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Sheephouse Heights Windfarm

Non Technical Summary



OUR MISSION: A SUSTAINABLE ENERGY SUPPLY FOR EVERYONE

NON TECHNICAL SUMMARY

INTRODUCTION

This Non Technical Summary forms part of the Environmental Statement to accompany an application by Evelop UK Limited ("the developer") for a 5 turbine windfarm of approximately 15MW near Midhopestones, north west of Stocksbridge in South Yorkshire. The location of the site is shown in Figure 1.1.

Evelop UK Limited is a renewable energy company that is committed to developing, owning and operating all forms of renewable energy; energy from wind, solar, biomass and hydro.

The company was formed in 2002 and was originally called Breeze Renewable Energy Ltd. In 2006 shares were acquired by a multi-national sustainable energy company, Evelop. Evelop is, in turn, part of the Econcern Group of Companies.

In 2007, Breeze Renewable Energy Ltd was fully integrated into Evelop International and commenced trading as Evelop UK Limited. Evelop are developing sustainable energy projects in The Netherlands, France, Germany, Belgium, Poland, The Czech Republic, Italy, Brazil, Chile, Africa, Canada, Spain, the Caribbean and the USA. Evelop is also a world leader in offshore wind energy. One of Econcern's largest projects, the offshore wind farm Q7 (120 megawatt) will be fully operational this summer. The 315 MW Sherringham Shoal wind energy park, off the Norfolk coast, is expected to be completed in 2010. Econcern's mission is 'a sustainable energy supply for everyone'. Econcern consists of operating companies Ecofys, Evelop, Ecostream and Ecoventures. Together they deliver unique projects, innovative products and services for a sustainable energy supply. Econcern employs about 1000 professionals in 20 countries across the world.

Energy underpins virtually every aspect of the economy. However, the use of fossil fuels such as gas and coal, which currently provide the bulk of our energy, releases greenhouse gases (such as carbon dioxide) into the atmosphere which directly affects our climate. To help lessen the effects of climate change, greenhouse gas emissions must be reduced. One way of helping to achieve this is by generating energy from sources that emit low or even zero levels of greenhouse gases, such as renewable sources.

In order to meet international obligations, the UK is committed to reducing greenhouse gas emissions in an attempt to reduce the effects of climate change. The UK Government has recently set a commitment to cut the UK's carbon emissions by 60% by 2050, with a 26-32% reduction by 2020, against a 1990 baseline. Latest estimates show that total UK greenhouse gas emissions in 2006 had fallen 15% below 1990 levels while carbon dioxide emissions were 5% below 1990 levels in 2006, (Meeting the Energy Challenge A White Paper on Energy, May 2007, DTI).

Another main objective is to move towards obtaining 10% of the UK's electricity supply from renewable sources by 2010, with an aspiration for 20% renewable generation by 2020. In 2006 electricity supplied from renewable sources stood at around 4% of the UK's total.

The current statutory Regional Spatial Strategy (RSS) for Yorkshire and the Humber was published by the Government Office for Yorkshire and The Humber in December 2004. Policy R12 gives targets for renewable energy generation of 674MW by 2010 and at least 1850MW by 2020.

The installed capacity of Sheephouse Heights Windfarm will be approximately 15MW, which could provide enough energy for approximately 5591 to 8387 homes and has the potential to contribute CO_2 emission reductions of approximately 24,874 tonnes[1] during each year of its 25 year operational life.

ENVIRONMENTAL IMPACT ASSESSMENT

The Environmental Statement (ES) has been prepared to accompany the planning application, in accordance with the Town and Country Planning (Environmental Impact Assessment) (England and Wales) Regulations 1999 ("The EIA Regulations").

Environmental Impact Assessment (EIA) is a process intended to ensure that permissions for developments with potentially significant effects on the environment should be granted only after prior assessment of the likely significant environmental effects has been carried out and suitable mitigation or management measures identified.

CONSULTATION AND SCOPING

The aim of the Scoping process is to identify key environmental issues at an early stage, to determine which elements of the proposal are likely to cause significant environmental effects and to establish the work required for the preparation of the ES.

A scoping opinion for Sheephouse Heights was requested from Barnsley Metropolitan Borough Council by Evelop UK Limited (formally Breeze Renewable Energy Ltd). Barnsley Metropolitan Borough Council consults with various statutory and non statutory consultees, such as the Natural England, Civil Aviation Authority and RSPB, who in turn have an obligation to provide any relevant information. In addition further detailed consultation was undertaken by the specialist consultants to feed into the various technical environmental assessments.

As part of the wider consultation process Parish Councils will be contacted and a public exhibition will be held at the time of submission of the application. This will provide an opportunity for local people to examine the proposals and explore issues of potential concern.

SITE SELECTION AND LAYOUT DESIGN

Evelop UK Limited have been meticulous in their search for potential sites for wind energy projects in England. Searches have ranged from the most north western stretches of the coast, across to North Northumberland and down to areas just North of the River Thames.

[1] BWEA, Calculations for Wind Energy Statistics, www.bwea.com/edu/calcs

Using advanced wind speed and duration evaluation software and techniques, combined with topographical modelling software, Evelop UK Limited have investigated over 3000 potential sites to develop shortlists of sites which satisfied initial technical viability criteria.

Further analysis relating to proximity to dwellings, constrained areas, designated sites, noise and landscape character/impact as well as analysis of the geographic orientation of the sites were then carried out to refine the lists of potential wind energy projects.

Outline discussions with the Ministry of Defence, National Air Traffic Services and the Civil Aviation Authority also served to confirm or reject potential sites. Feasibility studies relating to the electrical connection of the potential sites into the local and national grids was also undertaken.

The site at Sheephouse Heights was one of thirteen that were initially identified in the North West Sheffield/South West Barnsley area and was finally ranked by Evelop UK Limited as the first project in this area after detailed evaluation of the technical, visual and economic aspects of the potential project.

Different turbine layout designs were considered. Further detailed analysis of Sheephouse Heights confirmed that a single contour following row of wind turbines provided the optimal layout for this particular site based on detailed wind flow analysis.

THE PROPOSED DEVELOPMENT

The proposal is to construct and operate a 15 MW windfarm comprising the following:

- 5 wind turbines and associated infrastructure including transformers and crane pads;
- construction of site entrance;
- upgrading of existing access tracks;
- construction of new access tracks;
- construction of a temporary site compound;

Construction would take place over a 9-12 month period.

The proposed layout of the wind turbines is shown in Figure 2. The candidate turbine provisionally selected for this site, would have a hub height of 80m and a total height to blade tip of 125m. The turbine towers would be of tapering tubular steel construction and the blades would be made from fibre-reinforced epoxy. The finish of the turbines would be semi-matt pale grey.

The turbines would generate electricity in wind speeds between 4 and 25 m/s. At wind speeds greater than 25m/s (56mph) the turbines would shut down for self-protection. Such high wind conditions occur for a maximum of approximately 1% of the year. This windfarm would be generating electricity for approximately 80-85% of the year.

The windfarm will be connected to the national grid via the existing Hunshelf substation building. The grid connection is the responsibility of CE Electric UK (Northern Electric - Yorkshire Electricity Distribution (YEDL)) and the details of which would be agreed with Barnsley Metropolitan Borough Council..

Operation

Modern wind turbines have an expected operational availability of over 97%, including shutdowns due to routine maintenance. Each turbine has a computer controller that regulates every aspect of the turbine's performance. Routine site maintenance visits would take place approximately twice per week in a four-wheel drive vehicle to ensure that the turbines are operating at their maximum efficiency. Routine servicing would take place one per year with a main service at twelve monthly intervals and a minor service at six months.

Decommissioning

The expected productive lifetime of the turbines is estimated at 25 years. At that time, it would be necessary to decide whether to refurbish, replace or remove the turbines. If refurbished or replaced an application would be made to extend its operational life.

If the site is decommissioned, the turbines and all infrastructure would be removed from site. The upper sections of the foundations would be covered by peat and left to re-vegetate naturally. Underground cables would be cut back and left buried in the already vegetated peat and tracks left for use by the farmer. This approach is considered to be less environmentally damaging than seeking to remove all foundations, cables and roads entirely.

It is estimated that decommissioning a windfarm of this size would take approximately 6 months.

PLANNING POLICY

Government planning guidance on renewable energy developments is set out in PPS22: Renewable Energy (2004). The policy statement, while maintaining the usual planning controls is designed to encourage the planning system to make positive provision for renewable energy development.

The Development Plan for the area comprises the Regional Spatial Strategy (RSS) for Yorkshire and the Humber to 2016 based on a selective review of RPG12 (December 2004), and the Barnsley Unitary Development Plan (2000).

The planning system is currently undergoing a reform in which the development plan is restructured to comprise of a RSS and a Local Development Framework. The RSS is currently being revised and is expected to be published in November 2007.

These all form material considerations to the proposal.

A separate Planning Statement, not part of this Environmental Statement, discusses the policy considerations and reaches some conclusions on the acceptability of the proposed development in policy terms.

SOCIO-ECONOMICS

The capital cost of constructing the Sheephouse Heights Windfarm is expected to be approximately £16 million. Up to fifteen short-term construction jobs would be created.

Once operational, part-time maintenance support would be required from a person living within a call out distance of the site. Training would be given of this position.

The areas containing the windfarm infrastructure would be leased from the landowners. These annual payments would allow the landowners to invest more money into their farms, potentially increasing productivity and furthering employment opportunities.

Impacts on tourism and recreation depend upon attitudes of the viewer. Studies undertaken by professional bodies have shown that the public is in favour of generating energy by renewable means. Local people can be concerned with proposals for a windfarm in their area, however, these fears are generally allayed when the windfarm becomes operational.

Evelop UK Limited firmly believe that the benefits of renewable energy projects should be shared with the local community, and that this should involve shared ownership and/or profit sharing. As such, an agreed percentage of the proceeds of the project will go to the local community.

LANDSCAPE AND VISUAL EFFECTS

This assessment investigates the likely effect of the proposed windfarm on the landscape character and the visual amenity of the study area. It has been carried out by desk-based document review, consultation and site based survey work within a study area that extends 20km around the proposed windfarm. The assessment has been carried out in accordance with current guidance.

The main effect on landscape character would involve the introduction of 5 wind turbines as new elements of the landscape. Impacts would be due principally to the functional character of the turbines, their overall height and the movement of their rotor blades and would last for the 25 year life of the windfarm.

The study area for the proposed windfarm at Sheephouse Heights is located within the Pennine Fringe between the sparse open moorland of the Peak District National Park and the densely populated and industrial belt between Sheffield and Huddersfield. The windfarm is not located within a nationally or locally designated landscape and the undulating topography of the study area creates folds in the land that limits potential visibility of the proposed windfarm to localised pockets. The study area is criss-crossed with roads and power lines, and manmade structures are prevalent. In particular, there are numerous masts, including the vast communications mast at Emley. There is one existing windfarm at Royd Moor consisting of nine turbines and there are several other single micro-turbines within the study area. It is envisaged that introducing wind turbines into this location will not adversely impact on the existing character of the landscape.

The visual amenity of the study area has been gauged by understanding the views likely to be experienced by different users within the study area, such as road users, walkers, people in settlements etc. In the first instance, computer mapping of the Zone of Theoretical Visibility (ZTV) was carried out. The ZTV illustrates that visibility of the windfarm will be limited in the south-western portion of the study area from the Peak District National Park. Elsewhere visibility will be patchy and only within the immediate locality of the windfarm, within approximately 5km of the turbines will there be the possibility of continuous visibility. It must be noted that the ZTV does not take account of local landform, built form or vegetation. For this reason, it is purely theoretical. In reality, the local landform associated with the roads and the motorway corridor; the urban form within towns and cities; and the vegetation cover and blocks of woodland and trees in the landscape will reduce the visibility of the proposed turbines even further. The assessment of effects on visual receptors takes account of this.

In assessing the effect of the windfarm on the landscape and visual resource, the effects have been divided into three categories: the effect on the landscape that the wind turbines will physically sit in (landscape fabric); the effects on the landscape whilst the windfarm is being constructed (short term effects during the construction phase); and the effects of the windfarm in the long term (operational phase).
The effects of the windfarm on the landscape fabric are considered to be limited as the area of land taken up by the turbines is relatively small. Effects during the construction phase will include a short-term increase in heavy traffic whilst turbine parts are delivered to site and heavy plant is used to construct them. The effects relating to construction are considered to be limited as they are short-term. The longer term effects of the windfarm during its operational phase are considered in detail to understand the overall acceptability of the windfarm in this location.

There is no national or local designation on the landscape of the site area and the study area is generally well populated with man-made features both residential and industrial in nature. Significantly there are numerous vertical large scale elements within the landscape generally, such as masts and steel lattice pylons. The Peak District National Park extends into the south-western portion of the study area. This is unlikely to be adversely affected by the windfarm as views to the turbines are severely limited from this area. For these reasons, the assessment found there to be no significant adverse effects on the landscape character.

Significant effects on the visual amenity of the study area were found to be concentrated within five kilometres of the turbines where views to them were not filtered or restricted by mature planting, built structures or localised landforms such as road embankments. It is notable that potential views to the development from main settlements are very restricted due to the undulating topography.

The assessment also considered the effect of the proposed windfarm in relation to other existing windfarms or those already in the planning system that are or may be consented. Four other windfarms were identified including the existing windfarm at Royd Moor. All four windfarms are clustered relatively close together within 2km of Royd Moor. Out of seven possible representative views, the effects on one representative view was found to be significant and adverse due to the accumulation of the proposed windfarm with the other four existing, or potentially existing windfarms.

This assessment concludes that as there are relatively few potentially significant effects of the proposed windfarm on the landscape and visual resource of the study area, the proposed windfarm at Sheephouse Heights is acceptable in landscape and visual terms.

ECOLOGY AND ORNITHOLOGY

Following a Phase 1 survey, it was revealed that the site is dominated by habitats with limited ecological value such as arable fields and improved grassland. Few features considered to be of greater than Parish value were identified. The turbines and track layout would all fall within these habitat types. The most valuable habitat within the site is an area of acid and calcareous grassland mosaic within a field to the south of turbine 4, which is not considered to face significant impacts from the development.

The desk study revealed no internationally, nationally or locally designated sites within 2km of the survey area which would share any significant habitats with the site or held populations of protected species likely to be using the site.

Protected species identified from within the site during surveys involved low numbers of bats and some badger activity was recorded from the site and wider area (see confidential appendix). The locations of these records and predicted impacts from the development indicated that no significant impacts should occur to these populations from the windfarm.

It was considered that the development of the windfarm would have no significant adverse impacts on the ecology of the survey site or wider area.

Bird surveys and desk study results from the site revealed no significant populations of breeding or wintering records of particularly vulnerable species such as raptors, wildfowl or waders from within the locations of the turbines. The only records of these groups involved a small number of breeding lapwings and snipe in fields around the site, not holding turbines, and a single buzzard recorded over Sheephouse Wood (outside the survey area).

It was considered that there would be no significant impact on breeding or wintering bird populations from the development.

Appropriate monitoring of the ecological value of the site was recommended as mitigation during the operational phase of the project and particularly prior to the decommissioning phase.

HYDROLOGY

The assessment has been based on a detailed desk study, walkover, and consultations with a range of organisations, including Barnsley Metropolitan Borough Council and The Environment Agency.

The geology of the site is predominantly underlain by Grenoside sandstone rocks from the Carboniferous period, identified and overlain by residual soil materials from the in situ breakdown of rock. Three main surface watercourses drain the site, identified as the Small Clough and Jenkin Clough and Cotefield Beck. Underbank Reservoir lies approximately 800m south of the site centre.

The application site west lies within the catchment area of all three of the abovementioned watercourses, which drain southwards.
Potential impacts on hydrology have been mitigated through "embedded" measures and through best practice.

Embedded Mitigation
A fundamental "embedded" mitigation measure is the use of interceptor drains, silt traps and balancing ponds in proximity to access tracks to avoid introducing silt to site watercourses.

To avoid introducing silt to site watercourses, via borrow pit excavations, a 50m buffer from watercourses will be maintained. Overburden will not be stockpiled for prolonged periods around the perimeter of works but will be used to reinstate pits when practical.

Construction contractors will aim to maintain a 50 metre buffer zone for all turbine bases around the watercourses on the site. This 50m buffer zone, in conjunction with a suitable Pollution Prevention Plan should avoid potential impacts on surface water courses.

Finally, the principles of Sustainable Urban Drainage (SUDS) will also be employed where appropriate within the development.

Best Practice
A Pollution Prevention Plan (PPP) will set out measures to be employed to avoid or mitigate against potential impacts for all phases of the development, and will also include an Incident Plan to be followed, should pollution occur. A nominated person will have specific responsibility for implementation of the PPP.

Method statements will also be applied, which will follow the principles laid out in relevant Environment Agency Pollution Prevention Guidelines (PPGs).

With the proposed mitigation measures, the potential effects of the windfarm on hydrology and hydrogeology are considered to be not significant.

ARCHAEOLOGY AND CULTURAL HERITAGE

An assessment of the potential impact of the proposed development upon cultural heritage resources both within and outwith the site boundary has been undertaken.

The assessment started with the establishment of the baseline condition of the site, by means of accessing the Sites and Monuments Record (SMR) maintained by South Yorkshire Archaeological Advisory Service, as well as data on Scheduled Monuments, Listed Buildings and other nationally designated features held by English Heritage at the National Monument Record Centre. Records were collected for SMR sites to 1 km around the site boundary to allow an assessment to be made of the potential for unknown, buried, archaeological remains to exist within the development. Data on nationally designated cultural heritage features was collected

out to 15km from the proposed site boundary, to inform an assessment of the potential for indirect, that is visual effects upon the settings of such features.

The assessment shows that no Scheduled Ancient Monuments, Registered Historic Parks or Gardens or Battlefields lie within the development boundary in whole or in part. Only one Listed Building record lies within the site boundary; this is the "take off" stone (Historic Building Number 333865) along the boundary of Mortimer Road. This feature will not be directly impacted by the development. In addition, no features recorded on the SMR lies within the site boundary. Although the potential for buried archaeological remains cannot be discounted, the assessment (based on the known archaeological record from around the site) indicates that the likelihood of encountering significant remains is low. It is considered that this potential can be mitigated by the implementation of an appropriate programme of archaeological recording prior to construction, and a watching brief during construction, leading to preservation by record.

Assessment of potential visual impacts upon the settings of cultural heritage features is based upon the distance to the feature from the nearest turbine, as well as the level of designation of the features. More detailed consideration of the setting of features (including tree cover, associated buildings, location within a built-up area, designed views etc.) has been undertaken to determine the final potential effect. Although the turbines will be visible from cultural heritage features at distance beyond the development boundary, the assessment indicates that the actual effect upon the settings of such monuments is likely to be of no more than "minor" significance.

NOISE

An assessment of noise during construction, operation and decommissioning has been carried out.

Noise during construction and decommissioning will be managed through the use of best practice to ensure that effects are minimised as far as is reasonably practicable.

Operational noise has been assessed in accordance with relevant guidelines and in consultation with Barnsley Metropolitan Borough Council's Environmental Health Department. A baseline noise survey has been carried out at nearby properties and noise limits established. The noise levels likely to occur at nearby properties under worst-case conditions have been predicted and assessed against these limits. All predicted noise levels are lower than the limits, with one minor exception. In one case, the limits would be exceeded by a very small margin at one specific wind speed during the day. As this is a very minor effect, and unlikely to occur in practice due to the conservative assumptions made in the prediction process, this effect has is considered to be not significant. In all other cases, the noise levels are lower than the recommended limits and are therefore considered to be not significant.

EXISTING INFRASTRUCTURE

Pager Power, a consultancy that provides aviation and communication surveys, was commissioned to undertake a Television Impact Assessment to determine the impact of the proposed windfarm on television reception. The findings of the report were that any effects on television reception can be resolved through technical solutions, such as changing aerial heights, replacement and retuning of aerials or the provision of satellite or cable services for effected properties.

Mitigation is required for a BT point-to-point microwave radio link and a JRC telemetry and telecontrol radio link which both cross the proposed windfarm site. Pager Power was commissioned to undertake mitigation discussions with both link operators to find a solution to the link interference issues. The JRC now have substantial experience of undertaking communication system impact assessments and investigating mitigation work for wind farm developers. JRC advise that solutions can often be found which are cost effective and acceptable to all parties. In the case of the BT link a survey would be undertaken by BT, funded by the developer, to find an alternative feed. Following this one mitigation option could be the installation of a passive or active repeater to take the link around the windfarm site.

With mitigation, Sheephouse Heights Windfarm is not expected to have a significant effect on existing infrastructure including aviation, television and telecommunications and utilities after implemented mitigation options.

Pager Power will also continue to liaise with all parties to find suitable mitigations options prior to the construction phase of the windfarm.

ACCESS AND TRAFFIC

The traffic and transport assessment centers on the effects during the construction of Sheephouse Heights Windfarm. Traffic levels during this period would be at their highest levels when compared to operation traffic.

Three routes would be utilised during the construction period. Abnormal loads would be brought via the M1 motorway and follow one of the two routes below;

Turbine Blades;

- From M1 Junction 37 proceed west on A628
- Left turn (south) onto A629
- Right turn (south) onto Bower Hill
- Proceed along Roughbirchworth Lane and Back Lane
- Right turn (west) onto Cranberry Road proceed to site.

Other Components;

- From M1 Junction 36 proceed west on A61 and A616
- Right turn (north) onto A629
- Left turn (south) onto Bower Hill
- Proceed along Roughbirchworth Lane and Back Lane
- Right turn (west) onto Cranberry Road proceed to site.

Other construction traffic such as tippers and articulated lorries, would travel as follows;

- From M1 Junction 36 proceed west on A61 and A616
- Right turn (east) onto A628
- Proceed west onto Hartcliff Road
- Turn right (west) onto Hartcliff Hill Road
- Continue onto Mossley Road and proceed to site.

The highest level of construction traffic generated by the development would occur during Month 5, with 85 vehicle movements per day, 65 of which would be heavy goods vehicles. No significant effect on traffic along the A616 is expected. Agreements would be drawn up to ensure that these vehicle movements do not coincide with local peak traffic periods.

Abnormal loads would be escorted by the police or private contractor and delivered outside of peak periods due to the likely delays these could create. Wheel washing and road sweeping in the vicinity of the site access would be in place to reduce the effect of dust, dirt and mud on the public highway. In addition, a Traffic Management Plan would be agreed with BMBC to address any other concerns associated with the construction traffic.

OTHER ISSUES

Sheephouse Heights Windfarm will have a positive benefit of emission savings. Every year of its 25 year operational life it will displace 24,874 tonnes of CO_2, from entering the atmosphere.

Any health and safety risks will be addressed through mitigation measures and normal construction and operational procedures. All relevant legislation will be adhered to during all stages of development. The implementation of current best practice and technology will be used so as to minimise any health and safety risks that might be associated with this project. The implementation of the construction design and management principles will result in a quality windfarm development, built, operated and maintained to the highest standards of safety.

Sensors and protection equipment will be fitted to turbines and operational procedures followed to mitigate any safety risks associated with extreme weather.

An assessment of potential shadow flicker effects has been carried out. Shadow flicker is an effect that can occur when the shadow of a moving wind turbine blade passes over a small opening (window), briefly reducing the intensity of light within the room, and causing a flickering to be perceived.

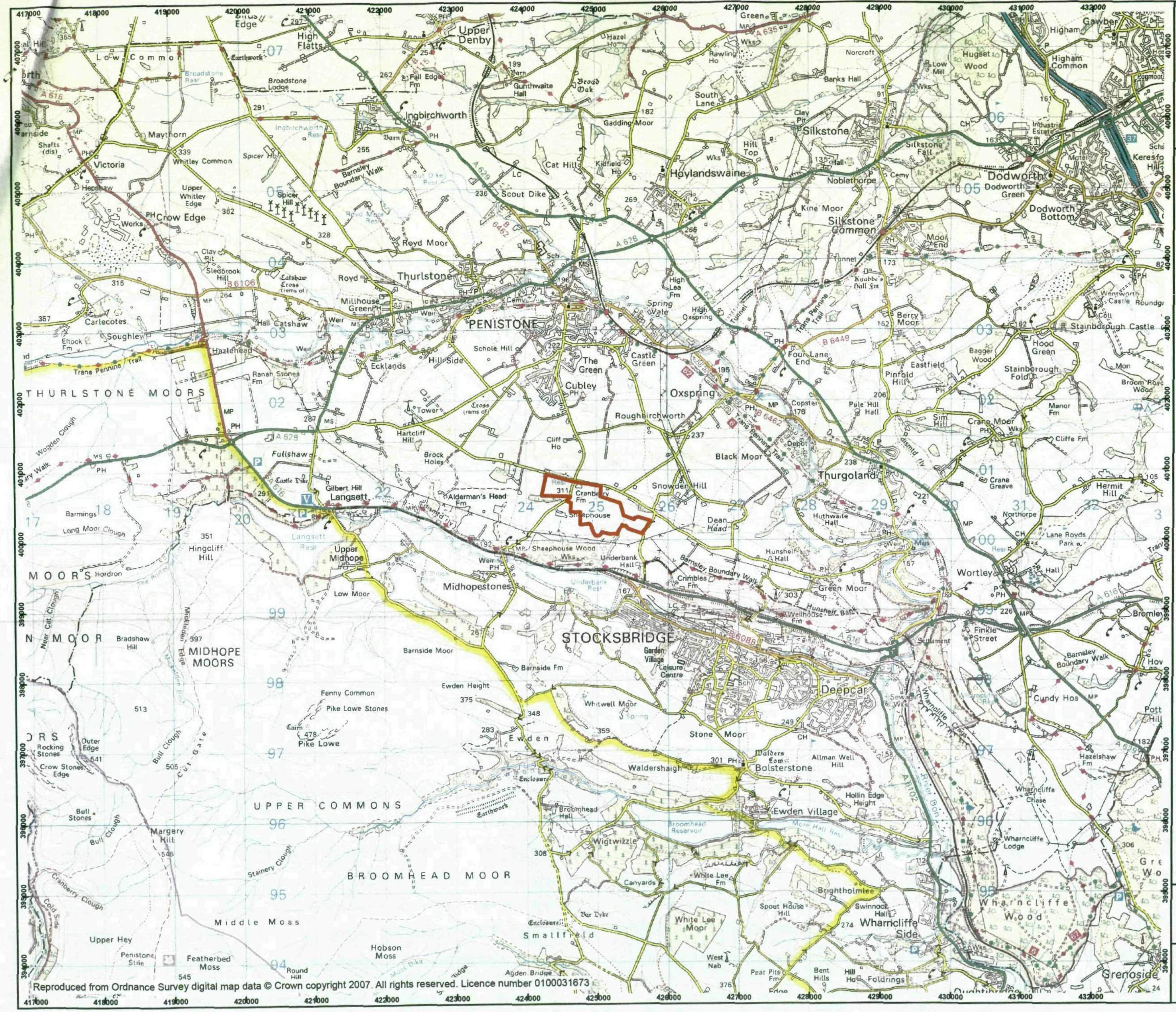
It occurs only under certain combinations of relative sun, turbine and window locations, turbine orientation, times of day, days of the year and weather conditions.

The flickering may have the potential to cause disturbance and annoyance to residents if it affects occupied rooms of a house. Although some persons with photosensitive epilepsy are sensitive to flickering light, the frequencies of flicker caused by modern wind turbines (less than one Hertz) are well below the frequencies known to trigger effects in these individuals.

The assessment has identified properties likely to be affected, within a distance of ten rotor diameters (900m) and 130 degrees of north relative to the proposed turbine locations, as this is the area in which effects are known to occur, according to the Companion Guide to PPS22.

The approximate times of day and year that effects may occur at these properties have been calculated, based on a number of worst-case assumptions.

A control system will be employed during operation of the wind farm which will prevent shadow flicker from occurring, by automatically shutting down turbines at times that flicker may occur, based on pre-programmed locations for the turbines and properties, and measurement of light intensity.



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Key

Application Boundary

1:50,000 Scale @ A3

0 1 2 Km

N

Site Location

Figure 1.1

Sheephouse Heights Windfarm Environmental Statement