



# CASE STUDY

## WINDFARM ONSHORE CIVIL ENGINEERING DESIGN

### HIGHLIGHTS

- Temporary Works Design
- Site Compound & Access Roads
- Cable Trench & Joint Bay Design



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### THE CHALLENGE

Our client has been appointed to design, manufacture and install a 220kV and 400kV subsea and onshore export cable system. The successful delivery of the project will connect the wind farm to the UK's national grid, delivering electricity to 650,000 homes.

As part of Scotland's ongoing commitment to net zero, the project is an important step towards the UK's goal of providing enough offshore wind energy to power the country. Up to 10GW of wind energy will be generated from the offshore wind farm, contributing a quarter of the UK's goal of 40GW by 2030.

The consented cable corridor route was extremely narrow at just 30m wide, with several topographical, geotechnical, land consent and engineering challenges. IKM's engineering team were appointed to provide temporary and permanent works design associated with routing the cabling from the landfall transition bay to the substation.

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### THE SOLUTION

The topography of the cable corridor required careful navigation of water crossings, A class roads and land consent challenges. Drone and manned surveying techniques were used to efficiently and safely develop a ground model for adoption in the route.

Traffic impact to the surrounding community was a significant consideration for the client, and IKM supported this with compliant access bell mouth access point design, traffic management support and signage.

IKM's onshore civil work scope also included:

Detailed civil engineering design of the cable trenches and circuit route of a 30km corridor

- Design of a transition bay, twenty-five joint bays & pulling pit design to allow jointing of the subsea cable with the beginning of the onshore cables
- Civil design of 30km of temporary access and haul roads, including twenty access points to provide vehicle access from existing public roads
- Horizontal directional drilling (HDD) works at fourteen locations (comprising an entry and exit pit at each location). This includes HDD works below several A and B-class carriageways, a live railway asset, wooded areas, and the River Isla.

- Geotechnical design of ground conditions
- Detailed design of the main construction site compound and two satellite compounds

IKM developed a civil engineering Design Intent Document to offer a clear overview of the design elements associated with the onshore work, including:

- relevant design data
- reference codes
- and standards that apply to each design

The successful delivery of the onshore civil engineering design work allowed for the completion of onshore cabling connections to reliably export green electricity to people across the UK.



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