



**TECHNISCHE  
UNIVERSITÄT  
WIEN**  
Vienna University of Technology

DIPLOMARBEIT

# PRODUCTIVE RHINE-CITY DUISBURG

A REURBANIZED INDUSTRIAL ZONE - A NEW RELATION TO THE RIVER

ausgeführt zum Zwecke der Erlangung des akademischen Grades eines Diplom-Ingenieurs  
unter der Leitung von

**Univ. Prof. Dipl.-Ing. Ute Schneider**

und der Mitbetreuung von

**Univ.Ass.in Dipl.-Ing Dorothee Huber**

E260-01

Institut für Städtebau, Landschaftsarchitektur und Entwerfen

eingereicht an der Technischen Universität Wien  
Fakultät für Architektur und Raumplanung

von

**Simon Hausmann**

01609918

Wien, am 27.05.2024

# TABLE OF CONTENT

<b>Preliminary Remarks</b>	<b>8</b>
<b>1 Ruhr-City vs. Rhine-City</b>	<b>10</b>
<b>2 IBA Emscher Park</b>	<b>15</b>
2.1 Origin and Background	16
2.2 Memorandum	17
2.3 Arbeiten im Park (Working In the Park)	19
2.4 Interim Conclusion	25
<b>3 IBA'27 Stadtregion Stuttgart</b>	<b>27</b>
3.1 Background and Field of Topics	28
3.2 General Theses	29
3.3 Voices and Discourse	31
3.4 IBA Project: Quartier Backnang West	33
3.5 Interim Conclusion	36
<b>4 Duisburg – Status Quo and Urban Developments</b>	<b>37</b>
4.1 Socioeconomic Survey	39
4.2 Planning Players	42
4.3 Municipal Integrated Spatial Concept	44
4.4 Municipal Economical Strategy	46
4.5 Current Urban Developments	46
4.6 Excursus: Hydrogen in Duisburg	49
4.7 Urban Analysis	51
4.7.1 Potatoplan Green Spaces	51
4.7.2 Potatoplan Industrial Areas	53
4.7.3 Potatoplan Residential Areas and Centralities	55
4.7.4 Potatoplan Urban and Green Blending Potentials	57
<b>5 Focus: Duisburg Hochfeld</b>	<b>60</b>
5.1 Historical Urban Development	61
5.2 Photo Documentation	76
5.3 Precedented Proposals	86

<b>6</b>	<b>Hochfeld Industrial Zone (Re)urbanized</b>	<b>87</b>
6.1	Concept Overview	87
6.2	Concept XXL: Public Transport	89
6.3	Concept XL: Programmatic Synergies	93
6.4	Concept L	95
6.4.1	Mobility Network	95
6.4.2	Urban Corridors	103
6.4.3	Intertwined Urban and Green Corridors	107
6.5	Integrated Concept Quarter	109
6.5.1	Spacial Concept	109
6.5.2	Quarter Accessibility	113
6.5.3	Green and Public Spaces	115
6.5.4	Nolliplan	117
6.5.5	Inventory Strategies	119
6.5.6	Signature Areas/ Framework	121
6.5.7	Programming	123
6.5.8	Principles of Site Development	125
6.5.9	Activated Ground Floor Zones	127
6.5.10	Morphology and Building Heights	129
6.5.11	Supply Infrastructure Network	131
6.5.12	General Overview	135
6.5.13	Urban Sections	137
6.5.14	Zoom - Ins	148
6.5.15	Roadmap 2030+	161
6.5.16	Wrap-Up	163
<b>7</b>	<b>Conclusion</b>	<b>166</b>
	Endnotes	167
	Bibliography	169
	Tabel of Figures	171

## Kurzfassung

Die Stadt Duisburg weist mit ihrer Lage am Rhein und der Ruhr ein besonderes Potenzial auf. Einerseits ist sie als Teil des Ruhrgebiets bis heute vom Strukturwandel betroffen, bedingt durch den Niedergang der Montanindustrie ab den 1950er Jahren, der bis heute soziale, wirtschaftliche und raumplanerische Problem- und Handlungsfelder offenlässt. Andererseits weisen gerade innerstädtische Industrieflächen, insbesondere im Hinblick auf die zunehmende Flächenknappheit in den benachbarten Rheinmetropolen, ein enormes Entwicklungspotenzial auf.

Duisburg, immer noch eine "Stahl-Stadt" mit dem größten Binnenhafen Europas und der Lage an internationalen Bahn- und Fernstraßenkorridoren, ist infrastrukturell stark aufgestellt. Sie ist eine "produktive Stadt" im besten Sinne, die enorme städtebauliche Entwicklungspotenziale birgt und deren negatives Image es aufzubrechen gilt. Diese Arbeit untersucht dieses transformative Potenzial konkret anhand des Stadtteils Duisburg-Hochfeld, dessen Industrieareal seit Beginn der Industrialisierung bereits massiven Transformationsprozessen unterworfen war und dies weiterhin ist. Dabei wird zunächst die Frage der Verortung und der strategischen Ausrichtung der Stadt in den Blick genommen, die ihre Wurzeln einerseits als Handelsstadt am Rhein hat, andererseits durch ihre Industriegeschichte traditionell mit dem Ruhrgebiet verbunden ist.

Im Rahmen eines Exkurses wird anhand der Analyse der Internationalen Bauausstellungen Emscher Park und Stadtregion Stuttgart von verschiedenen Herangehensweisen urbaner Transformation und konkreter Projektbeispiele gelernt und der aktuelle Diskurs hinsichtlich des Leitbilds einer produktiven Stadt thematisiert.

Eine räumlich-strukturelle Betrachtung der Stadt Duisburg mündet schließlich in einem stadträumlichen Leitbild, auf dem aufbauend, zusammen mit Erkenntnissen der historischen Stadtentwicklung, ein Entwurf für eine Reurbanisierung des Industrieareals Duisburg Hochfeld auf mehreren Maßstäben entwickelt wird, der eine räumliche wie programmatische Einbettung des Industrieareals in den städtischen Kontext zum Ziel hat. Das Konzept setzt auf Methoden der Vermischung, Überlagerung und Verdichtung, anstelle "gelernter" Verdrängungsmodelle. Das Zukunftsbild für Hochfeld ist ein Quartier, das Energieproduktion, Industrie, Gewerbe, Freizeit und Wohnen zusammendenkt und damit neue, eigene urbane Qualitäten für die Rheinstadt Duisburg schafft – und diese damit als attraktive, leistbare Alternative zu Städten wie Köln und Düsseldorf positioniert.

## Abstract

The city of Duisburg, with its location on the Rhine and the Ruhr, has special potential. On the one hand, as part of the Ruhr area, it is still affected by structural change, resulting from the decline of the coal and steel industry since the 1950s, which continues to leave social, economic, and urban planning challenges. On the other hand, inner-city industrial areas, particularly considering the increasing scarcity of land in neighboring metropolises at the Rhine, have enormous development potential.

Duisburg, still known as a “steel city” with the largest inland port in Europe and its position along international rail and road corridors, is strongly positioned in terms of infrastructure. It is a “productive city” in the best sense, offering significant urban development opportunities and seeking to overcome its negative image. This study examines this transformative potential specifically through the Duisburg-Hochfeld district, whose industrial area has been subject to massive transformation processes since the beginning of industrialization. The focus is initially on the question of the city’s location and strategic orientation, rooted in its history as a trading city on the Rhine and its traditional connection to the Ruhr area due to its industrial history. As part of an excursion, the analysis of the International Building Exhibitions Emischer Park and Stadregion Stuttgart provides insights into various approaches to urban transformation and concrete project examples, as well as the current discourse on the concept of a productive city.

A spatial-structural examination of the city of Duisburg ultimately leads to an urban spatial vision, on which, together with insights from historical urban development, a design for the re-urbanization of the Duisburg Hochfeld industrial area is developed on multiple scales. The aim is to spatially and programmatically embed the industrial area in the urban context. The concept relies on methods of mixing, overlaying, and densifying instead of learned displacement models. The future vision for Hochfeld is a neighborhood that integrates energy production, industry, commerce, leisure, and housing, creating new, distinctive urban qualities for the city of Duisburg - positioning it as an attractive, affordable alternative to cities like Cologne and Düsseldorf.



## Preliminary Remarks

The initial interest in Duisburg, the Ruhr area, and working on it arose from visits to the Zeche Zollverein Coal Mine Industrial Complex in Essen, which certainly stands as a beacon in terms of urban transformation, remembrance culture and repurposing strategy, aside from common planning practices. A fascination for industrial (culture) plays a role in this, but it quickly led to a fundamental question: What will value creation look like in cities in the future? How and from what will people live, and in what environment?

Many regions in Europe will face transformational pressures and could indeed learn from mining areas that have already had to deal with structural change and still do. It seems that in 2024, “crisis” must be considered a permanent state—climate crisis, biodiversity crisis, financial crisis, security crisis—the global instability is imminent, and the economic system of capitalism appears to be reaching its limits.

Specifically in Germany, the fear of deindustrialization is spreading due to the Russian invasion of Ukraine. This reveals the weaknesses of an economy heavily focused on exports—while raw materials are imported from abroad at high social and ecological costs, the processed products are sold abroad at high profits. A resilient economic structure should be conceived in a circular, more fragmented, and regional manner. Global players should no longer be the cornerstone of German prosperity. Duisburg has already experienced this development—large mining and industrial enterprises collapsed, and the city’s prosperity dwindled within a few years. The transformation of the remaining steel industry in Duisburg remains a significant opportunity but also a major uncertainty in the employment structure.<sup>1</sup>

In this tension field, an integrated urban planning approach for Duisburg Hochschule will be attempted in the following, which should be considered speculative, incorporating and thinking further various aspects. The design does not claim to be complete but is rather intended as an optimistic inspiration for what an industry-focused city could possibly look like in the future.

**Duisburg, the (Industrial)  
Pearl by the Rhine?**

Die approbierte gedruckte Originalversion dieser Diplomarbeit ist an der TU Wien Bibliothek verfügbar  
The approved original version of this thesis is available in print at TU Wien Bibliothek.

**TU** **Bibliothek**  
Your knowledge hub  
WIEN



Fig. 1: Duisburg-Mitte Rhine Waterfront



# 1 Ruhr-City vs. Rhine-City

## A Question of Self-Placement

To understand Duisburg in a regional context, a simplified comparison between the “Rhein” and the “Ruhr” is initially made, which is highly relevant in discussions about the city’s positioning. At a broader scale, the “blue banana” (Fig. 2) serves as a useful economic-geographical model. This refers to the agglomeration belt stretching from Great Britain to Northern Italy, where international metropolises such as London, Brussels, Amsterdam, Düsseldorf, Zurich, and Turin are located, and where the economy has developed particularly dynamically, reinforced by European block formation in the past century. The belt is characterized by a high density of infrastructure and is connected by the central axis - the Rhine - from Rotterdam to Basel. Duisburg plays an important role as a port location and logistics hub within this framework. The economic corridor “banana” can be overlaid by the European “rust triangle” from Lower Saxony over the French Atlantic coast town to Luxembourg, where the most important coal mining areas in continental Europe are (or used to be) located, along with the most important European steel production. Duisburg is situated at the intersection of these corridors - a fact that becomes apparent when looking at the regional context (Fig. 3): the city belongs to both the Lower Rhine region and the Ruhr area. Here, the contrast between different developments becomes clear. Cologne and Düsseldorf have benefited significantly more from their location on the Rhine and have been able to diversify their economies, while Duisburg faces the same structural challenges as the other cities along the Ruhr and Emscher rivers. These cities grew into a large sprawling conurbation with rapid industrialization and are still undergoing a lengthy process of economic transformation (see Chapter 4.1) due to the decline of coal mining and the associated loss of many industries. As the Potatoplan of the Ruhr area (Fig. 5) shows, Duisburg is particularly interconnec-

ted in terms of infrastructure and still politically intertwined with the region through the Rhein-Ruhr Association. Cities like Essen and Dortmund are already emerging as independent entities, developing further through new business settlements, university institutions, and R&D activities, and shaping their identity independently. Duisburg could move in the same direction. Strategic developer Thomas Sevcik has extensively studied the Ruhr area and Duisburg, concluding that the Ruhr’s history is over<sup>2</sup> - the era of coal mining was only a short sequence, and the cities have their own unique history to build upon.

This approach is sensible not only because of the continued crisis associated with the term “Ruhr” but also because a regionally coordinated policy and urban development are still largely wishful thinking. Speaking of a Ruhr metropolis, where Duisburg represents a district, was certainly a desirable goal during the Wirtschaftswunder era, and even the idea of the Emscher Landscape Park (Chapter 2), which was intended to integrate the Ruhr cities, has proven to be more of a utopia. The concept is also flawed for the image of a metropolis because the majority of the area consists of sprawling “in-between cities” rather than urban spaces. Additionally, as Sevcik notes, the remaining sub-centers have not experienced individualization and complementary polycentricity is in fact lacking.<sup>3</sup>

The question of whether Duisburg is a “Rhine city” or a “Ruhr city” can be answered by acknowledging the Rhine as a source of identity and recognizing that increased networking with Düsseldorf and possibly cities like Eindhoven, Rotterdam and Nijmegen may be more promising than enhanced coordination with Oberhausen and Mühlheim. However, this does not preclude preserving the industrial heritage that Duisburg shares with the Ruhr area and continuing to develop it as part of the city’s DNA.

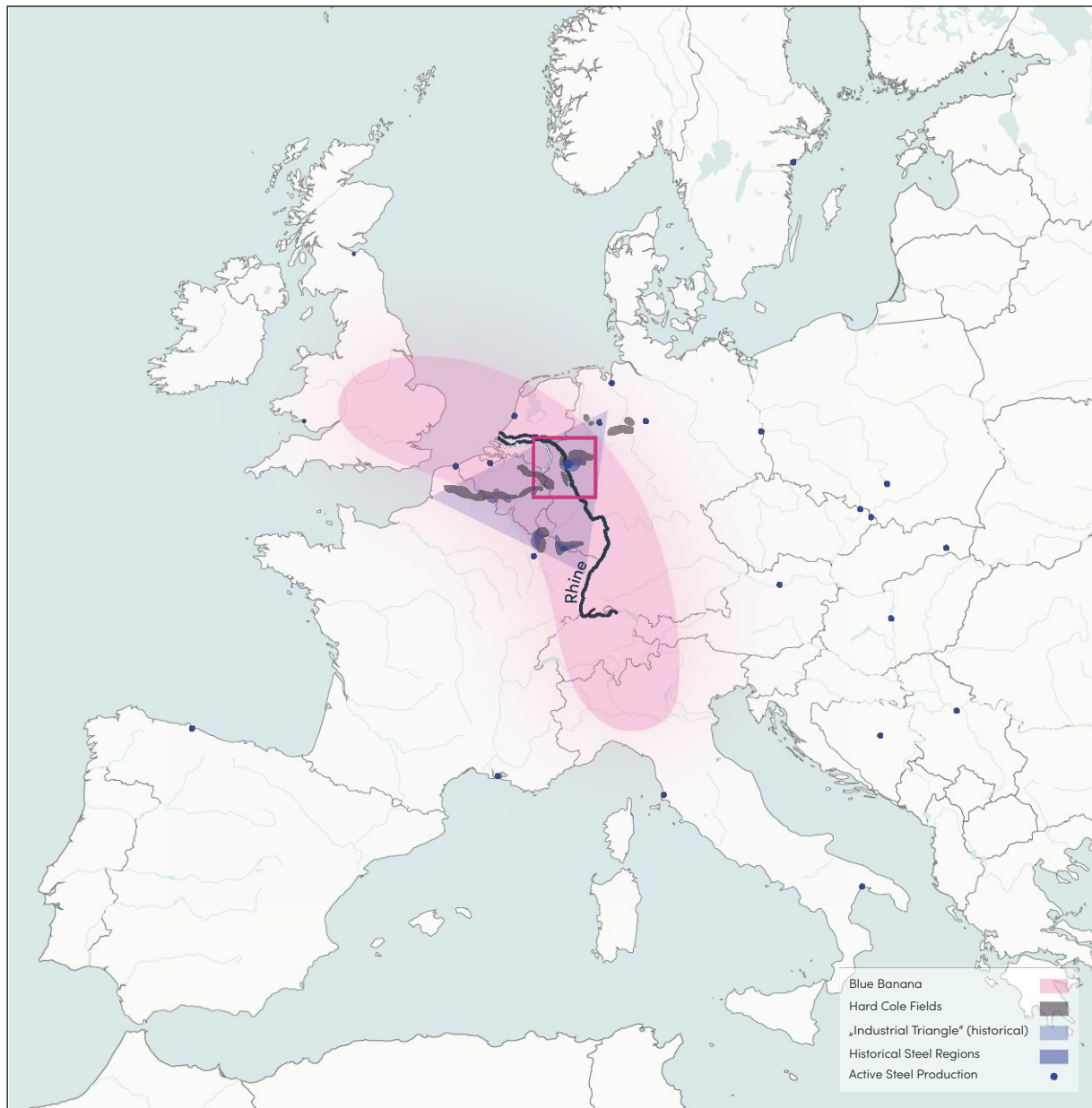


Fig. 2: Blue Banana and Industry Triangle

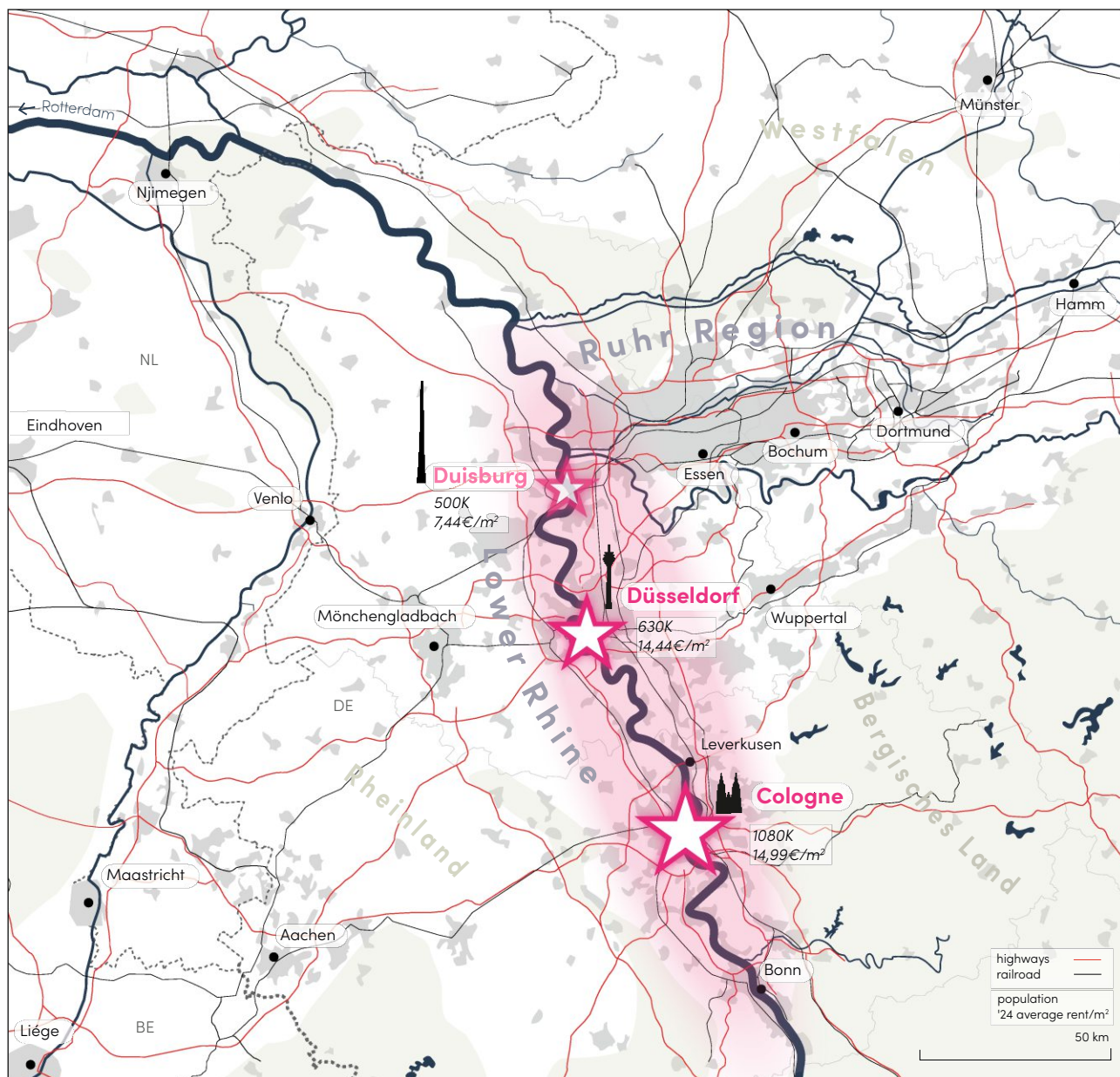


Fig. 3: City of Duisburg in a Regional Context

## .. or Duisburg as District Of "Ruhr City?"



Fig. 4: Orthofoto Ruhr Area (Regional Verband Ruhr)



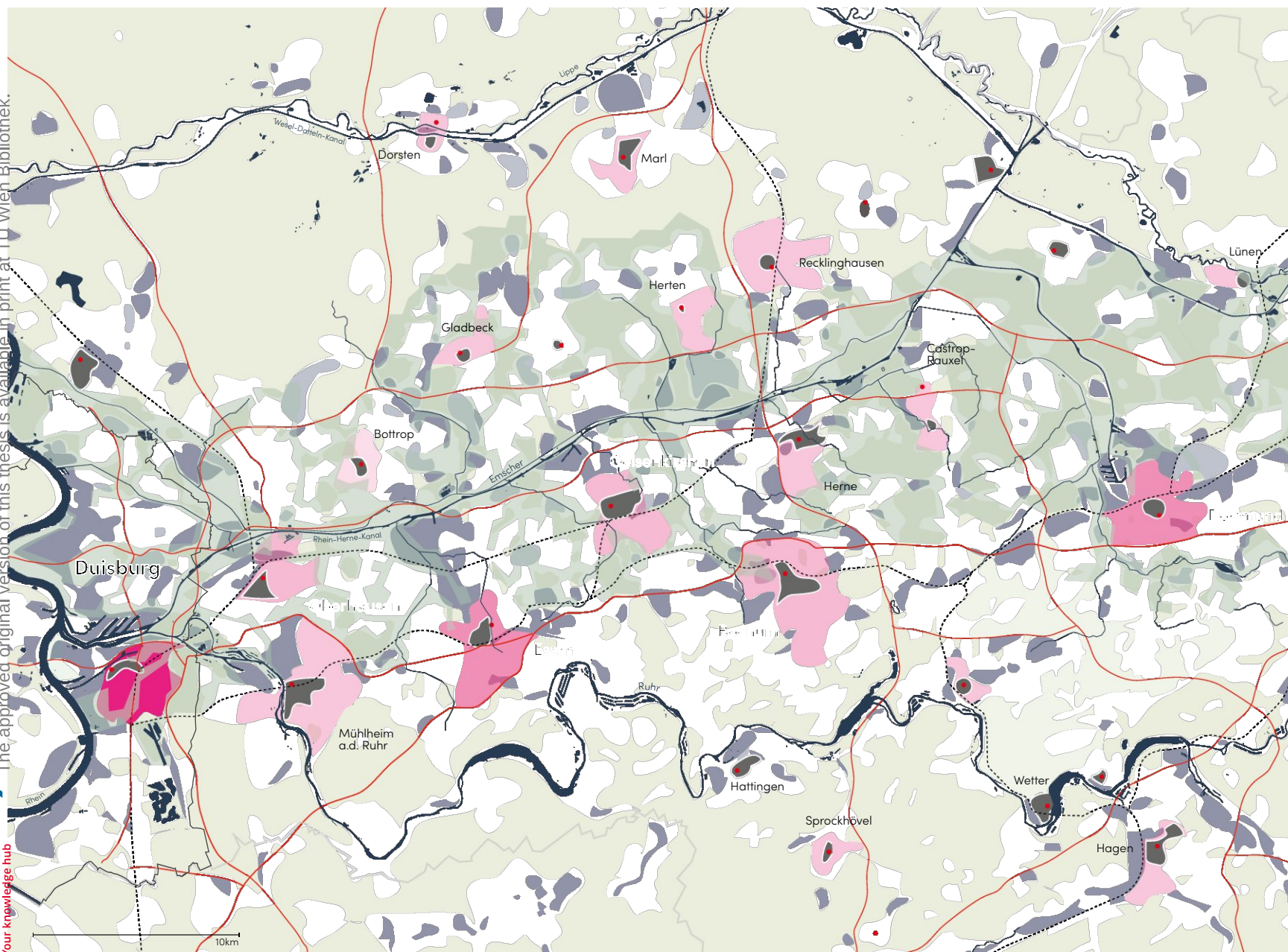


Fig. 5: Potatoplan Ruhr Area, Emscher Landscape Park

## 2 IBA Emscher Park Approaches to Industrial Wasteland



Fig. 6: Landschaftspark Duisburg-Nord

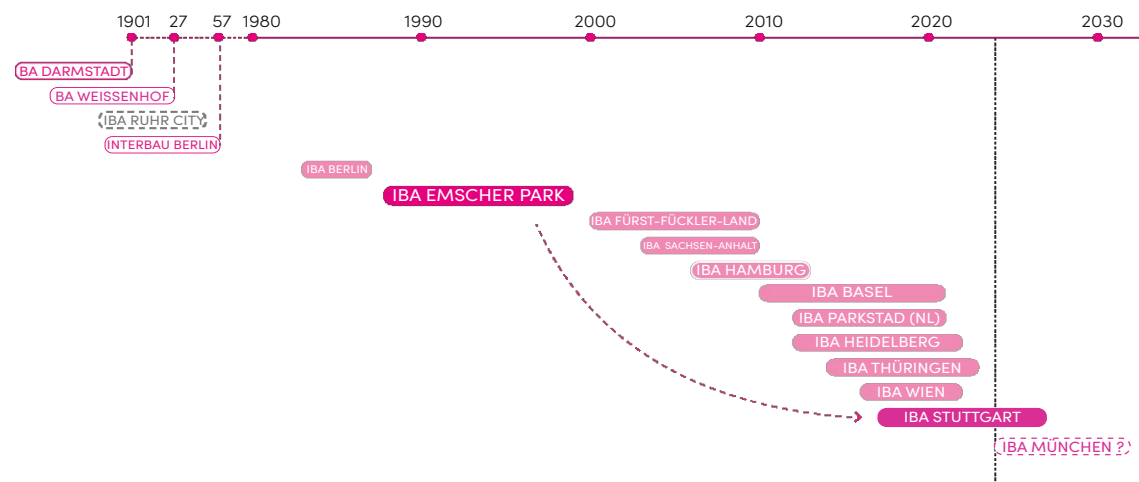


Fig. 7: Timeline of International Building Exhibitions

## 2.1 Origin and Background

As a first reference of urban transformation approaches, IBA Emscherpark is briefly examined in terms of topics and projects.

After over 100 years, during which the area around the Ruhr, Emscher, and Lippe rivers, previously a forest landscape, was cultivated, consumed, fragmented, and destroyed during the industrialization era. The Emscher River was transformed into the sewer of the Ruhr region in the early 20th century, becoming the dirtiest river in Germany at the time. In the late 1980s, following the closure of numerous collieries and smelting plants, the realization and the need to fundamentally repair and renew the region, to drive and accompany structural change, began to grow.

The decision to host an International Building Exhibition (IBA) in the Ruhr region was preceded by several developments. Notably, there were statewide structural funding programs such as the „Entwicklungsprogramm Ruhr“ (1968) and the „Nordrhein-Westphalen Programm“ (1975), which laid the groundwork for binding planning guidelines and the coordination and combination of various funding sources.

The direct model for the IBA Emscher Park, however, can be found in the IBA Berlin, which ended in 1987 and directly preceded it. The theme of „gentle urban renewal“ or „urban repair“ is notably present

in both the IBA Emscher Park and the IBA Berlin. Organizational inspiration was also drawn from Berlin, where the establishment of a private legal entity ensured the necessary distance from government offices.

More or less concurrently with the initial considerations, a working group of the Association of German Architects (BDA) initiated the concept of „IBA Ruhrgebiet,“ which was spatially broader but also inspired by the IBA Berlin. Ultimately, some ideas from the BDA were incorporated into the project list of the IBA.<sup>4</sup>

As an architect, driving force, and organizer of the IBA Emscher Park, Karl Ganser, the then head of the urban planning department in the North Rhine-Westphalia Ministry of Urban Development, must be mentioned -he gave the whole process the essential push. Spatially, the focus was on the area around the Emscher River, with the north-south and west-east highways serving as rough boundaries. The overarching goal was to utilize the building exhibition’s international reach to provide impulses for landscape and urban renewal, as well as to create the necessary new organizational and cooperative structures in the polycentric Ruhr region for this transformation.<sup>5</sup>

**»IBA is, what usually doesn't work out“<sup>6</sup>**

## 2.2 Memorandum

After the IBA society was founded in December 1988, the “Memorandum on Content and Organization” was issued shortly thereafter intended to serve as a guide for the ten-year building exhibition and represented the standard against which the later results would be measured, and also served as a public call to submit ideas and projects. In terms of content, the focus was set on the “Workshop for the Future of Old Industrial Areas,” clearly emphasizing the dismantling of industrialization damages and the possible subsequent developments, while also suggesting the transferability of practices to other regions with similar issues. The memorandum outlines the principles of the planning process, the form of idea generation, and the planning organization, where “Workshop” should already indicate the fundamental claims to the process: participation, discussion, and competition.<sup>7</sup> The following are the 7 guiding themes of the memorandum:

### 1. Emscher Landscape Park.

After decades of devastation, contamination, and urbanization in the region, the landscape in the area of the Emscher and the Rhein-Herne Canal between Duisburg in the east and Bergkamen in the west is intended to be rebuilt, connecting over an area of 320 km<sup>2</sup> to form a cohesive park landscape. The park is organized into 7 regional green corridors in a north-south orientation. The open space network includes protected natural landscapes, areas for recreation and culture, as well as a system of wetlands and artificially created water areas. The entire terrain is intended to be connected by a system of hiking and biking trails.<sup>8</sup>

### 2. Ecological Regeneration of Emscher River System.

The Emscher system, after being canalized and straightened in the early 19th century, was to be reclaimed and regenerated. This was to be achieved through three points: The decentralized treatment of wastewater through several new treatment plants, the separation of wastewater and clean water through new channels, as well as decentralized rainwater management, going along with the disconnection from the sewage system.<sup>9</sup>

### 3. Working in the Park

The ambition of these flagship projects were to improve the employment and economic structure, driving the transformation and renewal of the industrial region. High-quality and attractive science, commercial, and service locations for both private and public investors were to be created, also as part of urban rene-



Fig. 8: Cover of IBA Emscher Park „Memorandum zu Inhalt und Organisation“

wal. Key requirements include a significant proportion of green spaces, up to 50%, and high quality standards in terms of ecology, architecture and landscaping. Quality shall be ensured through competitions. The locations should ideally be close to the city center and ensure an intensive mix of industry, commerce, residences, recreation, art, and culture. Emphasis is placed on specific uses to prevent redundancies.<sup>10</sup>

### 4. Urban and Social Initiatives for District Development

The initially stated theme of „New offerings for social, cultural, and sports activities“ was later integrated into the leading theme of „urban and social impulses.“ On one hand, two neighborhoods with specific renewal needs, Duisburg Marxloh and Gelsenkirchen Bismarck, were brought into focus. Measures included employment and qualification programs, the construction of educational and cultural facilities, as well as projects with cultural, social, and ecological orientations. Additionally, part of the program was the renewal of railway stations in the Ruhr region, serving as anchor points in the urban fabric.<sup>11</sup>



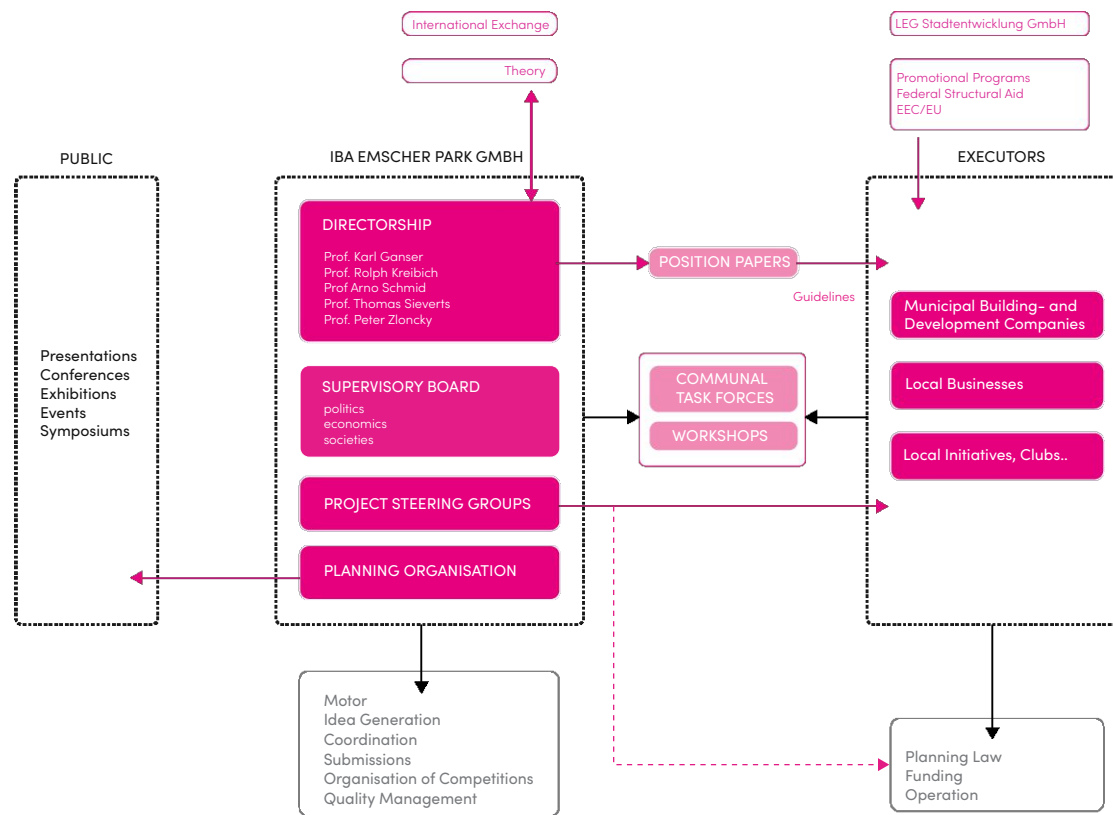


Fig. 9: IBA Organisation Structure

## 5. New Forms and Renewal of Housing Estates

Housing construction was considered as a central role in the urban development of the Emscher region. The ambition was to reactivate industrial brownfields and provide urban stimuli for mixed-use residential and commercial parks close to the city. The renewal of existing structures, especially factory settlements, based on social and ecological considerations, was also part of the agenda. The aim was to integrate the „quality of utility-oriented and ecological settlement construction coupled with urban and social quality“ into everyday planning practices.<sup>12</sup>

## 6. Industrial Culture and Tourism

The industrial heritage of the region, especially the industrial buildings of the 20th century, shall be brought into the discourse of monument preservation, highlighting the significance of these facilities for their spatial, urban, and identity-forming impact. The goal should be to demonstrate diverse forms of preservation, explore new types of usage, and avoid demolition whenever possible. Technical and financial feasibility of implementation should be tested, with a particular emphasis on initiating private-public collaborative projects. Tourism, as an important factor in this context, was added during the progress of the IBA.<sup>13</sup>

»And now, thanks to the IBA, a new, genuine workplace idyll? Inside, carpentring, shipping, invention, administration, (...) research, calculation and writing take place? And then you lift your head and look outside, gaze upon all green that's flourishing, and flowers blooming...<sup>145</sup>

## 2.3 Arbeiten im Park (Working In the Park)

As described in the leading themes of the memorandum, „Working in the Park“ projects aimed to support structural transformation and improvement of the employment and economical structure of the region. This approach was also a counter-strategy to prevent the sprawl of industrial settlements on the city outskirts, lacking urban and architectural qualities.

Those industrial areas were intended to incorporate high ecological value, „intelligent infrastructure,“ social facilities, while also demonstrate convincing urban and architectural quality.

„Arbeiten im Park“ are clearly distinguishable through a special emphasis on landscape architecture and quality of greenspaces, as to be noticed in the following examples.

In the end, all those projects should be embedded in the overarching open space network „Emscher Park“. Each location was assigned a profile: services primarily in Duisburg Innenhafen (see Chapter 4), business start-ups in Zeche Arenberg-Fortsetzung in Bottrop, craftsmen in Zollverein 3/7/10 in Essen, business operators on the Erin Castrop-Rauxel colliery site, and research and technology in the Gelsenkirchen Science Park.<sup>14</sup>

Below, exemplary locations and their transformations will be briefly outlined and evaluated.

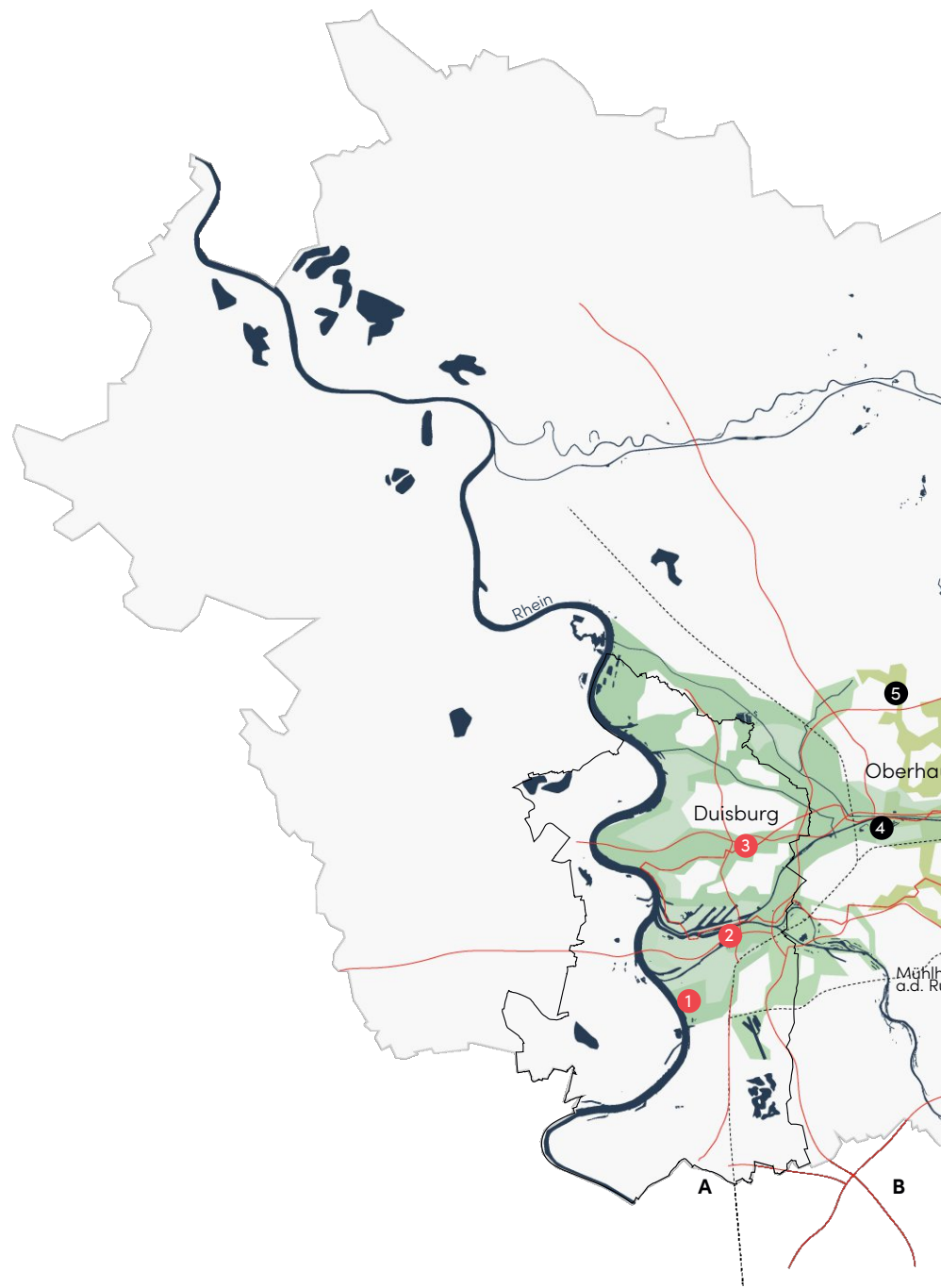
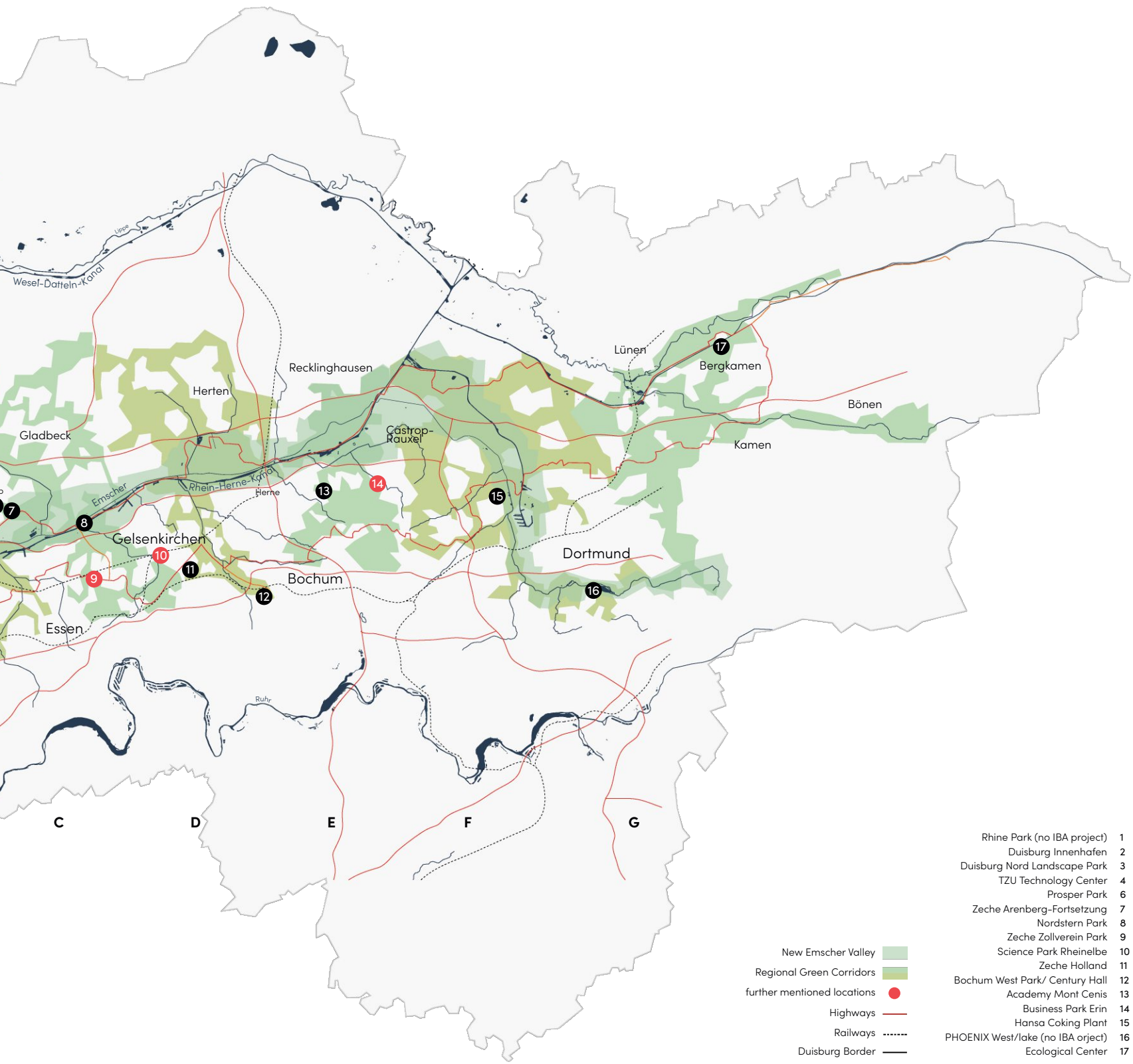


Fig. 10: Emscher Landscape Park (state of extension 2018)

Die approbierte getBrenkte Originalversion dieser Diplomarbeit ist an der TU Wien Bibliothek verfügbar.  
 The approved original version of this thesis is available in print at TU Wien Bibliothek.



- Rhine Park (no IBA project) 1
- Duisburg Innenhafen 2
- Duisburg Nord Landscape Park 3
- TZU Technology Center 4
- Prosper Park 6
- Zeche Arenberg-Fortsetzung 7
- Nordstern Park 8
- Zeche Zollverein Park 9
- Science Park Rheinelbe 10
- Zeche Holland 11
- Bochum West Park/ Century Hall 12
- Academy Mont Cenis 13
- Business Park Erin 14
- Hansa Coking Plant 15
- PHOENIX West/lake (no IBA orject) 16
- Ecological Center 17

- New Emscher Valley ■
- Regional Green Corridors ■
- further mentioned locations ●
- Highways —
- Railways - - - -
- Duisburg Border —

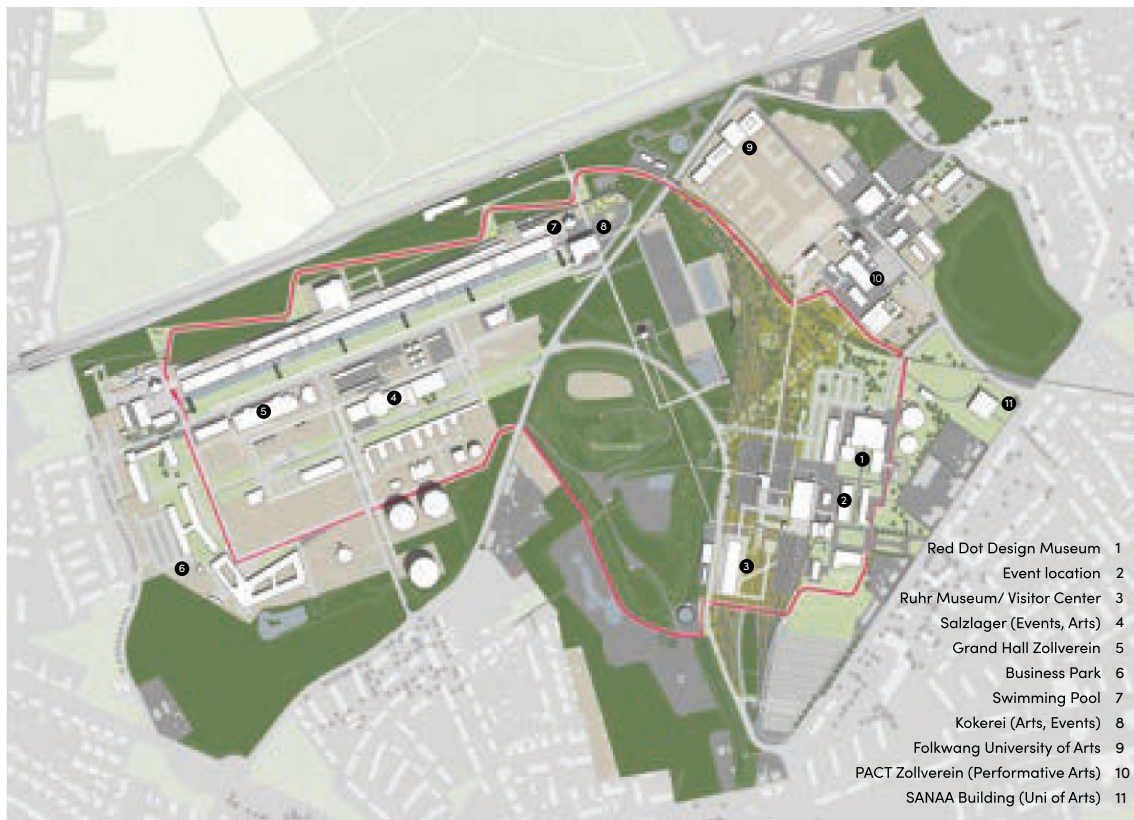


Fig. 11: Masterplan Zeche Zollverein 2005



Fig. 12: Schacht XII



Fig. 13: Kokerei

## Zeche Zollverein Essen

In 1847, industrial pioneer Franz Haniel initiated coal mining in Essen Katernberg, leading to the excavation of many shafts for the „Zollverein“ colliery in the area. The final one was „Shaft XII,“ designed by architects Fritz Schupp and Martin Kremmer and opened in 1932. It was the world’s most modern colliery at the time, following the principles of rationalization and Fordism, and adhering to the aesthetics of industrial modernity. The facility’s logic is based on two axes: a horizontal one for energy generation and a vertical one along production and processing processes. The steel truss structure was noggled with bricks, along with the rational arrangement of cubes, combined monumentality and flexibility.

Two years before its closure in 1986, the ensemble was placed under monument protection as a „*Symbol of Labor.*“ Design, business, science and research, as well as culture, were defined as the guiding themes for its reuse, swiftly becoming a flagship project in the IBA Emscher Park. The IBA played a significant role in fostering awareness for the revitalization and opening of industrial areas.

Architects Böll and Krabel began the restoration of parts of Shaft XII in 1990. By 1996, Norman Foster transformed the boiler house

into a design center. From 1994, there was an increasing focus on the tourist potential, leading to discussions with monument preservation authorities. Significant efforts were made, and in 2001, Zeche Zollverein was recognized as a UNESCO World Heritage site. Simultaneously, Rem Koolhaas and OMA developed a master plan based on the principle of „preservation through reuse,“ aiming to redevelop peripheral areas and reprogram protected facilities. A continuous path was designed to link all parts and encompass the entire ensemble.

OMA was also tasked with transforming the coal washing plant into a museum, which opened in 2006. Landscape design, according to the plan by the Planning Group Oberhausen, progressed from 2005. A significant milestone was the use of the site during the Ruhr.2010 European Capital of Culture.

The development is still ongoing, while the desired mix of new ventures, tourist offerings, cultural and creative industries, research, and education has been largely achieved. Over 1,000 jobs have been created, and the art university with more than 500 students has been established. Zeche Zollverein stands as an exemplary model of transformation and a site with international cultural and tourist appeal<sup>16</sup>.

## Wissenschaftspark Gelsenkirchen

Originally planned as the „Wissenschaftspark Rhein-  
elbe“ (Rhein-Elbe Science Park), the approx. 30-hectare  
area is located a few hundred meters south of Gelsen-  
kirchen’s main train station, where steel and iron were  
previously produced in the Thyssen works, and coal  
was mined in the adjacent Rhein-Elbe colliery. In 1985,  
the production halls were demolished, leaving only the  
historic Thyssen administrative building preserved.

Among three invited architects, Uwe Kiessler won the  
competition with the idea of creating an English garden  
and placing a 300 meters long office block within  
it, connected to 9 transverse wings. The building pre-  
sents a clear contrast to the Gründerzeit architecture  
nearby and is accessed through a glazed colonnade  
and a ground-floor passage that also serves as a win-  
ter garden. Hopes that the passage could develop a  
sense of urbanity through gastronomy and service fa-  
cilities were not fulfilled. The photovoltaic system can  
be considered progressive at that time.

The garden design is by Peter Drecker. A layer of clay  
isolates the contaminated soil, initially having a nega-  
tive impact on tree growth. The lake serves as both a  
design element and a retention basin.

In addition, residential developments were realized in  
the west of the park, and a kindergarten was built in the  
east. State institutions such as economic development,  
administration, and companies in the fields of energy,  
IT, and the creative industry were also located there.  
The whole site was opened in 1995, after 6 years of  
planning and construction. The circle-shaped office-  
building in the south is about to be developed.<sup>17</sup>



Fig. 14: site plan design concept: Uwe Kiessler (1998)



Fig. 15: Thyssen Steel Plant (1960s)

## Zeche Erin Castrop

The area of the former Erin colliery is located directly west of the historical city center of Castrop. The colliery was founded by the Irishman Thomas Mulvany (Erin means Ireland in Celtic) in 1867 and was shut down in 1983. The main preserved structure is the 68-meter-high, listed headframe, which now serves as the landmark of the park.

As part of the International Building Exhibition (IBA), a service, commercial, and landscape park was planned, connected to the city center. The State Development Corporation (LEG) was responsible for the urban structure, while the landscape architecture was designed by Prof. Wedig Pridik.

The park is divided by two avenue-like axes, in north-south and east-west directions, with the latter axis incorporating a stream between the streets, thus creating a more open layout. A footbridge over the bypass road connects the old town with the central avenue.

In the eastern part, service companies, a „starter center,“ and a branch of the „Fernuniversität Hagen“ were intended, while the western part accommodates a business park. The quality of commercial buildings was ensured through a design handbook covering forms, arrangement of structures, roof shapes, construction, and materials. However, these guidelines were valid only during the exhibition period.

Around the commercial area, an „S-shaped chain of hills with stepped, pyramid-like formations“ was created, mimicking the sparse mountains reminiscent of the landscape of Ireland. An artificial lake serves as a rain-water retention basin and is fed by the entire park.

The landscape park was completed in 1998, and while the commercial areas have largely been developed, some vacancies in the eastern service sector have to be noticed.<sup>18</sup>



Fig. 17: Park Erin: Headframe as Landmark



Fig. 16: Orthofoto Park Erin (2022)



Fig. 18: Orthofoto Park Erin (2022)

**»Our park is diverse, intricate, and not spatially describable in a single figure. Its essence is dynamic, its appearance extravagant. It expands quietly and steadily, its body forming the green tentacles of an entwined metropolitan landscape. City life unfolds in its arms.«<sup>19</sup>**

(Heinrich Böll in "Der produktive Park, 2010")

**... »The Ruhr region has always been a place where productivity has been the driving force. (..) However, the concept of production, of producing, and even that of profit, also carries the fundamental value of this genesis: the creation (..) of an idea is a profoundly creative one.«<sup>20</sup>**

(Marion Taube, Rudolf Scheuven)

## 2.4 Iterim Conclusion

The projects initiated by the IBA Emscher Park demonstrate that the format, despite its limitations, can initiate transformations and implement quality in urban development. In particular, the ecological enhancement of industrial wastelands and the designation of Zeche Zollverein as a World Heritage site are important milestones that were initiated by the IBA and had a significant impact on the external perception of the Ruhr region.

The renaturation of the Emscher river system was completed in 2022, and the green and urban space development of the "Park" remains an ongoing process. Thus, the projects of IGA'27, the urban developments of Kokerei Hansa and Phoenix West in Dortmund, or Zeche Zollverein can be interpreted as continuations of the construction exhibition – particularly the "Works in the Park" project line – it remains the benchmark for these developments to this day. The examples shown in Essen, Gelsenkirchen, and Castrop demonstrate that design quality and economic development

can go hand in hand – however, these projects must be seen as "beacons" that could not fundamentally influence the general discourse and planning practice in the Ruhr area, despite ambitious intentions. With the Master Plan 2010 and documents like "The Productive Park," approaches were created for how the Emscher Park could have been further conceptualized and institutionalized processes after the end of the IBA – little of which was implemented.

Considering the park as a unifying element of a "Ruhr metropolis" is charming but likely impractical, especially since the Emscher river is too insignificant to have an identity-defining effect. One interpretation of the IBA is that it showed cities development opportunities and laid the foundation for further structural transformation with the renaturation. The implementation of this, however, lies with the individual cities themselves, as already outlined in Chapter 1.



## Voices from IBA

**»Far and wide, there is no one in sight who, after the departure of the IBA team, would be capable of changing these power structures hostile to planning and construction culture. (...)  
The systemic conditions do not allow cities to learn from the IBA.«<sup>21</sup> (Karl Ganser)**

**»The project-specific approach of the IBA is deemed too isolated. While the IBA creates a new landscape park of 1500 hectares, a total of 1800 hectares of former agricultural land was lost in the entire Emscher zone.«<sup>22</sup> (Selle)**

**»Back then, the goal was to ,generate a change in mentality in the Ruhr area from a sclerotic, uncreative environment to a creative, open environment. That was a somewhat naive optimism.«<sup>23</sup>**

(Tom Sieverts)

### 3 IBA'27 Stadtregion Stuttgart Productive City in Theory and Practice

Die approbierte gedruckte Onlineversion dieser Monographie ist an der TU Wien Bibliothek verfügbar.  
The approved online version of this thesis is available in print at TU Wien Bibliothek.



Fig. 19: Combined Heat and Power Station Stuttgart



Fig. 20: Topics and Spaces

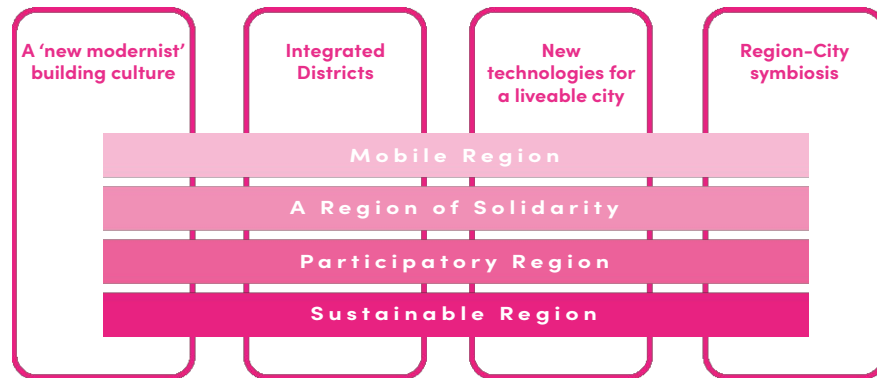


Fig. 21: Themes and Cross-cutting Characteristics

### 3.1 Background and Field of Topics

The idea of an International Building Exhibition (IBA) for Stuttgart dates back to the 1990s, when plans for the construction of the new main train station (Stuttgart 21) began but were initially not implemented. The initiative for the exhibition was eventually launched by the Economic Development Corporation of the Stuttgart Region, and it began in 2017 for a duration of ten years, intended to conclude by the 100th anniversary of the Weißenhofsiedlung (New Modernism) in 2027. Instead of focusing on a central theme, thematic worlds were defined to cover the main problem areas and objectives in the region.<sup>24</sup>

A leading theme is the handling of the legacy of modernism, which has shaped urban planning and architecture in the 20th century. However, it also addresses the further development of urban and industrially shaped spaces, dealing with new technologies, and developing a symbiotic model between the core city of Stuttgart and the surrounding cities. Essentially, the IBA is intended to serve as a laboratory for urban planning processes, particularly

accompanying a “preemptive transformation” of the region. This region has been known primarily as an industrial economic and innovation engine, particularly through the automotive industry, but its prosperity model is now in question due to economic, technological, and societal upheavals, as well as climate change.

The aim of structural transformation is to create a resilient economic foundation for the region through diversification, regional value chains, decentralized production, and the creation of mixed, livable, and affordable productive urban neighborhoods. This, in turn, touches on several other themes, including dealing with the resource of land, landscape conservation, new requirements for urban green and open spaces, industrial transformation, and the shift in mobility.<sup>25</sup>

These and other themes are synthesized in “10 Theses” of the IBA Stuttgart to clarify the basic positions. These will be followed by a general discourse overview on “productive city” and the exemplarily IBA project in Backnang.

## 3.2 General Theses



### Building Culture

The European city evolves as a space shaped by people across different eras, each seeking contemporary beauty using available technologies. Our aim is to create homes and urban spaces that future generations can use and enjoy. Architecture, engineering, and urban planning advance the design of existing spaces, enabling new interactions. These buildings meet the highest aesthetic, technical, and functional standards, contributing significantly to regional identity for the future.



### Polycentric city region

Urbanization presents new opportunities for metropolitan areas. The polycentric structure of the Stuttgart Region is ideal for enhancing urban development. The main goal is to improve residential quality rather than pursuing further quantitative growth. Breaking down spaces into smaller sections and enhancing urban and natural areas can boost the use of public transport, cycling, and walking, leading to sustainable improvements in quality of life and the environment.



### Appreciation

Building quality structures inexpensively is challenging. Our techniques allow us to create enduring buildings, focusing on life cycle costs. We prioritize lasting construction methods that enable easy repair and adaptation, including flexibility for various uses. Buildings, streets, and squares should serve people and communities, remaining open and accessible to all. Economic

growth in the region has driven up prices, causing displacement. A forward-thinking land and housing policy, along with new tools, must ensure social diversity, inclusion, and accessibility.



### Mixture

Mixing land uses enhances daily life, reduces dependency, and allows for flexible adaptation of spaces. Combining jobs, local amenities, cultural offerings, and leisure spaces enriches our surroundings. This approach reduces the need for motorized transportation due to increased density and proximity. It also embraces cultural and social diversity. Despite income inequality and rising housing costs in the Stuttgart Region, innovative social models are needed to preserve its openness and inclusivity over time.



### New technologies and new processes

During the term of IBA'27, digitalisation will comply the planning and construction processes, building technology and our everyday lives. This is triggering a push toward rationalisation in building and is influencing prefabrication, assembly and the running of buildings. Industrial techniques are no longer limited to individual components. This development will favour modular building techniques, timber construction and other lightweight construction techniques. Sensor systems and data monitoring will help us to understand energy flows and how to optimise the running of buildings.



### New forms of housing

Homes have always been and continue to be the central and most common use of the built environment. High density neighbourhoods that reduce production costs and new financing, rental and ownership models are providing affordable housing for everyone. This facilitates and promotes residential mobility that can respond to demographic change. It reduces per capita values of land use, and spaces are used efficiently. It creates barrier free, accessible housing for everyone.



### New work environments

Paid work will have a different emphasis, with a lesser status than before. Work routines move away from the traditional 9to5 model. Retraining, further training and taking new professional paths become common practice, just like flat hierarchies and the dissolution of traditional corporate structures. Coworking spaces become a selfevident phenomenon, even in areas that used to be purely residential. The possibility to reduce the scale of production areas and to lower emissions as well as a new appreciation of products, circular economies and repairs will bring production sites back into neighbourhoods and villages – and in return bring a residential use to what were formerly purely industrial areas.



### Inclusion in the city region

Digitalisation will not only change the world of work massively, it will also offer possibilities for new forms of political inclusion and participation in the region and the city. Urban and regional design processes will be-

come direct and accessible for all. At the same time, there is an increased need for communication to prevent society from breaking down into groups. The control and monitoring of public spaces must be designed and regulated in a way that allows them to retain their function as a place for all to congregate.



### Energy and materials cycles

The next generation must transition to a post-fossil fuel era to avert resource conflicts and curb climate change. The building industry, currently a major source of waste and CO2 emissions, must transform. Buildings should act as carbon sinks and energy generators, conserving fossil fuels. Neighborhoods will aim for energy self-sufficiency, supported by large-scale grids for storage and balancing. Passive buildings will naturally regulate climate and provide comfort amid climate shifts. Urban spaces will use greenery and water features to counter heat island effects in cities.



### New mobility

Means of transport will become a shared asset and no longer be owned individually. This will minimise stationary traffic and free up valuable spaces inside and outside the buildings. The entire transport system will become more resourcesaving and spacesaving, and it will be possible to use transport in a more targeted and efficient way. Less motorised traffic that is also efficient will reduce noise and be more compatible with urban life and the environment<sup>26</sup>.

»The return of production to the city may be facilitated by changes in the global economy and shifting consumer behavior. While globalization and technology have long been seen as unstoppable forces of structural change, there now appears to be a “window of opportunity” for alternative approaches to emerge.«<sup>31</sup>

(Dieter Läßle)

### 3.3 Voices and Discourse

While a large part of the IBA Stuttgart projects can be understood in the context of the “productive city,” it is worth examining the background of the term. On a meta-level in the discussion of the “search concept” of the productive city, the question arises of how cities (specifically European cities) can sustain themselves economically in the future. The transformation of the economic foundation concerns many cities and regions. Particularly in London, Brussels, Rotterdam, and Zurich, the concept has been embraced - the background being a continuous process of tertiarization, which pushed industry and manufacturing to the outskirts, to the periphery, or abroad. Thus, urban researcher Dieter Läßle notes that through post-industrial urban concepts, cities have lost their ability to regenerate and integrate. His solutions lie in breaking down the functional separation of the city, a “next economy” that integrates knowledge economy and production, more fragmented, urban production forms - especially enabled by a digitized and networked “Industry 4.0,” as well as repair or recycling economies that are intended to generate new, regional value chains.<sup>27</sup>

Similarly, Swiss architects Hiromi Hosoya and Markus Schäfer argue in their publication “The Industrious City.” “Industrious” is intro-

»We need to state our belief that manufacturing is a vital part of our city, indeed of any good city, that should be visible, understood, celebrated and nurtured. Cities are the home of innovation and entrepreneurialism, a great crucible of the new.«<sup>32</sup>

(Mark Brearley)

duced as a collective term for productive value creation - beyond material production. They also see industry and craftsmanship as essential components of the city and, similar to Läßle, see the possibility of reintegrating them into the urban fabric through new, emission-reduced production methods. In particular, the necessity of infrastructures and cluster formation are attributed a greater role.<sup>28</sup> To achieve this re-shoring of industry, economic protectionism is advocated and can thus be understood as an antithesis to globalization.<sup>29</sup>

Not least, the urbanist Mark Brearley must be mentioned, who has particularly dealt with displacement processes in London. He proclaims a new visibility and presence of inner-city businesses and craftsmanship, which should be brought back into the urban landscape through innovative typologies and use-mixes.<sup>30</sup>

All these approaches are united by the realization that solely the financial and service sectors, as well as the focus on knowledge-based sectors alone, will not secure the value creation of the future. The question of the economic, political, and societal implementation of the concept, of the narrative arises generally, and ultimately depends on the different structural starting points of the cities and regions.

## Voices from IBA

**» The demands on living have changed. We can counteract this development by paying more attention to versatility and adaptability...**

**But not only living, but also crafts and production are changing and are much more compatible with urban and residential areas today. «<sup>33</sup>**

(Christa Reicher)

*»But while functions were once meticulously separated and unfortunately still are today, today it's about the exact opposite: New, low-emission production methods make it possible for functions to come back together.«<sup>34</sup>*

(Stefan Rettich)

**»Mixed-use neighborhoods are certainly not the sole answer. However, it is a rejection from the paradigm of spatial separation and an opportunity for people to find work in close proximity to their homes, thereby reducing traffic volume. «**

(Thomas Auer)

*»"Inevitably, the uses limit each other. The economies of scale and efficiencies from separately optimized uses are lost. (..) "We ask ourselves: Isn't the shift from quantity to quality a necessary step towards saving the world?«<sup>36</sup>*

(Axel Simon)



Fig. 22: WohnFabrik Backwang - FAR frohn&rojas (Visualization)

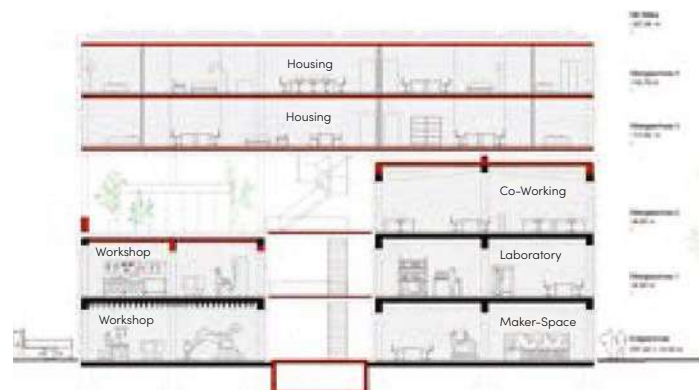


Fig. 23: Concept Section WohnFabrik - FAR frohn&rojas



Fig. 24: Masterplan Concept - Teleinternetcafe

### 3.4 IBA Project: Quartier Backnang West

The city of Backnang is located approximately 26km northeast of the center of Stuttgart, along the Murr River, a tributary of the Neckar, where tanneries, spinning mills, and machinery manufacturers settled in the 19th century. Today, the area is characterized by vacancies and deserted parking lots. The inclusion as an IBA project aims to create a mixed, productive urban quarter, as envisioned by the winning design by teleinternetcafe.<sup>37</sup>

Three sub-areas, "WohnFabrik" (Living Factory), "StadtWerk" (City Workshop), and "CityCampus," are planned to be developed, connected by a green belt called "Parkaue" along the Murr. Existing factory buildings will be upgraded and repurposed wherever possible, with productive courtyards featuring residential compo-

nents to complement and densify the existing stock. The mobility strategy involves gradually reducing parking areas through high-rise garages and providing bus connections to the nearby train station, aiming to reduce individual traffic in the long term. The overall design envisages a phased development approach, prioritizing the outer areas as the initial focus and completing the dense center "Stadtwerk" as the final step.

The first urban component, "Wohnfabrik," resulting from a workshop process, will be implemented as a flagship project. An historical factory will be converted, integrating workshops, laboratories, and commercial spaces, while two residential blocks and a green intermediate space will ensure vertical mixing.<sup>38</sup>





Fig. 25: Masterplan 2021 -Teleinternetcafe



### 3.5 Interim Conclusion

A comparison between the building exhibitions Emscher Park and Stadregion Stuttgart is difficult at the current time, as the latter is not yet completed and the aftermath cannot yet be analysed. However, observations can be made about the respectively considered projects.

Firstly, the starting points are very different in each case - while in the Ruhr area, structural change had already taken full effect and ecological ruin had already occurred, the Neckar region sees itself more as a victim of success, with the aim of proactively shaping economic transformation and curbing land consumption. In Stuttgart, a focus on programmatic aspects can be observed in the neighborhood projects, although climate resilience and re-urbanization and accessibility of the river landscape are also addressed here. In the Emscher Park, the focus was more on landscape architecture, with the garden city as the guiding idea from which the urban planning concepts emerged. This was based on the fundamental task of returning the contaminated industrial wastelands to nature or urban space. The "Works in the Park" projects were also developed with the realization that high-quality urban and green space is an important pull factor for business location decisions.

Similarly, in Stuttgart, it is important to position oneself as an attractive address in the future by providing sufficient quality housing and livable neighborhoods, while also becoming more independent of large industrial enterprises through mixed-use development and smaller-scale businesses.

However, the discursive background of the two building exhibitions is different. The 1980s and 1990s were (with exceptions) characterized by the same tertiaryization and post-industrial attitude that today's urban planning narratives are trying to break through.

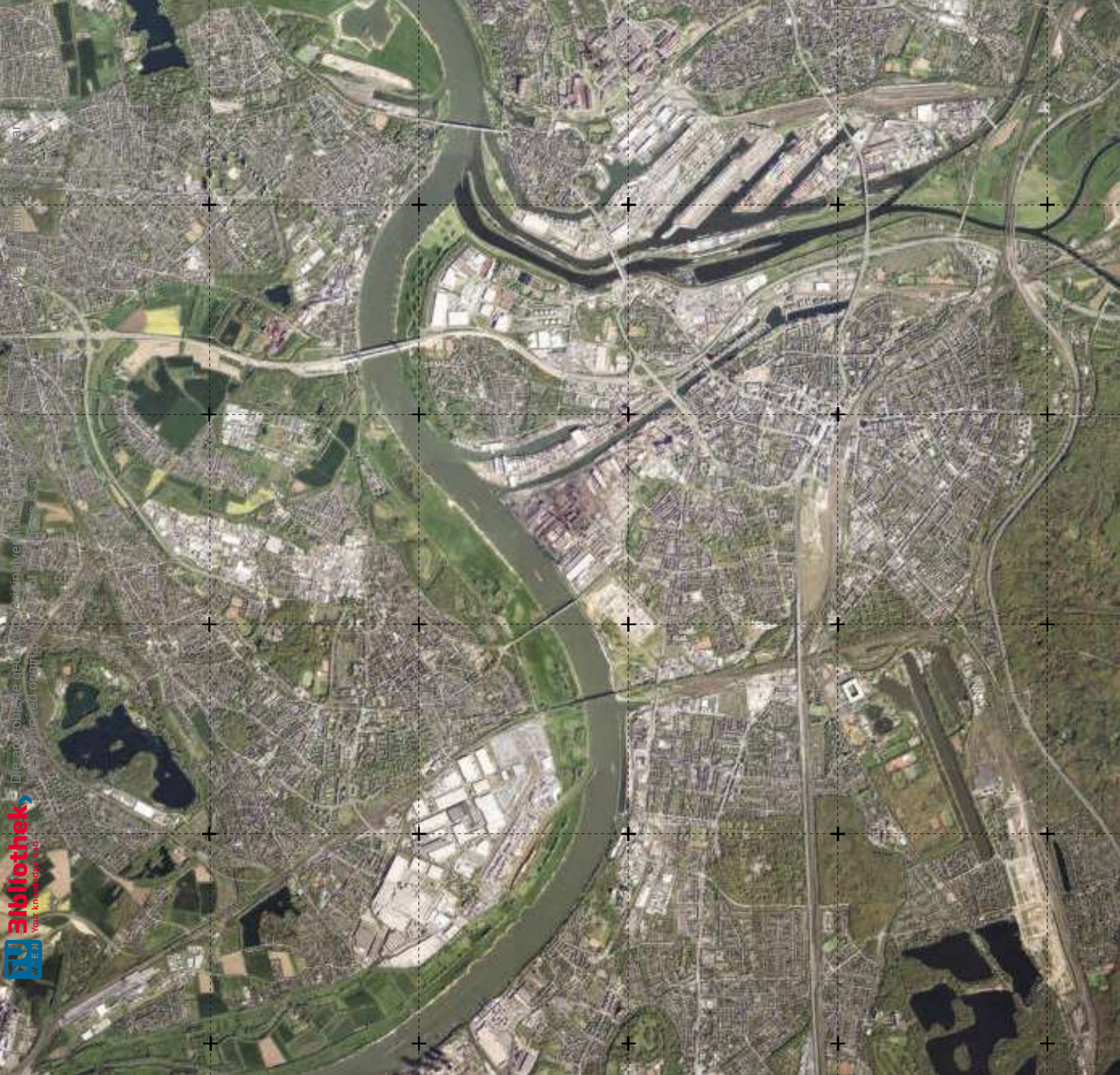
The examination of the "search concept" (Dieter Läßle) of the productive city shows how macroeconomic forces have a significant influence on urban development, but urban planning can also affect economic resilience. The spectrum of derived action approaches is broad and varies depending on the starting point: reurbanization of underutilized industrial sites, mixing and upgrading of monofunctional industrial areas, reintegration of smaller-scale production into city centers, and even the active establishment of new urban industry in the sense of reindustrialization. It is important to anchor these concepts in planning law and make them economically viable.

*»All that I love about Los Angeles,  
I also love about Duisburg. It's just  
not finished yet.«<sup>39</sup>*

*(Thomas Sevcik)*

## 4 Duisburg - Status Quo and Urban Developments

With the background knowledge of transformation approaches along the Neckar and Emscher rivers, as well as of the discourse on productive cities, the focus now shifts back to Duisburg. Initially, it is generally discussed at which point the city currently stands, which political actors influence planning, and what urban development strategies are pursued. These insights are supplemented with comments respectively. An overview expounds urban development projects that are planned or underway as of 2024. Following, an excursion on hydrogen illustrates how technological change towards climate-neutral energy sources could become a fundamental driver of Duisburg's economic development. Finally, a spatial analysis of the city is conducted, ultimately leading to a "Big Picture" as its own interpretation and vision for the future spatial development of Duisburg.



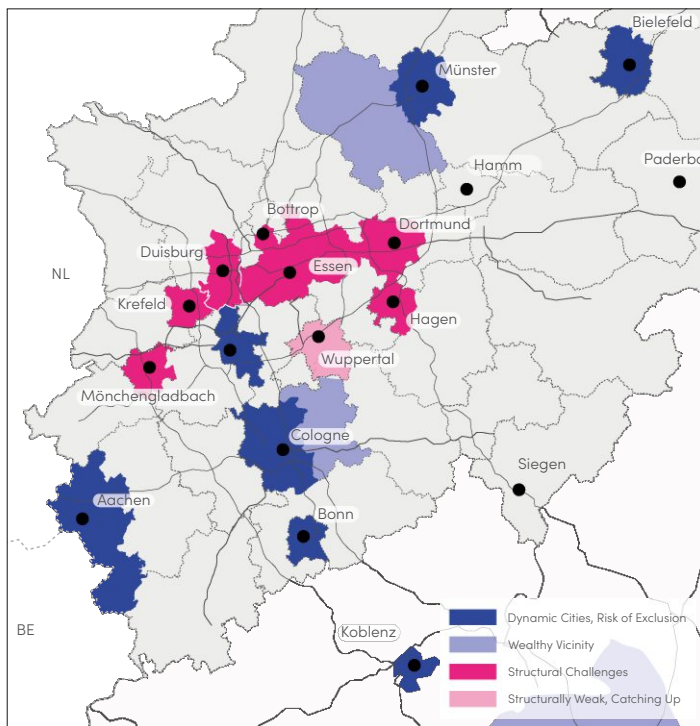


Fig. 27: Regional Cluster in North Rhine-Westphalia

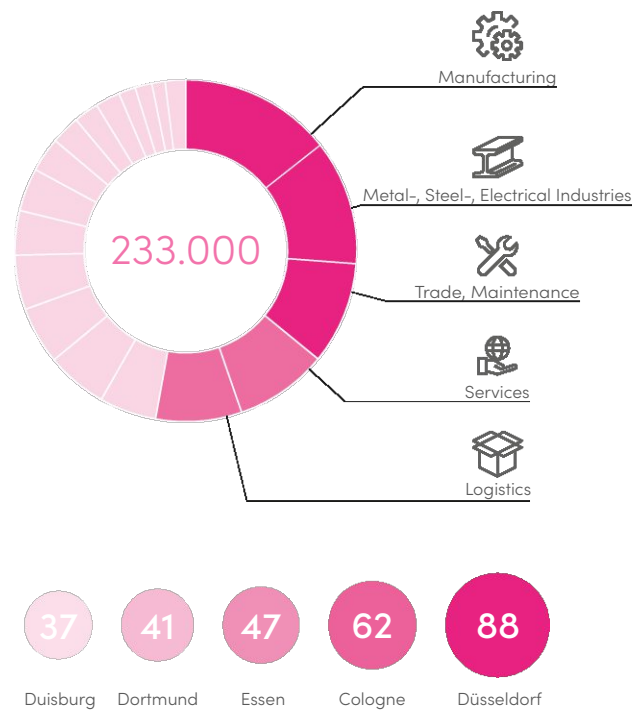


Fig. 28: Employment and Branches; GDP per Capita in 1.000 € in Comparison

## 4.1 Socioeconomic Survey

The socio-economic data for Duisburg paints a clear picture - the structural transformation in the wake of deindustrialization continues to affect the City strongly. Compared to Cologne and Düsseldorf, value added is significantly lower, while the manufacturing sector still plays a major role in the employment structure. The population structure also reflects social disparities: while affluent homeowners tend to reside in the outer districts, the Gründerzeit districts are culturally diverse but also marked by poverty. Contrary to predictions, the population has grown in recent years due to migration primarily from Eastern countries. A core task must be to promote and shape integration as an "arrival city," and to unlock the human capital of an open, multicultural society in Duisburg through dedicated quarter strategies, educational opportunities and local economic development.

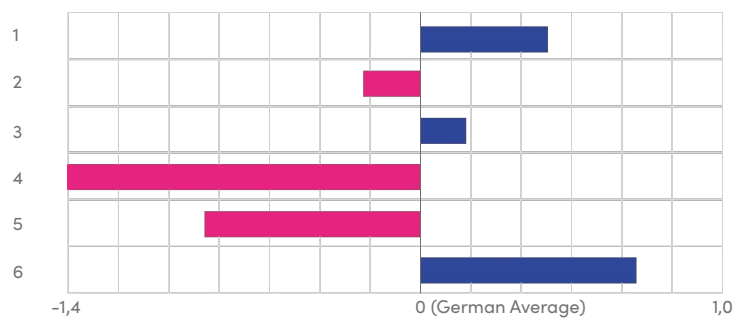


Fig. 29: Strength and Weaknesses: Selected Parameter Deviations from German Average

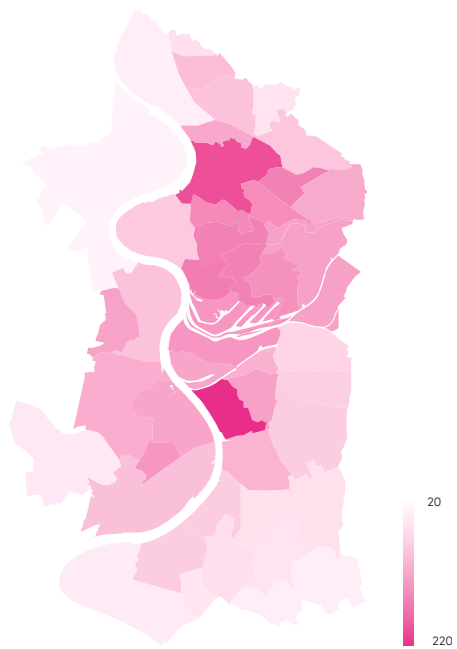


Fig. 30: Unemployment rate I (per 1000 Inhabitants 15-65)

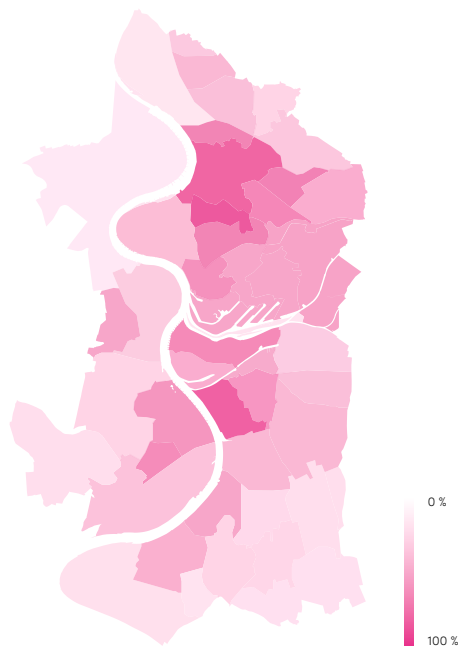


Fig. 31: Population with a Migration Background

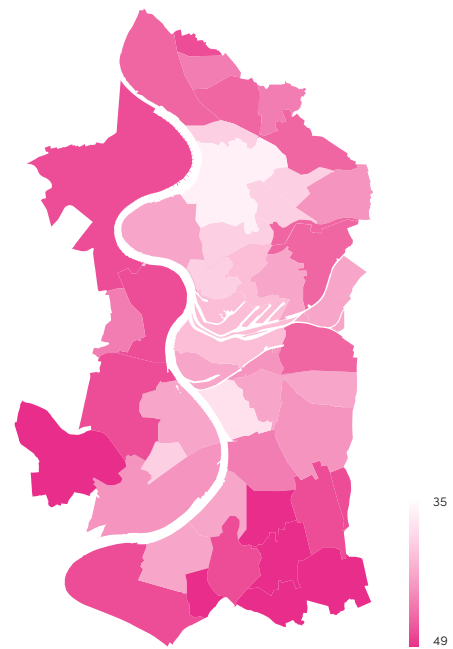


Fig. 32: Average Age

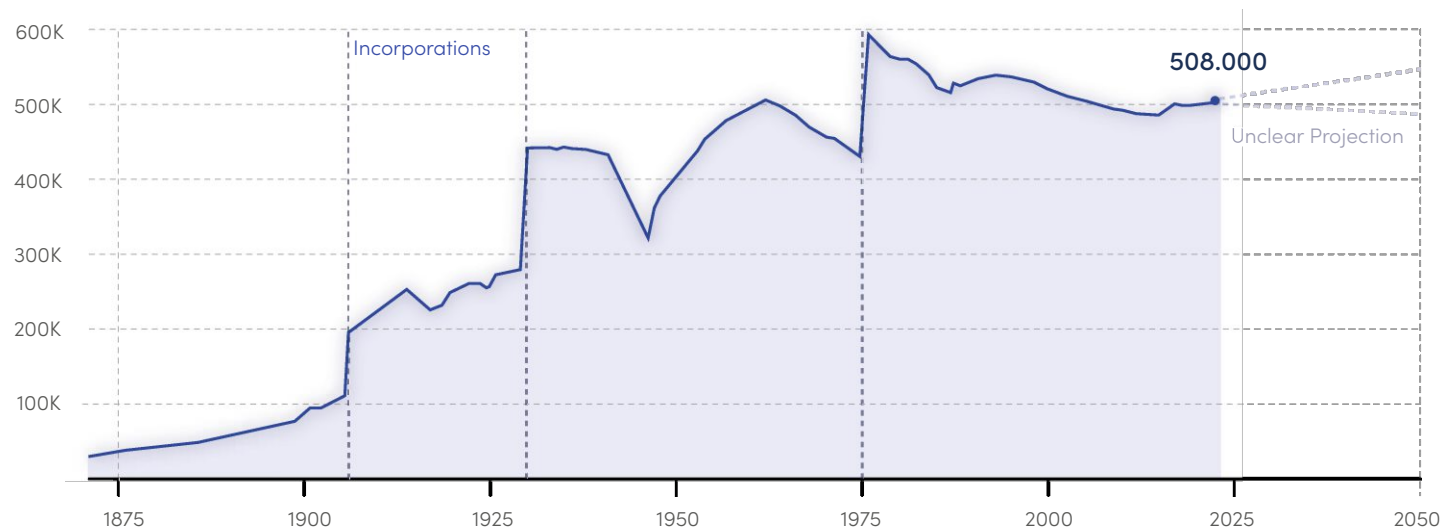


Fig. 33: Demographic Development



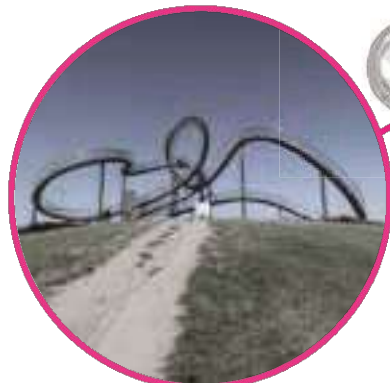
Landschaftspark Duisburg-Nord



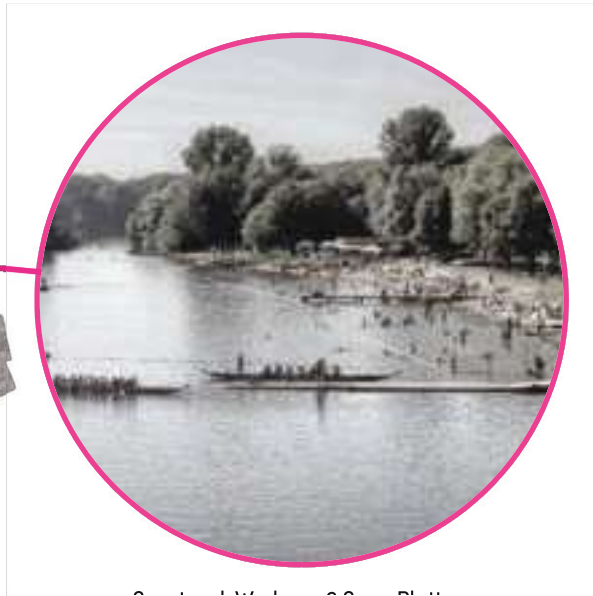
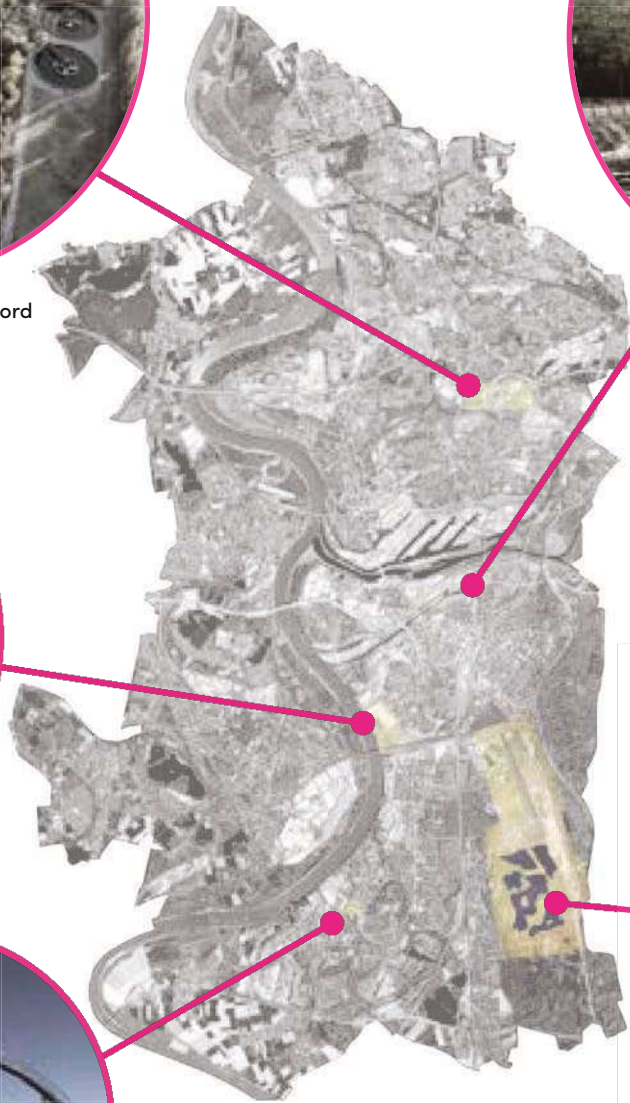
Innenhafen



Rheinpark



"Tiger & Turtle" Observation Hill



Sportpark Wedau + 6 Seen Platte



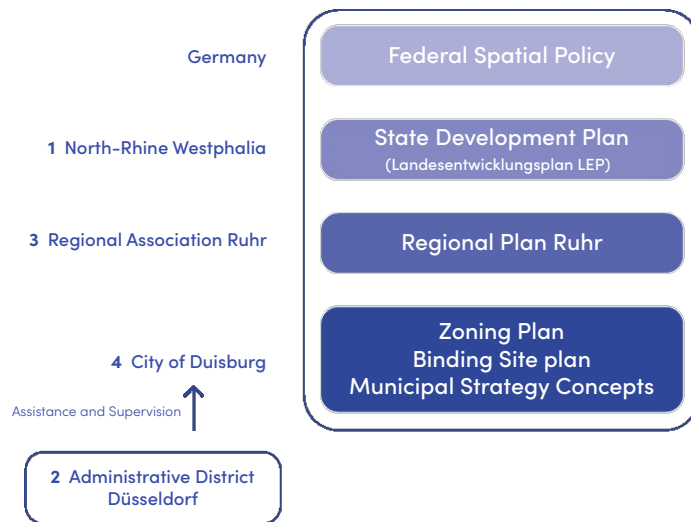


Fig. 35: Hierarchy of Strategic Planning

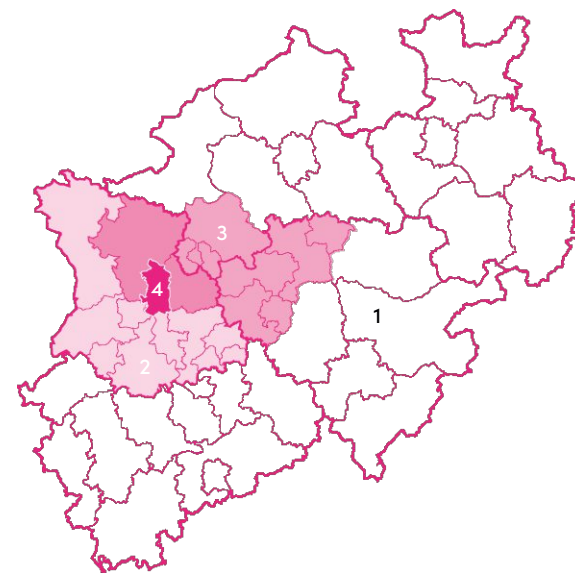


Fig. 36: Planning and Administration Spaces in NRW

## 4.2 Planning Players

Due to its location in Rhine- and Ruhr-area, planning processes in Duisburg are multifaceted and complex, often hindered by conflicting interests, as illustrated by the debate between the city and the federal government regarding the expansion of the A59 urban motorway.<sup>40</sup> The basic direction is set by the state of North Rhine-Westphalia through the State Development Plan (LEP), which notably emphasizes compact, land-saving, inner-city development at existing infrastructure nodes and refers to intercommunal regional plans for settlement and commercial development<sup>41</sup>. In the case of Duisburg, this is the Ruhr Regional Plan. As the most large-scale land use plan, it defines essential traffic, economic, settlement, and natural areas to be preserved. This plan is determined by the so-called “Ruhr Parliament,” which includes cities such as Essen, Bochum, and Dortmund, and forms the basis for municipal zoning and land use plans. The Düsseldorf administrative district, where Duisburg is located, plays a monitoring and support role in this constellation, for example, in the utilization of economic and urban development funds.<sup>42</sup> It should be noted that master plans

such as those of the Emscher Landscape Park have not been able to exert a sustainable influence on political structures, thus spatial strategic concepts beyond mere land use plans remain municipally limited.

One possible conclusion for Duisburg could lie in duality: on one hand, advancing areas such as public transportation and green spaces within the regional urban network consistently, and on the other hand, independently developing its own land potentials within the framework of the Regional Plan and strategically highlighting and marketing local advantages. This involves securing and enhancing existing industrial and commercial areas, as well as exploring potential “soft” conversion instruments such as the designation of urban mixed-use areas that allow for new, city-compatible developments in the sense of the productive city. In the end, a significant challenge for the city of Duisburg remains coordination and optimization of urban planning processes. Below, municipal development concepts, including their weaknesses and limitations are outlined.

- |  |  |
|--|--|
|  | Neue Wohnbaufläche (1)   |
|  | Entwicklung innovativer Stadträume mit neuen urbanen Qualitäten (Wohnen - Wirtschaft - Grün) |
|  | Neue städtebauliche Qualitäten (4)   |
|  | Aufwertungsbereich (5)   |
|  | Umstrukturierungs- und Rückbaubereich (6)  |
|  | Stabilisierungsbereich (7)   |
|  | Integriertes Handlungskonzept (Bestand) (8)  |
|  | Stärkung historischer Siedlungsbereich (9)   |
|  | Gestaltung von Plätzen (73)  |
|  | Erhalt der aufgelockerten Bebauungsstruktur (68)   |
|  | Nachverdichtungsbereich (69)   |
|  | Neue Wirtschaftsfläche (11)  |
|  | Aktivierung vorhandener Wirtschaftsfläche (13)   |
|  | Neue Baufläche für Büro- und Wohnnutzung (15)  |
|  | Sportparkentwicklung (57)  |
|  | Versorgungsschwerpunkt (55)  |
|  | Entzerrung von Konfliktlagen (23)  |
|  | Aufwertung stadtstruktureller Übergänge (25)   |
|  | Erhalt und Gestaltung des Siedlungsrandes (24)   |
|  | Geplante Verkehrsinfrastruktur (45)  |
|  | Neue Grün- und Freiraumfläche (26)   |
|  | Neue Grünverbindung (29)   |
|  | Zu sichernde Grünverbindung (30)   |
|  | Erhöhung des Grünanteils (31)  |
|  | Waldvermehrung (32)  |
|  | Entwicklung zum Wasser (36)  |
|  | Renaturierung von Fließgewässern (41)  |
|  | Wasser als gliederndes Element (40)  |
|  | Oberflächengewässer (Bestand) (35)   |
|  | Siedlungsraum - Wohnen (82)  |
|  | Siedlungsraum - Wirtschaft (83)  |
|  | Freiraum (84)  |

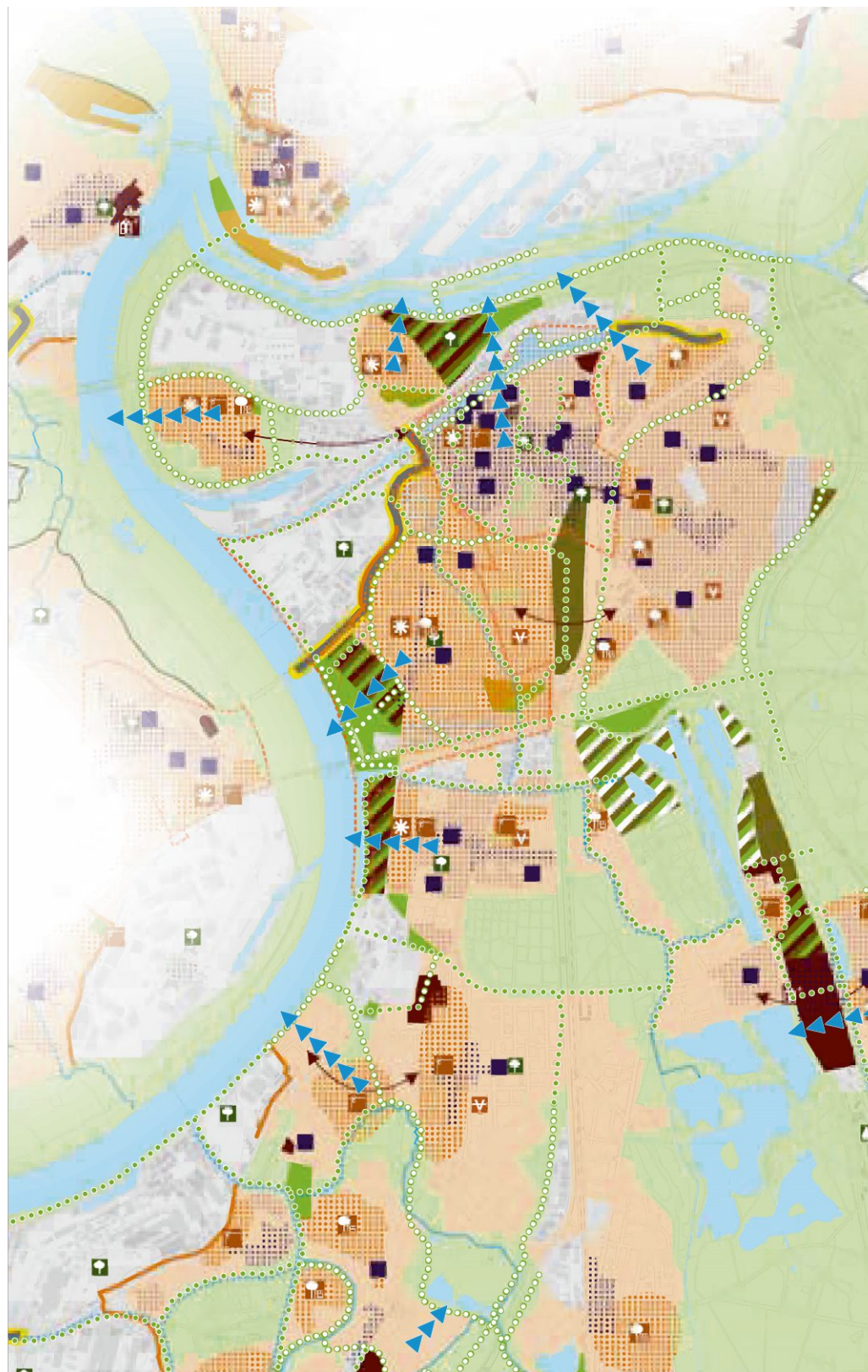


Fig. 37: Integrierte Teilraumkarte Mitte-Süd

### 4.3 Municipal Integrated Spatial Concept

The stated urban development goal “Duisburg on the Rhine” (as most districts have not close relation to the river) is primarily being realized through the developments of Rhein Park and Rheinort, as well as the future “Algarve” (see Current Urban Developments). With a view to the spatial strategy of 2013 and a comparison with the status quo of 2024, it can be deduced, on the one hand, that the focus of green and urban space development lies on new construction or conversion areas, while deficits in existing neighborhoods have tended to be neglected. Additionally, a continuous greening and accessibility of the right bank of the Rhine does not currently seem to have priority. It is clear that in the Hochfeld industrial area, located between the Old Town and the Rhine waterfront, no urban development potential is explicitly seen, and existing divisions are rather intended to be further solidified. It can also be noted that desired developments leading the city to the Ruhr in the north have not been advanced in planning. Particularly, integrating green and open spaces with the existing industry along the Rhine waterfront could generate unique qualities that set Duisburg apart from other Rhine cities.



## 4.4 Municipal Economical Strategy

Duisburg pursues a strategy with “future locations” such as LogPort Duisburg and Technologiequartier Wedau (see Current Urban Developments) that clearly aims at urbanization and requalification of existing industrial brownfields. The strategy map from 2015 shows that many of the designated transformation zones have already resulted in concrete projects. However, it is critical from a transportation planning perspective to question the compatibility of expanding the “Logistics Diagonal,” given its central urban location, and whether industrial development should not instead be oriented towards existing transportation infrastructure. The focus should be on prioritizing the further development of areas with direct highway access or, preferably, rail connections, rather than declaring every underutilized area as needing “activation.” The goal should be a qualitative enhancement of industrial zones in terms of density, mixed use, design, open spaces, and mobility, rather than rapid, uncurated industrial development. Particularly in Duisburg, logistics as an important economic factor must be questioned in light of the incompatibility of heavy truck traffic with residential areas, and sustainable, emission-reducing transportation concepts should take precedence over logistics area development. Ultimately, it must also be questioned how effectively the category “Creative Quarter” is being utilized and to what extent the necessary framework conditions have been considered – it appears to serve more as a filler instead of a serious strategy.

## 4.5 Current Urban Developments

As depicted in the previous strategy maps, urban development in Duisburg focuses on converted industrial and railway areas. An exception is the “Mercatorviertel” in the Old Town, which picks up on the original morphology and can thus contribute to the necessary urban repair. “Duisburger Dünen” and “Rheinort” are intended to become regional flagship projects for new urban neighborhoods, though ultimately they represent a more classical development with over 75% residential share and compatible commercial or office spaces. Meanwhile, the “Wedau Technology Quarter” is being developed as a purely commercial area connected with university facilities. South of this area, “6 Seen Wedau” comprises several residential neighborhoods that seamlessly integrate with the existing garden city in terms of density. Lastly, the “ALGA” area in Wanheimerort is earmarked for conversion into a mixed-use residential and commercial quarter, but it is exclusively driven by private initiatives, and its urban impact on the surroundings, given its isolated location, may be questioned. Developments north of Duisburg-Mitte are not included in the overview, as they do not have a direct influence on the city center.



Fig. 40: 1. Mercatorviertel (from 2023)



Fig. 43: 2. Duisburger Dünen (from 2024)



Fig. 39: 3. RheinOrt (from 2024)



Fig. 44: 4. Algarve from 202X

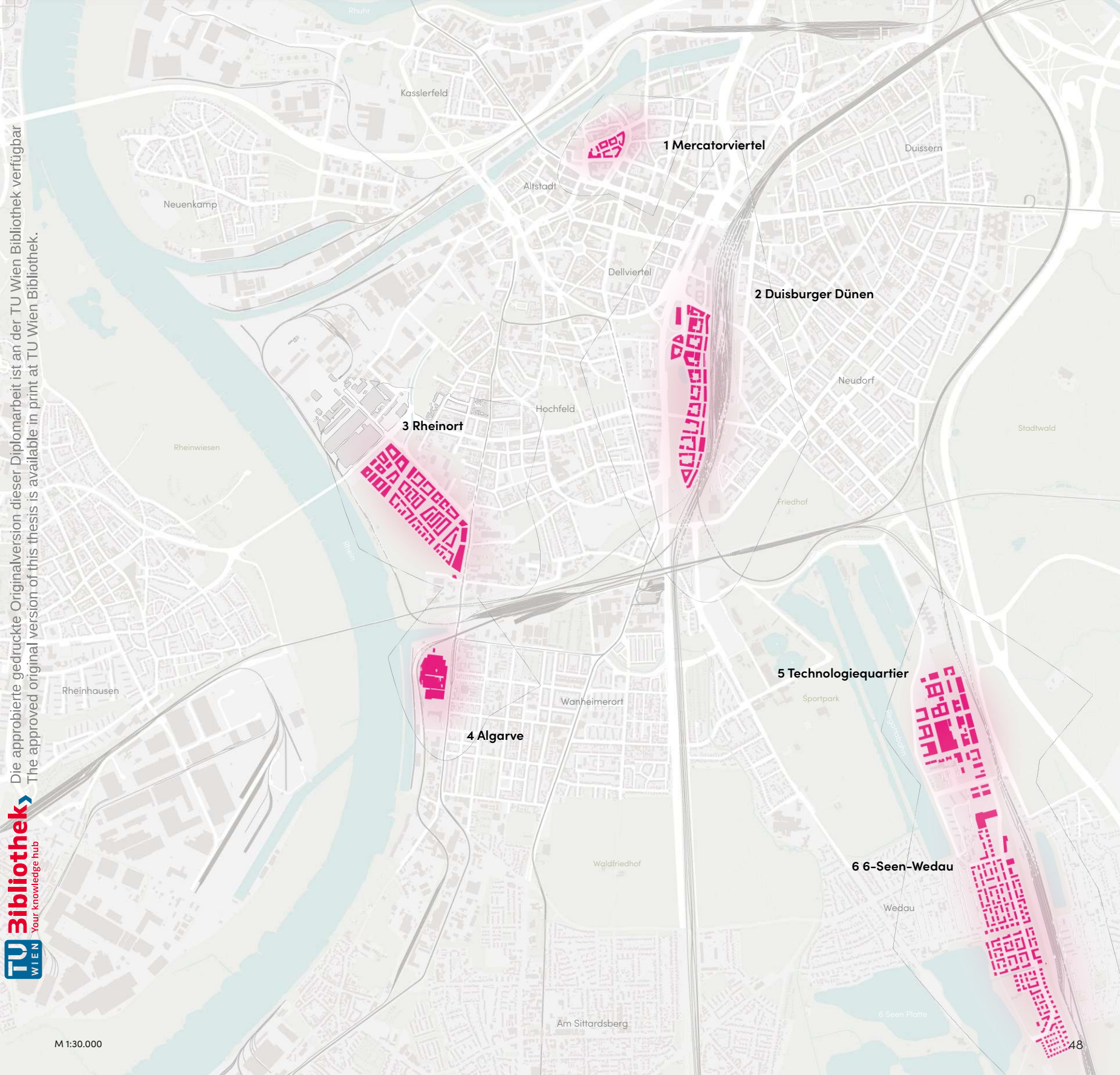


Fig. 41: 5. Technologiequartier Wedau-Nord (from 2026)



Fig. 42: 6. 6 Seen Wedau (from 202X)

Die approbierte gedruckte Originalversion dieser Diplomarbeit ist an der TU Wien Bibliothek verfügbar  
The approved original version of this thesis is available in print at TU Wien Bibliothek.



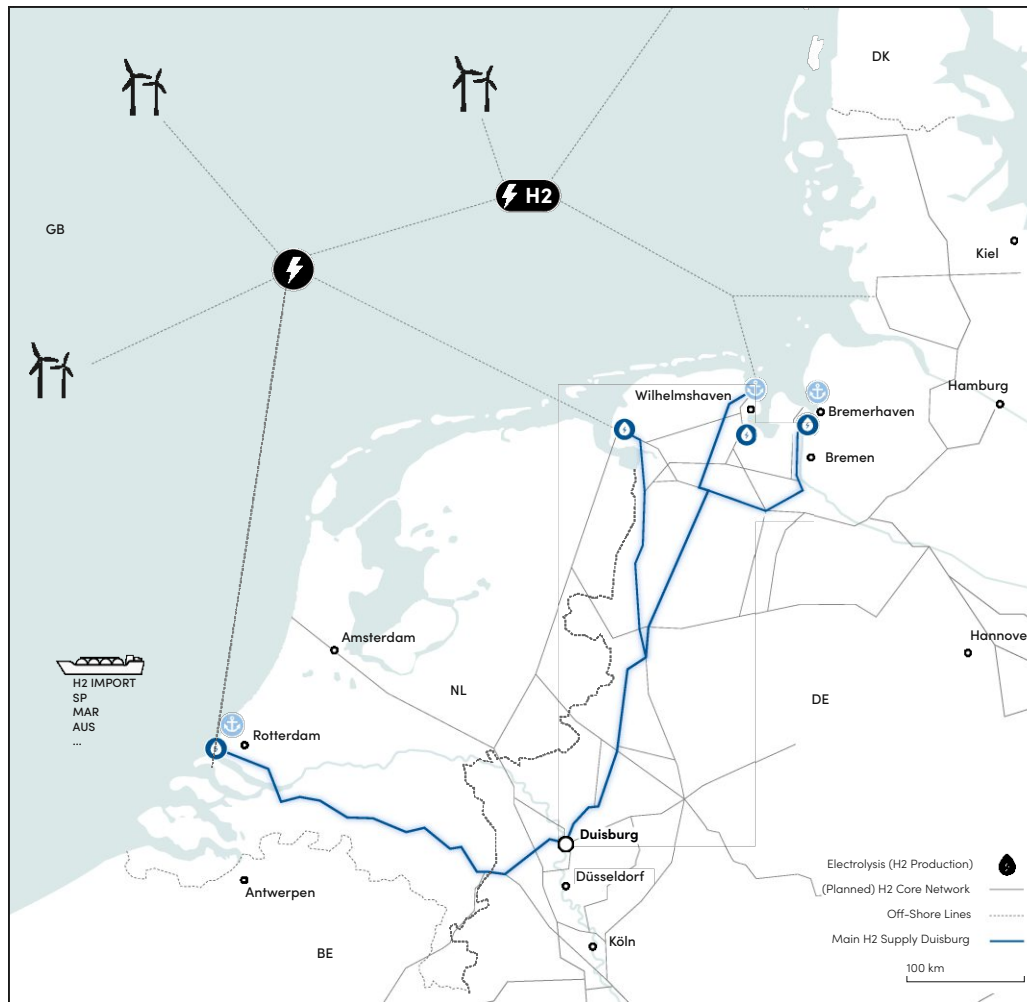


Fig. 45: Core Hydrogen Network and Major Supply Corridors for Duisburg and Rhein-Ruhr-Area

## 4.6 Excursus: Hydrogen in Duisburg

Despite massive deindustrialization in recent decades, heavy industry, especially iron and steel production, remains a crucial economic sector in Duisburg. But it is also a significant emitter of greenhouse gases, making hydrogen a fundamental resource as a substitute for coal and gas, securing local industries and leading it into a emission-free future. In addition to local hydrogen production projects, several pipeline projects are being planned to directly supply the Rhine-Ruhr economic region i.e. from Rotterdam and Wilhelmshaven,

which will bring direct competitive advantages for industrial development. The strategy involves not only locating hydrogen-related industry alongside steel producers, but also promoting innovations in hydrogen technology, using Duisburg as a testing area. Furthermore, the port of Duisburg is intended to be developed as an multi-modal energy hub for the city and region. The map shows the main hydrogen projects in Duisburg, including key supply corridors along which future industrial development could be oriented.



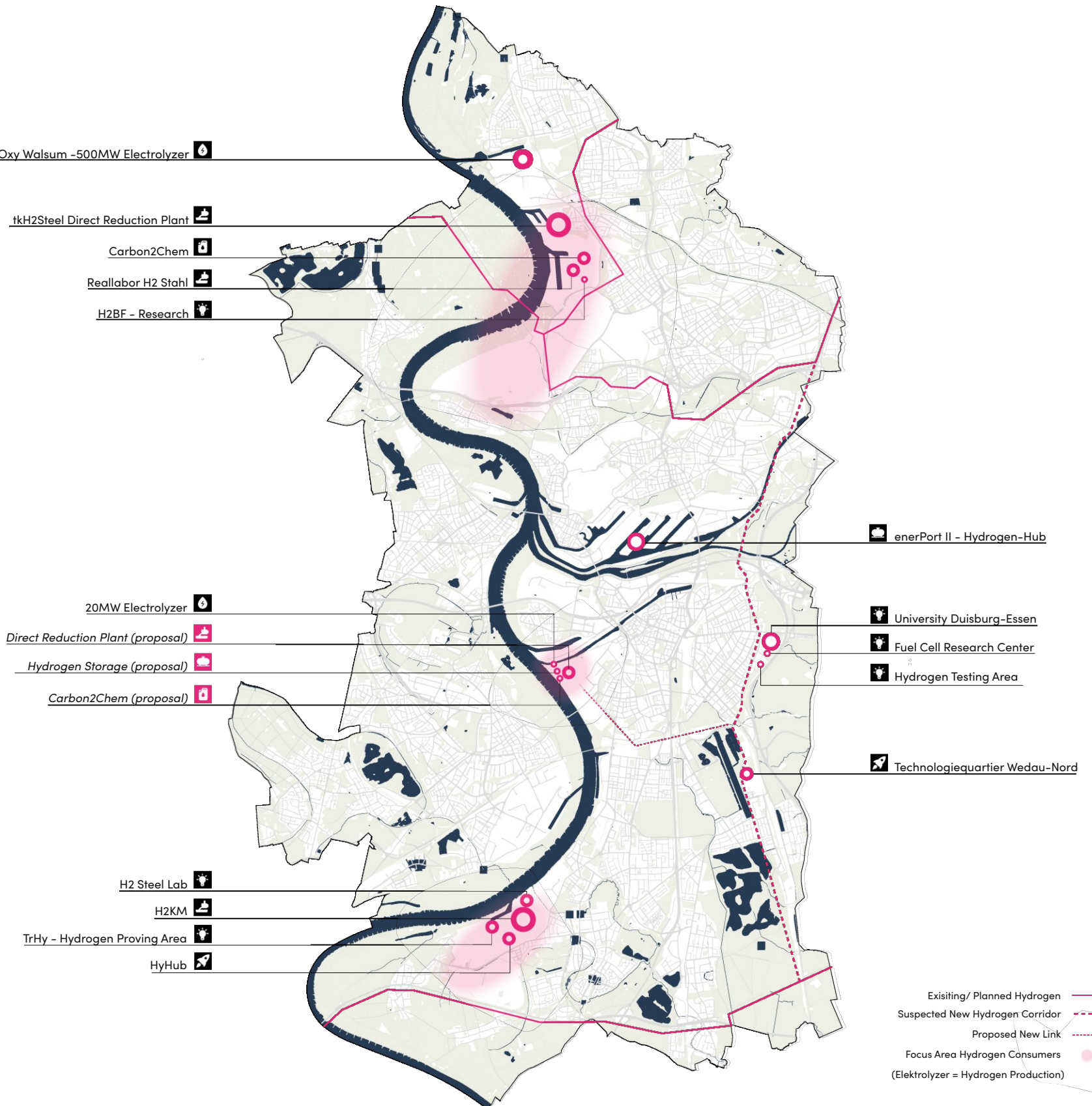


Fig. 46: Hydrogen Activities Overview



Fig. 47: Municipal Green Space Concept

## 4.7 Urban Analysis

### 4.7.1 Potatoplan Green Spaces

The (urban) landscape of Duisburg is mainly shaped by the rivers Rhine and Ruhr. Along the western rhine bank, a green corridor stretches almost uninterrupted, consisting mainly of cultivated meadows but also including protected wetlands. On the right bank of the Rhine, industrial use interrupts the green at several points, particularly in Hochfeld (see Green Space Strategy Map). The Ruhr, on the other hand, represents a largely intact natural area, which is only channelized in the port zone. Further north, branches of the Emscher delta run through the city area, while in the south, "6 Seen Platte" represents an artificially created recreational area directly adjacent to the Duisburg City Forest, a large-scale forestry area and a significant source of fresh air for the city.

Regarding open space development, there is significant potential to bring green spaces from the outer districts into the neighborhoods - more so than envisaged in the green space concept. Such green corridors could enable better connectivity among dispersed neighborhoods and promote active mobility away from the established urban motorway (see Urban and Green Blending Potentials).

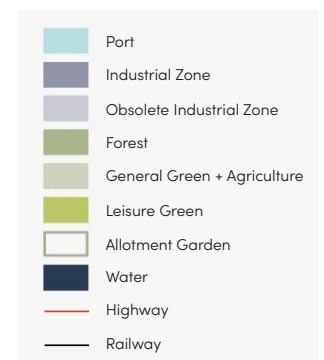


Fig. 48: Potatoplan Green



### 4.7.2 Potatoplan Industrial Areas

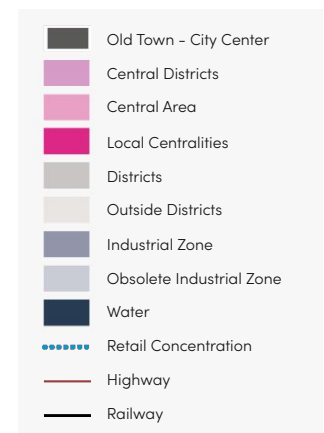
Industrial and commercial areas account for a significant portion of approximately 20% in Duisburg<sup>43</sup> – particularly prominent are the areas of heavy and chemical industries along the Rhine, as well as the Duisburg port, the largest inland port in Europe, which separates the city center from the northern districts. Together with green spaces and transport corridors, this creates a patchwork pattern, the spatial planning evaluation and organization of which would be rewarding for sustainable urban development. As already indicated, the economic strategy map only presents rudimentary approaches and lacks a clear spatial strategy. Which industrial areas can be consolidated in the foreseeable future? Which areas could be integrated into the green space network, and which ones should be further developed as urban economic zones? How can the infrastructure network be better utilized and developed further?

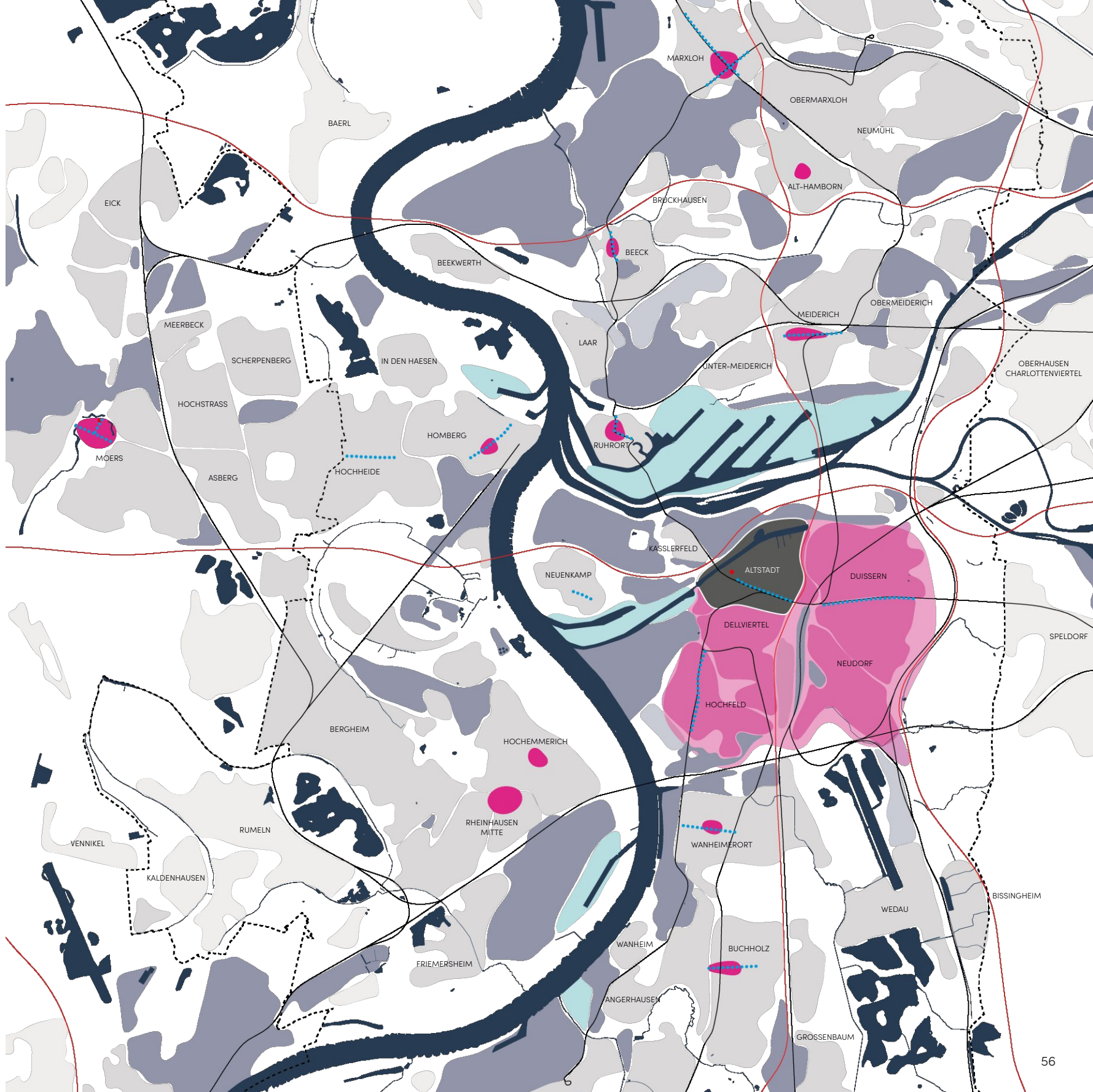




### 4.7.3 Potatoplan Residential Areas and Centralities

The relationship between residential areas and industrial zones clearly demonstrates that Duisburg has not only developed concentrically from its historical core but has also seen the parallel development of additional cores along industry and the port, such as Ruhrort, Hamborn, and Marxloh, which were later integrated into Duisburg. Specifically, in the post-war period, polycentricity was abandoned in favor of a development centered on the "City," as evidenced by the construction of the subway system and the development of high-rise buildings in the center. On the other hand, urban sprawl in the outer districts was actively promoted with the construction of the urban motorway. Currently, there is a renewed focus on the inner development of the Gründerzeit (19th-century industrialization period) neighborhoods, which should be complemented by measures of gentle urban renewal and densification, a public transport-oriented traffic planning, and a coherent green space strategy.





#### 4.7.4 Potatoplan Urban and Green Blending Potentials

Based on the layers of green space, residential areas, and economic zones, essential urban spatial insights are synthesized. The “expanded urban area” encompasses those neighborhoods that have developed sufficient centralities and urban density. The categories “Urban” and “Green” describe potential transformation potentials aimed at densification and urbanization, respectively green space development. Two urban bodies emerge - to the north of the Ruhr river, a directionless urban conglomerate, and to the south, the city center with radially developed neighborhoods. Both are connected via the settlement core of Ruhrort - this urban bridge should be promoted through targeted developments along this corridor - thus enabling a continuous urban network from north to south. The previously unused brownfields in the center (Hochfeld) but especially in the north have great potential to dissolve disruptions and conflict zones through a combination of industry, green, and urban space and to allow for inner-city development without additional land consumption. Regarding the Rhine riverbank as a recreational and experience space, accessibility and activation should be encouraged at targeted locations, both in the city center and beyond, as exemplified by the Rheinpark.

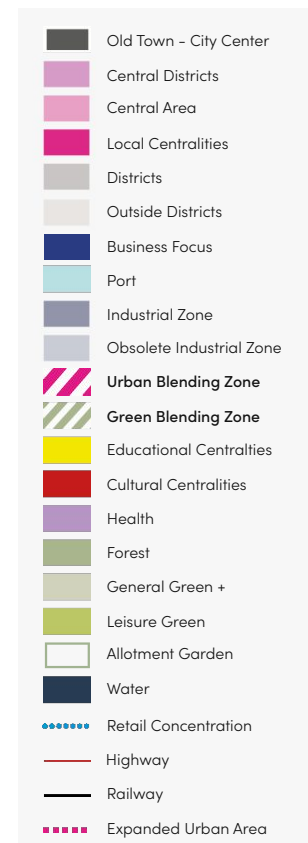


Fig. 51: Potatoplan Urban and Green Blending Potentials





Die approbierte, gedruckte Originalversion dieser Diplomarbeit ist an der TU Wien Bibliothek verfügbar  
The approved, original version of this thesis is available in print at TU Wien Bibliothek.



Fig. 52: "Skyline" of the Industrial Zone Duisburg Hochfeld

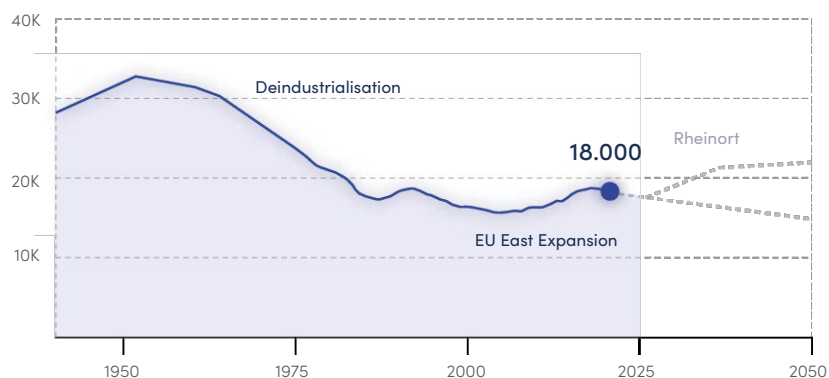


Fig. 53: Demographic Development Duisburg Hochfeld

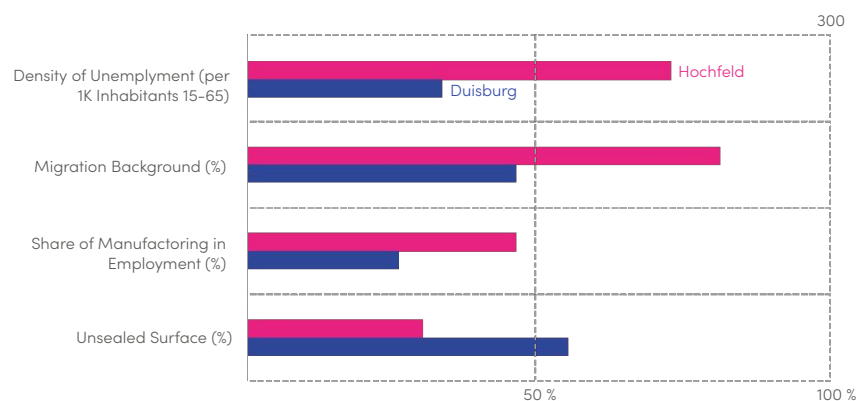


Fig. 54: Selected Figures of Duisburg Hochfeld in Comparison

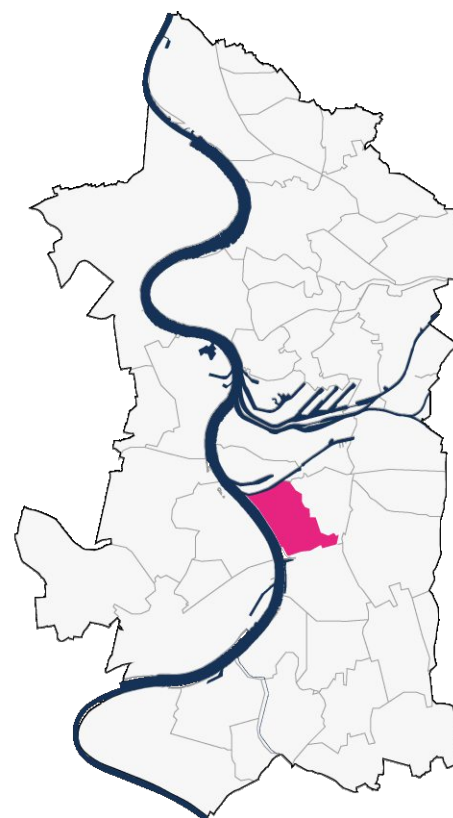


Fig. 55: District Hochfeld

## 5 Focus: Duisburg Hochfeld

### Transformation as consistency

While the previous considerations were related to the entire city area, the focus is now on the district of Hochfeld, especially its industrial area. As already evident in Chapter 4.1, Hochfeld, like Marxloh, stands out as a multicultural, relatively young, but also poverty-affected district within Duisburg. This development is directly related to the effects of structural change, which led to high immigration from abroad into these working-class neighborhoods. Despite the nearly halved population, the (remaining) industry still plays a significant role in the employment structure. However, besides the socioeconomic specifics, the area is also appealing from a urban design point of view, due to its location

between the old town and the Rhine, making it worthwhile to examine in detail. This chapter focuses on the turbulent historical development of the district and the core city of Duisburg, both of which are directly interconnected - starting from the founding of Roman settlements on the Rhine through the industrialization phase to the eventual decline of large industrial plants at the location which led to vacancies and demolition. A subsequent photo documentation describes the resulting status quo - which, together with insights from the city's history and current planning, forms an important basis for the subsequent design approaches.

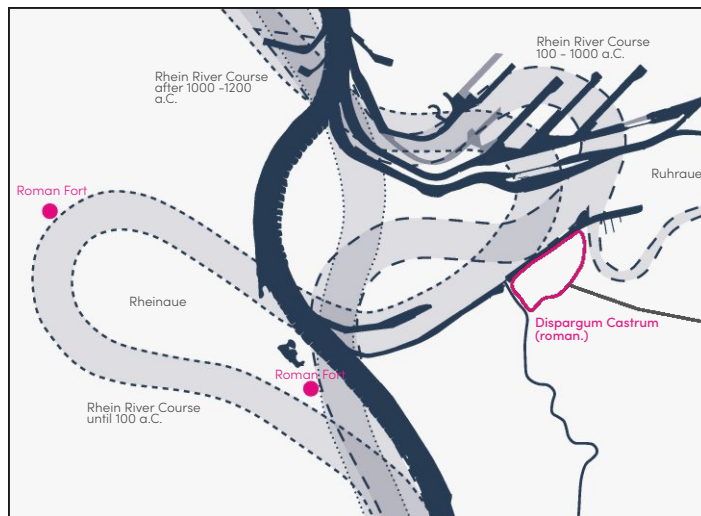


Fig. 56: Rhine River Courses over Time



Fig. 57: Corupitusplan (1566) - First City Map of Duisburg

## 5.1 Historical Urban Development

### Urban Roots of Duisburg

The history of the city of Duisburg is closely linked to its connection to the Rhine. The first Roman settlement presence is documented around the 1st century AD - aiming to secure the Rhine and the mouth of the Ruhr and establish trade routes. In the Middle Ages, an important trade route from Duisburg to Höxter (East-Westphalia) was established with the *Hellweg*, while simultaneously an inland port developed in the area of today's Old Town, with shipping connections to Belgium, Britain, and Scandinavia. Initially, Duisburg thrived as a mercantile city and "Pfalzort" (palace location). In the 12th century, the city wall, still preserved in many places today, was built, and residents were granted citizenship and customs exemption. In 1392, the City became member of the the Hanseatic League - the biggest commercial and defensive network of merchants in northern Europe at that time.<sup>44</sup> The development changed disruptively after the course of the Rhine was shifted to the detriment of the city in the 11th century,

and access to the Rhine was permanently lost due to silting after a devastating flood in the 14th century. The port was relocated to Ruhrort, which then began to prosper, while Duisburg had to return to agriculture and craftsmanship.<sup>45</sup> Two individuals were influential for the city: Johannes Corputius, a Dutch cartographer who published the first map of Duisburg in 1566, and his apprentice, Gerhard Mercator, known for the Mercator projection, which made Duisburg a center of cartography in the modern era. The name Mercator is still present in many parts of the city today (see 4.5 Current Urban Developments).<sup>46</sup> Also noteworthy is the early founding of the university "Academia Duisburgensis" in 1655 incorporating faculties like theology and medicine. However, it was relocated to Bonn in 1819 for political reasons and has no direct connection to today's University of Duisburg-Essen.<sup>47</sup>

Fig. 58: Duisburg 1735



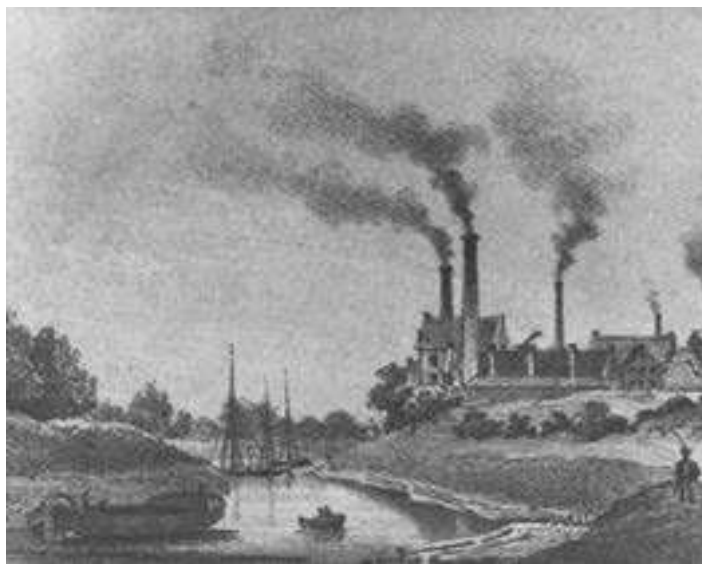


Fig. 59: "Borussia Hütte" One of the first smelteries at Rhein-Canal (1850)



Fig. 60: Düsseldorfer Straße 1870

## Rhine-Canal as Urban Catalyst

Although in the 17th century, shipping connections were established from Duisburg to the Netherlands, especially to Nijmegen, the problem of lacking loading infrastructure and the considerable distance from the shore to the city center persisted. It was not until the construction of the "Rhein-Canal" until 1832, then only 6 meters wide (now the Outer Harbor), that the connection to the river and thus access to international trade routes were restored. This was made possible by a joint-stock company in which wealthy Duisburg merchants participated. The canal ran to the mouth of the Dickelsbach at the Marienkirche, where a customs port was established. Shortly thereafter, it was decided to extend the canal to the Ruhr, thereby revitalizing the coal and timber trade – thus, the present-day Inner Harbor was created. However, the emerging success of the railway with new routes to Cologne and the Ruhr area prevented the Ruhr Canal from being economically successful, leading to its closure by 1890. Nonetheless, during this time, the Inner Harbor

became an important transshipment point for goods such as wood, coal, and grain, earning Duisburg the title "Granary of the Ruhr Area". Cargo handling at the Inner Harbor increased from 4,800 tons in 1833 to 1.4 million tons in 1887. Despite this growth, the economic pressure on traders and mills was enormous, leading to the merger of the ports in Duisburg and Ruhrort at the end of the 19th century to finance further expansion measures such as Parallelhafen.

The citizens of Duisburg greatly benefited from the canal, leading soon to the first settlements outside the city walls.<sup>48</sup> However, a bridge connection over the Rhine was still lacking – a ferry from Werthausen to Hochfeld was one of the few crossing options available at the time.

**Vater Rhein, Deine Welle  
spiele wieder klar und helle  
wie sie in der Vorzeit that  
bis zur Mauer unserer Stadt.**<sup>49</sup>

Slogan at the Canal-Inauguration

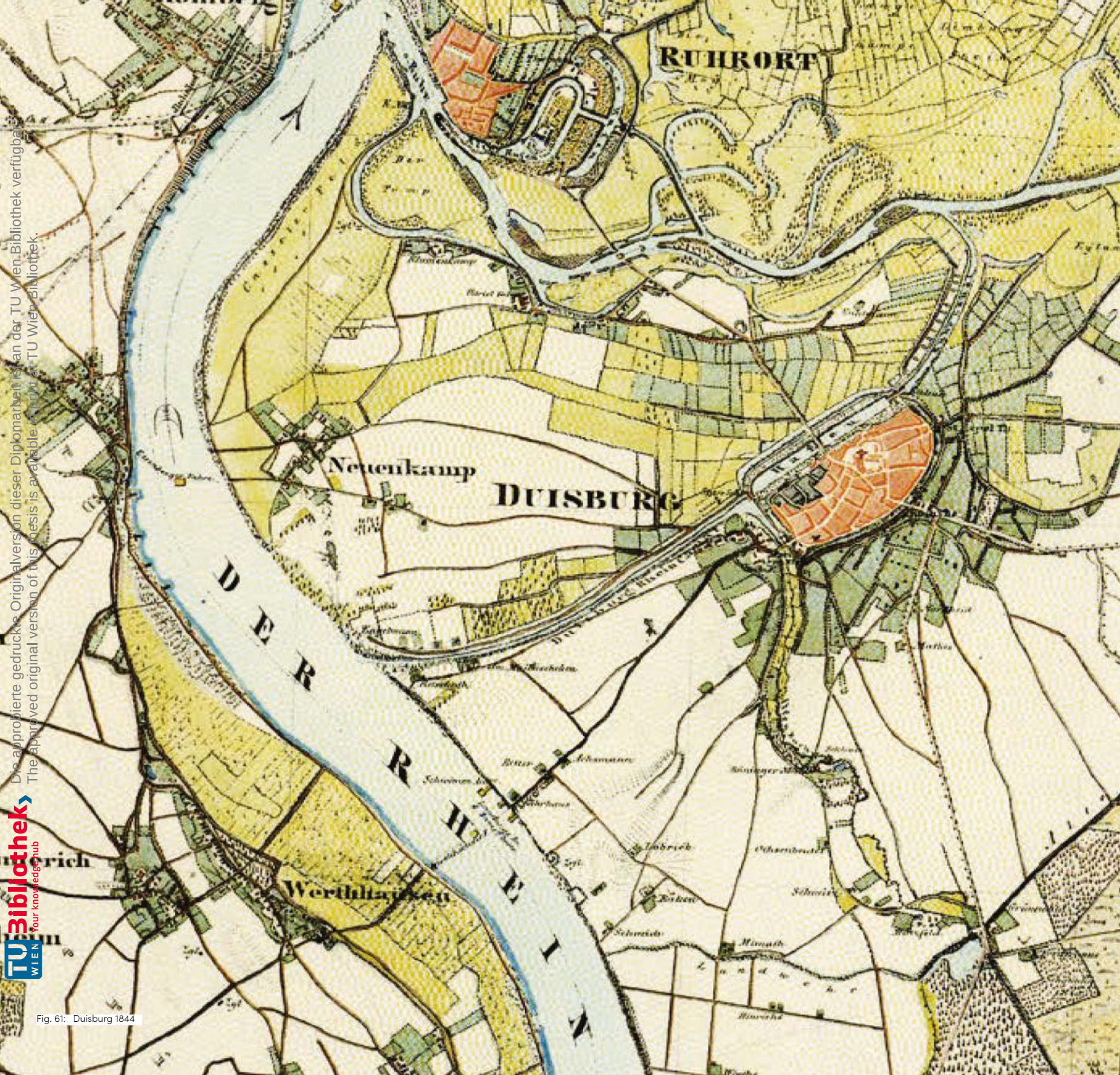


Fig. 61: Duisburg 1844



Fig. 62: H. J. Vuygen & Co. - Production of Fireproof Stones at Wörthstrasse (1890)



Fig. 63: Trainferry to Rheinhausen (1870)

## Beginning of Industrialization

As the inner harbor became a hub for goods handling, in Hochfeld along the outer Rhine canal, initial huts, brickworks, and other businesses emerged, benefiting from the flood-protected location and direct connection to the Rhine for coal supply from the Ruhr region and other goods. Soon, the Kultus- and Nordhafen were constructed along the right bank of the Rhine, and the area was connected by rail, attracting numerous industrial enterprises to Hochfeld. Ultimately, there were three competing private railways: the "Köln-Minden Eisenbahn", which connected Duisburg to Cologne as early as 1849, followed by the "Bergisch-Märkische Eisenbahn" and the "Rheineische Eisenbahn" The latter crossed the Rhine for the first time, initially via ferries, and from 1873 via

the Duisburg-Hochfeld Railway Bridge.

It was a period of uncontrolled economic growth, reflected also in urban development. While the more bourgeois quarters around old town - Wasserviertel and Dellviertel had a rough urban framework and development path, the emerging worker's settlements, especially in Hochfeld, grew without municipal coordination. There was no zoning strategy, as urban planning could not keep pace.

In this early stage of industrialization, workers's housing was provided mostly by the businesses very close to the factories - resulting precarious living conditions were even for that era.<sup>50</sup>



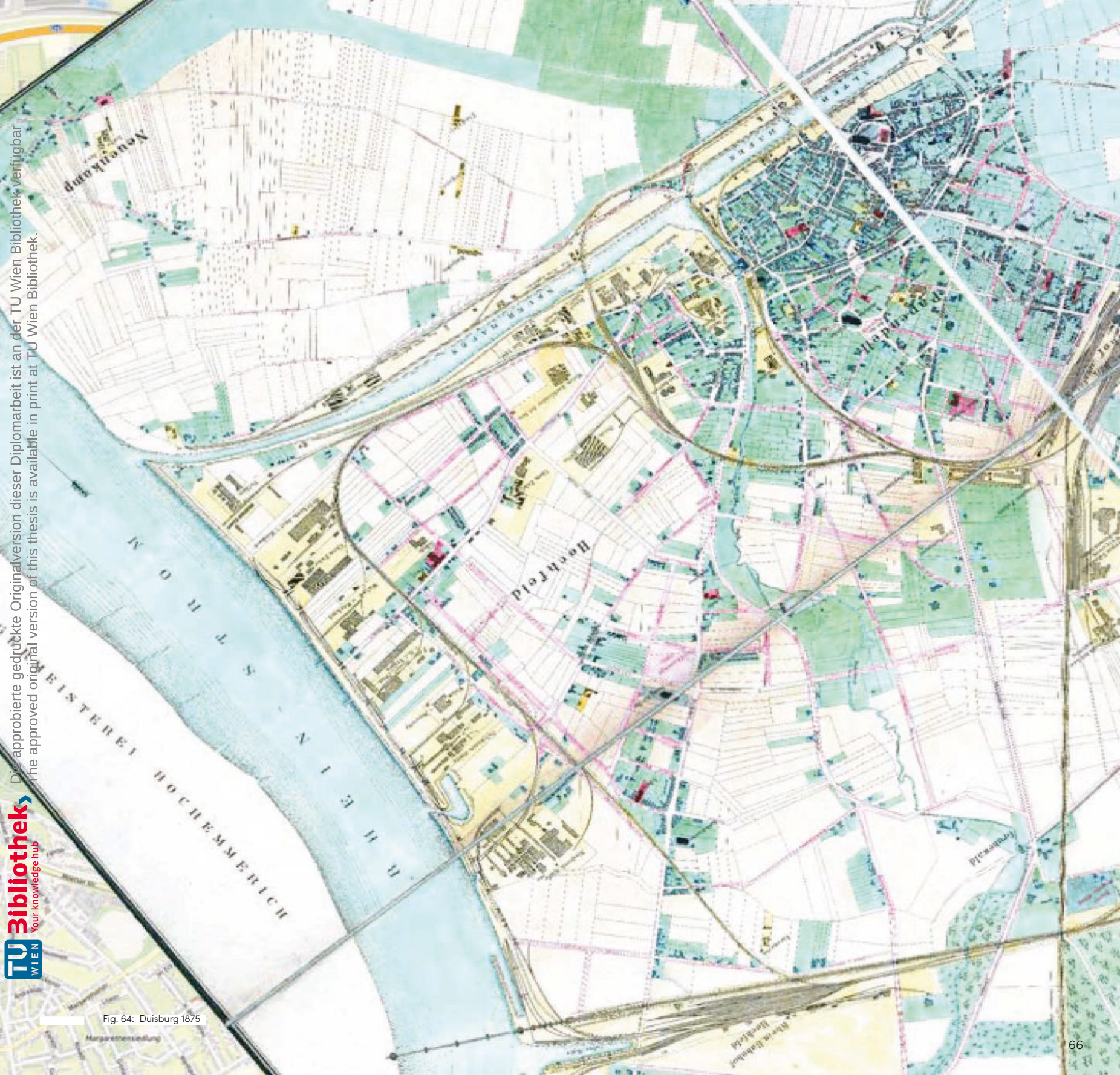


Fig. 64: Duisburg 1875

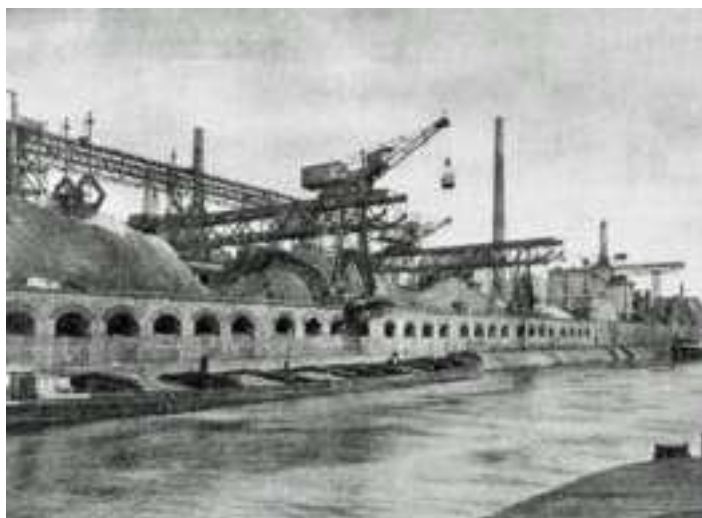


Fig. 65: "Hütte Vulkan" – a smeltery at the Rhine Canal, a Street is still named after in Hochfeld



Fig. 66: Soda Factory "Matthes & Weber" – survived as Name of a Bus-Station

## Peak Phase of Industrialization

From the second half of the 19th century onwards, a multitude of industrial enterprises settled along the riverside zone adjacent to the railway line: as early as 1848, the "Hütte Vulkan" smeltery opened at the outer harbor – alongside "Kupferhütte" and the "Niederrheinische Hütte", it was one of the major heavy industry plants in Hochfeld. Chemical factories, such as the soda producer Matthes & Weber, as well as metal industry, a brewery and a shipbuilding company established themselves in Hochfeld. In 1872, the city opened the Municipal Gasworks – today known as Stadtwerke with the combined heat and power plant. Following the phase of rapid economical growth, municipal facilities such as the Marienspital hospital, several church communities, elementa-

ry schools, a academic high school, an indoor swimming pool, a park, and public squares were established alongside the industrial enterprises. Several tramway-lines were established, to connect the outer district with the city center and main-station. The Gründerzeit quarter grew haphazardly, slowly encroaching upon the industrial plants with large gaps, while residential buildings along the riverside mostly gave way to expanding industries. The Kupferhütten-siedlung (Workers Settlement) directly in front of the factory gates was prototypically built as a semi-detached housing development with front gardens, but the living quality of the neighborhood continued to suffer greatly from industrial emissions.<sup>51</sup>

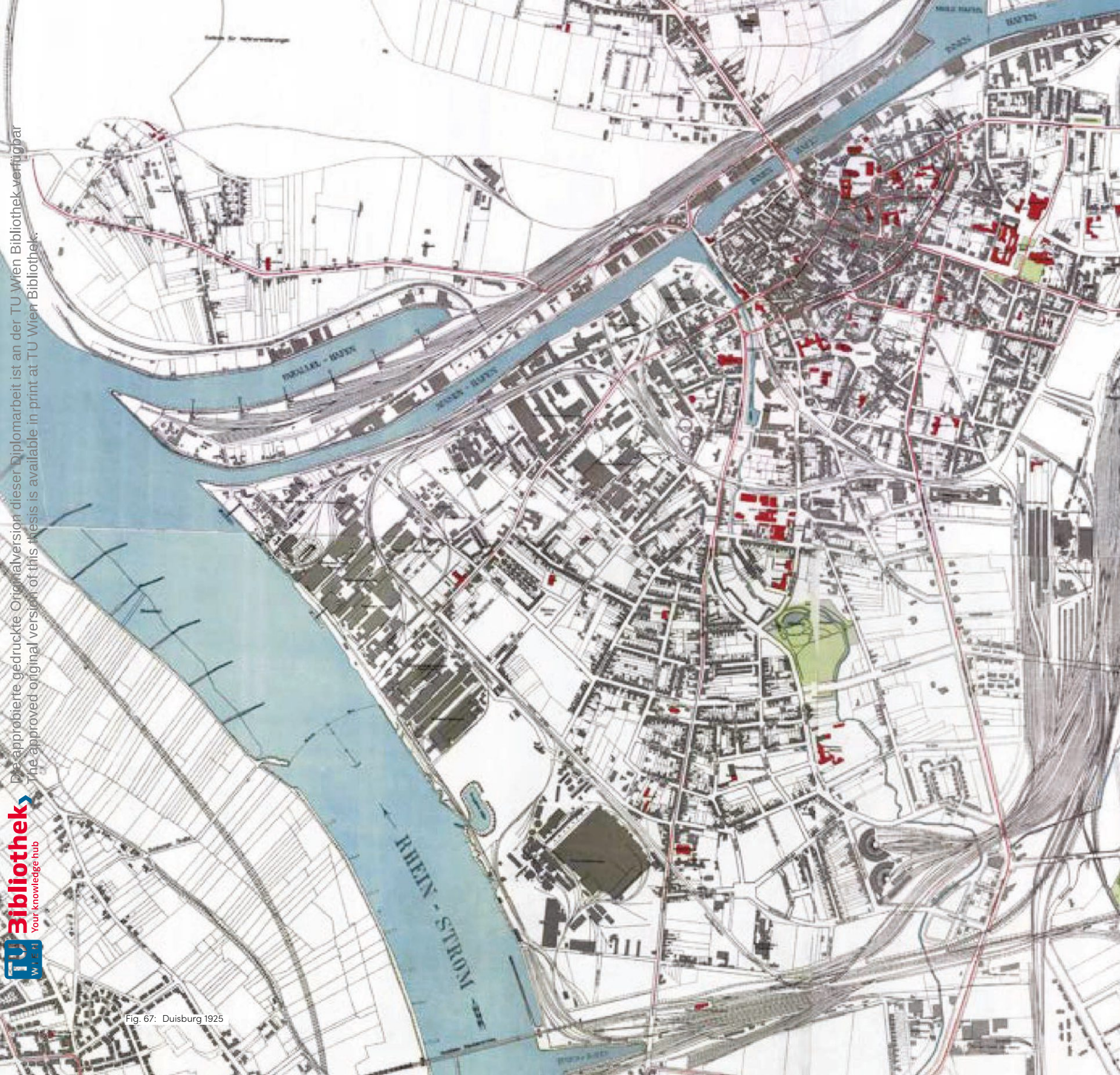


Fig. 67: Duisburg 1925



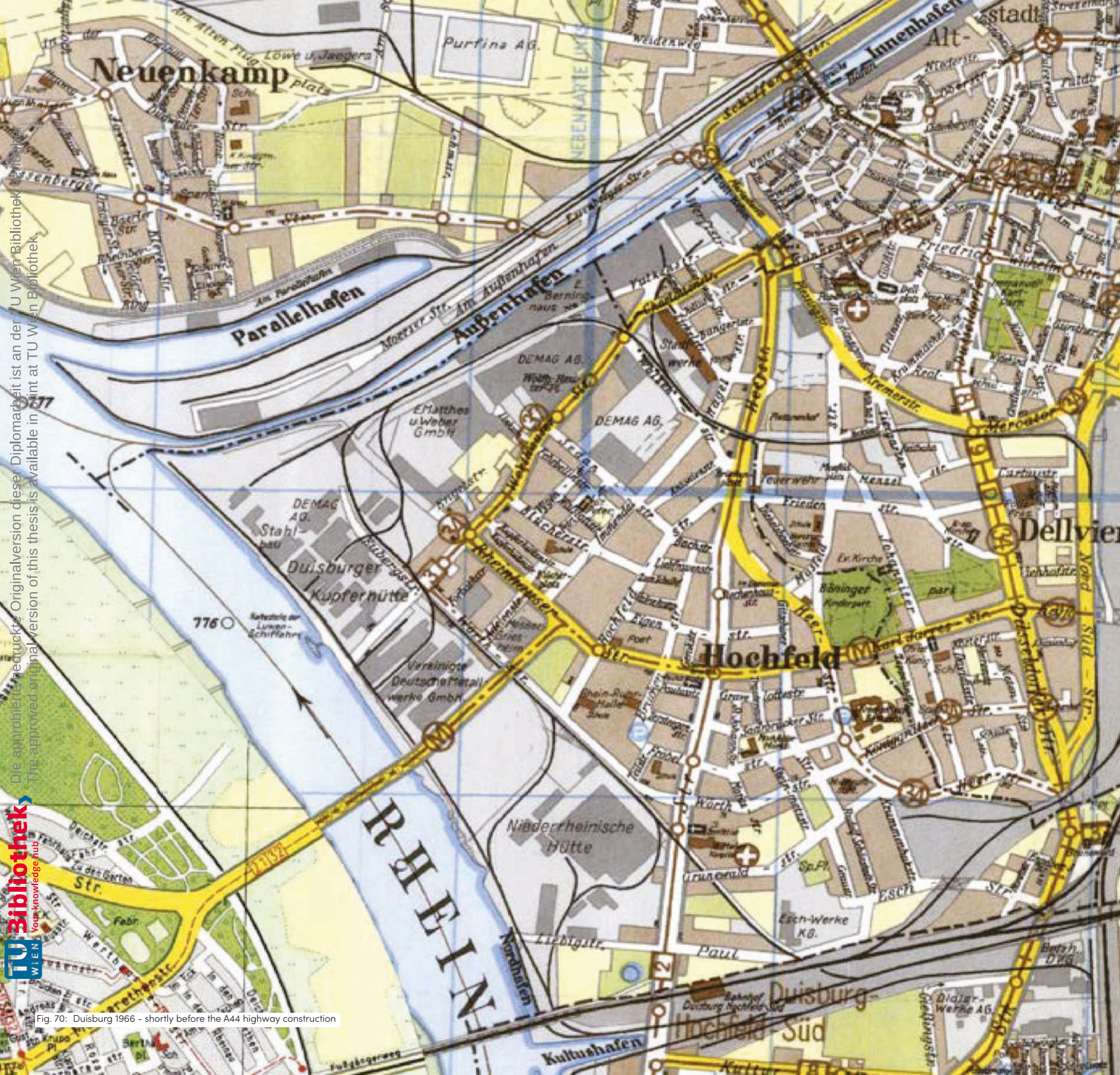
Fig. 68: Rhine Riverbank and the "Kupferhütte" Smeltery



Fig. 69: Loading Zone of the Steelworks "Niederrheinische Hütte"

## Miracle on the Rhine

During the time of the Nazi dictatorship, the industry in Hochfeld was mobilized for the war machine, and thousands of forced laborers were employed in the factories. Due to the massive bombardment by the Allies, the majority of Duisburg was destroyed, with the aim of eliminating the armaments industry in particular. Shortly before the end of the war, the Nazis destroyed the Rhine bridge, which they had previously built themselves - it was reconstructed shortly after in 1950. The 1950s and 60s were years of rebuilding and economic prosperity. The steel and iron works were in demand, and the necessary coal came in abundance from the Ruhr region. The population in Hochfeld grew to up to 33,000 inhabitants. However, the wide mix of industries was lost in the post-war period, with the large steelworks and the DEMAG (German Engineering Company) concentrating thousands of jobs. The residential district in Hochfeld developed a vibrant community with a lively shopping street (Wanheimerstraße) and a diverse offering of cultural and sports clubs.<sup>52</sup>



Die approbierte gedruckte Originalversion dieser Diplomarbeit ist an der TU Wien Bibliothek erhältlich.  
The approved original version of this thesis is available in print at TU Wien Bibliothek.

**TU Bibliothek**  
WIEN  
Your knowledge hub

Fig. 70: Duisburg 1966 - shortly before the A44 highway construction

## Time Journey - '50s - '70s



Fig. 71: **1.** Kupferhüttensiedlung (worker's settlement - demolished)



Fig. 72: **2.** Petrikirche (demolished)



Fig. 73: **3.** "Duisburger Kupferhütte" (Copper Smelter)



Fig. 74: **4.** Werthausen Strasse (residential buildings demolished)



Fig. 75: **5.** Garden Plots - Housing - Industry (demolished)



Fig. 76: **6.** Fishing at the Rhine Bank



Fig. 77: **7.** Sedanstrasse (residential buildings demolished)



Fig. 78: **8.** "Astoria Filmtheater" (demolished)



Fig. 79: **9.** Courtyard before demolition (1976)

10.000

-  Industry/Businesses
-  Mainly Residential
-  School/ Church





Fig. 80: Courtyard still partly standing (1980s)



Fig. 81: Blücherstrasse - used to be a strip mall in the quarter

## Decay and Urban Redevelopment

The economic upheavals such as the oil crisis in the 1970s led to a declining demand for the large steel and iron works, which had an immediate impact on urban development due to the monstructures in Hochfeld. Workers lost their jobs and moved away, while poorer individuals from abroad moved into the neighborhoods. At the same time, it became increasingly clear that the living situation close to the industry was no longer sustainable.<sup>53</sup> The «Sanierungsplan» (Rehabilitation Plan) of 1974 reflects the planning discourse of that time, which envisaged the demolition of buildings close to industry and proposed «low-emission businesses» as a buffer to residential areas, along with a green belt and a bypass road. Also interesting were the plans at that time to relocate the tram further south underground – in line with the

concept of functional separation and the car-oriented city. The demolition of residential buildings took place by 1987, but the bypass road has only been partially implemented to this day. The extension to the old town is still under discussion. Of the numerous businesses, only the copper smelter in the form of «DK Roheisen + Recycling» and DEMAG, which has been integrated into Siemens Energy and manufactures gas turbines, remain today. While the southern part of the Niederrheinische Hütte area has been or is being transformed into the residential quarter «Rheinort» and the Rheinpark as a repurposing, there are no clear perspectives for the remaining part beyond the bypass road, as indicated by the municipal strategic maps.



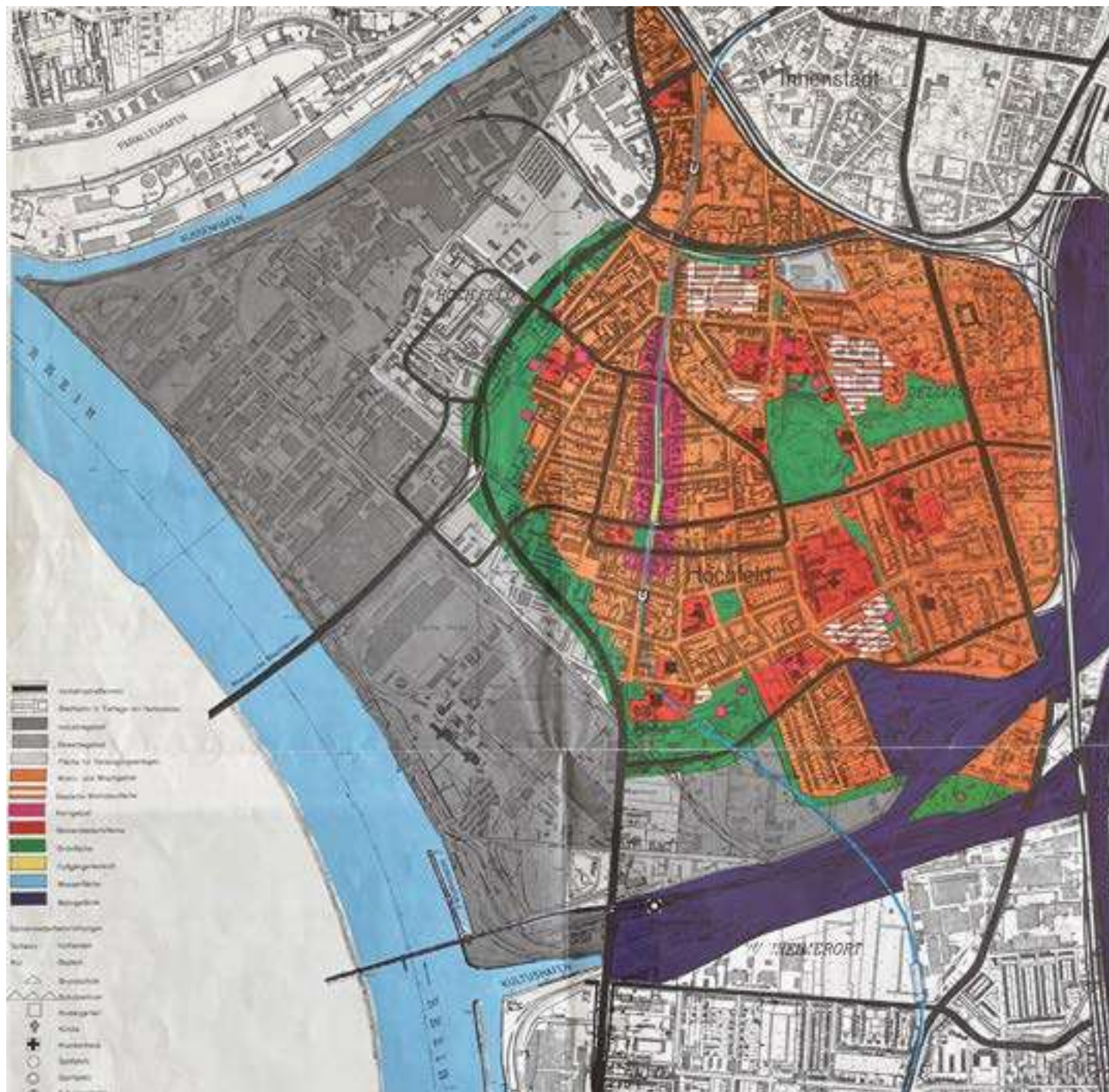


Fig. 82: Redevelopment Plan Duisburg Hochfeld 1970s

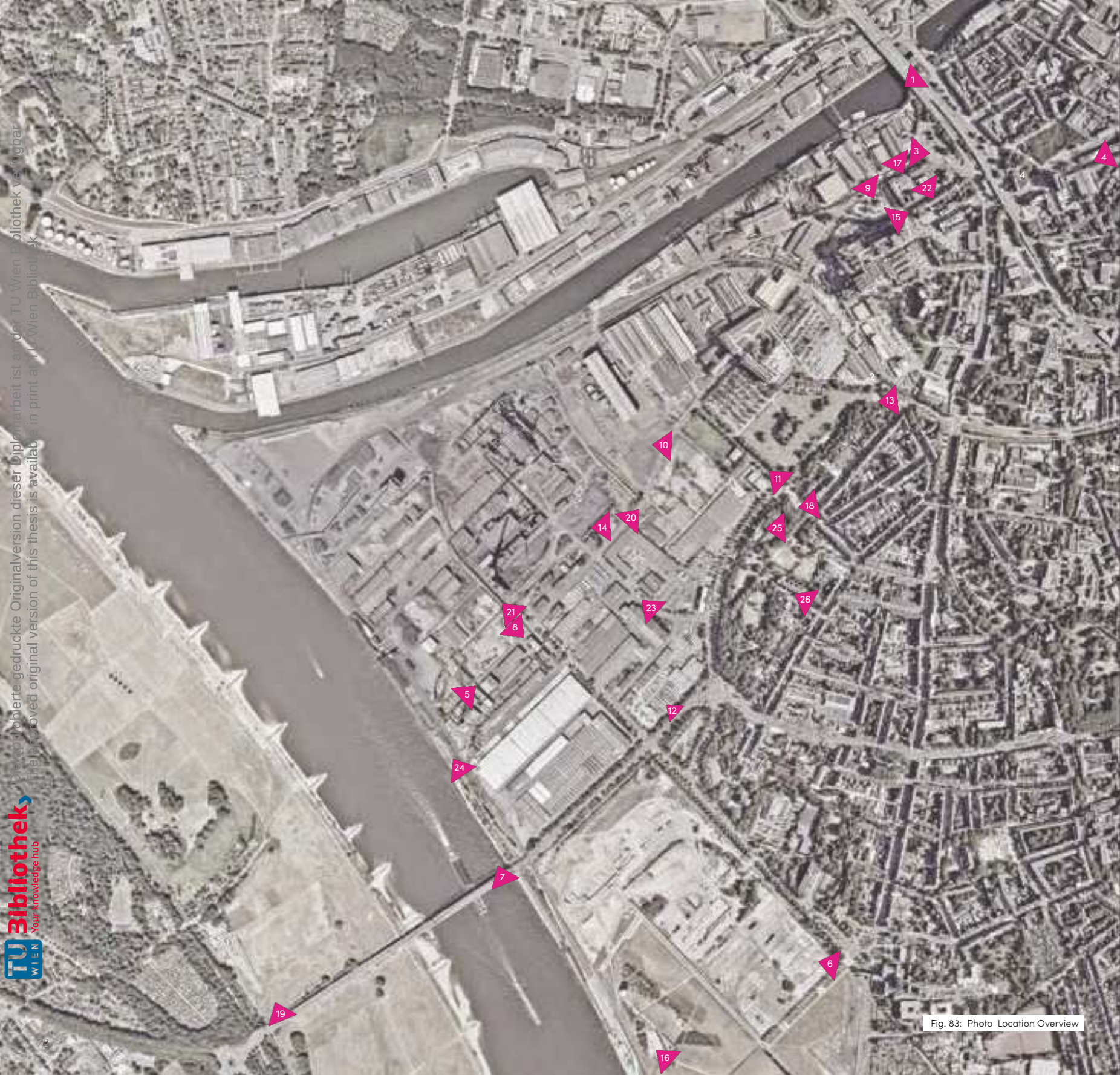


Fig. 83: Photo Location Overview

## 5.2 Photo Documentation

The following images aim to sketch the current image of the industrial area of Hochfeld and the adjacent urban and natural spaces in an essayistic manner, without heavily evaluating them, as the images speak for themselves. The photographs were taken between February and July 2023, reflecting three seasons. It becomes visible how contrasting the area between the old town and the Rhine riverbank is, where the problems lie, but also what enormous urban potentials lie within these contrasts. With a view to the neighborhood project at the Rheinpark and the construction activity on Werthausenstrasse, it becomes clear that development is constantly evolving - what holds true today may become obsolete tomorrow. From history, it is evident that Hochfeld has always been subject to market forces, where the success and failure of entrepreneurship shape the area. This can be interpreted as a weakness, but also as a strength in terms of the district's ability and openness to transform.



Fig. 84: 1. Dockyard, Silos and Terminals at Aussenhafen



Fig. 85: 2. Green Strip between Industry and Residential Quarter



Fig. 86: 3. View to Old Town and Marienkirche (former Zollhafen)

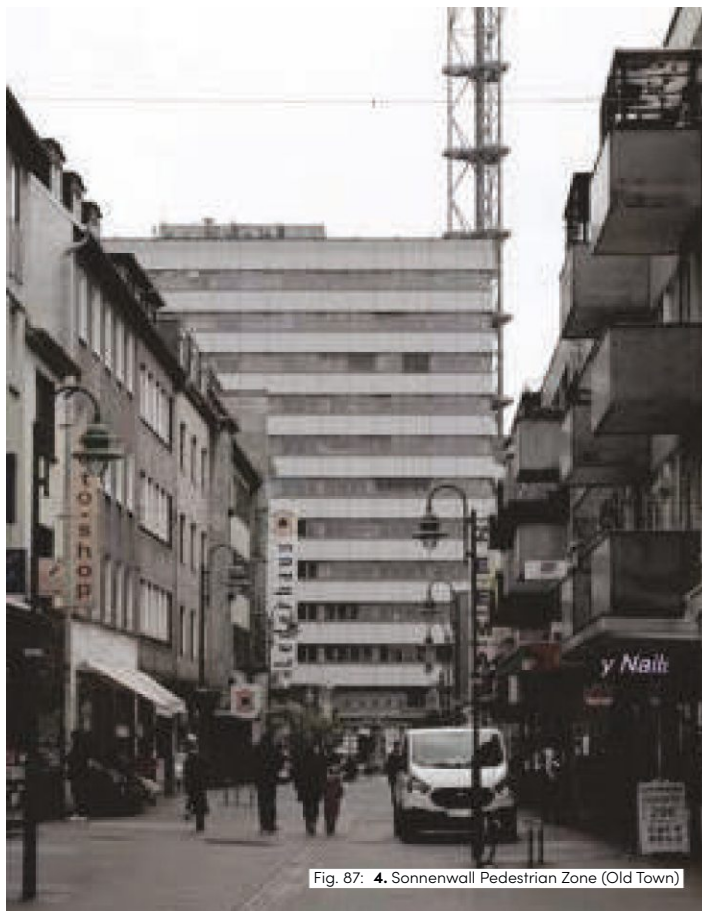


Fig. 87: 4. Sonnenwall Pedestrian Zone (Old Town)



Fig. 88: 5. Werthauser Strasse -View into Town



Fig. 89: 6. Demolished Industry - To be redeveloped as Residential Quarter



Fig. 90: 7. Rheinkai - Piers for Bulk Freighter



Fig. 91: 8. Culinary Supply at "Kupferhütte"



Fig. 92: 9. Abandoned Part of the Municipal Thermal Power Station

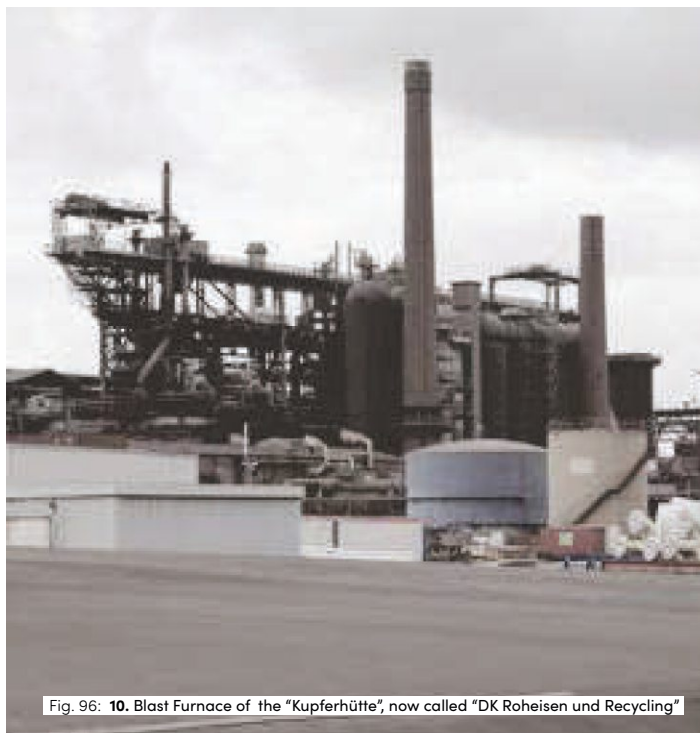


Fig. 96: 10. Blast Furnace of the "Kupferhütte", now called "DK Roheisen und Recycling"



Fig. 95: 11. Construction Market



Fig. 93: 12. Sedan Strasse - Heeavy Transit Traffic



Fig. 94: 13. Soccer Field at Blücherpark



Fig. 99: 14. Sinter Plant at Kupferhütte (Raw Iron Production)



Fig. 98: 15. Charlottenstrasse - Connection between Hochfeld and Old Town



Fig. 97: 16. Skaterpark at Rheinpark





Fig. 100: 17. Vulkanstrasse – Sex Trade District



Fig. 101: 18. Recently Opened Youth Center at Blücherpark



Fig. 102: 19. Farmed Grazing Areas westside the Rhine River



Fig. 103: 20. Werthauser Strasse - Siemens Energy in the Background



Fig. 105: 21. Waste Gas Chimney of "Kupferhütte" - Pipeline leads to Power Station



Fig. 104: 22. Vacancies at Charlottenstrasse



Fig. 109: 23. "Zur Kupferhütte"



Fig. 108: 24. Rheinkai



Fig. 106: 25. Climbing Walls at Former Bunker



Fig. 107: 26. Blücherstrasse

**»The Master Plan (..) recommends examining the perspectives of a continuous water-guided urban and landscape development between the Innenhafen (inner harbor) and the Rhein-Park. This includes developing scenarios to assess both the urban and economic perspectives of current industrial and commercial areas in Duisburg-Hochfeld, as well as exploring the possibilities of a genuine water-guided park band along the inner and outer harbors and along the Rhine riverbank.**

**The visible structural transformation in heavy industry in Duisburg-Hochfeld has already released significant land potentials, which can serve as the starting point for a new sub-regional urban development strategy for creating new jobs and improving quality of life in**

**Duisburg-Hochfeld»<sup>54</sup>**

(Masterplan Emscher Landschaftspark 2010)



Fig. 110: Proposal by BDA (Association of German Architects) late 1980s on occasion of the IBA Emscher Park

### 5.3 Precedented Proposals

Interestingly, in the past, there were actors who showed more interest in the Hochfeld Industrial Area than the city of Duisburg itself, as they were not directly involved in local urban planning. The Association of German Architects (BDA) pursued its own plans in the late 1980s to start an International Building Exhibition (IBA) Emscher Park and published their own sketches that concerned Duisburg's Innenhafen (inner harbor) as well as the Rhine riverbank. The Innenhafen ultimately became an IBA project, from which Duisburg still benefits today, but not the Hochfeld area. However, the BDA's design should ultimately be understood as more of an initial thought-provoking impulse than a fully developed concept. More than 15 years later - during which time no

further urban development measures were implemented except for the partial construction of the bypass road - it was the Project Ruhr GmbH that included the area in the project catalog of the "Masterplan Emscher Landscape Park 2010" (see quote). At that time, there was still a belief that, in the format of the "Ruhr Metropolis," the development of the Emscher urban landscape could be further advanced beyond the IBA and that urban development projects could also be initiated. From today's perspective, this approach must be considered unsuccessful. Nevertheless, it would be in the hands of the city of Duisburg to independently pursue these approaches further.

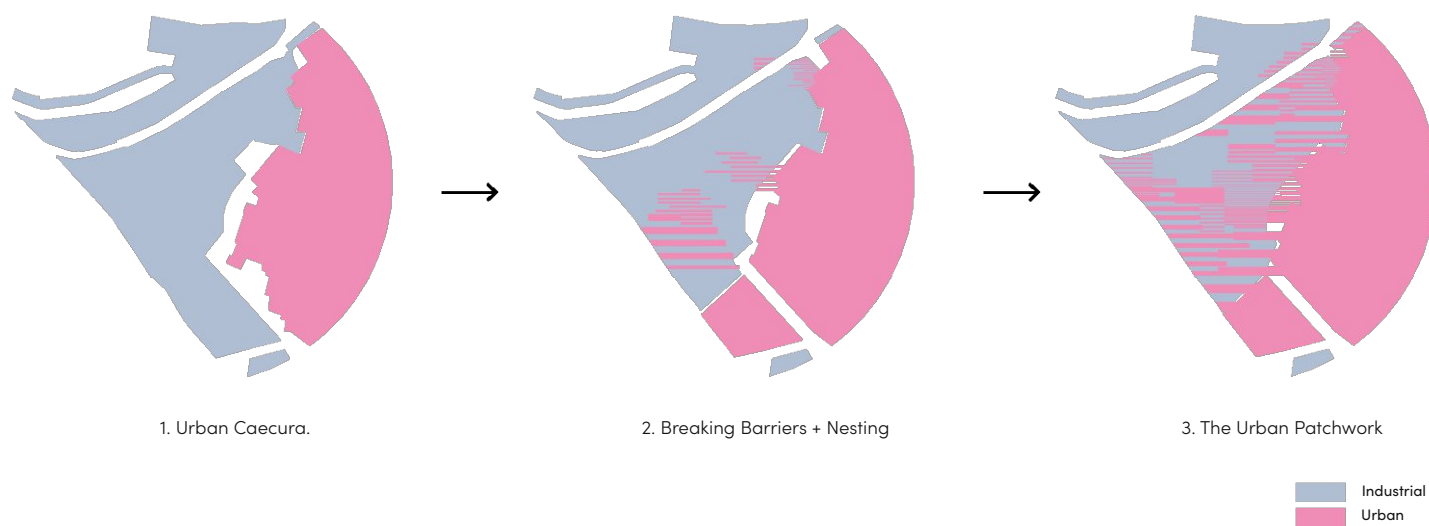


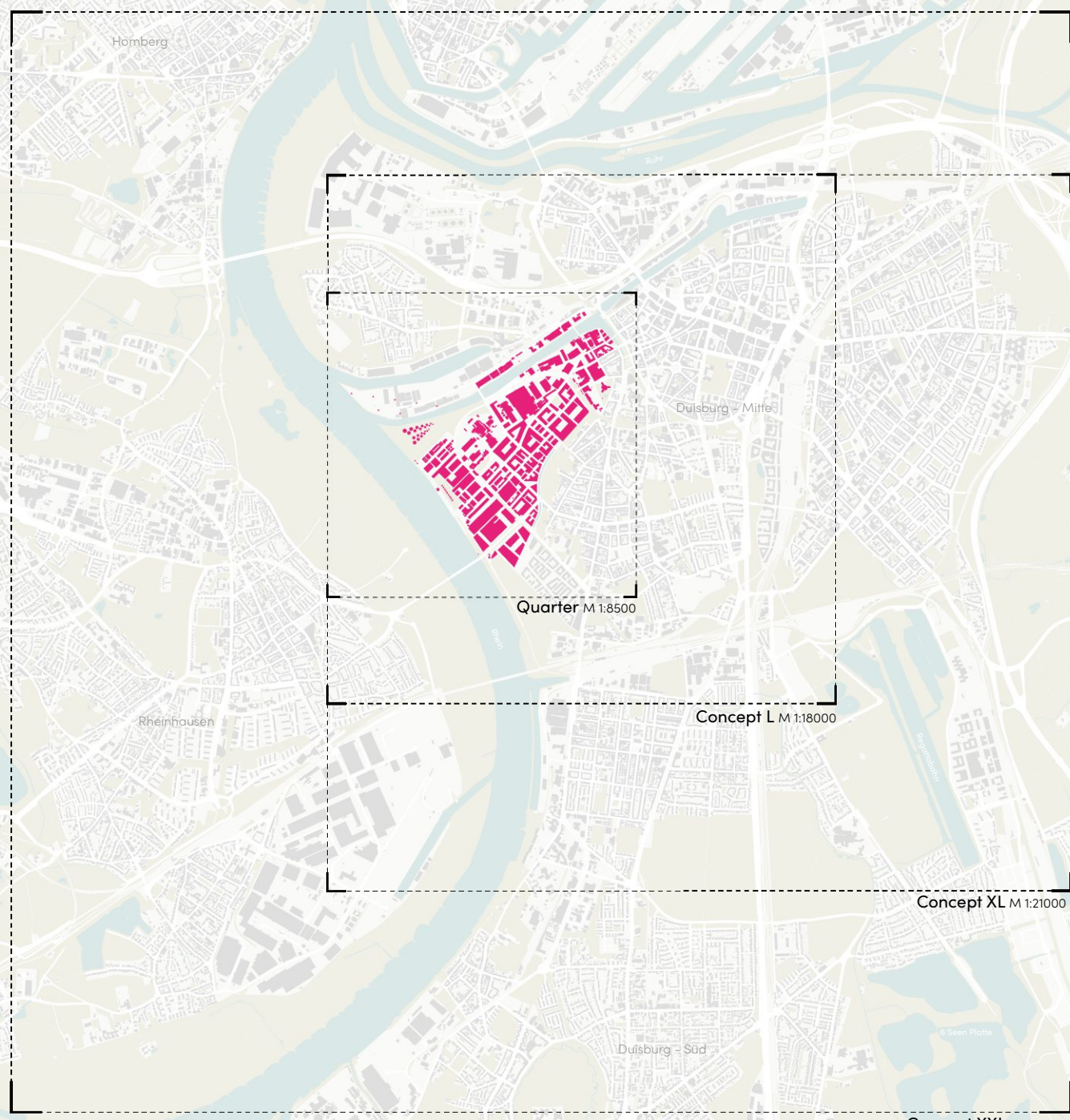
Fig. 111: Proposed Development Path "Urban Patchwork"

## 6 Hochfeld Industrial Zone (Re)urbanized

### 6.1 Concept Overview

The proposal to integrate the industrial area into the urban context necessitates a multi-scale approach. Unlike the city expansions at Rheinpark, the old freight station, and Wedau, which are intended to be accessed simply through neighborhood streets, stronger interventions would be required in Hochfeld to upgrade the area as an "urban development zone." The goal of this upgrade is gentle renewal and densification, contrasting with the planned development projects in Duisburg. Time dimension plays a significant role here – instead of waiting for potential obsolescence of the remaining industry and then imposing new ideas on the drawing board, transformations at different speeds need

to be curated and designed. However, the following conception is initially organized in terms of scale. Important aspects of traffic planning are first addressed, ultimately leading to an embedded urban spatial vision for Duisburg's central neighborhoods. At the same time, the industrial area is being integrated programmatically by incorporating the already planned projects and existing institutions and infrastructure into an overall vision. In the final step, based on the overarching visions, a comprehensive concept for the spatial and programmatic development of the area itself is presented, from which individual areas are finally outlined in more detail as "zoom-ins".



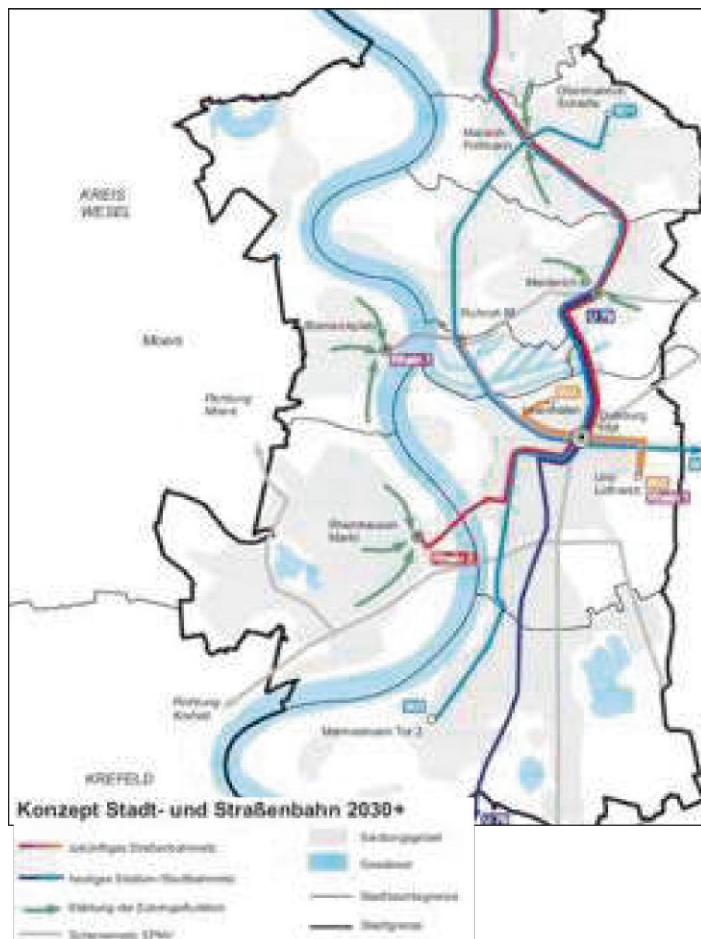


Fig. 113: Targeted Tramway Network 2030+

## 6.2 Concept XXL: Public Transport

The relatively high proportion of motorized individual traffic in the overall traffic mix in Duisburg, as previously outlined, is primarily attributable to political decisions made in the post-war period. The city highway A59 promoted urban sprawl and solidified the car-centric city, a legacy that persists to this day. Compared to the 1950s, several tram lines, including those to the Hochfeld industrial area, were discontinued, and instead, efforts began to move the tram underground in the city center and to expand roads above ground. This development reflected the zeitgeist of the time and the vision of a modern metropolis.

Today, the situation is markedly different – motorized traffic diminishes the quality of life, residential areas, and public spaces in many parts of Duisburg, including Hochfeld. Maintaining the subway system is a significant cost factor for the city, particular-

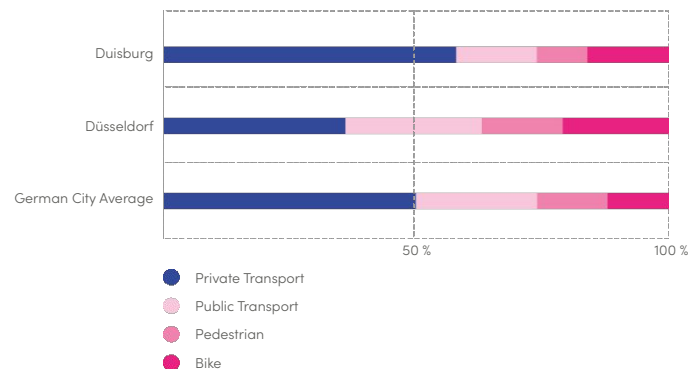
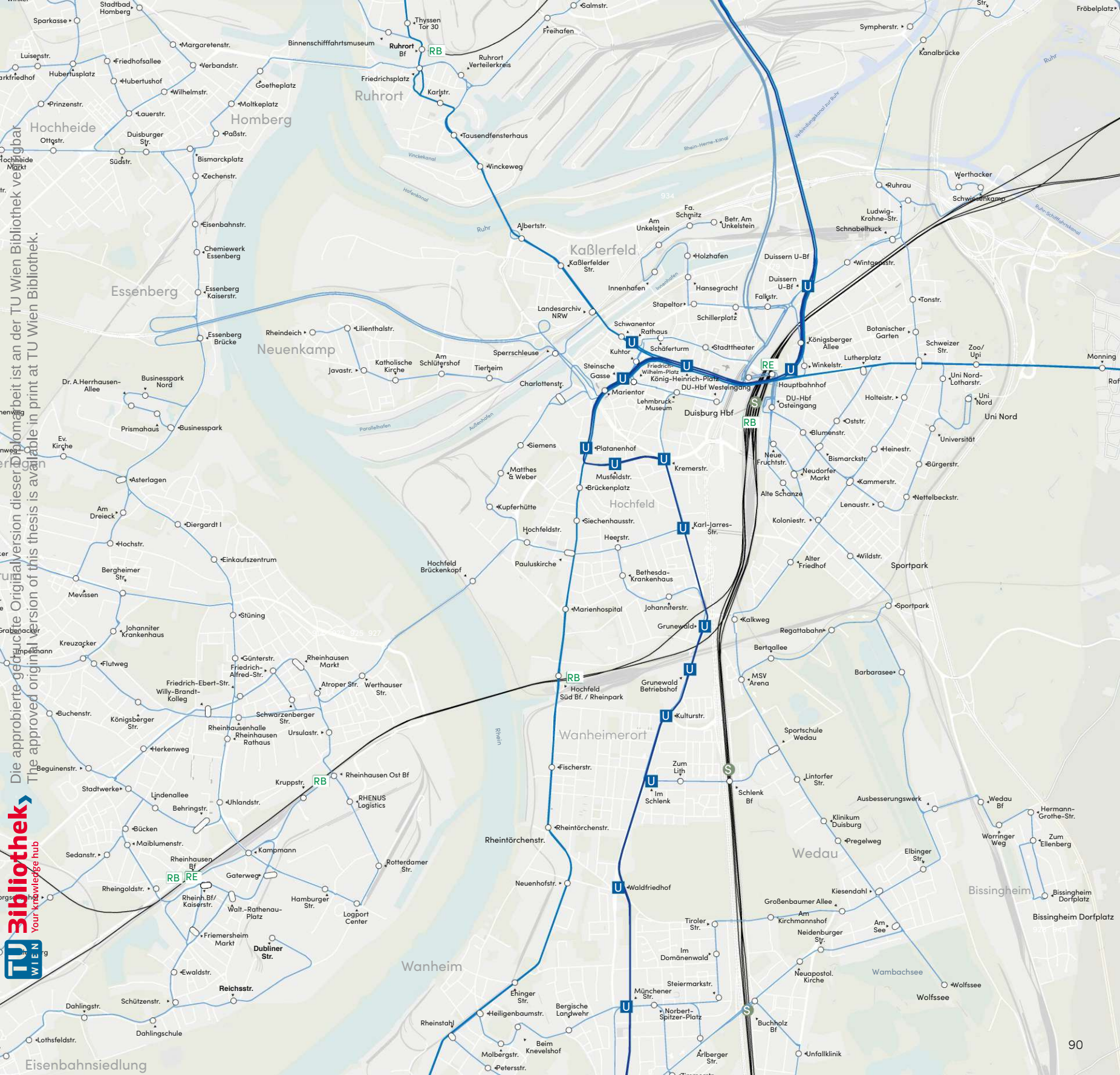


Fig. 114: Modal Split Duisburg in Comparison (2015)

ly challenging given the municipality's difficult financial situation. The expansion of the light rail network has long been planned, particularly affecting the university, the inner harbor, and Rheinhausen. However, as of 2024, the planning has not progressed significantly.

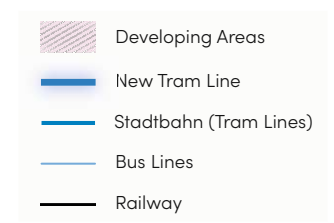
The XXL Mobility Vision incorporates the planned connection across the Rhine; the starting point of a new light rail line is therefore Rheinhausen Station, providing connections to the regional rail network. After crossing the Rhine, the line would serve the Hochfeld industrial area, connects to the existing Rathaus and Hauptbahnhof stations in the city center, and extends ultimately through Neudorf to the newly planned technology district and residential areas in Wedau.

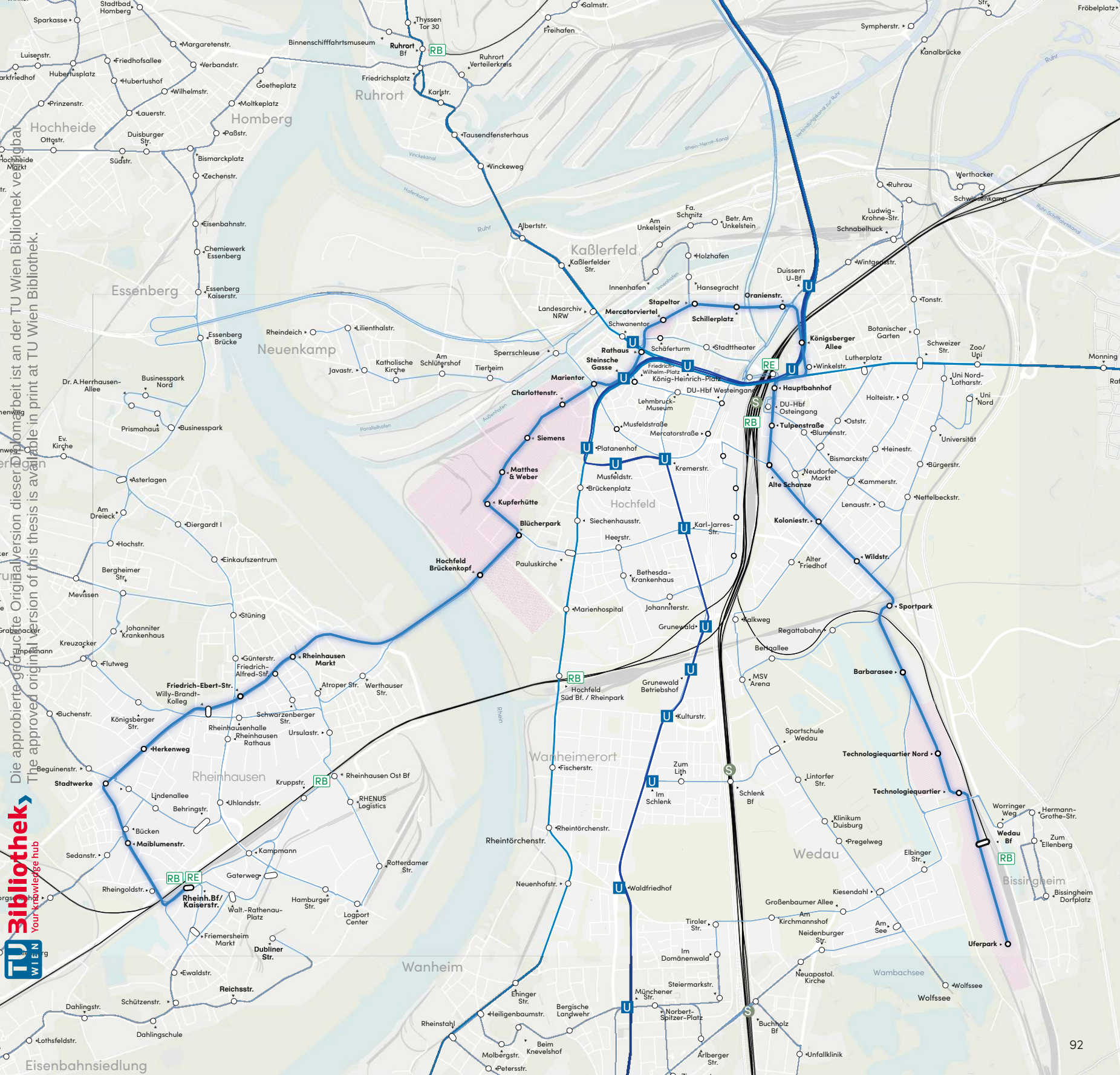




Die approbierte gedruckte Originalversion dieser Arbeit ist an der TU Wien Bibliothek verfügbar.  
The approved original version of this thesis is available in print at TU Wien Bibliothek.







Die approbierte gedruckte Originalversion dieser Arbeit ist an der TU Wien Bibliothek verfügbar.  
The approved original version of this thesis is available in print at TU Wien Bibliothek.



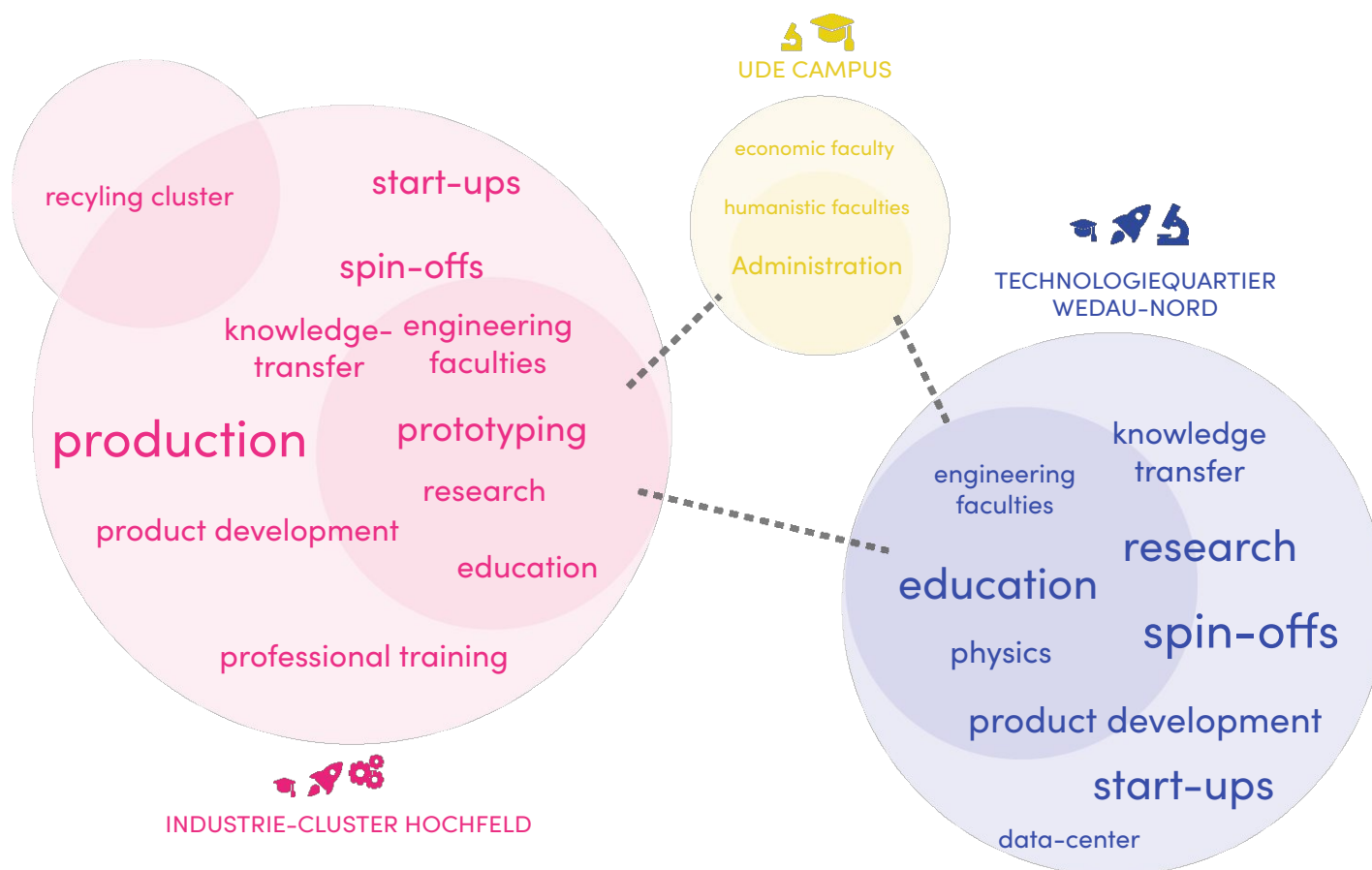


Fig. 117: Campus Program Overview

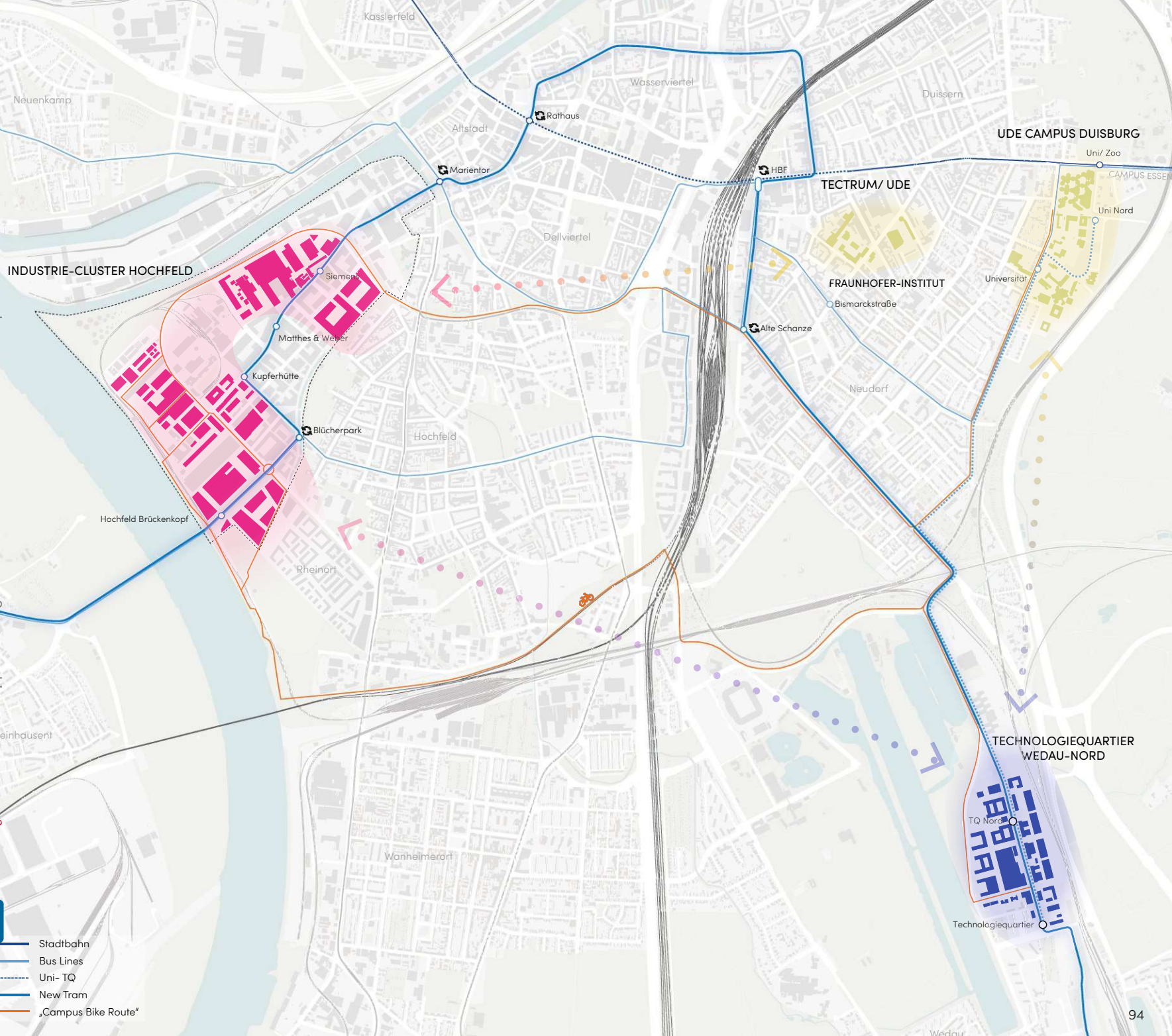
### 6.3 Concept XL: Programmatic Synergies

The new tram connection will be a central driver for the urban development of Duisburg. The planned technology quarter Wedau-North will be directly connected to the industrial cluster in Hochfeld, while the existing university campus will be accessible via the existing lines and interchange nodes such as Marientor, Rathaus, "Alte Schanze," and Hauptbahnhof. A direct bus connection will link the technology quarter and the university. Additionally, the three locations will be connected by an attractive network of bicycle expressways. The industrial cluster is intended to be programmatically linked to the university and the technology

quarter: A anchor module of the university will bring part of the teaching, which is planned for natural science and engineering subjects in Wedau<sup>55</sup>, to Hochfeld as well. Furthermore, test labs, research facilities, and prototype development will be located in Hochfeld, particularly including uses that have a high demand for space and infrastructure. Ultimately, the cluster is also intended as a "space of possibilities" and expansion for potential spin-offs from the university and other technology-oriented startups, explicitly including production on an industrial scale (keyword Industry 4.0).

Fig. 118: Overview of the 3 Connected Campus

Die approbierte gedruckte Originalversion dieser Diplomarbeit ist an der TU Wien Bibliothek verfügbar  
The approved original version of this thesis is available in print at TU Wien Bibliothek



INDUSTRIE-CLUSTER HOCHFELD

UDE CAMPUS DUISBURG

TECTRUM/ UDE

FRAUNHOFER-INSTITUT

TECHNOLOGIEQUARTIER WEDAU-NORD

- Stadtbahn
- Bus Lines
- Uni- TQ
- New Tram
- „Campus Bike Route“

## 6.4 Concept L

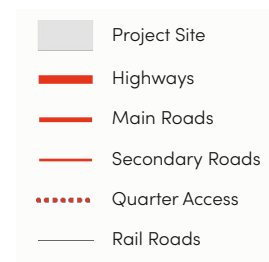
As an intermediate zoom level, the area from the Oldtown to the railway corridor in the east, as well as the districts of Hochfeld and Dellviertel, will now be examined. First, the street network will be addressed as the basis, followed by the network of “Urban Corridors” that will emerge as a result of the reorganization, explicitly integrating the Hochfeld industrial area.

### 6.4.1 Mobility Network

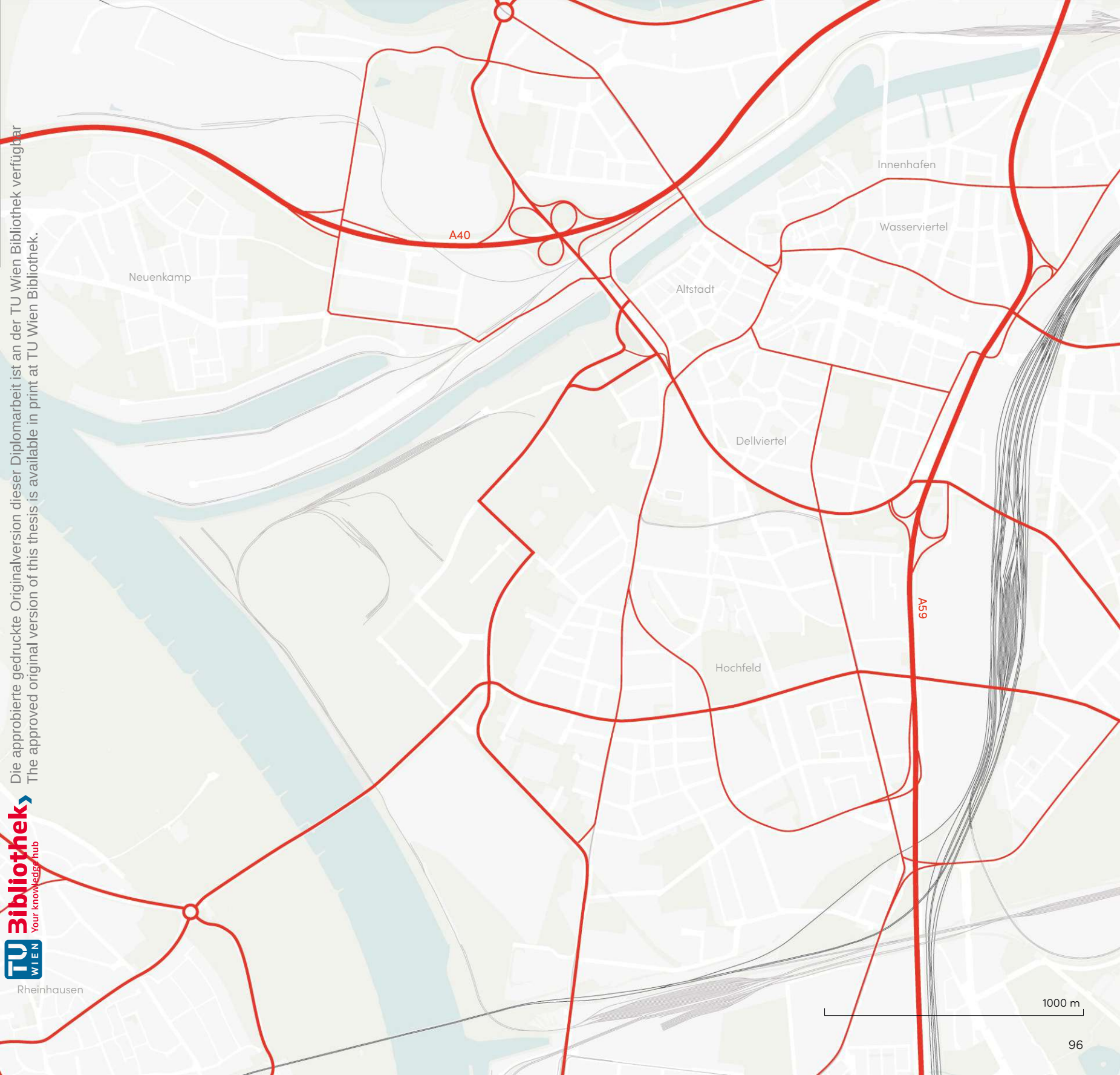
#### Road Network: Status Quo and Target Scenario

The center of Duisburg is sandwiched between the A40 highway, which leads from Belgium to the Ruhr area, and the A59 urban highway, coming from Düsseldorf and leading to the north end of the city. Another enlarged connecting axis of the highways runs directly along the old town. Another problematic situation arises from the high logistics and commuter traffic load coming from Rheinhausen, which is directed onto the highways via inner-city streets. Consequently, there is overall strong traffic and noise pollution, as well as a high barrier effect caused by the road cross-sections in central urban locations.

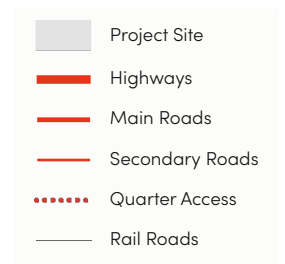
The aim of the interventions must be to dissolve these barriers as much as possible and, above all, to eliminate through traffic in the city center. Therefore, in the “Target Scenario,” a new road category called “Quarter Access” is introduced, designed for destination and source traffic for residents. The connecting axis is being downsized and speed-limited. Transit traffic from the west should be directed to a new corridor along the commercial zone in the south towards the highway, thus achieving overall traffic calming in the city area. Together with the expansion of the tram network envisaged in the XXL concept, a significant enhancement of the central urban spaces can be achieved.



Die approbierte gedruckte Originalversion dieser Diplomarbeit ist an der TU Wien Bibliothek verfügbar  
The approved original version of this thesis is available in print at TU Wien Bibliothek.

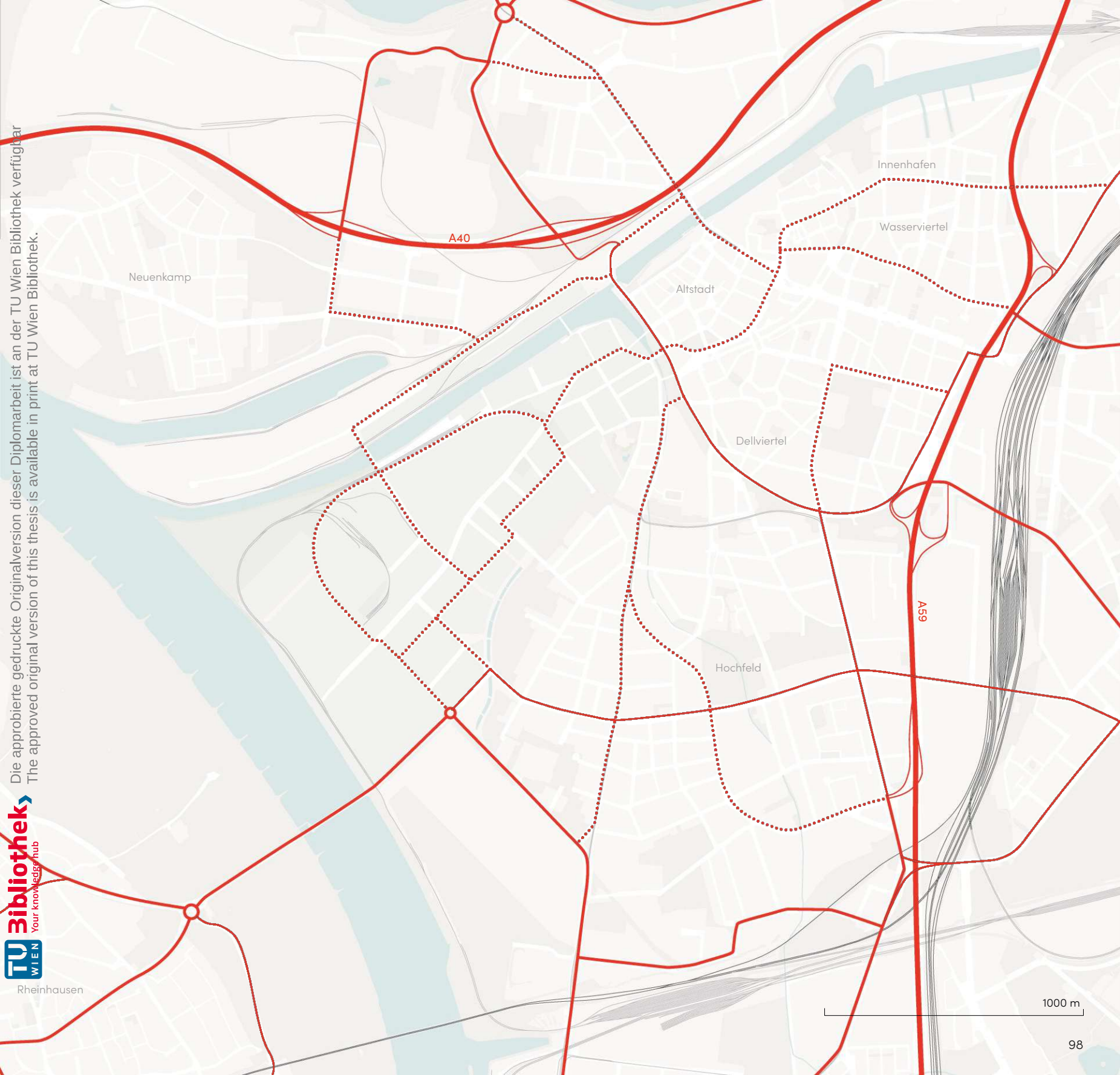


1000 m





Die approbierte gedruckte Originalversion dieser Diplomarbeit ist an der TU Wien Bibliothek verfügbar  
The approved original version of this thesis is available in print at TU Wien Bibliothek.



1000 m

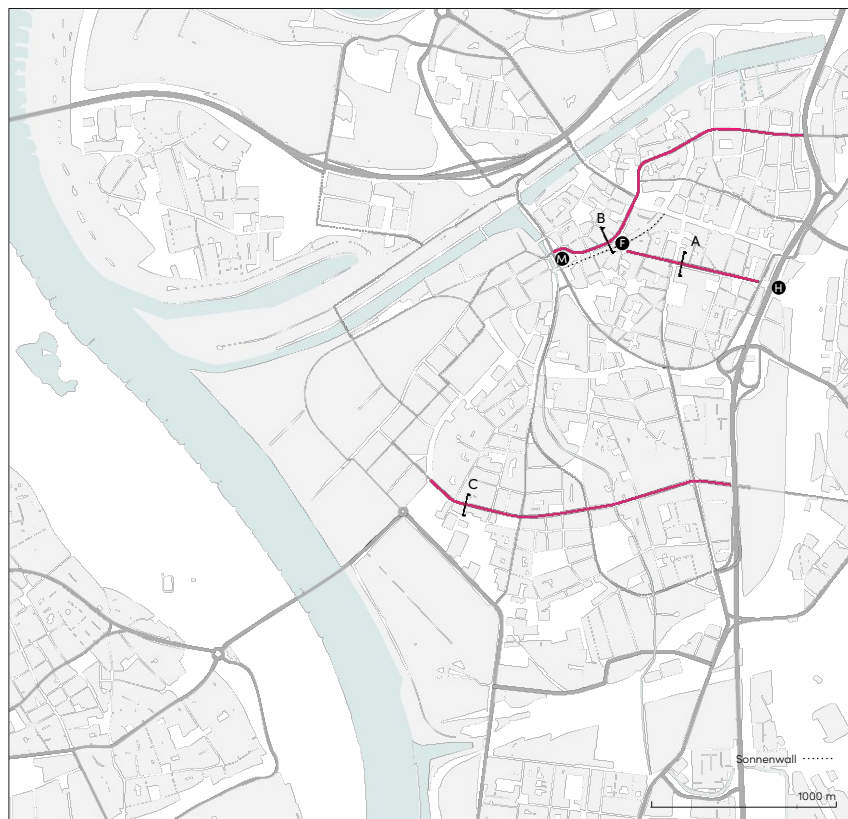


Fig. 124: Street Sections Overview

## Street Sections

By introducing the new road type “quarter access” and consequently downgrading other high-ranking roads in the inner city, new road cross-sections emerge, which are outlined here as examples.

The Rheinhauser Straße **C** directly affects the access of the industrial area – here, the roadway will be reduced to 2 lanes in favor of bike lanes, a wide pedestrian walkway, and continuous greenery. This new profile will enable wheelabouts and activation of ground floor zones.

The mobility corridor Steinsche Gasse - Oberstraße - Kardinal-Galen-Straße **B** will be downsized to two compact lanes – also the new tram line will run there. The rerouting at Marienstraße (M) enables the extension of the pedestrian zone “Sonnenwall” next to Steinsche Gasse.

The Friedrich-Wilhelm-Straße **A** will become a pedestrian-friendly boulevard by reducing roadway to two lanes, becoming an attractive connection from the main train station (H) to the Friedrich-Wilhelm-Platz (F), which will be largely traffic-calmed.



Fig. 121: **A** Friedrich-Wilhelm Straße



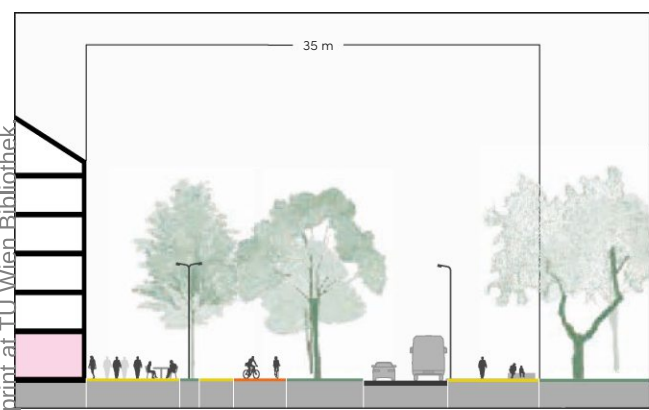
Fig. 123: **B** Steinsche Gasse



Fig. 122: **C** Rheinhauser Straße

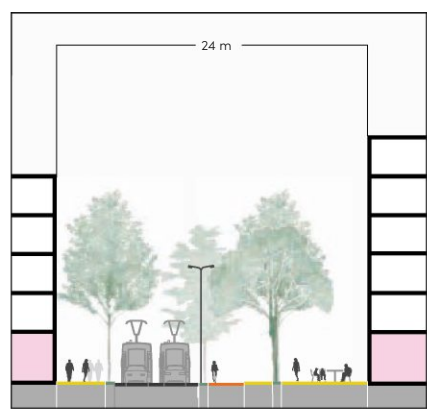
Die approbierte gedruckte Originalversion dieser Diplomarbeit ist an der TU Wien Bibliothek verfügbar  
The approved original version of this thesis is available in print at TU Wien Bibliothek

**A**

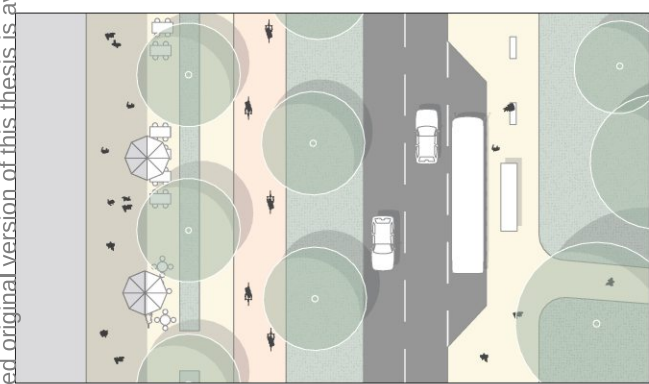
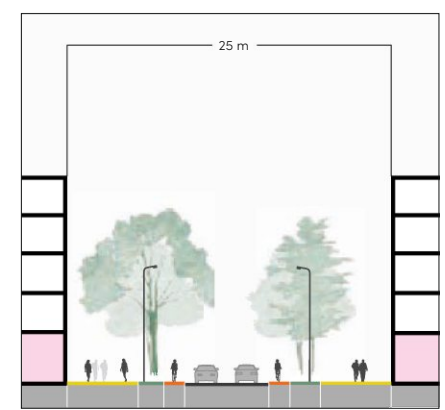


Section Target Scenario

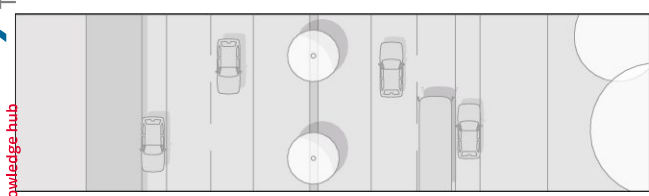
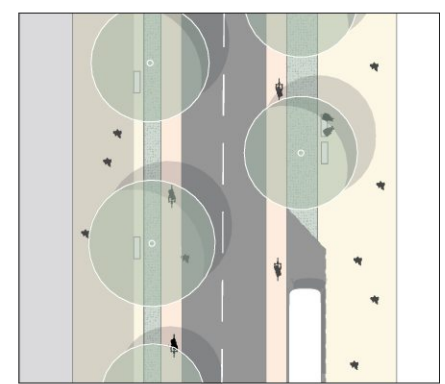
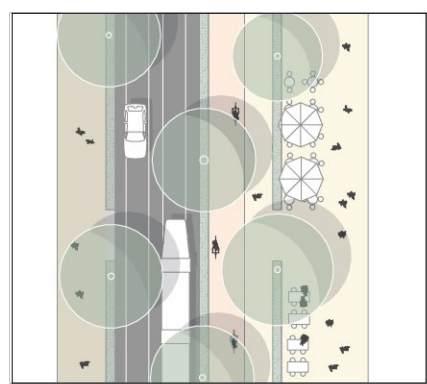
**B**



**C**



Top View Target Scenario



Top View Status Quo

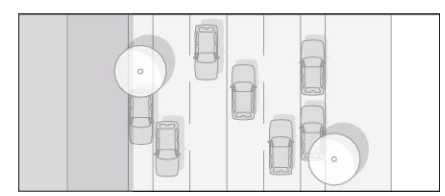
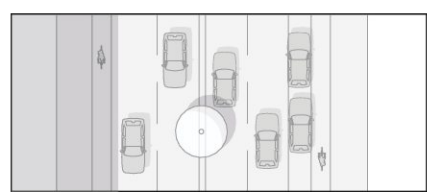
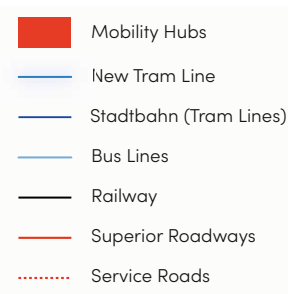


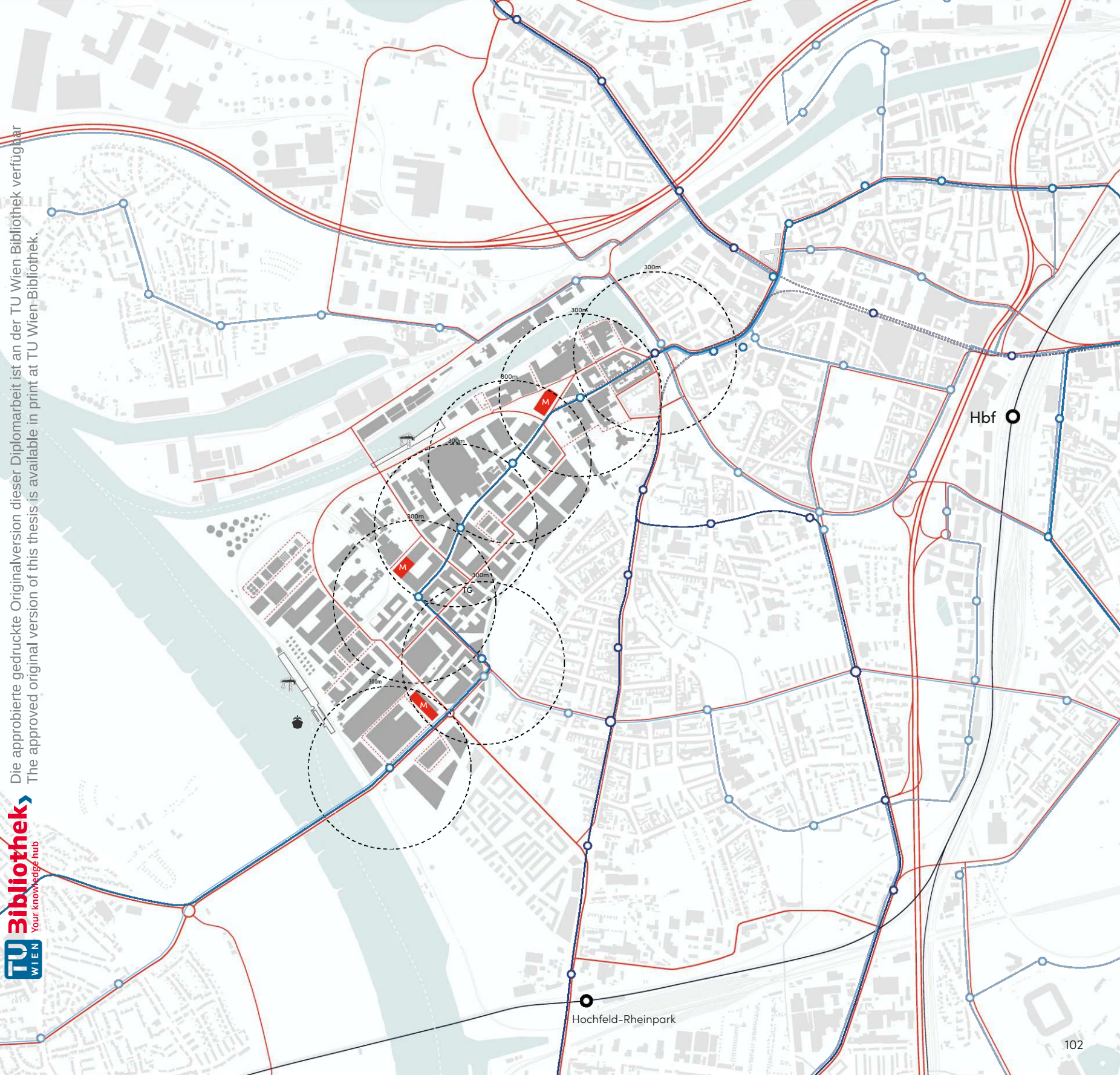
Fig. 125: Exemplary Street Sections Duisburg-Mitte

## Integrated Mobility Network

By overlaying the reorganized road network and the new tram line, the industrial quarter is integrated into urban traffic planning. The tram stops largely inherit their locations from the existing bus route and are optimized for accessibility. Starting from the Rhine Bridge, traffic is redirected away from the quarter towards the south through a new roundabout, but access for individual vehicles and neighborhood logistics by trucks is still allowed. From the north, the area is connected via a new bridge over the outer harbor to the new “Logistics Loop” on the former railway corridor, ensuring accessibility for delivery traffic despite the dismantling of the bypass road and the feeder road to the highway. A total of 3 collective garages will intercept destination and source traffic in the neighborhood, keeping the urban space car-free.

The trimodal city logistics system is maintained through the reorganization. The loading zone at Aussenhafen remains in place and becomes a hub for urban freight traffic. The docking area at the Rhine quay for industry and energy companies continues to be used. In addition, ferry connections to Cologne and Düsseldorf, as well as possibly river cruise ships, will be able to use the new dock. Overall, a dense mobility and logistics network is developing, which provides ideal conditions for new commercial and industrial settlements in Hochfeld while simultaneously largely alleviating conflict zones caused by traffic congestion.





## 6.4.2 Urban Corridors

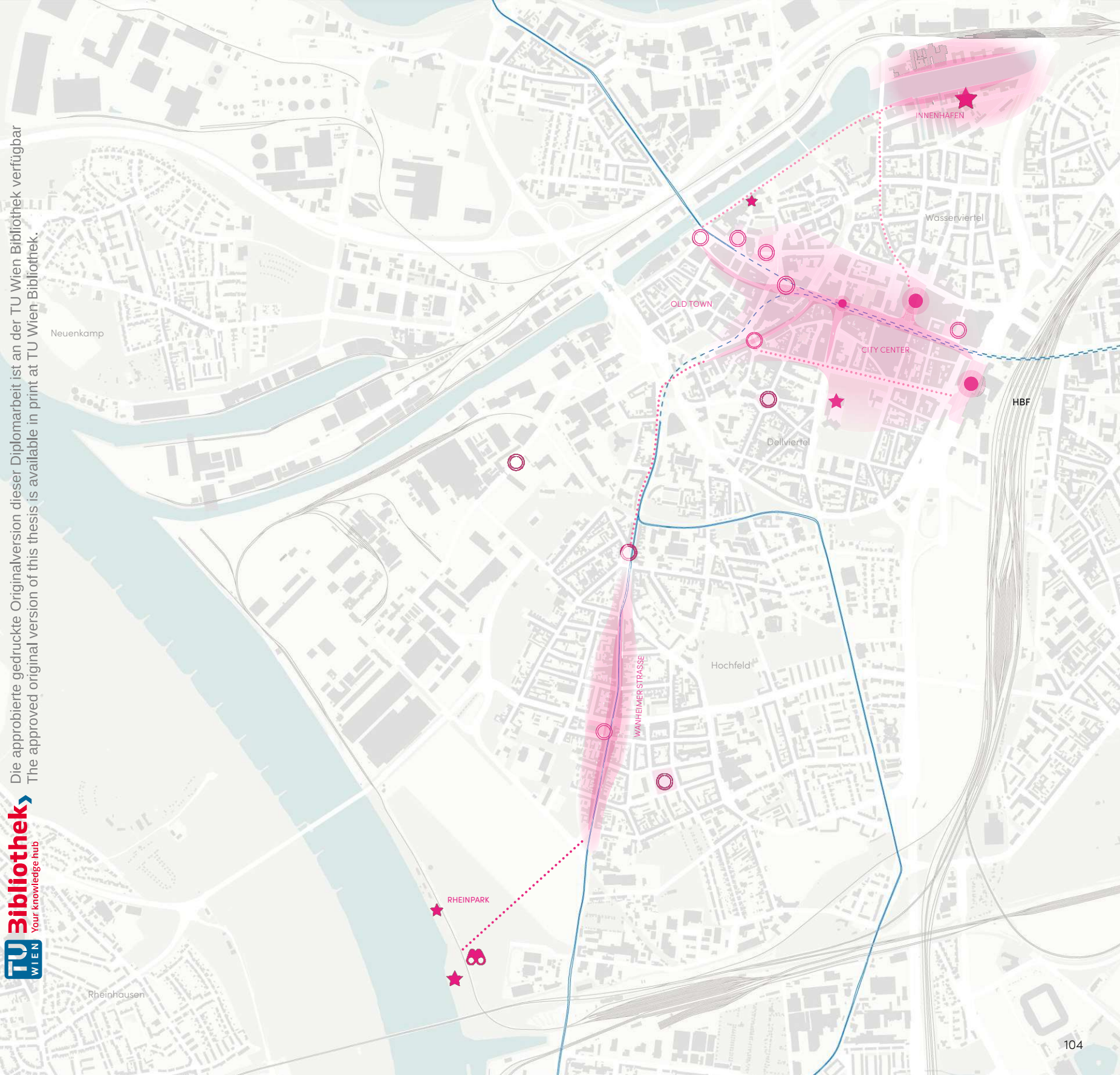
The restructuring and redesign of the road network reveals a new urban network characterized by the introduced "Urban Corridors" - these are distinguished by a diverse use of street space, an activated ground floor zone, and high pedestrian footfall.

The current situation, due to the described issues, presents a busy urban zone stretching from the main train station along Königstraße to the Kuhtor, while the historic core of the old town currently represents a "blind spot" that the city is already attempting to change. Innenhafen forms another urban space where office and service uses, as well as culture and gastronomy, have settled, but which is not connected to the central pedestrian zone by attractive pathways. The same applies to Wanheimer Straße in Hochfeld, which has high potential as a shopping street - an attractive pedestrian connection to the city center, a possible connection to the existing pedestrian zone Sonnenwall, however, is pending.

In the target scenario, the existing urban zones are connected to each other, and through the new developments in Hochfeld and at the old freight station (see 4.5), a spatial closure of the cityscape is created. The existing city squares (e.g., Rathausplatz, Brückenplatz, Calaisplatz, Dellplatz) are being enhanced and thereby important landmarks along the corridors, complemented by new urban square situations in the Hochfeld industrial area.

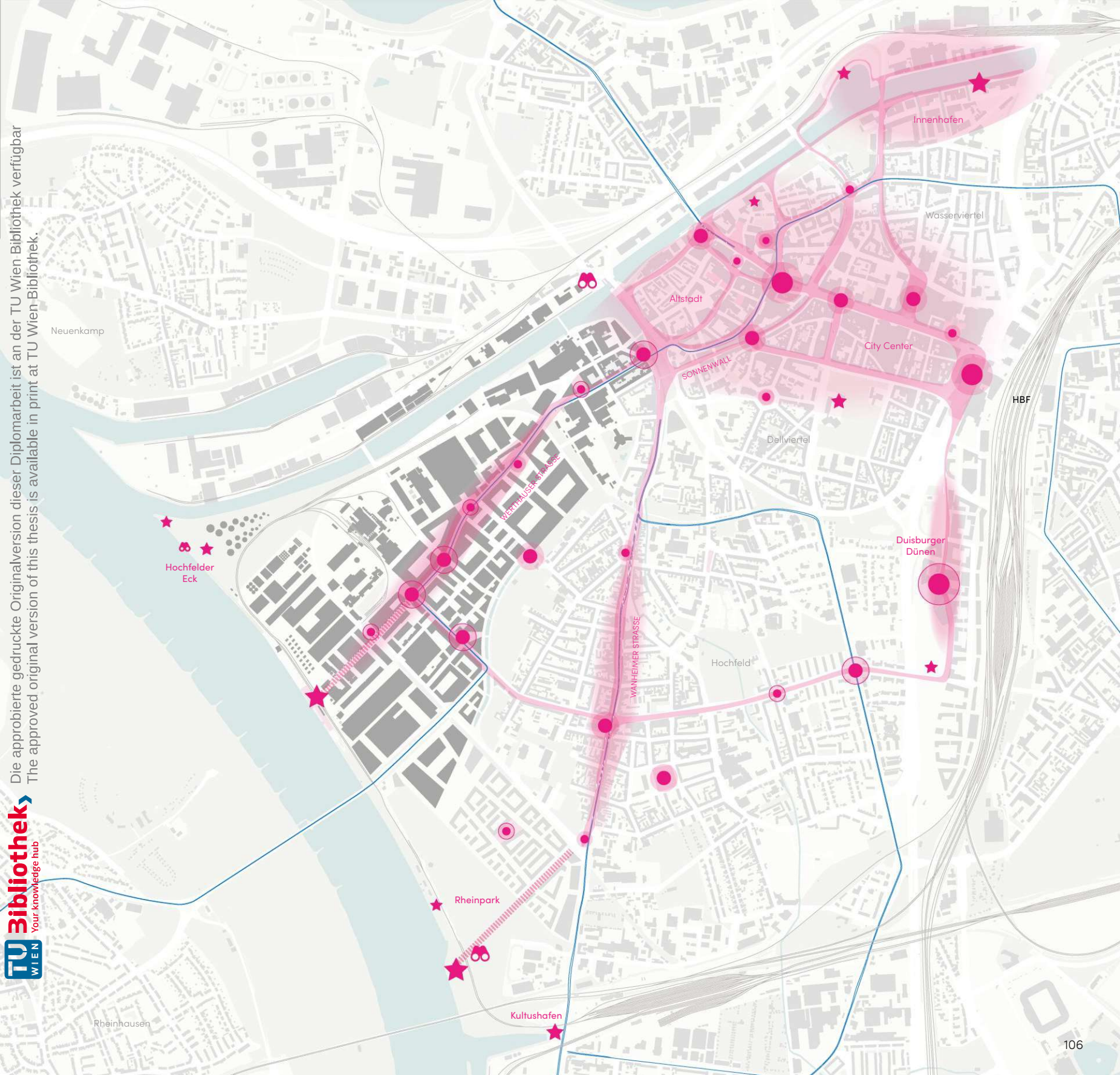
Crucial thereafter are the "Last Miles" to the Rhine riverfront. These cannot have the same frequency as the urban corridors but must meet minimum design requirements such as accompanying greenery and sidewalks to qualify as attractive pathways leading to the waterfront.







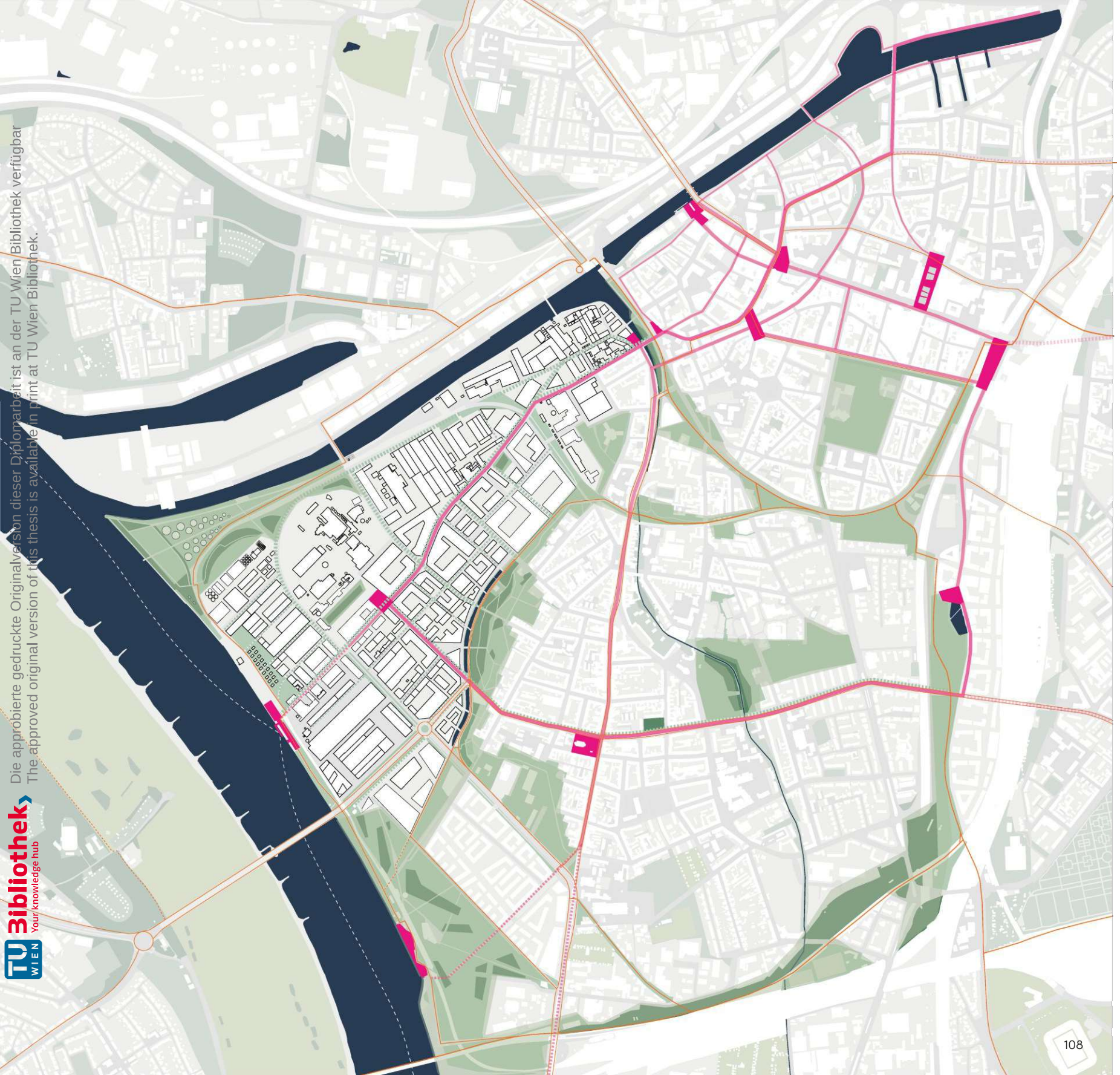




### 6.4.3 Intertwined Urban and Green Corridors

In the final step of Concept L, the interconnected urban spaces are overlaid with the city's green spaces.

This creates a picture of “interweaving” of the urban ring and the green ring that is intended to surround the Hochfeld district. Portions of the green ring are being redesigned and enhanced as of 2024, while the park in the Güterbahnhof area dependant to the city development project “Duisburger Dünen” (see 4.5). The completion of the ring closure via the railway corridor in the south and via the tram corridor in the north is still pending. The ring is complemented by a “green tangent” along the city center, ultimately ending at the Main Station and the new situation “Marientor-Zollhafen”. There, the Dickelsbach is also intended to find its original confluence with the Rhine system (see 5.1). Additionally, the “Hochfelder Eck” - the corner area between Aussenhafen and Rhine - is integrated into the green space system, thus implementing the demanded open space development between the Innenhafen, Aussenhafen, and Rheinpark. The green space network also provides important corridors for active mobility. The regional cycling highway network largely fits into this framework and enables attractive connections between neighborhoods and beyond, such as with the RS1, a planned cycling highway from Neuss to Dortmund. Special urban situations arise at the intersections of green and urban corridors, such as at Marientor and in the Blücherpark area, where special attention is required regarding design and traffic planning.



## 6.5 Integrated Concept Quarter

By embedding the industrial zone into the urban context within the XXL-L concepts, important framework conditions such as access and green space have already been established. Now, at the quarter level, the spatial and programmatic fundamentals of the urban planning concept are being further examined, and specific areas are shown in more detail. The general guiding principle of the design, as demonstrated in the initial statement, is the urban patchwork of industry, commerce, housing, green, and "urban" uses.

### 6.5.1 Spatial Concept

For a basic understanding of the design, the spatial concept is initially reduced to 4 core themes: accessibility of the Rhine riverbank, spatial-programmatic structuring, open space, and visual-urban characteristics.

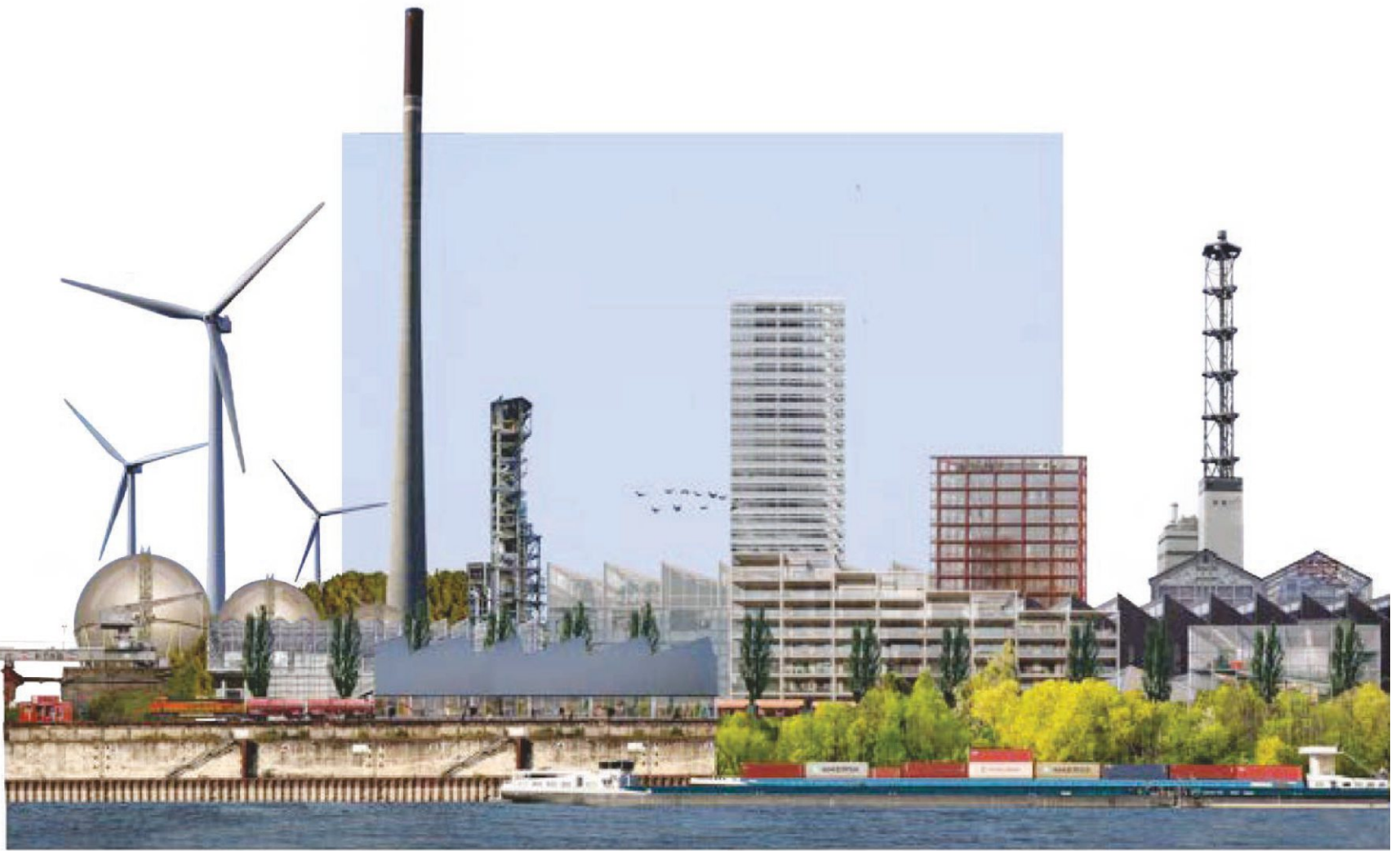


Fig. 130: Statement Collage "Urban Patchwork"

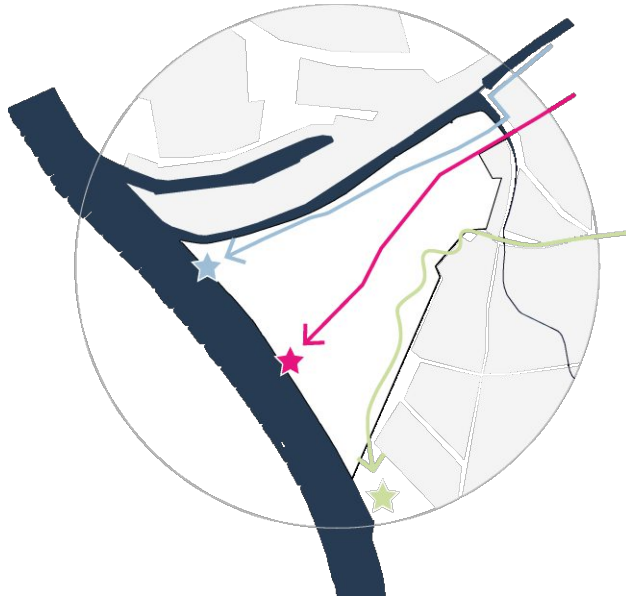


Fig. 131: Waterfront Access

Three Distinctive Ways to Rhine Waterfront.



Fig. 132: Green and Urban Spaces

A Rough, Multi-used Waterfront.  
A Chain of Plaza Situations.  
Versatile and Connected green spaces.



Fig. 133: Signature Areas

Signature Areas containing  
a dedicated mix of program.  
Micro centralities for everyone in reach.

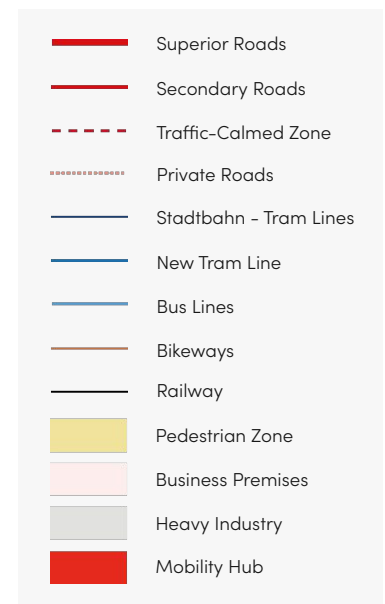


Fig. 134: Urban Elements

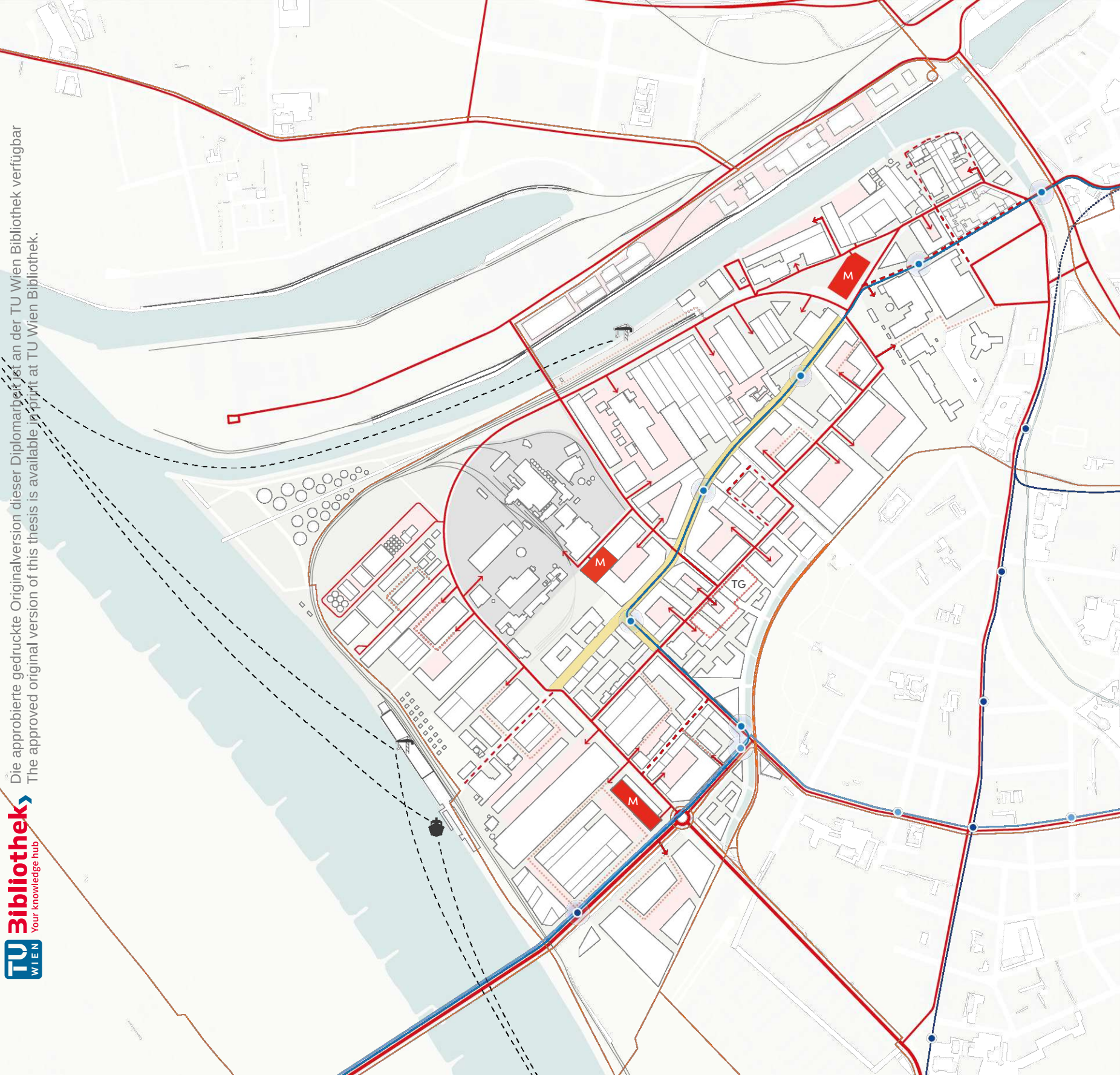
Diverse Urban Faces  
Concise Vistas  
A Variety of New/ Existing  
Remarkable Elements.

## 6.5.2 Quarter Accessibility

As described in the mobility concept L, the area is accessed via the new bridge over the Aussenhafen Canal and a roundabout in the south, connecting it to the superior roadway network. The old town and city-center is accessible by a new bridge over the creek mouth, which is excluded from heavy traffic. Two additional bridges are provided for pedestrians and cyclists. The new logistics loop forms the backbone of the transportation concept, providing direct access to nearly all businesses and properties. Together with the 3 mobility hubs and an underground garage for the residential area, the land consumption for access and parked vehicles is minimized. At the same time, the loop allows for traffic calming in the urban axis (Werthausen Straße), which will become an attractive boulevard and corridor for the new tram line. The last mile to the new Rhine-dock is designated as a shared space, as are all streets not directly necessary for accessing the collective garages. The existing railway infrastructure remains largely intact, allowing the two port zones at Aussenhafen and the Rhine quay to maintain their functions as intermodal nodes, and even expanding their significance in terms of a rail- and waterway-oriented city logistics system.

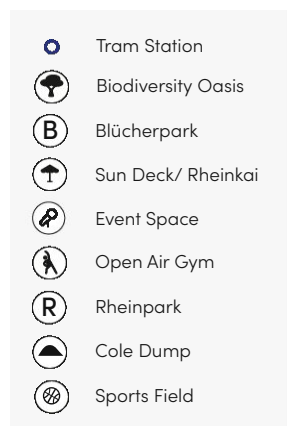


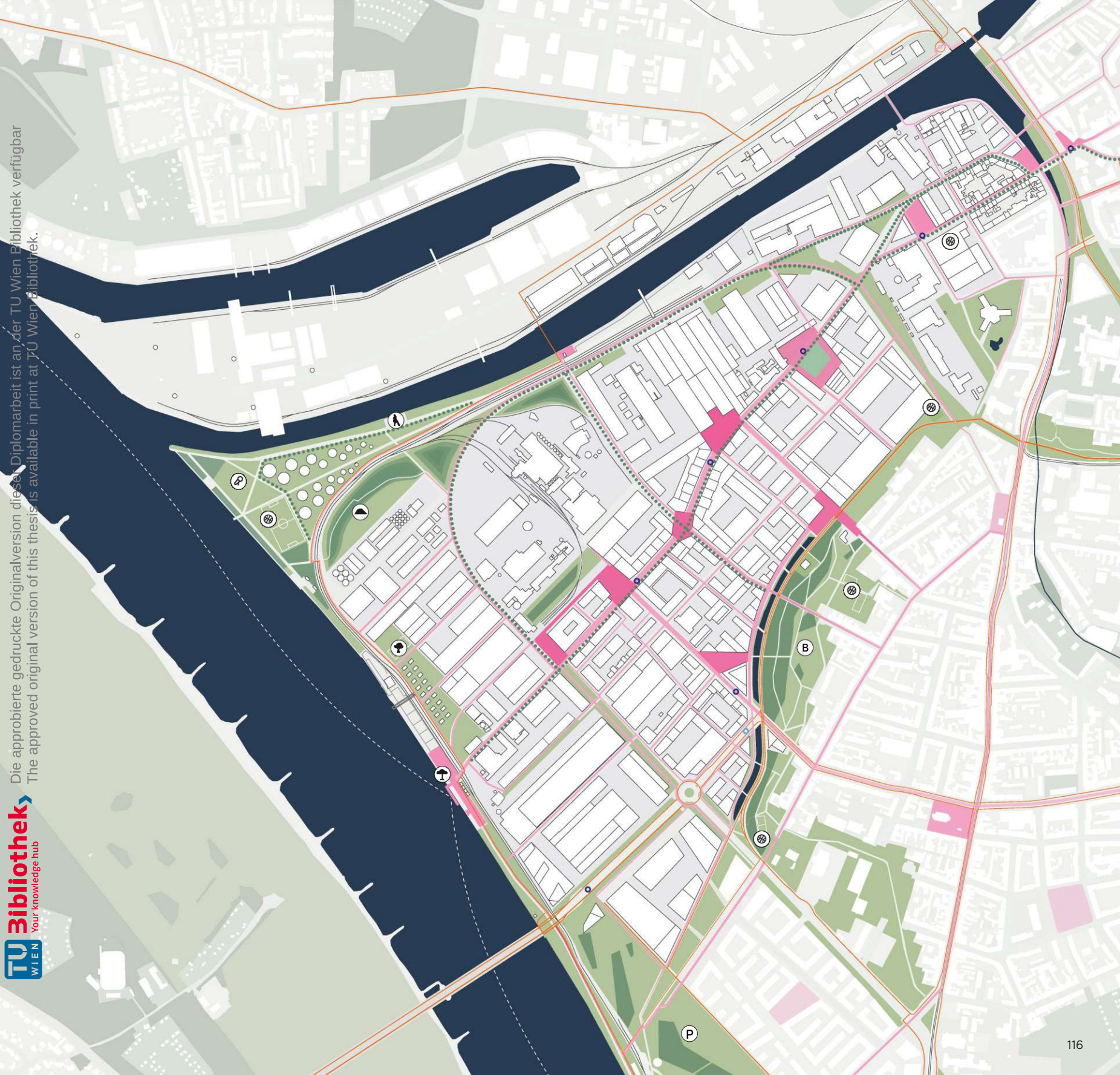




### 6.5.3 Green and Public Spaces

The green space concept consists of two parts - the urban arteries and squares in the core zone, and the green space areas in the peripheral zone, with the Blücherpark and Rheinpark already being significant green spaces in existence or under development. These parks are complemented by a new green zone at the area of "Hochfelder Eck," which will feature temporary events, a barbecue area, a kiosk and a sports field. This area provides additional high-quality recreational space and access to the water, becoming a new attraction for Hochfeld and Duisburg. The green space triangle is connected by tree-lined street corridors, especially in the area of the boulevard and the street axes leading to the waterfront. The boulevard is punctuated by regularly situated plaza areas, enhancing the quality of stay in the neighborhood and serving as important urban waypoints along the route from the old town to the Rhine. Along with two additional squares adjacent to the Blücherpark, a stable urban "square" is formed, with its corners serving as mobility nodes, meeting points, and interfaces for the various sub-areas within the neighborhood.





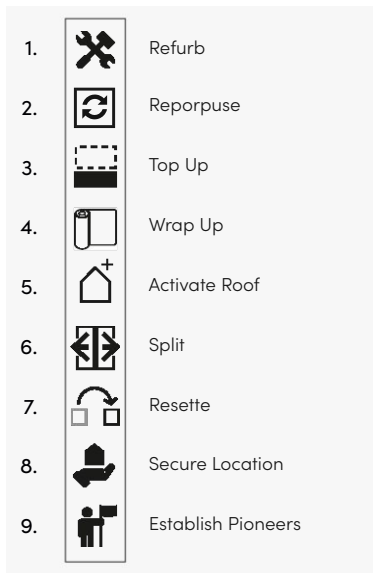
## 6.5.4 Nolliplan



Fig. 137: Nolliplan Status Quo (No Scale)

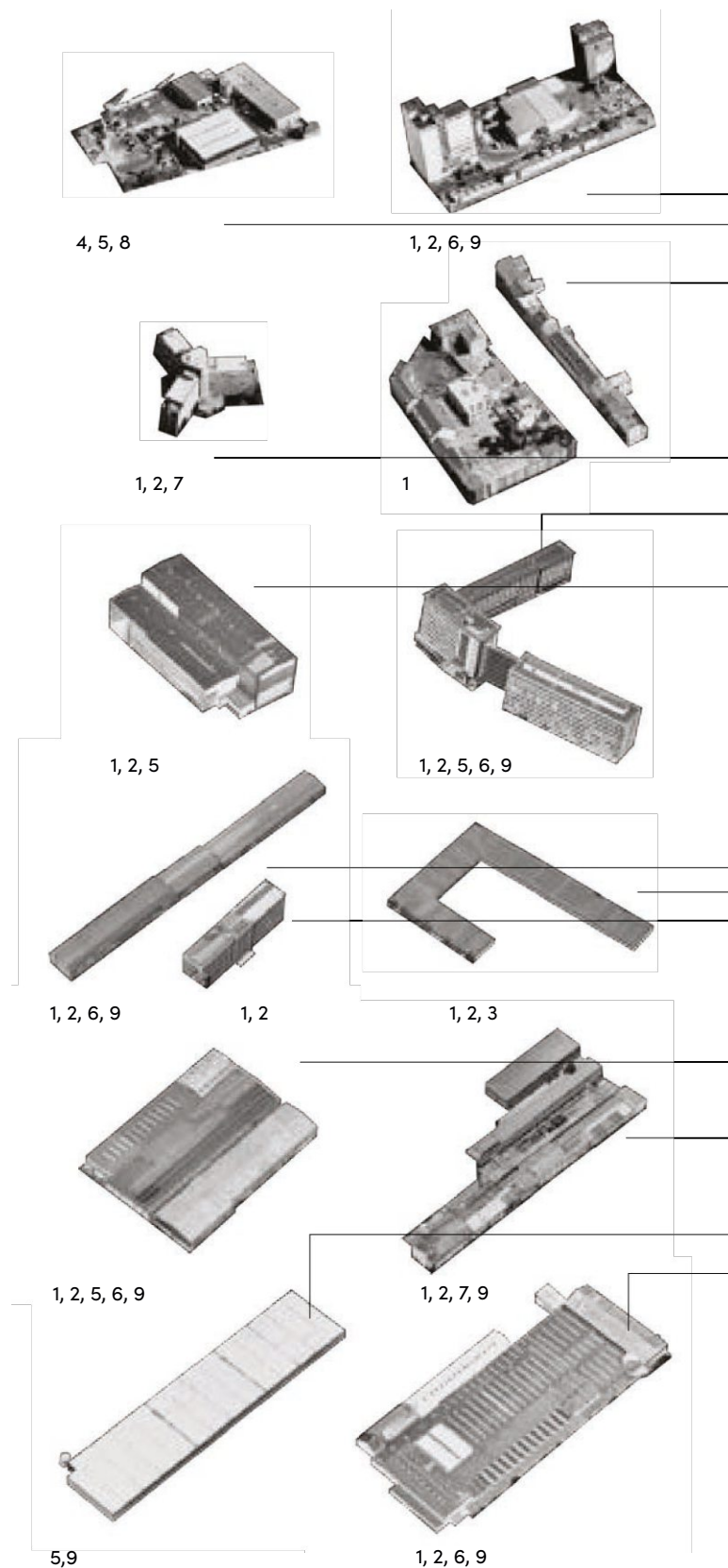


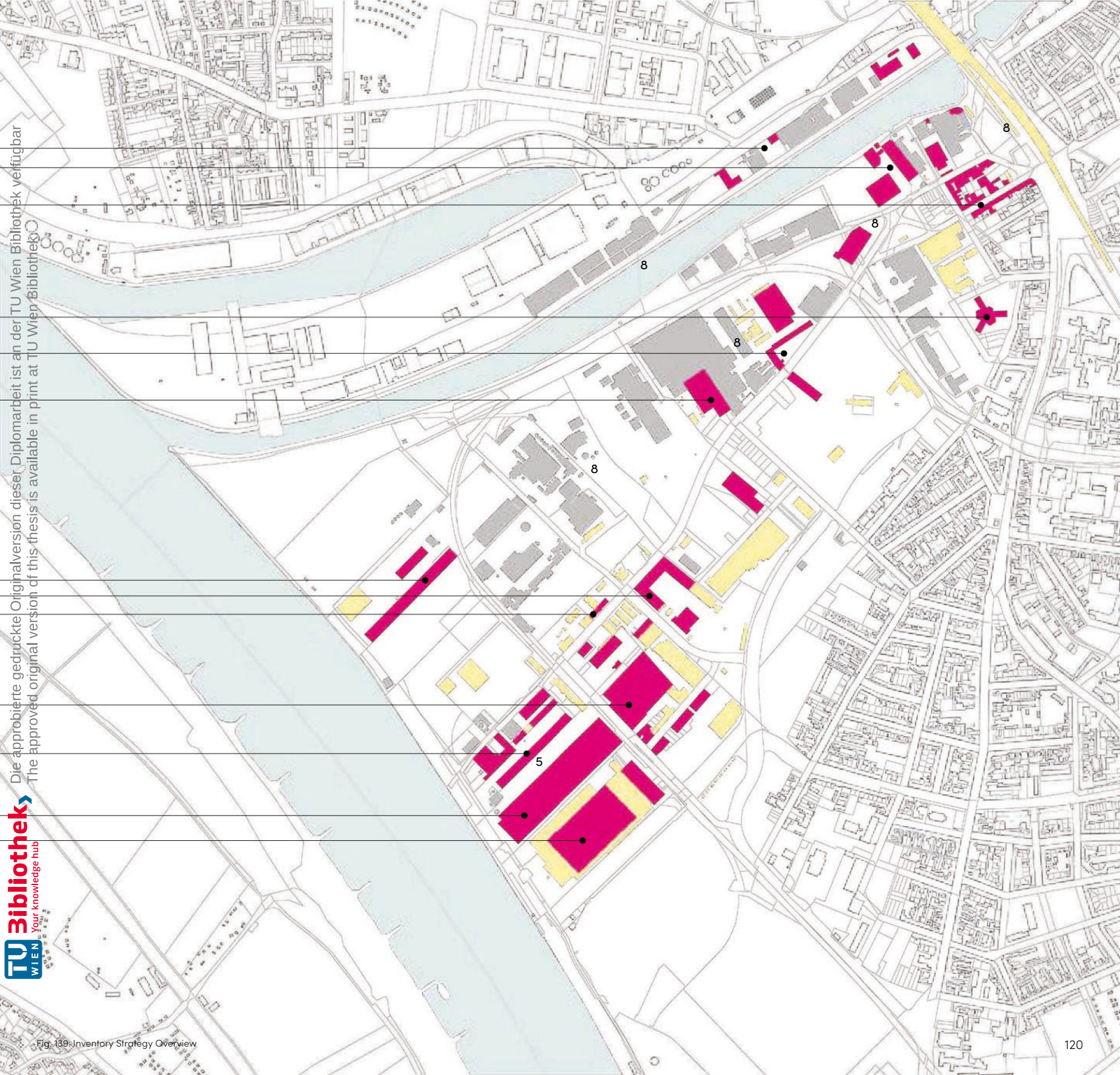
Fig. 138: Nolliplan Target Scenario (No Scale)



### 6.5.5 Inventory Strategies

The current situation in the industrial area can be seen as a gray area between use, underutilization, (planned or unplanned) vacancy, and vacant lots. From this starting point, a catalog of measures is developed, which on one hand makes clear statements about the respective building stock, but is also flexible enough to adapt to new, unforeseeable developments. A distinction is made between preservation, alteration, and demolition of the substance, and based on the condition of the buildings and their degree of use, respective courses of action are assigned. Generally, the design aims for minimal demolition where the existing building stock is not compatible with the overall concept even through conversion measures. Pioneer uses are particularly proposed where urban reordering requires instigators, where the building structure is particularly distinctive or has great transformation potential.





## 6.5.6 Signature Areas/ Framework

The industrial zone is divided into sub-areas that exhibit different qualities, scales, and mixes of uses. Tailored by the street and open space concept, the areas already contain different uses and typologies. These individual areas are further divided into building plots, which are developed according to the logic of the masterplan but still offer flexibility in terms of design and development speed. The targeted mix of uses in the areas is defined by the existing use and context. Residential use is limited to the boulevard zone and the edge zone of the Blücherpark, allowing the remaining areas to fully exploit their qualities as industrial and commercial zones.

Each area is connected to public plaza situations or green space, providing whereabouts for all users and fostering small micro-centers that promote community interaction within the quarter and its sub-areas. With a dense network of pathways between the building plots, adequate walkability is achieved despite the partly large building dimensions. Overall, a robust, versatile urban framework occurs, supported by differentiated, hierarchized street spaces.

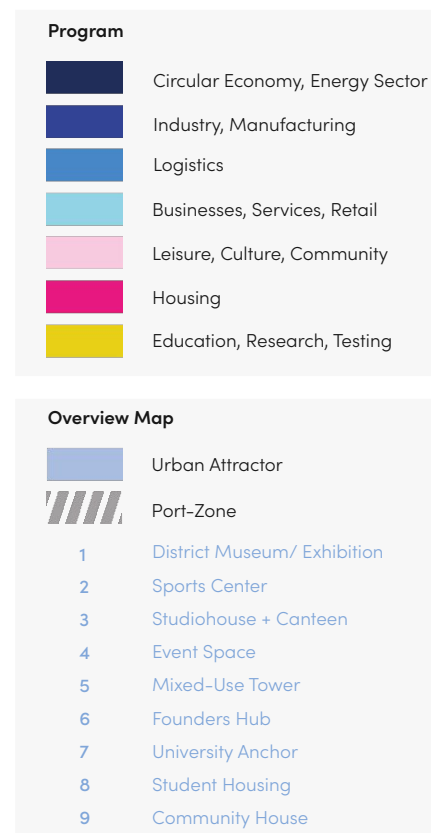


Fig. 140: Signature Areas and Building Plots Overview



Die approbierte gedruckte Originalversion dieser Diplomarbeit ist an der TU Wien Bibliothek verfügbar  
The approved original version of this thesis is available in print at TU Wien Bibliothek.



Außenhafen

Stadtwerke Areal

DEMAG Areal

Quartier Nord

Kupferhütte

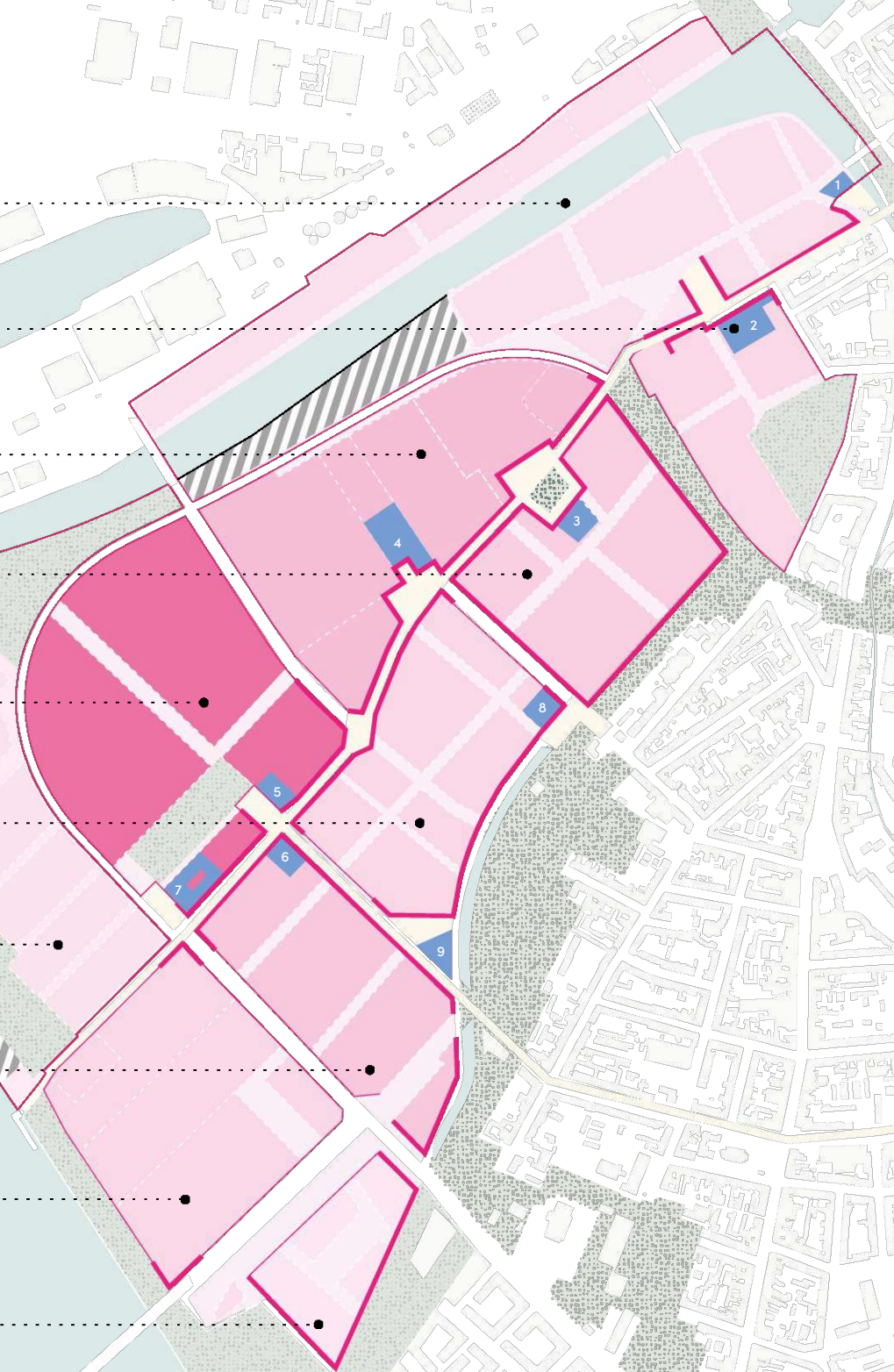
Quartier Mitte

Rheinplatte

Quartier Süd

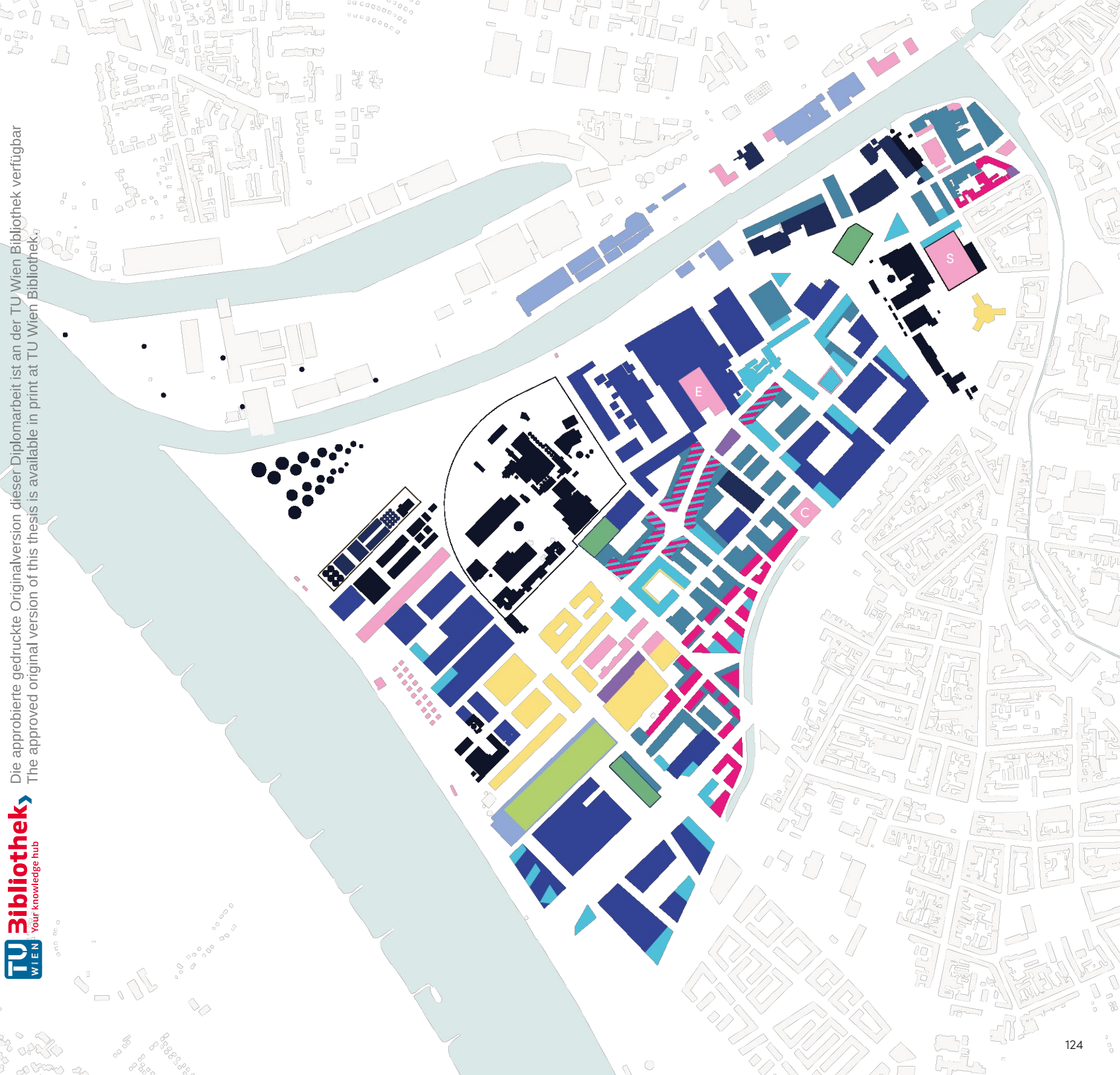
VDM Areal

Rheinort

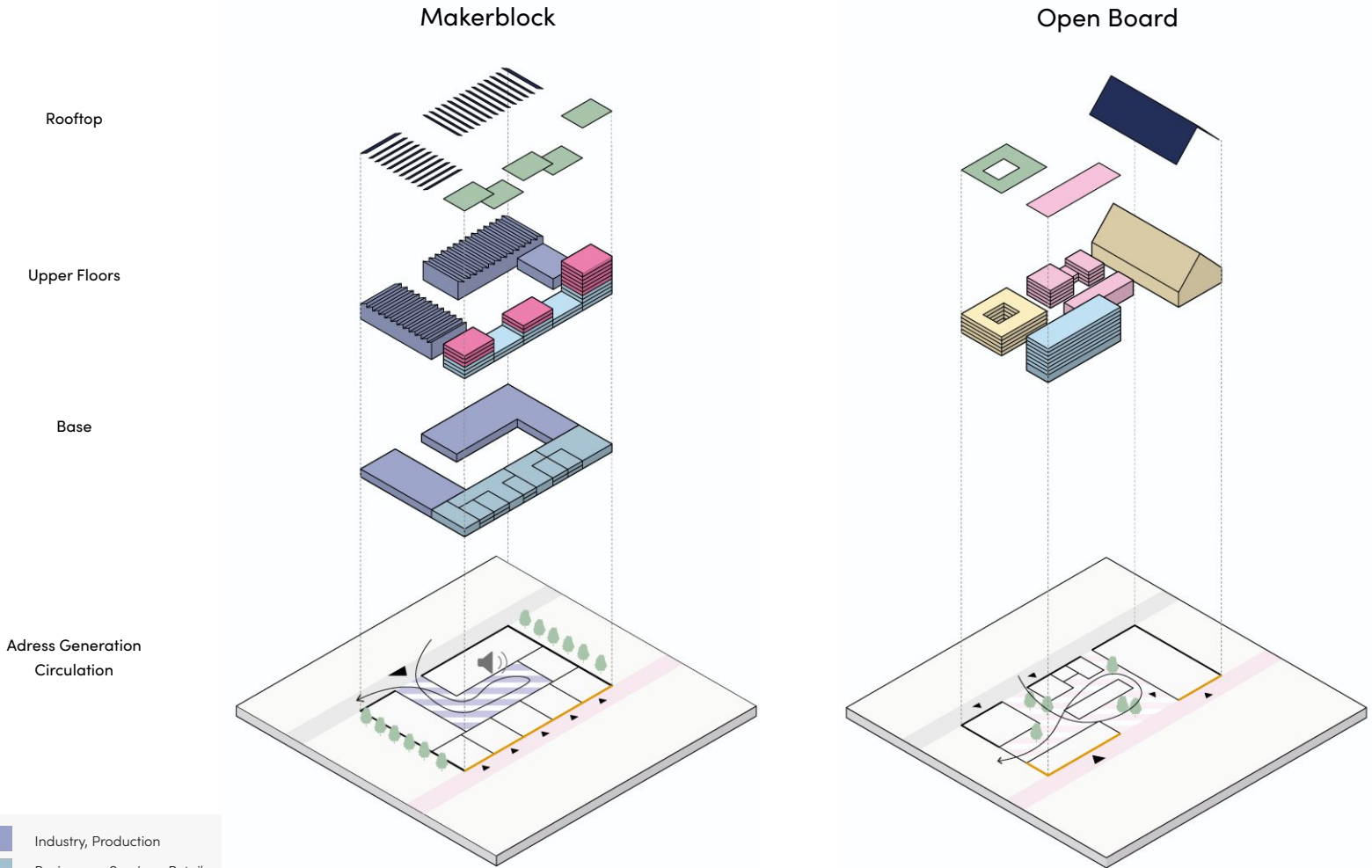


## 6.5.7 Programming



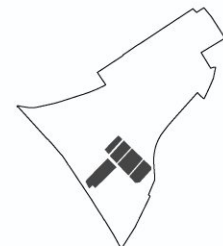
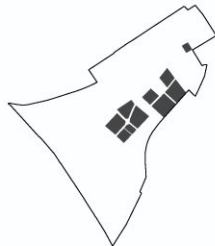


## 6.5.8 Principles of Site Development

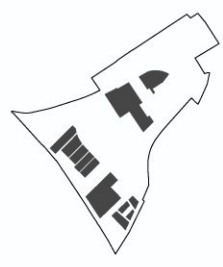
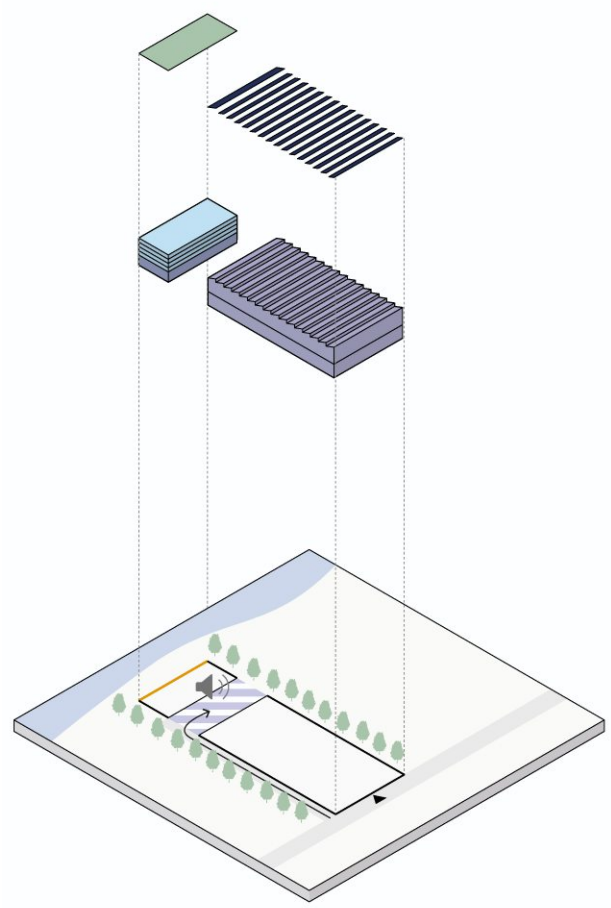


Adress Generation  
Circulation

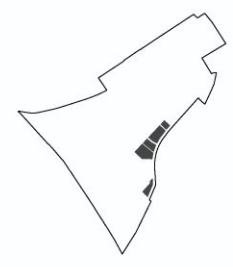
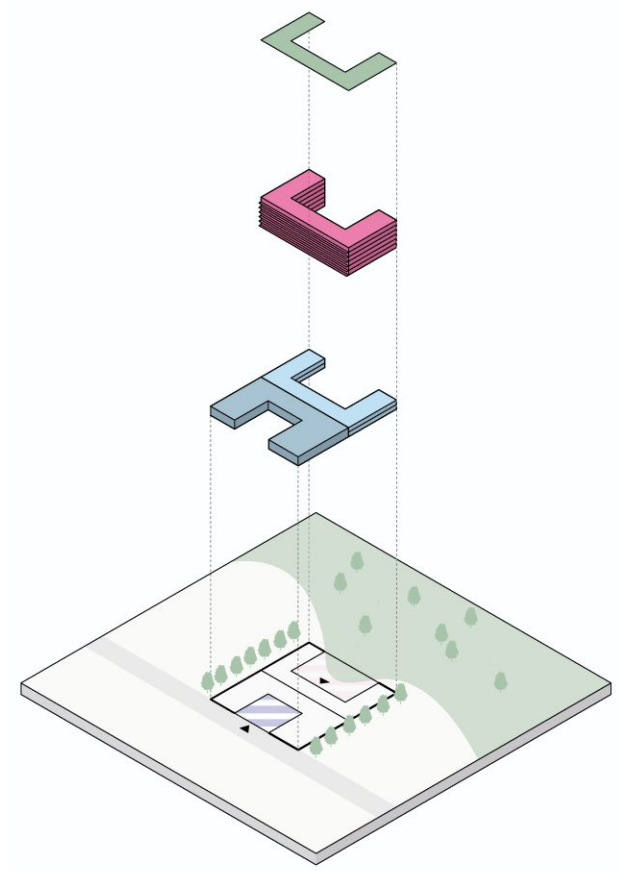
- Industry, Production
- Businesses, Services, Retail
- Office
- Leisure, Culture, Community
- Housing
- Education, Research, Testing
- Green Rooftop
- Semi-Public Area
- Noise Zone
- Solar Panels
- Representation



Big Box



Back2Back

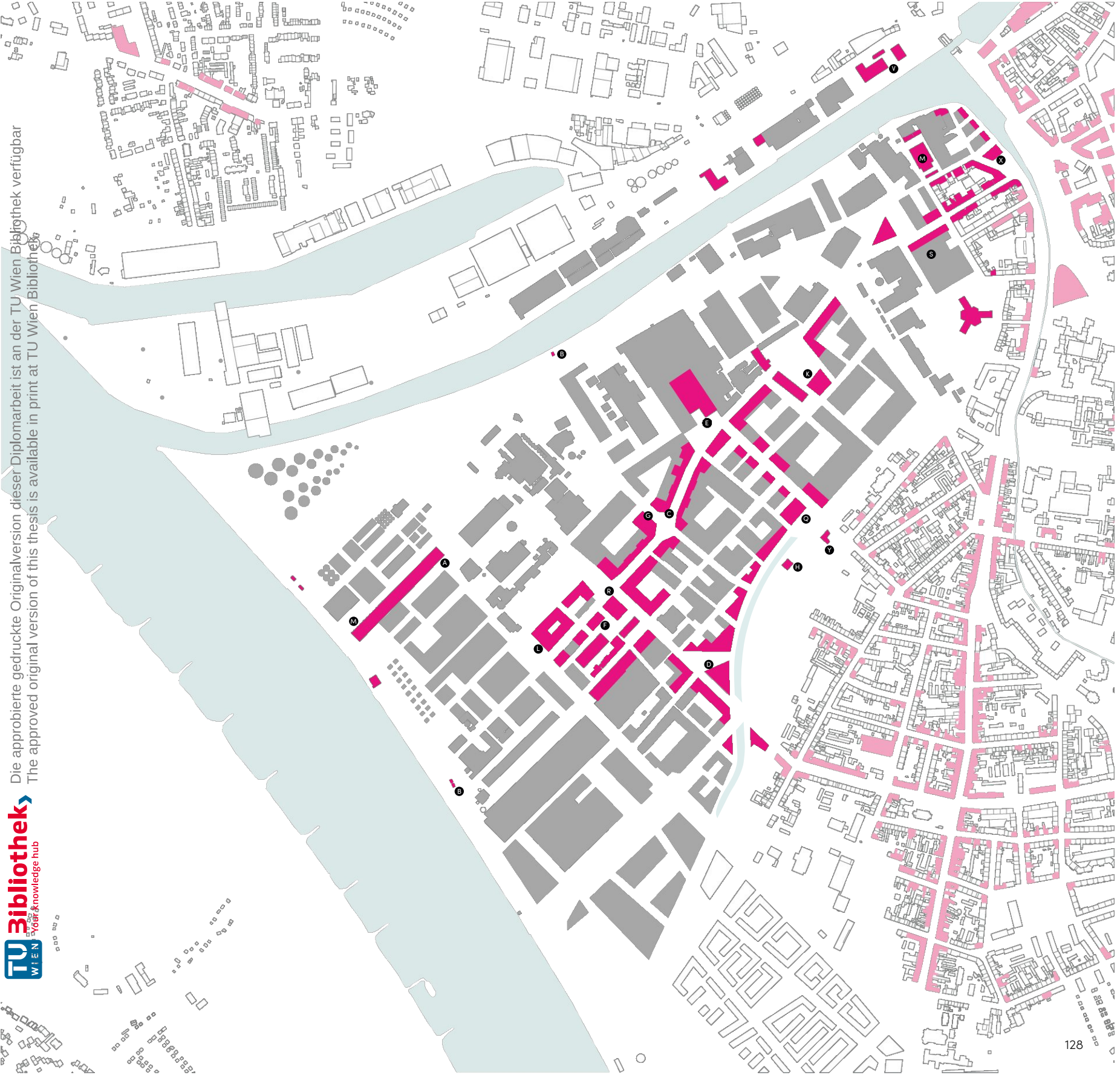


### 6.5.9 Activated Ground Floor Zones

Derived from the urban spatial and morphological determinations, a clear picture emerges of the activated ground floor zones, which extend on one hand around the “urban superblock” (Quartier Mitte), as well as along the urban corridors Rheinhauser Straße, Charlottenstraße and connects to the pedestrian zone Sonnenwall in the old town. The emphasis on the corner situations of the superblock, as described earlier, is implemented through publicly visible incubators such as the event hall, a quarter canteen, and the community house including a cafeteria. This core zone is complemented by urban interventions along the waterfront, in the form of gastronomy at the Rheinkai, as well as various bars and dance halls in the area of the Zollhafen-Aussenhafen. Especially on the north bank of the outer harbor, characterized by warehouses and vacancies, individual cultural pioneer uses are intended to enhance the area. A detailed examination of the base zone in the area of the boulevard will follow in the zoomed-in sections.

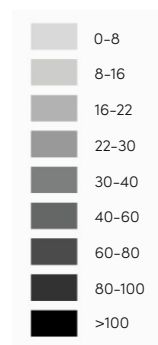
A	Ateliers
B	Food Stands
C	Cinema
D	Diner
E	Event Hall
F	Food Court
G	Groceries
K	Canteen
L	University/ Learning Center
M	Music Venue
Q	Community House
R	Cafeteria
S	Sports Center
V	Kulturverein Aussenhafen
X	Museum/ Exhibition
Y	Youth Center

Fig. 144: Activated Ground Floor Zones



### 6.5.10 Morphology and Building Heights

The moderation of different scales of industrial-commercial uses mixed with urban uses is clearly discernible in the morphology. In the core area, a high floor area ratio and high building density are aimed in order to meet the requirements of an urban corridor. The industry-dominated waterfront zone is economically optimized, while providing buffers for green space development. Thus, the overall density of the neighborhood is mitigated by the presence of three green space reservoirs and pocket parks in between. Furthermore, extensive roof greening reduces the degree of sealing and mitigates summer overheating. The height plan also indicates where high-rise development is necessary or at least feasible: These structures are intended to function as landmarks at the entrance points, such as a high-rise with hotel/residential use at Marienator/Zollhafen, a mixed-use tower at the *Kupferhütten* area, several residential high-rises at *Blücherpark*, and an office tower ensemble serving as a new city gateway at the Rheinbrücke.

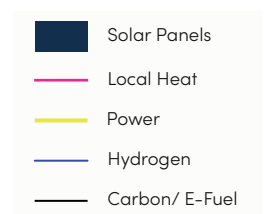


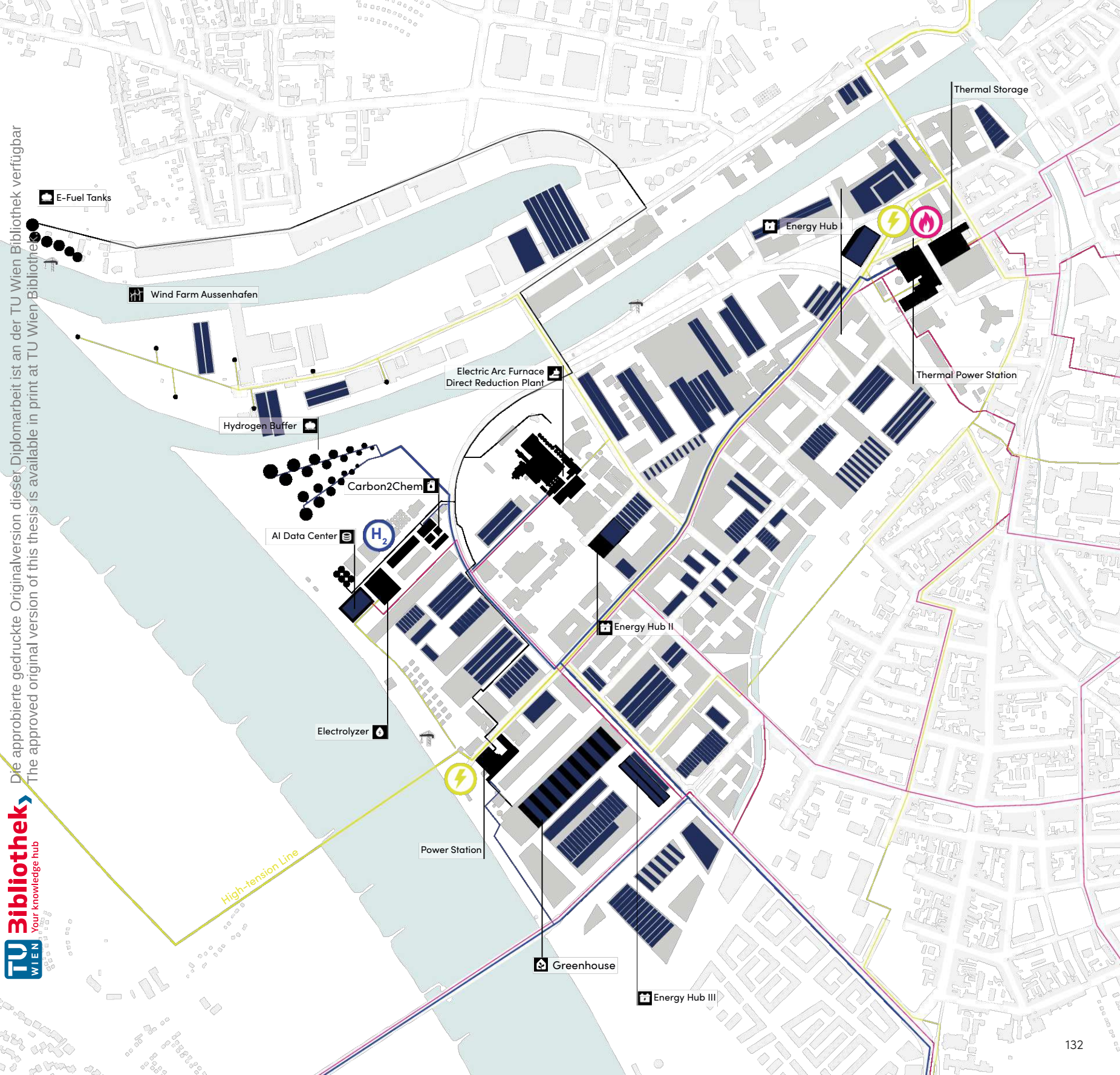




### 6.5.11 Supply Infrastructure Network

The urban design determinations for the industrial quarter are supplemented in a final step by infrastructure considerations, which are particularly essential for commercial and industrial settlements. It can be noted that the area is already extensively serviced: High-voltage electricity, district heating, gas, and oxygen for heavy industry, as well as connections to the nearby sewage treatment plant, are already in place, facilitating urban development through low infrastructure costs. The design also envisages a high proportion of solar roofs, which, together with the new wind farm at the outer harbor, provide additional energy for the neighborhood. Along with the existing combined heat and power plant and the power plant of the heavy industry, a robust heat and power network is created, which, in addition to new energy storage facilities, can provide a intelligent, low-emission energy network. Hydrogen, as shown in chapter 4.6, will be another important factor in Hochfeld. Not only will it be required in large quantities for the transformation of iron production, but it will also play a role in heat and power generation. Moreover, electrolysis (hydrogen production) can be used to buffer the peaks generated by wind and solar energy. This complex interplay, which includes additional components such as e-fuel production, is illustrated using a simplified diagram, while the map shows the location of system components and supply corridors.





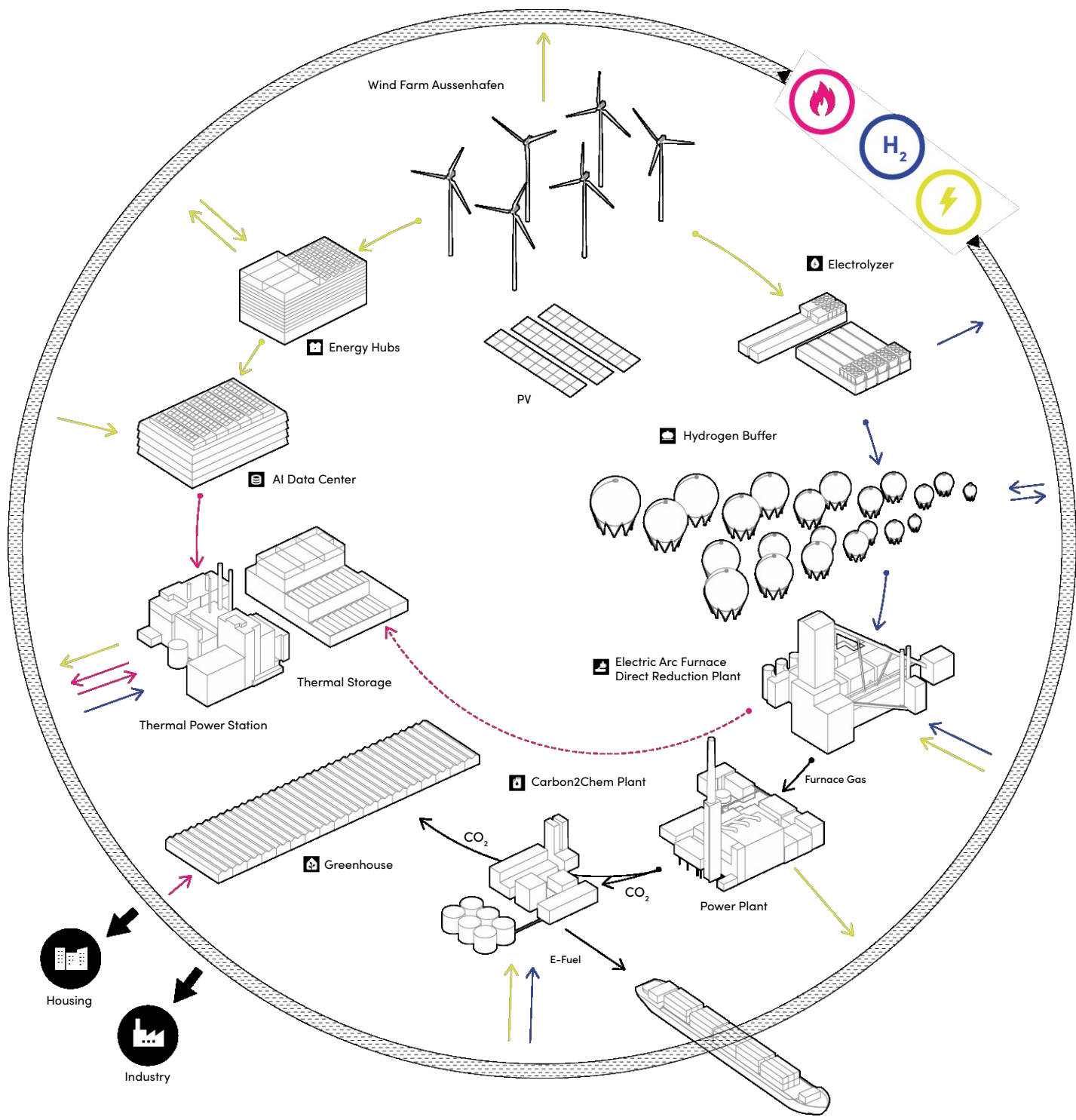


Fig. 147: Energy and Material Flows Concept

## Energy Synergies

The energy concept consists of four components: energy generators, energy storage systems, energy converters, and energy consumers. Hydrogen tanks serve as storage, which are integrated into the hydrogen network and act to stabilize the system. In addition to the combined heat and power plant, an additional heat storage system is connected to the municipal district heating network, primarily fueled by heat exchangers from heavy industry and waste heat from the data center. The batteries of electric vehicles parked in the collective garages serve as buffer element, making mobility-hubs to local energy managers. Additionally, the earlier mentioned electrolysis modules help to absorb peak loads.

Even with the transition of heavy industry to hydrogen technology, the industry will continue to produce furnace gases as waste. These gases are already cleaned and converted into electricity in the adjacent power plant. The CO<sub>2</sub> that ultimately falls after these processes, as illustrated in Chapter 4.6, is to be recycled through a so-called *Carbon2Chem* process with hydrogen into fuels or directly forwarded to the greenhouse facility. The overall concept thus pursues three goals: Firstly, to produce as much energy as possible within the neighborhood and thus become less dependent on the electricity market. Secondly, to use energy as efficiently as possible through heat and energy exchange, thereby saving energy as a scarce resource. And thirdly, to eliminate carbon emissions in energy production, as well as in industrial production processes, as much as possible.

## 6.5.12 General Overview

The overview summarizes all successive urban planning considerations. The industrial area becomes a neighborhood, a part of the city of Duisburg, which sets standards in terms of mixed-use and urban space design. Due to its location between the outer harbor and the Rhine, diverse spatial situations emerge. The copper smelter remains the industrial core around which new typologies and uses are grouped, creating a new programmatic coexistence. The green space intertwines with the emerging dense urban fabric, serving not only as a landscape element but also as an ecological, social, and climatic necessity in times of climate change.



Fig. 148: General Overview Axonometry



# 6.5.13 Urban Sections

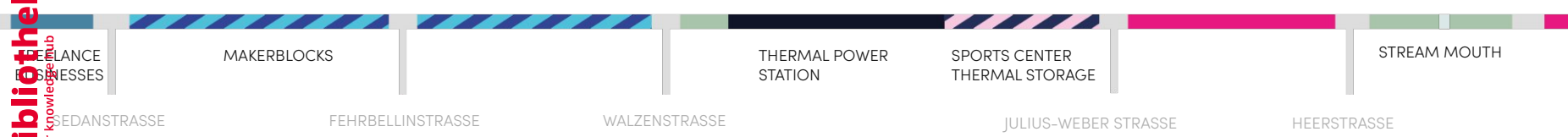
## Urban Section A

Die approbierte gedruckte Originalversion dieser Diplomarbeit ist an der TU Wien Bibliothek verfügbar  
 The approved original version of this thesis is available in print at TU Wien Bibliothek.





Die approbierte gedruckte Originalversion dieser Diplomarbeit ist an der TU Wien Bibliothek verfügbar  
The approved original version of this thesis is available in print at TU Wien Bibliothek.

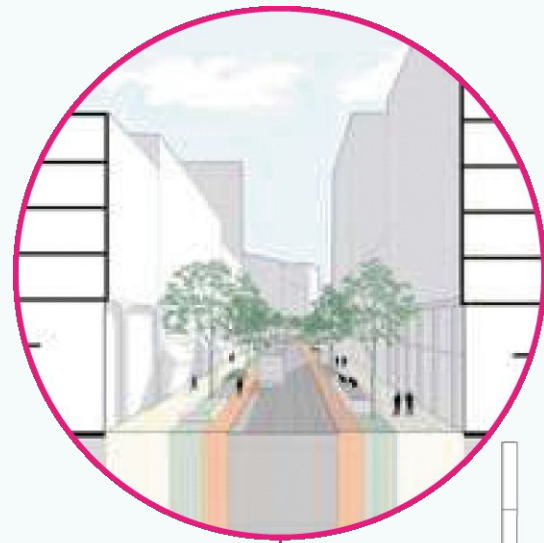


100m

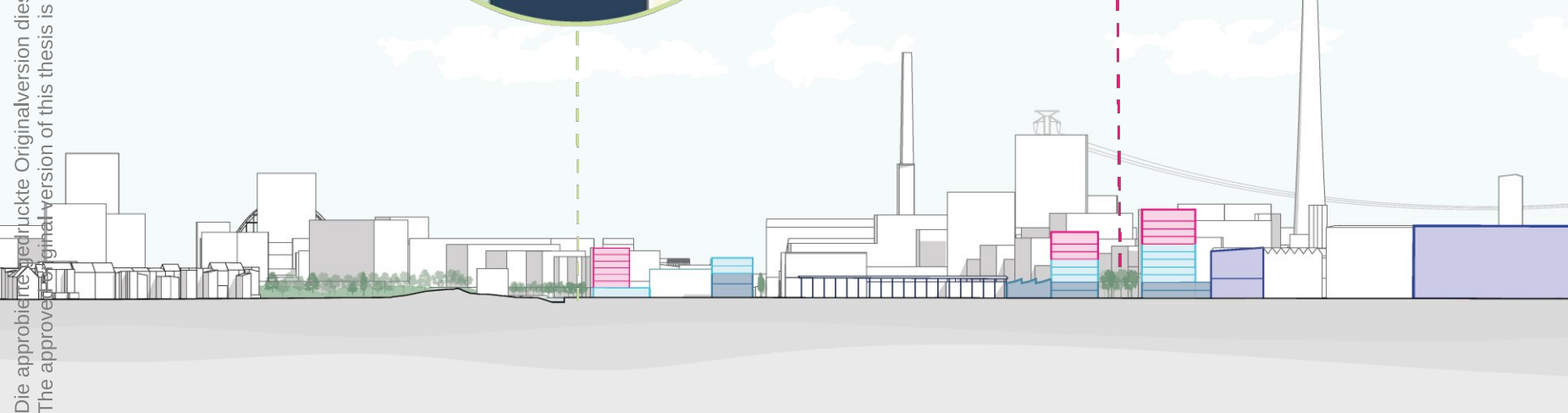
# Urban Section B

Boulevard Route

Esplanade Route



Die approbierte und gedruckte Originalversion dieser Diplomarbeit ist an der TU Wien Bibliothek verfügbar  
 The approved and printed original version of this thesis is available in print at TU Wien Bibliothek.



RESIDENTIAL QUARTER

BLÜCHER PARK

BACK2BACKS

MAKER BLOCKS

MAKER BLOCKS

BIG SCALE INDUSTRY

RUDOLF SCHOCK STRASSE

VYGENSTRASSE

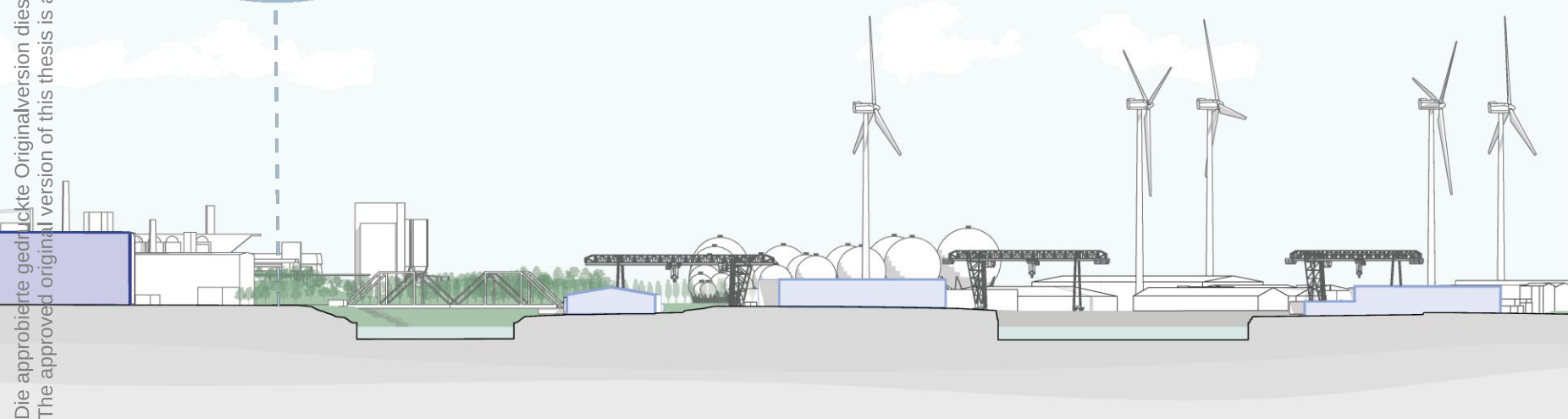
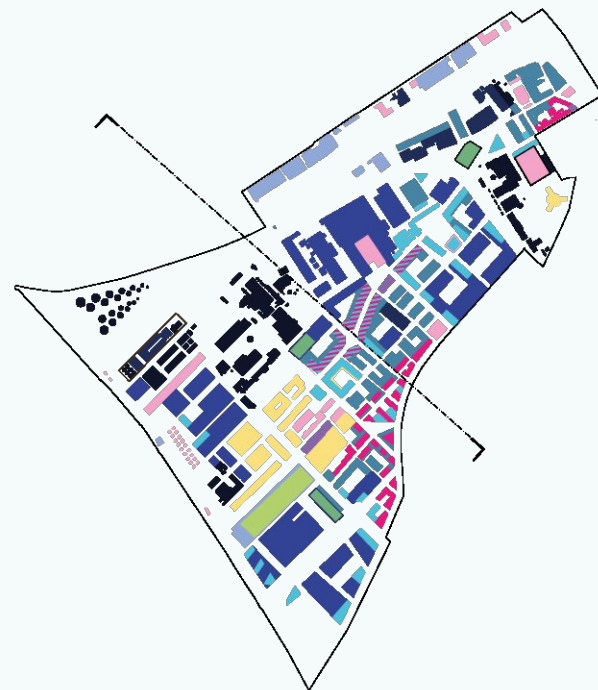
WERTHAUSER STRASSE

- Heavy Industry/ Energy Sector
- Recycling Sector/ Raw Goods
- Industry/ Production
- Businesses/ Services/ Retail

- Small Businesses/ Office
- Logistics
- Housing

Die approbierte gedruckte Originalversion dieser Diplomarbeit ist an der TU Wien Bibliothek verfügbar  
The approved original version of this thesis is available in print at TU Wien Bibliothek.

Boulevard Route



VULKANSTRASSE

TERMINAL

AUSSENHAFEN

MOERSER STRASSE

LOGISTICS + ENERGY

PARALLELHAFEN

LOGISTICS

100m



Fig. 149: Existing Situation Aussenhafen

## Aussenhafen Route

The route along *Aussenhafen* serves as both the connection between the old town and the new green space "*Hochfelder Eck*", as well as part of the regional cycling network.

The path initially touches the industrial zone, following the logistics loop, passing by the transshipment point and the new canal bridge, leading into the green area, along the hydrogen tanks and an outdoor gym as additional landmark, until finally reaching the "tip" and the Rhine riverbank. Where the pathway is accessible to trucks, a separation into roadway and mixed-use bike and pedestrian paths is necessary. In the harbor area, a loading ramp will serve as a dividing element between the street space and the loading zone, which becomes a public space outside of usage hours. A poplar alley stretches from the industrial zone to the riverbank, providing shade over the roadway while also serving as a navigational aid.

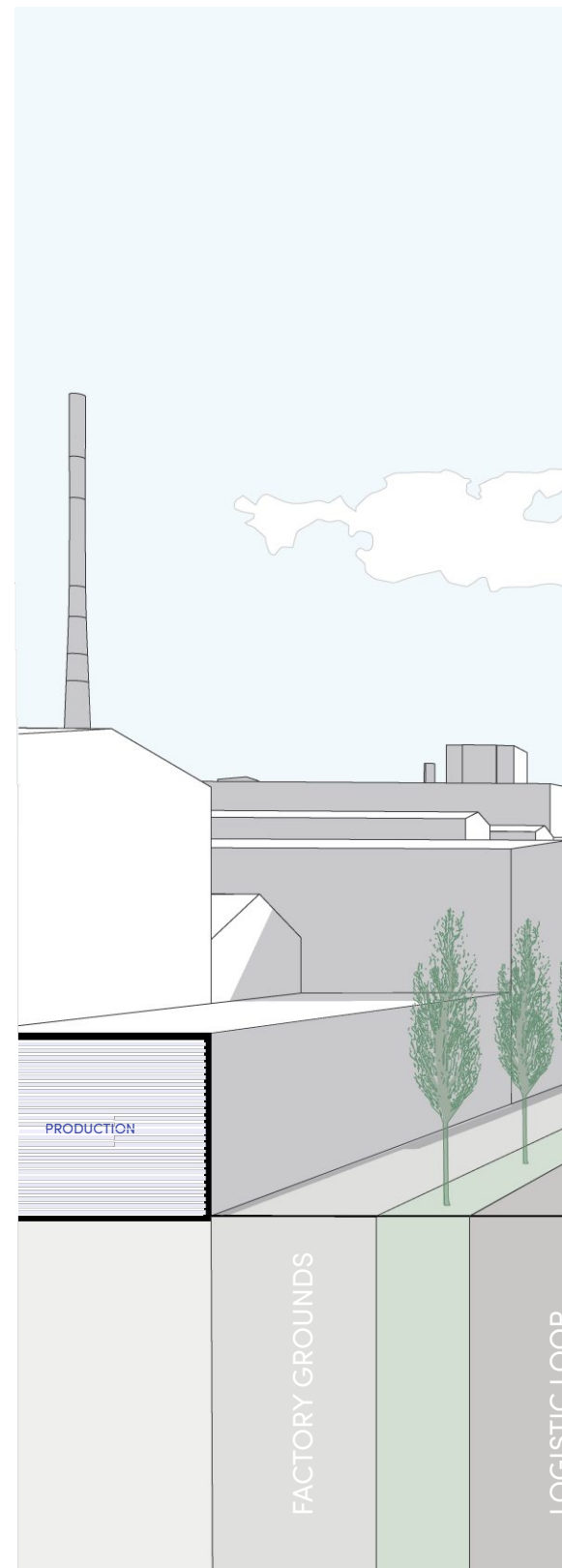


Fig. 150: Street Section Logistics Loop and Transshipment Point

FAIRNESS ZONE

LOADING RMAP

LOADING

UNLOADING





Fig. 151: Existing Situation Aussenhafen

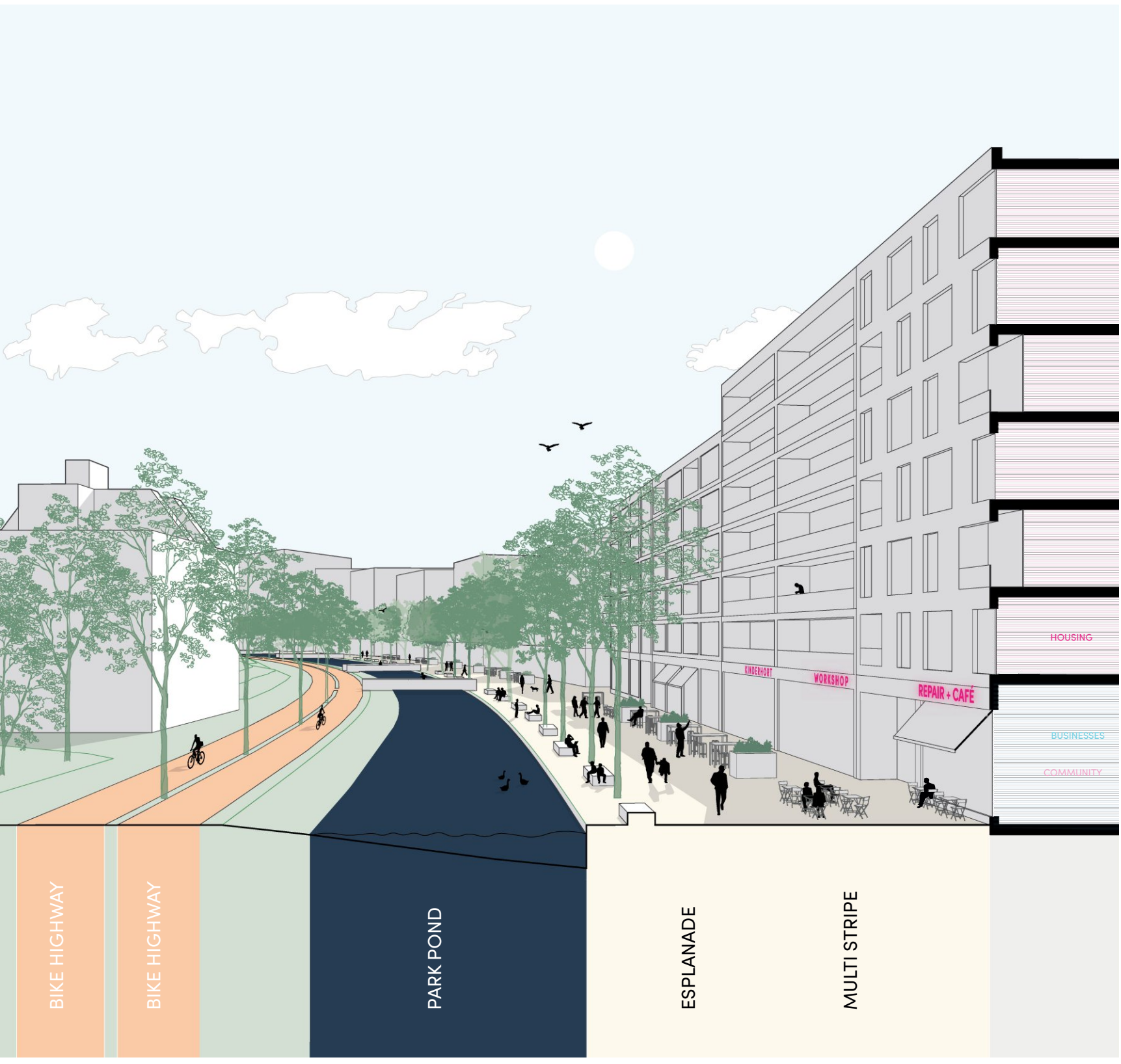
## Esplanade Route

The northern side of Blücherpark is developed into a gentle urban edge. Along the former bypass road corridor, a park pond is introduced as a spatial element, also working as a retention basin. While a new bike path leads to Rheinpark on the left side, a wide promenade on the right side invites strolling and lingering. The ground floor zone of the residential buildings is activated by social and communal facilities, office spaces, and other commercial uses. An intermediate zone with urban furniture and raised beds separates the bustling esplanade from the private plots, creating additional seating areas along the water



Fig. 152: Section Esplanade and Blücherpark

Die abgebildeten Szenarien sind als Visionen dargestellt. Die abgebildeten Szenarien sind als Visionen dargestellt. Die abgebildeten Szenarien sind als Visionen dargestellt.



BIKE HIGHWAY

BIKE HIGHWAY

PARK POND

ESPLANADE

MULTI STRIPE

HOUSING

BUSINESSES

COMMUNITY

KINDERHOTEL

WORKSHOP

REPAIR + CAFÉ



Fig. 153: Existing Situation Werthauser Strasse

## Boulevard Route

*Werthauser Straße*, the historic pathway from Duisburg's Old Town to the Rhine riverfront, becomes the urban centerpiece of the industrial quarter. The adjacent *makerblocks* activate the boulevard with a diverse mix of uses that go beyond those of a traditional shopping street. Small businesses, specialist retailers, high-quality services, workshops, studios as well as "transparent factories" are envisioned to characterize the streetscape, complemented by "classic" offerings such as grocery stores and gastronomy. Office-Spaces and Studio-Apartments are located in the upper floors. The street space is shaded by plane tree plantings and greenery along the "Multi-Stripes" – where additional areas for deliveries, bicycle parking, and seating are provided.

Foot traffic will be generated both by the users and residents of the quarter itself, as well as by the connection to the tram network and the ferry. Moreover, business models need to be developed for the ground floor zone that can function independently of pedestrian traffic, while still enabling activation.



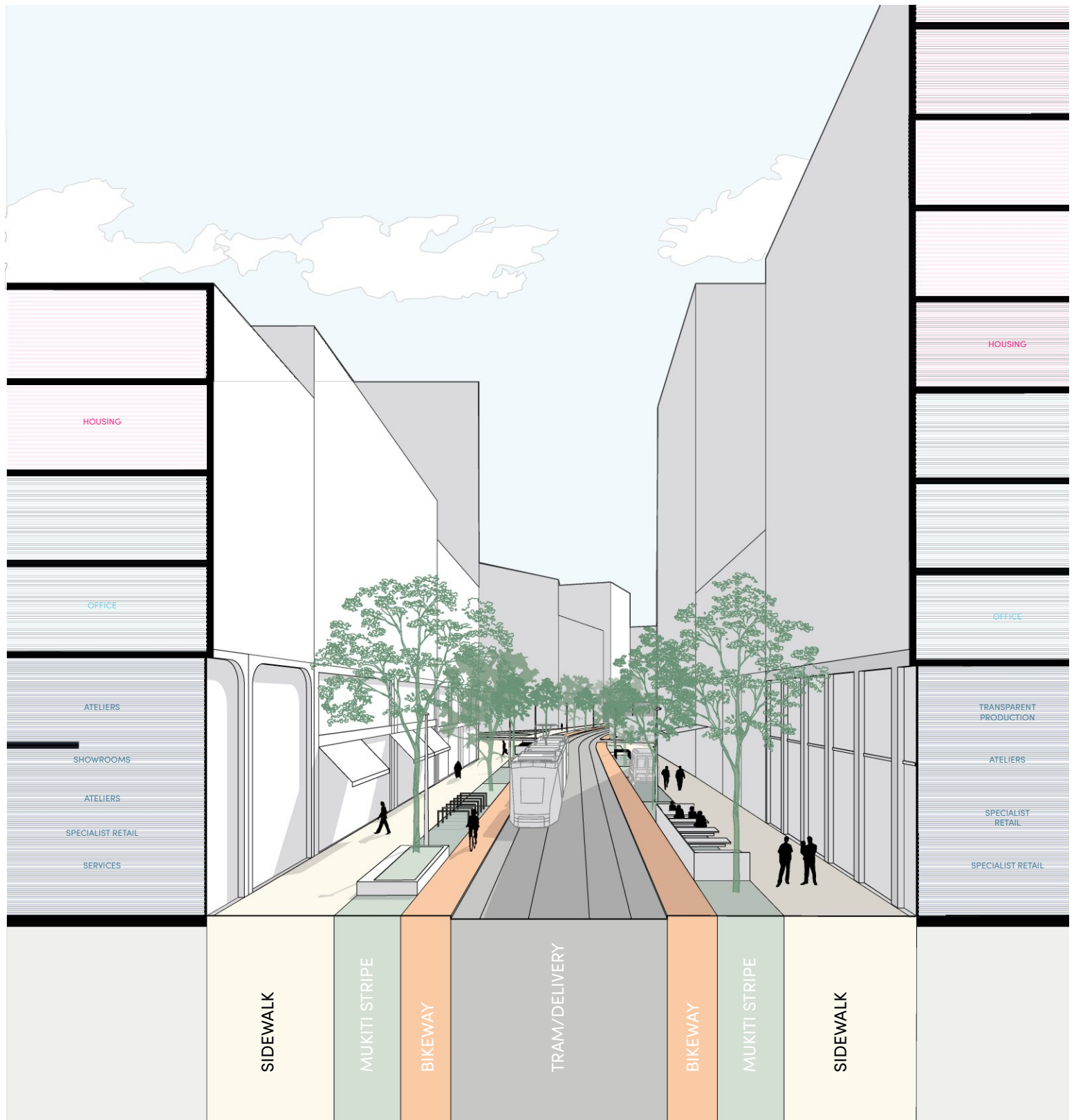


Fig. 154: Section Boulevard Werthausen Strasse



### 6.5.14 Zoom - Ins

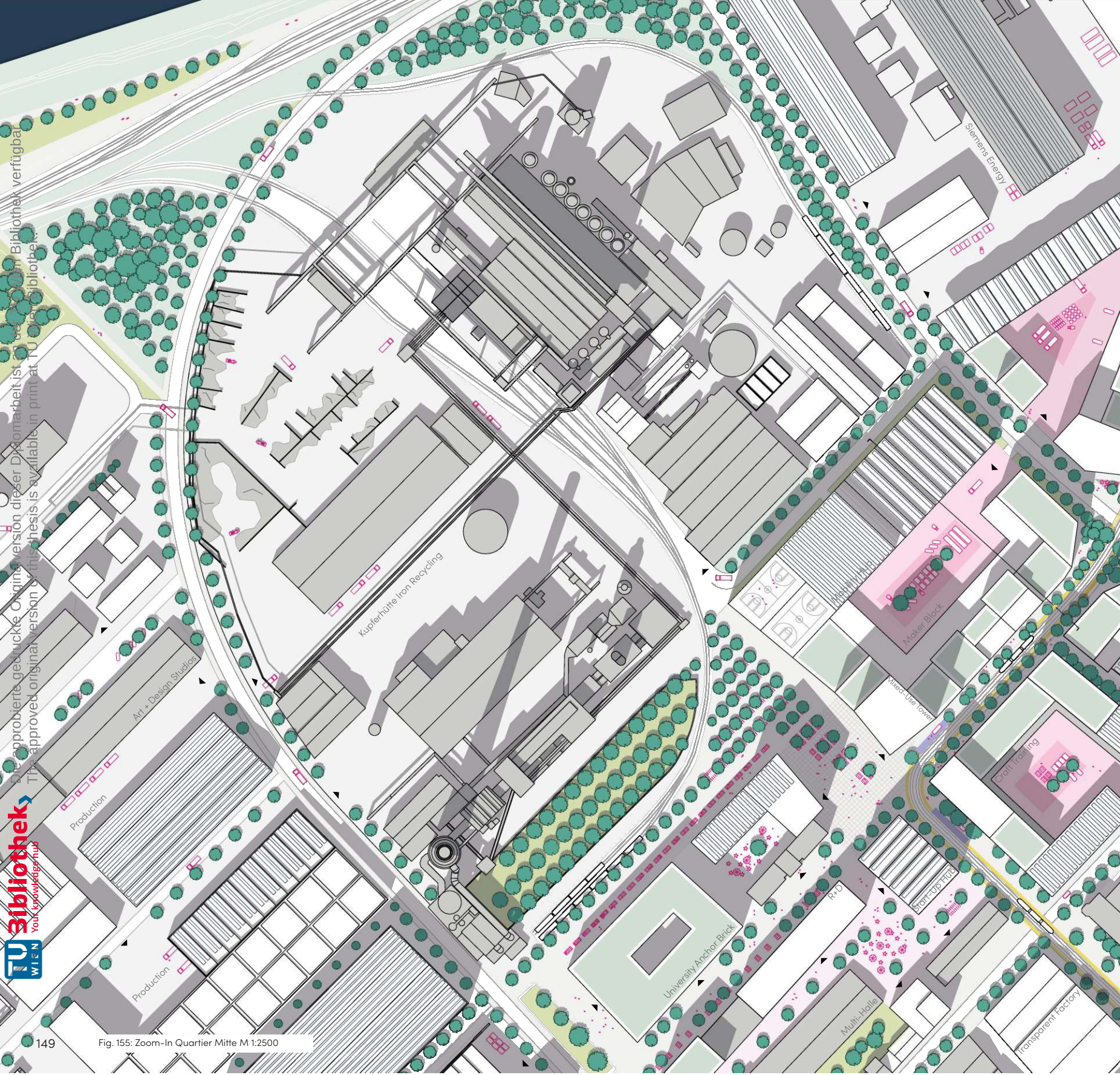
The excerpts outline four important sub-areas for the overall design. Firstly, the signature area "*Quartier Mitte*" is detailed along with the adjacent areas. Building upon this, a functional diagram of the ground floor zone of the boulevard is presented, as well as a prototypical section of the building typology "*Makerblock*." Finally, the urban situations "*Zollhafen-Marientor*," "*Hochfelder Eck*," and "*Rheinkai-Pier*" will be portrayed in terms of programming and open space design.

#### Zoom - In "*Quartier Mitte*"

"*Quartier Mitte*" - along with the Werthausener Straße boulevard - forms the new urban core zone of the industrial quarter. Here, it becomes clear how the building typologies - "*Makerblock*," "*Open Board*," "*Big Box*," and "*Back2Back*" not only enable versatile programming - they interact with and moderate the different contexts. In particular, Makerblocks are able to capture noise emissions from industry and achieve high building density through clear zoning and access, where quiet residential courtyards and noisy productive courtyards co-exist without hindering each other. The transition from heavy industry to the residential quarter of Hochfeld is "seamless" - the urban patchwork, held together by high-quality urban spaces, breaks the caesura.

#### Prototype Section Makerblock

The development principle "*Makerblock*" is exemplified in a cross-section illustration. A medium-sized production unit is juxtaposed with a "productive base" that includes smaller commercial units and businesses, all of which enclose a courtyard. The closed construction reduces noise pollution in the street area, which is activated and utilized with various ground-floor uses, especially B2C (business-to-consumer - this can include specialist market, services, ateliers, showrooms etc. The floors above the ground level consist of office spaces that serve as a buffer to the atelier residential units located on the upper floors. Address formation occurs from two sides: offices and residences face the street, while commercial and industrial units are accessed from the courtyard.





Die ursprüngliche Gestaltung des Originals ist ein Entwurf von TU Wien. Die hier gezeigte Version ist eine modifizierte Version des Originals.

# Prototype Section Makerblock

Die approbierte gedruckte Originalversion dieser Diplomarbeit ist an der TU Wien Bibliothek verfügbar  
The approved original version of this thesis is available in print at TU Wien Bibliothek.



**Bibliothek**  
Your knowledge hub



Die approbierte gedruckte Originalversion dieser Diplomarbeit ist an der TU Wien Bibliothek verfügbar  
The approved original version of this thesis is available in print at TU Wien Bibliothek.

**Bibliothek**  
Your knowledge hub

**TU**  
WIEN

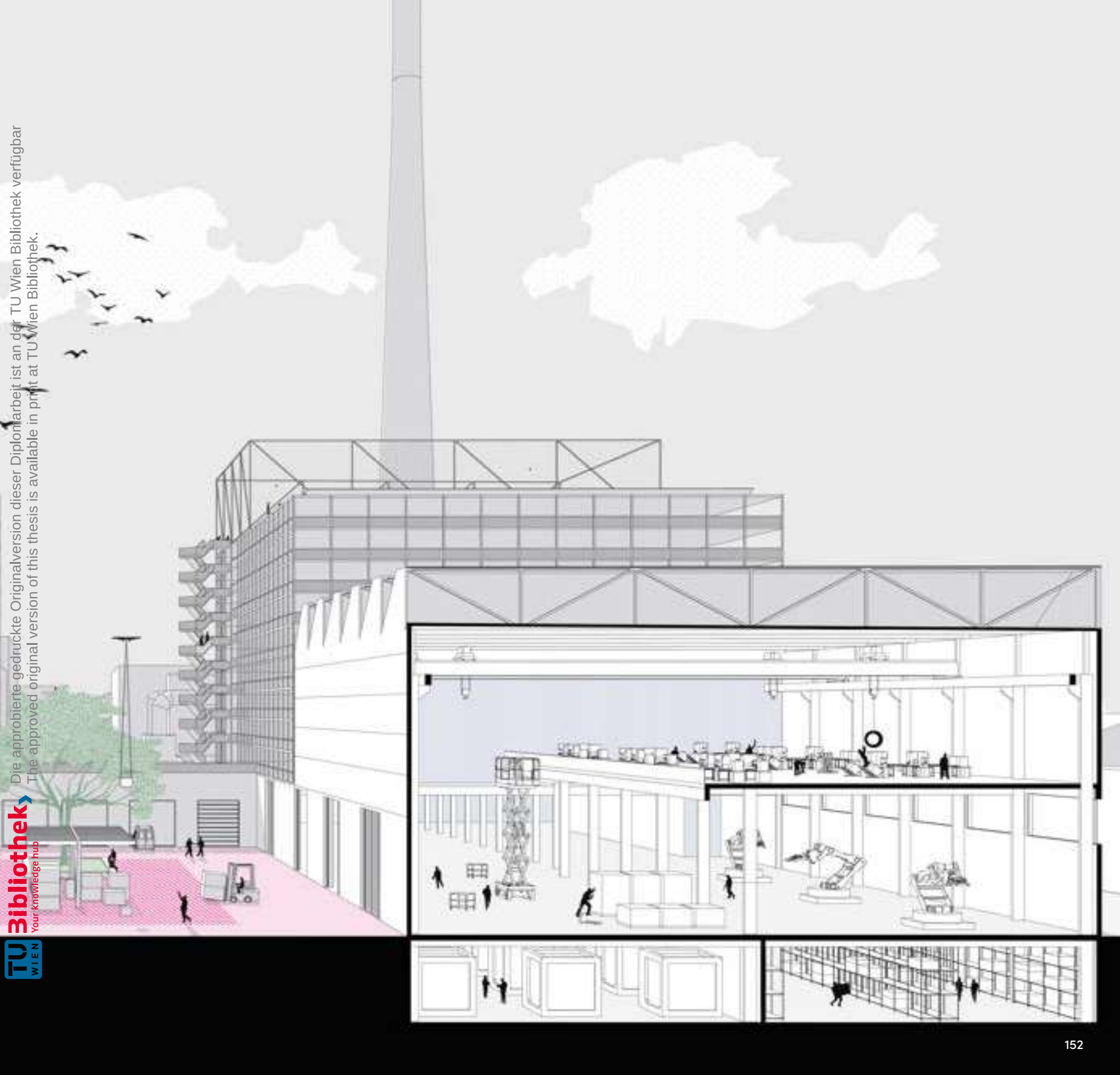




Fig. 157: Orthofoto Zoom-In Hochfelder Eck (No Scale)



Fig. 158: Orthofoto Außenhafen - Innenhafen (No Scale)

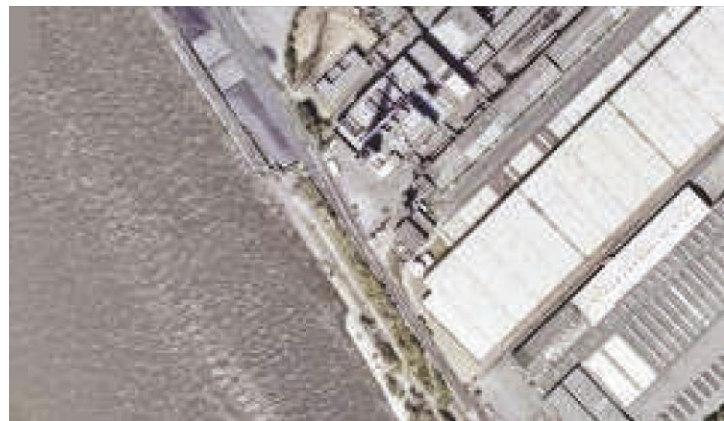


Fig. 159: Orthofoto Rheinkai (No Scale)



## Zoom-In: Hochfelder Eck

"*Hochfelder Eck*" is the new green space anchor of the neighborhood and a draw for all of Duisburg. Where once the "*Hütte Vulkan*" had its blast furnace, and where coal is currently stored, an open space is emerging for cultural events such as concerts, festivals, sports events, etc.

The specific design of the ground needs to be further discussed, as the heavy metal contamination of the soil and its intended use require more than just seeding grass.

At the entrances near the hydrogen tanks and the data center, bicycle parking spaces help to keep the area calm and make it attractive for active mobility. The waterfront area will be left to nature between the docks, avoiding costly re-naturalization and the transformation of the terrain. Instead, the 10-meter-high concrete edge remains as a landscape element, complemented by an extending platform for a lookout. The adjacent fortified slopes will be replaced by terraces inviting visitors to linger, while the "tip" will be greened and offers direct access to the water.

The industrial fringe zone along the Rhine will be perforated by alley-like cross-connections, while behind the railway line, the development give way to the green corridor between *Hochfelder Eck* and the *Rheinpark*. Consequently, the "first row" remains reserved for the public and will be animated with a cocktail bar at the harbor edge and elevated clubhouses.

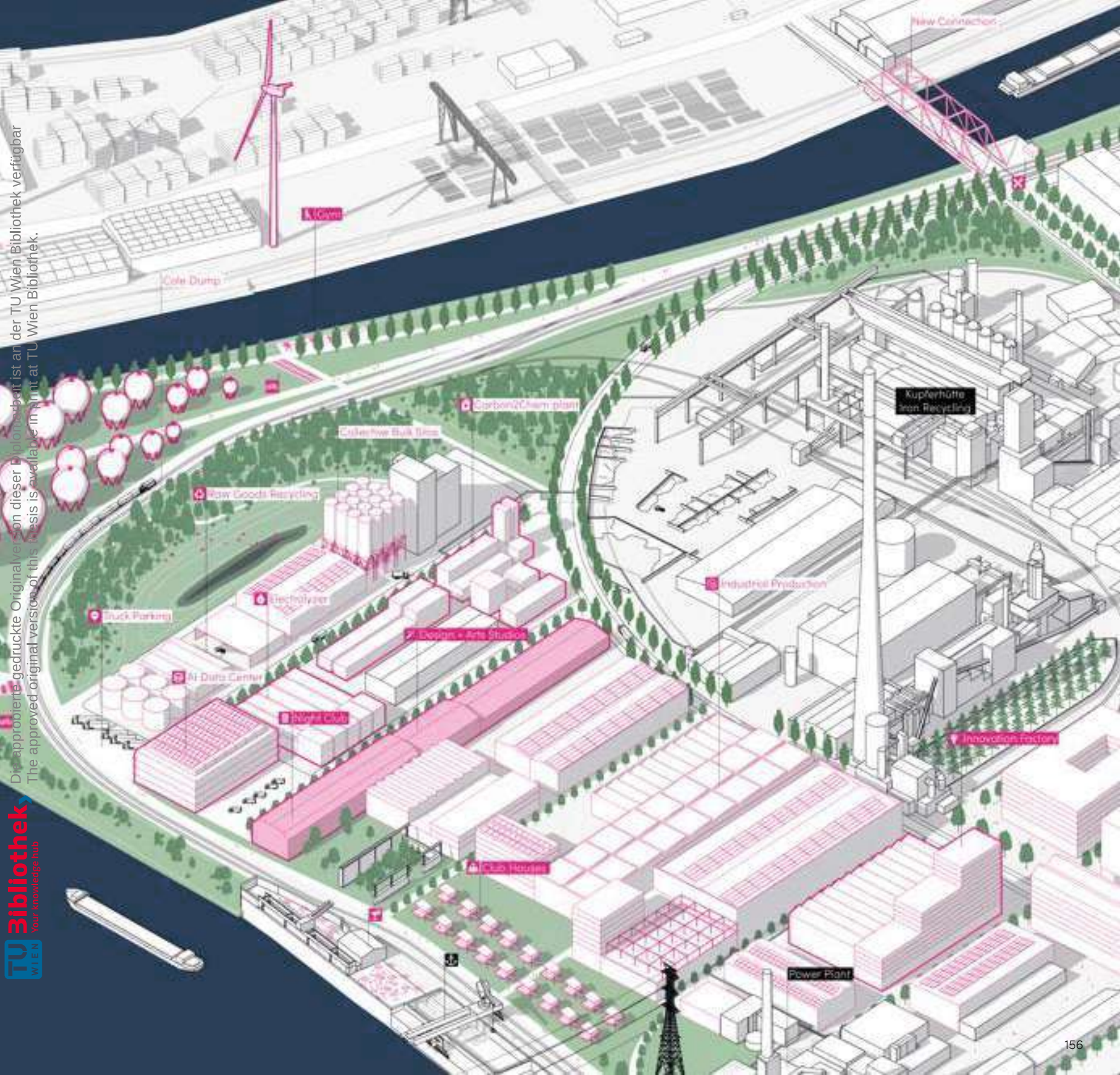
## Zoom-In: Altstadt - Zollhafen - Außenhafen

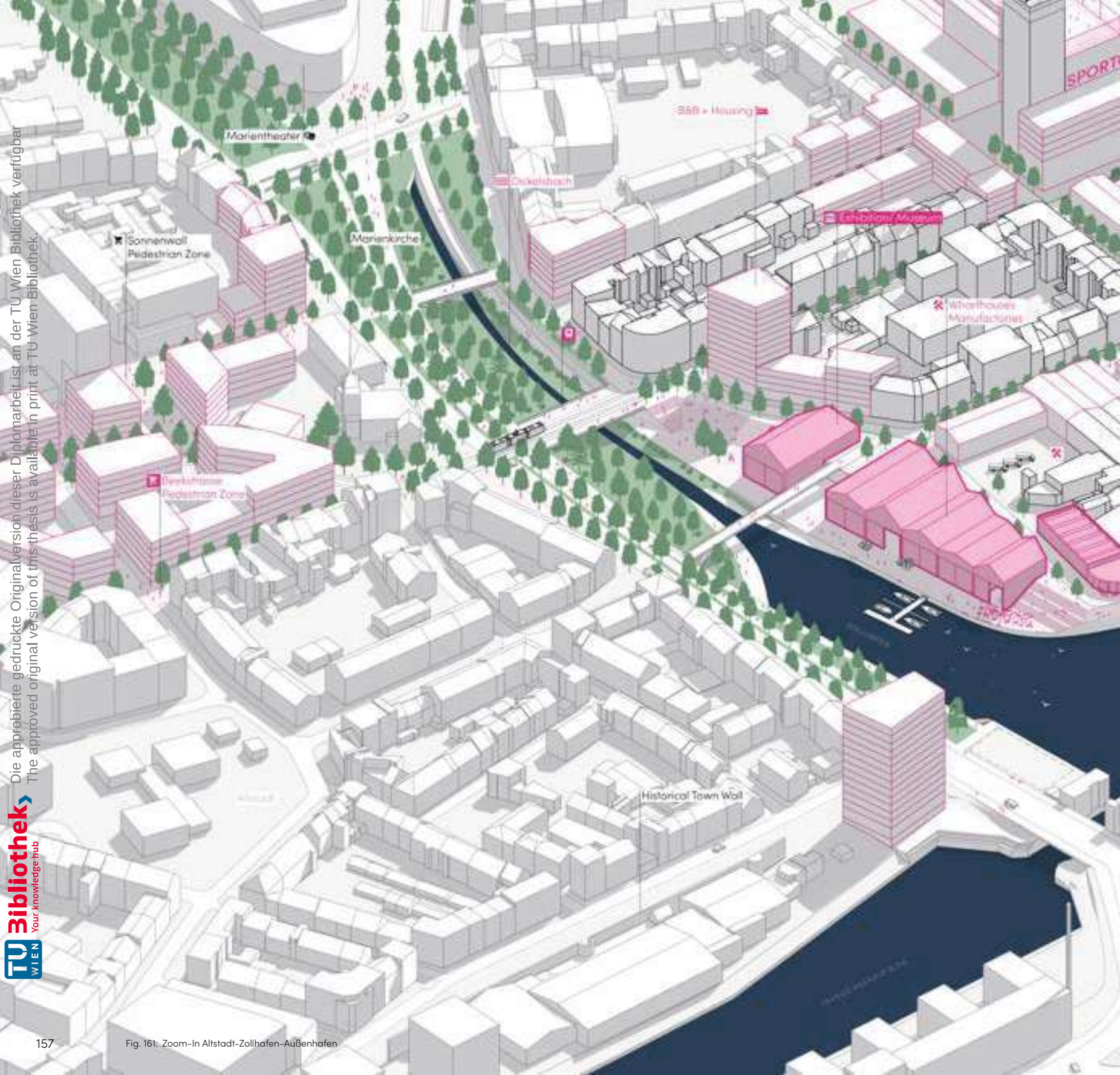
The situation at *Aussenhafen* changes significantly due to the reorganization of the road network - the reintroduced *Zollhafen* and rivulet mouth form a urban space that was previously blocked by the highway bridge. The area functions as both - the intersection between the old town, the industrial area of Hochfeld and the Wanheimerstraße - as well as a "urban arrival space" from the northern parts of the city via Ruhrort and Ruhr to the city center (see chapter X). The highway feeder road is cut off at the waterfront and becomes a pocket park with a viewing platform. A bicycle ramp allows access to the highway bridge and thus connects to Duisburg-Mitte and Nord as part of the regional cycling network. Along the new waterfront *Zollhafen*, publicly visible commercial halls and a district museum are grouped. The *Aussenhafen Zone*, currently infamous as a red-light district, is intended to be further developed through repurposing as an entertainment district, with a nightclub and various bars and venues along the waterfront. The goal is to overlay the new urban uses without displacing existing businesses such as the harbor shipyard.

Several overpasses over the stream enable barrier-free transitions from the old town to the industrial quarter - at *Zollhafen*, urban corridor meets green corridor.

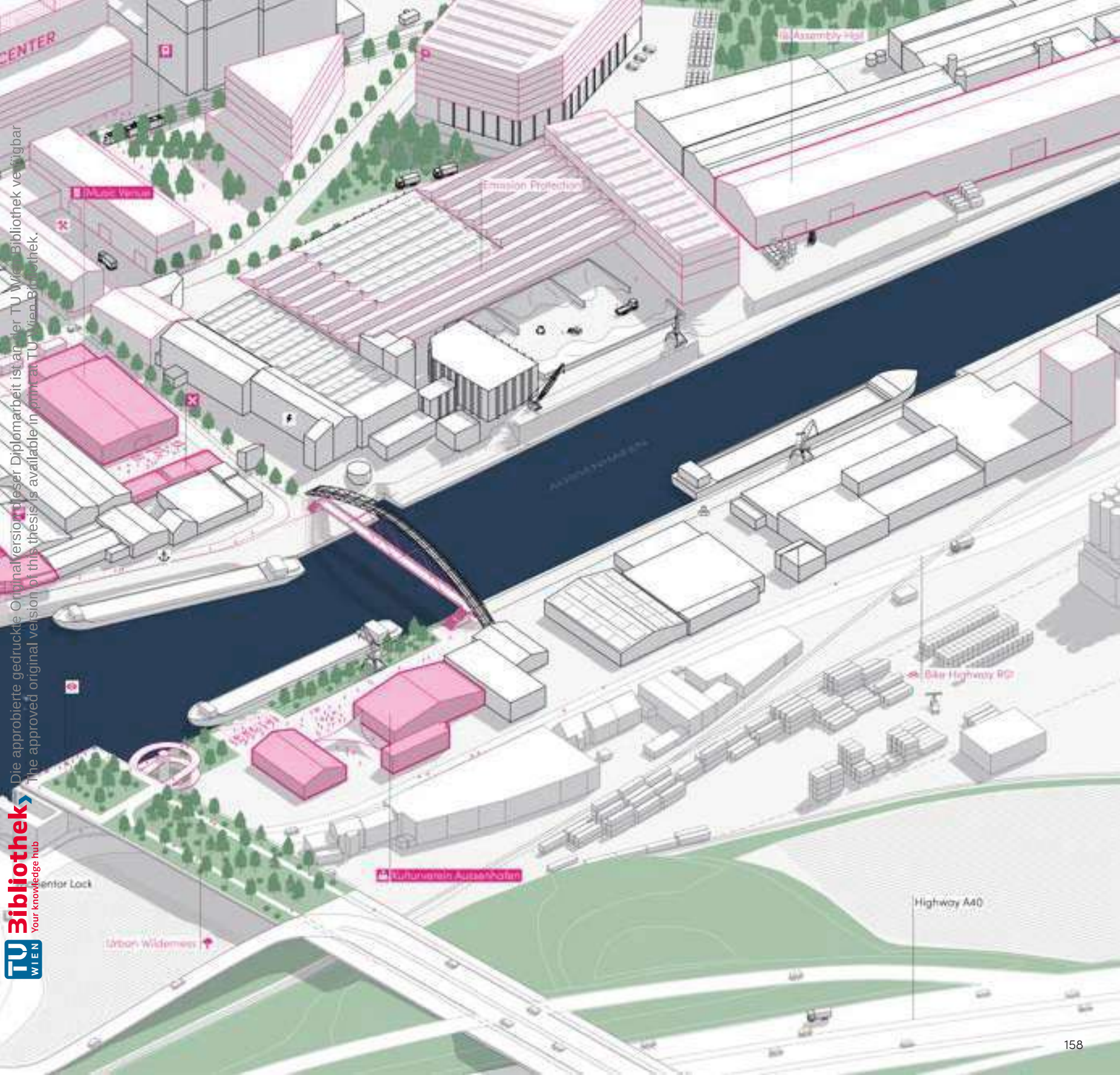


Fig. 160: Zoom-In "Hochfelder Eck"





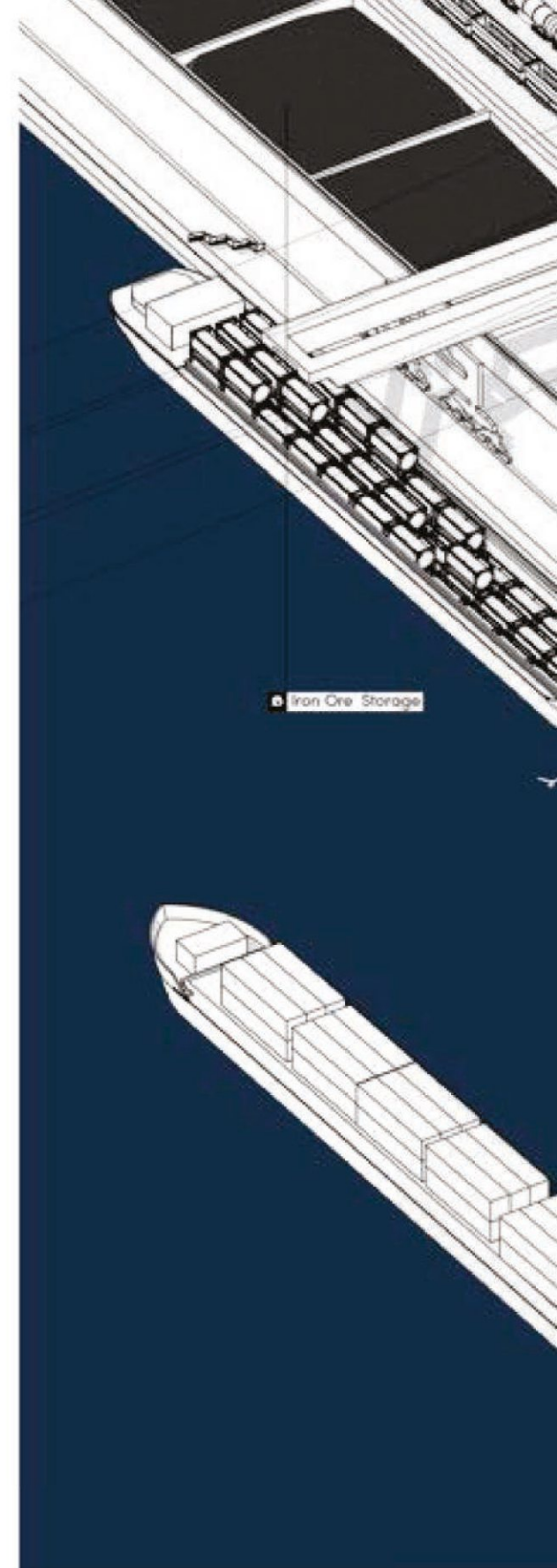
Die approbierte gedruckte Originalversion dieser Diplomarbeit ist an der TU Wien Bibliothek verfügbar.  
The approved original version of this thesis is available in print at TU Wien Bibliothek.



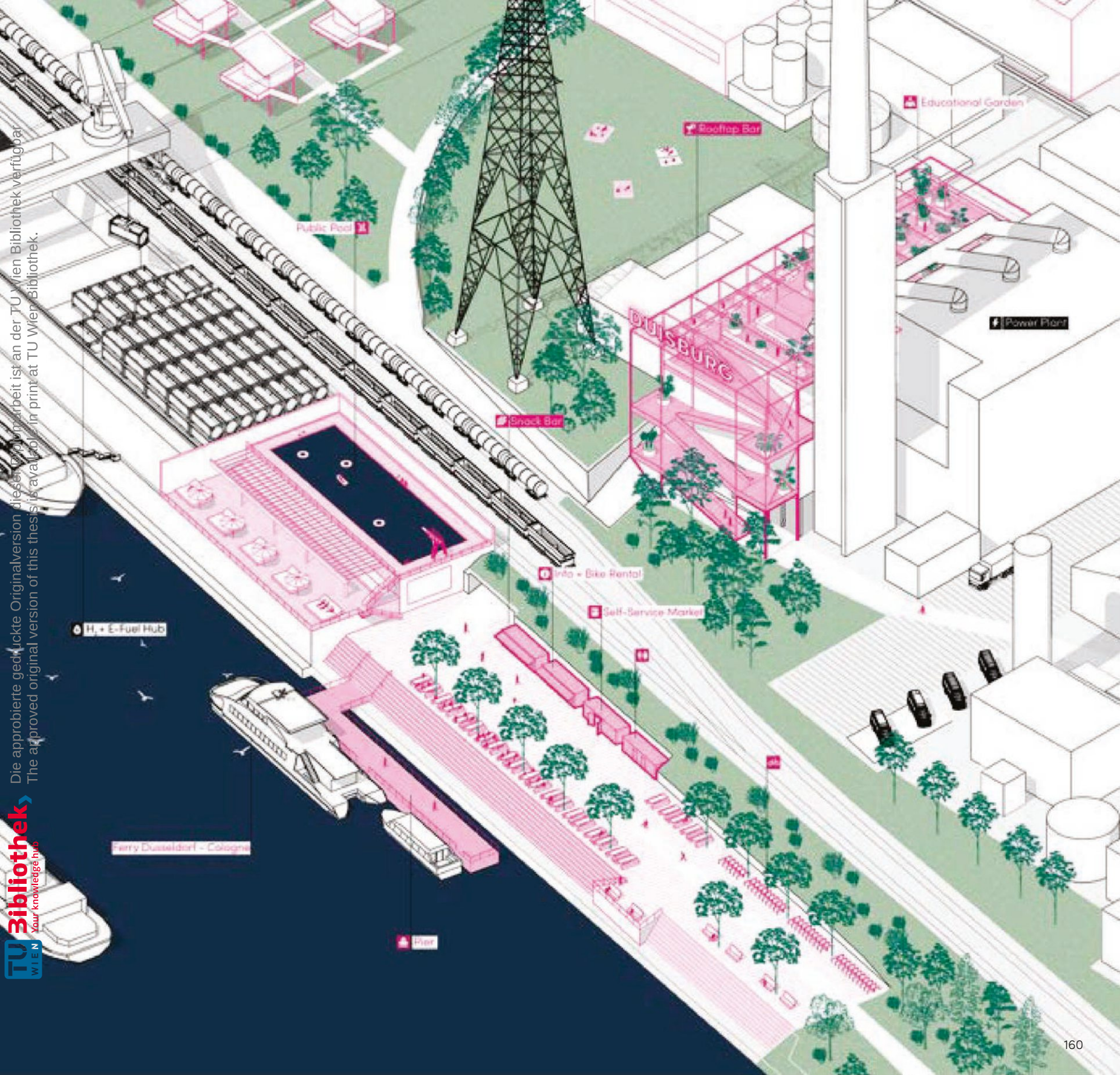
## Zoom-In Rheinkai - Pier

The *Rheinkai* is the point where the Werthausen Straße meets the waterfront and was historically the location where the ferry crossed the Rhine to Werthausen. This function is revived with the new pier for commercial and tourist Rhine shipping. *Rheinkai* becomes a mobility hub and a focal point for the users and residents of the quarter, as well as for tourists. The community pool provides cooling in the summer, the snack bar invites people to linger, and the information point with bicycle rental is aimed at tourists. The power plant gets a rooftop terrace, which becomes a green classroom during the day and functions as an after-work hotspot in the evenings.

Parallel to these urban uses, the port function remains. The raw material logistics of the heavy industry are reduced to a spatial minimum, with storage basins for iron ores and an intermediate storage for renewable fuels remaining.



Die approbierte gedruckte Originalversion dieser Publikation ist an der TU Wien Bibliothek verfügbar.  
The approved original version of this thesis is available in print at TU Wien Bibliothek.



H<sub>2</sub> + E-Fuel Hub

Ferry Düsseldorf - Cologne

Pier

Public Pool

Snack Bar

Rooftop Bar

Educational Garden

Power Plant

GIBSBURG

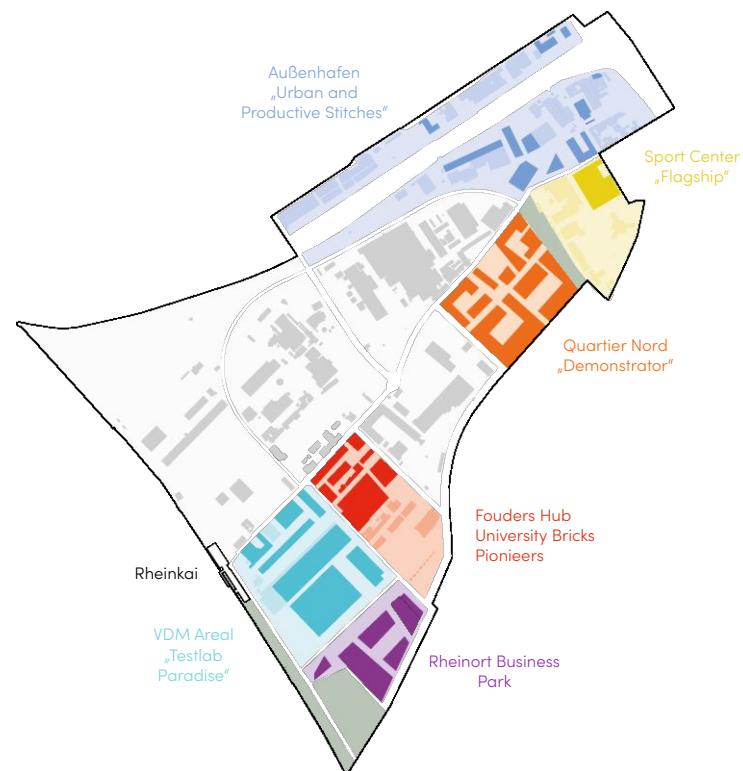
Info + Bike Rental

Self-Service Market

### 6.5.15 Roadmap 2030+

The development of the individual areas is placed in a temporal context in the final step. Key to this are the municipal investments in transport infrastructure. In the first phase, the areas that do not require immediate road restructuring will be developed. The "Quartier Nord" will serve as a prototype to test new functional mixtures and typologies. *Aussenhafen* will be enriched with cultural and pioneer uses, and the university will prepare initially halls and existing buildings for its own use. The sports center next to the heating plant will serve as another attraction to draw visitors to the industrial quarter.

In phase 2, the interventions described in the design will become reality. Traffic calming measures and the new tram line will facilitate the development of the urban core zone, particularly the residential areas. Industry and commerce will settle along the waterfront. In the final phase, large areas occupied by heavy industry will be freed up - coal will be replaced by hydrogen, allowing for the development of open spaces in the "Hochfelder Eck" along with the adjacent industrial and commercial uses.



### Phase 1

Pioneers and Demostrator Area

Fig. 163: Roadmap 2030+





**Phase 2**  
Infrastructure and Densifying



**Phase 3**  
Industry Transformation and Green Gap Closure



Fig. 164: Figure Ground Plan Status Quo (No Scale)



Fig. 165: Figure Ground Plan Target Scenario (No Scale)

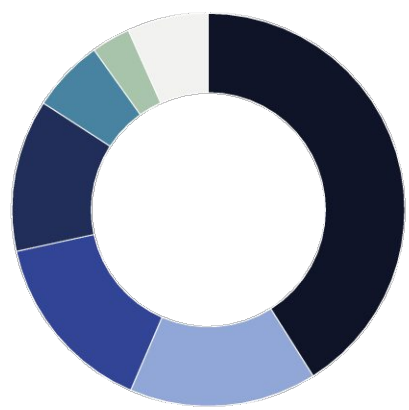
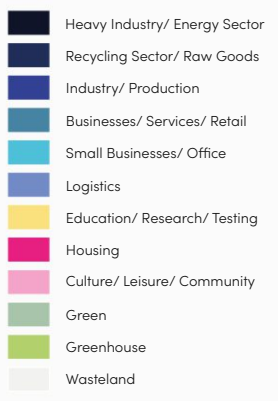
### 6.5.16 Wrap-Up

The impact of the urban interventions can be illustrated comparatively in the Schwarzplan. The current state can be described as a disjointed, fragmented structure. In the target scenario, the existing elements are largely integrated into a robust urban framework, which connects with the Hochfeld residential district while also becoming significantly denser. The resulting patchwork of different scales and granulations becomes a defining characteristic of the industrial quarter.

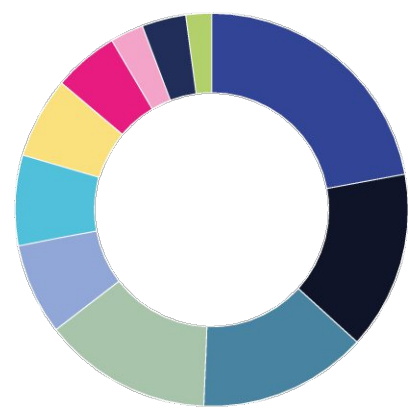
The necessary land reclassification for the intended mixed-use is evident in the comparative land use plan. Besides the new recreational area by the water, the new “urban zone” stands out,

mediating between residential and industrial areas and serving as the planning basis for the development patterns and typologies depicted in the design. The areas designated for motorized traffic are significantly reduced in the scenario.

Regarding land use distribution, it becomes clear how mono-functional the area currently is and how extensive the land consumption by heavy industry still is. This consumption is expected to be minimized through technological transformation. Despite the new commercial and residential areas, logistics and circular economy will remain in the quarter, with various forms of production making a significant contribution to value creation.



Use Mix Status Quo



Use Mix Target Scenario

Fig. 166: Use Mix Comparison



Zoning Map Status Quo



Zoning Map Target Scenario

Fig. 167: Zoning Comparison

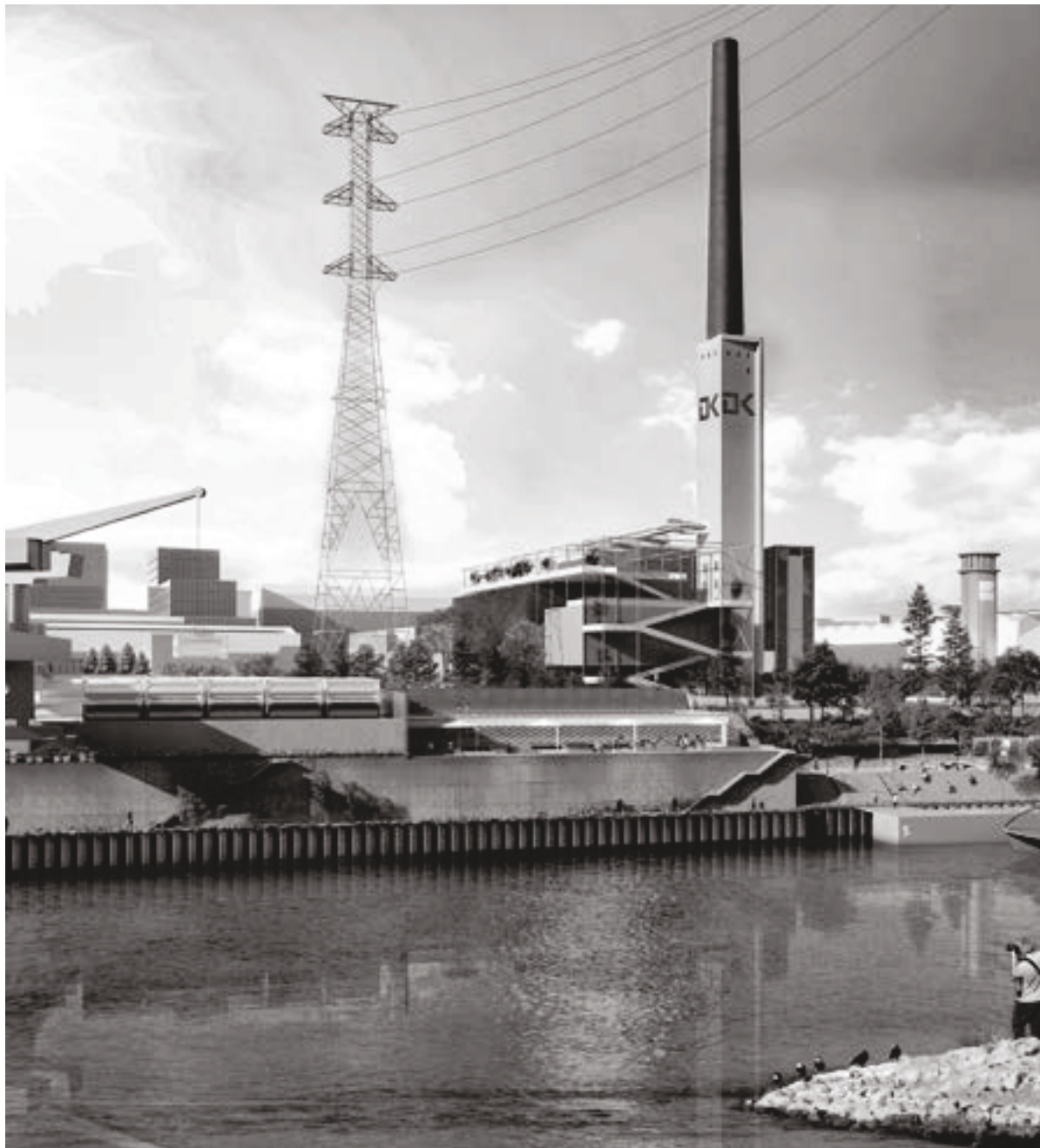


Fig. 168: Perspective Rheinkai

## 7 Conclusion

The goal of this thesis is to highlight the qualities and potentials of the city of Duisburg as a whole and of the Hochfeld industrial area in particular. The prerequisites for urban development in the sense of a successful «Second City» next to Cologne and Düsseldorf are given: the port as a European logistics hub, an ideal location on international transport corridors, the expansion of the hydrogen infrastructure, which could become an important location factor in the future. The city still embodies the image of a «Steel City» and yet has a history as a trading city and a university city on the Rhine, which goes far beyond the identity of the Ruhr area.

This thesis consistently explores these potentials and strengths – with the vision of an inclusive, circular, and resilient, self-confident «Second City» on the Rhine.

On a city-wide level, the derived guiding principles for Duisburg provide actionable directives:

- 1.** The inner-city districts should be upgraded by reducing logistics or transit traffic, thereby strengthening the urban and green corridors that connect the neighborhoods and their sub-centers.
- 2.** Consequently, the expansion of public transportation at the expense of individual traffic, as envisaged in the proposal through the introduction of a new tram line, should be consistently promoted. Instead of dismantling existing rail and port infrastructure, these should take on a greater importance in urban logistics, thereby further reducing traffic congestion.
- 3.** Monofunctional industrial areas with transformation potential, well connected to the transportation network, should preferably be developed proactively as hybrid productive urban quarters. Less suitable areas should be allocated to green space development in the interest of land consolidation.

Based on the guiding principles, an integrated development scenario was developed for Hochfeld, aimed at (re-)integrating the industrial area into the urban fabric through spatial corridors, achieving a resilient usage structure, and creating new accessibilities to the Rhine waterfront.

Overall, the closure of the gap between the Rheinpark and Innenhafen is achieved through the new open space at Hochfelder Eck. Furthermore, the establishment of universities and research institutions, small and medium-sized enterprises, high-tech companies, and urban production sites can lay the groundwork for upgrading

the Hochfeld Gründerzeit quarter, historically developed alongside industrial establishments, and thus promote new social diversity. Following the principles of the productive city, the design approach aims to transform the remaining industry and create new compatibilities with urban uses where possible. Thus, the «Duisburg Copper Works» will remain an important recycling site for pig iron and contribute to the identity of the neighborhood. Similarly, a focus on punctual mixing with port and industrial uses is planned along the outer harbor, rather than office developments as seen in the Innenhafen. «Zollhafen» and the adjoining creek mouth bring back a historic urban space into Duisburg's collective memory. The three characteristic pathways to the Rhine – the esplanade along Blücherpark, the urban boulevard Werthausen Straße, and the route along the outer harbor – are key urban elements contributing to the revitalization of the quarter and thus enlivening the riverbank. Despite urban uses, the function as a port is retained – the dock at the outer harbor becomes a hub for neighborhood and urban logistics with connections to the regional road and rail network. Lastly, an intelligent energy infrastructure, largely already in place and supplemented by renewable energy sources and new storage options, can help position Hochfeld and Duisburg as a clear competitive advantage in the European context regarding both hard and soft factors.

So will Hochfeld eventually become the «Prenzlauer Berg,» as proclaimed by Thomas Sevcik?<sup>56</sup> The potential is there, but this work also emphasizes that the development of the residential district Hochfeld cannot be separated from the development of the industrial area – both must be considered together, and gentrification, as in Berlin, should not be the goal of this urban development. Here, it is crucial to carefully consider which uses are allowed at which locations to ensure that industry and commerce can afford inner-city or near-city areas in the future.

Regarding the feasibility of the desired transformation, the IBA Stuttgart<sup>27</sup> with its pioneering projects could bring valuable experience to Duisburg. There is a general need to view industrial and commercial areas as part of the city and to have the willingness to curate and manage new settlements.

It requires the courage to embrace new typologies and urban building blocks, the courage to adopt more decentralized development models such as building groups and syndicates, especially on a commercial level, but also the courage to change paradigms in traffic and logistics planning.

## Endnotes

- 1 See Handelsblatt (2024)
- 2 See Sevcik (2022)
- 3 See Sevcik (2022)
4. See Burggräf (2013), 114-115.
5. See Urban (2008), 9-11.
6. See Burggräf, (2013), 33.
7. See Urban (2008), 13; Sack (1999),29-34.
8. See Urban (2008) 23-27; Sack (1999) 37-38.
9. See Urban (2008), 27-30; Sack, (1999) 37.
10. See Urban (2008) 30-33; Sack (1999) 38-39.
11. See Urban (2008) 30-42; Sack, (1999) 39.
12. See Urban (2008) 36-40; Sack, (1999) 38.
13. See Urban (2008) 33-36; Sack, (1999) 38.
14. See Urban, (2008) 51-55; Sack, (1999) 151-155.
15. See Sack (1999), 151.
16. See Marth (Ed.), (2018), 12-120.
17. See Sack (1999), 191-194.
18. See Sack (1999), 174-178.
- 19 See Böll (2010), 67.
- 20 See Taube, Scheuvens (2010), 73.
- 21 See Taube, Scheuvens (2010), 282.
- 22 Klaus Selle, quotation in: Burggräf, (2013), LXII.
- 23 Thomas Sieverts, quotation in: Burggräf, (2013), LXII.
- 24 See Wirtschaftsförderung Region Stuttgart (2019), 222-226.
- 25 See Herrmann (2022), 144-147.
- 26 See Wirtschaftsförderung Region Stuttgart (2019), 191-193.
- 27 See Läßle (2017).
- 28 See Markus Schaefer (2021), 25-47.
- 29 See Herrmann Prämientiver Wandel? (2022), 144-147.
- 30 See Brearley (2020)
- 31 See Läßle (2016), 22-29.
- 32 See Cities of Making (n.d.)
- 33 Reicher (2023), 4-7.
- 34 Rettich (2023) 16.
- 35 Auer (2023), 12.
- 36 Simon (2023), 62-63.
- 37 See IBA'27 (2023)
- 38 See Teleinternetcafe (2021)
- 39 Sevcic in: Schäfer (2023)
- 40 See Stadt Duisburg (2023).
- 41 See Ministerium für Wirtschaft, Innovation,Digitalisierung und Energiedes Landes Nordrhein-Westfalen(Ed.) (2020), 57-65.
- 42 See Bezirksregierung Düsseldorf (n.d.)
- 43 See Stadt Duisburg, Wirtschaftliche Entwicklung in Duisburg 2. Ausgabe des Strukturmonitorings 2023, 2023, 7.
- 44 See Stadt Duisburg, Chronik, (n.d.).
- 45 See Archäologie Duisburg (n.d.)
- 46 See Stadt Duisburg, Gerhard Mercator, (n.d.)
- 47 See Universität Duisburg-Essen (n.d.)
- 48 See Innenhafen Portal (n.d.)
- 49 See Innenhafen Portal (n.d.)
- 50 See Kleinwächter (2021)

- 51 See Kleinwächter (2021) |
- 52 See Kleinwächter (2021)
- 53 See Kleinwächter (2021)
- 54 See Projekt Ruhr GmbH (2005), 303.
- 55 See Duisburg Business & Innovation GmbH (n.d.)
- 56 See Michel (2023)

## Bibliography

- Archäologie Duisburg, *Duisburger Hafen im Mittelalter*, n.d., <https://www.archaeologie-duisburg.de/duisburger-hafen-im-mittelalter/> accessed 23.04.2024.
- Bezirksregierung Düsseldorf, *Organisationsstruktur*, <https://www.brd.nrw.de/ueber-uns/organisationsstruktur/abteilung-3-regionale-entwicklung-kommunalaufsicht-wirtschaft> accessed 12.04.2024.
- Burggräf, Sabine M., *Der Weg der Idee – Eigenheiten, Genesen, Modifikationen und Wirkungen ungleicher Projektentwicklungsideen innerhalb eines komplexen Prozesses unter dem Einfluss beteiligter Akteure. Eine Nachuntersuchung zur Internationalen Bauausstellung Emscher Park in den 1990er Jahren (Diss.)*, Witten, 2013.
- Böll, Heinrichl, *Raumproduktion*, in: *Der Produktive Park*, Essen/Wien/Dortmund, 2010.
- Brearley Mark, Yes, we want Industry in our Cities., Video 14.12.2020, London <https://www.youtube.com/watch?v=d-NMNc0lWeU> accessed 15.02.2024.
- Cities of Making, *Profiles: Mark Brearley – Kaymet – London* <https://citiesofmaking.com/manufacturing-profiles-mark-brearley-kaymet-london/> accessed 20.04.2024.
- Dahlheimer Achim, *Grundsätze*, in: *Visionen für das Ruhrgebiet – IBA Emscher Park: Konzepte, Projekte, Dokumentation*, Essen, 2008.
- Duisburg Business & Innovation GmbH, *Technologiequartier Wedau*, <https://www.duisburg-update.de/projekte/technologie-quartier-wedau> accessed 23.03.2024.
- Murphy Martin, Wermke Isabelle, *Thyssen-Krupp Steel will Kapazitäten verringern und plant Stellenabbau*, in: *Handelsblatt* 11.04.2024. <https://www.handelsblatt.com/unternehmen/industrie/stahlbranche-thyssen-krupp-steel-will-kapazitaeten-verringern-und-plant-stellenabbau/100030931.html> accessed 18.05.2024
- Herrmann Marth/ Stiftung Zeche Zollverein (Ed.), *Zollverein : Welterbe und Zukunftswerkstatt*, Berlin, 2018.
- Herrmann Leo, *Präemptiver Wandel? – Die IBA'27 zwischen Transformationsauftrag und symbolischen Akt*, in: *Arch+ Ausgabe 248*, Berlin, 2022.
- IBA'27 StadtRegion Stuttgart, *Quartier Backnang West*, <https://www.iba27.de/projekt/quartier-backnang-west/> accessed 14.04.2024.
- Innenhafen Portal, *Geschichte und historische Entwicklung*, n.d., <https://www.innenhafen-portal.de/standort/historie/geschichte-und-industrielle-entwicklung> accessed 25.04.2024.
- Kleinwächter Martin, *Stadtteil Geschichte(n)- Als Hochfeld boomte: Duisburgs frühe Industrie-Hochburg*, in: *WAZ Westdeutsche Allgemeine Zeitung* 08.07.2021.
- Läpple Dieter, *Die Produktive Stadt: Warum sie nötig ist und wie sie möglich wird*; Presentation at Symposium „Urbane Produktion – eine Strategie für die funktionsgemischte Stadt“, Cologne, 2017.
- Läpple Dieter, *Produktion zurück in die Stadt. Ein Plädoyer*, in: *StadtBauwelt 211*, Berlin, 2016.
- Meinolf Bertelt-Glöß/Rolf Heyer, *Arbeiten im Park*, in: *Visionen für das Ruhrgebiet – IBA Emscher Park: Konzepte, Projekte, Dokumentation*, Essen, 2008
- Metropole Ruhr, *Emscher Vorher Nachher*, <https://metropole.ruhr/auf-dem-weg-zur-gruensten-industrieregion-der-welt/emscher-vorher-nachher> accessed 08.10.2023.
- Ministerium für Wirtschaft, Innovation, Digitalisierung und Energie des Landes Nordrhein-Westfalen(Ed), *Landesentwicklungsplan Nordrhein-Westfalen*, Düsseldorf, 2020.
- Michel Mike, „Vielleicht ist Hochfeld in zehn Jahren wie der Prenzlauer Berg“, in : *Rheinische Post* 11.05.2023, [https://rp-online.de/nrw/staedte/duisburg/thomas-sevcik-beim-immobilien-talk-der-sparkasse-duisburg\\_aid-90156989](https://rp-online.de/nrw/staedte/duisburg/thomas-sevcik-beim-immobilien-talk-der-sparkasse-duisburg_aid-90156989) accessed 15.05.2024.
- Projekt Ruhr GmbH (Ed.), *Masterplan Emscher Landschaftspark*, Essen, 2005.
- Reicher Christa, *Vom Quantensprung im Wohnungsbau*, in: *Stimmen zur Internationalen Bauausstellung 2027 StadtRegion Stuttgart*,



### Stuttgart, 2023

- Rettich Stefan, *Druck im Kessel*, in: *Stimmen zur Internationalen Bauausstellung 2027 StadtRegion Stuttgart*, Stuttgart, 2023.
- Sack Manfred, *Siebzig Kilometer Hoffnung*, Stuttgart, 1999.
- Schaefer Markus, *The Industrious City*, in: *The Industrious City. Urban Industry in the Digital Age*, Zürich, 2021.
- Schäfer Jörg, "Was ich an Los Angeles liebe, liebe ich auch an Duisburg" in: WAZ Westdeutsche Allgemeine Zeitung 11.05.2023.
- Simon, Axel, *Mischen Possible!*, in: *Stimmen zur Internationalen Bauausstellung 2027 StadtRegion Stuttgart*, Stuttgart, 2023.
- Sevcik Tomas, *Das Ende des Ruhrgebiets*, in: Die Zeit 13.11.2022. <https://www.zeit.de/kultur/2022-11/ruhrstadt-ruhrgebiet-metropole-stadt-entwicklung/seite-3> accessed 16.04.2024.
- Stadt Duisburg, "Stellungnahme der Stadt Duisburg im Rahmen des Anhörungsverfahrens gemäß §§ 17 ff FernStrG i.V.m. § 73 VwVfG und § 18 UVPG", Duisburg, 2023.
- Stadt Duisburg, *Wirtschaftliche Entwicklung in Duisburg 2. Ausgabe des Strukturmonitorings 2023*, Duisburg, 2023.
- Stadt Duisburg, *Chronik*, n.d, <https://www.duisburg.de/wohnenleben/historie/chronik.php> accessed 23.04.2024.
- Taube Marion, Rudolf Scheuvs, *Der Produktive Park*, Essen/Wien/Dortmund, 2010.
- Teleinternetcafe, *STADT AN DIE MURR! QUARTIER BACKNANG WEST*, Competition Poster, n.p, 2021.
- Urban Thomas, *Visionen für das Ruhrgebiet - IBA Emscher Park: Konzepte, Projekte, Dokumentation*, Essen, 2008.
- Wirtschaftsförderung Region Stuttgart (Ed.), *Memorandum IBA 2027 Stadtregion Stuttgart - Ergebnisse des IBA-Plattformprozesses in: Auf dem Weg zur IBA Stadtregion Stuttgart*, Stuttgart, 2019.
- Wirtschaftsförderung Region Stuttgart (WRS) (Ed.), *Auf dem Weg zur IBA 2027 StadtRegion Stuttgart*, Stuttgart, 2019.

## Tabel of Figures

- Fig. 1: Duisburg-Mitte Rhine Waterfront (source: own representation)
- Fig. 2: Blue Banana and Industry Triangle  
(source: own representation based on Researchgate, n.d. [https://www.researchgate.net/figure/The-Blue-Banana-model\\_fig1\\_363457240](https://www.researchgate.net/figure/The-Blue-Banana-model_fig1_363457240) and Europeana, n.d. <https://www.europeana.eu/de/exhibitions/70th-anniversary-of-the-schuman-declaration/franco-german-problems> accessed on 16.04.24)
- Fig. 3: City of Duisburg in a Regional Context (source: own representation)
- Fig. 4: Orthofoto Ruhr Area (Regional Verband Ruhr)  
(source: Regionalverband Ruhr <https://luftbilder.geoportal.ruhr/> last accessed on 12.01.24)
- Fig. 5: Potatoplan Ruhr Area, Emscher Landscape Park  
(source: own representation based on Kees Christiaanse, Miriam Zuger, Potato Plan Collection, 2018, 172-173)
- Fig. 6: Landschaftspark Duisburg-Nord (source: own representation)
- Fig. 7: Timeline of International Building Exhibitions  
(source: own representation based on Internationale Bauausstellungen, n.d., <https://www.internationale-bauausstellungen.de/die-aktuellen-iba/> accessed on 15.01.24)
- Fig. 8: Cover of IBA Emscher Park „Memorandum zu Inhalt und Organisation“  
(source: Minister für Stadtentwicklung, Wohnen und Verkehr des Landes Nordrhein-Westfalen, Memorandum zu Inhalt und Organisation, 1989)
- Fig. 9: IBA Organisation Structure (source: own representation based on Sabine Marion Burggräf, Der Weg der Idee, 2013, 38-69)
- Fig. 10: Emscher Landscape Park (state of extension 2018)  
(source: own representation based on Regionalverband Ruhr, Position Emscher Landschaftspark 2020+, 2020)
- Fig. 11: Masterplan Zeche Zollverein 2005  
(source: Publicspace, n.d. <https://www.publicspace.org/works/-/project/k127-zollverein-park> accessed on 16.01.24)
- Fig. 12: Schacht XII (source: own representation)
- Fig. 13: Kokerei (source: own representation)
- Fig. 14: Site Plan Design Concept:  
Uwe Kiessler (1998) (source: Uew Kiessler, n.d. <https://kiessler.info/wissenschaftspark-gelsenkirchen/> accessed 19.01.24)
- Fig. 15: Thyssen Steel Plant (1960s) (source: Geoportal Ruhr, n.d. <https://luftbilder.geoportal.ruhr/> accessed 19.01.24)
- Fig. 17: Park Erin: Headframe as Landmark (source: Luca Maria Francesco Fabris, IBA Emscher Park : 1989 - 1999, 2004)
- Fig. 16: Orthofoto Park Erin (1951) (source: Geoportal Ruhr, n.d. <https://luftbilder.geoportal.ruhr/> accessed 19.01.24)
- Fig. 18: Orthofoto Park Erin (2022) (source: Geoportal Ruhr, n.d. <https://luftbilder.geoportal.ruhr/> accessed 19.01.24)
- Fig. 19: Combined Heat and Power Station Stuttgart  
(source: Intercity IC, Kraftwerk Münster mit Eisenbahnviadukt, Stuttgart, Baden-Württemberg, Deutschland, © Alamy Stock Foto, Photograph: Arnulf Hettrich, 2023)
- Fig. 20: Topics and Spaces  
(source: own representation based on Wirtschaftsförderung Region Stuttgart GmbH (Ed.) Memorandum IBA 2027 StadtRegion Stuttgart, n.d.)
- Fig. 22: Themes and Cross-cutting Characteristics  
(source: own representation based on Wirtschaftsförderung Region Stuttgart GmbH (Ed.) Memorandum IBA 2027 StadtRegion Stuttgart, n.d.)
- Fig. 23: WohnFabrik Backwang - FAR frohn&rojas (Visualization)  
(source: Baunetz, 2023 [https://www.baunetz.de/meldungen/Meldungen-Werkstattverfahren\\_bei\\_Stuttgart\\_entschieden\\_8451942.html](https://www.baunetz.de/meldungen/Meldungen-Werkstattverfahren_bei_Stuttgart_entschieden_8451942.html) accessed 29.03.24)
- Fig. 24: Concept Section WohnWabrik - FAR frohn&rojas (source: Baunetz, 2023 [https://www.baunetz.de/meldungen/Meldungen-Werkstattverfahren\\_bei\\_Stuttgart\\_entschieden\\_8451942.html](https://www.baunetz.de/meldungen/Meldungen-Werkstattverfahren_bei_Stuttgart_entschieden_8451942.html) accessed 29.03.24)

- Fig. 25: Masterplan Concept – Teleinternetcafe, 2021**  
(source: Teleinternetcafe 2023, <https://teleinternetcafe.de/iba-2027-quartier-backnang-west-1-preis/?c=true> accessed on 20.03.2024)
- Fig. 26: Masterplan 2021 –Teleinternetcafe** (source: Teleinternetcafe 2021, Competition Poster)
- Fig. 27: Orthofo 2023, 2000m Grid**  
(source: own representation based on Geoportal Duisburg, 2024 ([https://geoportal.duisburg.de/geoportal/historisches\\_portal/](https://geoportal.duisburg.de/geoportal/historisches_portal/)))
- Fig. 28: Regional Cluster in North Rhine–Westphalia**  
(source: Friedrich-Ebert-Stiftung, Ungleiches Deutschland – Sozioökonomischer Disparitätenbericht 2023, 2023 <https://www.fes.de/ungleiches-deutschland> accessed 25.02.24)
- Fig. 30: Strength and Weaknesses: Selected Parameter Deviations from German Average**  
(source: Friedrich-Ebert-Stiftung, Ungleiches Deutschland – Sozioökonomischer Disparitätenbericht 2023, 2023 <https://www.fes.de/ungleiches-deutschland> accessed 25.02.24)
- Fig. 29: Employment and Branches; GDP per Capita in 1.000 € in Comparison**  
(source: own representation based on Stadt Duisburg, Wirtschaftliche Entwicklung in Duisburg 2. Ausgabe des Strukturmonitorings 2023, 2023)
- Fig. 31: Unemployment rate I (per 1000 Inhabitants 15–65)**  
(source: own representation based on Stadt Duisburg, 2024 [https://www.duisburg.de/microsites/wahlen/Informationslogistik\\_Statistik/duisburg-in-zahlen/duisburg-in-zahlen.php](https://www.duisburg.de/microsites/wahlen/Informationslogistik_Statistik/duisburg-in-zahlen/duisburg-in-zahlen.php) accessed 08.04.2024)
- Fig. 32: Population with a Migration Background**  
(source: own representation based on Stadt Duisburg, 2024 [https://www.duisburg.de/microsites/wahlen/Informationslogistik\\_Statistik/duisburg-in-zahlen/duisburg-in-zahlen.php](https://www.duisburg.de/microsites/wahlen/Informationslogistik_Statistik/duisburg-in-zahlen/duisburg-in-zahlen.php) accessed 08.04.2024)
- Fig. 33: Average Age**  
(source: own representation based on Stadt Duisburg, 2024 [https://www.duisburg.de/microsites/wahlen/Informationslogistik\\_Statistik/duisburg-in-zahlen/duisburg-in-zahlen.php](https://www.duisburg.de/microsites/wahlen/Informationslogistik_Statistik/duisburg-in-zahlen/duisburg-in-zahlen.php) accessed 08.04.2024)
- Fig. 34: Demographic Development**  
(source: own representation based on Stadt Duisburg, 2024 [https://www.duisburg.de/microsites/wahlen/Informationslogistik\\_Statistik/duisburg-in-zahlen/duisburg-in-zahlen.php](https://www.duisburg.de/microsites/wahlen/Informationslogistik_Statistik/duisburg-in-zahlen/duisburg-in-zahlen.php) accessed 08.04.2024)
- Fig. 35: “Highlights” in Duisburg** (source: own representation)
- Fig. 36: Hierarchy of Strategic Planning**  
(source: own representation based on Ministerium für Wirtschaft, Innovation, Digitalisierung und Energie des Landes Nordrhein–Westfalen, Landesentwicklungsplan Nordrhein–Westfalen, 2020)
- Fig. 37: Planning and Administration Spaces in NRW** (source: own representation)
- Fig. 38: Integrierte Teilraumkarte Mitte–Süd**  
(source: Stadt Duisburg, n.d. [https://www.duisburg.de/microsites/pbv/planen\\_bauen/teilraeumliche-strategiekonzepte.php](https://www.duisburg.de/microsites/pbv/planen_bauen/teilraeumliche-strategiekonzepte.php) accessed 23.11.2023)
- Fig. 39: Teilräumliche Strategiekarte Duisburg**  
(source: Stadt Duisburg, n.d. [https://www.duisburg.de/microsites/pbv/planen\\_bauen/teilraeumliche-strategiekonzepte.php](https://www.duisburg.de/microsites/pbv/planen_bauen/teilraeumliche-strategiekonzepte.php) accessed 23.11.2023)
- Fig. 41: 1. Mercatorviertel (from 2023)** (source: GEBAG, n.d. <http://mercatorviertel.de/> accessed 25.04.2024)
- Fig. 40: 3. RheinOrt (from 2024)**  
(Source: DEAL Magazin, 2024 (<http://www.deal-magazin.com/news/3/131280/DLE-Quartiersentwicklung-RheinOrt-in-Duisburg-beginnt-im-Januar> accessed 25.04.2024)
- Fig. 42: 5. Technologiequartier Wedau–Nord (from 2026)**  
(source: Uni Duisburg–Essen, 2023, <https://www.uni-due.de/2023-05-07-technologiequartier-wedau> accessed 25.04.24)
- Fig. 43: 6. 6 Seen Wedau (from 202X)**  
(Source: GEBAG, 2024, <https://www.gebag.de/metamenu/presse/detail/6-seen-wedau-erste-investoren-stehen-fest> accessed 25.04.2024)

- Fig. 44:** 2. Duisburger Dünen (from 2024)  
(source: CKSA Architekten, n.d. <https://www.am-alten-gueterbahnhof.de/das-projekt/meilenstein-4/cksa-christoph-kohl-stadtplaner-architekten> accessed 25.04.2024)
- Fig. 45:** 4. Algarve from 202X  
(source: WAZ 2022, <https://www.waz.de/staedte/duisburg/article236781129/Duisburg-Spektakulaere-Ideen-fuers-Quartier-Algarve-am-Rhein.html> accessed 25.04.2024)
- Fig. 46:** Core Hydrogen Network and Major Supply Corridors for Duisburg and Rhein-Ruhr-Area  
(own representation based on Ferngas 2023 <https://www.ferngas.de/der-naechste-grosse-schritt-zum-wasserstoff-kernnetz-fernleitungsnetzbetreiber-legen-antragsentwurf-fuer-ein-wasserstoff-kernnetz-vor/> accessed on 14.03.2024, Gasunie 2023 <https://www.gasunie.nl/en/news/dutch-national-hydrogen-network-launches-in-rotterdam> accessed on 14.03.2024)
- Fig. 47:** Hydrogen Activities Overview  
(source: own representation based on Stadt Duisburg, n.d. <https://www.duisburg.de/microsites/wirtschaft/projekte-themen/Kompetenz-region-Wasserstoff.php> accessed 18.03.2024)
- Fig. 48:** Municipal Green Space Concept  
(source: Stadt Duisburg, n.d. [https://www.duisburg.de/microsites/pbv/planen\\_bauen/teilraeumliche-strategiekonzepte.php](https://www.duisburg.de/microsites/pbv/planen_bauen/teilraeumliche-strategiekonzepte.php) accessed 05.02.2024)
- Fig. 49:** Potatoplan Green (source: own representation)
- Fig. 50:** Potatoplan Industrial Areas (source: own representation)
- Fig. 51:** Potatoplan Residential Areas and Centralities (source: own representation)
- Fig. 52:** Potatoplan Urban and Green Blending Potentials (source: own representation)
- Fig. 53:** "Skyline" of the Industrial Zone Duisburg Hochfeld (source: own representation)
- Fig. 54:** Demographic Development Duisburg Hochfeld  
(source: Stadt Duisburg 2020, Fortschreibung des Integrierten Stadtentwicklungskonzept Duisburg Hochfeld Anlage 4 Sozialraumanalyse Duisburg Hochfeld 2020)
- Fig. 55:** Selected Figures of Duisburg Hochfeld in Comparison  
(source: Stadt Duisburg 2020, Fortschreibung des Integrierten Stadtentwicklungskonzept Duisburg Hochfeld Anlage 4 Sozialraumanalyse Duisburg Hochfeld 2020)
- Fig. 56:** District Hochfeld (source: own representation)
- Fig. 57:** Rhine River Courses over Time  
(source: own representation based on Archäologie Duisburg, nd. <https://www.archaeologie-duisburg.de/alter-markt/> accessed 07.03.2024)
- Fig. 58:** Corupitusplan (1566) - First City Map of Duisburg  
(source: Historisches Geoportal, n.d. Duisburg [https://geoportal.duisburg.de/geoportal/historisches\\_portal/](https://geoportal.duisburg.de/geoportal/historisches_portal/) accessed 12.12.2023)
- Fig. 59:** Duisburg 1735  
(source: Historisches Geoportal, n.d. Duisburg [https://geoportal.duisburg.de/geoportal/historisches\\_portal/](https://geoportal.duisburg.de/geoportal/historisches_portal/) accessed 14.12.2023)
- Fig. 60:** "Borussia Hütte" One of the first smelteries at Rhein-Canal (1850) (source: WAZ 2021, <https://www.waz.de/staedte/duisburg/article232730309/historische-fotos-aus-duisburg-hochfeld.html> accessed 12.12.2023)
- Fig. 61:** Düsseldorf Straße 1870  
(source: WAZ 2021, <https://www.waz.de/staedte/duisburg/article232730309/historische-fotos-aus-duisburg-hochfeld.html> accessed 12.12.2023)
- Fig. 62:** Duisburg 1844  
(source: Historisches Geoportal, n.d. Duisburg [https://geoportal.duisburg.de/geoportal/historisches\\_portal/](https://geoportal.duisburg.de/geoportal/historisches_portal/) accessed 14.12.2023)
- Fig. 63:** H. J. Vuygen & Co. - Production of Fireproof Stones at Wörthstrasse (1890)  
(source: WAZ 2021, <https://www.waz.de/staedte/duisburg/article232730309/historische-fotos-aus-duisburg-hochfeld.html> accessed 12.12.2023)
- Fig. 64:** Trainferry to Rheinhausen (1870)  
(source: WAZ 2021, <https://www.waz.de/staedte/duisburg/article232730309/historische-fotos-aus-duisburg-hochfeld.html> accessed 12.12.2023)

- Fig. 65: Duisburg 1875  
(source: Historisches Geoportal, n.d. Duisburg [https://geoportal.duisburg.de/geoportal/historisches\\_portal/](https://geoportal.duisburg.de/geoportal/historisches_portal/) accessed 14.12.2023)
- Fig. 66: "Hütte Vulkan" - a smeltery at the Rhine Canal, a Street is still named after in Hochfeld  
(source: Im Hochfeld, n.d. [http://www.im-hochfeld.de/b\\_vulkan.html](http://www.im-hochfeld.de/b_vulkan.html) accessed 26.10.2024)
- Fig. 67: Soda Factory "Matthes & Weber" - survived as Name of a Bus-Station  
(source: Rheinische Post 2018 [https://rp-online.de/nrw/staedte/duisburg/als-die-fabrikschlote-noch-qualmten\\_aid-23325471](https://rp-online.de/nrw/staedte/duisburg/als-die-fabrikschlote-noch-qualmten_aid-23325471) accessed 26.10.2023)
- Fig. 68: Duisburg 1925  
(source: Historisches Geoportal, n.d. Duisburg [https://geoportal.duisburg.de/geoportal/historisches\\_portal/](https://geoportal.duisburg.de/geoportal/historisches_portal/) accessed 14.12.2023)
- Fig. 69: Rhine Riverbank and the "Kupferhütte" Smeltery ( Source: Stadtarchiv Duisburg)
- Fig. 70: Loading Zone of the Steelworks "Niederrheinische Hütte" ( Source: Stadtarchiv Duisburg)
- Fig. 71: Duisburg 1966 - shortly before the A44 highway construction  
(source: Historisches Geoportal, n.d. Duisburg [https://geoportal.duisburg.de/geoportal/historisches\\_portal/](https://geoportal.duisburg.de/geoportal/historisches_portal/) accessed 14.12.2023)
- Fig. 72: 1. Kupferhüttensiedlung (worker's settlement - demolished)  
(source: Im Hochfeld, n.d. [http://www.im-hochfeld.de/b\\_kupferhs74.html](http://www.im-hochfeld.de/b_kupferhs74.html) accessed 26.10.2023)
- Fig. 73: 2. Petrikerche (demolished)  
(source: Im Hochfeld, n.d. [http://www.im-hochfeld.de/b\\_stpeterold.html](http://www.im-hochfeld.de/b_stpeterold.html) accessed 26.10.2023)
- Fig. 74: 3."Duisburger Kupferhütte" (Copper Smelter)  
(source: Im Hochfeld, n.d. [http://www.im-hochfeld.de/b\\_kupferh.html](http://www.im-hochfeld.de/b_kupferh.html) accessed 26.10.2023)
- Fig. 75: 4. Werthauser Strasse (residential buildings demolished)  
(source: Im Hochfeld, n.d. [http://www.im-hochfeld.de/b\\_werthauser1.html](http://www.im-hochfeld.de/b_werthauser1.html) accessed 26.10.2023)
- Fig. 76: 5. Garden Plots - Housing - Industry (demolished)  
(source: Im Hochfeld, n.d. [www.im-hochfeld.de/b\\_fensterblick\\_1957.html](http://www.im-hochfeld.de/b_fensterblick_1957.html) accessed 26.10.2023)
- Fig. 77: 6. Fishing at the Rhine Bank  
(source: Im Hochfeld, n.d. [http://www.im-hochfeld.de/b\\_ufer00.html](http://www.im-hochfeld.de/b_ufer00.html) accessed 26.10.2023)
- Fig. 78: 7. Sedanstrasse (residential buildings demolished)  
(source: Im Hochfeld, n.d. [http://www.im-hochfeld.de/b\\_sedandemag.html](http://www.im-hochfeld.de/b_sedandemag.html) accessed 26.10.2023)
- Fig. 79: 8. "Astoria Filmtheater" (demolished)  
(source: Im Hochfeld, n.d. [http://www.im-hochfeld.de/b\\_astoria\\_1968.html](http://www.im-hochfeld.de/b_astoria_1968.html) accessed 26.10.2023)
- Fig. 80: 9. Courtyard before demolition (1976)  
(source: Krupp Stiftung, n.d. [https://www.krupp-stiftung.de/app/uploads/2021/03/2\\_Kinder\\_in\\_Duisburg\\_Hochfeld\\_1975\\_76\\_Muenzberg-scaled.jpg](https://www.krupp-stiftung.de/app/uploads/2021/03/2_Kinder_in_Duisburg_Hochfeld_1975_76_Muenzberg-scaled.jpg) accessed 02.11.2023)
- Fig. 81: Courtyard still partly standing (1980s)  
(source: Im Hochfeld, n.d. <http://www.im-hochfeld.de/mick07.html> accessed 26.10.2023)
- Fig. 82: Blücherstrasse - used to be a strip mall in the quarter  
(source: FAZ 2022 <https://www.faz.net/aktuell/fotografie/40-jahre-bildagentur-laif-immer-eine-gratwanderung-17858764.html> accessed 28.10.2024)
- Fig. 83: Redevelopment Plan Duisburg Hochfeld 1970s (source: Duisburg Stadtentwicklung)
- Fig. 84: Photo Location Overview  
(source: own representation based on Geoportal Duisburg, n.d. <https://geoportal.duisburg.de/> accessed 04.04.2024)
- Fig. 85: 1. Dockyard, Silos and Terminals at Aussenhafen (source: own representation)
- Fig. 86: 2. Green Strip between Industry and Residential Quarter (source: own representation)
- Fig. 87: 3. View to Old Town and Marienkirche (former Zollhafen) (source: own representation)
- Fig. 88: 4. Sonnenwall Pedestrian Zone (Old Town) (source: own representation)
- Fig. 89: 5. Werthauser Strasse -View into Town (source: own representation)
- Fig. 90: 6. Demolished Industry - To be redeveloped as Residential Quarter (source: own representation)

- Fig. 91: 7. Rheinkai - Piers for Bulk Freighter (source: own representation)
- Fig. 92: 8. Culinary Supply at "Kupferhütte" (source: own representation)
- Fig. 93: 9. Abandoned Part of the Municipal Thermal Power Station (source: own representation)
- Fig. 94: 12. Sedan Strasse - Heeavy Transit Traffic (source: own representation)
- Fig. 95: 13. Soccer Field at Blücherpark (source: own representation)
- Fig. 96: 11. Construction Market (source: own representation)
- Fig. 97: 10. Blast Furnace of the "Kupferhütte", now called "DK Roheisen und Recycling" (source: own representation)
- Fig. 98: 16. Skaterpark at Rheinpark (source: own representation)
- Fig. 99: 15. Charlottenstrasse - Connection between Hochfeld and Old Town (source: own representation)
- Fig. 100: 14. Sinter Plant at Kupferhütte (Raw Iron Production) (source: own representation)
- Fig. 101: 17. Vulkanstrasse - Sex Trade District (source: own representation)
- Fig. 102: 18. Recently Opened Youth Center at Blücherpark (source: own representation)
- Fig. 103: 19. Farmed Grazing Areas westside the Rhine River (source: own representation)
- Fig. 106: 21. Waste Gas Chimney of "Kupferhütte" - Pipeline leads to Power Station (source: own representation)
- Fig. 104: 20. Werthaus Strasse - Siemens Energy in the Background (source: own representation)
- Fig. 105: 22. Vacancies at Charlottenstrasse (source: own representation)
- Fig. 107: 25. Climbing Walls at Former Bunker (source: own representation)
- Fig. 108: 26. Blücherstrasse (source: own representation)
- Fig. 109: 24. Rheinkai (source: own representation)
- Fig. 110: 23. "Zur Kupferhütte" (source: own representation)
- Fig. 111: Proposal by BDA (Association of German Architects) late 1980s on occasion of the IBA Emscher Park (source: Sabine Marion Burggräf, Der Weg der Idee, 2013, 128)
- Fig. 112: Proposed Development Path "Urban Patchwork" (source: own representation)
- Fig. 113: Concept Overview Map (source: own representation)
- Fig. 114: Targeted Tramway Network 2030+ (source: Stadt Duisburg, 3. Nahverkehrsplan, 2017, 132)
- Fig. 115: Modal Split Duisburg in Comparison (2015) (source: Stadt Duisburg, Zwischenbericht zum Mobilitätskonzept Duisburg, 2022, 15)
- Fig. 116: Status Quo Public Transport Network Duisburg (source: own representation based on DVG Liniennetzplan Tag [https://www.dvg-duisburg.de/fileadmin/Media/Downloads/Liniennetze/Liniennetzplan/DVG\\_Liniennetzplan\\_Tag.pdf](https://www.dvg-duisburg.de/fileadmin/Media/Downloads/Liniennetze/Liniennetzplan/DVG_Liniennetzplan_Tag.pdf) accessed 04.12.2023)
- Fig. 117: Proposed New Tramline Corridor (source: own representation based on ibid.)
- Fig. 118: Campus Program Overview (source: own representation)
- Fig. 119: Overview of the 3 Connected Campus (source: own representation)
- Fig. 120: Road Network Duisburg -Mitte: Status Quo (source: own representation)
- Fig. 121: Road Network Duisburg -Mitte: Target Scenario (source: own representation)
- Fig. 125: Street Sections Overview (source: own representation)
- Fig. 122: A Friedrich-Wilhelm Straße (source: own representation)
- Fig. 124: B Steinsche Gasse (source: own representation)
- Fig. 123: C Rheinhauser Straße (source: own representation)
- Fig. 126: Exemplary Street Sections Duisburg-Mitte (source: own representation)
- Fig. 127: Integrated Mobility Network Duisburg -Mitte (source: own representation)
- Fig. 128: Urban Corridors Status Quo (source: own representation)
- Fig. 129: Urban Corridors Target Scenario (source: own representation)

- Fig. 130: Interwined Green and Urban Corridors (source: own representation)
- Fig. 131: Statement Collage "Urban Patchwork" (source: own representation)
- Fig. 133: Waterfront Access (source: own representation)
- Fig. 132: Green and Urban Spaces ((source: own representation)
- Fig. 134: Signature Areas (source: own representation)
- Fig. 135: Urban Elements (source: own representation)
- Fig. 136: Quarter Access Concept (source: own representation)
- Fig. 137: Green and Public Spaces (source: own representation)
- Fig. 138: Nolli Plan Status Quo (No Scale) (source: own representation)
- Fig. 139: Nolliplan Target Scenario (No Scale) (source: own representation)
- Fig. 140: Inventory Strategy Overview (source: own representation)
- Fig. 141: Signature Areas and Building Plots Overview (source: own representation)
- Fig. 142: Program Overview (source: own representation)
- Fig. 143: Program Map (source: own representation)
- Fig. 144: Principles Of Site Development (source: own representation)
- Fig. 145: Activated Ground Floor Zones (source: own representation)
- Fig. 146: Signature Areas and Building Plots Overview (source: own representation)
- Fig. 147: Supply Infrastructure and Solar Potential (source: own representation)
- Fig. 148: Energy and Material Flows Concept (source: own representation)
- Fig. 149: General Overview Axonometry (source: own representation)
- Fig. 150: Existing Situation Aussenhafen (source: own representation)
- Fig. 151: Street Section Logistics Loop and and Transshipment Point (source: own representation)
- Fig. 152: Existing Situation Aussenhafen (source: own representation)
- Fig. 153: Section Esplanade and Blücherpark (source: own representation)
- Fig. 154: Existing Situation Werthausser Strasse (source: own representation)
- Fig. 155: Section Boulevard Werthausser Strasse (source: own representation)
- Fig. 156: Zoom-In Quartier Mitte M 1:2500 (source: own representation)
- Fig. 157: Prototype Section Makerblock (No Scale) (source: own representation)
- Fig. 158: Orthofoto Zoom-In Hochfelder Eck (No Scale)  
(source: Geoportall Duisburg <https://geoportall.duisburg.de/> accessed 10.05.2024)
- Fig. 159: Orthofoto Außenhafen - Innenhafen (No Scale)  
(source: Geoportall Duisburg <https://geoportall.duisburg.de/> accessed 10.05.2024)
- Fig. 160: Orthofoto Rheinkai (No Scale) (source: Geoportall Duisburg <https://geoportall.duisburg.de/> accessed 10.05.2024)
- Fig. 161: Zoom-In "Hochfelder Eck" (source: own representation)
- Fig. 162: Zoom-In Altstadt-Zollhafen-Außenhafen (source: own representation)
- Fig. 163: Zoom-In Rheinkai - Pier (source: own representation)
- Fig. 164: Roadmap 2030+ (source: own representation)
- Fig. 165: Figure Ground Plan Status Quo (No Scale) (source: own representation)
- Fig. 166: Figure Ground Plan Target Scenario (No Scale) (source: own representation)
- Fig. 167: Use Mix Comparison (source: own representation)
- Fig. 168: Zoning Comparison (source: own representation based on )
- Fig. 169: Perspective Rheinkai (source: own representation)