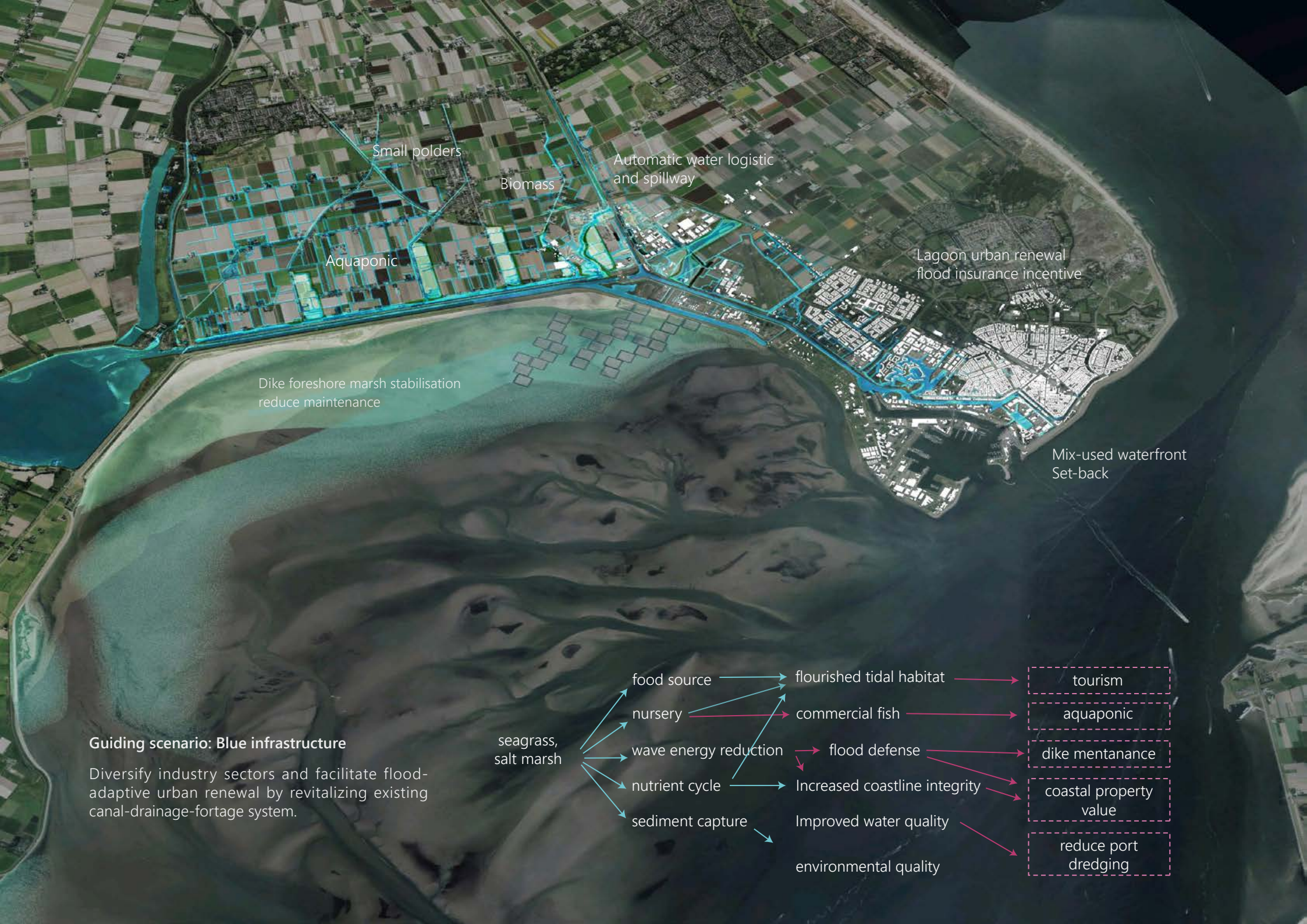
Natural Base: hydraulic forces + tidal ecosystem

Den Helder is an experimental habitat at the edge of Netherlands and Wadden Sea. Its urban development leverages on ecosystem services and flexibly adapts to hydro dynamics – sometimes shrinking and sometimes extensive.

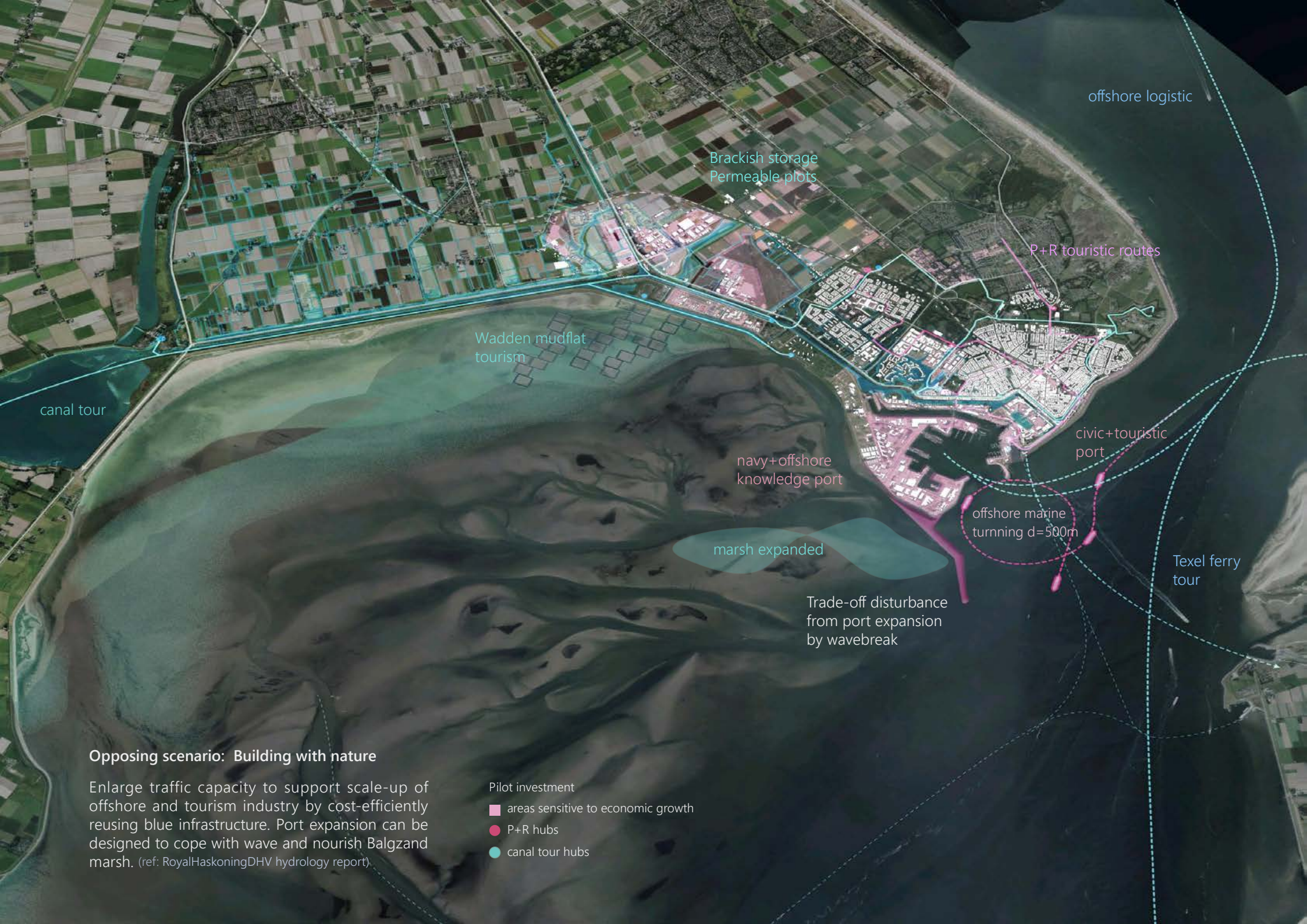
Utilizing scenario: Mud motor

Generated by dredging and drainage, the mud motor operates as systematic management over sediments, flood, ecosystem conservation and productivity, by a sequence of marsh, de-poldered detention basins and idle perneable plots.



Guiding scenario: Blue infrastructure

Diversify industry sectors and facilitate flood-adaptive urban renewal by revitalizing existing canal-drainage-fortage system.

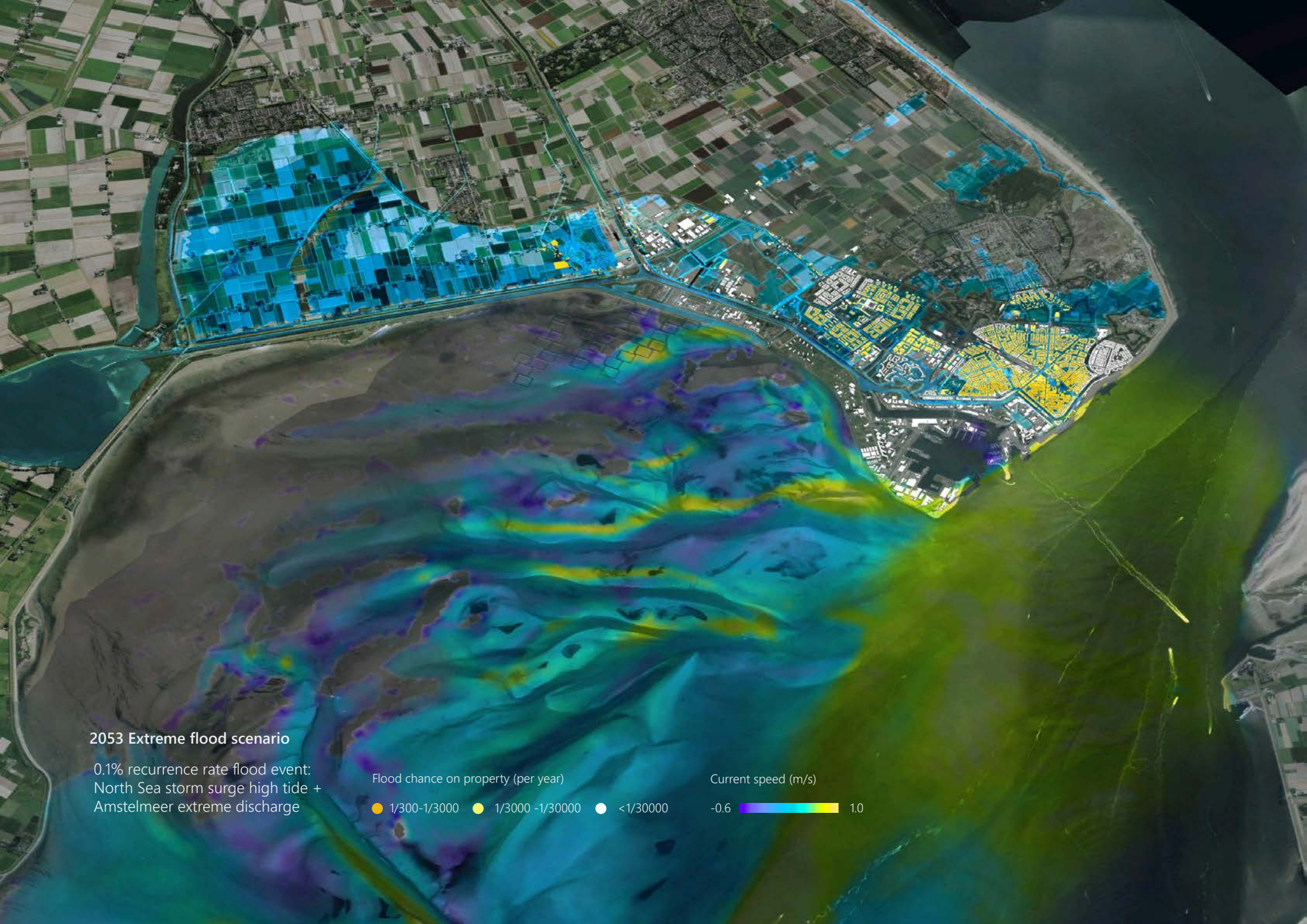


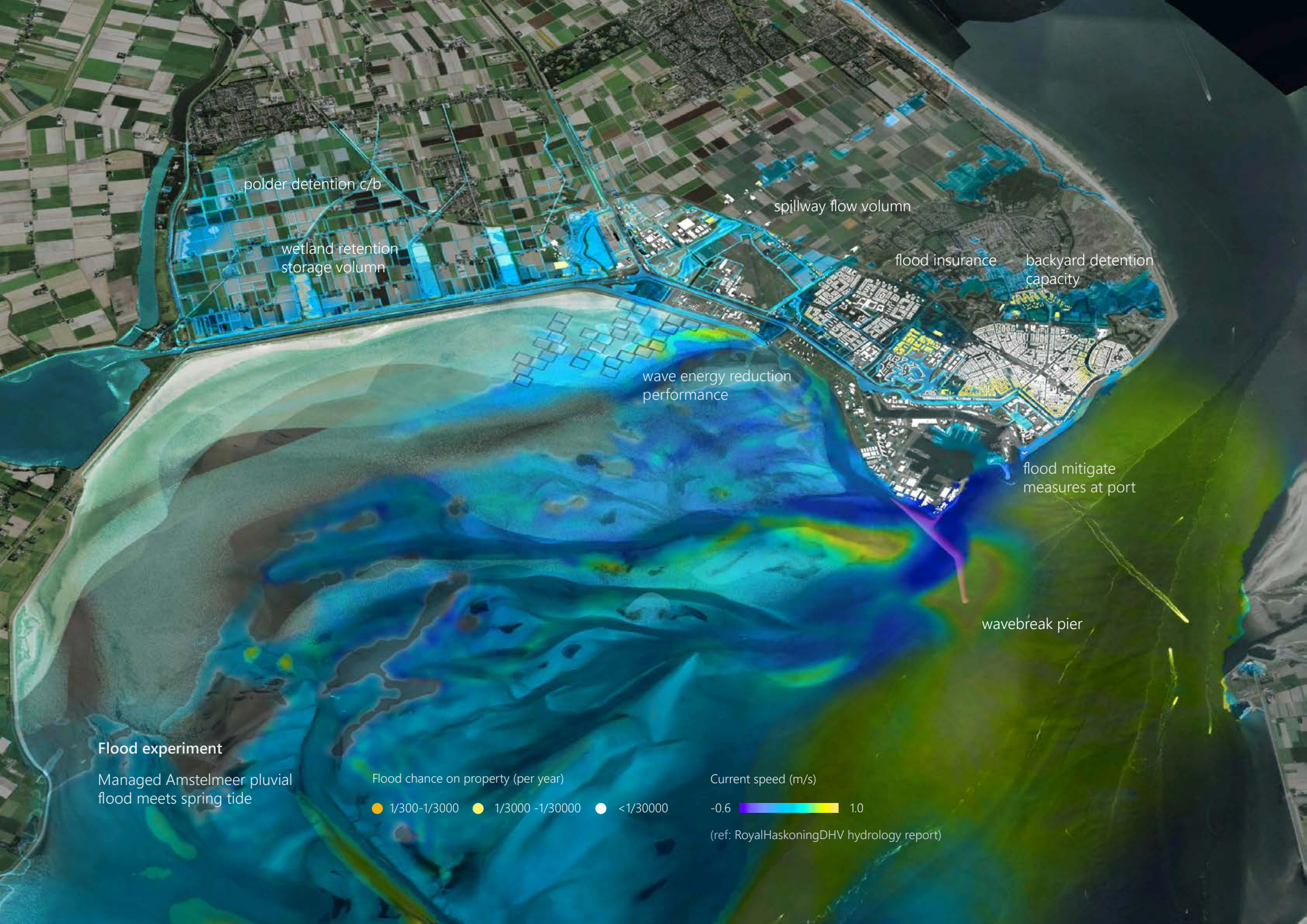
Opposing scenario: Building with nature

Enlarge traffic capacity to support scale-up of offshore and tourism industry by cost-efficiently reusing blue infrastructure. Port expansion can be designed to cope with wave and nourish Balgzand marsh. (ref: RoyalHaskoningDHV hydrology report)

Pilot investment

- areas sensitive to economic growth
- P+R hubs
- canal tour hubs


2053 Extreme flood scenario
0.1% recurrence rate flood event:
North Sea storm surge high tide +
Amstelmeer extreme discharge
Flood chance on property (per year)
1/300-1/3000
1/3000 -1/30000
<1/30000
Current speed (m/s)
-0.6
1.0


polder detention c/b
wetland retention
storage volumn
spillway flow volumn
flood insurance
backyard detention
capacity
wave energy reduction
performance
flood mitigate
measures at port
wavebreak pier
Flood experiment
Managed Amstelmeer pluvial
flood meets spring tide
Flood chance on property (per year)
1/300-1/3000
1/3000 -1/30000
<1/30000
Current speed (m/s)
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(ref: RoyalHaskoningDHV hydrology report)