



Wind monitoring

Grayside Wind Farm LiDAR Installation



Project overview

Riversdale Enterprises was at the pre-planning application stage for the development of a wind farm in Biggar, South Lanarkshire. They were already running a noise survey and wanted a wind monitoring campaign to run alongside it. The hope is that Grayside Windfarm will be a productive wind farm due to the exceptional wind resource on site, highlighted by the number of other farm wind developments already in the area. However accurate data on wind resource potential was required to proceed with the project.

Background

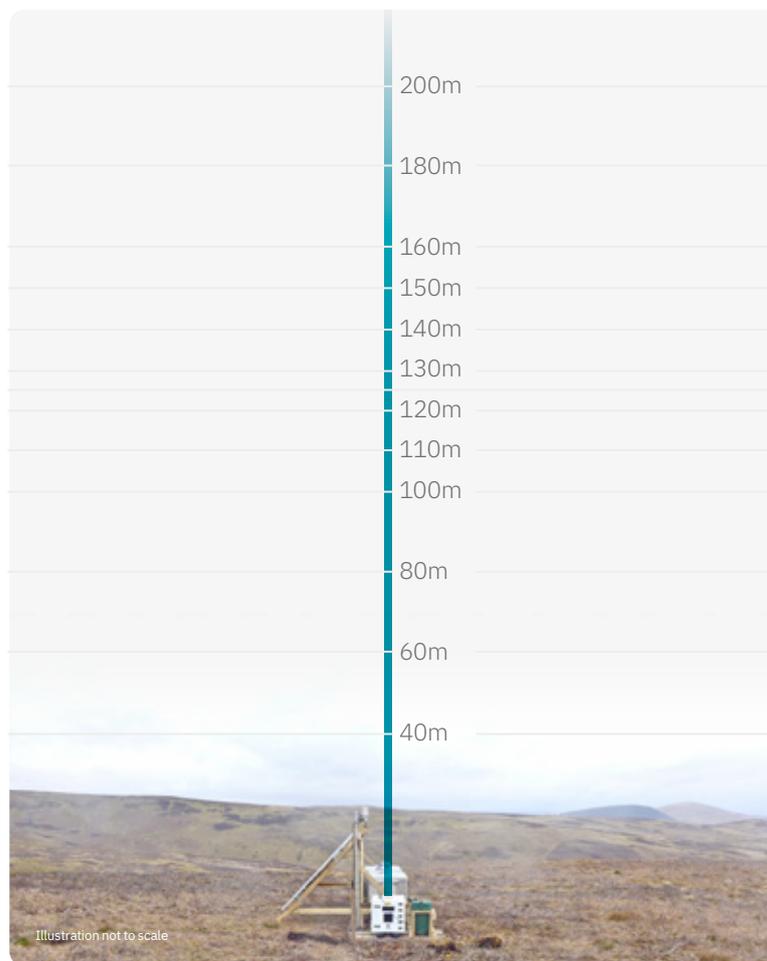
Wind energy potential assessment is crucial for accurate wind farm siting. The profitability of a wind farm often hangs on reducing uncertainty around wind resource estimation and on fine-tuning wind turbines. For a short-term installation Dulas advised that rental of a WindCube LiDAR remote sensing system at the site would be the most cost-effective way for the client to obtain data. LiDAR technology is a cost effective way of providing reliable evaluation of wind energy potential. It can also record wind measurements beyond a met mast's capability. Although the data collected from LiDAR is not as comprehensive as met mast data, the LiDAR is able to record wind measurements beyond a met masts capability, for example height.

Implementation

The terrain was challenging, a tractor and trailer were used for access. No mains power was available at this remote location so Dulas deployed an in-house designed and manufactured remote power supply* for use with the wind cube. The WindCube can be operated remotely via WIFI and uses 3G to send its data to WindCube Insights Analytics. This is a powerful cloud-based software that enables easier, IEC-compliant power performance testing (PPT) and analysis. With it, operators can perform quick, simple, transparent PPT, with IEC-compliant filtering, AEP calculation, and uncertainties reporting.

*Dulas remote power supplies are available for purchase and rental. Each one is designed to client's requirements to be used to power LiDAR and met masts reliably in the field.

“A good wind measurement strategy which **reduces uncertainty** around wind resource estimation can mean **higher leverage** when seeking financing. It allows the developer to **increase the rate of return** on their company equity.”



Conclusion of project

In its Energy Strategy published in 2017, the Scottish Government set out a target of achieving “the equivalent of 50% of the energy for Scotland’s heat, transport and electricity consumption to be supplied from renewable sources” by 2030. In order to achieve this, approximately 17 GW of installed capacity will be required throughout Scotland; onshore wind will be a key factor in achieving these goals. The hope is that Grayside Wind Farm will contribute to local and national targets by adding in excess of 50 MW of onshore wind capacity and producing low carbon electricity over its 30 year anticipated lifetime. Dulas has comprehensive experience of working with major wind farm developers in the UK, Republic of Ireland and internationally. We offer a variety of services including wind monitoring, data collection, feasibility studies, repowering and extension advice, helping to ensure that every wind scheme is successful and profitable.



WindCube

The WindCube is a CE approved, integrated LiDAR system that has proven its reliability and bankability of data in all kinds of environments worldwide. Made by Leosphere, a Vaisala company, it is the most compact and robust wind LiDAR ever manufactured. Capable of measuring at 20 heights simultaneously, and accurate across a range of heights up to 300m, the WindCube is recognised around the globe for reliable and consistent laser wind measurement. From energy yield assessment to power performance testing and optimisation, the WindCube is accepted onshore and offshore by all international standards and guidelines, including IEC, IEA, Measnet, TR6, and Stage 3 DNV-GL. Thousands of Vaisala LiDARs have been deployed throughout the world and the instruments are renowned for consistently delivering reliable, accurate data that results in a maximised return on investment. Dulas is proud to be the exclusive sales and support partner for Vaisala WindCube in the UK and Ireland.

