

PETROSCAPE

HYDROSCAPE

Name

Alexander van Delft

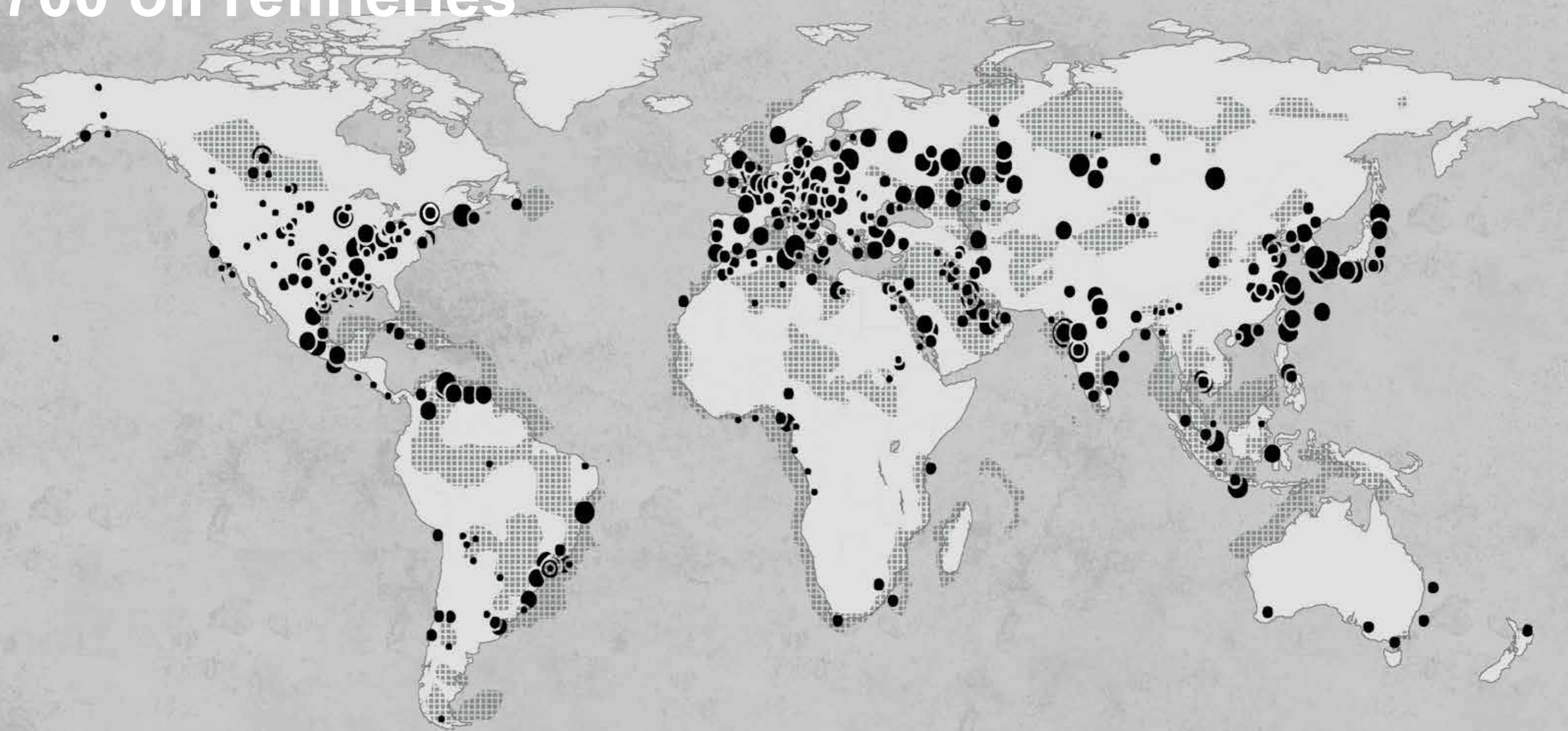
Rotterdamse Academie van Bouwkunst


Harbour Studio: Rotterdam - Marseille - Fos


Fossil fuels will run
out over the next
50 years



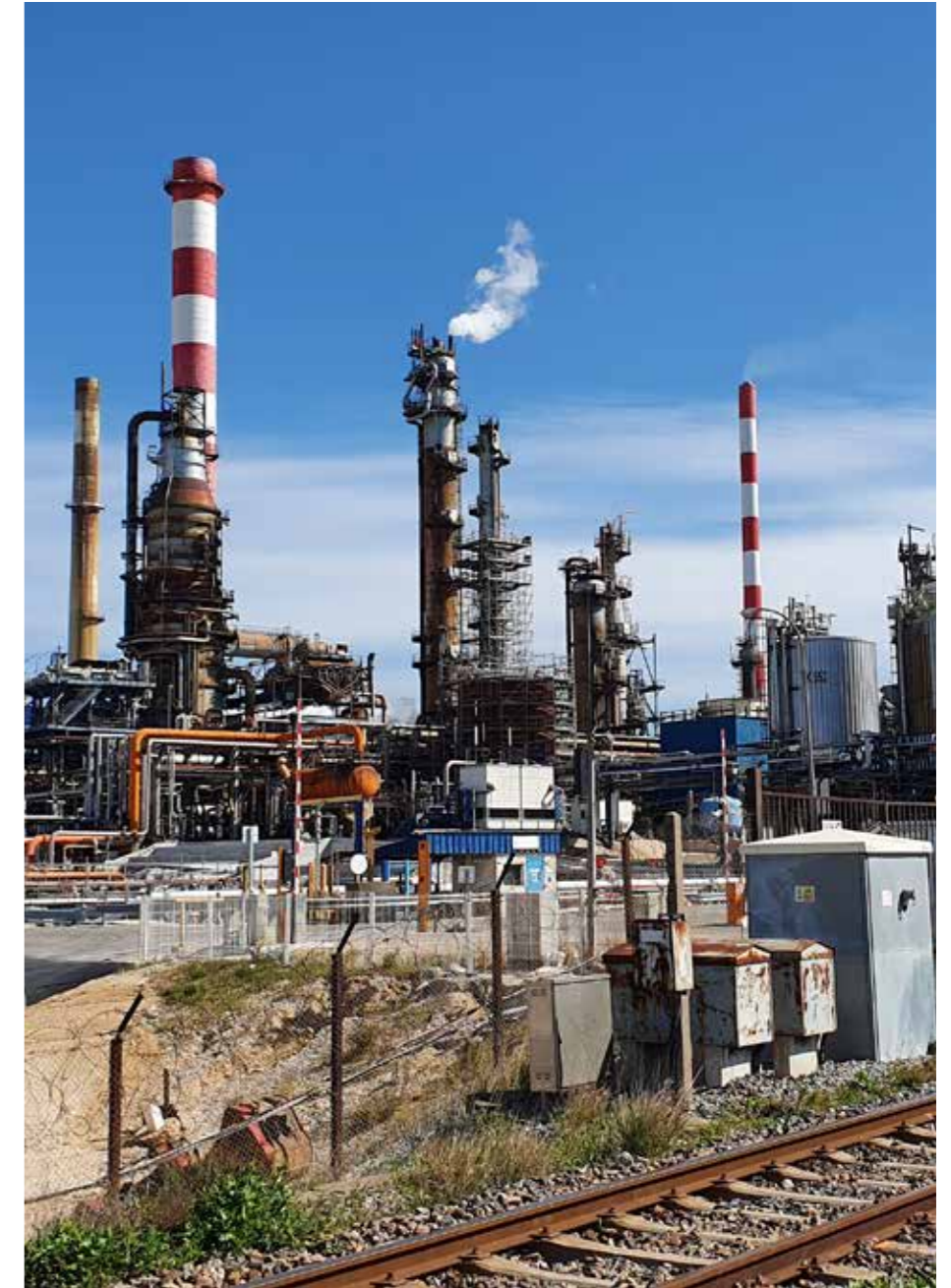
The world has about 700 oil refineries



 World oil reserves
1,73 trillion barrels of oil in 2018
The world uses 95 million barrels per day
This is enough fuel for the next 50 years

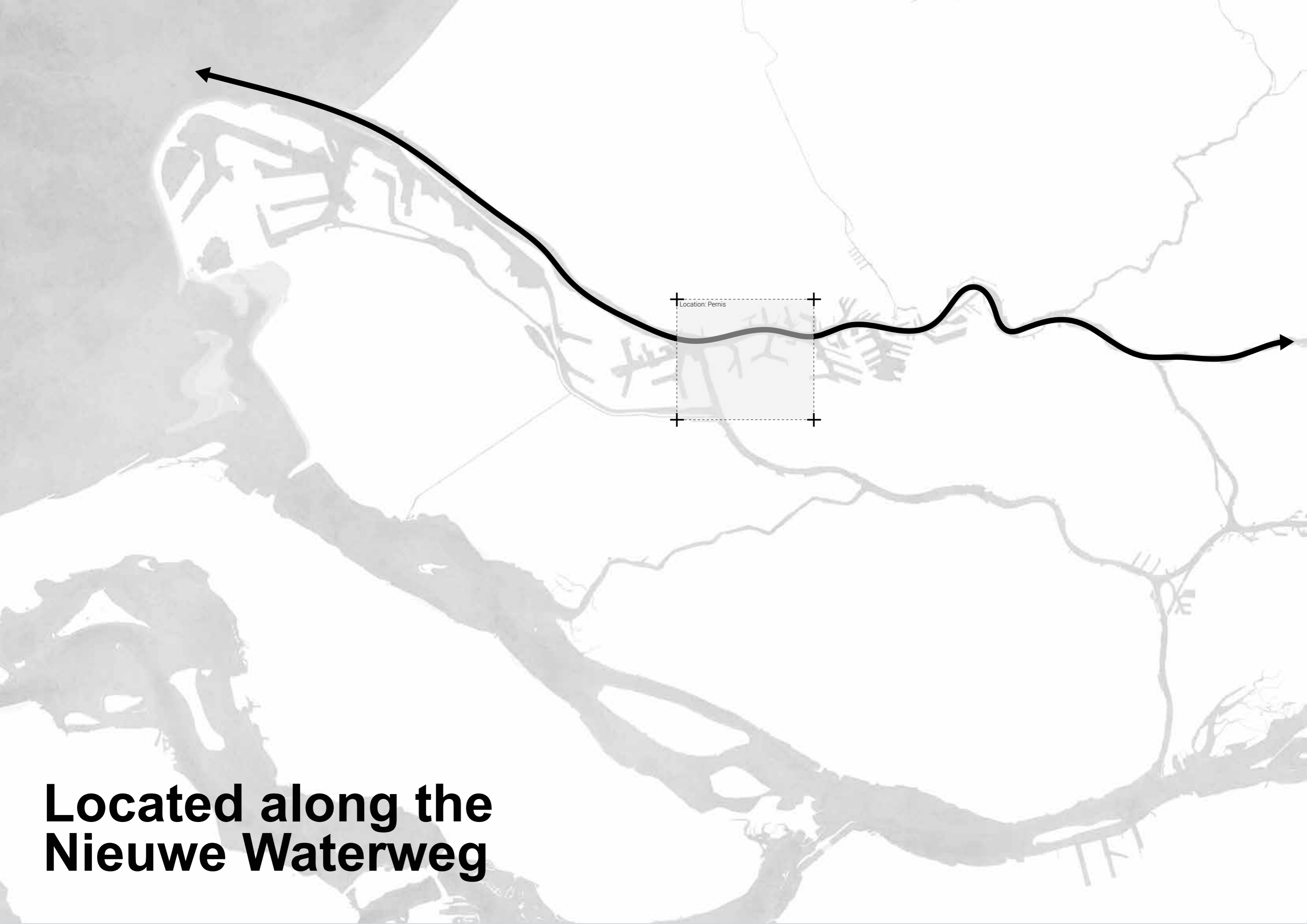
 1 Oil barrel = 159 liters
1 tonnes = 7,33 barrels
1 million tonnes = 8.450.000 barrels

These Petroscares are turning into wastelands



Europe's largest is Shell Pernis

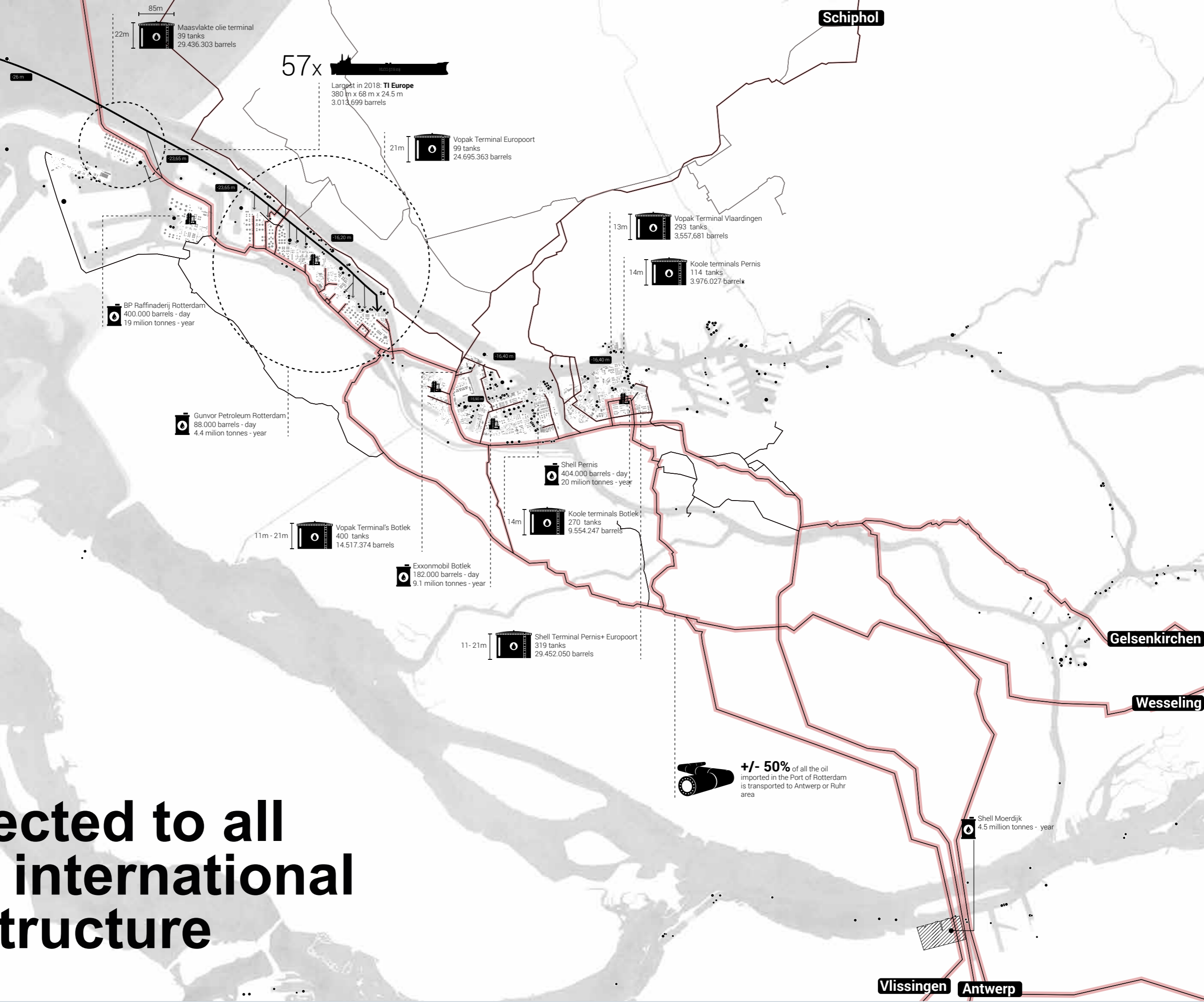




Location: Pernis

**Located along the
Nieuwe Waterweg**

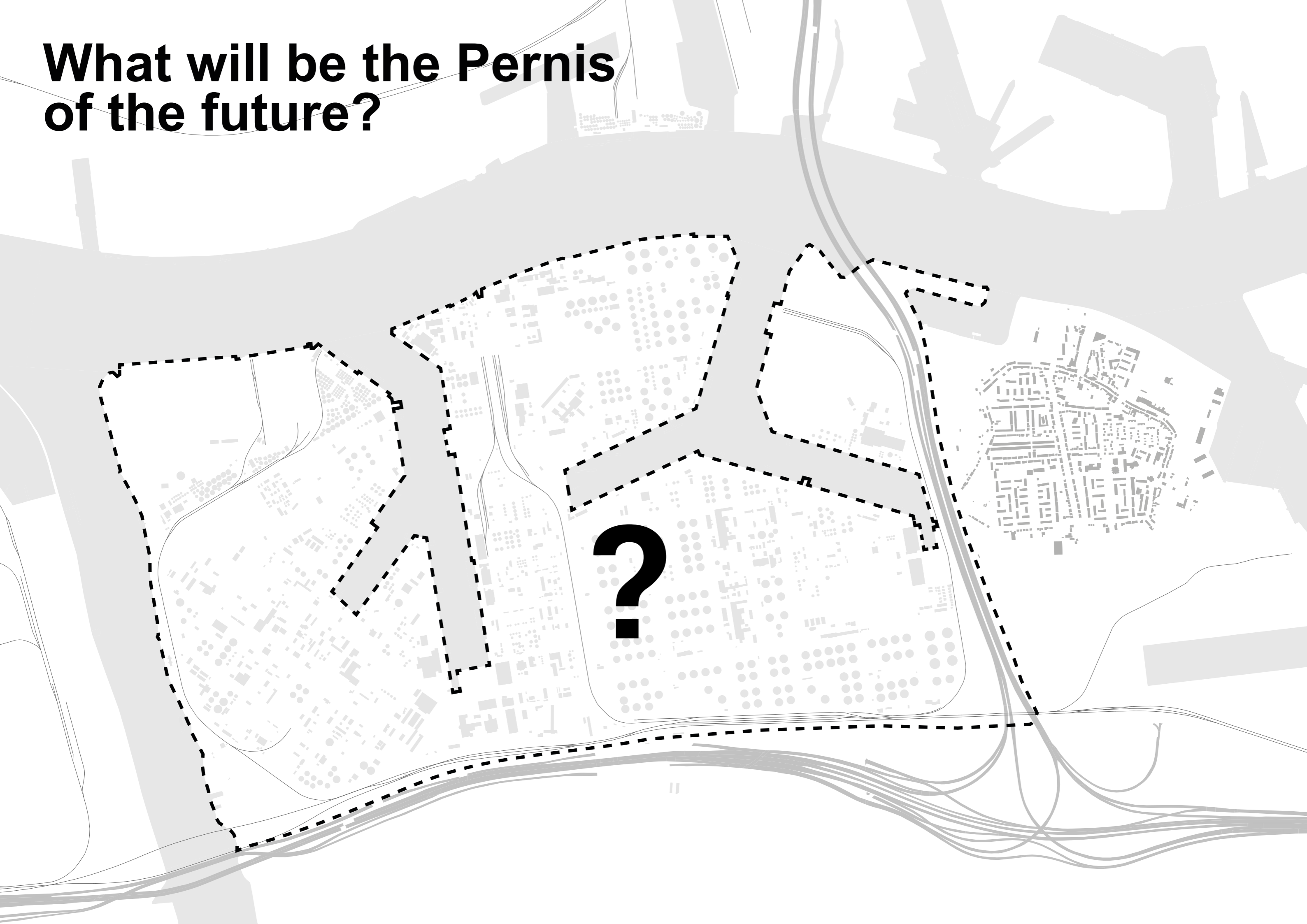
Connected to all major international infrastructure



Infrastructures that becomes abandoned



What will be the Pernis of the future?



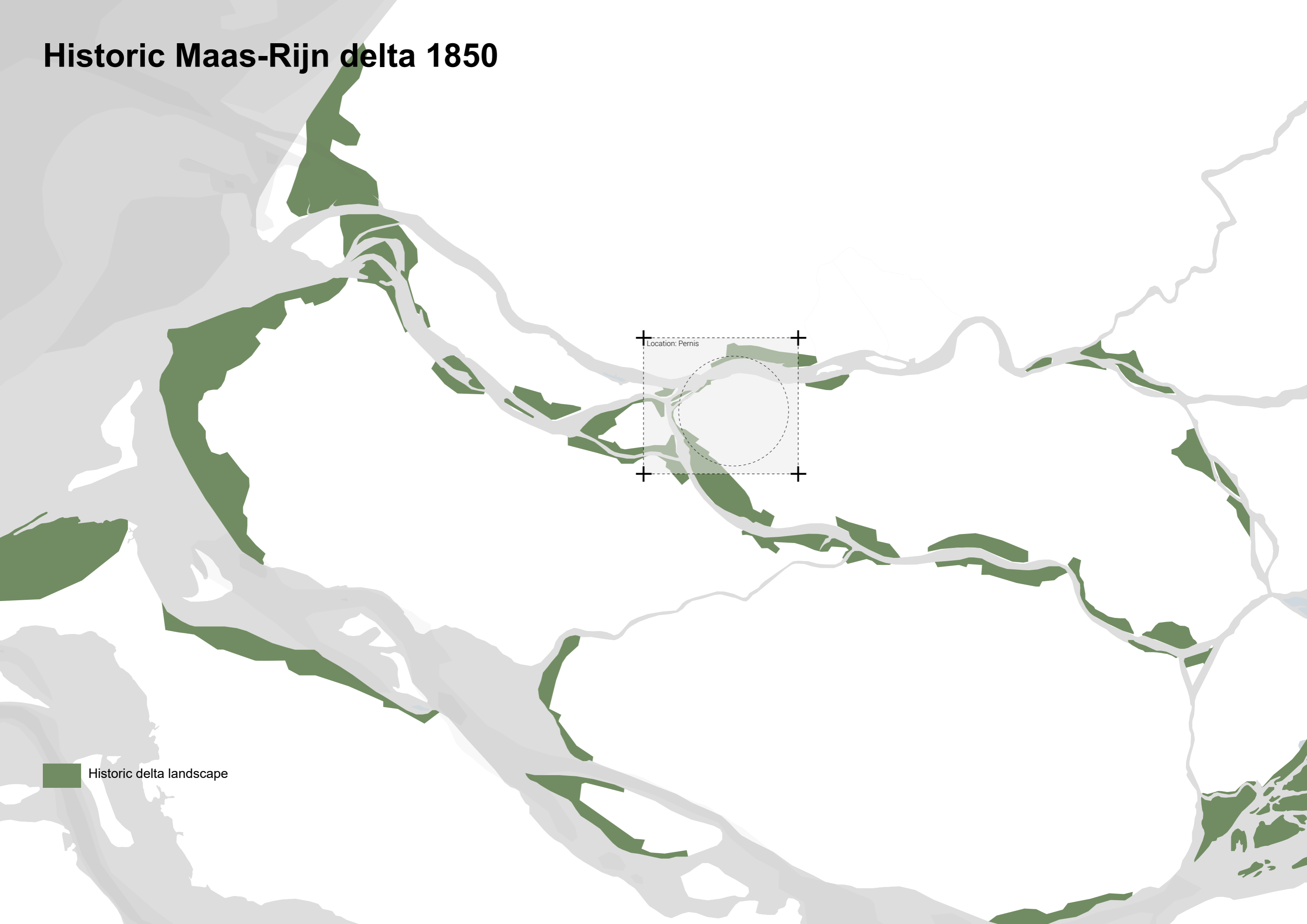


Delta

+

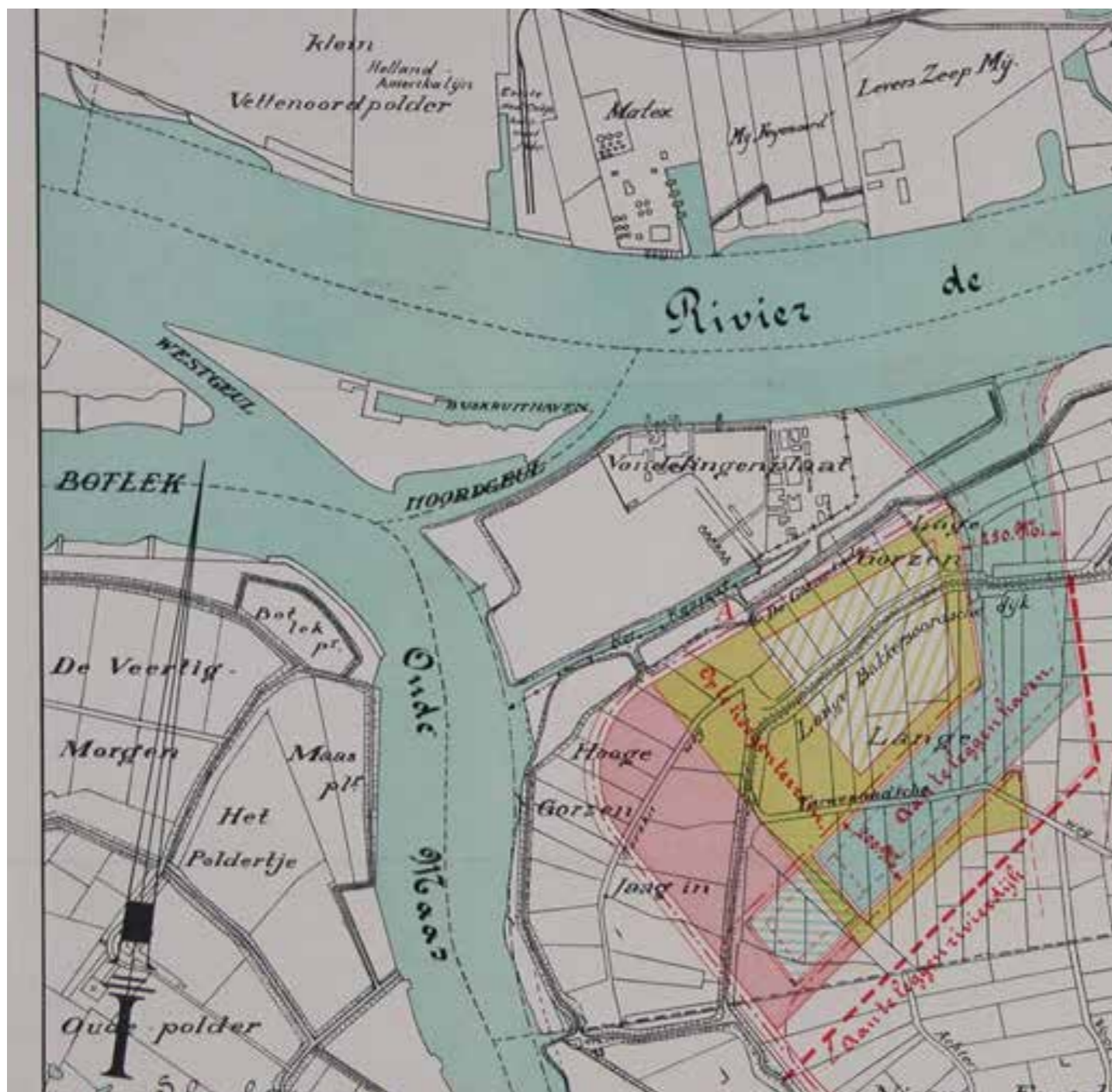
Nature

Historic Maas-Rijn delta 1850



 Historic delta landscape

Vondelingenplaat

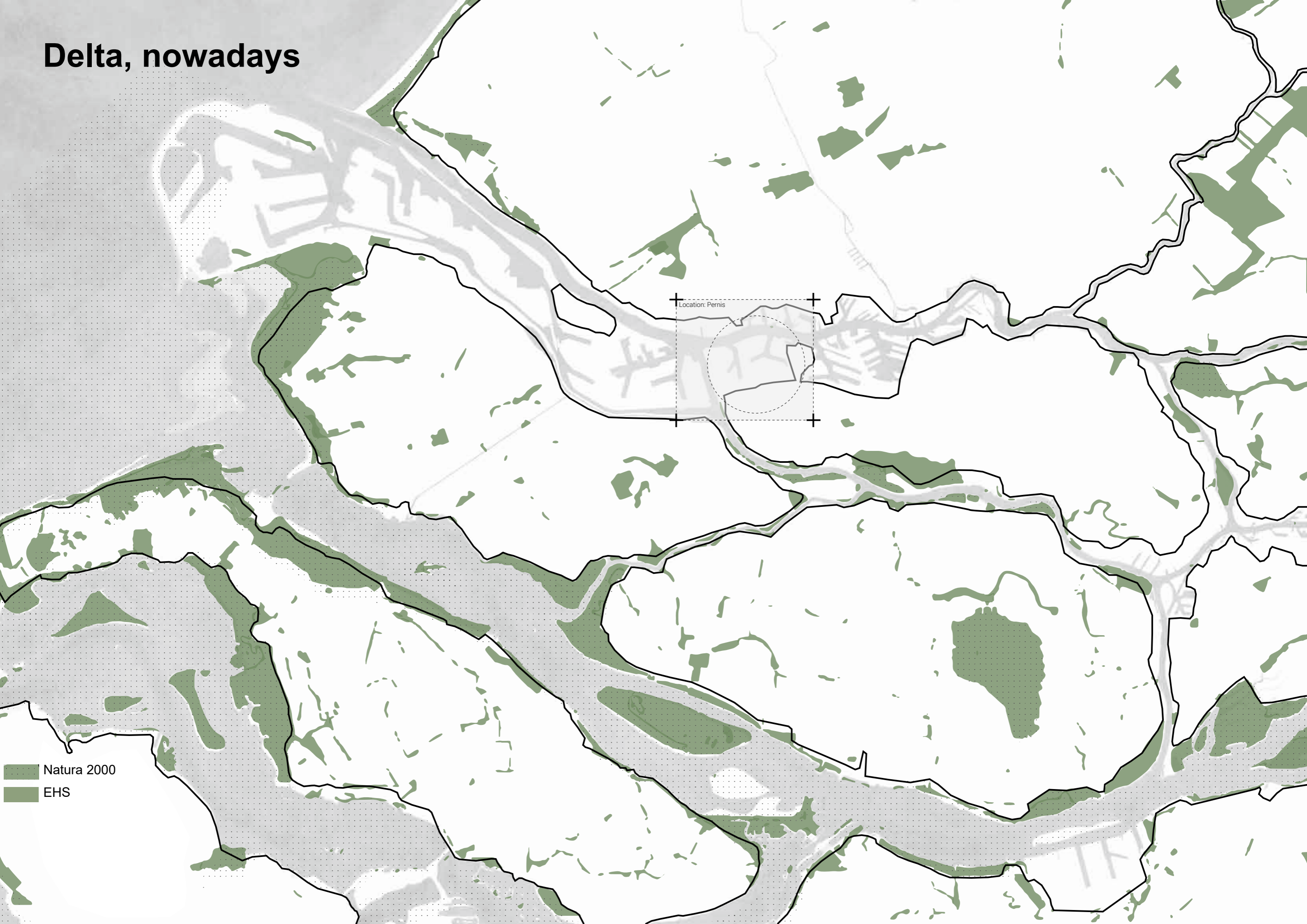


Plans for Pernis



Overlay

Delta, nowadays



Location: Pernis

- Natura 2000
- EHS

Policy

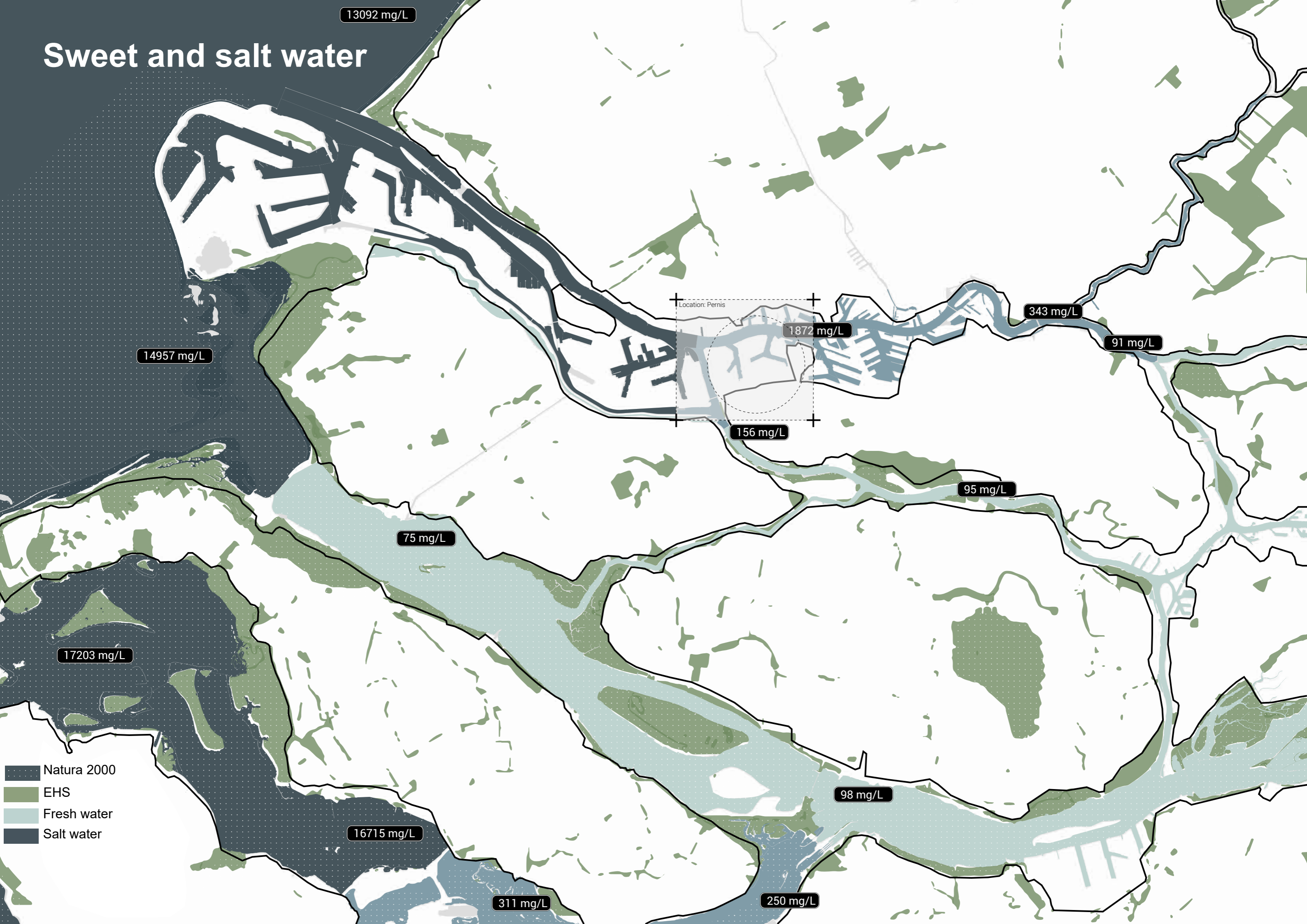


**Rotterdam
Getijdenpark**



**National
Ruimte voor de Rivier**

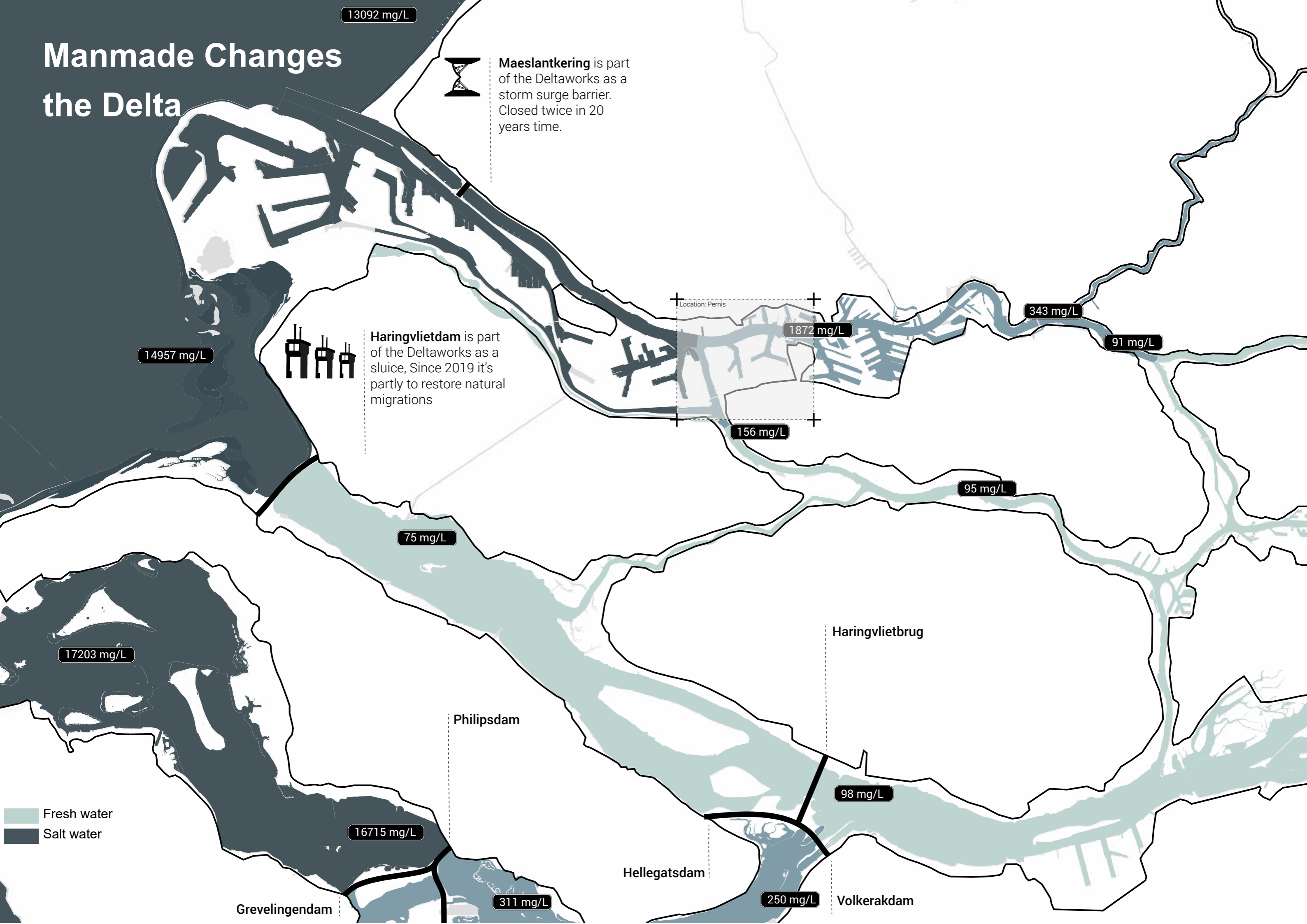
Sweet and salt water



Location: Pernis

- Natura 2000
- EHS
- Fresh water
- Salt water

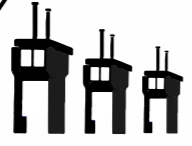
Manmade Changes the Delta



13092 mg/L



Maeslantkering is part of the Deltaworks as a storm surge barrier. Closed twice in 20 years time.



Haringvlietdam is part of the Deltaworks as a sluice. Since 2019 it's partly to restore natural migrations

Location: Pernis

14957 mg/L

1872 mg/L

343 mg/L

91 mg/L

156 mg/L

95 mg/L

75 mg/L

17203 mg/L

Haringvlietbrug

Philipsdam

98 mg/L

Fresh water
Salt water

16715 mg/L

Hellegatsdam

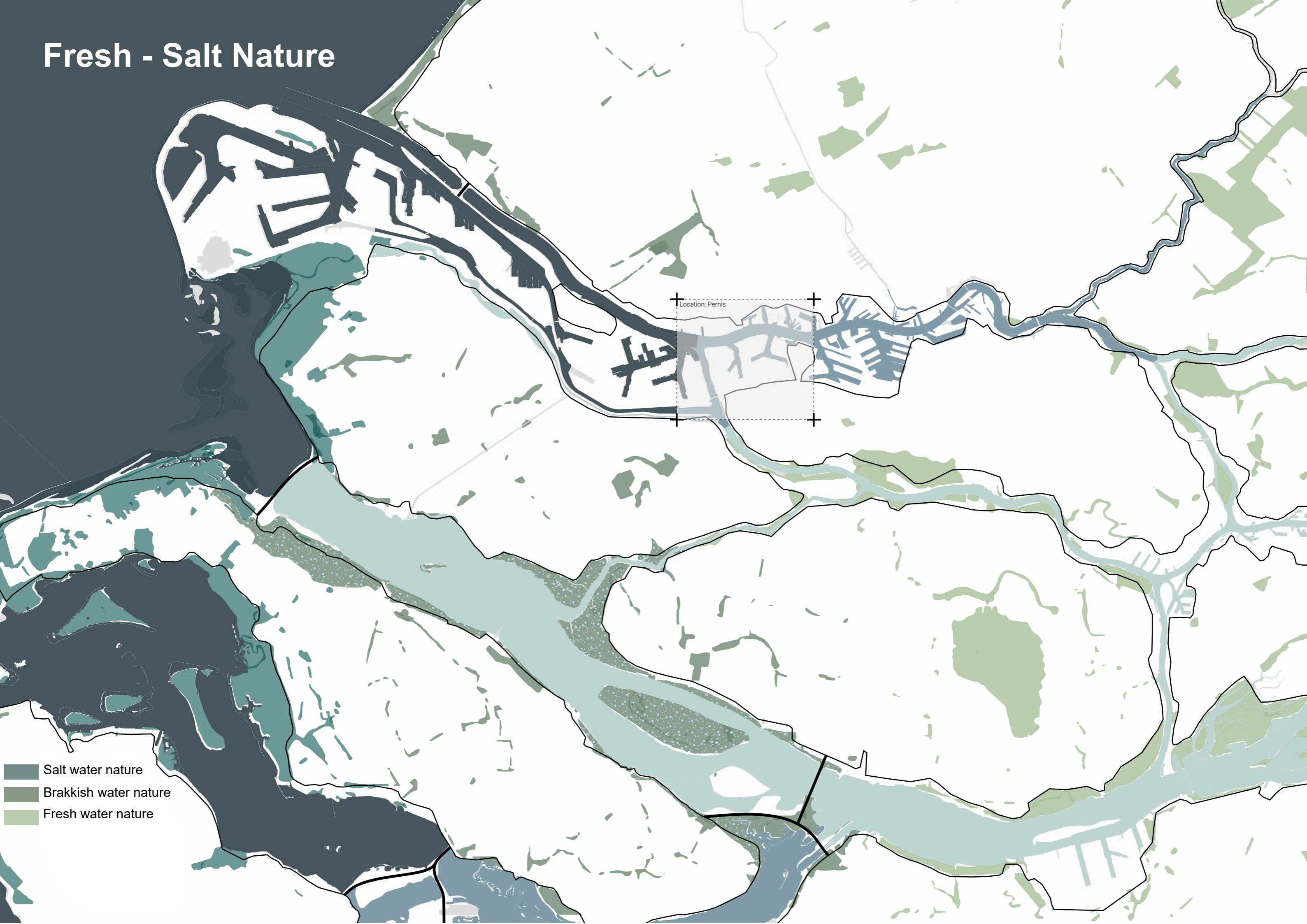
311 mg/L

250 mg/L

Volkerakdam

Grevelingendam

Fresh - Salt Nature



Location: Pernis

- Salt water nature
- Brackish water nature
- Fresh water nature

Fresh vs Salt



Fresh



Salt

Fresh - Salt Nature



'Groene poort' increasing the natural area in the harbour delta, using excess materials

Location: Pernis



Restoring migration flows, opening the gates/sluices will impulse the delta's flora and fauna.
A unique landscape

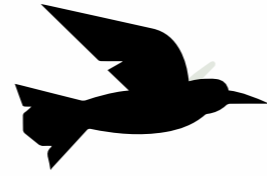
Spui estuary is a various natural delta area, wetlands perfect for birds



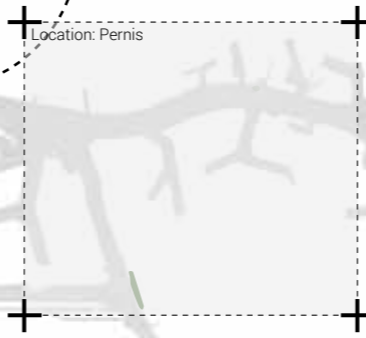
With the release of young **sturgeon**, migration is being stimulated

- Salt water nature
- Brackish water nature
- Fresh water nature

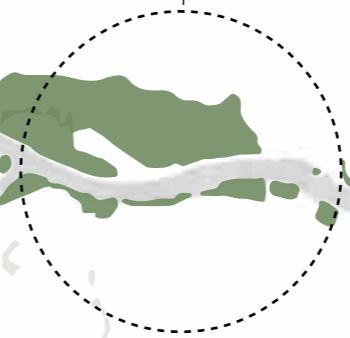
Oude Maas corridor



Aalkeetbuitenpolder is an old dutch grassland. In this area hosts a lot of meadow birds



Oude Maas is the largest fresh water tidal area of the Netherlands (up to 2m difference)

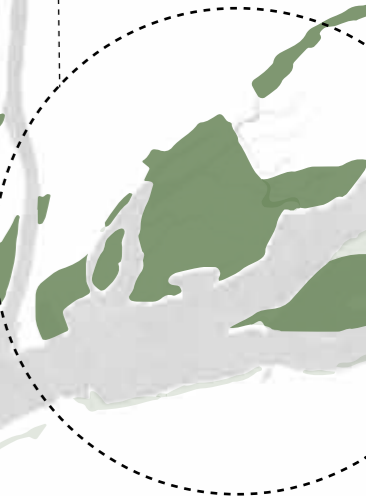


Ruigebosplaat

Rhoonse en Carnisse grienden

Zuiddiep

National park De Biesbosch is a freshwater tidal area.



Restoring the Delta connection



Location: Pernis

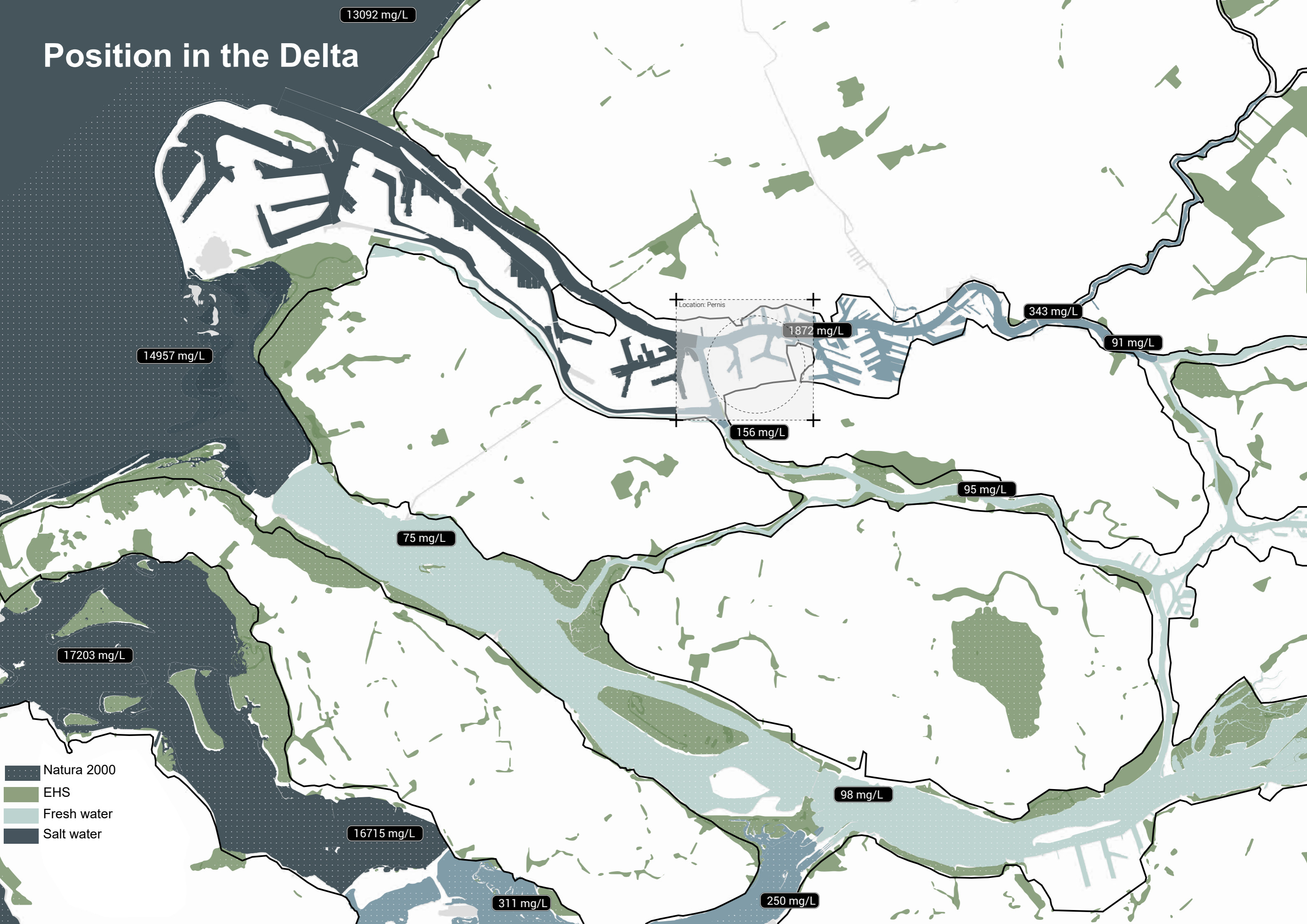
An aerial photograph of a long, narrow causeway or bridge crossing a large body of water. The causeway is a mix of green grass and grey pavement, with a few small structures or buildings visible. The water is a deep blue-green color. The sky is a pale, hazy blue.

Renewable Energy

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Accessibility

Position in the Delta



13092 mg/L

14957 mg/L

17203 mg/L

16715 mg/L

311 mg/L

250 mg/L

Location: Pernis

156 mg/L

1872 mg/L

343 mg/L

91 mg/L

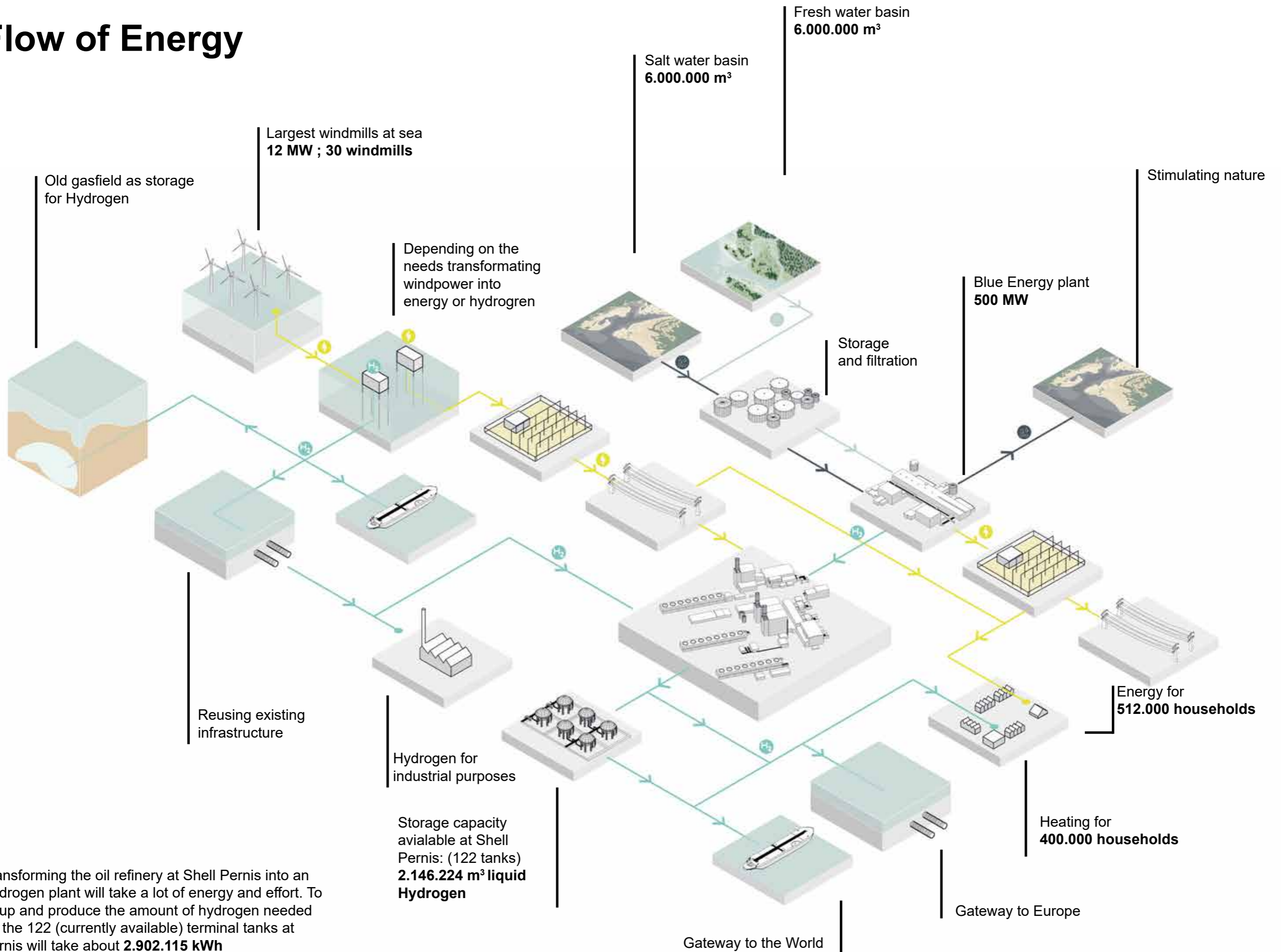
95 mg/L

75 mg/L

98 mg/L

- Natura 2000
- EHS
- Fresh water
- Salt water

Flow of Energy



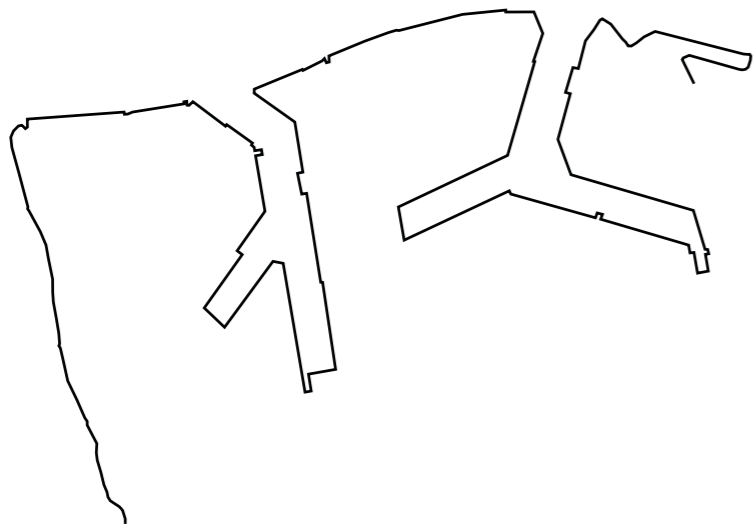
Transforming the oil refinery at Shell Pernis into an Hydrogen plant will take a lot of energy and effort. To fill up and produce the amount of hydrogen needed for the 122 (currently available) terminal tanks at Pernis will take about **2.902.115 kWh**

An aerial photograph of a large industrial refinery complex. The facility is characterized by a dense grid of numerous white cylindrical storage tanks, interconnected by a network of pipes and walkways. Several tall, thin distillation columns are visible within the complex. The refinery is situated along a wide, dark river that winds through the landscape. In the foreground, a multi-lane highway with several overpasses and ramps runs parallel to the refinery. The surrounding area includes residential neighborhoods with houses and trees, as well as other industrial or commercial buildings. The sky is clear and blue, and the overall scene depicts a major industrial hub in an urban or semi-urban setting.

Heritage

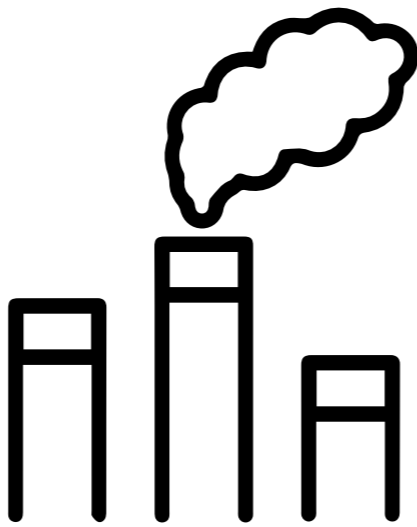
Looking at what we there is..





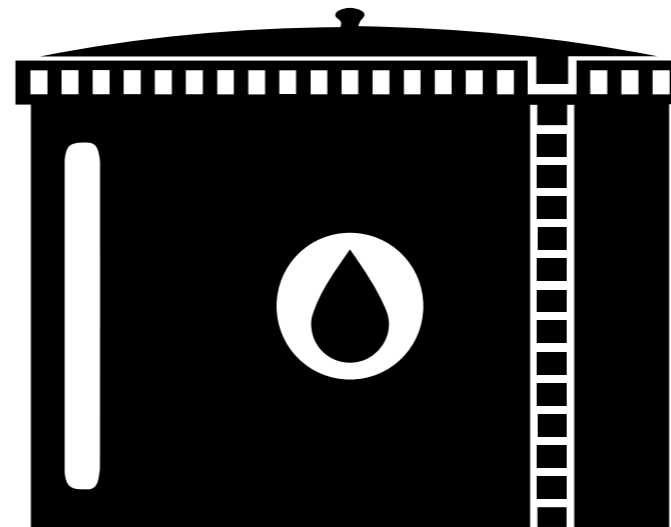
Harbours

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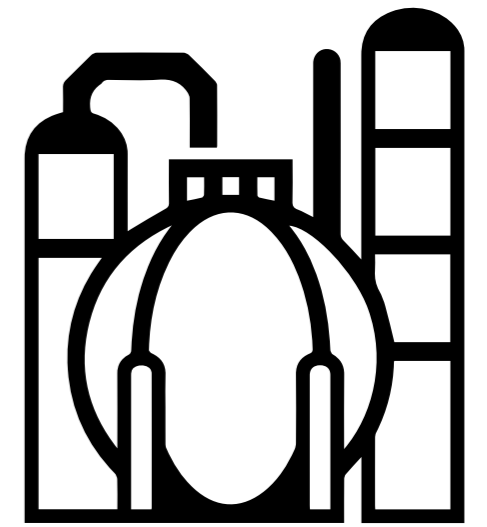
Chimney

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Terminal tanks

+



Pipes

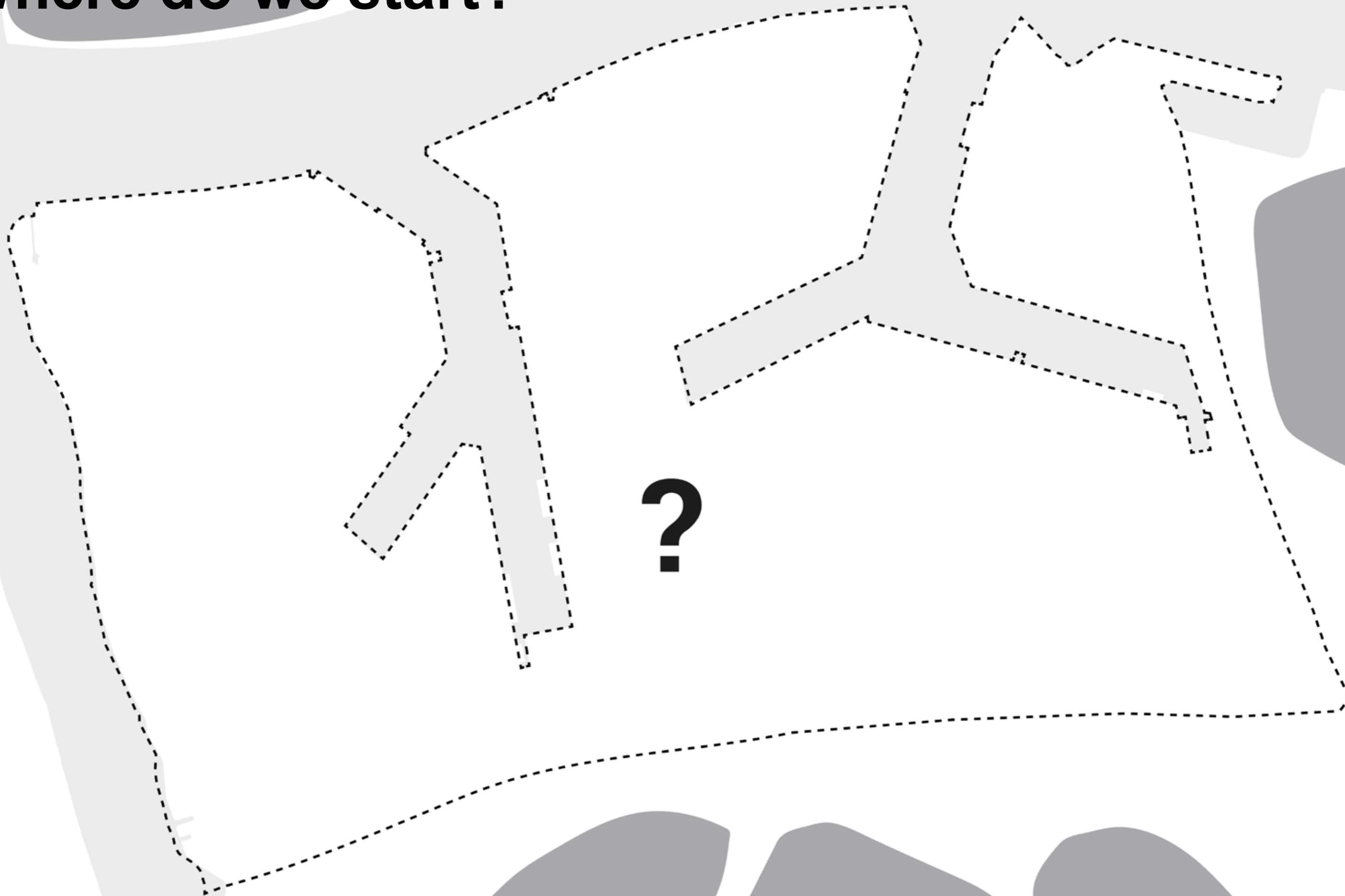


Industry



Nature

Where do we start?



Using the existing framework

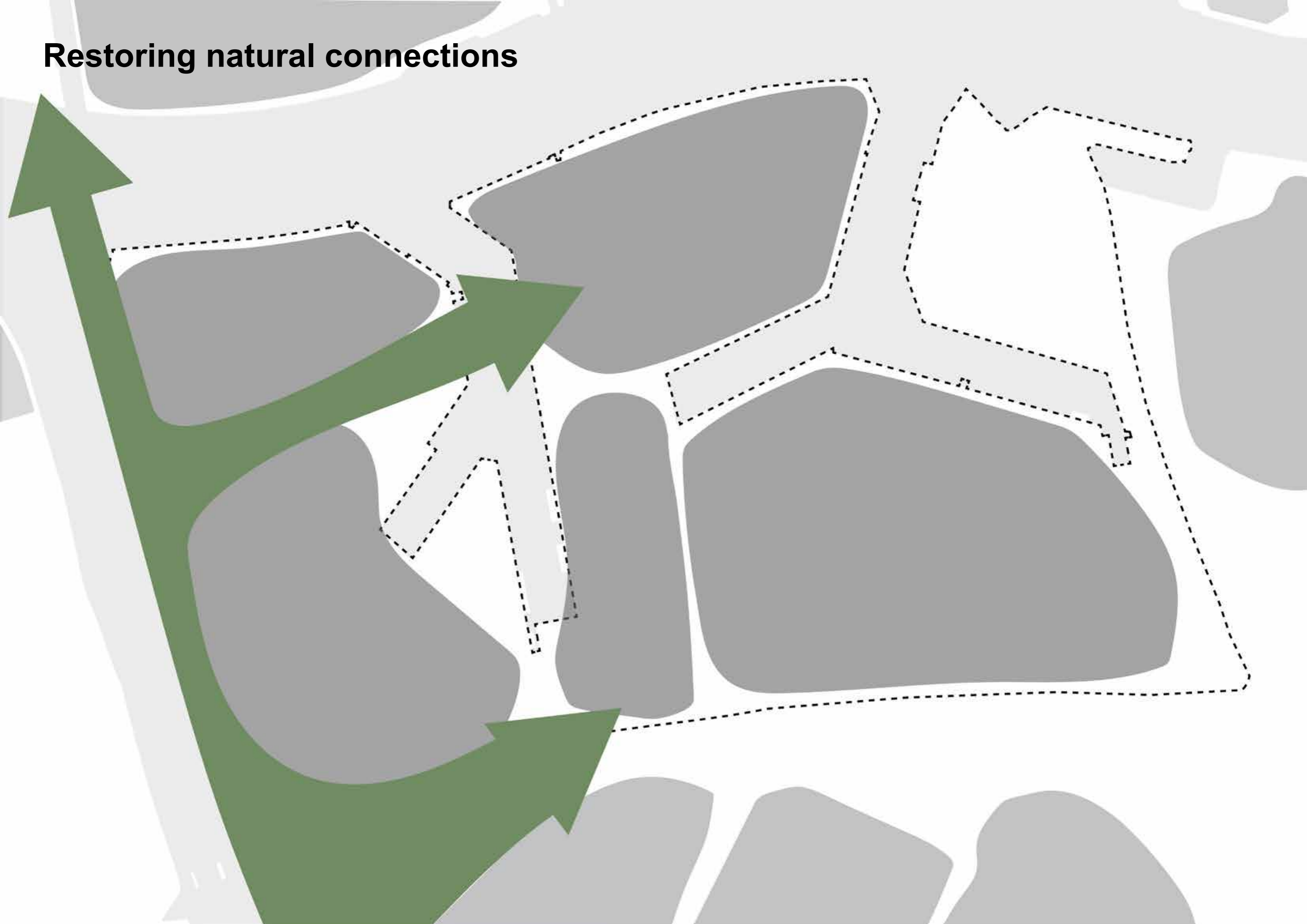


Preserve the industrial heritage on site

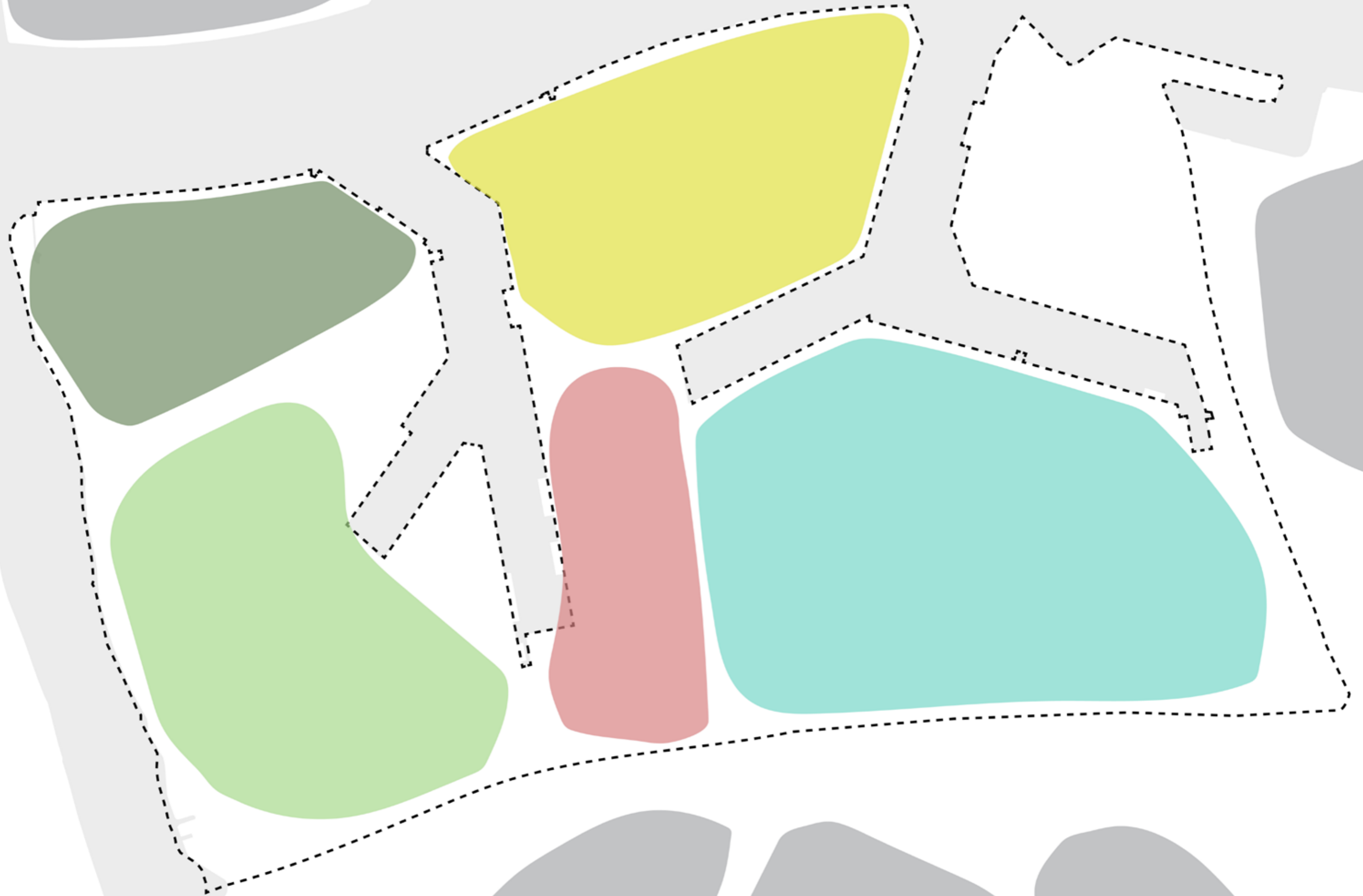


- Existing pipes
- Industrial buildings
- Clusters

Restoring natural connections



Creating five unique clusters.







Transforming the
existing Petroscape
into..



into a Hydroscape.



Connected to the surrounding.

-  Mobility hubs
-  Main road
-  Shared space
-  Restricted acces



Industrial backbone.

Birds nest

Silo point

Blue Maaspower

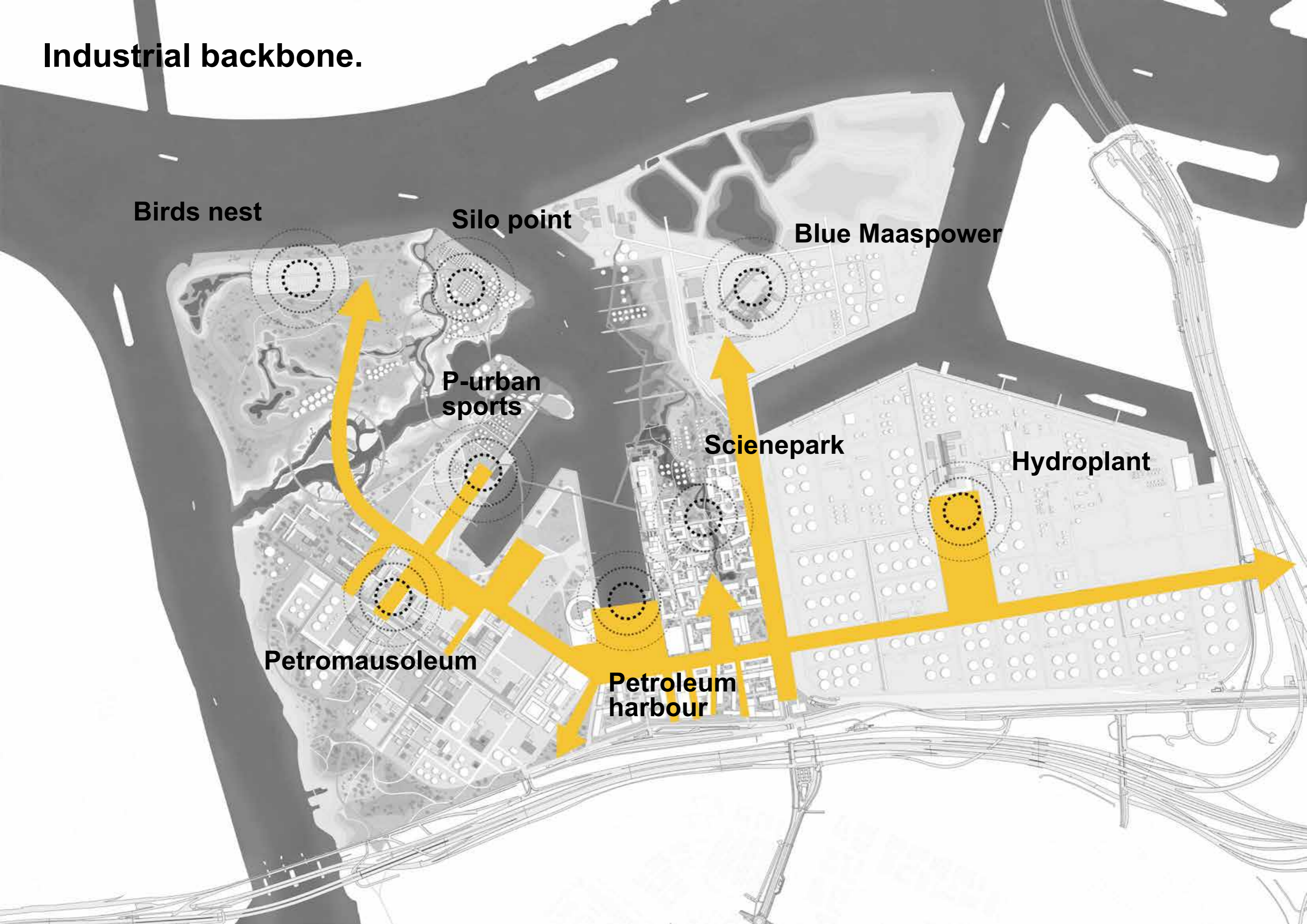
P-urban
sports

Sciencenpark

Hydroplant

Petromausoleum

Petroleum
harbour



Unique clusters.

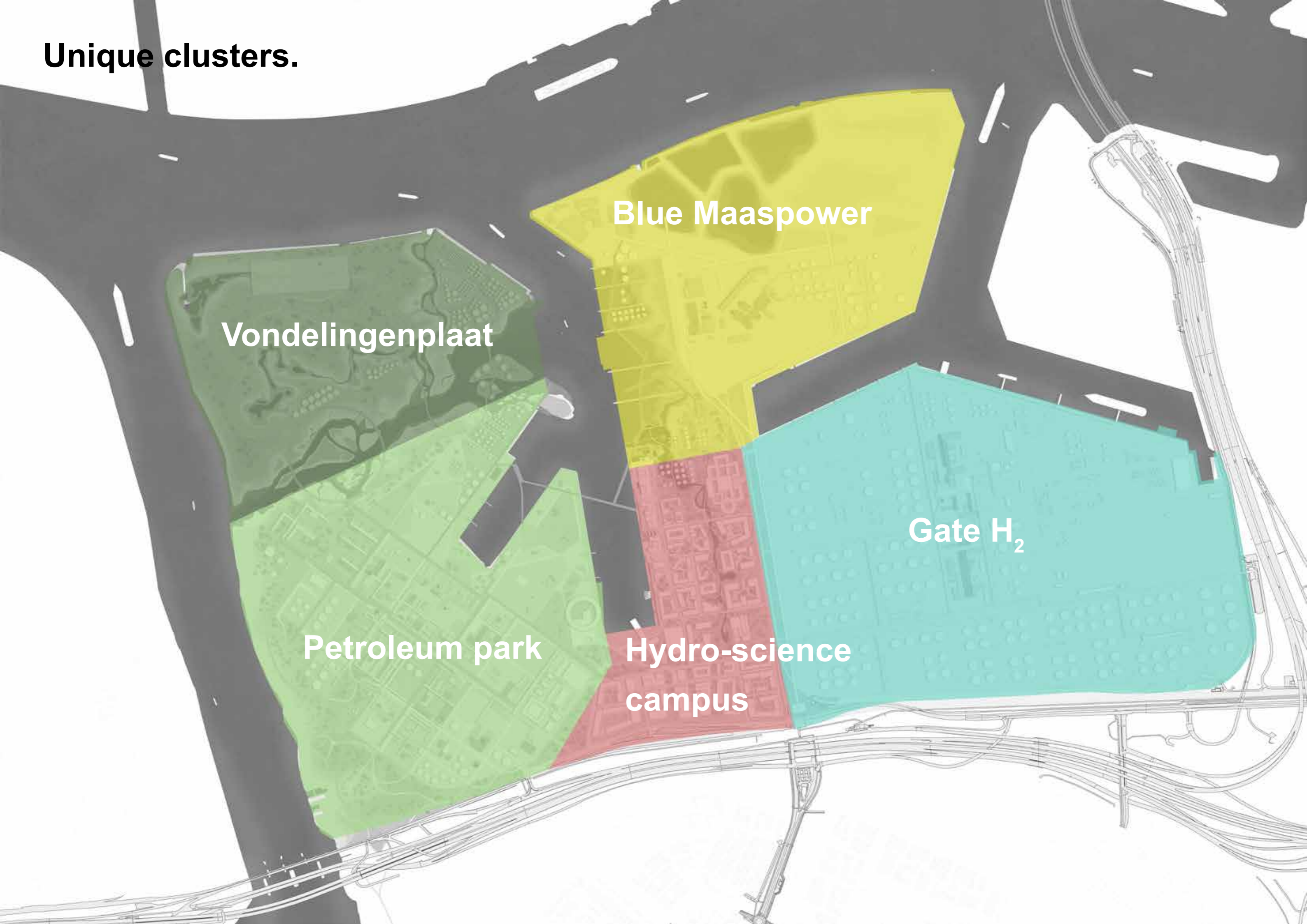
Vondelingenplaat

Blue Maaspower

Petroleum park

**Hydro-science
campus**

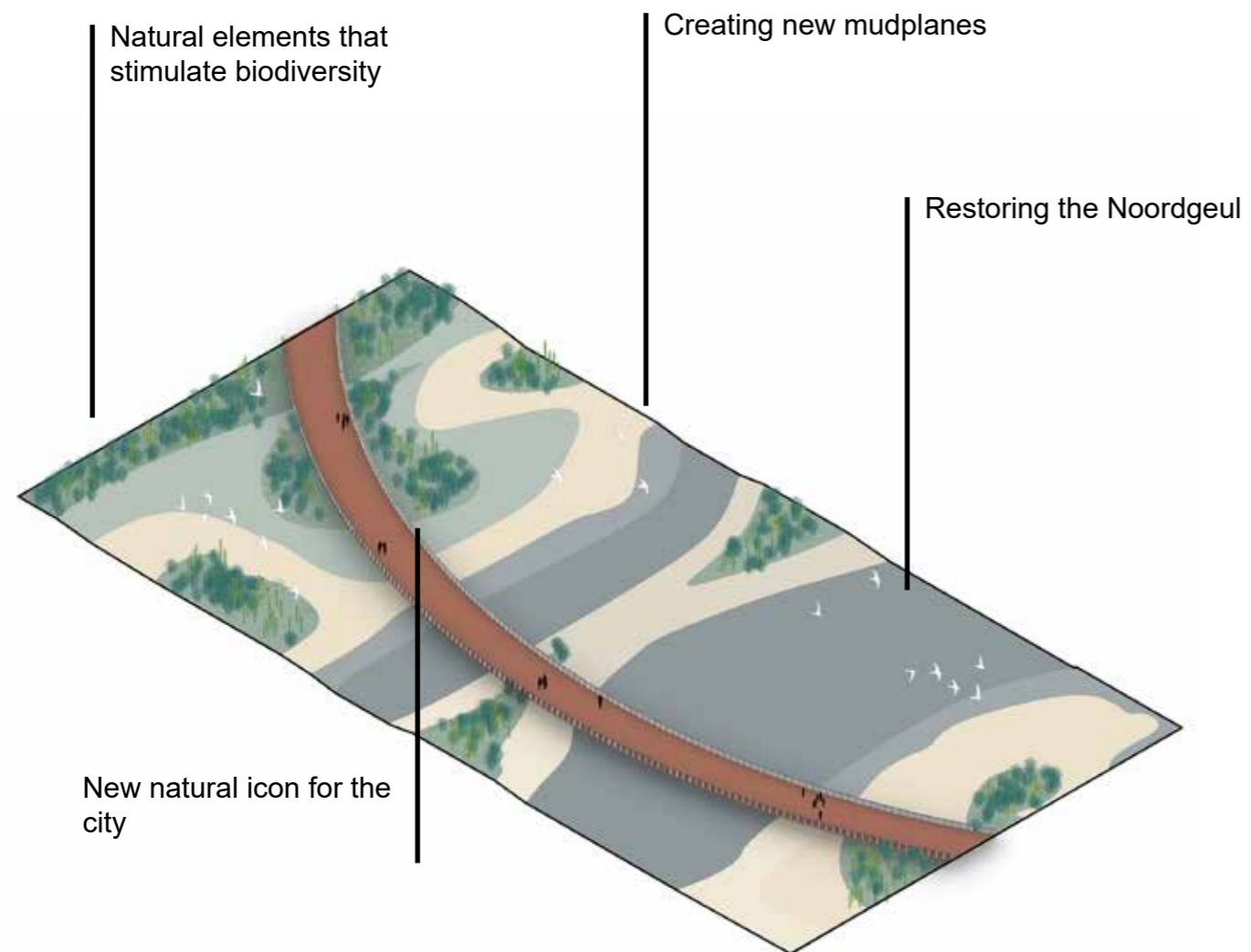
Gate H₂



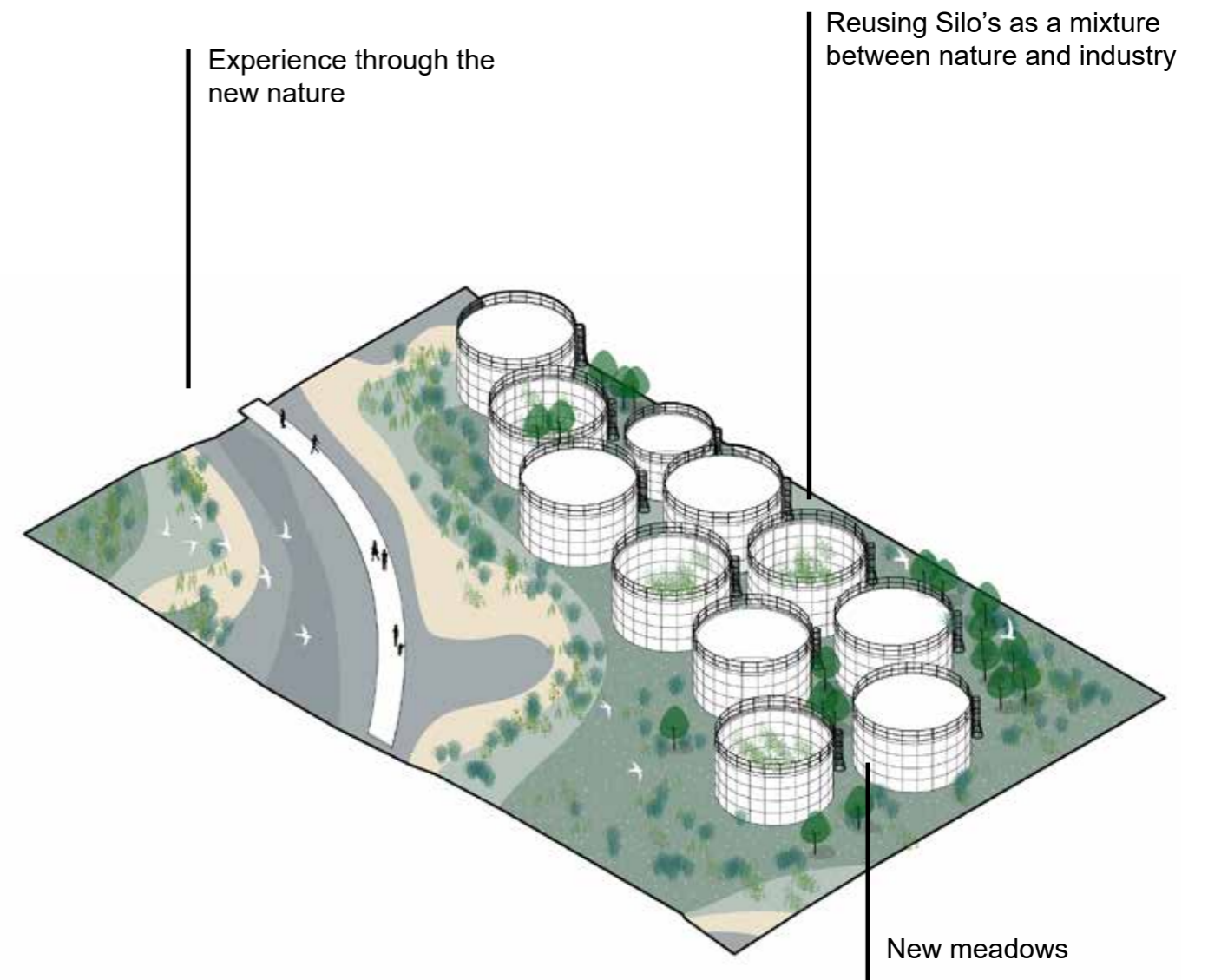
Vondelingenplaat



Vondelingenplaat

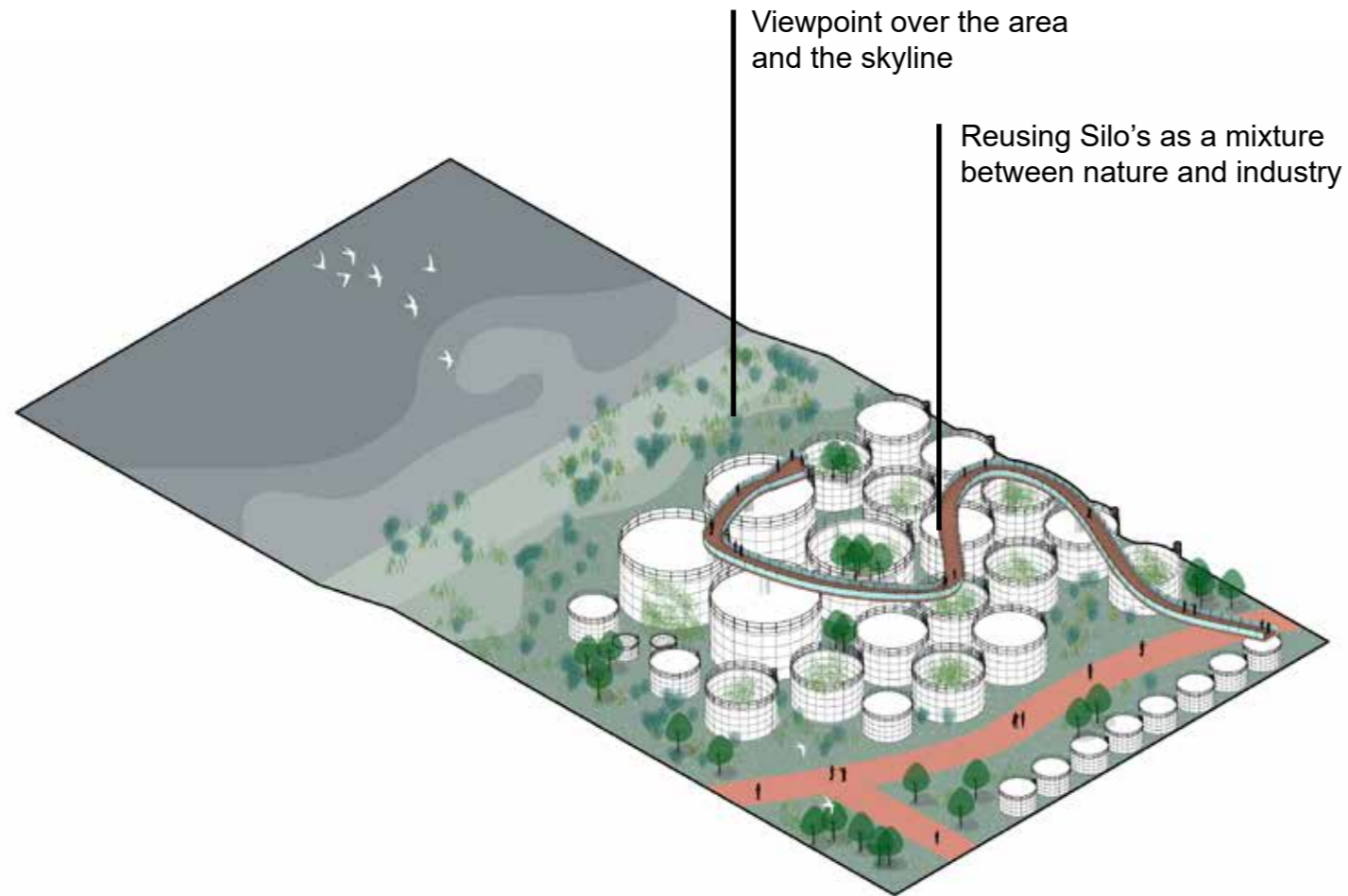


1. bridge

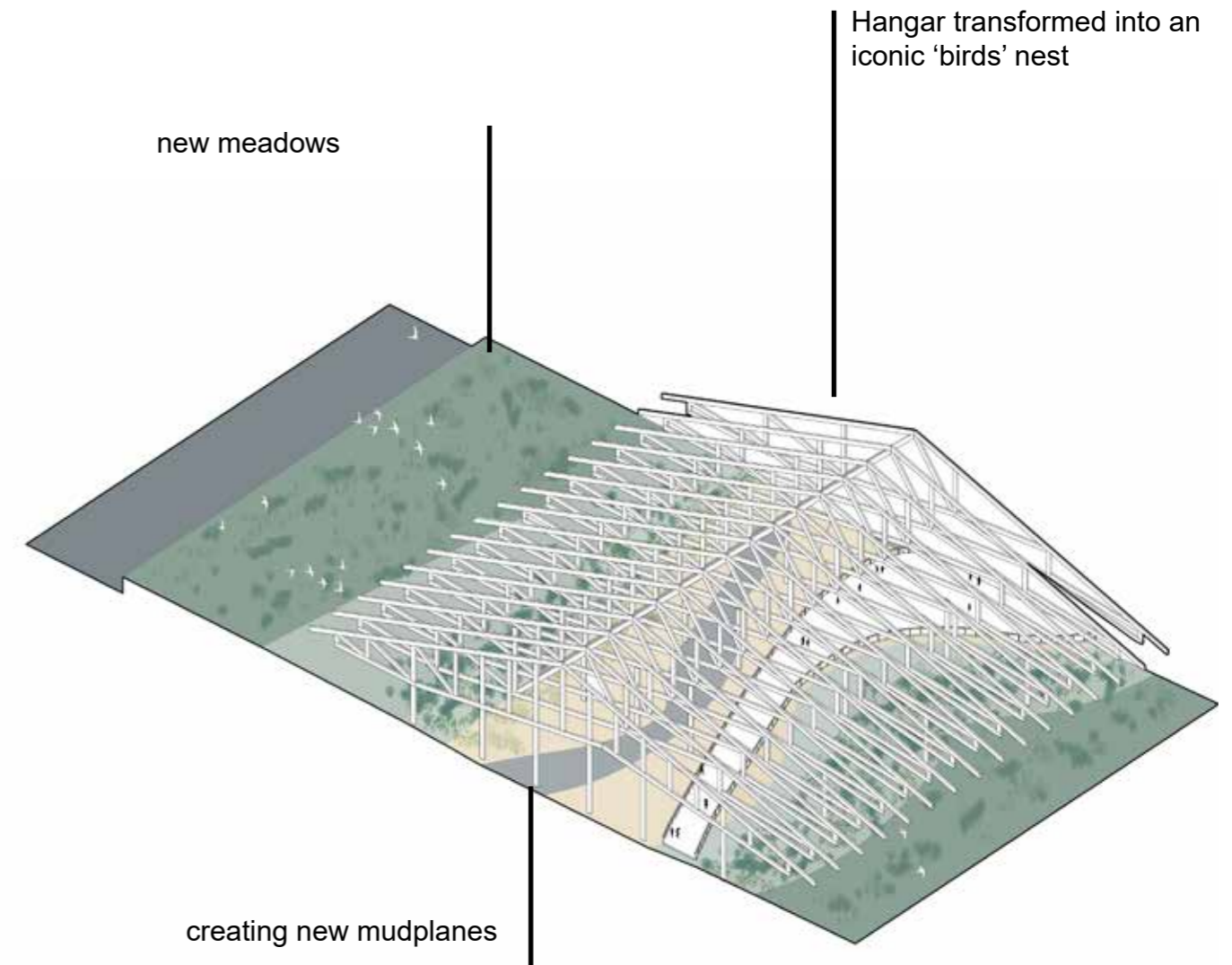


2. Silo park

Vondelingenplaat



3. Silo point



4. 'Bird nest'

Nature reclaims.



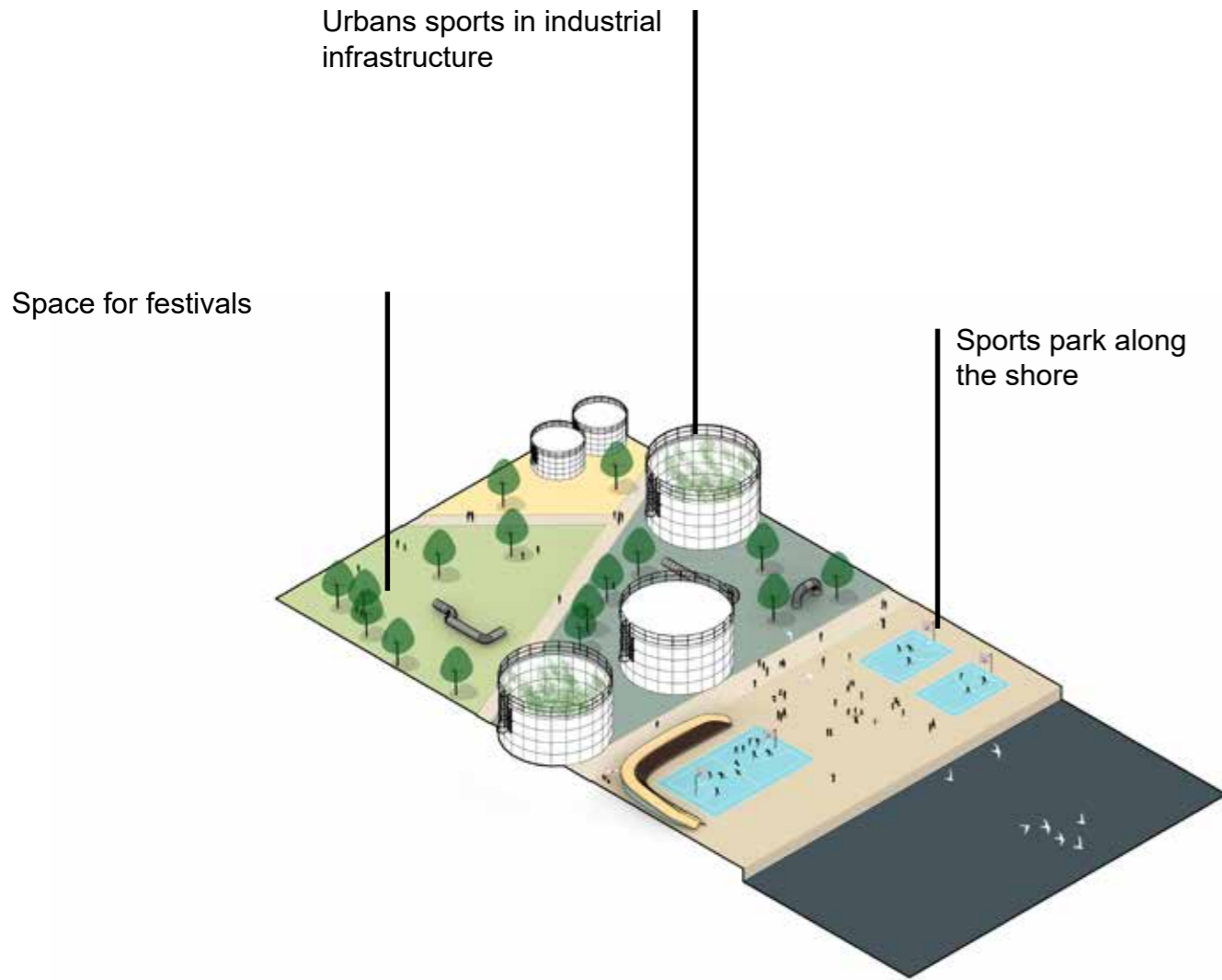
References



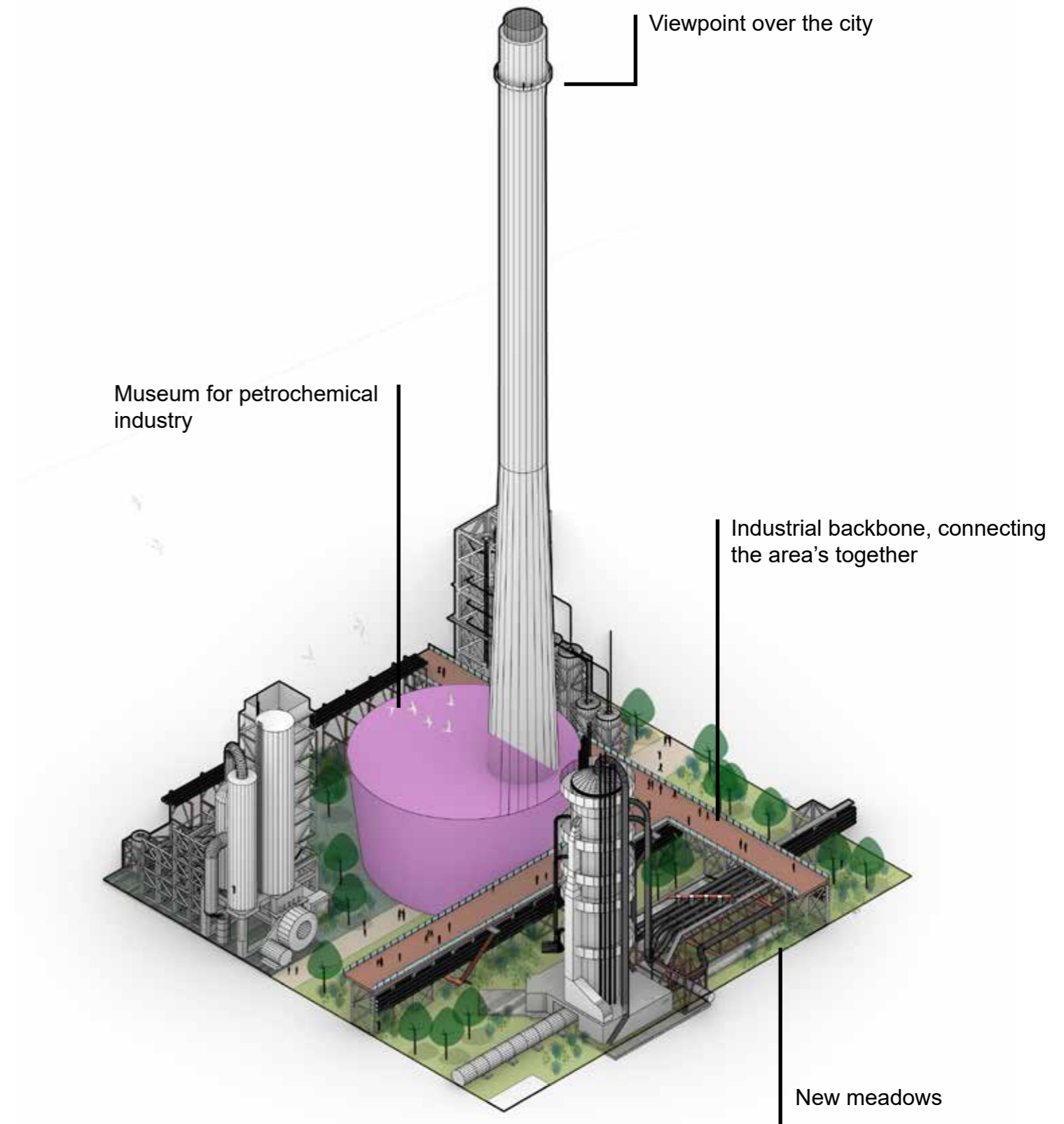


Petroleum park

Petroleum park



1. Purban sports

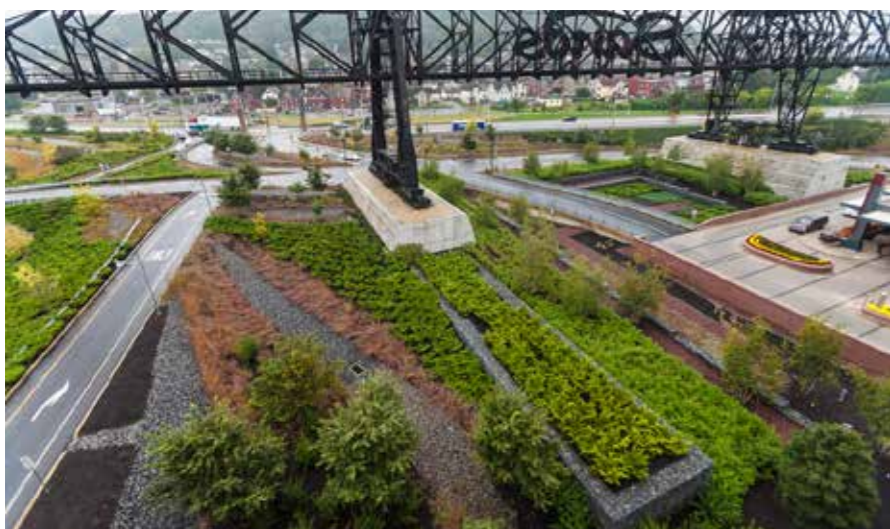
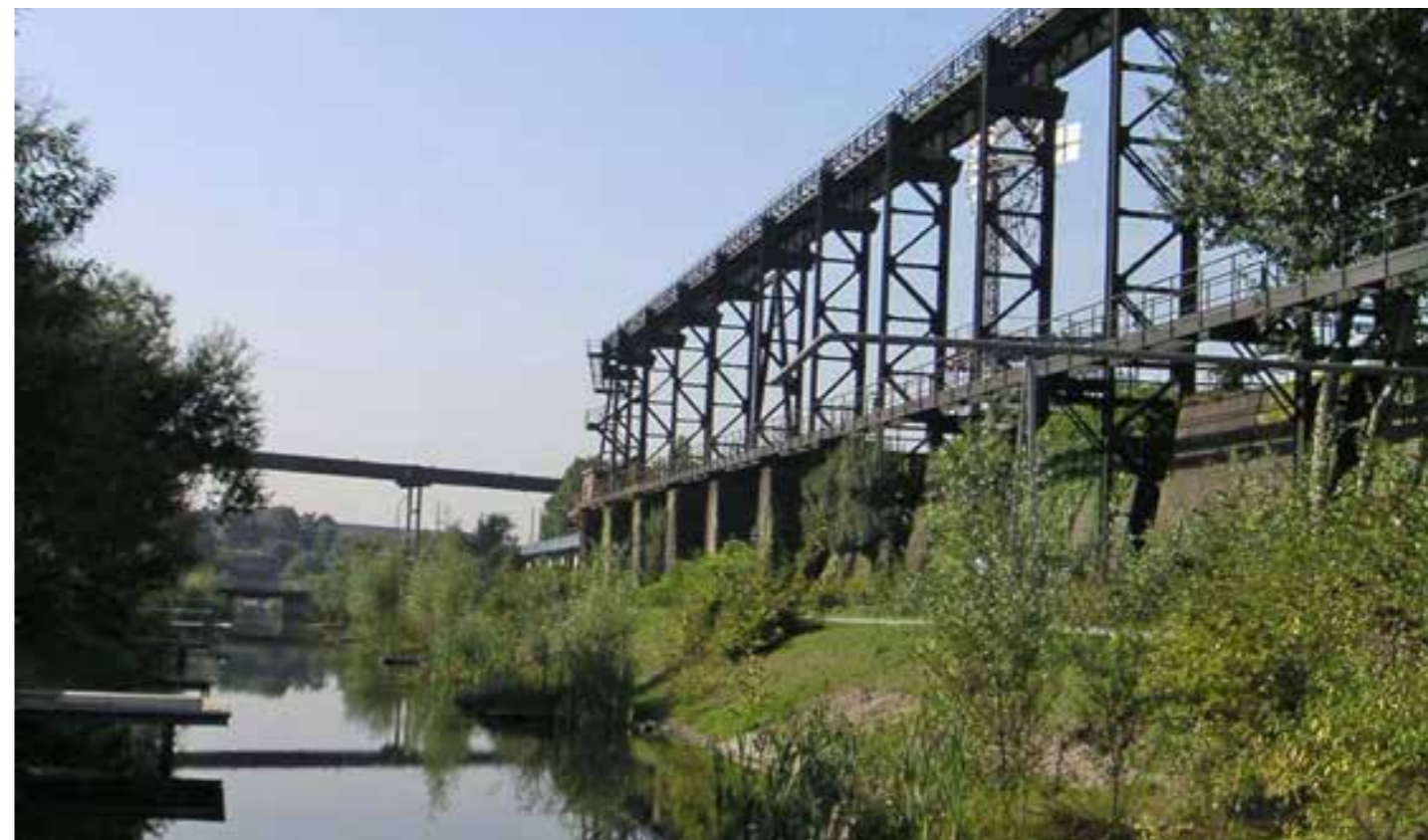


2. Petromausoleum

Urban sports reclaims.



Industrial references

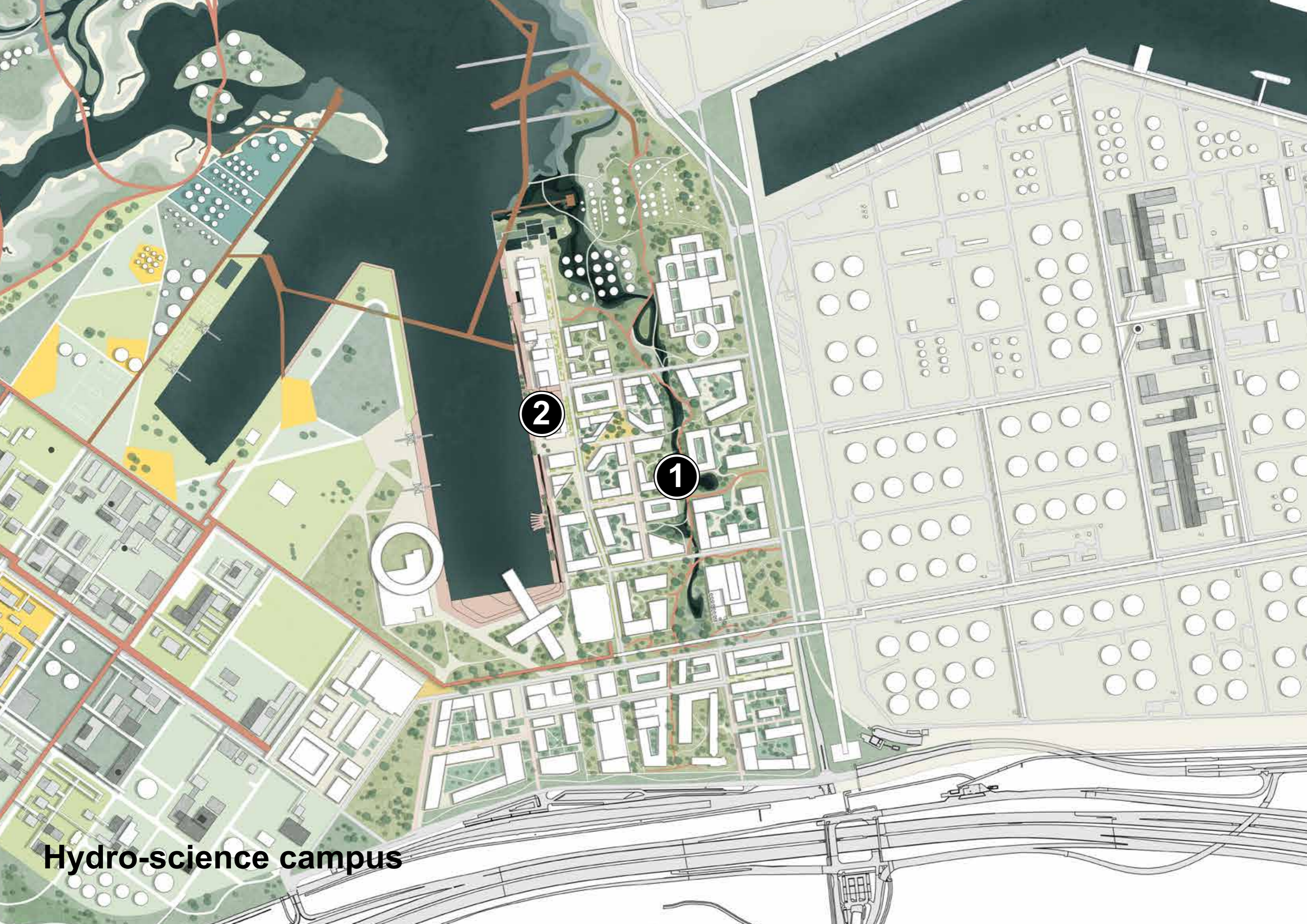


Sands Bethworks



Programmatic references



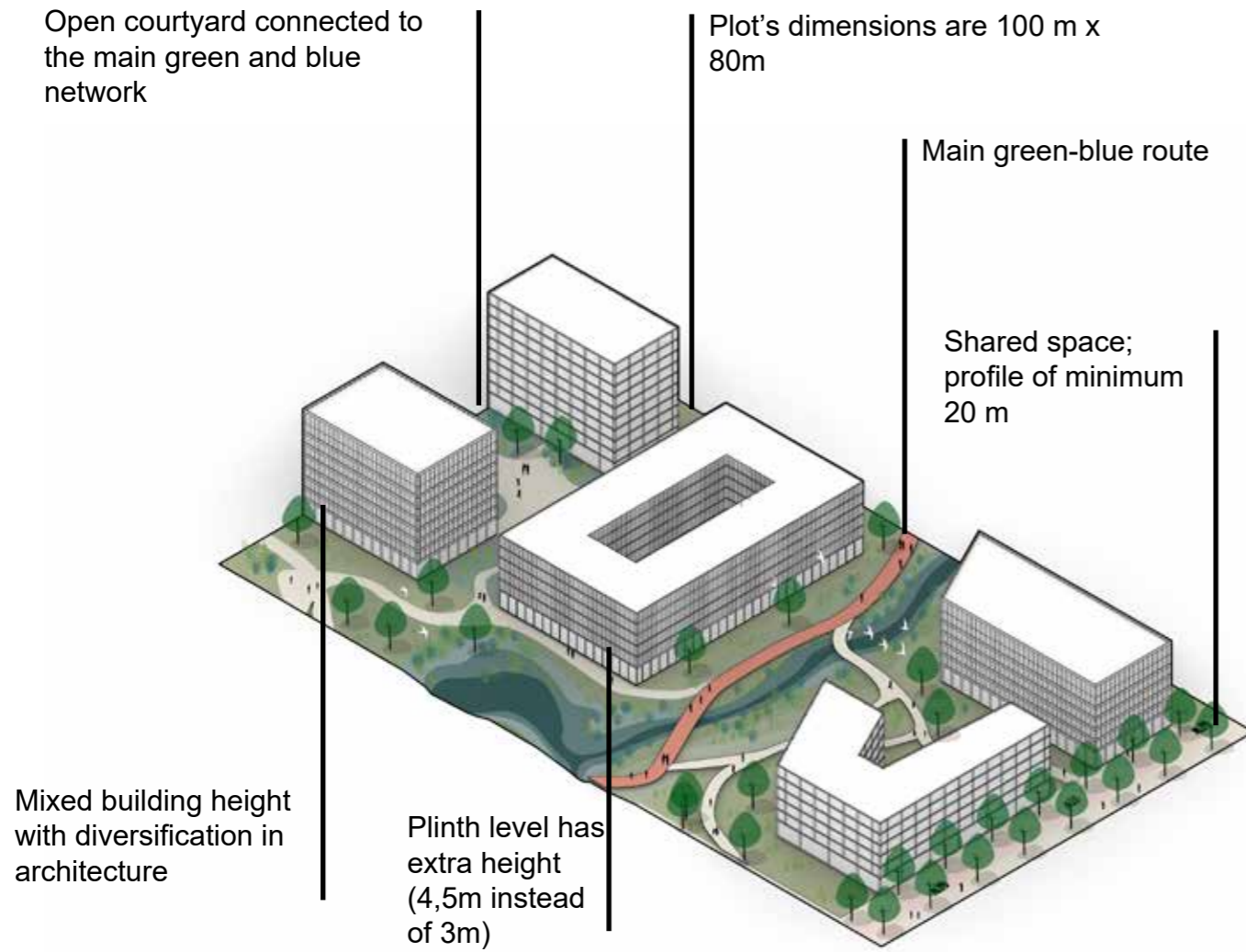


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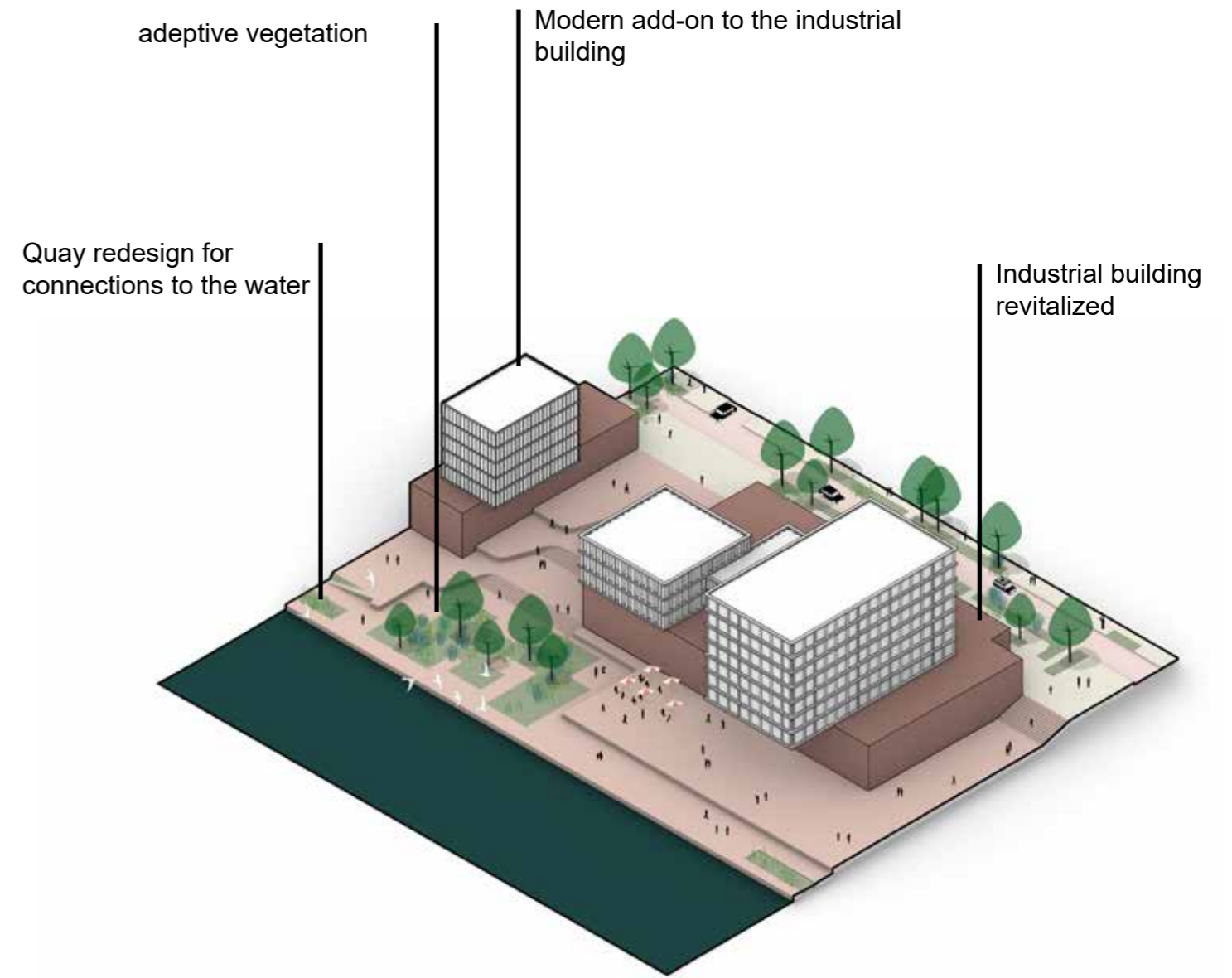
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Hydro-science campus

Hydro-science campus



1. Science park



2. Petroleumquay

Science park



R&D campus references



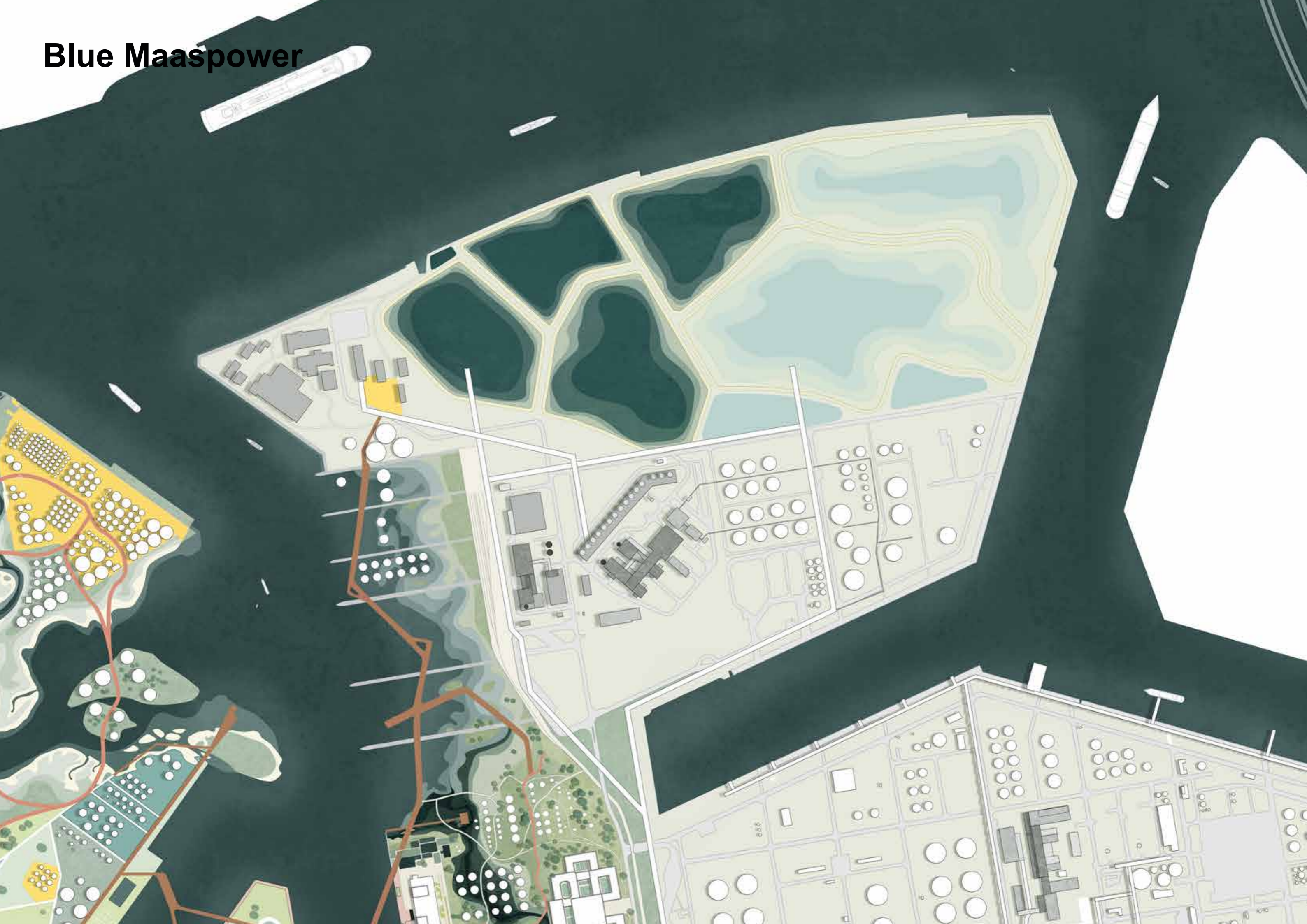
Architectural references



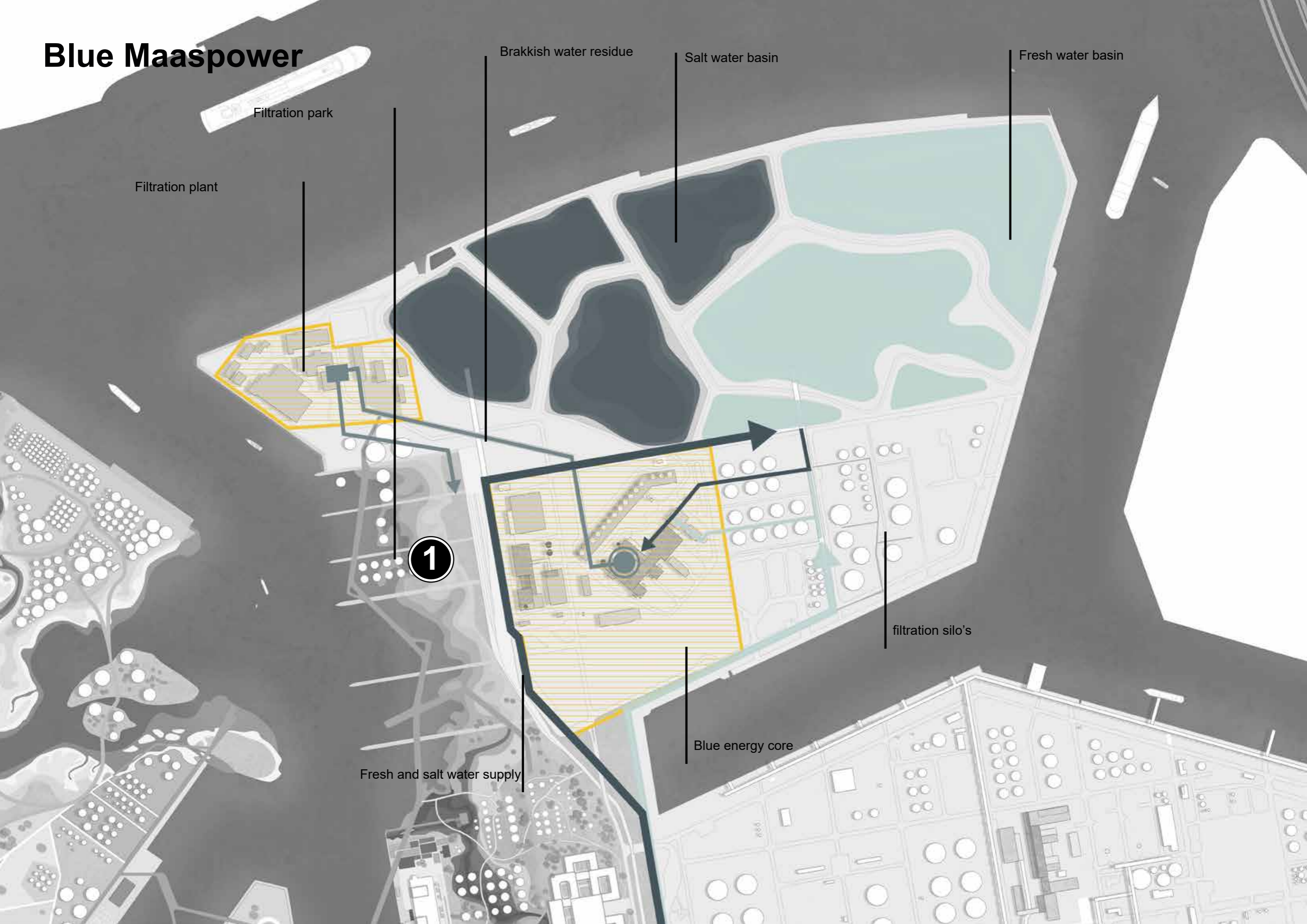
Landschaftspark Duisburg Nord



Blue Maaspower



Blue Maaspower



Filtration plant

Filtration park

Brackish water residue

Salt water basin

Fresh water basin

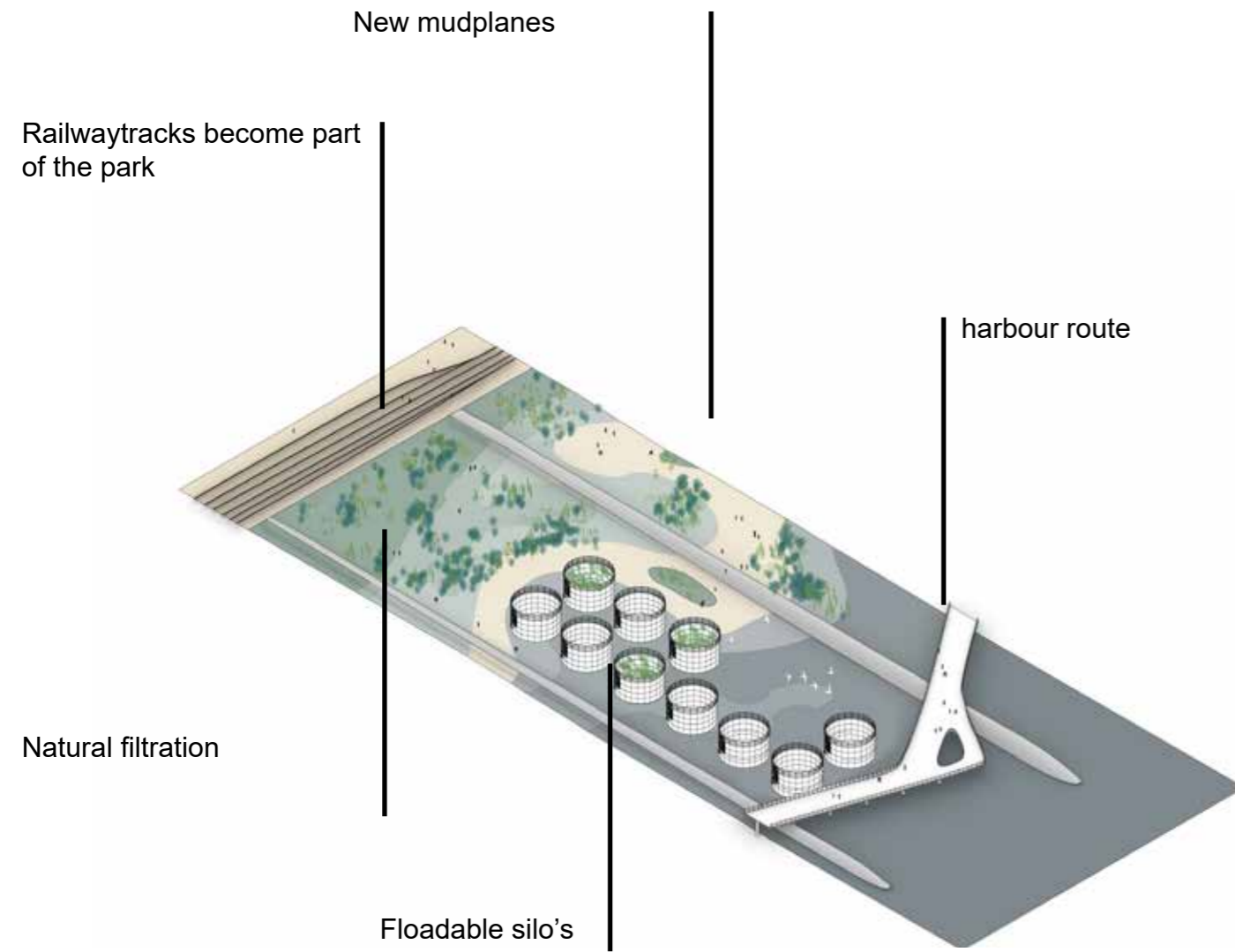
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filtration silo's

Blue energy core

Fresh and salt water supply

Blue Maaspower

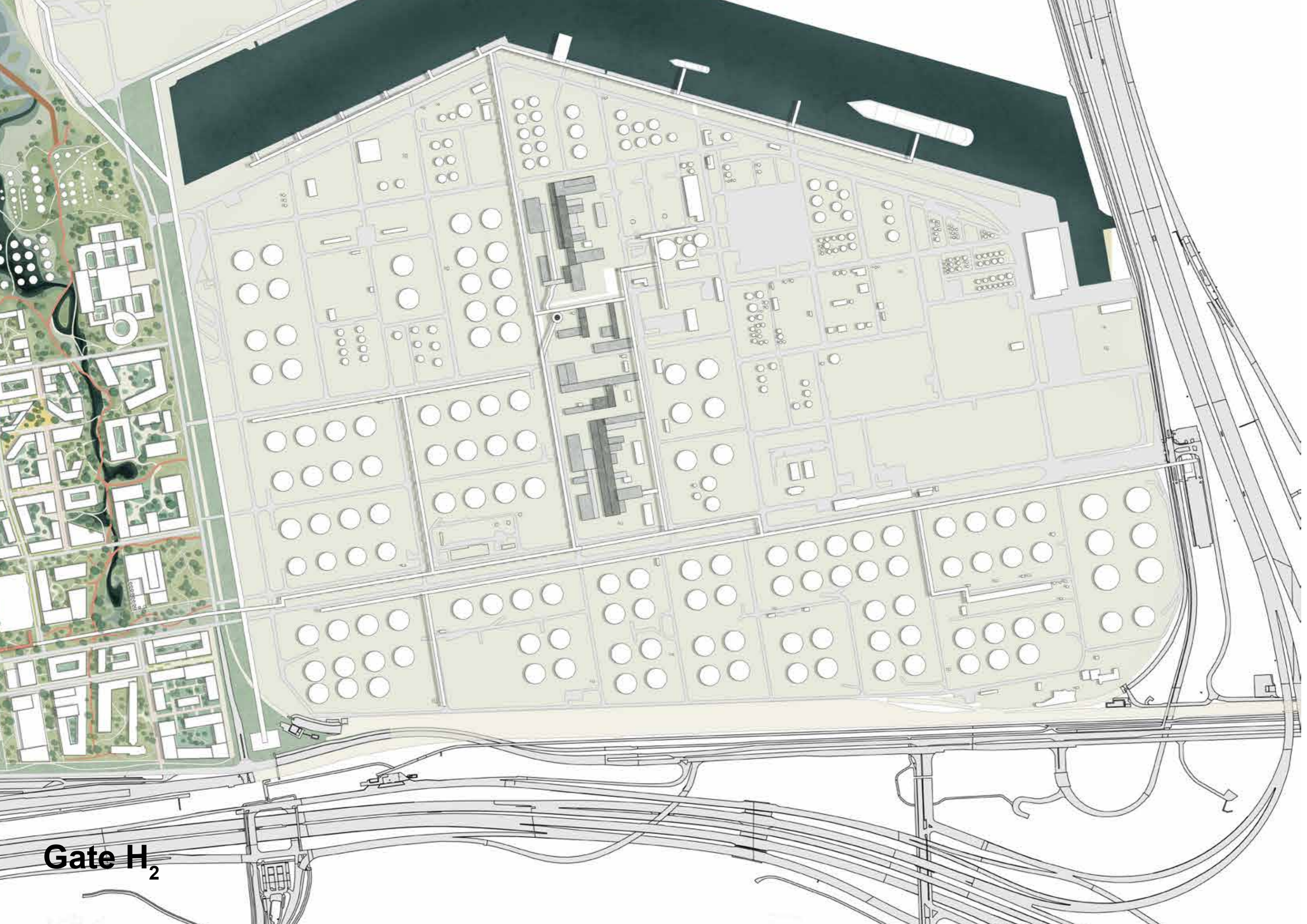


1. Filtration park



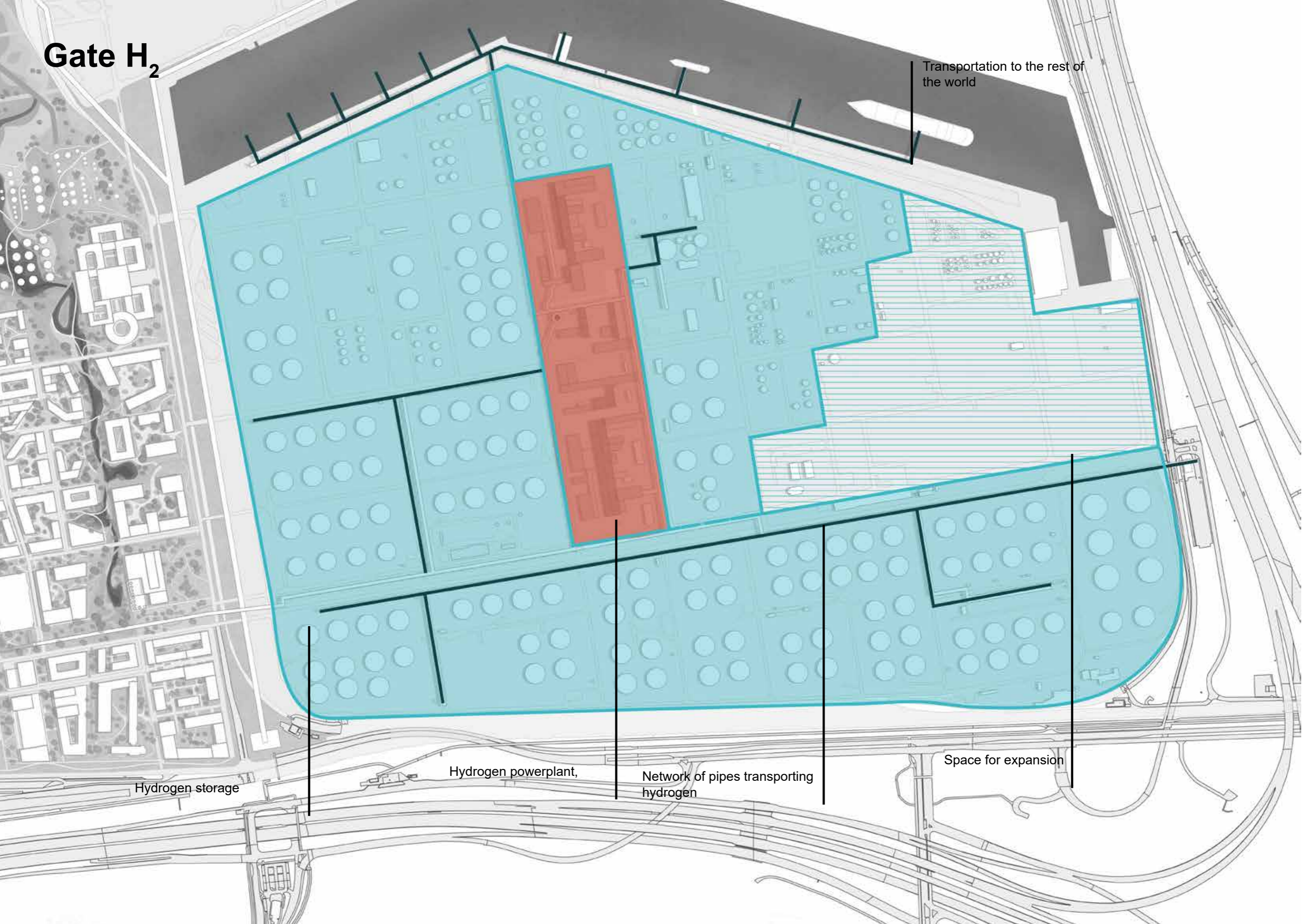
Architectural references





Gate H₂

Gate H₂





Hydroscape.





Thank you!