# FROM PATCHWORK TO MOSAIC

## Establishing a Regional Landscape Park to combat fragmented landscapes

Maxime Lugtenburg, MSc Landscape Architecture
Design lab for Landscape-based Urbanism
P5 presentation

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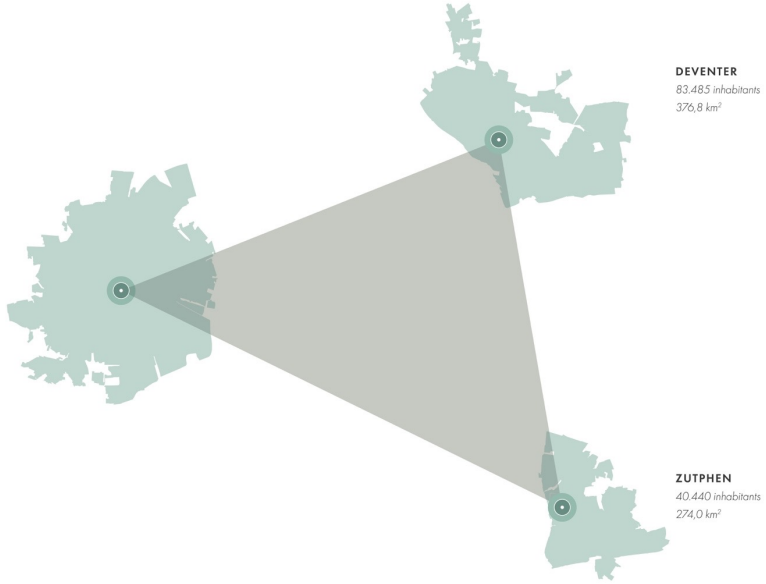
*ir. Leontine de Wit*

Netherlands,
Gelderland

# CITY TRIANGLE REGION

Inbetween area of the **high and dry** Veluwe ecosystem and **low and wet** Ijssel ecosystem

**Apeldoorn**, **Deventer** and **Zutphen**



ECOLOGY ⟷ AWARENESS ⟷ RECREATION

"We have forgotten how to be good guests, how to walk lightly on the earth as its other creatures do."

—Barbara Ward (1914-1981), Only One Earth, 1972.

[1] https://www.epa.gov/history/quotations-about-environment

City. (Photography by Matheus Bertelli on Unsplash, n.d.)

Bulb field. (Photography by Siggy Nowak on Pixabay, n.d.)

Mills. (Photography by Paul Henri Degrande on Pixabay, n.d.)

Agricultural meadowland. (Photography by Carolien van Oijen on Unsplash, n.d.)

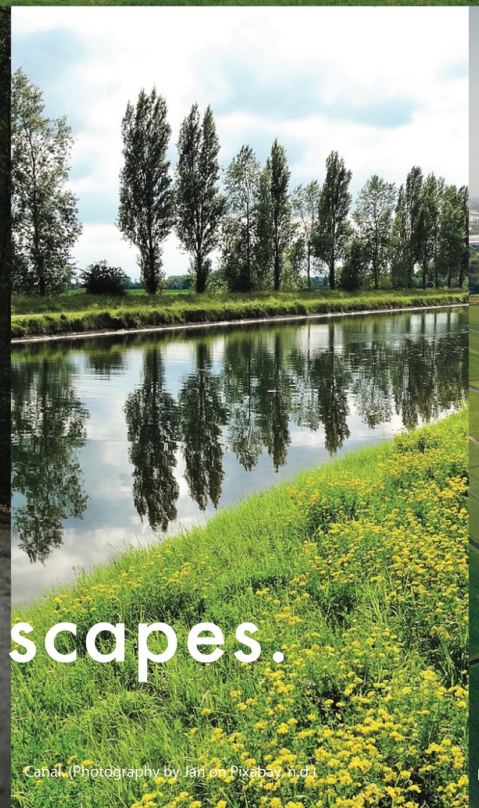
Artificial patterns. (Photography by João  Jesus, n.d.)

# ANTHROPOCENE

## Rapid and disruptive reshaping of landscapes.

Artificial patterns. (Photography by Rudy and Peter Skitterians on Pixabay, n.d.)

Fragmenting roads. (Photography by Sten Bergman on Pexels, n.d.)

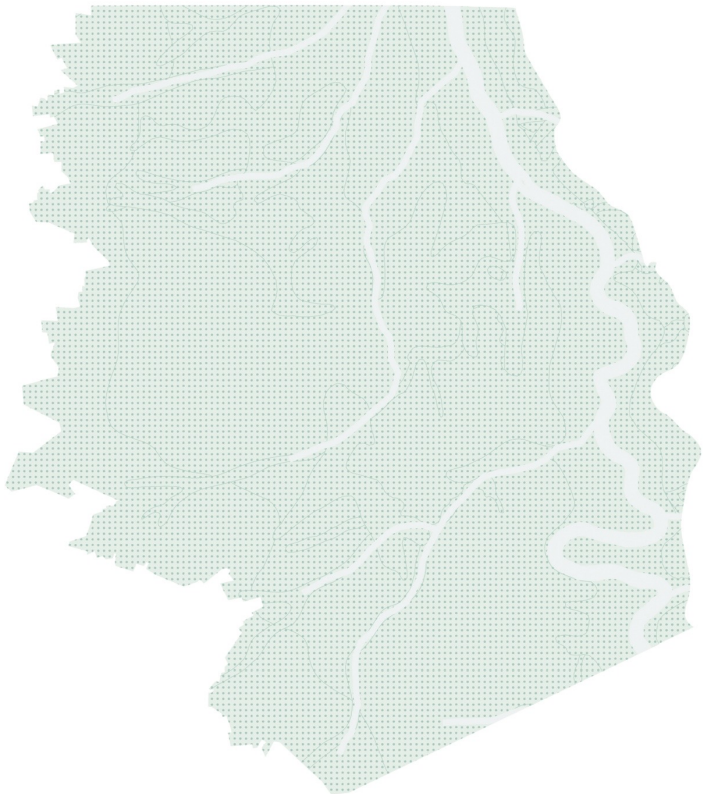


Canal. (Photography by Jan on Pixabay, n.d.)

Farmland. (Photography by João  Jesus on Pexels, n.d.)

fragmented patchwork
landscape
with lost
socio-ecological
connections

800 A.D.



NOW

fragmentation
environmental
degredation
biodiversity loss
floods and droughts
...

Dead heath. Heathland lost due to Anthropocene effects. (Photography by Natuurmonumenten, n.d.)

Dead forest. Forest lost due to Anthropocene effects. (Photography by Natuurmonumenten, n.d.)

Dried up stream. Drying up of streams due to Anthropocene effects. (Photography by Natuurmonumenten, n.d.)

## DOMINANCE

urbanisation pressure
of 24.000 houses
before 2030

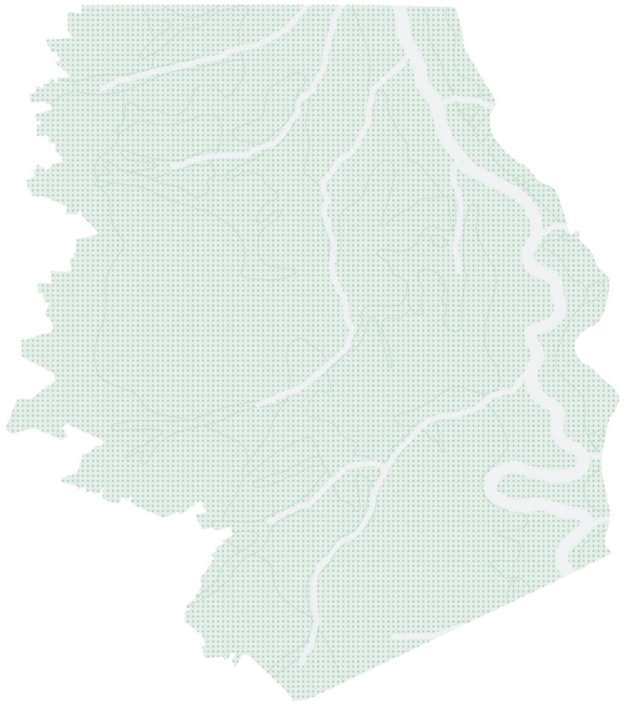
↓

further removal or
isolation of greenspace

thus more
**fragmentation**

Apeldoorn. (Videography by Sanmia Drone on Youtube, 2022).

800 A.D.



NOW

FUTURE

?

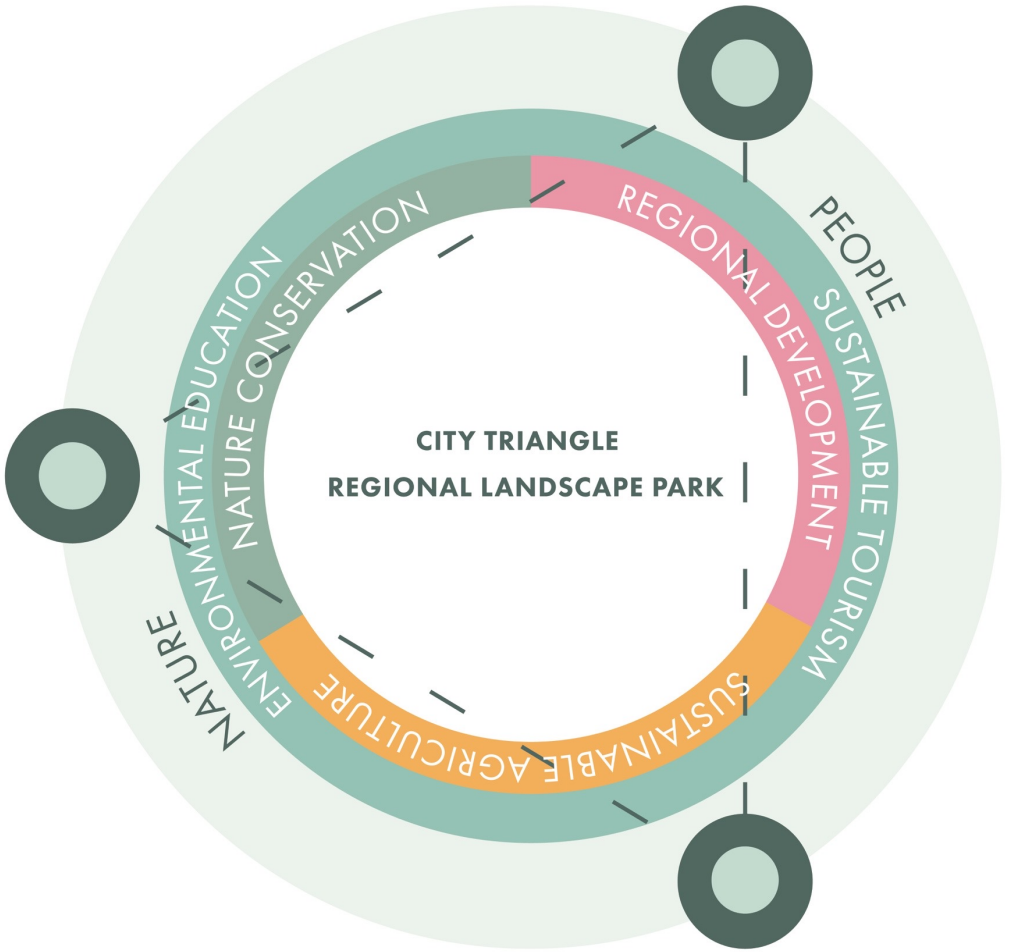
# RESTORE THE BALANCE

## A NEW BALANCE

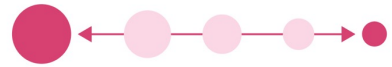
### Regional Landscape Park

as an **operative tool**

- WATER-SOIL-HEIGHT
- CULTURAL HISTORY AND FARMING ACTIVITIES
- RECREATION
- URBANISATION
- LANDSCAPE ACCESSIBILITY



across scales



How can a **Regional Landscape Park** in the **Stedendriehoek area**, situated between the **Veluwe and IJssel**, be utilized to **protect and develop nature and landscape, raise awareness, and guide urban growth**?

LANDSCAPE-BASED APPROACH

SUBQUESTION 1

UNDERSTAND

What are the components of a Regional Landscape Park and what is the current state of those components in the landscape system of the Veluwe, Ijsselvalley and Ijssel?

SUBQUESTION 2

IDENTIFY

What are design strategies and principles for the components of a Regional Landscape park?

SUBQUESTION 3

DESIGN

How can we apply the design strategies and principles in the city triangle region to create a Regional Landscape Park that protects and develops nature and landscape, increases awareness and guides urban growth?

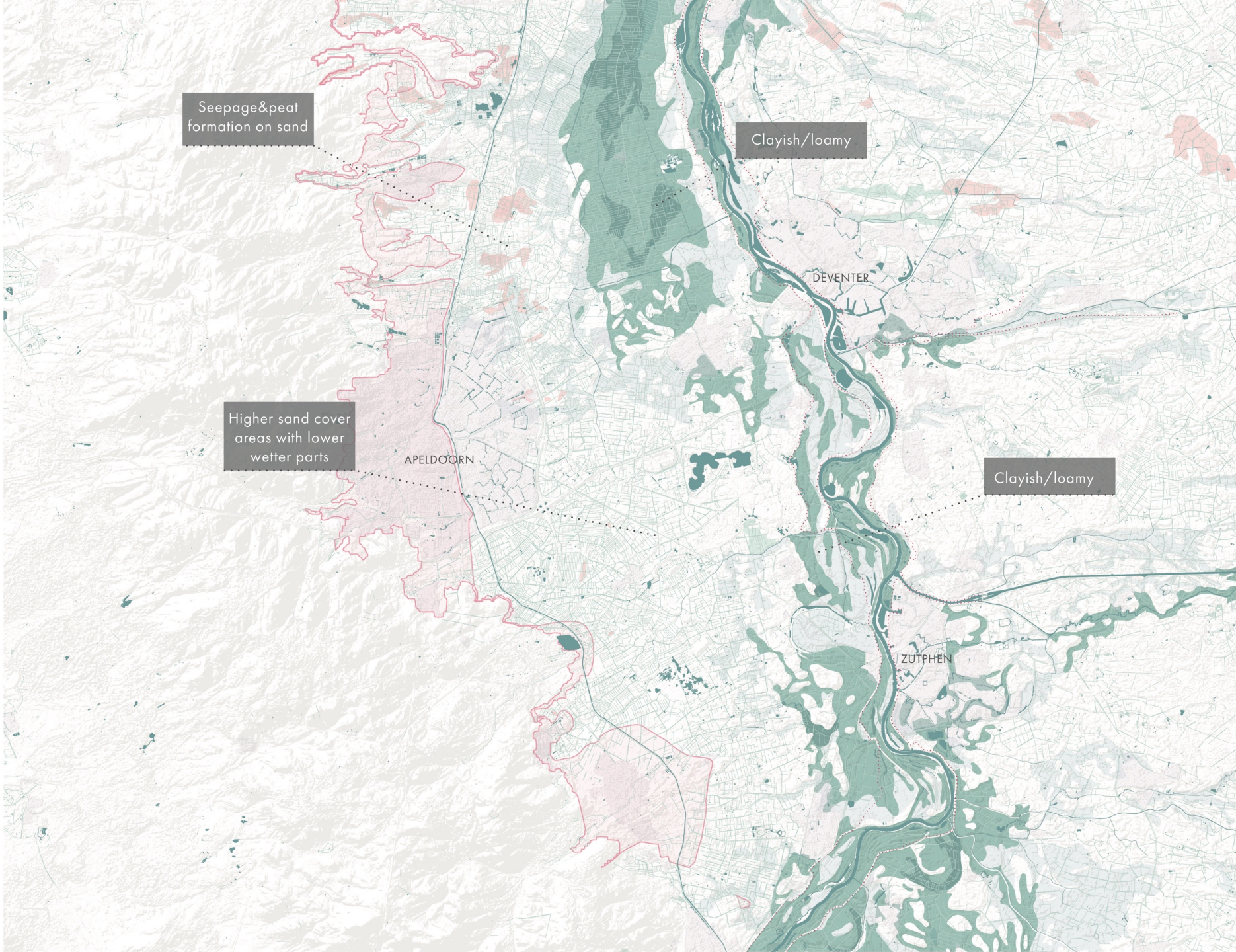
SUBQUESTION 4

REFLECT

What can we learn from this research?

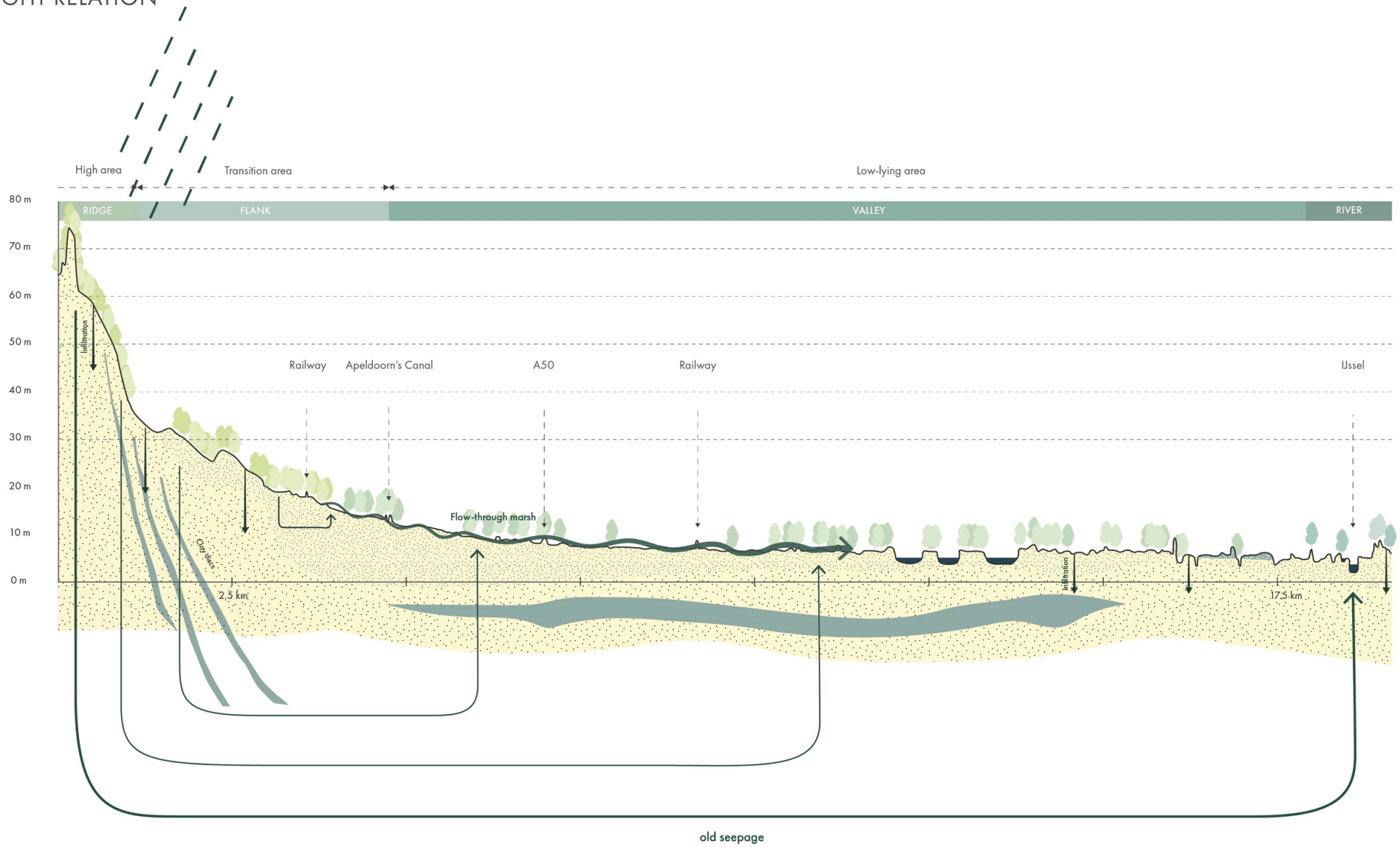
- WATER-SOIL-HEIGHT
- CULTURAL HISTORY AND FARMING ACTIVITIES
- RECREATION
- URBANISATION
- LANDSCAPE ACCESSIBILITY

# WATER-SOIL-HEIGHT RELATION

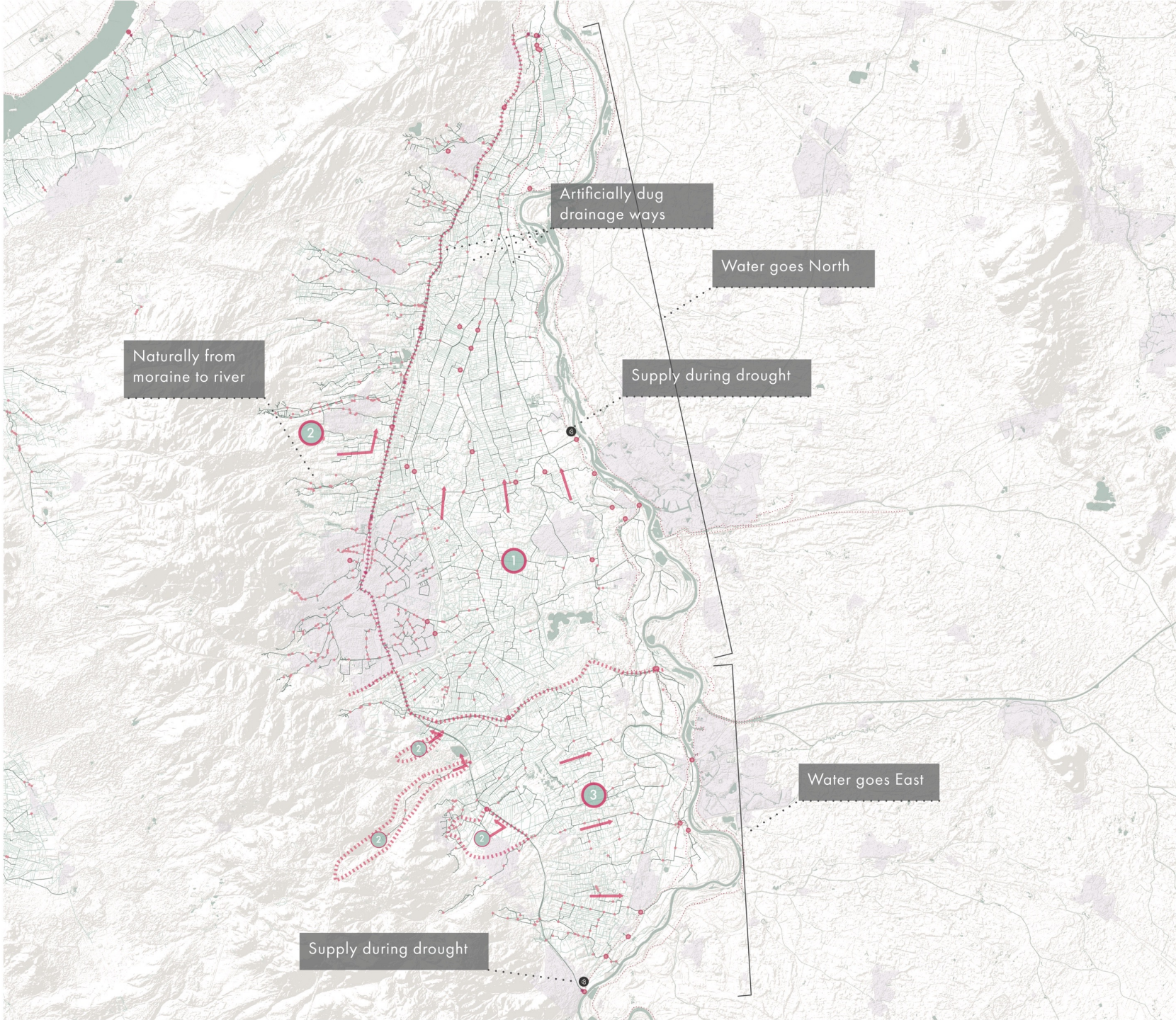



Map made by author, using data provided by Top10NL, Provincie Gelderland, CBS, Alterra and AHN.

# WATER-SOIL-HEIGHT RELATION



# WATER-SOIL-HEIGHT RELATION




Drainage system limit

1. North through multiple discharge canals
2. North through Apeldoorn Canal
3. East through streams

Map made by author, using data provided by Waterschap Vallei & Veluwe, Top10NL, AHN and CBS.

DRAINING STREAM

DRAINING STREAMS

DRAINING DITCH

## WATER-SOIL-HEIGHT RELATION

drought damage

water pollution

lowering groundwater supply

peak water surplus

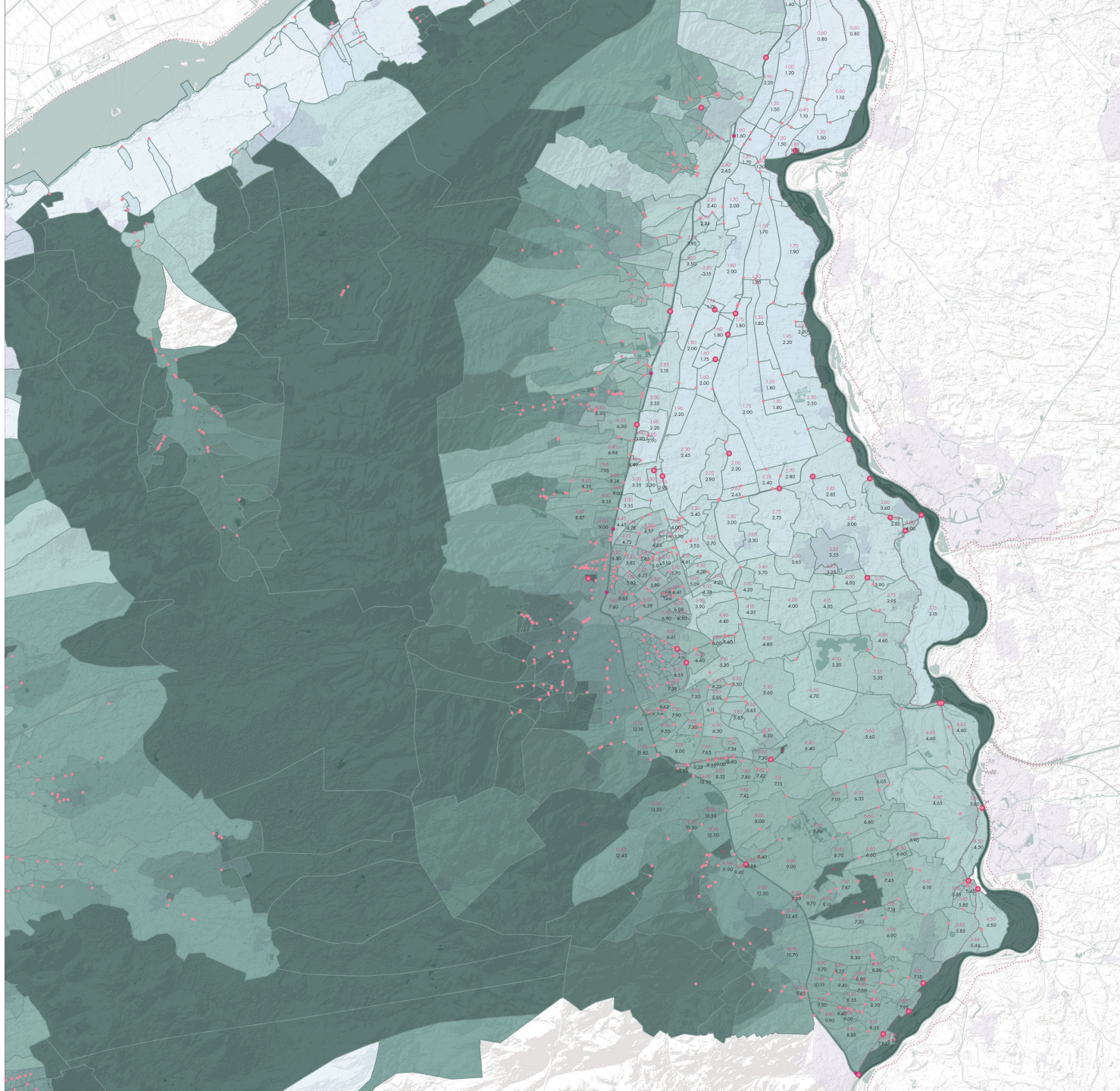
unsustainable agriculture

lowering waterlevel river

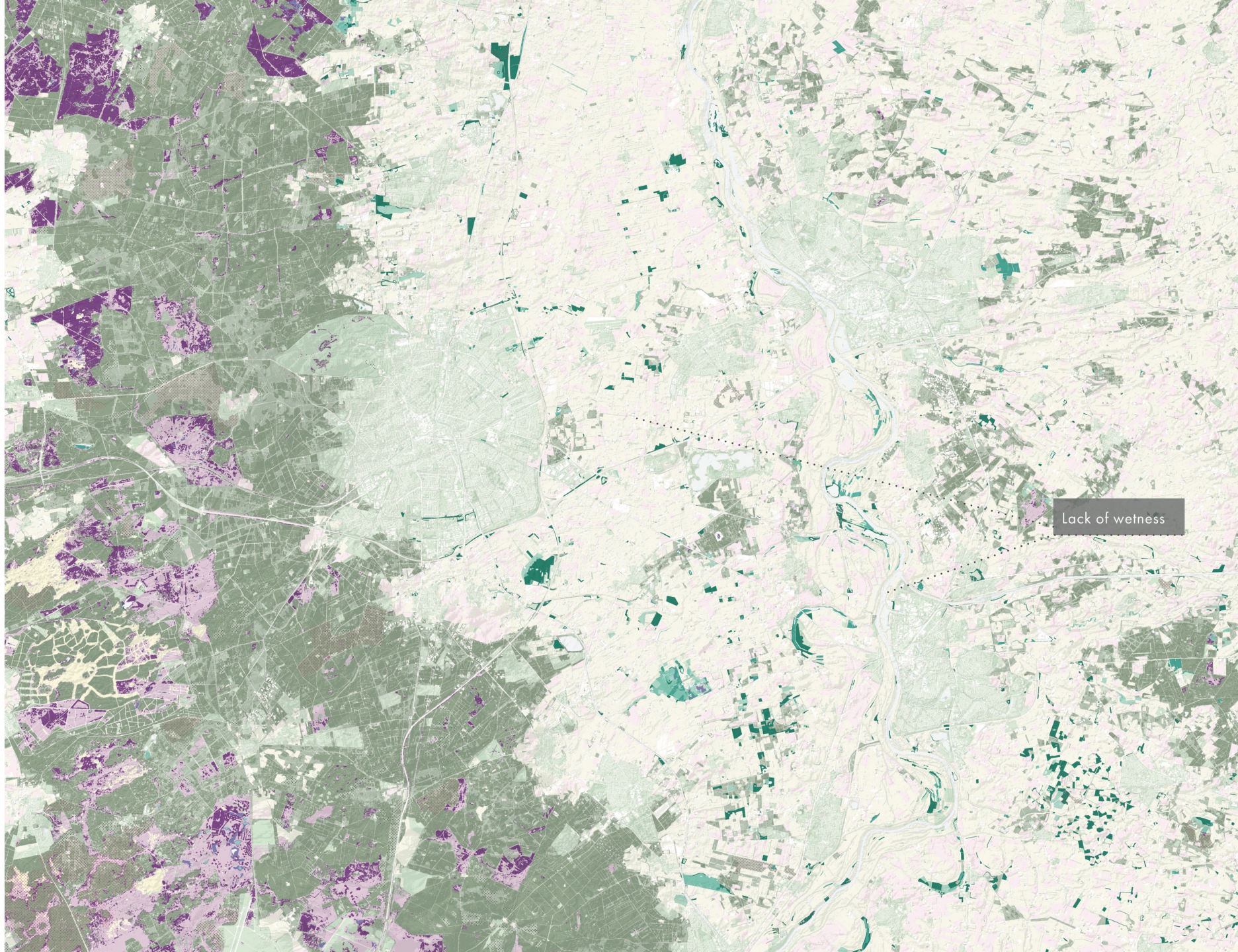
water pressure on dikes

lack of awareness

Map made by author, using data provided by Waterschap Vallei & Veluwe, Top10NL, AHN and CBS.



# WATER-SOIL-HEIGHT RELATION




lack of connection

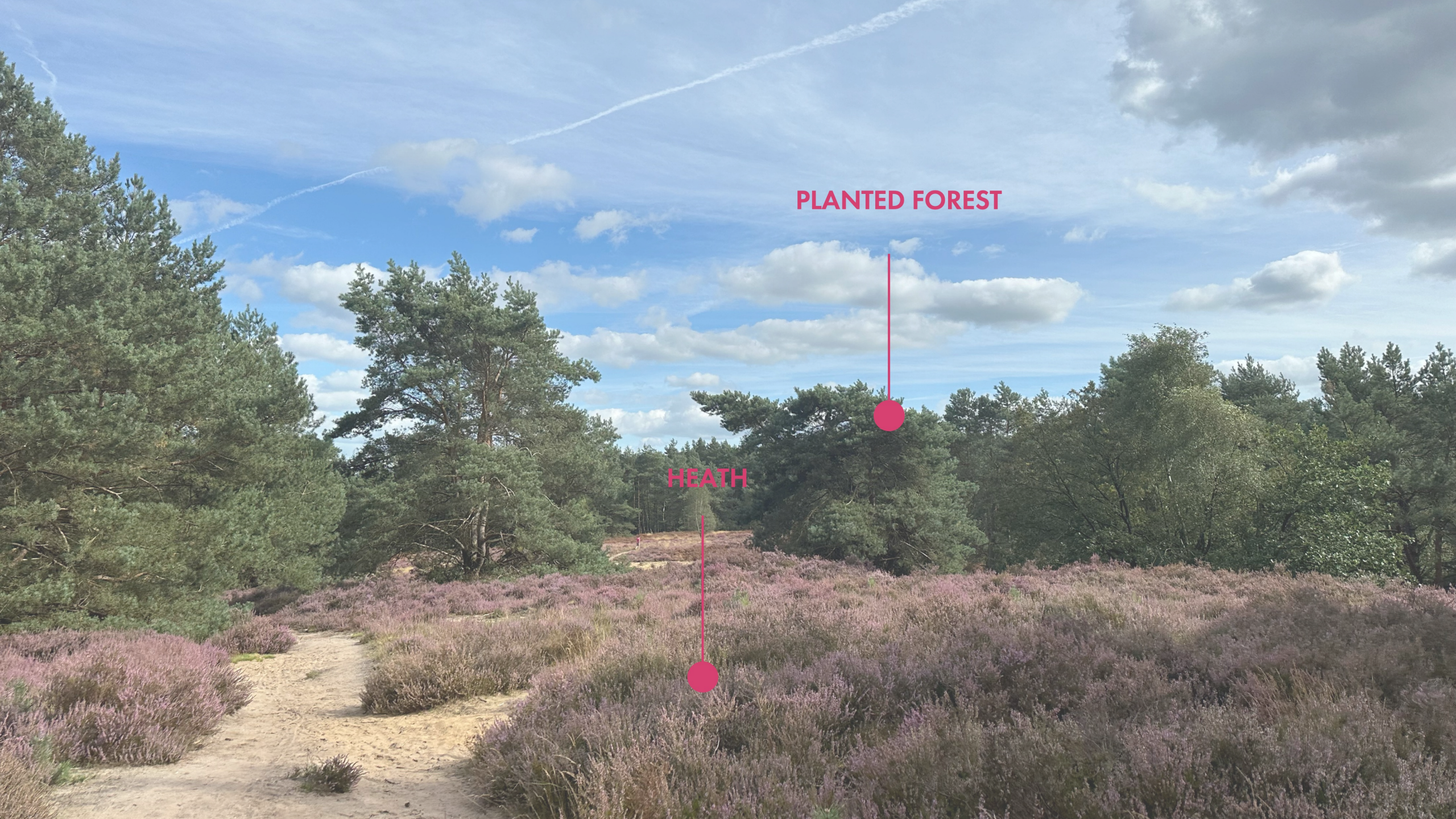
lack of habitats

insect loss

lack of awareness

Map made by author, using data provided by LGN 2023, AHN, Provincie Gelderland, CBS and TOP10NL.

PLANTED FOREST
SAND DRIFT


PLANTED FOREST
HEATH

LOW BIODIVERSITY
RYE GRASS FIELDS

RARE SEEPAGE
NATURE

- CULTURAL HISTORY AND FARMING ACTIVITIES

drought damage

water pollution

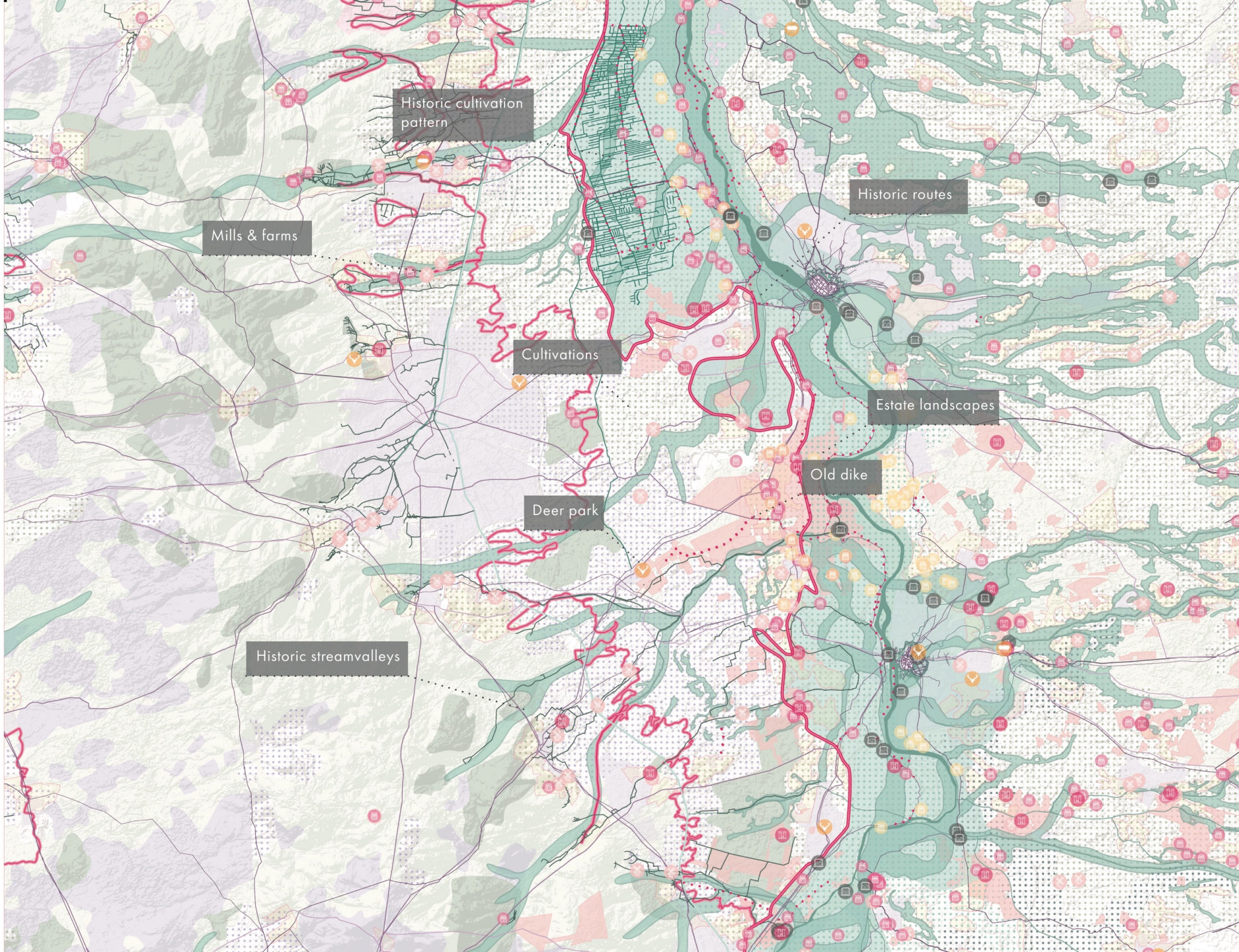
lack of connection

lack of habitats

biodiversity loss

experience of local identity

lack of awareness




Map made by author, using data provided by Erfgoedatlas of RCE, Province Gelderland and CBS.

PAPER MILL

HISTORIC TOLL BOOTH

CASTLE

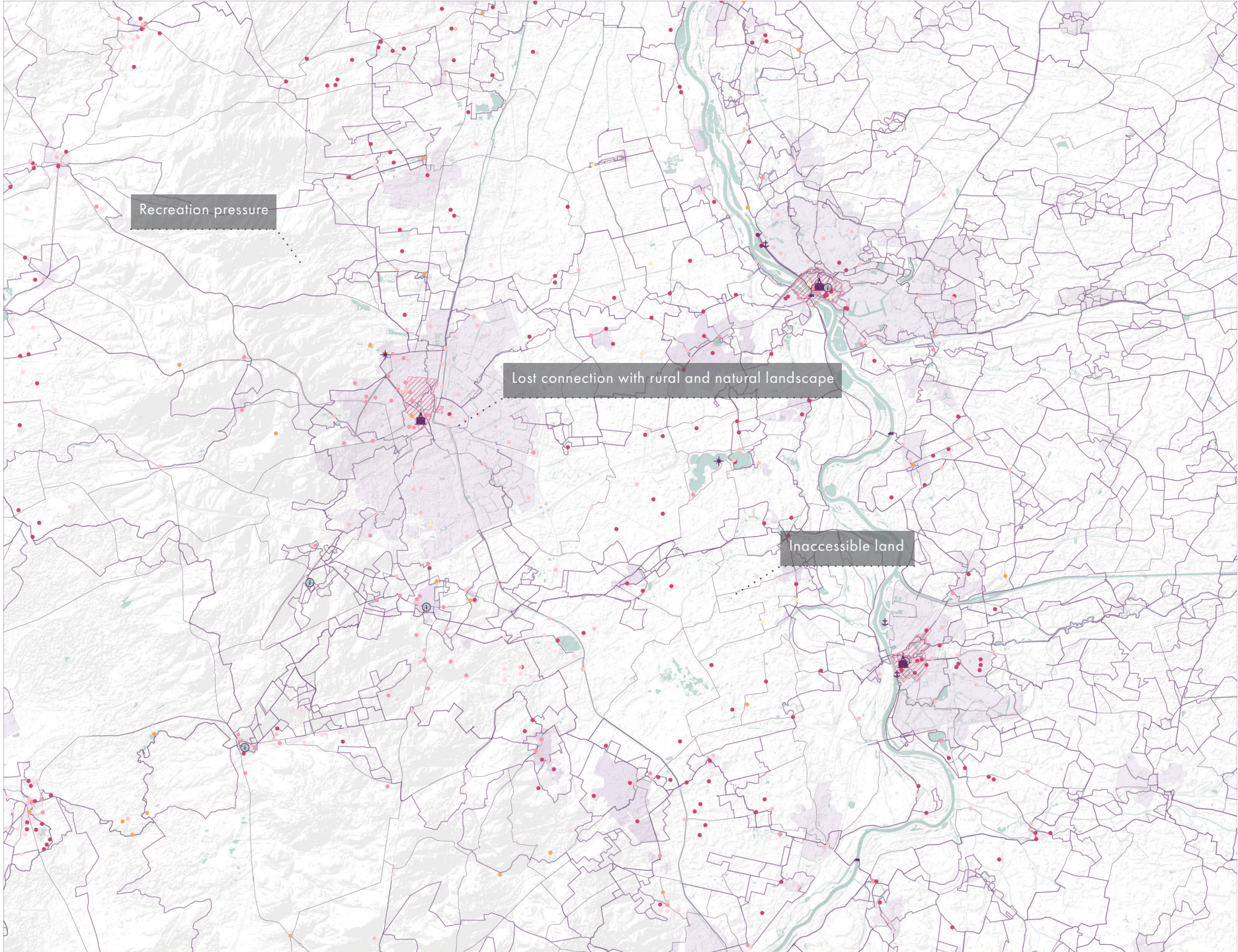
# • RECREATION

recreation pressure Veluwe

IJsselvalley inaccessible

disconnection from agricultural practices

recreational demand




Map by author, using data provided by CBS, Erfgoedatlas of RCE, OSM, Wandelnet, AHN, TOP10NL, Routes op de Veluwe

RECREATIONAL
ROUTING

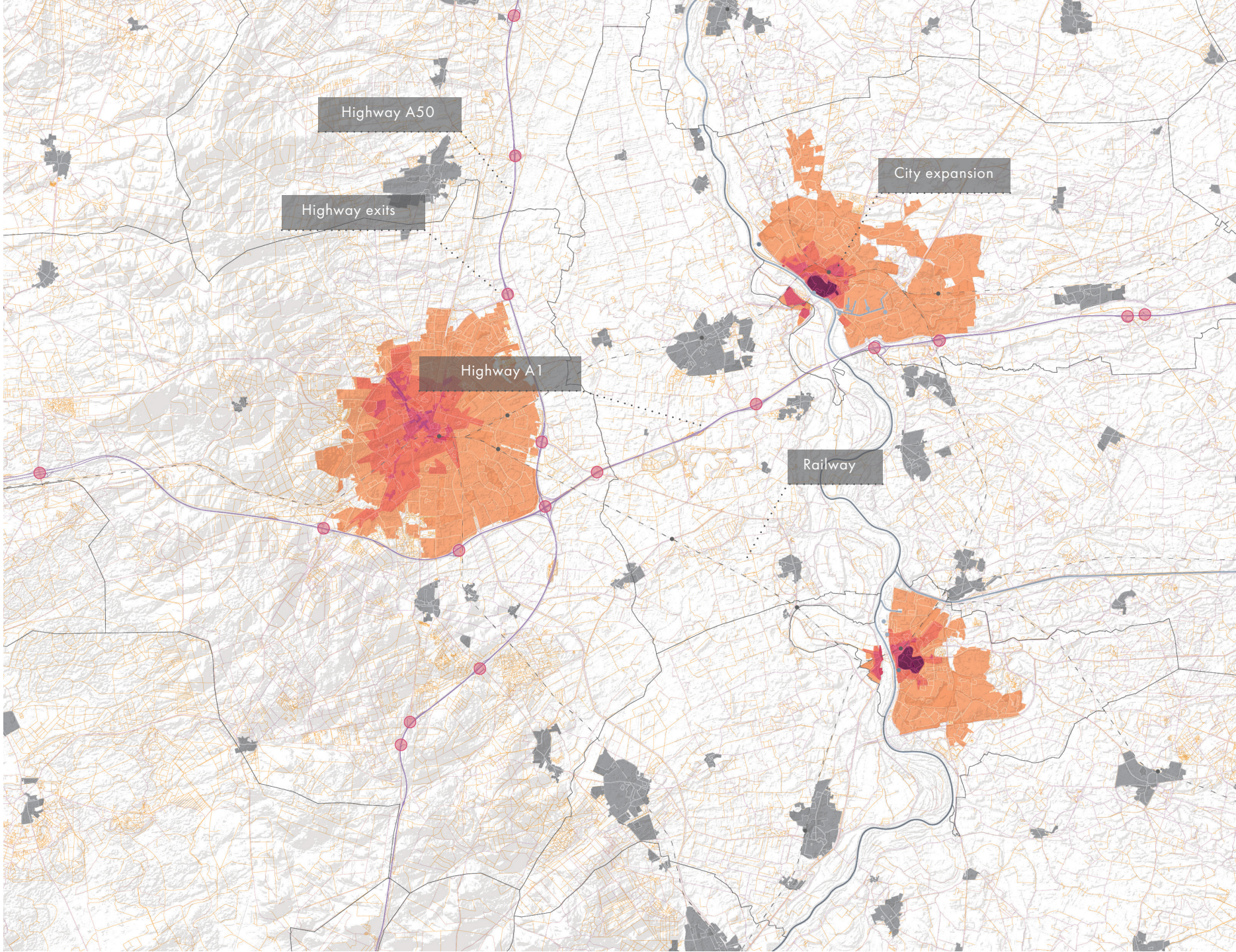
RECREATIONAL
WALKING PATH

RECREATIONAL
BIKING PATH

RECREATIONAL
BIKING PATH

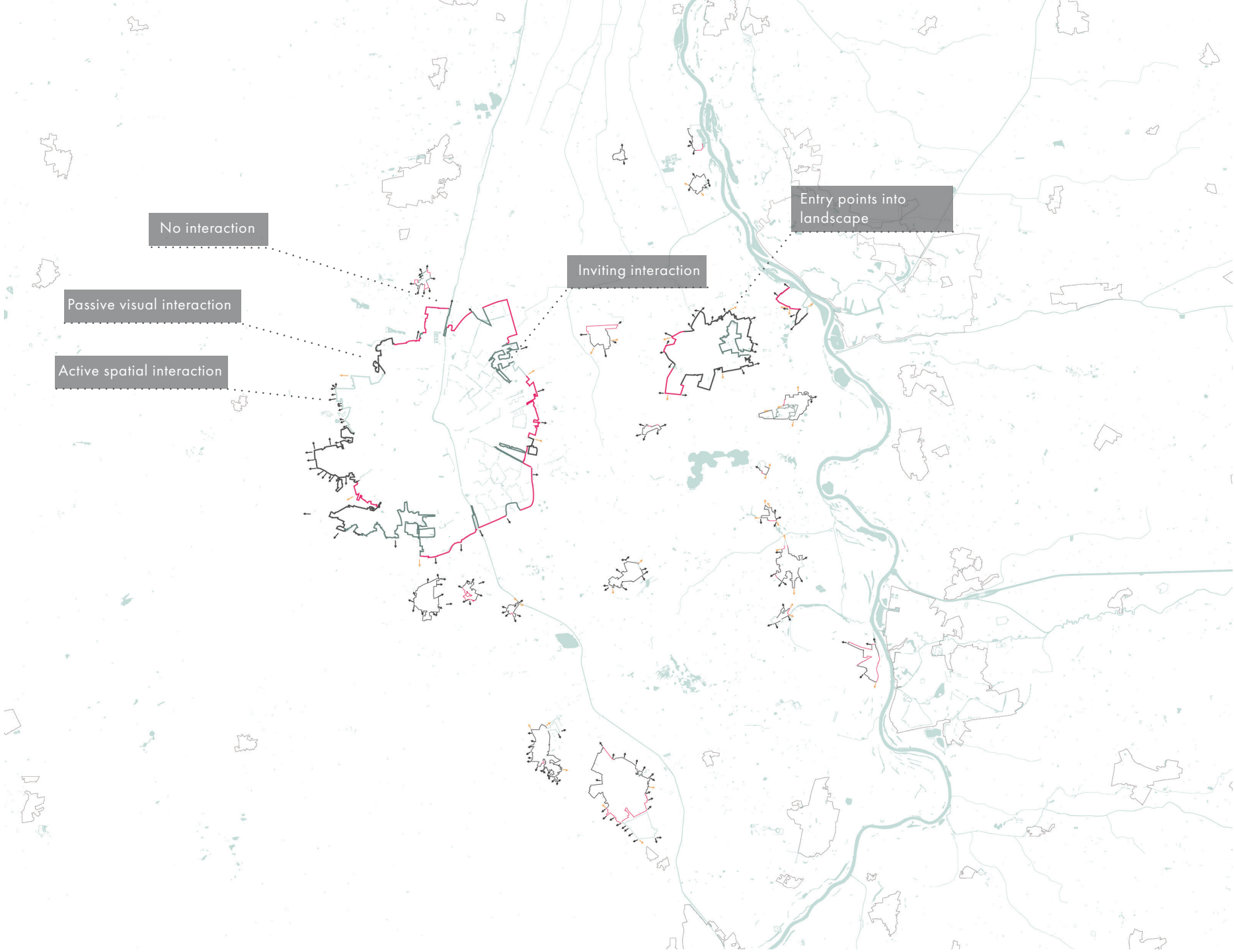
PRIVATE
PRODUCTION FOREST
FENCING
PRIVATE FARMING
LAND

urbanisation pressure




Map made by author, using data provided by TOP10NL, AHN, PDOK, OSM, RCE, CBS Bevolkingskernen and Province Gelderland.

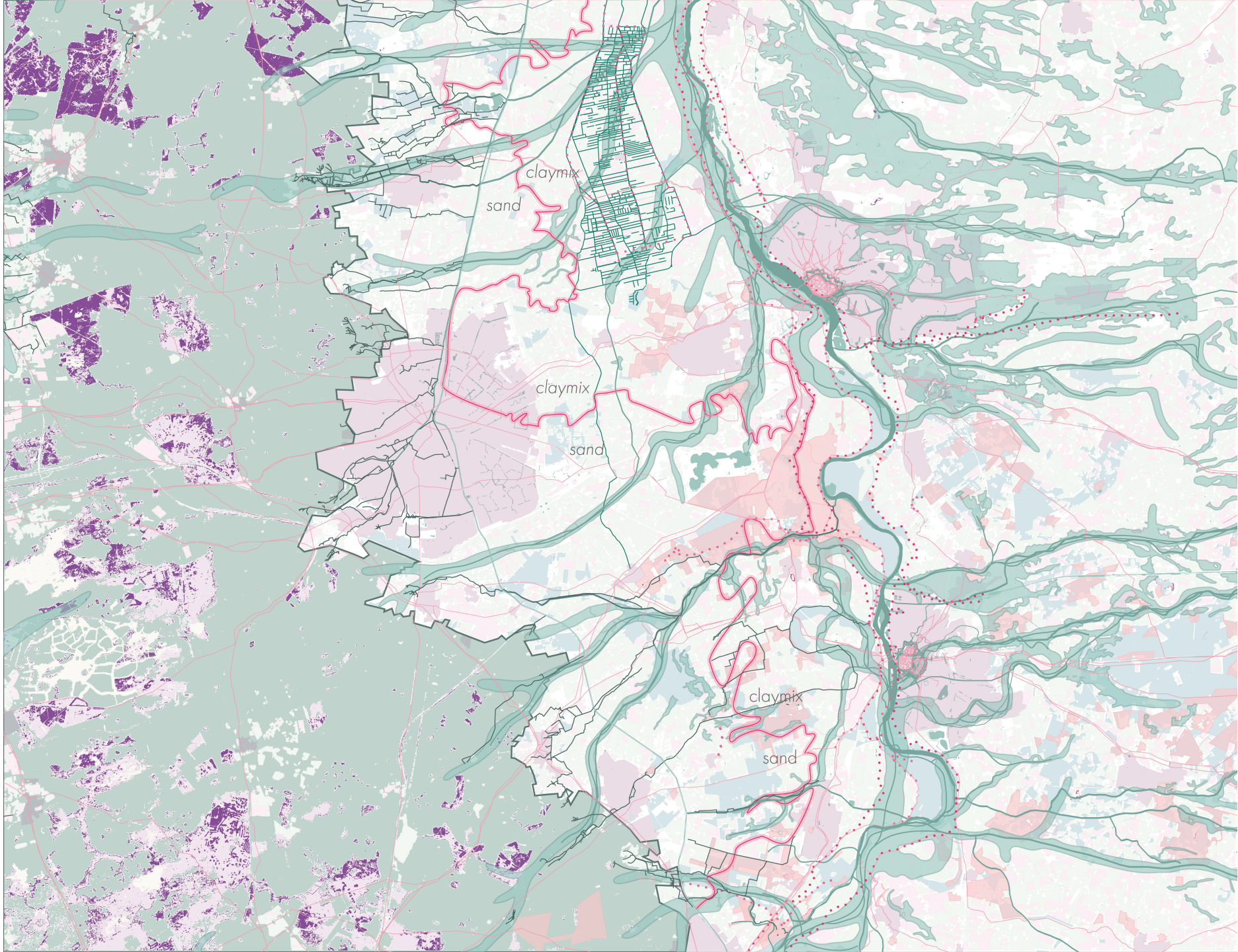
# CITY-LANDSCAPE INTERACTION




lacking/passive urban-landscape interaction

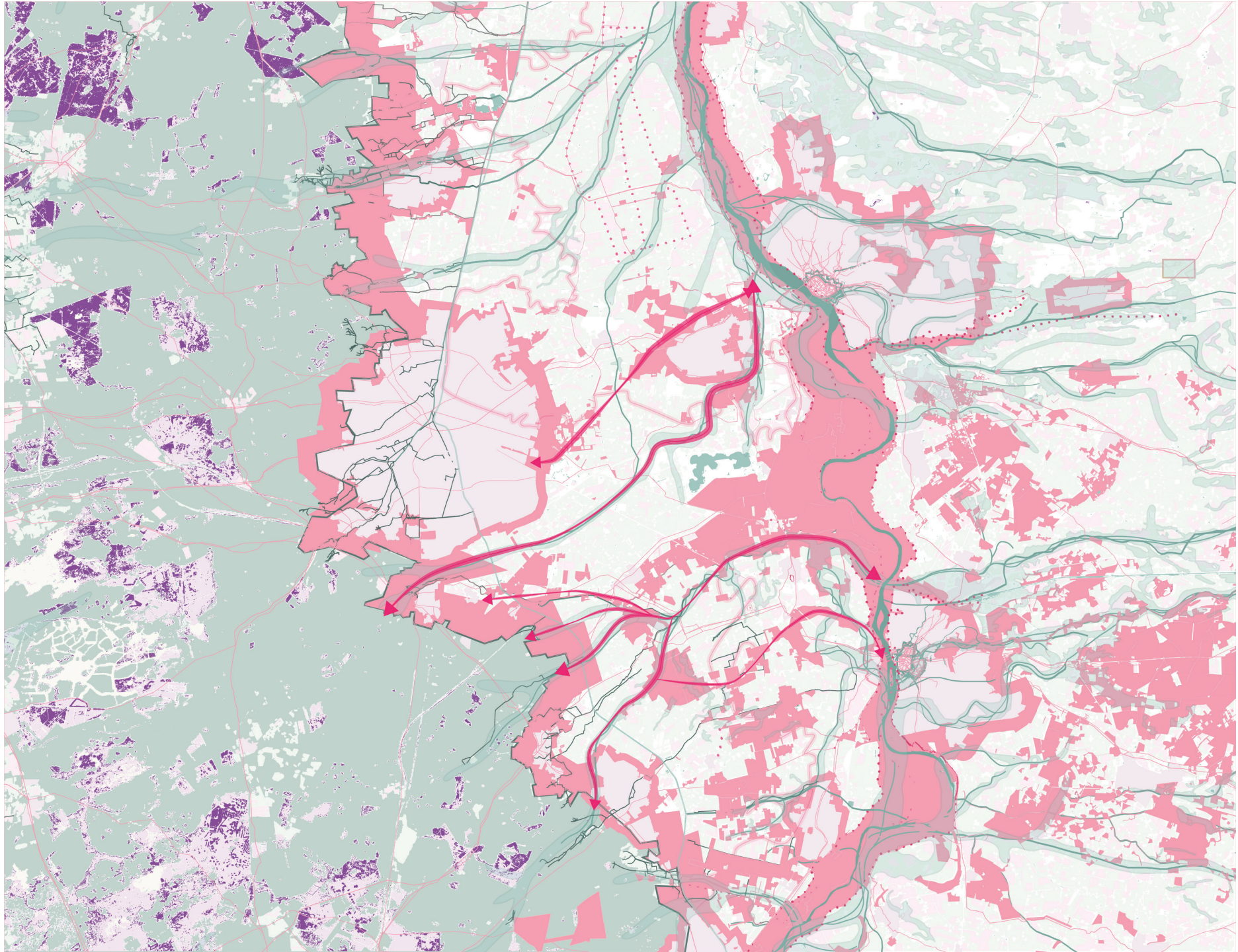
Map made by author, using data provided by Top10NL, CBS and Google Earth Image ©2019 Airbus.

# A STRONG SPATIAL LOGIC



**Connect** the Veluwe with the IJssel **ecologically** and **recreationally**

Valuable **multifunctional** green buffer zones in a **green belt** can guide urban expansion.



# ELEMENTS OF A REGIONAL LANDSCAPE PARK

NATURE

PEOPLE

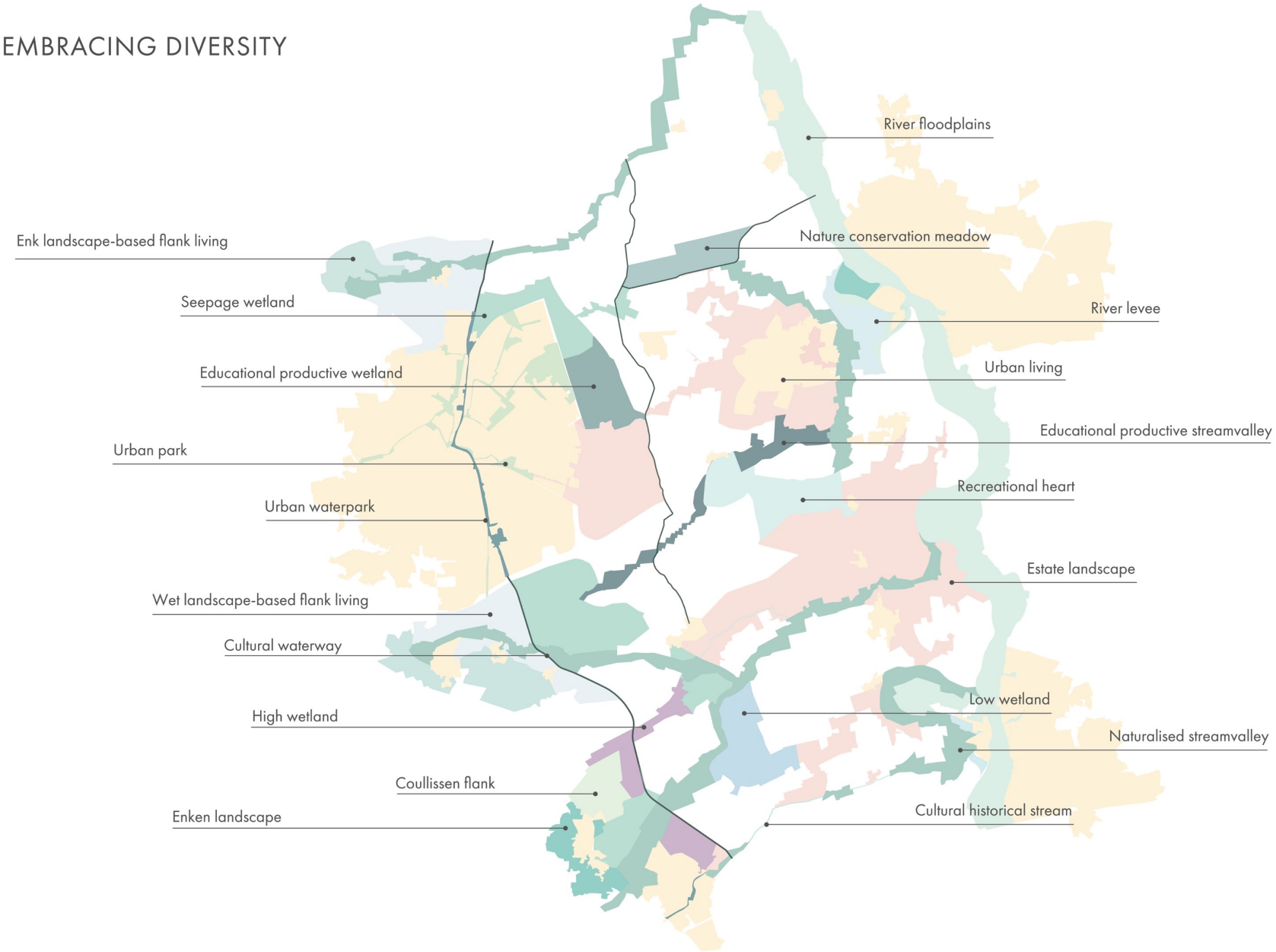
- ENVIRONMENTAL EDUCATION
- LANDSCAPE & NATURE CONSERVATION
- ACCESSIBILITY
- CLIMATE ADAPTIVITY
- CULTURAL-HISTORICAL IDENTITY
- HOUSING DEVELOPMENT
- SUSTAINABLE AGRICULTURE
- LEISURE & TOURISM

## CLIMATE ADAPTIVITY

## ECOLOGY

## RECREATION & IDENTITY

# EMBRACING DIVERSITY

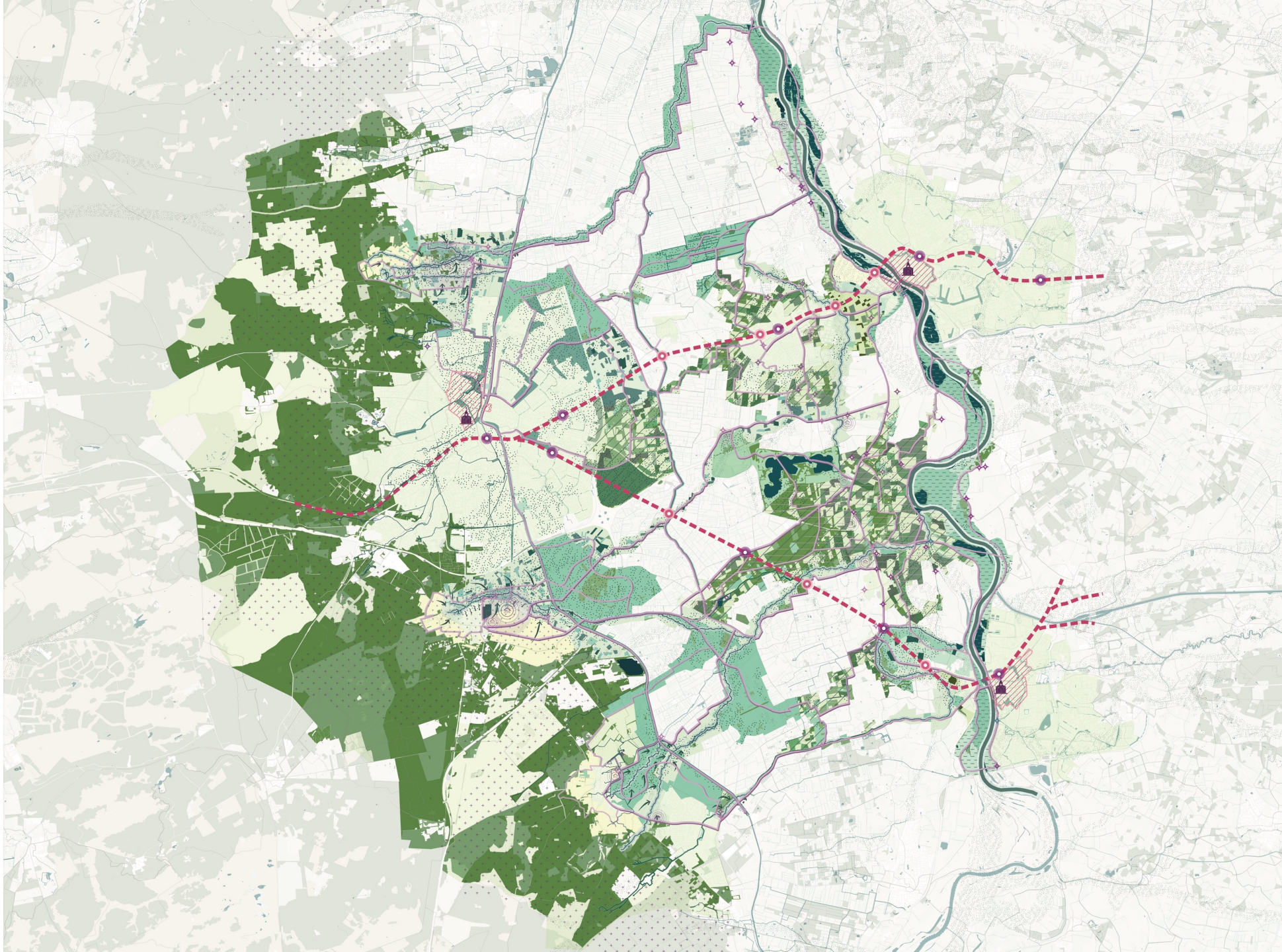


# CITY TRIANGLE
# MOSAIC PARK

Three strategic layers
thoughtfully binded together:

1. a **climate-adaptive** layer;
2. an **ecology** layer;
3. a **recreation** and **identity** layer.

using landscape as the **basis**
and celebrating the **diversity**
of the landscape



## CLIMATE ADAPTIVITY

1

Restoring the water cycle of the Veluwe, IJsselvalley and IJssel and adding sponge capacity, creating more resilience to future climate challenges such as drought and peak precipitations.

INFILTRATE & STORE SPONGE CITIES

INFILTRATE & STORE FLEXIBLE WATERLEVEL WETLANDS

SLOW WATER DOWN BY NATURALISING STREAMS

SPONGE LANDSCAPE ON FLANKS

WATER INFILTRATION LANDSCAPES ON RIDGES

FUNCTION FOLLOWS LANDSCAPE LOGIC

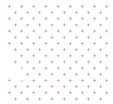
# CLIMATE ADAPTIVITY

1. Restore water flow of connecting streams from source to the river;

2. Going back to a wet valley with sponge capacity;

3. Using restored seepage for valuable nature development;

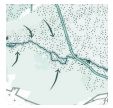
4. Safeguard cultural heritage in estate landscapes.



RIDGE AS INFILTRATION AREA

FUNCTION FOLLOWS LEVEL

CULTURAL HERITAGE SENSITIVE WATER MANAGEMENT



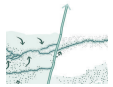
SPONGE AREA FEEDS STREAM

NATURALISED AND CULTURAL HISTORICAL STREAMS

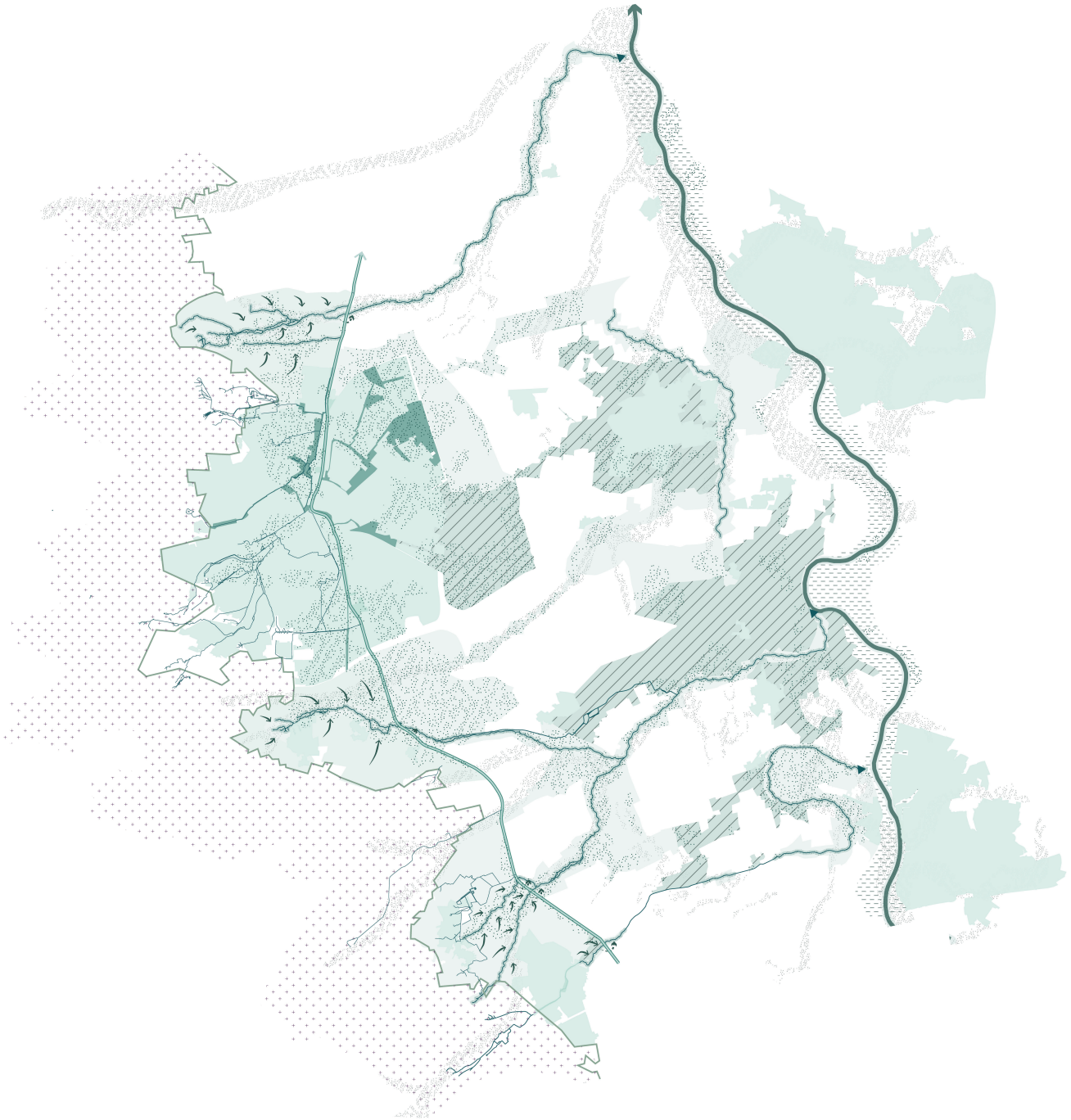
SEEPAGE FED NATURE

SPONGE CITY

ROOM FOR THE RIVER



CANAL AS WATERBUFFER



## BEFORE

## AFTER

FUNCTION FOLLOWS LEVEL

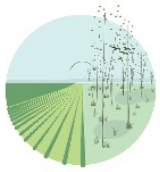
- FIXED WATERLEVEL → FLEXIBLE WATERLEVEL
- FUNCTION DETERMINES LEVEL → LEVEL DETERMINES FUNCTION

CULTURAL HERITAGE
SENSITIVE WATER
MANAGEMENT

# 2

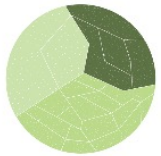
## ECOLOGY

Creating robust connections between the Veluwe and IJssel existing of nature conservation areas supported by nature-friendly and -inclusive extensive agricultural functions.



AGRICULTURE TO NATURE DEVELOPMENT

ECOLOGY-SENSITIVE RECREATION PATHS



RECREATIONAL ACTIVITY ZONING

NATURE-EXLUSIVE AGRICULTURE TO NATURE-INCLUSIVE AGRICULTURE

STEPPINGSTONES

CONNECTING FRAGMENTED GREEN

WOODLAND AS CONNECTOR

NATIVE LOCATION-SPECIFIC NATURE

PROTECTING EXISTING AND DEVELOPMENT OF NEW NATURE AND LANDSCAPE

WATER AS CONNECTOR

# ECOLOGY

1. Protect valuable existing and potential habitats from urbanisation pressure;

2. Restore connections between the Veluwe and IJssel for ambassador species;

3. Include existing protected nature areas into the ecological park structure;

4. Develop new nature conservation areas based on the ambassador species, allowing only extensive or minimal recreation;

5. Introduce new and reintroduce former nature-inclusive agricultural practices important for key ambassador species as an ecological basis working together with the nature conservation areas.

RIVER LEVEE WITH BIRDFIELDS, HIGH-STEM ORCHARDS AND FOOD AND PRODUCTION FORESTS

WET MEADOWLAND NATURE CONSERVATION AREA

MORAINE HEATH AND FOREST

OPEN ENK WITH FLOWER-RICH GRAIN FIELDS

STREAMVALLEY NATURE CONSERVATION CORRIDOR

COVERSAND LANDSCAPE WITH BIRDFIELDS, GRAZING FIELDS AND AGROFORESTRY

WET FLOWER-RICH HAYFIELDS, AGROFORESTRY AND PALUDICULTURE

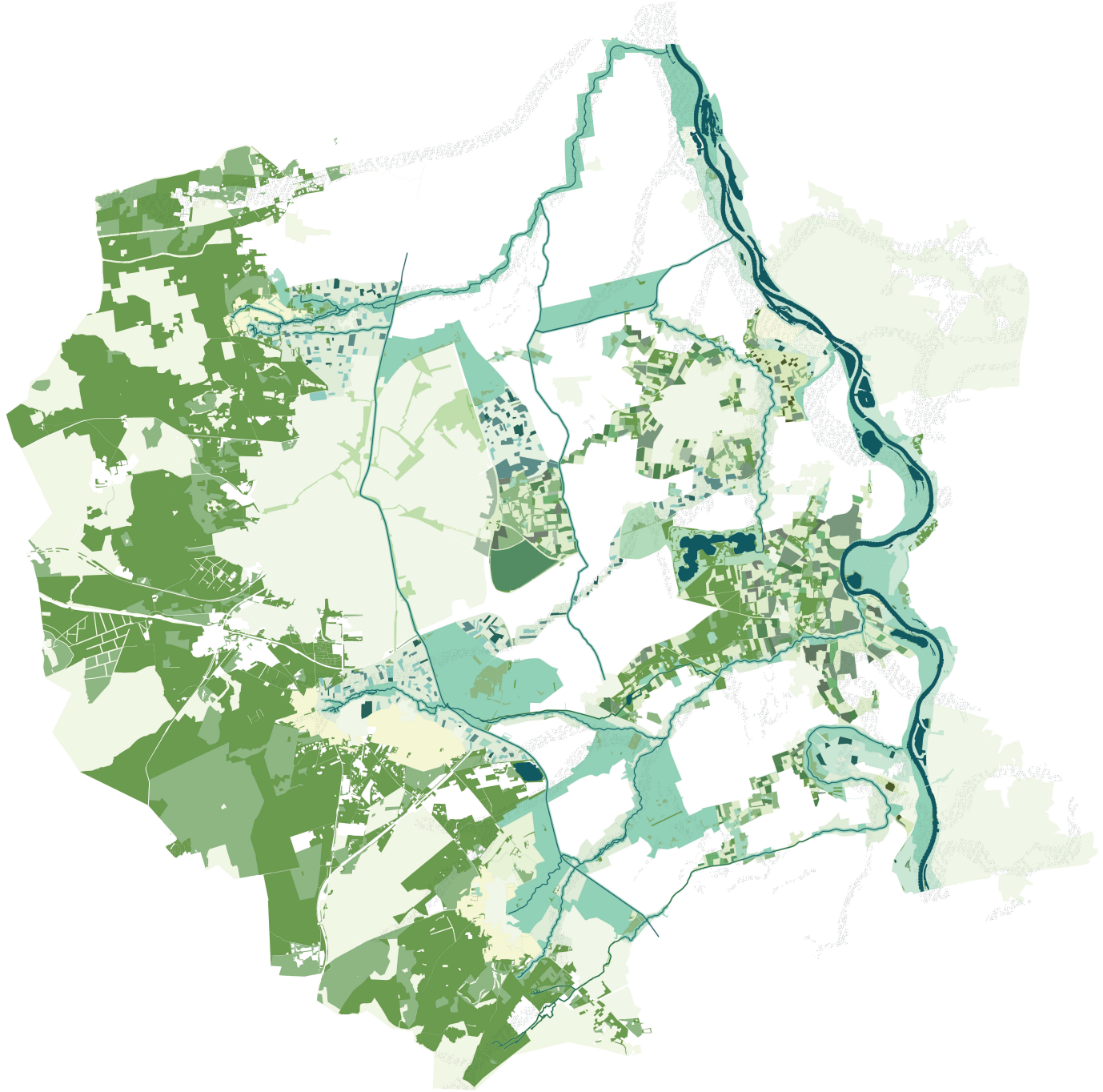
WET HAYFIELDS AND NATURE CONSERVATION AREAS CONNECTED THROUGH NATURALISED STREAMS

SEEPAGE-FED WET NATURE DEVELOPMENT

GREEN-BLUE CITY PARK STRUCTURES

RIVER NATURE DEVELOPMENT

FORMER RIVER FLOODPLAIN WITH WET GRAZING AND SILVOPASTURE



| | BEFORE | | AFTER |
|---|---|---|---|
| COVERSAND LANDSCAPE WITH BIRDFIELDS, GRAZING FIELDS AND AGROFORESTRY | • PRODUCTION FORESTS + ORCHARDS | → | PRODUCTION FORESTS + AGROFORESTRY |
| | • ARABLE FARMING | → | NATURE INCLUSIVE ARABLE FARMING |
| | • GRAZING FIELDS | → | EXTENSIVE GRAZING FIELDS |

# Estate landscape

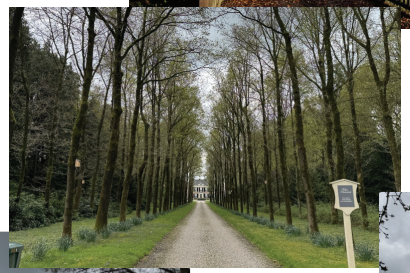
PRODUCTION FORESTS

ESTATE HOUSES

[1]

INDUSTRY

GARDENS



TREE LANES

OPEN FIELDS INSIDE FORESTS

[1] Photograph from Bezoek Voorst, n.d., https://www.bezoekvoorst.nl

## BEFORE

## AFTER

WET MEADOWLAND NATURE CONSERVATION AREA

- NATURE-UNFRIENDLY OPEN LANDSCAPE FARMING → OPEN LANDSCAPE NATURE CONSERVATION

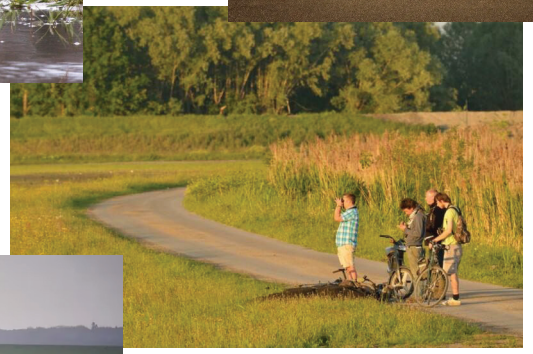
# Nature conservation meadow

MEADOWBIRDS

2

4

BIRDSPOTTING

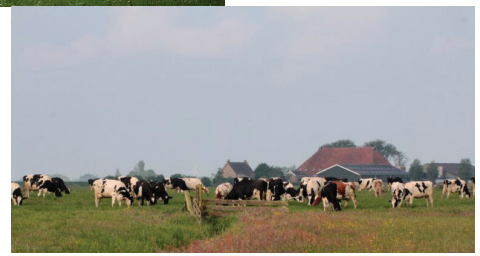


3

PUDDLES

1

OPEN



5

[1] Photograph from *De drie kraanvogels in het Gruttoveld*, J. Van Wijk, n.d., https://www.flevo-landschap.nl/nieuws/kraanvogels-in-gruttoveld

[2] Photograph from *Grutto in Beltrumse veld*, R. Kamphuis, n.d., https://www.gelderlander.nl/achterhoek/waarom-weidevogels-niet-beschermd-worden-tegen-windmolens-deze-vogels-zijn-geen-wespendief~addcc20b/

[3] Photograph from Weidevogels spotten, Y. Adams, n.d., https://www.regionalelandschappen.be/projecten/weidevogels#:~:text=Weidevogels%20zijn%20een%20gevarieerde%20groep,nesten%20van%20weidevogels%20extra%20kwetsbaar.

[4] Photograph from *Vogelkijkhut Roode Weel*, Brabantse wal, n.d., https://www.vvvbrabantsewal.nl/locaties/4133288916/vogelkijkhut-roode-weel\

[5] Photograph from *Extensief begrazen*, Sanfurd, n.d., https://www.sanfurd.nl/index.php/over-ons/weidevogels/

## RECREATION & IDENTITY

# 3

Strengthening the diversity of the landscape and adding a slow traffic network connecting cities and agglomerations with each other and with new landscape-based urban developments, greenspaces and heritage features.

THEMED TRAILS

AGRICULTURAL RECREATIONAL ACTIVITY

STRENGTHENING AND CONNECTING DIVERSE LANDSCAPE TYPES

RECOGNISABLE PARK ELEMENTS

REINTRODUCE HISTORIC LOCATION-SPECIFIC LANDUSES

ROUTE AND GREEN CONNECTION URBAN-RURAL

MAIN BIKE CONNECTING NETWORK WITH LOOPS

ACTIVATE HISTORIC ROUTES AND TRACES

# RECREATION & IDENTITY

1. Celebrate the diversity of regional landscape characteristics through recognisable clusters;

2. Integrate landscape-based, multifunctional urban expansions along the northern and southern urban edges of Apeldoorn and at agglomerations;

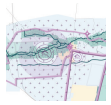
3. Establish a recreational network connecting cities, agglomerations, and their landscape-based developments;

4. Strengthen the presence of the park inside the city through green and recreational structures;

5. Combine heritage and experience by reactivating historic routes and exhibiting cultural features;

6. Safeguard nature conservation through guided recreation and seasonal access management.

DIVERSITY OF SHARED LANDSCAPE CHARACTERISTICS



MULTIFUNCTIONAL LANDSCAPE-BASED URBAN EXPANSION OF APELDOORN

RECREATION NETWORK CONNECTING CITIES, AGGLOMERATIONS AND LANDSCAPE-BASED DEVELOPMENTS

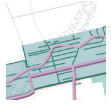
PARK INSIDE THE CITY

RECREATIONAL HEART

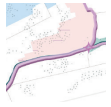
EDUCATIONAL EXPERIMENTAL FARMING AREA

NATURE CONSERVATION RECREATION

REACTIVATING HISTORIC ROUTES AND CONNECTING CULTURAL HISTORICAL FEATURES

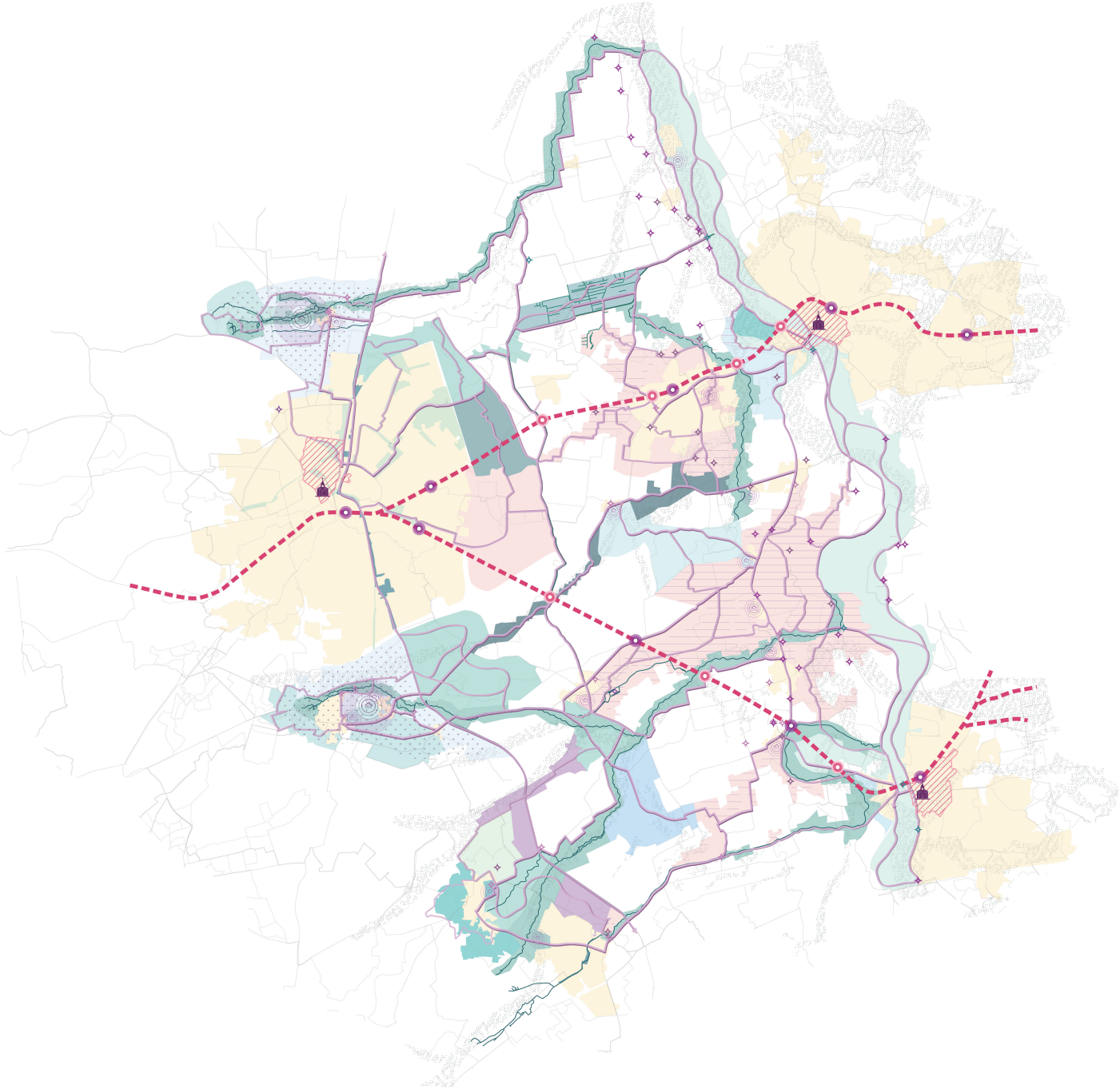


OPEN LANDSCAPE SHOWING HISTORIC PATTERNS



PRESERVE CULTURAL HISTORICAL RAISED STREAMS

LIGHTRAIL WITH PARK STOPS



## Wet landscape-based flank living

1

MULTIFUNCTIONAL PLOTS

2

HEIGHTENED HOUSING

3

FLOATING HOUSING

4

HOUSING ON MOUNDS

## Enk landscape-based flank living

5

RYE, OATS AND BUCKWHEAT

MULTIFUNCTIONAL PLOTS

6

PRESERVE OPEN LANDSCAPE

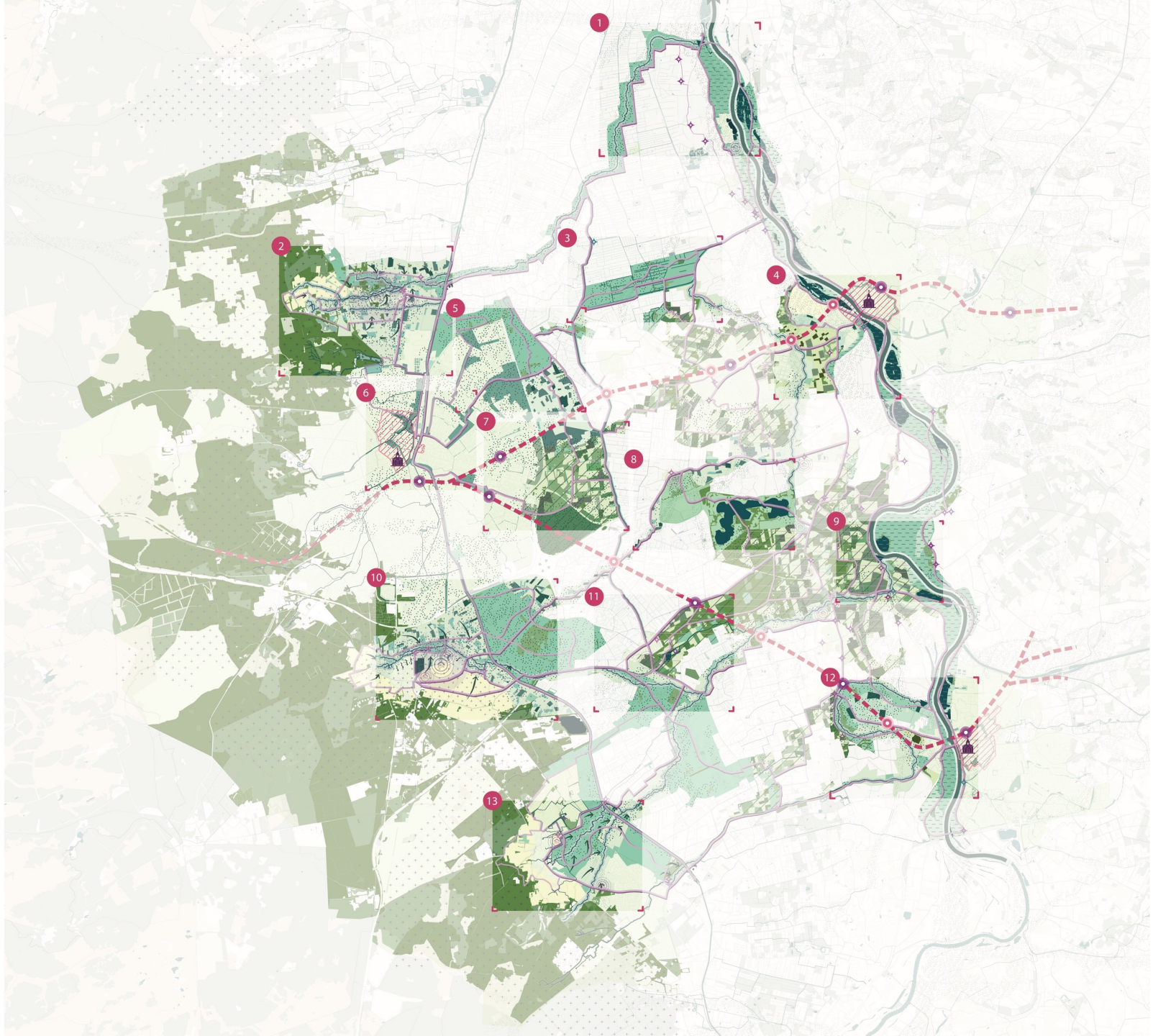
[1] Image from *Het Hart van de Purmer*, Studio Marco Vermeulen, n.d.-b., https://marcovermeulen.eu/nl/projecten/het+hart+van+de+purmer
[2] Image from *Bouwen boven de bodem*, Studio Marco Vermeulen, n.d.-a, https://marcovermeulen.eu/nl/projecten/bouwen+boven+de+bodem
[3] Image from *Floating neighbourhoods*, CommonCity, n.d., https://www.commoncity.nl/projects/blog-post-title-three-hakmb-pwf7w-8zy8f-zlp4d
[4] Image from *ReGen Villages Oosterwold*, Except, n.d., https://except.eco/projects/regen-villages-oosterwold/
[5] Image from *Bouwen boven de bodem*, Studio Marco Vermeulen, n.d.-a, https://marcovermeulen.eu/nl/projecten/bouwen+boven+de+bodem
[6] Image from *ReGen Villages Oosterwold*, Except, n.d., https://except.eco/projects/regen-villages-oosterwold/

## BEFORE

## AFTER

RECREATION NETWORK CONNECTING CITIES, AGGLOMERATIONS AND LANDSCAPE-BASED DEVELOPMENTS

- CAR-ORIENTED NETWORK → BIKE-ORIENTED NETWORK
- COLLECTION OF NETWORKS → CLEAR PARK NETWORK


1
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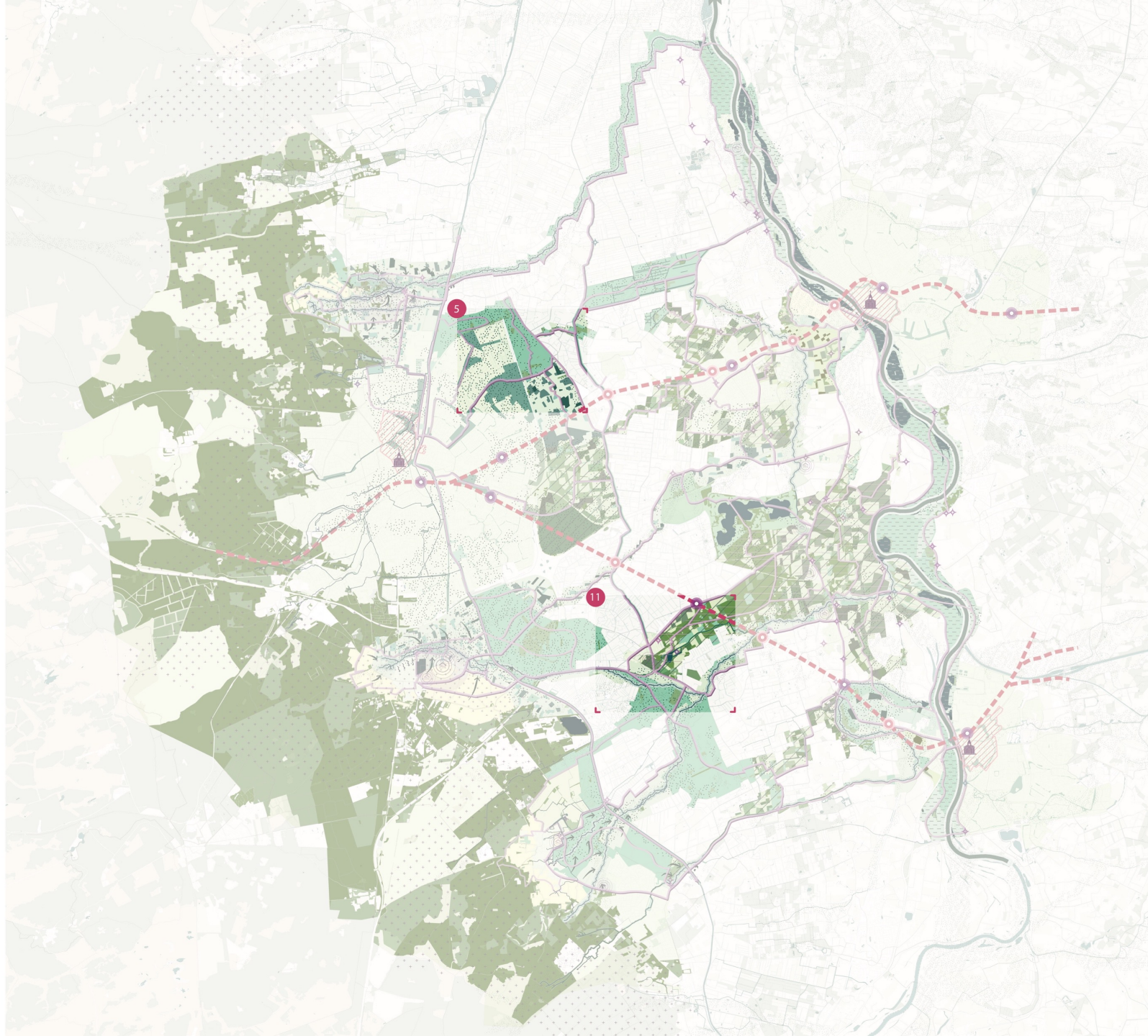
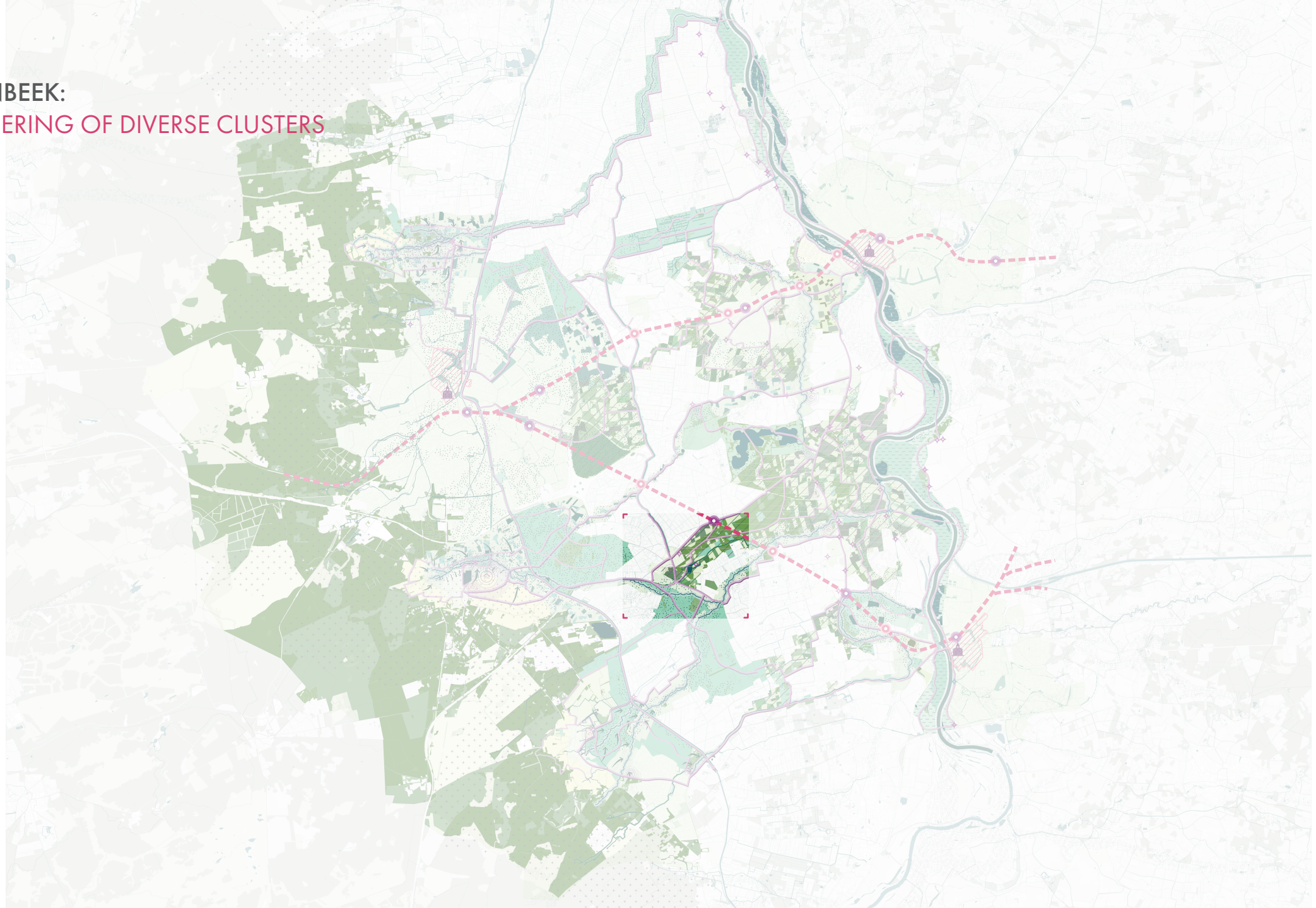
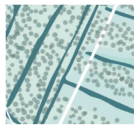

5
11

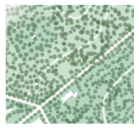
KLARENBEEK:
A GATHERING OF DIVERSE CLUSTERS



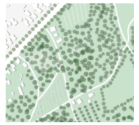
# PROJECT ENVELOP KLARENBEEK



ALDER FOREST SEEPAGE WETLAND



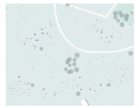
PRODUCTION FOREST



BIRD- AND GRAZING FIELDS

CULTURAL HERITAGE STREAM

RESIDENT COMMUNITY HUB



WET HEATH LANDSCAPE

LIVING ON MOUNDS

SPORTS AREA



INTERACTION WITH FARMERS ALONG ROUTES



NATURALISED STREAMVALLEY WITH STEPPING STONE AREA



ESTATE MANSION AREA



PUBLIC COMMUNITY HUB



NEW LANDSCAPE-BASED LIVING AREA



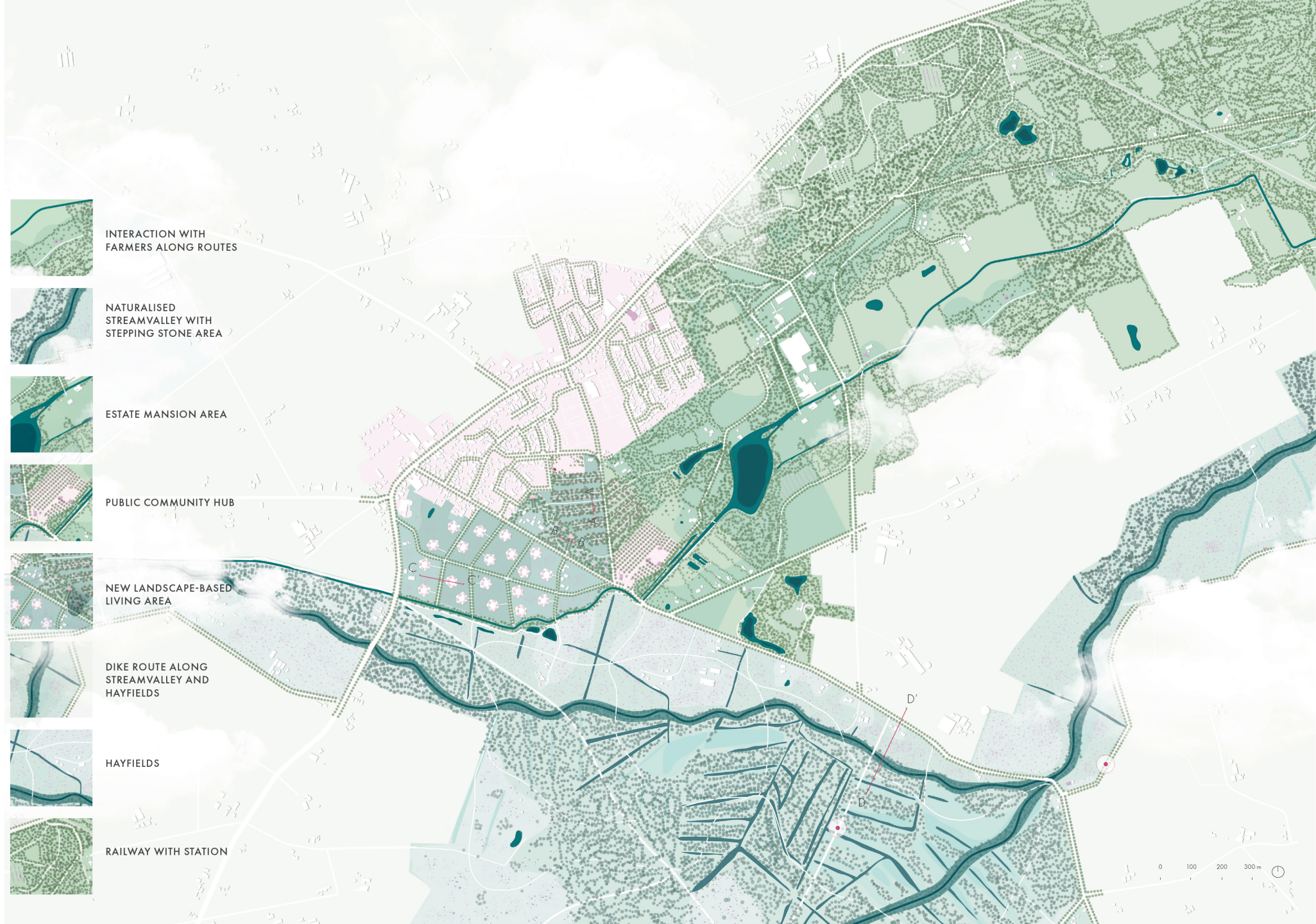
DIKE ROUTE ALONG STREAMVALLEY AND HAYFIELDS



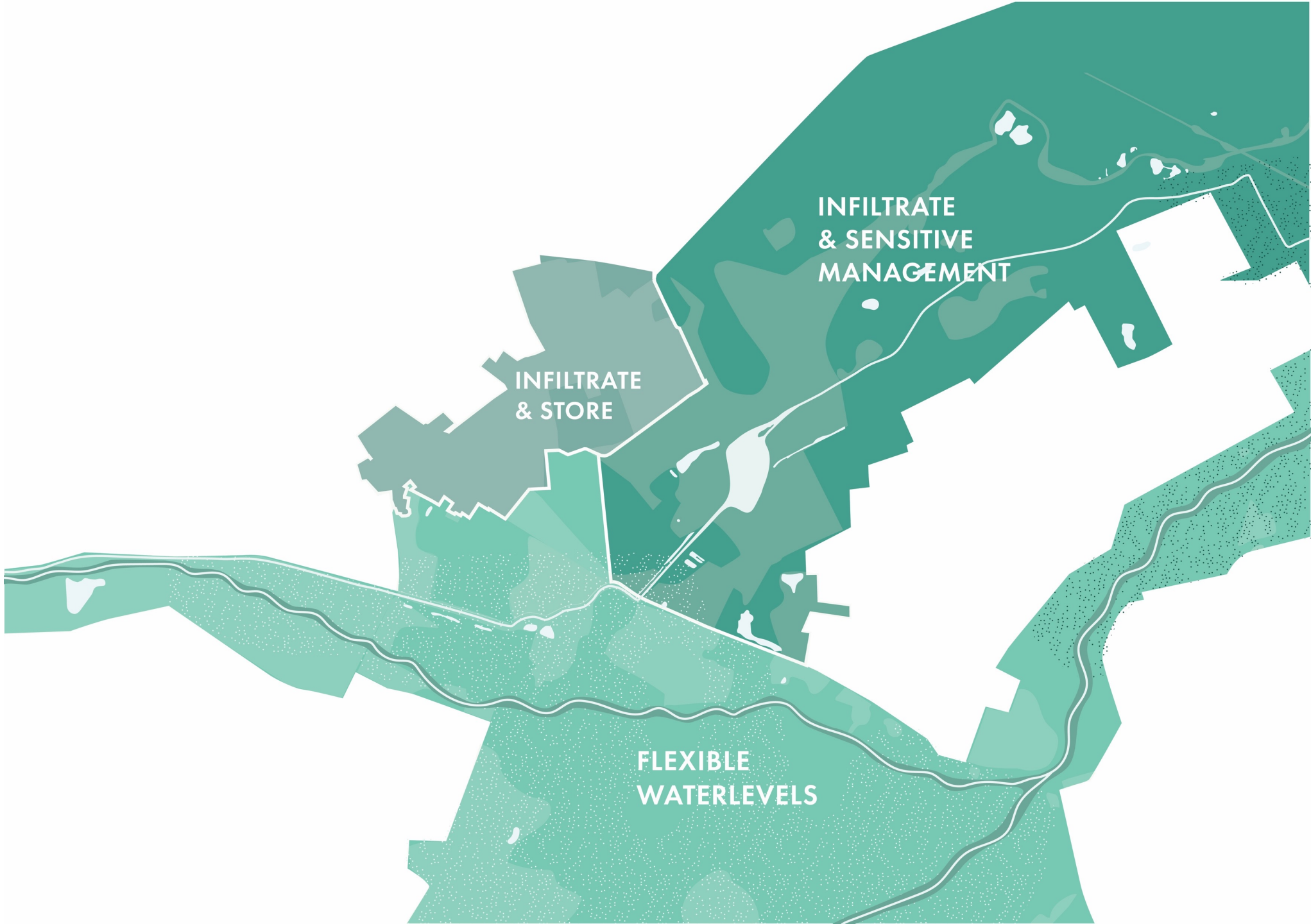
HAYFIELDS



RAILWAY WITH STATION



CLIMATE ADAPTIVITY



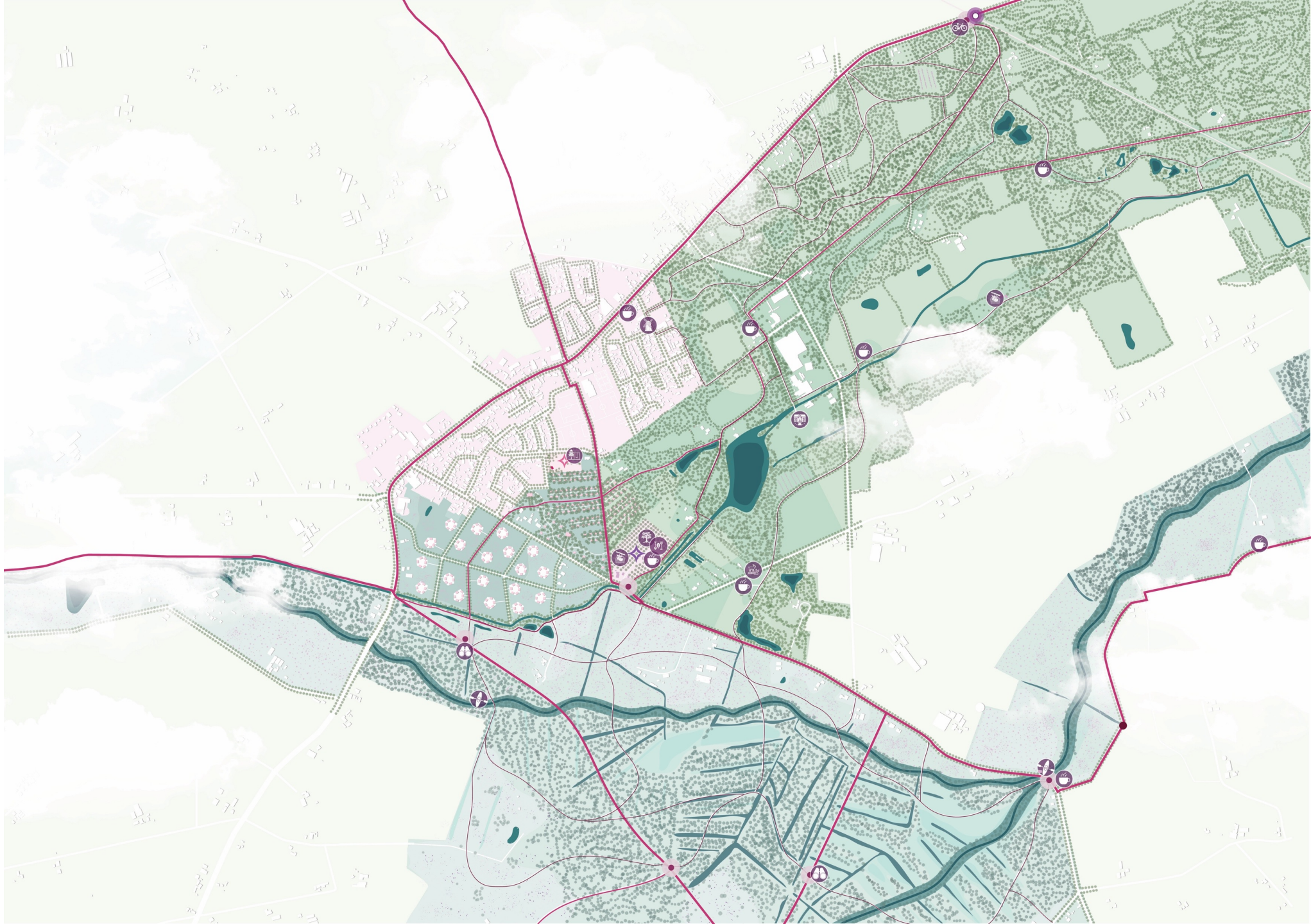
ECOLOGY

# RECREATION AND IDENTITY

- café
- bike renting
- bird watching facility
- hire own fruit tree
- farmers market or shop
- canoe renting stop
- local produce restaurant
- natural playground
- petting zoo
- estate mansion
- windmill
- lightrail stop
- hub
- regional bike connection
- biking paths
- hiking paths
- weir

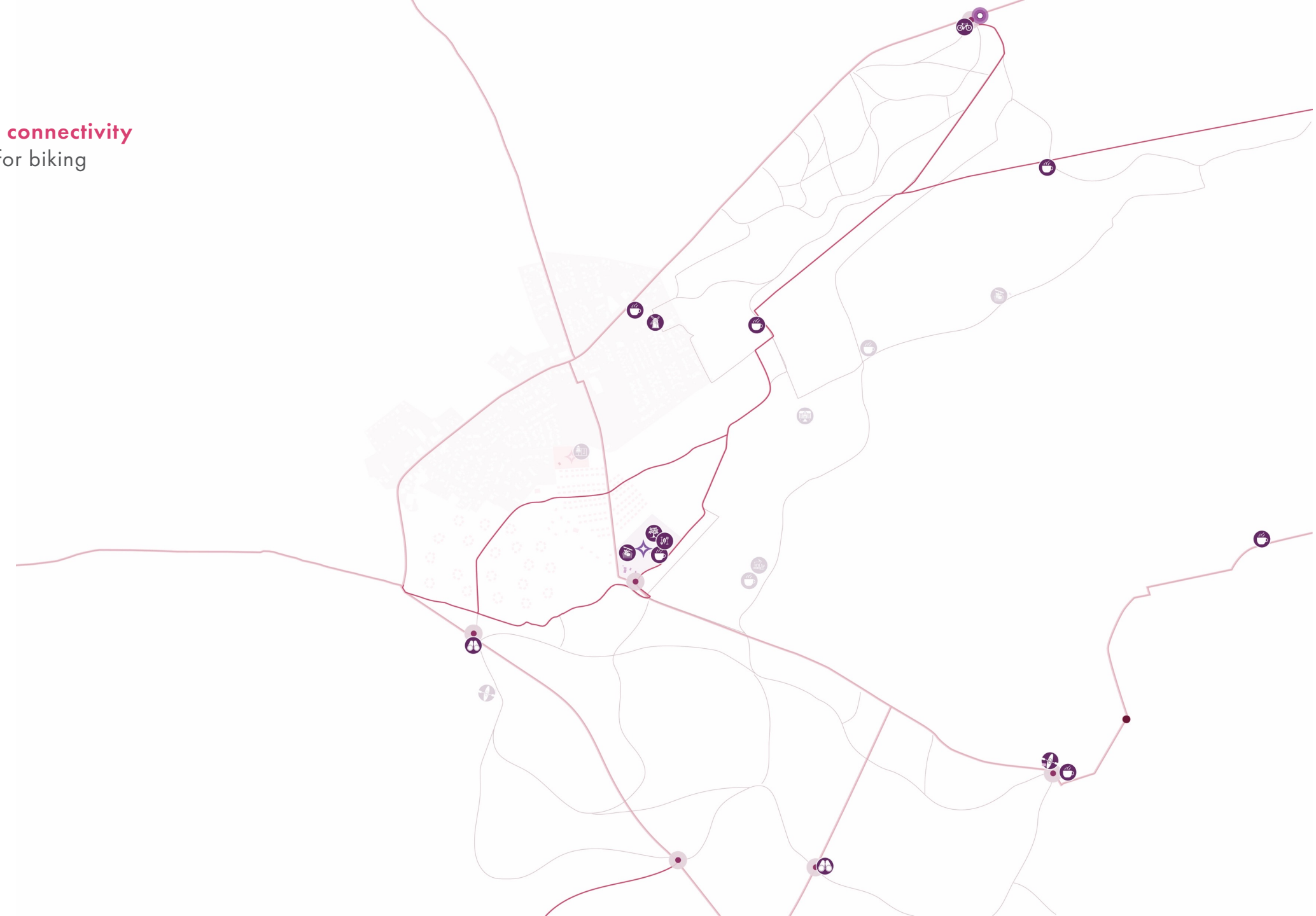
## routes, facilities and activities

- café
- bike renting
- bird watching facility
- hire own fruit tree
- farmers market or shop
- canoe renting stop
- local produce restaurant
- natural playground
- petting zoo
- estate mansion
- windmill
- lightrail stop
- hub
- regional bike connection
- biking paths
- hiking paths
- weir



## regional connectivity
network for biking

**regional connectivity**
network for biking

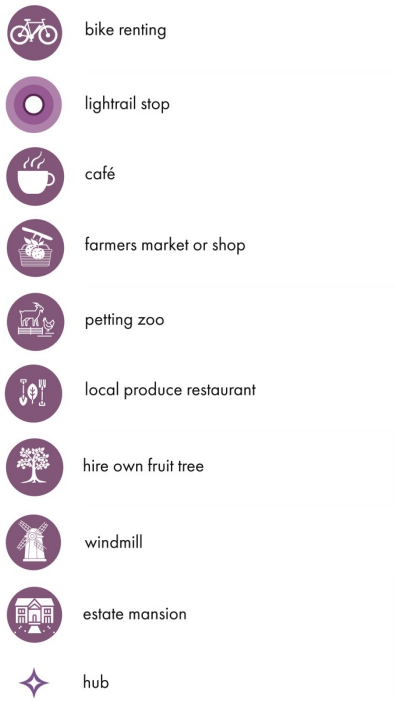


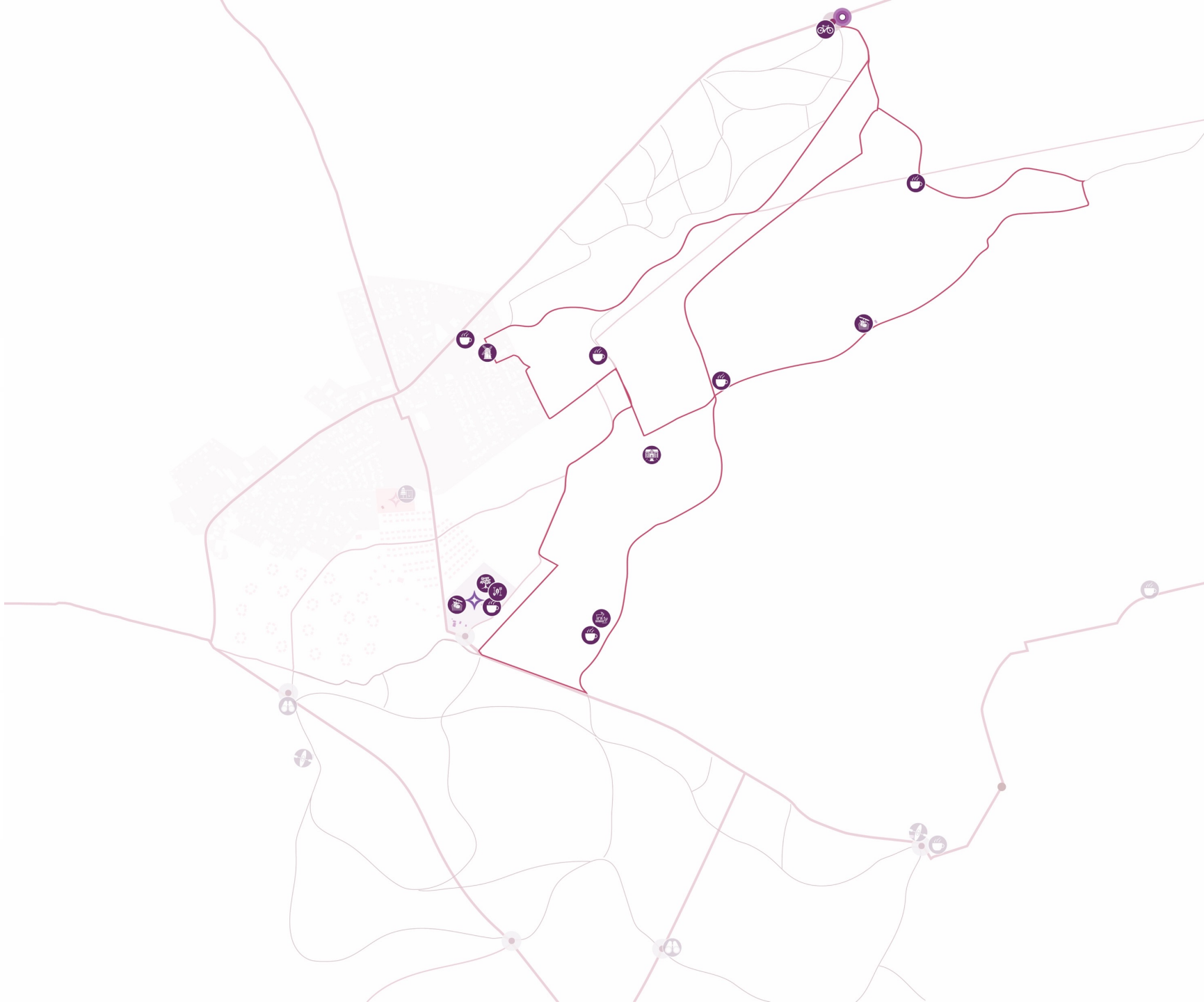
**Lightrail stration** and
**bike-hike points**

# **dog walking** paths

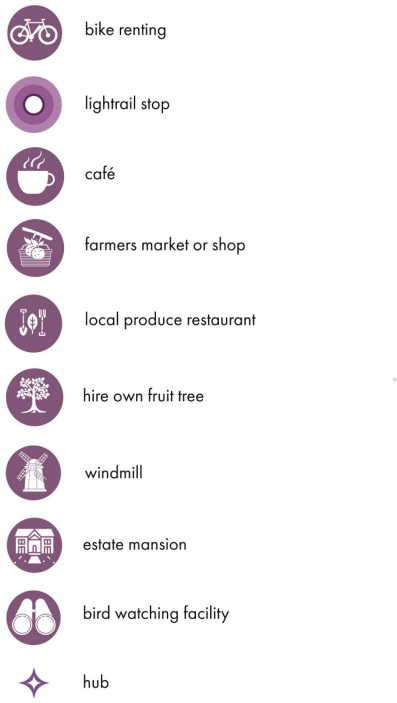
# **adventurous experience** trails

# **cultural heritage** loops: walking

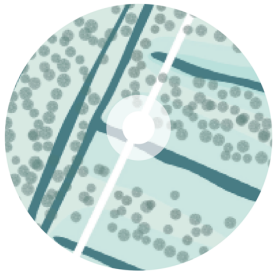


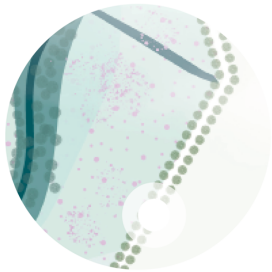



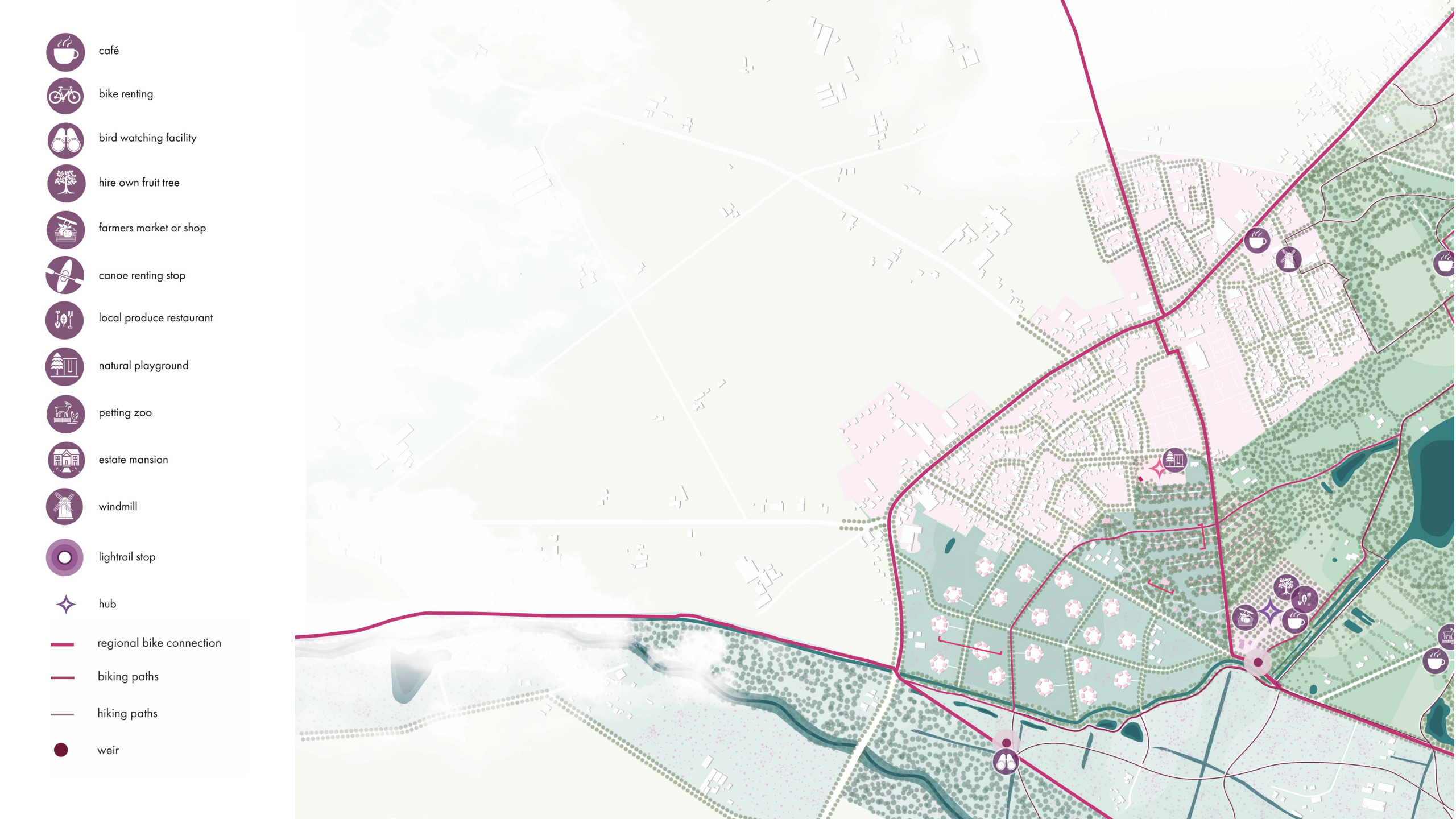
# **cultural heritage** loops: biking

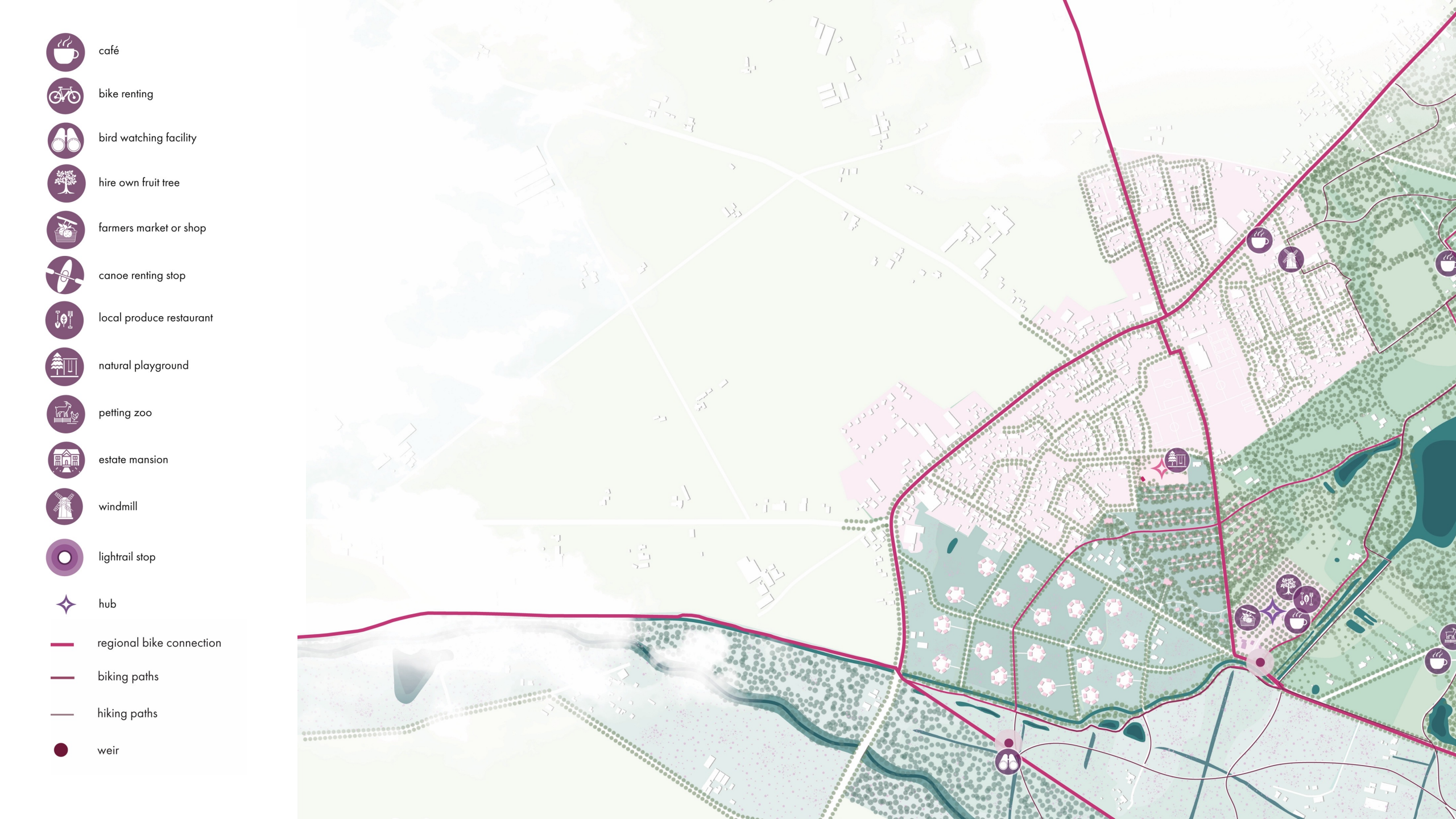


# **wetland exploration** paths






café
bike renting
bird watching facility
hire own fruit tree
farmers market or shop
canoe renting stop
local produce restaurant
natural playground
petting zoo
estate mansion
windmill
lightrail stop
hub
regional bike connection
biking paths
hiking paths
weir


café
bike renting
bird watching facility
hire own fruit tree
farmers market or shop
canoe renting stop
local produce restaurant
natural playground
petting zoo
estate mansion
windmill
lightrail stop
hub
regional bike connection
biking paths
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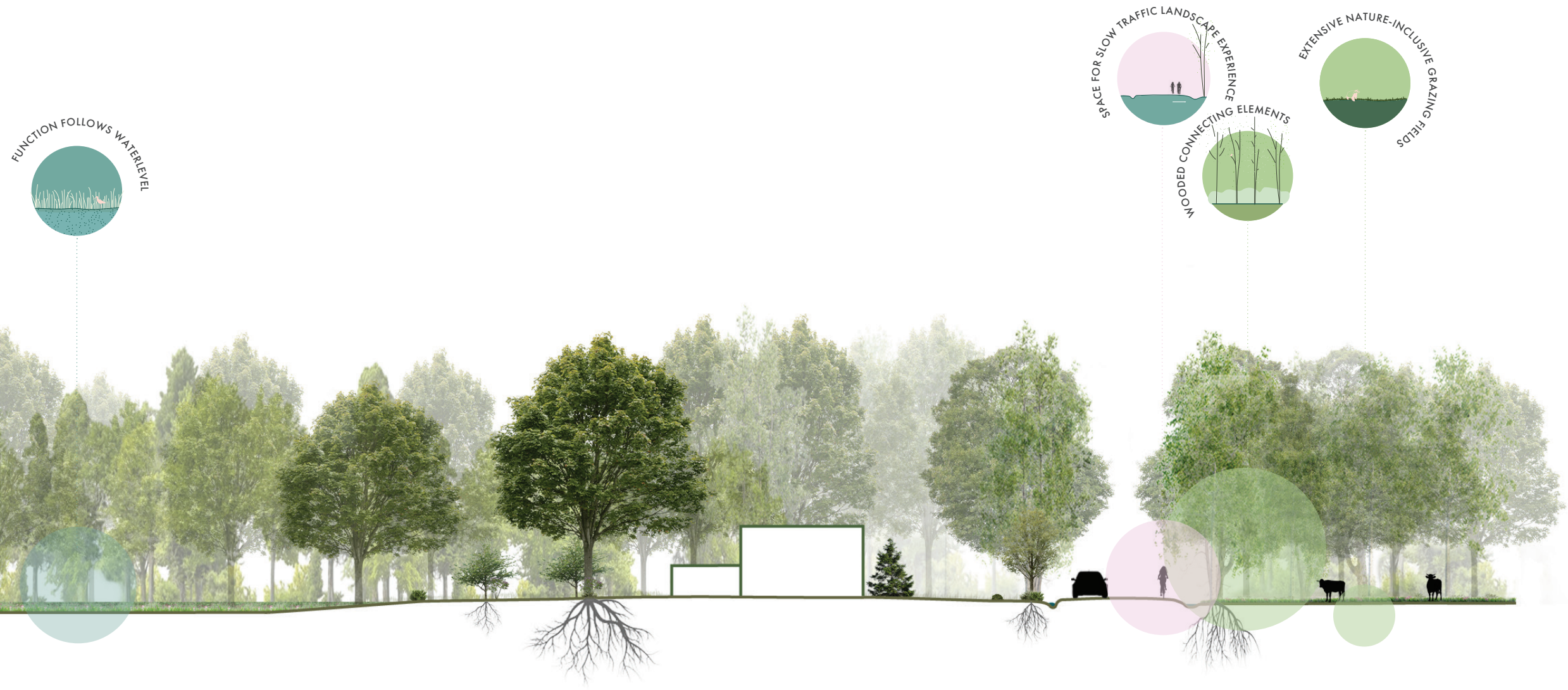
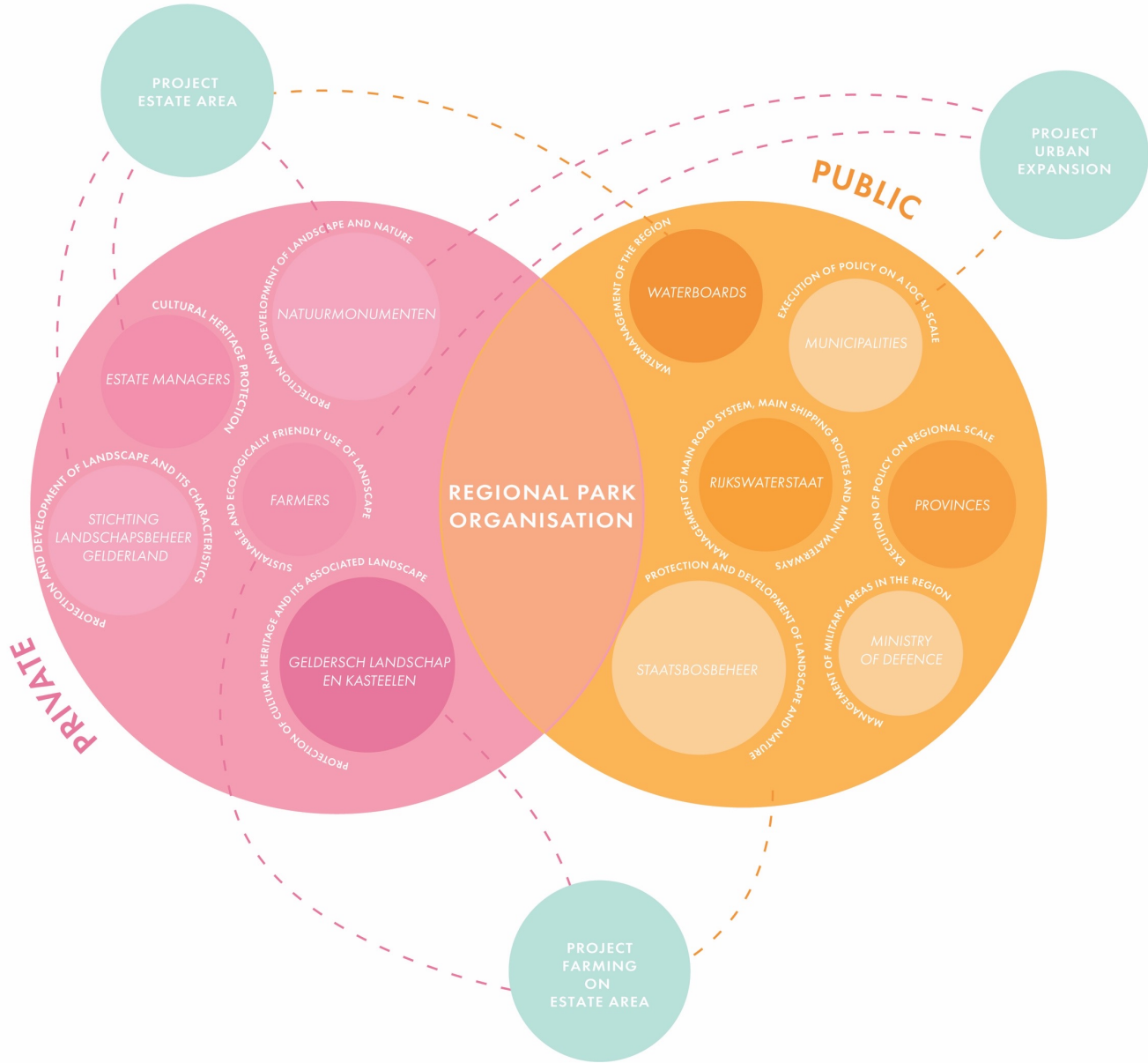
weir

ECOLOGICALLY SENSITIVE RECREATION
RESTORED SEEPAGE
SEEPAGE WETLAND ECOLOGY
ECOLOGICALLY SENSITIVE RECREATION
STREAM ECOLOGY
SEASONAL FLOODINGS
ENSURED CONNECTIVITY
Wetland
Walking path
Wetland
Natural stream


FUNCTION FOLLOWS WATERLEVEL
SPACE FOR SLOW TRAFFIC LANDSCAPE EXPERIENCE
WOODED CONNECTING ELEMENTS
EXTENSIVE NATURE-INCLUSIVE GRAZING FIELDS
Hayfields
Natural living
Shared road
Biological farming

AREA 1
AREA 4
AREA 3
AREA 2


PROJECT ESTATE AREA
PROJECT URBAN EXPANSION
PUBLIC
PRIVATE
REGIONAL PARK ORGANISATION
WATERBOARDS
WATERMANAGEMENT OF THE REGION
MUNICIPALITIES
EXECUTION OF POLICY ON A LOCAL SCALE
RIJKSWATERSTAAT
MANAGEMENT OF MAIN ROAD SYSTEM, MAIN SHIPPING ROUTES AND MAIN WATERWAYS
PROVINCES
EXECUTION OF POLICY ON REGIONAL SCALE
STAATSBOSBEHEER
PROTECTION AND DEVELOPMENT OF LANDSCAPE AND NATURE
MINISTRY OF DEFENCE
MANAGEMENT OF MILITARY AREAS IN THE REGION
NATUURMONUMENTEN
PROTECTION AND DEVELOPMENT OF LANDSCAPE AND NATURE
ESTATE MANAGERS
CULTURAL HERITAGE PROTECTION
FARMERS
ECOLOGICALLY FRIENDLY USE OF LANDSCAPE
SUSTAINABLE AND
STICHTING LANDSCHAPSBEHEER GELDERLAND
PROTECTION AND DEVELOPMENT OF LANDSCAPE AND ITS CHARACTERISTICS
GELDERSCH LANDSCHAP EN KASTEELEN
PROTECTION OF CULTURAL HERITAGE AND ITS ASSOCIATED LANDSCAPE
PROJECT FARMING ON ESTATE AREA

# LEARNINGS & LIMITATIONS

LANDSCAPE IS A CARRIER OF WHAT HAS BEEN, BUT OFFERS A CANVAS FOR WHAT CAN BE