

Fact Sheet

Brief Description of the Planned Offshore Wind Farm “Witte Bank”

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1. PRELIMINARY REMARKS

This document summarizes the key properties of the offshore wind farm project “Witte Bank” (in the following referred to as the “Project”). All information pertaining to the Project contained herein has been compiled to our best knowledge and may have to be further detailed in the course of further scrutiny of the Project.

This document may contain certain forward-looking information, e.g. regarding project size, economic feasibility and time schedules. Taking into account the current state of project development, we generally used conservative assumptions. As a precaution, it has to be noted that circumstances outside of the realm of influence of the Projekt Group of Companies such as changes in the political or legal environment may change or void the properties of the Project as presented herein. Furthermore, it has to be noted that projects in development are subject to the usual project development risks.



2. OFFSHORE WIND FARM “WITTE BANK”, GERMAN EEZ, NORTH SEA

The Projekt Group of Companies made its mark with the successful development of the offshore wind farm “Sandbank 24”. In close co-operation with our network of experts, we not only achieved to acquire the construction permit by the Federal Maritime and Hydrographic Agency (Bundesamt für Seeschifffahrt & Hydrographie, BSH), but also pushed the development of key pre-construction aspects including tendering of the wind turbines and the foundation design. In November 2011, the group of companies sold the project to Vattenfall Europe Windkraft GmbH.

Now we continue with “Witte Bank” ...

2.1. INTRODUCTION

Briefing

Projekt Ökovest has carried out a potential study to identify an area suitable for the development of a major offshore wind farm utilizing next generation multimegawatt wind turbines and the expertise generated in the “Sandbank 24” project. The Project area southwest of “Sandbank 24” has been identified as a suitable site. The layout of the application area results from the surrounding shipping lanes (determined by the federal land use plan), the FFH protected area DE-1209-301F as well as neighboring offshore wind farm sites (Gaia I-V).

The area offers potential for up to 118 wind turbines of the 5-8 megawatt class. Currently, we plan the erection of two substations and an operations and maintenance platform.

In the course of the compilation of the federal offshore grid plan for the German EEZ, “Witte Bank” together with other wind farms has been identified as “offshore installation, which is suitable for a joint grid connection” (Source: Draft Offshore Grid Plan for the North Sea as of July 2012).

The Site

Approximately 65 nautical miles (≈ 120 km) west of Schleswig-Holstein (Sylt)

Boundary coordinates (UTM 32N):	
Top	6.117.124 m
Left	333.509 m
Bottom	6.100.089 m
Right	343.573 m



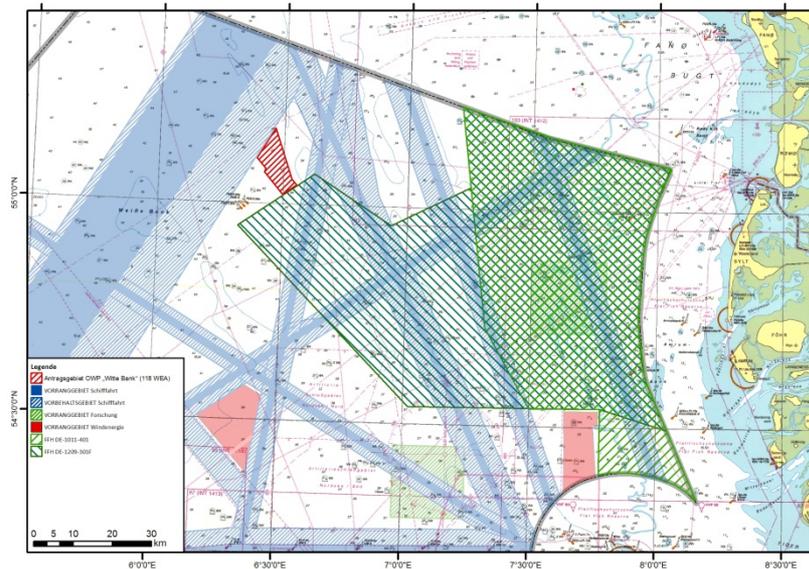


Fig. 1: Location of the Project area in the North Sea

The areas highlighted in green pattern are FFH protected areas, blue patterns highlight the shipping lanes according to Federal Land Use Plan.

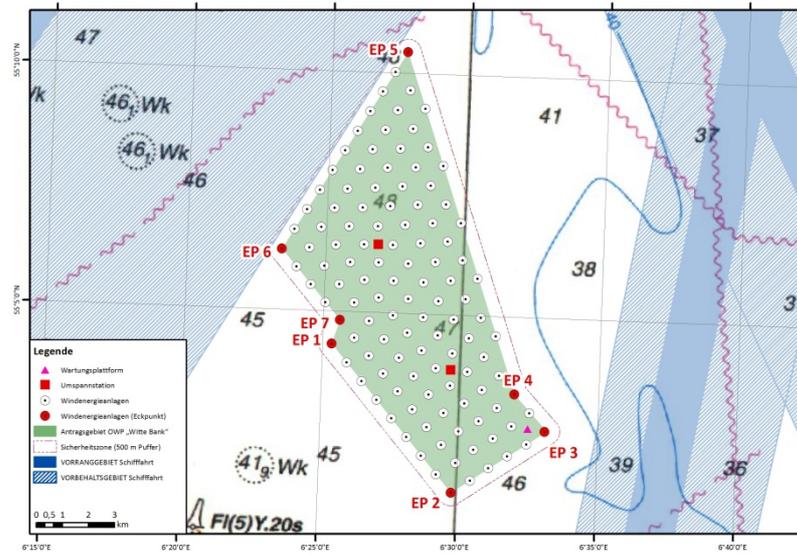


Fig. 2: Detailed Project Layout

Project Area	app. 77 sqkm	
Output	<ul style="list-style-type: none"> • Number of turbine sites: up to 118 • Total power (6 MW turbines): up to 708 MW 	

2.2. PERMITTING PROCEEDINGS

Permit Status

- Filing of application (BSH) 18 May 2009

Originally, the application was filed for a total of 171 wind turbine sites. In the course of a harmonization with neighboring applications, the number of turbine sites was reduced to 118.

The application conference was held in January 2011. The responsible Water and Shipping Directorate concluded in their advisory opinion that

„[...] no negative influences pertaining to the safety and efficiency of marine navigation can be recognized.“

The public hearing phase was concluded in summer 2012. No material obstacles to a permit have been identified.

Environmental Baseline Investigations

Full two years of environmental baseline investigations have been completed. BSH has confirmed by e-mail that the scope of investigations is compliant with the requirements stipulated by the relevant standards.

2.3. TECHNICAL PROJECT DEVELOPMENT

Water Depths

The project area shows water depths in the range of 40 to 49 meters.

Soil Conditions

An evaluation of grab samples from the environmental baseline investigations revealed in general fine to middle surface sediments with fractions of stone, gravel and silt.

In March 2011, FUGRO has conducted first spot-check geotechnical investigations at three turbine sites in the project area. The recovered soil profiles revealed a good suitability of the soil for gravity base foundations as well as for piled foundations.

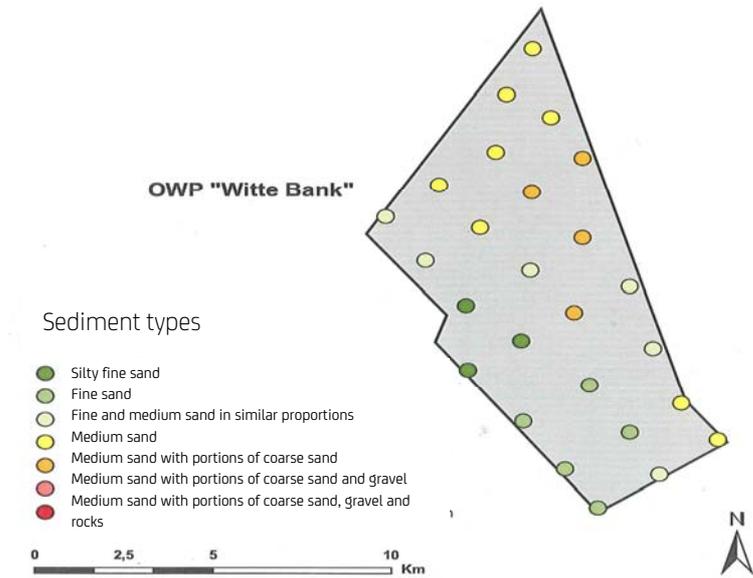


Fig. 3: Surface sediments in the Project area

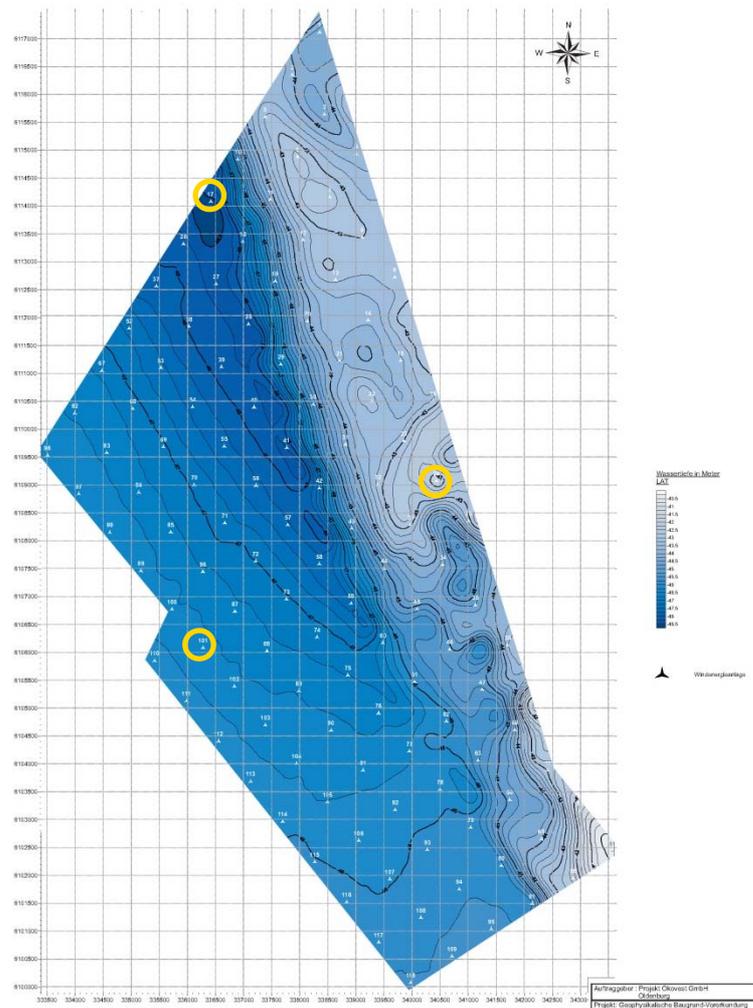


Fig. 4: Locations of spot check geotechnical site investigations (circled)

Grid Connection and Electrical Infrastructure

As it is planned to deploy wind turbines in the 5-8 megawatt class, the current planning comprises the construction of two transformer stations. From there, connection shall be made to the nearest TenneT converter station.

The Project Area has been included in the Grid Connection Cluster 13 as stipulated by current draft for the amendment of the Spatial Offshore Grid Plan¹ (German: Bundesfachplan Offshore) for the German exclusive economic zone (EEZ) of the North Sea (as of the hearing of Dec. 16, 2014). It has to be noted that many wind farm projects (mainly west of Witte Bank) have not been included in the Spatial Offshore Grid Plan. The grid connection Witte Bank will be established by the “NOR-13-1” cable system, for which a start of construction is envisioned for the year 2022 within the recent 2nd draft of the Offshore Grid Development Plan² (German: Offshore-Netz-Entwicklungsplan O-NEP) as of November 4, 2014.

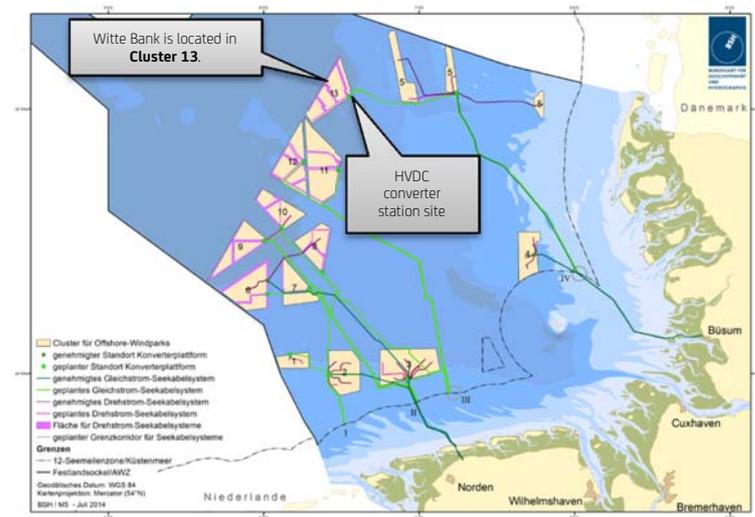


Fig. 5: Chart of the Spatial Offshore Grid Plan

Foundations

The current planning comprises the use of so-called jacket foundations although other foundation types are under investigation.

¹ See also: http://www.bsh.de/en/Marine_uses/BFO/index.jsp

² <http://www.netzentwicklungsplan.de/en/content/o-gdp>



Fig. 6: Typical jacket foundation (here: Alpha Ventus)

Operations & Maintenance

Due to the large coastal distance, the application comprises an accommodation and maintenance platform. In order to facilitate helicopter operations, the platform has been positioned near the edge of the area.

2.4. OUTLOOK

The next important mile stone in the course of the project development of “Witte Bank” is the acquisition of the construction permit. A pre-requisite for this is the acquisition of the 1st BSH Release.

Against this background, the next work packages will comprise conducting the preliminary geophysical and geotechnical site investigations as well as the compilation of a certified preliminary foundation design. The certification also comprises an investigation of the collision behavior of the foundation.