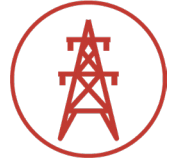




# CASE STUDY BRECON BEACONS, SOUTH WALES



## GROUND IMPROVEMENT

### CLIENT

**WALTERS**

### MAIN CONTRACTOR

**Intégral**  
Géotechnique

### SCOPE OF WORKS

Dynamic compaction

## Project Brief

Dynamic compaction of ground on top of a hill in the Brecon Beacons to create a wind turbine base.

As part of the Maesgwyn Wind Farm extension project, a new 2MW wind turbine was to be erected on a hill top site in the Brecon Beacons on a former open cast mine in Glynneath, South Wales.

To facilitate the construction of the turbine base, foundation engineers and geotechnical contractors Roger Bullivant Limited (RB) utilised the NRG dynamic compaction system to improve the geotechnical properties of the ground.

## Key Issues/ Requirements

- The chosen site was overlain by an unspecified depth of colliery spoil which was known to be at least 12m deep. The made ground was not considered suitable for founding the turbine base. Project geotechnical consultants, Integral Geotechnique, specified and designed a dynamic compaction scheme to improve the load bearing capabilities of the ground.
- Access to the hill top site was via steep forest roads with longitudinal grades up to 15% meaning that heavy plant would need to be capable of tracking up the grades.
- The exposed site raised safety issues with the use of traditional dynamic compaction plant, where a freely swinging weight is dropped from an unguided crane gib, which would be problematic in this environment.





# GROUND IMPROVEMENT



## Solution

- RB mobilised their specialised 12001 NRG dynamic compaction rig. The 66t machine, the heaviest in the company's fleet, is equipped with a leader mast allowing it to accurately and safely drop a 12 tonne compaction weight from a height of up to 12m.
- The increased accuracy of the 12001 rig leads to repeatability of impact points providing the designer with increased confidence in energy inputs.
- Exploiting the 12001's industry leading production rates, 1079no. compaction drops were made over a series of 3no. passes within the contracted period of five days.
- Additional material was imported between passes and levelling operations were carried out by the ground workers. The colliery spoil was densified at depths up to 5m providing an improved founding strata for the turbine base.
- A project such as this does highlight the importance of having a good ground investigation report made available for ground improvement; this information will aid design and could save you money in the long run. A detailed investigation will often be a requirement for warranty purposes.
- Boreholes drilled to depth allow for detailed logging of soil conditions, with in-situ testing (such as SPTs) able to determine the ground strength profile. A detailed investigation can identify any areas of concern, such as s obstructions or soft spots, which can govern the type of foundation solution adopted on each project.
- Laboratory tests are useful to identify existing soil properties, such as the plasticity index of clays to assess shrinkage and swelling, or compaction tests to determine optimal moisture content.



**"RB is the best suited company in the UK for carrying out this work."**

- Luke Holmes, Walters UK



**ROGER BULLIVANT LIMITED**

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