

Combigrid® - Temporary haul road - Dogger Bank, UK

Stabilisation and reinforcement for construction of a temporary haul road

- **Project Name**
Dogger Bank On-Shore Civils & Cable Installation, East Riding of Yorkshire, UK
- **Client**
Joint Venture:
SSE Renewables, UK
Equinor, Norway
Vårgrønn, Norway
- **Designer/Consultant**
BBG Bauberatung Geokunststoffe GmbH & Co. KG, Germany
- **Contractor/Installer**
Jones Bros Civil Engineering UK
- **Product**
Combigrid® 40/40 Q1 GRK 4 C



Dogger Bank Wind Farm is a joint venture between SSE Renewables, Equinor and Vårgrønn, and is being undertaken in three phases. Development of the land-based infrastructure and installation of onshore cabling was contracted to Jones Bros Civil Engineering UK and, for the first two phases of the project, undersea cabling will come ashore at Ulrome, a few miles south of Bridlington, and then connect with the existing National Grid at Creyke Beck substation, Cottingham, via 20 miles of underground ducting.

When completed, Dogger Bank Wind Farm will have the capacity to generate up to 3.6GW of electricity; sufficient energy to power up to 6 million homes.

Challenge

Facilitating these onshore activities would require the construction of over 17 miles of temporary haul roads across the Yorkshire countryside and, although temporary, construction of the roadways was required to be nothing less than substantial. For the duration of the project, deliveries of cable will traverse the route on low-loader vehicles, bringing over 80 drums of cable to the site; a combined total payload of 3,362 tonnes.

Onshore enabling works also included the preparation of load-bearing platforms for the construction of two converter stations, south of Beverley, where the DC current from the wind farm will be converted to AC current before reaching the substation at Cottingham, as well as the construction of compounds and stable lifting platforms at various points along the route.

Jones Bros have delivered civil engineering services for wind farm projects across the UK and have gained wide experience of the efficacy of Naue's geotextile products for ground reinforcement and stabilisation when constructing vehicular access roads. The company approached Naue for design advice on the suitability of geotextiles for the construction of stable, resilient haul roads and working platforms that would play a crucial role on this project.

Solution

There were several reasons for employing a geosynthetic design solution on this project:

- 1) all aggregate required for the roadway construction would be imported to site – using a geocomposite stabilised and reinforced base can significantly reduce the volume of aggregate required; reducing both raw material and transport costs, as well as minimising air pollution.
- 2) the low bearing capacity of the existing ground would have required substantial volumes of aggregate using conventional construction methods.
- 3) the requirement to return the land to its former state dictated that a barrier layer was employed which could be removed easily following completion of the project.
- 4) separation provided by the geotextile layer was necessary to prevent aggregate mixing with the agricultural soils below.
- 5) a filtration layer was required to allow rainwater to drain, whilst protecting the underlying land from potential pollution from vehicular traffic and site equipment.

Naue's engineering design partner, BBG, were consulted during the preliminary stages and recommended the use of Combigrid® 40/40 Q1 GRK 4 C as a basal layer, topped with a layer of well-graded, crushed aggregate. Naue supplied material direct to site, at regular intervals, to six different locations along the route.

“We generally sent full loads of 50 rolls at a time”, explains Infrastructure Manager, Steven Airey. “A full load would cover an area in excess of 23,500m², and deliveries were co-ordinated to correspond with Jones Bros' progress on the project – in total, Naue supplied 350,000m² of Combigrid® 40/40 Q1 GRK 4 C.”

When the temporary roadways are no longer required, the land will be returned to its previous state; the stone aggregate will be excavated, washed, and sold back to local suppliers. The geotextile will be lifted, bailed-up, and repurposed at a local waste-to-energy plant.

James Lockwood, Jones Bros' project manager commented: “From design stage through to delivery, Naue have, as always, provided excellent service; from taking on-board the initial project brief, producing construction design concepts and final designs, through to manufacture and supply, their teamwork has enabled us to progress the project through what was, for everyone involved, a challenging year.”

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