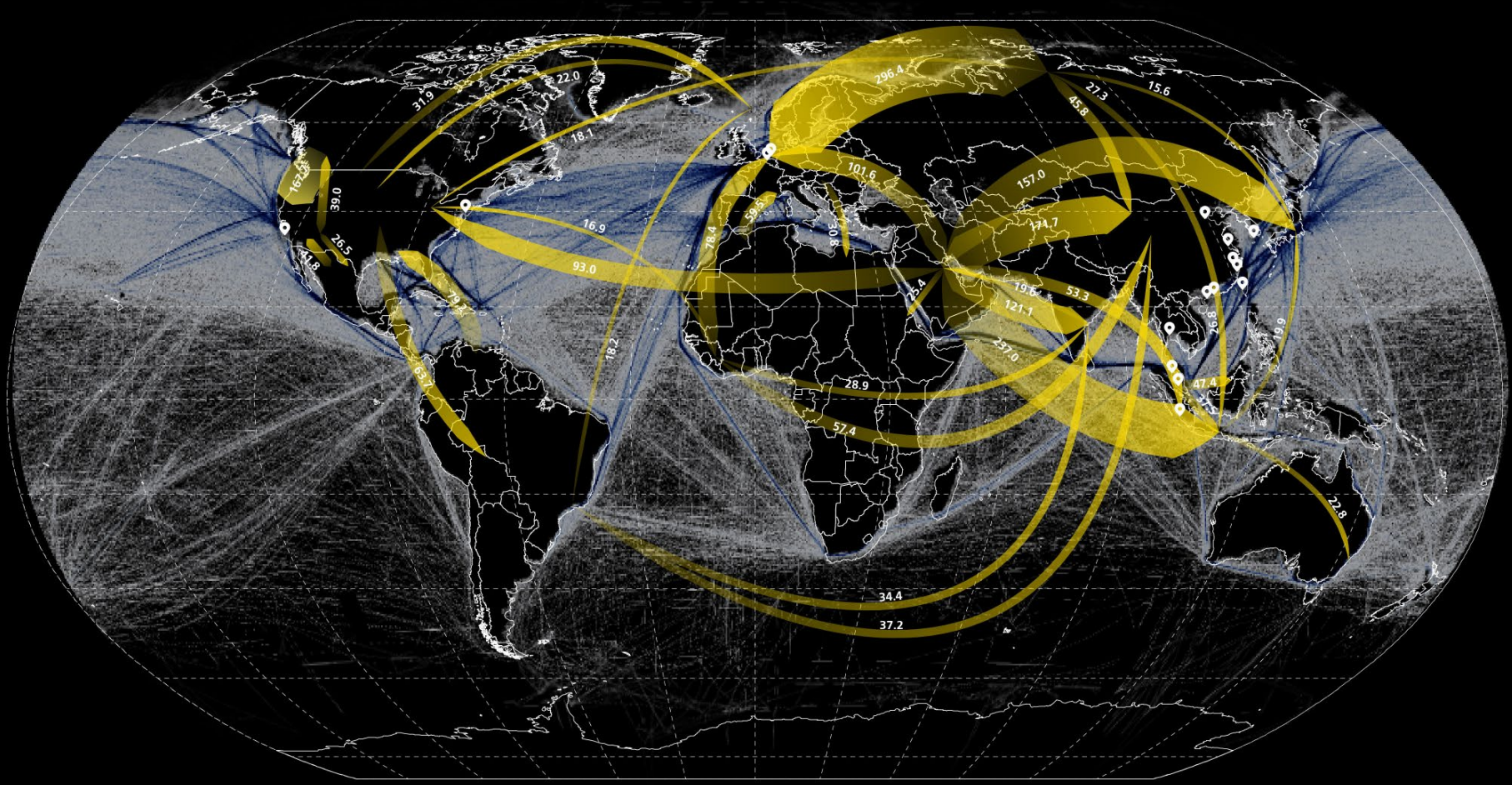
Set of Drawings

Sicco Jansen | # 4427718

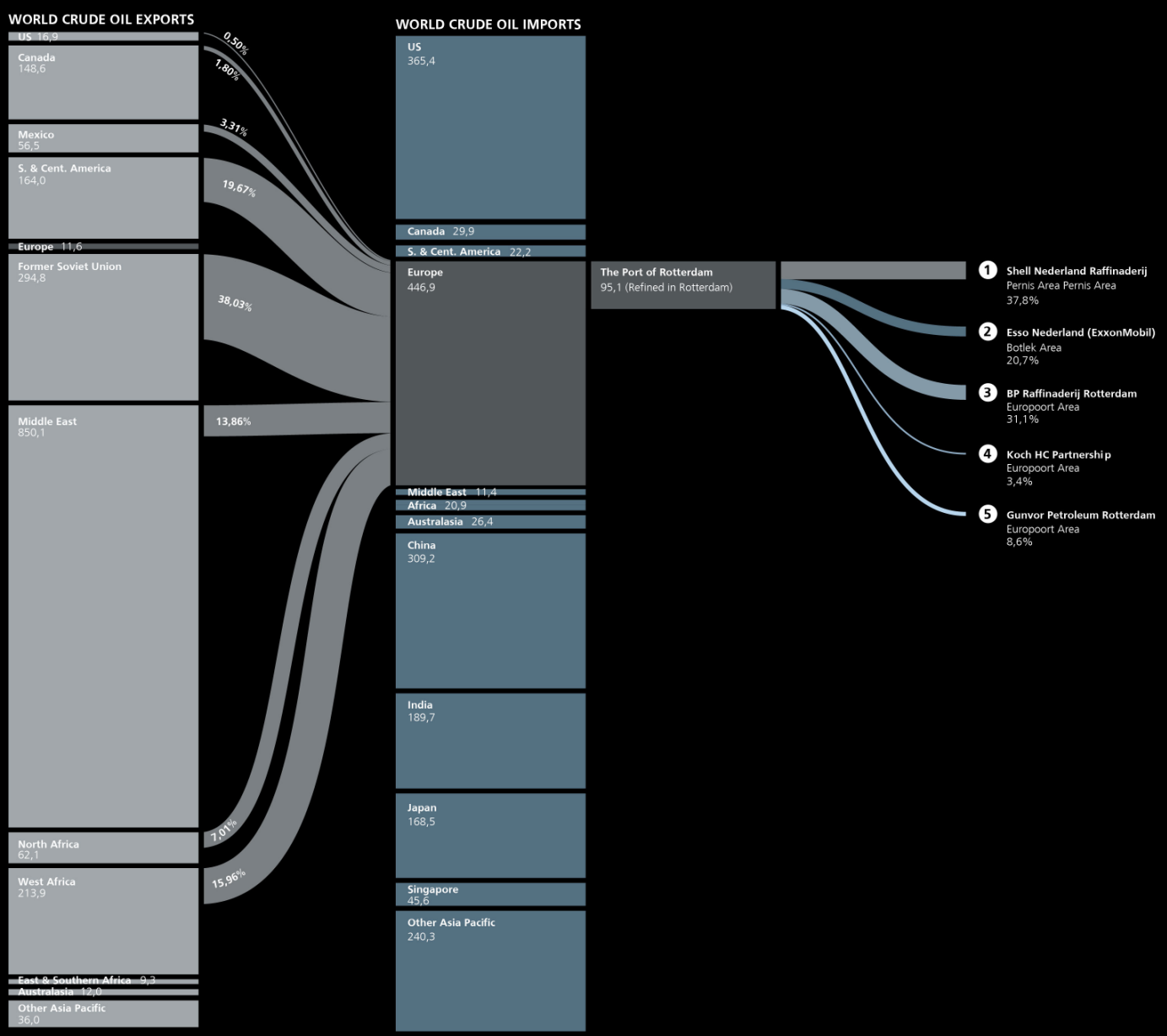
09th of November 2017



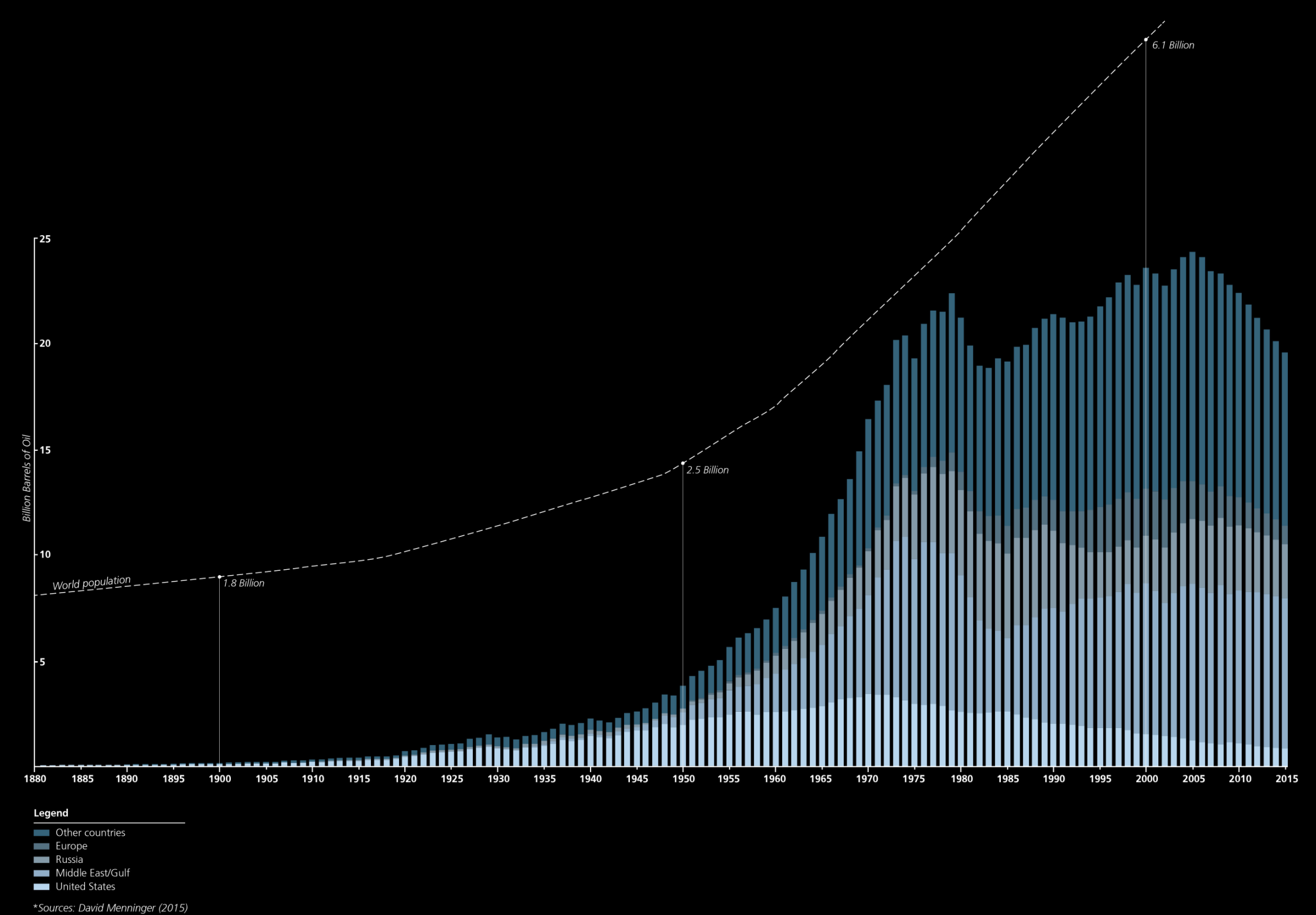
Legend

- Main [oil] harbours
- Ship intensity
- Oil flows [source-destination]
  In million tons

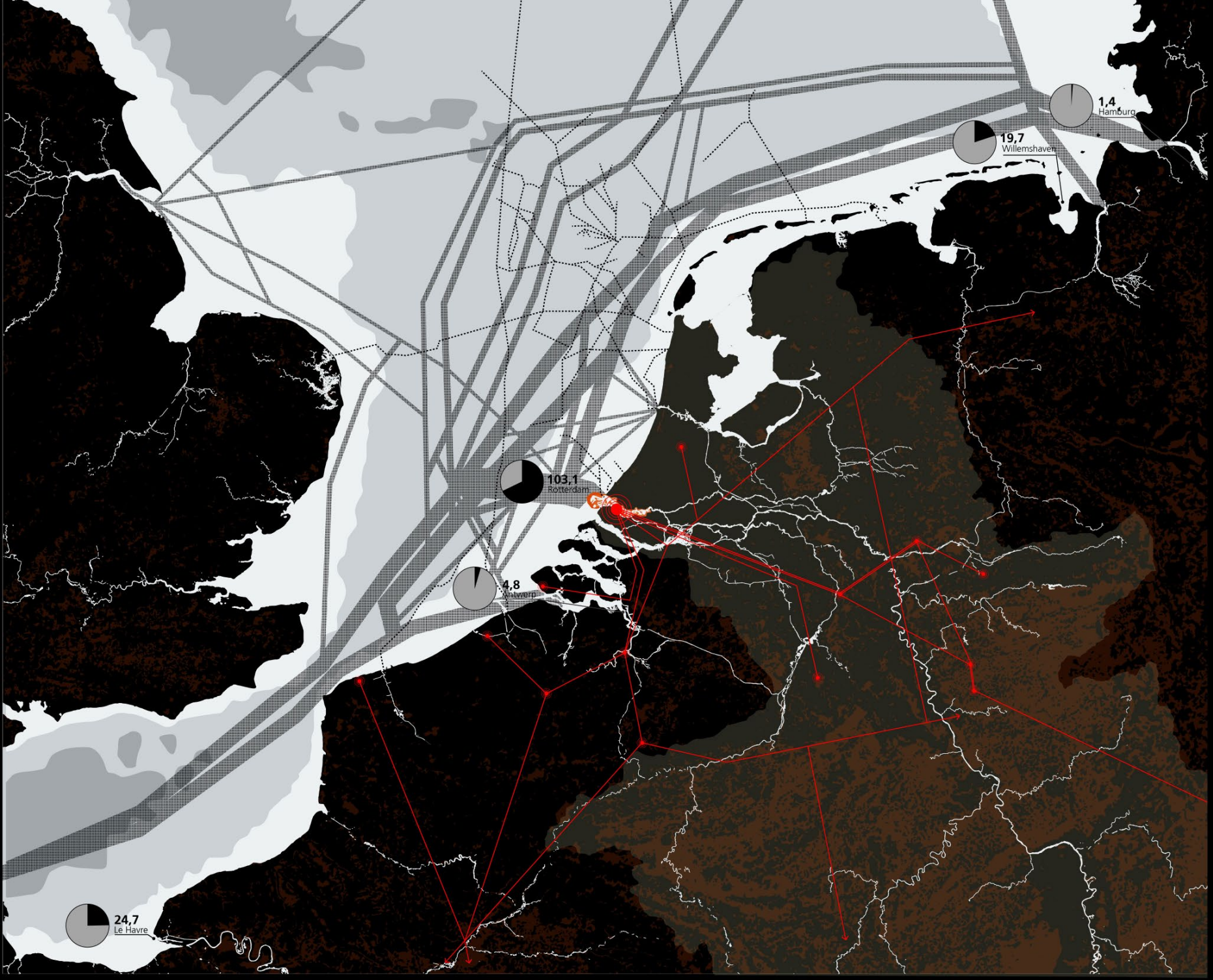
**Sources: BP Oil*
University of California (2008)



*Sources: BP OIL
EUROSTAT
PORT OF ROTTERDAM



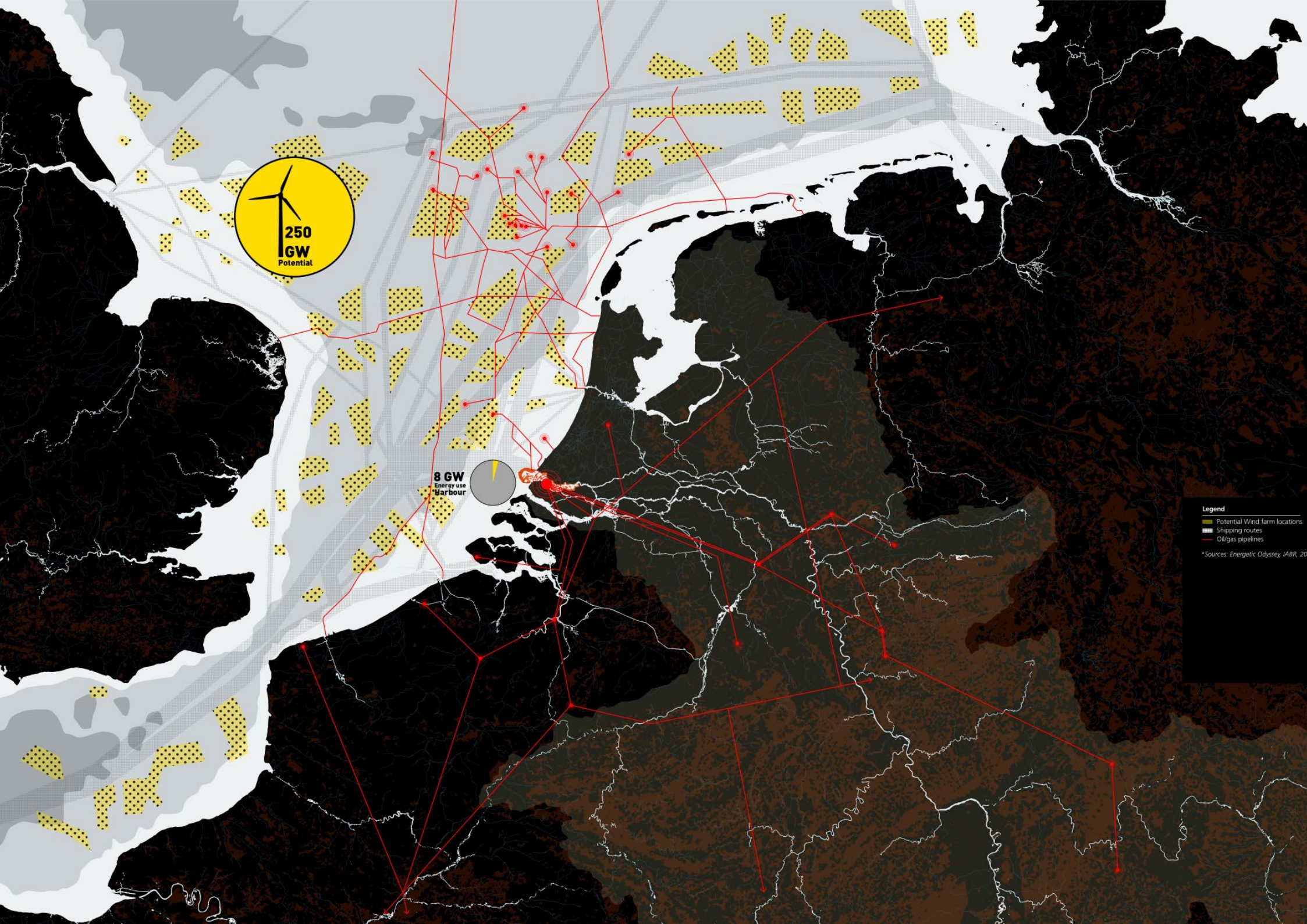
*Sources: David Menninger (2015)



Legend

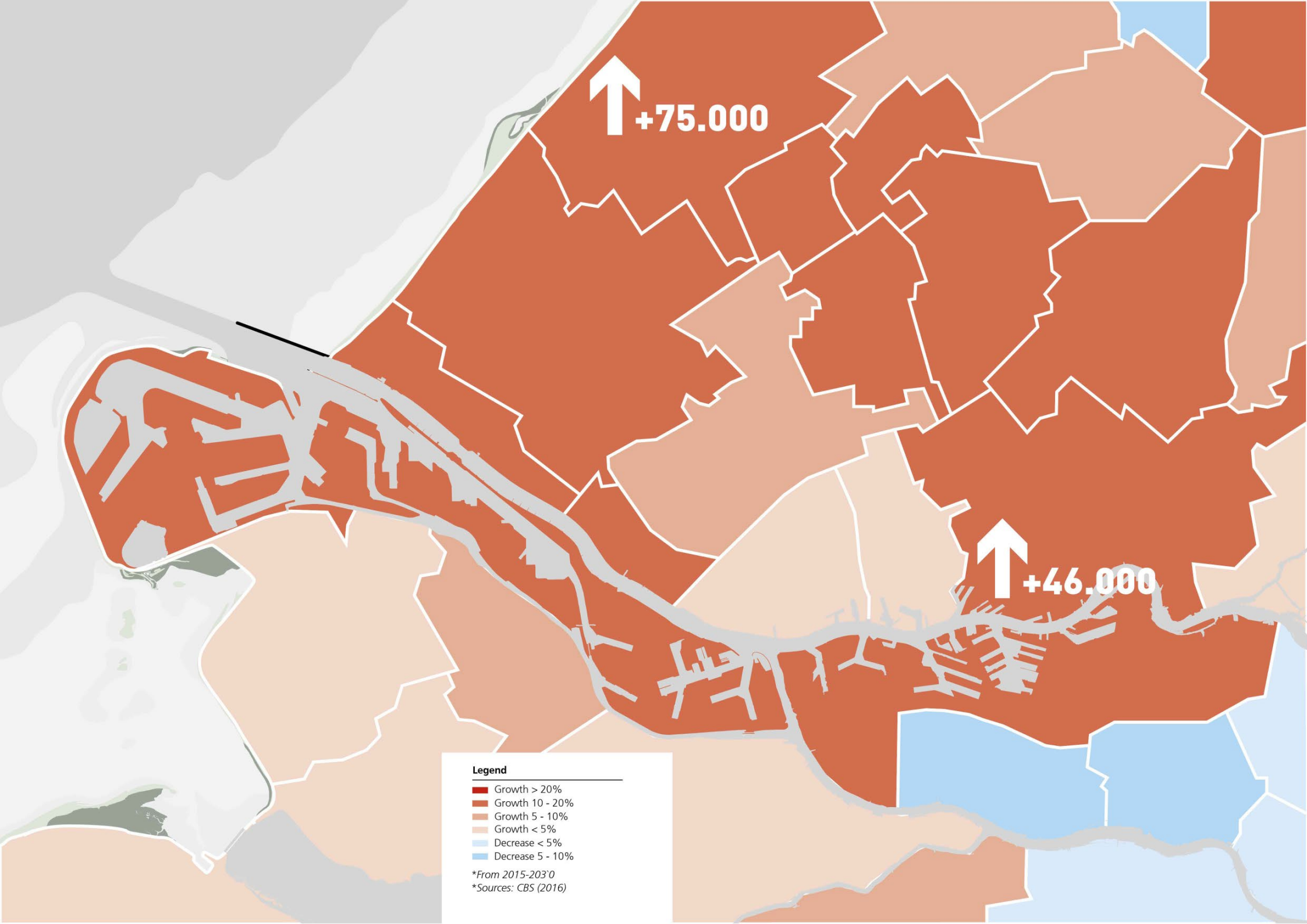
- Oil pipelines on land
- Oil pipelines on sea
- Shipping routes
- Crude oil transshipment (2015)
  In million ton

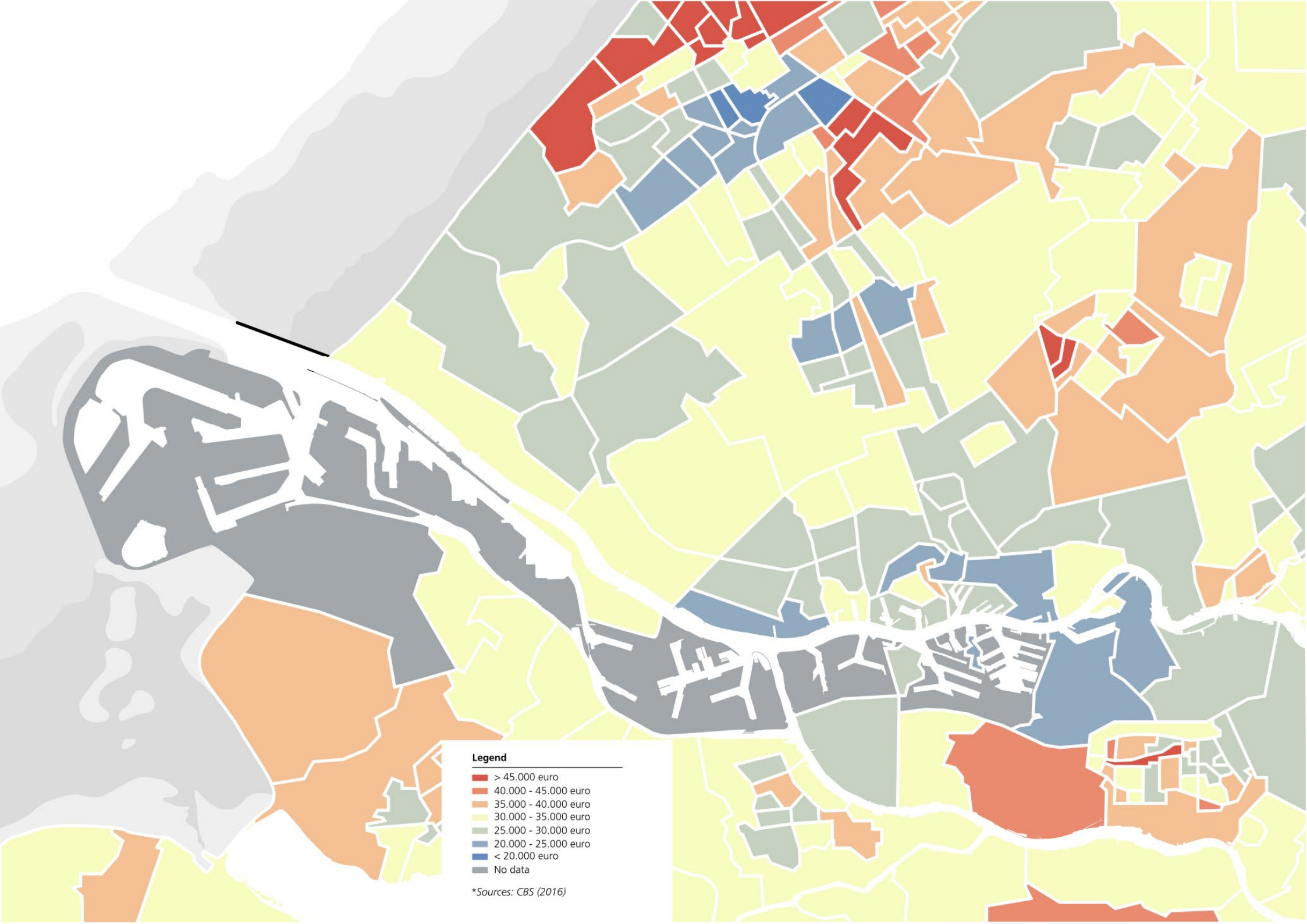
*Sources: The Port of Rotterdam Statistics (2015)


250
GW
Potential
8 GW
Energy use
Harbour
Legend
Potential Wind farm locations
Shipping routes
Oil/gas pipelines
*Sources: Energetic Odyssey, IABR, 20

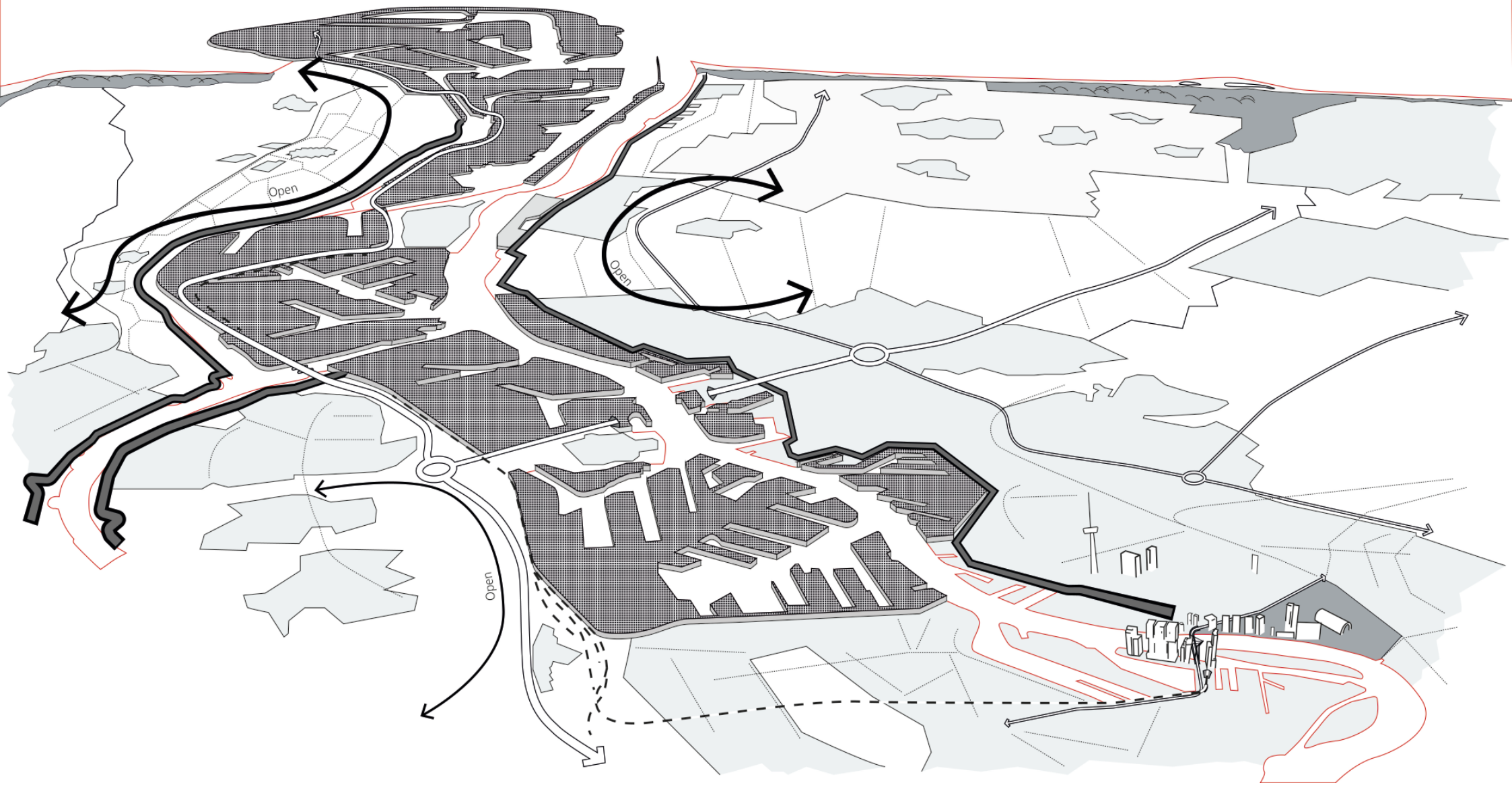

15,9%
58,3%
24,2%
88,7%
11,3%
24,7
Le Havre


Legend
Main bike routes
Grass/crops, mainly clay polders
Grass, wet, mainly peat polders
Rough, natural vegetation
High vegetation, forest
*Sources: Top 10NL


+75.000
+46.000
Legend
Growth > 20%
Growth 10 - 20%
Growth 5 - 10%
Growth < 5%
Decrease < 5%
Decrease 5 - 10%
*From 2015-203`0
*Sources: CBS (2016)

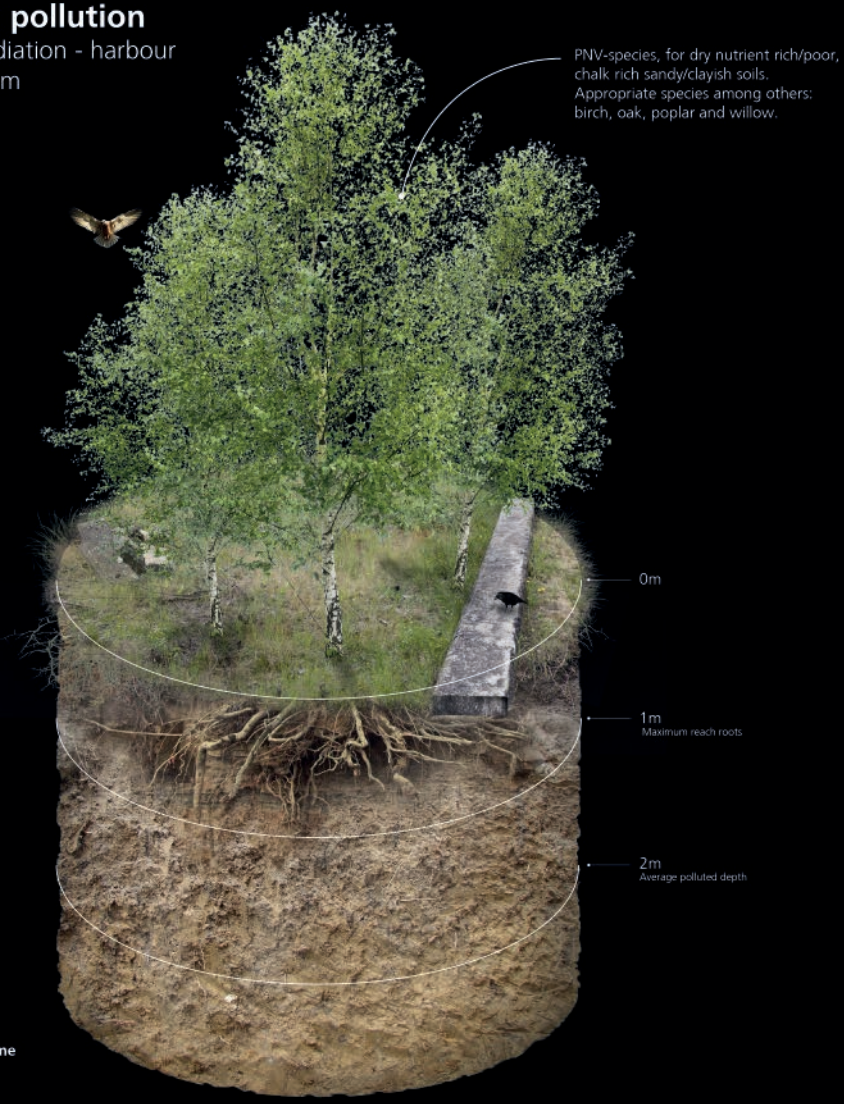

Legend
> 45.000 euro
40.000 - 45.000 euro
35.000 - 40.000 euro
30.000 - 35.000 euro
25.000 - 30.000 euro
20.000 - 25.000 euro
< 20.000 euro
No data
*Sources: CBS (2016)


Legend
Harbour area
Oil harbour
Pipelines - to Antwerp/Ruhr
Rail lines - to Germany
Highways - within the Netherlands
Inland shipping routes
Sea shipping routes
Ship-to-ship transfer places
*Sources: The Port of Rotterdam Statistics (2015)

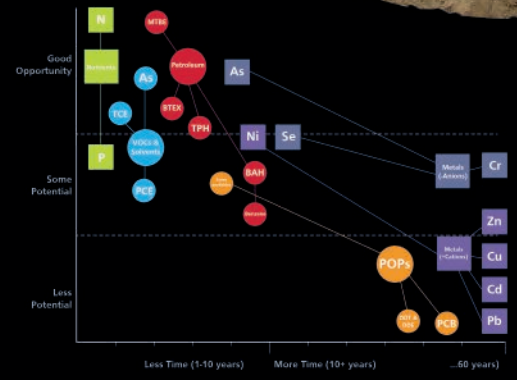

Open
Open
Open

Fighting pollution

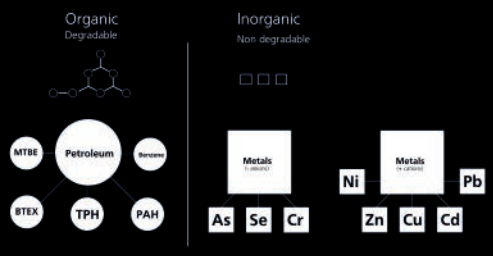
Phytoremediation - harbour of Rotterdam



Opportunity & Time

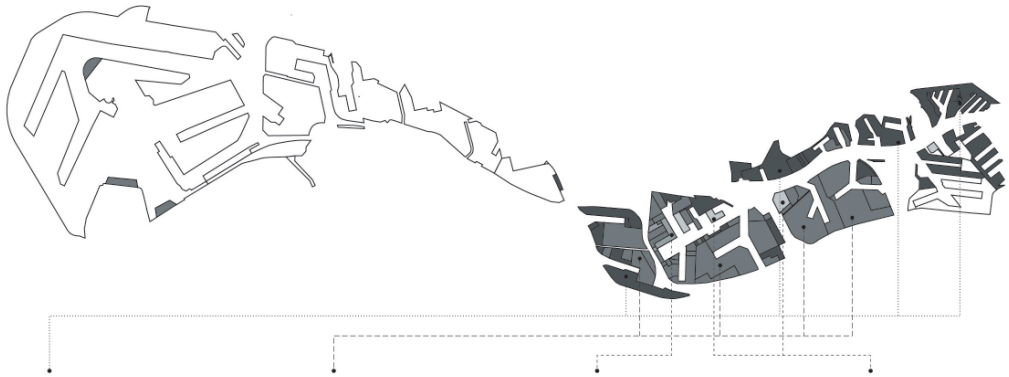


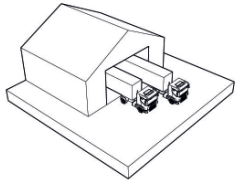
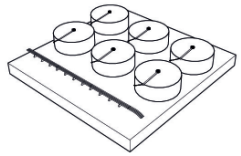
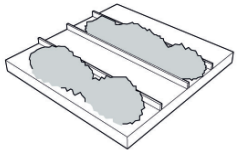
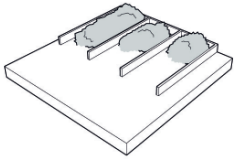
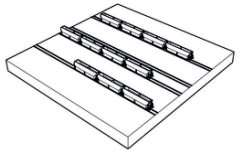
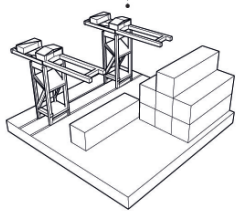
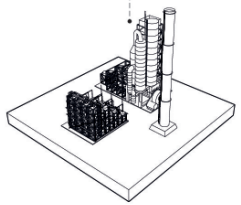
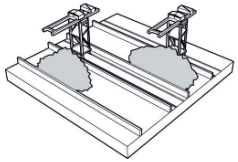
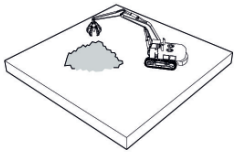
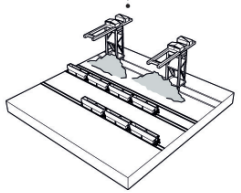
Types of contaminants



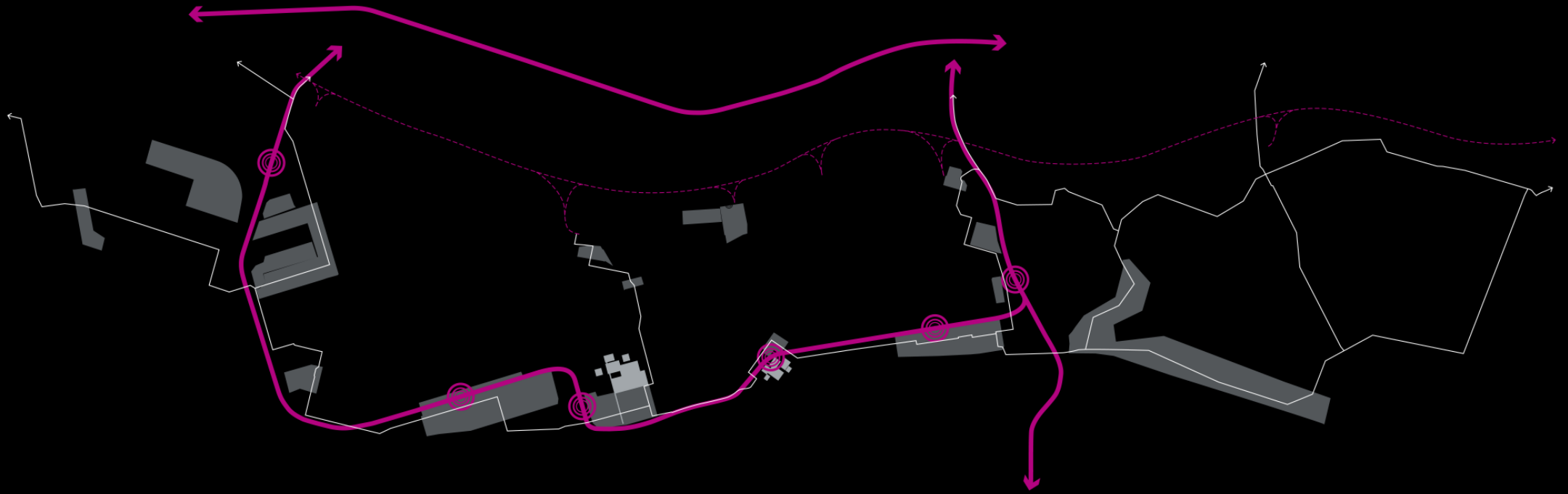
Pollution

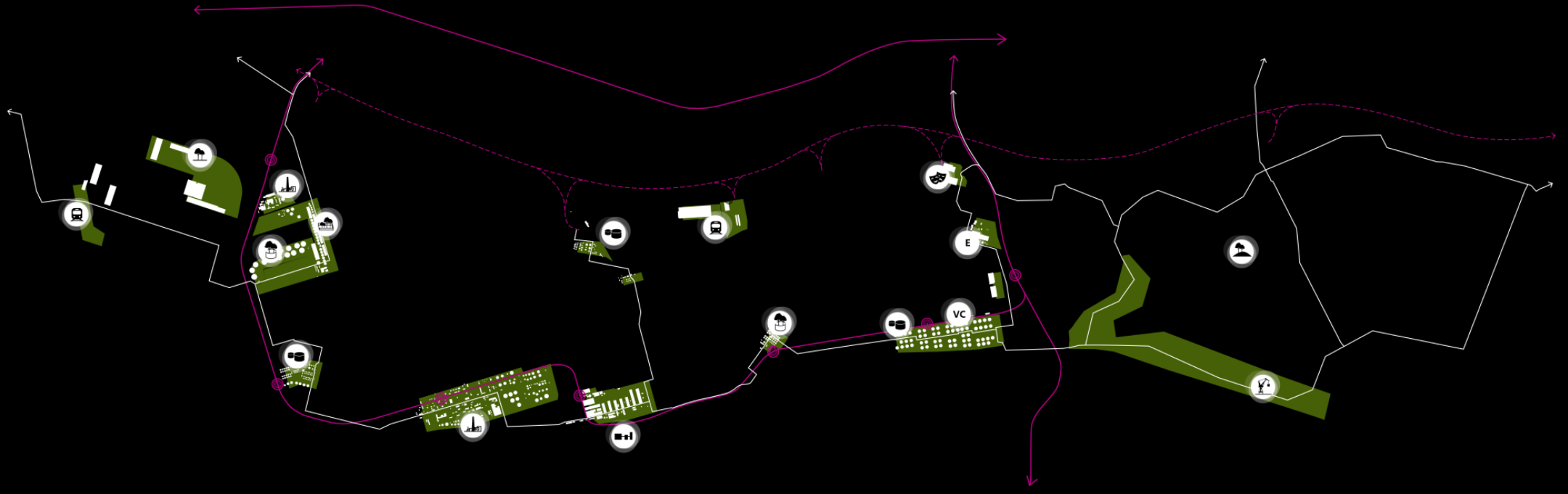
Where and What

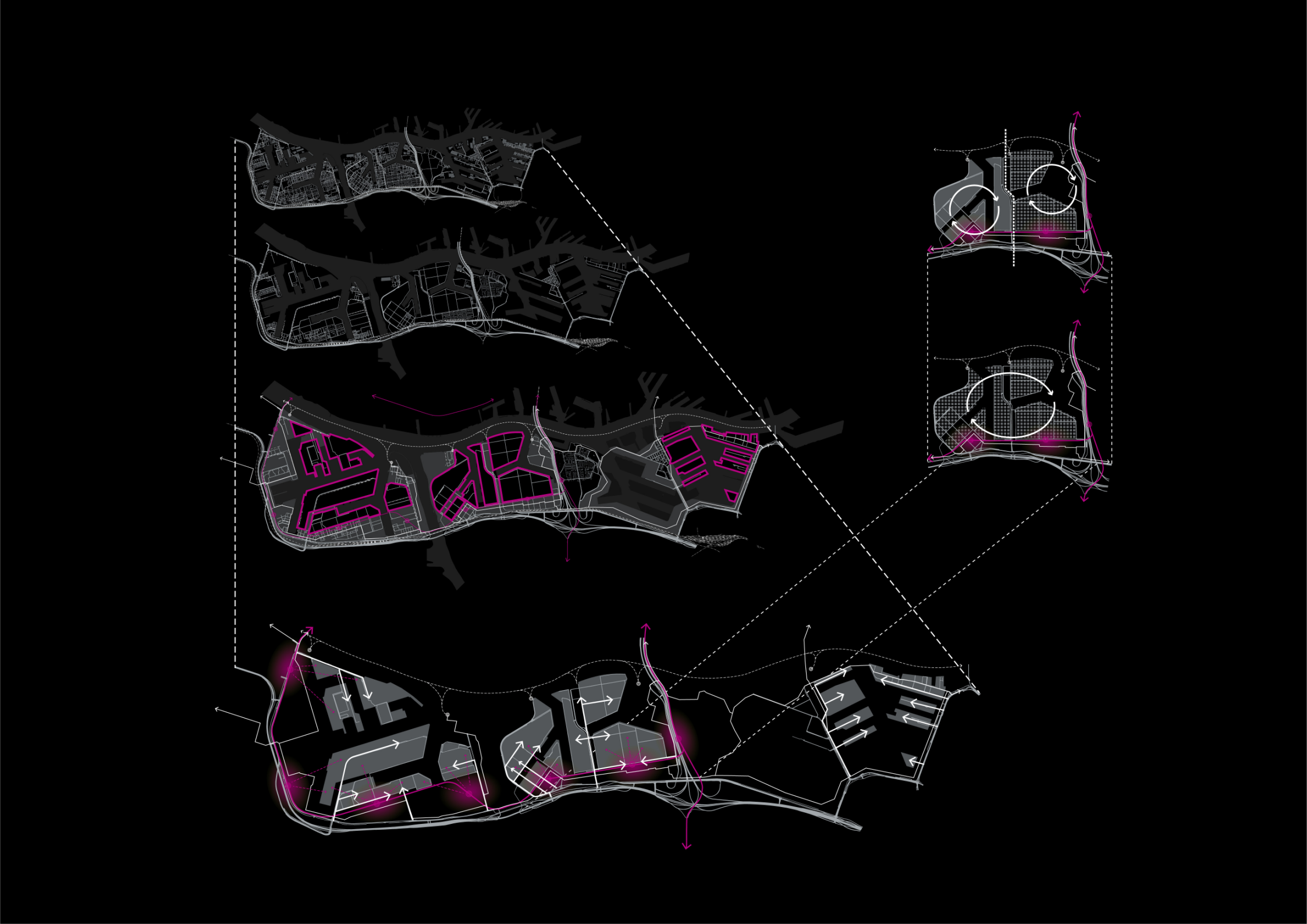


Industrial type	Ware houses/ bulk terminals	Chemical plants	Bulk storage (coal)	Recycling depots	Railyards
Area	13 km²	17 km²	1 km²	2 km²	40 km (main rail route)
Major operations					
					
Contaminants	Petroleum	Petroleum	Heavy metals	Petroleum Heavy metals	Petroleum Heavy metals

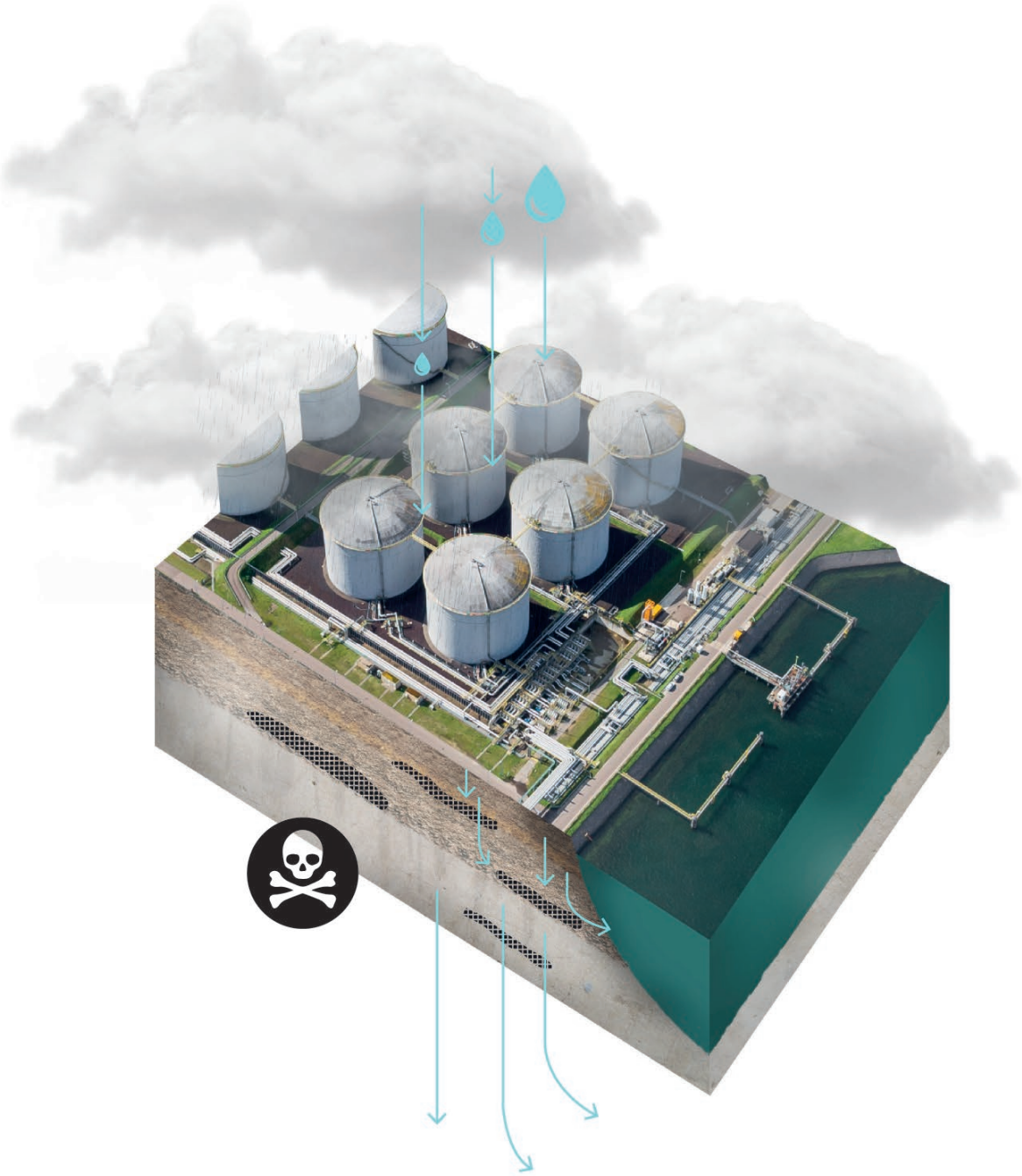

0-1m
>1m
Legend
Heavily polluted
Moderate polluted
Lightly polluted
Very lightly polluted




E
VC



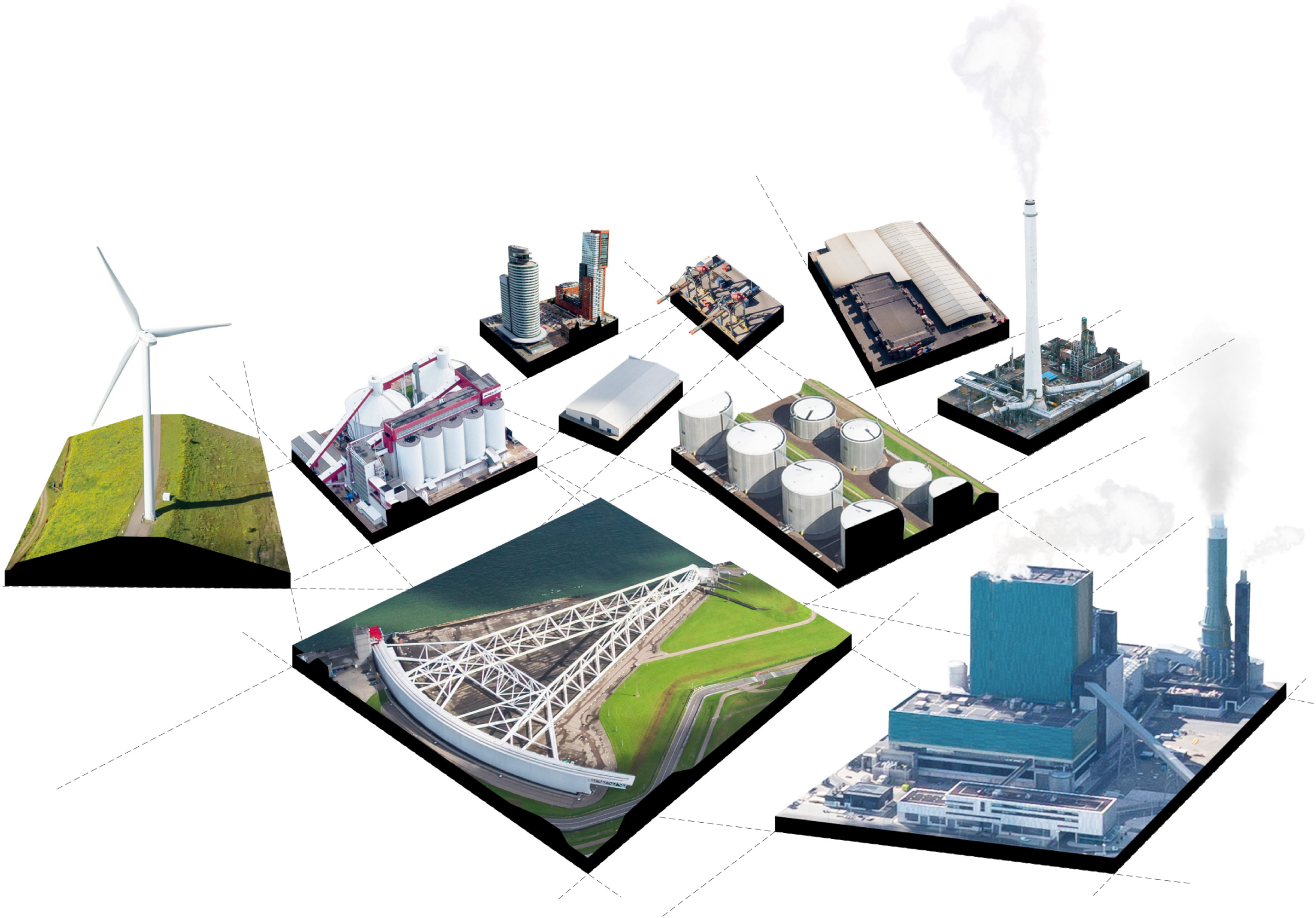

IC
IC
VC
E
IN
1:25.000
0m
1000m

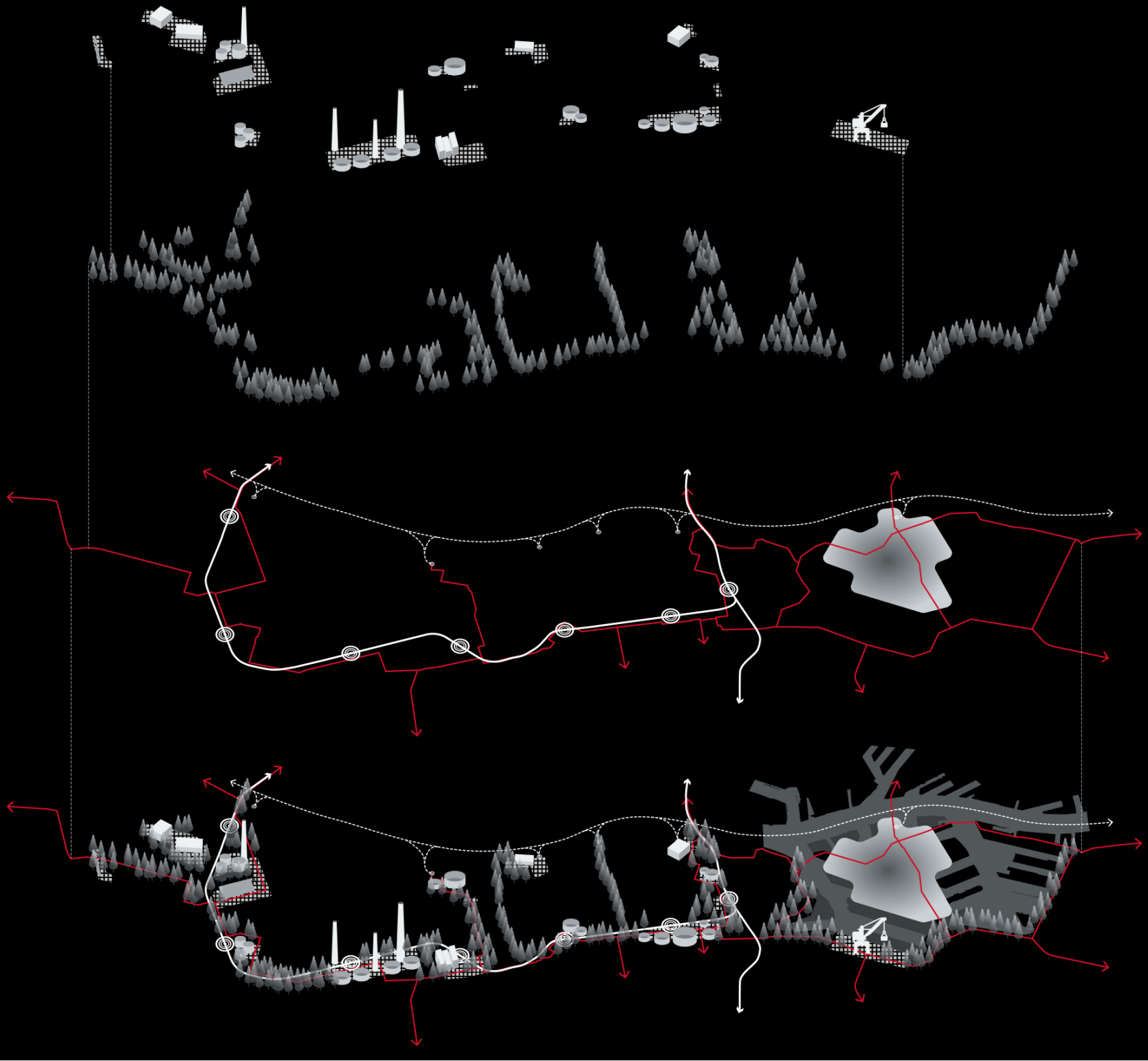


Clay
Natural: wet

Sand/clay
Natural: dry

Peat
Natural: very wet

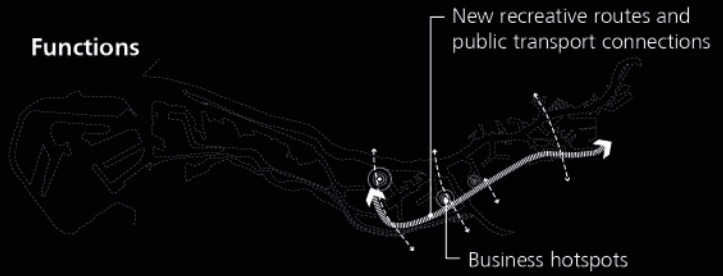


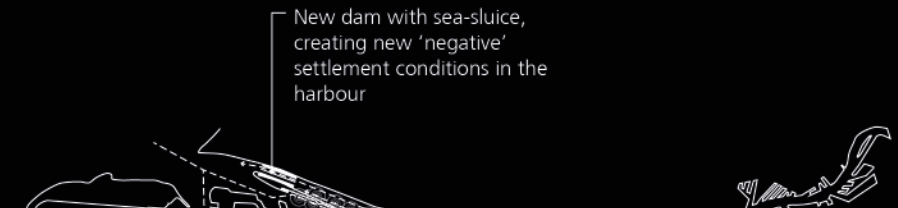


phase 1
2020>

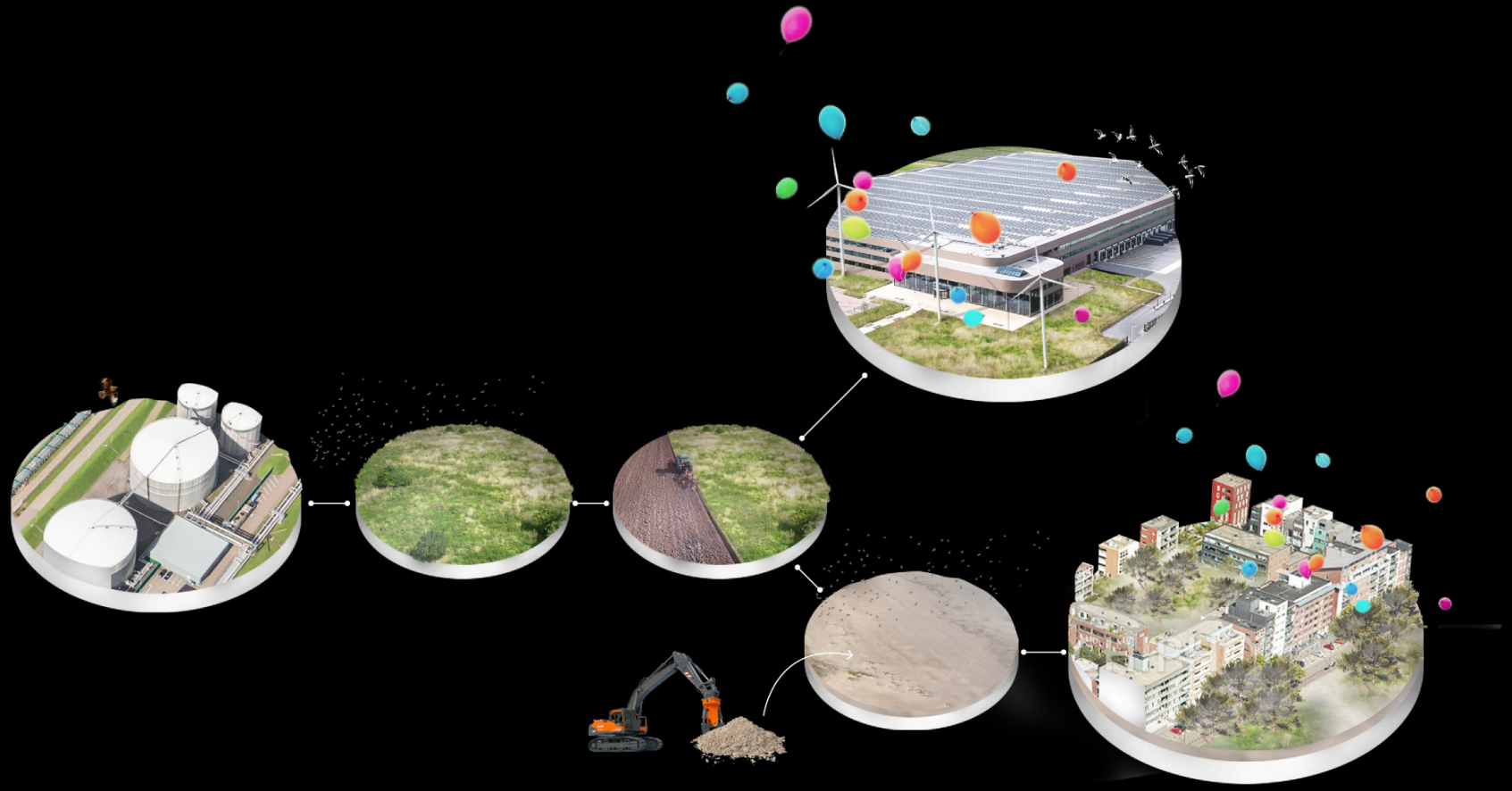
Zoning

Functions





Water system



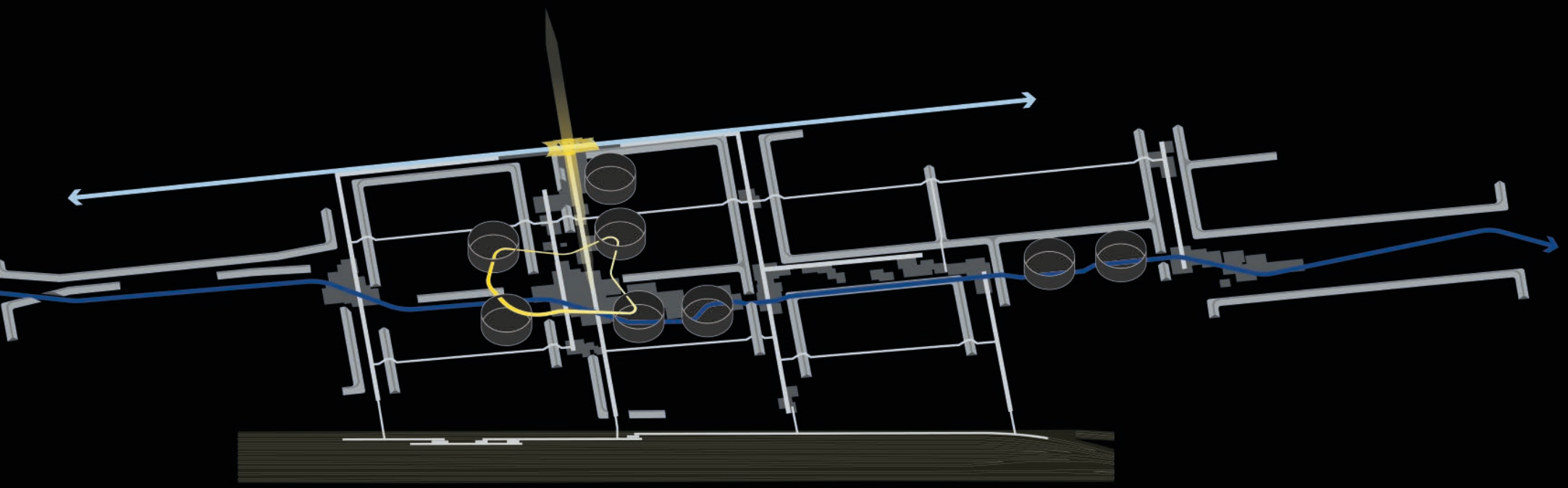
Current situation

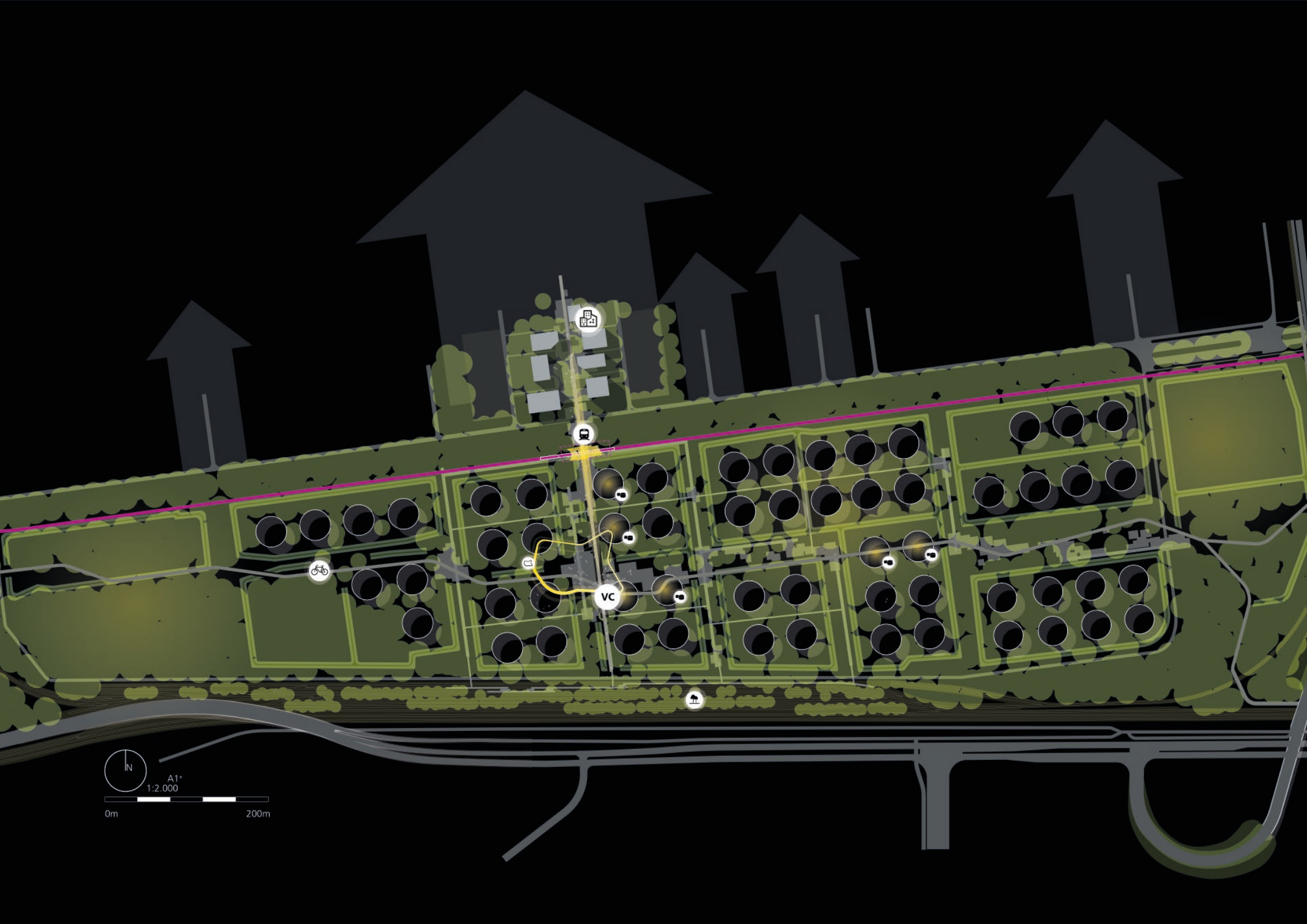
Vegetation cleans shallow pollution

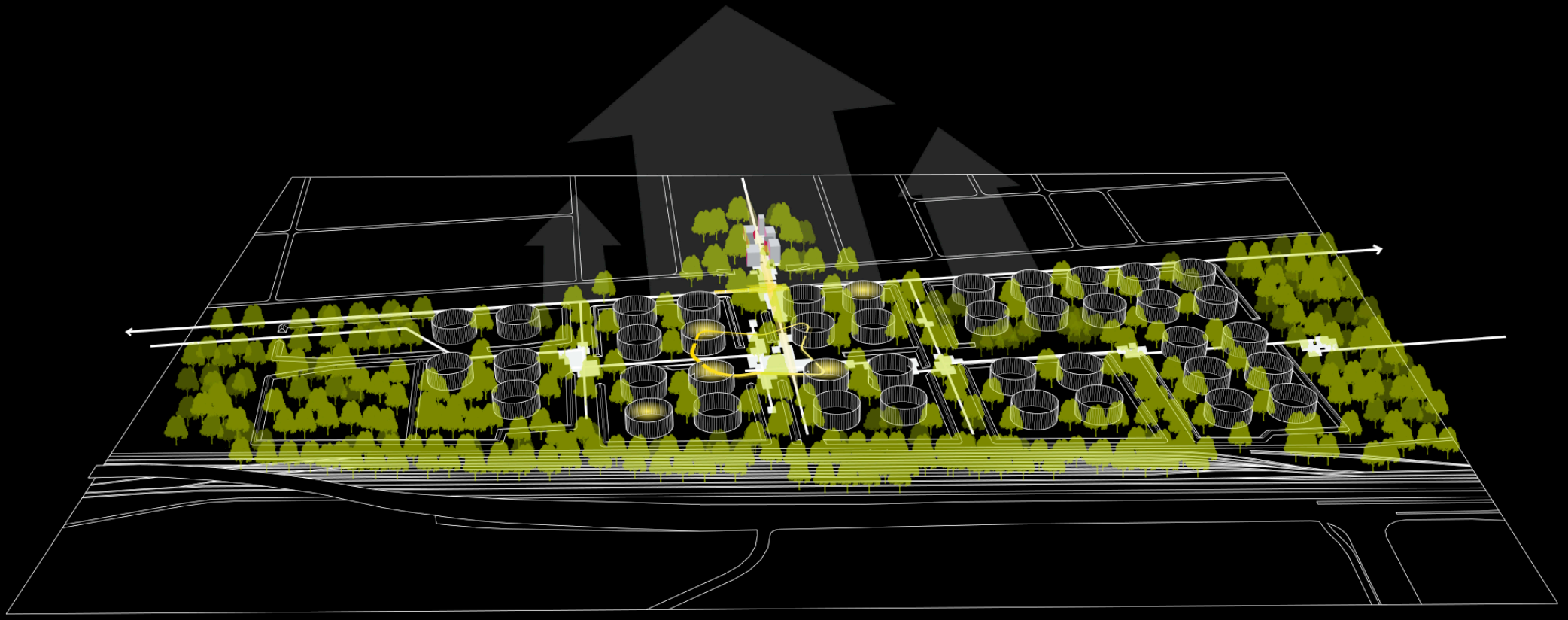
Soil preparations for development

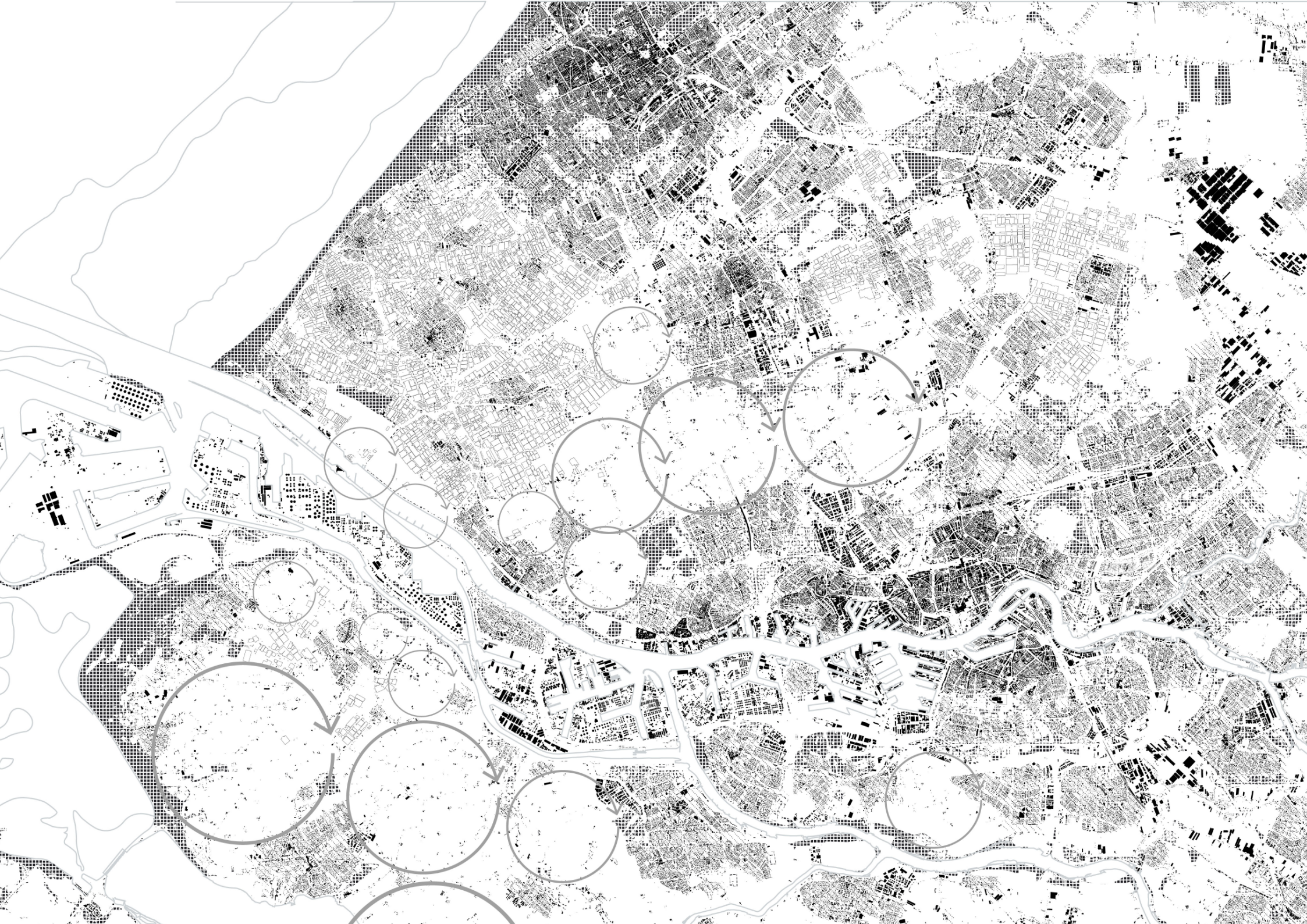
The remediation strategy is based on the program type that is chosen. If the program is industry, no additional steps are necessary. If the program is urban, a two metre 'life layer' of sand needs to be added.

Finished situation




VC
N
A1+
1:2.000
0m
200m



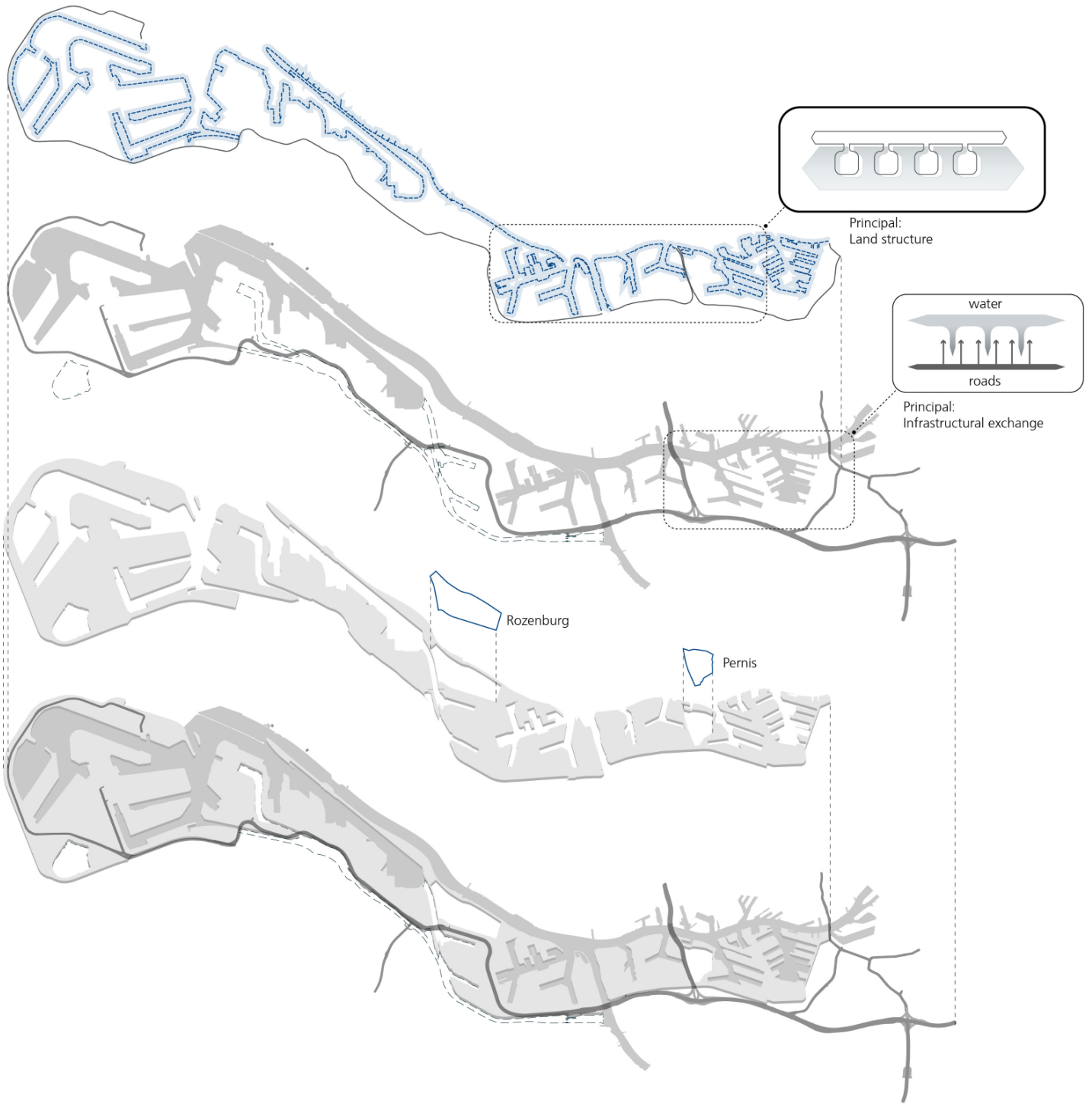


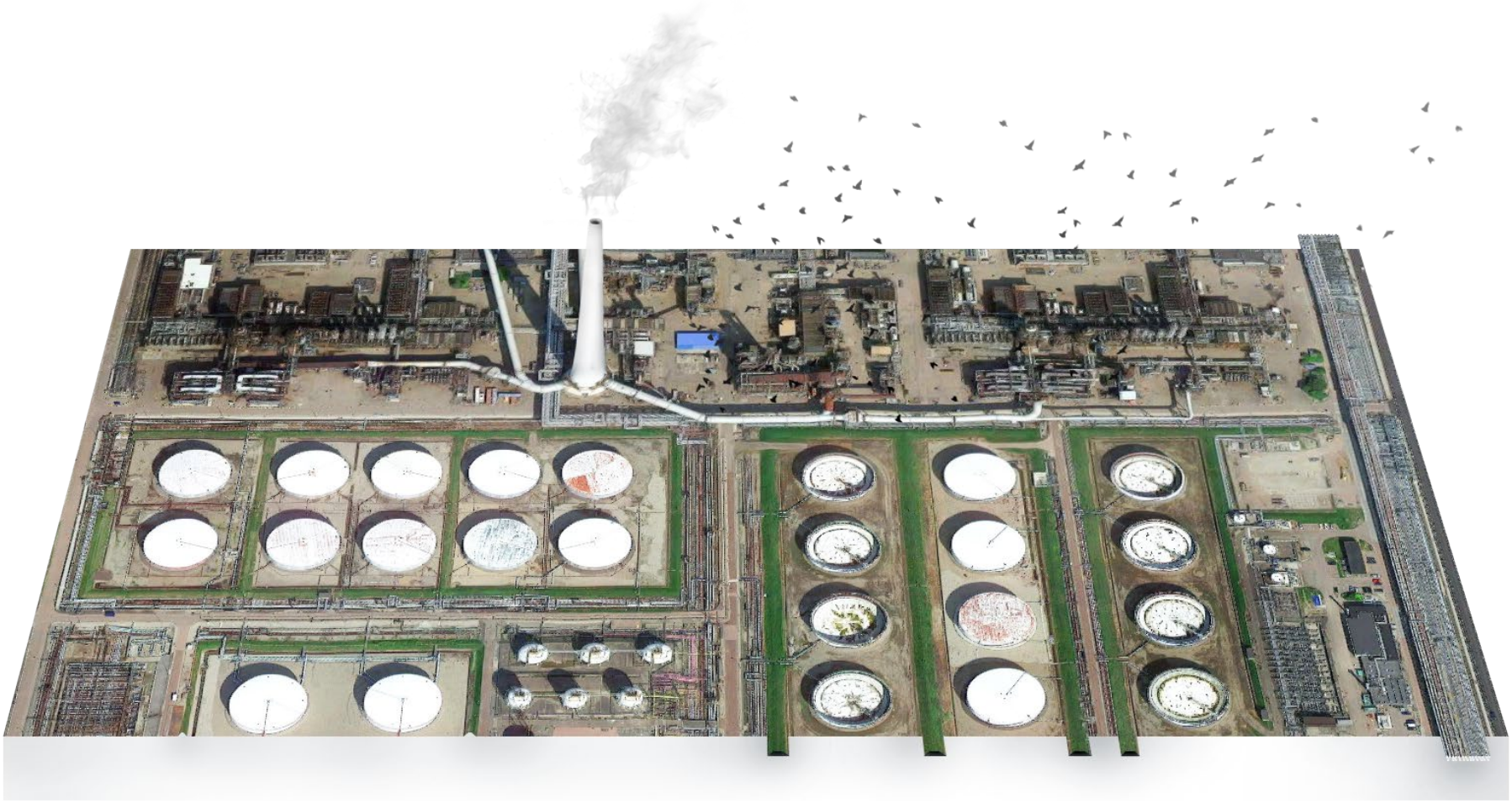
4 Water dictates
Image showing the main water and road edges. Clearly visible is that the water bodies carve into the harbour landscape.

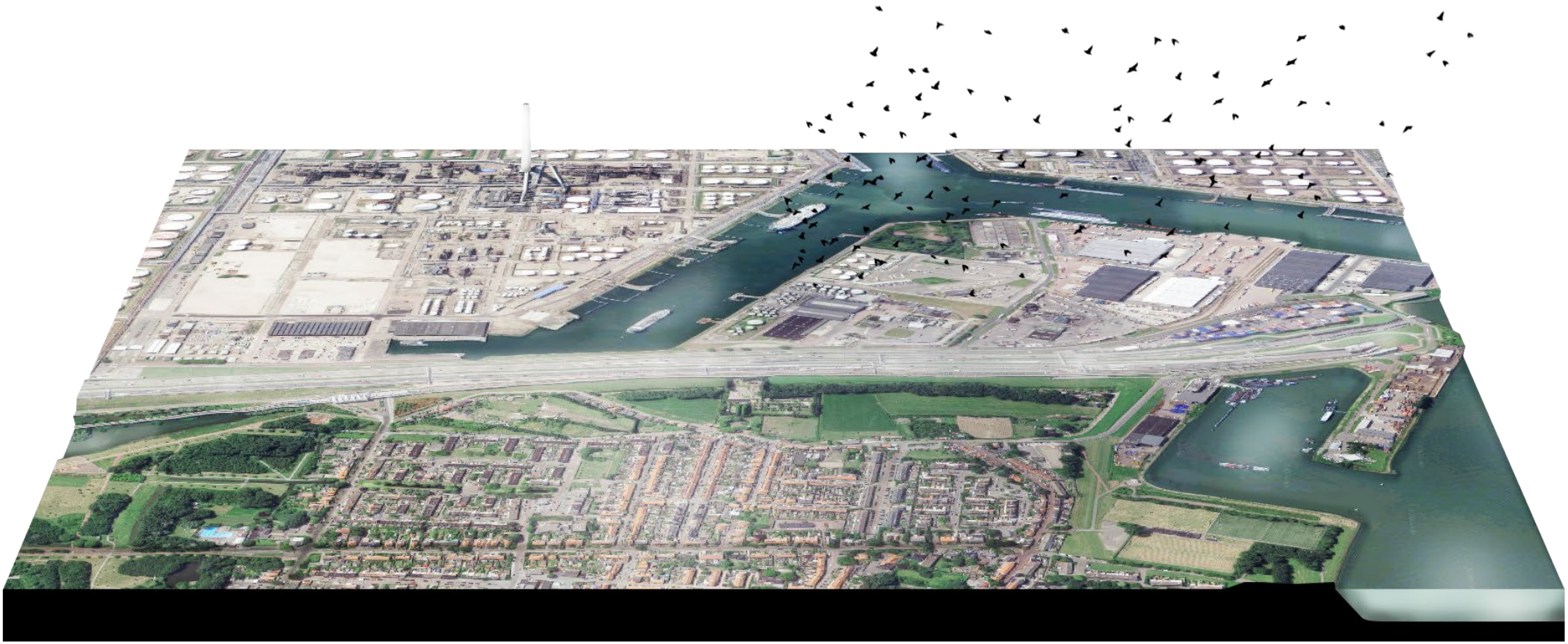
3 Water and roads
The water and road infrastructure is highly intertwined.

2 The underground
The harbour area was raised 5 metres, creating a blank new underground. The existing villages where not raised.

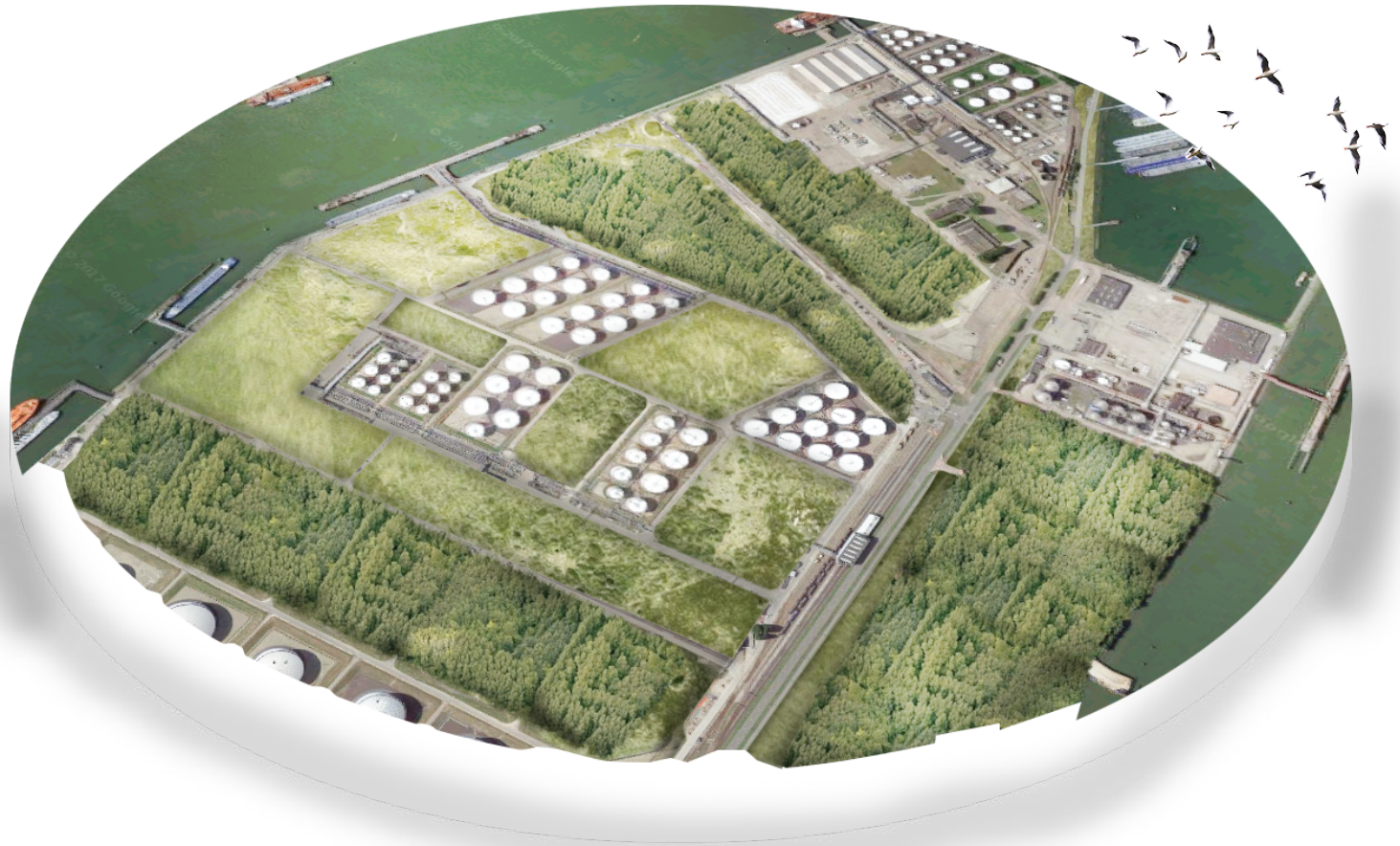
1 The basic landscape structures
that make the harbour landscape

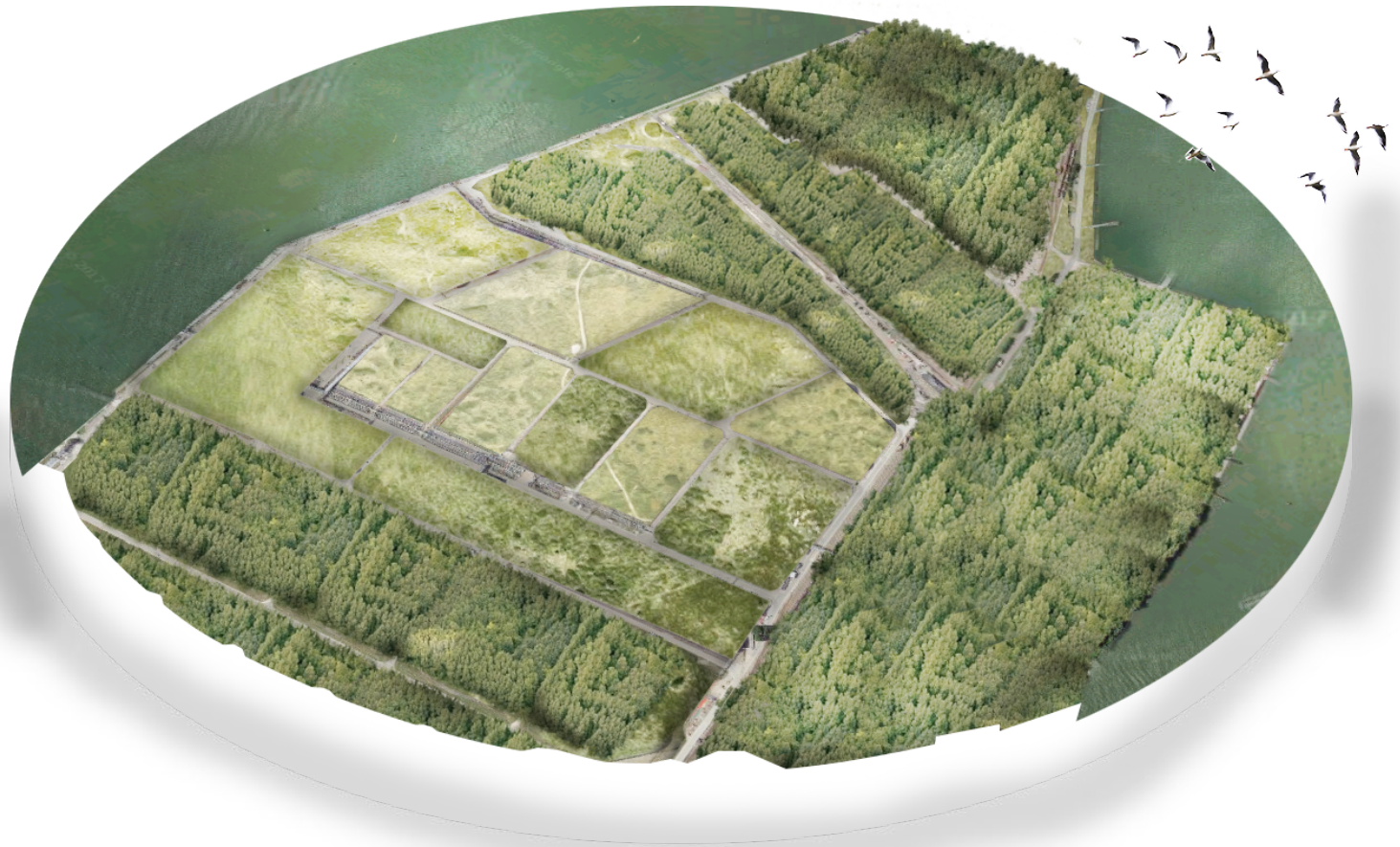


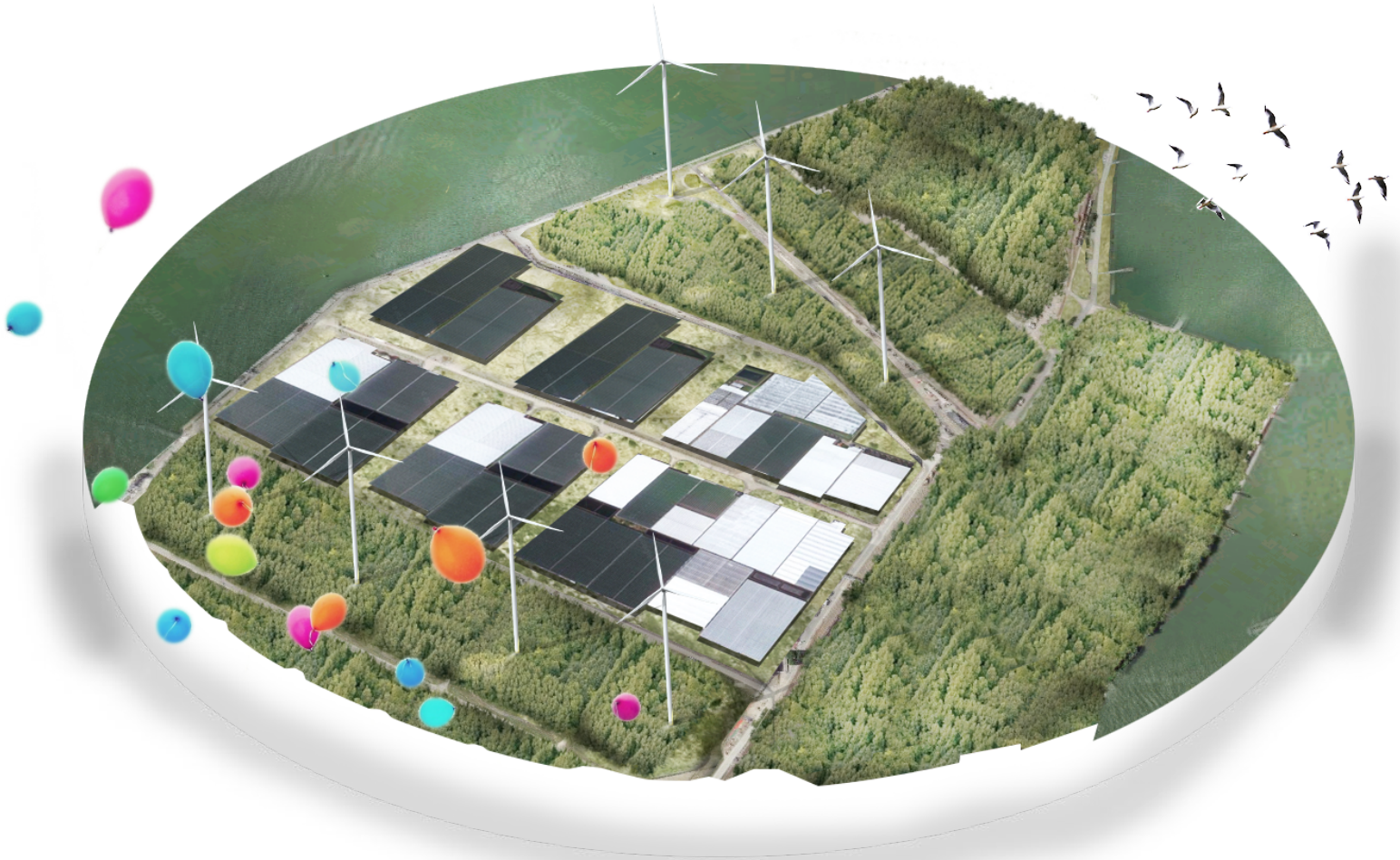





Urban








ODFJELL
MALA'S
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ODFJELL
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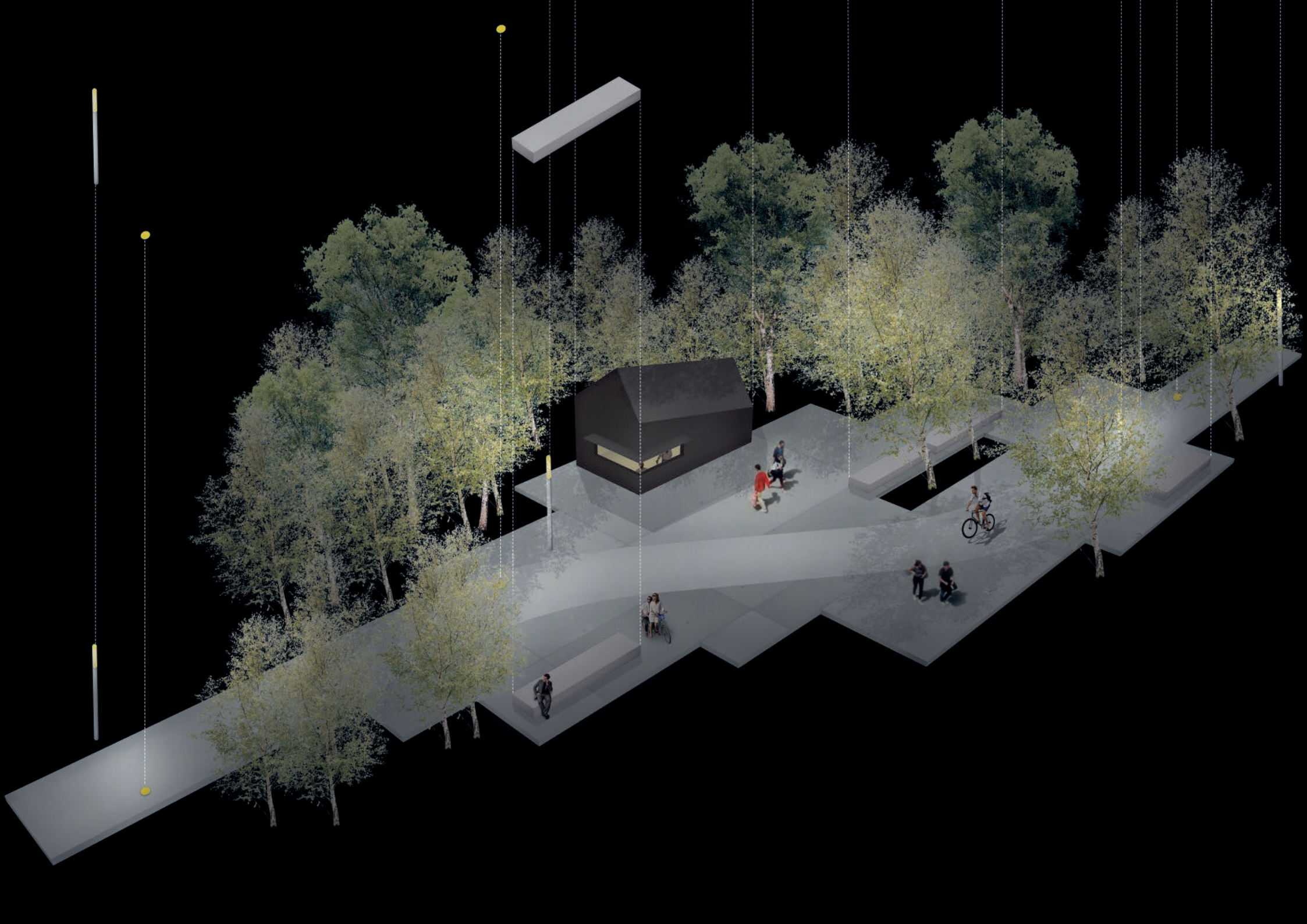
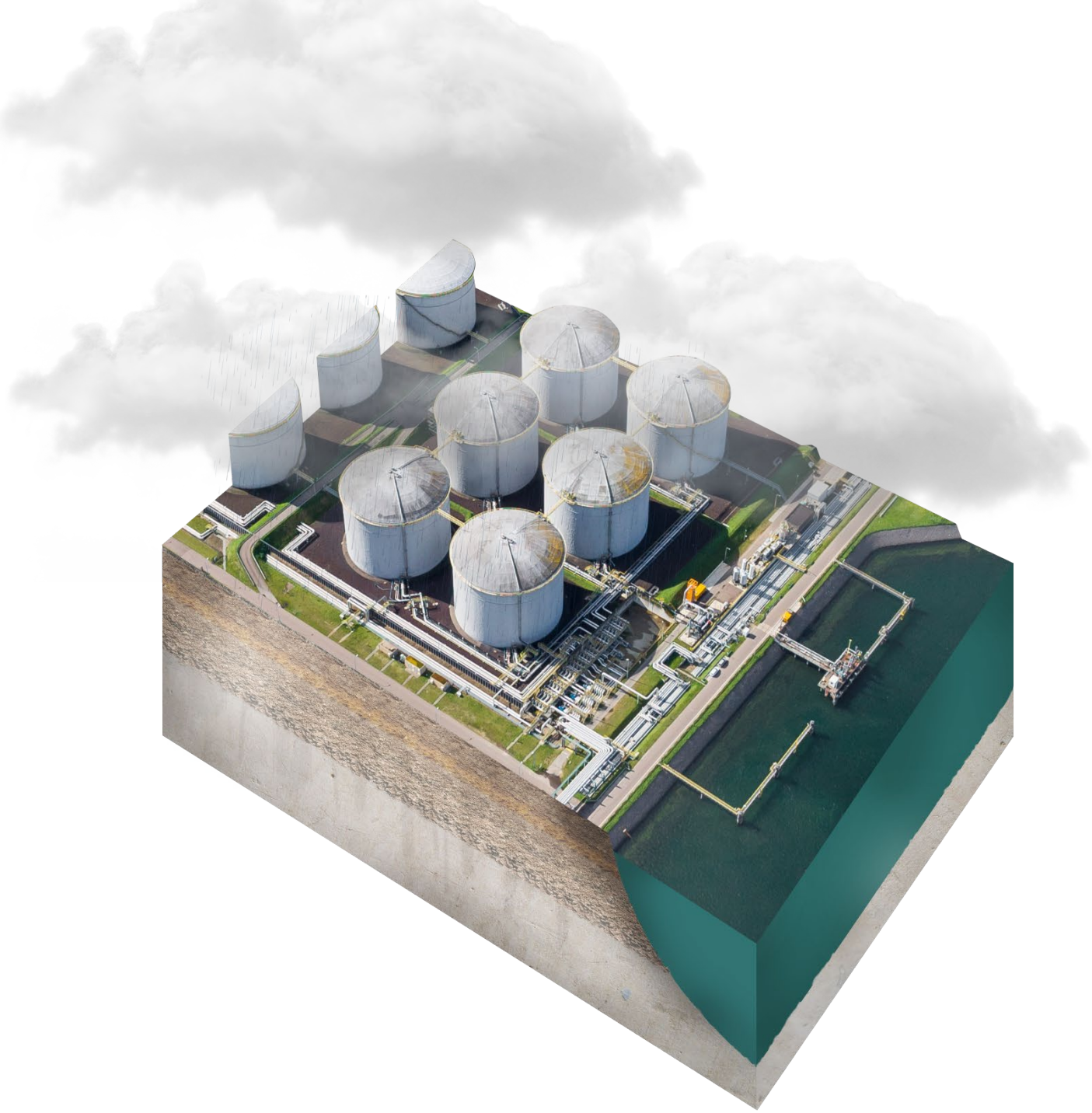
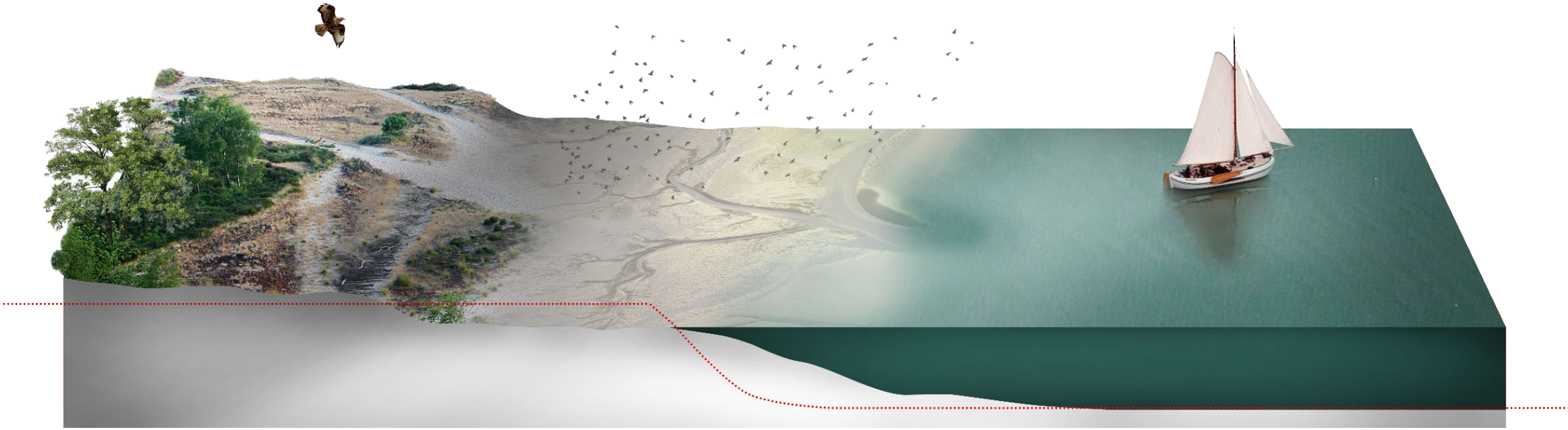
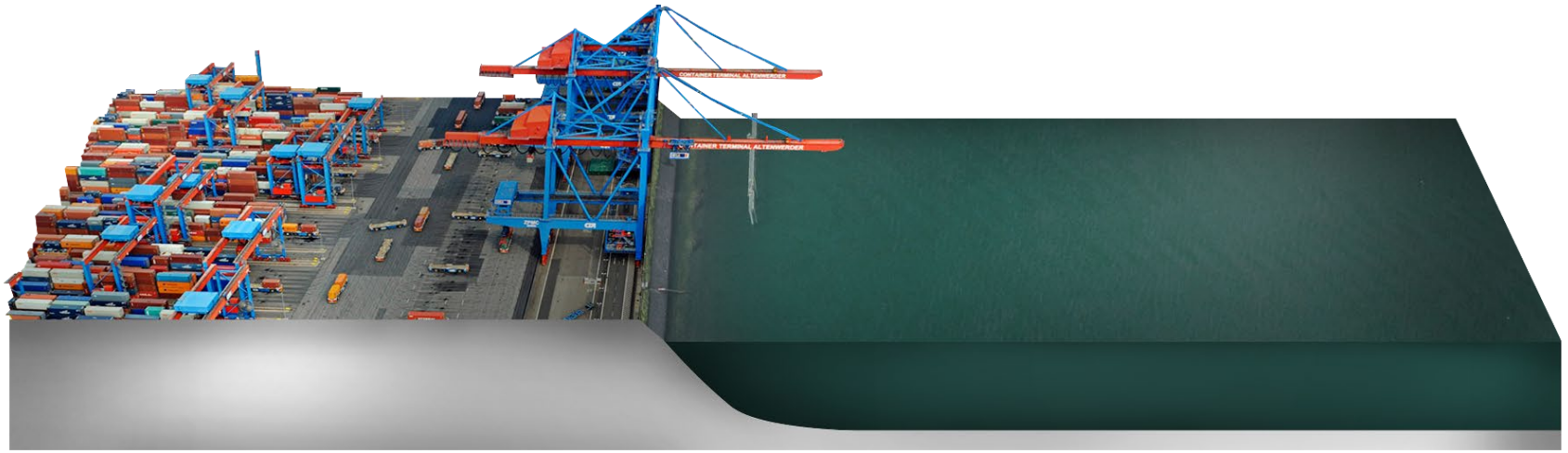
WATER TAXI
RET

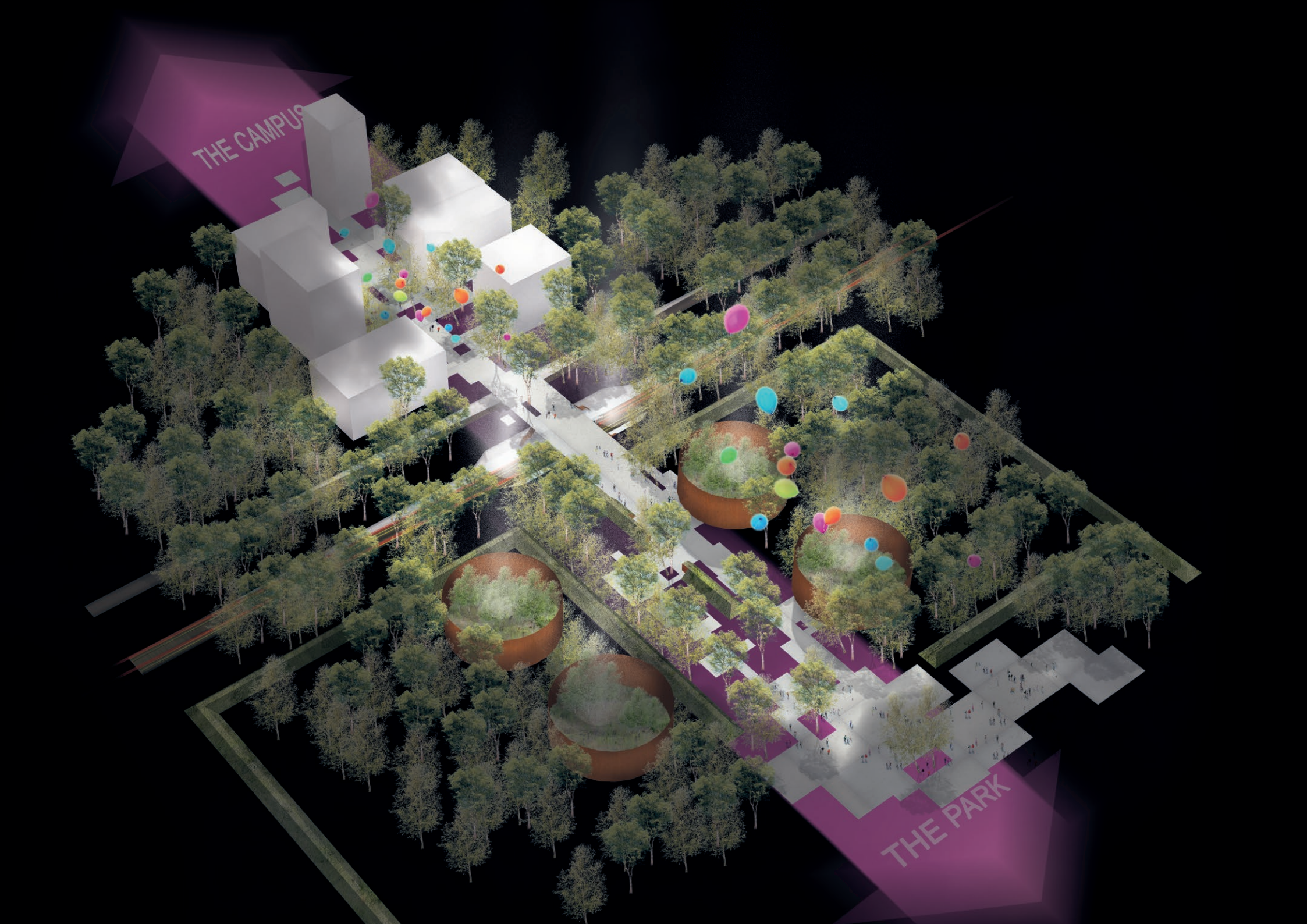


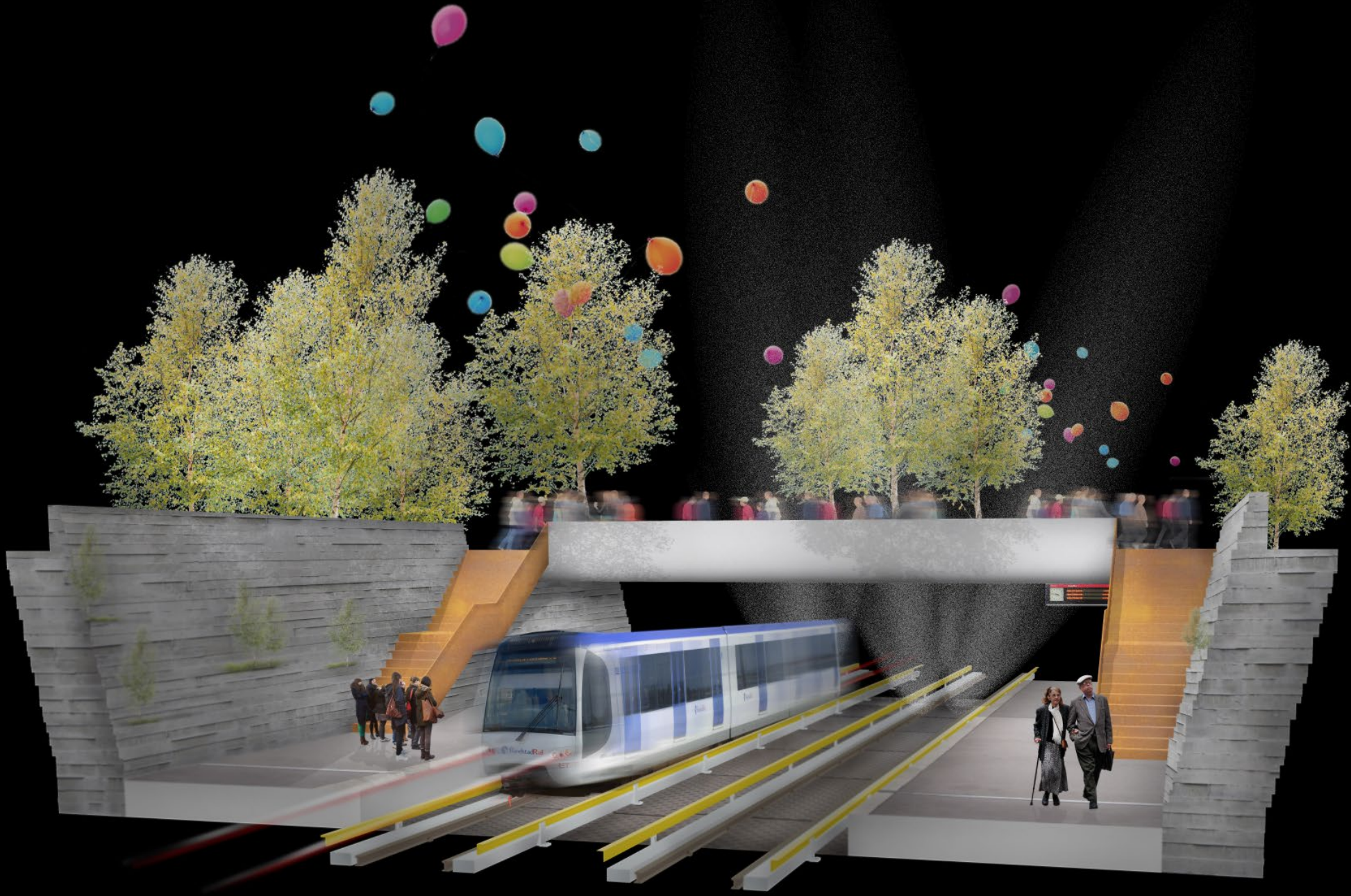





CONTAINER TERMINAL ALTENWERDER


SHELL
SPARK


THE CAMPUS
THE PARK




1000M
SHELL
PARK