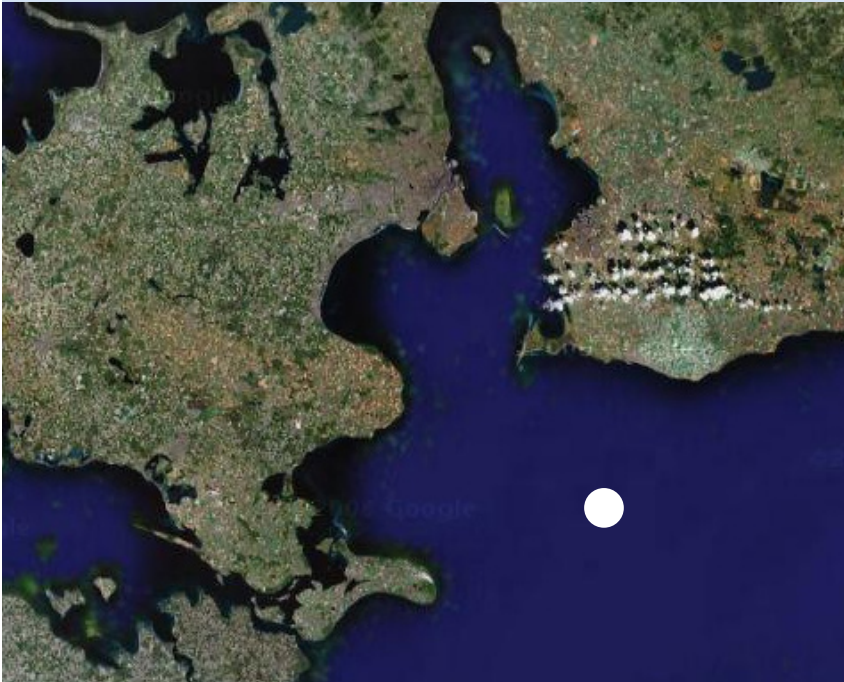


Kriegers Flak Offshore Wind Farm, Sweden



Consultancy Services:

- Foundation Design basis
- Sediment Spill Assessment for Concrete Foundations
- Tender preparation for geotechnical investigations
- Contract preparation for geotechnical investigations
- Supervision of geotechnical investigations

Client:

Vattenfall

Project period:

2006-2010

Project Description

On the Swedish part of the site "Kriegers Flak" the power company Vattenfall is planning a 640 MW offshore wind farm constituting 128 pieces of 5 MW turbines. The water depths on the site vary between 15 and 42 m.

Grontmij | Carl Bro has provided permanent staff for preparation of design basis for foundations of the offshore wind farm. The services provided include evaluation of wave, current, tide and surge as well as evaluation of ice. Further load combination evaluations including wind turbine loads were carried out. The evaluations lead to prediction of loads for different foundation structures. Grontmij | Carl Bro also provided assistance to writing of the design basis according to IEC61400-3 and DNV-OS-J101.

A spill assessment for possible future implementation of concrete foundations was prepared as an amendment of the EIA-report in order to open the possibility of using concrete foundations.

For the offshore geotechnical investigations Grontmij | Carl Bro has provided several services.

Initially a geotechnical baseline had to be provided in order to plan and optimise the future geotechnical investigations that would be deemed necessary. Grontmij | Carl Bro evaluated existing geophysical and geotechnical data and planned an additional geophysical investigation and the full geotechnical investigation. The detailed geophysical and geotechnical evaluation planned by Grontmij | Carl Bro resulted in a substantial reduction of the initially planned necessary number of borings and CPT – and a substantial reduction of the budget.

In order for the Client to tender for contractors for the geotechnical investigations Grontmij | Carl Bro prepared pre-qualification and tender documents for international tendering in accordance with EU rules and based on FIDIC. Following the evaluation, Grontmij | Carl Bro on behalf of Vattenfall managed negotiations with all tenders and prepared a contract.

During the summer of 2007 Grontmij | Carl Bro supervised the geotechnical investigations.

Further Grontmij | Carl Bro has been project manager of a foundation concept study where 5 consortia of consultants and associated contractors have developed new or improved foundation concepts including steel monopile, optimized jacket, drilled concrete monopile, gravity concrete tripod and gravity concrete cone. Results are presented at a seminar in Stockholm March 2009.

