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## 1 Introduction

Seren Energy has worked on a number of wind turbine schemes through the UK. Most of these schemes have involved single turbines on rural, commercial and brownfield sites. The client base is wide, ranging from landowners and farmers to factory owners and investors, and includes customers from the public, private and charity sectors.

When first contacted by a potential client, the site is reviewed during the initial enquiry to see if it is suitable. A concise desktop study takes place in which the site is put against a series of criterion, such as wind speed, distance from houses etc. If, for example, the wind speeds are too low, or the site in question is too close to houses, the customer is told immediately and the enquiry is not pursued. As Seren Energy's experienced staff can immediately spot the main barriers, the process does not take long and if applicable, the next step taken.

If the scheme does have potential, a feasibility study is undertaken which highlights the benefits of the scheme, and the barriers that it may face, particularly in planning. Once these have been ascertained, and if the scheme is considered by the client to be viable, further liaison takes place with the planners and key consultees, and an application is submitted.

The majority of schemes that Seren work with are below the 5MW EIA threshold. The type of work involved in feasibility studies and planning assistance is outlined in sections 2 and 3. In some areas the work in these sections overlaps, but generally once detailed discussions commence with the planners it becomes clear how much detail is required.

The cost of work depends on the exact requirements of the scheme and the level of Seren Energy's involvement.

In May 2007, Seren Energy bought the assets of EnergyTech Ltd, and took on staff from their wind/consultancy department. Relevant wind turbine projects undertaken by EnergyTech staff have therefore been included in the list provided.

Examples of relevant projects Seren Energy have worked on are given in the table below. Seren Energy has also undertaken a variety of consultancy work throughout the UK, relating both to energy efficient or renewable energy technologies. Where this work has not included wind turbines, its details are not included.



## 2 Feasibility Study

Feasibility studies typically include: -

- Selection of optimum location if a number of possible sites are involved
- Site Visit
- Initial contact with planners
- Initial contact with key consultees
- Topographical mapping of the site
- Photomontages
- Basic wind speed and performance analysis. The wind speed is taken from the NOABL database, and load factor calculated for various turbines in specialist software
- Economic analysis and financial model
- Noise prediction
- Zone of visual influence calculations
- Shadow flicker analysis
- Overview of access and foundations
- Identification of turbine options
- Grid connection observations
- Identification of any likely barriers

## 3 Planning Application

The work involved as part of planning application varies depending on the issues needing to be resolved at each site, but can include:-

- Presentation of the feasibility study in an additional planning information document, which includes extracts from relevant legislation and detailed explanations of various aspects of the wind turbine scheme
- Further photomontages, and other visual impact studies if required, such as larger Zone of visual influence maps, landscape cross sections and tall structure map
- Detailed road access plan
- Background noise survey
- Shadow flicker analysis
- Details of any anemometry and ancillary equipment required
- Sourcing, managing and liaising with contractors for specialist studies (e.g. archaeological, grid connection etc)
- Liaison with planners to assess any further information they require.
- Liaison with consultees, and resolving any issues they raise.
- Preparation an appeal documents if necessary
- Presenting the advantages of the application to planning officers, members of the council and members of the public

## Relevant Staff Experience

Client	Location	Date	Scope of Work	Description	Project Status
Awal Aman Tawe	Powys	March 2005 - April 2005	Planning Assistance	Provision of noise and visual impact modelling for a wind turbine on a landfill site.	Permission granted
Clive Streeter	Moray	May 2007 - Present	Feasibility and Planning Assistance	Feasibility and planning assistance for a rural, locally owned 900kW wind turbine.	Permission granted
Cory Environmental	Gloucester	March 2005 - May 2005	Feasibility Study	Looked at sites owned both by Gloucester Council and Cory Environmental as a joint study. The feasibility study identified a need for a detailed civil engineers survey on the Cory Site.	No Application Submitted
Derw Glass	Pembrokeshire	Feb 2005 - March 2005	Feasibility Study	Feasibility study for a wind turbine scheme. The site was suitable, but potential planning issues were identified and the client chose not to continue with the scheme.	No Application Submitted
Devere Hotel	Blackpool	Aug 2005 - Nov 2005	Feasibility Study	Devere Hotel Blackpool owns a large area of land. The best location was identified, and a suitable turbine selected, but planning issues were highlighted and the client is not continuing the scheme.	No Application Submitted
Dragon Plastics	Rhondda Cynon Taff	Nov 2005 - Present	Planning assistance	Two wind turbines, a 660kW turbine on the site of the clients factory and smaller one on a farm owned by the client.	Refused
England Communications	Pembrokeshire	Aug 2005 - Nov 2006	Planning assistance	Provision of additional planning information for a 500kW wind turbine scheme in N Pembrokeshire.	Refused
Flintshire County Council	Flintshire	May 2007 - July 2007	Feasibility Study	Feasibility study looking into all renewable energy options. It was found that the site was not suitable for an economically viable wind turbine scheme, and a solar hot water installation was recommended instead.	No Application Submitted.
Forestry Commission Wales	Investigated six sites throughout Wales	March 2004 - July 2004	Capacity Study	Looking into the capacity of forestry commission land in Wales to take large wind turbine scheme. Total capacity looked at was several hundred MW.	Forestry Commission has recently put out a tender for large wind turbine developments

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Gloucester County Council	Gloucester	March 2005 - May 2005	Feasibility Study	See Cory Environmental.	No Application Submitted
Good Energy Ltd	Various	March 2008 - Present	Site Selection and Feasibility Study	Feasibility into potential wind turbine sites for a renewable electricity provider.	Various
Jah Jireh Care homes	Merthyr Tydfil	August 2006 - Present	Feasibility Study and Planning Assistance	Planning assistance for a 500KW wind turbine to be owned by a charity residential home for the elderly.	In Planning
JS Baird and Sons	Aberdeenshire	Sept 2007 - Present	Planning Assistance	Planning assistance for 800kW wind turbine.	Scheme at Pre Planning Stage
Lafarge Roofing	Blaenau Gwent	June 2006 - Nov 2007	Feasibility Study and Planning Assistance	Feasibility study and planning assistance, including an appeal, for a 800kW wind turbine on an industrial estate near Ebbw Vale.	Permission Granted
Moulton Bulbs Ltd	Lincolnshire	Nov 2007 - Present	Feasibility Study and planning assistance	Feasibility Study and Planning Assistance for an 800kW wind turbine.	Planning application In Progress
RJ McLoed	Aberdeenshire	Jan 2005	Wind Monitoring	Installation of a 50m wind monitoring mast.	Data confirmed site suitability
United Utilities PLC	Various	Various	Site Selection, Feasibility and planning assistance.	A number of the projects listed here were done as part of a joint venture between the land owner and United Utilities. Initial site selection was done by Seren staff for United Utilities for a number of sites, many of which were not suitable so were not followed up.	Various
Ventus Enterprises	Leicestershire	July 2006 - present	Feasibility Study and Planning Advice	Feasibility, planning assistance and ongoing technical advice for a 660kW wind turbine scheme by a private developer.	In Planning

## Relevant Staff Experience

Client	Location	Date	Scope of Work	Description	Project Status
Westerton Energy	Pembrokeshire	Sept 2005 - Present	Feasibility Study and Planning Assistance	1MW scheme on a privately owned forestry site, ongoing planning assistance including re-application after refusal of the first.	Permission Granted
Winters Lane Storage	Lincolnshire	March 2008 – June 2008	Feasibility Study	Feasibility study for an 800kW wind turbine for a farming cooperative.	Client investigating funding options
Woodgate Farms Ltd	Lincolnshire	June 2007 - Present	Feasibility Study and Planning Assistance	Feasibility Study and Planning Assistance for an 800kW wind turbine.	In Planning