



# Tensar®

**ROADS AND PLATFORMS**

The cable haul road needed to support heavy duty construction plant, including cable drum deliveries and horizontal directional drilling equipment

## In for the long haul

Subgrade stabilisation, using Tensar geogrid, delivered cost, time and carbon savings for 40km of haul road built over weak ground to support installation of the cable transferring electricity from the windfarm to an inland converter station.

### CLIENT'S CHALLENGE

The requirement for construction to proceed during periods of saturated ground conditions together with the need to reinstate greenfield agricultural land to former use ruled out chemical stabilisation. Murphy Group planned to use biaxial reinforcement geogrid to support construction plant loading including cable drum deliveries and drilling rigs. Local sources of aggregates were of poor mechanical strength (Los Angeles Coefficient >60) to deal with heavy duty plant loading which resulted in a need to import aggregate over considerable distances. The key driver from Murphy Group was to limit stone delivery vehicle movements, avoiding disruption to the local area whilst increasing construction output.

### TENSAR SOLUTION

Tensar informed Murphy Group that a proposal including a biaxial reinforcement geogrid for the indicated road thickness would provide insufficient support to the anticipated trafficking loads, therefore an alternative approach utilising its stabilisation geogrids was proposed.

## Triton Knoll offshore Wind farm

Subgrade Stabilisation  
Cable haul road

📍 Lincolnshire, UK

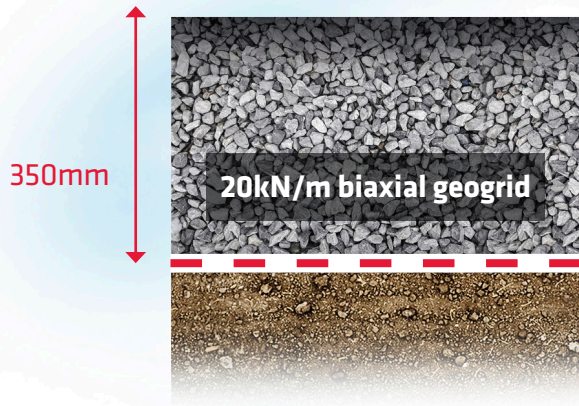
### BENEFITS

**20-25% reduction**  
in road pavement thickness

**25% savings in CO<sub>2</sub>e**  
by using less imported aggregate

**£200,000 savings**  
in total construction cost estimated

REF TEN420



*Original proposal - unable to carry predicted traffic load*



*Tensar MSL designed to carry predicted traffic load*

Performance based value with a Tensar MSL (mechanically stabilised layer)

## PROJECT BACKGROUND

The Triton Knoll offshore windfarm is located 32km off the Lincolnshire coast. Once operational in 2021, its 90 turbines will generate up to 857MW, enough to power more than 800,000 homes.

Murphy Group won the contract to install the twin 220kV buried cables running 60km, from the landfall near Anderby Creek to a substation south of Boston. The route crossed farmland and included hundreds of tunnelled crossings of rivers, roads and other infrastructure.

Ground conditions over 40km of the planned cable haul road route were highly variable. The presence of high groundwater table and the need to reinstate greenfield land upon completion precluded the use of chemical stabilisation which led Murphy Group to initially consider biaxial reinforcement geogrid to increase the ground's bearing capacity.

However, biaxial reinforcement would provide insufficient support and Tensar approached Murphy with an enhanced proposal using its stabilising geogrid to form a mechanically stabilised layer, designed to carry dynamic traffic loads from the anticipated heavy axle loads and other types of construction plant.

A key aim was to optimise aggregate thickness, as this was being imported over significant distances, while supporting the dynamic trafficking loads from lorries carrying stone and cables drums to site; and the plant installing and burying the cables. Additional bearing capacity was needed for the drilling rigs forming the tunnelled crossings.

Murphy's took advantage of Tensar's highest level of design service where detailed design calculations, section build-ups and construction guidance was provided for the haul roads. The use of a mechanically stabilised layer increased trafficking capacity of the finished road construction with a road build-up 20% to 25% thinner than the original solution.

Tensar's solution saved an estimated £5,000 per kilometre of road, or about 20%-25%, delivering total savings of £200,000 for the project. Additionally, using less aggregate reduced the road's carbon footprint by about 25%.

Client:

**Triton Knoll**

Contractor:

**Murphy Group**

*"Tensar's solution minimised the use of imported aggregate needed for the haul road, while delivering haul roads capable of supporting heavy lorries delivering materials to site, as well as providing stable platforms for horizontal directional drilling crossings."*

**Liam Gabriel**

Assistant Design Manger  
Murphy Group

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