



Shallow Water Projects Expertise

1.0 Case studies in IJsselmeer, The Netherlands

- **OWF Windplanblauw (2022):** Cable burial study, CBRA lite, cable stability assessment, landfall assessment, review ship-ping lanes, crossings, cable installation & protection evaluation.
- **Westermeerwind OWF (2015 - 2016):** Provision of QC management. Provision of client representation services for pile driving, heavy lift and marine operations with regard to the installation of the wind farm.

2.0 Other shallow water projects with challenging soil conditions

- **Connection Ameland – Holwerd (2020 and ongoing):** Owner's engineer advising on all mat-ters relating to the execution of the construction of new connection between Holwerd and Ameland, passing through the shallow Wadden Sea, the Netherlands. This includes, not limited to, advice on route design & engineering, burial & protection studies, landfalls & shallow water studies, snstallation engineering, studies & procedures, construction engineering and supervising the execution of the work.

- **NorNed (2005 - 2016):** Installation between The Netherlands and Norway. Acting in the capacity of the owner's engineer on the appraisal of the contractor, providing engineering and operational procedures, and representing the client during offshore works. Other works, after installation, include: O&M engineering including developing a maintenance strategy, setup of the PMS information system. Specification of ITT documents in respect to the shallow water survey strategies (and its requirements). Tender and offshore client management for the „lowering of the Cable in a crossing of the shipping channel“ and „remedial cable burial“ on the NorNed interconnector cable in the area near Eemshaven. (Westereems, the Netherlands). Development of a (Geographic Information System) GIS system. Client representation of the NorNed Deep-water surveys on the interconnector cable.
- **Horns Rev 3 (2016):** Trenching assessment study (TAS) for the Danish export cable system including reviewing the seabed features: shallow soils, UXO, boulders, wrecks and subsea infrastructure, soil risks, proposed trenching tool and re-routing options. Review of the hydrographic, geophysical and geotechnical survey data.
- **COBRA Cable (2015 - 2020):** Interconnector between The Netherlands and Denmark, passing both the Dutch and Danish shallow Wadden Sea. Primo Marine was the owner's engineer for the complete project: UXO desktop study, burial assessment study, cable and marine engineering, surveys & tendering management, bid package management, review of permit requirements, installation and route engineering, ITT package management and client representation.
- **Gemini OWF (2015 and ongoing):** Supporting the project team with focus on managing the dredging and trenching activities, from the Wadden Sea to the North Sea, as well as technical support of the on-going O&M phase.
- **DolWin, BorWin, HelWin and SlyWin (2011-2015):** Several burial assessment studies, protection studies, landfalls and shallow water studies for export cables in the German Wadden Sea and North Sea.

3.0 Worldwide experience

- **Sun Cable (2021 and ongoing):** Primo Marine is providing marine engineering and owner's engineering for the 4200km subsea cable route of the world's largest solar energy infrastructure network between Darwin (Australia) and Singapore. Works include: market analysis, route engineering, innovation and strategy.

For more projects, we would like to refer you to our interactive online map:

<https://primo-marine.com/projectmap.html>