

Park Spring Wind Farm

Non-Technical Summary

July 2013

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1 INTRODUCTION

1.1 Application Site

1.1.1 EDF Energy Renewables (EDF ER) proposes to build and operate a three turbine wind farm adjacent to Park Spring Road, Barnsley, hereafter referred to as 'Park Spring Wind Farm' or 'the Development'. This Non-Technical Summary (NTS) forms part of the Environmental Statement (ES) which accompanies a Planning Application submitted to Barnsley Metropolitan Borough Council (BMBC) for Park Spring Wind Farm.

1.1.2 EDF ER has undertaken an Environmental Impact Assessment (EIA) for the proposed wind farm development, this NTS summarises the findings of the EIA.

1.1.3 The Park Spring Wind Farm site is located approximately 750 m west of Great Houghton, 1km south of Grimethorpe, 1 km north of Little Houghton and 1.5 km northeast of Darfield. Further afield, Barnsley is located approximately 6.5 km to the west.

1.1.4 The site is located to the east of Park Spring Road (A6195) and comprises undulating, mixed use agricultural land with small areas of woodland and areas of restored open cast workings. The topography of the site ranges in height between 35 and 80 metres Above Ordnance Datum (m AOD).

1.1.5 The Development includes the installation of three wind turbines with an anticipated 6 MW total generating capacity, together with associated infrastructure.

1.2 The ES Structure

1.2.1 This ES is the culmination of a series of studies and discussions to assess the scope of the Development, identify the nature of the existing environment, identify the impact of the proposals, predict the significance of those impacts on the environment and allow the formulation of appropriate mitigation measures. The data analysed, the impacts identified, and the assessments of significance are reported within the ES.

1.2.2 This ES is structured as follows:

ES Volume 1	Contains the written text of the EIA, including an outline of the EIA methodology, a project description including details on site selection, the planning context and the environmental assessments.
ES Volume 2	Contains the technical appendices.
ES Volume 3	Contains the figures to support the assessments as described in ES Volume 1.

1.2.3 Additional documentation submitted with the ES is as follows:

- A Non-Technical Summary (this document).
- A Planning Statement.

- A Design and Access Statement (DAS).
- A Statement of Community Involvement (SCI).

1.3 Contact Details

- 1.3.1 Printed copies of the ES are available from the following addresses for a fee of £125 (to cover copying charges). A CD of the full ES or a copy of the Non-Technical Summary will be available free of charge on request to Parsons Brinckerhoff.

Parsons Brinckerhoff
Amber Court
William Armstrong Drive
Newcastle Business Park
Newcastle upon Tyne
NE4 7YQ

Tel: 0191 226 2056 or 0800 0566650

- 1.3.2 The ES will be available to view, by prior arrangement, with BMBC.

Barnsley Metropolitan Borough Council
Civic Hall
Eldon Street
Barnsley
S70 2JL

Tel: 01226 770770

2 EIA METHODOLOGY

2.1.1 An EIA is a process in which potential environmental impacts that could be caused by a development are identified and evaluated. This process allows impacts to be categorised as significant or non-significant. Significant impacts can be reduced through the implementation of mitigation measures.

2.2 Scoping

2.2.1 Scoping is a process in which the context and extent of environmental assessments to be undertaken for the EIA are agreed with the local planning authority and statutory consultees. A detailed Scoping study and consultation was undertaken for Park Spring Wind Farm and submitted to BMBC in February 2011.

2.2.2 The response issued by BMBC stated that the ES should focus on the following points:

- Landscape and visual impacts including any cumulative effects.
- Impact on the green belt.
- Impact on residential amenity including shadow flicker.
- Highways, access and transportation.
- Noise.
- Biodiversity.
- Archaeology and cultural heritage.
- Hydrology and hydrogeology.
- Geology, past coal mining activity and site stability.
- Socio-economics including tourism, recreation, bridleways and footpaths.
- Infrastructure, telecommunications, television reception, aviation and public safety.

2.3 Public consultation

2.3.1 An important part of the development process is public consultation. EDF ER hosted three public exhibitions, the details of which were as follows:

Table 1: Public consultation events

Location	Date and Time
Sandhill Golf Club, Little Houghton	Friday 1 st March 2013, 1pm-7pm
Great Houghton Welfare Hall	Saturday 2 nd March 2013, 11am-3:30pm
Welfare Hall, Grimethorpe	Friday 26 th April 2013, 11am -7pm

2.3.2 Information on the public exhibitions is detailed in the associated SCI.

2.4 EIA Process

2.4.1 Each chapter of the ES follows a broadly similar approach:

- Introduction.
- Methodology.
- Baseline.
- Impact assessment.
- Mitigation.
- Residual impacts and conclusions.

2.4.2 Each chapter includes a detailed description of the impact assessment methodology, the surveys undertaken and the approach used to determine significance. Environmental impacts are identified through the assessment process and mitigation measures discussed within the environmental assessment chapters where appropriate.

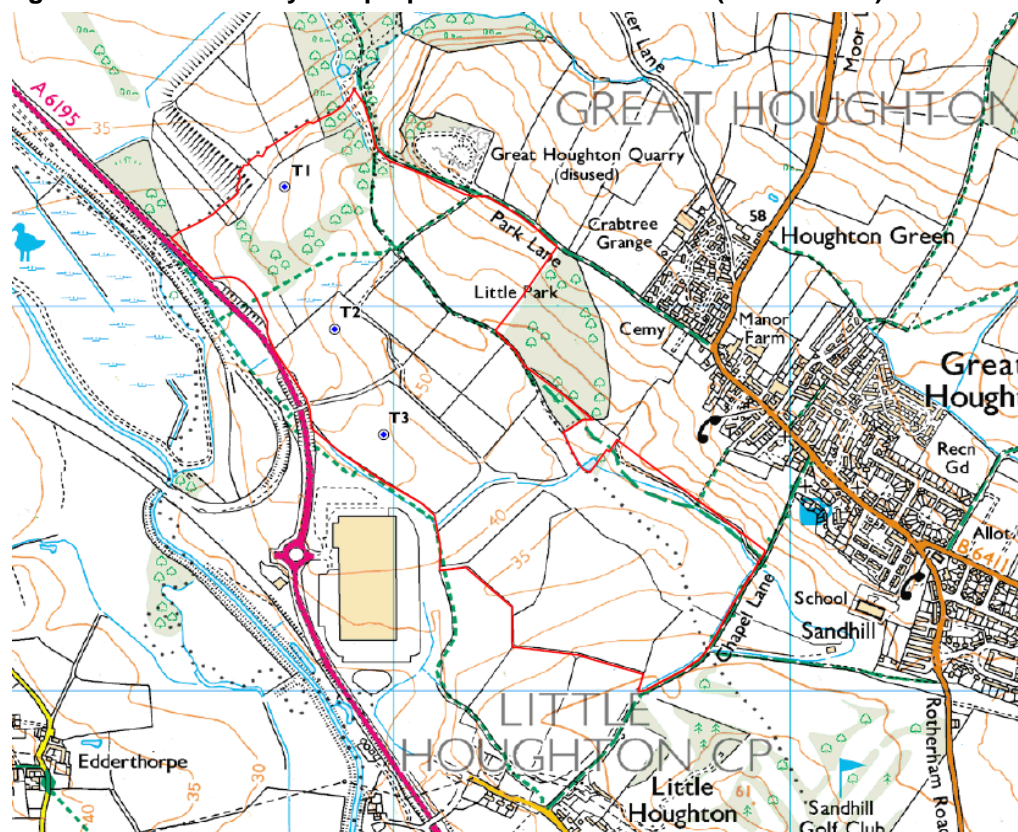
2.4.3 Two operational, one under construction, one consented and five 'in planning' wind farms were identified within 20 km of Park Spring Wind Farm Site. The EIA takes in to account the cumulative effects of the operational and developing wind farms at a scale appropriate to the subject.

3 THE PROPOSAL

3.1 Site Description

3.1.1 The Development site is centred on Grid Reference SE 420 070, and the site location can be seen in Figure 1 below. The Development site falls within the parish of Little Houghton, which is within the area administered by BMBC.

Figure 1: Site boundary and proposed turbine locations (Not to scale)



3.2 Site Selection

3.2.1 EDF ER has an ongoing site finding programme searching for suitable wind farm sites. The Development site was identified as being potentially suitable following a series of detailed assessments, including an analysis of factors such as wind resource, distances to housing, designations and technical constraints.

3.3 Site Design

3.3.1 The design of the proposed Park Spring Wind Farm has followed an iterative process. The layout of the wind turbines and associated infrastructure such as the access route have been adjusted throughout the design process in response to information gathered from statutory and non-statutory consultees, members of the public as well as information received from surveys and studies undertaken as part of the EIA.

3.4 Project Description

- 3.4.1 The Development will comprise three turbines, each with an anticipated rated installed generating capacity of 2 MW. Each turbine will have a total height to tip of up to 126.5 m. The rotor will consist of three blades connected to a hub supported by a steel tower.
- 3.4.2 In addition to the wind turbines, the Development will also comprise of access tracks, crane hardstanding, cabling, external transformers, control building and temporary works including a temporary construction compound.

3.5 Electricity Production

- 3.5.1 The Development is anticipated to annually produce 13613 MWh of renewable electricity.¹ This will supply approximately 3191 households annually, equating to approximately 42% of properties within 2km of the site (based on DECC's figures of UK annual domestic consumption²).
- 3.5.2 The Development could offset the emission of 5853 tonnes of carbon dioxide per year.³

3.6 Construction

- 3.6.1 It is anticipated that construction of the Development will take 6-9 months.
- 3.6.2 The contract for supply, construction and commissioning of the wind turbines and associated infrastructure will be awarded through a competitive process to one or more contractors who may in turn appoint specialist subcontractors.
- 3.6.3 The construction of the Development will be undertaken in accordance with a Construction Environmental Management Plan.

3.7 Operation

- 3.7.1 The Development is expected to have an operational life of 25 years. The operation of the Development will be undertaken in accordance with an Operational Environmental Management Plan.

3.8 Decommissioning

- 3.8.1 Decommissioning will take account of the environmental legislation and the technology available at the time. Notice will be given to the local planning authority in advance of the commencement of the decommissioning work. Any necessary licences or permits will be acquired. EDF ER will develop a Decommissioning Plan.

¹ 6MW rated capacity x 8760 x 0.259 capacity factor. Capacity factor taken from average 2008 -2012 loads factors for onshore wind at <https://www.gov.uk/government/publications/digest-of-united-kingdom-energy-statistics-dukes-2013-printed-version-excluding-cover-pages>

² <https://www.gov.uk/government/statistical-data-sets/sub-national-energy-consumption-statistics>

³ <http://www.renewableuk.com/en/renewable-energy/wind-energy/uk-wind-energy-database/figures-explained.cfm>

4 PLANNING POLICY

4.1.1 Guidance has been taken from both national and local planning policy to inform the EIA which in turn informed the design of the Development. This covers Government guidance as outlined within the National Planning Policy Framework (NPPF) and relevant national planning documents, along with the local BMBC planning policy documentation. A more detailed assessment of the degree to which the Development is consistent with the requirements of these policies is contained within the Planning Statement submitted in support of this application.

4.2 National Planning Policy

4.2.1 The National Planning Policy Framework (NPPF) has replaced the previous Planning Policy Guidance and Planning Policy Statements with a single document setting out the Governments economic, environmental and social planning policies for England. The NPPF provides the planning policy context for this ES. Running throughout the NPPF is a presumption in favour of sustainable development.

4.2.2 The NPPF states that local planning authorities should follow the approach set out in the National Policy Statement for Renewable Energy Infrastructure (EN-3) when assessing wind energy developments; with reference to the relevant sections of the Overarching National Policy Statement for Energy (EN-1).

4.2.3 In July 2013 the Department for Communities and Local Government issued guidance on the planning issues associated with the development of renewable energy; 'Planning Practice Guidance for Renewable and Low Carbon Energy'.

4.3 Regional Planning Policy

4.3.1 The Yorkshire and Humber Plan Regional Spatial Strategy (RSS) was adopted in May 2008 and was intended to provide a regional framework for development and investment for the region up to 2026. The Strategic Environment Assessment for the abolition of the RSS was concluded in March 2013 abolishing all RSS' however the RSS still forms part of the Development Plan for BMBC and is therefore considered to be of relevance.

4.4 Local Planning Policy

4.4.1 The Development Plan for Barnsley consists of the remaining saved policies of the Unitary Development Plan and the Local Development Framework (LDF) documents including the Core Strategy and the RSS.

- 5 EIA**
- 5.1 Noise**
- 5.1.1 The introduction of wind turbines has the potential to cause disturbance to the surrounding area and adjacent residential properties through noise emissions. In order to protect the reasonable amenity of neighbours to the proposed wind farm, a noise assessment for the Development was undertaken.
- 5.1.2 The methodology for the noise survey, including the selection of the background noise monitoring locations, was agreed with BMBC prior to commencement.
- 5.1.3 The results of the background noise survey have been correlated against measured wind speed data in order to establish changes in the noise climate at the proposed site with increasing wind speed. From this data, noise limits for the scheme have been derived for the night-time and amenity hours in accordance with the methodology set out in ETSU-R-97 – The Assessment and Rating of Noise from Wind Farms.
- 5.1.4 The assessment has been made using the candidate turbine, the REpower MM92 with a hub height of 80m. From this assessment, predictions of noise levels that could impact on the nearest residential properties and surrounding area have been identified.
- 5.1.5 The predicted noise levels as a result of the operation of the proposed wind farm, fall within the noise limits advised as appropriate in the noise guidance, at all of the nearest noise sensitive receptors, both for the Development on its own and cumulatively.
- 5.2 Landscape and Visual Impact**
- 5.2.1 An assessment of the effect that the three wind turbine development at Park Spring will have on the character of the landscape and visual amenity within the surrounding area was undertaken. Effects were assessed during construction, operation and decommissioning.
- 5.2.2 Landscape character in the vicinity of Park Spring has been substantially altered by man made features and activities. The key characteristics of the surrounding landscape are robust and able to accommodate development without significant character change, and the sensitivity of the landscape is assessed to be Low.
- 5.2.3 The Peak District National Park (PDNP) is located approximately 18 km south west of the site at its nearest point to Park Spring. The assessment found that the Development will not affect important views from the Peak District National Park. None of the key or distinctive characteristics of the National Park's 'natural beauty, wildlife or cultural heritage' will be lost or changed as a result of the Development.
- 5.2.4 The proposed development will result in the loss of 0.98 ha from Green Belt, which will be for the life of the wind farm and reversible. The Development will retain the openness of the Green Belt. Overall, it is considered that the visual effects of the proposed turbines will not conflict with the objective of local and national planning policy to protect the Green Belt.
- 5.2.5 Registered Parks and Gardens, National Trails and Recreational Paths, National Cycle Routes, Country Parks and the Dearne Valley Nature Improvement Area are all

present within the 20 km study area. There will be no significant effects on Parks and Gardens. Significant effects on users of recreational walking routes will be limited to parts of the Barnsley Boundary Walk and Dearne Way within a radius of 4 km from the proposed development.

- 5.2.6 Significant visual effects will be limited to views from settlements up to 2.5 km from the proposed development. Visual effects from settlements will vary depending on the potential for shadow casting, view proximity and the percentage of the view occupied by the proposed turbines from the residential property. The assessment did not identify any properties where it was considered that the visual effect of the scheme could render occupation unacceptable.
- 5.2.7 No significant cumulative landscape and visual effects are likely to arise from the proposed Park Spring wind turbines in addition to other existing and proposed wind farms.
- 5.2.8 Overall the assessment concluded that the three turbines of the Park Spring Wind Farm proposal will be appropriate to local landscape character and correspond with the scale and composition of the landscape. Significant landscape and visual effects will be localised because of the limited size and scale of the proposed development. The site is located within an area identified as having the capacity to accommodate small turbine groups similar to the number and scale of the cluster proposed. The conclusion is therefore that in landscape and visual terms the proposal should be considered acceptable in this location.

5.3 Archaeology and Cultural Heritage

- 5.3.1 The potential impact of the proposed Development upon archaeology and cultural heritage has been studied.
- 5.3.2 Two assets were identified within the site boundary, these are non-designated assets; Iron Age or Romano-British Enclosure and Field, and Park Field House Farmstead.
- 5.3.3 Four scheduled monuments lie within 5 km of the site; South Kirkby Camp, Hallsteads Moated Site, Monk Bretton Priory and All Saints Cross.
- 5.3.4 Two elements of a Grade II* listed building, St Michael's and All Saints Church, were identified within 1 km of the site boundary. Additionally, All Saints Church Grade I listed building and Grimethorpe Hall Grade II* listed building are within 5 km of the site boundary.
- 5.3.5 The excavation of foundations for turbines and the control building and the construction of site access tracks and ancillary structures all have the potential to directly impact on buried archaeology, both known and unknown.
- 5.3.6 It is predicted that the remains of Park Field House Farmstead will be disturbed by the construction of the proposed access track. It is recommended that an archaeological watching brief is carried out for this low sensitivity asset.
- 5.3.7 The construction of the proposed development also has the potential to have an indirect adverse effect upon on the setting of cultural heritage assets. This includes the Scheduled Monuments and listed buildings within the vicinity of the Development. The assessment found that the nature of this visual impact upon the setting of Scheduled Monuments will be negligible adverse to minor adverse and slight to moderate/slight in significance. This also applies to one Grade I Listed Building within

5 km of the Scheme Area, two Grade II* listed buildings and a number of Grade II listed buildings. The setting impact on the listed buildings will be negligible adverse and slight in significance. Additionally, seventeen non-designated assets will also be subject to a non-significant visual impact on their setting.

5.4 Hydrology, Geology, Hydrogeology

- 5.4.1 The Development site comprises primarily of agricultural pasture land with some small areas of woodland and areas of restored open cast workings. The fields are divided by hedgerows, tracks and fences. The development area of the site has a gently undulating topography with a general fall from the north-west to the south. The highest point of the development area is at approximately 80 mAOD dropping down to around 35 mAOD.
- 5.4.2 The most prominent geology, hydrology, and hydro-geology features of the local environment are the River Dearne and its associated floodplain to the south, and the historic opencast coal mining, onsite and in the wider area. Worked out quarries, wetland areas and restored workings are common throughout the Dearne valley to the south of the Development site.
- 5.4.3 Baseline conditions and the potential impacts of the proposed Development have been assessed with reference to legislation, guidance and best practice documents. Consultation was undertaken during the development process.
- 5.4.4 The assessment identified areas of activity, particularly during the construction phase, that may have the potential to impact upon the underlying geology and the water environment of the site and surrounds.
- 5.4.5 Potential impacts include:
- Disturbance of contaminated land at Park Field House.
 - Disturbance of colliery waste.
 - Spills/contamination.
 - Increase in surface water due to a small addition in hardstandings.
 - Changes in groundwater.
- 5.4.6 Detailed investigations of the site ground conditions will be carried out prior to construction works commencing.
- 5.4.7 The potential for the proposed development to affect geological, hydrogeological and hydrological features is mitigated, both through design and through the adoption of management plans and best practice. These mitigation measures concentrate on controlling surface water runoff and preventing/managing the mobilisation of contamination/pollution.
- 5.4.8 With the implementation of best practice mitigation it is considered that the impact of the Development upon the geology, hydrology and hydrogeology of the area is not significant.

5.5 Ecology

- 5.5.1 The methodology for the ecological assessment is based on guidance issued by the Institute of Ecology and Environmental Management (IEEM, 2006)⁴.
- 5.5.2 A desk study was undertaken to collate and analyse existing records of notable and protected species historically found within 1 km of the survey area boundary (10 km for bat records). Data was also collected to identify any statutory and non-statutory designated sites of nature conservation interest.
- 5.5.3 Ecology surveys undertaken included:
- Extended Phase 1 habitat survey.
 - Badger survey.
 - Otter survey.
 - Water vole survey.
 - Bat survey.
- 5.5.4 Habitats identified within the survey area by the Phase 1 Habitat survey include: broadleaved semi natural woodland, broadleaved plantation woodland, scattered broad leaved trees, semi-improved neutral grassland, improved grassland, tall ruderal, mesotrophic standing water, arable land, species rich intact hedge, species poor intact hedge, species poor defunct hedge, species rich hedge with trees, species poor hedge with trees, dry ditch and bare ground. The proposed access track will require the removal of up to 400 m of species rich hedgerows to allow the installation of wider access tracks within the Development site. New hedgerows and gapping up existing hedgerows are planned within the site boundary.
- 5.5.5 No active badger setts were found within the survey area, however latrines within the site boundary indicate that badgers cross and potentially forage within the site. Badgers are protected for welfare rather than conservation reasons, and are considered to be a common species. Mitigation measures are suggested within the ES to ensure that they are protected throughout the construction, operation and decommissioning phases.
- 5.5.6 No signs of otter were recorded during the field surveys. The otter survey concluded that although dispersing otters may pass through the site, otters are unlikely to use features in the area or site on a permanent basis.
- 5.5.7 During the field surveys signs of water vole were recorded in a ditch near the east of the site; four other water bodies were considered to have potential to support water voles although no signs of their presence were recorded during the surveys. It was considered that the site supported low numbers of water vole or was part of a territory of water voles within the local area. There will be no loss of water vole habitat, there are therefore no significant effects predicted on the distribution of water voles.

⁴ IEEM (2006) Guidelines for Ecological Impact Assessment in the United Kingdom.

5.5.8 The level of bat activity across the site is considered to be low to moderate and the species recorded are relatively common locally and nationally. The level of high-risk bat activity is considered to be generally low across the site. The wind turbines are located in excess of 50m from blade tips to habitat features, which is in line with Natural England guidance. The overall impact on low risk bat species is considered to be low magnitude and with the proposed hedgerow enhancements on site of a positive effect. The overall impact on high risk bat species is considered to be a low level negative impact at a non-significant level.

5.5.9 The survey area contains habitat suitable to support common reptile species and great crested newt species., Historical records in the locality exist for these groups. Given the extremely small area due to be affected and the distance from the nearest pond, it is considered extremely unlikely that the construction of the proposed wind farm will cause any problems to great crested newts. The construction of the proposed wind farm will require vegetation clearance and ground works, which will be undertaken in a manner to minimise risks to reptile species. Assuming successful implementation of the appropriate measures e.g. reducing the sward height of grassland, it is considered that potential impacts on reptile species and great crested newts due to the Development will not be significant.

5.6 Ornithology

5.6.1 The objectives of the ornithological assessment were to

- Undertake breeding bird surveys of the proposed wind farm site and its surrounds, to determine the numbers of birds present, and approximate breeding locations.
- Undertake wintering bird studies to determine the birds that may be affected by the proposed development at that time of year.
- Undertake vantage point observations to quantify the rates of bird movement across the proposed wind farm site and its surrounds.
- Collate relevant additional information on the area's ornithological interests.
- Evaluate the ornithological importance of the study area, assess the likely effects of the development on the study area's ornithology and recommend mitigation measures if necessary.
- Evaluate the residual effects of the Development after mitigation measures are incorporated.

5.6.2 This assessment has been undertaken by Ecology Consulting Ltd.

5.6.3 Baseline surveys followed the guidance on bird surveys for wind farm assessments produced by Scottish Natural Heritage [SNH] (Whitfield et al. 2010) and by Natural England (Drewitt 2010). The ornithological study areas were chosen to include areas within the potential zone of ornithological influence of the proposed wind farm. This included all the land that was being considered for locating wind turbines, plus a 500 m buffer around this for the breeding bird surveys and a 1 km buffer for the wintering bird surveys. These distances were chosen to follow current guidance (Drewitt 2010). The breeding bird study area covered a total area of 4.1 km². The wintering bird survey area was 8.7 km². The main habitat across both of these areas is predominantly arable farmland and grassland, with the Edderthorpe Flash wetland on the western fringe. The site lies within the 'Coal Measures' Natural England Natural Area.

- 5.6.4 The main potential effects of wind farms on birds are considered to be direct loss of breeding or feeding habitat, potential collision risk and indirect loss of habitat from disturbance.
- 5.6.5 Generally the breeding bird numbers within both the construction and operational disturbance zones were low, with no species present in more than locally important numbers. No high sensitivity species were found breeding within 500 m of the proposed wind turbine locations.
- 5.6.6 The wintering bird numbers recorded within a worst-case scenario potential disturbance zone of 600 m from the wind turbine (for both construction and operation) revealed only one species in nationally important numbers; the golden plover. Eight other species were also present in this zone in regionally important numbers; white-fronted goose, wigeon, gadwall, teal, mallard, shoveler, avocet and lapwing.
- 5.6.7 There are no Special Protection Areas (SPA) within 20 km of the proposed wind farm, therefore none will be affected. The only Site of Special Scientific Interest (SSSI) within 5 km of the site is Carlton Main Brickworks SSSI, a site of geological interest with no notified ornithological features, therefore no SSSI's will be affected.
- 5.6.8 Edderthorpe Flash lies 300 m SW from the nearest proposed wind turbine and is part of the Dearne Valley RSPB reserve, which RSPB consider to be of national importance for birds and wildlife. Most of the Flash's bird populations which are of conservation interest were found outside the potential impact zone of the wind farm, therefore the Development is not likely to have significant effect on this area's bird populations.
- 5.6.9 The ornithological effects that are likely to occur during decommissioning will be similar to those during construction, though given the reduced time required, and the presence of existing infrastructure, they will be of a lower magnitude. Significant effects are not likely but precautionary mitigation measures will be implemented to ensure this, to deliver a net benefit to the Dearne Valley NIA (Nature Improvement Area).
- 5.6.10 Though no significant effects are likely on the breeding or wintering bird community, given the range of species present, and the fact that the site lies within the NIA, a habitat enhancement programme will be implemented to ensure that the project delivers a net local conservation gain (following the guidance given in the NPPF). This could include enhancement of field margins, hedgerow restoration and the provision of barn owl nest-boxes to encourage nesting but at distances exceeding 300 m from the wind turbine locations.
- 5.6.11 Overall, there are not likely to be any significant impacts on ornithology as a result of the Development. In addition, no effects will result in any breach of the Habitats Regulations.

5.7 Socio-economic Impacts

- 5.7.1 The impacts of Park Spring Wind Farm on the economy of the area and social factors such as tourism and recreation are assessed during construction, operation and decommissioning.
- 5.7.2 A range of socio-economics impacts are considered, these include:
- Direct effects on employment.

- Indirect effects on economic activity.
 - Indirect effects on tourism and recreation.
- 5.7.3 It is predicted that the construction of the Development will result in a moderate positive economic benefit. There will be opportunities for direct employment during the 6-9 month construction phase. There will also be opportunities for local contractors and business that are included in the supply chain such as local quarries supplying aggregate.
- 5.7.4 During operation the Development will be unmanned with its operations being automatically monitored off-site.
- 5.7.5 Once the wind farm is operational, a dedicated community fund based on an agreed annual contribution from EDF ER will be set up to support a range of local activities and community projects.
- 5.7.6 Important tourism attractions in the area include the Peak District National Park, Locke Park and Brodsworth Hall amongst others. These attractions are largely based on visual amenity and are not expected to be adversely affected by the Development. There is an increasing body of research that suggests that wind farms have very little impact on tourism.
- 5.7.7 Short sections of permissive paths, footpaths and a bridleway that cross the site will require temporary closure. This will have a moderate adverse impact during the short construction and decommissioning phases.
- 5.7.8 A concern in the area is the misuse of the site including the public rights of way by motorbikes and similar. Rather than the creation of new paths or dedication of permissive paths, which could encourage further misuse of the site, it is considered that the provision of bollards, gapping up hedgerows etc. as appropriate will improve the area for pedestrians and horse riders.
- 5.8 Shadow Flicker**
- 5.8.1 Shadow flicker is the effect experienced when moving shadows cast by rotating wind turbine blades fall across constrained openings such as house windows.
- 5.8.2 An analysis of the impact of shadow flicker at properties in the vicinity of the proposed wind turbines has been undertaken. The computer model takes into account factors such as the orientation and distance of the property from the proposed wind turbines, positioning of the sun, and window size. From this model it was possible to accurately quantify the theoretical worst-case shadow flicker effects.
- 5.8.3 The assessment found that there is the theoretical potential for shadow flicker to slightly exceed best practice levels over the course of a year. However, once climatic conditions are taken into account the actual likelihood of the nearby residential properties experiencing shadow flicker effects above recognised best practice limits is considered to be very low.
- 5.8.4 Although not anticipated to be necessary, potential mitigation measures can be put in place if a significant degree of shadow flicker occurs at local properties. This will be controlled by the use of a suitable planning condition.

5.9 Transport and Traffic

- 5.9.1 Construction of the Park Spring Wind Farm will require the delivery of large items of plant and equipment to site as well as aggregate and concrete for the construction of the access tracks and hardstandings, and for the turbine foundations.
- 5.9.2 It is anticipated that the main turbine components will be brought to site from the motorway network. The route will be as follows:

A1(M) – A635 – A6195 (Rotherham Road) – A6195 (Park Spring Road).
- 5.9.3 The existing slip roads in place on the A6195 (Park Spring Road) will be used to form the site entrance and exit.
- 5.9.4 As a result of the local feedback from the public exhibitions, the initial proposed access route (through Great Houghton) was revised due to local residents concerns. The proposed access route has been discussed with BMBC Highways Authority.
- 5.9.5 Normal construction traffic will continue along the A6195 (Park Spring Road) before doubling back at the Grimethorpe Colliery Roundabout and entering the site along the existing slip road.
- 5.9.6 Using traffic management such as temporary traffic lights, the small number of abnormal load deliveries will exit the A6195 when heading northbound, onto the existing slip road. This will be managed in discussion with BMBC Highways Authority.
- 5.9.7 Estimates show that in the 6 months construction phase there will be approximately 15 vehicle movements per working day (assuming a 22 working day per month average) up to a peak of approximately 50 vehicles per day.
- 5.9.8 Peak traffic generation is likely to occur whilst the delivery of the aggregate necessary for the construction of the access tracks takes place, and during the construction of the turbine foundations.
- 5.9.9 The predicted increase in traffic represents an insignificant increase in the existing traffic levels in the vicinity of the proposed site.
- 5.9.10 The impacts of construction traffic will be mitigated, through amongst other things, the adoption of a Transport Management Plan which will include specific routing and control measures.
- 5.9.11 During the operational phase very few vehicle movements are expected and the impacts upon roads users is predicted to be insignificant.

5.10 Technical IssuesAviation

- 5.10.2 Wind turbines have the potential to impact on aviation activities both by causing a physical obstruction to aviation and by the generation of unwanted radar returns.
- 5.10.3 Both Robin Hood Airport Doncaster-Sheffield Airport and Leeds Bradford International Airport have expressed no objections with regard to the development of the Park Spring Wind Farm.

5.10.4 The Ministry of Defence (MOD) has confirmed that they have no objections to the proposed Development.

Telecommunications

5.10.5 As with any large structure, wind turbines can interfere with telecommunication systems that are used for television, mobile phones, radar and other forms of microwave communication. Interference with the telecommunication systems can cause distorted sound, image or data transmission.

5.10.6 Ofcom, the official government body that holds a central register of civil radio communications installations within the UK, has been consulted with regard to the potential for the proposed Development to interfere with existing telecommunications systems. The operators identified by Ofcom were then contacted directly to obtain accurate information.

5.10.7 The information provided by the operators has been used to produce a map of fixed links and masts within the vicinity of the site. It is considered that the Park Spring wind turbines are located at a sufficient distance from the identified links to ensure that they will not impinge upon their operation.

5.10.8 The potential impact on television reception has also been considered. The television assessment found that television services in the vicinity of the Development are likely to be provided by Emley Moor Transmitter, which provides television services for most of Yorkshire.

5.10.9 Medium interference is indicated on either side of Great Houghton and in isolated locations to the north and north west of the turbine locations. It is considered unlikely that this will cause interference at homes in the area. There were additional isolated points of medium and high interference indicated to the east of Darfield, however these points of interference are not in populated areas and are therefore are not likely to cause interference.

5.10.10 Insignificant impacts on terrestrial digital television signals as a result of the Development are predicted. If encountered, appropriate mitigation can be implemented.

Safety

5.10.11 Safety has been considered in the design of the wind farm, such as through the use of appropriate setback distances from nearby houses and roads.

5.10.12 A construction Health and Safety Plan will be developed to manage safety during the construction, operation and decommissioning of the wind farm.

5.10.13 All site work will comply with all relevant legislation such as the Health and Safety Act 1974, the construction (Design and Management) Regulations 2007 approved code of practice and all activity specific legislation and guidance such as Work at Heights Regulations 2005 as appropriate.

Public safety will be maintained throughout the construction of the Development with all necessary steps taken to ensure the safety of the public using the rights of way on the site.