
Non Technical Summary

1.1 Introduction

Nuon UK Limited is seeking planning permission to construct a wind farm comprising three wind turbines and ancillary infrastructure at Airfield Farm (a former US Air Force base) in Bedfordshire. The Airfield Farm site is located southeast of the village of Hinwick, Bedfordshire to the north west of Bedford. It is situated immediately adjacent to the Santa Pod Raceway and comprises cultivated arable land.

This Non Technical Summary forms part of the Environmental Statement (ES) for the proposed wind farm. The ES presents information on the identification and assessment of likely significant environmental effects of the proposed wind farm at Airfield Farm, in accordance with the EIA Regulations (Town and Country Planning (Environmental Impact Assessment) (England and Wales) Regulations 1999). It also comprises a main volume together with an accompanying volume of figures. The NTS provides an overview of the findings of the ES. More detailed information is presented in the ES.

1.2 Scheme Design and Description

The Airfield Farm site was initially identified to Nuon by Bedford based land agents Robinson Hall. Following checks in relation to its environmental and technical potential, Nuon concluded that the site provided an opportunity to design a commercially viable wind farm without compromising the local environment and recreational amenity of the area.

In June 2007 Nuon were refused planning permission for a scheme at Airfield Farm that comprised nine wind turbines plus ancillary infrastructure. The site boundary for this previous scheme extended from Santa Pod Raceway towards the village of Hinwick. In light of the response to the previous planning application the proposed wind farm is on a reduced scale. The remaining turbines are located within the southern half of the original site boundary and have been located to avoid any unacceptable effects on residential properties, Listed Buildings and the Scheduled Monument, and Public Rights of Way, especially bridleways.

It is now proposed to construct and operate a wind farm comprising three wind turbines and ancillary infrastructure including access tracks and a control building at Airfield Farm. Construction of the proposed wind farm will take approximately nine months and be in accordance with industry standard techniques and best practice. The wind farm will be designed with an operational life of 25 years and at the end of this period it has been assumed that the wind farm will be decommissioned.

The wind turbines will be installed on foundations comprising stone and concrete. Each wind turbine requires an area of hardstanding to be built adjacent to the turbine foundation which will be left in place following construction to enable maintenance work. The wind turbines will be connected to the control building via underground electrical cables which will then be connected to the local or national distribution network to the west of the site. It is anticipated that there will be a requirement for approximately 2.56km of on-site access tracks within the

development, use will be made of existing access road and disused airfield taxi-ways requiring only 1.43km of new track to be built on agricultural land.

The specific choice of wind turbine to be installed at Airfield Farm is dependent on the final commercial choice following a competitive tender process. However the chosen wind turbines will have a maximum height to blade tip of 126.5m. The maximum height to blade tip will be a combination of the hub height and rotor diameter. The reference wind turbine used to establish the effects assessed in this document, the Enercon-E82 model, has a power output of 2MW meaning the proposed wind farm would have a maximum installed capacity of 6MW in total.

If assuming a power output of 6MW, the annual output of the proposed wind farm is approximately 14,000MWh per year. It has been estimated that the yearly electricity output from the proposed wind farm will be equivalent to the approximate domestic needs of around 3,000 average households in Britain.

It is widely accepted that electricity produced from wind energy has a positive benefit with regard to reducing carbon dioxide emissions. In estimating the actual saving it is important to consider the mix of alternative sources of electricity generation, for example, coal powered and gas powered. However, at the time of writing no single figure for the amount of carbon dioxide emissions that could potentially be saved as a result of switching to wind generation has been agreed. In the interim, the British Wind Energy Association (BWEA) and the Advertising Standards Agency (ASA) have agreed that it is appropriate to compare wind generation against a range of values based on coal and gas powered generation.

Carbon dioxide emissions from gas powered electricity generation and coal powered electricity generation are estimated to be 370kg/MWh and 860kg/MWh respectively. Based on these figures, the savings associated with generating approximately 14,191MWh of electricity per year from wind power will be between 5,250 tonnes and 12,204 tonnes of carbon dioxide. Over the 25 year lifetime of the proposed wind farm the total savings will be between 131,250 tonnes and 305,100 tonnes of carbon dioxide. These estimates are based only on the UK's current energy mix and cannot be assumed to be accurate for future years (although all avoided emissions can be considered to be important).

1.3 Environmental Impact Assessment

EIA is a systematic process that must be followed for certain types of project before they can be given development consent. Given the sensitivity of the surrounding environment at Airfield Farm (e.g. Hinwick House, Hinwick Hall and Wold Farm Moated Enclosure) Nuon recognised that an EIA would be needed. Nuon also recognise that the structured EIA process can play an important role in developing the wind farm design. The EIA process has given consideration to all environmental topics but has been focused on those relating to likely significant environmental effects as follows:

- Socio-economics, land use and public attitude;
- Landscape and visual;
- Noise;
- Ecology;

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- Traffic;
 - Cultural heritage;
 - Hydrology and hydrogeology; and
 - Infrastructure, telecommunications, television, aviation safety and shadow flicker.

1.4 Scoping and Consultations

Consultation both to agree which environmental topics need most attention (scoping process) and to understand public perception of the wind farm in order to help in the design process is a key part of EIA. Nuon, their appointed public relations advisor and Entec undertook extensive consultations in relation to the previous scheme which was refused planning permission including a public exhibition at Podington Cricket Club and more recently have distributed information leaflets to local residents.

In light of the response to the previous planning application, consultations were resumed with those organisations who had an interest in the environmental features potentially affected by the revised scheme. Following the issue of a scoping request to Bedford Borough Council a scoping opinion was received in June 2008 which included responses from Natural England, the Environment Agency and Bedfordshire County Council.

1.5 Planning and Environmental Policy Context

Interest in renewable energy production (such as that produced by a wind farm) has arisen in response to growing concern about the rise in atmospheric levels of carbon dioxide and other greenhouse gases, and the changes in global climate that this could be causing. Burning fossil fuels (coal, oil and gas) is a major contributor to greenhouse gas emissions and reducing their use and increasing the proportion of power generated from renewable energy sources is seen as a vital part of reducing these emissions (increased energy efficiency also has a vital role to play).

In order to meet international obligations, the UK government is committed to reducing greenhouse gas emissions in an attempt to reduce the effects of climate change that are already being experienced. The UK Government expects that a significant proportion of the power generation capacity required to replace that generated from fossil fuel combustion will come from wind farms, and that in the short term these will be primarily on land rather than offshore. The UK has one of the windiest climates in Europe, giving the country great potential to use this resource to generate electricity.

The ES identifies that a range of policies exist that serve to encourage the development of renewable energy sources and establish targets for their progressive introduction. Planning Policy Statement 22 is of particular relevance and lists a series of key principles which are designed to support the expansion of renewable energy production whilst ensuring appropriate environmental safeguards. National Planning Policy Guidance, coupled with regional and local development plans, then set the individual framework for decision making, establishing the basis on which development could be progressed.

The East of England Plan, adopted in May 2008, sets out the Regional Spatial Strategy for the East of England, including Bedfordshire. This document forms the overarching strategic strategy for Bedford Borough's Local Development Framework which will supersede the existing Bedford Borough Local Plan. An assessment of the extent to which the proposed wind farm accords with planning policy is contained within a separate Planning Statement which does not form part of the ES.

1.6 Environmental Effects

The following sections provide a brief summary of the main findings of the EIA as set out in the technical sections within the full Environmental Statement.

1.6.1 Socio-Economics, Land Use and Public Attitude

It has been estimated that the yearly electricity output from the proposed wind farm will be equivalent to the approximate domestic needs of around 3,000 average households in Britain. It is also pertinent to note that from a socio-economic context, the wind farm will make a contribution to the alleviation of the adverse consequences of global warming by providing a source of energy that does not involve the emission of greenhouse gases. Such beneficial effects cannot readily be ascribed to particular individuals or groups, nor the scale of the benefit readily considered other than simply in terms of the amount of power generation and total level of emissions avoided. Nonetheless, for the purposes of this assessment, the contribution of renewable energy that provides a net supply of power to the electricity distribution system and in turn contributes towards the diversity and security of the UK's energy supply is considered to be a significant benefit.

The development constitutes a large investment in the area by Nuon. While companies bidding for the work will do so through an open tender it is likely that many will sub-contract to local companies employing local people. Local businesses should also benefit from increased spend by the construction workforce during the period of construction of the wind farm. No adverse effects on existing businesses, either in the immediate vicinity or more widely in the tourism industry, are envisaged during either construction or operation of the wind farm. The wind farm provides the opportunity for the landowner to receive a steady income through diversification, which would support ongoing investment and management of the site.

The incorporation of appropriate stand-off distances from sensitive receptors is considered to be the most effective method to ensure that the proposals do not have unacceptable adverse impacts on the relevant socio-economic receptors; residential properties and public Rights of Way (PROWs). There are no proposals to extinguish any PROWs or other recreational routes and disruption to these routes shall be kept at a minimum during the construction and then operation of the wind farm at Airfield Farm.

Overall it is expected that the proposed wind farm at Airfield Farm will have a positive socio-economic effect.

1.6.2 Landscape and Visual

For wind farms, landscape and visual assessment (LVA) is one of the key components of the EIA process. The main objectives of the LVA have been to determine the likely effects of the proposed wind farm on the existing landscape resource and upon the range of potential visual

receptors within the study area. The LVA has been conducted across a study area of up to 30km from the wind farm and has incorporated a desktop review, field study and modelling of the predicted effects through visualisations such as photomontages and wireframes.

Landscape Assessment

The construction and operation of the proposed wind farm at Airfield Farm would result in a limited number of landscape receptors sustaining a 'medium' magnitude of landscape change and that, at least initially, these changes would be likely to be perceived as negative, mainly due to the scale of the turbines. As these are not related to the loss of existing landscape elements or the disruption of existing landscape patterns, these changes and their consequent effects would be restricted to existing defined landscape character areas where the turbines would be new components in forming the setting of at least some of the defined landscape character types and areas. The wind farm would be located within a working landscape that has been subject to a variety of general and site-specific changes and pressures over the past half century, some of which are likely to continue throughout the proposed operational period of the wind farm. Some of these have the consequence of either providing some degree of precedence or altering perceptual characteristics so as to reduce the sensitivity of certain landscape receptors to this magnitude of landscape change. Hence it is concluded that overall the proposal is acceptable in landscape terms with few landscape receptors being affected and some long-term but reversible changes to local landscape character in an area that has already sustained considerable changes. Experience with other prominent developments that have become local landmarks demonstrates that over time they can become acceptable elements in the local landscape and add to the sense of place. In the case of wind turbines potential acceptability could be hastened by the increasing concern about climate change and the need to be seen trying to mitigate it. In these circumstances given that there would be no significant adverse effects upon any landscape character area or designations, it is concluded that the proposed wind farm at Airfield Farm would be acceptable in landscape terms.

Visual Assessment

The visual assessment concluded that the proposed wind farm at Airfield Farm would be acceptable in terms of its overall visual effects upon identified receptors. The introduction of three 126.5m high structures into existing views would always result in some visual receptors views being subject to medium or high magnitude of change. However careful site selection and revisions to the layout design which has paid due attention to the baseline characteristics of the detailed study area and in particular the area within 2.5 km of any of the turbines has enabled the proposed wind farm to be designed in such a way that only a small proportion of the large numbers of potential visual receptors will sustain significant adverse effects. Consequently the visual assessment concludes that the proposed wind farm should be considered to be acceptable in visual terms.

Cumulative Effects

The assessment of the potential cumulative landscape effects that could arise as a consequence of the operation of the proposed wind farm at Airfield Farm concludes that generally it would have very limited incremental effects on the various aspects of landscape character, aesthetics and designations and that it would have a weak relationship with the only existing wind farm in the in the study area: Burton Wold Wind Farm. There would be minimal discernible effects upon the integrity or setting of any locally designated landscapes, local landscape character areas or aesthetic considerations such as sense of distance, sky lining and scale. The lack of

cumulative landscape effects is due to the absence of any other existing, consented and proposed wind farms within the detailed study area with which cumulative relationships could arise.

1.6.3 Noise

Noise can have an effect on the environment and on the amenity enjoyed by individuals and communities. Noise is often therefore an important consideration in the determination of planning applications.

The noise assessment for the proposed wind farm at Airfield Farm considered noise from construction, operation and decommissioning of the site. For each phase, the assessment considered compliance with the applicable noise limit. Receptors considered are residential properties adjacent to the proposed wind farm.

Construction noise effects are normally of a temporary nature and comprise both moving and static sources. The results of the assessment indicate that the separation distance between turbines and receptors, along with standard noise controls, is sufficient to ensure that any construction or decommissioning noise effects will be minimised. No significant impacts are anticipated in this regard.

When operational, wind turbines can emit two types of noise – mechanical noise and aerodynamic noise. The main sources of mechanical noise are from internal components housed within the nacelle (e.g. the gearbox and generator). Mechanical noise from a modern wind turbine is negligible as the nacelles are insulated to reduce noise emissions and the various mechanical components housed within the nacelle are acoustically isolated to prevent structure borne noise. Aerodynamic noise occurs from the movement of the blades passing through the air. At higher wind speeds aerodynamic noise is usually masked by the increasing sound of wind blowing through trees and around buildings.

The design of the scheme is such that, based upon an Enercon E82 2MW turbine with some noise constraints to meet limits at Unit 11 (an industrial unit which has been converted into a residential property) and Santa Rosa worst-case predictions of operational noise levels lie within noise limits derived from measurements taken at a number of receptors surrounding the wind farm.

A range of turbines are appropriate for the site, the final model eventually being selected by competitive tender. Any turbine installed will be required to meet the noise limits derived herein, by way of planning condition, inclusive of any penalties for tonal noise.

In conclusion, it is considered that the proposed wind farm at Airfield Farm will comply with all relevant standards and guidelines for noise designed to protect residential amenity.

1.6.4 Ecology

Ecological surveys were carried out for the Airfield Farm site and surrounding land in relation to the previous scheme. These were updated in 2008 as appropriate. Surveys included an Extended Phase 1 Habitat Survey; badger survey; water vole survey; great crested newt (GCN) surveys; bat surveys; and bird surveys. The survey requirements were established following a desk-based exercise and consultation with a variety of local and national ecological organisations holding records of legally protected or otherwise notable species.

Overall the Airfield Farm site is of limited nature conservation value, with habitat and species assemblages typical of those found within the wider area. Potentially significant effects on those more valued habitats that do exist have been overcome primarily through avoidance of impacts during scheme design and the retention of existing vegetation to act as a natural buffer.

Common pipistrelle (*Pipistrellus pipistrellus*), soprano pipistrelle (*Pipistrellus pygmaeus*) and Daubenton's bat (*Myotis daubentonii*) have been recorded foraging along the site boundary habitats, but no roosts have been recorded. There are records of barbastelle bats (*Barbastella barbastellus*) located in the adjoining woodland (Great Odell Wood), although none were recorded during any of the surveys.

There is a very small amount of potential reptile habitat located on-site, but the presence of reptiles has not been confirmed despite site surveys. There are no badger setts in the vicinity of the turbine locations. It has not been possible to confirm the absence of setts in all boundary areas of habitat. No water voles have been recorded on-site either.

There is only one pond on-site or within 500m of the site boundary. During the Great Crested Newt (GCN) survey undertaken in 2004, a 'small' population of GCNs (as defined in the Great Crested Newt Mitigation Guidelines) was confirmed as occurring within this pond. As a result, during the previous scheme it was anticipated that an application to Natural England for a licence to conduct works would be required.

The Natural England guidelines for GCN state that survey information to inform a licence is only considered current if it is no more than two to three years old. Consequently a further survey was undertaken in spring 2008. This survey demonstrated (as far as possible) that GCN were no longer present in the water body. The absence of this species four years later is possibly attributable to the large population of carp that now exists in the waterbody and the fact that the waterbody receives polluted run-off from Santa Pod Raceway, which would inevitably place in question the long term survival of a population of GCN in this waterbody. This said, it is possible that a small population of GCN juveniles or non-breeding GCN may occur in the limited areas of terrestrial habitat located around the waterbody, i.e. the scrub and tall ruderal vegetation.

Although some elements of the breeding bird community at Airfield Farm are considered to be of medium conservation importance, effects on them due to land take, displacement and disturbance during the construction and operational phases of the development are unlikely to be significant (due to the limited scale of the project and the general lack of evidence of significant effects on breeding birds at operational wind farms).

In four areas of the UK, red kites have been reintroduced from Spain. One of the areas where the birds were reintroduced is Fineshade Woods in Northamptonshire, about 40km from Airfield Farm. This scheme has been very successful, with the numbers and geographical extent of the birds growing significantly. As a result red kites have now colonised Bedfordshire. Although there is some potential for collision with wind turbines by red kite, the empirical evidence suggests that such collisions are unlikely, and would not be significant at a regional or national level. Given that the county population is likely to increase at a similar rate to those recorded in other parts of the UK in the last 25 years, the significance of any effects at a county level would decrease with time.

The winter bird community features populations of golden plover and lapwing that are considered to be of county importance. While based on empirical evidence, risk of collision with turbine blades by these species is likely to be very limited; there is the potential for partial

displacement to occur, though significant impacts are not anticipated. Nonetheless, to add to the wider knowledge bases on bird/wind farm interactions, it is proposed that post construction monitoring to determine the scale of any effect is undertaken.

1.6.5 Traffic and Transportation

The main transportation impacts will be associated with the movements of commercial Heavy Goods Vehicles (HGVs) to and from the Airfield Farm site on the A45 (T), A509, B570, B569 and minor road to Hinwick from the B569 during the construction phase of the development. With very few vehicle movements associated with the operational phase it was agreed, through scoping, that operational vehicle movements did not need to be considered. Decommissioning impacts were not included in the assessment as the baseline will no longer be relevant after the 25 years of operation.

The maximum (excluding concrete deliveries) traffic impact associated with the construction of the wind farm would occur in month one of the anticipated construction timetable when a daily average of 5 HGV trips to the site and 5 trips from the site are predicted. This represents a maximum increase in HGV numbers of 1.23% on the A509 (one of the two routes for which traffic count data is available). Technical limitations may require all the concrete for an individual turbine base to be delivered on one day. As a result there will be 3 days when 59 deliveries of concrete will occur (118 two-way trips). With all other deliveries suspended on these days the concrete deliveries lead to an increase of 14.50% in HGV movements on the A509. Neither of these levels is considered to be significant in the context of environmental effects.

The percentage increase in HGV movements on the B roads to site cannot be calculated as traffic count data is not available. It has therefore been assumed that a detailed assessment of effects is required in these areas.

The assessment has concluded that, during days involving concrete delivery when an additional 118 HGV movements per day are generated, there would not be any significant traffic and transport related environmental effects. Furthermore, with the implementation of a Traffic Management Plan the level of HGV movements per day is considered to be acceptable and will not lead to significant delays or disturbance to other road users.

1.6.6 Cultural Heritage

The cultural heritage assessment involved an assessment of the likely significant effects of the proposed wind farm on features of cultural heritage interest, including potential effects upon the setting of off-site features, during the construction, operation and decommissioning stages of development.

There are no designated cultural heritage features within the site. However, the scheduled monument of Wold Farm Moated Enclosure lies just outside the site to the west, some 280m from Turbine 1. The nearest listed buildings to the site are the main house and a barn at Hinwick Lodge Farm to the north east of the site, beyond Santa Pod Raceway. Other listed farmhouses include Hobbs Green Farm and New Farm, both of which lie some 1.7km from the turbines, to the south east and east of the site respectively. Higher graded buildings closest to the site are the Grade I Parish Church of All Saints in Odell to the south of the site, and the Grade I Hinwick House, which lies nearly 2.5km to the north west of turbines. Grade II* listed Colworth House lies around 2.5km to the east of the site and Grade II* listed Hinwick Hall lies

over 2.7km from the turbines to the north of the site. The Grade II registered late 18th and early 19th Century historic park and garden which surrounds Hinwick House lies some 2.2km from turbines at its nearest point. Directly to the north of this and adjacent with it is the park and garden surrounding Hinwick Hall, which is also Grade II listed.

Other recorded features include the former airfield of RAF Podington, within which the site is situated. It is likely that a pond at the south western end of the former runway is that referred to in the Sites and Monuments Record (SMR) as Sir Rowland's Pond and Mound (SMR 2990), although this lies at a slightly different NGR to that quoted in the SMR. Forty Foot Lane, an ancient trackway which survives as a green lane, lies directly to the north of the site.

There is little evidence of archaeological remains within the site. However, numerous cropmark sites and artefact finds, particularly to the north of the site, suggest both prehistoric and native Roman activity.

Direct effects of the proposed wind farm on known cultural heritage features have been avoided through scheme design. However, the general potential has been identified for unrecorded remains, particularly of a prehistoric date, to exist within the site, although no such remains have been identified and there is no reasonable expectation that any remains will be encountered which are of sufficient importance to warrant their preservation in situ.

Accordingly, it is proposed that provision be made for the appropriate excavation and recording of features identified during construction, effecting their preservation by record, in accordance with Planning Policy Guidance 16 (Archaeology and Planning). This would be secured through a condition attached to the planning permission. Given micro-siting flexibility in the proposed layout, when taking into account other environmental and technical constraints, it may be possible to avoid any features identified during the evaluation. However, should this not be possible, the evaluation would inform the method for the preservation by record of any remains whose loss is unavoidable. Given the limited ground disturbance and the potential to avoid direct effects on any important remains identified, it is predicted that there will be no significant effect on buried archaeology.

The level and extent of effects on the setting of cultural heritage features as a result of the wind farm is anticipated to be overall of a low level, owing to the existing setting of features, views from and to these, and screening afforded by trees and built development. There are relatively few scheduled monuments within the vicinity of the wind farm. No further mitigation or compensation measures are suggested and no significant effects have been identified.

Overall it is considered that the development is not likely to have significant effects on cultural heritage resources.

1.6.7 Hydrology and Hydrogeology

The site includes a number of watercourses and field drainage ditches and also sits partly over a major aquifer with the potential to supply exploitable quantities of groundwater.

The assessment has highlighted a number of potential impacts, primarily during construction which could have adverse effects. The most serious potential impacts are associated with sediment-laden runoff and contamination entering watercourses or groundwater. However, the use of mitigation measures, in accordance with current best practice, will ensure that any negative impact is quickly controlled and at most of minor significance.

1.6.8 Infrastructure, Telecommunication, Television, Aviation Safety and Shadow Flicker

The proposed wind farm has been designed to take account of infrastructure, telecommunications, television and aviation safety constraints.

If a reduction in television reception quality occurs in the surrounding area, it is most likely to be noticed when the wind farm becomes operational. To mitigate this, Nuon will accept a planning condition to assess current television signals in advance of development and it will mitigate post-development where effects are attributable to the wind farm. The condition would require Nuon to meet the cost of investigating and rectifying any problems should they arise.

An unacceptable effect in terms of infrastructure, telecommunications, television and aviation would be one that significantly disrupts a service. There are no known effects in this respect.

An assessment of shadow flicker in accordance with the Companion Guide to PPS 22 was undertaken. The theoretical potential for the occurrence of shadow flicker has been shown to be limited to up to 60 hours per year for properties at Tower House and up to 35 hours per year at Unit 11. Additional properties in proximity of these two assessment locations would experience similar levels of shadow flicker.

The frequency and duration of shadow flicker events will be significantly less in reality than the maximum calculated figures reported in this assessment, if the effects of cloud cover and the orientation of the turbine blades away from properties (to face the wind) are taken into account.

If shadow flicker is actually experienced when the wind turbines have been erected, several mitigation measures are available to ensure that neighbours of the wind farm are offered a reasonable degree of protection. This could involve providing a natural form of screening (trees/bushes) at the developer's expense. If this was not deemed satisfactory then wind turbines could be programmed to stop operating during the specific times when flicker is experienced.

1.7 Obtaining Further Information

Copies of this Non Technical Summary may be obtained free of charge from:

Nuon Renewables

15e Cuxhaven Way

Longrock

Penzance, Cornwall

Copies of the Environmental Statement may also be obtained in Adobe pdf format on CD ROM at a cost of £20 from Nuon Renewables at the above address. Similarly, paper copies of the Environmental Statement may be obtained from Nuon Renewables at a cost of £150 each.

In addition, copies of the Environmental Statement will be available for public inspection at Higham Ferrers and Rushden Public Libraries.

The Environmental Statement can also be viewed at Bedford Borough Council offices by prior arrangement with Peter Bull.

Any representations with respect to the application should be made to Peter Bull, Senior Planner, Bedford Borough Council, Town Hall, St Paul's Square, Bedford, MK40 1SJ identifying that it refers to the proposed wind farm at Airfield Farm and specifying the grounds for representation.