

# Narrative Infrastructure and Functional Heritage

The Renovation of the New Dutch Waterline around Utrecht

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# 1. Introduction

## 1.1 Fascination

Since landscape has been claimed as an approach for contemporary urbanism, the role of landscape as machine is stressed. Landscape is viewed as ecology structure, remediating practice, urban framework, etc. Performative is an important lens to read landscape architecture. While functional aspects were addressed in most modern landscape architecture projects now, narrative aspects received less attention. This is due to the dominancy of engineering culture. Modernist motto 'Form follows Function" also influence the design. However, traditionally, landscape plays a role as narrative. Narrative is a very fundamental way people shape and male sense of experience and landscapes. (Potteiger & Purinton, 1998)

Therefore, the start research question of this thesis is weather a narrative and functional approach for urbanization can be found. Can infrastructure express some meaning and tell a story? Can cultural heritage play some function roles? Can narrative urban facilities help represent the genius loci and provide a framework for future urban development?



Narrative infrastructure



The Netherlands in Europe



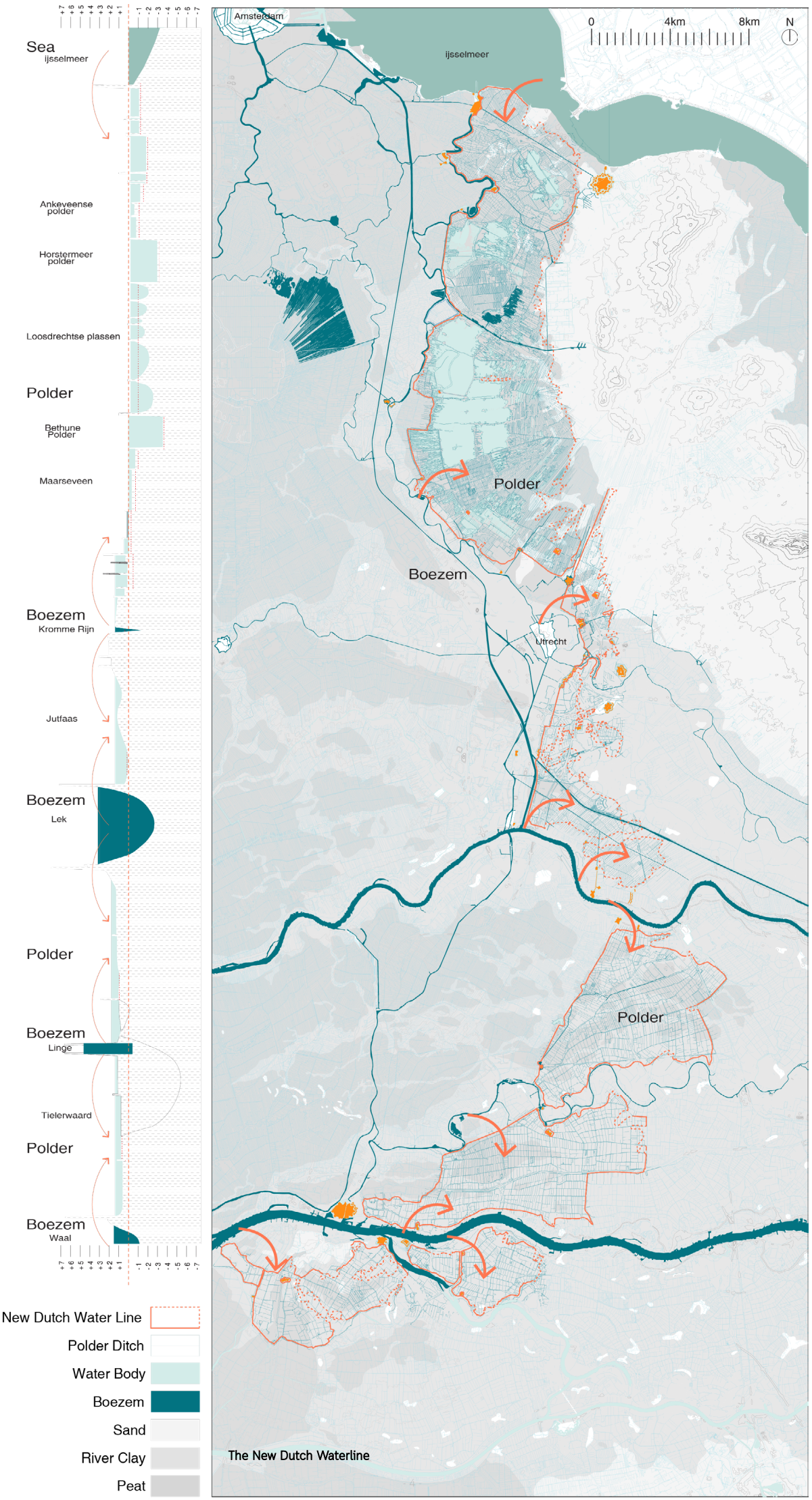

The New Dutch Waterline in the Netherlands

# 1.2 Context: the New Dutch Waterline

The study object is the New Dutch Waterline (NDW), The NDW was a defence line for North and South Holland, varied in width between 6 and 8 kilometers and running from Muiden to the Biesbosch. The belt is comprised of water infrastructure for inundation and series of forts, pillboxes and shelters for companies of troops. The inundation system was the basis of the defence line, as the forts only served to guard the access points.

The landscape could be flooded to defend Holland in a short time, a few days. Large areas of agricultural land (polders) were flooded with a layer of approximately 40-60 cm of water. The inundation fields formed the invisible part of the defense line. Only in the event of a threatening attack the polders were flooded.

Therefore, the NDW is world cultural heritage and traditional infrastructure as well. That is why the NDW could be agreed as functional landscape and emotional one as well. In fact, not only the NDW but also other urban facilities have the potential of functional and emotional landscape.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Horstermeer polder
Loosdrechtse plassen
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Maarseveen
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Boezem
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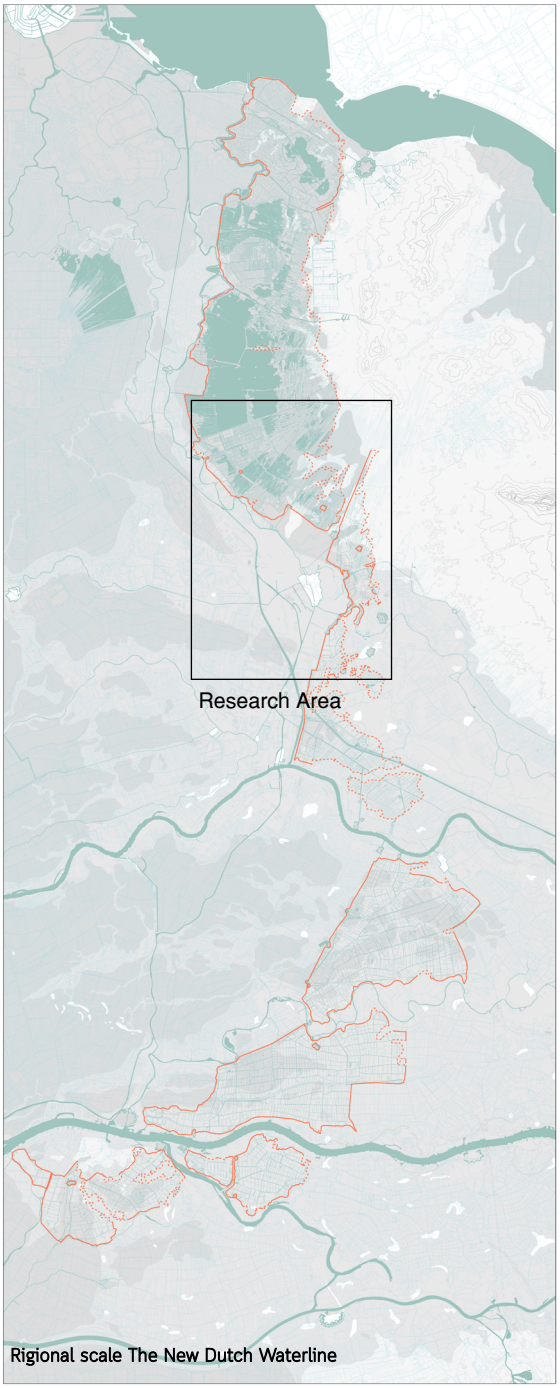
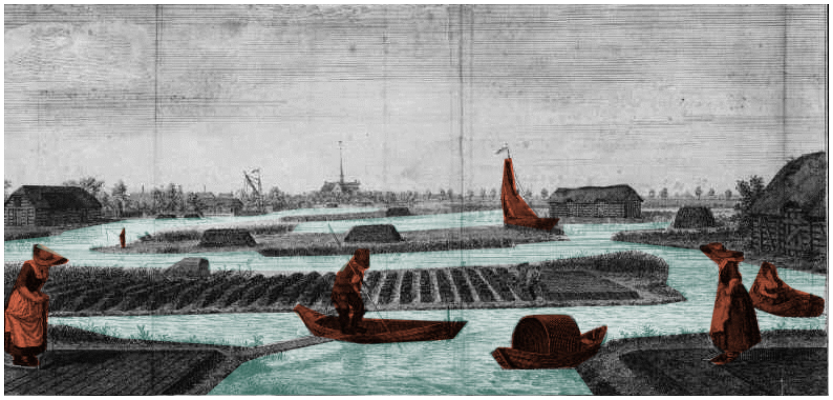
The New Dutch Waterline
New Dutch Water Line
Polder Ditch
Water Body
Boezem
Sand
River Clay
Peat







This study will focus on the part around Utrecht of the New Dutch Waterline, one which is in urban fringe and faces urbanization.

The urbanization happening in this area brings three problems, water management challenge, fragment and illegible heritage. After the line lost its defensive function, this unique historic legacy was threatened with the loss of its unity as a spatial entity and special memory, like something on flooding for defence. The defensive line was separated by the heavy infrastructure and urban fabric. It is becoming harder to read the waterline as linear landscape and inundation area. At the same time, traditional water management brings some problems. With the climate change, the pump station and the boezem with the limited capacity become the bottleneck of the drainage system. Also, the water full of phosphorus in the agriculture area is pumped into the cleaner boezem.




City scale The New Dutch Waterline

# 1.3 Research Goal

The main research question is whether it is possible to **transform the language (historical image, composition grammar and spatial features) of the New Dutch Waterline into a functional and narrative framework of urbanization**. Specifically, the design is aimed to provide a framework for the urbanization, which can make the visible and invisible heritage legible (represent historical stories and the new characters of heritage colored by the complex environments) and solve the urban problems (de-fragment and resilient water management). In this case, landscape plays the role as language and machine at the same time.

The NDW area is explored and represented from two dimensions, the **functional dimension (performative landscape) and narrative one (recognized landscape and place of memory)**. It is discussed that how to guide urbanization in urban fringe where cultural heritage, urban fabrics and infrastructure mix together.

Sub-research questions:

Why is it important that the grammar and spatial characters of the NDW are transformed as the principle and strategy of urban development and urban renewal?

How can the cultural heritage in the complex environments (natural landscape, cultural landscape and urban landscape) be read?

What kinds of narrative approaches can be used to represent the genius loci and re-organize the urbanization?

How can the urban fragment cut by heavy infrastructure be integrated for better urban function and representation of genius loci?

How can NDW function in another way for water management and represent the story of itself at the same time?

How can the new design have sufficient pliancy to adapt to changing demands of the future urban development?

How can this experimental project help urbanization along the NDW?

# 1.4 Methodology

Basically, the idea of design by research is applied on this case and the whole project can be divided into two parts: research and design. Under the research section, there includes the research of theory study, case study and site study.

How urbanization combines with cultural heritage renovation, how cultural heritage represent in a narrative way and consolidates of a public's sense of collective identity and memory are discussed on this thesis. Literature review is the main method in this part.

The selected cases are about the practices of combining urbanization and cultural heritage renovation: Landschaftspark Duisburg Nord in Duisburg, Zollverein Park in Essen, Olympic Sculpture Park in Seattle. The cases are explored based on the theory to figure out how these cases answer the question asked in theory part. The way of treating cultural heritage, the relationship between the pattern of cities and the practices of heritage renovation, the representation of the special DNA of the site including spatial characteristic and spatial logic, the way how the emotion, memory and identity are inspired, are discussed.

The site study of Utrecht was inspired by the case study. The morphology of Utrecht and the spatial DNA of the NDW are mapped from three layers  natural and agricultural layer, urban layer, heritage layer. The process of history is used as the base of new landscape design. Therefore, the way of transforming the spatial logic and quality of the NDW around Utrecht into functional and narrative infrastructure and heritage complex are explored, and these areas would become unique and memorable places engaging the traces left by previous uses and strong emotion. Therefore, the design is a process of integration, integrating different urban infrastructures, urban fragment, agricultural pattern, natural base and cultural heritage. It is also the representation of different urban elements.

Design by process is a tool that would be made use of. A large park system is proposed. It have sufficient pliancy and adapt to changing demands. The reason choosing this way is the dynamic nature of the material itself and anticipated changes. The ecology in this urban park would develop its form and structure by itself over time.

The design outcome can be seen as an experimental project to inspire government, designers and citizens a new approach of urbanism by transforming the DNA of the NDW including natural, agricultural, cultural and urban information and also a new one of representing urban facility including infrastructure as well as cultural heritage emotionally.

# 2. Literature Review

## 2.1 Cultural Heritage

### 2.1.1 cultural heritage protection and territorial identity

Why do we need to protect and renovate the culture heritage? If the purpose of protecting heritage is just protecting cultural diversity and cultural inheritance, why not just restore and keep them carefully like the collections of the museum? However, a lot of heritage sites are represented or recreated in diversified ways.

In fact, besides functional meaning like protecting culture diversity and storing traditional technique, cultural heritage is the carrier of collective memory, inspires the common and personal emotion and shapes the identity. Specifically, cultural heritage could help to consolidate the public's sense of collective identity. It helps to intensify the bond of groups, forge community and citizenship because the human as social animals have the nature of lessening this feeling of loneliness. Therefore, heritage is a sentimental element.

The significance of a place, its intelligibility, is influenced to a considerable extent not just by internal but by external factors, such as the surrounding landscape. (Weilacher, 2008) Thus, the identity of the site is dynamic. The significance of the site is being influenced by the changing surrounding landscape. Past, present and future can be seamlessly connected, if the site is understood in that way. Different temporal layers shape the genius loci together. It is an evolving story that connects nature to modern city.

## 2.1.2 representation of cultural heritage: legibility and syntax

Legibility is a straightforward term, referring most commonly to the capability of something to be read or deciphered, such as handwriting. In our discipline, reading design work is more usefully framed as understanding its logics–textual, biological, organizational, and methodological. In the context of large parks, legibility is the capacity of a project to be understood in its intention (its evolution and goals), identity (its distinguishing character and organization), and image (both its appearance, whether pastoral or post-industrial, and its marketing strategies). (Czerniak, 2007)

In the projects of culture heritage renovation, one of the important things is how to make the culture heritage legible. If the culture heritage is illegible, how can the heritage consolidate the collective identity? If that, how can the heritage arouse the resonance of human? Therefore, it is necessary to make the heritage legible. Narrative space is a good tool to help the culture heritage readable.

# 2.2 Landscape as language: narrative landscape

## 2.2.1 narrative landscape

As Spirn (1998) wrote in the language of landscape, landscape has all the features of language. It contains the equivalent of words and parts of speech - patterns of shape, structure, material, formation, and function.... Like the meanings of words, the meanings of landscape elements (water, for example) are only potential until context shapes them. An amount of information inheres in the material and process of landscape. During the process of landscape being experienced, story takes place naturally.

Narrative is a traditional way used in landscape architecture to help people make sense of space and its meaning. Rich strategies like symbolic space, sequence, juxtaposition can be applied.

This tradition dates back to the 17th century when classical Italian garden and England garden are built. Stourhead in Wiltshire, for example, derives from a specific story, Virgil's Aeneid. This story is retold by representation in this garden.



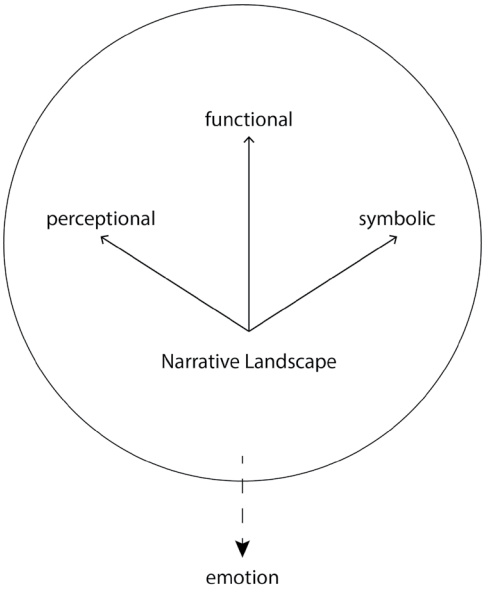
Landscape narrative in Italian garden



Functional Landscape

## 2.2.2 experiential landscape, narrative landscape and emotional landscape

The landscape, in fact, is a subjective reality. Space can be experienced and read in different ways. Narrative space cannot inspire the same emotion for everyone because everyone has different context, but people with similar context could be inspired similar emotion.




As for the culture heritage, it is the carrier of collective for one group people (sometimes also for the whole human) so this group people have similar understanding and can be inspired similar emotion. It is necessary to protect the carrier of the collective identity for them. For some other who has different context, the narrative culture heritage gives them a chance to learn different culture and it is open for them to have different explanation and emotion. However, weather the heritage is legible is also important for these intruders. The context can be given somehow on site and the physical feature can be highlighted to help them understand. They can understand differently and be evoked different emotion based on the learning about the site, just as the words said, “there are a thousand Hamlets in a thousand people’s eyes”.

Not only the culture heritage, all elements in the city, like the transport infrastructure, hydrological infrastructure, ecological patch, can be narrative, even emotional because the whole environment including all the public facilities shape the collective identity.

# 2.3 Landscape urbanism

## 2.3.1 the landscape in the urban network

Landscape urbanism advocates multifunctional network as the basic framework of city growing by itself and landscape as the carrier of organizing urban territory and programing urban life. Designing the site becomes creating the flexible framework within the landscape. The concept of this adaptive framework comes from contemporary ecology partly. The ecosystem is treated as changing process but not a stable order. For example, Rem Koolhaas's entry for the Parc de la Villette competition concluded that "we have confined ourselves to devising a framework capable of absorbing an endless series of further meanings, extensions, or intentions, without entailing compromises, redundancies, or contradictions." (Koolhaas, 1995)

## 2.3.2 the infrastructure as landscape

Infrastructure is the network of transportation and other public facilities ensuring the society working. Landscape infrastructure turn the unifunctional gray infrastructure to more sustainable and effective green infrastructure. The combine of infrastructure and landscape gives the urban territory rich functions and meanings, which can promote urban quality and make the infrastructure more sustainable.

## 2.3.3 the infrastructure as landscape

The distinctive physical characteristics of the city and its districts have been replaced by an urbanized field made up of indistinct, fragmented territories. (Van der Velde & De Wit, 2009)

In the metropolis the different stages, conditions and forms will usually overlap in space and time, as a result of which combinations and confrontations of landscape-forming forces that give a special dynamic to the metropolitan landscape architecture can be generated. (Van der Velde & De Wit, 2009)

When the city disintegrates into an archipelago of fragments a new role is also imposed on the landscape as a carrier of topographical characterizations, cohesion and continuity. The underlying landscape layer contains an annotated catalogue of situations, in which the genius loci is recorded and secured. (Van der Velde & De Wit, 2009)

# 2.4 Landscape as language: narrative landscape

## 2.4.1 beyond duality of landscape

Landscape function machine and language. Traditionally, landscape is used to frame the story in Italian garden. Landscape urbanism bring in functional design into the traditional garden, Designers start to think how to make use of design to slove the problems, like stormwater management, urban fragment. However, the landscape architects start to find the multifunctional roles of landscape and go beyond duality of functional and narrative part of landscape. In the Shell project, West 8 two clamshells, dark one and light one to pave the two sides of road. It aims to help the two kinds of birds with dark feather and light one to find food. At the same time, it also provides the public special driving experience.

## 2.4.2 landscape translated for territory transition

Approaches to addressing similar brownfield sites around the world typically fall into two categories: that of romanticizing and memorializing the past, or that of capping and forgetting the history of the site in a form of “amnesia”, as Elizabeth Meyer describes similar practices in Large Parks. (Czerniak & Hargreaves, 2007)

Is it possible to find the third way to deal the heritage? Is it possible to translate the language of heritage for territory transition, which can continue the dynamic memory to the future?

# 3. Case Study

## 3.1 Heritage transition typology

Transition approach

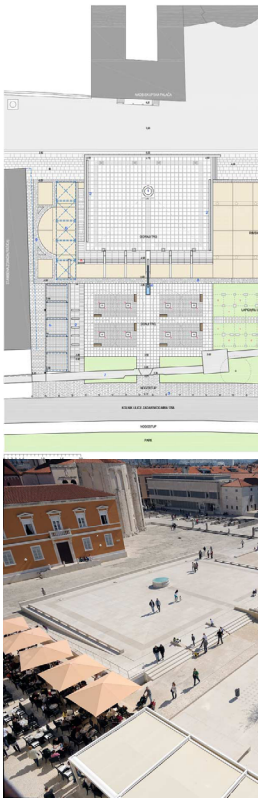
House New Function




Overlayer New Function



Expand an



d Enhance





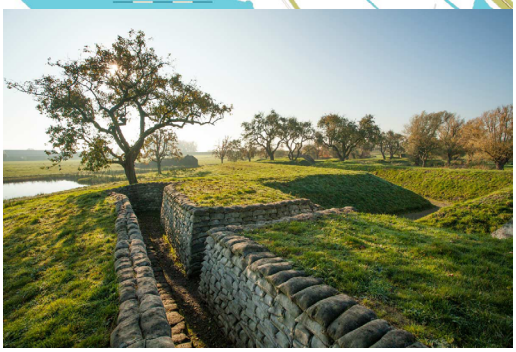
Represent

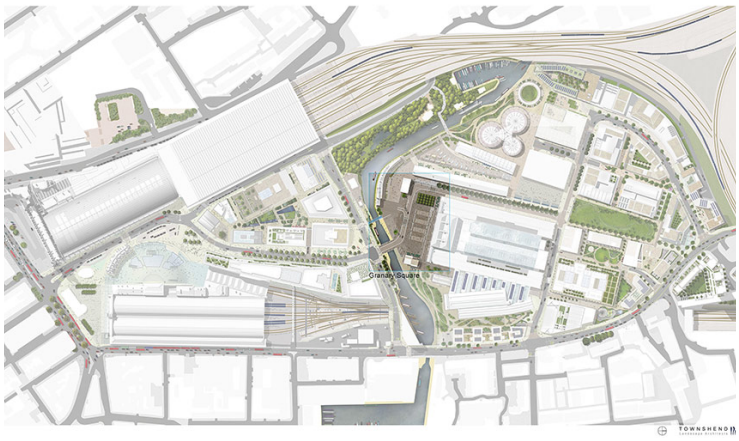




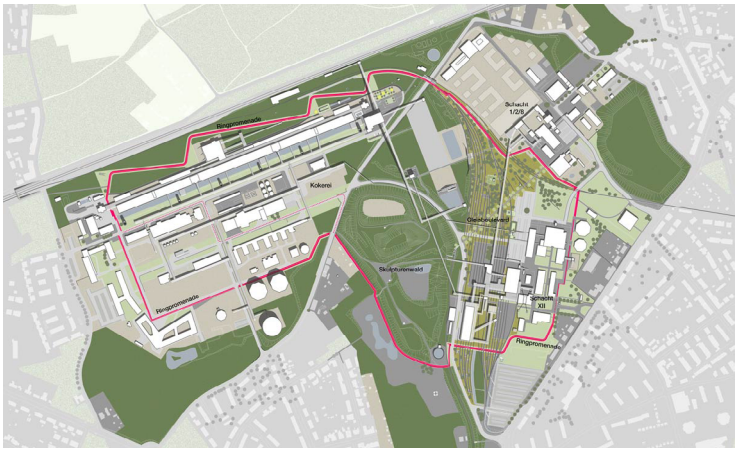
Repair and Recover



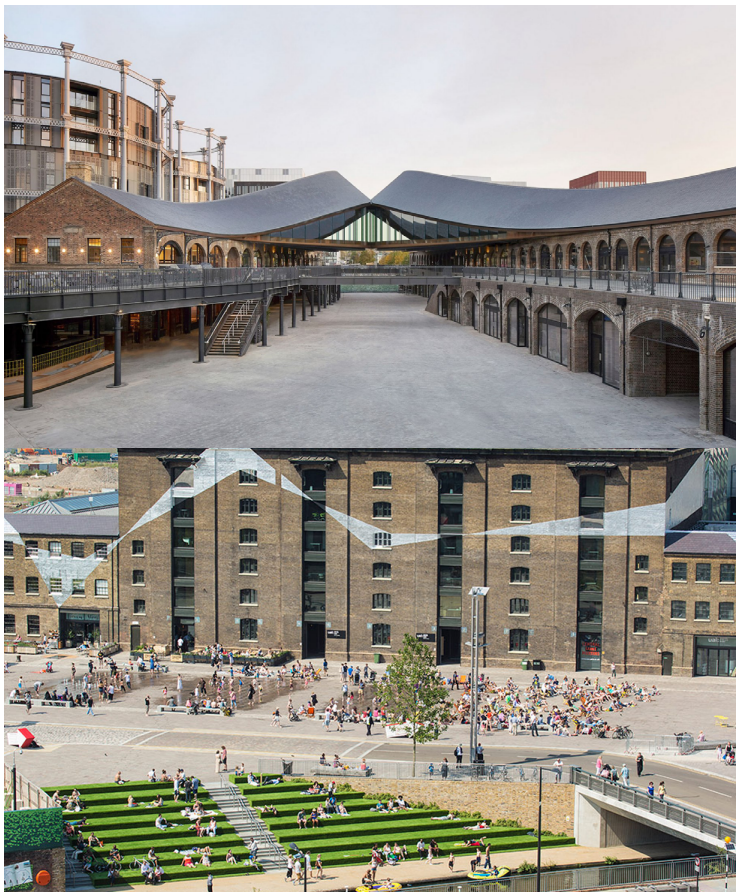





King's Cross
Allies and Morrison, Townshend Landscape Architects

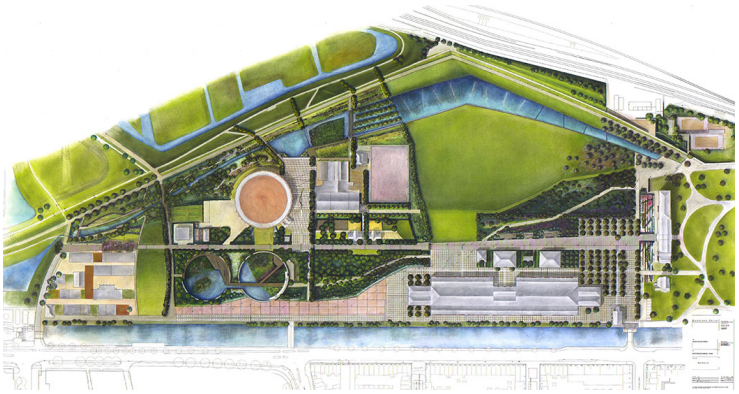



Zollverein Park
OMA, Agence TER, Planergruppe Oberhausen





Heritage in different environment context



Westergasfabriek Culture Park
Gustafson Porter

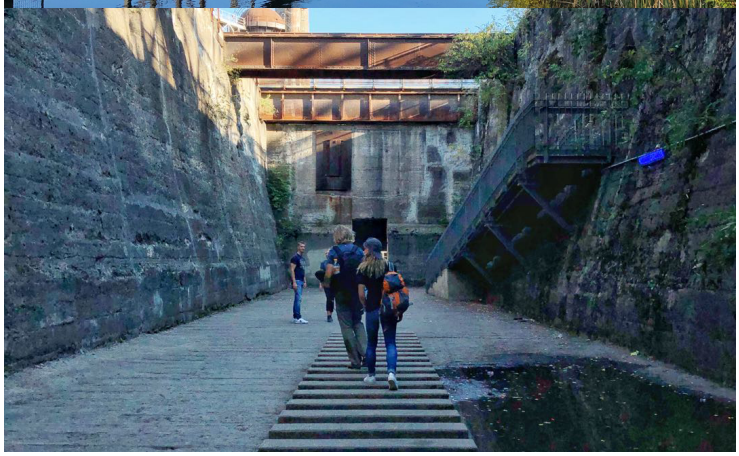


Duisburg Nord Landscape Park
Latz+partner



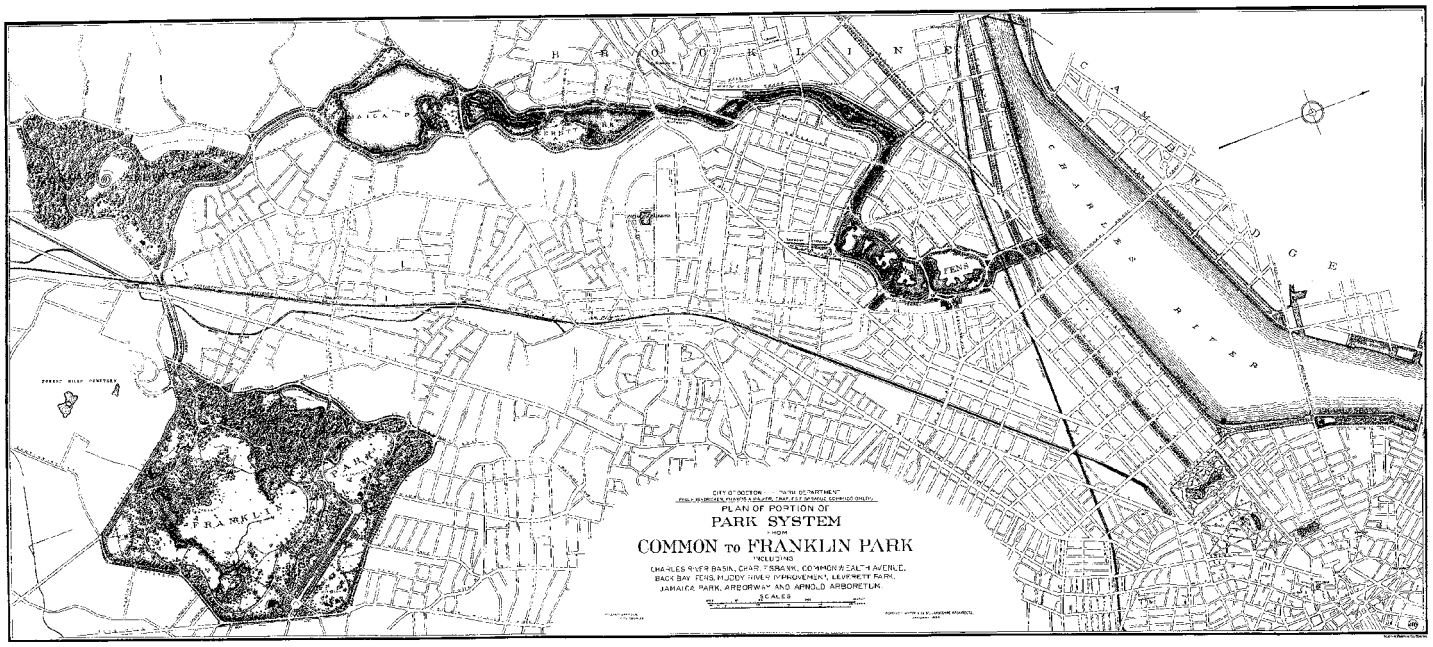






# 3.2 Territory transition and urbanism

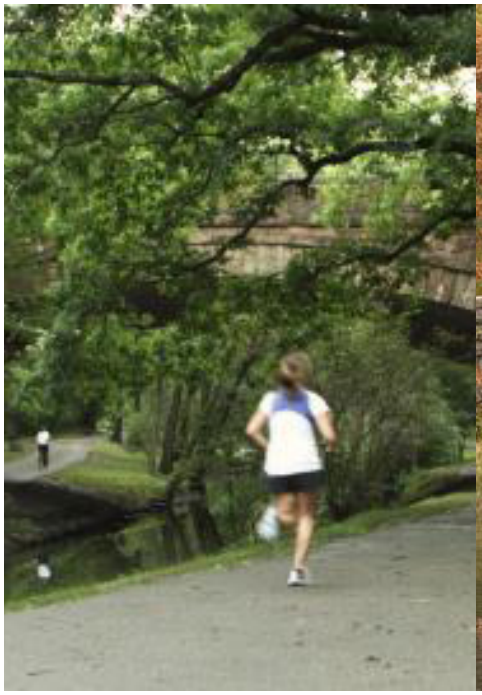
## 3.2.1 Emerald Necklace Park System



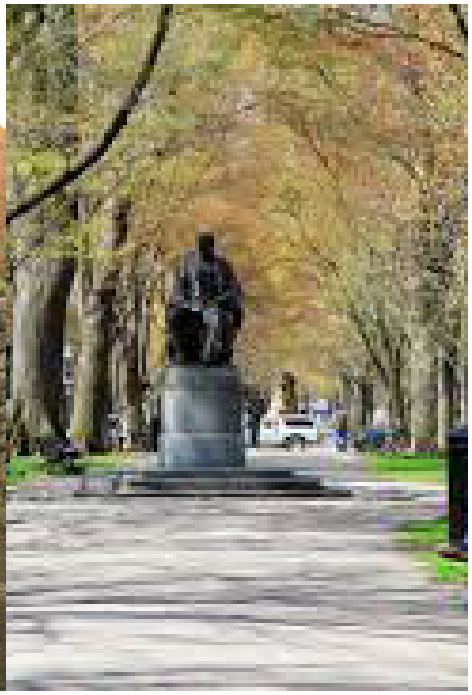

National Park Service Frederick Law Olmsted National Historic Site

OLMSTED ARCHIVES

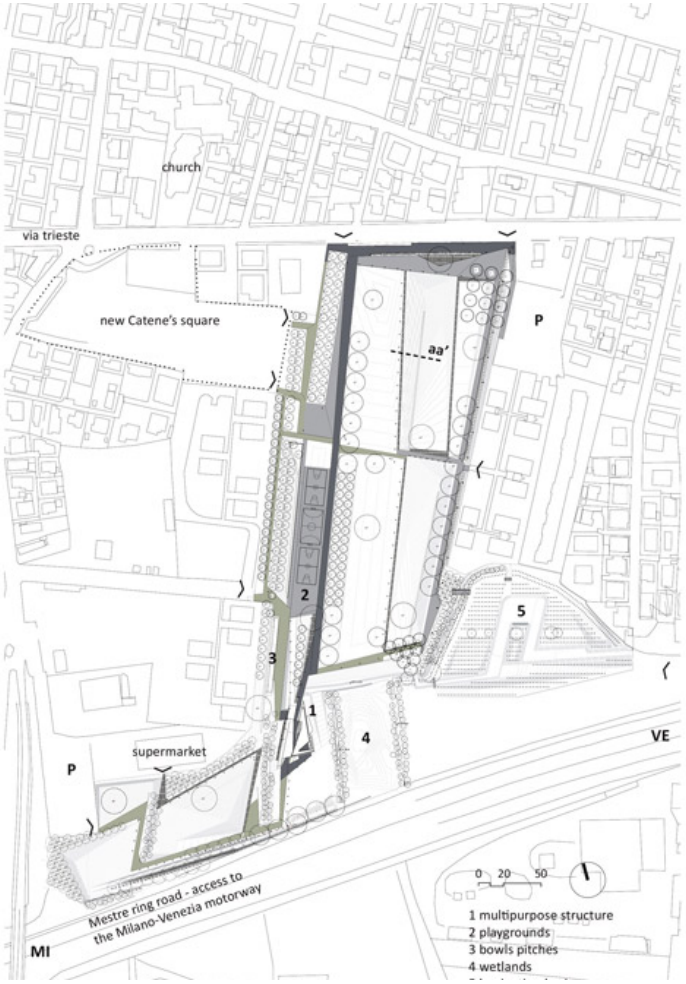
99 Warren Street Brookline, Massachusetts 02446

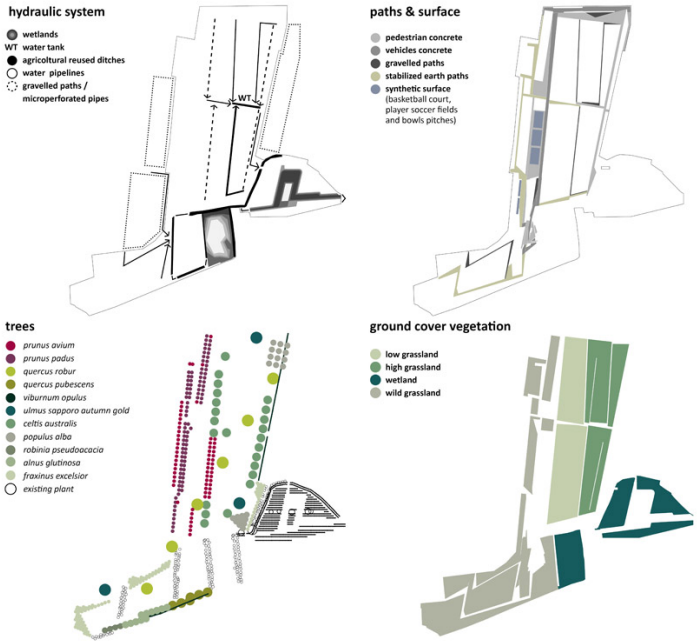






# 3.2.2 Catene Park



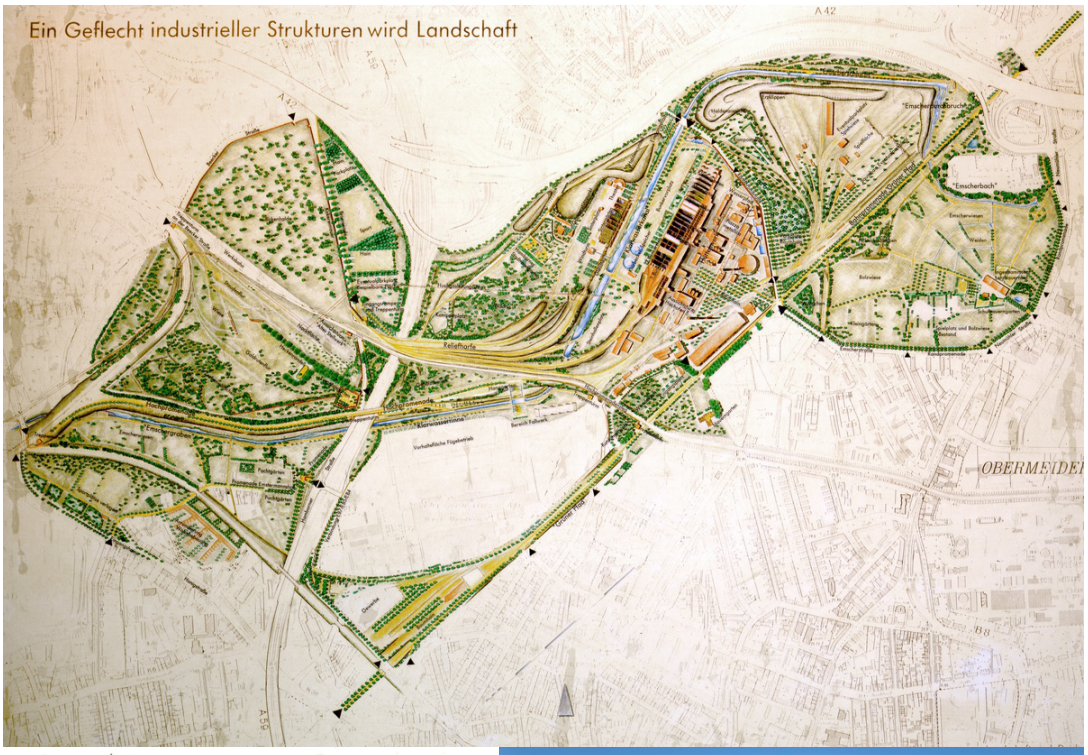



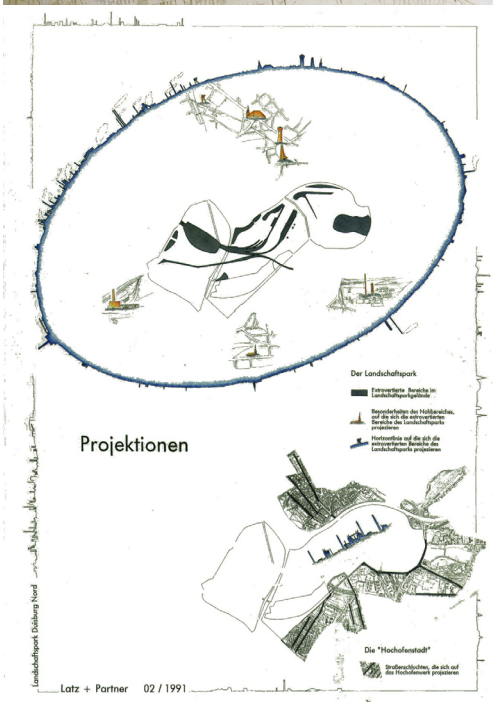




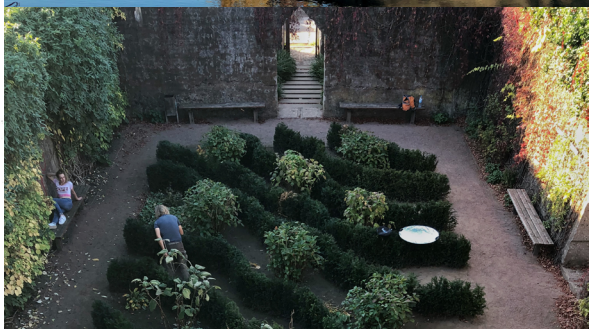

# 3.3 Narrative as an approach to represent territory

## 3.3.1 Landschaftspark Duisburg Nord



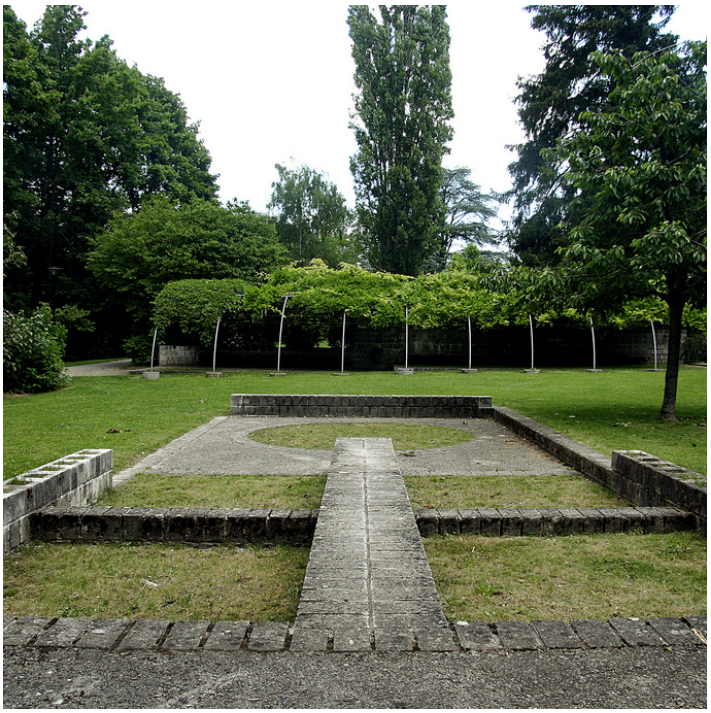





## 3.3.2 Parc en Sauvy









# 4. Site Analysis

## 4.1 The New Dutch Waterline

The construction of the inundation system and the construction of the permanent elements, like a fort and the waterworks were constructed by 1815. Between 1815 and 1826 the construction activities were limited only most necessary inundation facilities and the construction of a number of defenses around Utrecht were realized. Most of them consisted of no more than earth walls, surrounded by a wet moat, with artillery positions on the main wall.

Later, new forts were added on higher grounds which could not be flooded. From 1867, for example, a second line of forts were constructed near Utrecht. The New Dutch Waterline has been brought into a state of defense in 1870 during the Franco-German War. The line was completed around 1885. At that time, it counted fifty forts and a number of simple, earth batteries. During the Second World War in 1939-1940, some new concrete structure like bunkers were added. The inundation fields lost their function due to attacks from airplanes.

The New Dutch Water Line has been put on standby three times. The first time was during the mobilization of 1870 in connection with the Franco-German war, so before the time of the Works of Griftenstein. The water level was then, in preparation for a possible inundation, raised in many places to ground level. During the mobilizations of 1914-1918 and 1939-1940, inundations were applied, albeit not over the full length of the New Dutch Water Line. In the spring of 1945 the New Dutch Water Line was flooded for the first time on a large scale; incidentally, that was done by the German occupier. In addition, large tracts of land between Utrecht and De Bilt, including lands at the Works of Griftenstein, were flooded for some time.



the NDW in 1815-1826



the NDW in 1867-1870



the NDW in 1939-1940

# 4.2 Spatial Language of the New Dutch Waterline

## 4.2.1 the NDW as water infrastructure

Pumps and sluices guide the water out of the deep lying polders, in war-time the water could be directed into the polder. In a normal situation the water table is higher during winter. During a dry summer, water needs to be taken in from the boezem-system. The boezem system is the discharge water network which brings the polder water from into the outer water. It is a system of watercourses that is separated from the adjoining polder land by means of dikes and embankments, and also from the water outside by way of drainage sluices or pumping stations. (Bobbink, I. & Loen, S, 2013) The whole water system can be set in motion by switching the pumping stations on and off or changing the direction of the water flow.

The waterline itself basically coincides with the boundary between the peat and clay soils in the river landscape. On the west side the Waterline was situated in the peat meadow polders. On the East side it was situated in the clay polder of the river landscape as well as the higher grounds of the Utrecht sandy ridge. The waterline thus was positioned on the transitions in the Dutch landscape. (Gerdy, 2014) The gradients are the locations of the largest diversity in flora and fauna (Van Leeuwen, 1965).

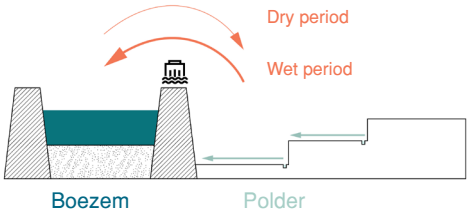
Normally the land is drained for agricultural use. After peat digging, used as fuel the land turned into a lake and became useless. By draining the inner lakes, new, deeper lake-bed polders were created. During the war period, the polders transformed into lakes again and could not be crossed by enemies on foot or horse.

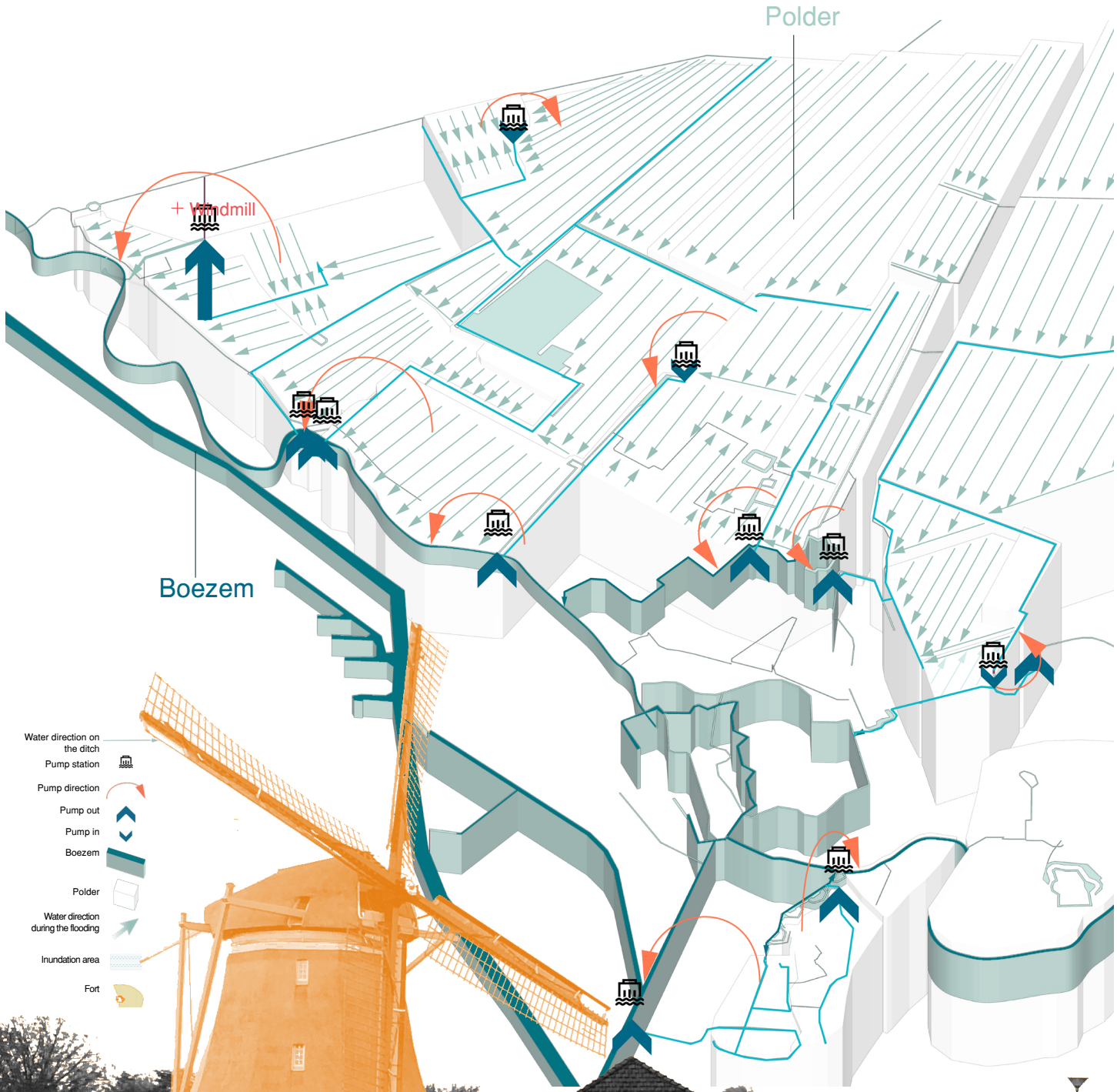






# Water direction during the normal days

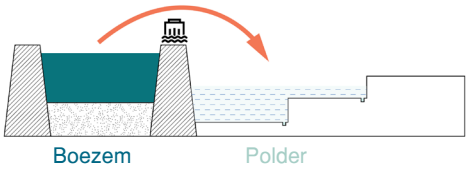



The water level depends on the soil condition and the use of the land. During the summer water from these water network, is led into the polders to top up the declining water levels. (Schuetze, 2011) During the normally wet periods, excess water is pumped out into the river, part of the boezem system and released outside. During the war, the waterworks can switch the direction and period the water is pumped into the polder by this infrastructure (canals and ditches) in a short time and these polders are transformed into lakes as a part of the defense line.



Water direction
during the war




Polder

Inundation

Boezem

Windmill

Functional
Infrastructure

Narrative
Heritage

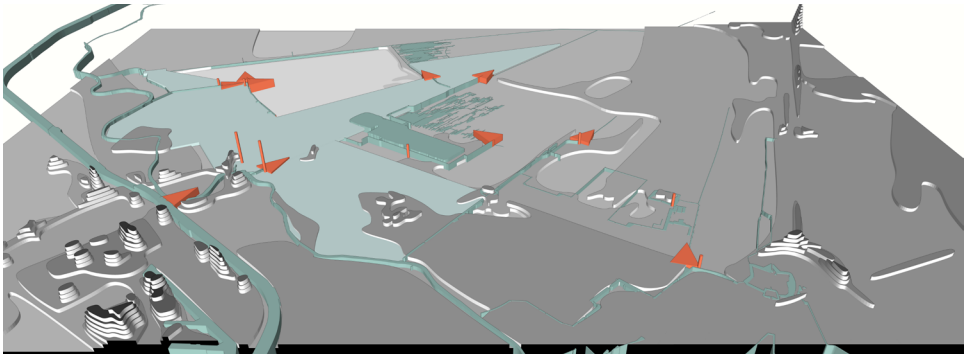
Bunker

Landscape as machine

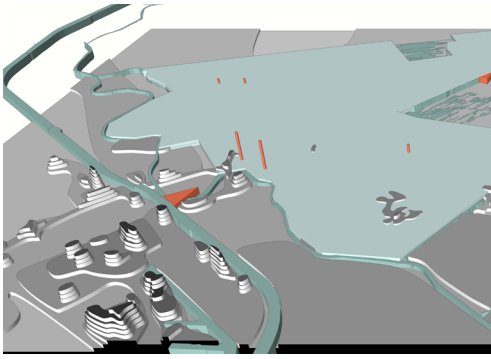
Landscape as language

Ditch

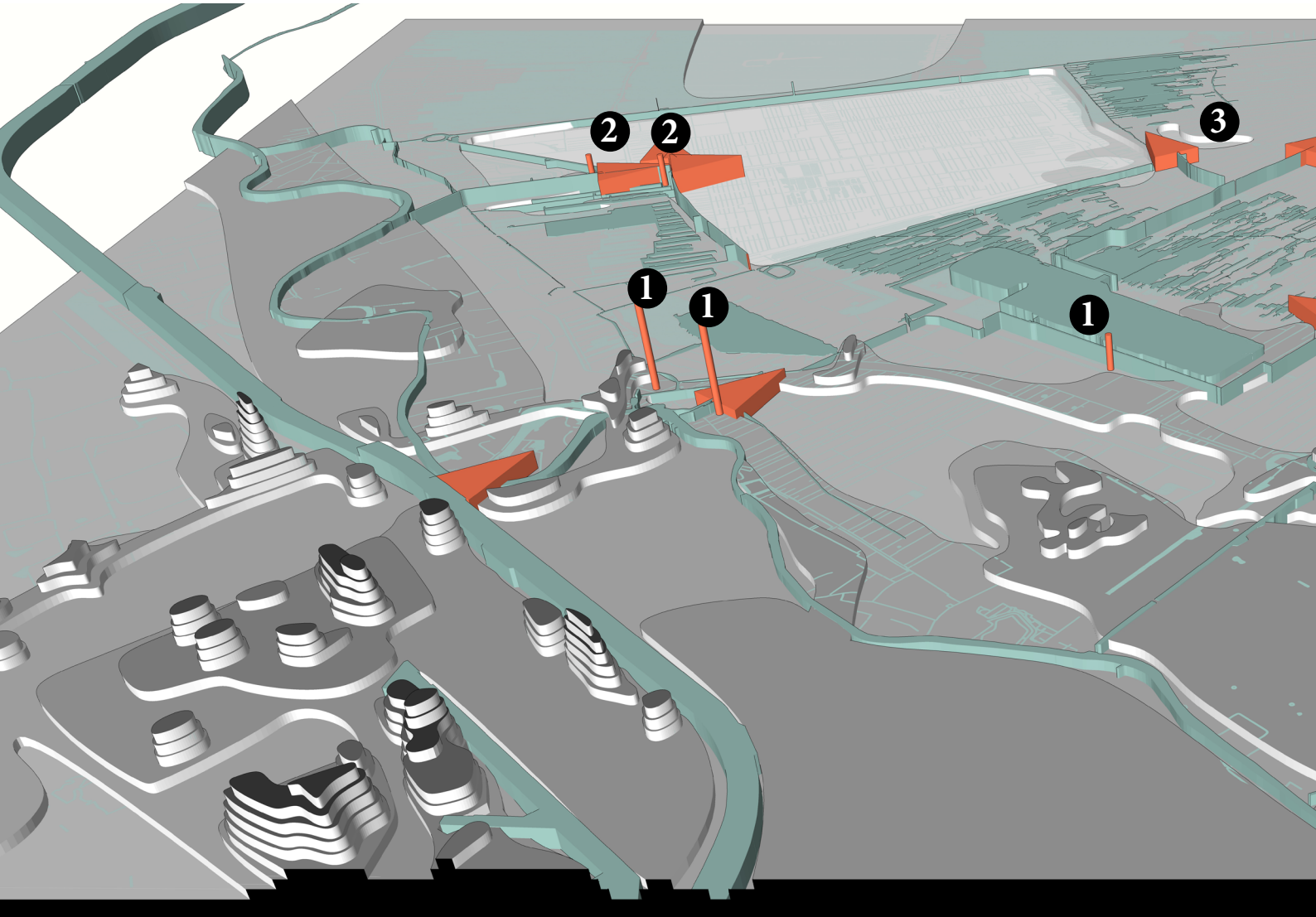
The system consisted of mills, later replaced by pumping stations and the sluices. The polders have different water levels. During the war the area is flooded polder by polder.

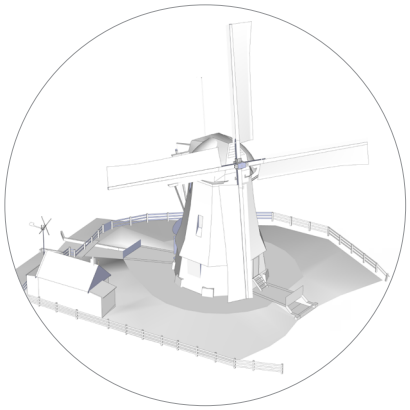


flood phase I

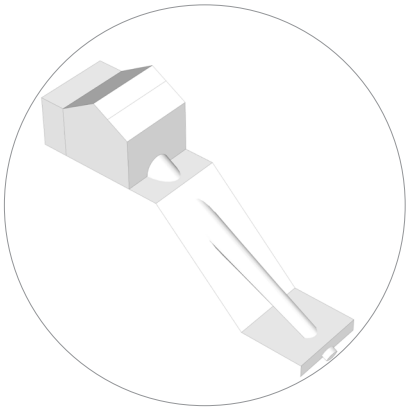


flood phase II

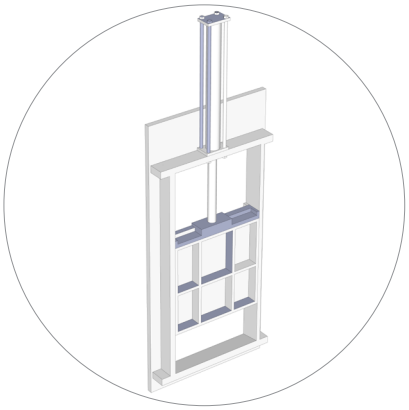




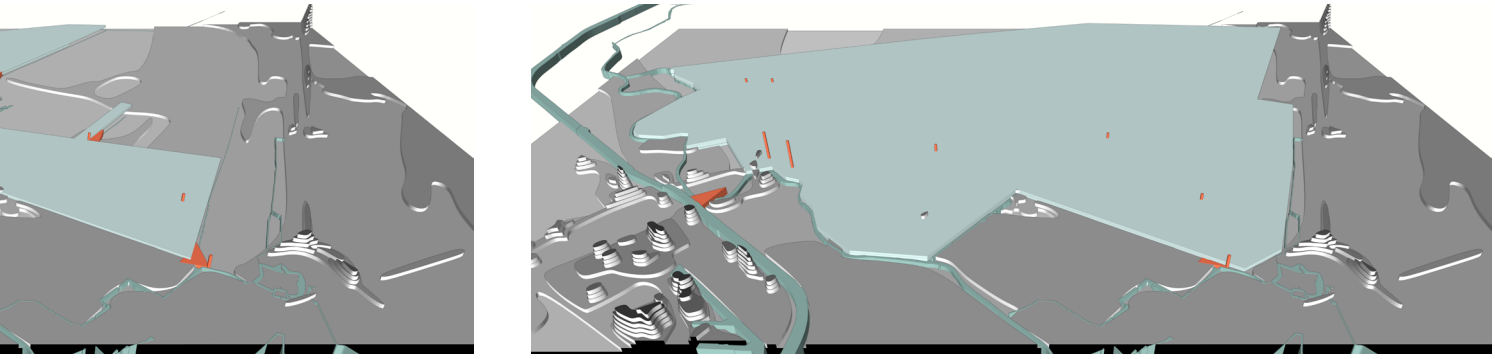
1 Mill



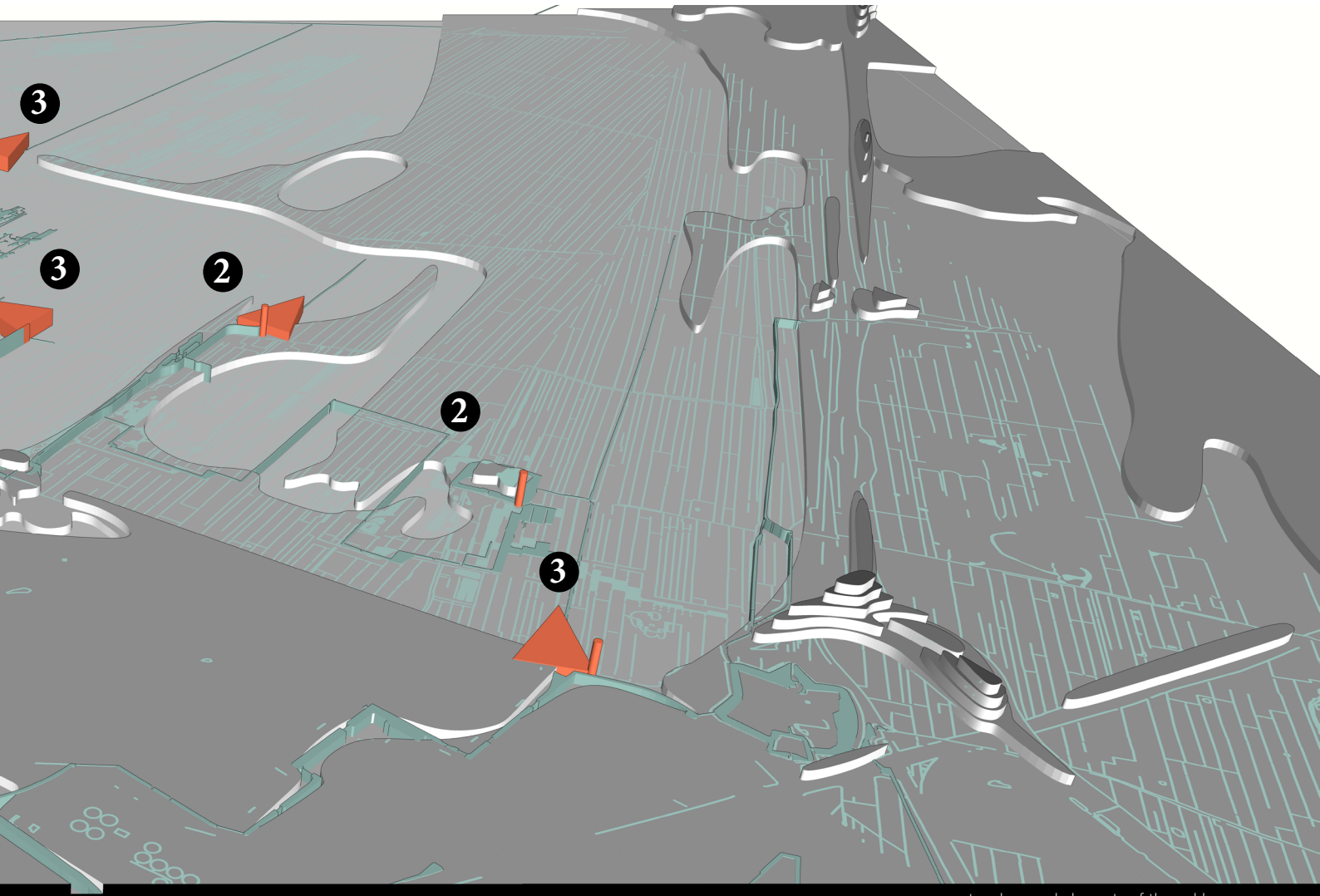
2 Pump Station



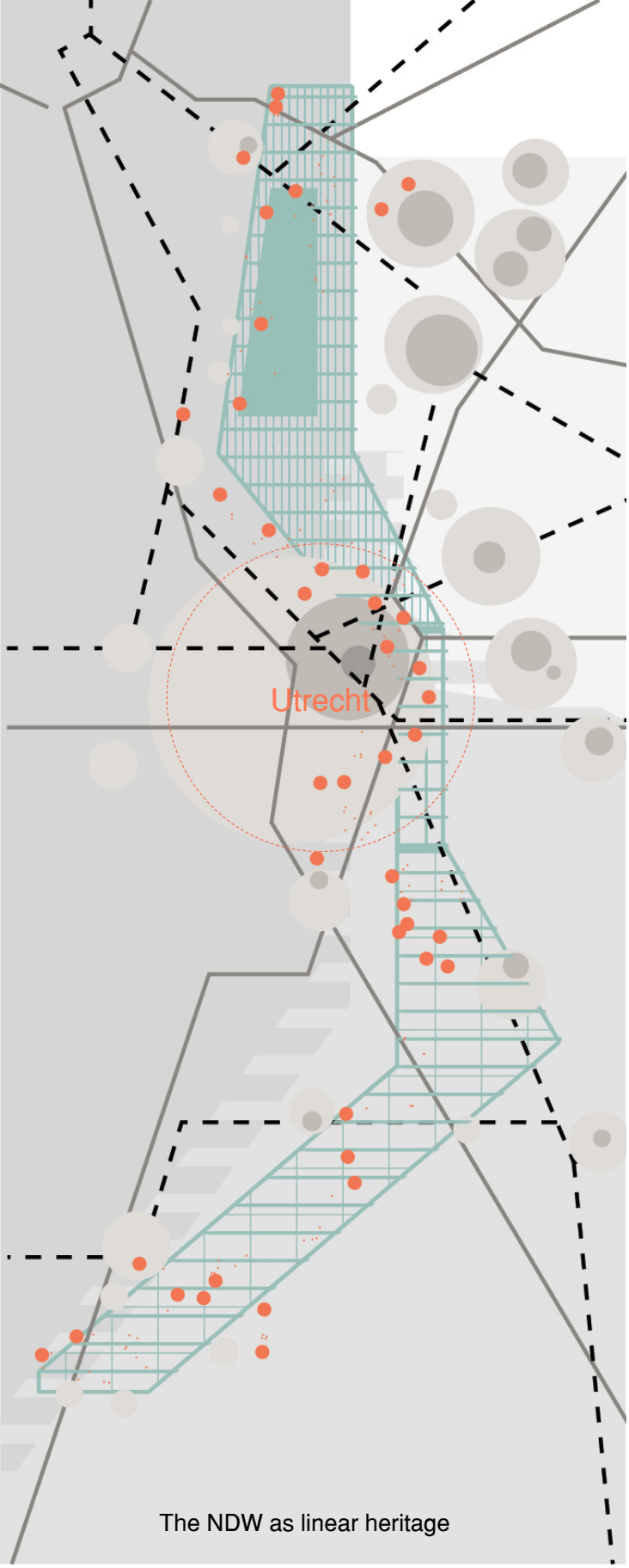
3 Sluice



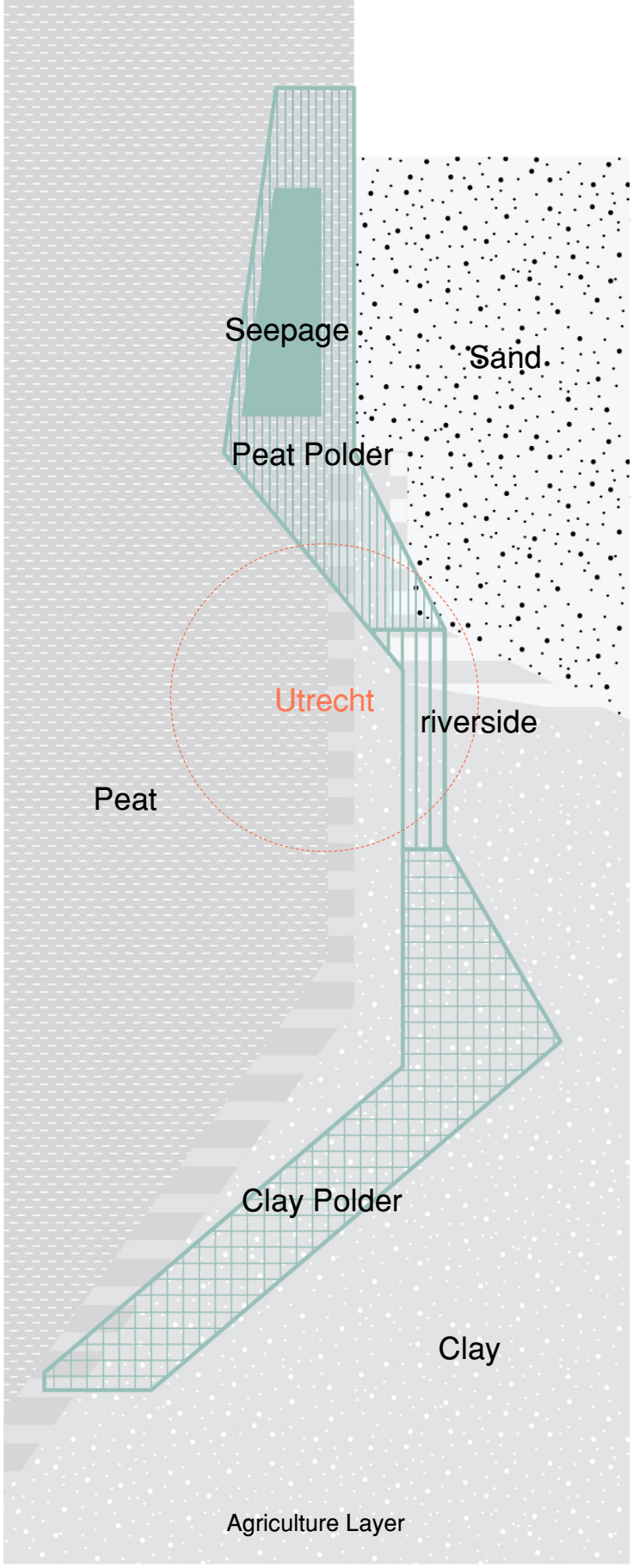
flood phase III




topology and elements of the polder



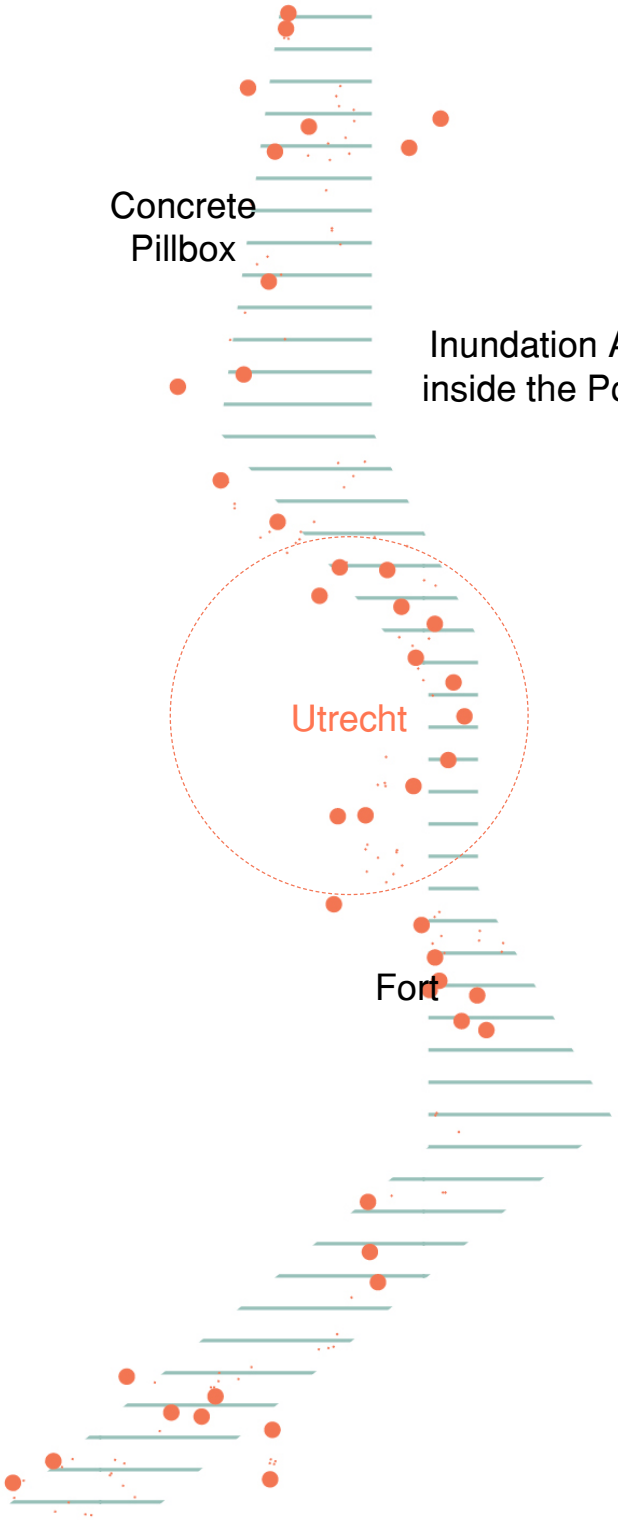

The NDW as linear heritage



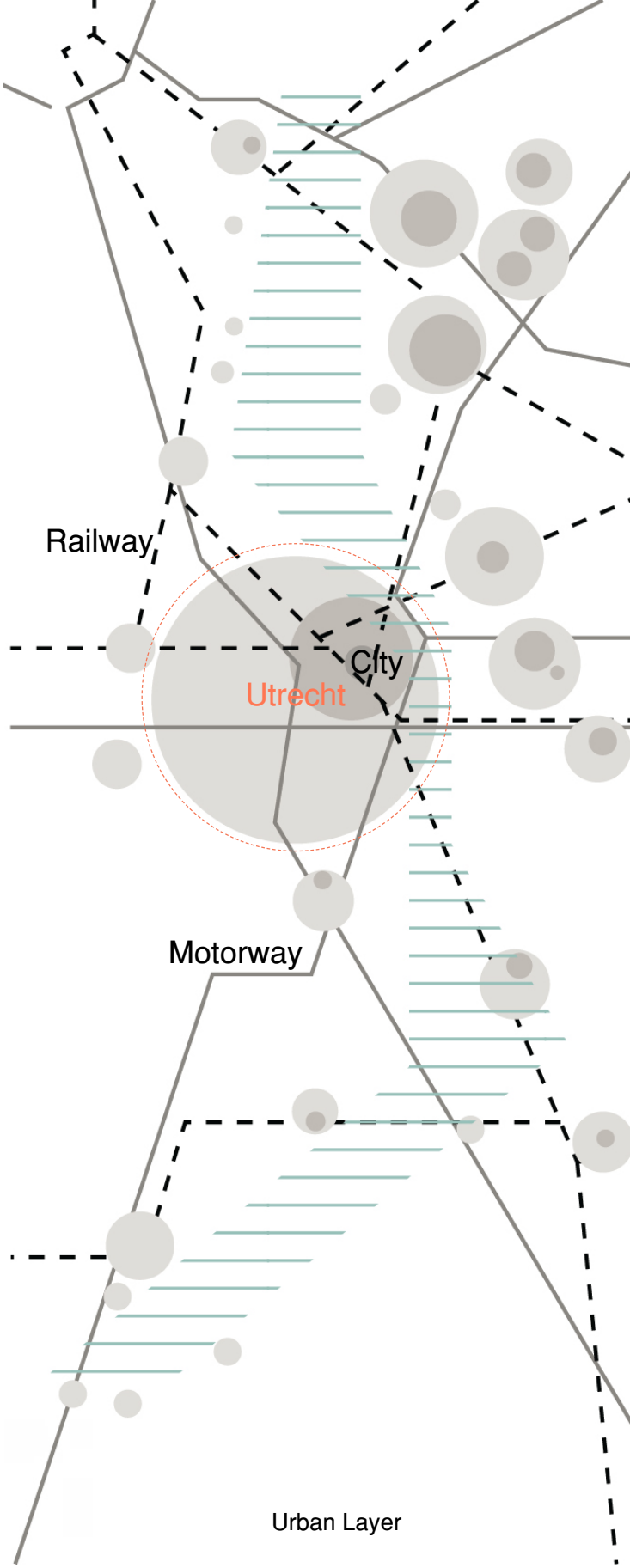

Agriculture Layer

## 4.2.2 the NDW as linear heritage

The NDW is linear landscape combining water infrastructure and a series of military elements, which forms a heritage belt.

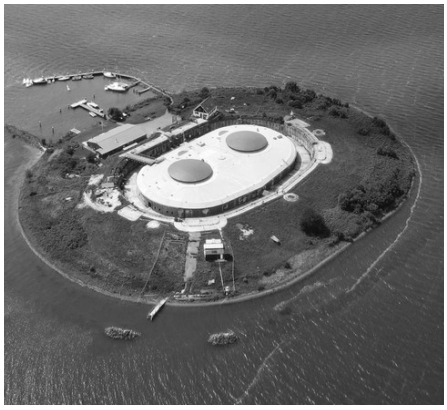



Heritage Layer




Urban Layer

Lake



Clay Field



Forts as Village



Peat Polder



River Clay Polder



Forts as Lonely Sculpture



Urban Green Pieces



Open Field



## 4.2.3 spatial characters

Typical Dutch landscape and typical Dutch plant association can be seen there.

The Waterline around Utrecht was a clearly recognizable transition zone between the city and the outlying area, with a particularly high landscape architectural quality. The main defense line separates the former urban area of Utrecht from the open inundation areas along the east and north flanks of the city. However, with the urban expansion, the boundary between city and country now becomes vague.

# 4.3 The present situation of the NDW renovation

The present regeneration projects focus only on the archaeological achievements and function re-definition and such patchy work do not help the NDW perform as an entirety.





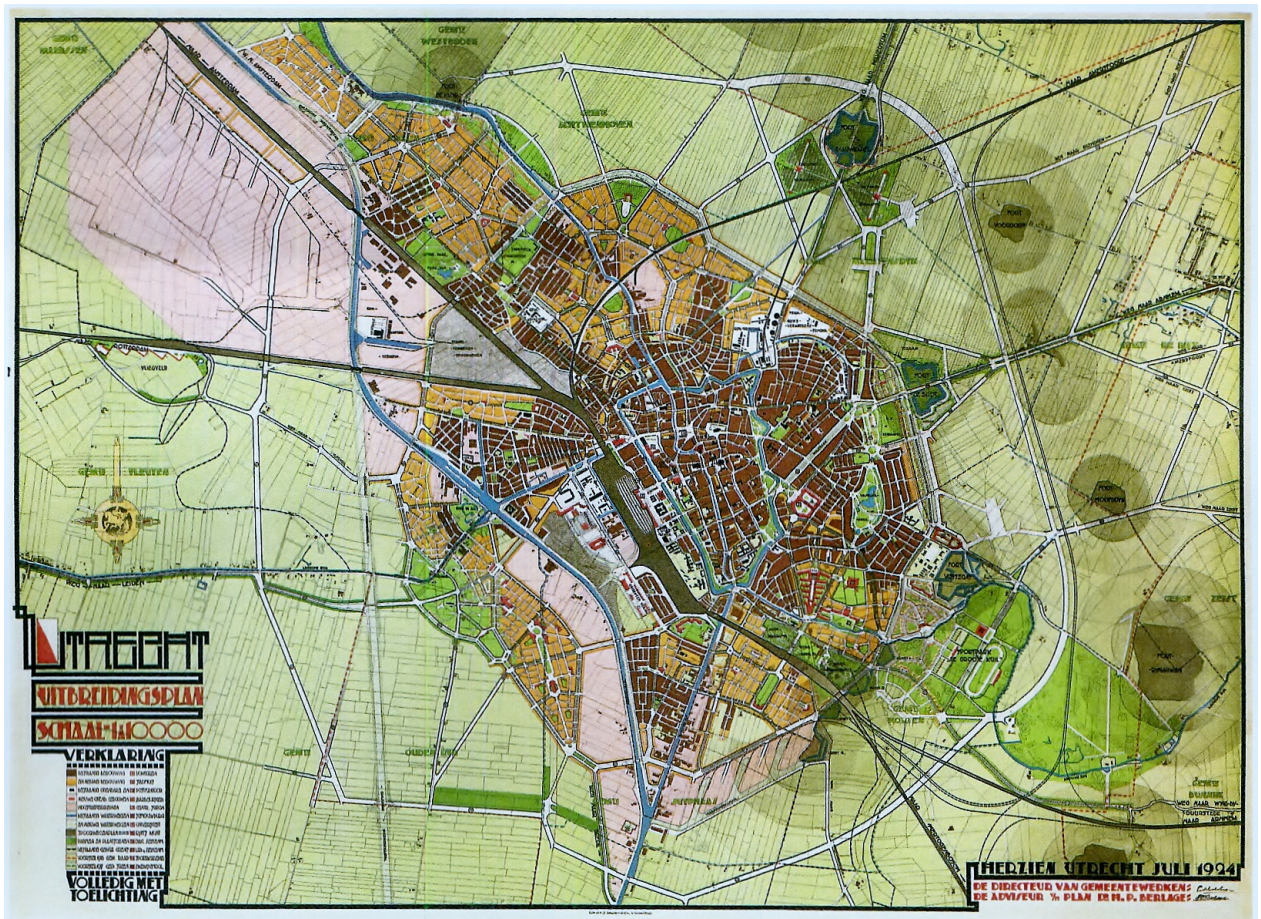



# 4.4 Urbanization around the Utrecht

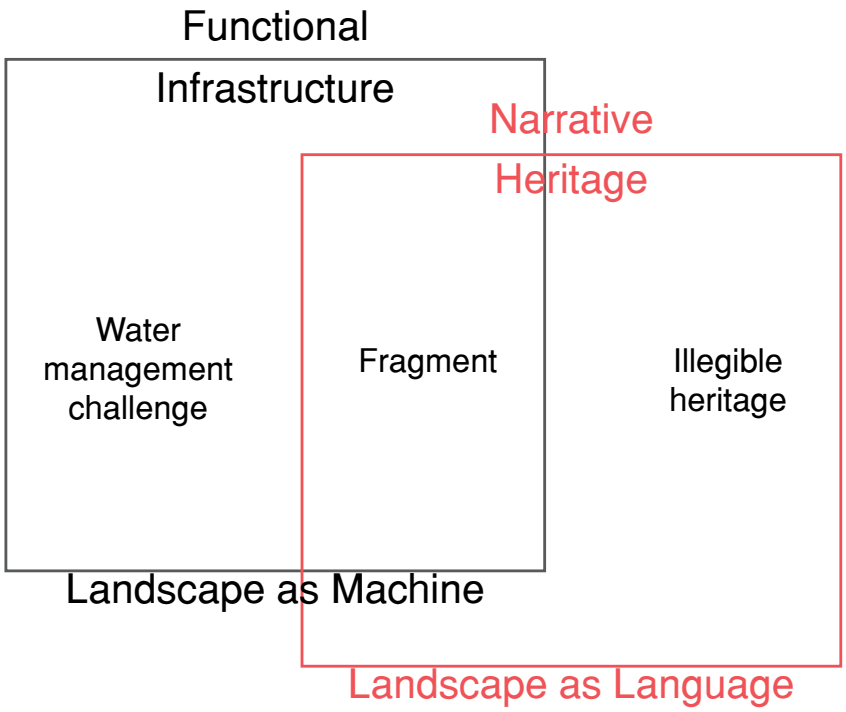
The urbanization happening in this area bring three problem, water management challenge, fragment and illegible heritage. The defensive line was separated by the infrastructure and urban fabric. It is becoming harder to read the waterline as linear landscape and inundation area.



Utrecht in 1924



Urban Planning of Utrecht in 1924




In general, because of the urban fragment and function loss of the NDW, the NDW is hard to perceive. It is necessary to enhance the readability and the spatial coherence of the area Besides these, other challenges including the water issue and fragmented city need to be solved.

# 4.5 Problem statement

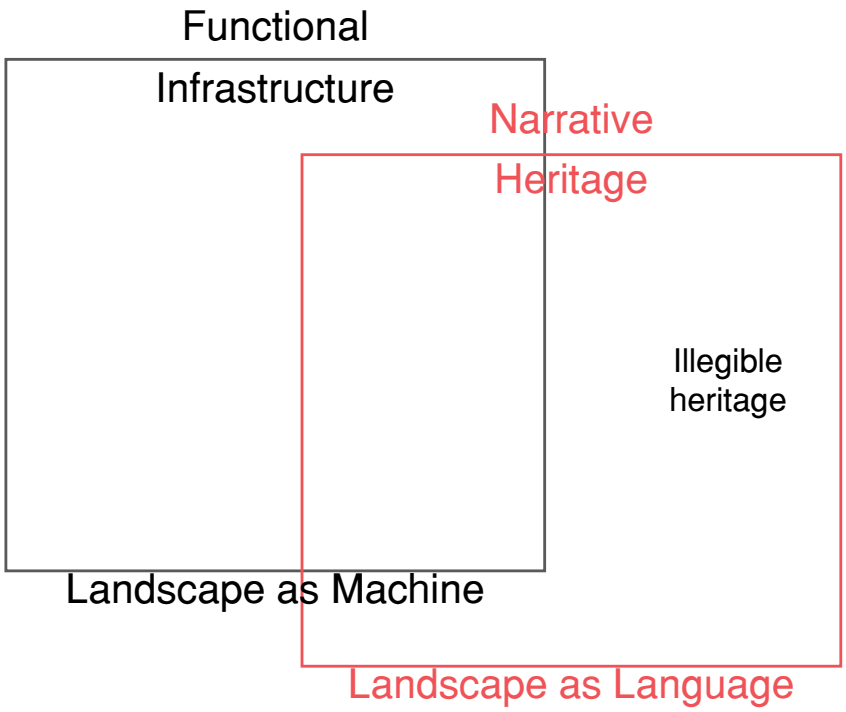
The urbanization happening in this area bring three problem, water management challenge, fragment and illegible heritage. The defensive line was separated by the infrastructure and urban fabric. It is becoming harder to read the waterline as linear landscape and inundation area. The representation of the NDW as cultural heritage is harmed by the urban expansion, but the meanings of the NDW is changed by the complex environment. How to represent history and envisage the development as part of evolving continuity of historical landscape at the same time is a big challenge.

The experience and representation of the NDW as cultural heritage is harmed by the urban fragment. The NDW overlaps with modern infrastructure like the motorway (the A27, the Waterlinieweg and the Noordelijke Ring Utrecht), the railway and future tram in a large number of places. The changes to the infrastructure will have major consequences for the functional value and emotional value of the urban landscape and cultural-historical landscape. The liner landscape is an important part of these areas but urban fragment makes it hard to perceive. Nowadays, even though there are some renovation project on the forts of the NDW, the patchy projects are helpless to the general and holonomic image. It is necessary to facilitate various place identities while maintain the coherence in a regional scale.

The experience and representation of the NDW as cultural heritage is also affected by the function transition. How to represent the historical image which cannot been Most function of the NDW, flooding for defence, has already gotten lost because of social background changes. Even the irrigation function of water system still works but is almost invisible for the public. It is hard to image how it works. Therefore, this part of memory will be easily forgotten and misunderstood.

The experience and representation of continually evolving NDW is also a challenge. New ways to confront conservational issues need to be found. Specifically, the challenge is how to expose the hidden realities of the site and the complex surrounding environments of heritage.

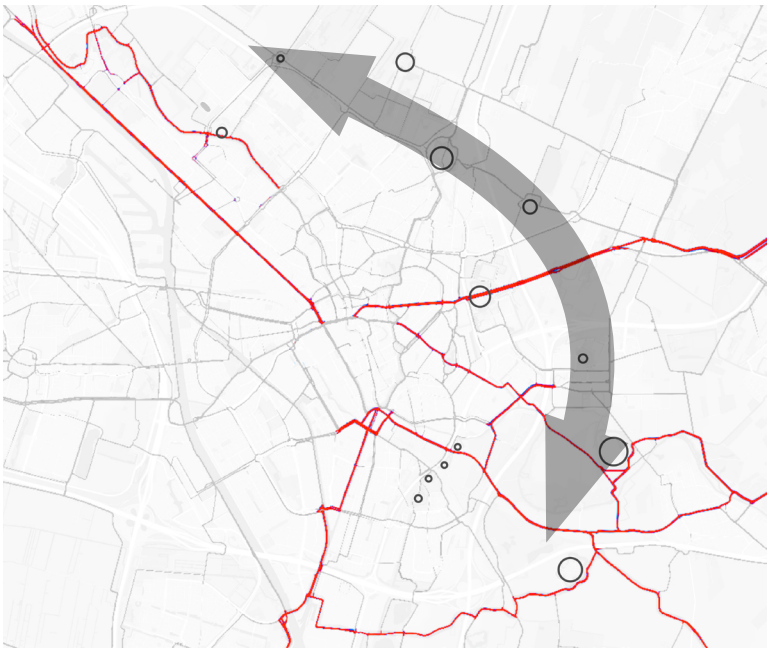
In general, because of the urban fragment and function loss of the NDW, the NDW is hard to perceive. It is necessary to enhance the readability and the spatial coherence of the area Besides these, other challenges including the water issue and fragmented city need to be solved.




### 4.5.1 Illegible heritage

On the one hand, after the line lost its defensive function, this unique historic legacy was threatened with the loss of its unity as a spatial entity and special memory, like something on flooding for defense. Also, the poor connections in adjacent historical sites along the NDW weaken the legibility.

On the other hand, urbanization is making the environment of the heritage complex and complex environments add new layer of meaning to the heritage. The forts and other elements are scattered in the natural area, cultural area and urban area. Urbanization is separating the heritage in different space-time fabrics and people could travel through time along the NDW.



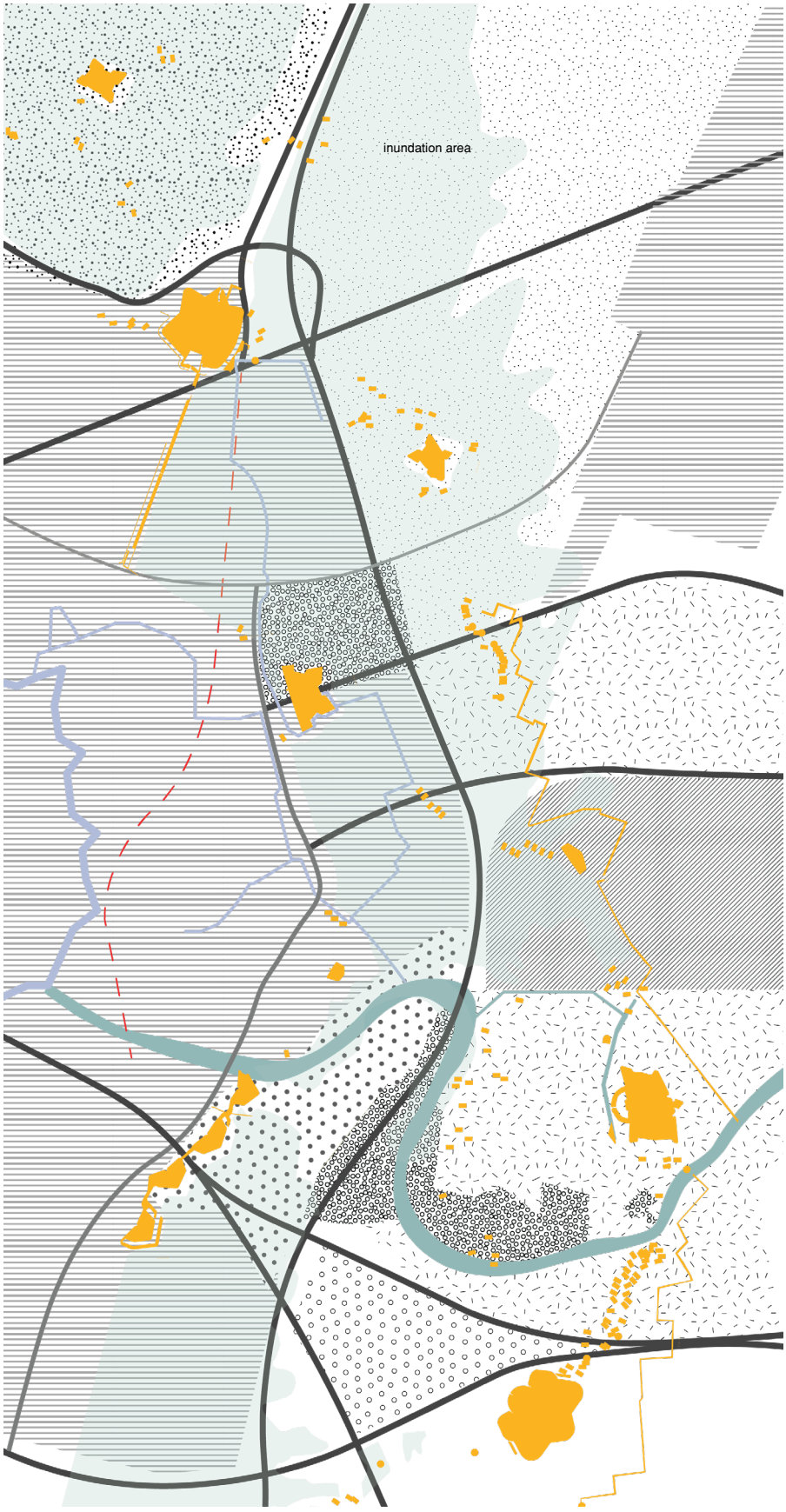
Cycling Corridor and Linear fort system

Fort  Cycling Route

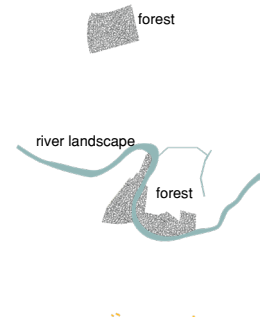



illegible image on inundation and shooting

historically illegible: linear landscape and memory on inundation and shooting

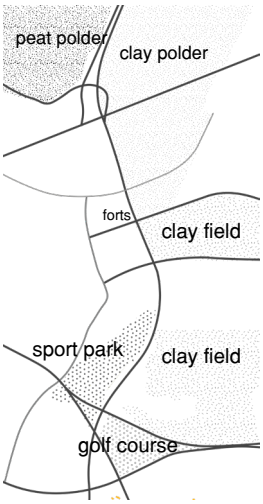



the environments of heritage




Natural Layer

+




Cultural Layer

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Urban Layer

territorially illegible: heritage on the complex environments



A fort inside the polder



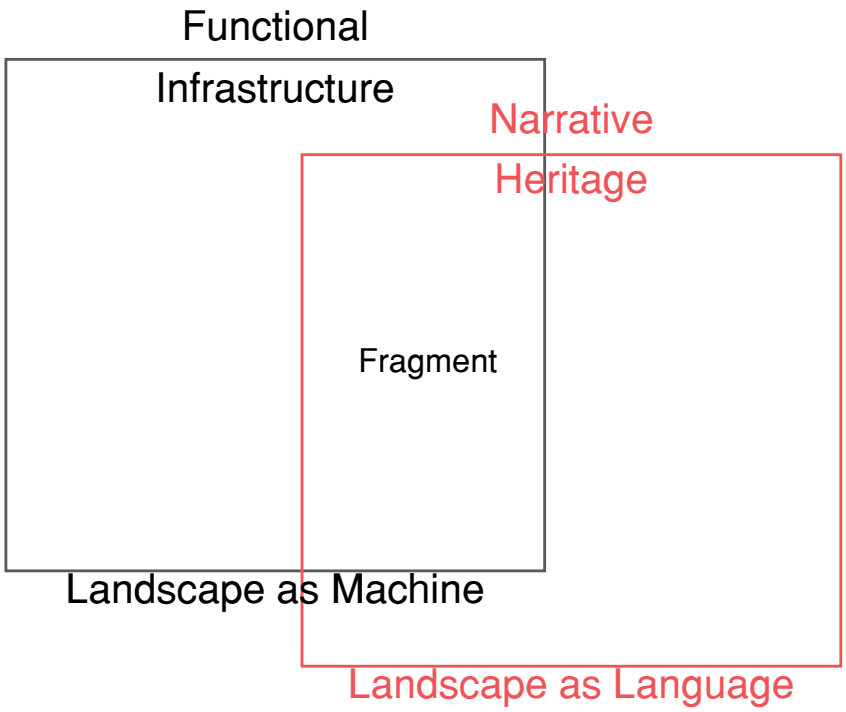
A fort inside the city



Experience of the path inside the polder



Experience of the path inside the city



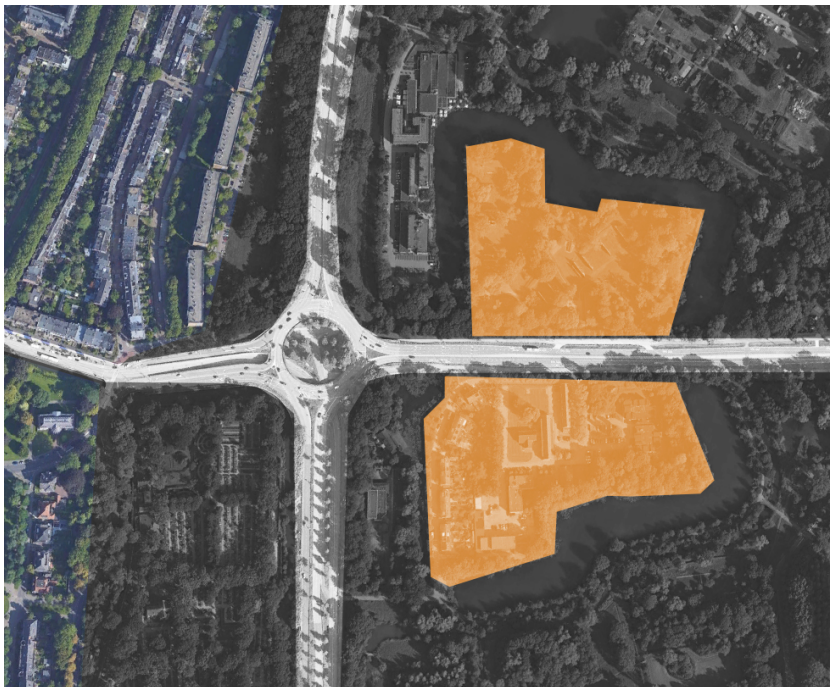

## 4.5.2 Urban fragment

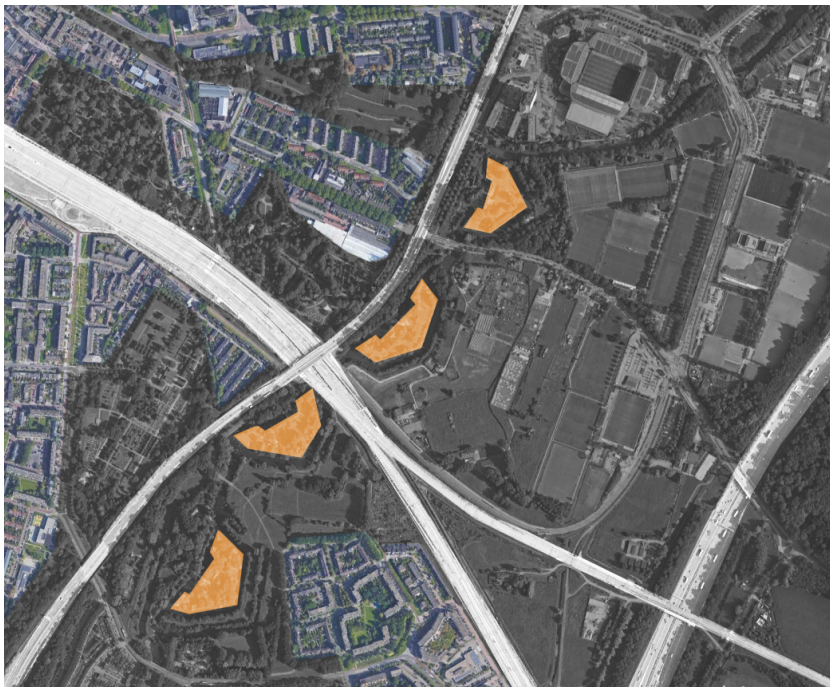
With the expansion of city, heavy infrastructure is currently blocking the movements of people and turning the city into fragments. A lot of space including the heritage is less accessible. The experience and representation of the NDW as linear cultural heritage is harmed by the urban fragment. The connections between urban pieces and heritage should be strengthened. For example, the motorway ring forms a barrier zone with a width of approximately one kilometer between city and country. In the future, the possible measures, which arise from the broadening of the A27 and the NRU for larger capacity of traffic flow, make it possible to remove the barriers and to continue the movement along the large landscape structures in a self-evident manner.

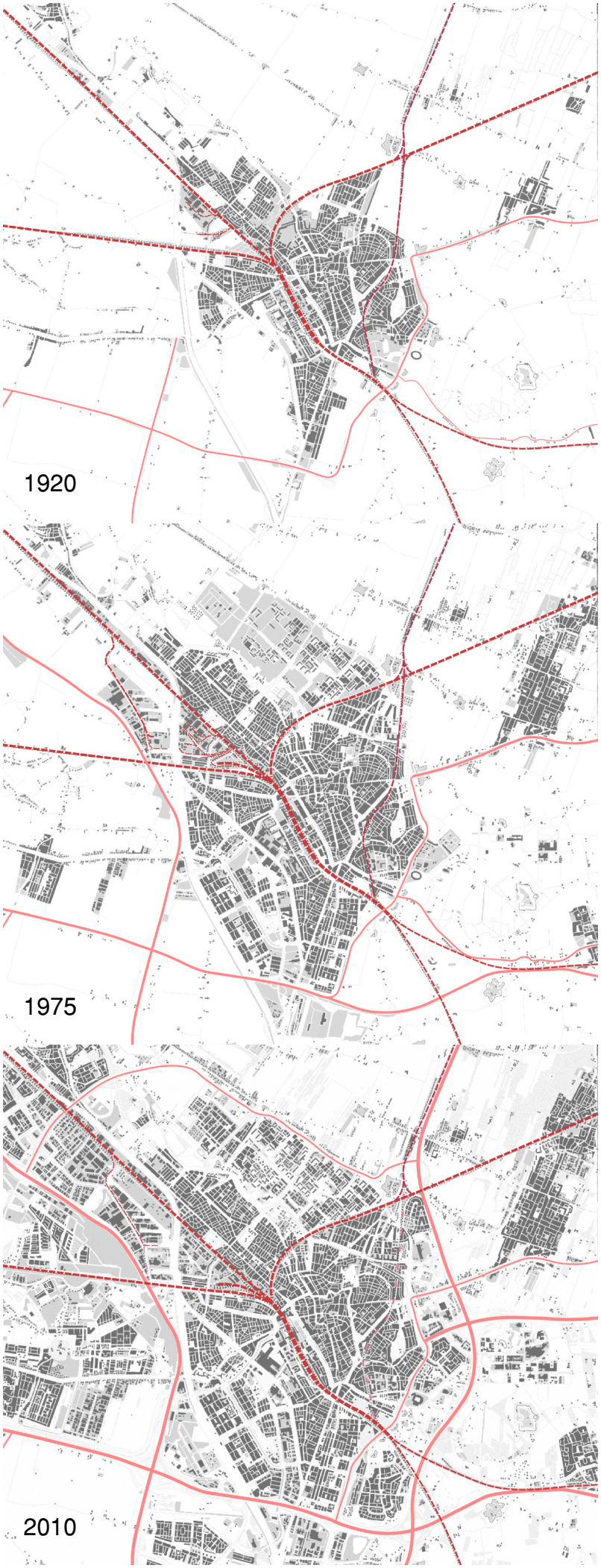
Although there are underpasses and bridges at various locations crossing the heavy infrastructure, they are not always very attractive and sometimes downright oppressive. It is necessary to turn this boundary into a border with intense and magnetic activity for a lively connection between the landscape and the city.

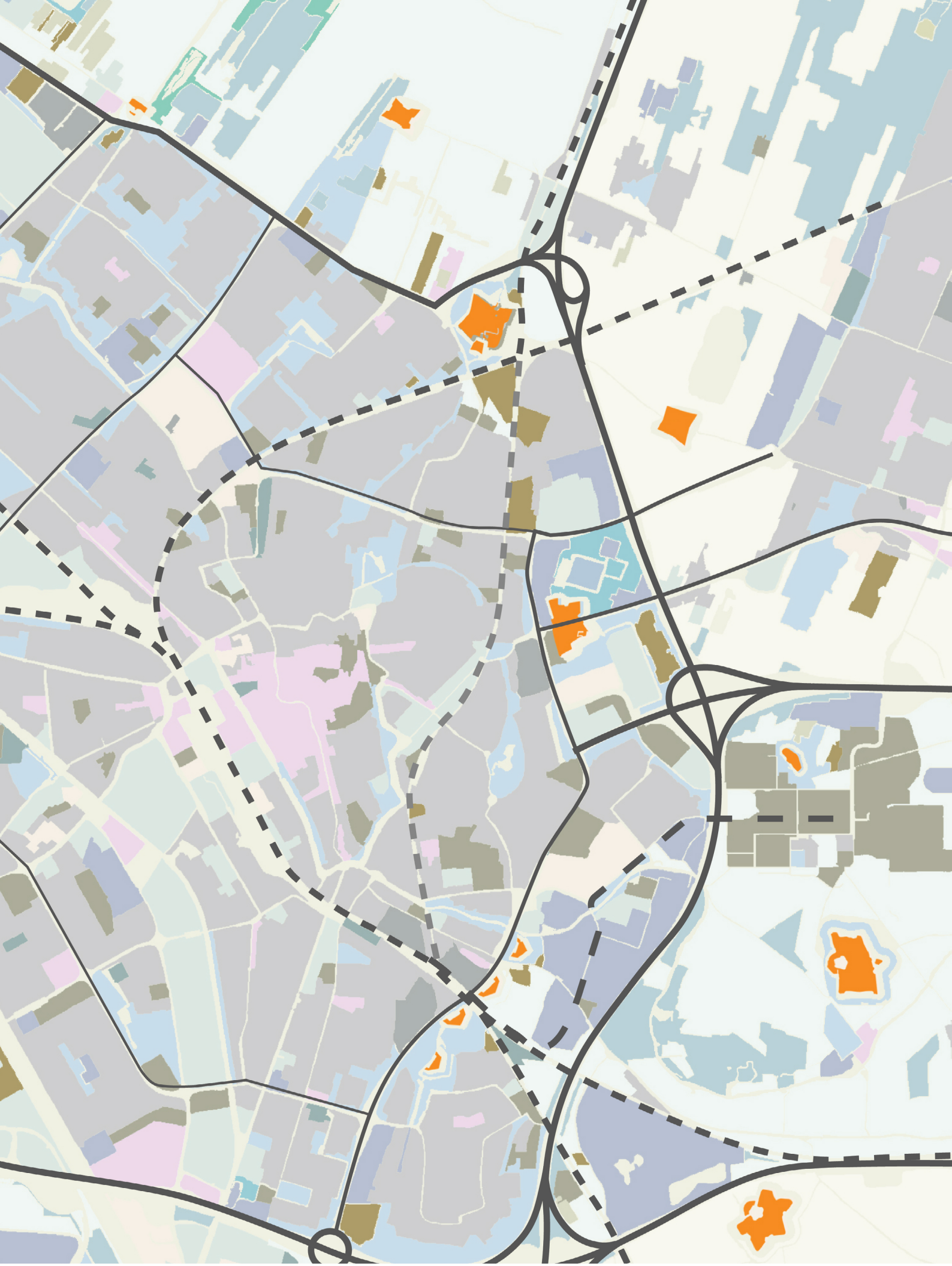
Therefore, the transition from urban detritus cut by heavy infrastructure to cohesive community is necessary.



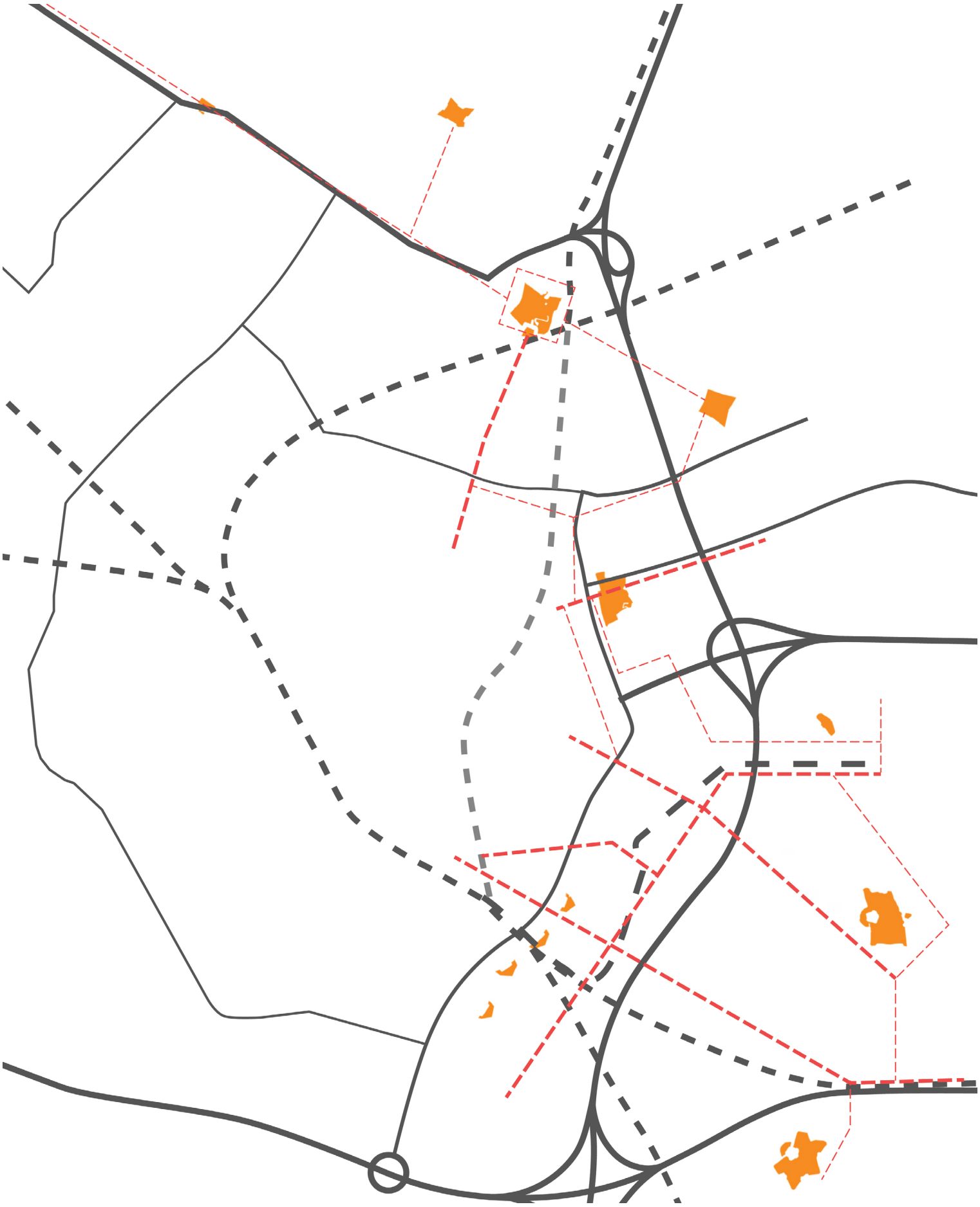





1920
1975
2010



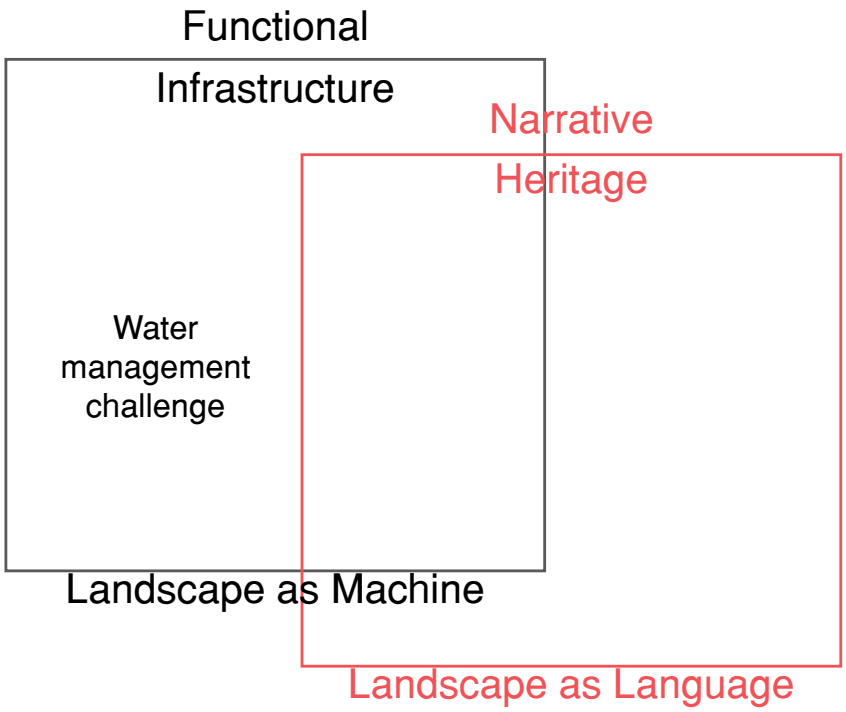
Urban fabrics are separated by infrastructure



cyclying paths cross the infrastructure

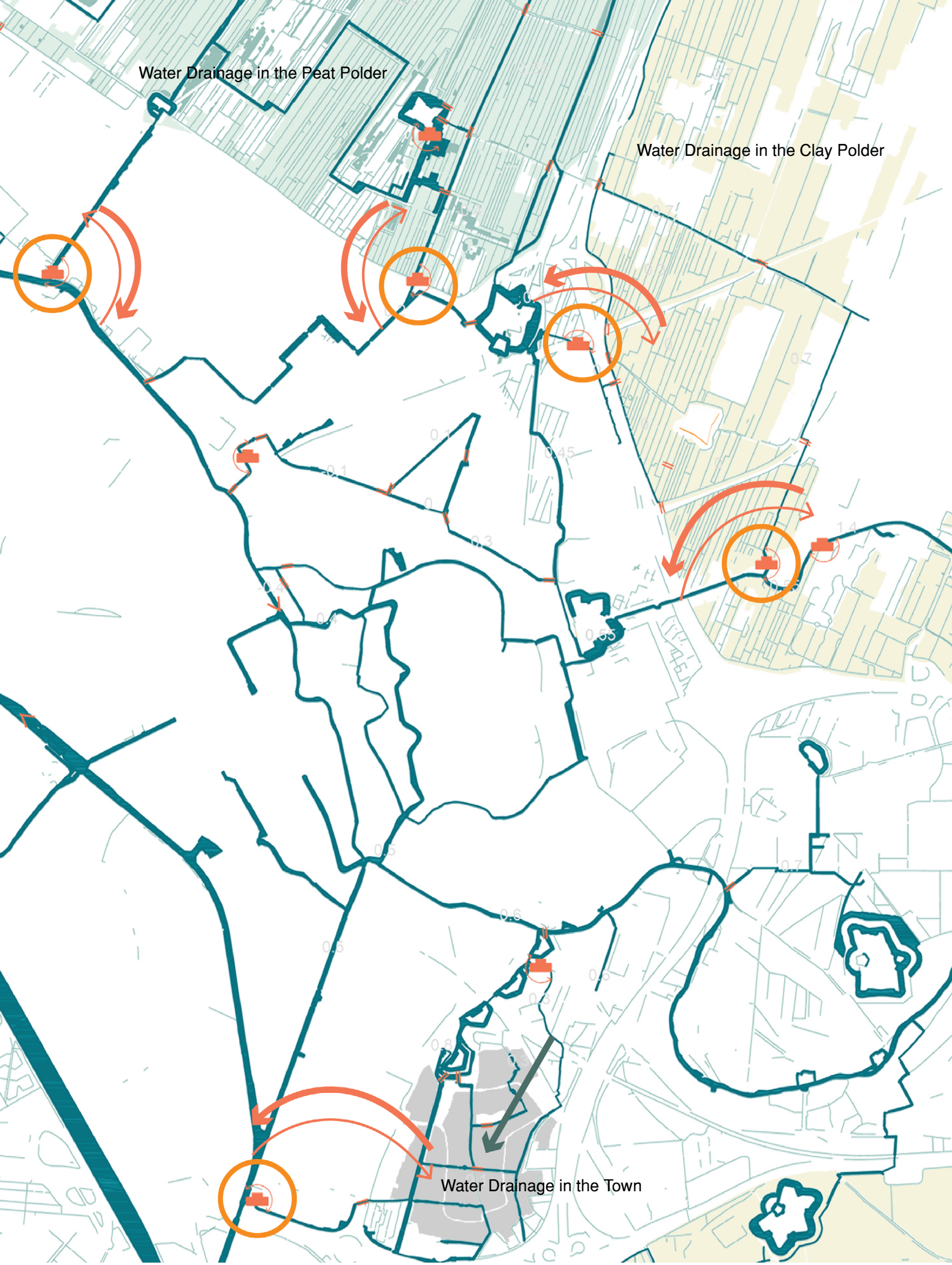



Poor conection between urban fabrics

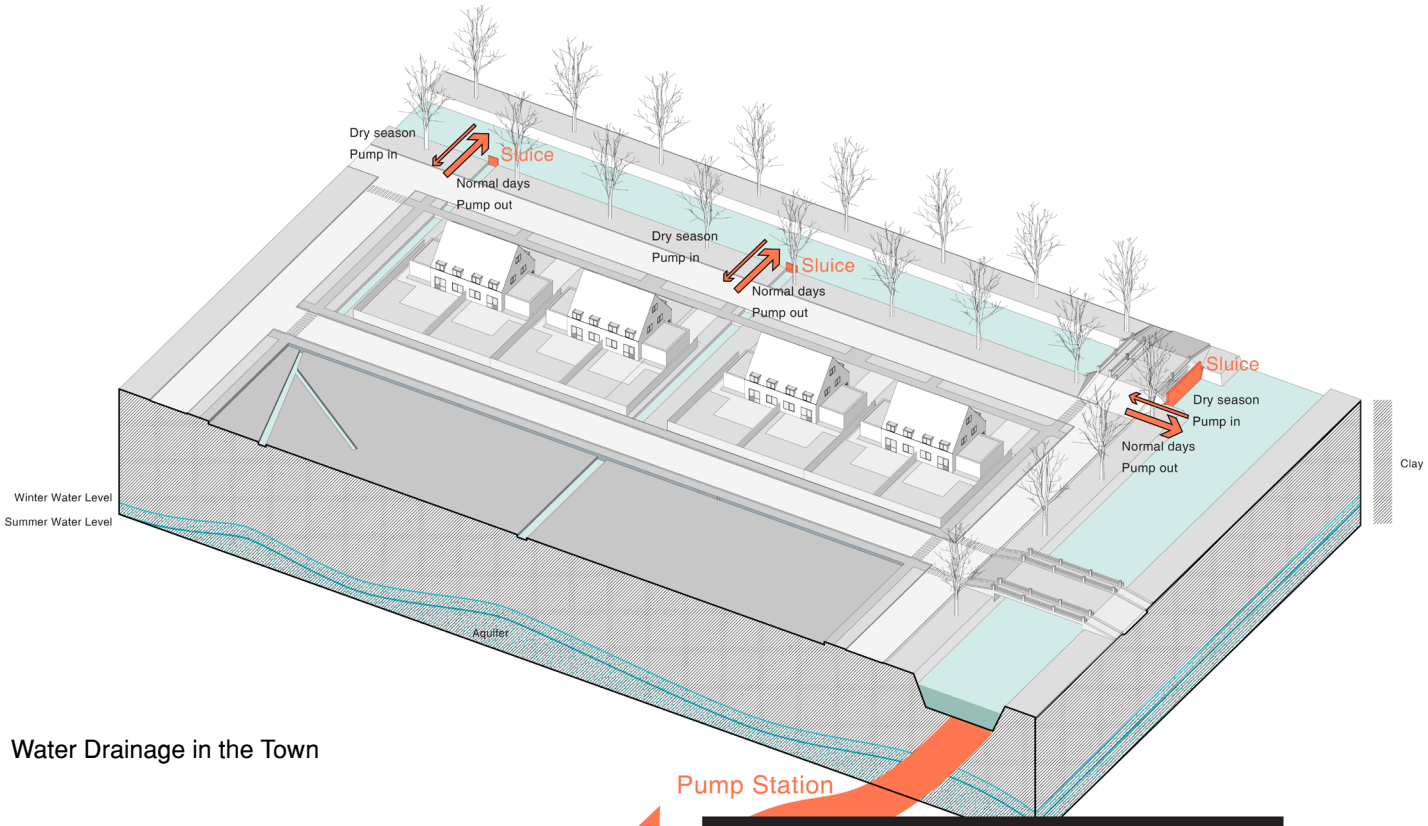



## 4.5.3 Water management and climate adaptive city

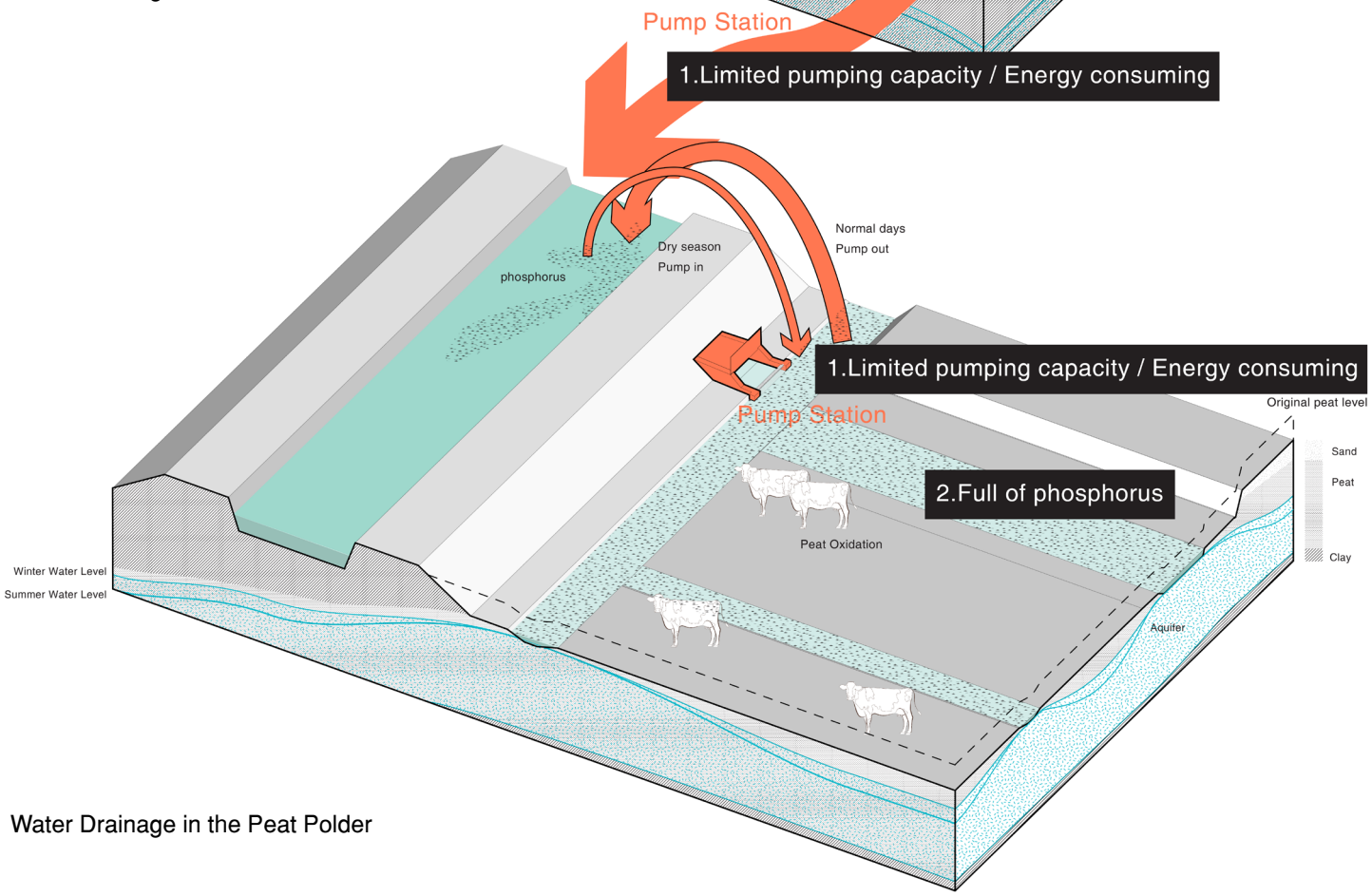
Traditional water management brings some problems. With the climate change, the pump station and the boezem with the limited capacity of are becoming the bottleneck of the drainage system. Also, the water full of phosphorus in the agriculture area is pumped into the cleaner boezem. Even worse, now, low groundwater level in the peat polder results in peat oxidation and land subsidence.




Water Drainage in the Town during the normal time



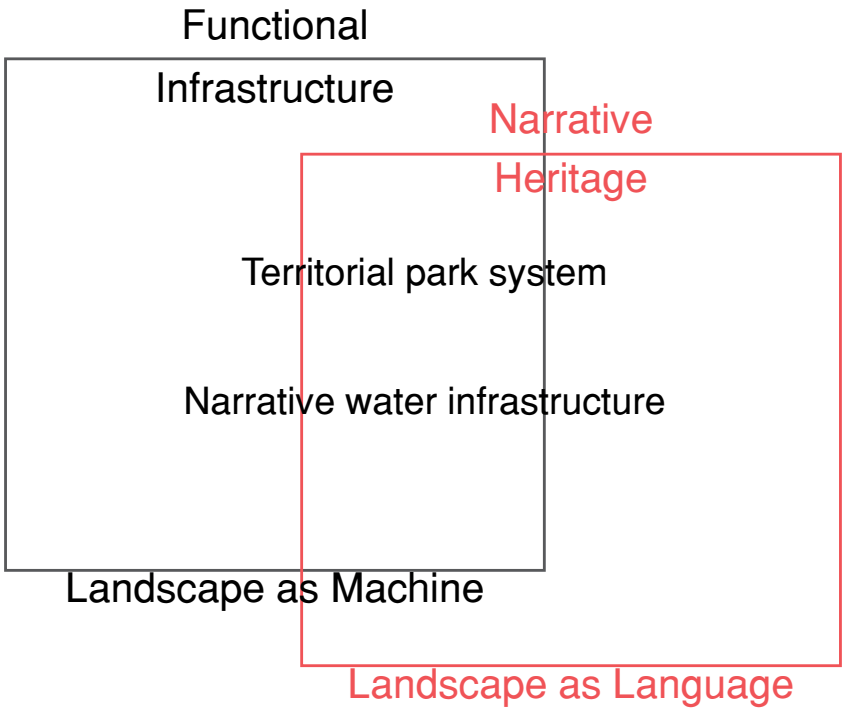

Water Drainage in the Town

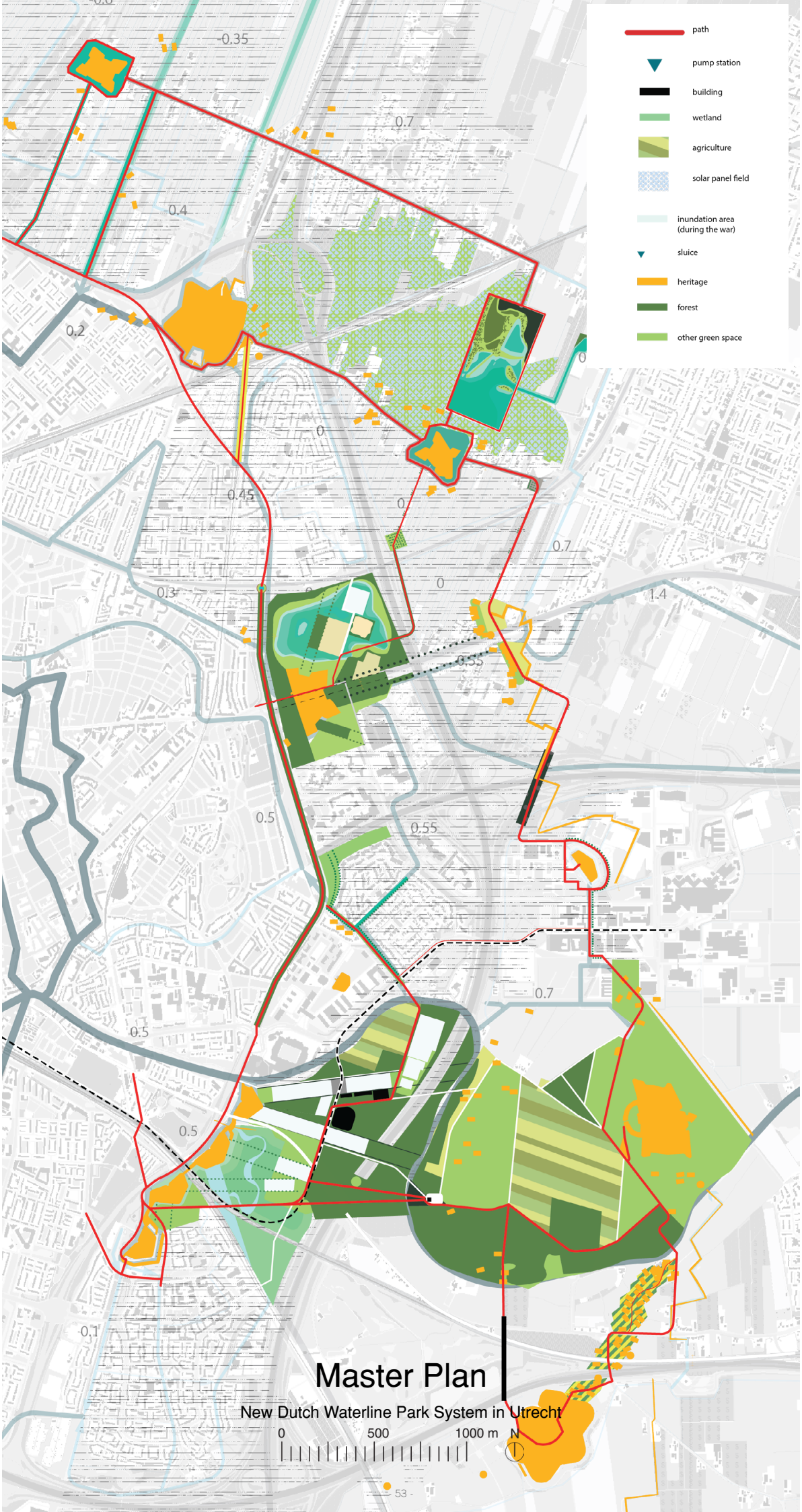


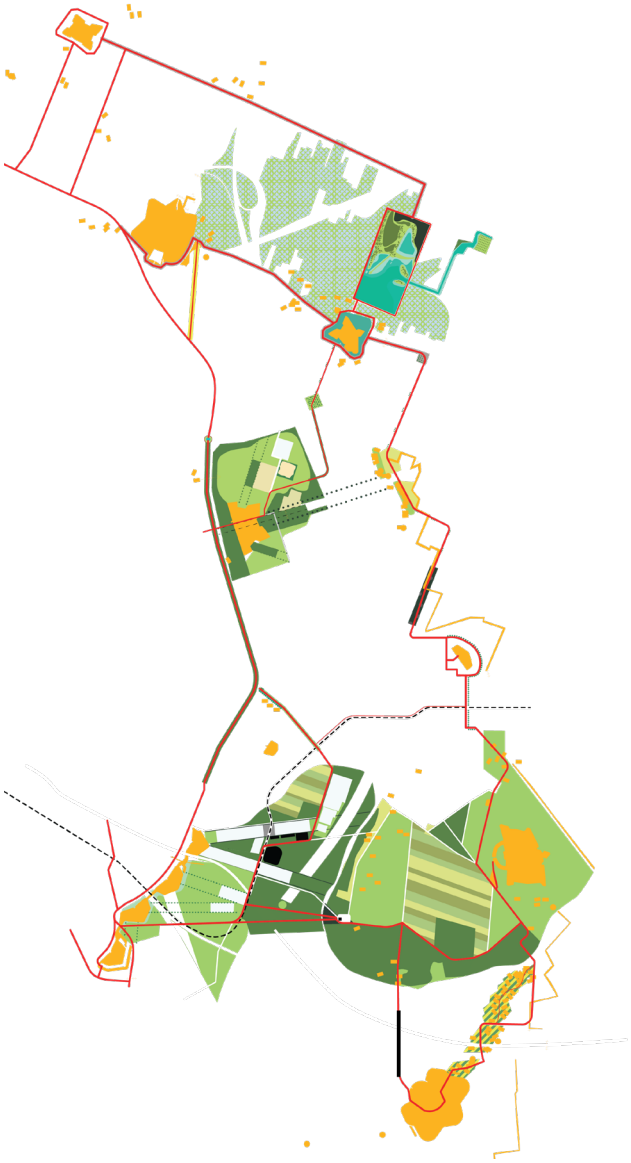

Water Drainage in the Peat Polder

# 5. Design

Two strategies are proposed to repair the functional infrastructure and represent the narrative heritage. A territorial park system is proposed to de-fragment and represent the new spatial character of the heritage elements colored by different surroundings. The narrative water infrastructures aim to provide resilient wetland for the boezem-polder system and represent the history of the inundation. Both provide a flexible framework, ensures the spatial entity of the NDW and leave enough space for future urban expansion around the park system together.




path
pump station
building
wetland
agriculture
solar panel field
inundation area
(during the war)
sluice
heritage
forest
other green space
-0.35
0.7
-0.4
0.2
0
0.45
0
0.7
0.3
0
1.4
0.55
0.5
0.55
0.7
0.5
0.5
0.1
Master Plan
New Dutch Waterline Park System in Utrecht
0
500
1000 m
N



Territorial park system

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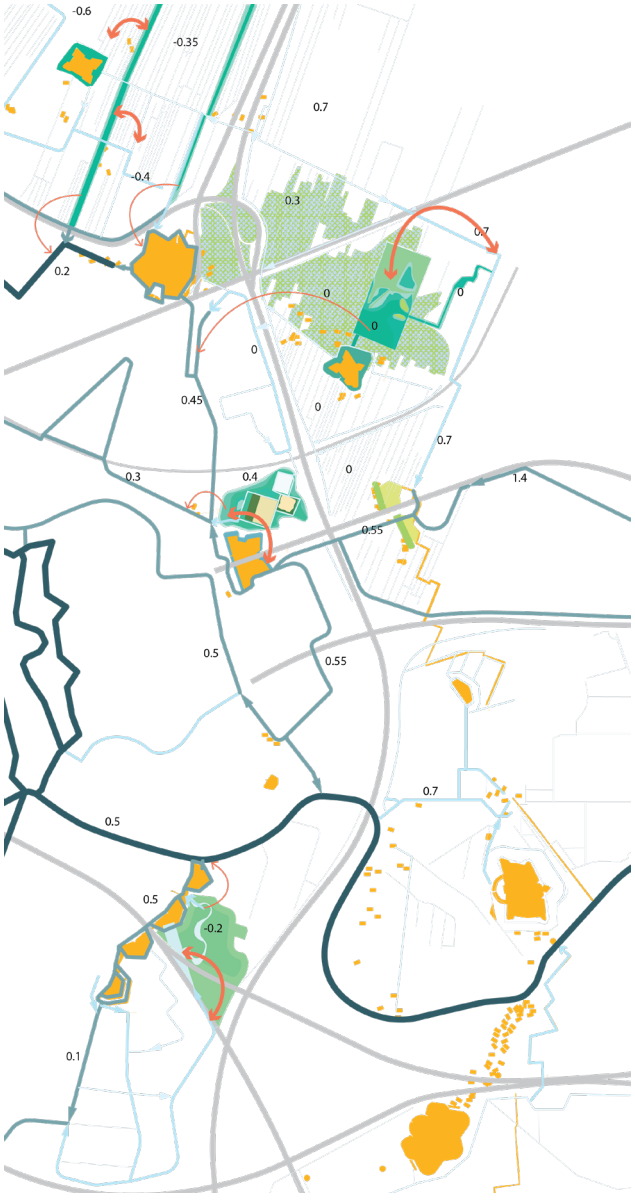



Narrative water infrastructure

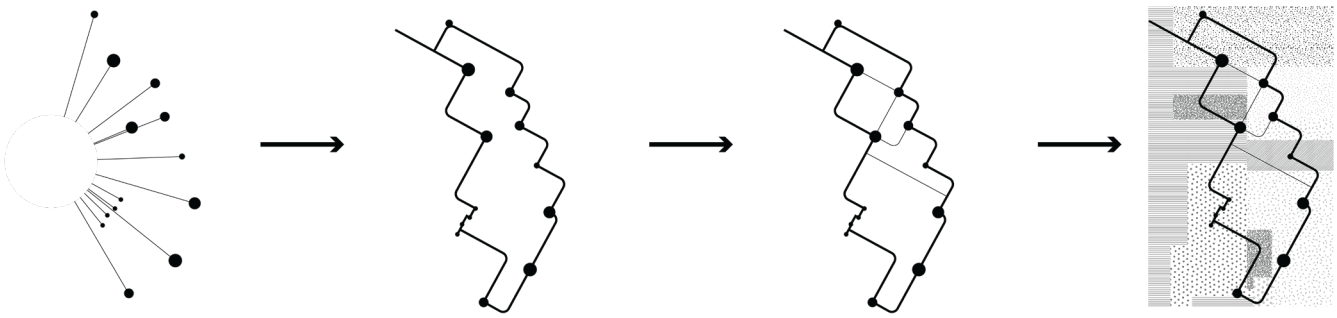
# 5.1 Heritage as framework, for de-fragment and accessible and legible heritage

This strategy aims to de-fragment and recover the spatial character of heritage in different landscapes. It can interpret the NDW in regional scale.

## 5.1.1 Territory park system

This strategy aims to develop a regional landscape framework to enhance the entirety of the landscape. A continuous park system would connect the fragmented parts, crossing the natural landscape, cultural landscape and urban landscape in between. This park system will also open the heritage to the public. New function can be added based on this framework.

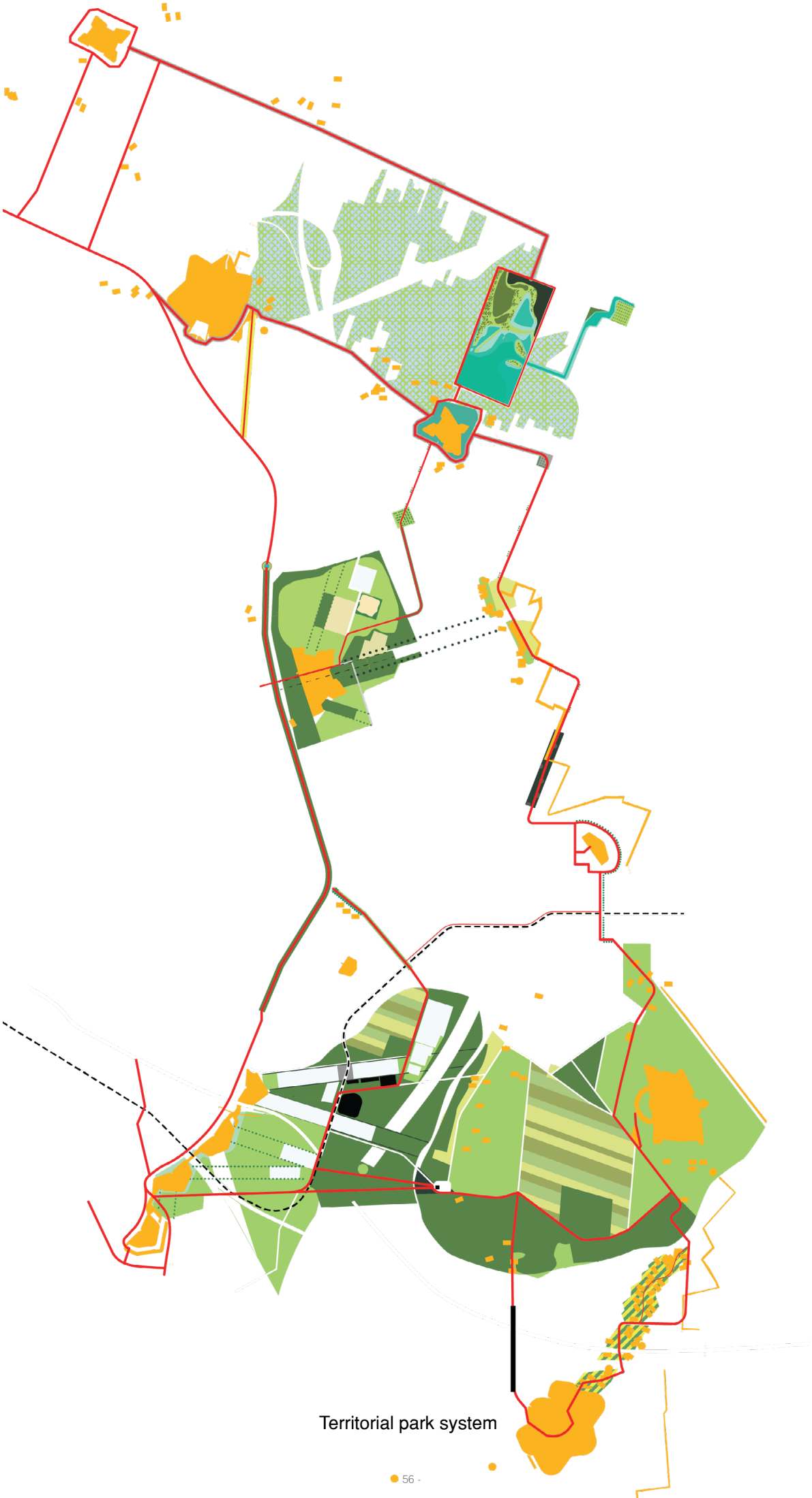
It is also an attractive green corridor with varied plant community and migrating corridor for animals.



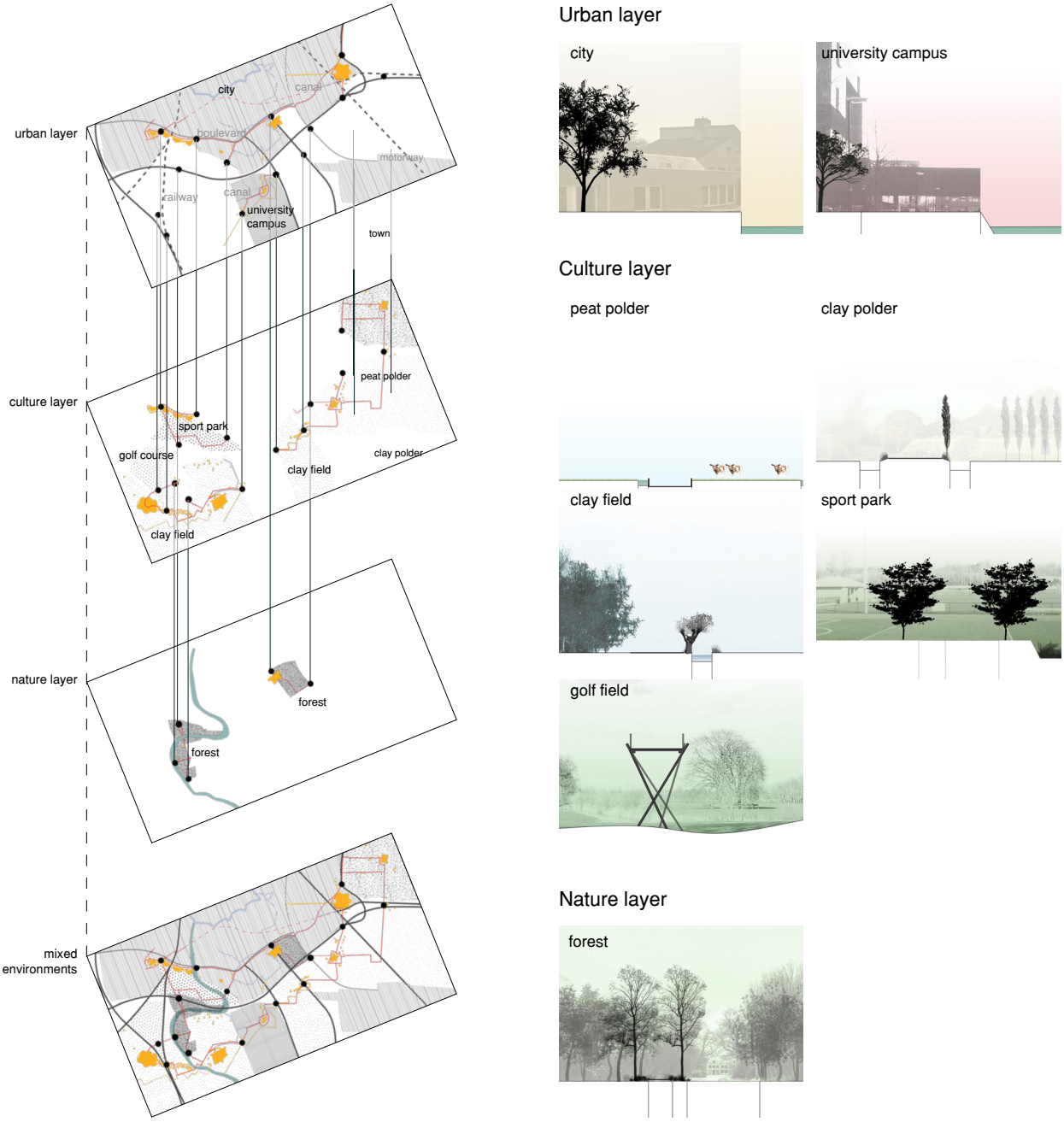
Segregated forts

De-fragment

Territorial park system
for legible heritage



Territorial park system

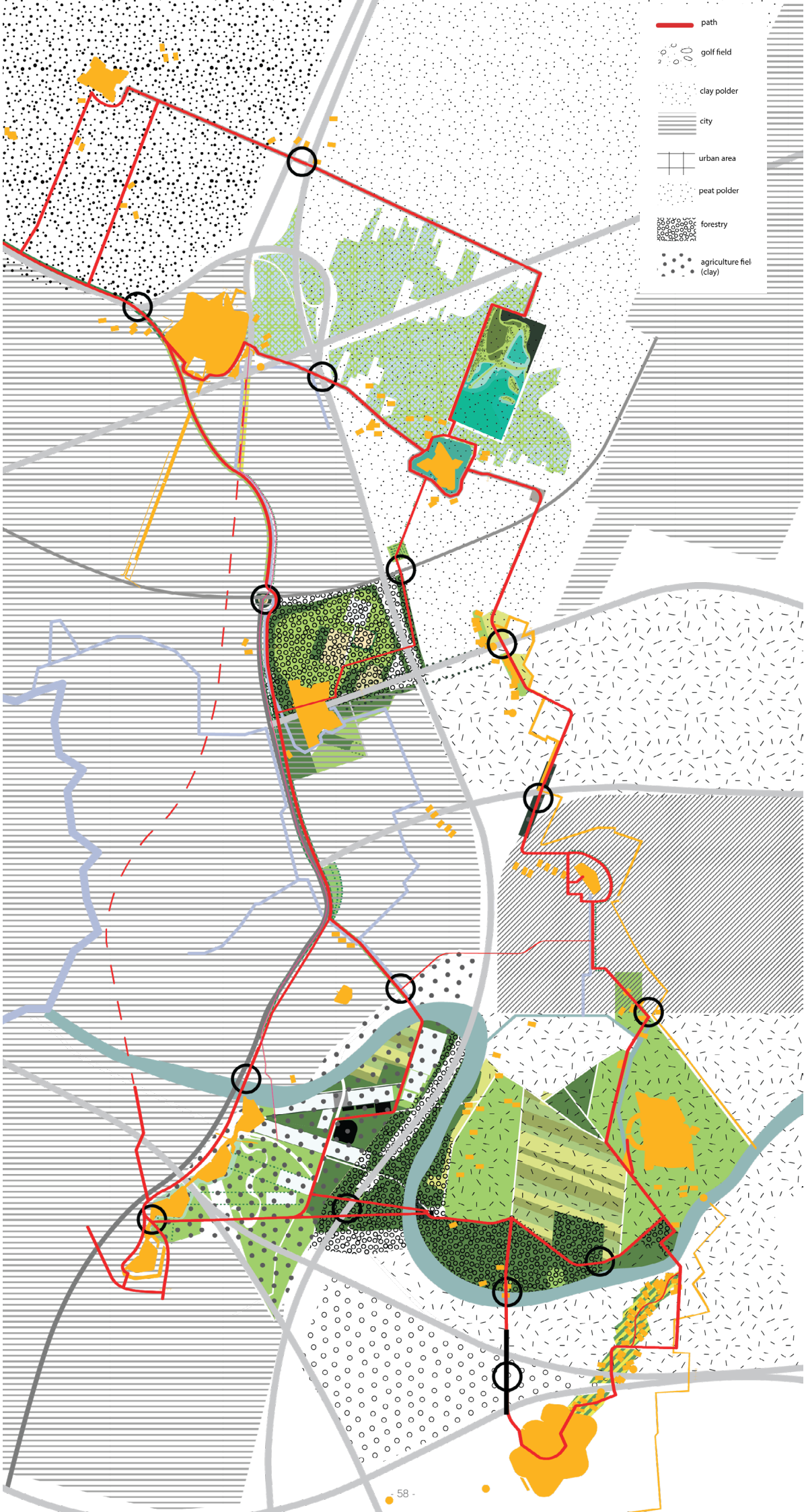


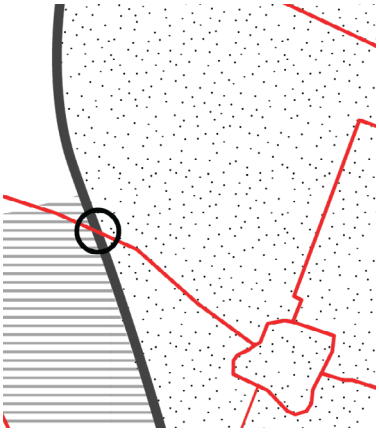

## 5.1.2 Layered history and experiential route

The project seeks new ways to confront conservational issues: to envisage the development as part of evolving continuity of historically significant landscape logic.

The different spatial features of environments are strengthened by vegetation, material and shape of the path, water and other elements. At the transition nodes, the experience from different environments and heritage is stressed at the same time. Sound of poplar leaves which is typical in the clay polder, tactile impression of water in the canal, the feeling in the forest, sound of cars and typical paving are mixed at the transition node. Therefore, people can feel the transform of environments and notice the different character of heritage. This strategy will create a clear landscape that is full of contrast and where the historical stratification can be re-experienced

Emerging from a forgotten heritage corridor, the New Dutch Waterline park system creates new sensory, cultural and spatial experiences by designing a route connecting the scattered historic monuments.

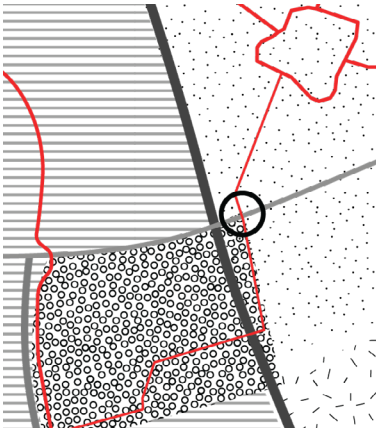

path
golf field
clay polder
city
urban area
peat polder
forestry
agriculture fiel
(clay)



Transition node 1
from the city to clay
polder



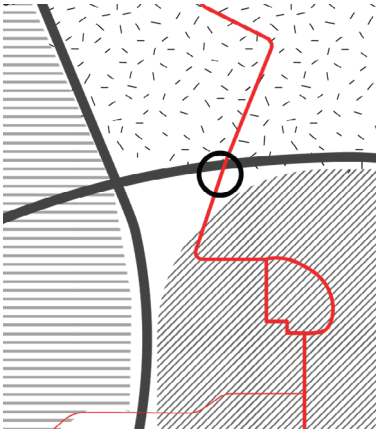
the city



Transition node 2
from the forest to clay
polder



the forest



Transition node 3
from agriculture field to
university campus



agriculture field (clay)




transition node: the door from city to clay polder



clay polder




transition node: the buffer zone from forest to clay polder

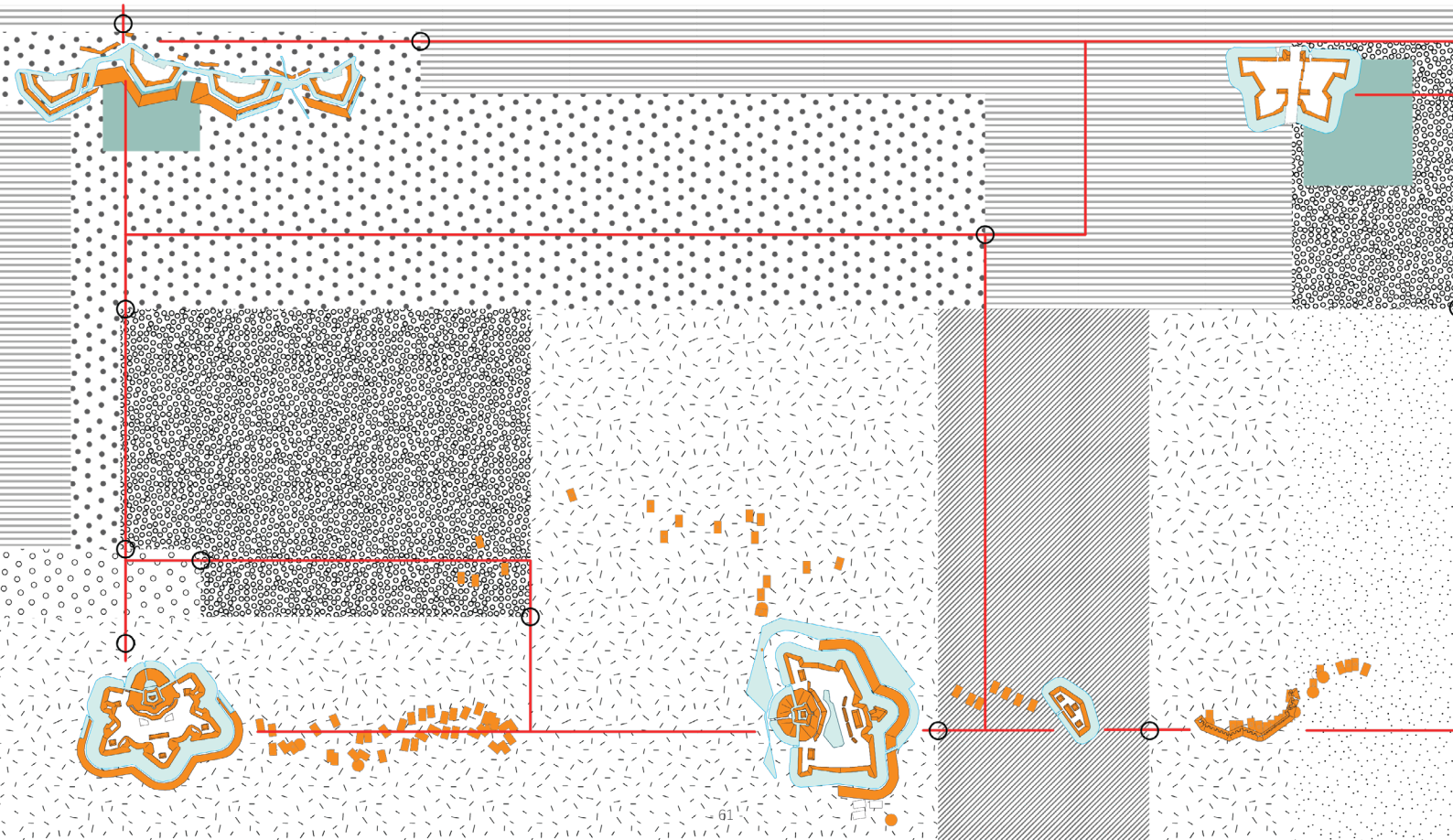


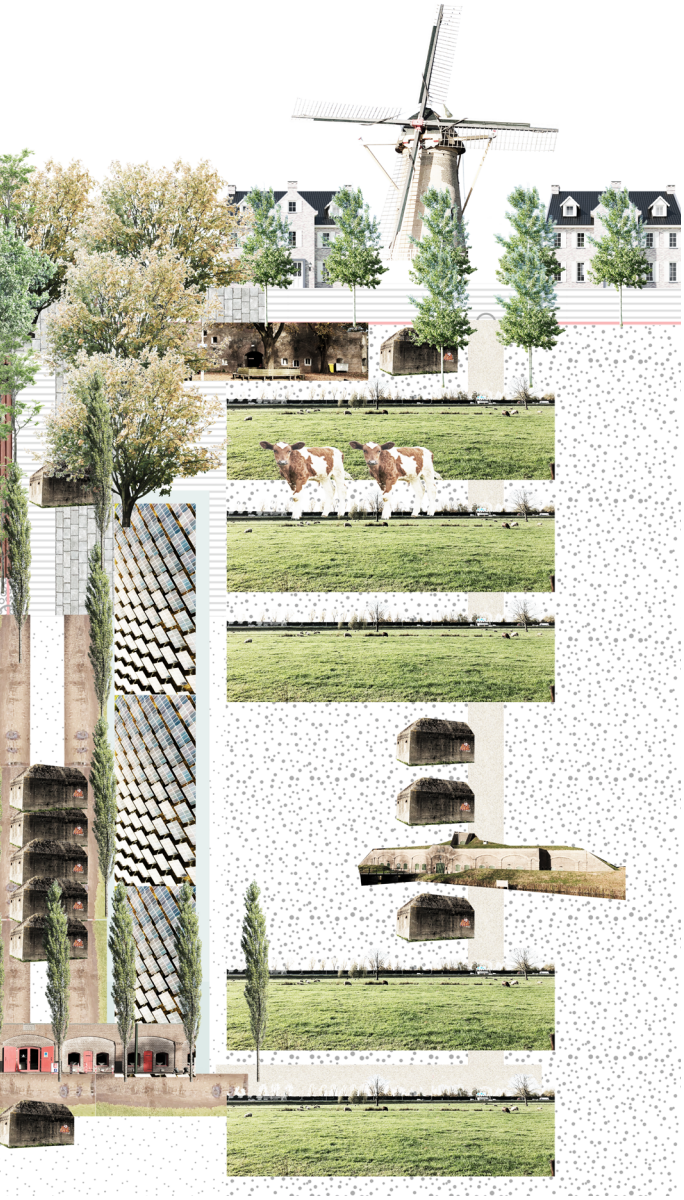

transition node: the tunnel from agriculture field to university campus



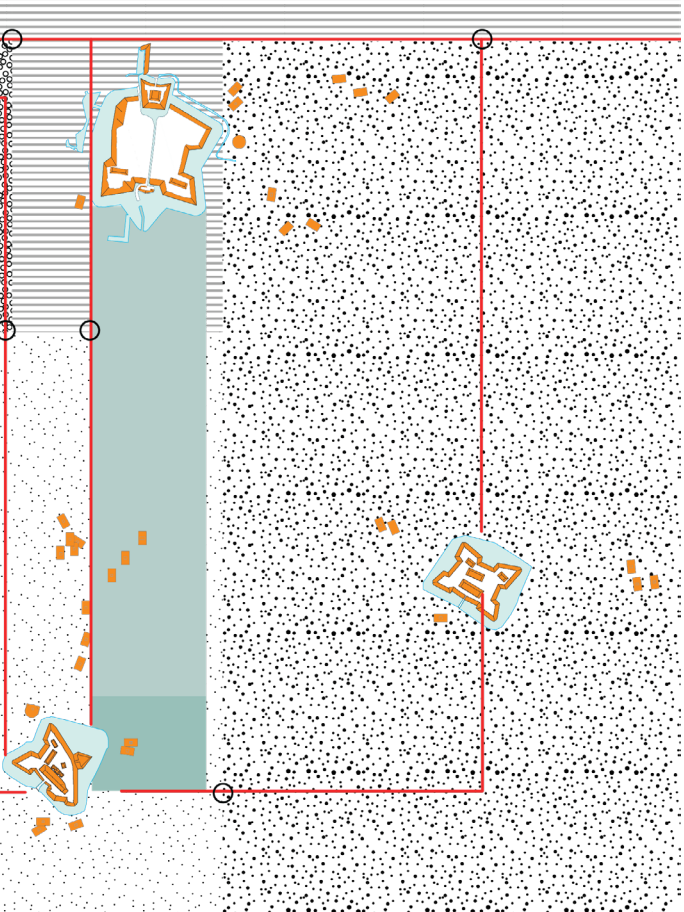
university campus







The experience of the linear landscape



golf field

clay polder

city

urban area

peat polder

forestry

agriculture fiel (clay)

Heritage in different environments

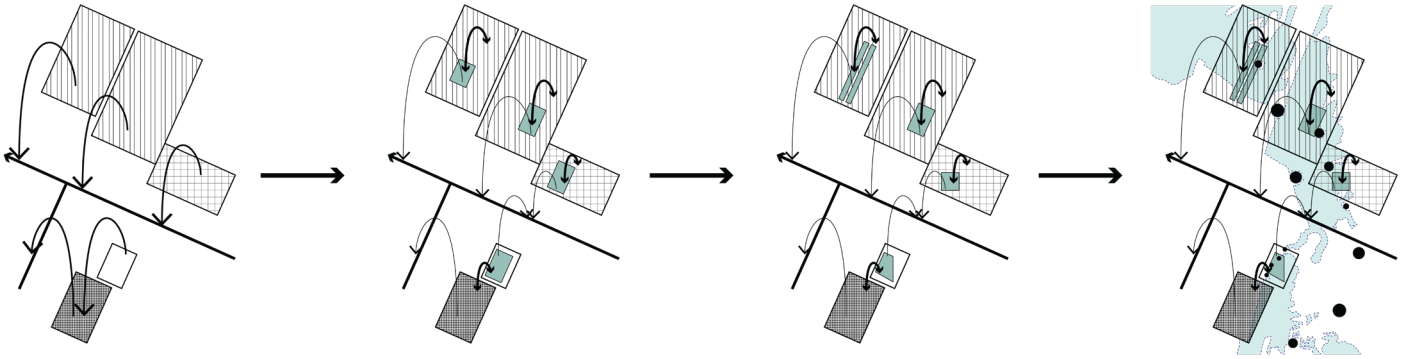
# 5.2 Territory park for adaptive city and legible heritage

New water infrastructure changes the water management from rapid drainage to hold and store and represents the inundation image. Seasonal wetlands are set at the edge of boezem to store rainwater. At the same time, the seasonal flooding can represent the inundation image.

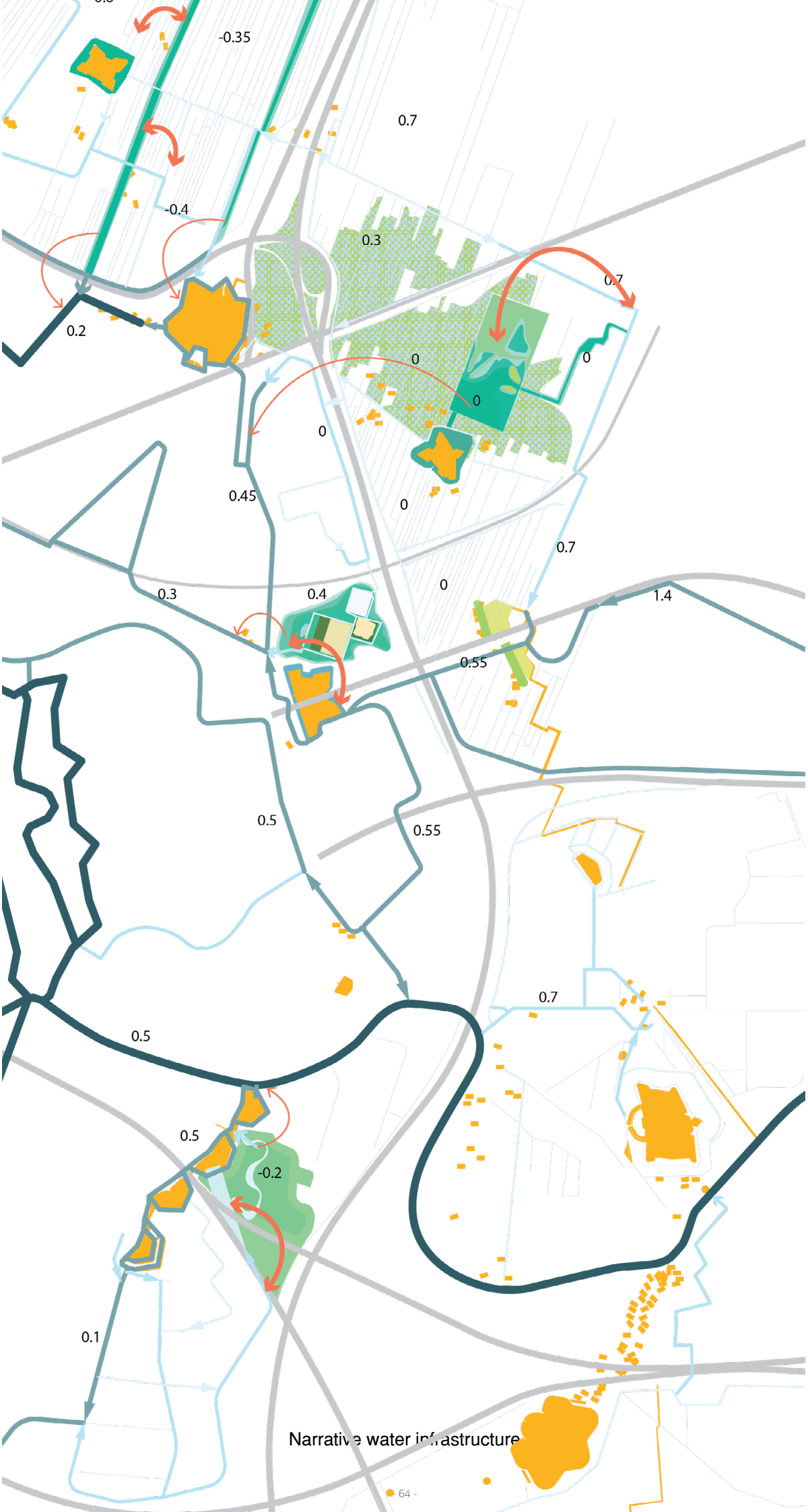
## 5.2.1 New water management approach

The intent is to transform the historical water system from a functional system into a place that all can enjoy and read the heritage and acknowledging its importance as functional heritage and part of the public realm.

The wetland receives and somewhat cleanses the stormwater runoff from the residential area and agricultural area. It can also reduce the risk of flooding in this district. Steep slope and walls shape the clear land form and represent the inundation basin. Tree rows start from the fort and point to the distance, just like shooting. The pits along the trees look like craters. The water flows into the seasonal wetland in the rainy days. Water is shaped as a curve, which showing the water flow direction. The “craters” collect the rainwater and turn into scattered mirrors. In stormy weather, the basin is full of water like during the war. The tree rows and sky are mirrored. The peaceful view inspires people to reflect war and peace.

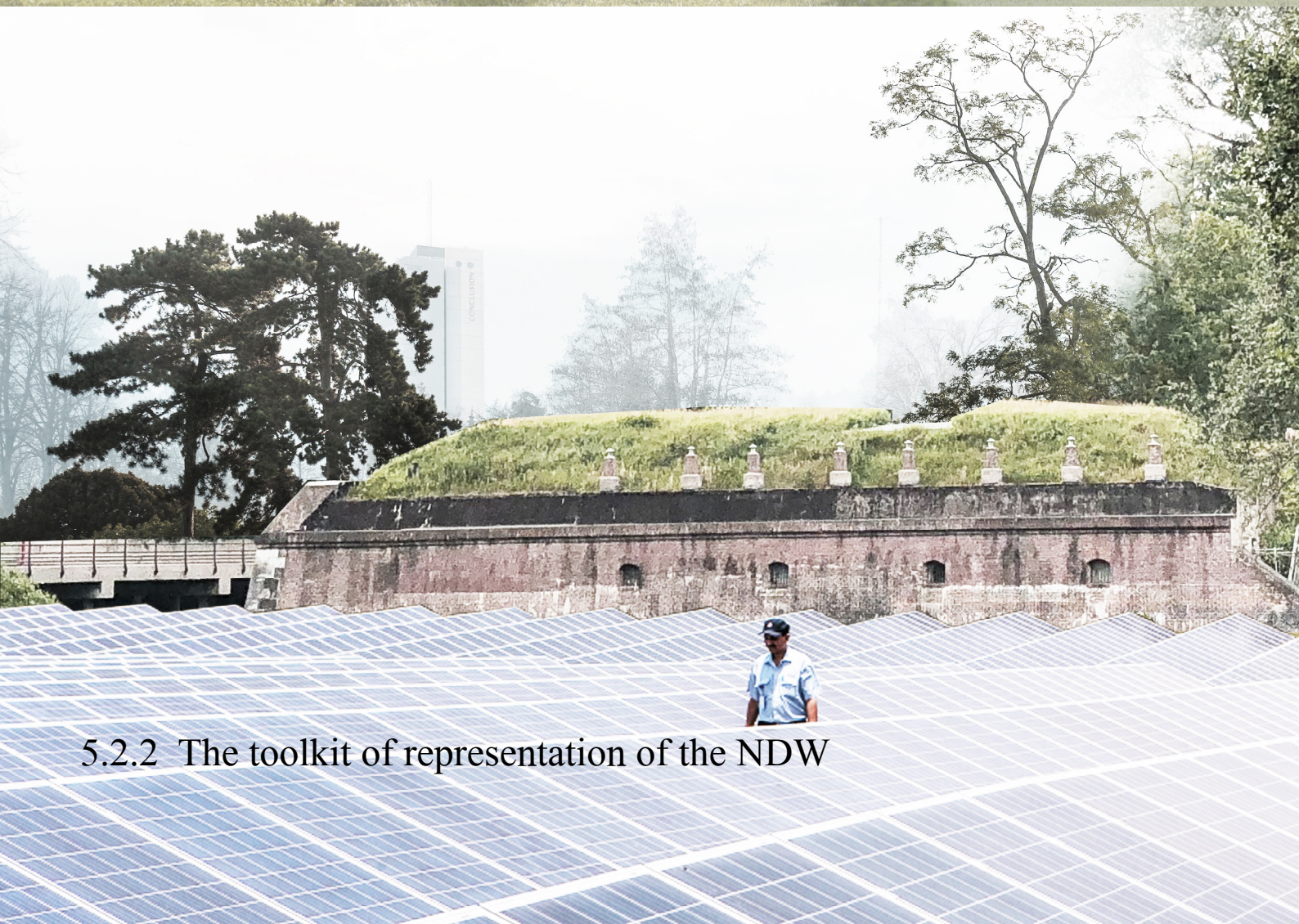


Boezem-polder system Resilient water management Representation of inundation




Narrative water infrastructure





## 5.2.2 The toolkit of representation of the NDW

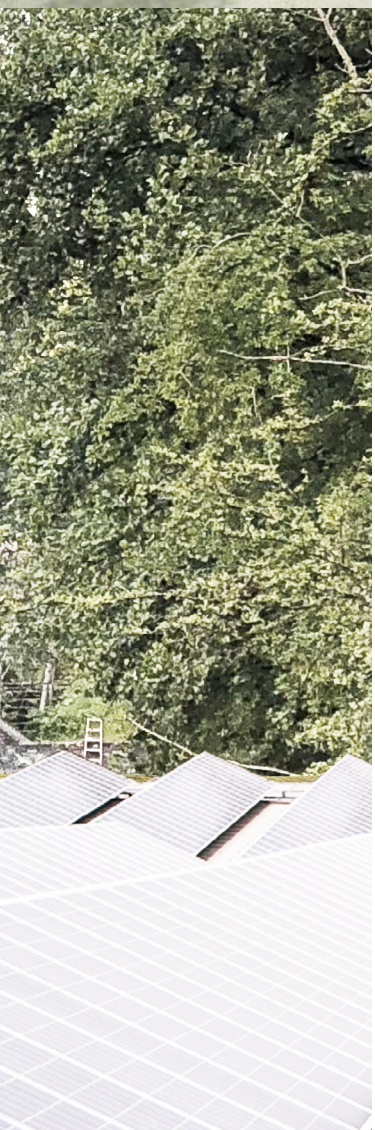


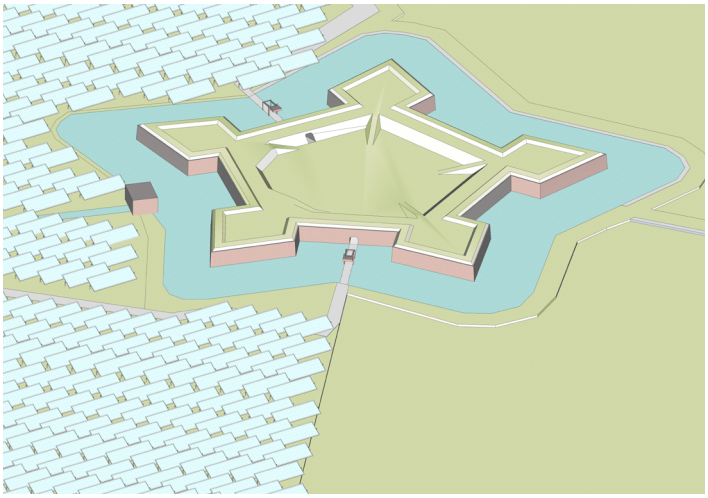


Tool A: Seasonal wetland

seasonal wetland for cultural narrative and resilient water management.

Vegetation absorbs the nitrogen and phosphate among the water from agriculture area. These substances act as nutrients and help the vegetation to grow. The purified water is discharged to the water system. Vegetation can be harvested as biomass.





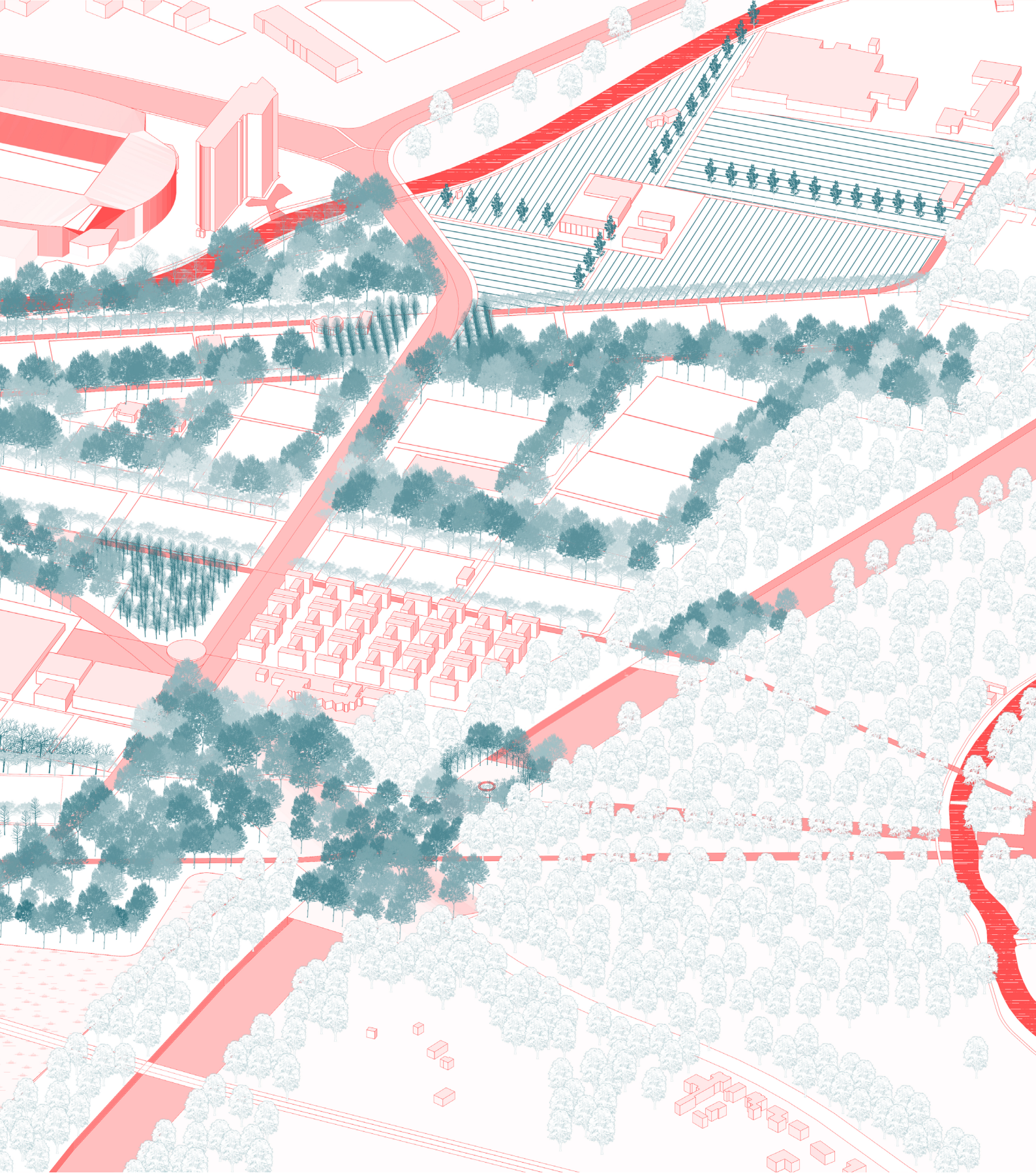
Tool B: Solar panel field

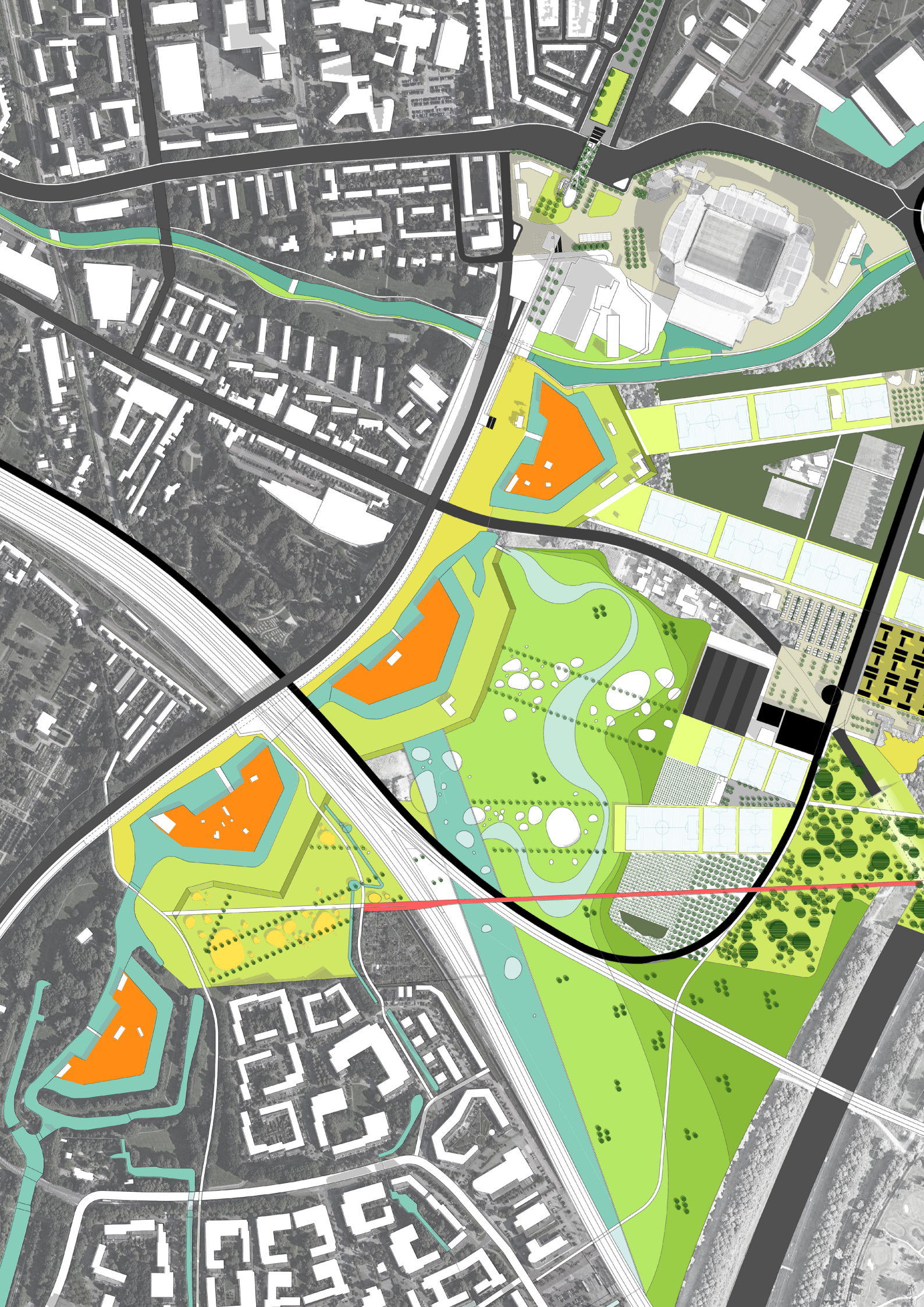
In some area which can not be seasonal flooded can be transformed into solar panel field, sometimes combining with farm. The shining image of solar panel field remind people of the water easily. Therefore, it is also used as a tool to represent the inundation.

# 5.3 Case: Fort Lunet Park



The experience path around the Fort Lunet expands as a park to cross heavy infrastructure, connect fragmented green space and provide rich programs for the citizen.








# Site Plan

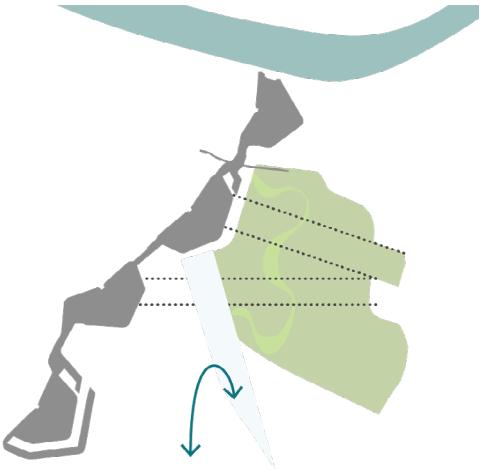
Fort Lunet Park in the New Dutch Waterline Park System in Utrecht



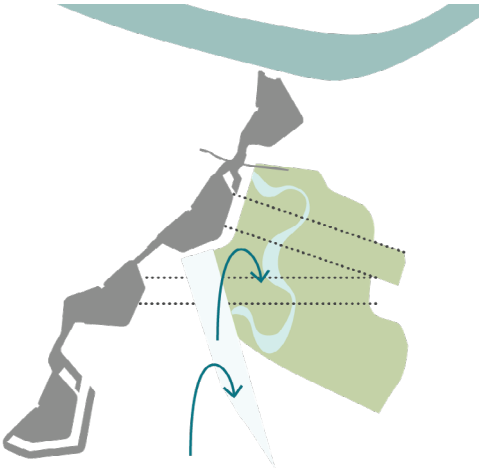




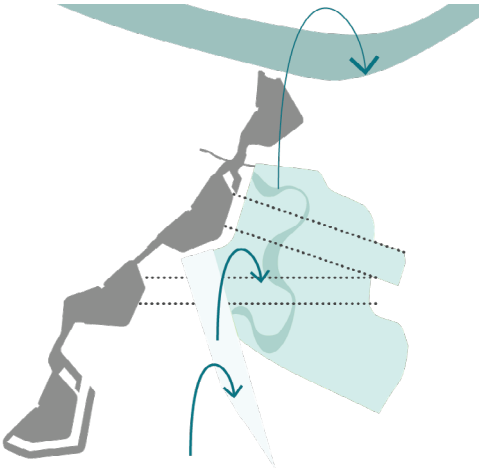
The forgot urban green space will be transformed into seasonal wetland. Now the water from this green space will be pumped into the town and then boezem. In contrast, in the future, the water from town and green space will be held and stored in the green space. More importantly, the seasonal flooding will represent the inundation basin, the water flow direction and inundation in different time.



Steep slope and walls shape the clear land form and represent the inundation basin. Tree rows start from the fort and point to the distance, just like shooting. The pits along the trees look like craters.



The water flows into the seasonal wetland in the rainy days. Water is shaped as a curve, which showing the water flow direction. The “craters” collect the rainwater and turn into scattered mirrors.



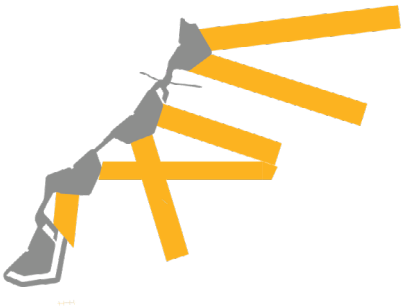
In stormy weather, the basin is full of water like during the war. The tree rows and sky are mirrored. The peaceful view inspires people to reflect war and peace.



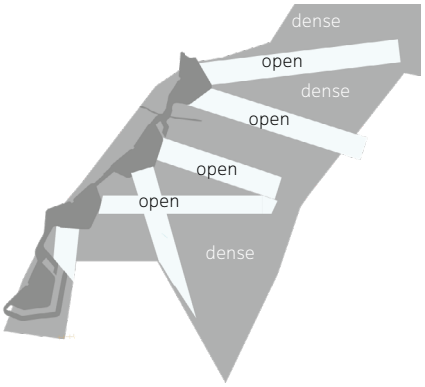




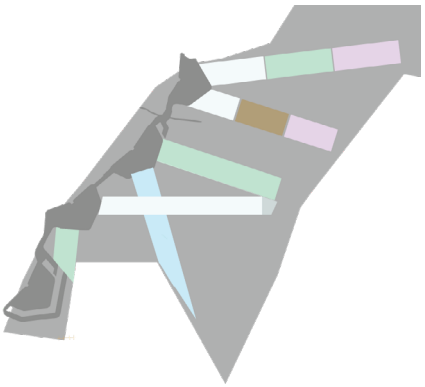




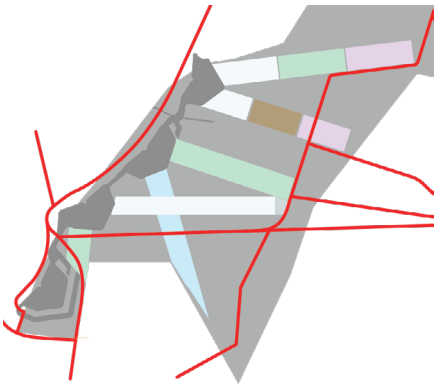
invisible shooting range




urban forest and other elements represent the invisible shooting range



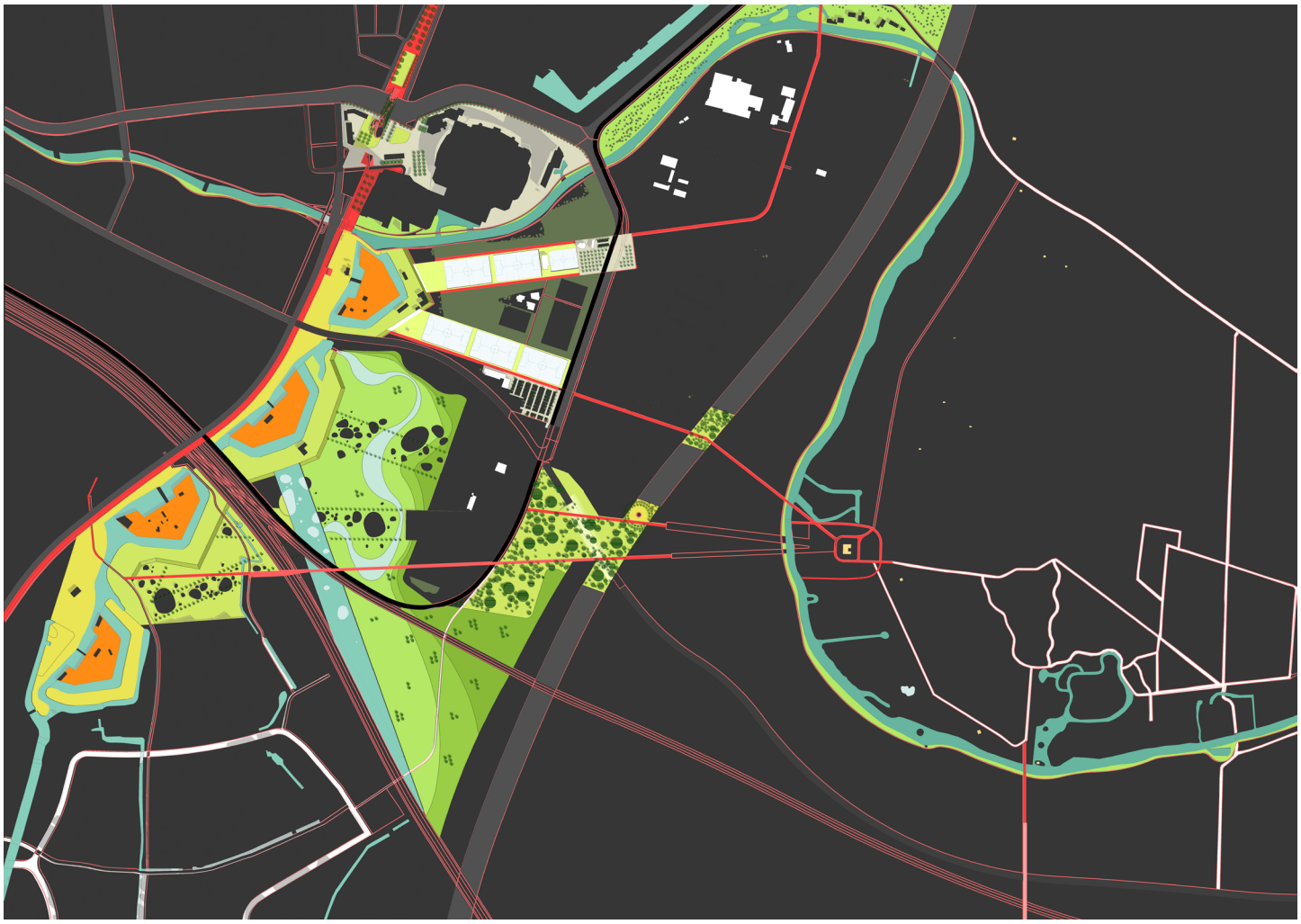
open areas in the shooting range provide flexible functions, like football field, farm, lawn and plaza. Similarly, dense areas also provide flexible functions, like housing, forest and green house.



flexible framework combines with experience path which connecting different forts and other urban fabrics.

The invisible shooting range of forts will be shown by the composition. Urban forest and other elements shape the dense and open area to represent the invisible shooting range. Open areas in the shooting range provide flexible functions, like football field, farm, lawn and plaza. Similarly, dense areas also provide flexible functions, like housing, forest and green house. This flexible framework combines with experience path which connecting different forts and other urban fabrics, becoming part of the park system.

Phase 1:narrative urban structure



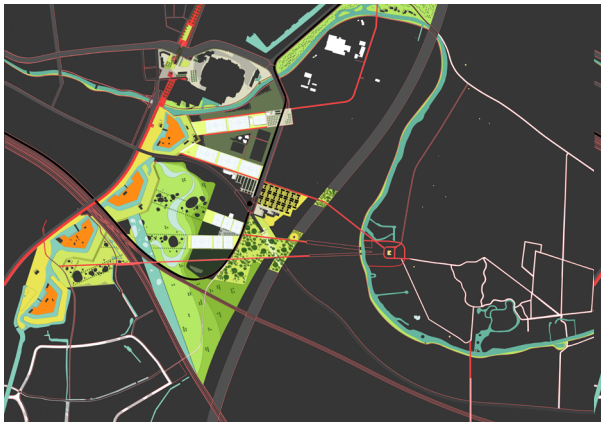
Urban forest, seasonal wetland and infrastructure shape the basic framework as the kick-off project.

# 5.4 Scenario

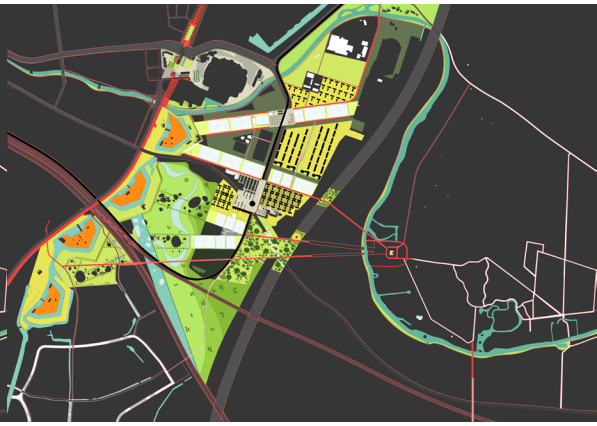
The narrative framework provides flexible scenarios for future NDW. Urban forest, seasonal wetland and infrastructure shape the basic framework. This area could be transformed into sport park, neighborhood and urban farm. The development of this area follows the infrastructure, starting at the junction of tram line and road, extending along the infrastructure and expanding across the area. In any scenarios, visible and invisible heritage could be represented and other urban issues are also be solved. This strategy provides a basic structure for an open-ended design (where multiple possibilities coexist) instead of a closed design, in a process that is based on flexibility and adaptability.

Phase 2 | Phase 3

## Scenario 1: neighborhood

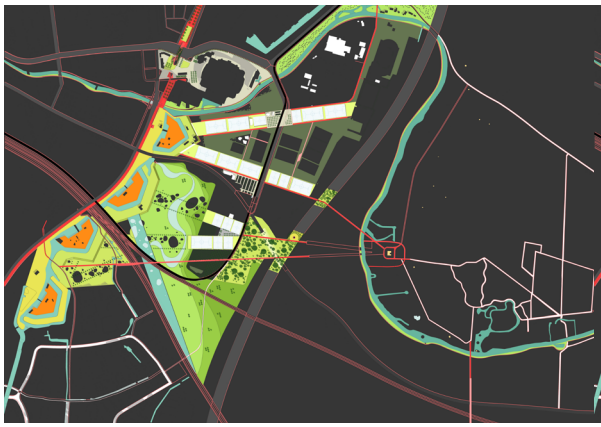


The new neighborhood starts from the new stop of tram, the junction of tram line and road



Neighborhood can expand along the tram lie and face the wetland and forest.

## Scenario 2: sport park



Excepting the sport fields kept in the forest, the new sport fields will extend along the shooting range and juxtapose along the tram line. The new stop of tram works as key people flow distribution center of the sport park.

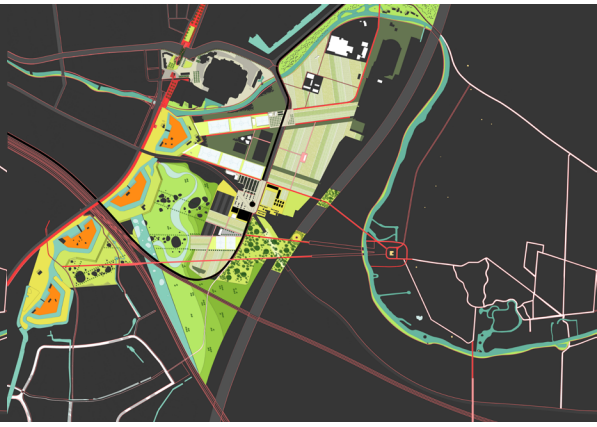


The sport park can expand to lower area and the lowest part can be built as green space for the crowd.

## Scenario 3: urban farm

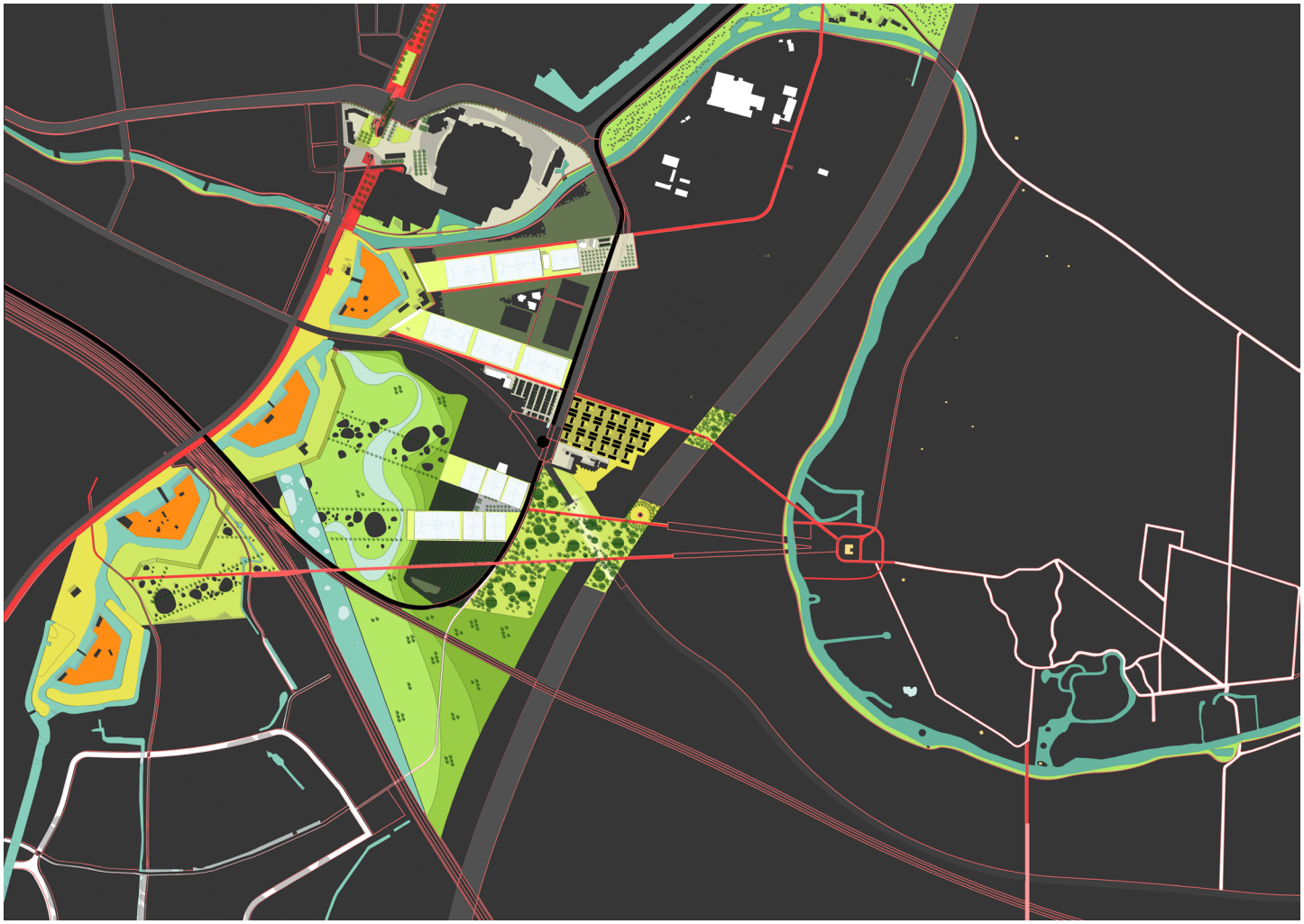


The new agriculture field will start from the space near the plaza and lowland.

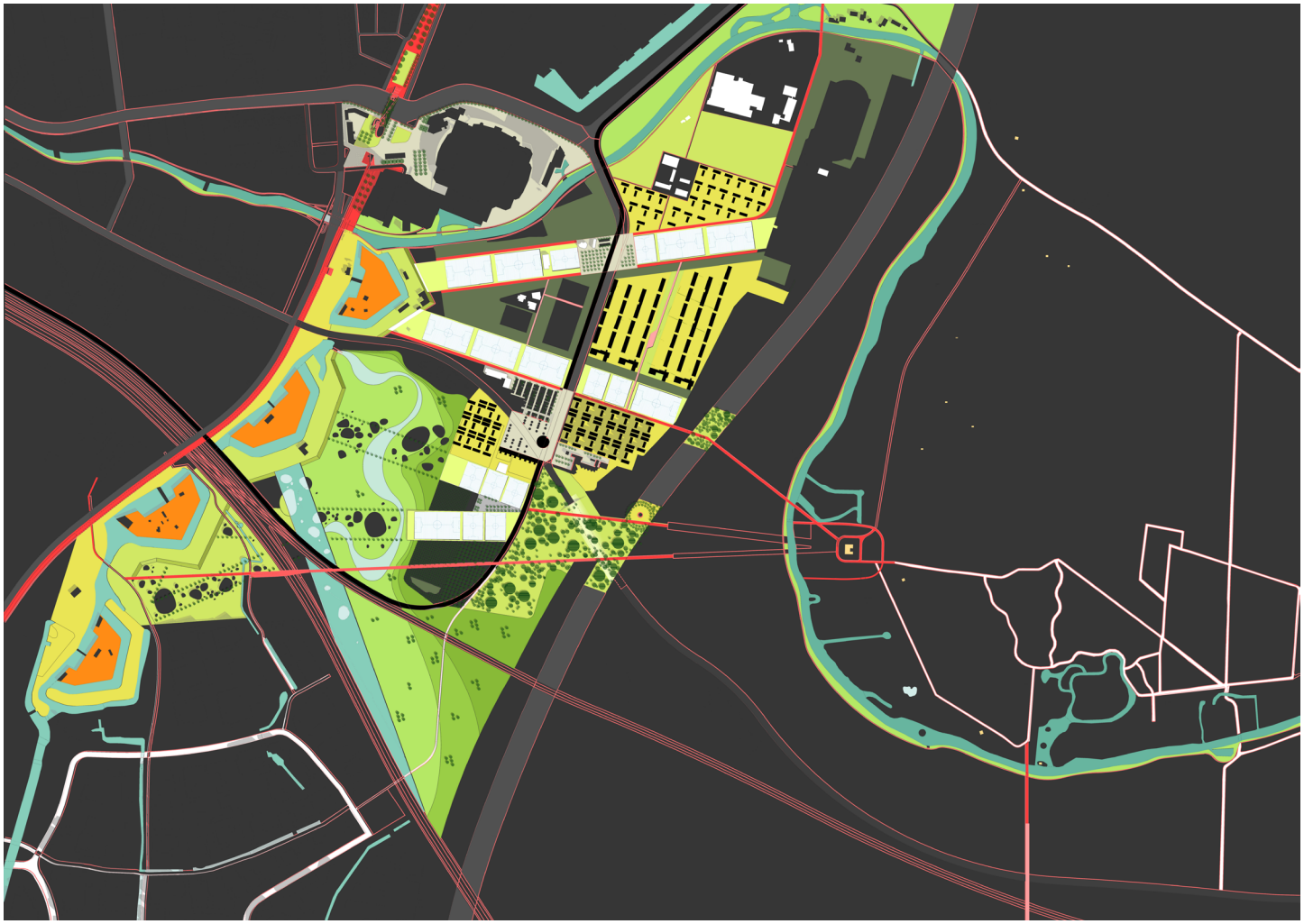


New agriculture can expand across the area and shape a new framework layer for efficiently farming.

# Scenario 1:
# neighborhood

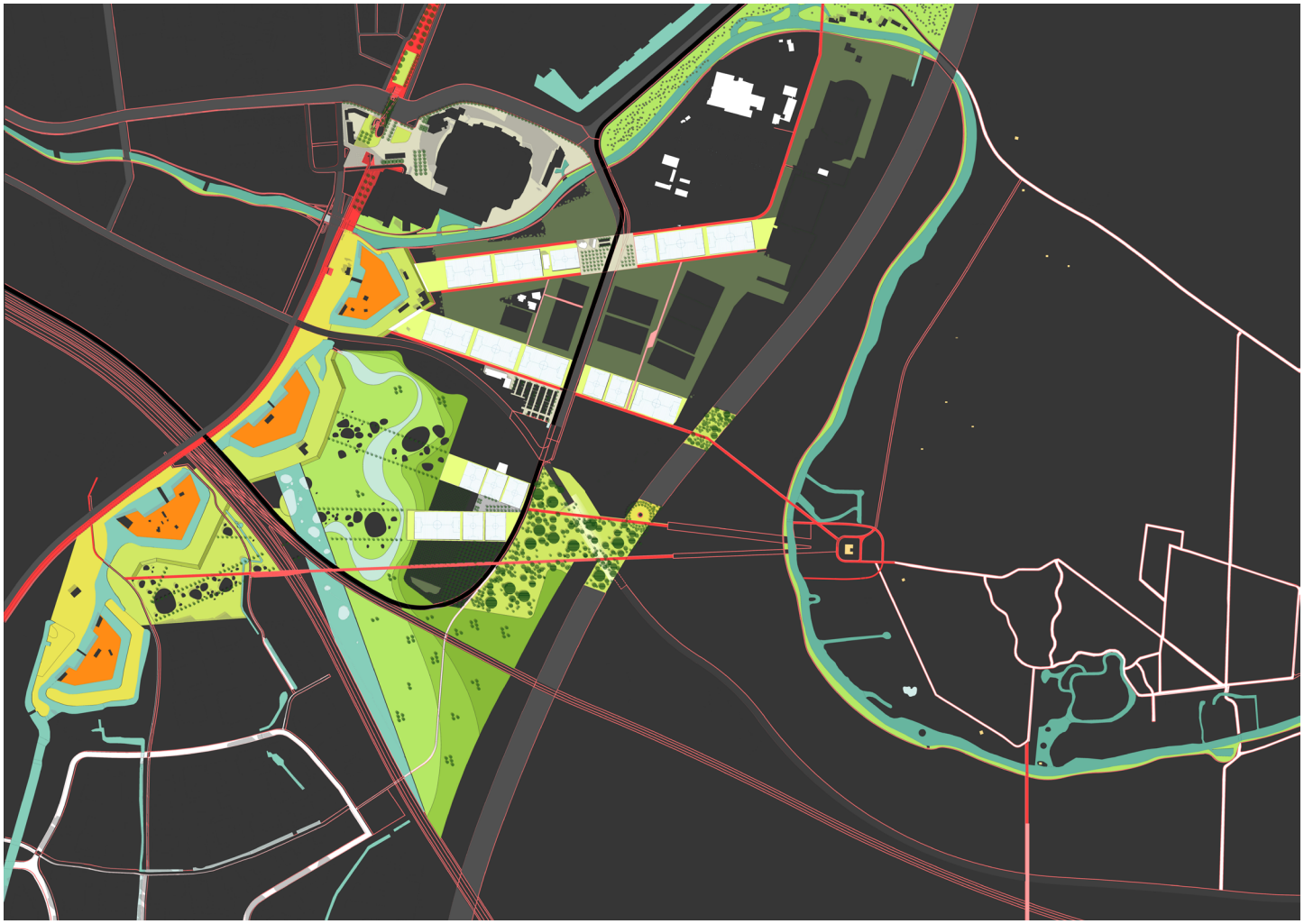


The new neighborhood starts from the new stop of tram, the junction of tram line and road



Neighborhood can expand along the tram lie and face the  wetland and forest.

# Scenario 2:
# sport park



Excepting the sport fields kept in the forest, the new sport fields will extend along the shooting range and juxtapose along the tram line. The new stop of tram works as key people flow distribution center of the sport park.



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The new agriculture field will start from the space near the plaza and lowland.



New agriculture can expand across the area and shape a new framework layer for efficiently farming.

# 6. Reflection

In this graduation project, research and design are parallel. Design by research and research for design. Information is analyzed and the conclusion as the result of research to support the initial design. In the process of design, underlying issues are explored and new analysis begins with the initial design hypothesis. In this case, the project starts with exploration on narrative infrastructure based on heritage. De-fragment and recovering the story of the NDW are the initial design goal. During the process of designing, the story on inundation along the NDW is stressed because it is an invisible and easily forgotten part of the NDW. Even though the water network still works, the inundation image is missing because of the function loss. Meanwhile, because of the urbanization, the surrounding environments of heritage is evolving and heritage is colored by the different landscape. How to represent the new information given by complex environments is a challenge. These two initial design strategies guide the further research into water system, narrative tool and the surrounding landscape layers of heritage.

Case study and literature review provides important reference to check the feasibility of this project. Theories on culture heritage, landscape narratives and landscape urbanism provide the base for this design. Some landscape projects (shell project by west 8, Parc de la Villette by OMA, Parc en Sauvy by Georges Descombes) inspire this heritage renovation project.

The theme of landscape graduation studio is 'Flowscapes: designing landscape as infrastructure'. It seeks to redefine landscape as spatial-visual structure, palimpsest, scale-continuum and process. This project provides a good example to response this challenge. Firstly, infrastructure and heritage are explored as multifunctional roles (language and machine). Designed flowscape proposes a narrative structure where people can experience and read the heritage. Secondly, the heritage is conserved critically here, and envolving historical culture as new information layer is added to the heritage elements. Thirdly, crossing-scale design is part making this project different from existing NDW conservation project. The heritage belt around the Utrecht is treated as an entirety to be planned. At the same time, the concept of functional heritage and narrative infrastructure is carried on from the large-scale planning to site design. Finally, process is used to guide the development of this area. This design provides an open-ended framework to adapt to the change in the future.

In fact, this project can be divided into the exploration of one core question (how to go beyond the duality of landscape as language and machine) and three other questions (how to read the objects in complex environments, how to critically conserve heritage, and how to provide a flexible and resilient framework). Each research question can be explored further.

Firstly, the role of landscape is a key topic having been discussed. Different from classical garden as language to express meanings or frame stories, modern landscape architecture stresses the performance of landscape. Like some projects described in the book Landscape infrastructure: Case studies by SWA, landscape plays the role of machine to manage the stormwater, enhance the biodiversity, etc. This design starts an exploration combing these two roles. The NDW is a good case because of its two roles as heritage and infrastructure. Such dual role makes the exploration of go beyond the duality of landscape as language and machine more feasible and easily understood. In fact, such narrative and functional approach can be used in more areas like the energy infrastructure project.

Besides, this project is not so much of an archeological design as a continuous transition from the past to the future. Complex environments from different temporal layers are accepted. The reading on complex environments comes

from the classical analysis of ‘first, second and third nature’ (Hunt, 2000). The world can be decomposed into three layers, natural layer (wildness), cultural layer and urban layer (man-made landscape). Such complex environments frame the condition of objects and these objects are colored because of absorbing new information. To imagine a park presumes an urban condition. When Frederick law Olmsted imagined central park, he imaged the context it would eventually inspire and sustain. (Mau, 2000) This understanding on the environment can be applied in more projects to show the complexity.

Also, critical conservation on heritage and landscape as process are worth to applying in more project to address the resilience and sustainability. Design can be open-ended and dynamic.

Finally, visual thinking and communication drawings, mappings and models being used here can be used to explore other landscape architecture.

As for the dilemmas encountered in this project, how to put such a large project in practice is a problem especially where the land is owned by different stakeholders. Therefore, after discussion with mentors, phasing and framework strategy is proposed. In the design of Fort Lunet Park, only the basic framework is designed as the start project and different scenarios filled with different modules. Large blanket areas are left for future development.

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