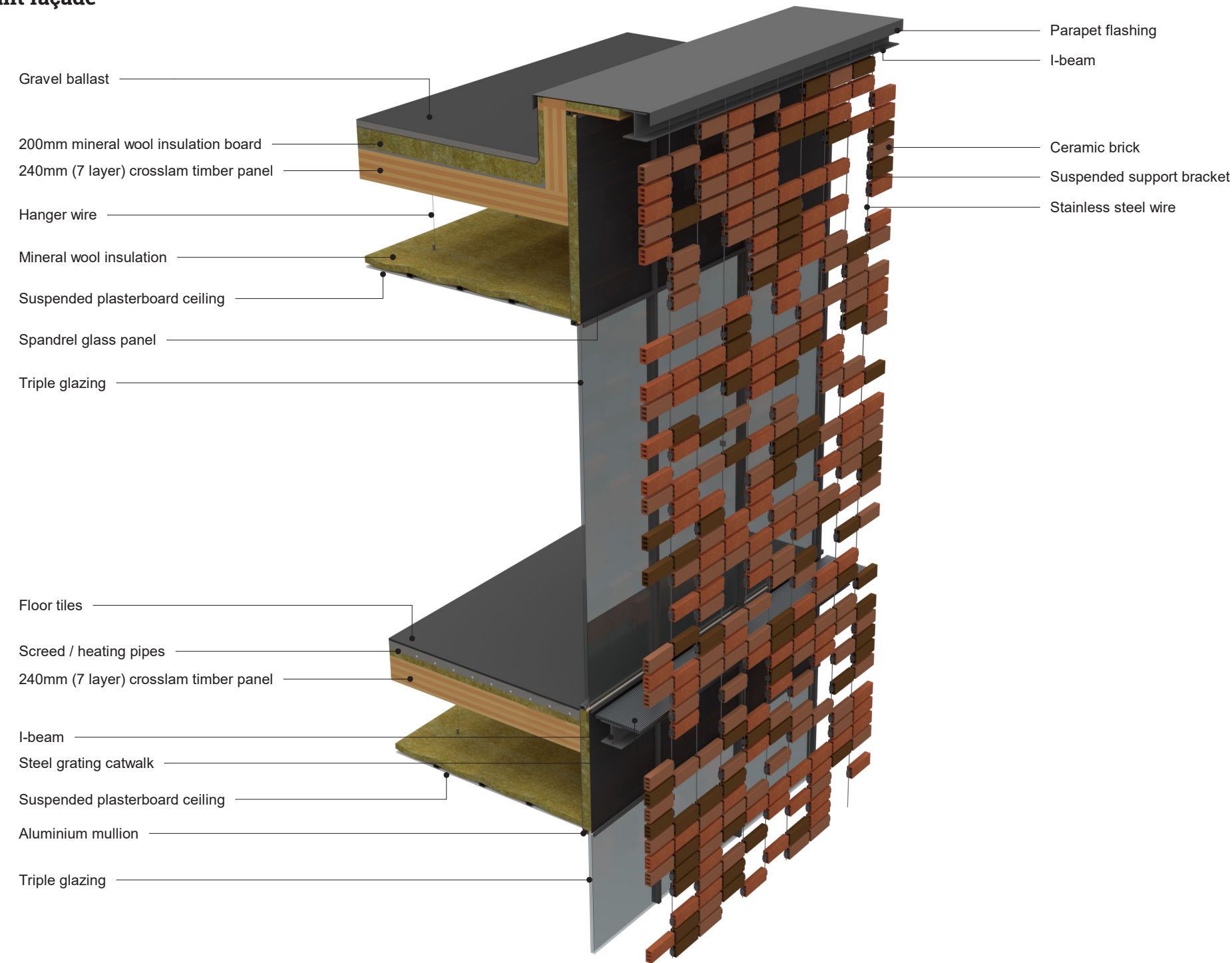


East

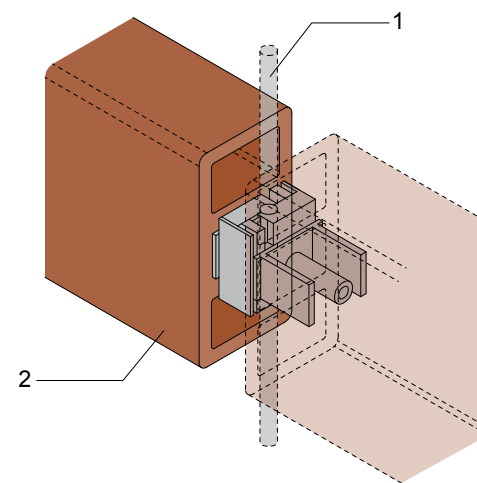


West

Restaurant façade



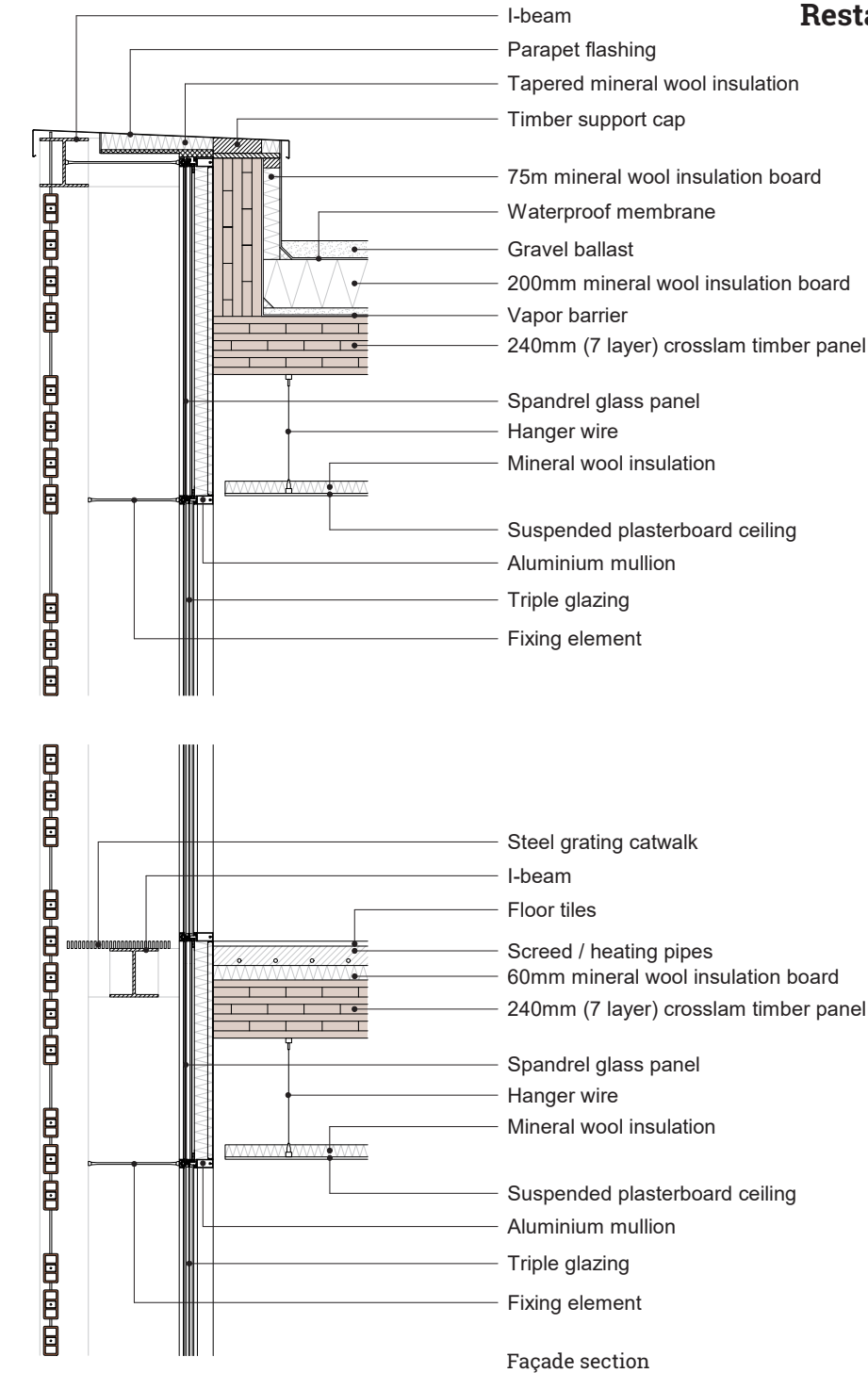
Brick screen elevation



Isometric view of bricks

1. Stainless steel wire
2. Ceramic brick
3. Suspended support bracket
4. Aluminum alloy pipe

Restaurant façade



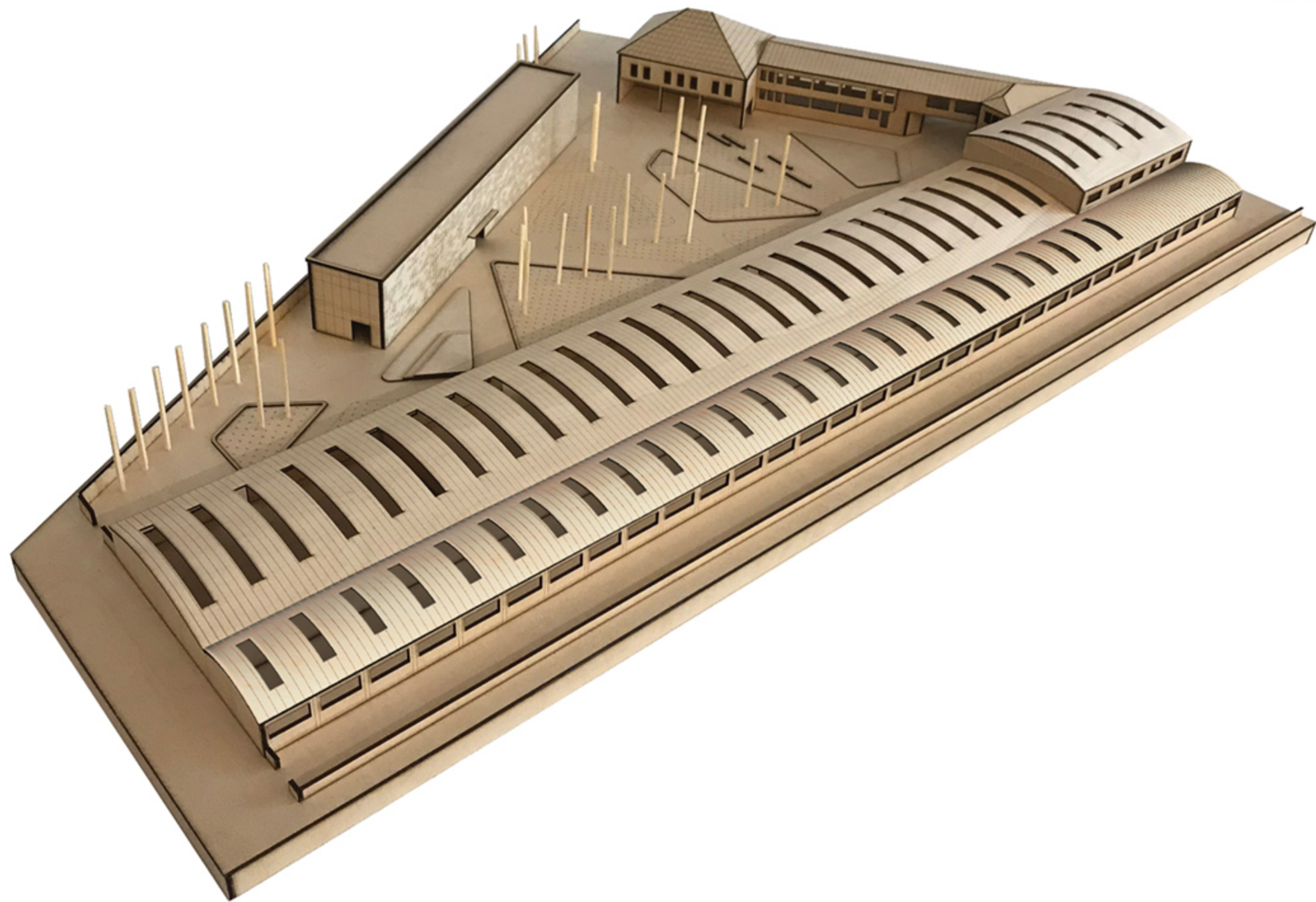
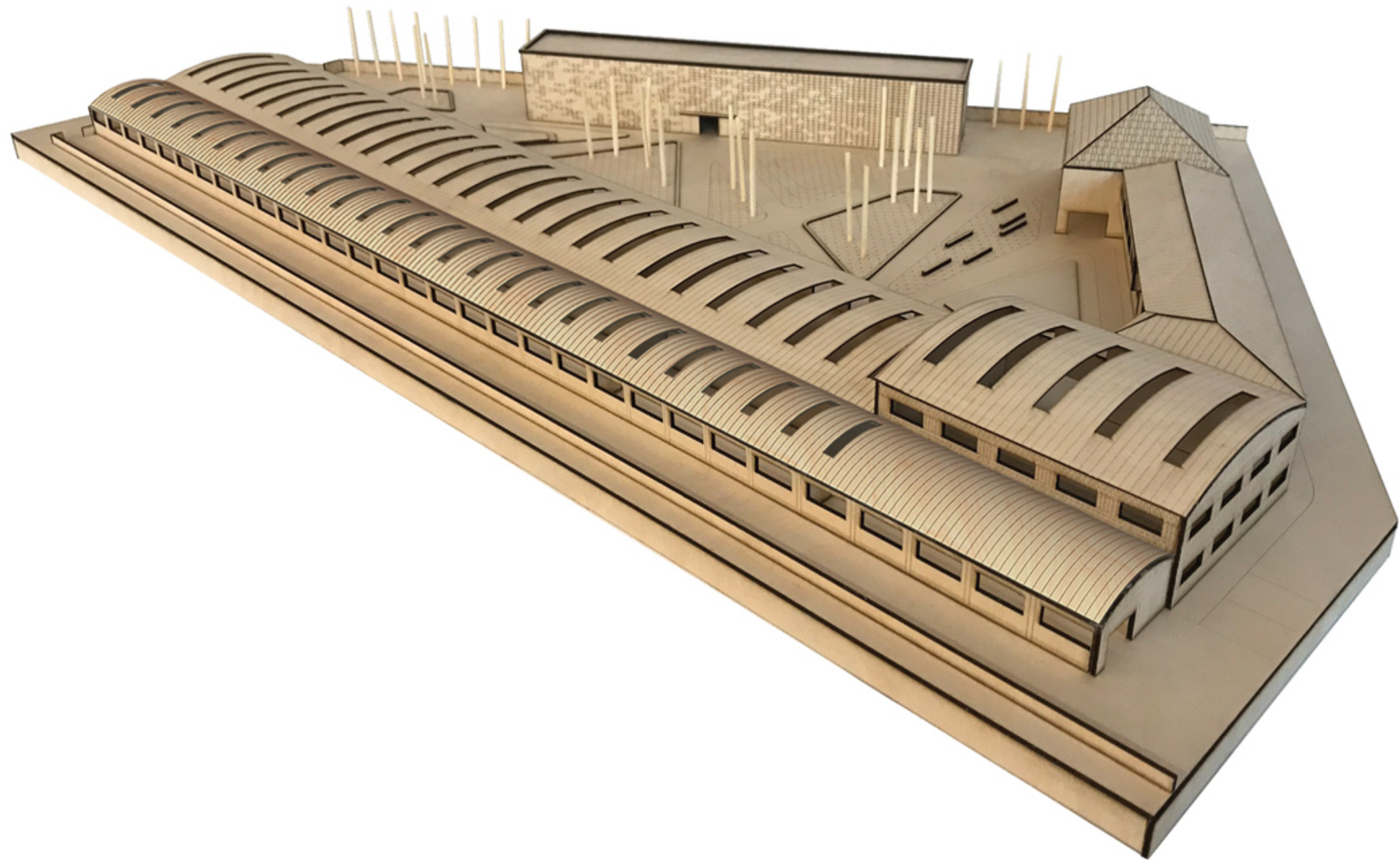
Façade section











Conclusion

Preservation of industrial heritage

The problems of the Ghia area analyzed in this project are still relevant for all abandoned industrial areas around the world. Many of these places contain unique landscapes which tell us about their history. However, architects and artists still admire industrial landscapes more than the society does. The clean lines and huge volumes that have become an outgrowth of these design ideas today attract the modern eye and beauty that can be considered as a prerequisite to successful transformation project. If we interpret and analyze industrial and technical structures from an aesthetic-symbolic point of view, it is obvious that the value of these works is not only based on their functional and technical components but also derives from their unique poetry, monumentality and elegance. While it also seems that both society and conservation organizations are also beginning to understand the importance of these sites and buildings, there are clear examples of valuable works in this category being assessed and rescued from demolition and loss. A significant factor in a former industrial area's structural change is the rediscovery of its own past.

The expression 'industrial culture' acquires a special meaning for redefining the architectural past as something valuable. The confirmation, analysis and presentation of the circumstances let us see the history from a different point of view. The opening and regeneration of the former industrial areas allow new forms of public discussion. Industrial halls are being converted into thrilling art and entertainment sites, residential premises, or pleasant retail spaces. It is not, however, simply a preservation of physical structures. The industrial architecture plays a significant role in new forms of identification of the space, region and history. There are also things to learn about how cities are transforming from industrial areas to redefined urban centers. While it is obvious that what works for one does not work for all, certain strategies can be adapted to many projects. Whether it is about the reuse of a harbor or the refurbishment of a dilapidated building, the redevelopment of industrial sites requires tremendous dedication, passion and knowledge.

Contribution to sustainable development

Heritage buildings play important roles in community life. They have direct connections to the past, which can provide livelihood of a substantial section of the community. Different communities and individuals regard historic buildings as a source of identity and as important remembrance bearers. Heritage strongly contributes to social sustainability. As a result of this research, historic buildings are important in community life, providing a connection to the past and playing a significant role in the development of new identities as communities change.

Keeping existing built fabric also provides a number of environmental and economic benefits. These include reduced demolition waste, reduced resource use compared to a demolish and rebuild scenario, and preservation of the embodied energy of the original building. Reusing buildings retains their embodied energy, and the materials kept in a refurbished building are also usually the most energy intensive materials. Embodied energy savings achieved by not knocking down a structure increase with the expected potential growth in energy costs.

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