Tensar stabilised floating road construction minimises disruption to environmentally senstive peat bog

Roads and Platforms
№ 476

# Viking Wind

Shetland, Scotland

## Benefits

**Demonstrated a proactive approach to conservation** by adopting floating roads design from the outset and communicating the benefits to stakeholders

**Overcoming planning objections** raised by stakeholders regarding peat loss, hydrological changes and the impact on flora and fauna which were addressed by the use of floating roads

**Minimised environmental impact** compared to excavation, storage and reuse of peat

**Limited hydrological disruption** by use of floating road, reducing impact on flora and fauna

**Reduced fill quantities** - leading to reduced haulage cost and construction CO2 emissions

## Building the UK's most productive onshore windfarm

The Viking Wind Farm in Shetland is the UK's largest onshore facility by output, and one of the world's most productive onshore farms. Most of the site is located on peat and blanket bog. From the earliest planning stage, 'floating roads' using geogrids were proposed as the most environmentally appropriate solution for access. Tensar supplied approximately 350,000m2 of geogrid to stabilise the floating roads and support cabling throughout the site.

### CLIENT'S CHALLENGE

To build and maintain the UK's largest output onshore windfarm required construction of many kilometres of access track and buried cabling. The location of this farm over a remote area of peat bog posed additional challenges. Rock fill material was readily available from borrow pits close to the site so material cost was not a big issue. However, environmental disruption had to be kept to a minimum to satisfy stakeholders and interest groups. This required a solution that would limit peat removal and any hydrological impact on the peatland.

### TENSAR SOLUTION

Floating roads were proposed from the earliest planning stages as an alternative to peat removal and backfill with rock. The use of Tensar stabilisation geogrid minimised the construction thickness for over 16km of floating road. This greatly reduced hydrological impact on the surrounding peat and the volume of rock fill to be transported. Tensar geogrid was also used in the base of cable trenches to stabilise the bedding and minimise support fill thickness, thereby reducing trench depths and limiting disruption and hydrological impact to the peatland.

 

Final turbine installation - the last of 103, with access tracks constructed as ‘floating roads’ stabilised with Tensar geogrid

## PROJECT BACKGROUND

In August 2023, the final turbine was installed on the Viking Energy project in Shetland. The 103 turbines have a combined capacity of 443MW, making this the most productive onshore windfarm in the UK in terms of electrical output. To get to this point, 280 convoys delivered over 1000 turbine components across the site. To carry these loads, plus the thousands of tonnes of construction materials, an extensive network of access tracks were needed. Most of the windfarm is sited over peatland and blanket bog. Due to the environmental fragility of the site, design and construction of the access tracks was extremely sensitive and of critical importance to the project.

Environmental studies carried out at the planning stage had identified the need to conserve the peatland. This had been reinforced by input from stakeholders and interest groups. ‘Floating road’ construction was proposed as the means to minimise the volume of peat removed and disruption to the peatland. This proposal formed part of the planning application and was crucial in gaining planning approval for the entire project.

A typical section of floating road included a single layer of Tensar geogrid placed directly over the peat. Crushed rock fill was then placed and compacted to the required level. In some locations, particularly the bog areas with high water table, a non-woven geotextile was installed below the geogrid to reduce the potential for contamination of the rock fill caused by upward migration of fines. Where the peat was very thick or loadings were higher, a second layer of Tensar geogrid was incorporated at half the fill height to improve bearing capacity and reduce differential settlement.

Having seen how the use of Tensar geogrids simplified placement and compaction of the fill over the weak peat, Tensar geogrid was incorporated into the extensive network of cable trenches. By stabilising the bedding material below the cables, the overall excavation and fill thickness was reduced. This in turn reduced trench depths and the minimised consequential hydrological disruption to adjacent peatland.

## Client
SSE Renewables/
Viking Energy Partnership

## Consultant
SWECO

## Contractor
R J McLeod

*“The use of Tensar geogrid allowed us to use “floating” road construction rather than founded road construction for 8.5km of the wind farm access roads. As well as programme benefits, this solution brought other advantages such as removing the need to excavate/haul peat, whilst minimising stone material production, usage, and haulage”*

**Ryan McLean**
Agent
RJ McLeod

 