

2. ENVIRONMENTAL ASSESSMENT

2.1 Introduction

Following the Scoping Consultation, a number of assessments were carried out to inform the Environmental Statement. These assessments are discussed in detail below.

2.2 Site Selection

The selection of the Cambridge Wind Farm site has come about through careful consideration of a number of economic, technical, planning and environmental factors. In particular, the site has:

- the agreement of the landowners for the construction of a wind turbine project;
- a good wind resource;
- good road access; and
- good geological strata for the construction of wind turbines.

In terms of the environmental considerations, the Cambridge Wind Farm site has the following merits:

- it does not lie in an area designated for ecological protection;
- it does not lie in any nationally designated areas for landscape; and
- there are no nationally important archaeological sites within the project boundary.

A number of potential areas in the Cambridgeshire region were considered and investigated by the developer using Geographical Information Systems (GIS) through which technical and environmental parameters in wind farm planning can be mapped. The Cambridge site was considered to be the most suitable for the development of a medium sized group of turbines. The other areas considered were largely compromised by the presence of the Area of Best Landscape, airsafeguarding zones around Cambridge Airport, RAF Witton and RAF Mildenhall, several small airfields and a host of other environmental and technical constraints that

would preclude the feasibility of a wind farm development.

The final selection of the Cambridge Wind Farm site was then dependent on a number of factors that would ensure its technical and economic viability. These are discussed in detail below.

Land Availability

The complete site area for the wind farm proposal is under the ownership of three landowners, all arable farmers. Agreements have been put in place with these landowners to secure lease of the land for the construction and long-term operation of the wind farm.

Wind Resource

Interrogation of the National 'NOABL' wind resource database, produced by the DTI, provided indicative wind speeds for the site. The figure for the centre of the site is 6.40 metres per second at 45 metres height. Consequently, there is clearly a viable windspeed available at the location of the proposed wind farm as higher windspeeds would be expected at the hub height of 60 metres, which this proposal is based upon.

A planning application for a temporary wind monitoring mast was granted by South Cambridgeshire District Council in July 2003. Average wind speed data from this mast has to date exceeded the prediction made by the wind resource database.

Site Access and Land Considerations

In the construction of a wind farm, large structures such as tower components and blades need to be delivered to a site, and these parts can be considerable in size. The wind turbine blades will be 40m metres in length. This can present considerable problems in terms of vehicle movements on public highways and especially the 'cornering' of such vehicles, which is often constrained by hedgerows and stone walls.

Access to the site is relatively straightforward and will require minimal disturbance to traffic

movements and road systems in the area. The turbines, the associated infrastructure and construction materials can be delivered to the area directly from the A14, which is designed to host large Heavy Goods Vehicles. This will present no difficulties in terms of delivering the 40m blades and tower sections.

The turning off the A14 would be at junction 28, Cambridge Services, Boxworth.

The delivery route then continues around the service station roundabout towards the village of Boxworth. The temporary removal or permanent relocation of one lamppost is required to accommodate the oversailing components as the load circumvents the roundabout.

The site entrance is located some 750m along the road from the Cambridge Services roundabout, just before it bends twice into Boxworth. The bends in the road are very open, giving both local and construction vehicles excellent visibility.

Electrical Grid Connection and Ancillary Works

Wind power is a form of embedded generation that connects into the local electricity distribution network rather than the National Grid. The site should be close enough to a grid connection point, at preferably 33kV or 11kV, to minimise the amount of off-site works required to make the connection.

Each wind turbine will generate electricity at 690V within the nacelle. This will then be stepped up to the connection voltage by a transformer hosted within the turbine and transmitted to the wind farm substation via underground cables where the connection to the distribution network will be made.

The site substation is split into two principal sections. Access to one half is only granted to the developer, and access to the other half is only granted to the connecting utility. It is at this 'junction' where the developer's responsibility for the grid infrastructure ends, as the distribution network is the sole responsibility of the connecting Distribution Network Operator (DNO).

The responsibility for the connection from this point to the local network falls under the remit of the DNO, EdF Energy. The connection is outwith the developer's control and is planned, wayleaved if necessary, and installed by the DNO which will investigate the options for the most suitable connection point. However, the cost of connection falls to the developer.

Provisional investigations carried out by the developer indicate two possible connection points. It is envisaged that the connection would follow the roadside verge to the A14 and then either head towards a primary 33kV substation at Oakington, or towards a primary substation at St Ives. The connection to the grid is subject to a separate planning application procedure under the Electricity Act 1989.

2.3 Project Evolution

Once the site selection process described above identified the Cambridge Wind Farm site as a suitable location for wind development, provisional designs and layouts of the wind farm were drawn up. The designs informed the Scoping Exercise whereby South Cambridge District Council and the statutory undertakers could review the provisional layouts and provide guidance on the issues to be covered by this environmental impact assessment.

Many iterative changes to the site design and layout have occurred since the Scoping consultations. This is because the individual assessments have informed the generation of new wind farm designs and layouts so that environmental and technical media, particularly existing telecommunications links, highways and footpath provisions, ecological considerations, and feedback regarding visual characteristics of the site can all be accounted for.

▪ Telecommunications and Utility Services:

Consultations with the telecoms operators identified seven microwave links crossing the site from various locations and at various angles. These links are owned and operated by Cable and Wireless (2 links), Castle Transmission (2 links on the same

path), Orange (1 link), O₂ (1 link) and BT (1 link). The network operators requested buffer zones around the centre of each link to the centre of the turbine towers, to ensure that there would be no interference caused by the structures. These links have been accommodated within the layout.

- Two gas mains have also been identified. These are owned and operated by Transco and Connect Utilities. The positions of the pipes have been micro-located with Transco engineers and appropriate clearances built into the layout.
- Finally, an 11kV line crosses the north west corner of the site near to the Conington road. A minimum of 6m clearance from the line is required - this has been built into the wind farm layout. Given that the wind turbines will be erected using cranes, safe working practice and risk assessments under Construction Design and Management (CDM) Regulations will be required when works are carried out proximate to the line. This will be undertaken utilising the services of the DNO (EdF Energy) site engineers during the construction of the project.
- **Highways and Public Rights of Way:**
The Highways Agency was consulted at the early stages of project development to establish the appropriate safeguarding buffer from the A14. In general, it is normal to expect a clearance of wind turbine tip height from the carriageway as with many operating wind farms around the UK. However, in order to account for the preferred plan under the Cambridge-Huntingdon Multi-Modal Scheme, which plans for potential widening of the carriageway and a potential junction near to the existing turn off to Conington, a buffer from the carriageway of 250m was agreed at a meeting with the Highways Agency in December 2003. At that point in time the Highways Agency had not formalised plans for the A14 redevelopment and they expressed a willingness to work with and around the wind farm proposal.

The County Bridleway's Officer and British Horse Society were consulted following the scoping meeting. A 200m clearance from the bridleway running from Boxworth to Conington was requested. Due to restrictions on turbine spacing it was very difficult to accommodate this requirement. However, data from the temporary anemometry mast has confirmed the prevailing wind direction to be South West. This allowed turbine spacing across the wind to be reduced and the site to be redesigned to accommodate the bridleways interest.

- **Visuals:**

At the scoping stage, it was observed from the wireframe visuals that the layout appeared to be fragmented. A single turbine sited adjacent to a telecom's buffer zone appeared to stand alone from the main array. Concerns raised by both the planning office and the landscape and visual consultant resulted in the relocation of this turbine to the north-west end of the site.

At this point, a constraint on the western end of the site was lifted. The dwelling known as New Barns Cottage, wholly owned by the principal landowner of the site, is to be taken out of residential use, should the site be permitted. This allowed a further turbine to be located at the north-west end of the site, further realising the site's potential. Before this amendment was made, the landscape and visual consultant was asked to assess the suitability of the site for sixteen wind turbines. At this point a crosscheck was also made to the locations of the wind turbines closest to Boxworth and Conington. It was confirmed through landscape and visual assessment that the relocation of the single turbine improved the site design; the site and landscape were assessed to be able to accommodate both this extra turbine and also the complete array, with appropriate separation distance from the nearest settlements.

The layout now formed a parallel arc, following the landform off the main ridge,

sweeping in a gentle curve from the south-east to the north-west corner of the site.

At the public exhibition on 19th May 2004, several personal views were presented, suggesting that the wind farm was potentially too large for its position. The developer, mindful of this feedback, reviewed the comments and analysed them against the environmental assessments conducted in the formulation of this wind farm proposal. Most pertinent to this issue are the findings of the landscape and visual consultant who, as described above, established at a very early stage upon reviewing the landscape type and character in the area, that the scale of the wind farm is appropriate to this form of landscape and that the overall capacity is well sized. Further to this, the developer has considered the balance between this limited number of public views stating that the wind farm is out of scale with the area with the objectives of National policy and also renewable energy, namely to optimise areas with good wind energy potential as tools in combating global warming, climate change, environmental pollution and human health effects from the emission of harmful emissions that arise from fossil fuel use. All views are worth considering, but the assessments presented in this report comprehensively state that effects to local residents will not exceed acceptable thresholds and that amenity will not suffer. Having carried out the assessments contained within the study and having weighed the impacts against the benefits the developer feels that the right balance has been achieved.

▪ **Ecology**

The ecological assessments highlighted three main areas on the site showing signs of badger activity and the presence of greater crested newts. Turbine locations and sections of access track were relocated to avoid the principal areas of badger activity and newt habitats. In accordance with English Nature consultations to protect the badger, all details which may highlight the position of badger setts are contained within a separate confidential document.

As a result of the site selection procedure employed by the developer and briefing to the professional consultants employed to assess the Cambridge Wind Farm proposal on the wind farm design and layout, the following results were identified:

2.4 Construction, Operation and Decommissioning

Overall, the developer has incorporated a civils design and layout for the wind farm that would be technically viable and, as can be gauged from the assessments included in this Environmental Statement, environmentally acceptable; in addition, construction and operational requirements will be undertaken in accordance with relevant legislation and guidance, and in consultation with the planning authority and other relevant consultees.

The following design modifications and considerations have been incorporated into the Cambridge Wind Farm proposal:

- Track routes have been selected to utilise existing farm tracks where possible, in order to ensure minimum damage to the agricultural and ecological value of the site.
- Stone and other aggregates will be sourced from a local quarry. This minimises construction traffic beyond the site boundary and ensures that the stone used in construction is of similar acidity to the surrounding soils.
- The turbine would be of modern design (please see Figure 3) with an expected operational availability of 97%.
- The transformers would be contained within the turbines so that additional external features are not present in the landscape.
- After commissioning of the wind farm the areas around the tracks and the hardstandings will be partially reinstated to match the surrounding habitat in accordance with details to be approved by the Council.
- The developer is willing to enter into a legally binding agreement to undertake any modifications that may be required

and to repair any damage that may occur as a direct result of the temporary highways works.

- The construction of the wind farm would incorporate a turbine communication system, which would enable remote monitoring of numerous turbine functions and minimises the need for on-site attendance.

2.5 Landscape and Visual Assessment

A Landscape and Visual Assessment (LVA) has considered the likely effects of the proposed Cambridge Wind Farm on the landscape and visual amenity of a 20km radius study area centred on the site; it also provided a cumulative assessment in the context of the operational and permitted wind turbines in the study area.

The approach used for the LVA was based on three methodologies. Firstly, The Guidelines for Landscape and Visual Impact Assessment published by the Landscape Institute (LI) and Institute of Environmental Management and Assessment (IEMA) (1995 revised 2002); secondly, the Countryside Agency's Landscape Character Assessment Guidance (1999 revised 2002); and thirdly the Guidelines on the Environmental Impacts of Windfarms and Small Scale Hydroelectric Schemes (2001). The method of assessment involved information review, fieldwork observations and photography, computer-based data processing, modelling and analysis, and professional judgement.

This assessment has considered the potential impacts that would be brought about through the introduction of sixteen wind turbines in to the Cambridgeshire landscape at the proposal site. It has been systematically demonstrated that this development will have the potential to affect the landscape and visual amenity of the study area.

Effects on landscape fabric

This assessment concludes that there will be long-term, but reversible effects on the landscape fabric of the site during the operational life of the development, through

the development of the turbines and the associated infrastructure. However, on decommissioning these effects will be reversed and the landscape will be able to be fully restored to arable cultivation. There will be no loss of inherently characteristic features, such as hedges or ditches, and therefore no long-term or permanent adverse effects on the landscape fabric of the site are anticipated.

Effects on landscape character

Generally it has been demonstrated that the landscape quality of the study area is medium to low in the open arable land and high in the generally traditional village, town and city settlements. The landscape value has been assessed as being medium to low over most of the land, with the exception of the Open Fen to the east and the towns and villages with a traditional and intact character. The scale of the landscape is generally medium to large, and large in the Claylands, the landscape type within which this development is proposed. The condition of the landscape is very variable, with good, fair and poor areas. Most of the poor areas are those which have undergone a high degree of change over the last century.

The introduction of sixteen turbines with an overall height of 100m to tip will be a long-term, but not permanent change to the landscape. The local landscape character will be changed through this development, with the character within the vicinity of the site, up to 3km from a turbine, becoming Claylands with wind turbines. This change will be long-term over the 25 year operational life of the project, yet reversible on decommissioning.

Whilst there are no national landscape designations, such as AONBs or National Parks, within the study area, the effects on the historic landscape have been broadly assessed. These included an assessment of effects on parklands, conservation areas and listed buildings. The landscape assessment has informed the extent of this assessment as significant effects are not predicted to be likely to the landscape character and characteristic features over 3km. The likely effects on the settings of these buildings and areas have been assessed as being moderate within 3km of a turbine. Beyond this distance, the effects on

these designated areas have been assessed in the overall landscape character assessment. This is in part due to the inward looking nature of these developments and the well-wooded setting of buildings in the area. They are assessed as being negative as the protection of the settings of historic features, that are an integral aspect of the cultural patterns that define landscape character, is an objective of national government policy of landscape conservation and enhancement. Therefore there are assessed to be moderately significant adverse effects on the settings of cultural features within 3km of the proposed development.

Overall the change on the landscape character is assessed as being slight to moderate. Any significant effects are concentrated within an area with a radius of approximately 3km from a turbine.

Effects on visual amenity

The proposed development has the potential to be seen over very long distances. The turbines have been designed to appear as a consistent and coherent group of simple structures. Only in very near views will the anemometry mast be visible, and in very few near views will the access tracks be seen post-construction. A single photomontage predicting views from Conington is presented in Figure 4.

The 20km study area was chosen to effectively assess all of the potential impacts likely to be brought about through this development. Whilst it is possible to see turbines of this scale at distances over 20km on very clear days, and with no clutter on the horizon, effects are unlikely over 15km. The development will be most likely to be seen from within a radius of 8km from the site, on clear days subject to the degree of localised enclosure, such as vegetation and development, as described in the landscape character assessment. The viewpoint analysis has indicated that the magnitude of change of view will be high in the near-views reducing to medium over a distance of approximately 3km. At greater distances and within the more undulating landscape of the Claylands landscape type, the magnitude of change further reduces. This viewpoint assessment

has informed the assessment of impacts on the landscape character of the study area.

The sensitivity of the receptors assessed ranged from high to low, with sensitivity increasing in areas of high numbers of receptors of a high quality and in areas of few other features or few discordant elements. The effects are assessed as ranging from slight in distant locations and moderate on middle-distance village edge and footpath locations, to some substantial effects from clearly visible locations within near settlements.

Some significant effects have been identified near to the site, as informed by the viewpoint analysis, these effects are not necessarily assessed as being negative. This is expanded below.

Assessment of significance of effects

Through the assessment process recorded in this document, the potential landscape and visual impacts likely to be brought about by the development of the Cambridge Wind Farm, have been systematically analysed and evaluated in detail. The levels of significance of these potential effects have been recorded as being either substantial, moderate to substantial, moderate, slight to moderate, slight, slight to negligible or negligible.

Due to the nature of the proposed development and the character of the receiving landscape, some substantial effects have been recorded. The acceptability of these substantial effects is now evaluated. Substantial effects are not necessarily adverse or unacceptable. Within the development framework of the local and structure plan, there are three main planning policies which define what changes to the landscape through development are acceptable. These policies set out that development must be sensitive to the local environment, contribute to the sense of place and local distinctiveness and not have an adverse effect on the local character and distinctiveness of the area. Through any development of this scale and form some adverse and substantial effects are likely to result. Through the evolution of the site selection of this development, and the design evolution, the extent of adverse effects on the landscape and visual amenity of the area have

been considered. The estimation of these potential effects has influenced the project development. Tools such as wireframes and ZVIs have been used to inform these design decisions.

Substantial effects have been identified from some near public rights of way and from dwellings in close proximity to the site. They have also been recorded for traffic on the adjacent A14(T). These substantial effects are concentrated on the local visual receptors, and are broadly contained within 3km of a proposed turbine location. Moderate to substantial effects have been recorded for receptors generally from 2-4km from a proposed turbine. These effects on the visual amenity of the receptors are assessed as being significant and yet acceptable. Moderate effects have been recorded up to 6km distant; these effects are not assessed as being significant. The scale of the landscape is large, particularly in the local area of the Claylands landscape type, and the simple and sculptural form of the development will add interest to a relatively bland landscape without creating clutter or detracting from the simple agrarian patterns.

The assessment of effects on the landscape has demonstrated that there are unlikely to be any substantially adverse effects on the landscape fabric of the site, and that the slight to moderate effects assessed as being likely to be brought about on the landscape character of the study area are well within a range of acceptability. Nearer to the site the effects are greater, and the assessment has concluded that there will be a localised change in character through the addition of this development within the Claylands landscape type. This assessment has taken into account the scale and form of both the landscape and the proposed turbines. This is an exposed and open landscape and these characteristics relate well and directly to the form and purpose of wind turbines.

A detailed landscape character assessment has been undertaken of the site which formed the baseline against which the magnitudes of change, sensitivity of receiving landscape and visual receptors have been assessed. It has assisted in the judgement that the changes

likely to occur will bring about a change in the local landscape character, from the Claylands to the Claylands with wind turbines landscape type. This change will be broadly perceived to have an effect on the landscape over a distance of approximately 3km from a turbine in the Claylands landscape type. This change is assessed as being acceptable. It has been concluded that the development relates well to the receiving landscape character and the perception of the landscape. A development of this nature in this location will not adversely detract from the sub-regional landscape character or the diversity of landscape character beyond the local context.

The scale and design of the development has been carefully considered through the development of the proposals. The scale, design and layout of the scheme and materials are appropriate to the landscape character and development proposed.

In conclusion, those adverse and significant effects that have been identified in this landscape and visual impact assessment are judged to be both localised and acceptable.

2.6 Noise Assessment

An assessment of the likely noise impact of the proposed Cambridge Wind Farm has been carried out. Baseline noise levels were measured at locations representative of the nearest residential properties in the area and worst case turbine noise levels at these locations were predicted based on sound power level data for a Vestas V80 wind turbine which will be warranted by the manufacturer.

The assessment has been carried out by comparing the predicted noise levels with noise limits described in ETSU-R-97, Assessment and Rating of Noise from Wind Farms, the published recommendations of the Working Group on Noise from Wind Turbines.

The assessment shows that the predicted noise levels at the nearest residential locations to the site meet the night time limit under all conditions.

The assessment also shows that these predicted noise levels meet the lower daytime noise limit under all conditions.

A warranty will be sought from the manufacturers of the turbine for this site that the noise output will not require a correction under the ETSU-R-97 scheme.

In the area around Marshall's Farm, where predicted levels are closest to the ETSU-R-97 noise limits, the worst case predicted levels of turbine noise corresponding to down-wind propagation will only occur for conditions when noise from the A14(T) is highest. The baseline noise data used as a basis for derivation of the noise limits was acquired under predominantly south-westerly winds leading to lower levels of background noise due to road traffic than will occur for the predicted levels of turbine noise, which assume downwind conditions i.e. a north-westerly wind.

2.7 Ecological Assessment

Following consultation with relevant consultees, extensive ecological surveys took place at the site of the proposed Cambridge Wind Farm. These focused particularly on wintering birds, flightline assessment, breeding birds, mammals and amphibians. In addition, a detailed Phase I habitat assessment was carried out.

A number of species protected by legislation were found to use the site, namely badger, great crested newt, golden plover, barn owl and pipistrelle bats. In addition, other species were listed as Biodiversity Action Plan species, mostly on account of their population declines rather than their rarity. Consequently most of the BAP species are relatively widespread in Cambridgeshire. Overall as a result of this assessment, the site was considered to be of district/borough level of ecological value.

Impacts on the various species were considered, with potentially major negative pre-mitigation impacts considered possible for farmland breeding birds, ponds and ditches, great crested newt and badger. In many cases mitigation has been inserted at the design stage

to avoid serious impacts, and for badger and great crested newt, application for disturbance licences from DEFRA and English Nature respectively are proposed in order to implement appropriate mitigation.

Mitigation to avoid adverse impacts is stated. This includes extensive mitigation during construction to avoid mortality to badgers and great crested newts, and avoidance as far as possible of important site features in both design and construction for all species. Works will be timed to avoid disturbance to important species.

Provided this mitigation is adhered to, the construction and operation of the wind farm is only likely to result in a level of negative ecological impact which will not permanently affect the integrity of any species or habitat. There are also opportunities for positive impacts through provision of arable flora habitats.

2.8 Archaeological Assessment

The archaeological assessment of the location for the proposed development of the Cambridge Wind Farm has revealed that the current proposal poses a significant impact to known archaeology only in the area of Turbine 7 and its adjacent crane hardstanding and access track. This can be mitigated by an archaeologist being present during the initial clearance works on the area of the proposed turbine and the area of hardstanding for the works cranes, which should only be excavated to a depth of the first intact archaeological layers. Any archaeological features/deposits should then be fully excavated by a qualified archaeological team prior to any further development.

The access tracks on the immediate approaches to the area of Turbine 7 should also be constructed on the surface of the field and not cut into it. If planning consent is awarded, the developer will undertake this work as a condition of development; in this way the development will not have a significant effect on archaeological resources.

2.9 Electromagnetic Interference and Air Safeguarding

A wide range of operators of microwave and other communication links has been consulted in the early phases of this environmental impact assessment. Several of the EMI operators raised issues regarding the proposed wind farm development, including the ITC, BT Wholesale, Crown Castle and Cable and Wireless. The safeguarding requirements of each of these organisations have been factored into the layout. The solutions to television interference, if it occurs, are well understood and it is normal for a scheme to identify and resolve potential television interference through planning conditions.

The CAA has been consulted utilising the standard proformas produced by the DTI Aviation Working Group. In the response from the CAA Safety Regulation Group, the developer was asked to consult six aerodromes within 30km of the proposal. The nearest aerodrome, Bourn, responded with no objection, as did Fowlmere Aerodrome. Cambridge Airport responded with an objection which has been addressed by the developer through an independent aviation study. The airport is still considering this study. The remaining three aerodromes and NATS have not responded to consultation.

The MOD has been consulted on the wind farm proposal utilising the standard proformas produced by the DTI Aviation Working Group. As Cambridge Airport is a dual use facility, the MOD provided a response on their behalf. The MOD issued an objection in September 2003, which was addressed by the same independent aviation study submitted in October 2003.

This independent study produced by Cyrrus Associates states that the only issue pertinent to Cambridge Airport is the potential effect on the AR15 radar and subsequent effects on the Air Traffic Control Service. It goes on to state that the foundation for any planning objection raised by Cambridge Airport must be based on safety issues. Considering the relative position of the proposed development to the airport

operations, it is difficult to envisage a robust objection in terms of safety that could not be mitigated by changes to operational procedures.

The developer has expressed a willingness to work with both the airport and MOD to resolve their concerns. These bodies are still considering the study submitted to them

2.10 Land Use, Public Access, Recreation, Driver Distraction and Shadow Flicker

All the factors that could compromise private and public use, safety and amenity have been assessed in respect of the Cambridge Wind Farm proposal. These factors include private use of the land, public access and amenity, public safety, driver distraction and shadow flicker.

With regard to land take resulting from the wind farm, upon completion of construction, the areas occupied by the wind turbines, mast and substation and tracks would be unavailable for agricultural purposes, and would total approximately 4.06ha. Where new access tracks would need to be constructed to access the turbine locations, they will be routed alongside field boundaries wherever possible to minimise the loss of area to agricultural areas. They will, however, not be suitable for a return to agricultural use once the wind farm is constructed as suitable access will still be required in the event that cranes are required on site for essential maintenance purposes. Of the 294ha in the site application area, only 1.4% of the area will be taken out of agricultural use for operation of the wind farm. Once decommissioned, the wind farm can be removed in its entirety and the land would revert to agricultural use.

In respect of icing on the blades, the local climate and operational requirements will prevent the displacement of the ice from affecting public safety on the public footpath. There have been no accounts of public injury through ice displacement from turbine blades, nor any incidents of public injury through damage to turbines blades as a result of

damage through high winds or lightning. Usually, in the event of poor weather conditions, the turbines are shut down (over wind speeds of 25 metres per second) in order to protect them and the public from damage. It is undeniable that the wind farm will constitute a partially new visual aspect in the landscape for users of the bridleway.

In the event that the planning authority deems it worthwhile, the developer would comply with a condition to erect information boards relating to renewable energy generation on the public rights of way, highlighting important ecological and archaeological features in the area as a means to increasing public knowledge and the appreciation of the purpose of wind farms and the general ecological and archaeological status of the area.

There is no evidence to date in the history of wind farm development of distraction impacts to vehicle drivers despite a large number of UK wind farms being clearly visible from major roads. The flat nature of the landscape in this area indicates that drivers would not be surprised by sudden appearance of turbines in their view. Drivers would recognise the presence of the turbines well in advance of getting close to the site thereby avoiding any startle effects that could present a danger and will not therefore ‘surprise’ drivers whilst travelling on nearby roads. Occasional hedgerows and trees, as well as usual infrastructure in the form of walls and properties will provide some screening. The combination of long distance views of the proposed wind turbines to users of the A14 and the absence of any evidence for driver distraction arising from wind farms adjacent to trunk roads and motorways, combine to provide a high level of confidence that safety on the roads would not be compromised.

In respect of reflective light, the colour of the turbine towers, blades and nacelle will be subject to agreement with the planning authority. However, there is an expectation that they will have a semi-matt, light grey surface finish, which will ensure that the potential to reflect light is minimised.

An assessment of the potential for shadow flicker effects to properties within 800 metres

of the locations of the turbines (10 times the rotor diameter) has been conducted under worst case conditions.

Potential disturbance from shadow flicker only occurs at frequencies between 2.5Hz and 40Hz (or cycles per second). The proposed turbines are variable speed and the blades would rotate at between 13 and 19rpm, giving blade passing frequencies of less than 1Hz, well below the frequencies of concern. This infers that shadow flicker nuisance is unlikely to occur within any nearby properties.

Only four properties in Conington and Grapevine Cottages may experience a passing shadow. Due to the limited number of hours that a shadow can be potentially cast from turbine 16 and turbine 11, the developer will program these times into the turbine controllers, and along with a light and wind sensor these turbines will automatically shut down under worst case conditions.

In conclusion, it has been established that public access, private residences, recreation and public safety would not be significantly affected by the Cambridge Wind Farm proposal: there are no recreational uses to the site except in the form of a single bridleway to the south on the perimeter of the site, for which adequate safeguarding zones from turbines have been provided. An assessment of potential shadow flicker effects has shown that none of the nearby properties will be affected.

2.11 Socio-Economic Effects and Environmental Benefits

The Cambridge Wind Farm proposal would provide substantial benefits, both financially and environmentally. Suitably qualified local contractors will have the opportunity to bid for the civil and electrical works and the provision of site services; a potential investment of up to £1,800,000. The proposal would also provide permanent part time employment for a site manager and fitter during Operation and Maintenance.

The proposal would provide a reliable income stream for the landowners, an educational resource for local schools and colleges, and

following construction the developer would register local community interest in a community energy efficiency scheme. Such a scheme would aim to facilitate, either through the local Parish Councils or the Energy Advice Centre, the distribution of funds for home energy efficiency measures in the locality. For a 32MW wind farm, a total of approximately £460,000 will be made available to the community through operational revenues. This could potentially be doubled with matched funding from grants.

The Cambridge Wind Farm would make a significant contribution to the reduction of emissions that are known to cause global warming and acid rain. Based conservatively on a 2 MW turbine, these would amount to:

CO ₂	72,322 tonnes p.a.
SO ₂	840 tonnes p.a
NO _x	252 tonnes p.a

Over a 25 year lifetime it will displace:

CO ₂	1,808,050 tonnes
SO ₂	21,000 tonnes
NO _x	6,300 tonnes

It has been argued by some that wind energy projects, particularly small proposals, would produce an insignificant amount of electricity and only a fraction of the total electricity needs of the UK. However, previous public inquiry decisions do not support this claim. In the case of a decision to allow a proposal near Lowca, in Cumbria (Ref T/APP/Z0923/A/98/301037/P2, 19 March 1999), the Inspector made the following comments:

“23. Merely because a scheme would produce only a small fraction of total electricity needs does not in my view mean that it would not be worthwhile, Furthermore, this position is clearly not part of the government’s renewable energy strategy since there has been an increasing trend in the

award of NFFO contracts to smaller projectswhich, cumulatively, will contribute to overall targets.

An Inspector, in allowing an appeal for 6 turbines overlooking Carmarthen Bay in South Wales (Ref APP/M6825/A/99/513157, 1 February 2000), had this to say:

“14. The Government recognises that renewable energy has an important role to play in the reduction of greenhouse gas emissions and in the provision of electricity and has set targets to be achieved. The existence of a NFFO contract for the project is recognition that it is capable of making a contribution towards this target. In national terms the output from the scheme would be small, but this would be the case with any local renewable energy proposal. What is significant is that in local terms it would make a significant contribution, as it is capable of providing electricity to 11,495 households.”

And more recently an inspector, on allowing an appeal for an 8 turbine scheme at Mablethorpe, said:

“Clearly, at its optimum ‘rating capacity’...this wind farm would contribute some 3.9% to the Regional and 10% to the County target for 2010. It would thus make a significant contribution to meeting the aims of Government policy here.”

In this context, the Cambridge Wind Farm proposal comprises sixteen turbines and will produce sufficient electricity to provide for the equivalent needs of over 19,000 households. This is equivalent to approximately 37% of the total District’s domestic needs. It will also provide benefits through its ‘embedded value’ as a local generator. Lastly, wind turbines are recognised as having a positive energy balance. Over their lifetime they can repay up to 50 times the energy used in their manufacture and installation.

12.12 Overall Conclusions

In pursuance of ensuring conformity with planning policy guidance at the national, regional and local level guidance and in compliance with statutory regulations for the assessment of impacts likely to arise from the proposal, namely environmental impact assessment (EIA), the developer has accorded with all regulatory and guidance criteria in the formulation of this proposal. EIA provides for a systematic procedure for the assessment of a project's likely significant environmental effects, thereby ensuring that the importance of the predicted effects, and the scope for reducing them, are properly understood by the public and relevant statutory bodies.

Cambridge Wind Farm Ltd has conformed with EIA requirements and has been openly consultative on this project from its inception. The local planning authority and statutory undertakers were consulted at the early stages of the project and their views on the proposal were incorporated into establishing the scope of assessments required for a planning application. In addition, Cambridge Wind Farm Ltd has undertaken local public consultation and exhibitions on the proposals.

During the undertaking of the EIA, the advice of the assessment consultants has been factored into the design of the wind farm extension so that sensitive environmental media are well protected. Several wind farm extension layouts were considered and the final layout, as stated in the planning application, is the culmination of this exhaustive approach. In this way, the developer has sought to balance the potential global objectives of wind energy development and local community benefits against the potential environmental impacts. The result is a proposal that has minimised potential environmental negative impacts whilst maximizing the global and local benefits.