

Proposed Wind Farm at Hempnall, Norfolk

Information and Frequently Asked Questions



Introduction

Enertrag UK are proposing to develop a wind farm to the North East of Hempnall village. The current proposal is to construct seven turbines which will each have the capacity to generate up to 3MW of electricity.

Enertrag have produced this document to advise the stakeholder / general public how they can become involved in the public consultation process during the development of this project, allowing them to make informed decisions regarding the advantages and disadvantages of the wind farm.

Enertrag are developing several sites in the UK, the first being North Pickenham, Swaffham which is currently under construction, at this time the foundations for the eight turbines are complete and the turbines will shortly be arriving for installation. Two other sites at Guestwick, Norfolk and Hemington, Northamptonshire are at various stages within the planning system.

The Company

The company is jointly owned by Enertrag AG (Germany) and Prokon Nord, (Germany), who have installed over 300 turbines throughout Europe and are currently operating several biomass power stations in Germany, several more being under development. Prokon Nord currently have a prototype offshore turbine on trial in Northern Germany and another under construction hoping to bring the turbine into manufacture by 2009, the turbine has a 5MW capacity. The company's mission is the development of renewable energy projects.

Public Opinion

Approximately 80% of the UK public are in favour of renewable energy and are behind the development of wind power. As with any development of this nature there will also be a number of people who do not support this type of project and will voice their democratic right to object, for whatever reason. We request that you consider the facts and not the fiction and if you do support the development please let us know, showing your support when the planning application is placed by writing to the appointed planning officer. Enertrag staff are always ready to discuss any issues with members of the public and if you wish to do that please don't hesitate to use any of the contact details below.

Statement of Case

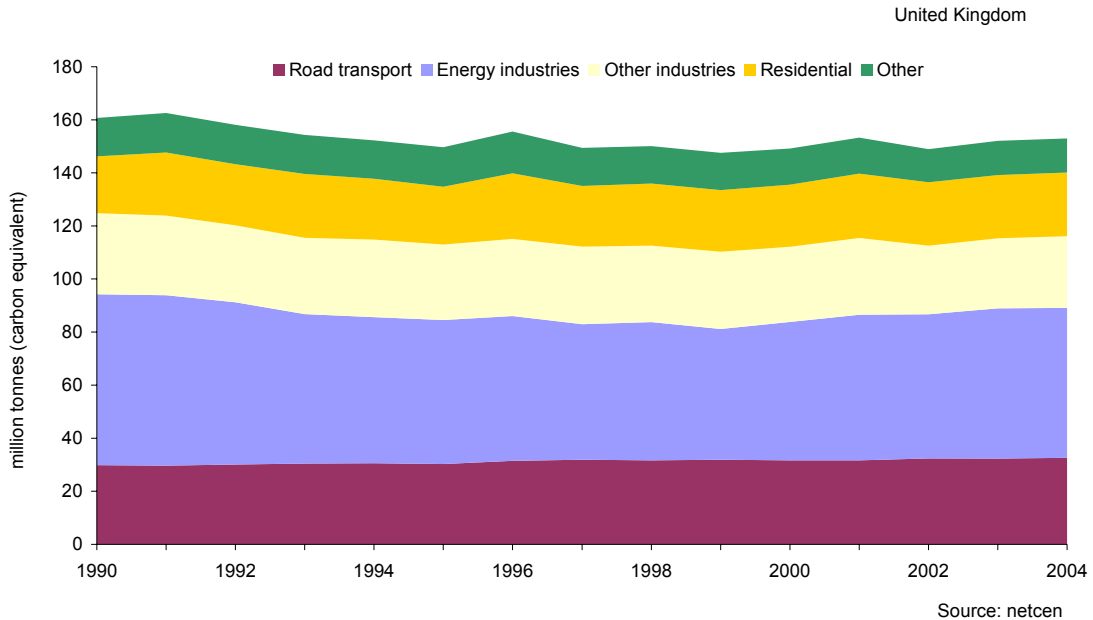
Climate change occurs as time passes, we are all aware that our climate is changing. Climate change is a naturally occurring phenomenon. So why bother?

It is a fact that the climate is now changing much more rapidly than it has in the past. CO₂ levels in the atmosphere have increased far beyond the levels which are regarded as normal. It is known that these levels have increased because of man's activities and the increase in CO₂ in the atmosphere is known to be the main cause of the greenhouse effect.

There are a number of producers of CO₂ including petrol vehicles, the energy industry and manufacturing industry. The largest producer of CO₂ in the UK is the energy industries that

are responsible for 56.5 million tonnes of CO₂ discharged into the atmosphere as shown below.

Carbon dioxide emissions by source: 1990-2004



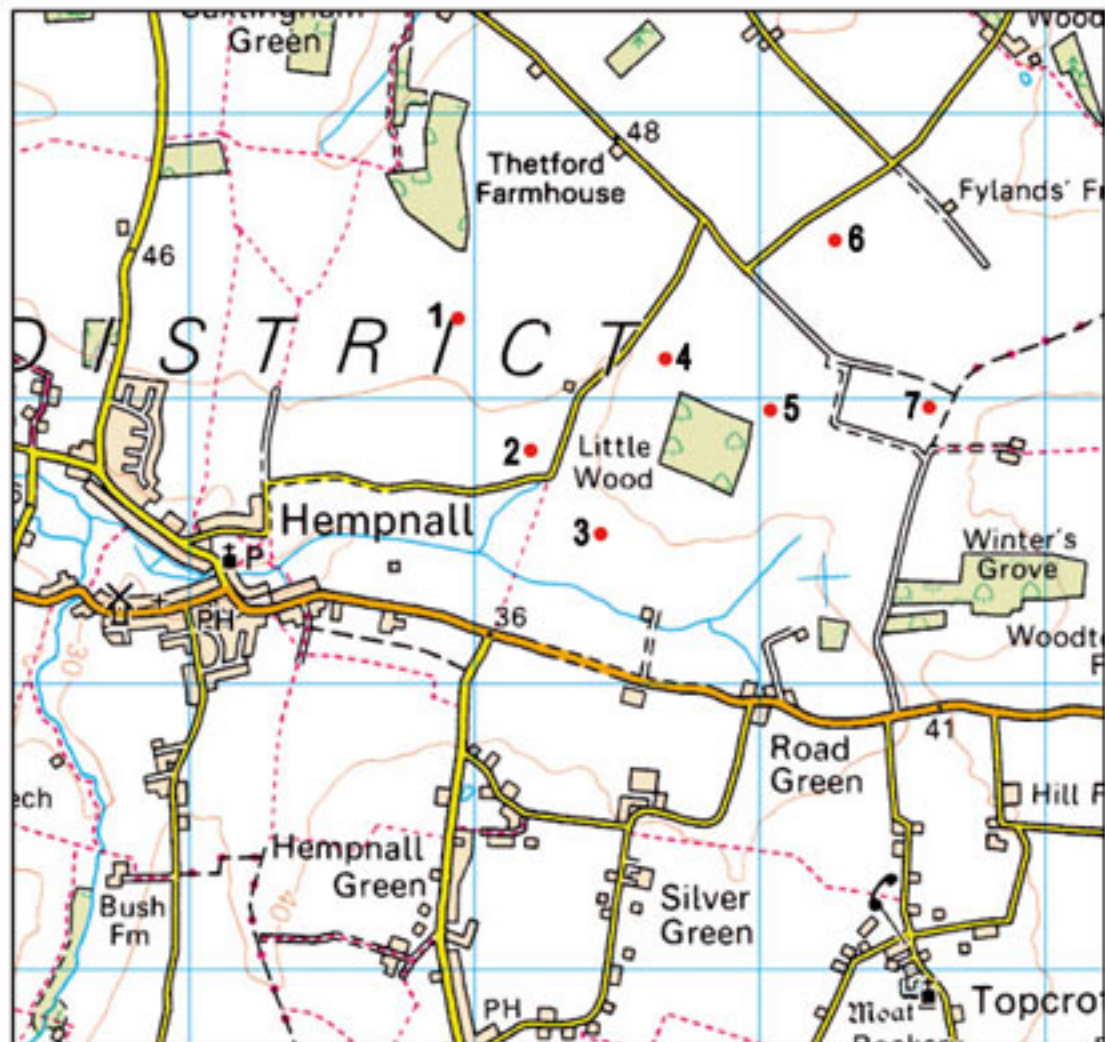
Wind farms are not the total solution, it is equally important that we pursue new technologies such as tidal power, biomass, biofuels, solar and we also have to review ways of using the energy we currently do more efficiently. Wind farms are one of the most commercially viable and also the most fuel efficient forms of producing energy that is currently available to us. The UK also has the greatest resource of this type of fuel available in Europe.

The other issue that we need to consider is the sustainability of our electricity generation. Fossil fuels and also Nuclear power are not sustainable forms of fuel and their supply will eventually be exhausted. The wind is a sustainable form of fuel and is free.

The Proposed Wind Farm at Hempnall

The proposed wind farm on land to the NE of the village of Hempnall would comprise of seven turbines each having a maximum output of 3MW. The proposed site layout is shown on the figures overleaf. The turbines would generate electricity that would be fed into the national grid via underground cables. Vehicle access routes will be provided between the turbines for construction and maintenance, these will follow current tracks and field boundaries where possible.

Each turbine will be a maximum of 85m high to the hub and the rotors would be a maximum of 90m diameter. The diameter of the tower at the base is approximately 4m. The final arrangement for the foundation will be confirmed once the turbine manufacture is determined. The land around the turbine would be flat as the foundation would be buried. Once construction is complete, the land can continue to be farmed right up to the turbine tower.



Legend:-

As Ordnance survey 1:50000
Not to scale

6 :- Proposed turbine positions

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Site:-
Hempnall, Norfolk

Title:-
Proposed Turbine Locations

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Revision			
Rev	Date	Drawn	Checked
0	15.08.06	TC	DL

The planning application will describe the turbines in a generic form, the reason for this is that the technology is constantly moving forward and at the time of placing the contract for the turbines Enertrag would want to take advantage of the turbine that best suites the site. The various energy production and greenhouse gas savings are detailed below for a typical seven turbine wind farm:-

Installed capacity per turbine	Total annual wind farm output (MWhr)	Equivalent No. households (consumption)	CO ₂ Saving (Tonne/Yr)	SO ₂ Saving (Tonne/Yr)	NO _x Saving (Tonne/Yr)
2MW	36,792	7,800	31,641	367	110
2.5MW	45,990	9,750	39,551	458	137
3MW	55,188	11,700	47,461	551	165

Figures are based on:-

30% load factor.

CO₂ emission saving of 860g/kWh

SO₂ emission saving of 10g/kWh

NO_x emission saving of 3g/kWh

Average annual household electricity consumption of 4.7MWh

The Planning process

Before construction can start Enertrag UK Ltd must obtain planning consent, thus a planning application must be submitted.

As part of that planning application Enertrag UK are required to carry out an Environmental Impact Assessment (EIA). This assessment will do exactly what it's title suggests and it will assess any impacts the wind farm will have on the environment.

To do this firstly a scoping opinion will be submitted to the council which will determine the scope of the EIA.

Environmental Impact Assessment (EIA) Process

Environmental Impact Assessment (EIA) is a process to ensure that the potential effects of a development on the natural, physical and human environment are fully understood. The EIA is undertaken in accordance with the Town and Country Planning (Environmental Impact Assessment) (England and Wales) Regulations 1999.

Within an EIA, the potential impacts and effects of a development on population, fauna and flora; soil, water, air, climate, and the landscape; material assets and the cultural heritage; and the interaction between these factors, are examined and their significance assessed. Where necessary, mitigation measures to eliminate or reduce potential impacts are identified.

The results of the EIA are presented in an Environmental Statement (ES), which supports the planning application. The Local Planning Authority (LPA), in this case South Norfolk District Council, will publish a notice in the press and/or post site notices indicating where the ES can be inspected or from where it can be obtained. Third parties can inspect the ES and present observation and comments to the LPA within 21 days from the date that the planning application has been submitted.

Consultation

Consultation is an important part of the EIA process. Detailed below are some of the organisations and groups that consultation will take place with consultation:-

- South Norfolk District Council (Planning Control Department, Policy Unit, Environmental Services Department)
- Hempnall Parish Council
- Saxlingham Nethergate Parish Council
- Shotesham Parish Council
- Norfolk County Council (Highways)
- Environment Agency
- English Nature
- The Royal Society for the Protection of Birds (RSPB)
- Norfolk Wildlife Trust
- English Heritage.
- Defence Estates (MOD)
- CAA
- Norwich Airport

How Local Community Issues are addressed

The EIA addresses the issues which are likely to be of concern to the local community. This includes the potential impacts relating to noise, visual impact, birds, wildlife, shadow flicker, recreation and tourism, rights of way, electromagnetic interference, radar and airspace.

All information, issues, interests and concerns voiced during the public consultation meetings are recorded and incorporated within the EIA. Members of the public are also invited to write (letter, fax or email) to Enertrag with any specific concerns or issues.

In addition, once the planning application is submitted, the ES will be made publicly available and any comments or issues can be raised directly with South Norfolk District council during the planning process.

Frequently Asked Questions

The following FAQs aim to answer the majority of generic concerns relating to wind farms and any other issues raised already by the local community in relation to the proposed wind farm. All issues will be assessed and discussed in detail within the Environmental Statement.

1. How are potential wind farm sites selected?

Enertrag UK initially reviews areas of land by using a large scale Ordnance Survey map to highlight areas of potential. This is done in conjunction with the councils land designation maps and also air traffic control maps. Once a potential area is identified, on site observations will take place to identify proximity to residential property.

2. How efficient are the turbines?

The theoretical maximum energy which a wind turbine can extract from the wind blowing across it is just under 60%, known as the Betz limit. However the meaning of efficiency is a redundant concept to apply to wind energy, where the fuel is free. The primary concern is not the efficiency for its own sake, but to improve productivity in order to bring the price of wind energy down.

Efficiency should not be confused with utilisation. Wind turbines will operate for 70-75% of the time and will return approximately 30% of their total capacity. This is less than some other forms of generation but it must be remembered that with wind turbines the fuel is free and totally sustainable.

3. What is the energy pay back rate?

The average wind farm will pay back the energy used in its manufacture and construction within 5-6 months of its operation. This compares favourably with coal or nuclear power stations, which take about six months. Wind energy is essentially a form of development which is reversible, unlike fossil fuels or nuclear power.

4. Why can't the energy produced be used to power the surrounding villages?

The energy generated from the proposed wind farm would be supplied into the national grid as the grid has the capacity to make use of the inconsistent nature of the wind.

5. Where can I see a built example of a similar turbine to those proposed?

A second Ecotricity turbine was installed at Swaffham in July 2003 following a request by local residents. The 'Swaffham II' Enercon E-66 turbine has a hub height of 85m and a rotor diameter of 70m. Enertrag are currently constructing an eight turbine wind farm at North Pickenham near Swaffham which is due for commissioning early in 2007. The turbines will be visible from the local road network and arrangements will be made to allow anyone interested to have a closer look.

6. What roads would be used during construction?

This issue will be addressed in the Environmental Statement in liaison with the local Highways Authorities and the Highways Agency in consideration of the suitability of the access roads and the impact on the local road network.

7. What infrastructure would be required?

Existing on-site tracks would be utilised and upgraded where possible. Crane hard standing areas would also be constructed on arable areas. Roads must be suitable for carrying heavy trucks and crane during the construction period. Access roads would be retained during operation in order to provide access to maintenance vehicles when required.

The connection cable to the grid will be buried and connect at the Hapton Primary substation. The Distribution Network Operator (DNO) will review the grid connection and propose a route during the course of the EIA. Cables between the turbines would also be required. A small excavator would be used to excavate the cable trenches to a depth of approximately 1.5m and a width of 1-2m.

8. How much concrete is required for the foundations?

A concrete foundation suitable for the model of turbine selected and the ground conditions will be designed after planning consent is granted, foundations with or without piles may be required. Typically the foundation would be approximately 15-20m in diameter and located between 1.2m and 2m below the surface. The design of the foundation will be fully reviewed when the contract for the turbines is placed and a survey of the underlying rock is carried out.

9. Would the wind farm affect property prices?

There is currently no evidence to date in the UK showing that wind farms impact upon house prices. Regardless, property price issues are not a valid objection to any planning application.

Studies published in November 2004 by the Royal Institution of Chartered Surveyors (RICS) and leading chartered surveyors Knight Frank show either that there is no evidence to confirm empirically any impact, or that any effects observed have no lasting impact (www.bwea.com). Furthermore, there is evidence following a comprehensive study by the Scottish Executive that those living nearest to wind farms are their strongest advocate (MORI, 2003).

10. Would the wind farm affect the numbers of tourists visiting the area?

There is no evidence to suggest that wind farms negatively affect tourism. A MORI survey of visitors to major beauty spots in Scotland stated that the presence of wind farms in the area made no difference to whether they would return. Of those questioned, about one in five had actually seen one of the three wind farms in Argyll. When asked what effect, if any, the wind farms had had on their impression of the area, 55 per cent said 'generally' or 'completely positive', 32 per cent said 'ambivalent' and only 8 per cent said 'negative' (MORI Social Research, 2002).

11. How long would the turbines stay and what would happen at the decommissioning stage ?

The wind farm would be built with specifications for a 25 year lifetime. At the end of their working life the wind turbines would be removed and the ground surface would be reinstated to its former condition to allow the site to revert to its former agricultural use. It is envisaged that the buried cables would be disconnected, notified and left beneath the ground surface to prevent any further ground disturbance, unless otherwise required by the Local Planning Authority. The potential impact during decommissioning is discussed and assessed within the Environmental Statement.

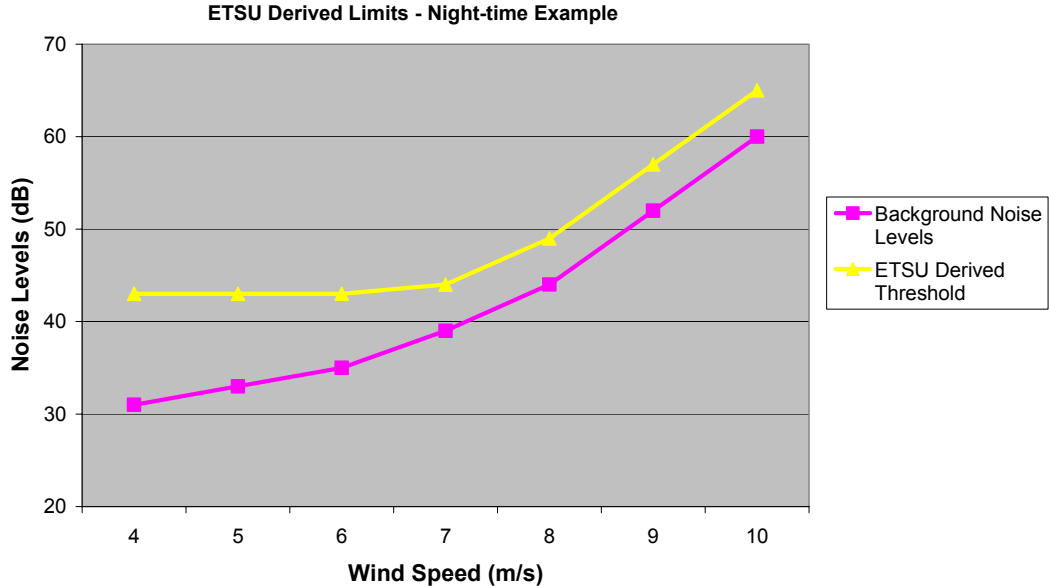
12. Are there any health implications related to wind turbines being located close to houses?

Wind turbines do not produce emissions, harmful pollutants or waste products. The level of noise (and low frequency noise/infrasound) is anticipated to be low for the closest households, and below threshold limits set by the UK Government (refer to FAQ 13 and 14). In 25 years of wind generation and with more than 35,000 turbines now worldwide, there have been no significant reports of health issues (www.dti.gov.uk).

13. How loud are the turbines and would I be able to hear them from my house?

A noise impact assessment has been undertaken in accordance with the Noise Working Group on Wind Turbine Noise, Assessment and Rating of Noise from Wind Farms, September 1996 (ETSU-R-1997) as required by Planning Policy Statement 22: Renewable Energy (PPS22, ODPM 2004). The working group was formed from independent experts to define a framework to measure and rate the noise from wind turbines and to provide indicative noise limits to offer a reasonable degree of protection to wind farm neighbours and encourage best practice in turbine design and wind farm siting and layout.

In summary, the ETSU guidelines set the lower threshold limit at residential properties (external) as 35-40dB during day-time and 43dB during night-time. A higher threshold limit of background plus 5dB to the recorded levels to give a derived threshold limit at each wind speed, as illustrated in the graph below. In order to comply with ETSU, actual noise levels during operation would need to be below the derived threshold limit. As a guide, indicative noise levels within a rural night-time background are between 20-40dB(A) (PPS22 Companion Guide, ODPM 2004).



A background noise survey will be undertaken and the site will be modelled. Residential property will be considered within the model to ensure that recommended noise levels are not exceeded. Full details of the assessment will be included within the Environmental Statement. Enertrag will carry out actual noise measurements during operation to confirm that noise levels are below the ETSU derived thresholds to ensure compliance with ETSU and PPS22.

14. Would I be affected by infrasound due to the turbines?

A Defra report on low frequency noise (infrasound) and its effects (G Leventhall *et al* 2003) states that infrasound exposure is ubiquitous in modern life. It is generated by natural sources such as earthquakes and wind. It is common in urban environments, and as an emission from many artificial sources: automobiles, rail traffic, aircraft, industrial machinery, artillery and mining explosions, air movement machinery including wind turbines, compressors, and ventilation or air-conditioning units, household appliances such as washing machines, and some therapeutic devices. In response to concerns that wind turbines emit infrasound and cause associated health problems, Dr Geoff Leventhall, says: *"I can state quite categorically that there is no significant infrasound from current designs of wind turbines. To say that there is an infrasound problem is one of the hares which objectors to wind farms like to run. There will not be any effects from infrasound from the turbines."* (Defra, 2003).

15. Do the turbines emit vibration?

The levels of vibration radiated from modern, upwind configuration wind turbines are at a very low level, such that they will not be noticeable. A study commissioned by the DTI in 1997 assessed the vibrations from wind turbines and concluded that:

- vibration levels attenuated rapidly with distance,
- there was no clear increase in vibration with wind speed, and
- 100 metres away from the turbine, levels were 10 times lower than the safety requirements for modern laboratories (source: www.dti.gov.uk).

16. What is shadow flicker and would I be affected?

The rotating wind turbine blades can cast a moving shadow on the surrounding countryside that cause a flickering effect and can affect residents living nearby. Whether problems due to shadow flicker will occur is dependent on the size of the turbines, the distance from the turbines to the shadow receptors, the angle and intensity of the sun and meteorological circumstances.

Enertrag site all turbines at least 700m from residential properties in order to minimise any occurrence of shadow flicker. The amount of shadow flicker likely to be experienced by the households close to the site will be calculated with the use of dedicated software. The results will be fully included in the Environmental Statement. Enertrag UK would rectify any shadow flicker effect in the unlikely event that it became a problem at specific residencies.

17. Would my television or mobile phone reception be affected?

High structures of any size can cause interference with electromagnetic transmissions including television reception interference, permanent broadcast (TV and Radio) links, mobile telephony links and other private telecommunications. Some households in the vicinity of the wind farm may experience television reception interference. In the event of such a problem, Enertrag UK is committed to work with the residents affected to compensate for such nuisance. Possible solutions include providing the affected households with improved receiving aerials or with alternative source of suitable television signals.

Consultation will be being undertaken with the relevant bodies and organisations to assess the likelihood of electromagnetic interference caused by the wind farm and any interference of signals with mobile phones..

18. Would aircraft using the area be put at danger?

The Ministry of Defence (MoD), Civil Aviation Authority (CAA), National Air Traffic Services (NATS) and any nearby airports or airfields will be consulted regarding this proposal. At no point will any aircrafts safety be put at risk.

19. Is there a risk of mechanical failure?

Wind turbines have an excellent record for safety and they are designed and built to meet the most stringent safety standards. Experience indicates that properly maintained wind turbines are a safe technology. The very few accidents that have occurred involving injury to humans have been caused by failure to observe manufacturers' and operators' instructions for the operation of the machines. There has been no example of injury to a member of the public (PPS22 Companion Guide, ODPM 2004).

20. How far away would we be able to see the turbines?

The Landscape and Visual Impact Assessment (LVIA) is a key component of the EIA process being undertaken. The scope and extent of the study will be agreed with South Norfolk Council and consultation will be undertaken with adjacent councils. Representative viewpoints will be selected and photomontages will be prepared.

21. Would the wind farm impact horses?

Horses are often frightened by a variety of natural and man-made features, but according to the British Horse Society, there is no conclusive evidence that horses are frightened by wind farms, nor is the society opposed to wind farms (source: www.bwea.com and PPS22). The first wind farm built in the UK, in Cornwall, has a stud farm and riding school close by, riders currently use the bridleways around and through the wind farm without any problems(www.bwea.com).

22. What would be the impact to birds?

The RSPB has stated (2004) that *“in the UK, we have not so far witnessed any major adverse effects on birds associated with wind farms”*. In addition, a recent report published in the journal Nature, confirmed that the greatest threat to bird populations in the UK is climate change (2004).

Within the EIA an assessment of the potential impact to birds during the construction and operation of the wind farm in consultation with English Nature and the RSPB will be undertaken. Surveys will then be carried out as part of the EIA and the results will be published in the ES. If any local residents hold data or anecdotal information relating to birds using the area within and surrounding the site, this can be forwarded to Enertrag UK Ltd and will be included within the assessment.

23. What other ecological surveys will be undertaken?

Ecological surveys of the proposed site and surrounding area will be undertaken to identify existing habitats and to determine whether the site is used by species of nature conservation importance, including amphibians, reptiles, badger, bats, water vole and brown hare. Where necessary mitigation measures will be identified, in consultation with English Nature, to ensure that the construction and operation of the wind farm will not adversely affect these species or groups. Full details of the results of the surveys undertaken and mitigation measures to be put into place to minimise or prevent any adverse impact will be included within the Environmental Statement.

24. Would there be any impact to archaeology?

A detailed assessment, including site survey will be undertaken to determine the potential impact to archaeology, in consultation with the Statutory Consultees. If archaeological remains are identified within areas to be impacted, consultation will be undertaken with the consultee to ascertain whether the positions of the turbines require adjustment.

Consultation will be carried out with English Heritage to assess the level of impact to any Scheduled Ancient Monuments (SAMs) within the area or other features of cultural heritage value such as Listed Buildings and Historic Parks and Gardens.

25. Would there be an increased risk of flooding?

The potential impact to geology, hydrogeology (including groundwater) and surface water will be assessed during the EIA in consultation with the Environment Agency. This will include details on existing levels of flood risk in the locality and measures to ensure that the proposed development does not contribute to an increased level of flooding. No adverse impacts are anticipated.

Contact Details

The wind farm at Hempnall is being proposed by Enertrag UK. Contact details are provided below. Any information or queries relating to the Environmental Impact Assessment (EIA) should be directed to Enertrag UK Ltd

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References and Further Reading

Defra (2003) A Review of Published Research on Low Frequency Noise and its Effects, Report for Defra by Dr G Leventhall *et al*

Available on: <http://www.defra.gov.uk/environment/noise/lowfrequency/index.htm>

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ETSU/DTI (1997) Low frequency noise and vibrations at a modern wind farm (ETSU W/13/00392/ REP). Available on: www.dti.gov.uk

Milborrow (1998) Dispelling the Myths of Energy Payback Time, as published in Windstats, Vol. 11, no. 2 (Spring 1998).

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MORI (2003) Public Attitudes to Windfarms; A Survey of Local Residents in Scotland, Scottish Executive Social Research.

Nature (Jan 2004) Extinction risk from climate change, Vol 427, pp145-148.

ODPM (2004) Planning Policy Statement 22: Renewable Energy.

Available on:

http://www.odpm.gov.uk/stellent/groups/odpm_planning/documents/page/odpm_plan_030334.hcsp

ODPM (2004) Planning for Renewable Energy. A Companion Guide to PPS22.

www.odpm.gov.uk/stellent/groups/odpm_planning/documents/page/odpm_plan_033489.pdf

RSPB (2004) Information leaflet on Wind Farms and Birds.

SERA, 2005. Our Energy Future: The Role of Wind Power

Available on <http://www.bwea.com/pdf/SERA-briefing.pdf>

TNS (2003) Attitudes and Knowledge of Renewable Energy amongst the General Public. On behalf of: Department of Trade and Industry, Scottish Executive, National Assembly for Wales and Department of Enterprise, Trade and Investment Northern Ireland.

Other Useful Web-Links

<http://www.dti.gov.uk/renewables/>

<http://www.bwea.com/ref/faq.html>

<http://www.bwea.com/energy/attitudes.pdf>

<http://www.bwea.com/>



<http://www.ecotricity.co.uk/projects/SwaffhamII/>

<http://www.english-nature.gov.uk/>