

Crake Scar Windfarm

Scoping Report

October 2008





BOLSTERSTONE

CRAKE SCAR WINDFARM
SCOPING REPORT

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1 INTRODUCTION

1.1 Purpose of the Scoping Report

This report constitutes the Scoping Request for a proposed windfarm on land to the north of the village of Woodland and northwest of Butterknowle in Durham. The site location is shown in Figure 1 in Appendix A. This Scoping Report has been prepared by Arcus Renewable Energy Consulting Ltd ("Arcus") on behalf of Bolsterstone Innovative Energy (Woodland) Ltd ("Bolsterstone"), a Special Purpose Vehicle of Bolsterstone plc.

An application for planning consent will be made under the Town and Country Planning Act (1990) and it is anticipated that this application will require an Environmental Impact Assessment ("EIA") under Schedule 2 of the Town and Country Planning (Environmental Impact Assessment) (England and Wales) Regulations 1999 ("EIA Regulations"). The findings of the EIA will be presented within an Environmental Statement ("ES").

This Scoping Report is written with a view to providing a structure for consultation on the approach to the EIA and the content of the ES. As such, it sets out a summary of the proposed windfarm and outlines the proposed approach to each of the principal technical studies anticipated to be required for the EIA.

1.2 The Applicant

Bolsterstone plc was originally formed in 1988, its first project being to construct an industrial estate on the M18 near Rotherham. Since that date, a wide range of property related investments have been made by the directors through various corporate bodies which they run. There are over twenty actively trading or investment companies/bodies corporate, owning a wide range of assets including substantial office blocks let to the government, retail parades and several investments leased to substantial companies. Bolsterstone Plc acts as the project management company to the other subsidiary and associated companies, including Bolsterstone Innovative Energy (Woodland) Ltd, a special purpose vehicle established for this project.

Bolsterstone plc has ambitions to become a major provider of 'green energy' in the UK, in conjunction with funders.

Bolsterstone plc intends to fulfil its ambition to help provide a secure energy supply for the nation, reduce climate change and provide a better environment for future generations. The current group thinking revolves around 'future proofing' its investments by better design of new build projects and incorporating energy efficient technologies and vastly improved insulation values during refurbishment of its estate.

A Bolsterstone plc subsidiary, Roy Williamson Homes Ltd, is currently constructing 22 advanced eco friendly homes in Norwich, incorporating various features such as low energy lighting and appliances, grey water use, massive amounts of insulation, solar powered street lighting and many other power and water saving devices. It is working closely with the Building Research Establishment (BRE) to ensure this development is a model of what can be achieved with available technology.

1.3 Environmental Impact Assessment

EIA is a legal requirement for certain defined developments. For windfarms, the decision on whether or not this is required has been delegated, via legislation, to local authorities.

EIA is an iterative process of assessment and design, whereby prediction and assessment of effects will feed back into the design of the windfarm proposal. The proposal can then be refined in order to avoid or reduce potential environmental effects.

During the EIA process, impacts arising during construction, operation and decommissioning will also be assessed and mitigated accordingly. This includes all temporary construction

facilities and other buildings or structures which will be on site for the duration of the windfarm, such as the substation or anemometer mast.

1.4 Cumulative Assessment

New proposals for wind energy development have been stimulated by the policy support shown by the UK Government. At the time of writing it is known that there are other wind energy developments at various stages of development in the region. In the absence of any specific English guidance, the methodology adopted for assessing the cumulative effects of wind energy developments is in line with recent advice from Scottish Natural Heritage and the Scottish Government in the form of the draft Scottish Planning Policy (SPP) 6 ("Renewable Energy"). Cumulative assessment will include all windfarms within the vicinity of the site, which are built, consented or in the planning process for which sufficient information including details of size, location and number of turbines is publicly available. Bolsterstone will agree during consultations the appropriate extent of cumulative work relevant to each environmental assessment.

In designing the windfarm, Bolsterstone has considered other local windfarm proposals, and has sought to design a scheme that will work, both as a stand-alone development, and in conjunction with others; in particular, with a development proposed on land directly adjacent to the Bolsterstone proposal..

2 THE PROPOSED DEVELOPMENT

2.1 Site Description

The site is located on farmland to the north of the village of Woodland, approximately 2.5 kilometres (km) west-northwest of Butterknowle, 8km west of High Etherley, and 12km west of Bishop Auckland, in Durham. The proposed turbine envelope covers approximately 0.5 square kilometres (km²). The site is owned and occupied by one local landowner. The site is surrounded to the north and east by Hamsterley Forest, owned by the Forestry Commission. The site area is made up of managed grazing farmland.

The land rises gently from the north to the south, from approximately 270 metres (m) above ordnance datum (AOD; approximately equivalent to sea level) in the north, to approximately 330m AOD in the south. The site location and provisional layout is shown in Figure 1 in Appendix A.

2.2 Justification for the Development

In the 2003 Energy White Paper¹, the Government set a target of a 60% reduction in carbon dioxide (CO₂) emissions by 2050. On the 28th March 2006 the Climate Change Programme Review identified that the UK was unlikely to meet its targets for reducing carbon dioxide (CO₂) emissions by 20% by 2010 increasing the drive for renewable energy developments.

In March 2007, a draft Climate Change Bill was published which creates a new legal framework for the UK to achieve a mandatory 60% cut in the UK's CO₂ emissions by 2050 (compared to 1990 levels), with an intermediate target of between 26-32% by 2020. If approved, the UK is likely to become the first country in the world to set such a long-term and significant carbon reduction target into law.

In May 2007, "Meeting the Energy Challenge: a White Paper on Energy"² was published. In this, the UK Government reiterated its commitment to cut the UK's CO₂ emissions by 60% by 2050 and by 26-32% by 2020 against a 1990 baseline.

Latest estimates show that total UK greenhouse gas emissions in the UK in 2006 had fallen 15% from 1990 levels, while CO₂ emissions have fallen 5% in this period, (Meeting the Energy Challenge A White Paper on Energy, May 2007, DTI²). However, since 1997, annual net CO₂ emission levels in the UK have actually risen by around 2%, and further action is needed to curb CO₂ emissions over the next few years.

The Government has also set national targets for renewable energy aiming to achieve 10% of electricity produced from renewable resources by 2010 and 20% by 2020. Wind energy is seen as the most significant renewable energy source for achieving these targets in the short and medium term. Wind power does not create CO₂ emissions during its operational life, and displaces other fuel sources generating greenhouse gas emissions.

In 2006 electricity supplied from renewable sources stood at only around 4% of the UK's total electricity supply.

The Draft Regional Spatial Strategy for the North East (2007) Policy 40: "Renewable Energy Generation" sets out to increase installed renewable energy capacity. It states that "*Strategies, plans and programmes should facilitate the generation of at least 10% of the Region's consumption of electricity from renewable sources within the region by 2010 (454MW [MegaWatts] installed capacity)*". This increases to an aspirational target of 20% by 2020.

2.3 Site Selection

From 2005, Bolsterstone has conducted an extensive search for potential windfarm sites in England and Scotland. An initial site search has led to the appraisal of many hundreds of

¹ White Paper: Our Energy Future – Creating a Low Carbon Economy, DTI, February, 2003

² Meeting the Energy Challenge A White Paper on Energy, DTI, May 2007

sites, culminating in the identification of a long-list of sites or potential areas based on the following criteria:

- Local Authority development plan policy, within a preferred windfarm area, or consistent with criteria set out in windfarm policies;
- No international or national designations covering the site, such as National Parks, Areas of Outstanding Natural Beauty, Special Areas of Conservation, Special Protection Areas or Ramsar Sites;
- Exposed location with good wind speeds;
- Close proximity to a potential grid connection point;
- Land area available to accommodate sufficient generating capacity;
- Availability of a good access route to site involving minimal environmental disruption; and
- No, or potentially resolvable, civil and military radar issues.

2.4 The Windfarm

The purpose of the proposed development is the generation of electricity from a renewable source of energy, the wind. The windfarm infrastructure required will include:

- Up to 4 wind turbines and wind turbine foundations;
- Access tracks;
- A meteorological mast;
- A control building; and
- Grid connection (transformers, cables and sub-station).

2.5 Turbines

The proposed turbine details are as follows

- | | |
|--------------------------------------|------------------|
| • Number of turbines | up to 4 |
| • Hub height | 74 metres |
| • Rotor diameter | 82 metres |
| • Height to blade tip | Up to 115 metres |
| • Generating capacity (per turbine) | 2MW |
| • Total windfarm generating capacity | up to 8MW |

An indicative turbine layout is shown in Figure 1 in Appendix A.

For the purposes of the ES, a precautionary approach will be taken and the largest prospective turbine will be used as the selected option. This allows a worst case scenario to be assessed, for example during collision risk modelling and in the landscape and visual assessment.

2.6 Access

The turbine components are likely to be delivered to the site using the existing road network. Use of public roads will require consultation with the appropriate bodies and an abnormal load assessment. A detailed traffic assessment will be undertaken to determine the most suitable route of turbine delivery to the site.

The approach to the site for large windfarm components (principally the turbine blades and tower sections) could be taken from Junction 58 of the A1(M), then north west along the A68, then along the B6282 road. Access into the site could be taken off the B6282, or from the minor roads surrounding the site (subject to assessment of weight restrictions etc.). Existing farm access tracks would be used as far as possible to provide access to the turbines, construction compound, substation and meteorological mast. Where required, new tracks will be constructed of a graded stone and be up to 5m in width.

A traffic and transport assessment will be conducted as outlined in Chapter 13 of this Report.

2.7 Meteorological Mast

A meteorological mast is required for power testing of the turbines and subsequently to provide a point for weather data collection, which will be integral to the operation of the windfarm.

While the mast location is yet to be determined, it is likely to be placed on the site toward the prevailing wind and will be built to the same height as the turbine hub height. Further details will be provided within the ES.

2.8 Electrical Cabling

Underground cabling, laid where possible alongside the access tracks, will link the turbine transformers to a single storey control building and substation. Each turbine transformer will be located either within the turbine nacelle (the component joining the blades together and to the tower), within the base of the tower or in a small enclosure at the base of the turbine.

The connection to the national grid falls under a separate consent process and will be subject to a separate environmental investigation. It will not be considered as part of the EIA.

2.9 Decommissioning

The windfarm will be designed with an operational life of 25 years. At the end of this period, it is expected that the site will be decommissioned and all equipment is dismantled and removed from the site. Typically, all above ground equipment will be removed from the site and the cables and turbine foundations will be cut off below ground level and covered with topsoil. Access tracks will be left for use by the landowner, or if appropriate, covered with topsoil.

3 REVIEW OF PLANNING POLICY

Guidance on planning policy in England is set out in the series of Planning Policy Guidelines (PPGs) and Planning Policy Statements (PPSs). These set out the framework within which local planning authorities are required to draw up their development plans and take decisions on individual applications to secure these objectives.

Government guidance on renewable energy developments is set out in PPS22: "Renewable Energy" (2004). The policy statement, while maintaining the usual planning controls is designed to encourage the planning system to make positive provision for renewable energy development. In addition to PPS22, PPS1 has a recently published supplement: "Planning and Climate Change" that provides guidance to planning authorities and developers regarding the ways in which planning should contribute to reducing emissions and stabilising climate change.

3.1 Adopted Policy

Planning legislation requires planning applications to be determined in accordance with the development plan unless material considerations indicate otherwise. The Development Plan covering the site comprises several documents detailed below. PPS1 provides details of what may constitute a material consideration. "Planning and Climate Change: A Supplement to Planning Policy Statement 1" (December 2007) stresses that policies contained within the document may be material considerations, and the policies in this PPS should take precedence where existing PPSs place less emphasis on climate change; this also applies to Development Plan policies which predates this PPS.

The Development Plan for the area comprises the following:

- The North East of England Plan Regional Spatial Strategy to 2021; and
- Teesdale District Council Local Plan (June 2002)

3.1.1 *The North East of England Plan Regional Spatial Strategy to 2021*

The recently adopted RSS for the region has the following policies relating to the development of windfarms.

Policy 40: Renewable Energy Generation sets out to increase installed renewable energy capacity. It states that "*Strategies, plans and programmes should facilitate the generation of at least 10% of the Region's consumption of electricity from renewable sources within the region by 2010 (454MW installed capacity)*".

The regional target is broken down by sub-region. The Durham sub-region has a minimum target of 82MW of installed renewable energy capacity for 2010. The current capacity of operational and consented wind energy in County Durham is 126.8MW, with a further 15MW currently in the planning system³.

Although the installation of the currently consented and "under construction" capacity will allow Durham to meet its 2010 target, section 3.162 of the RSS states that the aspirational 2020 target is likely to be double the 2010 target. There is a need for further renewable energy development in Durham in order to meet this target.

Policy 41: Planning For Renewables: "*Strategies, plans and programmes should support and encourage renewable energy proposals and identify renewable resource areas.*" This also details a range of environmental criteria against which renewable energy proposals should be assessed, including potential noise, ecological and landscape and visual effects.

Policy 42: Onshore Wind Development: "*Strategies, plans and programmes should provide a positive policy framework to facilitate onshore wind development within the following broad areas of least constraint for wind energy developments*". A number of areas are identified, and are shown below on the diagram, taken from the RSS. The proposed

³ From www.BWEA.com September 2008

Crake Scar Windfarm is in an area considered to be suitable for small to medium wind power developments, as shown on the map below taken from the draft RSS

3.1.2 Teesdale District Council Local Plan (2002)

The key policy within the Local Plan relating to renewable energy developments such as Crake Scar Windfarm is **Policy C5B Wind turbines/ farms outside the North Pennines AONB**. It states:

"The development of wind farms of two or more turbines will be permitted outside the North Pennines AONB where:

- There would not be unacceptable harm to the amenity of nearby residential occupiers by means of noise emission, visual dominance, shadow flicker or reflected light*
- The development, including servicing roads, any buildings and all transmission lines between the development and point of connection to the grid would not unacceptably harm the character and appearance of the area*
- The development would not unacceptably harm the landscape of the area, nor unreasonably damage the landscape setting of adjacent land falling within the North Pennines AONB and/ or North Yorkshire National Park*
- The topography of the site has been taken into account for the locality*
- There would not be unacceptable harm to wildlife*
- There would not be unacceptable harm to an area of archaeological importance*
- The turbines would not cause unreasonable harm to the performance of military radar or hazard to military low flying operations.*

Proposals should include provisions that the turbines are painted in a suitable colour, that any associated buildings are constructed in materials appropriate to the locality, and that any transmission lines between individual turbines and any transformer building are located underground."

Other relevant policies include GD1 (General Development), ENV5 to ENV8, dealing with nature conservation, and Policy BENV11, addressing the protection of sites of Archaeological interest, and the extent to which they could potentially be affected by the development.

3.2 Emerging Policy

3.2.1 Teesdale Local Development Framework

When adopted, the Local Development Framework (LDF) will replace the current Local Plan discussed in Section 3.1.2. This LDF is currently at an early consultation stage, and will eventually consist of a number of development documents. The Core Strategy is the document that will outline the general development policies for the District. The Issues and Options document forms the first part of the consultation on the LDF Core Strategy. The consultation period for this document ended in December 2007. Within this, Option 13 (Large Scale Renewable Energy Development) is the most relevant option. This option recognises that the North East Plan (see section 3.1.1) identifies two strategic wind areas within Teesdale. The proposed Crake Scar Windfarm is within one of these areas.

In April 2009, Durham will become a joint unitary council, and will be responsible for planning applications across Durham. Work has stopped on the existing draft LDF, and has begun on a new, Durham Unitary LDF. This is currently at an early stage, and not yet publically available. However, it will be written in accordance with policies outlined in the RSS, as described in Section 3.1.1.

3.3 Other Policy Considerations

3.3.1 *Planning and Climate Change: A Supplement to Planning Policy Statement 1*

This Planning Policy Statement (PPS) sets out principles to guide planning authorities in determining their spatial strategies and in determining planning applications. In respect of individual applications, the PPS indicates that where planning authorities are making decisions before Regional Spatial Strategies and Development Plan Documents are updated to reflect this PPS:

"planning authorities should have regard to this PPS as a material consideration which may supersede the policies in the development plan."

It further stresses the positive approach that should be adopted by Planning Authorities in considering applications that further the objectives of the PPS, stating that:

"An applicant for planning permission to develop a proposal that will contribute to the delivery of the Key Planning Objectives set out in this PPS should expect expeditious and sympathetic handling of the planning application."

In addition to the advice the PPS provides in relation to individual applications, there is also clear guidance regarding the form and content of renewable energy policies in forthcoming Core Strategies that will ultimately form part of Local Development Frameworks. The PPS requires the Core Strategy to promote and encourage renewable energy through policies designed to promote and not restrict renewable and low-carbon energy and supporting infrastructure. It states that planning authorities should:

"– not require applicants for energy development to demonstrate either the overall need for renewable energy and its distribution, nor question the energy justification for why a proposal for such development must be sited in a particular location;

– ensure any local approach to protecting landscape and townscape is consistent with PPS22 and does not preclude the supply of any type of renewable energy other than in the most exceptional circumstances;

– alongside any criteria-based policy developed in line with PPS22, consider identifying suitable areas for renewable and low-carbon energy sources, and supporting infrastructure, where this would help secure the development of such sources, but in doing so take care to avoid stifling innovation including by rejecting proposals solely because they are outside areas identified for energy generation; and

– expect a proportion of the energy supply of new development to be secured from decentralised and renewable or low-carbon energy sources."

Teesdale District Council will be required to consider any application for the proposed wind farm at Crake Scar within the context of existing development plan policies but, importantly, applying due weight to this new PPS. The positive effect of Crake Scar Windfarm on stabilising climate change is required to be fully considered as part of the decision making process.

4 LANDSCAPE AND VISUAL

Landscape and visual effects are among the key environmental issues associated with windfarm development and their assessment forms a central component of the EIA process. Whilst utilising related information, the landscape and visual assessments will be treated as two separate (but related) assessments for the purpose of the EIA, as recommended by the Landscape Institute. It is the combined assessment which is referred to as the Landscape and Visual Impact Assessment (LVIA).

- Landscape effects relate to changes in the physical and other characteristics of the landscape and its resulting character and quality; and

Visual effects relate to changes in views experienced by visual receptors (such as residents, footpath users, tourists, *etc.*) and on the visual amenity experienced by those people. A windfarm would add an additional visible landscape component within the general area. The significance of this will vary according to the distance from which it is observed and the character of the landscape.

The study area for the landscape and visual assessment will extend to 35km from the site in all directions unless otherwise agreed with the local planning authority during the consultation process. Research suggests that the limit of the human eye's ability to identify turbines is reached at around 30km from a windfarm site.

The LVIA will follow an established procedure for determining impact significance. The sensitivity of the baseline landscape resource and visual amenity will be determined and cross-referenced against the magnitude of change caused by the development.

4.1 Landscape Assessment Methodology

The appointed LVIA specialists will examine baseline conditions of the landscape character without the windfarm, for present and likely future situations. Key characteristics of a landscape character are defined as those physical, ecological and aesthetic components that combine to make a distinct landscape type.

The assessment of effect involves the identification of:

- Landform and composition including type and rate of change;
- Landscape character areas which would experience change as a result of the proposed windfarm;
- The nature of these changes to landscape character areas;
- Extent to which identified key characteristics of the affected landscape character areas would be changed;
- Extent to which the overall landscape resource would be changed;
- Effect on local communities;
- Effect on transport routes; and
- Effect on landscape and historic designations.

4.2 Visual Assessment Methodology

Through the production and review of plans showing the Zone of Theoretical Visibility (ZTV), the theoretical geographical extent of visibility will be established at hub and blade tip heights. This will help identify sensitive visual receptors in the surrounding area. A preliminary ZTV at tip height has been produced and is provided as Figure 2 in Appendix A.

On the basis of the ZTV and site visits, a series of representative viewpoints will be agreed with the appropriate local authorities and other relevant stakeholders. These viewpoints will represent different visual receptor types (e.g. observers from residential properties, footpaths, roads, tourist attractions, *etc.*) and also at different distances and directions from the scheme.

The exact number of viewpoints that will be used will be determined in consultation with the local authority as part of the scoping process. Of these, a number will be selected to be

developed into photomontages with the remainder depicted as wireline diagrams. Initial viewpoint suggestions are made in the following section.

Initial discussions with the Local Authority on the ZTVs have demonstrated avoidance of impact on the Area of Outstanding Natural Beauty (AONB), as specified in Policy C5B of the Local Plan, outlined in section 3 of this report.

4.3 Identification of Key Viewpoints

Figure 2 shows the preliminary zone of theoretical visibility (ZTV) of the proposed windfarm. The following list identifies a number of indicative viewpoints. These have been selected as settlements, transport corridors, such as roads or public rights of way, or designated landscapes. The list does not reflect the extent of the assessment, and the exact location and number of viewpoints will be agreed with Teesdale District Council:

- Woodland – Residential;
- North Pennines AONB – Amenity;
- Cockfield – Residential;
- Hamsterley – Residential;
- Bishop Auckland – Residential; and
- A67 – Transport corridor.

4.4 Cumulative Assessment

The cumulative assessment will consider all windfarms within 35km of the site that are built, consented, or in the planning process, for which sufficient information including details of the size, location and number of turbine is publicly available.

A series of maps will be prepared to show the effect of the cumulative visibility of different windfarms in combination. The overlap of areas of cumulative visibility with mapped features indicates potential effects on receptors and these will be further explored as appropriate through viewpoint assessments and cumulative impacts within landscape character areas. These will be summarised and evaluated by receptor groups.

Other windfarms and windfarm proposals to be considered during the assessment will be agreed during the Scoping process.

5 ECOLOGY

The key ecological issues to be addressed in detail as part of the EIA process are the potential direct and indirect impacts upon protected species and habitats, particularly during the construction phase, as well as the operational and decommissioning phases of the development. Alternative solutions and mitigation will be identified where the assessment indicates that there is a potential significant impact upon important habitats or species as a consequence of the development. Potential impacts on avian interests are covered in Chapter 6 of this Report.

Consultations and data requests will be conducted with Natural England and the relevant holders of local biological records.

5.1 Designated Sites

From a review of available published data (Multi-Agency Geographic Information for the Countryside (MAGIC), Natural England), there are a number of sites designated for wildlife within 5km of the site. These are summarised in Table 5.1 below.

Table 5.1 Summary of Designated Sites

Site	Designation	Area (ha)	Distance
North Pennine Moors	SPA (1)	147,246	3km E
North Pennine Moors	SAC (2)	103,109	3km E
North Pennine Dales Meadows	SAC	497	3km E
Moor-House Upper Teesdale	SAC	38,796	5km W
Low Redford Meadows	SSSI (3)	9.3	1.5km N
Frog Wood Bog	SSSI	3.2	1km N
Bollihope, Pikestone, Eggleston and Woodland Fells	SSSI	7,949	2km N & 2km E

Notes: (1) SPA: Special Protection Area

(2) SAC: Special Area of Conservation

(3) SSSI: Site of Special Scientific Interest

The potential effects of the proposed windfarm on the designated interests of both the statutory sites listed above and other local non-statutory sites for nature conservation will be given careful consideration in the assessment.

5.2 Baseline Surveys

5.2.1 Habitat Survey

Natural England recommends that impacts upon Annex 1 Habitats, as detailed in the EC Habitats Directive (Council Directive 92/43/EEC), be avoided as part of the iterative design process. An extended Phase 1 habitat survey has been conducted during 2008, following the standard methodology published by JNCC⁴. Any areas of semi-natural habitats identified will be subject to more detailed survey using the National Vegetation Classification method. The habitat survey will be used to identify the requirements for subsequent species specific

⁴ JNCC. 2004. Handbook for Phase 1 habitat survey: A technique for environmental audit. JNCC.

surveys in line with best practice. These surveys would be conducted in line with current best practice and could involve the following:

- Bats
- Badger
- Otter
- Water vole
- Dormouse
- Protected amphibians
- Protected reptiles

At this stage, surveys already conducted on the site have identified habitats suitable for bats and badger. Further detail on this is given below:

Bats

Bat surveys have been designed with reference to Bat Conservation Trust (BCT)⁵ and EUROBATS guidelines⁶. Three survey visits have been undertaken in suitable conditions between March and September in order to assess foraging/commuting activity across the site. Consultations with the local bat group and surveys of the area within 500m of the proposed development area will be undertaken to identify potential roost sites near the development site. The locations of possible hibernacula will be identified through a suitability assessment of built structures and trees.

Badger (*Meles meles*)

Badgers are afforded protection under the Protection of Badgers Act 1992 and the Nature and the Conservation (Natural Habitats &c) Regulations 1994, as amended.

A badger survey will be completed by a suitably qualified ecologist, searching for all signs of badger activity and setts within 50m of the proposed development area. Due to the sensitive nature of this information, the results of this survey will be included as a confidential annex to the Environmental Statement.

5.3 Ecological Impact Assessment

The ecological assessment will state the significance of the site in relation to species and habitats protected under the EC Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Flora and Fauna (commonly known as the Habitats Directive), Wildlife and Countryside Act 1981 (as amended), Conservation (Natural Habitats &c) Regulations 1994 (as amended), the Protection of Badgers Act 1992, the Hedgerows Regulations 1997 and UK Biodiversity Action Plan (reviewed 2007) (UKBAP). A full assessment of the short and long term impacts of the development upon habitats and species will be included, following guidelines published by the Institute of Ecology and Environmental Management (IEEM 2006)⁷.

Alternative solutions and mitigation will be identified where the assessment indicates that there is a potential significant impact upon important habitats or species as a consequence of the development. In addition, opportunities to enhance habitats for the benefit of wildlife will be explored and implemented as part of the development if appropriate, particularly where opportunities exist to benefit habitats or species listed in the Local Biodiversity Action Plan.

⁵ Parsons, K., Crompton, R., Graves, R., Markham, S., Matthews, S., Oxford, M., Shepherd, P., Sowler, S. 2007. *Bat Surveys: Good Practice Guidelines*. BCT, London.

⁶ Rodrigues, L., Bach, L., Biraschi, L., Dubourg-Savage, M., Goodwin, J., Harbusch, C., Hutson, T., Ivanova, T., Lutsar, L., Parsons, K. 2006. *Wind Turbines and Bats: guidelines for the planning process and impact assessments*. EUROBATS, Bonn.

⁷ IEEM. 2006. *Guidelines for Ecological Impact Assessment in the United Kingdom*. IEEM.

6 ORNITHOLOGY

The Royal Society for the Protection of Birds considers climate change to be the greatest threat to bird life and therefore supports the development of wind farms in appropriate locations. They state that the available evidence shows that appropriately located wind farms do not pose a significant hazard for birds (Wind Farms and Birds leaflet, RSPB, 2005). Poorly sited wind farms can have adverse impacts on birds as a result of disturbance, habitat loss/damage or collision with the turbines and the potential for this is analysed through a rigorous programme of survey and assessment.

Consultations and data requests will be conducted with Natural England, RSPB and other relevant local groups and holders of biological records.

6.1 Designated Sites

Chapter 5 of this Report provides details of the designated sites near the proposed development site. Movements of birds associated with the North Pennines SPA could potentially occur over the site and this will be assessed through a detailed programme of flight activity surveys at the development site.

6.2 Baseline Surveys

A study to assess the potential impacts of the proposed windfarm development on local bird species was commenced in December 2007.

Based on the findings to date it is considered that, with the exception of a small wintering population of Golden Plover, the site does not hold any significant wintering bird populations. It is considered that wintering bird populations in this area are low due to the site's exposure to extreme climatic influences (i.e. wind, precipitation and low temperatures) and the fairly heavily managed nature and high livestock levels of the improved grazing habitat that dominates the site and the immediate turbine envelope.

6.2.1 Flight Activity Survey

Vantage point (VP) watches commenced in December 2007, and in the absence of any specific English guidance, these are being undertaken using a standard methodology developed with reference to Scottish Natural Heritage (SNH) guidelines for onshore windfarms⁸. A single VP location has been selected providing good views over the development site and surrounding area. Observations will be made during the breeding (mid-March – August) and non-breeding seasons (September – March) to provide a minimum of 36 hours observation in each season. All target species will be recorded, noting direction and height. Target species are Annex 1 (EU Birds Directive) and Schedule 1 (Wildlife and Countryside Act) raptors and owls and all wildfowl and waders of conservation concern. VP watches will be carried out under varying weather conditions, and will provide good coverage of daylight hours throughout the year.

Initial observations indicate very little flight activity at any time of day with records generally restricted to crow and jackdaw registrations, with a single, small group of Mallard outside of the turbine envelope. A few common and black-headed gulls and a number of Golden Plover have been recorded moving in fields within 500m of the proposed turbine locations.

6.2.2 Breeding Bird Survey

A breeding bird survey has been carried out in summer 2008 covering all areas within 500m of the proposed development (where accessible) following a reduced version of the British Trust for Ornithology's (BTO) method for the Common Birds Census (CBC). In line with SNH guidance, three survey visits will be made between April and June to record locations of all birds displaying some evidence of breeding activity. The purpose of the survey is to map the

⁸ SNH. 2005. Survey Methods for Use in assessing the Impacts of Onshore Windfarms on Bird Communities. SNH, Inverness.

territories of breeding birds in order to allow the assessment of potential displacement impacts.

6.2.3 Breeding Raptor and Owl Survey

Habitat assessment of all areas within 2km of the have been carried out during spring 2008 to establish whether any raptor species of conservation importance are likely to breed within or close to the site. The habitat in the area is generally unsuitable for target species, therefore detailed searches are unlikely to be required. Any observations of buzzard, sparrowhawk and kestrel will be noted during the reconnaissance surveys.

A reconnaissance visit will be made in early spring 2008 to identify potential barn owl nest-sites within 1km of the proposed development.

6.2.4 Winter Walkover

Walkovers of the site and 500m buffer zone (where accessible) have been undertaken on three occasions between December 2007 and March 2008 to record all wintering birds using the area in order to allow assessment of potential impacts on birds that may use the sites infrequently, but in large numbers. Principal target species would include wildfowl and flocking waders, such as golden plover. On each visit, a similar methodology will be followed to that of the breeding bird survey; surveyors will walk over the site, following features of interest, such as hedgerows and streams, recording all birds encountered using the BTO notation for the Common Birds Census.

6.3 Ornithological Impact Assessment

Information from the surveys detailed above will be analysed and collated into a technical report detailing the baseline conditions at the site with respect to breeding, wintering and migratory birds. This will include data appendices, figures, collision risk modelling and a confidential annex where appropriate. The ornithological assessment will state the significance of the site in relation to species of conservation interest, such as those protected under the *EC Directive 79/409/EEC on the conservation of wild birds* (commonly known as the *Birds Directive*), *Wildlife and Countryside Act 1981* (Schedule 1), and *UK Biodiversity Action Plan* (reviewed 2007) (*UKBAP*). A full assessment of the short and long term effects of the development upon birds of conservation interest will be included, following guidelines published by the Institute of Ecology and Environmental Management (IEEM 2006)⁹. The evaluation will identify the potential effects of the development on birds and will consider the likelihood of the effects occurring. In determining the significance of the potential impacts, consideration will be given to the nature conservation importance, or value, of the receptor and the magnitude of the potential impact. Trends in the national or regional populations of the receptor will be incorporated in determining the significance of the effects.

Alternative solutions and mitigation will be identified where the assessment indicates that there is a potential significant impact upon important bird species as a consequence of the development. In addition, opportunities to enhance habitats for the benefit of birds will be explored and implemented as part of the development if appropriate, particularly where opportunities exist to benefit habitats or species listed in the Local Biodiversity Action Plan.

⁹ IEEM. 2006. Guidelines for Ecological Impact Assessment in the United Kingdom. IEEM.

7 HYDROLOGY AND HYDROGEOLOGY

A hydro-geological survey will be undertaken in order to establish the baseline conditions and assess the potential effects of the proposed windfarm, significance and the potential for mitigation.

There are a number of small, unnamed watercourses flowing south to north from the centre of the site. These watercourses join to form Linburn Beck, itself a tributary of the River Wear.

Surveys will include an appraisal of ground conditions at the site, a survey of downstream hydrological processes, a record search and a desktop study. They will cover geology, hydrogeology, aquifer classification and vulnerability, water quality, rivers and river classification and surface deposits.

Efforts will also be made to identify and assess the potential risk to any private water supplies and any known fisheries resources.

Appropriate maps and existing records will be referenced including, for example, the BGS website Geoscience Data Index, the Hydrogeological Map of England and groundwater vulnerability maps. The Environment Agency, the local authority, and the local water authority will also be contacted to obtain further surface and groundwater data. If necessary, field surveys or flow measurements will be undertaken.

8 CULTURAL HERITAGE AND ARCHAEOLOGY

For the purposes of the assessment, cultural heritage interests are deemed to include both above ground (the built heritage) and below ground remains. The assessment will consider both direct and indirect (largely visual) effects upon the following cultural heritage receptors:

- Archaeology – above and below ground, designated or not. Consideration will be given to the potential for currently unknown (buried) archaeological remains to exist within the site; and
- Listed buildings, Conservation Areas, Historic Parks and Gardens, Registered Battlefields and hedgerows that may qualify as historically important under the Hedgerow Regulations.

A desk based assessment of cultural heritage records will be carried out in order to establish the baseline against which the impact assessment will be carried out. Data will be gathered from the following sources:

- The Durham Sites and Monuments Record;
- Aerial records of known sites and monuments;
- OS 1st Edition 6" map coverage;
- Aerial photographs and other cartographic information on pre-recent land uses;
- National Monuments Record;
- County Records Office; and
- Local Studies Libraries and other archives as appropriate.

The study area will extend to 15km around the site to ensure potential visual effects are considered. There are approximately 75 Scheduled Ancient Monuments within 15km dating from all periods. There are 3 Scheduled Monuments within 5km of the site, although none of these occur on the site.

The desk based assessment will be augmented by a walkover survey to provide information on the archaeological potential of the area, and to validate the documentary evidence. This fieldwork will be conducted to:

- Assess and validate documentary data collected;
- Identify the extent and condition of any visible archaeological monuments; and
- Determine whether previously unrecorded archaeological features are present.

Subject to the findings of the desk based assessment, the requirement for, and extent of, any additional surveys will be agreed in consultation with the Durham County Archaeologist, on behalf of Teesdale District Council.

An assessment will be made of the potential indirect effects upon the setting of cultural heritage features including historic landscapes. This assessment will be made against the same Zone of Theoretical Visibility used in the Landscape and Visual Assessment.

The assessment will be supported by presentation of the data in assessment tables, with a gazetteer and location plan. The Cultural Heritage chapter will also include proposals for mitigation of any identified impacts where necessary.

9 NOISE

Potential noise effects associated with the proposed windfarm include effects during both the operation and the construction phases.

9.1 Operation phase noise

Sources of noise during operation of a wind turbine are mechanical (from machinery housed within the turbine nacelle) and aerodynamic (from the movement of the blades through the air). Modern turbines are designed to minimise mechanical noise emissions from the nacelle through isolation of mechanical components and acoustic insulation of the nacelle. Aerodynamic noise is controlled through the design of the blade tips and edges.

While noise from the wind turbines does increase with wind speed, at the same time ambient background noise (for example wind in trees) usually increases at a greater rate. Planning conditions are used to enforce compliance with specified limits.

Noise will be assessed in consultation with Teesdale District Council's Environmental Health Department, and will take into account Policy C5B of the Local Plan (2002).

The assessment methodology for operational noise is described in ETSU-R-97 "The Assessment and Rating of Noise from Windfarms". Relevant guidelines will be reviewed in the ES but, in summary, these provide recommendations for noise limits relating to the existing levels of background noise for quiet daytime and night-time periods.

A baseline noise survey will be carried out at properties situated close to the site. Suitable locations will be selected by identifying those properties that are likely to be subject to a noise level in excess of the minimum limit specified in ETSU-R-97, 35 dB(A) ($LA_{90,10min}$), and in consultation with Teesdale District Council's Environmental Health Department.

The wind farm layout and turbine selection will, if necessary, be modified during the design process, to ensure that the proposed wind farm will comply with the requirements of ETSU-R-97.

Low Frequency Noise, Infrasound and Amplitude Modulation

A recent study¹⁰, published in 2006, by Hayes McKenzie on behalf of the DTI investigated low frequency noise from windfarms. This study concluded that there is no evidence of health effects arising from infrasound or low frequency noise generated by wind turbines. It also noted, however, that a phenomenon known as Aerodynamic Modulation (AM) was in some isolated circumstances occurring in ways not anticipated by ETSU-R-97.

A further study¹¹ was carried out on behalf of the Department for Business, Enterprise and Regulatory Reform by the University of Salford, which investigated the incidence of noise complaints associated with wind farms and whether these were associated with Amplitude Modulation, defined as aerodynamic noise from wind turbines with a greater degree of fluctuation than normal at blade passing frequency.

The study concluded that AM has occurred at only a small number (4 of 133) of wind farms in the UK, and only for between 7% and 15% of the time. It also states that the causes of AM are not well understood as yet, and that prediction of the effect is not currently possible. The study recommends against revision to the current guidelines (ETSU-R-97) on wind farm noise assessment.

It is therefore not considered necessary to carry out specific assessments of low frequency noise, infrasound or amplitude modulation.

¹⁰ 'The measurement of low frequency noise at three UK wind farms', Hayes Mckenzie, The Department for Trade and Industry, URN 06/1412, 2006

¹¹ 'Research into aerodynamic modulation of wind turbine noise'. Report by University of Salford, The Department for Business, Enterprise and Regulatory Reform, URN 07/1235, July 2007.

9.2 Construction phase noise

Principal noise sources during the construction phase include track laying, excavation works and turbine foundation works.

The principal UK guidance on construction noise is contained in BS5288:1997 Noise and Vibration Control on Open Sites. This advocates control of construction noise through Best Practice, such as equipment selection and restriction of working hours (in consultation with local Authority). Principal noise sources during construction include track laying, excavation works and turbine foundation works.

10 EXISTING INFRASTRUCTURE

Windfarms have the potential to interfere with electro-magnetic signals passing above ground or existing infrastructure below ground.

Existing infrastructure on and around the site has begun to be identified through consultation with telecommunication and utilities providers and this information will inform future layout iterations.

Consultation with relevant infrastructure providers is a routine part of windfarm development. Consultees include:

- Civil Aviation Authority (CAA);
- Ministry of Defence (MoD);
- Television and telecommunications providers; and
- Water, gas and electricity utilities providers.

Initial consultation has been undertaken with the MoD, the CAA, and telecommunications and utilities providers in the area.

11 SHADOW FLICKER AND REFLECTIVITY

Reflectivity is simply the potential for the sun to 'glint' off structures, which, in the case of wind turbines, can be an intermittent glint when the turbines are rotating. This effect can be minimised by selecting a matt coating for the wind turbines, designed to reduce the potential for reflection.

Guidance presented within the Companion Guide to PPS22 describes shadow flicker as an effect that, "under certain combinations of geographical position and time of day, the sun may pass behind the rotors of a wind turbine and cast a shadow over neighbouring properties. When the blades rotate, the shadow flicks on and off. It only occurs inside buildings where the flicker appears through a narrow window opening".

In the UK the shadow flicker effect can only occur within 130 degrees either side of north relative to the turbine positions, as turbines do not cast long shadows on their southern side. It has also been proven that, generally, the effect only occurs within 10 rotor diameters.

Any potential shadow flicker effects will be quantified using a computer model during the EIA process and mitigated accordingly.

12 SOCIO-ECONOMICS

A socio-economic impact assessment will address both direct and indirect effects. Baseline information will be used to determine socio-economic and visitor profiles, land-use and ownership and public attitudes. This baseline can then be compared against published information into the perception of wind turbines.

In respect of recreation and access, consultations will take place to assess the effects to users of the public rights of way. This will include consultations with organisations such as Teesdale District Council and other relevant local groups.

Effects will be considered against:

- An economic profile of the area;
- Tourism and recreation;
- Land-use and ownership; and
- Public attitudes towards windfarms.

13 TRAFFIC AND TRANSPORT

Access to the site is dependent on the point of origin of the turbine components, but consideration will be given to shipping components to a nearby port facility capable of handling them, to minimise road haulage requirements. The approach to the site for large windfarm components could be taken from Junction 58 of the A1(M), then north west along the A68, then along the B6282 road. Access into the site could be taken off the B6282, or from the minor roads surrounding the site (subject to any weight restrictions, *etc.*).

The EIA will include consultation with the Highways Agency and the Highways Departments of the appropriate local authority to ensure that there are no low bridges or weight restrictions on this route. "Pinch point analysis", to determine where temporary road closure would be required for safety reasons, will also be carried out during the Environmental Impact Assessment (EIA) process.

Methodology will follow the Institute of Environmental Assessment's (IEA) Guidelines for the Environmental Impact of Road Traffic. Site visits will be undertaken to inspect existing access and the local road network. The assessment will include roads subject to a screening process outlined by the rules in the IEA guidelines:

- Include highway links where traffic will increase by more than 30% (or where the number of heavy goods vehicles will increase by more than 30%); and
- Include any other specifically sensitive areas where traffic flows have increased by 10% or more.

Peak traffic flows will be identified to establish a worst case scenario. Subject to the completion of this assessment, further consultation will be carried out with the Highways Authority and other relevant bodies. Assessment will include a swept-path analysis to inform on the practicability of route options. An assessment of driver distraction by the operational turbines will be undertaken as appropriate.

The assessment of effects will be based on the collection of baseline data, the proposed access routes and calculation of increased road traffic, whilst identifying receptors and their sensitivity.

14 AIR AND CLIMATE

Recent policy changes have brought the issue of climate change to the forefront of the political agenda. A windfarm has the potential to make savings on greenhouse gas emissions. The Environmental Impact Assessment will consider the current electricity generation mix and assess the level of savings that could be made.

It is estimated that a windfarm of the size proposed (based on 4 turbines with a combined 8MW generating capacity) would result in annual emission savings (compared to fossil-fuel generation) of between approximately 7,760 and 18,000 tonnes of carbon dioxide, based on the current range of energy generation facilities in the UK¹².

¹² Based on a windfarm of 10MW capacity, assuming a capacity of 27.3% and figures for CO₂ emissions from UK generation fossil fuel mix of 643 tonnes of CO₂ per GWh in 2007 (taken from BERR DUKES 2008, Table 5C) the proposed windfarm would displace 15,377 tonnes of CO₂ emissions each year.

15 PUBLIC CONSULTATION

Bolsterstone is committed to working with local communities and aims to ensure that they are consulted and informed of developments during the EIA process, through public exhibitions, meetings and newsletters. The responses from public consultation will be incorporated into appropriate sections of the ES. Bolsterstone welcomes comments from the local community and other stakeholders on ways that they would prefer to be consulted. Appendix B shows the consultees that will be consulted as part of the EIA process.

All responses should be addressed to:

Arcus Renewable Energy Consulting Ltd
Suite 2F
Swinegate Court East
3 Swinegate
York
YO1 8AJ

If you wish to discuss matters in this report in more detail please do not hesitate to contact Ian Simms at the above address or by e-mail at ians@arcusrenewables.co.uk, prior to responding to this Scoping Report.

Comments are specifically invited on:

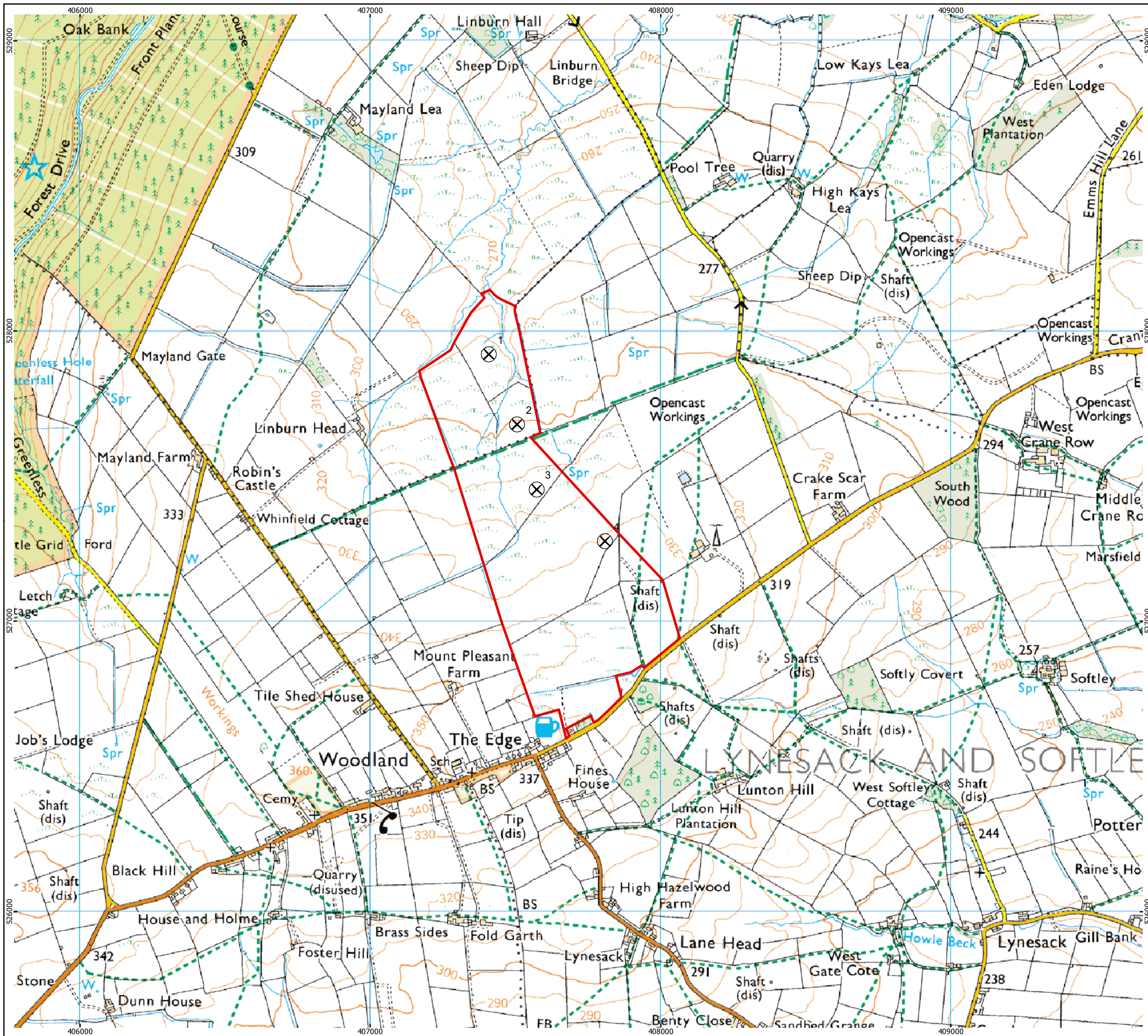
- The proposed content of the Environmental Statement;
- The assessment methods used;
- Additional data sources; and
- Additional consultees.

APPENDIX A – FIGURES

Figure 1 – Site Layout

Figure 2 – Zone of Theoretical Visibility

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- Key**
- Site Boundary
 - ⊗ Proposed Turbine Locations

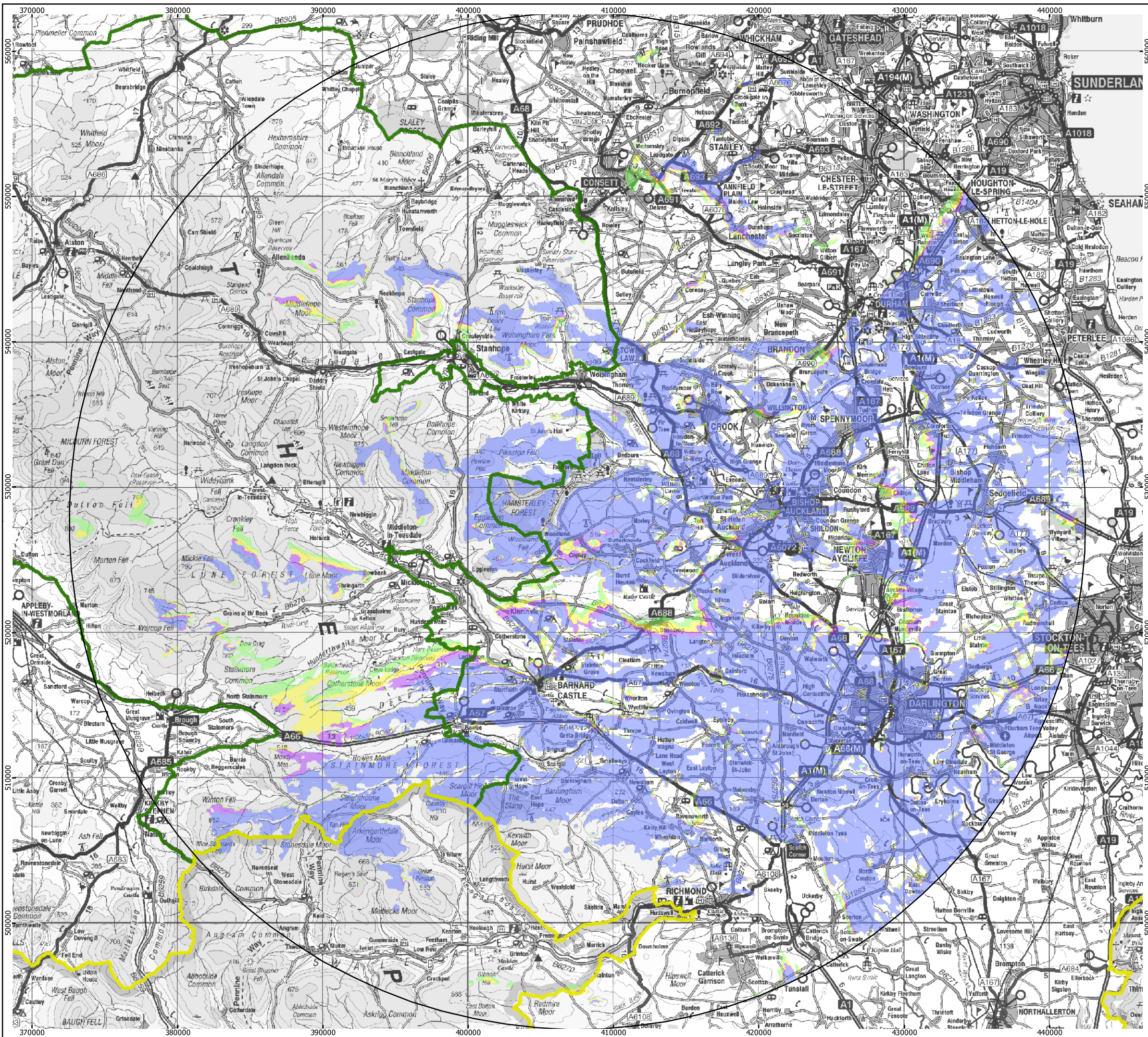
1:12,500 Scale @ A3




Produced By: IS
 Approved By: PP
 101/SCP/001 Revision: A
 Date: 07/10/2008





Site Layout
 Figure 1

Crake Scar Windfarm
 Scoping Report

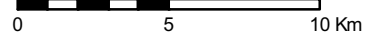

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- Key**
-  35km Radius of Site Centre
 -  National Park Boundary
 -  North Pennines Area of Outstanding Natural Beauty

- Theoretical Visibility of Turbines**
-  1 Turbine Visible
 -  2 Turbines Visible
 -  3 Turbines Visible
 -  4 Turbines Visible

1:250,000 Scale @ A3

Produced By: IS
 Approved By: PP
 101/SCP/002
 Date: 07/10/2008

Revision: A

**Zone of Theoretical Visibility
 115m to Blade Tip
 Figure 2**

**Crake Scar Windfarm
 Scoping Report**

APPENDIX B – LIST OF CONSULTEES

Arqiva	Joint Radio Company
BBC Research and Development	Langleydale and Shotton Parish Council
British Horse Society	Lynesack and Softly Parish Council
Civil Aviation Authority	Ministry of Defence
CE Electric (NEDL)	National Grid Transco
Cockfield Parish Council	National Grid Wireless
CSS Spectrum Management Services Ltd	NATS
Durham County Council	Natural England
Durham Bat Group	Northern Gas Networks
English Heritage	Northumbrian Water
Environment Agency	Ofcom
Evenwood and Barony Parish Council	Ramblers Association
Garden History Society	Royal Society for the Protection of Birds (RSPB)
Hamsterley Parish Council	South Bedburn Parish Council
Highways Agency	Sustrans
ITC Office of Communications (OFCOM)	Teesdale District Council
	Woodland Parish Council

This list is not definitive; should you be aware of any other organisations that would like to be included please advise the project team.