

Spring Brook Wind Turbine

Non Technical Summary

June 2013



Spring Brook Wind Turbine: Non Technical Summary

1.1 Non-Technical Summary

1.1.1 This document presents a Non Technical Summary (NTS) of the Environmental Statement (ES), which accompanies a planning application to Barnsley Metropolitan Borough Council (BMBC) for the proposed Spring Brook Wind Turbine.

1.2 Spring Brook

1.2.1 The Spring Brook Wind Turbine (Spring Brook) is a proposed wind energy development comprising a single wind turbine located on farmland within the boundary of Sheephouse Farm, above Underbank Reservoir near Stocksbridge. The wind turbine would have an installed capacity of 900kW and would have a maximum vertical tip height of 79m.

1.2.2 The location of Spring Brook is shown on **Figure 1.1**. Other components of the proposed development are summarised in paragraph 1.8, below.

1.3 The Applicant

1.3.1 The applicant is local farmer John Darwin and family. Sheephouse farm is a family run business and is a mixed farm with livestock and cereal comprising of approximately 300 acres and 140 dairy cows. The intention is to use some of the power from the wind turbine for the dairy and export the rest to the national grid.

1.3.2 Mr Darwen and family have engaged The Energy Workshop Ltd to project manage the Spring Brook proposal.

1.4 The Agent

1.4.1 The Energy Workshop (TEW) is a specialist wind energy consultancy based in Huddersfield. TEW has been in business for twenty years and the team has over sixty years combined experience in the renewables sector. TEW has worked with a wide range of clients including npower renewables, Enviros, Clipper, BT, ENECO, e-Gen, Element, the Department of Trade and Industry (now BIS and DECC) and TNEI.

1.4.2 TEW specialise in managing wind energy proposals of all scales through to operation and its staff have played a lead role in the consenting of some thirty wind energy projects throughout the UK.

1.5 Environmental Impact Assessment

1.5.1 Environmental Impact Assessment (EIA) is a process intended to ensure that developments with potentially significant effects on the environment are granted permission only after full consideration of the likely significant environmental effects and suitable mitigation or management measures identified.

1.5.2 The Spring Brook Wind Turbine proposal has been the subject of a detailed EIA, the scope of which has been determined by a Screening Response issued by the BMBC, and through further consultation with the Council and other interested organisations. The Screening Response is reproduced as **Appendix 3.1** of the ES.

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1.5.3 The ES comprises four volumes in addition to this Non Technical Summary, as follows:

- Volume 1: Environmental Statement – presents the full text of the Environmental Statement and full details of the environmental impact assessment that has been completed following the various technical assessments;
- Volume 2: Figures - contains supporting figures and visualisations supplementing the findings presented within Volume 1;
- Volume 3: Design and Access Statement – explains the design principles and concepts that have been applied to this particular scheme; and
- Volume 4: Technical Appendices including the LVIA and ecological assessments.

1.6 Climate Change

1.6.1 Energy underpins virtually every aspect of our society and economy. 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. It is generally accepted that greenhouse gas emissions must be reduced to help lessen the effects of climate change.

1.6.2 One way of delivering a meaningful reduction in the emission of potentially harmful gases is to generate electricity from sources that emit low or even zero levels of greenhouse gases, such as renewable sources.

1.6.3 The UK Government recognises that renewable energy, from sources such as on-shore wind farms, can tackle the causes of climate change and can also help to deliver sustainable economic growth.

1.6.4 Clear targets for renewable electricity have been set by the Government, with 15% of all energy consumed in the UK to come from renewable sources by 2020, i.e. all energy sources and not just electricity. In the light of the difficulties in providing significant elements of fuel and heating from renewables by 2020, the proportion of electricity supply that will have to come from renewables to balance this out will need to be raised substantially to at least 30%.

1.6.5 The proposed Spring Brook Wind Turbine has the potential to generate an estimated 2,401,000 kilowatt hours of electricity per annum, equivalent to the average demand of around 570 households or around 17% of the population of Stocksbridge. Through generating electricity from a renewable source, it could also prevent the emission of around 1,032 tonnes of carbon dioxide each year, or 30,972 tonnes over a 30 year operating lifetime.

1.7 Site Selection and Layout Design

1.7.1 The reasons for refusal for the original Sheephouse Heights proposal (for five 125m wind turbines) in 2009 have heavily informed the design of the new proposal for this location, as discussed **Chapter 4** of the ES. The design of the

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scheme has been proposed following detailed design work and consultation with key stakeholders.

1.7.2 The site itself is considered to be suitable for a wind energy development on the basis of a range of selection criteria, which include the following:

- suitable wind speed (the average wind speed on site needs to be above a certain level to make the scheme economic);
- the availability of a potential grid connection close to site;
- the availability of suitable road access to the site;
- the site is a reasonable distance from residential properties;
- the site is outside national and international environmental designations (e.g. National Parks);
- the site does not support any Sites of Special Scientific Interest (SSSIs) or other areas designated as of conservation importance within its boundaries;
- there is no known conflict with civil or military aviation, including radar systems.

1.7.3 TEW have undertaken and commissioned numerous surveys and assessments over an extended period of investigation to further understand the site, and to identify any constraints, which could affect the project's viability. The key assessments carried out as part of the ES are summarised below.

1.8 The Proposed Development

1.8.1 The proposed development consists of a single wind turbine with an installed capacity of up to 900kW. The project consists of the following elements:

- wind turbine with a rated capacity of up to 900kW and a maximum vertical tip height of 79m;
- an electrical control building;
- an appropriately sized crane hard-standing;
- a new access track;
- a temporary construction compound for use during construction; and
- a temporary met mast of up to 60m in height, to be erected at the same location as the wind turbine for up to 24 months prior to erection of the wind turbine itself.

1.8.2 The construction of the project is anticipated to take around six months.

1.8.3 The proposed layout of the project is shown in **Figures 1.2** and **1.3** of the ES.

1.8.4 The assessments within the ES are based on the development of a single turbine, with a maximum height to blade tip of no more than 79m. The turbine tower would be of tapering tubular steel construction and the blades would be made from fibre-reinforced epoxy. The finish of the turbine would be semi-matt and non-reflective pale grey.

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- 1.8.5 The Spring Brook Wind Turbine would be decommissioned at the end of its 30-year life and the site reinstated. Decommissioning will take account of the environmental legislation and technology available at the time.

1.9 Screening

- 1.9.1 In July 2012, TEW requested a screening opinion from BMBC relating to a proposed development of two wind turbines on the site, with a larger tip height of up to 101m. The Council subsequently advised that an EIA would be required for the proposed development. TEW then initiated a pre-application consultation process with the Council, providing visualisations of two 79m to tip turbines and two turbines of 101m to tip, for comparison. BMBC gave its view that the smaller turbines "appear (based on the submitted wirelines) substantially less obtrusive and visually prominent than the larger turbines."

- 1.9.2 TEW subsequently requested a screening opinion on the current proposal, for a single turbine of up to 79m to blade tip. BMBC provided a screening opinion stating that it would still consider such a proposal to be EIA development, principally on the grounds of potential visual impacts. The screening request and response are included at **Appendix 3.3** and **3.4**.

1.10 Planning Policy

- 1.10.1 The development site lies within the Barnsley Metropolitan District Council administrative area, but a 5km radius around Spring Brook encompasses land administered by two other local planning authorities: Sheffield City Council, and the Peak District National Park Authority. TEW have carefully considered international, national, and local policy from the relevant authorities throughout the pre-planning process, as discussed in the **Planning Statement**. As already discussed, the design of the current proposal has been strongly influenced by previous proposals, discussions with the relevant authorities and the iterative EIA process, as recorded in the ES.

- 1.10.2 International and national policy confirms that local planning authorities should give significant weight to the wider environmental, community and economic benefits of proposals for renewable energy schemes. This should include the contributions such schemes make towards renewable energy targets, to mitigating the causes of climate change and to reducing the consumption of finite natural resources.

- 1.10.3 The Spring Brook Wind Turbine would make a small but significant contribution towards the national and local aims of promoting sustainable development and the use of renewable energy. Given the limited and temporary impact of the proposal on the open character of the area, these wider environmental benefits provide the very special circumstances to justify the proposed turbine's location in the Green Belt.

1.11 Landscape and Visual Effects

- 1.11.1 A Landscape and Visual Impact Assessment (LVIA) of the Spring Brook proposal was undertaken by TEW to determine the effects of the project on the landscape and visual resource.

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- 1.11.2 As part of the landscape and visual assessment, computer-modelled maps have been produced which show the predicted Zone of Theoretical Visibility (ZTV) of the proposed wind turbine, within 15km of the site. A ZTV is shown in **Figure 5.1a** and photomontage views and wirelines from nearby viewpoints are shown in **Figures 5.2** through to **5.24**.
- 1.11.3 The LVIA observes that the modest scale of this proposal is able to take advantage of the local landform without substantially changing local landscape character and the settings of the valley settlements. As a result, the proposal will not result in unacceptable landscape and visual effects.

1.12 Ecology & Ornithology

- 1.12.1 A range of ecological assessments have been undertaken to investigate the ornithological and other ecological interest of the site in accordance with relevant guidance published by Natural England and others.
- 1.12.2 A number of ecological receptors were identified, including designated sites, habitats, badgers, amphibians, bats and breeding and non-breeding birds. There are not predicted to be any significant adverse effects on statutory or non-statutory designated sites. All potential effects of the construction, operation and decommissioning of the development on ecological receptors were assessed as of low magnitude and are not significant, either alone, or cumulatively with other plans and projects.
- 1.12.3 It is concluded that potential for ecology and ornithology to be adversely affected by the current proposal is extremely unlikely.

1.13 Residential Amenity

Noise

- 1.13.1 A full Noise Assessment has been undertaken TEW using WindPro Decibel, and is reproduced as **Appendix 11.1**. This describes the potential noise levels caused by the proposed wind turbine at the nearest Noise Sensitive Receptors. It then compares the results with the relevant criteria.
- 1.13.2 At the time of the assessment, in May 2013, the calculated turbine noise levels at Noise Sensitive Receptors at all the reference wind speeds was below both the daytime and night-time noise criteria recommended by ETSU.
- 1.13.3 The Noise Assessment therefore concludes that the predicted noise levels from the proposed turbine would not exceed the noise limits defined in ETSU-R-97 and therefore will not adversely affect local amenity.

Shadow Flicker

- 1.13.4 Rotating turbine blades cast moving shadows, which could, under certain conditions, cause flickering. Shadow flicker is the term used to describe the effect of those shadows passing a narrow opening (usually a window). The resultant effect can be a shadow appearing to quickly turn on and off as blades pass the opening in succession. There are limited atmospheric conditions under which shadow flicker may occur and occurrence relates to the position of the sun relative to the turbines and the opening.

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- 1.13.5 The Energy Workshop Limited (TEW) carried out an assessment of potential shadow flicker effects caused by the proposed turbine. Government planning guidance advises that the distance over which this effect can occur is generally within ten times the rotor diameter of the proposed wind turbine. In the case of the proposed Spring Brook wind turbine, this effect could potentially occur within a radius of 540m from the turbine as the EWT DW-54 has a rotor diameter of 54m.
- 1.13.6 The assessment shows that there are several potential receivers within the 540m assessment zone, which could potentially experience weak shadow flicker resulting in potential impacts of low significance. If complaints concerning shadow flicker were, however, to arise, mitigation measures such as installing window blinds or curtailing turbine operation could be implemented. The frequency of any shadow flicker from the proposed turbine is outside of the range which is said to affect epileptics.

Conclusions

- 1.13.7 While the ES identifies a number of residential properties within 1km of the proposed turbine, there are not predicted to be any unacceptable effects on the residential amenity of the residents of these properties from either noise, shadow flicker or the visual impact of the proposed turbine as perceived from the properties in question.

1.14 Access and Traffic

- 1.14.1 The proposed delivery route for abnormal loads is as follows:
- it is intended that the turbine will be landed at Hull (or another port, suitably connected to the trunk road system);
 - then transported via the trunk road and motorway network to M1 junction 37;
 - then west along the A628 towards Penistone;
 - then south east along the A629;
 - then south along Bower Lane through Oxspring, turning right along Sheffield Road, then left down Roughbirchwood / Back Lane;
 - then right along Cranberry Rd and left into the site entrance.
- 1.14.2 The proposed delivery route for other construction traffic (concrete etc.) is as follows:
- exit M1 at junction 36;
 - then travel west along the A616 towards Stocksbridge and Manchester;
 - then turn right and travel east along the A628 towards Penistone;
 - then turn right along Hartcliff Road;
 - then continue along Cranberry Rd and right into site entrance.

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- 1.14.3 The proposed access route is illustrated on **Figure 10.1**.
- 1.14.4 The construction period for the proposed wind farm would be a short-term period of four to six months. A proposed delivery schedule is set out in Chapter 10 of the ES. Temporary removal of street furniture may be required in places. It is proposed that, in the event planning permission is granted, a planning condition would require that a detailed Traffic Management Plan be submitted to and agreed in writing by BMBC. This shall include details of the final access route, road upgrading works, and any other works required to allow safe passage of the abnormal loads.
- 1.14.5 Concerns have been raised in consultation with Oxspring Parish Council in respect of potential road damage as a result of traffic movements. In order to address these concerns, it is proposed that a pre-construction condition assessment of the public roads to be used to access the site be carried out to the written satisfaction of the planning authority. Within one month of the completion of the development, a post construction condition assessment of the public roads which were used to access the site shall be clearly carried out and remedial works to repair any damage caused shall be clearly identified, including a timescale for its implementation. The works identified shall thereafter be carried out in full within the timescale thereby agreed.

1.15 Archaeology and Cultural Heritage

- 1.15.1 No significant direct effects are anticipated upon archaeological features within the site, although some measures are proposed to ensure that the potential for buried remains to be encountered is addressed, and that other features within the site boundary are protected from accidental encroachment during construction.
- 1.15.2 No significant effects on the settings of any scheduled ancient monuments outwith the site are predicted. Any potential effects upon settings are considered temporary, lasting only for the consented life of the turbine, and are fully reversible upon decommissioning. No significant harm is predicted the character and appearance of Midhopstones Conservation Area, which was a key concern in the Council's refusal of the Sheepphouse proposal.

1.16 Electromagnetic Interference and Air Safeguarding

- 1.16.1 Wind turbines can potentially affect electromagnetic transmissions in two ways: by blocking of or deflecting of line of sight transmissions (as with any large structure), or by the dispersal of signals.
- 1.16.2 The MOD, CAA and NATS were consulted with regards to the previous Sheepphouse Heights proposal, and no objections were given. Given the comparatively small scale of the current proposal, no impacts on aviation are therefore predicted.
- 1.16.3 It is current industry practice to include a planning condition specific to TV interference issues. Such conditions specify that, where a deterioration in TV reception can be attributed to the wind turbine(s) in question, the developer is required to provide an alternative service at their cost within a specified time period. The use of such a condition here would provide effective mitigation of

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any effects in television reception arising as a result of the operation of the turbine.

- 1.16.4 It is also noted that the recent switch to a digital service delivers additional significant mitigation as digital services are largely unaffected by wind turbines.

1.17 Air Quality

- 1.17.1 A key driver in the development of renewable energy is the resultant reduction in greenhouse gas emissions and other pollutants that will occur as conventional energy sources are replaced.

- 1.17.2 The ES concludes that the Spring Brook turbine would generate an estimated 2,401,000 kilowatt hours of electricity per annum, equivalent to the average demand of around 570 households or around 17% of the population of Stocksbridge. Through generating electricity from a renewable source, it could also prevent the emission of around 1,032 tonnes of carbon dioxide each year, or 30,972 tonnes over a 30 year operating lifetime.

1.18 Socio Economic Impacts

- 1.18.1 The installed capacity of the Spring Brook wind turbine will around 900kW. It is intended that, subject to confirming technical feasibility, the proposed development would provide power for the Darwin family's dairy with the remaining majority being exported to the electricity network for general use in the local vicinity. The milking system is currently powered by diesel generator. Replacing this system with one powered by wind will increase the sustainability of the Darwin's farming operations in both environmental and business terms.

- 1.18.2 The development of the project will bring with it a limited demand for construction materials and related employment within the local area. Local companies could benefit from the construction of the project through tendering for contracts worth around £375,000. The operation of the project will support the equivalent of 0.5 full-time job.

- 1.18.3 A community benefit package of up to £10,000 per year, equivalent to £250,000 - £300,000 (in real terms) over the lifetime of the project, will reduce energy bills for those living closest to the wind turbine and has the potential to provide valuable funding support for local groups and community projects.

- 1.18.4 Wind energy is the UK's fastest growing energy sector creating jobs with every MW installed. To date, over 10,000 jobs are sustained by companies working in the wind sector, and this is projected to increase as the industry grows.

- 1.18.5 The clean, renewable electricity produced by the turbine will not have a significant effect on tourism. Whilst visitors may note their presence, there is no substantial evidence to indicate that it will affect either visitor numbers or visitor-spend within the area, as discussed in **Chapter 15** of the ES.

- 1.18.6 The investment in this project has the potential to generate a range of economic and social effects and opportunities for local businesses, most notably employment opportunities and local spending. Overall it is considered that the Spring Brook Wind Turbine will have a positive socio-economic effect.



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1.19 Contact Details

The planning application and ES is available for inspection at the Barnsley Civic Centre, and at the Penistone and Stocksbridge Libraries.

Copies of the ES can be requested from The Energy Workshop at the following address (copies on DVD and copies of this NTS will be provided free of charge; however, a charge of £80 will be made for hard copies to cover the cost of printing and postage).

Address: The Energy Workshop
The Media Centre
Northumberland Street
Huddersfield
West Yorkshire
HD1 1RL

Telephone: **0845 257 1080 (calls charged at local rate)**

Email: info@theenergyworkshop.co.uk

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