Secugrid® - Carland Cross Wind Farm

Stabilisation of wind farm access roads

- **Project Name**
  Carland Cross Wind Farm
- **Date**
  August 2012
- **Client**
  ScottishPower Renewables
- **Main Contractor**
  Balfour Beatty Regional Civil Engineering
- **Product**
  Secugrid® 30/30 Q1

Secugrid® geogrids from Naue proved to be the most cost-effective and technically beneficial solution for the mechanical reinforcement of unbound access roads and crane pads.

Carland Cross Wind Farm, located between Newquay and Truro in mid-Cornwall, was one of the first wind farms to be built in the UK when it became operational in 1992.

Recently, ScottishPower Renewables has undertaken a £20 million project to upgrade and repower the wind farm to increase output from 6MW to 20MW – enough to power 12,000 homes.

The project involved replacing 15 existing turbines (tip height 49m) with ten new wind turbines, each 100m high to tip of blade, with an output capacity of 2,000kW.

Like most remote construction sites, unpaved access roads are a feature of the 500 acre Carland Cross site. Here, the task was to design and construct an unbound access road with spurs to the 10 turbine sta-tions, each of which included hard-standing for a crane.

Five metre wide unbound roads had to be constructed which would be capable of coping with extremely heavy tracked plant, such as cranes and excavators. With good ground conditions at Carland Cross, it was possible to design a scheme using geosynthetic reinforcement elements, which would be installed between the stable subgrade and a 200mm aggregate base course.

Naue Secugrid® was selected by the main contractor, Balfour Beatty, as the most cost-effective geogrid solution for the scheme. Recognised all around the world, Secugrid® geogrids have provided tensile reinforcement for base courses on a multitude of ground engineering projects.

For Carland Cross Wind Farm, Secugrid® 30/30 Q1 was installed throughout. Secugrid® Q geogrids, made from high strength, extruded monolithic flat bars, with welded junctions, are particularly well-suited for the construction of heavily trafficked areas. They offer superior soil reinforcement elements, that resist service tensile force loading, with very low elongation. This results in an immediate force connection and interlocking with the fill material without primary deformation. Secugrid® 30/30 Q1 also has a mass of just 200g/m2, making it lightweight and easy to handle. Maximum tensile strength is at least 30kN/m in both machine direction and cross machine direction.

In total, 42,000m2 of Secugrid® 30/30 Q1 was delivered to site in 4.75m wide, 100 metre long rolls, which were simply rolled out on the prepared sub-base. A hydraulic excavator followed on behind, laying the aggregate base course which was then compacted by vibrating roller, to create a reinforced mechanically stabilised composite layer.