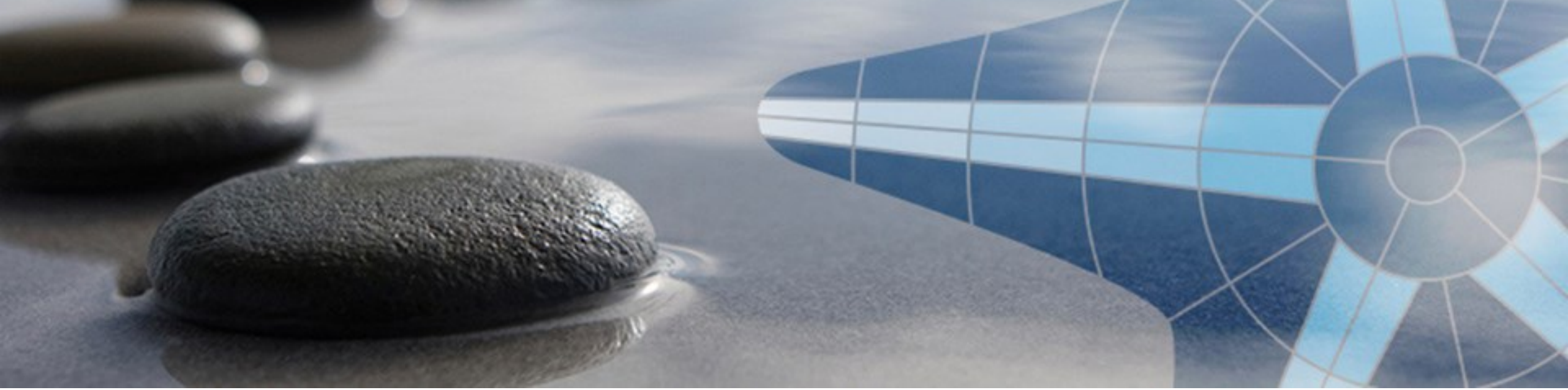

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Exploration of solutions to adapt to the effects of accelerated sea level rise

Preparation of a pilot nourishment in the mouth of the Scheldt estuary

Marco Schrijver, Rijkswaterstaat (RWS), NL

Contents

+ Overview of the location

+ Why a pilot nourishment

+ Approach (up to now and in the future)

+ Summary and conclusions

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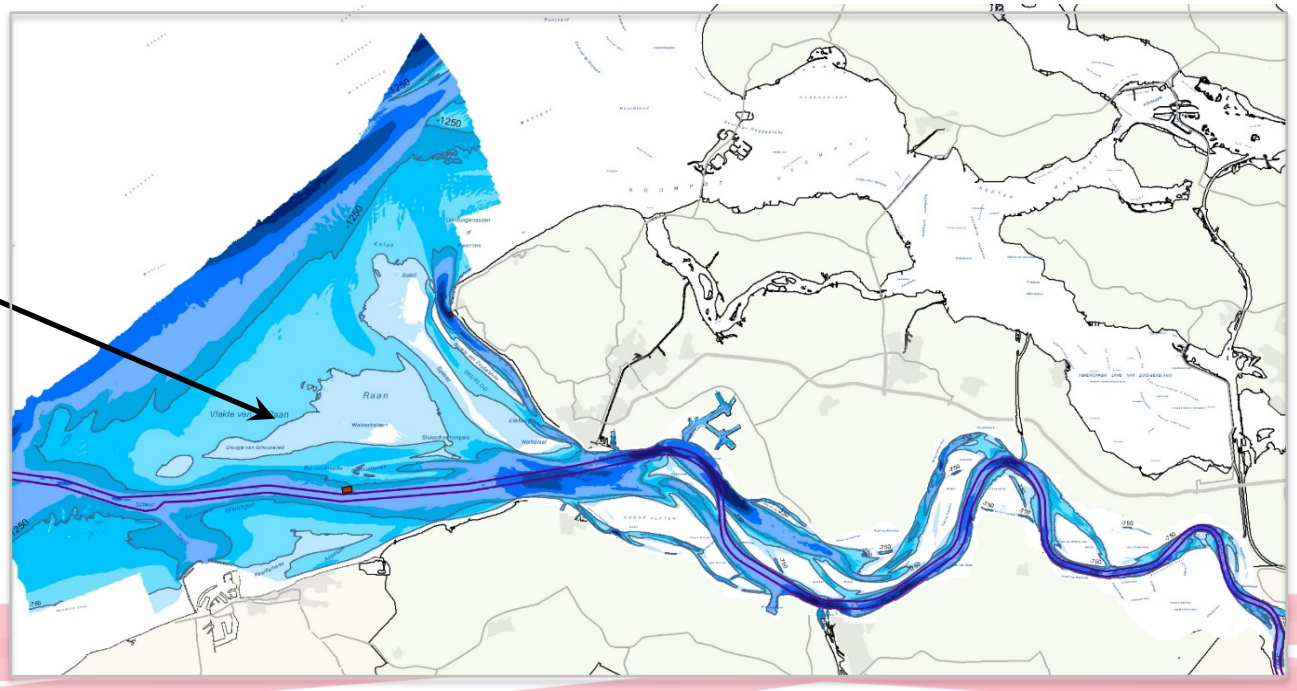

Questions about the effects of sea level rise

+ How and when will (accelerated) sea level rise affect nature, safety and accessibility of the Scheldt estuary?

+ Can these effects be mitigated by using a smart sediment strategy?

+ What are the effects of such a strategy on nature, safety and accessibility?

Dutch government policy

+ Invest in additional monitoring, research and pilot studies to be able to:

  - anticipate to future developments that may influence the coastal system

  - use nourishments more efficiently (learning by doing)

The project ‘sediment pilot’

+ Rijkswaterstaat aims to construct a pilot nourishment in the mouth of the Scheldt Estuary in order to

+ Increase the knowledge of nourishing ebb-tidal deltas
+ Develop knowledge of the effect of nourishments on local hydrodynamics, morphodynamics and ecology (comprehensive monitoring program)
+ Improve large-scale numerical models used in studies on effects of sea-level rise

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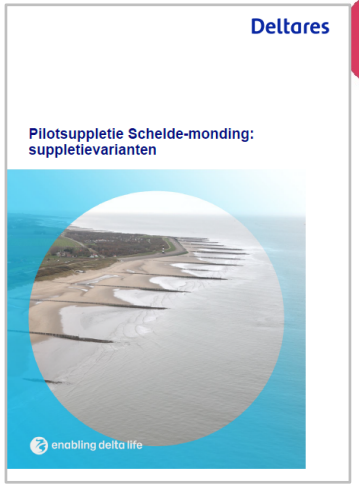
Approach



+ Inventory of existing knowledge and data of the area Vlakte van de Raan
  - 1 Description of the mouth of the Scheldt estuary and overview of data availability
  - 2 Morphology and ecology of the mouth of the Scheldt estuary

+ Differentiate different areas based on hydrodynamics, morphology and ecology and rank these according to pre-defined criteria (accessibility, knowledge questions, …)
  - 3 Pilot nourishment: assessment framework and alternative locations for the nourishment

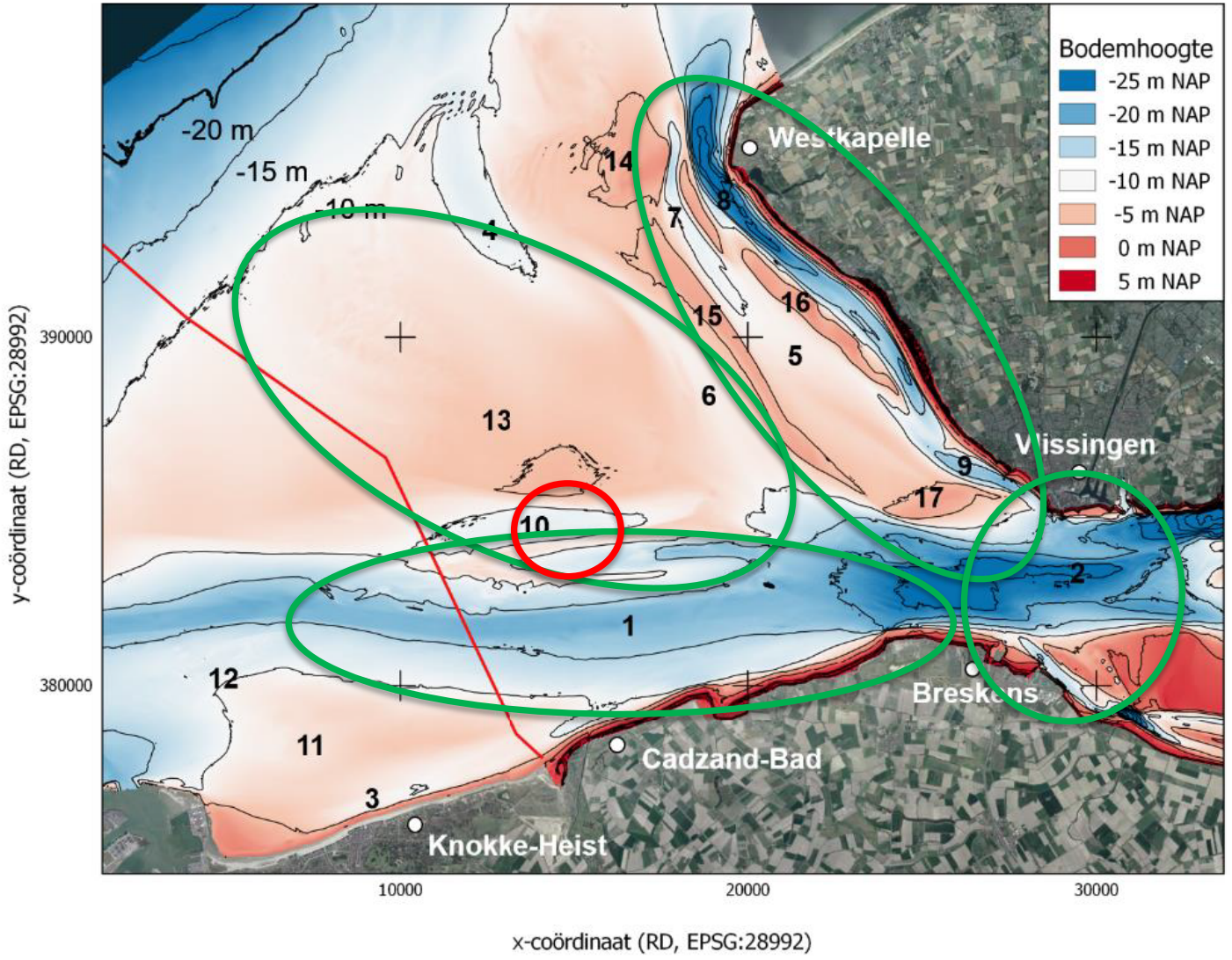
Approach

+ Detailed studies on the preferred location were carried out to gain more insight in the morphological and ecological behavior
  - 4 Sediment transport paths in the mouth of the Scheldt estuary
  - 5 Morphological development of the southern part of the Vlakte van de Raan
+ Variants in the design of the nourishment and the information requirements to monitor the evolution were described
  - 6 Pilot nourishment in the mouth of the Scheldt estuary: nourishment variants
  - 7 Information and monitoring requirements for the pilot nourishment

All reports

Available on the IMMERSE website

In Dutch with an English summary



1. Wielingen
2. Rede van Vlissingen
3. Appelzak
4. Deurloo-West
5. Deurloo-Oost
6. Geul van de Walvischstaart
7. Geul van de Rassen
8. Oostgat
9. Sardijngeul
10. Spleet
11. Paardenmarkt
12. Bol van Heist
13. Vlakte van de Raan
14. Rassen
15. Elleboog
16. Bankje van Zoutelande
17. Nolleplaat

Further steps

+ The project is delayed for about a year due to legislation of nitrogen disposition
+ Explore the possibility with Flemish government (MT) to use sediments coming from maintenance dredging (Western Scheldt and Vlakte van de Raan)

+ Actual planning sediment pilot
  - Design and T0 monitoring (2022)
  - Preparation of and apply for permits (2022)
  - Construction of the nourishment (2023)
  - Monitoring development and effects (2023 – 2025)
  - Evaluation (2026)

Summary and conclusions

+ We used research questions, existing knowledge and government policy and asset management as framework to create a consistent and explainable project assignment for the pilot
+ Early involvement of stakeholders in the project (2019, 2022 coming up)

+ Large scale infrastructural pilots require a long preparation time: be aware that delays can and will occur
+ Monitoring of the evolution will be done over 2 years, therefore not all answers will be available before 2026


Thank you for your attention