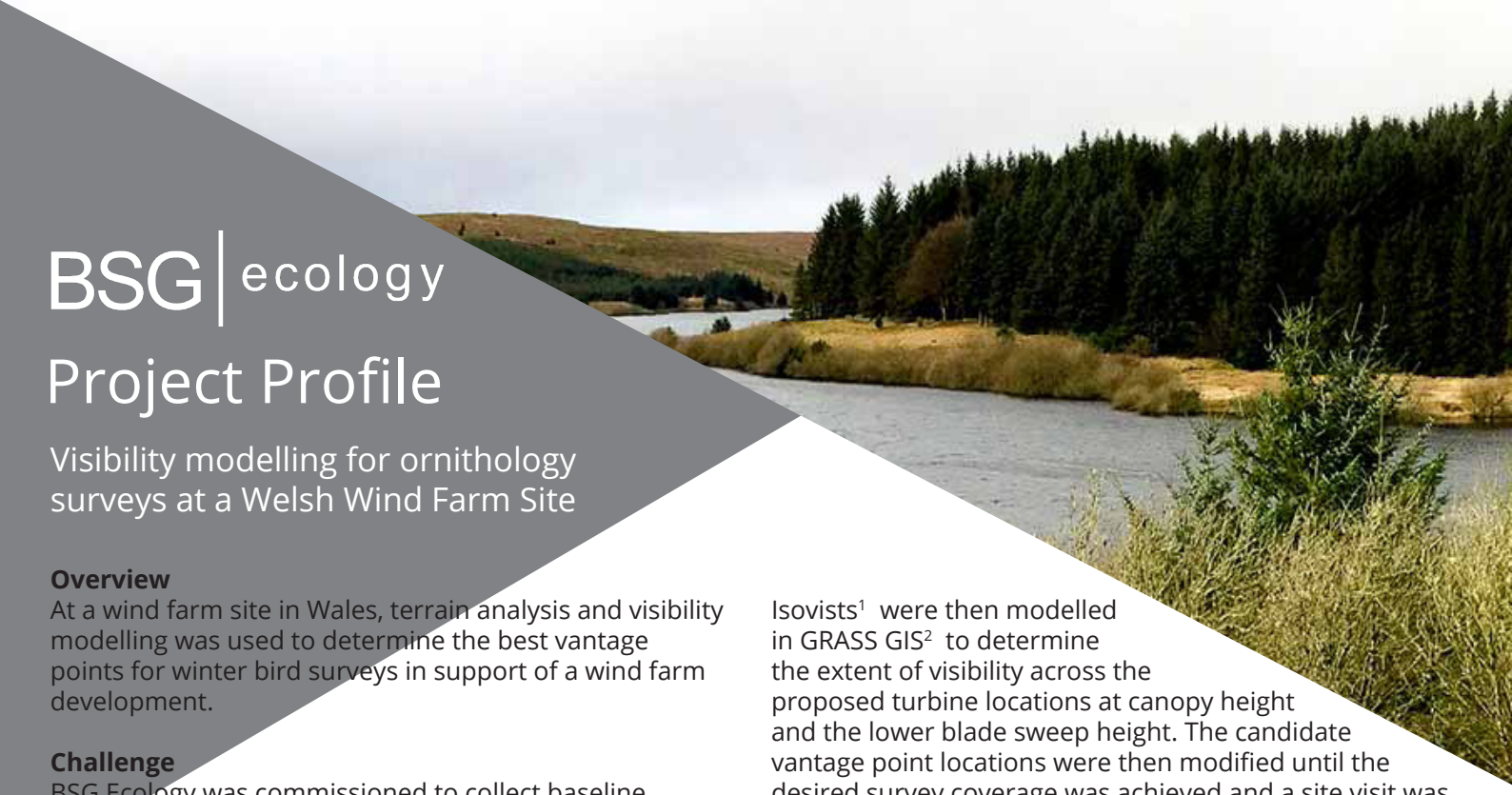

BSG | ecology

Project Profile

Visibility modelling for ornithology surveys at a Welsh Wind Farm Site

Overview
At a wind farm site in Wales, terrain analysis and visibility modelling was used to determine the best vantage points for winter bird surveys in support of a wind farm development.

Challenge
BSG Ecology was commissioned to collect baseline ornithological flight line data to inform a planning application for the wind farm. Vantage point locations needed to afford excellent views across the potentially developable area. Accurate viewshed modelling (followed by ground truthing) was critical, as once in place, data to inform the application would be collected from these locations for at least two years.

Solution
Using Ordnance Survey mapping, BSG Ecology initially selected candidate vantage point locations that appeared likely to give the best coverage of the turbine locations within a theoretical 180° 2 km viewing arc. A digital elevation model for the site was then developed in GIS based on the Ordnance Survey 10m contours. Given that the site largely consisted of plantation woodland, LIDAR data from Natural Resources Wales was then used to establish the height and maturity of the woodland area, and to determine the effect that this might have on visibility.

As this was a working forest, NRW coupe maps were also consulted to evaluate the accuracy of the LIDAR data. High-resolution satellite imagery was also used to help formulate an accurate picture of the state of the woodland and the impact this would have on surveyor visibility.

Isovists[1] were then modelled in GRASS GIS[2] to determine the extent of visibility across the proposed turbine locations at canopy height and the lower blade sweep height. The candidate vantage point locations were then modified until the desired survey coverage was achieved and a site visit was then made to confirm vantage point selection.

Outcome
The terrain analysis and visibility modelling was found to be very effective. It allowed us to maximize the coverage of the rotor swept area, including the lower blade sweep height, and achieved a high degree of coverage at the woodland canopy height. This provided a robust and defensible quantitative basis for the survey, which was achieved in consultation with NRW, and involved two years of survey effort , and was used to inform the EIA scoping report for the project.

---

[1] An isovist, or total viewshed, is the set of all points visible from a given vantage point in space and with respect to an environment.

[2] GRASS GIS is an open-source GIS suite with a broad set of tools for imagery processing and terrain modelling.