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P5 Presentation by

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Delta Interventions Graduation Studio
MSc Urbanism
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“Towards an open delta
Research and design for sustainable urban landscapes in an open Dutch Southwest Delta

by N. den Besten”
Graduation Framework
R&D Location | Problem statement | Aim | Relevance

Research
History | Urban Form

Design
Phases 1-10 | Maps | Sections | Vizualizations

Conclusion
Open delta | Working with nature | Questions
Graduation Framework

# R&D Location
# Problem statement
# Aim
# Relevance
Graduation Framework | R&D Location

- Rotterdam
- Dordrecht
- Antwerpen
- Hellevoetsluis
- Bergen op Zoom
- Goes
- Zierikzee
- Middelburg
- Vlissingen
- Middelharnis
- Zierikzee
- Roosendaal
- Breda
Today, the Delta Werken provide water safety, but also water problematics.”
Without salt the Krammer Volkerak could not be without blua algae
Diminishing of sediment transport and inclination of sand plates in the Oosterschelde
WOZ-values Goedereede, Dirksland, Middelharnis and Oostflakkee.

Source: Author, 2012

€ 307,000,-
€ 226,000,-
€ 218,000,-
€ 197,000,-

“
The urban design aims to restore and realize (new) relations with water”
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Vacant housing in Oude Tonge as a sign for a lesser socio-economic condition.
Temporary water storage in times of high river discharge

Temporary water storage in times of high river discharge

Part potato harvest lost, heavy rains flooded agricultural lands
The shipping route over the Krammer Volkerak is the busiest in Europe.
Toekomstbeeld ZW Delta
ZW Delta & H+N+S Landscape architects

"The shipping route over the Krammer Volkerak is the busiest in Europe"
Hoogtij voor Laag Nederland

World Nature Fund (WNF)
“To design an urban landscape in the Krammer Volkerak area, that in a durable process provides a sustainable combination of urban, cultural and natural layers, in a re-opened Dutch South-west Delta.”
The project is socially relevant because it relates to:
- the two visions for an open delta
- the general discussion on an open delta
- the current socio-economic condition of the delta cities
- the program Room for the River in the Krammer Volkerak

The project is academically relevant because it relates to:
- the (new) paradigm ‘working with nature’
- historic research done in Delft:

“Research

# A history of an open delta
# Large scale relation with water
# Small scale relation with water
# Transformation of urban form”
“Delta cities were founded after the construction of a ring-dike, near the main creek of a sand plate”
Research | A history of an open delta
The processes of sedimentation and land reclamation led to the present island of Goeree Overflakkee
Land reclamation caused early harbor cities to become polder cities.
Research | Large scale relation with water

Schoenmaker Atlas: Zeeland, Oude Tonge, 1710-1735
Created by: A. Schoenmaker, G. Schoenmaker, C. Pronk & A. de Haen
Source: Koninklijke Bibliotheek, Den Haag
From: www.geheugenvannederland.nl, 2012
Research | Large scale relation with water

Canal, Oude Tonge, 2012
Photo by: Author
Harbor, Oude Tonge, 1910-1935
Photo by: C. Steenbergh
Source: Rijksdienst voor het Cultureel Erfgoed, afdeling Gebouwd Erfgoed
From: www.geheugenvannederland.nl, 2012
Research | Small scale relation with water

Harbor, Oude Tonge, 2012

Photo by: Author
The presence of water in the public space of Oude Tonge has diminished.
Not only the relation with water, but also the urban form of Oude Tonge itself changed
Not only the relation with water, but also the urban form of Oude Tonge itself changed.
Post-war expansion, 1970 Vinex locations, 2009

Supermarket as city center, Oude Tonge, 2009

Harbor as city center, Oude Tonge, 1850

Research | Transformation of urban form
“Design

# Phase 1 - 10
# Maps
# Sections
# Visualizations

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Design | Phase 1

Current situation

2012
Enhanced creek network
2015
Enhanced creek network
2015
From a cultural to a natural landscape that provides water storage, nature development and recreation (routes)
From a cultural to a natural landscape that provides water storage, nature development and recreation (routes).
Selected polders can be inundated. The area is large and water depth is low.
In later phases the inundation polders will develop in natural areas for water storage.
In later phases the inundation polders will develop in natural areas for water storage.
The Krammer Volkerak will be part of the program Room for the River (RvR) and stores water with high river discharge.
The Krammer Volkerak will be part of the program Room for the River (RvR) and stores water with high river discharge.
The harbor is the pivot point in the urban extension of Oude Tonge
The urban design aims to restore and realize (new) relations with water.
The dike has an increased height, from 3,4m + NAP to 6,0m + NAP.
Design | Phase 3 | Reference housing

The dike has an increased height, from 3,4m + NAP to 6,0m + NAP.

"Neo historic buildings, Vathorst, Amersfoort
Photo by: Harold Trier
From: Flickr.com"

"Public initiative will be a driver for an diverse and attractive environment, strengthening the socio-economic condition of Oude Tonge"
Water storage and purification is created by the restoration of the former ditch.

“Design | Phase 3 | Section church ring”
The harbor has a new and modern relation with water
Design | Phase 3

Urban extension & Natura 2000  
2020
“The addition to the Natura 2000 area will attract birdspotters and wanderers.”
Design | Phase 4

Day recreation

2040
Day recreation
2040
"The outer dike will transform from a hard border to an integrated element"
The pools generated to supply soil for the ‘wierde’ function as recreation areas.
The pools generated to supply soil for the ‘wierde’ function as recreation areas.

Design | Phase 5
From inundation to intertidal area
2050
From inundation to intertidal area
2050
The area transforms from an inundation polder to marsh to intertidal area.
The area transforms from an inundation polder to marsh to intertidal area.
“The area transforms from an inundation polder to marsh to intertidal area.”
Living in the contact zone
2055
Living in the contact zone
2055
The modern castles become more embedded in the landscape during the phases
A dynamic landscape makes living attractive in the green archipelago.
A dynamic landscape makes living attractive in the green archipel.
A dynamic landscape makes living attractive in the green archipel. 
A dynamic landscape makes living attractive in the green archipel.

A controlled tidal delta
2065

"The plan of the ZW Delta is in effect and maintains fluctuations between 1.0-1.5m."
The plan of the ZW Delta is in affect and maintains fluctuations between 1,0-1,5m
The plan of the ZW Delta is in affect and maintains fluctuations between 1,0-1,5m.
As the outer dike, the inner dike will transform from a hard border to a natural water defense
As the outer dike, the inner dike will transform from a hard border to a natural water defense.
Design | Phase 9

Landscape living

2085
The design is related to the urban form of ‘wierden’ in Northwestern Europe.
The design is related to the urban form of 'wierden' in Northwestern Europe.

An open and natural delta 2100

"The full gradient of landscape with water fluctuation between 6,0-6,8m"
An open and natural delta 2100

"The full gradient of landscape with water fluctuation between 6,0-6,8m"
An open and natural delta
2100

“The full gradient of landscape with water fluctuation between 6.0-6.8m”
An open and natural delta
2100
An attractive shipping route from the Haringvliet to the delta cities
“Conclusion

# An open dutch southwest delta
# Working with nature
# Questions

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The case of the Krammer Volkerak can be applied in the whole delta
Working with nature can add value to the urban, cultural and natural layer in an open delta.
Thank you for your attention!
“Thank you for your attention!”

“Do you have any questions?”