Emscher Park 2.0

How can the landscape concept of urban forestry be used to shape the future landscape of the Rhine Ruhr Area (RRA)?

Master graduation project of Landscape Architecture

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Location: Emscher Park; Rhine Ruhr Area, NRW, Germany

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Cover generated by AI, this image is the original image, taken in Bochum in winter 2023

Abstract

Today, our cities continue to expand, and these cities have outgrown traditional urbanist descriptions. The character of the city, and its surroundings, has been replaced by dispersed areas, and a low-density, decentralised form of urban sprawl has become popular around the world, known as the Zwischenstadt, in-between city. At the metropolitan scale, this decentralised urban spatial character provides space for landscape interventions that are full of potential when the landscape is viewed as a whole.

In the past, most landscape interventions have been carried out from a systematic and functional angle, such as the famous IBA Emscher park project, which created a regional scale blue-green network system that is now the basis for a regional greenway in the Ruhr area. Few have explored our regional landscapes from the angle of spatial form and spatial experience. Few also look at the question of the arrangement of our regional landscapes through the lens of morphological studies of urban forestry.

Therefore, this paper will explore how to describe the morphology of in-between regional landscape in the context of the Rhineland Ruhr region from two major angles: urban forestry and landscape form in metropolis. at the same time, how to develop these two major theories from the human perspective and apply these two theories to regional design to help people to perceive specific urban landscape images. Finally try to use these landscape theories to shape the future landscape of the Rhineland Ruhr region.

Keywords

Zwischenstadt, Landscape Form in Metropolis, Urban Forestry, Morphology

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CHAPTER 04

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CHAPTER 05

REFERENCE

Glossary

Zwischenstadt

This is the type of city studied in this paper. Zwischen is the German word for in-between, and the term refers to the in-between city, the type of city that is intermediate between the rural and the urban. This type of city is no longer simply a city, but an increasingly large urban agglomeration of many clusters of development, connected by transport routes. The former compact city spreads out into a network of cities. (Sieverts, T, 2003)

IBA

Every Internationale Bauausstellung (IBA) is born as a sign of its time under specific historical social and political conditions. In the IBA Emscher park, the Internationale Bauausstellung is organised as a method of urban renewal. (https://www.internationale-bauausstellungen.de/)

Urban Forestry

This is a study launched by the TUD Landscape Department. It is about urban understanding, with a tree-centred approach to research, using the urban landscape as an integral part of the study. This paper focuses primarily on how urban forestry goes about shaping our cities. It is a morphological study centred on trees. (https://www.urbanforestry.nl/)

Emscher Park

The IBA Emscher park was started in 1989 to provide a transformational impetus for the central Ruhr region and its problems caused by industrial decline. Led by Prof Karl Ganser, Emscher Park is characterised by the development of new planning structures and regional approaches that go far beyond the theme of housing for urban life. A great milestone in the history of the IBA.(https://www.internationale-bauausstellungen.de/)

Landscape in Metropolis

Redefining the metropolitan landscape archetype in terms of abstract spatial belongings frees it from the constraints of scale, planning and meaning. In this theory, the metropolitan landscape is abstracted into three main elements: point, line and plane. (Van der veld, R, De wit, S, 2009)

Ruhr Metropolis

The Regional Union of the Ruhr Area (Association of the Ruhr Area - RVR) is the regional centre for the 11 cities and 4 districts of the Ruhr area with 5 million inhabitants. Its headquarters are located in Essen, in the heart of the Ruhr metropolis. Its predecessor was the Ruhr Coal District Municipal Association, founded in 1920. (https://www.rvr.ruhr/)

Typology of Tree Configuration

This is a theory that attempts to use the language of trees to analyse how the morphological characteristics of trees and their configurational structure define space. The concept originates from the work of Rose, Meyer, Steenbergen and de Josselin de Jong. This study of plant configurations focuses primarily on pairs that define space, exploring inside, outside, under and between vegetated spaces. (Van der veld, R, De wit, S, 2024)

Regional Green Belts

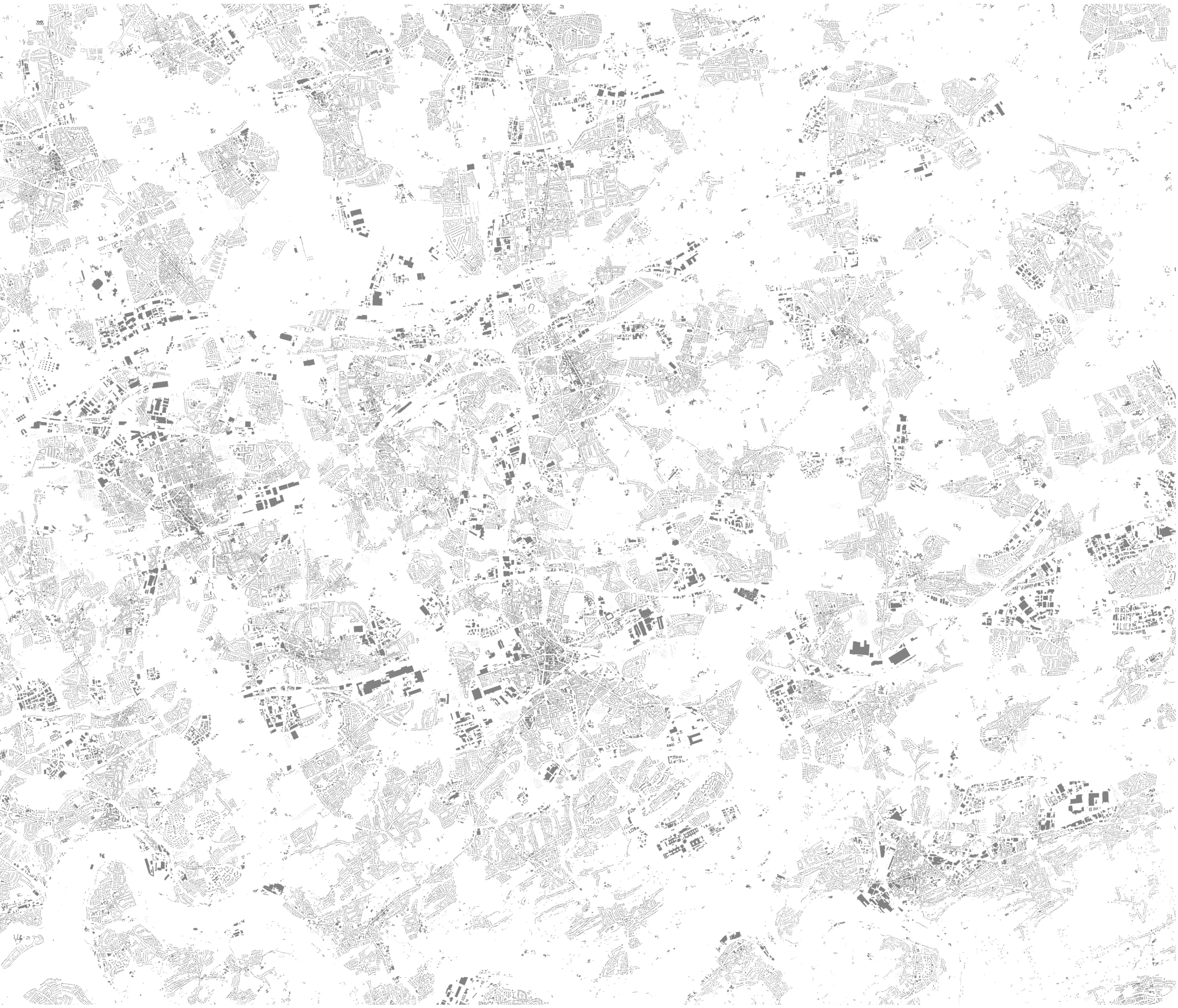
Protecting the security of continuous open space in response to rapidly expanding sprawling settlements. The Regional Green Belt for the Ruhr area began in 1912 with the hope that the Green Belt would be used to control settlement development and that the location of residential, industrial, transport networks and recreational areas would need to be co-ordinated and valued recreational areas and greenspaces would be identified. (Fachliche Grundlage „Regionale Grünzüge“ zum Regionalplan Ruhr)

Layered Landscape

The imagery of the landscape can be viewed as a series of layers of history superimposed on each other, with each particular history leaving a recognisable appearance of the landscape from a particular period. Natural systems, agricultural activities, industrial development, and urban growth all play a role in the layers of today's landscape. In the process, the old layers serve as a background for the new layers, and the characteristics of the old layers become visible in the layers above. (L. Pols, Robert Jan Croonen, 1995)

Chapter 1

Introduction



Zwischenstadt

What is Zwischenstadt?

Potrntial of Zwischenstadt from landscape aspect

Emscher Park

Green landscape infrastructure

Coastal landscape

What's the next generation of Emschher park?

Angle: Recognize spatial form of landscape in Zwischenstadt.

Theory: Urban Forestry

Theory: Landscape form in Metropolis

Research Question

Methodology

Zwischenstadt

Top: Gelsenkirchen;
Below: Frankfurt am Main
Picture from: 'Cities without cities'

What is Zwischenstadt?

The cities we live in and the way we enjoy our lives are constantly changing with historical periods and technological advances. In today's world, electronic communication devices allow us to communicate with each other wherever we are, flexible modes of transport allow us to reach anywhere, and we have the ability to pick and choose wherever we like to live. Some people live around factories, some live in farmland, some live in the forest. Some people choose the convenience of work, some choose the quality of life, and each person decides by their own decision where they live. Obviously when people have the right to choose and the ability to make decisions, an era of migration freedom begins.

In this era, compact urban patterns were gradually abandoned and people settled on the periphery of traditional cities, creating new settlements next to open fields and meadows. Gradually, farmland became houses and the edges of forests were eaten away by human activity. In this way, the modern city spilled over into its environment, creating the distinctive form of the urban landscape, or landscape city, the Zwischenstadt, which is neither a city nor a landscape, but a Zwischenstadt that is a combination of the two. they are dispersed and disorganised, but they have geometrically structured patches scattered like an archipelago, with no clear centre, and therefore more content, more networks, more nodes, and more multifunctional area. (Thomas Sieverts, 1997)

In our study of Ruhr area, people have freely chosen their own settlements, which have gradually filled the Ruhr area with residential areas over an area of 800km2. Here the Zwischenstadt is formed, a dispersed “metropolis” without a clear center, heavily dependent on the road network which is not a dense city we know as usual; there is no complete landscape structure, no clear urban boundaries, not clear where the countryside is and where the city is. Moreover, the slowing down of economic growth and the beginning of a declining population make the Ruhr area's potential for future growth weak, and it seems to be physically impossible to redistribute and reorganize this structure as a designer. All we can do then is to assume that it is a given and to discover the hidden qualities of the Zwischenstadt. (Karl Ganser,?)

Potential of Zwischenstadt from landscape aspect

Zwischenstadt is a concept that goes beyond the traditional urban structure and is particularly characteristic of areas that have developed into urban complexes. The Ruhr region in Europe and the Pearl River Delta region in Asia, for example, are areas where cities are so connected that they can no longer simply be planned as individual cities. The landscape in these mega-urban agglomerations is also fragmented by dense built-up areas and infrastructures. Gradually, the traditional landscape changes from an all-encompassing "background" to a "role" in the dense built-up areas. At the same time the settlement increases in its surface area and openness (the plot ratio of the built-up area is decreasing nowadays with a declining population) and acquires the landscape character of its environment (Thomas Sieverts, 1997).

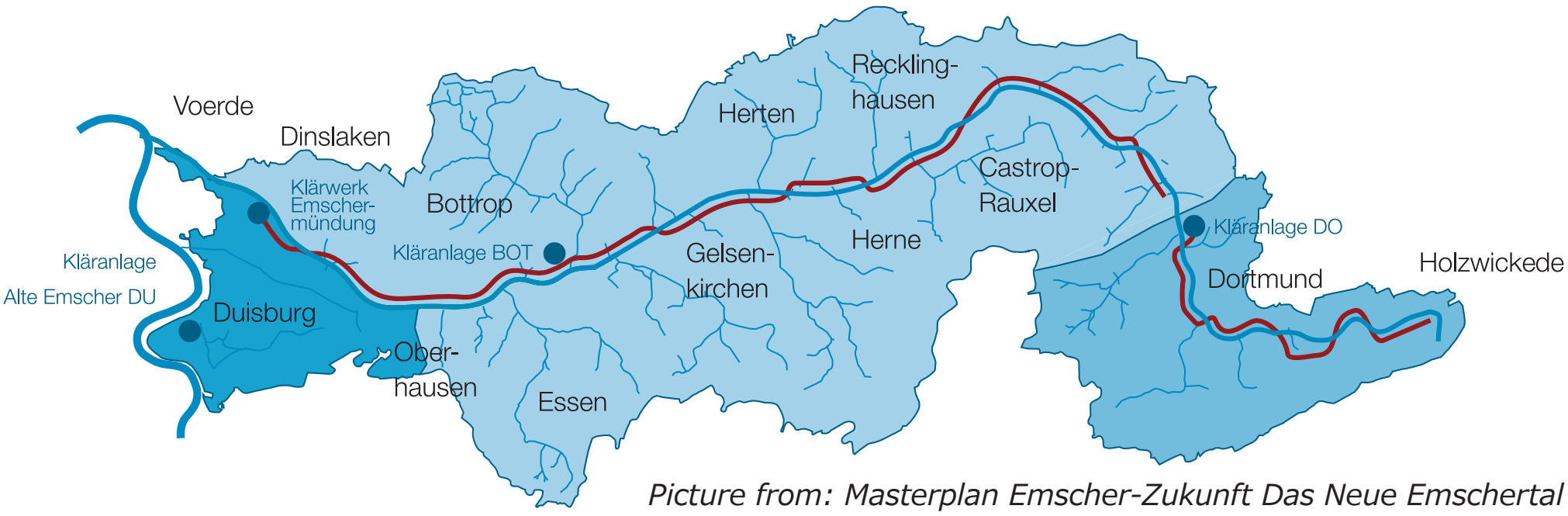
This also gives new tasks and responsibilities to the landscape, in terms of the landscape elements themselves, which, influenced by human activities and natural forms in different periods of history, will have their own character, a character that affects human perception and influences the general perception of an area. Thus, in the context of the Zwischenstadt, landscapes can reshape the way an area is perceived by rearranging their composition and functioning.

Emscher Park, A great testing in landcape approach

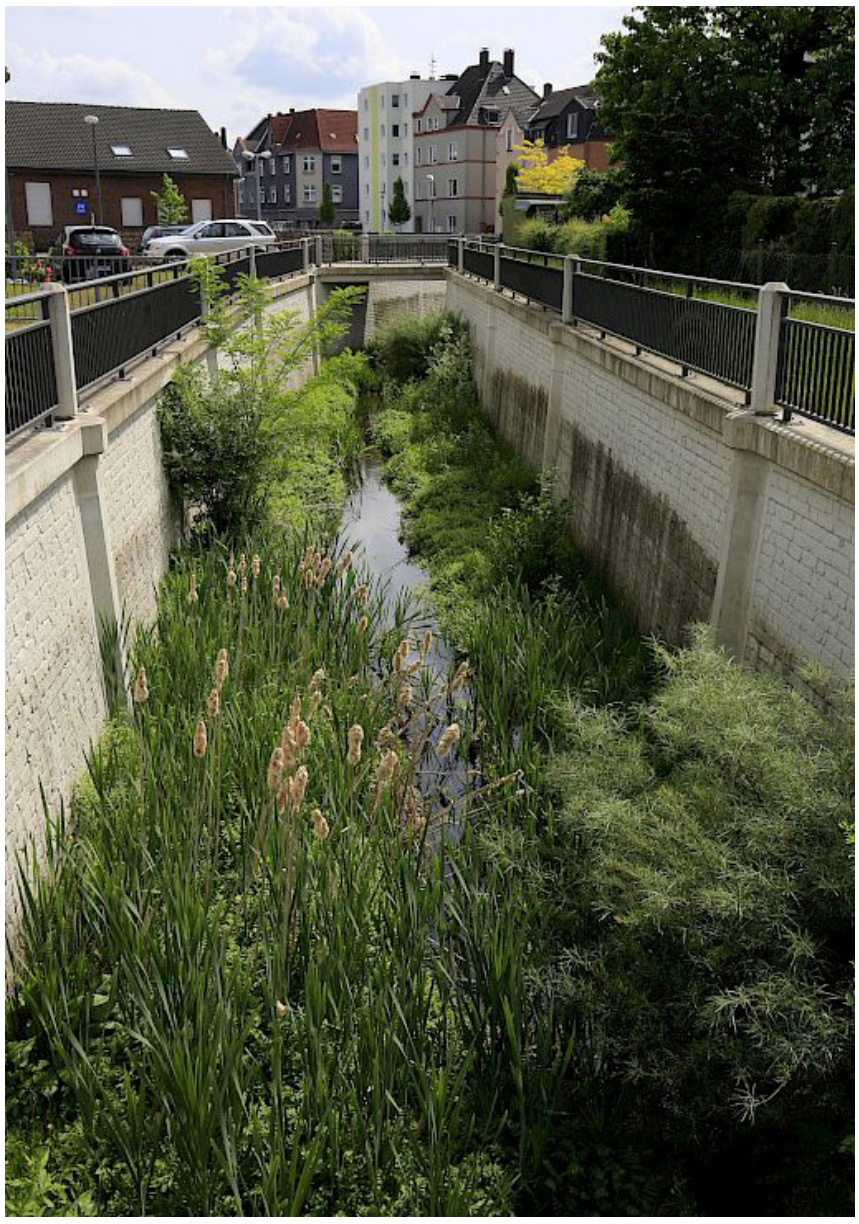
Green landscape infrastructure

The green spatial network of green spaces, regional green belts, and green corridors is the design of the urban landscape infrastructure in the Zwischenstadt environment. Together they form an interconnected network of green spaces focussed on serving the values of natural ecosystems. This green space network serves as an organisational framework for the Ruhr Metropolis, providing space for natural development, recreation and cultural heritage. The main design themes include the structural planning of urban parks, the landscape planning of agricultural cities, urban ecology and the conservation of heritage landscapes.

Green Corridor in Ruhr. Pic from Fachliche Grundlage „Regionale Grünzüge“ zum Regionalplan Ruhr



Picture from: Masterplan Emscher-Zukunft Das Neue Emschertal



Picture from: IBA's webpage

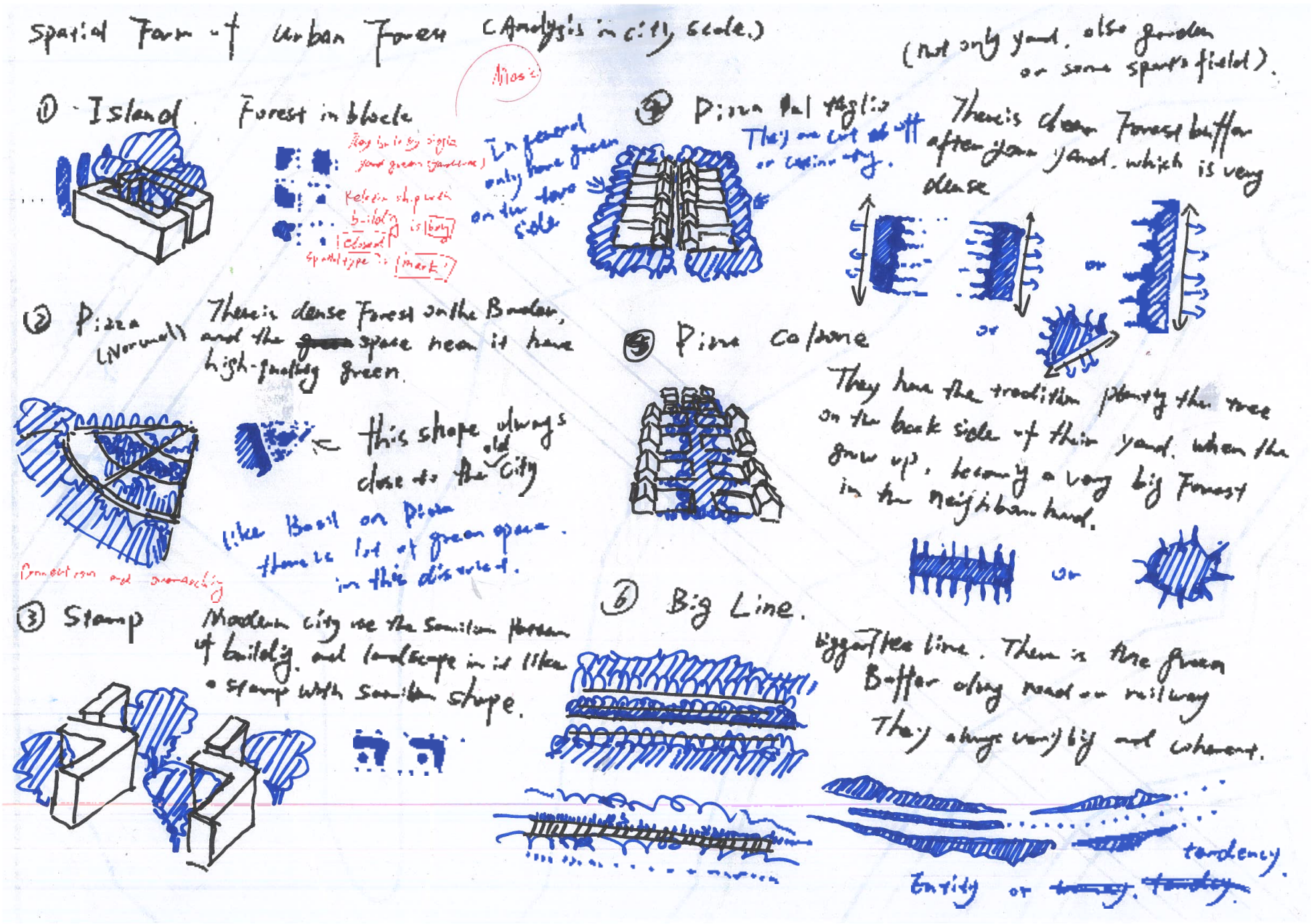
Coastal landscape

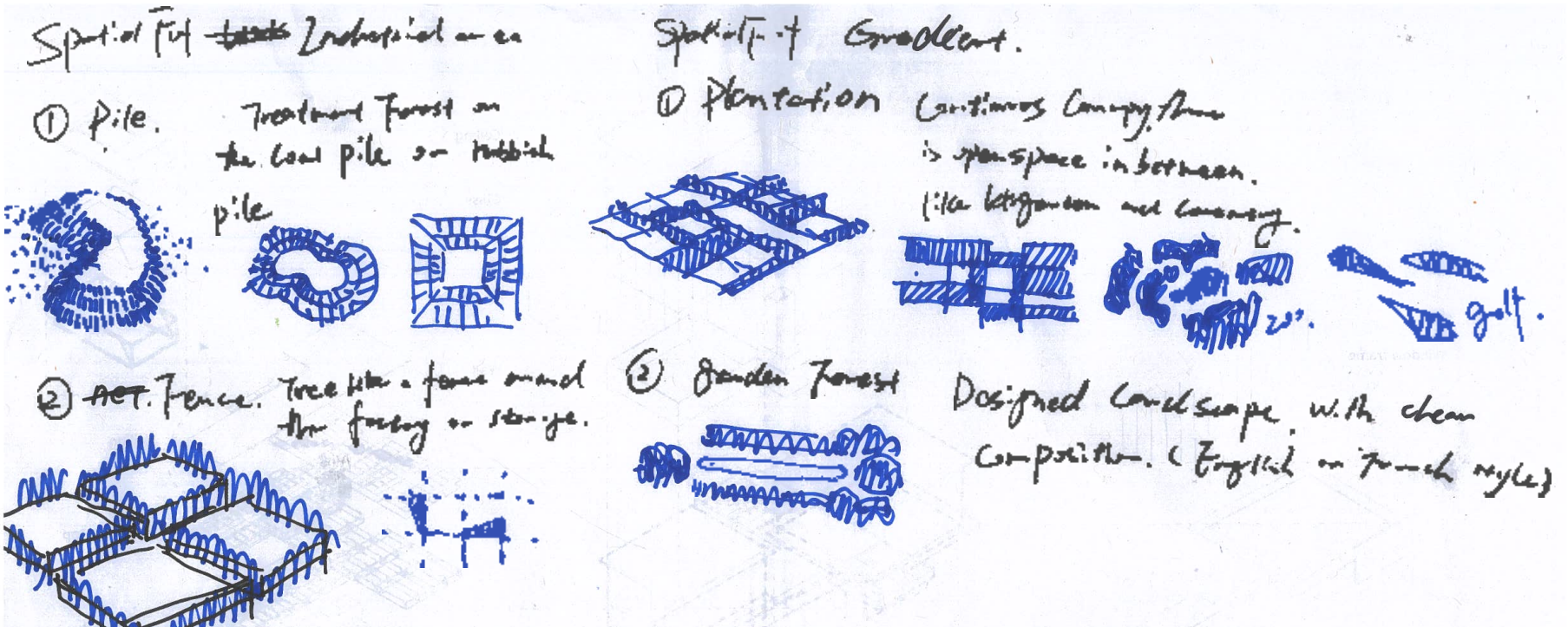
The transformation of the Emscher river started in 1991 and until 2020, the Emschergenossenshaft programme installed a total of 400 kilometres of new sewage run-off canals and ecologically adapted and improved approximately 350 kilometres of four hundred and oh water streams. The entire Emscher basin was upgraded by technical methods. Over the decades of the project, the Emscher river was transformed from an inaccessible area protected by a barbed wire fence into a recreational Emscher Park for the public. The landscape can now be experienced by the public and more than 30 kilometres of water-related open recreation areas have been created from Oberhausen to Castrop-Rauxel. (Keil, A; Wetterau, B. 2012) According to their plan, the next decade of the Emscher river will be a gradual process of restoration to its natural form. The design and planning of this process will focus on water management and coastal zones. Important issues here are riverside and water management, including the design of flood protection systems, drainage systems, irrigation systems and sewage runoff. Its landscape practice will encompass the design and planning of coastal landscapes such as multi-purpose flood control structures, river modification, and aquatic landscape development. (Nijhuis, S., & Jauslin, D, 2015)

What's the next Generation of Emscher Park?

Emscher Park as a great attempt to create a systematic landscape in the context of Zwischenstadt is in any case a success, but there are not many attempts to recognise the landscape from a visually oriented perspective and in terms of physical and spatial aspects. There does not seem to be a spatial-formal approach to the landscape of Zwischenstadt, a spatial or visual quality of the landscape or an attempt at landscape design. Today we are faced with the Zwischenstadt as a rejection of the traditional spatial continuity of the city, and a new way of looking at the spatial structure of the urban landscape is necessary. Finding a suitable theory to understand the spatial elements and the way the landscape is composed in Zwischenstadt will be the entry point of the project. The next generation of Emscher Park will be conceived from a spatial aspect, trying to reorganise the landscape of Emscher Park from a spatial angle.

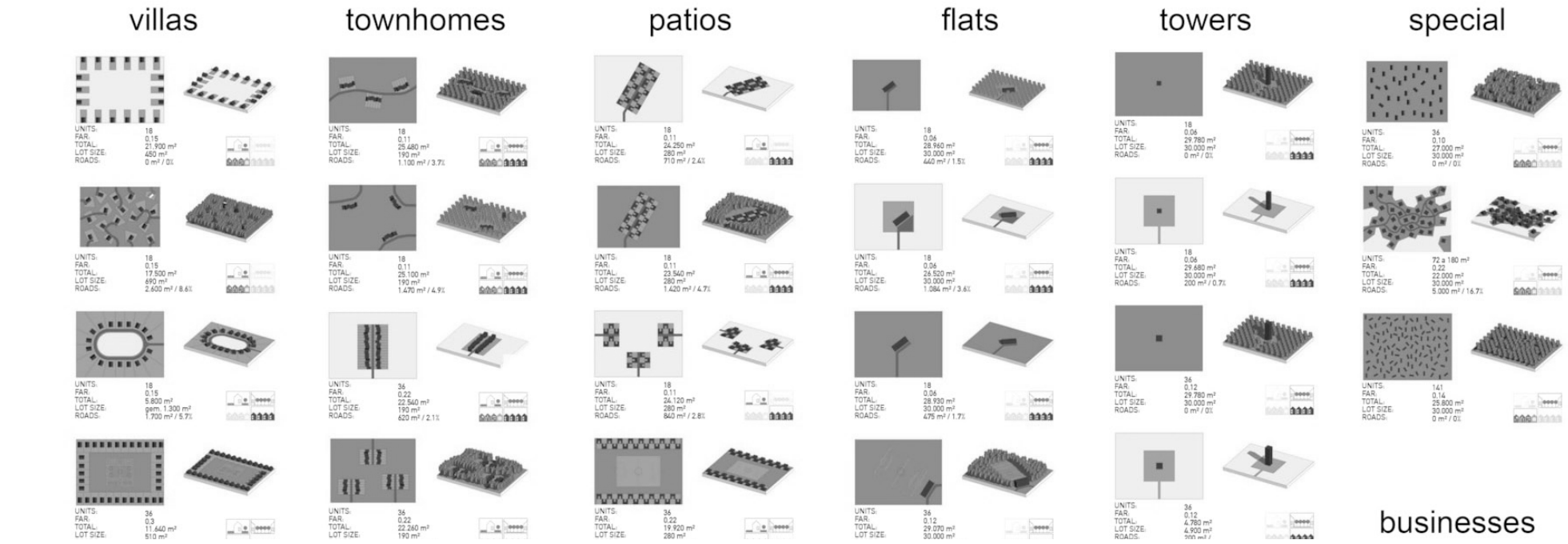
Angle Recognize spatial form of landscape in Zwischenstadt

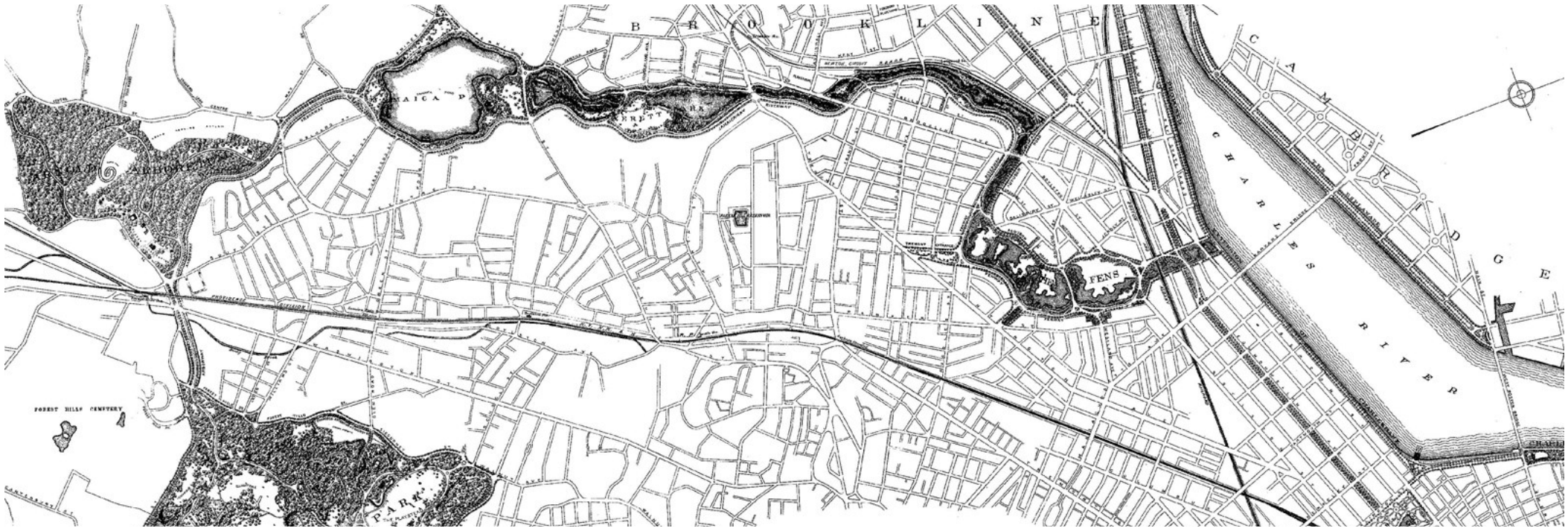




Urban Forestry

The urban forest is a very important element in analysing the landscape in Zwischenstadt from a visual-spatial dimension. The study of the relationship between the urban forest and the city from a visual-spatial perspective is the focus of this theory. The approach is to describe the relationship between form and space in terms of tree configurations. Generally, each pattern of tree configuration produces a corresponding spatial structure, and a summary of these spatial structures leads to a vocabulary that can describe the spatial form of the woods in the study area. (De Wit, S; Van der Velde, R. 2024) When applied in practice to specific cities, the vocabulary of woods can reveal the composition of the forest in each area, and the projection of this composition onto a city map is a mosaic of interlocking patches. This form of expression allows for the clarification of differences and the relationship between the different patches of the urban forest. It is suitable for the complex structure of the urban landscape, showing its diverse character.





Landscape Form in Metropolis

When studying the spatial form of the landscape in the context of the Zwischenstadt, the spatial character of the urban realm and the fragmented landscape plots make it challenging to study the spatial form of the landscape on a regional scale. In addressing this issue, a landscape model that replaces and complements the urban form from a landscape perspective, distilled from the underlying landscape, was needed for the project. In other words, we need to redefine the architectural form of the landscape in the metropolis in abstract spatial terms, an abstract form that is free from the constraints of scale, planning and meaning, and that narrates the landscape from a purely spatial way. In 1995, Clemens Steenbergen, Wouter Reh and Peter de Zeeuw proposed describing the new urban realm in abstract terms, simplifying the contemporary model of urbanisation into points, lines and surfaces. This produced three basic forms: Theatre, Flowscape, and Plantation. (De Wit, S; Van der Velde, R. 2009)

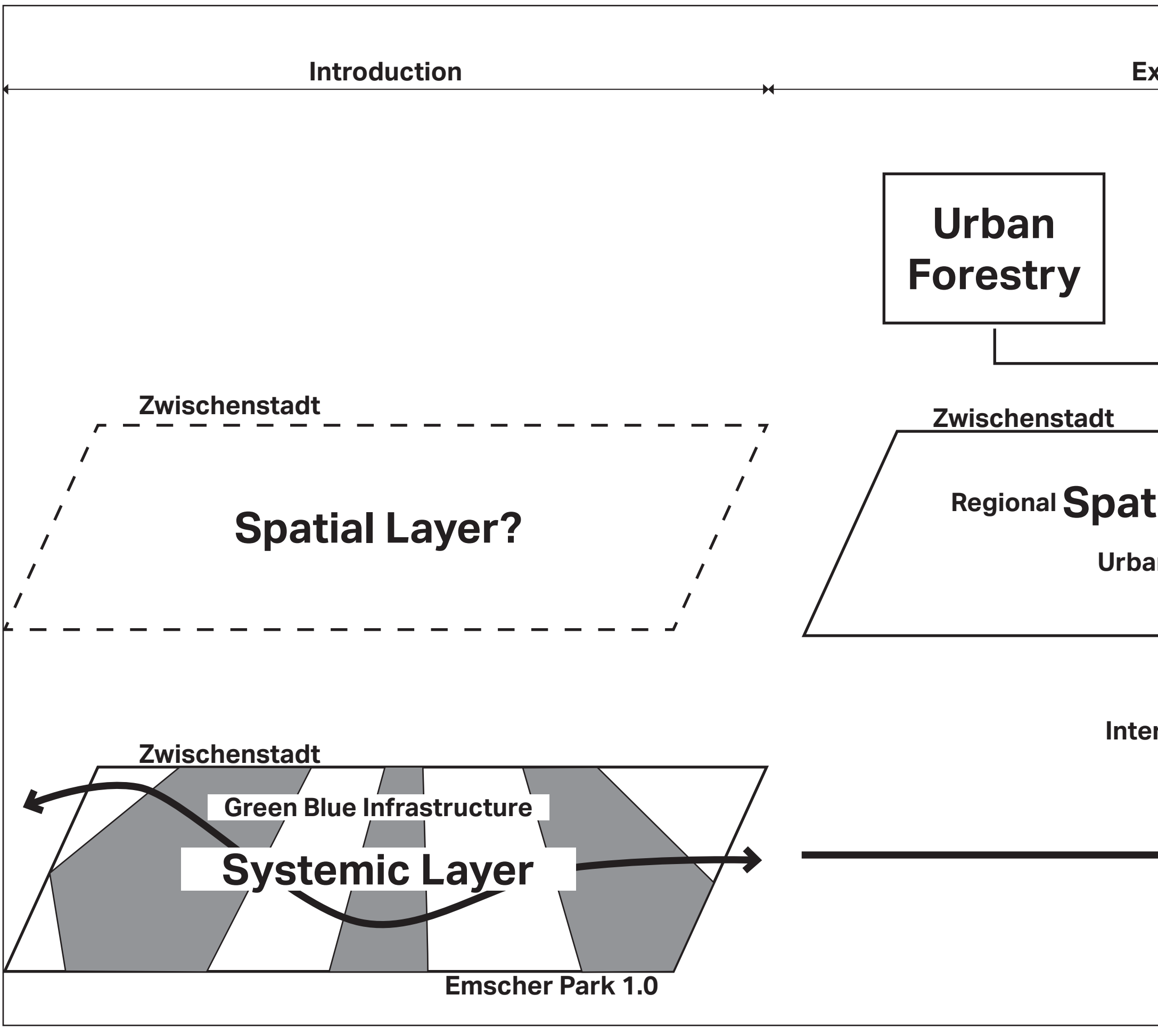
Research Question

Sub Research Questions:

1. What are concepts to describe the morphology of in-between regional landscapes?
2. How can these concepts be used to perceive the particular landscape of the Rhine Ruhr Area?
3. How can the landscape concept of urban forestry be applied on the regional scale?

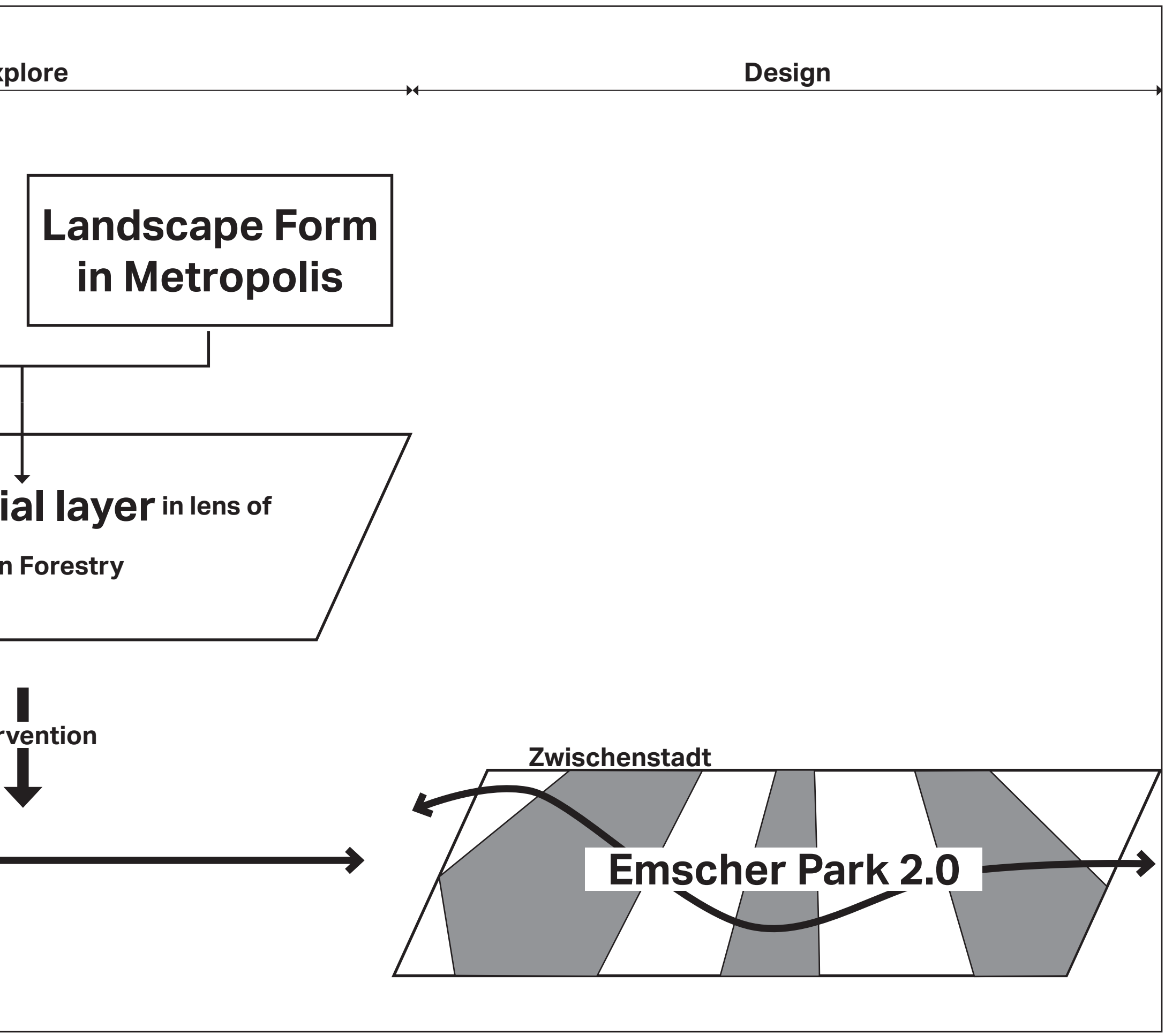
Research Questions:

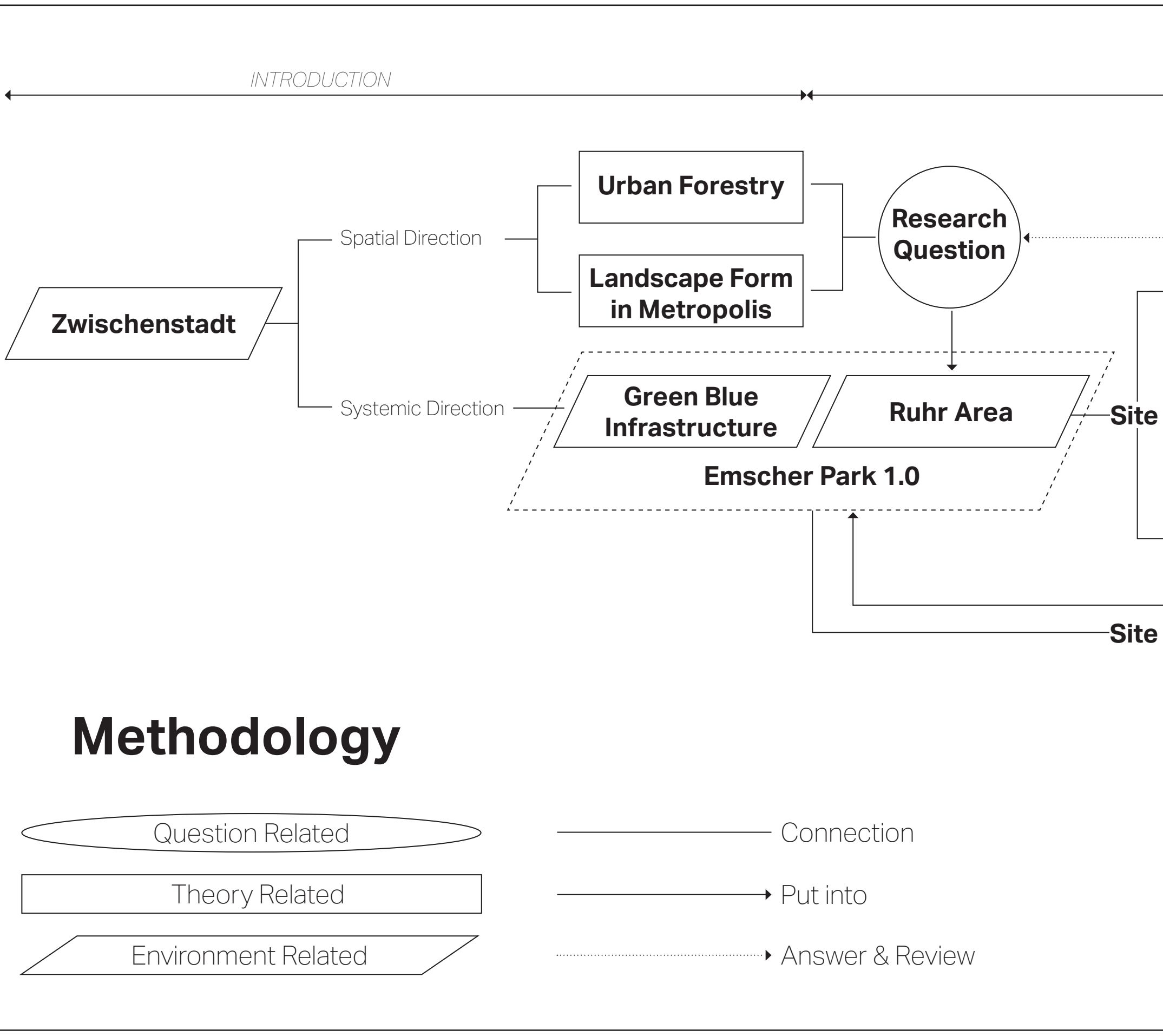
How can the landscape concept of urban forestry be used to shape the future landscape of the Rhine Ruhr Area?



Methodology

The central task of this thesis is to answer the research question. In the first chapter, by introducing Zwischenstadt and looking at both spatial and systemic aspects, it was found that most of the landscape interventions in the past have been oriented towards systematic landscape planning and design, with less research in the direction of spatial composition and visual experience of the landscape. UF as a lab to study the spatial form of landscape through the lens of trees, using Urban forestry and Landscape in Metropolis as the theoretical tools to enter the problem and get the Research Question, then put this Research Question into a specific environment (Ruhr area) to explore. The first stage of the exploration focuses on the research approach, in which the theory should be developed to answer the questions in a given context. In this way a universal research approach adapted within the given context is obtained. This research approach is then trialled within the given context, again identifying issues belonging to the site itself, and combining the approach to arrive at design principles and design conclusions. Finally, the design outcomes are reflected upon and the scientific validity of the approach is examined in order to answer the research questions posed at the start of the project.





Methodology

EXPLORE

OUTCOME

Urban Forestry

Spatial Layer

Develope & Merge

Landscape Form in Metropolis

Approach

Reflection

Analysis for Research

Image Layer

Layered landscape

Problem

Analysis for Design

Problem

Landscape Principle

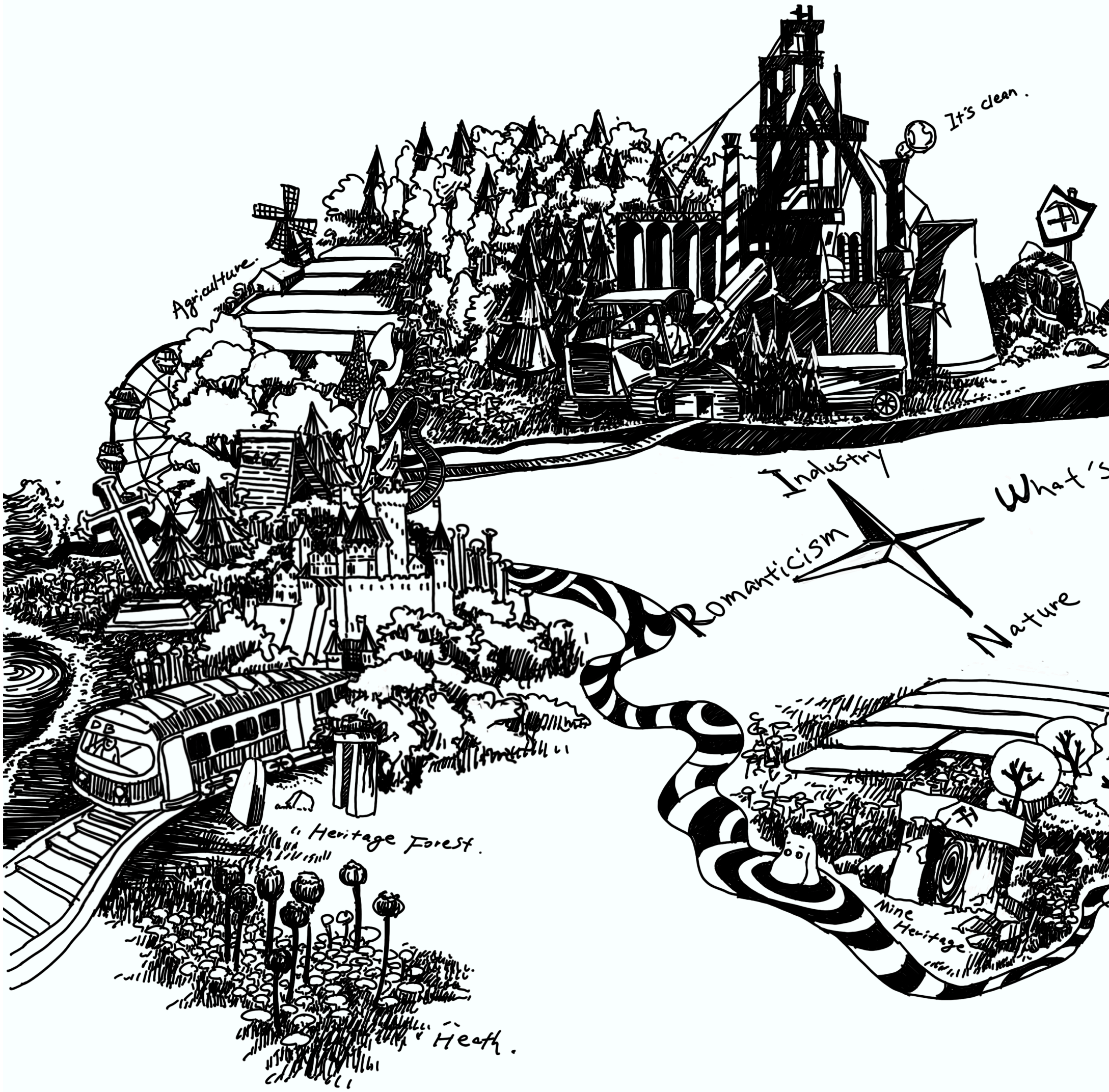
Vision & Master plan

Essen

Gelsenkirchen

Bismarck

Emscher Park 2.0



Chapter 2

Explore

Framework of Exploring

Site Intro

Layered Landscape

Urban Forestry

Problem Statement

Landscape Form in Metropolis

Plantation

Theatre

Case study

Flowscape

Urban Forestry in Flowscape

Theatre in Flowscape

Approach

Framework of Explore

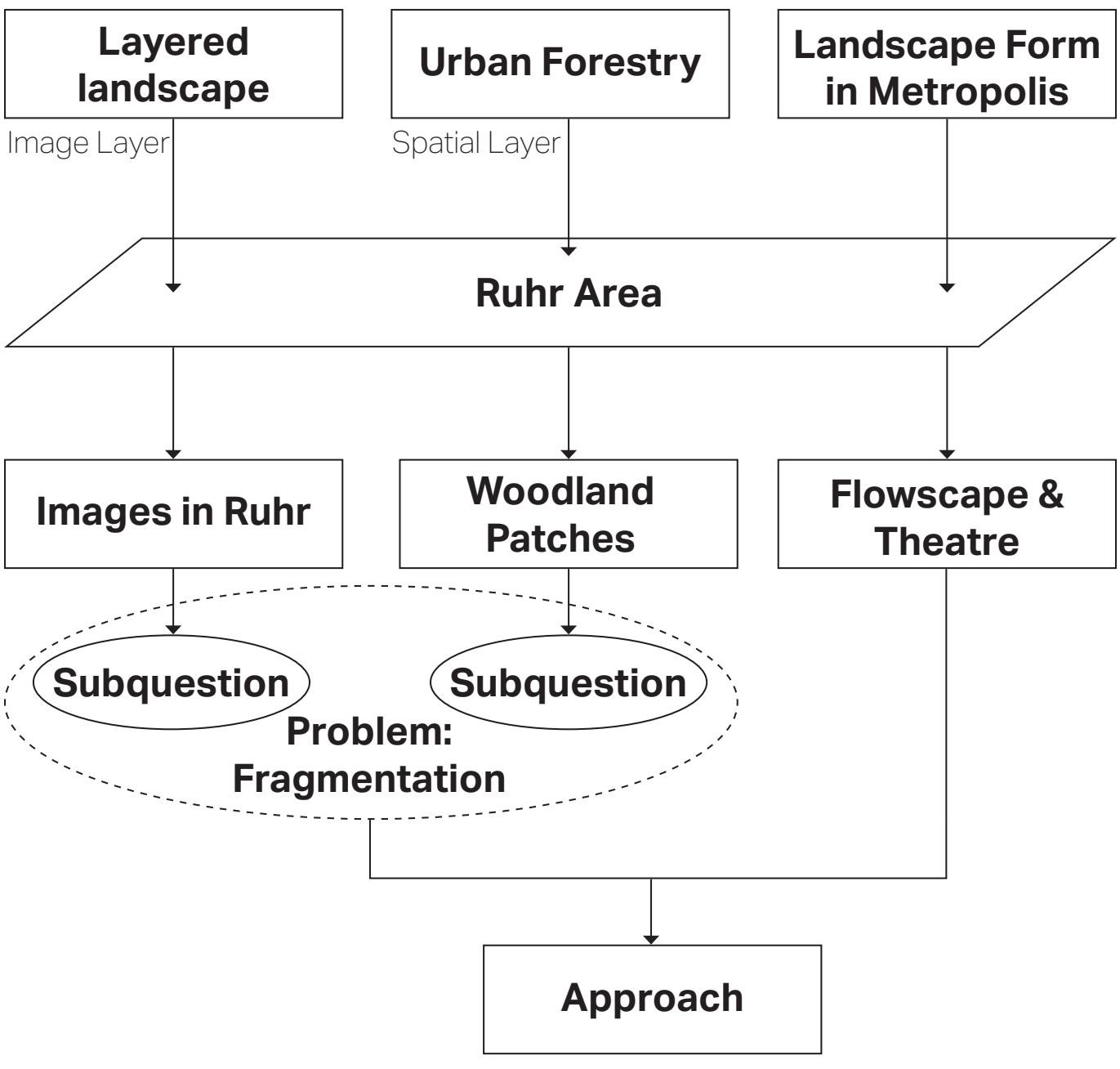
In order to explore potential landscape qualities of Zwischenstadt in an orderly and complete way, this chapter will approach the problem from two perspectives:

1. Landscape image aspect, the difference between landscape and wilderness is that landscape is the process of human intervention on the land, landscape is the translation of land palimpsest. Through the landscape, we can read the cultural and historical changes on the land. It is then a reasonable approach to understand the hidden imagery of Zwischenstadt by understanding the historical and cultural images behind the landscape; (James Corner, 1991)

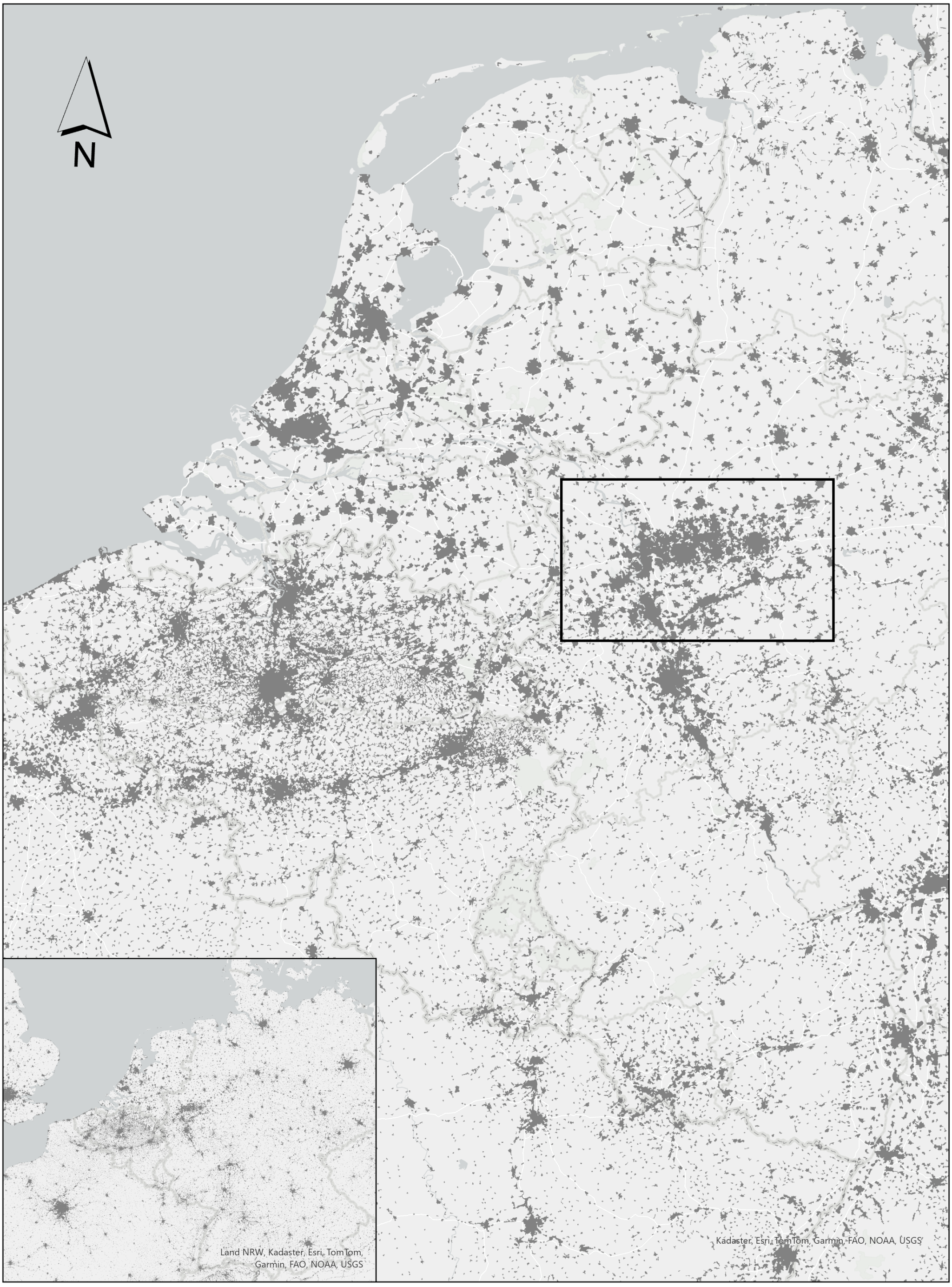
2. From the perspective of Urban Forestry, a selective sampling of urban plots in Zwischenstadt was carried out to classify them according to their spatial and morphological characteristics, to obtain a basic Urban Forestry vocabulary, which was then applied to one of the cities of the Region to test for its generalisability. The criterion is whether all urban forestry forms in the city can be represented by this vocabulary.

3. After the analysis based on the image perspective and the spatial perspective, the following sub-questions can be posed for the next step of the exploration: how to organise this chaotic forest PATCH WORK CITY? How to face the problem of plant configuration in the city? The question of the configuration of the woods in the city is asked from a regional scale.

4. Metropolis landscape form aspect, in today's metropolis the landscape should also be seen as a synthesis, so exploring what our landscape would look like at this regional scale and how to adapt and develop the theory of spatial form in metropolitan landscapes is how this subchapter explores the spatial potential of the Zwischenstadt.



Site Intro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Kadaster, Esri, TomTom, Garmin, FAO, NOAA, USGS
100
Kilometers

Layered landscape

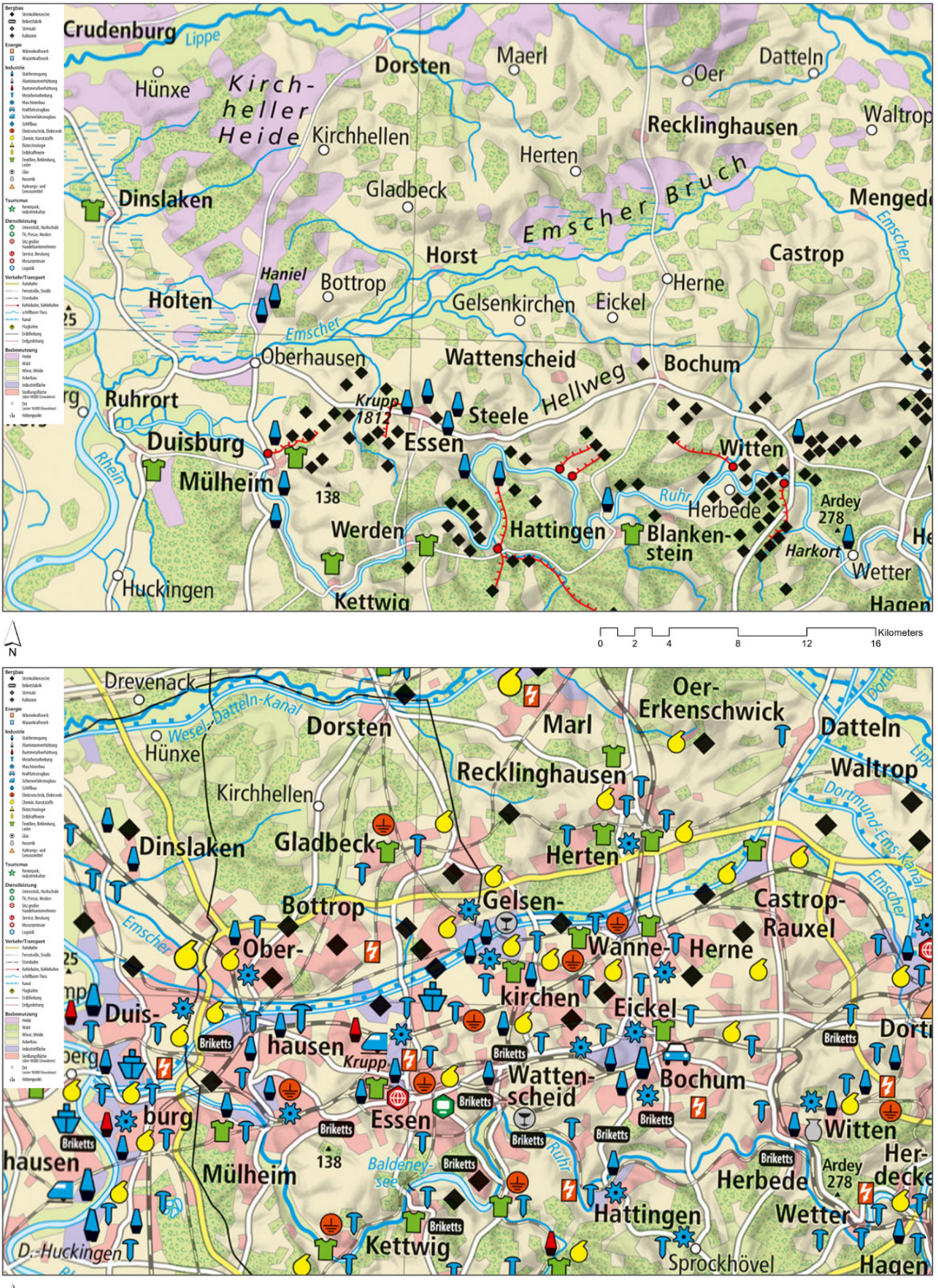
The imagery of the landscape can be viewed as a series of layers of history superimposed on each other, with each particular history leaving a recognisable appearance of the landscape from a particular period. Natural systems, agricultural activities, industrial development, and urban growth all play a role in the layers of today's landscape. In the process, the old layers serve as a background for the new layers, and the characteristics of the old layers become visible in the layers above. (L. Pols, Robert Jan Croonen, 1995) For example, after the Second World War, the new workers' dormitories in Sobbehof, Bismarck were built next to the original farms, and after the 80's, when factories were demolished, settlements were expanded, and the constant land consumption happened next to the original workers' dormitories, creating the current spatial form of the farmland surrounded by dispersed houses, flats and woods.

In this thematic study, we can simply divide our hierarchy into: human intervention in the natural landscape in the pre-modern period; the impact of human activities on the land and landscape in the industrialisation period; the impact of land consumption on the landscape in the rapid urbanisation phase; and the process of nature returning to the urbanised area once again in the contemporary period, represented by the IBA, through the transformation of industrial brownfield sites by way of landscape intervention. By analysing these four periods, we can understand how human activities have shaped the landscape, but also the historical meanings and metaphors behind the landscape images in today's Zwischenstadt.

Images of Zwischenstadt in context of Ruhr area

Pre-modern

In the pre-modern phase, natural and agricultural activities were the main interventions in shaping the regional landscape. In the Emscher area, which is a typical river valley landscape, river activity shaped dynamic landscapes such as marshy wetlands and heathlands. The nearby villages consisted mainly of inhabitants engaged in agricultural activities such as grazing, and they were mostly scattered and sparsely populated near the cities of Essen, Bochum, and Dortmund. The dominant landscapes of this period are the river valleys with large wetlands and marshes, and the plains with heathland meadows and small woodlands.


Bergbau
Steinkohlenzeche
Brikettfabrik
Steinsalz
Kalkstein
Energie
Wärmekraftwerk
Wasserkraftwerk
Industrie
Stahlerzeugung
Aluminiumverhüttung
Buntmetallverhüttung
Metallverarbeitung
Maschinenbau
Kraftfahrzeugbau
Schienenfahrzeugbau
Schiffbau
Elektrotechnik, Elektronik
Chemie, Kunststoffe
Biotechnologie
Erdölraffinerie
Textilien, Bekleidung, Leder
Glas
Keramik
Nahrungs- und Genussmittel
Tourismus
Revierpark, Industriekultur
Dienstleistung
Universität, Hochschule
TV, Presse, Medien
Sitz großer Handelsunternehmen
Service, Beratung
Messezentrum
Logistik
Verkehr/Transport
Autobahn
Fernstraße, Straße
Eisenbahn
Kohlebahn, Kohlekufen
schiffbarer Fluss
Kanal
Flughafen
Erdölleitung
Erdgasleitung
Bodennutzung
Heide
Wald
Wiese, Weide
Ackerbau
Industriefläche
Siedlungsfläche (über 10000 Einwohner)
Ort (unter 10000 Einwohner)
Höhenpunkt
Crudenburg
Lippe
Hünxe
Kirch-
heller
Heide
Dorsten
Maerl
Oer
Datteln
Waltrop
Recklinghausen
Kirchhellen
Herten
Dinslaken
Gladbeck
Emscher Bruch
Mengede
Emscher
Horst
Castrop
Haniel
Bottrop
Herne
Holten
Gelsenkirchen
Eickel
Emscher
Oberhausen
Wattenscheid
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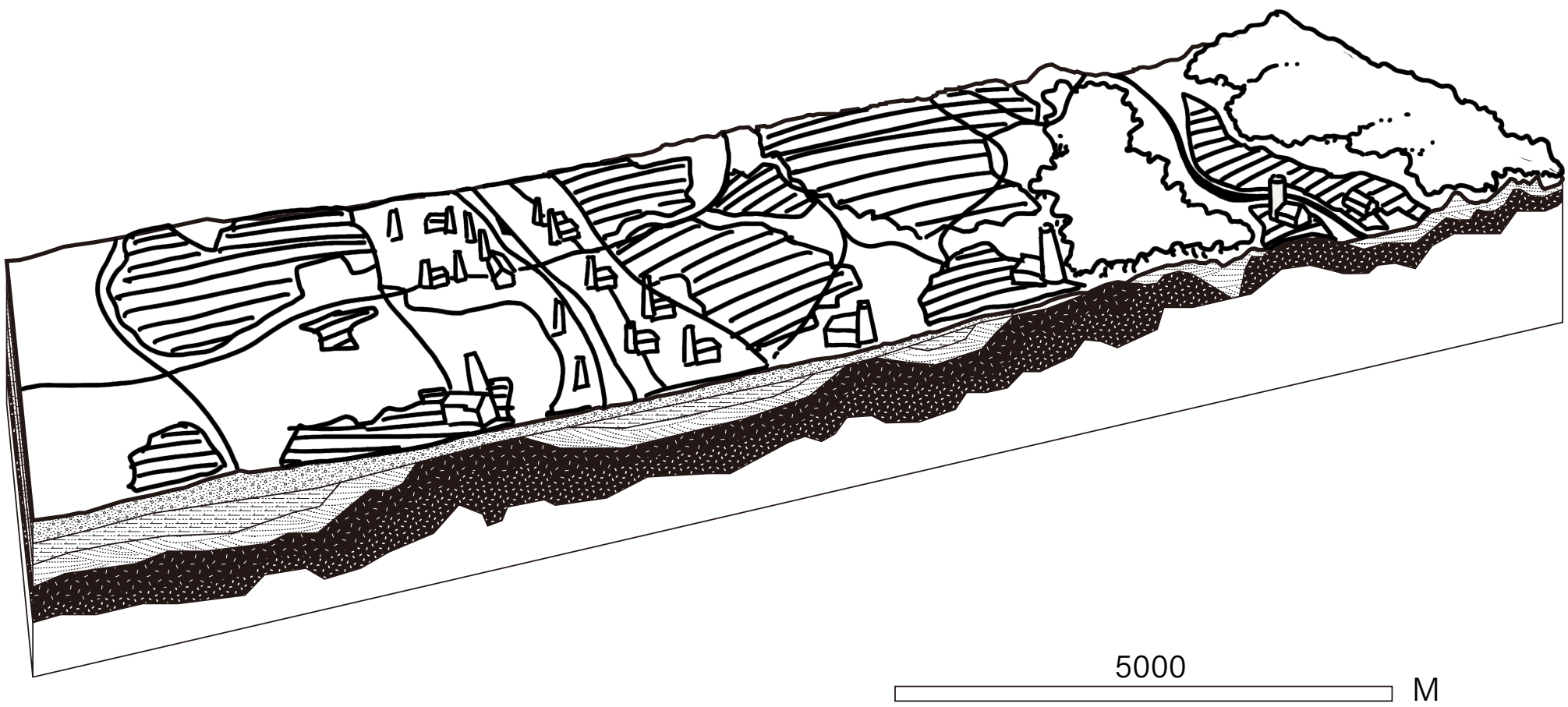
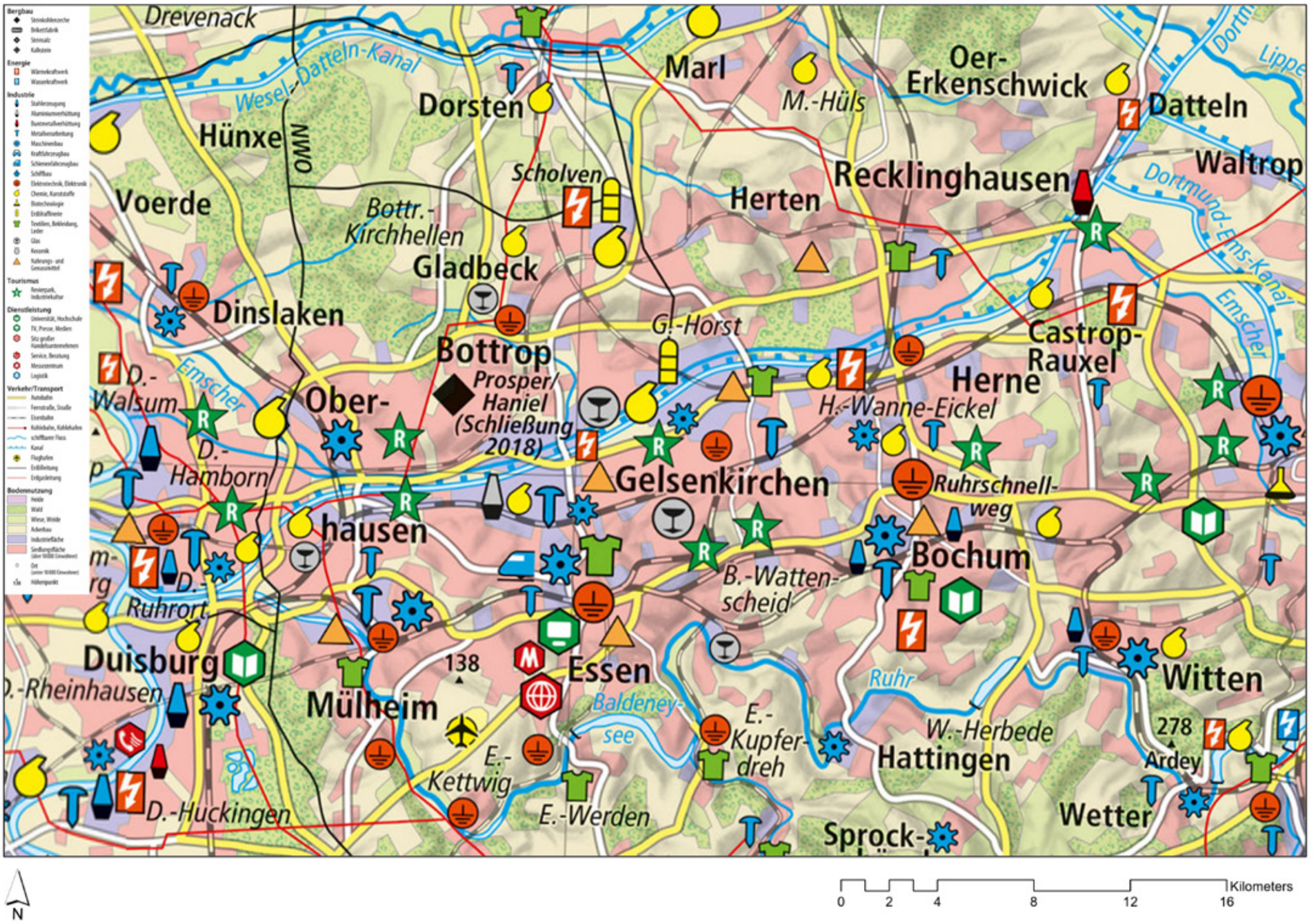


Industrialization

The mining of coal from the 17th century onwards changed the landscape of the area considerably. This was because the Carboniferous strata were exposed in the southern part of the Ruhr valley, from where they plunged northwards at an angle of 2-3 degrees, thus increasing the depth of the coal seams. The earliest coal mining was therefore concentrated along the Ruhr. However, with the increase in mining standards and the pursuit of high-quality coal mines in the north, coal mining in the Ruhr shifted northwards. However, due to political chaos, it was not until 1815 that coal mining became the mainstay of the Ruhr's economy, and industrial activity gradually took shape and the Ruhr began to rise. From 1840 onwards, a large number of new mines were built in the Hellweg area (Duisburg to Dortmund), and coke ovens were constructed in large numbers during this period. The canal system was developed to improve logistics, the flooding problems affecting the Emscher region were solved, and a large number of coking coal plants were built alongside the canals to facilitate transport, which is why today we can see a large number of industrial monuments along the banks of the Emscher Canal, as well as man-made rubbish and coal slag heaps. With the industrial development, distinctive and compact workers' housing estates characterised the period, and workers from the countryside still retained the peasant habit of clearing land and running gardens near the industrial estates, some of which have been demolished today, but these gardens have been preserved and have gradually developed into local community gardens (Andreas Keil. Burkhard Wetterau, 2013)

The blaster ovens and industrial facilities of this period are therefore important landscape symbols that should not be overlooked; the human reconstruction of the Emscher watercourse, the construction of canals, and the heap also altered the flat landscape of the valley area, with man-made hillocks becoming local landmarks. Small gardens and small plots of farmland are the result of personal intervention in the land during this period, in between the industrial and residential areas.


Drevenack
Wesel-Datteln-Kanal
Hünxe
OMN
Dorsten
Marl
M.-Hüls
Oer-
Erkenschwick
Datteln
Lippe
Dortm
Waltrop
Recklinghausen
Dortmund-Ems-Kanal
Emscher
Scholven
Herten
Voerde
Bottr.-
Kirchhellen
Gladbeck
Dinslaken
G.-Horst
Castrop-
Rauxel
Bottrop
Prosper/
Haniel
(Schließung
2018)
Herne
H.-Wanne-Eickel
D.-
Walsum
Ober-
D.-
Hamborn
Gelsenkirchen
Ruhrschnell-
weg
hausen
Bochum
B.-Watten-
scheid
D.-
Ruhrort
Duisburg
D.-Rheinhausen
138
Essen
Mülheim
Baldeney-
see
Ruhr
Witten
E.-
Kupfer-
dreh
W.-Herbede
278
Ardey
Hattingen
E.-
Kettwig
D.-Huckingen
E.-Werden
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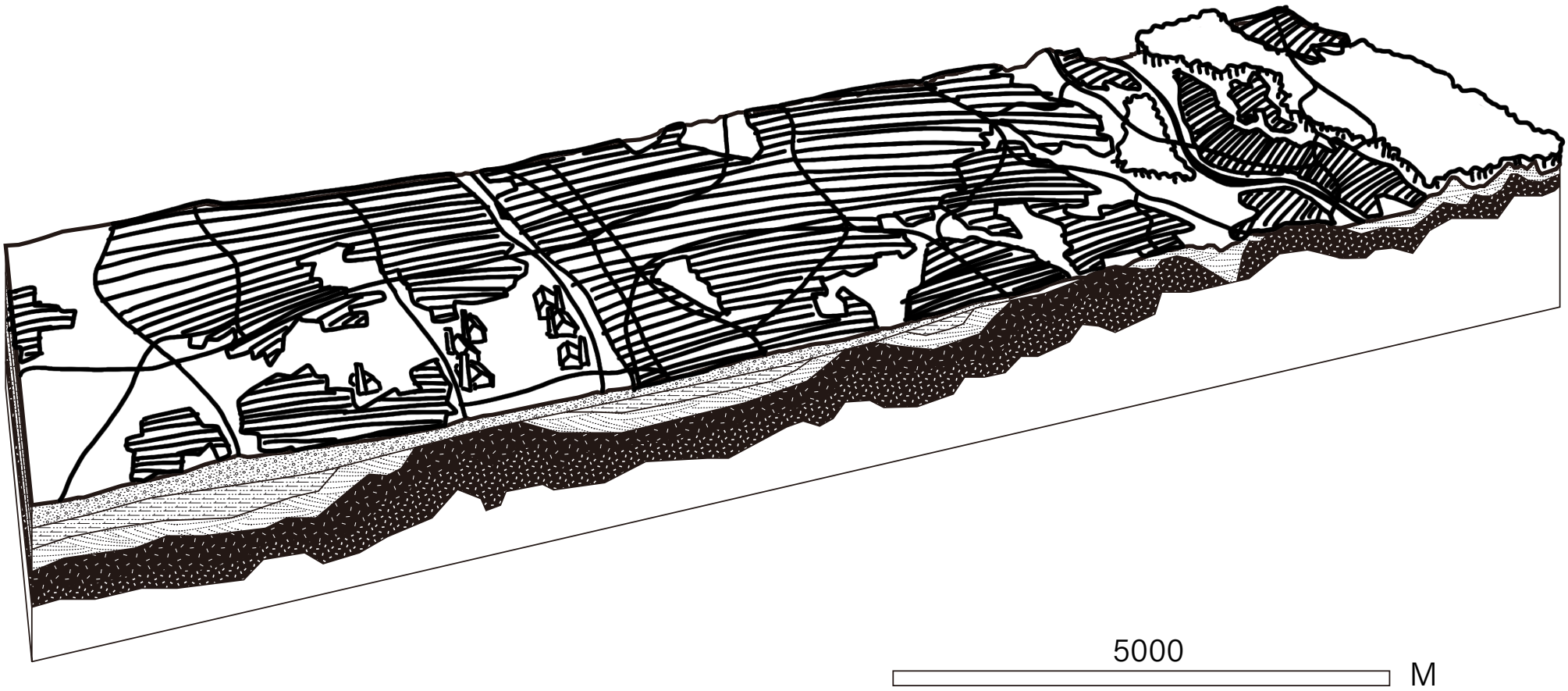

5000
M

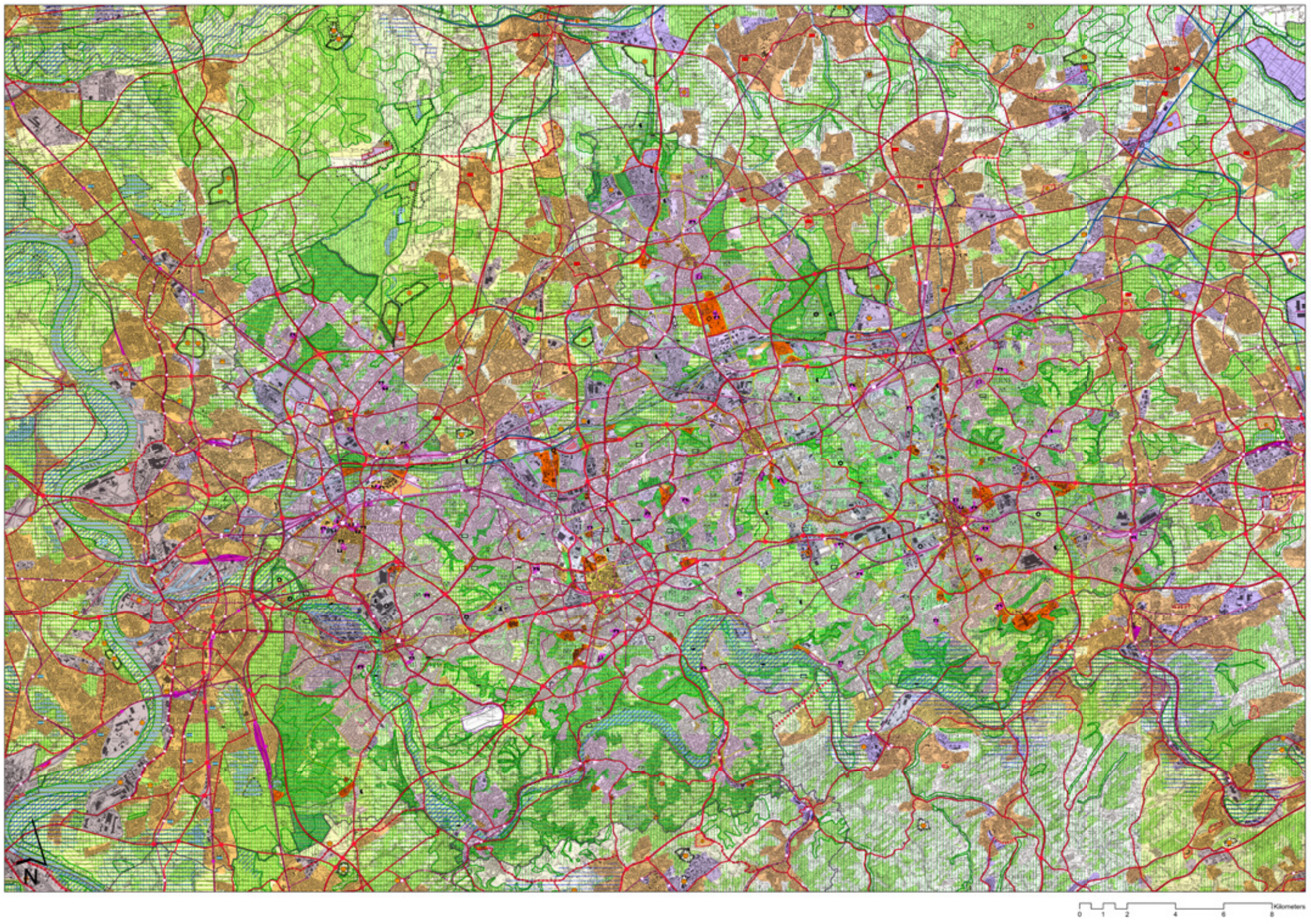
In the past, there used to be a continuous field in front of the residential area of Sobbehof

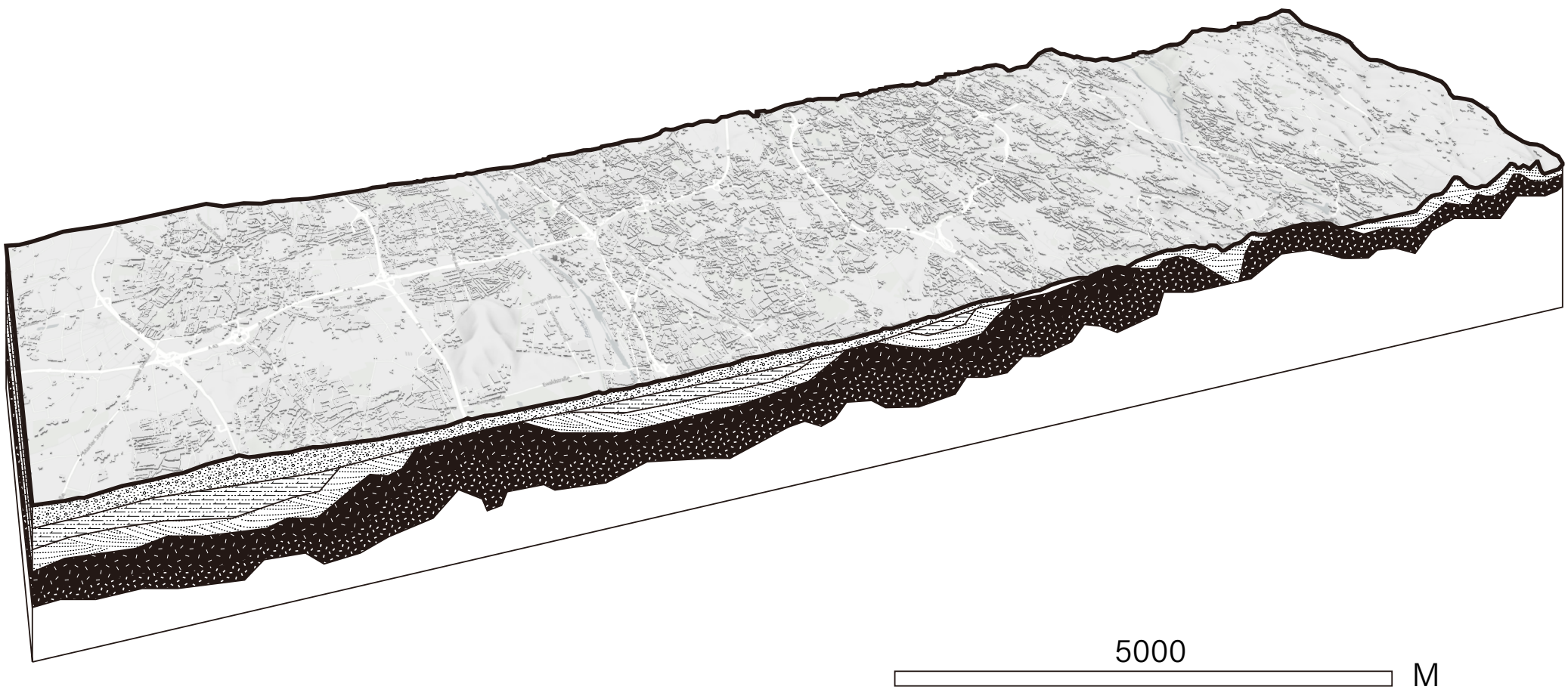
Urbanization

After the Second World War, the Ruhr region's city centre and the nearby dense residential areas were severely damaged and urgently needed to be rebuilt, and in the 1950s urban development was guided by the concept of the decentralised city, which led to the reorganisation of the historic city centre, with an increase in the size of the plots and the expansion of the traffic area. In the 1960s, urban development was fully adapted to the needs of the automobile, giving priority to the development of private motorisation needs, and a large number of motorways and national roads were widened, and at this time the A42 motorway and the A40 road were formed as the main urban arterial roads. In addition, under the concept of density urbanisation, large housing estates were created in all Ruhr cities. In addition, they moved out of the cities through suburbanisation, whereby coal miners' flats were converted and large residential areas were planned, creating new settlements of over 50,000 inhabitants. During this period, small business shops such as kiosks were evicted and residents were relocated to large suburban housing estates in order to allow for the expansion of retail, administrative, banking and other uses to areas near the city centre. In the 1970s, the energy crisis ended the Ruhr's confidence in growth, factories were closed down, unemployment rose and the large housing estates did not meet the expectations of the city's population. Urban conservation, residential improvements and environmental improvements became the themes of the city's construction in this period.

(Andreas Keil. Burkhard Wetterau, 2013)

The landscape of this phase therefore consists of several elements: first of all the dense traffic network, especially the A42, which cuts off the connectivity between the north and south of Emscher and crosses Emscher island several times, making it difficult for Emscher island to become a coherent space. The dense green belt created by the soundproofing makes the A42 a dividing line and a landscape backdrop for many areas. In addition, the creation of large housing estates and the suburbanisation campaign have led to a squeezing of open spaces in the Ruhr periphery of the city, which has led to the present-day difficulty of finding open spaces in the Emscher area and the creation of a densification of the spatial experience.


N
0 1 2 4 6 8
Kilometers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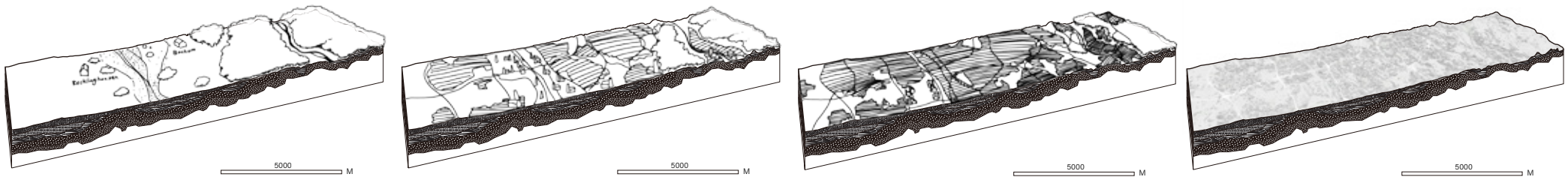
Urban Renewal

In 1989, IBAEmscherPark was founded with their proposal to promote a conceptual structural change in the centre of the Ruhr area in response to the industrial decay of the region. To this aim they implemented more than 800 square kilometres of landscape planning and urban development projects, ecologically, economically and culturally renewing the industrial area. The creation and connection of EmscherPark was a great innovation, as they declared the industrial brownfield sites to be nature reserves, and the remaining industrial sites were seen as an opportunity to create new landscapes. The industrial complex, which was previously seen as an industrial decay, became unique, defining the identity of the Ruhr area and a new landmark for the Ruhr area.

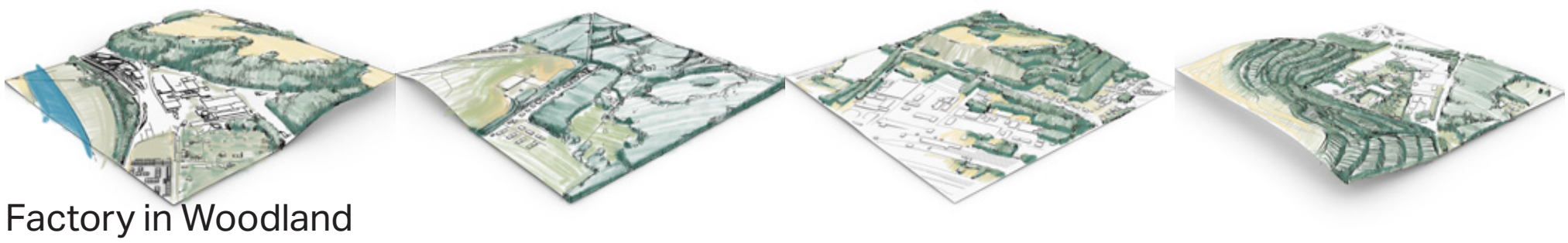
Conclusion



Based on our analyses of the four different periods, we can approximate the features of the Zwischenstadt in the context of the Ruhr area: the fragments we see were formed by a combination of individual-led agriculture, big-business-led industry, and expert-scholar- and government-led urban renewal. These fragments are insufficiently connected to each other, but their existence itself is full of significance: they are indicative of the agrarian inertia of mankind in the midst of rapid industrialisation and urbanisation; they are indicative of the Ruhr's tradition of blood and sweat, of the desire of mankind in that era to tame nature; and moreover, they are indicative of mankind's rethinking of the environment and the transformation of the industrial brownfield sites. In other words, the Zwischenstadt in the Ruhr can present three images: a picture of idyllic landscapes, a picture of industrial heritage, and a picture of nature friendliness. Our next task is to make these three images perceptible through our planning and design, demonstrating the richness of the Zwischenstadt landscape elements.

Living in Woodland

Farmland in Woodland

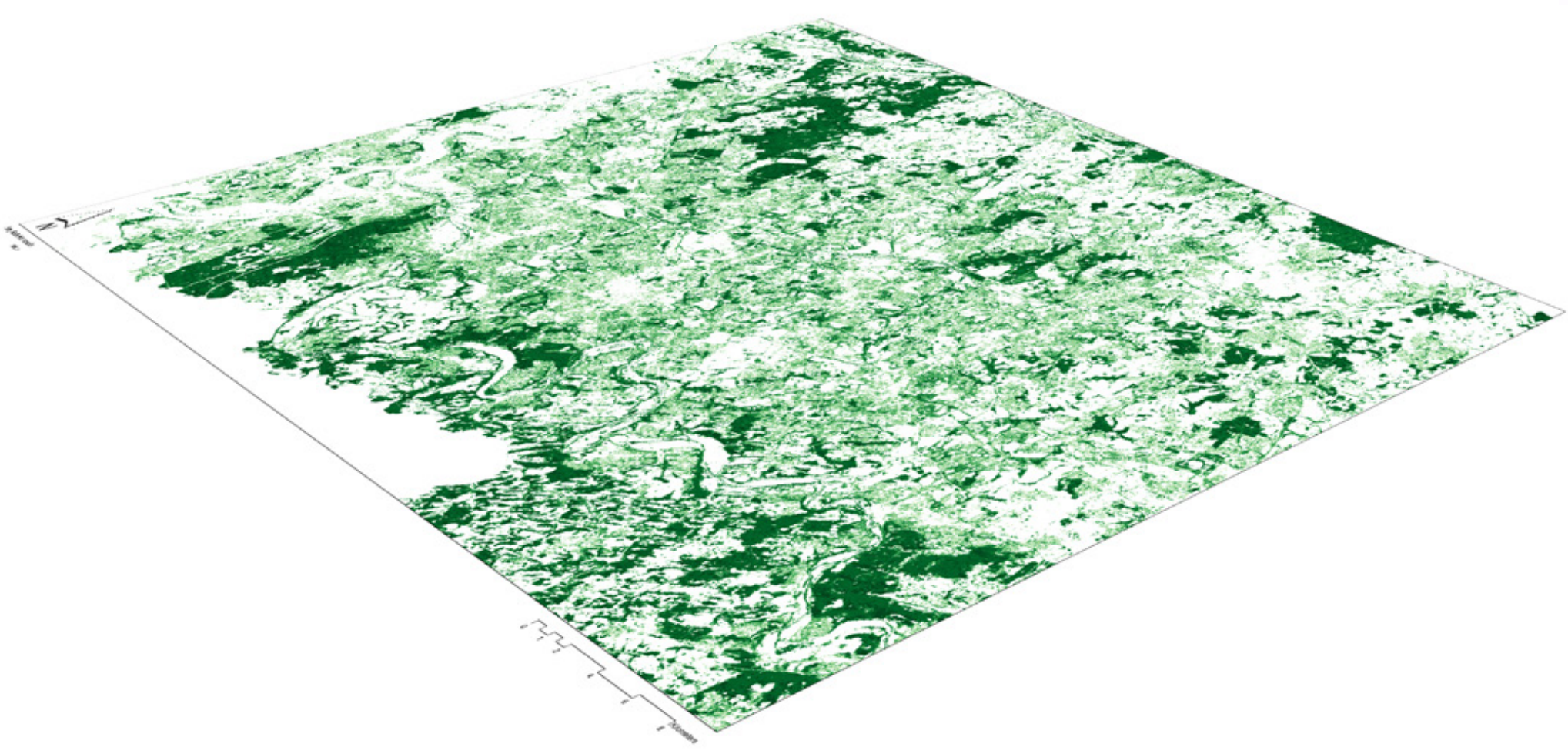


Factory in Woodland

Woodland in Emscher Park

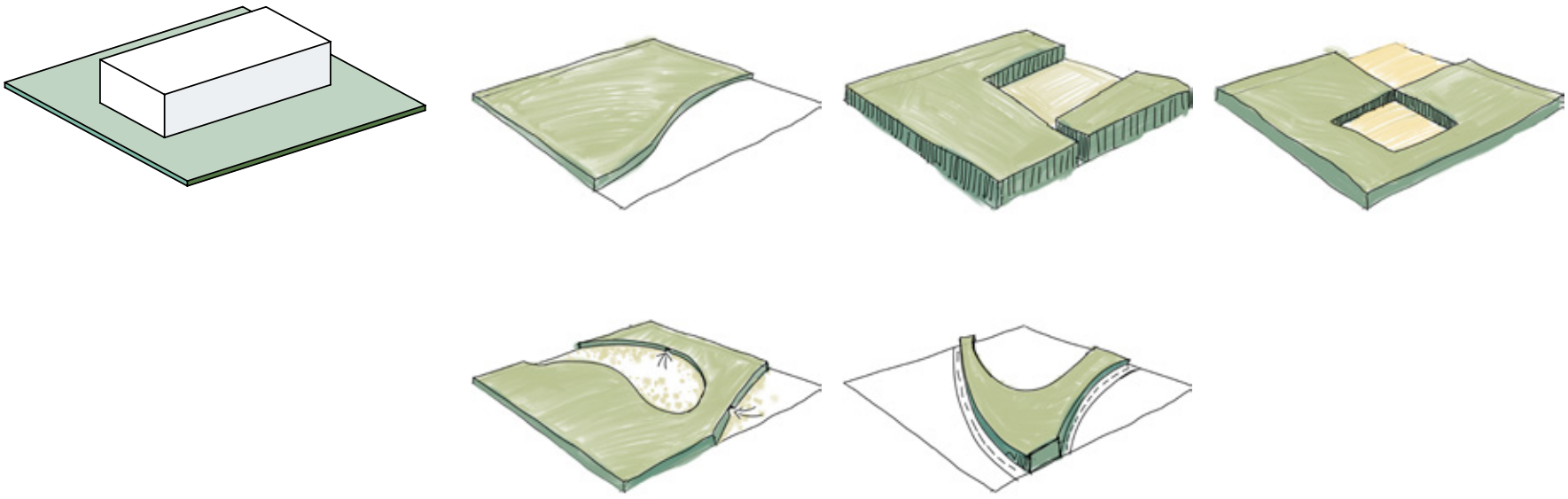
Infrastructure in Woodland

Woodland in Settlement

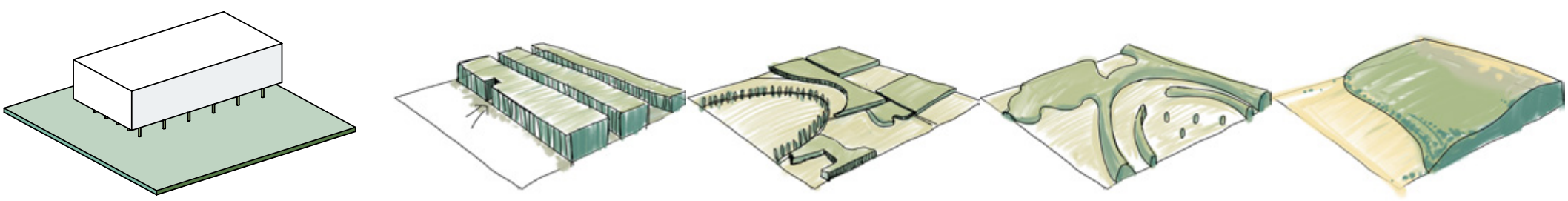


Summarising tree configurations

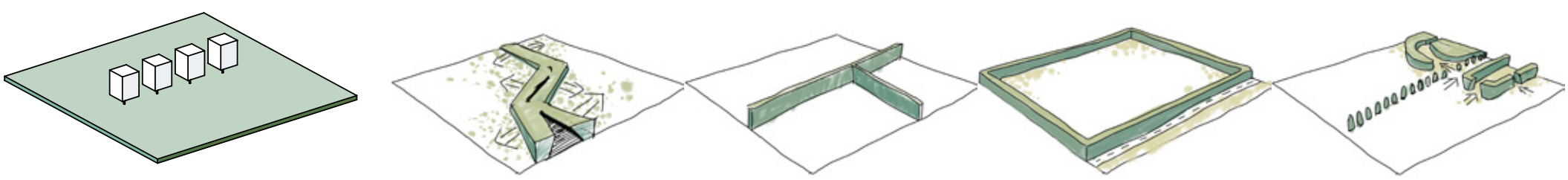
Volume



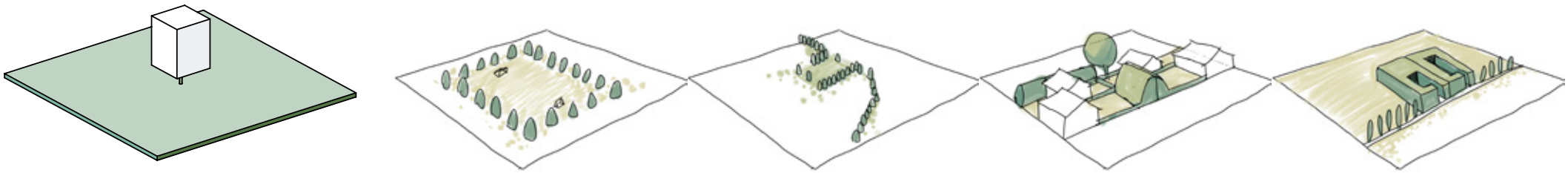
Group



Line

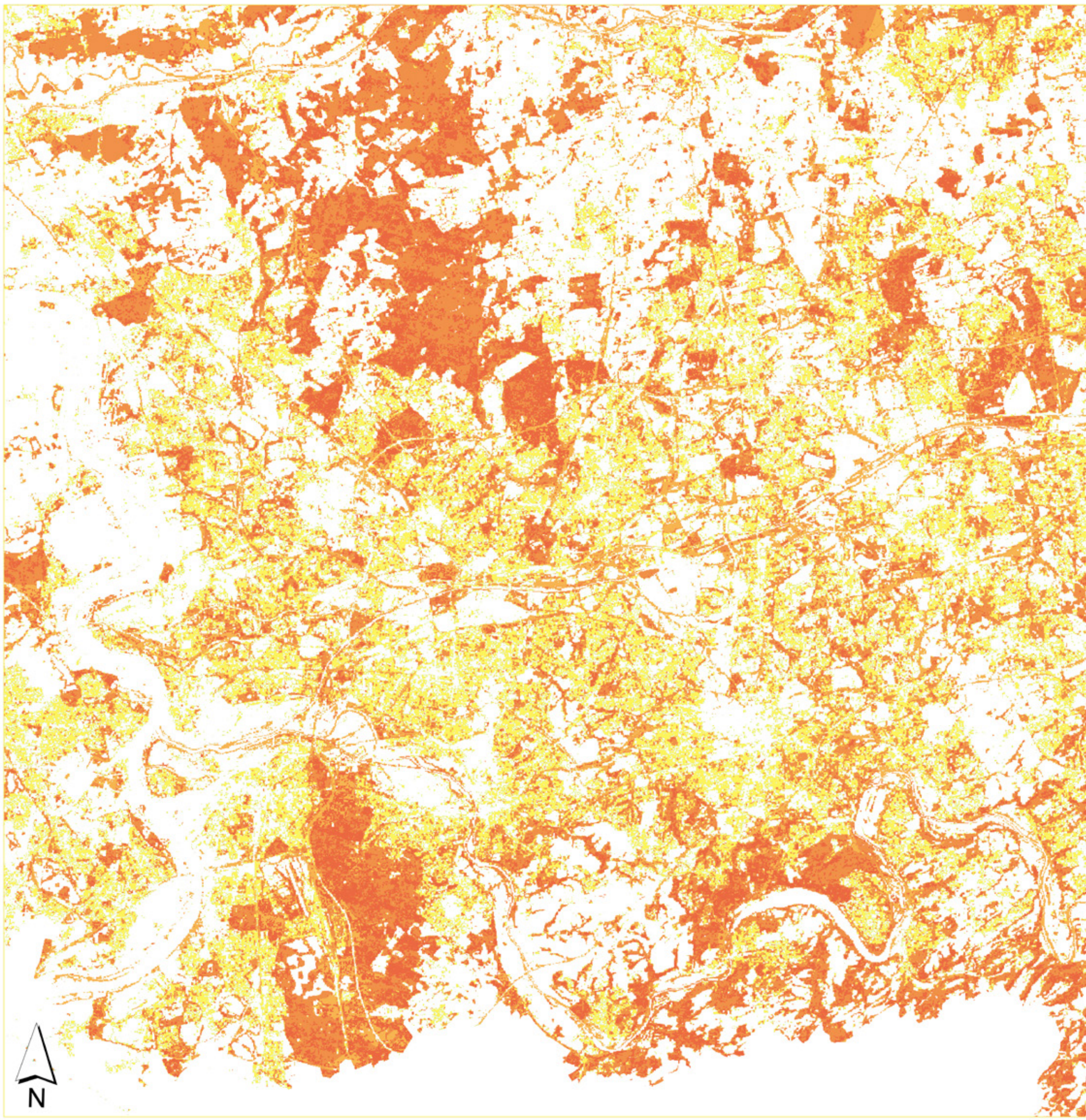


Point



Urban forestry as a language of spatial narrative needs to vary accordingly in different spatial dimensions and scales. In Zwischenstadt, in this huge urban scale, we should be more concerned with the image shaped by the plant configuration. Judging by the shape of the composition of the woods, the density and the planting pattern. For example, a dense (density) linear distribution (plant configuration) of low-scoring trees (e.g. black poplar, etc.) creates a wall. Trees in the city were studied by selective sampling (1km^2).

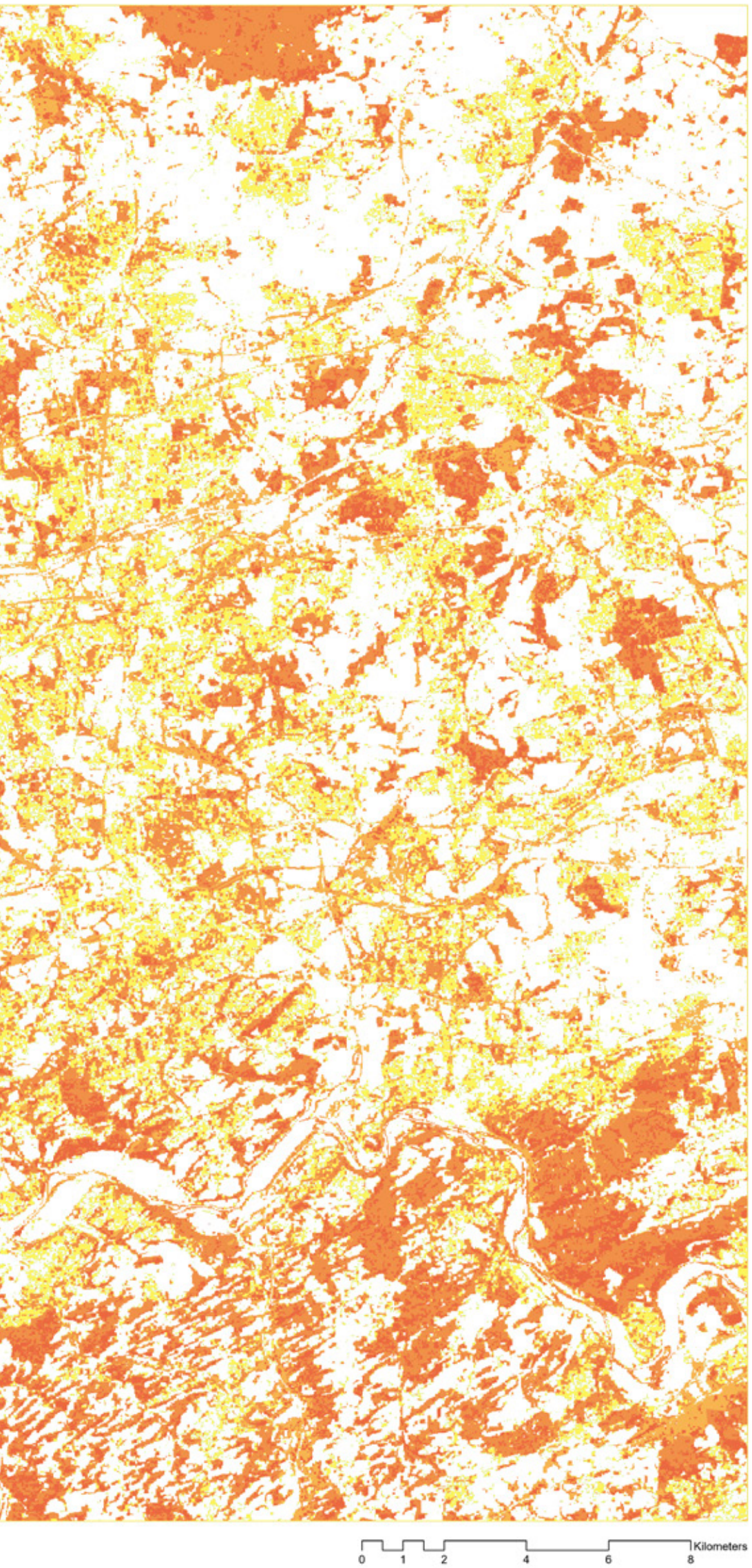
Based on these sample squares, we can distill their tree configurations, grouping and rearranging them according to basic tree configurations (Volume, Group, Line, Point).



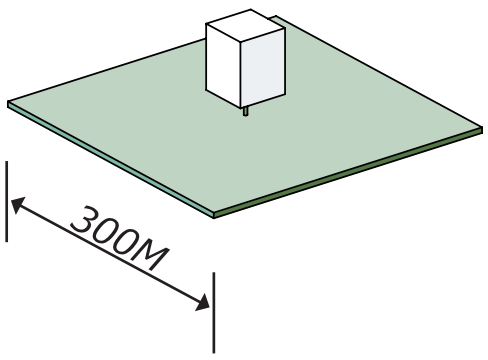
Urban Forestry Test

Technical way define tree configuration

-Point: On a small scale "point" is a tree that lacks a connection with its surroundings, which form a single view. At the regional scale we define a "point" as a tree(or a group of tree) that lacks a spatial connection with the surrounding trees. Quantitatively, a tree(or a group of trees) estimated with maximum canopy cover of less than 30% per unit pixel and no direct spatial connection to surrounding trees can be defined as a POINT.

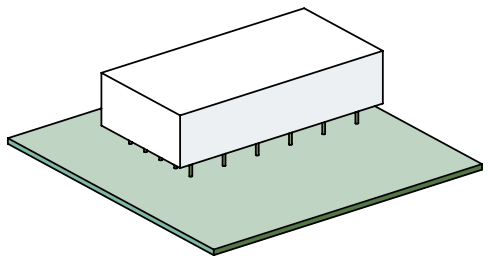


Point

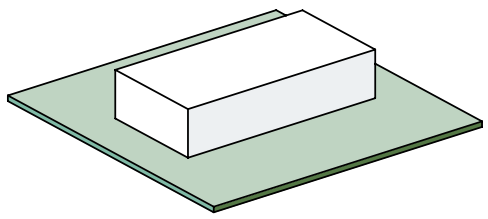


Line

Group



Volume

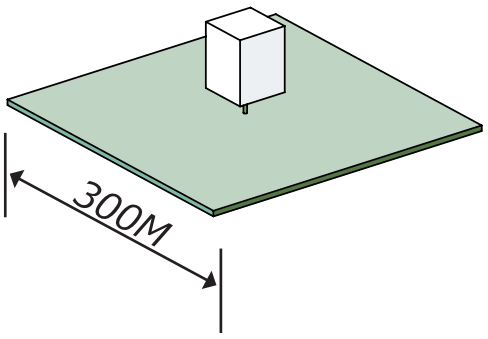


-Line: Whatever density, or function, in spatial form constituting a line is defined as a LINE. e.g., green corridor, avenue, fence.

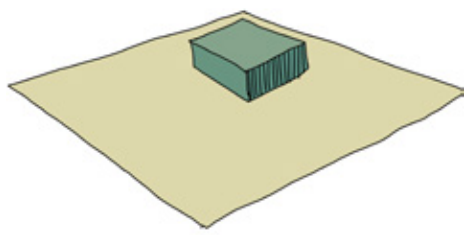
-Group: Forests that lack layers in vertical space can be defined as GROUP. And it is important to note that there are a large number of Industrial Forests in the Ruhr area, which are planted on former industrial brownfield sites, and are pioneer forests, which lack understory vegetation and shrubs, and are less biologically diverse than Volume near the forest edge.

-Voulume: Forests with a maximum canopy cover higher than 75% per unit pixel and richly layered in vertical space were defined as VOLUME.

Point Defination



Firstly, the point element is the point of visual focus, and often there are isolated woods or trees in space that can be called points. When subdividing point elements, different point elements can be defined according to whether they create enclosed or accessible space within the point: accessible or enclosed points are called Room; inaccessible or geometrically present points that only constitute a visual experience are called Island.



Point - Islnad

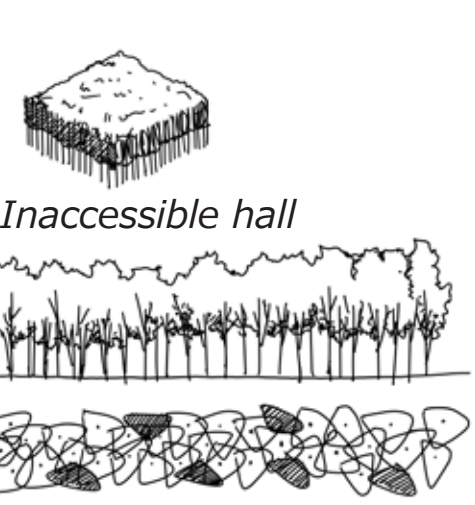
Oak

Single tre

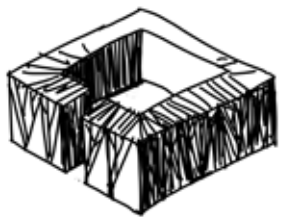
Birch

Poplar

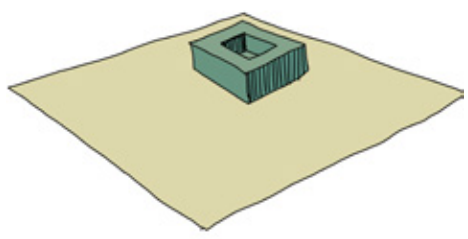
Individual trees and inaccessible small woods in open areas can be considered as island.



Inaccessible hall

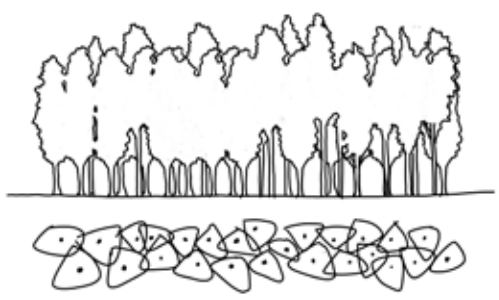


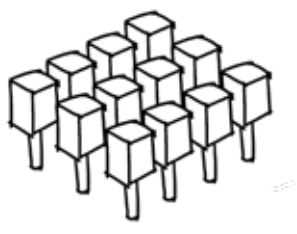
Clearing or Tree Room



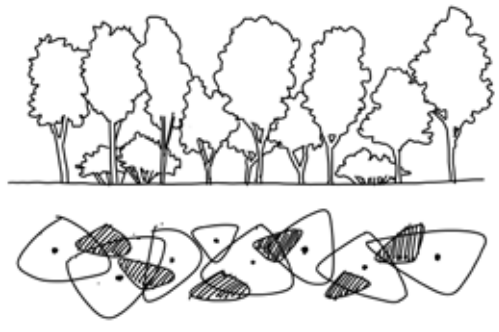
Point - Room

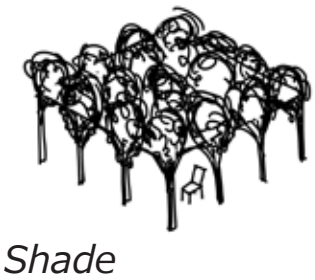
Pillar Hall



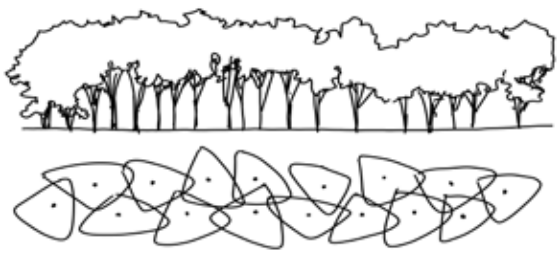


Grid of trees



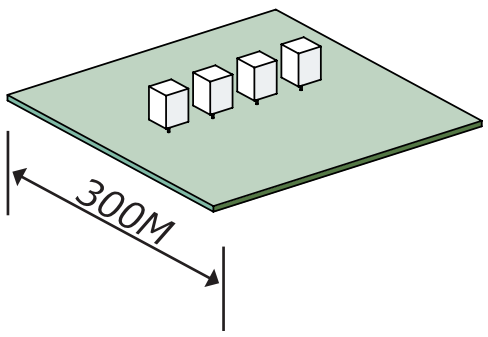


Shade

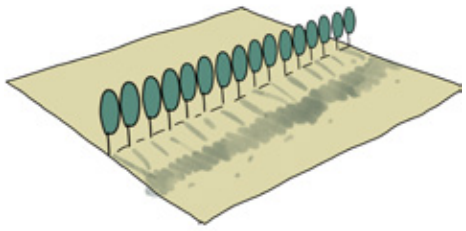


Not only the enclosed forest spaces created by humans can be considered as rooms, like, accessible halls of pillars, shades, grids of trees, etc., these accessible small group of trees can be considered as rooms. So, as long as the point meets the definition of a space that can be POINTed, and at the same time a space that a human being can enter and use it can be defined as a room.

Line Defination

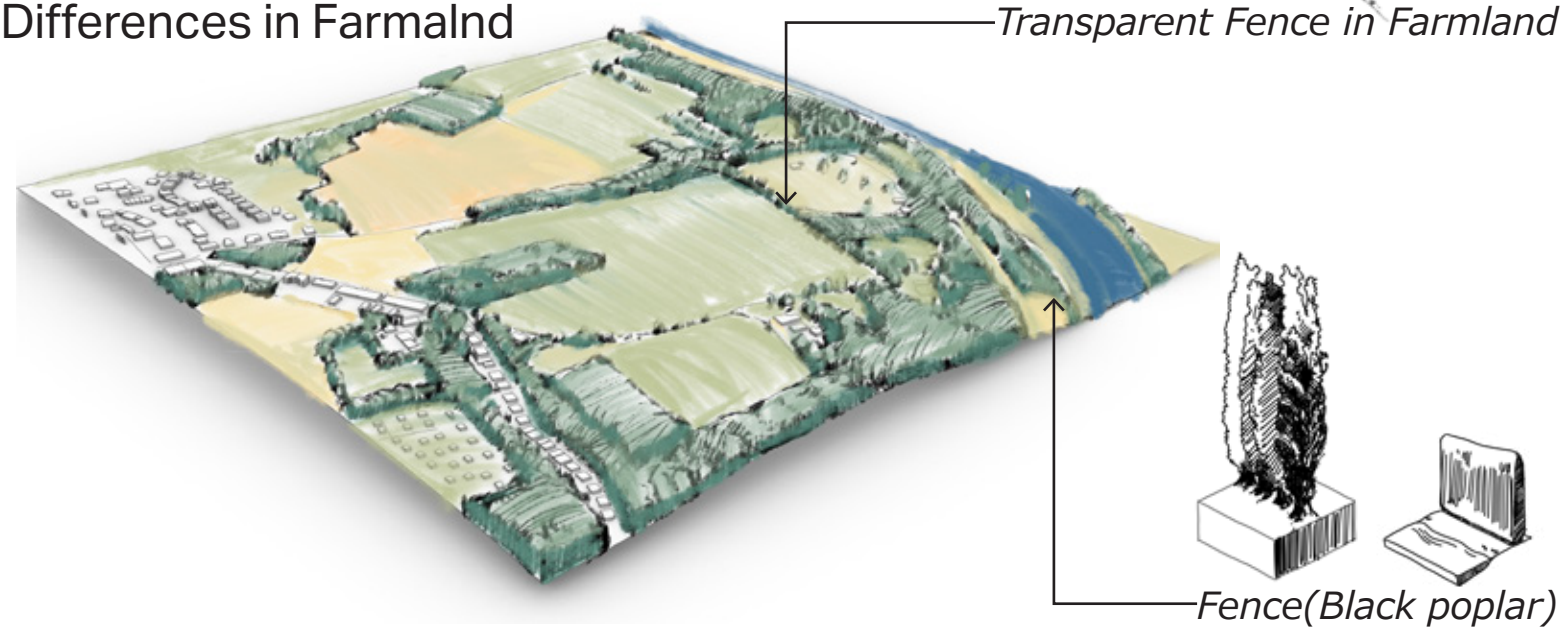


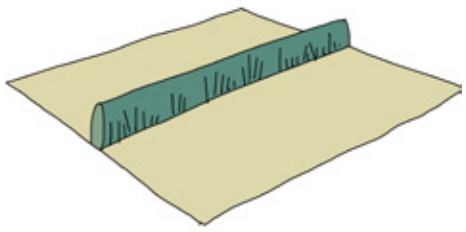
Line elements are often used spatially as visual guides or separators (visual barriers). Some line elements are only designed as a spatial tool to guide, but in reality they also serve as a divider. Therefore, in the classification of line elements, we divide them into four categories according to the spatial experience they actually form: Transparent line; Fence; Pipe; Gig line.



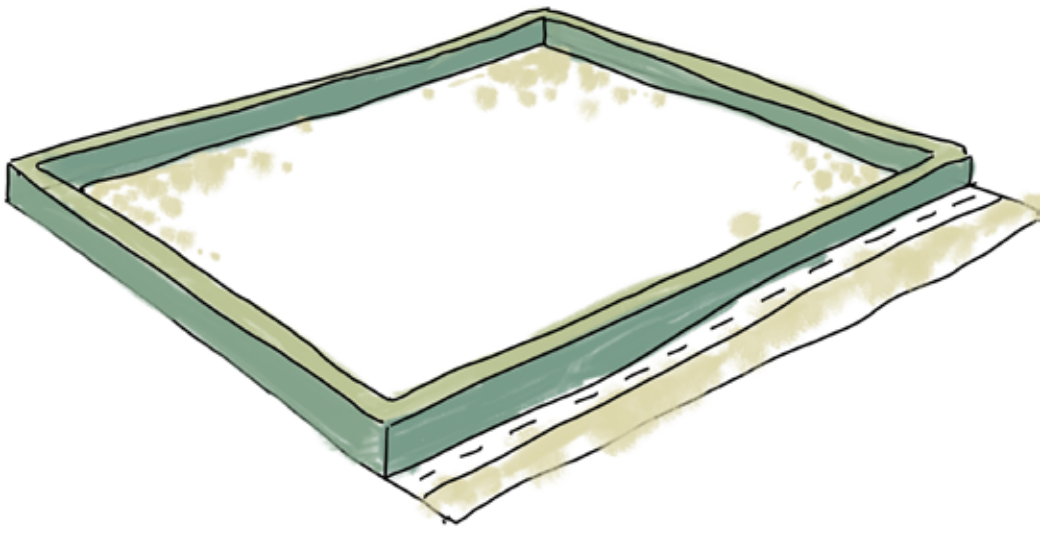
Line - Transparent Fence

Differences in Farmalnd

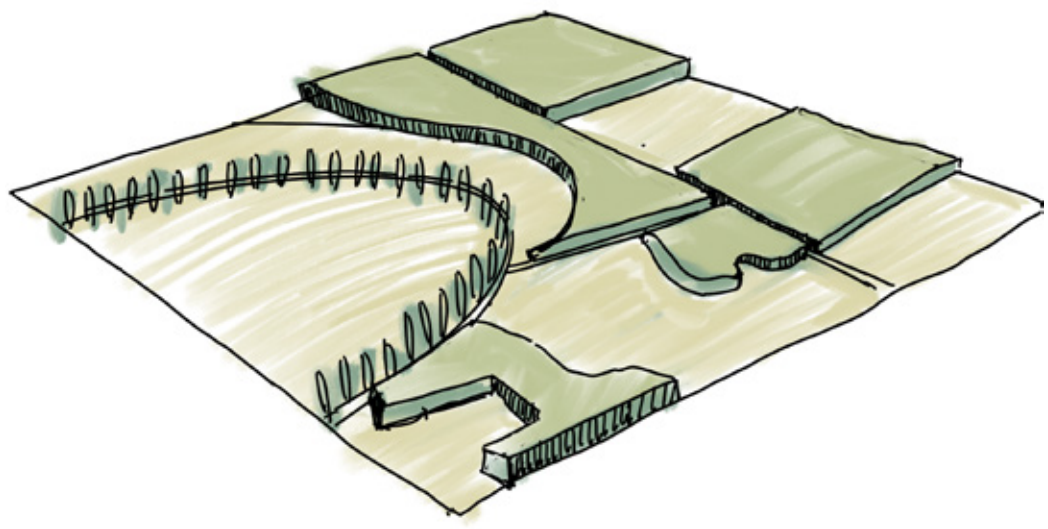




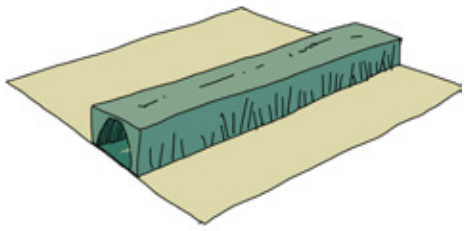
Line - Fence



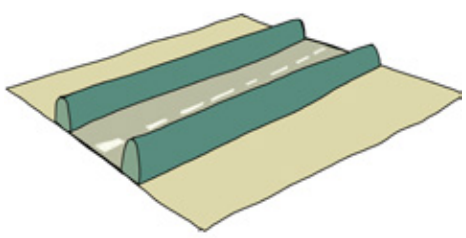
Line - Fence

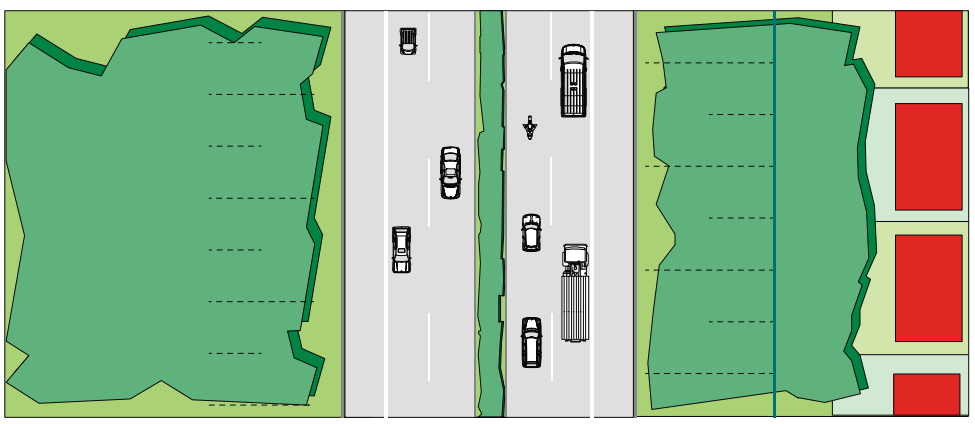


Line - Transparent Fence

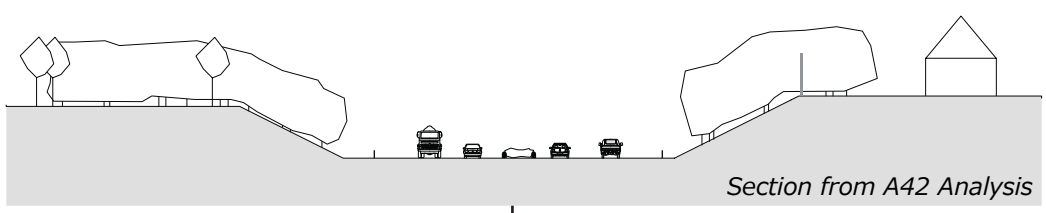


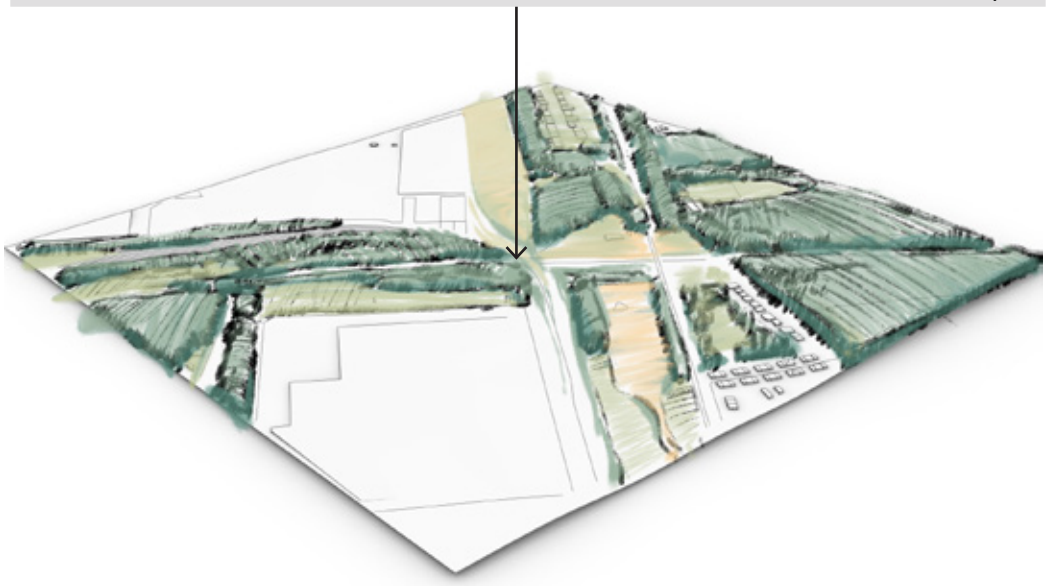
Line - Pipe



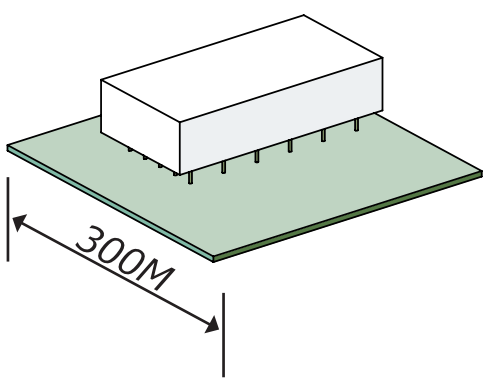


Line - GigLine

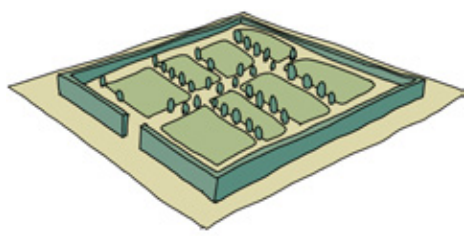




Group Defination



The Group element is the most complex element in flowscape; it is the spatial form of the woods that can be experienced, accessed, and provides complex visual effects. It is influenced by function, topography, culture, and tree species. Functional influences are reflected in the division of plots, such as community gardens, cemeteries, car parks, etc. Trees as well as paths have to divide the site into equal areas and allocate them to users. As a result, continuous shade and open spaces of equal size are often present in such sites. They are also clearly enclosed spaces. This type of space is defined as Garden Catalogi. culturally, the traditional European structure of garden space influences the spatial form of urban parks, and this type of space is defined as Urban Garden. topographically, the woods on the Heap tend to be densely planted at the bottom and sparsely planted at the top, and because of the soil influence, the tree species tend to be birch. so this type of woods is relatively bright. For the climber, the experience of climbing the Heap ranges from natural woodland to desert and is a characteristic woodland of the Ruhr area. This type of wood is defined as Heap, and finally, woods with sparse trees and shrubs are defined as Heath.



Group-Catalogi

• Kleingarten

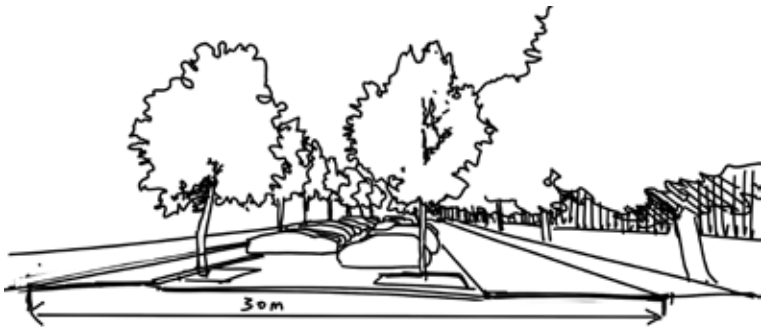

Former form of the Distributive Association: Kinderbeete

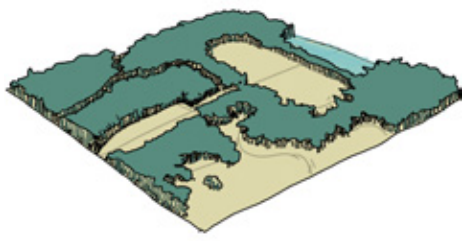
In post-WWI Germany, where food supplies were in short supply, it became the norm for German city dwellers to rent gardens and grow their own fruits and vegetables for less money. Germany's Federal Allotment Garden Law (Bundeskleingartengesetz) also came into effect after WWI, legally regulating the allocation of area for cultivation obligations. The law required that one-third of the area had to be planted with fruits and vegetables, one-third could be used for buildings, such as gazebos and paths, and one-third could be used for recreation, which is known as the garden trichotomy.

• Cemetery

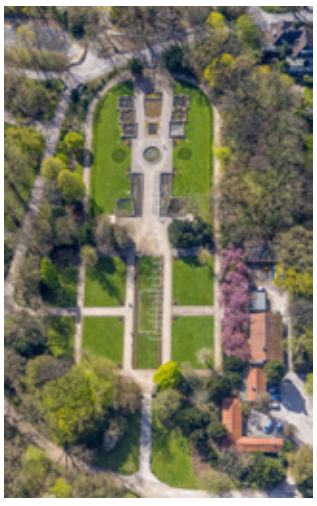
Cemeteries, as green spaces with a large number of trees, are primarily used as places to bury the dead and honour their memory with dignity. For this reason, the design of a cemetery involves planning the arrangement of the graves, which in most cases follows a pattern.

- **Green parking lot**

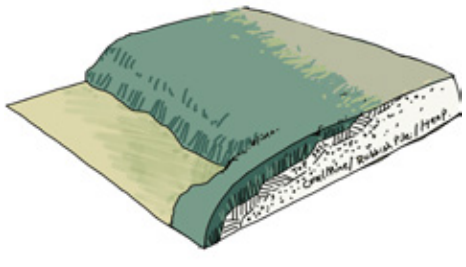




Group-Urban Park



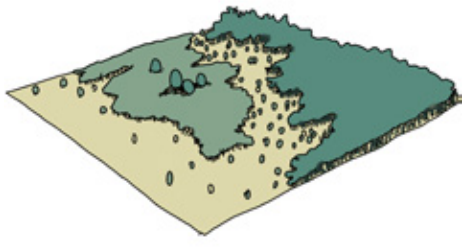
Whatever the era of the park, whatever the compositions. these parks follow specific design principles, use specific compositions, and have clear principles for the plant configurations in them.



Group-Heap


Heaps in Gelsenkirchen


Halde Schurenbach Now



Group-Heath

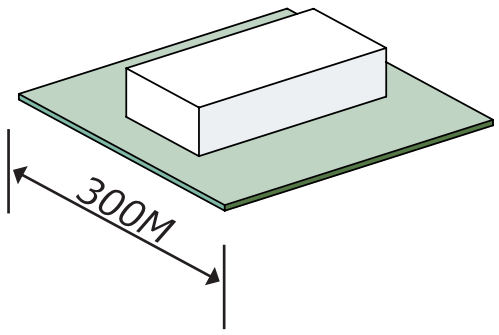

Pöppinghauser nature park


Bismarck Heaven

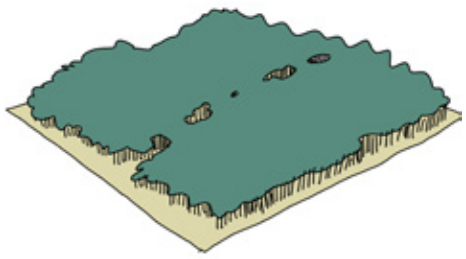

Bismarck Nature Park

A heath is a habitat formed by shrubs and low woods. The space is experienced as open, but not inviting to enter until it is intervened. These heaths are often coexisting with irregular woods, and if not intervened, can easily be completely overrun by forest.

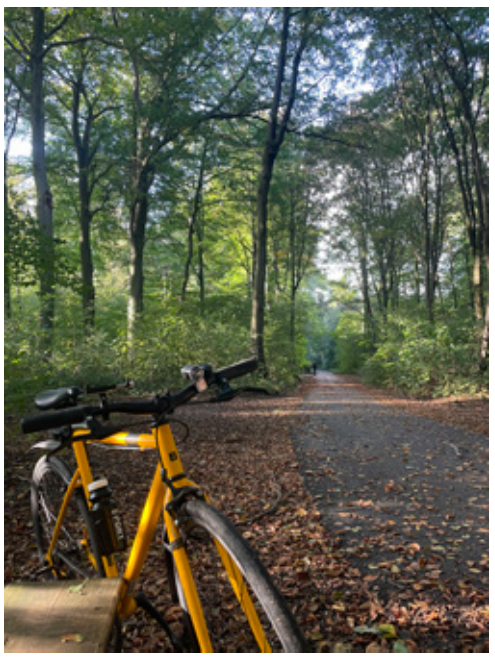
Volume Defination

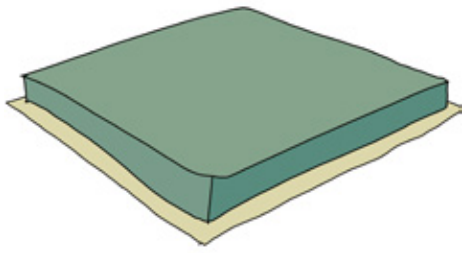


Volume elements are often used as background, or filler, and are often overlooked in terms of experience. Thus most volume can be seen as an inaccessible entity. On an urban scale, today's urban forests are often not designed with specific spatial aspects, but are simply filler for planted forests. Therefore Urban forest is also categorised as a type of Volume.

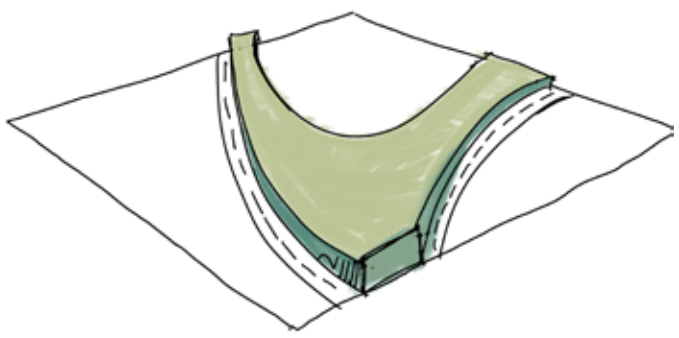


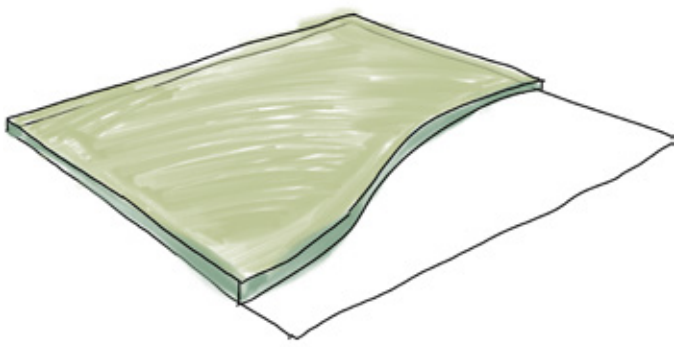
Volume - Urban Forest





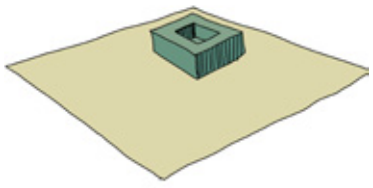
Volume - Entity

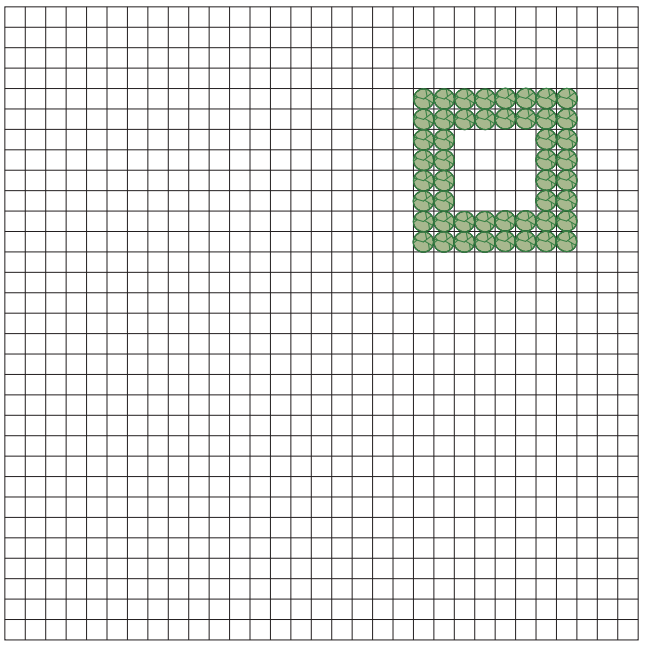




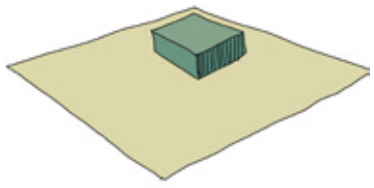
Urban Forestry Vocabulary

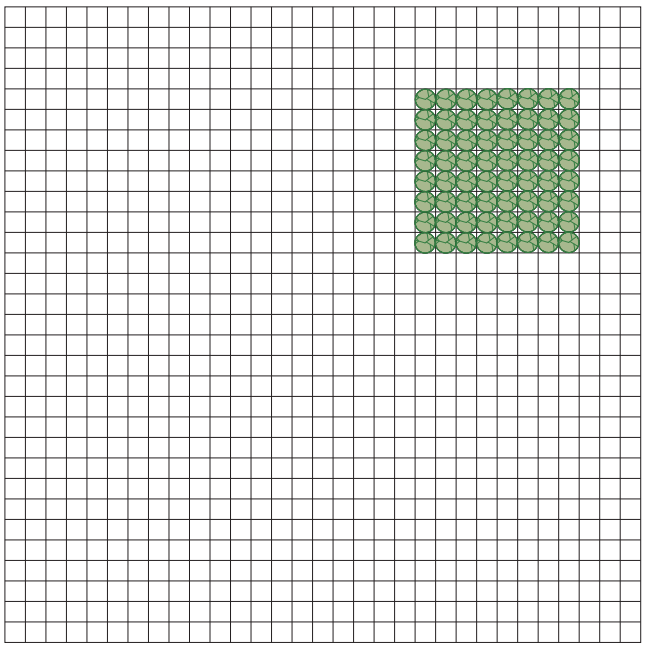
Tree Configuration



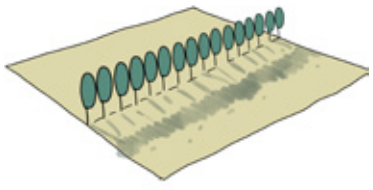


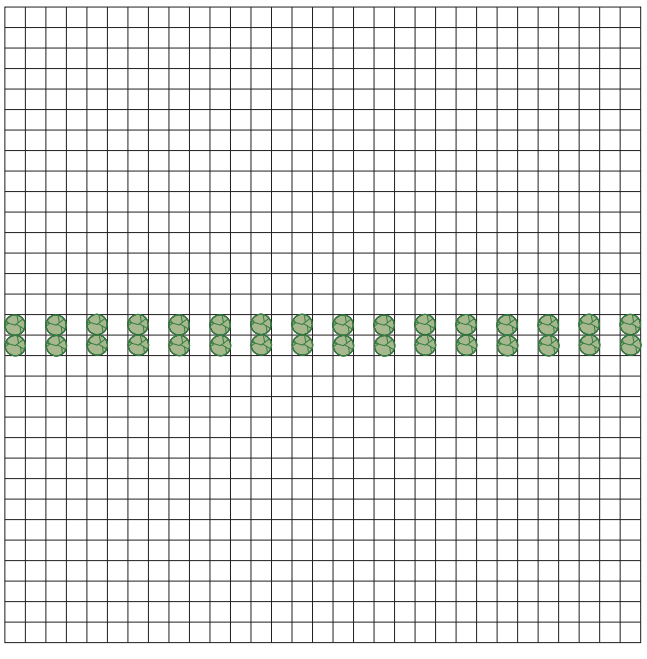
Point - Room



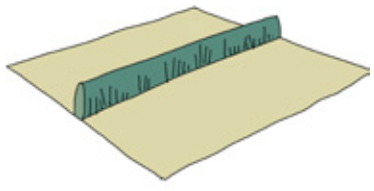


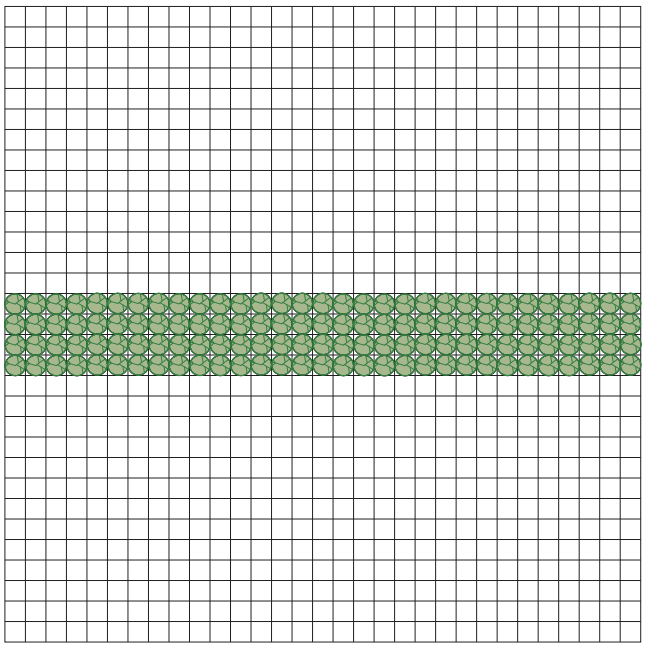
Point - Island



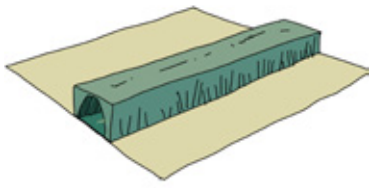


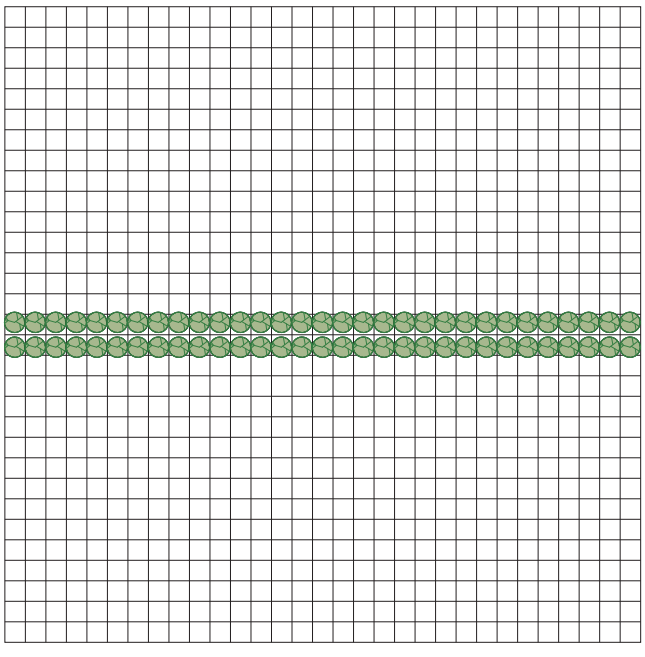
Line - Tr-Fence



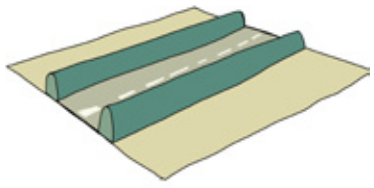


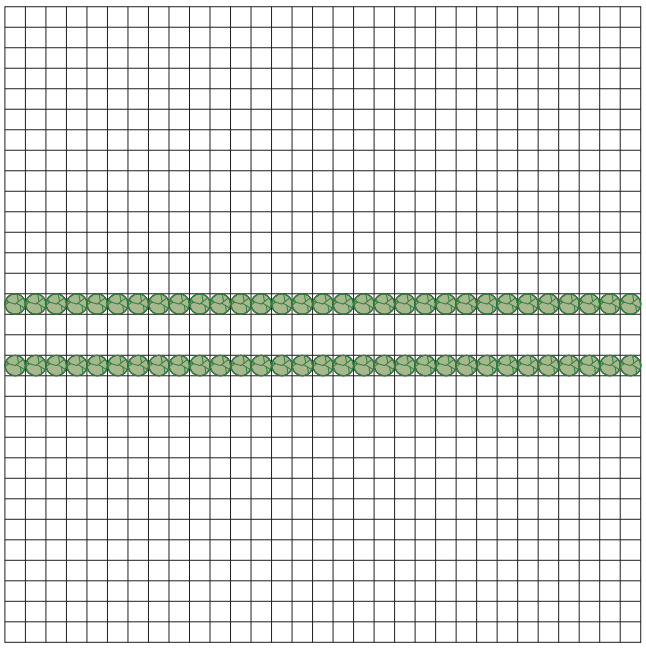
Line - Fence



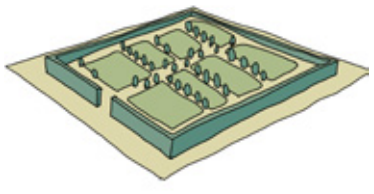


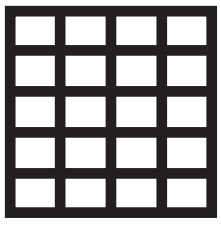
Line - Pipe



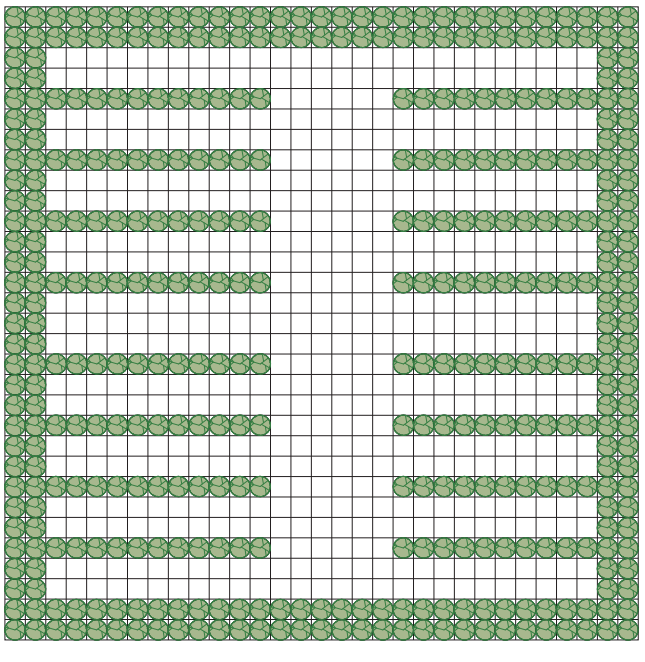


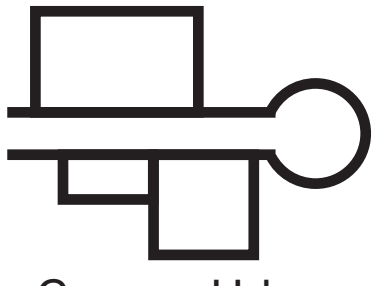
Line - Bigline



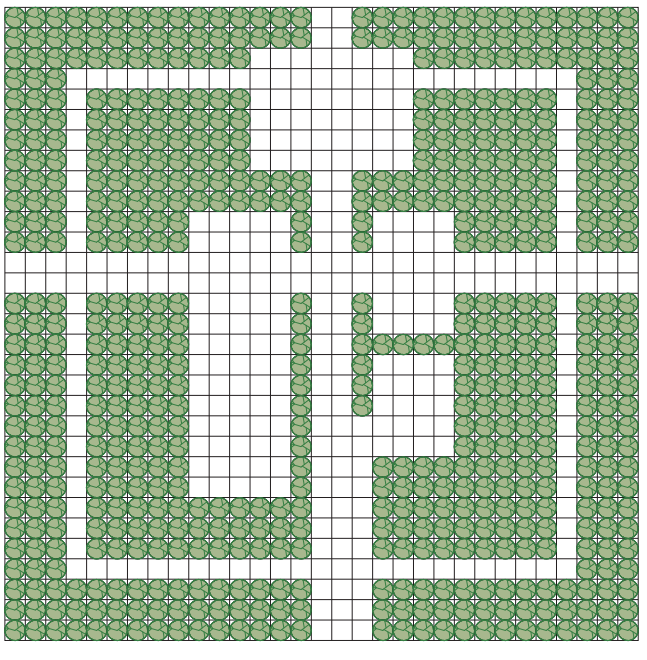


Group - Catalogi



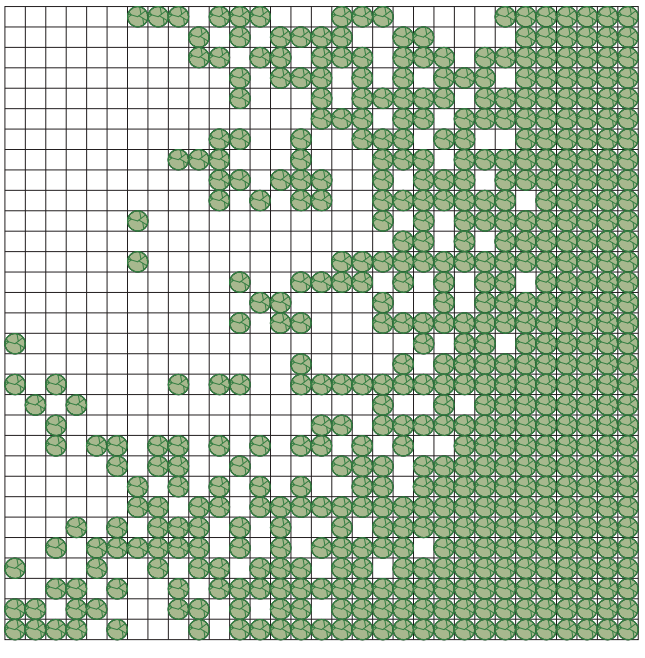


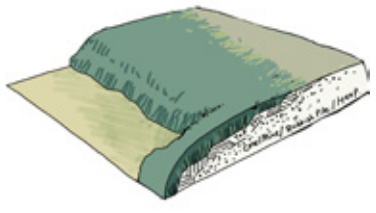
Group - Urban Garden

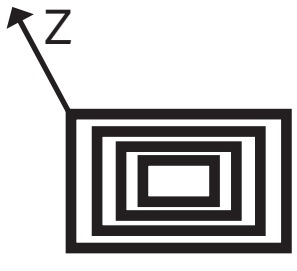


Nature Group

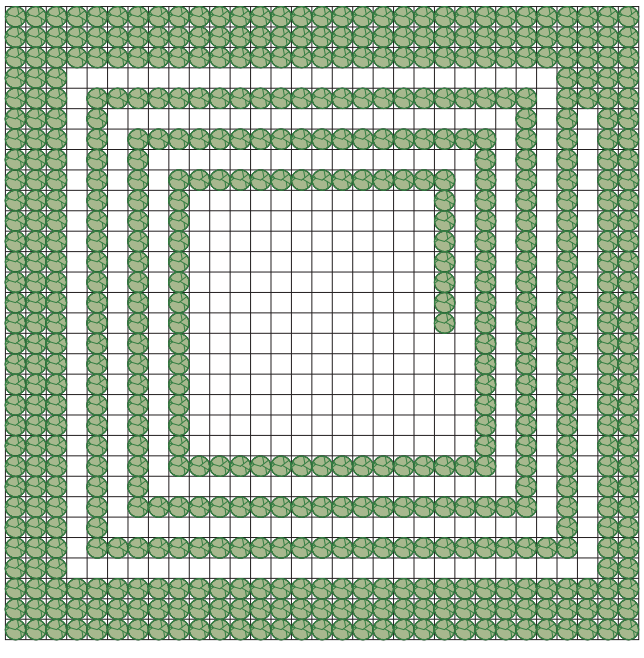
Group - Heath



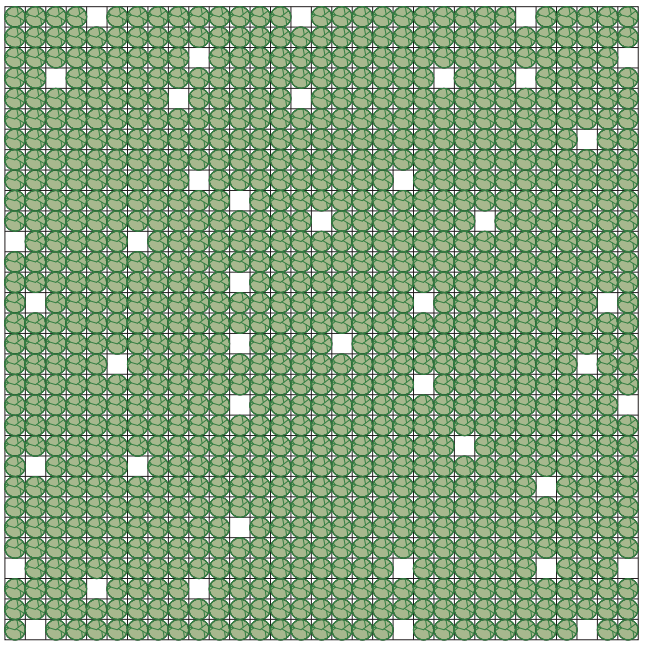


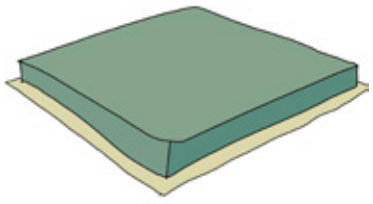


Group - Heap

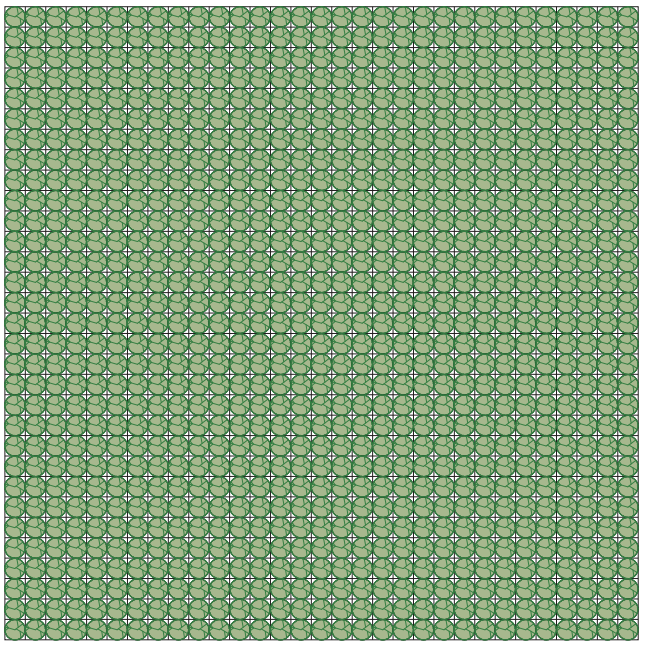


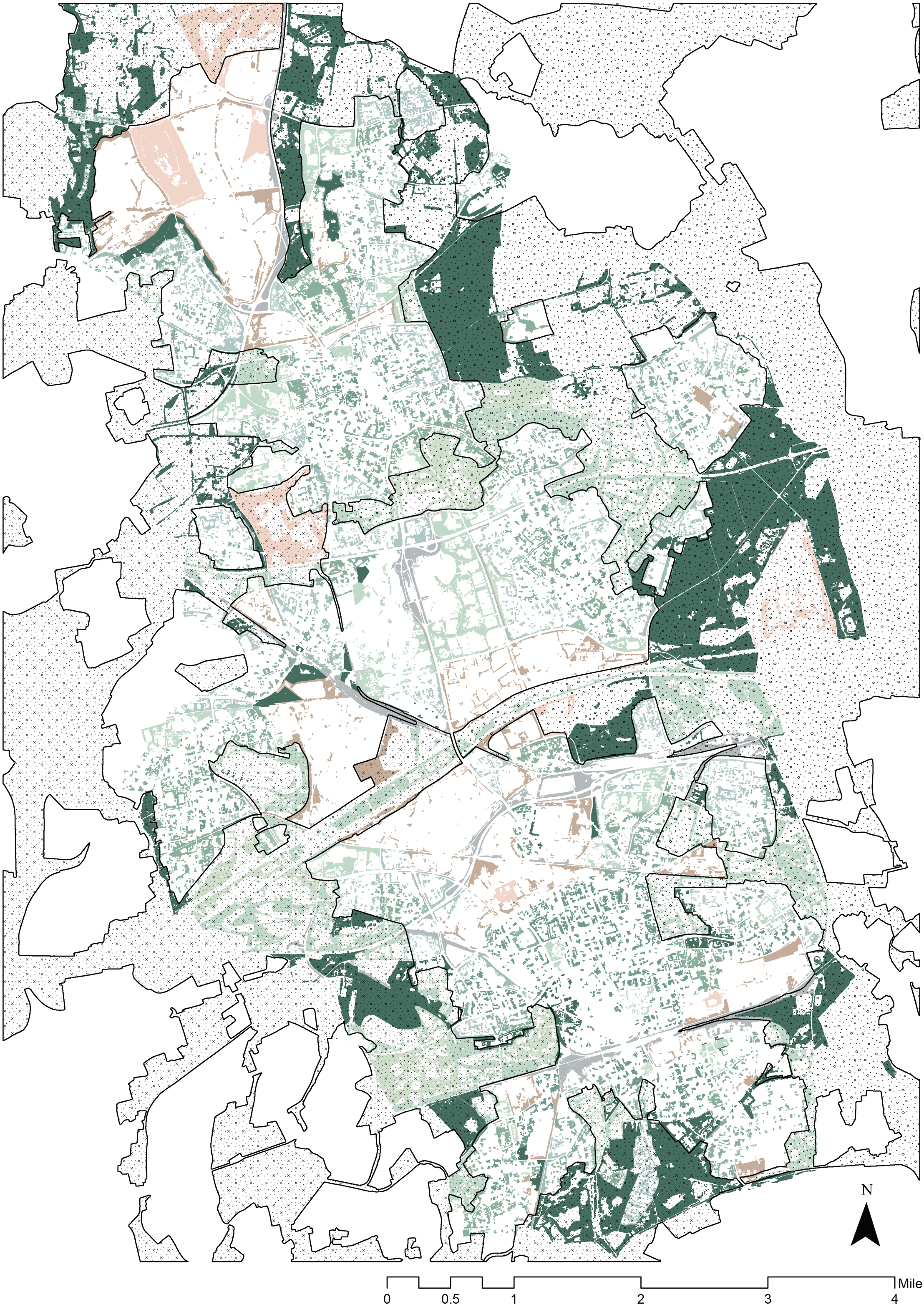
Volume - Urban Forest





Volume - Entity

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Test Urban Forestry Vocabulary

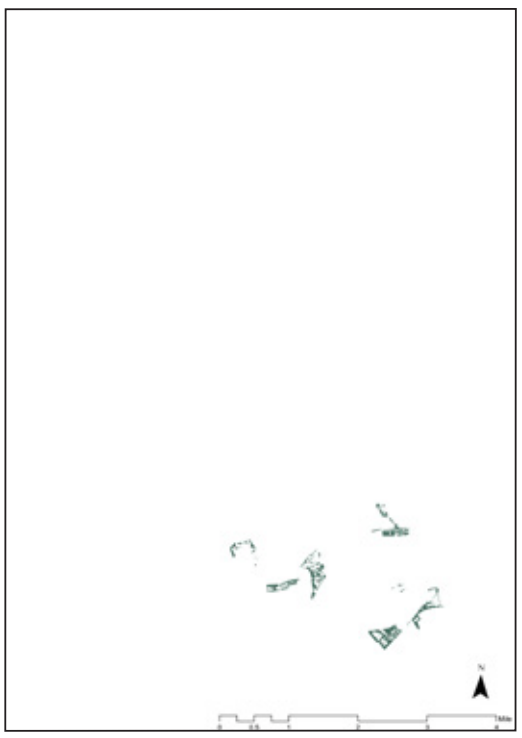
Big Line

Urban Park

Urban Forest

Heap

Piple



Entity

Island

Room

Heath

Fence

Garden Catalogi

Planed Green Belts

Problem Statement

By analysing the historical layers, we find that Zwischenstadt has a rich content of landscape. But when we enter Zwischenstadt, we find that it is a world that has been filled, where there are too many elements to be perceived, but it is also because of this redundancy that we lose focus and get lost in this world of information explosion. This world has been designed, remodelled, and rebuilt; it is like a palimpsest that has been written all over the place. As designers, what we need to do is to erase and lighten those redundant ink marks and leave the essence of the words and images in the eye-catching position, both the complexity and the white space are the way we express our thoughts. So, what method should we use to express? How do we recognise this city? And how do we recognise the cityscape? Discovering the problems in Ruhr's metropolitan landscape, finding the appropriate theory to adapt to this environment, and developing this theory through the environment are the main tasks of this sector. At the end of the chapter, we will get a concrete theoretical framework for understanding the landscape structure in Zwischenstadt. This framework will become the programme principle for the subsequent concrete landscape planning and design.

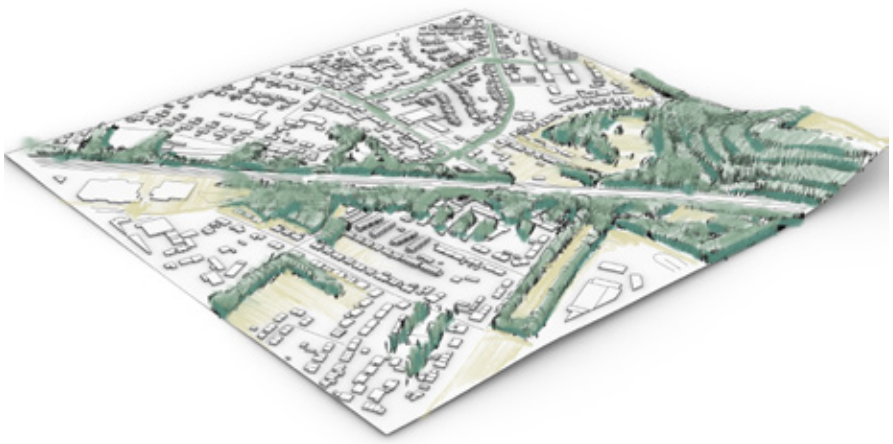
Subquestion: How can these concepts be used to perceive the particular landscape of the RRA?

A morphological study of the configurations with trees gave us a vocabulary of woods that is universal in the urban forests of the Ruhr area. But a language cannot be called a language if it only has a vocabulary, so we need to continue exploring the syntax of urban forestry in the Zwischenstadt. At this stage, as was found after the layered landscape study, the overly complex way in which the landscape is composed is like a palimpsest that has been written all over again. In past landscape attempts, our landscape interventions have not been planned in a way that the spatial composition of the landscape was planned on a regional scale. The result is that all forests and landscapes are scattered like colonies in the corners of the Zwischenstadt. We need to find an abstract way of composing the landscape, or the forest, on a regional scale in order to obtain a syntactic principle for the urban forest on a regional scale.

Subquestion: How can the landscape concept of urban forestry be applied on the regional scale?

Summarising the sub-problems obtained from these two explorations, it can be found that there are too complex and fragmented landscape elements in Zwischenstadt is the main problem we are facing, researching the problem, clarifying the goal, and developing the existing theories with the problem and goal is the focus of this part.

Spatial Problem: Green Fragmentation



Dense Green Way

In urban networks bounded by trees, many continuous networks continue to be divided by infrastructures (railroads, highways). At the same time these infrastructures are often wrapped in continuous dense vegetation for safety and noise reduction. This results in transportation networks that create dense greenways, blurring spatial connections and emphasizing a sense of fragmentation.

As Dividers

Trees act as dividers in an urban network where subspaces are poorly connected to each other. This division can emphasize differences, but when this division occurs continuously, the greenery can create a sense of fragmentation.

Design Goal

Based on a study of the green belts in the Ruhr area, it is clear that green fragmentation in the Emscher area is significantly high, with the higher the degree of built-upness, the higher the fragmentation. (Zeep, 2017) This fragmentation is particularly evident in the zone where the industrial area meets the residential area, in the area along the Emscher canal, giving the impression that the urban development of the Ruhr area has forgotten the Emscher area. (Masterplan Emscher Landschaftspark 2010) It is precisely due to this feature that a spatial reorganisation in the dense Emscher area is necessary, and the new east-west greenway centred on the EmscherPark has great potential.

In other words, the basic design goal for the next generation of the EmscherPark is to complete the spatial reorganisation of the densified area centred on the island of Emscher.

The Landscape Form of Metropolis

Today's urban form is beyond our traditional understanding of cities and architecture. Especially in the Zwischenstadt, fragmented green spaces and diverse visual elements are hindering our understanding of the urban landscape. Thomas Sieverts in his book 'Cities without cites' concludes that Zwischenstadt is comprehensible in its network of settlements as long as we see it as a whole, and most importantly, that the settlement can be set as an archipelago in an interrelated sea of landscapes. In this way, the landscape becomes the glue that holds Zwischenstadt together. This inspires us that when looking at metropolitan issues as a whole, the landscape also needs to be seen as a whole. The Zwischenstadt has a different spatial form in different geographic, cultural and historical contexts. This morphology is characterised by the granularity and density of the development of each urban area and the degree of penetration of open spaces and landscapes. The focus of this section is to explore this relationship, in other words, to explore the spatial form of the landscape in the metropolis.

Rene and Saskia's theory of Landscape form in Metropolis is then the ideal theoretical basis for the study of Zwischenstadt. In this theory, the urban landscape is summarised in abstract terms as points, lines, and planes. This gives rise to three basic forms: Theatre, Flowscape, and Plantation. What this section does is to put this theory into practice in Zwischenstadt in the context of the Ruhr area and to develop the theoretical foundations in order to adapt them to the specific situation of the Ruhr area and to provide a theoretical basis for the next spatial planning practice.

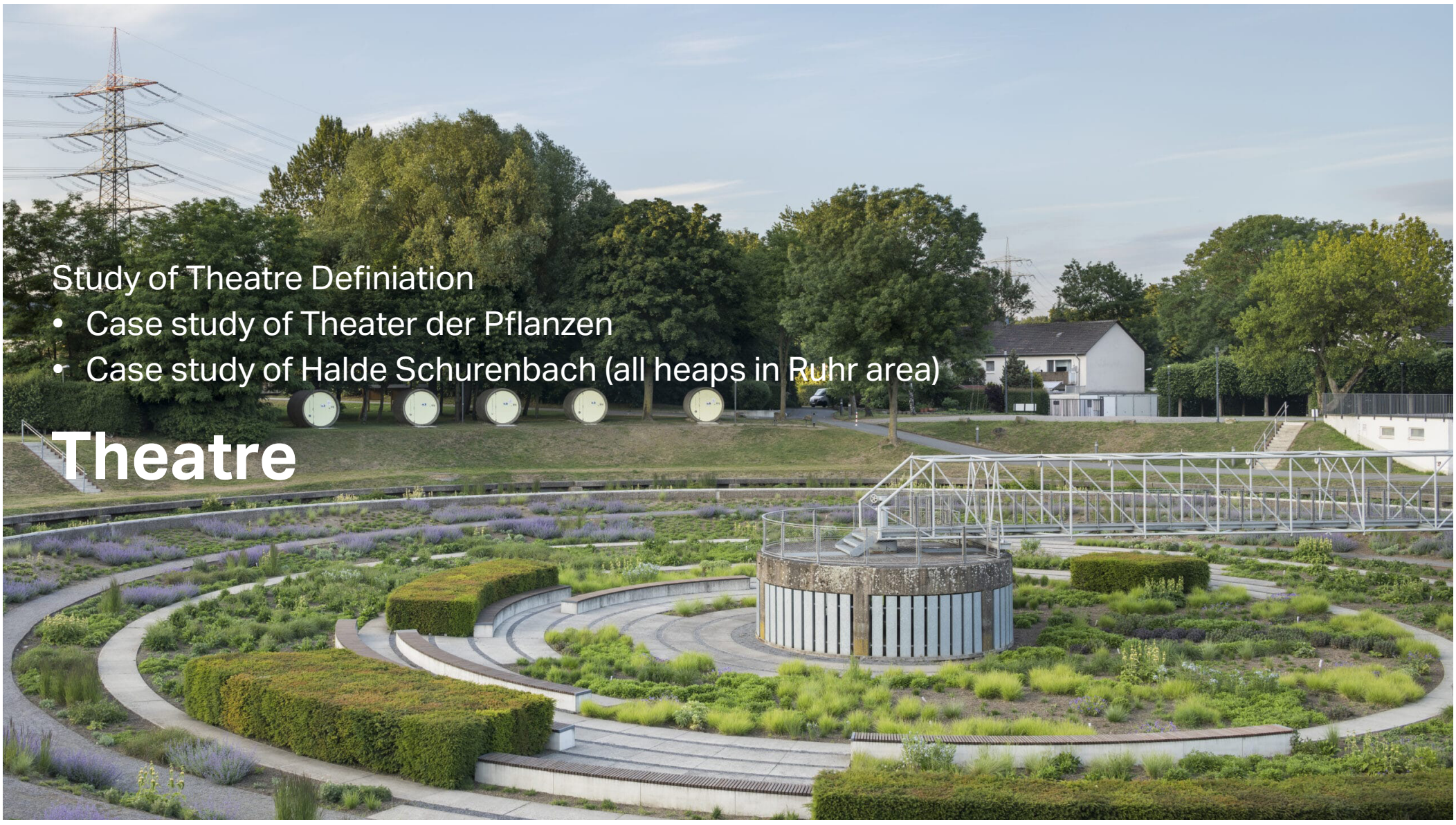
In order to achieve the goals and to recognize the compostion of the landscape in the Emscher area, I drew on the theory of Landscape Form in Metropolis and developed the theory according to the specific spatial characteristics of the Emscher area.

There is a very clear distinction in the tree composition of Bismarck: bounded by the A42, the northern part of the site has seen nature return to the site after the cessation of industrial damage; the southern part is predominantly residential, with human intervention evident.

When we look at all the landscapes and vegetation in the city as a whole, the greenery that we usually ignore, such as private greens, street trees, etc., are the components of the urban landscape, and as we have done in the Urban Forestry study, we have made them a separate vocabulary. Looking at landscapes in Metropolis through Urban Forestry, plant types in built-up areas are the most subject to human intervention, and the compositions of many woodlands are strongly influenced by the urban fabric, as in the case of human-built plantations in the past.

Plantation

Plantations are plane elements in the city, the modern urban block spaces that we typically find, such as residential areas, industrial areas, etc. These spaces have specific functions, and the trees are organized according to a particular spatial principle that responds to their function and serves as a divider to enhance the subspaces in these types of spaces.



Study of Theatre Definiation

- Case study of Theater der Pflanzen
- Case study of Halde Schurenbach (all heaps in Ruhr area)

Theatre

Theatres are places where users can perceive the city and the outside world through "landscape devices". These places are mostly for walkers, low-speed, or static observers.

But this theory needs to be developed to suit the specific context of the Zwischenstadt, and for this reason it is possible to analyze here two representative projects that can be identified as theatres:

Theater der Pflanzen

Theater der Pflanzen is a landscape transformation project for a small sewage treatment plant. The concept is based on the renewal of two circular clarifiers, one of which was transformed into an accessible sunken garden by the designer Piet Oudolf. A circular maze of herbaceous plants and shrubs was created. The other clarifier has been preserved in its original form. The contrast between the two creates an industrial monument that can be experienced, and which serves both educational and recreational purposes.

Spatial analysis:

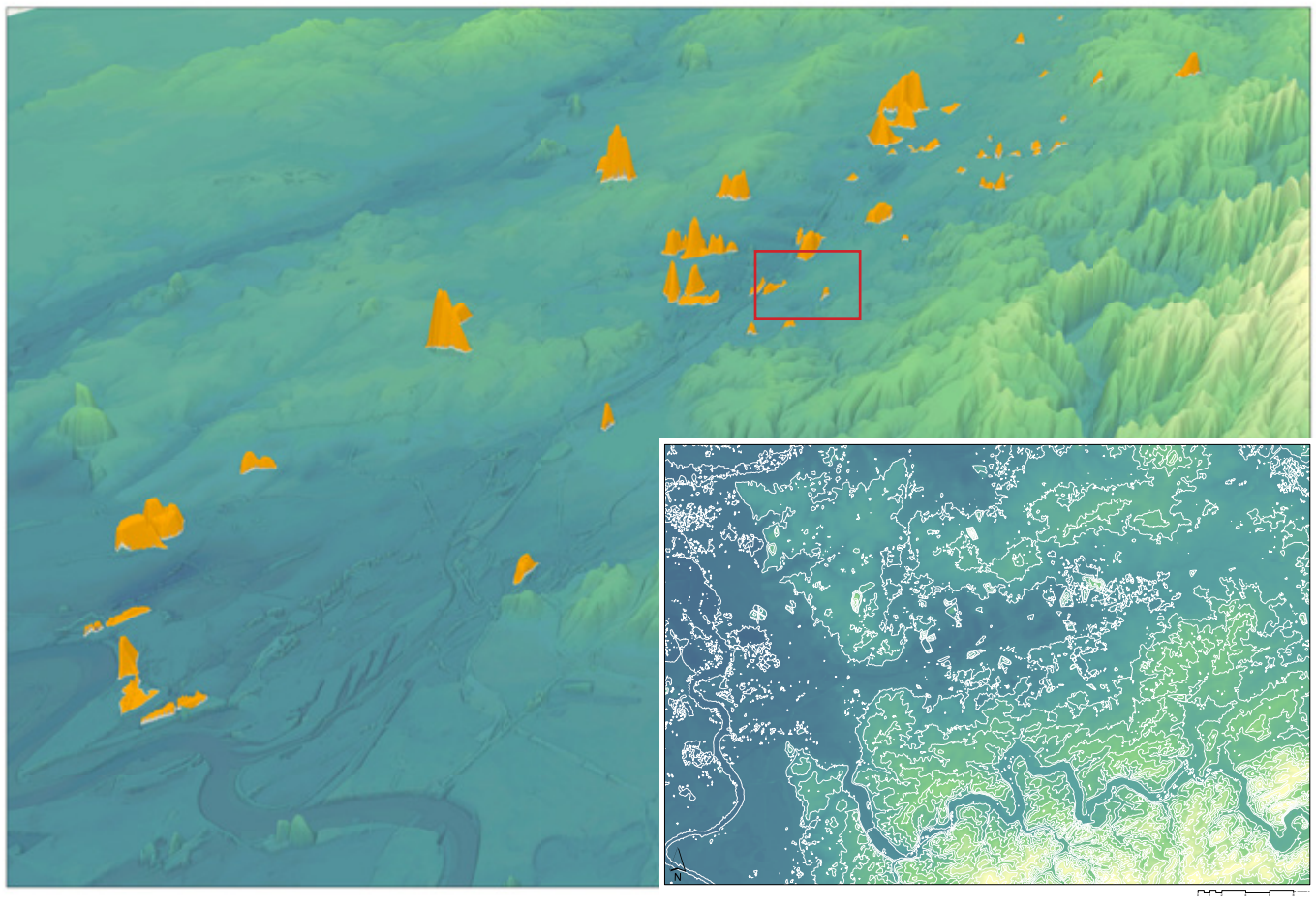
On a small scale, the site is surrounded by dike and woods and the maze structure in the clarifier also creates a sunken enclosure; on a large scale, the clarifier is located at the outlet position of the BerneRiver flowing into the EmscherRiver, next to the A42 highway, which can be seen when travelling on the A42. In the 1990s, after the EmscherRiver was restored to a near-natural state, the closed sewage treatment facility could be defined as an urban void.

Image analysis:

without landscape transformations or artistic interventions, this abandoned sewage treatment plant is nothing more than a forgotten industrial monument in the city. What it presents to the visitor is its historical function. But the story behind this single historical function is the story of the designer-engineers who built a huge underground sewerage system in the Ruhr area, after which the small sewerage system was closed down. Humans have left a new footprint on the land after this history, but the visitor cannot read this land palimpsest without landscape translation and interpretation. (James Corner, 1991) In this perspective, therefore, theatres are landscapes that can be read through landscape or artistic intervention.

Program analysis:

Design interventions often change the function of the area. As a result of the design, the site was transformed into a famous recreational area many tourists travelled to the site specifically to visit it and it became a specially marked attraction on the kunstweg as a tourist destination. At the same time the location next to the EmscherRiver and the preservation of the other clarifier as a contrasting design form together make the site educational. The DasparkHotel, which was built on this foundation, has made the former sewage pipes into individual sleeping pods, adding a new residential function to the recreational and educational function. This also demonstrates the larger purpose of the EmscherRiver's transformation: to give new residential qualities to a river that had previously been used for industrial purposes.

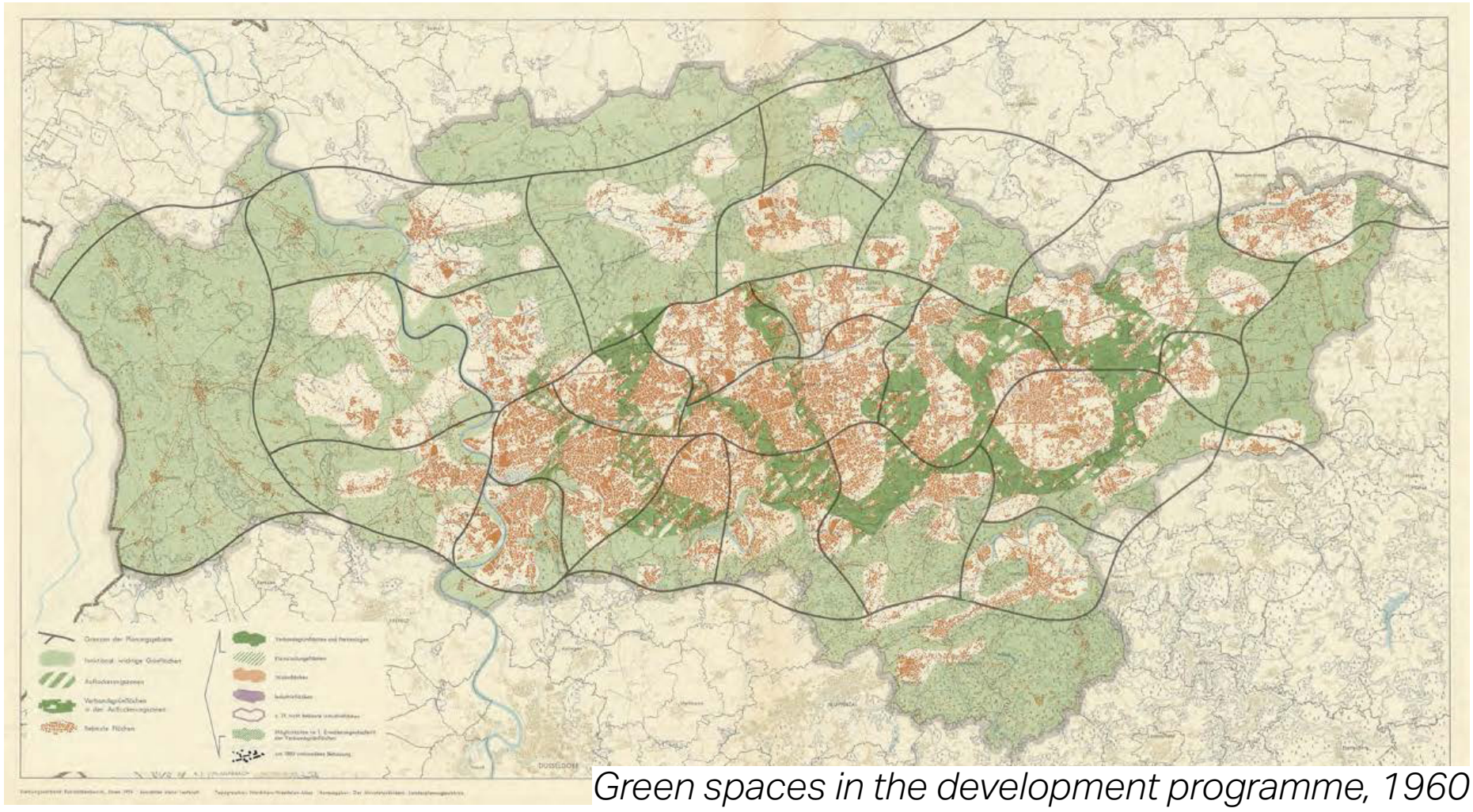


Spatial analysis of Halde Schurenbach:

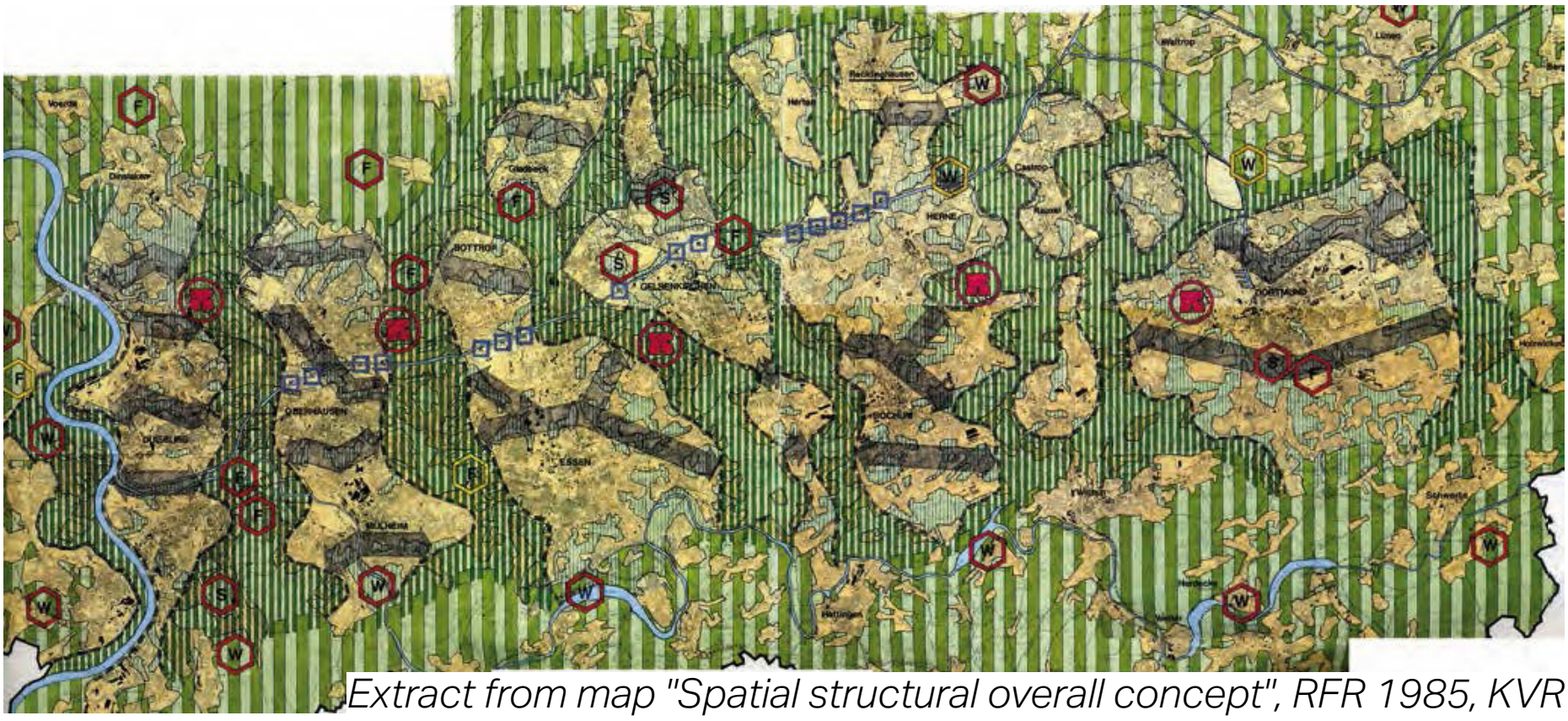
the perception in the heap is that the top is completely exposed, and the bottom is covered by a dense industrial forest. The climb from the dense birch forest path to the open "lunar surface" with no grass at all creates two opposing spatial experiences. At the same time, when reaching the top, the heap provides a suitable platform for observing the entire Ruhr area. From this platform one can see almost the entire outline of Essen, as well as other cityscapes such as the Bottrop coking plant and even the Veltins-Arena. The perception in the city, the Emscher region is a river valley topography, and in the flat valley area the heap stands out as a man-made mountain. This obvious scar landscape helps the observer to perceive the location in the city and is the most obvious way to perceive the city with landscape device.

New Definition of Theatre in Emscher Park

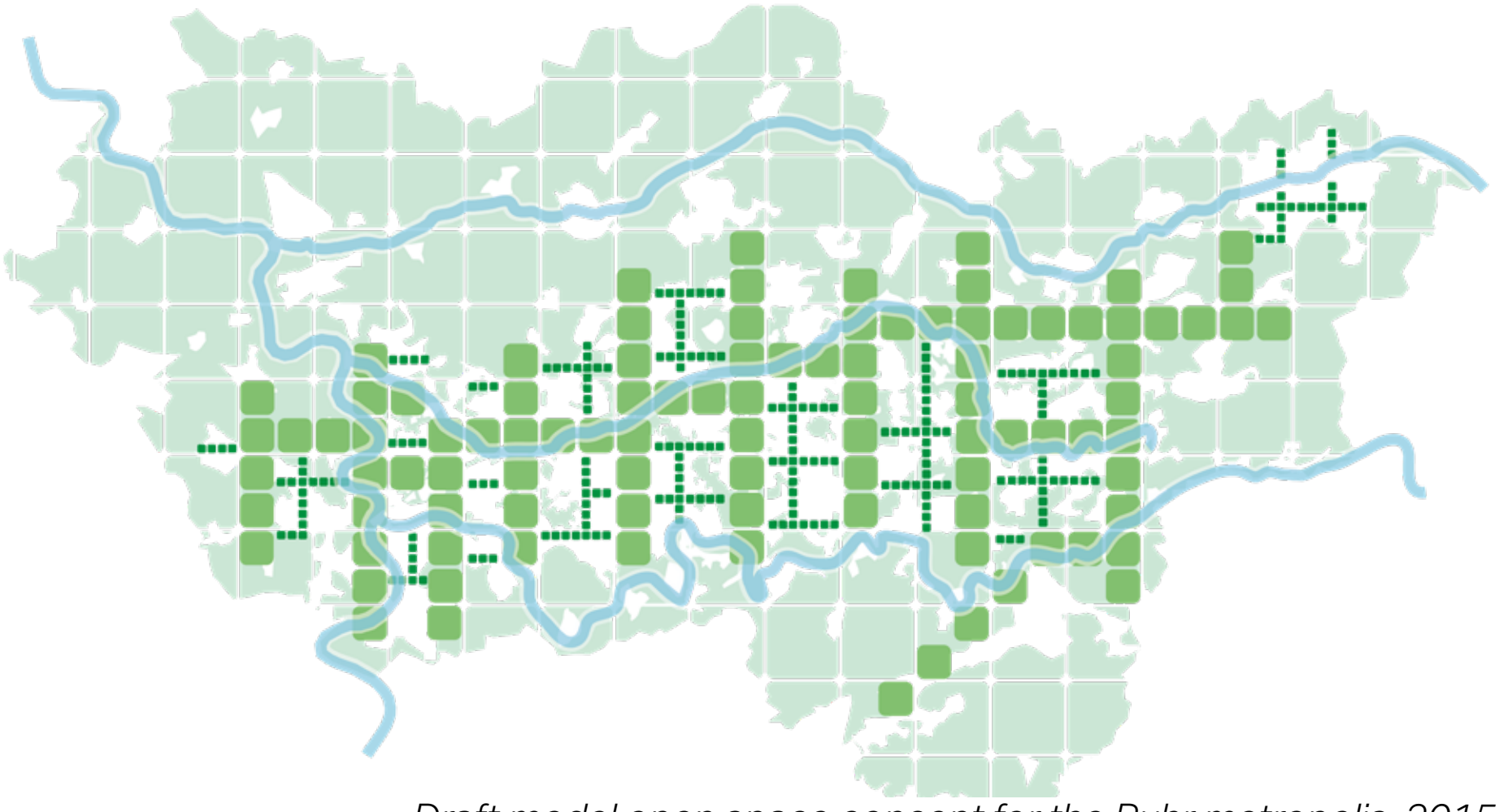
1, A Urban Void or An Enclosed space; And Heap (or Land scar).
2, Readable land palimpsest (landscape and artwork is translating the genius loci to the public);
3, A recreational, educational … space with specific function, or it is a destination for visitor.



Green spaces in the development programme, 1960



Extract from map "Spatial structural overall concept", RFR 1985, KVR



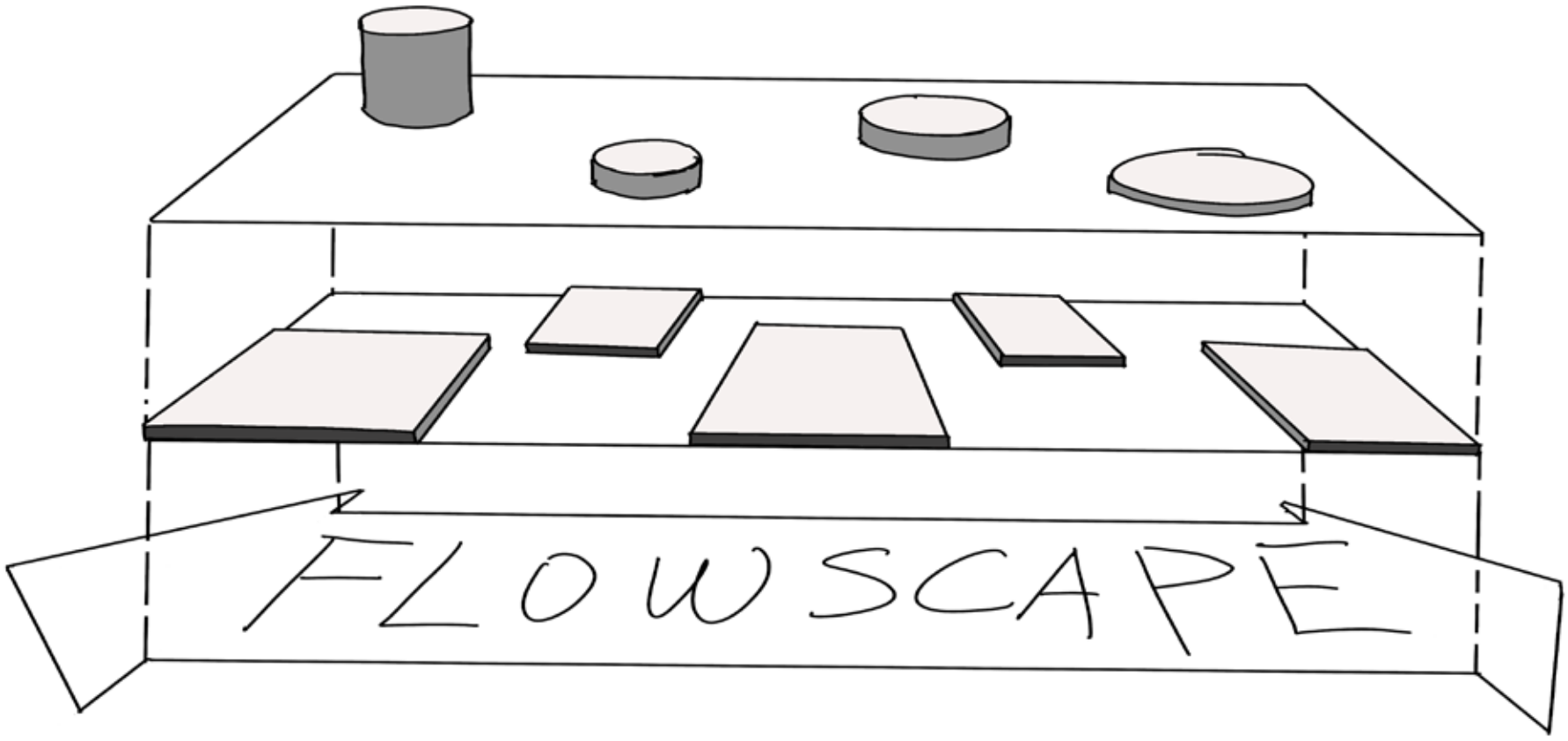
Draft model open space concept for the Ruhr metropolis, 2015

As early as 1912, Schmidt, the later director of the SVR Foundation, introduced the concept of the green belt, which has since become an integral part of the Ruhr planning as a theoretical concept and a planning category. The SVR planning atlas of 1960 was later called a milestone in the conservation of open spaces in the Ruhr area. It contains a number of core areas and green space systems, and it defines specific functions for many of the open spaces, such as separating residential and industrial areas, improving air quality or designing floodable plains for water safety. the concept of the Ruhr open space system was further developed in the 1985 plan when the locations of the green belts were clearly labelled. IBA in the 1990s also followed this regional green space concept, and since then the entire area of the urban landscape between A2 and A40 has been declared a potential area for the expansion of the historic green corridor. At present, the Ruhr metropolis has developed a systematic network of open spaces, the aim of which is to present the important uses of these areas for nature balance, recreation, etc. (Regionalverband Ruhr Referat Regionalpark / ELP / Freiraumsicherung, 2015)

Flowscape

Based on the formation process of the regional green belts in the Ruhr area, we can abstract the green belts with functions in the regional scale into linear landscapes or landscape networks, which leads to our definition of Flowscape:

Flowscape is a continuous network of landscapes made up of systematic functional networks (e.g. water systems, greenway systems, road systems). In the context of the Ruhr area, Emscher Park and the traditional greenway network is a flowscape, but unlike other urban typologies, where the flowscape has clear boundaries, the plantation and theatre of Zwischenstadt float like an archipelago on the oceanic flowscape, and the flowscape sticks to the plantation and theatre like glue. (Thomas Sieverts, 2003)



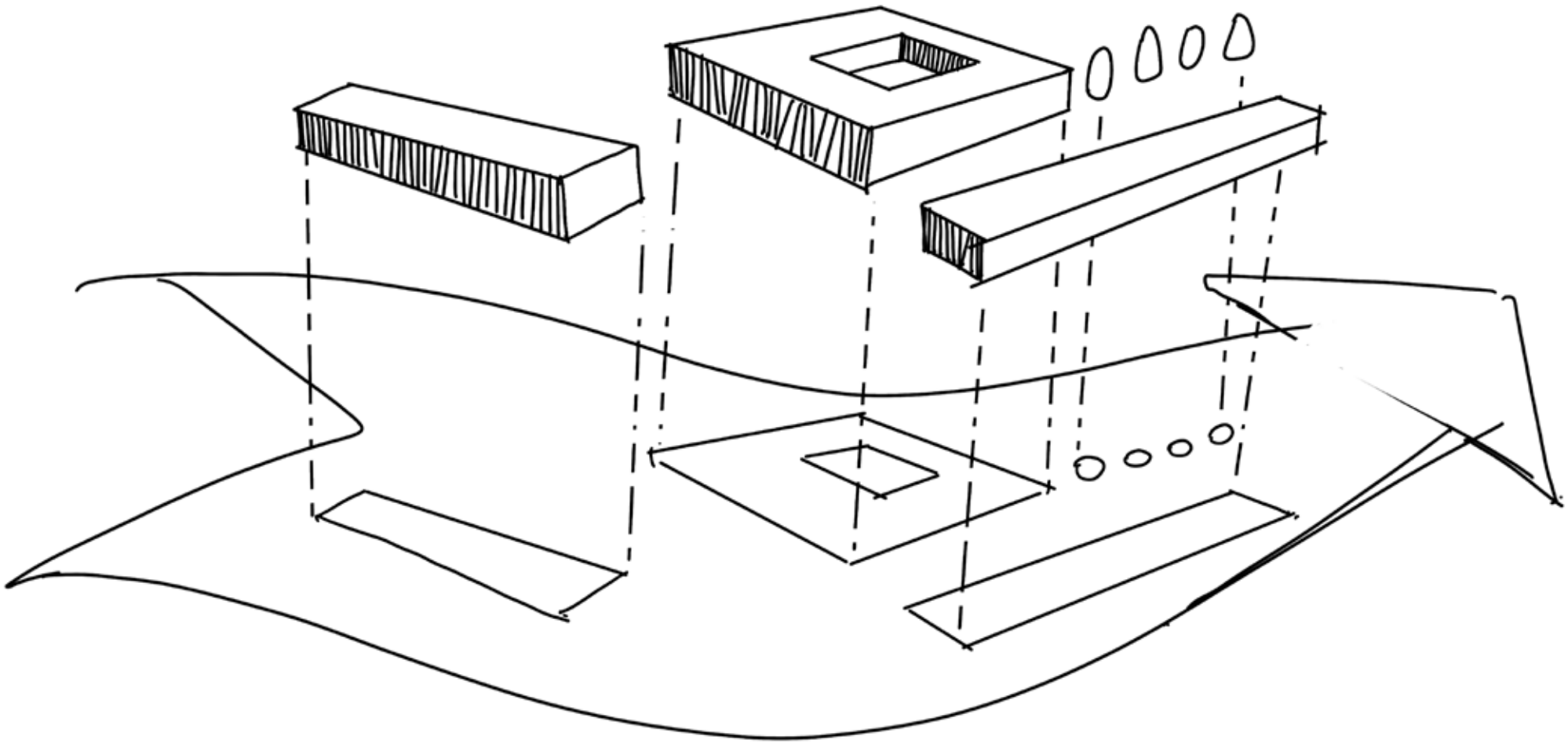
Urban Forestry on Flowscape

Landscape project of floodable plain in Dortmund, 2004

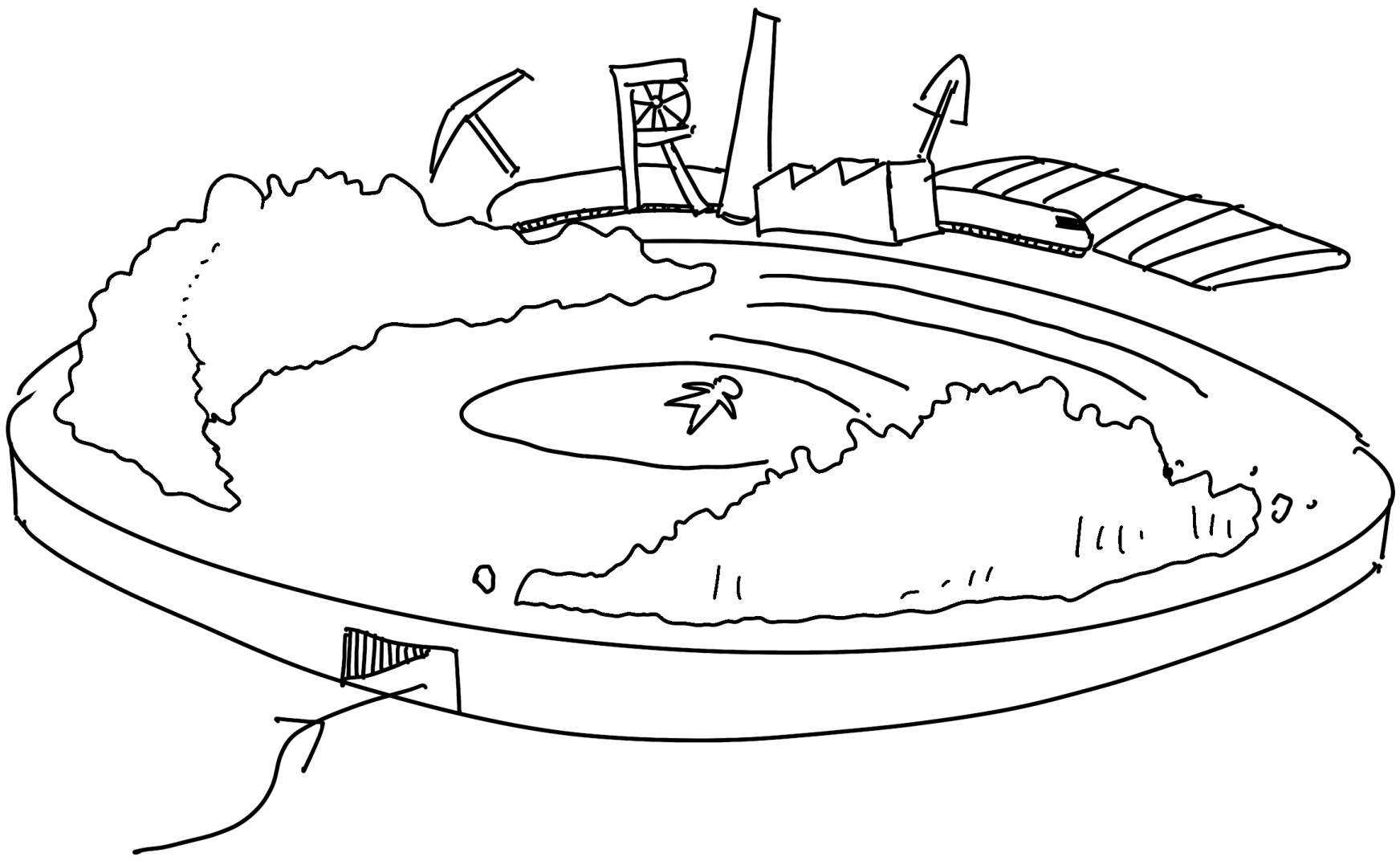
In 2004, as part of an environmental impact study, the authorities (City of Dortmund, Arnsberg Council and Forestry Administration) discussed the planning of the floodplain. It was decided that the Dortmund section of the Emscher floodplain would be designed as a "tree stream", in which the spatial form of the river would be enhanced by a linear planting of trees parallel to the Emscher river. In the plan this linear arrangement of trees will enrich the entire plain. Cycle paths and footpaths will be built along the boundaries of the floodplain. This practice can be seen as an application of Urban Forestry to Flowscape. The design approach is to realise the spatial experience through woodland composition. (Anhang zur Vorlage in den politischen Gremien der Stadt Dortmund im April 2005)

In the practice of Urban Forestry we can also refer to this approach, where the existing Woodland vocabulary can be used as a spatial language for narrating this landscape intervention. For example, in Dortmund's flowscape (context) we need to emphasise the spatial presence of the Emscher river (design objective), and we need to plant a continuous linear woodland along the flow of the river, which consists of fences and transparent fences (spatial vocabulary) aligned in parallel with each other to form a Tree Stream.

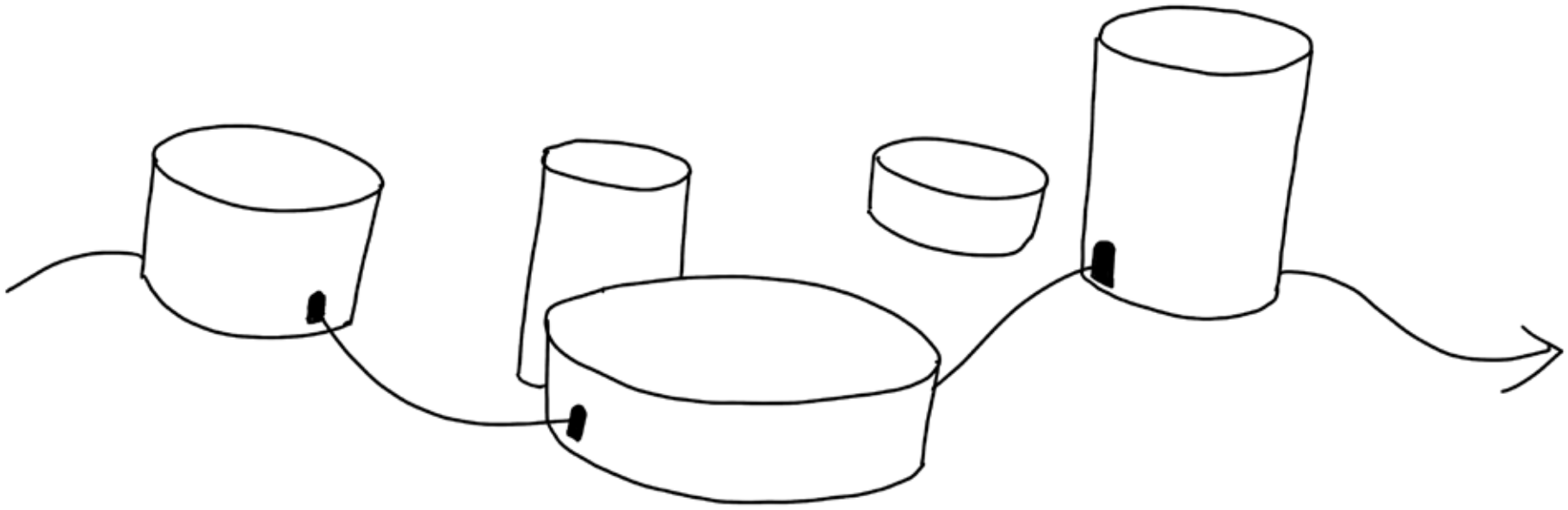
In practice, the design goals are derived from the problem analysis study and are achieved through the application of the woodland vocabulary. A flowscape with coherent design goals is formed on a regional scale.



Theatre in Flowscape

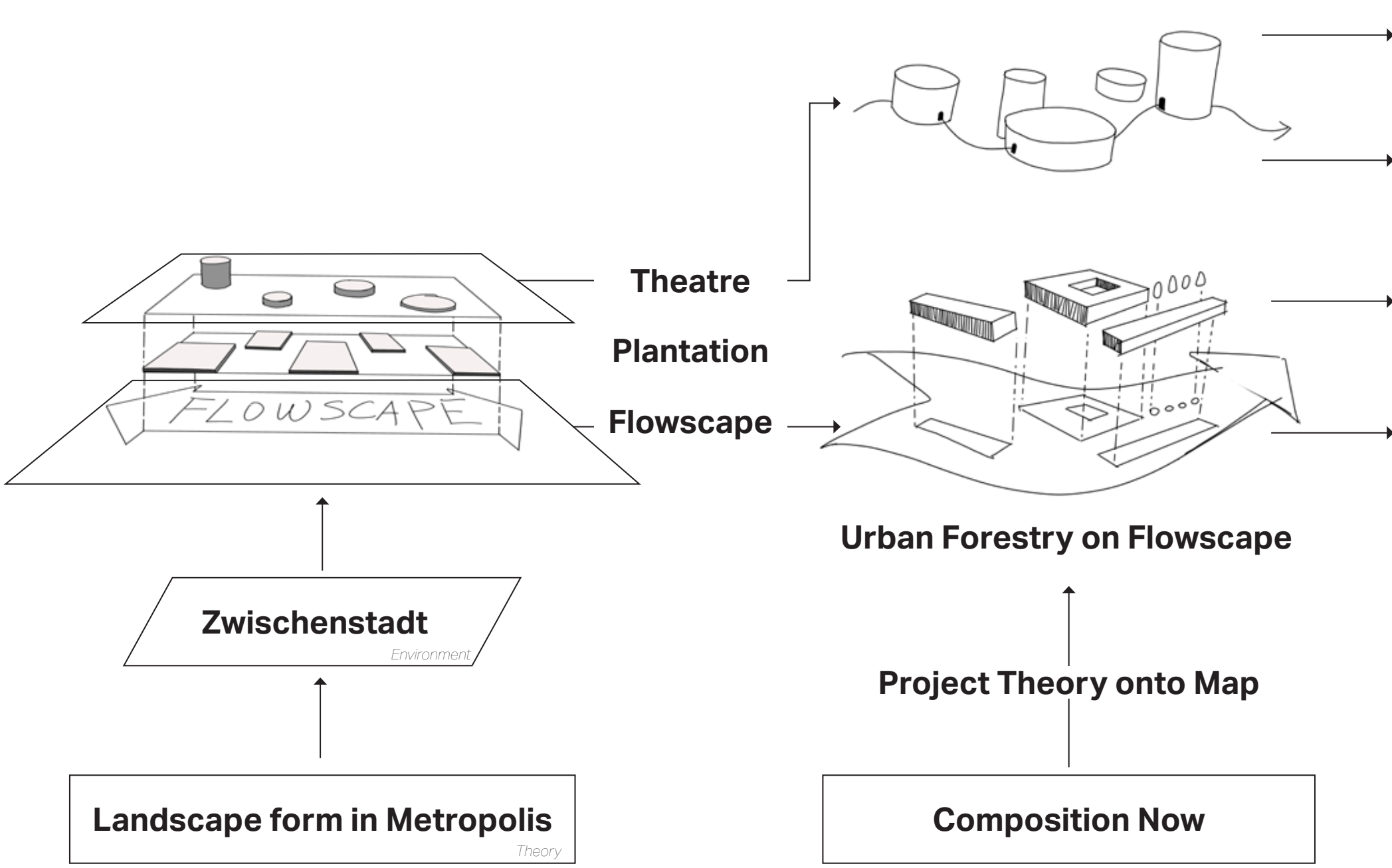


In this theory, the theatre floats on the flowscape, spatially as an enclosing space (or heap), and imagery as an expression of the spirit of the site. the theatre is the place in the flowscape where perception is realised through the device of landscape (or art), and therefore, when discussing the specific design, it is necessary to drop down to the human scale to interpret the design solution. In combination with Urban Forestry, the woodland composition determines the way finding of the theatre, and the specifics of how to design for perception should be the design of specific plant configurations and landscape features.e problem analysis study and are achieved through the application of the woodland vocabulary. A flowscape with coherent design goals is formed on a regional scale.



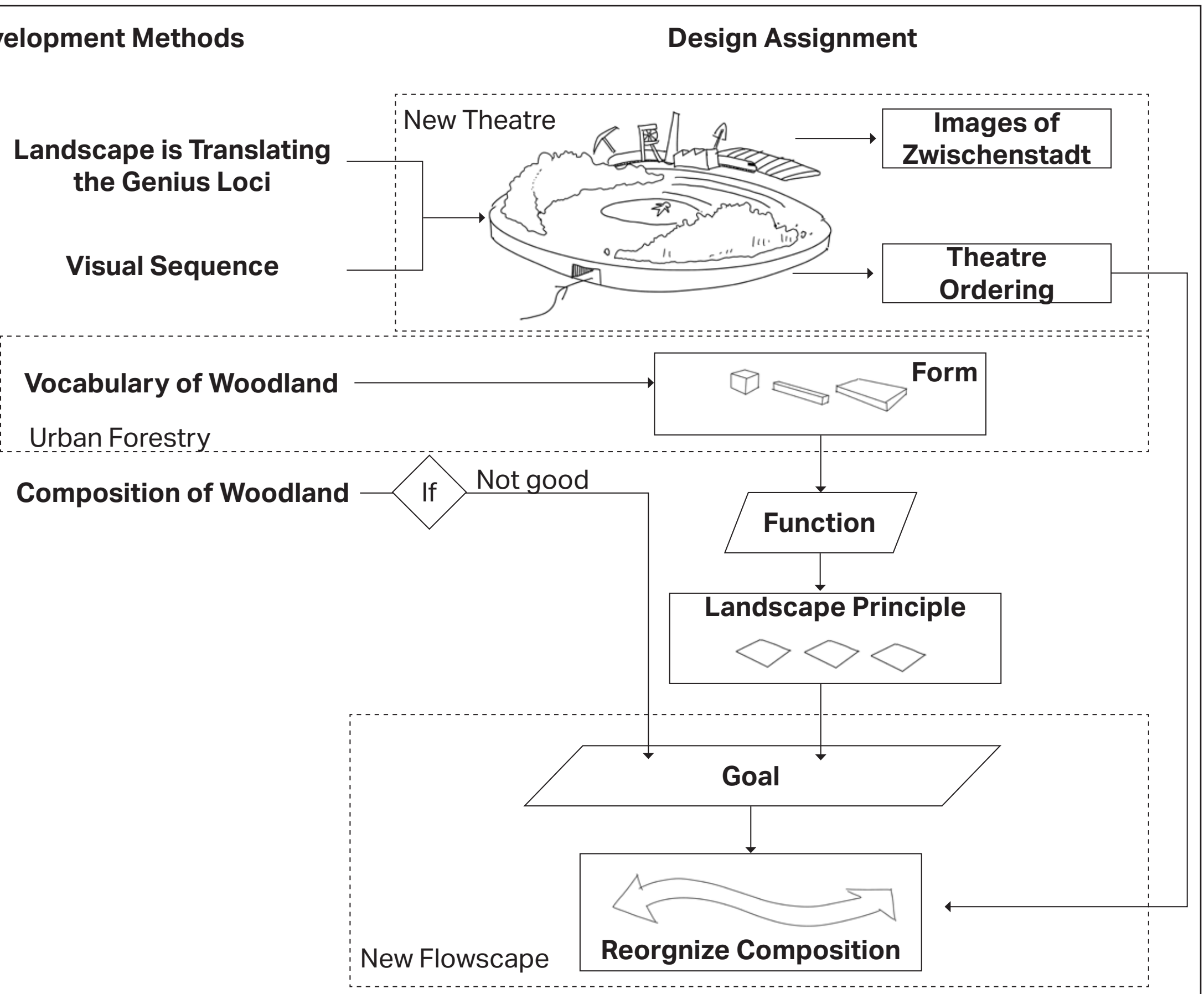
Exploring the landscape form in Zwischenstadt

Summarize Spatial Problem & Dev

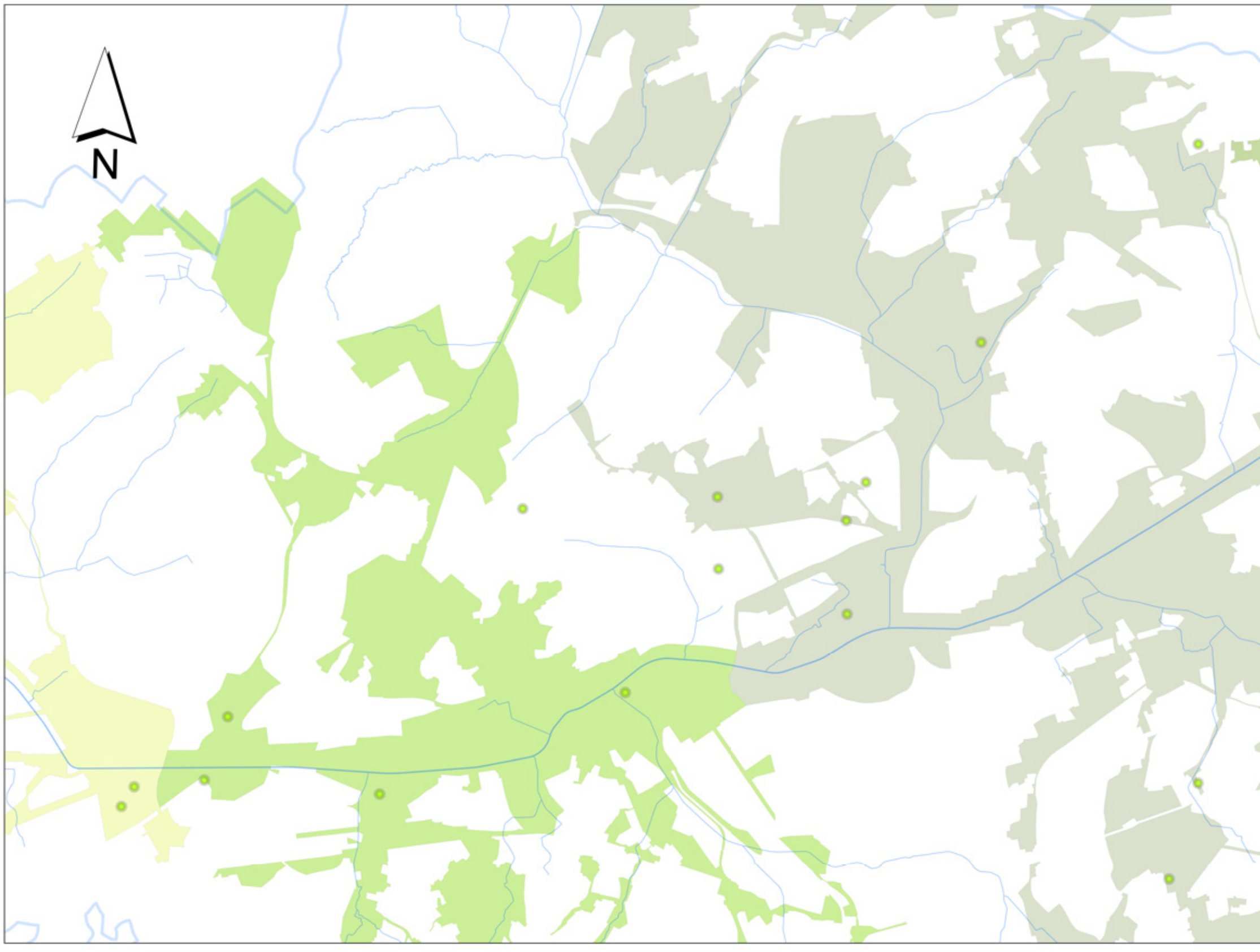


Approach

After studying a series of theories we can get a method trying to answer our Research Question, on a regional scale, the landscape is abstracted into three main elements: point, line and plane. Based on the theory, the current situation is projected onto a map, defining the elements of point, line and plane in the current landscape, and then deconstructing Flowscape and theatre, and then bringing the vocabulary from the Urban Forestry study into Flowscape to discover the existing problems of spatial composition. Based on the problems, the designer proposes his own spatial solutions, and proposes a spatial form to solve the problems, and then assigns functions to these spatial forms and adds them to the existing functional plan. To achieve REORGANISING WOODLAND COMPOSITION.



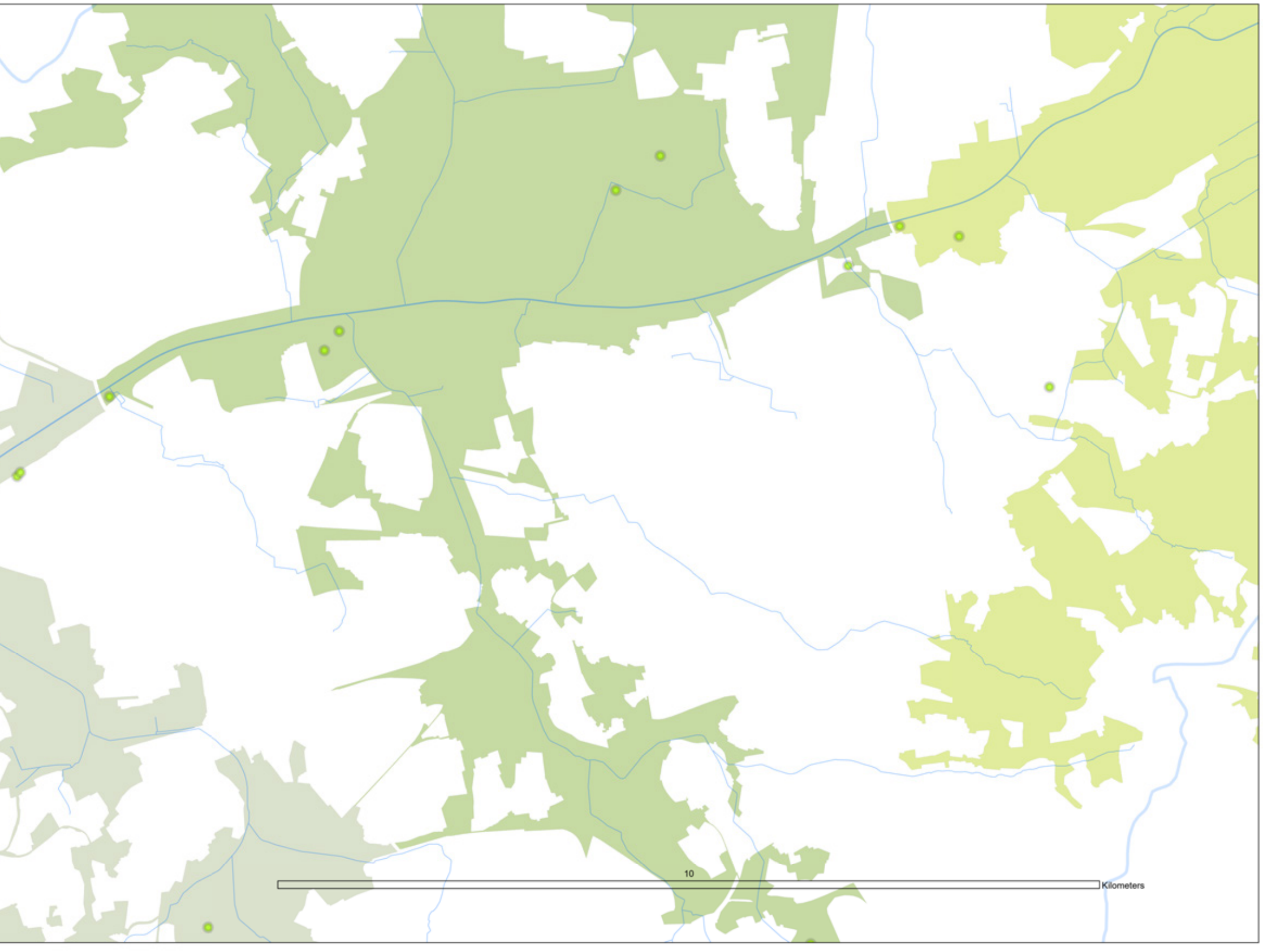
In order to realise the scientific validity of this theory, the approach will be applied to the current Emscher Park and attempts will be made to design the next generation of Emscher Parks.



Chapter 3
Flowscape

In this chapter, I will apply the theory of metropolitan landscape forms summarised in the previous chapter and try to enter the problem from the angle of green space fragmentation, exploring the spatial aspects of one of the flowscape in the Ruhr area (the green belt of the EmscherPark, centred on Emscher island and running from west to east), and summing up its potentials for spatial experience and spatial quality. After exploring the spatial issues, the systemic issues of the Emscher area, such as the water management system and the ventilation system, are analysed, and the landscape principles containing specific spatial patterns are generated by responding to the systemic issues, which are overlaid on top of each other to respond to the spatial experience requirements developed from the spatial analyses. The task of this chapter is to get the final Emscher Park Vision. In other words, the task of this chapter is to imagine the next generation of Emscher Park from the perspective of spatial form.

In summary, this chapter will put into practice the theory developed in the previous chapter by analysing and designing Flowscape, with the result that specific landscape designs will be used to echo the previous theory.



Analysis for Design

Spatial Analysis of Flowscape

Spatial land definition

Spatial form of woodlands

Woodland composition in flowscape

Problem Statements

Problem Solving Strategies

Tree configuration Principles

Systemic Analysis of Flowscape

Water managment system

Cooling system

Landscape Principles

Design Assignment

Points of Depature

Conceptual Spatial Vision

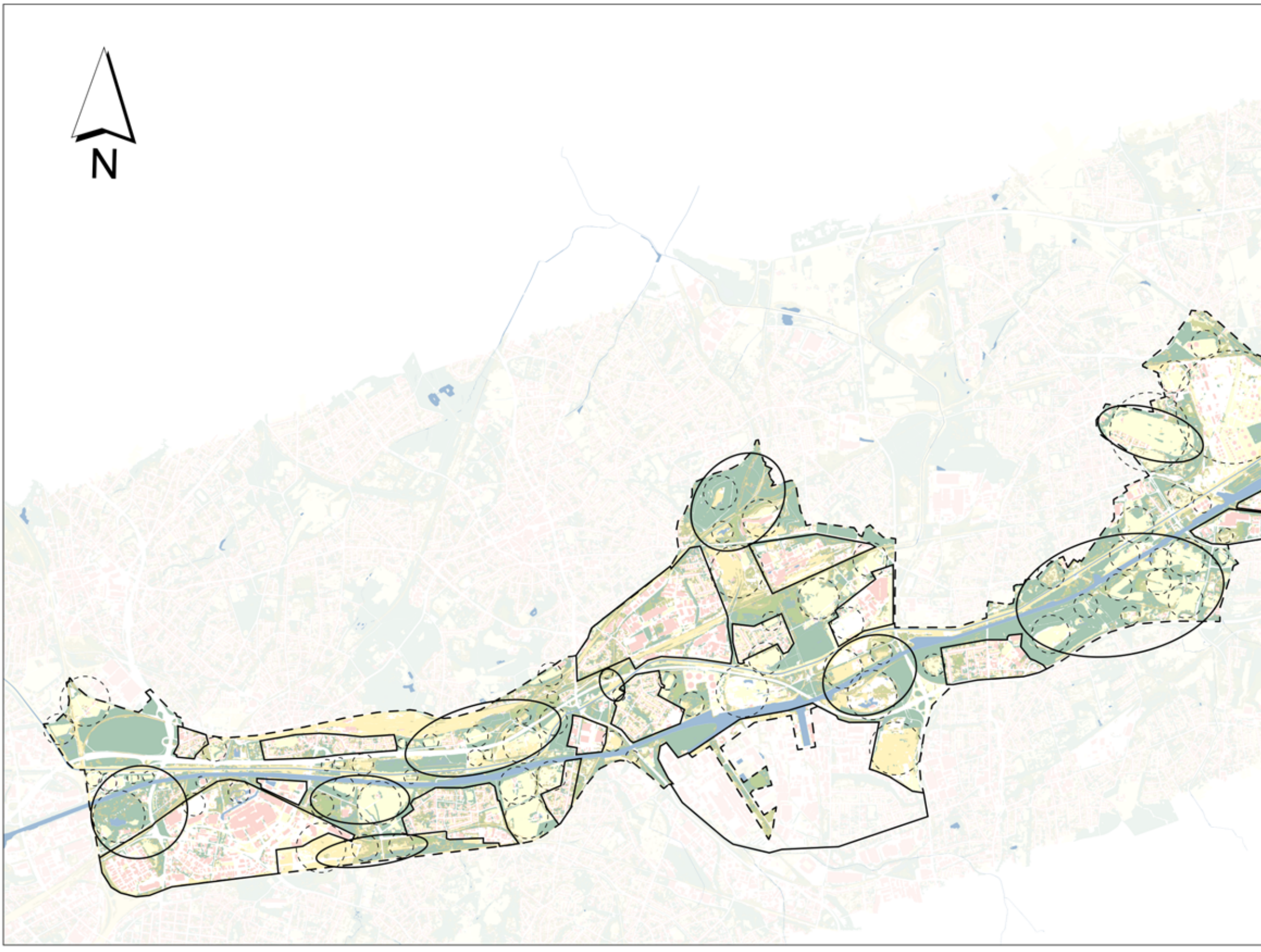
Master Plan

Woodland composition plan

Water principles application

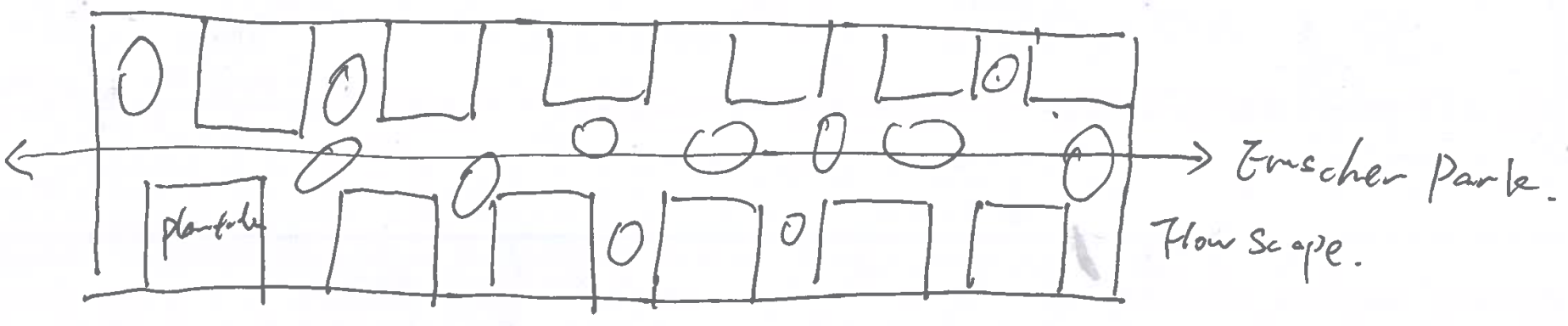
Cooling principles application

Master Plan

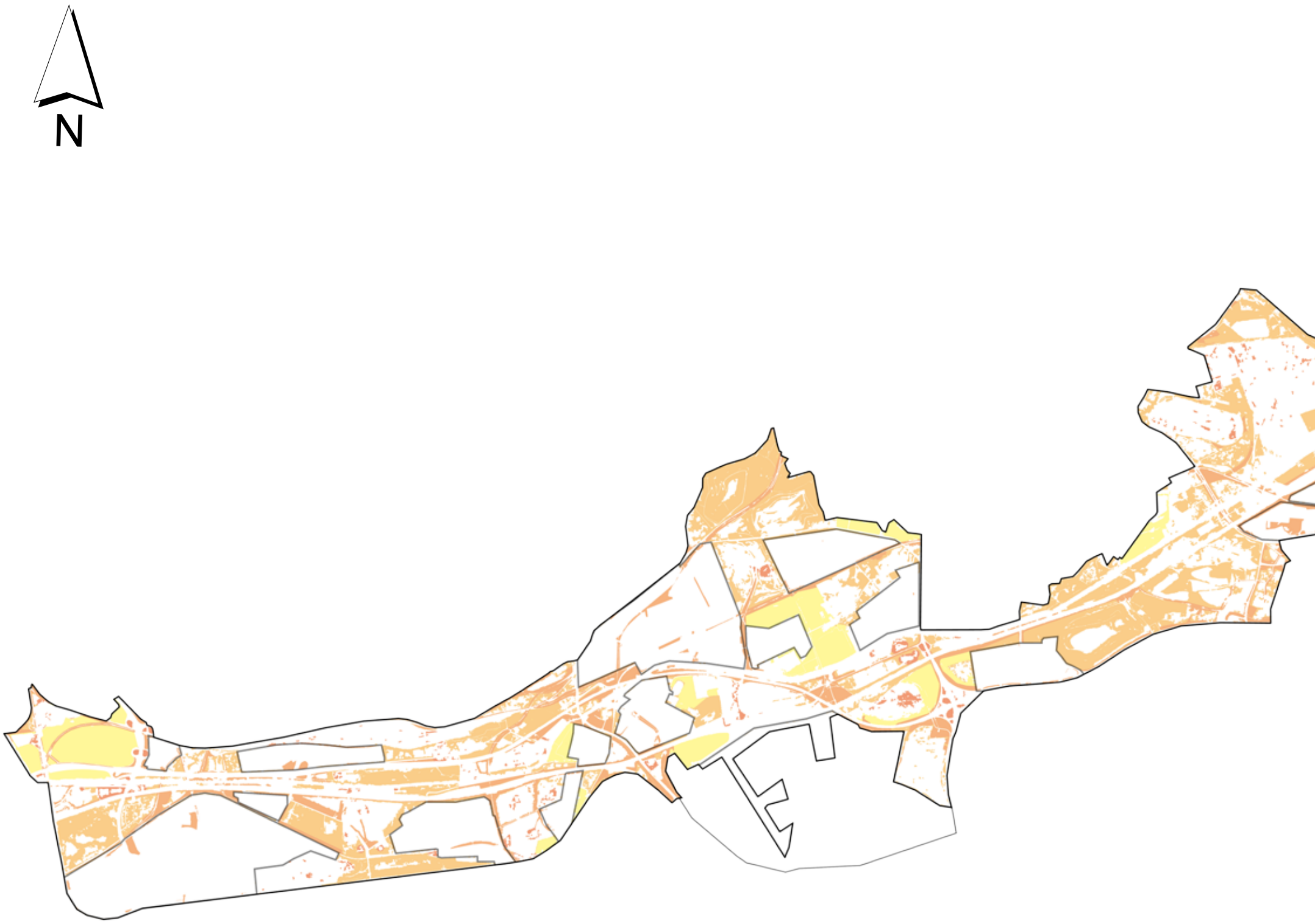


Spatial Analysis of Emscher

Spatial Land Defination

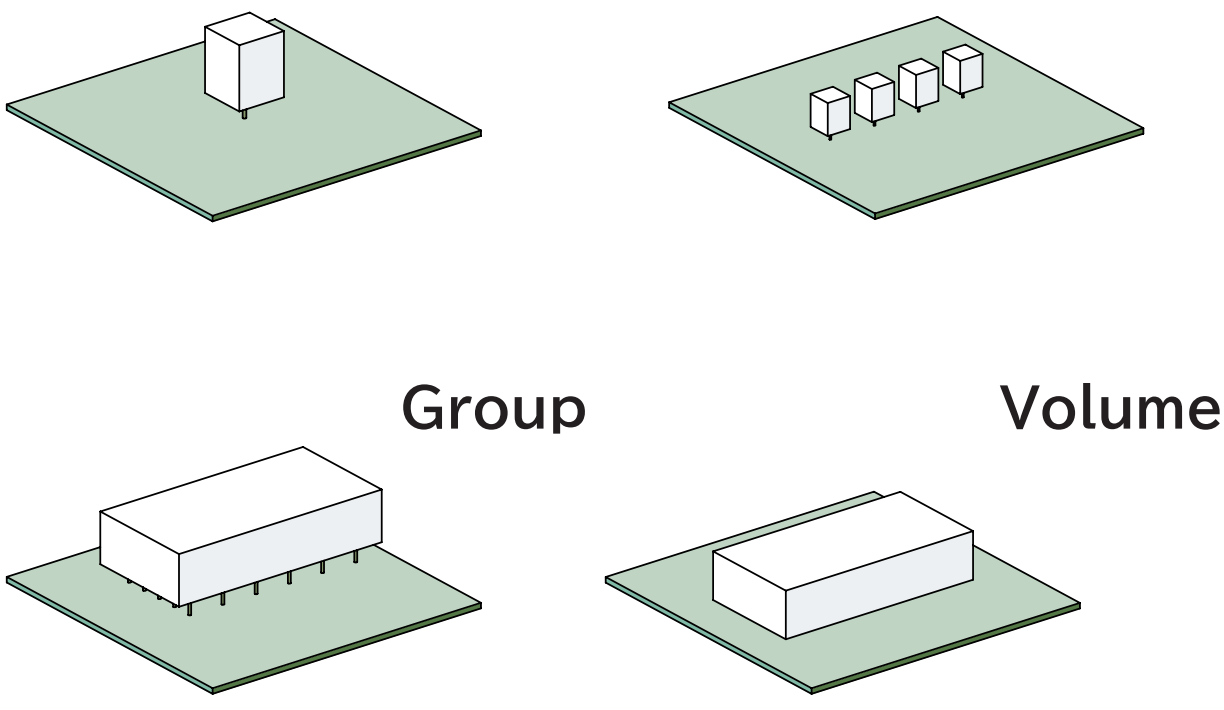


Before spatial analyses are made, a simple distinction of spaces needs to make. This map identifies the elements of vertical direction in flowscape, red in vertical direction is made up of buildings, green in vertical direction is made up of vegetation, and distinguishes between trees and shrubs. We can conclude that in the vertical direction, the main constituent elements are trees. In other words, trees and woods are the main language of flowscape to express the spatial form, and the organisation and application of trees will be the main content to be narrated in this section. So according to our previous definitions of plantation and theatre, we can find their locations on the map. It is clear that these plantations and theatres are not strongly related to each other along the Emscher island, and only in the Eastern Essen section do they form a complete organised whole. The rest of the site is just a stack of various functions without any large-scale spatial organisation.



Spatial Analysis of Emscher

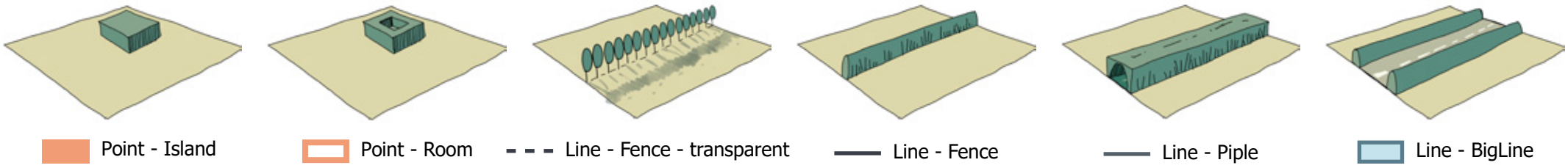
Spatial form of woodlands



PartB

In order to study the composition of spatial forms in the flowscape, we need to describe the spatial composition of the area using the Forestry Urbanism approach. This approach considers woodland as four basic elements: Point, Line, Group, Volume, and when we apply these four spatial patterns to Emscher Park, we can roughly obtain a map of the spatial patterns of the trees and divide this section of Emscher Park into two parts, Part A where the trees are more involved in the expression of the spatial forms, and the form of the trees has more influence on the specific spatial experience. Part B has less tree cover than Part A and has less voice in the expression of spatial form. In the next step of the design, if trees are used as the main intervention, Part B needs more intervention and more modification of the existing plantation. Therefore, Part A is more suitable to use trees as a way to intervene in the spatial form of the flowscape. It is more economical and efficient. And Part B needs more long term planning.

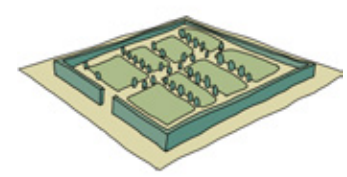
Thus in Part A we can make better use of the morphological vocabulary obtained from the Urban Forestry study and use it to investigate problems in the syntax. (Flowscape's woodland composition)



Spatial Analysis of Emscher

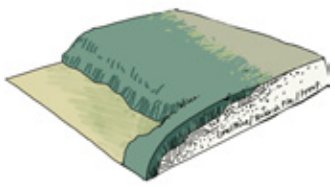
Woodland Composition in Flowscape

According to Woodland Vocabulary, project these elements onto the current map we can get a specific map of the spatial composition of the woodland on the Emscher flowscape. Based on this map of woodland flowscape, we can divide the flowscape into six parts according to the spatial structure of the trees, and each of these six parts has its own spatial features and spatial problems. We need to summarise their common spatial problems and define the visual goals we want to achieve in order to get our design strategy, and then solve the specific problems of each section according to the design strategy.



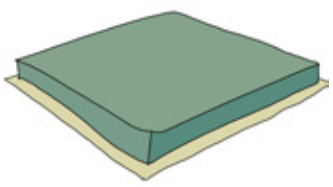
Group - GardenCatalogi

Group - UrbanPark

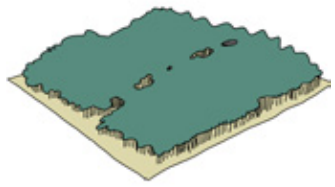


Group - Heap

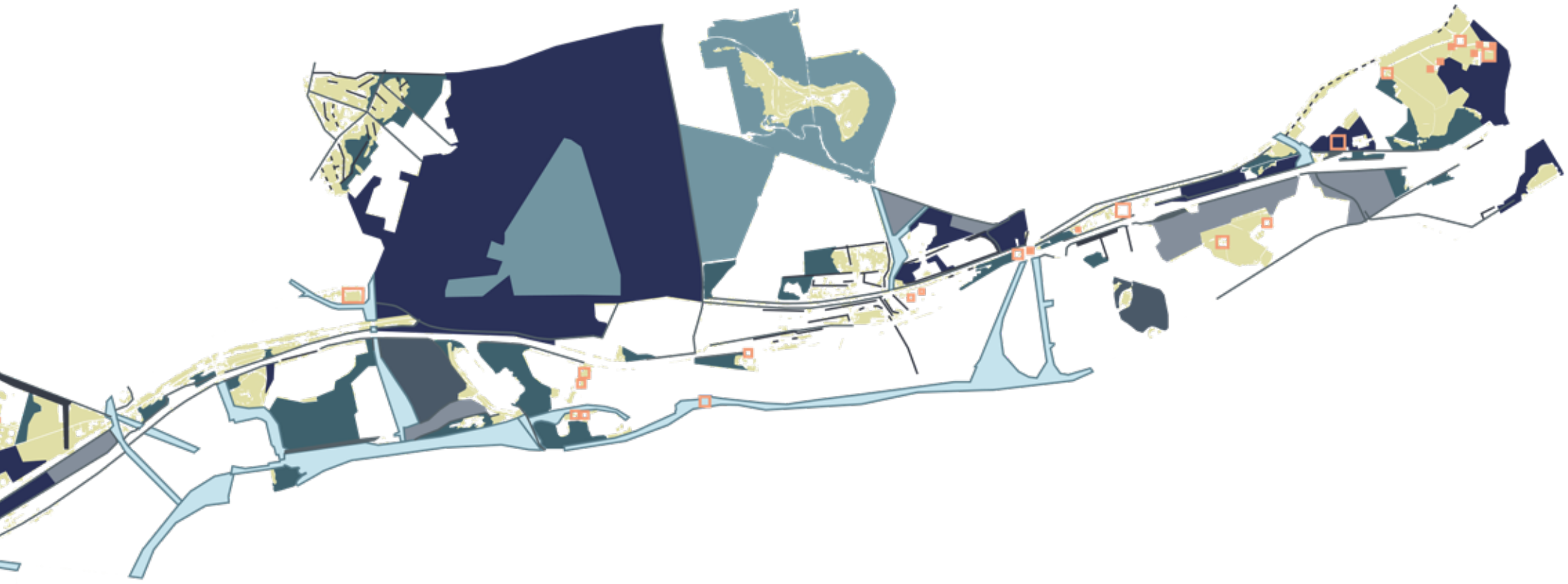
Group - Health



Volume - Entity



Volume - UrbanForest



Planting Form Recognize

Vertical Form - PLGV

Point - Island

Point - Room

Line - BigLine

Line - Piple

Line - Fence

Line - Fence - transparent

Group - Heap

Group - GardenCatalogi

Group - UrbanPark

Group - Health

Volume

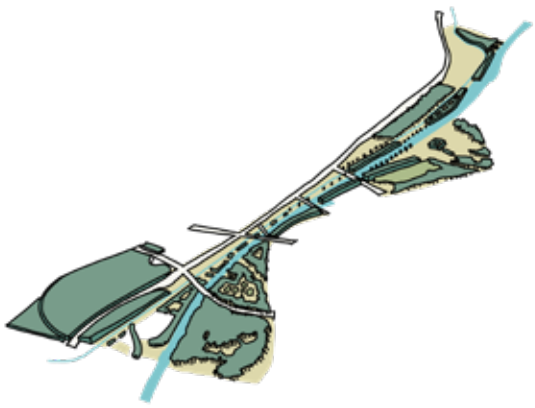
Surface Landcover

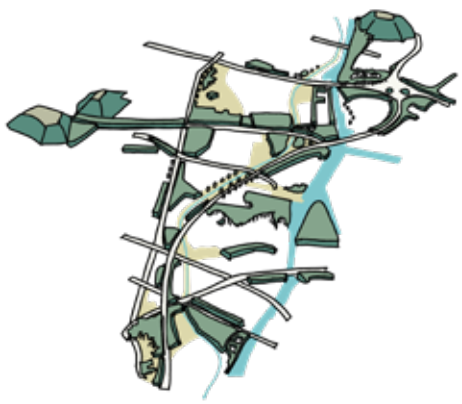
Herb

10

Kilometers

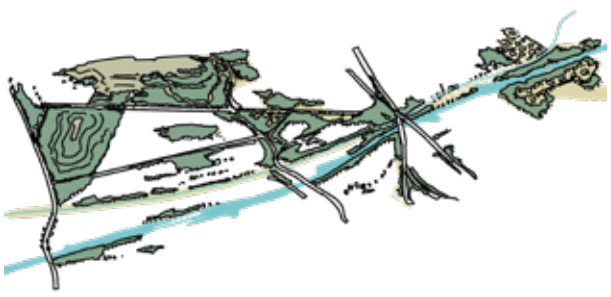
Part4

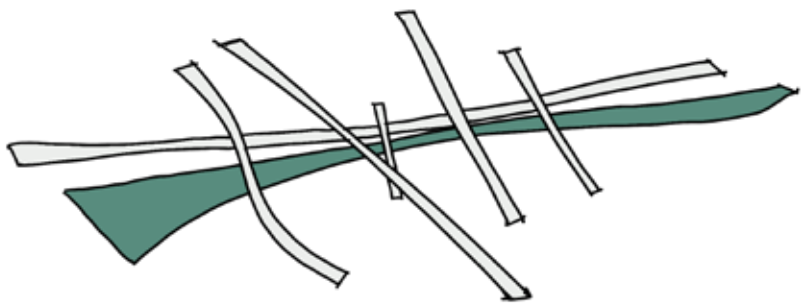




Part5

Part6



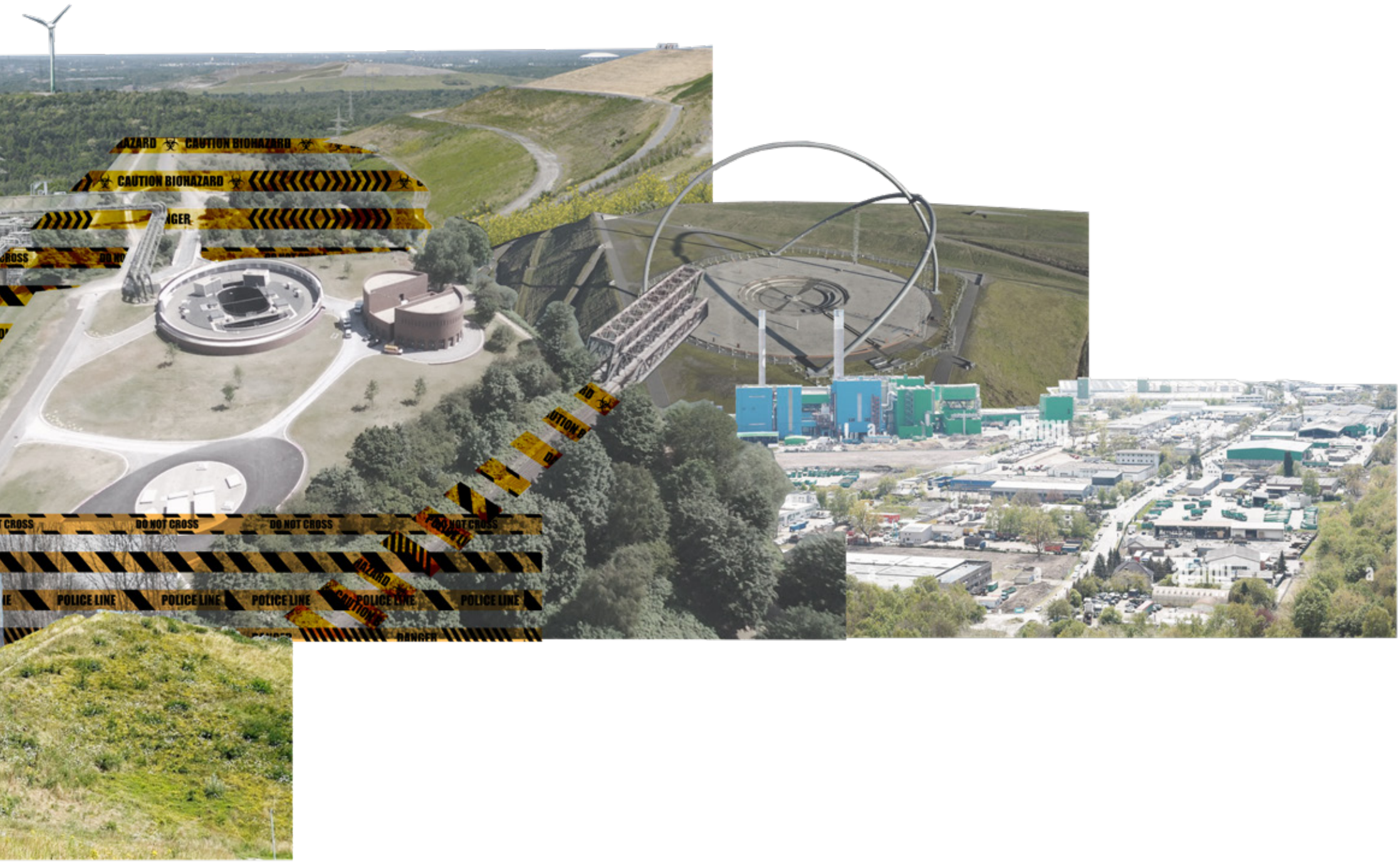


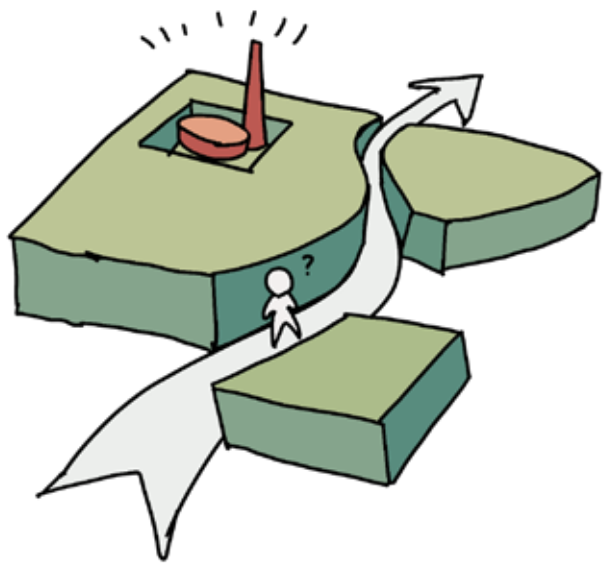
Spatial Problem of Emscher

Visual and Spatial Problem after analysis

Fragmented by infrastructure

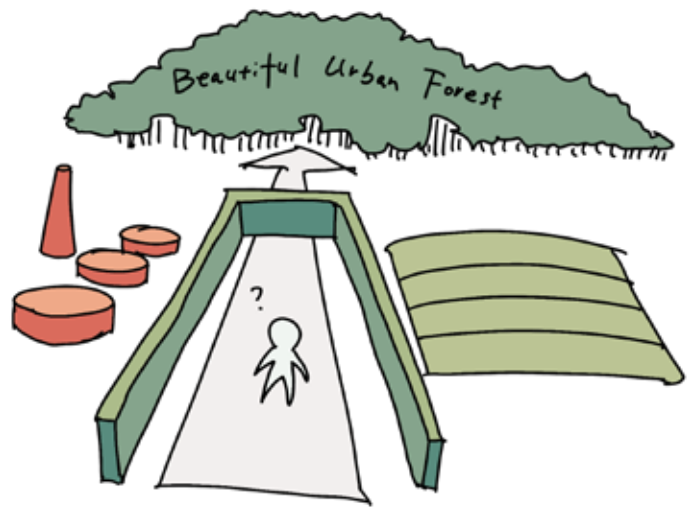
The Oberhausen part of Emscher island and woodland is cut to fragments of varying sizes by the railway and highway. However, the area is also characterised by a high density of bridges across the canals. The integration of the infrastructure into the spatial composition of the area was the task of the vegetation design.





Lost in a block maze

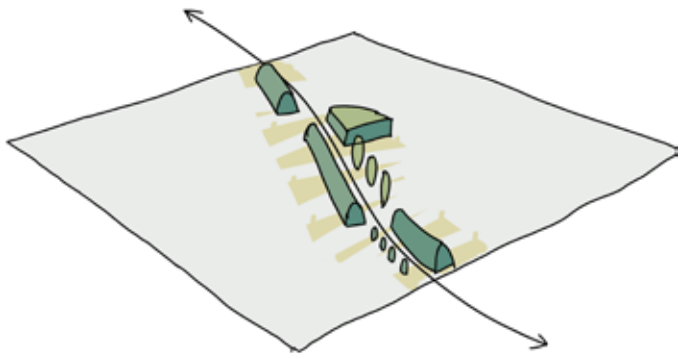
The Essen area is rich in industrial sites and features, but most of these are hidden in dense vegetation, the Emscher valley and the A42 pass through these gaps in the blocky vegetation, making these industrial achievements invisible to both drivers and walkers.



Lost in the pipe

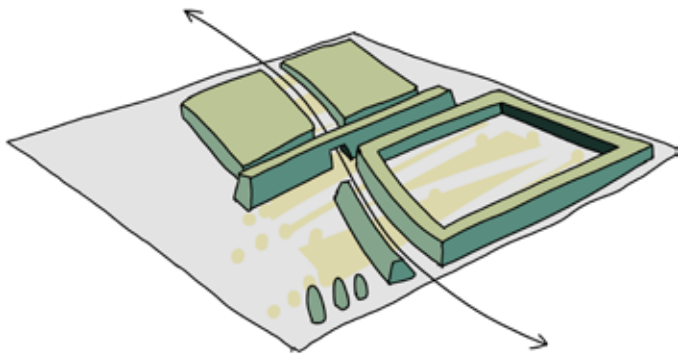
The Emscher river runs through the middle of Gelsenkirchen, and the valley was the border of Gelsenkirchen before Buer was joined to Gelsenkirchen, so there is a wealth of industrial and agricultural imagery here, and they are both industries that are still in actual operation. This is the area where the three images of the Zwischenstadt are most visible. But the path through this image is covered with dense vegetation, as if travelling through a pipe, and the observer has no idea of the beauty of the landscape.

Problem that we are facing



Linear Fragment (Including point)

The main components of linear fragments are:
1) a dense vegetation layer outside the road network, and small fragments cut by the road network;
2) linear vegetation used to divide the subspace in the site.

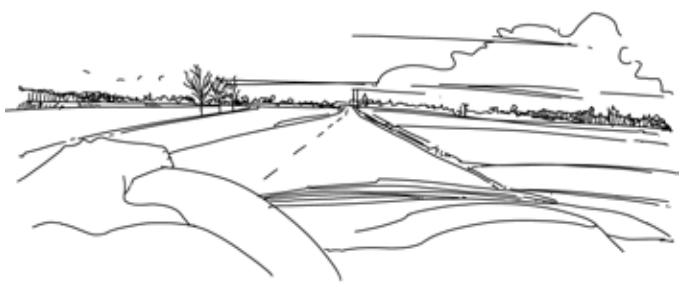


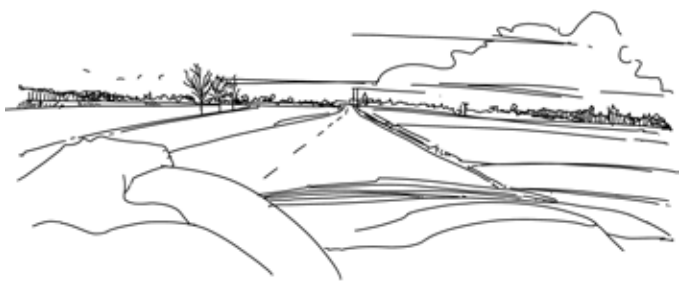
Block Fragment

The main components of block fragments are:
1) brownfield sites that have not been designed for renewal, the spatial elements in this plot are stacked randomly to create a sense of fragmentation;
2) a dense layer of vegetation that surrounds the periphery of the site.

Spatial Quality we want to achieve

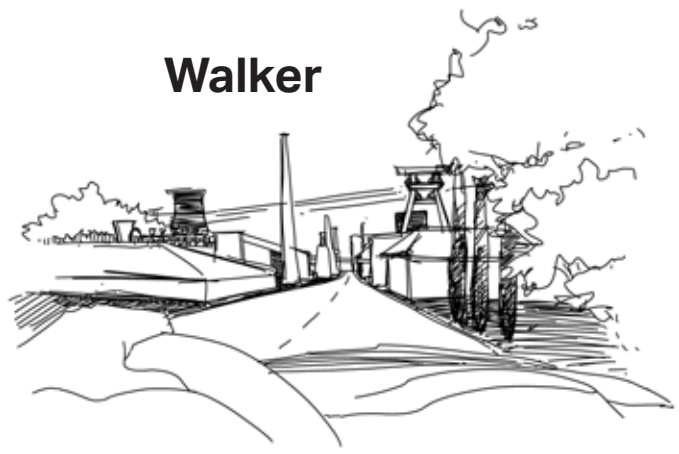
Walker

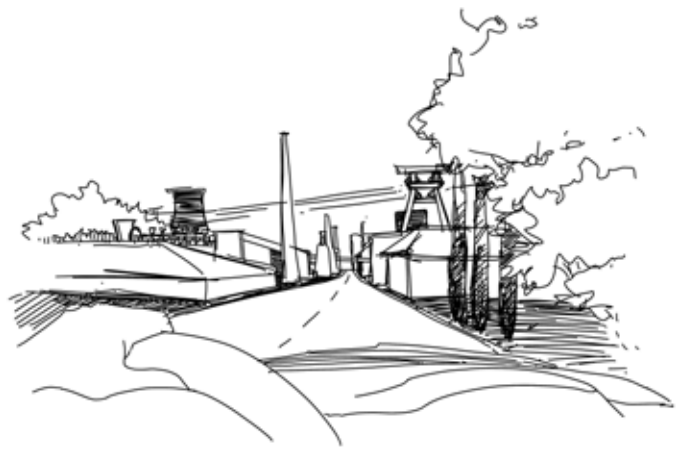




A Coherent, Quiet, Open Space

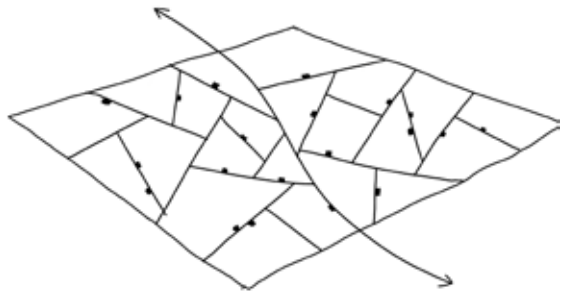
Walker





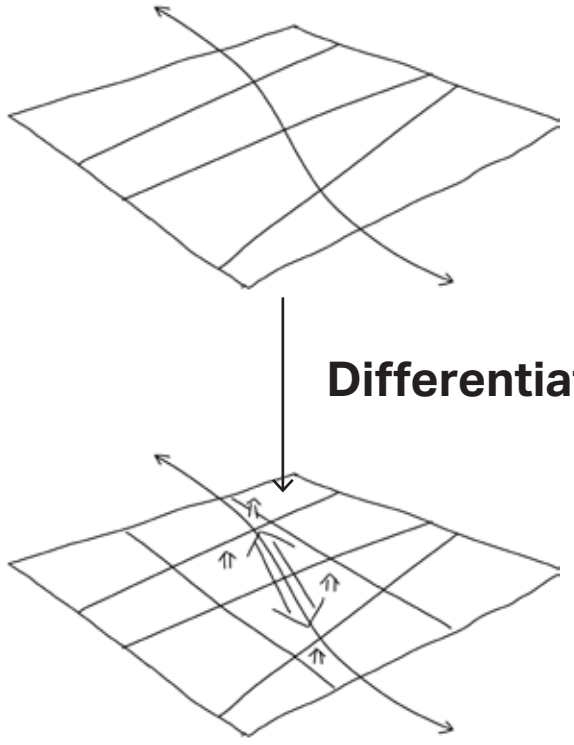
An Industrial Squence

Strategy



Integrate

Integrate redundant woods or other facilities on the site that do not provide spatial value, while reinforcing existing spatial structures to better achieve the spatial goals of the design;



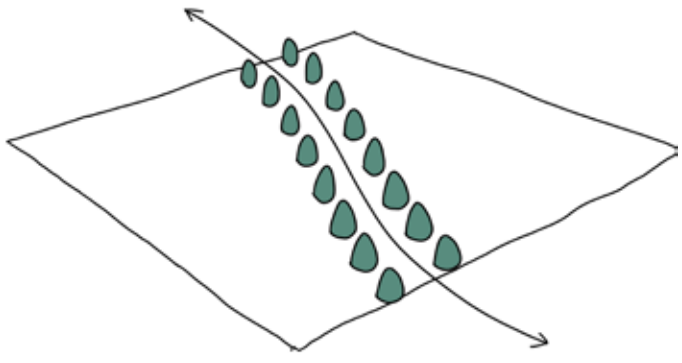
Differentiate

The difference between different spaces is reinforced by the creation of open and closed spaces, creating spatial forms and sequences as in the different rooms in the architecture.

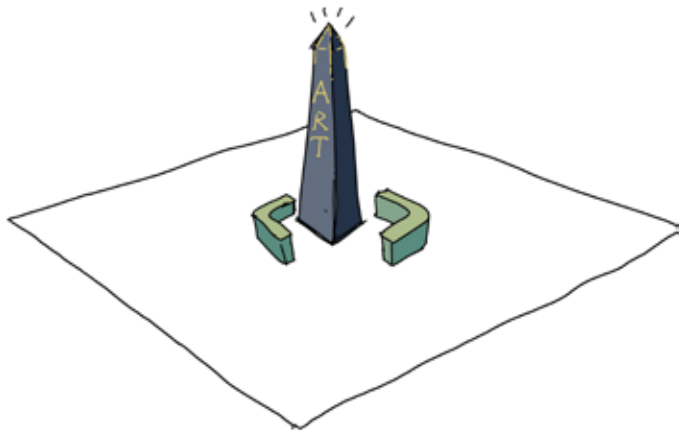
Tree comfiguration methods

According to Woodland vocabulary

Line **Volume**

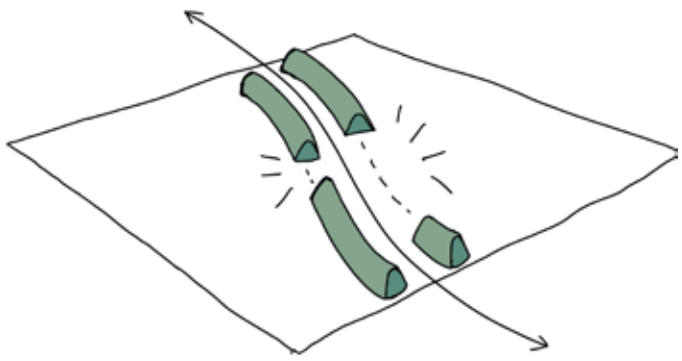


More Transparent Line

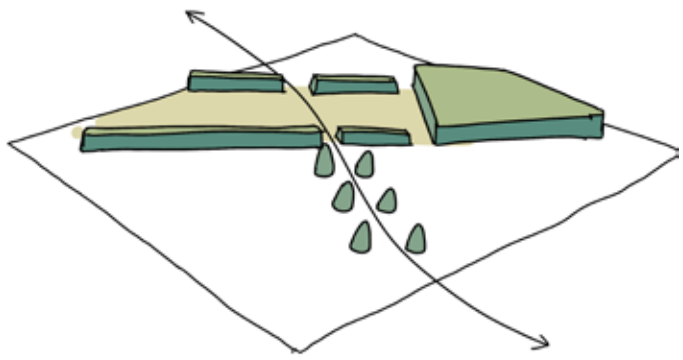


New landmark(or theatre) in the group

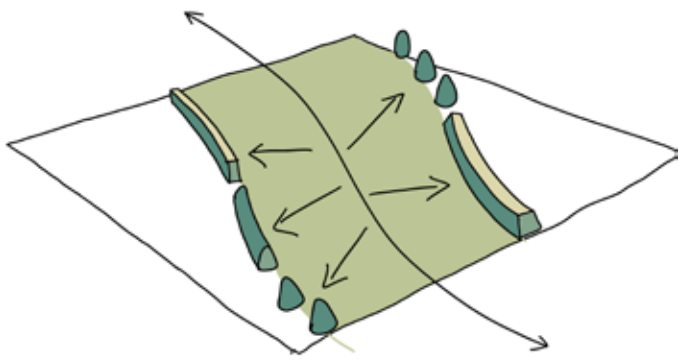
Scale



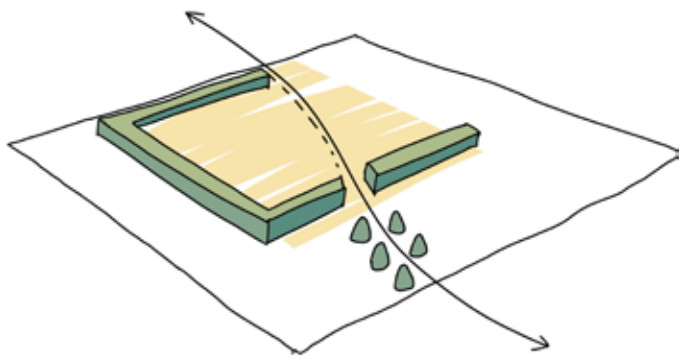
Break off Piple



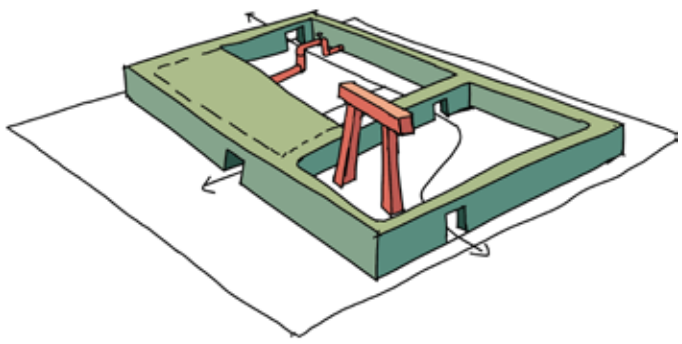
Axis composition cross the exisiting route



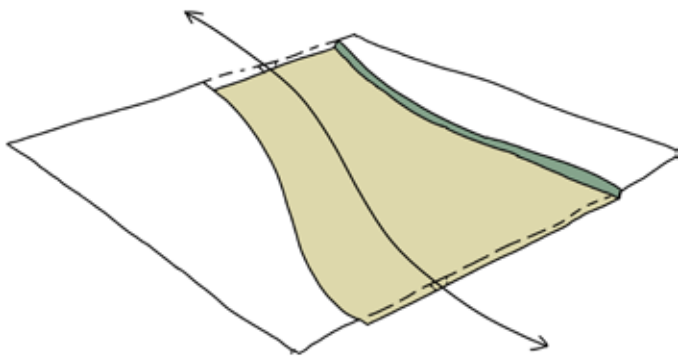
Widen Piple and Transparent Big Line



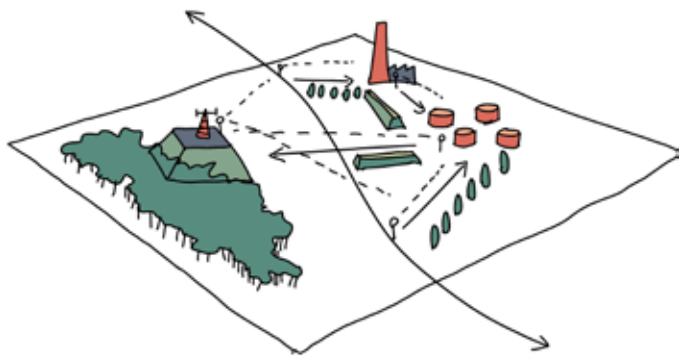
Semi-open Group with guiding



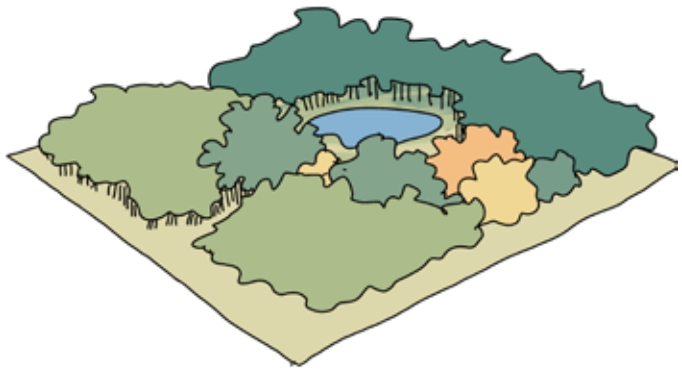
Outdoor industrial muesum (Build the room of trees)



Open Space



Picresequence

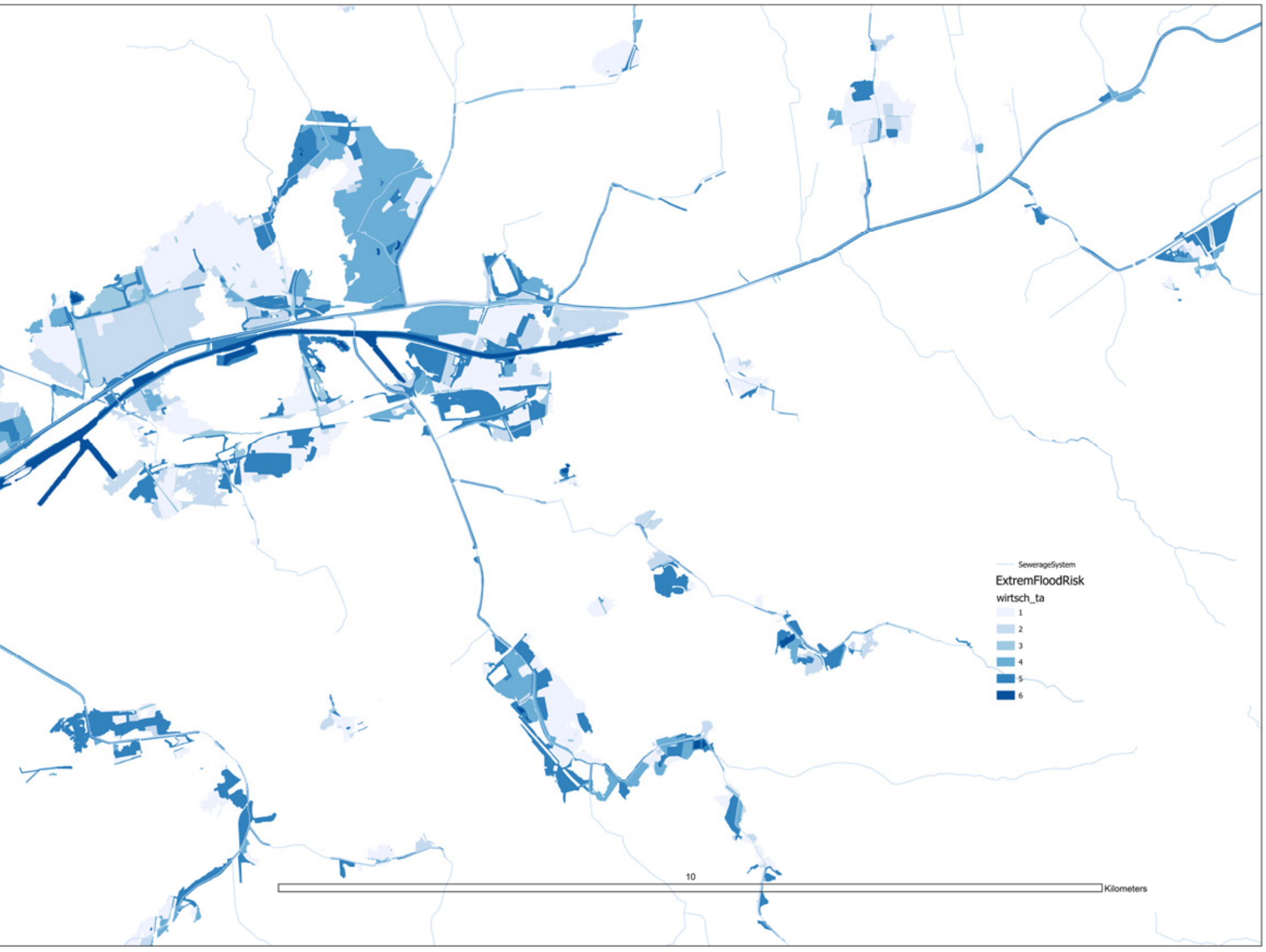


Designed Urban Forest

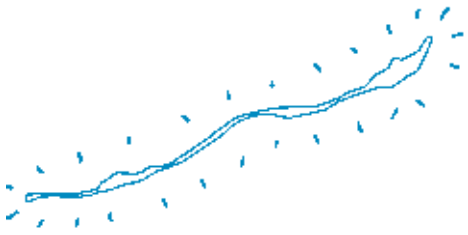
Analysis of Water Management Issue

Flood Risk Analysis Map of Emscher

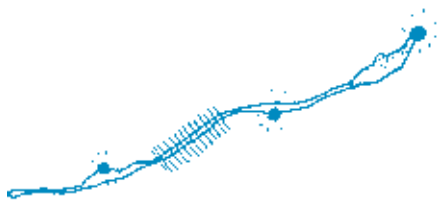
The Emscher river has always been a river that floods from time to time, and humans have been intervening in the river since the industrialisation era, building canals and dikes to protect the settlements and factories along its banks from the river's flooding. But nowadays, with climate change, extreme rainfalls and extreme droughts are occurring, especially extreme rainfalls. This puts the lives and property of people living along the river at direct risk. This map shows which areas are threatened by flooding during extreme rainfall events. In the face of stormwater flooding problems and water management issues, back in 2006 the New Emscher Valley Working Group put forward a proposal for the rewilding of the Emscher River, proposing that the Emscher river and its tributaries be transformed into a continuous aquatic habitat



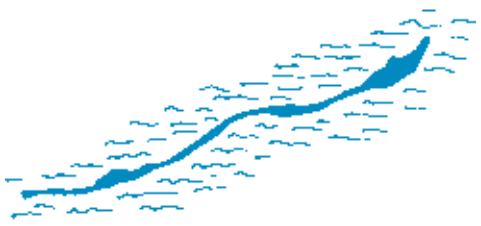
Emscher Island Development Memorandum Book



The Emscher Island must become recognisable as an island.



An island in the river of change.

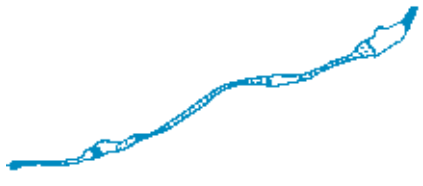


The Emscher Island must be defined by the water.

TThe Emscher Island needs quality.

As an economic impulse

The Emscher Island is being created in the process.



The Emscher Island can be characterised by its differences.

The Emscher Island is and remains a piece of utopia.

and a critical habitat link for the area. In their plan, a diverse floodplain landscape would be created on the Emscher River, with large flood storage basins to absorb large amounts of stormwater runoff and support stormwater retention. Emscher island will play an important role in this strategy.

Strategy of Water Magement

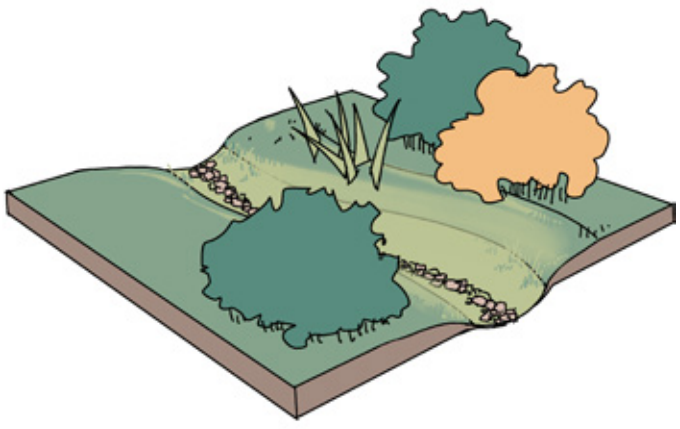
According to Handbuch Stadtklima from NRW

Problem		Solution
A. Extreme Precipitation		
Repid, large surface runoff	Soil Erosion	Reduce the erosion (Rough surfaces slow down runoff) Planting on the slope
	Urban Ponding	Infiltration Surface Rain water Storage Emergency waterway
Drainage system Over load Water level of canal is higer than dike (Pumping is not work)		Emergency waterway Room for water (Floodable plain) Room for Drainage outlet
Flooding Risk		Room for water (Floodable plain) Second dike system
B. Dry Season		Artificial recharge through infiltration of excess groundwater from the polder areas
Ground water problem		Urban farming (Root penetration) Urban planting (Rood penetration) Rain water storage Permeable surface
Pressure on water supply		Ground water Protection Rain water storage

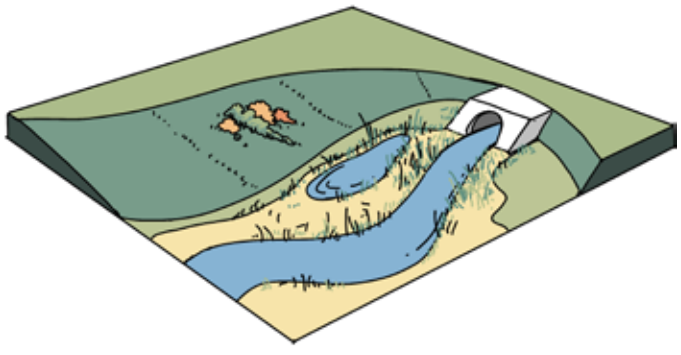
Depending on the problem and the solution, we can get rich landscape principles and different spatial forms, which can be applied to our design.

Landscape Principle

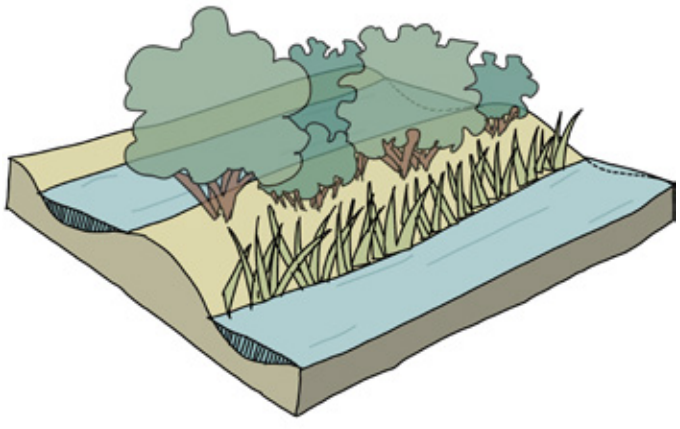
Line ——— **Volume**



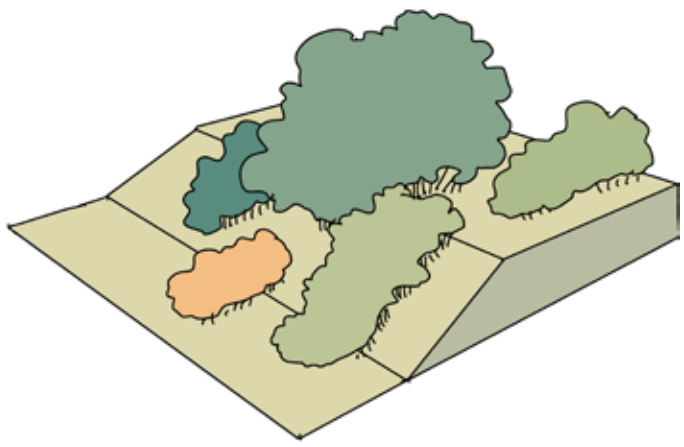
Emergency Waterway



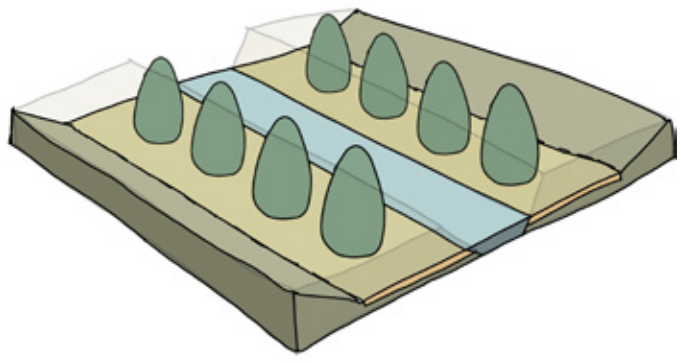
Room for Drainage outlet



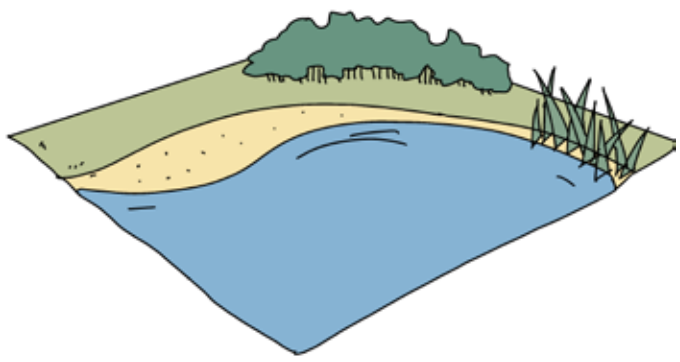
Wetland



Planting on the Slop

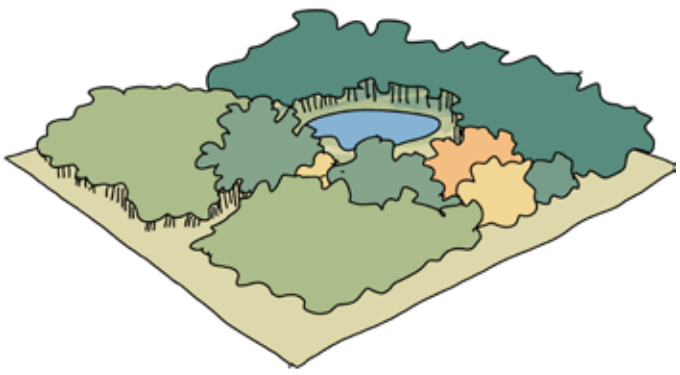


Enlarge the Room for Water

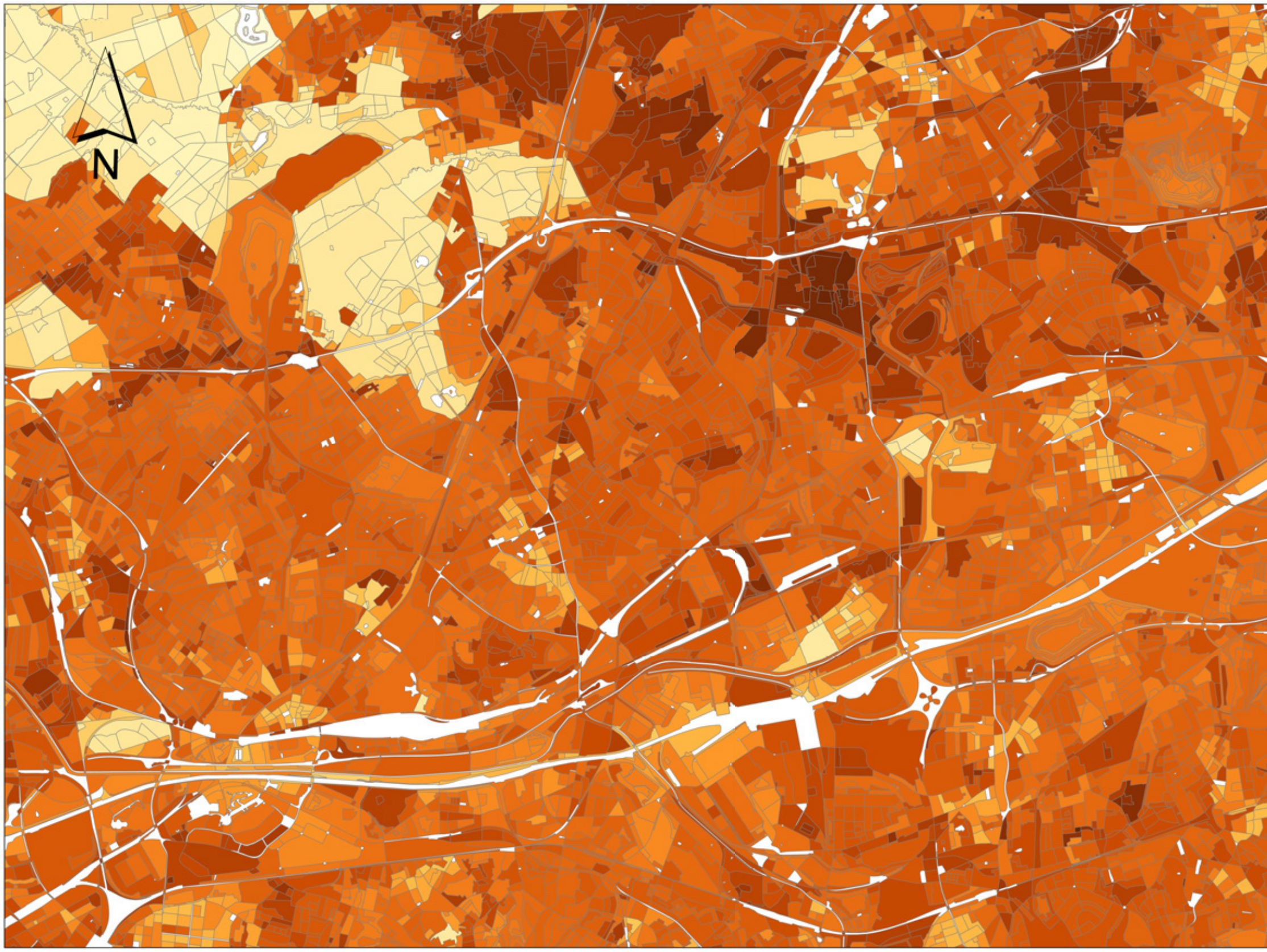


Rain Water pond

Urban Farming



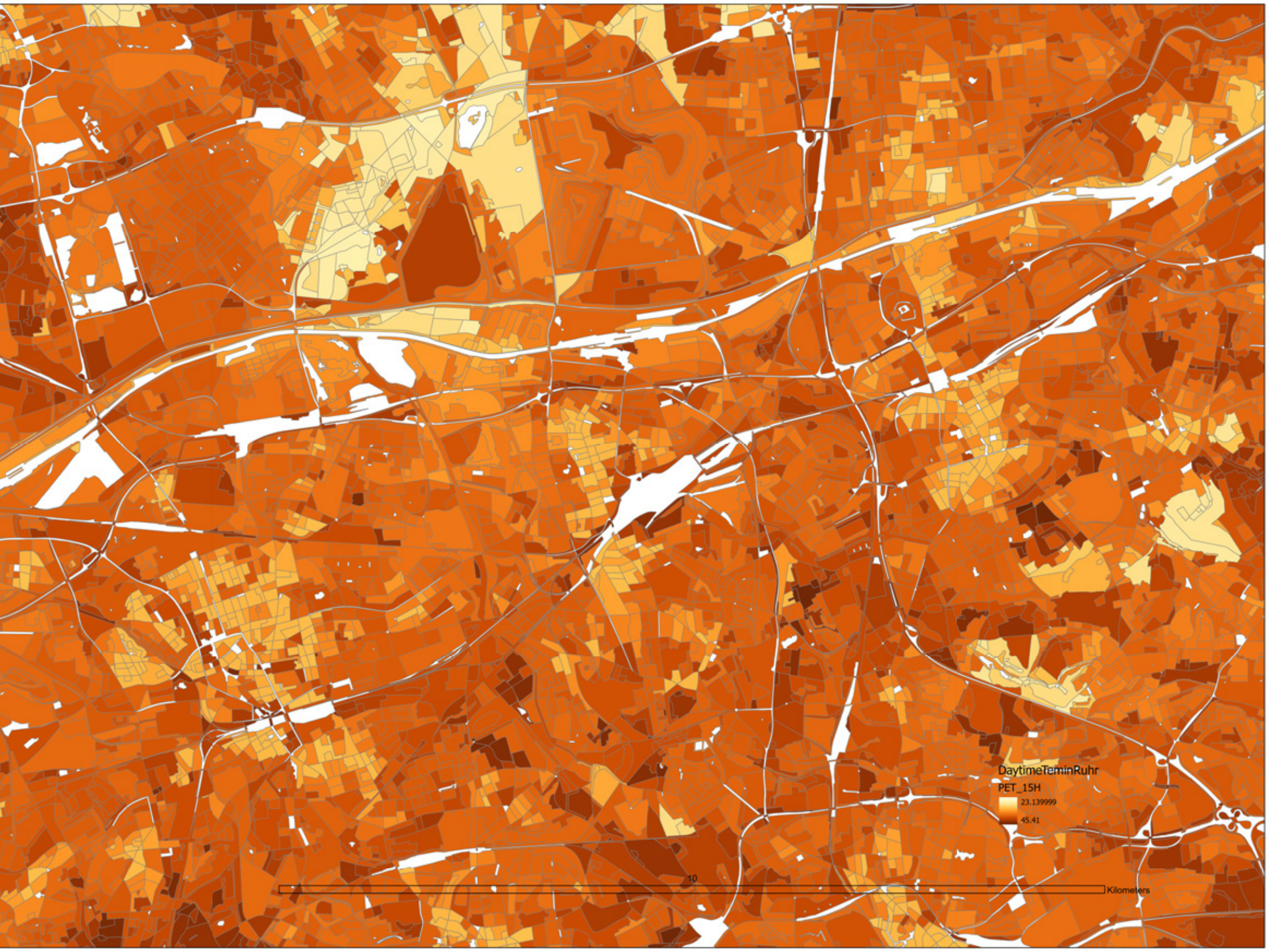
Designed Urban Forest



Analysis Heat Island Effect at day time

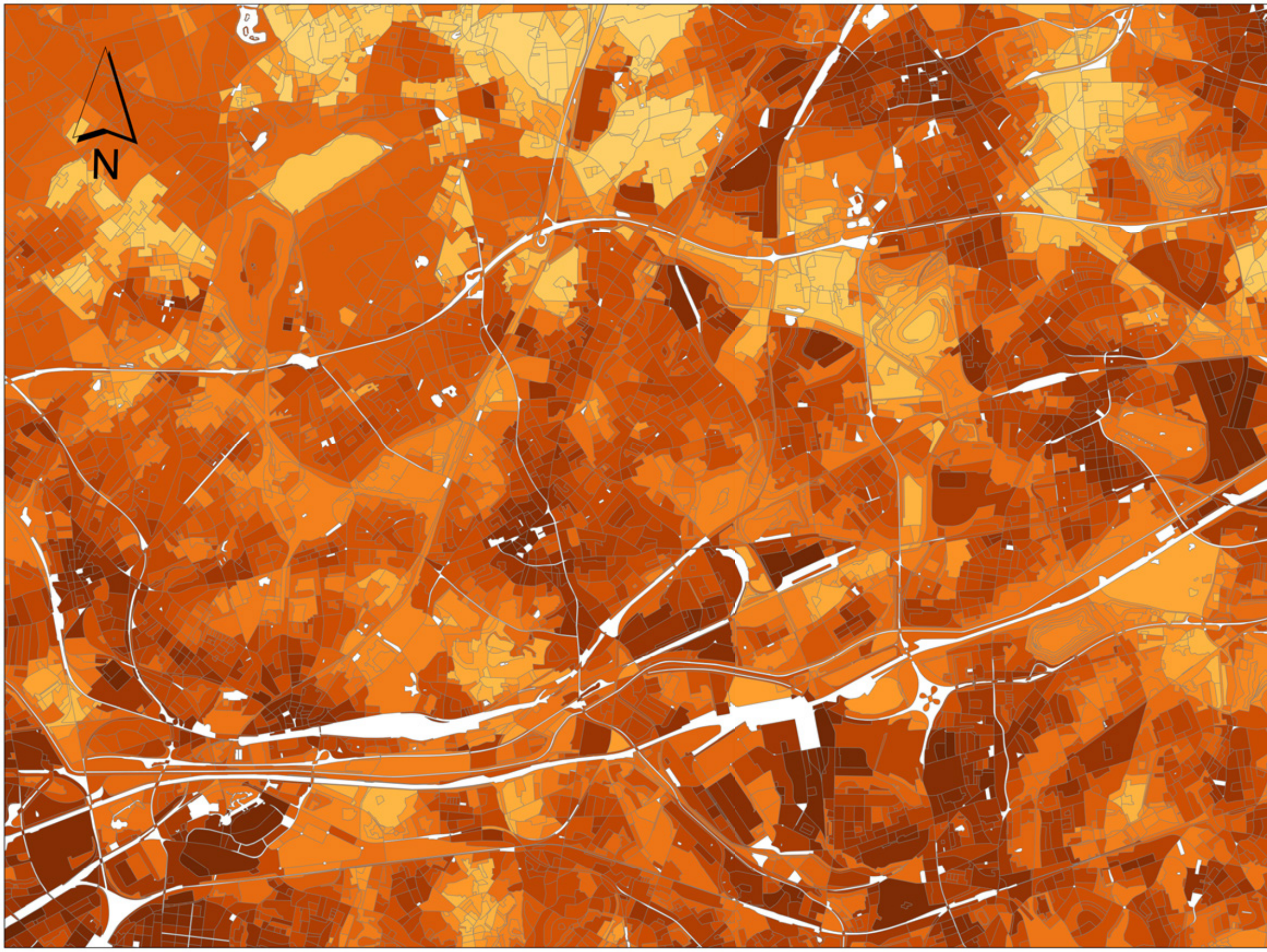
15H Temerature in Emscher area

Increasing urbanisation, rising building densities and continuous hard surface paving are all contributing to higher temperatures and heat stress in our cities and towns. This phenomenon is exacerbated in the Zwischenstadt, the intermediate form between rural and urban, the city without end. As the map shows, fragmented, low-density urban green spaces are hardly an effective systematic solution to the problem. A continuous, regional scale, naturalised green corridor and green infrastructure is therefore a prerequisite for the solution. Following this strategy, the 2010 Masterplan proposes to create an east-west corridor connecting previous seven regional north-south green corridors in Ruhr area. (Masterplans ELP 2010)



Treecover Rate in Emscher area

Fragmented, Low density Urban Green

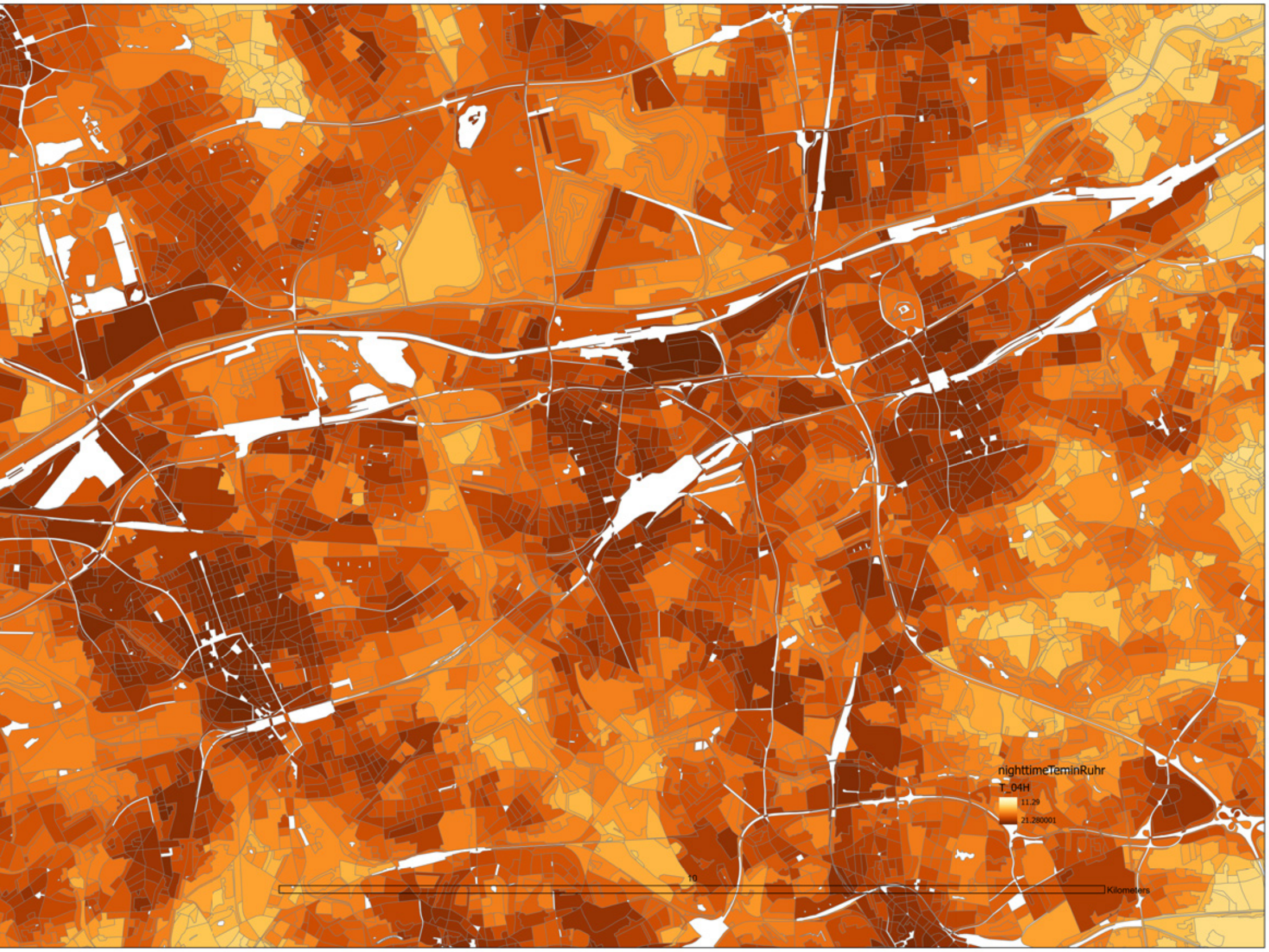


Analysis Smog Bubble Issue

4H Temperature in Emscher area

The formation of the Smog bubble is related to the temperature. Hot air carries pollutants and particles high up into the sky, creating a Smog bubble. Cooler air from outside the city has difficulty penetrating the city centre. At night, the hot air reverses, preventing the city from cooling and preventing urban air from mixing with clean air from the countryside (Krusche et al., 1982).

According to the night-time temperature map we can see that the night-time temperatures are high throughout the Emscher region, and even in areas with high vegetation densities the night-time temperatures remain in a relatively high position. The reason for this is that there is no continuous green open space in the Emscher region, and at the NRW Klimaschutz Ministerial Conference in 2011 it was decided to create a green network linking towns and villages. The towns located in the river valley are to create a green corridor where cool air flows in from the green hills at night.


nighttimeTeminRuhr
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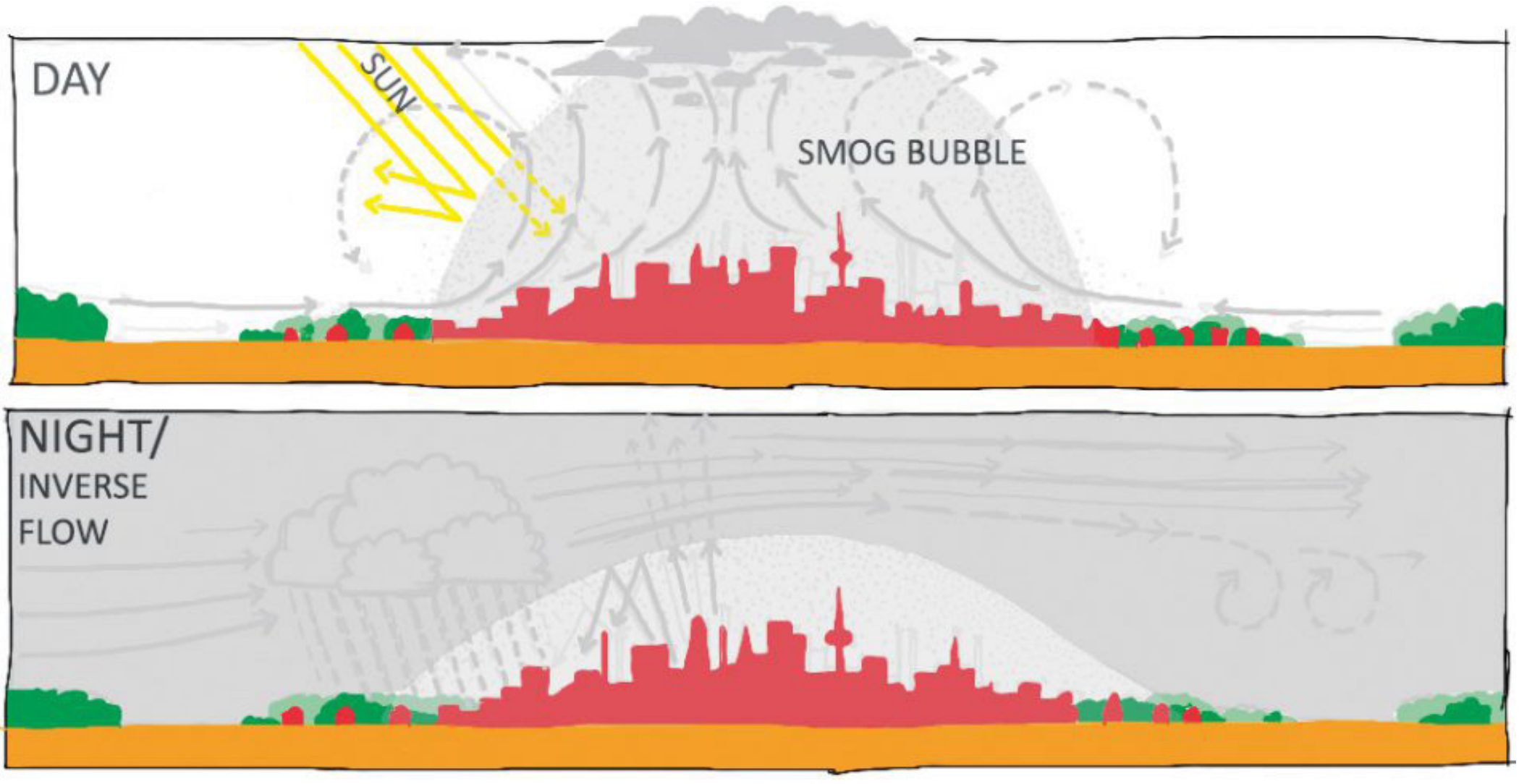
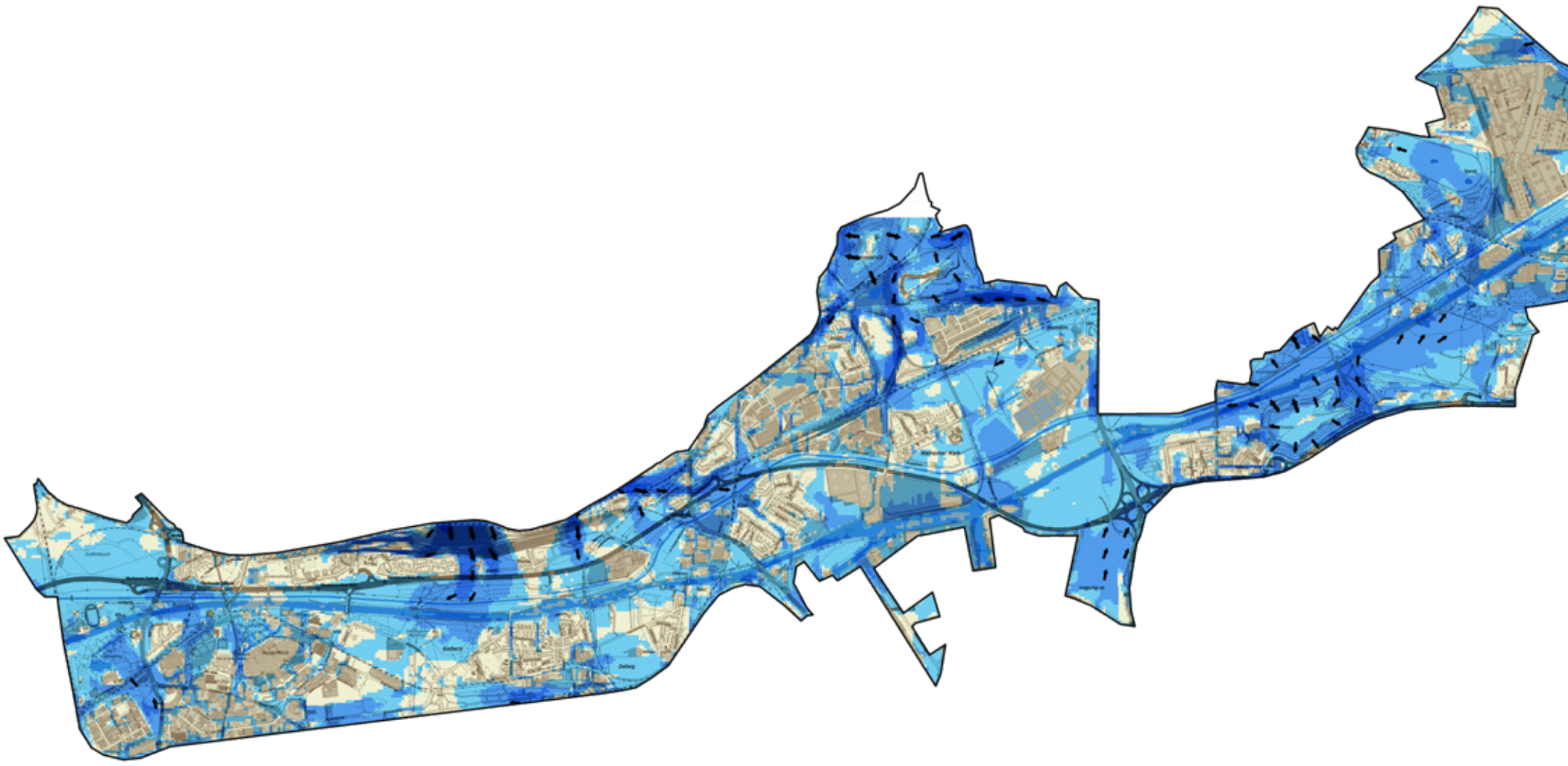
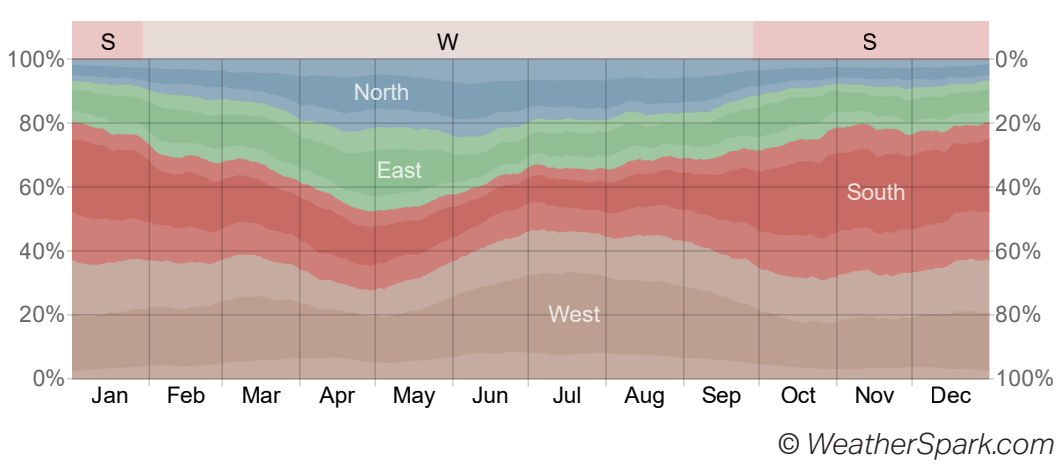
10
Kilometers


DAY
SUN
SMOG BUBBLE
NIGHT/
INVERSE
FLOW



Analysis of Wind Way Issue

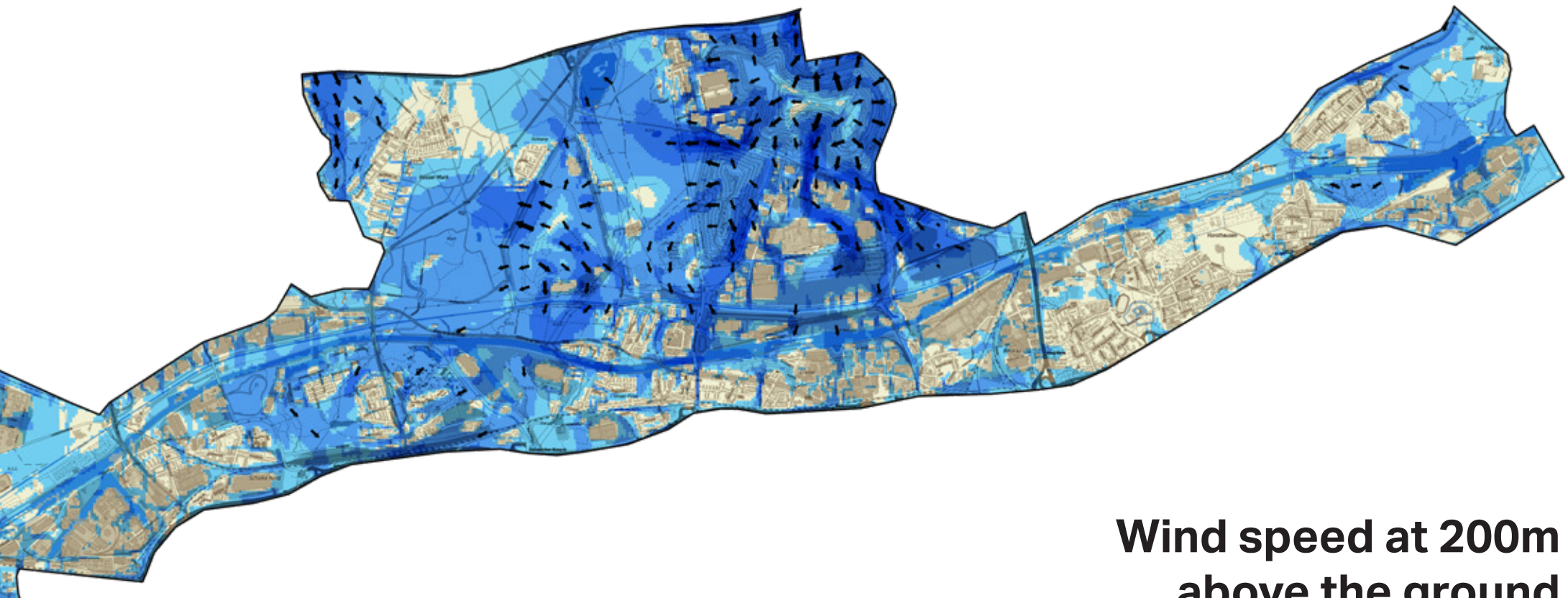
Air Volume and Wind Direction



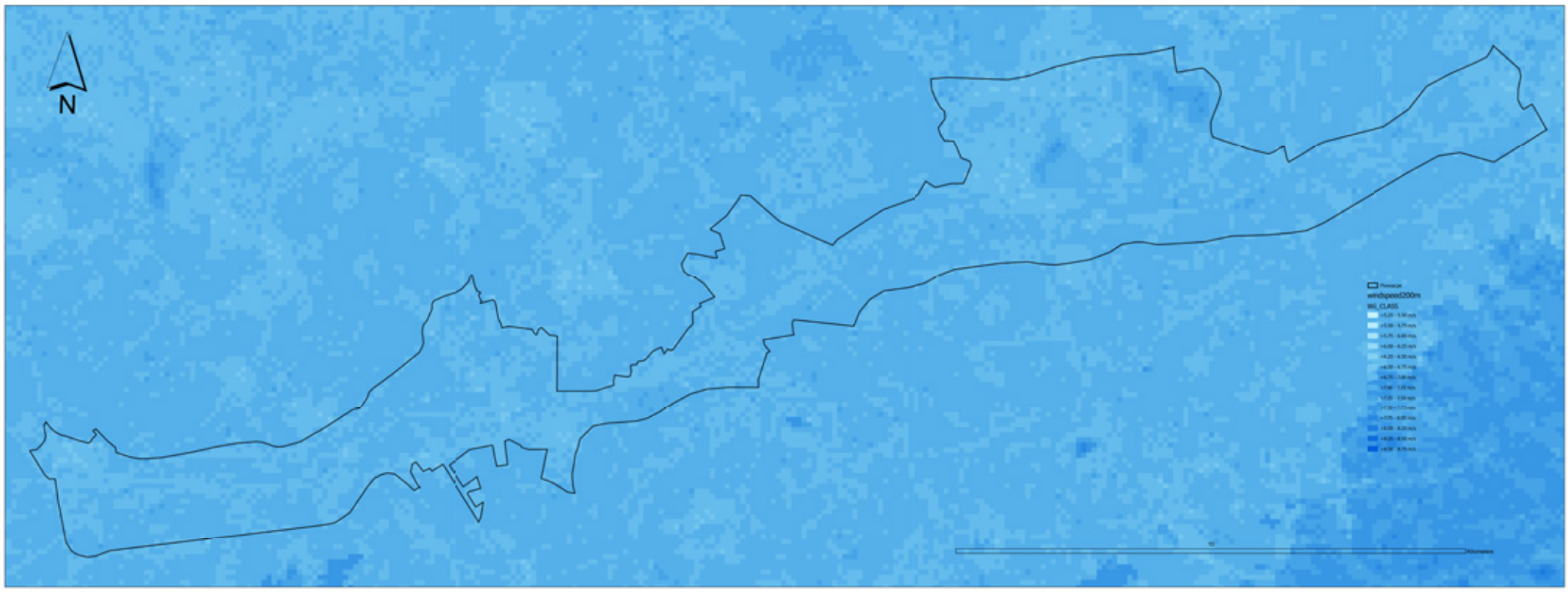
© WeatherSpark.com

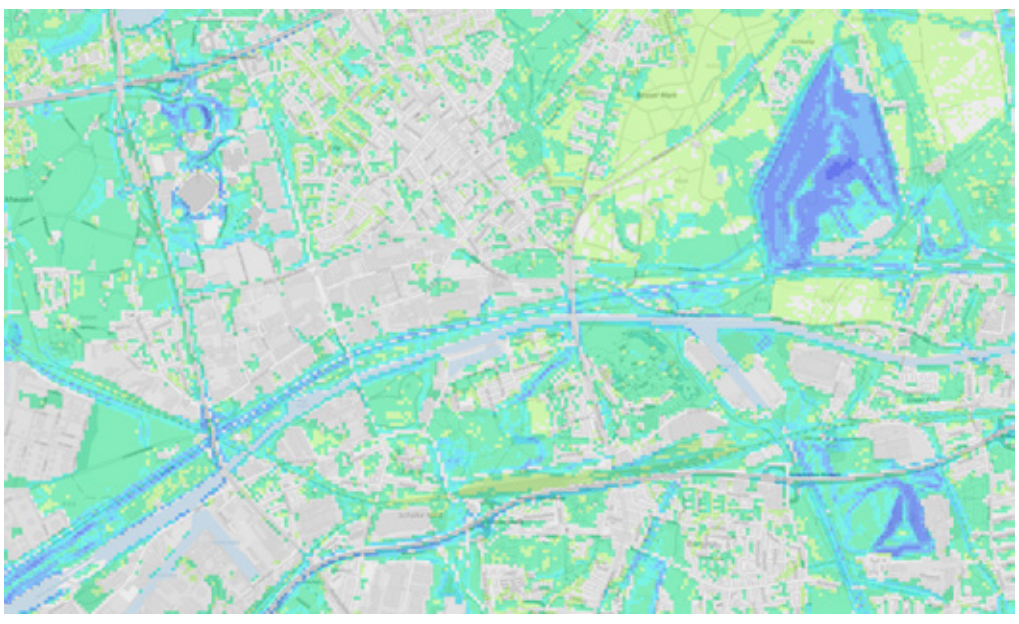
Based on the NRW climate map, I made a map of the cold air flow and cold air direction, which shows that during the night the east-west air exchange is mainly realised via the Emscher canal and the A42. This air exchange is driven by the westerly winds which dominate the Ruhr area in summer.

At the regional scale, maintaining open or semi-open green spaces on the east-west direction

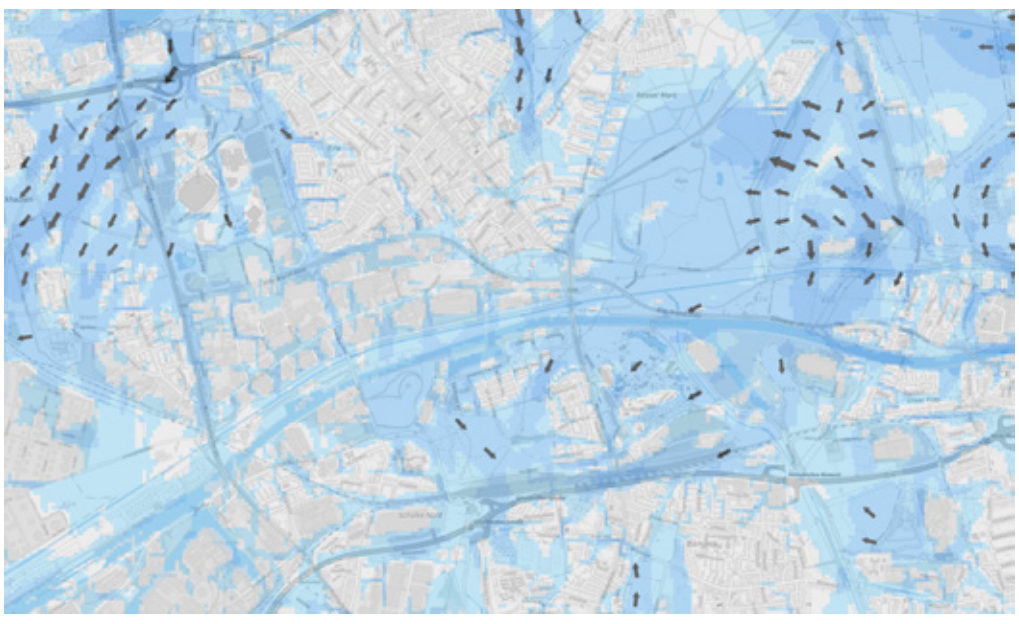


Wind speed at 200m above the ground





Cold Air Volume at night



Cold Air Direction at night

can help air exchange in the central area of the Ruhr Metropolis.
At the city scale, the heap with vegetation can be found to be the main producer of cold air. (Glocke, P.; Scholz, T.; Grudzielanek, A.M. 2023)

Making full use of the heap cooler, directing, and purifying the cold air coming from the heap is a design task at this scale.

Strategy of Cooling System

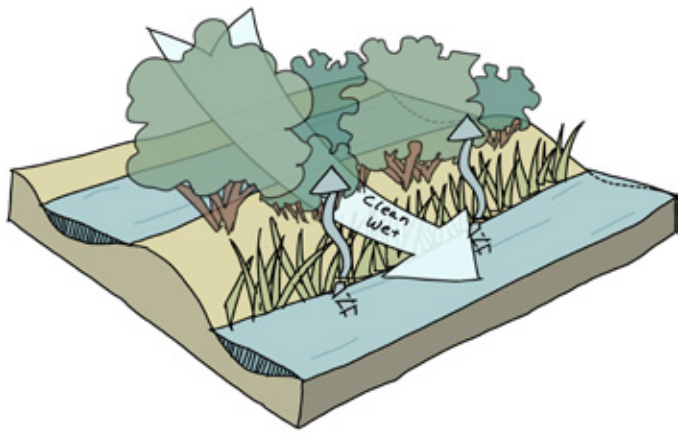
Problem		Solution
Heat Stress	Low rate of Vegetation	More Urban park More Street green Green Roof Green Surface Protect Fresh air area
	High Density/Sealing Rate	Open water space Limite Land consumption More Open space
Low permeability Hard Surface		Urban farming (Root penetration) Urban planting (Rood penetration) Water surface Rain water storage Permeable surface
Poor Ventilation		Unlocking the cooling potential of forests and heaps More Wind way (open) Keep Slopes free Fresh air filter
Low Cold Wind Generate at night		Unlocking the cooling potential of forests and heaps More Wind way (open)

Landscape Principle

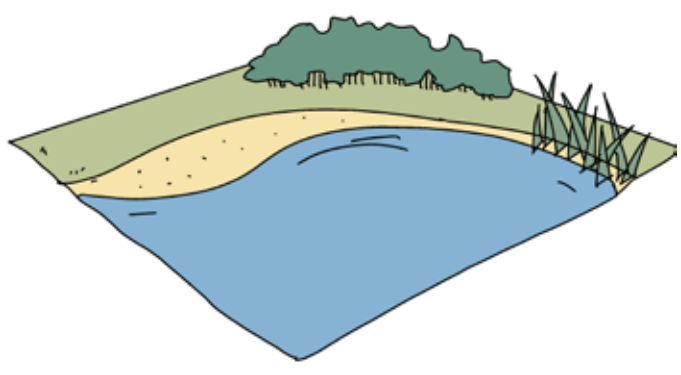
Line — **Volume**

Urban Farming

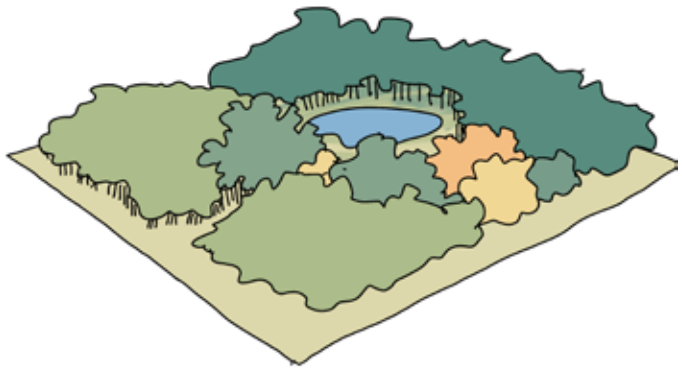
Urban Planting Shade



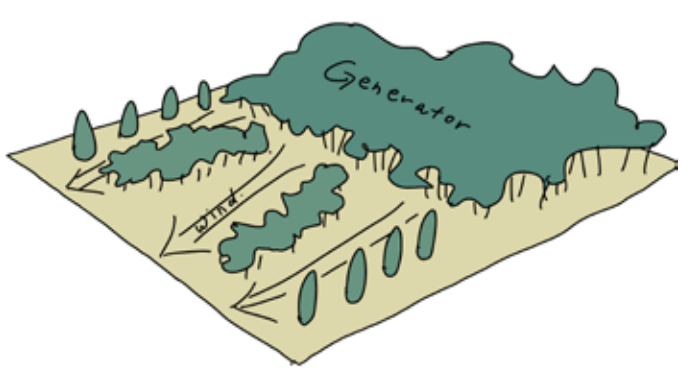
Air Filter



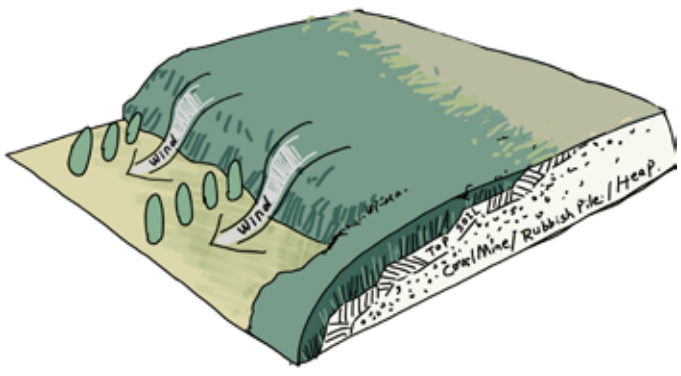
Water Surface



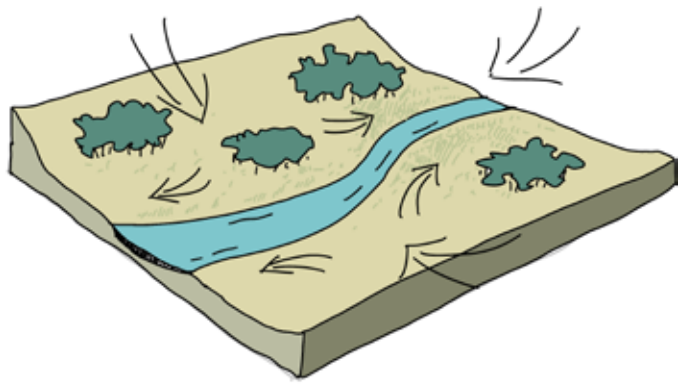
Oasis



Wind Way



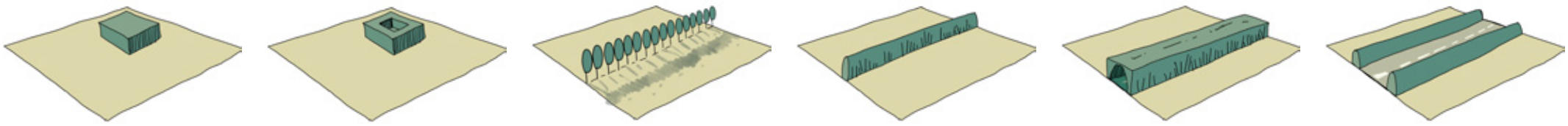
Heap as Generator



Wind Collect

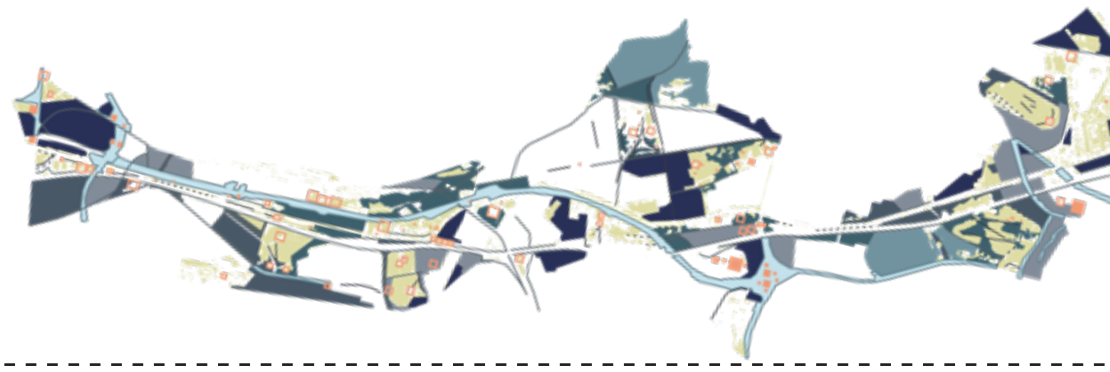
Frame

Spatial Elements in Flowscape

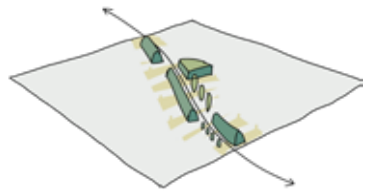


Point

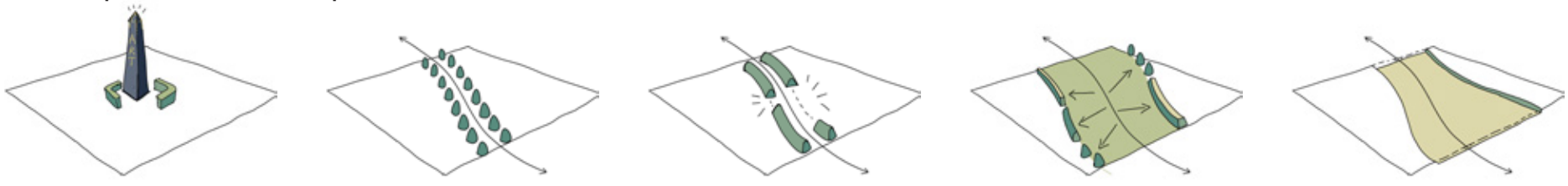
Together they form the flowscape we see today.



Spatial Problem in Flowscape

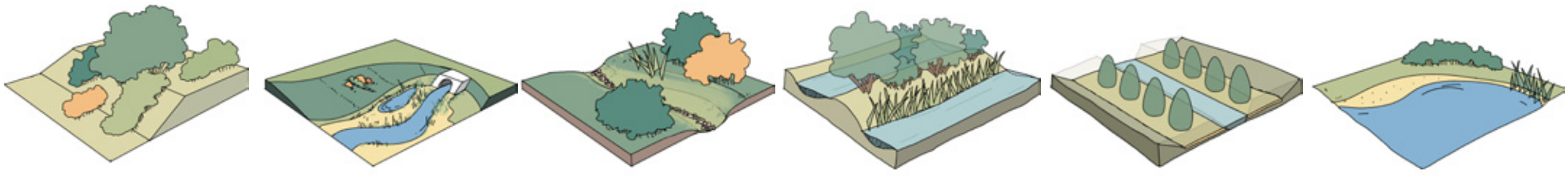


Spatial Principle & Composition to face problem

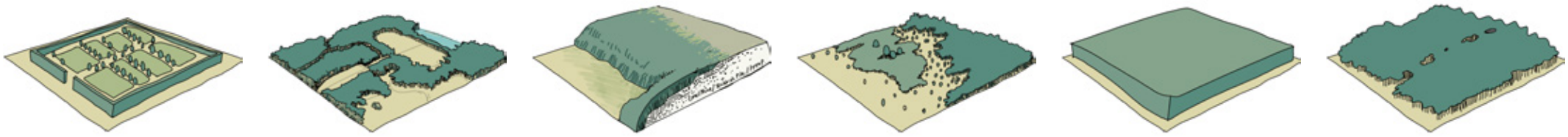


Face the Risk of Flood

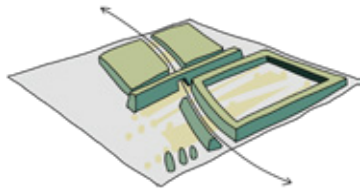
Landscape Principles Respond to Water Issues

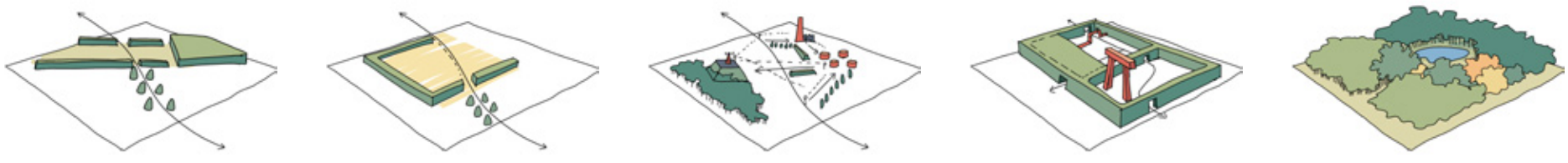


Point **Volume**

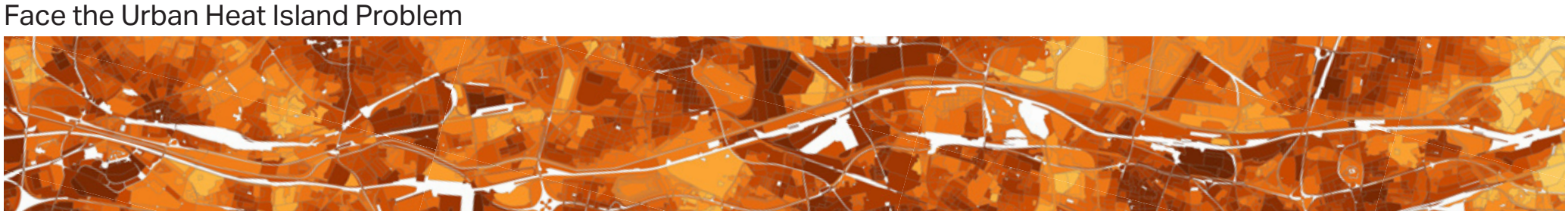


Volume

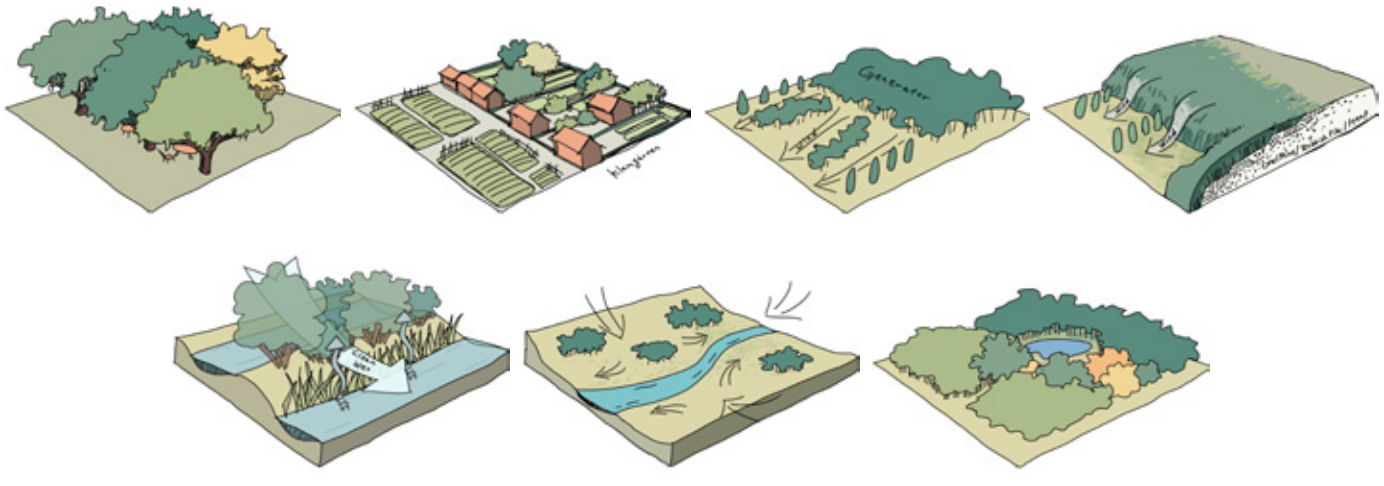




Face the Urban Heat Island Problem



Landscape Principles Respond to Heat Issues



Point

Volume

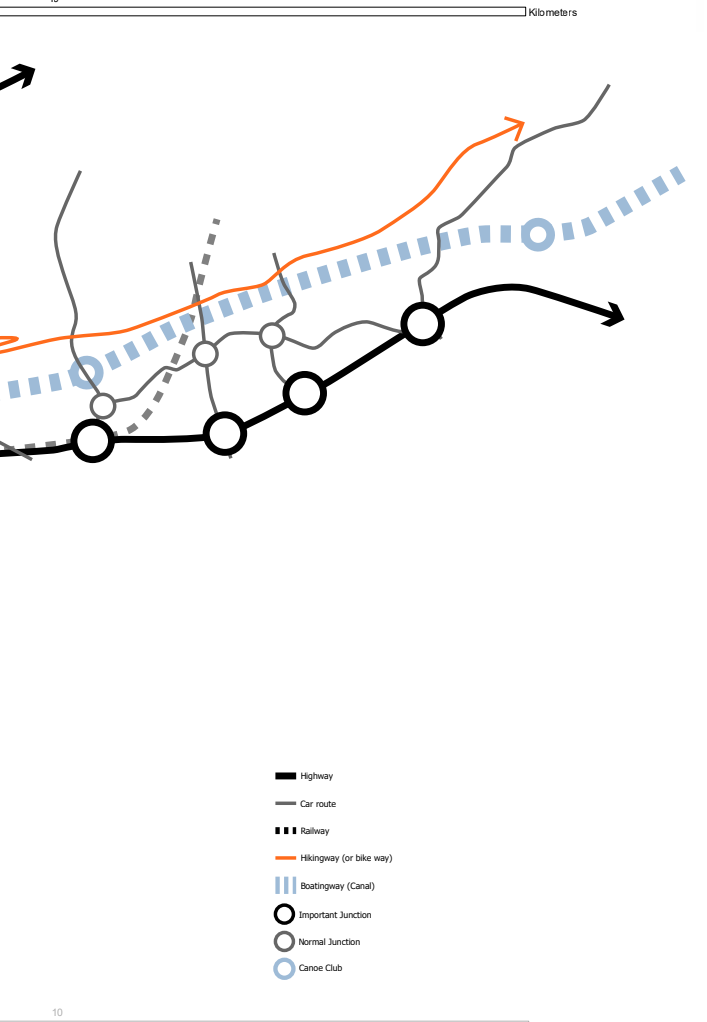

N
N

Perceive Location

Different areas have different images to be perceived, this figure mainly describes what kind of images can be perceived in the theatre, and what range of area can be perceived in this flowscape.

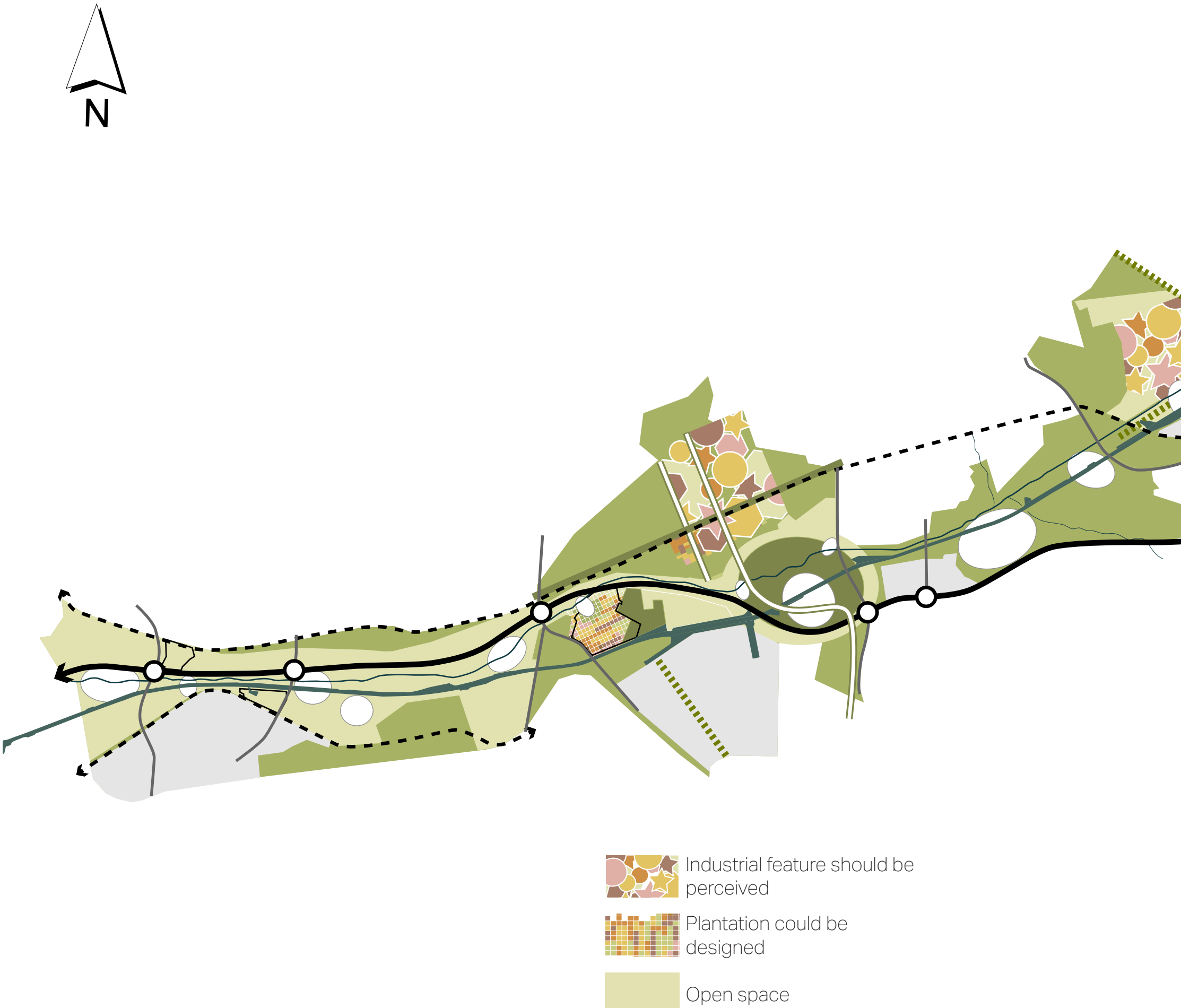
Theatre Ordering

Based on the topography and site characteristics, along the flowscape I have arranged a series of theatres to realise the above perceptions.



Routing

The different paths connecting the theatre are designed for drivers, pedestrians and ships.



Conceptual Spatial Vision

Spatial (Perceptual) Recognizing map

With this design the aim is to create a quiet continuous open space with the ability to show the industrial sequence of the Emscher area. For the walker or cyclist, Emscher island and the Emscher river are important exploratory routes, and creating a continuous open space along the Emscher river is a strategy for the low-speed explorer. Obviously, a continuous 30km strip of open space is not what we want, so in order to reinforce the perception of place, the open space will be interrupted at Eastern Essen and Eastern Gelsenkirchen. Even if open spaces, changes in enclosure and water systems can affect the perception of the experiencer. As a whole, the spatial experience

of both pedestrians and drivers, starting from Oberhausen at the western end and moving eastwards, changes from loose to dense, with each change being a perception of change in the area. For example, in the same application of open space, the opening up of Emscher Island and the opening up of the individual Emscher river need to be perceived, and this change in the water system is the most direct way of perceiving the spatial change of the location.

For the goal of creating industrial sequences, two types of design were made: in Essen, more attention was paid to the creation of entrances or thresholds by the railway and the linear woods; in Gelsenkirchen, the huge oil tanks and factories are still in use and not suitable for exploration, but can be displayed, so that more attention was paid to the use of sightlines in the design. For the planning of the plantation, the plantations that need to be designed are mainly concentrated in places where industrial achievements need to be displayed. Integrating them with the existing flowscape is the next design task.

N

Composition Master Plan

Composition Vision

Landscape Elements in Flowscape

- Woodland
- Old Theatre
- New Theatre
- Open Space

Other Spatial Elements in Flowscape

Industrial Elements (Architecture)

Bridges

Main Roads

Main Railways

Naturalized Emscher River

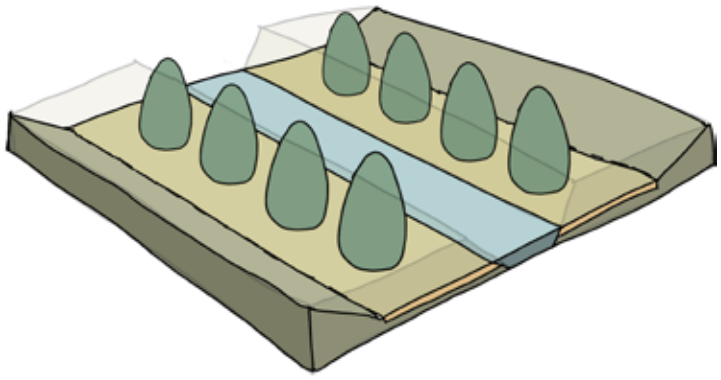
Rhein-Herne-Canal

Plantations which need to be improved

Application of Landscape Principles

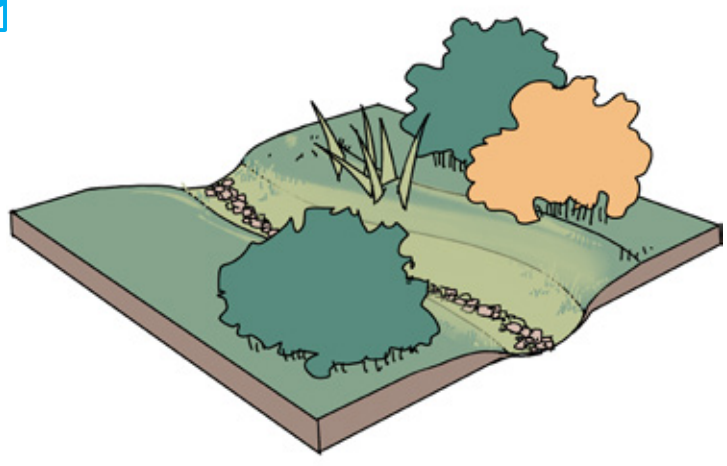
Water solution of Emscher

Enlarge the Room for Water

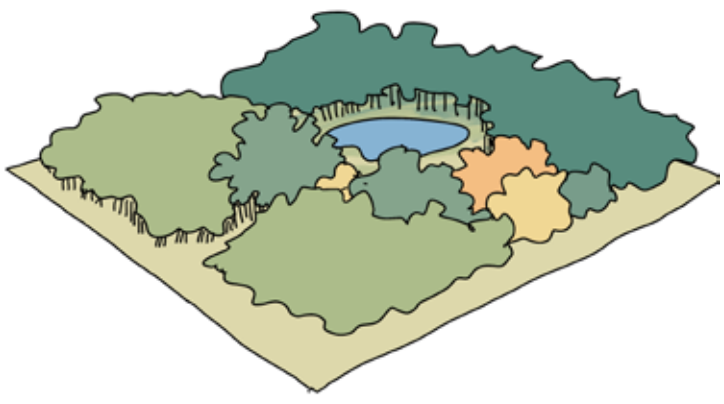


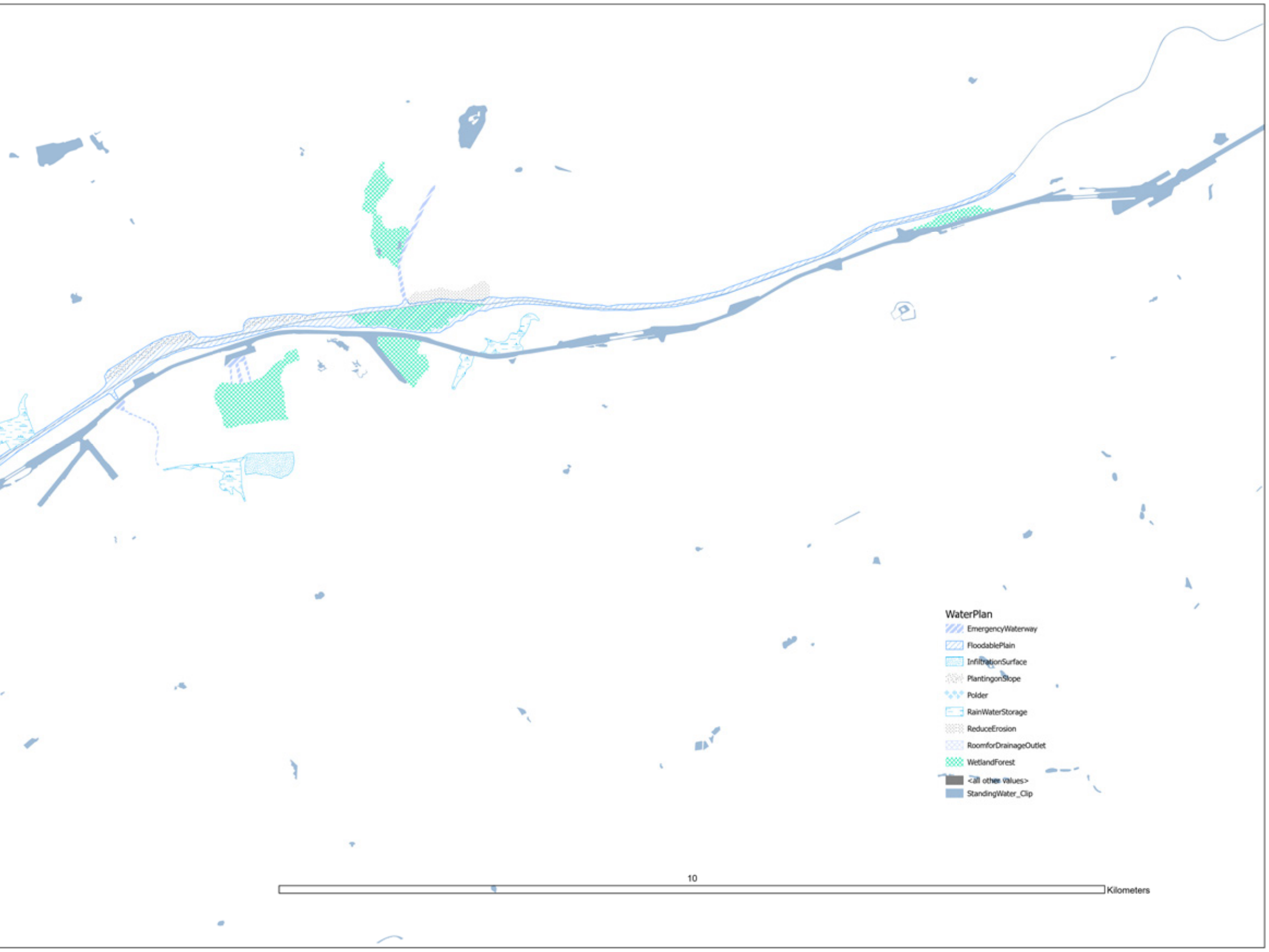
Urban Farming

Rainwater Collect

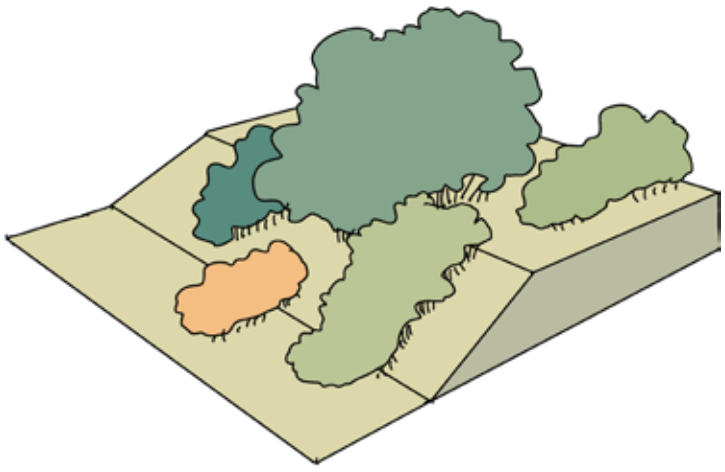


Wetland Forest

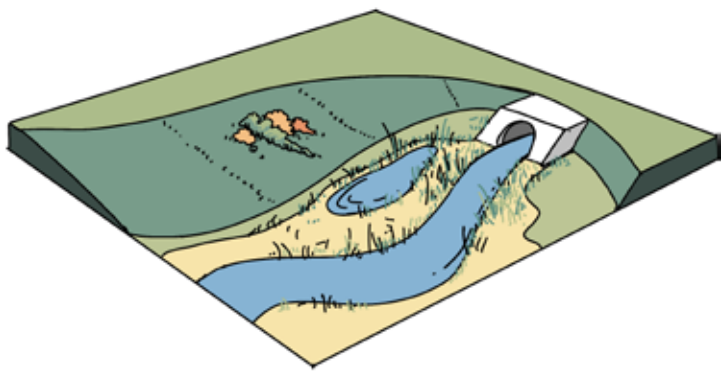




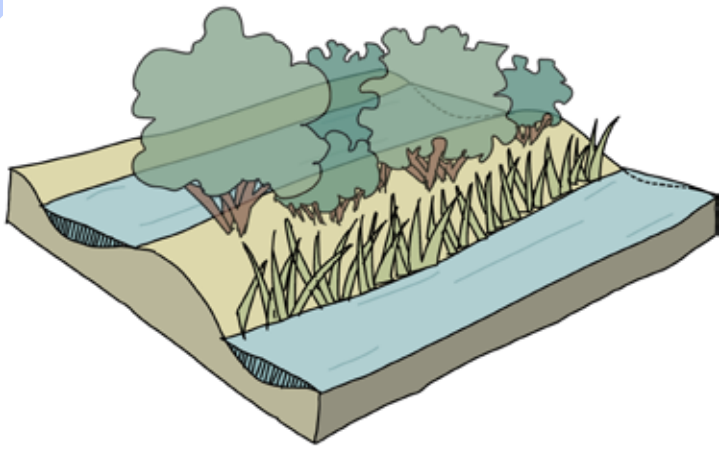
Planting on the Slop



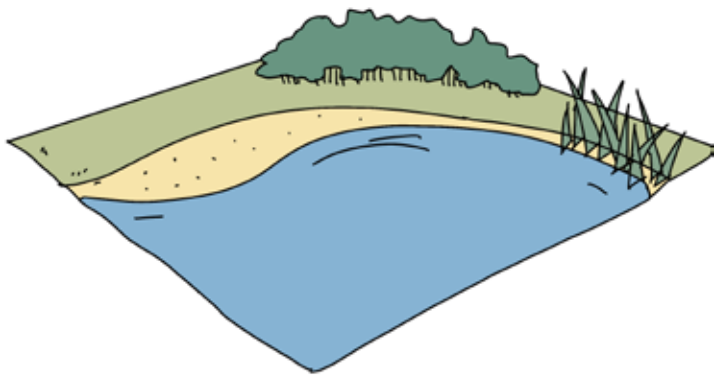
Room for Drainage outlet



Water Way



Water Surface

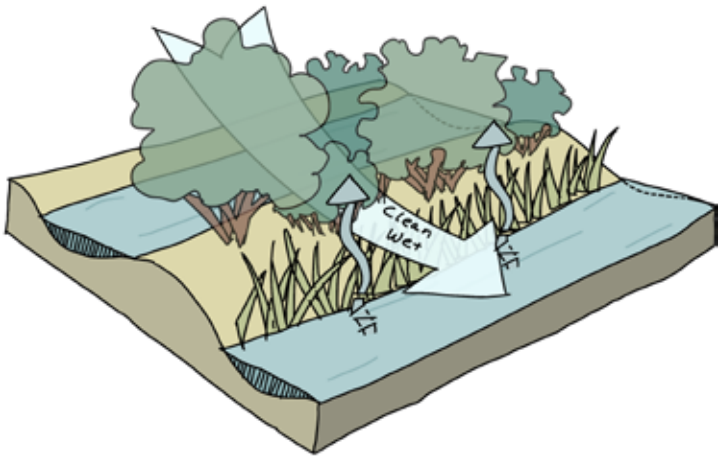


N

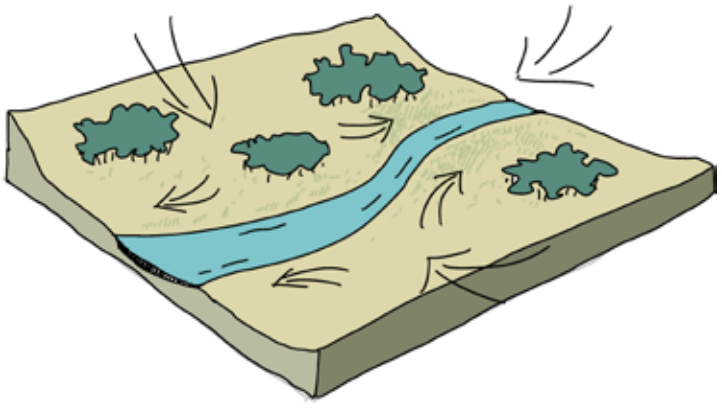
Application of Landscape Principles

Ventilation and Heat mitigation map

Air Filter



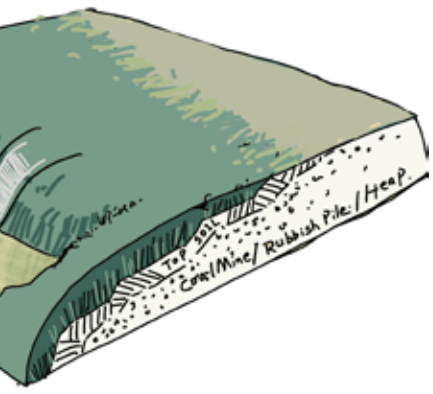
Wind Collect

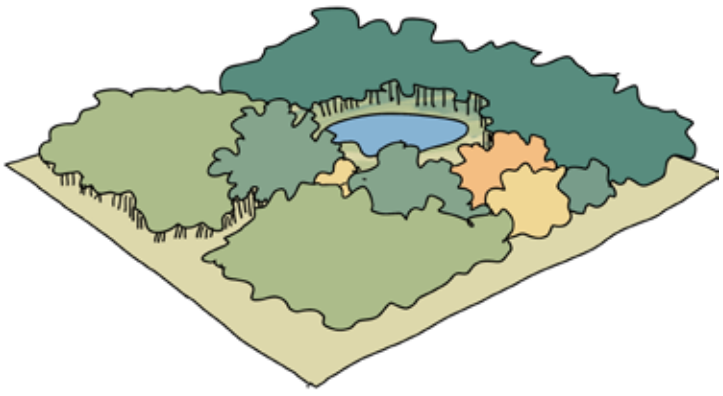


Coolingsystem
AirFilter
ColdAirCollect
LimitDensity
Oasis
WindWay
<all other values>

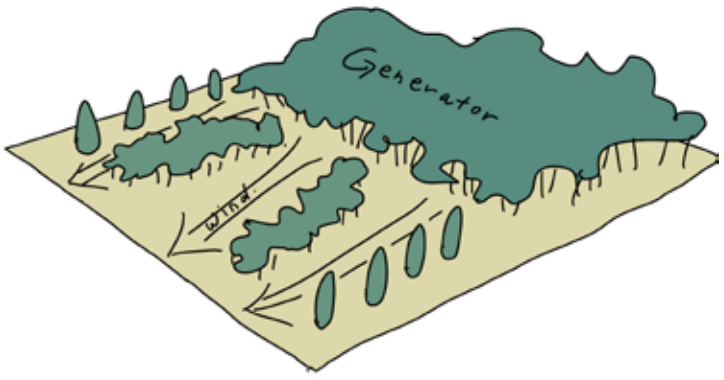
10
Kilometers

Oasis





Wind Way

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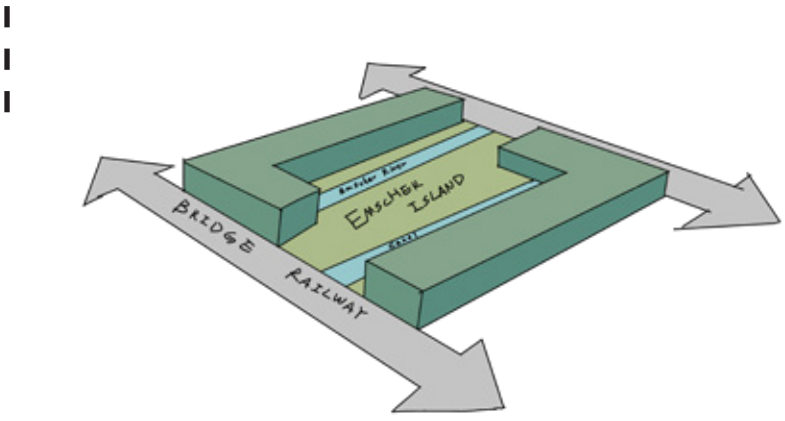
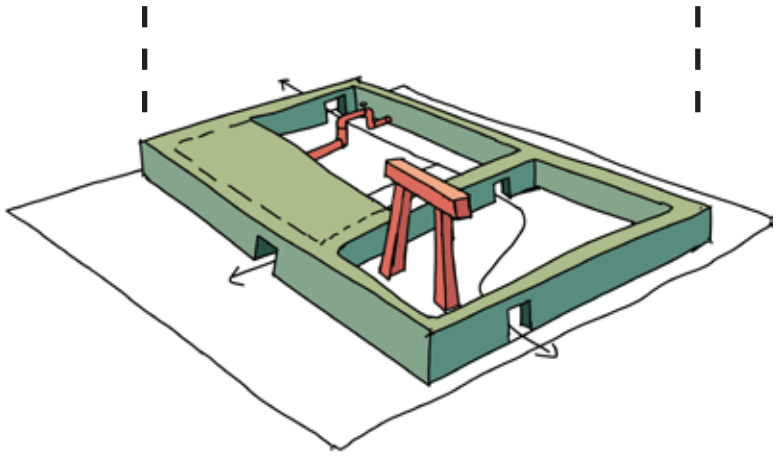
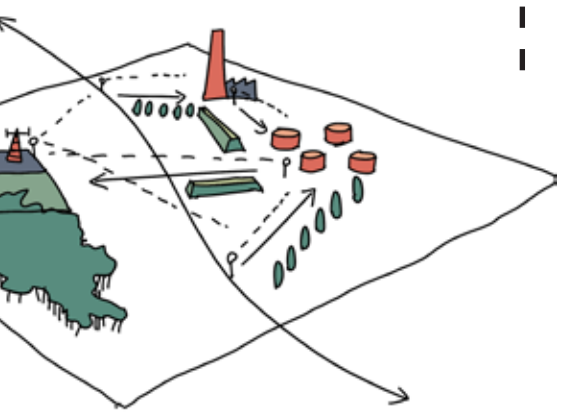

EMSCHER ISLAND
BRIDGE
RAILWAY





Woodland Composition in Flowscape

- Dense Forest
- Loosen Forest
- Shurb
- Openspace
- Brown Field

Other Spatial Elements in Flowscape

- Infrastructure
- Industrial Feature
- Canal
- Natural Emscher River

Chapter 4

Theatre

Essen

Gelsenkirchen

Theatres are like a series of islands with their own distinctive characteristics on the great voyage of flowscape. As if they had a powerful magnetic field of their own, these theatres always catch the compass of the visitors and turn themselves into their destinations. In the first chapter, we analysed the status and definition of theatres in the metropolitan landscape. In the second chapter, we analysed the arrangement and composition of theatres in the flowscape. In this chapter, we are going to design the theatres that float on the flowscape and show how imagery of Zwischenstadt is perceived in these designed theatres.

Structured as follows:

1, In Essen's design, I will briefly describe how different paths with different observers will experience different urban images through landscape interventions. What is the role of theatre in pathways? What can be a theatre?

2, In Gelsenkirchen's design, the design of the paths will focus more on the connection between theatres. And the focus will be on explaining how the urban forest can be designed through landscape interventions.


Hiking Route
Driving Route

Essen

Master Plan

Routing

Hiking Route

Driving Route

N

Legend

Viewshed Input point or polyline observer features (Lines)
2

Viewshed Input point or polyline observer features (Lines)

Viewshe_oldd

Value

0.001 - 0.032

0.033 - 8

Viewshe_oldh

Value

0.001 - 0

0.001 - 8

DSM_theatre

Value

203

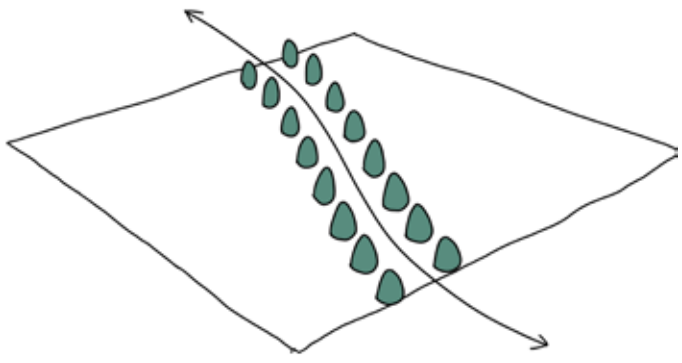
0

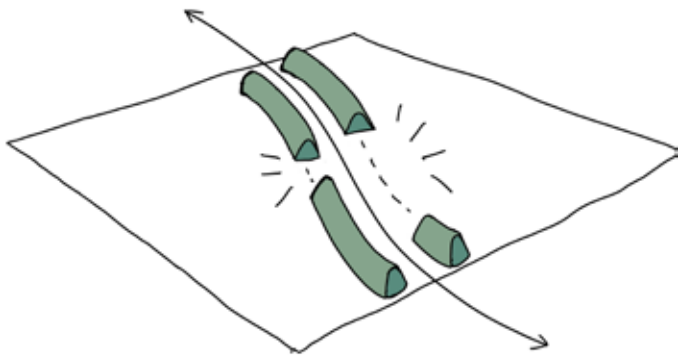
1

Kilometers

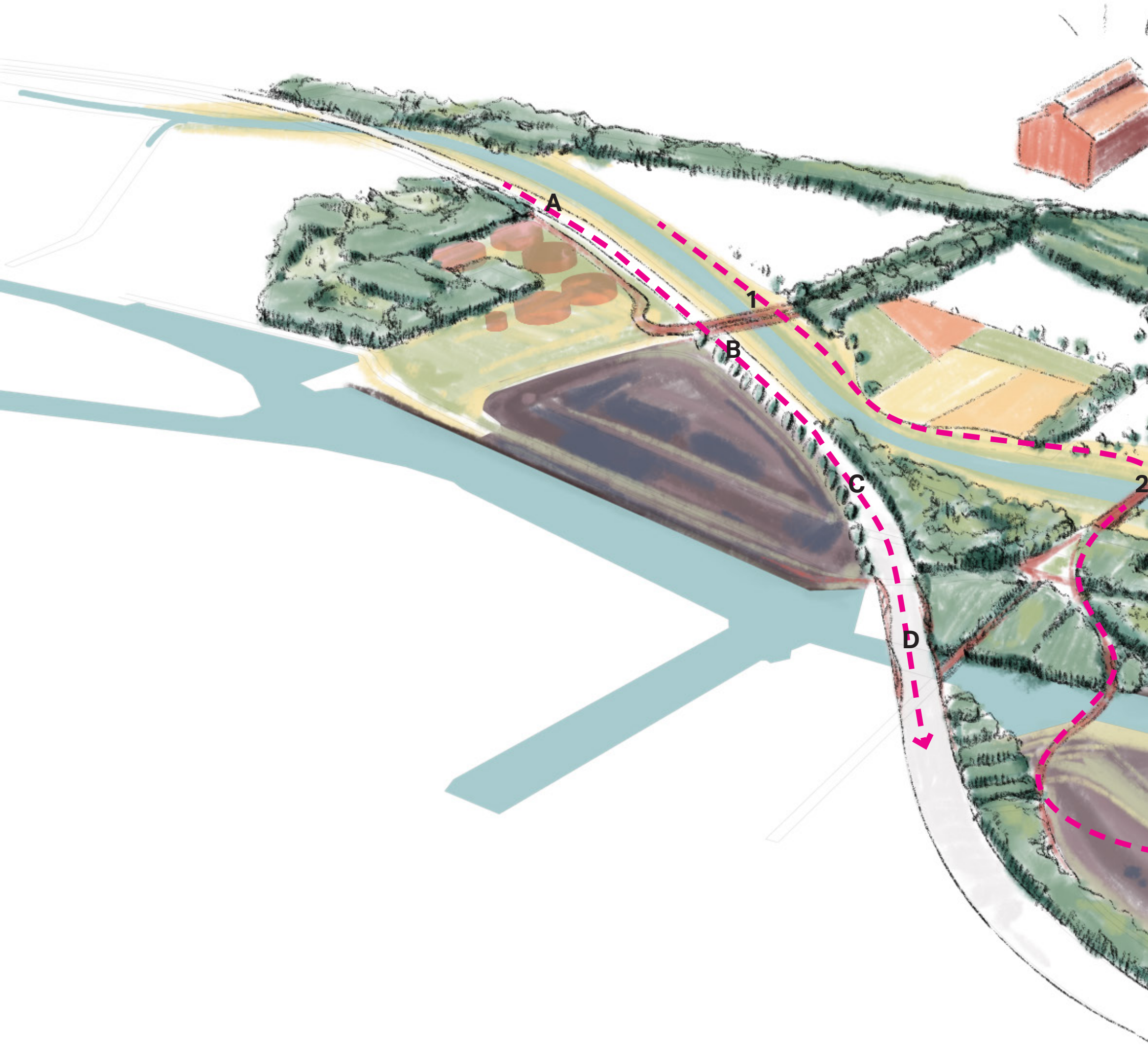
Picture taken while passed by

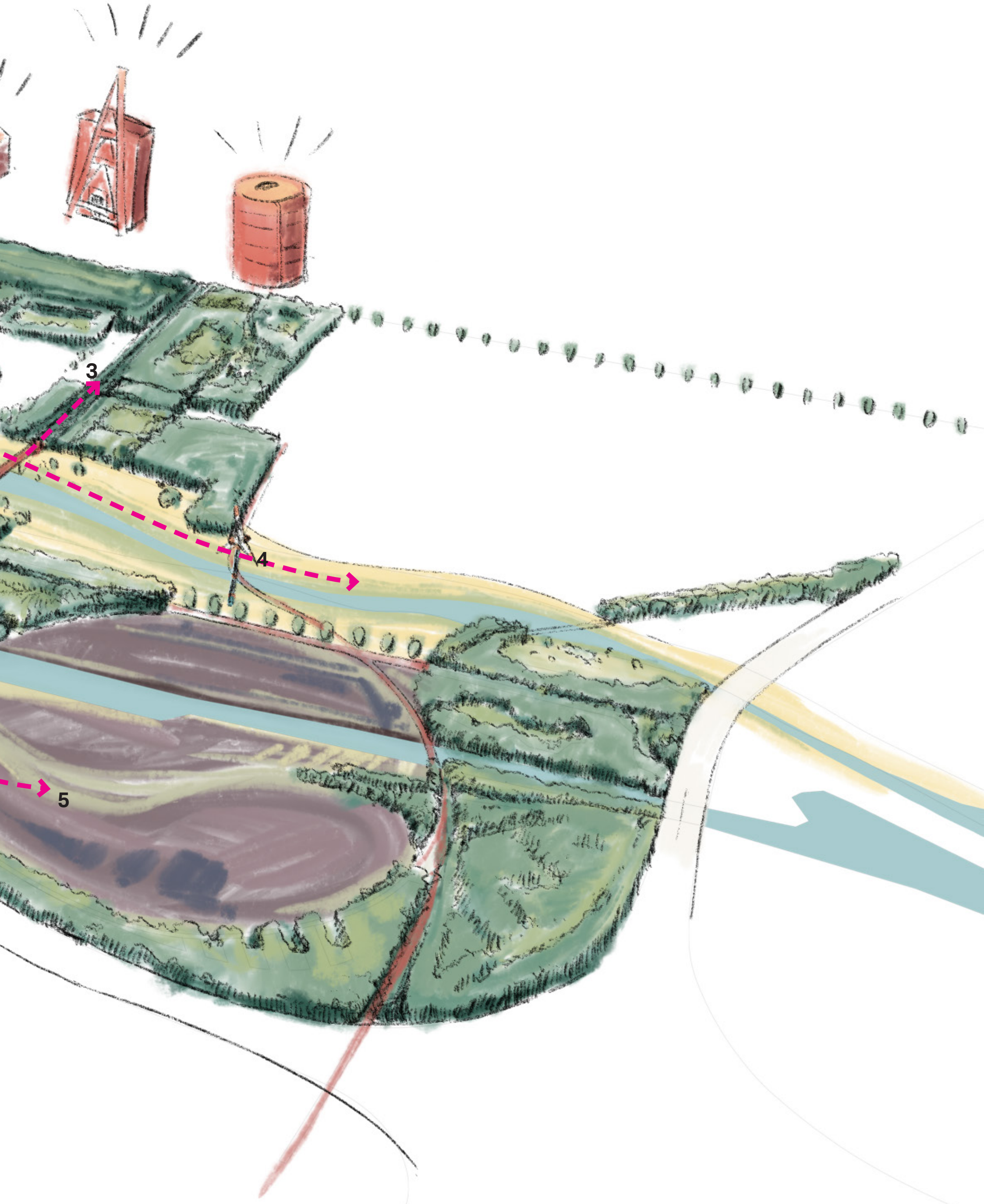
The biggest problem in Essen from the aspect of the visual experience is that many industrial facilities cannot be observed if the Emscher valley is used as a tour route; the A42 road through the Ruhr area also hinders the perception of the area because of the dense woods (line-big line).





Facing these problems, break part of the big line and increase the planting interval are the planting principles to be observed in this section of Flowscape.


A
B
C
D
1
2


3
4
5

Hiking Route, Clues Succession

Unpredictable pedestrian routes need to be guided by the design of visual focus and clues. As from Figure 1 to Figure 2, the windmill has been an important visual focus, and the open river valley allows for an unobstructed view of the surrounding landscape, whether it be farmland or brownfield, with more opportunities for visitors to perceive interesting targets. As in Figure 3, the disused railway leads directly to the industrial heritage, the design of the path across the railway bridge is to give the visitor the opportunity to explore the railway to discover the northern industrial heritage. Even if, the visitor ignores the railway lines, eventually, the open Emscher valley will lead the visitor to a theatre where the industrial character of the North can be observed.

1

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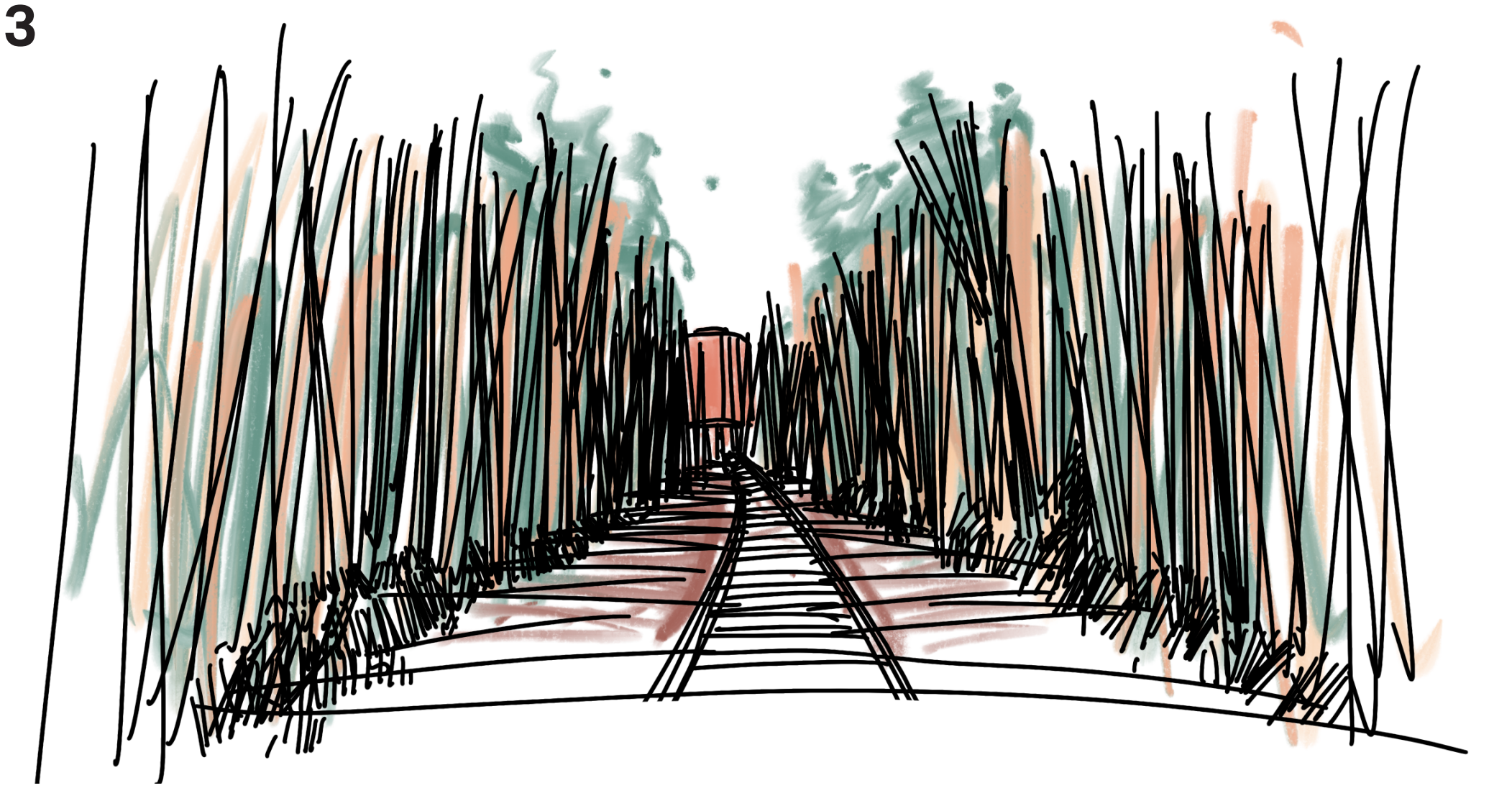

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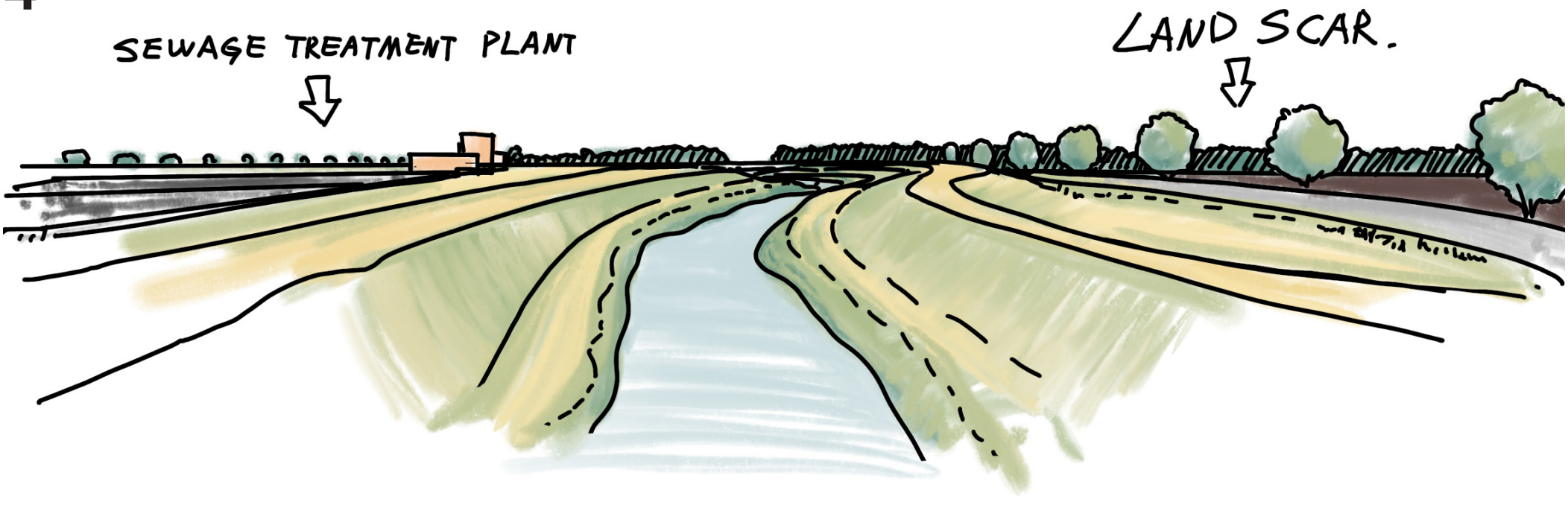


5

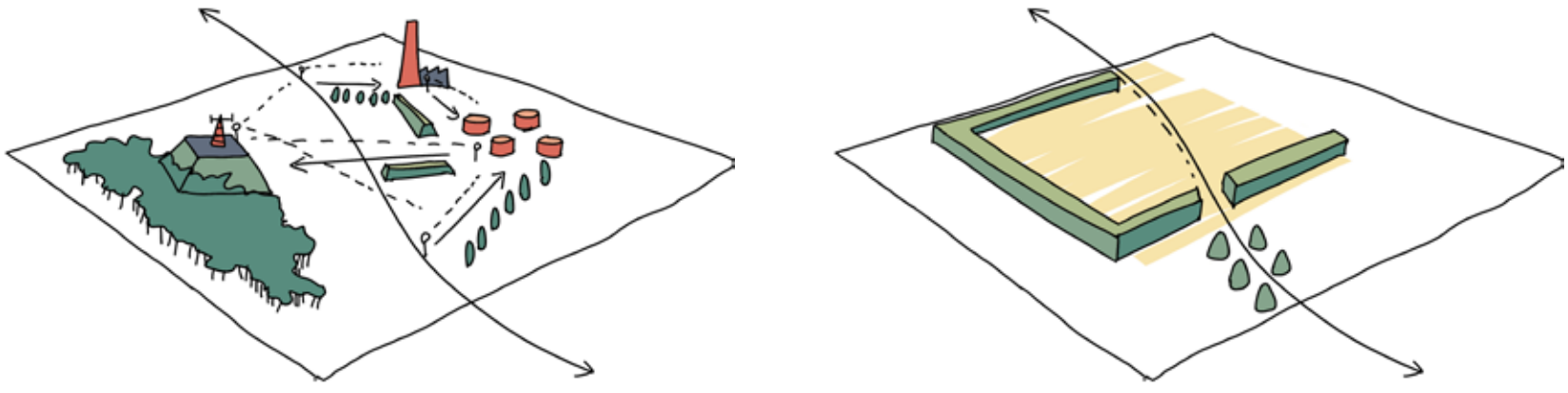
N

1

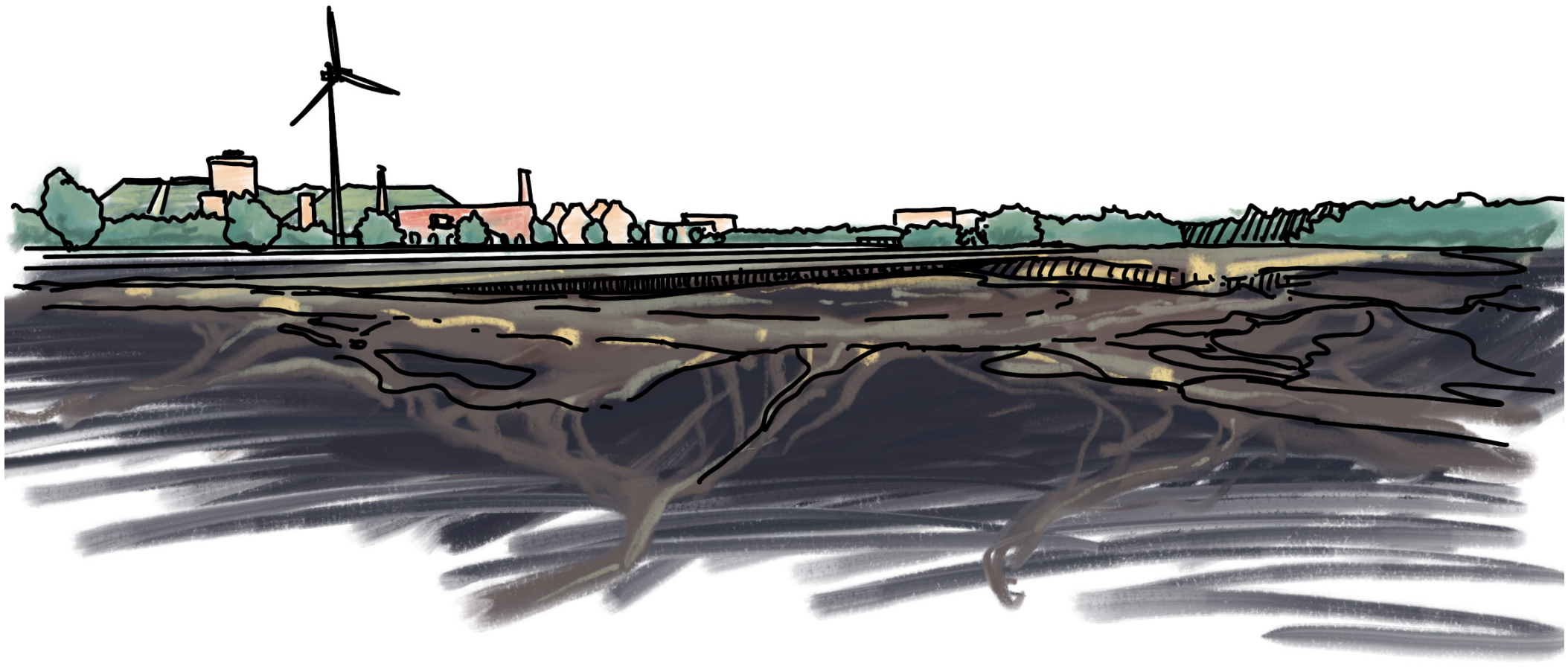
Kilometers

Theatre in Essen

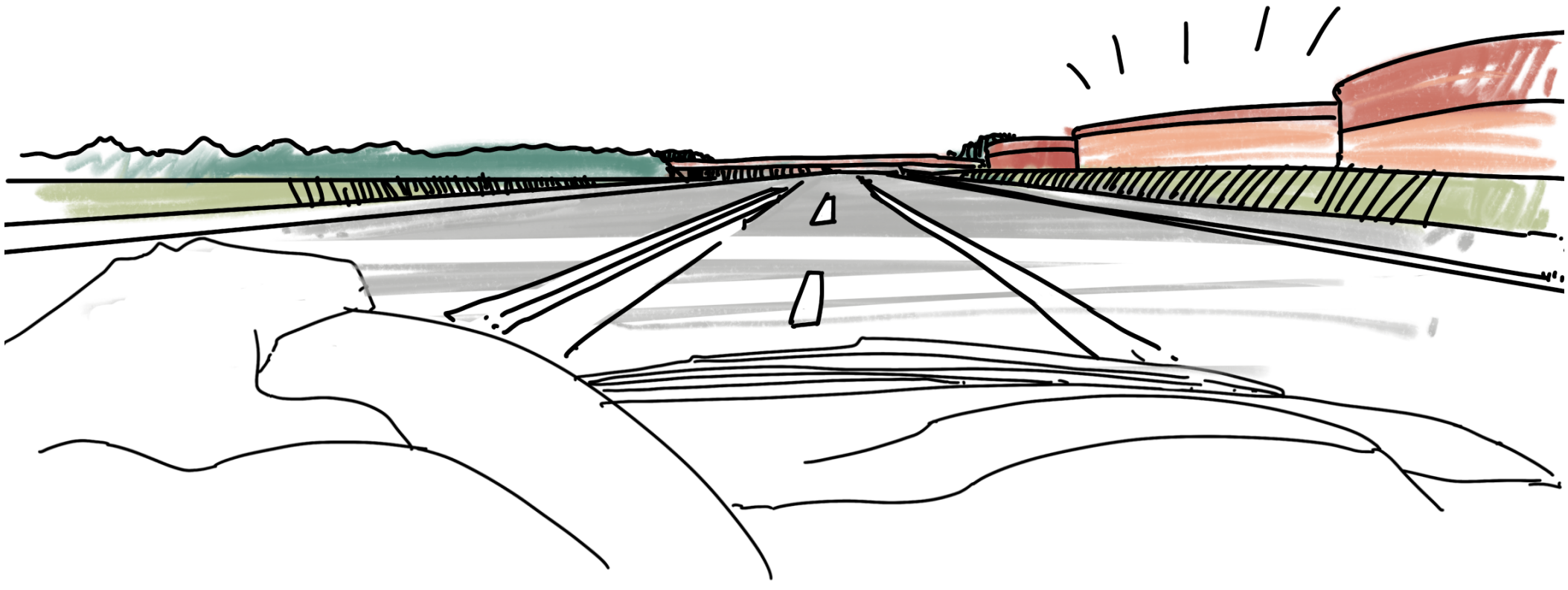
This theatre is an important observation point for all the significant industrial facilities north of Essen. Interestingly, it is not a heap far above the surface, nor a man-made tower, but a huge, abandoned brownfield site. In itself this polluted brownfield site is a unique geomorphological destination with a unique landscape. The Northern Industrial Estate is showcased by cutting down the trees that block the view and planting trees to match.



The sightline design is used as a basis for opening up the closed block forest to show industrial features to the visitor in order to achieve the design goals.



A

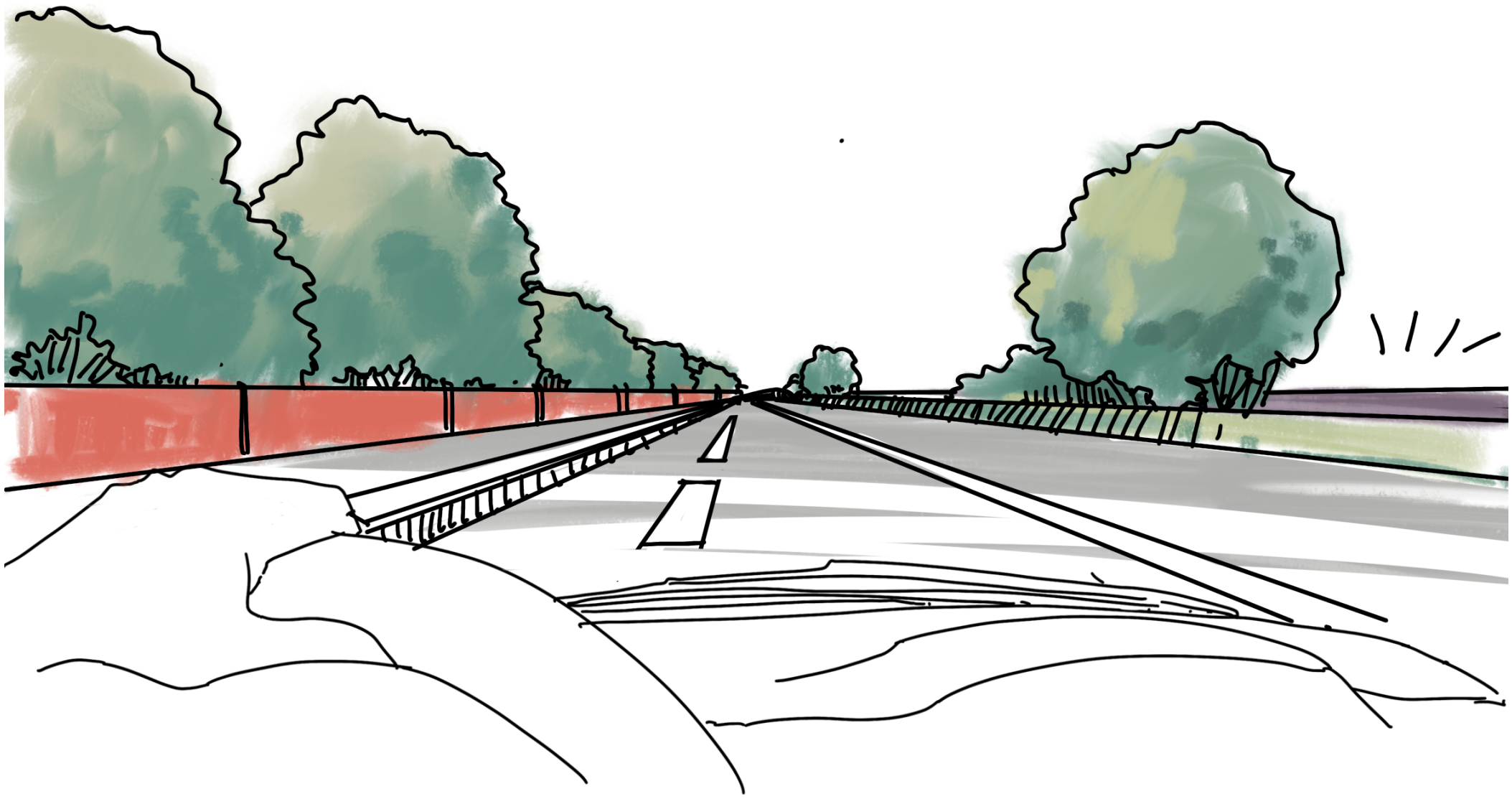


B

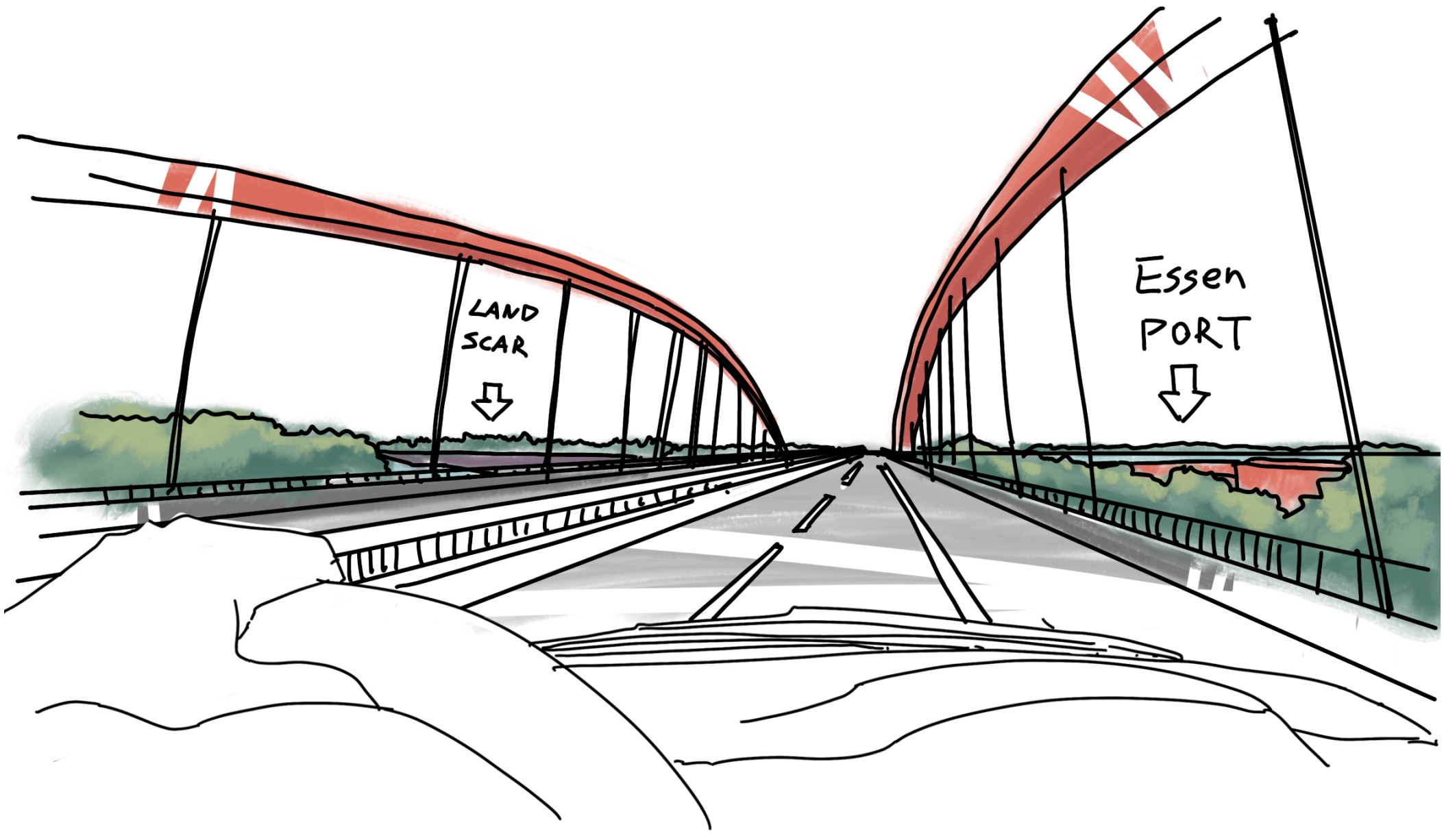
Driving Route, Goals Succession

Theatre as a tool for perceiving the urban landscape can be perceived by the observer inside it by borrowing a landscape device, or outside it by looking at it. For drivers, visual perception is the main way of perceiving movement on a modern flat highway. Architectural features on the roadside, changes in landforms, and placed objects attract their attention. As Appleyard said, the apparent movement of objects can be a pleasure in itself. Distant landmarks become visible and shift as the vehicle approaches; canals and heaps gradually come into view, and features of the harbour allow the driver to perceive specific directions. These are the theatre. In this scale the driver moves along the road, and on the way, the visual focus is captured by a series of goals, which may be landmarks, nearby landforms, or paths they are travelling on. On this basis, the road is divided into successive visual segments. Intervening in these segments and reinforcing the targets is the principle of this part of the landscape: differentiation.

C



D



GS3_Heap theatre

Hiking Route

GS2_Land theatre

Hiking Route

GS1_Visual theatre

Gelsenkirchen

Master Plan

Routing

Hiking Route

Theatre

Visual theatre

Land theatre

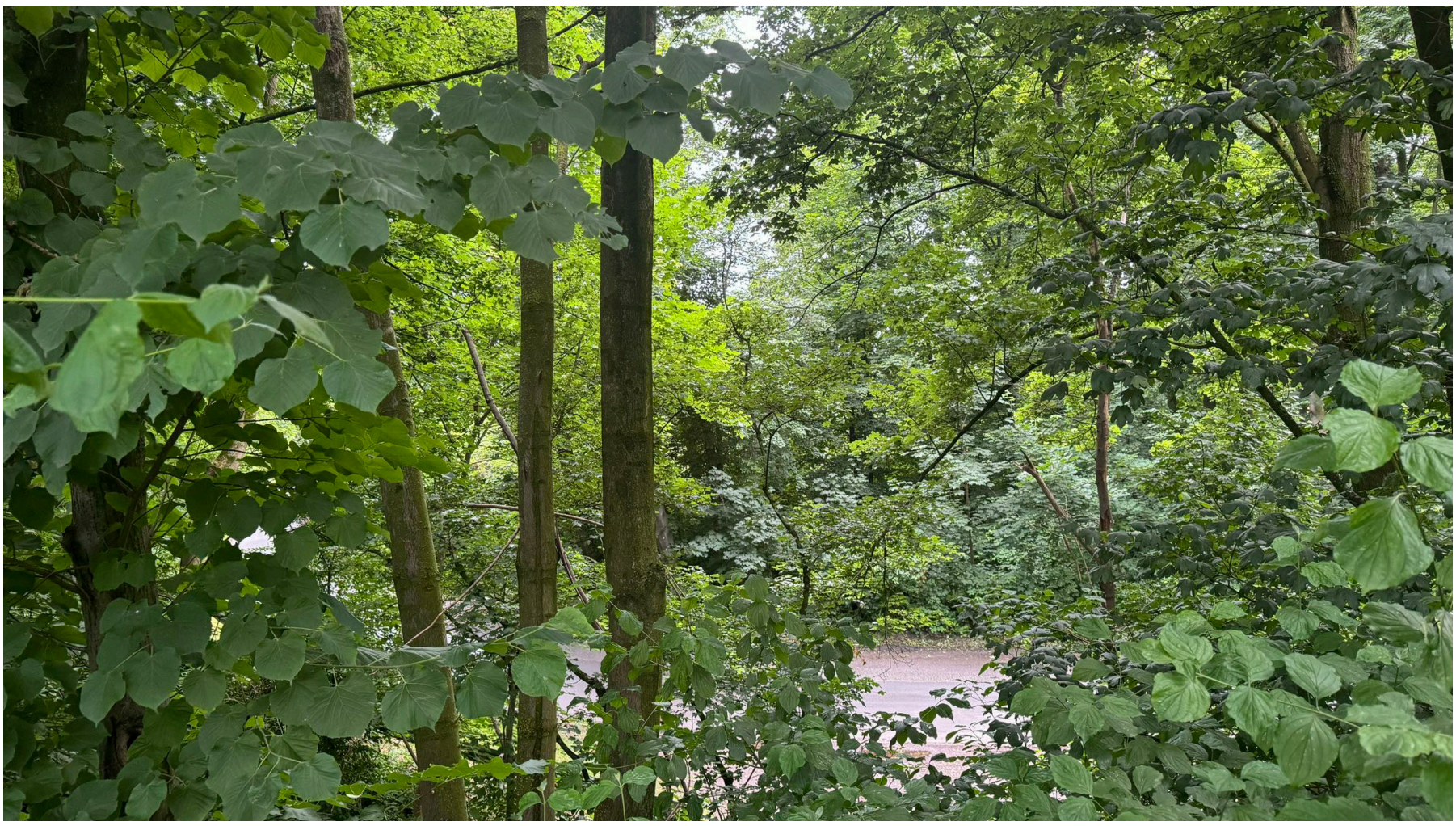
Heap theatre

Planting plan

Spatial plan

1, Volume of woodland in Gelsenkirchen

2, Path along the canal, like go through the pipe, can not perceive the environment

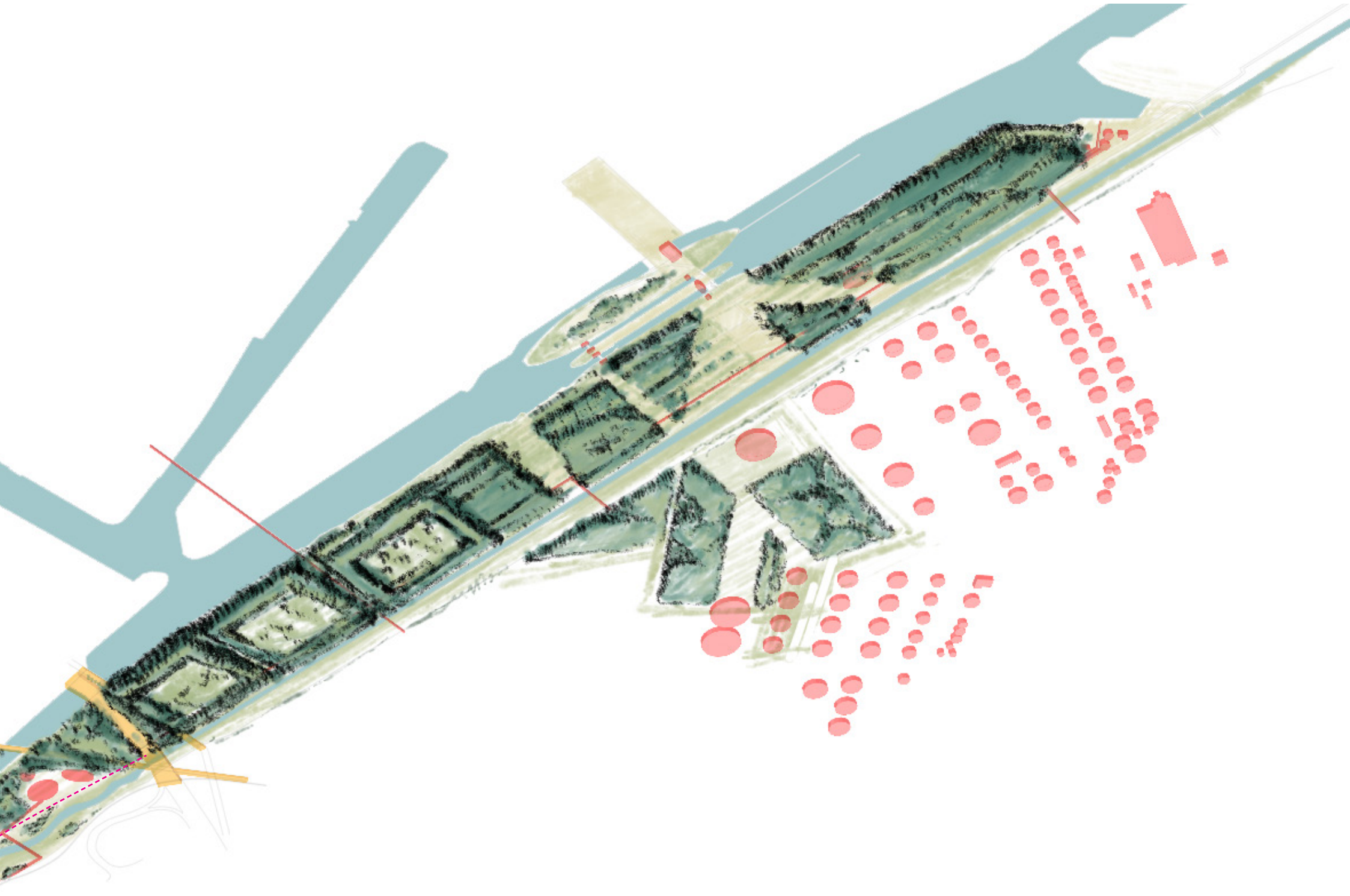


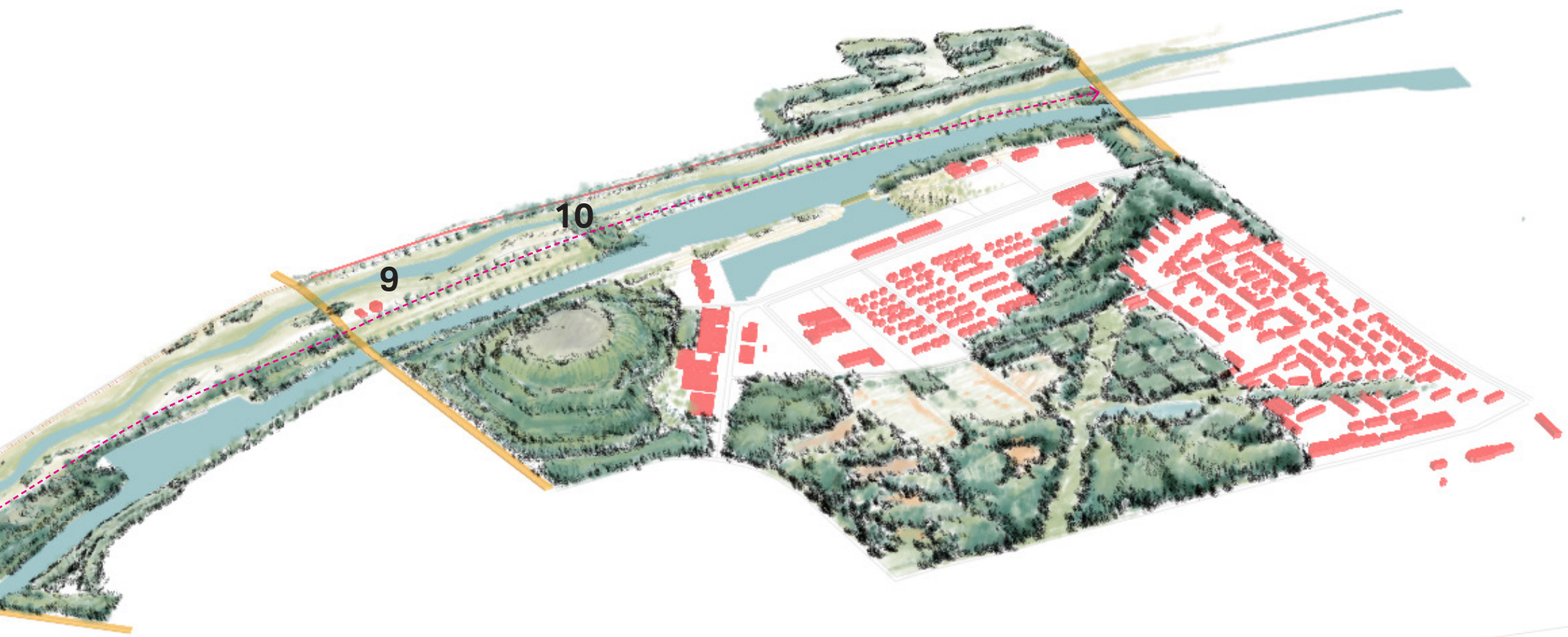
3, The pipe itself can not be perceived

The Emscher river in the Gelsenkirchen section is divided by dense woods, which makes it impossible to perceive the waterways on both sides even from the Emscher island in the centre. As shown in Figure 1, the canal is surrounded by dense woods on both sides, resulting in the north and south banks (pedestrians as observers) and the waterway itself (ships as observers) being separate from each other, whatever the direction of view. Even in the case of a factory next to the river, such a dense forest can completely block the view of its observation.

The cyclist who travelled through it was even more easily getting bored, with a whole 2,000 metres of unchanged forest pipe, no river in sight, no buildings, and the occasional un-signposted road junction. This was one of the most disappointing sections of the expedition for me, and without double-checking the GPS, a cyclist could easily miss the entire city (as I experienced). Other than being able to observe the new city of Bismarck, the rider does not get a sense of any regional identity. This is for cyclists travelling east-west, but for cyclists travelling north-south, they won't even notice this boring greenway.

It is therefore important to base landscape interventions in the Gelsenkirchen section of the Emscher river on visual experience.

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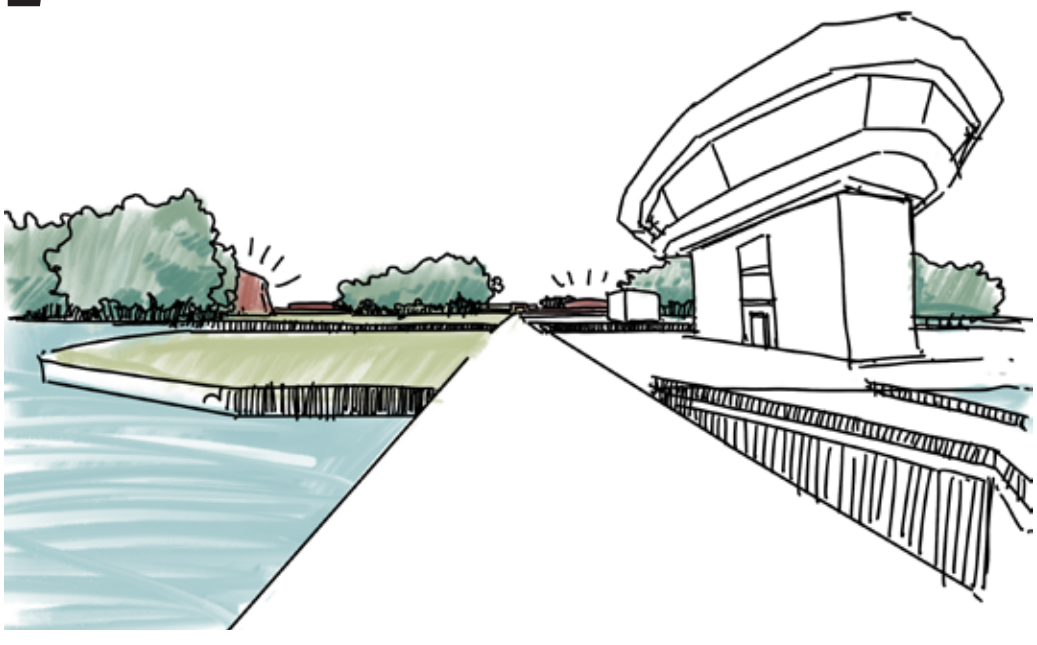

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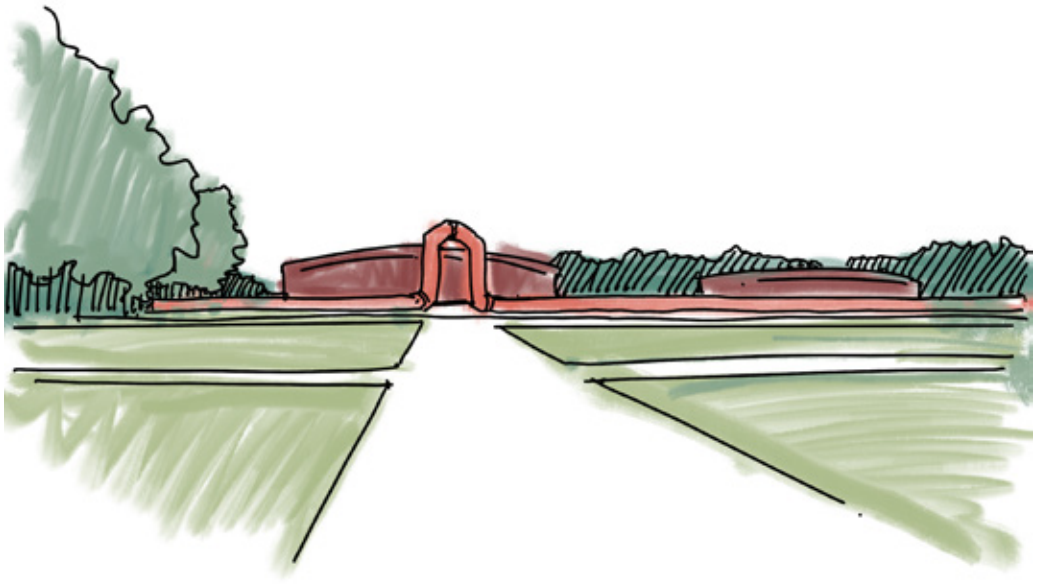

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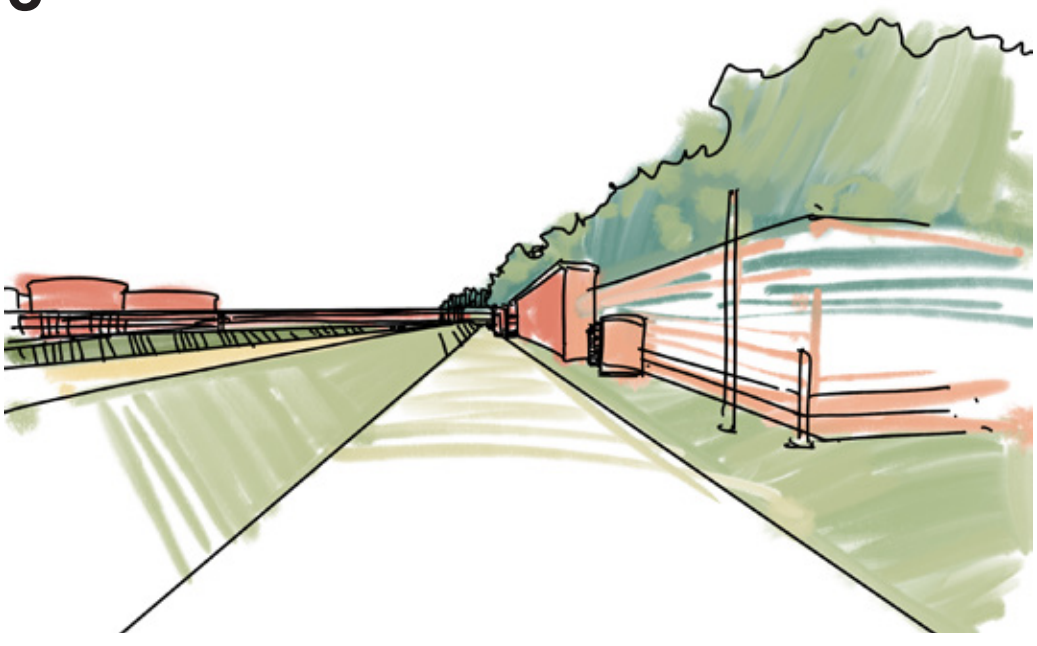

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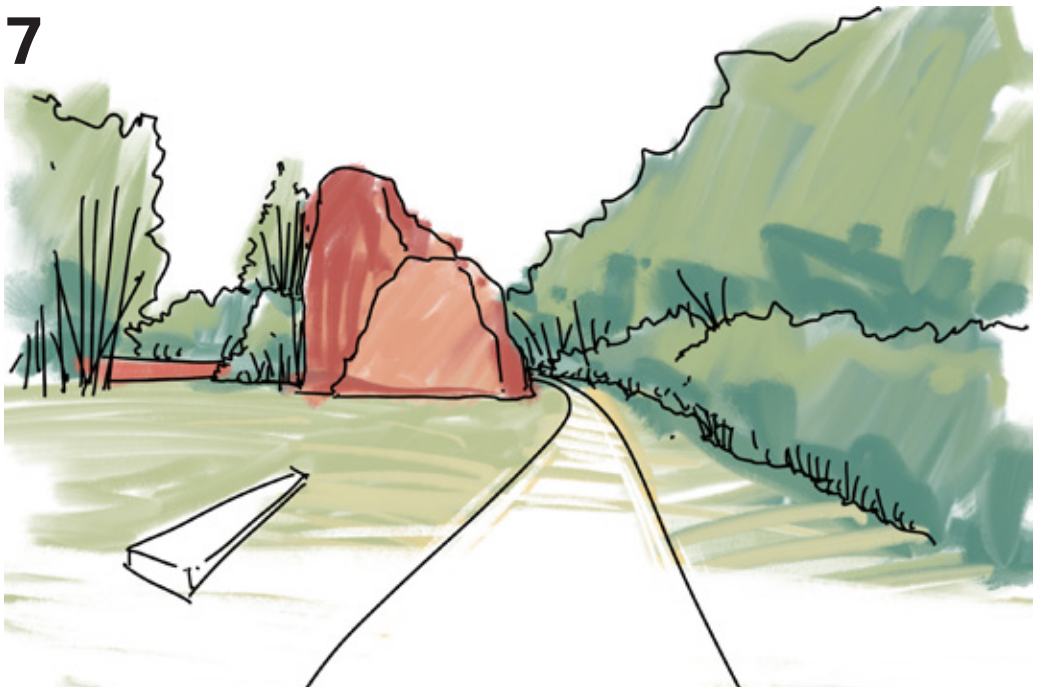

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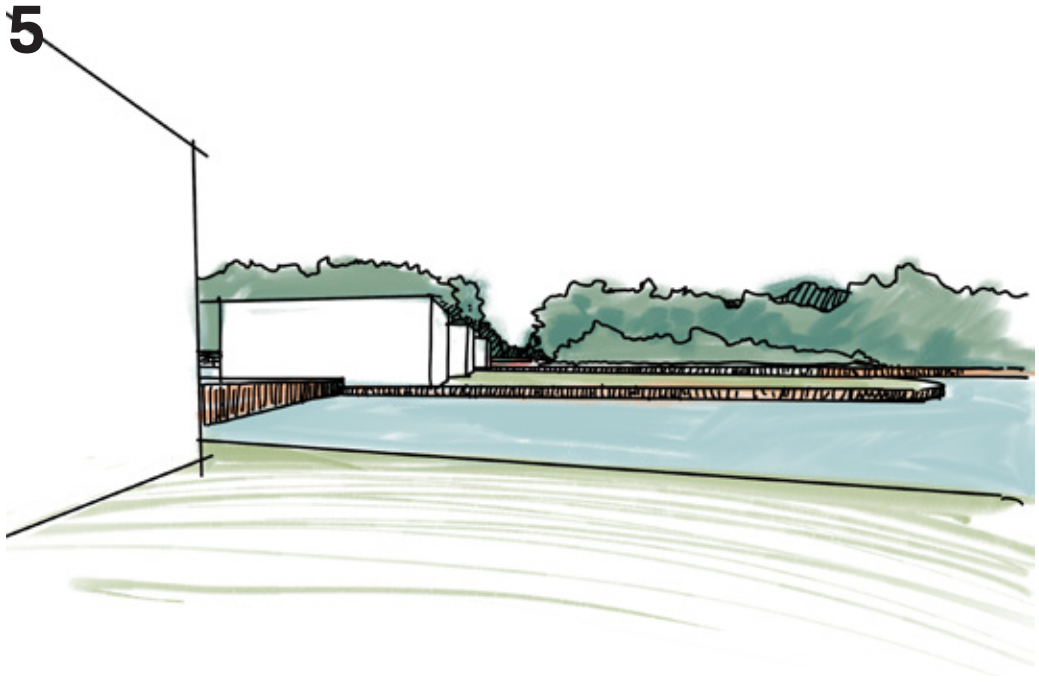

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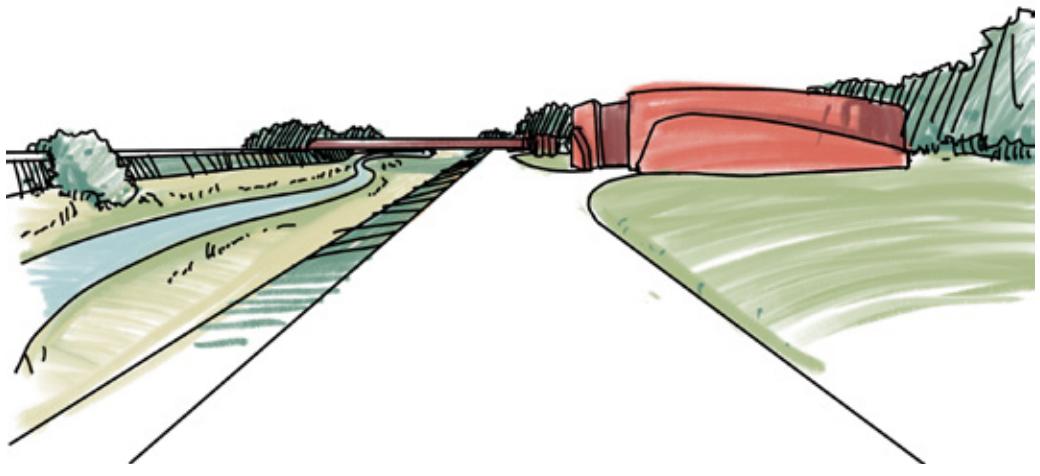

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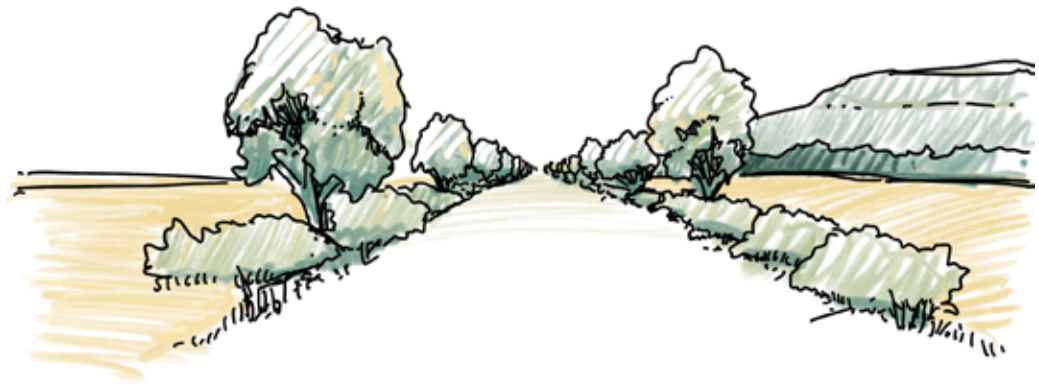
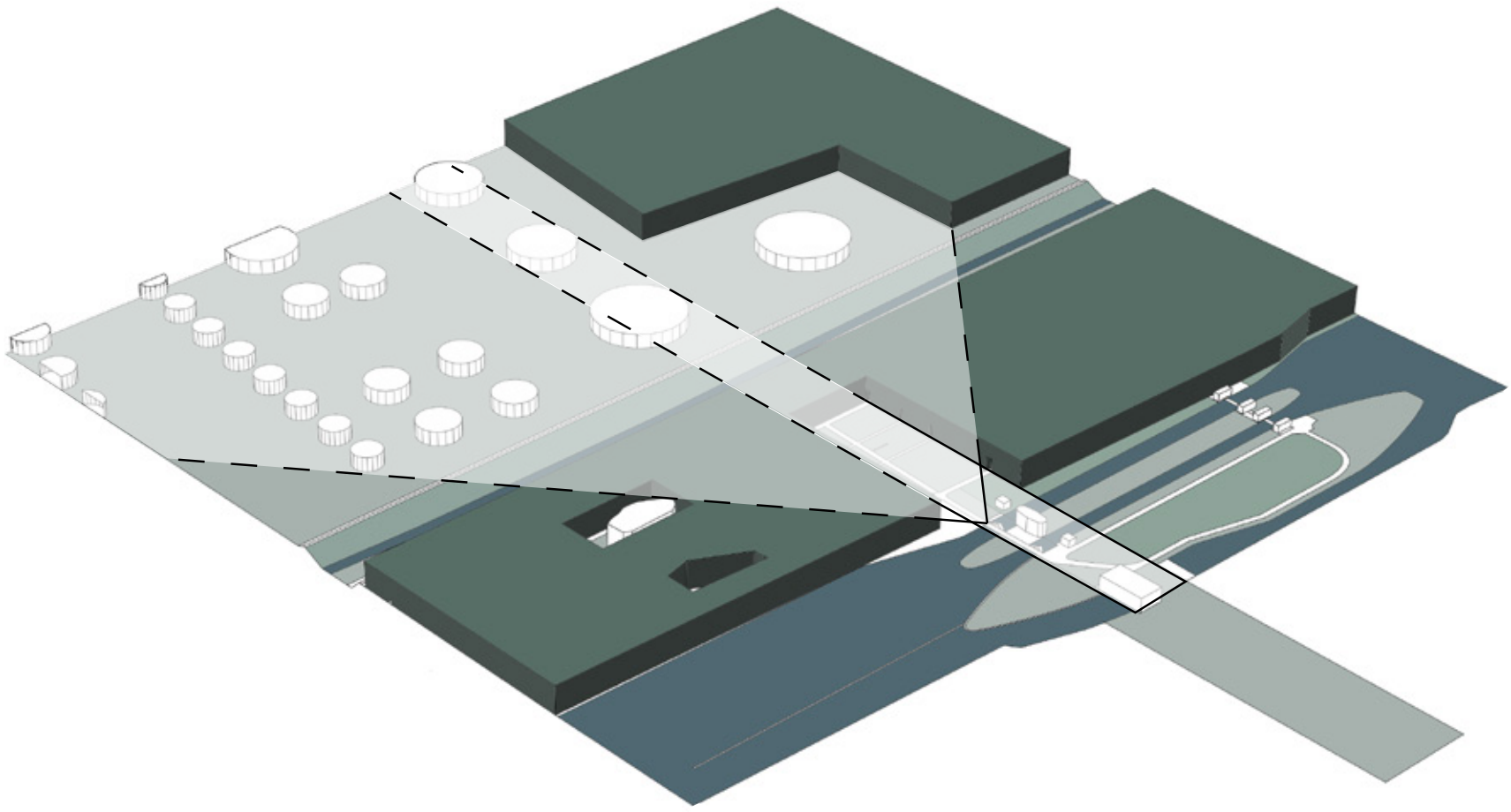
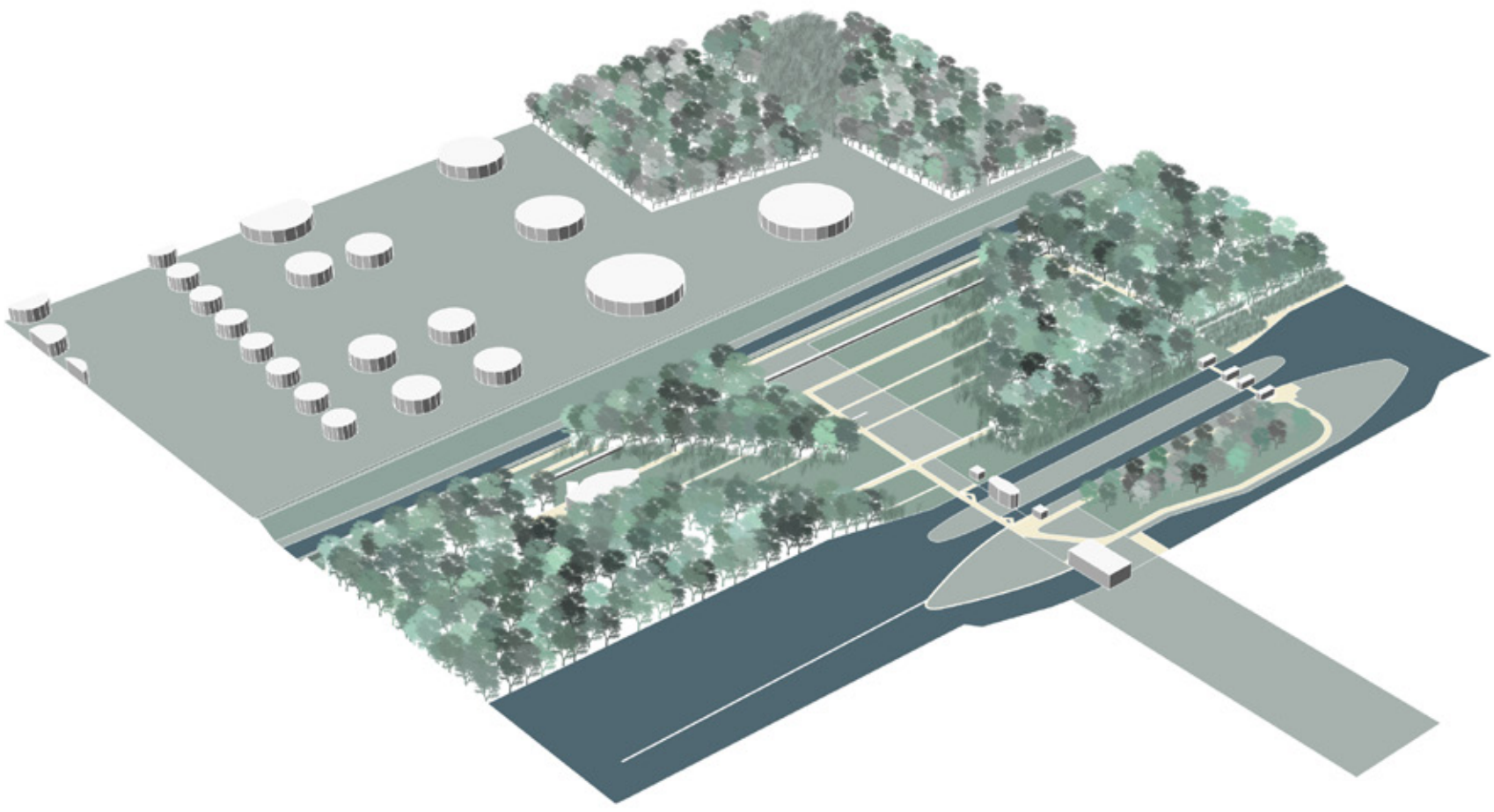


10

Visual Sequence

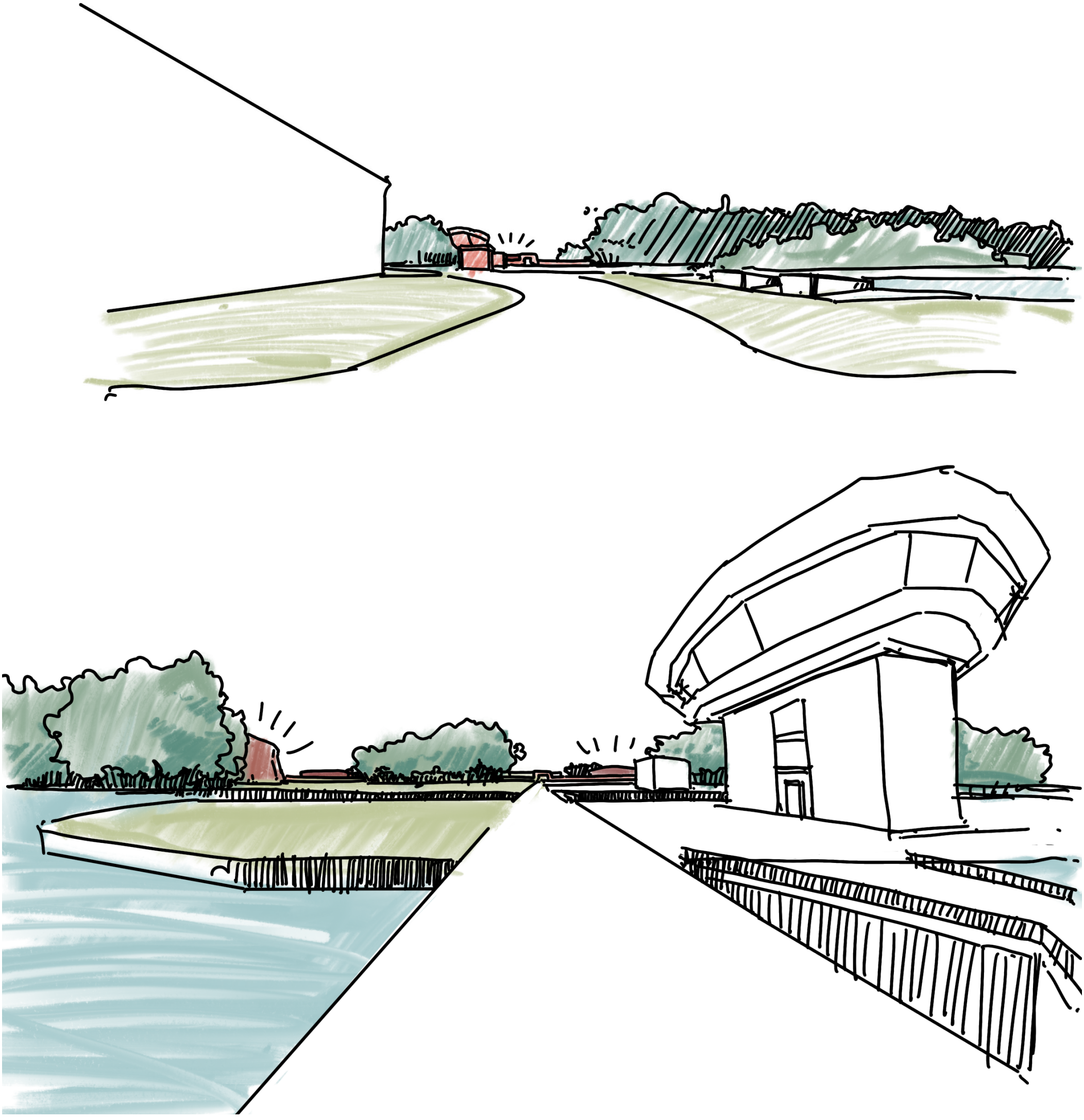
The first thing to be achieved through the intervention is a continuous change of visual targets on the flowscape. Even if there are no goals, breaking the unchanging greenway is one of the goals of the intervention. Figures 1 to 7 show the visual change from the canal bridge to the Kurt-Schumacher-Straße. The design focuses on exposing some of the industrial features to view through the felling of the woods. The pipeline (industrial features) can be exposed on one side of the path as a clue to the path design; it can also be a visual background to show the character of the area. Figures 8 to 10 show the changes in the second half of the path up to Bismarck, where the deliberate openness of the path allows the visitor to observe the naturalised Emscher river, the former sewage treatment site, the farmland, the heap, and the small woods planted for shade.

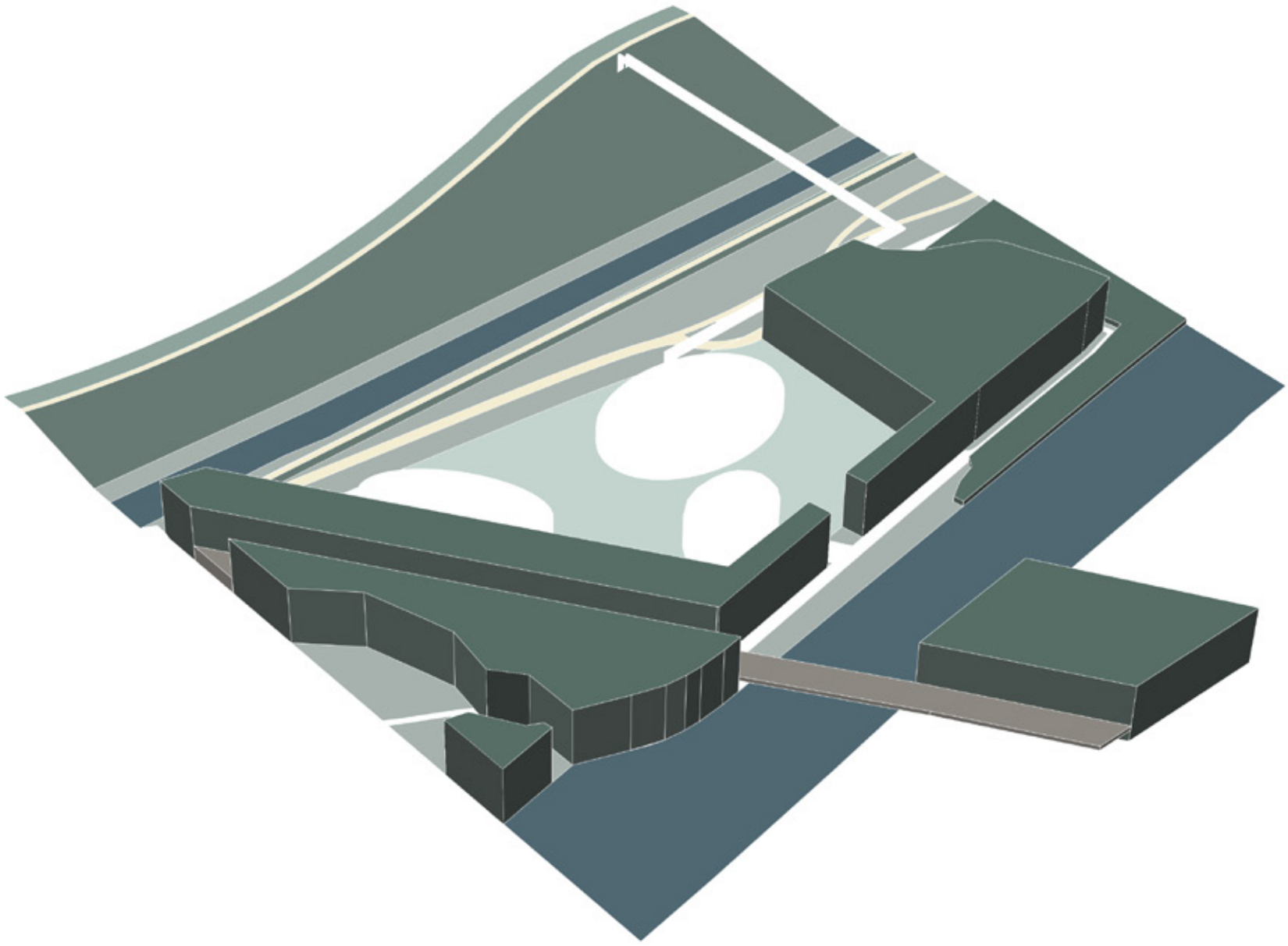


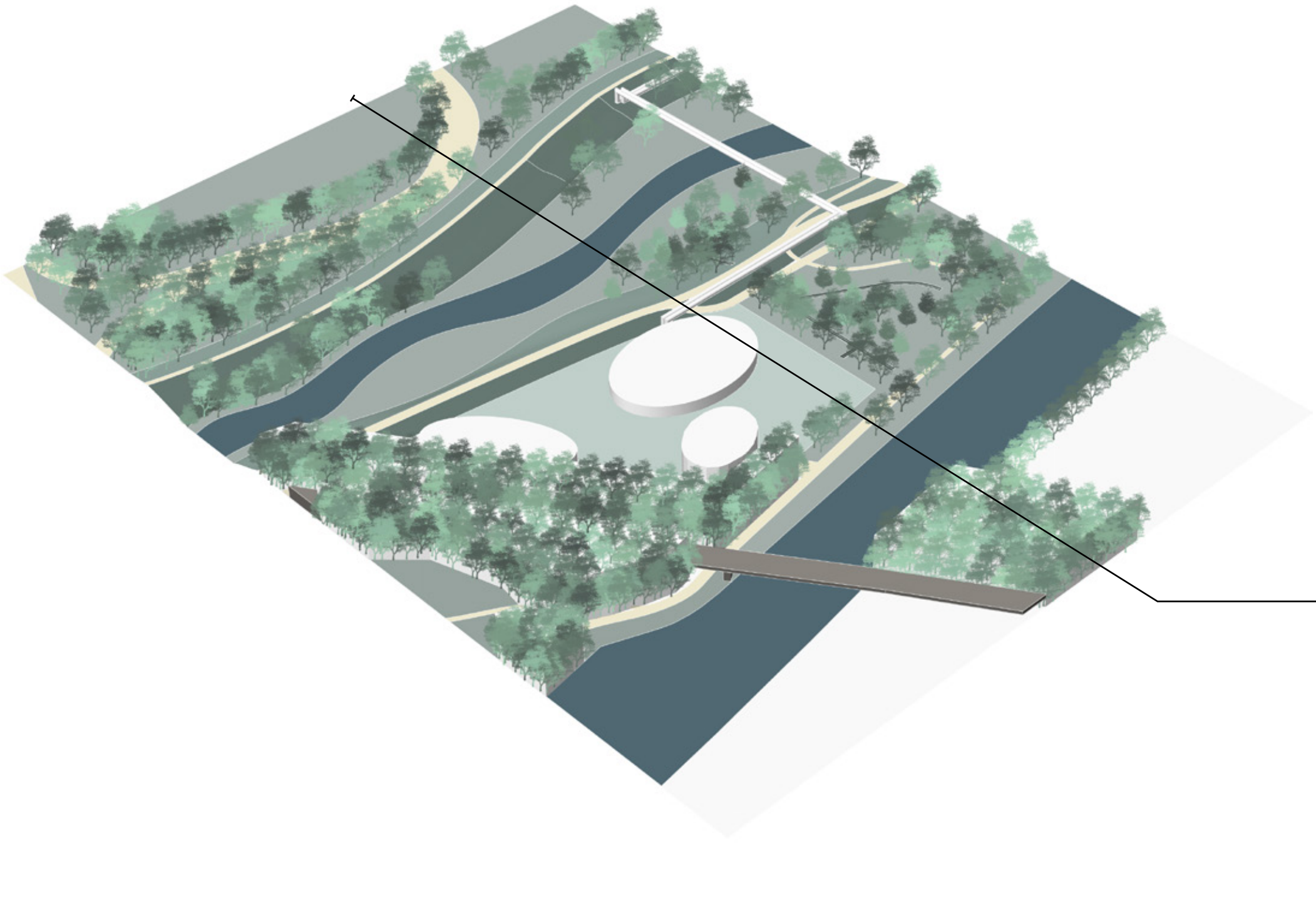


Theatre guides visual line

Today, the largest power plant still in operation in the Ruhr area, with a large amount of green space on the site, is located in Gelsenkirchen, next to the Emscher river, a great industrial facility that deserves to be proudly displayed. The design uses the locks of the canal, the point of intersection of land and water transport, as a starting point (and thus a viewing point), and directs the view through planting to help the visitor observe the plant from a distance. At the same time, the monolithic artwork (designed by OLAF NICOLAI, DOUGLAS GORDON & MOGWAI), which is hidden in the dense forest, is presented to the outside world. In order to maintain the atmosphere of the artwork, the line of sight was designed in such a way that the boulder is not completely exposed, but only partially.

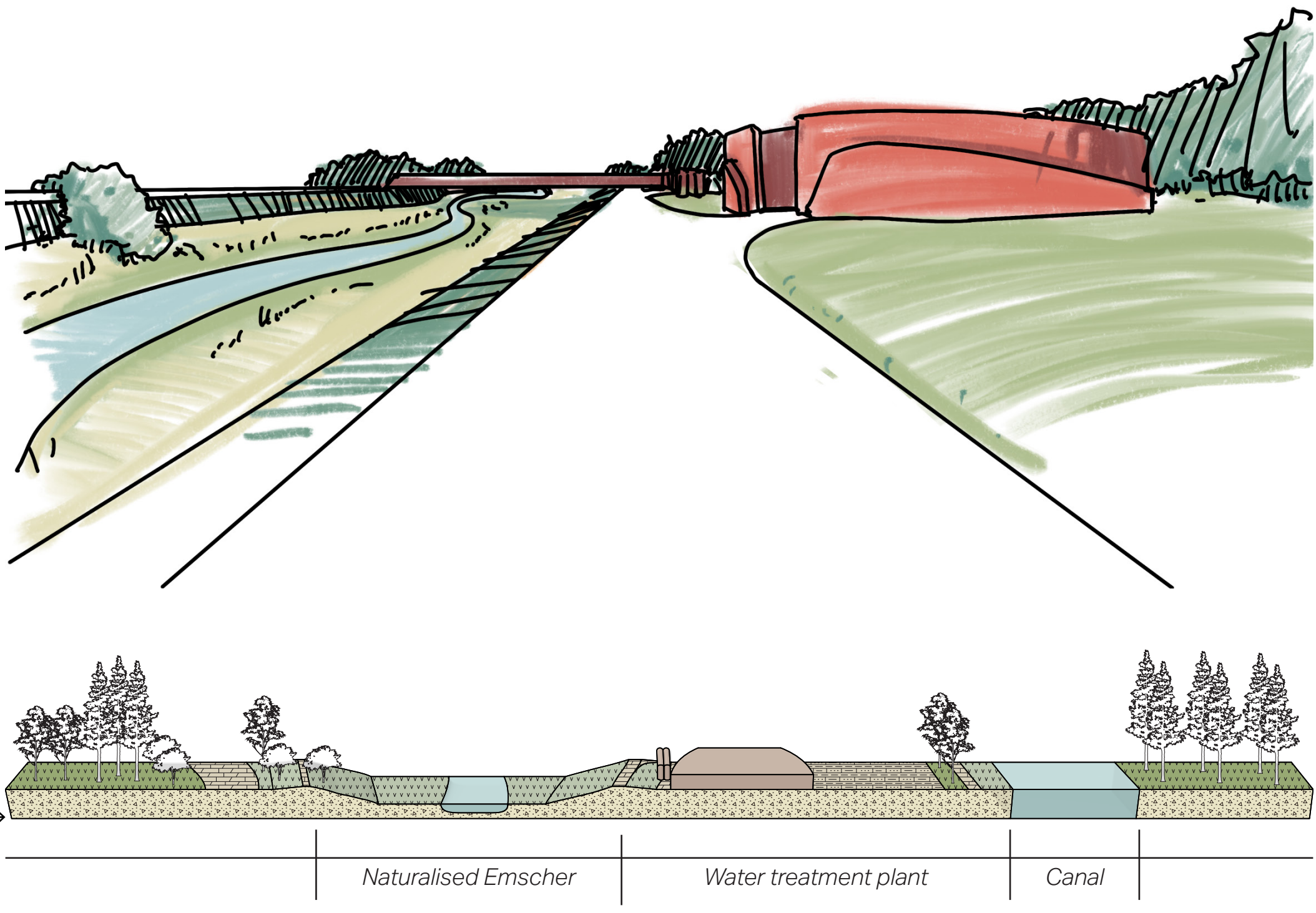






Theatre translate land palimpsest

Since the end of the last century, the Ruhr region has been building huge underground sewage pipes, a project that has made the Emscher river less of a smelly open sewer. In today's plan for the Emscher river, the naturalisation of the river is the main goal for the next decade. In the process of realising this goal I want to preserve the original sewage treatment station and the exposed pipes and make them part of the naturalised river valley. The natural contrast between the restored river valley and the buildings of the past, where sewage was treated by technological methods, is an educational site and a monument in the journey of water management in the Ruhr area. In future designs, the dikes that ensure safety can be used as part of the path, and a clear sense of contrast between left and right is what the design needs to achieve.



N

Existing woodland

Existing grassland

High grass land

Low grass land

High grass wetlands

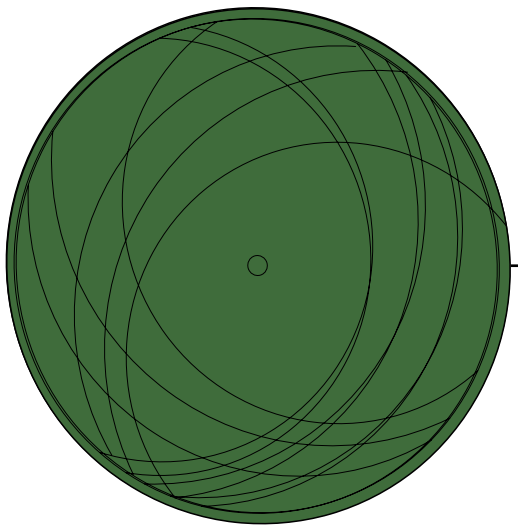
Water

Open grassland with heritage

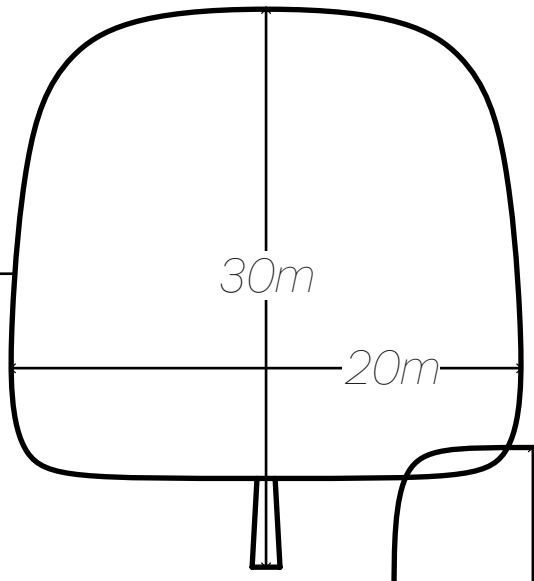
Building

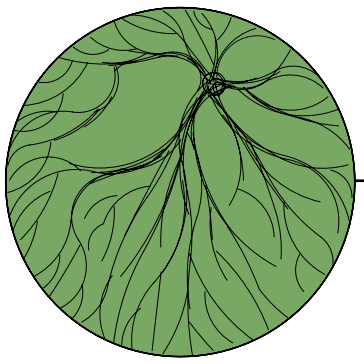
500 M

Plant Legend - Upper story

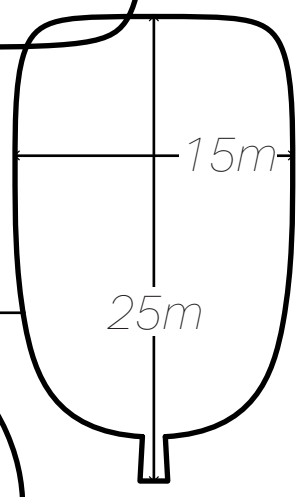


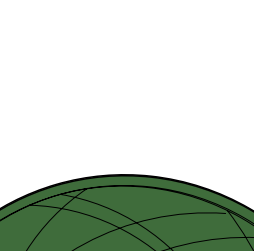
Sessile Oak
Quercus petraea



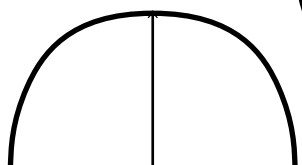


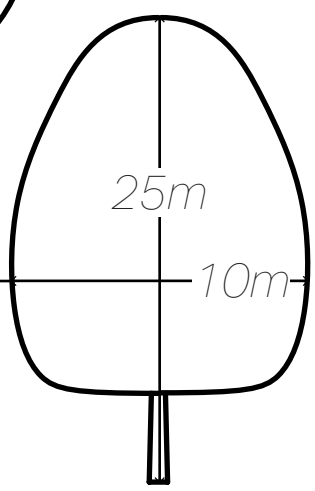
Golden Weeping Willow
Salix × sepulcralis 'Chrysocoma'

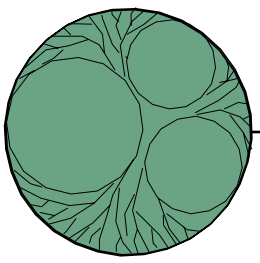




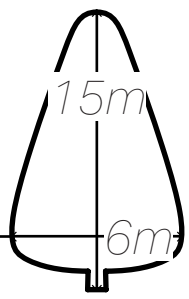
London Plane
Platanus × hispanica

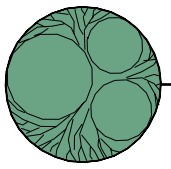




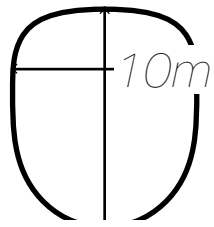


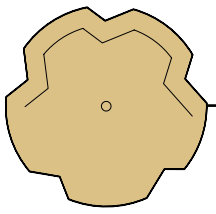
Silver Willow
Salix alba var. sericea



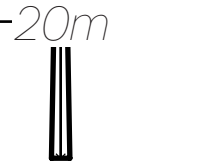


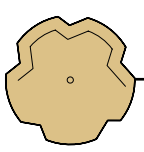
Cardinal
Salix alba 'Cardinal' (Female clone)



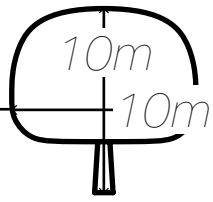


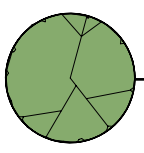
Sugar Maple
Acer saccharum



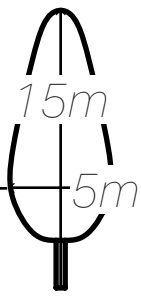


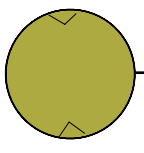
Hornbeam-leaved Maple
Acer carpinifolium



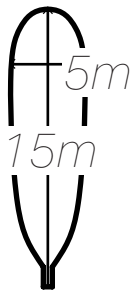


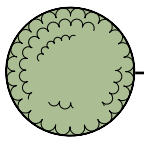
White Poplar
Populus alba



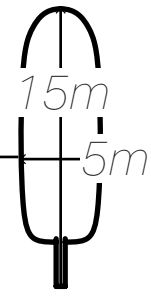


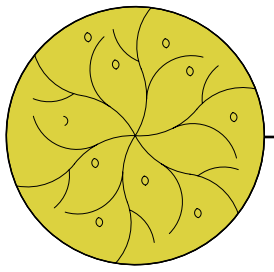
Black Poplar
Populus nigra 'Vereecken'



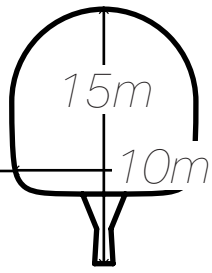


Silver Birch
Betula pendula

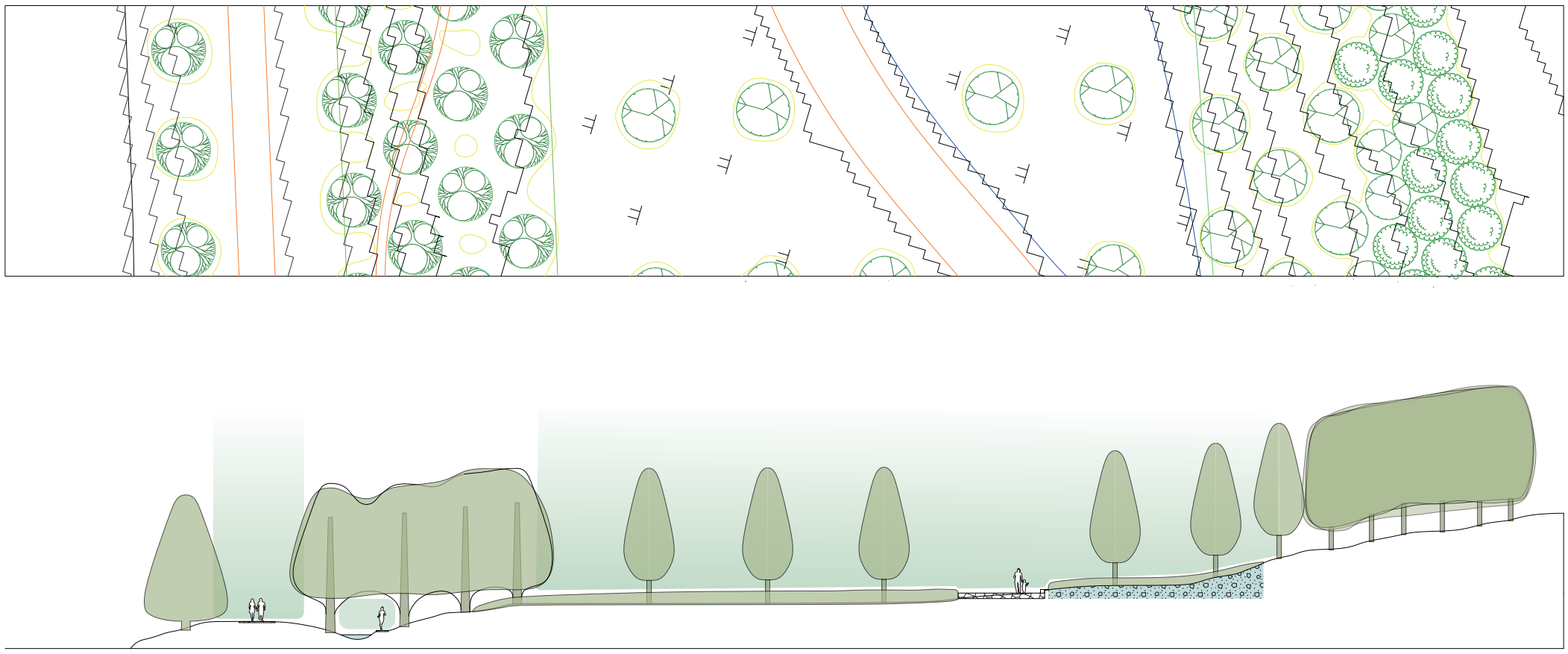




Wild Cherry
Prunus avium

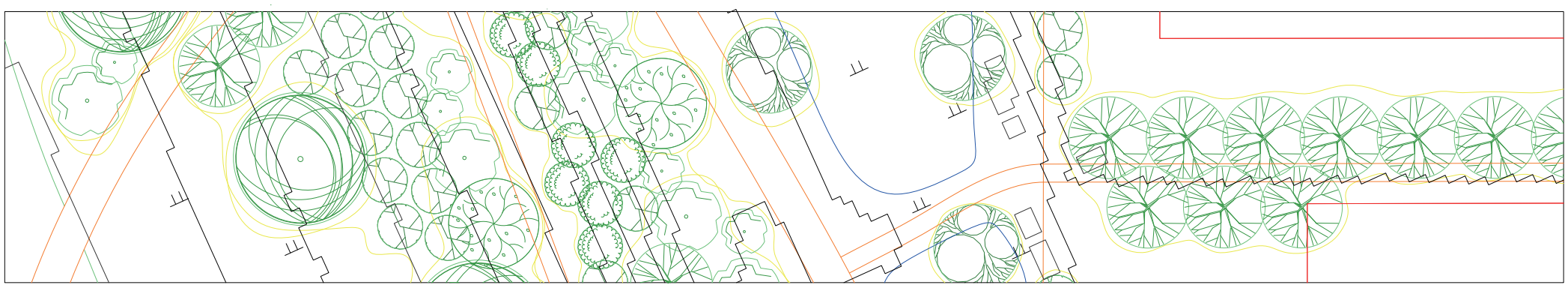


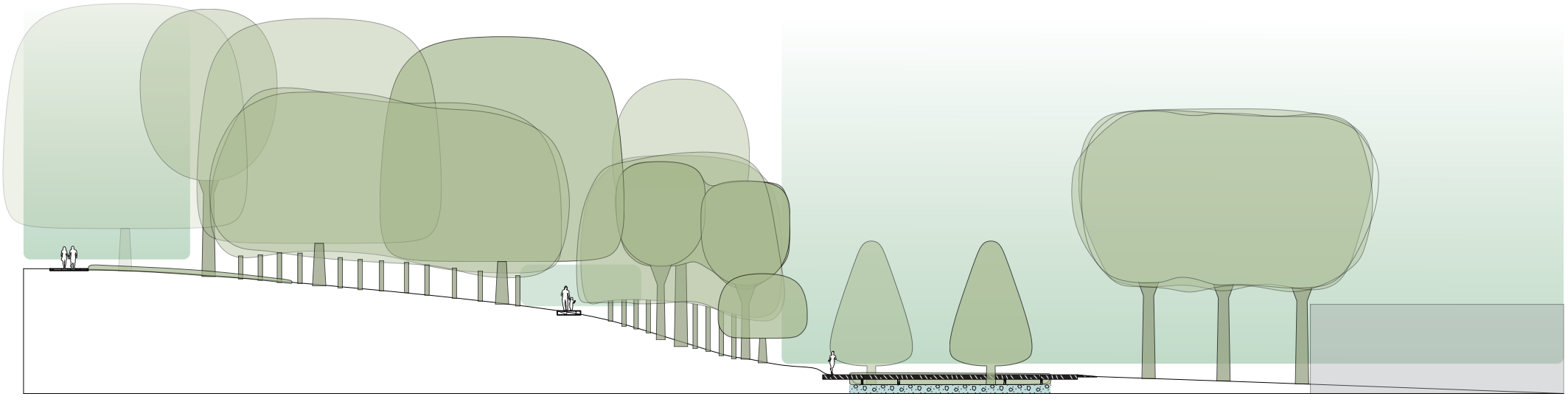
Theatre meet Flowscape



Clear visibility and open space are the principles by where theatre meets flowscape. The design is meaningless if visitors (whether pedestrians or motorists) cannot discover the theatre after the design.

Theatre meet Plantation

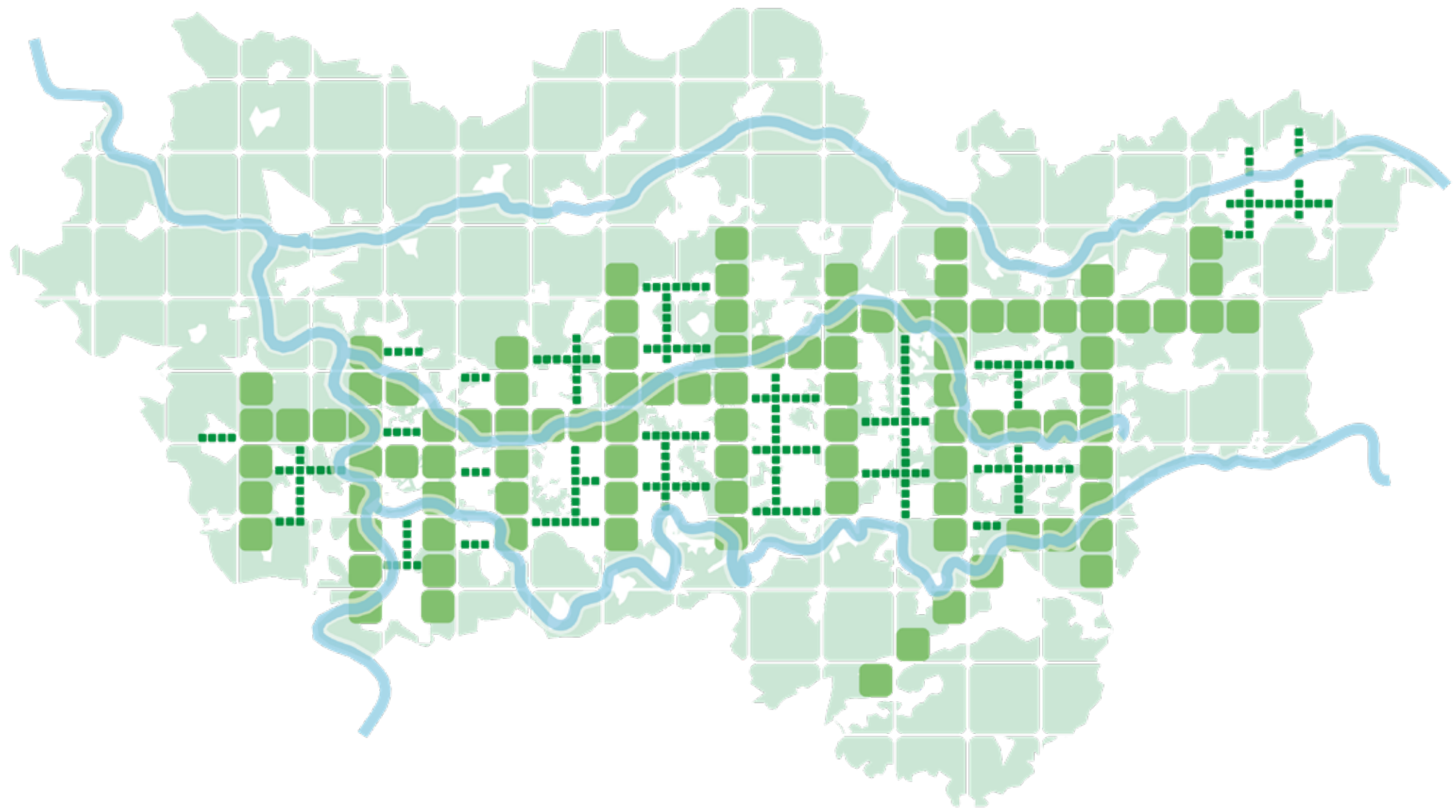




The composition of the planting where the two meet follows the plantation itself, which can be said to be an extension of part of the plantation. This extension needs to ensure that visitors have a good view before entering the theatre, so that the extension is guided. In the case of the heap this guiding tree line not only guides the view, but also the flow of cool air generated in it to the living area.

Chapter 5

Reflection



Sketch of the Ruhr Metropolis Open Space Concept 2015

Returning to Zwischenstadt after design attempts, what kind of landscape form does Zwischenstadt need? Still using the Rhein Ruhr Area as a research context. The green open space of the Ruhr Area is a longstanding, informal and specialised concept, which is now being developed under the theme of regional green corridors, creating a unified hierarchical system of open spaces that form a vast network of landscapes in the metropolitan area connecting the urban fringe to the core of the residential areas. With this as a guideline for landscape design, the sketch of the Ruhr Metropolis Open Space Concept 2015 that we see today emerged. But almost ten years after the publication of the plan, following the vision of the plan, and many interesting attempts by designers to devise it, fragmentation is still evident, and open continuous green spaces are not well realised in the human perspective.

The question has been raised as to whether our city could move towards Connected patchwork? So what kind of connection could be defined as an actual connection? A directly connected greenway on a drawing plan? A green network as in the 2015 Open Space sketch? Is that a connection for the people who live in it? After this year's study, I would like to give a negative answer that regional scale green corridors are only the first step in creating green space connections, creating a physical connection for green space connections, but for people this

is a kind of isolation. I think the so-called connection needs to create the explorability and observability of the space. We need to think of the green open spaces we create as landscaping itself, not simply planting trees, and there needs to be a unified set of design principles at different scales to achieve a true connection to patchwork.

To do this I developed two theories: the development of a metropolitan landscape morphology theory to answer the question of perceiving specific landscapes at the regional scale, and the development of an urban forestry theory to adapt to landscape problems at the regional scale. These two theories are combined to shape future regional landscapes.

For the development of metropolitan landscape forms. I have kept the basic form of the three elements, but re-narrated their relationship. In the context of Zwischenstadt, theatre and plantation are floating above the flowscape. This relationship, in answering the question of how they are connected, imposes additional spatial requirements on the flowscape, such as the need to design the interface with the theatre and the plantation, and the need to plan the paths that connect the theatre. Thus, the connection at the regional scale is made by the flowscape, where the exploratory and observable aspects are realised by the theatre.

For the development of urban forestry theory. I focused on the morphological aspects of urban forestry at the regional scale, providing a spatial vocabulary for how to realise the spatial requirements and goals in flowscape. And using the morphological study as an entry point, I gave landscape intervention suggestions for different spatial forms of urban forestry, and tried to design their relationship with the overall flowscape.

The combined application of these two sets of spatial theories to the context of Zwischenstadt can provide us with some ideas for the future when planning for low-density, rapidly expanding cities.

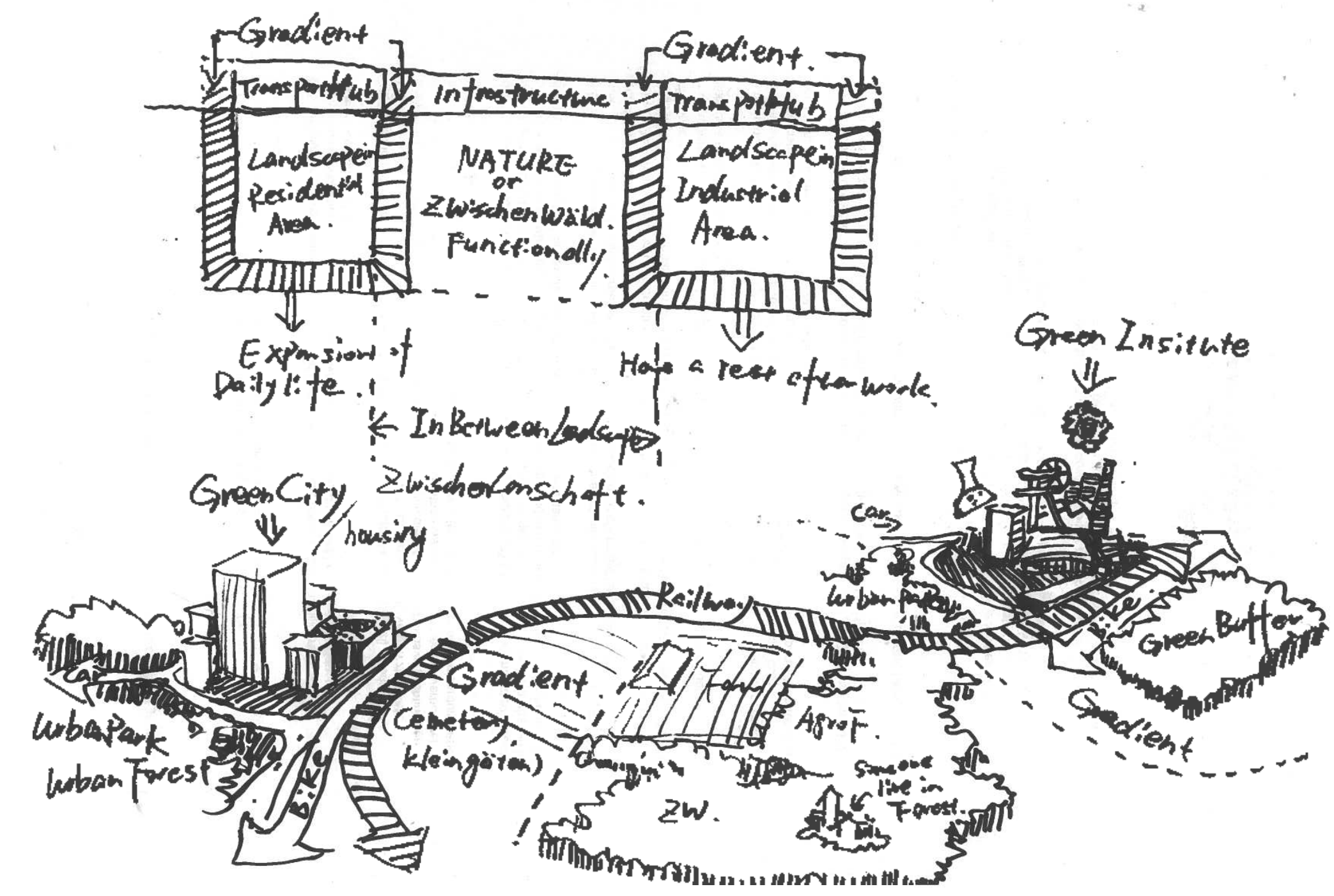
These two projects have influenced my understanding of metropolitan landscape patterns

Reflection of graduation work (P4)

This reflection(in P4) will review and summarise and reflect on the whole research process from multiple dimensions such as theory, methodology, and design attempts.

The Morphological Language of Urban Forestry and the Rethinking of Metropolitan Landscape Forms in the Zwischenstadt Context

Initially, I tried to understand landscape forms in the metropolis from the direction of perception. I abstracted the way landscape is perceived in the city in terms of speed, Flowscape is the landscape perceived by vehicles moving at high speeds, and theatre is the landscape observe city through the landscape device when there is no speed. This idea is based on the 1998 Rotterdam Zuidwaarts Theoretisch ontwerp voor de Hoeksche Waard (meervoudige opdracht). In this design theory the A4 road from Rotterdam to Antwerp is used as the main object of study to plan the spatial composition of the landscape around the A4, which is delineated based on speed. However, I found that this approach is not applicable to Zwischenstadt, as the urban texture along the A4 is also rich due to the construction of the autobahn, but the density is not comparable to that of Zwischenstadt at all. At the same time, the concept of plantation is difficult to define quickly when applying the landscape form in Metropolis theory to the Ruhr area, because of the environmental impact of the various residential and industrial areas in the Ruhr area. So I went back to thinking about metropolitan landscape forms in terms of abstract spatial patterns, which is why I later defined flowscape as a regional greenbelt and plantation as a residential-industrial plot. But I still agree that the theatre is the place in the static environment

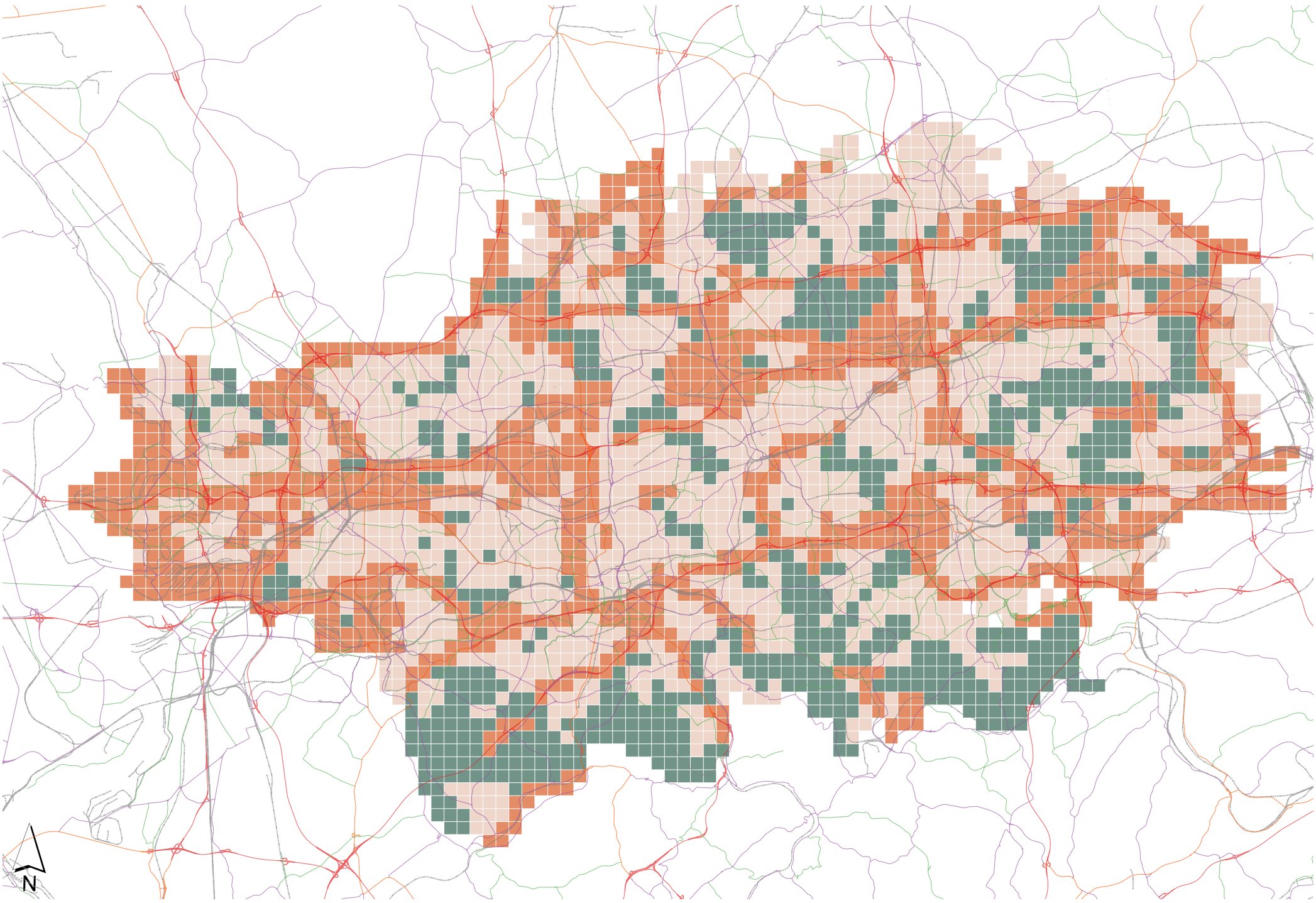


where the city is perceived through the lens of landscape devices. This is why my theoretically derived spatial points-theatre, emphasises perception, but flowscape and plantation do not have much of a perceptual narrative.

Going back to the urban forestry theory itself, I was struggling with the role of tree species for urban forestry before P2, and I can't say it was a failed attempt, but I realised that I made a causal error. The vegetation cover of the once Ruhr district was reduced by industrialisation and rapid urbanisation, and much of the wooded structure we see in cities now was planted after the 1970s (energy crisis). Therefore, plant configurations are aimed at specific space creation, rather than a fixed spatial experience because of existing forests. It may be a more reasonable entry point to focus the study on the mistakes urban forestry makes in shaping urban space. Therefore, in P3 I abandoned the study of the main tree species in the area and focused my work on urban forestry morphology.

Therefore, my research at that time was based on how the specific urban structure would shape the woodland form, such as island, big line and other spatial terms came from that stage. However, this phase of the study focused too much on urban plots, which are plantation plots in the main text. When I returned to the regional scale, I realised that the previous forest vocabulary was not applicable to regional green belt areas. For this reason, I updated my urban forest vocabulary by removing terms such as stamp, green axis, and other terms that were too specific and got the current vocabulary.

The Tree Stream project in Dortmund inspired me, but equally disturbed me, when it came to the question of how to combine urban forestry with the metropolitan landscape. Applying the



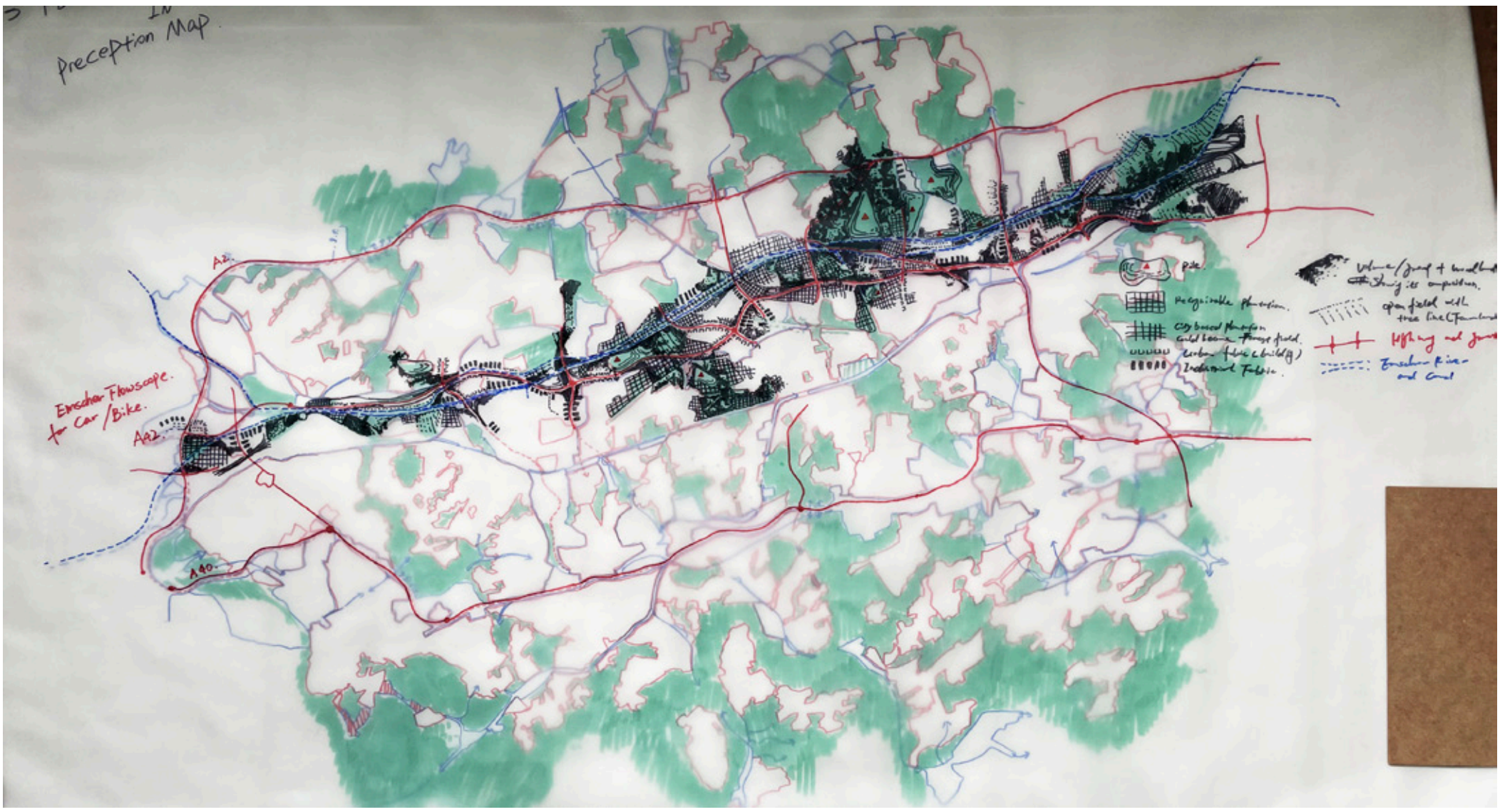
vocabulary of Urban Forestry to the flowscape, recombining the spatial forms of the forest to reshape the spatial experience of the flowscape, and redesigning or adding theatre to the flowscape in order to reflect the genius loci, are some of the ways in which I have been able to combine the two theories and realise the jumps between the different scales. However, this approach does not mention the relationship between flowscape and plantation, which as a functionally orientated landscape form that serves the needs of human beings, the designer can only intervene in the boundaries and public spaces, and the influence of architecture and infrastructure cannot be ignored. It is true that the low plot ratio of Zwischenstadt provides a rich site for landscape interventions, but the complexity of the site prevented me from getting an answer that would satisfy myself within a year. For this reason I gave up on addressing how to reorganise the relationship between plantation and flowscape through urban forestry.

Reflections on the application of theory to design practice

Diving into design with morphological analysis tends to focus more on spatial form, but landscape design is not all about space; function is an element that cannot be discarded. When I was in P3, I hoped to inherit a purely spatial narrative in my design, but I found this attempt to be ridiculous. Function can create more interactive forms, and space and form interact with each other, so it is impossible to abandon function to discuss form in design. Therefore, I added function to my design attempts, and then combined function and form to get the landscape principles. The final woodland composition master plan also proves that this theory can help designers to plan the plant configuration that serves the spatial experience on a large scale.

This also provides another perspective for my reflections: urban forestry and its practical use. Urban forestry is divided into several dimensions, and I chose to explore how trees shape our cities from a spatial perspective. The study of urban forestry in design experiments can be useful for designers to design plant configurations, and describing spaces in the language of forestry is full of potential. This also reminds me of UCL's research on spatial syntax, using topology to study space. I have also tried to combine spatial syntax with urban forestry to explore spatial continuity in my site studies. But when it comes to design practice, and this is the difference between landscape space and architectural space, the spatial boundaries of the landscape are dynamic. For example, the axis in Amsterdamse Bos is the landscape, and the forest's woodland edge is often the most attractive. At the same time, each tree has the potential to stand alone as a landscape, to become a focus, and the woodland type group itself is a room that can be freely explored. this allows for more spatial possibilities to exist in the landscape. Therefore in explaining spatial sequences, I think Way finding (or Routing) is more convincing than topological spatial analysis.

Theatre, Plantation, and Flowscape in P3



Preception Map along A42

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