



Case Study : Export cable installation

# Cathie provides end to end management of Windfloat Atlantic export cable installation in Portugal.





## The project

Windfloat Atlantic is a 25MW floating wind farm off the coast of Viana do Castelo in Portugal. It consists of three WindFloat semi-submersible platforms which support V164 8.33MW wind turbines that are anchored to the seabed at a water depth of 100m. These turbines are connected by a network of inter-array cables to one export cable.

In 2015, the Portuguese government allocated the responsibility for the design and commissioning of the export cable to Redes Energéticas Nacionais (REN), the Portuguese transmission system operator.

## Our challenge

We were required to provide a holistic geoscience and geotechnical engineering solution for export cable landing, negotiating sea defences and a river crossing. Our work on the project started in 2014 when we were contracted to assist EDPR in the early stages of route engineering and landfall design as well as initial geophysical surveys and corridor selection.

Then, from 2016 we were contracted by REN to support the project from early planning through to the end to end management of the Windfloat Atlantic export cable installation. This included budget and programme support, survey design, GIS support, procurement management support, on-site management support and due diligence on all aspects of the cable installation in a demanding marine environment.

## The solution

We have the in-house capability to help developers and contractors manage a project from start to finish, while leveraging our teams' specialist geoscience and geotechnical skills.

Our initial work in 2014 meant that by carrying out desk studies, geohazard assessments and a CBRA we were able to highlight any hazards, risks and environmental factors that may affect the project and advise on the best corridor for the cable. Having this prior input to the project meant we could then build on our already existing knowledge in order to support REN.

We carried out several visits to the landfall sites, had meetings with key stakeholders and undertook several stages of engineering work, including design of further survey requirements to help establish the ground model and aid routing.

We then partnered with local Portuguese consultancy WavEC for the electrical and mechanical engineering aspects of the cable and dry-mate connector design and installation. OPTIMUM (specialist trenchless consultants) supported the technical supervision of HDD (Horizontal Direction Drilling) works.

In combination with our subconsultants we completed the ITT design and the cable protection requirements and prepared the technical specifications required for the commissioning of the construction contract. We also provided technical support during the technical evaluation of the EPC contractors' offers. The contract was then awarded to Hengtong with DeepOcean as their cable installation contractors.

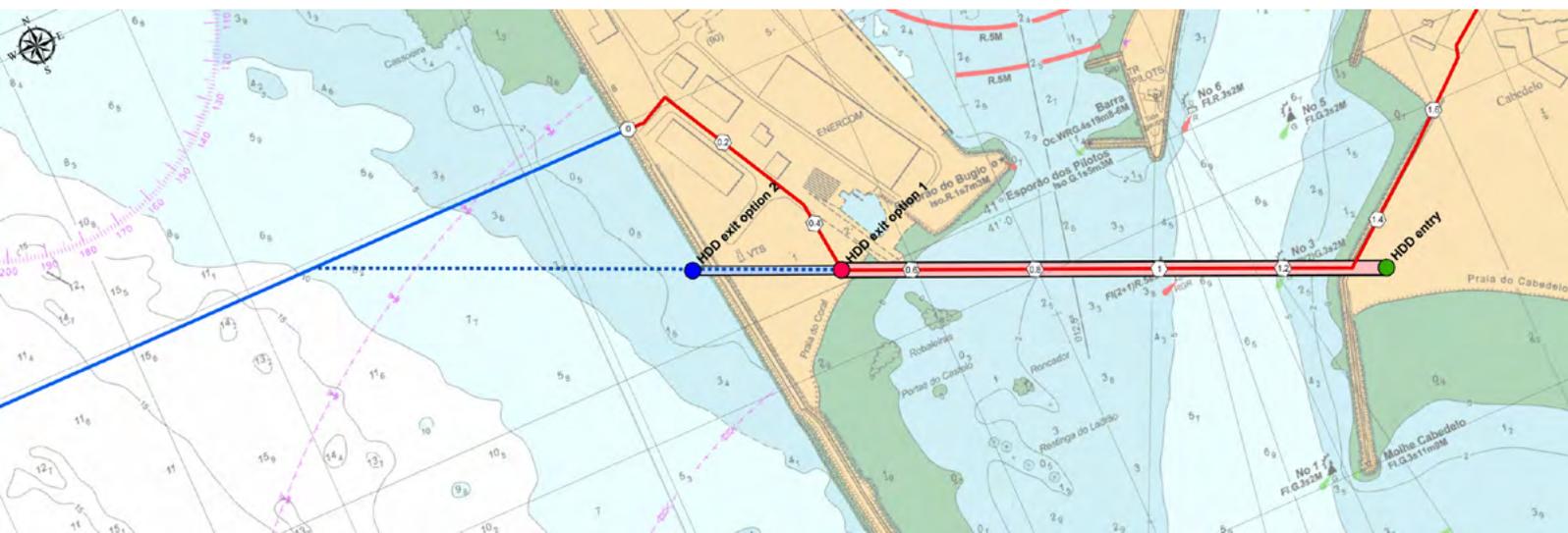
The project involved the design and installation of a highly technical and demanding push-reaming HDD section through very strong metamorphic rocks at Viana do Castelo, and HV cable lay works directly onto rock in a highly energetic marine environment. Sections of trenching in sediment were also required toward the offshore end of the route. With the contractors in place, it was our responsibility to manage the detailed engineering and construction stages and perform due diligence on all aspects of cable installation and trenching methodologies.

With such a complex installation scenario, DeepOcean designed effective solutions which were reviewed by us, in conjunction with the engineering and management team at REN. As well as acting as their offshore construction management support entity we also supported the onshore pull in works with technical attendance as well as engaging daily with the client representatives supplied by REN. The HDD was completed in June 2019, followed by the installation and trenching of the cable.

### The impact

The cable was successfully installed out to the Windfloat Atlantic windfarm hook up location in late summer 2019 and our work with REN continues. The next stages are to review the final 'as-built' documentation and assist in the preparation of the Operation and Maintenance (O&M) phase for the cable lifetime.

The client was very pleased with the work we carried out. Our full end to end engineering input and management from our team of cable installation experts meant the project was delivered on time and on budget and our technical expertise at each stage contributed to the overall success of the project.





**CATHIE**

