

Public Attitude to Incorporating Wind Energy in an AONB?

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- 1. AEA Technology - Future Energy Solutions (FES) - Wind Expertise**
- 2. LDA Design Consultants - Landscape and Visual Impact Assessment**
- 3. Alison Millward Associates - Stakeholder Consultation & Facilitation**
- 4. Sheepdrove Organic Farm - Client**

**ALISON
MILLWARD
ASSOCIATES**



LDA DESIGN

Introduction

- The Area of Outstanding Natural Beauty considered here is The North Wessex Downs AONB
- Sheepdrove Organic Farm and The North Wessex Downs AONB Council of Partners funded the study
- The work was undertaken from December 2005 to June 2006
- Resulting report entitled 'Renewable Energy at Sheepdrove Organic Farm, Developing Best Practice in the North Wessex Downs AONB'.
- Relevant web sites are
 - www.sheepdrove.com
 - www.northwessexdowns.org.uk

The North West Downs ANOB

1730 km² of chalk landscape in Southern England straddling Oxfordshire, Berkshire and Hampshire



Previous Landscape Study

- 'North Wessex Downs AONB - A Study of Landscape Sensitivities and Constraints to Wind Turbine Development', September 2005
- Concluded that 'this study has developed a transparent, robust and defensible evaluation framework to identify the core landscape values of the North Wessex Downs and the sensitivities of its defining characteristics to wind turbine development'.
- Classifications it came up with were ...

Previous study

Summary of Sensitivities and Constraints to Wind Turbine Development					
	Landscape Type	Landscape Values	Visual Sensitivity	Landscape Character Sensitivity	Constraints to Wind Turbine Development
1	Open Downland	High	High	High	Highly Constrained
2	Downland with Woodland	High	Moderate	High	Moderately - Highly Constrained
3	Wooded Plateau	High	Moderate	High	Moderately - Highly Constrained
4	High Chalk Plain	High	High	High	Highly Constrained
5i	Scarp	High	High	High	Highly Constrained
5ii	Downs Plain	High	High	Moderate	Moderately to Highly Constrained
6	Vales	High	Moderate	Moderate	Moderately to Highly Constrained
7	River Valleys	High	High	High	Highly Constrained
8	Lowland Mosaic	High	Low	High	Moderately to Highly Constrained

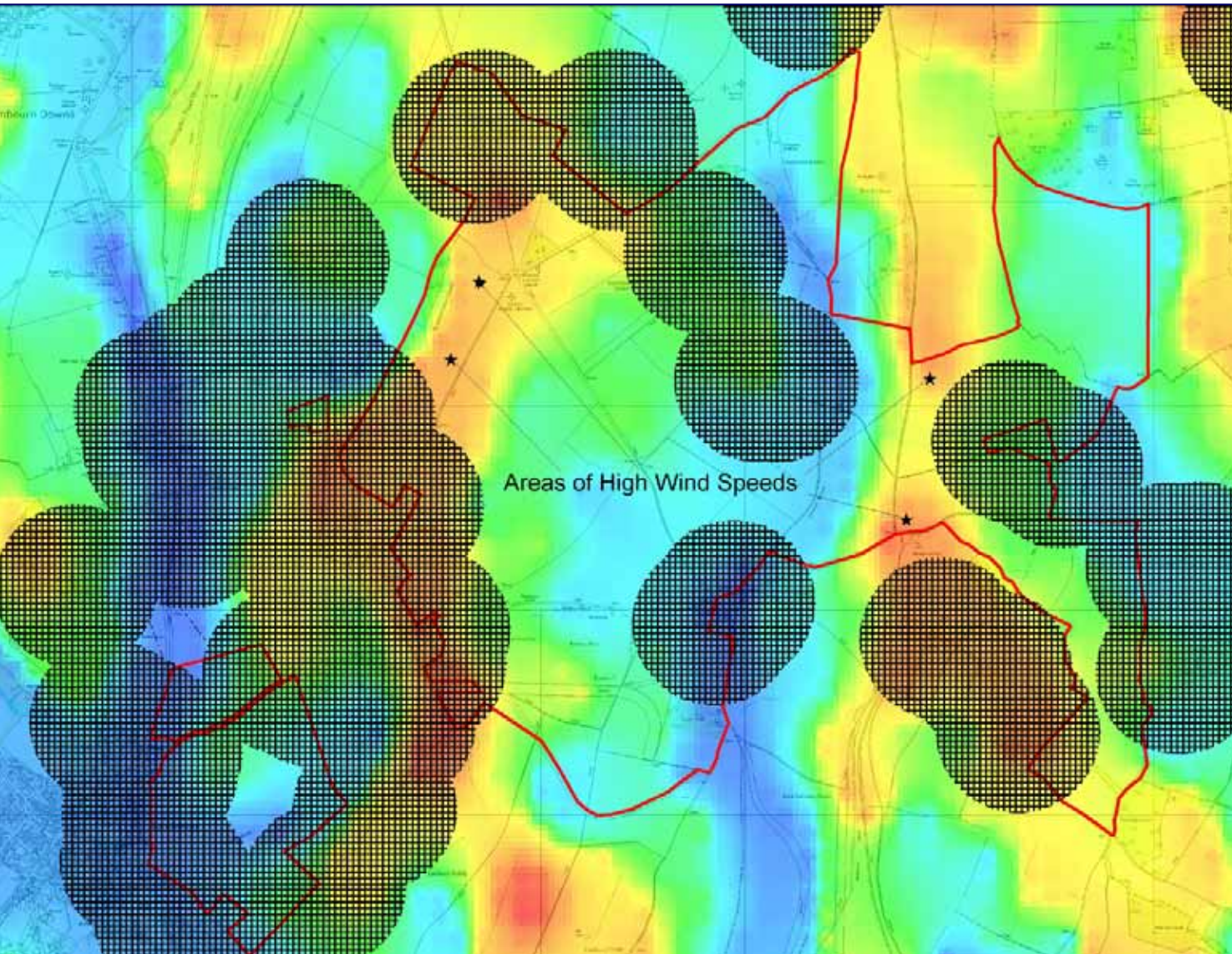
Previous study

	Landscape Type Constraint Judgement for each Height Class			
	Height Class 1 (25 - 40m) Single Turbine	Height Class 2 (40 – 80m) Single Turbine [Lower end of Height Class only]	Height Class 2 (40 - 80m) Group of 2 – 4 Turbines	Height Class 3 (80m+) Single and Group
1: Open Downland	Highly	Highly	Highly	Highly
2: Downland with Woodland	Moderately	Moderately to Highly	Highly	Highly
3: Wooded Plateau	Moderately	Moderately to Highly	Highly	Highly
4: High Chalk Plain	Highly	Highly	Highly	Highly
5i: Scarp	Highly	Highly	Highly	Highly
5ii: Downs Plain	Moderately	Moderately to Highly	Highly	Highly
6: Vales	Moderately	Moderately to Highly	Highly	Highly
7: River Valleys	Highly	Highly	Highly	Highly
8: Lowland Mosaic	Moderately	Moderately to Highly	Highly	Highly

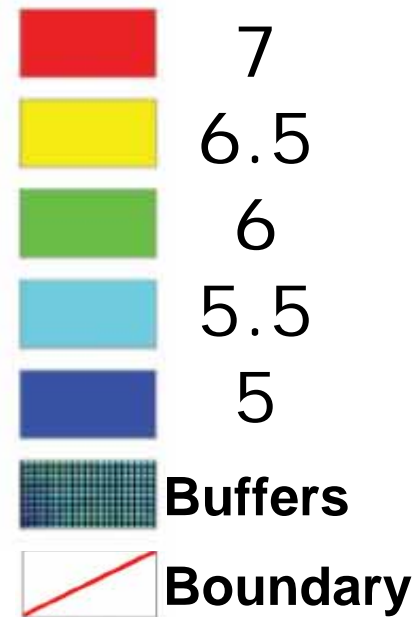
Sheepdrove Farm

- An award winning food producer and an innovative farm business that is continually striving to improve the sustainability of its operations
- The farm has carried out work on energy efficiency, clean fuels and has installed solar photovoltaics and solar heating
- Its aim is to provide 25% its energy from renewable sources
- It is on the high ground of the Lambourn Downs
- Wanted to generate electricity from wind power equivalent to 100% of its annual electricity consumption

Estimated Wind Resource



Average Mean
Wind Speed
@25m [m/s]



Notes on Wind Resource

Sheepdrove's

- Wind resource is reasonable for large turbines
- Based on WAsP modelling using data from an existing 2m environmental monitoring mast so would need confirming!
- Average Mean Wind Speed similar to that from ETSU/DTI NOABL Wind Speed Database.

In general

- The power in the wind is proportional to the velocity cubed – power extracted by turbines is more like velocity squared as power regulated in higher winds
- As a general rule of thumb for large turbines 0.1 m/s equates to an Internal Rate of Return of 1%.
- Tower height & grid location also key to accessing resource

Wind Turbine – Types and Sizes



20 kW Gazelle; Ø11 m, 15 m tower
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A pair of 5 kW Iskra AT5-1s;
Ø5 m with 15 m tower



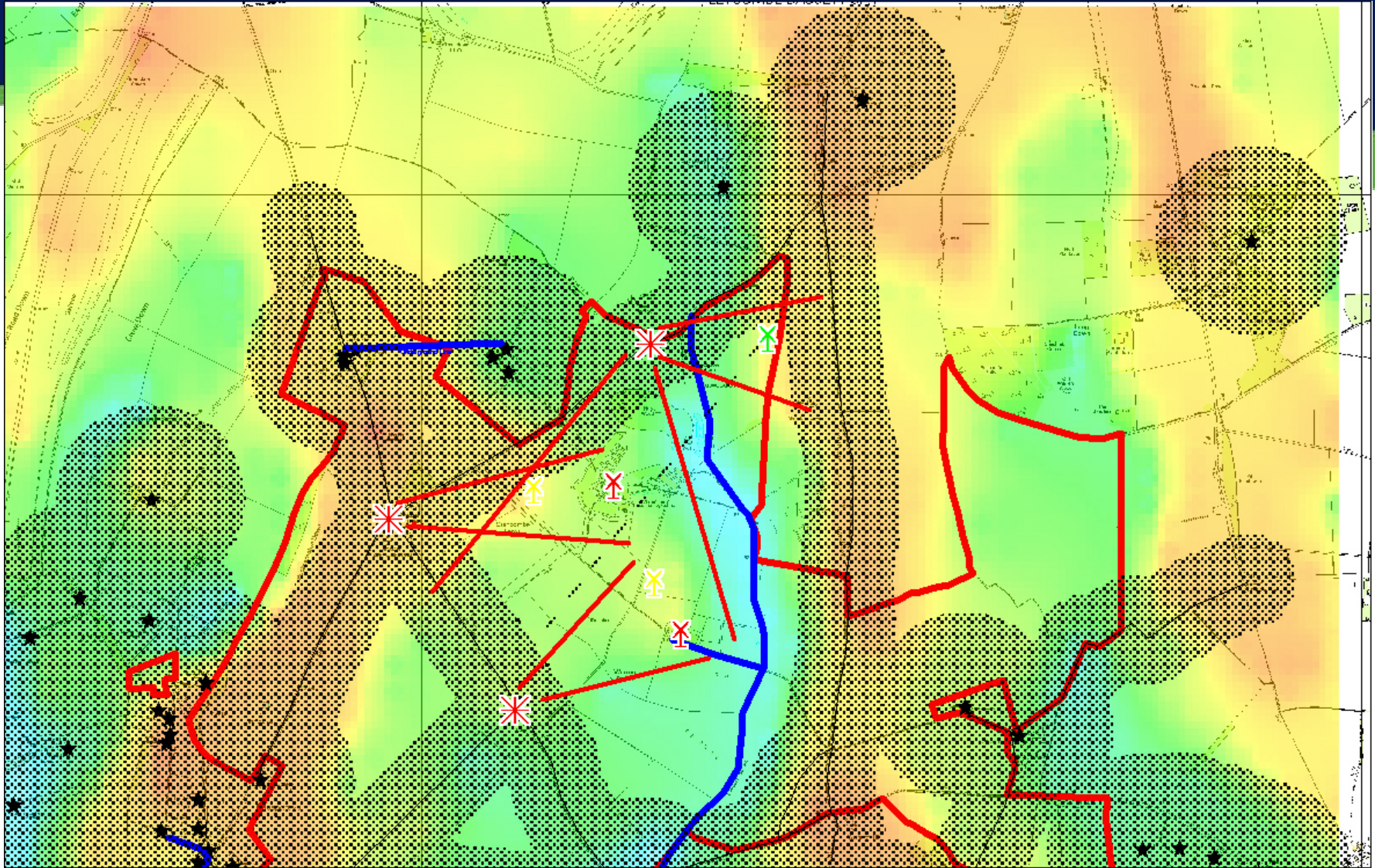
333 kW Enercon; Ø33 m, 50 m tower

Indicative Turbine Costs

Turbine	Country of Manufacture	Capacity (kW)	Tip Height (m)	Capex	Cost (Per kW)
Enercon E33	Germany	330	66.5	£401,650	£1,214
Furlander FL 250	Germany	250	57	£316,570	£1,266
Wind Energy Solutions	Netherlands	80	40	£145,467	£1,818
Entegrity Wind EW15	Canada	50	32.5	£90,000	£1,800
Gazelle Wind Turbines	UK	20	18.5	£95,170	£4,759
Building Mounted	UK	2.5	Building + ~4.25m	£16,000	£6,400

Notes on Turbine Costs

- Installed cost including the turbine, tower, transformers, shipping and transportation, equipment hire, all civil and electrical work.
- Larger turbines are considerably cheaper to install per kW than smaller turbines
- Wind Energy Solutions is the successor to Lagerway
- Entegrity Wind is the successor to Atlantic Orient



Red Turbine Fuhrlander 250 or Enercon E33

Green Entegriy EW15

Yellow Wind Energy Solutions

Stars 3 viewpoint locations



New Study - Consultation

- This new study has looked at turbines above the 25m threshold as needed to generate significant energy
- Assessment rooted in a consultation process, and as such utilises best practice guidance on the engagement process for wind turbine developments
- 2 Workshops exploring scenario and a visit to 2 existing small turbines in the AONB – RAL and Faccombe
- FOLD – Friends of Lambourn Down founded to oppose
- The scenarios and figures related to the original hypothetical target of meeting 100% of electricity need from wind power. As a result of workshop 1 a reduced target of 25% electricity from wind (5% of total energy) was presented to the delegates at workshop 2.

Thank you for listening

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BWEA 28 Tuesday 10 October

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AEAT - FES

