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DIPLOMARBEIT

TRANSDANUBISCHE DICHTEN

Hochhäuser als Bindeglieder eines dispersen Stadtgefüges

ausgeführt zum Zwecke der Erlangung des akademischen Grades einer Diplomingenieurin

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A handwritten signature in blue ink, appearing to be 'H. Otto'.

ABSTRACT

ENGLISH

TRANSDANUBIAN DENSITY

High-rises as connectors for a dispersed urban fabric

The transdanubian area of Vienna results from a north-eastern quick expansion of the city during the 20th century and is now defined by the 21st and 22nd districts. Due to its particularly dispersed and heterogeneous structure, the transdanubian expanse differs from the other areas of Vienna. The future development of the city presents the opportunity to create a suitable and pleasant urban space out of this dispersed structure. In order to counteract the urban sprawl, an intensive densification of the city offers itself as a credible solution. On the basis of the demographic increase of Vienna and according to STEP 2025, a "node strategy" has been adopted as an urbanistic procedure for this area. Under this city planning strategy, high-rises work as landmarks in the urban landscape and build a network between the different interspaces. In addition, they reorganize their immediate environment and thus create a new urban space. As an example of applying this strategy, the project consists of the identification and representation of these nodes in the Transdanubian area.

DEUTSCH

TRANSDANUBISCHE DICHTEN

Hochhäuser als Bindeglieder eines dispersen Stadtgefüges

Der transdanubische Bereich von Wien resultiert aus einer nordöstlichen raschen Ausdehnung der Stadt während des 20. Jahrhunderts und wird heute mit dem 21. und 22. Bezirke definiert. Aufgrund seines besonders dispersen und heterogenen Gefüges, unterscheidet er sich von den anderen Bereichen Wiens. Die zukünftige Entwicklung der Stadt kann eine Gelegenheit werden, aus diesem dispersen Gefüge einen angemessenen und gemütlichen urbanen Raum zu schaffen. Um der Zersiedlung entgegenzuwirken, liegt die Möglichkeit einer intensiven Verdichtung der Stadt vor. Außerdem wird aufgrund der demographischen Zunahme von Wien und laut STEP 2025, die städtebauliche Verhaltensweise für diesen Bereich als eine „Knotenstrategie“ vorgesehen. Nach dieser Strategie wirken Hochhäuser als Landmarke in der Stadtlandschaft und bilden ein Netzwerk zwischen den verschiedenen Stadtgefügen. Zusätzlich ordnen sie ihr unmittelbares Umfeld an und erschaffen somit einen neuen urbanen Raum. Als Beispiel zur Anwendung dieser Strategie besteht der Entwurf aus der Identifizierung und Darstellung der Knoten im transdanubischen Bereich.

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FOREWORDS

Definition of the Transdanubian expanse area

The term “Transdanubian” qualifies literally the territory situated “across the Danube”. Corresponding to the urbanized left bank of the river in Vienna, the concerned territory is set thereby in opposition to the old city on the right bank, the “Cisdanubien” (Suitner, Kirsch, & Pühringer, 2018). Also, the term “Transdanubian” in its essence already suggests an unbalanced relationship between the two banks of the river. Moreover, the “expanse area” refers to a geographical growth of an already existing territory. Therefore, combining these terms into the “Transdanubian expanse area” instantly link both physical and historical aspects of an emergence and places implicitly the concerned area in a second rank of urban relevance.

For this project however, the Transdanubian area is going to be the focus of a morphological study and considered as an autonomous urban region.

The “nodal strategy” as key concept

In chapters 1 & 2, after an historical overview of the Transdanubian area’s emergence, we will see how a low urban density and a morphological disparity can form together the dispersed and heterogeneous fabric which characterizes it today.

Then it will be discussed in 3 & 4, how densification - more specifically high-rises - step in an improvement of a spatial urban coherence. Indeed, as mentioned in the STEP 2025 Thematic Concept for high-rise buildings in Vienna, the Transdanubian area with its fragmented cityscape claims a nodal strategy for the allocation of towers. This nodal strategy refers to a two-scale significance of high points in a urban territory. Scattered on a dispersed area, they act as connectors , whereas individually they provide activity and diversity to their immediate surroundings.

This is by working on both large and small scales, that the project, introduced in chapters 5 & 6, has been conceived. It consists indeed in an attempt of application of the nodal strategy on the Transdanubian territory. Based on a morphological urban analysis in a close scale, the identification of potential sites for high-rises in Chapter 5 stands as the core of the project. After detailing three high-rise propositions, the Chapter 6 is dedicated to the landscape presentation of the resulting network.

1. HISTORICAL AND URBANISTIC BACKGROUND

1 VIENNA AND THE TRANSDANUBIAN EXPANSE AREA

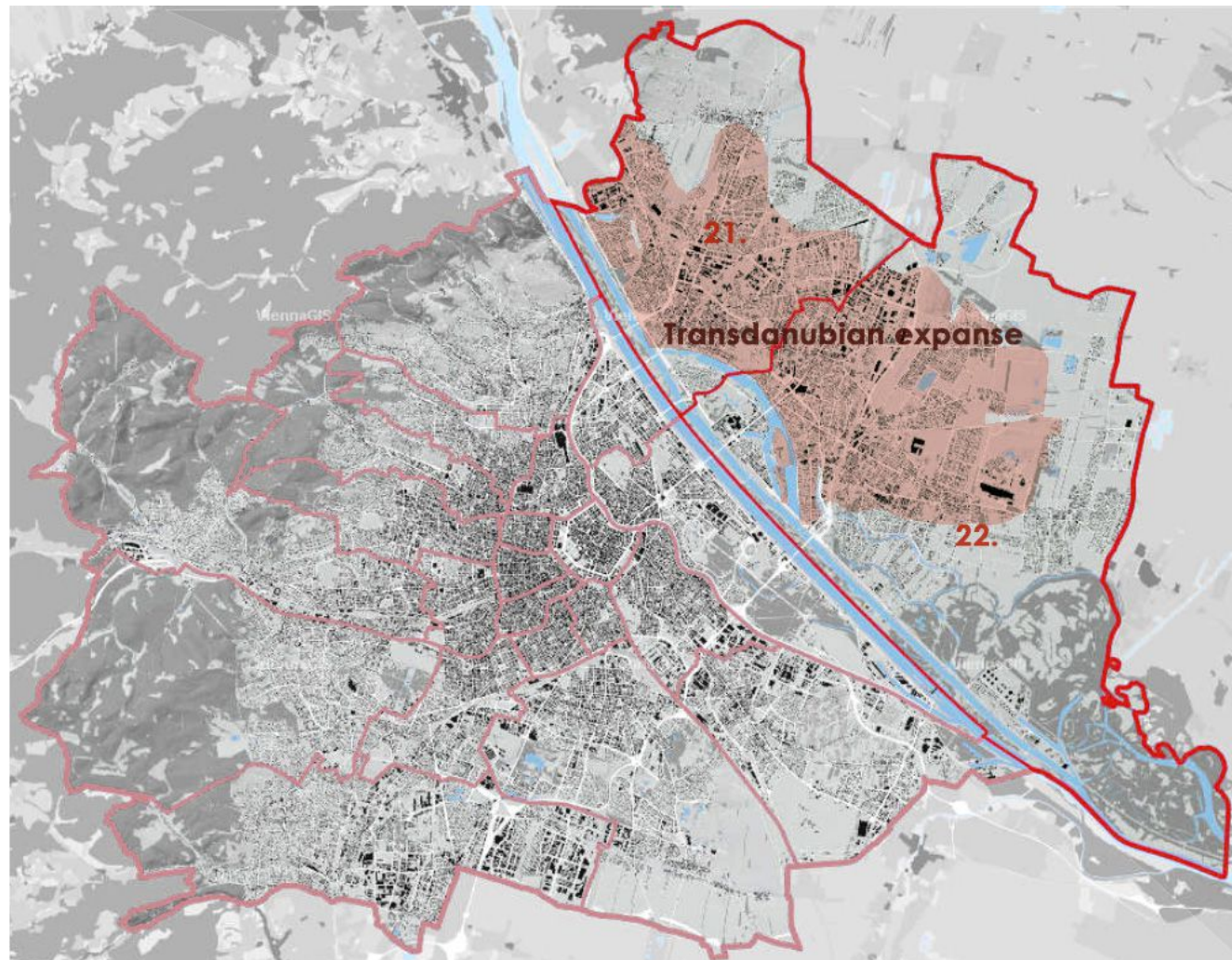


Figure 1 : Vienna and the Transdanubian Expanse area. Source: Stadt Wien, wien.gv.at

First of all, it is with a historical approach that we will try to detail the emergence and evolution of the Transdanubian Expanse area, revealing thereby its urban qualities. To this end, it is essential to consider the evolution of this area parallelly to the general history of Vienna itself. Situated across the current 21st and 22nd districts, this vast territory is the main urban body of the Danube's left bank in Vienna. As mentioned in introduction, in its name already, the Transdanubian area expresses an unbalanced linkage between the two Danube's banks, influencing their urban schemes and atmospheres.

In comparison to the Seine in Paris or the Thames in London, the Danube is larger and seems not to cross the city in its relative center. These two obvious statements have however deep consequences on the global morphology of Vienna. The Danube, wide, and today split in two arms by the island, acts as an internal natural edge of the city (Suitner, Kirsch, & Pühringer, 2018, S. 3). The communication between the two physically distant banks in Vienna is logically more complicated than in Paris, for example, and lends itself more to a landscape discussion than to a direct urban interaction. Moreover, as the edges of the river sides are already distant, the internal urban territories of each bank appear even more far from each other. Consequently, in opposition to the left and right banks in Paris which have a permanent interaction, the Viennese north-east side, represented by the 21st and 22nd districts, tends naturally to be more independent from the rest of the city.

First ignored, then colonized as a far-off suburb, we will see in this first chapter how Vienna's history and the Danube landscape influenced the development of the Transdanubian area, and set the foundation for its actual urban structure.

In reality, originally located on the right bank, Vienna grew and expanded until mid-19th century without crossing the Danube. Even though the left bank has always been occupied by a few villages, its urbanization, and thereby its incorporation in the city, were mainly influenced by the complex relation of the city with the Danube



Figure 2 : Distant view on the Marchfeld and Vienna from Bisamberg, 1840, Christian Plattensteiner, painting, oil on panel, Belvedere Museum, Vienna

The slow evolution of the settlements on the left bank until the 19th century can be mostly explained by the course of the Danube and by its surrounding landscape. Indeed, the many Danube branches and islands (*"Haufen"* in German) made not only the boat traffic difficult, but also represented a true impediment for the development of the villages. The regular floods, by hitting more particularly the flat left bank, represented the main threat for the constructions and population.¹ Nevertheless, this flat landscape, composed of islands and swamps, had the advantage of being very fertile.

As we can see in Figure 3, an extract of the cadastral land register of Francis I (1829), the left bank territory, when still not incorporated into Vienna, was composed of 13 distant villages. The earliest mention of settlement in the area is related to the village of *Leopoldau*, and goes back to the 10th century A.D. This village offers a very typical structure: a lenticular longitudinal global form, stretched along an silted up branch of the Danube.² Except *Floridsdorf*, *Jedlesee* and *Großjedlersdorf* which follow a north-oriented major axis coming from the city, most of the villages, scattered on the territory, are oriented to the West, the main wind direction in Vienna.³

Separated by fields, but linked by direct roads, the villages are set in a network which doesn't seem to have expended or strongly evolved until the mid-19th.

As we will see in a second part, this almost untouched "nodal" disposition of the villages makes them still today easily discernible, and leads them to act as cores in a complex townscape.⁴ Moreover, most of their linking roads are still recognizable as important axes of development for the entire territory.

As a matter of fact, some features on the Transdanubian area, like the village of Floridsdorf, and particularly the *Floridsdorfer Hauptstrasse*, are relevant elements concerning the urban evolution of the area. In fact, the large street along which the villages of *Floridsdorf* and *Groß Jedlersdorf* have grown, is remarkably straight (especially when comparing to the roads on the more eastern part of the area). Indeed, the many islands and the regular floods strongly hindered the construction of bridges, and the related connection of both banks, over centuries.⁵ As an extension of one of the earliest bridges (the Tabor bridge), the *Floridsdorfer Hauptstrasse* stands then as a relevant marker of Vienna's successive periods of development.

Because of its topography, the left bank has been kept isolated from the rich and dynamic right bank, and has found its colonization strongly impeded. Despite its restricting character, the Danube had also been a remarkable and profitable edge for Vienna.

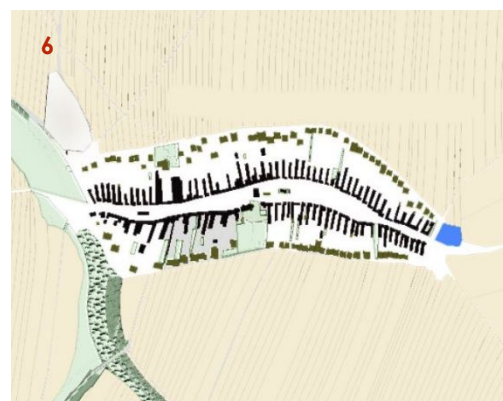
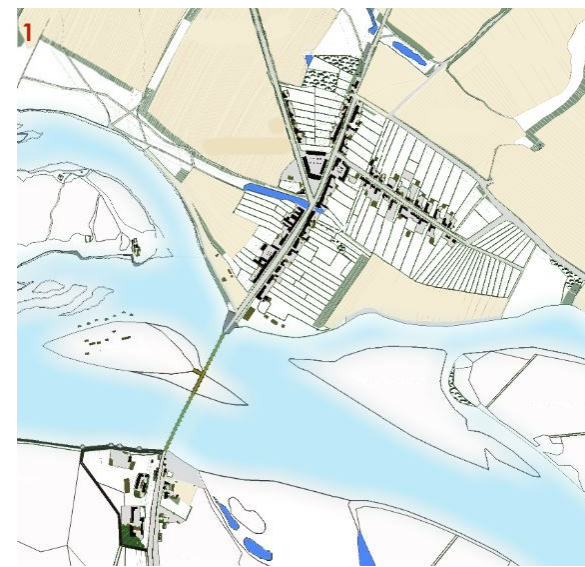
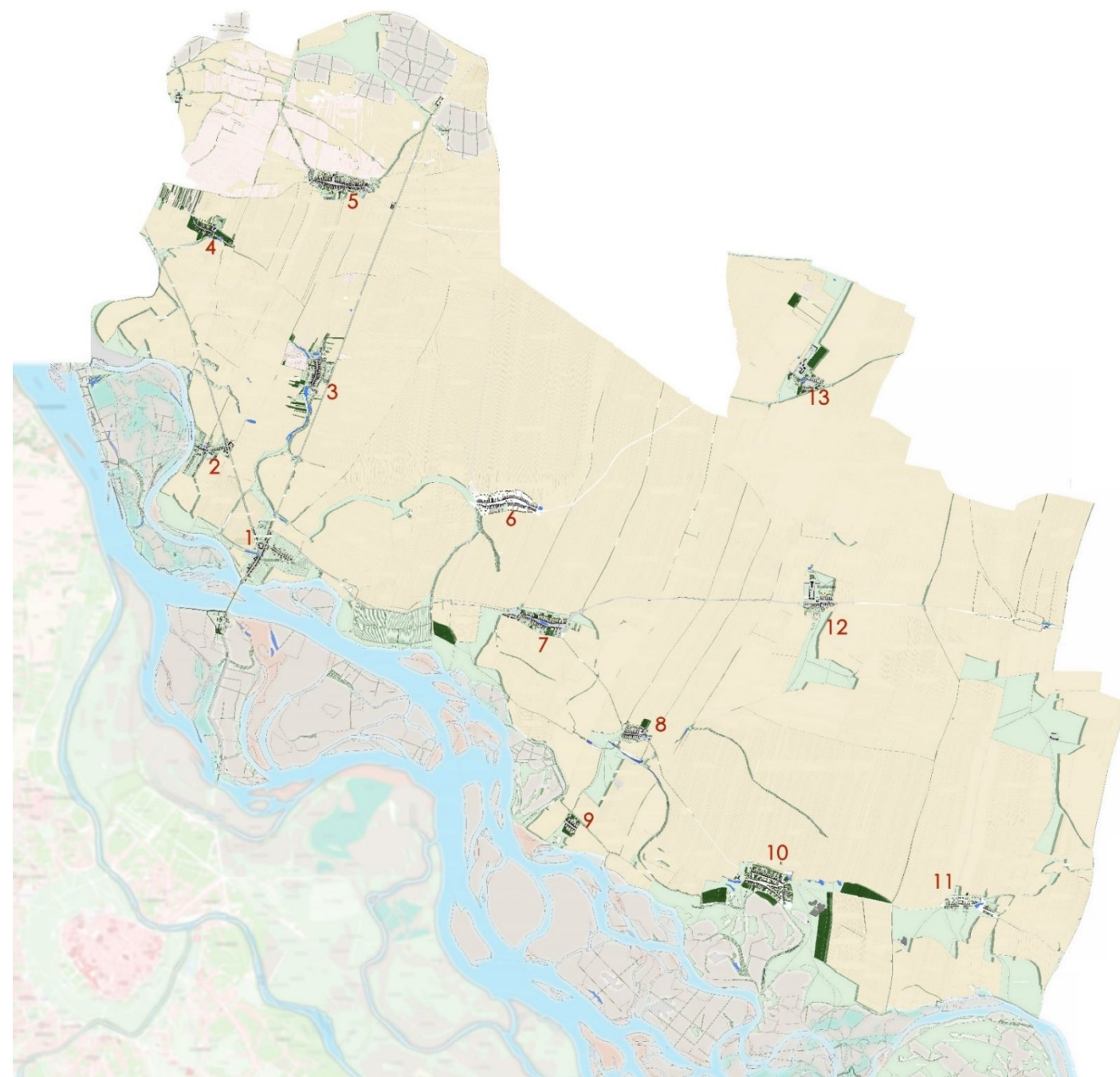
¹ Wien Geschichte Wiki ; *Donauregulierung*, 2017

² Wien Geschichte Wiki ; *Leopoldau*, 2017

³ (Suitner, Kirsch, & Pühringer, 2018) *TRANS[form]DANUBIEN*; Endbericht, p43. The houses, ranked along the main street and joined together, would form a unique construction with their thinner façades oriented to the direction of the dominant wind from the west. Thus the wind resistance of the line of houses would be decreased, providing more stability.

⁴ STEP 2025. *High-Rise Buildings*, p31

⁵ Wien Geschichte Wiki; *Donauregulierung*, 2017



VILLAGES

- 1 Floridsdorf
- 2 Jedlesee
- 3 Groß Jedlersdorf
- 4 Strebersdorf
- 5 Stammersdorf
- 6 Leopoldau vulgo Eipeltau
- 7 Kagran
- 8 Hirschstetten
- 9 Stadlau
- 10 Aspern an der Donau
- 11 Esslingen
- 12 Breitenlee
- 13 Süssenbrunn

Figure 3 : Vienna's left bank side of the in 1823, Land Register of Francis I, *Franziszeicher Kataster*. Source: wien.gv.at

B - INDUSTRIALIZATION, DANUBE REGULATION AND GREAT EXPANSION OF VIENNA

Indeed, at several historical moments, the Danube landscape and the Transdanubian territory represented a noticeable strategic tool. Sometimes turbulent, these events impacted of course the development of the few settlements located on the left bank.

The geography of the left bank, and particularly on the *Marchfeld*, played a role in some of the most important events in the History of Vienna, like the first and second Turkish sieges, when each time, the villages have been burned down.⁶

Again, during the Napoleonian battle of *Aspern-Essling*, the bridges, more specifically, took a decisive role: destroyed during the battle, they rendered the reinforcement of the French Army impossible.

Albeit punctual events, the sieges and battles, added to the repeated floods, seem to have strongly hindered the urbanization of Vienna's left bank. In fact, it is only at the turn of the 20th century, when new technologies and a need of expansion emerged, that the flood hindrance was overcome.

As shown on the landscape evolution of Vienna Figure 4 and Figure 5, it is between the mid-19th century and today that the most remarkable densification of the settlements on the left bank took place. On the present maps, accessible on Vienna's website, it appears clearly that the progressive but massive urbanization of this area happened within the framework of a global expansion of the city. It is also possible to assert that the first steps of urbanization across the Danube used the villages as cores, as base for the grid.

These villages found themselves progressively joined together, first by new street connections, then by the planning of the resulting intermediate space. This sudden and methodical urbanization, also recognizable in most of the European capital cities, finds its roots in a very intense period of changes in the technology and society.

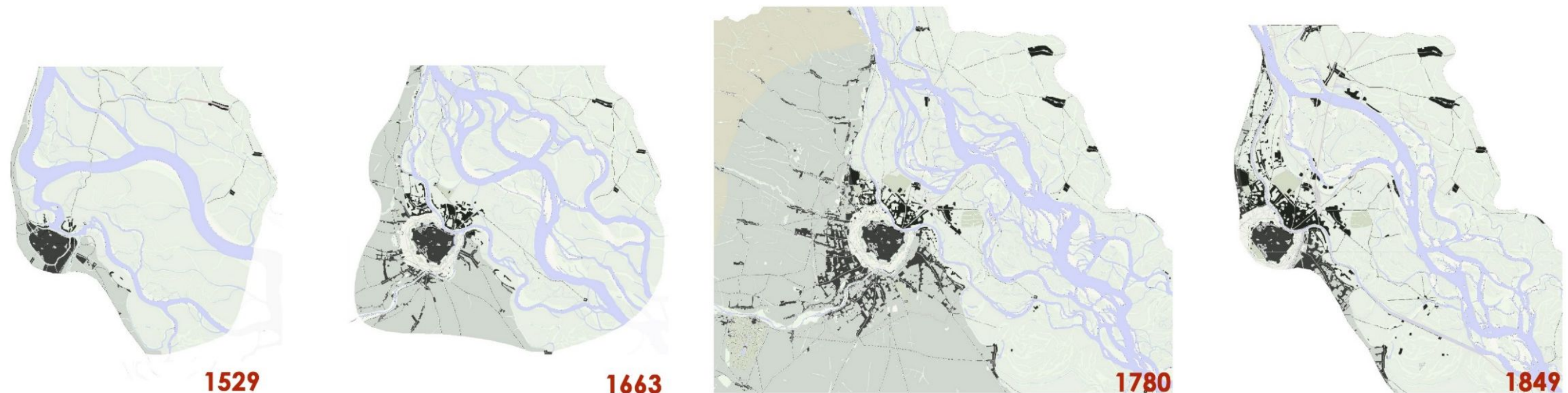


Figure 4 : Landscape evolution of Vienna from the 16th to the 19th century. Source: Stadt Wien, wien.gv.at

⁶ For example, the first Turkish siege in 1529 started when the Turks burned down the only bridge leading to Vienna and tried to settle in the islands and floodplains. During the second Turkish siege in 1683 however, as the Turks started to bombard Vienna, the imperial troops left the city and burned the same only bridge behind them, before they withdrew to Pressburg. (Weigl U.-D. M., 2017)

In fact, during the *Gründerzeit* period⁷, the Austrian-Hungarian Monarchy, as most of the European countries, modernized itself and industrialized many regions. A great economic boom and the strong industrialization resulted in a massive rural exodus towards the cities, which triggered to the emergence of a new social class, the proletariat.

This sudden and high population growth in Vienna led to a high dwelling need, and consequently, to the development of new urban landscapes and expansion patterns. This phenomena is particularly remarkable in the Viennese suburbs.⁸

In the 1850s, the planning and construction of the *Ring's*, as a boulevard between the inner city and its facing suburbs, had led to the integration of the first range of these suburbs into Vienna. This was followed by a general reorganization into districts (1-9). A second incorporation of suburbs followed in 1890-92 (today districts 11 to 19).

Finally in 1904, the new commune of Floridsdorf has been in turn integrated into the city.⁹ Representing the latest sudden and significant expansion of Vienna, this justifies the term of “Transdanubian expanse area”.

The expansion and densification of the city on the North-East wouldn't have been possible without the first regulation work of the Danube (1869-1875). Indeed, in 1849 the first Commission for the Danube Regulation was formed and led a few years later to the construction of a wide floodplain area, 474 meters wide, on the left bank of the main stream.¹⁰

Still without solving the flood risk, this first planning permitted a lasting settlement of most of the surroundings of the Danube, including the left bank.

The current Danube landscape is due to the second and last regulation works between 1974 and 1977, which consisted mainly into excavating the second arm and building up the Donau Island, a public open space for sports and free time.¹¹ Relatively recent, these final regulatory work put an end to centuries of floods, and boosted the urban construction along the Danube area.

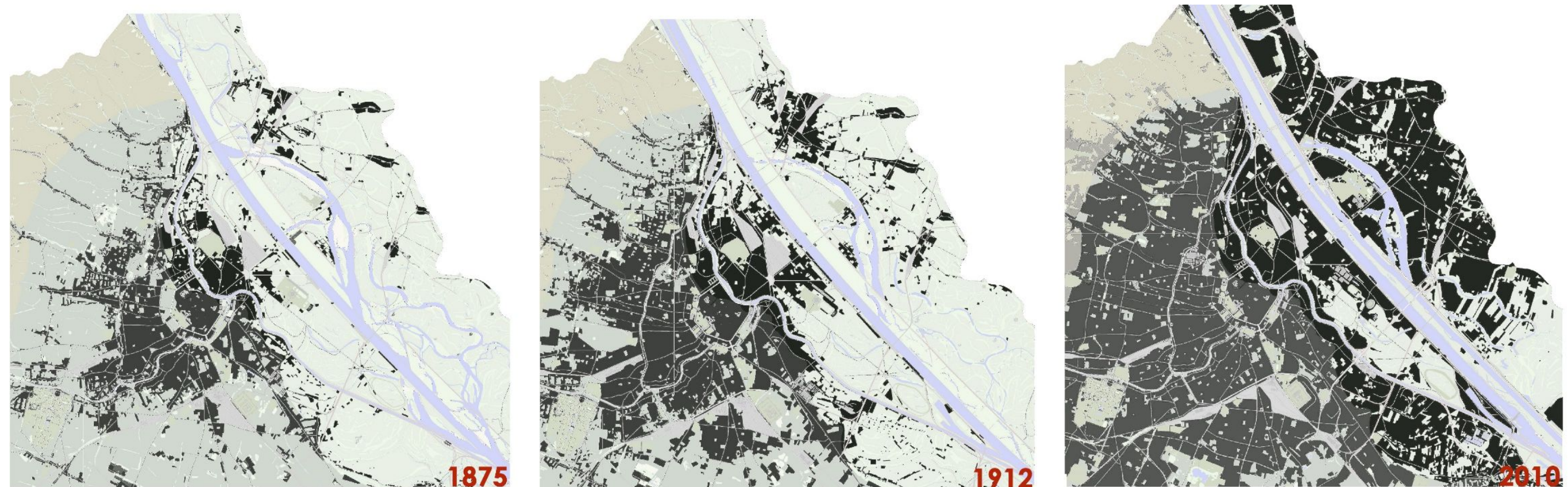


Figure 5: Landscape evolution of Vienna between 18th to 21st century. Source: Stadt Wien, wien.gv.at

⁷ Understand „Age of Promotism“. Also describing an architectural, artistic and urban planning movement, the German terminology will be used for this work.

⁸ Austria-Forum ; *Gruenderzeit*, AIEOU

⁹ Wiki Geschichte Wiki, *Generalstadtplan*

¹⁰ Wien.at ; *Geschichte der Donauregulierung*

¹¹ Wien.at ; *Geschichte der Donauregulierung*

C - EMERGING OF A NEW URBAN AREA

The first regulation work of the Danube can be held as a major triggering factor which began the process of urbanization of the north eastern part of Vienna. In fact, by making the construction of the plains possible, a sudden but also necessary colonisation of the fields by the city ensued.

As we can see on the Figure 8, a superposition of the cadastral Land Register of Francis I (1829) and the General City map (1912) in the Floridsdorf area, this sudden urbanization of the Transdanubian territory has been certainly radical but also methodical.

1893 a competition was organised for the first General Regulation Plan of Vienna. Otto Wagner won, in partnership with the architect and planner Joseph Stübben. The project was only implemented in one district (Stubenviertel) but remained as basis for next Otto Wagner's project, the "unlimited Large city" of 1911. At the heart of both projects lies the development of an efficient public transport system (Wien Museum, 2018).

In his pamphlet published in 1911 in reaction to the uncontrolled growth of the cities, the architect placed his theory in opposition to another famous Viennese urbanist, *Camillo Sitte*, who was advocating irregularities and a sort of particularization of urban spaces. Considering the city as a reliable but also beautiful machine, Wagner placed himself as an engineer of metropolitan life. (Wien Museum, 2018)

Also, in its project *The Large City*, related to the Pamphlet, Wagner intended to generate a more "homogeneous" and therefore more "aesthetic" cityscape. Although categorized as a theoretical project, its principles were identifiable in Vienna's contemporary urban development.

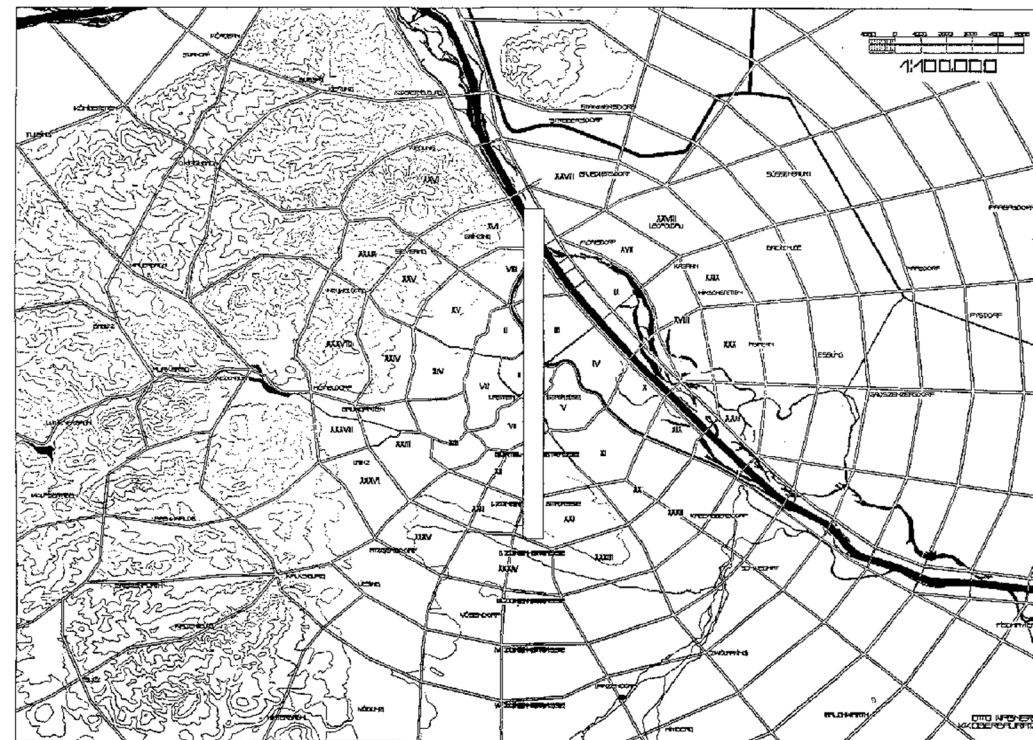


Figure 6: Otto Wagner, The Large City, "The Großstadt", Radial System for the development of Vienna, 1911. Source: urban planning cornell

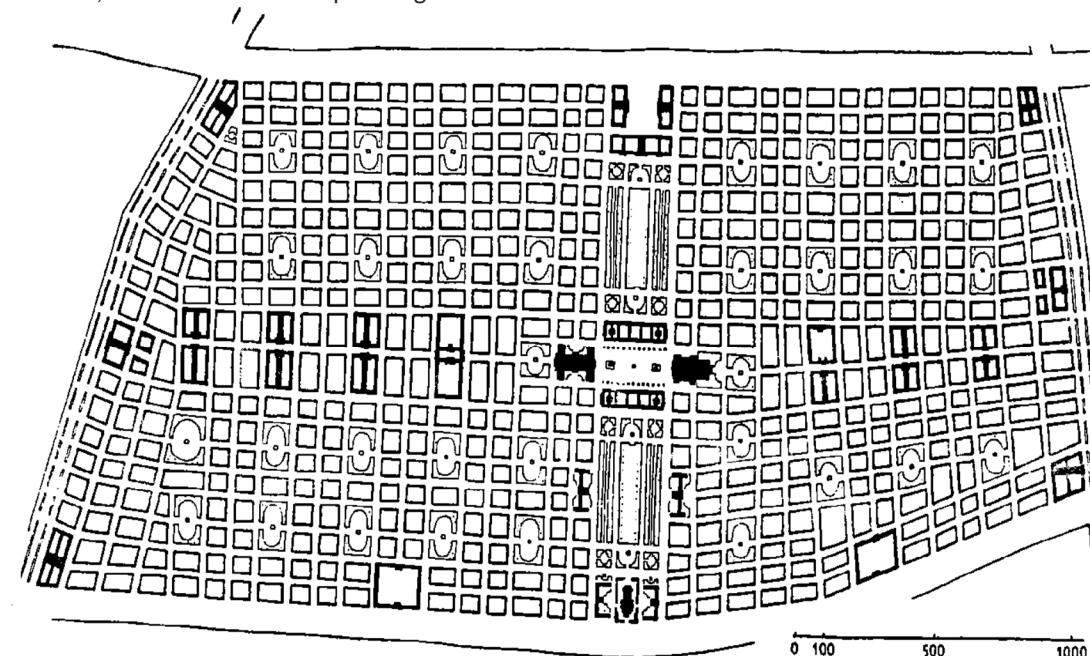


Figure 7: Otto Wagner The Large City, "The Großstadt", proposition for the 22nd Ward of Vienna (today 12th district), 1911. Source: urban planning cornell

As we can see on Figure 8, the urban transformation has been quite intense in the freshly incorporated villages of the transdanubian area. By applying the large scale scheme on Figure 6, the pre-existing roads were used to form the main grid of streets. At a closer scale, and inspired by the grid and dimensions showed on Figure 7, the fields were massively built-up into enclosed building blocks.

Also, in the framework of a global expansion of the city, the emergence of the Transdanubian area as an urban entity, is based on remarkable and widespread principles for urban planning development. The following turbulent 20th century also transformed the Transdanubian cityscape in many ways.

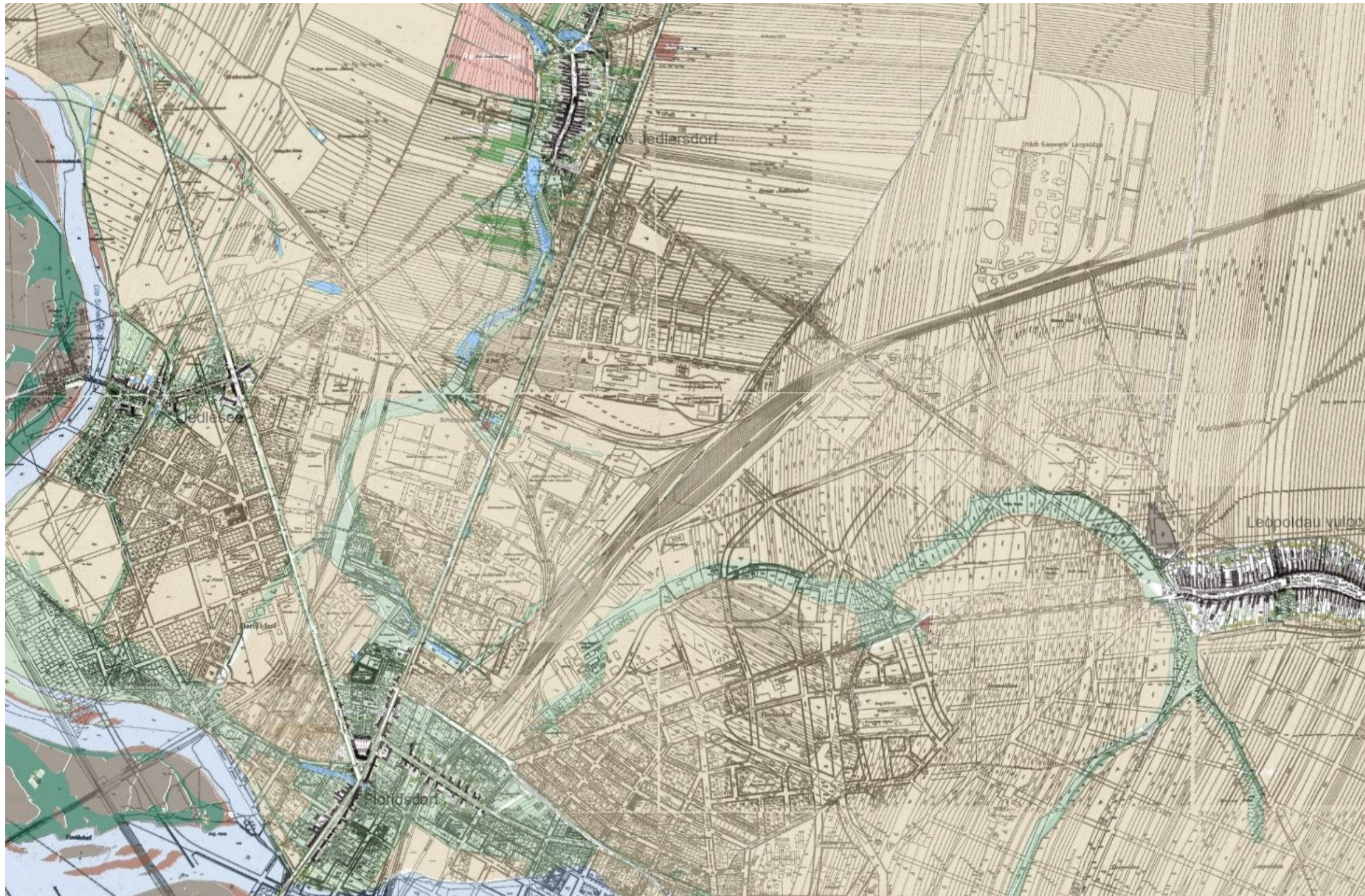


Figure 8 : Superposition of the cadastral Land register of Francis I (1829) - see Figure 3 - with the General Regulation plan (1912) on Floridsdorf, Jedlersee, Leopoldau and Großjedlersdorf. Source : Stadt Wien, wien.gv.at

2 THE 21ST AND 22ND DISTRICTS



Figure 9: The Transdanubian expanse area in comparison with the administrative boundaries of Vienna and of the 21st and 22nd district. Fond: Satellite view from Google Earth®, 2017

A - ADMINISTRATIVE BOUNDARIES

As previously detailed, the emergence of the Transdanubian area is due to the sudden expansion of Vienna at the turn of the 20th century. Its urban landscape, however, is due to the tumultuous following decades. Indeed, as with most European cities, two world wars, deep political changes and technological development have forced Vienna's cityscape to adapt itself. Contrary to the inner districts, which survived, the left bank side grew out of this unstable period. Then this adaptation and its markers are particularly more noticeable in the transdanubian expanse area, and remain today a large part of its identity.

In order to understand the structure and delimitation of this urban body which is the Transdanubian area, it is necessary to place it in a larger geographical context. Today as a major part of the expansion of Vienna, the Transdanubian area can be identified as the "heart" or "main body" of the combined 21st and 22nd districts. Again, it is through their common history, and particularly through their changing boundaries over the 20th century, that the present Transdanubian area emerged.

It is clear that the Transdanubian expanse area doesn't fit with any of the official boundaries in Vienna. As we can see on the adjacent satellite view (Figure 9), and moreover as one can envisage on site, the separation lines between the two districts don't seem to be based on a prominent natural nor structural boundary. Although being traced by following streets and urban patterns, this border can be surely pursued as artificial. Almost the same statement can be made concerning the boundary of Vienna with Lower Austria. In truth, today as distinctive regions, their separation process started in 1920 with a new State constitution, but was only acted in the 1990s¹². The relocation of the State Parliament of Lower Austria from its historical place in Vienna to St-Pölten symbolized this final step in this process.

The track of Vienna's boundary seems here to be placed following the concentric diagram of Otto Wagner. However, placed so far from the current limit of the urbanized territory, its track represents more likely a potential structural limit of the city in the future. Then used as a prospective tool, this boundary was placed in a global concept of anticipation concerning Vienna's urban development.

¹² NÖ Landtag ; *Die Trennung Wiens von Niederoesterreich*

B - DEVELOPMENT OF THE 21ST AND 22ND DISTRICTS

At the turn of the 20th century, before being incorporated to the city of Vienna, the dispersed villages of the Transdanubian territory were grouped into communes. In 1894, the Commune of “Floridsdorf” was created, comprising the villages of *Floridsdorf* itself, *Donaufeld*, *Jedlesee* and *Neujedlersdorf*. Then, in 1904, with *Aspern*, *Hirschtetten*, *Kagran*, *Leopoldau* and some other communes of the eastern part of the transdanubian territory, this commune was joined and officially integrated to Vienna, forming only one district named *Floridsdorf*. Afterwards, this district underwent a strong transformation into an industrial area, and hosted accordingly the labor classes.

In the 1920s and early 1930s, the local government, the “Red Vienna”, facing the housing shortage, built large urban housing complexes, especially boarding the most important axes of development (as the *Aspernstraße*, *Siemenstraße* and *Floridsdorfer Hauptstraße*). Thus in 1934, 6000 new dwellings like *Franz-Bretschneider-Hof*, *Karl-Seitz-hof*, *Paul-Speiser-Hof*, could be outnumbered. Similar to public housing movements in Germany¹³, these large-scale projects represent significant markers of this period in the modern architecture.

In 1938, under the National Socialist regime, a part of the 21st district was cut and joined to 15 Communes of the *Marchfeld* to create the 22nd district. During the Second World War, the construction of social housing was interrupted, and the 21st District, in comparison to the rest of the city, became particularly damaged by the bombings. In the beginning of the war, *Floridsdorf* appeared to be known as a center of resistance against National Socialism.

After the war, then occupied by the Soviet Union, the erection of social housing started over and got improved thanks to new social and technical infrastructures. The border between the two districts moved in 1954, integrating Kagran and Kaisermühlen to the 22nd district. At this time, the district saw its surface reduced and its name changed from *Groß-enzersdorf* to *Donaustadt*.¹⁴

Through the construction of large-scale housing such as *Großfeldsiedlung* and the significant, and today controversial, satellite towns, the population grew from 70.000 to 120.000.¹⁵ In the 1960s, the connection to Vienna’s city center was improved thanks to the creation of a highway connection with the 19th and 20th districts on the right bank, and of the S-Bahn Stations. Finally from the 1970s till today, the reconstruction and multiplication of the bridges across the Danube finalized a strong linking process of the 21st and 22nd districts to the southern part of Vienna.



Figure 10: Paul-Speiser-hof in the 21st district, built between 1929 und 1932. Photo: bwag/commons



Figure 11: Großfeldsiedlung, large scale collective housing in the 21st district, built between 1966 and 1973. Photo: bwag/commons

¹³As the *Neues Frankfurt*, a public programm for affordable housing in the 1930s in Frankfurt.

¹⁴Wien Geschichte Wiki ; *Floridsdorf*

C - PUBLIC TRANSPORT IN THE TRANSDANUBIAN AREA

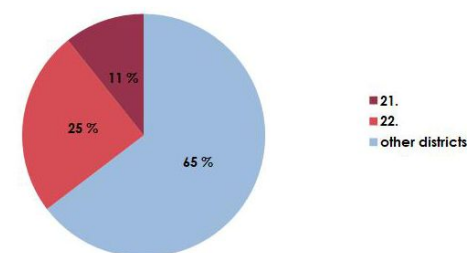
In comparison with most of the European metropolises in the 19th century, Vienna has only been able to afford an effective public transport system relatively recently. Nevertheless, the city was given such an exemplary system by Otto Wagner's Stadtbahn that it functions well even today. Since the construction and modernization of the U-Bahn in the 1970s, the Viennese public transport is even seen as a successful example.¹⁶ When they started building the metro in Vienna in the early 1970s, the original plans of Otto Wagner in the 1900s were used as guidelines. From the U1 to the U6, the present six lines of Vienna follow routes that were designed one century ago. These plans, however, also include a seventh line which, certainly following the radial system, crossed through the districts of Floridsdorf and Donaustadt. The line has not yet been built because of the low population in the area.¹⁷

The creation of Vienna's Metro network proceeded in progressive steps. In the first construction phase, only the U1 was crossing the Danube, its track ending in Kagran. After the second phase in 2000, however, the U6 was extended to Floridsdorf and the U1 to Leopoldau. It was only during the third phase, in 2007, that the U2 line was extended to Aspern- Seestadt. Therefore one could project that the last extension would concern the U6 from Floridsdorf to Rendezvousberg.¹⁸

Although the development of public transport seems to be effective in the transdanubian area, one noticeable weak point can be the lack of strong transversal connections. In fact, the metro lines and the S-Bahn link the territory to the city center pretty well across the Danube. However, with the exception of some tram lines and a majority of bus lines, the route from Floridsdorf to Aspern appears complicated and long. All of these extensions are primarily as a result of a need for mobility in this territory (especially from and to the left bank of the Danube). Nevertheless they are essentially linked to the growing population.

According to Vienna's Statistics, as represented in the graphs below, the 21st and 22nd districts together represent around 35 % of the total area of the city, though this only accounts for 18 % of its total population. In this observation resides the underlying issue of the left bank side's urban development: an extremely expansive area, for which there are few potential users, isn't a good basis for great urban development.

Total surfaces of the 21st, 22nd and added other districts of Vienna, in 2017 (ha)
<https://www.wien.gv.at/statistik/lebensraum/tabelle/nutzungsklassen-bez.html>



Repartition of population in the 21st, 22nd and other districts of Vienna in 2017 (%)
<https://www.wien.gv.at/statistik/bevoelkerung/tabelle/bevoelkerung-bez-zr.html>

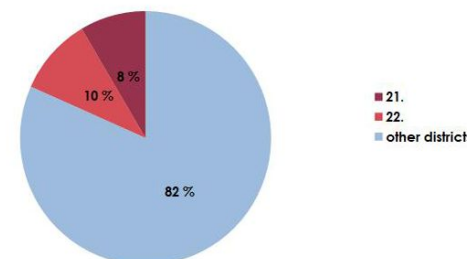


Figure 12: Areas and population distribution in the 21st and 22nd districts in Vienna in 2017. Source: wien.gv.at



Figure 13: Public transport system of Vienna in 2017. Source : Studie "Wien Polyzentral", MA 18

¹⁶ Jäger-Klein Caroline: *Österreichische Architektur des 19. und 20. Jahrhundert*, p239

¹⁷ Wikipedia ; *U-Bahn Wien*

¹⁸ [u-wien.at](https://www.u-wien.at) ; *Ausbaustufen*

D - GENERAL URBAN STATISTICS

Before focusing on precise composition and proportions of building typologies among the transdanubian area, it seems important to consider the built-up density, alongside the population density, as one of its major urban characteristics. In fact, a recent urbanistic study : *The Build density and Land use in Vienna. Is the growing city losing the ground ? (2016, Stadt Wien)*, brings key insights into the understandings of Vienna’s current urban fabric, density, and land utilization. This brings the first clue for a current differentiation between the 21st and 22nd districts from the other districts, but also shows the global dynamic in which Vienna is evolving.

General facts and Land Use of Vienna’s Cityscape

Between 2007 and 2014 the cubic contents of construction increased by about 7 %, which corresponds exactly to the population growth over the same period, reaching 1,78 Million inhabitants. In 2016 Vienna’s gross floor area grew by 178 million m², whereas 73 % of it was dedicated to Housing and Mixed-used area.

According to the same study, the viennese settlement fabric is anchored in a very stable structure. Indeed, from 1981 until today, the largest increase in the area dedicated for a land use has amounted to 2,5 % (*housing and mixed-used utilization rose from 22,5 -25% in this period*). By contrast, most of the areas needed for alternative land uses (industries and offices, technical infrastructure, natural space, leisure equipment, social infrastructure,...) show tiny fluctuations. Only a relatively sharp decrease of approximately 6% was observed concerning the proportion of land used for agriculture (replaced by housing and mixed uses). As it was in 1981, the biggest proportion of land use (slightly over 25 %) was still for natural space, a share that has now also been achieved by housing estates.

In other words, even if the construction of housing estate represents the biggest change in its urban composition during these last 20 years, Vienna still

remains a very green city, with a very stable and balanced land use distribution.

Low built-up density in the 21st and 22nd districts

As detailed in this study, the most densely constructed district, with a constructed ground area with around 63 million m³, is the 22nd district. This is also the district with the highest Gross floor area by quite a margin. In third position, after the 10th district, we can find the 21st district, Floridsdorf. However, as shown in the figures below, both districts combined have globally a very low net floor area factor (< 0,63) when compared to Vienna’s inner districts.¹⁹ So, thanks to different indicators about construction density, it appears evident that the transdanubian expanse area, and especially the 22nd district, have the lowest construction density in Vienna. This basic urban characteristic reinforces firstly their fusion into a single entity, but also their primary characters as the distant, vast, urbanized left bank side of the Danube in Vienna.

To conclude, even if the 21st and 22nd districts have been fairly recently identified and formally distinguished, they can’t really be considered as separate entities. Indeed, their common emergence, development and particularly low urban density are more perceptible than their administrative borders. After having emerged as a suburb, the 21st and 22nd districts are tending today to be considered as an independent urban territory.

As one of the first remarkable facts, their progressive densification seems to play a strong role in this evolution. With Vienna expecting a population growth of 230,000 until 2025²⁰, this process of densification in the left bank appears to be the appropriate urban dynamic in many ways. By answering the regular dwelling need, it shall lead the transdanubian area to a new turn in its history.

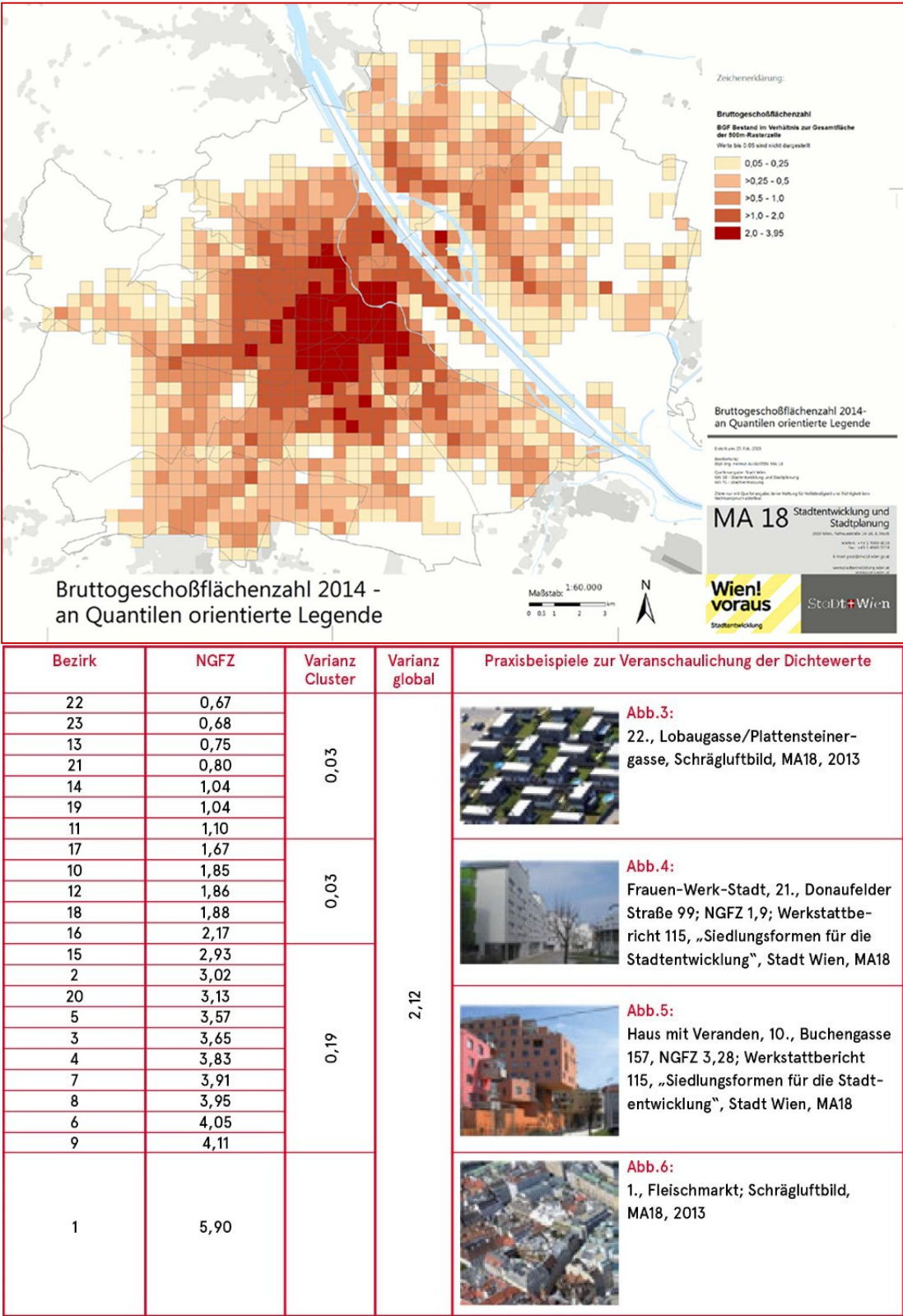


Figure 14: Gross floor area factor in 2014 and clustered districts sorted by building density. Source: Stadt Wien, MA 18

¹⁹ MA 18, Stadt Wien : *Bauliche Dichte und Landnutzung in Wien*, s.3

²⁰ STEP 2025; MA 21, High-Rise Concept, p16

3 STRUCTURAL CONSEQUENCES

A - DEFINITION OF THE TRANSDANUBIAN AREA IN THE URBANISTIC MODEL OF VIENNA

The definition of the Transdanubian area by its urban composition occupies a central part in the present work. Indeed, the nodal strategy on which the future identification of the high-rises is based, lies with an urbanistic model of Vienna. In truth, the “Transdanubian expanse area” is one of the 6 areas defined in the Thematic concept of STEP 2025²¹ for high-rise buildings in Vienna. As the relevance of a high-rise depends on its urban context, different areas have been created. Each of these areas compel a custom made high-rise strategy, by reflecting different site-specific requirements, and considering the urban structure and spatial development.

According to STEP 2025, the present areas can be detailed as follows:

The “**consolidated city**”, composed of the inner city and the adjacent “*Gründerzeit*” expansion areas, is characterized by a high urban density. As it has grown over itself over centuries, it is considered as an outstanding monument of European urban development. The “**urban composite**” area, similarly to Transdanubian area, is located South-East, and is characterized by a juxtaposition of very different architectural and functional units (and therefore by a very fragmented urban territory). The “**southern terraces**” area, on the other hand, is defined by its particular topography of plains and plateaus, and is marked by “heavyweight ensembles”. The “**fluvial cityscape**” area integrates the areas characterized and enclosed by the watercourses of the Danube Canal, Danube and Old Danube, and form the transitional space between the structurally different consolidated city and transdanubian plain. The **transitional areas** of Vienna, located on the outer bound of the city and principally comprising agriculture land or houses, represent the effective and environmental transition between the citified areas and the natural protected landscapes surrounding Vienna.²²

Lastly, the **Transdanubian area**, located between the Fluvial cityscape and transitional areas, can be identified as the largest area of Vienna. Moreover, when considered in the context of this areal subdivision, this area tends to act as the counterbalance of the consolidated city, as two banks of a river would traditionally tend to counterbalance each other. Yet the real urbanistic “weight” of the Transdanubian area still recognizably renders it as an expansion of the city, rather than an autonomous urban entity. This is due to the low construction, and population densities.²³

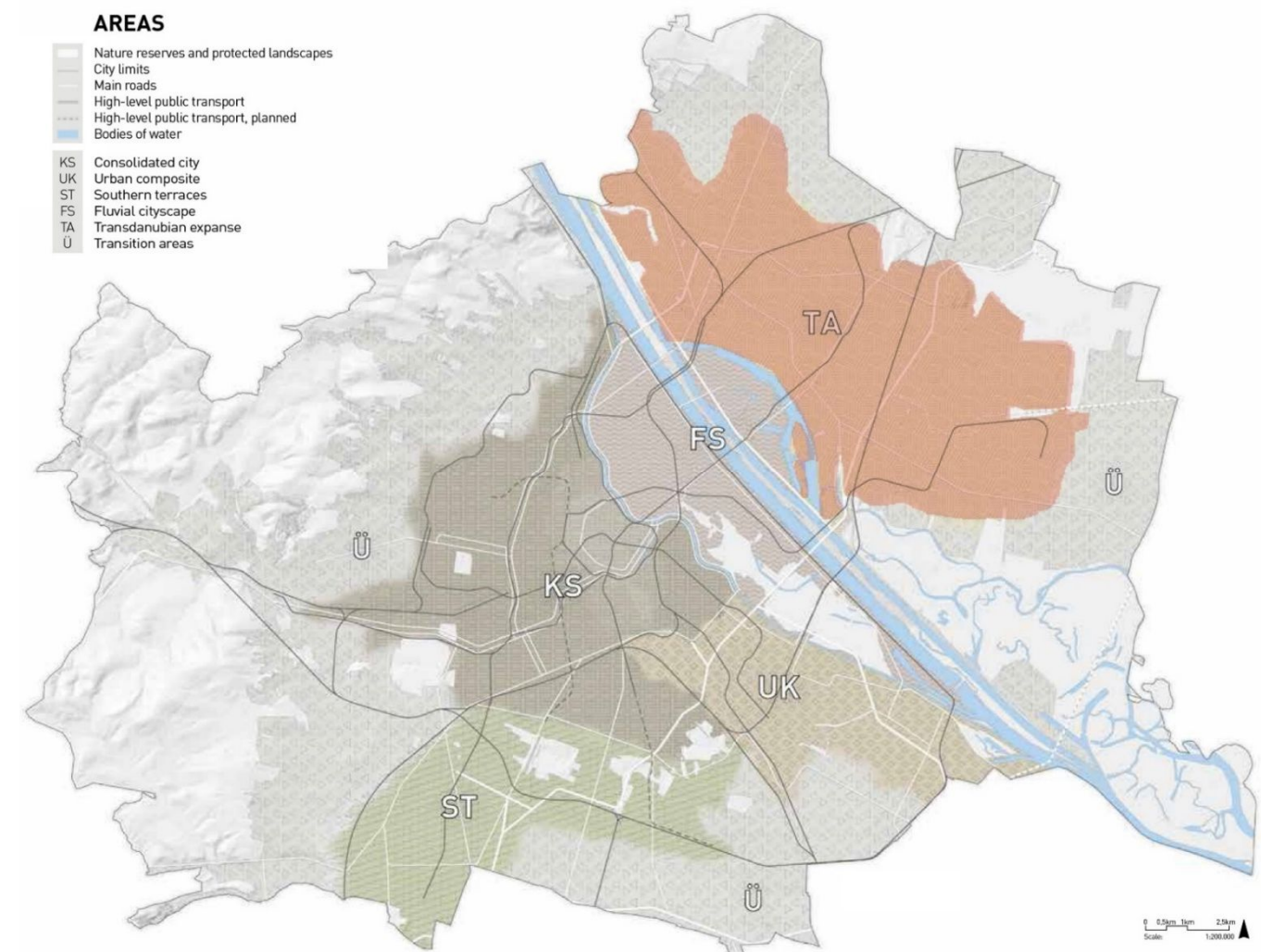


Figure 15: Areas in Vienna, urbanistic Model. Source : STEP 2025 Thematic Concept : High-rise Buildings, MA 18

²¹ „Stadtentwicklungsplan Wien 2025“ Urban development plan of Vienna. Written by the city of Vienna, it rocures guidelines and concepts for the various thematics concerning the urban planning of Vienna for 2025.

²² STEP 2025, City of Vienna, MA 18

²³ STEP 2025, City of Vienna, MA 18

B - HETEROGENEOUS CITYSCAPE AS A MARKER OF EXPANSION

As previously detailed in the historical description, the origin of the Transdanubian area is a sudden and large expansion of Vienna. The consequences have set the base for the current urban qualities of this territory, and thereby placed it in a kind of structural opposition to the inner districts of Vienna.

According to the description of the area in the urbanistic model in STEP 2025, the complex composition of this territory leads primarily to a lack of coherence, and thereby to a difficult perception.

Contrary to the consolidated city, which has grown over itself and been rebuilt over the centuries, the Transdanubian area is composed, in some parts, of a very loose agglomeration of settlement units from the various construction periods, resulting in the previously detailed history. While the inner districts construction, deriving mainly from the *Gründerzeit* period, offer a valuable homogeneity, the Transdanubian is then characterized by an extremely heterogeneous cityscape, which engenders a rich but also confusing lack of historical coherence. The spatial coherence, in turn, depends on the texture of the intermediate areas, which interconnect or separate these settlement fragments from one other.

Too recent to be renewed, the Transdanubian area have kept the markers of its birth and growth to this day. The axes of development haven't changed either, and follow the radial system of Otto Wagner for the development of the city.

Although offering a sort of capillary network of superior routes and open spaces, the complex urban fabric of the Transdanubian area doesn't make the territory easily perceptible as a whole. Composing of partially loose, fragmented and heterogeneous individual settlements, the irregular spatial coherence reinforces the perception of the transdanubian area as a dispersed cityscape (Magistratsabteilung 21- District planning and land use, 2015).



Figure 16 : Satellite View in 2017 in the Transdanubian Area (Brunner Straße, Siemensstraße). Source : Stadt Wien Datenviewer, wien.gv.at

C - URBAN BOUNDARY OF THE TRANSDANUBIAN AREA

Contrary to administrative borders, like the separation line between the 21st and the 22nd districts, the urban boundaries of the areas defined in the urbanistic model are not easily recognizable. Indeed, in the thematic book STEP 2025 for the High-Rise Concept, from which the previous areas are taken, their boundaries have not been precisely or purposefully defined. In fact, the limits between the two areas, especially in the peripheral area sections such as the Transdanubian area, are relative. *"The allocation of a site to a specific area must be argued in keeping with qualitative area description."*²⁴ This reminds us that a spatial border of an architectural or urban object mustn't be used as a tool of exclusion, nor finds itself impenetrable. Then again, considering the city as a complex living entity, an urban boundary, when not administrative, follows a time relative track and remains inevitably flexible.

However, as the Danube's left bank, and more specifically the Transdanubian area, tend to be qualified as an independent part of the city, it seems logical to give this "whole" a boundary. The Transdanubian expanse area is therefore an urban entity, which can be considered as the "main body", the most built up of the combined 21st and 22nd districts. Also, the following morphological and typological analysis require a border for the studied object. On the other hand, to avoid any risk of subjective and definitive exclusion of a part of the territory for the following project, it seems important to specify that this track is introduced as a suggestion.

This is a representation of the delimited urban area "at it's largest". Indeed, as we can see in the global map (Figure 14), the Transdanubian area is connected to many transitional zones, and to the Fluvial area. As the definition of these areas has to be placed in a prospective point of view, it seems important to take in account the places dedicated to the future development of Vienna. These places have mostly been integrated into the main body, "Transdanubia".

According to many theoretical references in city planning, an urban boundary echoes to the concept of an "edge" in a cityscape. In fact, according to the architect and writer Gordon Cullen, in his book *A Concise Townscape* (1961), a town must have an edge, which can be natural like a shore, a forest or a riverside, but with which it can also be used as a tool by planners : *"[...], a town can have an edge, for if the planners puts down an obstacle it simply means that at that point everyone suddenly starts leaping in the same direction; which turns chaos into an event. This is rather like creating huge hazards in order to bring clarity into the landscape. It is not zoning."* (p59)

A similar definition of an edge is given by the American urban theorist Kevin Lynch in his book *The Image of the city* (1960) :

*"Edges are linear elements not used or considered as paths by the observer. They are the **boundaries between two phases, linear breaks in continuity** : shores, railroad cuts, edge of development, walls. [...] barriers, more or less penetrable, which close one region off from another"*

"Edges [...] are usually, but not quite always, the boundaries between two kinds of areas. They act as lateral references." (p62)

Given this information, the present track of the Transdanubian boundary is suggested following both statements, or at least being inspired by them. After combining them and adding some shades, it resulted in the delimitation of a large and recognizable area. However, in opposition to Cullen's definition, the present work was never about "laying down" an edge in the cityscape, but trying rather to identify its natural presence, or potentially its creation due to a planner. According to Lynch's definition, the edges have been identified under different traits, but always act in some way as a light separation line, such as a street closing a built environment from the fields, the artificial Marchfeld Canal, by railroads leading to Leopoldau or by a street separating large zones of individual housing, to a more various and dense area. Placed alongside each other street by street, block by block, the segments have then been joined together to form a unique line. In this sense, the present border (Figure 17) should define a "whole", with common grid, density, and shapes. Nevertheless it should remain flexible and large, and include a future densification of the area.

CONCLUSION:

The present image of the Transdanubian expanse area is the result of its particular emergence and evolution in a close relationship with Vienna's general history. In this first part we have identified the first traits of this urban area as a vast, relatively loose and flat territory, occupying the left bank of the Danube. What was once distant suburbs, this territory now tends to be understood as an independent urban entity. The question of density therefore already appeared as a key factor of this new turn in the evolution of the transdanubian cityscape. In fact, as mentioned in the definition of the Transdanubian expanse area in the urbanistic model in STEP 2025, behind the low built density hides a complex juxtaposition of contrasted urban spaces. In light of this, in the second part we shall now try to understand, in more detail, the urban characteristics of the transdanubian area, more specially through a morphological and typological analysis of its components.

²⁴STEP 2025 : *High-Rise Buildings*, p16

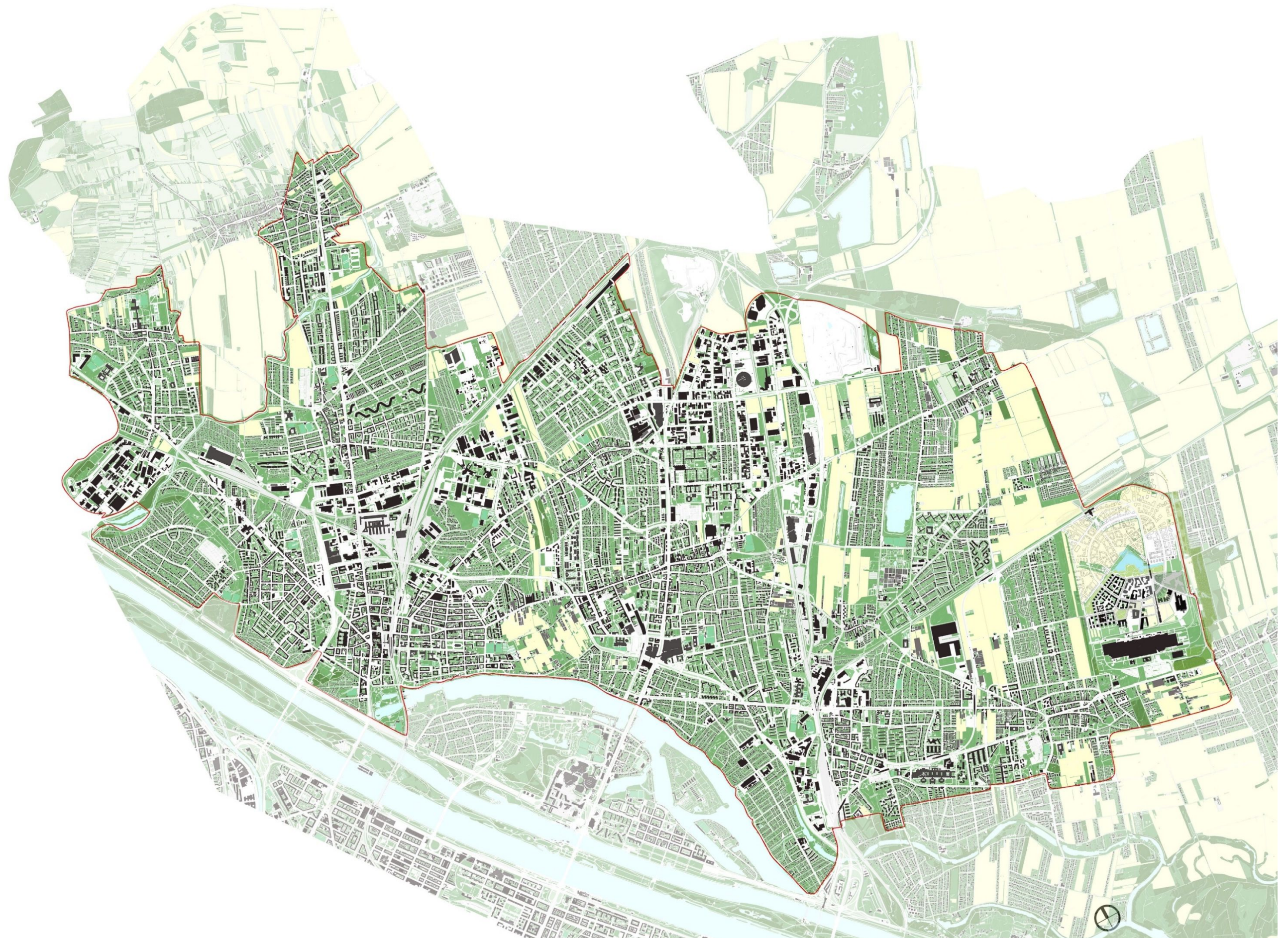


Figure 17: Suggestion of a boundary of the Transdanubian Area. Source: MZF Plan, Wien.gv.at

2. MORPHOLOGY

1 STREET AND BLOCK PATTERNS

For the identification of potential high-rise sites in the Transdanubian area, a close analysis of the urban territory is obviously required. This second chapter shows thereby a synthetic and thematic presentation of this morphological analysis. It is based on personal observations on site and on maps, but also through the research project “TRANS[form]DANUBIEN”. Developed at the Department of Spatial Planning at the TU Vienna, this project offers a rich study into the Transdanubian area morphogenesis. As mentioned in the first chapter (though it endured a quick and intense expansion over the last century) this territory still makes its historical settlement structure visible today. (Suitner, Kirsch, & Pühringer, 2018). The elements, their communication, and their impact on the urban quality of the territory are going to be detailed with regards to their streets and block patterns, but also in terms of functions and typologies, as well as open space and density.

According to the Figure 18 (right-hand side), the early nodal disposition of the villages on the territory set the first frame for following development of routes, railroads and streets, although not connecting the territory to the original city of Vienna. Indeed, as shown on this map, the first series of villages, founded before the 12th century²⁵ represent a first homogeneous and central group of settlements on the left bank, approximately equally distant from each other. During the 13th century, new villages like Strebersdorf, Aspern and Essling appear to be founded as an extension, especially on south-east side of the precedent group. Then, from the 16th century onwards, the last founded settlements are centralized in Floridsdorf area and in Kaisermühlen, closer from each other and from the right bank. The progressive densification and implantation, oriented to the old Vienna, coincides with the apparition of the first Post street in the 18th century.

The many linking roads (“Verbindungsstraßen”) between the villages set an irregular network of connection while forming the main frame of extension for the city, and still influences Vienna’s current urban development.

As starting point of the public transport system in Vienna, the train lines from 1837 have a high significance, as well as a technical improvement on the following incorporation of the suburbs into Vienna (Suitner, Kirsch, & Pühringer, 2018). They can be considered, thereby, as the second marker of both bank’s connection, although they also enhanced a new internal organisation of the left bank itself.

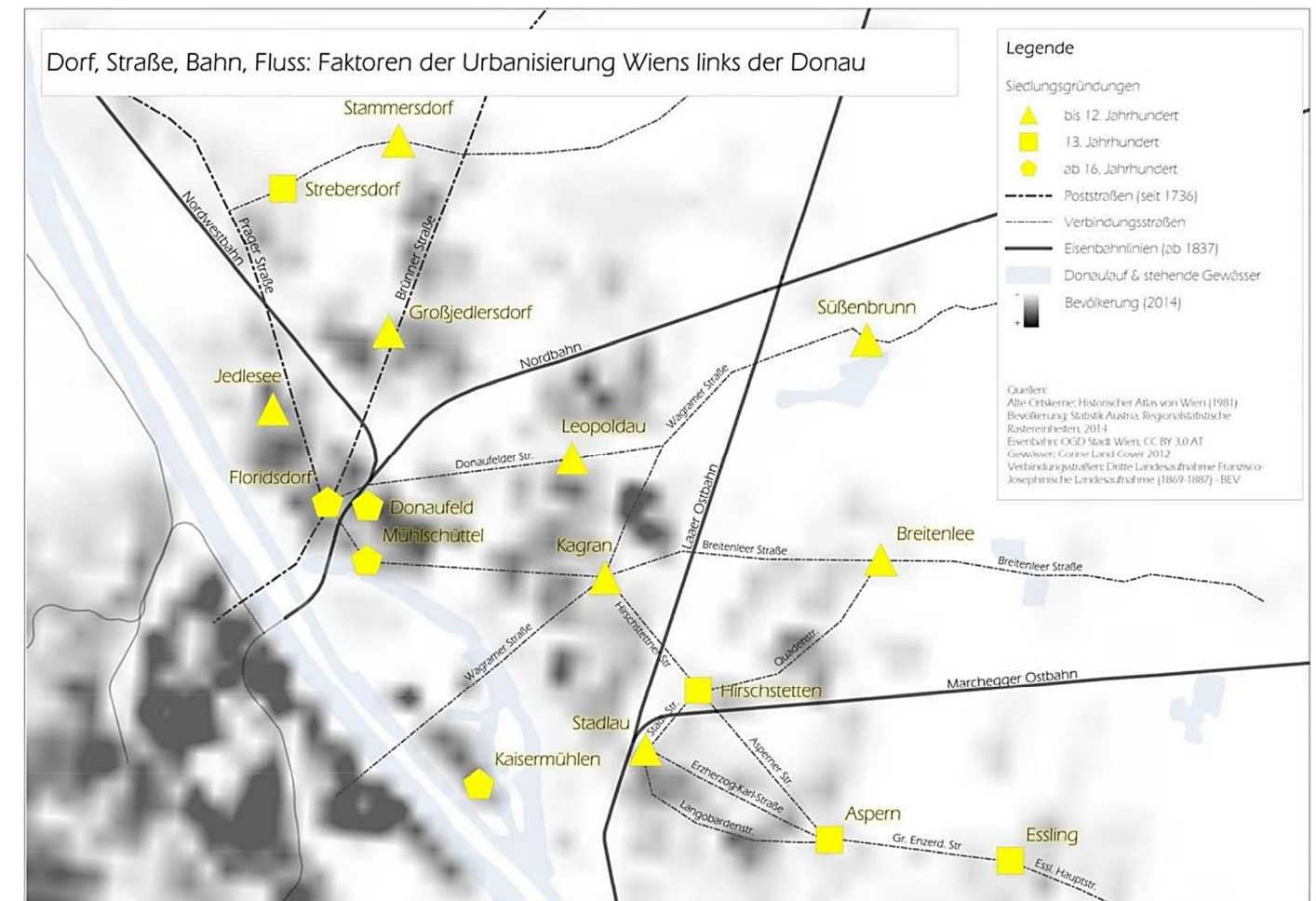


Figure 18: Factors of the historical morphogenesis of the Danube's left bank in Vienna. Source : Research Project TRANS[form]DANUBIEN, Department of Spatial Planning, TU Vienna

²⁵ Jedlesee, Stammersdorf, Kagran and Stadlau

A - LARGE-SCALE ROAD MESHING

RAILROADS

The particular tracks of the first railroads in the 19th century guide and distribute the circulation through the territory on a regional scale. By splitting in two lines in both anchor points of Floridsdorf and Stadlau, the train lines open not only the transdanubian area, but also Vienna itself to more distant external territories. Starting from two anchor points, two branches of the railroad system cross a few kilometres away from the center, and therefore form a strong mirror-framed figure in the region. By opening the city to extra-regional connections, this railroad system also influences the structural development of the Transdanubian area.

TRAFFIC ROADS

As mentioned previously, the beginning of the history of urban planning on transdanubian territory comes back to 1893, with Otto Wagner's project for Viennese General Regulation Plan. In this project he suggests a complete plan for Vienna, taking into account the north-east area.²⁶ Marking out the inner city (currently the 1st district) as the center of the radial system, Otto Wagner began by linking it directly with the left bank, thanks to a strong direct axis which is still recognizable today with the Reichsbrücke and Wagramerstraße. This track coincides with the axis of the "mirror framing" pattern suggested by the first train lines. On the present map (Figure 19), the access roads (*Einfallstraßen*), on the north-easterly side across the Danube, appear to be the most representative figures of this radial system in Vienna. These three axes linking Floridsdorf, Kagran and Stadlau to the right bank are still very efficient traffic roads today.

After the second world war, the quick reconstruction of the infrastructures came to the foreground of planning interests. All the bridges over the Danube were destroyed, totally cutting off Floridsdorf from the rest of Vienna.²⁷ While the planning of a new traffic system for Vienna was designed to open up the city's center for regional, national and international road communication, it simultaneously induced an intensive construction of social communal housing, as well as the first planning reflections concerning the *Donauinsel* (Suitner, Kirsch, & Pühringer, 2018). Some projects of the 1930s and 40s directly influenced the post-war planning, for example with the design of the arterial streets of the city. The construction of the Wagramer Straße and the Airport Stichstraße as a highway are considered as the first large-scale projects of the new traffic network. However, because of the insufficient need for their construction, and because of the development of the south of Vienna, definite traffic infrastructures weren't realized (Suitner, Kirsch, & Pühringer, 2018). A considerable emphasis for the Infrastructure's development were placed upon Vienna's left bank, as well most of the outer districts. This took place during the technical modern period in the 1960s & 1970s, with the construction of the underground and S-bahn lines as a prime example of this.

Used first as connectors, these large streets, like the Railroads, are also separation lines or edges for the territory that they cross. Therefore, they can be identified as *lines of forces*²⁸ in the townscape.

Although acting as a strong connector between two distant points on a territory, they are in fact also perceptible internal edges for the territory in which they are passing through. Hardly penetrable when not built underground, largescale infrastructures have this double-side effect on their urban territory. They act as a connector of distant spaces, while dividing their immediate interspace.



Figure 19: Main road system of Vienna in 2016. Source : Studie "Wien Polyzentral", MA 18

²⁶ TRANSFORM[form]DANUBIEN, 2018 (p.46) : Indeed he is convinced that this is "only by taking in account the left bank side of the Danube in Vienna that the city can finally get the appreciation as an international trade's city."

²⁷ TRANSFORM[form]DANUBIEN, 2018 (p.47)

²⁸ Lines of forces are a concept developed by the author and town planner Gordon Cullen in his book *The Concise Townscape* (1971) p111 "[the lines of forces] represent the combination of circumstances that brought the town into being" and they are reflected by "the arrangement of the its parts"

As a natural geographical guide, the Danube can be identified as the strongest line of force on the Transdanubian territory, and should therefore dominate its urban organisation. However, the previously detailed sharp relevance of its suburban character and radial system counter this pre-dominance, and thereby disintegrates the entire system. Such a confusion between the lines of forces contributes to a lack of a town's character and structure, and can thereby very often be linked with a flaw in the relationship between form to function (Cullen, 1971). The Transdanubian territory can be, even from a larger scale, enduring a complex internal disorganisation.

LEGEND:

Dark blue lines represent the street blocks from the general city plan of 1912, which succeeded the general regulation plan of Otto Wagner. As mentioned in chapter 1, this plan, established at the end of the Gründerzeit period, and just before the first World war started, is the most relevant planning tool used for the rapid urbanization of the Transdanubian area.

The continuous lines show the block and street patterns which **have not changed tracks**. They may have been widened however, or have gained/lost in significance during the 20th and 21st centuries.

Dotted lines represent the block boundaries from the Gründerzeit period which **are not recognizable in the current urban fabric**. As the original plan of 1912 was very prospective, and because of the war, it was not fully applied, but may have been used later as a reference tool. Some of the tracks are therefore more suggestive than defined, but they bear witness to the deep interest of the planner for the Transdanubian area (Suitner, Kirsch, & Pühringer, 2018).

B - STREETS, BLOCKS AND COMMUNAL HOUSING ESTATES

VILLAGE CORES AND GRÜNDERZEIT

As we can see on the picture on the right, the cores of these villages, dating back to the middle of the 19th century, are still clearly visible in the urban fabric of the transdanubian area. Their plot subdivision have also mostly remained over the centuries. Only the village of Floridsdorf has seen the allotment refined several times, partly due to its intense planning during the *Gründerzeit* period, but also because of intense bombings during the second world war.

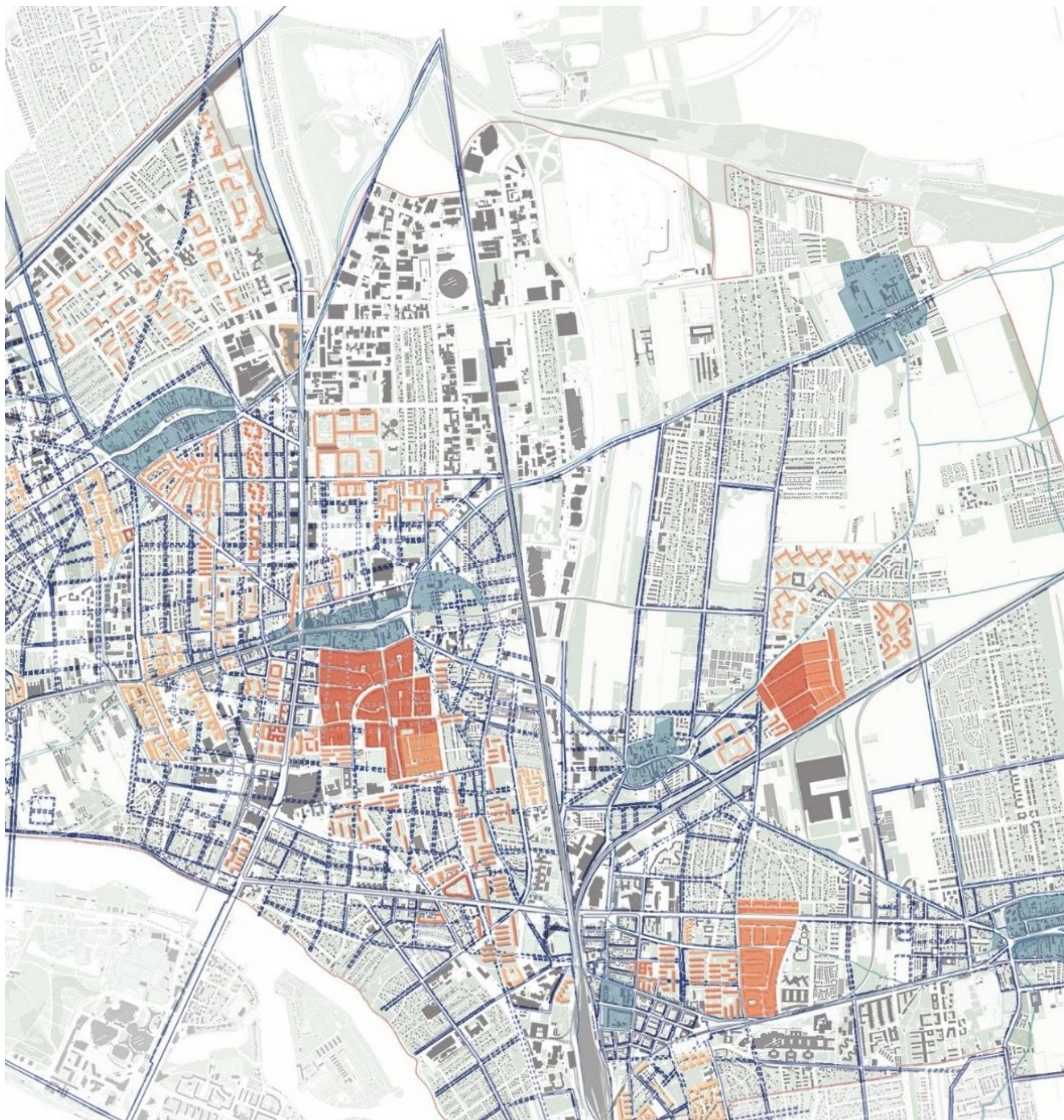
First of all we can see that the **most important axes** of development of the Gründerzeit period have been almost completely followed the track of ancient linking roads between the villages, and are still recognizable today (Brunner Strasse, Wagramer Strasse, Aspern Strasse..).

The **typical building block system**, used and generalized in the Gründerzeit period, can be estimated with dimensions like 60m width and 120m length (Measurement: *Mehrzweckkarte wien.gv.at*).

This small-scale part of the system is still distinguishable today, especially in the surroundings of Floridsdorf, Jedlesee, Kagran and Stadlau. Although it seems to have also been planned for the old Danube waterfront, it is not fully discernible today. Also, because it wasn't yet incorporated into Vienna, only the larger streets are traceable within the eastern part of the Transdanubian area (Aspern, Breitenlee, Groß-Enzersdorf,...).

Figure 20: Chronological evolution of the morphology on the transdanubian territory.
Fond: Stadt Wien, wien.gv.at





Variations of this block in squares or trapeziums and triangles have been set together in order to design this particular urban fabric.

The most relevant feature appear to have been the villages cores, like nodes which had to be connected to each other. This typical urban fabric first join them together with one street and then filled the interspace with its typical block system.

Indeed, considering the lentil shape of the villages in its length, it was tried to design an offset of approximately the same width as the already existing core's half. And to straighten out the streets on the outbound of the cores in the offset rows of blocks. It was also intended to prolong the street along which the villages are already set, and by creating large crossroads at the entrance of the cores in order to stretch out new streets, directly leading to the nearest other villages.

Rather surprisingly, as most of the *Gründerzeit* buildings on the right bank are already listed as **protected area**, it is only recently (2017-2018) that the area of the *Floridsdorfer Spitz*, at the meeting of the Brunner and the Prager Strasse, have also been listed for protection. Located in the heart of the most relevant part of the *Gründerzeit's* blocks, this points out some discredit, accorded to the left bank in Vienna. This area is going to be added to the list alongside the village's cores, which have already been identified as protected areas (Jedlesee, Großjedlersdor, Strebersdorf, Stammerdorf, Leopoldau and the Gashouse Leopoldau) (Stadt Wien, kein Datum)).

STREET SCHEMES OF A GARDEN-CITY

After the World War and the First Republic replacing the Austro-Hungarian Empire, a social and financial crisis intensified an urgent need of dwelling. Largely influenced by the Garden-city concepts, the first large-scale social housing estates emerged all over Europe, including in Vienna, thanks to the Settlement movement.²⁹

Lots of these settlements have been implanted on the left bank side of the Danube, and offer specific technical and urban characteristics. Even if most of them endured extension, destruction or renovation until today, their particular allotment renders them discernible on the territory until today. The most representative of these workers settlements is the one *Am Freihof* (fig 21), planned by Karl Schartelmüller in cooperation with three independent Settlement associations and erected between 1923 and 1927 (Wiener Stadt- und Landesarchiv (MA 8) & Wienbibliothek im Rathaus (MA 9), 2018). As the largest settlement of Vienna, it offers 687 houses for approximately 1000 dwellings. Bordered by the Wagramer Straße, Freihof, Rugierstraße and Kagraner Anger, it respects most of the garden-city characteristics (Figure 24). Again a radial distribution of the streets dominates the scheme, orienting the wards to a central and collective garden.



Figure 21: Siedlung Kagran, 1927. Source: Österreichische Nationalbibliothek



Figure 22: Am Freihof - Kagran Settlement (North) and Plankenäcker (South). Source: basemap.at.



Figure 23: Kriegsheimstätte Hirschtetten. Source: basemap.at

²⁹ Architectural and social movement which emerged at the end of the war, first “wild colonies” in Vienna’s woods, it led quickly to the apparition of many self-help organizations. In cooperation with the City of Vienna, It was created in 1921

GESIBA, Agency for communal settlement and construction materials, which with several social plans led to the construction of the first important communal housing estates in Vienna (*Siedlerbewegung* ; *GESIBA* : *Weblexikon dasrotewien.at*).

The theoretical design of the garden city led the architects to adapt and create variations of this radial and centralized system. In Freihof settlement, for instance, we can notice the design of clusters of rowed back-to-back houses, with a narrow, deep garden in each. In the center of the clusters, we can find a courtyard of garden, accessible only thanks to one opening in the cluster.

Also the Am Freihof settlement offers a peaceful and green vision of the city, resembling a fractal organisation of centralized polar systems, thanks to a successful application of a garden city main principles.

Whereas the *Am Freihof* settlement in Kagraan was dedicated to workers at the power and gas station and the tram factory, the settlement in Hirschtetten was part of a wide plan of building decent homes for the returning home soldiers and their families (Wiener Stadt- und Landesarchiv (MA 8) & Wienbibliothek im Rathaus (MA 9), 2017).

This settlement, planned by Adolf Loos and built in 1921, doesn't show a radial system, but rather a linear and squared subdivision of the blocks. Excluding one cluster shape in the south end, the internal distribution of the streets reproduces the street connection of the external two major axes, crossing on the north east: Erherzog-Karl Strasse and Zschokegasse.

Although the two settlements seem to be enclosed, independent and internally oriented, they also offer a great integration with their surroundings.

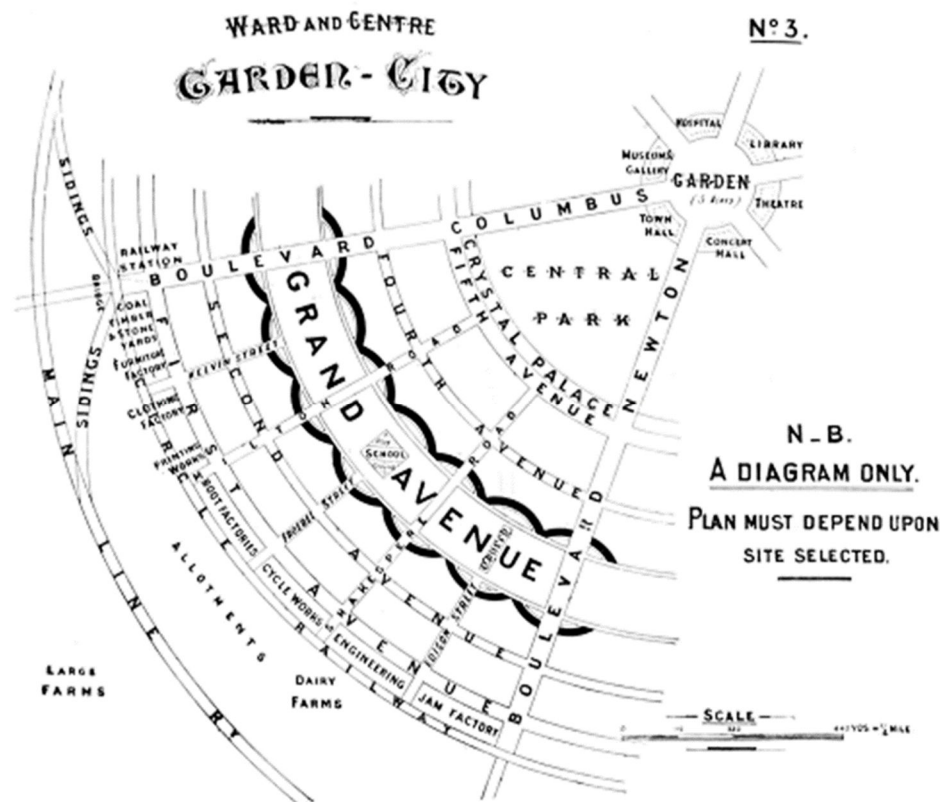


Figure 24: Garden City, Diagram n°3, Ward and Center, Howard, 1902. Source: urban planning Cornell university.

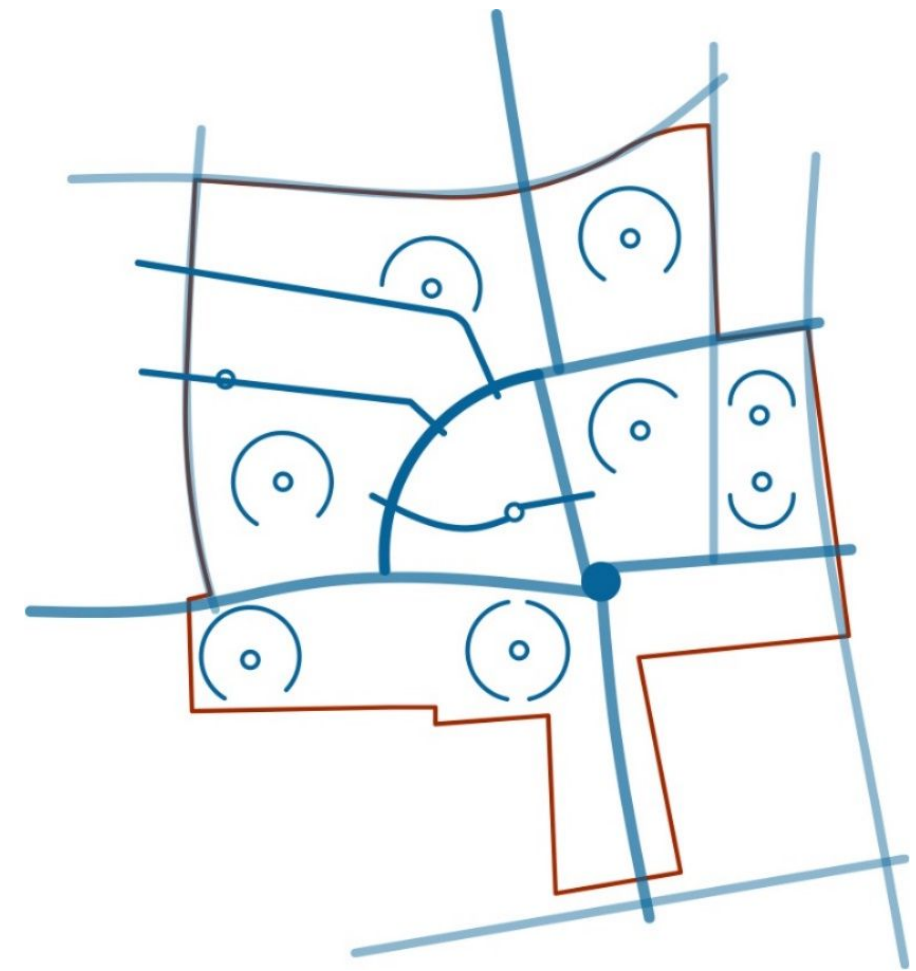


Figure 25: Schematic street system "Am Freihof"

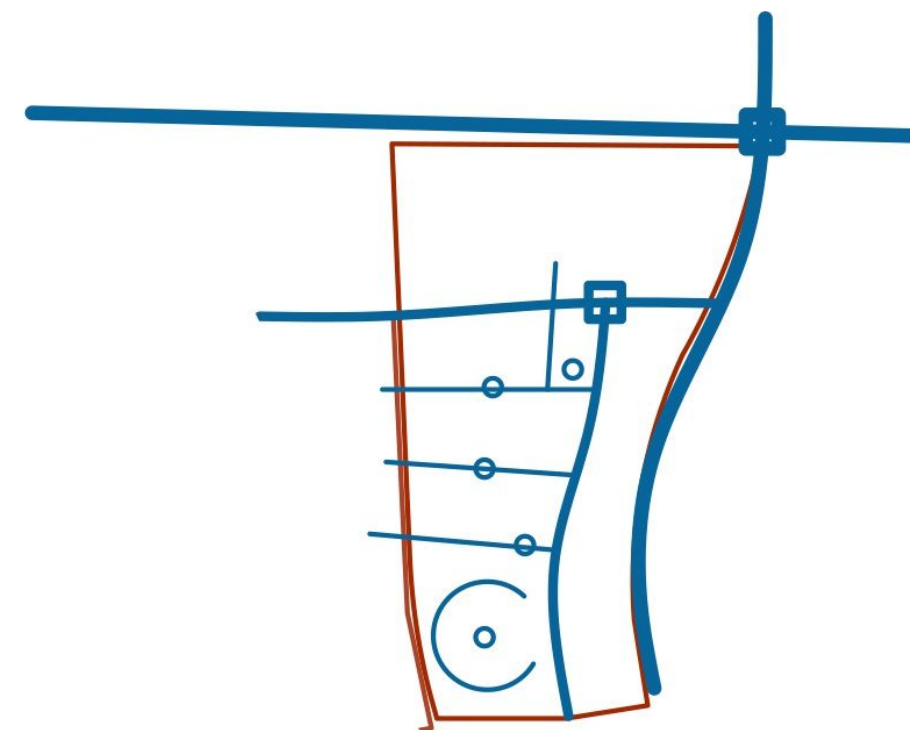


Figure 26: Schematic street system "Erwerbslossiedlung"

INTERNAL DISTRIBUTION OF LARGE-SCALE COMMUNAL HOUSING

After the second world war and until the beginning of the 1980s, many large scale housing projects were erected in the suburbs of Vienna, including within the Transdanubian area.

Always built along major axes of development on the territory, these projects use the secondary streets directly connected to these axes, sometimes even using these axes themselves as border or internal lines of forces³⁰. They are setting thereby the basic frame for an internal distribution and circulation system.

Whereas the typological significance of these systems will be detailed in the next part, the present schematic representation of their street pattern expresses their perceptible disconnection from their surroundings.

In fact, one of the most remarkable difference we can identify, between the large scale housing estates from the 1950s and the 1960s and the ones erected in the 1970s, seem to reside in their internal street distribution. Indeed, throughout their specific evolution, the internal street distribution switched slowly from a car oriented distribution to a full pedestrianized circulation. As we can see on the figures aside, the earliest projects offer a more in-depth orientation into car traffic than the large scale projects from the 1970s, in which the car seems to be excluded from the project.

Indeed, as shown on the graphs aside, the present selected large housing complex reveal their internal street distribution, as well as offering a strong shaped spatial implantation of the housing blocks. Within a strong hierarchy, most of them show one major street, which connects them to their borders and surroundings and lead to the further internal streets.



In der Schwarzlackenau



Joseph-Bohman-Hof

Trabenngründe-Hof



Oskar-Helmer-Hof

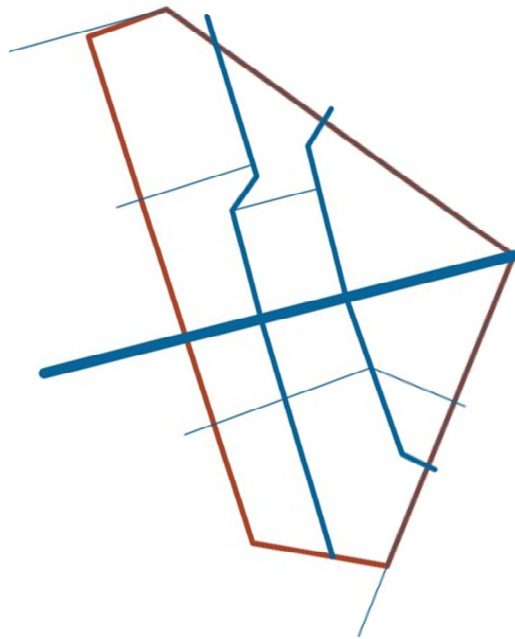


Franz-Koch-Hof

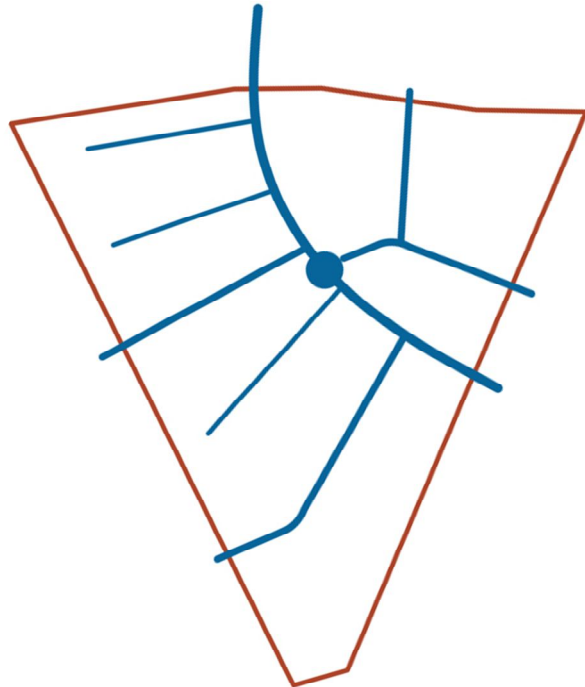
Siemensstraße

Figure 27: Selection of large scale housing in the Transdanubian area, built between the 1960s to the 1980s.
Source: Stadt Wien wien.gv.at

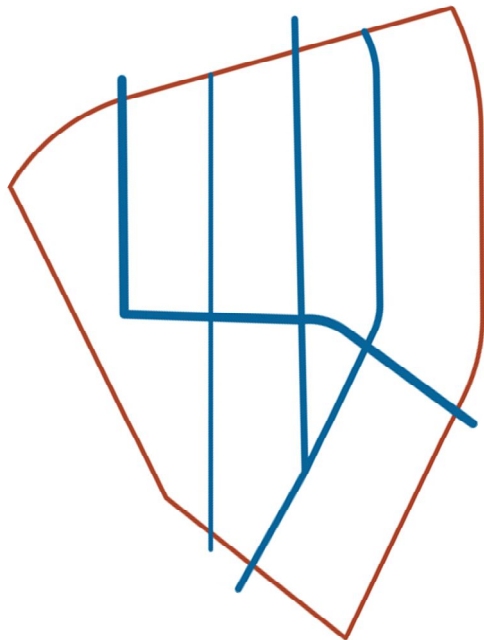
³⁰ Cf. Lines of forces, Definition p24.



In der Schwarzlackenau

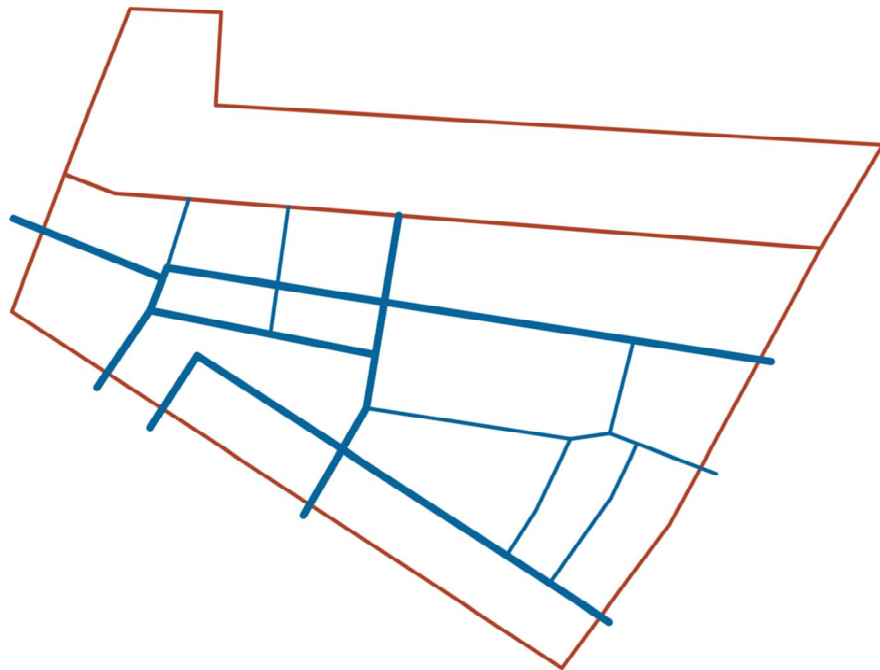


Joseph-Bohman-Hof



Oskar-Helmer-Hof

Figure 28: Schematic street system of large scale housing



Siemensstraße



Figure 29: Pathway going trough a large scale housing project Großfeldssiedlung. Photo: Otto.H.

List of large scale projects and housing settlements in the Transdanubian area per construction period (non-exhaustive)

- 1920s-1930s: Das Rote Wien:**
- Franz-Bretschneider-Hof
 - Karl-Seitz-Hof [„Gartenstadt Jedlesee“]
 - Paul-Speiser-Hof
 - Anton-Schlinger-Hof
 - Erwerbslosensiedlung Leopoldau
 - Siedlung Neustraßäcker
 - Siedlung „Kriegerheimstätten (Hirschtetten)
 - Siedlung Bachheimer-Kornfeil (Hirschstetten)

1950-1960s: Post World War 2nd

- Dag-Hammarskjöld-Hof
- Helmerhof
- Marianne-und-Oscar-Pollak-Hof
- Rosa-Weber-Hof
- Ernst-heumer Hof

1970s-1980s

- Großfeldsiedlung in Leopoldau
- Rennbahngründe

C - EDGES AND FRACTURES

The circulation system on the Transdanubian territory is also a marker of fragmentation. As one can observe on the figures below, the system, with all of its subdivisions, can act as an edge. This is evident not only within the landscape, but with the close relationships formed between a street, public areas or housing estates.

Whereas the highway interchange in Stadlau joins two very important axes of large scale circulation (along the Danube and the North-South route), it is one of the most remarkable edges in the transdanubian landscape.

On another hand, the air metro rails generate, at different places along the Transdanubian area, public spaces looking for value (Figure 31). The primary usage which was found for this is the installation of bike park facilities. Although this may not be sufficiently attractive for such an expansive area, this topic may be a useful one for city councils to explore further. Even if today most of these areas are yet to find a proper utilization and spatial quality. To generate a denser city would probably be the first step in the determination of these spaces.



Figure 30: Aspernstraße with intense traffic and a specific access to a second street distributing a individual housing area, Feb. 2018. Photo : Otto.H.

Finally Aspernstraße, marking most of the major axes of development, suffered during the 1960s with the emergence of the private car possession.³¹ However, it has proved to be extremely efficient, and is supporting intense car traffic to this day. It goes without saying though that these axes, by enduring such a heavy traffic load, lost their connection with their immediate surroundings. This is well indicated on Figure 30, where it was necessary to build another street along the Aspernstraße, in order to take over the distribution of the houses, while secluding them from the noisy and busy street.



Figure 31: View on public space under the metro line, U2 Station Stadlau, Feb. 2018. Photo : Otto.H.

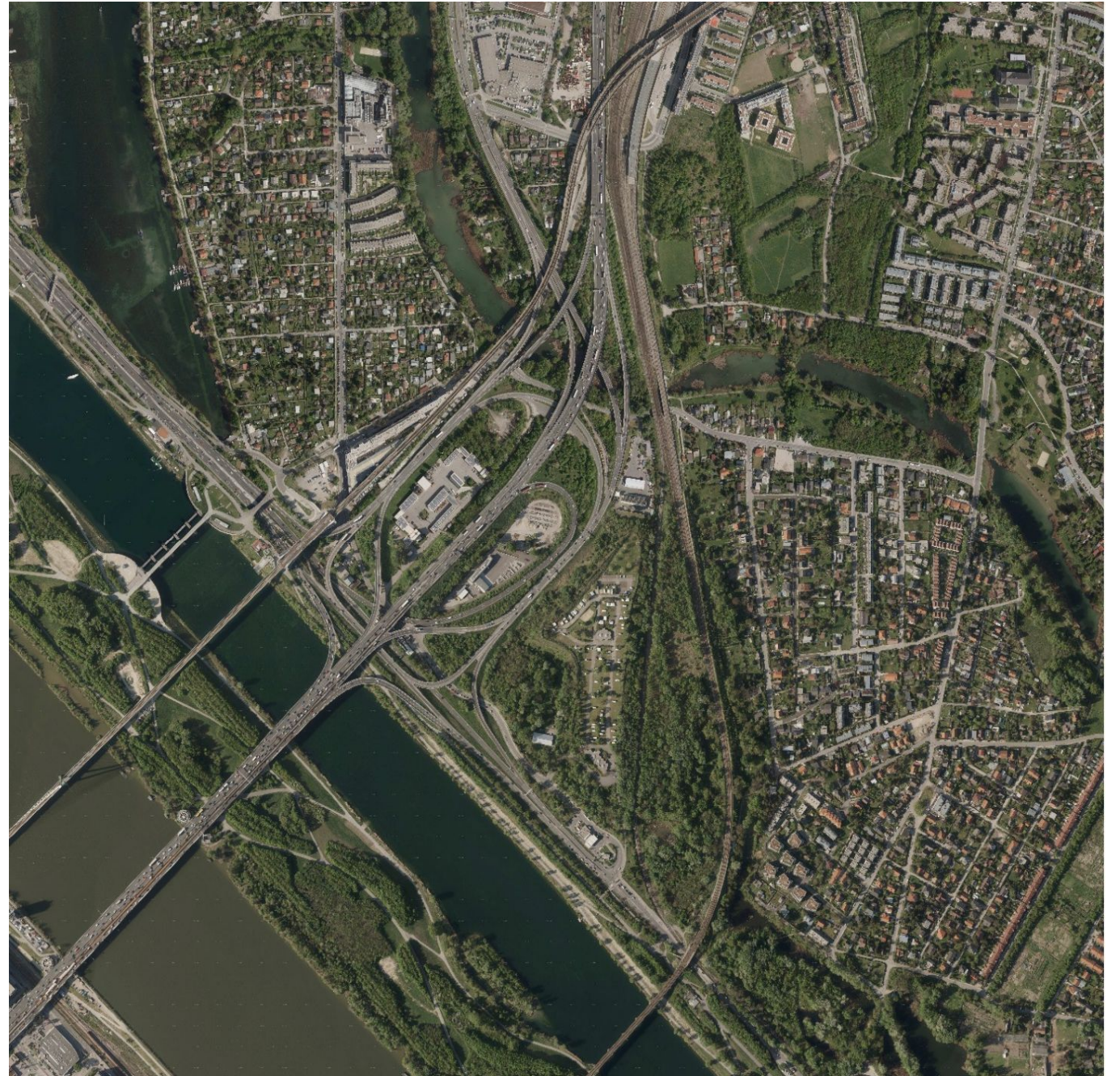


Figure 32: Stadlau interchange. Source : Luftaufnahme Wien GeodatenViewer (Stadtvermessung Wien)

³¹ TRANS[form]DANUBIEN, p45

D - AXIS OF DEVELOPMENT

As mentioned previously, since the beginning of Vienna's expansion across the Danube at the turn of the 20th century, only a few streets have been used as axis of development. the Prager Strasse, Brünner Straße, Aspern Strasse, build together the main grid for the many housing projects on the territory, which have been put next to one another.

These axes, and particularly the Brünner Strasse, still represent a very important part of Vienna's urban development (Figure 35: Axis Brünner Strasse In STEP 2025). Divided into 4 zones, this street itself is the object of urban development. Particularly wide, it would remain, until recently, without any continuous cycle lane. Both sides of this arterial road lose in connection and communication as we get far from Floridsdorf. Although particularly efficient as traffic road, the Brünner Strasse tends more to divide the areas it is crossing, and isn't very profitable for the neighbourhood.

However, this urban arteria and the urban areas it is passing through, form a target area for Vienna's urban development "Floridsdorf – Achse Brünner Straße". Although divided into 3 zones instead of the 4 presented : Zentralraum Floridsdorf, Krankenhaus Nord and MühlSchüttel, it appears to gain in relevance within the urban quality of its surroundings.



Figure 33: View of the Brünner Strasse from the Krankenhaus Nord to Floridotower. Photo: Otto.H.

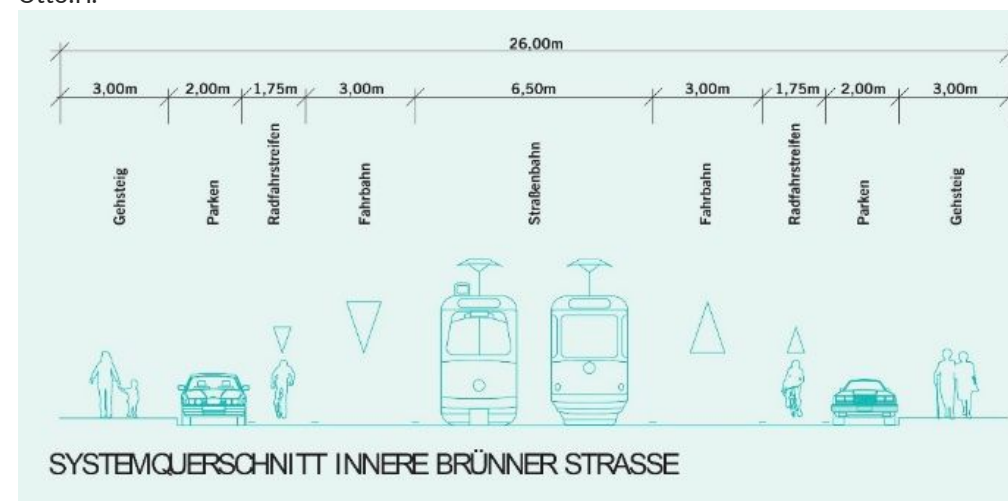


Figure 34: Cut on the future Brünner Straße including a cycle lane. Source : zielgebiete.com

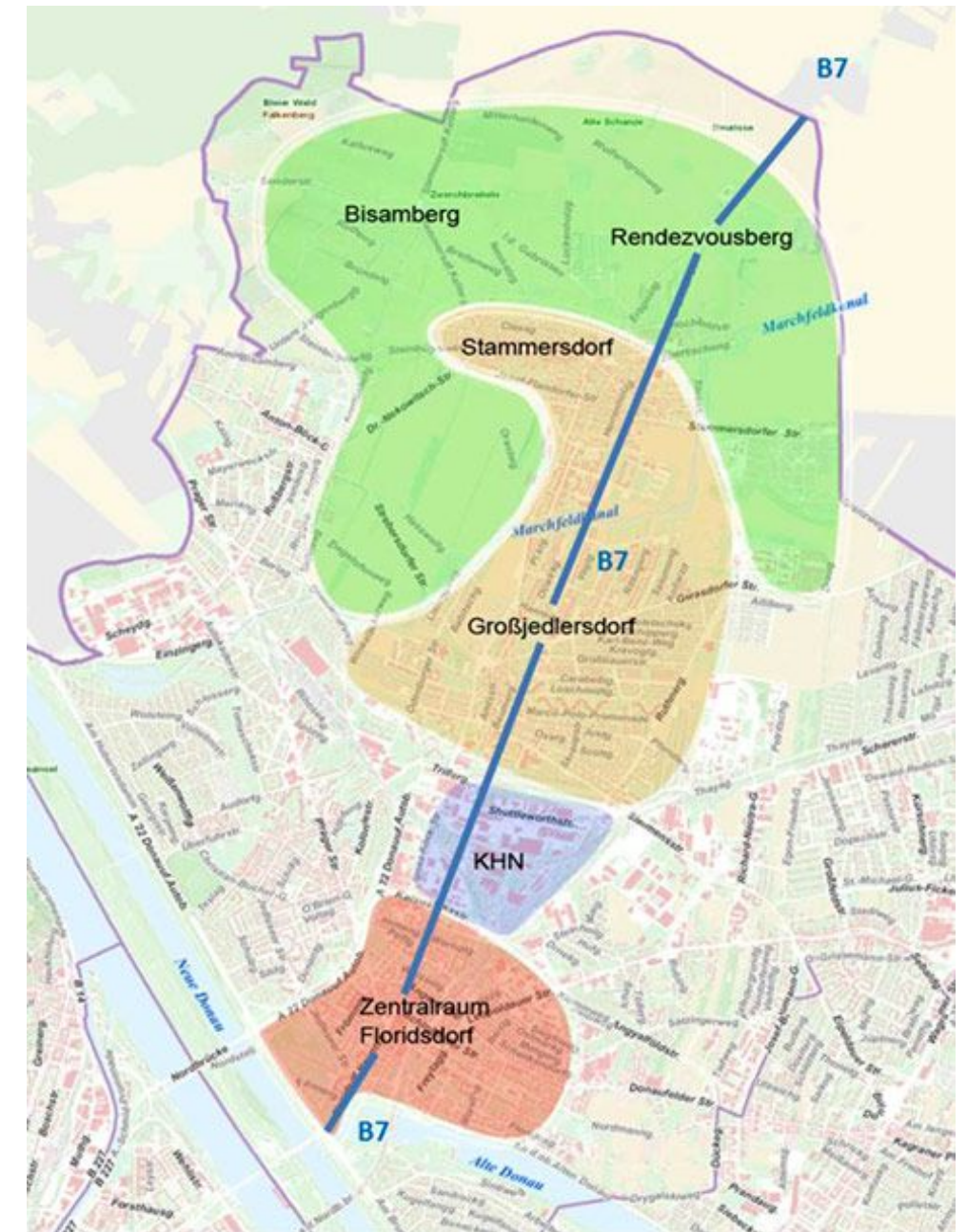


Figure 35: Axis of development Brünner Strasse. Source Stadt Wien, wien.gv.at

2 FUNCTIONAL AREAS AND TYPOLOGICAL SYSTEMS

The left bank of the Danube distinguishes itself from the right bank, particularly because of its architectural composition. Indeed, as the districts between 1 and 11 are composed mainly of old *Gründerzeit* housing blocks, the map aside shows the relative diversity and juxtaposition of the various types of housing in Vienna's north-eastern districts.

In fact, when comparing the present figure with the relative population densities living within each type of housing, we can define major typological differences between the banks of Vienna.

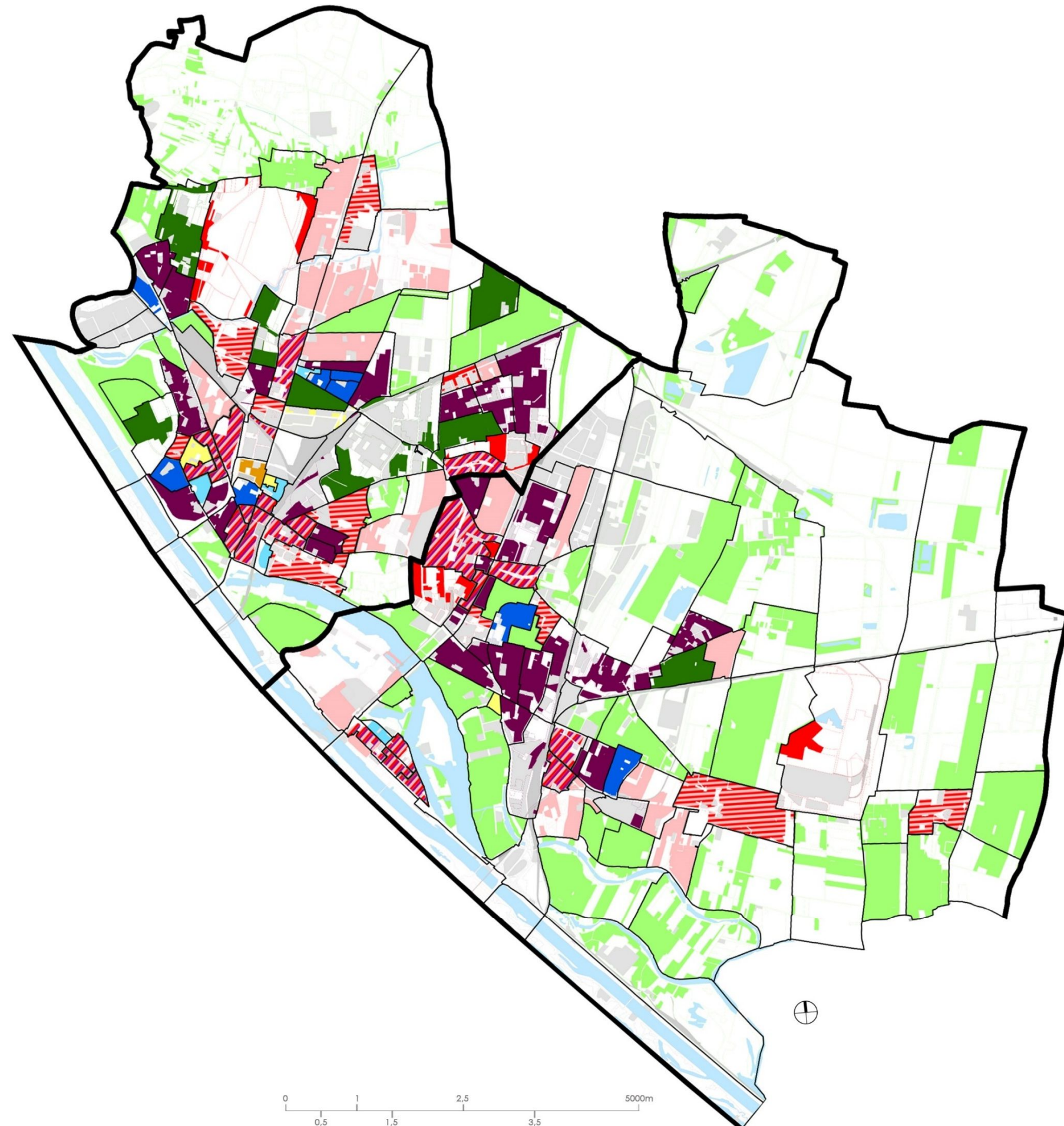
Whereas, according to the relative population statistics below, around 35% of Viennese people live in a dense housing from the *Gründerzeit* period (regions 3 and 4), this category of housing is one of the few identifiable ones on the Transdanubian territory (only in Floridsdorf).

On the other hand, when individual housing and small private gardens represent just under 10 % of the total housing parks of the city, it appears as though this major "urban" housing type is the primary of those used within the 21st and 22nd districts.

Second to this come the following, with approximately equal proportions :

- Non-residential spaces (industries, commercial areas,...)
- Large scale housing, erected between 1960s to 1980s, during the economic miracle.
- All-combined housing types, constructed from 1980s until today.

Figure 36: Types of housing areas on the left bank of Vienna in 2016. Source:Stadt Wien, wien.gv.at



A - DISTRICTS, BOUNDARIES AND SUBCULTURES














Wohngebietstypen 2016 (gesamte Wien)		Einwohner	
		Absolut	Relativ
1	 Einfamilienhäuser und Kleingärten	129.665	7,10%
2	 Einfamilienhäuser und Kleingärten mit signifikantem Anteil an Geschößwohnbau	50.442	2,70%
3	 Gründerzeit: hohe bauliche Dichte (NGFZ >= 2) und Bevölkerungsdichte über 425 EW/ha	379.082	20,60%
4	 Gründerzeit und Altstadt: hohe bauliche Dichte (NGFZ >= 2) und Bevölkerungsdichte unter 425 EW/ha	281.899	15,40%
5	 Gründerzeit: niedrige bauliche Dichte (NGFZ < 2)	34.756	1,90%
6	 Zwischenkriegszeit und Zweiter Weltkrieg 1919-1944	79.616	4,30%
7	 Gemischtes Baualter, Zeitraum 1919-1960 dominiert	23.649	1,30%
8	 Wiederaufbau 1945-1960	77.304	4,20%
9	 Wirtschaftswunder 1961-1980	231.488	12,60%
10	 Gemischtes Baualter, Zeitraum ab 1961 dominiert	292.963	16,00%
11	 Bauperiode 1981-2000	98.590	5,40%
12	 Bauperiode ab 1981 - gemischtes Baualter	99.365	5,40%
13	 Bauperiode ab 2001	56.084	3,10%
14	 nahezu unbewohnt	1.294	0,10%
Gesamt		1.836.197	100,00%

Figure 37: General statistics of the population distribution per type of housing for the entire city of Vienna in 2016. Source :Stadt Wien, wien.gv.at

³² “A city district in its simplest sense is an area of homogeneous character, recognized by clues which area continuous throughout the district and discontinuous elsewhere.” *The Image of the city*, Kevin Lynch, p.103

All of these areas spread on the territory juxtapose each other to form a map of differentiated “districts”.

Not referring to administrative boundaries, but qualifying the spatial perception of an urban area ³², these districts are ruled by their homogeneity.

This internal homogeneity sharpens their spatial and social incidence within the city, and thereby differentiates them from each other. Their boundaries also play a key role in their significance, and their capacity to piece together a city (Lynch, 1960).

Indeed, the district’s boundaries must be as discernible as they are penetrable, and therefore “heighten the character of each district, and bring together great urban areas” (Lynch, 1960).

More than the quality and the juxtaposition of these districts, the problem of heterogeneity of the entire transdanubian territory could find some roots in the boundaries quality of its different components. This when not directly juxtaposed by the interspaces with which it plays the role of a boundary.

This issue of the boundaries areas is also mentioned as a determinant factor of urban quality in the theory book of architecture and city planning *A Pattern Language*, where these areas can be assimilated as *subcultures*³³.

While describing an ideal cityscape with a *mosaic of subcultures*, with porous interspaces between the housing areas, the authors also recommend the subcultures not to be too large (less than 400m diameter). On the transdanubian territory, the spatial areas assimilating to the subcultures have mainly a 500m width, and a “too sharp” or almost inexistent spatial boundary. As felt on site, when identifiable, their interspaces also sometimes feel a lack of urban quality.

According to the same references, however, a cityscape which is too heterogenous or homogeneous isn’t particularly beneficial. On the contrary, a mosaic of subcultures or districts, various and lively, are good base for the development of a warm urban atmosphere.

To conclude, besides the juxtaposition of contrasting urban components, the lack of coherence which may result from the transdanubian area is due to the bad quality of these component’s connection and interspaces. Reconnecting, on ground level, in their immediate surroundings, the various parts of this mosaic can be understood as the main task of a planner in this urban area, and is taken as a background motivation for the present project.

³³According to the Oxford dictionary, a subculture is “a cultural group within a larger culture, often having beliefs or interests at variance with those of the larger culture.” Applied to an urban analysis, this could be meaning a typological group of building, which make together a landscape entity, but also have common architectural, sociological and spatial aspects which makes them differing from another while belonging to the same larger group.

B - HOUSING SYSTEMS

These various districts, however, (especially when comprising multiple identical housing buildings) primarily have a very strong incidence on the landscape and on their neighbouring districts, due to their large scale character.

One of the most representative examples of such a housing system is the large scale housing of *Großfeldsiedlung* (literally “large field settlement”), located north-east of Leopoldau. Originally dedicated in the 30s to emergency dwelling, the area has been turned into a gigantic residential housing system, between 1966 and 1973.³⁴ As other projects in the Transdanubian area, each housing block is made of a panel construction type, which permits the quick and cheap construction of good quality dwellings.

Up until 2006, when the U1 was prolonged to Leopoldau, this district was very isolated, and endured thereby a ghetto reputation. As a result, projects like this have not been planned for further expansions of Vienna.

Similar projects have, however, been more largely used in France, particularly in the peripheric areas of Paris. Corresponding to the French term used for describing these projects: “Grands ensembles” (literally “large collective housing”), they have been built during the same period as in Vienna, but were implemented all over France, even at the periphery of small cities.³⁵

The most famous and worst-renowned project of this kind is *la Cité des 4000*, “The city of the 4.000” (Figure 39), taking its name from its dwelling capacity of 4.000 apartments. This was built in 1950 in La Courneuve, a satellite city of Paris, according to the plans of the architects Tabuté and Delacroix, and financed by the city of Paris. Dedicated to control the immigration levels post-decolonization, these large projects in France suffer from a sometimes very poor reputation, particularly in certain cases, since their construction in the 1960s.³⁶ The major urban, and thereby social, problem with these large projects resides in their enclosure and mono-functionality. Indeed when most of the time only affording dwellings over a large area, the population finds itself cut out from the rest of the city. Because of their monofunctional and large scale arrangement, people living externally from the district don’t have any reason to go there, other than visiting or residing purposes.

Moreover, in a morphological point of view, most of these projects are ruled by parallel and squared distribution of identical buildings, but lack a focal point of congregation. This is why these housing systems could highly benefit from the use of high-rises. By their high significance, they could bring functional diversity, and stand out as an attraction point, dominating and thereby reducing the impression of monotonous arrangement.

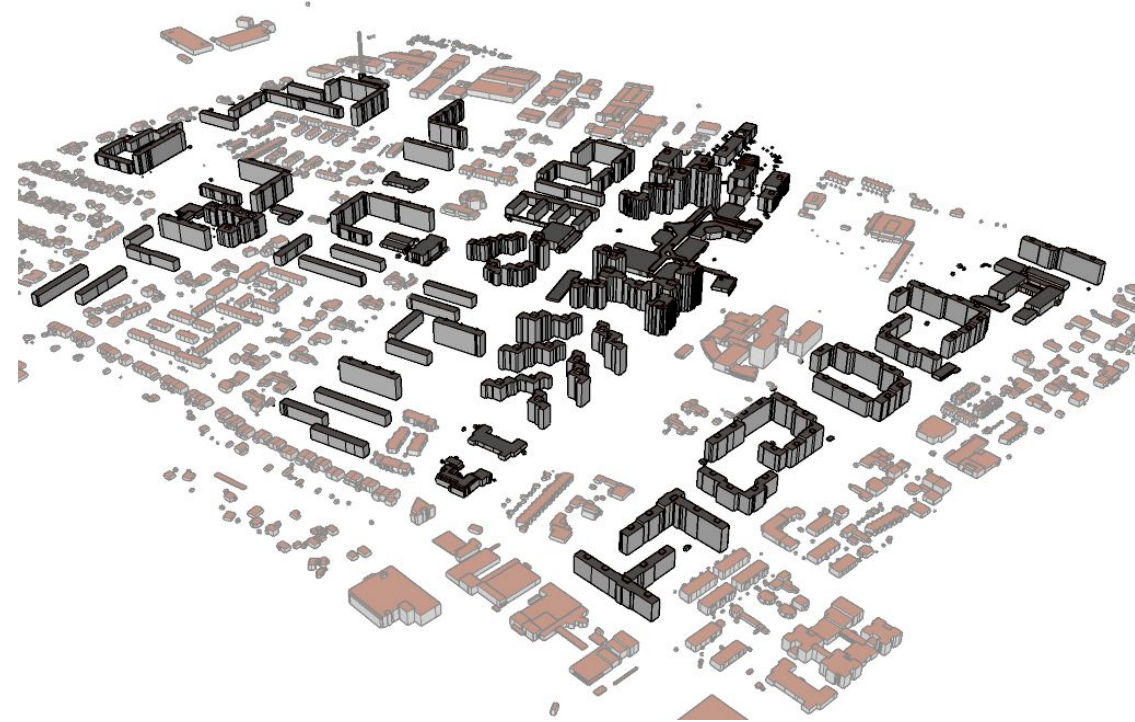


Figure 38: Volume, Großfeldsiedlung. Source: Generalisiertes Oberflächenmodell, Geodaten Viewer Stadtvermessung Wien



Figure 39: "La Cité des 4000" in the 1960s, La Courneuve, France. Source: architectesdelacroix.unblog.fr.

³⁴ Lidovienna.at ; Großfeldsiedlung

³⁵ For example in Meaux with only around 53,000 inhabitants in 2015 (Wikipedia;Meaux) or Evreux in Normandie, with less than 50,000 inhabitants in 2015 (Wikipedia; Evreux).

³⁶ Seine-Saint-Denis Tourisme ; La cité des 4000



Figure 40: Different views on social housing from the 1950-60s in the Transdanubian expanse areas. Photo: Otto.H.

C - SHOPPING CENTER

Distributed more poignantly than large scale housing systems, shopping centers are largely present on the Transdanubian territory.

Along with the Shopping City Nord, the *Donauzentrum*, built in 1975 in Kagran, is the largest in Vienna.³⁷ Its purpose was to resolve a low supply quality, from which the left bank of Vienna suffered in comparison to the original bank. Just few years after its erection, the center finally became connected to the Vienna's inner districts, by the metro (U1-Station Kagran in 1982) and by the local highways A23 and A10.

As well as effectively solving a problem of supply, and of accessibility for the left bank, this huge complex with around 133,000m² of lettable area, more than 260 shops and 18 million visitors per year³⁸ almost functions as an city itself.

Unfortunately, although very practical, the two hermetic volumes, which find themselves implanted either side of the Wagramer Strasse, don't provide the urban area with a particularly lively atmosphere. As shown on the pictures aside, all activities, which characterize the *micro-city* life, is more recognizable inside the shopping center than on the local street encompassing it.

This is due to the inner distribution of a shopping center, which is made to resemble a city street, with shops, coffee places and restaurant alongside it. Moreover, the intense traffic in the Wagramer Strasse, and the bridge connection between the two parts of the Donauzentrum, transfer any urban life from the district outside to the one recreated inside.



Figure 41: Internal and external views of the shopping center Donauzentrum in Kagran. Photo: Otto.H.

³⁷ Lidovienna.at; Donauzentrum

³⁸ Donauzentrum.at ; B2B, Shops

D - INDUSTRIAL AND COMMERCIAL AREAS

“The artificial separation of houses and work creates intolerable rifts in people’s inner lives.”
(Alexander, Ishikawa, & Silverstein, 1977)

Functionalism prevailed in architecture and urbanism from the 1950s to the late 1970s. Less popular in Vienna than in France for example, the movement influenced strongly the structural development of the Transdanubian area in the 1970s.³⁹ The separation of the functions which makes a modern city: living, working, supply and traffic, were the basis for the development of the 22nd district.

Whereas the private car possession largely began to dominate town planning, it also influenced Vienna’s position on a European level, especially by placing it on a European highway junction⁴⁰. Ultra-connectivity ruled traffic planning until the 1990s, when a new movement emerged, banning the car from the inner-city areas.

A consequence of this “car-friendly” and functionalist urban development is the massive construction of residual commercial areas and industries, which actually mostly took place during the 1990s. As shown on the present satellite view, these gigantic areas are today still preeminent in the transdanubian landscape (Figure 42 and Figure 43). Monofunctional and almost impenetrable, these areas are commonly regarded as an “urban planning deadly sin”⁴¹.

Although they can be considered as large built-up area, and thereby as a part of an urban entity, they don’t participate in the creation of “urban life” as most of other uses do. In fact, they somehow also represent a barrier to any further expansion of the city, as they can hardly be integrated into it, especially when being so large.



Figure 42: Satellite view on industrial area on Vienna’s left bank (north-east from Schwarlackenau). Source: Orthofoto 2014, Stadt Wien, data.gv.at



Figure 43: Satellite View on residual commercial area on Vienna's left bank (north-west from Großfeldsiedlung and Rennbahnweg). Source : Orthofoto 2014, Stadt Wien, data.gv.at

³⁹ lidovienna.at ; Wiener (Ent)Mischung

⁴⁰ lidovienna.at ; Wiener (Ent)Mischung

⁴¹ Lidovienna.at ; Gewerbepark Stadlau

E - HIGH-RISES ON THE TRANSDANUBIAN TERRITORY

As the main object of this project, high-rises are already present in the Transdanubian area. Where in the *Donaucity* or Wien Erdberg they are clustered together, high-rises in the left bank are dispersed among the urban territory. This will be described in the next chapter. Excluding the Donaucity, only two objects are today particularly relevant.

FLORIDO TOWER

Gross floor area: 36,000m²

Architect: Andreas Müller-Hartburg

With 31 floors, composed of offices and a conference center at the top, the Florido Tower reaches 113m. Situated at the junction of the Fluvial landscape and the Transdanubian area, it marks the origin of the Floridsdorfer Strasse. It passes on its east side, also creating an agreeable ensemble with the individual housing area expending on its west side.

CITY GATE

Gross floor area: 32,646m²

Architects: querkraft

Urban planning : competition won in 2000 by Gasparin & Meier

Finished in 2015, the city gate tower (100m) and the Leopold tower (85m) form together the “City gate from the North”. Firstly used as a landmark, it extends the city’s boundary, but also creates a center of activity, and thereby takes part in the polycentric evolution of the area ⁴² (Polycentric strategy is detailed p.46)

Like the Florido Tower, City Gate also acts as a “gate” for Vienna. Whereas the Florido tower marks the transition from Danube landscape to Transdanubian plain, the City Gate towers mark the beginning of Vienna’s urban area in the North.



Figure 44: Floridotower. Photo: Bwag



Figure 45: City Gate, residential buildings, shopping center and high-rises, Vienna, 21st district in 2015. Photo: Bwag

⁴² Lidovienna.at ; Stadttor des Nordens

3 HEIGHTS, DENSITY AND GREEN OPEN SPACES

Aside from this particular street connection and its mosaic of different functional areas, the Transdanubian urban territory is also characterized by its general low density and its key role in the future landscape, and the growth of Vienna during the following years, for open-space area and demographic.

A - POPULATION DENSITY AND GROWTH

According to the following documents, Vienna's current population is much higher on the right bank than anywhere else in the Transdanubian area. In fact, perhaps only some blocks from the *Gründerzeit* period in Floridsdorf had a comparable population density as in central Vienna.

On the right bank, the population's repartition seems to be in some parts independent from the districts subdivision. The most continuous area of dense population could be discernible on the *Gürtel*⁴³, with a ratio of 500 inhabitants/built-up area, 10 times higher than the average population density of the outskirts zones, such as the 22nd districts. However, the contrast between very dense to sparse density of territory appears to be, at least in some places stark (18th district).

Considering the 21st and 22nd districts independently, they appear to have very low population density in general, with literally no more than 100-200 inhabitants per hectare of built-up area.

Floridsdorf's area, with the *Gründerzeit*'s blocks, is a little denser than the rest of the transdanubian territory.

Aside from the low population, the left bank seems to endure a very inconsistent layout of inhabitation plots. In fact, even when comparing the outskirts areas on the right bank with this same low density (of the 16th to 20th and 23rd districts), some of them appear to follow a similar pattern, but generally smaller.

The next 20 years, however, may change this population repartition in Vienna. Indeed, the city is expecting a population growth of roughly 177 000 inhabitants until 2024 (+10 %). With an already very dense city center on the verge of receiving an even greater rise in population, the general tendency would be to balance and distribute the population more equally.

Indeed, both the 21st and 22nd districts, today's larger and less populated areas of Vienna, seem to have been set out for this purpose of catering for the population influx. The districts of Liesing and Simmering, Floridsdorf and Donaustadt should expect their population to raise by 20%, especially in the areas which are currently unbuilt.

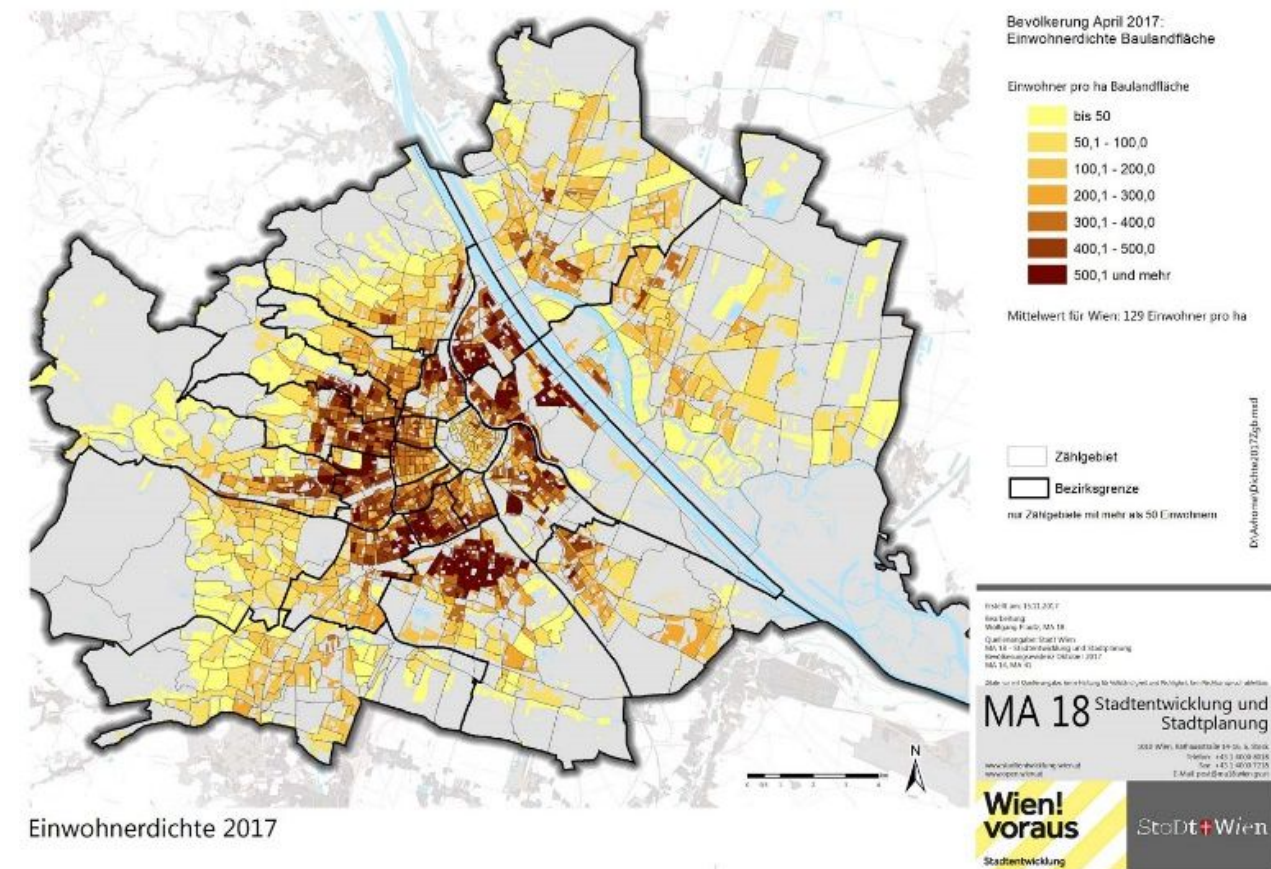


Figure 46: Population density in Vienna in 2017. Source: Stadt Wien, MA18

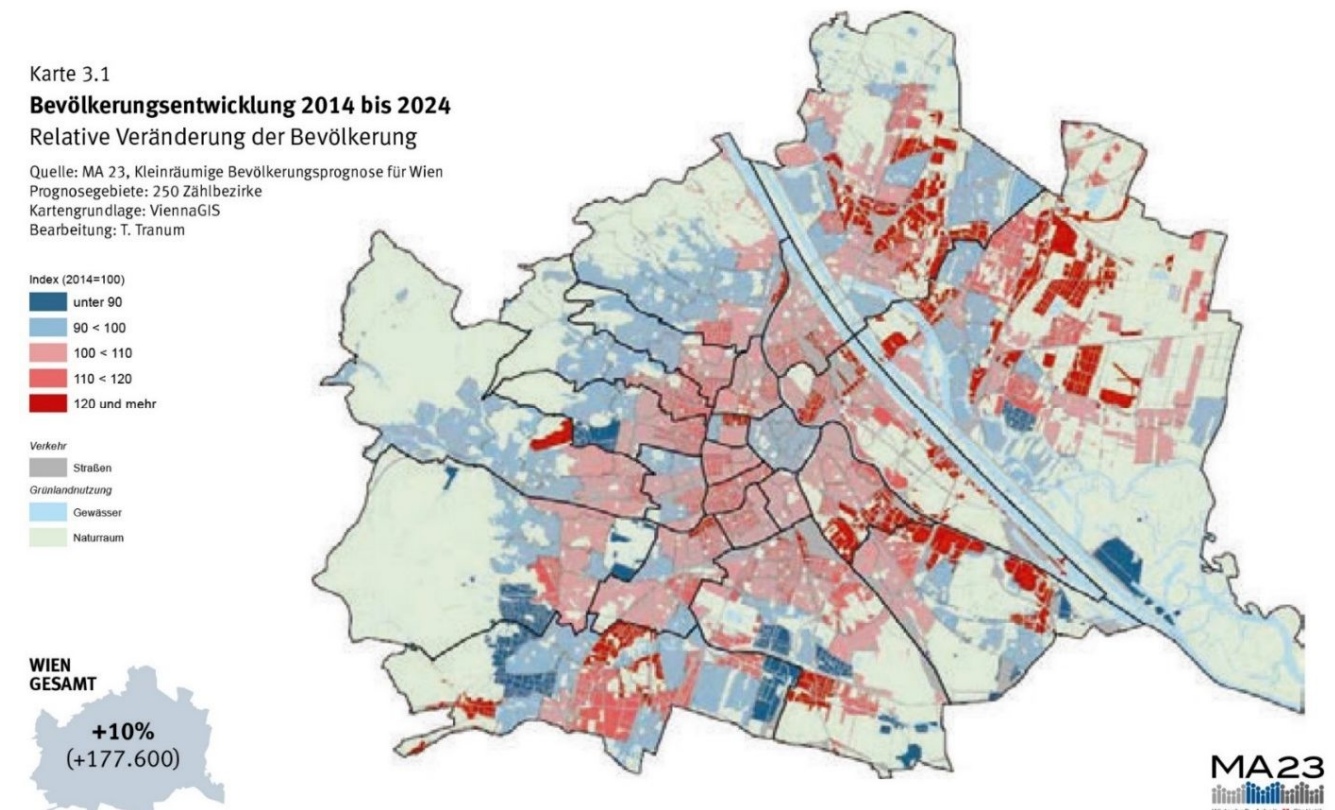


Figure 47: Relative evolution of the population in Vienna between 2014 and 2024. Source: Stadt Wien, MA23

⁴³Understand "Belt", large boulevard boarding externally the districts 4 to 9. It is concentric with the Ring and is a very efficient traffic road for central Vienna.

Nettogeschossflächenzahl 2014

Zeichenerklärung:

NGFZ auf Baublock

- 0,0 - 0,5
- >0,5 - 1,0
- >1,0 - 2,0
- >2,0 - 3,0
- >3,0 - 4,0
- >4,0 - 6,0
- >6,0

Histogramm NGFZ auf FBK

Die NGFZ ist eine wesentliche Kennzahl der baulichen Dichte. In dieser Karte wird das Nettoplatzland gem. Rechenverfahren des BAK 2012 definiert. Die Gebäudeformen basieren auf der NGFZ 2014. Die Darstellung erfolgt als auf Baublocke bezogener Mittelwert.

Nettogeschossflächenzahl 2014

Bruttogeschossfläche
Nettogeschossfläche
Nettoflächenanteil

MA 18 Stadtentwicklung und Stadtplanung

1010 Wien, Rathausstraße 14-16, 6. Stock
Telefon: +43-1-4000 1333
Fax: +43-1-4000 1334
E-Mail: post@ma18.wien.gv.at
www.stadtentwicklung.wien.at

Wien! voraus
Stadtentwicklung

Stadt+Wien

CURRENT HIGH-RISE BUILDING STOCK

Legend:

- Nature reserves and protected landscapes
- City limits
- Main roads
- High-level public transport
- High-level public transport, planned
- Bodies of water
- High-rises, designated plots
- High-rises, current/under construction
- 35 m - 60 m
- 61 m - 90 m
- 91 m - 120 m
- 120 m +

Scale: 0 1km 2km 5km
1:200,000

The construction density is directly related to the building heights. According to Vienna's Building Code, a building is considered as a high-rise when its heights exceeds 35m. On the present document, extracted from the high-rise concept for Vienna, the high-rises are classified into 4 categories, expressing the large variability of objects which can be understood under this term. It is also important to remember that certain objects located on this map, fulfilling this criteria, are not used for housing purposes, such as industrial chimneys or warehouses (in Stadlau for example).

Figure 49: Current high-rise building stock of Vienna in 2015. Source: STEP2025. Thematic Concept for High-rises.

C - CURRENT GREEN AND OPEN SPACES

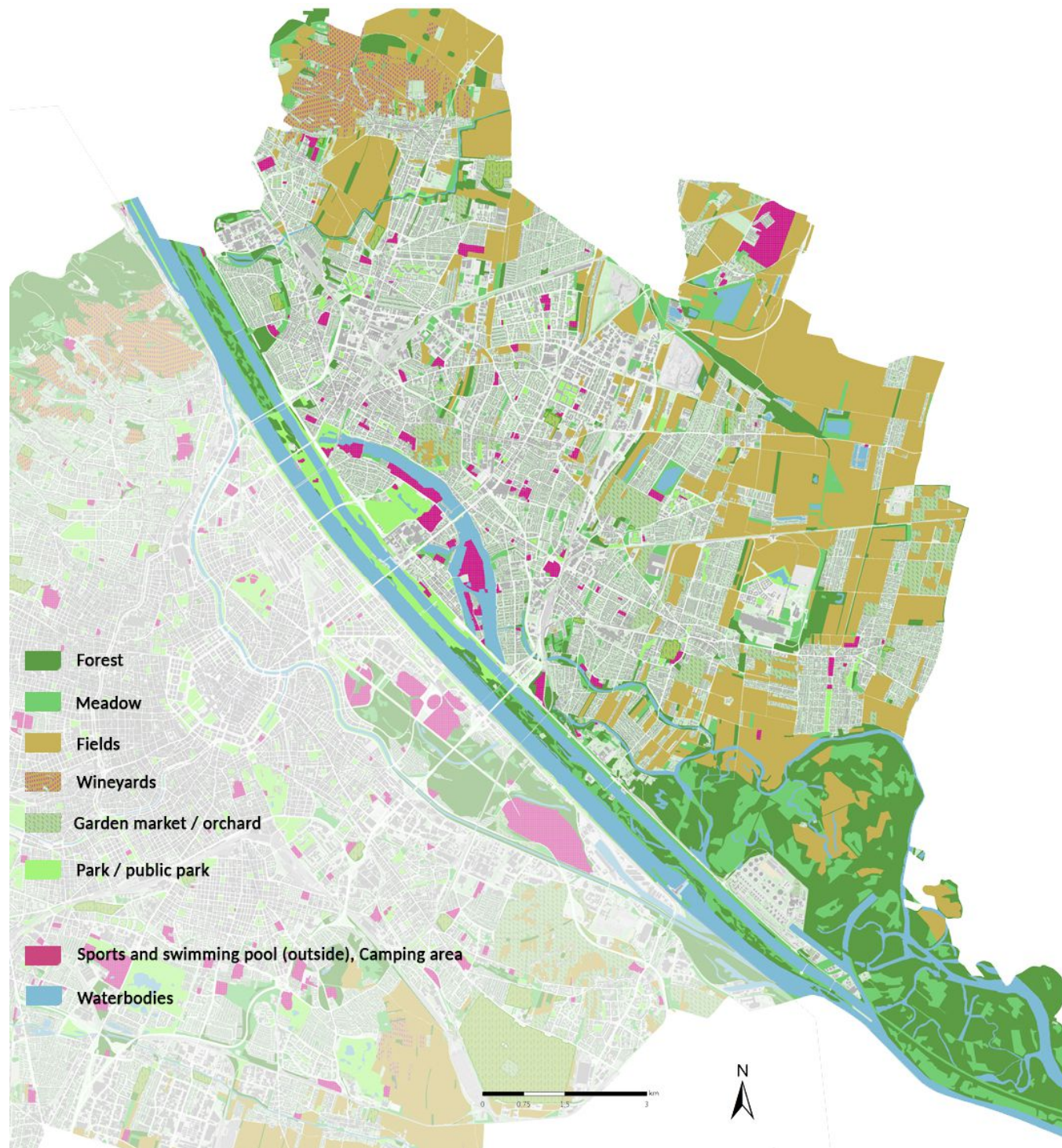


Figure 50: Extract of the general plan for green and open spaces of Vienna in 2016. Source: Stadt Wien. wien.gv.at

The vertical development of Vienna, including of the Transdanubian area, isn't obviously equal to the reduction of public and green open spaces in the city. In fact, their combination is seen as the most valuable option for any urban development. Besides, the present map of public and open spaces in the Transdanubian area shows a dispersed, but also dense allocation of sports and green areas on the territory.

Indeed, whereas the proportions of sport installations are a bit higher than on the other parts of Vienna, they are built alongside other types of green spaces, creating an interesting network of public open spaces.

Finally, mostly surrounded by fields, forest and vineyards, the Transdanubian territory still maintains some agriculture land, which is unfortunately often comparable to industrial areas in terms of urban continuity. In fact, although residual, they can be considered as large, loose and inaccessible open spaces, situated between built-up areas, which hinder the urban coherence. As a result, according to the Building Code in Vienna, a global densification of the Transdanubian territory would mean that this agricultural area shall mostly be turned into land designated for construction.

According to STEP 2025, the urban mission statement for Vienna in 2025, the development of these green open space areas encompassing Vienna, and particularly the north-eastern part of the city, has to be encouraged. For example, forming a "green belt" ⁴⁴ by networking three leisure zones implanted in Bisamberg, Marchfeld and the Danube zone, would enclose the transdanubian territory. A green belt provides important benefits, including avoiding an urban sprawl, landscape preservation, and the protection of eco-systems.⁴⁵

When focusing on the location of green space development for the Transdanubian area, four of the nine new parks planned in Vienna can be found on the left bank. Two of them in the Donauefeld, replacing the fields, and two others in the newly built Aspern district. These two areas are major locations for urban development in Vienna.

Finally, the creation of green routes, following important axis of development, are meshing thereby green connection through the Transdanubian area, between the Danube and the planned Green Belt.



In conclusion, the transdanubian expanse area finds itself today in the heart of Vienna's development in terms of green and open spaces. Indeed, when including Vienna's woods, on the south west and the Terrace Landscape in the south east, the biggest step for finishing the circle of a green belt remains the left bank.

⁴⁴Term used principally to qualify the woods and fields area surrounding London where this is forbidden to build any "new buildings or for the change of use of existing buildings, nor for purposes other than agriculture, sport cemeteries, [...] or other uses appropriate to a rural area" according to the London Green Belt Council.

⁴⁵ *London Green Belt Council* ; About London's Green Belt.

MISSION STATEMENT FOR GREEN SPACES

PLANNED MEASURES

-  Leisure zone upgrading
-  New parks (2-10 hectares)
-  Planned open space networking, partly already implemented
-  Open space networking (characteristic of landscape), mainly improvement of current situation
-  Open space networking (urban), mainly improvement of current situation
-  Networking with the environs

CURRENT STATUS

-  Landscape dominated by woods (woods, vineyards and meadows)
-  Mainly agricultural landscape
-  Large-scale urban green spaces (e.g. Schönbrunn Palace Gardens, Central Cemetery)
-  Parks (2-10 hectares)
-  Parks (10-50 hectares)
-  Fresh air corridors
-  Parks with a surface of less than 2 hectares are not shown.

SITUATION


-  Built-up area (2013)
-  Woods in the environs of Vienna
-  Danube water bodies
-  Standing water bodies
-  City limits
-  Above-ground traffic infrastructure (road and rail)
-  Above-ground traffic infrastructure at planning stage (road and rail)



Figure 51 : Mission Statement for green spaces, 2014. Source: STEP 2025, MA 21, MA 22

3. FUTURE SCENARIOS

1 METROPOLIS PLANNING

A DISPERSED URBAN FABRIC

As a conclusion of the morphological and typological analysis of the transdanubian territory, we can find many terms describing the urban fabric: “heterogeneous”, “loose”, “juxtaposition”. Made out of very different areas, scattering population and uses, the transdanubian expanse area can hardly be defined by a single term to summarize it’s numerous and varied characteristics. As in STEP 2025, and considering principally typology and density criteria, a “dispersed” urban fabric seems to adequately fulfil this role.

At several levels this dispersion of the urban elements, forming the transdanubian area, is discernible. This character directly influences the user’s perception of the city. As a result of this, “disorganized” urban areas can become perceived as a kind of urban confusion. Indeed, the entire street system is also in part responsible for this perception of the territory. As described previously, and as the urbanist Kevyn Lynch indicates in his Book *The Image of the City*, a sort of confusion of the various lines of forces (the main axis)⁴⁶ appears, and this sets a precedent for the guidelines of the territory.

A THEORICAL EXPLANATION AND SOLUTION ?

When using the terminology defined in Gordon Cullen’s book *The concise townscape*, we can describe the current transdanubian structure as positional, but also as slightly flexible. Showing indeed “*parts roughly related in terms of their general direction and perhaps even relative distance from each other, while still remaining disconnected*”. Some of these parts, however, are connected, but then in a “*loose and flexible manner*”, contribute to a “*known sequence of events, but for which the mental map might be quite distorted*.” This statement can also be found in the Thematic Concept 2025 for high-rise, when describing the transdanubian area.⁴⁷

A victim of zoning and loose urban fabric, the transdanubian territory suffers nowadays from internal conflicts at the boundaries of its areas, and in a more general point of view, from discontinuity.

THE TASK OF THE PLANNER; THE GOAL TO REACH

The good news in this statement is that such a territory represents great opportunity for urban planning, something which many urbanists see potential in. In this dispersed urban fabric, the opportunity to “resolve conflicts”, in order to “draw out the identity latent in the confusion”, conspires to “link the parts to the whole” :

METROPOLITAN FORM

“Total imageability of an extensive area such as a metropolitan region would not mean an equal intensity of image at every point. There would be dominant figures and more extensive backgrounds, focal points and connective tissue. But whether intense or neutral, each part would presumably be clear, and clearly linked to the whole.”

The image of the city, (Lynch, 1960, p. 112)

THE PROCESS OF DESIGN

“a frequent problem is the sensitive reshaping of an already existing environment: discovering and preserving its strong images, solving its perceptual difficulties, and above all, drawing out the structure and identity latent in the confusion.”

The image of the city, (Lynch, 1960, p. 115)

THE TASK OF THE PLANNER

“Since his task, in any case, is one of resolving conflicts and allocating the regard to be paid to rival demands, and since the procedures he follows is one of particularization, the success with which he discovers and gives visual interpretation to the most significant lines of force will largely determine whether the town achieves an intelligible and characteristic form.”

The Concise Townscape, (Cullen, 1971, p. 111)

⁴⁶ See p. 22

⁴⁷ See p. 20

A - FUTURE VIENNA

As far as Vienna's development is concerned, the mission statement delivered by STEP 2025, from which the description of the Transdanubian expanse area is taken, is synthesising the many aspects of this evolution. Acknowledging the population growth until 2025, is organizes and distributes the interest and actions in a prospective way.

On the following map, the general indications concerning the structural and typological evolution of Vienna are given.

Somewhat unsurprisingly, the left bank side appears to include a large section of the areas with a development potential, although they are scattered on the territory. Focused more on the northern-western part of the left bank, the zones with enterprises unsuitable for mixed use and those appealing for further development are alternating, while still occupying a large part of the built-up territory.

Offering no Central business district comparable to the 1st district and the Donau City, and with only one shopping street of remarkable note (Floridsdorfer Strasse), the left bank certainly seems destined for a global densification, and more precisely for particularization (see Gordon Cullen's citation on the page aside).

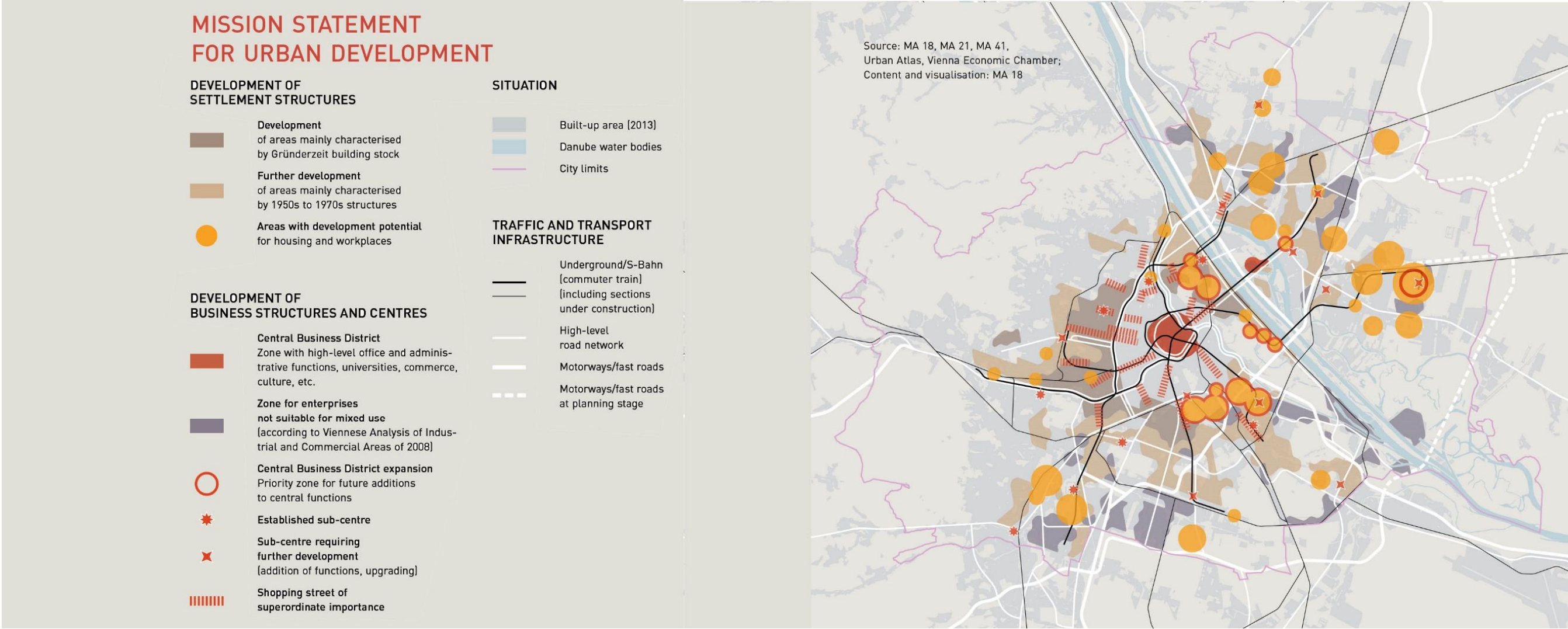


Figure 52 : Mission statement for urban development, 2014. Source : STEP 2025, MA 18, MA 21, MA 22

B - A POLYCENTRIC CITY

This task of particularization is linked to Vienna's "centre" concept : the polycentric city.

In the urban development plan for 2025, the action field places the centre development as a high priority.⁴⁸

This strategy consists of the strengthening and supporting of existing centres, and developing new ones during the course of urban expansion, so that the necessary building structures and urban uses are positioned directly into the appropriate location (MA 18, 2014).

This strategy and process has formed part of Vienna's evolution since the 1960s, with the urbanist Roland Rainer⁴⁹ setting the first steps for Vienna's decentralisation in 1960.

As shown on the map aside, the first district remains the geometrical and urban center, whereas the rest of Vienna is scattered by approximately 20 "Stadtteilzentren" (literally "district's centres"). Added to this we have the 12 old village cores mostly present on the outskirts of the city. Roughly homogeneously dispersed on the territory, these two types of cores are mainly set between mixed zones of urban expansion and areas dedicated to re-densification.

Away from this intermingled development of condensation points, centers, and construction/densification areas, we can understand the duality of the transformation of the transdanubian area: that of light homogenization and strong particularization.

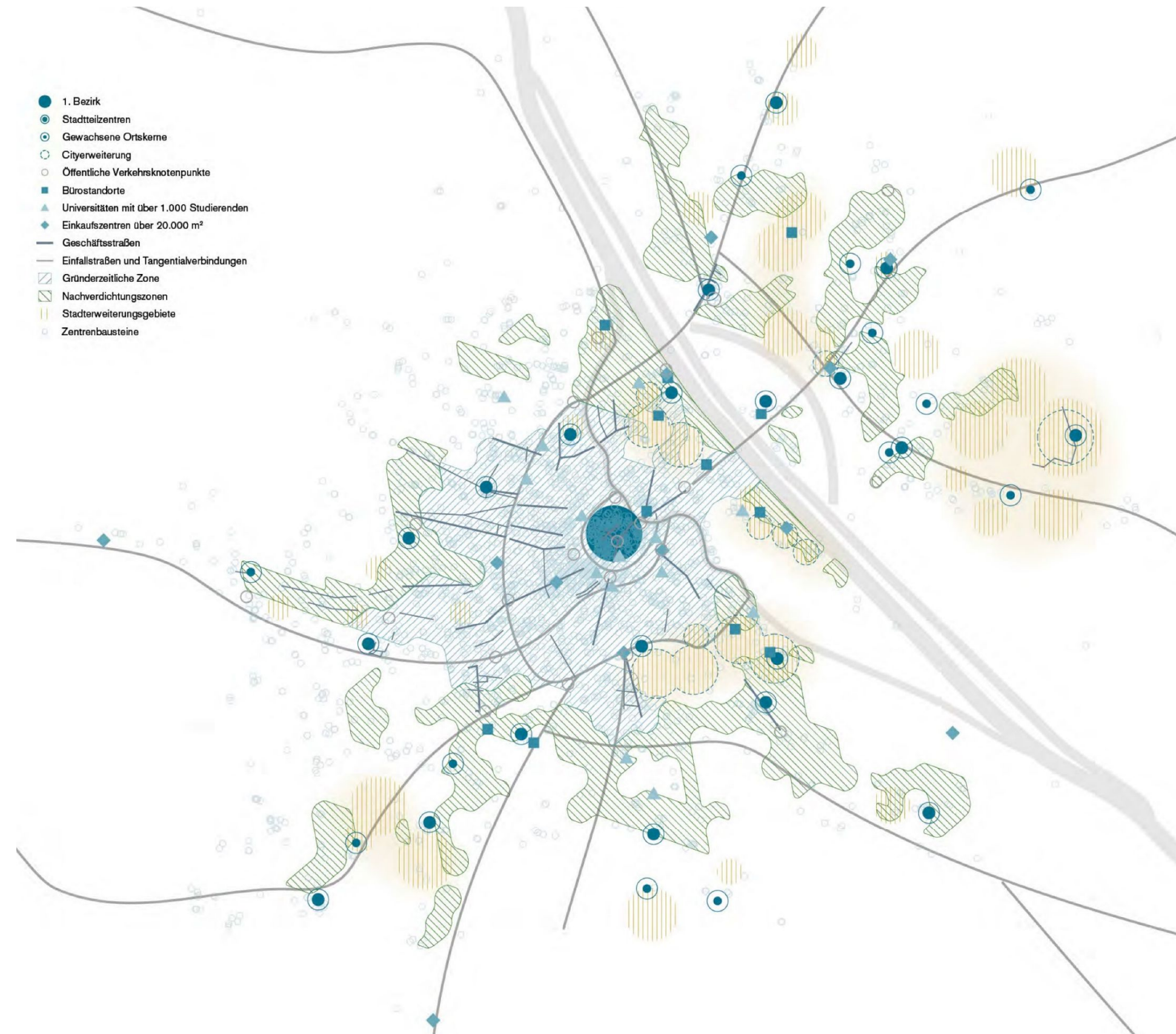


Figure 53: Wien polycentric development. Source: Wien polyzentral: Research project for the development of Vienna's centers MA 18

⁴⁸ Wien polyzentral : Forschungstudie zur Zentrenentwicklung Wiens, p 29

⁴⁹ Lidovienna.at : Zentren & Achsen

C - TARGET AREAS ON THE TRANSDANUBIAN TERRITORY



Figure 54: General principle for EUROPAN 12 Housing Project "Siemenssäcker", 2014. Source : wien.gv.at



Figure 55: General principle for the planning area of Ödenburger Straße, 2013. Source : wien.gv.at

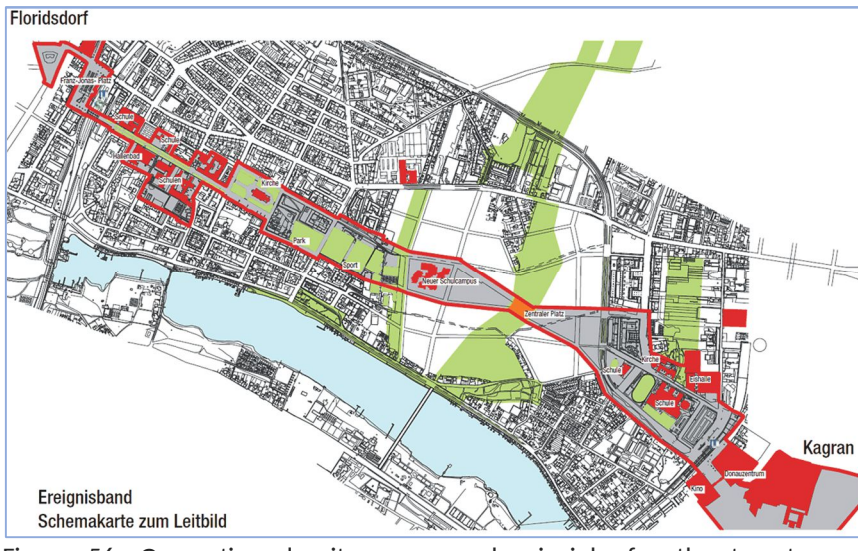


Figure 56: Generating density as general principle for the target area "Donaufeld", 2010. Source : wien.gv.at

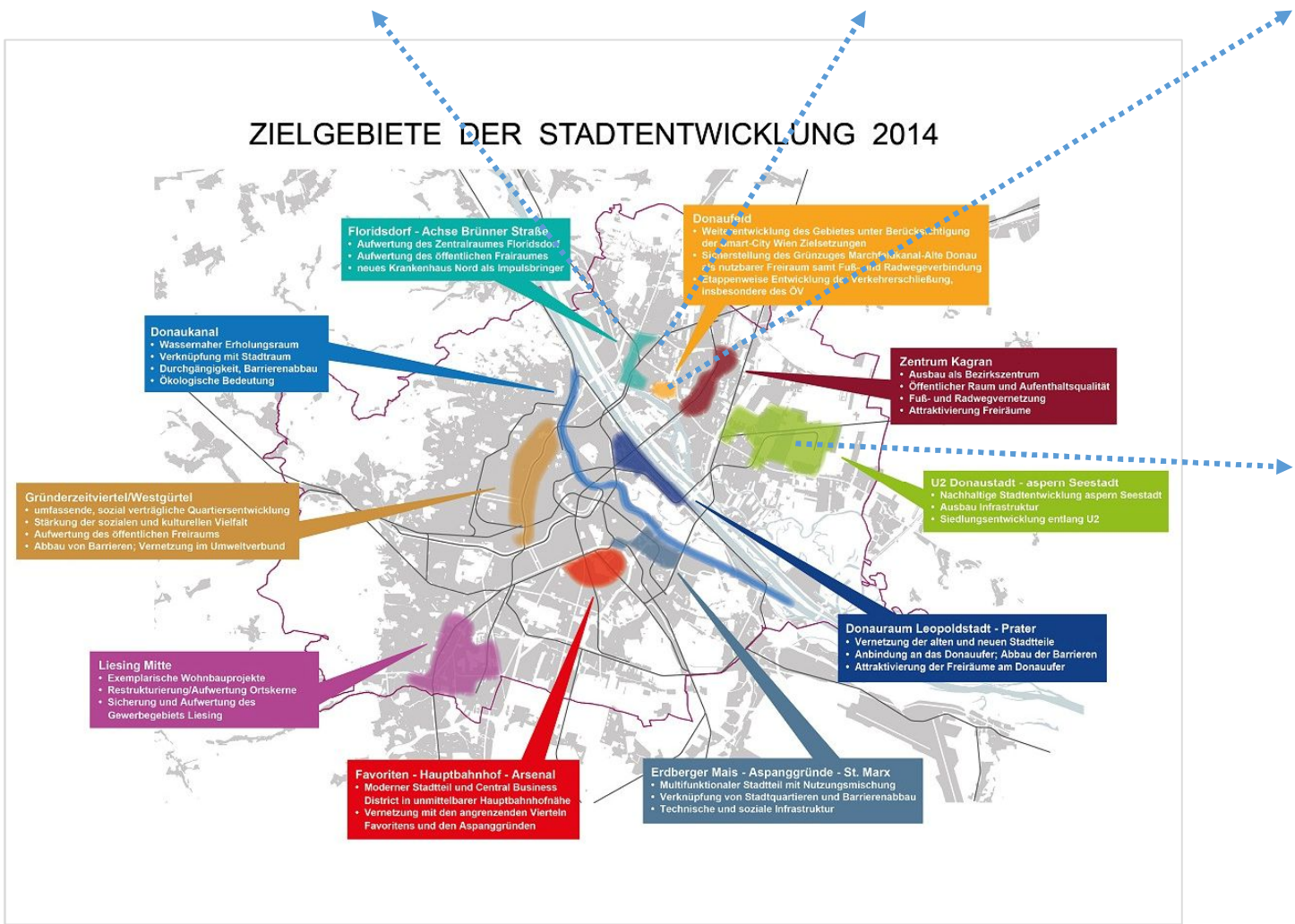


Figure 57: Target areas for Vienna's urban development, Source : wien.gv.at



Figure 58: Overview plan of target area U2 Donaustadt, 2014. Source : wien.gv.at



Figure 59: Seestadt in September 2018. Photo : Otto.H.



Figure 60: Seestadt in September 2018. Photo : Otto.H.



Figure 61: Rendering of Aspern-Seestadt's lake Front. Source : Wien 3420 AG, STM Seestadt aspern - Bernhard Siquans, PID - Schaub-Walzer, PID - Christian Fürthner

ASPERN-SEESTADT

Aspern Seestadt is currently one of the largest urban project in Europe. Taking the place of the old airport of Aspern, the new urban center currently both on planning and growing. Planned in several phases, the project has a cost estimated of 5bn of euros and should afford 20,000 potential workplaces as dwellings for 20,000 people until 2028.

After a two steps competition in 2005, won by the swedish Planing office Tovatt Architects & Planners and the german Office for Project development N+ Objekt Magament, the master plan was officially put in place in 2007. The metro line U2 is recently linking the district to the city center, whereas a first phase of the project, is close to be finished by 2019. With large innovation center and one of the highest high-rise in wood currently under construction, the entire district is planned according to Smart City princips, eco-friendly with more than 50 % of the ground surface dedicated to public uses.

Boarded by multiple high-rises, the lakeside is seen to become an importance business center, as Aspern finds itself in a strategic place in the Vienna-Brastilava axis.

Standing as a prototype, the Aspern-Seestadt district promises a great quality of life, and collects the prizes for the many innovations.

However, when filled of good intentions, the Seestadt district is sometimes hardly criticized. Although the places are planned, the companies and shops are sometimes still missing and this represents a risk for the balance in the development of the area.⁵⁰

This gigantic project in the 22nd district of Vienna is an important marker of the new identity that the Transdanubian expanse area is creating to itself. Although located quite far from a central part of the Transdanubian body itself, they are part of its general overseen densification.



Figure 62: Master plan of Seestadt in January 2018. Source : aspern-seestadt.at

⁵⁰ To questions about this topic, Andreas Trisko (MA18 Stadtentwicklung und Stadtplanung) answered during the Planerforum at the TU Vienna in 2018, that the Aspern-Seestadt project has to be considered more as a process than as a finished product.

2 DENSIFICATION

A - DECENTRALIZATION AND DENSIFICATION AGAINST THE URBAN SPRAWL

Originating from the general urbanization of Vienna, the Transdanubian territory could itself be assimilated to the negative renowned phenomena of an “urban sprawl”. In fact, this suburban area has grown so large today that it is now to be considered more as a unique urban entity, showing its own peripheral extension. Since the phenomena appeared in the 1970s, many architects, urbanists and sociologists developed theoretical answers to this question: “Why is the urban sprawl bad for a city?”.

Indeed, they describe this phenomena of a suburban sprawl as a major problem in modern cities. In addition to the spatial aspects of the issue, some of these professionals consider this question more specifically in terms of its social aspects.

In truth, in 1971, Gordon Cullen, in his book *The concise Townscape*, depicts one of the most essential qualities of a generic town by its capacity of “a gathering together of people and utilities for the generation of civic warmth” and calls it *Towniness*.

For example, Henri Lefebvre, a renowned French sociologist from the same period, published a book, *Droit à la ville*, in reaction to the modern functionalism in urban planning in 1968. He is one of the first to warn about the consequences of the urban sprawl.⁵¹ Without precisely mentioning the polycentric city as a valuable option for the modern city, he brought the “Right of the city” into the heart of urban and sociological debate and evolution, particularly in France.

Two main processes arose against the urban sprawl: Decentralization and Densification. These different urban processes act at different levels, separately or together.

Decentralization⁵² acts at a political, social and hierarchical level in the city, and thereby also acts on a large scale in urban planning. This is why the development of a polycentric scheme for Vienna⁵³ is in its essence an early process of decentralization.

Densification, on the other hand, is more concrete and can take place thanks to more typological tools, acting directly on specific plots or buildings.

These two processes are also linked with the eco-movement, and the Smart City concept. Today, new strategies of densification arise in the European society.

Whereas various means of densification exist for different types of urban areas and objects (see examples aside), one possibility, the implantation of high-rises, seems to also ensure both roles: decentralization and densification.

B - VARIATIONS OF DENSIFICATION

Concours mix'Cité, organized by CAEU from Haute-Savoie, Annecy France: 2017



Figure 63: Annecy – Meythet – Les Myrtilles – MixCité'2017 – CAUE 74



Figure 64: Annecy – Meythet – Les Myrtilles – MixCité'2017 – CAUE 74 – THINK TANK Architecture

1st phase of the project is dedicated to raising awareness in the communities about the issue of densification. One can increase the value of his private house or garden by building or permitting the construction of a second house.

2nd phase.: the interested owner is accompanied by a mandated architect free of charge to analyze the different development possibilities that could be envisaged.

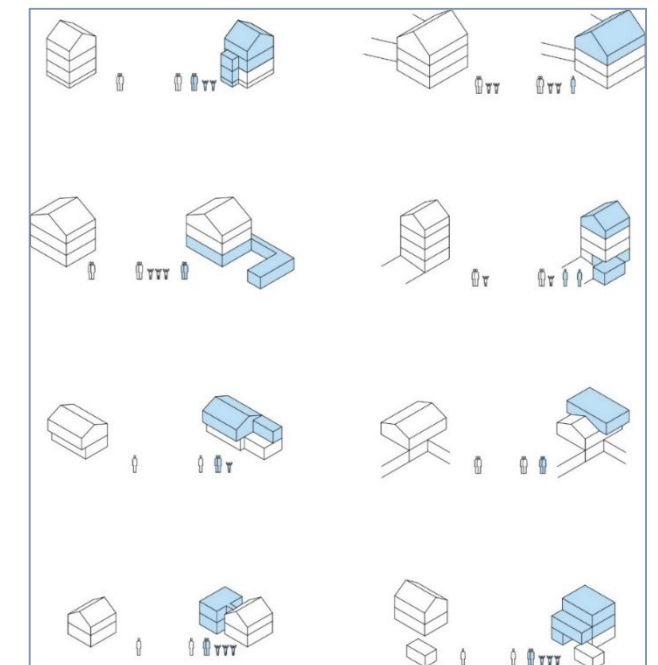


Figure 65: MetamorphHouse, "Build in my Backyard", in Crassier, Cugy, Echallens and Pompaples, in Vaud, Switzerland. 2017

⁵¹Although with a considerable Marxist background, he proclaims that a new city, a “social” city would emerge out of the “historical city”. The “historical city” is based principally on the dualism centre/periphery, in which he sees the foundation of a social fracture between rich people in the center and poor people in the periphery. His questioning, still present today, is about to know how the population could access easily to what suggests the urban world in terms of services, employment and amenities, in other words, to “centrality”, even when living in the periphery. (Marchal & Stébé, 2014)

⁵² In the Collins dictionary, two definitions (Brit.) are given: 1. To reorganize (a government, industry, etc) into smaller more autonomous units. 2. To disperse (a concentration, as of industry or population)

⁵³ See p.46

C - NETWORK OF GREEN AND OPEN SPACES

When questioning the densification of the city, it appears just as important to include and to improve the development of urban and green spaces in the process. Indeed, more than the replacement of green and wide open space for built-up areas, the creation of new urban centers has to generate loci for green urban spaces of high quality. In the thematic concept for this in STEP 2025, seven categories of actions at different levels are detailed. Indeed, next to the development of major recreation zones, a network of open spaces and a “Local Green Plan” should help planners as well as the local citizens to contribute to the green development of Vienna.

Undeveloped, unsealed or green, open spaces fulfill one or more of the following functions:

- For everyday life and recreation
- For the structuring of the urban fabric
- For ecosystem services
- For nature conservation

In order to afford Vienna’s citizens a better quality of life in new urban development areas, standards have been established, containing minimum

dimensions and catchment areas. They are then meant to become new meeting points, offering a pleasant atmosphere. These green open areas are necessary to balance the construction and evolution of a neighbourhood. The future goal of the Thematic Concept is indeed that every Viennese will be able to reach a segment of open space within 250m.

As well as improving the quality of life for the entire neighbourhood, the mission statement for green and open space behind this concept is to create a balanced network. While using either linear or wide open spaces, the “Local Green Plan” recommends the combination of methods and actors, in order to diversify and particularize the various segments and places.

This distributive strategy of green spaces among Vienna coincides with the particularization and polycentric evolution of the city itself. As we will describe in the next chapter, it also recalls a “nodal-strategy” which is envisaged for high-rises. Also, instead of contrasting, the two urban processes of densification and of green development can easily be engaged with mutual intensification. As a consequence, it has to be compatible with the construction of high-rises.

GREEN AND OPEN SPACES	CATCHMENT AREA (m)	SIZES (hectare)	m² per inhabitant		
Neighbourhood	250	< 1	3.5		
Residential area	500	1–3	4.0	8.0	13.0
Urban quarter	1,000	3–10	4.0		
	1,500	10–50			
Region	6,000	> 50	5.0		
+ sports ground			3.5		
+ green spaces per working place (catchment area 250 m)			2.0		

Figure 66: Green and open space standards for Vienna. Source: STEP 2025 Thematic Concept for green and open spaces, MA 18

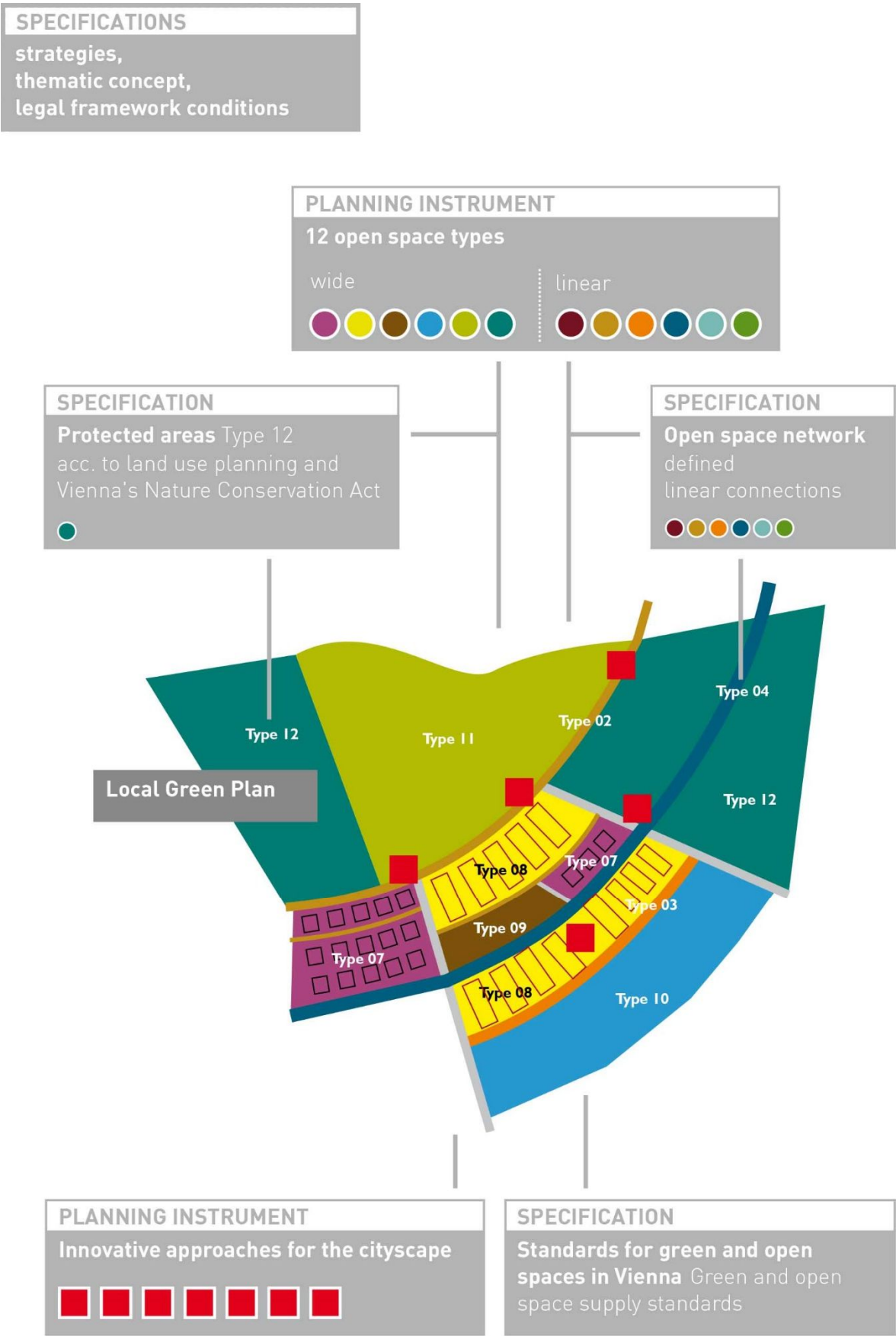


Figure 67: Local Green Plan, elements and specifications. Source: STEP 2025 Thematic Concept for green and open spaces, MA 18.

CONCEPT

4. A “NODE-STRATEGY” FOR HIGH-RISES IN VIENNA

1 SPATIAL SIGNIFICANCE OF A HIGH-RISE IN THE URBAN SPACE

A - WHY A “NODAL STRATEGY”?

What is a node ? Generally, and as mentioned previously with the urban development and the green and open space mission statements, a nodal disposition of elements echoes three different processes; particularization, distribution and multi-polarization.

„Nodes are points, the strategic spots in a city into which an observer can enter, and which are the intensive foci to and which from is travelling”⁵⁴

These points are **conceptually** small, even though in **reality** they also can take the form of large squares, linear shapes or even entire districts (Lynch, 1960). Considering a node is therefore dependent upon the scale at which we are examining the city.

Nodes can be **junctions**⁵⁵ or **concentrations**⁵⁶. A high-rise can be specifically related to a concentration node, as it can also be placed at a junction node.

According to different theorists, such as Gordon Cullen and Kevin Lynch, a high-rise can be simply identified under different terms.

B - TWO-SCALE SIGNIFICANCE

This nodal strategy refers to a two-scale significance of high points in an urban area. In concrete terms, high-rises, when scattered on a territory, form a network of landmarks, connecting visually and mentally the various urban fragments. On the other hand, on a ground floor scale, high-rises should be used as sources of activity and diversity for its immediate surroundings. Also they can turn a monotonous system into a vibrant and living public space.

“Spatial prominence can establish **elements as landmarks** in either of two ways: by making elements **visible from many locations** [...] or by setting up **local contrast** with nearby elements, i.e, a variation in setback and height.”

The image of the City, (Lynch, 1960, p. 80)

C - OTHER DEFINITIONS OF A HIGH-RISE

LANDMARK

From *The image of the city* (Lynch, 1960, p. 47):

“another type of **point-reference** [...] but the observer cannot visit them”

“a rather simply **defined physical object** : building, sign, store, mountains. Their **use** involves the **singling out of one element** from a host of **possibilities**”

“some **landmarks are distant** ones, typically seen from many angles and distances, over the tops of smaller elements, and used as **radial references**. They may **be within the city** or at such a distance that for all practical purposes they **symbolize a constant direction**. [...] isolated towers, golden domes, great hills.”

“[...] **systems of landmarks** [...] to enjoy **uniqueness and specialization**, in place of the continuities used earlier.”

INCIDENT

From *The concise townscape* (Cullen, 1971, p. 44):

Value of incident : “to **entrap the eye** so that it does not slide out into the beyond with resulting **boredom**”

Disposition of incident : “The skilful disposition of an incident gives point of the basic shapes of the streets and place; it is a **nudge**.”

“[...] through the lack of incident that so many meticulously thought-out plans fail to come **to life in three dimensions**.”

A FOCAL POINT

From *The concise townscape* (Cullen, 1971, p. 26):

“Coupled with enclosure⁵⁷ (the hollow object), as an **artefact of possession**, is the focal point, the **vertical symbol of congregation**. In the fertile streets and market places of town and village it is the focal point (be it column or cross) which **crystallizes the situation** [...]”

„High points serve as nodal points and landmarks for capillary network of intermediate areas between the heterogeneous settlement units. The function of high-rises is to enrich their direct surroundings and to act as connectors linking the interspaces typical of the dispersed urban fabric of the Transdanubian expanse.”

STEP2025, Thematic concept for High-rises, Strategy in the Transdanubian area, p58.

Content and editing :

Ma 21 - District Planning and Land Use

Bosshard & Luchsinger Architekten AG

⁵⁴ Definition of a node : *The Image of the City*, p 47, Lynch, 1960

⁵⁵ “Places of a break in transportation, a crossing or convergence of paths, moments of shift from one structure to another.” *The Image of the City*, p47

⁵⁶ „concentrations, which gain their importance from being the condensation of some use or physical character, as a street corner or an enclosed square” *The image of the City*, p 47

⁵⁷ Can be identified as a cluster, a courtyard, an enclosed plaza ..in enclosure, the eye reacts to the fact of being completely surrounded. The reaction is static[...]” *The concise townscape*, p47

D - CONNECTOR AND ANCHOR

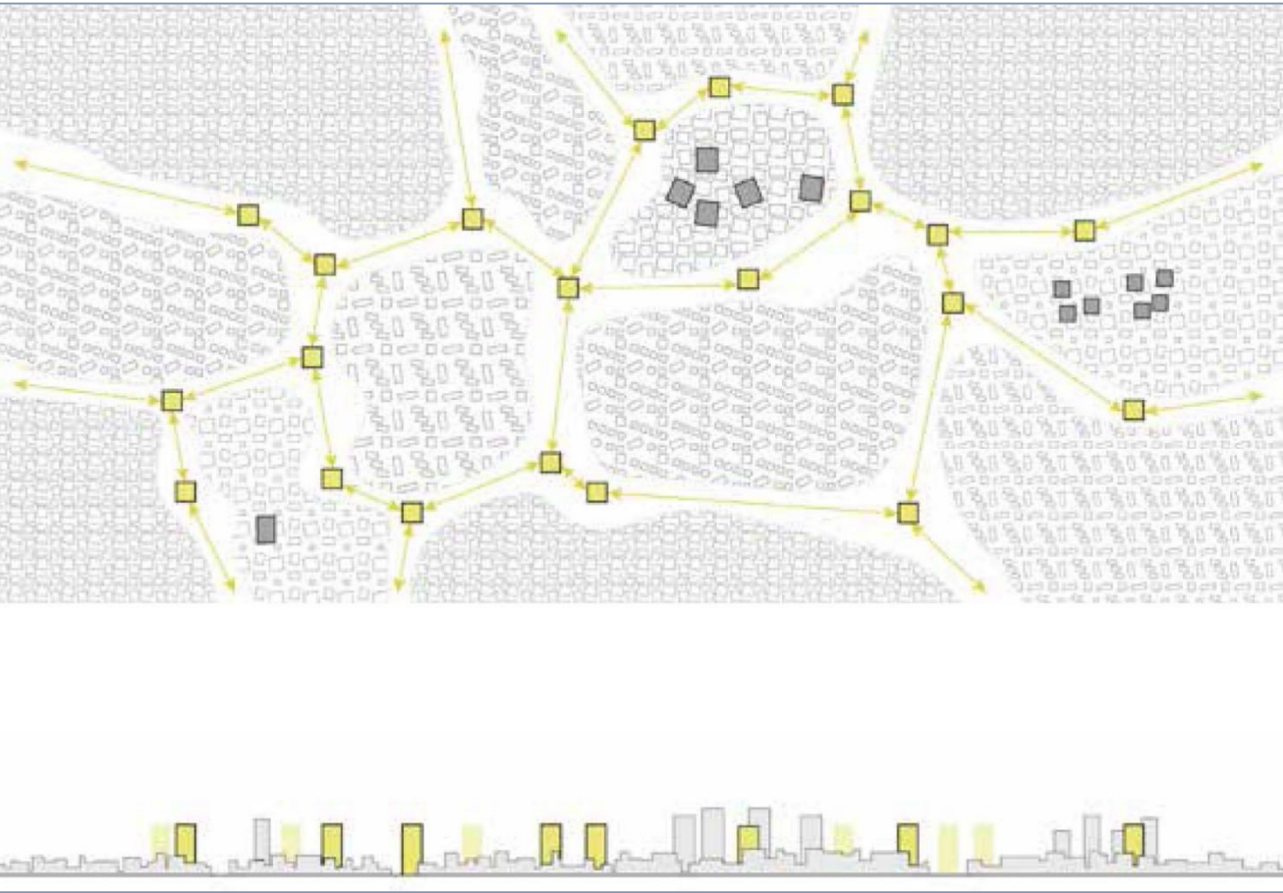


Figure 68: Nodal strategy for high-rises in the Transdanubian expanse in Vienna, 2015.
Source: Ma 21 - District Planning and Land Use - Bosshard & Luchsinger Architekten AG

According to STEP 2025 Thematic Concept for High-rises in Vienna, the construction of high-rises is excluded in :

- Nature reserves and protected landscapes
- Safety Zones of Vienna International airports
- Protection zones according to Art 7, of the Building Codes for Vienna
- the core and buffer zones of the UNESCO World Heritage

From *The concise townscape* (Cullen, 1971, p. 102):

DIRECTION

“A landmark is yet stronger if visible over an extended range of time or distance, more useful if the direction of view can be distinguished.”

ANCHOR

“if identifiable from near and far, while moving rapidly and slowly, by night or by day, it then becomes a stable anchor for the perception of the complex and shifting urban world.”

SERIES

“a sequential series of landmarks, in which one detail calls up anticipation of the next and key details trigger specific moves of the observer, appeared to be a standard way in which these people travelled through the city.”

CONDENSATION POINT

“ These condensation points can, by radiation, organize large districts around themselves if their presence is somehow signaled in the surroundings.”

THE SENSE OF THE WHOLE

From *The Image of city* (Lynch, 1960, p. 108):

“ In such a whole:

Paths link together the various nodes.

Landmarks would indicate the cores of the districts

Total orchestration of these units which would knit together a dense and vivid image, and sustain it over areas of metropolitan scale.”

2 HIGH-RISES WITHIN THEIR SURROUNDINGS

A - PHYSICAL INCIDENCE AND CHARACTERISTICS

Again, when talking about physical incidence, and significance within its surroundings, it is better to consider the concept of a high-rise under its many definitions. For example, as a node, its success would reside in its capacity to ensure its roles (albeit slightly antithetic) at the same time :

“In any event, the most successful node seemed both to **be unique** in some way and at the same time **to intensify some surrounding characteristics.**”
The image of the city, (Lynch, 1960, p. 77)

When we consider the high-rise as the landmark, according to Kevin Lynch the key physical character still appears to be **singularity**. This is due to it being memorable within its surroundings for its identifiability, significance and uniqueness. They are more easily perceptible if they :

- have a clear form
- contrast with their background
- enjoy of a certain prominence of spatial location.

The **figure-background contrast** appears to also be a key factor in the implantation of a high-rise. To highlight its significance as a landmark, the background against which it stands out needs to be limited to its immediate surroundings. A contrast too low or too high brings the high-rise to critical implantation. On the other hand, grouping high-rises together may lead to them reinforcing each other, or on the contrary, conflicting and destroying themselves (Lynch, 1960).

“ A great landmark may dwarf and throw out of scale a small region at its base. **Properly located**, another landmark may **fix and strengthen a core**; placed off centre, it may only mislead.”
The image of the city, (Lynch, 1960, p. 84)

“ A landmark feature may be so alien to the character of a district as to **dissolve the regional continuity**, or it may on the other hand stand in just the contrast that intensifies that continuity.”
The image of the city, (Lynch, 1960, p. 84)

B - PROGRAMMATIC AND CONTEXTUAL STANDARDS

According to STEP 2025 Thematic concept for High-rises, such objects must, fulfil particularly exacting programmatic and contextual standards, due to their specific weight in the urban development and their visibility in the cityscape.

- **Multifunctional concepts** at a programmatic level, for a living city.
- **Compensatory concepts** (contextual level), that generates outstanding **added value** for the community.

Multifunctional Programmes have a double-side effect. They first permit the high-rise to revive, and enrich the vicinity, constituting major added value for the community. However, they also represent difficulties, not only on a structural level, but also for building utilities and organisation.⁵⁸




ADDED VALUE OPTIONS			
	BUILDING 	BUILDING GROUND 	SURROUNDINGS 
OPEN SPACE	<div>Regulated accessible open areas</div> <ul style="list-style-type: none">• inner courtyard• roof areas• plinth• intermediate storey	<div>Publicly accessible green space/ plaza</div> <ul style="list-style-type: none">• covered• no consumption obligation• programmable• adaptable	<div>Designated open space</div> <ul style="list-style-type: none">• leisure and recreation• neighbourhood park• waterside promenade• sports facilities• playgrounds• surface design of road space
INFRASTRUCTURE	<div>Barrier-free connection of open spaces</div> <div>Traffic infrastructures</div> <ul style="list-style-type: none">• local public transport• footpaths• cycle paths• streets• traffic-calmed areas <div>Basic infrastructures – sewer system</div> <ul style="list-style-type: none">• gas and electricity• water		<div>Integration into surroundings</div> <ul style="list-style-type: none">• traversability/porosity• traffic junction in the object• levelling of the surroundings• parking spaces (car sharing rates)• bike racks/bike ports• levelling (lift, bridge)

Figure 69:Added Value options for high-rises. Planning tools from STEP 2025 Thematic Concept: High-rises in Vienna. 2015. Source: MA 18

⁵⁸ Combinations vary in difficulty : Residential and hotel are easily combined whereas housing and Work less. STEP 2025, *Thematic concept for high-rises*; p37

3 VERTICAL URBANISM IN EUROPE

Alongside its continuous urban development, Vienna has experienced a great boom in the high-rise construction since the beginning of the 21st century.

Indeed, most of the high-rises discernible in Vienna's landscape, like the Florido Tower, the DC Tower or the Millenium Tower in Handelskai, are markers of a generalized renewal of interest in high points across Europe. As shown on the figure aside, the construction of high-rises of any type follow this same cycle. After a boom during the post-war period, it reached a peak during the 1970s, before being brutally reduced by half in the 1980s. In the 1990s only eastern Europe was still erecting residential towers. In the 2000s, however, the construction of towers, especially residential ones, suddenly started again, even exceeding 1970s records.

During this post-war period, characterized by large-scale urban planning, high-rises became the essential feature of the expansion of industrialized states in Western and Eastern Europe.

Between the 1970s and 80s, several cities experienced a negative public reaction against high-rise urbanism. They became the object of intense demonization and stigmatization, following a series of isolated incidents. (Drodz, Appert, & Harris, 2018). England and France were at the center of these controversies, particularly in Paris with the construction of the office tower - *Tour Montparnasse*, and London with its *Center Point*.

The riposte against the vertical urban growth was correlated with the institutionalization of heritage protection, such as in Vienna's first large-scale rehabilitation measures in the 1970s. The post-modern form of urbanism was thereby more oriented towards morphological continuity and the conservation of historic centres.

"Contemporary wave of verticalization must be understood in reference to these multiple legacies of a disputed vertical past and is a distinctive feature of the European high-rise context." (Drodz, Appert, & Harris, 2018)

Up until the 2000s the rise of global finance in property markets for office buildings accompanied and enhanced the piecemeal modernization of business districts, and led to the verticalization of European Centres once again. International financial centres arose in the capital cities (in Paris at La Défense, in Vienna at the Donau city). This not only contrasted with the middle and low density periphery, but also displaced the economical centre, separating it from the historical one (albeit not completely). During the 2000s, globalization and financialization of real estate within Europe led to a proliferation of tower projects in european cities, even in smaller cities.

The post- 2000 boom in Europe, in which the city of Vienna is largely inscribing its own high-rise concept, is characterized by middle-sized structures (not as high as in Asian cities), and more specifically in energy-efficient residential urban blocks.

"Woven into the city fabric, these projects are often framed from the ground up, as initiatives to reinvigorate local deprived or de-industrialized neighbourhoods and to create human amenities around transport nodes, embodying new sets of discourses and practices among built environment professionals and planning authorities." (Drodz, Appert, & Harris, 2018)

In an economical point of view, the current profusion of isolated high-rise projects directly serves the purpose of producing a continuous stream of rental revenues for numerous investors in a crisis-prone environment.

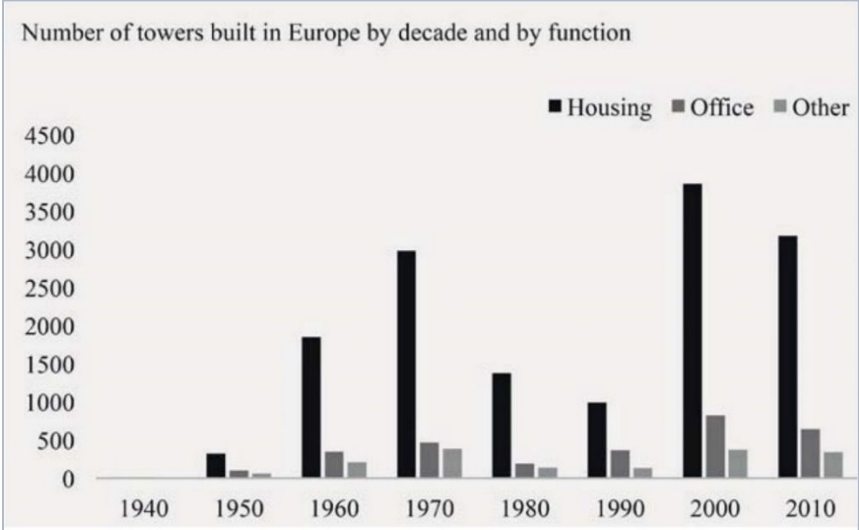


Figure 70: Number of towers constructed per decade in Europe since 1950. Source: Built Environment n°43, vol 4

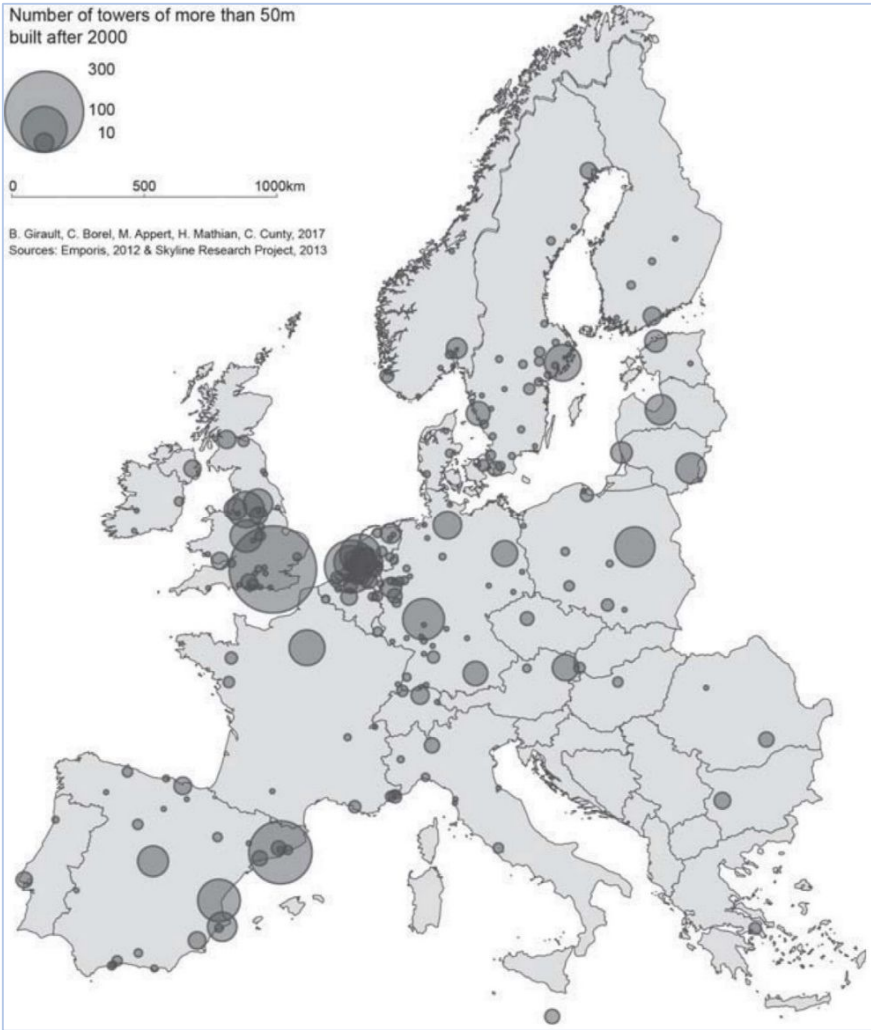


Figure 71: Geographical location of towers constructed in Europe 2000-2013. Source: Built Environment n°43, vol 4

FRANKFURT

The generic cityscape of Frankfurt am Main is characterized by a largely quiet, flat development. With a total surface of 248,3 km² and more than 740,000 in 2017, it is the 48th biggest city of Europe, with a population density of barely 3,000 inh/km². By comparison, Vienna is reaching a population density of 4,500m².

Despite its small size and relative low density, Frankfurt owns an impressive “Business City” which is comparable with some of the biggest European cities, London, Paris and Vienna included⁵⁹. Therefore, the high-rise buildings there are mainly organized in groups or clusters, a typical high-rises formation for business centers.

These buildings, however, correspond in proportion (and thereby in significance) more to the Donauturm in Vienna. Indeed, it approaches 250m, sometimes more than twice the heights of the high-rises present in the transdanubian area (with height 80-100m).

The resulting significant height differences between the “normal” city and skyscrapers are not perceived as a design disadvantage, although they endow a large part of Frankfurt’s identity.

1999 was published the first general high-rise plan in Frankfurt. In order to further this development, an update of this plan has been acted in 2008 and rules until today the high-rise construction in the city.

This plan from 2008 includes 23 new high-rise buildings from 60m height on 16 locations, resulting in an gross floor area increase of approximately

800,000 m². For four of the locations, residential high-rises are proposed for the first time. The reference limit for high-rises has been set by 60m, as the distance-effect of the skyscrapers and thus their contribution to the formation of the skyline begins at this height.

Compared to Vienna, Frankfurt’s concept doesn’t afford specifications for each and every part of the city. Instead, some clear guidelines, and a detailed map showing the potential sites for high-rises on a delimited area, are accessible on the website for urban development.⁶⁰ Two main options are available and very strict:

-Meaningful supplementation of the existing high-rise and skyscrapers clusters and axes.

-Individual sites are conceivable as a space symbol only with outstanding public importance, or in a particular urban planning situation.

In the case-by-case examination of high-rise projects by the urban planning authority, new high-rise locations must afford a high quality connection to public transport systems. The high-rise area must be constructed in the city-center, and NOT in the urban fringes, so as not to trigger the construction of residential areas, and hence an urban sprawl.

As in Vienna’s concept, high-rises must integrate public uses into buildings, respect certain standards of primary energy consumption, and require architectural competition. Frankfurt’s high-rises must follow certain specific rules, such as ensuring supplementary housing areas amount to at least 30 % of the total gross floor area above the high-rise .



Figure 72: View of the business district in Frankfurt. Source : thenational.ae

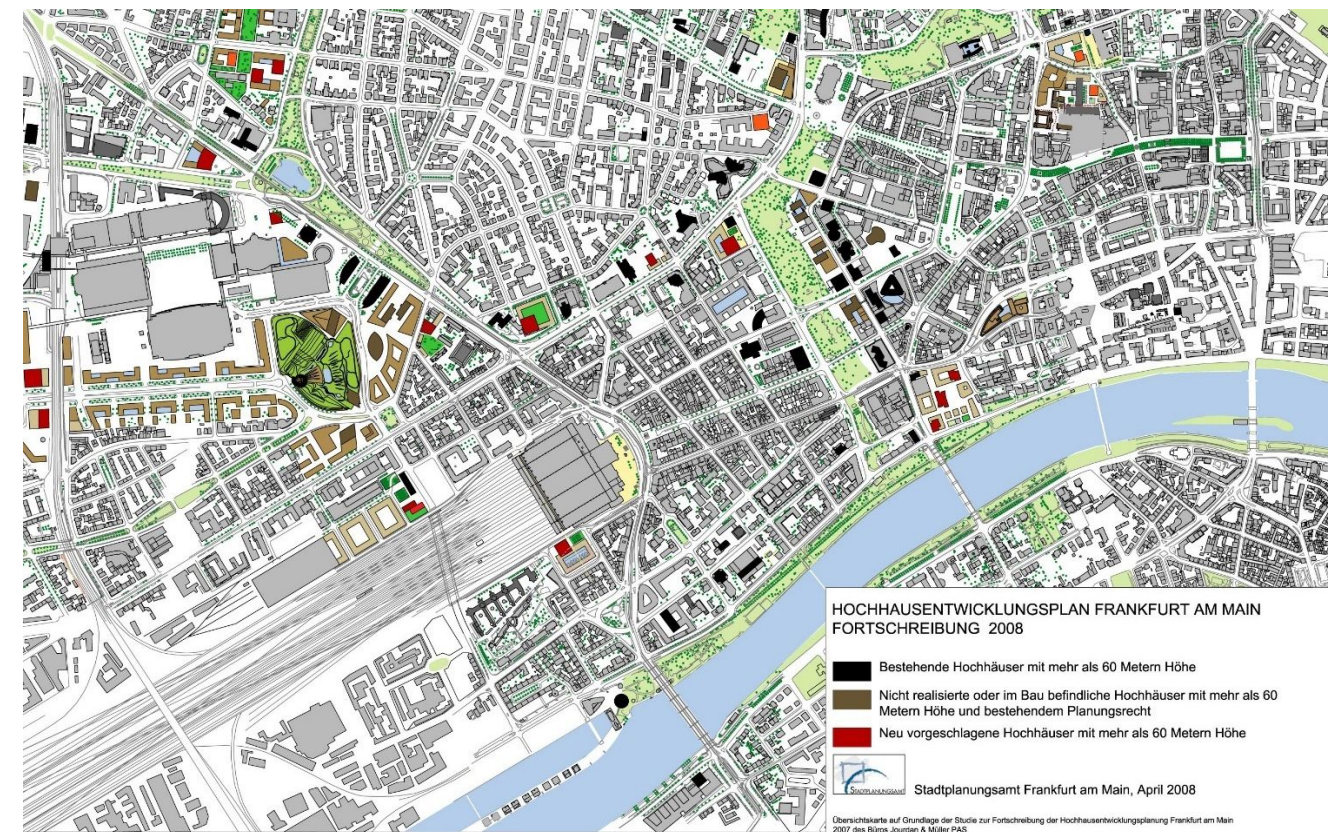


Figure 73: Extract of the evolution plan for high-rises of Frankfurt am Main, updated in 2008. Source: Stadtplanungsamt Frankfurt am Main

⁵⁹ Vienna's Business center in Kaisermühlen: *Donau city*.

⁶⁰ <https://www.stadtplanungsamt-frankfurt.de/>

ZÜRICH

Like in Vienna, a detailed concept for high-rises in zones has been edited since the beginning of the 2000s, and regularly updated since (last update in 2012). Similarly to Vienna's concept, it bounds morphological characteristics of the various areas of the city with potential high-rise locations, as well as their implication within their surroundings.

The main characteristics of high-rises in Zürich are defined by their concept's initial position, according planning and building law of Zürich's canton and city. As for the Viennese concept, it is clearly specified that a high-rise must bring an added value to its surroundings, either in their spatial integration with the cityscape or with the building's uses and determination.

With more than 400,000 inhabitants, Zürich is the largest city in Switzerland. Even if they are not comparable in total terms of total population, Vienna and Zürich show a similar population density (4,400-4,500 inhabitants per km²) and are also both recognized worldwide as cities offering excellent, or even the best quality of life⁶¹.

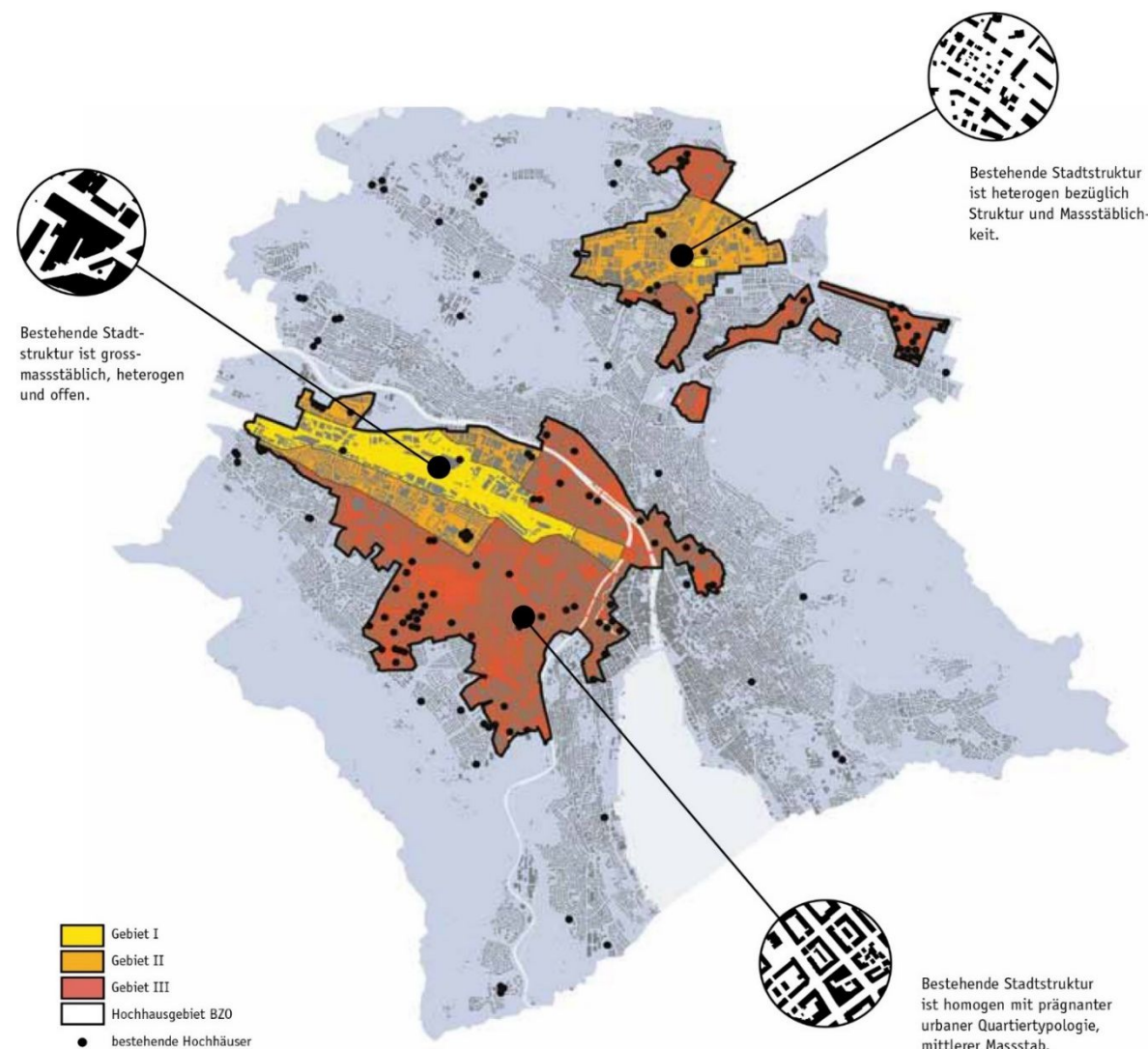


Figure 74: High-rise sites for Zürich. Source : Zurich's high-rise regulation concept, 2001, updated in 2012

Particular attention is given to the shadow projection on the surroundings in that no residential area, nor open space facing a residential building, should receive shadow from the high-rise. A detailed diagram concerning the shadow impact is required for an high-rise project.

Finally, the high-rise implantation is ruled by a zoning plan (figure below), in which specific characteristics are given for potential high-rises in each zone.

As a main principle, Zürich's urban planning council asserts that a high-rise is a building which "belongs to central and not to peripheric areas". They therefore put themselves in opposition to the architectural concepts of the 1960s and 1970s, during which high-rises were implanted in large green fields. Moreover, they asserted that the planning of a high-rise in a settlement area, separated from the city by either a green open space, or next to a large sports area or lake, isn't permitted. In fact, all natural and historical centers are excluded from areas of potential high-rise planning.

Construction of high-rises in the interspaces between the Zürich City and Zürich Nord, the *Milchbuch*, is also forbidden according to the council.

The map on Figure 74 depicts the different areas where high-rises could potentially be implanted. Three morphological categories principally rule their construction: their urban characteristics (height and block formation), the integration into public space at the ground floor level, and its utilization.

In this concept, the 1st zone, located solely in central Zürich City, with an heterogeneous, large-scaled and open-urban fabric, allows for high-rises reaching 80m height. These are preferably placed together in clusters, allowing for external and internal relevant public spaces and mixed uses.

The 2nd zone, bordering the 1st, and also identifiable in Zürich Nord, shows a heterogeneous urban fabric, in structure and scale. This zone requires almost the same characteristics to the 1st one, unless mixed use isn't mentioned. Public uses must be varied depending on the desired project, but utilises, either partly or fully, the ground floor and the first upper floors.

In the 3rd zone however, bordering the 2nd zone, the max height allowance for high-rises reaches 40m, linking them more directly to the previously existing environment. In addition, the public area must be reduced.

The Transdanubian area of Vienna, by its morphology and concept of development, could be assimilated to the 2nd zone in Zürich...



Figure 75: View of Zürich 1st zone for high-rises. Photo: Stadt Zürich

⁶¹ According to MERCER's ranking of cities per Quality of Life in 2018

PARIS

France's capital city has to be understood under two different urban entities. Indeed the city of Paris' "intra-muros" area contains a population of approximately 2.209,000 inhabitants, whereas the urban entity, including Paris and its periphery approximates, has 12.000,000 inhabitants. This intra-muros population density is 5 times superior to that of Vienna⁶², placing it among the most dense urban areas of Europe. Contrary to Vienna, Zürich and Frankfurt, Paris has endured a demographic decline during the last 50 years.⁶³

Although general information concerning the building heights are detailed in the Local Plan for Urbanism (PLU), a high-rise concept in zones like those for Zürich and Vienna isn't expressively detailed for Paris. In fact, even without any accessible guidelines like with Frankfurt, the high-rise projects are studied, as well as strongly criticized, case-by-case.

With first the Eiffel Tower in the 1890s, followed by the Tour Montparnasse in the 1970s, high-rises in Paris have always been a source of debate, and has provoked protestations among Parisian population and the architects and urbanists community.⁶⁴ Indeed the Parisian city scape, largely rebuilt by Haussmann in 1870, is very dense and homogeneous. As for Vienna's *Gründerzeit* inner districts, the construction of towers in this protected urban area is strictly protected. The most important of the current high-rise projects in the Parisian region are mostly located punctually along the border between Paris and its first range of communes in its periphery.

Contrary to Zürich, and put in context against its much smaller scale, Paris' currently planned high-rises in focus of debate, are more likely to be considered as skyscrapers, with a height reaching 250-300m. Although some projects, such as Paris Courthouse (figure below) emerged from an urgent need of space for the dedicated instance, the impact on the Parisian skyline remains the focus of debate, started by the Montparnasse Tower in the 1970s. Some high-rise projects barely obtained the necessary construction permit, and the refurbishment of the famous Montparnasse Tower is still being strongly criticized today.



Figure 76: Paris Courthouse, Porte de Batignolles, delivered in april 2018. ©rpbw



Figure 77: Tour Triangle in Paris, Rendering, competition 2006 © Herzog et Demeuron



Figure 78: Tour Montparnasse Skyline in the background of Saint-Sulpice Church, Rendering Competition 2018 ©Chartier Dalix Architects



Figure 79: Tour Montparnasse, Skygarden. Rendering Competition 2018 ©Chartier & Dalix Architects

⁶² 20,934.4 inh/km² in 2015 for Paris according to INSEE and 4,502 inh/km² for Vienna in 2018

⁶³ 2,590,000 inhabitants in 1968 according to Ville.data.org and 2,209,000 inhabitants today.

⁶⁴ Liberation.fr; Urbanisme : Paris remonte dans les hauteurs.

PROJECT

5. HIGH-RISES

1 TYPOLOGICAL AND ALLOCATION CONSTRAINTS

DIMENSIONING OFFICE AND RESIDENTIAL HIGH-RISES

After the comparison with the current guidelines for high rises in Frankfurt, Zürich and Paris, it appears necessary to define the intended proportions, in particular their heights. These high-rises, which shall be suggested to lie on the Transdanubian territory.

On the present graphic, some recent high-rise projects in Vienna are introduced in terms of their volumes and heights, be it for office or residential use. Globally, excluding the DC Tower (220m), all of these projects from the last few years have a height of between 85 and 145m.

Squared or cylindric, their shape seems to be strongly influenced by their type. Indeed, considering there are only two main functions for high-rises (office or residential), it appears that the office towers are generally higher and bigger than residential ones.

Office towers are also more suitable for curved facades, and are therefore more complex in shape by comparison to residential towers, which mostly take squared and rectangular form.

In order to match up with the present and future high-rise landscape of Vienna, it appears better to consider high points in the Transdanubian area that are consistent with those already present or in planning, with similar proportions. Indeed, the high-rises in the urban landscape will be forming a network of landmarks, dominating the current disparity and heterogeneity of the transdanubian territory. Once used as a tool for homogenisation, the high-rises will thus better accomplish their role, by being assimilating in form to one another. In this way they build a prevailing network of homogeneous objects.

As previously mentioned, combining densification with the development green and open space's is an important aspect of the urban integration of high-rises. According to the standards published in the thematic concept for green and open spaces of STEP 2025, a minimal area of green space has already been integrated into the high-rise's identification process. Moreover, a closer estimation of the required green areas is presented for the detailed high-rises. Also, without detailing the economical footprint as a major tool for the planning, an overview of the population, flats and working places afforded by each tower is suggested for the detailed high-rises.

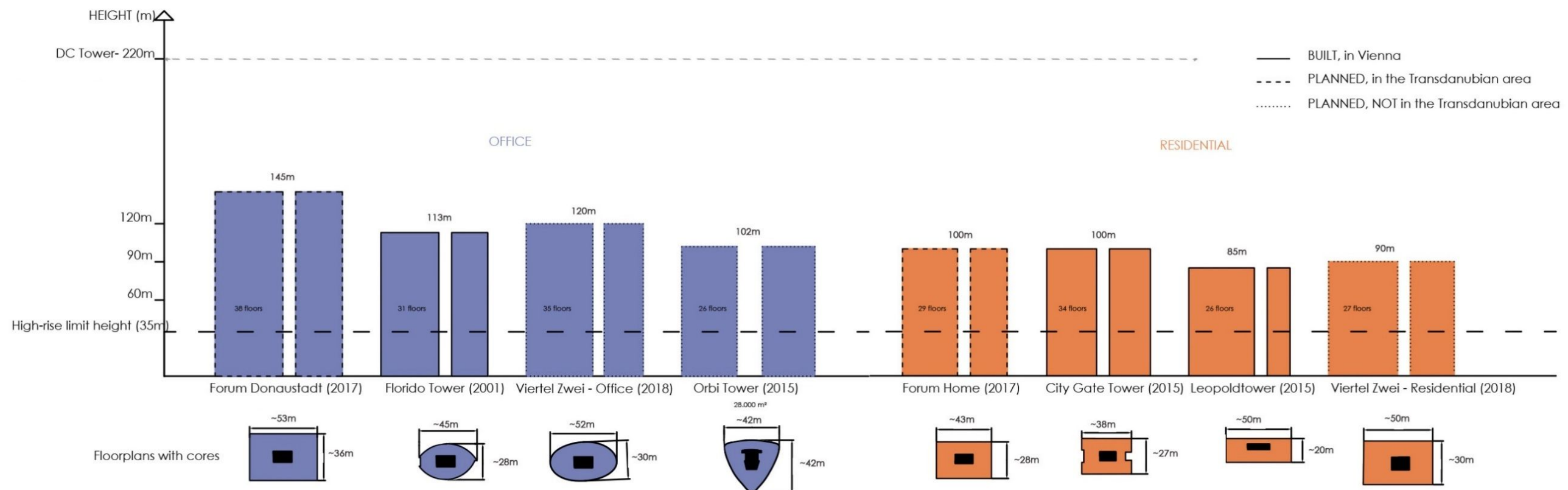


Figure 80: Heights and profiles of high-rises, built and planned since 2000 in Vienna and in the Transdanubian expanse area. Otto.H.

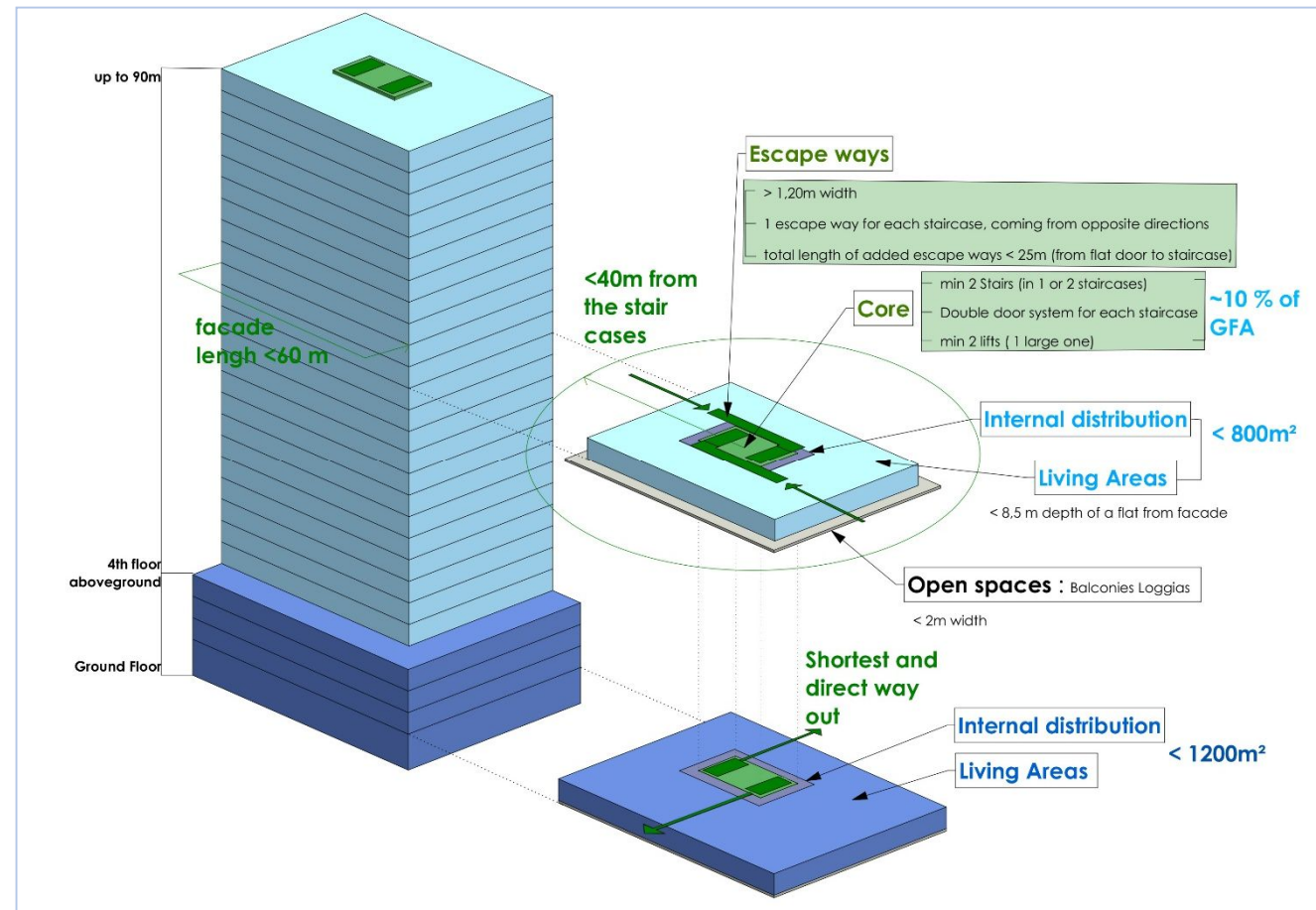


Figure 81: Main rules in fire safety for designing a high-rise according to OIB Richtlinie 2.3 . “Brandschutz bei Gebäuden mit einem Fluchtniveau von mehr als 22m” (10.2011)



Figure 82: Various facade treatment of high-rises in Vienna (from left to right : DC Tower, Florida Tower, OMV Hochhaus Hoch Zwei, Citygate tower). Source : wikimedia

Estimated AREAS for residential high-rises

Concerning residential towers, the following estimated areas are based on *The program of uses and areas (attached document to the description of the open competitive bidding)*, for the high-rise competition “Hochhaus Viertel Zwei” in Vienna. Two towers, of 120 and 90m in height respectively, dedicated to offices and residential, were the subject of an architectural competition in 2017.⁶⁵

For the **office towers**, according to the two-types concept for regular floor for offices⁶⁶, the total GFA per floor is estimated to be about **1,000m²**.

GFA (Gross Floor Area) BGfa (Brutto-Grundfläche)		REGULAR FLOOR TYPE	
GROUND FLOOR		Total area for housing use from 1 st to 26 th floor: 27,600m²	
<u>Facilities for residential part :</u>		Total area for other uses from G to 3 rd floor: 16,000m²	
Pram park : 25m²		Total above ground level : 43,600m²	
Bin storage : 60m²		Plant Rooms :	
Plant room : 100m²		- Roof : 600m²	
Letter/ Packetbox : 50m²		- Ground floor : 100m²	
Bike storage (1 place/room and flat) : 160m²		- Basement : 2,000m²	
Entrance hall and corridors : <200m²		Flat mix (Small “S”, Medium “M”, Large “L”) for housing use :	
Elevators : 17m²		Type S (2 rooms): 50,00%	
Staircase : 31m²		Type M (3 rooms):20,00%	
Total	643m²	Type L (4 and 5 rooms): 30,00%	

⁶⁵ The present sources come from the architecture office **Zechner & Zechner GmbH** in Vienna, which has participated to the competition.

⁶⁶ Beilage B4.13 Bürokonzept . Hochhaus Viertel Zwei, p11 and p22

LEVELS OF DENSITY

After understanding the territorial composition of the left bank in Vienna, it appeared useful to subdivide the Transdanubian expanse into two zones. Indeed, because of the many large open spaces in and around the urbanized areas, two different types of locations can be identified. Certain potential sites for high-rises could suit the present urban fabric, while others require a general densification of their surroundings.

The present zoning map (Figure 83) was established as a reversed image of the map on Figure 84 (an extract of Vienna's utilization plan).

In fact, the protected landscapes (in blue), and the ban on building⁶⁷ (in red), show (Figure 84) the direction in which the urbanization is going to progress, but also shows the unbuildable land. Adding the fluvial and protected landscape and the protected areas of Floridsdorf, it results in two yellow areas (Figure 83) which could potentially welcome high-rises.

The next eleven propositions (see p64 to p.80) for high-rise locations are consequently only located in the relatively dense part (bright yellow) of the Transdanubian area. Additional high-rise locations are mentioned in chapter 6. as an extension of the network. A network resulting from the eleven following propositions.

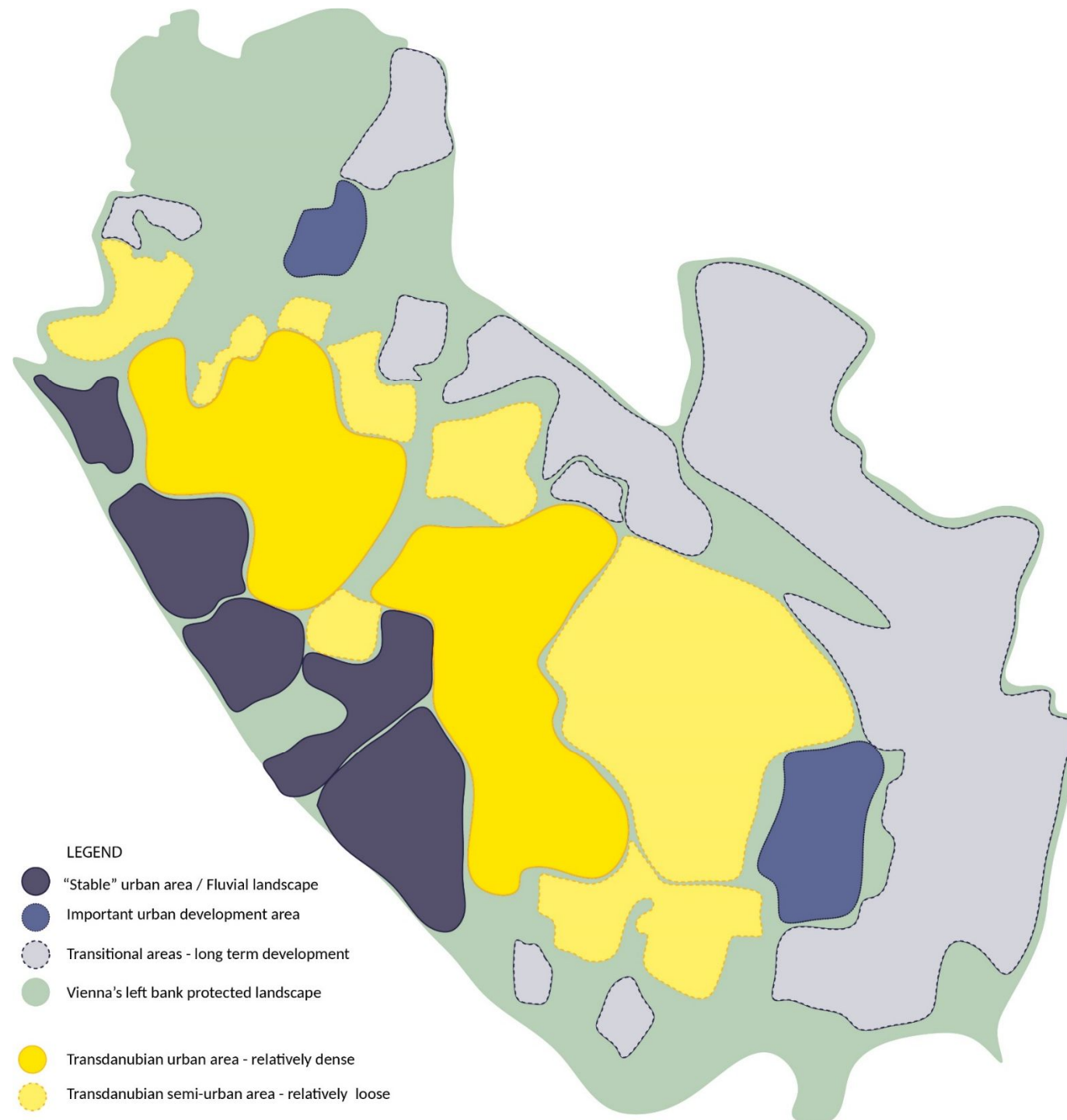


Figure 83: Protected areas, areas of development and levels of density of Vienna's left bank.

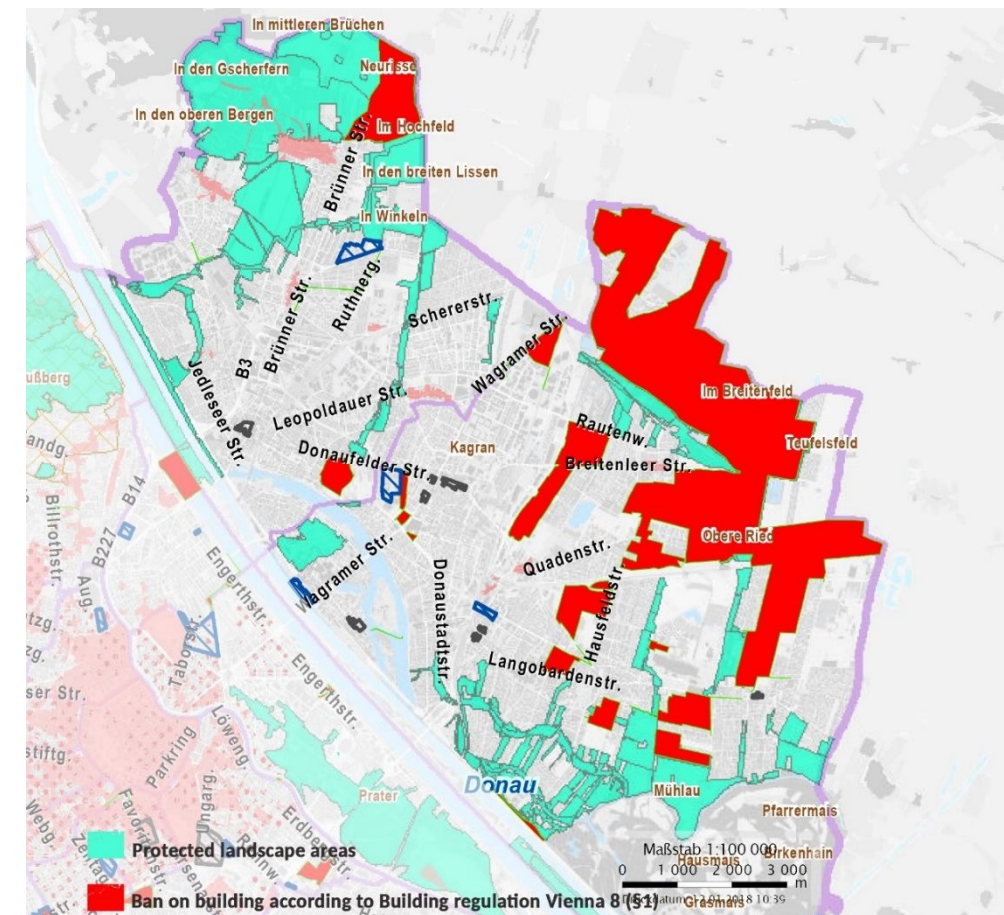


Figure 84: Extract of Vienna's land utilization plan in 2018. Source: Stadt Wien, wien.gv.at

⁶⁷«Bausperre» : parts of the land utilization plan which are currently often large, unconstructed open spaces. These are, however, dedicated to be turned into buildable land, and shall offer therefore an urban character in the coming decades.

2 IDENTIFICATION

As mentioned previously, because of the strong incidence of high-rises on their surroundings, and on the urban landscape, they remain very controversial objects. Also, in order to identify potential sites for the implantation of the high-rises, a strict process has to be put in place.

Although the aim of this project is to obtain a network of high-rises, their location can only be identified on a small scale (approximately 1:2000). By covering the territory street by street, and understanding its internal and variable characteristics, it is possible to reduce the risk of a high-rise’s misplacement.

It is more convenient to have a slightly unbalanced network of high-rises, but to provide a sensible integration of them within the territory.

This doesn’t mean that a high-rise MUST be placed HERE, but that HERE, a high-rise would bring an added value to the area.

Additionally the main focus of this process of identification resides in the understanding of the various types of surroundings and neighbourhoods. Out of this close analysis urban systems and areas have emerged, which can be improved by the implantation of a high-rise.

The potential sites have been selected only when on the current plot there are either no remarkable features, green open space without any specific dedication, or commercial blocks of low density such as a single storey supermarket. Their existing function could be integrated into the base of a high-rise, while an underground car park could similarly be integrated into the underground space.

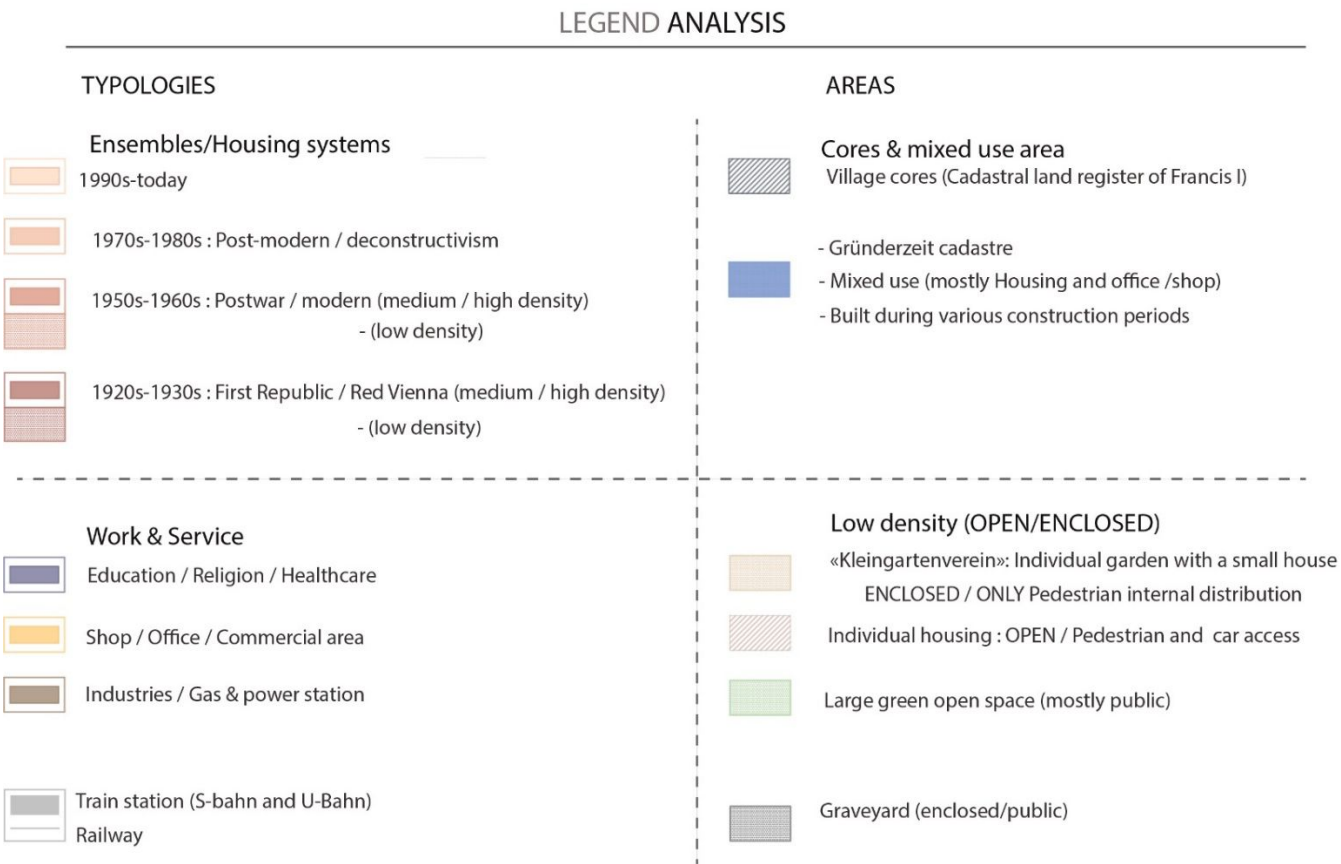


Figure 85: Process of identification, legend for the urban analysis.

METHOD

DIAGNOSTIC

- understand the territory in terms of its typologies and building density (map, on site...)
- identify a high demand on dwelling

THEN a high-rise must :

- **improve**; or at least morphologically suit its immediate environment
- **afford specific use**; to contribute to the development of the districts

Therefore, most of the high-rise propositions also include a suggestion as to their functional dedication:

- at the base (Ground floor to max. 3rd -4th floor)
- in the high-rise itself (4th to the top)

This identification process is complete only by a final verification on site.

In other words : **first the site; then the high-rise.**

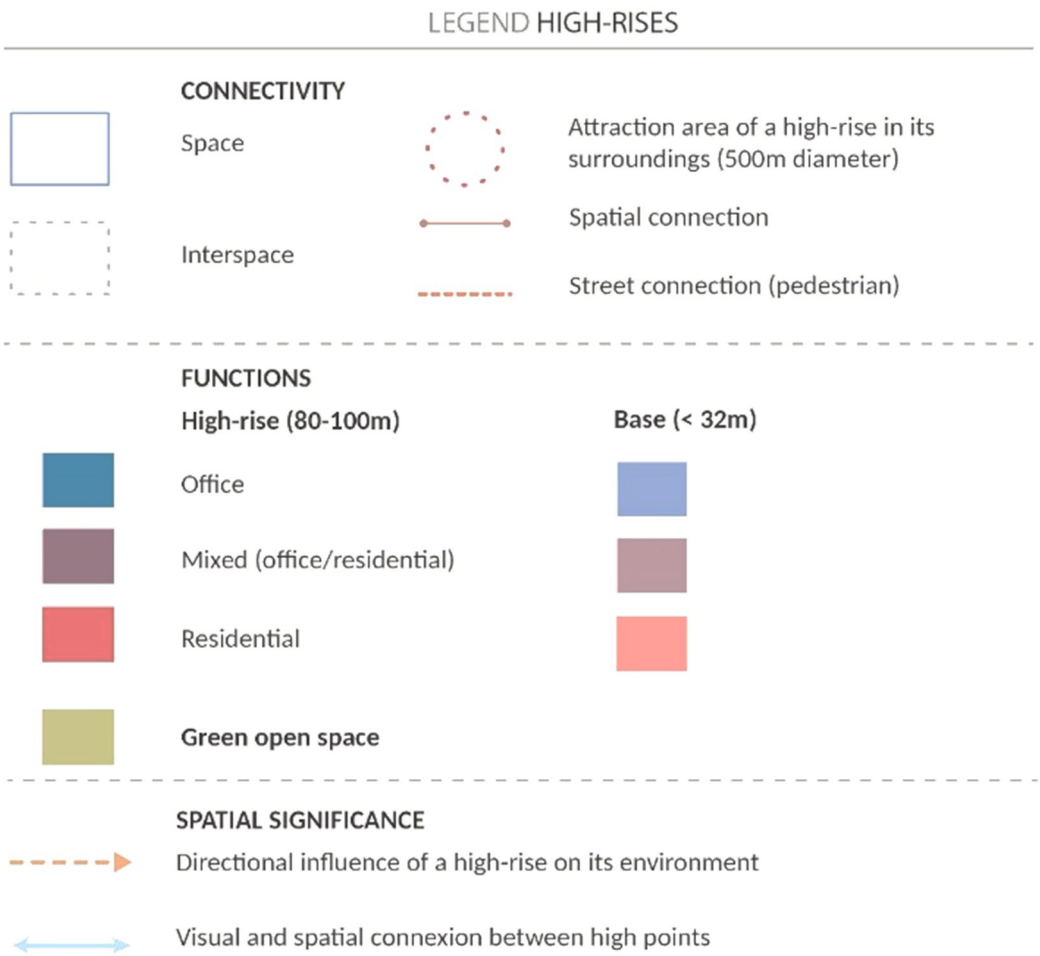


Figure 86: Process of identification, legend for the high-rises.

1 & 2: U2-HARDEGGASSE

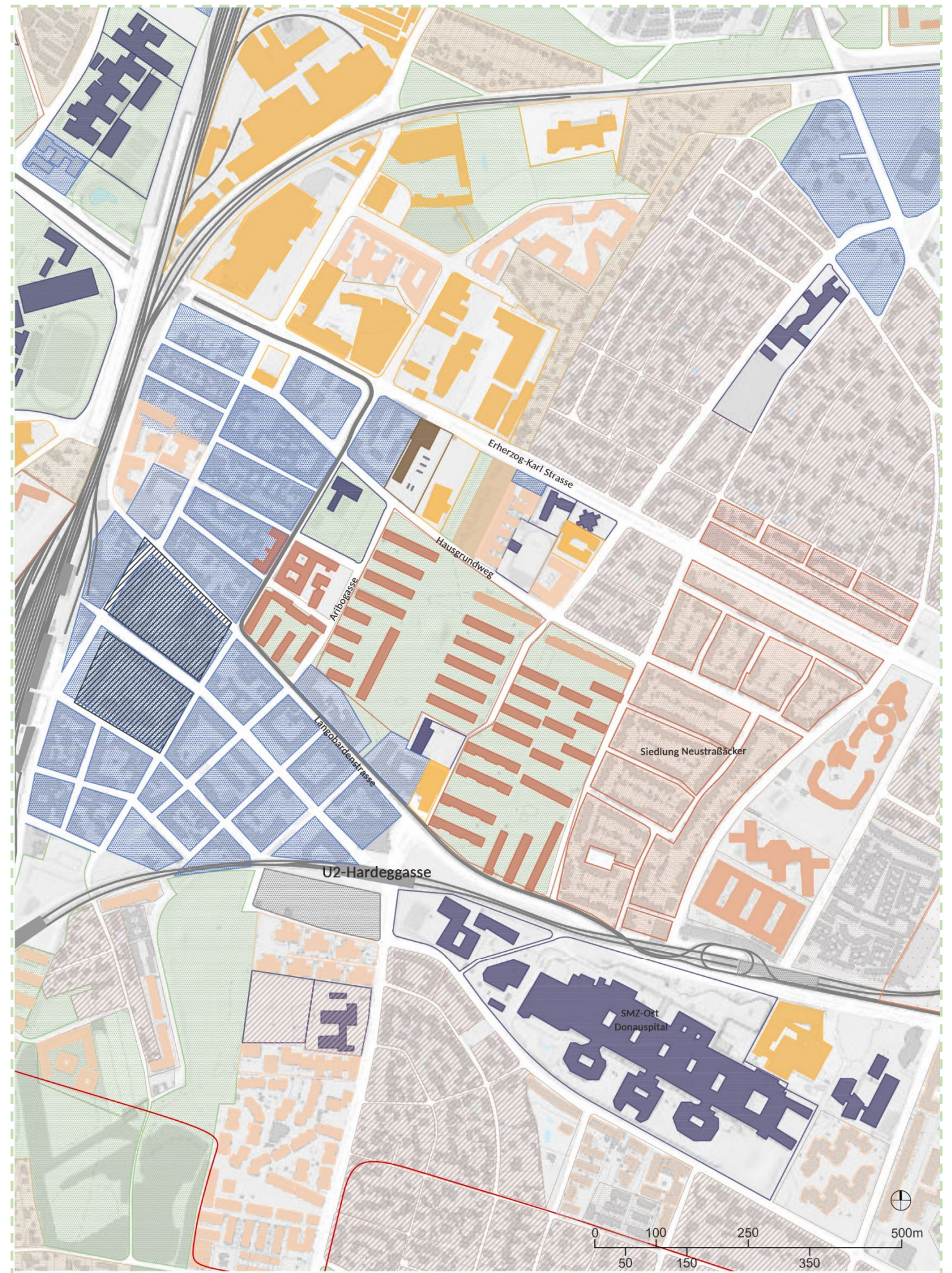
IMPLANTATION IN A SYSTEM

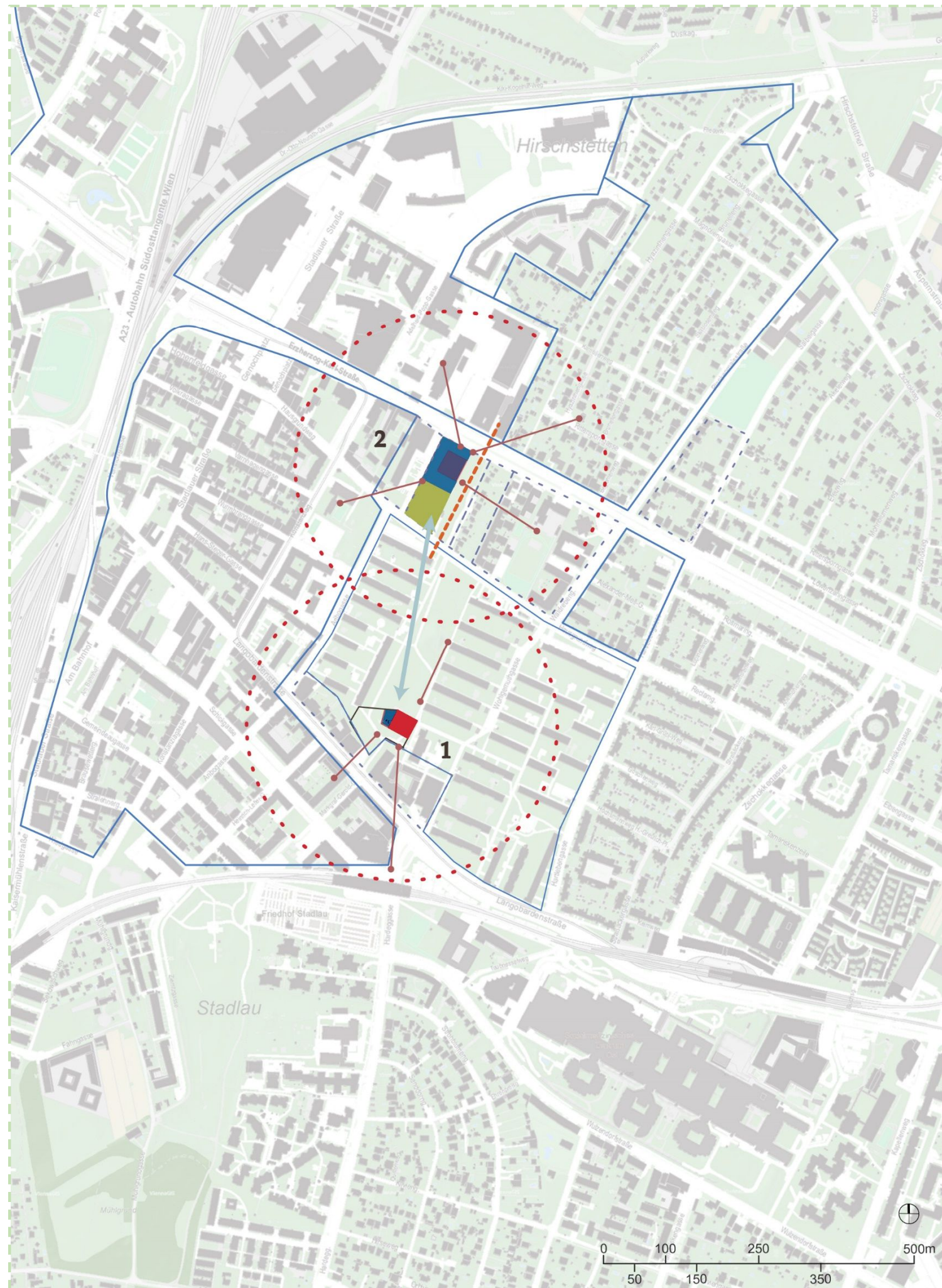
Erected in the 1960s, the residential large scale project Hans-Pollak is set between the *Gründerzeit* extension of Stadlau village and the housing settlement *Neustraßacker*, dated from 1930 and planned by Adolf Loos.

Located near the U2 metro Station *Hardeggasse*, linking the northern, denser part of Stadlau to the looser southern area, it also finds itself bypassed by the tram line 25, transversally crossing the territory connecting Aspern (East) to Floridsdorf (West).

The Erherzog Karl-Strasse is a wide street, with intense traffic, separating this group of mixed period areas (south) from large areas of commercial buildings and individual housing.

The housing system, placed here in the center, reflects the global internal orientation of this area. Due to the implementation of its housing blocks; all identical, in parallel and equidistantly placed in a meadow, the system appears to be mainly transversally oriented. Only the rectangular north-south oriented green area, placed in its approximate center, is leading the visual focus and path from the Langobardenstraße to a first northern limit, Hausgrundweg.





The two high-rise propositions act together to bond the U2 Station *Hardeggasse* to the prominent *Erherzog-Karl Strasse*, and thereby enhance this north-south direction.



N° 1

- Completes the previous system, orienting the green open space north south, towards the n°2, and thereby to the northern areas.
- Connects the housing system across the *Langorbardenstrasse* to the *Stadlau*. From *Gründerzeit*
- A tower and a public ground floor gives value to the green open spaces
- No currently existing buldings destroyed

n°2

- Gives spatial and visual value to the interspace between *Hausgrundweg* and *Erherzog-Karl Strasse*, while connecting the commercial areas and the residential area to the south.
- Incorporated into the project, the urban development of a pathway on its right hand side would strongly connect the two streets.
- The supermarket existing today on the plot can easily be integrated into the socket of the high-rise.

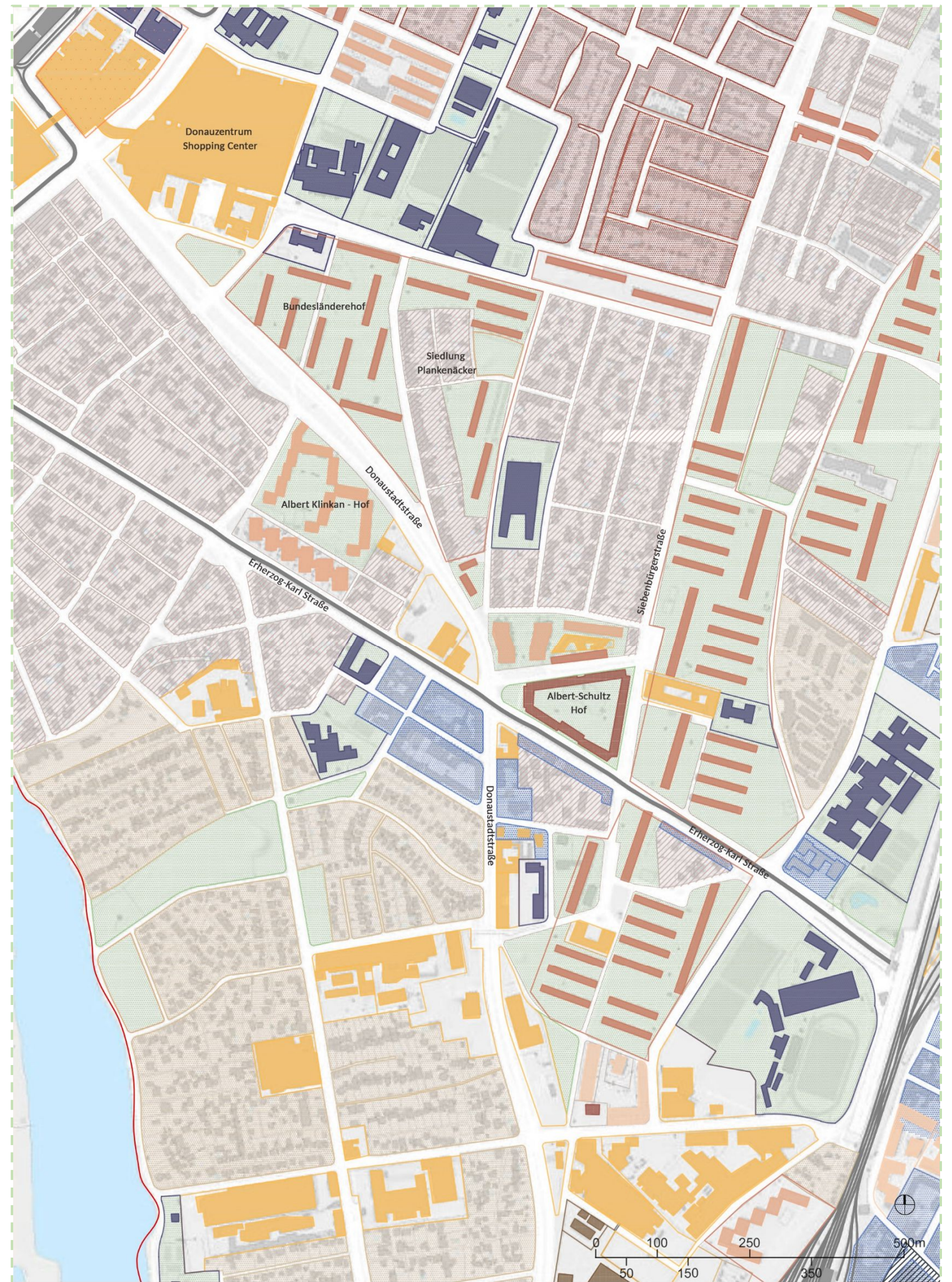
3 - DONAUSTADTSTRAßE

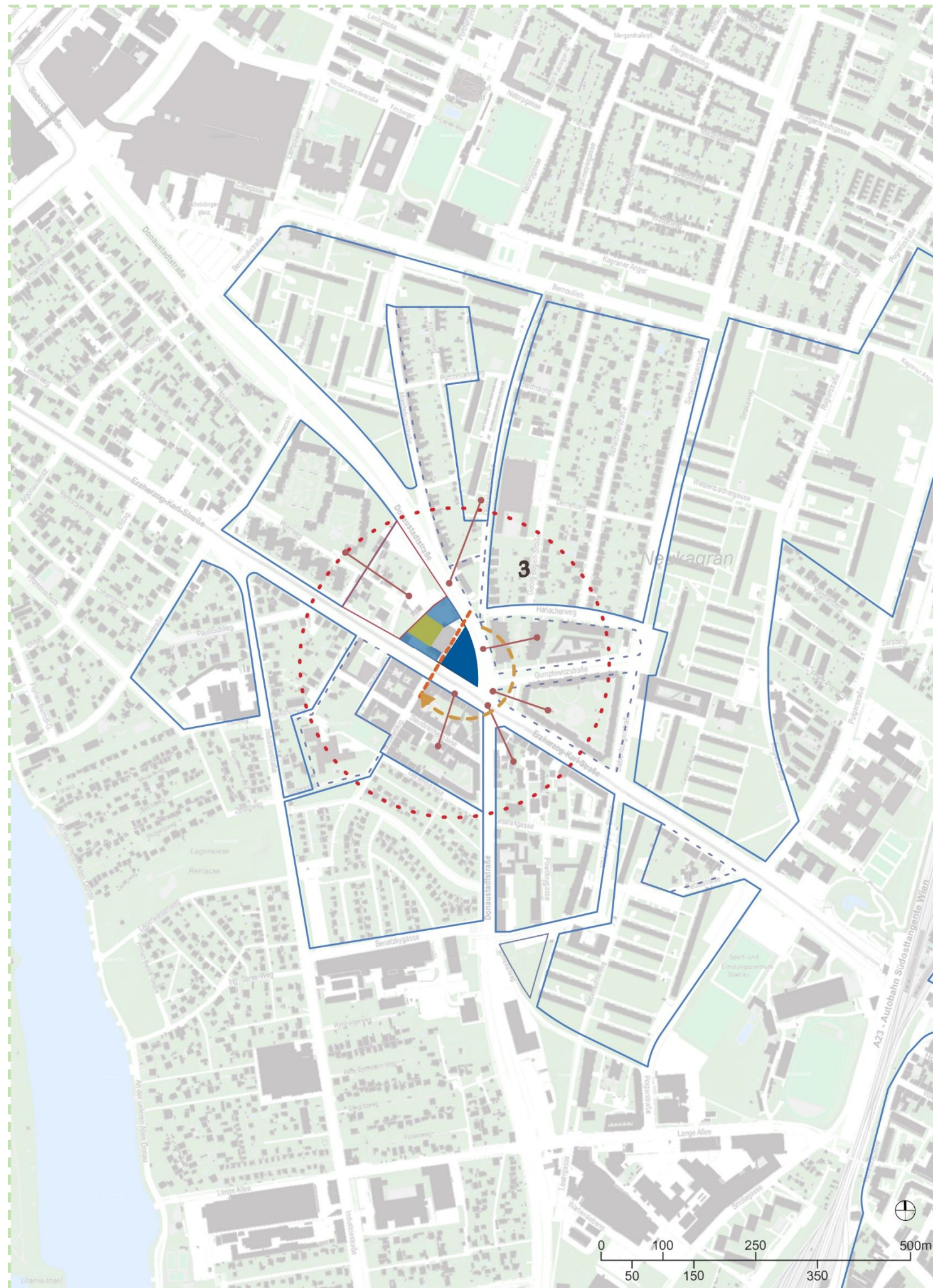
IMPLANTATION AT A NODE

The two streets, Donaustadtstraße and the Erherzog-Karl Straße, are two important traffic axes. One leads transversally from the west to east side of the Transdanubian territory, and the other one connects it to Vienna's right bank.

The crossroad of these streets of intense traffic also signifies an invisible border between the sides; the southern loose part, boarding and oriented towards the old Danube, and the northern, denser and more various part of the Transdanubian expanse area.

As one piece of the crossroad, the triangular parcel is facing strong urban elements, such as the Albert-Schultz Hof (built in the 1930s, and the large housing system of Albert-Klinkan-Hof (1970s)), boarding the Donaustadtstrasse and answering the first elements of the Bundesländerhof.





The high-rise n°3 would be located at the front of the triangular parcel, thereby placing it in the center of the crossroad. In fact, a high point at this location within the territory would enhance the rotating effect already suggested by the streets implantation. It would also stand as a landmark which, as with the City Gate in the north, signifies the “entrance” of the Transdanubian area in the south.



Set in balance with the pre-existing and very differentiated elements boarding the crossroad, the high-rise could also reduce the impression of heterogeneity, not only by largely dominating them but also by filling the central empty space of the crossroad.

The triangular parcel itself is understandable, marking the end of the point of a triangular group of objects between the two axes. Therefore, by integrating medium-sized buildings of various uses on the western part of the plot, it could create a spatial transition between the high points old and new : The Albert-Klinkan-Hof on the west, and the pair of residential buildings on the other side of the crossroad.

4 - RENNBAHNWEG

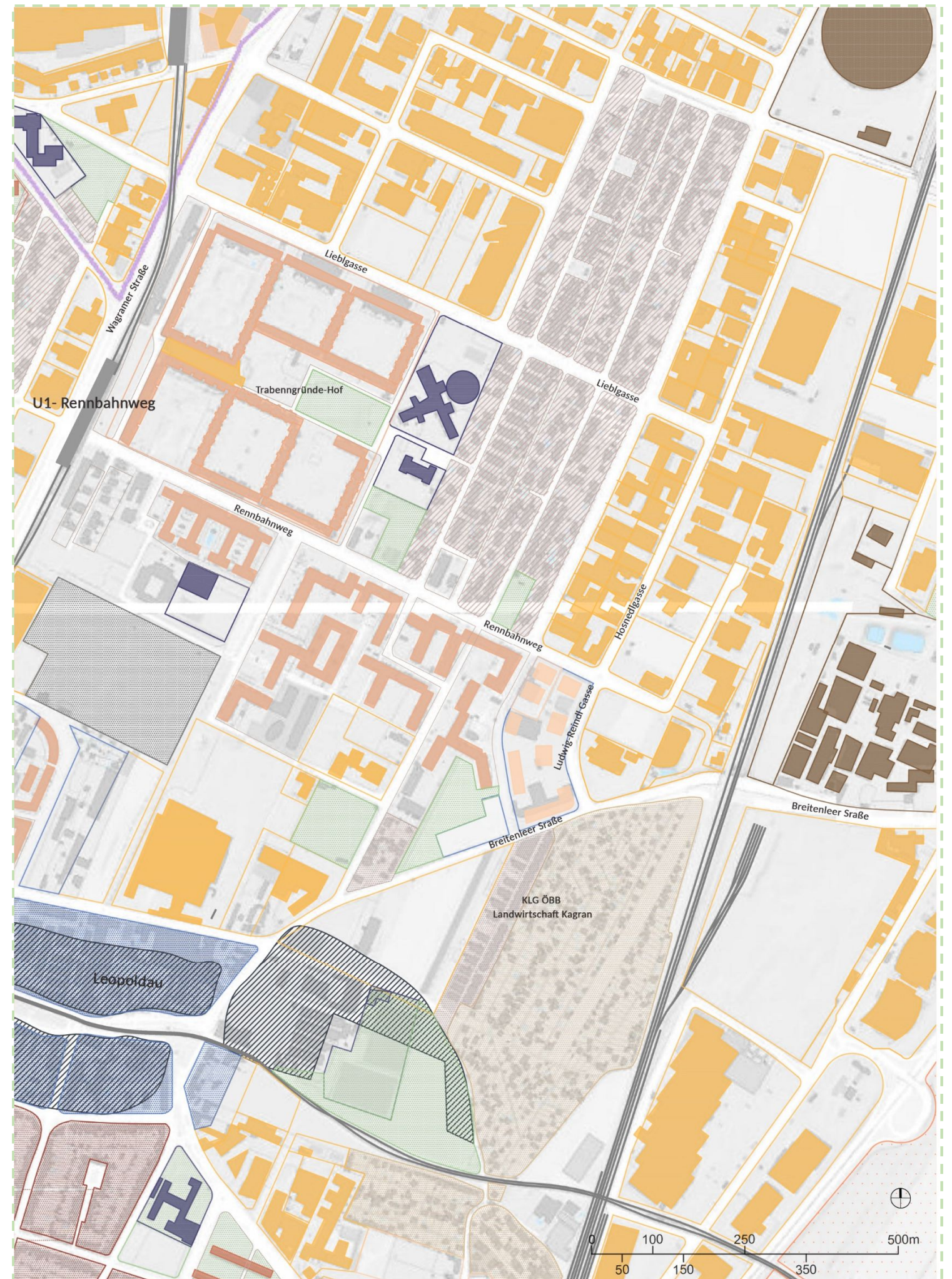
IMPLANTATION AS A LANDMARK

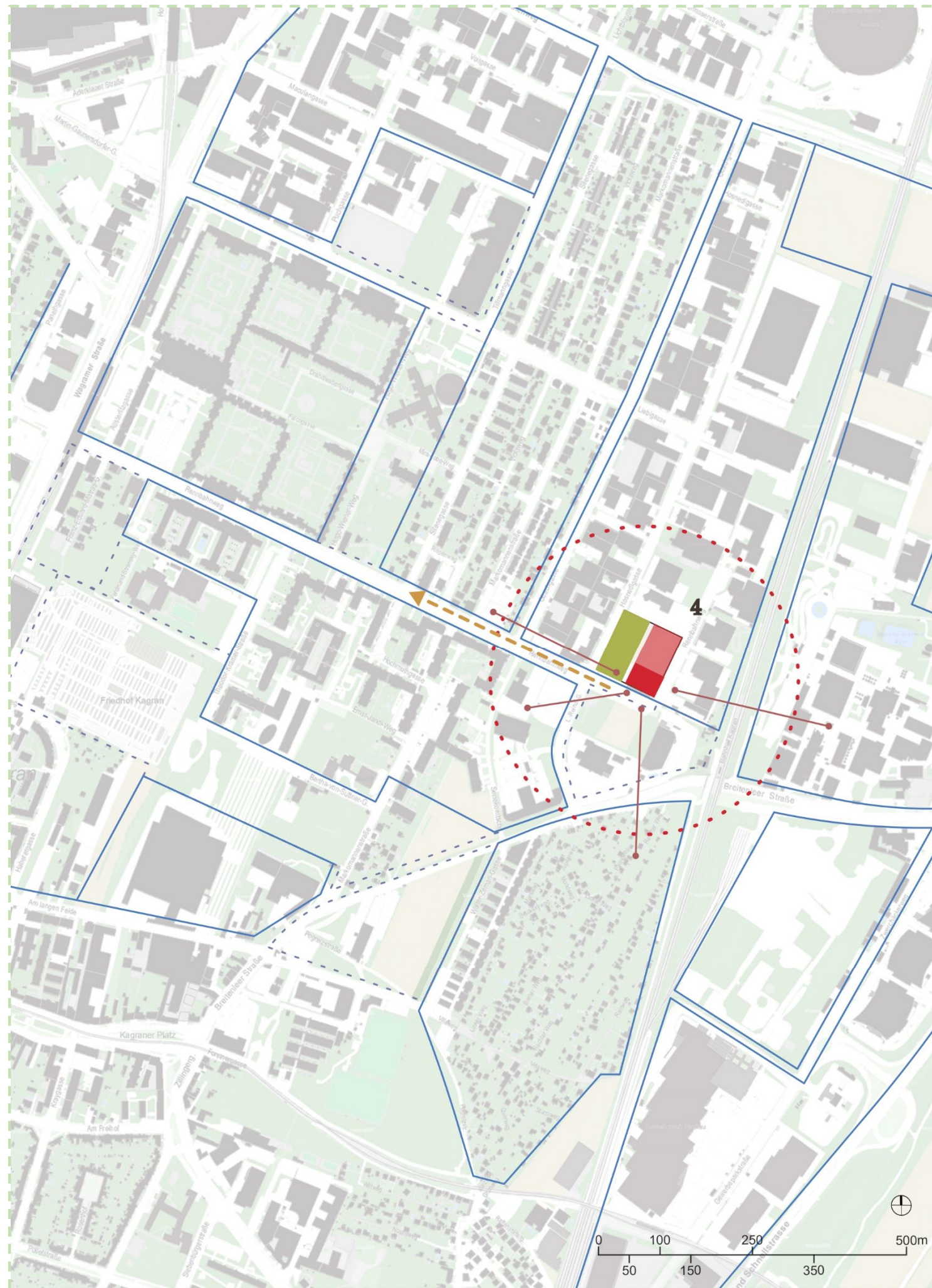
Rennbahnweg is a very significant street in its surroundings, starting from a U1 Station and crossing a district carrying the same name. Indeed, most of the housing blocks, which also have a strong landscape significance, have been and are still today implanted along it. Locate particularly north within the transdanubian territory, the present area greatly shows the juxtaposition between large spaces of different use and morphology.

The denser buildings are located along the Wagramer Straße, at the beginning of the street. Each housing block is built one after the other, heading eastwards along the street, and ending at the fringe of a vast commercial area.

Whereas the two large scale areas, commercial and housing, tend to get closer together, an important residential complex is in construction between Breitenleer Strasse, Rennbahnweg and Ludwig-Reindl Gasse, opening up the system to the south.

With the added significance of a railway line, this main south-east area will surely become a notable node in the Transdanubian area in the coming years.





In order to enhance this build-up process, as well as the densification and areal connection, a high-rise at the crossroad ending Rennbahnweg seems to be a profitable solution.

Indeed, when implanted primarily along Rennbahnweg, but also at the beginning of the adjacent area, the high-rise tends to counterbalance the U1 Station. In this way it closes the Rennbahnweg system, while also opening it to its neighbouring areas.

A residential high-rise would bind the two ends of the streets by their function. However, in case of a diversification and densification of potential new projects across the Rennbahnweg in the interspace, an office high-rise could be a more efficient answer to this.



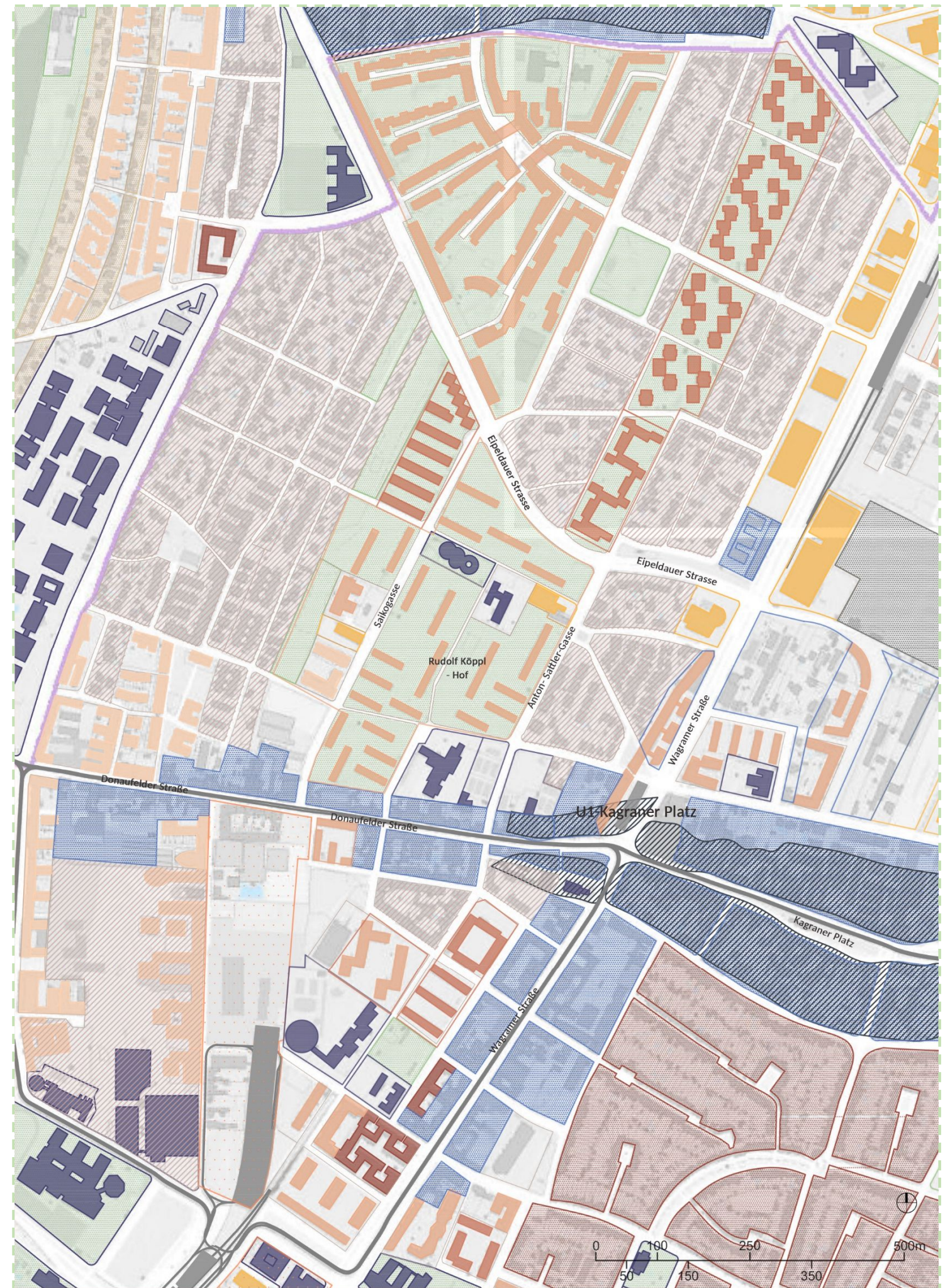
5 - RUDOLF-KÖPPL-HOF

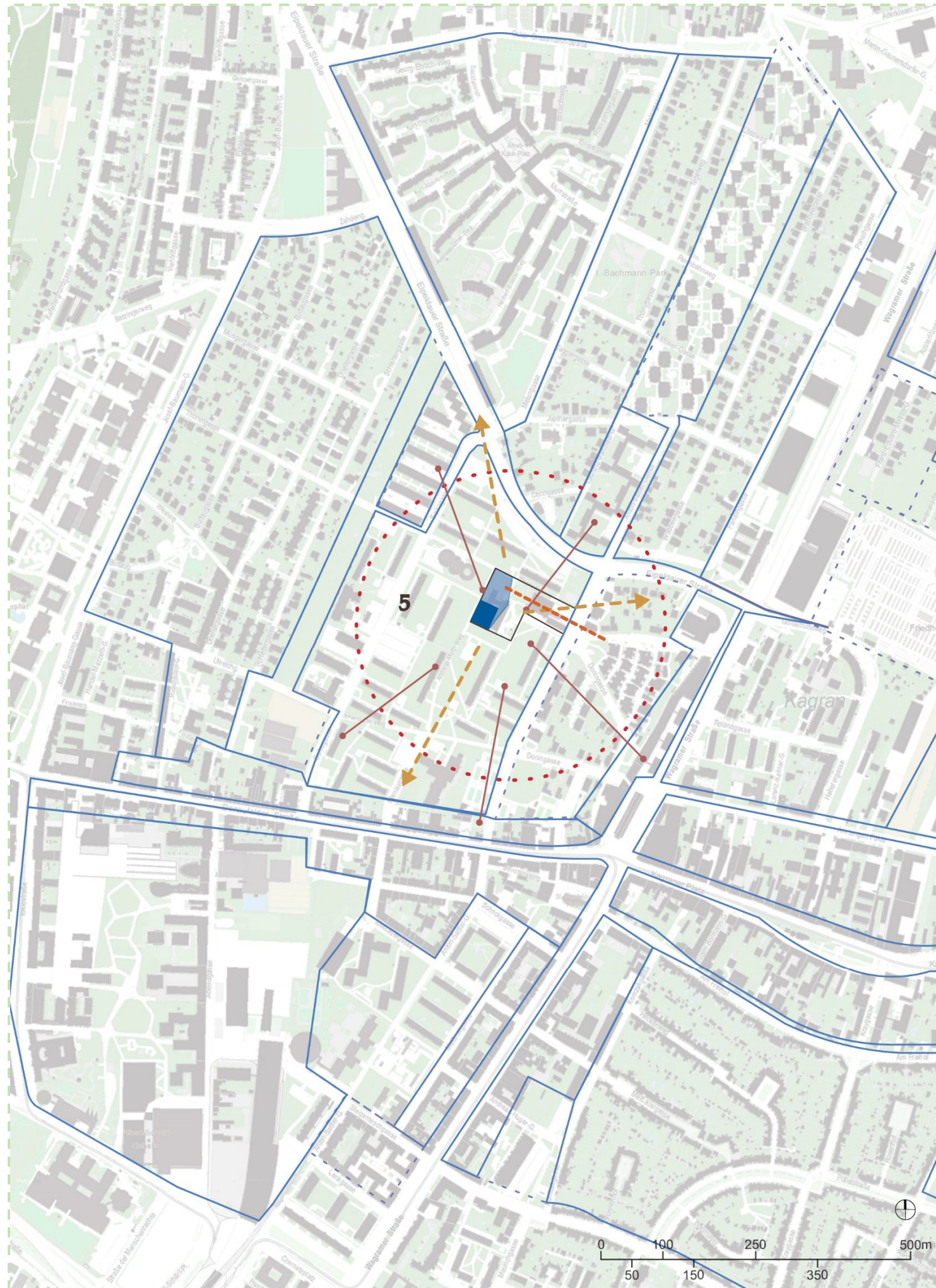
IMPLANTATION IN A SYSTEM

Focusing on an approximate center of the Transdanubian area, we can consider the Rudolf-Köppl-Hof as a very interesting housing system. Built in 1966, it is boarded by two important axes of development: Eipeldauer Strasse, emerging from the close node of Kagran and leading to the north-west, and Donaufelder Straße, orienting from west to east.

Only a few minutes walking separates the ensemble, be it starting from the U1 Station Kagraner Platz or from the tram lines in the Donaufelder Straße.

Enclosed between the wide individual housing areas on the west and a smaller one on the east, before reaching Wagramer Straße, the system has multiple values. In fact it can be understood either as a large and relatively dense interspace between two loose spaces or as an isolated group of north-south orientating housing blocks, which dominate the surrounding area.





Whereas Rudolf-Köppl-Hof is already ruled by a strong bidimensional internal orientation, it remains a large group of stand-alone objects. Such a system typically appeals to a center, which counterbalances this monolithic organisation, and simultaneously releases it from its enclosed position. A high-rise could effectively fulfil both parts of this role.



The high-rise n°5, here placed in the center of this system, would open it up to its nearest neighbouring areas, with which it currently has an almost inexistent connection.

The nursery and the supermarket, as well as a youth center or café for example, could become part of the its socket.

On its eastern parameter, a plaza and an adjoined pathway would assure the street and pedestrian connection between Wagramer Straße and the U1 Station – Kagraner Platz.

6 & 7 - SIEMENSSTRASSE STATION

IMPLANTATION AS A LANDMARK

Floridsdorf's northern side of the Transdanubian territory shows a particularly complex combination of uses. Indeed, while a large number of allotment garden colonies "Kleingartensiedlung" are spread out over the territory, varying in size and publicity, they are set with an inconsistent communication between industrial buildings, large company headquarters and large scale housing from the 1960s.

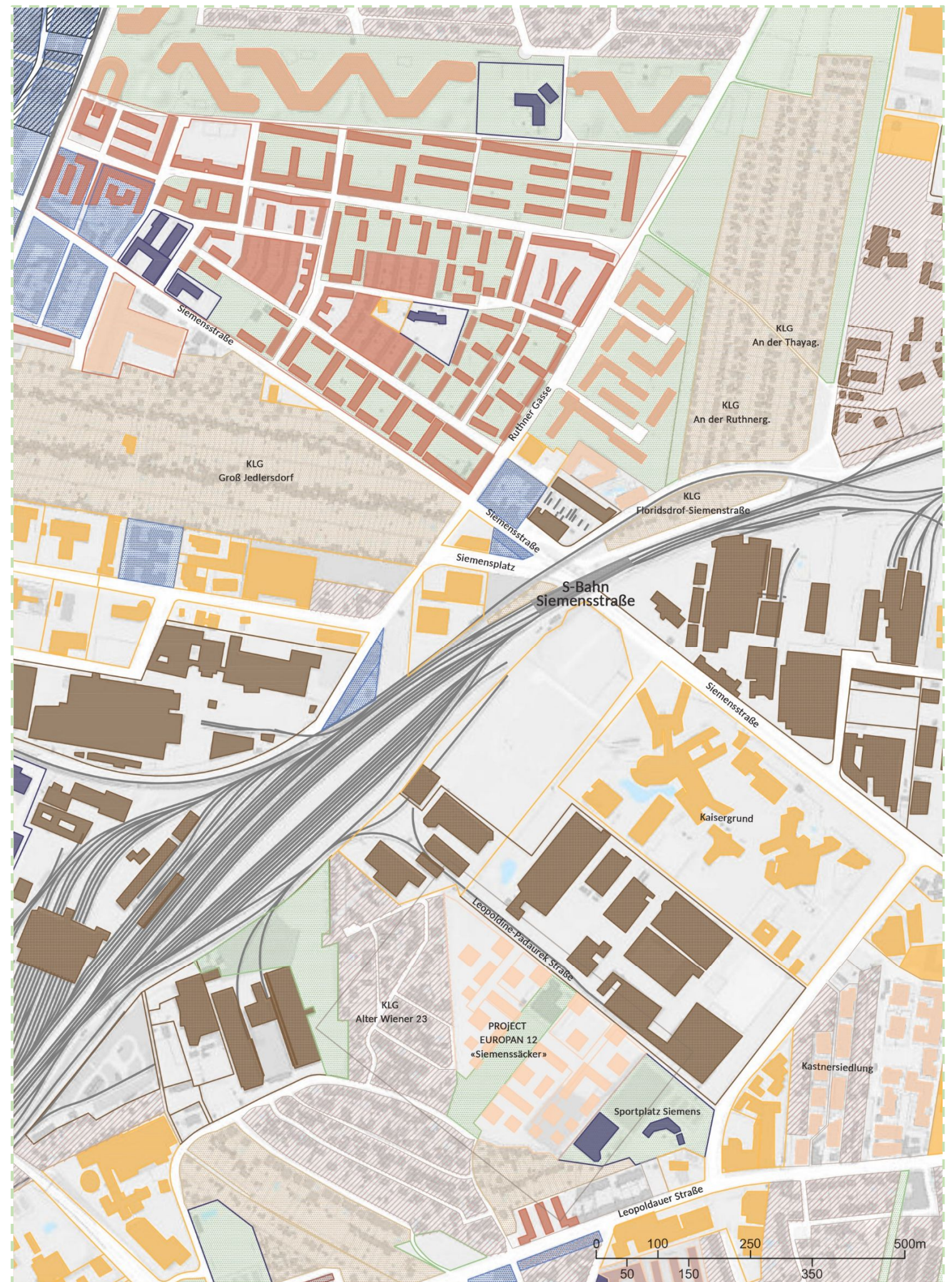
The present area is located at an important landscape node: the crossroad between the Siemenstraße, an important axis of heavy traffic with a wide set of railway lines, standing as probably the strongest edge of this area. Thanks to the S-Bahn Station Siemenstraße the entire district is directly linked to Vienna's right bank, and thereby gives an important insight into future development.

The various urban areas presented here have very different morphologies, and each show a different urbanity⁶⁸.

For example, the private garden allotments are set together in very large areas, only accessible by foot or by bike. They are sometimes enclosed by a wall, brutally separating it from the street with which they border.

Set next to other urban elements, they cause a discontinuity with both the building density and street distribution. In a concept in which the city must harmonise with density and connectivity, these areas could stand out as anti-urban.

⁶⁸ understand „urban quality“





Due to their differing land utilization both sides of the railway, and the S-Bahn Station, have opposite daily dynamics. Indeed, with both being large scaled, the companies located on the south-east, as well as the housing blocks on the north-west, create two contradictory movements of population.

In this sense, and being inscribed in the dynamic of the Project EUROPAN 12 “Siemenssäcker” south of the Siemens’s complex, the development of two high-rises (n°6 and n°7) would confirm the status of this area as a technical and commercial pole in Vienna.

The current car park, which we can find on the site, could be reintegrated underground in this project.



The two high-rises would spatially complete the particular character that the main building of Siemens offers to the environment. Moreover it would bind both sides, visually and functionally, across the rail roads, and thereby weaken the heterogeneity of the large areas surrounding it.

N°6 Residential high-rise :

- Creates the opportunity for mixed-usage.
- Situated at the back of the parcel, it would benefit from a park and a relatively quiet atmosphere.

N°7 Office high-rises:

- With a socket, including a shopping area.
- Bordering Siemenstrasse, and directly connected to the S-Bahn station
- Would act as an introducing door to the system, and a landmark.

8 - KATSUSHIKASTRAßE

IMPLANTATION AT A NODE

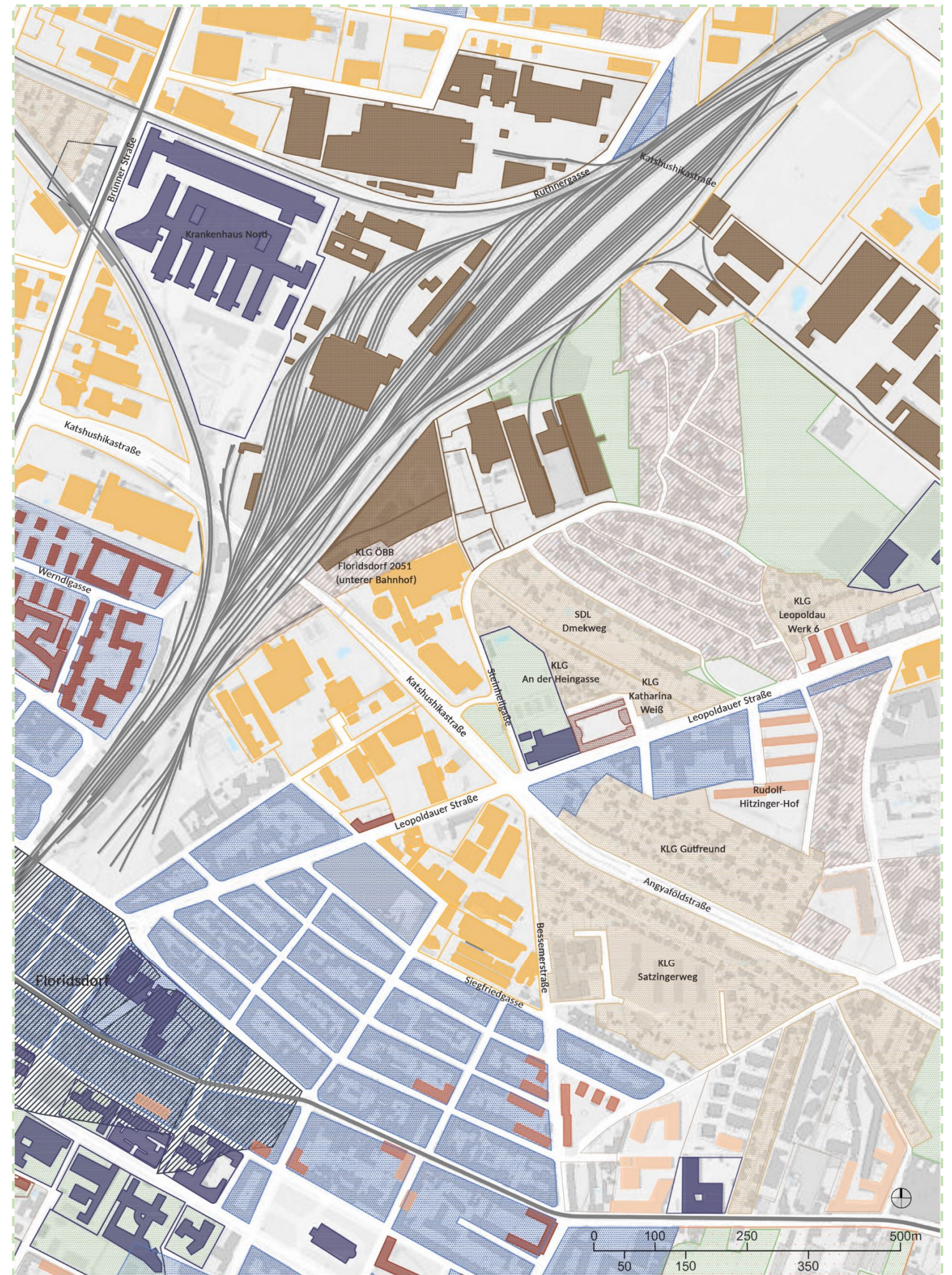
With the spatial differentiation of the Gründerzeit's blocks from the later grown city, we can understand the radial scheme of the territory.

Indeed, as the village of Floridsdorf has been a part of the Gründerzeit's great expansion of the city, the first remarkable sign of heterogeneity of the territory shows up at the fringe of this 1900's blocks. After the bombings of the second World War, which mainly affected inner Floridsdorf, the upcoming juxtaposition of large various areas contributed to a spatial separation.

In fact in the present focus, the large commercial areas that first appear between this limit and the Katsushikastraße, acts as an offset boundary, away from the morphological one.

Whereas the immense railway area forms again a significant edge in the Transdanubian territory, Leopoldauer Straße, spreading out from Floridsdorf center, tends to link Floridsdorf to the north-east.

Finally, located at the crossroads of these two important axes, the fact that all various areas meet leads it to becoming identified as a street node.





Situated at the meeting point of such important axes, and their various types and uses, the current empty plot doesn't help with connection to its surroundings.

In fact high-rise n°8, when implanted on the triangular parcel in the crossroad, would act on several levels of connectivity.

First of all, as with high-rise n°3 in Donaustadtstraße, the crossroad here has to be built-up in order to gain significance, and hence to end its role as being merely a consequence of the crossroad.

By enhancing the rotating movement of the crossroad the high-rise would also act as a landmark.

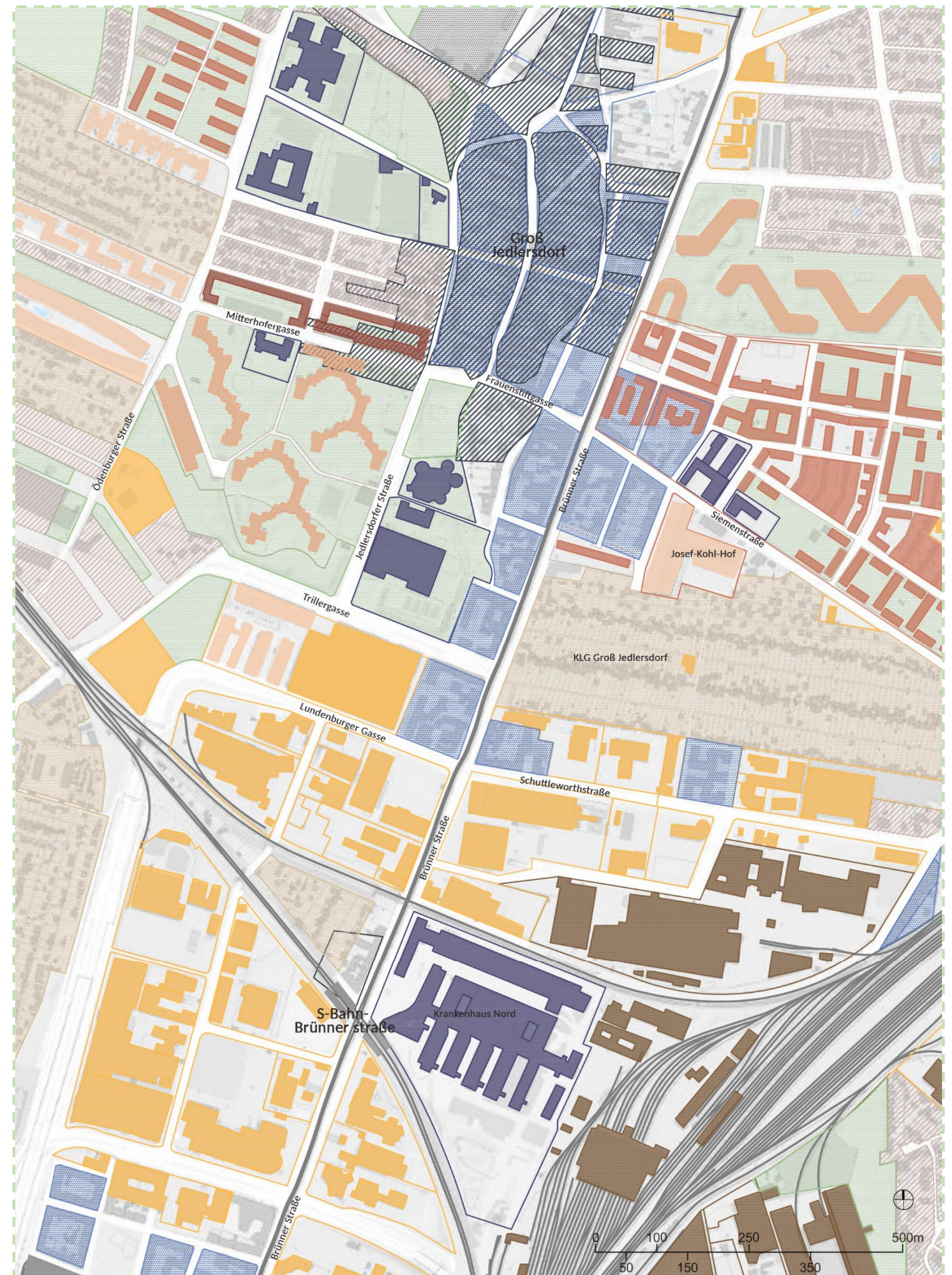
9 - BRÜNNER STRAßE A

IMPLANTATION AS A NODE

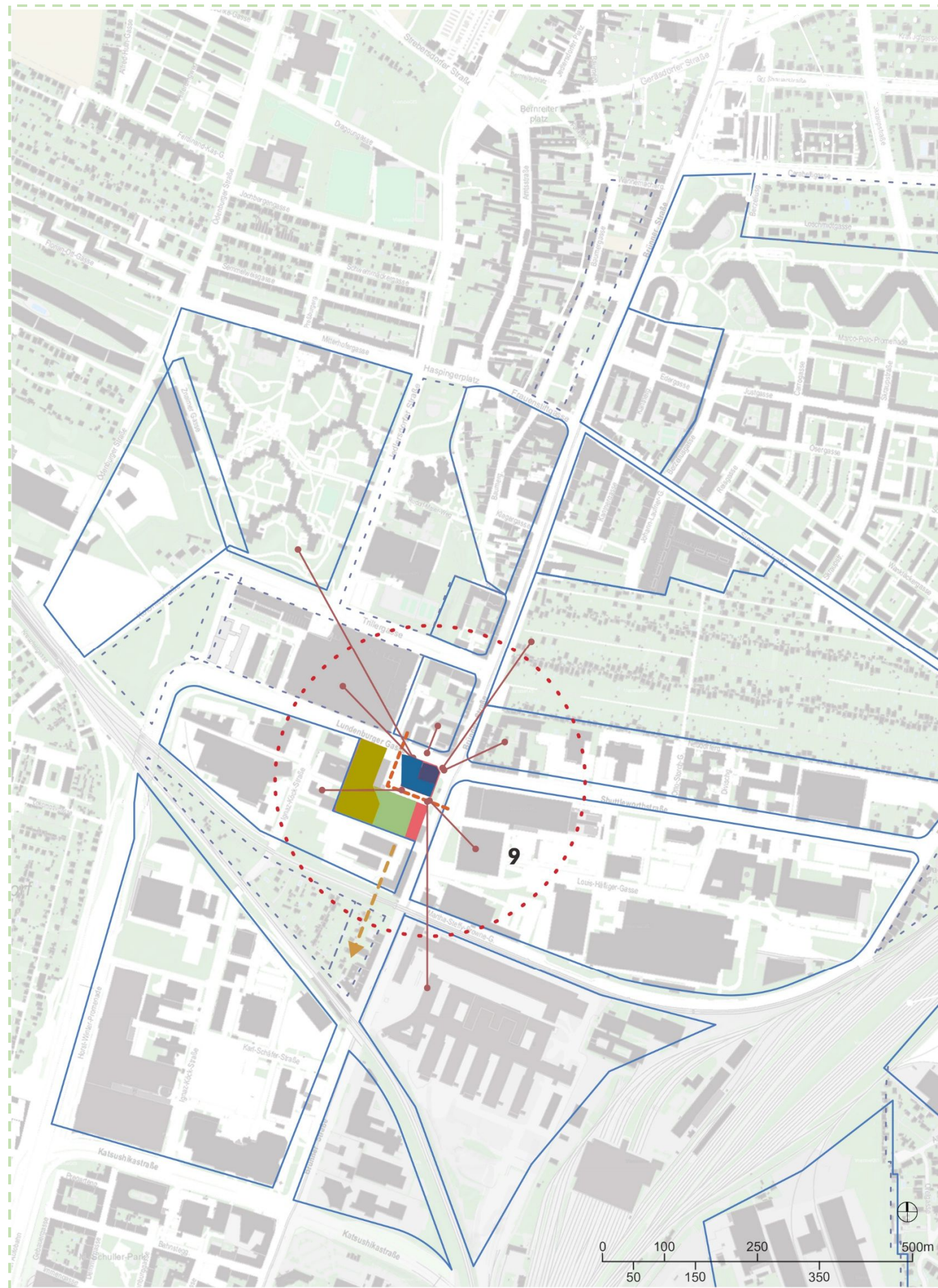
As detailed previously, Brünner Straße is designed as a major axis of development, according to STEP 2025⁶⁹. Situated at the junction between two of the identified areas connected by this axis ("Krankenhaus Nord" and "Groß Jedlersdorf") lies one of the only remaining crossroads with a radial line. This is symbolized by Schuttleworthstrasse, coming from the west.

Whereas the hospital "Krankenhaus Nord" is inserted into one of the biggest nodes of the left bank, Schuttleworthsstraße encloses the commercial and industrial areas. In this way it acts the first encircling of this major node.

Therefore the meeting of Schuttleworthstrasse, Lundenburgerstrasse and Brünner Straße is itself a node in the street's and area's distribution. Near the S-Bahn station Brünner Strasse, the present area also benefits from a favourable location, and connection with Vienna's right bank.



⁶⁹ See p31.



As the first high-rise along Brünner Straße's axis, tower n°9 is surely acting first as a node, because it gives significance to the crossroads with Schuttleworthstraße. It is also implanted as a landmark in a sequence of high-rises along the street.

Dedicated to housing, its socket could contain the two large-scale shops we can find on the current site. In this way it would functionally link the high-rise to its north surrounding (KLG and Siemenstraße), and also link the socket to its immediate neighbouring commercial areas.

On the southern side, the sequence created from the bridges and the hospital press on the spatial separation between the sides of this rail node. By starting or ending this sequence, this is why a high-rise would help to reduce this physical division of the territory. It would visually link both sides of the node along the Brünner Straße, and potentially further urban objects.

10 - BRÜNNER STRASSE B

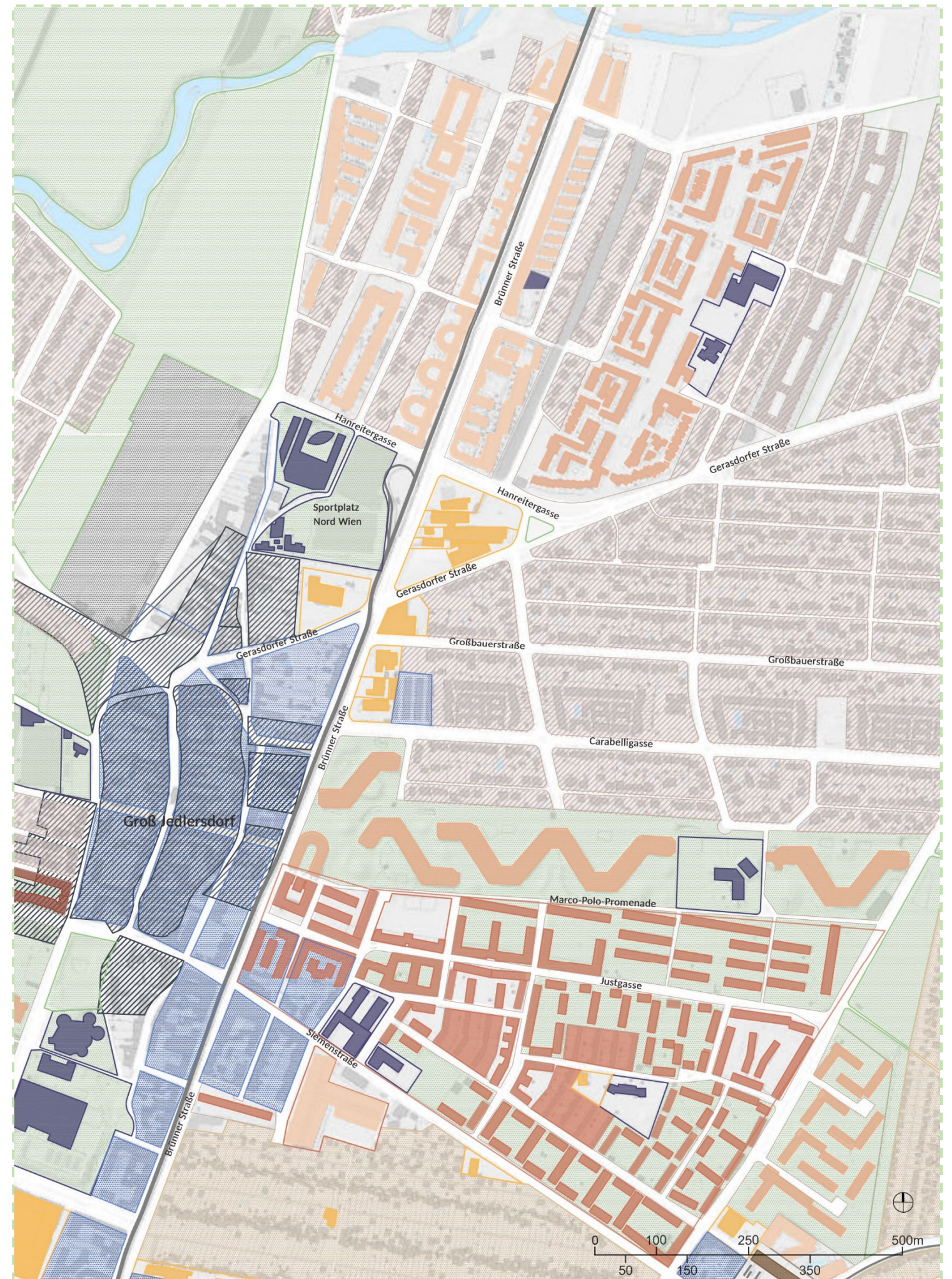
IMPLANTATION AT A NODE

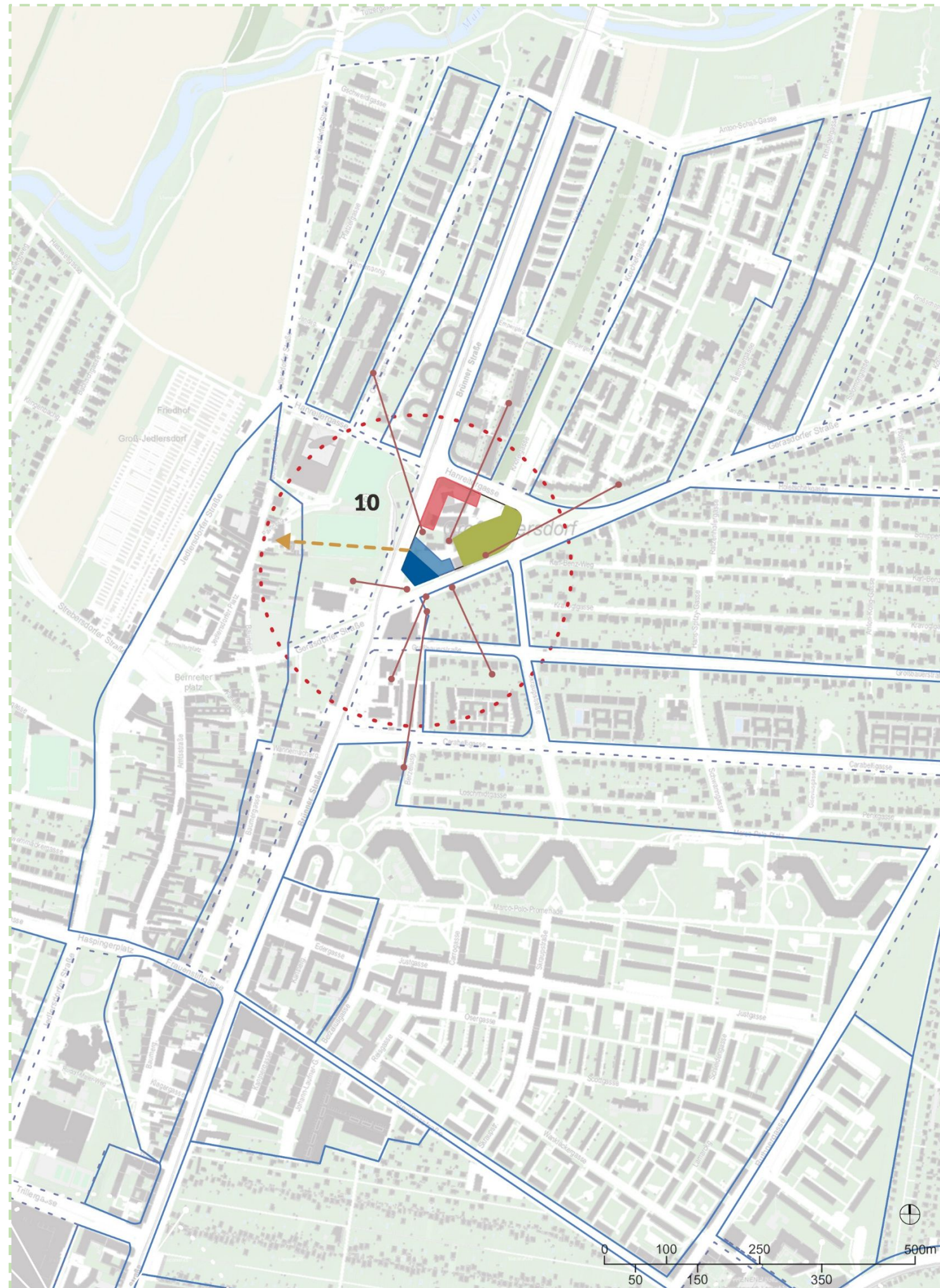
Continuing to follow Brünner Straße as an axis of development, a second remarkable node appears on the territory.

Indeed, after passing by *Groß Jedlersdorf*, and the large scale collective housing complex built over the second half of the 20th century, we reach the immense individual housing area. This housing zone is boarded indirectly by Brünner Straße as well as being directly limited by the Gerasdorfer Straße and a group of a few commercial buildings.

Although the general constructed density tends to become very low this far along Brünner Strasse and Gerasdorfer Straße, the node that they create is still important. In this sense, we must consider Hanreitenstrasse to also be part of the node.

The triangular system which they form finds itself at the meeting point between two large-scale and partially dense collective housing systems, implanted along Brünner Strasse since 1950. As a spatial junction between these two complexes, this block of commercial buildings, and the sports center facing it opposite Brünner Straße, are currently wide, loose interspaces. Both have a strong landscape significance (V – shape or linear/circular shape).





In order to ensure a buildings continuity along Brunner Straße, the entire triangular nodal area would suit the implementation of a high-rise and its developed base.

Indeed, one suggestion for urban development could be the implantation of a high point at the front of the parcel, facing Brunner Straße. This would enhance its connection with Gerasdorfer Straße. Acting first as a node, but also as a landmark, it would bind both parts of the territory implanted along the same axis.

Therefore, separated by 1500m, the two high-rises would mark out this axis. Consequently it would create another, larger sequence, which would polarize the various areas recognizable on the territory, instead of juxtaposing them along one line.

11 - PRAGER STRAßE

IMPLANTATION AS A LANDMARK / in a system

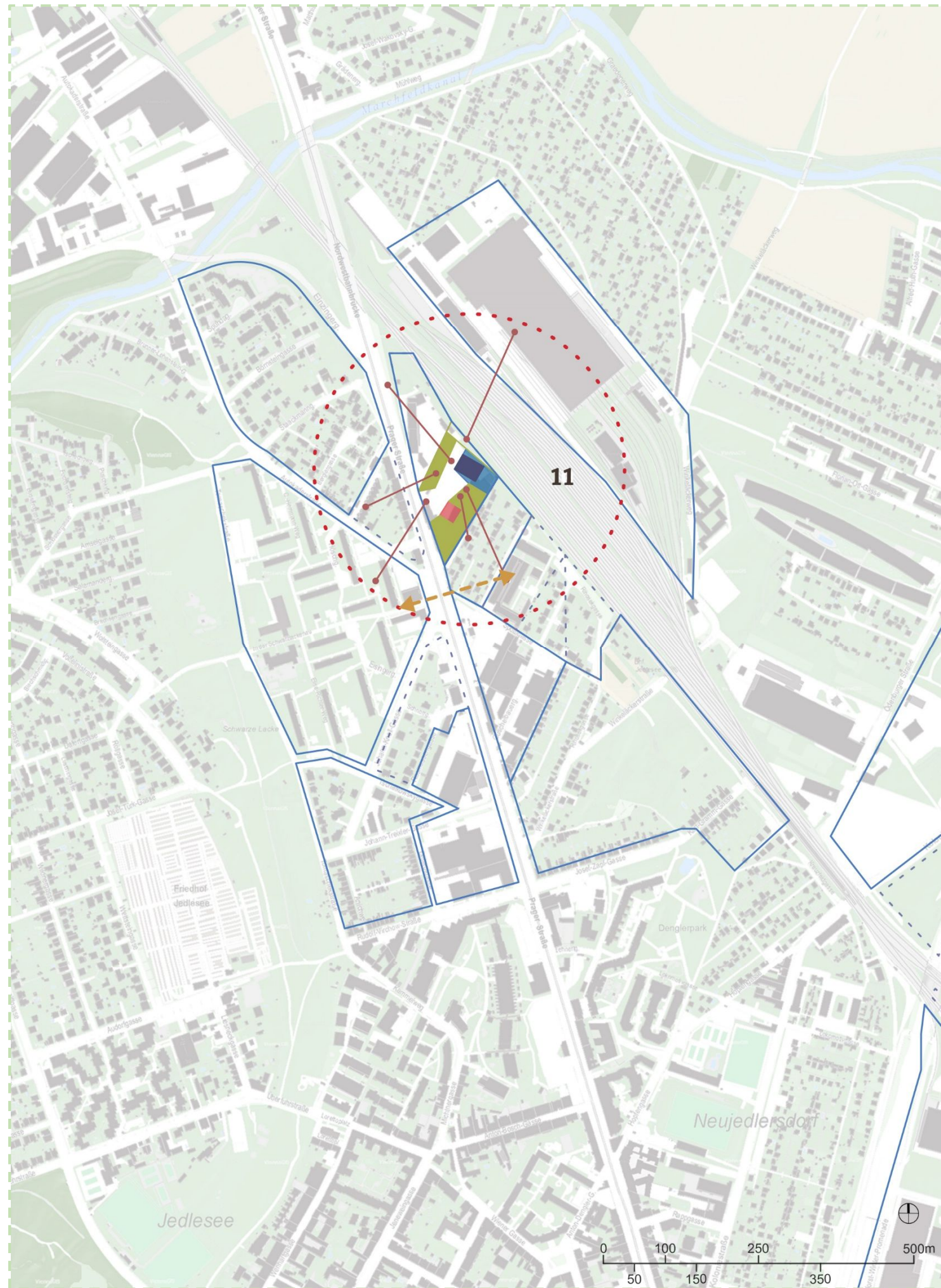
Similar to the Brünner Straße, Prager Straße is a very important axis of development of the transdanubian territory's west side. The two streets find their common origin in the south (*Floridsdorfer Spitz*), in Floridsdorf's center.

Separated by another big railway complex, from the central part of the transdanubian territory, this western section has a generally lower built-up density, and smaller areas.

One significant landscape figure in this area is the triangular set of collective housing from the 1960s, framed by the Autokaderstraße and the Johann-Knoll-Strasse. These buildings form a two-dimensional group of collective housing buildings of similar heights (around 22m), and seem to be oriented towards a specific node on Prager Straße.

This street is, however, boarded almost entirely by commercial buildings. They are low in height, forming a non-homogeneous construction group.





When implanted into the interspace, enclosed between Prager Straße on the west and the railways of the east, a high-rise could act both as a node and as a connector. Indeed, it would primarily signify the approaching crossing of the two axes, and then counterbalance the strong geometrical disposition of the collective housing system across the street.



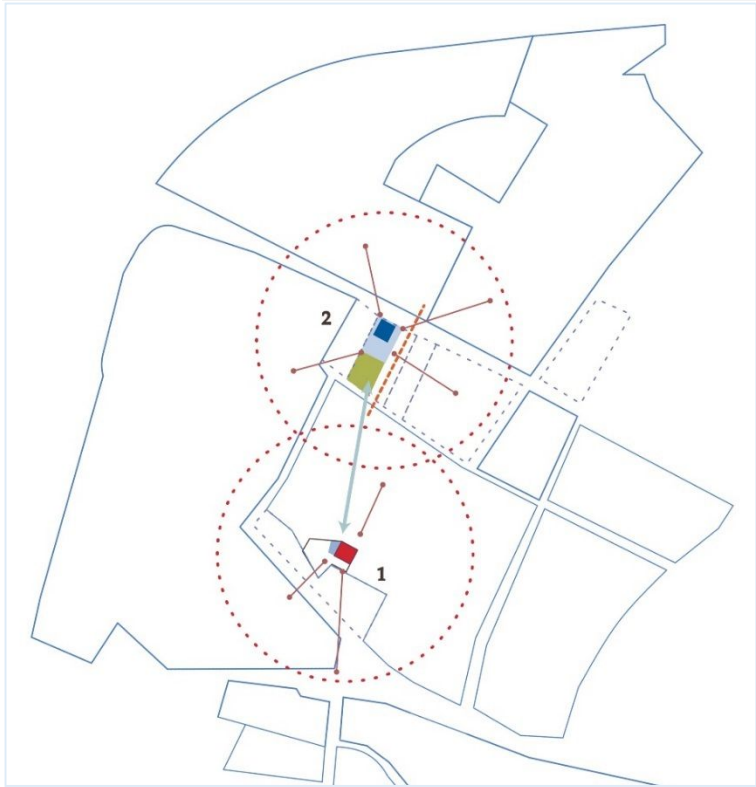
The present high-rise (N°11) could also stand as a major landmark in the western part of the Transdanubian territory.

By mixing the uses of the project, such as having offices in the upper floors and a cultural/educational center in its base, this would dynamize the area. Completing it with a medium-high housing block and a park, the high-rise would be more efficiently anchored within its surroundings in this way.

3 DETAILED PRESENTATION OF HIGH-RISES

1 - HARDEGGASSE

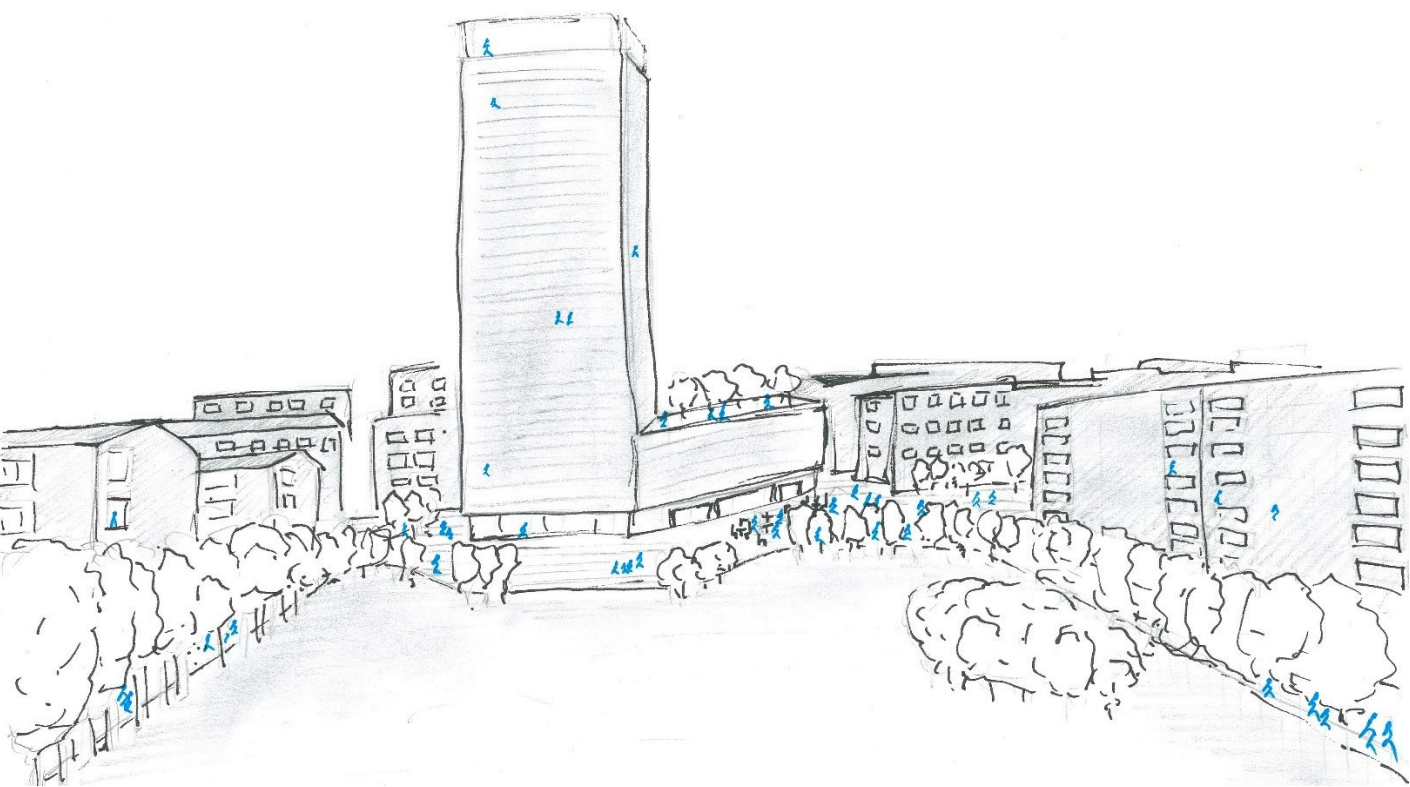
HEIGHTS (m)	
High-rise	92m
Base	16m
CAPACITY	
Apartments	192
Inhabitants	384
Working places (22m²GFAper working place)	155
AREAS (m²)	
GFA housing	18,900
GFA office	3,400
GFA other functions	4,560
GFA TOTAL	26,860
BUILT-UP DENSITY (plot ratio= total GFA/total plot area)	
	3,0
Green and open spaces (> 3,5m² per inhabitants + 2,0m² per working place)	
	> 1,684m²
Average functional areas for housing per person in Austria in 2017	
Source : Wien in Zahlen 2017. Stadt Wien; MA 23	38 m² per person



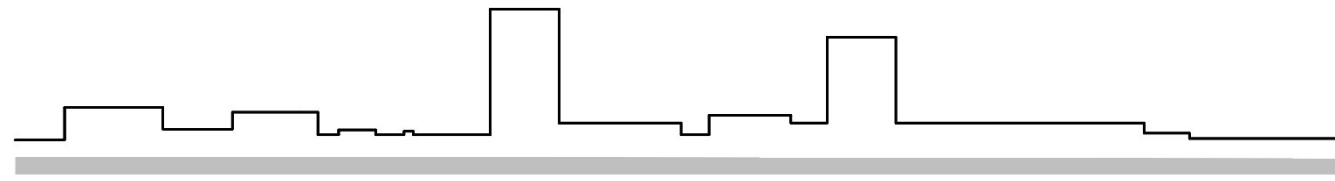
AREAL CONNECTIVITY



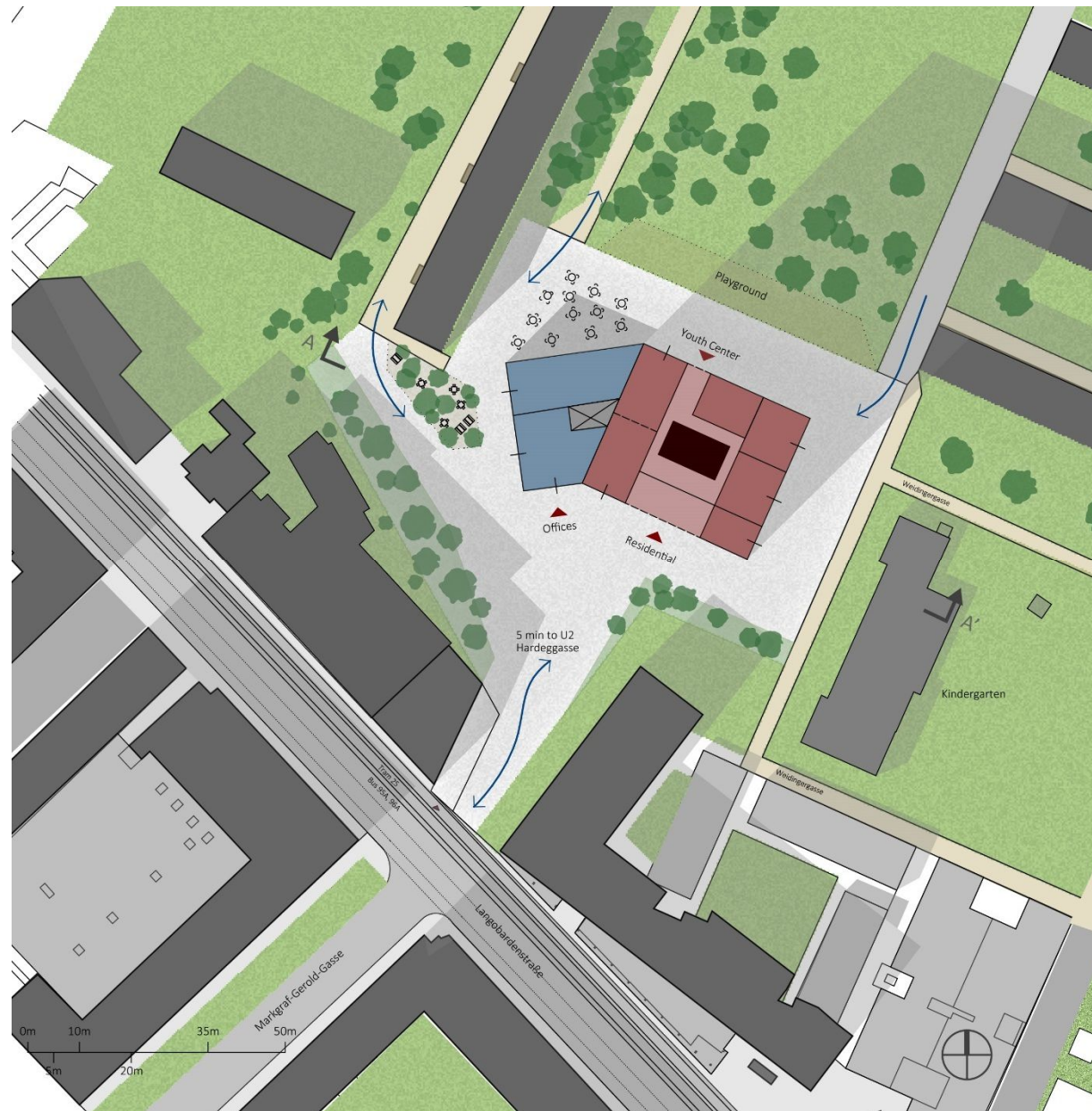
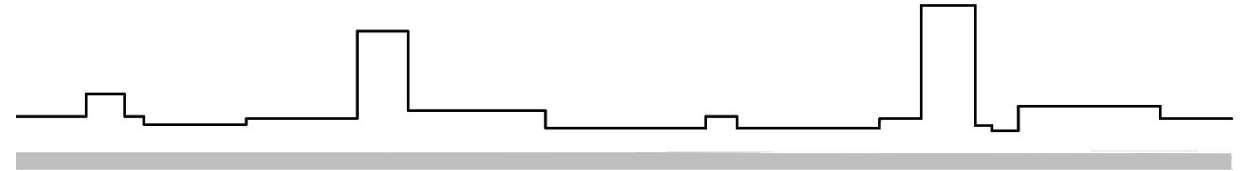
FUNCTIONAL CUT 1:1000



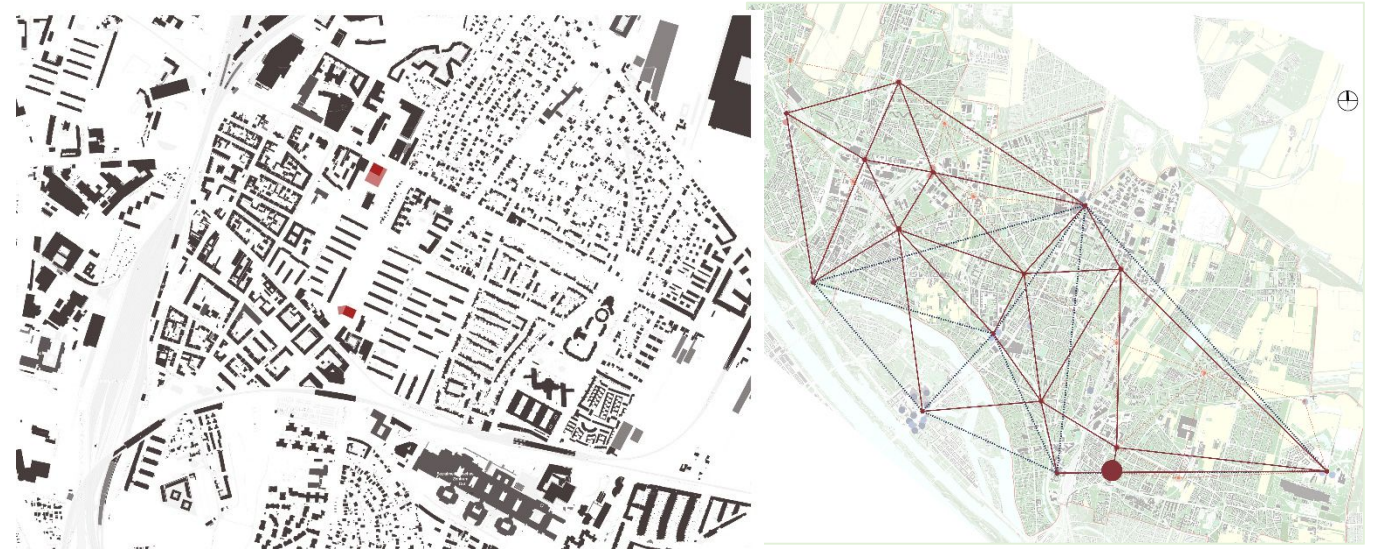
PUBLIC OPEN SPACE



SKYLINE

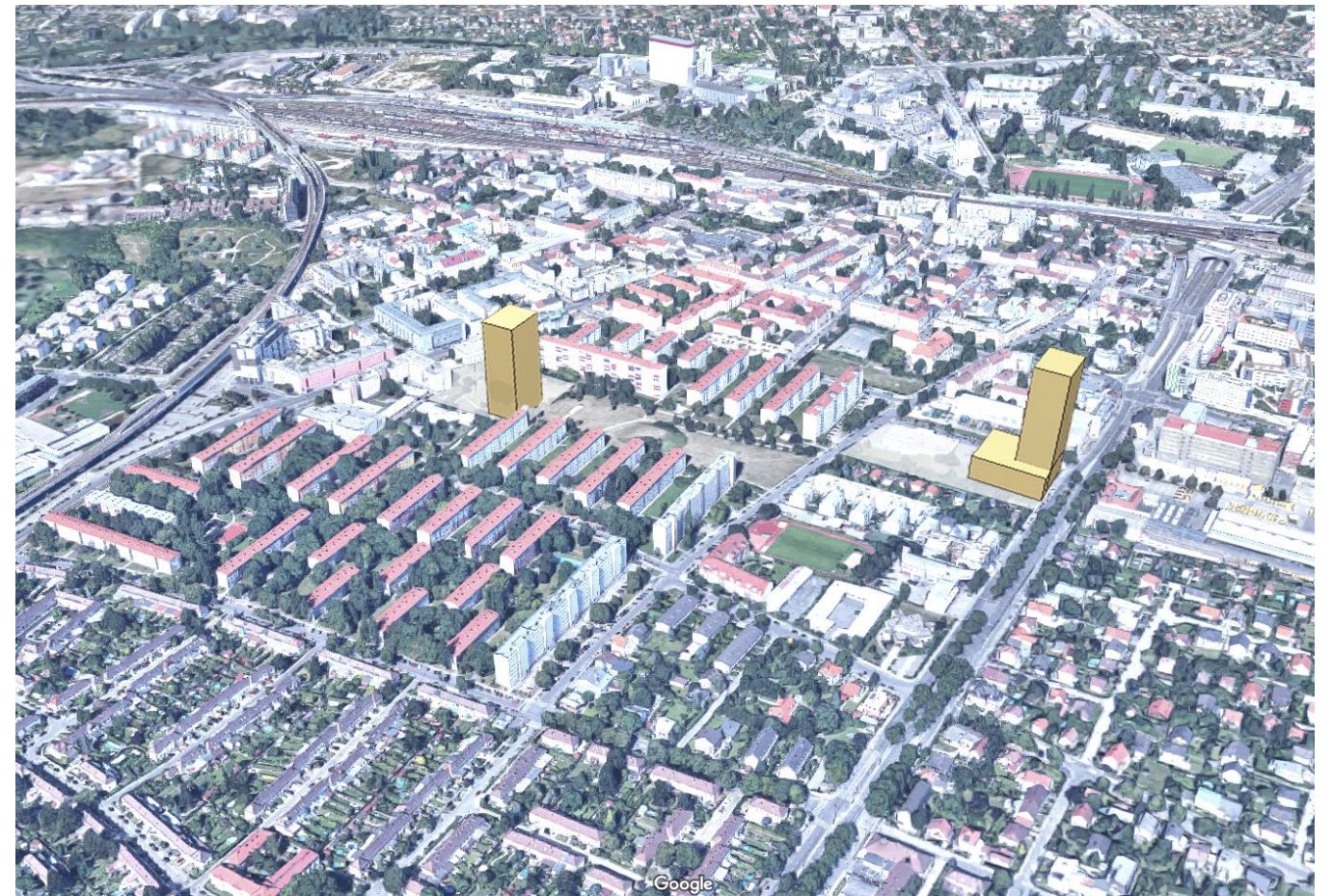


GROUND FLOOR CONCEPT 1:1000



LAGE

NODE



BIRD'S EYE VIEW

5 - RUDOLF-KÖPPL-HOF

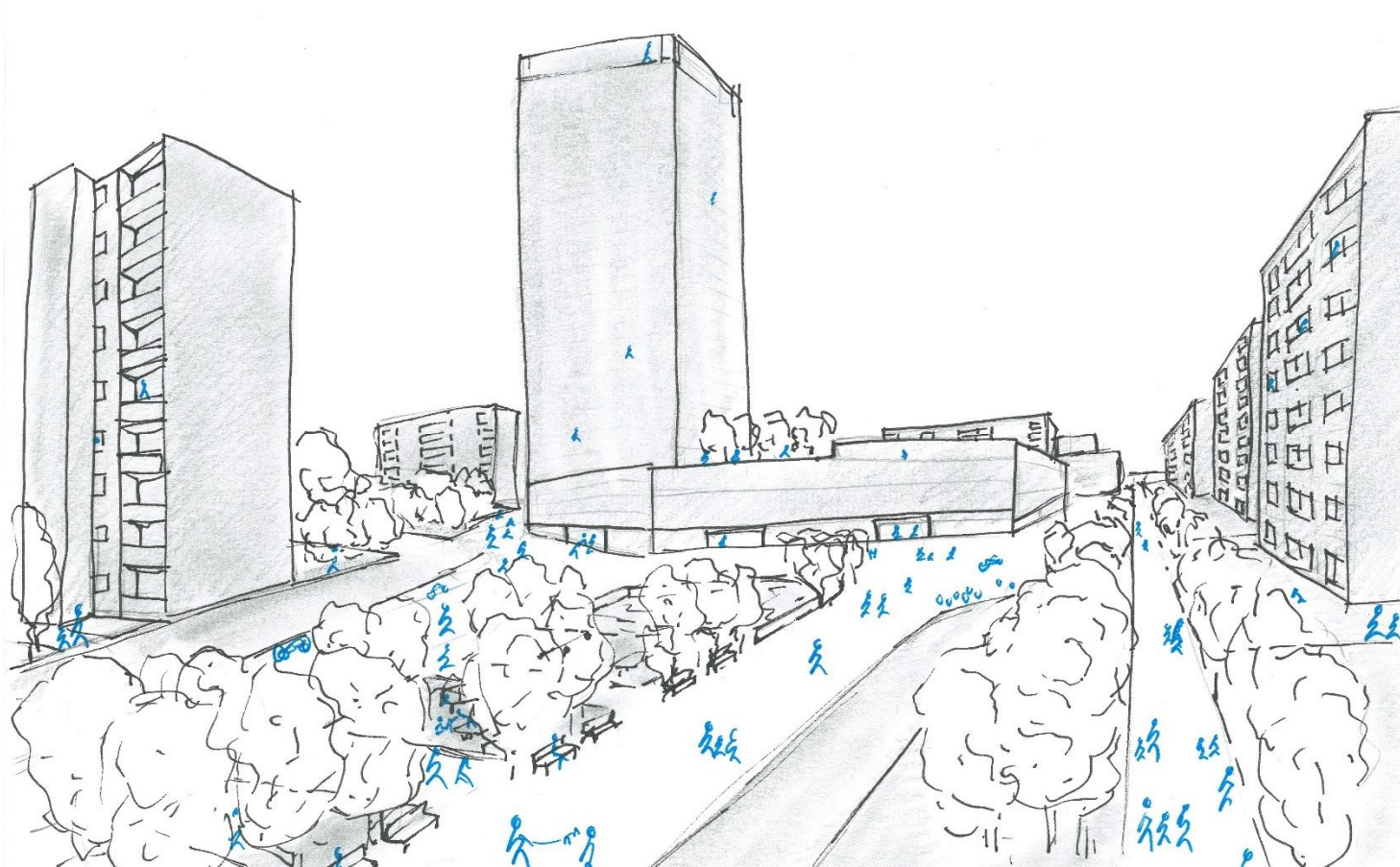
HEIGHTS (m)	
High-rise	87,5m
Base	12,0m
Kindergarten	15,50m
CAPACITY	
Working places(22m²GFA per working place)	1,000
AREAS (m²)	
GFA office	20,045
GFA shops and medical center	4,036
GFA kindergarten	886
GFA other functions	6,769
GFA TOTAL	31,736
BUILT-UP DENSITY (plot ratio = total GFA/total plot area)	
	2,9
Green and open spaces (> 3,5m² per inhabitants + 2,0m² per working place)	
	>2,000m²



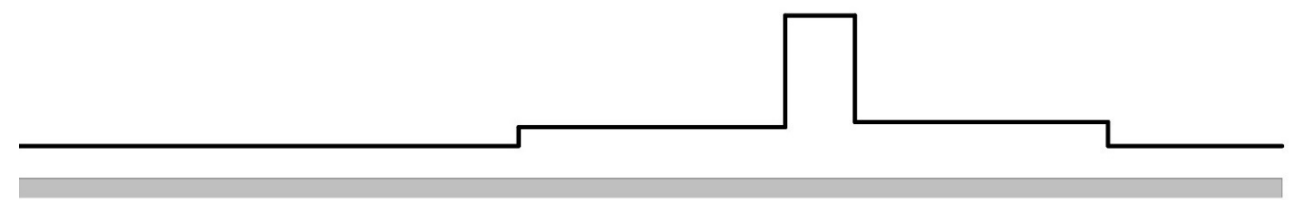
AREAL CONNECTIVITY



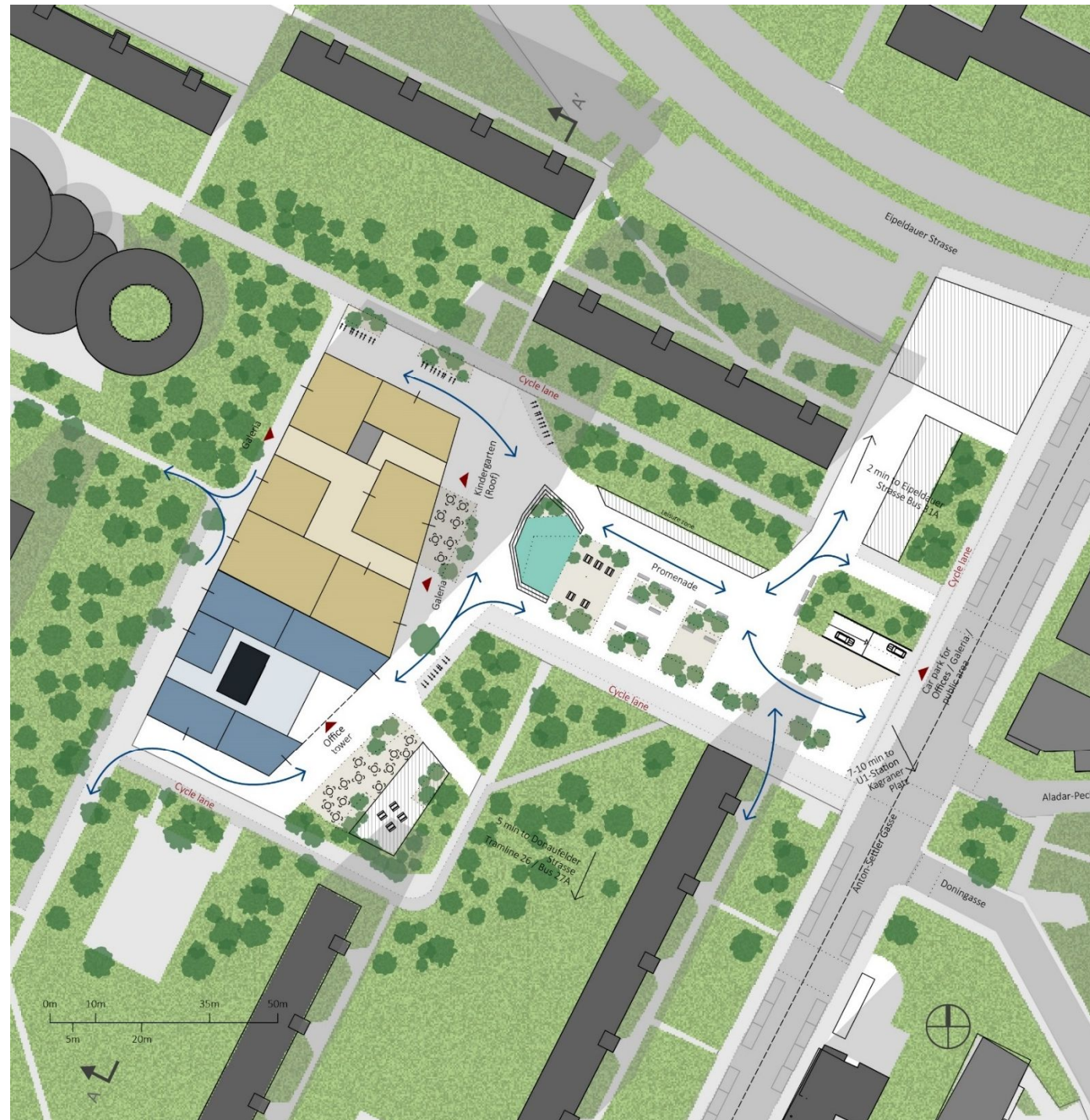
FUNCTIONAL CUT 1:1000



PUBLIC OPEN SPACE



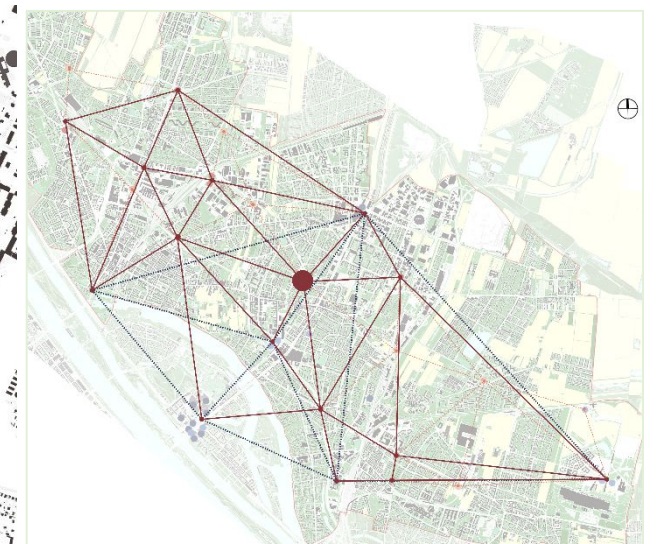
SKYLINE



GROUND FLOOR CONCEPT 1:1000



LAGE



NODE



BIRD'S EYE VIEW

9 - BRÜNNER STRASSE A

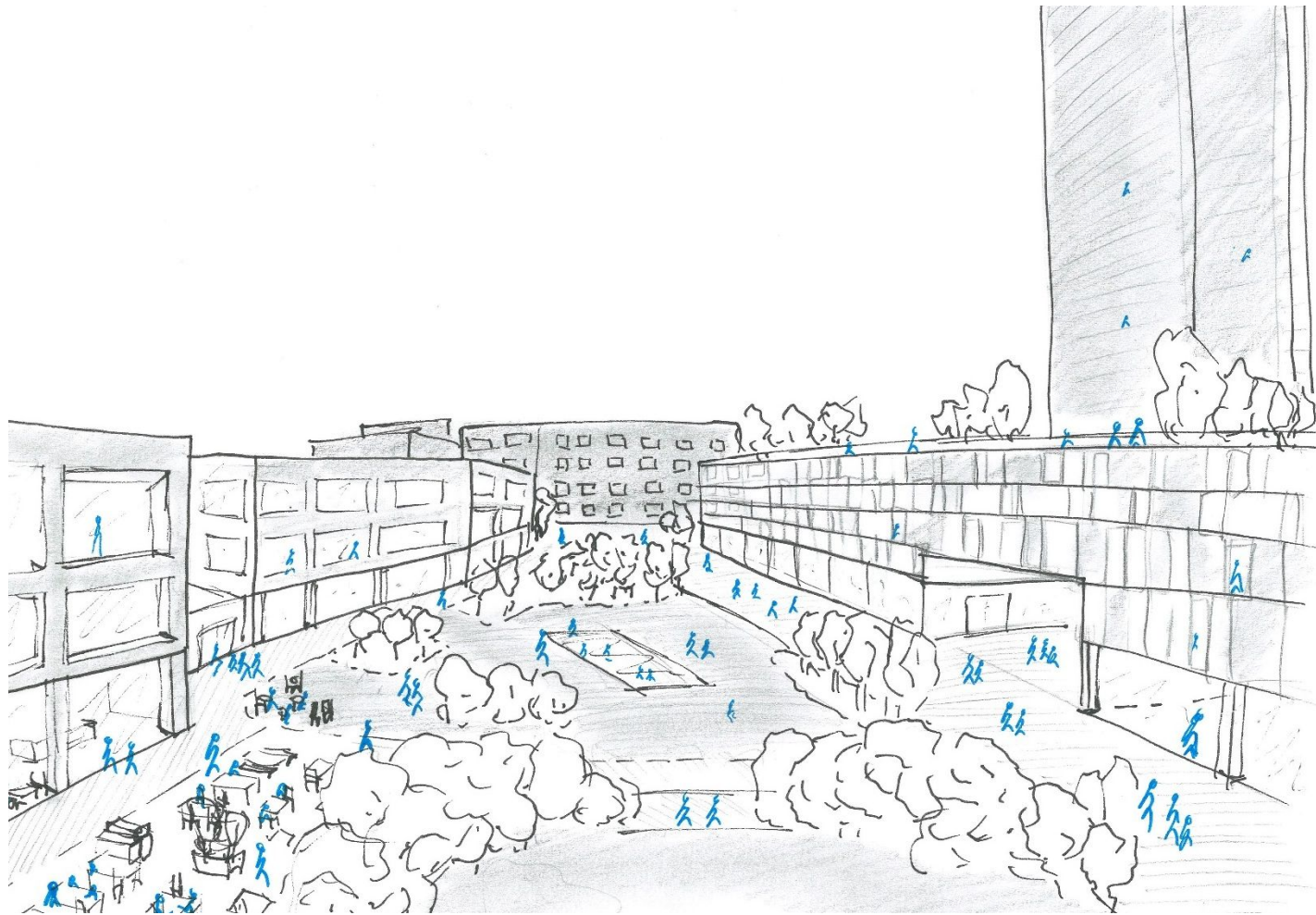
HEIGHTS (m)	
High-rise	92m
Base	16m
Shopping center	15,50m
CAPACITY (unit)	
Apartments	236
Inhabitants	473
Working places	405
AREAS (m²)	
GFA housing (high-rise)	15220
GFA housing (other)	3350
GFA office	8931
GFA shopping center	9885
GFA other functions	6600
GFA TOTAL	43986
BUILT-UP DENSITY (Plot ratio = total GFA/total plot area)	
	3,5
Green and open spaces (> 3,5m² per inhabitants + 2,0m² per working place)	
	>2650m²



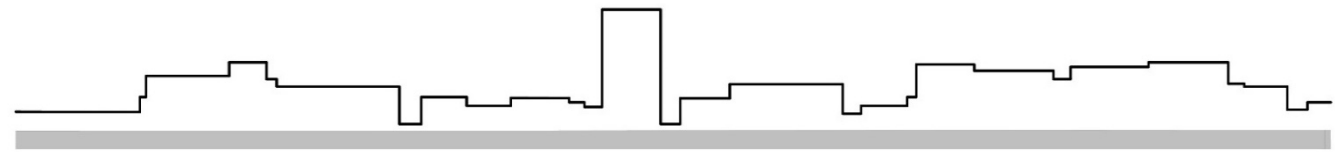
AREAL CONNECTIVITY



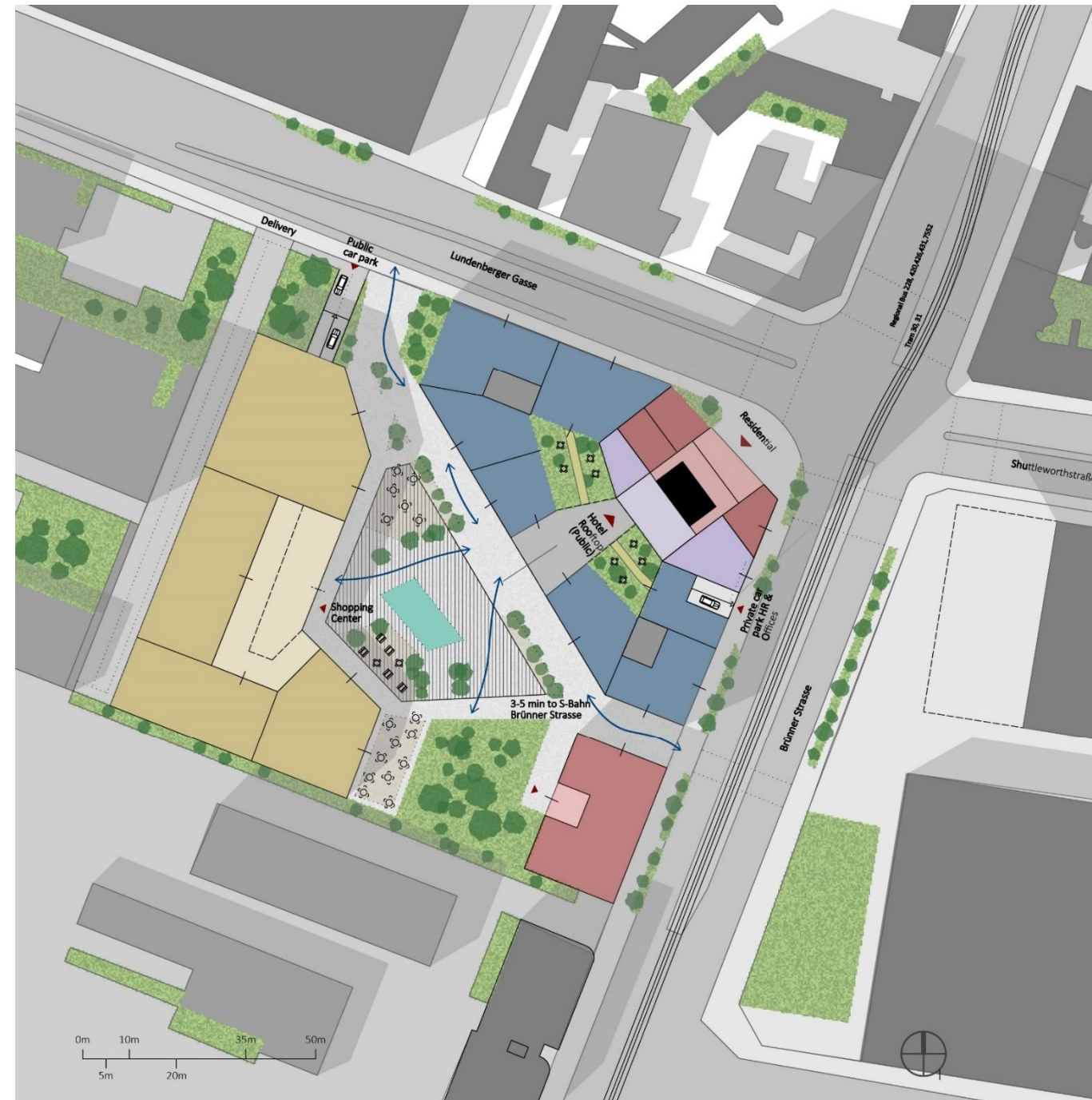
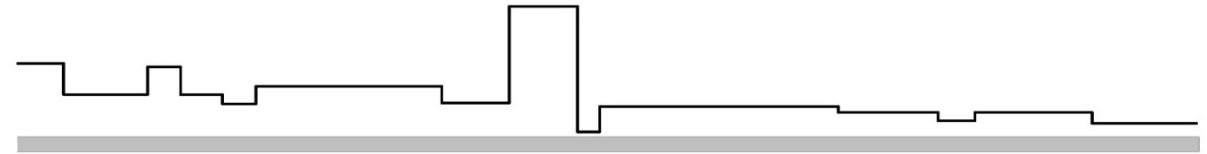
FUNCTIONAL CUT 1:1000



OPEN PUBLIC SPACE



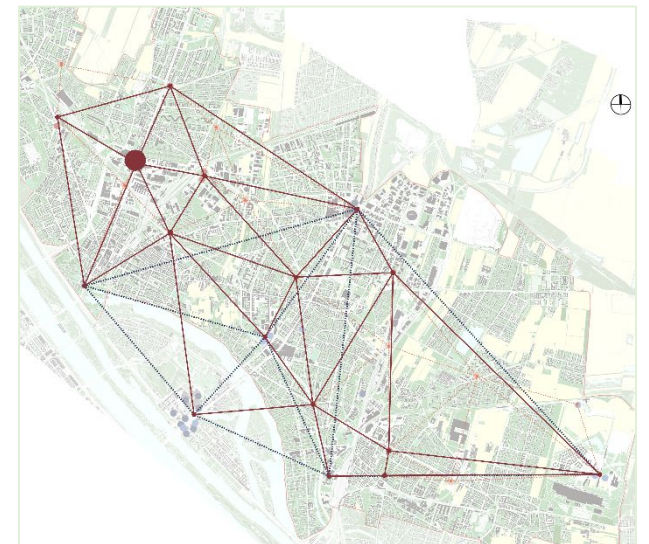
SKYLINE



GROUND FLOOR CONCEPT 1:1000



LAGE



NODE

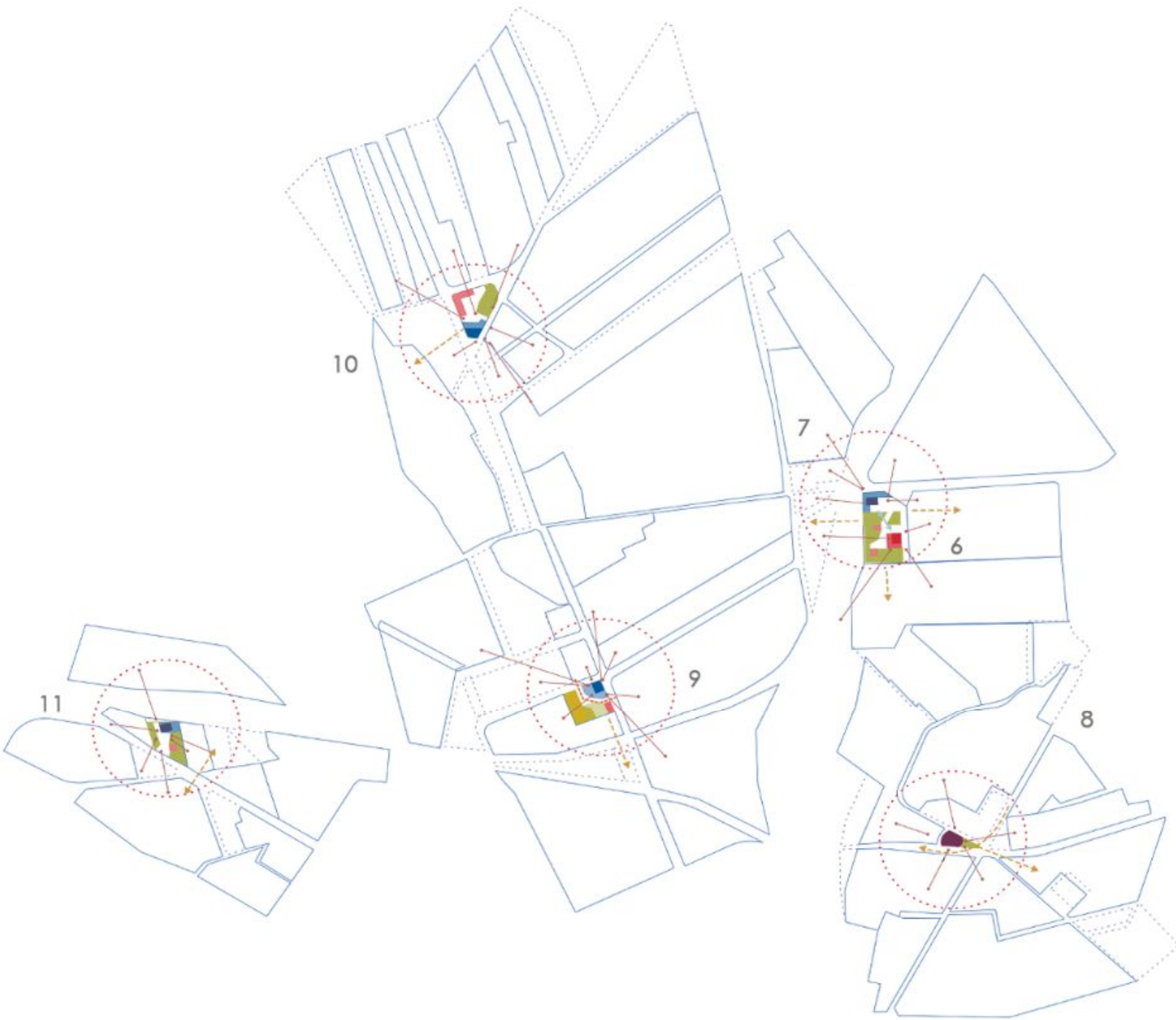
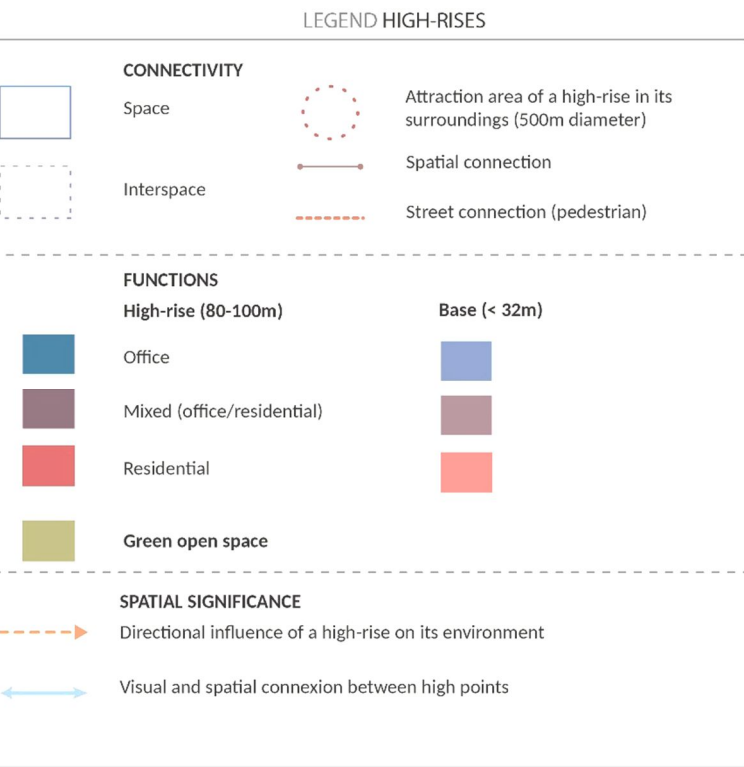


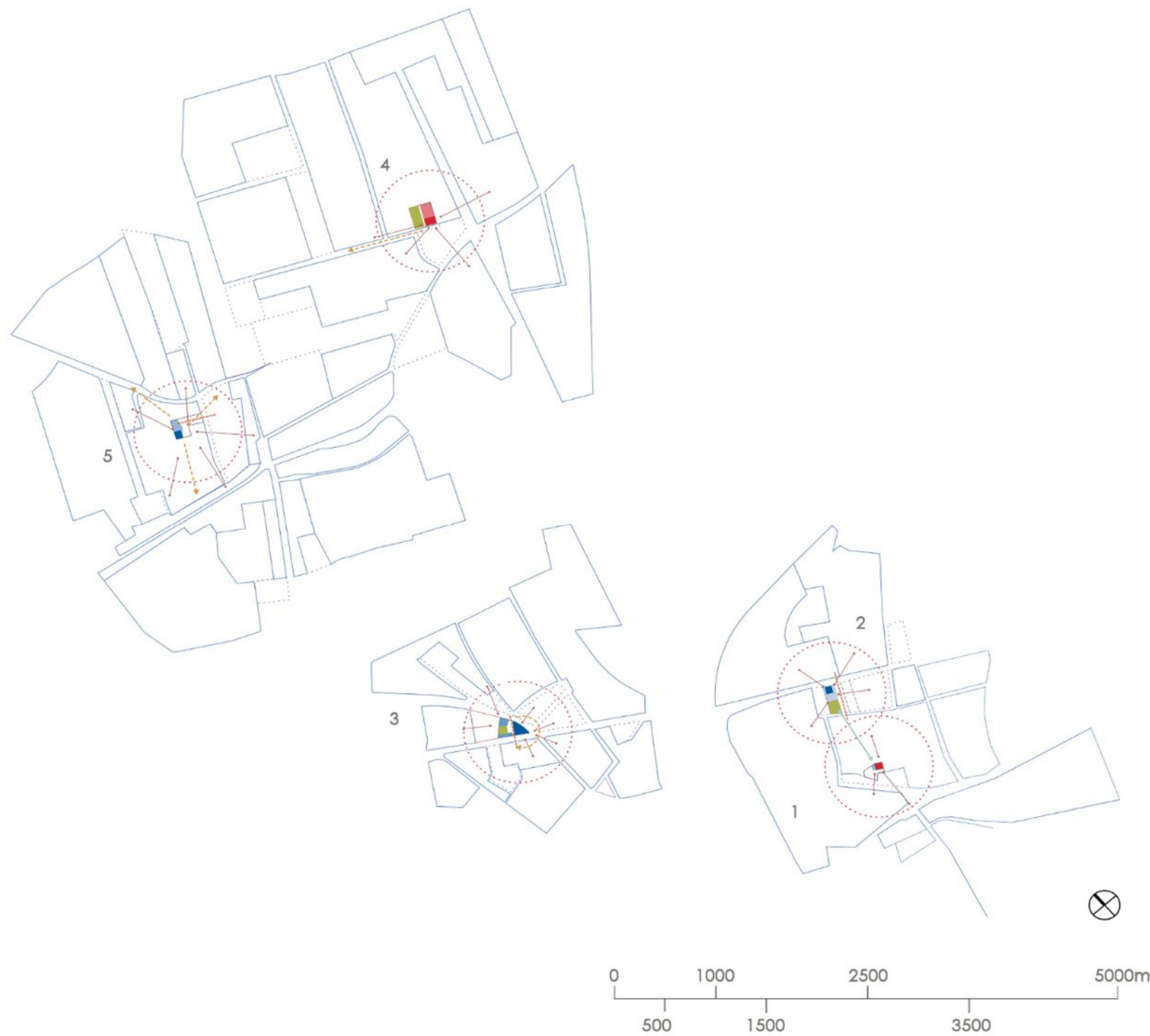
BIRD'S EYE VIEW

6. CAPILLARY NETWORK

1 AREAL CONNECTION

POLYCENTRIC CONNECTIVITY



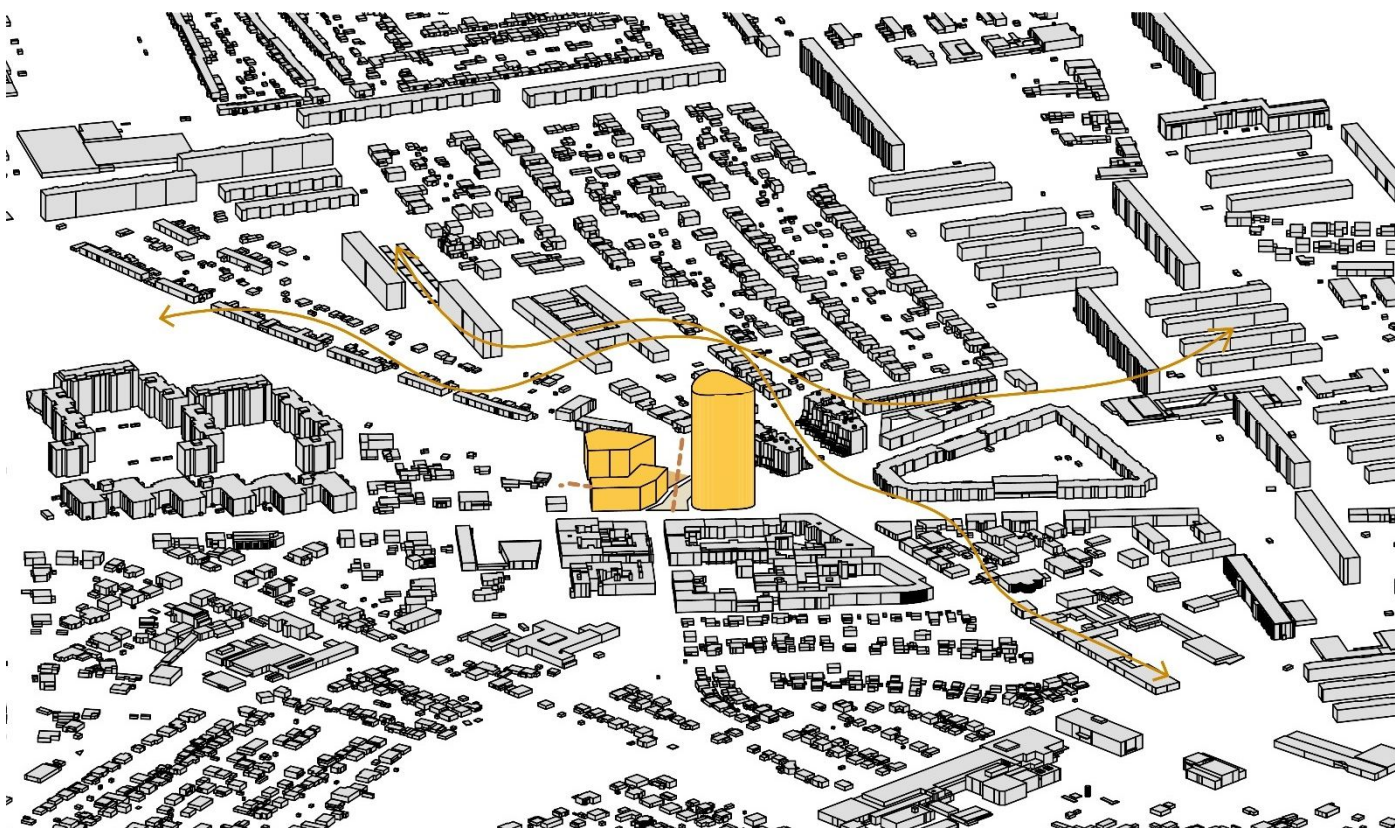
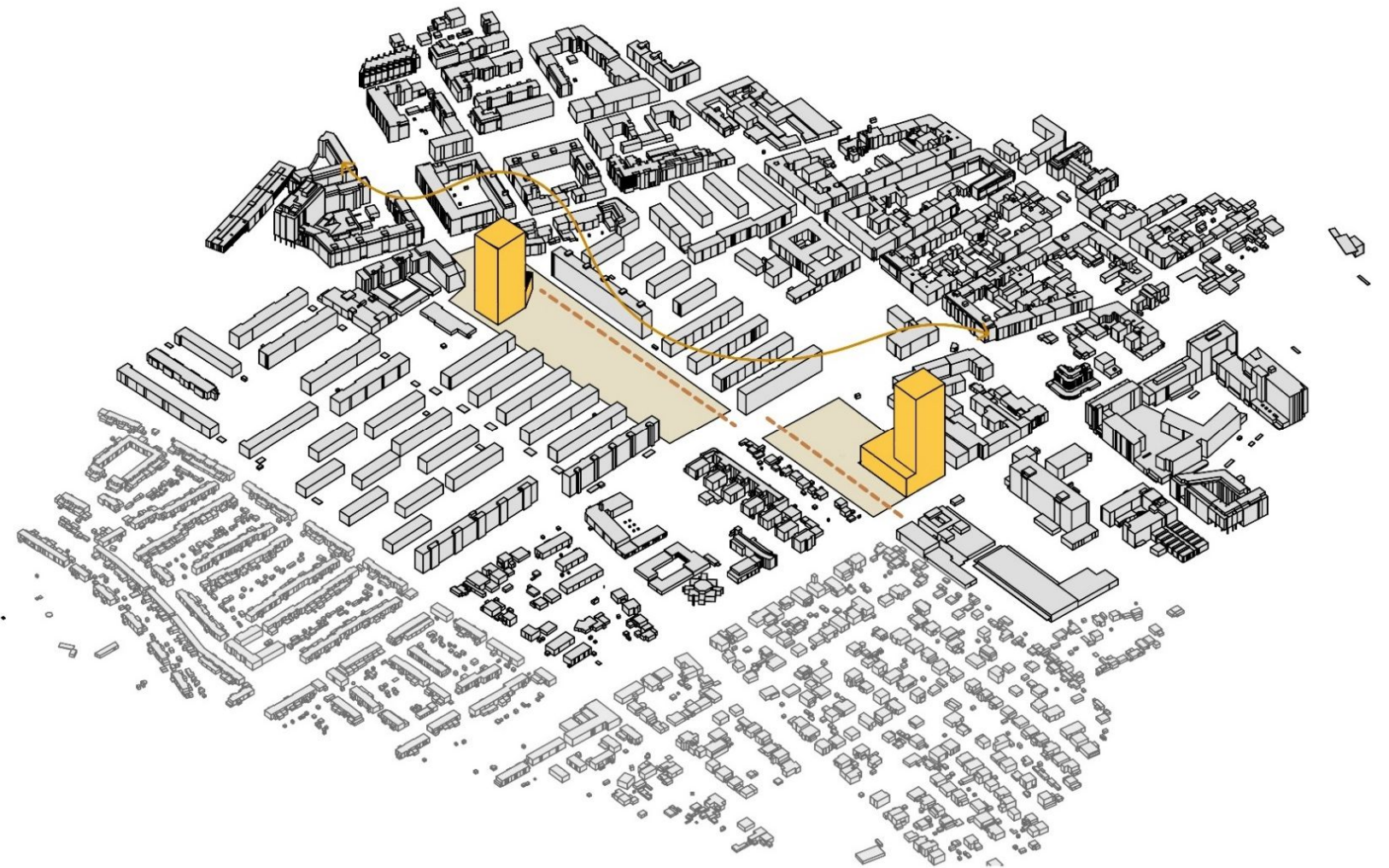


FORMATION OF CLUSTERS

Each identified high-rise plays many roles in the morphological and volumetric communication of the buildings in the districts. Indeed, they can be markers of a street connection, ensuring the building continuity along important streets or linking other large scale objects in their surroundings.

Integrated into a system, they start to act as new attraction point, destabilizing the hierarchical, orthogonal and monolithic distribution of its components. They can also simply be the anchor points, rotating and guiding from one axis to another.

By assuming so much roles, the high-rises become an important components in the formations of the city scape. They are even more understandable and identifiable as many urban theoretical definitions.



enclosure

“Enclosure sums up the polarity of legs and wheels. It is the basic unit of the preintual pattern; outside, the noise and speed of impersonal communication which comes and goes but it is not of any place. Inside, the quietness and human scale of the square, quard or courtyard. This is the end product of traffic, this is the place to which traffic brings you. Without enclosure, traffic becomes nonsense.”

(Cullen, 1971, p. 25)

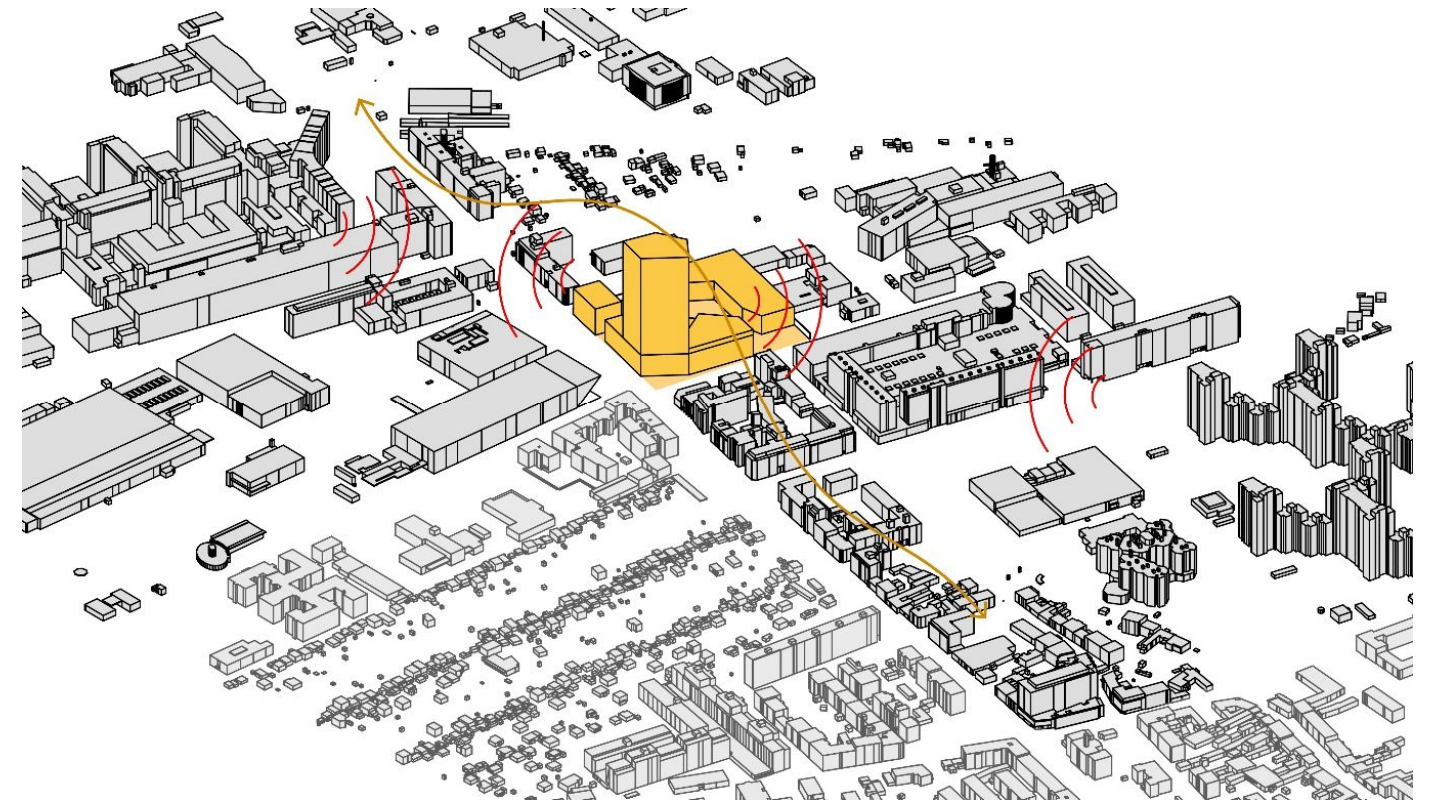
1 & 2 - Hardeggasse

3-Donaustadtstraße

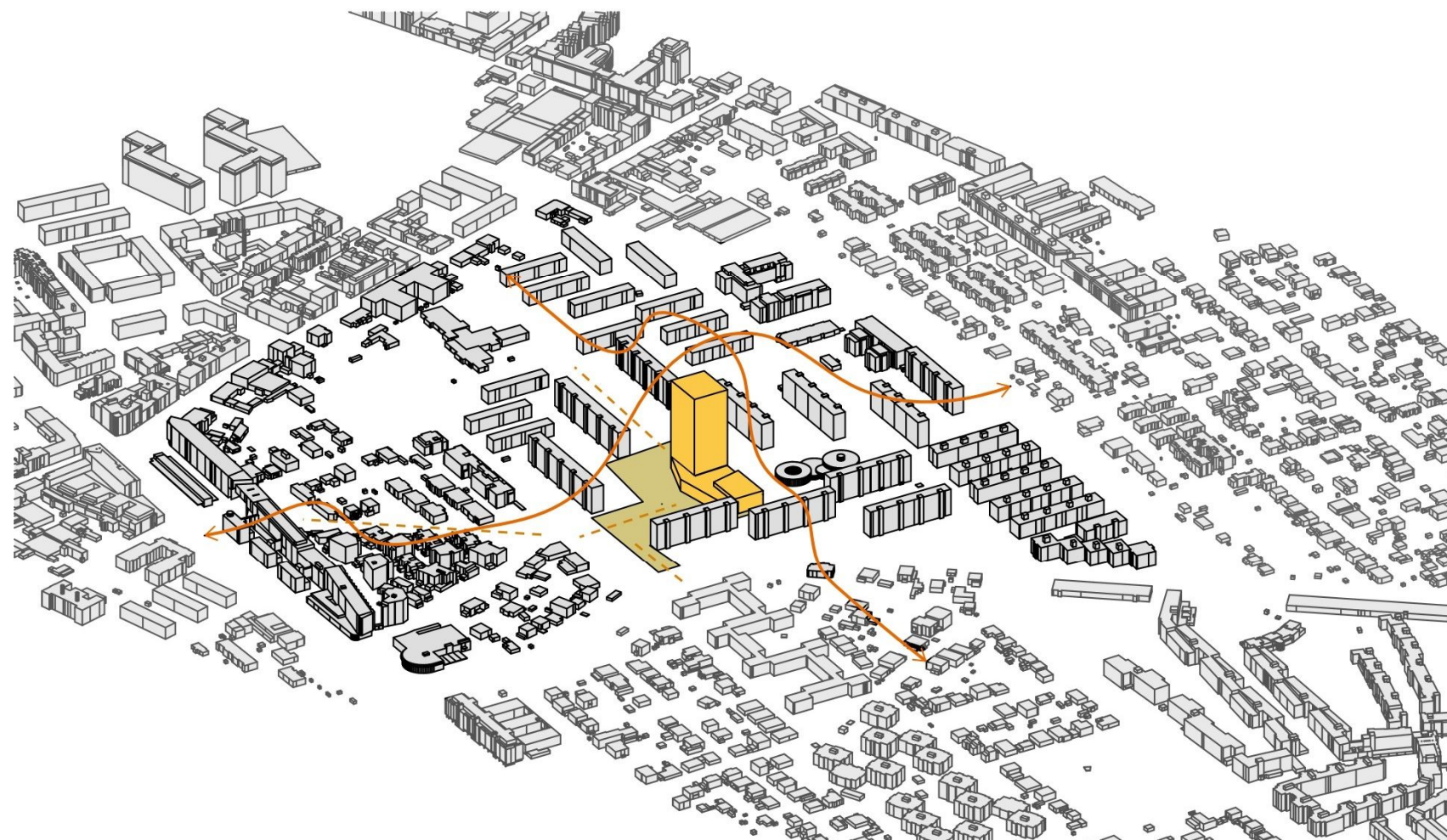
focal point

“Coupled with enclosure (the hollow object), as an artefact of possession, is the focal point, the vertical symbol of congregation. In the fertile streets and market places of town and village it is the focal point (be it column or cross) which crystallizes the situation, which confirms “this is the spot.””

(Cullen, 1971, p. 26)



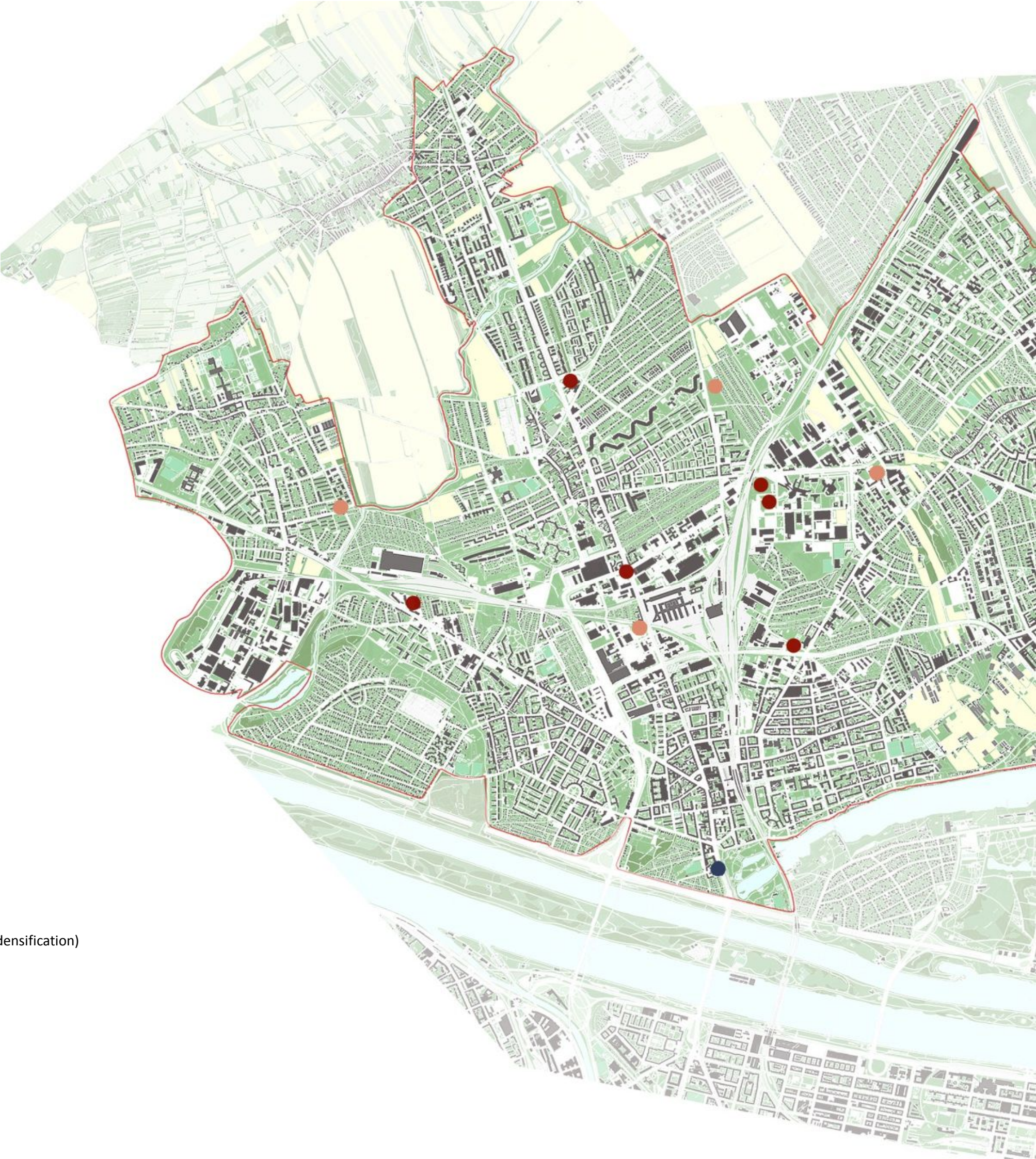
9-Brunner Strasse A



5-Rudolf-Köppl-Hof

2 LANDSCAPE CONNECTION

STATUS



LEGEND

- Potential sites for high-rises (current density)
- Potential sites for high-rises (in case of a future general densification)
- High-rises currently in use
- High-rises currently planned / in construction



FUNCTIONAL ALLOCATION

Status

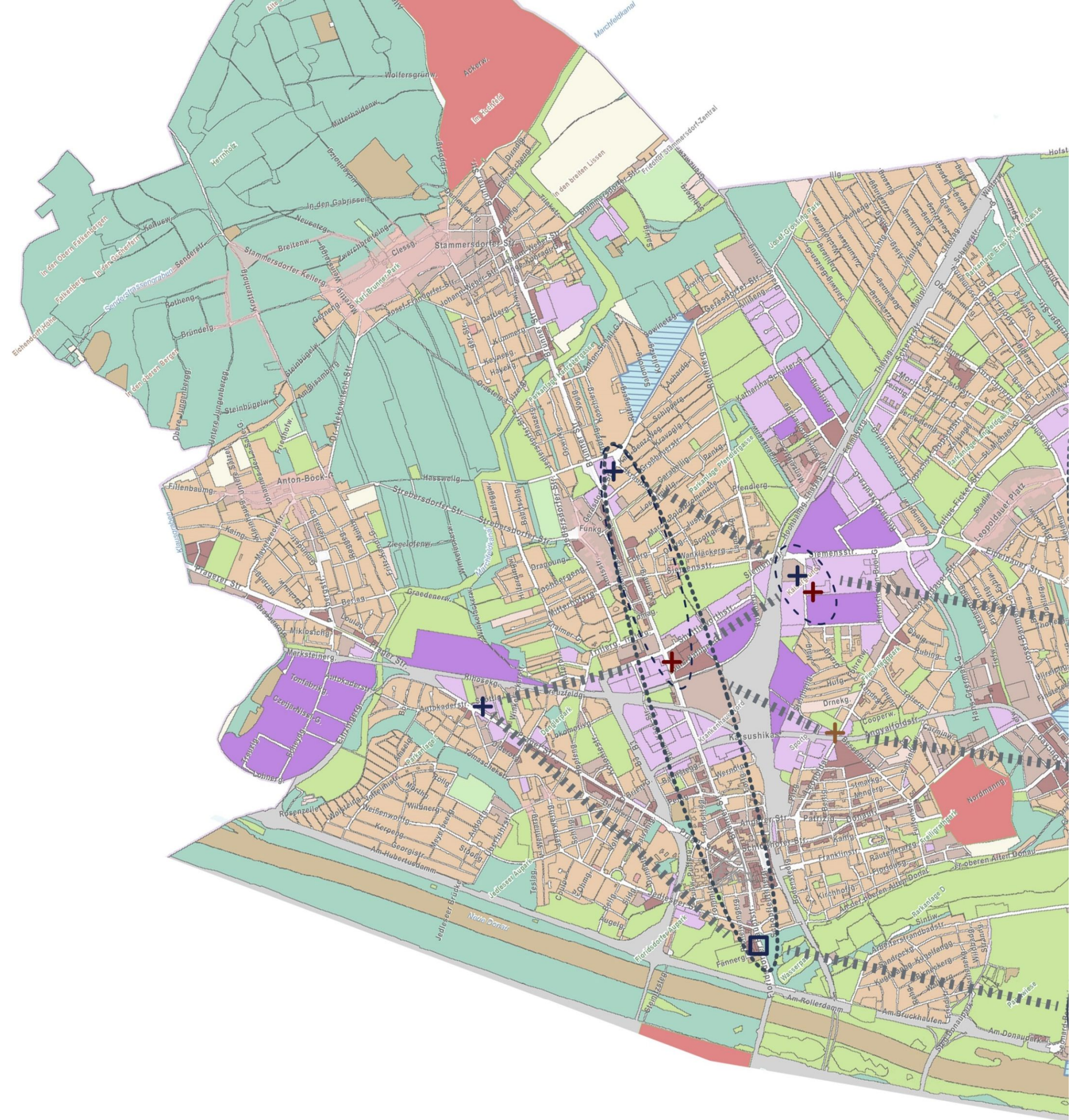
- + “Node-strategy” belonging high-rises
- △ Planned / in construction
- Built

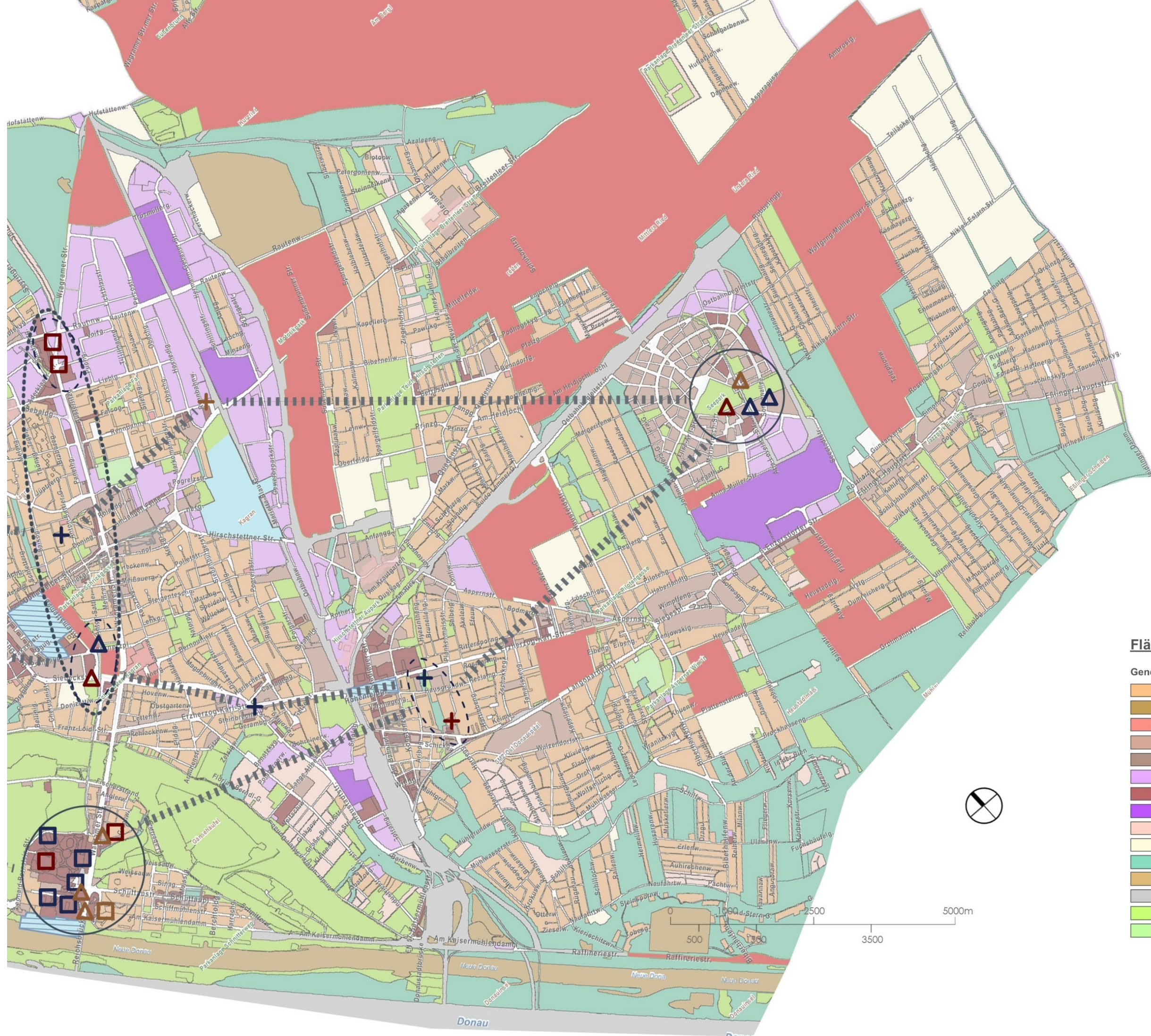
High-rises main function

- Office
- Residential
- Mixed Uses (Office/ Residential) or undefined

High-rises connexion

- Pairs
- Groupment / Cluster
- Along an axis of development
- Transversal connexion





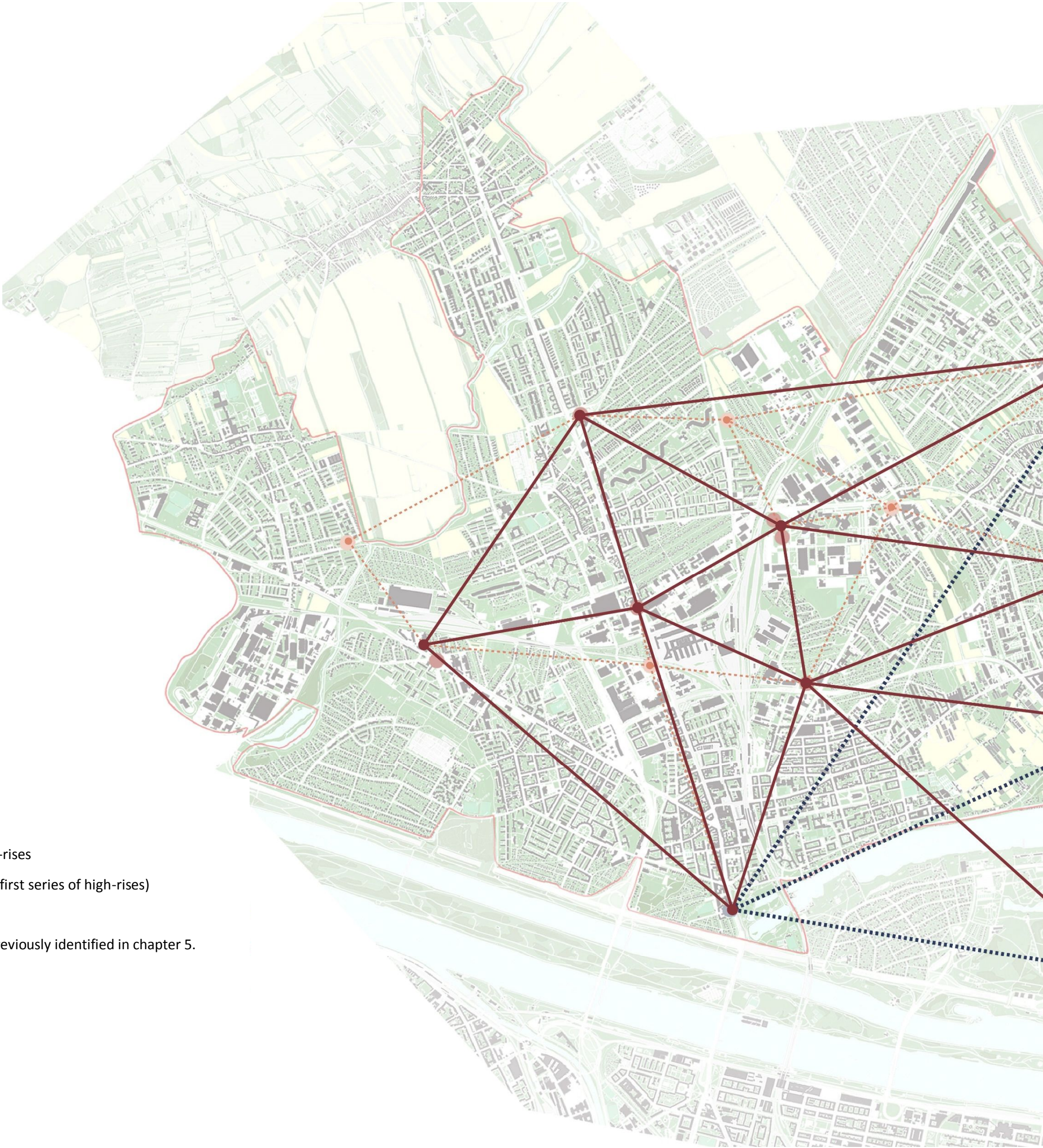
Flächenwidmung

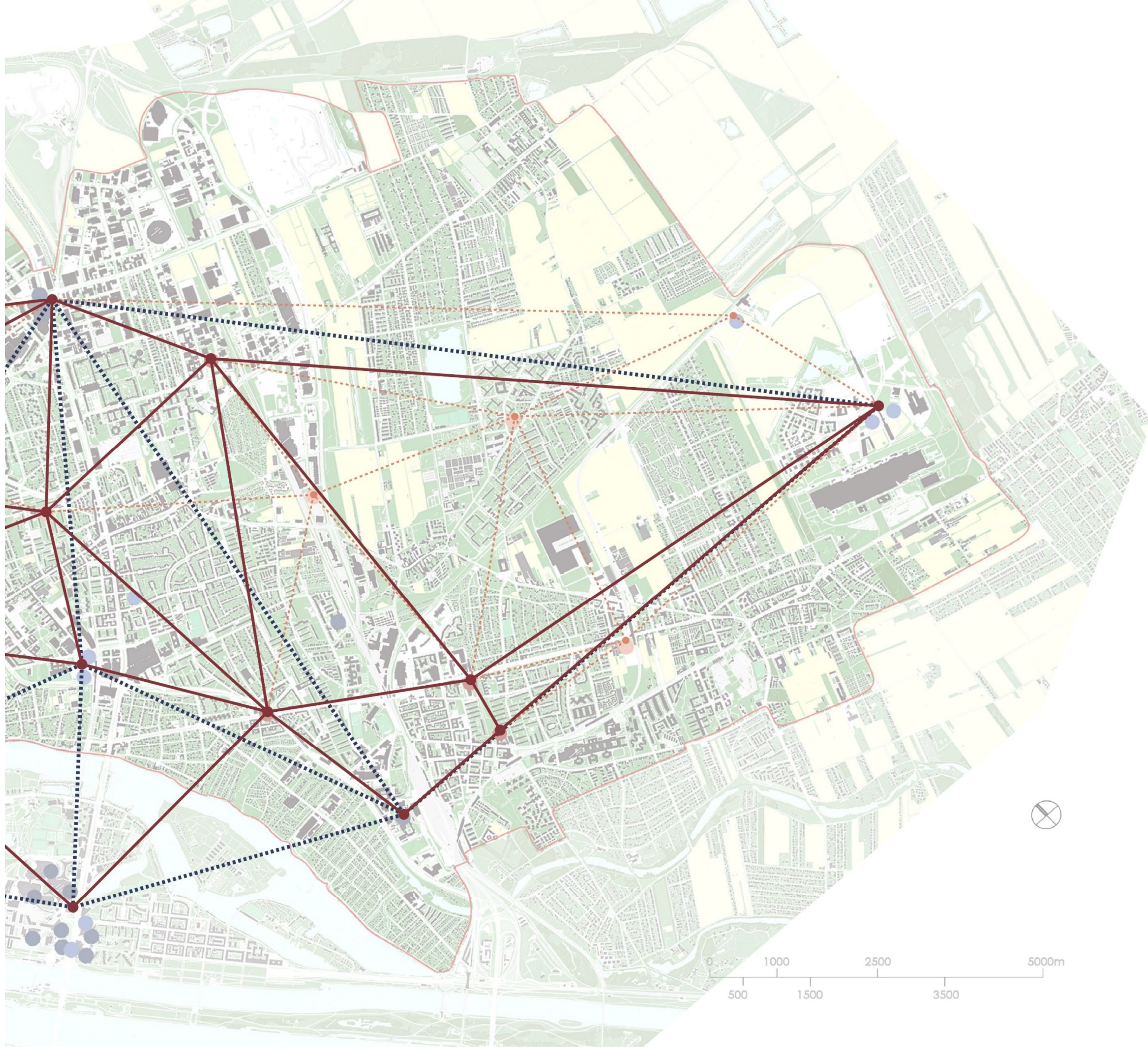
Generalisierte Flächenwidmung

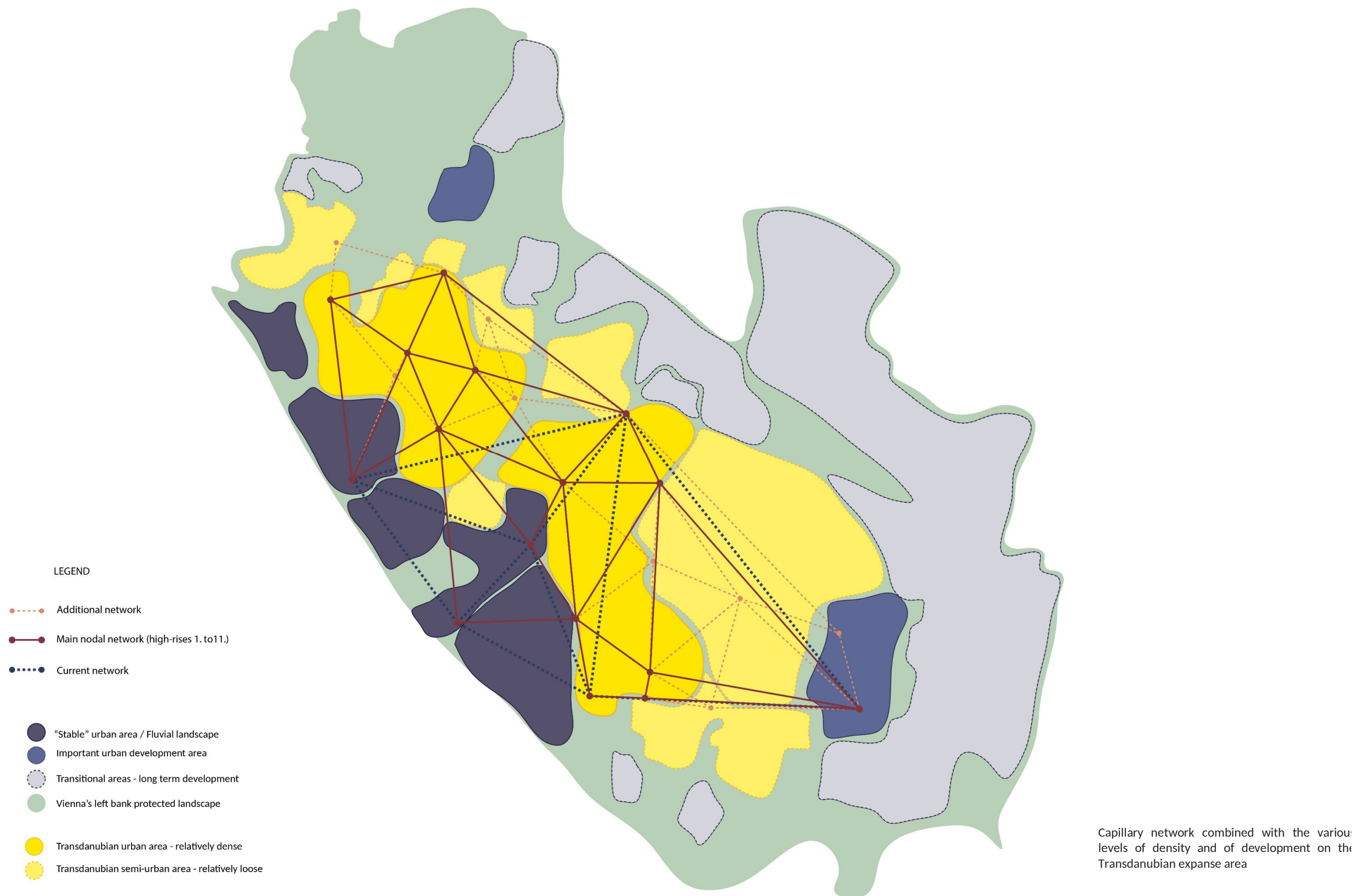
- Wohngebiet
- Wohngebiet-förderbarer Wohnbau
- Wohngebiet Geschäftsviertel
- Gemischtes Baugebiet
- Gem. Baugebiet-förderbarer Wohnbau
- Betriebsbaugebiet
- Baugebiet - Geschäftsviertel
- Industriegebiet
- Gartensiedlungsgebiet
- Ländliches Gebiet
- Schutzgebiet
- Sondergebiet
- Verkehrsband
- Erholungsgebiet
- Friedhof

NETWORK

- LEVELS OF CONNECTIVITY
- ● Additional network of locations for potential high-rises
(in case of a global densification and based on the first series of high-rises)
 - ——— ● 1st network of locations for potential high-rises, previously identified in chapter 5.
(suitable on actual landscape composition)
 - ● Current network of high-rises







CONCLUSION

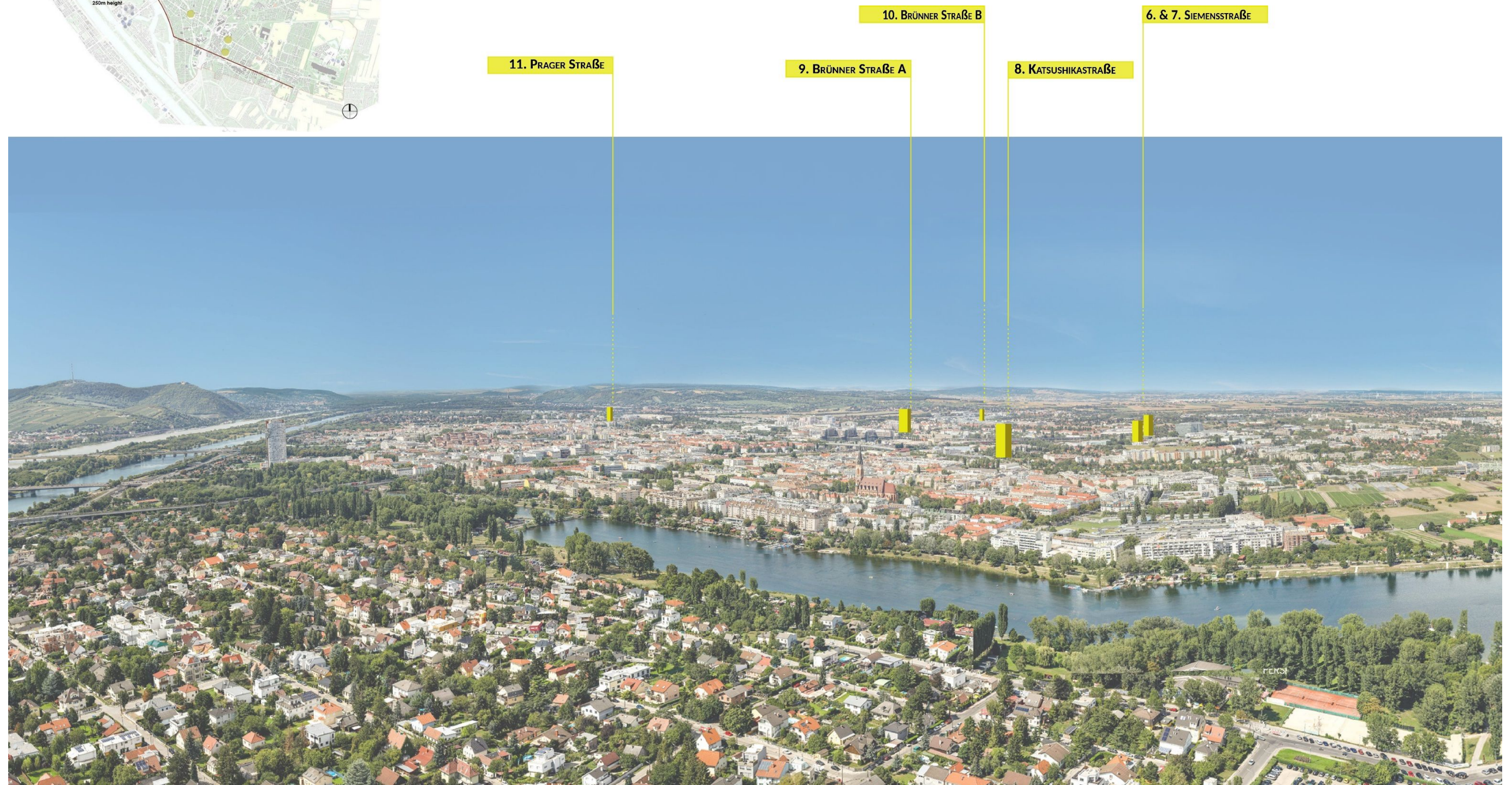
Out of the close morphological analysis of the Transdanubian expanse area emerged surprisingly more potential high-rise locations than it was expected. In fact the nodal strategy being strongly related to the one of a polycentric city, the added-value of high-rises within a district gains in relevance. Still, many are the aspects of the nodal strategy which could be more deeply explored, and enrich the presented application. For this reason, this project, rather than showing a network of concrete proposals, presents high-rises which stand as possibilities.

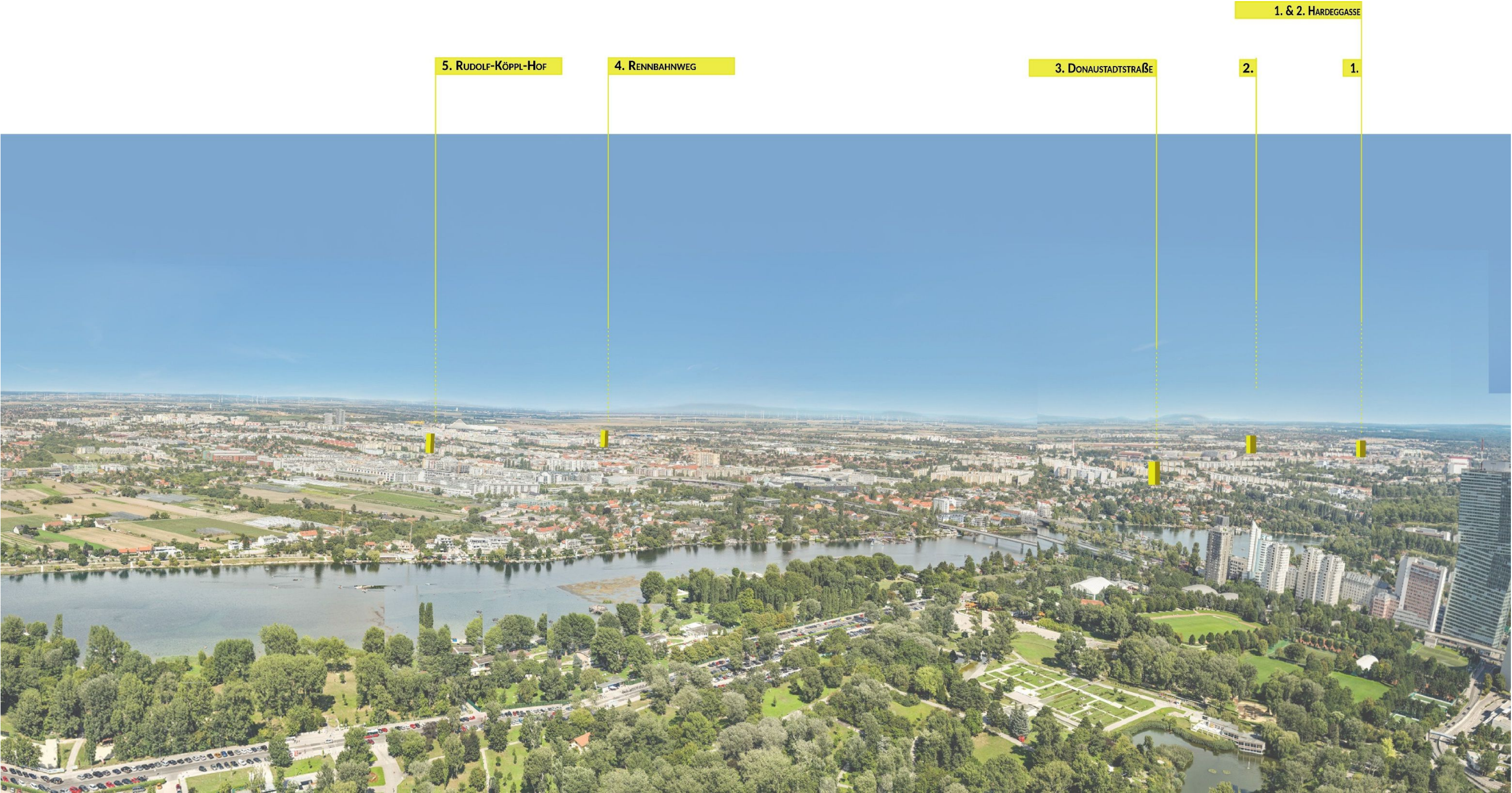
High-rises are still today controversial objects in the European cities. Hence, this work, based on the nodal-strategy, aimed to manipulate these big objects not as problems, but as solutions. When used as a physical tool of densification for a heterogeneous cityscape, these high points show many positive aspects. In truth, they may not only bring coherence into the perception of the Transdanubian area, but also dynamize and bound the various sub-districts comprising it.

As a conclusion, the following skyline and model show, from different points of view, the eleven high-rise potential sites within the rich and complex Transdanubian territory.

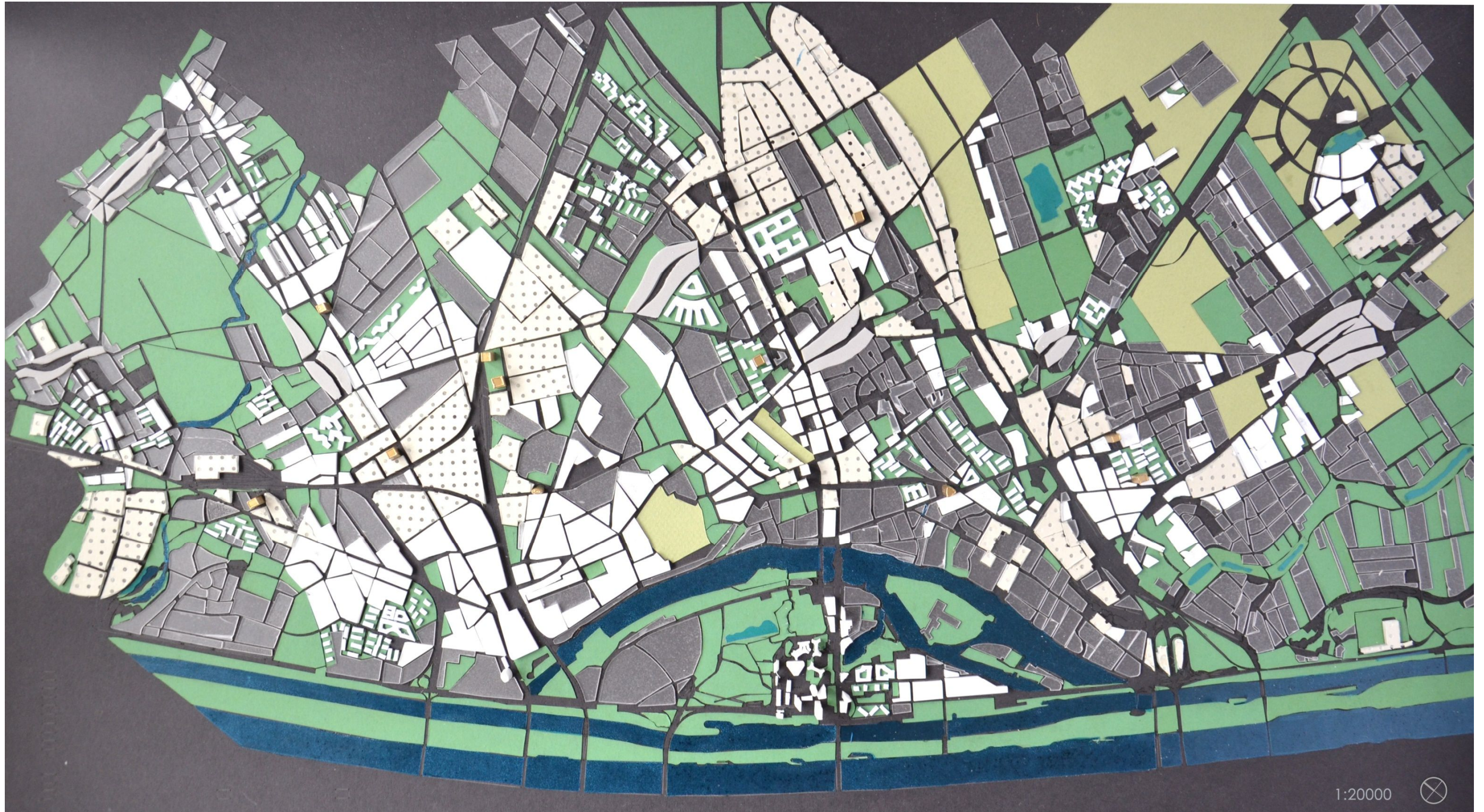


SKYLINE





MODEL



The Transdanubian territory is here represented by blocks, large open spaces and relevant landscape systems. They 11 suggested high-rise locations are represented in gold.

Model TRANSDANUBISCHE DICHTTE Top view on Vienna's left bank. (including the Donaucity) 66,5 x 36.8

- construction density (low, medium or high) for blocks including housing
- large scale buildings or areas NOT dedicated to housing
- large systems of collective housing
- green and open spaces
- large areas of ban on building (future development)



Landscape view from Stammersdorf on the Transdanubian expanse area



Close bird's eye view on the high-rises of Hardeggasse and Donaustadtstraße.



Bird's eye view on the Donaucity, Kagran, Stadlau and Aspern-Seestadt



Landscape view from the Danube, on Floridsdorf, Siemenstrasse, Kagran and the Donaucity

LITERATURE RESEARCH

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