

Morphology Study for the Planned Offshore Wind Park “Meerwind”

assignment

The project developer Windland Energieerzeugungs GmbH (Berlin, Germany) is planning an offshore wind park (“Meerwind”) in the German Bight of the North Sea. For the land connection of the electricity via a high-voltage power cable Windland required an investigation of the morphological stability along several cable route options.

For the design of a cable route several aspects need to be taken into account, e.g. operational safety, ecology, prohibited areas (e.g. anchorage areas) and economical aspects. These factors determine a possible corridor where the cable can be buried. Due to the risk of damage from dragged ship anchors and fishery equipment the cable needs to be covered by seabed material. Therefore, morphological variability along the proposed cable routes became an important issue in the Meerwind project.

WL | Delft Hydraulics was requested by Windland to conduct a comparative study of various route options on the basis of seabed mobility and variability.

client

Windland Energieerzeugungs GmbH (Berlin, Germany)

period

September 2003 – March 2004



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keywords:
offshore wind park
power cable
morphology
North Sea



objective

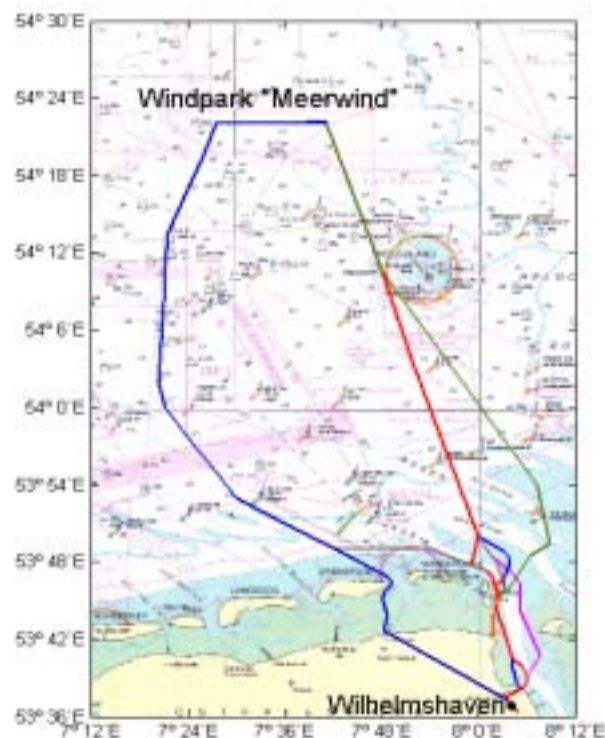
The objective of this desk study was to analyse the morphological variability along 10 different route options, to predict future changes, and to identify morphologically active route sections.

project location

The envisaged land connection for all considered cable routes was a transformer station close to Wilhelmshaven in the North of Germany. The proposed cable routes and sub-routes (in total 383 km) comprised different options for the course between the wind park “Meerwind” north west of the island Helgoland and the land fall.



Site map planned offshore wind park Meerwind and land connection



Nautical chart and investigated cable route options

The most important morphological features of the Jade-Weser estuary were described. Generally eroding and sedimenting areas were identified for the Jade estuary.

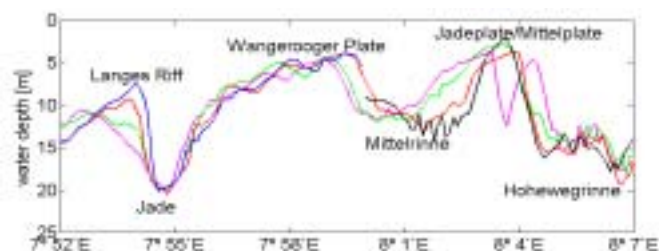
Finally, routes and route sections were recommended which look promising with respect to long-term morphological stable behaviour.

Study contents

The study started with data collection. Historical bathymetry survey charts, soil data and information on human activities (dredging, dumping, infrastructure measures) were collected from local authorities.

Numerous bathymetry charts were digitised along the proposed cable routes. In this way morphological developments were determined for the last 30 years. Based on these profiles, historic changes of depth contours and engineering judgement future trends were given for the morphological variability.

Additionally, several profiles for morphologically dynamic areas of critical sections were analysed. In this way, general trends (directions, shifting speed) of movements of major banks and channels were found.



Historical cross section of the Jade-Weser estuary (west-east)

WL | Delft Hydraulics

Decisive advice: from multidisciplinary policy studies to design and technical assistance on all water-related issues.

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