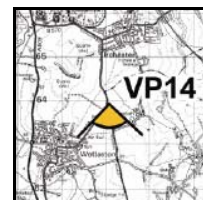


Nun Wood Wind Farm

Design and Access Statement

December 2008



DESIGN AND ACCESS STATEMENT

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Introduction

This Design and Access Statement (DAS) accompanies the planning application prepared by Npower Renewables Limited (NRL) for the construction of 12 wind turbines, an anemometry mast, sub-station, access tracks and ancillary infrastructure on land between the villages of Bozeat, Harrold and Lavendon. The statement is produced in accordance with the Town and Country Planning (General Development procedure) Order 1995 (as amended) and takes into account guidance set out in circular (DCLG) 01/2006. Regard has also been had to Statutory Instrument 1062/2006.

The planning application is supported by an Environmental Statement (Volumes 1-4) (ES) which reports the findings of an extensive Environmental Impact Assessment (EIA). **Chapter 2** of the ES sets out the site selection criteria and relevant site constraints, whilst **Chapter 3** sets out the project details and design evolution. Access issues are considered largely in **Chapter 11** in terms of traffic associated with the various stages of the project. Each topic-specific chapter within the ES sets out the relevant policy context.

Design and Access Statements

Section 42 of the Planning and Compulsory Purchase Act 2004 substitutes a new section 62 of the Town and Country Planning Act 1990 and amends section 10 of the Planning (Listed Buildings and Conservation Areas) Act 1990 so as to provide that a statement covering design concepts and principles and access issues is submitted with an application for planning permission and listed building consent - a 'Design and Access Statement'.

A Design and Access Statement is a short report accompanying and supporting a planning application to illustrate the process that has led to the development proposal and to explain and justify the proposal in a structured way. It provides an opportunity for applicants to demonstrate their commitment to achieving good design and ensuring accessibility in the work that they undertake, and allow them to show how they are meeting, or will meet the various obligations placed upon them by legislation and policy. It also helps those assessing the application to understand the design and access rationale that underpins it and provides greater transparency for stakeholders.

Good Design plays a fundamental role in achieving sustainable development through the planning process. Planning Policy Statement 1: Delivering Sustainable Development, provides the following definition:

“Good design ensures attractive, usable, durable and adaptable places and is a key element in achieving sustainable development. Good design is indivisible from good planning. Planning authorities should plan positively for the achievement of high quality and inclusive design for all development, including individual buildings, public and private spaces and wider area development schemes. Good design should contribute positively to making places better for people. Design which is inappropriate in its context, or which fails to take the opportunities available for improving the character and quality of an area and the way it functions, should not be accepted.”

With regard to access, statements should explain how access arrangements will ensure that all users will have equal and convenient access to buildings and spaces and the public transport network. The statement should address the need for flexibility of the development and how it may adapt to changing needs. A Design and Access Statement has five essential parts as set out below:

- Appraising the context
- Identifying the design principles
- Identifying the access principles
- Creating the design solution
- Creating the access solution

The level of detail required in a design and access statement will depend on the scale and complexity of the application, and the length of the statement will vary accordingly. Statements must be proportionate to the complexity of the application, but need not be long.

This DAS outlines the design and access considerations that have informed the form and content of the proposed development under the specific headings set out in Statutory Instrument 1062/2006, namely:

- 1) Design
 - a) Design principles and concepts applied to:
 - Amount
 - Layout
 - Scale
 - Landscaping
 - Appearance
 - b) Appraisal of development context, and how design has responded.
- 2) Access
 - a) Access policy, and consideration of relevant Development Plan policies
 - b) Consultation undertaken and impacts on access
 - c) Explanation of:
 - How issues affecting access have been addressed
 - Access for prospective users
 - Why access points and internal routes chosen
 - Maintenance of access feature

Background to the Project

The proposed wind farm is located on agricultural land between the villages of Bozeat, Harrold and Lavendon on the Bedfordshire/ Milton Keynes/ Northamptonshire border. The site crosses the administrative boundaries of Bedford Borough Council, Milton Keynes Unitary Authority and the Borough Council of Wellingborough. The site area measures approximately 496 hectares and is located broadly 9km south east of Wellingborough, 13km north east of Milton Keynes and 13km west of Bedford. The proposal is for a wind farm comprising 12 turbines, each with a capacity of between 1.8 megawatts (MW) and 3 MW. In summary the elements of the wind farm which fall within each Local Authority area are as set out below.

- **Milton Keynes Council** – 3 turbines, anemometry mast, access tracks, cabling, hardstandings;

- **Bedford Borough Council** – 6 turbines, access tracks, cabling, hardstandings; and
- **Borough Council of Wellingborough** – 3 turbines, substation, construction compound, access tracks, cabling, hardstandings and site access.

Planning applications were made to the above local planning authorities in 2006 for a 16-turbine wind farm proposal, also known as Nun Wood Wind Farm. This 2006 application was withdrawn in April 2008 to allow for the layout to be re-designed in response to consultee comments.

Design Issues

This section of the DAS explains the design principles and concepts applied to the wind farm design in respect of those features of the proposed development listed above.

Amount

It is noted that for developments other than residential schemes SI 1062/2006 defines the issue of “amount” for the purposes of DAS’s as relating to the floor space proposed for various uses. In addition to the above explanation of the factors that have determined the scale of development in terms of the number of turbines and other associated infrastructure the floor area associated with each of these elements is also quantified and detailed where appropriate below.

As previously noted the area within the wind farm site boundary is **496 hectares** (ha). During the construction phase, the wind farm will require approximately **14ha** of land, which equates to less than 3% of the site area. During the operational phase, this will be reduced to approximately **7.5ha**, less than 2% of the site area.

The application site area is irregularly shaped. It is influenced by the geographical extent of the area covered by the proposed wind turbines and associated infrastructure, within the area available to NRL, and includes access tracks to the public highway, namely the A509 on the western side of the site.

The key influences have been to ensure the optimum spacing of the turbines, from an energy capture point of view to maximise the production of electricity, in conjunction with visual and amenity considerations.

Planning permission is sought for a wind farm comprising 12 wind turbines with associated infrastructure, including a permanent anemometer, a single-storey control building (sub-station), internal access tracks, a temporary construction compound and temporary crane hard standing areas for each turbine.

The most significant influence on the size of the application site and development is the number of turbines. This has reduced since the inception of the project, through the EIA, design and consultation processes. This has included submission and subsequent withdrawal of an initial planning application for 16 turbines. A number of technical, visual/landscape and heritage impact design considerations, objectives and principles were raised during the consideration of the earlier application which have been addressed within this smaller scheme.

The modifications made to the layout in response to these considerations are discussed in detail in Chapter 3 of the ES that accompanies these applications, but summarised in **Table 1**.

Table 1: Layout Evolution

Layout	Summary of Constraints considered	Resulting Number of turbines
1	Adequate separation between turbines to ensure their efficient operation and amenity issues	24
2	The inclusion of a cautious 200m separation from the bridleway (The Three Shires Way)	22
3	Greater minimum spacing criteria, greater compliance with noise guidelines and greater separation from the site at Poddington and from Nun Wood	17
4	Deletion of a turbine at the northern part of the site to reduce density and therefore improve the cohesiveness and legibility of the design	16
5	Deletion of turbines in response to comments from English Heritage in relation to visual impacts on views from Castle Ashby, particularly in relation to turbines within the central section of the site, and following withdrawal of the initial planning application. The number of anemometry masts was also reduced from 2 to 1 based on the reduced number of turbines involved	12

One of the key design considerations is to site turbines so as to exploit the wind resource and maximise production of electricity, whilst taking into account the constraints affecting a potential wind farm site such as landscape, nature conservation, cultural heritage, access, aviation and noise constraints.

The layout of the Nun Wood Wind Farm has been optimised for energy capture in two ways. Firstly the site selected is well exposed to prevailing winds, and secondly the spacing between turbines within the wind farm has been considered carefully. In converting the energy from the wind into electricity, there is a reduction in wind speed and increase in turbulence immediately behind each turbine. The effect of this can be to reduce the output of turbines in downwind positions within the wind farm, thus reducing the overall output of the wind farm. There is therefore a balance to be made in reducing the overall extent of the wind farm and maximising the spacing between the turbines.

Layout

As referred to above, the layout of the proposed development has evolved through the EIA process, in response to a number of technical, and environmental constraints, visual and amenity considerations. The layout of the wind farm has also been influenced by advice given by LDA Design landscape consultants to minimise the impacts of the wind farm. A detailed explanation of the evolution of the wind farm layout and the many factors considered is outlined in Chapter 3 of the Environmental Statement that accompanies the planning applications.

The Proposed Layout

The 2006 application was withdrawn in April 2008 following consultation responses received from English Heritage. Their response focused on the anticipated visibility of a number of turbines within a planned view from the eastern terrace of Castle Ashby, a Grade I listed building. The layout proposed in this application seeks to respond to this objection by grouping turbines in two clusters either side of the planned view. Wireframes and photomontages have been prepared to ensure that the planned view is satisfactorily safeguarded. Areas of woodland in the eastern part of Castle Ashby's registered parkland provide screening, obscuring views from the east terrace towards turbines within the two clusters. These amendments to the design resulted in reducing the number of turbines from 16 to 12, based on 16, 1.8-2.3 MW turbines with an 80-90 m rotor diameter. The remainder of the turbines have been repositioned to ensure appropriate noise limits can be met and to maintain appropriate spacing between the turbines and to ensure that, from a landscape and visual perspective, the appearance of the wind farm as two isolated groups of turbines is minimised as far as possible from the majority of viewpoints.

Since the 2006 application was withdrawn, new interim guidance has emerged from Natural England in relation to the provision of good practice and recommendations to minimise harm to bats¹. This guidance document recommends that turbines are placed at least 100 m away from any hedgerows, woodlands, ponds and derelict buildings. It goes on to state that a separation distance of 50 m could be permitted where bat surveys show little/no activity. The proposed layout maintains separation distances of turbines from hedgerows and woodlands of at least 100m for all but two of the turbines (turbines 11 and 12). The bat surveys did not find any evidence of bats commuting between feeding and roosting areas using linked hedgerows, or any bat activity along, or close to Three Shires Way, in the area of Turbines 11 and 12. For these two turbines, separation distances of at least 50 m have been maintained from the nearest hedgerows and woodlands in line with Natural England guidance.

The proposed layout maintains commitments made in response to the feedback received at the public exhibitions held in 2005, i.e. moving the closest turbine to Bozeat further from the village.

The sub-station compound, which will include a single storey control building, is located within the northern part of the wind farm site boundary, in close proximity to the existing overhead lines that run south-east to north-west at the north of the site. The wind farm proposal would connect directly into the 132kV overhead electricity lines within the site with the benefit of not needing off-site cabling. The sub-station location minimises the length of cabling required within the site, whilst visual impacts are minimised by the burying of cables underground in association with the access tracks as far as possible, to minimise ground disturbance.

Prior to construction, the locations of the proposed turbines and other components of the development would be subject to micro-siting. This will provide scope for further mitigation of potential impacts and will allow for short-term changes to environmental conditions such as the movement of protected species into a proposed turbine area. It is anticipated that the agreed 'tolerance' micro-siting distance will form a condition accompanying any planning permission for the proposal.

A micro-siting allowance of 50m radius in any direction is proposed and this has been fully taken into account in the detailed survey and assessment EIA work including any limitations on this for environmental reasons.

¹ Natural England (May 2008). Bats and Onshore Wind Turbines: Interim Guidance.

Scale

The turbine dimensions selected for the Nun Wood Wind Farm proposal have a maximum height to tip (from the ground to the full vertical extension the blades) of 125 m and an approximate rotor diameter of 80-90 m. The height to tip of 125 m represents the maximum case scenario, which therefore forms the basis for the planning application, and is the height of turbine that has been assessed for the purposes of the EIA. The final tip height, within this maximum range, will be dependant on the model of turbine selected for the site, which will in turn be a result of a tendering exercise carried out by NRL if planning permission is granted.

This size of turbine is typical of that being proposed throughout the UK and this size of turbine is also considered appropriate when taking into account residential amenity and the distance between the turbines and nearby dwellings. It should be noted that for the turbines considered in the 80-90 m rotor diameter range, 90 m blade diameter turbines would not result in a perceptible overall increase in landscape and visual impacts when compared with equivalent turbines with an 80m rotor diameter.

The scale of other elements of the proposed development may also be considered relevant, and are now discussed briefly.

The single **anemometry mast** will be the same height as the approximate height of the turbine tower (80 m) so that wind speed data collected reflects the same conditions experienced by the turbines. It is anticipated that the mast will be of steel lattice tower construction, and will accommodate anemometry equipment.

The **sub-station control building** will consist of a single storey building approximately 4.5 m high to the ridge of the roof and with floor area dimensions of approximately 10 m x 15 m. The dimensions of this building are dictated by its function and the scale of equipment it is required to house, although this has been designed and will be constructed to be in sympathy with the local environment.

Each wind turbine will have its own electrical **transformer**. Depending on the turbines selected as a result of the tendering process, the wind turbine transformers could either be housed internally (i.e. within the tower or nacelle² of the wind turbine) or externally, adjacent to the base of each turbine. Many wind farms in the UK have the transformers housed within the turbine tower, however some models are not designed to facilitate this, and therefore the possibility that external housing may be required has been built into the application and EIA. For the purposes of the EIA, it has been assumed that the turbine transformers will be external with a maximum measurement of 5.4 m x 3 m x 3 m high. They will be painted in a colour to be agreed with the planning authorities.

A temporary **construction compound** will also be created approximately 400 m from the site entrance at the junction of the access track which runs south to turbines 1 to 3. It will be approximately 80 m by 80 m and will be constructed from crushed stone. The compound will comprise:

- Temporary portacabin type structures for site offices and welfare facilities including toilets with provision for sealed waste storage and removal;
- Parking for cars and construction vehicles; and

² The nacelle is the housing at the top of the wind turbine tower which holds many of the essential components of the turbine, such as the gearbox and generator.

- Storage areas for components.

The construction compound will be removed from site within three months of the wind farm being fully commissioned.

Landscaping

The development proposed does not contain significant direct landscaping measures in the usual sense associated with more typical development forms. The assessments presented within the ES do however recommend that the inclusion of a carefully sited indigenous scrub planting belt, of approximately 5 m in width, planted in close proximity to the sub-station could assist in screening views towards the sub-station structures from the surrounding landscape as well as better integrating the sub-station compound within the surrounding landscape. Elsewhere, additional planting to strengthen and enhance existing hedgerows within the site, particularly those that have deteriorated in close proximity to public rights of way, could provide further mitigation by partially filtering views towards the development from some viewpoints within the site and the wider surrounding landscape.

Other potential landscaping issues could be considered to arise in relation to a number of ecological enhancement measures proposed within the ES. Whilst these are aimed largely at increasing the ecology value of the site a number of the measures set out entail further planting and infilling of hedgerows, and the establishment of new grassland areas, which could be considered to be relevant to the issue of landscaping. Ecological enhancement measures to be undertaken as part of the wind farm development will include:

- Increasing the diversity of plant species within headlands where these have previously been disturbed;
- The establishment of new grassland areas between access tracks and field edges, in addition to the creation of wider verges on the shoulders of bends following reinstatement after construction;
- Replanting and infilling of existing hedgerows will be undertaken where appropriate, utilising native local species including hazel, hawthorn, blackthorn, dog rose, honeysuckle, with oak and ash standard trees, to be agreed by the local planning authority; and
- Enhancing linkages between Nun Wood, The Slipe and the woods to the north (e.g. Park Wood) to encourage movement of species between these areas. This would involve improving the hedgerows bordering the Three Shires Way bridleway (from the Oaks Wood to close to Park Wood) in combination with retaining an uncultivated strip at least 2m wide either side of the bridleway.

Appearance

Most aspects of the appearance of the proposed development have been covered within the preceding sections of this DAS. The only additional issues highlighted therefore relate to the finish of the turbines and other associated structures. The colour of the turbines will be agreed in consultation with the planning authorities. However, it has been recommended by landscape consultants LDA Design that the turbines are grey or off-white in colour with a semi-matt surface finish. These colours are regressive in appearance and the semi-matt surface finish will reduce any glint produced by the turbines in brighter weather conditions.

Appraisal of development context

The context within which the proposed wind farm development has been progressed encompasses a wide range of issues, which have all been taken into account in evolving and finalising the design that is presented within this planning application. These include Government objectives for renewable energy and carbon reduction, and other elements of planning policy relating both to encouragement of such development and policies aimed at controlling the impacts of development more generally, and the physical, environmental and socio-economic context of features within the area surrounding the site. These issues have been addressed fully within the ES, and have been assessed through a number of methods, against the relevant planning policy context. The methods employed have included desk-top research studies, detailed analysis of the site and the surrounding area through site surveys, monitoring and excavation, in addition to consultation with the public and specialist bodies, as set out below.

Involvement

Consultation on the proposed Nun Wood Wind Farm has taken place with a range of Consultees, including Statutory Consultees, local residents, Parish, Ward and District Councillors, and local MP's. NRL submitted a request for a scoping opinion accompanied by a report outlining the details of studies to be undertaken as part of the EIA process, in August 2005. Scoping responses were received from Wellingborough Borough Council, Milton Keynes Council and Bedford Borough Council, which included feedback from the Environment Agency, Countryside Agency, English Nature and local Wildlife Trusts.

Meetings have taken place with Statutory Consultees including Natural England and the Archaeology departments of the three relevant authorities. These meetings have influenced the content of the ES including proposed mitigation measures.

Consultation with the general public commenced in August 2005 with the circulation of a newsletter with a "response postcard", followed by Public Exhibitions in November 2005. 237 people filled in response postcards before the exhibition with 33% expressing positive comments, 49% expressing negative comments or concerns and 18% with undecided comments or questions to NRL.

Comments forms were available to fill in at the public exhibitions and 211 were completed. 40% of the comments indicated support, with 48% indicating opposition and 12% undecided. The most commonly raised issue is the proximity of the turbines to nearby settlements.

Further to consideration of the comments received, the turbine closest to Bozeat was moved to the south-west to increase the distance between the turbine and the village of Bozeat.

English Heritage raised concerns when they were consulted on the previous planning application regarding the impacts on planned views from a garden terrace at Castle Ashby. In response to the comments of English Heritage the decision was taken to withdraw the application, and review this issue. This current scheme has been designed to address their concerns, and has resulted in a reduction from 16 to 12 turbines, with care taken to ensure that such views would now be satisfactorily safeguarded.

A full range of consultations with bodies and organisations with an interest in the area of the proposed wind farm have taken place in relation to the EIA undertaken on the revised scheme. The approach taken to redrafting of the ES has been discussed with the three LPAs, and has been set out in writing to the Councils.

Energy Policy Context

The objective of the development is the generation of electricity from a renewable source, in line with the Government target to supply 10% of UK electricity from renewable sources by 2010 with an aspiration to reach 20% by the year 2020, which therefore represents a key element of the wider context for the scheme. The 2007 White Paper on energy, entitled “Meeting the Energy Challenge” sets out a long-term strategic vision for energy policy based on tackling climate change by reducing carbon emissions, and ensuring secure, clean and affordable energy as the UK becomes increasingly dependent on imported fuel. This includes aiming for a reduction in Carbon Dioxide (CO₂) emissions in the UK by 60% from current levels by 2050. The White Paper also sets a target for 20% of the UK’s electricity consumption to come from renewables by 2020. The electricity generated from Nun Wood Wind Farm will contribute to the renewable electricity generation targets under the Renewables Obligation, the vehicle for the delivery of this target, which came into operation in April 2002.

Planning Policy Context

National Planning Policy

The need for good design, as embedded within PPS1, is recognized. National planning policy guidance on renewable energy is found in Planning Policy Statement 22 (PPS22): *Renewable Energy* (August 2004). This establishes a positive framework for renewable energy development, stating that the wider environmental and economic benefits of renewable energy proposals should be afforded significant weight. This in turn provides part of the context within which the scheme has been developed, particularly in terms of seeking to maximize the potential energy output from the turbines. Other national policy statements relevant to the broad range of topics considered, which have therefore had a bearing on the design of the wind farm are as follows:

- PPS1: *Delivering Sustainable Development* (2005);
- PPS7: *Sustainable Development in Rural Areas* (2004);
- PPS9: *Biodiversity and Geological Conservation* (2005);
- PPG13: *Transport* (2001);
- PPG15: *Planning and the Historic Environment* (1994);
- PPG16: *Archaeology and Planning* (1990);
- PPG24: *Planning and Noise* (1994); and
- PPG25: *Planning and Floodrisk* (2001);

Regional Policy

Regional guidance is contained within the respective Regional Spatial Strategies and Regional Planning Guidance documents for the South-East, East of England and East Midlands. The following policies, contained within **Table 2**, have been reviewed specifically in relation to the issues of renewable and wind energy development and design more generally:

Table 2: Regional Policies on Renewable Energy and Design

Policy Topic	Regional				
	East of England Plan (May 2008)	RPG for the South East (RPG9 2001, updated 2004)	Draft South East Plan Proposed Changes (July 2008)	RSS for the East Midlands (RSS8 March 2005)	East Midlands Draft RSS Proposed Changes (July 2008)
Renewable Energy and Wind Energy Developments	Policy ENG1: Carbon dioxide emissions and energy performance Policy ENG2: Renewable energy targets	Policy INF6: Regional Renewable Energy Targets Policy INF7: Sub-Regional Targets Policy INF8: Location of Renewable Energy Development Policy INF9: Development Criteria	NRM13: Regional Renewable Energy Targets NRM14: Sub-Regional Targets NRM15: Location of Renewable Energy Development NRM16: Development Criteria CC2: Climate Change	Policy 41: Renewable Energy	Policy 1: Regional Core Objectives Policy 39: Regional Priorities for Low Carbon Energy Generation
Design Considerations	Policy ENV7: Quality in the Built Environment	Policy Q3: <i>Development should be carefully located and designed</i>	CC4: Sustainable Design and Construction	Policy 4: Promoting Better Design	Policy 2: Promoting Better Design

Local Policy

Local Plans and Local Development Plan documents contain guidance on a range of issues relevant to the proposal. The following policies from the relevant Local Plans and Local Development Plans, set out in **Table 3** below, have been reviewed in relation to the specific areas of renewable energy and design.

A full examination of these policies is made in the relevant sections of the ES. In summary, planning policy concerning design considerations has highlighted issues including the extent to which the design of development can minimise the environmental and social impacts of the proposal; and the importance of minimising or improving the visual impact of the proposal, including the extent to which the proposals affect the surrounding landscape.

Table 3: Local Development Plan Policies on Renewable Energy and Design

Policy Topic	Bedford Borough Local Plan Saved Policies (Oct 2002)	Bedford Core Strategy & Rural Issues DPD (April 2008)	Milton Keynes saved Local Plan (Dec 2005)	Milton Keynes Core Strategy Preferred Options (Sep 2007)	Northampton on-shire County Structure Plan Saved Policies (March 2001)	Wellingborough Local Plan Saved Policies (Sep 2007)	North Northampton on-shire Core Spatial Strategy (June 2008)
Renewable Energy and Wind Energy Developments	BE7: Renewable Energy Criteria	CP2: Sustainable Development Principles CP26: Climate Change and Pollution	D5: Renewable Energy.	MI 3: Managing environmental impact through renewable energy provision			Policy 13: General Sustainable Development Principles
Design Considerations	BE29: High Standard of Design BE30: Material Considerations in the Control of New Development	CP2: Sustainable Development Principles CP21: Designing in Quality	D1: Impact of Development Proposals on Locality D5: Renewable Energy		<i>GS5: high quality design and sustainable development</i>	G6: Development within the Open Countryside	Policy 13: General Sustainable Development Principles

Physical Context

The site area measures approximately 496 hectares and is located broadly 9km south-east of Wellingborough, 13km north-east of Milton Keynes and 13km west of Bedford. The site comprises agricultural land and woodland and is characterised by mainly arable fields with smaller areas of pasture. The site is gently undulating rising to a ridge, comprising land at an altitude of approximately 108m AOD.

There is a row of existing 132kV electricity pylons that run through the northern part of the site, from south-east to north-west. This facilitates a direct on site connection from the wind farm to the electrical grid. These pylons represent an existing strong, linear man-made feature. There are also 400kV pylons located just outside the site boundary to the south running south-east to north-west.

Social and Economic Context

The site is in private ownership, and is not open access land, although there are a number of public rights of way that cross the site. These include the Three Shires Way bridleway, which extends broadly north-south through the length of the site, and the Milton Keynes Boundary Walk, which extends broadly east-west through the southern portion of the site. Other public rights of way that cross the site include:

- a footpath extending from the eastern edge of Bozeat across the northern portion of the site towards Harrold;
- a public footpath extending across the western portion of the site connecting the southern edge of Bozeat with The Slipe located in the central core area of the site; and

- a public bridleway aligning part of the southern boundary of Threshires Wood connecting the Three Shires Way with Park Farm to the east of the site.

These public rights of way form part of a wider, comprehensive network of public rights of way that extend throughout much of the area immediately surrounding the site. Further details of this are given in Chapter 7 and Chapter 12 of the ES.

The wind farm development also provides an opportunity for the landowners to diversify and supplement farm incomes. This is supported by national, regional and local policies that encourage rural and farm diversification. The proposed development would generate direct and indirect employment generation.

Site Selection Principles and Constraints

Site Selection Principles

The criteria used to assess potential wind farm sites is discussed in detail in Chapter 2 of the ES that accompanies these planning applications. In summary, the initial set of criteria used to assess whether a project is considered appropriate for a more detailed assessment or further work is outlined here:

- Wind Resource
- Proximity to Dwellings
- Landscape Designations
- Nature Conservation Interests
- Electrical Connection
- Access
- Military and Aviation Constraints
- Availability of Land

The investigations into the environmental constraints at the Nun Wood Wind Farm, together with informal discussions with stakeholders have given NRL a good picture of the constraints to wind farm development in the LPA areas. The potential number of areas on high enough land (and therefore with enough wind resource) and a local grid connection with capacity for electricity generation are limited due to the above key constraints and should be utilised where appropriate opportunities arise which are environmentally acceptable. The wind speed and grid connection are particularly important due to the high capital costs associated with wind farm projects.

Design Principles and Considerations

In response to consideration of the policy, physical and social context presented above, it is possible to identify a number of principles that have been applied to development of the layout, and its design, in parallel with and as a direct result of the various stages of the EIA process, resulting in the evolution of the scheme through at least 7 key iterations, as set out previously, with many more minor iterations through the EIA. The landscape and visual assessment, as well as consideration of built heritage impacts in particular, has influenced the final design.

The final siting of proposed turbines and other scheme elements such as access tracks took into account the following design principles and features on and around the site:

- the existing agricultural land use within the site;
- spacing between the turbines;
- topography;
- woodland, hedgerows and other physical features within the site;
- the distance between turbines and nearby dwellings;
- minimising the number crossings to rights of way, hedgerows and ditches within the site;
- pylons running through the northern parts of the site; and
- presence of archaeological features within the site and cultural heritage features around the site.

Design Summary

The wind farm scale, layout and other aspects of its design, have been informed by design objectives and principles stemming from a range of technical, environmental and social considerations. Alterations to the scheme design have been made in direct response to findings from the EIA, policy guidance and consultation to ensure environmental and social impacts are addressed satisfactorily. Mitigation measures and improvements proposed through the ES would reduce the impact of the wind farm and the approach taken complies with the objectives of design policies at national and local levels.

Access Issues

Introduction

This section of the DAS explains the transport and access principles applied to the wind farm construction, operation and decommissioning in respect of a number of issues raised within SI 1062/2006, as detailed within the introduction section above.

There are several existing access points to the site from the north, east and west. The access from the north is mainly from a farm access and the footpath off Harrold Road. From the east, there is access to the site through Manor Farm, Harrold. From the west, there are existing access points, which run past Bozeat Grange and Cottages and Northey Farm (A509). It is this latter access point which will be used to access the site during construction and operation of the wind farm, as detailed below.

A number of transport options were considered in relation to the delivery of the turbines and other materials to the site. It is proposed to access the site from the A509 north of Northey Farm. An improved access from this road will include the upgrading of an existing farm track entrance to a bellmouth access.

Route Options

The proposed development requires that turbine parts are delivered to a sea port and transported by road to the site. The turbine consists of several parts, with some provided at significant lengths and weights. On this basis, specialist vehicles are needed to transport these parts, referred to within the industry as 'abnormal load vehicles'.

Modes including rail, water and road have been considered for the delivery of the turbine components and construction materials. The transportation of the turbine components pose

significant challenges. Due to their size and weight it is difficult to accommodate turbine components on the UK rail network. Furthermore both in terms of delivery of general construction materials and turbine components, there are no local freight rail facilities in the vicinity of the site. Access by water is not practical for a wind farm in this location in the centre of the country. For these reasons road delivery is the only feasible option.

For the abnormal load routes, a series of potential routes have been considered locally and nationally for delivery of the turbine components. Locally, two routes have been considered between the motorway network and the site. Nationally, three motorway routes have been considered between three east coastal ports and the nearest appropriate motorway junction to the site. These potential local and national routes are set out below.

Local Access Routes

The site access to the wind farm will be from the A509 at Northey Farm. The two potential local access routes are:

- from the A14 (via the A45) to the north of the site (**North Local Route**); and
- from the M1 (Junction 14) to the south of the site (**South Local Route**).

The north local route has been identified as the most suitable route for abnormal load vehicles, as this route does not pass through the centre of any residential settlements.

National Routes (Motorway)

Three potential sea ports on the east coast have been identified as potential access points for the turbine components being delivered by sea from abroad. The three ports considered are:

- the Port of Immingham in Lincolnshire;
- the Port of Tilbury in Essex; and
- the Port of Felixstowe in Sussex.

In order to minimise the impact of the development traffic on the highway network, and to minimise requirements for temporary mitigation measures to be employed, the trunk road network (and primarily motorway and dual carriageway routes) will be utilised to maximum effect for the transportation of abnormal load vehicles.

The Port of Immingham and its associated route has been identified as the preferred route for abnormal load vehicles travelling to the site. This port was chosen due to its previous use for wind turbines, which have successfully used the route identified for the delivery of wind turbine components for Nun Wood, without the requirement for any mitigation measures.

Although the Highways Agency has indicated that the closest port should be used (port of Tilbury), congestion on the M25 could be an issue on this route. The port of Felixstowe has been considered as a possible alternative, although a number of weight restrictions on the A14, in particular at Huntingdon, make this route less favourable than Immingham.

The motorway route from the port of Immingham to M1 Junction 19, meets the approval of the Highways Agency, and the MAC Area managers for Areas 9 and 12, which this route travels through. As a result, this route has been chosen to be the preferred and recommended route.

Access Tracks

Approximately 12km of new tracks will be required to provide access to the individual turbines for construction and maintenance purposes. To accommodate the delivery of turbines and crane(s) on long vehicles, the access tracks from the site entrance to each turbine will be 5m wide. There will also be additional widening on bends to accommodate long vehicles or to provide occasional passing places. After construction, the shoulders of the tracks will be covered with top soil, on the ditch side, where relevant, and seeded with mixed grasses leaving verges some 5m in width. The sections of access track which lead exclusively to the substation and anemometer will be 2.5m wide.

The site tracks will consist of approximately 425mm depth of graded stone aggregate. Running surfaces will be suitably cambered to manage surface drainage flows. Ditch crossings will be included where necessary, the design of which will take into account any sensitive habitats present at the crossing locations.

Access policy, and consideration of relevant Development Plan policies

In formulating the transport and access strategy for the proposed wind farm a number of relevant policies at National, Regional and Local levels were assessed. These are summarised below.

National Guidance

Advice on transportation is provided within the 2001 ODPM³ publication *Planning Policy Guidance 13: Transport (PPG13)*. The objectives of PPG13 are to integrate planning and transport at the national, regional, strategic and local level to promote more sustainable transport choices both for carrying people and for moving freight. PPG13 acts as a guide for regional and local planning authorities in the production of their spatial strategies and development plans.

The key aims of planning policy at both the national and local level are to:

- Promote more sustainable transport choices;
- Promote accessibility to jobs, shopping, leisure facilities and services by public transport, walking and cycling; and
- Reduce the need to travel, especially by car.

It should be noted however, that these aims are more relevant to the operational period of a development rather than the construction period (the only period where considerable levels of traffic would arise for this proposal) and even then are of limited direct relevance given the nature of the proposed scheme. The wind farm will not form a destination, such as those listed in the guidance (noted above) that will be the subject of intensive trip numbers and therefore standard sustainable transport considerations, such as accessibility to the community and via public transport are not relevant. Indeed the overriding considerations regarding the location of the site have included a range of factors, such as the presence of wind as a resource to be captured, and suitable site conditions, including distance from residential properties. The ability to secure appropriate site access, particularly in relation to the construction phase, has however been a key consideration.

³ In May 2006, the responsibilities of the Office of the Deputy Prime Minister (ODPM) transferred to the Department for Communities and Local Government (DCLG), now Communities and Local Government (CLG).

Regional Planning Policy

The only Regional plan containing policies relevant to this development relating to transport and traffic is the East of England Plan (Regional Spatial Strategy for the East of England). This Plan was published in May 2008 and embeds within the statutory planning system a sustainable long term vision for development offering focus on delivering better transport plans and the environmental controls the region needs.

RSS Policy T6 *Strategic and Regional Road Networks* requires that the network be improved, managed and maintained to achieve regional priorities and objectives including reduced congestion, the mitigation of environmental impacts and improved safety. Policy T8 *Local Roads* requires the local road network to be managed in line with Local Transport Plan objectives and priorities to tackle congestion and its environmental impacts, provide efficient vehicular access to locations where this is required and to improve safety, amongst other objectives.

Local Planning Policy

Structure Plans

There are saved policies within a number of structure plans relevant to the development site. These include the Bedfordshire Structure Plan (September 2007) and the Northamptonshire County Structure Plan (March 2001).

Bedfordshire Structure Plan: Policy 25: Infrastructure states that *'Before planning permission is granted for new development which requires the provision of associated on-site and off-site infrastructure, developers will be required to satisfy that they will provide or requisition the necessary associated infrastructure or contribute to meet its cost'*.

Northamptonshire County Structure Plan: Policy T3: Transport requirements and access needs of development states that *'Development will only be permitted where the local planning authority is satisfied how the transport requirements and access needs of the development will be accommodated'*.

Local Plans

Whilst the Borough of Wellingborough Local Plan does not include policies relevant to this development relating to transport and traffic, the relevant policies in the other Local Plans are summarised below:

Bedford Borough Local Plan (saved policies): Policy BE30 states that in determining planning applications for new developments, the Borough Council will have full regard to all material considerations including *'any additional traffic expected to arise from the development, either in relation to highway capacity or general disturbance...'*

Policy E21 supports farm diversification as a response to changing agricultural needs subject to a number of criteria including *'the level and type of traffic generated is compatible with the rural location and the local road network'*.

Milton Keynes Local Plan: Policy D1: Impact of Development Proposals on Locality outlines the reasons for which planning permission will be refused for development deemed to be harmful. One of these reasons is the *'additional traffic generation which would overload the existing road network or cause undue disturbance, noise or fumes'*.

Policy D5: Renewable Energy states that '*Planning permission will be granted for proposals to develop renewable energy resources unless there would be significant harm to the amenity of residential areas, due to noise, traffic, pollution or odour...*'

Policy T10: Traffic states that 'Planning permission will be refused for development if it would be likely to generate motor traffic:

- *exceeding the environmental or highway capacity of the local road network; and*
- *causing significant disturbance, noise, pollution or risk of accidents.'*

Local Development Frameworks

There are three core strategies, at varying stages of production, relevant to the development site and surrounding area. The only strategy that contains policies relevant to this development relating to access is the North Northamptonshire Core Spatial Strategy.

Policy 14: General Sustainable Development Principles of this Core Spatial Strategy states that 'Development should meet the needs of residents and businesses without compromising the ability of future generations to enjoy the same quality of life that the present generation aspires to'. It continues that development should, among other things, have a satisfactory means of access and provide for parking, servicing and manoeuvring in accordance with adopted standards.

It is considered that the transport and access strategy during the construction and decommissioning phases has achieved the most appropriate routes to and from the site for the delivery of abnormal loads and other materials, and that regard has been had, in consultation with the relevant highways agencies/authorities, to minimizing disruption during these periods. Access directly from the A509, and use of trunk roads wherever possible, allows the avoidance of impacts on local roads and in turn on local residents and road users.

The access from the A509 will be improved to meet the necessary visibility requirements in respect of road safety measures, in association with other traffic management measures.

Consultation undertaken and impacts on access

Preliminary consultation on the issue of access has been carried out with statutory bodies/stakeholders on the suitability of abnormal load vehicles using the highway network. These include:

- The Highways Agency (including Management Area Consultant (MAC) managers);
- Northamptonshire County Council (NCC); and
- Milton Keynes Council (MKC).

A summary of the responses received is set out below. Bedfordshire County Council was not consulted given that none of the access route options pass through Bedfordshire, although policy related to transport in Bedfordshire has been considered, as set out above.

Highways Agency

The abnormal loads department of the Highways Agency has been consulted regarding potential routes to the site for the turbine components. The Highways Agency has advised that the nearest suitable port should be used for the delivery of the wind turbine components. However, a case may be put to the Highways Agency for using an alternative port if there are mitigating

circumstances, e.g. the route from the nearest port requiring significant measures to make it suitable for abnormal loads.

The Highways Agency commented that the MAC managers should be contacted for the areas in which the route travels through, for more detailed information on the suitability of potential routes for deliveries. These managers have a good knowledge of the restrictions present within their area.

The MAC managers provided comments that the routes identified are suitable for abnormal load vehicles, without the need for mitigation. Dependant on the timescales for the construction of the site to begin and its duration, it was suggested that deliveries should be aware of M1 widening currently occurring in some locations. It is suggested that a check for temporary traffic management schemes in place that may affect the delivery of abnormal loads would be undertaken, prior to the delivery of turbine parts.

Northamptonshire County Council

NCC was consulted on a potential northern route which ran through their territory. They advised that consideration should be given to the classification and construction of the roads used for delivery traffic, in particular consideration as to potential damage to the fabric of the highway. In selecting the recommended route to the site for deliveries, the trunk road system and in particular motorways have been utilised as far as possible.

NCC raised initial concerns of the ability of bridges north of the site on the A509 to handle the weight of abnormal load vehicles. During the consultation process, NCC undertook a review of all bridge structures along the route, and concluded that these would be suitable for the types of vehicles identified. NCC had no other issues with the potential route identified through Northamptonshire (from the A14).

Milton Keynes Council

MKC was consulted on a potential southern route which ran through their territory. MKC provided comments stating that they had no issues with the types of vehicles identified to use the route.

How issues affecting access have been addressed

In addition to the measures taken in respect of consultation on this issue, and responses to this process as set out above, the ES covers a range of further issues. This includes an assessment of the significance of increased traffic movements on the local road network, which have been confirmed as acceptable in both respects. This includes consideration of cumulative impacts arising from other major developments in the area. The routes intended to be taken for abnormal loads, and local routes to both the north and south, including analysis of potential pinch-points at junctions and roundabouts, and consequent identification of minor temporary street furniture removal measures has also been highlighted. Works required to create the bell-mouth access from the A509 have also been set out, sufficient to enable manoeuvring of abnormal loads into the site. Within the site a network of access tracks has also been shown to enable delivery of components to the appropriate parts of the site. These tracks will be narrowed further to construction. It has been demonstrated that the predicted construction traffic will not have a significant environmental impact on the highway network or a significant impact on highway capacity. Routes to the site have been selected which make the maximum use of strategic routes, in particular motorways and dual-carriageways, which can easily cater for HGVs and abnormal loads. Operational traffic will have an insignificant impact on traffic flows.

However, the following mitigation measures will be implemented in order to control any residual impacts that could occur during construction:

- a Traffic Management Plan (TMP) will be agreed with the highway authority to establish mitigation measures required in order to allow abnormal loads to manoeuvre around certain junctions on the A45 and A509. A police escort will also be required to safely manoeuvre around other junctions;
- road sweeping facilities will be provided, as required, in order to keep site entrances and routes used by construction vehicles free from vehicle deposits and debris;
- wheel and vehicle body washing or other appropriate facilities will be provided in order to keep the site entrances and routes used by construction vehicles free from deposits and debris;
- agreement will need to be made with the police and the local highway authorities in order to ensure safe movement of the abnormal loads, minimising any impact on congestion.

Access for prospective users

The nature of the development is such that there will be few specific users relating to the wind farm itself. Issues regarding access to the site for the purposes of construction and decommissioning have already been discussed above, whilst during the operational life of the wind farm the users will effectively be the technical maintenance staff required to visit on a relatively infrequent basis. There is the potential for people to visit the wind farm, although it is anticipated that such visits will be limited and made in conventional vehicles, with people accessing the wind farm site via the existing public rights of way. Public access will essentially be restricted to use of the public rights of way that cross the site, as the land is otherwise privately owned. Such recreational access will be retained and therefore existing access for such users will not be affected by the proposed development.

Why access points and internal routes were chosen

As set out above, it is proposed that all vehicles accessing the site during the construction, operational and decommissioning phases will use the improved access from the A509 north of Northey Farm, consistent with the objective of minimising disruption to the local road network. This arrangement will require an improved access into the site, the location of which has been informed by the existing access at this point, bearing in mind that traffic management measures will mitigate any safety issues relating to the slow manoeuvring of abnormal vehicles during construction and decommissioning. Regard has also been had, in assessing options for the distribution of access tracks within the site, to the need to following the alignment of existing hedgerows, so as to minimize disruption to agricultural operations as far as possible. Additional factors determining the internal layout of tracks has been the objectives of utilizing existing tracks as far as possible, in turn reducing the need for creation of new tracks and minimizing the need to cross ditches and water features which could potentially provide wildlife habitats. Naturally the distribution of turbines and other built infrastructure across the site, which will ultimately be served by the tracks, has also been a principal guiding factor.

Maintenance of access feature

It is not envisaged that there will be a need to provide ongoing maintenance relating to the access features described above. The improved access from the A509, including any landscape features temporarily removed can be restored as appropriate, along with any other temporary measures

required. The level of traffic access required during the operational phase of the wind farm, will be so low that no further maintenance requirements is anticipated.

Design and Access Conclusions

The wind farm scale, layout and other aspects of its design, have been informed by design objectives and principles stemming from a range of technical, environmental and social considerations. Alterations to the scheme design have been made in direct response to findings from the EIA and policy guidance and public consultation to ensure environmental and social impacts are minimised. Access issues arising largely from the construction and decommissioning phases of the proposed development have been discussed and local and national routes for the movement of abnormal vehicle loads to the site have been agreed with the relevant consultees.