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1 INTRODUCTION

This Design and Access Statement has been prepared to accompany an application by J. G. Pears Ltd., under the Planning and Compensation Act 2004, for permission to construct and operate a three turbine wind farm at Spicer Hill ('the Development'), near Ingbirchworth, Barnsley.

The Development will comprise the following:

- Three wind turbines and associated infrastructure including transformers and crane pads;
- Construction of site entrance;
- Construction of new access tracks;
- Laying of underground cabling between turbines;
- Construction of a control building;
- Erection of one permanent meteorological monitoring mast; and
- Construction of a temporary site compound (for use during construction).

The proposed wind farm is the subject of an Environmental Impact Assessment (EIA) under the Town and Country Planning (Environmental Impact Assessment) (England and Wales) Regulations 1999 (as amended). This process involves gathering environmental information about the site over a period of time and constantly revising and improving the project design in order to avoid or reduce environmental impacts wherever possible.

This Design and Access Statement has been produced with reference to Barnsley Metropolitan Borough Council's website¹ and to the 2006, Commission for Architecture and the Built Environment's (CABE) guide: Design and Access Statements, How to write, read and use them.

This iterative design process has been at the core of the design evolution of the Development and this document seeks to demonstrate this following the guidance detailed above.

¹ www.barnsley.gov.uk

2 DESIGN STATEMENT

There are five design principles that require to be addressed within the design component of the Design and Access Statement. These are

- Use- What the Development will be used for;
- Amount – How much development is proposed, which is closely related to the capacity of the site;
- Layout – The general arrangement and orientation of the development and any individual components, and how it fits with the surrounding environment;
- Scale – The size and extent of the development and any individual components;
- Landscaping – Treatment of private and public land through hard and soft landscaping techniques to enhance or protect the amenity of the development site and surrounding environment; and
- Appearance – Measures incorporated into the design of built elements that determines the impression it makes, including its built form, choice of materials, lighting, colour and texture.

2.1 Use

In the Climate Change Act 2008, the UK Government has set a binding commitment to cut the UK's carbon emissions by 80% by 2050 and requires that limits be set on the total amount of emissions in successive five year periods (carbon budgets), with a minimum 26% reduction by 2020, against a 1990 baseline.

In accordance with international obligations, the UK Government has committed to reduce emissions of greenhouse gases to alleviate the effects of climate change. The Climate Change Act, published in March 2007, proposed a new legal framework for the UK to achieve a proposed mandatory 60% cut in the UK's carbon dioxide (CO₂) emissions by 2050 (compared to 1990 levels), with an intermediate target of between 26-32% by 2020.

In 2002, the UK Government placed a 'Renewables Obligation'² on all UK licensed electricity suppliers to provide 10% of their electricity from renewable sources by 2010 and 15% by 2015. This calls on all licensed electricity suppliers in England and Wales to supply a specified and growing proportion of their electricity sales from a choice of eligible renewable sources.

With a generating capacity of approximately 6.9 MegaWatts (MW), it is estimated that the Spicer Hill Wind Farm will annually produce enough electricity to supply the average annual needs of around 4,200 homes each year³.

While the exact volume of CO₂ emissions that the wind farm would prevent will depend on the mix of conventional sources of electricity displaced at the time of generation, it is anticipated that savings may equate to between 6682 and 15,495 tonnes of CO₂ per year

² The Renewables Obligation Order 2002. The Stationery Office 2002

³ Based on a windfarm of 10MW (assuming a capacity factor of 27.3%) and an average electricity consumption in the Cherwell District in 2006 of 5,058kWh (BERR, www.berr.gov.uk/energy/statistics/regional/regional-local-electricity/page36213.html) the number of homes supplied is calculated as 4,728. It should be noted that the number of homes supplied will vary depending on site wind speeds and household electricity consumption.

2.2 Amount

The wind farm site covers approximately 18.26 hectares and consists of three wind turbines, each measuring 95 m to the blade tip in the vertical position. Other associated infrastructure will include

- On-site access tracks;
- Underground cabling routes;
- Control building and substation; and
- 60 m high meteorological mast.

The capacity of the Development site to accommodate the Development has been considered throughout the design process, taking account of particular technical, environmental and commercial considerations.

In technical terms, a number of factors were initially considered to determine the maximum number of turbines that might be accommodated on the wind farm site. These included:

- Turbine spacing - As recommended by manufacturers to achieve the optimum operational efficiency;
- Turbine size – The taller the turbine the wider the spacing required, which limits the number that can be accommodated within a given site area;
- Turbine availability – In wind yield terms taller turbines are more efficient and tend to be preferred to smaller turbines, which are increasingly more difficult to obtain;
- Wind speed data – Identifies those parts of the wind farm site that are most suitable for siting turbines;
- Topography – The steepness of the land determines which parts of the wind farm site are most suitable for erecting turbines;
- Existing infrastructure – Local roads, Rights of Way, overhead or underground services etc that pass in close proximity to the wind farm site, or through it, that require to be protected or safe guarded in the event of a turbine toppling over;
- Access – The means of accessing the wind farm site via the local road network can influence the size of turbine that can be accommodated;
- Grid connection capacity and location – The means of carrying the power off-site and the wattage that can be accommodated; and
- Proximity to housing – A minimum buffer of 500 m is usually required to safeguard properties from the potentially intrusive visual and noise effects of turbines.

In environmental terms, the capacity of the Development site may be further affected by areas of sensitivity, which may limit or even preclude development. Issues considered at Spicer Hill included:

- Ecology and Ornithology – Rare, unusual and/or protected species of plants, animals and birds that may be present on the wind farm site, including the flight path of birds. Separation distances of 200 m or more may be required;
- Hydrology and drainage – Waterlogged ground conditions may influence the siting of turbines as will watercourses that cross the wind farm site. Separation distances of 50 m on either side of streams are generally required;
- Cultural heritage – Archaeological features that may be present on the site, including scheduled ancient monuments. Separation distances of 100 m or more may be required; and
- Other features – Woodland, trees, hedgerows, walled enclosures and other artefacts present on the wind farm site may influence the final siting of turbines

In landscape and visual terms, the capacity of the Development site relates to its ability to accommodate turbines without creating unacceptable impacts on the physical fabric of the site itself, on the character of the surrounding landscape and on views from surrounding areas. This ability to accommodate the Development is closely related to the layout, scale and appearance of the Development, which are discussed in the following sections of this design statement. There are, however, two broad characteristics that can determine the initial suitability of a site to accommodate wind farm development in landscape and visual terms. These are:

- The key characteristics of the surrounding landscape in which the wind farm will be seen. Medium to large-scale landscapes that are open and with relatively uniform landform and landcover are generally considered to be more appropriate at accommodating wind farm development. This is because whilst the turbines may be visible over a wide area, they will tend to occupy a small proportion of the visible landscape and appear as minor components in relation to the underlying landscape characteristics. Additionally, their large-scale will be more difficult to discern. In contrast small-scale, intimate and enclosed landscapes are generally less capable of accommodating wind farms, since, whilst visibility may be more limited, the turbines may occupy a greater proportion of views where they appear intrusively tall and dominate the surrounding area. Spicer Hill occupies the crest of a local ridgeline that sits on the eastern fringes of the Pennines. When viewed from surrounding areas it is generally seen in the context of an upland plateau landform that is open and expansive with simple landscape components. In this context, it is considered that the small group of turbines proposed can be successfully absorbed; and
- The value of the surrounding landscape, in particular the presence of any international or national landscape-related planning designations. At a national level, PPS22 provides guidance regarding potential effects on nationally recognised designations, stating that *'in sites with nationally recognised designations (...National Parks, Areas of Outstanding Natural Beauty, Heritage Coasts...Registered Parks and Gardens...)* planning permission for renewable energy projects should only be granted where it can be demonstrated that *the objectives of designation of the area will not be compromised by the development...'*

The Development is not sited within any international or national designations, although it falls within an area of local landscape value designated by BMBC. There are some predicted effects upon the Peak District National Park which lies to the south and west of the Development site, however, these are judged to be not significant. Similarly, whilst effects on the area of local landscape value are predicted to be significant, they will be localised and confined to the close vicinity of the wind farm site. The Development is therefore considered to follow guidance given in PPS22.

2.3 Layout

Layout is a key part of the design of the Development and is considered throughout the assessment process, with the findings feeding back into the design process. The final wind farm layout can be seen in Figure 2.1 of the Environmental Statement (Volume II).

The proposed layout has undergone several iterations in arriving at the final layout. In each instance computer-generated ZTVs and wirelines have been used to assess differing turbine layouts in terms of numbers, heights and spacing, whilst taking account of technical, environmental and other aesthetic considerations.

Previous layouts utilised both parcels of land in the study area on either side of Whitley Road. However, following a preliminary appraisal and consultation with BMBC turbines were omitted from the southern and most visible parcel. This was partly to avoid additional impacts on

properties immediately below the site but also to avoid elongating turbines along the ridgeline when seen in conjunction with Royd Moor Wind Farm. This was particularly apparent with the early layout, with potentially significant effects on the Upper Don Valley and Peak District National Park.

Subsequent design iterations therefore concentrated on the larger triangular parcel of land beyond the ridge where the proposed turbines generally appear behind those of the neighbouring Royd Moor Wind Farm in more sensitive views from the south and west. Here the emphasis has been placed on achieving a layout that complements the formal nature of the Royd Moor development, takes account of site constraints and minimises overall visibility.

The original Spicer Hill Wind Farm planning application considered the turbine height and spacing to ensure an acceptable balance was achieved between that design and the existing Royd Moor turbines. Layouts involving four, five and six turbines were considered in both single and staggered rows to reflect the regimented layout of the existing wind farm and regular field pattern. At the same time a range of turbine heights was assessed from the smallest commercially available (40m hub with 52m rotor diameter) up to largest considered to be acceptable in relation to the Royd Moor turbines (56m hub with 56m rotor diameter).

After consultation with BMBC it was considered that the submitted layout did not take cognisance of proposed and consented wind farms in the BMBC area and as such this application was withdrawn. Further to the withdrawal of this application additional layouts were considered which took a strategic view of the Development and the decommissioning of the Royd Moor wind farm.

Two potential layouts were considered and were issued to BMBC for consultative purposes. Both of these layouts considered three turbines both with a hub height of 60 m respecting the aforementioned wind farms. Details of these layouts are contained in Figure 3.1 of Volume II of the ES.

The final layout was selected as it was the best landscape and visual fit for the site.

2.4 Scale

Two aspects of scale are considered in the design of a wind farm. The first of these is the extent of the wind farm *i.e.* the number of turbines that can be accommodated on the Development site. This has generally been covered for Spicer Hill in the preceding sections of this design statement, on *Amount* and *Layout*, where the size of the proposed wind farm is discussed with regard to the various technical, ecological and aesthetic considerations.

The second aspect of scale that must be considered is the height of the turbines proposed. This has also been discussed in the preceding section on *Layout*, particularly in relation to Royd Moor Wind Farm. It is considered that the final turbine size of 95m to blade tip height is appropriate to both the setting of the wind farm and the relationship that it would have with both Hazlehead and Blackstone Edge Wind Farms.

The scale of the Development in relation to its visual context is illustrated in the computer-generated photomontages contained in Volume II of the Environmental Statement which accompany the resubmitted planning application for the Development. These photomontages indicate that the scale of the turbines can be accommodated within the Development site.

2.5 Landscaping

New tree and hedgerow planting measures are often incorporated into a new development, partly to compensate for the removal of any existing vegetation but also to help screen the development from the surrounding area, so reducing its landscape and visual impact. In the case of wind farm developments, new planting is not a particular requirement since loss of

vegetation is generally minimised by the small footprint occupied by the turbines, control building and access tracks. Additionally, any new planting will be largely ineffectual at screening the turbines. Furthermore, wind farms tend to be sited in elevated and exposed locations with strong wind speeds where vegetation other than improved pastures, rough grazing and moorland struggle to thrive.

Spicer Hill is located within an upland farmland landscape on the eastern fringes of the Pennines. Landcover across the wind farm site and within the immediate surrounding area is predominately pastoral and is dominated by a strong geometric pattern of small to medium sized fields enclosed by gritstone walls. Vegetation by way of woodlands, trees and hedgerows is conspicuously absent as a result of the elevated and exposed environment. As such, there are no proposals to introduce new tree and hedgerow planting as part of the wind farm development.

The current agricultural use of the wind farm site will, however, be maintained during the lifetime of the development. The access tracks, control building and turbines have all been carefully positioned to minimise impacts on the physical fabric of the site, particularly through avoidance of the various walled field boundaries. Areas of rough grazing and improved pasture that are disturbed during the construction and decommissioning of the wind farm will be reinstated on completion of these phases.

2.5.1 Appearance

The appearance of wind farm developments, particularly the type and arrangement of turbines, is of great importance in terms of minimising landscape and visual impacts. This has generally been covered in the preceding sections on *Layout* and *Scale*. The actual design principles followed in this process are:

- The wind farm should form a cohesive unit, with an array of regular, evenly spaced turbines. Outlying turbines, which stand apart from the rest of the development site, should be avoided, as should overlaps and clusters as all of these characteristics can draw attention to the development and prevent it from achieving a fit with the visual context;
- Abrupt contrasts of scale between turbines, where some turbines appear very large while others are small, should be avoided as this can emphasise the extent and scale of the wind farm; and
- The wind farm layout should appear to relate to the landform and pattern of land-use on which it stands.

These principles have been followed in considering the appearance of Spicer Hill as far as is practicable within the constraints of the Development site. Particular consideration has been given to the close physical and visual relationship with Blackstone Edge Wind Farm, as previously described, to ensure that both developments read as a single integrated wind farm rather than two separate developments after the decommissioning of Royd Moor Wind Farm.

The type of turbines proposed is illustrated in the Environmental Statement (Volume II). These comprise a three-bladed type mounted on a tapering, tubular steel tower and painted in an off-white or pale-grey colour with a semi-matt finish to reduce glare. Additionally, no company logos or advertisements will be displayed on any part of the turbines.

In order to avoid visual clutter and maintain the simplicity of the turbines all transformers will be housed in the towers. The concrete foundations required to support the turbines will also be set below the finished soil level in order that vegetation can be restored right up to the base of each tower.

Whilst the turbines constitute the most apparent visible feature of the wind farm, the appearance of the other site infrastructure has also been considered in the design of the development. A new site entrance will be created off Whitley Road. New tracks to access the turbines, control building and meteorological mast are required. Tracks will be typically five metres wide and constructed from graded stone using materials sourced from a local quarry rather than from borrow pits excavated on site.

The control building will be located amidst the turbines, adjacent to the access track linking turbines 1 and 3. The control building will comprise a single storey building with a pitched roof as illustrated the Environmental Statement (Volume 1). Final materials for the building will be agreed with BMBC, but it is anticipated they will be similar to the Royd Moor control building and reflect the local building vernacular. All cable runs leading from the turbines to the control building will be buried below ground.

The meteorological mast will be a free-standing lattice tower structure positioned towards the southern edge of the site facing the prevailing wind, the location of the meteorological mast is illustrated in Figure 1.2 of the ES.

3 ACCESS STATEMENT

This part of the statement must address two inter-related issues

- General movement to and through the site and its structures; and
- How all members of society will be able to use the site.

Wind farms are generally not developments which are widely accessed by the public. In many cases this is discouraged for health and safety reasons. As a result, this access statement focuses on the movement of only vehicular traffic on-site. Other route users are specifically considered with respect to existing off-site public access routes and potential impacts of the wind farm on these.

3.1 Movement to and Through the Site and Its Structures

The CABE guidance provides a range of questions in relation to safe and inclusive access. These are aimed primarily at other forms of development with a specified end user. Although wind farms are not classed as engineering operations, their characteristics are similar in terms of societal access, hence this section concentrates on vehicular traffic associated with the development.

3.2 Movement of Construction Vehicles

Movement to site is largely a construction consideration as the operational traffic generation of the proposed wind farm is very small.

During the six month construction period vehicular access to site will be required for:

- low loaders and other heavy goods vehicles to deliver equipment and plant;
- 20-tonne lorries, to deliver/move material and stone for access tracks;
- flat-bed lorries to deliver control building components;
- extendable semi-low and platform trailers to deliver turbine components (requiring private or police escort);
- cranes delivered as mobile units and on low-loaders;
- deliveries of fuel and water by tanker; and
- construction personnel, by private car, light vehicles or minibus.

The turbine delivery vehicles (TVD) will constitute abnormal loads during delivery to the site. Once the component has been unloaded, the TDV will be retracted to the size of a standard articulated lorry (approximately 16.5 metres in length).

The total number of off-site vehicle movements⁴ generated during the construction of the wind farm is estimated as 7782 over a 10 month period and takes account of all construction vehicles generated by the above works during the construction period and assumes an average of 1 construction personnel per vehicle, representing a worst case scenario. 4000 of the 7782 trips are the movement of staff in cars or light vehicles, where possible this will be reduced through the promotion of car sharing and provision of other forms of shared transport.

⁴ One movement equals one arrival or one departure

3.3 Movement through the site

3.3.1 Access Track Design

The main site access would be taken from Whitley Road. An estimated 0.7km of site access tracks would be required for the Development.

The tracks would have a nominal width of 5 m and may have temporary passing places as required in order to facilitate traffic movement. At bends the track would be widened as appropriate depending on bend radius.

Access tracks will comprise a geotextile base with crushed stone on top, to a depth appropriate for the ground conditions. A running surface of higher quality finer graded stone will be applied. It is anticipated that tracks will have minimum thickness of 450 mm.

A turning area will be located at each turbine to allow the safe movement of vehicles in forward gear across the site. The turning areas will be constructed in the same way as tracks to an estimated depth of 600 mm.

Access tracks will be reduced in width following construction by laying topsoil on the shoulders of the tracks. The operational width of the tracks will be approximately 3 m which is adequate for ongoing maintenance.

Turning areas will also be covered with topsoil and allowed to regenerate naturally. In both cases, a geotextile separator would be used between the surface of the stone and the topsoil to minimise cross contamination between soil fines and stone which could weaken the strength of the compacted stone.

The access tracks have been designed so as to minimise visual impact whilst ensuring the safe movement of vehicles in and around the site during construction and ongoing maintenance throughout the lifespan of the Development.

3.4 How all members of society will use the site

Wind farms are in effect electricity generating stations, but unlike more traditional fossil fuel power stations, their location is dictated based on the availability of adequate wind resource. In this respect, wind farms are generally sited in open countryside and do not have many of the negative connotations relating to access and safety, often associated with more traditional power stations. As highlighted above, the purpose and characteristics of the development are such that on site access for those not associated with the development is not a key feature of the design process.

3.4.1 Policy

The Development lies adjacent to the existing Royd Moor Wind Farm and between Spicer House Land and Whitley Road. The Draft Barnsley Rights of Way Improvement Plan aims to guide BMBC in delivering the improvement of the Public Rights of Way (PROW) network over the next 10 years.

It presents a summary of the current position and a strategy for improvements. It identifies a number of areas of surface damage, in the vicinity of Ingbirchworth which are targeted for improvement. However, none of these will be affected by the wind farm development. A mechanism for avoiding, and where this is not possible repairing, impacts to road surfaces as a result of turbine delivery vehicles will be agreed with BMBC.

3.4.2 Consultation

Consultation is integral to the EIA process and was principally undertaken through a Scoping exercise, detailed in the Spicer Hill Wind Farm, Environmental Statement. The Scoping exercise was supplemented by public exhibitions held in Penistone in March 2008 and will be supplemented with consultations with Parish Councils over the coming months.

The principle findings of the scoping exercise, with regard to public access, was the response from BMBC's PROW Office which indicated that the impact of the proposal on the amenity value of the PROW will be minimal and that the proposal is more than 200 m from bridleways which is the minimum separation distance recommended by PPS22.

The BHS were consulted directly and highlighted the PPS 22 separation distance and also noted that the roads around the site are well used by horse riders who are familiar with turbines due to the presence of the existing Royd Moor Wind Farm.

Natural England highlighted in their response that they wished to see any negative impacts on PROWs highlighted in the ES.

Other consultees included the Peak District National Park Authority and Kirklees Council. There will be no direct impact on any PROWs within these areas.

Appropriate separation distances from PROWs have been adopted throughout the iterative project design process.

3.4.3 Site Specific Issues

As highlighted above, the site lies between Spicer House Lane and Whitley Road, both of which are public roads and may be used by vehicular, pedestrian/wheelchair and equine traffic.

There are no PROWs crossing the site. The site is currently in use for grazing and is not open access land.

The land will continue to be used for grazing, although due to habitat enhancement proposals, the regime may be modified to facilitate biodiversity.

There are no proposals to make the land publicly accessible, however the Developer may allow prearranged educational visits.

The proposal has been designed with adequate access and maintenance tracks and hard standing to construct and maintain the wind farm, whilst minimising visual impacts through the careful siting of these elements.

4 SUMMARY

This Statement has summarised the key design and access issues considered as part of the wind farm design process.

It has provided details of the main elements of the development with regard to:

- Use;
- Amount;
- Layout;
- Scale;
- Landscaping; and
- Appearance.

The vehicular access arrangements, on and off site are outlined alongside a summary of consultation with regard to the implications of the development on public access, on and off site, and a summary of and changes to the current access arrangements at the site.