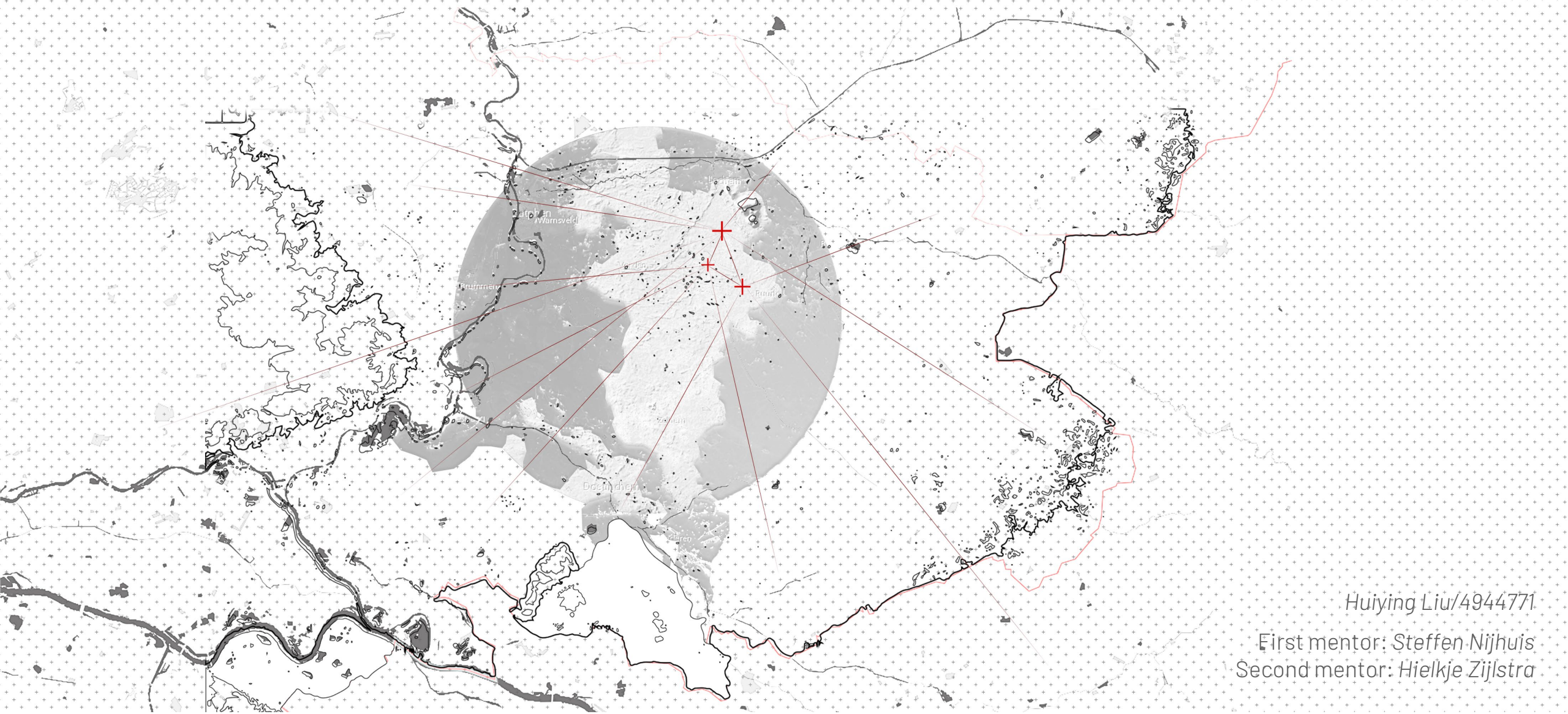


# Integrated Nodal Estate Landscape

-- Reconnecting Baakse Beek Brook Eco-system & Recreation through Estate Landscape Development



Huiying Liu/4944771

First mentor: Steffen Nijhuis  
Second mentor: Hielkje Zijlstra

- Introduction
  - Fascination
  - Problem Statement
  - Research Objective & Questions
- Approach
- Diagnosis
  - Analysis
  - Challenges & Opportunities
- Strategies & Principles
- Design Exploration
- Conclusion

# INTRODUCTION

▣ Fascination

▣ Problem Statement

▣ Research Objectives & Questions

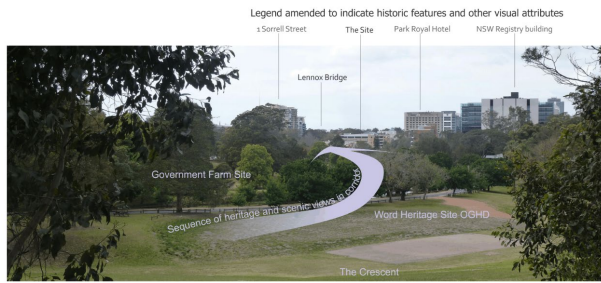
## Brook Eco-system



(C) WahooArt.com

Healthy condition of a natural brook—defined by **unaltered hydrology** (streamflow), **high diversity of habitat features**, and **natural water chemistry**—supports diverse biological communities with aquatic species that are sensitive to disturbances.

- Flexible Boundaries between heritage and mankind



The interaction between people and heritage can be **flexibly adjusted** (inclusive or exclusive) according to specific conditions to achieve a certain balance.

- Indicative Landscape

Some landscape with characteristics of specific estate could be arranged on the way there, working as a guidance or indication for people to realize where they are.




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## Estates Balanced Interaction System

- Experience more about Cultural Heritage
- Better Protection of Historical Heritage
- Get conveniently to each Estate Landscape
- Coherent Experience when travelling among Estate Landscape

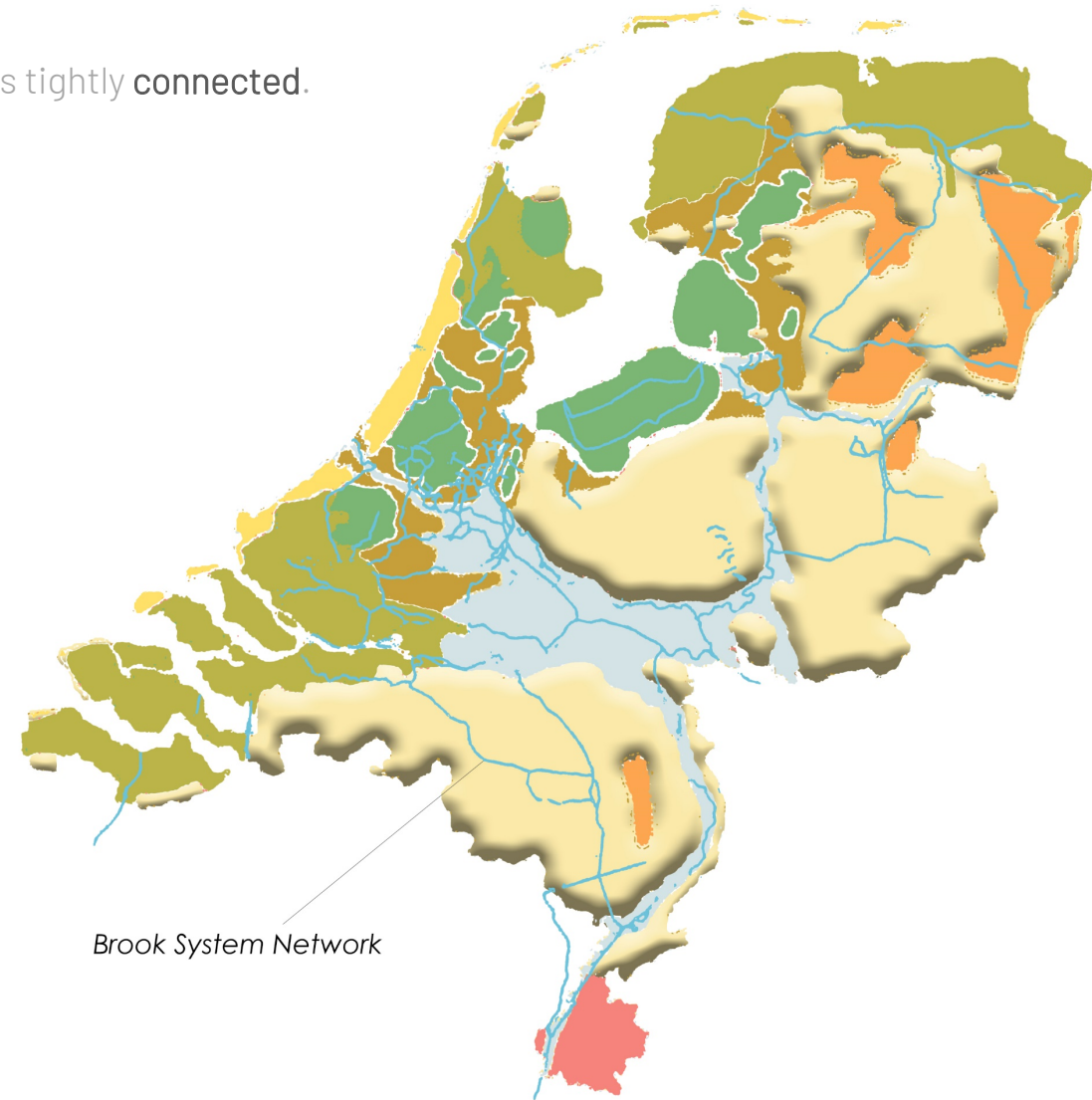


Half of lands in Netherlands are **sandy region landscape**, which the brook ecosystem is tightly **connected**.









*Brooks on sandy region area*

So to enhance the **brook ecosystem** is to improve **the whole landscape**.



Brook System Network

LEGEND

- |   |                               |   |                     |
|---|-------------------------------|---|---------------------|
|  | Reclaimed Land/Polders        |  | Lowland Peatlands   |
|  | Hilly Regions                 |  | Fluvial Areas       |
|  | Exploited Raised Bogs Regions |  | Sandy Areas         |
|  | Coastal Area                  |  | Maritime Clay Areas |

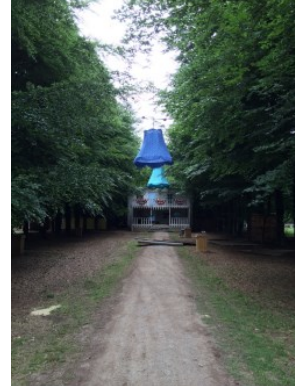
There are also some **recreational values**, including cultural and leisure values, on top of the landscape.



*Castle Hackfort*

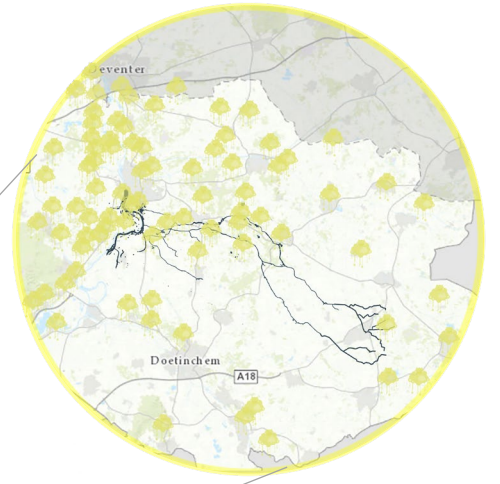
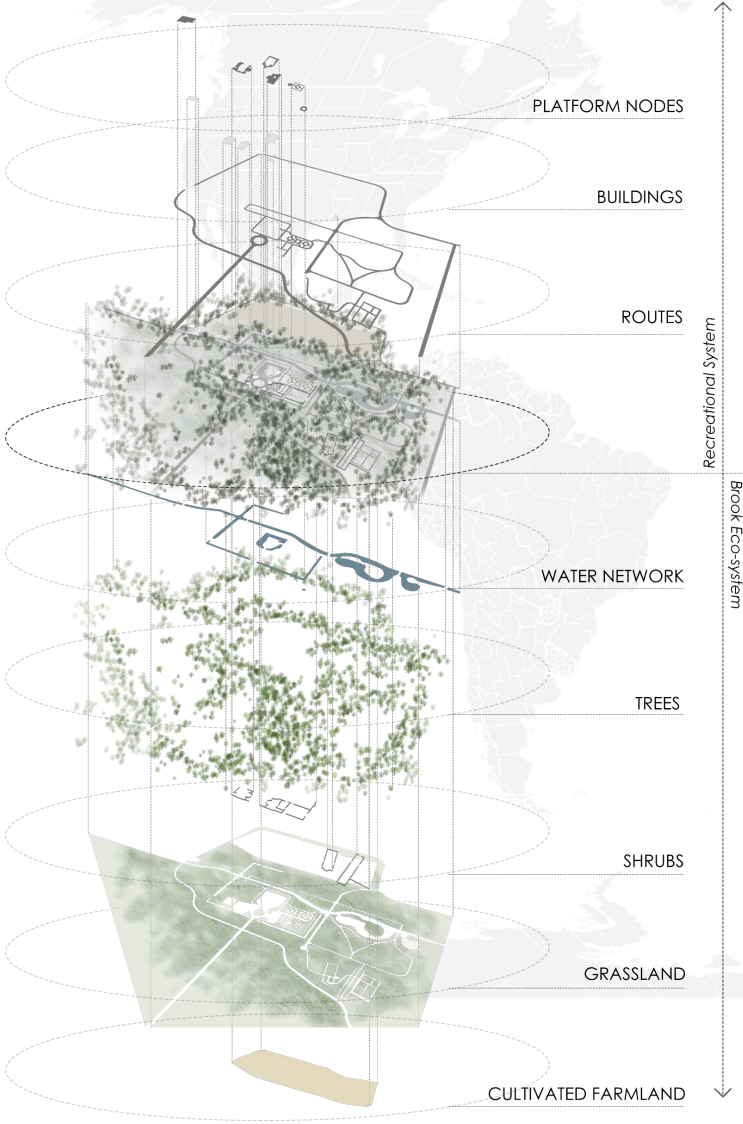


*Castle Vorden*



So to enhance the **Recreational System** can help with **the landscape**.

• De Wiersse



Baakse Beek Region



Castle Vorden

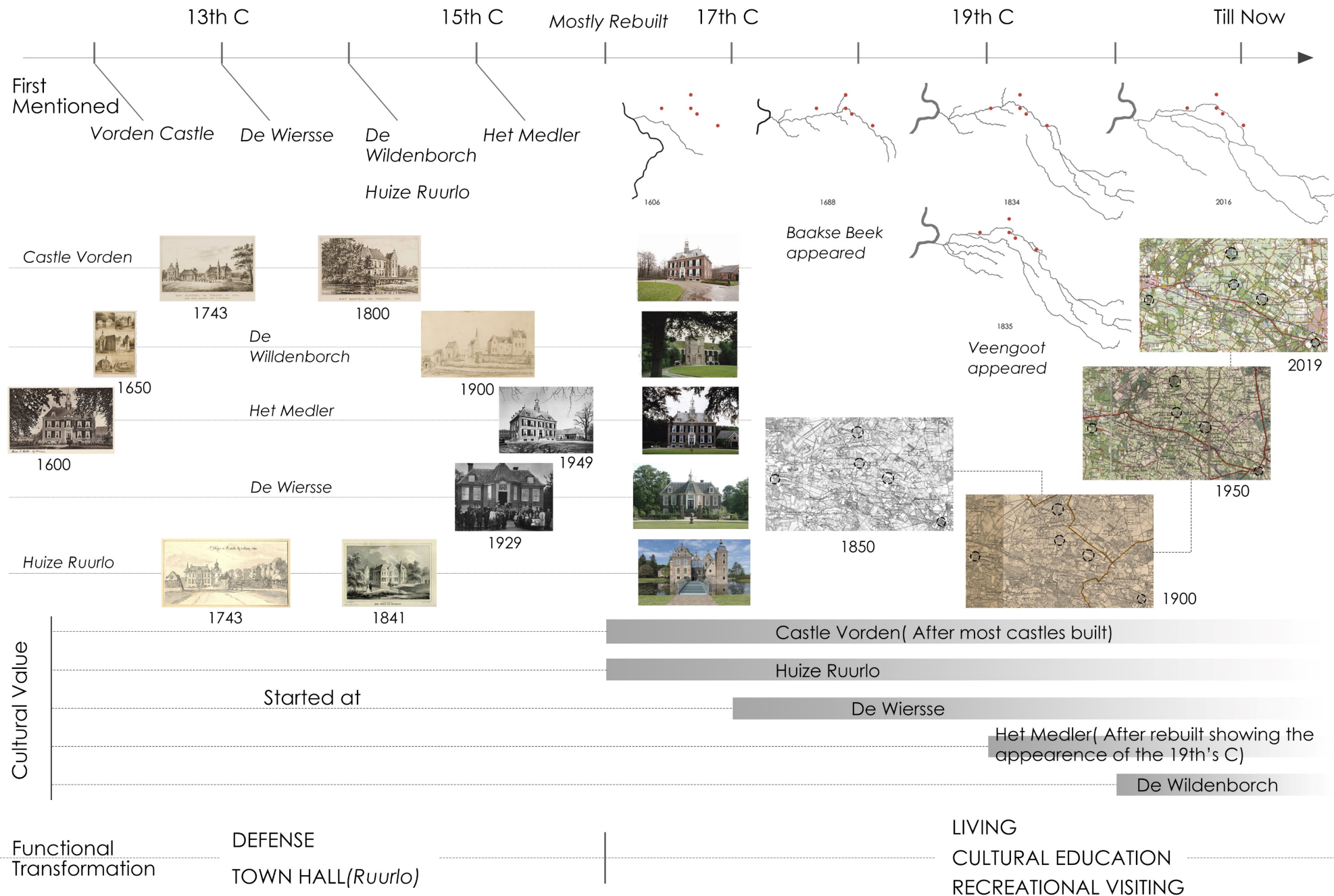


Castle Ruurlo

Amounts of estates have formed in Eastern Netherlands since 16<sup>th</sup> Century. The estate landscape is a kind of combination of Brook Eco-system and Recreational System.

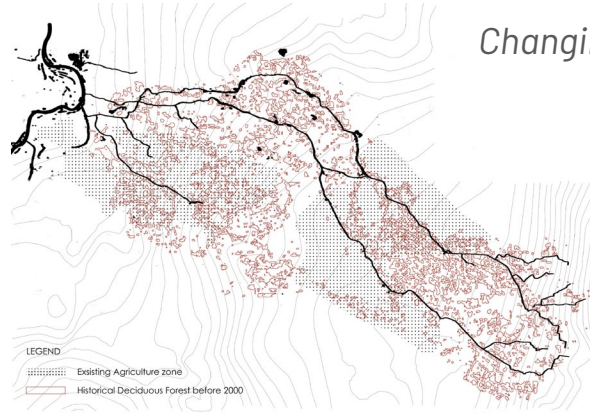


# Historical Development of Baakse Beek Region



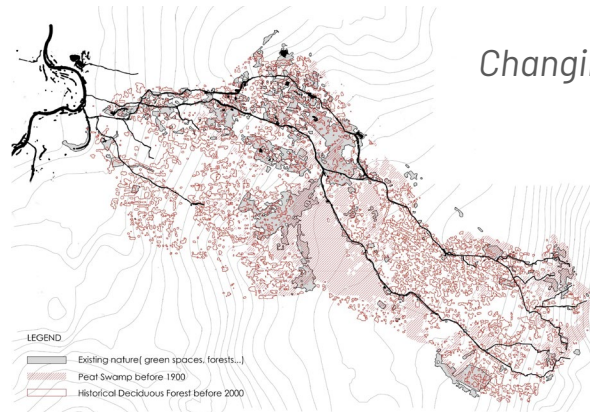
# Changing in Brook Eco-system

## Changing of Main Land use



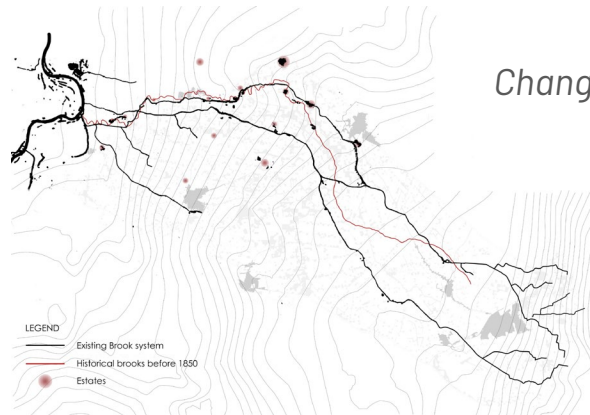
Agriculture grassland took place of the nature areas, especially the forests through time changing.

## Changing of Green Structure



There are less marshlands and forests than before.

## Changing of Watercourse



Watercourse's getting **straighter**, **wider** and more **complex**. Groundwater level is **lower** than before.

# Problems with Brook Eco-system

- Unhealthy Brook Eco-system



+ Seasonal Water Issues

Design Assignment 1

Prevent surrounding from Flooding & Drought

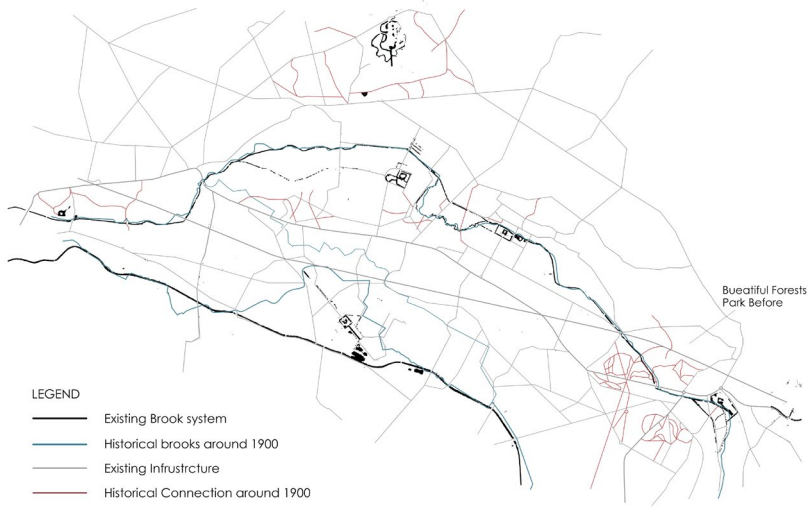


+ Pollution (Eutrophication)

Design Assignment 2

Purify the Water and Balance the Nutrient for creature around living

# Changing in Recreational System



There are some roads that **existed before** as connection among estates and ecology, yet now have been removed because of reasons like economic benefits and defense.

# Problems with Recreational System

- Poor Recreational Quality



+ Insufficient Interaction with some of the Heritage

Design Assignment 3

Strengthen Engagement between human and heritage



Design Assignment 4

Make up New Connection among Heritage

+ Inaccessibility to the Estate Landscape



Design Assignment 5

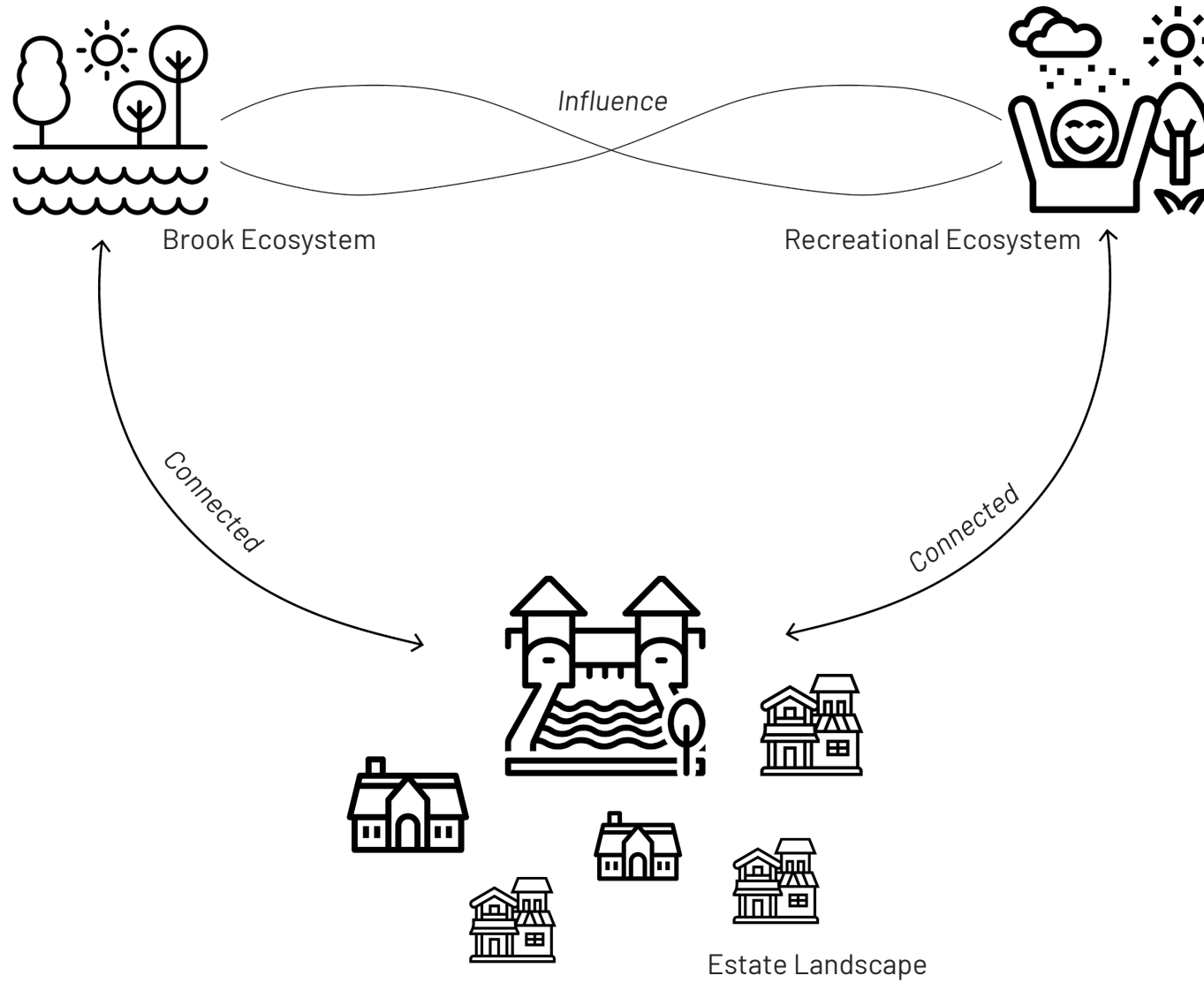
Enhance Spatial Diversity

+ Landscape Space Levelling out

Hence, now the relationship between brook eco-system and the recreational system has changed from a close and tight situation to a **relatively separated one**.

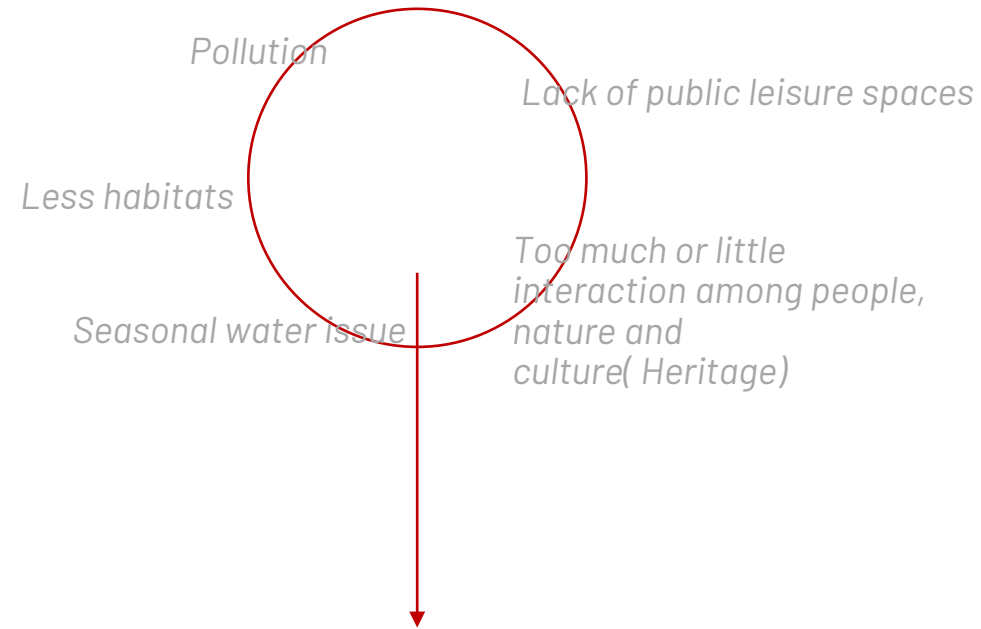
**Estate landscape** nowadays serves as an important role combining these two systems.

# Possibility for Application



Estates themselves could be connected through Brook Eco-system and Recreational System, while Brook Eco-system and Recreational System could be linked through several estates.

## Research Objective



Explore the potential of **estate landscape** as a link to restore the complex **connective relationship** between **brook eco-system** and **recreational system**: Identify spatial design strategy for the development of estate landscape of the Baakse Beek region by enhancing the brook ecosystem and recreational system

More Interaction



More Gradient

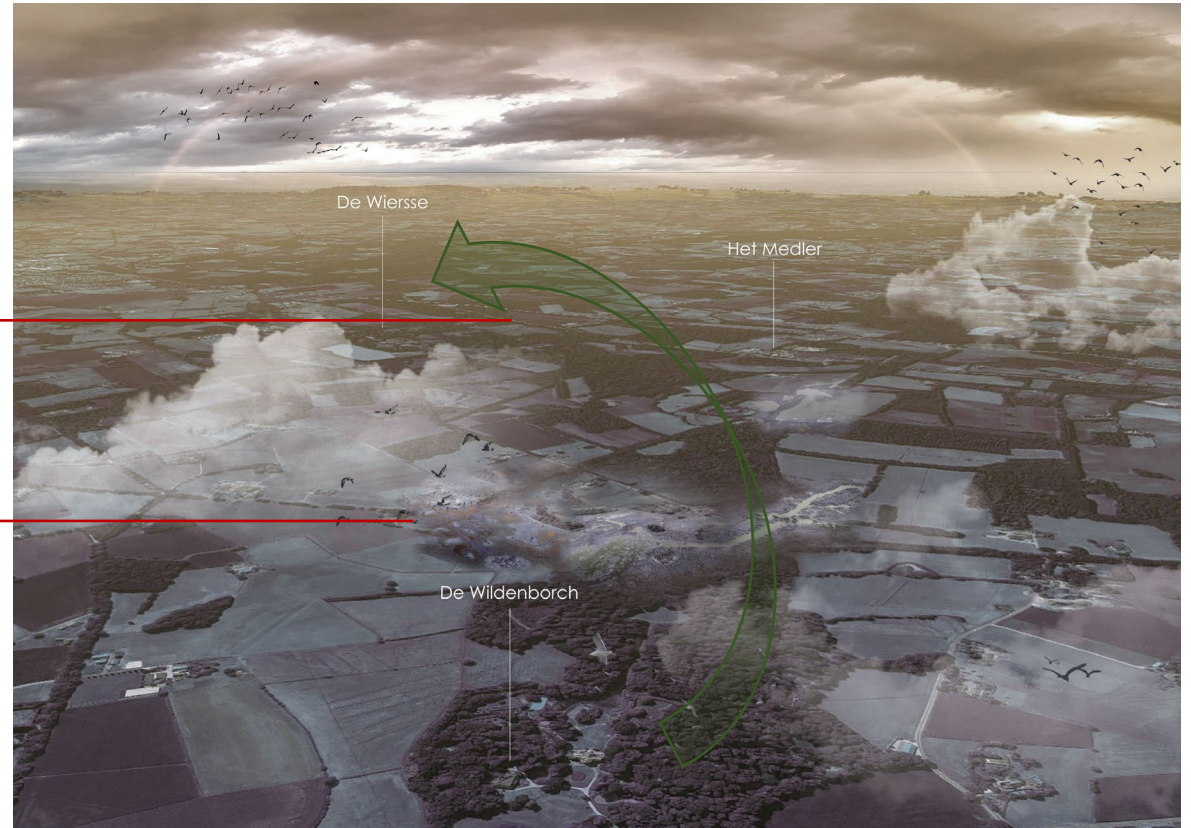


*Rich Biodiversity*



Green  
Connection

Integrated  
Wetlands





## Research Questions

- ✓ *What are 2 systems and how do they interrelate to each other?*

*What are the challenges and opportunities according to analysis?*

- ✓ *What kinds of design principles and interventions are available could be set to solve the problem taking advantage of the possibilities?*

- ✓ *How to apply through design and what will be the possible results for the Baakse Beek area ?*

APPROACH

## Theory

a) Look Estate Landscape as a system

b) Regard Brook System & Estate Landscape as two related units that support each other

c) Consider human beings as continuously working elements, with dynamically changing activity routes

b) Use Indicative Landscape as an integrated functional system

## Methods

- Decomposing it in layers/systems
- Address them on different levels/scales
- Look into time period

➤ Interacting them on different layers( Commons, connections, opposites, conflicts...)

➤ Guiding them in order to interact or keep distance with estate and landscape

➤ Make it as connection and coherence among different elements with diverse characteristics

# DIAGNOSIS

## □ Brook Eco-system Network Elements & Summary Maps

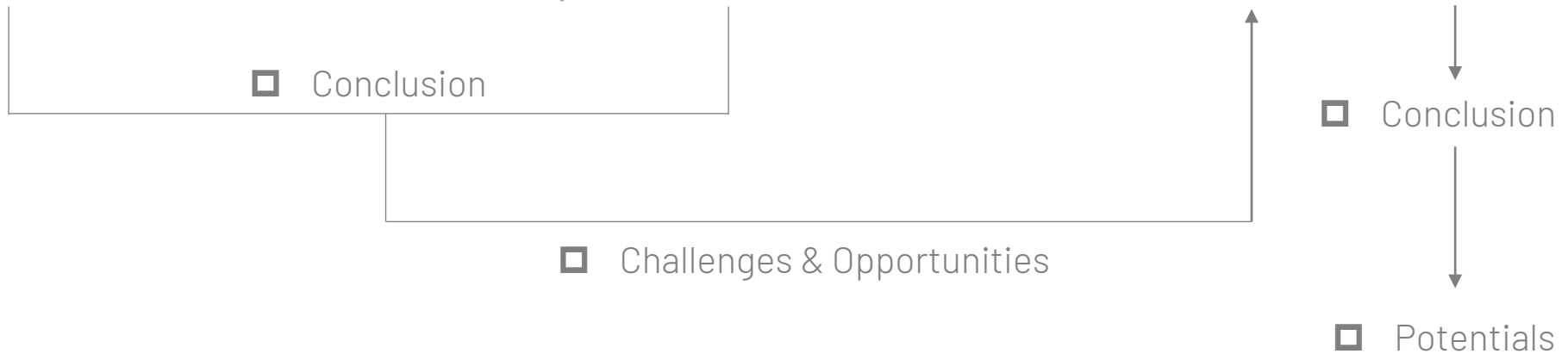
*( Water quantity, water quality, landscape typologies...)*

## □ Recreational Landscape Network Elements & Summary Maps

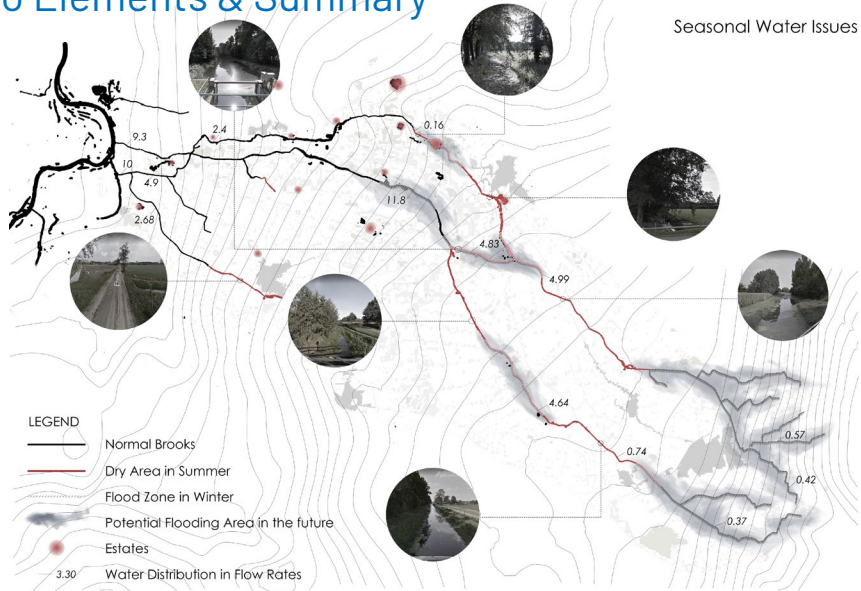
*( Mobility network, cultural facility, leisure facility...)*

## □ Estate Landscape Elements & Summary Maps

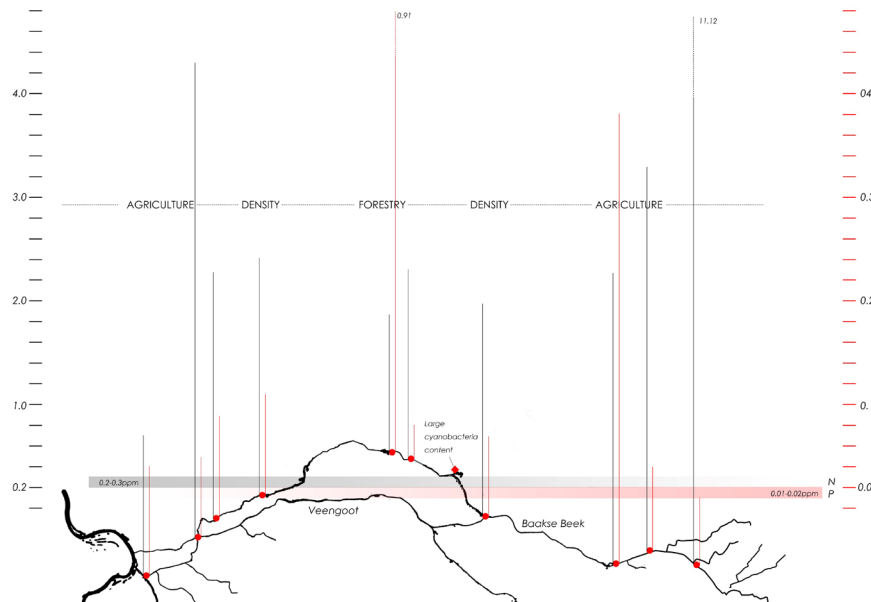
*( Layering analysis, systematic heritage...)*



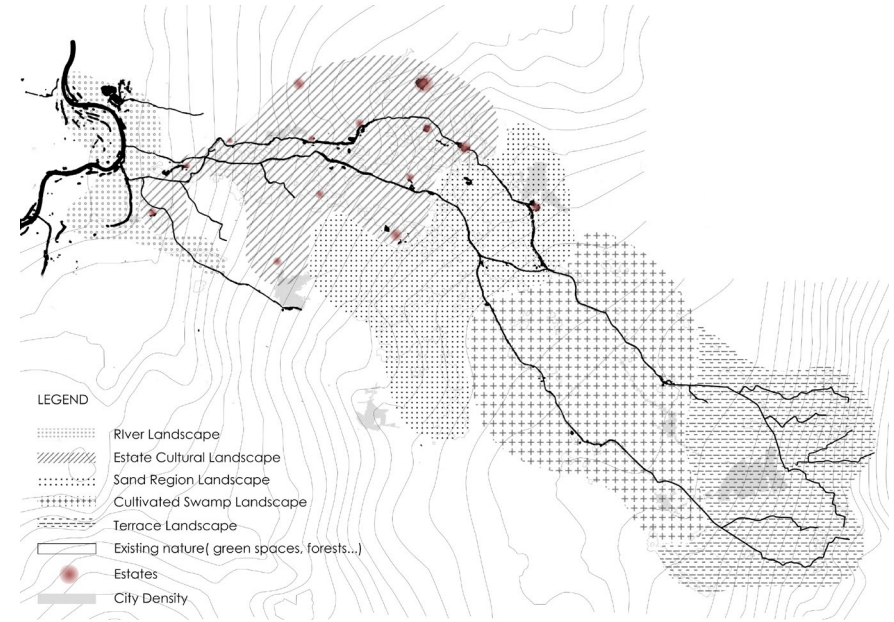
# Brook Eco Elements & Summary



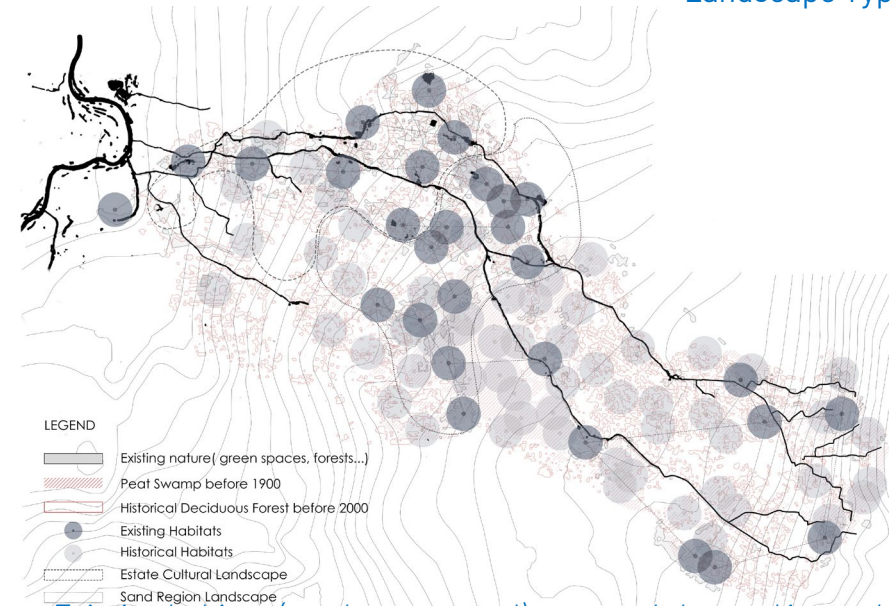
Always suffer flooding in winters and drought in summers  
Water Quantity



Eutrophication pollution in some parts of the brook  
Water Quality

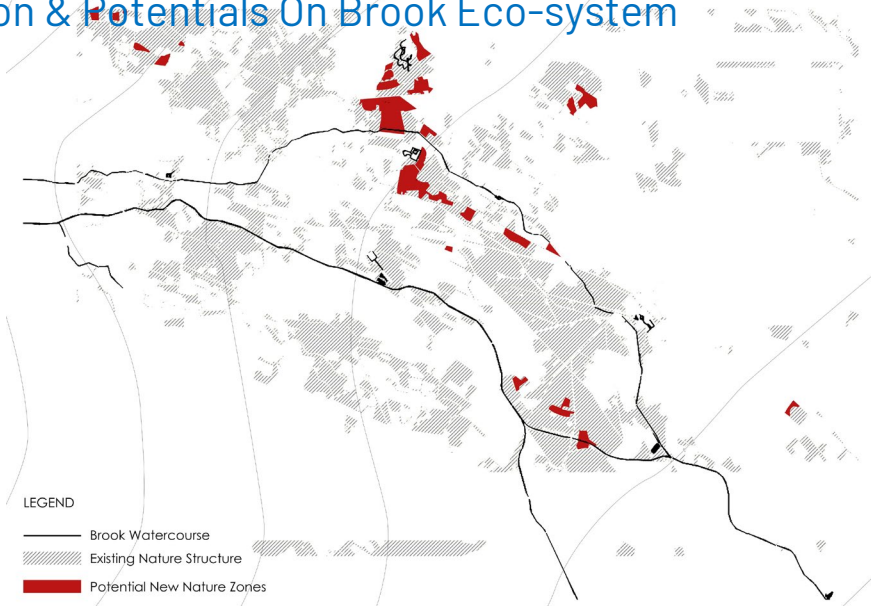


Concluded as 5 main landscape typologies around  
Landscape Typologies

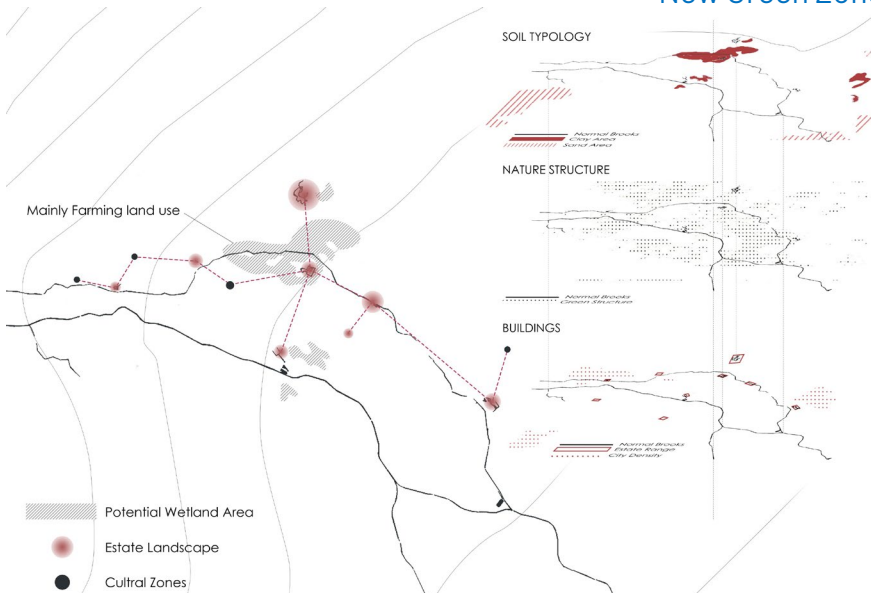


Existing habitats(maybe separated) are mostly located in sandy region landscape where many estates are settled around  
Ecological Habitat Degradation

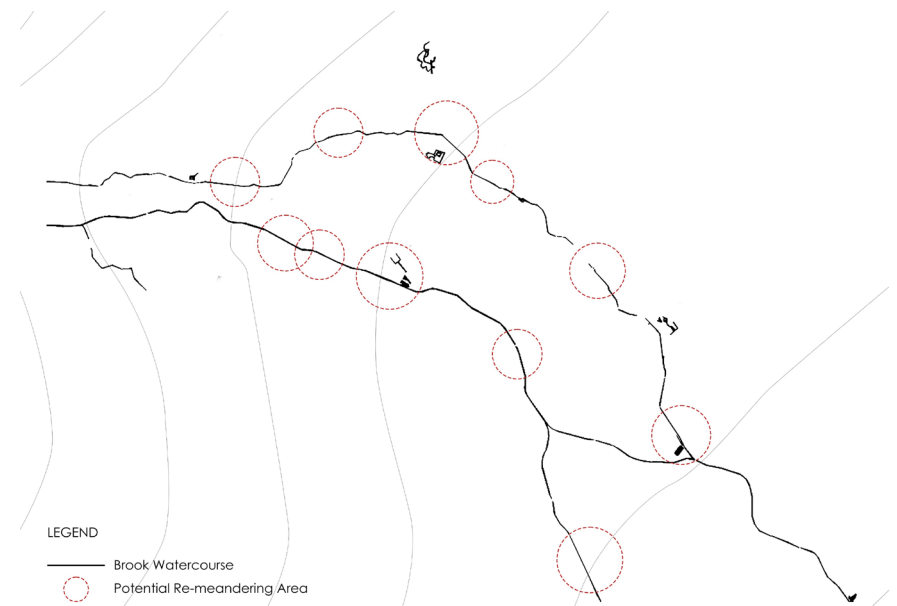
# Conclusion & Potentials On Brook Eco-system



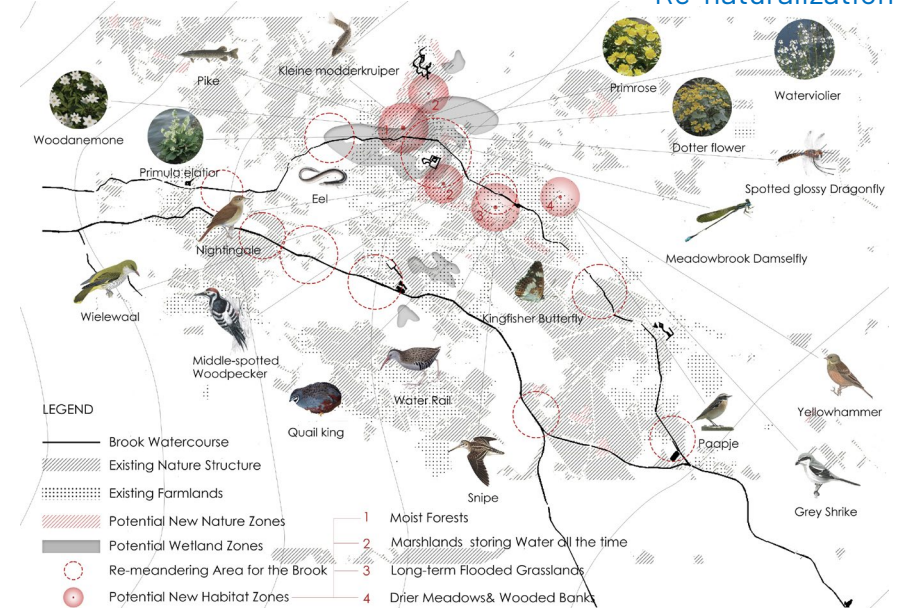
Some areas could be changed to green zones such like ineffective farmlands  
**New Green Zones**



Layers of soil typologies and other land use could contribute to potential wetland zones  
**Restoring Wetlands**

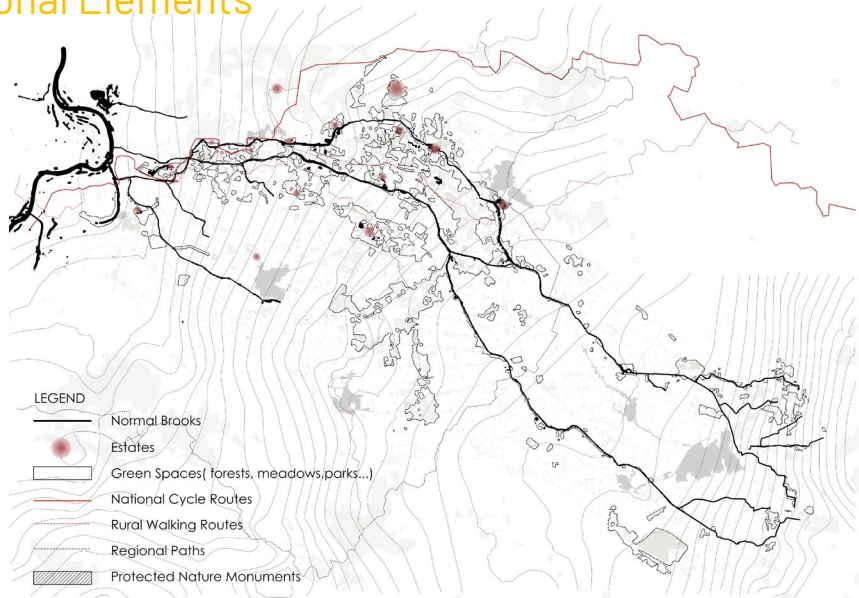


Straightened water courses could be re-meandered to help with water issues  
**Re-naturalization**



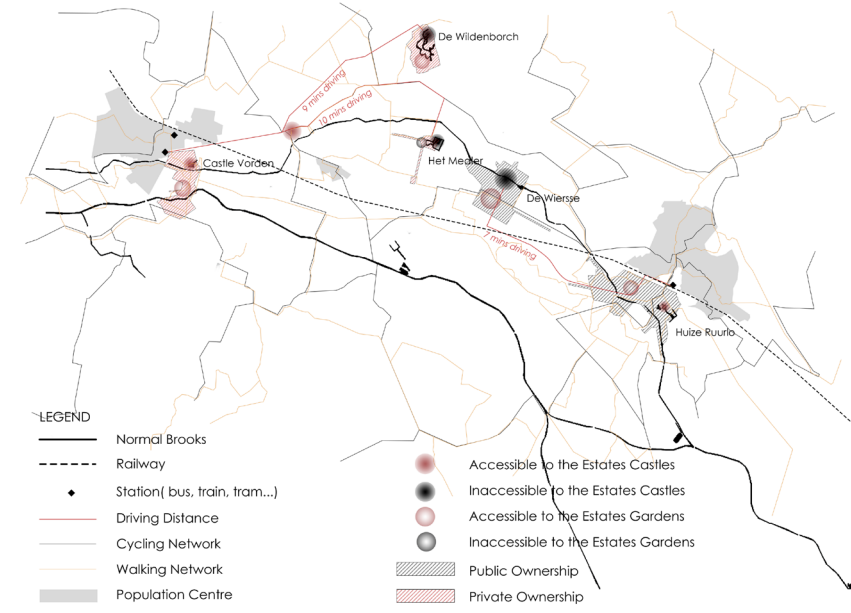
Potential eco improvement around brook would rich habitats & biodiversity  
**Redeveloping Habitats**

# Recreational Elements



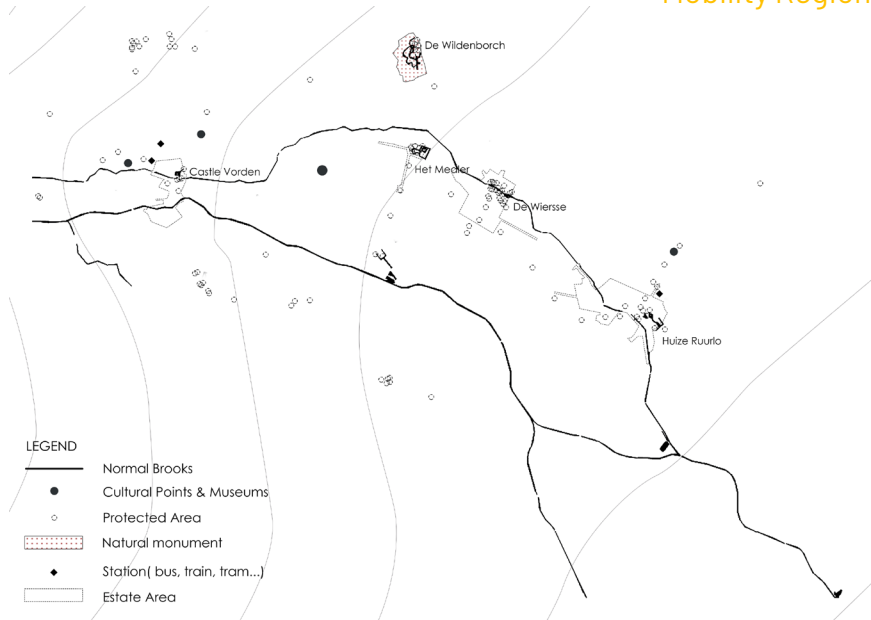
Not much mobility flows around this rural region

Mobility Regional Scale



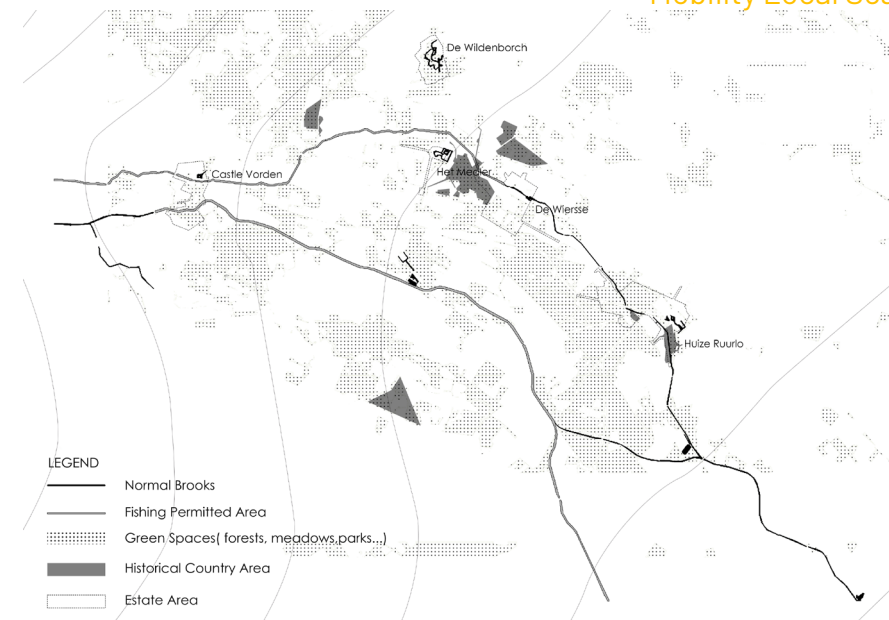
Could not visit around partly because of the privacy

Mobility Local Scale



High historical heritage values

Cultural Facility



Relatively low leisure quality

Leisure Zones

# Conclusion & Potentials on Recreational System



Castle Ruurlo

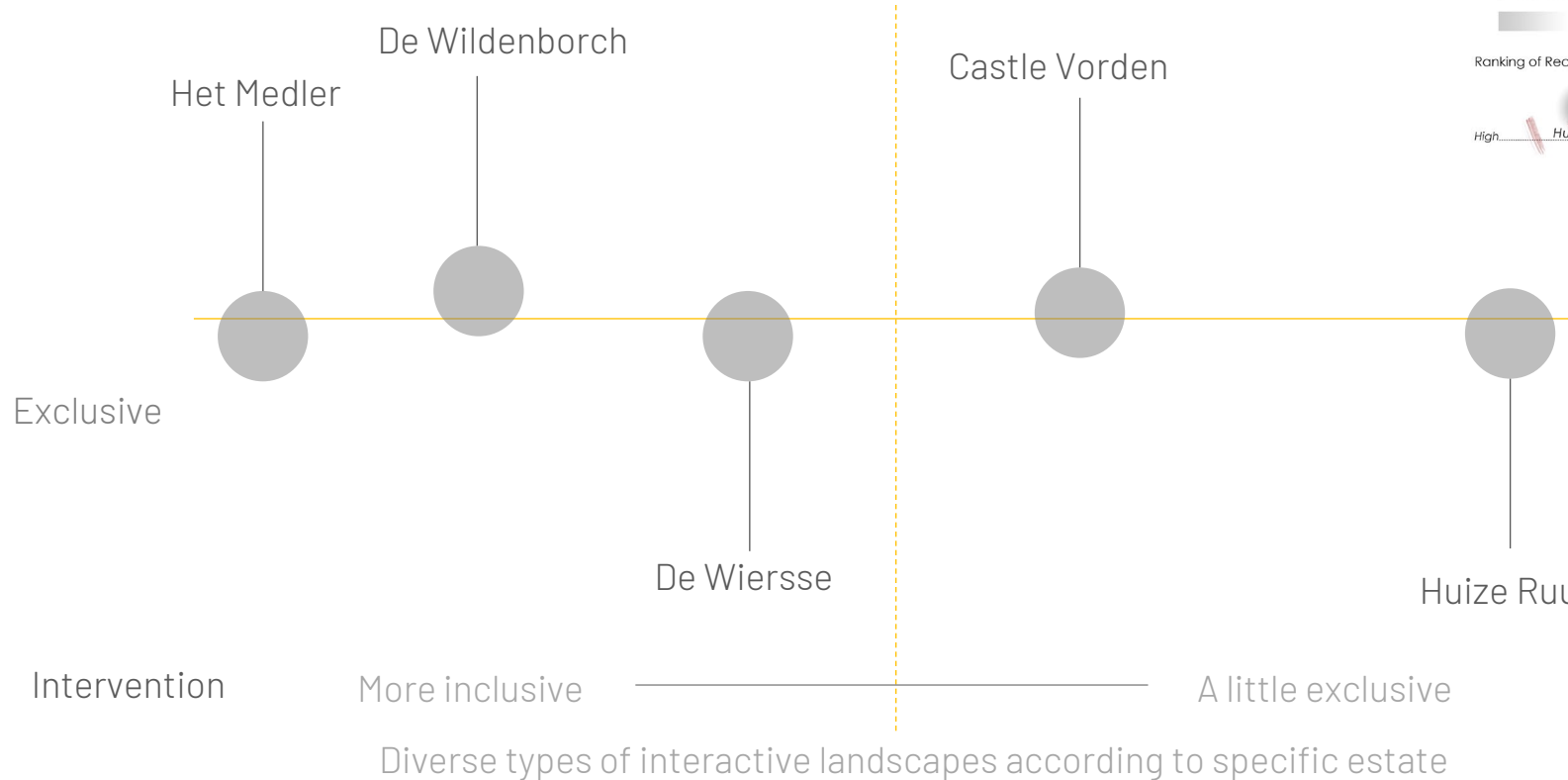
Destructive to the heritage



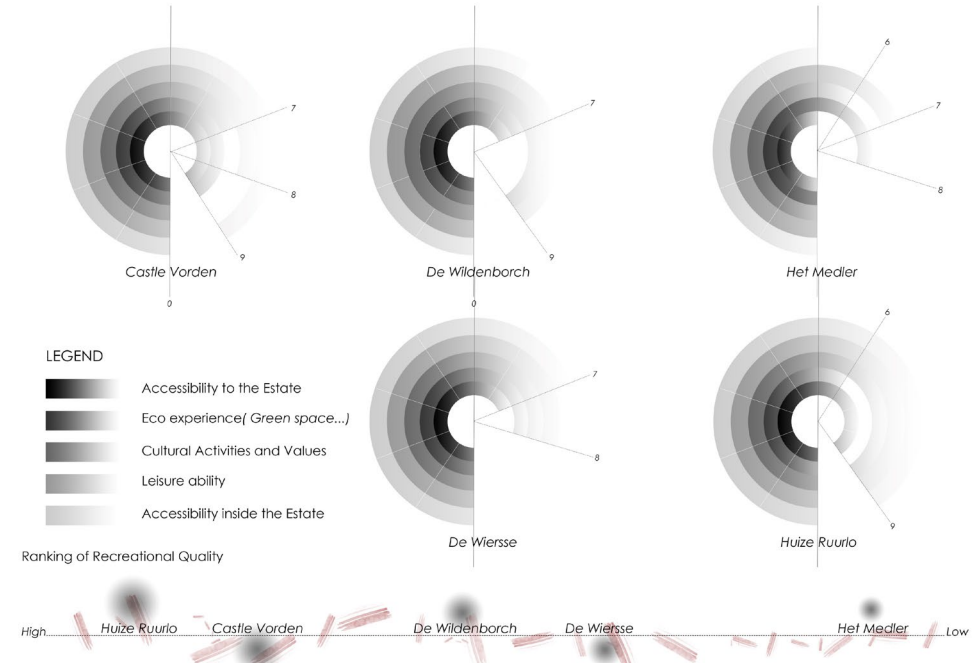
Het Medler

Insufficient interaction with culture

## Imbalance of Interaction Degree between Human, Estate & Landscape



## Ranking of Recreational Quality



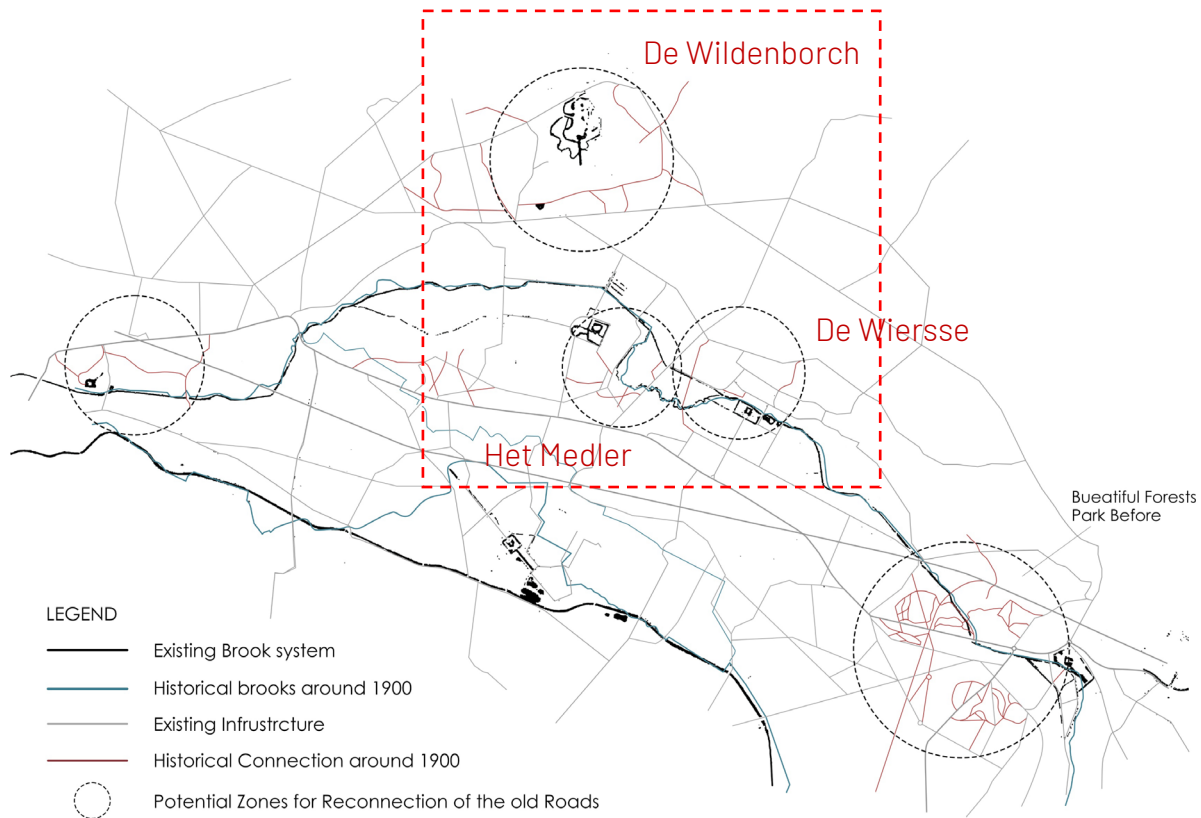
Poor Recreational Quality:  
Het Medler

Good Recreational Quality:  
De Wiersse, De Wildenborch

High Recreational Quality:  
Huize Ruurlo

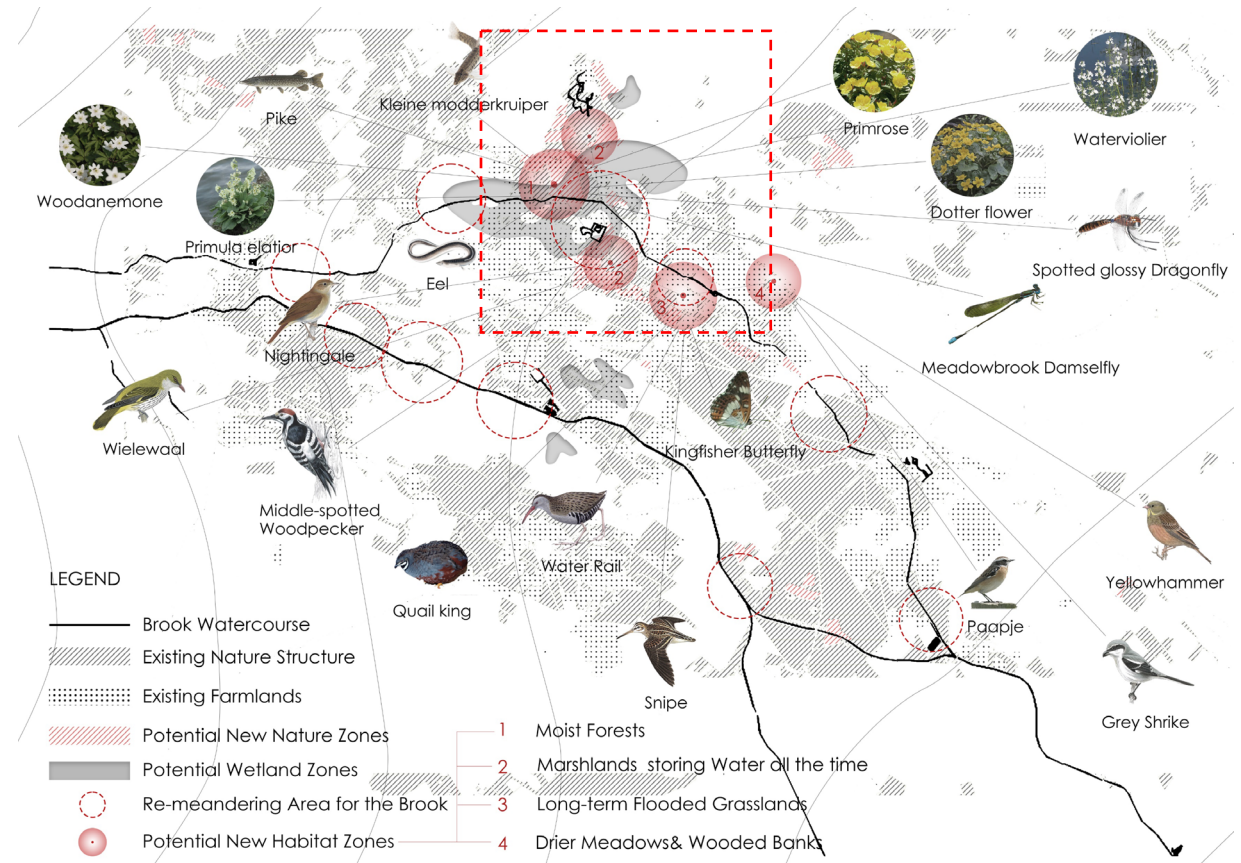


# Potentials On Combination of two systems



## Reconnecting Roads

There are some roads that **existed before** as connection among estates or ecology. Some developed to farmlands now.



## Redeveloping Habitats

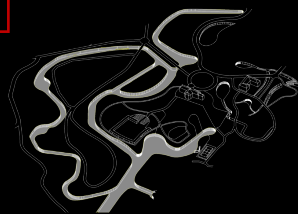
# Layered Elements

De Wildenborch

# Axes & Viewing lines

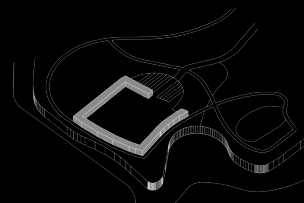
## Composition

Blue Typologies



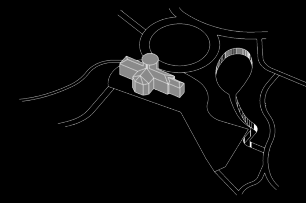
Natural water scene

Green Typologies



Hedge around the watercourse

Cultural Exploration

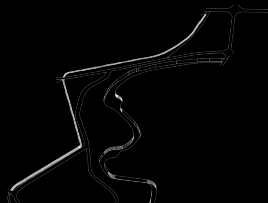


Historical valued estate

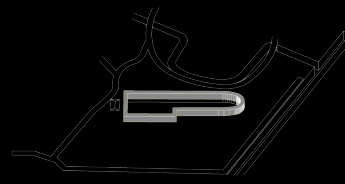
Leisure Experience



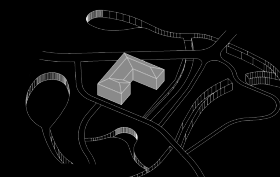
Dotted waterscape (fountains...)



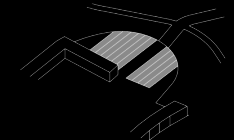
Straight watercourse



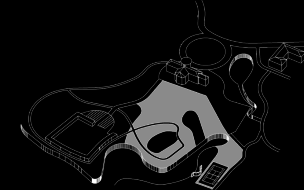
Hedge surrounding water



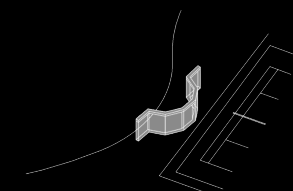
Surrounding functional historical buildings



Kitchen Garden



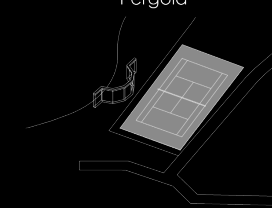
Green spaces surrounded by recreational & functional areas



Pergola



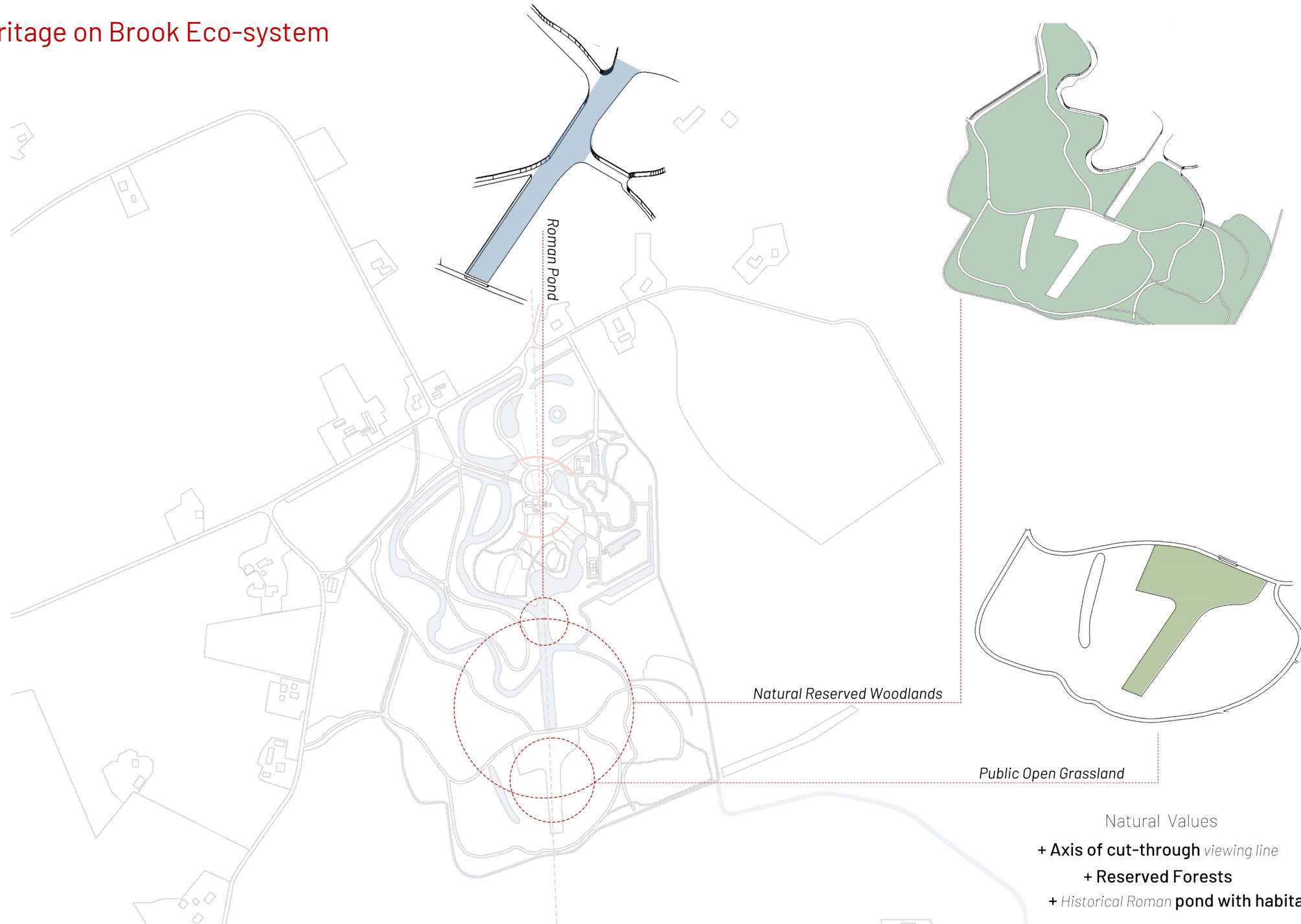
Green spaces surrounded by natural area



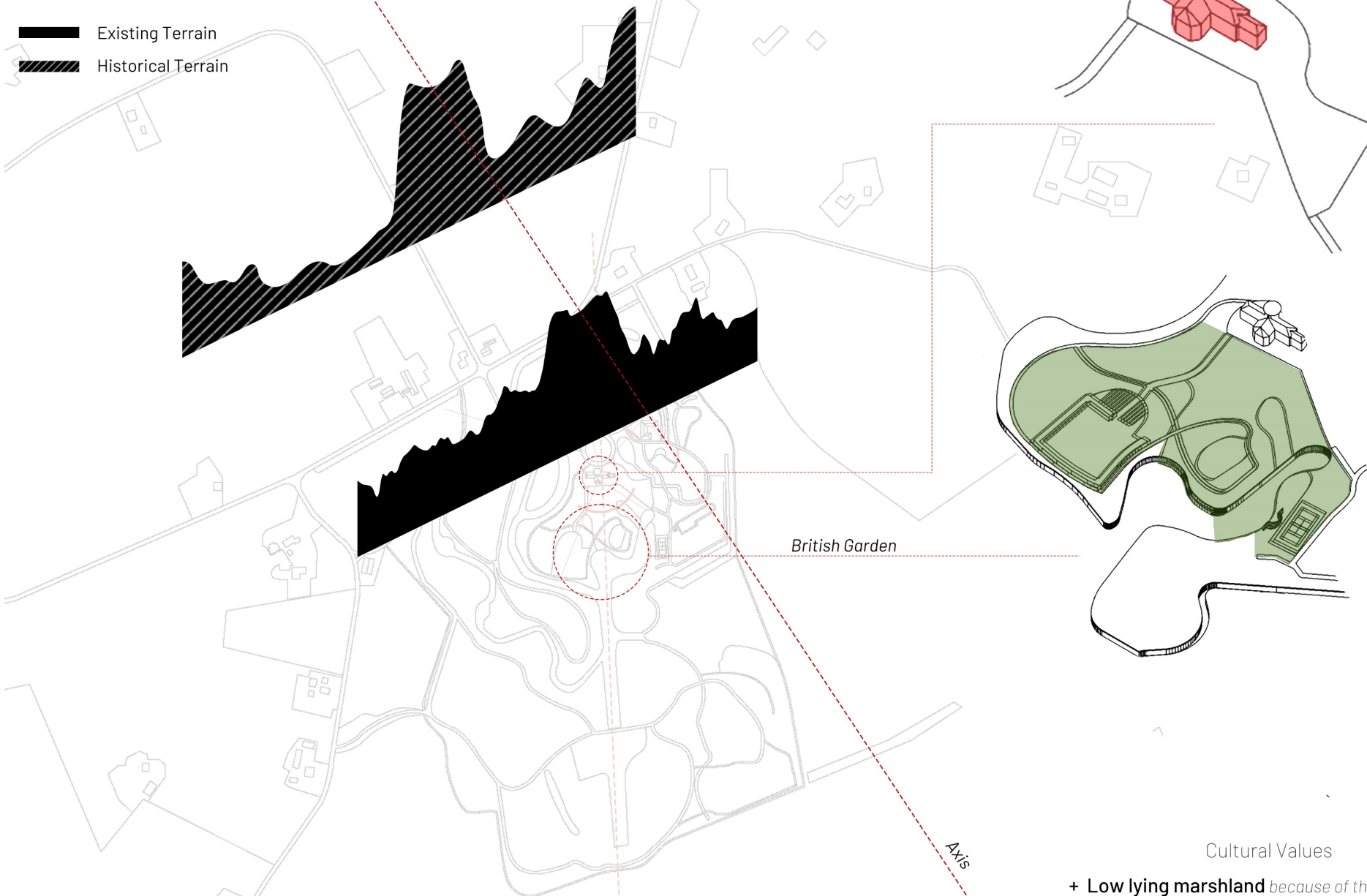
Sports Playground

----- Axis  
———— View Line

# Crucial Heritage on Brook Eco-system



# Crucial Heritage on Recreational System



Existing Terrain  
Historical Terrain

British Garden

Axis

Cultural Values

+ Low lying marshland because of the bandit fortress

+ Existing Historical Roman pond

# Layered Elements

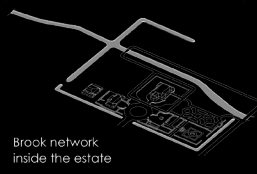
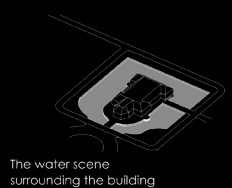
De Wiersse

## Axes & Viewing lines

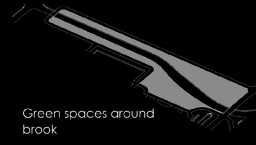
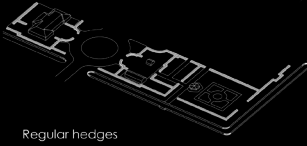
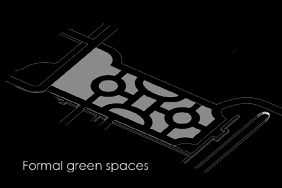


## Composition

Blue Typologies



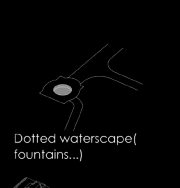
Green Typologies



Cultural Exploration



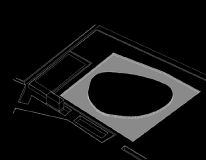
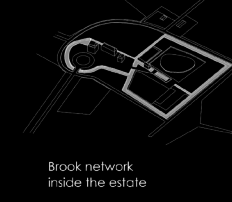
Leisure Experience



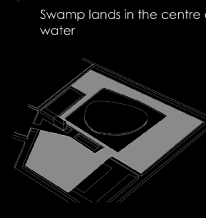
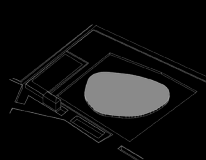
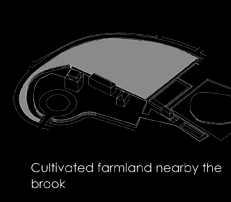
Het Medler



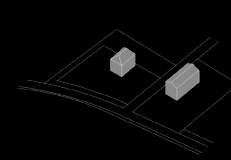
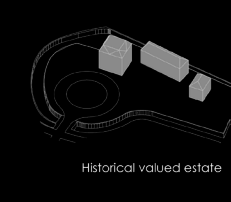
Blue Typologies



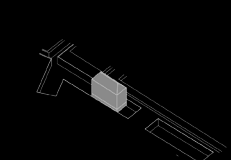
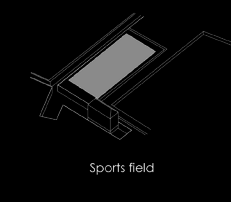
Green Typologies



Cultural Exploration

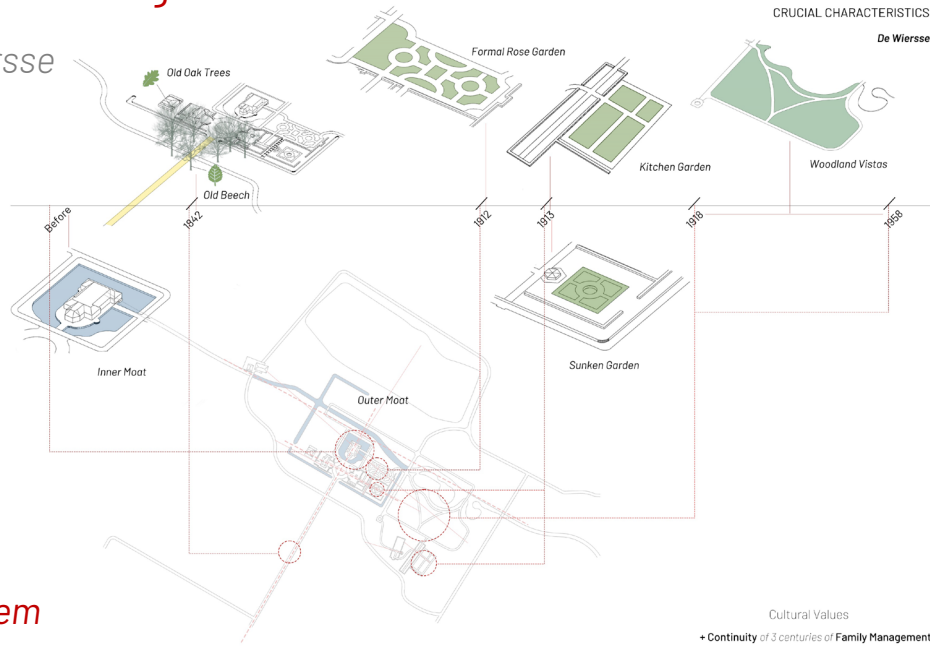


Leisure Experience

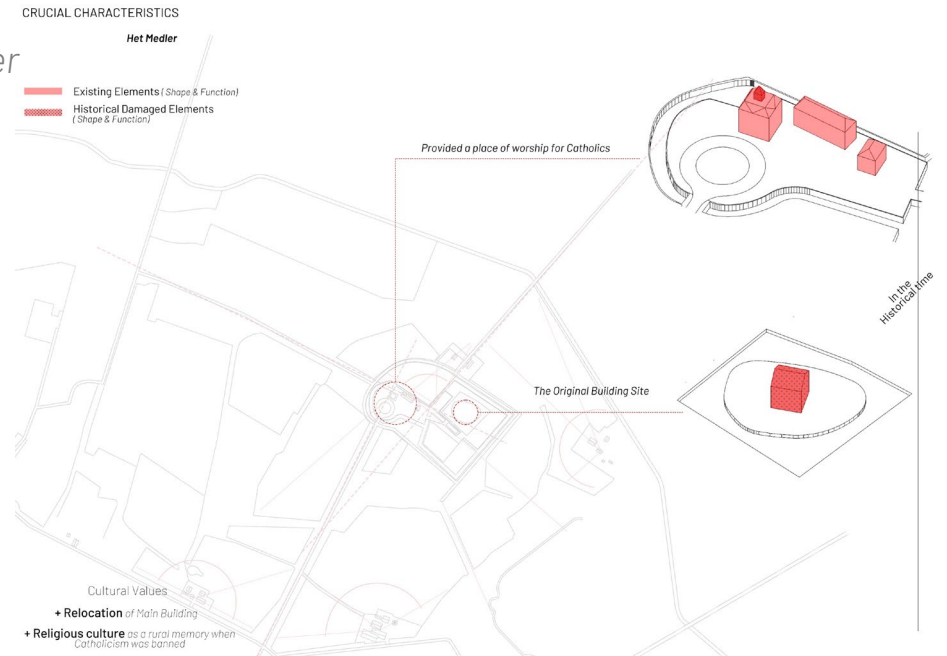


# Systemic Crucial Heritage

## De Wiersse

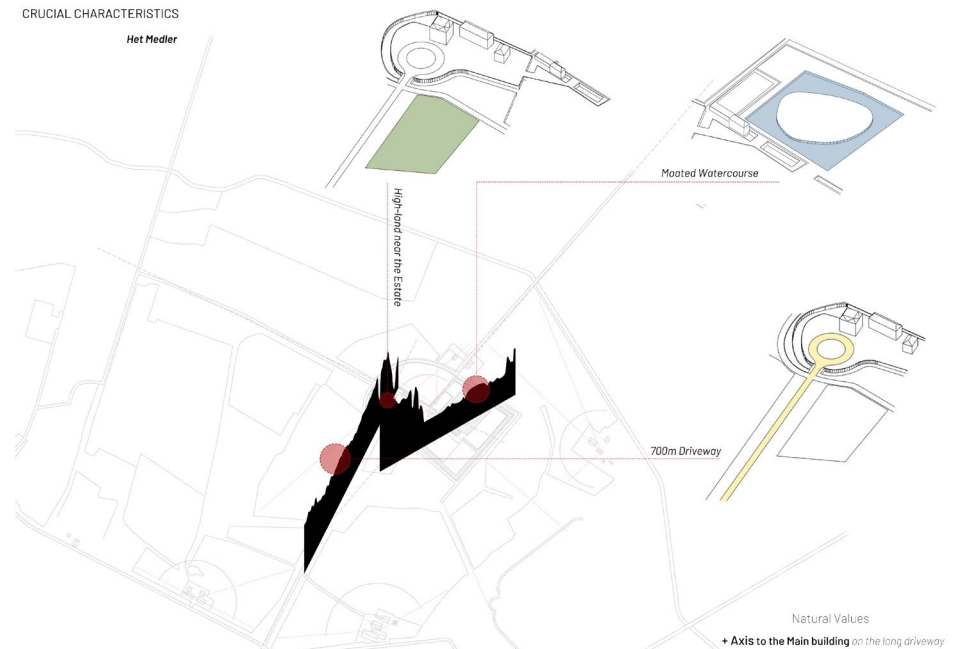
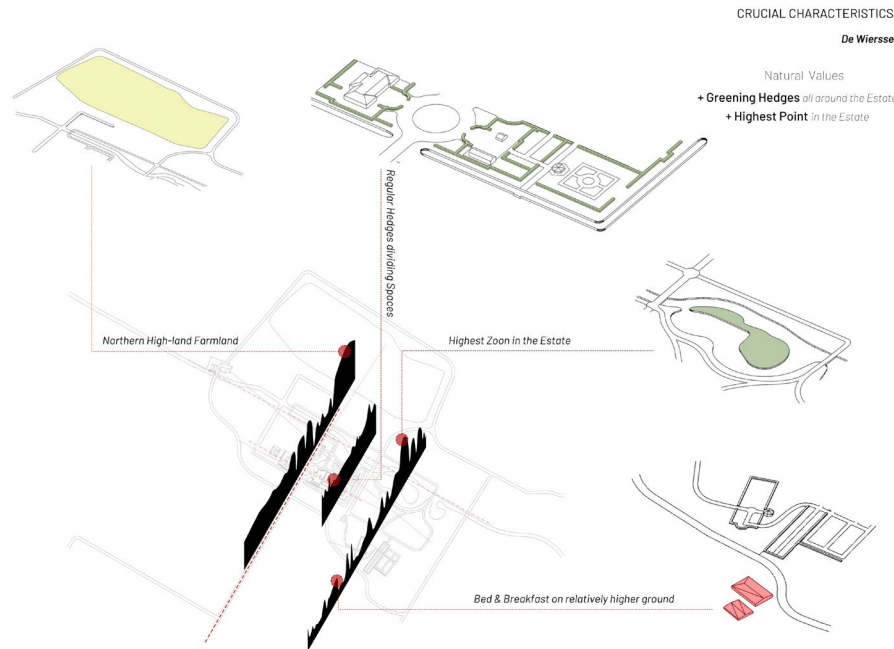


## Het Medler



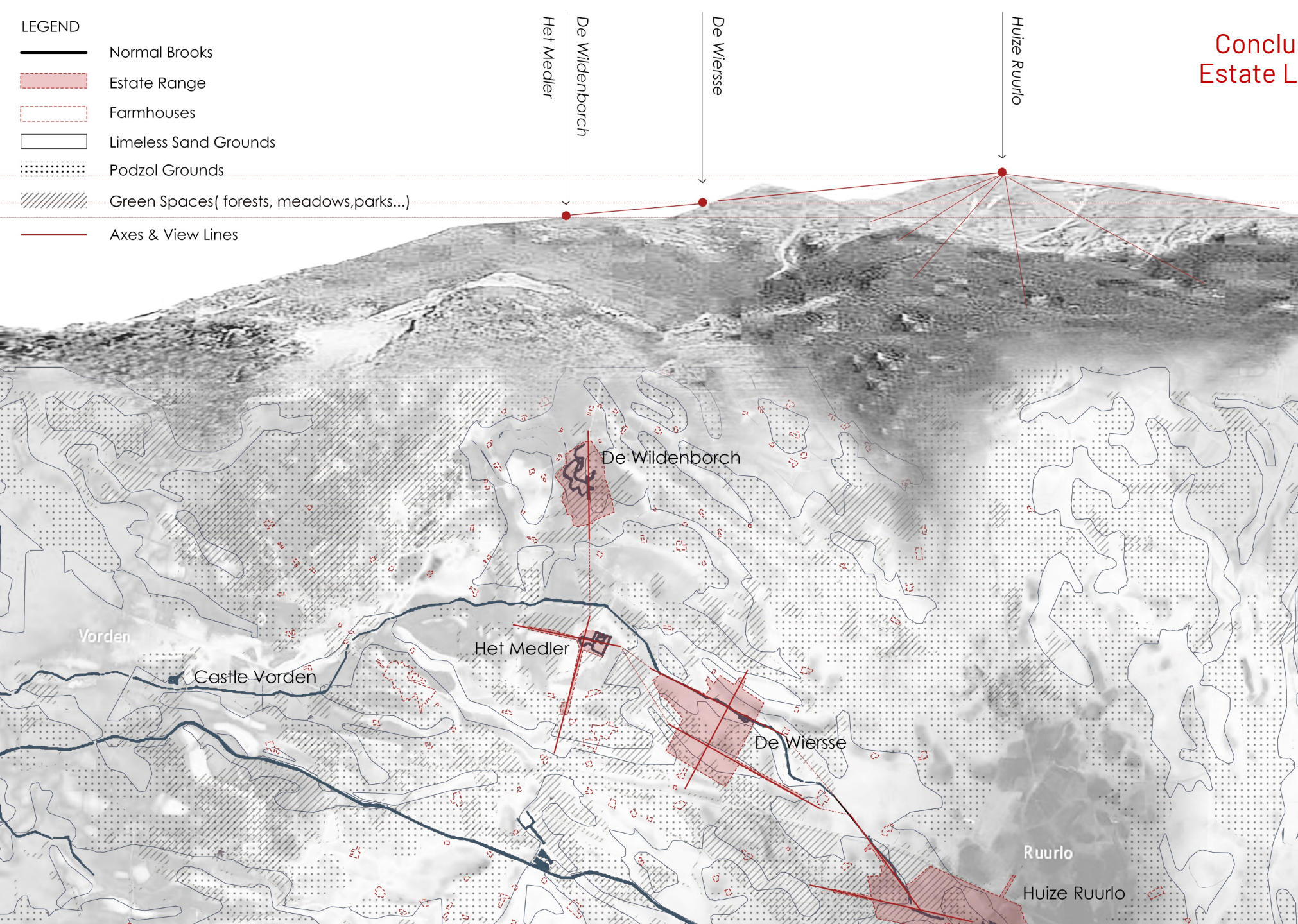
# Recreational System

## Brook Eco-system



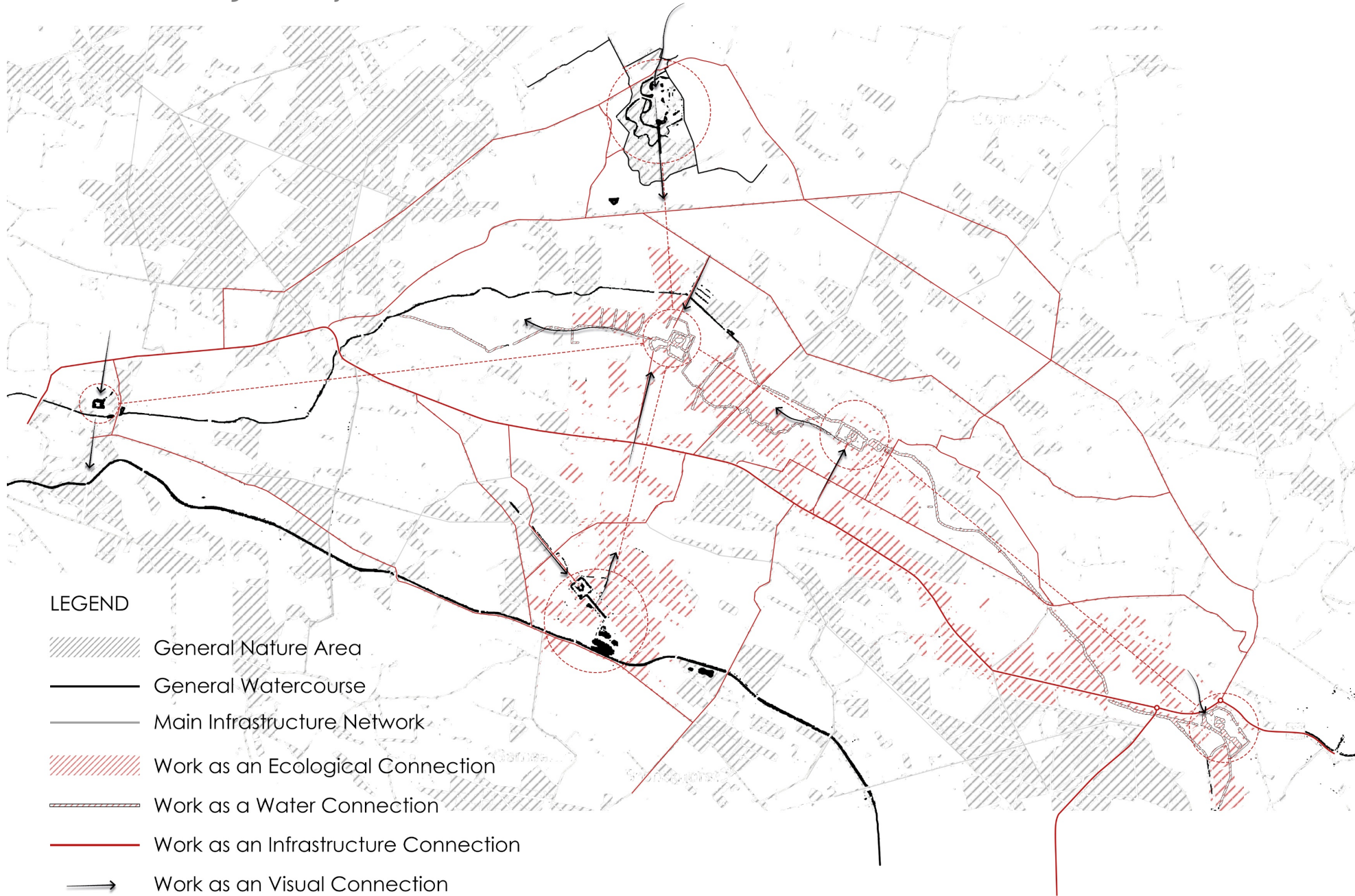
## Conclusion of Relationship among Estate Landscape, Nature & Culture

- LEGEND
- Normal Brooks
  - Estate Range
  - Farmhouses
  - Limeless Sand Grounds
  - Podzol Grounds
  - Green Spaces( forests, meadows,parks...)
  - Axes & View Lines










It can be seen that estates and farmhouses were mostly built at the **edge of sand region**, so that people can take advantage of both wetness and drought. Only Het Medler were set in the middle of swamp lands, because of defense. Moreover, buildings, especially the estates, were likely to be built on **higher ground**. Then the estate connect with surrounding landscapes through green & blue axes and view lines.

# Potentials on Integrated System



## LEGEND

-  General Nature Area
-  General Watercourse
-  Main Infrastructure Network
-  Work as an Ecological Connection
-  Work as a Water Connection
-  Work as an Infrastructure Connection
-  Work as an Visual Connection

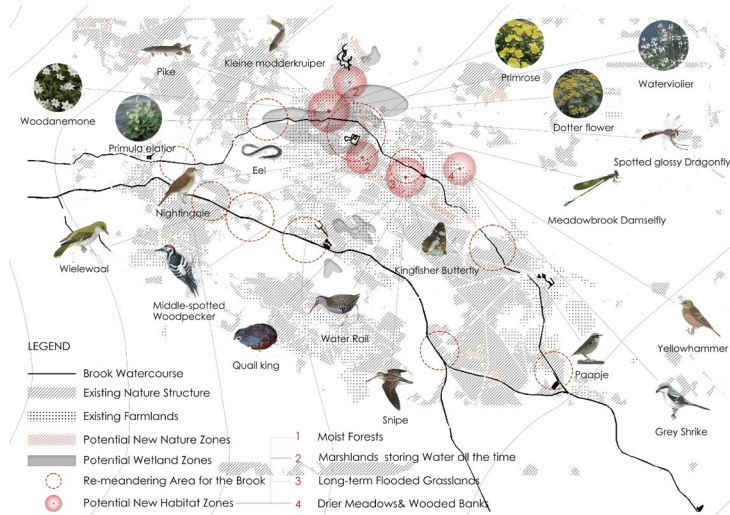
These estates link to each other by **green** and **blue** structure, **infrastructure** and **visual**. Medler, Wiersse and Ruurlo castle can connect one another by water and green links. Yet there are **lack of connection** between De Wildernborch and the others.



## Brook Eco-system Network Elements & Summary Maps

(Water quantity, water quality, landscape typologies...)

Conclusion

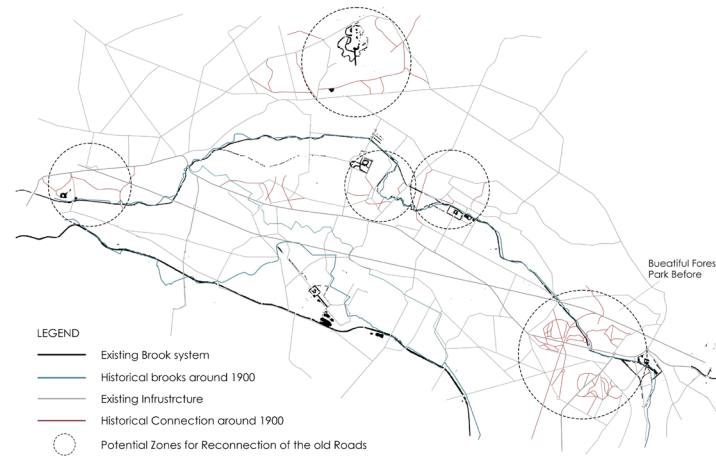


Potentials on Brook Eco-system

## Recreational Landscape Network Elements & Summary Maps

(Mobility network, cultural facility, leisure facility...)

Challenges & Opportunities



Potentials on Recreational System

## Estate Landscape Elements & Summary Maps

(Layering analysis, systematic heritage...)

Conclusion

Potentials



Potentials on the Combined System

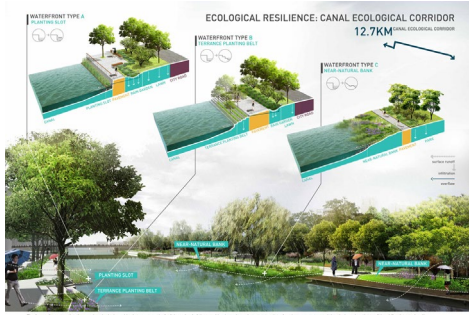
## TOOLBOX: STRATEGIES & PRINCIPLES

▣ Case Studies

▣ Strategies Catalogue

▣ Principles

# Case Study



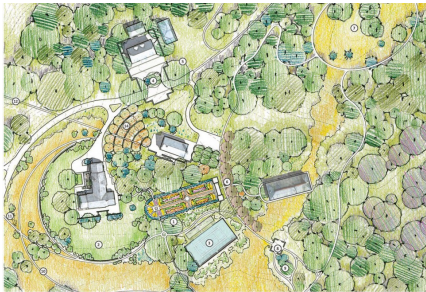
*Symbiosis of Nature and Infrastructure: Revival of Resilient Canal Network, Ningbo, China.*

Recall Resilient Water Storage Habitat( Curve stream and valleys, wetlands, floating Meadows, groove forests...)-Ecological Restoration



*Canada unveils its first chemical-free public outdoor pool and it's gorgeous*

Combine the Landscape Purification Methods with the Technical ones



*Overlook Farm as an exemplary working landscape*

Make Cultural Landscape as a sponge between heritage and people, meanwhile protecting the estates and landscape

# Design Strategies

## LANDSCAPE



*-Brook Eco-system Modification*

Ecological Landscape System  
Healthy Blue & Green Infrastructure  
Restoration of Wetlands  
Interaction-balanced System

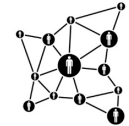
## CULTURE



*-Recreational System Reconstruction*

Indicative Landscape  
Transitional Landscape  
Interstitial Space

## NETWORKS



*-Multiple Connection*

## NODES



*-Estates as Heart of Networks*

Stronger the Garden Environment  
Make use of Elements of Estates as Hinge/Hub...  
Recall Historical Links

## ECONOMY



*-Sustainable Land use/Landscape*

For Woodlands: Restoration of Functional Forests, Multiple Plantings...  
For Grasslands: Multiple Grass Seed Configuration...

# Principle Catalogue

## ● RESTORATION

### Healthier Brook Eco-system

- *About Water Quantity*

*a) Multiple Wetlands Restoration*

*b) Re-meandering*

*c) Restoration of natural infiltration to Groundwater*

*d) Increase water storage space in brook*

- *About Water Quality*

*a) Anti-pollution with Landscape and Technical methods*

- *About Ecological Landscape around brook*

*a)*

### Higher Recreational Quality

- *About Public Space*

*a) Space Restoration*

- *About Infrastructure*

*a) Roads Reconnection*

## ● CREATION

### Healthier Brook Eco-system

- *About Water Quantity*

*a) Basins and Ponds*

*b) New Brook Connection*

### Higher Recreational Quality

- *About Diverse Landscape*

*a) Transitional Landscape*

*b) Interaction-balanced System*

*c) Interstitial Landscape*

- *About Diverse Experience*

*a) Multiple Sensory*

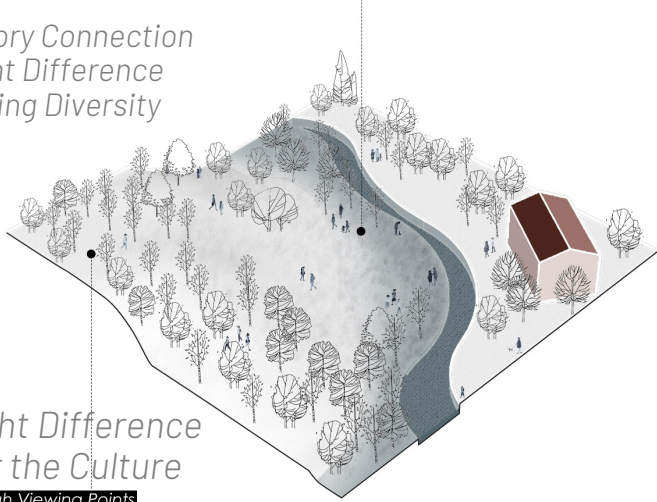
- *About Cultural Memory*

# Tool Box\_ Relationship Typologies( In what ways 3 systems could be connected)

## Estate landscape as View-focus points

Wetlands with Purification Plants

- + Sensory Connection
- + Height Difference
- + Planting Diversity



- Height Difference Near the Culture

Re-meandering Intervention



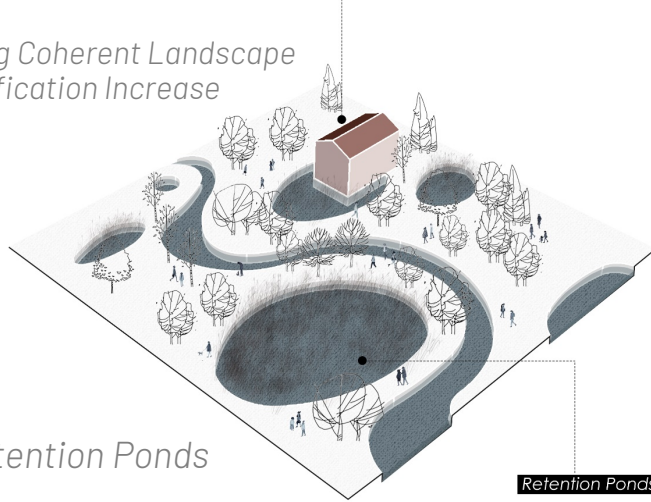
- Watercourse Connection

High Cultural Point

## Estate landscape as Interstitial Landscape

Interstitial Landscape

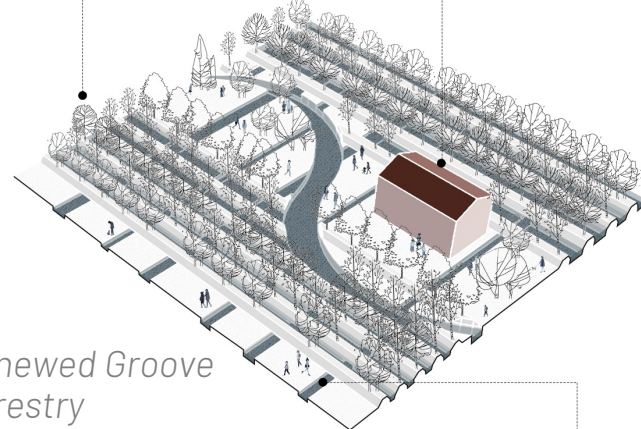
- + Among Coherent Landscape
- + Identification Increase



- Retention Ponds

Groove Forests

Interstitial Landscape

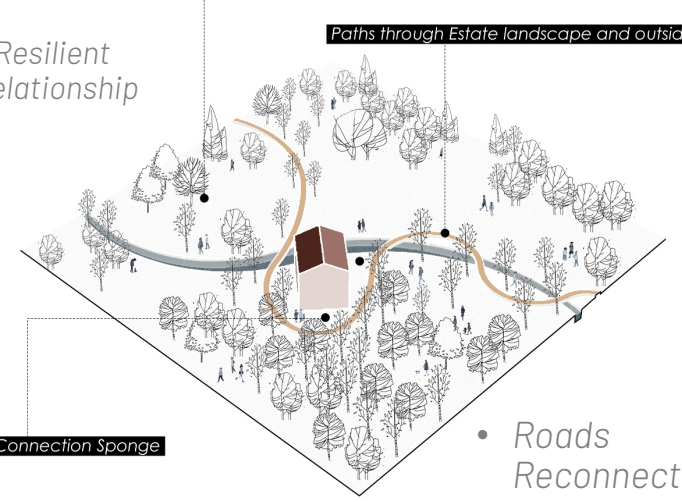


- Renewed Groove Forestry

## Estate landscape as Sponge

Diverse scales of Spaces

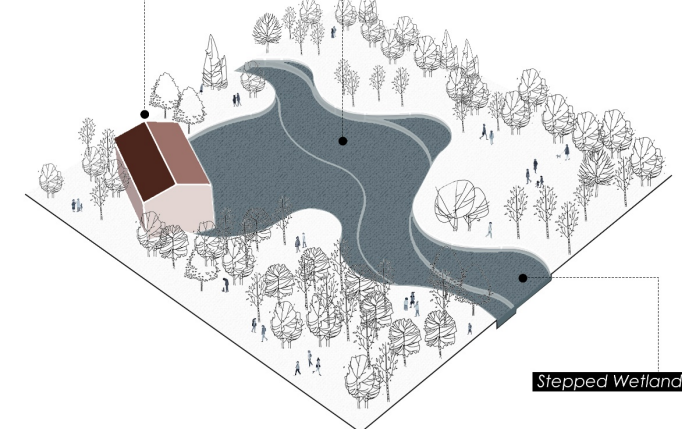
- + Resilient Relationship



- Roads Reconnection

Connection Sponge

Widened Brook

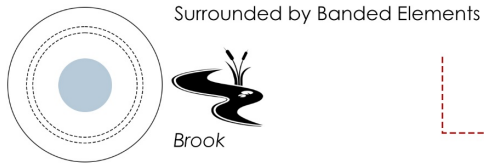
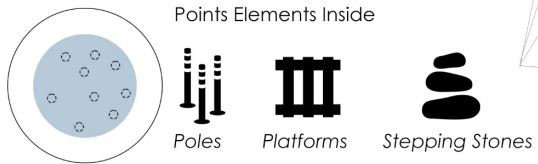
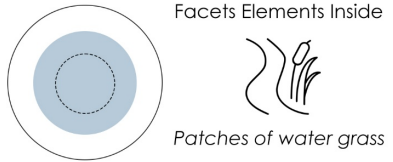
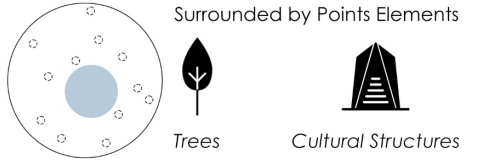


- Re-naturalization and Flooding Plain Zones

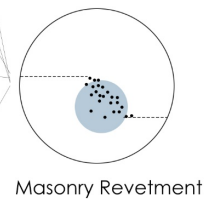
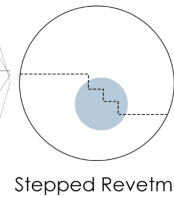
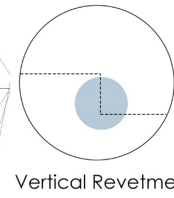
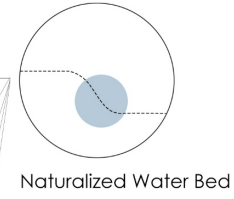
# Application\_ Connect through Retention Ponds

## Retention Ponds set Typology

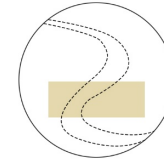
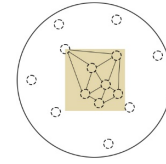
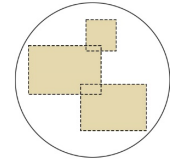
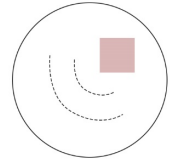
### Environment



### Revetment

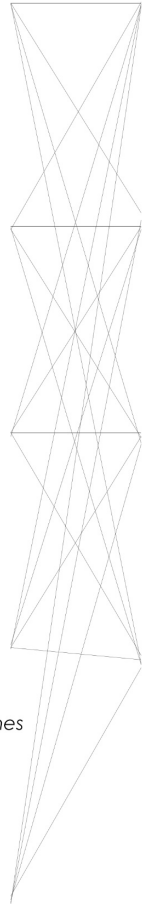
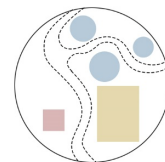
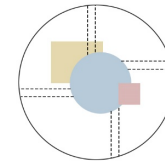
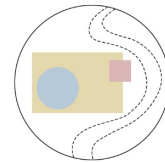
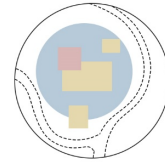
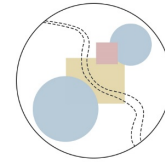
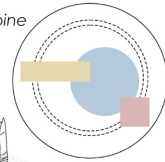


## Recreational Set Typology



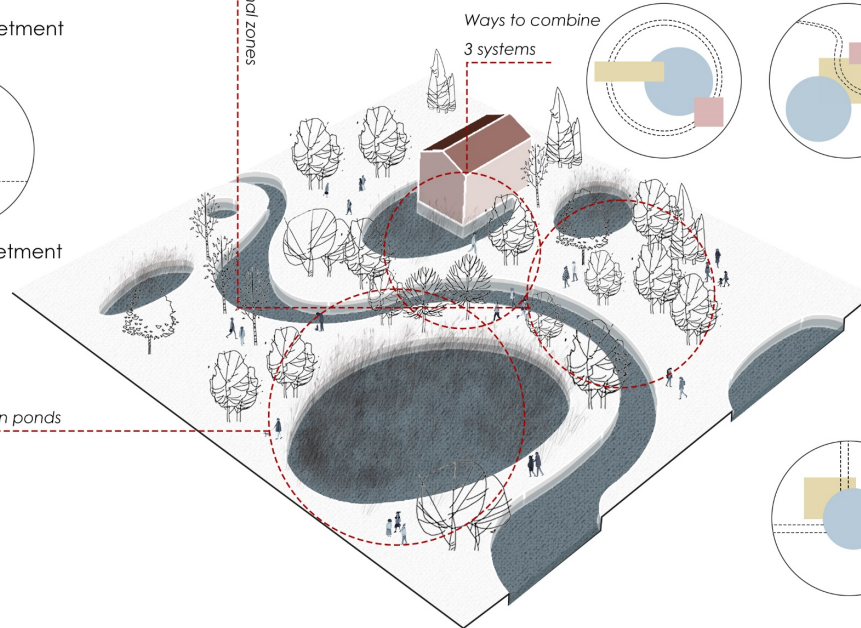
## Combination Typology

Ways to combine  
3 systems



Ways to set up recreational zones

Ways to set up restoration ponds

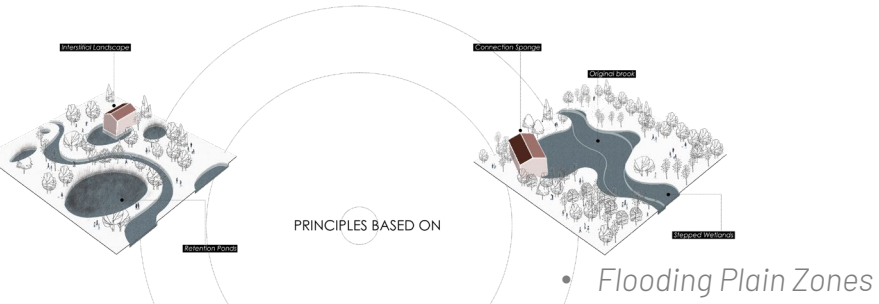


## DESIGN EXPLORATION

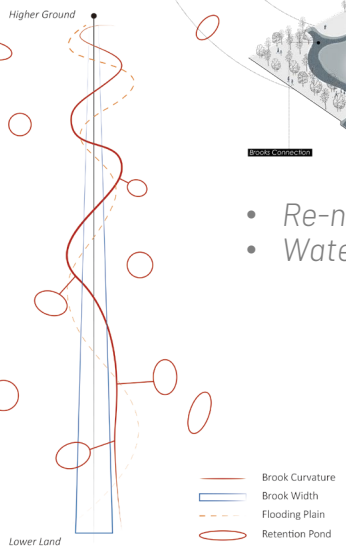
□ Possibilities

□ Experiments

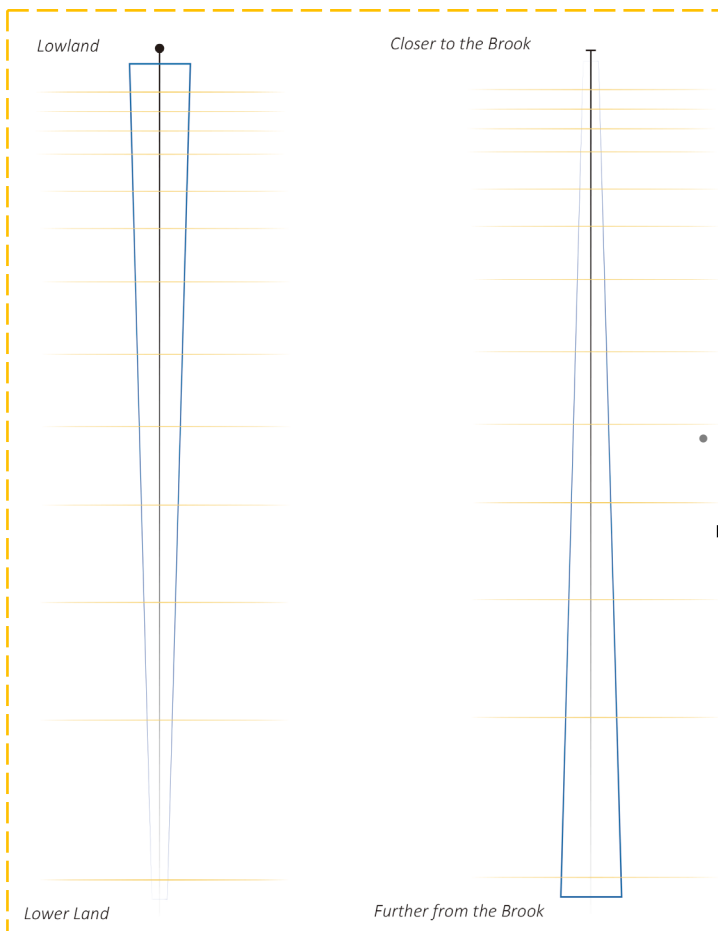
# Possibilities



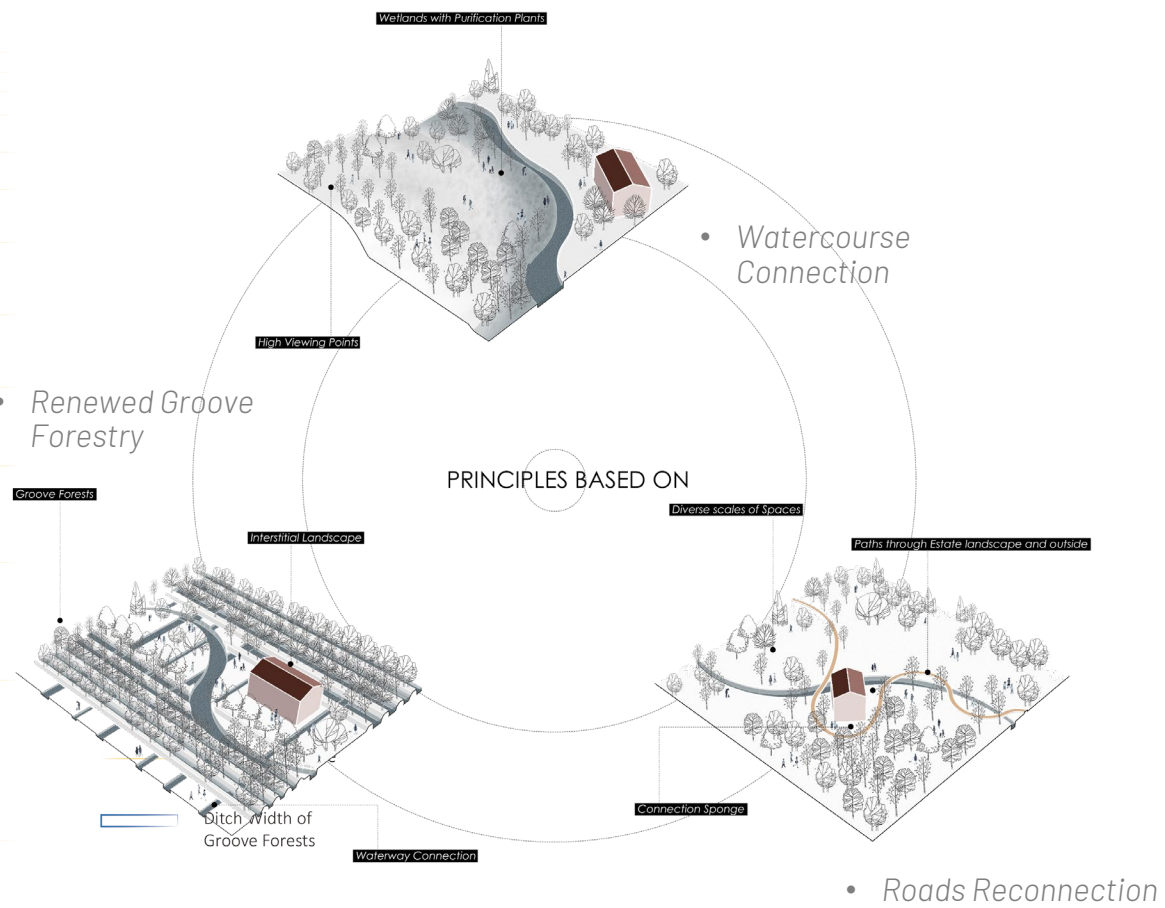
- Retention Ponds
- Re-naturalization
- Water Reconnection



OPTION2: Activate functions of *watercourse extension* to get integrated



OPTION1: Activate functions of *groove forestry* to get integrated





## OPTION 1( GROOVE FORESTRY RESTORATION)

### ▣ Application

- 2 Systems as Links( *Local proposal*)
- Each Estate as Link( *Estate development*)

### ▣ Comparison & conclusion

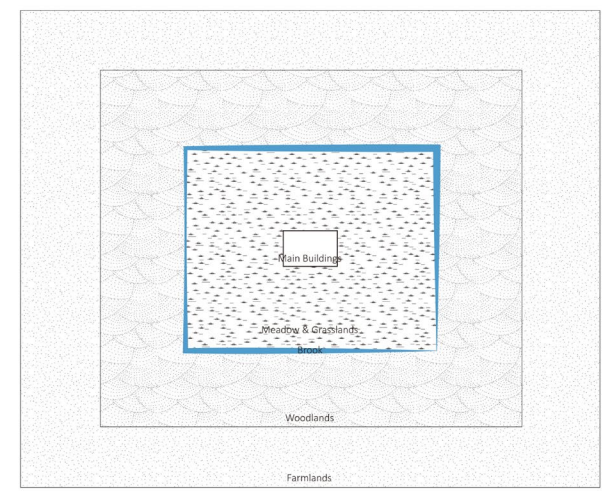
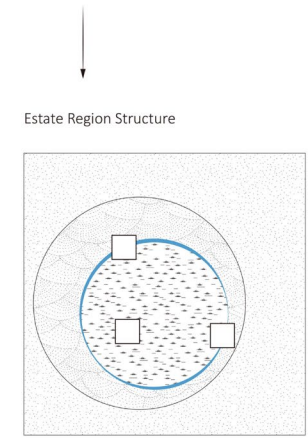
### ▣ Reflection

# Original Local Scale



# Existing Situation

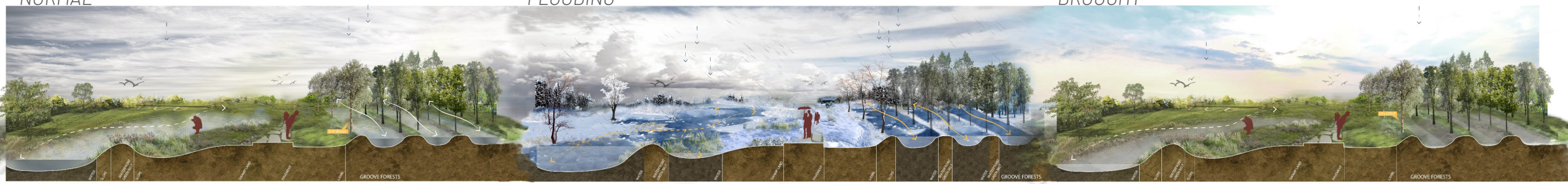
- Estate Landscape Structure
- + Multiple
- + Stable
- + Symbiotic-- Good combination of the 3 systems



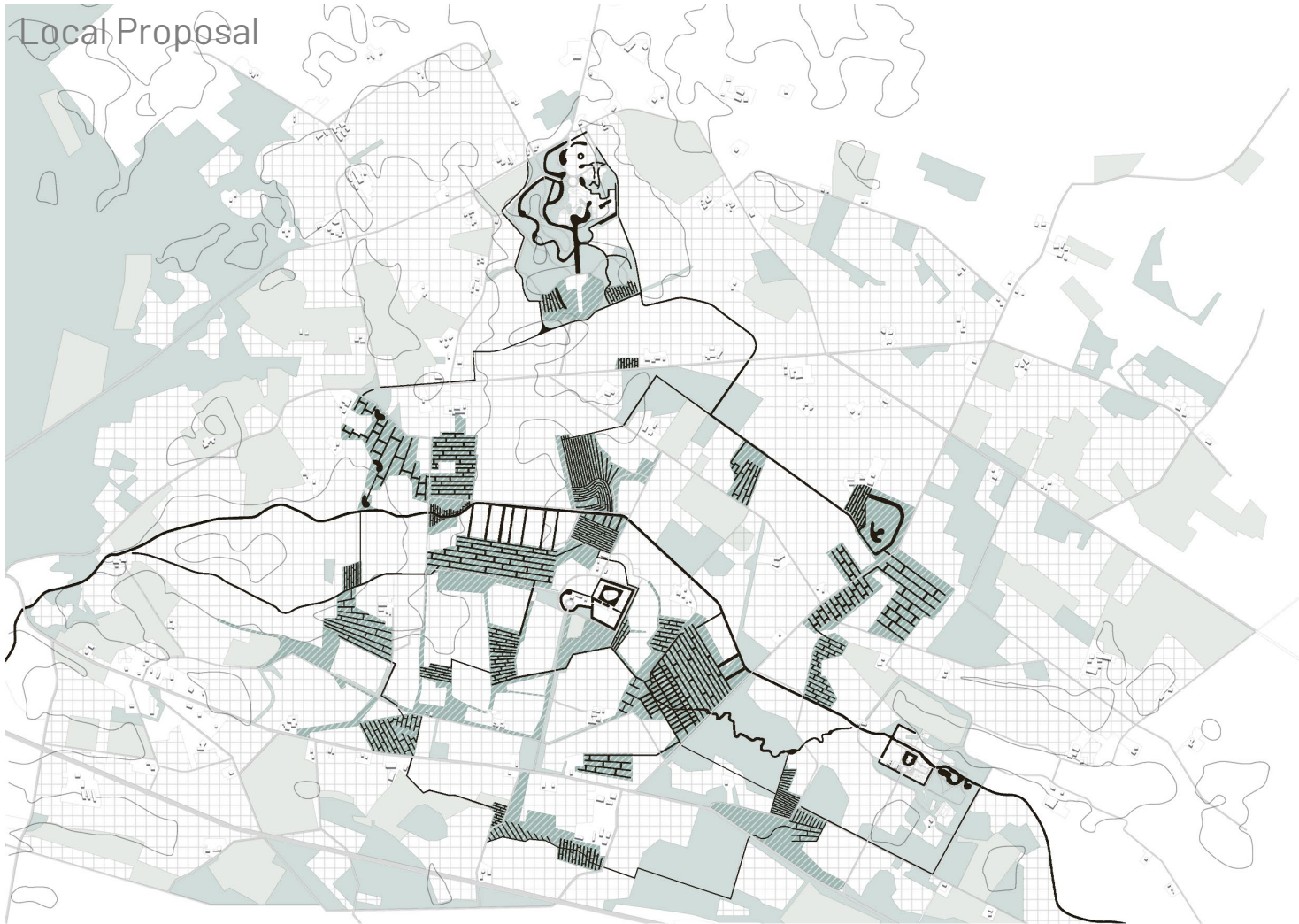
# NORMAL

# FLOODING

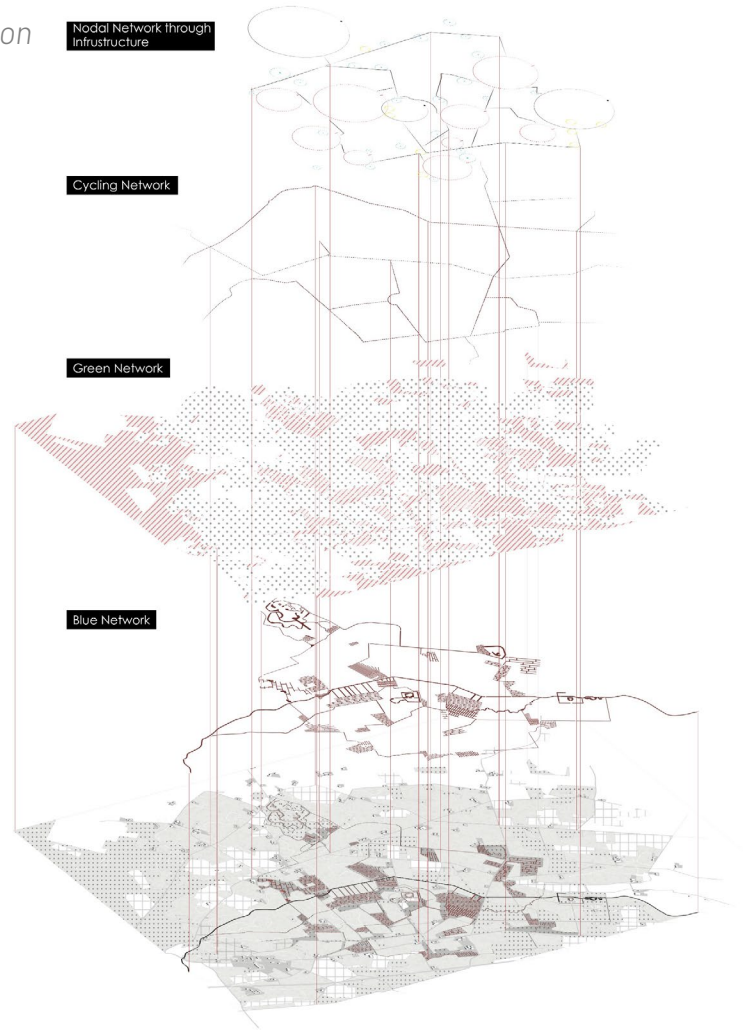
# DROUGHT



# Local Proposal



# Predicted Situation



# NORMAL

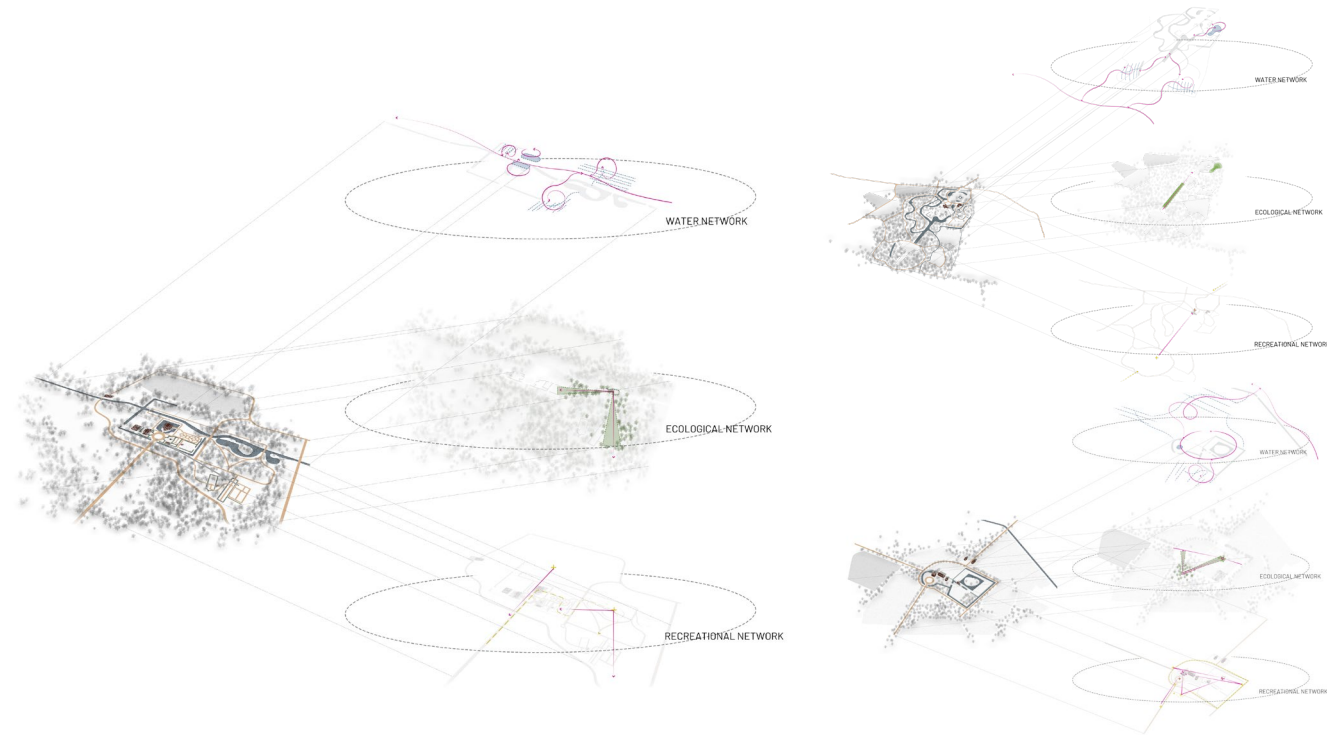
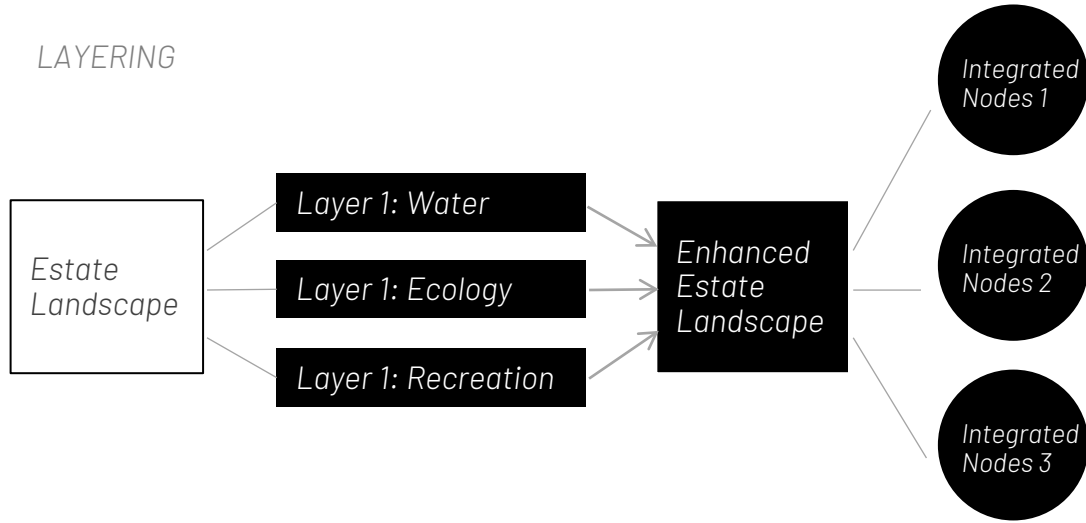
# FLOODING

# DROUGHT

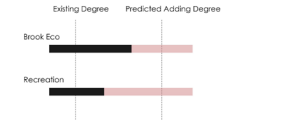
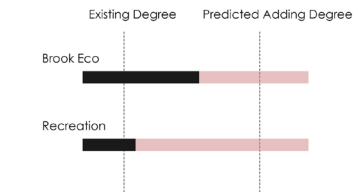
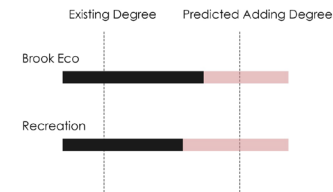
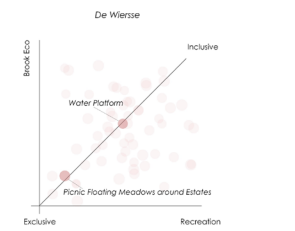
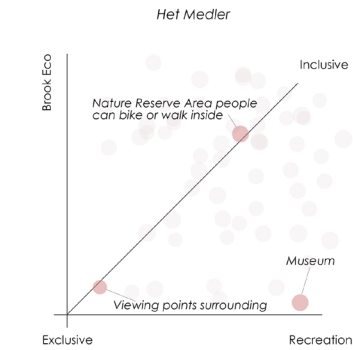
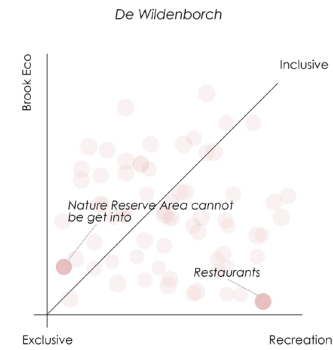
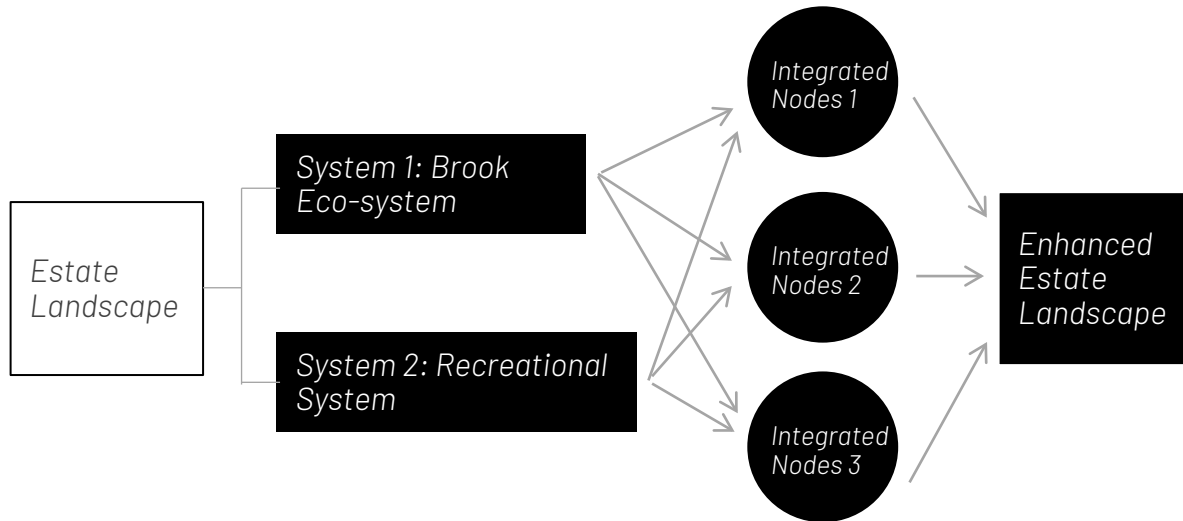


# Layering/Decomposing & Integration

## LAYERING



## SYSTEMIC DECOMPOSING



*Story of De Wiersse...*



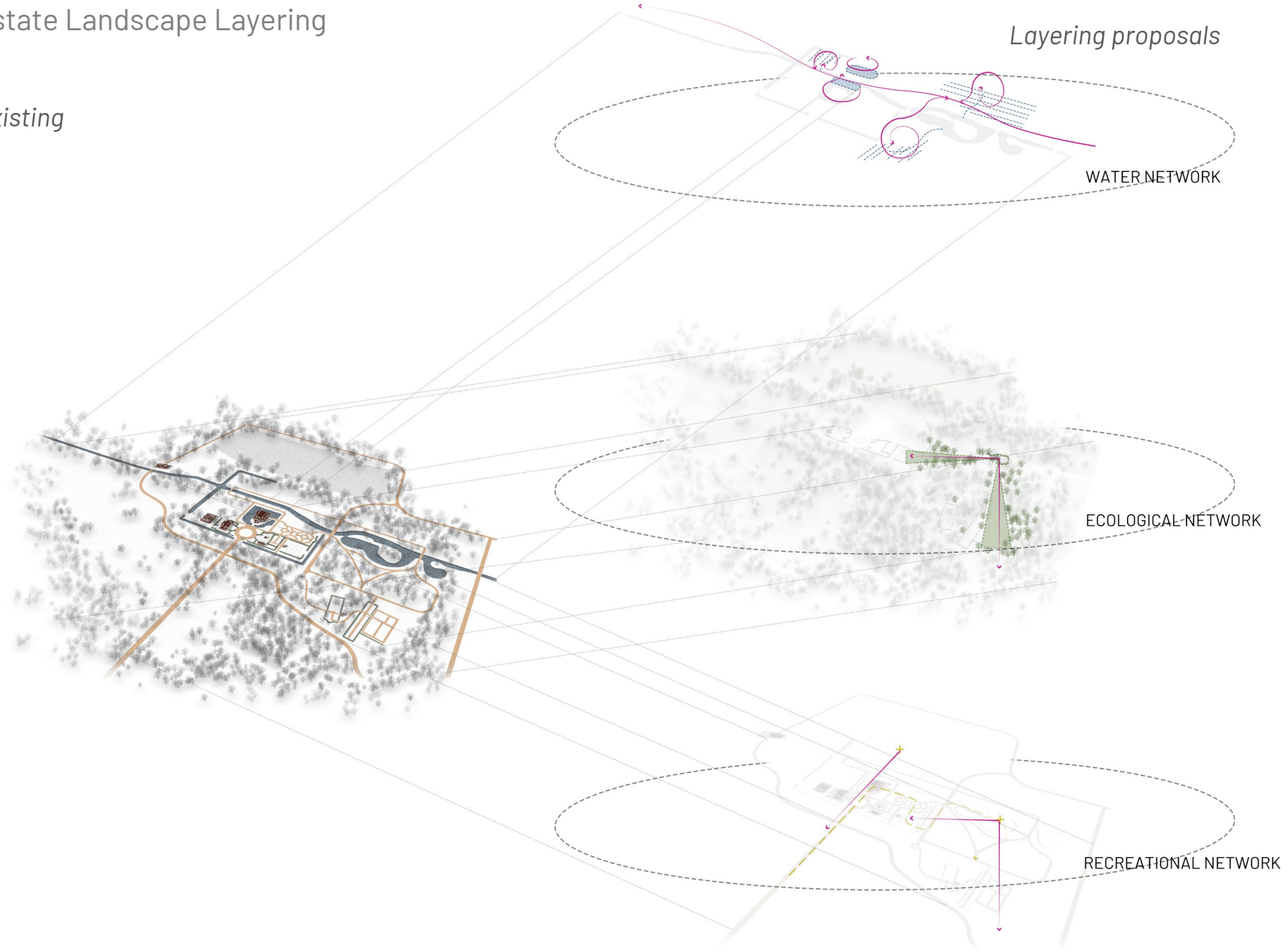
*Historic Entrance Area*



*Entrance Area Nowadays*

# Estate Landscape Layering

Existing



Layering proposals

Goals on layers

Watering all year round:

- More Water Diversion & Habitats

Diverse Landscape Experience:

- More Habitats and biodiversity
- Visual Experience

Emphasize the Genius Loci orderly:

- Recall historical memory

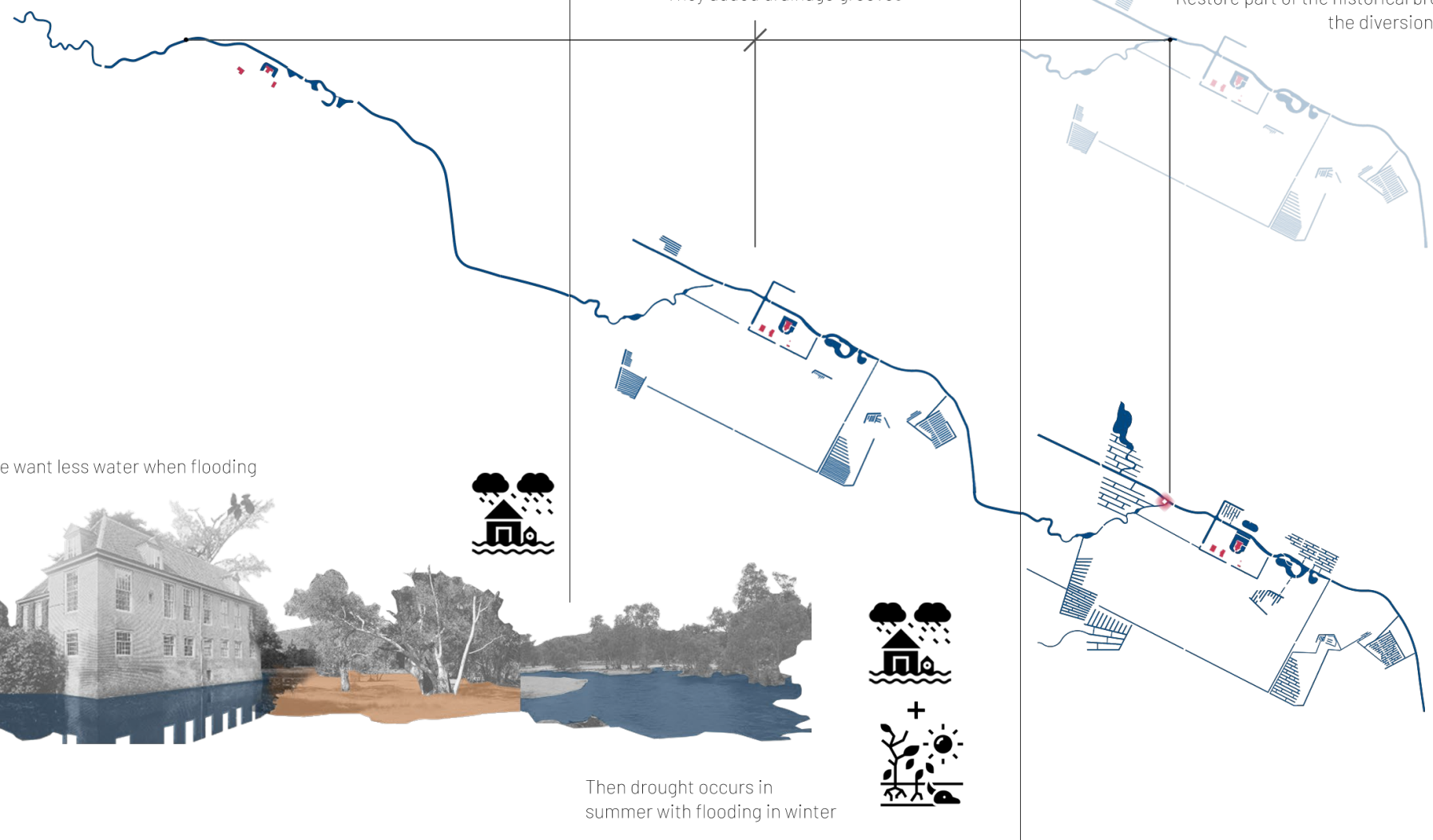
# WATER NETWORK\_ Water Heritage

Watering All Year Round

Layers Around 1900

Existing Layers

Future Layers



They added drainage grooves

Restore part of the historical brook, increase the diversion and habitats

People want less water when flooding

Then drought occurs in summer with flooding in winter

Lowland

Closer to the Brook

Lower Land

Further from the Brook

- Ditches of Groove Forests
- Ditch Width of Groove Forests

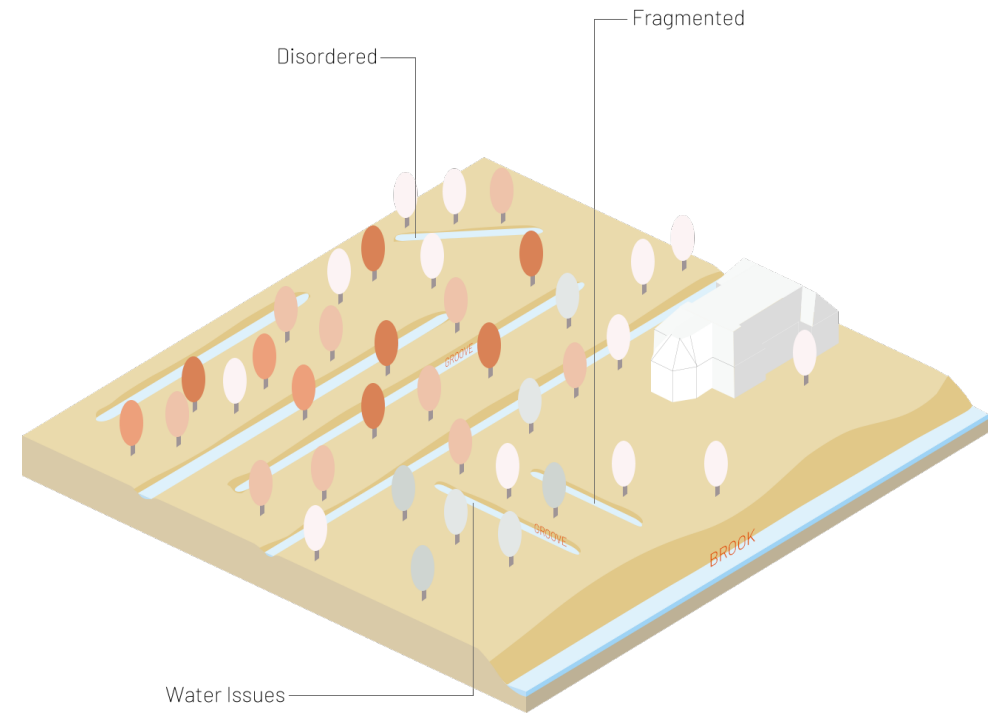
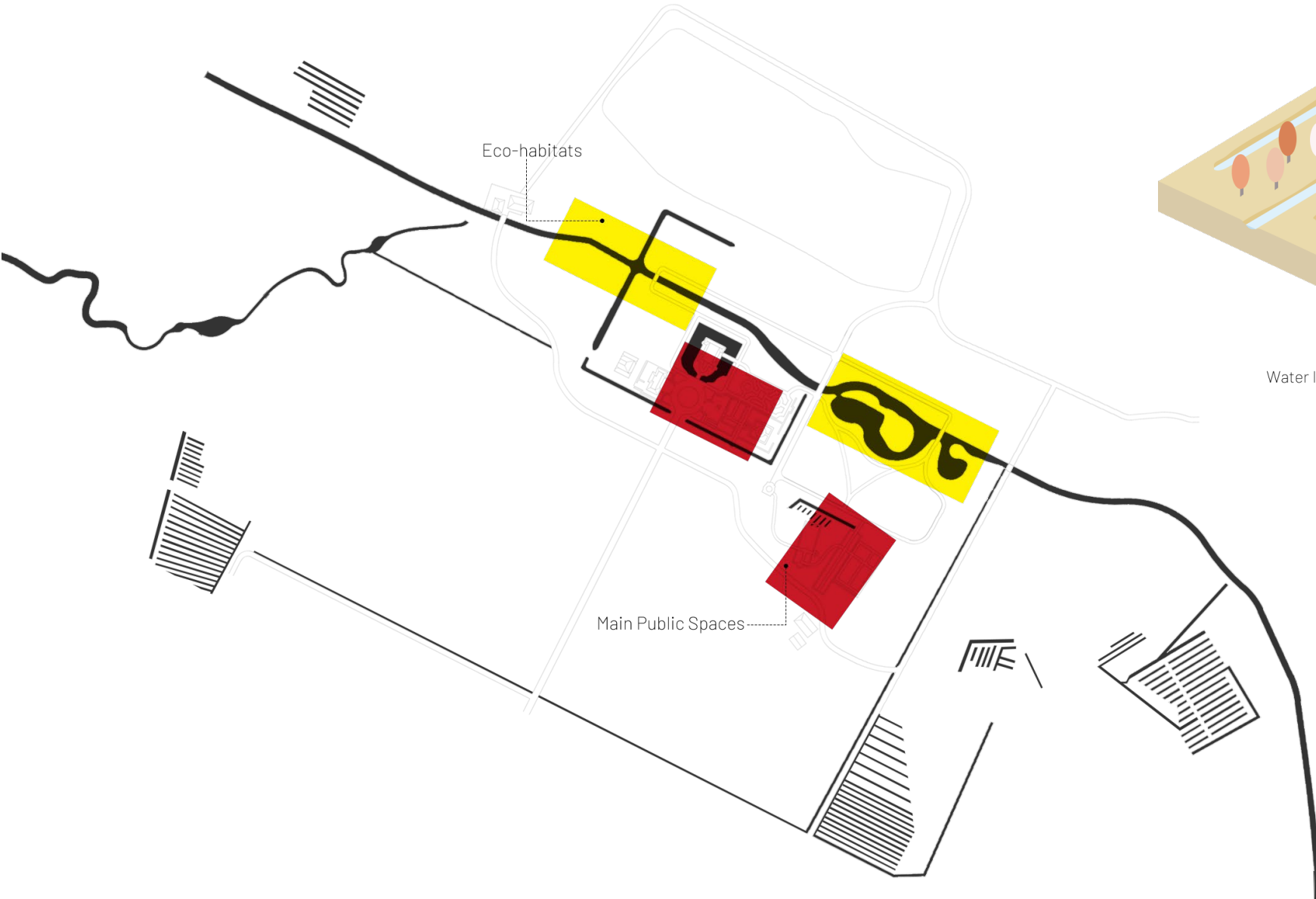




# WATER NETWORK\_ Systemic Links

*Watering All Year Round*

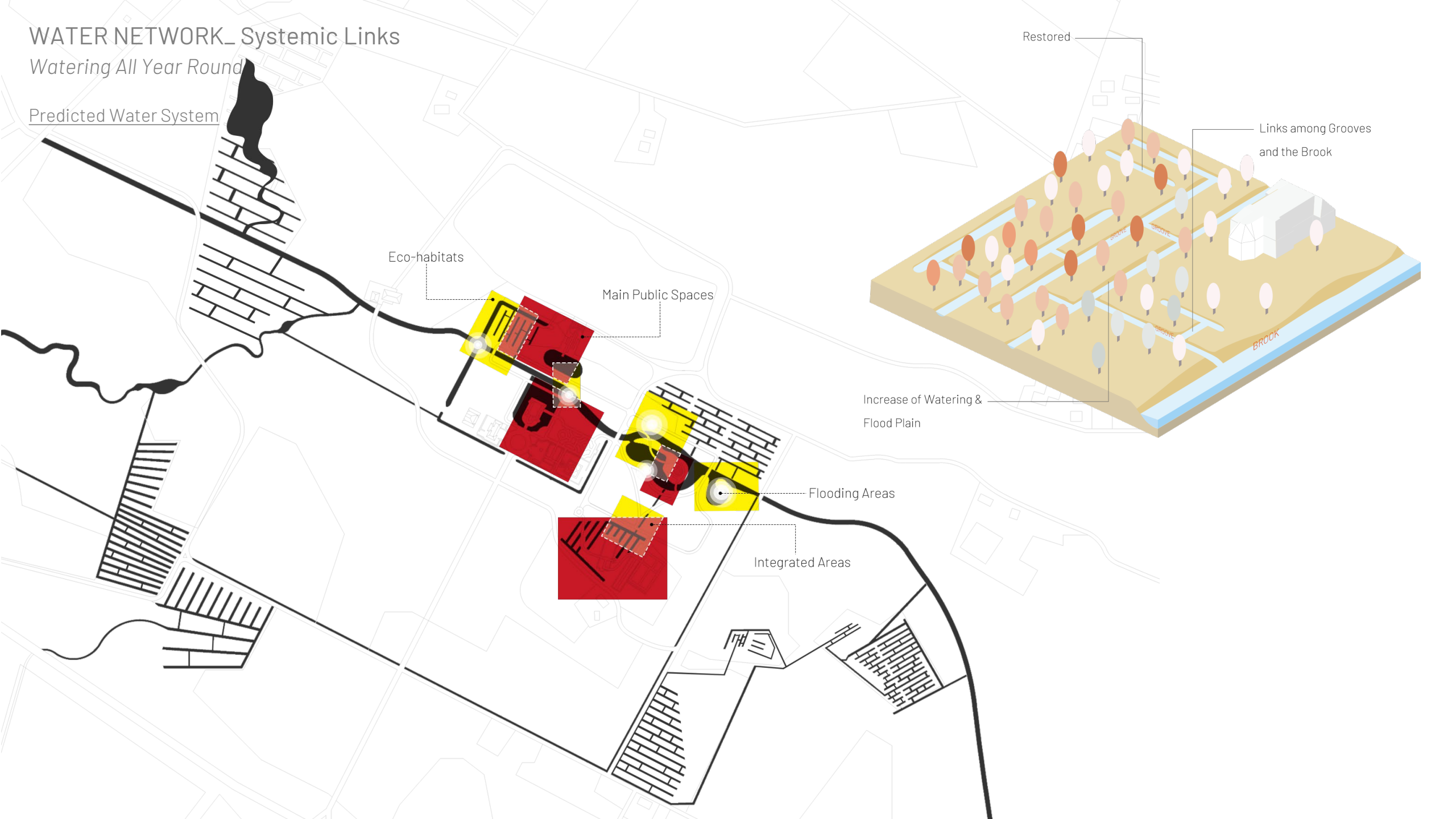
Existing Water System



# WATER NETWORK\_ Systemic Links

*Watering All Year Round*

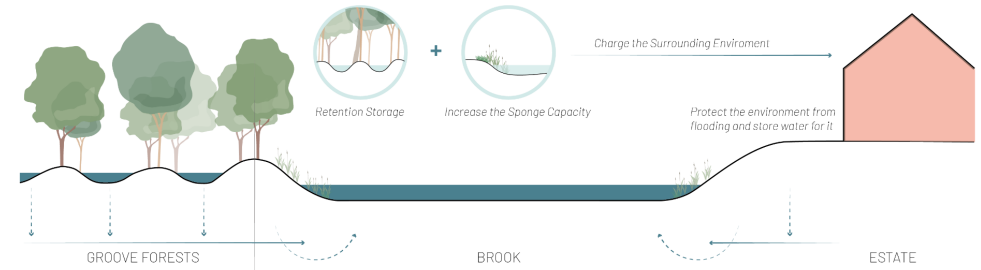
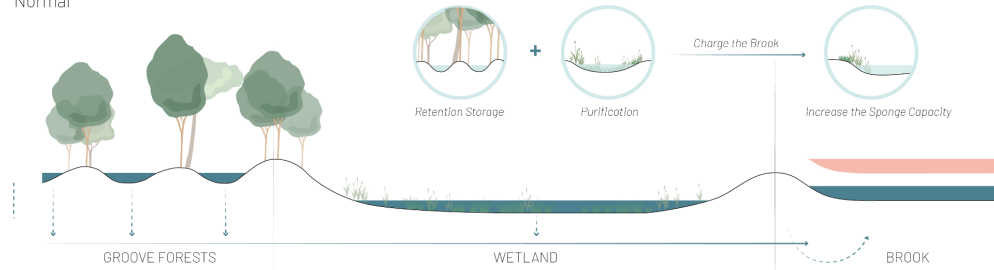
Predicted Water System



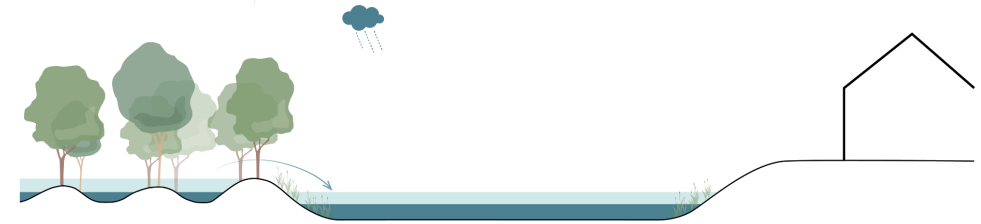
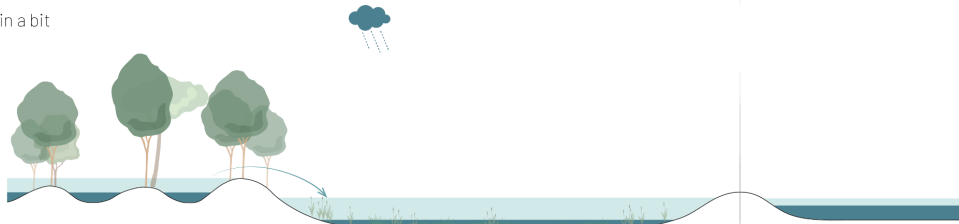
# Watering All Year Round

## Resilient 'Battery' System

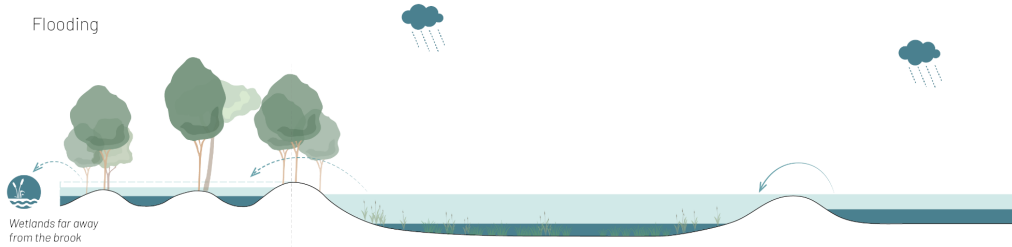
Normal



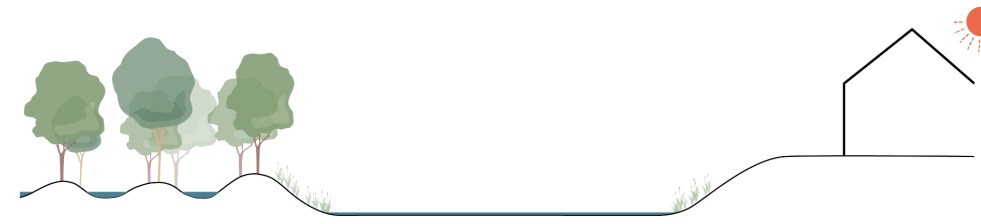
Rain a bit



Flooding

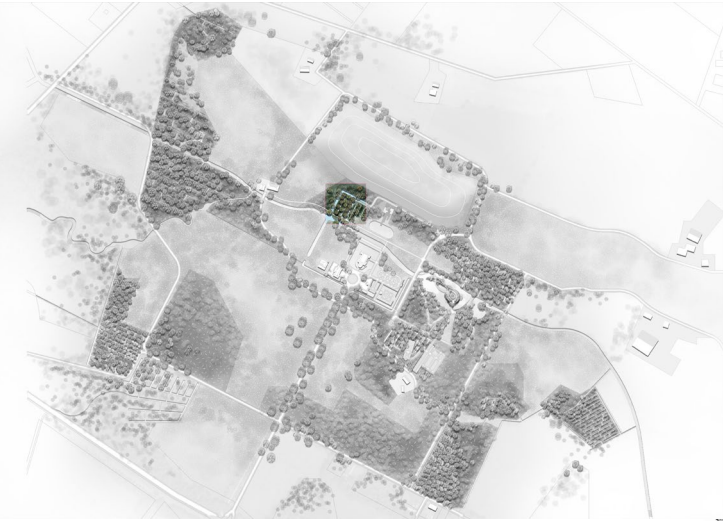


Drought



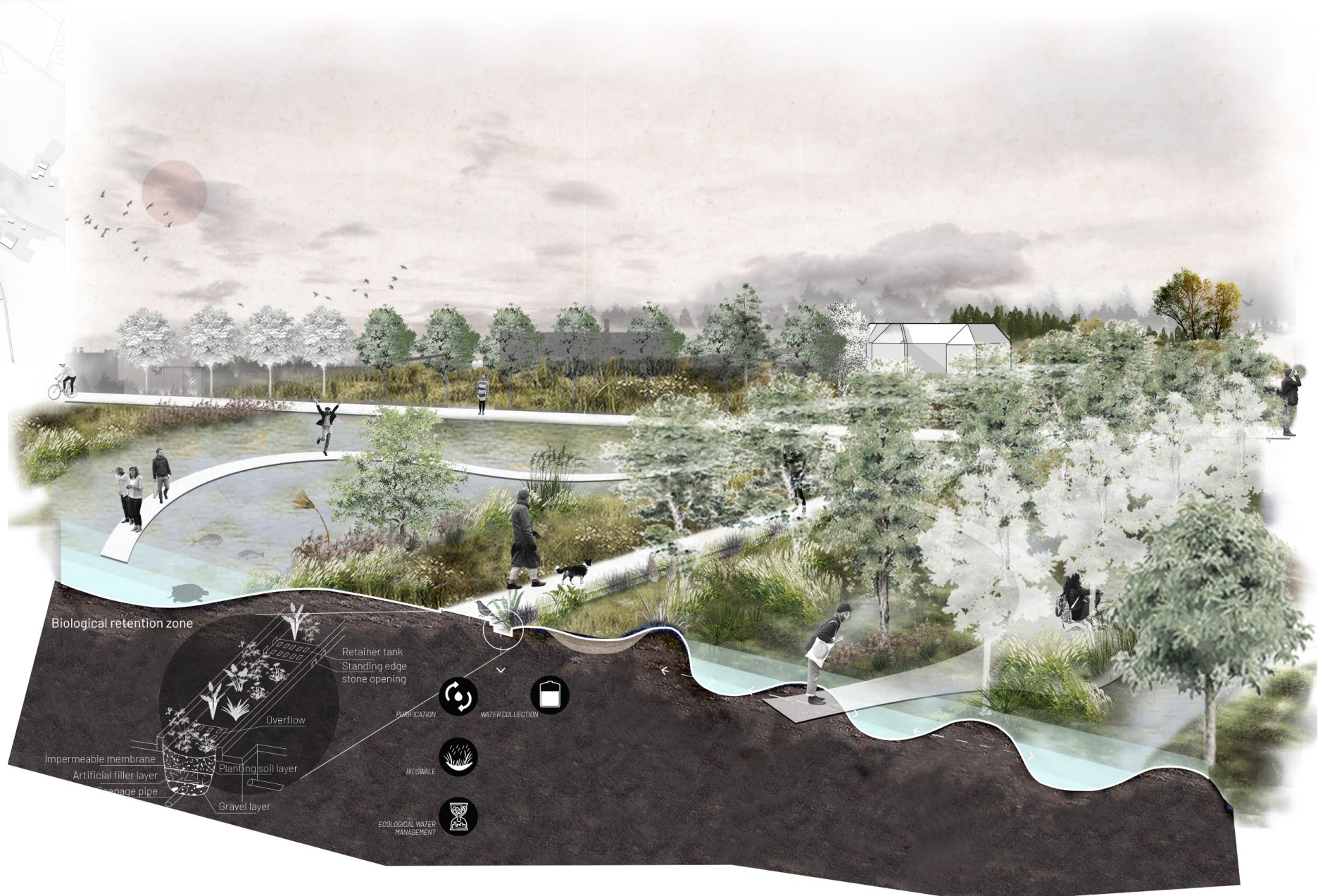
# Battery 1

Create more Gradience nearby the Brook



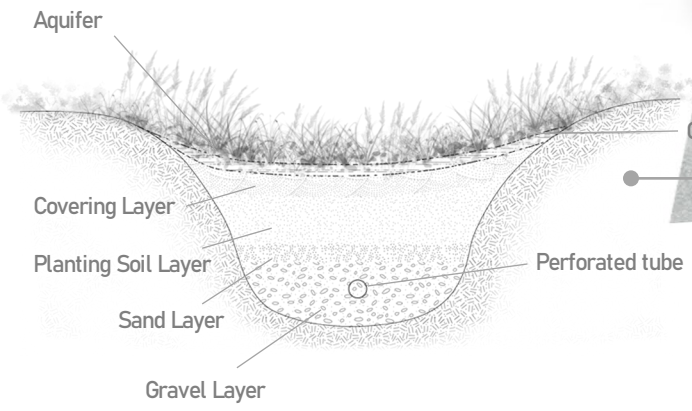
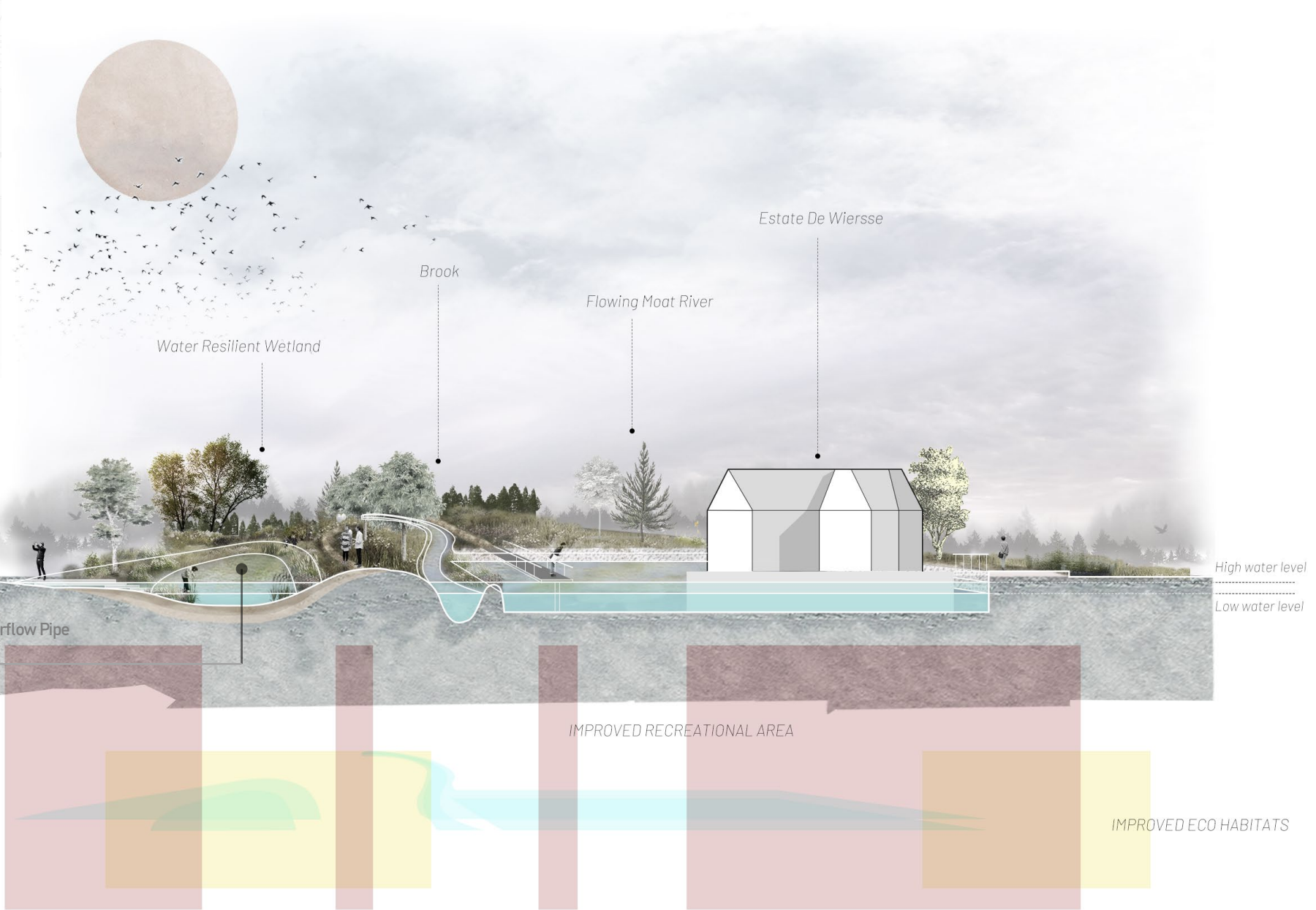
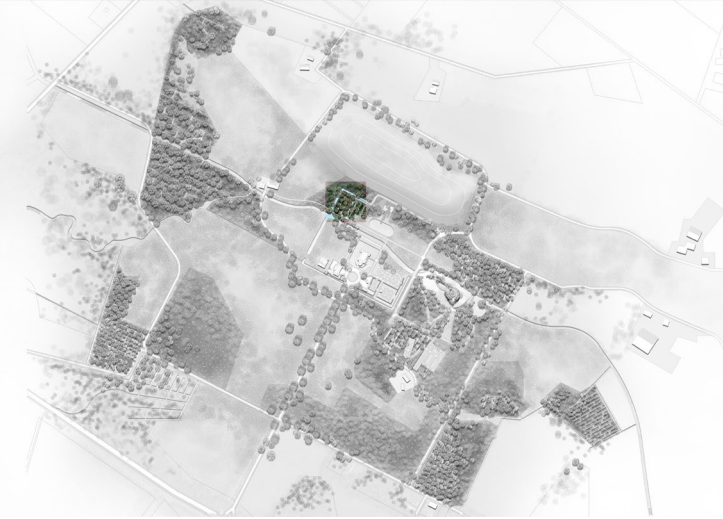
# Battery 1

Create more Gradiance nearby the Brook



# Battery 2

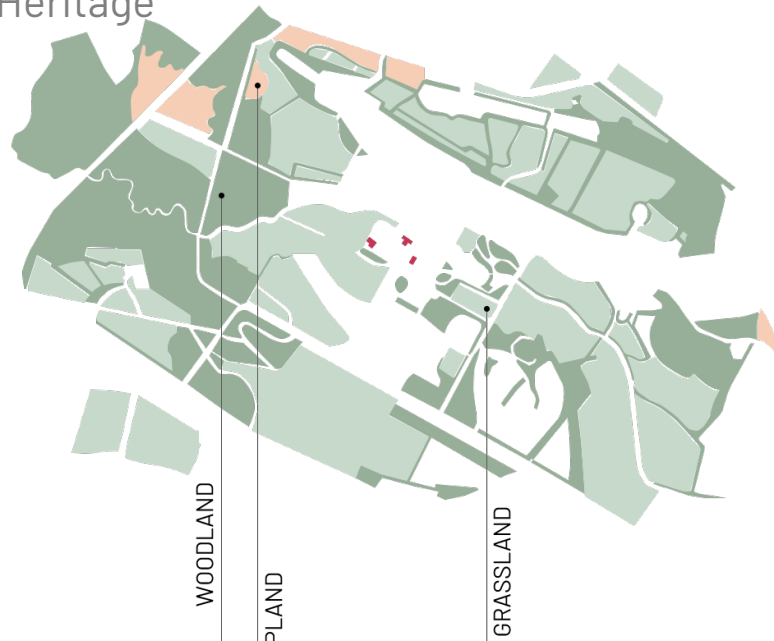
## Existing Lowland to Flexible Retention



# ECOLOGICAL NETWORK\_ Eco Heritage

Diverse Landscape Experience

Layers Around 1900



WOODLAND

SWAMPLAND

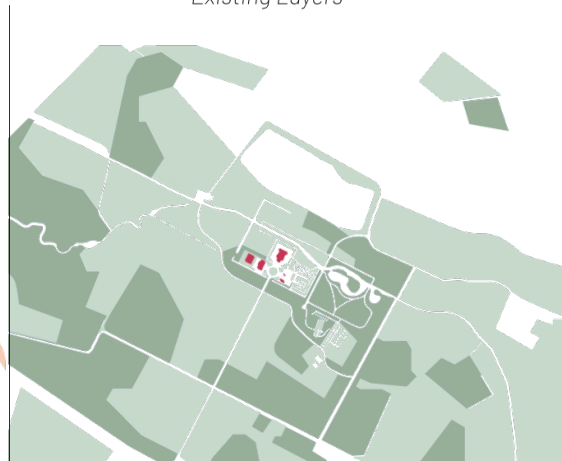
GRASSLAND

Restore the historical swampland to floating meadows and floating forests

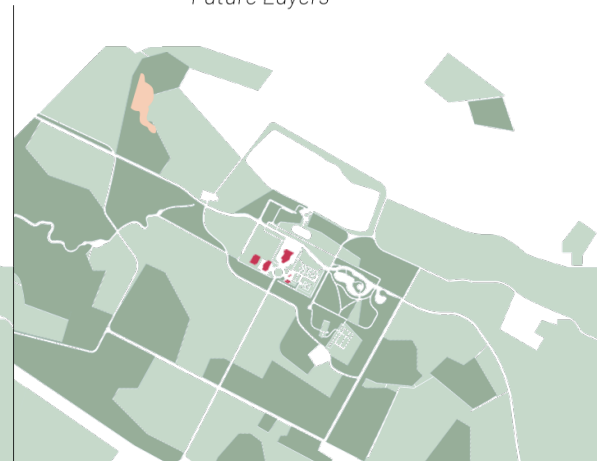
People changed many greenlands to farmlands for more economic benefit



Existing Layers



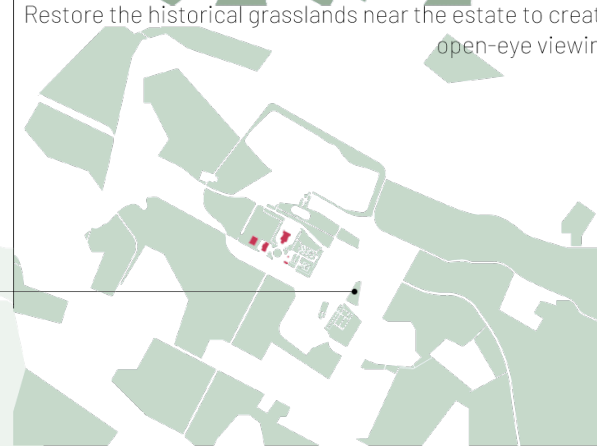
Future Layers



Restore the historical woodlands near brook to grove forests connecting the estate and the brook



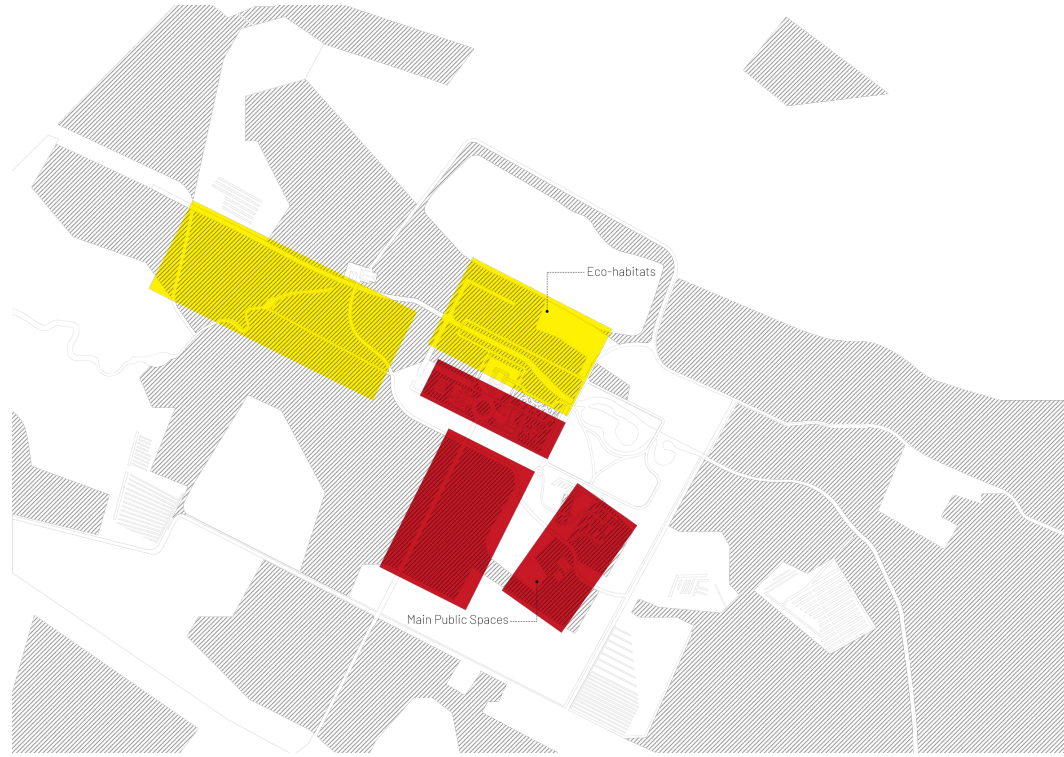
Restore the historical grasslands near the estate to create open-eye viewing



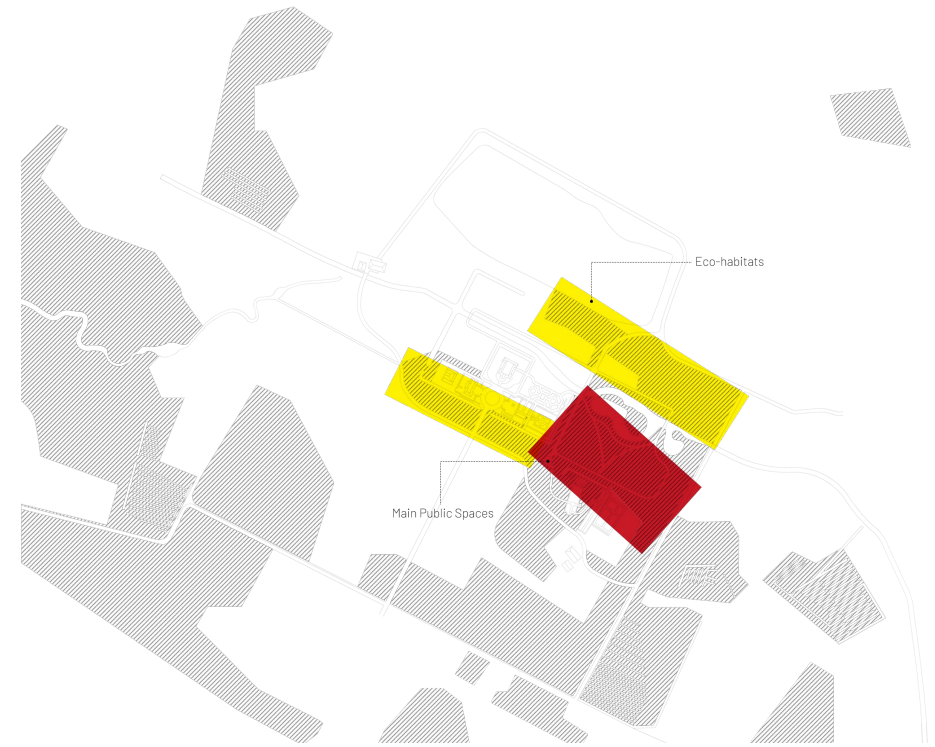
# ECOLOGICAL NETWORK \_ Systemic Links

*Diverse Landscape Experience*

Existing Grassland System



Existing Woodland System





# ECOLOGICAL NETWORK \_ Systemic Links

*Diverse Landscape Experience*

Predicted Grassland System

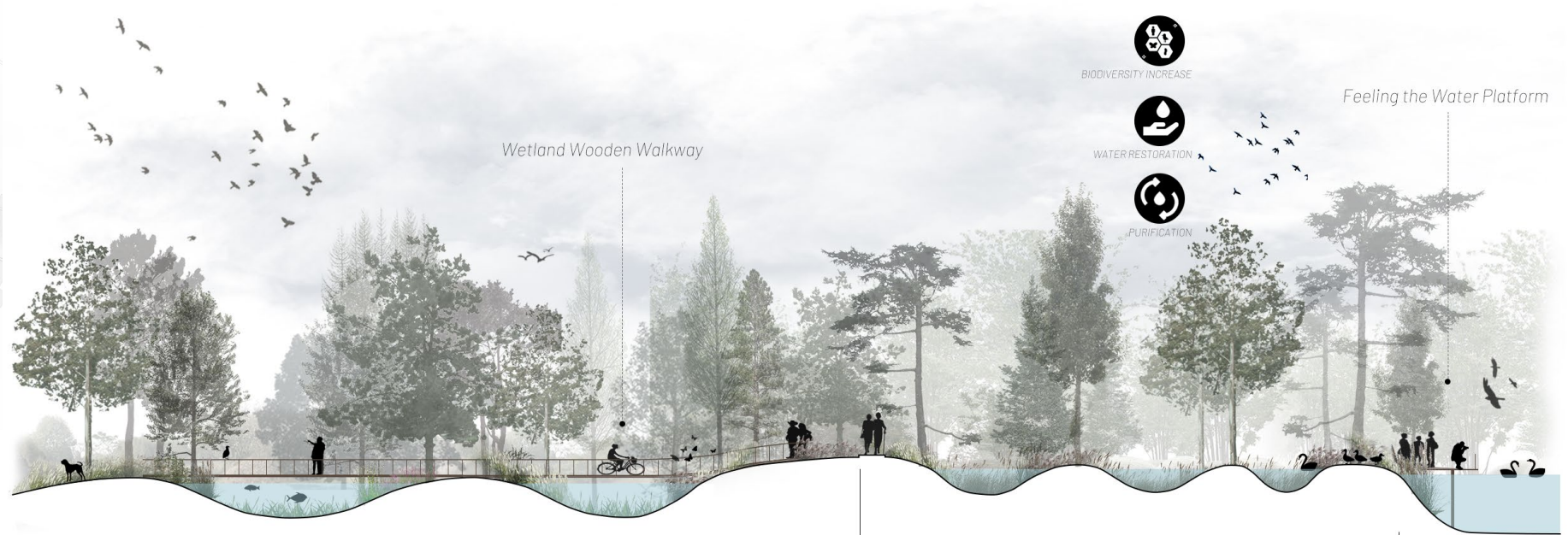
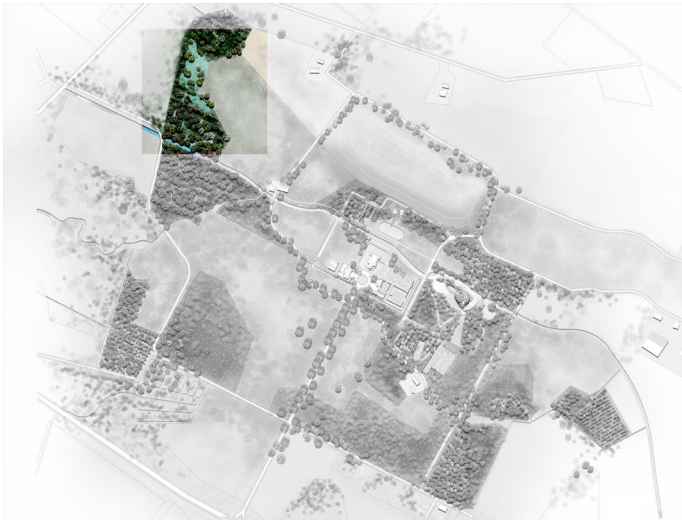


Predicted Woodland System



# Diverse Landscape Experience

## Historical Swampland to Floating Woodland



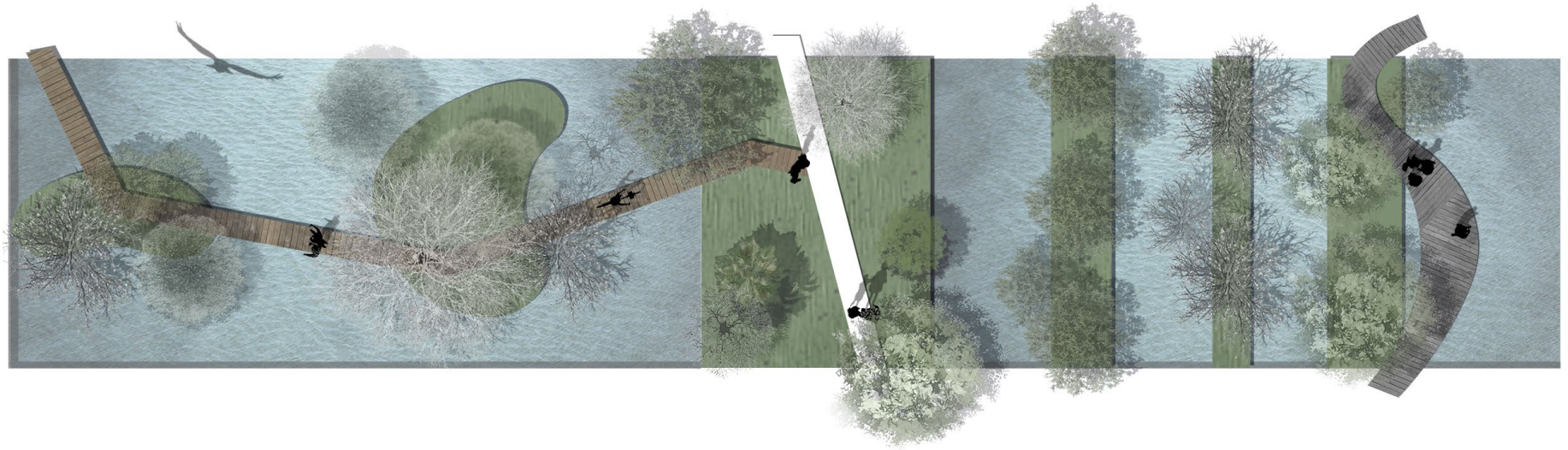
-  BIODIVERSITY INCREASE
-  WATER RESTORATION
-  PURIFICATION

Feeling the Water Platform

Floating Forests

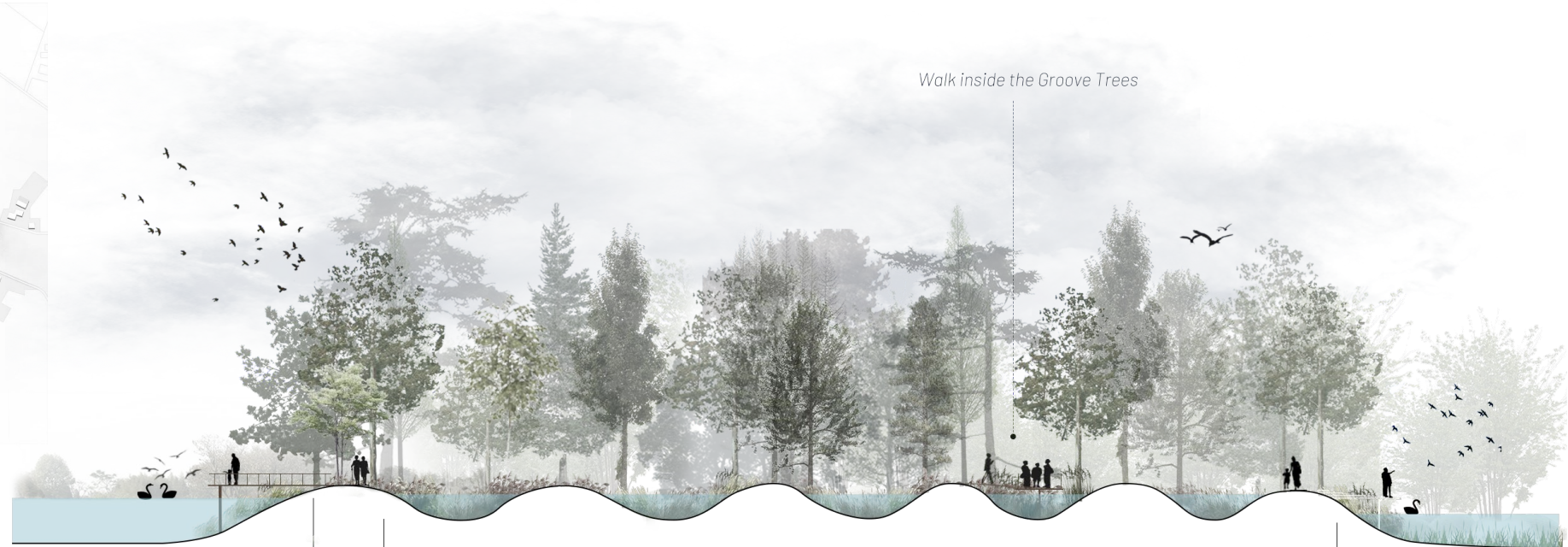
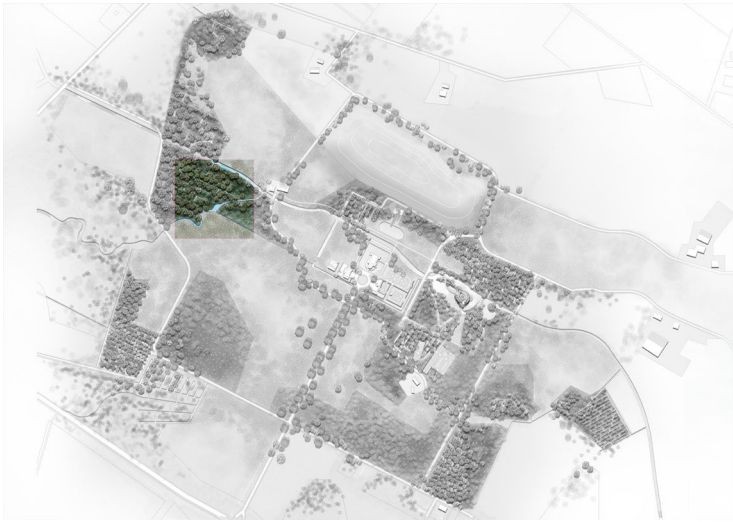
Restored Groove Forests

Brook



# Diverse Landscape Experience

*Restored Groove Forests nearby the brook*



Walk inside the Groove Trees



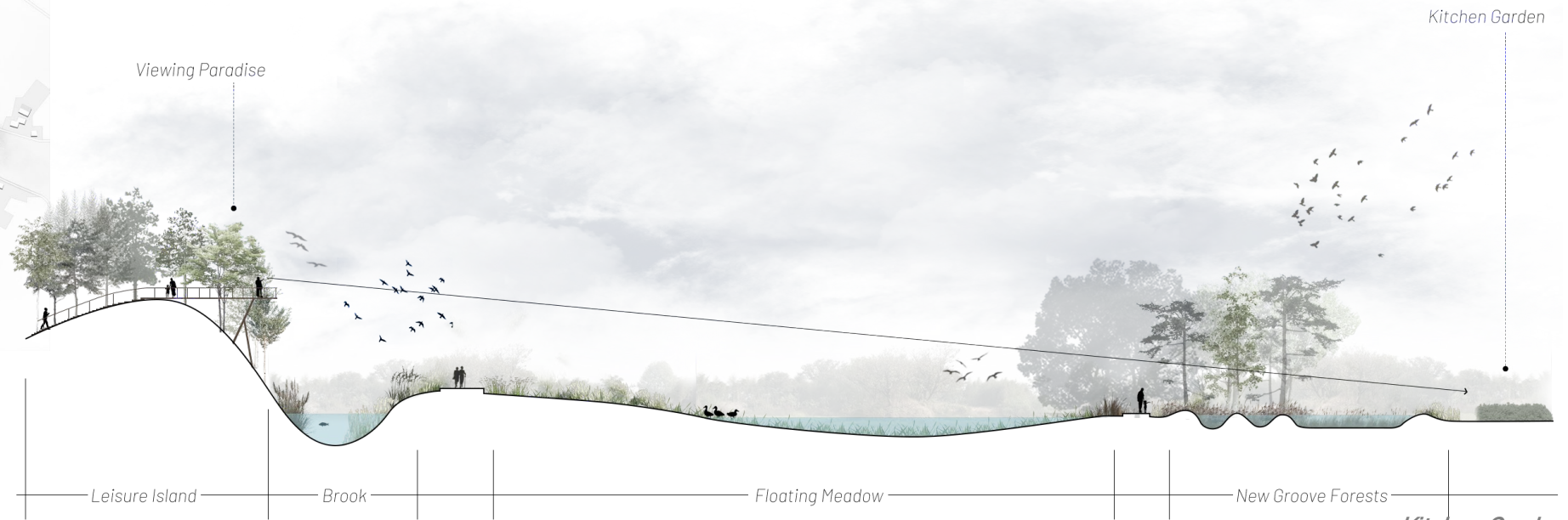
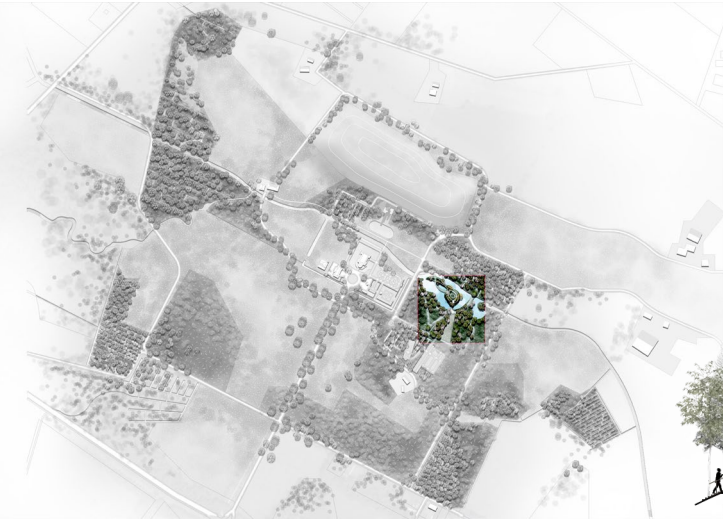
Brook

Restored Historic Groove Forests

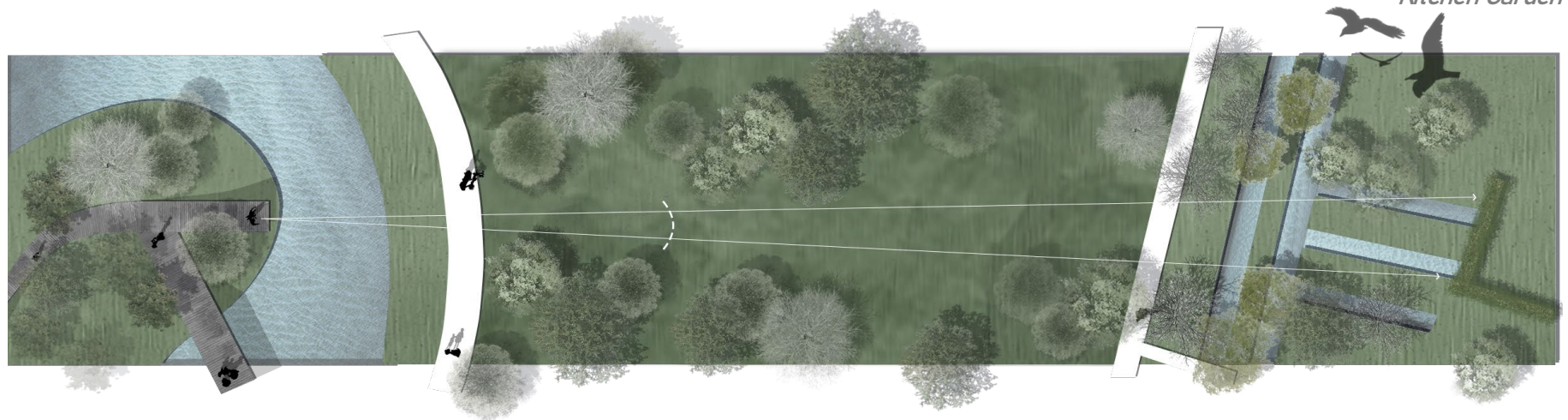
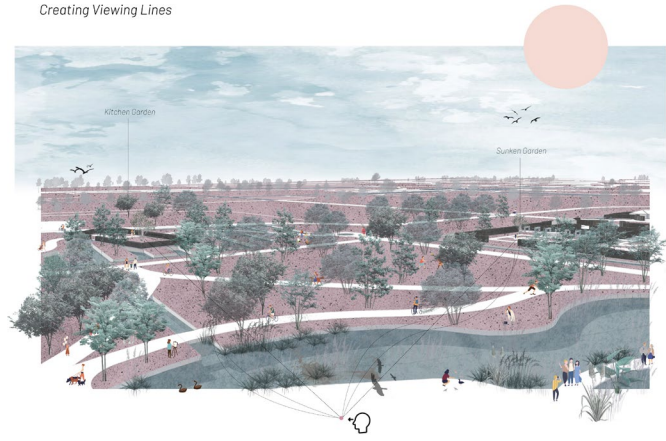
Diversion of Brook

# Diverse Landscape Experience

## Viewing Experience



### UPPER GREENING INTERVENTION Creating Viewing Lines



*Sunken Garden*

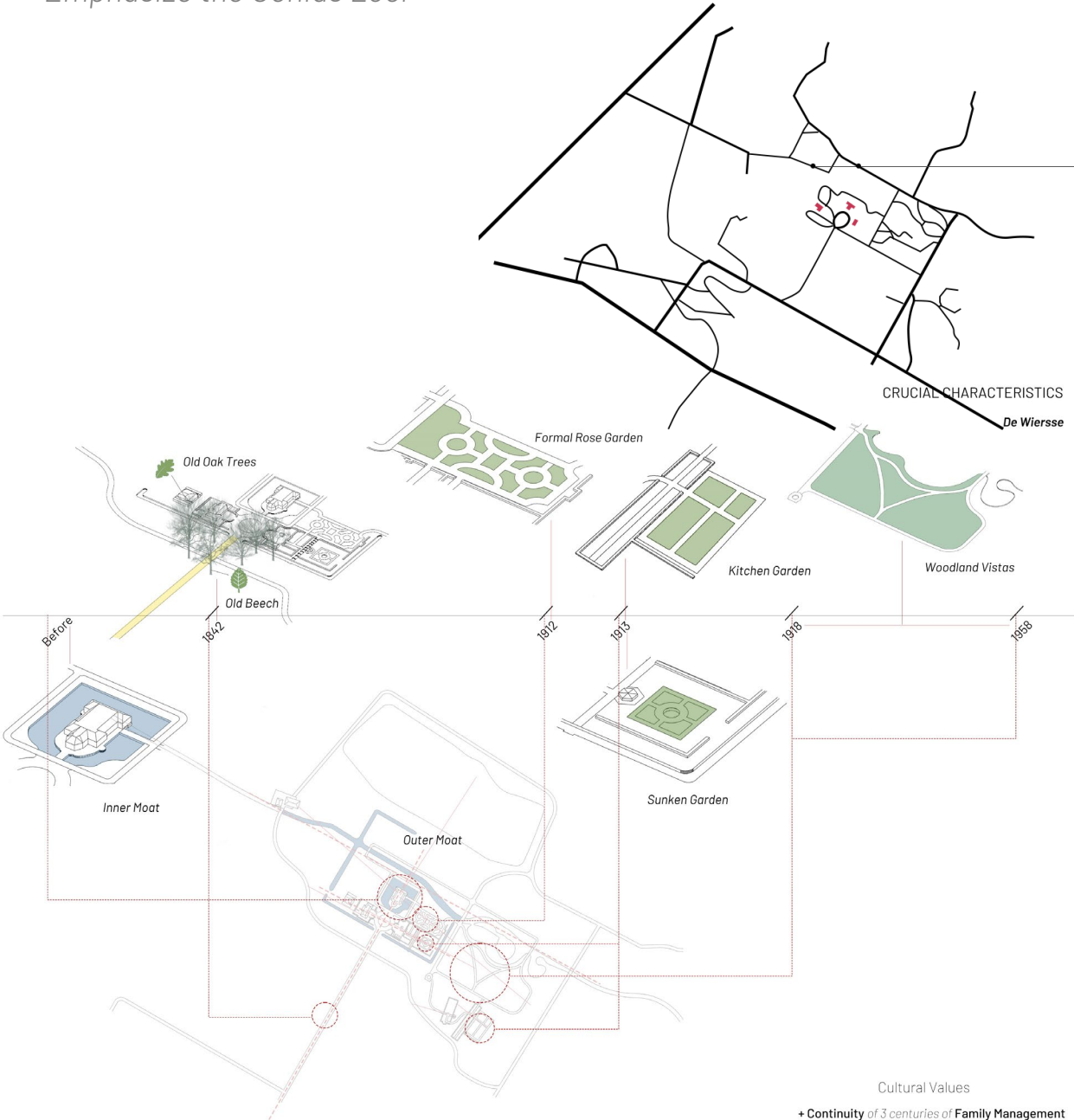
# RECREATIONAL NETWORK\_ Recreational Heritage

Emphasize the Genius Loci

Layers Around 1900

Existing Layers

Future Layers



Some historical roads could be restored to strengthen the genius loci.

# RECREATIONAL NETWORK\_ Systemic Links

*Emphasize the Genius Loci*

Existing Recreational System



# RECREATIONAL NETWORK\_ Systemic Links

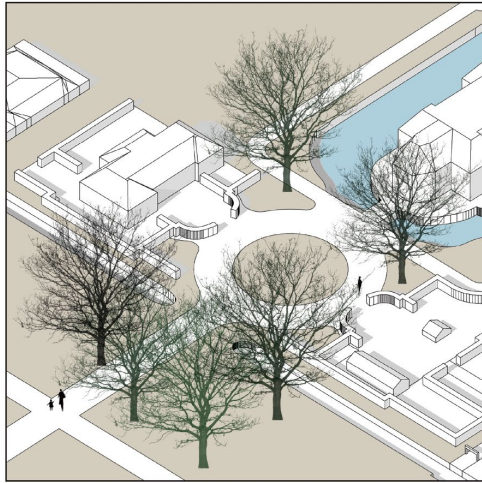
*Emphasize the Genius Loci*

Predicted Recreational System

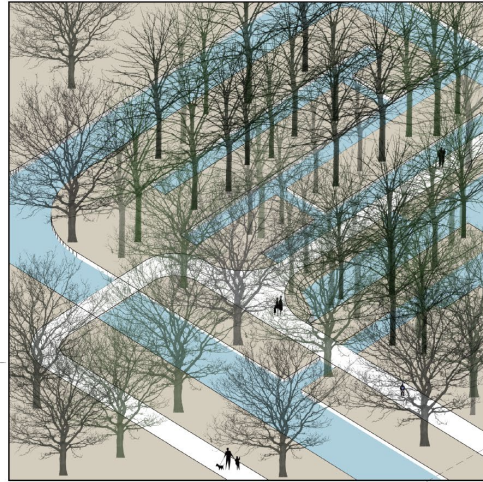


# Emphasize the Genius Loci

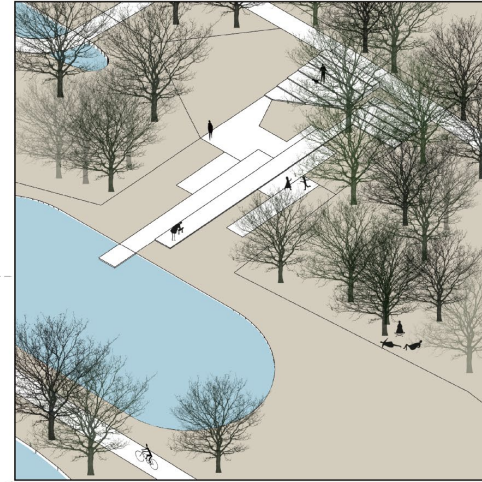
Follow the Building-up Sequence to tell the History



ENTANCE ZONE

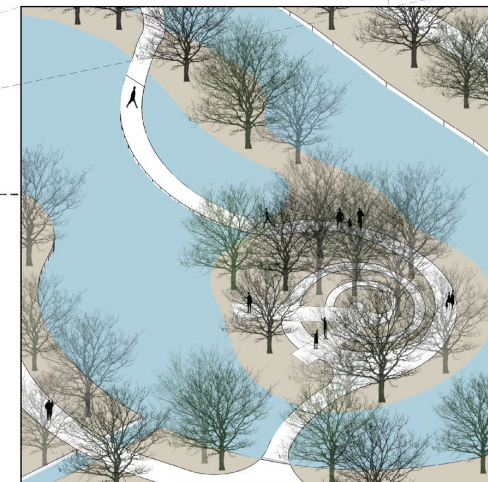
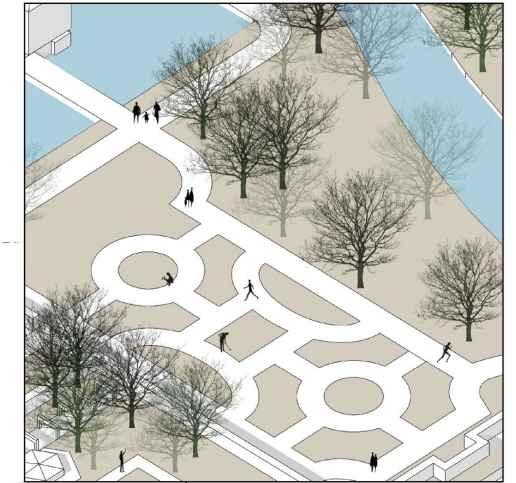


GROOVE WOODLAND PARK



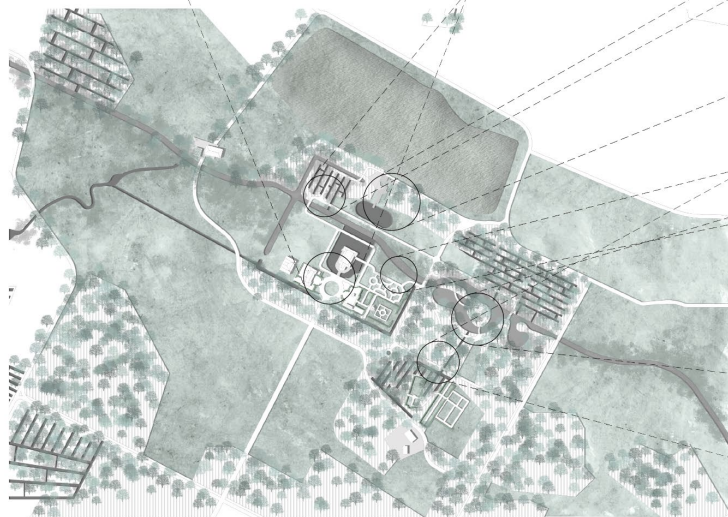
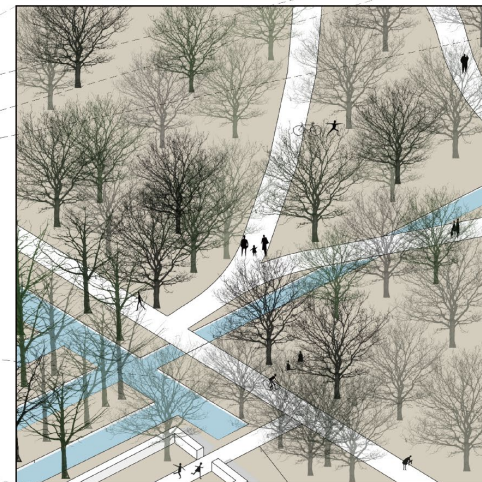
MARSHLAND LEISURE ZONE

FORMAL ROSE GARDEN



VIEWING ISLAND

WOODLAND VISTA

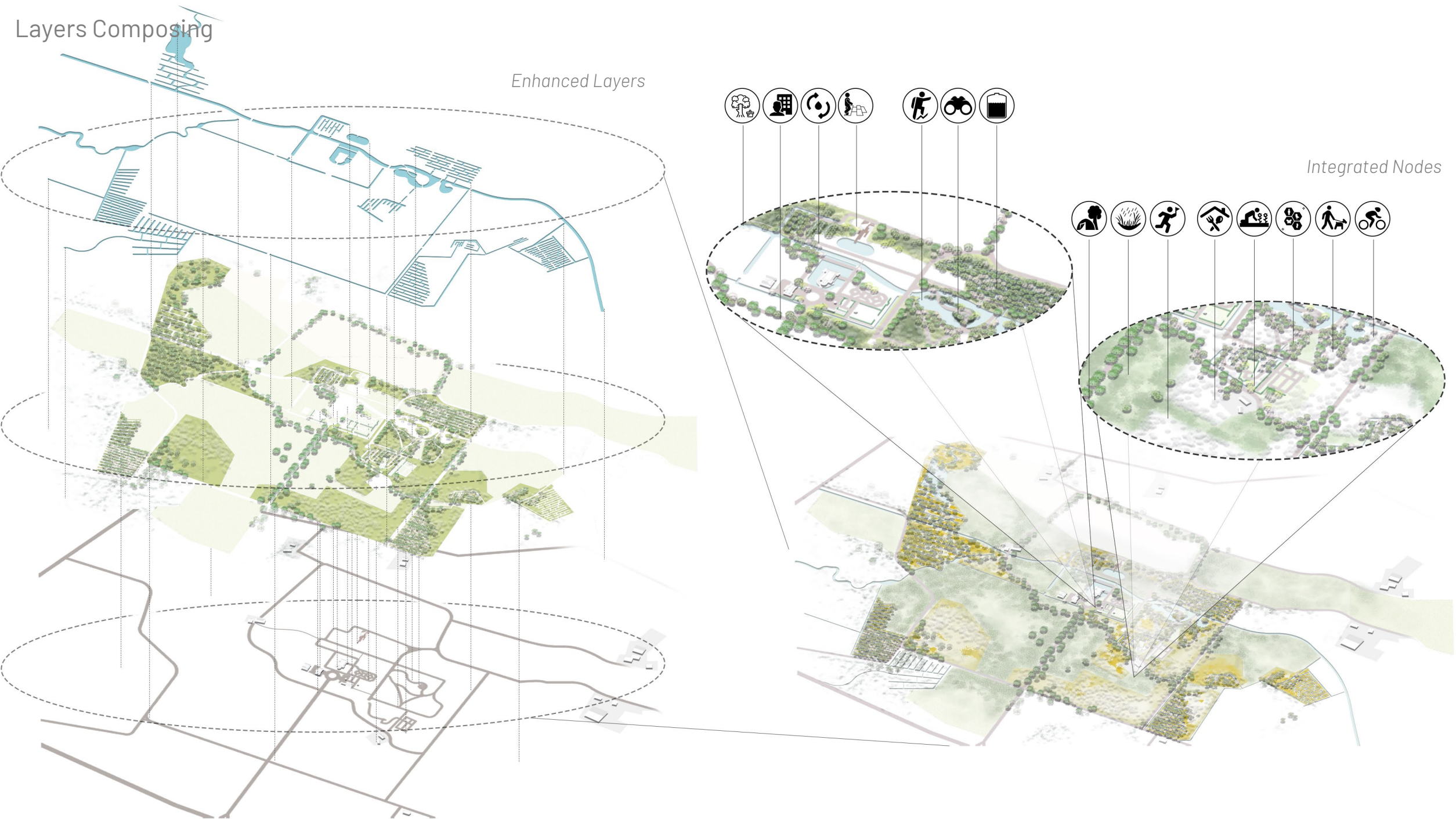




# Layers Composing

## Enhanced Layers

## Integrated Nodes



# Estate Landscape Development

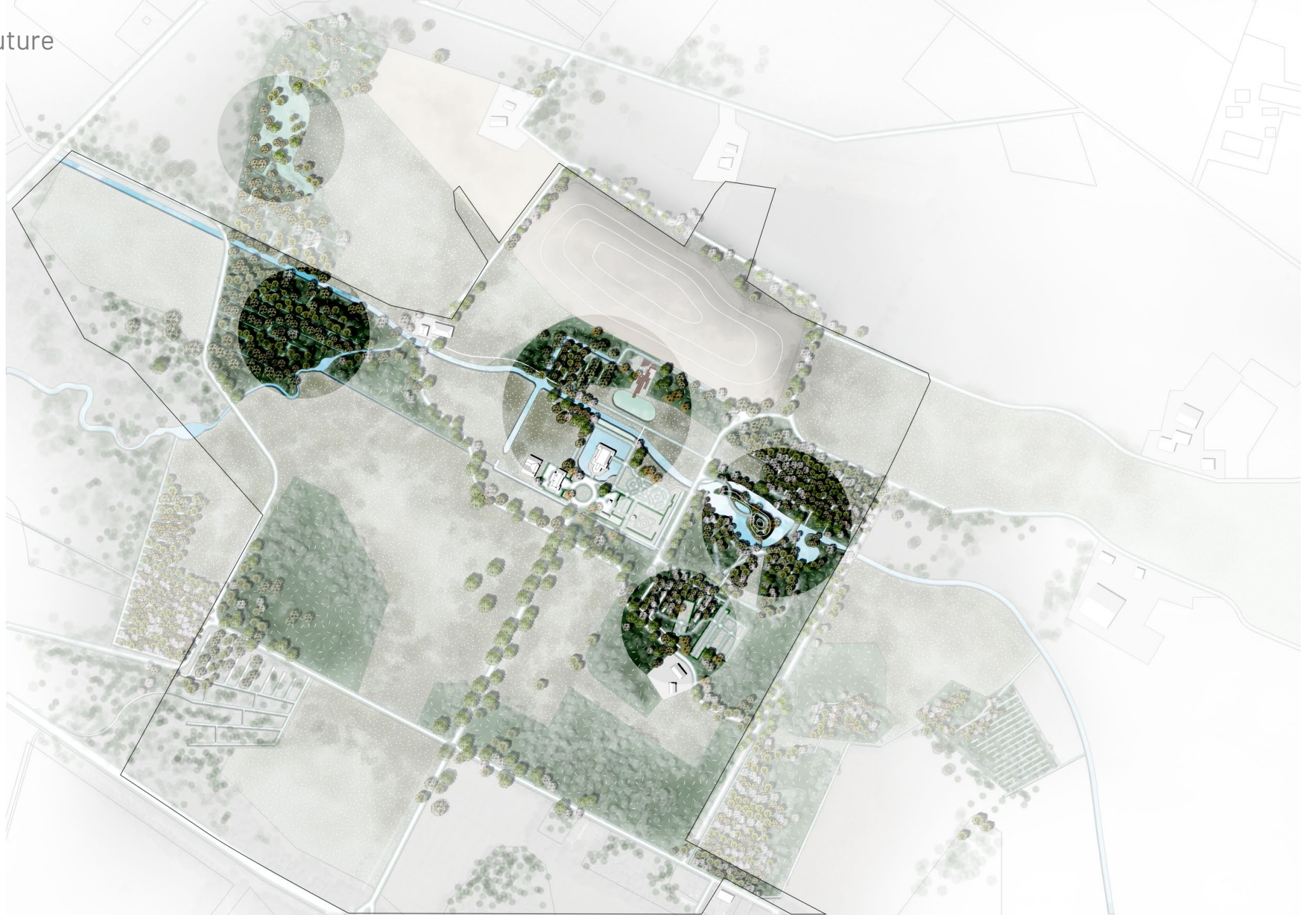
Original Situation



Predicted Situation



De Wiersse's Future



## Reflection of De Wiersse

- **Predicted Benefits:** *1. Relatively comprehensive consideration in each layer  
2. Tight bonds of heritage and systemic links in each layer*
- **Deficiency:** *1. More details in each level, so the unity is insufficient  
2. Difficult to see the correlation and interaction among different layers*
- **To improve:** *Need more comprehensive thinking to build up strong relationships among different decompositions from the estate landscape*

Story of De Wildenborch



Historic Estate Zone

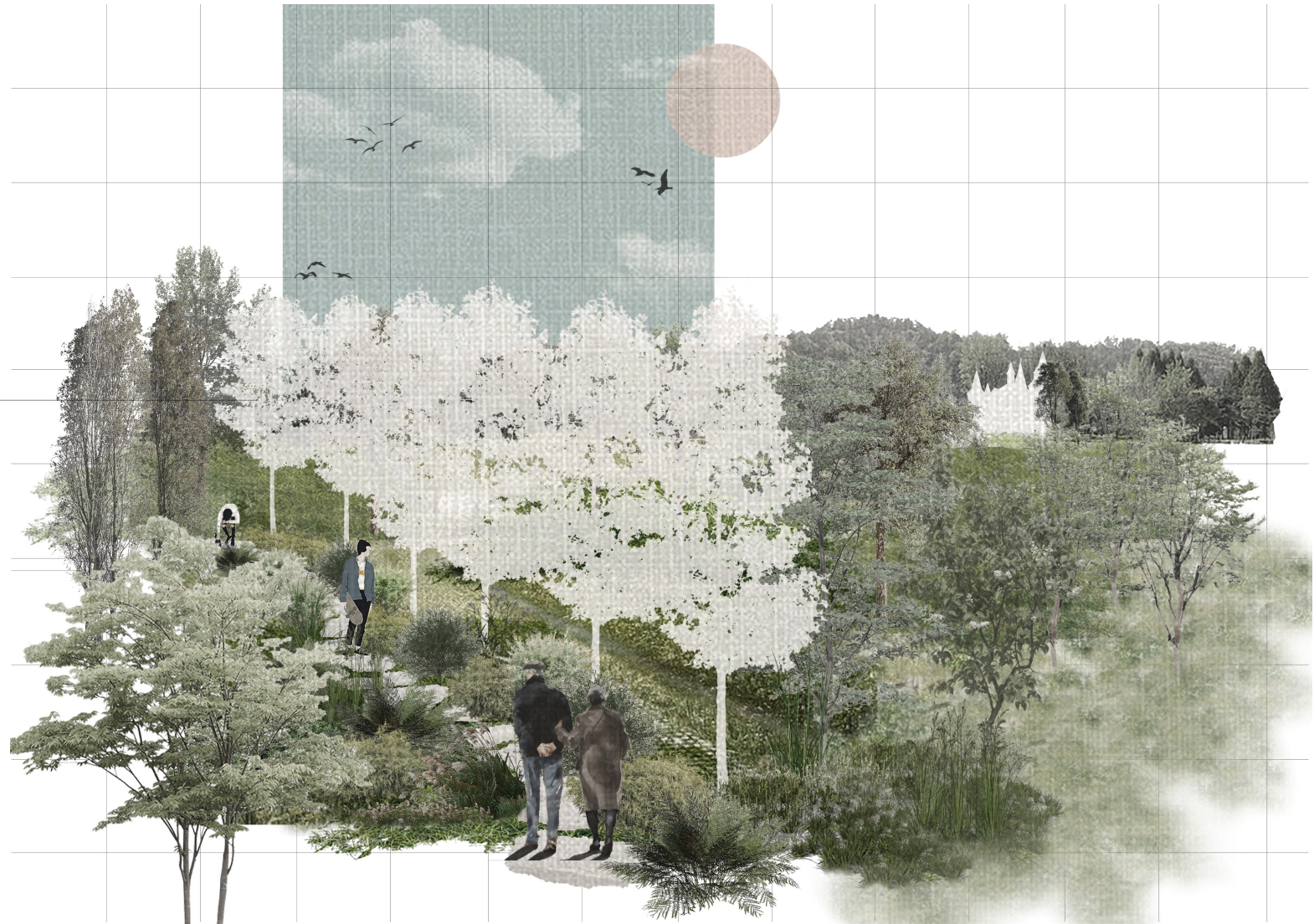
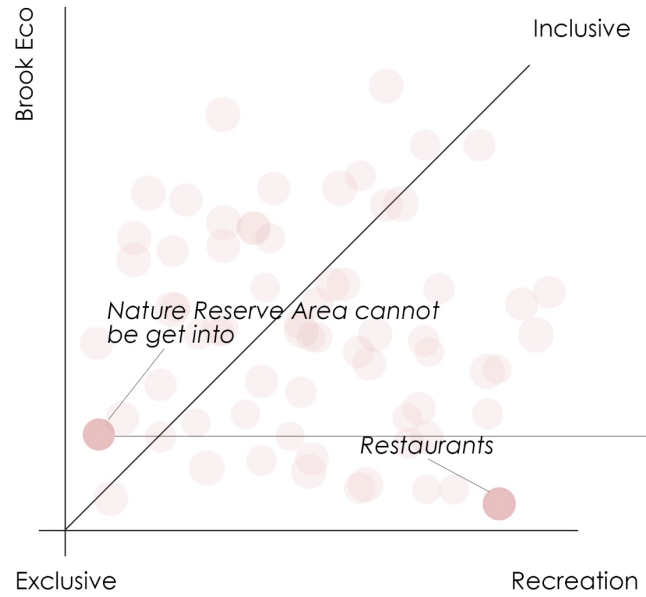


Estate Zone Nowadays

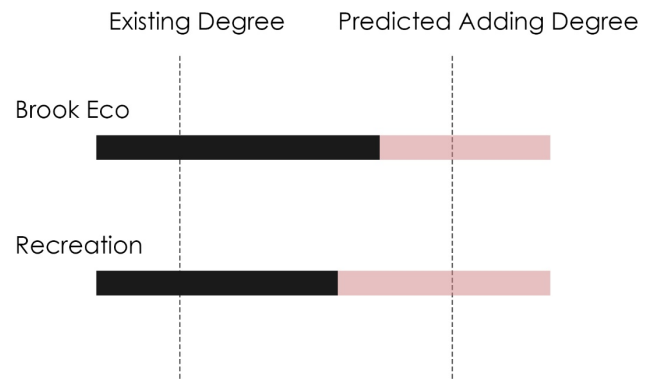
# Estate Landscape Systemically Decomposing

Systemically proposals

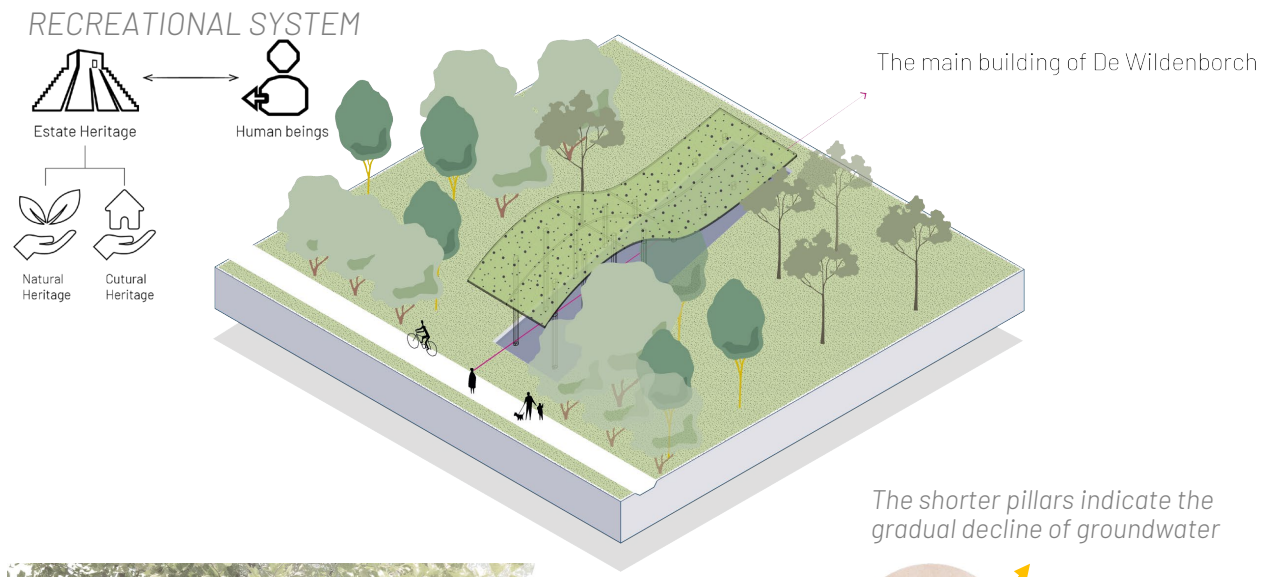
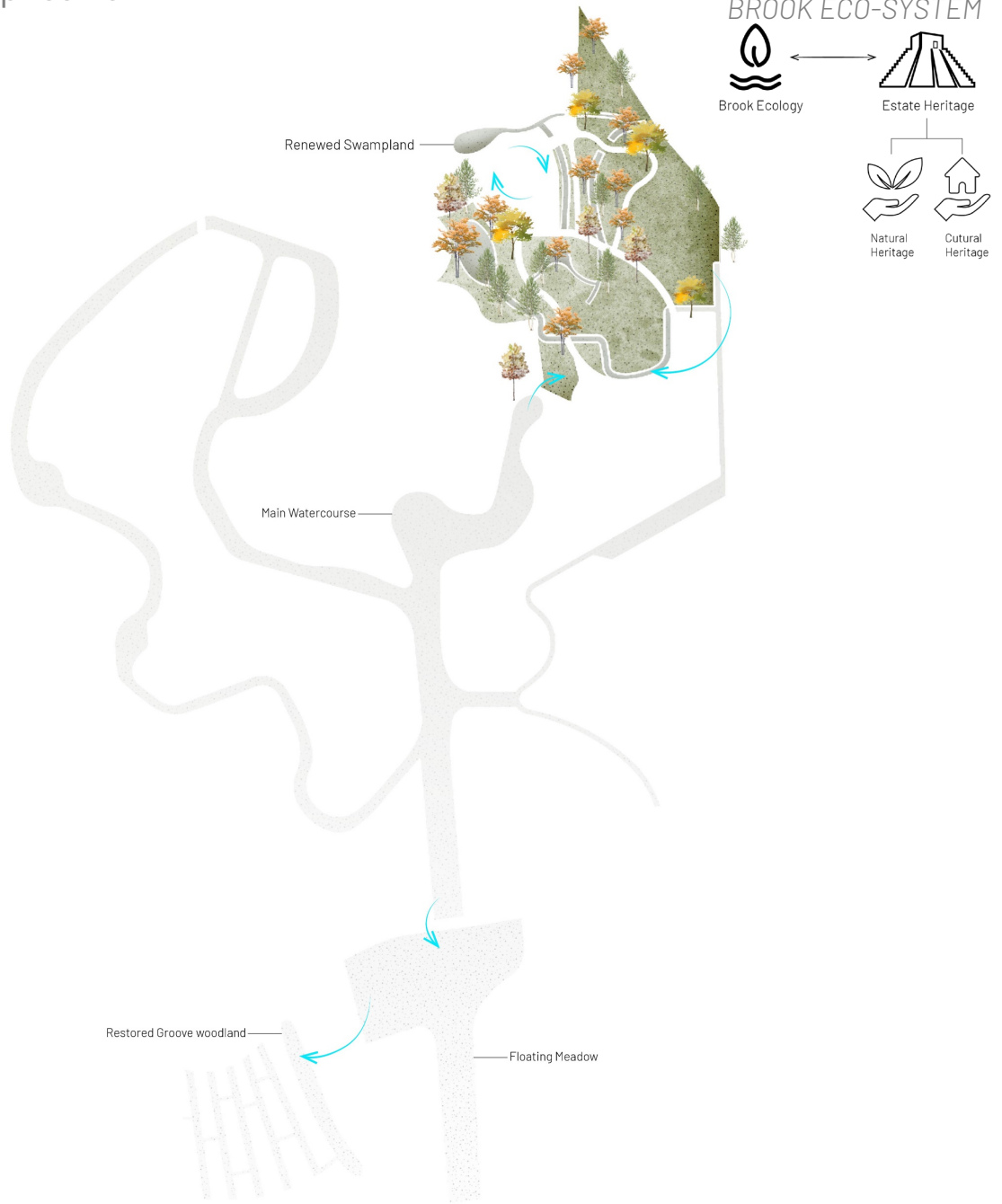
De Wildenborch



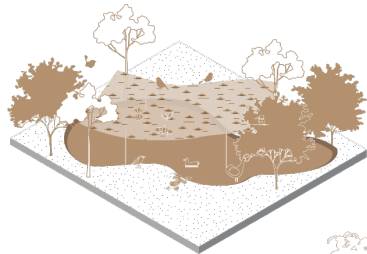
Efficiency



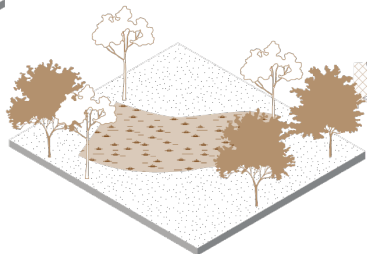
# Application



# Integrated Nodes



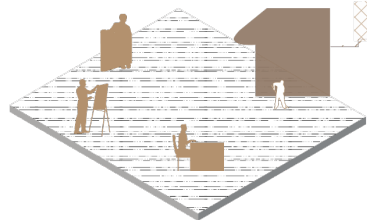
Habitats for more Species



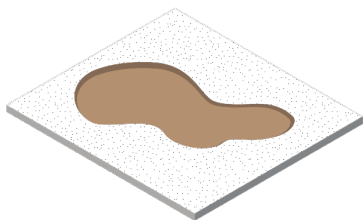
Green Connection



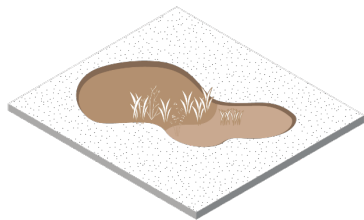
Height difference emotion



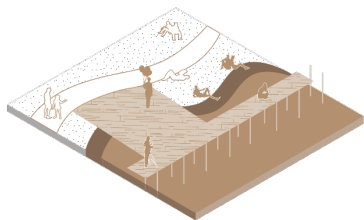
Cultural heritage experience



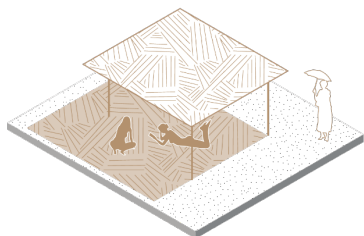
Water Storage



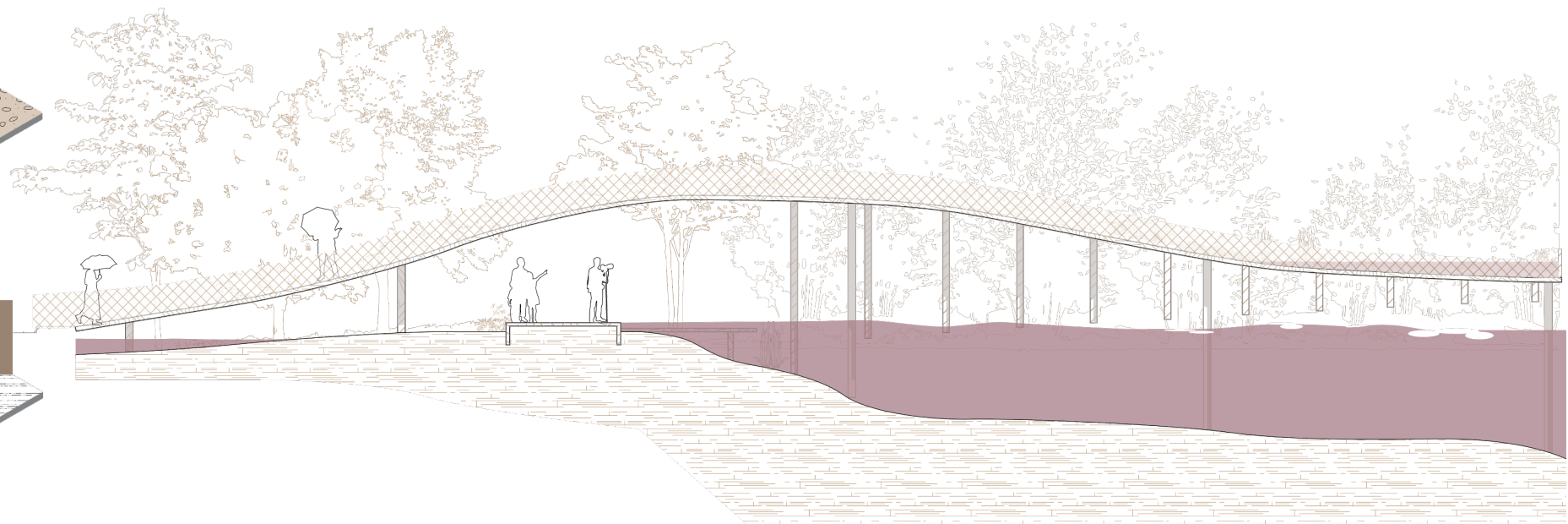
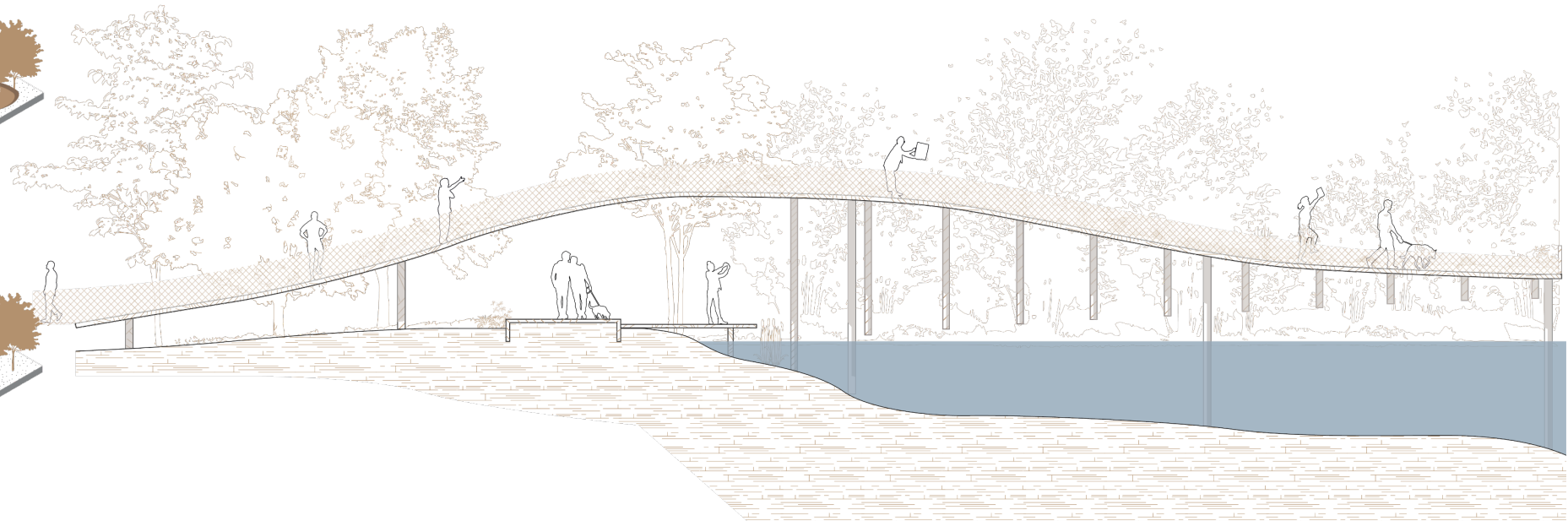
Water Purification



Landscape accessibility



Special period shelter





# De Wildenborch's Future



*Story of Het Medler*



*Historic Way to the Estate*



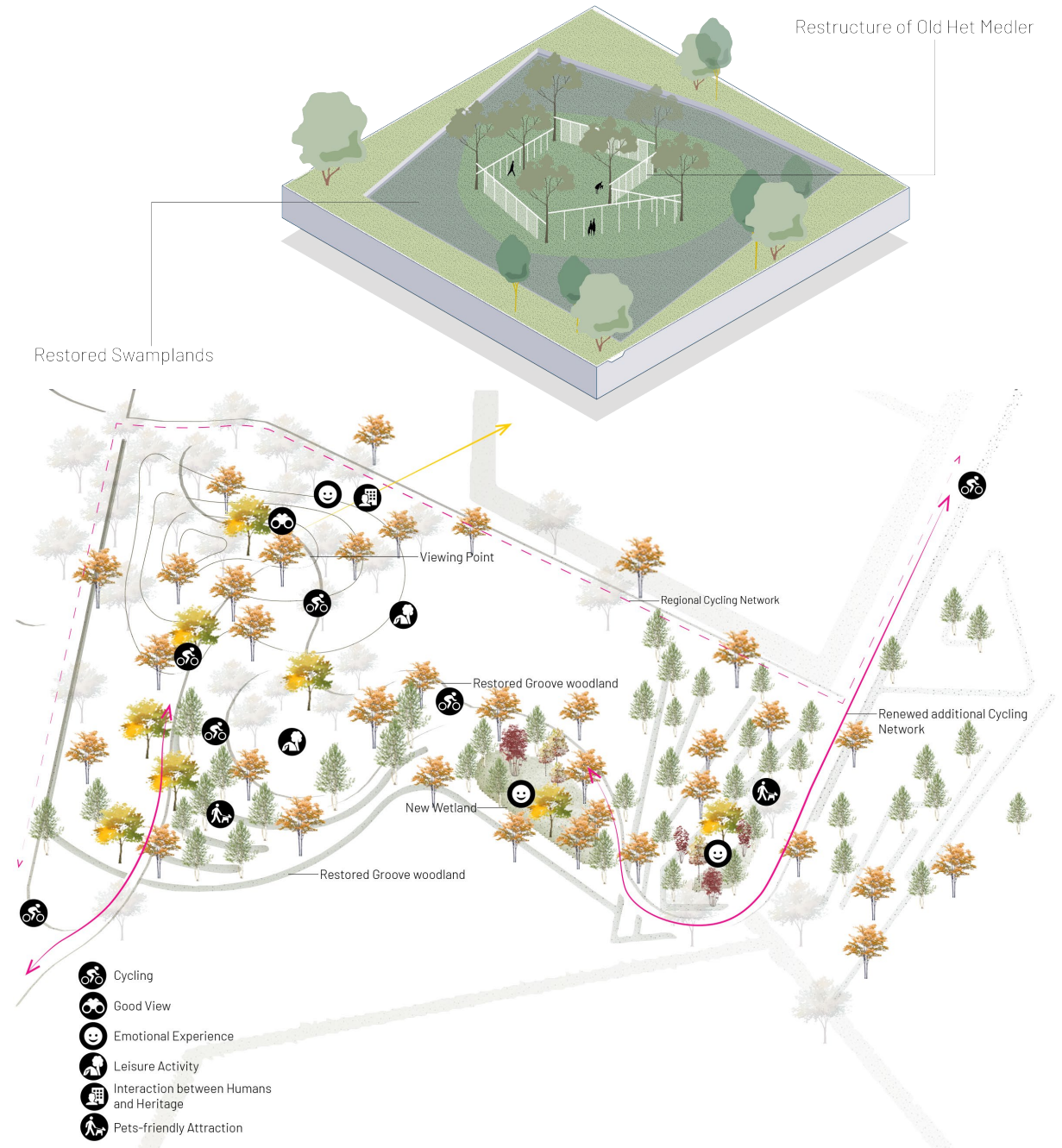
*Way to the Estate Nowadays*

# Application

## BROOK ECO-SYSTEM



## RECREATIONAL SYSTEM

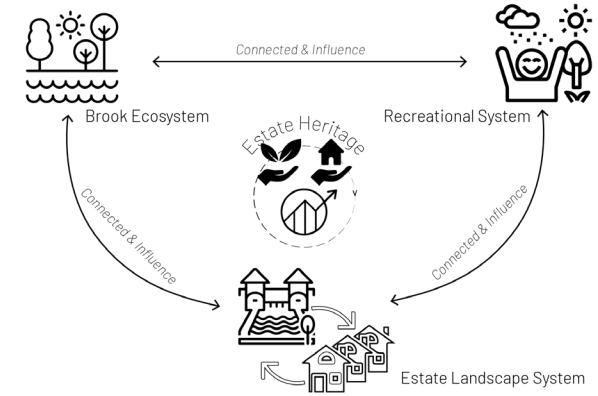


Het medler's Future



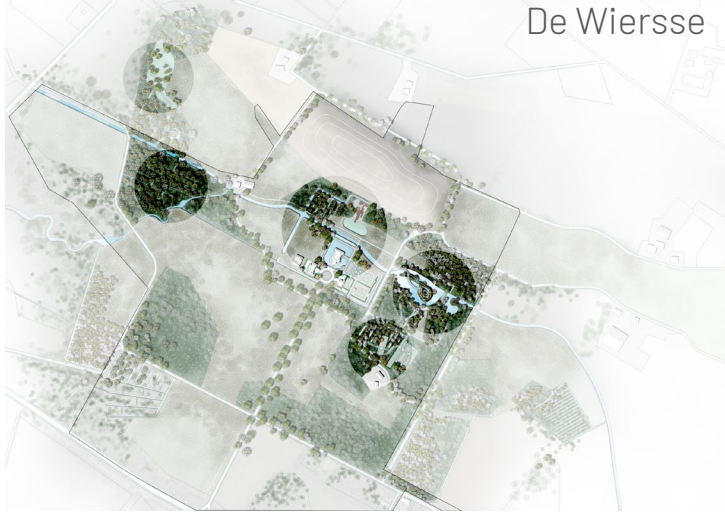
## Reflection of De Wildenborch & Het Medler

- **Predicted Benefits:**
  1. Clearly see relationships between two systems
  2. Clearly see strong connections among systems making use of the heritage
- **Deficiency:**
  1. Lack of the interaction of several elements inside
  2. Difficult to see the role played of working factors
- **To improve:** Need further thinking to see how the elements serve for each system



# Estates Development

De Wiersse



De Wildenborch



Het Medler



Estate Development

Main Integrated Nodes

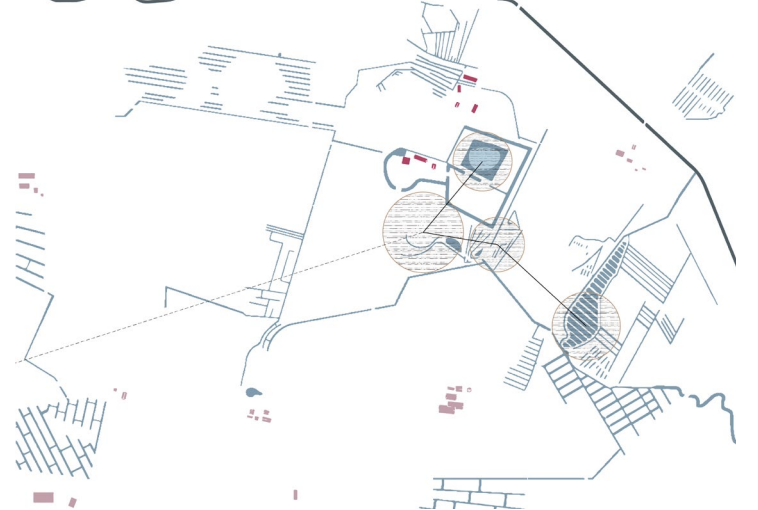
Key Role of Restored  
Groove Forestry



As a watershed

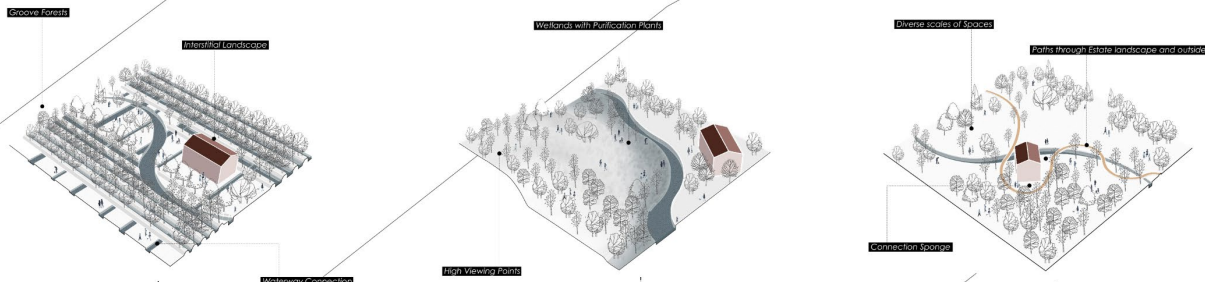


As a link

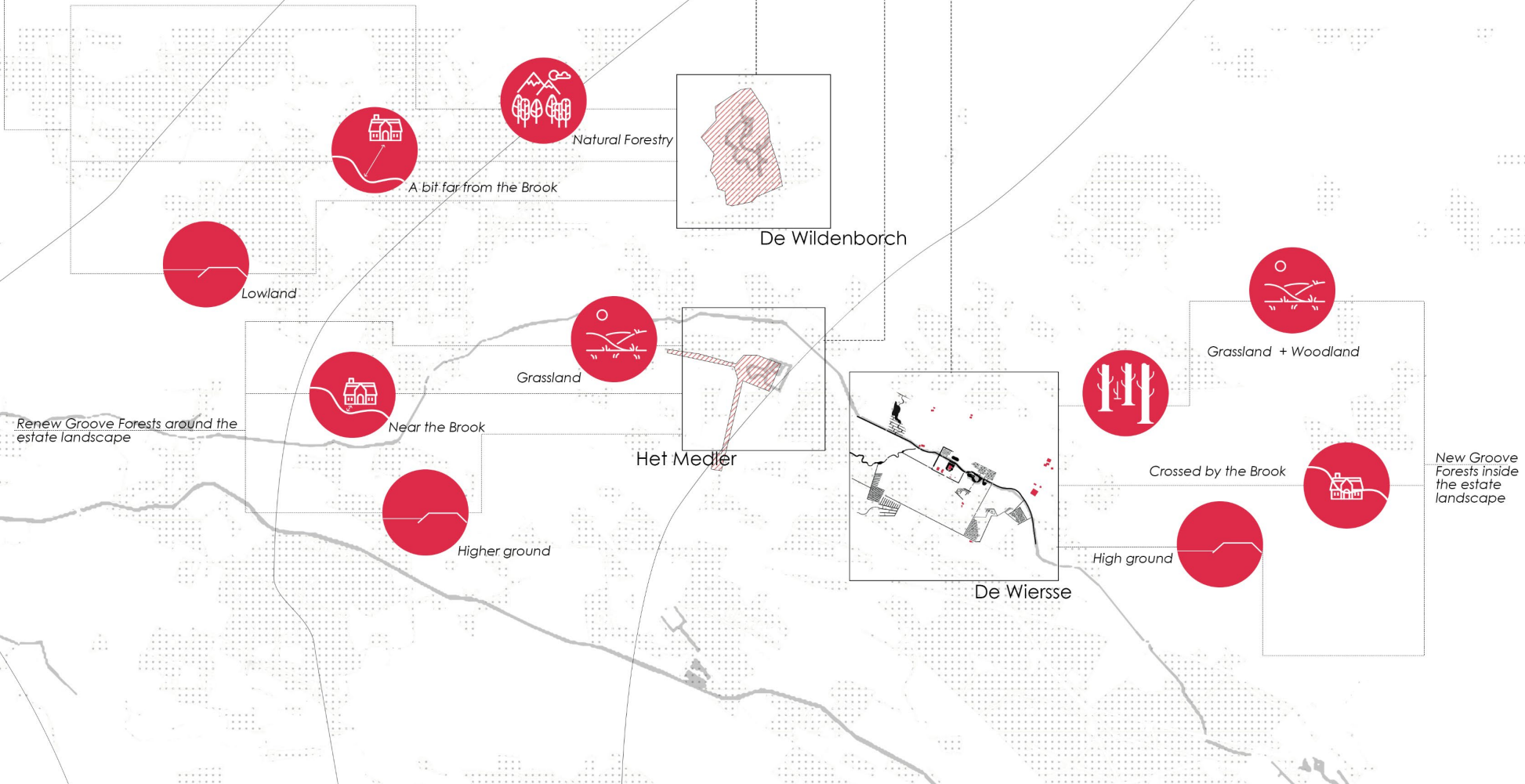


As a buffer

# Comparison



Restored Groove Forests near the estate as links to connect the brook and the estate landscape



Renew Groove Forests around the estate landscape

New Groove Forests inside the estate landscape

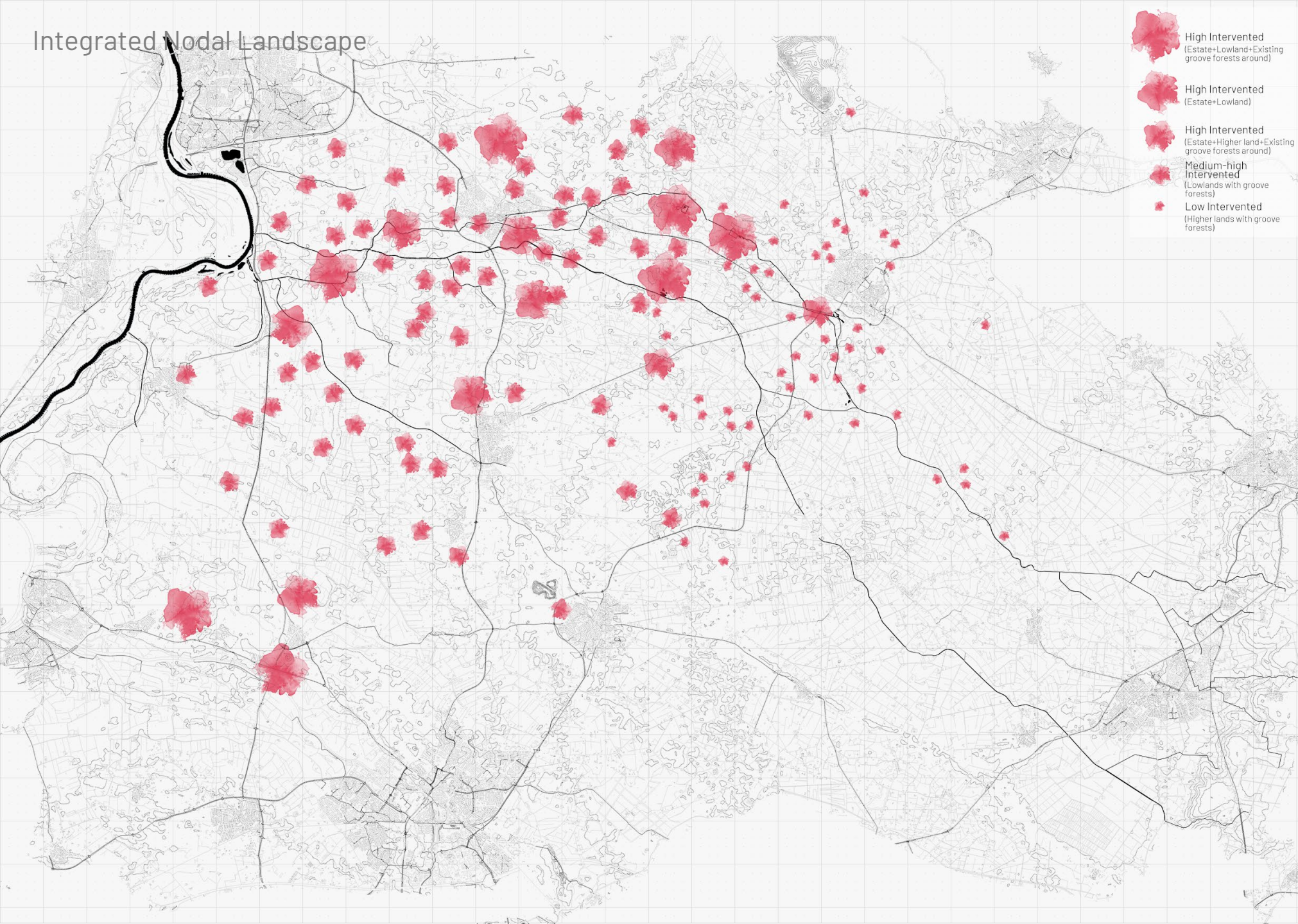
# Local Development

-  New Groove Forestry
-  Restored Groove Forestry
-  Groove Loop
-  Water Flow





# Integrated Nodal Landscape

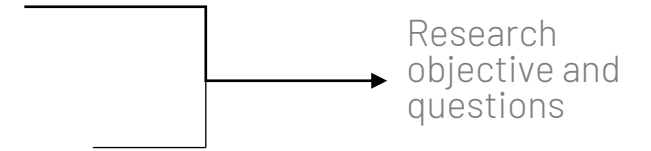


Other suitable areas that could be adapted with this set of principles

# Lessons Learned

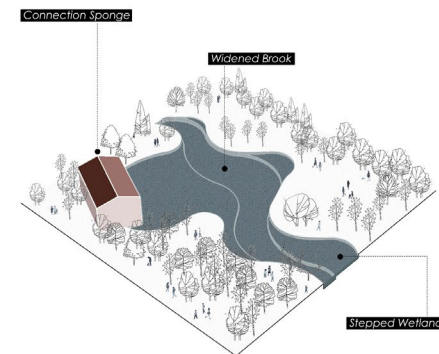
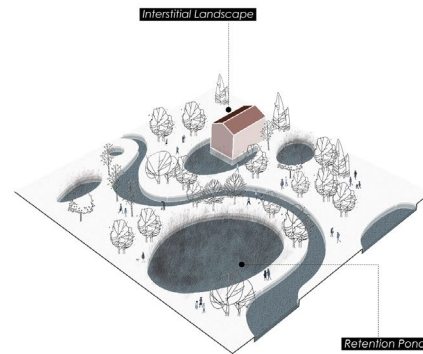
## Groove Forest Restoration Application

- **Predicted Benefits:**
  1. *Water-layer interventions: Alleviate seasonal water problems*
  2. *Eco-layer interventions: Increase habitats and biodiversity*
  3. *Recreational -layer interventions: Recall cultural memories*
  4. *Re-interrelate Brook Ecosystem, Recreational System and Estate Landscape System*



- **Deficiency:**
  1. *Only applicable to relatively Lowland*
  2. *Limited ability to collect water and depends to some extent on technical support*

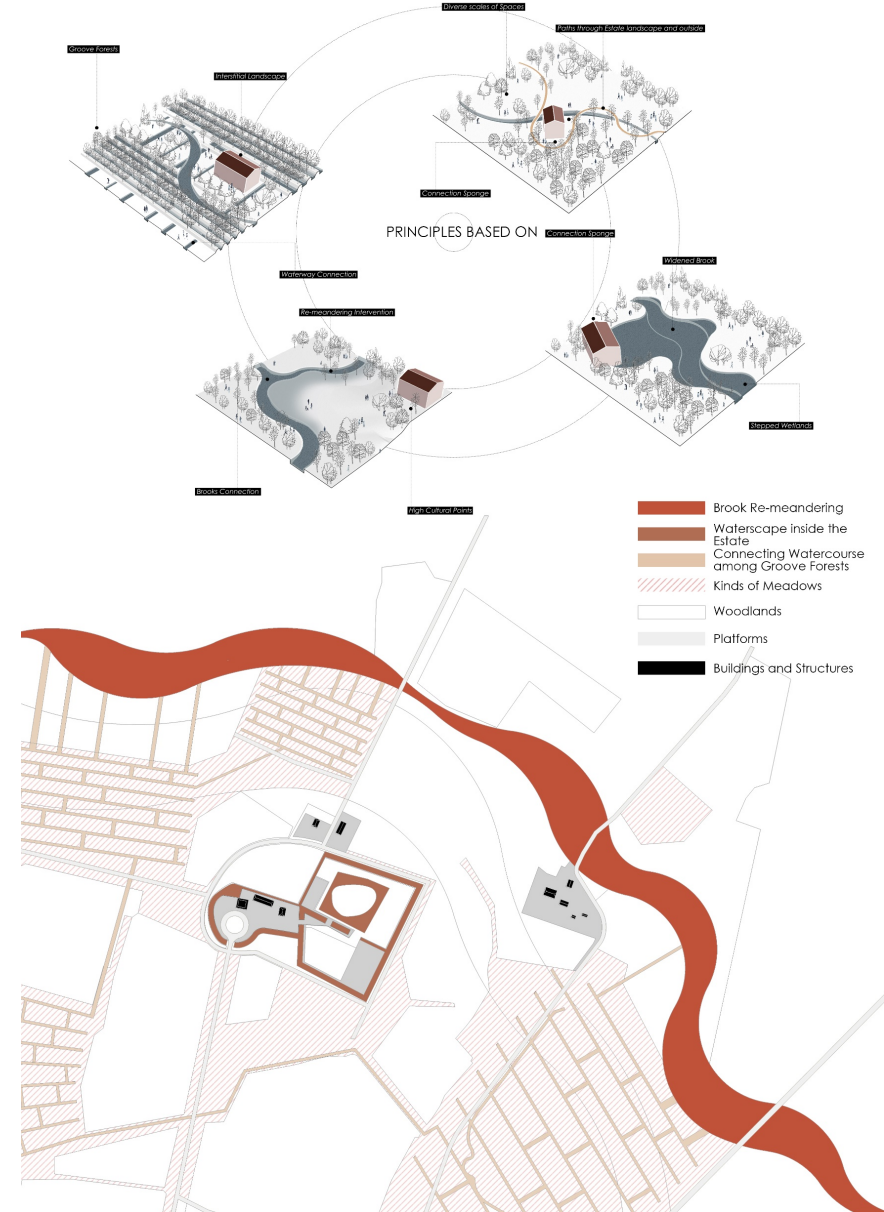
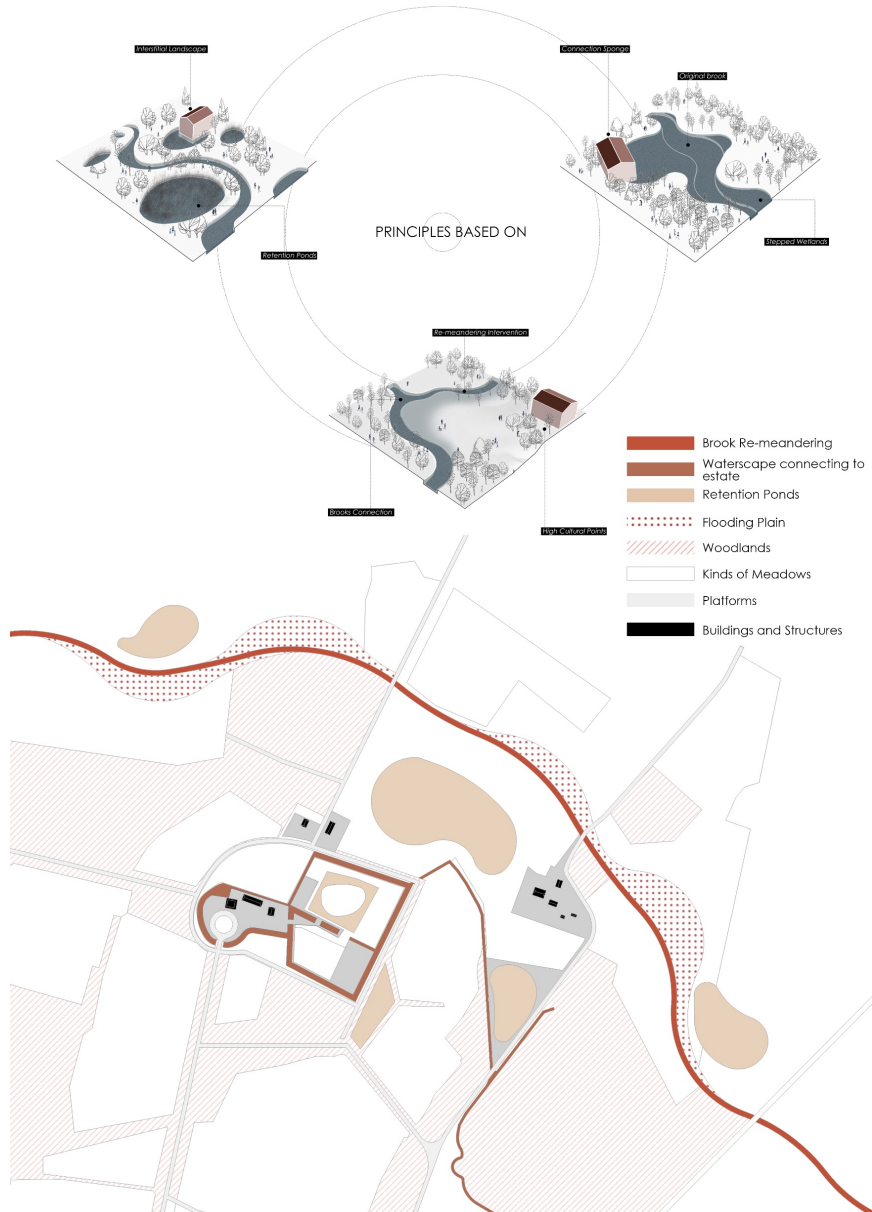
- **To improve:** *Need more application of:*





OTHER POSSIBILITIES

# Option 2 (Watercourse & Wetlands Restoration )

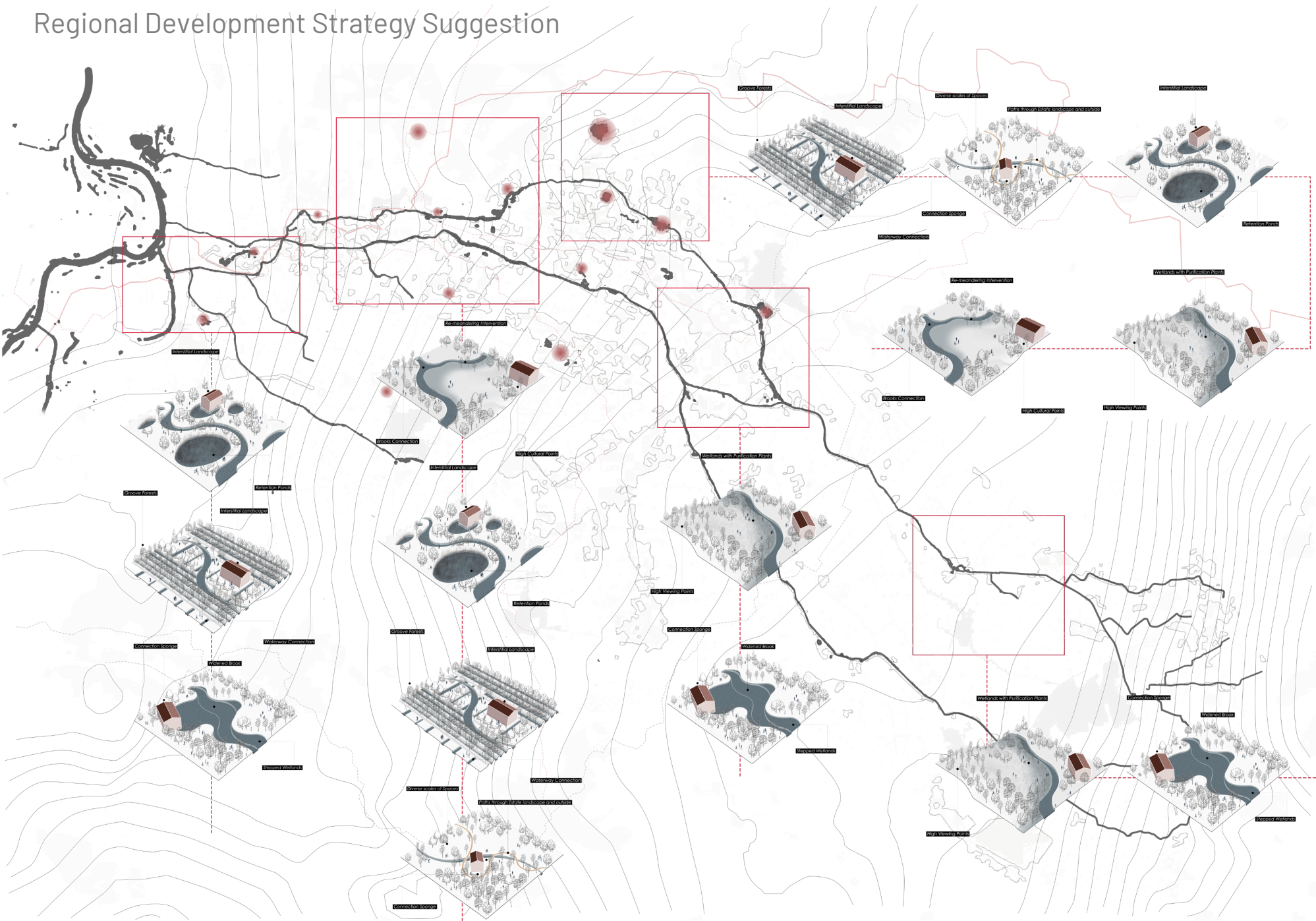


## FINAL CONCLUSION

▣ Strategy Suggestion

▣ Regional Planning

# Regional Development Strategy Suggestion



The most suitable options of some specific zones in the region

# Regional Application





