

The Restoration of Lillo Fortress and the SIGMA flood defence project

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EFFORTS Congress 2019

Fortified Heritage and Water - The European Dimension



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landschap | stedenbouw

SWECO 

Content



- Historical situation and opportunities



- Masterplan of the Fortress

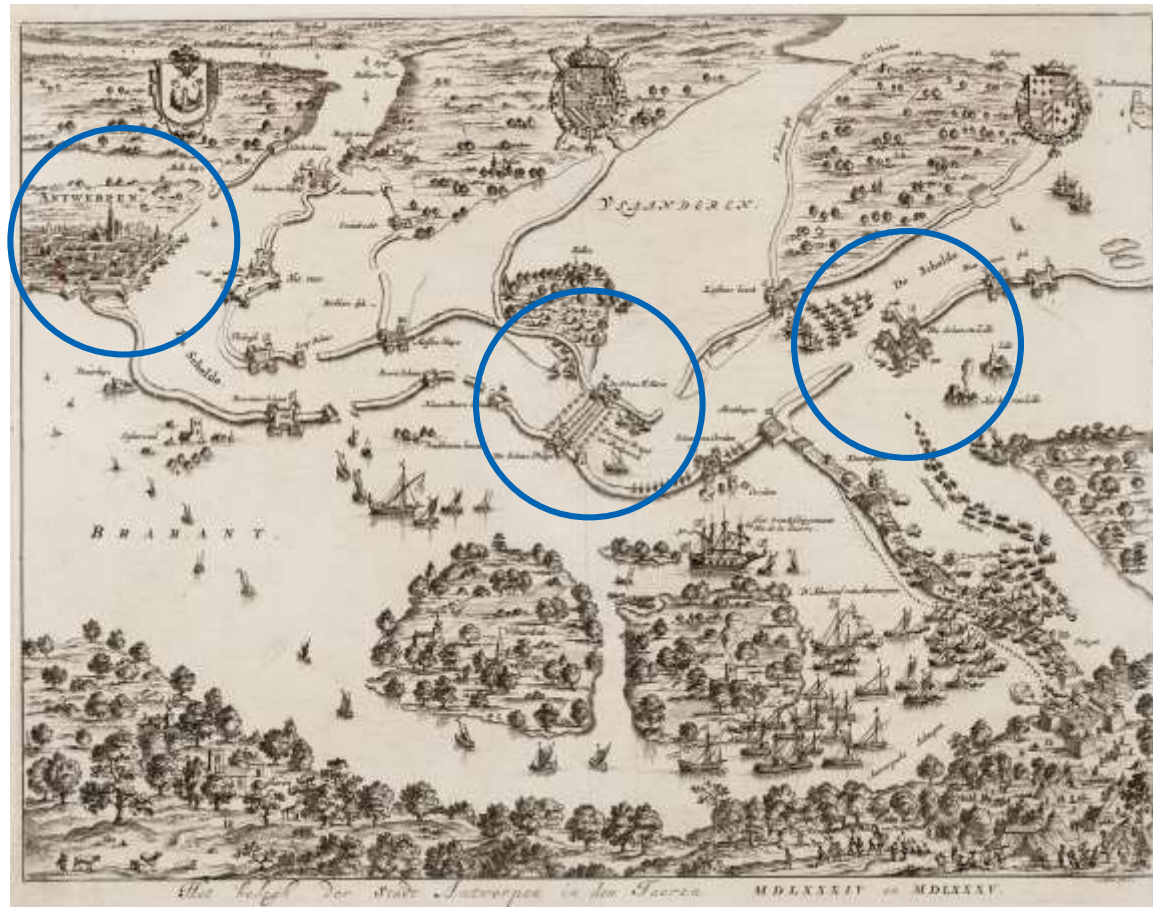


- Implementation of the Masterplan

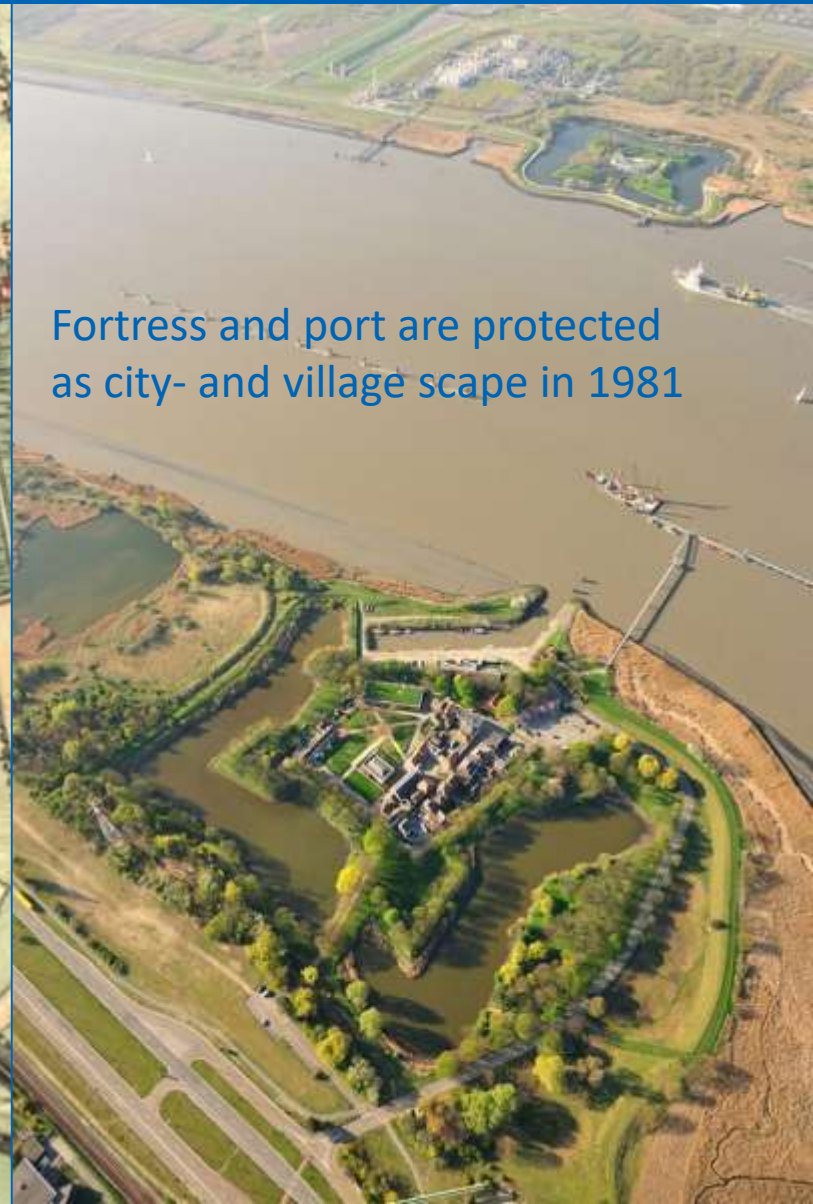
- Conclusions and ?

1. The Scheldt Fortresses

- Antwerp States-Spanish conflict
- 1579 Lillo built by the Dutch William of Orange, stadtholder of Antwerp
- Lillo and Liefkenshoek, twin fortresses
- 1583 Fortresses St. Mary and St. Phillips, built by the Spanish Duke Alexander Farnese
- 1584-1585: 'Bridge of Farnese'
- 1585: Fall of Antwerp
- Until 1839: Dutch control
- 1894: no military function

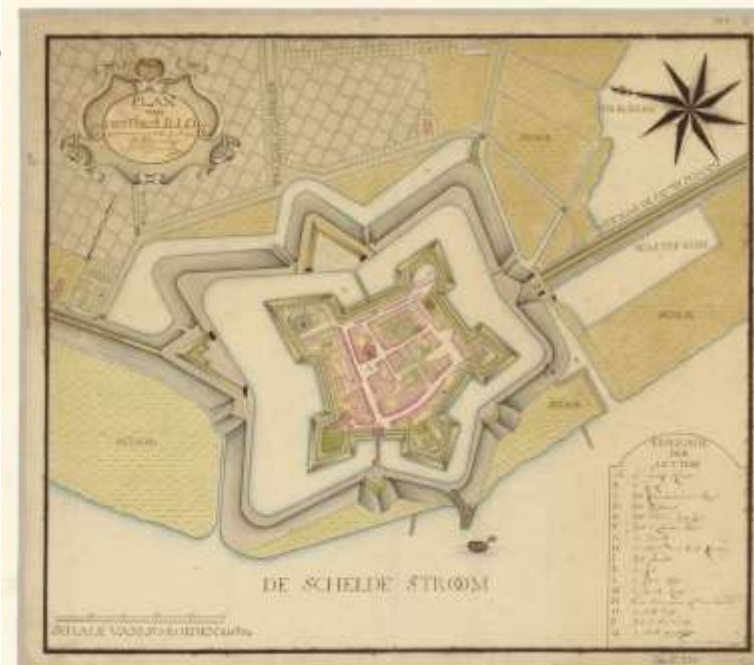
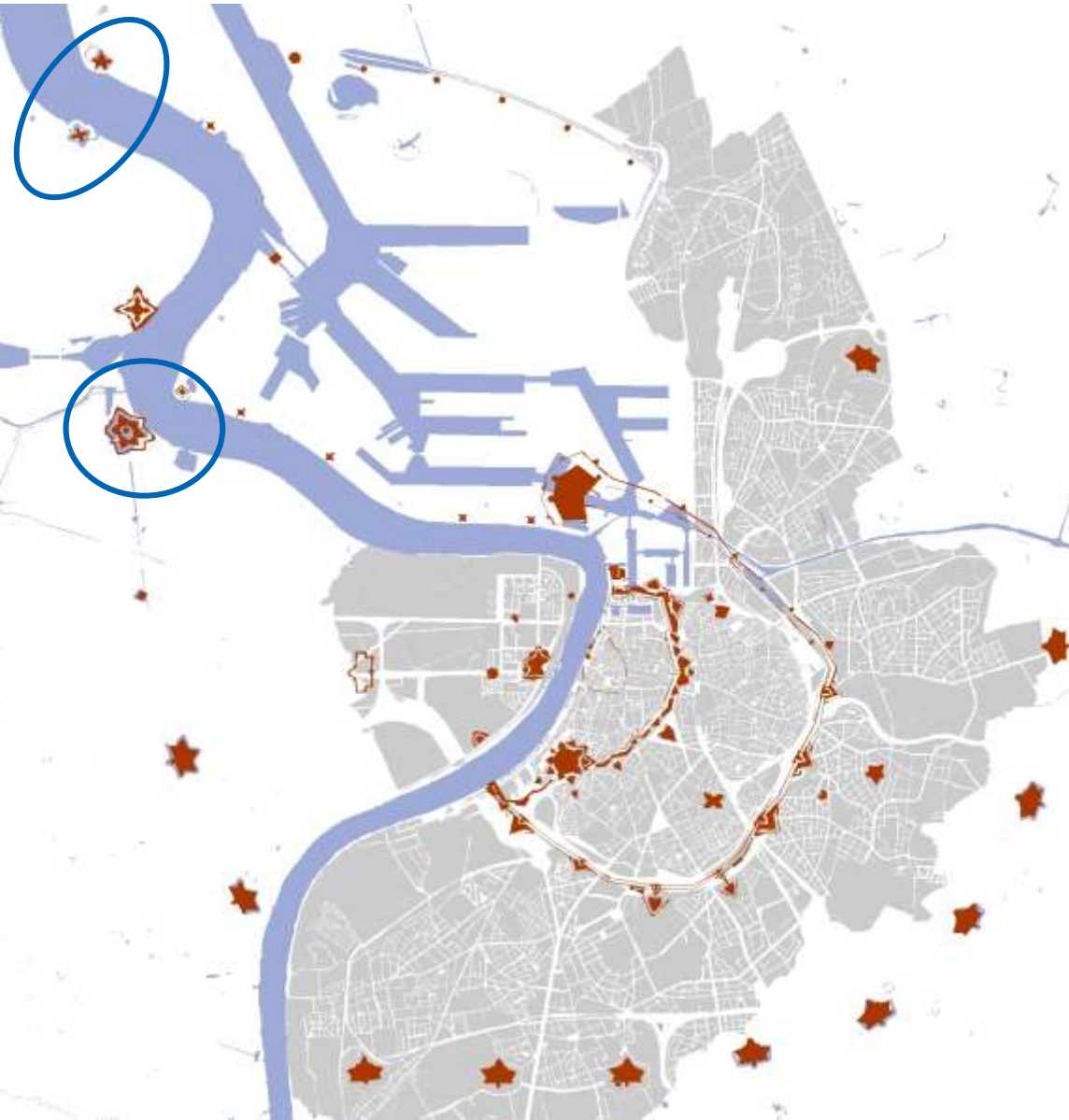


The twins Lillo and Liefkenshoek



Fortress and port are protected
as city- and village scape in 1981

Strategical position



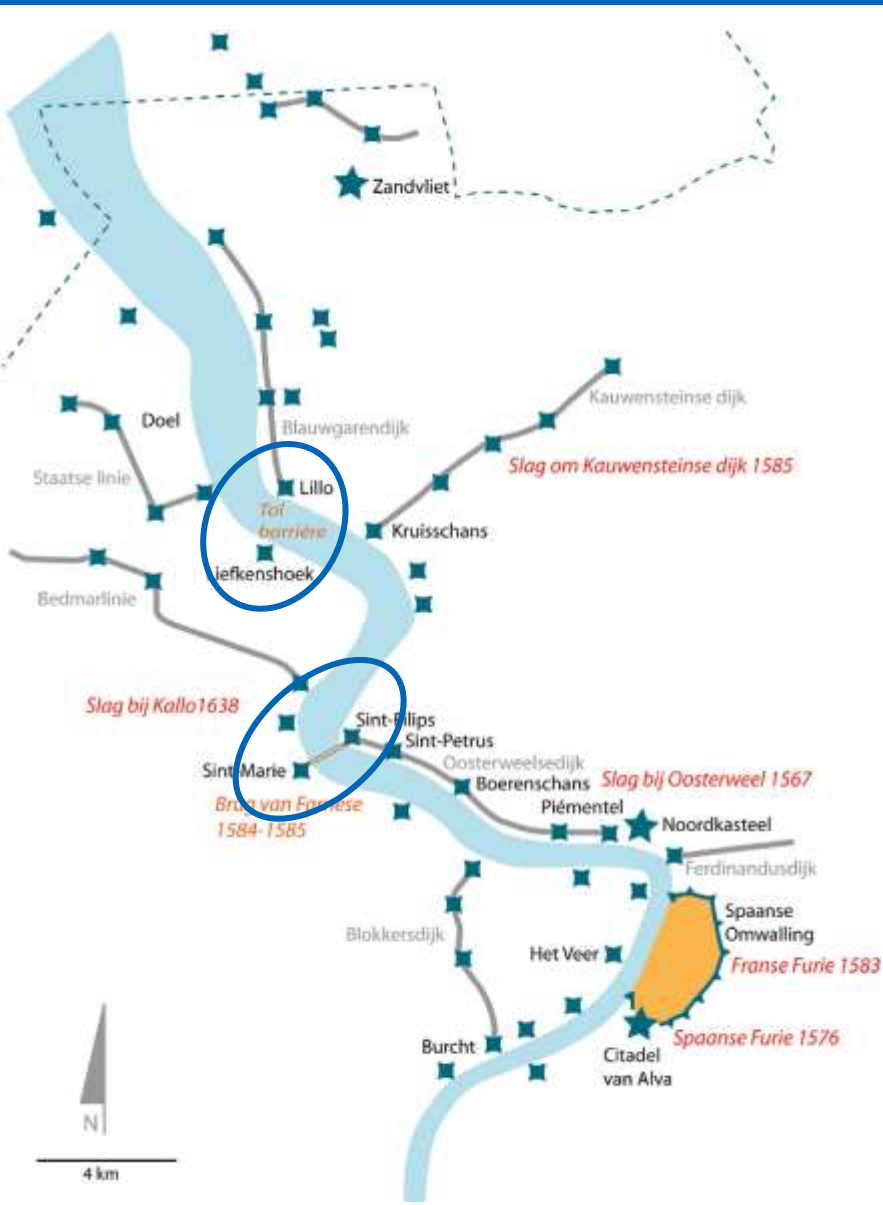
The Bridge of Farnese 1584 - 1585



LE PONT DE FARNESE.

A. Alexandre Farnese approuvant le dessein B. fort sainte
 Marie C. chateau D. pont large de 12 pieds long de 2400 E. S.
 Philippe F. barques garnies de pointes de fer pour la defense du
 pont G. Salieres de garde du pont H. navires de garde du port.
 I. rencontres entre les galees et les navires de garde et ceux
 d'Anvers K. la Porta L. Riv. de l'Escar M. Anvers N. le Cha-
 teau O. forte des rebelles P. digue ouverte Q. quartier de Farnese.
 Et. sup. "Ingénieur hollandais" R. de l'Escaut.

Forten en Linies in Grensbreed Perspectief (Interreg IVA)



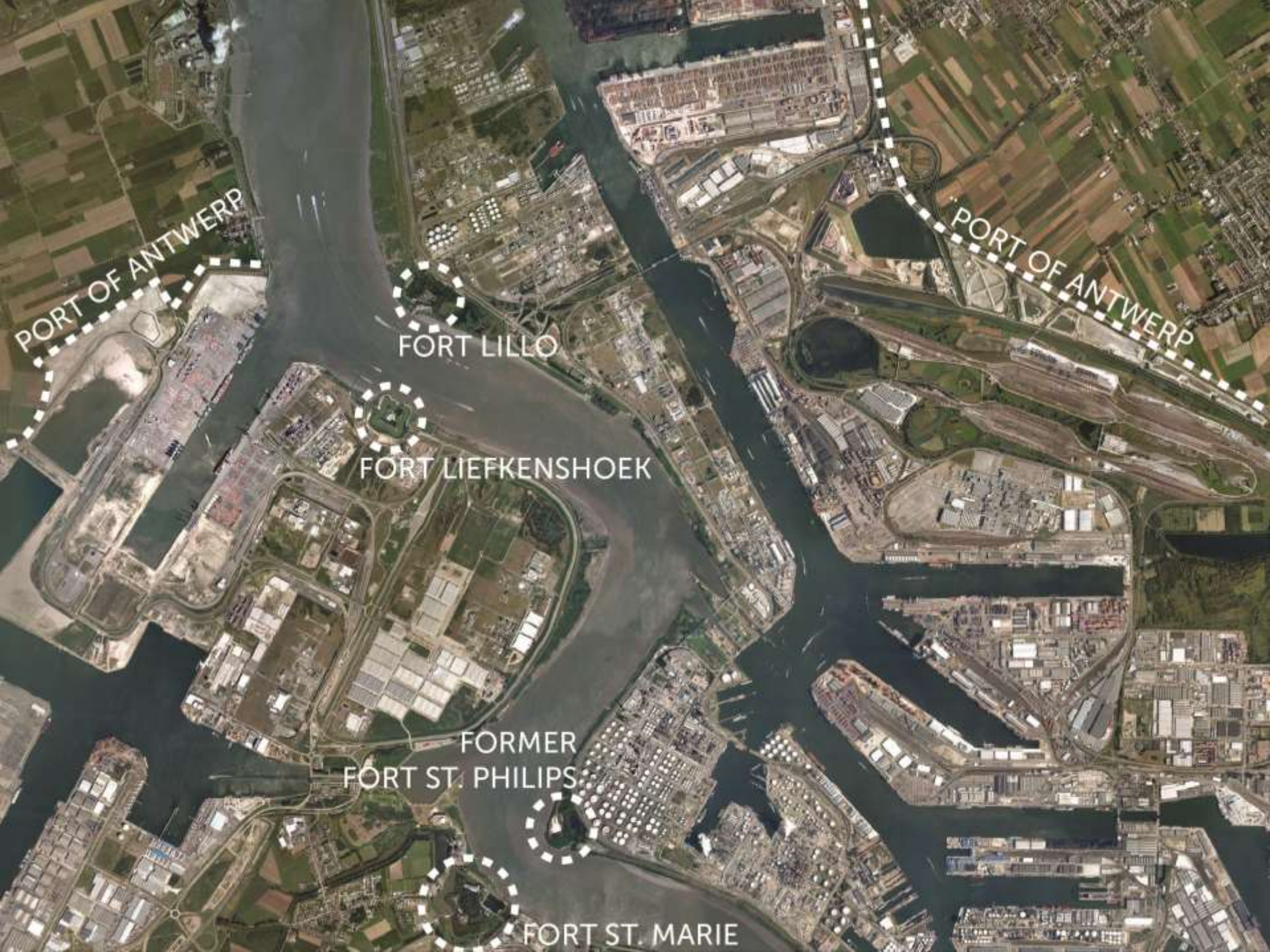
Part of 2 defence lines

- States-Spanish lines
- Fortress Belts of Antwerp

High potential (history, fortification, recreation, nature)

2. Masterplan Lillo Fortress





PORT OF ANTWERP

FORT LILLO

FORT LIEFKENSHOEK

FORMER
FORT ST. PHILIPS

FORT ST. MARIE

PORT OF ANTWERP

Characteristic Lillo Fortress

Strong visual and functional relation between the fortress and the river

Characteristic pentagonal morphology



Lillo today



Lillo today





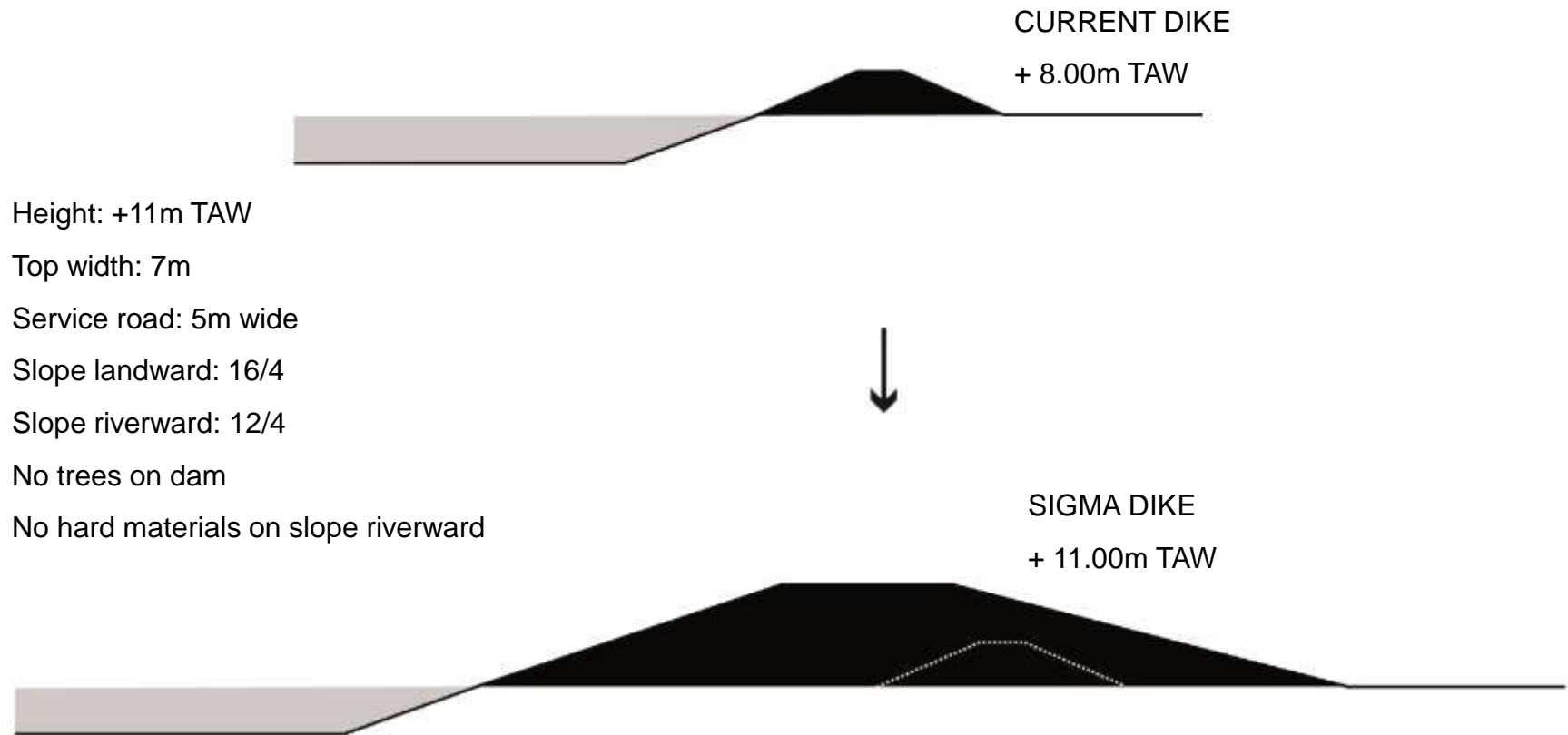
SCHELDT

FORT LILLO

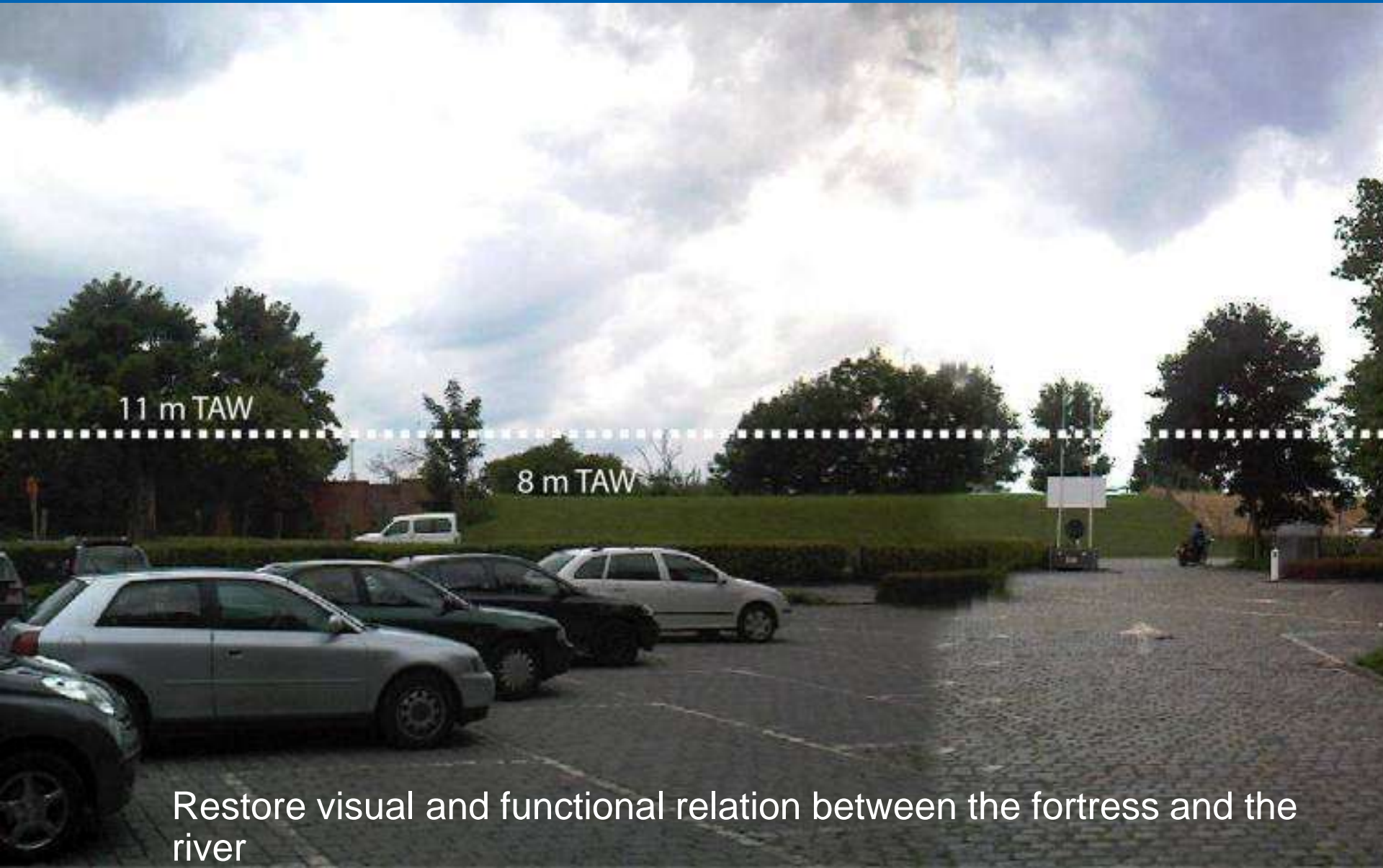
ANTWERP

GHENT

Spatial conditions SIGMA dike



Ambition




Restore visual and functional relation between the fortress and the river

Ambition

Restore the fortress morphology (pentagonal bastion)



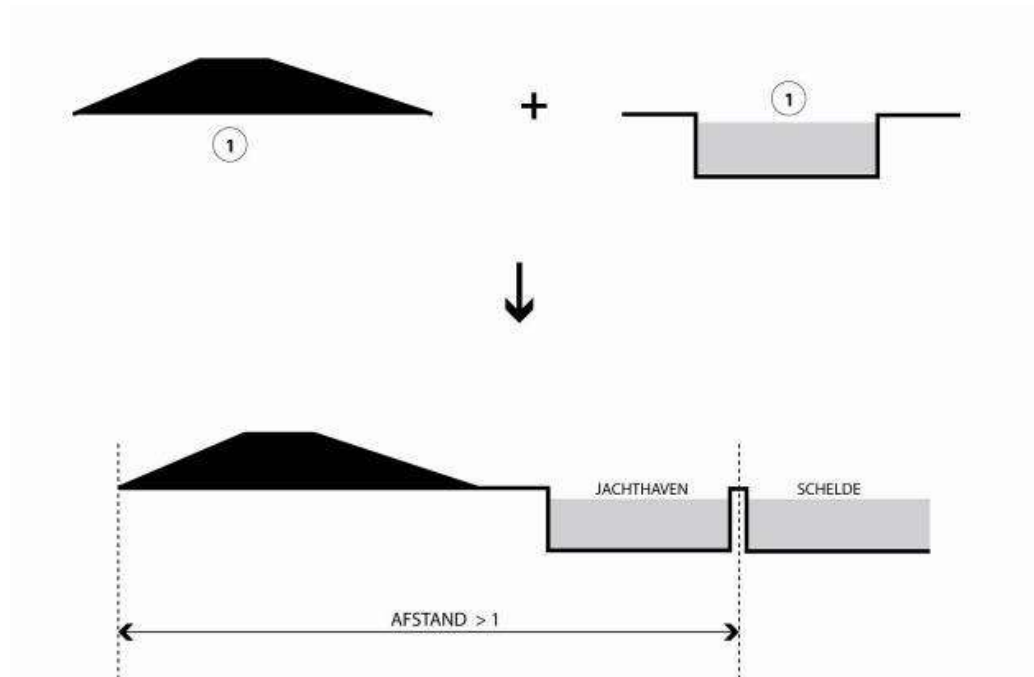
Scenario 1: Preservation of the existing marina

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- An aerial photograph showing a coastal area. In the center, there is a cluster of buildings with red roofs, surrounded by dense green trees. To the left of the buildings is a small marina with several boats docked. To the right of the buildings is a large, winding body of water, possibly a lagoon or a reservoir. In the bottom left corner, a long pier or breakwater extends into the water. In the top right corner, a multi-lane highway runs parallel to the coast. The overall scene depicts a coastal development with a mix of natural and built environments.
1. High cost price (necessary repairs of base foundation)
 2. Actual location has problem of silting
 3. Insufficient space between marina and Lillo for construction of Sigma dike

Masterplan

Scenario 2: Marina towards the river

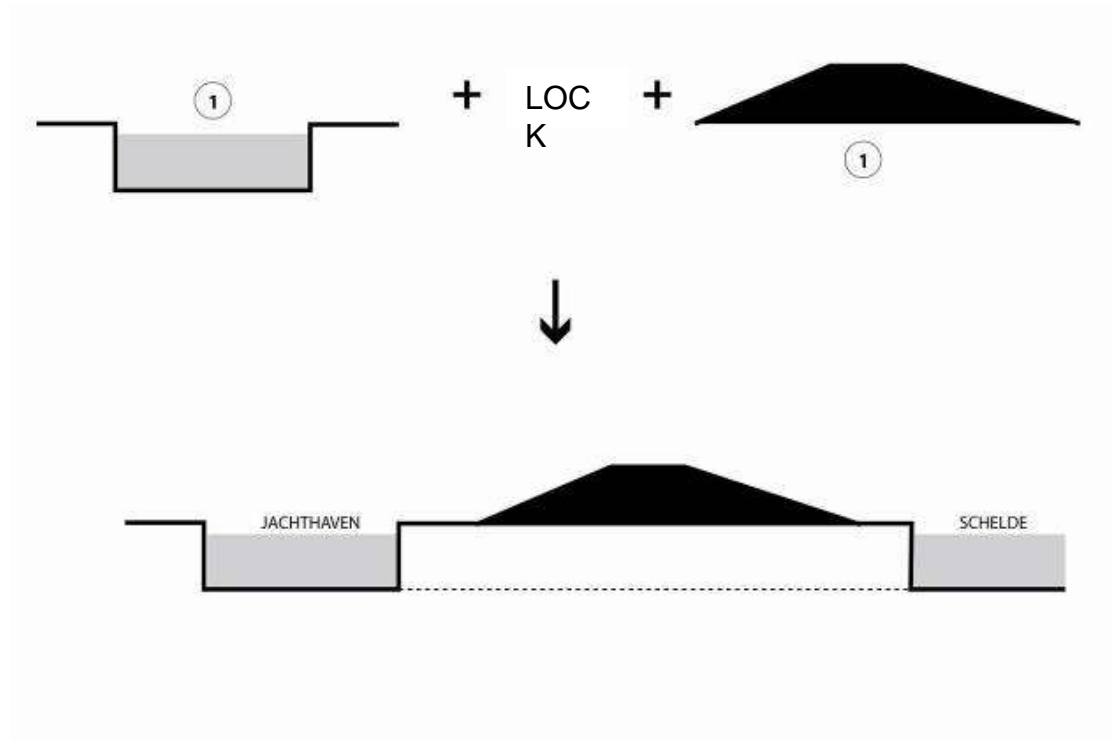
1. High cost price because of heavy foundation in tidal current
2. Loss of tidal vegetation
3. Sigma dike is barrier between Lillo and Scheldt



Masterplan

Scenario 3: Inland marina

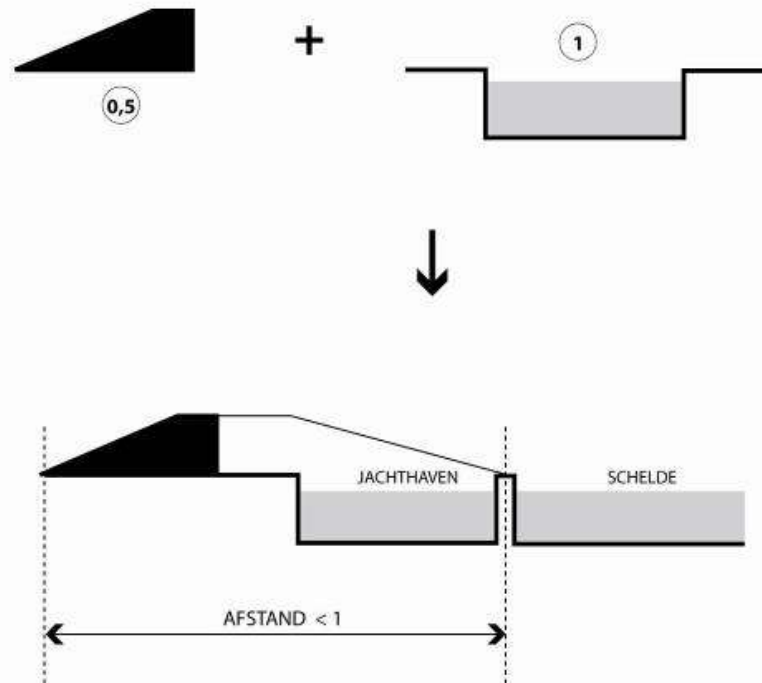
1. Not a tidal harbor (cfr. Marina Kallo)
2. Very high cost price of lock construction
3. High management costs
4. Risk of silting



Masterplan

Scenario 4: Inner-dam marina

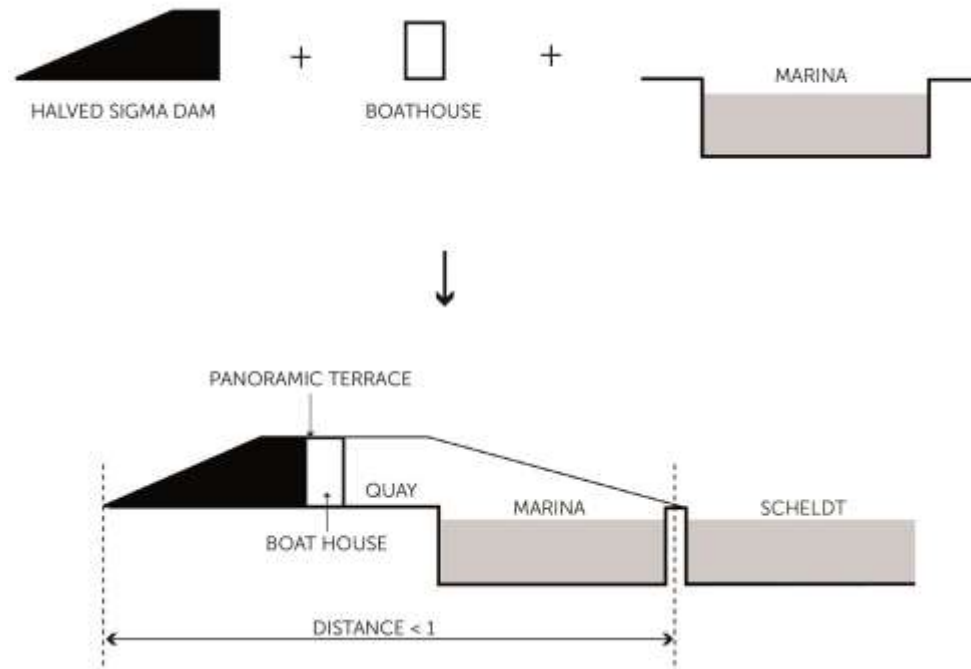
1. Lower cost price as a result of combination quays and dams
2. No loss of tidal vegetation
3. No disruption of Scheldt current
4. Marina is closer to the center of Lillo



Masterplan

Optimization: Boathouse with panoramic terrace

1. Lillo gets a 'face' to the river Scheldt
2. Quay is loaded with public functions (cafés, terrace, Yacht club Scaldis, ...)
3. A new public space in the form of a panoramic terrace



Actual situation



Masterplan

Galgenschoor



low tide line (0.5M-TAW)

marina

harbour quai
passenger service

sigma dam

Lillopolder

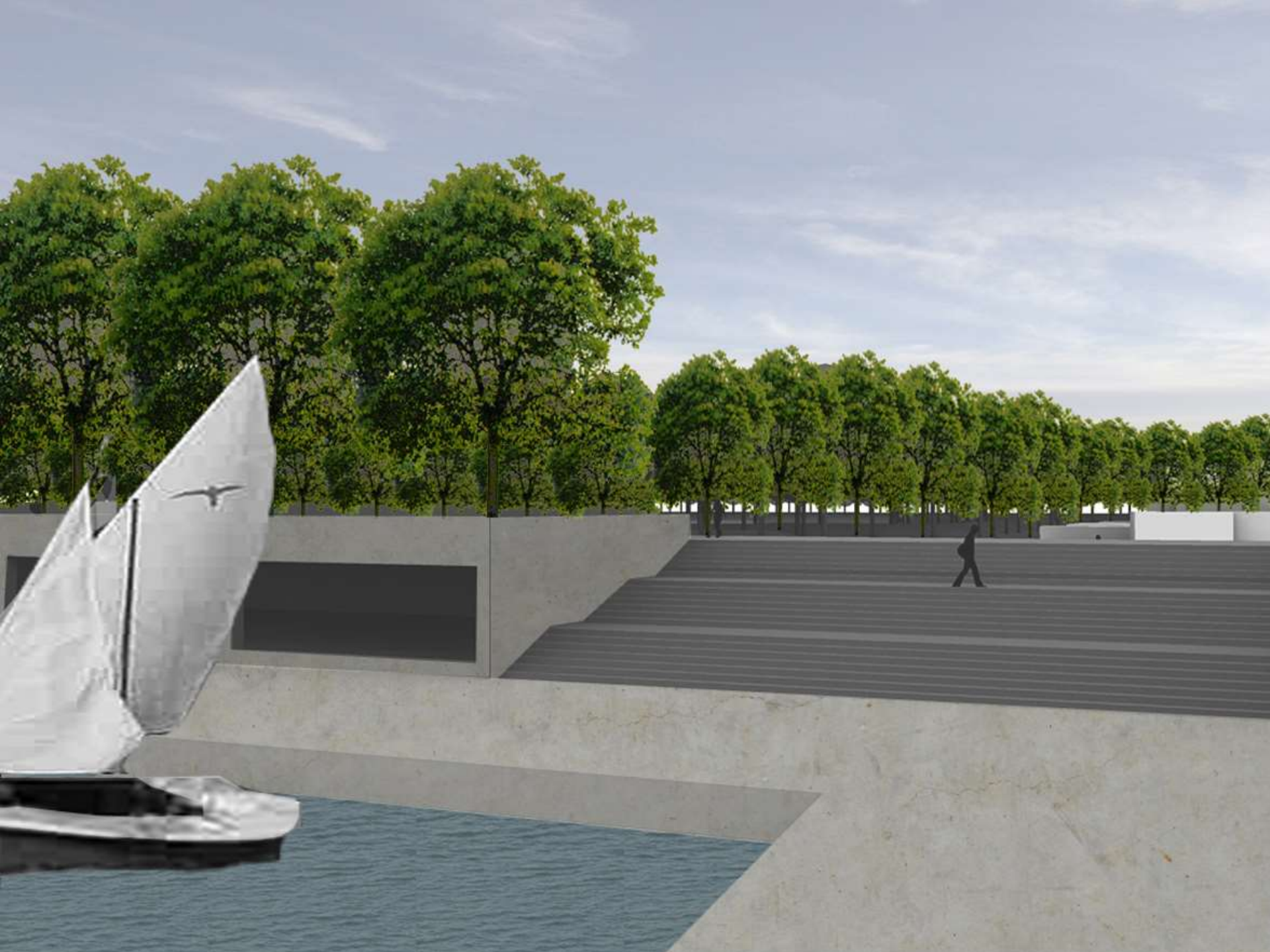
Scheidebaan

0 25 50 100 150 m

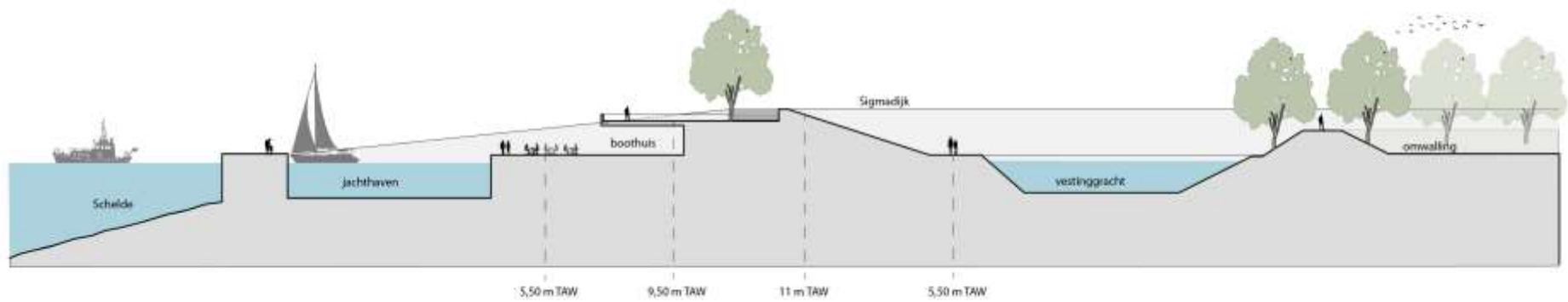








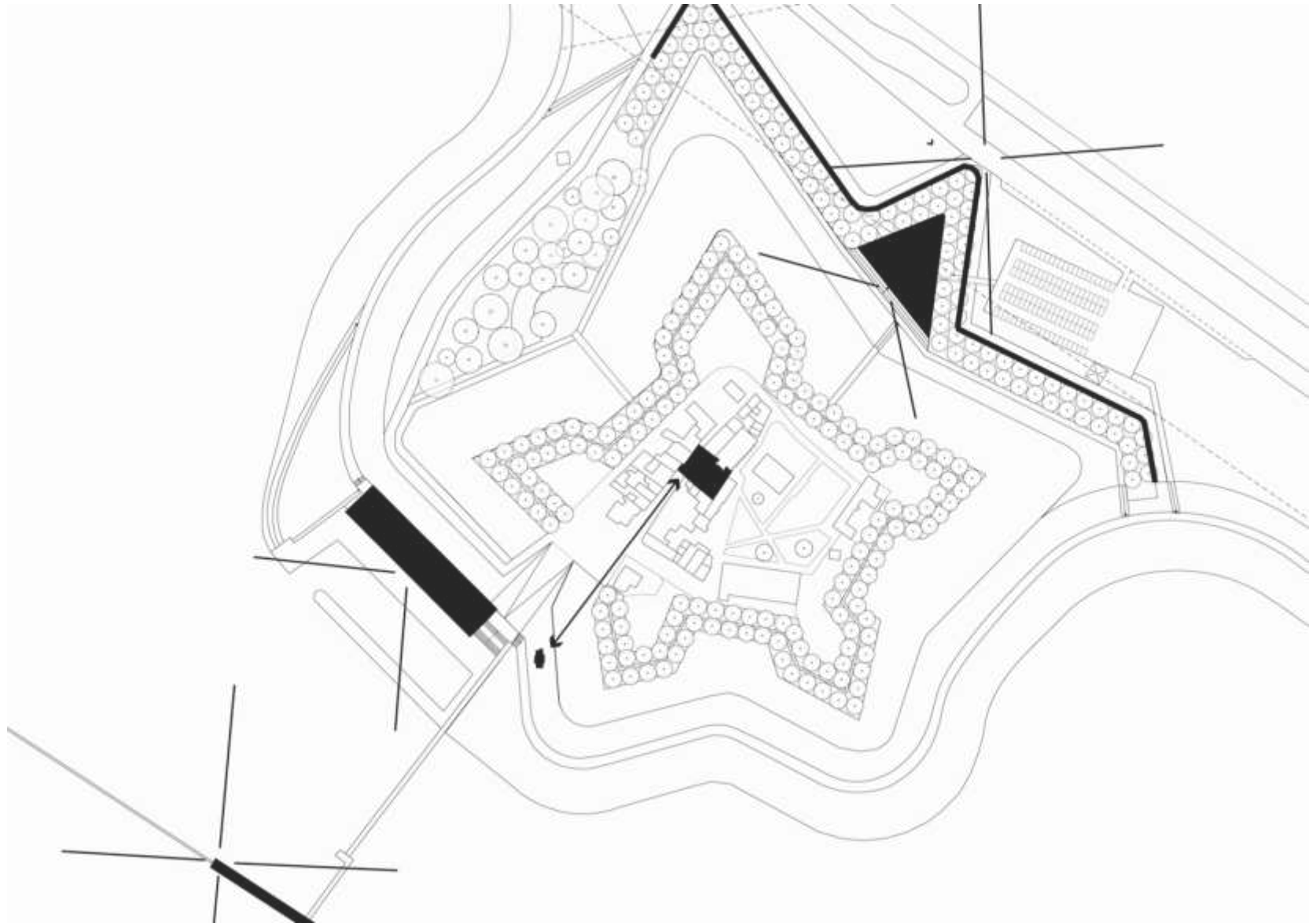




Public space




Visual relations

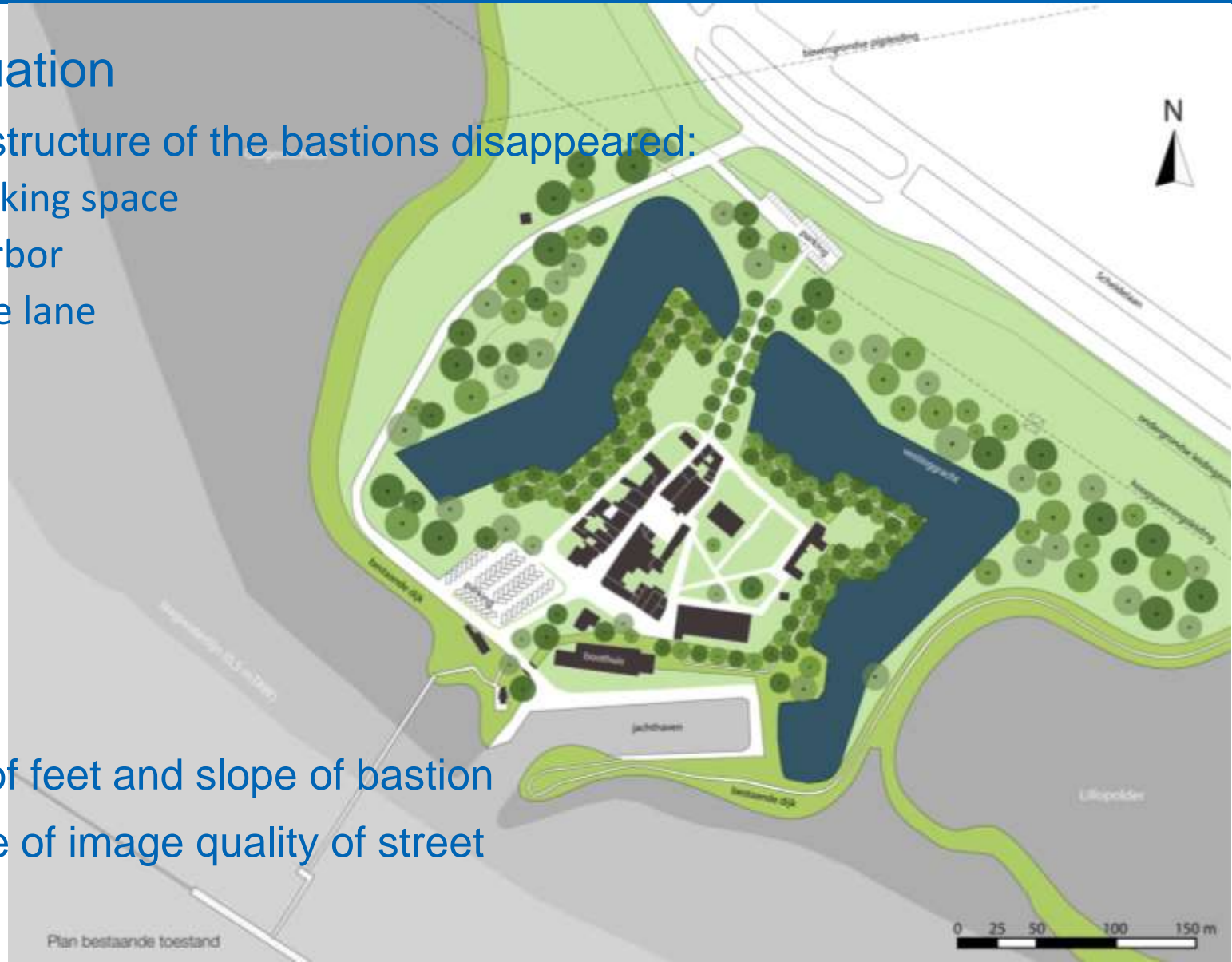




3. Implementation of the Masterplan

Actual situation

- Original structure of the bastions disappeared:
 - parking space
 - Harbor
 - tree lane
 - Erosion of feet and slope of bastion
 - Decrease of image quality of street
- 
- The map shows a coastal area with a harbor (Harbor) and a bastion (Bastion). The bastion is a large, irregularly shaped area with a green border. Inside the bastion, there is a parking space (parking space) and a tree lane (tree lane). The harbor is a large body of water. The surrounding area includes a street (street) and a harbor (harbor). The map also shows a large area of erosion (erosion) and a decrease in image quality (decrease of image quality) of the street.



Actual situation



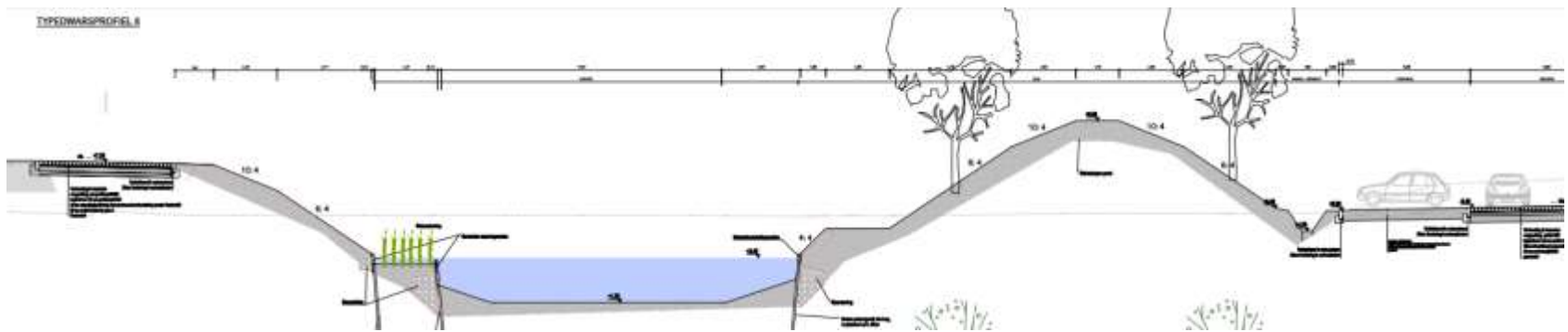
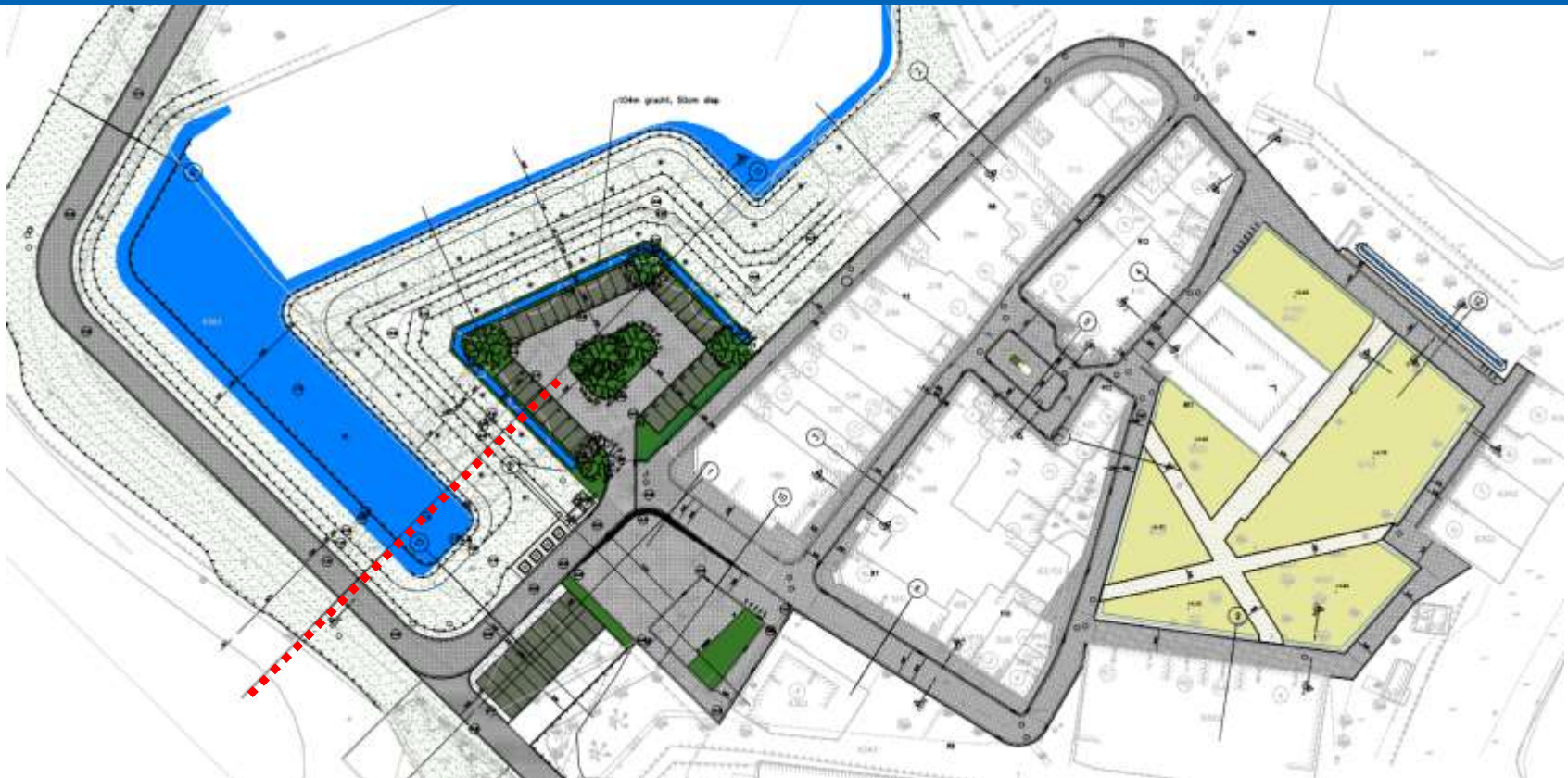
Realisation phase 1

- Restore SW bastion to original plan
- Entire renewal of sewage system

- Inbedding in bastion: parking space for inhabitants
- Increasing image quality street: design of pedestrian zone and new square

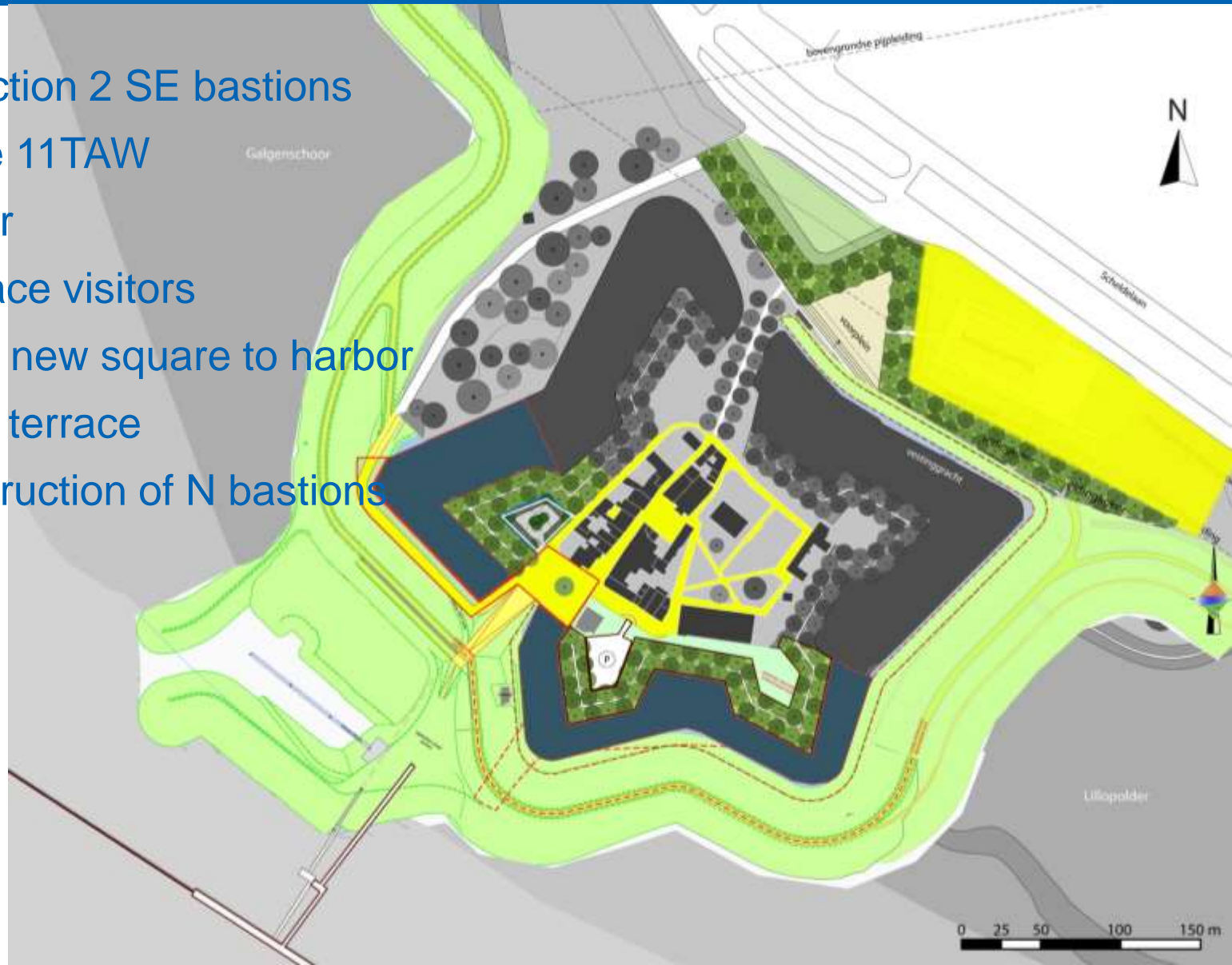


Realisation phase 1

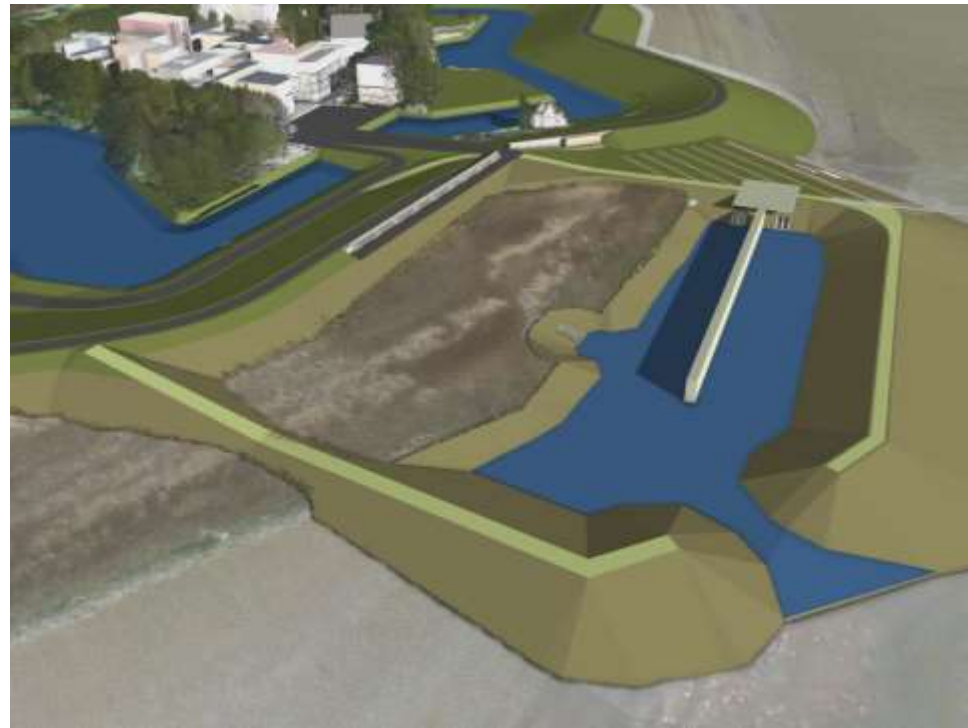
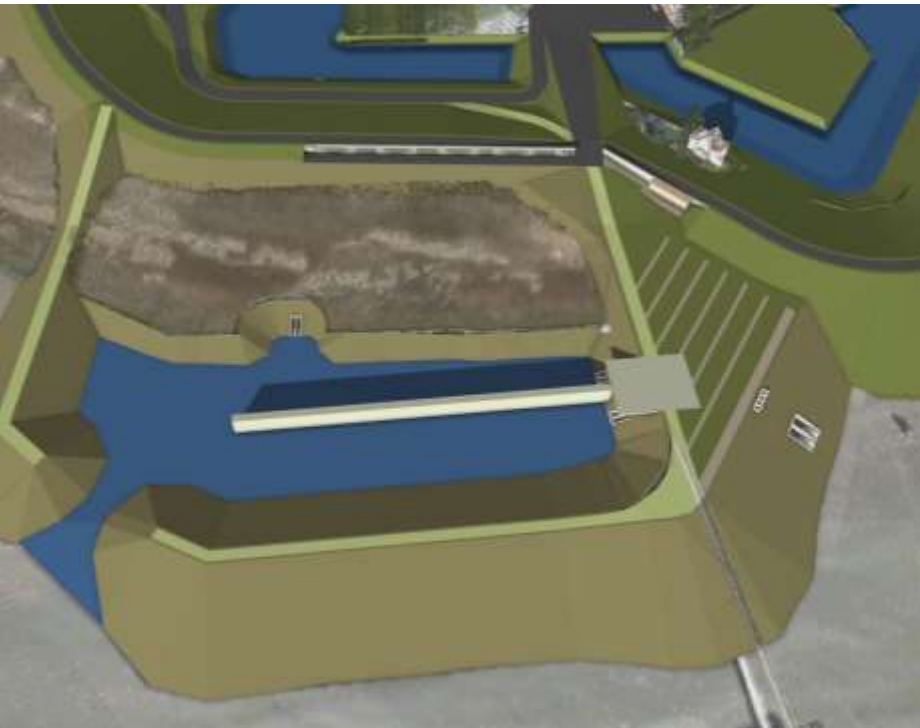


Realisation phase 2

- Reconstruction 2 SE bastions
- Sigma dike 11TAW
- New harbor
- Parking place visitors
- Slope from new square to harbor
- Panoramic terrace
- No reconstruction of N bastions

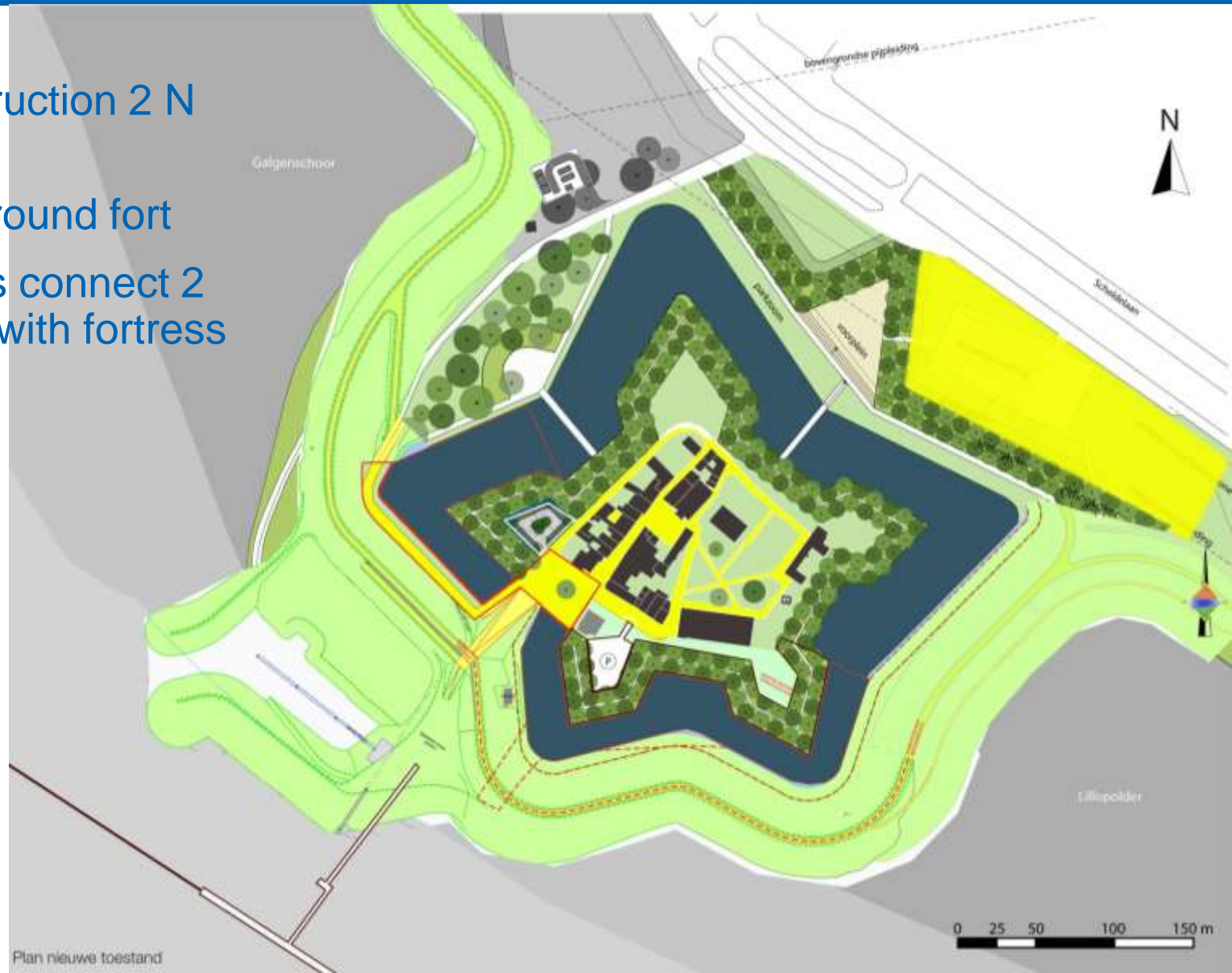


Realisation phase 2



Complete realisation of the masterplan

- Reconstruction 2 N bastions
- Edges around fort
- 2 bridges connect 2 squares with fortress



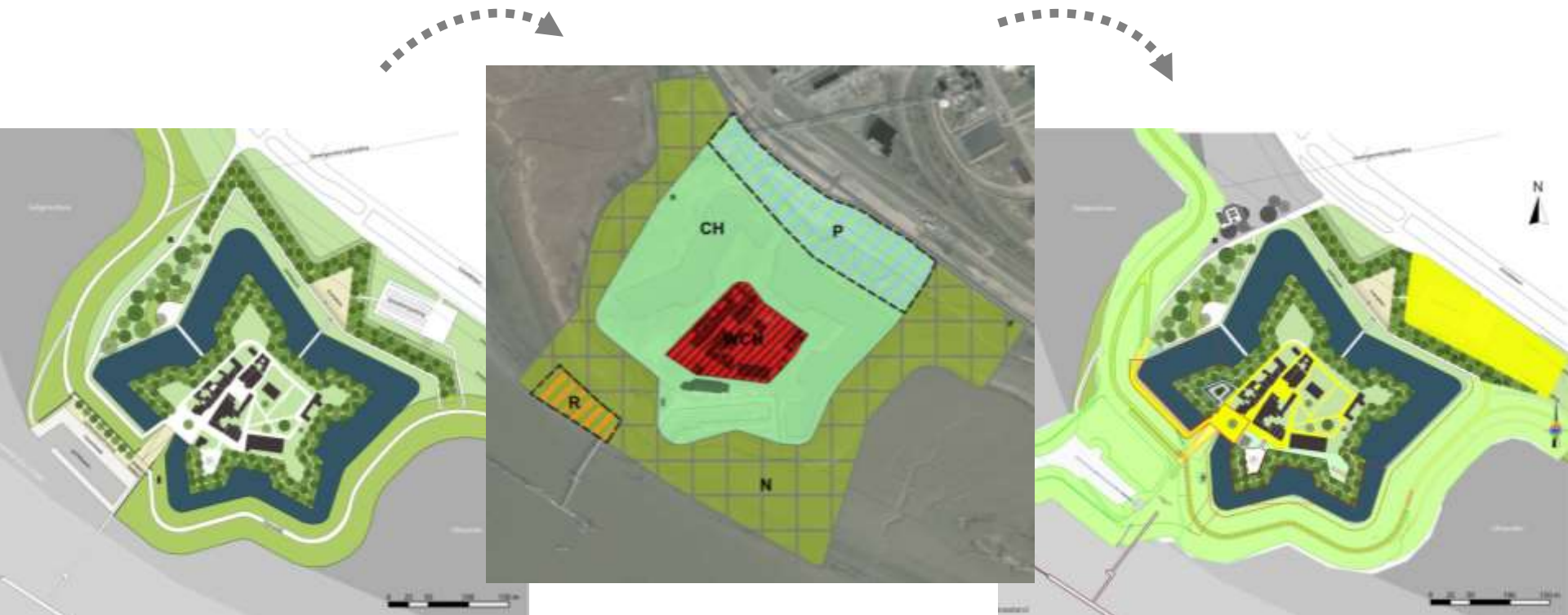
Contradictions between vision and reality

- Administration vs political vision (allocated budget)
- Dimensions of the visitors parking zone
- Realisation without entrance bridges
- Harbor with large clubhouse and panoramic terrace modified
- Boundaries road in property of Flemish Region
- No building permit possible within current zoning in regional plan



Spatial implementation plan (Flemish Region)

- Adaptation of the zoning to execute masterplan
 - visitors parking place in natural reserve as overlay
 - harbor in natural reserve -> recreation zone
- Harbor as part of protected heritage site -> relocate
- European protected mudflats and salt marches (Habitat Directive Site)



Further research and questions

- The momentum

We are looking for expertise and collaboration in a European project
How can fortifications contribute to present-day water management?

- Final image of the Masterplan

How would a partial exucation look like (heritage, nature)?

What final image do we want? How to get the max out of budget?

- Location for the harbor

Is this the ideal location?

Is there experience on European regulations of protected mudflats





Thank you for your attention!



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