NEW ALMERE RECOVERING MARKERMEER

MSc Thesis
Landscape Architecture

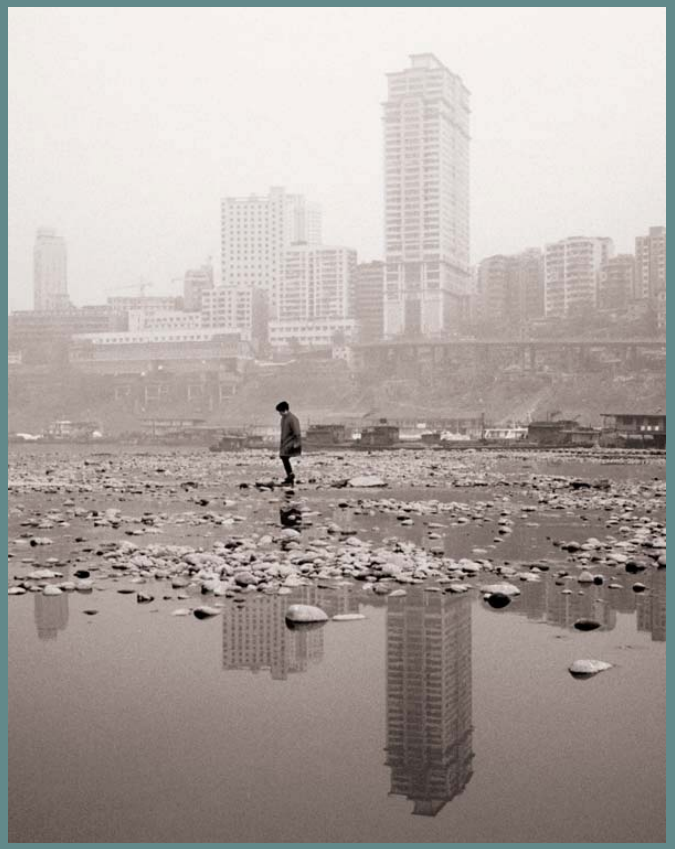
Bojan Balen

Wageningen University, October 2009

Global context

- Rapid increase of urban population (in 2050, 69% of population will be urban)
- Population pressure on coastal areas (currently – 30 – 50% of people lives within 100km of the coastline)

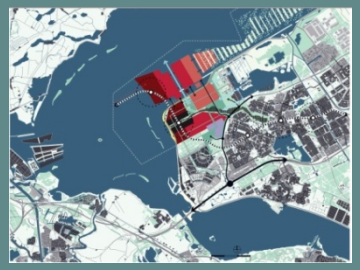
"The growth of cities will be the single largest influence on development in the 21st century." (UN Population fund, 1996)



Martine 2007

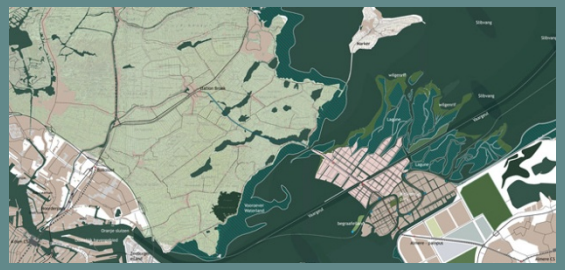
Local context

- Population pressure on Randstad area
- By 2030 Almere wants to double its population
- Intentions of urban expansion into Markermeer



SAMM, 2009

Koolhaas and Marcus, 2006



West 8, 2006

Markermeer's ecological issue

- Area of Markermeer falls under protection of NATURA 2000 meaning prohibition of any development that can be disturbing for nature...
- ...at the same time National Spatial Strategy suggests " No, unless..." principle which leaves space for development under special conditions – qualitative input for nature.
- Key factor – current ecological deterioration of Markermeer

Problem statement

The protective status of the lake Markermeer prevents any urban development in the water because of its expected negative influence on ecology. On the other hand, the decline of the main food sources for fauna and consenquently the loss of biodiversity is resulting in continuing deterioration of ecological value of the Markermeer.

Research questions

- Can urban expansion of Almere beyond the dikes be designed in such a way that it can be combined with the target(s) of ecological improvement of the lake? And if so,

- Which landscape-architectonic form can contribute to such an improvement?

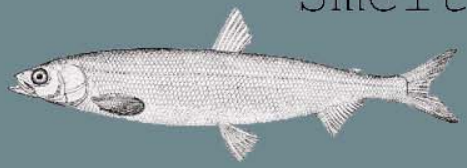
Approach to the issue

- Ecological aspects
- Urban/landscape - archietctonic aspects

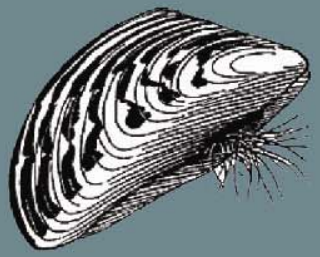
Ecological aspects of Markermeer

- "Mainport" for more than 1% of the world population of migatory birds
- Biodiversity on decline: since 80s there is a rapid decline of qualifaying species – tufted duck, smew, tern and many other species.

Smelt



Zebra mussels

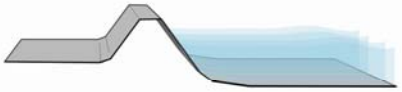


Water plants

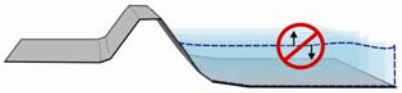
BIRD FOOD ON DECLINE

Hydromorphological pressures

STEEP GRADIENT WATER/LAND



FIXED WATER LEVEL



STOPPED NATURAL FLUSHING

PREVENTING GROWTH OF EMERGENT VEGETATION

INCREASING TURBIDITY AND INCREASING SILT CONCENTRATIONS

POOR LIGHT CONDITIONS **NO UNDERWATER VEGETATIONS**

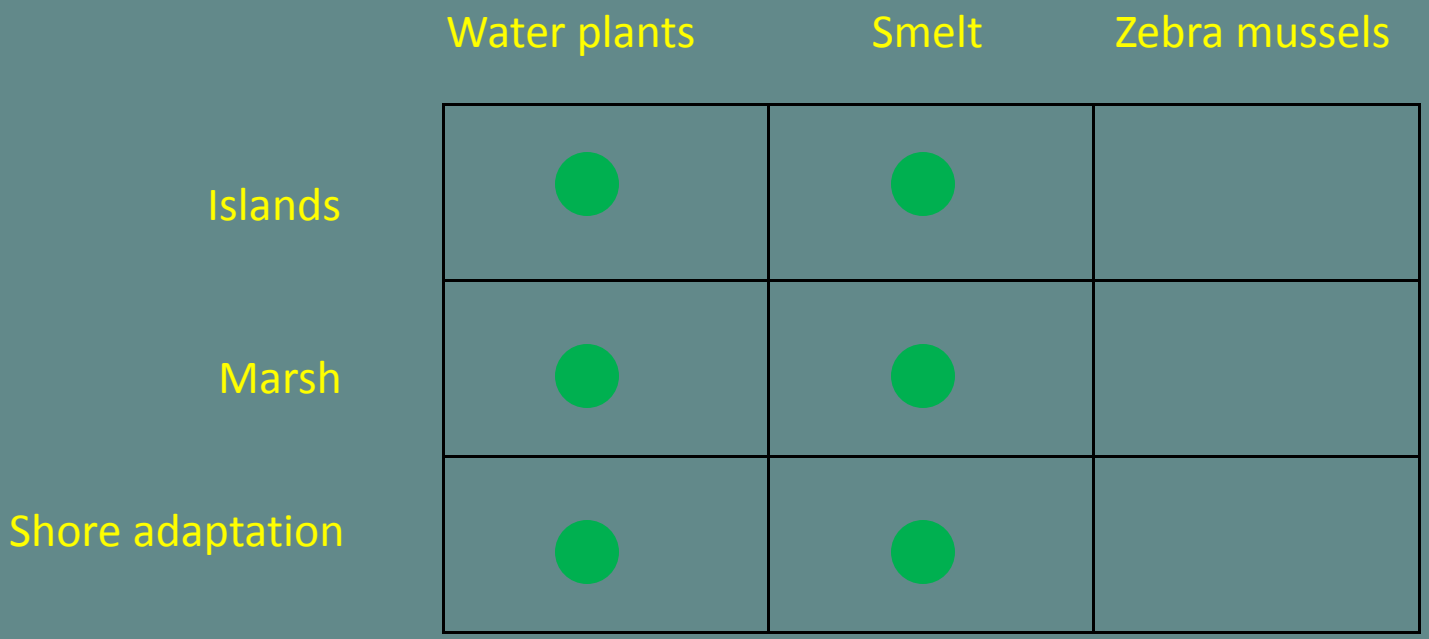
NO HARD SURFACES ON THE BOTTOM **DECREASE OF ZEBRA MUSSELS**

LACK OF GOOD SPAWNING GROUND FOR SMELT **DECREASE OF SMELT**

CLIMATE CHANGE **HIGHER WATER TEMPERATURE**

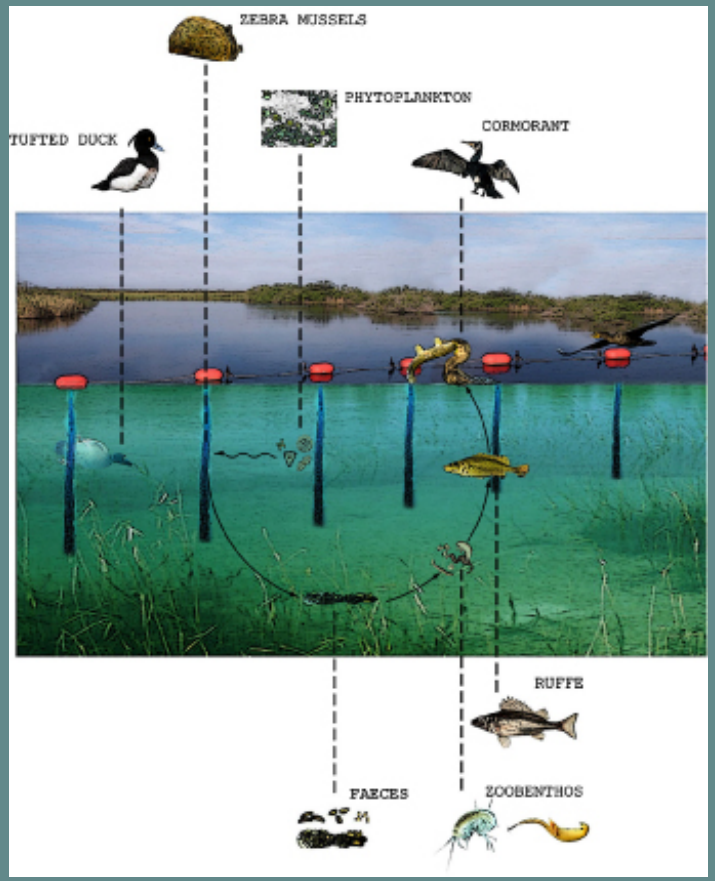
SOLUTIONS:

- Artificial islands
- Marsh development
- Adaptation of the coastline


Water plants
Smelt
Zebra mussels
Islands
Marsh
Shore adaptation

Increasing the amount of artificial solid substrate for zebra mussels attachment by introduction of – *LONG-LINES*

Effects of zebra mussel on lake's ecsystem



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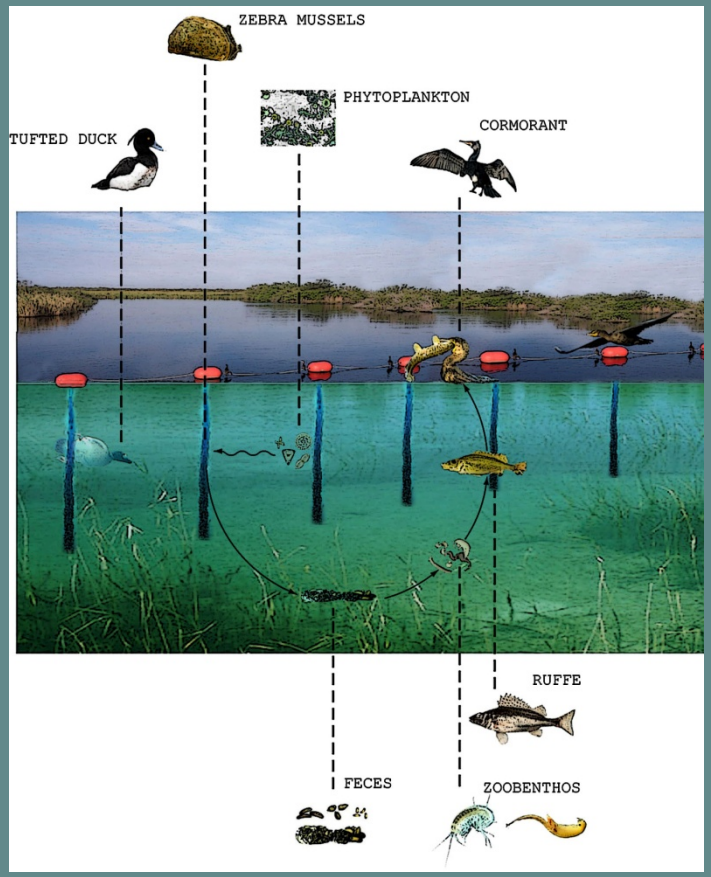


Filtration rate of one mussel = 1 liter of water per day (Stanczykowska, 1977).

In 80s whole population (400 mussels per m2) filtered the lake once or twice a month (Reeders et al., 1989).

Urban/landscape-architectonic aspects

Based on Catharine Dee's morphological elements (adopted and modified from Lynch's "Image of the City")

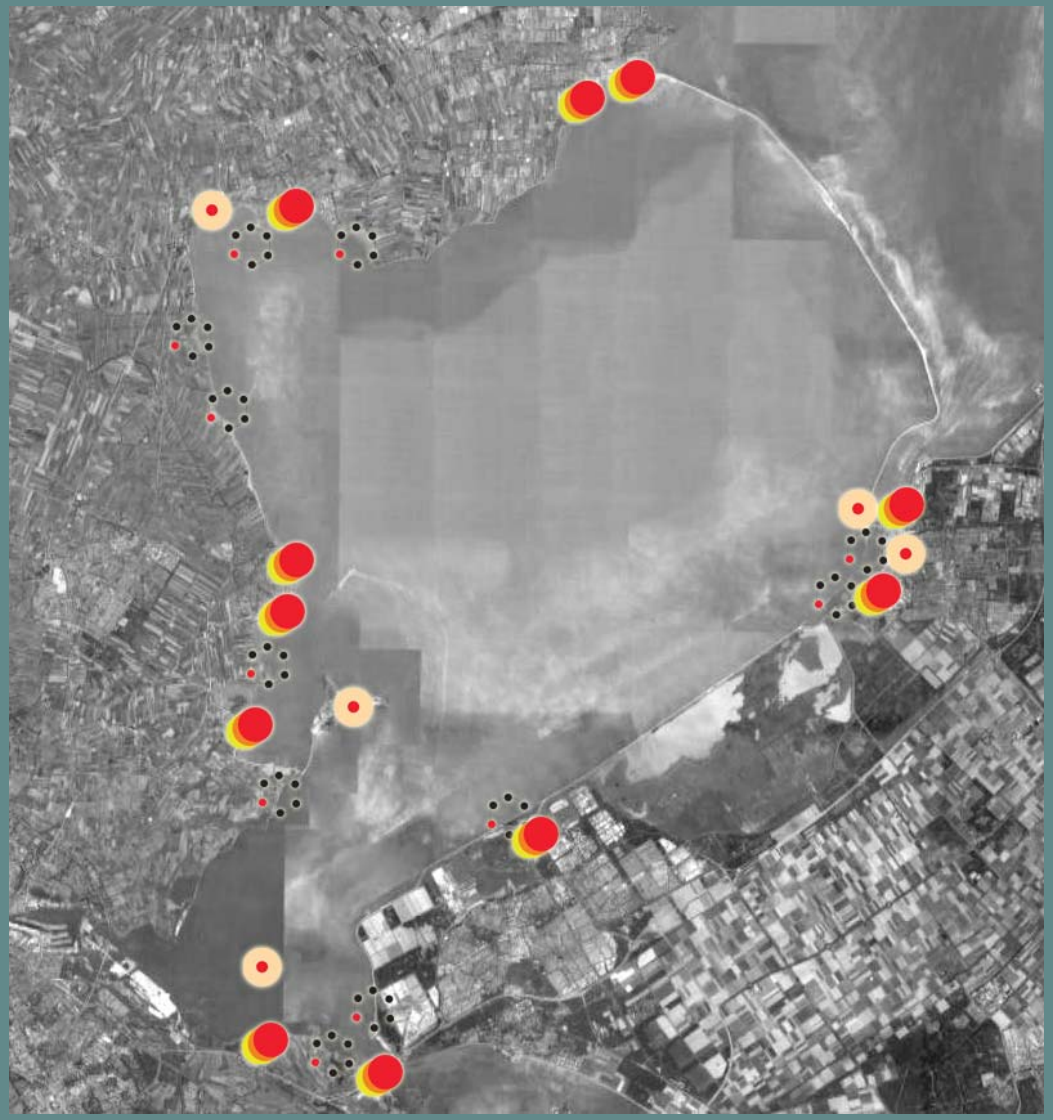
- Edge
- Foci
- Threshold
- Spaces
- Paths

Paths

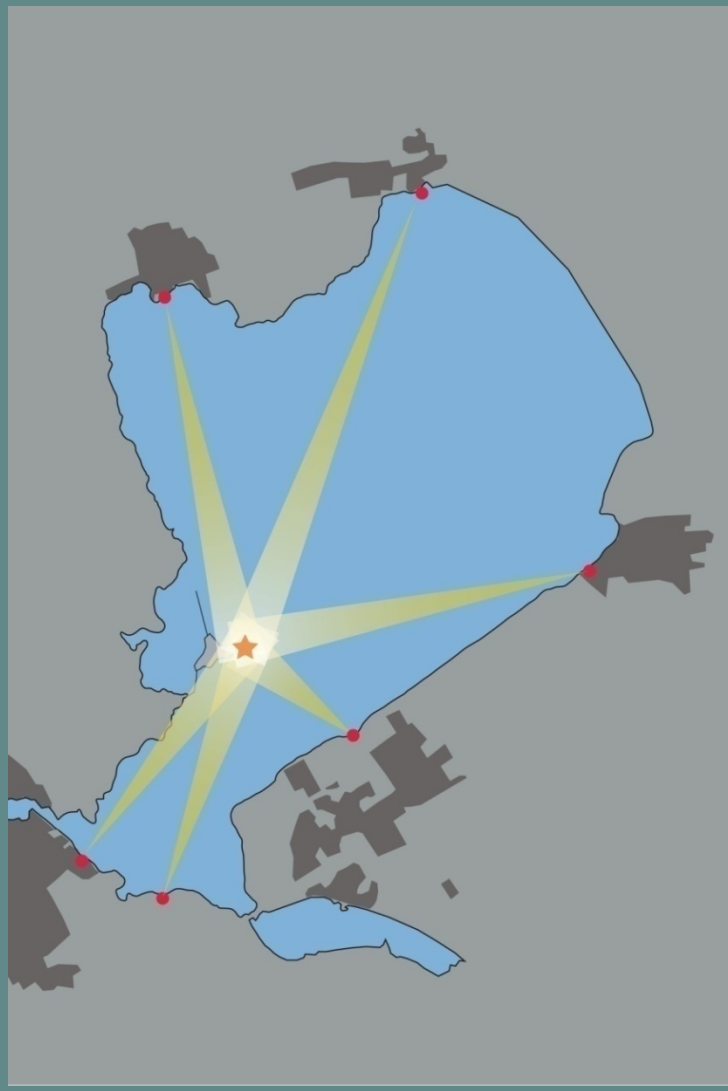
Spaces

Thresholds

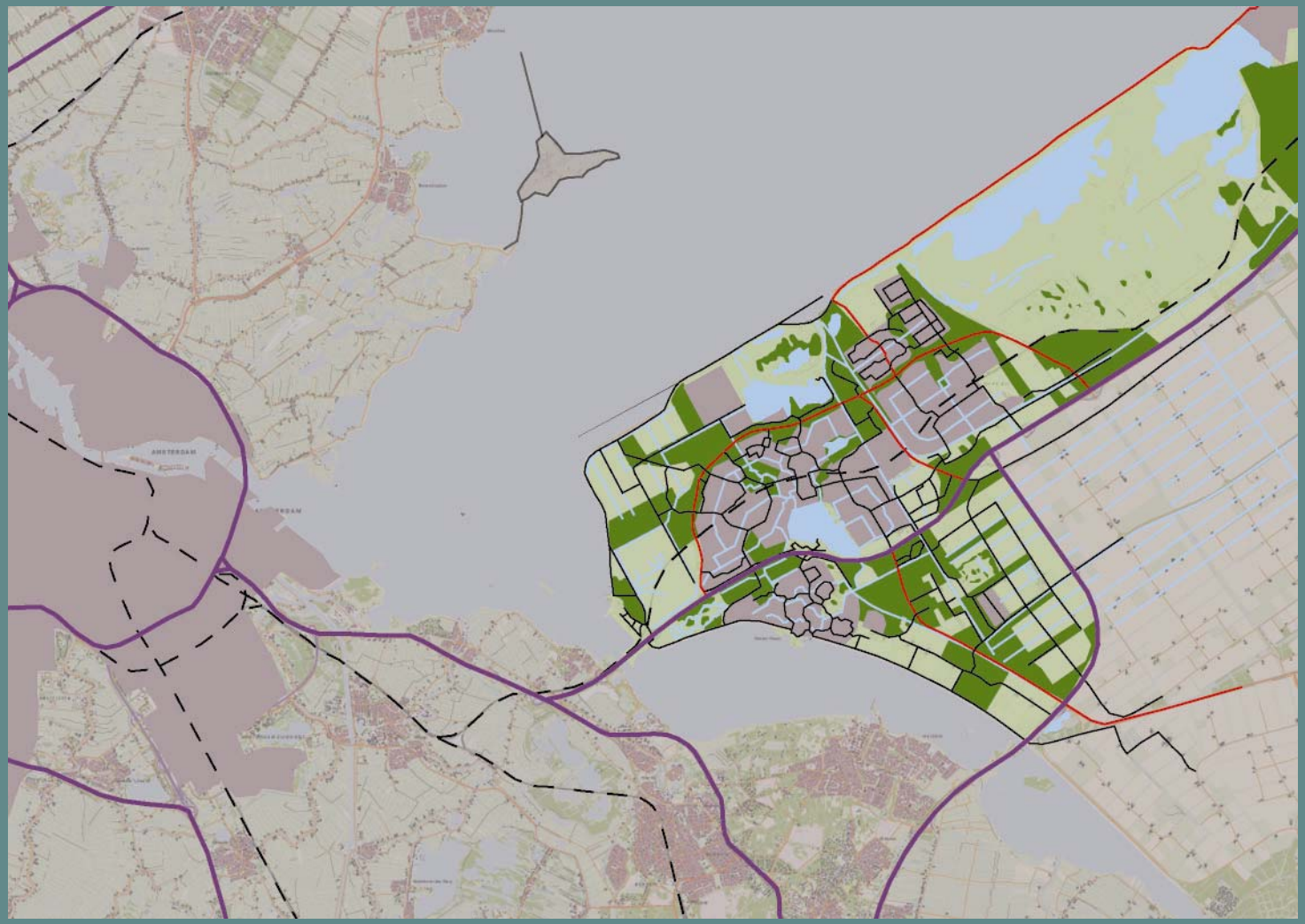
Foci



- Openess as a main spatial characteristic
- Island Marken as a main focal point



Existing situation in and around Almere



Design

Two approaches:

1) - higher density
   - maximum population (150 000)
   - more consumed space

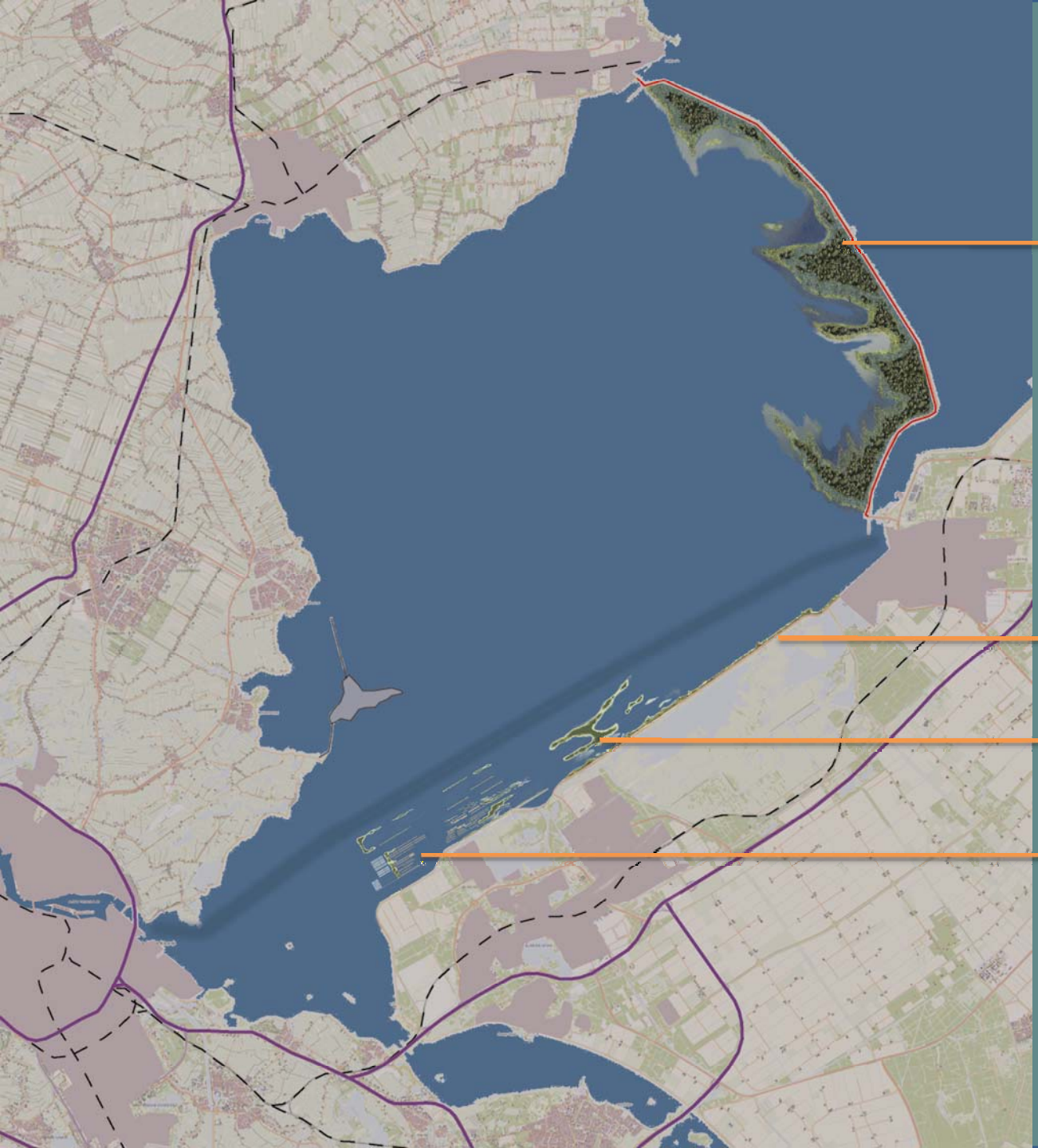
2) - low/medium density
   - population not a critetia
   - more open space
   - integration of urban space with nature

Model 1

Model 2


connection
metro

Final masterplan



MARSHLAND DEVELOPMENT

SHORELINE ADAPTATION

ISLAND(S)

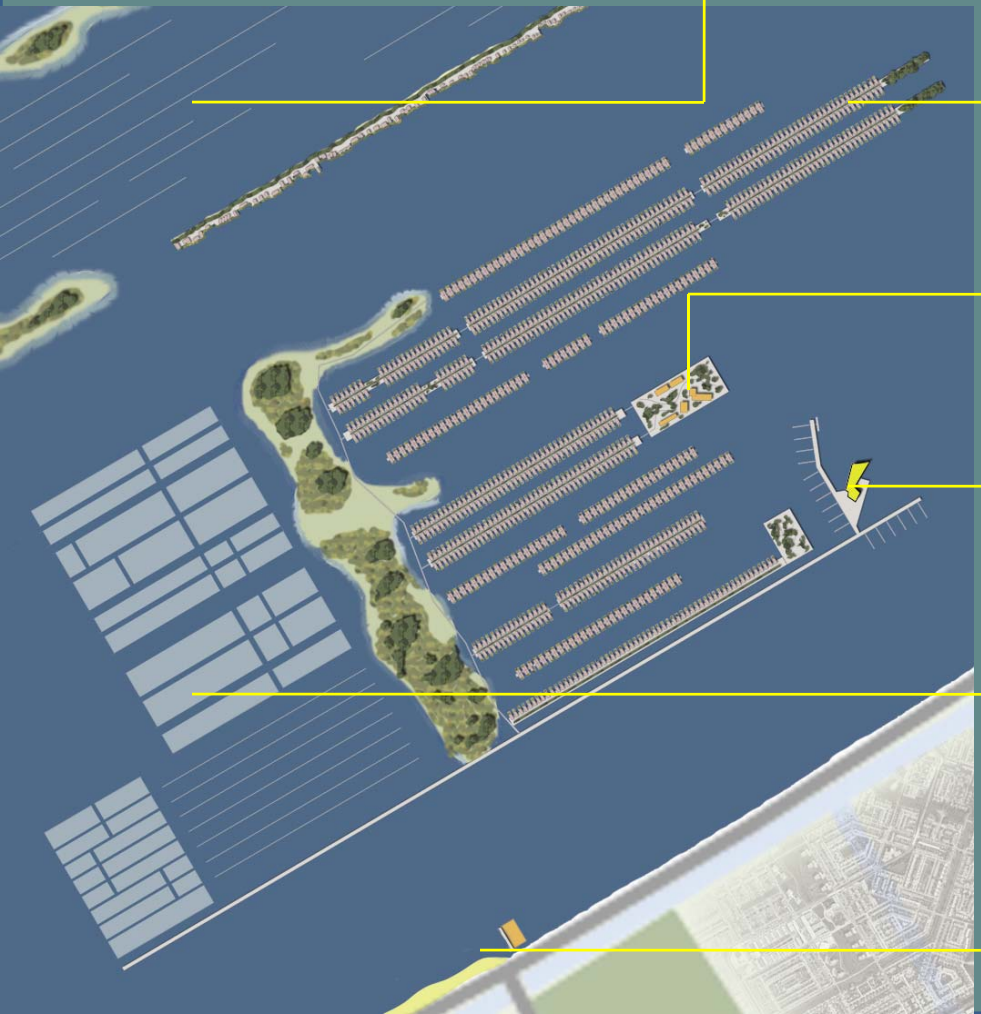
“LONG-LINE ALMERE”

MARSHLAND DEVELOPMENT

SHORELINE ADAPTATION

ISLAND IMPLEMENTATION


“LONG-LINE ALMERE”




School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OFFICE


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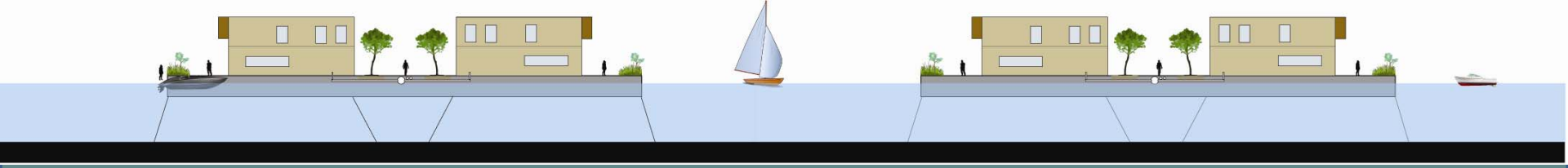

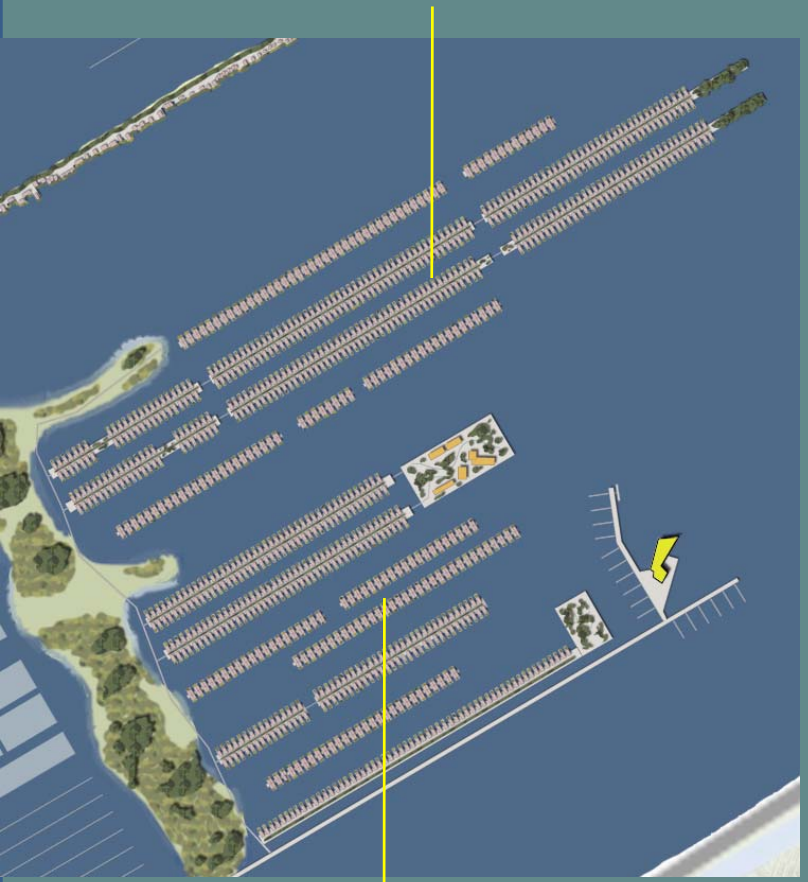

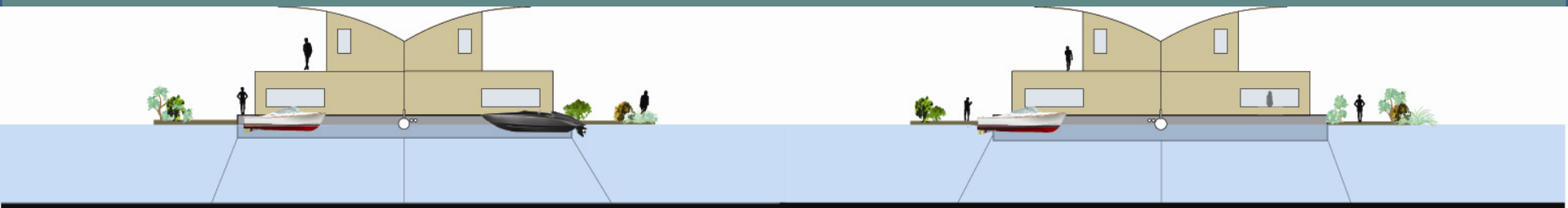

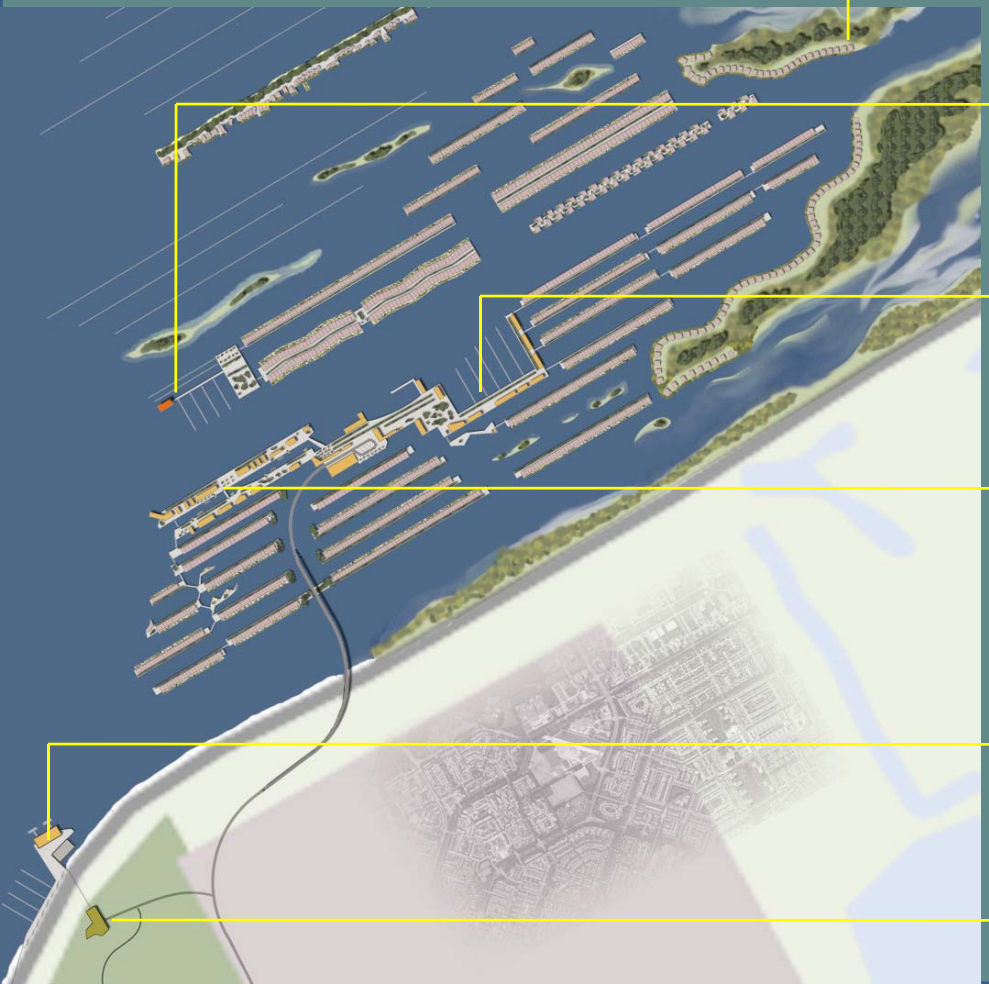

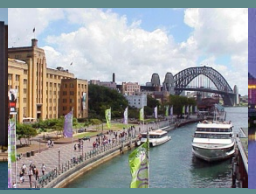

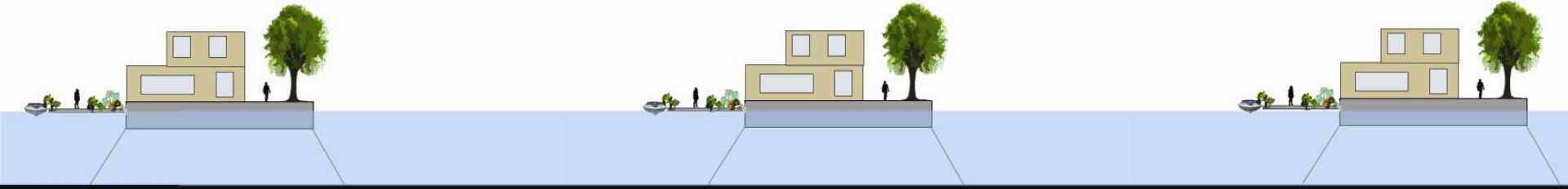


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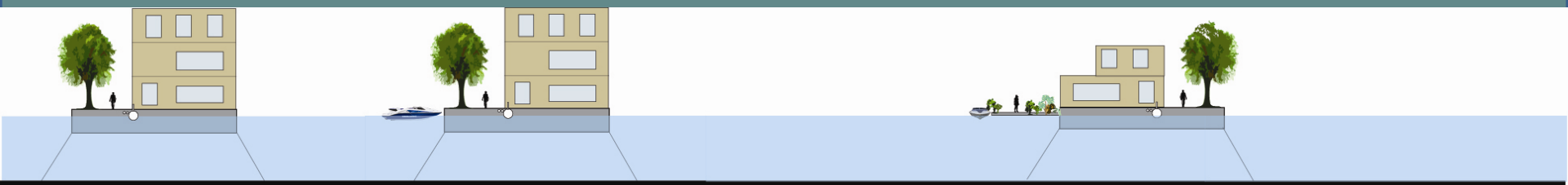

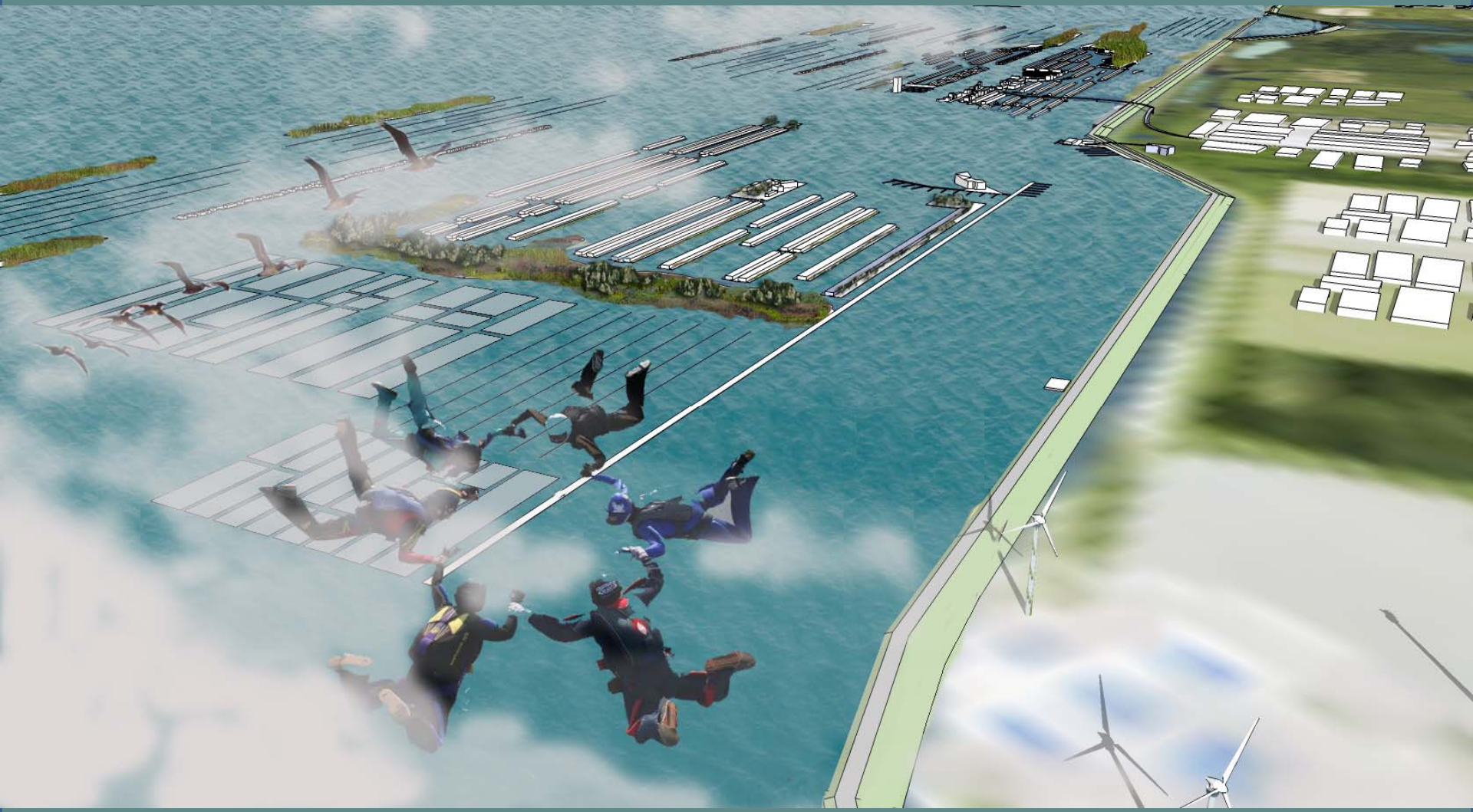

THANK YOU

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