

# NEDERWIEK WIND FARM ZONE

## MORPHODYNAMIC AND SCOUR ANALYSIS

As part of its climate goals, the Dutch Government aims to install 90 TWh/a of offshore wind energy by 2032. Offshore wind farms will be built within designated Wind Farm Zones. RVO, executive agency for the ministry of Climate and Green Growth, and Dutch transmission system operator TenneT have, therefore, started preparations for further developing the Nederwiek Wind Farm Zone under the 21 GW roadmap. The Nederwiek Wind Farm Sites I-III (up to 6,000 MW) are currently being developed for tendering.

The Nederwiek scour and morphology study aimed to improve understanding of the seabed morphology, morphodynamics, and infrastructure-related scour potential at the Nederwiek Wind Farm Zone.

A detailed data analysis was carried out to:

- To characterise the prevailing hydrodynamic, wave, and sediment (transport) regimes;
- To identify and characterise the seabed morphology, bedforms, and associated features and morphodynamics;
- Assess the surficial sedimentology and shallow geology focused on the implications for sediment transport and future morphological response of the seabed.

Based on the results of this data analysis, a prediction of the likely future spatiotemporal variability in seabed levels over the proposed life cycle of the wind farm was made to support the design, installation, and maintenance of wind turbines, substations and their foundations,

and inter-array cables.

Furthermore, a feasibility level assessment of the to-be-expected scour depth was made. A time-dependent scour development model was used to compute the equilibrium scour hole depth and characteristic timescale of the scour for each timestep to calculate the development of the scour hole over time.

A feasibility-level design of a dynamically stable, loose rock scour protection was made, as predicted scour depths were expected to be too large to allow for free scour. The deformation model from JIP HaSPro (2023) is used with the 90% non-exceedance values to calculate the required gradings of the armour layer of a dynamically stable loose rock scour protection.

This comprehensive study provides critical insights into the seabed dynamics and scour potential at the Nederwiek Wind Farm Zone. All reports, data and an explanatory webinar are freely accessible [here](#).

### CLIENT

Rijksdienst voor Ondernemend Nederland

### LOCATION

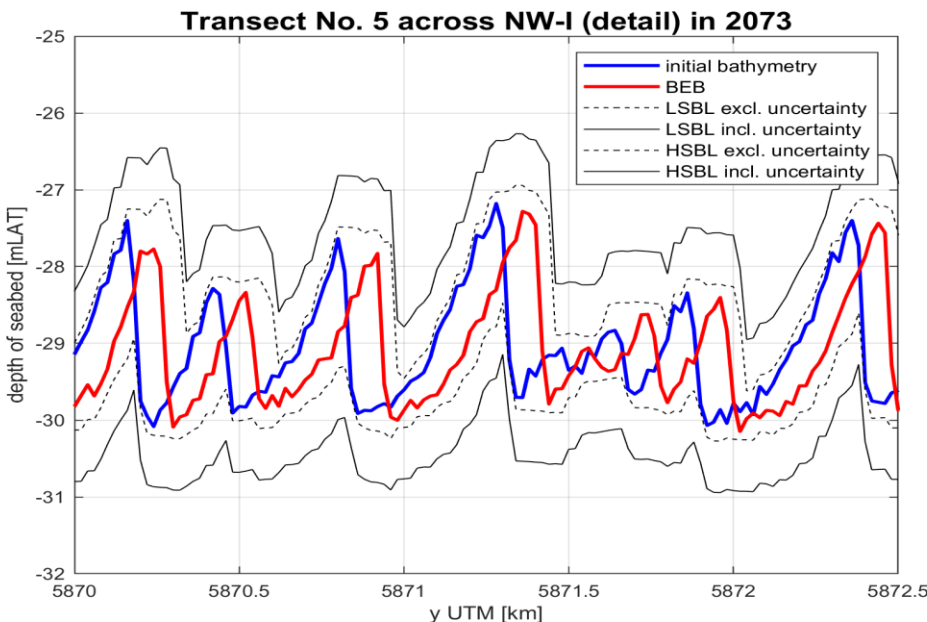
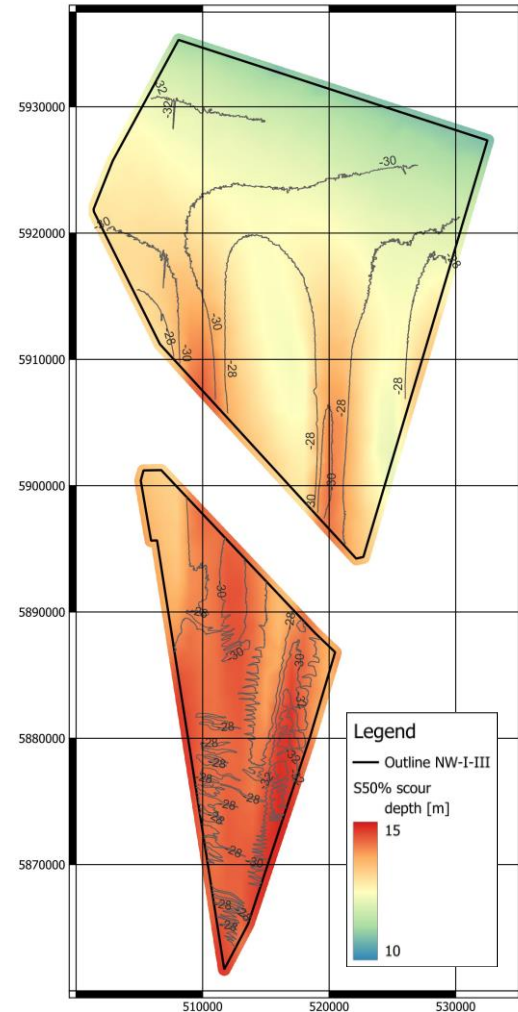
Dutch continental shelf

### DATE

2024

### SERVICES

- Hydrodynamic, wave and sediment transport regime analysis
- Historical and future sand wave analysis
- Scour predictions
- Seabed protection design



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