

- *Support the transition to a low carbon future in a changing climate, taking full account of flood risk and coastal change, and encourage the reuse of existing resources, including conversion of existing buildings, and encourage the use of renewable resources (for example, by the development of renewable energy);*
- *Contribute to conserving and enhancing the natural environment and reducing pollution. Allocations of land for development should prefer land of lesser environmental value, where consistent with other policies in this Framework;*
- *Promote mixed use developments, and encourage multiple benefits from the use of land in urban and rural areas, recognizing that some open land can perform many functions (such as for wildlife, recreation, flood risk mitigation, carbon storage, or food production); and*
- *Conserve heritage assets in a manner appropriate to their significance, so that they can be enjoyed for their contribution to the quality of life of this and future generations.*

The most relevant policy areas of the NPPF, in relation to the Spicer Hill development are:

### **3.2.3 Greenbelt**

The Spicer Hill extension would be located in an area of Greenbelt land, albeit one that in the immediate area is characterised by existing wind farm developments.

Paragraph 79 states that: *"The Government attaches great importance to Green Belts. The fundamental aim of Green Belt policy is to prevent urban sprawl by keeping land permanently open; the essential characteristics of Green Belts are their openness and their permanence."*

Paragraph 87 states that: *"As with previous Green Belt policy, inappropriate development is, by definition, harmful to the Green Belt and should not be approved except in very special circumstances."*

Paragraph 88 continues: *"When considering any planning application, local planning authorities should ensure that substantial weight is given to any harm to the Green Belt. "Very special circumstances" will not exist unless the potential harm to the Green Belt by reason of inappropriateness, and any other harm, is clearly outweighed by other considerations."*

Relating to Renewable Energy, Paragraph 91 notes that: *"When located in the Green Belt, elements of many renewable energy projects will comprise inappropriate development. In such cases developers will need to demonstrate very special*

*circumstances if projects are to proceed. Such very special circumstances may include the wider environmental benefits associated with increased production of energy from renewable sources.*

### **3.2.4 Conservation of the Natural Environment**

In relation to the conservation of the natural environment, Paragraph 109 sets out that the planning system should contribute to and enhance the natural and local environment by:

- *Protecting and enhancing valued landscapes, geological conservation interests and soils;*
- *recognising the wider benefits of ecosystem services;*
- *minimising impacts on biodiversity and providing net gains in biodiversity where possible, contributing to the Government's commitment to halt the overall decline in biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures;*
- *preventing both new and existing development from contributing to or being put at unacceptable risk from, or being adversely affected by unacceptable levels of soil, air, water or noise pollution or land instability; and*
- *Remediating and mitigating despoiled, degraded, derelict and contaminated land where appropriate”.*

### **3.2.5 Climate Change**

Section 10 of the NPPF is entitled, “Meeting the challenge of climate change, flooding and coastal change”. Paragraph 93 notes that

*“Planning plays a key role in helping shape places to secure radical reductions in greenhouse gas emissions.... and supporting the delivery of renewable and low carbon energy and associated infrastructure. This is central to the economic, social and environmental dimensions of sustainable development.”*

The NPPF encourages LPAs to adopt proactive strategies to mitigate and adapt to climate change. LPAs should, “

- *“Have a positive strategy to promote energy from renewable and low carbon sources;*
- *Design their policies to maximise renewable and low carbon energy development while ensuring that adverse impacts are addressed satisfactorily, including cumulative landscape and visual impacts;*

- *Consider identifying suitable areas for renewable and low carbon energy sources, and supporting infrastructure, where this would help secure the development of such sources;*
- *Support community-led initiatives for renewable and low carbon energy, including developments outside such area being taken forward through neighbouring planning; and*
- *Identify opportunities where developments can draw its energy supply from decentralised, renewable or low carbon energy supply systems and for colocating potential heat customers and suppliers."*

The NPPF stipulates that, when determining applications for renewable and low carbon energy development, local planning authorities should not require applicants for energy development to demonstrate the overall need for renewable or low carbon energy and should approve the application if impacts are (or can be made) acceptable.

The NPPF also includes, inter alia, policies for economic growth (including within rural areas), transport and conserving and enhancing natural and historic environments. These policies are also relevant to the proposed wind farm.

### **3.2.6 Proactive Engagement**

Paragraph 187 states that *"Local planning authorities should look for solutions rather than problems, and decision-takers at every level should seek to approve applications for sustainable development where possible. Local planning authorities should work proactively with applicants to secure developments that improve the economic, social and environmental conditions of the area."*

### **3.2.7 Other Policies**

The NPPF also includes policies for:

- Supporting a prosperous rural economy;
- Requiring good design;
- Conserving and enhancing the natural environment; and
- Conserving and enhancing the historic environment/

## **3.3 Local Planning Policy - Unitary Development Plan**

Barnsley Council's Statutory Development Plan consists of several elements. The following are relevant to the Spicer Hill extension. These are:

- The Core Strategy;
- The remaining saved policies of the Unitary Development Plan; and
- The Yorkshire and Humber Plan - Regional Spatial Strategy 2026.

Although a Supplementary Planning Document for renewable energy developments is currently being prepared by the Council, it was not available at the time that the Environmental Statement was being prepared.

### **3.3.1 Barnsley Local Development Framework Core Strategy (adopted 2011)**

The Core Strategy sets out the key elements of the planning framework for the Barnsley area, linking the Council's 2026 Vision with the long-term physical development necessary to achieve this

The following policies are considered to be of relevance to the Spicer Hill development:

- CSP 1 - Climate Change;
- CSP 6 - Development that produces renewable energy;
- CSP 21 - Rural Economy;
- CSP 29 – Design;
- CSP 30 - The Historic Environment;
- CSP 34 - Protection of Green Belt;
- CSP 36 - Biodiversity and Geodiversity;
- CSP 37 - Landscape Character;
- CSP 38 – Minerals; and
- CSP 40 - Pollution Control and Protection.

**Policy CSP1** states that all new development will be expected to:

- *Reduce and mitigate the impact of growth on the environment and carbon emissions;*
- *Ensure existing and new communities are resilient to climate change; and*
- *Harness the opportunities that growth, and its associated energy demand brings to increase the efficient use of resources through sustainable construction techniques and the use of renewable energy*

Paragraph 9.1 states that *“It is important that developments are designed to mitigate climate change and to withstand its effects”*.

**Policy CSP6** applies directly to renewable energy development. It states that:

*“We will allow development that produces renewable energy as long as there is no significantly harmful effect on:*

- *The character of the landscape and appearance of the area;*
- *Living conditions;*
- *Biodiversity, geodiversity and water quality;*
- *Heritage assets, their settings and cultural features and areas;*
- *Highway safety, and*
- *Infrastructure including radar.*

*Proposals must be accompanied by information that shows how the local environment will be protected, and that the site will be restored when production ends”*.

Paragraph 9.37 restates the (now obsolete) Regional Spatial Strategy local targets for installed grid-connected renewable energy. The target figures for Barnsley are 15 MW of installed renewable capacity by 2010 and 34 MW by 2021.

At the time of publication, only the Royd Mood Wind Farm with a capacity of 6.5 MW had planning permission (this is due for decommissioning) in 2018 and there were a further three extant wind farm permissions totalling a potential capacity of 20.1 MW.

Paragraph 9.38 recognises that some proposals for renewable energy will have significant effects on the local area, and may be prominent in the local landscape. The Core Strategy states that, *“In these cases we will carefully weigh up the environmental, social and economic benefits of the proposals against effects on the local area including any effects on the National Park, the Green Belt and European and Natura 2000 designations”*.

Paragraph 9.39 continues *“Careful consideration will need to be given to the capacity of the landscape to accommodate turbines, the ability to mitigate visual intrusion and the cumulative impacts of individual sites when they are grouped rather than dispersed. We will use the Landscape Character Assessment and Policy CSP37 to assess the effect of development proposals”*.

**Policy CSP37** states that *“Development will be expected to retain and enhance the character and distinctiveness of the individual Landscape Character Area in which it is located (as set out in the Landscape Character Assessment of Barnsley Borough 2002)”*.

The Landscape Character Assessment is discussed in more detail in Section 7: Landscape and Visual Impact Analysis.

Other relevant policies set out in the Core Strategy are summarised in **Table 3.1** below.

**Table 3.1 – Core Strategy Policies**

|                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| CSP 21 - Rural Economy | <p>The Council will encourage a viable rural economy by allowing development in rural areas if it:</p> <ul style="list-style-type: none"> <li>• Supports the sustainable diversification and development of the rural economy; or</li> <li>• Results in the growth of existing businesses; or</li> <li>• Is related to tourism or recreation; or</li> <li>• Improves the range and quality of local services in existing settlements</li> </ul> <p>Development in the Countryside will be expected to:</p> <ul style="list-style-type: none"> <li>• Be of a scale proportionate to the size and role of the settlement;</li> <li>• Be directly related, where appropriate, to the needs of the settlement;</li> <li>• Not have a harmful impact on the countryside, biodiversity, Green Belt, landscape or local character of the area;</li> <li>• Consider the re-use of existing rural buildings in the first instance; and</li> <li>• Protect the best quality agricultural land.</li> </ul> <p>Paragraph 9.17 states that, <i>“Rural diversification should relate primarily to business and employment development, rather than residential development, with priority given to the re-use of existing buildings rather than the construction of new ones”</i>.</p> |
| CSP 29 - Design        | <p>This policy aims to ensure a high quality of design in new developments, focusing in particular on the consideration and enhancement of:</p> <ul style="list-style-type: none"> <li>• Topography, Green Infrastructure assets, important habitats, woodlands and other natural features</li> <li>• Views and vistas to key buildings, landmarks, skylines and gateways</li> <li>• Heritage, townscape and landscape character including the scale, layout, building styles and materials of the built form in several areas including Penistone and its surrounding rural villages.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| CSP 30 - The Historic  | States that development will be expected                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |

|                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|-------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Environment                               | to protect the character and/or appearance of listed buildings and Scheduled Ancient Monuments.                                                                                                                                                                                                                                                                                                                                                                                                         |
| CSP 34 - Protection of Green Belt         | The Core Strategy sets out to preserve the character and open-ness of Green Belt Land, with development only permitted in special circumstances.                                                                                                                                                                                                                                                                                                                                                        |
| CSP 36 - Biodiversity and Geodiversity    | Development will be expected to: <ul style="list-style-type: none"> <li>• Conserve and enhance the biodiversity and geological features of the borough by protecting and improving habitats, species, sites of ecological value and sites of geological value with particular regard to designated wildlife and geological sites of international, national and local significance; and</li> <li>• By maximising biodiversity and geodiversity opportunities in and around new developments.</li> </ul> |
| CSP 38 - Minerals                         | The item of relevance to the Spicer Hill development is:<br><br><i>"Existing sites with planning permission for the extraction of minerals will be shown on the Proposals Map which will accompany the Development Sites and Places DPD and will be protected from inappropriate development that could result in their sterilisation"</i>                                                                                                                                                              |
| CSP 40 - Pollution Control and Protection | Development will be expected to demonstrate that it is not likely to result, directly or indirectly, in an increase in air, surface water and groundwater, noise, smell, dust, vibration, light or other pollution which would unacceptably affect or cause a nuisance to the natural and built environment or to people.                                                                                                                                                                               |

### 3.4 Compliance

The section below considers how the proposed development complies with the most important policy areas set out above.

**Table 3.2 – Policy Compliance**

| Policy Area    | Relevant Policies                        | Compliance                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|----------------|------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Climate Change | NPPF Section 10<br>CSP1 – Climate Change | Policy CSP1 within the Core Strategy builds upon the aspirations set out within NPPF for Local Authorities to have a positive strategy to promote energy from renewable and low carbon sources. CSP1 sets out a clear target for 31MW of installed capacity within Barnsley by 2021. Should the Spicer Hill Extension be consented it would provide 6.9MW of capacity, 20% of the target. It would effectively replace the 6.5MW of capacity installed at Royd Moor, which would be lost upon expiry of the 25 year planning permission. |

| Policy Area             | Relevant Policies                                                     | Compliance                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|-------------------------|-----------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                         |                                                                       | Chapter 13 of the Spicer Hill Extension ES sets out the expected carbon savings from the wind farm. Calculations show that over its 25 year lifecycle the project is expected to result in a carbon saving of ~49,339 tonnes. This is assessed as a small positive contribution to the UK's Climate Change targets.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Sustainable Development | NPPF Section 10<br>CSP 6 - Development that produces renewable energy | <p>The thrust of both national and local policy is a presumption in favour of renewable energy development with the caveat that they should be located in suitable areas and designed so that any adverse environmental impacts can be satisfactorily addressed.</p> <p>The main areas for consideration (to be considered singularly and cumulatively) are:</p> <ul style="list-style-type: none"> <li>• Landscape Character</li> <li>• Living Conditions (Noise, Shadow Flicker, Visual Impact)</li> <li>• Biodiversity, geodiversity and water quality</li> <li>• Heritage Assets</li> <li>• Highway Safety and</li> <li>• Infrastructure and Radar</li> </ul> <p>All of these elements are discussed in detail within the ES. In terms of visual impact (<b>Section 7</b>), the development would sit between two existing wind farms, and the turbines would be of a similar design and scale to those already present. The marginal increase in visual impact would only be noticeable in close proximity to the wind farm, and the additional turbines would not increase the horizontal or vertical footprint of wind energy in the immediate area. The Landscape and Visual assessment concludes that the extension turbines would create a more coherent layout than exists at present, with the contrast in scale and layout between the Royd Moor development and the more recent Spicer Hill and Blackstone Edge Wind Farms.</p> <p>The ES predicts that the residential impacts at the nearest properties are likely to be similar, or reduced compared to the current situation. Of the 16 locations assessed for noise (<b>Section 8</b>), 14 are likely to experience reduced noise levels. Shadow flicker (<b>Section 12</b>) is not expected to be problematic at any properties. The majority of properties in the area do not face towards the development, with those in closest proximity tending to be orientated away from the development.</p> |

| Policy Area              | Relevant Policies                 | Compliance                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|--------------------------|-----------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                          |                                   | <p>In terms of biodiversity, a full set of ecology surveys has been undertaken (<b>Section 6</b>) and the site has been assessed to be of low ecological value, with no significant impacts on species predicted.</p> <p>The Cultural Heritage Assessment (<b>Section 9</b>) has identified that there are no known assets at risk of direct impact from the construction of the development. Views from the only site identified by English Heritage as being at risk of indirect (visual) impact already contain existing wind farm developments, and the additional impact of the Spicer Hill extension has been assessed as negligible.</p> <p>No issues are expected in terms of highway safety, water supplies communication links or radar.</p> <p>Whilst there are some marginal environmental impacts of developing the Spicer Hill Extension site, overall the development will contribute significantly towards local renewable targets and is deemed to comply with CSP 6.</p> |
| The Rural Economy        | CSP 21 - Rural Economy            | The development represents a diversification for an established local business that employs over 250 people. This will allow for further expansion and reinvestment throughout the area. The scale of the development is in keeping with other similar developments in the area, and although located on Green Belt land, and with some visual impacts on the local landscape character, it is contended that as an extension site with limited marginal impacts, the location is one of the most suitable in the region for wind development.                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Design                   | CSP29 Design                      | The site has been carefully designed, taking into account the existing developments and local constraints. The overall outcome will be the replacement of 13 turbines with three slightly larger ones, which are set out in a triangular arrangement more in keeping with the existing Blackstone Edge and Spicer Hill Wind Farms. The Extension turbines are of the same scale as these developments, which together will now appear as one coherent 9 turbine scheme, replacing the mismatch in size created by the Royd Moor development.                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| The Historic Environment | CSP 30 - The Historic Environment | The Cultural Heritage Assessment has concluded that there are no significant impacts upon cultural heritage assets, either directly or indirectly.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Green Belt               | CSP 34 - Protection of            | In line with NPPF, the Core Strategy sets out to preserve                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |

| Policy Area | Relevant Policies | Compliance                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|-------------|-------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|             | Green Belt        | <p>the character and open-ness of Green Belt Land, with development only permitted in special circumstances. The main 'source of harm' the green belt that could result from the development is in terms of visual impact.</p> <p>The locations most suited to wind turbines are those with the best wind resource, and these are typically found in more remote rural areas of the UK, which are more likely to be areas that are valued for their landscape value or, as in this instance, designated as green belt.</p> <p>Mitigating arguments for the consent of the Spicer Hill Extension in this location are:</p> <ul style="list-style-type: none"> <li>• The proven wind resource on site. In 2013 the three Spicer Hill turbines produced 17,999 MWh of electricity<sup>1</sup>, enough to power just over 4,000 homes<sup>2</sup>. The average capacity factor of the development since construction is 29.1%, which compares to a UK average for onshore wind of 25.8%<sup>3</sup>.</li> <li>• The presence of the existing wind farms, which has set a planning precedent in the area. As a result the Extension turbines will create only a marginal impact on views, noise levels, ecology</li> <li>• The creation of a 'cluster' of wind farms in this area, which will in themselves will have an installed capacity of 21.3MW, 63% of the Council's stated target of 34MW by 2021. Concentrating wind farms in this small area will reduce the development pressure throughout the rest of the Borough.</li> </ul> |

### 3.5 Conclusion

Renewable energy projects are supported at both the National and Local policy levels, provided that the environmental impacts of the development can be satisfactorily accommodated at the regional and local level.

<sup>1</sup> Source: Renewable Energy Foundation

<sup>2</sup> Based on an average UK household consumption of 4,432kWh as presented in Table 3.07 of DECC's 'Energy Consumption in the UK 2014'.

<sup>3</sup> Source: RenewableUK.

Whilst the Spicer Hill Extension site is located in an area of Green Belt, the existing adjacent developments mean that marginal environmental impacts are limited. The development will make a small contribution towards national renewable targets, and a significant contribution at the local level. On balance it is contended that the development is in compliance with both National and Local Policy.



## **4 PROJECT DESIGN CONSIDERATIONS**

### **4.1 Introduction**

The design of any wind farm is an iterative process that aims to strike the optimum balance between minimising environmental impact, achieving the best engineering solution and other considerations such as energy yield which impacts upon the financial viability of a scheme. This chapter sets out the design objectives of the scheme, and discusses the process through which the final layout was developed.

The design process involved two main phases:

- Confirmation of the suitability of the site for wind development through a preliminary review of the planning and technical issues; and
- The iterative design phase which looked at site-specific constraints and opportunities.

### **4.2 Overall Suitability of the Site**

#### **4.2.1 Planning considerations**

The existing Spicer Hill Wind Farm was granted planning permission by the Council following a thorough programme of environmental assessments and a consideration of the benefits and impacts by both internal and external consultees within the planning process.

This suggests that in planning terms the site is suitable for wind development, with the caveat that planning policies can change over time, and that one of the main issues for any new development near the site would be the cumulative impacts of the proposal.

All of the planning issues likely to be relevant to the extension turbines were reviewed and overall it was concluded that in principle, as per the original Spicer Hill Wind Farm, a wind development on the site would be able to comply with the relevant policy and guidance.

#### **4.2.2 Wind resource**

The electrical output of the current Spicer Hill turbines demonstrates that the site has a good wind resource. In 2013/14 the three Spicer Hill turbines produced 20,945 MWh

of electricity<sup>4</sup>, enough to power just over 4,700 homes<sup>5</sup>. The average capacity factor of the development since construction is 31.9%, which compares to a UK average for onshore wind of 25.8%<sup>6</sup>. The comparable capacity factor of the Royd Moor Wind Farm is 20.1%.

#### **4.2.3 Grid connection**

With the Royd Moor Wind Farm due for decommissioning in 2018, it was known that sufficient grid capacity would become available in the area. If the Spicer Hill Extension were to secure this capacity then there would be little need for new electrical infrastructure, apart from a new substation on site and a short extension of electrical cable to link the substation to the existing connection, which runs adjacent to Whitley Road.

#### **4.2.4 Landscape and noise envelope**

The land available for the Spicer turbines is located in two areas:

- The plot of land between the Spicer Hill Wind Farm and the Blackstone Edge Wind Farm; and
- The area of land to the east of the Spicer Hill Wind Farm within the control of the applicant which lies to the north of the existing Royd Moor Wind Farm.

A new wind development on this land, in addition to the Royd Moor Wind Farm would be likely to give rise to unacceptable cumulative landscape and visual impacts, and would be unable to meet noise constraints at properties in the area.

Analysis showed that the removal of Royd Moor would create headroom in the overall noise budget (i.e. allowing turbines where previously additional turbines would not meet noise limits), and also remove the turbines from existing views, potentially making space for new turbines.

#### **4.2.5 Other technical aspects**

There were no objections to the Spicer Hill turbines in terms of:

- Construction of the access tracks and turbines;
- Civil or military aviation;

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<sup>4</sup> Source: Renewable Energy Foundation

<sup>5</sup> Based on an average UK household consumption of 4,432kWh as presented in Table 3.07 of DECC's 'Energy Consumption in the UK 2014'.

<sup>6</sup> Source: RenewableUK.

- Ecology issues; or
- Service providers (communications, gas, electricity, water etc.).

Whilst every turbine application needs to be assessed on a case-by-case basis, a review of these elements in terms of the extension site showed that these aspects were again likely to be un-problematic.

### **4.3 Detailed design**

Having confirmed that the site of the Spicer Hill Extension was suitable in technical and financial terms, and was also likely to be suitable in principle in planning terms, the project proceeded to the detailed design stage.

From the outset it was determined that the Enercon E70 on a 57m tower, and 92.5m to tip would be the preferred turbine, in order to fit with the existing Spicer Hill Wind Farm. No other turbine models or heights were considered.

The following hard constraints (constraints that must be met) are present on the site:

- **Ensuring that no turbine is closer than 102m from a public road** (tip height plus 10%). Although the Royd Moor turbines are closer than this distance, this is the minimum distance now required by the Council.
- **Ensuring a sufficient distance between the Greenley Carr quarry and the turbine foundations**, necessary to ensure the stability of the turbine. A geotechnical study showed that a minimum distance of 50m was required.
- **Ensuring that noise levels comply with national and local requirements** at all of the nearest properties. Noise limits were agreed with the Council in line with the ETSU guidance. This element is discussed in detail in **Section 8** of this report.
- **Ensuring a suitable separation distance between the proposed turbines and the Spicer Hill and Blackstone Edge turbines** to guard against turbulence effects, which impact upon performance. The two eastern Blackstone Edge turbines are located 305m apart from each other. This was set as the minimum separation distance required for the nearest Spicer Hill turbine<sup>7</sup>.

Consultation with microwave link operators confirmed that there were no links in close proximity to the site which needed to be considered in the design process. Similarly,

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<sup>7</sup> The final spacing of the nearest Spicer Hill Extension turbine to the nearest Blackstone Edge turbine was 335m, well in excess of this.

there were no aviation constraints that would influence the design. The following considerations were part of the overall design strategy:

- **Achieving consistency of design.** The existing Spicer and Blackstone Edge turbines are laid out in a broadly 'triangular' design.
- **Fine tuning the turbine locations** so that the layout appears balanced from the most viewpoints.
- **Making as much use of existing infrastructure as possible.** The existing site access junction will be used for the extension turbines, and the need for new on-site tracks has been minimised as much as possible in the design.
- **Ensuring that the selected turbine locations satisfy construction criteria** in terms of foundation design and space for crane hard-standings.

Noise modelling showed that:

- Only one turbine could be located to the east of the eastern-most existing Spicer Hill turbine due to noise constraints at Annat Royd Farm.
- No extension turbine could be located further north than a point ~100m north of the Greenley Carr Quarry due to noise constraints at Brown's Edge Farm.

The location of the western-most existing Spicer Hill turbine and the eastern-most Blackstone Edge turbine meant that only one turbine could be located in land to the south of Greenley Car Quarry.

**Figure 4.1 (Volume III)** shows the hard constraints identified on site. Having identified these and set out the overall design strategy the next step was to investigate potential turbine locations and finalise the layout. The design work up to this point had established that:

- A maximum of one turbine could be located to the north of Greenley Carr Quarry but not further north than 100m north of the quarry due to noise constraints.
- A maximum of one turbine could be located to the south of Greenley Carr Quarry, no closer than 102m from Whitley Road.
- A maximum of one turbine could be located to the east of the existing Spicer Hill turbines due to noise constraints at Annat Royd Farm.

The noise modelling established that three extension turbines in these broad locations would be able to meet noise constraints at all of the nearest properties. The turbines

were then micrositd so that the layout would appear to be balanced from the key viewpoints, and would extend the current triangular arrangement. The aim was to establish uniform spacing and reduce turbine ‘overlap’ in views, both of which contribute to an improved visual appearance. The final turbine layout is shown in **Figure 4.1 (Volume III)**.

The triangular configuration has been retained within the final layout. The photomontages presented in **Volume II** demonstrate that the proposed Spicer Hill extension turbines sit seamlessly alongside the existing Spicer Hill Wind Farm, and appear as one coherent development. Three examples are shown **Figures 4.2 to 4.4** below. The Royd Moor turbines have been removed from the photographs to show the future situation.

**Figure 4.2 – View from Royd Moor Wind Farm Viewing Platform**

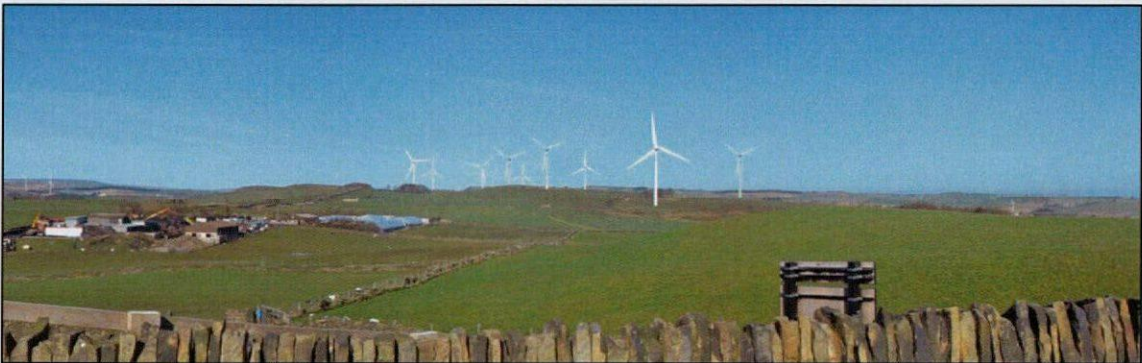


**Figure 4.3 – View from High Flatts**

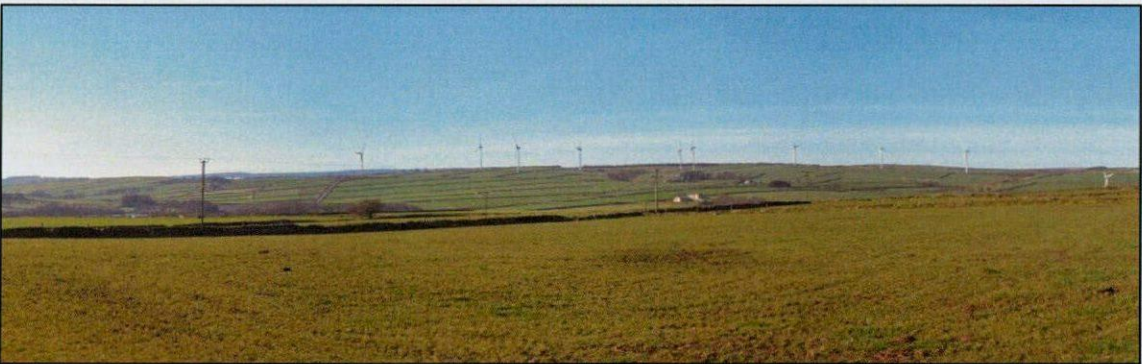
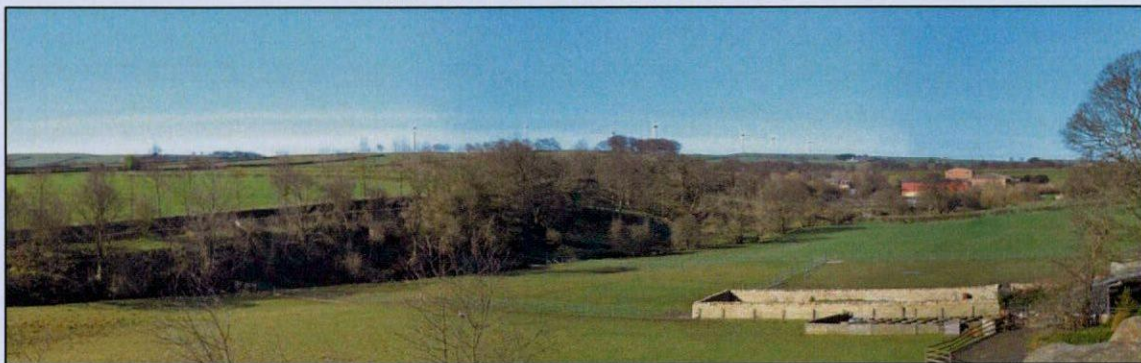


**Figure 4.4 – View from Ingbirchworth**



#### ***4.4 Summary of Design***

The design of any wind farm is an iterative process that aims to strike the optimum balance between minimising environmental impact, achieving the best engineering solution and other considerations such as energy yield which impacts upon the financial viability of a scheme.

A balanced scheme has been created that meets all of the identified constraints, and which appears as a coherent whole when viewed alongside the existing Spicer Hill and Blackstone Edge developments. The final layout has been designed in line with best practice wind farm design guidelines and fully takes into consideration the pre-application advice received from all consultees.

## **5 SOCIO-ECONOMIC ASSESSMENT**

### **5.1 Introduction**

This section has focuses on the potential socio-economic impacts of the proposed Spicer Hill Extension. As there are two existing wind developments in close proximity to the proposed extension, this assessment has focused on the potential impacts of the three additional wind turbines.

There are other environmental topics that have relevance to aspects considered in this chapter such as; traffic, noise, cultural heritage, landscape and visual amenity and climate change. The specific assessments of the potential effects of these are provided in the relevant Environmental Statement (ES) chapters and are not reassessed in this chapter.

### **5.2 Policy and Guidance**

The following documents have been considered when assessing the potential impacts of the proposed extension upon; tourism, recreation and socio-economics:

- Guidelines for Environmental Impact Assessment (2005) Institute of Environmental Management and Assessment; and
- A Handbook on Environmental Impact Assessment (2013) Scottish Natural Heritage, 4th Edition<sup>8</sup>.

The relevant planning policies are discussed within **Chapter 3 – Planning and Environmental policy**.

### **5.3 Methodology**

This assessment has aimed to produce a site specific assessment of the potential socio-economic impacts of the proposed extension. As the proposal is an extension to an existing wind farm it will not add wind turbines into views that do not already have turbines present. With regards to the proposed extension, the key elements for consideration were; the impacts upon recreation and tourism, the general public's attitude towards the project, the current land usage and project design and the potential cumulative impacts. Other elements that have been considered are the

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<sup>8</sup> Although a SNH publication, this document is considered to be applicable throughout the UK.

potential creation of jobs during the operational and decommission phases as well as impacts on existing rights of way and public access during construction and operation.

## **5.4 Baseline**

The proposed development is located ~4km to the north-west of Penistone and ~12km to the west of Barnsley. The proposed access to the site will follow that used for the operational Spicer Hill Wind Farm. The original access was via the A628 to Millhouse Green, turning left at Millhouse Green and heading north up the Whitley Road to the site.

### **5.4.1 Recreation and Tourism**

There is a wide spread of tourist attractions within the Penistone area, including; fishing, climbing, museums, walking trails, galleries and wildlife tours. There are two well-known tourist attractions in close proximity to the proposed extension; the Peak District National Park and Trans-Pennine Trail. The Peak District National Park is located ~2km to the south-west of the site and the Trans-Pennine Trail ~2km to the south.

### **5.4.2 Public Exhibition**

A public exhibition was held on Wednesday 17<sup>th</sup> September 2014. The public exhibition was held in order to allow the general public to raise any questions that they had and to find out more information about the proposed extension. A total of 30 members of the public attended the exhibition. In general no serious concerns were raised about the proposed extension. Those who attended the public exhibition were generally more concerned about wind energy developments in the area in general than the proposed extension.

### **5.4.3 Land Use & Project Design**

The current land use of the proposed extension is agricultural farmland. As is evident the photomontages in **Volume II** the proposed extension has been designed in order to fill the current gap between the operational Spicer Hill Wind Farm to the east and the Blackstone Edge Wind Farm to the west. The proposed wind turbines for the extension are the same turbine type as those used for the original Spicer Hill Wind Farm, 92.5m to tip height. The Blackstone Edge Wind Farm is 100m to tip height. The proposed extension is in keeping with the scale of the two existing wind farms.

### **5.4.4 Existing Rights of Way**

The land that is proposed for the extension is not currently open to the public. According to Barnsley Council records, there are no known public rights of way within the development area. There are a number of promoted walks in the area surrounding

the proposed extension; Trans Pennine Trail: Dunford Bridge to Wortlet via Penistone, Penistone Boundary Walk, Thurgoland Boundary Walk and Siltstone Waggon Way and Cal- Der-Went.

## **5.5 Assessment and Predicted Impacts and Effects**

### **5.5.1 Local Employment Opportunities**

The proposed extension will create employment opportunities during the; construction, operational and decommissioning phases. Local employment opportunities would arise from contracts being placed with local contractors and the use of hotels and other local services. During the construction phase, there will be around 15-20 workers on site per day and one person will be employed for site security. The wind farm would be serviced by a regional maintenance team. The creation of potential employment opportunities within the region is considered to be a small positive impact.

### **5.5.2 Public Attitudes towards Wind Turbines**

The impact of the extension on tourism is highly dependent on the public perception of wind turbines. Research and experience suggests that the public are polarised in their opinions on the visual impact of wind turbines and this commonly leads to the assumption that such developments must negatively impact upon the tourist industry. However, whilst a man-made structure is seen by some to blight the landscape, regardless of its form, there are others who appreciate the beauty of its design and respect the purpose for which it is built.

This is a contested area but a robust review of the evidence was presented by Professor Cara of University of Edinburgh as part the of Scottish Parliament's Renewable Inquiry. She concluded (paragraph 3.9):

*'the findings from both primary and secondary research relating to the actual and potential tourism impact of wind farms indicate that there will be neither an overall decline in the number of tourists visiting an area nor any overall financial loss in tourism-related earnings as a result of a wind farm development.'*

### **5.5.3 Tourism**

Due to the presence of the existing wind turbines in the vicinity of the site, the addition of the proposed extension is not predicted to add to the current impact of the operational wind farms. No significant adverse impact upon tourism is predicted.

#### **5.5.4 Land Use & Project Design**

The total area of the landholding is 102.2 ha, the proposed turbines and associated infrastructure will occupy ~5% of this. Once the proposed extension is decommissioned the land will be reinstated as agricultural land. The change in land use in line with current proposals is not predicted to cause a significant adverse impact. The proposed extension project design has taken into account the existing wind farms in the immediate vicinity. By using turbines of a similar scale, coupled with a coherent wind turbine layout the proposed extensions design has endeavoured to produce a layout that fits harmoniously with the two adjacent wind farms (See **Section 4**).

#### **5.5.5 Existing Rights of Way and Public Access**

During the construction phase access to the site will be restricted. A phased approach to public access restriction will be adopted and if required, suitable diversions will be put in place during this time. According to the records held by Barnsley Council, the proposed turbine locations and associated access tracks do not cross or directly impact any public rights of way.

#### **5.5.6 Cumulative Impacts**

As can be seen in **Figure 7.6 in Volume III**, there are a number of operational wind developments in the immediate vicinity of the proposed extension. The 3 turbine operational Spicer Hill Wind Farm is located to the immediate east and the 3 turbine operational Blackstone Edge to the immediate west. The 13 turbine Royd Moor Wind Farm is visible to the rear of the operational Spicer Hill Wind Farm. The 53m to tip Royd Moor Wind Farm is due to be decommissioned before the proposed extension would be constructed.

The proposed extension is not expected to add significant cumulative impacts as it essentially fills in the current gap between the two existing wind farms. It is of a similar scale to both the existing wind farms and therefore does not introduce visual clutter into the current views. The Royd Moor Wind Farm is due to be decommissioned before the wind farm extension would be erected, and this would allow the two existing Spicer and Blackstone Edge wind developments and the proposed extension to appear as one coherent wind farm.

### **5.6 Conclusion**

In the context of the EIA Regulations no significant effects on socio-economic, tourism or land use have been identified. The proposed Spicer Hill extension accords with Government policy at all levels and stands to make a meaningful contribution towards achieving the UK renewable energy targets.

## 6 ECOLOGY

### 6.1 Introduction

This EclA assesses the impact of the proposed Spicer Hill Wind Farm Extension. In order to determine the potential ecological impacts of the development this chapter describes the current ecological condition of the site and in the immediate surrounding area. It:

- Considers the potential effects of the proposed wind turbines on the nature conservation interests on and around the site;
- Sets out the findings of the various surveys carried out; and
- Provides an assessment of impact on key sensitive species and habitats.

This chapter also identifies the potential for ecological impacts and the potential for mitigation of these impacts, and assesses the residual impacts remaining after mitigation has been implemented.

GLM Ecology is an experienced ecological consultancy with ten years' experience of ecological assessments at over 120 wind farm sites in the UK. Dr. Mortimer MCIEEM has a PhD in bat ecology, is a licensed bat consultant and bat ringer, has radio tracked bats and given talks on bats at both national and European Conferences. He is also a highly experienced ornithologist, and active member of the Scottish Raptor Group, has Schedule 1 licenses for several species and is a qualified "A" bird ringer. He is also highly experienced in survey work and assessments of various mammal species including otter, badger, water vole and red squirrel.

The findings of the field and desktop surveys have been considered in regards to the legal obligations and guidance that currently exists for all protected species of flora and fauna when considering proposals for wind turbines.

### 6.2 Regulations and Guidance

This ecological impact assessment (EclA) pays explicit regard to the requirements of:

- Council Directive 79/409/EEC on the Conservation of Wild Birds (the "Birds Directive");
- Council Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Fauna and Flora (the "Habitats Directive");
- The Wildlife and Countryside Act 1981, as amended;
- The Hedgerow Regulations 1997;
- National Planning Policy Framework – ODPM Circular 06/2005 - 'Biodiversity and Geological Conservation'

- The UK Biodiversity Action Plan (BAP).

The EclA was carried out using the following documents:

- Assessing the impact of small-scale wind energy proposals on the natural heritage, SNH 2011;
- Recommended bird survey methods to inform impact assessment of onshore wind farms, Scottish Natural Heritage, November 2013;
- Assessing connectivity with Special Protection Areas (SPAs), SNH 2012;
- Assessing the cumulative impact of onshore wind energy developments SNH 2012;
- Technical Information Note 59 Bats and single large wind turbines: joint agencies interim guidance Natural England 18 September 2009; and
- Technical Information Note 51 Bats and onshore wind turbines Interim guidance Natural England 11 February 2009.
- BCT (2011) Bat Surveys – Good Practice Guidelines; surveying for onshore wind farms. Bat Conservation Trust, London, UK.
- The Barnsley Biodiversity Action Plan.

The EclA has been carried out according to current guidance published by the Institute of Ecology and Environmental Management (2006), which is recognised as best practice. These guidelines set out a process of identifying the value of each ecological receptor and then characterising the effects that are predicted, before discussing the effects on the integrity or conservation status of the receptor, proposed mitigation and residual effects.

### 6.2.1 Ecological Features Evaluation Criteria

A value or sensitivity has been assigned to each ecological receptor based on the following factors:

- Importance at a geographical scale, from local to international level;
- Designation status, e.g., SPA, SSSI, non-statutory designated sites, etc.;
- Biodiversity value, e.g., national BAP habitat/species, local BAP species, etc.; and
- Social, community and economic value.

The rationale for the valuation of sensitivity has been included for each receptor for which a significant effect is predicted. **Table 6.1** provides examples, which are designed to give guidance as to how levels of sensitivity are typically derived. The value

of sensitivity of an ecological receptor refers to land within the development area and a recognised 500m zone of effect.

**Table 6.1 - Guideline definitions for the sensitivity of ecological receptors**

| <b>Sensitivity of Receptor</b> | <b>Examples (Guidance to evaluation)</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|--------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| International                  | <p>An internationally designated site or candidate site (SPA, pSPA, SAC, pSAC, Ramsar site, Biogenetic Reserve) or an area which the country agency has determined meets the published selection criteria for such designation, irrespective of whether or not it has yet been notified.</p> <p>A viable area of a habitat type listed in Annex I of the Habitats Directive, EU 1992 or smaller areas of such habitat which are essential to maintain the viability of a larger whole.</p> <p>Any regularly occurring population of an internationally important species, which is threatened or rare in the UK, i.e. it is a UK Red Data Book species or listed as occurring in 15 or fewer 10km squares in the UK (categories 1 and 2 in the UK Biodiversity Action Plan (BAP)) or of uncertain conservation status or of global conservation concern in the UK BAP.</p> <p>A regularly occurring, nationally significant population/number of any internationally important species.</p> |
| National                       | <p>A nationally designated site (SSSI, ASSI, NNR, Marine Nature Reserve) or a discrete area, which the country conservation agency has determined meets the published selection criteria for national designation (e.g. SSSI selection guidelines) irrespective of whether or not it has yet been notified.</p> <p>A viable area of a priority habitat identified in the UK BAP, or of smaller areas of such habitat, which are essential to maintain the viability of a larger whole.</p> <p>Any regularly occurring population of a nationally important species, which is threatened or rare in the region or county (see local BAP).</p> <p>A regularly occurring, regionally or county significant population/number of any nationally important species.</p> <p>A feature identified as of critical importance in the UK BAP.</p>                                                                                                                                                     |
| Regional                       | <p>Viable areas of key habitat identified in the Regional BAP or smaller areas of such habitat which are essential to maintain the viability of a larger whole.</p> <p>Viable areas of key habitat identified as being of Regional value in the appropriate Natural Area profile.</p> <p>Any regularly occurring, locally significant population of a species listed as being nationally scarce which occurs in 16-100 10km squares in the UK or in a Regional BAP or relevant Natural Area on account of its regional rarity or localisation.</p> <p>A regularly occurring, locally significant number of a regionally important species.</p> <p>Sites, which exceed the County-level designations but fall short of SSSI selection guidelines, where these occur.</p>                                                                                                                                                                                                                     |
| County                         | <p>Semi-natural ancient woodland greater than 0.25 ha.</p> <p>County/Metropolitan sites and other sites which the designating authority has determined meet the published ecological selection criteria for designation, including Local Nature Reserves selected on County/metropolitan ecological criteria (County/Metropolitan sites will often have been identified in local plans).</p> <p>A viable area of habitat identified in County BAP.</p> <p>Any regularly occurring, locally significant population of a species which is listed in a County/Metropolitan "red data book" or BAP on account of its regional rarity or localisation.</p> <p>A regularly occurring, locally significant number of a County important species.</p>                                                                                                                                                                                                                                               |

| Sensitivity of Receptor                                                                         | Examples (Guidance to evaluation)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|-------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| District                                                                                        | <p>Semi-natural ancient woodland smaller than 0.25 ha.</p> <p>Areas of habitat identified in a sub-County (District/Borough) BAP or in the relevant Natural Area profile.</p> <p>District sites that the designating authority has determined meet the published ecological selection criteria for designation, including Local Nature Reserves selected on District/ Borough ecological criteria (District sites, where they exist, will often have been identified in local plans).</p> <p>Sites/features that are scarce within the District/Borough or which appreciably enrich the District/Borough habitat resource.</p> <p>A diverse and/ or ecologically valuable hedgerow network.</p> <p>A population of a species that is listed in a District/Borough BAP because of its rarity in the locality or in the relevant Natural Area profile because of its regional rarity or localisation.</p> <p>A regularly occurring, locally significant number of a District / Borough important species during a critical phase of its life cycle.</p> |
| Parish (Local)                                                                                  | <p>Areas of habitat considered to appreciably enrich the habitat resource within the context of the Parish or neighbourhood, e.g. species-rich hedgerows.</p> <p>A regularly occurring but low number of locally common protected species within or adjacent to the Development area.</p> <p>Local Nature Reserves selected on Parish ecological criteria.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Very Local                                                                                      | <p>Areas of habitat that have a limited ecological value. Plant assemblages tend to be species poor, but may be utilised by a small number of faunal species.</p> <p>Those habitats that have an effect of enriching and complimenting the local natural environment to a small degree.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Low                                                                                             | <p>Areas of habitats considered to be of very limited ecological value. They are not representative of natural habitats and are very species poor.</p> <p>Those habitats that do not enrich the local natural environment.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| NB: Where species of habitats occur in more than one category, the highest value is applicable. |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |

### 6.2.2 Characterisation of Effects/Magnitude of Effect

The effects on individual receptors are described in relation to a range of factors. These include the magnitude, extent (either in area or population terms), duration, timing and frequency of the effect on the structure and function of the ecosystem. Effects in combination may have a cumulative effect that is greater than when the same effects occur in isolation. Combination effects include the separate effects of the scheme upon a feature (e.g., effects as a result of the construction and operation stage), or the combined effects of a number of schemes that affect the same receptor. Consideration is given to the longevity of effects, based on the life span of the Development and reversibility of the effect.

The criteria used to determine the character (magnitude, scale, duration, reversibility) of the ecological effects are given in **Table 6.2**.

**Table 6.2 - Definition of terms relating to the Character of ecological effects**

| Character/Magnitude | Definition                                                                                                                                                                                                                                                                                                             |
|---------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Very high           | Total loss or very major alteration to key elements or features of the baseline conditions such that post development character, composition or attributes will be fundamentally changed and may be lost from the site altogether. For example the loss of a great crested newt breeding pond or loss/destruction of a |

| Character/Magnitude | Definition                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|---------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                     | maternity roost of a rare species of bat, loss/destruction of hibernation roost for bats, destruction of a Annex1 priority habitat or a statutory designated site. Generally irreversible and permanent. Guide: >80% of population or habitat lost.                                                                                                                                                                                                                                                                                                  |
| High                | Major alteration to key elements or features of the baseline (pre-development) conditions such that post development character, composition or attributes will be fundamentally changed. For example the loss of a bat maternity roost, damage to a great crested newt breeding pond, pollution of a stream containing white clawed crayfish, damage to annex 1 priority habitat. Generally reversible after long period of time. Guide: 20-80% of population or habitat lost.                                                                       |
| Medium              | Loss or alteration to one or more key elements or features of the baseline conditions such that post development character, composition or attributes of baseline will be partially changed. For example loss of optimal foraging habitat for great crested newts, death or injury to a low number of a locally rare species, loss of species rich ancient hedgerow, severance of a bat flight path, temporary abandonment of a bat roost. Generally reversible with mitigation on a short timescale.<br>Guide: 5-20% of population or habitat lost. |
| Low                 | Minor shift away from baseline conditions. Change arising from the loss or alteration will be discernible but underlying character, composition or attributes of baseline condition will be similar to pre-development circumstances or patterns. For example loss of sub optimal foraging habitat for Great crested newt, loss of species poor hedgerow, death or injury of a very small number of common species of bat.<br>Generally reversible without mitigation in short timescale.<br>Guide: 1-5% of population or habitat lost.              |
| Negligible          | Very slight change from baseline condition. Change barely distinguishable, approximating to the "no change" situation. Guide: <1% of population or habitat lost.                                                                                                                                                                                                                                                                                                                                                                                     |

### 6.2.3 Significance Criteria

An ecologically significant effect is defined as an effect (adverse or positive) on the integrity of the site or ecosystem(s) and/or the conservation status of habitats or species within the identified zone of effect for the Development. The definitions of integrity and conservation used for this assessment are those detailed in the Institute of Ecology and Environmental Management (IEEM) Guidelines for Ecological Impact Assessment, namely:

- Integrity is the coherence of ecological structure and function, across a site's whole area, that enables it to sustain a habitat, complex of habitats and/or the levels of populations of species; and
- Conservation status for habitats is determined by the sum of the influences acting on the habitat and its typical species that may affect its long-term distribution, structure and functions as well as the long-term survival of its typical species within a given geographical area.