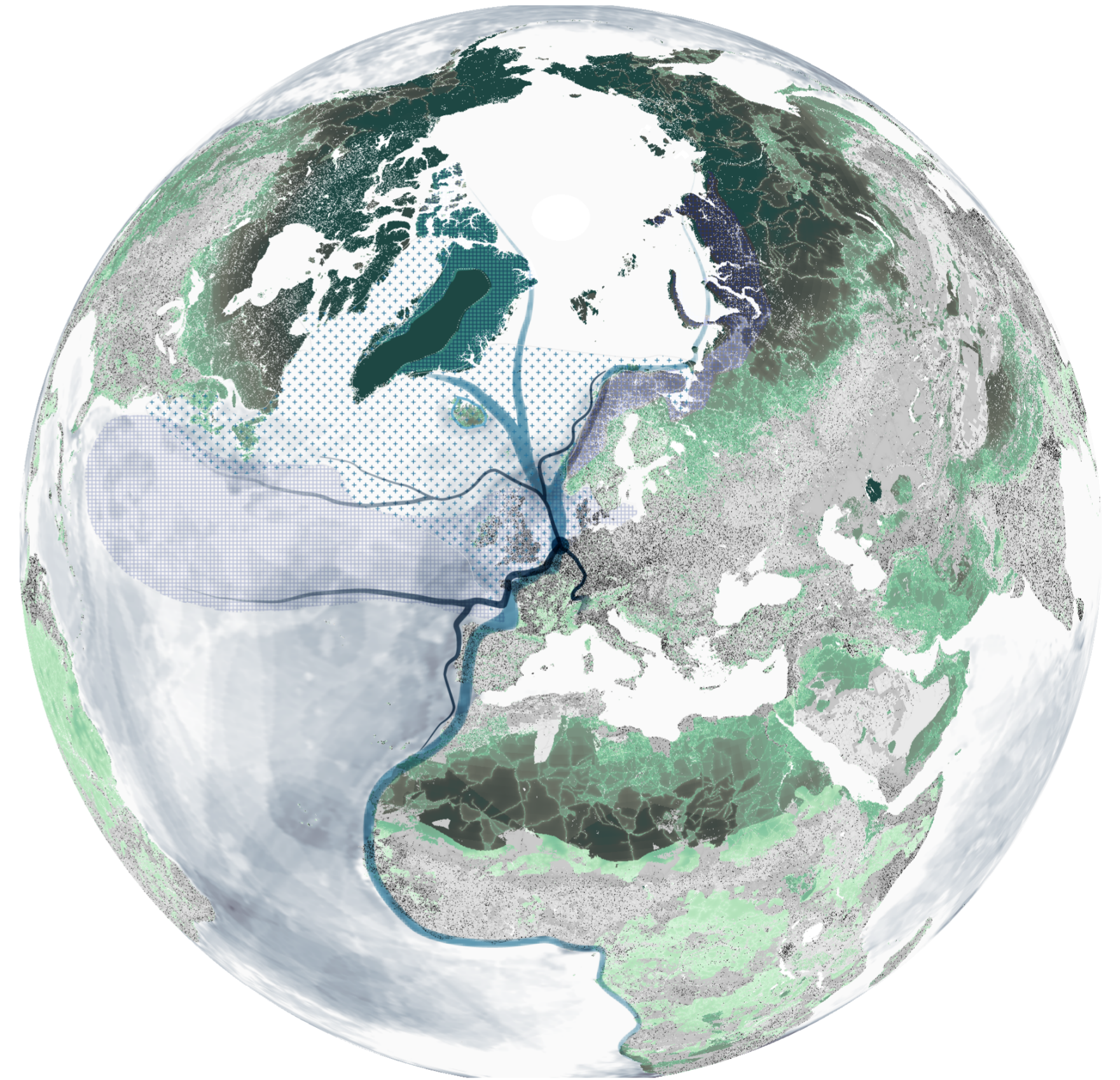


The Blue Heart, a territorial envisioning of
evolutionary agro-urban ecologies

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The Blue Heart

The Blue Heart is a Delta that connects the Alps with the North Sea through the Rhine basin, being an important route for several species such as the European eel and Atlantic salmon. The fish migration routes cross the estuarine basin of the Blue Heart (IJsselmeer) and the intertidal/dune areas of the Wadden Sea, attracting birds of the East Atlantic Flyway that search for feeding areas and shelter during winter. Several coastal waterbirds that move from arctic breeding grounds that stretch from Canada east to central Siberia to wintering grounds in Western Europe and West Africa.

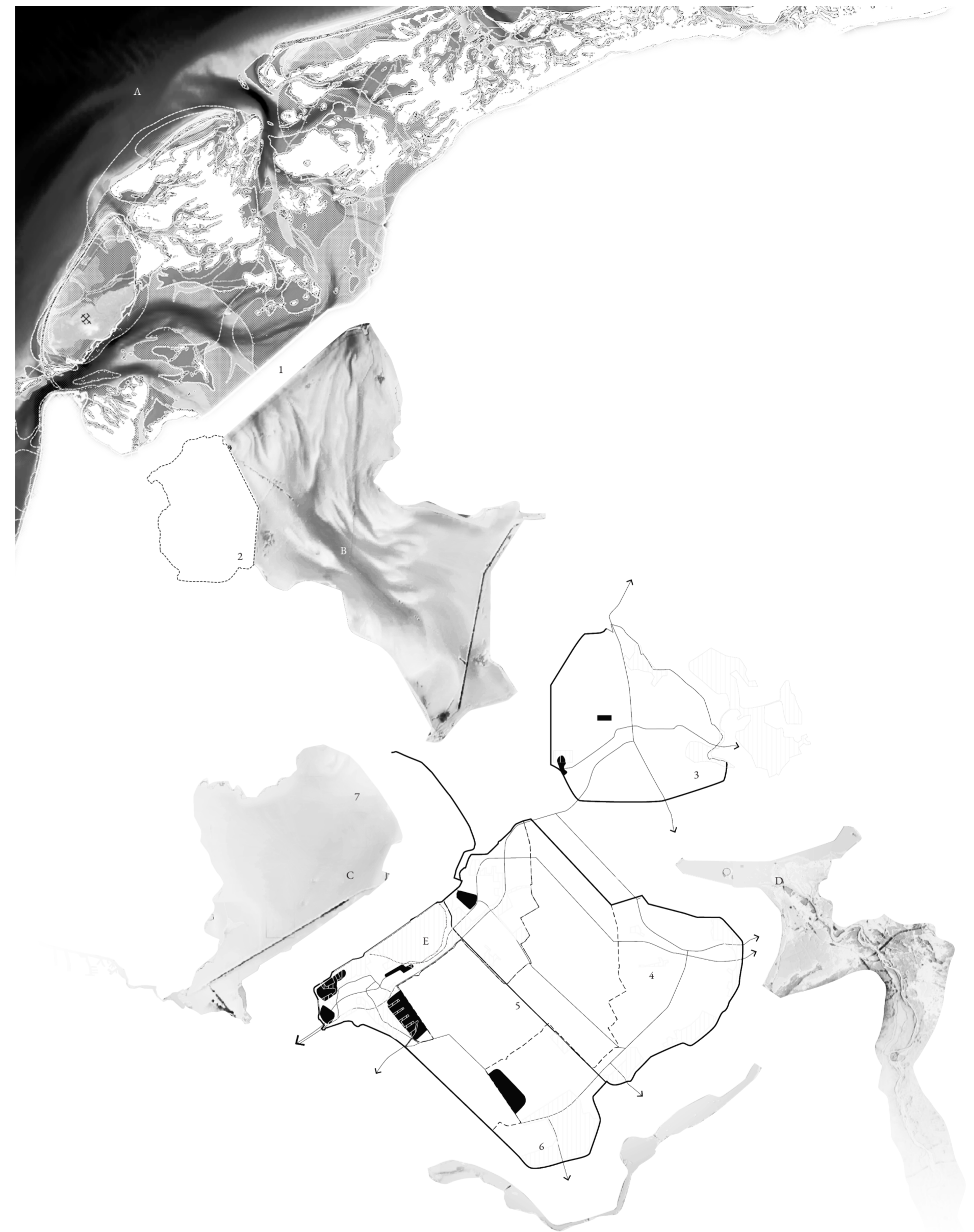
Due to human interference, the Blue Heart lost most of its ecological integrity, amidst a global biodiversity crisis pushed by land use, resource extraction, and climate change. The last natural fragment of the Blue Heart is the Wadden Sea, World Heritage by UNESCO, and transitional habitat for almost one million ground-breeding birds as ducks, geese and swans, part of the 52 populations of 41 migratory waterbirds species that use the East Atlantic Flyway.

Ecological integrity (MSA indicator)*

- Most of endogenous species remain unaffected by human interference
- All of endogenous species were extinct by human interference

Migration routes

- East Atlantic Flyway
- Fish migration route
- ▨ Migration zone extent of European eels
- ⋄ Migration zone extent of Atlantic Salmon



From geomorphological fragmentation to habitat compartmentalization

The Blue Heart's reclamation interrupted the geomorphological unity of the delta, disrupting the deltaic "equilibrium" state and the ecological integrity of human and natural habitats that were intertwined by a complex set of ecosystems.

The ecological compartmentalization in Blue Heart is a consequence of the extensive adoption of linear flooding defenses to protect against storm surges. And the maintenance of the compartmentalization is related to the intensive land-water use for a industrial agriculture. The fragmented delta acquired a conflictive relationship between its land use and its hydrogeomorphology. The freshwater from the lakes became a critical resource for intensive agriculture and the growing urban centers originated after the reclamation process.

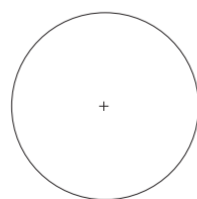
Reclaimed areas	Compartmentalized nature
1 Afsluitdijk	A Wadden Sea
2 Wieringermeer polder	B IJsselmeer
3 Noordoostpolder	C Markermeer
4 Oostelijke Flevopolder	D IJssel estuary
5 Knardijk	E Oostvardenplassen
6 Zuidelijke Flevopolder	
7 Marker Wadden	

Towards a territorial release

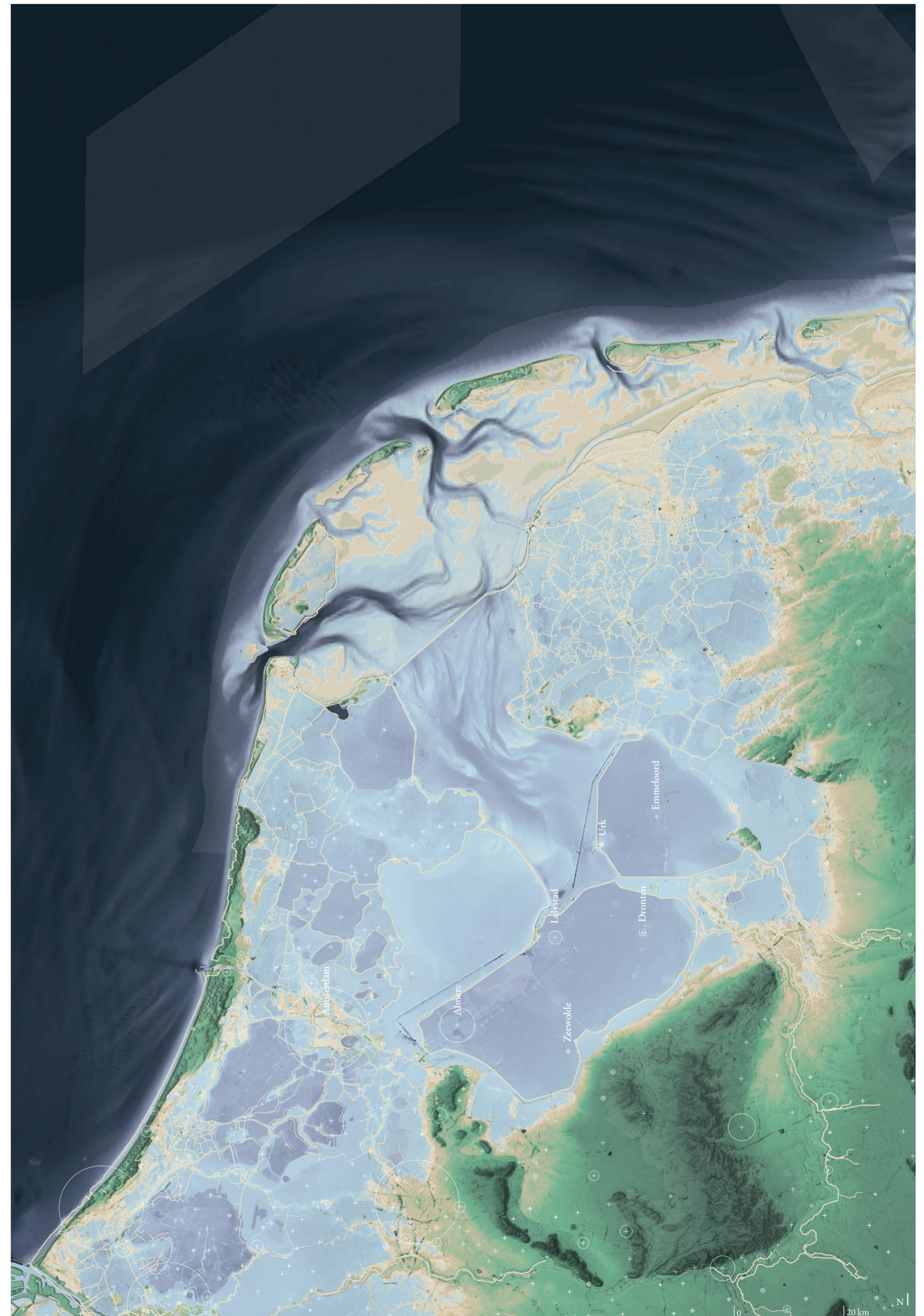
The project starts with a visualization of potential endogenous habitats in SLR scenarios (+0.5, +0.8, +1.2m). What if the Dutch landscape in the Blue Heart could look like if all the endogenous deltaic habitats evolve without considering the current land use. This first experimental exercise aims to unveil the degrees of ecological and geomorphological interference of water infrastructure. Hence, opening the critical question if there is a way forward to achieve through a reformed land use adapted to local conditions.

Elevation (m)	Habitats
-30	Deep water
-20	
-10	
-5	
0	Shallow water
0.5	
0.8	
1.2	
5	Dunes
10	
50	Forests

■ Natura 2000



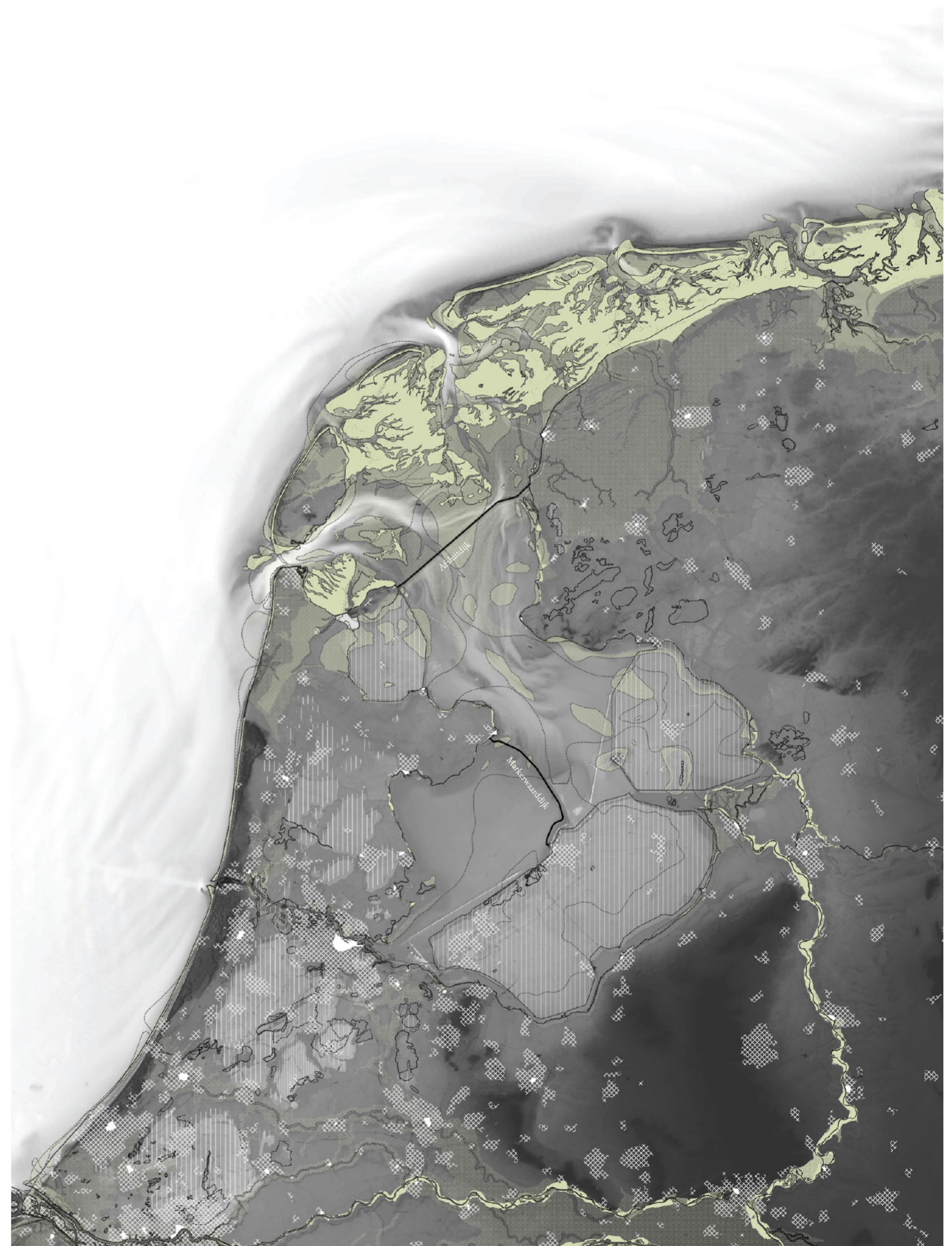
> 500.000 inhabitants < 2.000 inhabitants

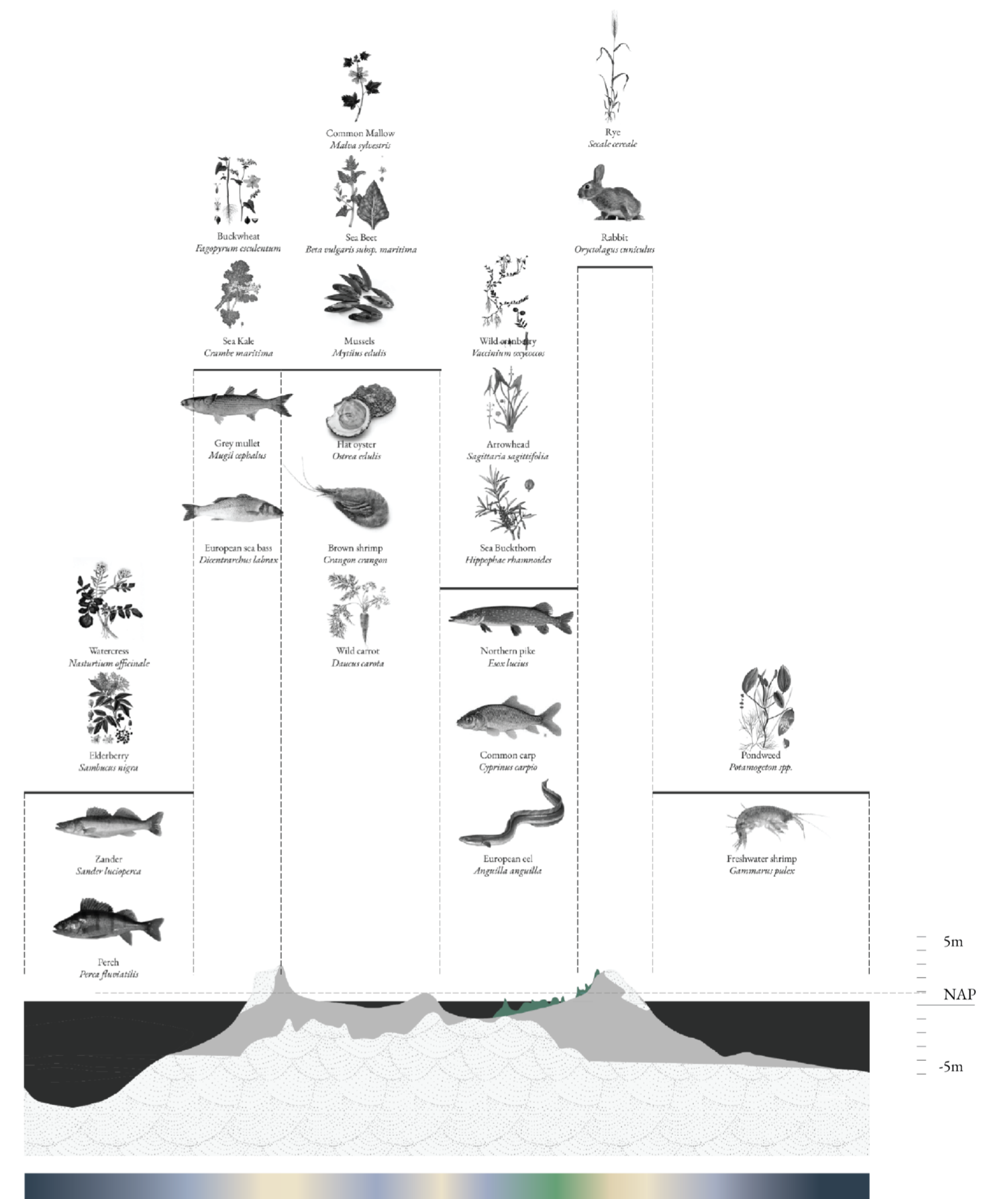


Composition

Geomorphological reconfiguration, reclamation, and the confinement of the Blue Heart.

- Intertidal zones (from 800 until 1850)
- Intertidal zones (Wadden Sea)
- Reclaimed land
- ⊠ Urban expansion post-Afsluitdijk
- Urban areas pre-Afsluitdijk

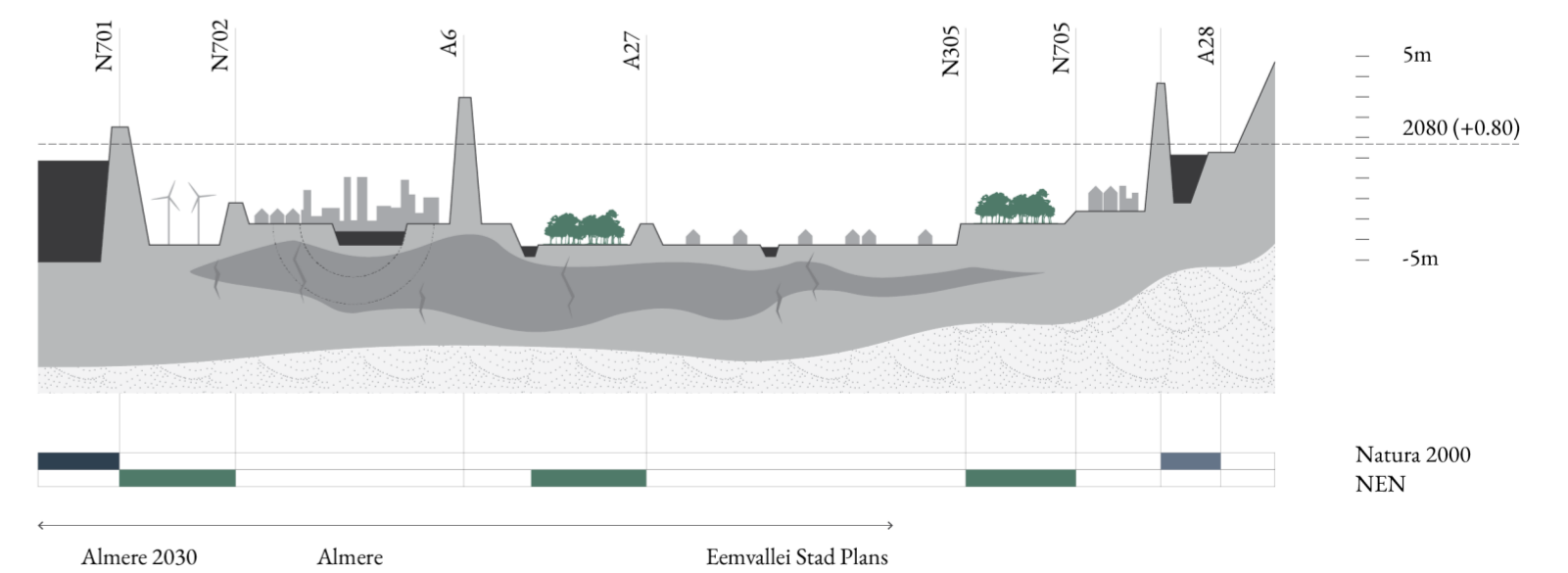




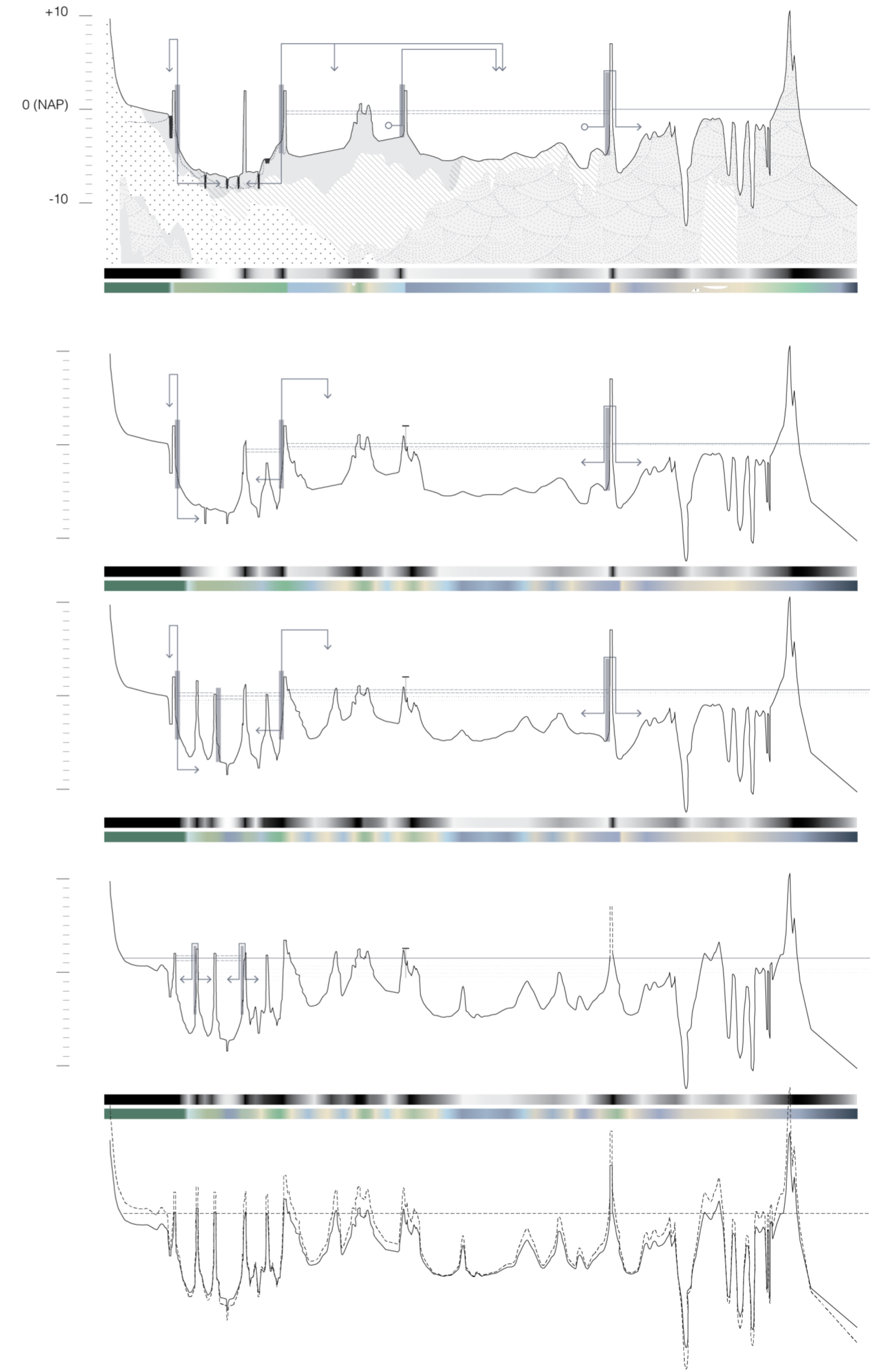
Endogenous agrobiodiversity

Schematic section of the Marker Wadden highlighting potential staple food adapted to the Blue Heart's geomorphology. This exploration allowed the operationalization of ecological habitats to become transformative forces.

- Clay
- Clay/Sand
- Compacted clay



Natura 2000
NEN



Evolutionary planned adaptation

The macro territorial design starts with a paradigmatic shift in the nexus of ecology and water infrastructure, by an experimental approach on recomposing the deltaic geomorphology and ecological integrity to achieve a long-term evolutionary condition. The framed area is limited to the relationship between the Wadden Sea, the IJsselmeer-Markermeer, the IJssel Estuary, and the Province of Flevoland.

The paradigmatic shift in ecology and water infrastructure allows the adoption of the extended restored natural habitats as a release of water infrastructure linearity. Hence, it aims to promote land use management as part of an SLR-adapted habitable landscape infrastructure that works with natural buffers that absorb storm surges. A system that can increase the safety of all its endogenous habitants intertwined by the territorial web of life as it grows.

Planning model for evolutionary territorial adaptation
The Blue Heart application

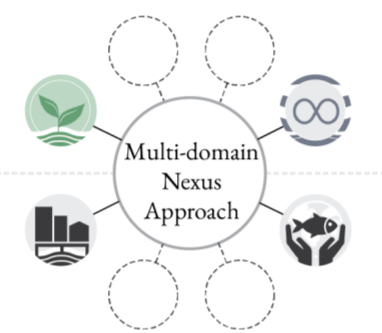
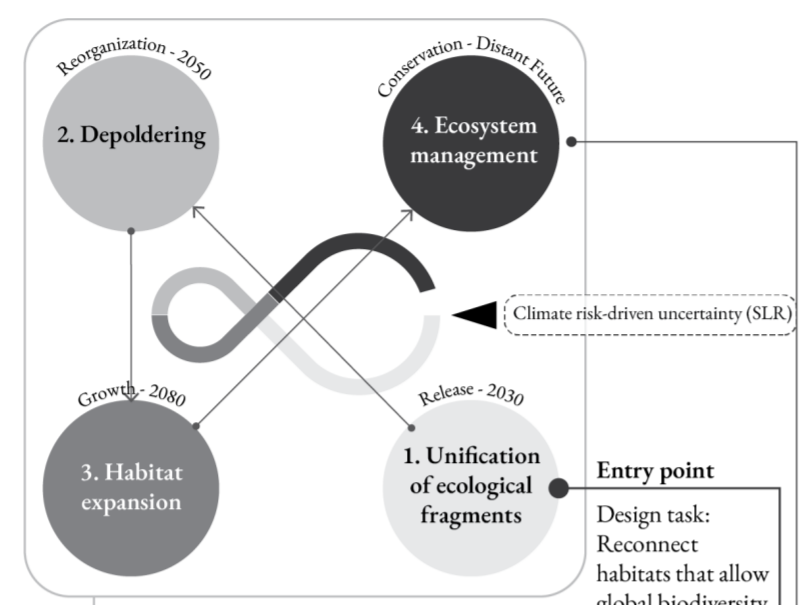
Territorial Conditions

The Blue Heart Recomposition
 Designed future of a territorial evolutionary ecosystem based adaptation

Regional Functions

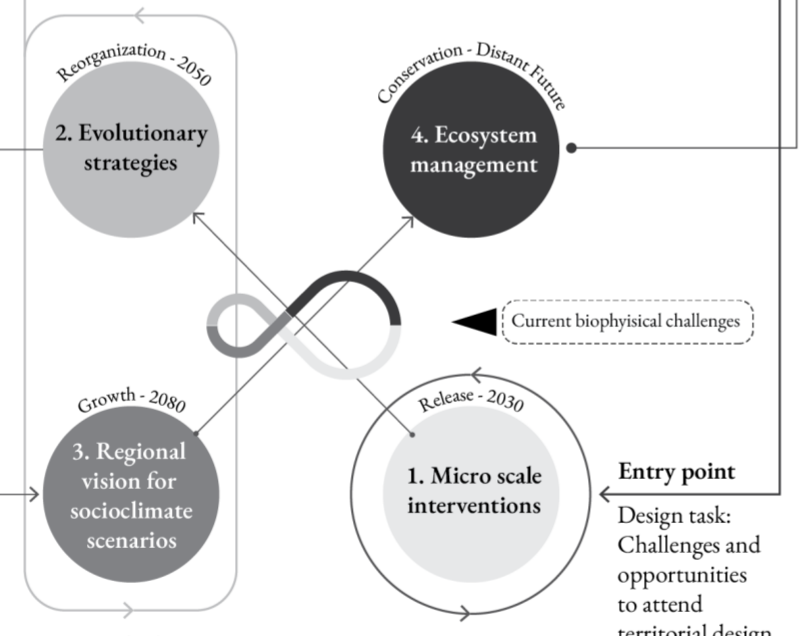
Indeterminant Regional Deconstruction
 Regional infrastructure and land use pathway transformation

Local design inquiring as a learning method



Trade-off analysis

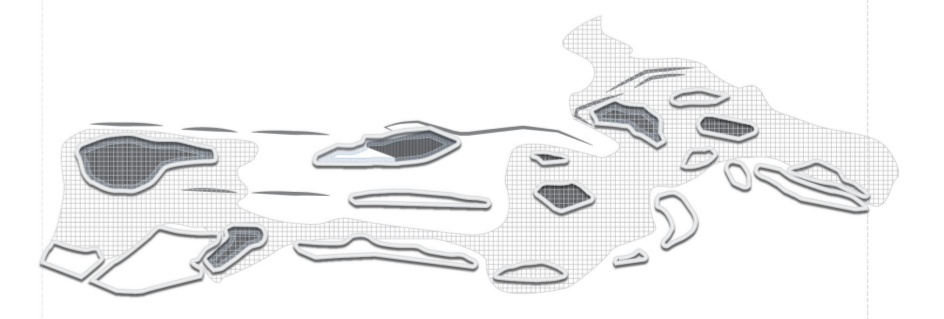
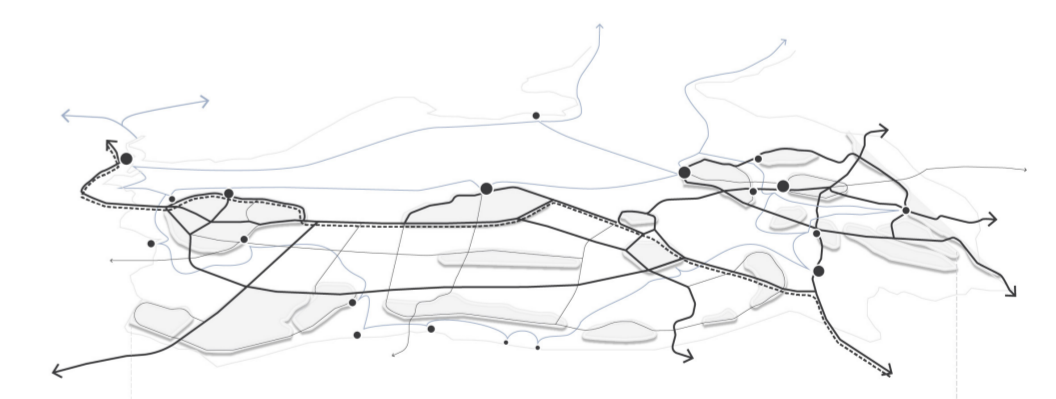
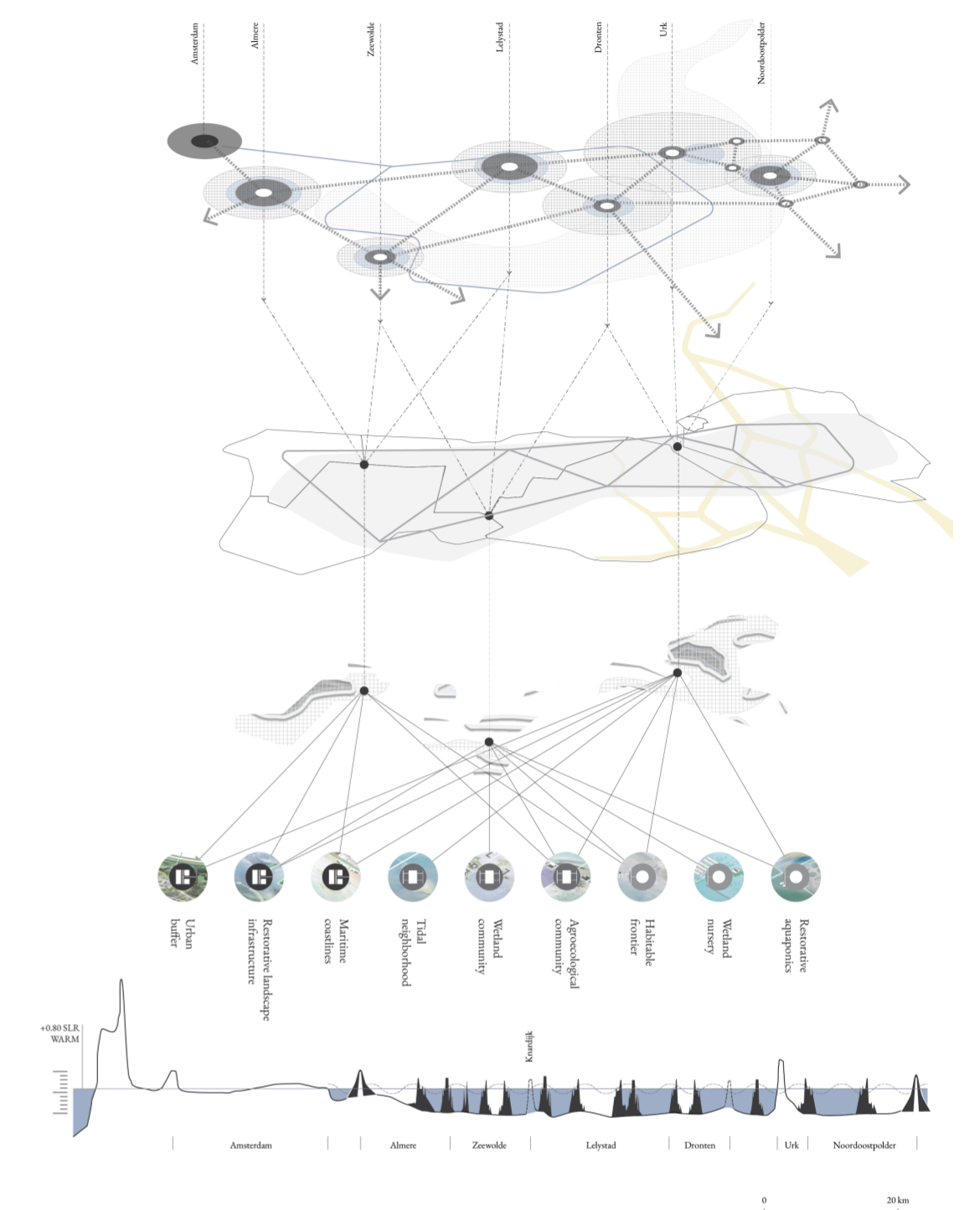
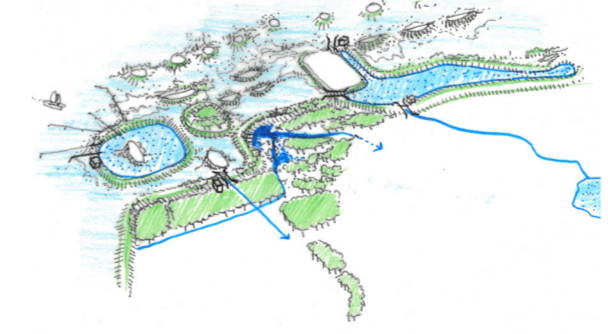
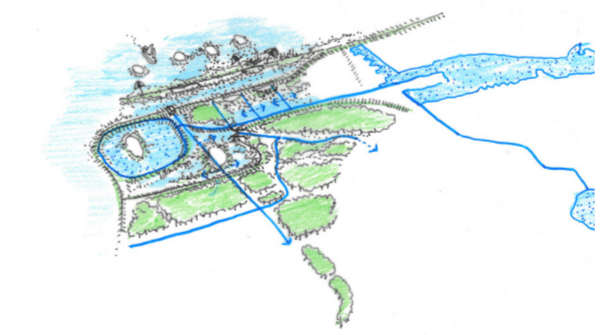
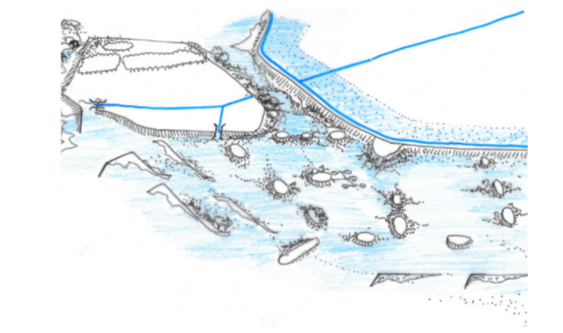
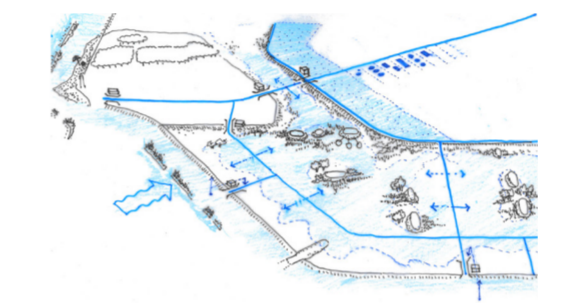
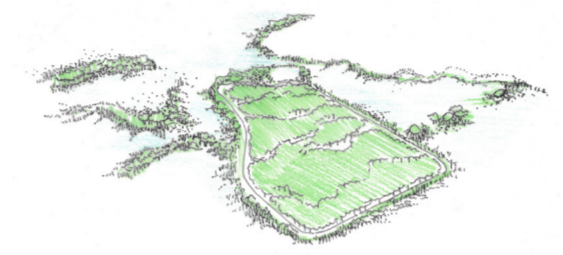
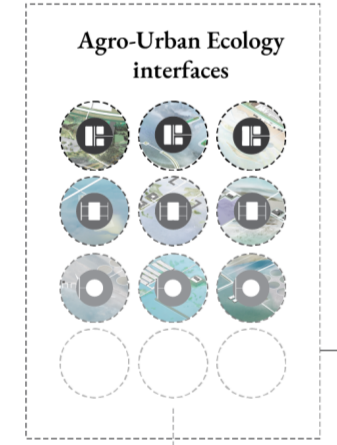
Guidelines



Land-use / Infrastructure possibilities



Infrastructure intensity

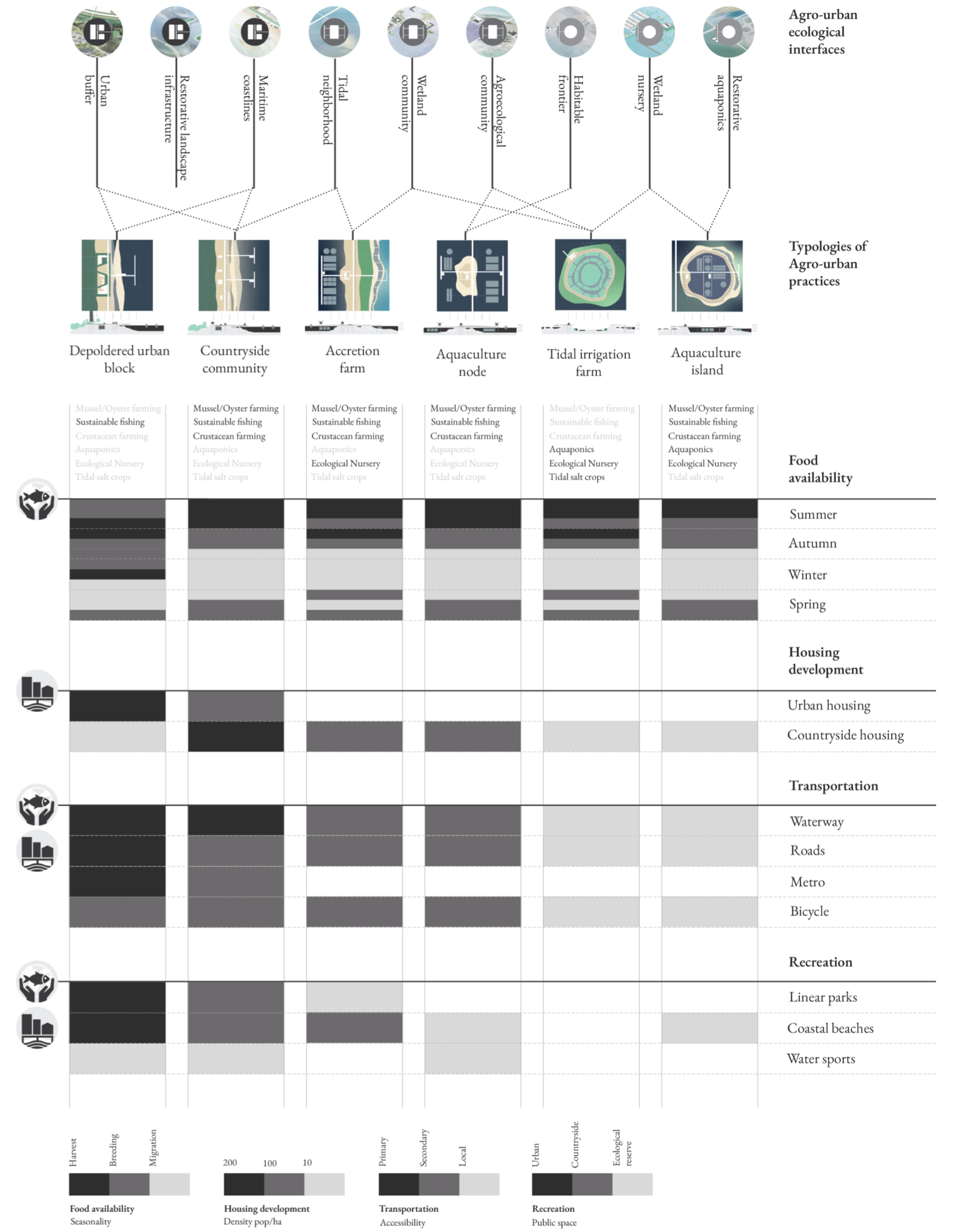
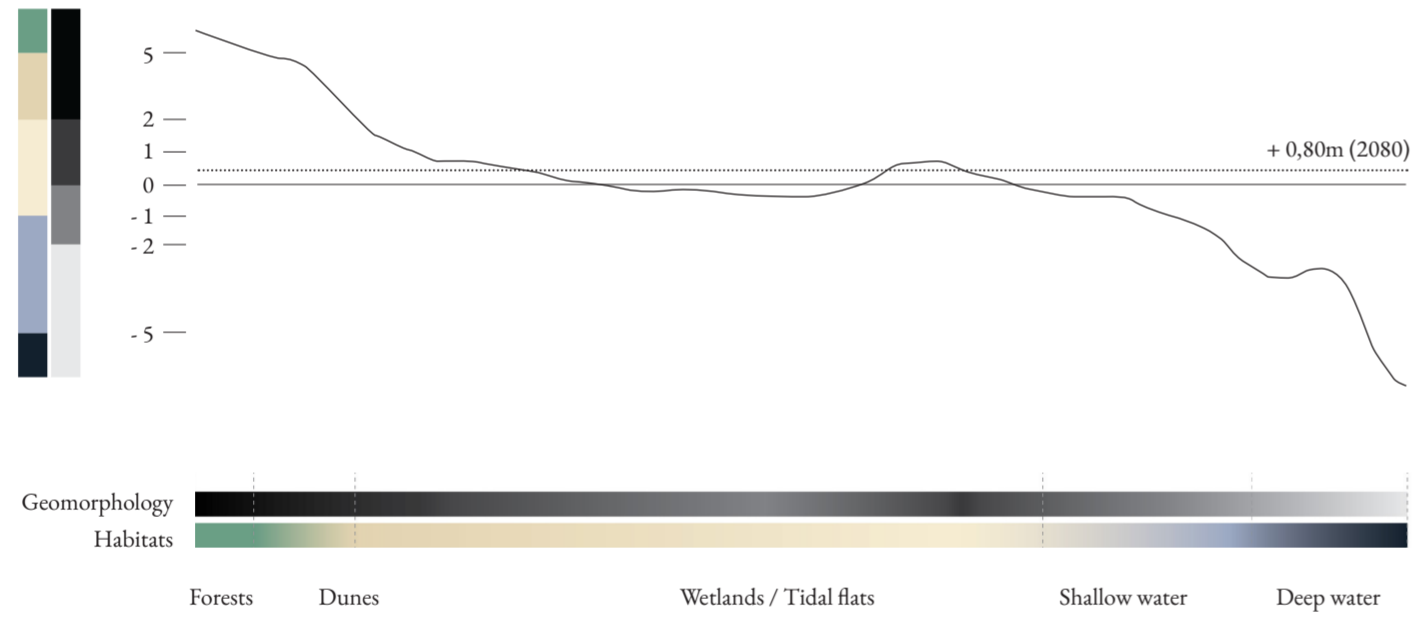


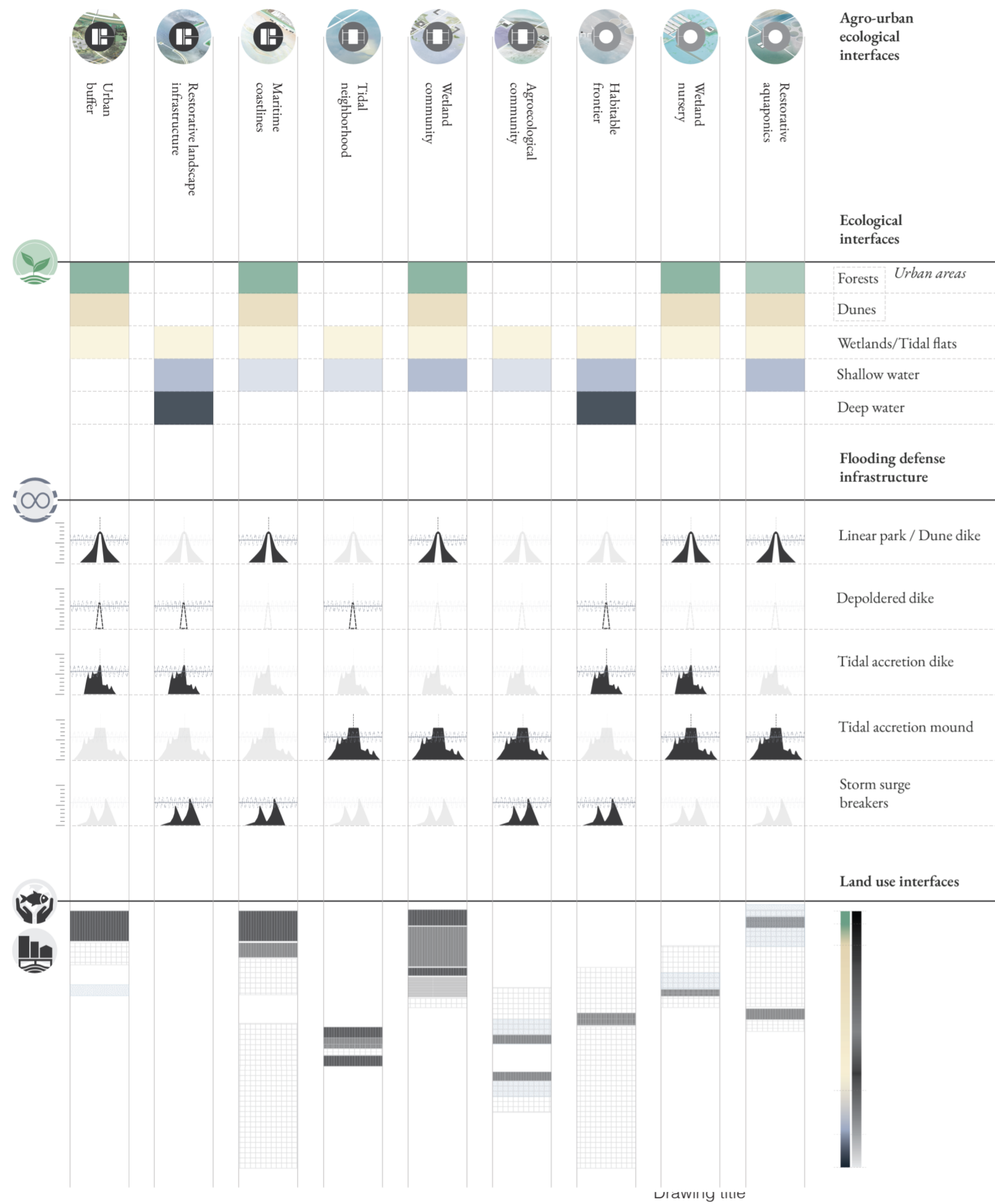


Evolutionary Agro-Urban Ecologies

The territorial recomposition of the Blue Heart led to a multiscalar design methodology, that aimed to extract Evolutionary Agro-Urban Ecologies. These strategies are landscape interfaces that connect adjacent habitats in the Delta's geomorphology through an holistic land use. This design iteration is based on Urk, and investigated the possible urban and agro transformation to coexist with the delta condition. That being the basis for implement a new type of regional land use, that integrates agroecological farming, gradients of housing, and new forms of natural and functional possibilities that can be transposed and provide new design questions for a new iteration of the planning model.

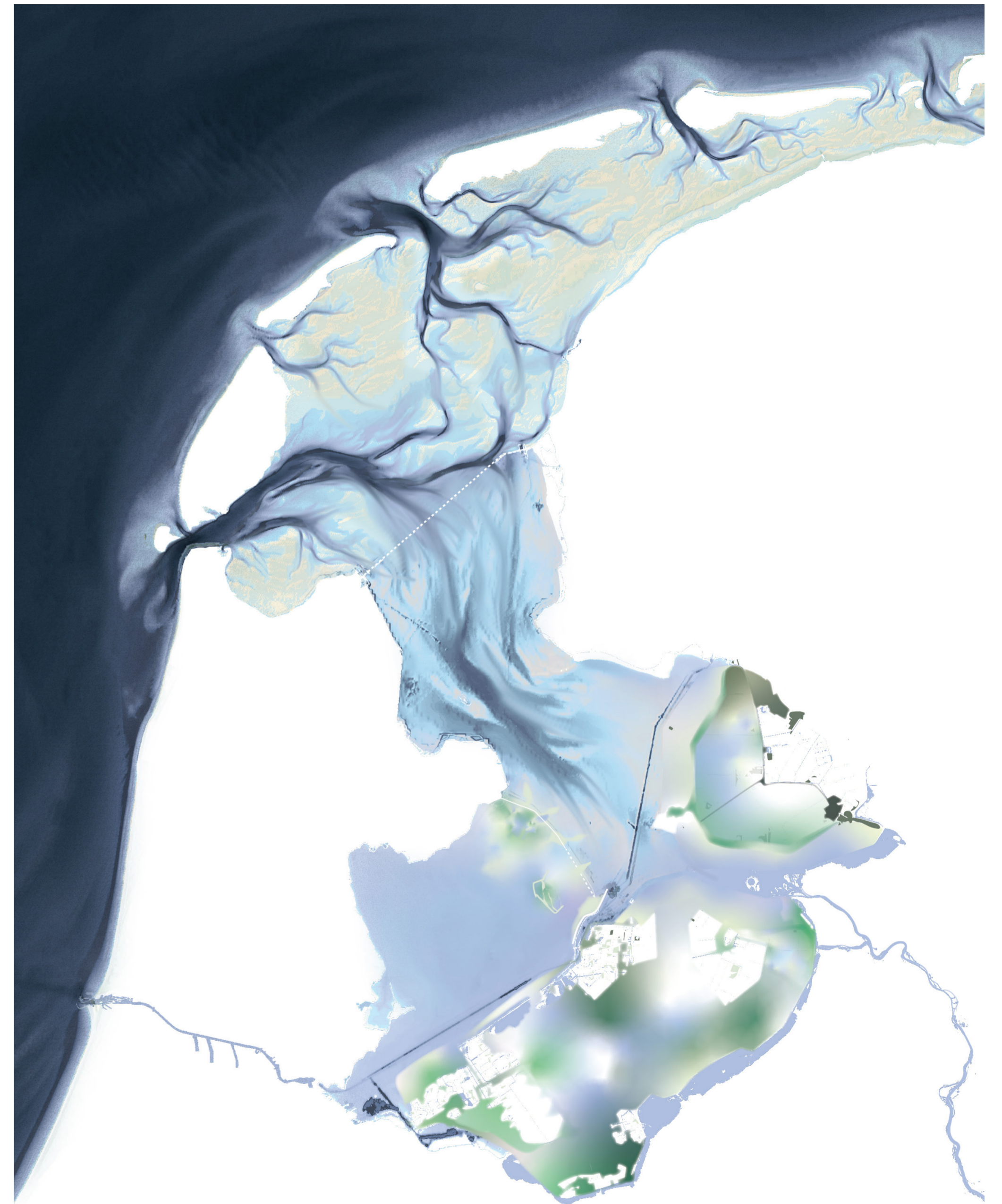
- | | |
|--------------------------|------------------|
| Fresh water storm basins | Waterway routes |
| Housing | Railway |
| Food | Primary access |
| Dikes | Secondary access |



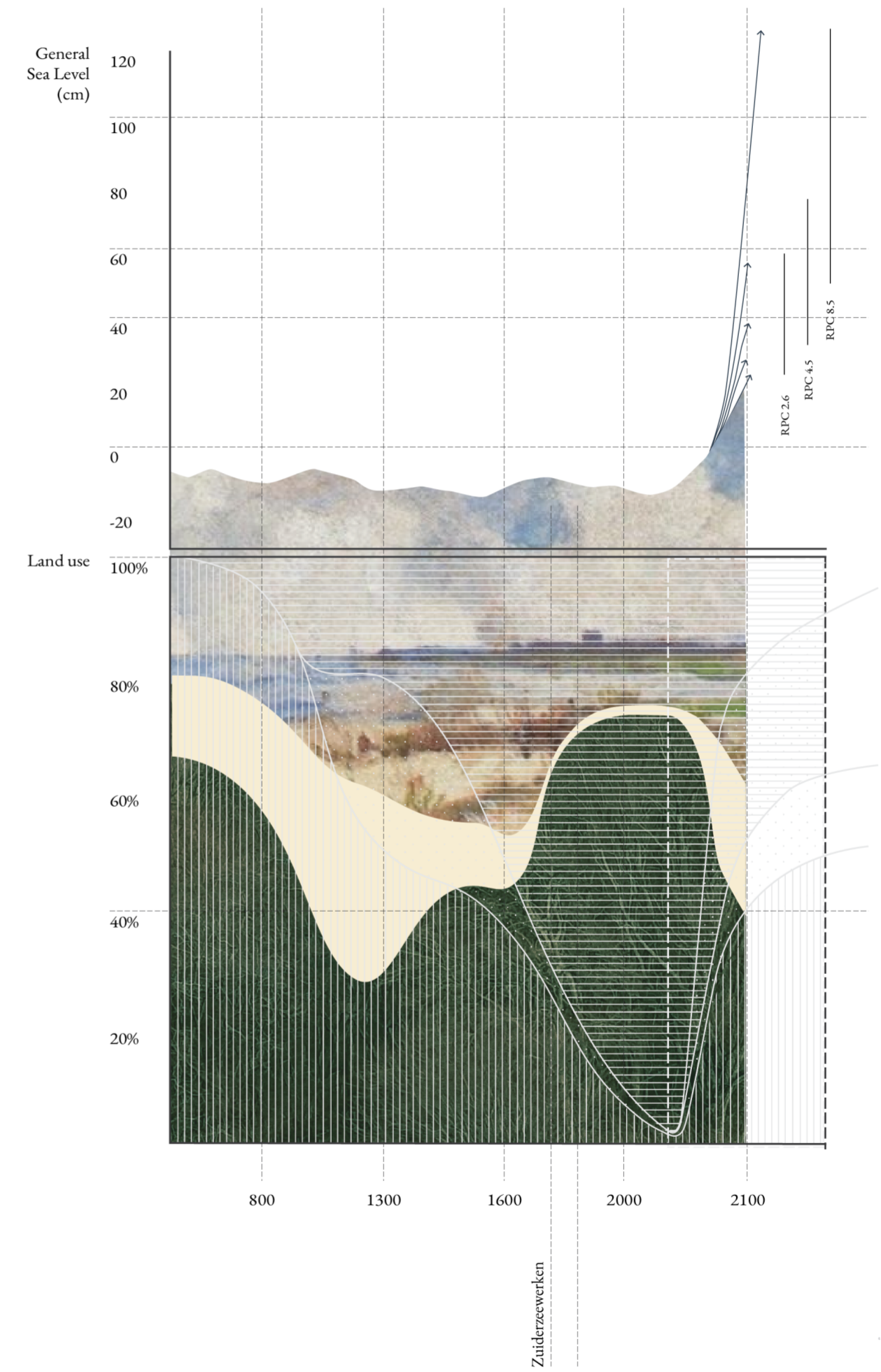


Here you can write a brief explanation. Font: EB Garamong Regular, font size: 9. you can find this font in the package.

- Water or highlight
- Rivers
- Sealevel rise
- Mountain
- Etc
- Etc
- Etc
- Etc







Land use balance

Historical and projective land-use and habitat percentage in the Blue Heart territory (IJsselmeer + Markermeer system).

- | | |
|---------------------------------------|--|
| Land-use | Habitats |
| <input type="checkbox"/> nature | <input checked="" type="checkbox"/> dry land |
| <input type="checkbox"/> semi-natural | <input checked="" type="checkbox"/> intertidal |
| <input type="checkbox"/> cultivated | <input checked="" type="checkbox"/> water |