









Die Reaktivierung und Neunutzung der Industriezone in Sarajevo/Carsija 4.0

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## Abstract ●

Die Stadt Sarajevo hat immer die Verbindung zwischen Ost und West repräsentiert, die in ihrer weiteren Entwicklung die Rolle der Stadt als Tor zu mittler Europa ermöglicht. Sarajevo ist eine Stadt der longitudinalen Konfiguration, die sich im Tal zwischen Bergen entwickelt. Im Laufe der Geschichte wurde die Stadt zum Bestandteil verschiedener Monarchien und anderer Staatssysteme, die großen Einfluss auf ihr städtebauliches Bild hatten. Wenn man durch Sarajevo fährt, kann die Unterschiede in der Gestaltung des öffentlichen Raums von verschiedenen Kulturen und Zeiten sehen. Auf Grund der sturmischen historischen Ereignisse hat die Stadt den Entwicklungsprozess nie abgeschlossen und bietet viele Punkte, die das Potential für städtebauliche Interventionen haben.

Einer dieser Punkte ist die Industriezone, die sich am westlichen Eingang der Stadt befindet. Der Raum, der die Form behielt, die in den 20. Jh. gebaut wurde, ist in einem sehr schlechten Zustand. Als Ergebnis haben sich, neue unangemessene Funktionen herausgebildet, die den Raum weiter verschlechtert haben.

Ziel dieser Arbeit ist es, nach einer umfassenden Analyse, dem Ort eine neue Identität zu geben, die erkennbar ist und die die Qualität und ständige Entwicklung dieses Teiles der Stadt gewährleistet. Der Entwurf sollte durch die Einführung neuer Inhalte, sowie die Anpassung bestehender die Lebensqualität in einem größeren Umfeld verbessern und stadtgesellschaftlichen Mehrwert erzeugen.

The city of Sarajevo has, for a very long time been the liaison of the east and west, giving it the role of the city of gates of Middle Europe. Sarajevo is a city of longitudinal configuration, developing in a valley amongst the mountains surrounding it. Throughout history it has been a constituent of different monarchies and systems, that highly influenced its urbanistic image. This fact enables us to clearly notice different ways of spatial understanding of various cultures and times. Due to many challenging historical events the city's development process has not been completed and thus has many unaddressed issues that have the potential for urbanistic interventions.

One of these areas is industry zone located on the west entrance to the city. This space has kept its form from 1980's and is currently in a bad condition. Furthermore the appearance of inadequate functions have additionally contributed to the degradation of this capacity.

In this thesis we aim to perform detailed analysis of the space, that would enable creation of a representative, unique area by introducing new features and adapting existing ones, in order to ensure constant and efficient development of this part of the city and to additionally enhance quality of life in this area and beyond.



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● Development of Sarajevo through history



# 1 Development of Sarajevo through history

## Genesis of Sarajevo

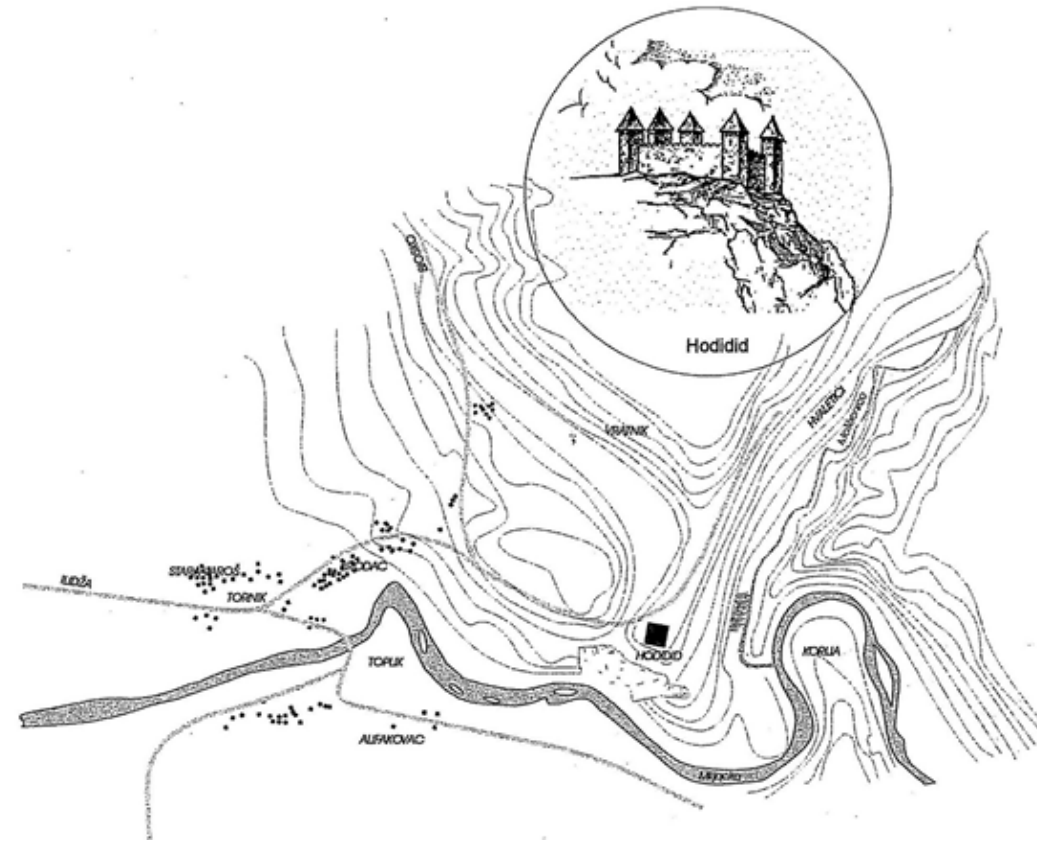


Figure 1. Fortres Town- Hodidjed

Parish of Vrhbosna was first mentioned in the Bele Charter in 1244. In the parish of Vrhbosna stood a fortres town - Hodidjed, located on the east end of Sarajevo's basin in close proximity of the Miljacka river. This area was popular for its merchendasig sevice that would gather visitors every Tuesday. The city's square Tornik, consisting of the old city and the old trading area, according to the Ottoman sources from 1462, was mentioned in the field list from 1455.

This market was actually a cross road for paths leading to the center of Bosnia and Herzegovina following river Miljacka and Bosna, towards the Hodidjed fortres and Biosko, leading further to Bistrik and to Alifakovac all the way to Istanbul.

By its origin it is a medivial city. The building itself existed in its original form until 1878, when an Austrio-hungarian fort was built in its

place. The whole location, together with the construction is known by the name Bijela tabija (bostion).

The best description of this city was given by Evlija Celebi, a novelist from Turkey, depicting it as a beautiful, little fortress, stone-built, on a hill, its entire size, measuring around it, amounting to four hundred steps. On the north side there is a canal, but at the south and southeastern side, further down to the river Miljacka, a chazm, its depth measuring the size of two minarets. It has a hard iron gate facing east. In the citadel there are mosques, houses of imams, two trumpets, a wicker house and several military houses. The view from the city gate, such, that all houses could be counted.<sup>1</sup>

The layout is rectangular, the longer side parallel to Miljacka. The fort structure, consisting of four corner towers with a quadrangular ground plan in-

terconnected with thick stone walls. The towers camber over the ramparts and dominate in the space. A gothic architecture similar to those in the medieval towns of Western Europe.<sup>2</sup>

It is clear from the data presented that Sarajevo did not emerge from an uninhabited, completely open area, but in a close topographic connection with the fortress Hodidjed on Vratnik, that was the appointed residence (Saraj) of the Ottoman leaders in this area. With its strategic location it enabled good protection of the rest of the town situated in the plain. Some claim that the town was named after the tower (Saraj), while others thought that the city was named after the palace of the regent Isa beg Ishakovic, who built his palace on the river bank of Miljacka, and began with the construction of several other buildings, initiating city development

<sup>1</sup> Behija Zlatar, Zlatno doba Sarajeva, Svjetlost, Sarajevo, 1996.

<sup>2</sup> Alija Bejtici, Srednjovjekovni grad bio je na Vratniku u Sarajevu, Akademija nauka i umjetnosti BiH, 1979.

# 1 Development of Sarajevo through history

## Otoan period

### Sarajevo Town

Influenced by the orient, political, economical and cultural trends Sarajevo has gradually began shaping into a city in the valley of Miljacka. The builders were lead by the desire to follow undisputed rules of archiecture, already developed in mountain settlements in the region of Bosnia. The street is the spine of the city, the vally gives it shape, carsija (old city) represents the heart, the river its soul and in the end the vegetation the lungs needed for the city to breathe.

The old city (carsija) is in a basin and has a regular pattern. There, smaller business objects interfere with architecutal master pieces, mosques, hans (type of a hotel a the time), hamams (bathrooms and spas), bezistan (markets) and other interesting creations.

On the slopes of the valley there are mahale (dwelling ponds) which, on the other hand, are accompanied by an irregular pattern. The curvy streets lead to the old city, giving this part of the city a picturesque, lively physionomy.

During the Ottoman Empire, Sarajevo was built in three architectural periods.

**The first period** is related to Isa Bega who built his palace on the coast of Miljacka. As a newly-appointed ruler of the Bosnian province, he felt obliged to build mosques or other public buildings. This served as a model for future leaders, who each continued builing important constructions and so this area became enriched with several mosques, schools, public baths, marketplaces, huts (hotel type, for the detitute travelers). Amongst these things, small stores “ducan”, were built, thus creating the first form of the city center, called the Carsija.

**The second construction period** coincides with the reign of Gazi-Husrev Beg, at the end of the 15th century. His father was of great influence since he was married to the sister of Bayazid II (son of sultan Suleyman). His rule is celebrated as a golden age in the architecture of oriental Sarajevo.

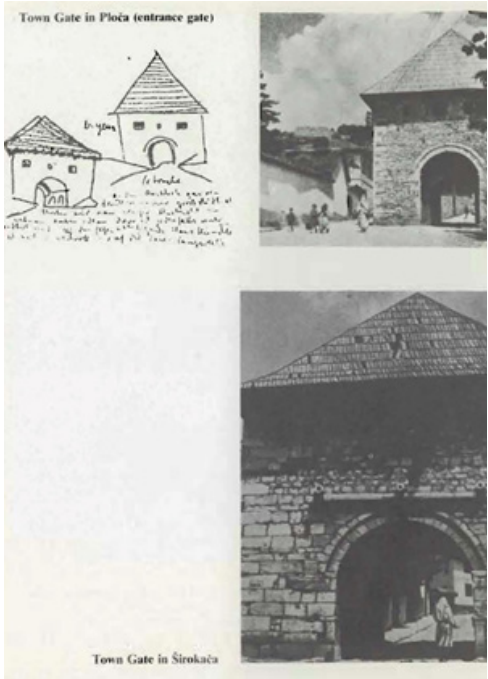


Figure 2. Town gates

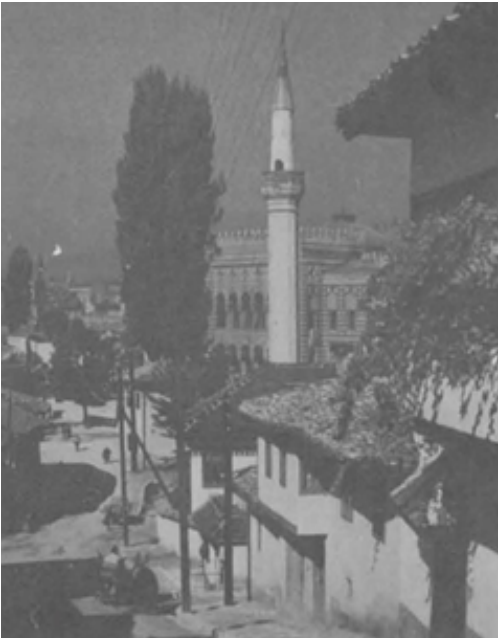


Figure 3. Wiew on Vijecnica (Cityhall)



Figure 4. Sarajevo in 15th century



# 1 Development of Sarajevo through history

The city was continuously developing. After building a mosque and a market place and hence forming a central part meeting the residents needs, the former rural villages around the city transferred into Mahala (dwelling quarters). During the lifetime of the city's artisan, Gazi Husrev, Sarajevo was converted from a borough into a town.

The mid 16th century, when the city develops to the west between two newly built mosques: Ferhadija (behind Bezistan) and Ali Pasha's mosque (next to the place where Kosevski stream flows into the river Miljacka) marks the third construction period. Near the end of the 16th century, the city had around 50 000 inhabitants, 100 mosques, two churches, a synagogue, several tekijas (prayer houses), three high schools, six hamams (public baths), three covered market places, several deiras (storehouses) numerous hans (hotels) about 100 shops, and 10000 dwelling houses amid gardens on the slope extending on either bank of Miljacka river across which led four wooden and four stone bridges. The town's water supply was from numerous near and far sources.<sup>3</sup> At that time, Sarajevo becomes the capital city of Bosnia, and no significant expansions have happened until 1878 and the arrival of the Austrian-Hungarian Monarchy.

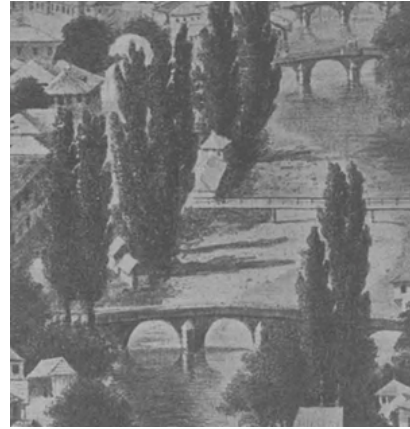


Figure 5. Sarajevo, City of bridges in 16th century



Figure 6. Cekrecici mosque in Charsija

Figure 7. Beys Mosque and clock tower

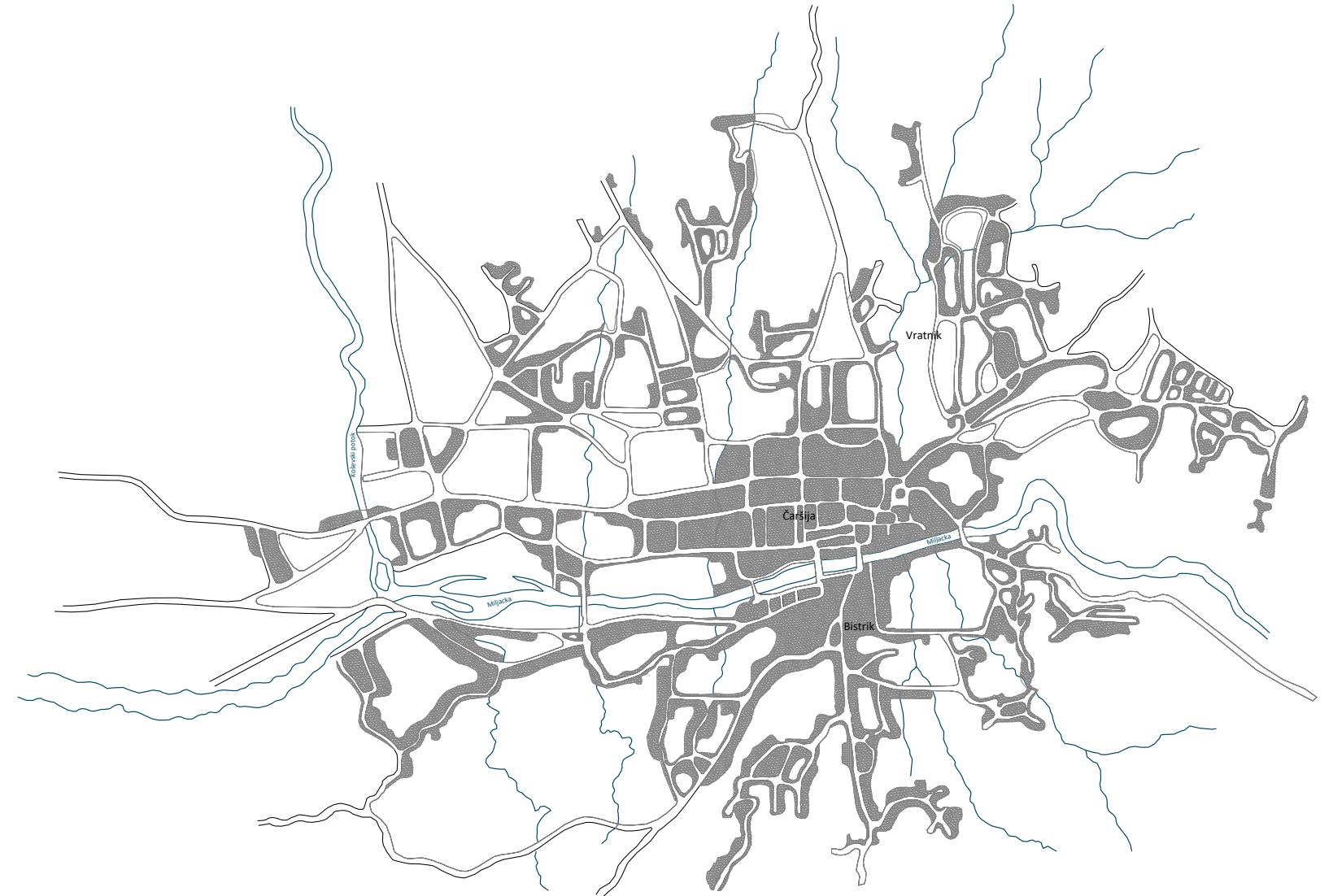


Figure 8. Sarajevo in 16th century



# 1 Development of Sarajevo through history

## The Carsija (business zone)

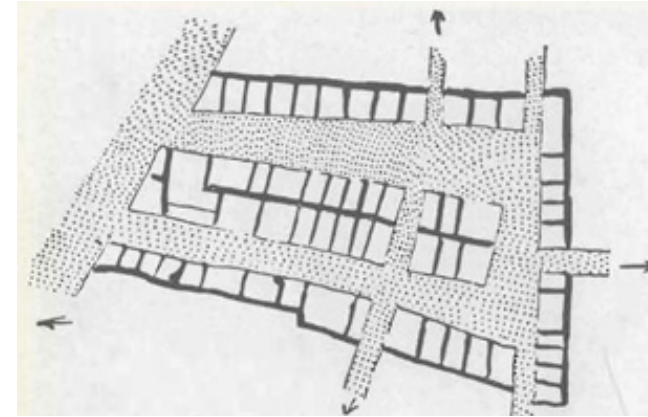
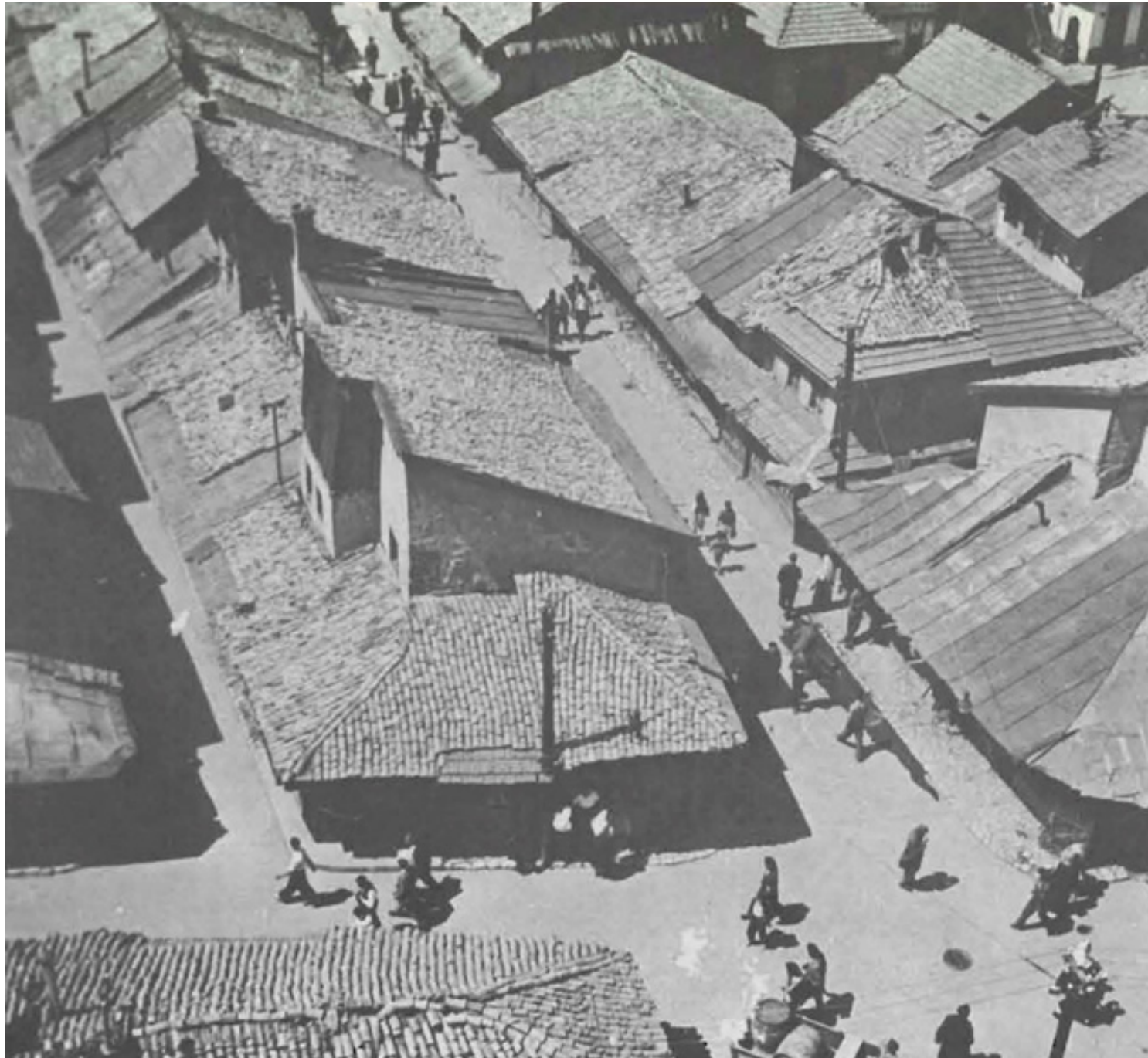
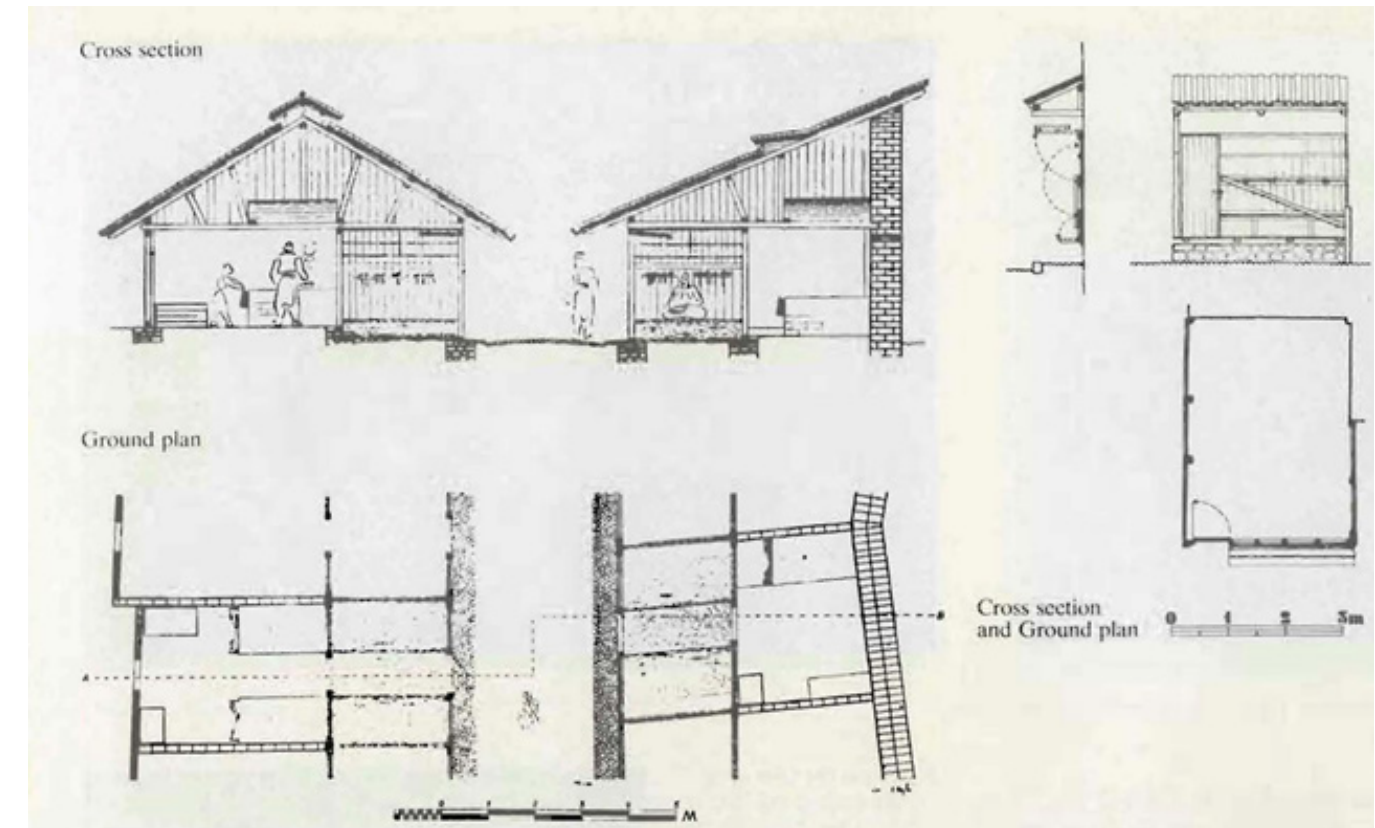


Figure 9. urbanistic situations of Carsija

It has already been said that the residential area (mahala) was separated from the merchandising part (Carsija). Following the concept present throughout the history, artisans and merchants of Sarajevo laid out and further expanded Carsija, the oriental bazaar (market) located in the heart of the city on the coast of river Miljacka, consisting of grouped shops, public baths, hans and mosques. Every craft was positioned in an exact part of the old city, creating a district. The districts were organized in harmonious patterns, forming a mosaic-like whole. The little shops along the streets created the look of a honeycomb. These stores are called ducan and served as workshops and storerooms, all in one.





# 1 Development of Sarajevo through history

“Thus the prospective costumers strolling along the narrow streets, had to take only a step or two towards a shop and they were directly before a multitude of items wich were a deligt for eyes and wich were bought, not because they were needed, but because they had an irresistible charm. Enchanting like a graceful articles made by artisans is also the architectural layout of the Carsija in wich the principles of the unwritten architectural rules were followed to every extreme consequence. Thus we can see how the buildings rise pyrmidaly from little shops to hotels and-covered market places and further to the leaden domes of baths, mausoleums, high schools and mosques, and still higher to the tops of cylindrical and conic minarets.

Behind the lattice-windows in the walls around the mosques, in the atriums and mausoleums, are open, semiclosed or closed spaces where tombstones brood amid green lawns, fountains play, and old trees raise their verdant crowns over paved cours. The whole conveyed the impression of gorgeous multicolored oriental rug across wich flowed the puissant Miljacka river and gentle Moscanica reek, walked gaily attired citizens and peasants, plodded caravans of heavily laden pak animals, while the air reverberated with noise, yells, the all of imams, the bubbling of water, the latter of hoofs, the clangor of tools, and the throb of the town’s big heart”<sup>4</sup>

The structure of carsija remained unchanged up until the 19th century. The position of Sarajevo, between Istanbul, Dubrovnik and Venice provoked and influenced development of handcrafts and commercial activities in the city.

As time pased by, the feudal loards wealth constantly increased and resulted in quick exchange of goods with Venice via Split and Dubrovnik. Agricultural products, honey wax and wool were traded for linen, rice, paper and silk. In the 17th and 18th century, as

money was introduced, the economical war grew. As the industrial revolution reached Sarajevo, Carsija lost its significance, because of its structure and scale. During the Austro-Hungarian period it was completely excluded from the bussiness setting and slowly deteriorated. In the middle of the 20th century a resolution proclaiming it a touristic area started the remediation of existing facilities and with these efforts, Carsija takes on the present look.

Figure 10. Model of Carsija

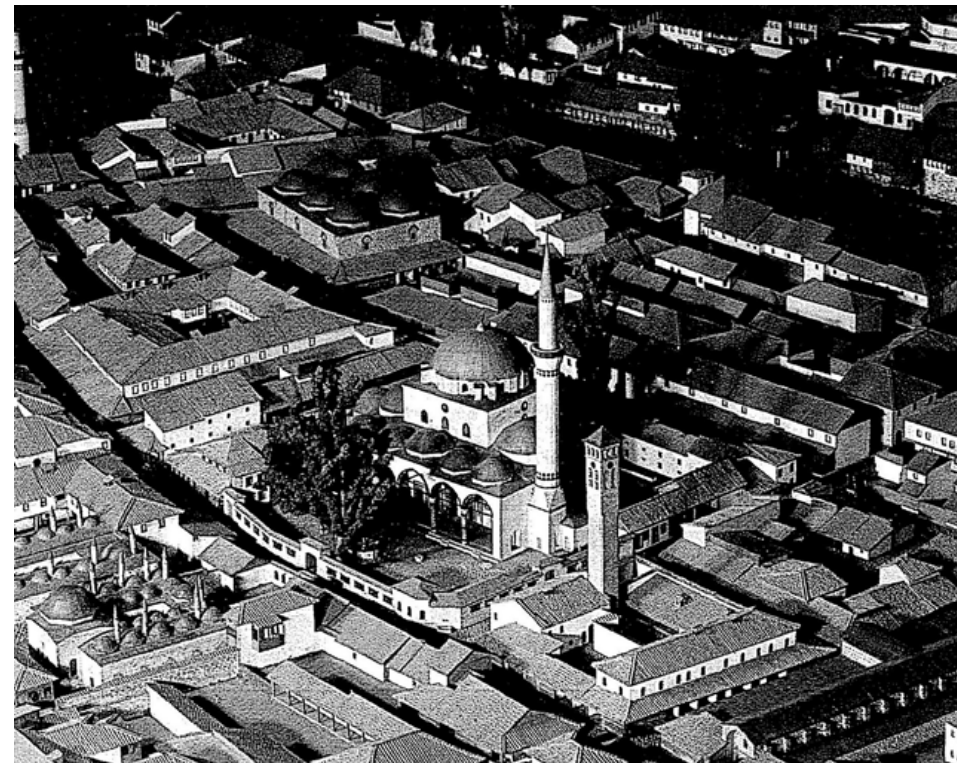


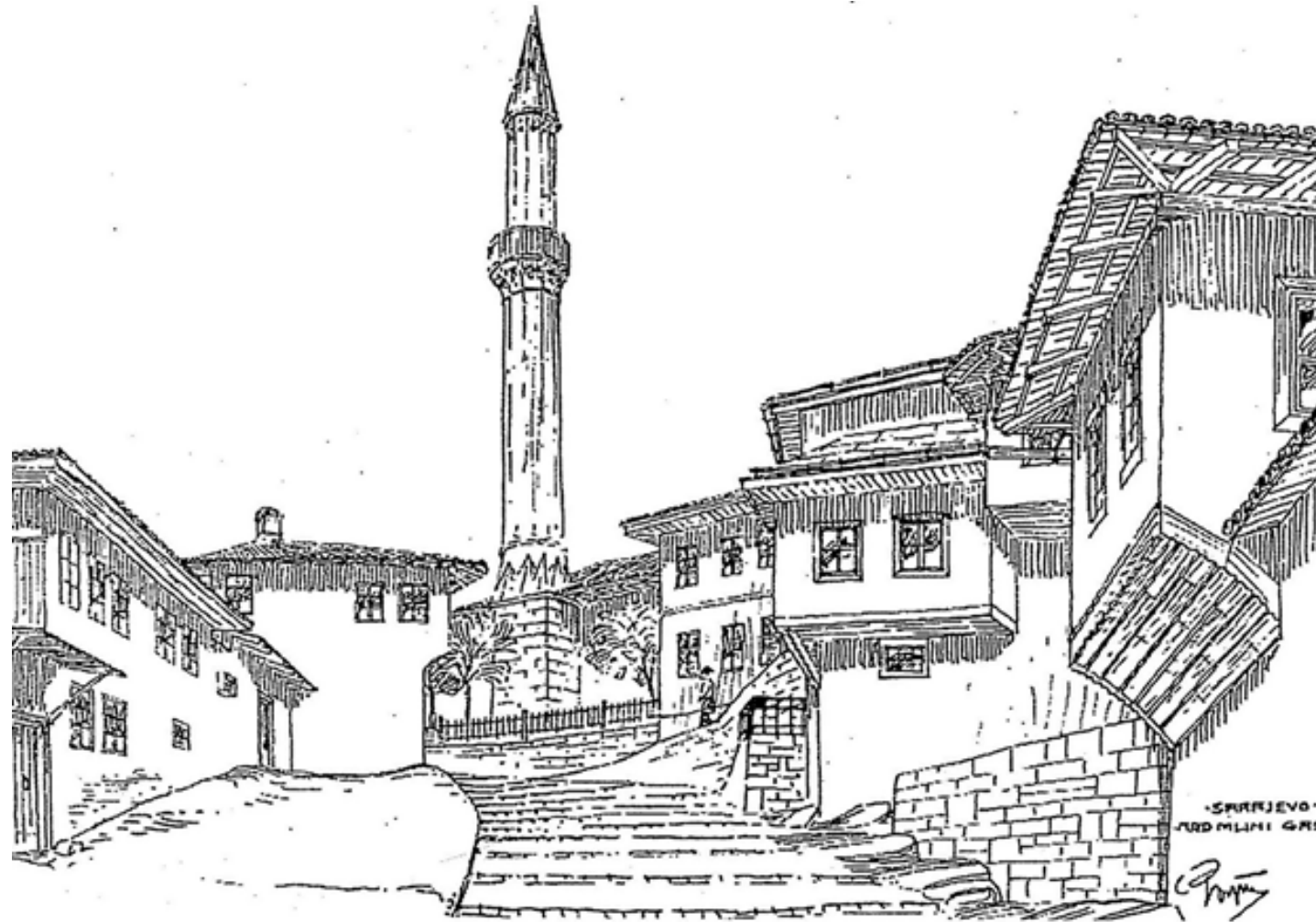
Figure 11. Masterplan of Carsija

<sup>4</sup> Dusan Grabrian, Bosanska orijentalna arhitektura u Sarajevu, Sarajevo, 1984



# 1 Development of Sarajevo through history

## The Mahala (residential zone)



Carsija was located in the valley, and on the hills above it fortresses protecting the city, were built. As time passed by a road between these two areas was constructed. Other roads started branching on each side triggering development of new residen-

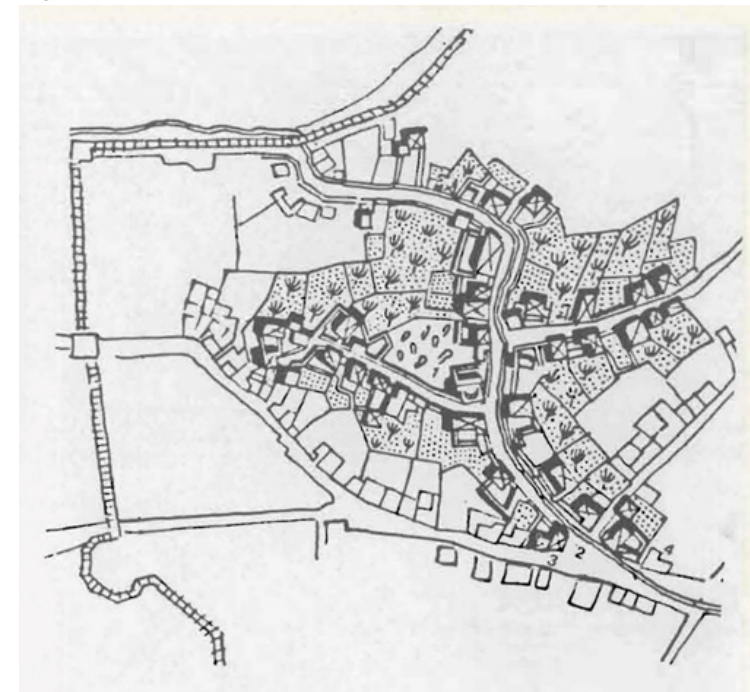
tal establishments. In this manner a main road, smaller adjacent roads (sokak) and tracks (cickma) were formed. Houses were build in a zig-zag pattern alongside the slope, so that each would have a view of Carsija. Mahala (settlement) was developed in

the following way: first houses along the way are built. Afterwards, one of the residents builds a mosque, school, aquaduct and a fountain, optionally a bakery and a shop, creating a compact residence unit, known as Mahala.



Figure 12. Landscape of Mahala

Figure 13. Scheme of Mahala



The streets leading to the mahala follow the terrain configuration, and the street pattern is very similar to the modernist concept known today. The only difference lies in the dimensions due to the transportation possibilities then and now. Street arrangement is reminiscent of a branching tree. At the place where the main street branches different objects, serving the inhabitants, are found. The houses are organized in a stepwise form. All the paths, gutters, brooklets and pavements show with what a vivid imagination landscaping was carried out. Because of the importance the water had in the oriental culture, fountains, built in cubical stone form, occupied the central part.

White walls on the ground floor, separating the houses from the street, thus the public from the private area, represent a monumental architectural element. The closed structure at the ground level is opened by consoles (doksati) that represent the house's eyes and contribute to a very interesting plastic of the street itself. Doksati is a plastic feature of a traditional bosnian house built on the slopes and along the winding streets with first floor walls following the curve of the street and the second floor pavilions infinitely changing the orientation and interrelation, being very different from the usual european straight street.

Houses are rigid positive images among utterly unflexible and schematic chanall-like streets. Residents whose activities are hidden behind the walls in their gardens have the opportunity to look at the environment through doksati.

# 1 Development of Sarajevo through history

“ Behind every curve a new scenery opens before the eyes of the walker. One marvels at how it was possible to contrive such a variety of patterns by utilizing a few standard elemnts as are the fountain, gate, doksat, wall, and roof. The street system in the Mahala cannot be compared with maze, because of never changing scenarios one will not get lost here as one might in Western city where the streets and buildings are more or less uniform”<sup>5</sup>

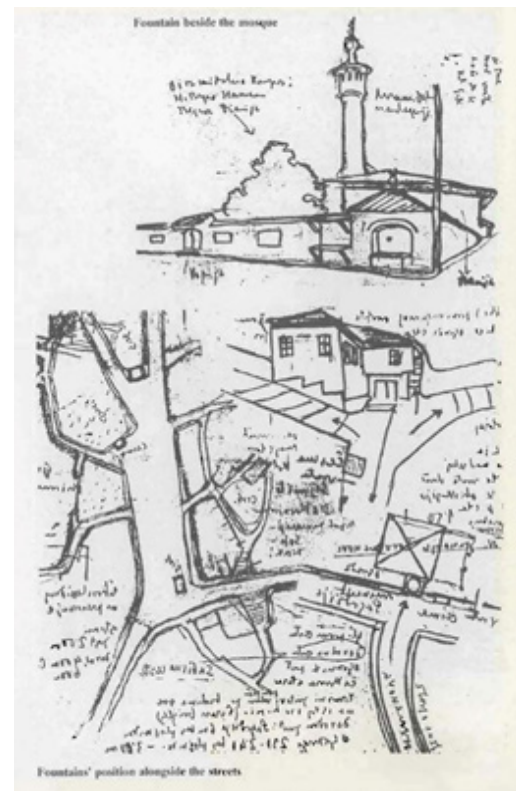
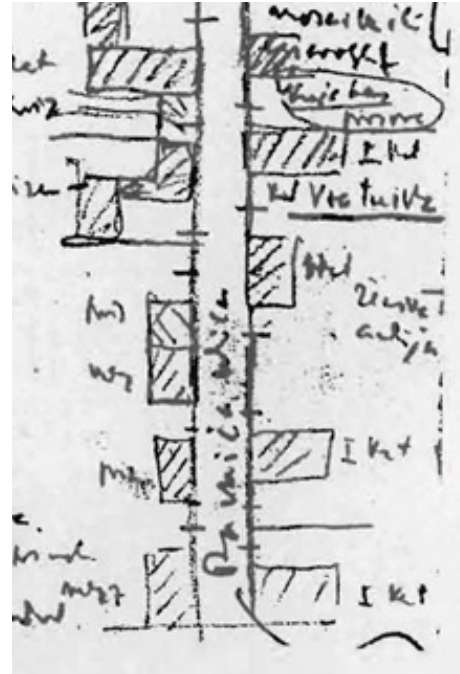
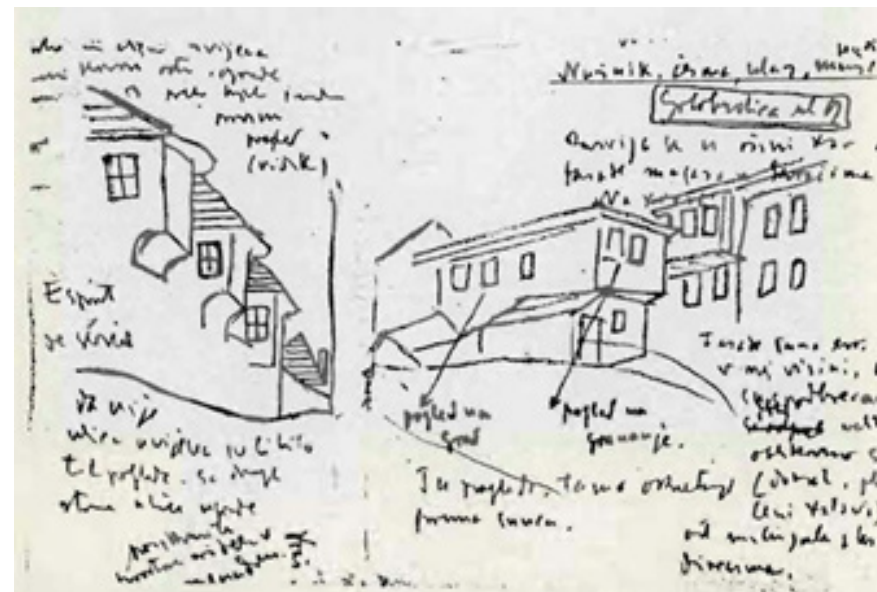


Figure 14.,15.,16. Spatial characteristics of Mahala



<sup>5</sup> Dusan Grabrian, Bosanska orijentalna arhitektura u Sarajevu, Sarajevo, 1984



# 1 Development of Sarajevo through history

## Austro-Hungarian period

At the Berlin Congress in 1878, the Austro-Hungarian Monarchy was given a mandate to govern Bosnia. After an unforeseen resistance, the Austro-Hungarian army occupies Bosnia,

forms government and changes its name to Bosnia and Herzegovina. It was a big cultural change, from Ottoman eastern to Western European. The beginning of Austro-Hungarian

reign was parallel to industrialization in Europe and to the creation of a modern European city, which greatly contributed to the further urban development of Bosnia and Sarajevo.



Figure 17. Obala street

At that time, the city had a population of 20,000 people. The new government carried out a census, and collected data for creation of the Sarajevo plan and cadastral map. In 1880 the building regulation was published - "Bauordnung", and the plan of the city created in 1882 and printed in Vienna. The plan foresees the expansion of existing roads, but also the construction of completely new ones, with four types of lanes introduced: 11.25m, 9.0m, 7.5m and 6.0m. The first class consisted of Cumurija street, Obala street- a brand new street that follows the Miljacka coastline, from Cumurije Bridge to Ali Pasin Bridge, and Strosmajer street- the longitudinal road connecting these two streets. In the second class, Ferhadija, the extension of Saraci street and the other two largest streets in the Carsija area were included.

The city was expanding in east to west direction, starting from the area that remained in the old part of the city after the fire in 1879, down the Miljacka river all the way to Marijin Dvor and further to Pofalici. This new part of the city starting from the Marijin Dvor is called Novo Sarajevo. Due to large population migration, a need for functional control emerged, re-

sulting in creation of new public and residential habitats. There is also a massive construction of industrial facilities. Architects and constructors who came to Bosnia after the occupation were involved in realization of the planned objects (Josip Vancas, Karlo Parzik, Alexandar Vitek, Jozef Pospisil, Ivan Berger etc.). In their projects, they include Gothic, Romanesque, Renaissance, and various forms of eclectic and Viennese secession elements that largely changed the urban appearance of Sarajevo.

The city has changed its topography, general art silhouette and physiognomy. "As opposed to the harmony and scale adjusted to human perception of Bosnian-Oriental architecture where everything is "reachable by hand", in the old part of the city, a Middle-European Sarajevo was rising "<sup>6</sup>

In addition to facilities built by the State government such as the "First Building of the Government", the railway directory, the White Government, various schools, museums and hospitals, private capital had a great influence and enriched the city with its first hotel and a large number of housing palaces .

The City Hall (Vijecnica), built in a pseudomavian style and located in the old part of the city had a special place. Even though the dimensions of this construction diverge from the environment, it represents a successful urbanistic solution. Sacral objects are built and the city gets its first major Catholic and Orthodox churches.

Figure 18. Straus street



<sup>6</sup> Mustafa Imamovic, Historical Frame of Sarajevo, Economic Urban Development City Assembly of Sarajevo, 1989



# 1 Development of Sarajevo through history

Along with the rise of monumental buildings in Sarajevo attention is placed on infrastructure development. The flow of Miljacka was regulated in the form and extent that has been preserved to date, thus enabling the construction of the aforementioned Obala Street. The water supply network is configured, and the water supply capacity extended. Sarajevo was linked to the first railway line in 1882. The railway station was built west of the city center (at that time peripheral area). The tram line with horses pulling the vehicle linked the railway station and Ferhadija Street, and in 1895 Sarajevo got the first electric tram. This period is also characterized by construction of parks and the first designed cemetery.

“The main feature of the urban planning in the Austro-Hungarian period was the orthogonal traffic system, construction in blocks and arrays, construction of objects consisting of several floors, unlike before, when everything was placed only on the ground floor. In the Ottoman period, the urban unit was mahala, in the Austro-Hungarian the urban unit became the street. Planning in Europe, with a growing awareness of individuals has become a natural expression of

the living community and a special field of artistic self-expression.

The planners were influenced by contemporary artistic trends: the cult of old, mathematical-geometric laws and perspective. A set of rules for urban planners has been established and lasted until the 20th century. Based on the concept of visual order, the rules were a geometric formula. Two symmetric street facades, formed the street. The picturesque image of the city from the Ottoman period, in which the hierarchy of architectural volumes enabled a logical and easily interpretation of the structure of internal relations, was relatively quickly disturbed with massive changes that the Middle European concept of the city imposed. Instead of building a new city next to the existing one, destruction was the solution to indulge the needs of the new construction and that resulted in significant loss and inability to retain the existing and construct new objects.”<sup>7</sup>

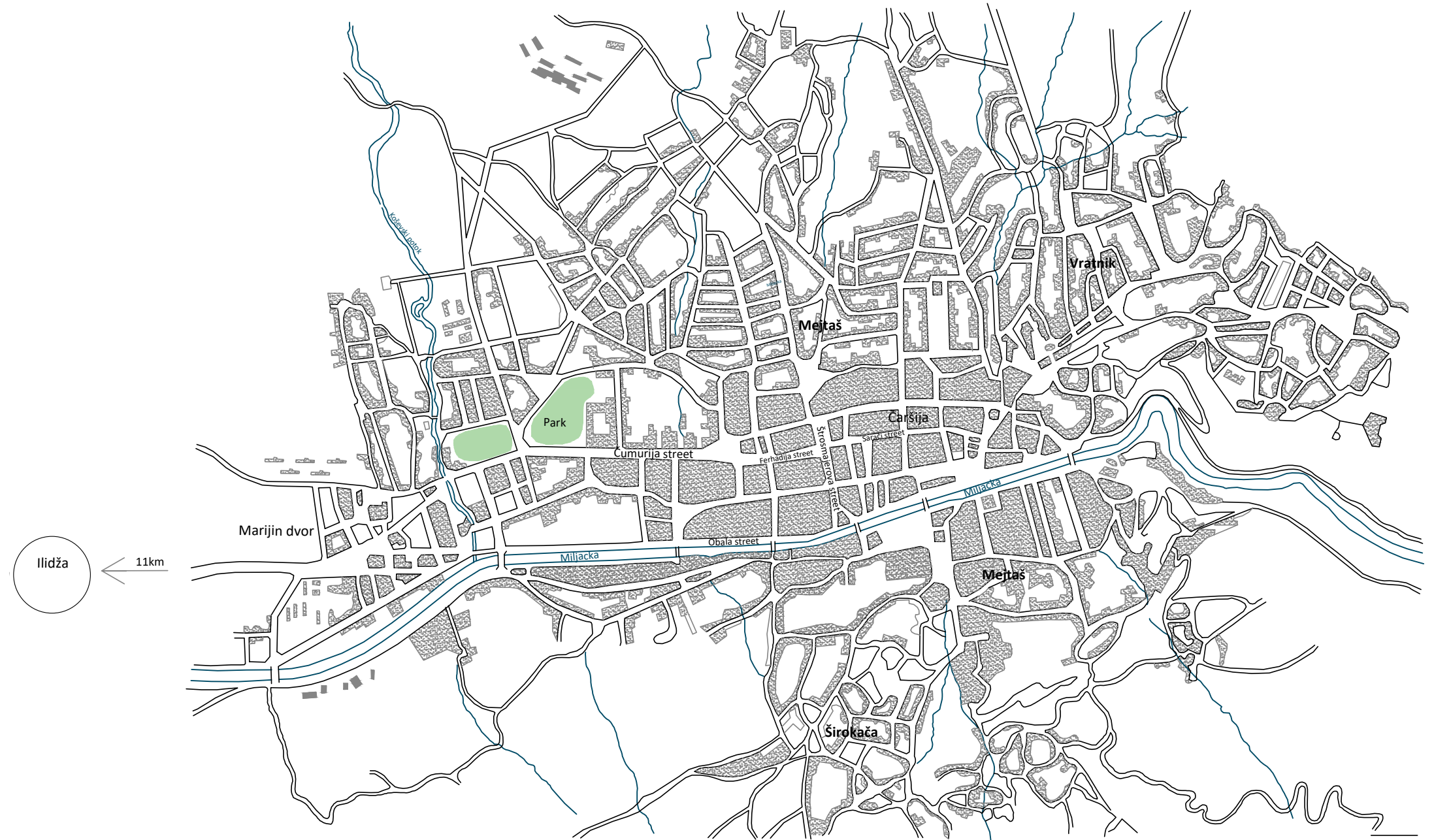


Figure 19. Sarajevo in 19th century

<sup>7</sup> Mehmed Bublin, Sarajevo u istoriji, Buybuk, Sarajevo, 2006.



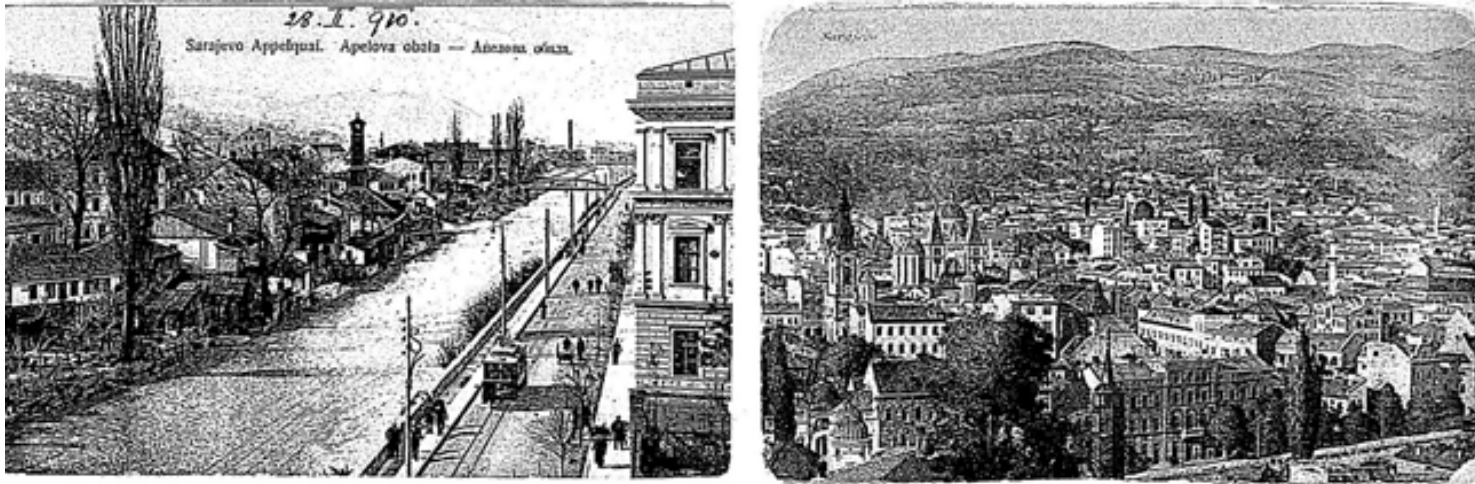


Figure 20. New look of Sarajevo in Austro-hungarian period



Figure 21. The conflict of old and new

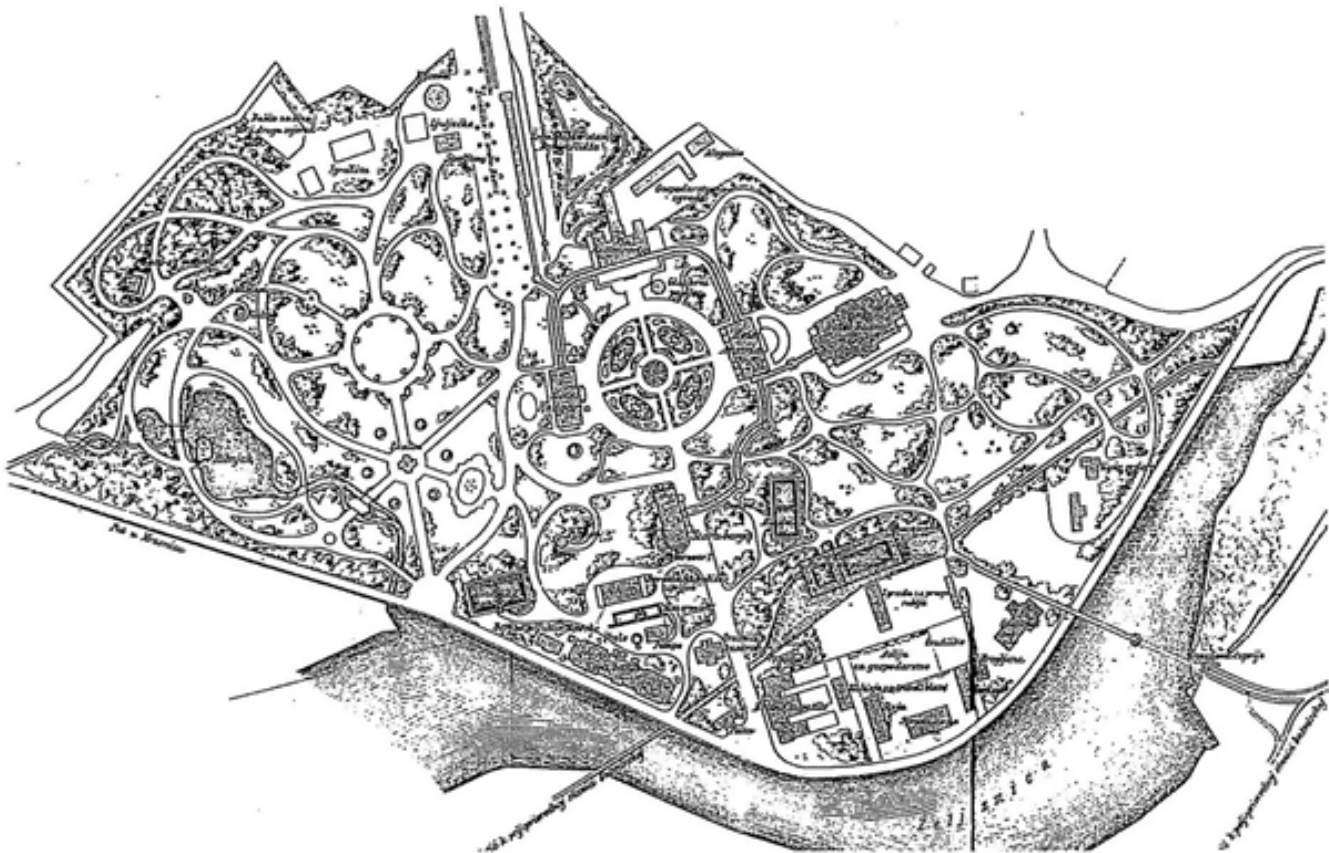


Figure 22. Plan of park in Ilidza

Ilidza and its surroundings, located on the source of the river Bosna, have developed into an organized space, especially during the Austrian rule. Due to its natural beauty, hilling water and location distant from the city center at the time, the Ilidza area was used as a resort near the city. According to the general plan, the hotels “Hungaria”, “Austria” and “Bosnia” are located in the center of the spa complex Ilidza. The fountain is located in the axis between the two fountains,

facing a circular flower garden, and the hotels are interconnected by the covered corridor, as well as the Banja Ilidza railway station. Park surfaces and grids with oval and curved courses around one axis, parallel to the axis of the Big alley and symmetrical disposition of the hotel, were planned. A band of land with villas up to 3000 m<sup>2</sup> was also part of the project. During the construction of the hotel “Hungaria”, important archeological remains from the Neolithic period were discovered.

Agricultural potential was also recognized in this area and it was considered that the products grown at that site could meet the needs of Sarajevo. Therefore, an Agricultural Center Center was opened at this location. Besides the recreational zone and the agricultural potential, a hippodrome was built enabeling the continuation of the tradition of horse breeding, and also gave the citizens a new form of entertainment.



# 1 Development of Sarajevo through history

## Sarajevo in 20th century

In 1914, the assassination of the Austro-Hungarian crown prince Franz Ferdinand in Sarajevo, by Gavrilo Princip, a member of “Black Hands”, a terrorist organization that carried out actions based on Serbia’s interest in the Balkans, was carried out in Sarajevo. This murder marked the outbreak of the First World War, which, as in most of European cities, has led to stagnation.

In the period between the two world wars, Bosnia and Herzegovina was part of the Kingdom of Serbs, Croats and

Slovenians. During this period, the city of Sarajevo faced a major crisis of accommodation. Due to the difficult economic situation, an increasing number of residents moved to the capital, looking for better conditions. In addition to the construction of the settlements Kovacic and Hrasno, there were no major changes in the expansion of the city. The only contribution to the construction of objects was given by private investors, who, in the midst of a difficult economic situation managed to fulfill their interests, and hence constructed buildings

in the center of the city with the height that did not fit to the environment. A big problem at the time was lack of urban planning. Many young experts, such as Juraj Najdhart, educated at European universities, designed studies analysing city regulation. In their works, one can clearly sense the awareness and respect for the tradition of the domestic architecture, usage of modern, available materials, appreciation of the environment surrounding their buildings, as well as a complete negation of pseudostyles, that is, adaptation to the international style.

However, incompetent builders, most commonly being the building owners, constructed a large number of objects that left a negative impact on the city, even though the experts were aware of new ideas that were dominant in Europe and the United States at that time. However, due to the limited access to materials, as well as lack of will of the authorities, they could not more effectively influence the application of their theories.

After the Second World War, that greatly influenced the Balkan area, Bosnia and Herzegovina became a part of the Socialist Federal Republic of Yugoslavia. Sarajevo was given the role of the capital of the Federation of Bosnia and Herzegovina. After the war a series of actions were undertaken concerning the construction of infrastructure, that, via railway road linked Sarajevo with Europe. At that time, a large railway station was built on the site of the old one built during the Austrian-Hungarian monarchy.

The city is expanding its borders to the west in the basin of the Miljacka River, and Vogosca, a suburban settlement in the north is added. In 1947, a group of architects from Czechoslovakia, in cooperation with domestic architects, were appointed to design an urban plan. Although some of the starting points were rational, the project could not be used for planned construction, but for further analysis, because the solutions offered for housing complexes and the connection of peripheral parts with the center were insufficiently investigated.

In the course of 1948, the city stadium – Kosevo, was built. Previously, a bathing place called “Jezero” was located there. The stadium was constructed by covering the Kosevsko stream and by using the city’s natural slope for the stands.

Soon, the entire flow of the Kosevsko stream was covered providing a road connection of the city with Vogosca. This of course led to the construction of residential settlements in this area. In 1948, the construction of Grbavica I, the largest residential settlement of the time, began.



Figure 23. New railway station

Figure 24. Cengic Vila





1 Development of Sarajevo through history

At the end of 1948, the urbanistic structure was be further developed. Since the documentation process was long and the planning could only be started afterwards, because of increasing construction activities, the authorities assigned the city's bureau to resolve certain city ensembles, which will be mostly based

on the existing urban projects. Thus, a complete urban ensemble around Ali Pasa mosque, at the place where the Kosevo stream flows into Mijacka river, was constructed according to the architectural project of Juraj Najdhart.

On the Kosevo area many large sport

fields were built, as well as other smaller projects. Due to the undeveloped and uncompleted urban planing, certain errors were made, which were reflected in the wrong height of the buildings and the density of construction.

At the beginning of the 1950s munic-

Figure 25. Residential area Grbavica

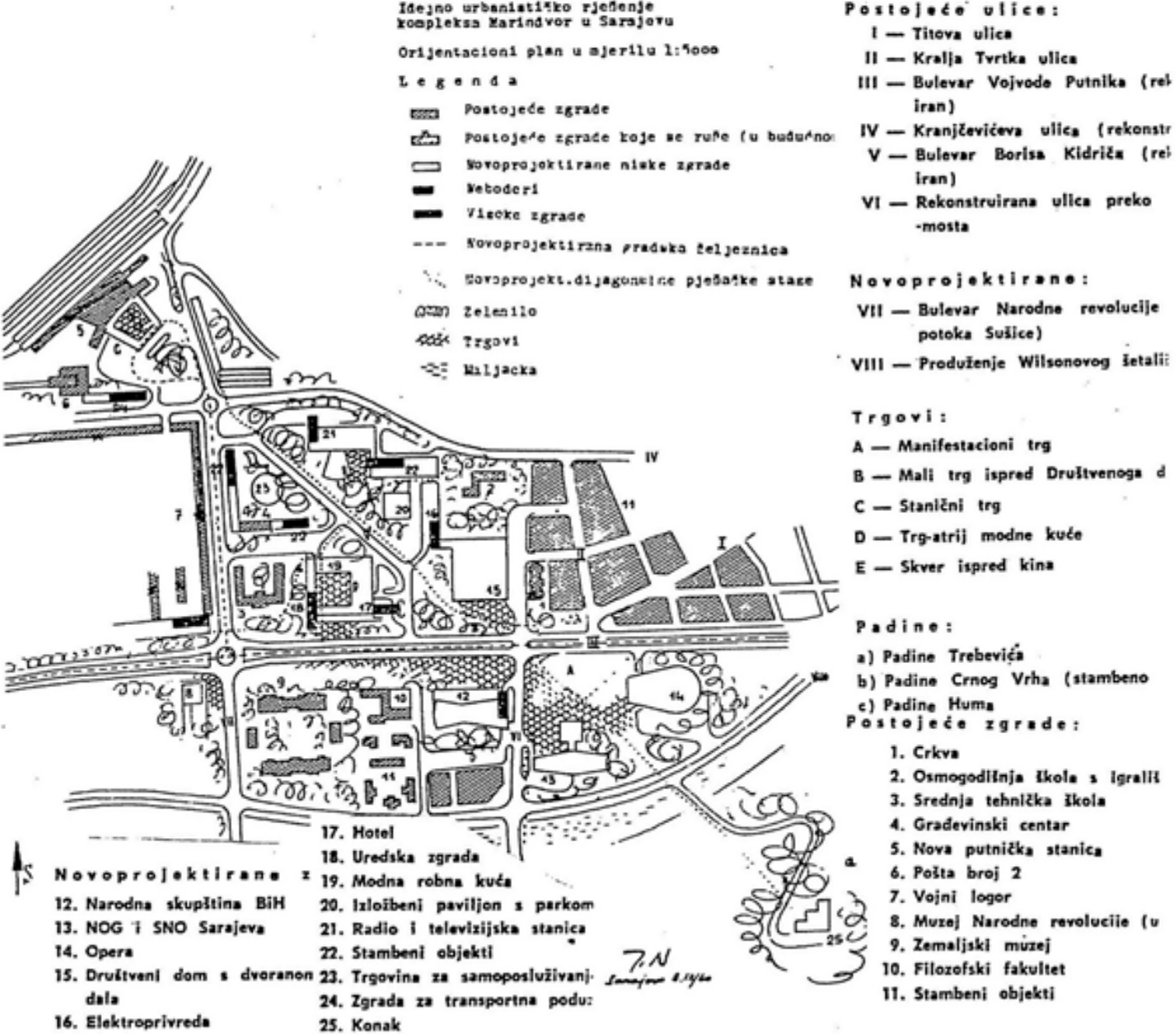
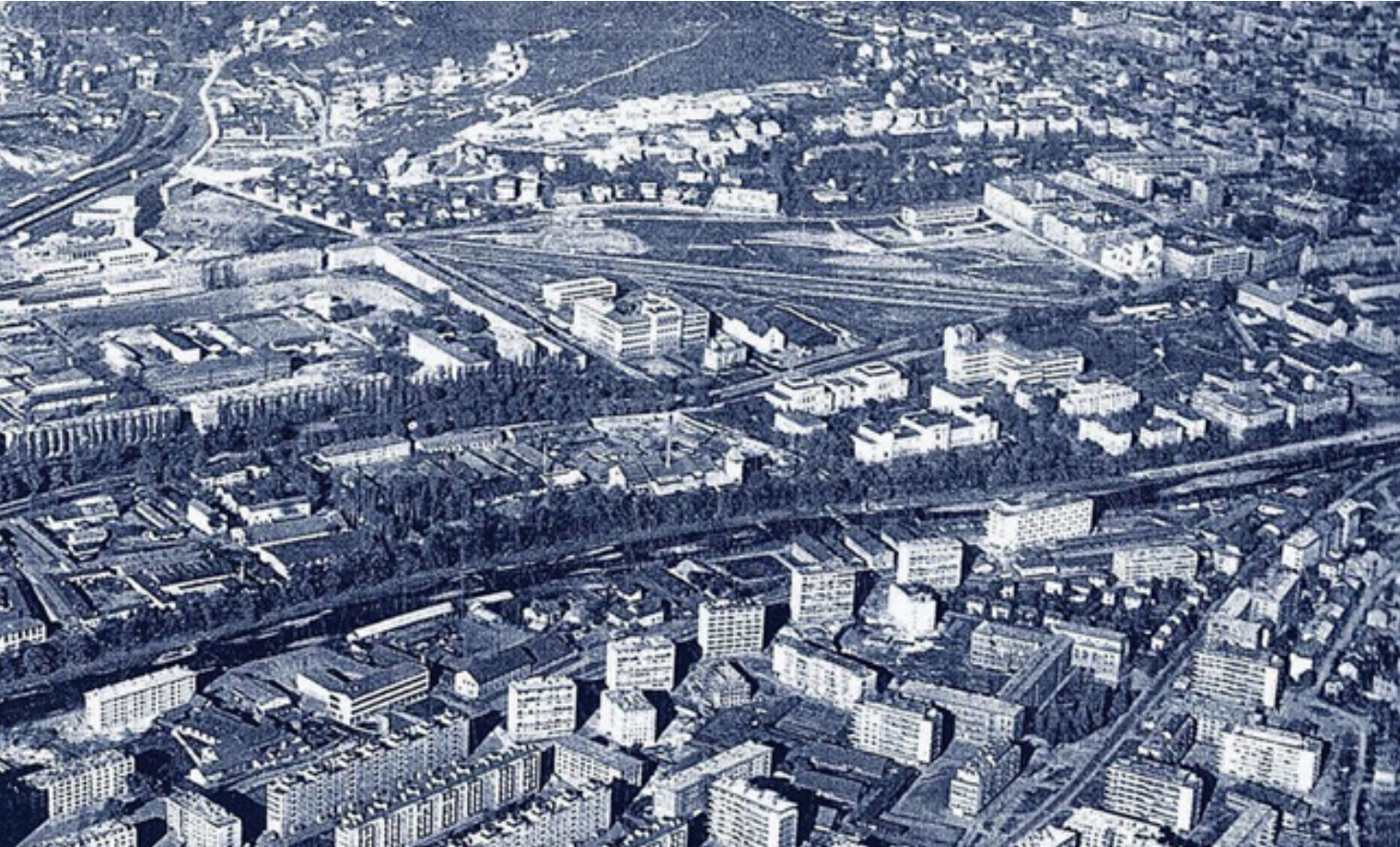


Figure 26. Proposal of Masterplan for Marijin Dvor area from architect Juraj Najdhart



In 1955, a competition for designing Marijin Dvor, formed in the time of the Austrian monarchy, with a goal of creating a new business-administrative core of the city, was announced.

“... We have left behind the 19th century and its “ka and ka” architecture of closed blocks. Today every object needs to be solved individually, without schematism ... and when there is already a possibility to place them on one park ribbon in order to create an impression of plastic pattern. So the city (seen from the top) becomes city-carpet. With such a comprehension, the conceptual projects on this competition were designed ... Marijin Dvor represents a unique place and a rare appearance, for such a useless space to be in the very center of the city, between the new and the old part. It would be an epic fail to crowd this part of the city with buildings, this space should be saved, there should be a green ribbon, a penetration stretching from Crni Vrh to Trebevia (mountain above Sarajevo) and thus connecting the opposite hills with the valley of the city. A new, dominant quarter should be built at this location, where the central part would be occupied by the Parliament with a large space for the manifestation”<sup>8</sup>

The plan was partially implemented with certain func-

tions, listed in the plan, never being integrated. Instead new residential buildings were constructed. Skyscrapers, right of the diagonal street are otherwise positioned. In the last years, a shopping center and a hotel were built at the place where the square, in front of the opera, should have been and in this manner forever closed the visual communication between the two hills and interrupted the green line needed to connect them.

In 1960s, the railway line to Ilidza was set up, solving the existing issue of public transportation, and the city gained an extra impulse to expand towards the west.

Work on the urbanistic plan continued and one of the great dilemmas was Bascarsija. Questions, as to whether it could be an open-air museum, a carsija-regional park, with some of the old buildings being preserved and used for modern purposes. Discussions lasted for a long time and were very controversial, from the revitalization proposal to the demand for its ruin and the construction of modern facilities. In the end, decision to revitalize was met and Alija Betić and Zdravko Kovčević planned the project named “Carsija – yesterday, today and tomorrow”. In this way Carsija remained the cultural and spiritual symbol of the city, and despite many falls has it has only been slightly altered.

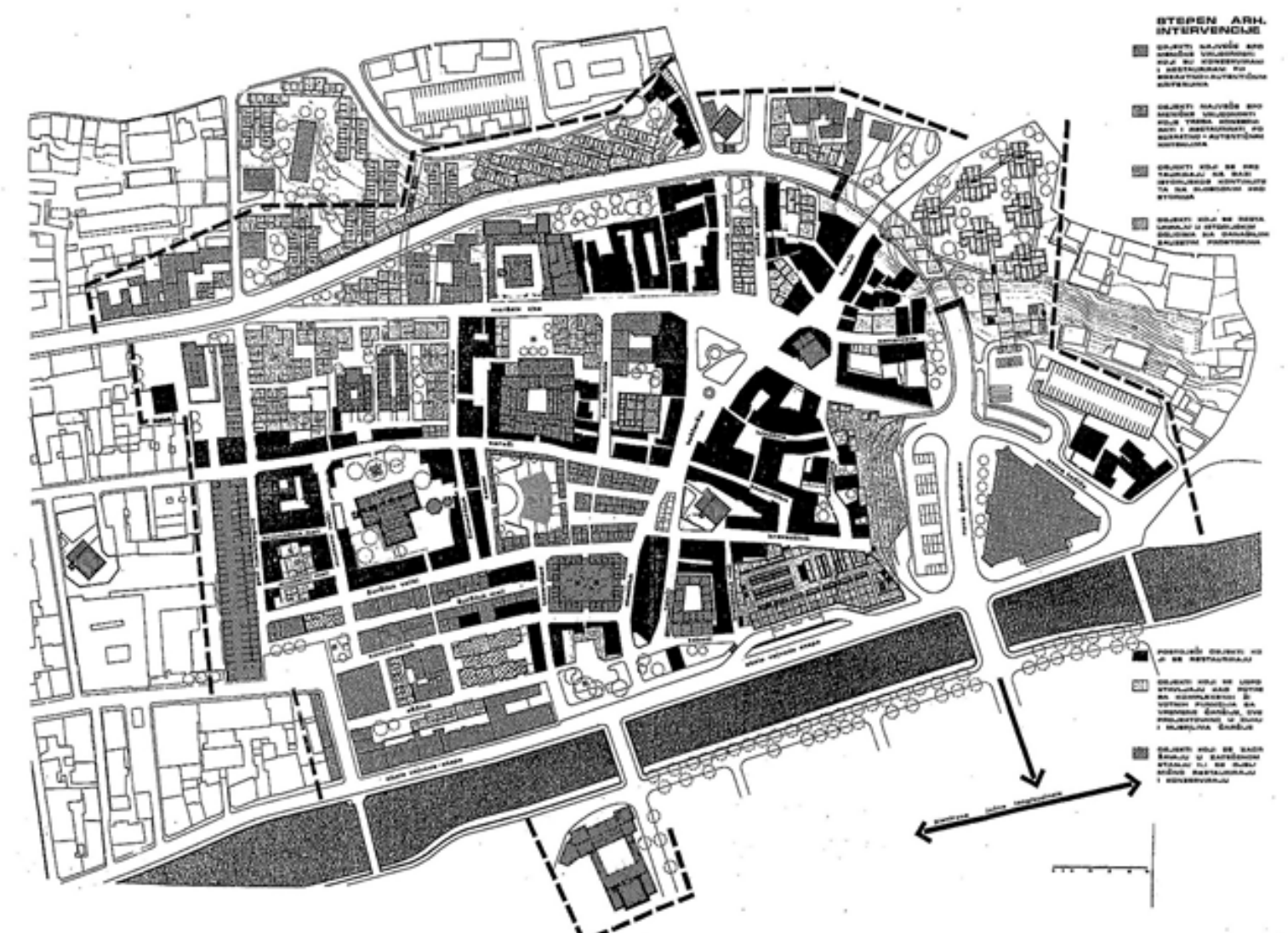


Figure 27. Masterplan for revitalization of Carsija in 1970.

<sup>8</sup> Jelica Kapetanović, Stvaralaštvo arhitekta Juraja Najdharta, Arhitektonski fakultet univerziteta u Sarajevu, 1988.



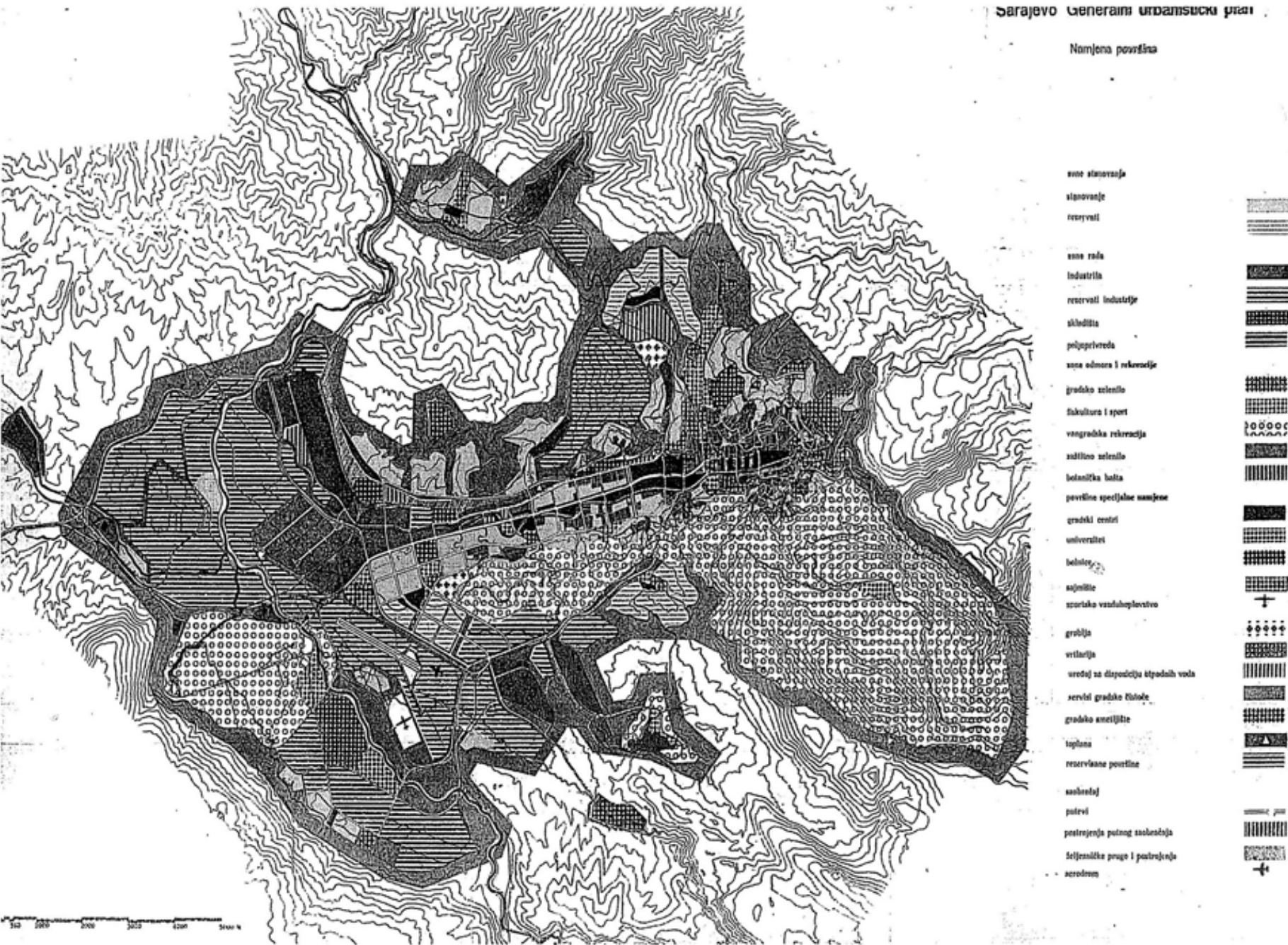


Figure 28. General urbanistic plan

In 1962 two new settlements were built: Grbavica II was with 2700 housing units for about 11,000 inhabitants, and Kosevo for about 3000 inhabitants.

The general urbanistic plan was completed in 1961. It was based on the Athens Charter, that is founded on the separation of housing zones, work zones and recreation areas. The development of the city is oriented toward the west, complementing the existing urban setting, utilizing:

- Miljacka basin and the slopes that surround it for residential construction
- Sarajevo field for the accommodation of industrial zones
- Trebevic and Ilidza for recreation

The constant development of the city following Miljacka's groove conditioned its longitudinal shape. In order to reduce the negative characteristics of such a form, slopes north and south were utilised for housing purposes.<sup>9</sup> Between the seventies and nineties, in the height of expansion, some of the most important architectural achievements were built in the city, including the Skenderija Sports Center (Zivorad Jankovic, Halid Muhasilovic), the Radio Television building, the Holiday Inn hotel, Elektroprivreda building, skyscrapers Unis (Ivan Straus), Faculty of Philosophy, Parliament Building (Juraj Najdhart), all based on the modern architectural expressions in the world.



Figure 29. Elektroprivreda building (arch. Ivan Straus)



Figure 30. Radio Television building

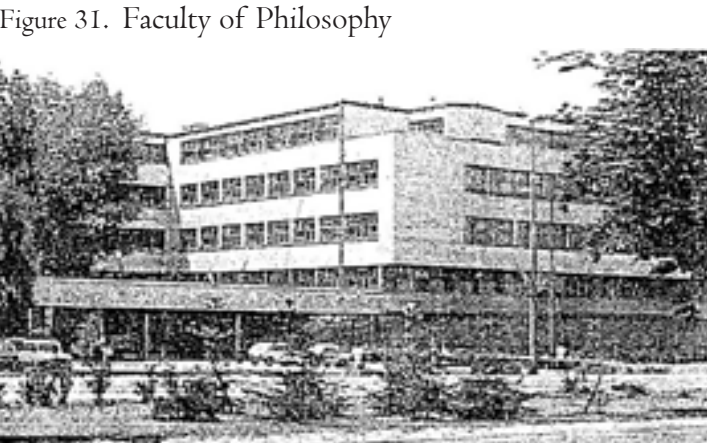


Figure 31. Faculty of Philosophy

<sup>9</sup> JNedžad Kurto, Sarajevo MCDLXII-MCMXCII, Svjetlost, Sarajevo, 1991



# 1 Development of Sarajevo through history



Figure 32. Skenderija Sports Center



Figure 33. Parliament building



In parallel to the old, relatively compact city core, which was maximally burdensome, a new, much larger but not organized and poorly connected to the old city, area was formed. It was built in the post-war and consisted of new objects of collective character.





# 1 Development of Sarajevo through history

Due to the sudden expansion of the city in addition to negative urbanistic occurrences, air pollution, caused by the heating method and the positioning of high buildings and skyscrapers in the valley, thus blocking the natural ventilation, the city would otherwise have, became a problem.

In 1978 implementation of the project for protection of the human environment started. This included: Introduction of natural gas to the city, the reconstruction of the water pipeline and the construction of waste water treatment facilities as well as the construction of a sanitary landfill for waste and the disentangling of the existing traffic problems.

In 1977, Sarajevo got the honor to host the 1984 Winter Olympic games. It was a new big development project that had the characteristics of the world project. Within this project, a completely novel complex of Olympic facilities on the mountains surrounding Sarajevo (Igman and Bjelasnica) was opened. Furthermore an Olympic settlement on Dobrinja (west of Sarajevo), a Zetra sports hall next to Kosevo stadium and numerous other facilities were built. Thus, in a very short time, two projects of epochal significance in the development of Sarajevo, were carried out.

Very dynamic development of the city over the past 40 years has had great successes but also certain pit-

falls. The prevailing urban model was based on the international style, resulting in the fact that the landscape built was significantly different from the old part of the city. The city at the time, and in the present, looks unfinished, with interruptions in continuity and compositional disharmony. Due to the shortcomings in the development of Sarajevo a necessity for managing the development of the city became essential. An initiative for a new spatial and urbanistic plan was launched, with the aim of providing a basis for polycentric development .

“The spatial plan provides the necessary facilities and areas reserved for the completion of numerous functions in order to enable urbanization

of regional regions. The spatial organization of the city presents a functionally gravitational region that is related to daily movements. In this way, the process of rapid regional development of the city or of the city-region was initiated. The unique concept of urban planning is reflected in the commitment to treat urban areas (Sarajevo, Hadzici, ilia, Pale, Trnovo) as a system which gradually diminishes the differences in the growth and development of urban areas of Hadzici, Pale, Ilijas and Trnovo in comparison to the urban area of Sarajevo. The basic feature of this concept is the transformation of urban areas starting with the reduction of tendency for concentration of population, activities and content in the centralized locations of the urban

area, and at the same time accelerate the growth and development of urban areas in order to increase the activity of these areas and retain its own population, natural increase and a significant part of the mechanical inflow of population directed towards the city “<sup>10</sup>

On April 6th, 1992, the siege of Sarajevo by Serbian aggressors within the aggression against Bosnia and Herzegovina, began. In the three year period, between 1992 and 1995 Around 3000 grenades were fired in Sarajevo daily causing the city to suffer enormous damages with unimaginable consequences with about 15,000 people losing their lives. After the war ceased, the city was in ruins.

All the major establishments were completely or partially destroyed, the complete agricultural and industrial facilities ceased to operate. Therefore, in the last twenty years, a great amount of energy was directed in reconstructing the existing state, and the development of the city was no longer priority. The urbanistic plan adopted in the year 1986 was never realized. Today, although it has been renewed, with visible warbursts, Sarajevo is behind other european cites for at least two decades, and it is on the crossroad between developing into a modern or turning into a dysfunctional city without the ability to serve the needs of a contemporary human being.

<sup>10</sup> Skupština grada Sarajeva, “prostorni plan grada Sarajeva za period 1986-2000, odnosno 2015 god.” Sarajevo, 1986

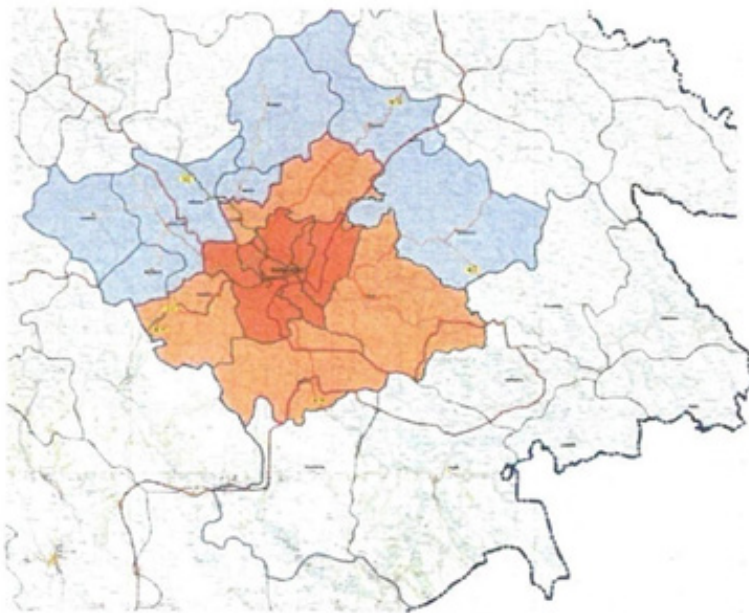
● Macrolocation

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## 2 Macrolocation

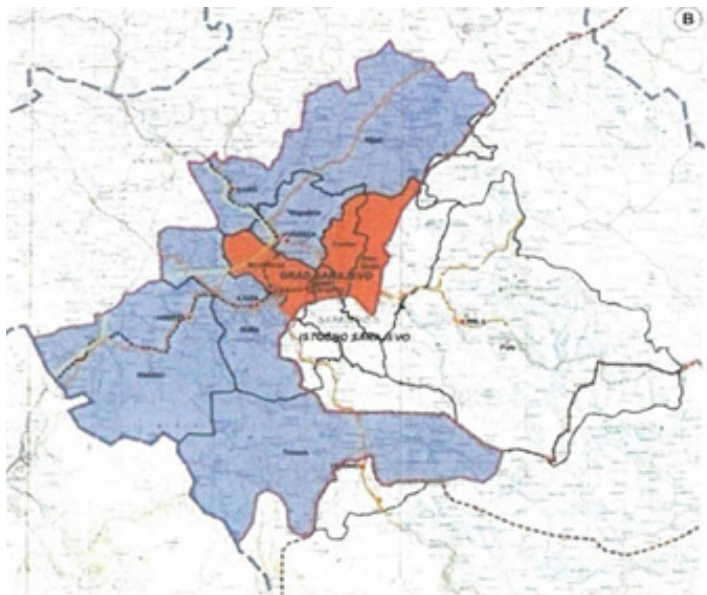
### Sarajevo region



After the Dayton agreement the Sarajevo area has spatially and demographically shrunk and has lost some of its influence as the capital city of the state. However, the perspective for joining the European Union creates a new image for the development of the area. Sarajevo, macro region consists of 32 municipalities:

- Zenicko-Dobojski: Breza, Olovo, Vares, Visoko
- Bosansko-Podrinjski: Foca-Ustikolina, Gorazde, Praca-Pale
- Srednjobosanski: Centar, Novi Grad, Novo Sarajevo, Stari grad, Hadzici, Ilidza, Ilijas, Trnovo, Vogosca

### Sarajevo city



### Geografical location

The area of the county is 1.268,5 m2 or 2,5% of total territory of Bosnia and Herzegovina. It is located in the mountain massif Dinaride between two large natural - geographical structures: Podunavlje and Adriatic sea and as such has a crucial position in trafficking manner, because it is the crossroad for two main and vital communication liaison.

### Field characteristics

County of Sarajevo is from the geomorphologic aspect considered an exclusively

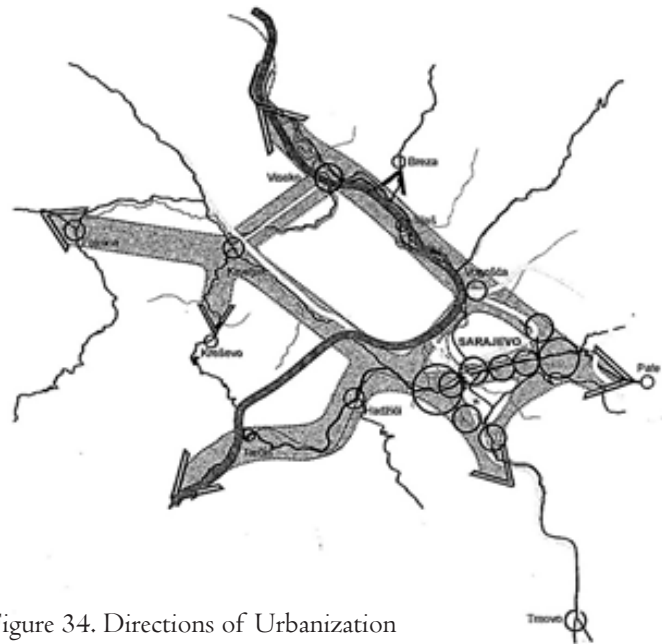


Figure 34. Directions of Urbanization

mountain area (78% of the territory is at the altitude of more than 700m, 13% on 550-700, and only 9% on the lowland area). From the aspect of terrain inclination, 24% is positioned on the inclination of 45%, presenting a limiting construction factor.

### Climate characteristics

The counties climate is considered uneven, very variable, especially at micro locations and contact zones with the surrounding mountains, determined by the altitude of the location, position, length and amount of precipitation. This area is generally char-

acterized by three climate types: continental, continental - mountainous and alpine climate. Lower parts, up to 600m of altitude have typical continental climate with warm summers and cold winters, areas above 600m are characterized by continental-mountainous climate, and alpine is present at locations at the highest points on the adjacent mountains.

### Natural resources

Significant mineral deposit sites that have been identified that have a good probability of being exploited are: gravel, sand, clay, dolomite, limestone and quartz sandstones as

Considering the topographic and morphological characteristics of the region (watercourse valleys) and the traffic matrix, urbanization has a predominantly linear character, as can be seen in the picture (number). Arranging settlements alongside the main roads, as a concept, may have a number of positive effects, when organised in a precise manner. This type of a concept of urbanization “saves” space and provides optimal possibilities for the development of an infrastructure system.

By locating the economic and social infrastructure in the hubs, the space is optimally integrated and provides favourable conditions for accessing central functions. By developing urbanization and increasing the density of settlements in the wider area of the urban region, conditions for the emergence of higher order centres (poles of development) are created. One of the benefits this brings is reduction of pressure to migrate to the city core for the reasons of settlement or even daily activities. Polycentrism should be a goal, present on both wider and narrower urban area.

Traffic and conctions

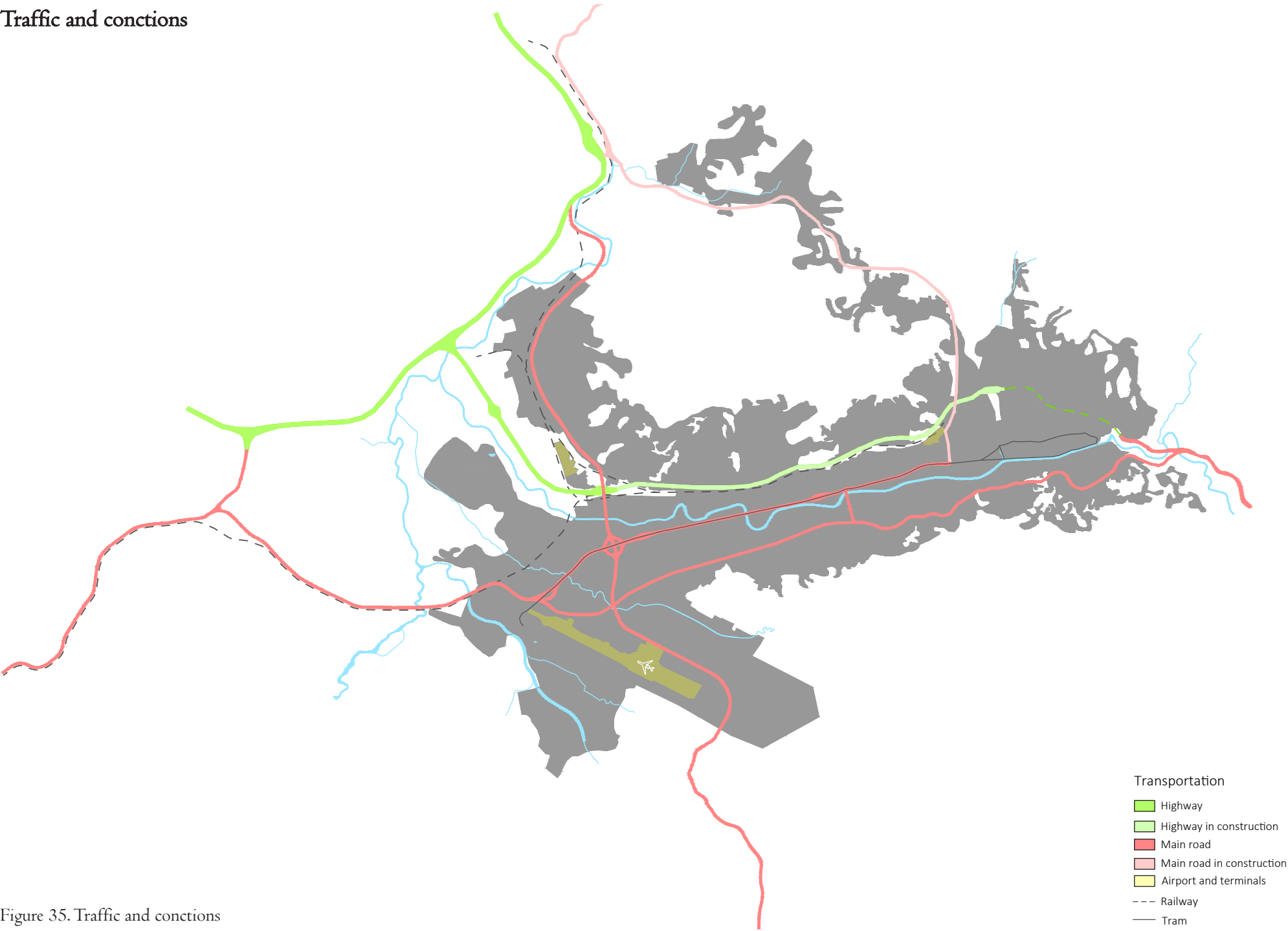


Figure 35. Traffic and conctions

Because of its geographical position, Sarajevo represents a very important joint for the northern and southern, and the western and eastern parts of Bosnia and Herzegovina, and thus suffers enormous traffic burden. The traffic spine consists of the southern and central longitudinal road, connected with II transmissions, which due to the overuse of cars do not meet the current needs. Because of this issue a fast road (northern longitudinal) is currently being built, aiming to reduce traffic jam in the city itself. Public traffic in the city consists of a tram line along the central longitudinal road, trolleybus and bus lines. Due to the high density of constructed objects in the slopes of the city, mini buses are used. Although the railway runs through the city, its utilization is at a very low level, because it is used only for inter-city communication. In order to the increase public transport usage and to enhance the communication between the eastern and western parts of the city, the existing railway line could be used in the form of a fast city railroad. Another issue that should be addressed is the lack of bicycle paths.

Population

In nine municipalities in Sarajevo county, according to the statistics from the Federal Office of Statistics 421.289 are inhabited. The most populated municipality is Novi Grad (New City) with 123.200 inhabitants and Trnovo with the lowest number of only 2.554 people.

This county is mostly populated because 328 people are living per meter square of area. The aging statistic shows that in the county of Sarajevo is mostly inhabited by elderly people, since the difference between the young and older is minor. According to the newest analysis by the Official Planning Office, from the total number of citizen, the youth represents 16,6% and 16,5 of people are of age above 65. In order to have the majoriti of populata-tion consisting of young people the number of inhabitants above the age of 14 should be much higher. Working-age population (age 15-64) is the majority - 67%.

Estimations note that in 2003 county of Sarajevo had 401.274 inhabitants. That number has risen to 421.289 in 2008 and 442 000 in 2012. The expected population on this area in year 2023 is 442.000, in the analysis conducted by this institution. From this we can conclude that the estimations made are not correct since the number was already reached in 2012.

Spatial plan, by definition, is a higher order plan that gives general directions for the development of an area it was created for. It handles general planning and sets long-term goals and as such doesn't provide detailed definitions of the zones of micro locations. The relevant plan is the County Sarajevo plan made for the period between 2003 and 2023.



2 Macrolocation

Recreational areas, green spaces and potentials



Sarajevo is the city with the largest percentage of green areas in Europe. However, most of these green areas are located on the periphery of urban tissue, on the city slopes, as landscape, dominated by woods. These areas descend to the city in the form of private green spaces, through individual residential units. One of the shortcomings is the lack of public green areas in the city itself. There are very few parks in this area, and the green areas are sporadic and most often within the residential ensembles, that are not adequately regulated. Therefore, one of the goals should be the regulation of the existing ones, and the creation of new green spaces as a place of active and passive recreation, and the construction of a green connection between the free spaces in the basin and inclined landscapes. Through the development of the city, there were many attempts by architects to establish these connections, but unplanned and illegal construction prevented the realization of these concepts, which, with enormous concrete paving, led to a reduction in the quality of life in the city itself. River Miljacka that flows along the city offers an axis that could also represent a green city spine, on which the open spaces of various characteristics can be placed. Currently, only in the central part of the city there is a Vilsonov’s alley, and a similar concept should be applied to the rest of the river.

- Large-scale urban green spaces (e.g. parks, zoo, cementary)
- Landscape dominated by woods (woods, vineyards and meadows)
- Woods in the environs of Sarajevo
- Mainly agricultural landscape
- Open space networking (characteristic of landscape)
- Networking with the environs
- Parks (10-50 hectares)
- Parks (2-10 hectares)

● Sarajevo- the longitudinal city

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### 3 Sarajevo- the longitudinal city

Arrangement of functions in the city

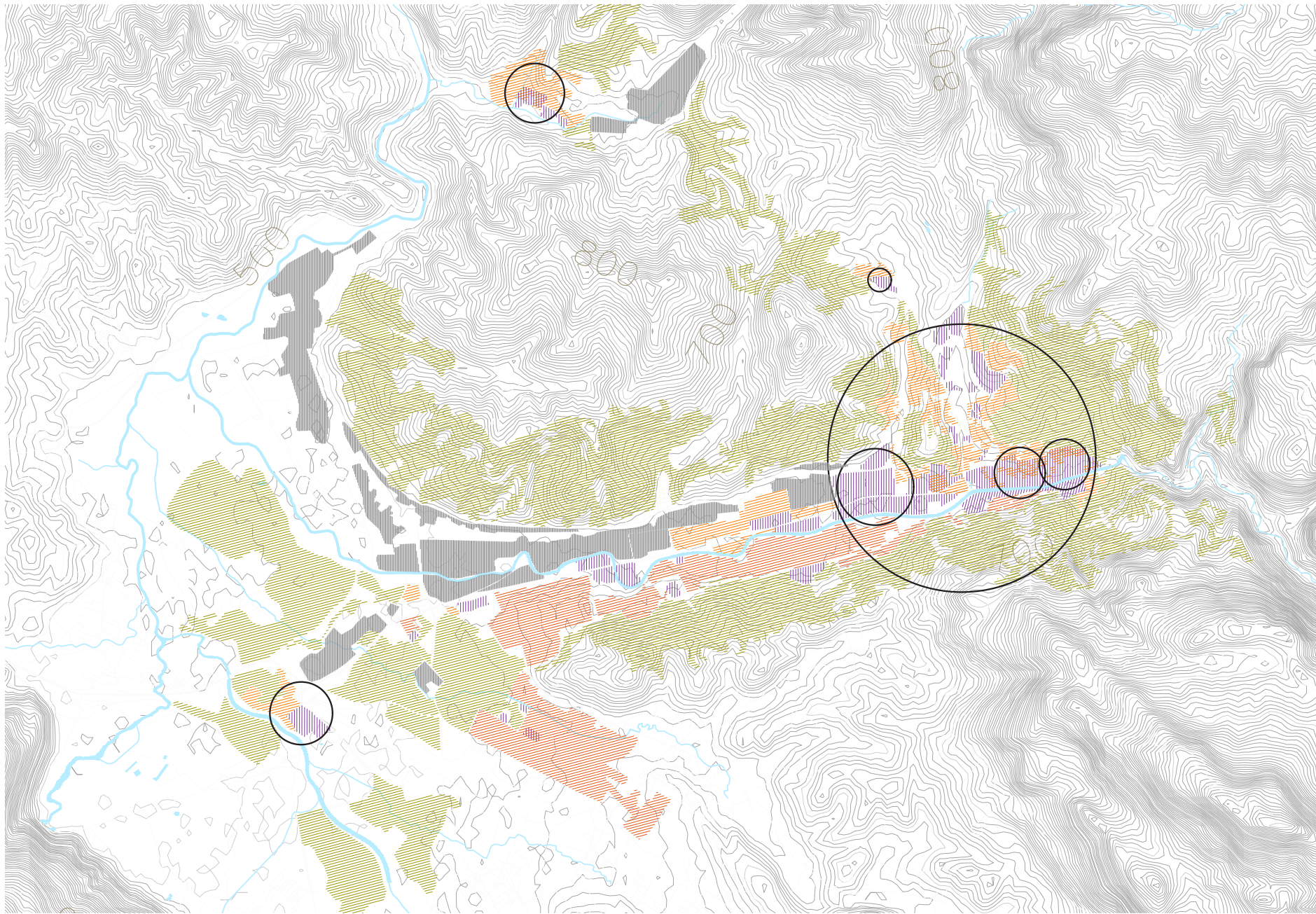


Figure 36. Arrangement of functions in the city

The city’s cultural and administrative center is located in the eastern part, alongside the historical city core. By creating new centers in Vogosca (north) and Ilidza (west), efforts were made to reduce the burden on the central city core with the aim to create new areas to attract the citizens. Nevertheless, their influence remained negligible, and the desired effect was not realized. It is also interesting to look at what is considered the “city center”. In Sarajevo this area does not correspond to the geographic center of urban tissue. Interestingly, 90% of the objects of cultural character (museums, theaters, cinemas) are positioned in that “central” city core.

In the basin of the city, the separation of various life functions, housing and work, which results in a non-functional city is clearly visible. Here, larger residential areas are completely separated by industrial zones, causing problems with the merging

of these settlements. On the slopes of the city objects of family housing are dominant. They were built without the respect to regulatory plans during the great influx of the population into the city. This practice continues even today and as a result, there are 30,000 illegally constructed facilities. By location and infrastructure, these objects do not fit into existing urban plans, and most of them do not have a building permit. The result of this type of construction is reflected in the distorted image of the city, a large number of landslides on the slopes and enormous consequences for the future functioning of the city.

Individual objects on the slopes of the city, as well as the objects of collective housing in the slopes, became large dormitories that cannot satisfy the social needs of a man.

- City administration, cultural, business center
- Industry
- Residential living
- Individual living
- Gravitational zones



### 3 Sarajevo- the longitudinal city

#### Issues of longitudinal city and possible solutions

Sarajevo has, with its characteristic relief and timeframe in which it emerged, developed into a longitudinal city. The city core originating from the Ottoman and the Austro-Hungarian period, reflects characteristics of a compact city, even though the building conception between these two eras completely differed. The Ottoman period is characterized by the separation of functional zones: business was located in the valley, housing on the slopes, while the architecture of the Austro-Hungarian period is characterised by vertical differentiation of functions: business being on the ground floor, living areas on higher levels. After the Second World War, the urban matrix is starting to develop in line and hence encounters that this kind of expansion brings: lack of urban physiognomy, urbanism and social contact space. The new part of the city was built on an urban model based on the

international (modern) style influencing the the landscape of the city to be significantly different from the old part, where building was heterogeneous, without the harmony of a unified whole. The aesthetic component is neglected, and the disharmony of the constructed parts and nature is evident.

The city appears unfinished with lapses in continuity and compositional imbalance. Due to a large inflow of inhabitants from rural area a so called phenomenon of illegal construction emerges, resulting in settlements being built illegally on slopes on both sides of Miljacka.

The construction of high-rise buildings in Sarajevo has become a real and great danger for the spatial values of the city, and on the other hand ventilation of a rather narrow basin

has been impeached by the construction of such facilities.

“It has been scientifically proven that the increase in the number of contents in the city centre does not increase the radius of its usage”. Therefore, the efforts of urban planners and the competent institutions should be based on the establishment of a dynamic city with the activation of secondary city centers.

By looking at the city as a whole one can conclude that from the aspect of public, cultural, recreational and other content, it meets the basic requirements. However, the arrangement of the present objects is unsatisfying. Most of these establishments are located in the historical center of the city, in the area up to Marijin Dvor. This thesis is confirmed by Figures 37 and 38 done in a study at the Fac-

ulty of Architecture in Sarajevo, where the analysis of the daily movement of the population was carried out. Bright colors mark zones with an increased number of activities.

This negative characteristic can be assigned to almost all cities developing longitudinally. The main disadvantages being the lack of city physiognomy, urbanism and locations for social contacts, as well as the fact that main centers are hard to incorporate in linear systems.

The attempts of urban planning is to revive other city centers and central city zones (Dolac Malta, Otoka, Ali-pasino polje) hence creating the need for a new city center on Stup that will be the new polarity.

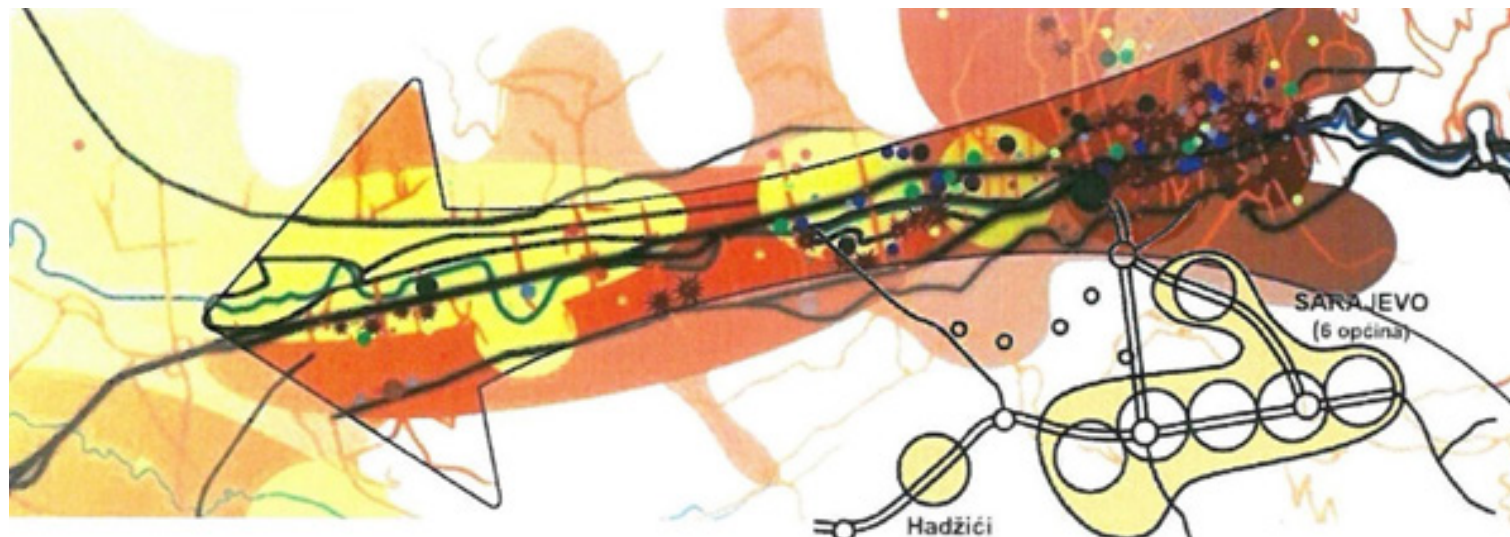


Figure 37. Chart of movement of the population 1

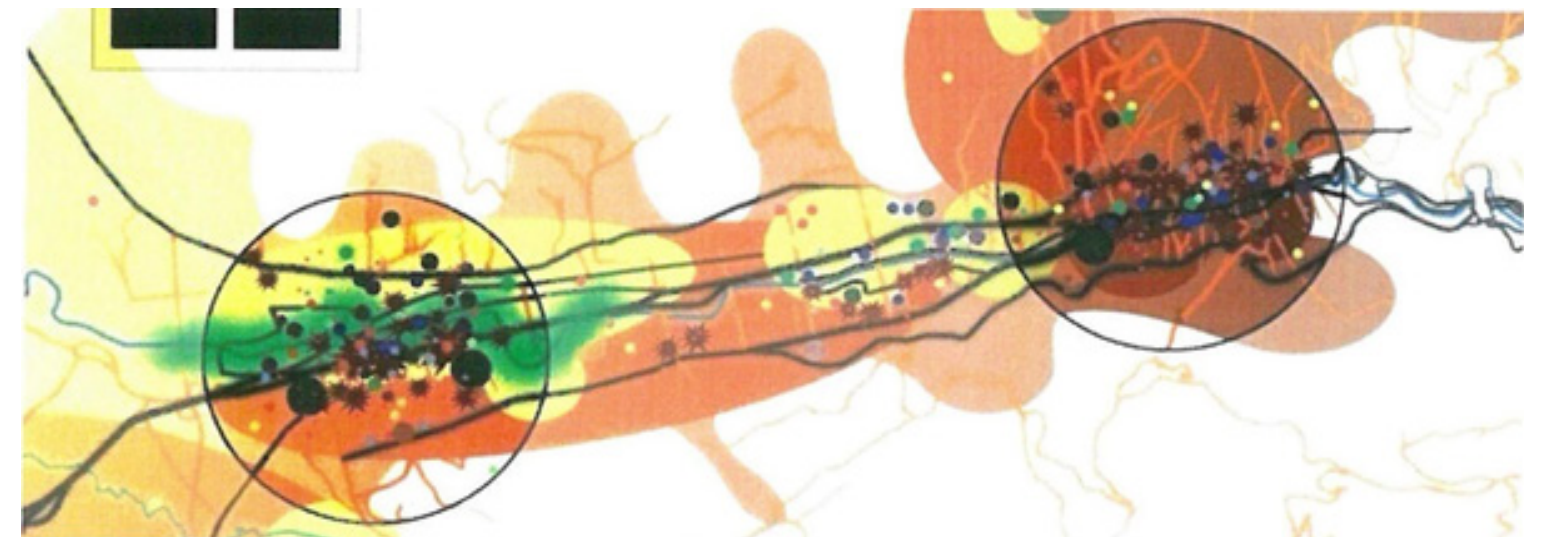


Figure 38. Chart of movement of the population 2



● Industrial areas and their conversion

# 4 Industrial areas and their conversion

The transition of the society from industry to informatics with a strong emphasis on service activities, and the abandonment of ecologically unsustainable forms is a long-term process that already creates new social values, new forms of production, different forms of time organization. These features have undoubtedly begun to create new architectural models, new urban structures and, more generally, new insights into spatial planning. In these new insights into architecture and urbanism, the end result is increasingly influenced by consciousness of sustainable development. It is possible to notice the emergence of completely new architectural and urban structures that are a set of new elements, as well as those already known but agglomerated within efficient hybrids.

New ecological requirements in urban construction, besides the logical implications for the environment, create

a new perception in planning of cities. Requirements for buildings that respect the principles of bioclimatic architecture, new waste management systems, the ever-increasing use of renewable energy sources and the problem of light pollution are not only ecological imperatives, but have, over time, become an aesthetic component, which is why they need to be considered at the initial stages of planning.

The above mentioned implies the need for transformation of social (social and economic) elements and those in the system of planning and managing cities, as well as in the transformations of the cities themselves. This fact points to methodological issues concerning the continuity-discontinuity in the spatial development of the city, the change in the visual identity of the city and its social, urbanistic microclimate repercussions.

The rapid expansion of the city is also evident in the merging of industrial zones with urban areas, which today, with the increasing presence of the tertiary and quaternary sector in the economy and with abandoning industrial production in the form it existed in the previous century, is an additional problem characterized by the emergence of the so-called brownfields. It is an abandoned or unused industrial area suitable for reuse. Chewing or re-development of such possibilities can be complicated or completely disabled by high concentrations of pollution. A land with a low concentration of pollution, once cleansed, represents the potential for its reuse.

It is often debated whether maintaining the existing structures in industrial zones is the correct method for transforming these areas. By retaining existing elements, the ex-

isting image of the city is kept, and a link with history and urban substance is maintained. In order to apply the method, by which the transformation would be carried out by adding new elements to the existing structure, it is necessary to perform a thorough valorization. It often happens that such structures that were designed in the past can hardly meet the needs of new ways of production and organization of life activities. If they originate in the city, as it is the case in Sarajevo, it can affect the development of the city itself. On the other hand, by eliminating these urban structures, the danger of losing the memory of the site is created, and therefore it is very important to approach the planning of new urban formations. Many economical studies have shown that this method is more cost-effective than trying to adapt old objects to new functions and requirements.

Now



Should be

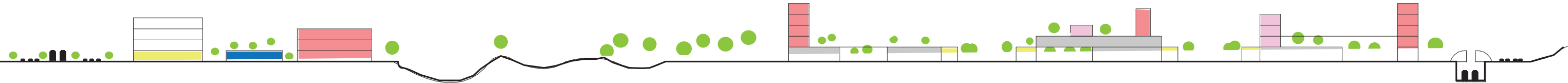


Figure 39. Conceptul section



# 4 Industrial areas and their conversion

## Industry 4.0

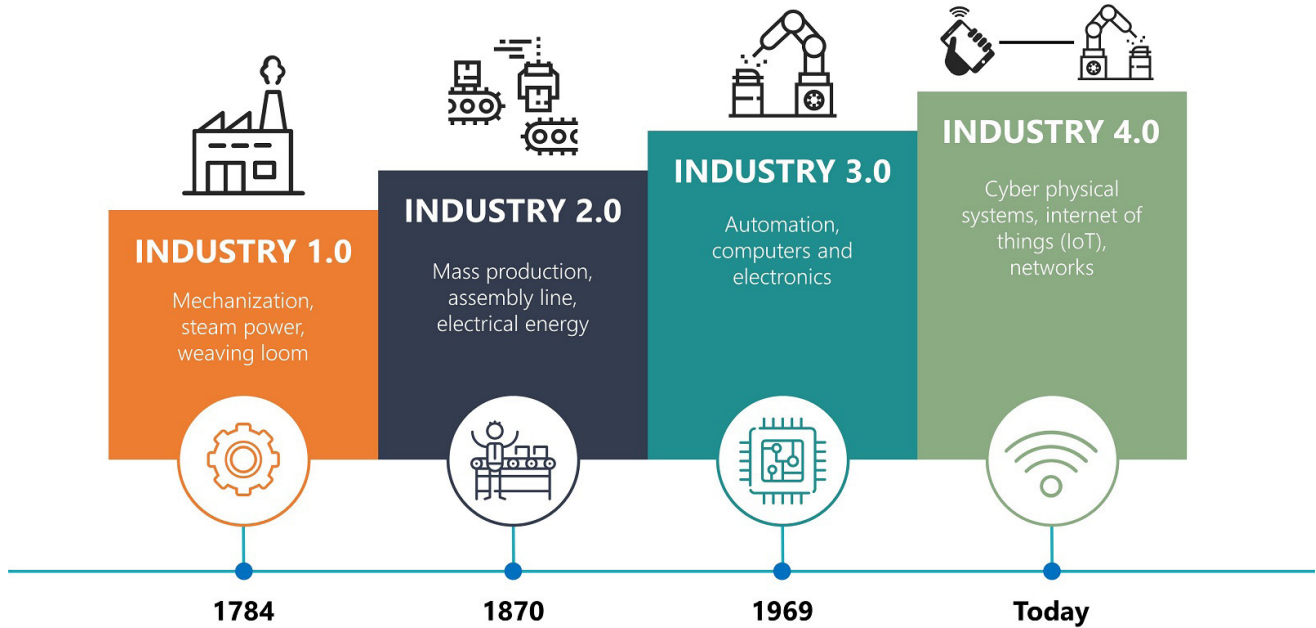


Figure 40. Development of Industry trough History

Manufacture face changes on multiple fronts. Advanced manufacturing—in the form of additive manufacturing, advanced materials, smart, automated machines, and other technologies—is ushering in a new age of physical production. At the same time, increased connectivity and ever more sophisticated data-gathering and analytics capabilities enabled by the Internet of Things (IoT) have led to a shift toward an information-based economy. With the IoT, data, in addition to physical objects, are a source of value—and connectivity makes it possible to build smarter supply chains, manufacturing processes, and even end-to-end ecosystems.

Inherent within manufacturing is the process of information creation, communication, and action.

While its output is a physical object, manufacturing inevitably begins with information: A design is created via drawing, design software, or the scanning of a physical object, creating data. These data are then communicated to machines that execute the design, bringing it forth from the digital to the physical realm. Ideally, data from the process of creation (and subsequent use) is further captured, sparking ongoing cycles between the digital and physical realms.<sup>11</sup>

There are differences between a typical traditional factory and an Industry 4.0 factory. In the current industry environment, providing high-end quality service or product with the least cost is the key to success and industrial

factories are trying to achieve as much performance as possible to increase their profit as well as their reputation. In this way, various data sources are available to provide worthwhile profit as well as their reputation. In this way, various data sources are available to provide worthwhile information about different aspects of the factory. Health prediction in component and system levels and forces factory management to trigger required maintenance at the best possible time to reach just-in-time maintenance and gain near-zero downtime.

In this stage, the utilization of data for understanding current operating conditions and detecting faults and failures is an important topic to research. e.g. in production, there are various commercial tools available to provide overall equipment effectiveness (OEE) information to factory management in order to highlight the root causes of problems and possible faults in the system. In contrast, in an Industry 4.0 factory, in addition to condition monitoring and fault diagnosis, components and systems are able to gain self-awareness and self-predictiveness, which will provide management with more insight on the status of the factory. Furthermore, peer-to-peer comparison and fusion of health information from various components provides a precise.

Due to the changes that have arisen from the development of Industry 4.0, various demands in architectural terms are set in order to incorporate new production types into existing structures. Due to the changes in dynamics of relationships and communication between people, it is important to understand the needs and new demands, in order to be able to create frameworks that satisfy the socio-economic needs of the finite user- the man.



<sup>11</sup> [https://www2.deloitte.com/content/dam/insights/us/articles/manufacturing-ecosystems-exploring-world-connected-enterprises/DUP\\_2898\\_Industry4.0ManufacturingEcosystems.pdf](https://www2.deloitte.com/content/dam/insights/us/articles/manufacturing-ecosystems-exploring-world-connected-enterprises/DUP_2898_Industry4.0ManufacturingEcosystems.pdf)

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4 Industrial areas and their conversion

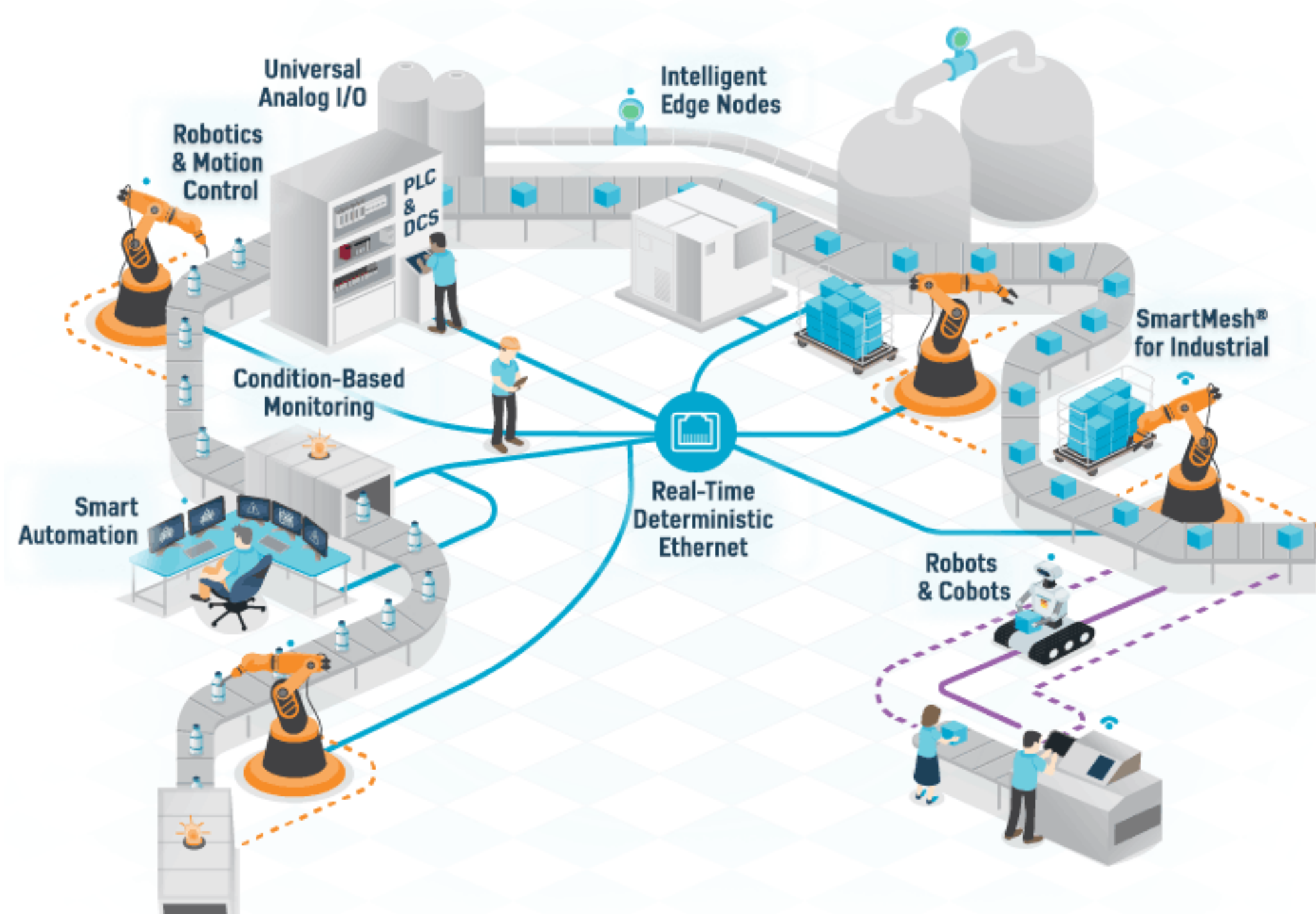


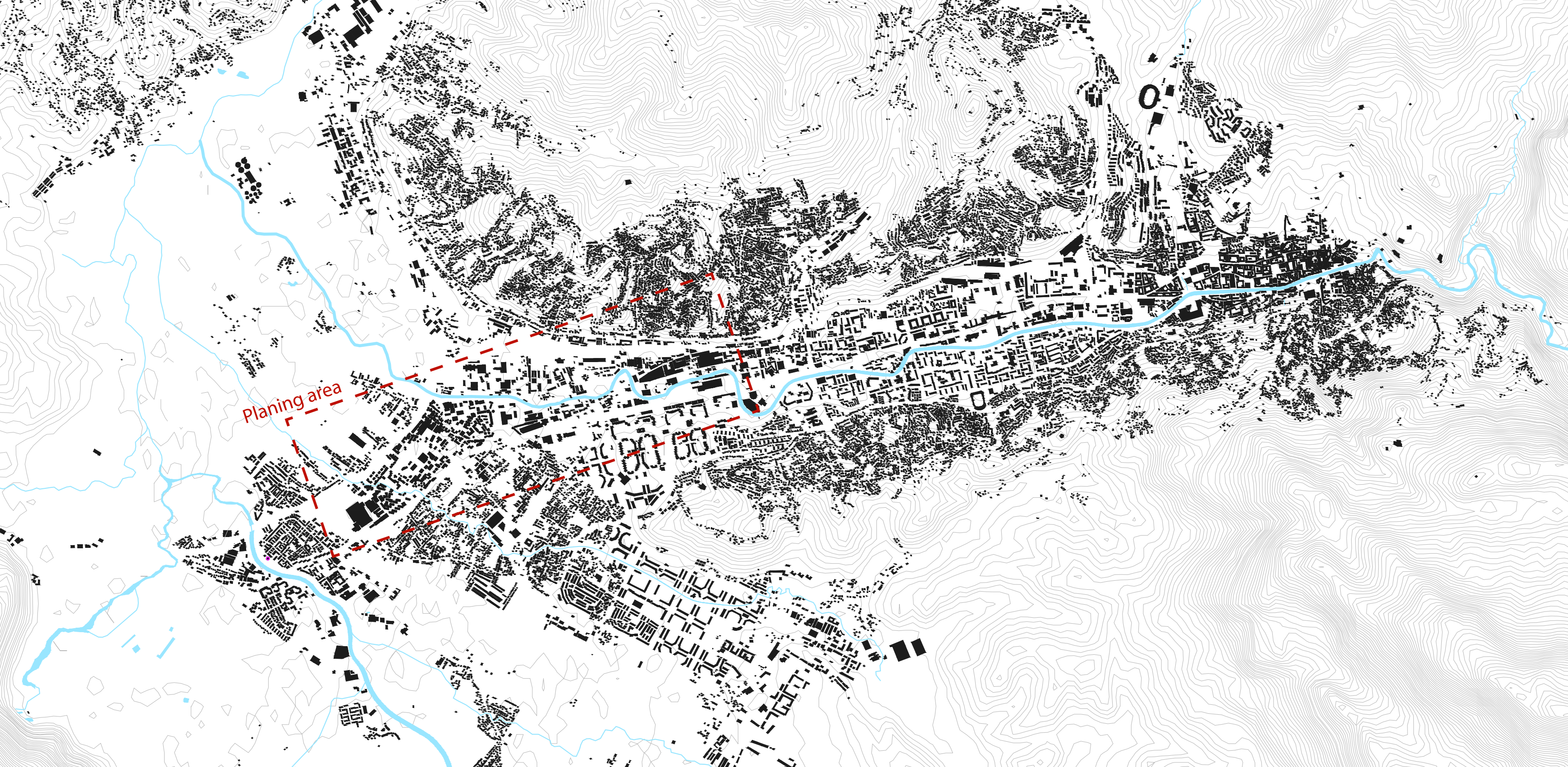
Figure 40. Industry 4.0 process



● Microlocation

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5 Microlocation  
Photo documentation



Figure 41. Mesa Selimovic Boulevard, Radio televiion building



Figure 43. Mesa Selimovic Boulevard, ASA building



Figure 42. Intersectionn of Mesa Selimovic Boulevard and Ivo Andric street



Figure 44. Intersectionn of Mesa Selimovic Boulevard and Ante Babic street



5 Microlocation



Figure 45. Mesa  
Selimovic Boulevard,  
east direction



Figure 47. Panorama view  
right and left from Mesa  
Selimovic Boulevard,  
east direction



Figure 46. Panorama view  
right and left from Mesa  
Selimovic Boulevard,  
west direction



Figure 48. Panorama view  
right and left from Mesa  
Selimovic Boulevard,  
east direction



5 Microlocation



Figure 48. Panorama view of railway and industry area



Figure 50. Miljacka river, brownfield, part of Safet Zajko park



Figure 49. Miljacka river



Figure 51. Miljacka river, industry area in Halilovici, brownfield



5 Microlocation



Figure 52. Tram line, Mesa Selimovic Boulevard



Figure 54. Buisness buildings around Mesa Selimovic Boulevard



Figure 53. Industry facilities in Halilovici, railway



Figure 55. Road loop on Stup



# 5 Microlocation

## Arrangement of functions

The planning area is an industrial quarter in the Novo Sarajevo neighborhood, in the western part of the city, which developed in the second half of the twentieth century. It is located at the place where Sarajevo is coming out of the basin and is spreading into the plain. At the industrial central part (Halilovići) facilities of the most successful Sarajevo companies, such as Energoinvest, Famos and others, which were state-owned in the Communist system, were located. Due to the war destruction, many of these companies halted production, and the area in the new capitalist, unregulated system was sold indefinitely to individuals, which due to the lack of project documentation led to urban discrepancies, as well as to creation of an industrial, polluted, semi-arid area that largely blocked Sarajevo’s development towards the Sarajevo field.

The industrial zone is surrounded by residential settlements in a rising scale. In the north is Buca potok, a rocky settlement with individual housing. From the south, there are two residential settlements: Ali pasino polje and Stupsko brdo. Ali pasino polje has the characteristics of social architecture from the period of communism and is characterized by high housing blocks. Stupsko Brdo is a settlement that has kept the characteristic style of housing in peripheral settlements of the city. Due to rapid development, it has been suddenly placed in the urban tissue itself. The discrepancy between this settlement and Ali pasino polje is clearly visible and is one of the best examples of urban discontinuity in Sarajevo.

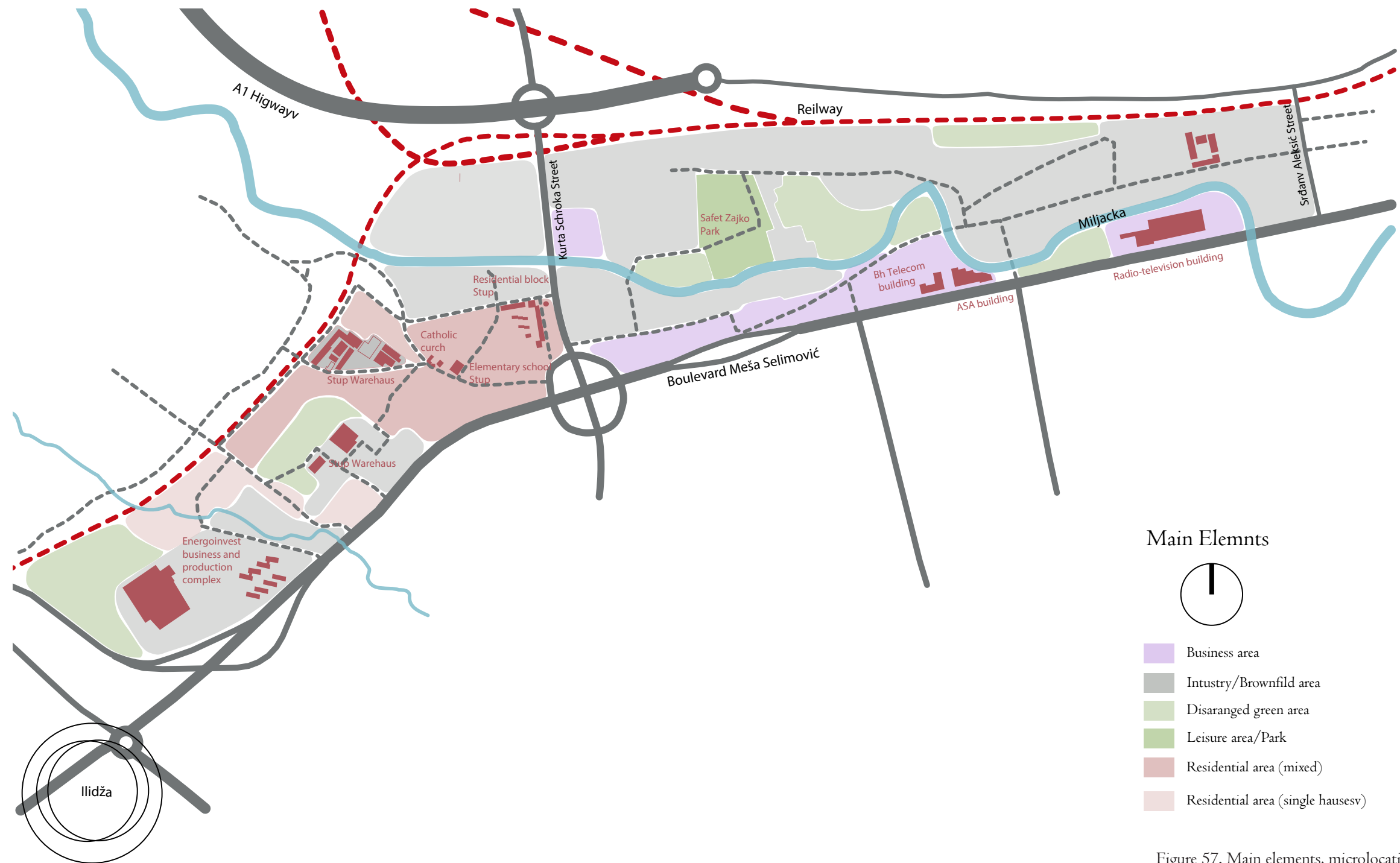
The central industrial zone is crossed by the housing estate Stup, which is a mix of collective and single housing. Along the Mesa Selimovic boulevard (central city longitudinal) business buildings that form some type of buffer between industrial and residential areas, are located.



Figure 56. Function/Morphology diagram, microlocation



5 Microlocation  
Main elemnts



The existing urban elements play an important role in the further development of the city, as new structures are formed in relation to them. Therefore, it is very important to carry out an assessment of the importance and quality of existing structures.

Along the Mesa Selimovica boulevard there are several crucial business buildings. The first in line is Radio-Television of Bosnia and Herzegovina. It is one of the examples of brutalism from the period of modernism in Sarajevo and as such is an important architectural heritage of the city. Other buildings with importance are occupied by BH telecom and insurance company ASA.

The industrial area, however, is flooded with objects that are not in use, forming a brownfield, which blocks the communications and the further development of the city. The approach in which the functions will change, and new urban elements integrated is estimated as a more expensive option. Furthermore, with such an approach it would be very difficult to respond to the urban requirements that are placed before this part of the city.

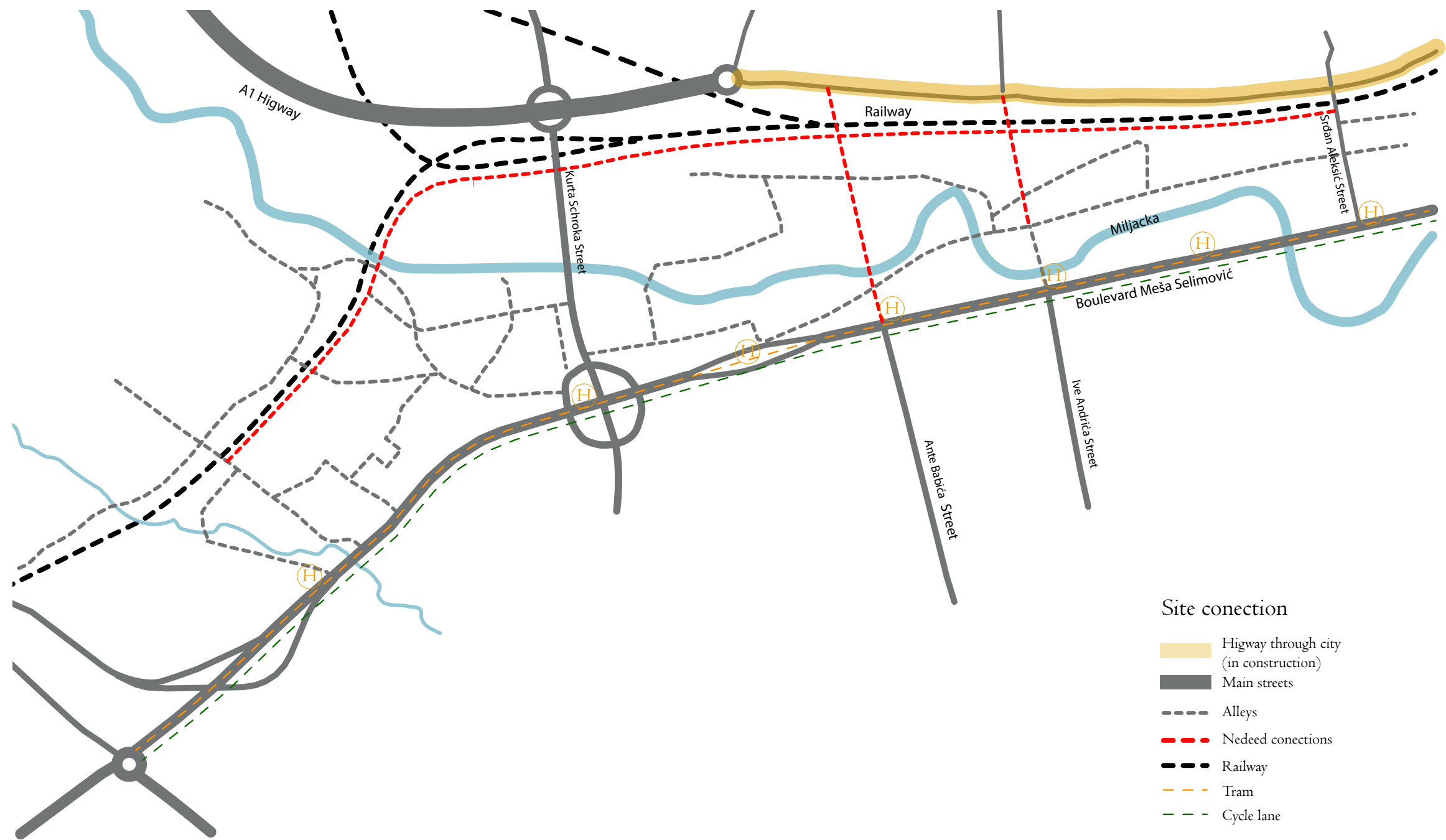
Settlement Stup consists of residential settlements, as well as a school and a Catholic chapel. Storehouses in this area could be used to increase social activities, through various forms of workshops, exhibition spaces, and sequences for multifunctional purposes.

In the eastern part the former plant Energoinvest, with administrative buildings and production halls is located. This locality has the potential to change function and to activate objects that are currently not in use.

Figure 57. Main elements, microlocation



5 Microlocation  
Site conections



Throughout the area where urban planning is carried out, the most important city roads pass through. In the south it is the Mese Selimovica boulevard (central longitudinal) connecting the central city core and secondary city center Ilidza. In the north the speed road (north longitudinal) that is currently under construction and is connected to the A1 highway that links Sarajevo with Western Europe.

These two longitudinals are linked transversally by Kurta Schroka Street and Srdjan Aleksic Street.

In parallel with the fast road is the railway line that currently represents a barrier between sloping settlements (Buca Potok) and southern settlements in the basin. However, with proper access it can be an important traffic element that can increase the frequency with the western, “central”, part of the city.

Public transportation is mainly by the tram line along Mese Selimovica boulevard.

There is a noticeable lack of communication between the northern and southern parts of the city, visible through the nonexistent connection of the two transversal roads: Ivo Andric Street and Ante Babic Street with the north longitudinal.

Secondary streets in the planning area itself make an unsustainable network, which has no connection role. It is evident that these streets were built only to meet the needs of industrial facilities in that area.

Figure 58. Site conection, microlocation



## 5 Microlocation

### Free space / landscape

In Figure 99, it can be seen that there are a few open spaces in the planning area. The only larger green area is the Safet Zajko Park, the next located at Ilidza- the natural park “Vrelo Bosne”. Residential neighborhoods are also affected by the same disadvantage, which is one of the major shortcomings of the entire city. The only forms of free spaces are sporadic sports playgrounds, and unorganized green areas around residential ensembles.

Therefore, the future solution must offer these contents, and find a catalyst for improvement for the afore mentioned disadvantages. Rijeka Miljacka, which flows through the industrial zone offers the opportunity to intensify the green spaces. It also provides conditions for passive and active relaxation.




-  Park area
-  Free spaces around residential ensembles
-  Sport fields



Figure 59. Free space/landscape, microlocation



● Entwurf

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## 6 Entwurf

### General structure

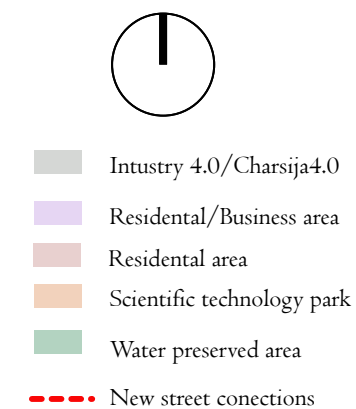
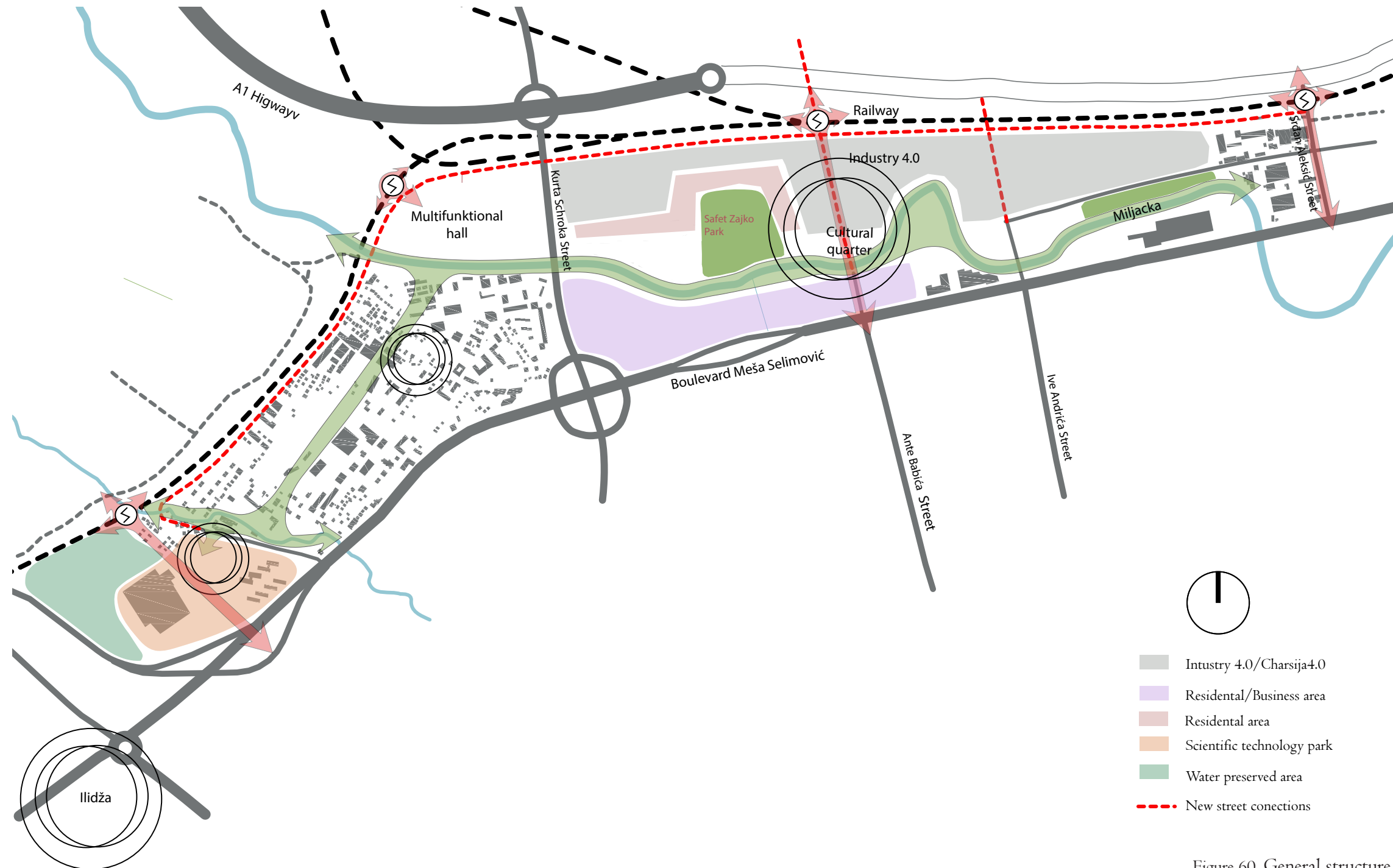


Figure 60. General structure

The planning of a large (urban) area on a larger scale offers the possibility for establishing a new business and cultural center, thus achieving polycentricity, and enhancing the functionality of Sarajevo as a longitudinal city. The aim is to create an industrial business center that will generate the economic development of the city

On the other hand, planning on a smaller scale provides us with the possibility for creating proper connections for residential settlements (north-south) and the realization of the functions that are missing in these settlements. With this the area north of Mesa Selimovic boulevard will become an urban “filter” for the mistakes that were created during the development of this part of the city.

It is necessary to take advantage of the potentials of the river Miljacka and to form, along with it, the green axis that would further connect with the river Dobrinja in the east. Other open spaces should then be created around it.

The railway stations are used to intensify traffic by creating a fast lane. It will aim to increase the flow of the population between the new center and the cultural and historical center in the eastern part of the city, and with the four stations the use and passage through the planned area will be intensified.

The existing industrial zone will retain its purpose, with the new structures having to satisfy the requirements of the new generation industry (Industry 4.0) and provide urban hybrids with the emphasis on combining different functions.

Alongside the Mesa Selimovica boulevard, the business zone continues, that will be some kind of a distributor between the existing housing structures south of the Boulevard and the new business industrial zone. Creating a cultural quarter plays a very important role due to the lack of objects with cultural purpose in the whole part of the city.

The area of the former Energoinvest in the western part of the region is transformed into a technical business park.

## Main communications

In order to connect the housing settlements on the north and south it is necessary to extend the existing two roads (in the southern settlement of Ali pasino polje) through the planning zone itself.

Bulevar mese Selimovica, the main traffic road in Sarajevo, cannot satisfy the needs of the entire area, so it is necessary for parallel streets to be formed. The goal is to move the traffic, as much as possible, to the peripheral streets connected to the Mesa Selimovic Boulevard and the new street that will be built parallel to the railway.

Two roads pass through the middle, one of which is planned as a promenade along the Miljacka river. The second street that serves the new industrial quarter, should become a boulevard in the future, and an important line of business and cultural events

## Green conections

A strong green network structures a new city center and connects new fields within themselves and with the environment. There are various axes, the most prominent one along the Miljacka river. It is connected to the existing Safet Zajko Park, a green shaft in both directions. The slopes are conceived as large green liaisons with the surrounding to the north and south and offer the opportunity to create smaller parks and sports fields.

The planned main roads also serve as green links. Some of them also take on the role of a sound barrier.

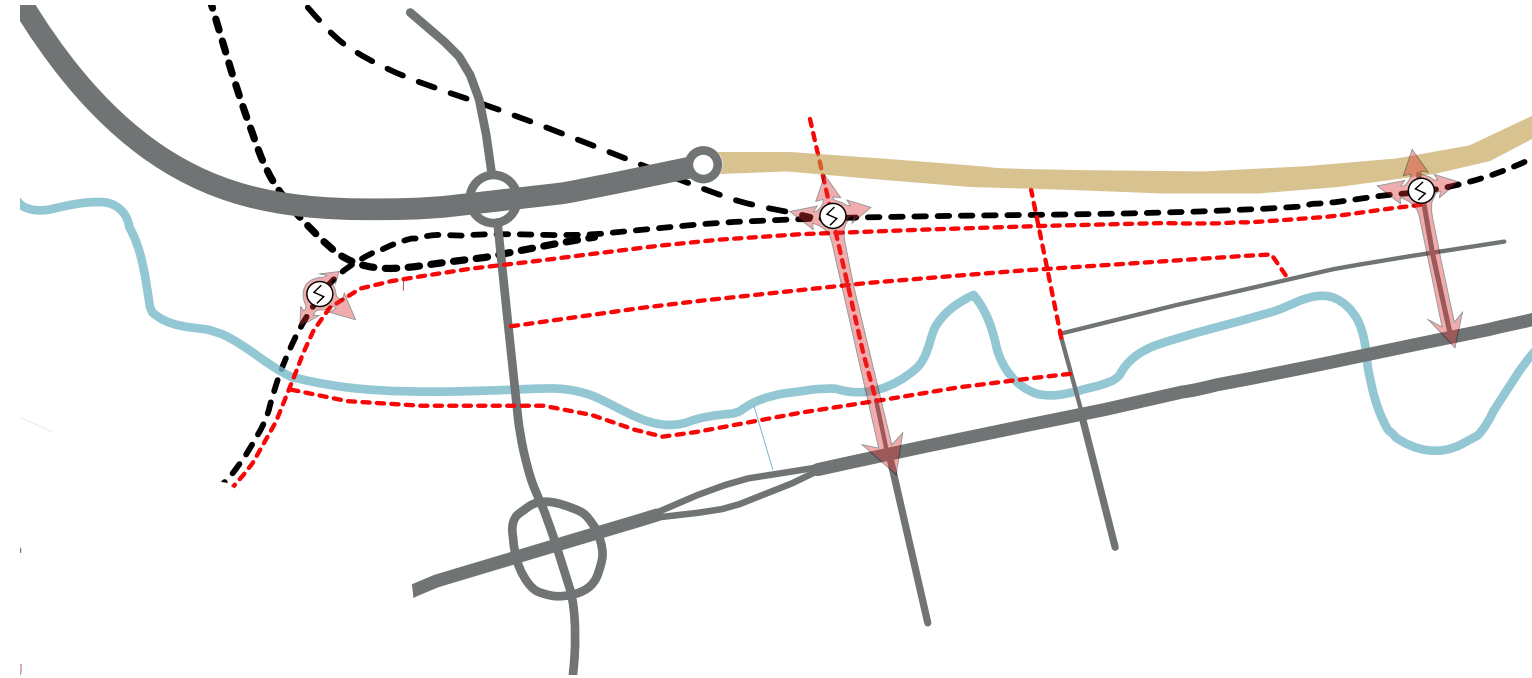


Figure 61. Main communications

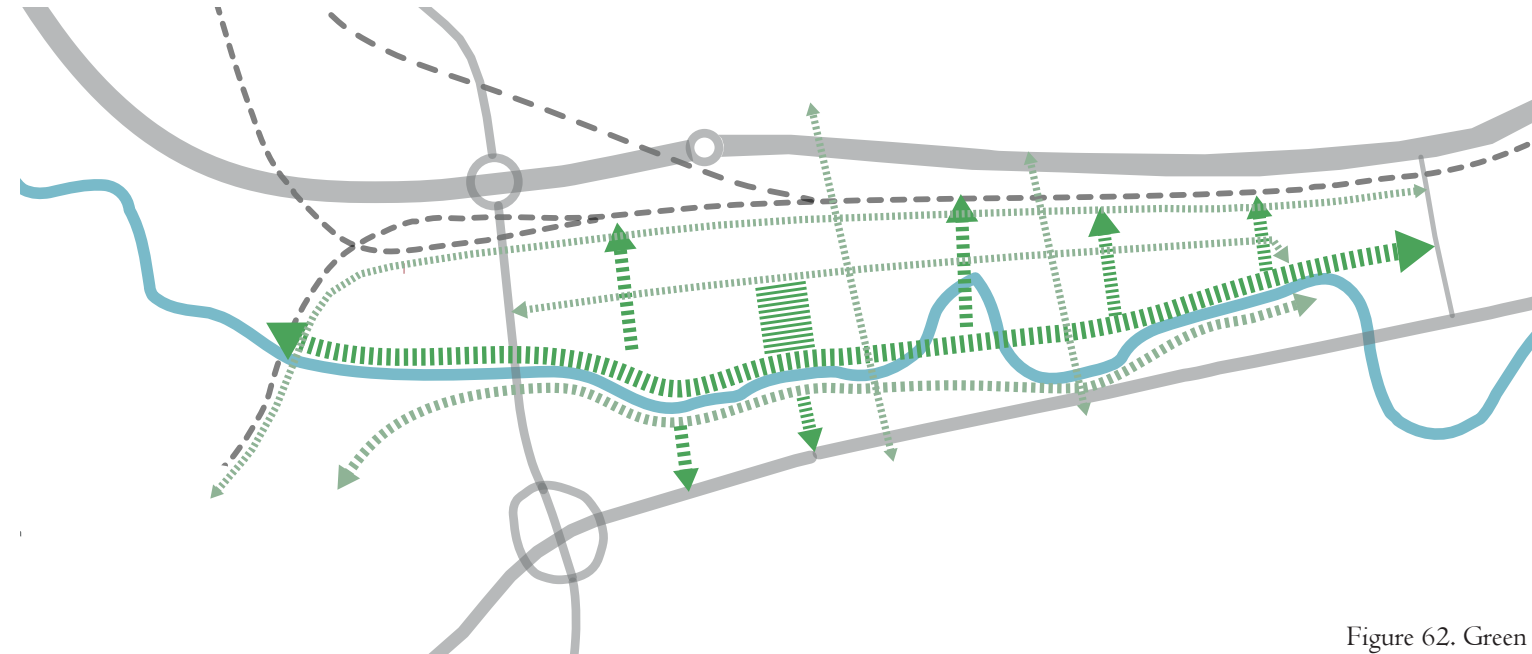


Figure 62. Green conections



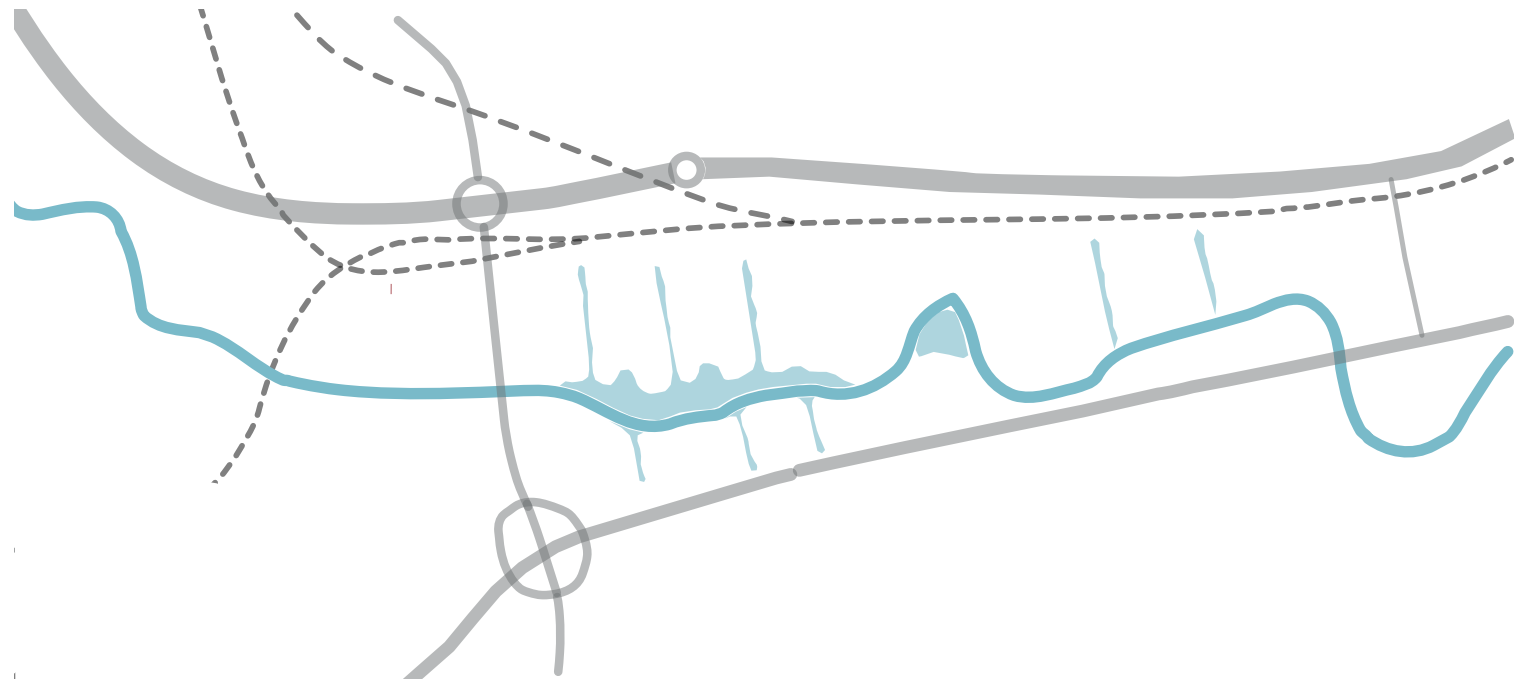


Figure 63. Water consumption

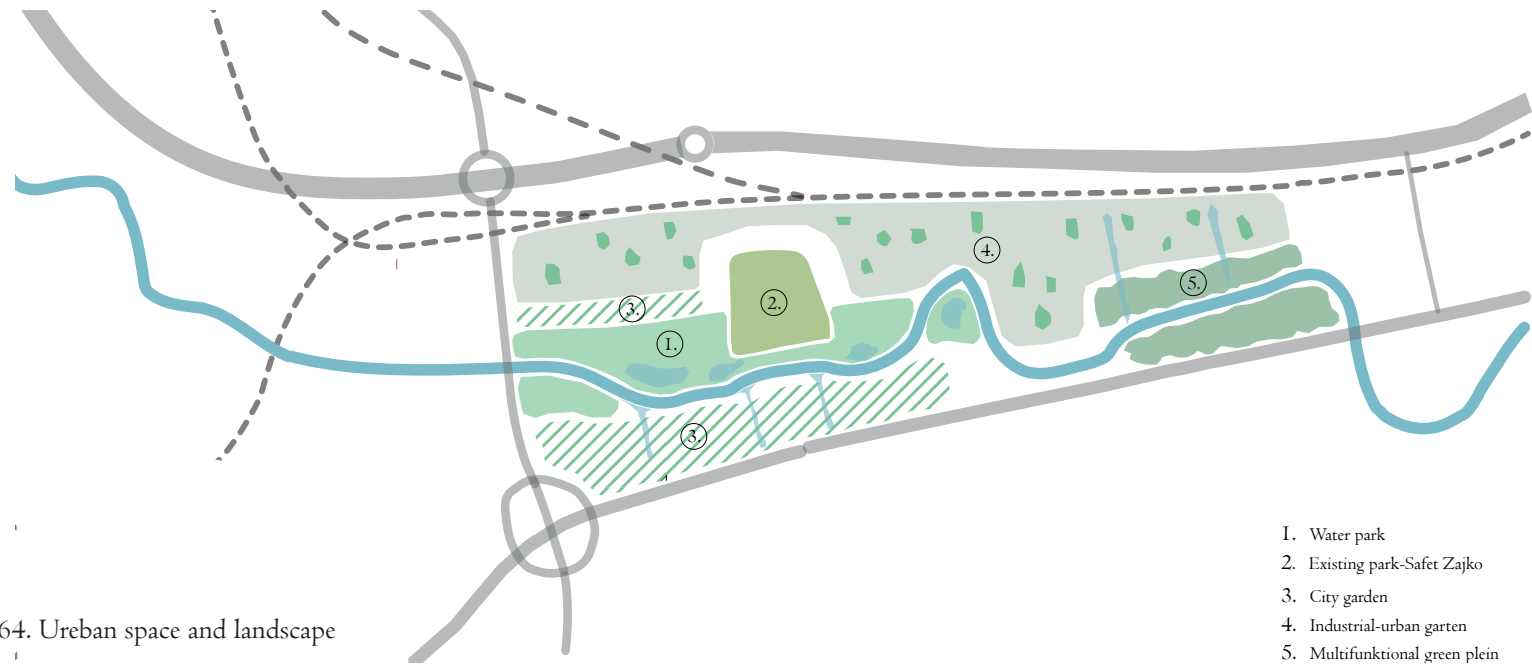


Figure 64. Ureban space and landscape

Water consumption

For a newly constructed structure, water will play an important identification role. Therefore, it is important that the resting area and free time paths are located along the river Miljacka. One large water park can stimulate utilization of rainfall, biotope, water sports and water filtration. With low-lying areas that can be flooded, a water park forms a dynamic landscape and increases the quality of life in the area itself.

Urban space and landscape zone interaction

The goal is to achieve the blending in of the landscape zone along the river Miljacka with the new city areas. This is possible if new urban structures are intensified with free green areas.

In the fields marked as a city garden there are private and semi-private spaces in the form of small parks, joint courts and private gardens. Green decks play an important role in the formation of landscapes.

The industrial zone should also offer various content in the form of public markets, green roofs in the first floor area and semiprivate green courts.

# 6 Entwurf

## Fields structure

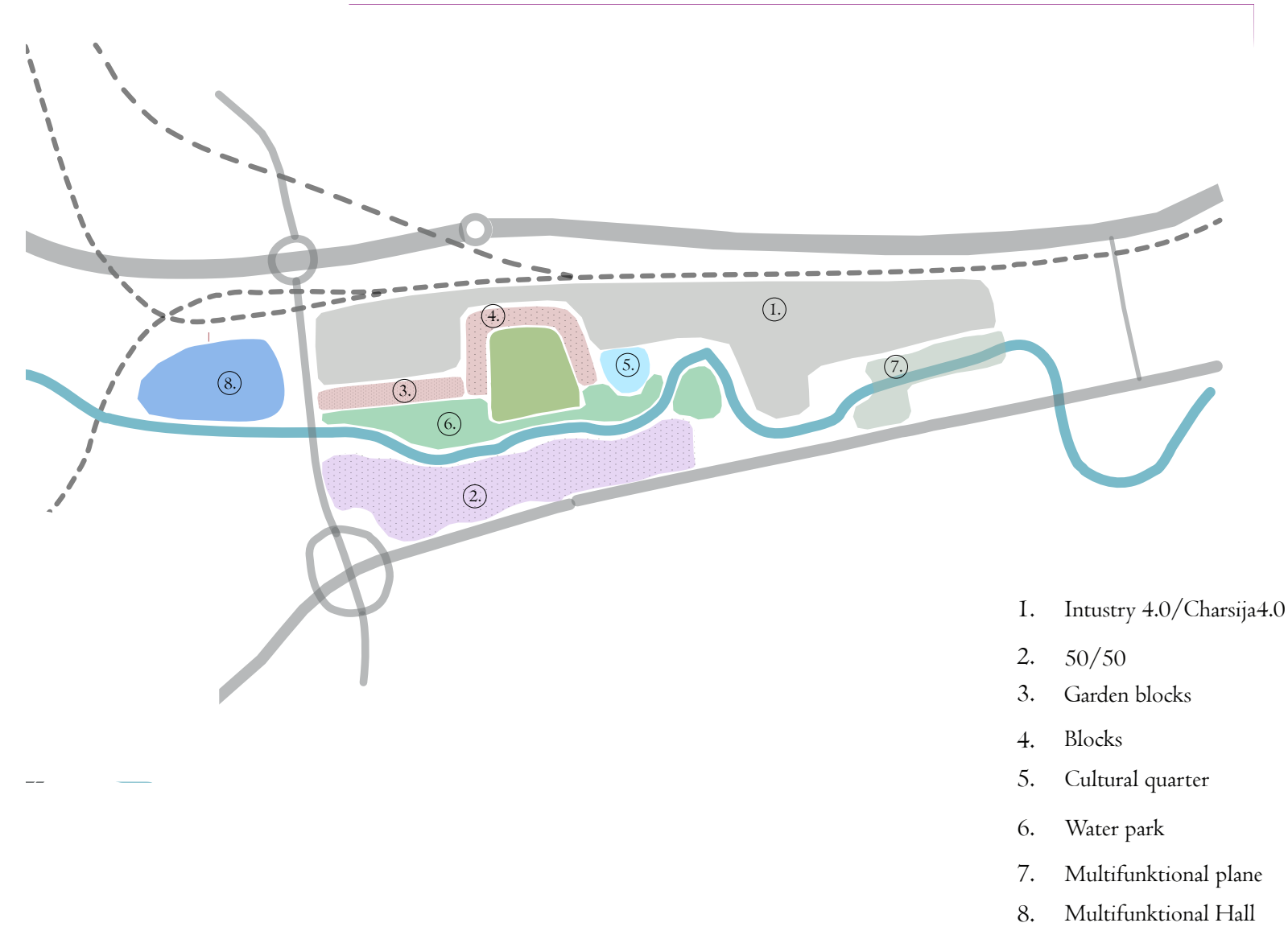


Figure 65. Fields structure

# Blocks

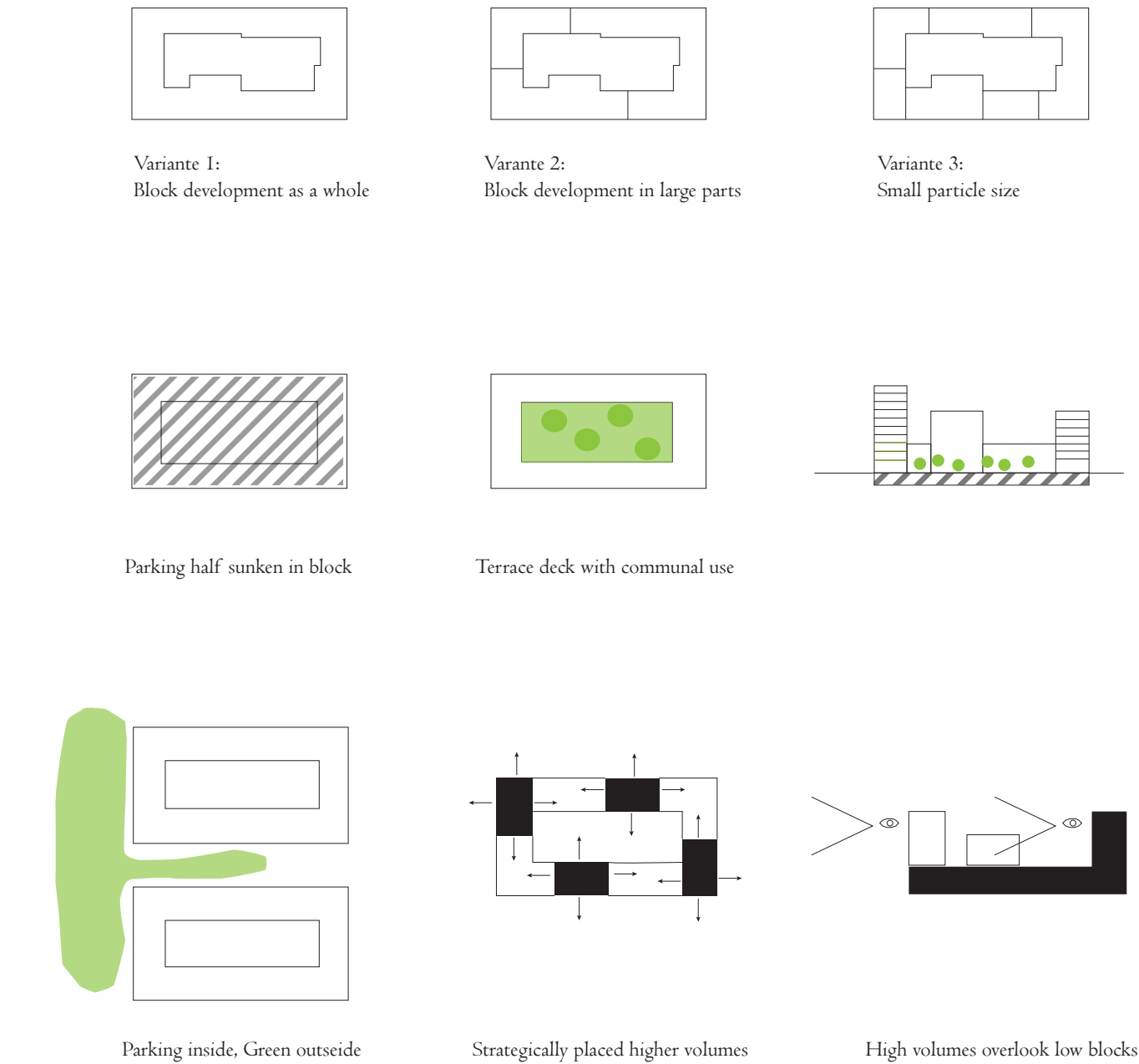
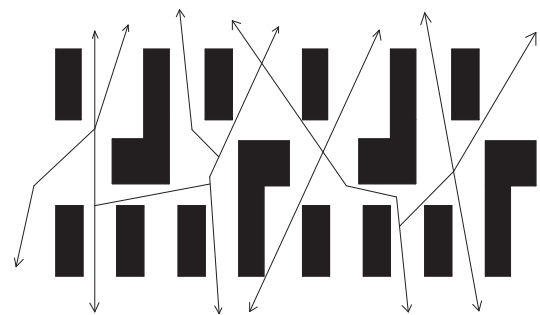
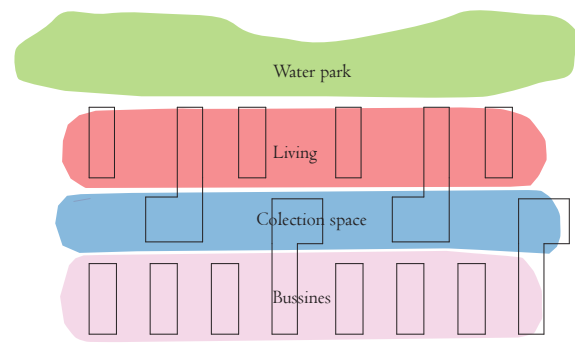
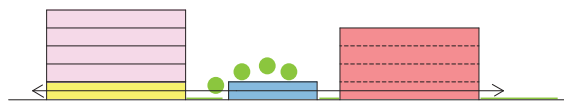
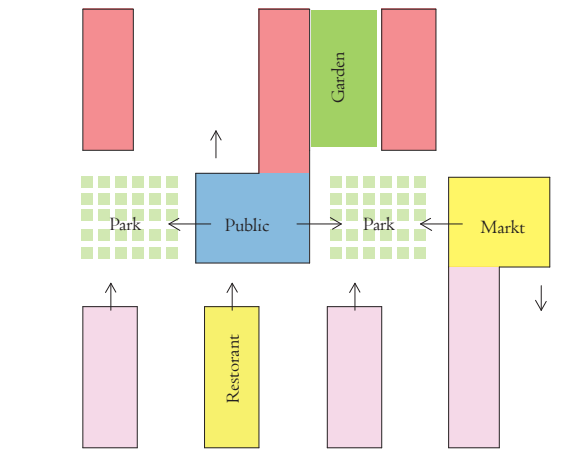


Figure 66. Blocks concept

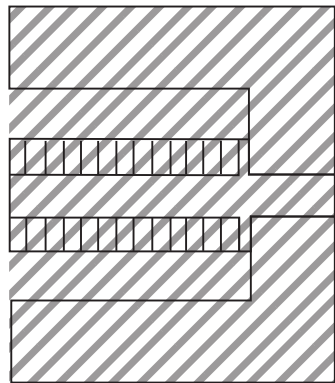




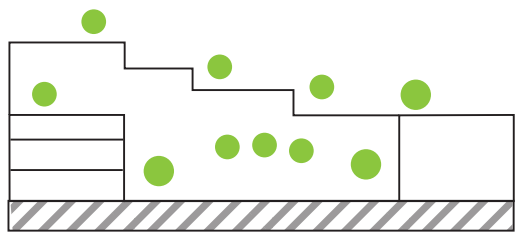
Distributer between Bulevard Mesa Selimovic and Water park



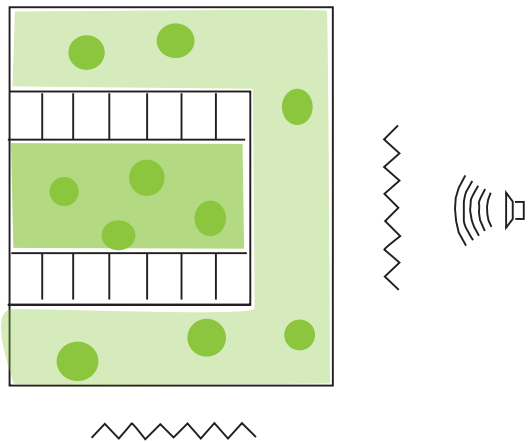
City garden



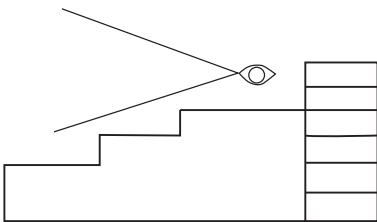
Parking in Underground



Parking, Park on garage, Patios in Blockinterior



Noise proofing and green roofs on arage and terasees



View into the green

Figure 67. 50/50 concept

Figure 68. City garden concept

6 Entwurf  
Carsija 4.0/Industry 4.0

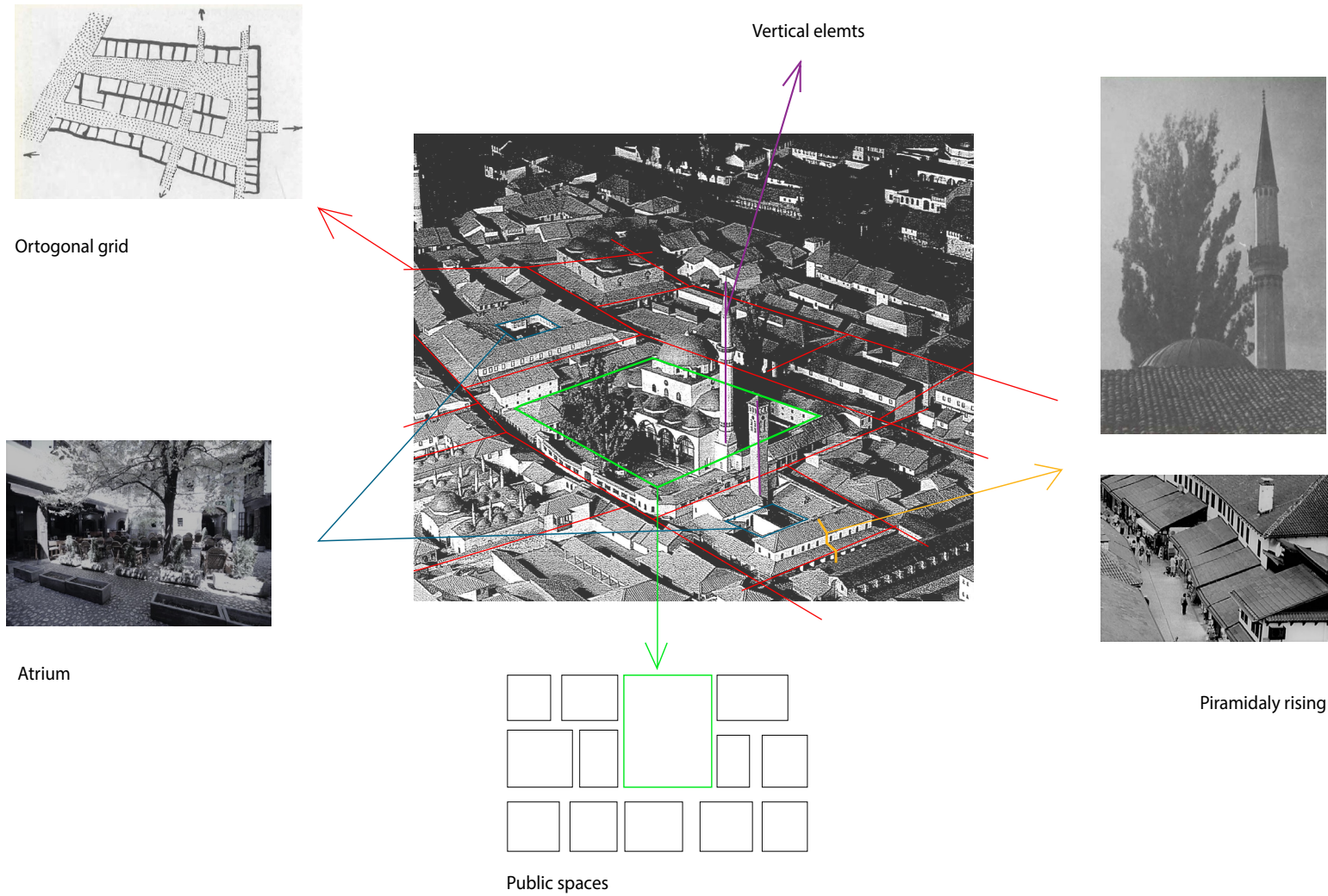


Figure 69. Spetial element of old Carsija

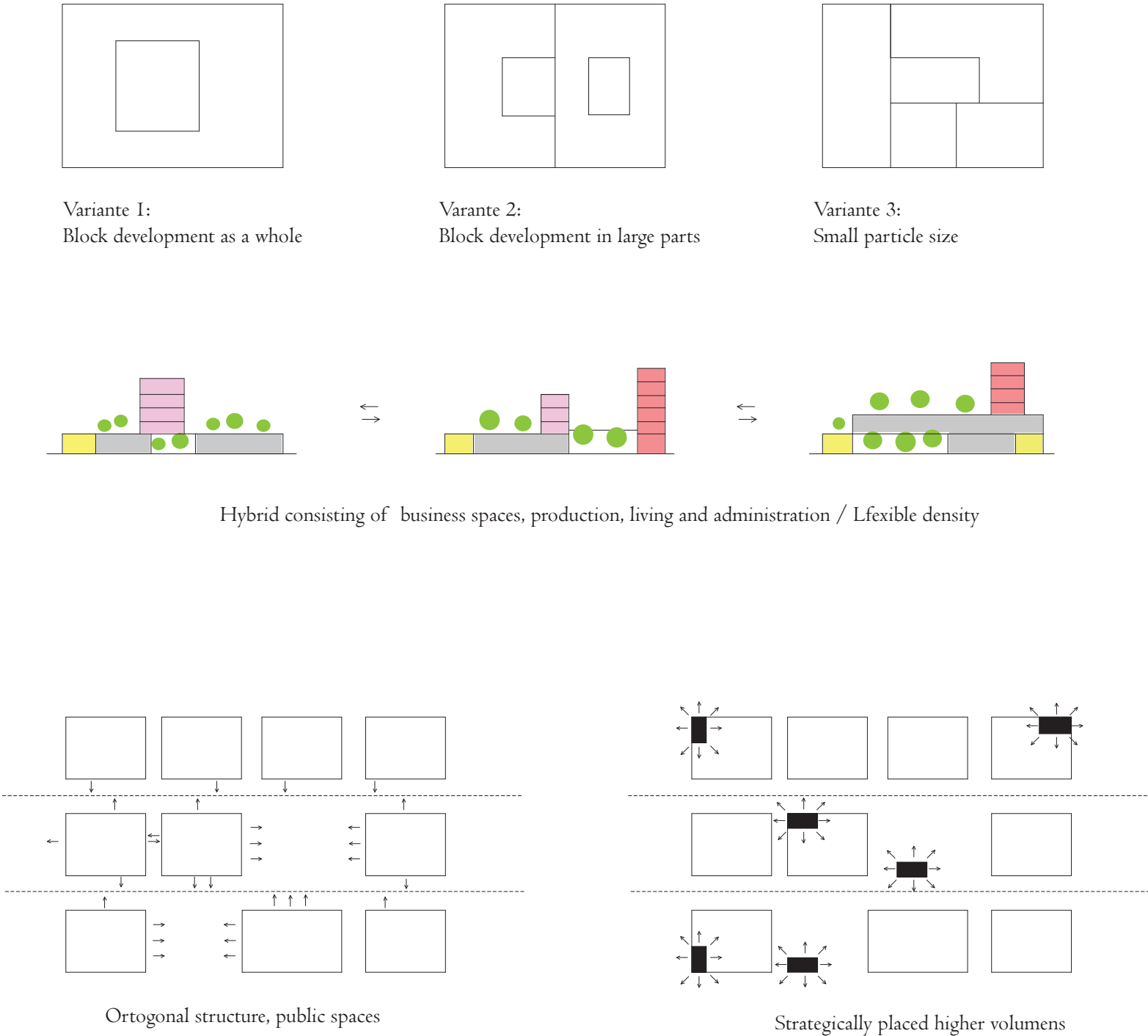


Figure 70. Carsija 4.0 concept



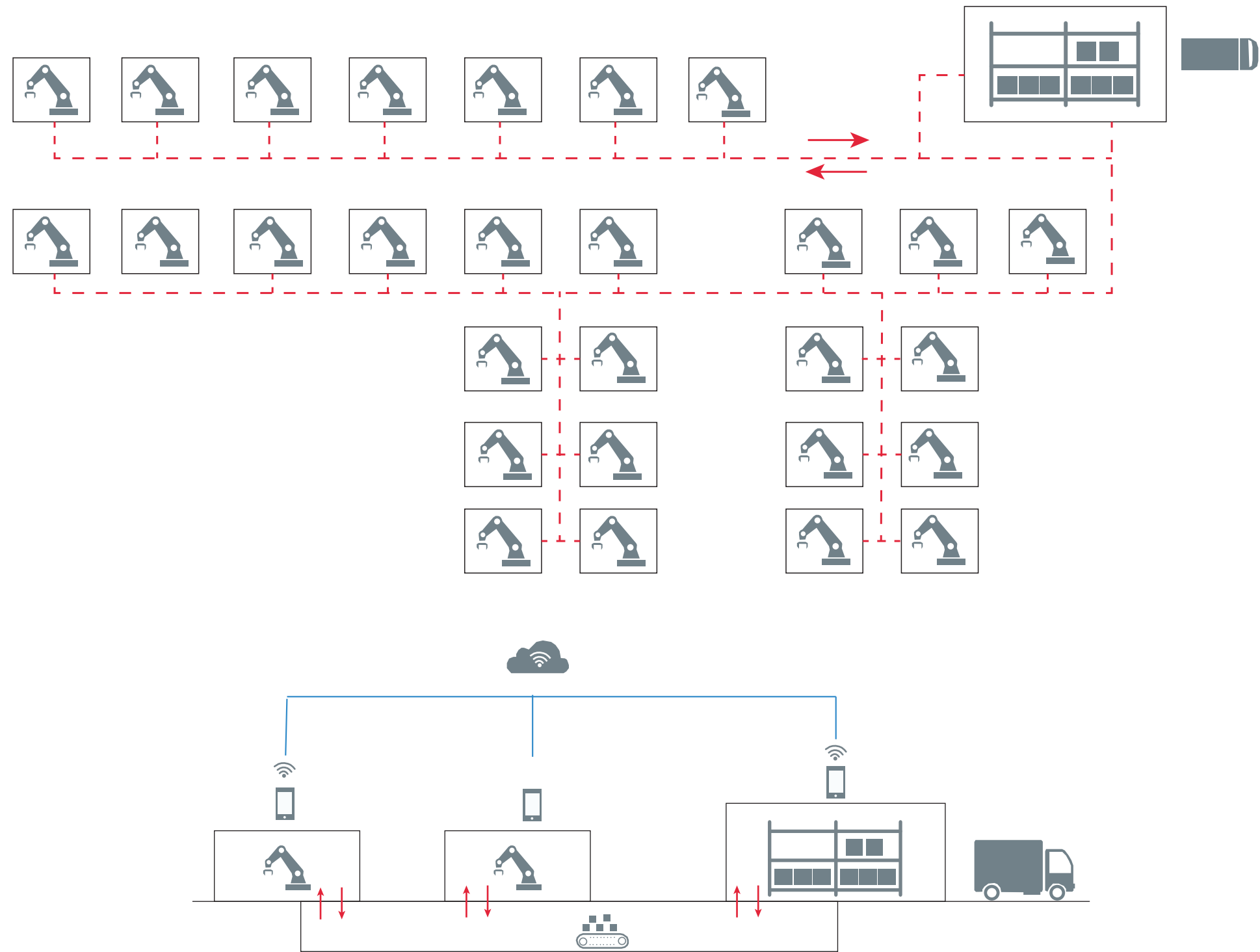


Figure 71. Smart grid

Old Carsija (Business Quarter) in the old part of the city with its urban patterns can serve as an inspiration for the newly formed structure of Carsija 4.0, that is, the fourth generation Carsija. Consequently, the context would be maintained, and the traditional architectural elements transposed into the modern expression. Urban elements such as the orthogonal network, vertical elements as benchmark, subtraction to create public and open spaces, pyramidally rising can serve as a guide in creating a new structure.

Industry 4.0, due to its mode of production, with ecological factors at a very high level enables mixing of functions, so in addition to production it opens the possibility for other activities. Housing, exhibition spaces, creative workshops, restaurants, markets, public gatherings, open spaces together with the new generation industry can create an urban hybrid that will enable the development of a new business lifestyle and social interaction.

The emphasis of the concept is flexibility. It is necessary to enable the development of various forms of production, with different spatial requirements, and enable the “natural development” of urban tissue and its density in accordance with the new needs.

The creation of the “Smart Grid” system enables the flow of raw materials and finished products via underground channels that are connected to the smart grid. Each user can access the cloud, and through smart devices participate in the flow of matter. In this way, the idea of industry 4.0 is enhanced and it creates ecological conditions by reducing transport of goods by trucks and cars. All products and raw materials are collected in one central warehouse, from which further deliveries are made.

### City levels

In the course of understanding a city, its floor plan plays an essential role. In the abstract black plan one can recognize the sealing relations and organization prinzipte. The projected plan, however, only depicts two dimensions - the development of tadpoles is not evident.

But since this is a decisive factor for the impact of a city, the different city levels must be examined individually.

The adjacent image shows the levels of the project and it becomes clear how much the density of the city is decreasing upwards.

The pedestal is the densest zone. This area interacts directly with the passants and shapes the main impression. It forms the transition from outside to inside and the wall of public space.

Small streets / paths are interrupted in their linearity again and again by small squares. They provide an interesting way through and invite you to explore the area.

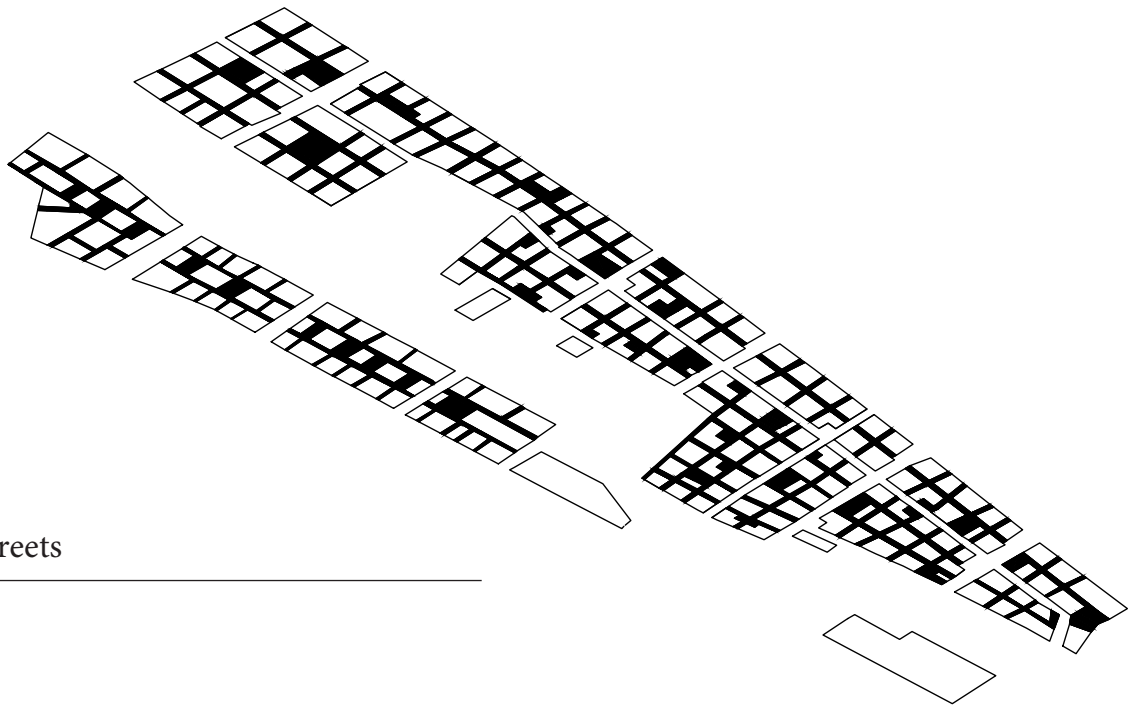
Squares are stopovers in the city. Therefore, they should be arranged at regular intervals. Basically: rather smaller dimensions, but larger number of squares. For the best possible development of the spatial effect, the edges should be kept closed. Depending on the desired use and situation, the squares are to be treated, proportioned and shaped differently.

Streets connect the squares with each other and form the basic structure of the city. The dormant traffic is concentrated in collective garages, which are accessible via small roads. The remaining street spaces are “shared spaces” designed primarily for pedestrian and bicycle traffic, as well as a recreation room. For delivery, supply temporary parking in the streets is possible.

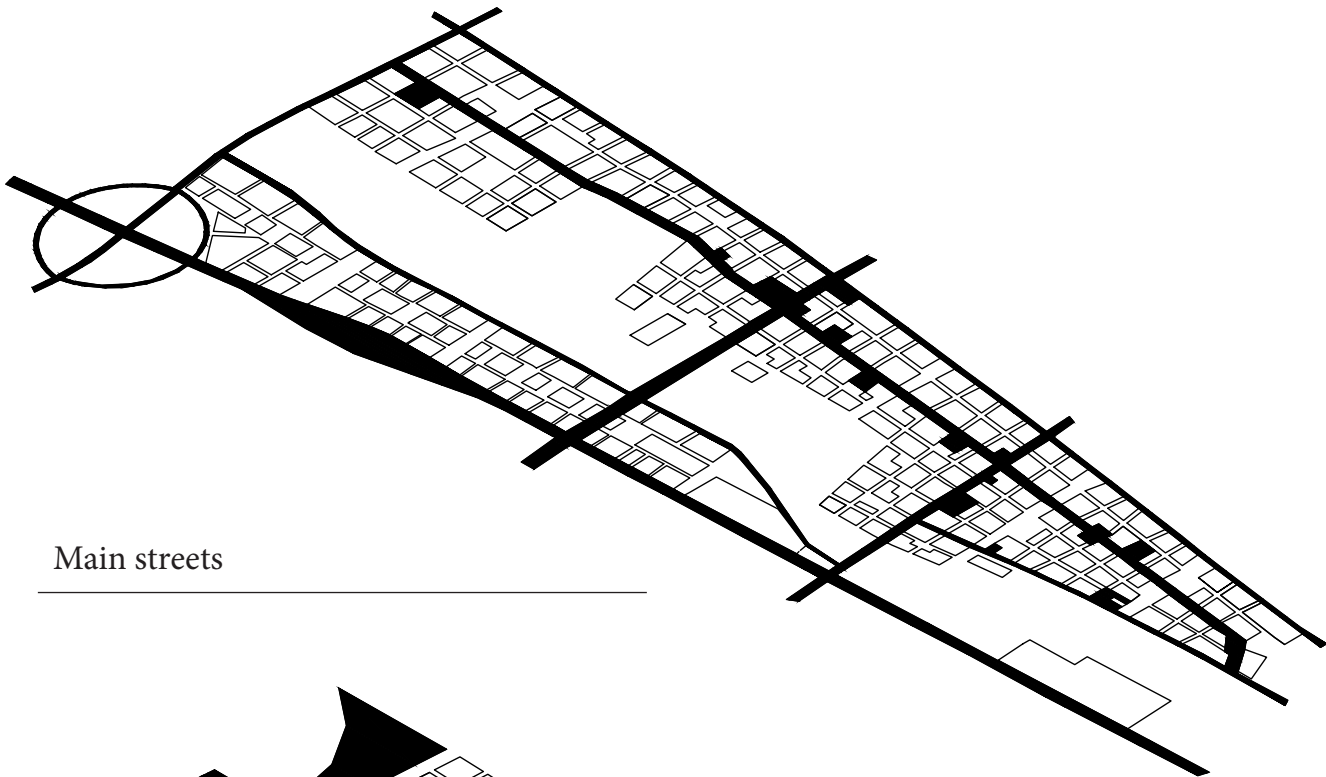
The higher buildings form so-called city crown. Beyond the prayer, they act as landmarks and make the new district legible



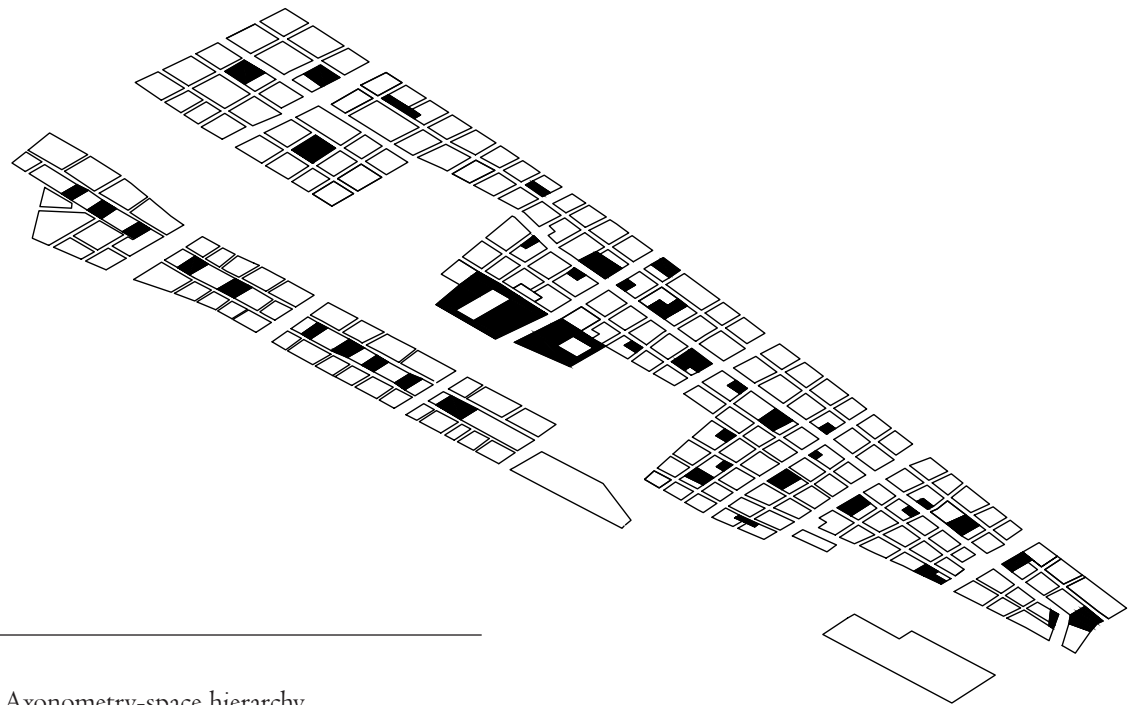
Small streets



Main streets



Squares



Central free space

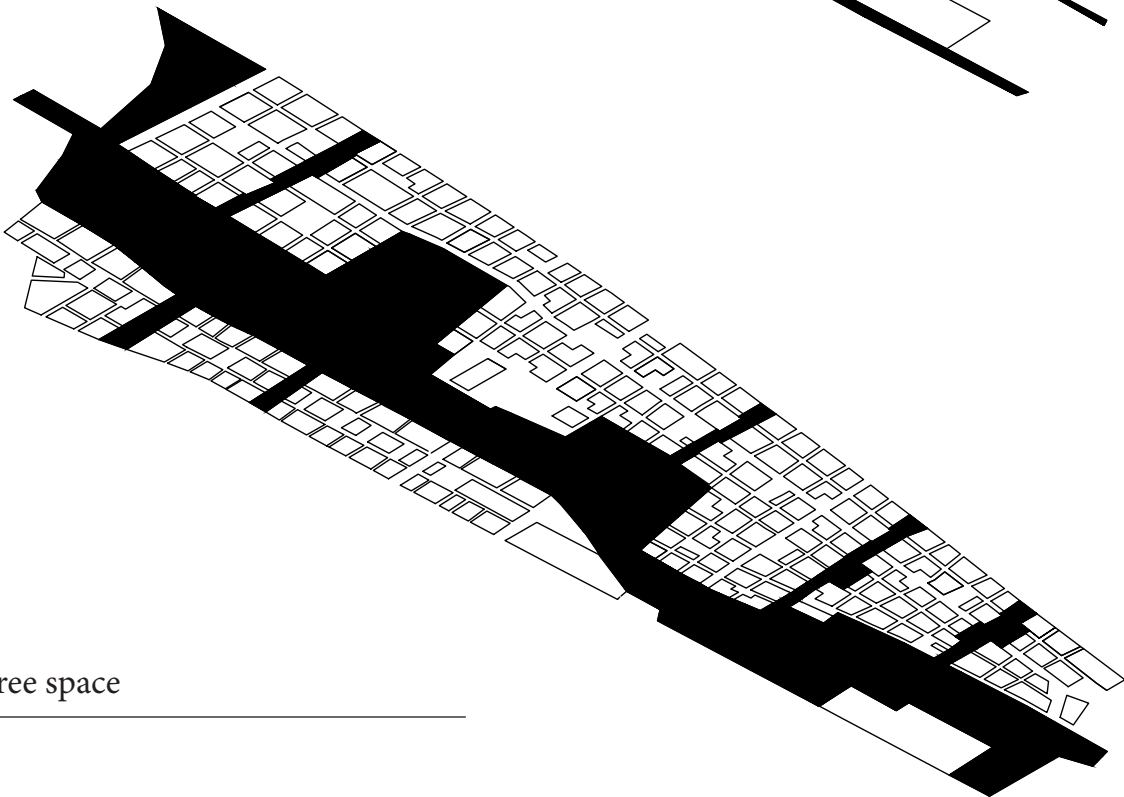


Figure 72. Axonometry-space hierarchy





## 6 Entwurf

### Courtyards

Courtyards i međuprostori u danasnjem razvoju grada igraju vaznu ulogu. Kroz uloženi trud pri dizajniranju javnih prostora, ozivljava se urban space. Međutim sa druge strane stoje courtyards kao određena konkurencija tim prostorima. Zbog toga je potreban jedan novi pristup, koji će ponuditi različite vrste aktiviteta u tim prostorima.

U ovom projektu imamo različite vrste courtyards. Njihova upotreba i funkcije variraju od mjesta na kojem se nalaze i koje polju pripadaju. U polju 50/50 imaju ulogu javnih prostora između poslovnih zgrada, dok su između stambenih zgrada više privatnog karaktera u vidu vrtova u zoni prizemlja.

Na području nove carsije (industrijske zone) to su poluprivatni prostori koji trebaju ponuditi dodatne aktivnosti i zelenilo.

“City garden” and “Block” areas nude courtyards koji su povezani na centralnu zelenu zonu i predstavljaju nadogradnju na funkcije koje nudi ta zona.

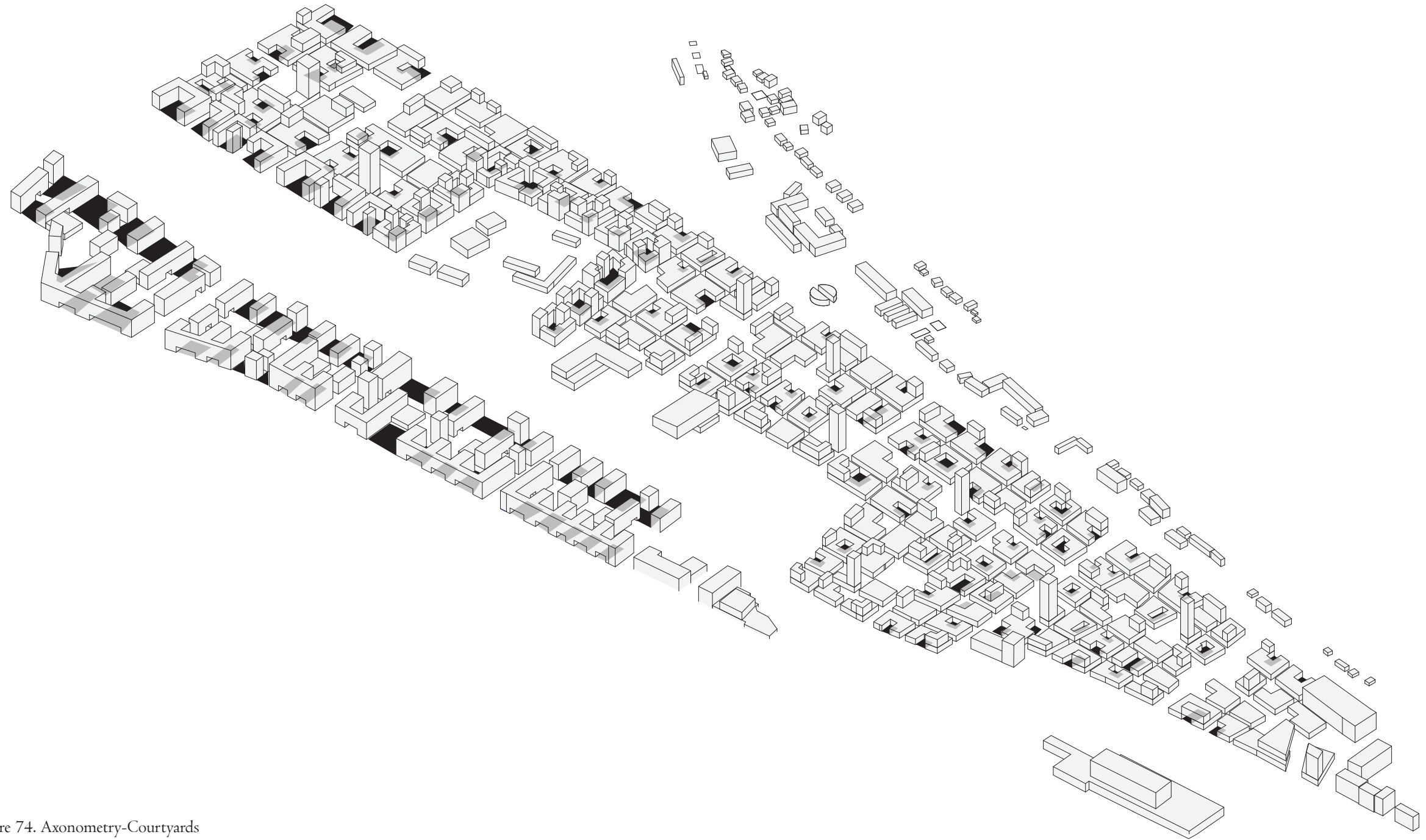
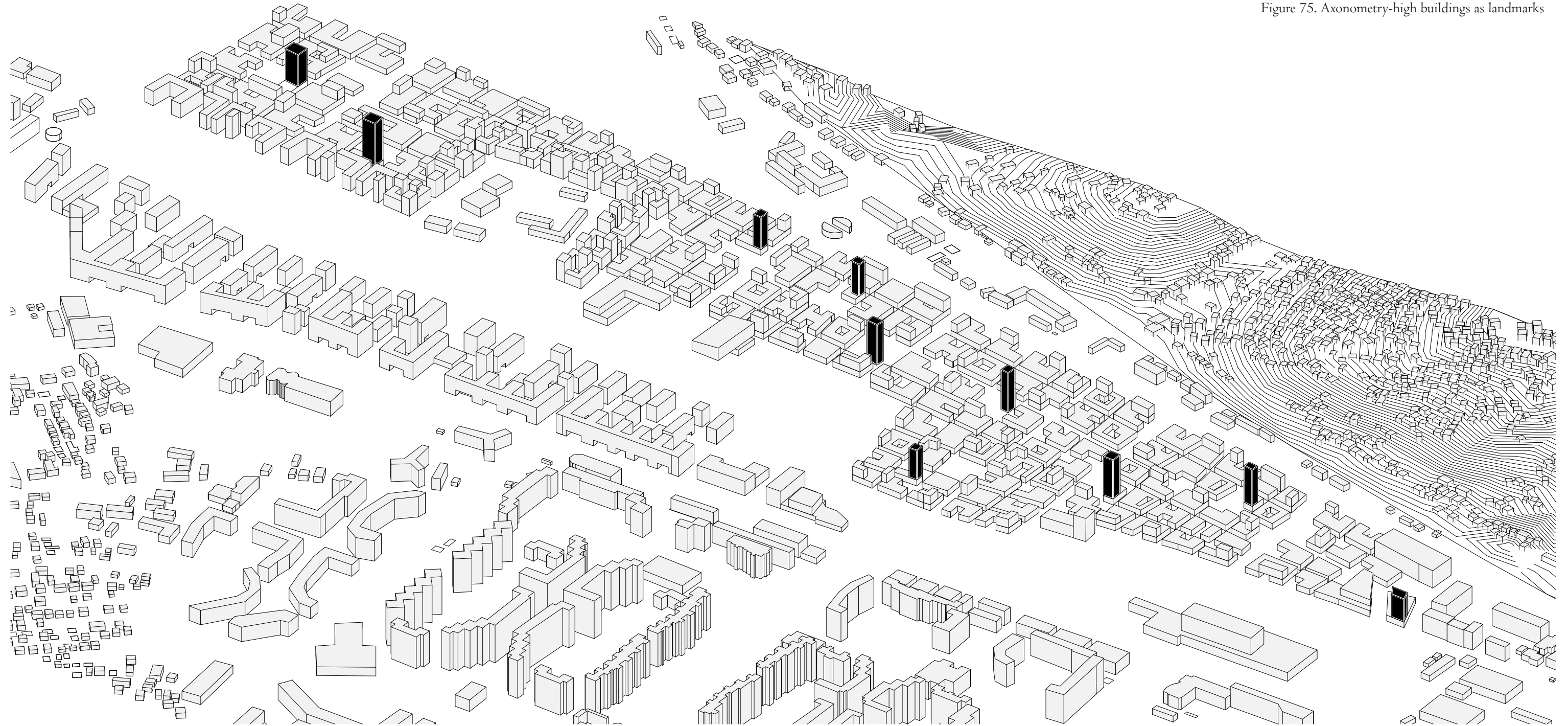


Figure 74. Axonometry-Courtyards

Figure 75. Axonometry-high buildings as landmarks





# 6 Entwurf

Figure 76. Masterplan M-1:2500



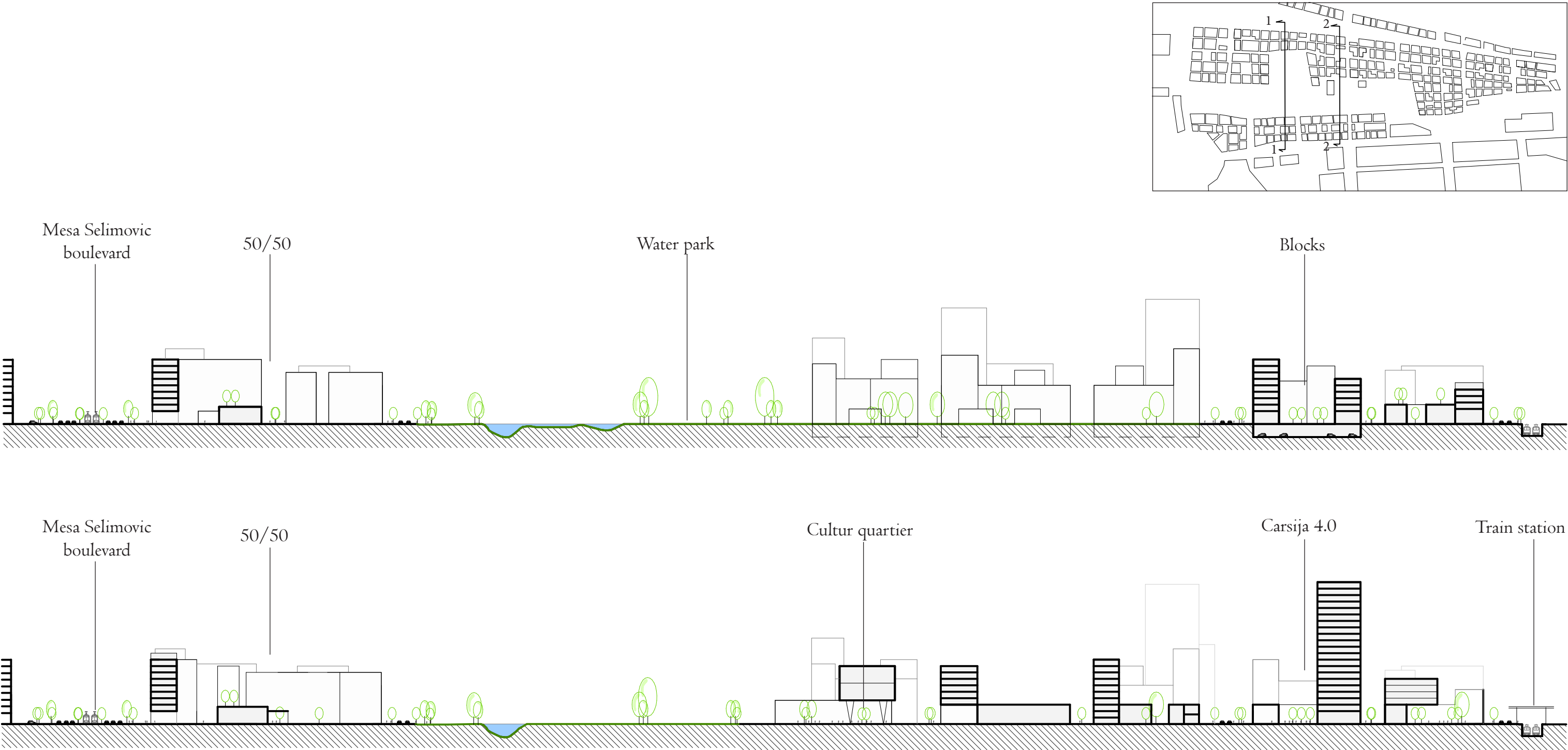


Figure 77. Section 1-1, Section 2-2



## 6 Entwurf

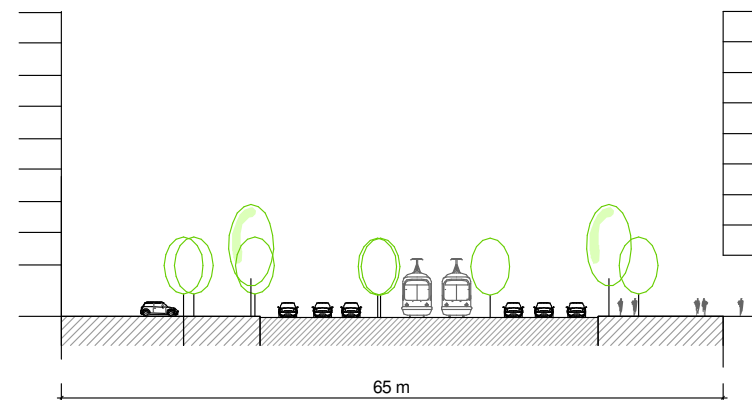
### The hierarchy of the streets

The street space is much more than a mere development and traffic area. In the present project, most of these are free of motorized traffic. The space that remains free can be accepted by the people again.

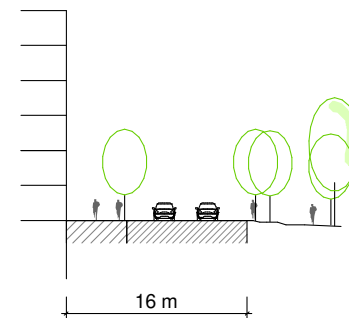
Kao što je ranije navedeno većina komunikacija se obavlja preko dvije vanjske ulice u smjeru istok-zapad, Bulevar mese Selimovic na jugu, te nove sjeverne longitudinalne na sjeveru paralelne sa željezničkom prugom i tri poprecne ulice u smjeru sjever-jug. Pored njih imamo još dvije poduzne ulice u centru područja koje trebaju prilagodjene pješacima sa saobraćajem niske brzine. Male ulice su in general oslobođene od motorizovnog saobraćaja, s tim da je potrebno omogućiti prilaz u zahtjevnim slučajevima.

Prateća grafika pokazuje primjere presjeka ulica. Međutim ne preporučuje se njihovakonsekventna upotreba. Poželjni su prijedlozi, da bi se ostvarila visoka fleksibilnost.

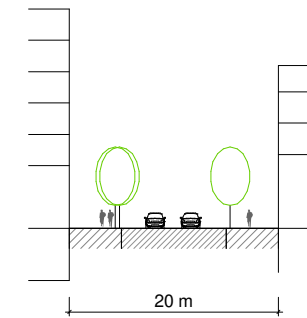
Narrowing the street space is a peculiarity of the urban space, which goes down in the purely technical consideration of streets length. However, for an interesting tour of the passers-by and the associated experience of urban space is of enormous importance.



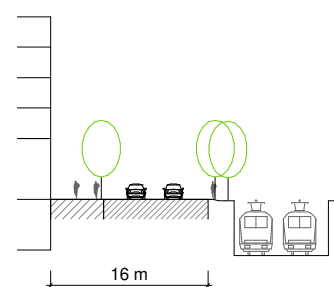
Mesa Selimovic boulevard



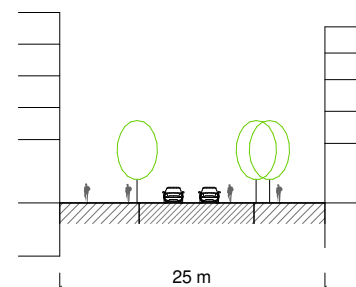
Small promenades next to Water park



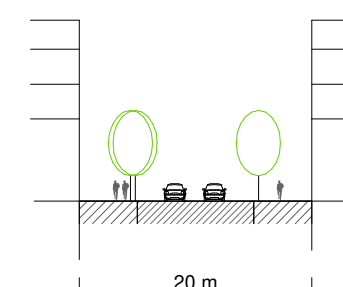
New Carsija street



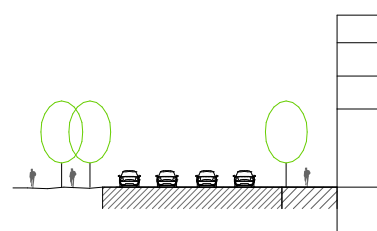
North longitudinal



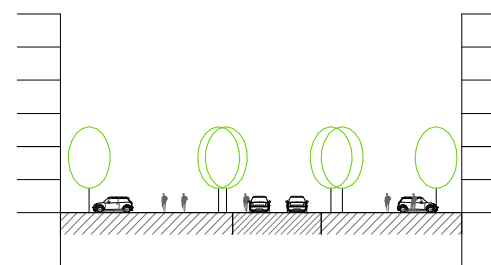
Ante Babic street



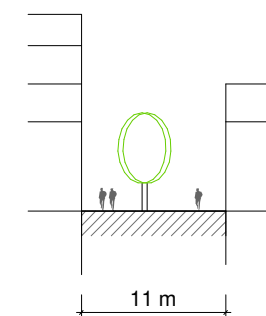
Ivo Andric street



Kurt Schrock street



Small streets (50/50 area)



Small streets (Carsija 4.0 area)

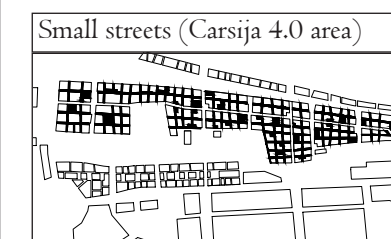
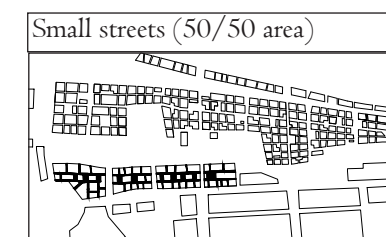
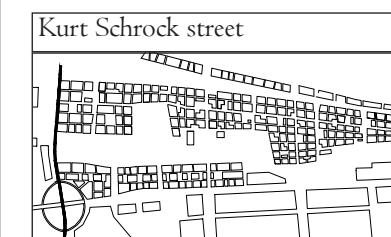
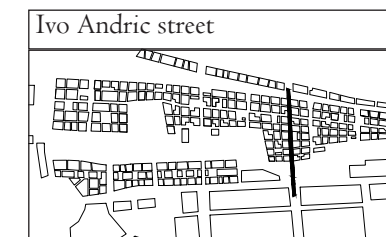
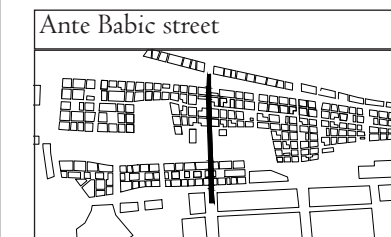
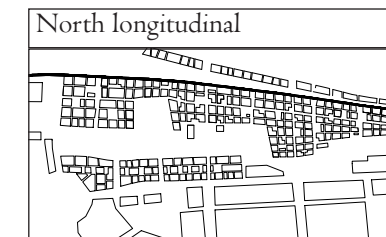
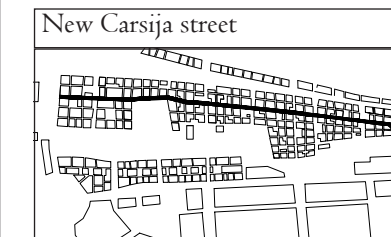
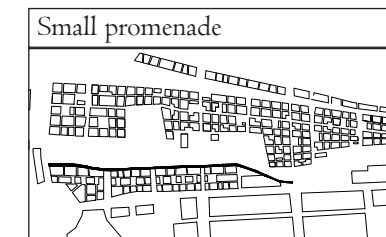


Figure 78. Street sections

## 6 Entwurf

### Increase of density

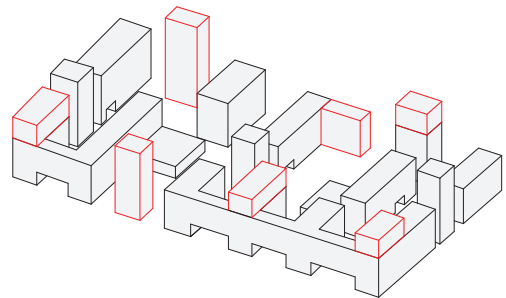
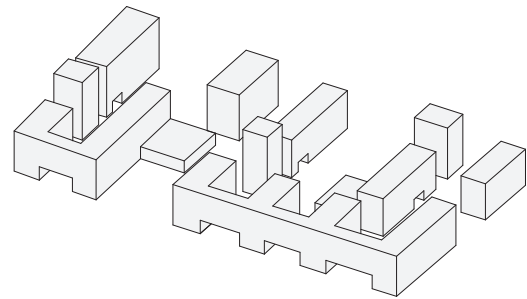
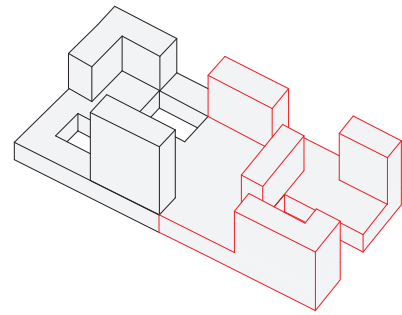
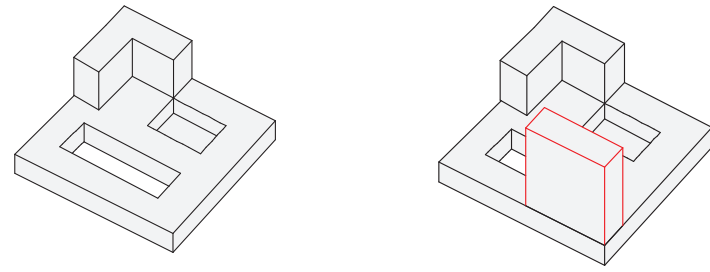


Figure 79. Possibilities for increasing density

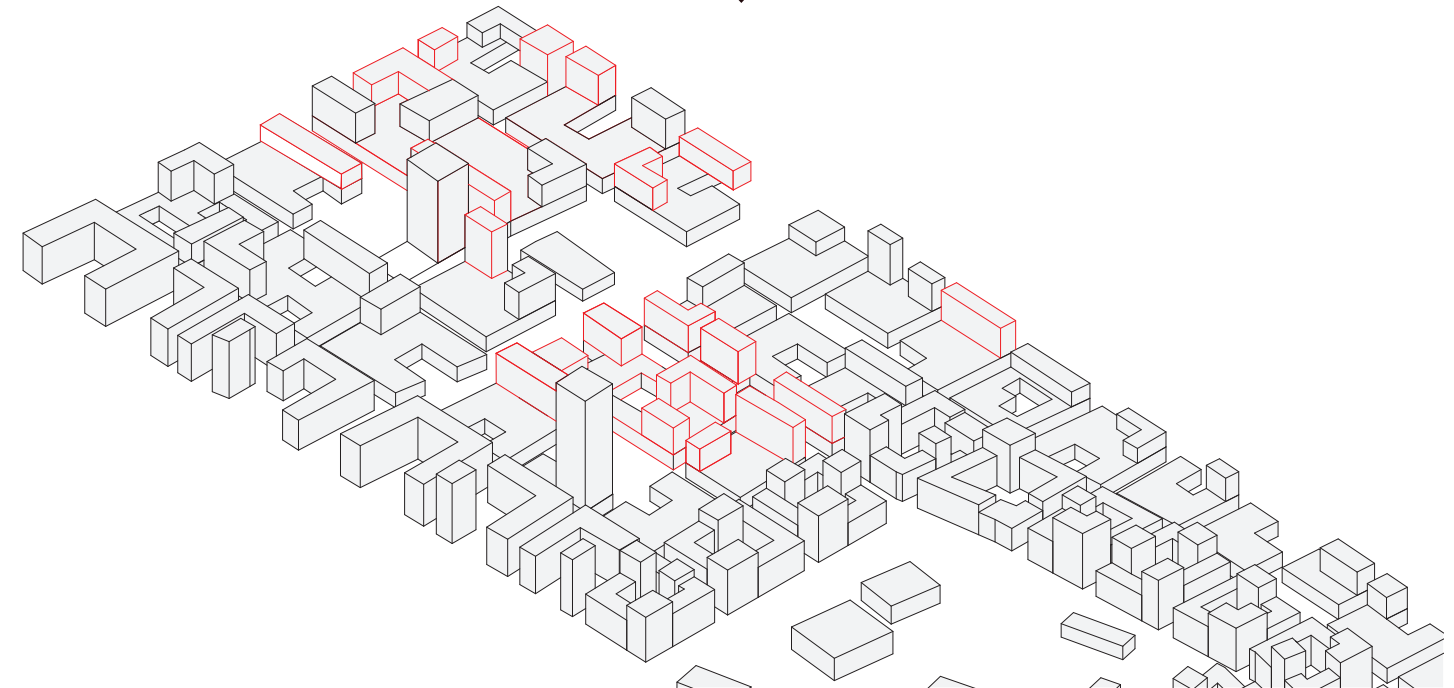
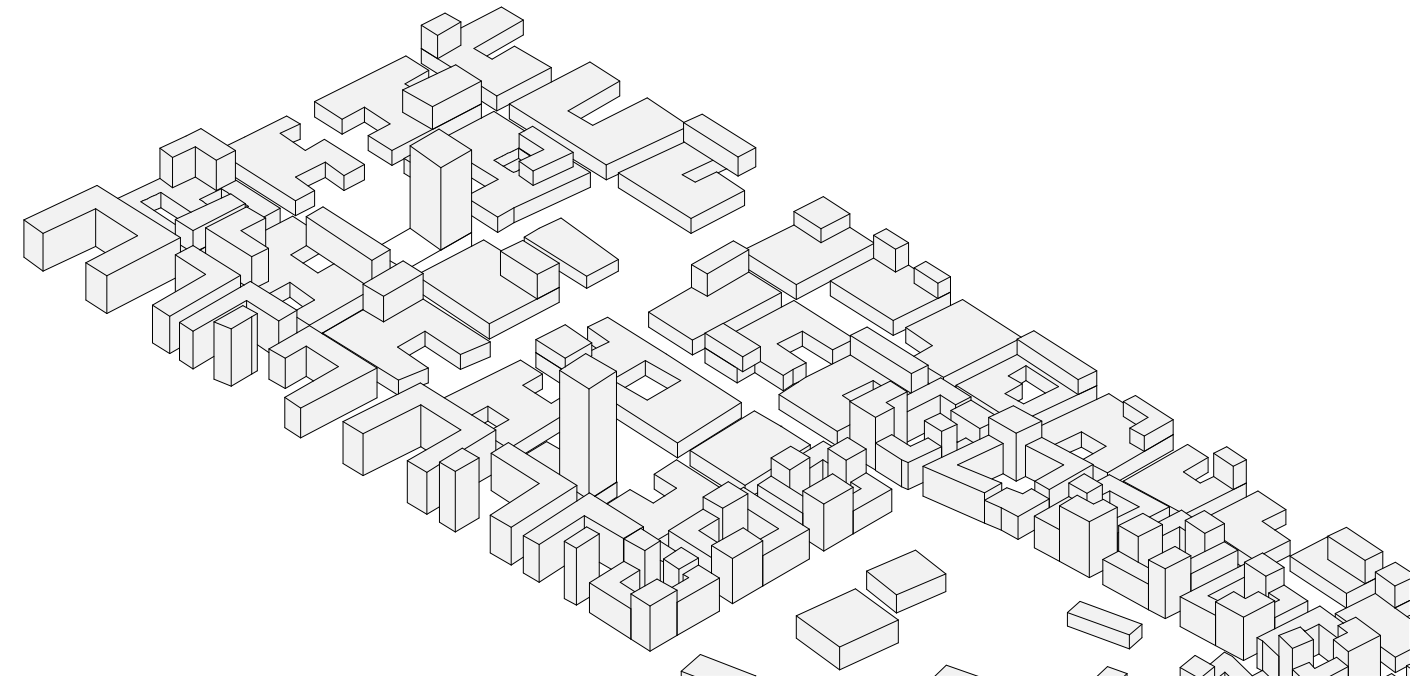
In debates about urban density we often find comments about buildings being too tall or not tall enough, about too many people in a neighbourhood or too few, about streets and buildings being overcrowded or empty.

Is it the volume or height of buildings? Or is it the numbers of people? One person's high density may be another's sprawl; the same tall building may be experienced as oppressive or exhilarating; a "good crowd" for one can be "overcrowded" for another.

However, there is a distinct difference between urban density of city centres and the density in periphery. The density of a certain area of the city is derived from different activities and needs that are presented throughout time.

Therefore, the goal to achieve in this area is to enable a flexible surface, where the city core could develop in accordance with emerging needs, types of production and people interaction. This all would reflect on the planning density of this area in the future.

Another aim is to form space edges through positioning and heights that will define different elements, such as: free central space, boulevards, squares...







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