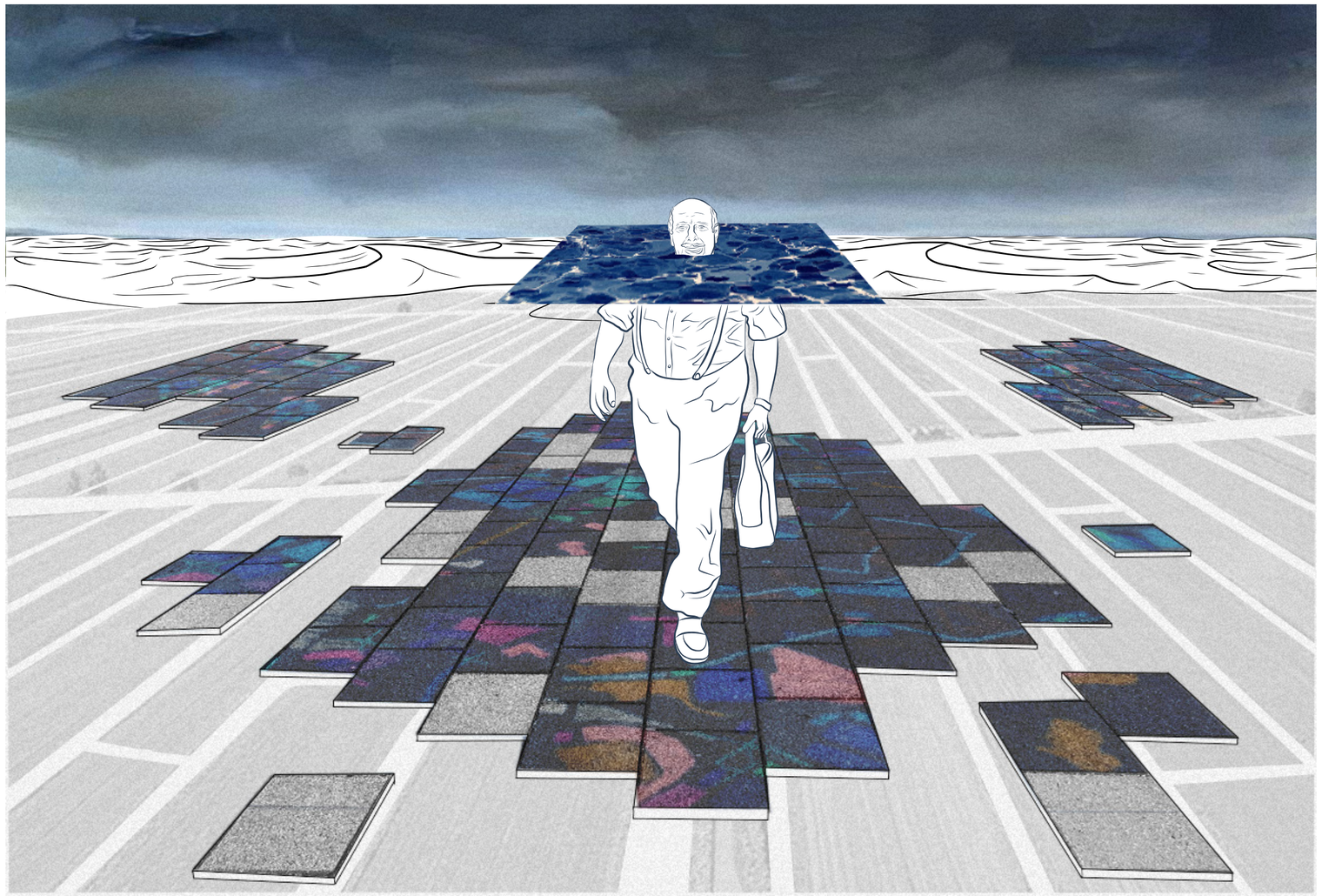
FLUID BORDERS

NETHERLANDS
ZEEUWS-VLAANDEREN

FLANDERS, BELGIUM
ANTWERP

Floor Mare Schepel
4854535, Graduation project

Msc Urbanism, 2024-2025
Transitional Territories



DUTCH-BELGIAN BORDER DIKE AT ZEEUWS-VLAANDEREN



On the border, in the nature park ‘Het verdronken land van Seafthinghe’. The horizon is the Scheldt river [image by author]

THE BORDER AS...



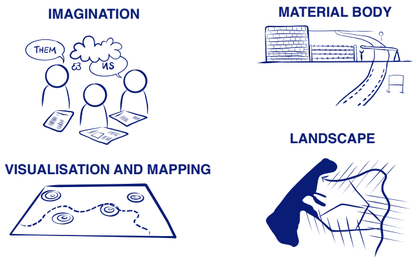
On the border, in the nature park ‘Het verdronken land van Seafthinghe’. The horizon is the Scheldt river [image by author]

THE BORDER AS...



On the border, in the nature park ‘Het verdronken land van Seafthinghe’. The horizon is the Scheldt river [image by author]

WHAT IS THE MEANING/INFLUENCE OF A **TERRITORIAL BORDER** IN TIMES OF CLIMATE CHANGE ?



HOW WILL **THE FUTURE BORDER** LOOK LIKE BETWEEN BELGIUM AND THE NETHERLANDS ?

2030 | 2050 | 2100

SHOULD WE RE-B/ORDER?

(van Houtum et al., 2005)

NATURAL BARRIERS



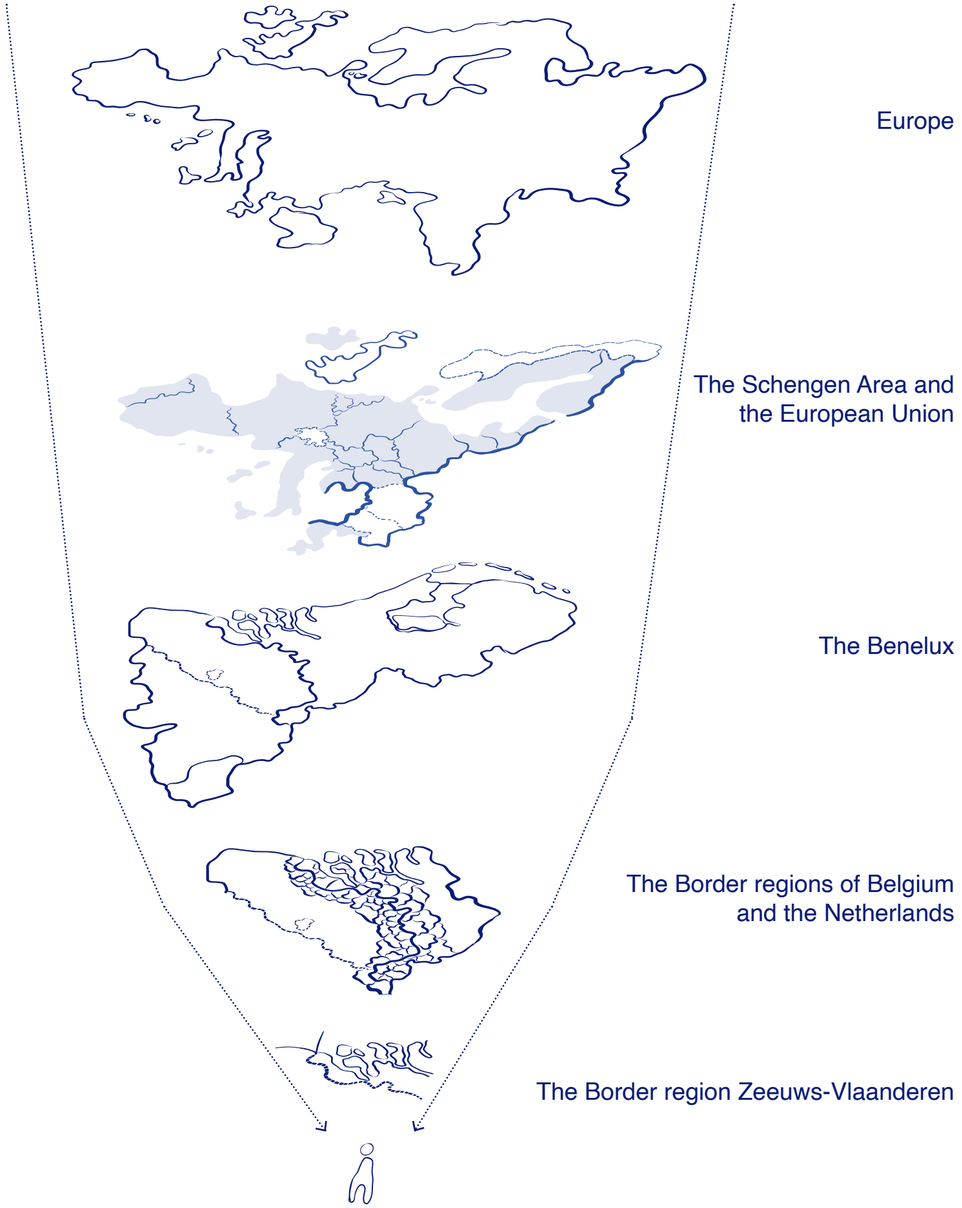
Sloot dividing farmland [Image by author]

MAN-MADE BORDERS



Fence dividing tiles [Image by author]

THE TERRITORIAL BORDERS



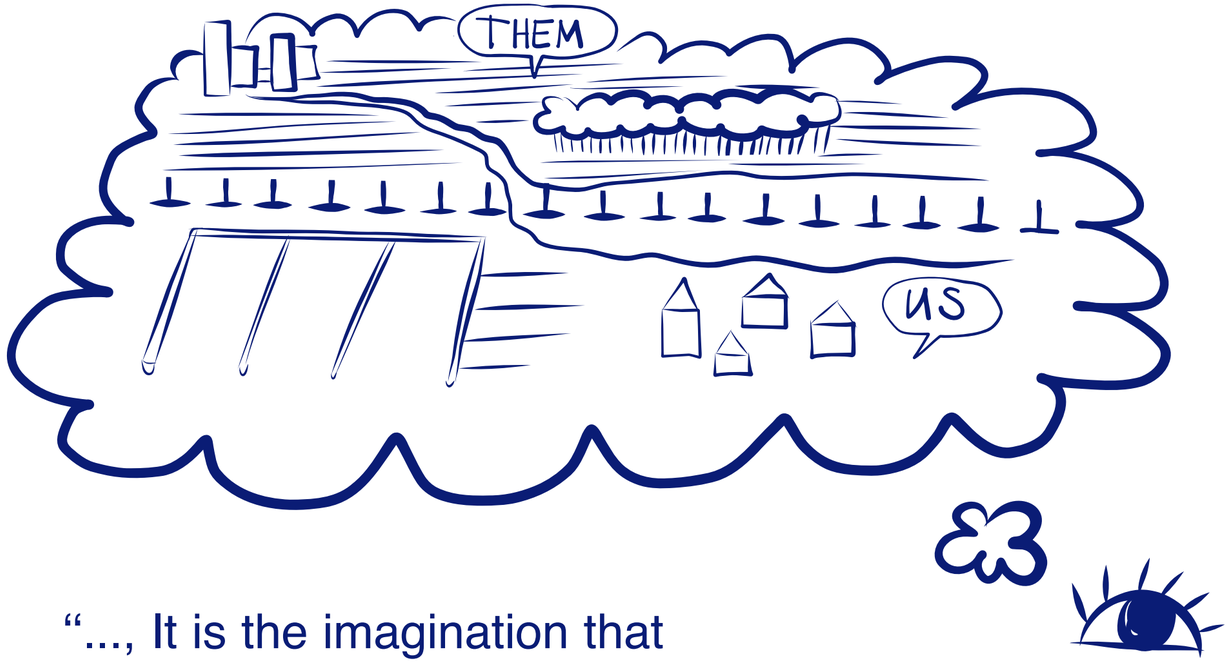
Different scales of territorial borders [Visualisation by author]

ZEEUWS-VLAANDEREN



BORDERED BY HUMANS AND WATER

THE TERRITORIAL BORDER = A SOCIAL CONSTRUCT



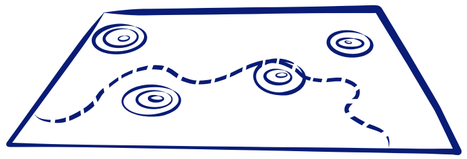
“..., It is the imagination that shapes and creates a world, a *social reality.*”

(VAN HOUTUM, ET AL. 2005)

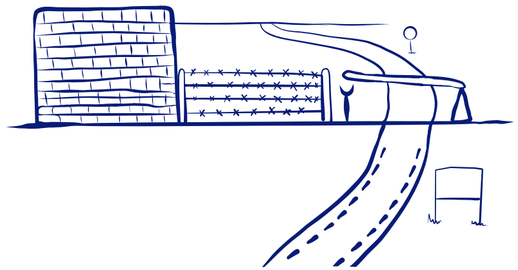
B/ORDERING (van Houtum et al., 2005)



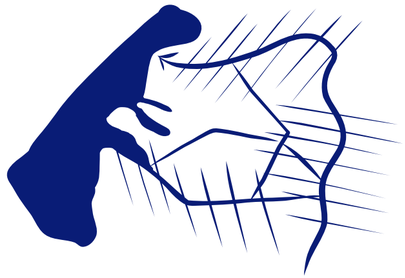
IMAGINATION



VISUALISATION AND MAPPING



MATERIAL BODY



LANDSCAPE

The different ‘layers’ of B/ordering [Visual by author]

LAYERS OF B/ORDERING



IMAGINATION

VISUALISATION AND MAPPING

MATERIAL BODY

LANDSCAPE

"US"

"THEM"

IDENTITY + *ENTITY* = ID/ENTITY

(HOUTUM ET AL., 2005)

"OURS"

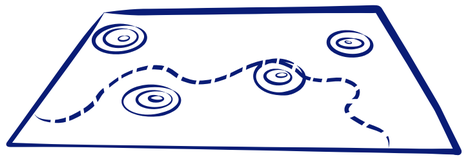
"THEIRS"

BOUNDARY OF **RESPONSIBILITY** & **OWNERSHIP**

The different 'layers' of B/ordering [Visual by author]

LAYERS OF B/ORDERING

IMAGINATION



VISUALISATION AND MAPPING

MATERIAL BODY

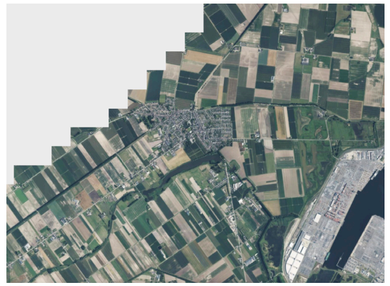
LANDSCAPE

NL



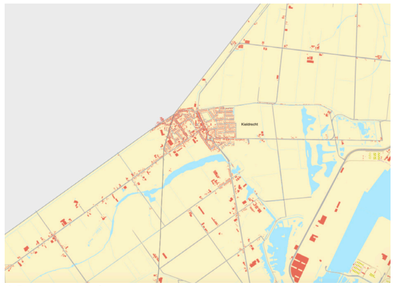
(Pdok, n.d.)

BE



(Geopunt | Digitaal Vlaanderen, n.d.)

BE



(Geopunt | Digitaal Vlaanderen, n.d.)

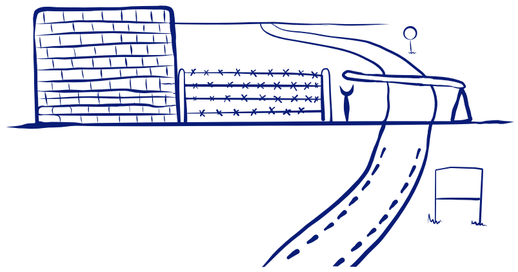
MAPS AND DATA OFTEN STOP AT HARD LINE OF BORDER

The different ‘layers’ of B/ordering [Visual by author]

LAYERS OF B/ORDERING

IMAGINATION

VISUALISATION
AND MAPPING



MATERIAL BODY

LANDSCAPE



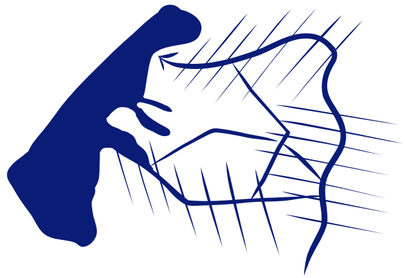
The different ‘layers’ of B/ordering [Visual by author]

LAYERS OF B/ORDERING

IMAGINATION

VISUALISATION
AND MAPPING

MATERIAL BODY

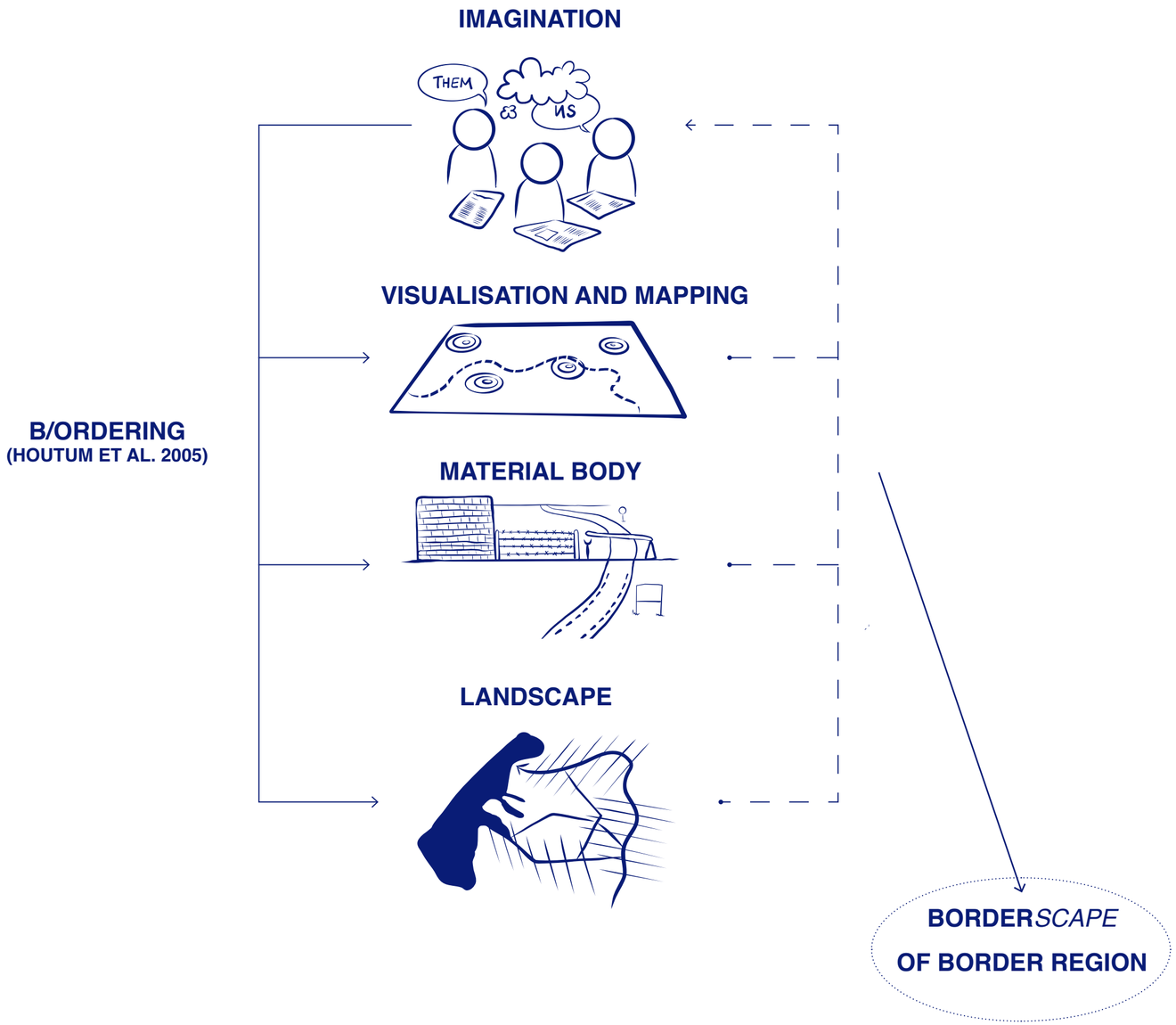


LANDSCAPE



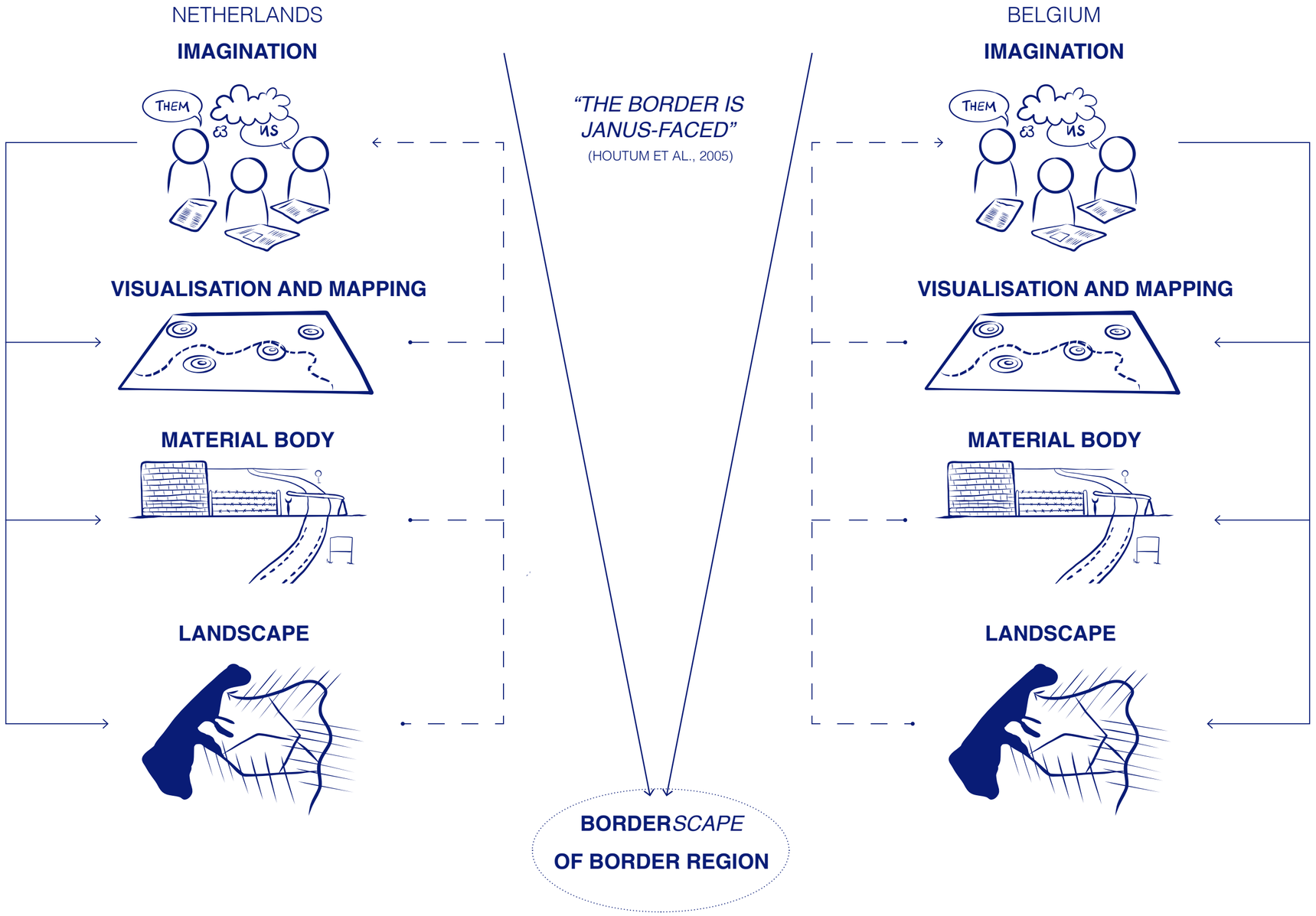
The different ‘layers’ of B/ordering [Visual by author]

BORDER DYNAMICS



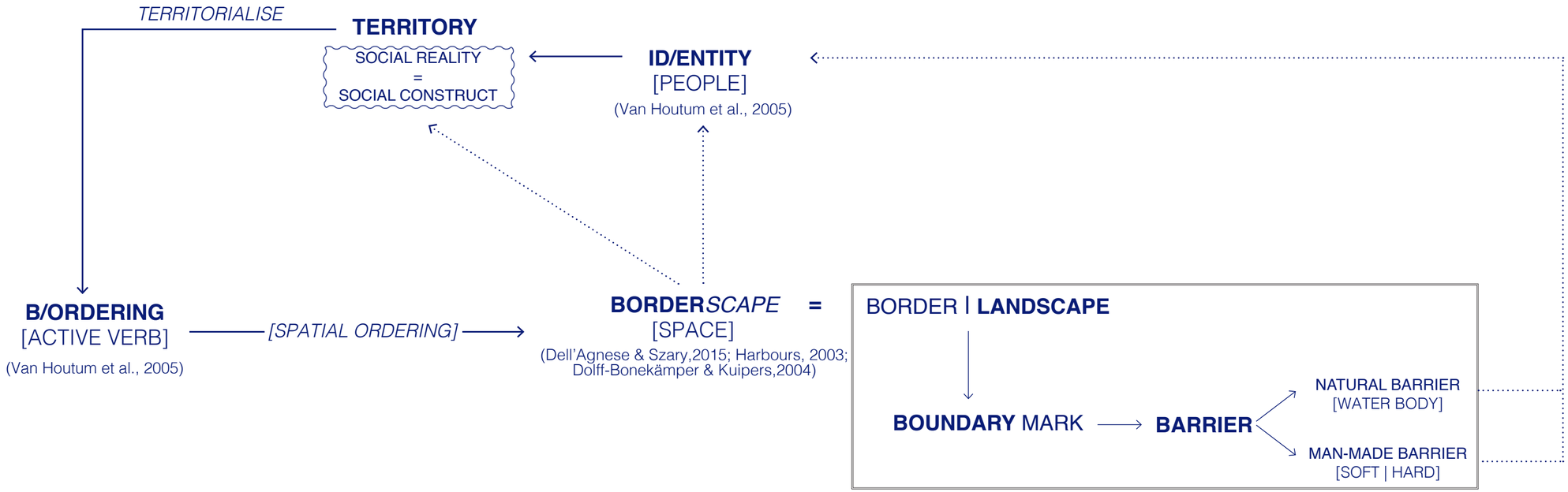
The different ‘layers’ of B/ordering [Visual by author]

THE BORDERSCAPE IS JANUS-FACED



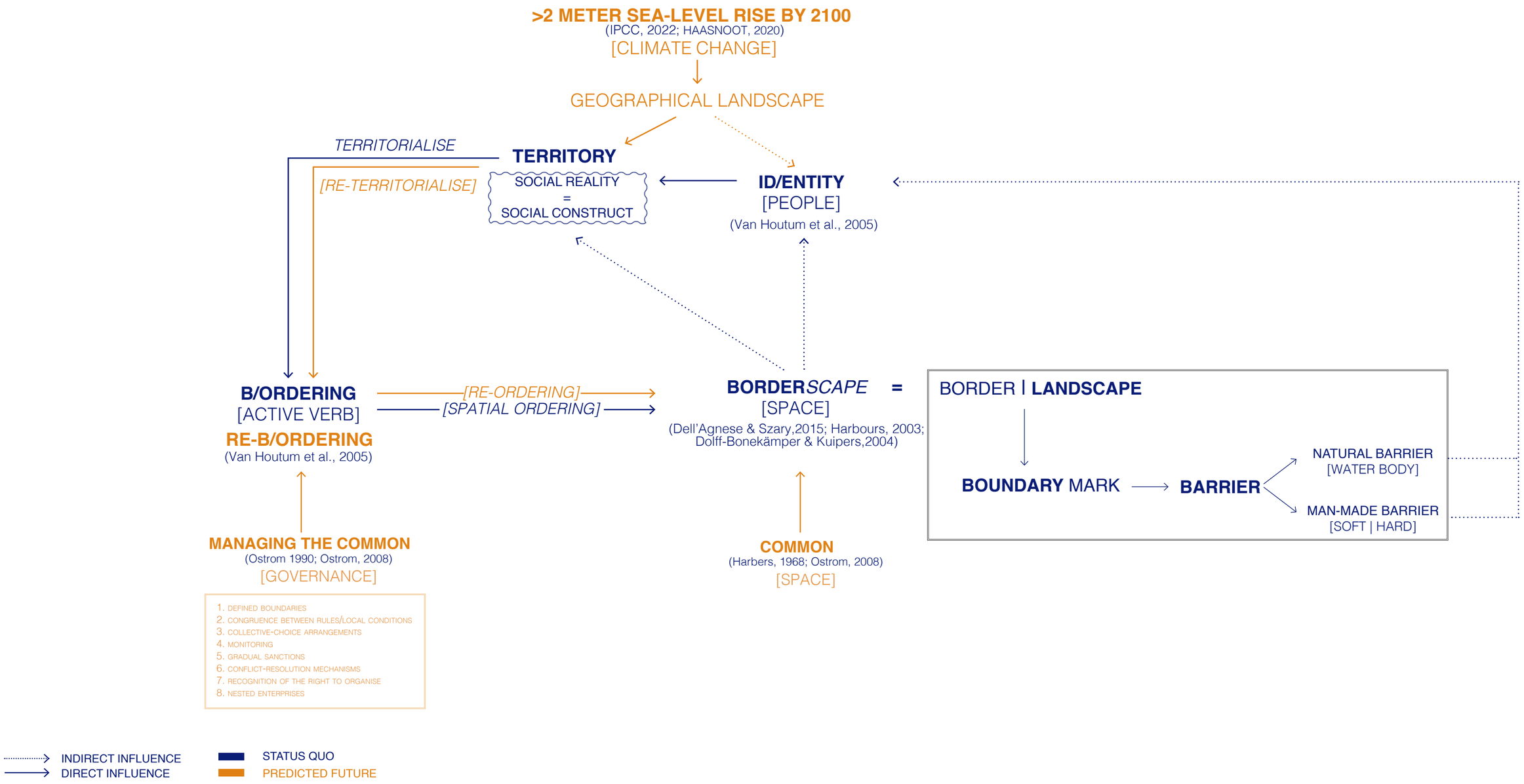
The different 'layers' of B/ordering [Visual by author]

THEORETICAL FRAMEWORK

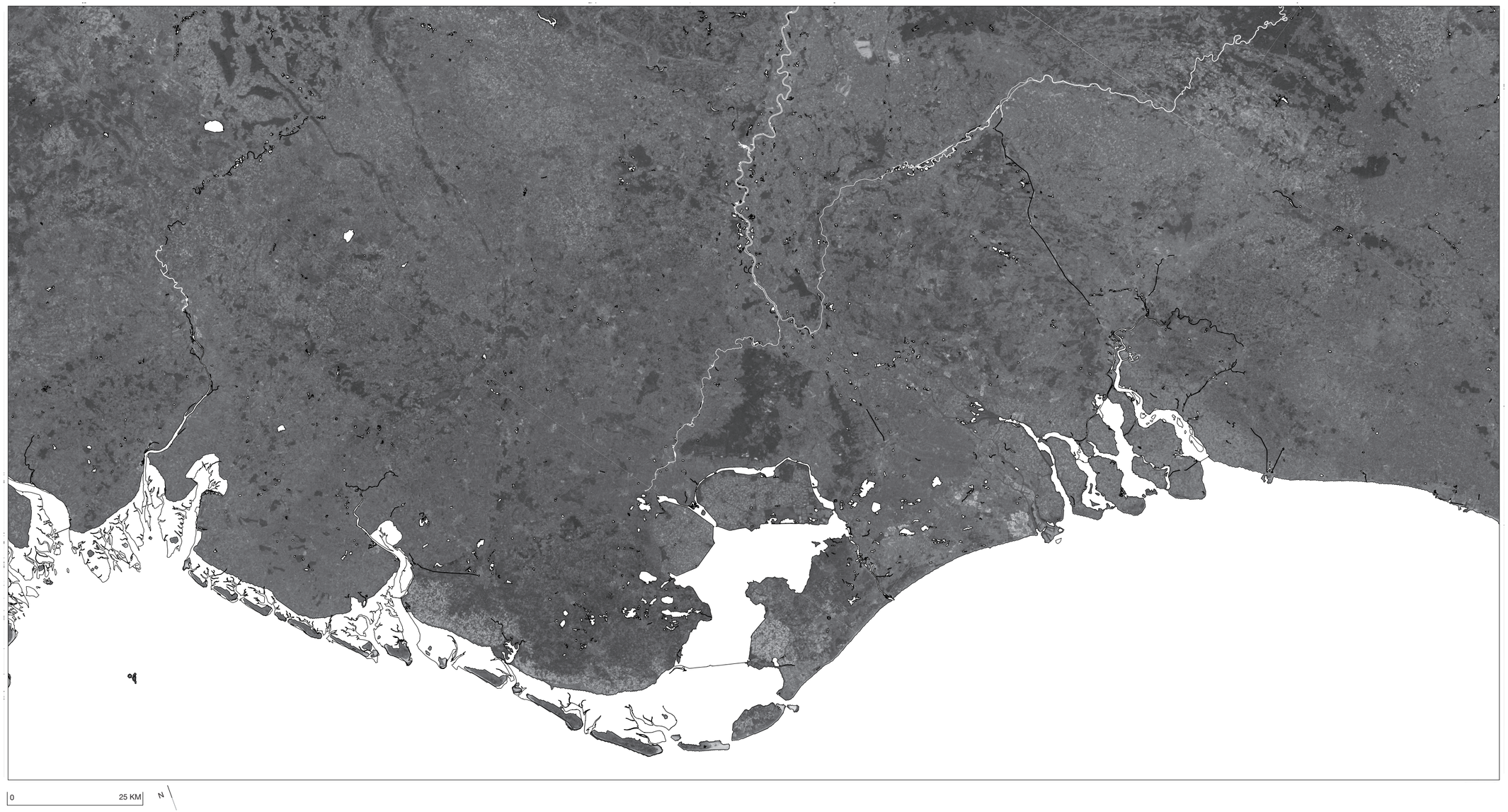


INDIRECT INFLUENCE
DIRECT INFLUENCE
STATUS QUO
PREDICTED FUTURE

THEORETICAL FRAMEWORK

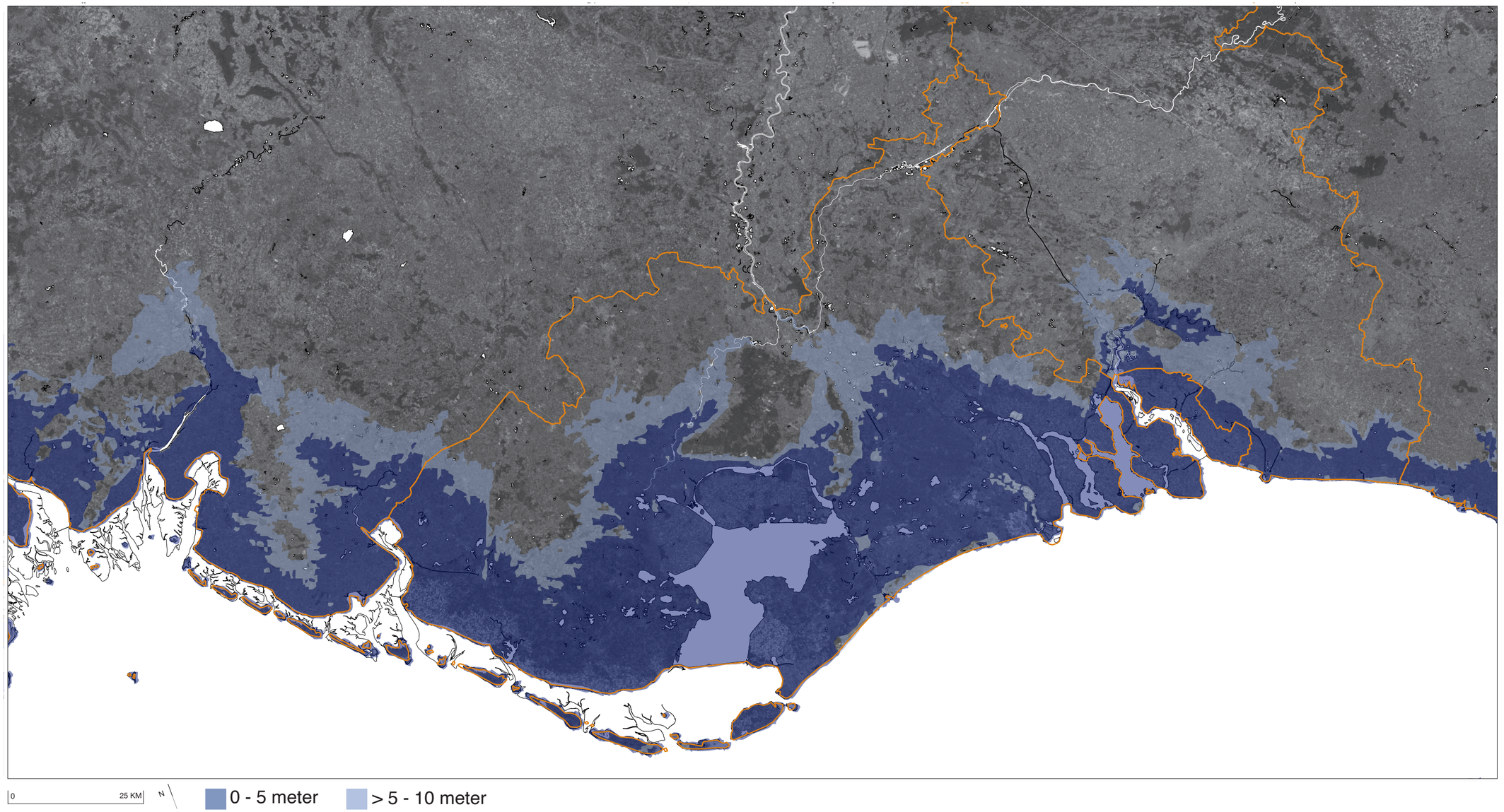


THE EURO DELTA



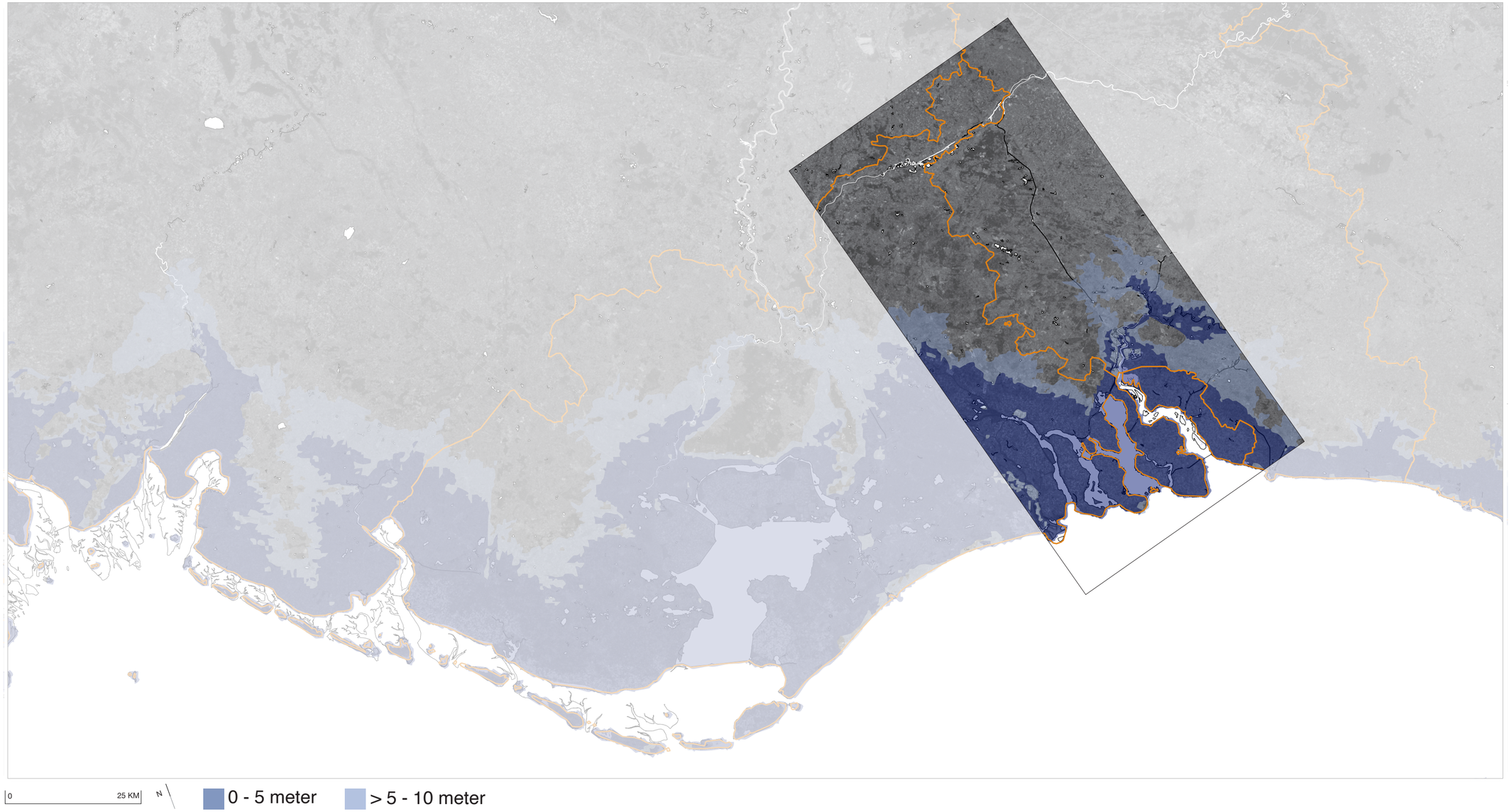
Critiqual zone coast line floods [Visual by author, based on data (CIESIN, 2021)]

THE EURO DELTA



Critical zone coast line floods [Visual by author, based on data (CIESIN, 2021)]

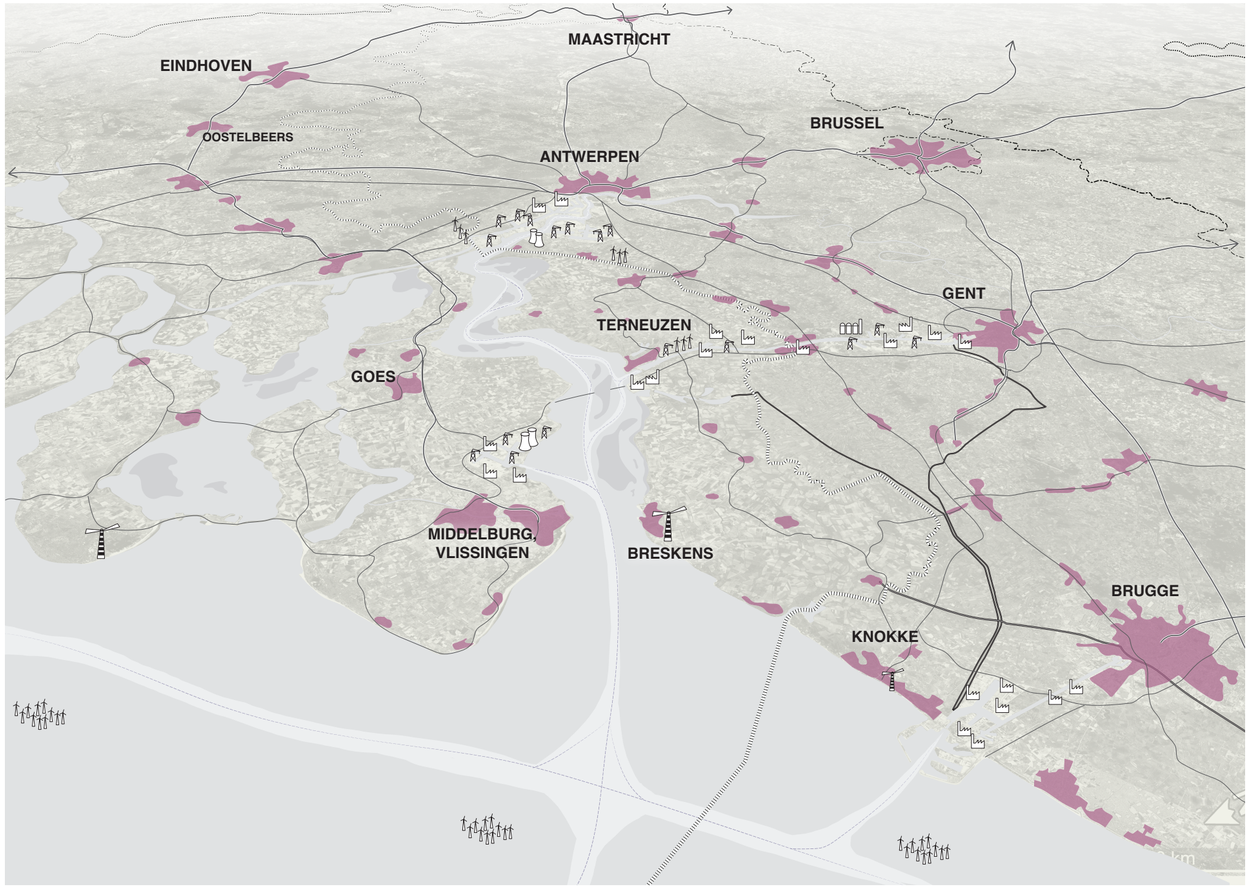
THE EURO DELTA



Critical zone coast line floods [Visual by author, based on data (CIESIN, 2021)]

THE EDGE OF THE TWO COUNTRIES

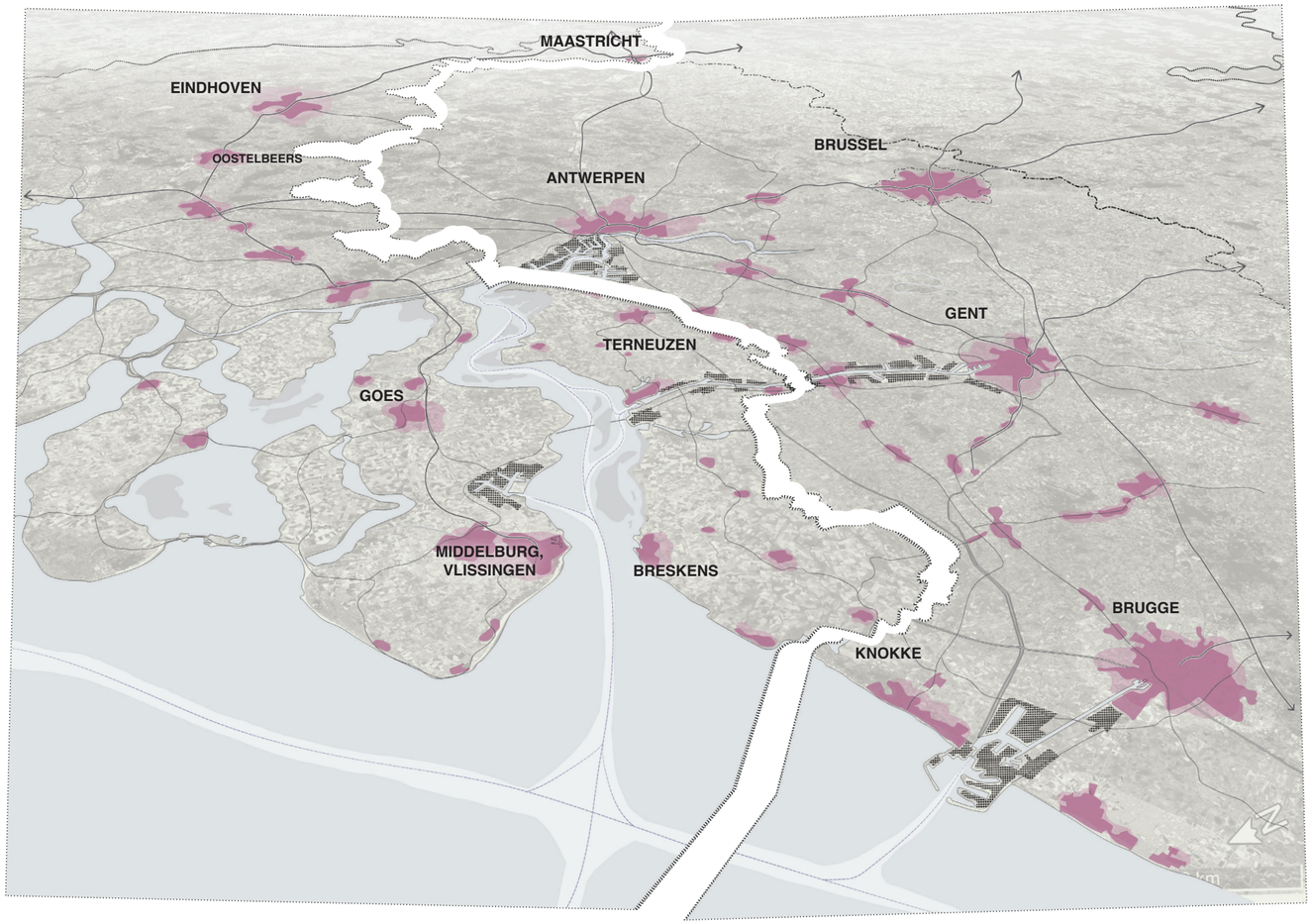
‘MIND THE GAP’



Birds eye view current situation 2025 [Visual made by author]

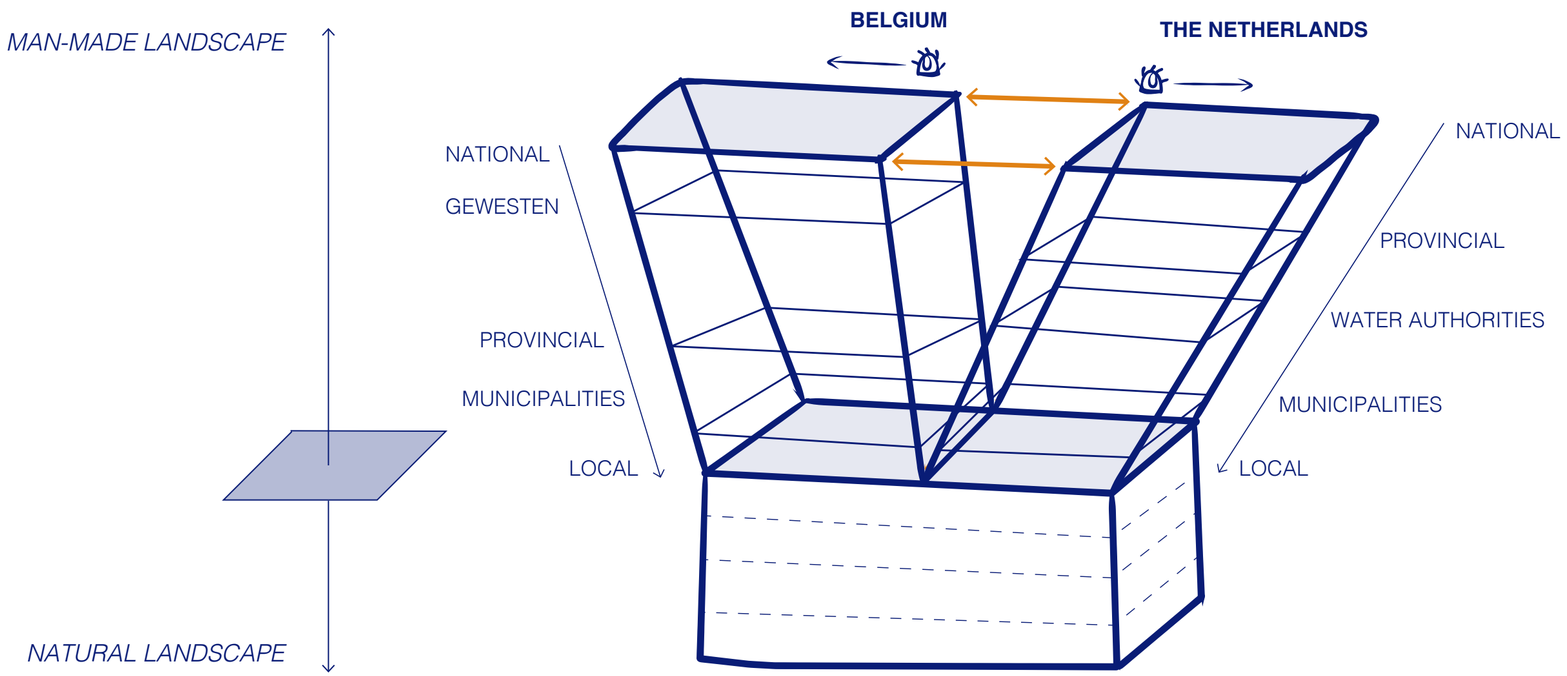
ZEEUWS-VLAANDEREN AS A DISCONNECTED ISLAND

‘MIND THE GAP’



Mind the gap | Zeeuws-Vlaanderen as an island [Map by author]

GAP IN PERSPECTIVE TOWARDS BORDERS | DIFFERENT GOVERNANCES STYLES AND SCALES

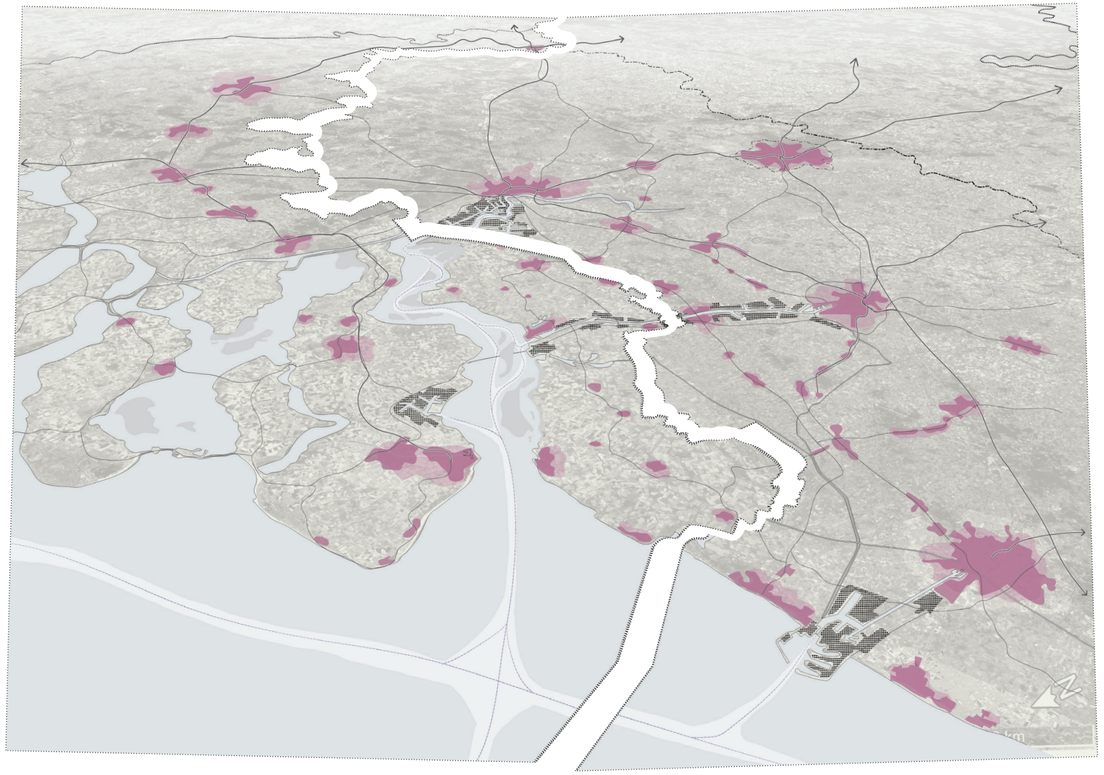


LOCAL PERSPECTIVE | NATIONAL BORDER IS NOT PERCEIVED AS A PHYSICAL BARRIER

"ZEEUWS-VLAMINGEN SOMETIMES FEEL **MORE CONNECTED TO BELGIUM** THAN TO THE NETHERLANDS. THE BORDER ONLY *FEELS LIKE A BORDER* WHEN THEY **CROSS IT TO WORK** AND **ENCOUNTER BUREAUCRATIC OBSTACLES**."

(Moeliker & Boogaard, 2024)

PROBLEM STATEMENT



Zeeuws-Vlaanderen as an island

Due to **rising sea levels** and **socio-economic challenges**, the Zeeuws-Vlaanderen border region is increasingly facing challenges.

The border regions are struggling with **population decline** and limited cross-border cooperation in **infrastructure, water management and spatial planning**.

Together with the **natural barrier** of the Westerschelde, this results in a challenge to the **livability** and **future-proofing** of the **region**.

An integrated and new border approach is necessary to make Zeeuws-Vlaanderen **resilient to rising sea levels**.

How can the challenges of **rising sea levels** and **socio-economic** pressures be addressed, through the **design** of **re-B/ordering** the Belgium-Netherlands border, by **re-territorializing** the Zeeuws-Vlaanderen **border*scape***?

SUB-QUESTIONS

Future adaptation & Design I Border
How could alternative border scenarios improve flood resilience and cross-border cooperation in the region?

How can Zeeuws-Vlaanderen be Re-B/ordered in spatial scenarios?

Socio-economics I Border
Which historical events, including floods and political shifts, have shaped the territorial border between Belgium and the Netherlands?

What are the current socio-economic challenges in the Dutch–Belgian border region, specifically in Zeeuws-Vlaanderen?

How can the challenges of **rising sea levels** and **socio-economic** pressures be addressed, through the **design** of **re-B/ordering** the Belgium-Netherlands border, by **re-territorializing** the Zeeuws-Vlaanderen **border*scape***?

Governance I Border

What institutional or legal frameworks are needed to support re-territorialisation and shared governance in border landscapes?

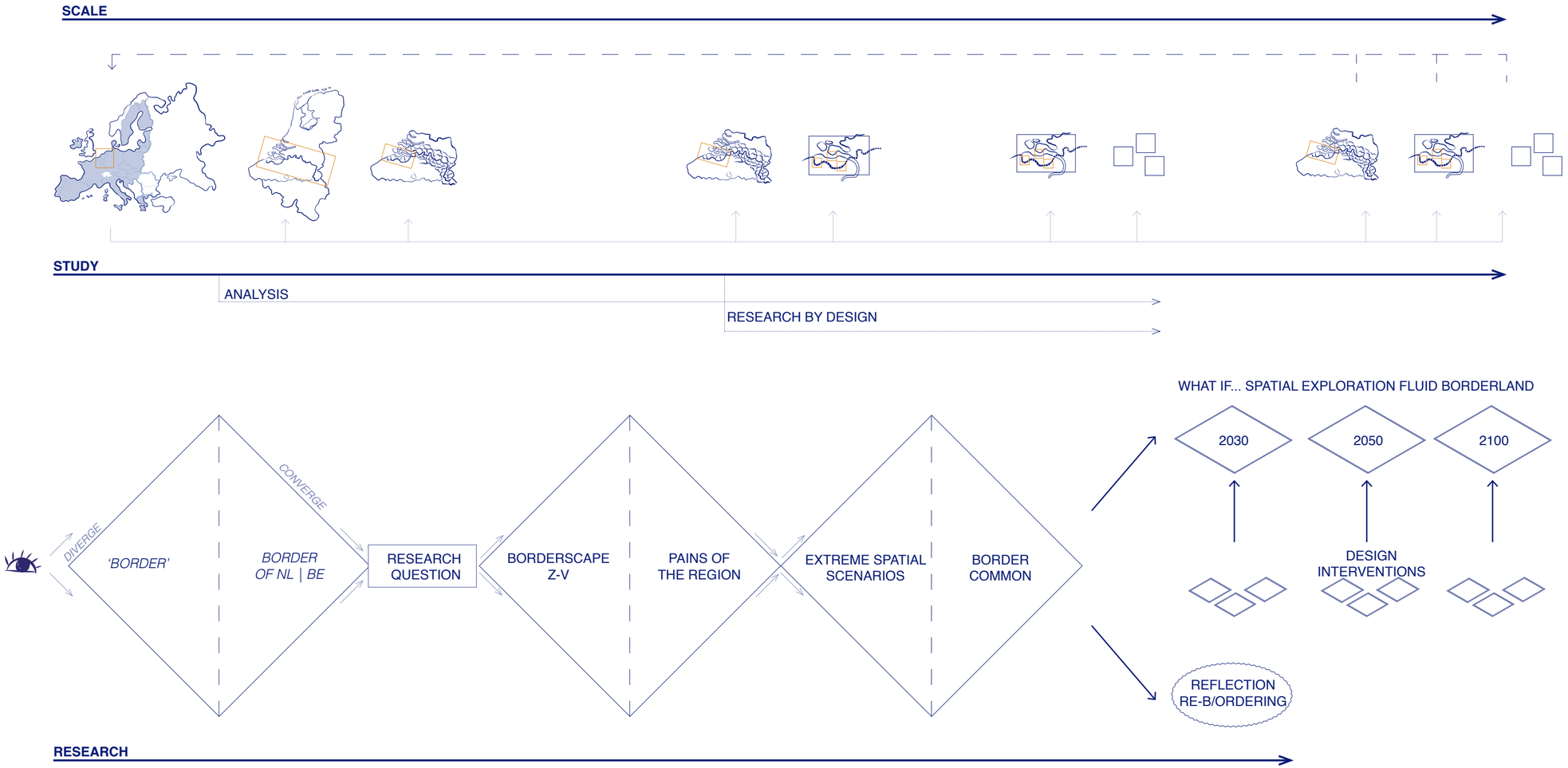
Water I Landscape I Border
How does the national border shape the Dutch–Belgian border landscape?

How do differences in Dutch and Belgian governance influence water management across the border?

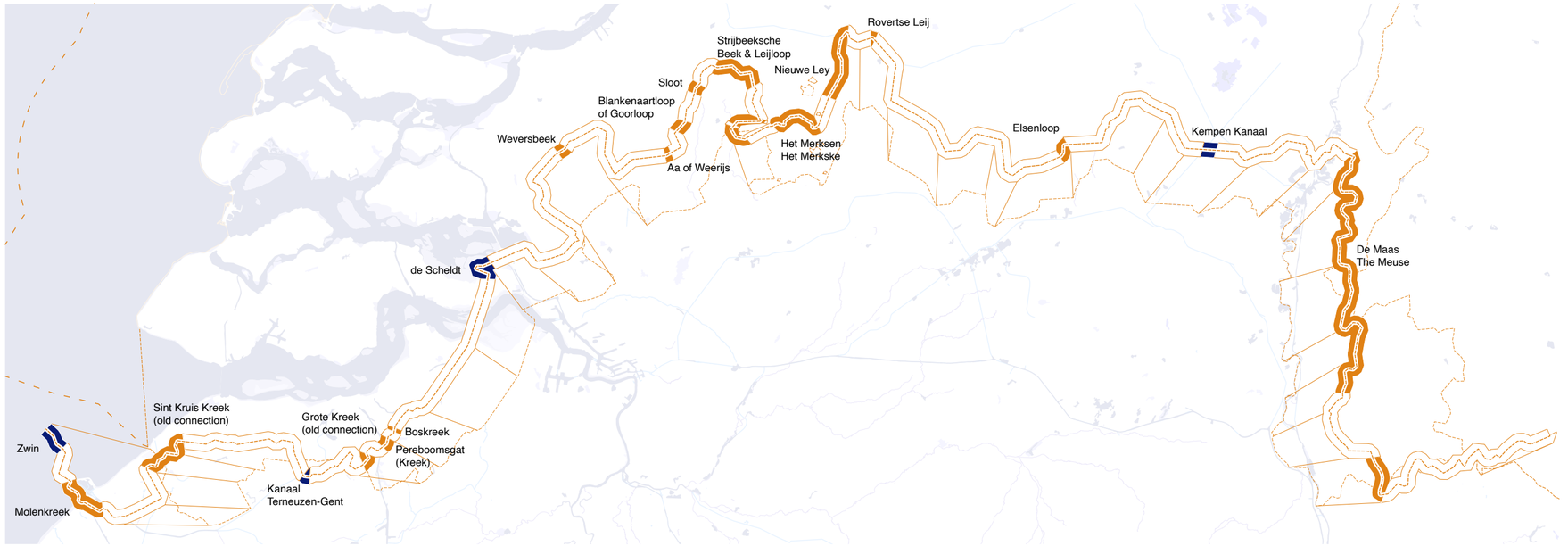
How is the Zeeuws-Vlaanderen border landscape defined by its relation to water?

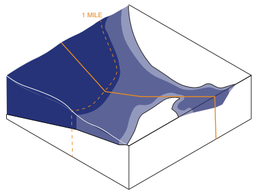
What are the current territorial border characteristics and the water barriers that define the Zeeuws-Vlaanderen borderscape?

METHODOLOGICAL FRAMEWORK

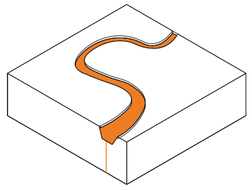


WATER AS THE BORDER

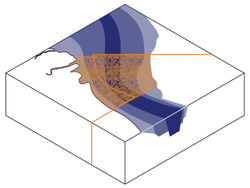




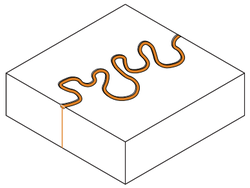
OLD ESTUARY



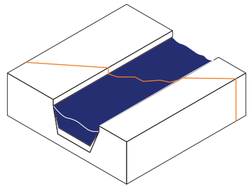
KREEK (BAY/INLET)



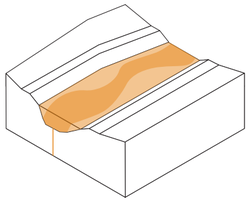
ESTUARY & TIDAL RIVER



BEEK (CREEK)



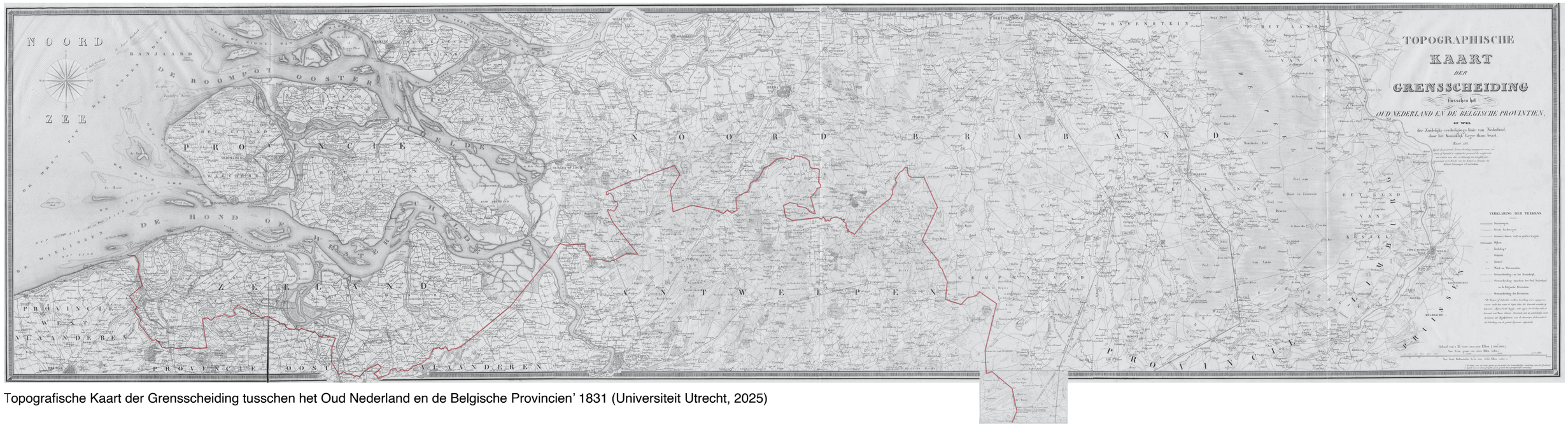
CANAL



RIVER



HISTORY OF THE BORDER | JANUS-FACED



Topografische Kaart der Grensscheiding tusschen het Oud Nederland en de Belgische Provincien' 1831 (Universiteit Utrecht, 2025)

SINCE 1830

"THE DUTCH CIVIL WAR" **VS** *"THE INDEPENDENCE REVOLUTION"*

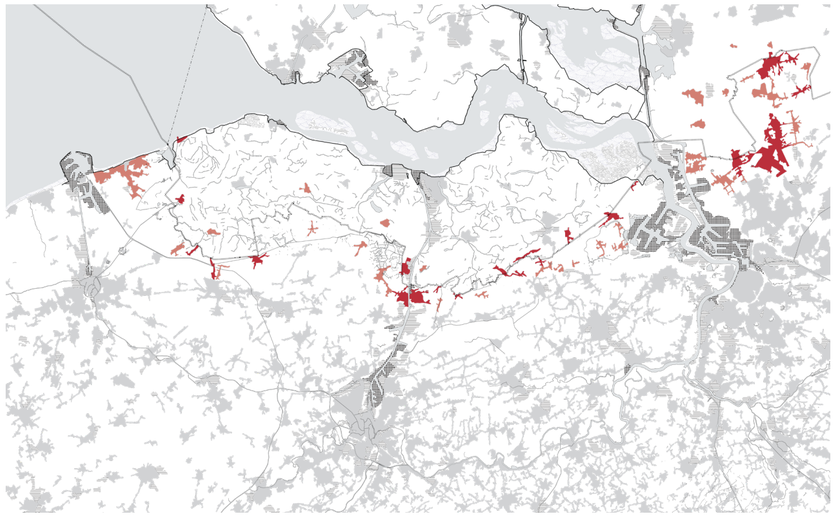
NL | *BE*





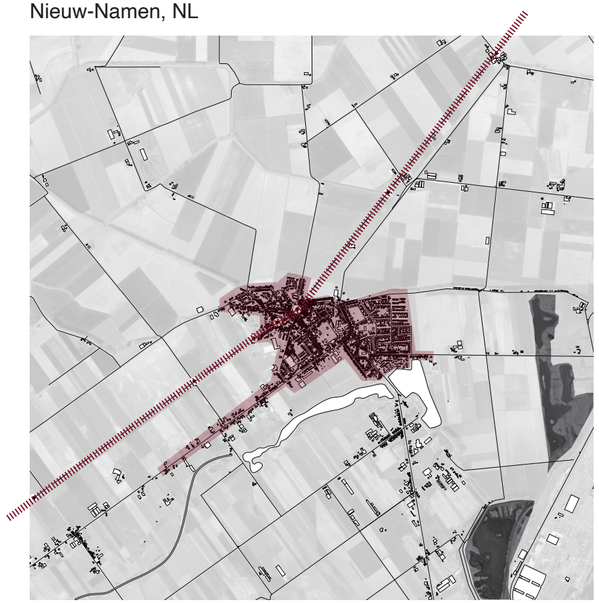
WHAT IS THE ZEEUWS-VLAANDEREN BORDER*SCAPE*?





Difference in urban density along the border.

Nieuw-Namen, NL



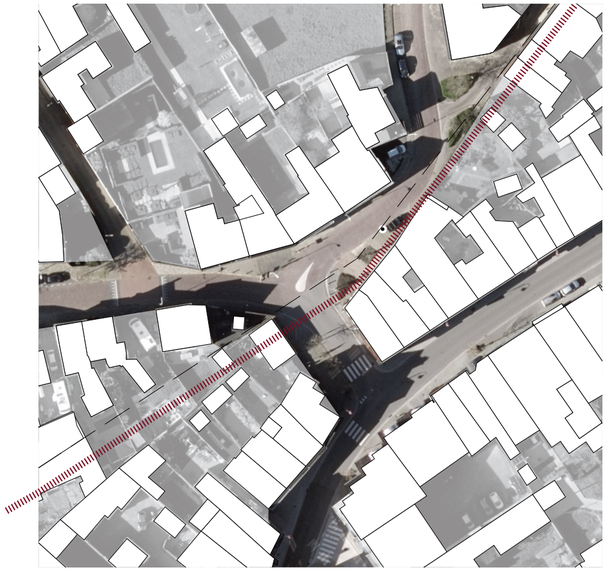
Kieldrecht, BE

Two villages ignoring the border





Nieuw-Namen, NL



Kieldrecht, BE

Border goes through houses and gardens





BORDER*SCAPE* | DIFFERENCE IN MATERILISATION

Nieuw-Namen, NL



Kieldrecht, BE

Take a look at the pavement and street furniture



NL



BE

*“I AM A **BORDER RESIDENT**,*
NOT DUTCH NOT BELGIAN.
I AM BOTH”

- Resident, Kieldrecht

BORDER*SCAPE* | LANDSCAPE IS IGNORING THE BORDER, SOMETIMES NOT VISIBLE



BORDER*SCAPE* | LANDSCAPE VS THE BORDER LINE

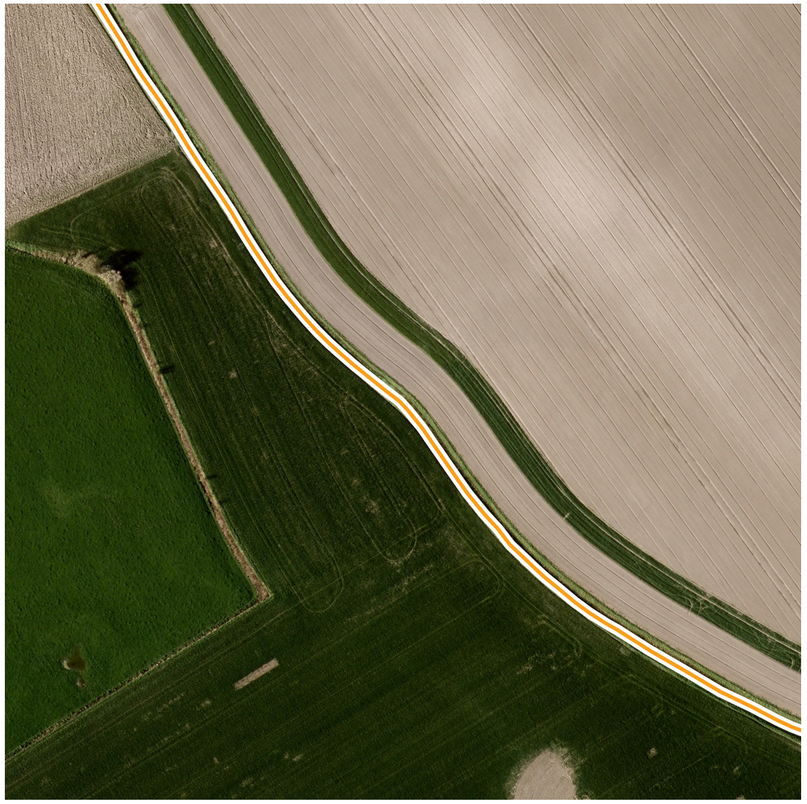
NL



BE

BORDER*SCAPE* | LANDSCAPE VS THE BORDER LINE

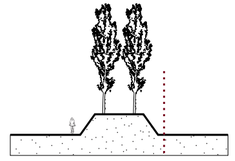
NL BE



BORDER*SCAPE* | DYKE & DEFENSE LINE

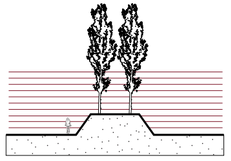


ALMOST





CROSSING





BORDER*SCAPE* | DYKE AS THE BORDER | PROTECTION



1613-1615 | War on the Kauwenstijnse dyke, 26 may 1585
[Map photographed by F. Hogenberg (Rijksmuseum, n.d.; Lola architects et al.,2014)



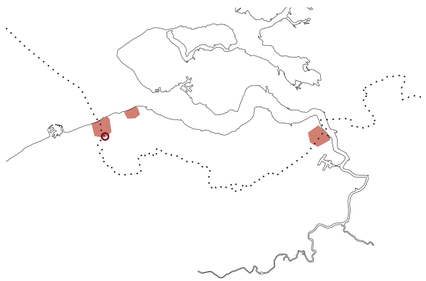


Legend
Soil
Border Dutch Data
Border Belgium Data

0 5 m N



2019 | De-poldering of 'International Dike' **by Belgium and Dutch Government**
[Visual and photo by (Omroep Zeeland,2019)





Legend
Soil
Border Dutch Data
Border Belgium Data

0 5 m N

SO, THE SOCIAL PERSPECTIVE OF THE BORDER INFLUENCES THE LANDSCAPE AND VICE VERSA

*“WE DO **NOT** SEE THE BORDER AS A PHYSICAL BORDER, WE FLY ACROSS THE BORDER AGAIN AND AGAIN”*

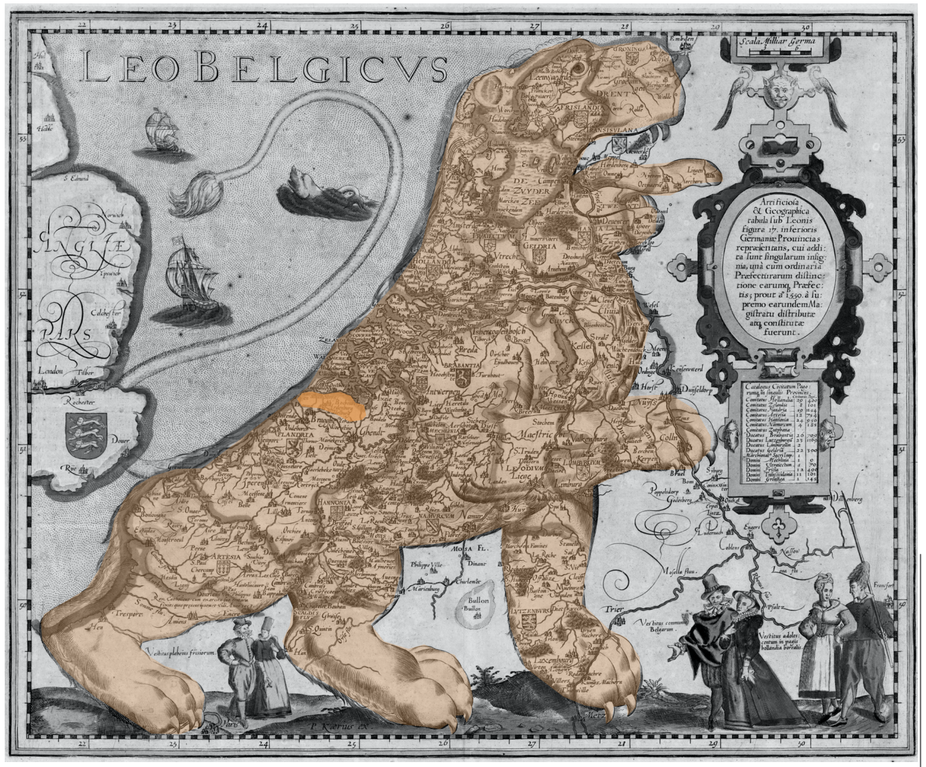
- RESIDENT ,HULST

NATIONAL BORDER VS SCHELDT BORDER

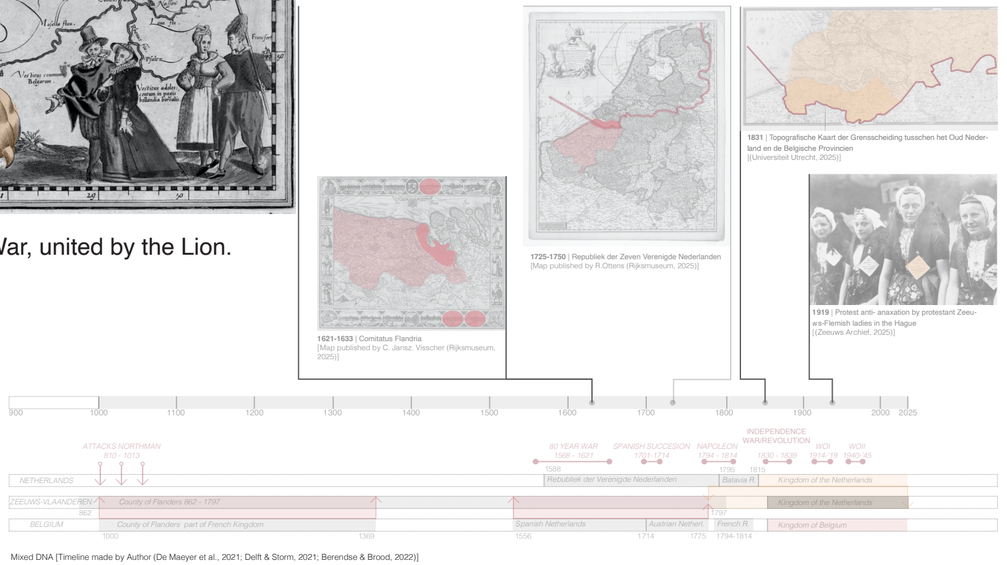


PAINS OF THE REGION?

PAINS OF THE REGION | THE MIXED DNA OF ZEEUWS-VLAANDEREN



1617 | Leo Belgicus, Holland propaganda during Spanish War, united by the Lion.
[Map by Pieter van den Keere]



Mixed DNA [Timeline made by Author (De Maeyer et al., 2021; Delft & Storm, 2021; Berendse & Brood, 2022)]

PAINS OF THE REGION | THE MIXED DNA OF ZEEUWS-VLAANDEREN

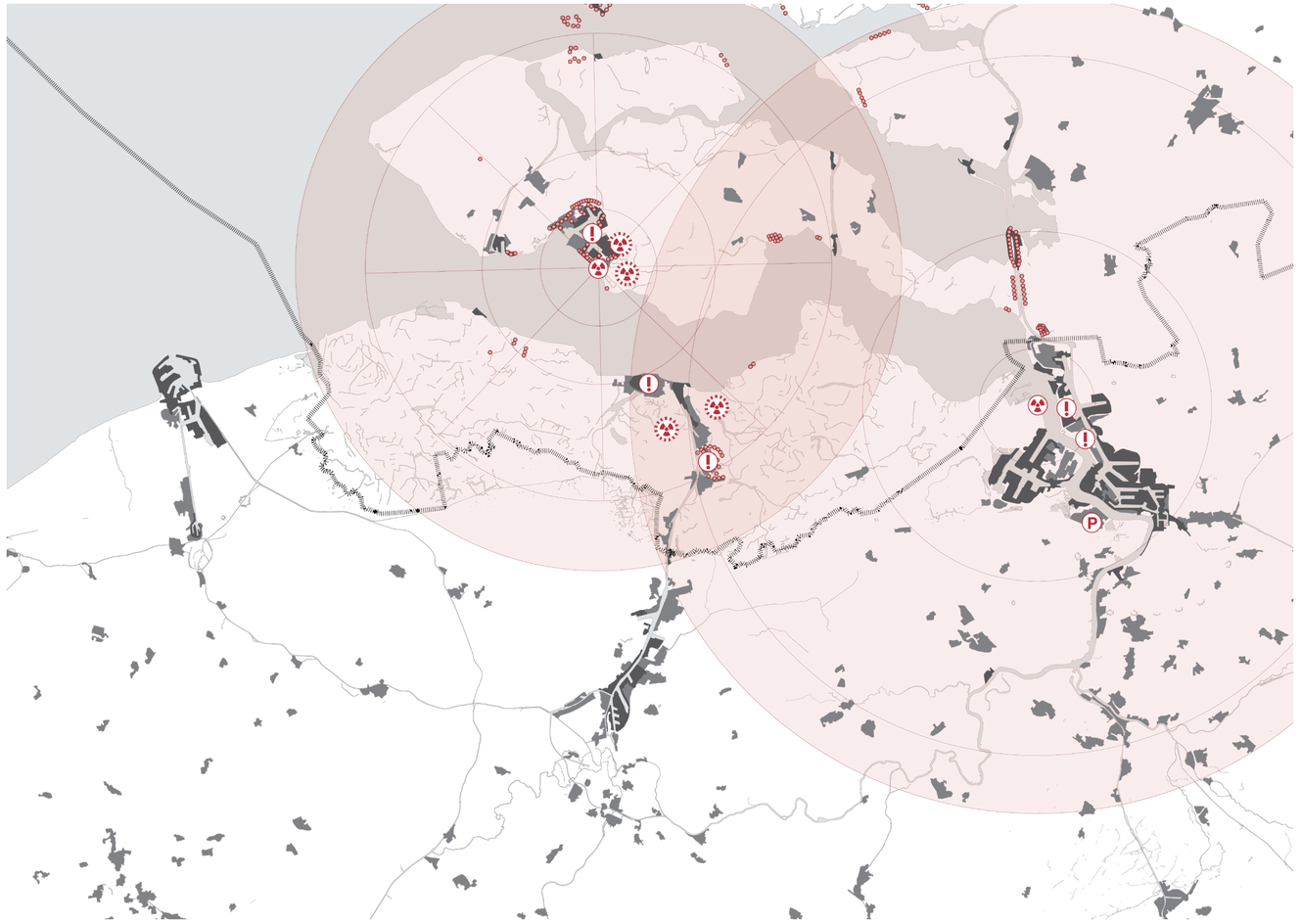
*“We are **neither Dutch nor Belgians**. We are **not Zeelanders and not Flemish**. Our language and our culture are very different from those on the Other Side. Catholics also live here; we are un-Zeeuws burgundy and convivial.”*

- Farmer Zeeuws-Vlaanderen (Versprille, 2011)



Border resident [Image by Author]

PAINS OF THE REGION | THE BACK-YARD OF TWO COUNTRIES



The industrial shoreline [Map made by Author]

Legend

- Water
- Industry
- Port
- Wind Turbines NL
- Pvas producer 3M
- Heavy Industry
- Nuclear Power Plant
- Potentail new Nuclear Power Plant
- Risk Area

PAINS OF THE REGION | THE BACK-YARD OF TWO COUNTRIES



Nuclear power plant Doel above dyke.
[Visual by author]



Dutch fruit parcel watched by the port of Antwerp
[Visual by author]

PAINS OF THE REGION | DISCONNECTED BY WATER



*“Hello, I couldn’t go anywhere! I was on a **kind of island**. It makes you realise how vulnerable you are.” - Resident Hulst.*



2020 | Covid Pandamic
[Image by F. van Hecke, 2020 (NOS,2020)]

PAINS OF THE REGION | DISCONNECTED BY WATER



Western Scheldt Tunnel, ONLY GATEWAY TO NL
[Image by unknown (Westerschelde tunnel, 2022)]



Westerschelde as CONTAINER SHIP HIGHWAY
[Image by author]

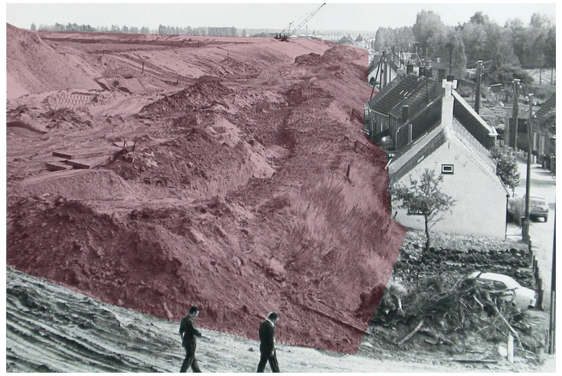
PAINS OF THE REGION | DISCONNECTED FROM WATER

“We used to run up the dyke to see if the water was high enough to go swimming.”

- Resident, Baalhoek



Baalhoek **1968**



Baalhoek **1974**

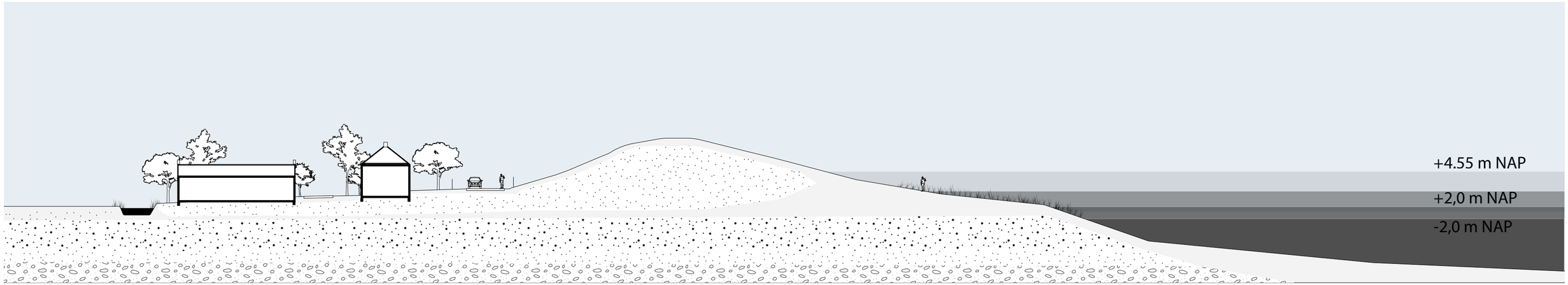


Baalhoek **1980**

Dyke Baalkoek elevated after big flood of 1953 [Photos by C. Kotvis, (ZB Bibliotheek van Zeeland, 2025) edited by author]

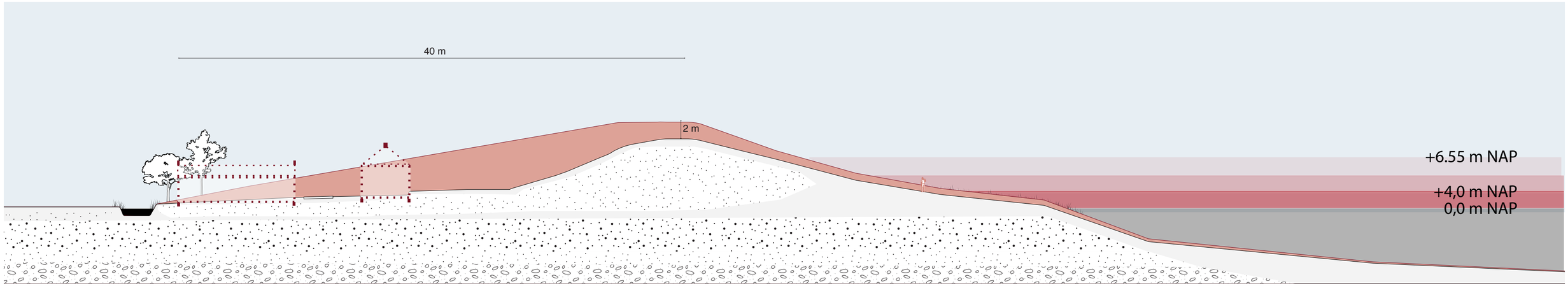


PAINS OF THE REGION | DISCONNECTED FROM WATER



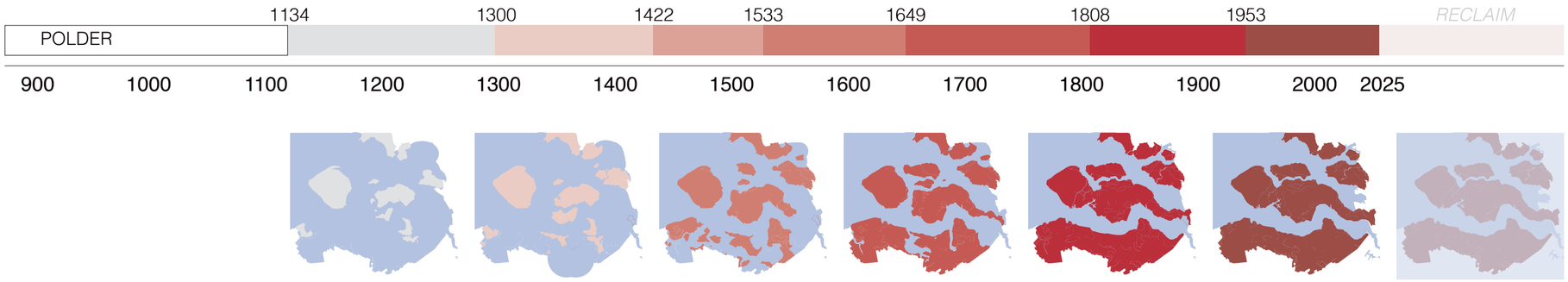
Section of dyke at Baalhoek [Visual by author]

PAINS OF THE REGION | WHAT WILL DYKES OF THE FUTURE LOOK LIKE?



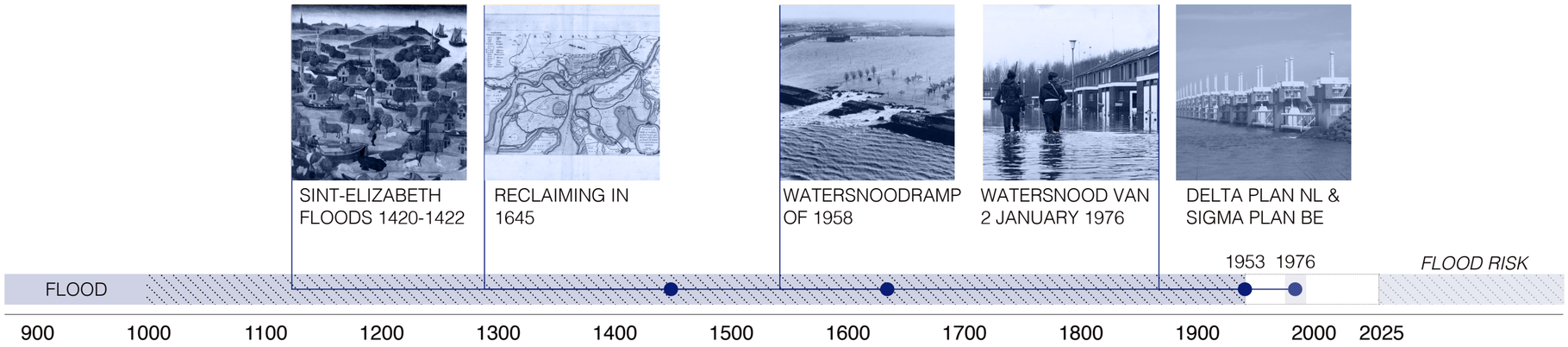
Section of dyke at Baalhoek [Visual by author (Ministerie van Infrastructuur en Waterstaat & Deltacommissaris, 2023)]

PAINS OF THE REGION | TRAUMA OF LOSING LAND | POLDERING LAND



Timeline and map reclaimation of Zeeuws-Vlaanderen [Map and Visuals made by author (WFS opendata Zeeland, 2025)]

PAINS OF THE REGION | TRAUMA OF LOSING LAND | POLDERED LAND FLOODED



PAINS OF THE REGION | TRAUMA OF LOSING LAND | DE-POLDERING



1. Het Zwin
2. Waterdunnen
3. Hedwige-prosperpolder

Fig. # In black re-poldered land vs in red polderland [Map made by author (Google Maps, 2025)]

"We had to leave our land behind to make room for birds..."
- Inhabitant Kallo

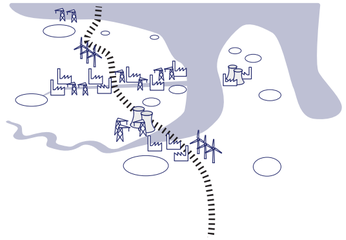


PAINS OF THE REGION | CONCLUSION

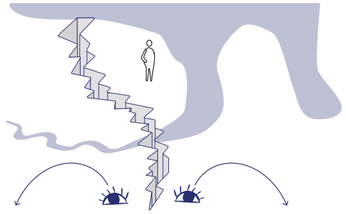
From Pains



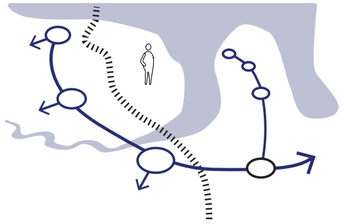
MIXED DNA VS IDENTITY CRISIS



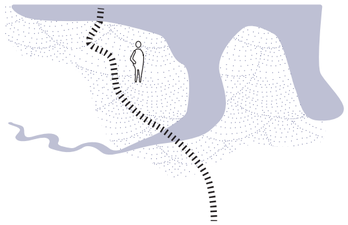
BACKYARD OF TWO COUNTRIES



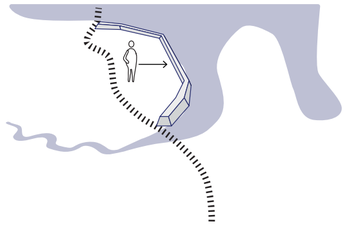
DEPENDENCE ON RELATIONS WITH NEIGHBOURS



OUT OF SIGHT, OUT OF MIND OUT OF CONNECTION



TRAUMA OF LOSING LAND



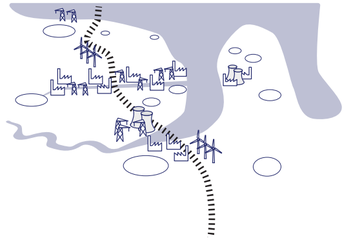
DISCONNECTED BY/FROM WATER

PAINS OF THE REGION | CONCLUSION

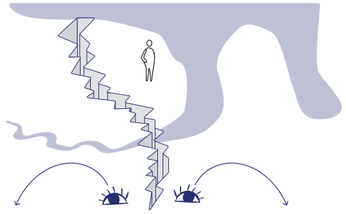
From Pains



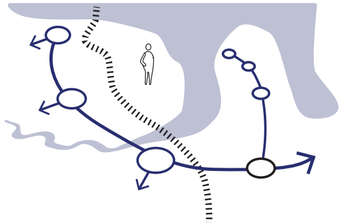
MIXED DNA VS IDENTITY CRISIS



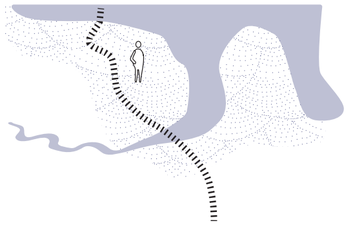
BACKYARD OF TWO COUNTRIES



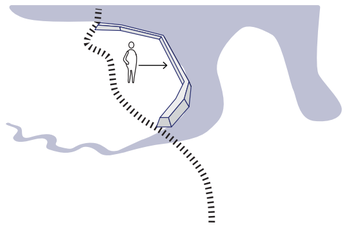
DEPENDENCE ON RELATIONS WITH NEIGHBOURS



OUT OF SIGHT, OUT OF MIND OUT OF CONNECTION

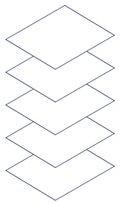


TRAUMA OF LOSING LAND



DISCONNECTED BY/FROM WATER

To Design Gap



~~DIS~~**CONNECTED** INFRASTRUCTURE
~~DIS~~**CONNECTED** FROM AND BY WATER
~~DIS~~**CONNECTED** BY GOVERNANCE
~~DIS~~**CONNECTED** THROUGH ECONOMY
~~DIS~~**CONNECTED** BORDER LANDSCAPE

To Design Potential

To Design Interventions

RE-CONNECTED GOVERNANCE
- The border becomes a bandage rather than a line
- A Border Common is governed by Ostrom's 8 principles (2008)

RE-CONNECTED INFRASTRUCTURE
- A network of (high-speed) trains connects the Border Common to the Randstad and the Flemish Diamond
- Self-driving metro lines link smaller villages to the regional network
- A bridge reconnects the Border Common with 'the other side' – physically and symbolically

RE-CONNECTED ECONOMY / INDUSTRY
- The industrial 'backyard' is cleaned up through stricter rules on pollution and emissions
- New forms of agriculture are explored, such as seaweed cultivation and crop rotation adapted to saline groundwater

RE-CONNECTED BORDER
- Landmarks act as unifiers
- Viewpoints along the border and the Scheldt visually reconnect people with the landscape
- A connected park integrates existing nature and historical structures, such as dykes and defence lines, allowing people to engage with the polder and kreken landscape

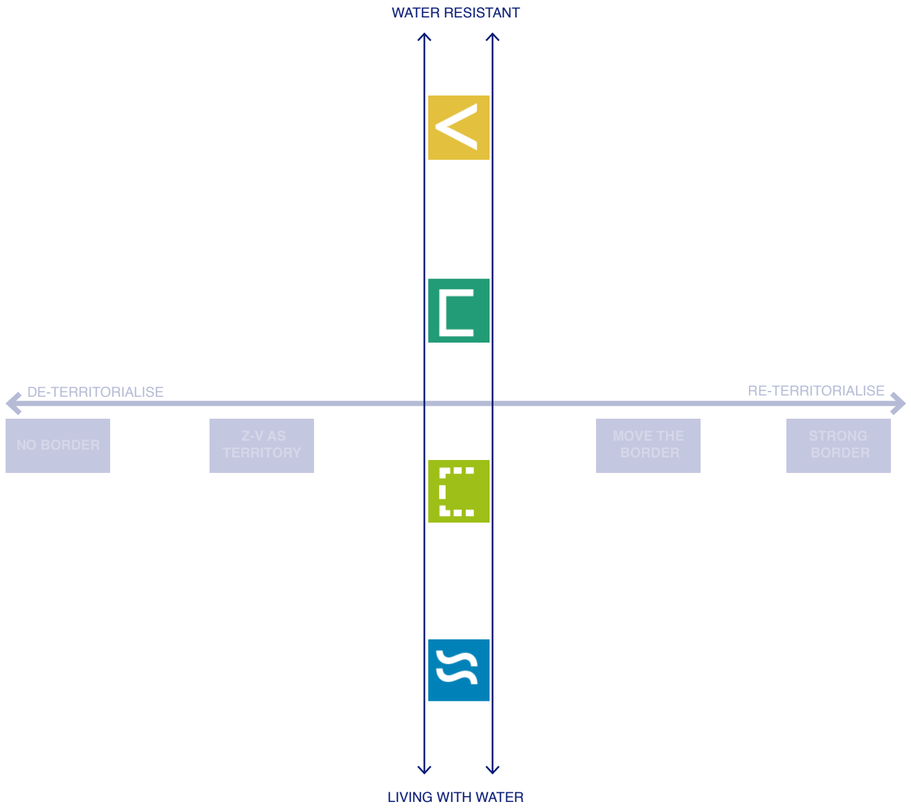
RE-CONNECTED WITH WATER
- Land is depoldered to give more space to the Scheldt; the flooded zones support tidal activities
- Existing dykes are raised with gentle slopes, offering multifunctional space for recreation
- On both dry and tidal land, wooden walkways improve access to water

What is the influence of the border on future scenarios for Zeeuws-Vlaanderen?





RADICAL SCENARIO EXPLORATION | FRAMEWORK



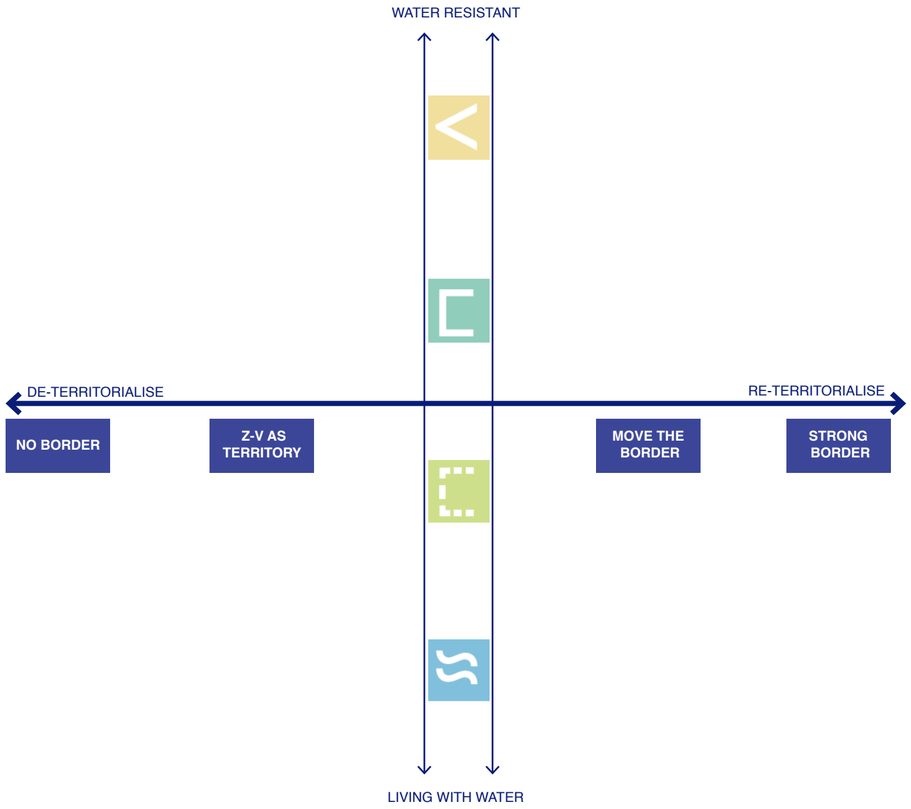
RADICAL/EXTREME SCENARIO'S

SOLUTION DIRECTIONS (HAASNOOT,DIERMANSE, KWADIJK, DE WINTER, & WINTER, 2020)

Zeewaarts | Beschermen gesloten | Beschermen open | Meebewegen

Extreme Scenarios framework [image by author]

RADICAL SCENARIO EXPLORATION | FRAMEWORK



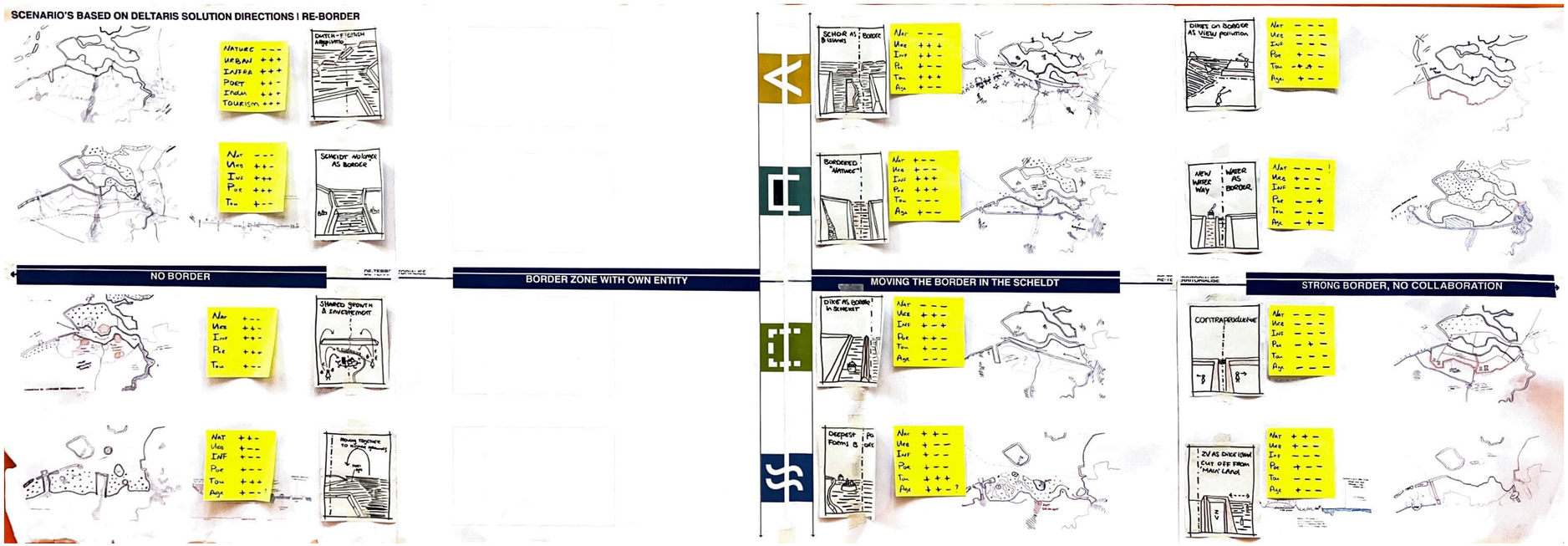
RADICAL/EXTREME SCENARIO'S

SOLUTION DIRECTIONS (HAASNOOT,DIERMANSE, KWADIJK, DE WINTER, & WINTER, 2020)

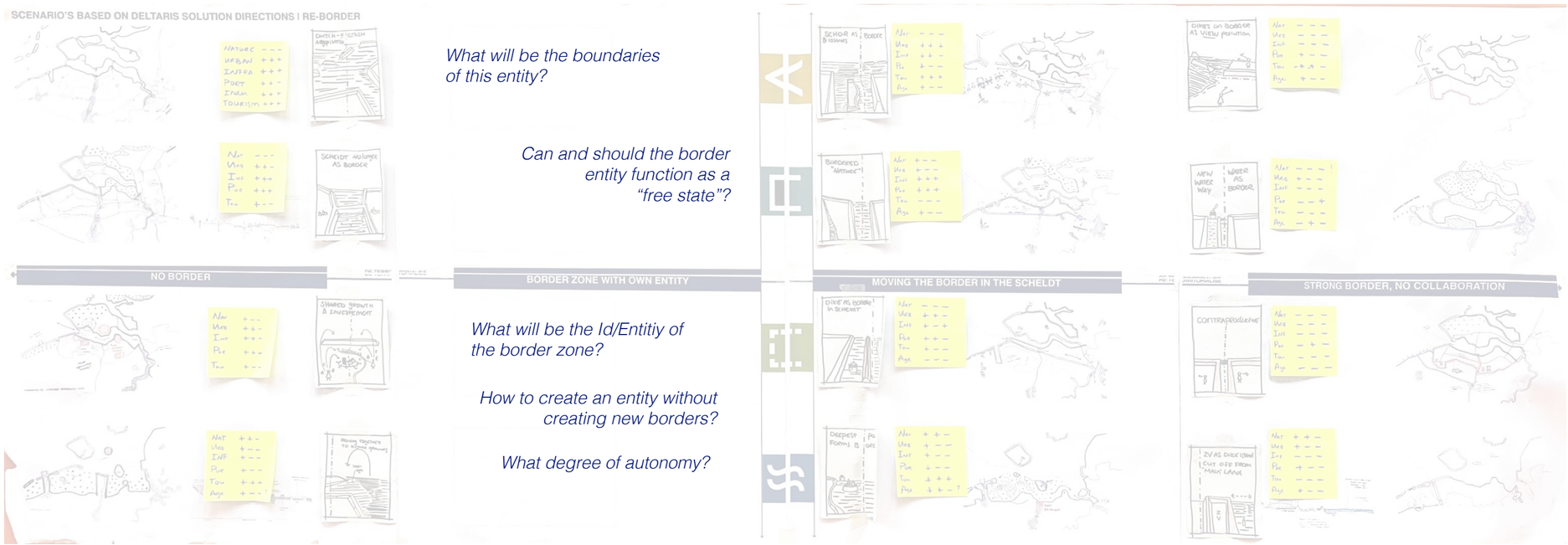
Zeewaarts | Beschermen gesloten | Beschermen open | Meebewegen

Extreme Scenarios framework [image by author]

RADICAL SCENARIO EXPLORATION | RESULTS

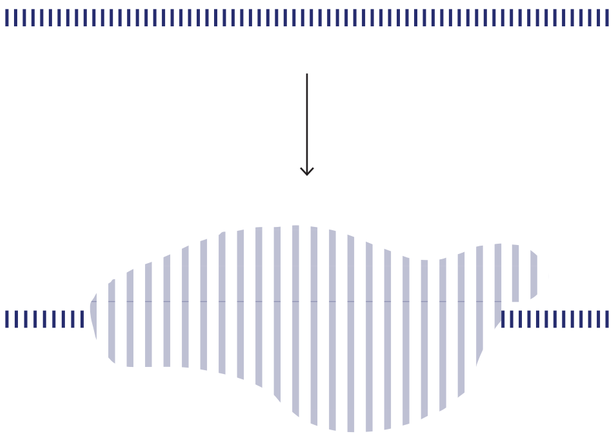


RADICAL SCENARIO EXPLORATION | REFLECTION



HOW TO RE-BORDER? | FROM LINE TO BANDAGE

From Line

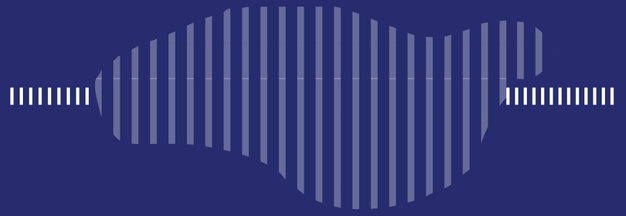


To Zone of Exception

FLUID BORDERLAND

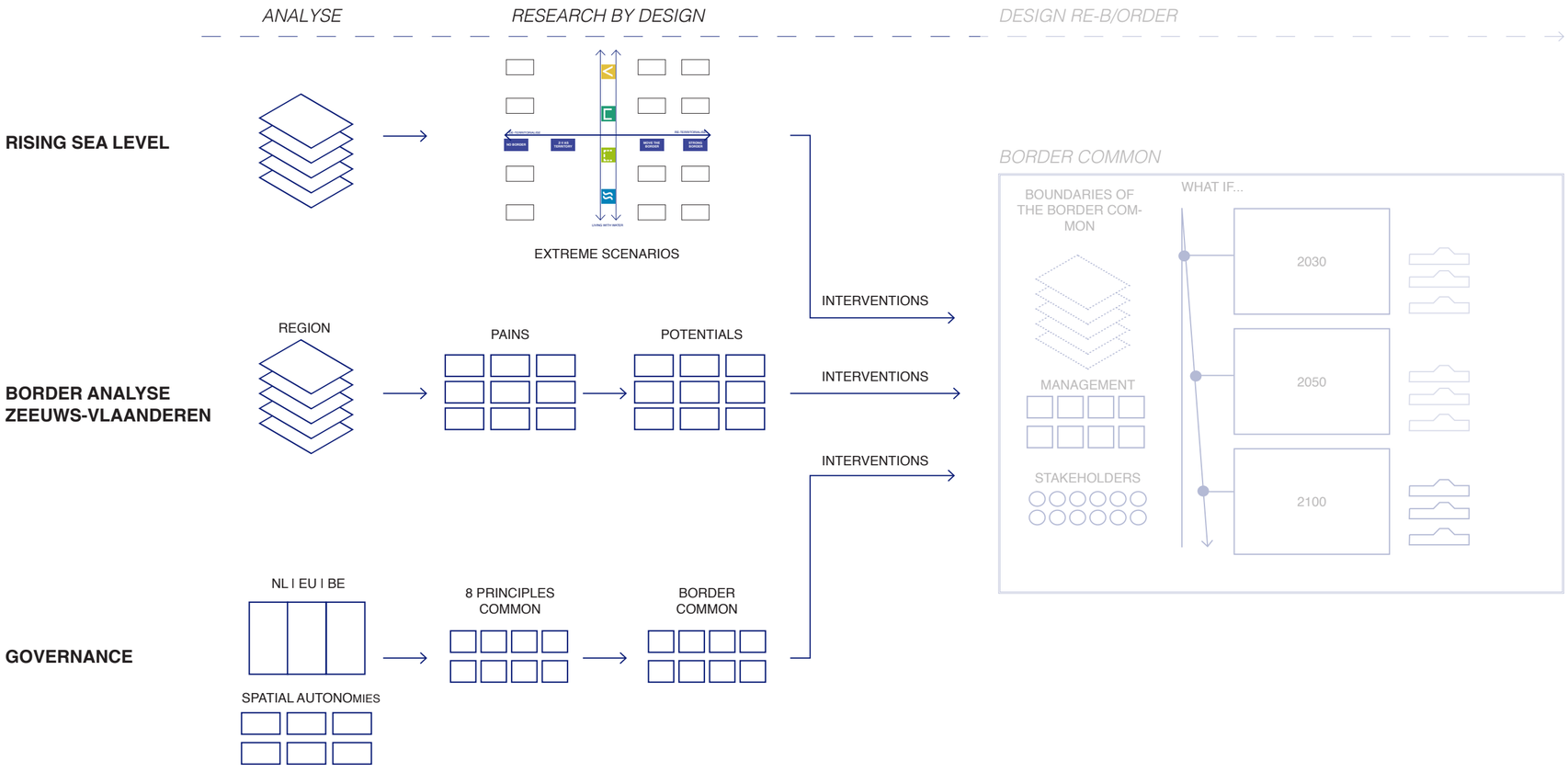
INTRODUCING THE FLUID BORDERLAND

FLUID BORDERLAND

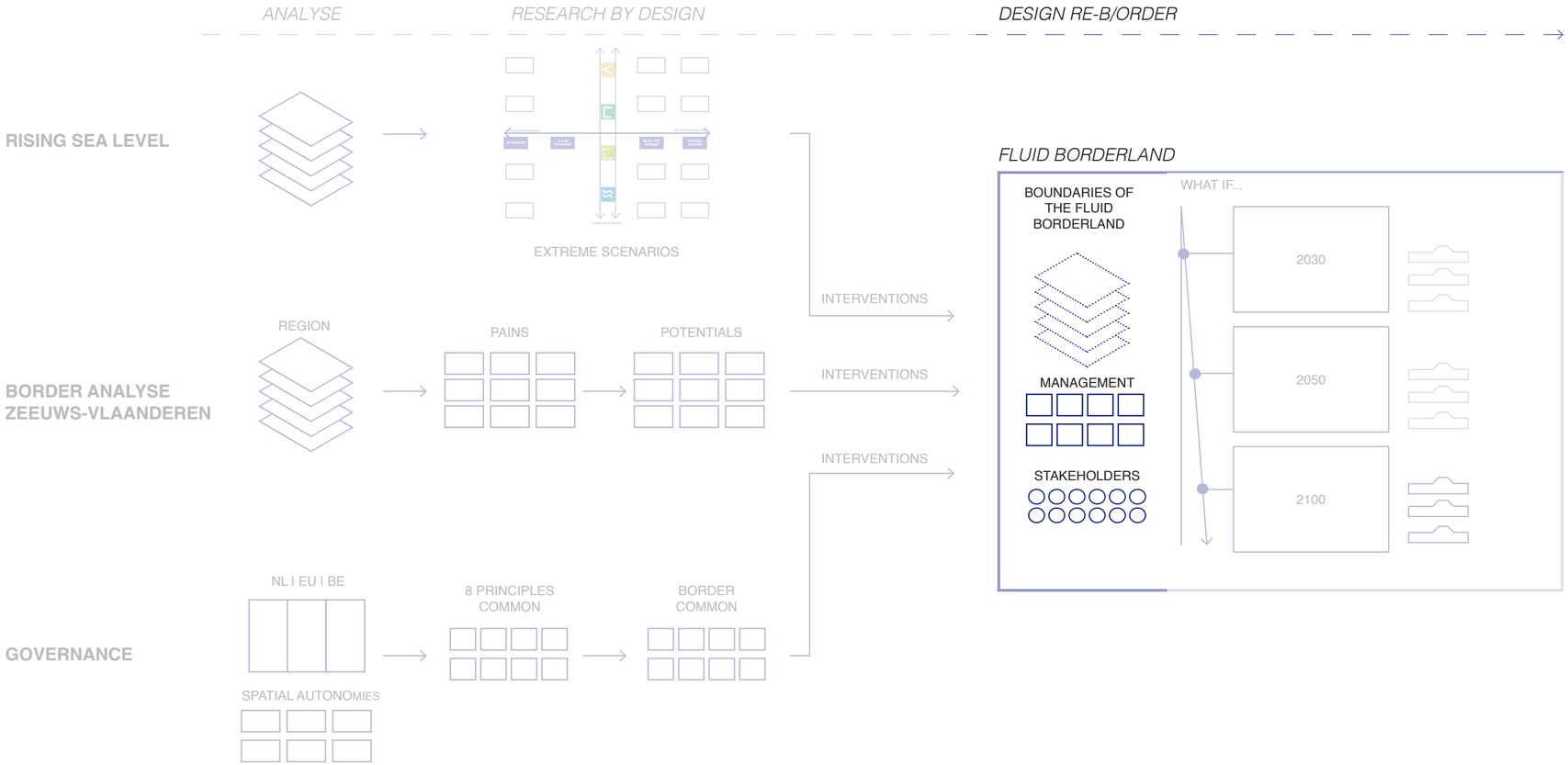


To Zone of Exception

METHOD DESIGN RE-B/ORDERING

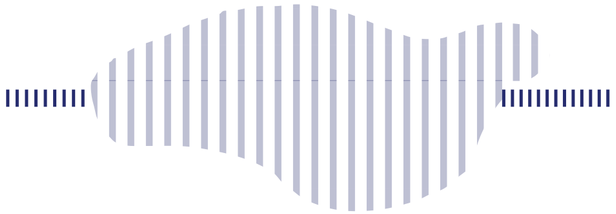


METHOD DESIGN RE-B/ORDERING



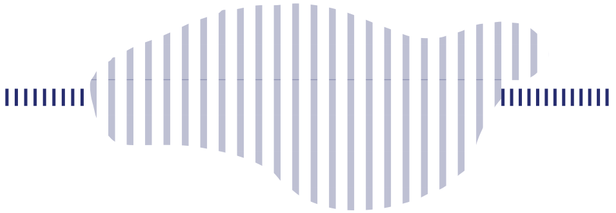
FLUID BORDERLAND CONCEPT

How to governance Fluid Borderland?



To Zone of Exception

FLUID BORDERLAND CONCEPT



To a Zone of Exception

OSTROMS (1990; 2008) 8 WAYS TO MANAGE THE COMMON

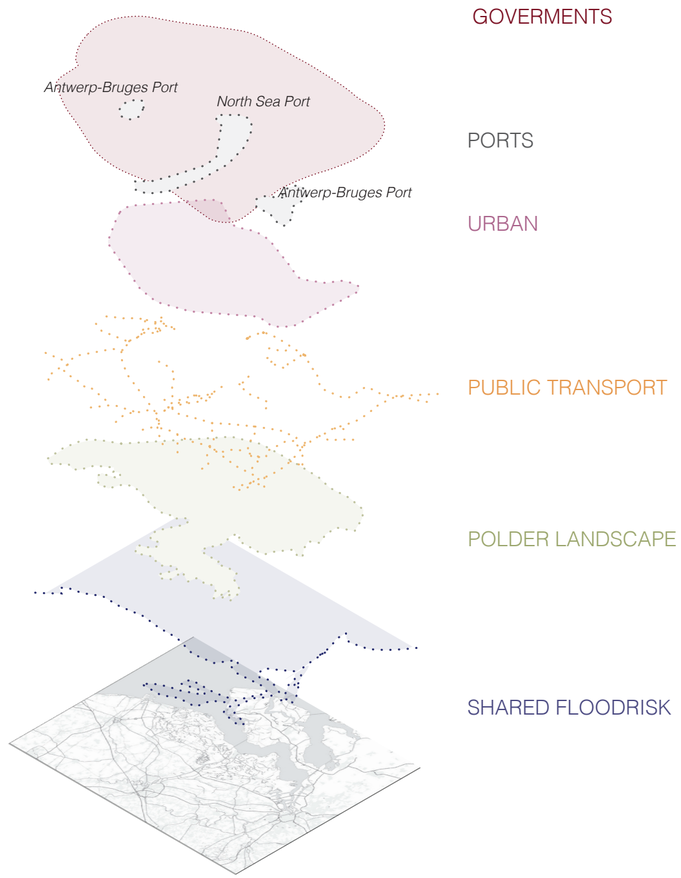
1. CLEARLY DEFINED BOUNDARIES
2. CONGRUENCE BETWEEN APPROPRIATION AND PROVISION RULES AND LOCAL CONDITIONS
3. COLLECTIVE-CHOICE ARRANGEMENTS
4. MONITORING
5. GRADUATED SANCTIONS
6. CONFLICT-RESOLUTION MECHANISMS
7. RECOGNITION OF THE RIGHT TO ORGANISE
8. NESTED ENTERPRISES

STATE OF EXCEPTION (AGAMBEN, 2005)

A LEGAL-POLITICAL MECHANISM IN WHICH THE EXECUTIVE **TEMPORARILY** SUSPENDS THE NORMAL LEGAL ORDER

FLUID BORDERLAND CONCEPT

BOUNDARIES OF THE FLUID BORDERLAND



GOVERMENTS

PORTS

URBAN

PUBLIC TRANSPORT

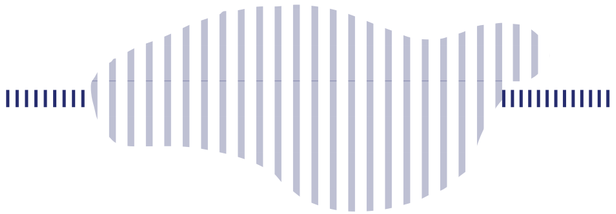
POLDER LANDSCAPE

SHARED FLOODRISK

OSTROMS (1990; 2008) 8 WAYS TO MANAGE THE COMMON

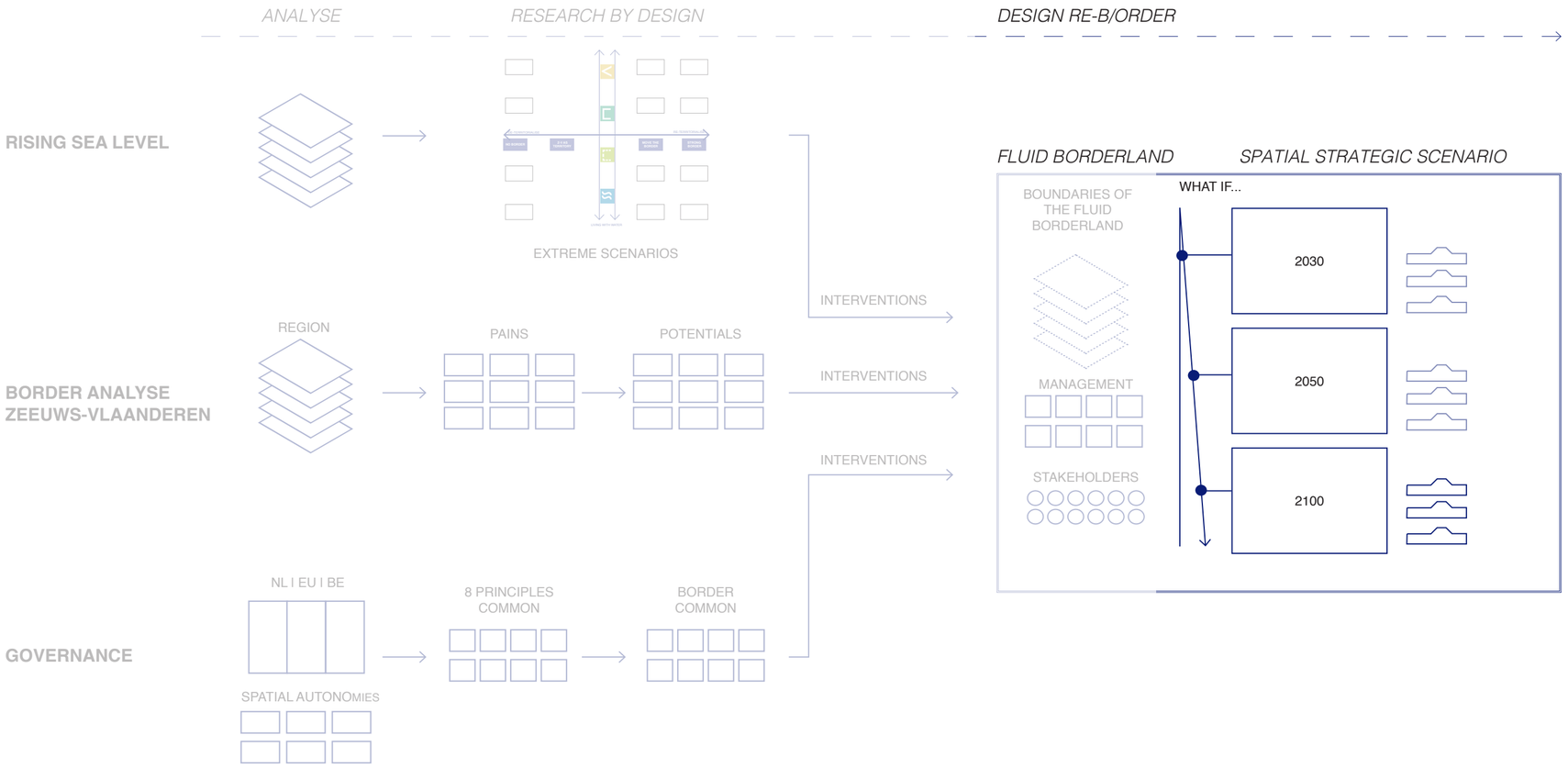
1. CLEARLY DEFINED BOUNDARIES	2. CONGRUENCE BETWEEN APPROPRIATION AND PROVISION RULES AND LOCAL CONDITIONS	3. COLLECTIVE-CHOICE ARRANGEMENTS	4. MONITORING
5. GRADUATED SANCTIONS	6. CONFLICT-RESOLUTION MECHANISMS	7. RECOGNITION OF THE RIGHT TO ORGANISE	8.NESTED ENTERPRISES

So how can this Fluid Borderland look like in the future?

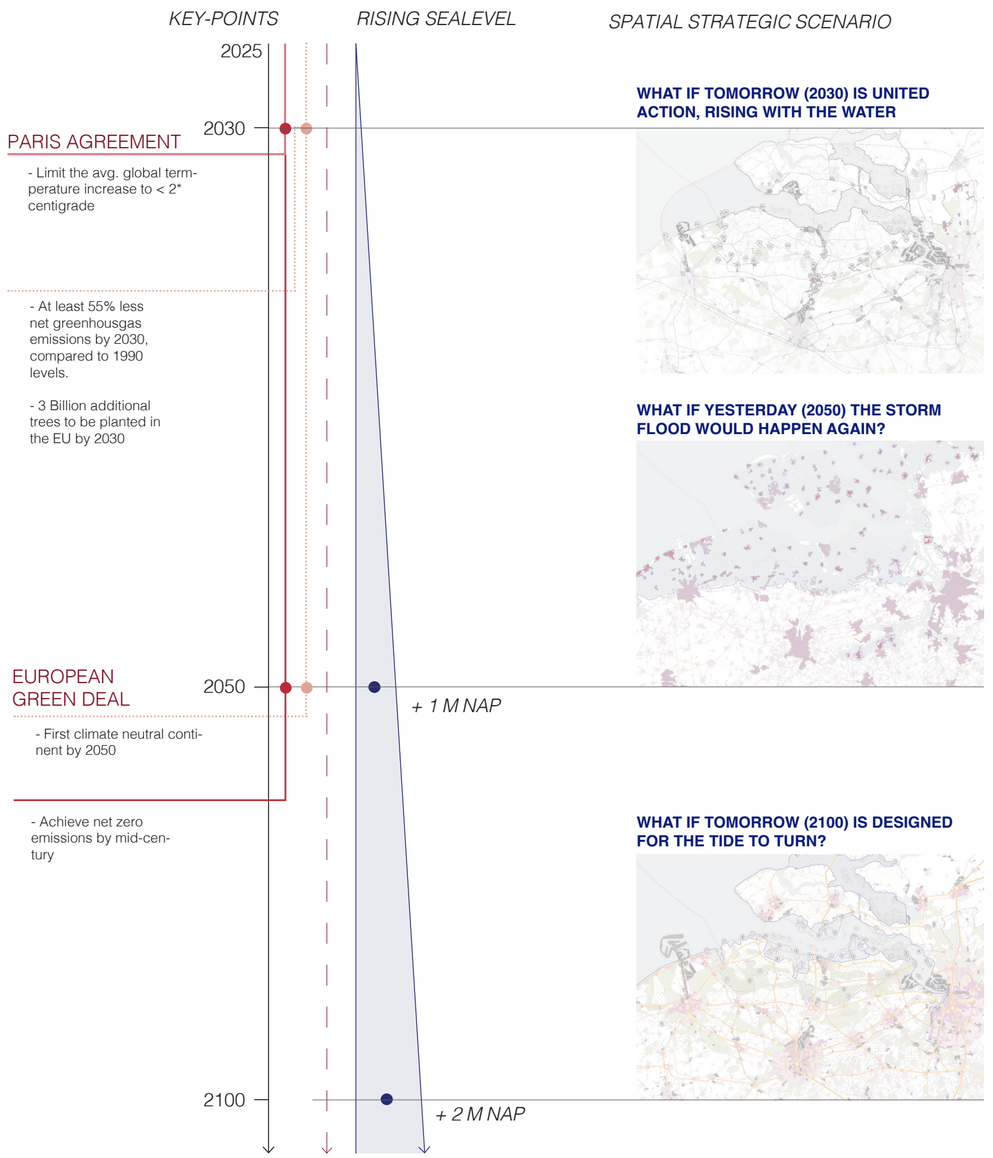


To Zone of Exception

METHODOLOGY DESIGN RE-B/ORDERING



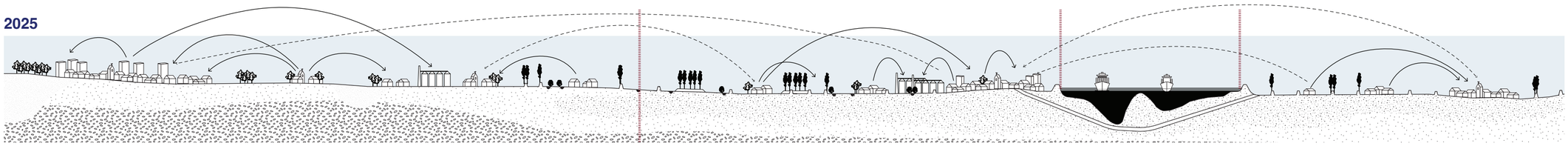
SPATIAL STRATEGIC SCENARIOS FOR RE-B/ORDERING



Timeline Scenarios [image by author]

SPATIAL STRATEGIC SCENARIOS | **2025** | 2030 | 2050 | 2100

2025



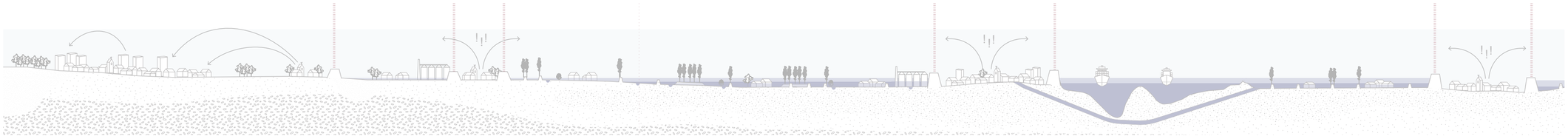
BE | NL

2030 | WHAT IF TOMORROW IS UNITED ACTION, RISING WITH THE WATER



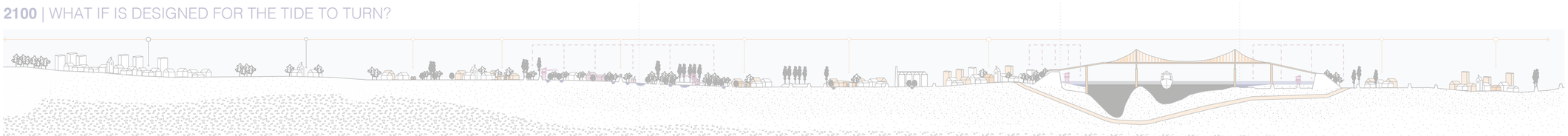
BE | NL

2050 | WHAT IF YESTERDAY THE STORM FLOOD WOULD HAPPEN AGAIN?



BE | NL

2100 | WHAT IF IS DESIGNED FOR THE TIDE TO TURN?

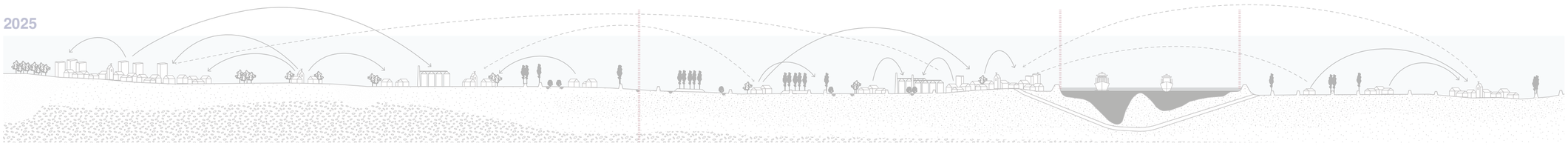


Overview schematic sections per strategic scenario [image by author]

BE | NL

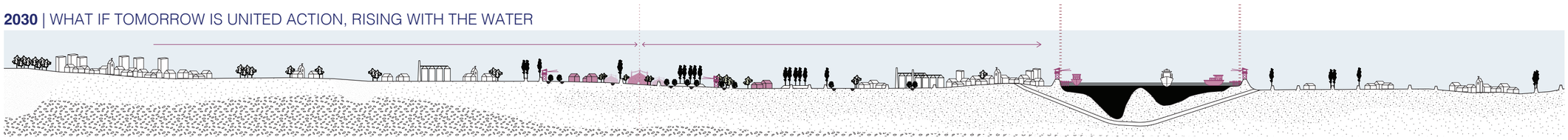
SPATIAL STRATEGIC SCENARIOS | 2025 | **2030** | 2050 | 2100

2025



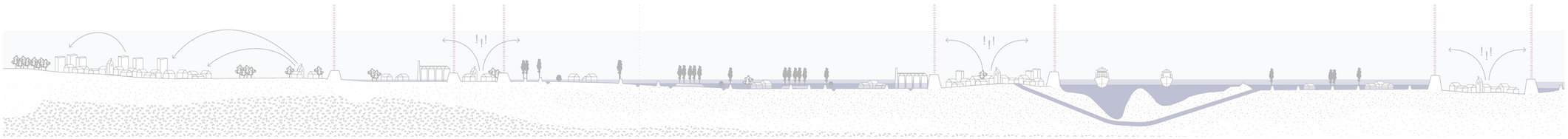
BE | NL

2030 | WHAT IF TOMORROW IS UNITED ACTION, RISING WITH THE WATER



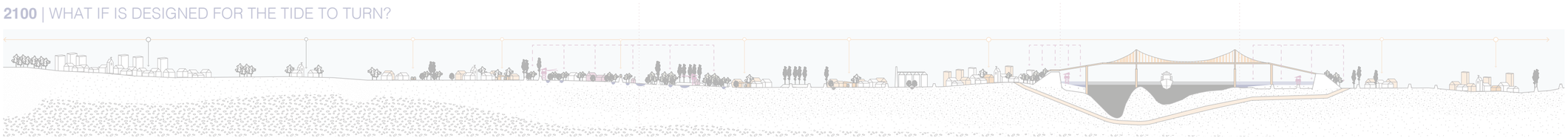
BE | NL

2050 | WHAT IF YESTERDAY THE STORM FLOOD WOULD HAPPEN AGAIN?



BE | NL

2100 | WHAT IF IS DESIGNED FOR THE TIDE TO TURN?



Overview schematic sections per strategic scenario [image by author]

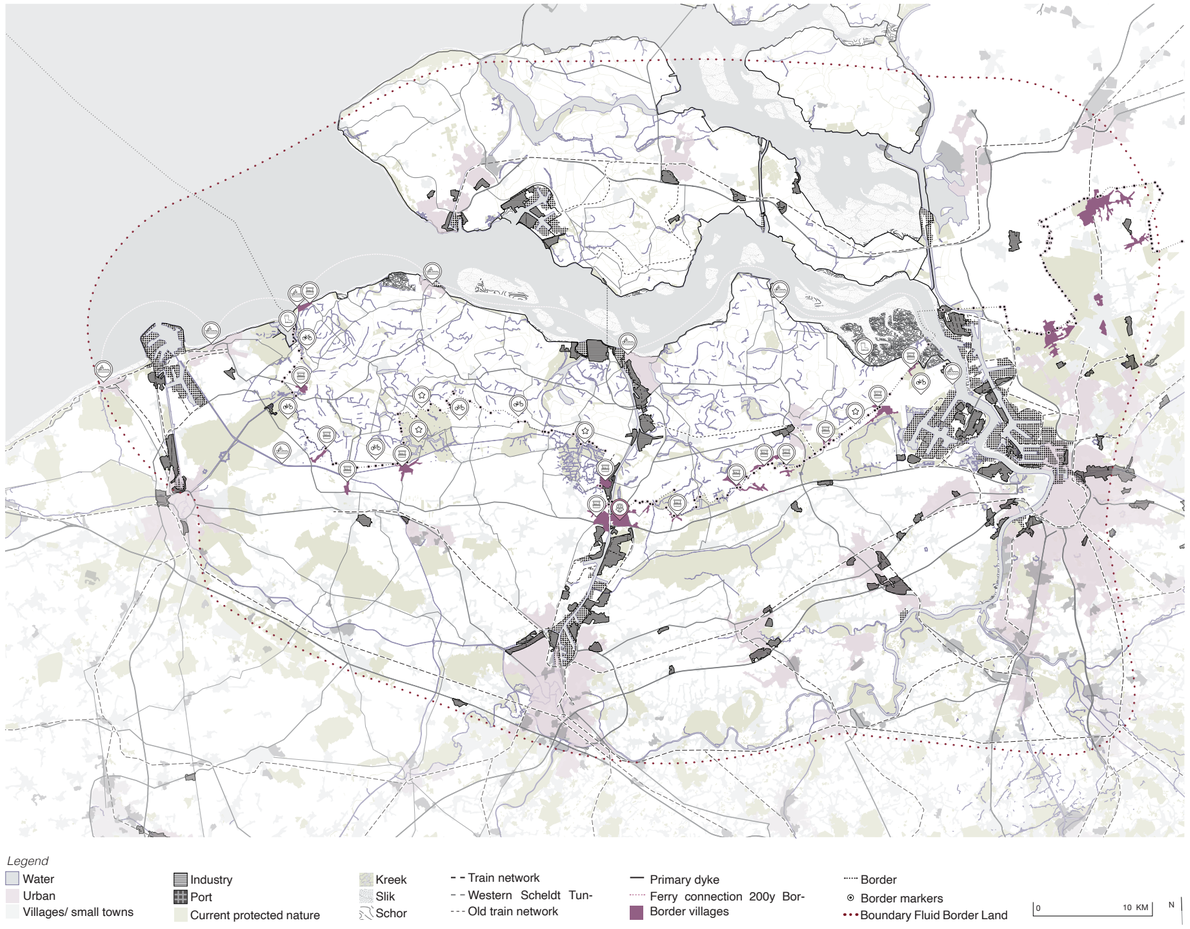
BE | NL

2030 | WHAT IF TOMORROW IS UNITED ACTION, RISING WITH THE WATER



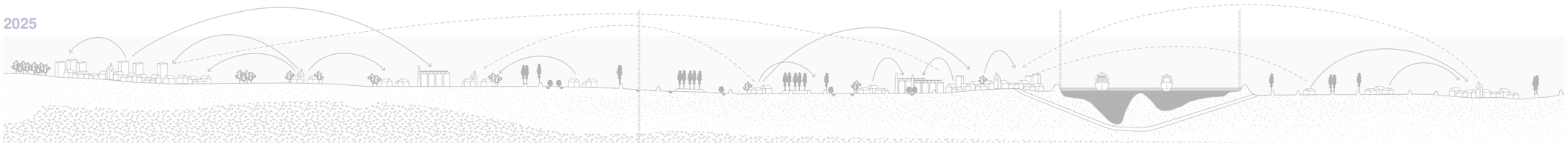


2030 | WHAT IF TOMORROW IS UNITED ACTION, RISING WITH THE WATER



SPATIAL STRATEGIC SCENARIOS | 2025 | 2030 | **2050** | 2100

2025



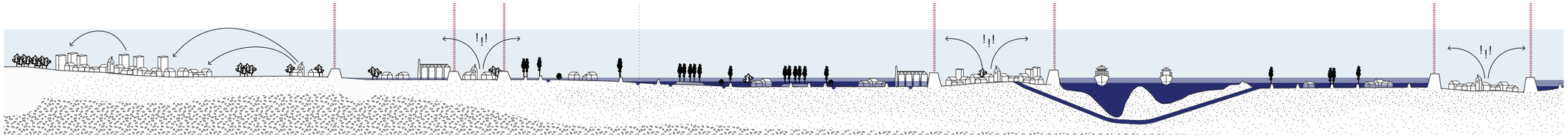
BE | NL

2030 | WHAT IF TOMORROW IS UNITED ACTION, RISING WITH THE WATER



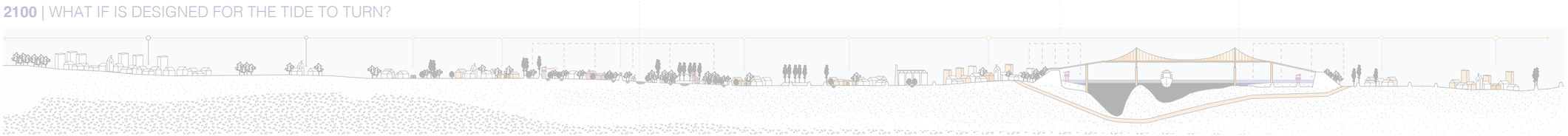
BE | NL

2050 | WHAT IF YESTERDAY THE STORM FLOOD WOULD HAPPEN AGAIN?



BE | NL

2100 | WHAT IF IS DESIGNED FOR THE TIDE TO TURN?

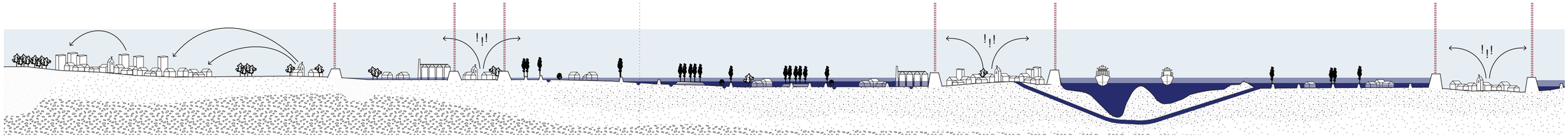


Overview schematic sections per strategic scenario [image by author]

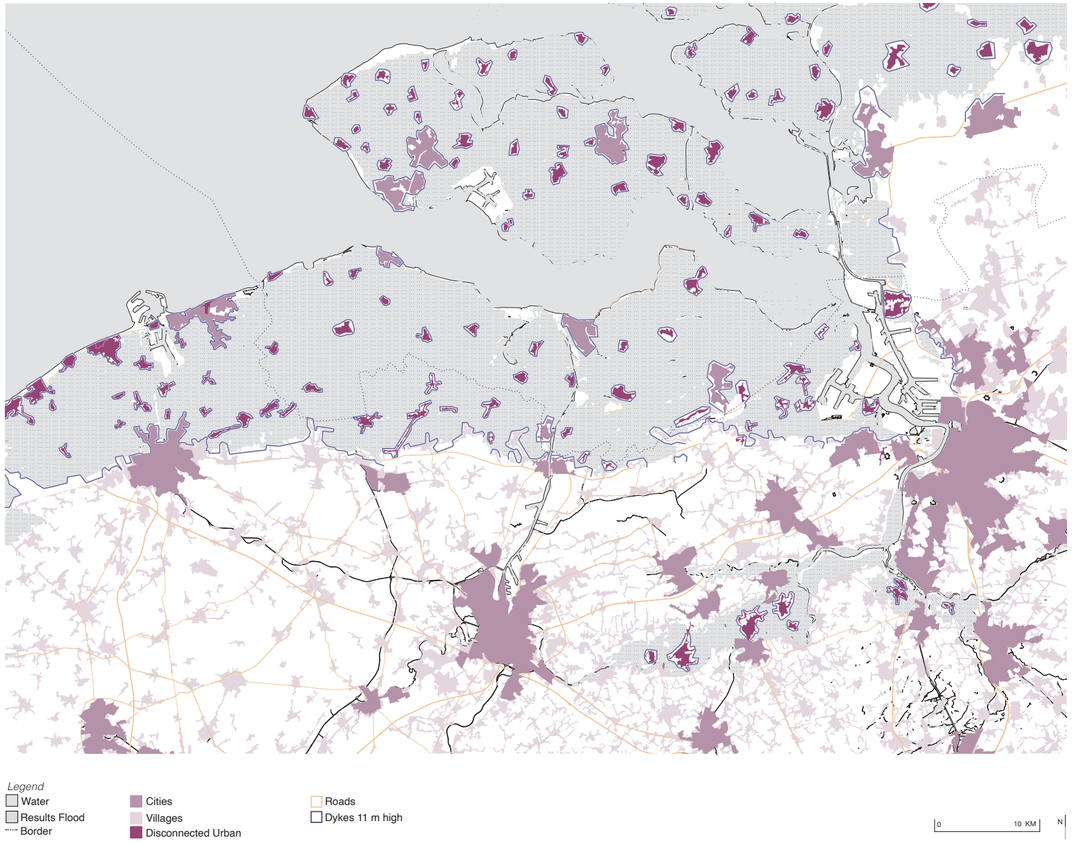
BE | NL

2050 | WHAT IF YESTERDAY THE STORM FLOOD WOULD HAPPEN AGAIN?



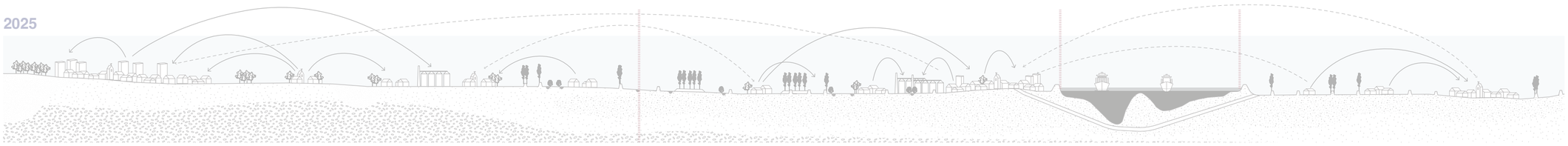


2050 | WHAT IF YESTERDAY THE STORM FLOOD WOULD HAPPEN AGAIN?



SPATIAL STRATEGIC SCENARIOS | 2025 | 2030 | 2050 | **2100**

2025



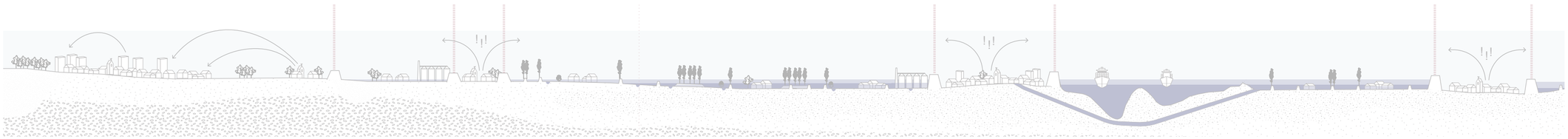
BE | NL

2030 | WHAT IF TOMORROW IS UNITED ACTION, RISING WITH THE WATER



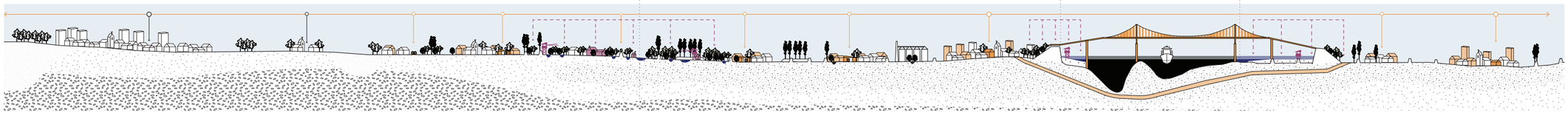
BE | NL

2050 | WHAT IF YESTERDAY THE STORM FLOOD WOULD HAPPEN AGAIN?



BE | NL

2100 | WHAT IF IS DESIGNED FOR THE TIDE TO TURN?



BE | NL

2100 | WHAT IF TOMORROW IS DESIGNED FOR THE TIDE TO TURN?



PEOPLE RE-CONNECTED TO KREEK LANDSCAPE



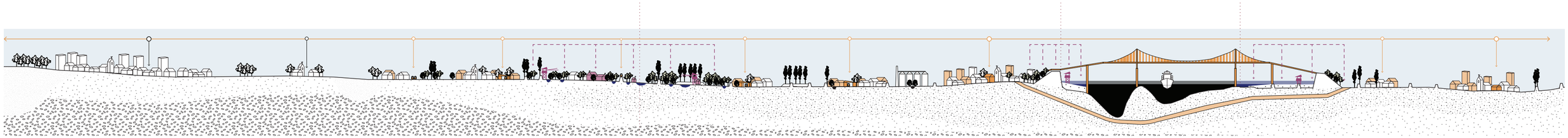
DYKES AS CORRIDORS FOR MOBILITY AND NATUR



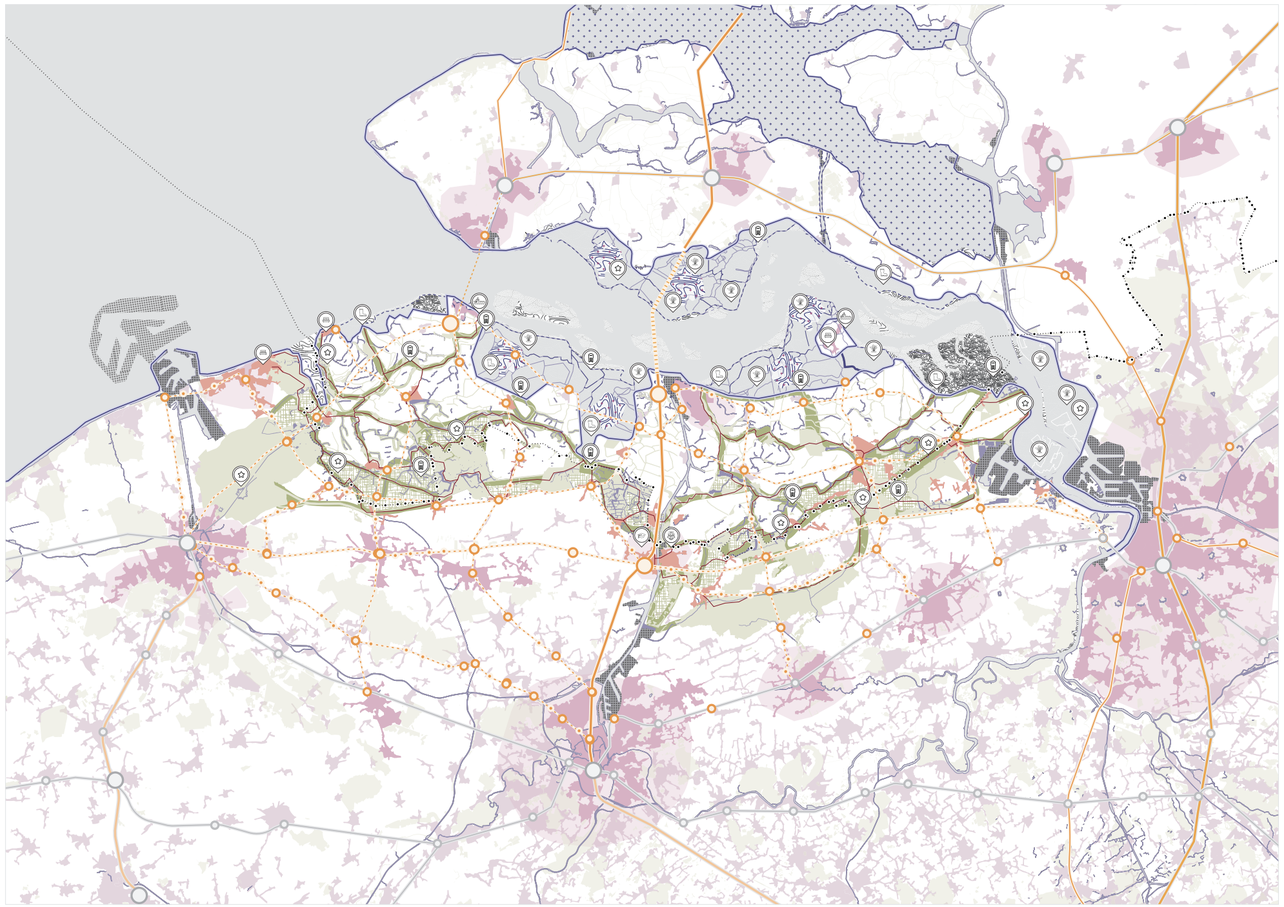
RURAL LANDSCAPE CONNECTED BY LIGHT RAIL



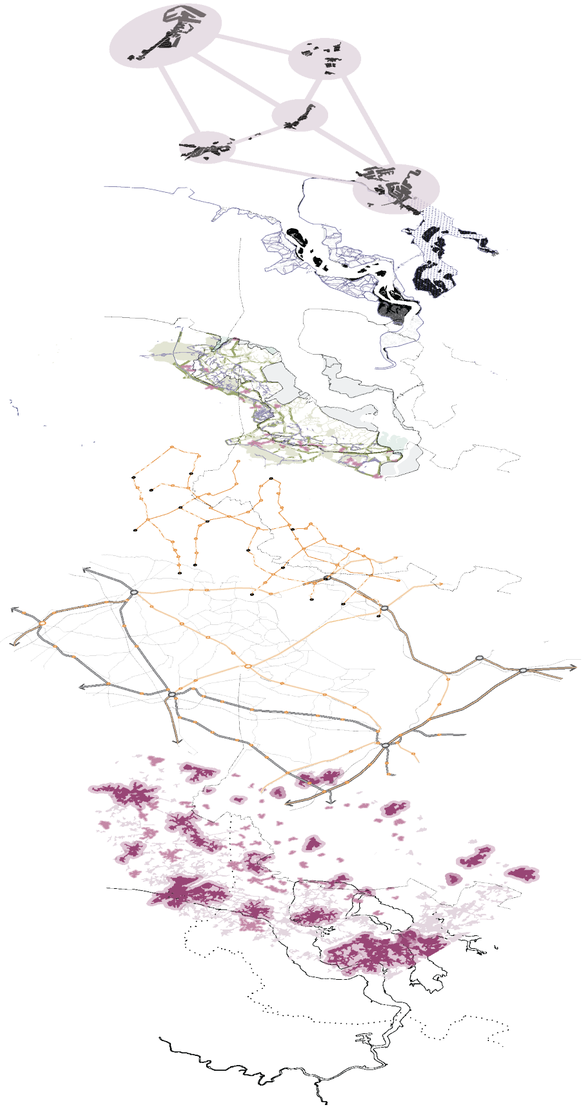
TIDAL PARKS AS RESOURCE AND PROTECTION



2100 | WHAT IF TOMORROW IS DESIGNED FOR THE TIDE TO TURN?



2100 | SYNTHESIS OF DESIGN INTERVENTIONS



Overview interventions 2100 [image by author]

ECONOMY
- Industry
- Port

FLOOD PROTECTION
- De-poldered land
- Slik
- Schor
- Dyke elevation 12 m
- Opened primary dykes 9m
- Opened tidal dykes 4,5 m
- Tidal dykes 3,0 m

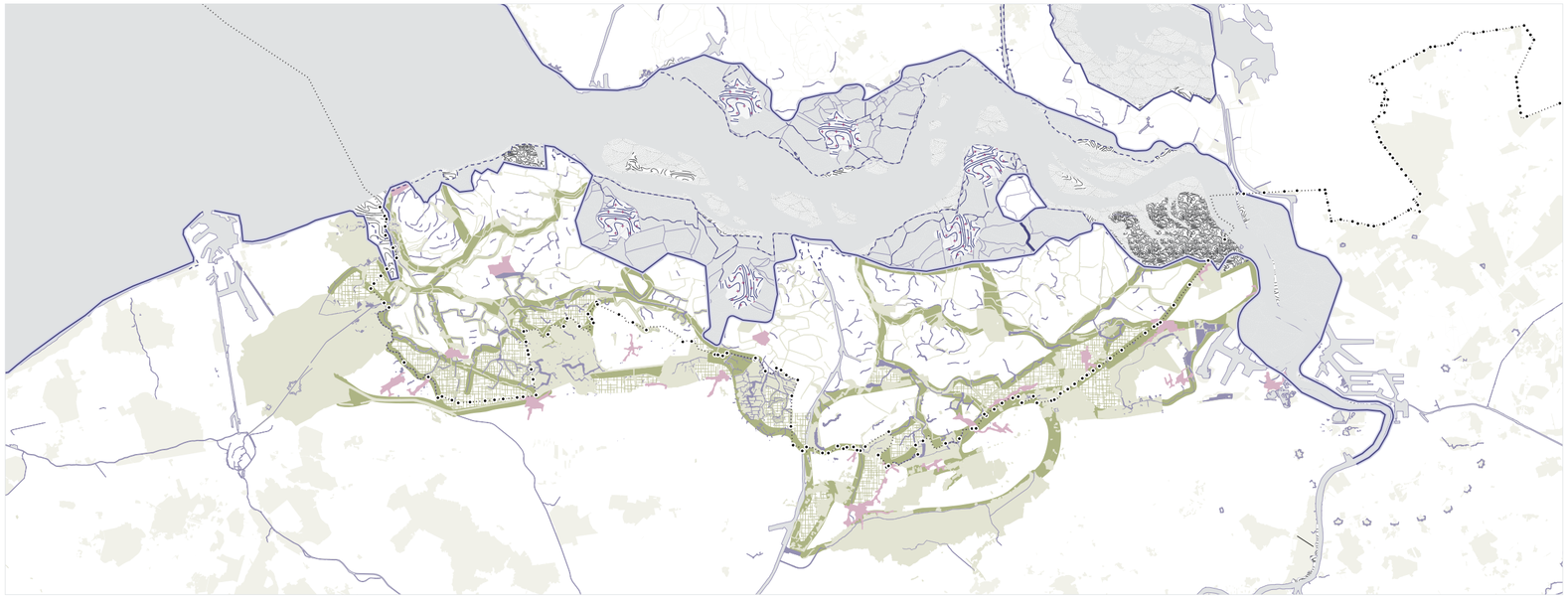
POLDER AND DYKE NATURE
- Current protected nature
- Corridor for nature
- Kreek
- De-poldered land
- Aqua farming
- Food forest

PUBLIC TRANSPORT
- New train network
- Current train network
- Light rail network
- Highway
- Bridge and train tunnel
- New train tunnel

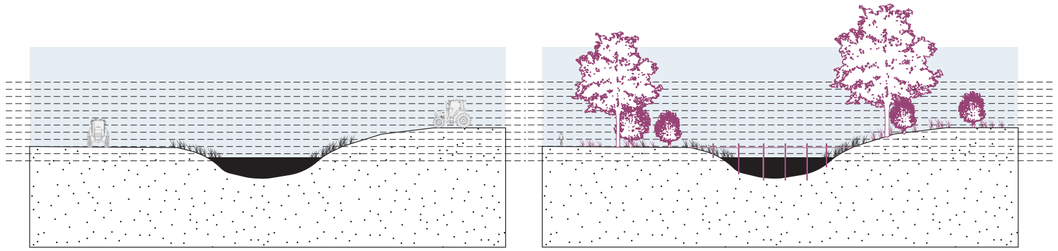
URBAN
- Urban
- Urban expansion
- Villages/ small towns

SCHELDT ESTUARY
- Border

2100 | RE-CONNECTING PEOPLE TO THE BORDERED LANDSCAPE



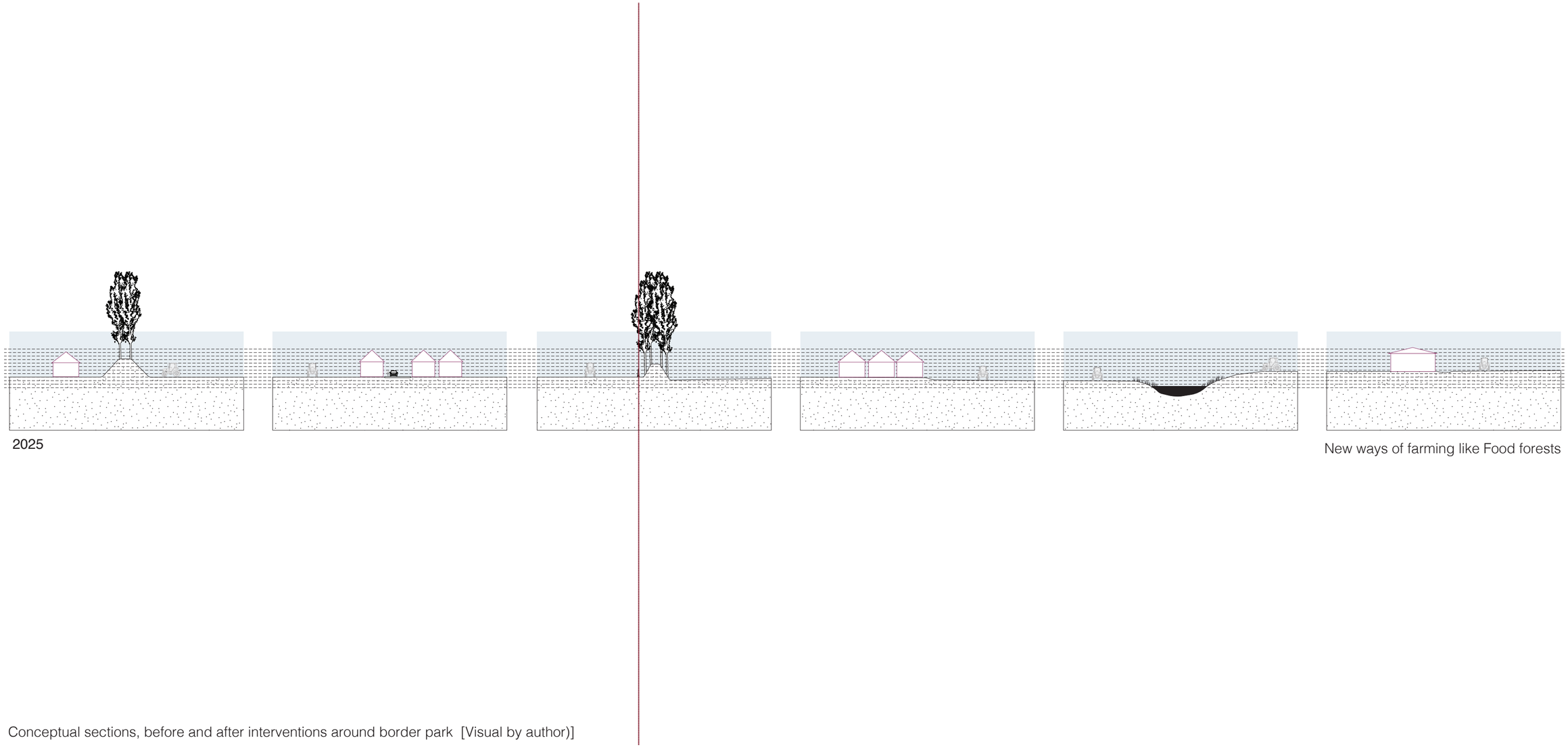
Map of re-connecting protected nature by corridors [image by author]



KREEKS GET MORE ROOM AND FORM SMALL CORRIDORS

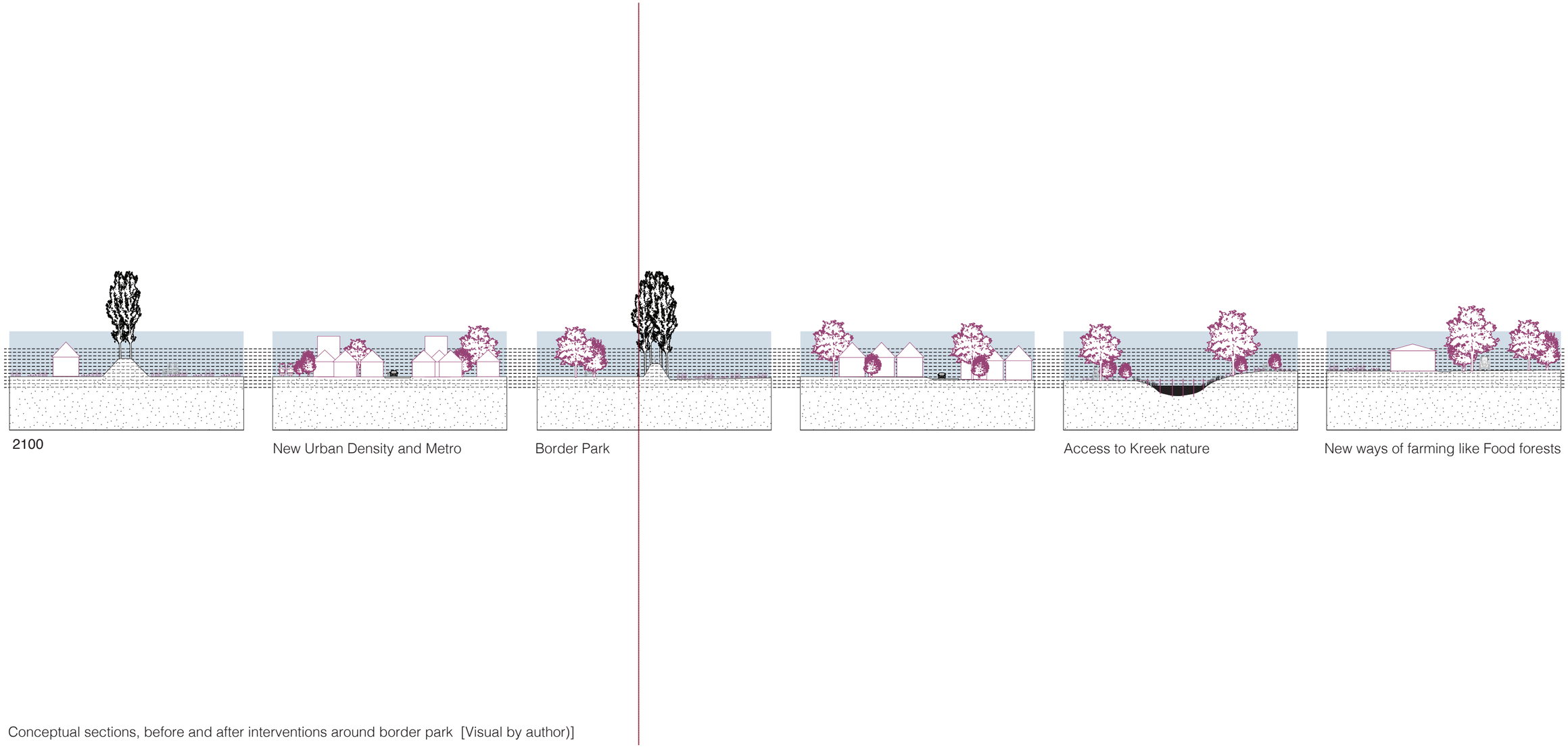


2100 | RE-CONNECTING PEOPLE TO THE BORDERED LANDSCAPE



Conceptual sections, before and after interventions around border park [Visual by author)]

2100 | RE-CONNECTING PEOPLE TO THE BORDERED LANDSCAPE

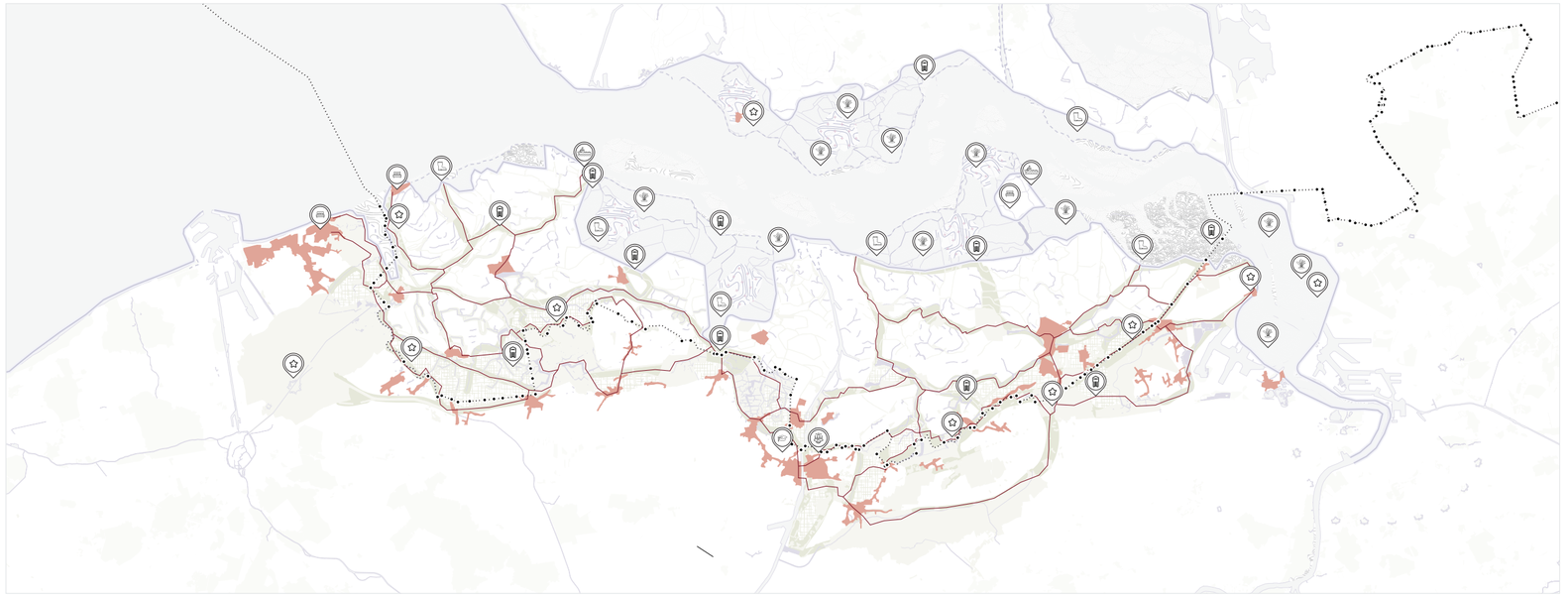


Conceptual sections, before and after interventions around border park [Visual by author)]

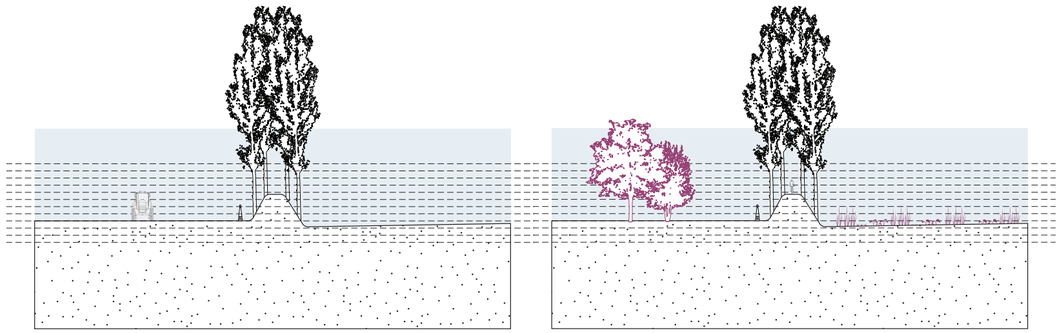
2100 | BORDER PARK



2100 | RE-CONNECTING PEOPLE TO THE BORDER AND SCHELDT THROUGH RECREATIONAL BIKE ROUTES



Map new bike routes around national border and Scheldt [image by author]



DYKES AS CORRIDORS, COMBINED WITH FOOD FORESTS

Conceptual sections of dyke and Kreek corridors [image by author]

2100 | RECREATIONAL BIKE ROUTES ALONG THE BORDERSCAPE



2100 | RE-CONNECTING FLUID BORDER LAND BY FAST MOBILITY | TRAIN + LIGHT RAIL

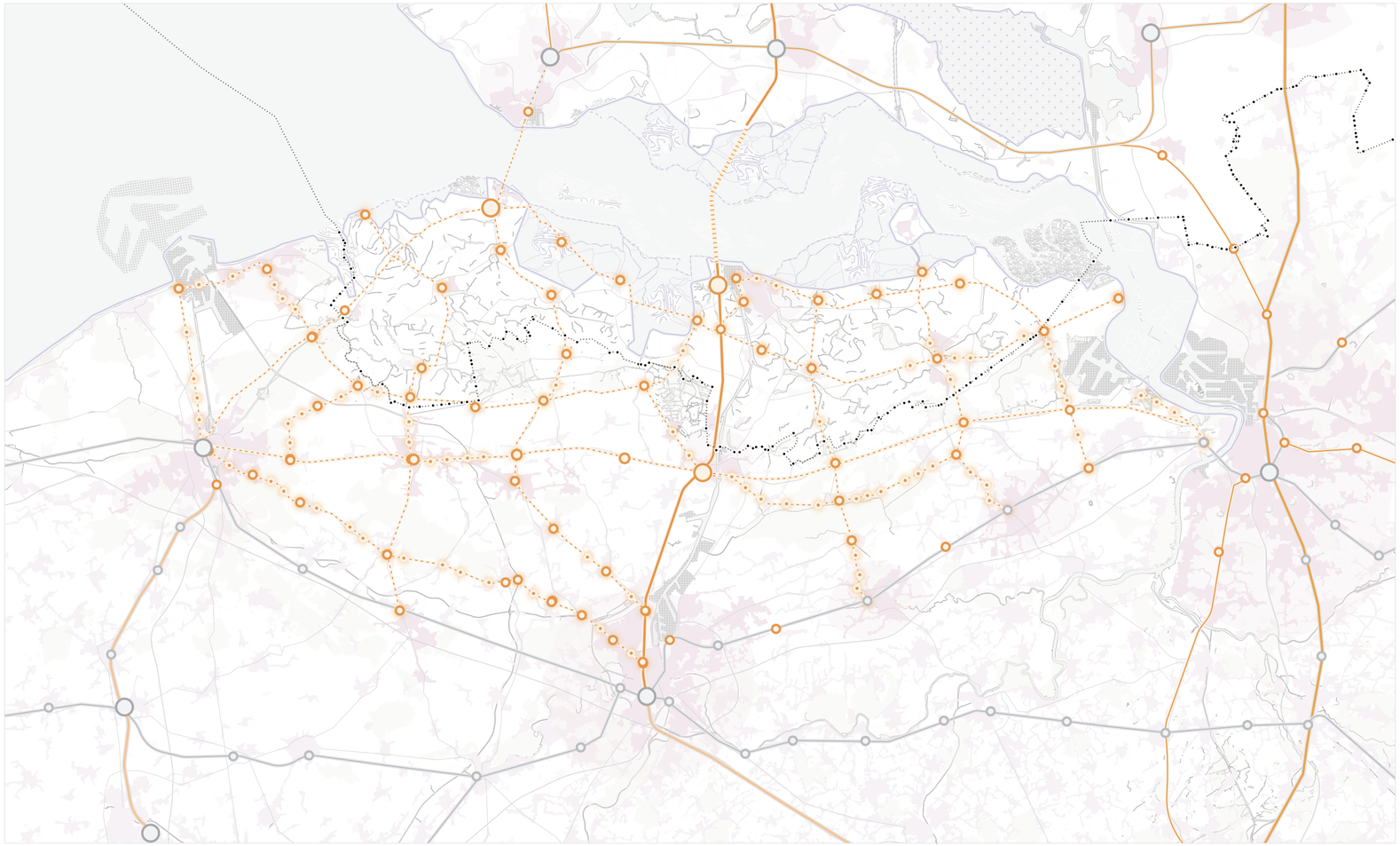
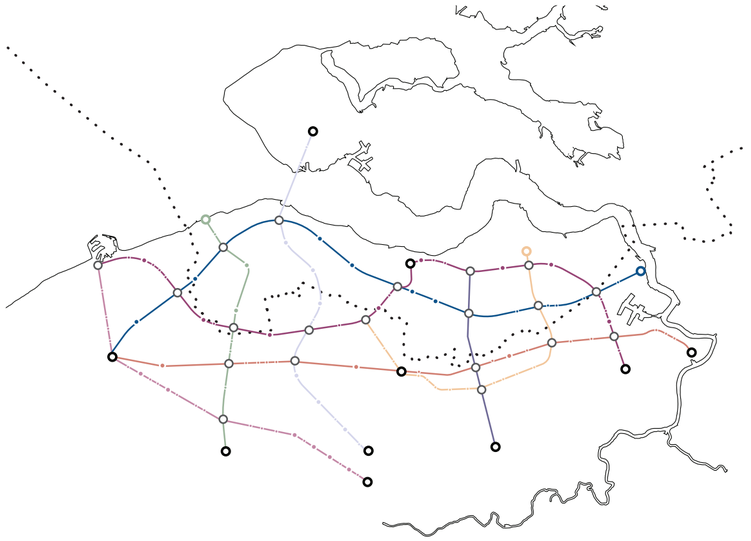


Figure 103. Map new fast mobility network in Fluid Borderland [image by author]

2100 | LIGHT RAIL NETWORK CONNECTING VILLAGES AND CITIES TO BIGGER NETWORK

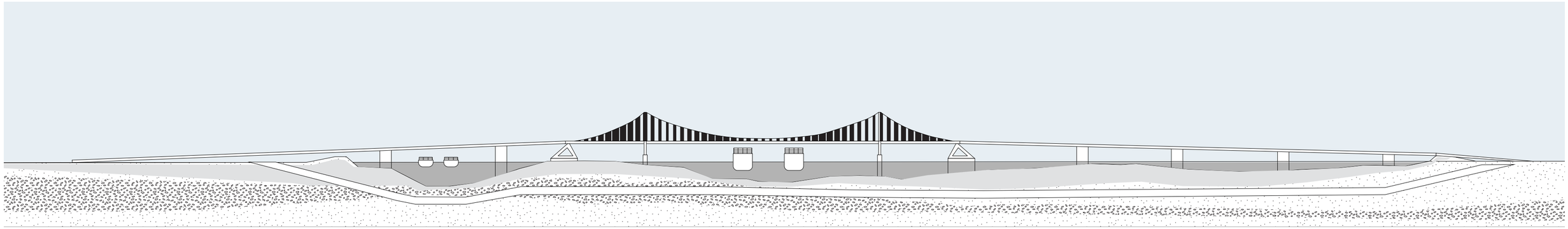


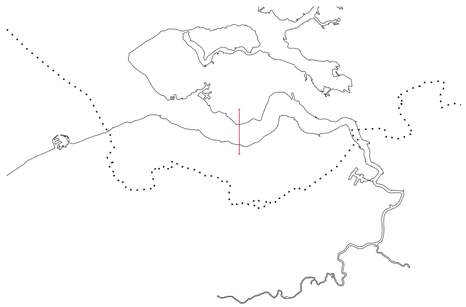
Map new light rail network in Fluid Borderland [image by author]

2100 | RE-CONNECTED FLUID BORDER LAND

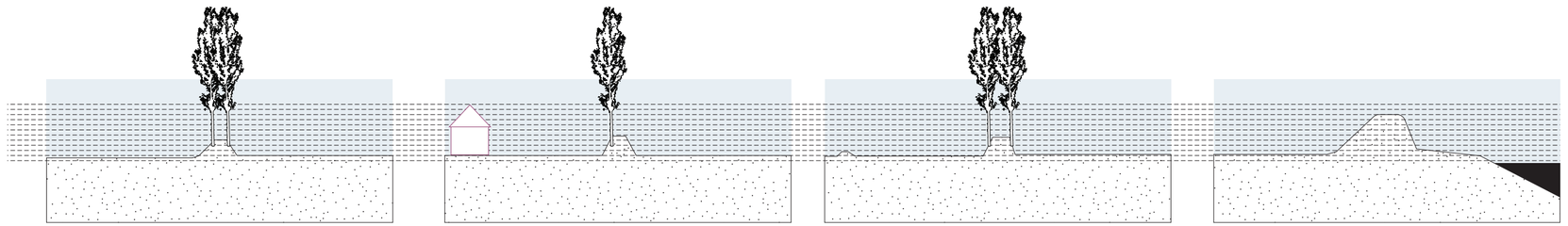


2100 |BRIDGING BORDERS | SYMBOLICALLY | VISUALLY | PHYSICALLY



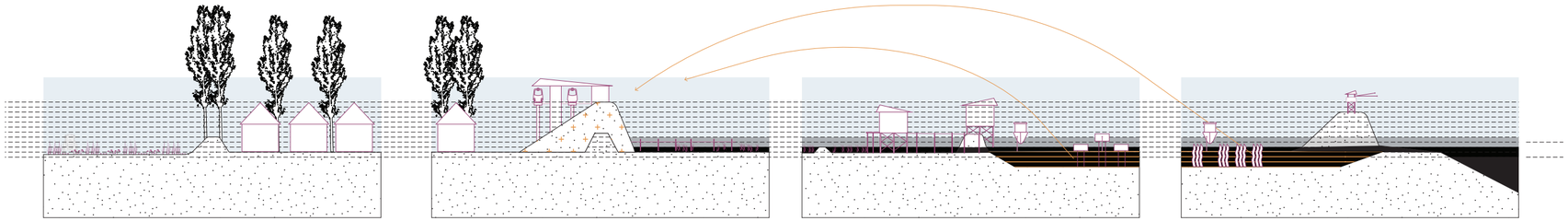


2100 | RE-CONNECTING PEOPLE TO TIDAL LANDSCAPE



2025

2100 | RE-CONNECTING PEOPLE TO TIDAL LANDSCAPE | BY DE-POLDERING WITH NEW AQUA FARMING AND RECREATION



Villages expansion and new types of farming giving space to nature

New elevated Primary Dyke build by sand from de-poldered lands

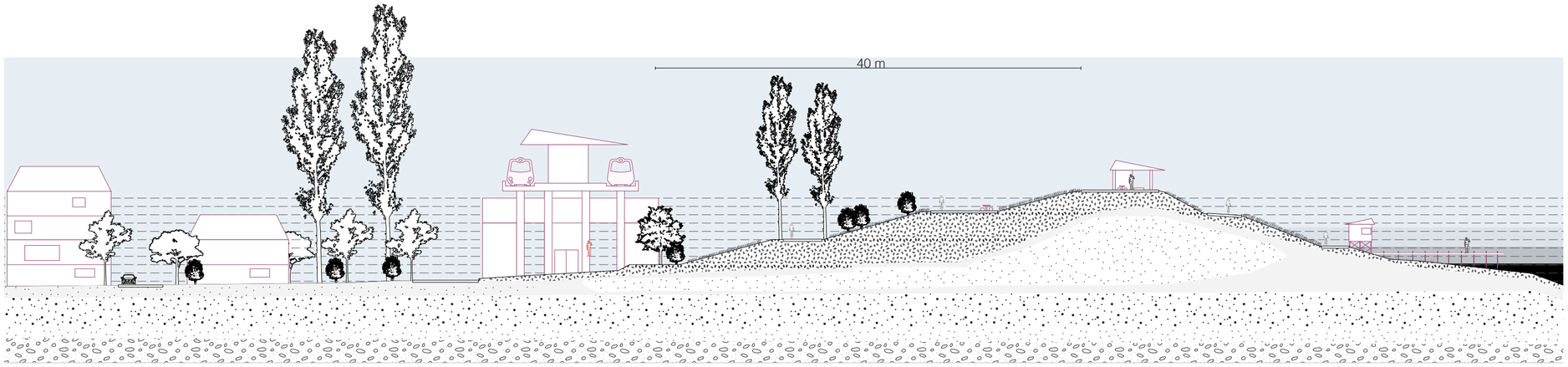
Tidal Parks with new types of aqua farming

Old Primary Dykes get Lookout points

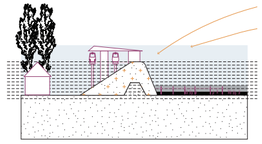


Baalhoek **1980**

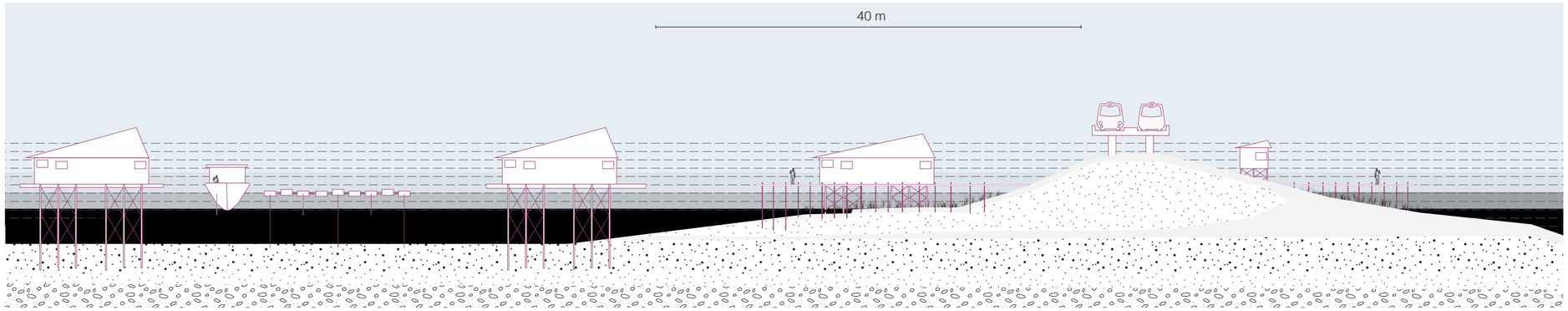
2100 | RE-CONNECTING PEOPLE TO DYKES



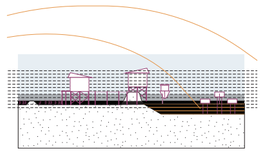
Conceptual section, Villages with light rail connection and new primary dyke [Visual by author)]



2100 | RE-CONNECTING PEOPLE TO DYKES AND TIDAL LANDSCAPE



Conceptual section, Villages with light rail connection and new primary dyke [Visual by author)]



2100 | RE-CONNECTING PEOPLE TO TIDAL LANDSCAPE



IN CONCLUSION: DESIGNING WITH RE-B/ORDERING

2030



2050



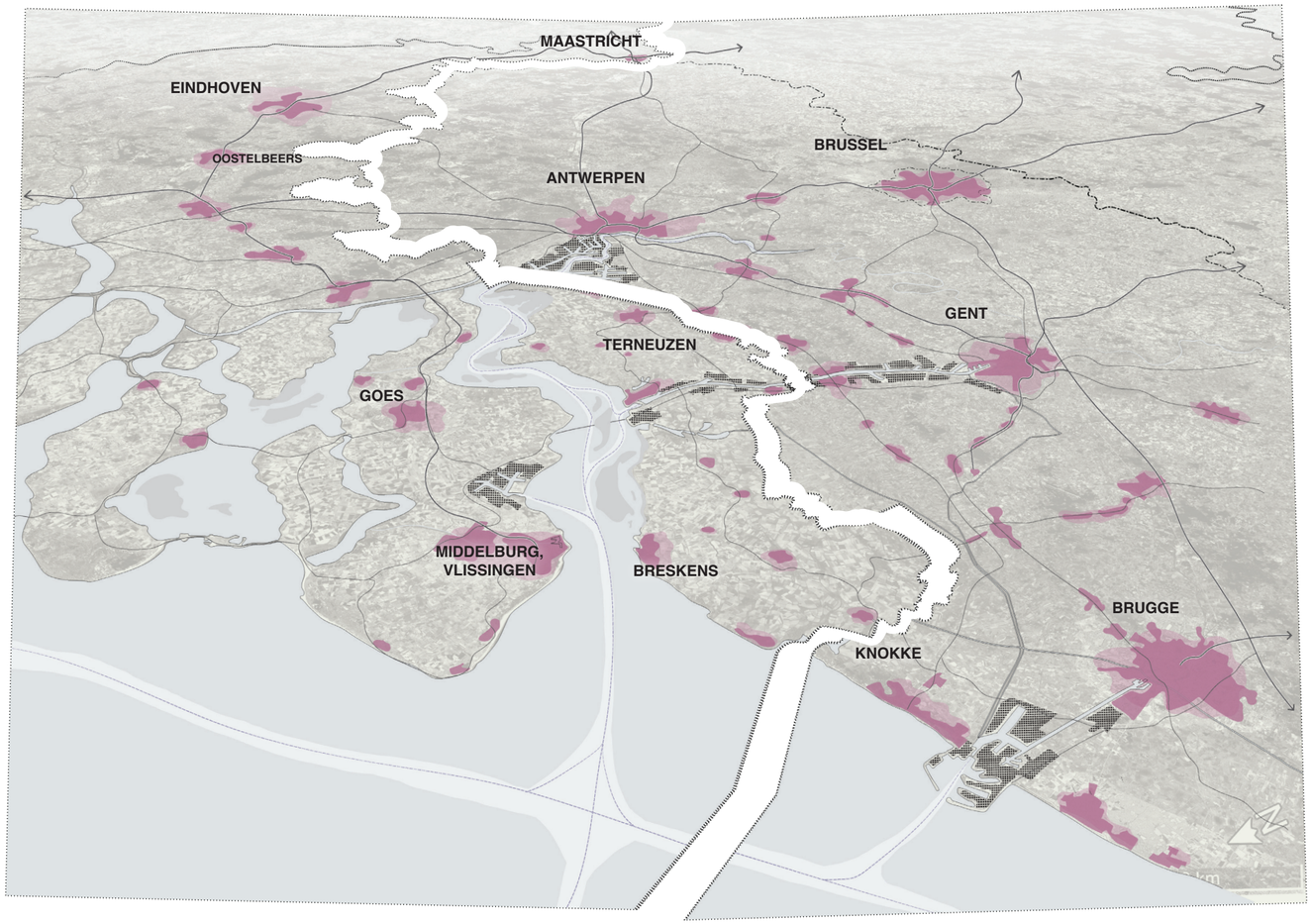
2100



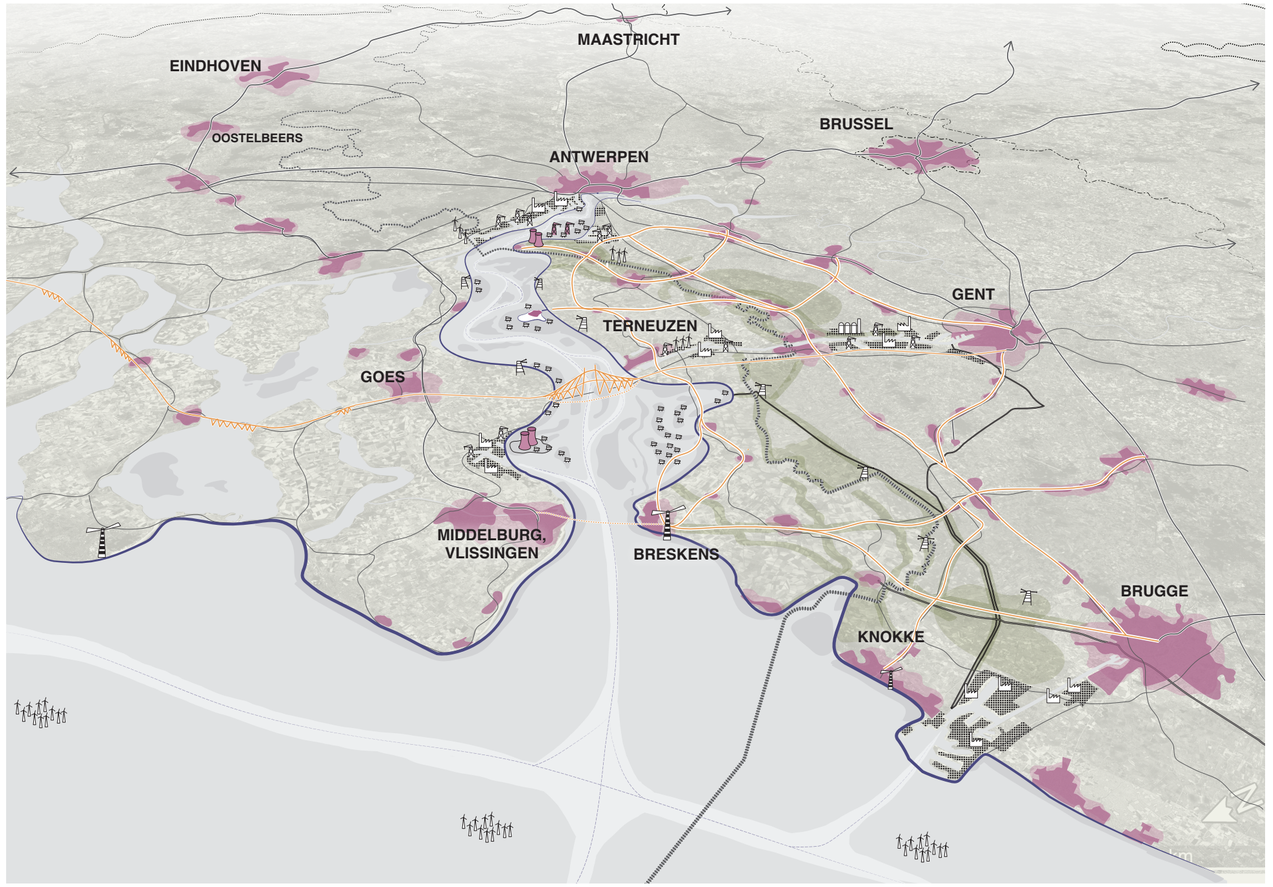
ZEEUWS-VLAANDEREN IN 2025



‘MIND THE GAP’


MAASTRICHT
EINDHOVEN
OOSTELBEERS
ANTWERPEN
BRUSSEL
GENT
TERNEUZEN
GOES
MIDDELBURG,
VLISSINGEN
BRESKENS
KNOKKE
BRUGGE

‘LET’S CONNECT THE GAP’



FLUID BORDERS

NETHERLANDS
ZEEUWS-VLAANDEREN

FLANDERS, BELGIUM
ANTWERP

Floor Mare Schepel
4854535, Graduation project

Msc Urbanism, 2024-2025
Transitional Territories

