

solar  
**wind**  
hydro  
biomass

Trusted project delivery  
and aftercare for  
50-500kW turbines



# Why Dulas?

Established in 1982, Dulas offers professional services for renewable energy. Dulas brings together expertise, skills and knowledge in the renewable energy sector and is able to advise and install solar PV, wind, biomass, and hydro systems.

We offer unrivalled experience: We have already installed some of the first medium-scale turbines across the UK; installations backed up by knowledgeable teams who work to the highest possible standards. This experience gives our customers the best possible start - well sited turbines which generate significant power with good financial returns.

The turbines offered by Dulas are the leading models in the UK market. We offer a comprehensive range; turbine models are carefully selected as providing the best value for money for their generating capacity and class. For example, the three Endurance E-3120 turbines we installed in Devon last year are exceeding expectations both in overall performance and in generating revenue.

The customer support we offer is first class. With us you can have confidence in three decades of customer satisfaction combined with the practical expertise to provide you with outstanding service from start to finish.



# Process Explained

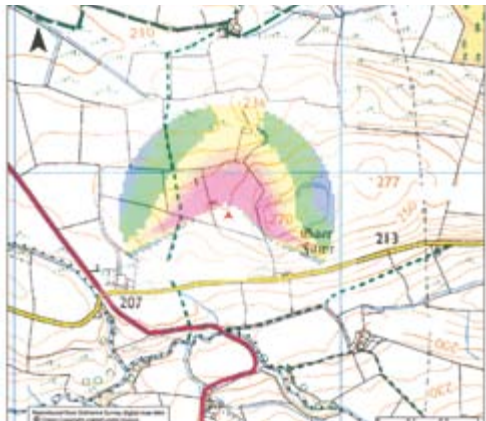


# 1

## Assess

First, our team of wind experts will look at your site or potential sites for free. The initial desk based study will ensure that there are no obvious constraints that will prevent a turbine from being installed.

To follow on we may then recommend you proceed with a planning pack. These are location specific and are completed by one of our experienced engineers. This is to ensure all the necessary checks have been made before you proceed.



# 2

## Plan

Once you have chosen your turbine we can manage your grid connection negotiations and provide technical planning support in the form of the planning pack. Your planning pack will include: optimum position, visual impact, noise profile, transport access, any ecological issues, predicted generation, a photomontage, draft landscape assessment and financial return for site appropriate turbines. The documentation produced from this assessment will address the technical aspect of your planning application giving you improved prospects for planning success.



# 3

## Install

With dedicated installation teams, Dulas will oversee everything from the construction of the foundation, the logistics of delivering the turbine to the site, right through to the final construction and commissioning. Our professional engineers have a proven track record of installs and can be trusted to look after every aspect of your project. We work with you on key timings of shared works and installation, ensuring that your turbine is generating as soon as possible. We can also advise on insurance and finance options as well as supporting you through Ofgem accreditation.



# 4

## Manage

We offer a range of service contracts for your turbine that will include scheduled and unscheduled servicing, ensuring that it continues to generate electricity and income for the lifetime of the Feed-in Tariff. It is important that your turbine is available to generate as much as possible so timely maintenance and availability of spares are vital. Our remote monitoring systems will allow us to monitor the performance of your turbine, giving quick, reactive maintenance when required. We know that your turbine is a significant investment and you want to be sure that it will perform as expected.

# Solution Insight

We have delivered renewable energy solutions and services to a vast range of customers. Here is a brief insight into some of our projects.



**Location:**  
East Ash Farm, Bradworthy, Devon

**Details:**  
Mr. Ludwell farms his dairy herd on the rolling hills of North Devon. His milking parlour and farm buildings lie in a valley, however his land also rises to a windy hilltop ideal for a turbine. Mr. Ludwell was motivated by the prospect of reducing his significant energy costs and providing an additional revenue stream through the Feed-in Tariff. Dulas installed Europe's first Endurance E-3120 turbine in July 2010. This turbine has outperformed predictions and delivers excellent returns for this farmer.

**Location:**  
Cae Gwyn and Cae Weirglodd Farms, Ruthin, Wales

**Details:**  
Neighbouring farmers, Mr. Jones and Mr. Roberts were inspired by the construction of a new wind farm on the opposite side of the valley and investigated the options to embrace this technology for their own needs. These two farmers and their families were excited at the prospect of having the first high performing Endurance wind turbines in Wales and benefiting from the savings and returns they will make.

“The Dulas Medium Wind Team have a detailed knowledge of their field. Our initial feasibility study gave us confidence to proceed. Our planning application was placed in very competent hands and the team made light work of the turbine install leaving the site neat and tidy in two days flat. Thanks Dulas.”

Richard Roberts, Cae Gwyn

# Why Wind Works

## The Feed-in Tariff Explained

The Feed-in Tariff (FIT) is a government mandated incentive to install renewable energy solutions that will help achieve our carbon reduction targets. It offers the opportunity for anyone with a good site to generate clean energy and a financial return from wind power.

The FIT guarantees high payback rates on generation from medium scale turbines (50-500kW).

### The financial benefits are three-fold:

- You earn income for each unit of electricity your turbine generates.
- You can use the free electricity that your turbine generates reducing your electricity bills.
- You can sell any unused energy back to your selected utility company.

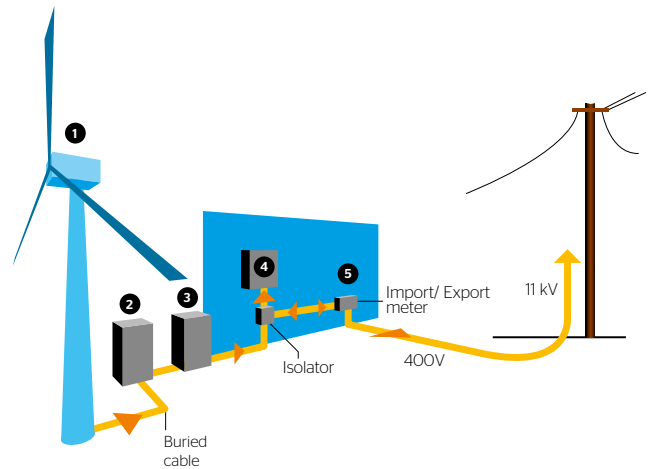
These payments are guaranteed and the rate is index linked for twenty years from the day that your Ofgem approved turbine is registered by your electricity company as operational. Those that sign up to the scheme soonest will receive guaranteed rates, as they are reviewed on an annual basis.

## Potential Income

Turbine	Turbine Rating	FIT rate (p/kWh)	Potential total annual benefit*
Endurance	50 kW 25m hub	25.3	£59,000
Northern Power	100 kW 30m hub	25.3	£84,000
ACSA	225 kW 30m hub	19.4	£145,000

\* Based upon average annual wind speed of 7m/s and manufacturer's yield performance data assuming 5000kWh used on-site and the remainder exported at 3.1p/kWh.

## How Wind Turbines Work



1. Wind drives the turbine in which an induction generator produces AC electricity.
2. The control cabinet houses the G59 mains protection relay and turbine control system.
3. Mains switch and generation meter.
4. Distribution board for on-site electricity use.
5. Import/export meter.

## What is a Good Turbine Site?

### Wind Speed

For optimum generation the turbine site needs to have an average wind speed of 6m/s or higher at 25m above ground level.

### Turbine Siting

The perfect position is on a rounded hill away from trees and buildings that can cause turbulence which reduces turbine performance and reliability.

### Property and Access

An Endurance turbine must be sited at least 180m from inhabited properties and a safe distance from roads and public access areas. These separation distances increase for larger turbines.

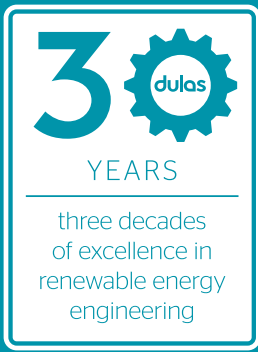
### Environment and Locality

It is advised that you do not try to site a turbine in a SSSI, AONB or similarly designated area.

### Grid Connection

You will require a 3-phase grid connection point of at least 95kVa capacity for an Endurance turbine. This can be a maximum of 480m from your turbine.





### About our logo

Dulas (pronounced “dih-lass”) means “black blue” in Welsh and is the name of one of the rivers flowing through the Dyfi Valley, the birth place of Dulas. The Dulas logo represents some of the key elements of our business. In it you can see the sun’s rays, the blades of a high-torque wind turbine or a cut-away of a hydro turbine. The wave through the centre is a sine-wave of an electrical alternating current, the output of many of our technologies.

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