

WEST BENHAR WIND FARM
EASTFIELD, NORTH LANARKSHIRE, UNITED KINGDOM**BASAL REINFORCEMENT****Problem**

West Benhar Wind Farm is a 30.1 MW, seven-turbine project capable of powering up 18,000 homes. To gain access to construct the turbines, a spinal road and access platforms were required to transport cranes and low-loader turbine delivery.

Challenging site conditions came in the form of Fibrous Peat, which was to remain undisturbed throughout the construction works. Peat depths ranged from 0.5m to 6.5m in key areas. A Peat management plan alongside a Waste and Habitat management plan was put in place. Spinal roads had to span these problem areas to enable any progress on site.

Solution

Maccaferri was approached by Tony Gee and Partners in February 2021 to propose suitable high-strength geogrids for use as basal reinforcement for the hard-standing platform areas as well as a reinforcement for the spinal roads.

For the working platforms at the turbine locations, the area was typically piled and capped. By using our Maccaferri MacBars software program, we calculated the required strength of geogrid as per the requirements of BS8006-1:2010+A1:2016. Paralink was used to link the caps to keep constant support and strength throughout the platform. Paralink reinforcement is designed to suspend the ground above the geosynthetic reinforcement should the ground below collapse or compress. The theory here was to bridge the space between pile caps so that the surface behaved uniformly and limited the depth of any depression occurring at the ground surface. This was a huge cost saving to the Client as the alternative would be a concrete slab.

Our road design assumed 12 tonnes for general traffic and 22 tonnes for axle loads for cranes. At wind farms, the roads receive the biggest punishment during road construction. It was assumed that each turbine base, together with turbine component deliveries and construction of the basal mattress system was no more than 10,000 equivalent standard axle loads. Imported aggregate was spread to achieve a road thickness consistent with the required trafficking. This was made up of well-graded, hard angular fill such as 6F2 or type 1 and formed a floating road.

Client: EDF Renewables**Designer / Consultant:** Maccaferri / Tony Gee and Partners**Contractor:** I&H Brown**Products used (Qty.)**

- Biaxial Geogrids

N/A

Date of construction: 02/2021 - 01/2022[Google Maps](#)[Google Earth](#)**ParaLink fully Layed out****ParaLink Installation for work platform**