

## CHAPTER 5: LANDSCAPE AND VISUAL

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## INTRODUCTION

- 5.1 This Landscape and Visual Impact Assessment (LVIA) has been prepared by Gavin David for Ecotricity as part of a comprehensive Environmental Impact Assessment (EIA) in support of an application under Section 36 of the Electricity Act 1989 for Heckington Fen Wind Park. Gavin was previously employed with RPS where he gained considerable experience in the LVIA of renewable energy development in England, Wales and Scotland, including the largest wind energy project in Europe – London Array Offshore Windfarm.

### Purpose and Structure of Assessment

- 5.2 The purpose of the assessment, in accordance with the requirements of the relevant regulations as outlined in Chapter 2: Environmental Impact Assessment is to identify the potential significant landscape and visual effects resulting from development proposals comprising up to twenty two wind turbines and associated infrastructure on land at Heckington Fen, East Heckington midway between Sleaford and Boston in the county of Lincolnshire.
- 5.3 The landscape and visual impact assessment is structured as follows:
- Introduction
  - Methodology
  - Baseline Assessment
  - Evaluation of Landscape and Visual Resource
  - Assessment of Potential Effects
  - Mitigation
  - Cumulative Assessment
  - Summary and Conclusions
  - Statement of Significance

### Site Location and Context

- 5.4 The proposed Heckington Fen Wind Park site is located midway between the settlements of Sleaford and Boston, roughly 20km inland from the coast at the Wash (see **Figure 5.1 Site Location and Study Area**). The application land holding (blue line area) occupies approximately 604 hectares of agricultural land north of East Heckington and the A17 and A1121 (see **Figure 5.4 Proposed Layout and Landscape Context**).
- 5.5 The application site (red line area) occupies approximately 21 hectares of fenland currently managed for arable crops. The topography on, and immediately surrounding, the site is relatively flat varying between 0 and 3m AOD (above ordnance datum) land use is primarily intensive arable farmland delineated by ditches / drains and remnant hedgerow with very occasional trees. A few small farm woodland blocks (deciduous plantation) are located within and adjacent to the landholding. The surrounding area is a variety of level fenland to the east and south of the site, and very gently sloping / undulating countryside, rising to over 20 AOD in places, immediately to the

north west. The land continues to rise to the west and north, forming the Southern Lincolnshire Edge (NCA 47) and the Lincolnshire Wolds (NCA 43 respectively).

- 5.6 The fenland and gently undulating lowland surrounding the site are interspersed with small settlements and isolated dwellings and farmsteads, and traversed by transport routes and infrastructure including major and minor roads, railways and 400kV electricity transmissions lines. These built elements combined with the distinct rectilinear field patterns of the fens give the local landscape a partially 'developed' character. The operational Bicker Fen Windfarm lies about 7km to the south of East Heckington acting as a reminder of the long-standing tradition of windmilling' in the Lincolnshire fens, evidenced by the many extant traditional windmills which are a feature of the present day landscape. The landscape context of the site and the immediate surrounding area is shown in **Figure 5.4**.

### Study Area

- 5.7 The study area is defined by a 35km radius from the site as recommended in current best practice guidance (see **Figure 5.1** and Method Statement below). It incorporates several local planning authorities (LPA) including: the majority of North Kesteven District (in which the site is located) and the whole of Boston Borough; parts of East Lindsey, South Kesteven, and South Holland Districts; and a slither of West Lindsey District. LPA boundaries are shown on relevant figures supporting this document.

### Proposed Development

- 5.8 The proposed wind energy development is described in **Chapter 4: Project Description**. This landscape assessment has been completed upon a 'worst case' by using the maximum characteristics of each of the scenarios outlined in Chapter 4. A brief summary of the maximum characteristics has been provided below.

#### *Maximum Characteristics*

- 5.9 This Landscape and Visual assessment and associated figures have been completed assuming:
- 22 No X 3.0 Megawatt (MW) wind turbines;
  - 80m hub height;
  - 90m rotor diameter;
  - 125m tip height; and
  - Other ancillary development including access tracks, cabling, an electricity substation and a temporary construction compound.

#### *Turbines and Site Layout*

- 5.10 Each of the wind turbines are three-bladed units, mounted on a steel tower with a clockwise blade rotation. One turbine identified in Chapter 4 is the Vestas V90 an illustration of which has been provided in **Figure 4.3**. Technical details of the turbines and associated infrastructure proposed are provided in **Chapter 4**. The proposed site layout is shown in **Figure 4.1** and repeated in this chapter at **Figure 5.4** which shows the site in its landscape context together with the turbine locations.

**Access and Infrastructure**

- 5.11 Approximately 10.664km of onsite access tracks would be required to construct and service the wind park, details of which can be found at **Chapter 11: Transport and Access**. The track layout is shown on **Figure 4.1**. The alignment of these tracks has been designed to minimise effects on field boundaries and other landscape features. The tracks would be constructed with materials sourced from local quarries selected to minimise the visual impact. Illustrative access track cross-section drawings are shown at **Figure 4.6**.
- 5.12 The electricity produced would be exported via a new substation to an existing substation at Bicker Fen Wind Park site 6km to the south. This connection will be via a new overhead wooden pole cabling between the two substations. Details of the new substation are provided in **Figure 4.5**.

**Construction**

- 5.13 Construction would take place over about 52 weeks based on a rolling timetable with each foundation constructed in turn followed by turbine installation in four stages:
- Site enabling works and access
  - Foundation construction
  - Grid connection
  - Turbine installation
- 5.14 Construction stages may overlap so there may be two or more phases in operation at any time. The process and programme is described in more detail in **Chapter 11**.

**Operation**

- 5.15 The design life of a wind turbine is approximately 25 years. Turbine operation and electricity generation would commence upon commissioning of the wind park. Normal agricultural operations would continue across the land holding with cultivation and/or livestock grazing possible up to the base of the turbines.

**Decommissioning**

- 5.16 The wind park would be decommissioned at the end of the operational period. Decommissioning would take approximately two days per turbine which would be dismantled and taken off-site for re-use or recycling. The foundations would be left underground and covered with topsoil enabling agricultural operations to be carried out over the entire site. Underground cables would be disconnected from the local grid and also remain in the ground unless removed for recycling. The access tracks and site access would be retained to facilitate continued use for agriculture.

**Consideration of Different Site Layouts**

- 5.17 Alternative site layouts are dealt with in **Chapter 3** based on feedback from the various environmental topics including Landscape and Visual. The proposed site layout is the product of several design iterations which take into account key constraints or issues identified during the EIA process as summarised below:

- Landscape character of the application site and surrounding area;
- Views from / visual amenity of residential properties, settlements and associated public realm and rights of way within approximately 3km of the site (occasionally up to approximately 5km); and
- Views from / visual amenity of key landscape and visual receptors including places of interest, publicly accessible land, recreational routes and public highways within 5km of the site (and occasionally up to approximately 10km).

- 5.18 This LVIA includes an account of how landscape and visual matters were taken into consideration when designing the proposed wind park.

## METHOD STATEMENT

5.19 This section summarises the methodology used to carry out the LVIA. Further information is provided at **Appendix 5.1: Landscape and Visual Impact Assessment Methodology**.

### Assessment Method

5.20 The method used to carry out the LVIA is in accordance with current best practice guidance in particular that contained within:

- Landscape Institute and Institute of Environmental Management and Assessment (2002) 'Guidelines for Landscape and Visual Impact Assessment 2nd Edition';
- Countryside Agency and Scottish Natural Heritage (2002) 'Landscape Character Assessment – Guidance for England and Scotland.'; and
- University of Newcastle for Scottish Natural Heritage (2002) 'Visual Assessment of Windfarms: Best Practice'

5.21 Additional information on the assessment of landscape character is included in **Appendix 5.1: Method for Assessing Landscape Character Effects**.

### Purpose and Scope of Assessment

5.22 The purpose of the assessment, in accordance with the requirements of the EIA Regulations 2000, is to identify the potential significant landscape and visual effects resulting from development proposals comprising twenty-two wind turbines and associated infrastructure on land at East Heckington located in North Kesteven District.

5.23 The study area is defined by a 35km radius from the site based on the size of proposed turbine and recommended extent of ZTV, as set out in current best practice guidance<sup>1</sup>. Within the study area, up to a distance of 15km from the nearest proposed turbine, a 'detailed study area' has been identified to provide a focus to the LVIA, particularly in relation to landscape character and views from sensitive receptors.

5.24 Landscape and visual impact assessment requires a combination of objective analysis and subjective professional judgment. It follows a clearly defined methodology set out in published guidance comprising a combination of desk studies and field surveys. It involves analysis and evaluation of the landscape and visual baseline, including landscape features, landscape character, visual amenity and views available of the site from the surrounding area and the effects that would potentially arise due to implementing the proposed development.

5.25 The baseline assessment (see Baseline sections 1 to 4 below) includes reference to other studies and landscape character assessments, including those undertaken at a national, county and district level. Landscape and visual fieldwork was undertaken in the winter and spring of 2010 / 2011 and the assessment completed in early summer 2011.

<sup>1</sup> University of Newcastle for Scottish Natural Heritage, 2002, 'Visual Assessment of Windfarms: Best Practice' – Table 17 and para 6.1.9

5.26 In outline the assessment involved:

- site and study area appraisal, both in the field and desk-based, employing *inter alia* Ordnance Survey mapping, Arc GIS and Google Earth;
- review of landscape character, protected landscapes / designations, planning policies, strategies and assessments relating to landscape at the national and local levels;
- evaluation of the landscape and visual context, landscape character, landscape sensitivity to the development proposals and the ability of the local landscape to accommodate the proposed wind park;
- inspection of publicly accessible viewpoints, representing a range of visual receptors and views available looking towards the site from within the defined study area;
- viewpoint analysis of the potential effect on views and visual amenity (public and private) in the surrounding area, including local residents;
- consideration of mitigation and enhancement measures to avoid, reduce or remedy significant effects on the landscape, visual amenity and/or views; and
- identification of residual significant landscape and visual effects potentially arising as a result of the proposed wind park during construction, operation and decommissioning.

### Consultations

5.27 North Kesteven Council (NKC) and Boston Borough Council were consulted at the pre-application stage and during the preparation of the LVIA. The viewpoints selected for the photomontages as presented in this assessment were agreed with the relevant planning officers responsible for landscape matters and confirmed by email as follows:

Local Planning Authority	Officer	Date
North Kesteven District Council	Alan Oliver	11 <sup>th</sup> and 12 <sup>th</sup> May 2011
Boston District Council	Peter Udy	4 <sup>th</sup> February 2011

### Baseline / Assessment Year and Cumulative Effects

5.28 The baseline for EIA purposes is taken as being the existing situation in April 2011. The baseline includes existing and consented windfarms, in addition to those for which detailed planning applications have already been submitted. Consequently, the cumulative assessment is based on the existing situation plus development 'in planning' at the time of submission.

### Nature of Effects

5.29 The landscape and visual resource of an area can be affected both directly and indirectly. Visual impacts are always direct because when an object is not in view by implication there can be no impact; impacts on visual amenity also depend on visibility and are therefore direct. Landscape impacts on the other hand can be either direct or indirect. Change which affects onsite physical features (i.e. vegetation, buildings and landform), or the character area / unit in which the site is located, is a direct landscape impact, whereas an impact arising on the character of surrounding

landscape character areas / units is indirect; this phenomenon is explained in **Appendix 5.1**. It is assumed that indirect effects will be intrinsically less significant than direct ones.

5.30 In summary landscape and visual effects can be experienced as:

- Direct (primary) effects on the landscape fabric and character of the site, and on views and visual amenity;
- Indirect (secondary) effects on the surrounding landscape character and context of landscape features;
- Temporary or permanent, reversible or irreversible; and
- Static or dynamic, continuous or fleeting.

5.31 Factors to consider as part of the impact assessment process include:

- Magnitude and duration of impact
- Sensitivity of landscape and / or visual resource
- Significance of residual effect
- Valency of effect (adverse, beneficial or neutral)

**Note on Historic Environment and Cultural Heritage**

5.32 This LVIA is concerned with the present day landscape and visual amenity and only refers to the historic environment and cultural heritage insofar as they are intrinsically part of the contemporary landscape. It is important to stress that the significant effects identified in this assessment are those attributable to the current landscape and visual resource only. Potential effects on the historic environment and specific cultural heritage assets, including the issue of ‘setting’, are dealt with in **Chapter 6: Cultural Heritage**.

**Assessment Criteria and Significance of Effects**

5.33 Landscape and visual effects are assessed by measuring the magnitude of impact against the sensitivity of the receptor. Simply put significance is a function of magnitude and sensitivity. Each of these three factors is determined by a combination of quantitative (objective) and qualitative (subjective) assessment using professional judgement. The significance criteria are described in more detail in **Appendix 5.1** and in the matrix in **Appendix 5.2**.

**Guidance on Wind Farm Visibility**

5.34 It is recognised that, due to perspective and ‘aerial perspective’, potential visual effects tend to decrease with distance. The sensitivity of a receptor and the magnitude of change will also vary the level of effect. Guidelines exist regarding the distance at which turbines may become prominent in views from the surrounding area. The Scottish PAN 45 (revised 2002)<sup>2</sup> gives the

following guidance on visibility of turbines with a tower height of over 70m and rotor diameters of over 80m.

**Table 5.1 Perception of Wind Turbines**

Distance	Prominence
<2 km	Likely to be a prominent feature
2-5 km	Relatively prominent
5-15 km	Only prominent in clear visibility – seen as part of the wider landscape
15-30 km	Only seen in very clear visibility – a minor element in the landscape

5.35 The above distance ranges, or combinations of, are shown on the plans making up the Figures included with this LVIA.

**Valency and the Nature of Landscape and Visual Effects**

5.36 The European Landscape Convention defines ‘landscape’ as: “*an area, as perceived by people, whose character is the result of the action and interaction of natural and / or human factors.*” In this LVIA ‘landscape’ is understood to be at one and the same time a physical entity and a mental construct. People’s perception of landscape inevitably varies and one person’s arcadia may well be another’s wasteland. In the context of LVIA a particular landscape and visual change may be perceived as adverse, neutral or beneficial by different people depending on the perspective of the observer.

5.37 Wind energy development generates a variety of responses ranging from strongly negative to strongly positive. This is known as the ‘valency’ of effect which depends on a) the type and nature of impact and b) the perception / opinion of the observer. It is evident from recent surveys of public opinion that current attitudes towards wind turbines differ greatly – some people find them attractive, fitting and necessary, whilst others see them as ugly, incongruous and unwelcome.

5.38 Regarding future trends, as awareness of environmental issues and the pressing need to address climate change and energy security increases, more and more people living in and visiting the countryside are likely to take a positive standpoint on wind energy development, seeing it as a logical feature of the landscape, adding to the variety of experience the great outdoors provides.

5.39 Therefore residents and visitors, both now and in coming years, will not necessarily experience the addition of wind turbines in the landscape as adverse; many are likely to perceive changes to landscape character and visual amenity in a positive, or a neutral way. An exception to this rule is where direct, physical effects occur in relation to landscape elements, such as the removal of trees and hedgerows, which would normally be assessed as adverse. Conversely, where new appropriate features are introduced, such as native species planting in the countryside, this would usually be assessed as beneficial.

<sup>2</sup> Scottish Natural Heritage and University of Newcastle (2002) ‘Visual Assessment of Windfarms: Best Practice’ (Table 3, page 10)

- 5.40 To address the question of 'valency' in the LVIA only the level of significance of landscape and visual change is recorded in the text, thus bringing to the attention of the decision maker those effects which are predicted to be significant in EIA terms. However, in the interests of clarity and for the purposes of EIA, it should be assumed that the default position is adverse and that residual landscape and visual effects identified in this LVIA would be adverse unless stated otherwise. This reflects the possibility that, although change to landscape character and visual amenity may be perceived by some people as positive, or neutral, a particular change such as the one proposed (wind turbines in the countryside) can also be inconsistent with planning policy, as set out in PPS7, which seeks to maintain the status quo in landscape terms.

### Subjectivity versus Objectivity

- 5.41 It is important to note that judgments in this LVIA, including those on the valency of effect, are impartial and based on professional experience and opinion, and informed by best practice guidance<sup>3</sup>. Whatever the judgment made (whether adverse or beneficial) by either of the polarised camps in the wind farm debate, there will be a contrary judgment which, provided it is founded on reliable information and genuinely held, will be legitimate and should therefore be afforded respect.

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<sup>3</sup> *Guidelines for Landscape and Visual Impact Assessment (2<sup>nd</sup> Ed 2002) The Landscape Institute and IEMA*

## BASELINE 1 – DESCRIPTION OF SITE AND SURROUNDING AREA

### Site Description

- 5.42 The landholding at East Heckington consists predominantly arable farmland delineated by ditches and drains with occasional remnant native species hedgerows and a few small farm woodland blocks. The site boundary is approximately 604 ha, occupying level ground, lying at around 2m AOD; the site area (red line) measures 21ha. **Figure 5.2 Aerial Photo** shows the land use and character of the application site and its immediate surroundings.

### Landscape and Visual Context

- 5.43 The immediate context of the site comprises flat fenland. **Photomontages 2, 4, 6 and 7** illustrate the landscape context and characteristics of the site and surrounding area.
- 5.44 The local landscape is large scale and relatively uniform in character, reflecting the intensive agriculture land use of the fens, and its flat, expansive landform (see **Figure 5.3: Topography**). The lowland location, level topography and relative homogeneity of landscape elements – large arable fields under broad skies, punctuated occasionally by farm woodlands, settlement and electricity infrastructure – give the fenland its distinctive sense of place.
- 5.45 Visually the fenland landscape is open, affording broad vistas and long views. Visibility towards / across the application site is extensive from the surrounding fens and adjacent gently sloping ground, but views are limited locally by topographical variations, woodland / tree cover, occasional hedgerows and settlement / buildings, as for example occurs at East Heckington adjacent to the land holding (see **Photomontage 2**).

### Landscape Character

- 5.46 The landscape character of the area is summarised at a broad scale by Natural England in the National Character Area (NCA) descriptions for The Fens (NCA 46) and the Southern Lincolnshire Edge (NCA 47), summary descriptions of which are provided at **Appendix 5.3: Landscape Character Schedules** and shown on plan in **Figure 5.6: Landscape Character**. The character of the local landscape is dealt with in more detail in Baseline 3: Landscape Character and Value section below.
- 5.47 A number of built elements give the countryside surrounding the Heckington Fen site a partially 'developed' character. These include the A17, A1121 and other roads, railway lines, high-voltage (400kV) electricity transmission lines and pylons, grid like drainage ditches / dykes, drains and canals, and Bicker Fen Windfarm. In addition the urban areas of Boston to the east and Sleaford in the west make their presence felt. These 'developed' characteristics of the local countryside, combined with the large-scale landscape context, give the application site at East Heckington the capacity to accommodate a wind energy development of the scale proposed. These factors and related issues are discussed further in the Evaluation of Landscape and Visual Environment, and Cumulative Assessment sections below.

### Settlement

- 5.48 Settlement and built development located in the wider study area (between 15km and 35km from the application site) is shown on the 1:250,000 base map underlying **Figure 5.1**. Settlements situated in the detailed study area (within 15km of the application site) are shown in **Figure 5.4** and **Figure 5.8** using 1:25,000 and 1:50,000 scale Ordnance Survey mapping respectively.
- 5.49 The settlement pattern in the study area is varied consisting broadly of small to medium sized towns and villages, and a variety of nucleated and dispersed villages / hamlets with isolated farmsteads scattered throughout the fenlands and its margins. The larger settlements like Boston and Sleaford have distinctive historic cores (usually marked by a conspicuous building, for example Boston Stump) which are enclosed by a range of more recent development. The town centres have their own particular history and 'townscape' character which typically is contained by the surrounding more modern context of 'post-war' housing and commercial development. This outer ring of development usually forms the visible interface with the surrounding countryside and enjoys views across it. Properties within settlements on level ground, on the other hand, tend to be enclosed / contained visually by surrounding buildings and are therefore located outside the Zone of Theoretical Visibility (ZTV with Screening) of the proposed wind park.
- 5.50 A variety of smaller settlements including villages and hamlets are located within 15km of the application site (detailed study area). As with their larger counterparts the centres / historic cores of these rural settlements normally lie outside the ZTV (with Screening) of the proposals, so that views from within them tend to be blocked and / or broken up by the buildings and mature vegetation of which they are formed. A distinctive characteristic of these local villages, such as Heckington, Howell and Ewerby, is the tall church spires which mark out their location. These spires indicate where concentrations of settlement are located within the level fenland and stand out as landmarks or act as focal points in views.
- 5.51 The main built-up areas situated approximately within 15km of the site (the detailed study area) potentially falling within, or partly within the ZTV (with Screening) of the proposals are:
- eastern edges of Heckington and Sleaford
  - western edge of Boston
  - northern edge of Swineshead and Donington
  - southern edge of Coningsby / Tattershall
- 5.52 The following settlements situated within the detailed study area lie predominantly outside the ZTV of the proposals due to the screening effects of landform, vegetation and / or built form :
- Ruskington
  - Woodhall Spa
  - Sutterton
  - Gosberton
  - Billingborough
- 5.53 At distances in excess of 15km from the site, and bearing in mind the landscape context and partly 'developed' character of the fenlands, potential visual change arising would tend to be negligible

and insignificant. This is evident when looking at the visualisation in **Figure 5.11: Photomontages and Wirelines**. Consequently, as a general rule, settlements located outside the detailed study area but lying within the ZTV are not likely to be affected visually to any significant degree and therefore have been scoped out of the LVIA. Settlements falling within this category and / or lying wholly outside the ZTV include the following and their environs:

- Holbeach
- Spalding
- Bourne
- Grantham
- Lincoln
- Horncastle
- Spilsby,
- Wainfleet All Saints
- Wrangle

#### ***Residential Properties and Settlement Surrounding the Site***

5.54 Individual residential properties lying within 3km of the nearest proposed turbine are listed in the schedule, and shown on the plan, provided at **Appendix 5.10: Assessment of Residential Properties within 3km**. More information on residential properties and settlement surrounding the application site is provided in Baseline 4: Visual Environment.



## BASELINE 2 – PLANNING POLICY CONTEXT

5.55 This section deals with planning policy relating to wind energy and landscape, at the local and national levels, contained in the current development plan. Consideration is also given to the emerging development plan.

### Scope of Planning Policy Review

5.56 The local planning authority (LPA) boundaries are shown in **Figure 5.1: Site Location and Study Area**. The application site is located within the jurisdiction of North Kesteven District Council, Lincolnshire County Council and the East of England region. The study area also includes parts of Boston Borough and South Holland, South Kesteven, East Lindsey, and West Lindsey District Councils. The section provides a review of relevant development plan policy contained in:

- East Midlands Regional Spatial Strategy 2006-2026 (RSS – 2009)
- Lincolnshire Structure Plan (superseded) – Adopted 2006
- North Kesteven Local Plan – Adopted 2007
- Boston Borough Local Plan – Adopted 1999
- Boston Borough Interim Plan – February 2006

5.57 The following local authority development plans have not been included in this policy review because the areas lie predominantly outside the ZTV of the proposals and / or are located too far away from a planning policy perspective.

- South Holland District
- South Kesteven District
- East Lindsey District
- West Lindsey District

5.58 Planning authorities, under the direction of the Planning and Compulsory Purchase Act 2004, are in the process of preparing Local Development Frameworks (LDF) that will replace those policies within Local Plans and Structure Plans. Those policies that have been 'saved' in the transition to the LDF have been considered, whilst those that have not are referred to / covered by other regional or national policy.

5.59 Although regional plans (Regional Spatial Strategies) were revoked following the general election in May 2010 they still remain a material planning consideration pending primary legislation due to the recent Cala Homes high court judgment.

### Development Plan Policy

5.60 The focus of the planning review is on current policy relating to landscape and visual issues in the context of renewable energy development. The specific plans and policies are reviewed in each case below.

### Regional Spatial Strategy (RSS) for the East Midlands

5.61 The 2009 Regional Spatial Strategy (RSS) for the East Midlands sets out policies for both the protection of natural assets (including landscape) and promotion of renewable energy schemes.

#### Policy 31: Priorities for the Management and Enhancement of the Regions Landscape

5.62 Policy 31 promotes the protection and enhancement of the Region's 'natural and heritage landscapes' including:

*"the promotion of the highest level of protection for the nationally designated landscapes of [...] the Lincolnshire Wolds Area of Outstanding Natural Beauty;"*

*"the establishment of criteria-based policies in Local Development Frameworks to ensure that development proposals respect intrinsic landscape character in rural and urban fringe areas, including, where appropriate, recognition of the value of tranquillity and dark skies;"*

*"the identification in Local Development Frameworks of landscape and biodiversity protection and enhancement objectives through the integration of Landscape Character Assessments with historic and ecological assessments."*

5.63 In line with PPS7, the use of Landscape Character Assessment is strongly advocated in the Regional Plan, with reference to wider landscape assessment tools such as the CPRE inspired 'tranquillity mapping' and Historic Landscape Characterisation.

#### Policy 40: Regional Priorities for Low Carbon Energy Generation

5.64 Policy 40 of the RSS set priorities for low carbon energy production in the Region.

*In terms of wind power, the supporting text notes that:*

*"Much of the Region could be suitable for the location of wind turbines subject to a number of criteria, including visual impact and the cumulative effect of a number of turbines and their actual size. Local Planning Authorities should not adopt policies that would in effect impose a blanket ban on on-shore wind energy projects. Instead they should establish the criteria which guide and inform wind energy projects in order to achieve high quality, well planned developments."*

5.65 Further detail is provided within Policy 40:

*"In order to help meet national targets low carbon energy proposals in locations where environmental, economic and social impacts can be addressed satisfactorily should be supported. As a result, Local Planning Authorities should:*

*[...]*

*develop policies and proposals to achieve the indicative regional targets for renewable energy set out in Appendix 5.*

*In establishing criteria for onshore wind energy, Local Planning Authorities should give particular consideration to:*

*landscape and visual impact, informed by local Landscape Character Assessments;*

*the effect on the natural and cultural environment (including biodiversity, the integrity of designated nature conservation sites of international importance, and historic assets and their settings);*

*[...]*

*the number and size of turbines proposed;*

*the cumulative impact of wind generation projects, including 'intervisibility';*

*the contribution of wind generation projects to the regional renewables target; and*

*the contribution of wind generation projects to national and international environmental objectives on climate change."*

#### **Policy 4: Development in the Eastern Sub-area**

- 5.66 The regional plan sets out sub area priorities and the Heckington Fen site falls within the Eastern Sub-area which is covered by **Policy 4**. With regards to landscape the policy seeks to;

*'protect and enhance the natural beauty of the Lincolnshire Wolds AONB;*

*Protect and enhance the natural and historic environment of the coastal margin including the Wash and Humber Estuary Special Protection Area of Conservation'*

#### **Policy SRS1: Lincoln Policy Area**

- 5.67 The site also falls within the Lincoln sub regional policy area. **Policy SRS1** Lincoln Policy Area provides policy for a number of spatial priorities for the sub region. In relation to landscape only the following two points are relevant;

*'protect and/or enhance the character and quality of the built and natural environment, including greenspace, and the wider surrounding countryside;*

*protect and enhance the dominance and approach views of Lincoln Cathedral on the skyline.'*

#### **North Kesteven District Local Plan**

- 5.68 The application site is located in the North Kesteven District where the following 'saved' adopted local plan policies relating to 'Landscape and Wildlife' apply:

#### **C2 Development in the Countryside**

*C2 is one of the 'core policies within the local plan. The policy advises;*

*'Planning permission will be granted for development in the countryside (as shown on the proposals map), provided that it*

*Will maintain or enhance the environmental, economic and social value of the countryside;*

*Will protect and, where possible, enhance the character of the countryside;*

*Cannot be located within or adjacent to a settlement; and*

*Will not attract or generate a large number of journeys, and is located to provide opportunities for access by public transport, walking or cycling. '*

#### **C5 Affects upon Amenities**

- 5.69 This policy is concerned with protection from undesirably harmful effect on other land users. The policy states;

*'Planning permission will be granted for proposals, provided that they will not adversely affect the amenities enjoyed by other land users to an unacceptable degree.'*

- 5.70 The supporting text informs that developers should consider what impact their proposal will have upon neighbouring land uses (and potentially uses some distance away in the case of some types of development) and should seek to reduce harmful effects as much as possible.

#### **C17 Renewable Energy**

- 5.71 Within the Local Plan North Kesteven District Council acknowledges that it is supportive in principle of renewable energy. It also advises that *'In determining any application to develop renewable energy resources, the Council will weigh the immediate impact upon the local environment against the wider contribution that would be made to reducing wider environmental damage'*

- 5.72 Policy C17 sets out the criteria for which renewable energy planning permissions would be granted. The criteria is;

*the environmental, economic and social impacts can be addressed satisfactorily;*

*the proposal minimises the landscape and visual effects of the development through appropriate siting, design and landscaping schemes;*

*where the proposal would have an adverse effect on a site of international importance for nature and heritage conservation, there is no alternative solution and there are imperative reasons of overriding public interest;*

*where the proposal is in a nationally designated area, the objectives of the designation of the area will not be compromised, and any adverse effects on the qualities of the area are outweighed by the environmental, social and economic benefits.*

- 5.73 The supporting text also goes on to acknowledge that different technologies have different impacts and specifically that wind turbines have a significant visual impact (and consequently applicants should undertake an assessment of landscape impacts). It goes on to state;

*'In determining any application to develop renewable energy resources, the Council will weigh the immediate impact upon the local environment against the wider contribution that would be made to reducing wider environmental damage. The Council will also bear in mind that many renewable resources can only be harnessed where they occur and that, as a consequence, developments to exploit them will frequently be constrained in their locational choices. The Council will require an assessment of the environmental, social and economic impact of proposals to accompany applications in appropriate cases'*

#### C18 Design

- 5.74 This policy is concerned with 'form; Its appearance and relationship with the surrounding environment'. The policy states;

*'Planning permission will be granted for development, only if it will:*

*Reinforce local identity and*

*Not adversely affect the character or appearance of its surroundings;*

*And*

*Existing site features that contribute positively to the character or appearance of the area are retained, and satisfactorily incorporated into the design;*

*The proposal responds satisfactorily to its context in terms of its layout, scale, massing, height, density, detailing, external appearance, and the use of materials, and*

*The proposal has a cohesive character, and adds interest and vitality to its surroundings.*

- 5.75 The supporting text advises of the need to assess the positive qualities of the site to ensure that design takes full account of site features and the need to assess and understand the immediate surroundings of their site, and the wider area in which their development will be located.

#### C19 Landscaping

- 5.76 Policy C19 seeks to secure the provision of appropriate high quality landscaping which will;

- a. *'protect and enhance the existing landscape and townscape character;*
- b. *satisfactorily integrate the development with its surroundings;*
- c. *protect the amenities of occupiers of the development and nearby occupiers;*
- d. *retain and incorporate key landscape features on the site;*
- e. *provide appropriate levels of open space within the development.'*

- 5.77 The supporting text adds that landscaping can be highly important for proposals that are visually prominent.

#### C22 External Lighting Schemes

- 5.78 This policy seeks to protect both amenity safety and character and informs that;

*'Planning permission will be granted for proposals which include a scheme of external lighting, only if the proposed lighting scheme:*

*Will not compromise highway safety;*

*Will not adversely affect the amenities of nearby land-users; and*

*Will not adversely affect the character of the area.*

*Where it is necessary to safeguard amenity or to prevent the wasteful use of energy resources, conditions will be attached to planning permissions requiring lights not required for safety or security to be extinguished at an appropriate curfew time.'*

#### LW1 Landscape Conservation

- 5.79 The Landscape and Wildlife section of the local plan discuss the changes to the landscape which have taken place over time from its *'natural state as successive generations of people have cleared natural woodland, farmed the land, defined field boundaries with hedges, walls, fences and ditches, planted and managed new trees, copses and woods, drained land, controlled watercourses and constructed roads, paths, buildings and settlements. The underlying geology, hydrology and soils continue to exert their influence upon the District's character, but the landscape as we see it today is, to a significant extent, the product of the influences of each of these generations of people.'*

- 5.80 It continues to say that; *'each generation inherited a landscape that had been modified by its predecessors, and retained what it valued or what was still useful, but changed what was no longer useful or valuable. This process continues today, and one of the roles of this Local Plan is to balance the on-going need for change with the need to protect and enhance the beauty and particular character of the District's five broad areas of landscape character.'*

- 5.81 The site sits within the landscape character area of 'The Fens' which is described as;

*'Eastern-most parts of the District have a fenland character, i.e. they are very low-lying and very flat. The land is almost exclusively farmed for vegetable crops and grains, and fields are typically large and divided from one another by drainage channels. Tree and woodland cover is scarce (with the only significant area of woodland being to the north of South Kyme). The landscape is dominated by straight roads raised above the surrounding land, linear drainage channels, and embanked watercourses. The lack of trees, hedges and slopes means that views are very extensive and open, and this part of the District generally has an isolated character. The fenland part of the District contains very few villages, and settlements are generally small in size and linear in pattern, with buildings constructed in brick, slate and pantiles.'*

- 5.82 Policy LW1 seeks to protect the landscape character and informs that;

*'The Council will seek to protect the distinctive landscapes of the identified Landscape Character Areas and any special features which contribute to that character. Where development is acceptable, it will be required to contribute to the local distinctiveness of the area, be well integrated into the local landscape character, protect any features of importance to the local scene, and respect any important views.'*

### **Boston Borough Local Plan**

- 5.83 Although the application site is located in the district of North Kesteven the proposed wind park would be in close proximity to the adjacent Boston Borough. Therefore the Boston Borough Local Plan has been consulted.
- 5.84 There are currently two plans which the planning department uses when making planning decisions. The Boston Borough Interim Plan (Non-Statutory Development Control Policy) 2006 and the Adopted Boston Borough Local Plan 1999. The reason for this was due to the re-deposit draft of the Boston Borough Local Plan being withdrawn from the statutory adoption process in February 2006.

### The adopted Boston Borough Local Plan 1999

#### **G1 Amenity**

- 5.85 General Development Policy G1 read;

*'Planning permission will only be granted for development which will not substantially harm the amenities of other nearby land users or residents, or the general character of the area because of its nature, scale, density, layout, appearance or level of traffic generation.'*

#### **G2 Wildlife and Landscape Resources**

*'Planning permission will not be granted for proposals which will have a significant adverse impact upon existing landscape, wildlife and vegetation resources'*

#### **G10 External Lighting Schemes**

*'Full planning permission will not be granted for developments which will include a scheme of external lighting, unless the proposed lighting scheme;*

*Is the minimum required to undertake the task*

*Will not prejudice highway safety;*

*Will not substantially harm the character of the area*

*Where necessary to safeguard amenity or to prevent the wasteful use of energy resources, conditions will be attached to planning permission, requiring the extinguishment of lights not required for safety.'*

#### **CO1 Development in the Countryside**

*'Development will not be permitted in the countryside unless it is supported by other local plan policies.'*

#### **CO13 Farm Based Diversification**

*Planning permission will be granted for farm based diversification proposals provided that;*

*The proposal will not significantly harm the amenities of other nearby land-users or residents nor the appearance of the countryside because of its nature, scale density, layout appearance or level of traffic generation...*

*Where new buildings are essential their location, form, scale, materials and proportions are appropriate to their rural surroundings.'*

#### **ED11: Renewable Energy**

*'Planning permission will be granted for development that will provide a renewable energy source, provided that the proposal;*

*Will not significantly harm the appearance or character of the area...*

*Will not challenge the visual dominance of the tower of St Botolph's church over Boston's skyline, and....*

### The Boston Borough Interim Plan (Non-Statutory Development Control Policy) 2006

#### **G1 General Conditions**

*'Planning permission will be granted for development if;*

*It will not materially harm the amenities of nearby residents and/or land users, or the character of the area, because of its nature, scale, density, layout, appearance or level of traffic generation;[...]*

*It will have a high quality layout, design, external; appearance and landscaping which will enhance the built and natural character of the locality, whilst retaining existing trees, woodland and hedgerows where possible and where appropriate to enable the development to deliver a net gain in sustainable environmental improvements. Some trees and hedgerow removal may be appropriate, depending on its quality and the extent and quality of the new development and its landscaping proposals*

*It will not have a significant adverse impact upon the existing landscape, wildlife and vegetation resources that contribute positively to the quality of the environment, biodiversity and sustainability;*

*It will not have an unacceptable adverse effect on the historic environment;*

*Sufficient information is provided to clearly understand the proposals and their environmental effects in the context of the policies of this plan.'*

**G5 External Lighting**

*'Full Planning Permission will be granted for developments which include a scheme of external lighting, if the proposed lighting scheme;*

*Does not exceed that which is reasonably required to undertake the task having regard to other criteria below; [...].*

*Will not harm the amenities of nearby land-users; and*

*Will not substantially pollute the night sky or harm the character of the area.*

**G10 Large Scale Renewable Energy Generation**

*Planning permission will be granted for the development of a renewable energy scheme provided it can be demonstrated that the benefits outweigh the environmental disbenefits taking into account the following criteria;*

*The development, including and service roads and transmission lines/equipment, has no significant adverse impact on local landscape or townscape character and does not challenge the visual dominance of the tower of St Botolph's Church over Boston's skyline to an unacceptable degree;*

*The development does not involve unreasonable disturbance to local residents in terms of noise, odor, smoke, visual intrusion, electro-magnetic interference, shadow flicker or reflected light, is capable of being minimised to an acceptable degree; [...]*

*The development and any other existing or approved renewable energy development in a locality would not, by reason of their cumulative effects, have unacceptable adverse impacts as regards to the matters detailed in criteria 1-4 above; and [...]*

**CO1 Development in the Countryside**

*'Development will be permitted in the countryside provided it is supported by other plan policies. Where planning permission is granted, the form of the development must make a positive contribution to the rural environment.'*

**CO8 Farm Diversification**

*'Planning permission will be granted for proposals for the diversification of farm-based activities provided that;*

*[...]*

*Where new buildings are essential, they must be of a design and scale which is appropriate to their rural surroundings.*

**E4 Local Distinctiveness**

*'Planning permission will be granted for proposals which adversely affect an important traditional building or structure, provided the benefits of the proposals to the community outweigh the value of the building or structure to the appearance of the surrounding area.*

**E5 Historic Landscapes**

*'Planning Permission will be granted for the development, provided that it will not adversely affect the character, appearance, or setting of any important historic landscape, such as the park or garden of special historic interest (as shown on the Boston inset map).'*

**Government Planning Guidance**

- 5.86 Government guidance is set out in Planning Policy Statements known as PPSs which have largely replaced the former Planning Policy Guidance Notes or PPGs. PPSs provide guidance to local authorities and others on a wide range of planning matters. PPS 22 and PPS 7 are of particular relevance to this assessment.

**PPS 22 – Renewable Energy**

- 5.87 Planning Policy Statement 22 sets out the Government's strategy on renewable energy development and guidance for local authorities when preparing development plans / documents and determining planning applications. Landscape and visual effects of renewable energy developments are discussed on page 13. In paragraphs 20 and 21 of PPS 22 it states:

*"Of all renewable technologies, wind turbines are likely to have the greatest visual and landscape effects. However, in assessing planning applications, local authorities should recognise that the impact of turbines on the landscape will vary according to the size and number of turbines and the type of landscape involved, and that these impacts may be temporary if conditions are attached to planning permissions which require the future decommissioning of turbines.*

*Planning authorities should also take into account the cumulative impact of wind generation projects in particular areas. Such impacts should be assessed at the planning application stage and authorities should not set arbitrary limits in local development documents on the numbers of turbines that will be acceptable in particular locations."*

- 5.88 The guidance in PPS 22 provides the basis for the threshold of impact significance in terms of the EIA Regulations 2000 as set out in the Methodology section above – see Table 5.4.

**Planning for Renewable Energy: A Companion Guide to PPS 22**

- 5.89 The Companion Guide to PPS 22 provides further guidance on wind energy development and landscape and visual issues, in particular Sections 3, 4, 5 and 8. Sections 5 and 8 deal with the content of an LVIA and wind turbine technology respectively. Section 3 concerns landscape character and sensitivity with reference to the South West Region Renewable Energy Strategy (RSS REvision 2020) as described below. Section 4 encourages local authorities to carry out their

own renewable energy landscape capacity / sensitivity studies based on the 'character' approach, but with certain reservations. At paragraph 4.15 on page 48 it states:

*“Character areas could form the basis for considering which technologies at which scale may be appropriate in different types of location. However, it will not be appropriate for local authorities to identify specific locations or prescribe a particular technology that should be developed on a particular site as a result of any local landscape assessment.”*

5.90 This matter is dealt with in the Baseline 3: Landscape Character and Value and Evaluation of Landscape and Visual Resource sections below.

### **PPS 7 – Sustainable Development in Rural Areas**

5.91 PPS 7 sets out the Government's strategy on development in the countryside and protection of the landscape. It promotes sustainability and provides broad guidance to local authorities and developers on achieving sustainable development in rural areas. PPS 7 states that the countryside should be protected for the benefit of all and points out the importance of landscape character with regard to accommodating development in the countryside. Landscape character is dealt with in the Baseline Assessment section above.

### **Natural England – Guidance for On-Shore Wind Energy in England**

5.92 Natural England has recently published advice for wind energy developments in England<sup>4</sup>. This document is the culmination of extensive consultation and engagement with stakeholders, as presented in Natural England – 'Assessing the Environmental Capacity for On-Shore Wind Energy Development' – Consultation Draft (July 2009), which sets out criteria for evaluating landscape sensitivity and capacity in relation to large scale wind turbines. This guidance has informed the design and layout of the application scheme.

### **Key Landscape Planning Issues**

5.93 The key planning policy and guidance issues relating to the proposed development in respect of this LVIA are as follows:

- Government planning guidance – PPS 7: Sustainable Development in Rural Areas and PPS 22: Renewable Energy and its Companion Guide
- Advice to Government on renewable energy – Natural England advice/guidance for on-shore wind energy development in England
- Development plan policy – North Kesteven District Adopted Local Plan policies C2: Development in the Countryside, C17: Renewable Energy and C18: Design; and Boston Borough Adopted Local Plan policies ED11: Renewable Energy.

5.94 These landscape planning and related policies provide a focus for the assessment of potential landscape and visual effects resulting from the proposed wind energy development which are examined in the Assessment of Effects section below.

<sup>4</sup> Natural England (2010) 'Making space for renewable energy: assessing on-shore wind energy development'

## BASELINE 3 – LANDSCAPE CHARACTER AND VALUE

- 5.95 This section of the LVIA deals with present-day character and value (protected / designated status) of the landscape in the study area and should be read in conjunction with **Figure 5.5: Landscape Planning Context**, **Figure 5.6: Landscape Character**, and **Appendix 5.3: Landscape Character Schedules**.

### Scope of Baseline Assessment

- 5.96 Bearing in mind the baseline landscape characteristics described below, combined with the intervening distances involved and other limiting factors, and when compared with the scale of development proposed at this particular location, significant character effects resulting from the proposed wind park are not expected to occur in excess of 5km from the nearest turbine and the level of potential effects would diminish with distance from the application site. This is in keeping with advice in current guidance as presented at **Table 5.1** in the Method Statement section above. Notwithstanding that all character units lying within the 35km study area have been considered in this LVIA, the focus of the baseline character assessment is within 15km of the site – the ‘detailed study area’ – and it is assumed that potential character effects would be negligible or none beyond the detailed study area.

### Note on Potential Visual Influence of the Proposals

- 5.97 The Zone of Theoretical Visibility (ZTV) of the proposed development to the ‘hub’ and ‘blade-tip’ is shown in **Figure 5.9** and **Figure 5.10**. An appraisal of the approximate extent of potential visibility of the proposals across each character unit is provided as part of this baseline assessment in order to help gauge the visual sensitivity which is appraised further in the following section: Evaluation of Landscape and Visual Environment.

### Characterisation of Landscape

#### National Character Unit

- 5.98 The landscape character of the study area is described at a national level by Natural England in its National Character Areas (NCA), also / formerly known as Joint Character Areas (JCA). NCAs were developed by the former Countryside Agency as part of its Character of England Landscape, Wildlife and Cultural Features Map<sup>5</sup> produced in 2005 with support from English Heritage, an update of an earlier map issued in 1996 “The Character map of England”. The NCA descriptions provide a broad-brush description of the landscape surrounding the application site. Summaries of the key characteristics are provided below with the full text included in the landscape character schedules at **Appendix 5.3**. The geographic extent of the NCAs is shown in **Figure 5.6a**.
- 5.99 The scope of the assessment of national character areas in this LVIA is the study area (35km). However the focus is on those character units lying within approximately 20km of the nearest proposed turbine, notwithstanding that 5km is considered to be the outer limit of potential indirect significant effects on landscape character, taking the scale of both the proposed development and

the receiving environment into account. The following four NCAs are situated in excess of 20km from the proposed wind park, summaries of these character units are provided in **Appendix 5.3**:

- Lincolnshire Coast and Marshes – NCA 42
- Northern Lincolnshire Edge with Coversands – NCA 45
- Trent and Belvoir Vales – NCA 48
- Lincolnshire Wolds – NCA 75

#### The Fens – NCA 46

- 5.100 The site is located in The Fens national character area. The key characteristics of the landscape unit as summarised by Natural England include the following:

- Large-scale, flat, open landscape with extensive vistas to level horizons and huge skies.
- A hierarchy of river drains and ditches provide a strong influence throughout the area.
- Embanked rivers and roddons create local enclosure
- Area south of Lincolnshire Wolds most recently drained with Wolds providing marked ‘Upland’ horizon to north.

- 5.101 The site lies in the north western part of the character area (see **Figure 5.6a**). The lowland area of The Fens NCA is defined by a subtle transition from the gently undulating landform of the Kesteven Uplands NCA to the west, and bounded to the north east by the upland horizon of the Lincolnshire Wolds NCA. The low-lying, flat relief is an entirely man made landscape which although sparsely settled contains prominent built development in the form of power lines and large agricultural buildings in addition to dispersed farmsteads and dwellings.

- 5.102 Regarding the influence of development and transport infrastructure on countryside character locally, the national character area description states on page 63 that :

*‘The medieval pattern of north-south drove lines, between parent and daughter settlements on coast and fen edge respectively, was crossed in the 19<sup>th</sup> century by the A17 and A47. Since then the settlements in these Townlands have spread along these principal routes to create ribbon developments of smallholdings, modern bungalows, large agricultural barns and food processing buildings’*

- 5.103 The proposal would theoretically be visible across the majority of The Fens National Character Area at varying distances. The pattern of visibility is interrupted by large settlements such as Boston to the east and Spalding to the south, would be further fragmented with distance due to the screening effect of surface objects in a flat landscape. Consequently, in practice the extent of visibility would be less than indicated on **Figure 5.9** and **Figure 5.10**.

#### Southern Lincolnshire Edge – NCA 47

- 5.104 The adjacent Southern Lincolnshire Edge NCA extends almost the length of the study area, aligned north-south, to the west of the proposed site. The character area description states on page 134:

*‘The dip slope which surrounds the ‘Cliff’ falls gently to the east. This is predominantly a large-scale ‘upland’ arable landscape with occasional dry*

<sup>5</sup><http://www.naturalengland.org.uk/ourwork/landscape/englands/character/areas/default.aspx>



*valleys... Towards the eastern edge of the dip slope, the landscape pattern gradually becomes more enclosed'*

- 5.105 The Southern Lincolnshire Edge landscape is described as having the following key characteristics:
- Large scale 'upland' arable escarpment broadly divided into north and south by River Witham at Lincoln...
  - Prominent scarp slope of Lincoln 'Cliff' marks western edge of area.
- 5.106 The Southern Lincolnshire Edge landscape character area is situated directly to the west of the proposal, approximately half of which falls within an irregular pattern of visibility that gradually disperses westward, reflective of the undulating topography of the upland plateau. The dramatic change in topography of the Lincoln Cliff scarp slope defines the limit of visibility further west.

#### *Central Lincolnshire Vale – NCA 44*

- 5.107 The Central Lincolnshire Vale character unit is predominantly an extensive low lying vale divided by a central lowland watershed. The character area is situated to the north of the Fens (NCA46), the boundary between the two formed by catchwater drains. It is summarised by Natural England as having the following key characteristics:
- Broad low lying arable vale. Balanced yet simple open landscape.
  - A regular pattern of medium sized fields with enclosure by hedgerows of limited species and few hedgerow trees. ...
- 5.108 Between a quarter and a half of the Central Lincolnshire Vale NCA in the study area falls within the ZTV of the proposal. The settlements of Tattershall / Coningsby and Woodhall Spa and surrounding woodland cover fragment the extent of visibility, particularly to the centre and north of the character area.

#### *Kesteven Uplands – NCA 75*

- 5.109 The Kesteven Uplands NCA lies to the south of the Southern Lincolnshire Edge and is described by Natural England as having the following key characteristics:
- Medium-scale undulating mixed farming landscape dissected by rivers Witham and East and West Glen. Enclosure generally by hedgerows and more locally by stone walls to the south.
  - Significant areas of woodland including semi-natural and ancient woodland which, in combination with topography, frame and contain views.
- 5.110 Approximately a quarter of the Kesteven Uplands National Character Area falls within the zone of theoretical visibility of the proposal. Areas of visibility would be predominantly found along elevated slopes, so that views occur intermittently in the north eastern reaches of the character area. A combination of rolling landform and woodland cover contain visibility to small irregular intervals to the south and west.

#### **Regional Character Units**

- 5.111 The recently completed East Midlands Landscape Character Assessment (2010) complements Natural England's character assessment, effectively bridging the gap between national and local level landscape character typologies. Landscape character units are identified using a broad level, non-technical descriptions of distinctive, rare or special characteristics.
- 5.112 The scope of the regional character appraisal in this LVIA is 35km from the nearest proposed turbine. The focus of the assessment is on those regional character units lying within 20km of the nearest proposed turbine. Outline descriptions of the pertinent regional character units are provided below; summaries of all regional character units lying within 35km of the site are presented at **Appendix 5.3**, the geographic extent of the regional character units is shown on **Figure 5.6a**.

#### Planned and Drained Fens and Carrlands (2B)

- 5.113 The site lies centrally within the Planned and Drained Fens and Carrland landscape, adjacent to the Settled Fens and Marshes (2A) to the east and narrow strip of Fen and Marsh Margin Farmlands (2C) to the west. The key characteristics of the landscape unit are defined as:
- Consistently low lying terrain and simple palette of land uses and landscape features gives visual unity and strong sense of identity;
  - Large scale open landscape of flat farmlands with extensive and uninterrupted vistas to distant horizons beneath vast skies;

#### Coastal Saltmarshes and Mudflats (1A)

- 5.114 A small region to the south east of the study area. This threshold landscape between land and sea is unified by its low lying topography, level horizons and vast skies. The key landscape characteristics are summarised as follows:
- Extensive low lying landscape with wide panoramic views out to sea, notably in The Wash albeit limited in some places by sea banks;

#### Shallow Inlet Bay (1D)

- 5.115 Situated south-east of the proposal adjacent to The Wash. A narrow strip of this character area falls within 20km of the study area. It is described as having the following key characteristics:
- Sheltered waters, albeit influenced by high tidal ranges
  - Temporal landscape displaying marine and terrestrial characteristics dependent on tides

#### Settled Fens and Marshes (2A)

- 5.116 Covering an extensive area of land to the south east of the study area, containing the town of Boston and several key transport links including the A17 and A52. The regional assessment describes the landscape unit as having the following key characteristics:
- Low lying, flat and open landscape with wide horizons and panoramas encompassing vast skies;



Fen and Marsh Margin Farmlands (2C)

5.117 Fen and Marsh Margin Farmlands are found adjacent to the Planned and Drained Fens and Carrlands (2B) to the west of the proposal, with a smaller area to the north east bounded by the rising, undulating topography of the central plateau and Lincolnshire Wold scarp slope respectively. The landscape unit is described as being characterised as follows:

- Transitional landscape, displaying features characteristic of elevated areas to the west, and lowland fens and marshes to the east;
- Lowland Landscape formed across expansive superficial deposits of till...
- Broad east facing landscape with consistent pattern of streams and field drains that run west to east create a gently undulating character and structure to the landscape;
- Small scale rural landscape of mixed farms with permanent pasture along valley bottoms

Unwooded Vales (4A)

5.118 A small area of this character unit is present due west of the site, the majority of the character area being in excess of 20km from the proposal. The key characteristics are summarised as being:

- Extensive, low lying rural landscape;
- Expansive long distance and panoramic views from higher ground at the margin of the vales gives a sense of visual containment;
- Low hills and ridges gain visual prominence in an otherwise gently undulating landscape;

Wooded Vales (4B)

5.119 Two regions of this character unit can be found situated to the north and west of the study area. The Wooded Vales landscape character type marks a transition between the low-lying Fenland landscape and the rising scarp slopes of the Lincolnshire Wolds, evident by a series of enclosed low hills and ridges. Page 144 of the East Midlands Landscape Character Assessment states that 'The Wooded Vales generally has a strong sense of place, with major landform features flanking the lower lying areas creating broad scale visual containment'. Other key characteristics are described as:

- Gently undulating landform formed over soft mudstone and clay geology, sharing many characteristics with the wider Unwooded Vales Landscape Character Type;

Limestone Scarps and Dipslopes (6A)

5.120 The Limestone Scarps and Dipslopes character type is predominantly an area of raised upland to the west of the proposal and the Fen and Marsh Margin Farmland (2C) character unit. The key characteristics are described as follows:

- Limestone escarpment and dip-slope with strong north south alignment;

Wolds Scarps, Ridges and Valleys (7B)

5.121 This character type covers a small proportion of the north eastern fringe of the study area. The key characteristics are defined as:

- Pronounced escarpment with rounded ridge top profile at north western section of the Chalk Wolds, with exposed scars of chalk, and ironstone outcrops;
- Elevated undulating landscape of prominent chalk ridges bisected by deep combs and wide river valleys in the southern section of the type;

Forest Hills and Ridges (10A)

5.122 Covering an broad area to the south west of the proposed wind park, key characteristics of this landscape character type are described as:

- Broad, elevated plateaux and ridges with undulating landform;

**Local Character Units**

5.123 More detailed assessments of landscape character have been carried at the local level by North and South Kesteven District, Boston Borough, East Lindsey and South Holland District Councils. **Figure 5.6b** shows the various local landscape character units (LCU) within the study area. The following local authority character assessments are adopted as supplementary planning guidance (summary character descriptions / key characteristics for each are provided at **Appendix 5.3**):

- Boston District Council, 2009, 'Landscape Character Assessment of Boston Borough'
- North Kesteven District Council, 2007, 'North Kesteven Landscape Character Assessment'

5.124 The scope of the local character appraisal in this LVIA is 20km from the nearest proposed turbine. However the focus of the assessment is on those character units lying within approximately 10km of the nearest proposed turbine, notwithstanding that 5km is considered to be the outer limit of potential indirect significant effects on landscape character, taking the scale of both the proposed development and the receiving environment into account. Summary descriptions (extracts of key characteristics) of the relevant local character units are provided below; the key characteristics / character description summaries for all local character units lying within 20km of the site are reproduced at **Appendix 5.3**.

5.125 The following local authorities and their character assessments within the study area situated in excess of 20km from the site have been scoped out of the LVIA because they are too far away from the application site to be affected by the proposed wind park with respect to landscape character:

- West Lindsey
- Lincoln
- Newark and Sherwood
- Fenland

**North Kesteven Landscape Character Assessment (2007)**

5.126 Three landscape character types constitute North Kesteven district, running broadly north to south. The site lies within 'The Fens' character unit, to the east of the 'Central Plateau' and 'Trent and Witham Vales'. These character units are made up of various landscape sub-areas which are summarised below with reference numbers as shown in **Figure 5.6b** in brackets.

*The Fens – Fenland (13)*

5.127 The site lies on the eastern boundary of 'The Fens' landscape character type as defined in the North Kesteven District Landscape Character Assessment, see **Figure 5.6b** and **Appendix 5.3**. This local character type is a homogenous unit very similar to the corresponding Fens national character unit (NCA46) as described by Natural England. It comprises one sub-area – Fenland which has the following key characteristics (this being the host character unit the characteristics are listed in full):

- Low lying with very flat relief.
- Occasional small islands of slightly higher land.
- Very large, rich arable fields divided up by drainage channels.
- A hierarchy of rivers drains and ditches creating linear patterns across the landscape.
- The geometric road pattern follows the drainage pattern with small roads raised above the level of the fields ...
- Generally extensive vistas to level horizons and huge skies ...
- Sparse woodland cover though some occasional trees ...
- Intensively farmed and managed it is almost entirely a man-made landscape.
- Except for scattered farmsteads and farm buildings the sub-area is unsettled.
- Prominent power lines and large-scale agricultural buildings.

5.128 The majority of these character units fall within the ZTV of the proposals as shown in **Figures 5.9** and **5.10: Zone of Theoretical Visibility**.

5.129 The character unit is predominantly man-made being reclaimed land laid out and maintained with a rectilinear structure of drains / ditches and roads. In addition to the underlying contemporary agricultural landscape, the large scale field pattern and scattered farmsteads with conspicuous farm buildings, there are a number of developed features which characterise the area and form prominent visual elements including:

- A roads and associated infrastructure and traffic;
- 400 kV electricity transmission lines and pylons; and
- Large scale drainage channels / canals.

5.130 These 'man-made' elements give 'The Fens – Fenland' character unit and the surrounding landscape, a partially 'developed' character which assists the area in accommodating a wind energy development of the type and scale proposed (see **Photomontages 1, 2 and 16**). This matter is dealt with further in the Evaluation of Landscape and Visual Environment section below.

#### *Central Plateau*

5.131 To the west of the application site lies the slightly elevated, undulating Central Plateau character unit comprising the following landscape sub units within 20km of the site: Limestone Heath (7), Rauceby Hills (8), Wilsford Heath (9), Sleas Valley (10), Central Clays and Gravels (11), Upland Plateau Fringe (12). The key characteristics of its character sub units are described as:

#### Limestone Heath (7)

- This is a large landscape character sub-area situated in the centre of the District between the ridge of the Lincoln Cliff and the Central Clays and Gravels to the east.
- Its position on the upper reaches of the cliff's dip slope gives it a feeling of relative elevation and exposure.
- It is predominantly an empty, open landscape with wide views to the skyline in all directions.
- The landform is a gently undulating plateau which dips gently towards the east.

#### Rauceby Hills (8)

- A small landscape sub-area situated to the southwest of the District. It is delineated to the north by the wide gentle valley that the A17 follows. To the south the area is marked by a drop in gradient to the Sleas Valley. To the west is the District boundary while to the east there is lower land surrounding Sleaford.

#### Wilsford Heath (9)

- Small sub area on the south western edge of the District.
- Relatively flat, high in elevation (between 90-92m) and falls away to the north towards the Ancaster gap and to the east where the land becomes more undulating. To the south and west the land rises gently.
- A generally level, agricultural landscape.
- Fields are large and generally used for intensive arable agriculture.

#### Sleas Valley (10)

- Small, linear shaped landscape character sub-area situated in the south west of the District. It is delineated by rising land to the north and south on either side of the shallow valley. To the east it meets the lower more open land surrounding Sleaford. To the west the area meets the District boundary.

#### Central Clays and Gravels (11)

- Landscape sub-area runs the entire length of the District.
- The narrowest part is in the north, widening southwards beyond Sleaford to meet the Upland Plateau Fringe. The western edge is defined by the Limestone Heath and Sleas Valley, whilst the Fens lie to the east along its full extent.
- A gently undulating lowland, edged by areas of woodland in the north.
- Fields are generally smaller and more varied in shape than on the adjacent limestone plateau with some grazing land as well as arable.

#### Upland Plateau Fringe (12)

- South westerly fringe of the district.
- Topography is more varied than most other elements of the district.

- A series of interlocking, rolling low hills and gently rounded ridges with small river valleys with steep lower reaches.

5.132 Since the Central Plateau follows an almost identical boundary to that of the Southern Lincolnshire Edge NCA47, the patterns and extent of visibility are broadly the same. The gently rising and undulating landform produces an irregular pattern of visibility which becomes steadily more fragmented with distance before visibility towards the site is interrupted entirely by the marked change in level along the Lincoln Cliff scarp slope.

#### ***Landscape Character Assessment of Boston Borough (2009)***

5.133 Boston District lies adjacent to the eastern edge of the site. The local authority area is made up of three character types running from 'The Wash coastline south-west to the inland fens namely: Reclaimed Fen, Settled Fens, Reclaimed Saltmarsh and Wash Saltmarsh. Each character type consists of 2-3 character areas, described as follows:

##### *Reclaimed Fen Landscape Character Type: Holland Reclaimed Fen (A1), Wrangle Common to Freiston Ings Reclaimed Fen (A2):*

- The Reclaimed Fen landscape character type is located inland from the Settled Fen and lies to the south of the Borough boundary with East Lindsey and north of the Settled Fen character type
- It is an open landscape with big skies and long distance views to the Lincolnshire Wolds in East Lindsey District to the north.
- The landscape is evidently man-made with the regular, geometric pattern and grain defined by the large water filled drains, dykes, and canalised rivers that cut across the character areas.

5.134 The key characteristics of the Holland Reclaimed Fen are identified in the Council's assessment as follows (this unit being immediately adjacent to the application site and host character unit the characteristics are listed in full):

##### Holland Black Fens (A1)

- Flat and low-lying reclaimed fenland.
- Open and expansive views with big skies and dark night skies with some views semi-enclosed at ground level by large embankments.
- More distant views to Boston Stump and to the Lincolnshire Wolds in East Lindsey District to the north.
- A man-made intensive arable landscape laid out in a regular, geometric pattern with narrow roads and trackways alongside drains, dykes and ditches.
- The large North Forty Foot Drain and South Forty Foot Drain are key dominating features of the area.
- Field boundaries are typically open with wet ditches, dykes and drains and the occasional hedgerow.
- Occasional large scale horticultural glasshouses, and packing or processing plants occur near the southern boundary of the area.

- Sparsely populated with occasional small hamlets, scattered farmsteads, and occasional rows of former workers' cottages.
- Occasional derelict farm cottages and field buildings.
- Sparse tree cover confined to shelterbelts, with occasional hedgerows and small blocks of mixed woodland with shrubby edges.
- Bicker windfarm and large scale pylons on the south western tip are modern landmark features.
- A semi-remote, tranquil and intact working agricultural landscape.

##### Wrangle Common to Freiston Ings Reclaimed Fen (A2)

- Flat and low-lying reclaimed fenland
- Open views are semi-enclosed at a low level by large drain embankments.
- A man-made, intensively farmed arable landscape laid out with a strong geometric pattern of narrow roads and tracks alongside drains, dykes and ditches.

5.135 For a full list of key characteristics for local character unit A2 refer to **Appendix 5.3 / 5.4.**

5.136 The Reclaimed Fen landscape character type is situated adjacent to the character area in which the proposal lies. The majority of the character type falls within the zone of theoretical visibility of the proposed wind park, interrupted by localised screening from surface elements.

5.137 Settled Fens Landscape Character Type: Bicker to Wyberton Settled Fens (B1), Frampton to Fosdyke Settled Fen (B2), Wrangle to Cowbridge Settled Fen (B3):

- The *Settled Fen* Landscape Character Type lies between the *Reclaimed Saltmarsh* towards the coast and the *Reclaimed Fen* which is inland from this character type.
- The generally flat landscape allows long distance views interrupted only by settlements and associated shelterbelts and trees. Other vertical elements such as traditional windmills, church towers and spires, and poplar trees stand out in these views.
- Occasional fields of pasture remain. Overall the landscape has an irregular, organic pattern formed by winding roads and watercourses which is older than the more regular, geometric pattern found in the *Reclaimed Fen* character

##### Bicker to Wyberton Settled Fens (B1)

- A largely flat landform slightly elevated above the adjacent drained fenland.
- Open views with big skies.
- A relatively large scale organic network of winding roads is infilled by a geometric field pattern of predominantly arable fields.

##### Frampton to Fosdyke Settled Fen (B2)

- A largely flat farmed landscape with a patchwork of predominantly arable fields with some pasture.

- Open views with big skies.
- A small scale landscape pattern of winding narrow roads enclosing small irregularly shaped fields bounded by dykes and ditches.
- Wrangle to Cowbridge Settled Fens (B3)
- Largely flat, but slightly elevated above the drained fenland to the west and the reclaimed coastal marsh to the east.
- Some open views with big skies and others foreshortened by settlements within groups of trees.
- A small to medium scale pattern of winding roads, ditches and dykes infilled with a mix of both geometric and irregularly shaped arable fields.

5.138 The zone of theoretical visibility of the proposed wind park encompasses most of the Settled Fens landscape character type. Larger settlements such as Boston and Kirton, as well as ribbon developments along major roads such as the A52, provide local level screening in the predominantly flat landscape.

*Reclaimed Saltmarsh Landscape Character Type: Welland to Haven Reclaimed Saltmarsh (C1), Glebe Farm Reclaimed Saltmarsh (C2):*

- The Sea Bank Fens landscape character type is set just inland from the coast.
- The area is flat with raised sea banks which run parallel to the coastline.
- The large geometric fields have drains around their perimeter.

#### Welland to Haven Sea Bank Fens (C1)

- A fairly remote man-made, flat landscape of reclaimed saltmarsh which is surrounded and enclosed by sea banks of varying ages.
- Views to big skies within the area are contained at ground level by grassed and hedged sea banks.
- A predominantly geometric pattern of medium to large scale fields bordered by open ditches and dykes.

#### Glebe Farm Sea Bank Fens (C2)

- A fairly remote man-made flat landscape of reclaimed saltmarsh surrounded and enclosed by a series of sea banks of varying ages.
- Open views with big skies within the area are enclosed in the mid-distance at ground level by grassed and hedged sea banks.
- A geometric pattern of medium to large scale fields containing crops such as wheat and brassicas bordered by open ditches and dykes.

5.139 The majority of the Sea Bank Fens character type falls within the ZTV of the proposal. Views towards the site would be interrupted by intervening surface objects, and by large settlements such as Boston.

*Wash Saltmarsh Landscape Character Type: Welland to Haven Wash Saltmarsh (D1), Freiston Low to Wrangle Flats Wash Saltmarsh (D2):*

- The *Wash Saltmarsh* Landscape Character Type is located on the expansive tidal flats where Boston Borough meets The Wash.
- It is a simple, wild landscape which consists of large expanses of flat, open tidal saltmarshes, sand and mudflats, with virtually no man-made structures.

#### Welland to Haven Wash Saltmarsh (D1)

- An extensive area of open saltmarsh and intertidal winding mud and sand flats, and mud creeks.
- Views with big skies and wide horizons across The Wash to Norfolk are influenced by the changing tides, light and weather conditions.
- A largely inaccessible, remote and wild landscape.
- Freiston Low to Wrangle Flats Wash Saltmarsh (D2)
- A narrow strip of open saltmarsh and intertidal winding mud creeks with wider areas of tidal sand and mud flats.
- Tidal areas which regularly change from landscape to seascape with the tides. Regular flooding by the sea in other areas.
- A largely inaccessible, expansive, remote and wild landscape.

5.140 The majority of the Wash Saltmarsh Landscape Character Type falls within the zone of theoretical visibility of the proposed wind park. The tidal nature of the Wash Marshes Fens, being a transitory and dynamic environment, would preclude views of the proposal from large proportions of the character area.

#### ***East Lindsey Landscape Character Assessment (2009)***

5.141 Situated to the north east of the study area, East Lindsey district constitutes eleven character types, of which five character areas are located within 20km of the proposal; Stickney to Sibsey Reclaimed Fen (A1), Wragby to Horsington Vale Woodland and Farmland (E1), Woodhall Spa to Coningsby River Terrace (F1), Hainton to Toyton All Saints Wolds Farmland (G3), Mareham to Little Steeping Fenside Woodland and Farmland (H1).

#### Stickney to Sibsey Reclaimed Fen (A1)

5.142 Bounded by the River Witham to the west, and framed by the rising foothills to the north, its 'key characteristics' are noted as being:

- Flat and low-lying drained fenland with open, expansive views and big skies
- Intensively farmed medium to large scale arable fields...

5.143 Stickney to Sibsey Reclaimed Fen character area lies to the north east of the proposal, the majority of which falls within the zone of theoretical visibility of the proposed wind park. Within the low-lying landscape larger settlements such as Stickney provide intermittent screening of views towards the site, the effect of which increases with distance.

- Wragby to Horsington Vale Woodland and Farmland (E1)
- 5.144 Situated on the western boundary of East Lindsey district adjoining both West Lindsey and North Kesteven Districts. The character area's key characteristics are described as:
- An open, fluted and gently rolling broad vale intersected with small valleys draining mostly into the fens to the west and a few towards the Wash Basin to the south
  - A patchwork of medium to large mixed agricultural fields, with smaller pastoral fields in irregular patterns around small villages and hamlets
  - Trees are an important element in the landscape with scattered ancient lime woods, small deciduous and coniferous woodland blocks and strips, as well as frequent hedgerow trees
- 5.145 Approximately a quarter of the character area, which extends beyond the study area, is within the zone of theoretical visibility. The ZTV coverage extends primarily along the boundary with the low-lying Fens to the west and gently rising upland landscape to the east of the character area.
- Woodhall Spa to Coningsby River Terrace (F1)
- 5.146 Contained by the River Witham to the west and River Bain to the east, bounded by Wragby to Horsington Vale Woodland and Farmland (E1) to the north and Stickney to Sibsey Reclaimed Fen (A1) to the south. It is characterised as follows;
- A largely flat river terrace at the confluence of the Old River Bain and River Witham
  - Some gentle undulations across the terrace and flooded sand and gravel pits. Raised man-made embankments to the River Witham and Old River Bain
- 5.147 Of the area covered by Woodhall Spa to Coningsby River Terrace landscape character area, approximately half lies within the zone of theoretical visibility of the proposal. Settlements such as Tattershall and Coningsby to the south, Woodhall Spa and surrounding areas of significant plantation woodland interrupt the pattern of visibility in the central and northern regions of the character area, blocking views towards the site.
- Hainton to Toyton All Saints Wolds Farmland (G3)
- 5.148 Located along the fringe of the study area to the north east of the application site. Hainton to Toyton All Saints Wolds Farmland stretches from the boundary of West Lindsey District to the north to Mareham to Little Steeping Fenside Woodland and Farmland in the south and has the following key characteristics:
- Elevated undulating landscape of ridges, wide and narrow valleys, plateau and scarp
- 5.149 The majority of the character area lies in excess of 20km from the proposal. Of the small proportion of the character unit within the study area between a quarter and a half would fall within the ZTV of the proposed wind park. The intermittent pattern of visibility bears close relation to the underlying rolling landform of the area.
- Mareham to Little Steeping Fenside Woodland and Farmland (H1)

- 5.150 The character area occupies a narrow band of land between the lowland fen landscape to the south and the elevated Wolds to the north. Its key characteristics are summarised as follows:

- A rolling landscape at the foot of the Lincolnshire Wolds rising gently to the Wolds from Stickney to Sibsey reclaimed Fen

- 5.151 Approximately half to three-quarters of the character area situated within the study area falls within the zone of theoretical visibility of the proposal. The pattern of visibility extends along the southern lowland fens; intervening blocks of woodland and elevated topography act to disrupt views towards the site from the north of the character area.

#### ***South Kesteven Landscape Character Assessment (2007)***

- 5.152 South Kesteven District is located to the south west of the study area and has been subdivided into seven character areas: Trent and Belvoir Vale, Southern Lincolnshire Wolds, Grantham Scarps and Valleys, Harlaxton Denton Bowl, Kesteven Uplands, Fen Margin and The Fens. Of these, the following fall partly within 20km of the proposal;

#### Southern Lincolnshire Edge (Ecotricity Ref 3)

- 5.153 A small fragment of this character unit falls within the study area to the west of the proposed site. The key characteristics are defined as:
- 5.154 Large-scale open arable landscape
- 5.155 Large rectilinear fields with some fragmented hedgerows and shelterbelts
- 5.156 Of the character area lying within the study area, the majority falls within the zone of theoretical visibility of the proposal.

#### Kesteven Uplands (Ecotricity Ref 1)

- 5.157 Located to the south west of the site, along the periphery of the study area. An extensive character area of undulating landform, defined to the east by the Fen Margin and in the north by the pronounced limestone scarp of the Southern Lincolnshire Edge. The key characteristics are described in the District assessment as being:
- A relatively unified, simple, medium-scale agricultural landscape, with a high proportion of historic woodland.
  - Undulating landform based around the valleys of the Rivers Witham and East and West Glen and the Welland to the south
- 5.158 In the region of three-quarters of the Kesteven Uplands landscape character area, which extends beyond the study area to the south and west, falls within the ZTV of the of the proposed wind park. Subtle changes in topography break up the areas of visibility towards the site.
- Fen Margin (Ecotricity Ref 6)
- 5.159 The character area covers the threshold between the Fens to the east and Kesteven Uplands to the west. Page 52 of the local character assessment describes the Fen Margin as '...contains little of

intrinsic character or quality either. It is a transitional landscape, borrowing characteristics from adjacent areas'. Its key characteristics are defined as being:

- Broad east-facing slope, with local variations in topography
- Medium-scale rectilinear fields with some hedgerow trees and a variety of farming uses

5.160 The rising and falling topography of river valleys create distinctive 'channels' of visibility running east to west. Around half to three-quarters of the character area within 20km would fall within the zone of theoretical visibility of the proposal.

- The Fens (Ecotricity Ref 7)

5.161 Low lying flat terrain running broadly north-south to the south west of the proposal. The character area is defined by its topography. The key characteristics are summarised as follows:

- Low flat terrain, level horizons and large skies
- Large-scale open rectangular fields, divided by drainage ditches and embanked rivers

5.162 The majority of The Fens landscape character area lies within the ZTV of the proposed wind park. As with The Fens (NCA 46) the low lying topography and sparse settlement dictate the pattern of visibility. However, in practice the wind park (or parts of) would often be hidden from view by trees, shelter belts, hedges and engineered structures, such as bridges and embankments.

#### ***South Holland Strategic Landscape Capacity Study (2003)***

5.163 The application site lies to the north of South Holland District, which covers the south eastern corner of Lincolnshire. The district lies within The Fens (LCA 46) character area, as defined by Natural England. The finer grain of the Landscape Capacity Study highlights the subtle differences between the broad low-lying fenland landscape, and has been divided into three extensive landscape character types; The Settled Fens, Peaty Fens and Wash Marshes.

#### ***The Settled Fens (Ecotricity ref 'S')***

5.164 Located to the south of the study area, bounded to the west by South Kesteven District, east of the 'Peaty Fens' and characterised as follows:

- Flat landform
- Nucleated settlements with mature vegetation and church spires
- Organic lines dominate e.g. winding roads

5.165 The majority of the Settled Fens landscape character type falls within the ZTV of the proposal.

- Peaty Fens (Ecotricity ref 'P')

5.166 Lying south of the application site and bounded to the east by the 'Wash Marshes' the character type forms an extensive area of the district, covering the south eastern edge of the study area. Described in page 9 of the Landscape Capacity study as having 'strong linear pattern, defined by geometric arable fields' other key characteristics are listed as:

- Flat landform
- Linear settlement and isolated farmsteads with associated shelterbelts

5.167 The majority of the character area, within 20km, falls within the zone of theoretical visibility of the proposal. Visibility within the Peaty Fens is interrupted by medium sized settlements such as Donington and Pinchbeck, and by linear settlements with an east-west alignment, such as Risegate and Surfleet

- The Wash Marshes (Ecotricity Ref 'W')

5.168 Transitional landscape between The Wash and the inland fens landscape. The form of the landscape is influenced and defined by the presence of water, described in the Strategic Landscape Capacity study on page as: 11 as 'Flat topography dissected by winding creeks, drainage channels and drainage ditches'. Key characteristics are summarised as:

- Flat landform
- Salt marsh
- Tidal creeks

5.169 The ZTV of the proposed wind park encompasses the majority of The Wash Marshes character area within 20km of the site.

#### ***Summary of Landscape Character Baseline***

##### ***Character of the Study Area***

5.170 In broad terms the study area is a low-lying coastal fenland bounded to the east by the sea (The Wash) and to the west and north by the rising / undulating chalk and sandstone hinterland of the Lincolnshire Wolds which in turn affords long views across the lowland at certain locations. In terms of local authority areas the low-lying fenland in the east makes up all of Boston Borough, a large part of South Holland District and the eastern and southern parts of South Kesteven and North Kesteven Districts respectively and southern extremity of East Lindsey District. The rising / higher ground occupies the west and northern study area taking in the remainder of South Kesteven, North Kesteven and East Lindsey Districts plus the south eastern tip of West Lindsey District.

##### ***Character Areas within 10km of the site***

5.171 The following local authority character units lie within 10km of the application site:

- North Kesteven District – Central Clays and Gravels (11); The Fens/Fenland (13);
- Boston Borough – Holland Reclaimed Fen (A1); Bicker to Wyberton Settled Fen (B1); Frampton to Fosdyke Settled Fen (B2); Wrangle to Cowbridge Settled Fen (B3);
- East Lindsey District – Stickney to Sibsey Reclaimed Fen (A1); Woodhall Spa to Coningsby River Terrace (F1); Mareham to Little Steeping Fenside Woodland and Farmland (H1)
- South Holland District – Peaty Fens, Settled Fens
- South Kesteven – The Fens

5.172 The majority of land within 10km of the site is low-lying fenland which is mainly level and settled with a range of settlement types and forms, but which in general displays a relatively open 'fenland' character. The exception to this is the Central Clays and Gravels character unit in North Kesteven District occupying the slightly higher, undulating ground to the west and north of Heckington Fen and the application site which tends to be more enclosed than its fenland neighbour and supports more woodland, particularly to the north.

#### *Visual Characteristics of the Study Area Landscape*

- 5.173 The ZTV of the proposed development indicates that the wind park would have a visual presence in the flat fenlands that would diminish with distance and vary in magnitude depending on the amount and type of vegetation cover and settlement at any given location, as illustrated in **Figures 5.9 and 5.10 (ZTV) and Photomontages 2, 5, 6, 7, 13, 22, 26 and 28**.
- 5.174 Although more enclosed which restricts visibility, the proposed development would be visible from parts of the surrounding rising ground – Central Clays and Gravels character unit – particularly the gently sloping ground overlooking Heckington and Bicker Fens, for instance in the vicinities of Ewerby and Osbournby.
- 5.175 In practice the wind park (or parts of) would often be hidden from view by trees, shelter belts, hedges and engineered structures, such as bridges and embankments, which it was not possible to include in the ZTV computer model (see **Photomontages 8, 9, 10 and 11**).

#### *Evaluation of local landscape*

5.176 The landscape quality and sensitivity of the site and surrounding area is dealt with in the Evaluation of Landscape and Visual Environment section below, particularly in respect of North Kesteven District's and Boston Borough's local character areas, and Natural England's 'The Fens National Character Area (NCA46). **Appendix 5.4: Landscape Assessment Schedules (5.4a – 5.4f)** give the landscape quality and sensitivity classifications for each character unit in the detailed study area (15km).

#### **Valued Landscapes**

5.177 Valued landscapes are those areas of land, identified in development plans, designated for their special landscape or scenic qualities. There is a range of 'valued' landscapes in the study area, in addition to a number of historic / designed landscape areas. **Figure 5.5: Landscape Planning Context** shows the location of designated landscapes in the study area including Areas of Outstanding Natural Beauty (AONB) and Registered Historic Parks and Gardens. Other areas designated for landscape and recreational reasons are shown on the extracts of adopted Local Plan Proposals Maps for North Kesteven District Council and Boston Borough in **Appendix 5.9**. Designated heritage assets are shown on **Figure 6.1-6.3 in Chapter 6: Cultural Heritage**.

#### *Areas of Outstanding Natural Beauty (AONB)*

5.178 AONBs are designated for their natural beauty and, in terms of planning policy, enjoy the same level of protection as national parks. There is one AONB within the study area: the Lincolnshire Wolds, as shown in **Figure 5.5**.

#### *Lincolnshire Wolds AONB*

- 5.179 The current AONB Management Plan<sup>6</sup> states "The Lincolnshire Wolds lie in the north-eastern quarter of the county of Lincolnshire... mid-way between Lincoln and the coast, surrounded by the relatively flat fens, coastal marsh and the Lincoln Clay Vale. The AONB comprises an area of 558 km<sup>2</sup> (216 miles<sup>2</sup>)". The Lincolnshire Conservation Board is responsible for administering the AONB and has a statutory duty 'to conserve and enhance the natural beauty of the area'<sup>7</sup>. Information on The Lincolnshire Wolds AONB is provided in the Management Plan, including its special qualities which are examined in the Assessment of Effects section below. The baseline character of the designated area has been dealt with in the previous section under the East Lindsey Landscape Character Assessment heading.
- 5.180 The proposed wind park is located more than 25km from the nearest part of the AONB in The Fens NCA which is a distinctly different landscape unit. In addition a very small proportion of the designation falls within the ZTV of the proposals – see **Figures 5.9a and 5.10a**. Long distance views of the proposed wind park would be restricted to a small part of the southern edge of the designated area – particularly within the threshold / fen margin between low-lying fenland and the gently undulating upland of the Lincolnshire Wolds. It should be noted that in practice there will be many stretches within this section which would not have views of the proposals due to the screening effects of vegetation and built form. The remainder of the AONB, the vast majority of the designated area, would be situated more than 25km from the site, beyond the ZTV of the proposed wind energy development, where no views of it would be possible.
- 5.181 Considered as a whole, the Lincolnshire Wolds AONB would be unaffected by the proposed wind park in landscape and visual terms because of the intervening distance in excess of 25km and the lack of intervisibility across the majority of the protected area and the separating distances between it and the application site. Where there is potential for low-level effects to occur on the character of, or views from within, the AONB at its southern extremity, they are examined in the Assessment of Effects section below.

#### *Historic Parks and Gardens*

5.182 There are six historic parks and gardens located within 20km of the application site, namely:

##### *Boston Cemetery, nr Boston*

- 5.183 Located approximately 11km east of the proposal. A late 19th century cemetery featuring a central avenue of lime trees running east to west from the lodge, with a variety of specimen trees.
- 5.184 Approximately a quarter of the cemetery falls within the zone of theoretical visibility of the proposed wind park, although the Register of Historic Parks and Gardens<sup>8</sup> states that 'The level ground and enclosure of the site preclude views into or out of the cemetery'.

##### *Culverthorpe Hall, nr Oasby*

<sup>6</sup> The Lincolnshire Wolds Countryside Service and Lincolnshire Wolds JAC, 2003, Lincolnshire Wolds AONB Management Plan 2004-2009

<sup>7</sup> Section 82, Countryside and Rights of Way Act 2000

<sup>8</sup> [http://www.parksandgardens.ac.uk/index2.php?option=com\\_parksandgardens&task=site&id=5071&preview=1&Itemid=292](http://www.parksandgardens.ac.uk/index2.php?option=com_parksandgardens&task=site&id=5071&preview=1&Itemid=292)

5.185 Situated 18km west-south-west of the site, Culverthorpe Hall. It is described in the Register of Parks and Gardens<sup>9</sup> as having 'A country house with an early 20<sup>th</sup>-century garden, set in a park with woodland and formal features laid out from the 17<sup>th</sup> century onwards.

5.186 Around half of the grounds fall within the zone of theoretical visibility of the proposal.

*Rauceby Hospital, nr South Rauceby*

5.187 Lying 15km to the west of the proposal, Rauceby Hospital was a former mental hospital with grounds and gardens laid out in the 1900s. The hospital site is currently being redeveloped for housing.

5.188 Approximately half of the grounds fall within the ZTV of the proposal.

*Rauceby Hall, nr South Rauceby*

5.189 Situated 16km east of the application site, Rauceby Hall consists of landscaped parkland in the order of 100 hectares, half of which are registered.

5.190 In the order of quarter to a half of the gardens or grounds lie within the zone of theoretical visibility of the proposed wind park.

*Revesby Abbey, nr Mareham le Fen*

5.191 Located approximately 18km north east of the proposed wind park, Revesby Abbey is described in the Register of Historic Parks and Gardens<sup>10</sup> as 'A mid-19<sup>th</sup>-century country house set beside the remains of mid-19<sup>th</sup>-century formal gardens surrounded by a later 18<sup>th</sup>-century park with its origins in a medieval deer park'.

5.192 In the region of a quarter to a half of the gardens or grounds fall within the zone of theoretical visibility of the proposal.

*Scrivelsby Court, nr Horncastle*

5.193 Located approximately 19km north-west of the proposal, key heritage features of Scrivelsby Court are listed in the Register of Parks and Gardens<sup>11</sup> as being 'a post-medieval landscape park on which Humptry Repton advised in the late 18<sup>th</sup>-century, with 18<sup>th</sup>-century and mid-20<sup>th</sup>-century gardens, forming the setting for a country house converted from a 16<sup>th</sup>-century gatehouse'.

5.194 Parts of the grounds and gardens fall within the ZTV and views of the proposal may be possible from certain locations within them.

**Other designations**

5.195 Other areas designated locally for reasons of landscape, nature conservation or public amenity situated within 10km of the application site are shown in the extract of North Kesteven District

Council and Boston Borough Adopted Local Plan (2007 and 1999 respectively) Proposals Map at **Appendix 5.9**. Those publicly accessible areas lying within the ZTV of the proposals are examined in the Assessment of Effects section below.

**Public Access, Recreation Resources and Places of Interest**

5.196 There are a range of landscape and recreation resources and places of interest in the study area which provide public access and outdoor recreation opportunities for residents and visitors to the locality. Important or sensitive resources in this respect, which fall within the ZTV of the proposals have been identified as 'key landscape and visual receptors', particularly those situated in the 'detailed study area' (within 15km of the site) as summarised below; a number of sensitive receptors lying within the wider study area are also included:

- Recreational trails and public rights of way
- Land with public access including foreshore
- Places of interest including cultural heritage features with public access
- Public highways used for recreational purposes

5.197 A range of landscape resources and visual receptors is shown in **Figure 5.7: Public Access, Recreation Resources and Places of Interest** and described in the Baseline 4 – Visual Environment section below. The key landscape and visual receptors situated in the detailed study area are shown in **Figure 5.8: Key Landscape and Visual Receptors**.

<sup>9</sup> [http://www.parksandgardens.ac.uk/component/option,com\\_parksandgardens/task/site/id,1019/Itemid,292/](http://www.parksandgardens.ac.uk/component/option,com_parksandgardens/task/site/id,1019/Itemid,292/)

<sup>10</sup> [http://www.parksandgardens.ac.uk/component/option,com\\_parksandgardens/task/site/id,2793/tab,description/Itemid,292/](http://www.parksandgardens.ac.uk/component/option,com_parksandgardens/task/site/id,2793/tab,description/Itemid,292/)

<sup>11</sup> [http://www.parksandgardens.ac.uk/component/option,com\\_parksandgardens/task/site/id,2927/tab,description/Itemid,292/](http://www.parksandgardens.ac.uk/component/option,com_parksandgardens/task/site/id,2927/tab,description/Itemid,292/)



## BASELINE 4 – VISUAL ENVIRONMENT

5.198 This section describes the visual environment based on field surveys and a desktop study of 1:25,000 scale Ordnance Survey maps and aerial photographs.

### Visual Resource

#### Zone of Theoretical Visibility (ZTV)

5.199 The Zone of Theoretical Visibility (ZTV) of the proposed wind park is shown in **Figures 5.9** and **5.10**. The ZTV has been calculated for twenty-two turbines with a height of 80 metres to the hub and 125 metres to the blade tip. **Figure 5.9** shows the extent of theoretical visibility of the turbines to the hub / nacelle, and **Figure 5.10** shows the area from where the blade-tips of the turbines would theoretically be seen. The ZTV is based on a digital terrain model (DTM) and includes 'screening' which takes account of all built form and woodland blocks shown on the 1:50,000 OS base. However, the ZTV model does not include engineered structures and incidental vegetation such as hedges, hedgerow trees, shelter belts and wooded watercourses and therefore represents the worst-case scenario in terms of visibility. In other words there will be many locations shown as being within the ZTV on plan from where the proposals would not, in practice, be visible.

#### Scope of Visual Assessment

5.200 Important viewpoints and visual receptors situated in the study area were identified in consultation with the local planning authority. Visual receptors can be either static or dynamic and are grouped under five main headings:

- Property – residential and places of work;
- outdoor recreation resources including waterways;
- places of interest including cultural heritage resources with public access;
- public rights of way
- transport corridors (public highways and railways).

5.201 The 'detailed study area' threshold (15km) is considered to be the outside limit of significant visual impact in relation to the proposed wind turbines. An assessment has been carried out on potential visual impacts on key receptors situated within the 'detailed study area'. In addition, certain sensitive receptors lying more than 15km from the site, for instance popular places of interest and vantage points located in areas of valued landscape, have also been considered in order to include the possibility of visual effects arising in the wider study area. These are covered where necessary in the assessment of photomontage viewpoints as set out at **Appendix 5.6: Summary of Landscape and Visual Effects**.

5.202 **Figure 5.8** shows the sensitive landscape and visual receptors, including settlement, lying within 15km of the development proposals. For those receptors situated in the wider study area see **Figure 5.7**. The key receptors are described in more detail the Visual Receptors section below.

### Viewpoints and Photomontages

5.203 A selection of views looking towards the site were photographed to produce panorama format 'photomontages' (A3 paper size) of the proposed wind park in its landscape context. The photomontage viewpoint locations were agreed with the relevant local planning authorities at the pre-application consultation stage. Photomontages and 'wirelines' (also known as a 'wire frames') of the proposed wind park are provided at **Figure 5.11: Photomontages and Wirelines** together with thumbnail viewpoint location plans.

5.204 The photomontage viewpoint locations were identified, in consultation with North Kesteven and Boston District Councils, as being representative of sensitive receptors locally including residential properties, places of interest, recreational resources and public highways. The selected viewpoints are based on the following criteria:

- Extent of study area (35km – approx limit of visibility due to acuity of eye)
- Extent of 'bareground' ZTV (area of theoretical visibility based on landform)
- Settlement (concentrations of residential population within ZTV)
- Popular outdoor recreation resources within ZTV
- Places of interest (popular and / or designated sites, buildings and features within ZTV)
- Public access (publicly accessible areas, nodes and routes within ZTV)
- Landscape character (a range of different character areas within ZTV)
- Valued landscapes (protected / designated areas and sensitive landscapes within ZTV)

5.205 It was beyond the scope of this LVIA to produce photomontages from every key receptor. The methodology for generating the visualisations is based on current guidance on computer modelling and photomontage production as described in the Methodology section above.

5.206 One of the purposes of the photomontages is as an aid to understanding the landscape character and visual amenity of the study area, factors which form the basis for assessing the potential landscape and visual effects arising as a result of the proposed wind park. Views and visual amenity are assessed together from representative viewpoints.

### Weather, Atmospheric Conditions and Visibility

5.207 Wind direction and turbine yaw angle affects visibility of the turbine rotors and blades in the landscape generally which in turn influences the magnitude of visual impact from specific locations. Annual wind direction data based on the closest Met Office monitoring station to the site (Coningsby) is presented at **Appendix 5.8: Met Office Wind Direction Data (2009)**. The wind rose indicates that the turbine rotors would be facing towards the prevailing wind (west-south-west / south west) the majority of time and in the opposite direction (east-north-east / north east – towards the dominant wind) for much of the remainder of the year. The corollary of this is that locations to the west south west / south west and east north east / north east of the site would tend to experience slightly higher levels of visual change because the rotors / blades would be viewed end-on the majority of the time. Conversely, locations to the north west and south east would experience slightly lower levels of visual change because the rotors / blades would tend to be seen side-on, which reduces the amount of turbine structure in view and minimises visibility of the

- rotating blades. Obviously those locations in between including to the north, east, south and west would experience levels of visual change somewhere in between the two extremes. This phenomenon has been factored into the assessment.
- 5.208 Regarding weather and prevailing atmospheric conditions, it is important to note that there would be many days of the year when visibility is significantly restricted. Poor visibility is common in lowland England due to the location near the coast, distinct topographic variations and incidence of low cloud, mist, haze and fog. An appraisal of local visibility patterns is provided below based on Met Office data for RAF Coningsby, as summarised in **Table 5.2** below, which is taken to be representative of the Lincolnshire Fens.
- 5.209 Generally speaking the amount of time that the proposed wind park would be visible during the year is a function of distance from the site. Met Office visibility data for the region indicates that at distances of around 20km the turbines would be visible for about 50% of the time. At greater distances the frequency of visibility gradually drops to around 38% of the time at 25km, and about 24% of the time at 35km or more; the closer to the site the viewer, the higher the frequency of potential visibility over any given distance. At 10km for example the proposed wind park would be visible for the equivalent of approximately 9 months a year; in other words it would not be possible to see the turbines for the remaining 3 months (or equivalent in days annually). The table below summarises the pattern of visibility for the application site and surrounding area.

Table 5.2 Met Office Visibility Data

Distance from site (km)	Approx % time objects would be visible at this distance	Equivalent no. months a year proposals potentially visible	Equivalent no. days a year proposals potentially visible
5	85%	10.2	310
10	72%	8.6	263
15	62%	7.4	226
20	51%	6.1	186
25	39%	4.7	142
30	38%	4.7	142
35	24%	2.9	88

Source – Met Office data for Coningsby (2011)

- 5.210 It should be noted that even when objects are theoretically visible at a particular distance, atmospheric conditions vary and often visibility is not distinct and clarity decreases with distance. It was observed during fieldwork that, when it was possible to see a certain distance, objects near the limit of visibility were blurred and difficult to pick out due to haze and/or low cloud. This phenomenon is known as ‘aerial perspective’ and is evident in some of the visualisations, for example **Photomontages 13 and 18**. This factor needs to be taken into account when considering the magnitude and significance of landscape and visual effects.

Description of Visual Environment

- 5.211 The parts of the study area lying within the ZTV of the proposals with potential views towards the site are described in outline below. References to representative Photomontages are provided in brackets.

Overview

- 5.212 The character of the study area has been described in detail in the previous section. It is, for the main part, a low-lying, level to gently sloping landscape, intensively farmed and settled with a combination of dispersed and nucleated settlement throughout. The study area supports a well developed transport network of roads, railways and some waterways plus, in the fenlands, an extensive drainage system. These features are shown at a broad scale on **Figure 5.1 Site Location and Study Area**. In addition the study area is punctuated by tall structures and other development such as high-voltage electricity transmission lines / pylons, Bicker Fen Windfarm and a range of agricultural buildings including glasshouses.
- 5.213 Based on Natural England’s analysis<sup>12</sup> there is a distinction in broad landscape and visual terms, which is largely topographical, between: a) the predominantly level Fens adjacent to the coast to the east and south of the study area – from Bourne through Spalding and Boston to the Wash; and b) the higher, undulating / varied topography of the hinterland to the north and west – from the Lincolnshire Wolds to the Lincolnshire Edge, encompassing the adjacent Trent / Belvoir and Lincolnshire Vales, plus Lincoln city, Grantham and their environs. **Figure 5.3: Topography** helps describe the ‘lie of the land’ in relation to the application site showing the areas of low-lying, level ground surrounded by the rising, undulating land. Natural England’s ‘Countryside Character’ map information is reproduced in **Figure 5.6a**.
- 5.214 The low-lying fenland is level and open with relatively little woodland and tree cover. In contrast the rising, undulating ground of the wider study area contains large woodland blocks which combine to structure and break-up views, particularly within North Kesteven District. Notwithstanding the openness of the fens, visibility from fenland settlements including Heckington, Sleaford, Coningsby, Boston and Donington is often restricted by surrounding buildings and incidental vegetation. The main settlements associated with the elevated ground to north and west including Grantham, Lincoln and Horncastle tend to be located in the valleys surrounded by higher ground and mature vegetation which limits visibility and would block views towards the wind energy proposals. The visual characteristics of the study area are described in more detail below.

‘Detailed Study Area’ Views (up to 15km from the site)

- 5.215 The distinctive local landform – the broad, level fenland combined with the gently rising and undulating land to the north and west – and to a lesser extent tree cover and settlement determine the visual characteristics of the study area. Views vary from extensive and panoramic across the fens and from local highpoints, to limited and framed in the surrounding undulating, wooded areas. However, although long range views are typical of open, level landscapes, visibility across much of the fenland is interrupted by the characteristic tree belts, hedges, dykes / embankments, and built

<sup>12</sup> Natural England, 1999, ‘Countryside Character’ – Volume 4: East Midlands

form / engineered structures, a phenomenon illustrated in many of the photomontages provided at **Figure 5.11**.

- 5.216 The ZTVs at **Figures 5.9** and **5.10** indicate that in the detailed study area (within 15km) the proposed wind park would be visible in close to medium / long range views across a large part of the fenland and adjacent slopes including potentially from some settlement edges such as Heckington, Sleaford and Boston. However there would also be areas lying mainly in the 'visual shadow' of landform, vegetation and / or buildings, notably the undulating farmland around Ewerby, Anwick and Ruskington, the fenland margin around Helpringham and Heckington, and within urban areas such as Sleaford and Boston. In addition, at a local level, even within the open fens, there are many locations / settlements shown as lying within the ZTV from where most views are, in practice, interrupted by buildings and mature vegetation (including street planning and gardens), for example the majority of properties in Heckington, Swineshead, Donington, Billingham and Coningsby, including their historic cores (see **Photomontages 9, 11 and 16**).
- 5.217 The same intermittent visibility is experienced when moving through the landscape, either in vehicles or on foot, caused by local variations in topography and interruption of views by shelterbelts / tree planting, hedges, embankments and built form for instance: travelling in vehicles along A15, A16, A52, A153 and A155, and parts of the A17 and A1121; or walking, riding or cycling along minor roads and public rights of way (PRoW) situated more than 5km from the application site, including the for example the B1192 and B1394 and those in the vicinity of Heckington, Ewerby, Widmore Fen, Langrick / Hubbert's Bridge, Swineshead and Donington (see **Photomontages 8,10 and 12**).
- 5.218 Within 5km of the application site visibility tends to be less interrupted and intermittent due to the openness of the fenland landscape and lower density of upstanding features (built and vegetated). Consequently, except within settlements, due to the relative prominence of the proposals, close to medium range visibility would be less interrupted and therefore more frequent. This includes the villages / hamlets of Swineshead Bridge, East Heckington, Amber Hill, Holland Fen and South Kyme. The same more frequent and uninterrupted visibility would apply to local roads and PRoW within 5km including the A17, A1121, B1395 / Sidebar Lane, Littleworth Drove, Claydyke Bank / Maryland Bank and Sutterton Drove (see **Photomontages 2, 3 and 4**).

#### **Views from the wider Study Area (between 15 and 35km)**

- 5.219 As with the detailed study area, theoretical visibility across the wider study area tends to be restricted to the level fenland areas and adjacent enclosing slopes facing / 'overlooking' the application site as depicted in the ZTVs in **Figures 5.9** and **5.10**. Long range views of the proposals from the upland areas enclosing the low-lying Fens, namely the Lincolnshire Edge and Lincolnshire Wolds, would be afforded from open areas tilted towards the application site, for example in the vicinity of Wellingore, and Belchford and Tetford respectively (see also **Photomontages 27 and 29**).
- 5.220 Similarly some open stretches of main road such as the A153 crossing the Lincolnshire Wolds (NCA 43) and the A15 traversing the South Lincolnshire Edge (NCA 47), would afford fleeting, long range views towards the proposals. However other sections of these roads plus many local B / minor roads and PRoW are enclosed by hedges, tree planting and large woodland blocks which tend to block or break up views towards the site, thus significantly restricting long range views.

- 5.221 The enclosed or semi enclosed valley landscapes of the Central Lincolnshire Vale (NCA 44), and Trent and Belvoir Vales (NCA 48) which lie beyond to the west and north of the Southern Lincolnshire Edge, incorporating Lincoln city, Grantham and their environs, are located outside the ZTV where no views of the wind energy proposals would be available due to the screening effect of landform (see **Figure 5.3**). The only exception to this is from the public gallery at the top of Lincoln Cathedral tower which is located at the edge of the study area approximately 35km from the application site.

#### **Visual Receptors**

- 5.222 This section summarises the salient landscape, recreation and other resources located in the study area which fall within the ZTV. These have been identified as 'key landscape and visual receptors' which have the potential to be affected visually by the proposed wind park. The key receptors are grouped as follows:
- residential property – residents of isolated dwellings and settlements;
  - recreation trails and public rights of way – people using footpaths, bridleways, byways, cycleways, canal towpaths, and local roads used as recreational routes
  - publicly accessible land – people using common land, access land (open and forest), National Trust land, and Woodland Trust land;
  - places of interest with public access (including cultural heritage resources) – views from / visual amenity of popular landscape features including historic buildings, monuments and parks and gardens; and
  - public highways – people in vehicles and others using main roads and local roads.
- 5.223 **Figure 5.7: Public Access, Recreation Resources and Places of Interest** shows the location of these receptors in relation to the wider study area. **Figure 5.8: Key Landscape and Visual Receptors** provides the same information in more detail for the detailed study area up to 15km from the site, together with the ZTV (overlaid in blue), in order to assess the likely visual effect on sensitive local receptors. References to illustrative photomontages are provided in brackets.

#### **Settlement and Residential Property**

- 5.224 The settlement characteristics of the study area are described in the Description of Site and Surrounding Area section above and shown on plan in **Figure 5.1** and **Figure 5.8**. **Figure 5.4:** shows the location of settlement, including farmsteads and isolated dwellings surrounding the application site, individual residential properties situated within 3km of the nearest proposed turbine are identified in the schedule at **Appendix 5.10a**, and shown on the plan in **Appendix 5.10b**.
- 5.225 It is unlikely that residential properties situated beyond 3km would experience significant visual effects. In some cases, due to their exposed position and / or sensitive location, certain dwellings / property groups beyond the 3km threshold up to approximately 5km were considered, for example exposed locations at the southern edge of South Kyme (Low Road and Cow Drove) and Heckington / Great Hale (Orchard Drive / Pocklington Way). It is assumed that the majority of dwellings / settlement situated within 5km of the nearest turbine lie within in the ZTV (with Screening) of the proposed wind park. However this does not take into account localised screening of built-form and vegetation.

5.226 To assist in the visual assessment hamlets and clusters residential properties and situated within 3km of the application site, as detailed in **Appendix 5.10**, are identified below by thoroughfare in groups, organised by 'quadrants'; the approximate distance from nearest turbine in kilometres is provided in brackets:

*South East Quadrant (SE)*

- East Heckington (east), Main Road / A17 (1.0 – 1.5)
- Swineshead House and East and West Cottages, Main Road / A17 (1.5)
- The Rakes, Browns Drove (1.0 – 1.5)
- Swineshead Bridge, Main Road / A17 / A1121 / Browns Drove (1.5 – 2.5)
- Cattlehome, Harrisons Drove (1.5 – 2.0)
- Swineshead Bridge, Main Road / A17 / A1121 (2.5 – 3.0)
- Algarkirk Fen, Harrisons / Ulyetts Drove, Claydyke Bank (2.0 – 3.0)

*South West Quadrant (SW)*

- East Heckington (west), Main Road / A17 (1.0 – 1.5)
- Side Bar Lane (1.0 – 1.5)
- Main Road / A17 and Great Hale Fen (2.0 – 3.0)

*North West Quadrant (NW)*

- Mill Green Farm (1.0)
- Side Bar Lane / Kyme Road (1.0 – 1.5)
- Clay Bank / Kyme Road (1.5 – 2.5)
- Littleworth Drove (1.5 – 3.0)
- Cow Drove (2.5 – 3.0)

*North East Quadrant (NE)*

- Sutterton Fen, Claydyke Bank (1.0 – 1.5)
- Algarkirk Fen, Claydyke Bank / Chapel Lane (1.5 – 2.0)
- Maryland Bank (1.5 – 3.0)
- Sutterton Drove (2.0 – 3.0)
- Amber Hill, Sutterton Drove (2.0 – 3.0)
- Holland Fen, Sutterton Drove (2.0 – 3.0)

5.227 More information on the residential properties surrounding the site is provided at in the schedule at **Appendix 5.10**.

***Public Rights of Way and other non-vehicular routes***

5.228 Definitive Public Rights of Way (PRoW) and other routes with public access situated in the detailed study area (within 15km) are shown in **Figure 5.8**. Those lying within 3km of the site are shown in more detail on **Figure 5.4**. PRoW located in the remainder of the study area, more than 15km from the site, would not be affected significantly by the proposals and therefore are only assessed where they form part of a recognised trail or long distance route such as the Viking Way, and where there is potential for effects to occur. Furthermore significant visual effects are unlikely to arise on the PRoW network situated more than 3km from the site due to the character of the host landscape and the distances involved. However certain routes lying up to 5km from the nearest proposed turbine were assessed where there is potential for effects to occur at particularly sensitive locations, for instance at South Kyme.

5.229 PRoW reference numbers shown on **Figure 5.4** and quoted in the LVIA relate to specific parishes in the vicinity of the application site. Information on definitive PRoW is available online at Lincolnshire County Council's website<sup>13</sup>. No PRoWs are located within, or cross the application site (red line area). There is one public footpath crossing the application land holding (blue line area) – Heck/15/1 at the north west corner. A further nineteen PRoWs (or stretches of) lie within 3km of the nearest proposed turbine, namely (ordered by quadrant and distance from the site; linked routes assessed together):

NW Quadrant (South Kyme)

- Heck/15/1
- SKym/3/1
- SKym/2/1 and Heck/12/1
- Heck/13/1, SKym/1/1 and Cow Drove

NE Quadrant (Amber Hill)

- Ambe/4/1
- Ambe/3/1
- Ambe/2/1 and Kirt/12/1
- Ambe/5/1

SE Quadrant (Swineshead Bridge)

- Swhd/13/1, Swhd/14/1, Swhd/16/1 and Ambe/8/1
- Swhd/15/2 and Swhd/15/1

SW Quadrant (Heckington / Great Hale)

- GtHa/cs/1

<sup>13</sup> <http://microsites.lincolnshire.gov.uk/countryside/section.asp?catId=7023>

- Heck/3/1

- 5.230 There are no bridleways or other dedicated non-vehicular routes located on the land holding, or crossing the application site (red line area) or land holding (blue line area).
- 5.231 People using PRoW between 5 to 15km from the site and in the wider study area (15-35km) would generally be too far away to be affected visually to any significant degree. In addition, many non-vehicular routes open to the public situated in the wider study area either fall outside the ZTV 'with screening', or are enclosed by incidental vegetation and / or buildings and engineered structures. The exceptions to this rule generally form part of long distance routes / recreational trails which are dealt with below.

### Recreational Trails

- 5.232 Several recreational trails used by walkers, equestrians and in some cases cyclists are situated in the study area and shown on **Figures 5.7** and **5.8**. These tend to coincide with PRoW, stretches of minor road and canal / waterway towpath and include the:
- Water Rail Way (disused railway parallel to River Witham)
  - Viking Way long distance path
  - Macmillan Way
- 5.233 Of these only the Water Rail Way (River Witham). Of these only the River Witham passes within approximately 5km of the application site near Copping Syke Farm; the remainder of the route between Lincoln, Boston and the Wash, although falling partly within the ZTV 'with screening', would generally be too far away from the proposals to be significantly affected. **Photomontages 10 and 30** are illustrative of potential views from the river at varying distances.
- 5.234 The closest sections of the Viking Way in the study area are south of Wellingore where it follows Ermine Street, part of which falls within the ZTV of the proposals.
- 5.235 The closest stretch of the Macmillan Way in the study area is within the urban area of Boston from where it follows The Haven towards The Wash, before heading back inland through the Fens - parts of which fall within the ZTV of the proposals.
- 5.236 These routes and the potential effect of the proposals on them are examined in the Assessment of Effects section below.

### Cycle Routes

- 5.237 Cycle routes in the study area falling within the ZTV of the proposals include:
- National Cycle Network (on and off-road)
  - River Rail Way (dedicated cycle path)
- 5.238 National Cycle Route 1 crosses the detailed study area following minor roads and dedicated routes, incorporating the River Rail Way cycle path which follows the River Witham 'towpath' and associated disused railway between Boston and Lincoln, passing within approximately 4km of the

application site near Holland Fen. **Photomontage 10** is representative of views from the route at Langrick Bridge.

- 5.239 National Cycle Route 12 starts at Spalding (over 20km from the site) and runs south via Crowland at the edge of the study area. National Routes 15 and 64 linking Grantham, New-on-Trent and Lincoln are situated at the western extremity of the study area outside the ZTV of the proposals and therefore would be unaffected by the development.
- 5.240 The potential effect on views from / visual amenity of National Routes 1 and 12 is dealt with in the Assessment of Effects section below.

### Land with public access

- 5.241 Tracts of land with public access are located in the study area including public open space (POS), access land, common land, National Trust land and foreshore / flats.
- 5.242 Access land is that which is normally accessible to the public on foot. It includes land designated under the CROW Act 2000 and areas owned / managed by the National Trust, Forestry Commission and the Woodland Trust. Access land in the study area incorporates incidental areas of open country, common land and public forest. These landscape elements are shown in **Figure 5.7** and in more detail on **Figure 5.8**.
- 5.243 The key areas of land with public access situated within the ZTV considered in this assessment are (located mainly within the detailed study area, listed roughly in order of distance from the site):
- Haven Bank, Wildmore Fen (access land, river bank / dyke and commons)
  - Crossgates Farm, Drayton / Bicker (access land / commons)
  - North Kyme Common, Billingham (access land, river bank / dyke and commons)
  - West Fen Drain / Cowbridge (access land, river bank / dyke and commons)
- 5.244 Several publicly accessible areas lie outside the ZTV due to the screening effect of landform, woodland and / or buildings and therefore would not be affected visually by the proposed wind park. This publicly accessible land includes:
- Incidental open space A153 and B1192, Conningsby (access land / commons)
  - Kirkby Moor, Woodhall Spa (access land / nature reserve and Forestry Commission land / public forest)
  - Bardney Limewoods National Nature Reserve, Bardney (Forestry Commission land / public forest)

### Public Open Space

- 5.245 Areas of public open space (POS) in the detail study area are shown on **Figure 5.8**. They include mainly recreation grounds and playing fields, but also churchyards and school grounds within 5km of the application site. The following POS is assessed in the Assessment of Effects section below:
- Amber Hill – Amber Hill / Toftstead Primary School playing fields
  - Holland Fen – recreation area / playing fields

- South Kyme – St Mary and All Saints churchyard
- Swineshead and Donington
- Heckington / Helpringham
- Boston
- Billingham
- Sleaford

### Country Parks

5.246 Country Parks in the detail study area are shown on **Figure 5.8**. They include public and private facilities for both formal and informal outdoor recreation situated within 15km of the application site. The following Country Parks are assessed in the Assessment of Effects section below:

- Witham Way
- Tattershall Lakes

### Places of Interest

5.247 This element of the LVIA deals with the landscape setting and views from / visual amenity of 'places of interest' in the study area, including recreational and cultural heritage resources with public access. It should be noted that only the landscape and visual setting of places of interest which happen to be also heritage resources is assessed in the LVIA; consideration of specific heritage assets is restricted to the contribution they make to present-day landscape character and visual amenity. The historic 'setting' of heritage assets such as scheduled monuments, listed buildings, conservation areas and registered parks and gardens is dealt with in **Chapter 6: Cultural Heritage** which contains a detailed description and assessment of the historic environment.

5.248 A range of places of interest are situated in the study area including some historic buildings, monuments and parks and gardens. Many of these are landscape features in their own right and, if publicly accessible, are considered to be potential visual receptors. The places of interest in the study area of importance from a landscape and visual perspective are shown in **Figure 5.7** and reproduced in more detail in **Figure 5.8**.

5.249 The landscape context and visual amenity of the following places of interest including designated heritage resources with public access, located mainly within 15km of the site and lying within the ZTV of the proposals, were considered as part of this LVIA:

- Kyme Tower, South Kyme
- South Kyme Golf Club
- Heckington Mill, Heckington
- Boston West Golf Club, Hubbert's Bridge
- Sibsey Trader Windmill, Sibsey
- Boston Stump, Church of St Botolph, Boston
- Battle of Britain Memorial Flight (BBMF) Visitors Centre, Coningsby

- Tattershall Castle, Coningsby
- Money's Mill, Sleaford
- Tattershall Lakes Country Park
- Revesby Abbey, Revesby
- Lincoln Cathedral

5.250 The remaining places of interest and recreational resources in the wider study area are either located outside the ZTV and / or are too distant from the site, or would not have views of the proposals due to the screening effects of vegetation and built form and therefore have been scoped out of the LVIA. The exception to this is Lincoln Cathedral (33km) which is included in the assessment due to its high sensitivity and exposed location within the ZTV of the proposed wind park.

### Main Transport Routes

5.251 Main roads crossing the study area are indicated on **Figure 5.1**. The following A and B routes (or parts of) fall within, or partly in the ZTV and would potentially afford views of the proposals from certain stretches of highway crossing the detailed study area (ordered approximately according to distance from the site):

- within 2-5km – A17, A1121 and B1395
- between 5-15km – A52, B1192, B1394, A152, B1391, B1189, B1397, A16, A153, A15, B1183, B1188 and A155

5.252 Main roads (or parts of) lying more than 15km from the site are considered to be located too far away to be significantly affected by the proposals, including:

- A15 – Lincoln to B1191 junction and Bourne to Folkingham
- A16 – Market Deeping to A152 junction and A158 intersection to Stickney
- A17 – Kings Lynn to B1357 junction and Newark-on-Trent to B1429 junction
- A52 – Skegness to B1184 junction at Old Leake and Grantham to A15 intersection
- A151 – between the A1 and Kings Lynn via Bourne and Spalding
- A153 – from Scamblesby to Haltham
- A158 – between Lincoln and Skegness via Horncastle
- A607 – between Lincoln and Grantham
- B1191 – between the A15 and Horncastle
- B1183 – between Horncastle and A155
- B1188 – between Lincoln and B1191 intersection

5.253 The following railways cross the study area and lie within the detailed study area (listed in order of distance from the application site):

- Sleaford to Skegness via Boston

- Peterborough to Lincoln via Spalding and Sleaford

5.254 Except for passing holidaymakers in summer and some local recreational use, traffic on roads running through the study area would generally be involved in daily / work-related activities. This type of dynamic receptor is considered to be of 'low' sensitivity in visual terms. Busy A and B roads are considered to be less sensitive visually than the quieter 'local roads' where users are likely to include some walkers, equestrians and cyclists who are more sensitive to landscape change. Generally speaking some roads carry a higher proportion of recreational users and / or holidaymakers than others, in addition to daily / work-related activities, and this characteristic has been factored into the assessment.

### Local Roads

5.255 Local roads and other popular rural routes running through the detailed study area are shown on **Figure 5.8**. Those lying within 3km of the site are shown in more detail in **Figure 5.4**. Most unclassified local roads are bounded by hedges and trees which tend to break up or block views across the surrounding countryside. Certain stretches of minor road situated in the detailed study area lying within the ZTV are likely to have views of the proposals, but it is unlikely that significant effects would occur beyond the 5km threshold. Those lying within 15km with potential to be affected visually are as follows:

- A17, A1121, B1395 / Sidebar Lane, Littleworth Drove, Claydyke Bank / Maryland Bank and Sutterton Drove

5.256 Some local roads carry a higher number of recreational users in addition to daily / work-related activities than others. Minor roads designated as cycle or horse riding routes, for example National Cycle Network, are classified as 'medium' sensitivity. These include the following stretches situated within the detailed study area:

- North Forty Foot Bank / Ferry Lane between Langrick Bridge and Chapel Hill (National Cycle Route 1)

### Landmarks and Focal Points

5.257 Landmarks are not visual receptors in themselves but do make a contribution to landscape character and act as focal points in views. Prominent built features, in particular church spires, situated within 10km of the application site which play a role in the landscape locally as landmarks are shown on **Figure 5.8**. The local landmarks located within the detailed study area identified are:

- Boston Stump (the Stump is the tower of Church of St Botolph)
- St Mary's (and the Blessed Virgin) Church, Sutterton
- St Mary's Church, Swineshead
- St Mary's (and the Holy Rood) Church, Donington
- St Andrew's Church, Helpringham
- St Andrew's Church, Heckington
- St Andrew's Church, Asgarby
- St Edith's Church, Anwick

- Kyme Tower
- St Michael & All Angel's Church, Billingham

5.258 Bicker Fen Windfarm is also a local landmark, albeit a composite one, comprising 13 turbines situated about 3km north west of Bicker / Donington approximately 6km to the south of the application site.



## EVALUATION OF LANDSCAPE AND VISUAL ENVIRONMENT

5.259 This section examines the sensitivity of the landscape and visual environment of the Lincolnshire Fens to wind energy development.

### Landscape Sensitivity

5.260 To establish landscape sensitivity and understand the nature of effects it is necessary to consider the development in context.

*“The sensitivity of the landscape is dependent on both the attributes of the receiving environment and the characteristics and effects of the proposed development and can only be established by carrying out the assessment.” GLVIA 2002 para 4.73*

*“Landscape sensitivity relates to stability of character, the degree to which that character is robust enough to continue to be able to recuperate from loss or damage.” Bray, C. quoted in Swanwick, C. LCA Guidance -Topic Paper 6 2004 p.4*

*“Landscapes which are highly sensitive are at risk of having their key characteristics fundamentally altered by development, leading to a change to a different landscape character, ie. One with a different set of key characteristics.” Benson, J. quoted in Swanwick, C. LCA Guidance -Topic Paper 6 2004 p.4*

5.261 The landscape resource and sensitivity of the receiving environment is evaluated below in the context of the development proposals.

### Characteristics and Perceptions of Proposed Development

#### Nature of Proposed Development

5.262 Wind energy developments typically include the following attributes: simple engineered forms (medium or large scale); smooth texture; monochrome / muted colour; vertical fixed structures with rotating elements arranged in clusters (depending on viewpoint and layout), polarised opinion – public perception varies:

- to some wind turbines as seen as elegant symbols of clean energy – interesting, safe, harmonious, rhythmic, invigorating, sculptural, majestic and spiritual
- to others they are offensive – incongruous, industrial, degrading, jarring, over-bearing, clashing and ugly

5.263 This polarisation of public opinion or perception gives rise to the question of valency of characterising effect with those in favour experiencing wind farm development as at least neutral but in many cases a positive addition / change in the natural landscape. On the other hand it is accepted that there are broadly equivalent numbers of people who have the opposite experience and who always view wind turbines negatively as an alien element in the natural landscape. Valency is discussed further in the Methodology section above.

### Key Characteristics and Effects of Proposed Development

5.264 The key characteristics of the proposed development can be summarised as follows:

- Large / medium scale wind park<sup>14</sup>
- Vertical, engineered features
- Linear, geometric forms
- Dynamic and static structures
- Wide visibility
- Small footprint
- Limited lifespan (25 years), reversible
- Polarised public perception (positive / negative)

### Characteristics of the Receiving Environment

5.265 At a broad landscape level the application site is located in ‘The Fens National Character Area (NCA 46). Natural England’s national landscape assessment<sup>15</sup> summarises the character of the area as a ‘large-scale, flat, open landscape with extensive vistas to level horizons and huge skies’. With respect to its key characteristics the assessment states on page 61:

*“The level horizons and the huge scale of the landscape create a strong sense of isolation. There are, typically, large open panoramas and enormous skies whose changing weather patterns have a strong influence on the observer. The large fields and strong seasonal changes of colour, created by varied and multiple cropping in the rich soils, forms a landscape which can, at one and the same time, be intimidating and yet uplifting. It is a landscape which represents man’s dominance over the environment and often results in a strong rectilinear pattern of drainage to drain inland fens or reclaim coastal marshes.” (Ecotricity underlining)*

5.266 Regarding the local level the main characteristics of the landscape surrounding the application site, identified by North Kesteven and Boston District Council’s as ‘Fenland’ and ‘Holland Reclaimed Fen’ respectively, are summarised in the table below:

5.267 The characteristics described above relate to the underlying natural landscape and traditional built elements but do not include many of the more recent developed features which are apparent on the ground. The quality and sensitivity of the receiving environment at East Heckington is evaluated below taking all these factors into account (see also **Appendix 5.4**).

<sup>14</sup> as defined in Scottish Natural Heritage (2009) ‘Siting and Designing Windfarms in the Landscape: Version 1 (page 17, para 4.3)

<sup>15</sup> Countryside Agency, 1999, ‘Countryside Character – Volume 4: East Midlands’



5.268 An important general point to note is that wind energy development has a light ‘footprint’ in terms of land-take and a finite lifespan (approximately 25 years), the duration of which can be limited by means of a ‘planning condition’ as advised in paragraph 20 of PPS22<sup>16</sup> which states:

*“Local authorities should recognise that the impact of turbines on the landscape will vary according to the size and number of turbines and the type of landscape involved, and that these impacts may be temporary if conditions are attached to planning permissions which require the future de-commissioning of turbines.”*

### Landscape Evaluation

5.269 People value landscapes for a variety of reasons which relate to its intrinsic qualities and the amenity it provides. Landscape may offer a special scenic experience, or peace and quiet (tranquillity) for reflection; it can also provide a sense of freedom and remoteness away from busy, urban lifestyles. Natural England have published guidance on landscape character assessment<sup>17</sup> which informed its recently published advice on onshore wind energy development in England<sup>18</sup> and the preceding draft guidance<sup>19</sup> from which the following criteria for evaluating landscape sensitivity in this LVIA are derived:

**Table 5.3 Landscape Evaluation Criteria**

Scale
Landform
Land cover
Human Influence
Skylines and Settings
Visibility and Views
Landscape Quality (condition)
Scenic Quality
Wildness and Tranquillity
Historic Environment
Cultural Associations
Amenity and Recreation

Source: Natural England – ‘Assessing the Environmental Capacity for On-Shore Wind Energy Development’ – Consultation Draft (July 2009)

<sup>16</sup> Planning Policy Statement 22: Renewable Energy (p.13)

<sup>17</sup> Countryside Agency and Scottish Natural Heritage, 2002, ‘Landscape Character Assessment – Guidance for England and Scotland’

<sup>18</sup> Natural England – ‘Making space for renewable energy: assessing on-shore wind energy development’ – 2010

<sup>19</sup> Natural England – ‘Assessing the Environmental Capacity for On-Shore Wind Energy Development’ – Consultation Draft (July 2009)

5.270 Descriptions of the above criteria are provided at **Appendix 5.2**. These attributes of landscape are analysed in the table below to give an overall landscape sensitivity and capacity for the application site and the host landscape character unit(s) as a whole based on a three-point scale of low, medium or high. It was beyond the scope of this assessment to carry out a detailed landscape capacity analysis for each character unit in the wider study area.

5.271 The table below assesses:

- the landscape sensitivity of the application site and the surrounding area to wind energy development, situated within Natural England’s The Fens national character area (NCA 46), North Kesteven District Council’s ‘The Fens / Fenland’ and Boston District Council’s ‘Holland Reclaimed Fen’ contiguous local character units, and the capacity of the site to accommodate a wind park of the type and scale proposed bearing in mind the site’s landscape and visual context.

Table 5.4 Landscape Sensitivity and Capacity

Landscape Criteria	Site and Surrounding Area within 5km (Local Planning Authorities)	Wider Landscape Context (Natural England NCAs)	Analysis	Sensitivity	Capacity
Location and Summary Description of Character Area	<p>North Kesteven District – The Fens – Fenland (13)</p> <p>Low lying with very flat relief.</p> <p>Very large, rich arable fields divided up by drainage channels.</p> <p>A hierarchy of rivers drains and ditches creating linear patterns across the landscape.</p> <p>Generally extensive vistas to level horizons and huge skies ...</p> <p>Sparse woodland cover though some occasional trees ...</p> <p>Intensively farmed and managed it is almost entirely a man-made landscape.</p> <p>Prominent power lines and large-scale agricultural buildings.</p> <p>Boston District – Holland Reclaimed Fen (A1)</p> <p>Flat and low-lying reclaimed fenland</p> <p>Open and expansive views with big skies and dark night skies with some views semi-enclosed at ground level by large embankments</p> <p>A man-made intensive arable landscape laid out in regular geometric pattern...</p> <p>Sparse tree cover confined to shelterbelts with occasional hedgerows and small blocks woodland of mixed woodland ...</p> <p>Bicker windfarm and large scale pylons on the south western tip are modern landmark features.</p> <p>A semi-remote, tranquil and intact working agricultural landscape</p>	<p>The Fens (NCA)</p> <p>Large-scale, flat, open landscape with extensive vistas to level horizons and huge skies.</p> <p>A hierarchy of rivers drains and ditches provide a strong influence throughout the area.</p> <p>Embanked rivers and roddons create local enclosure and elevation. Banks provide good grazing and grassland habitats.</p> <p>Modestly elevated 'islands' within fens provide isolated higher ground for most settlement. A higher proportion of grassland, tree cover and hedgerows are associated with these areas.</p> <p>Settled Fens or 'Townlands', in arc set back from the Wash, exhibit an ancient medieval and irregular field pattern. Typically smaller-scale with scattered farmsteads and dispersed ribbon settlements along the main arterial routes</p> <p>Peaty Fens drained in 17th century comprise large rectilinear fields of black soil. A geometric road and drainage pattern with major high-level drains, washes and associated pumping stations. Roads and rail links often on elevated banks.</p> <p>Area south of Lincolnshire Wolds most recently drained with Wolds providing marked 'Upland' horizon to north.</p> <p>Woodland cover sparse. Occasional avenues to roads, elsewhere isolated field trees have marked significance. Shelter belts including poplar, willow and leylandii hedges around farmsteads. Numerous orchards in Wisbech area.</p> <p>Fragments of relic wet fen areas at Wicken, Woodwalton and Holme.</p> <p>Built forms exhibit strong influence ranging from historic cathedrals and churches, like Ely and Boston to large agricultural and industrial structures. Domestic architecture displays combination of elegant Georgian brick houses and bland 20th century bungalows.</p> <p>Marshes directly adjacent to the Wash exhibit an exceptionally open aspect, broken only by a series of sea walls. Associated river outfall structures, tidal saltmarshes and mudflats.</p> <p>Rich and varied intensive agricultural land use including wide range of arable, root crops, bulbs, vegetables and livestock. Field labourers prevalent at harvesting. Horticultural glasshouses and general agricultural clutter a significant feature.</p> <p>Bronze Age, Iron Age and Roman landscapes emerging from below the falling peat. Very rich archaeology especially on fen margins.</p>	See detail below ...	See detail below	See detail below
Scale	Very large, rich arable fields divided up by drainage channels.	Large scale.	An extensive, open, large scale landscape.	Low	High
Landform	Low lying with very flat relief; occasional small islands of slightly higher land.	Flat and low-lying typically at or below 2m AOD (rarely above 10m).	A flat, uniform landscape.	Low	High
Landcover	Arable farmland, scattered farm woodlands, shelter belts, occasional hedgerows. Very large arable fields predominate.	Arable farmland, scattered farm woodlands, shelter belts, occasional hedgerows.	A simple, regular landscape, relatively homogenous and uncluttered.	Low	High
Human Influence	Man-made landscape, intensively farmed with a regular, geometric pattern and grain. Bicker Fen Windfarm and large	Reclaimed land, engineered drainage system, dispersed settlement with ribbon	An almost entirely man-made	Low	High

	scale pylons on the south western tip are modern landmark features. Prominent power lines and large-scale agricultural buildings.	development along transport routes.	landscape.		
Skylines and Settings	Open landscape with big skies; skylines tend to be hidden by landcover features including shelter belts, woodland blocks, farm buildings, housing, dykes / embankments etc.	Broad skies with mainly level horizons and distant skylines including the Lincolnshire Wolds to the north and Southern Lincolnshire Edge to the west.	Relatively little in the form of backdrops but some focal points present ie church spires / towers.	Medium	Medium
Visibility and Views	Long distance views to the Lincolnshire Wolds to the north from open, slightly raised positions. Visibility restricted locally by woodland blocks, shelter belts and buildings.	Generally expansive, long range views, limited locally by vegetation and built form.	Extensive visibility but few well-know vistas.	Medium to high	Medium to low
Landscape Quality / Condition  (strength of character / state of repair)	The Fens / Fenland is a highly productive agricultural landscape, almost entirely the product of mechanised drainage and engineering works, reflected in the geometric, rectilinear field patterns, intensive arable farming activities and sparse structural vegetation, comprising mainly plantation woodland and shelter belts. Due to the almost total removal of the 'original' landscape, evaluation of current landscape quality and condition is problematic. No assessment of landscape condition / quality is provided at the local level.	Intensive arable land delineated by a regular pattern drainage ditches and dykes (berm or bank); developed features / infrastructure present in views. The 'reclaimed fens' were the last to be drained (early 19th century) – "The drainage here was so thorough that scarcely a vestige of what had been one of Britain's richest wildlife habitats. This is an open productive landscape with strongly rectilinear form" <sup>20</sup> . No assessment of landscape condition / quality is provided at the national level.	Integrity and condition of regular landscape patterns, elements and features is intact. Taking the precautionary approach the present day landscape condition / quality of the 'The Fens' NCA, and 'Fenland' and 'Holland Reclaimed Fen' local character areas is assessed as 'medium to low'.	Medium to low	Medium to high
Scenic Quality	A man-made intensive arable landscape laid out in regular geometric pattern. Distinctive fenland character is perceived as attractive scenery to some; to others the landscape is featureless and monotonous.	A man-made, intensive agricultural landscape with some prominent built form.	An undesignated, man-made utilitarian landscape displaying geometric patterns with some 'developed' characteristics.	Medium to low	Medium to high
Wildness & Tranquillity	A semi-remote, tranquil and intact working agricultural landscape. Negligible 'wildness' present.	Negligible 'wildness' present; medium levels of tranquillity away from settlement and transport routes. "The level horizons and huge scale of the landscape create a strong sense of isolation." <sup>21</sup>	Some remoteness and tranquillity present; negligible wildness.	Medium	Medium
Historic Environment	Windmills were the traditional source of power in the fens and surrounding areas with a number still extant, for example at Heckington and Sibsey (500 were reputedly in operation in Lincolnshire at the peak of windmilling <sup>22</sup> ); South Kyme was an important monastic settlement (remains of Priory and Kyme Tower still extant);	Historic settlements located at Fen fringe and on 'islands' within fenland marked by conspicuous church spires / towers; notable heritage features include Tattershall Castle and Boston Stump. The Fens are "very rich in archaeology, especially on fen margins" <sup>23</sup> .	Historically a wind 'harvesting' area therefore modern windfarms provide continuity with past human activity; nature of proposal means any archaeology present can be preserved.	Medium	Medium
Cultural Associations	Place names reflect various waves of settlement, particularly the Danish Viking influence with places including 'by', 'thorpe' and 'kirk', for instance Ewerby Thorpe.  The fens were traditionally drained with the aid of windmills many of which still stand, some still operational as at Heckington, Sibsey and Boston.	Fenland folk tales the Saxon hero Hereward the Wake and his resistance to the Normans invaders using the swamps of Black Fen as a refuge. The 19th century poet John Clare and writer Charles Kingsley eulogised the undrained fen.	No known cultural associations that would constrain wind energy development at this site.	Medium	Medium

<sup>20</sup> Countryside Agency, 1999, 'Countryside Character – Volume 4: East Midlands' – page 61

<sup>21</sup> Ibid – page 61

<sup>22</sup> <http://www.lincolnshire.gov.uk/visiting/windmills/>

<sup>23</sup> Countryside Agency, 1999, 'Countryside Character – Volume 4: East Midlands' – page 59

Amenity and Recreation	Public rights of way network throughout Fenland / Holland Reclaimed Fen character areas including adjacent to the application site, plus various recreation resources / places of interest of local importance including Boston West Golf Club, and Heckington and Sibsey Windmills.	Public rights of way network throughout The Fens character area including adjacent to the application site, plus various local recreation resources / places of interest of local to regional importance including Tattershall Lakes Country Park, Tattershall Castle and Boston Stump.	No significant amenity or recreation resources that would constrain wind energy development at this site.	Medium	Medium
Overall Evaluation				Medium to low	Medium to high

**Note:** Landscape Criteria based on emerging Natural England guidance set out in ‘Assessing the Environmental Capacity for On-Shore Wind Energy Development’ – Consultation Draft (July 2009) (see **Appendix 5.2**)

**Landscape Sensitivity of Site and 'Fens / Fenland' and 'Holland Reclaimed Fen' Character Units**

- 5.272 No assessment of landscape sensitivity to wind energy development is provided at the local level. The generic sensitivity of Boston District Council's 'Holland Reclaimed Fen' character unit, which is effectively a continuation of the adjoining North Kesteven District Council 'Fenland' unit, is classified as 'moderate to high'. However, landscape sensitivity is development specific (as highlighted in the current guidance quoted at the head of this section) and needs to be considered in the context of the type of development proposed. The key characteristics of these adjacent character units are summarised in the table above and an assessment of sensitivity to wind energy development provided.
- 5.273 The proposed development would introduce twenty-two tall, slim, geometric features into an area which is already defined by a variety of natural and built elements and characterised by man-made patterns and structures. The proposed new engineered features (the wind turbines), although tall compared to existing landscape elements of the character area, would be perceived in the context of the man-made, intensive agricultural landscape together with other developed characteristics locally including drainage channels and dykes, high-voltage electricity transmission lines and pylons, main roads and railways. These characteristics give the local landscape (the Fens / Fenland' and 'Holland Reclaimed Fen' character units), which includes the application site, a predominantly 'manufactured' and 'developed' character. This is reflected in the 'medium to low' landscape quality evaluation in the table above. On balance, therefore, the character unit as a whole is classified as having a 'medium to low' sensitivity to wind energy development in landscape terms, erring towards the 'low' sensitivity side.

**Landscape Sensitivity of Wider Environment**

- 5.274 In the absence of any appraisal of landscape quality / condition in published landscape assessments, at both national and local levels, an outline evaluation of local character units lying mainly within 15km of the site (detailed study area) was undertaken as part of the LVIA based on a summary appraisal of landscape condition and value (designation status) by means of both fieldwork and desk study, using the approach set out at **Appendix 5.1**. As a general rule those character units where a majority of the area is designated for its landscape value, for example as AONB, are assigned a 'high' quality / condition and sensitivity status, whereas those with a minority proportion of designated area, and / or displaying consistently good condition throughout are classified as 'medium' quality and sensitivity. Character areas with no protected status and containing landscape 'detractors' and man-made / developed features are assigned 'low' quality and sensitivity. The landscape **sensitivity** classification of each character unit in the detailed study area is given in **Appendix 5.4**.

**Key Attributes of Site and Receiving Environment**

- 5.275 The landscape and visual attributes of the site and its surroundings (the receiving environment) have been the subject of both desk-study and assessment in the field and are summarised as follows:
- Large scale, intensive agricultural landscape.
  - Low lying reclaimed fenland with very flat relief.
  - A hierarchy of rivers drains and ditches creating linear patterns across the landscape.

- Open with big skies and expansive views, generally extensive vistas to level horizons.
- Sparse tree cover of shelterbelts, occasional hedgerows and small blocks woodland.
- A man-made, intensively farmed arable landscape laid out in regular geometric pattern.
- A semi-remote, tranquil and intact working agricultural landscape.
- Prominent power lines and large-scale agricultural buildings.

**Wind Energy Development and Landscape Character**

- 5.276 Notwithstanding the long tradition of wind-milling in England, wind turbine development is a relatively recent addition to the UK environment and there are few references to its effect on landscape character in published studies. The relevant points of note in relation to wind energy development and landscape character are:
- the precedent of harnessing wind energy is well established in Lincolnshire and the fens; notwithstanding some local opposition wind turbines are accepted by many residents and visitors as a necessary and welcome part of the contemporary landscape;
  - wind farm development is a stage in the evolution of landscape – one whose significant visual and landscape effects can be reversed through decommissioning and removal at the end of the 25 year life cycle;
  - wind farms have a light 'footprint' – landtake is relatively small and underlying landscape character / characteristics can be preserved pending decommissioning and returning the site to its current state; and
  - wind energy development can support sustainable land management / agriculture, particularly in marginal areas.
- 5.277 Nevertheless, the effect on landscape character of wind turbines is tangible and needs to be understood in the present context. Wherever it occurs, wind energy development tends to have a characterising effect to a greater or lesser extent depending upon the individual circumstances, particularly the scale of the proposal, the sensitivity of the landscape to wind energy development and capacity of the receiving environment to accommodate wind turbines.
- 5.278 Appraisal of similar scale wind energy proposals and landscape context, for example Little Cheyne Court, Romney Marsh, suggests that a 'wind farm' landscape type is established up to a distance of approximately 0.75-1.0km from the turbines. In other words in that part of the landscape where the wind turbines are the principle elements by which character is defined. Moving further away, a wind farm sub-type landscape is established up to 1.5-2.0km from the turbines depending on the ability / scope of the observer to perceive the locally characterising effects from within the limits of the ZTV.
- 5.279 Beyond these indicative ranges, the observer may be conscious of looking at a 'wind farm' landscape type or sub-type, but not of being within one (see diagram at **Appendix 5.1 – Annex 5.1**). The farther away from an existing wind farm the observer is the more the turbines are perceived as being part of the wider landscape. Consequently, as a rule, approaching 5km distance from the windfarm the influence of the wind turbines on landscape character is barely discernible.
- 5.280 These principles apply to varying degrees at other existing and proposed wind energy developments depending on the attributes of both the scheme and the host environment. For the

purposes of this assessment it is assumed that a 'wind farm landscape' type would be created up to about 1km from the application site and a 'landscape with wind farm' sub-type up to around 1.5km and occasionally 2km. Beyond this distance the wind park would normally not affect landscape character. In other words areas of landscape situated farther away than approximately 2km from the nearest proposed wind turbine would usually lie beyond the predicted 'zone of characterising effects'.

- 5.281 As a rule of thumb, in this particular case due to the landscape context of the site, significant change to character is not likely to occur beyond 1.5km from the nearest turbine, although this distance threshold may vary slightly on the ground depending on local variations in landcover, for example settlement and mature planting.

### Theoretical Limit of Characterising Effects

- 5.282 Bearing in mind the landscape characteristics described above, and considering the scale of development proposed at this particular location, the level of potential landscape and visual effects would diminish with distance from the application site and significant character effects resulting from the proposed wind park are not expected to occur in excess of 2km from the nearest proposed turbine. Erring on the side of caution, for the purposes of this LVIA, a theoretical limit of characterising effects of 5km from the nearest proposed turbine has been set, beyond which significant effects to landscape character would not arise. This theoretical limit is in keeping with advice set out in current guidance relating to the perception of wind energy development as presented at **Table 5.1** in the Method Statement section above which states that, at distances over 5km, turbines of a similar scale to those proposed would be '*only prominent in clear visibility – seen as part of the wider landscape*'.

### Landscape Capacity of 'The Fens / Fenland / Holland Reclaimed Fen' Character Units

- 5.283 The Holland Reclaimed Fen character unit has been evaluated in Boston District Council's adopted landscape assessment<sup>24</sup> as being of 'moderate to high' landscape sensitivity in generic terms. It might be concluded from this that the Fens landscape has a low capacity for change. However, no qualification of development type is given in the Council's assessment which, according to current guidance (GLVIA 2002), is required to properly assess landscape sensitivity and capacity in relation to any particular form of development, whether it be new housing, infrastructure or wind energy (GLVIA – p.94, para 7.43 as quoted above).
- 5.284 The evaluation carried as part of this LVIA examines the sensitivity of the landscape surrounding the application site in relation to the specific development proposed. It was undertaken using the latest guidance for assessing the environmental capacity of wind energy development prepared by Natural England. Based on Natural England's criteria the sensitivity of the receiving environment was found to be 'medium to low' giving a 'medium to high' capacity for large scale wind turbines.
- 5.285 The conclusion of this evaluation section is that the application site is a suitable location in landscape terms for a wind energy development of the scale and layout proposed.

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<sup>24</sup> Boston District Council – 'Landscape Character Assessment of Boston Borough (July 2009)

## ASSESSMENT OF EFFECTS

5.286 Potential landscape and visual effects during operation and construction of the proposed development are assessed separately in this section. For the purposes of this LVIA the proposed wind park is that described in Chapter 4 of the ES.

### Landscape Effects

#### Scope of Landscape Effects

5.287 An assessment was undertaken of potential impacts on the following broad landscape receptor groups located within the study area.

- Site landscape / features
- Landscape character
- Valued landscape

5.288 Broad landscape receptors are described in Baseline 3: Landscape Character and Value. Specific landscape and visual receptors are described in Baseline 4: Visual Environment section above and shown on plan in **Figures 5.4 to 5.8**.

#### Assessment Area

5.289 A 'detailed study area' has been identified based on a 15km radius distance from the site centre. This area contains several North Kesteven / Boston District Council landscape units which have the potential of experiencing impacts on character, as described in the Baseline 3: Landscape Character and Value section above and shown in **Figure 5.6**. The level of potential landscape impact on each character unit would depend largely on the proximity to the site and the sensitivity of the unit in question as set out in **Appendix 5.4**.

#### Operational versus Construction Effects

5.290 Information on likely landscape and visual impacts occurring during construction is provided in the 'Effects During Construction' towards the end of this section. Potential onsite landscape effects resulting during the operation phase of the proposed wind park are assessed below.

#### Effects on Site Landscape and Features

5.291 The site boundary and layout of the proposed wind park, together with its immediate landscape context, is shown in **Figure 5.4**. A summary of the site's characteristics is given in Baseline 1: Description of Site and Surrounding Area section above.

#### Potential Onsite Landscape Effects

##### Site Access

5.292 The site would be accessed from the A17 via a new proposed access point. Access requirements are addressed in more detail in Chapter 11: Transport and Access.

##### Turbine Installation

5.293 A typical foundation for the V90 turbine is shown in figure 4.4. This describes a square foundation of approximately 16.2m x 16.2m. Upon completion of the works only the base of the turbine tower is visible with the remainder of the base being allowed for grass over with an appropriate seed mix.

5.294 Foundation construction would involve stripping off topsoil to a depth of roughly 340mm, most of which would be replaced to cover the submerged foundation up to the base of the tower. The permanent loss of arable land would amount to approximately 14 m<sup>2</sup> per turbine. Sub-surface material arising would be used for the temporary hardstanding areas as far as possible and / or removed to a licensed waste transfer operative in the local area, to be recycled.

##### Temporary Hardstanding

5.295 To install the turbines it would be necessary to lay down temporary hardstanding pads measuring about 40m by 20m beside each turbine base to support cranes. The pads would comprise locally sourced crushed aggregate laid to an indicative depth of 340mm. This would require the removal of roughly 17,600m<sup>2</sup> of arable crop during construction, together with the stripping and temporary storage of associated topsoil. The hardstanding areas would be retained and allowed to grass over following construction.

##### Access Tracks

5.296 A 5.5m wide access track linking the turbine positions would be required with a total length of about 10,664 metres. The track would be constructed with locally sourced crushed aggregate to an indicative depth of 340mm and allowed to grass over in the long term. **Figure 4.12** shows a typical cross section of the access track, depicting the water permeable membrane and finished ground levels.

5.297 The track would be aligned to protect field boundaries, hedgerows and trees in order to avoid / minimise potential impacts on the site landscape; a length would follow an existing farm track as shown in **Figure 4.1**. Assuming an average width of 5.5m to allow for bends and adjacent cable trenches construction of the access tracks would result in the loss of around 58,652m<sup>2</sup> of arable land which would be replaced by a 5.5m wide aggregate track which would be allowed to grass over during the operational phase.

5.298 Excess topsoil would be redistributed on existing farmland with no net loss. Access track construction is not expected to generate any subsoil waste material. However any sub-surface arisings would be removed to a licensed waste transfer operative in the local area, to be recycled.

5.299 Roughly 139 linear metres of field boundary and / or ditch would need to be removed / modified to facilitate access during construction. This would involve constructing several bridging points across ditches with culverts as described in Chapter 4 and shown in Figure 4.1.

##### Construction Compound

5.300 A temporary construction compound will also be required to house machinery and materials, the location of which is shown on **Figure 4.1**. It would be sited away from landscape features such as field boundaries and mature vegetation. The construction compound would measure approximately 40m by 40m resulting in the temporary removal of around 1600m<sup>2</sup> of arable and topsoil which would be allowed to grass over during the operational phase.

*Substation*

- 5.301 An onsite sub-station measuring up to 10m x 12m in plan and up to approximately 4m tall is proposed adjacent to the construction compound, located near to the existing farm building as shown in **Figure 4.1**. The small building would be constructed in brick where possible using locally sourced materials in order to respect the character of the area. Construction of the sub-station would require stripping of a small quantity of topsoil slightly in excess of its plan area which would cause the loss of about 50m<sup>2</sup> of arable and the redistribution of associated topsoil on the farm.

*Cabling*

- 5.302 All cabling would be in underground trenches measuring 0.6m wide x 1.2m deep, running adjacent to the access tracks as shown on **Figure 4.1**. This would involve the temporary removal during construction of roughly 6,398m<sup>2</sup> of arable crop and associated topsoil which has been accounted for in the access track calculation of 58,652m<sup>2</sup>. The cable trenches would be backfilled with excavated subsoil and the topsoil replaced and sown with an appropriate grass seed mix. Any excess topsoil would be redistributed on existing farmland with no net loss.

*Grid Connection*

- 5.303 The electricity produced would be exported via the onsite sub-station and an underground cable to a 33kV grid connection located at approximately 1km to the north west of the site. No new overhead electricity pylons / poles and lines would be required.

*Protection of Site Vegetation during Construction*

- 5.304 All mature trees and hedgerows with the potential to be affected by construction activities would be protected in accordance with best practice guidance in BS5837: Trees in Relation to Construction (2005). Any works required to trees and hedges (including removal) to facilitate access and construction would be carried out according to BS5837 and other relevant British Standards. These measures would also apply to any off-site works if required.

**Residual Onsite Landscape Effects**

- 5.305 Implementation of the proposed wind park would result in the permanent loss of less than 9.37 hectare of arable land to accommodate the turbines and associated infrastructure. An equivalent area of topsoil to a depth of about 340mm would need to be temporarily removed for storage and either replaced or redistributed across the farm with no net loss. Approximately 139 linear metres of ditch / field boundary would have to be permanently modified / bridged and culverted to accommodate the access tracks, although these would be allowed to grass over in the longer term. These losses represent a fraction (approximately 1.6% and 0.3% respectively) of the total site landscape resource. On balance, therefore, the wind park proposal would have a negligible / minor direct effect on the site landscape in the medium to long term which be insignificant in EIA terms and would be reversible.
- 5.306 The tables below summarise the predicted, onsite landscape impacts for the construction and operation phases of the proposed development.

**Table 5.5 Onsite Landscape Effects**  
**Construction**

Development Item	Landscape Element		
	Arable Land (m <sup>2</sup> )	Woodland (m <sup>2</sup> )	Field Boundary / Ditch / Hedgerow (m approx)
Foundation / Turbine Bases	5,774 (1 foundation = 262.44)	0	0
Hardstanding	0	0	0
Access Tracks & Cabling	0	0	0
Compound	1,600	0	0
Sub-Station	0	0	0
Grid Connection	N/A	N/A	N/A
<b>Total Removed</b>	0.74ha	0.0ha	0m
<b>Total Resource *</b>	604ha	0.0ha	48,200m
<b>% Temporary Loss</b>	0.12%	0.0%	0.0%
<b>Landscape Sensitivity</b>	Low	Medium	Medium
<b>Impact Magnitude</b>	Very Low	None	None
<b>Landscape Effect</b>	Negligible r	Negligible / None	Negligible / None

\* Land ownership / 'blue-line' area – 604ha; application site / 'red-line' area – 21ha

**Operation**

Development Item	Landscape Element		
	Arable Land (m2)	Woodland (m2)	Field Boundary / Ditch / Hedgerow (m approx)
Foundation / Turbine Bases	303 (1 turbine base = 13.76m2)	0	0
Hardstanding / Crane Pad	17,600 (1 crane pad = 800m2)	0	0
Access Tracks & Cabling	75,660 (total length 10,664)	0	139
Compound	0	0	0
Sub-Station	120	0	0
Grid Connection	N/A	N/A	N/A
<b>Total Removed</b>	9.37ha	0.0ha	139m
<b>Total Resource *</b>	604ha	0.0ha	48,200m
<b>% Permanent Loss</b>	1.55%	0.0%	0.29%
<b>Landscape Sensitivity</b>	Low	Medium	Medium



<b>Impact Magnitude</b>	Low	None	Negligible
<b>Landscape Effect</b>	Negligible / Minor	Negligible / None	Negligible

## Effects on Landscape Character

### Introduction

- 5.307 This section assesses the potential changes to landscape character in the study area resulting from implementation of the proposed Heckington Fen Wind Park. It sets out the scope of assessment, examines the extent of characterising effects, provides background information relating to landscape character and wind power, and identifies the significant character effects likely to arise during operation and construction.
- 5.308 The baseline character of the area surrounding the application site is described in North Kesteven District Council's and Boston District Council's adopted landscape character assessments and various other local authority assessments relating to the wider landscape. At a broader scale the character of the study area is set out in Natural England's national landscape assessment. **Figures 5.6a-c** show the extent of all character units in the detailed study area, summary descriptions of which are provided at **Appendix 5.3**; landscape evaluation data is given in the assessment schedule at **Appendix 5.4**. Character unit reference numbers (where available) are given in brackets below where appropriate.

### Nature of Landscape Character Effects

- 5.309 Landscape effects usually arise when visible changes are made to existing land use which alter the pattern of landscape elements which, when combined together and perceived as a whole, define the distinctive character of a particular area. Landscape change which affects the character unit(s) in which the proposed wind park is located is considered to be a direct impact, whereas change affecting adjacent character units would be indirect. Whether the change is perceived as negative, positive or neutral depends on the stand point / opinion of the observer. This phenomenon is generally known as the 'valency' of effect, as explained in the Method Statement section above and further at **Appendix 5.1**.

### Scope of Assessment of Character Effects

- 5.310 The focuses of this section is on landscape character within the detailed study area, and particularly the area within a 10km radius of the application site. As explained in the previous section the theoretical limit of characterising effects is 5km. Consequently, a 10km radius extent / scope for the assessment of potential character effects is considered to be consistent with the precautionary approach.
- 5.311 The following national and local character units are assessed in detail:

#### Natural England – National Character Areas

- The Fens (NCA 46)

#### North Kesteven Council – Landscape Character Areas

- The Fens – Fenland (LCA 13)

- Central Plateau – Central Clays and Gravels (LCA 11)

#### Boston District Council – Landscape Character Areas

- Holland Reclaimed Fen (LCA A1)
- Bicker to Wyberton Settled Fen (LCA B1)

#### East Lindsey District Council – Landscape Character Areas

- Stickney to Sibsey Reclaimed Fen (LCA A1)
- Woodhall Spa to Coningsby River Terrace (LCA F1)

#### South Holland District Council – Landscape Character Areas

- Peaty Fens (LCA 'P')
- Settled Fens (LCA 'S')

#### South Kesteven District Council – Landscape Character Areas

- The Fens (LCA 7)

- 5.312 An assessment of the potential effect of the proposed wind park on the character of the landscape within 10km of the application site is provided below.

### Assessing Landscape Character Change

- 5.313 Before assessing individual character units it is worth considering how significant character effects may arise. Fieldwork and observation of similar operational projects indicates that changes in the character of the local undesignated landscape would potentially occur within about 1km of the nearest turbine and occasionally up to 1.5km in those areas falling within the ZTV where the proposed wind park has a strong presence; character effects may extend up to 2-3km from the site where there is unobstructed intervisibility with the proposals in areas of high landscape sensitivity and / or value. At greater distances any landscape character change arising from the presence of wind turbines is considered to be insignificant in EIA terms. However, it does not follow that all parts of character units lying inside the 1.5 or 3km thresholds mentioned above (within the ZTV) would necessarily experience significant character effects. Impact significance will depend on various factors relating to landscape context, degree of visual presence / visibility and landscape sensitivity and capacity as set out in the evaluation section above.
- 5.314 A significant character effect would occur where the wind turbines become the defining characteristic of the landscape. In such cases the wind turbines are likely to be perceived as the principal element in the landscape and the baseline character would be changed to one defined by the wind farm – in other words a 'wind farm' landscape type. A good test of whether a 'wind farm' landscape type has been, or would be created at a given point is whether the observer is situated within a wind farm, in other words surrounded by wind turbines on at least three sides, as opposed to being located outside one, looking towards it.
- 5.315 In areas surrounding the application site where the wind park has less influence, but nonetheless still exerts a characterising effect, the wind turbines would combine with the other landscape

elements to create a wind farm landscape sub-type. Bearing in mind the level topography, open character and man-made landscape context of the application site this is not likely to happen beyond about 1.5km and occasionally 2km because the wind turbines would tend to be perceived less and less as a component of landscape character and read increasingly more as part of the landscape at large. These principles are illustrated in the diagram at **Appendix 5.1 – Annex 5.1**.

- 5.316 In some situations, where the baseline landscape displays a strong man-made character or contrasting characteristics of natural and ‘developed’ features, the influence of a sensitively designed wind park like the one proposed on the underlying landscape will be mitigated somewhat, and the resulting potential effect on character minimised. Such is the case with the ‘Fens – Fenland character unit within which the site is located and its equivalent neighbour in Boston District (Holland Reclaimed Fen). Due to baseline conditions including the regular, geometric landscape patterns and presence of prominent built development such as the high voltage electricity transmission lines / pylons, the significance of landscape change to the host character unit would be less than might be expected, for example compared with a site, or a character unit, where there are no detractors, and where the underlying landscape is more ‘natural’ and the quality / condition higher (see **Table 5.3: Landscape Sensitivity and Capacity** above for more information).

### Landscape Impact Significance

- 5.317 In a landscape free of development it is considered that a significant landscape character effect would normally arise when either a wind park landscape type or sub-type would be formed where none existed previously. However, the degree of impact significance arising would vary depending on visibility of the wind energy proposals and the sensitivity of the receiving environment which is, in part, a product of landscape quality / condition. It should be noted that, in some cases, for instance due to the lower sensitivity and higher capacity for wind energy development of the character area in question, landscape impact significance may be below the level at which the effect is significant in terms of the EIA Regulations 1999, as explained in the methodology at **Appendix 5.1**.
- 5.318 In general terms, bearing in mind the local landscape context and sensitivity / capacity of the application site and host character unit, the number of wind turbines of the type proposed at Heckington Fen would potentially create (a) a wind farm landscape type within / up to about 0.75km and 1.0km from the nearest turbine, and (b) a landscape with wind farm sub-type up to around 1.5km and occasionally 2.0km from the turbines, subject to the extent of the ZTV locally and depending on local variations in visibility / screening due to built form and vegetation. The predicted landscape changes and significance of effects arising from the proposed wind park are assessed below and set out in the schedule at **Appendix 5.4**. It should be noted that the creation of a windfarm landscape type where one did not exist before would normally result in a significant character effect, whereas with the creation of a windfarm landscape subtype may or may not be significant change depending on the baseline landscape character and other factors including professional judgment.

### Development Plan Context

- 5.319 Current planning policy relating to landscape for development control purposes is set out in the North Kesteven Adopted Local Plan 2007. Relevant policy is reproduced in Baseline 2: Planning Policy Context section above. Policy LW1 states:

*“The Council will seek to protect the distinctive landscapes of the identified Landscape Character Areas and any special features which contribute to that character. Where development is acceptable, it will be required to contribute to the local distinctiveness of the area, be well integrated into the local landscape character, protect any features of importance to the local scene, and respect any important views.”*

- 5.320 The supporting text to Policy LW1 adds:

*“The District Council does not expect the area’s landscape to remain unchanged, because there must be some evolution in response to on-going changes in the use and management of land.”*

- 5.321 PPS22 acknowledges that:

*“Of all renewable technologies, wind turbines are likely to have the greatest visual and landscape effects. However, in assessing planning applications, local authorities should recognise that the impact of turbines on the landscape will vary according to the size and number of turbines and the type of landscape involved, and that these impacts may be temporary if conditions are attached to planning permissions which require the future decommissioning of turbines.”*

- 5.322 It is standard practice for councils to request and for renewable energy developers to offer and / or accept such a planning condition(s).

### Climate Change and Landscape Character

- 5.323 The issue of climate change is well documented, has its own Government department<sup>25</sup> and is enshrined in legislation by act of parliament<sup>26</sup>. There is general consensus therefore, both political and public, that climate change is real and demands positive action now. Wind is one form of renewable energy which the UK possesses in abundance and can be economically harnessed. If Government objectives / targets for carbon emissions reduction are to be achieved in the timescale required by legislation there is a pressing need for the construction of windfarms wherever feasible. It is a key principle of PPS22 that:

*“Renewable energy developments should be capable of being accommodated throughout England in locations where the technology is viable and environmental, economic, and social impacts can be addressed satisfactorily.”<sup>27</sup>*

- 5.324 Surveys of public opinion indicate that more people support wind energy development, including onshore, than oppose it (see Public Attitudes to Wind Energy Development and Valency section in **Appendix 5.1**). In the context of climate change wind turbines are increasingly perceived as necessary characteristics of the contemporary British landscape which need not compromise the

<sup>25</sup> Department of Energy and Climate Change (DECC)

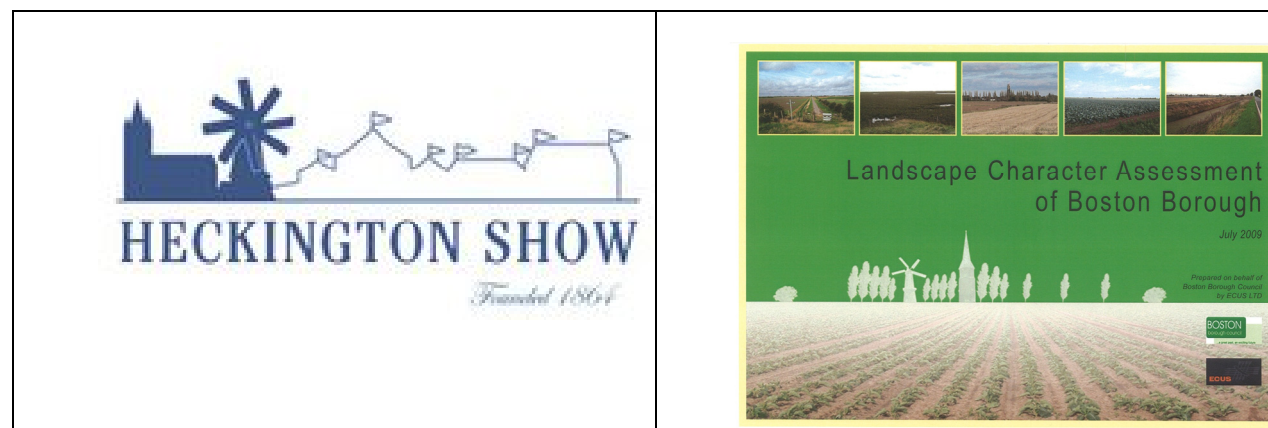
<sup>26</sup> Climate Change Act 2008

<sup>27</sup> ‘Planning Policy Statement 22: Renewable Energy’ (2004) – paragraph 1(i)

objectives of landscape conservation and management. In fact windfarms are making an important contribution to the conservation of landscape by helping to combat global-warming and sea-level rise which will inevitably change our cherished countryside and, crucially, threaten the integrity and survival of vulnerable low-lying landscapes such as the Lincolnshire Fens, much of which lies at, or near and sometimes even below, current sea-level. Consequently, for low-lying, coastal landscapes such as the Fens the do-nothing option in the struggle against climate change is nothing short of irresponsible.

### Landscape Character Precedent

- 5.325 Lincolnshire, including the Fens, has a long tradition of 'windfarming'. The man-made fenland owes its existence in part to wind technology which provided essential power for drainage, amongst other things. The earliest record of windmills being constructed in the Fens is 1395<sup>28</sup>. At the height of windmilling in the 19<sup>th</sup> century there were an estimated 500 windmills in operation in the county<sup>29</sup>, some of which were among the largest in the country, such as Money's Mill, Sleaford and the Maud Foster Mill in Boston. A plan showing the location of all known 'traditional' windmills in Lincolnshire is provided at **Appendix 5.13**. A good number of these mills are still extant and few still operational, including Maud Foster Mill, Heckington Mill and Sibsey Trader Windmill, to name a few. These windmills are included in the 'places of interest' marked on **Figures 5.7 and 5.8**.



5.326

- 5.327 Wind power is so rooted in the Lincolnshire landscape that the windmill has become a local symbol in some villages and towns. The logo for Heckington Show and the front cover of Boston District Council's landscape character assessment presented above are two examples.

### Potential Landscape Character Effects

- 5.328 An assessment of potential *direct* landscape effects on national and local character units located within 5km of the application site is provided below. The character areas are shown in **Figure 5.6b**. A summary assessment of landscape character effects is provided at **Appendix 5.4**. The Boston

District local character area, which lies adjacent to its North Kesteven District counterpart, is included in this sub-section because it is essentially an extension to The Fens – Fenland.

- 5.329 Natural England National Character Areas within 5km

#### The Fens (Natural England NCA 46)

- 5.330 Following a desk study and assessment in the field it is judged that a 'wind farm in fenland' landscape type would be created up to about 1km from the application site and a 'fenland with wind farm' landscape sub-type up to around 1.5km and occasionally 2km. Beyond this distance the wind park would generally not affect landscape character to any significant degree. In other words areas of landscape situated farther away than approximately 2km from the nearest proposed wind turbine would lie beyond the predicted 'zone of characterising effects'. Taking account of the man-made context and existing developed characteristics of the host landscape, significant change to character is not predicted to occur beyond 1.5km from the nearest turbine. This distance threshold will not vary much on the ground due to the open, homogenous character of the fens. However, some local variations will inevitably arise, for example at settlements and where there is mature tree planting, both of which would restrict visibility and limit the presence of the proposals. An assessment of the predicted character change across the character area as a whole is provided in **Appendix 5.4a**.

- 5.331 It should be remembered that landscape character at any particular location is determined by more than just appraisal and awareness of elements observed in a single direction or sector of the compass, as viewed from an observation point. The character at any given point is based on the presence of elements in the full 360 degree environment surrounding the observer. As such the wind turbines may not give rise to significant landscape effects as considered at particular locations whilst observers may still consider themselves to be the subject of significant visual effects at those points when looking towards the proposed wind park (see illustration at **Appendix 5.1**).

#### *North Kesteven and Boston Districts Landscape Character Areas within 5km*

#### The Fens / Fenland (North Kesteven District Council LCA 13) and Holland Reclaimed Fen (Boston District Council LCA A1)

- 5.332 The potential character effect described above in relation to The Fens NCA would be replicated with respect to the host character unit(s) at the local level – The Fens – Fenland (North Kesteven District) and coterminous Holland Reclaimed Fen (Boston District). The level, open character area(s) surrounding the site would be changed to a 'windfarm in fenland' landscape type up to approximately 1km from the nearest proposed turbine and a 'fenland with wind farm' landscape sub-type up to around 1.5km. There will be pockets of landscape which would be changed to a lesser extent, in particular within East Heckington on Boston Road.
- 5.333 Beyond 1.5km distance the wind park would not affect landscape character in a significant way because the presence of the wind turbines would diminish so that they increasingly read as part of the wider landscape.

#### *Character Areas within 10km*

- 5.334 The following is an assessment of potential *indirect* landscape effects on national and local authority character units located within 5–10km of the application site. The character areas are

<sup>28</sup> *Power from Wind* (1999) by Richard Hills – page 136

<sup>29</sup> <http://www.lincolnshire.gov.uk/visiting/windmills/>

shown in **Figure 5.6a**. A summary assessment of landscape character effects is provided at **Appendix 5.4**.

#### Southern Lincolnshire Edge (Natural England NCA 47)

- 5.335 The Southern Lincolnshire Edge is situated to the west of the application site predominantly outside the 5km theoretical threshold of characterising effects. Furthermore the landform and vegetation characteristics of the area, which is more undulating and wooded than the adjacent Fens, restrict intervisibility (see **Figures 5.9 and 5.10**) and would reduce the presence of the proposed wind park in views. Consequently the magnitude of potential change to landscape character would be low at the most and no significant character effects are predicted to arise within the national character area. This includes the easternmost extremity around Heckington village, the boundary of which is located about 3km from the nearest proposed turbine, beyond the 2km threshold within which significant landscape character effects would potentially occur.

#### Central Lincolnshire Vale (Natural England NCA 44)

- 5.336 The Central Lincolnshire Vale separates the Lincolnshire Wolds from the Fens and lies mainly over 10km to the north of the application site; the boundary of its southern extremity around Coningsby / Tattershall is located about 8km from the nearest proposed turbine. The landscape is gently undulating with large woodland blocks which breaks-up visibility within and across the character area (see **Figures 5.9 and 5.10**). As a result, the magnitude of potential landscape character change to would be very low at most and no significant character effects are predicted to occur within the national character area.

#### Central Plateau – Central Clays and Gravels (North Kesteven District Council LCA 11)

- 5.337 The Central Plateau lies to the west of the application site predominantly outside the 5km theoretical threshold of characterising effects. In addition the characteristics of the area (more undulating and wooded than the adjacent fenland) restrict intervisibility (see **Figures 5.9 and 5.10**) and would reduce the presence of the proposed wind park in views. As a consequence the magnitude of potential change to landscape character would be low at the most and no significant character effects are predicted to arise.

#### Bicker to Wyberton Settled Fen (Boston District Council LCA B1)

- 5.338 The character area is situated adjacent to the south of Holland Reclaimed Fen and lies predominantly more than 5km from the application site, outside the theoretical threshold of characterising effects. The more settled characteristics of the area with its associated infrastructure and planting limits intervisibility (see **Figures 5.9 and 5.10**) and would reduce the presence of the proposed wind park in views; the operational Bicker Fen Windfarm forms part of the landscape baseline. The magnitude of change in character is predicted to be low at most and no significant effects are anticipated in terms of landscape character.

#### Stickney to Sibsey Reclaimed Fen (East Lindsey District Council LCA A1)

- 5.339 This character area is similar to its Boston District neighbour Holland Reclaimed Fen, forming an eastern extension of it, and lies predominantly outside the 5km theoretical threshold of characterising effects. The predicted magnitude of change in landscape character would be low at most and no significant character effects are predicted.

#### Woodhall Spa to Coningsby River Terrace (East Lindsey District Council LCA F1)

- 5.340 The character area is more settled and wooded than the adjacent fenland the south (Reclaimed Fen) and west (The Fens / Fenland), and lies predominantly more than 10km from the application site, well beyond the 5km theoretical threshold of characterising effects. The predicted magnitude of change in landscape character would be very low at most and no significant character effects are expected to occur.

#### Peaty Fens (South Holland District Council LCA (Ecotricity Reference P))

- 5.341 The Peaty Fens of South Holland District are an extension of the Reclaimed Holland Fen (Boston District), and lie more than 7km to the south of the application site, beyond the 5km theoretical threshold of characterising effects. The magnitude of change to landscape character would be low at most and no significant character effects are predicted to occur.

#### Settled Fens (South Holland District Council LCA (Ecotricity Reference S))

- 5.342 The Settled Fens of South Holland District are an extension to the Bicker to Wyberton / Frampton to Fosdyke Settled Fens (Boston District), and lie more than 7km to the south of the application site, beyond the 5km theoretical threshold of characterising effects. The predicted magnitude of change in landscape character would be low at most and no significant character effects would arise.

#### The Fens (South Kesteven District Council LCA (Ecotricity Reference 7))

- 5.343 The Fens of South Kesteven District are a southern extension North Kesteven District of Fens – Fenland character area, and lie more than 10km from the application site, well beyond the 5km theoretical threshold of characterising effects. As a result the magnitude of change to landscape character is predicted to be very low or less, and no significant character effects would occur.

#### *Character of the Wider Landscape beyond 10km*

- 5.344 The character of the landscape in adjacent local authority areas located more than 10km from the site would not be affected to any significant degree, because they are located well beyond the theoretical threshold of characterising effects, as explained above. An assessment of the potential effect on each character area in the detailed study area is provided at **Appendix 5.4**. Character areas lying more than 15km from the site are considered to be situated too far away from the proposals to be susceptible to landscape character effects.
- 5.345 Regarding the wider landscape the remainder of the study area would be unaffected from a landscape character point of view. In terms of Natural England's national character areas it is important to note from **Figures 5.9 and 5.10** that the majority of the Lincolnshire Coast and Marshes (NCA 42), Lincolnshire Wolds (NCA 43), Central Lincolnshire Vale (NCA 44), Northern Lincolnshire Edge with Coversands (NCA 45), Trent and Belvoir Vales (NCA 48) and Kesteven Uplands (NCA 75) would predominantly lie more than 10km from the application site and fall mainly outside the ZTV of the proposals and therefore would be largely unaffected visually or characterwise by the proposals. The same would apply to local authority character areas situated more than 10km from the site.
- 5.346 As a consequence, there would be negligible or no (none) landscape character effects occurring in the following local authority areas adjacent to North Kesteven and Boston Districts:

- South Kesteven District
  - South Holland District
- East Lindsey District
  - West Lindsey District

5.347 A summary of potential effects on landscape character in the study area is provided at the end of this section.

Effects on Landscape Value

5.348 This section examines the potential effect of the proposed wind park at Heckington Fen on designated landscapes including registered parks and gardens in the study area, particularly The Lincolnshire Wolds Area of Outstanding Natural Beauty (AONB). Historic designations and features are dealt with in **Chapter 6: Cultural Heritage**.

5.349 The proposed wind park is not situated within any designated landscape areas and therefore no direct effects would arise on valued landscapes in the study area. In general terms indirect effects on landscape value would be limited to the same distance threshold as potential significant character effects which is considered to be up to 1.5km from the nearest proposed turbine at most for the scale of development proposed taking account of the landscape context. For the purposes of this assessment the theoretical limit of characterising effects is 5km from the nearest proposed turbine. Potential effects on the character and quality of valued landscapes lying beyond 5km would therefore tend to be very low and insignificant in EIA terms. .

Nationally Important Landscapes

The Lincolnshire Wolds AONB

5.350 The Lincolnshire Wolds AONB is an extensive area of relatively open, rolling chalk upland, situated over 20km to the north east of the application site, the southern edge of which lies within the study area – see **Figure 5.5**. It was designated in 1973 for its special landscape qualities. Descriptions of the designated landscape are provided in:

- The Lincolnshire Wolds AONB Management Plan 2004-2009
- The Lincolnshire Wolds Landscape Assessment (1993 – Countryside Commission)

5.351 The special qualities of the AONB are set out in Table 1 of the Management Plan and include a range of physical characteristics and other attributes such as landscape character which comprises less tangible qualities, namely:

- Scenic beauty and rural charm;
- Expansive, sweeping views; and
- Peace and tranquillity.

5.352 A key quality of the Lincolnshire Wolds AONB is the extensive panoramic views available over the surrounding lowlands and coast. Of particular note are the views towards the sea to which Tennyson refers in his poetry:

*Calm and deep peace on this high wold,  
And on these dews that drench the furze,  
And all the silvery gossamers  
That twinkle into green and gold:*

*Calm and still light on yon great plain  
That sweeps with all its autumn bowers,  
And crowded farms and lessening towers,  
To mingle with the bounding main.*

*‘In Memorium AHH’ – Tennyson*

5.353 As the application site is located in the Fens over 20km from the closest part of the AONB the proposed wind park would be visible on the horizon when looking across the fenland from the southern extremity of the Wolds, for example from Foxendale Hill north of West Ashby as depicted in **Photomontage 29**. It should be noted that the large majority of the AONB which extends to the north and east lies outside the ZTV of the proposals (see **Figures 5.9 and 5.10**).

5.354 The Management Plan identifies ‘expansive, sweeping views’ as one of the special qualities of the AONB, citing those from High Street and Bluestone Heath Road as representative<sup>30</sup>. However, as brought out in Tennyson’s poem quoted above, the focus of attention for people enjoying the AONB’s special qualities is mainly views from the scarp edge, across the low-lying coastal plain towards the sea; in other words eastward views looking way from the application site.

5.355 The proposed wind park would form a very small element in distant views when looking across the Fens from the southern edge of the Lincolnshire Wolds, sited slightly ‘in front of’, and appearing to combine with, the operational Bicker Fen Windfarm which forms part of the landscape baseline. Consequently changes to the character and special qualities of the designated landscape would be negligible in magnitude. The predicted indirect effect on this high sensitivity landscape would therefore be minor at most and the majority of the Lincolnshire Wolds AONB would be unaffected.

Locally Important Landscapes

5.356 There are no landscapes of local importance such as Special Landscape Areas in the study area – see **Figure 5.5**.

<sup>30</sup> Lincolnshire Wolds AONB Management Plan (2004-2009) – Table 1: Special Qualities



**Landscape Planning Designations**

- 5.357 According to North Kesteven and Boston District Councils' adopted local plan proposals maps (see **Appendix 5.9**) no other local landscape or related designations are located in the ZTV and / or close enough to the site to be affected character wise by the proposed wind park. The potential visual effect on public open space is dealt with in the Visual Assessment section below.

**Historic Landscapes****Historic Parks and Gardens**

- 5.358 There are five Historic Parks and Gardens located close to the detailed study area between 15km and 20km from the application site, all of which lie partly within the ZTV of the proposed wind park, namely (in order of approximate distance from the site as shown in brackets):
- Rauceby Hospital near Sleaford (16km)
  - Rauceby Hall, South Rauceby near Sleaford (17km)
  - Revesby Abbey, Revesby (18km)
  - Culverthorpe Hall, Oasby (18km)
  - Scrivelsby Court, Scrivelsby near Horncastle (20km)
- 5.359 Rauceby Hospital, Rauceby Hall, Culverthorpe Hall and Scrivelsby Court would have very little intervisibility with the proposed wind park, and then only fragmented, filtered views of the rotating blades would occasionally be available particularly in winter. The reason for this is because these parks and gardens are located in adjacent character areas to the fenland where there is more woodland and hedgerow vegetation. The built form and associated planting of Sleaford and Coningsby also form an obstacle to views. Furthermore the parks and gardens are located more than 15km from the nearest proposed turbine, well outside the theoretical zone of characterising effects, and any visible part(s) of the wind park would be a very small element of views. Consequently the proposals would have a negligible effect on historic parkland as a whole and the magnitude of landscape and visual change at these four parks and gardens would negligible or none and the potential residual effects are predicted to be negligible.
- 5.360 Revesby Abbey is situated about 18km to the north east of the site in the Central Lincolnshire Vale (NCA 44) at the northern edge of the Fens (NCA 46). Although the landscape both of, and surrounding the Park is wooded and well-treed parts of the proposed wind park (rotors and blades) are likely to be visible intermittently through gaps in tree / hedge planting from the edge of the Park – (**Photomontage 25** is representative of open views from this general location). However at distances of around 18km this would have a negligible characterising affect on historic parkland as a whole bearing in mind the heavily filtered, fragmented and intermittent nature of these views. As a result there would be a negligible magnitude of landscape and visual change at the Park and the potential residual effect of implementing the proposed wind park at Heckington Fen is predicted to be negligible / minor or less.
- 5.361 The potential effect on views from publicly accessible areas / routes in and around Revesby Abbey is dealt with in the Visual Assessment section below. The potential effect on the historic setting of the registered park and garden is assessed in **Chapter 6: Cultural Heritage**.

**RESIDUAL LANDSCAPE EFFECTS**

- 5.362 The proposed wind park would have a relatively small development footprint which would result in a low magnitude direct impact at most on the low to medium sensitivity site landscape caused during construction and operation by the turbine foundations, access tracks and associated infrastructure. The residual landscape effect would be negligible / minor and reversible.
- 5.363 In terms of landscape character within 5km of the application site a 'windfarm in fenland' landscape type would be created up to approximately 1km from the nearest proposed turbine which would have a direct impact causing a high to very high magnitude of character change resulting in a moderate / major to major / moderate effect based on the low to medium sensitivity of the host landscape. In addition a 'fenland with windfarm' landscape subtype would be formed up to approximately 1.5km from the nearest proposed turbine which would have a direct impact generating a high magnitude of character change, reducing to medium to high with distance, giving rise to a moderate / major effect on the low to medium sensitivity fenland landscape up to 1.5km from the nearest proposed turbine at most.
- 5.364 Beyond 1.5km the magnitude of character change would reduce from medium to high to medium or less with distance generating a moderate or lower landscape effect; beyond 5km the magnitude of change to landscape character is predicted to be very low to negligible or none and the resulting effects from negligible / minor to negligible / none. Furthermore, there would be negligible or no (none) landscape character effects arising on those character areas of higher landscape sensitivity, such as the Lincolnshire Wolds, lying more than 10km from the nearest proposed turbine.
- 5.365 Regarding valued landscapes the Lincolnshire Wolds AONB would be unaffected by the proposed wind park and no other designated landscapes and / or features would be affected in a significant way.

**Visual Effects**

- 5.366 An assessment of the likely effects of the proposed wind park on representative views in the study area is provided at **Appendix 5.5: Visual Assessment Schedule**. The assessment findings are set out in the Effects on Views and Visual Amenity section that follows below and summarised at **Appendix 5.6: Summary of Landscape and Visual Effects**.

**Scope of Visual Assessment****Visual Receptors**

- 5.367 An assessment has been undertaken of potential impacts arising on the following groups of sensitive landscape and visual receptors located within the study area.
- Residential property and settlement
  - Recreational routes and PRow
  - Land with public access
  - Places of Interest (including cultural heritage resources with public access)
  - Public highways – local and main roads

- 5.368 Sensitive visual receptors situated in the study area are described in the Visual Baseline – Public Access, Recreation Resources and Places of Interest section above and shown on plan in **Figure 5.7**. For key receptors situated in the detailed study area see **Figure 5.8**. A focussed assessment of residential receptors situated within 3km of the nearest proposed turbine is provided in the schedule and accompanying plan at **Appendix 5.10**; settlement located over 3km from the site. Representative photomontage references for the various receptors are provided in brackets.
- 5.369 Views from the selected receptors including residential properties were assessed in the field from public highways, rights of way and publicly accessible land. It should be noted that it was beyond the scope of this LVIA to gain access to individual dwellings or gardens and the nearest public access point was used for visual assessment fieldwork purposes.

#### *Other Visual Considerations*

- 5.370 The following other visual considerations are dealt with in this section:
- Valued landscape – views from / visual amenity of the Lincolnshire Wolds AONB
  - Landmarks / focal points – church spires and towers in the detailed study area
- 5.371 Areas of landscape designated for their landscape value are marked in **Figure 5.5**. Local landmarks are shown on **Figure 5.8**.

#### *Assessment Areas*

- 5.372 Although potential visual effects across the whole study area have been assessed, particularly designated areas with a high landscape value (see **Figure 5.5**), the focus of the assessment was on sensitive receptors lying within about 15km of the application site. 15km is considered to be the outer limit of potential significant visual impact in relation to a wind turbine development of the scale proposed at this location, and is the distance used to define the ‘detailed study area’ shown in **Figure 5.8**. However, in practice, due to the landscape context, visual characteristics and the low to medium landscape sensitivity of the site and its surroundings, potentially significant visual effects, where they arise, would tend to occur within approximately 5km of the site. This distance threshold is in keeping with current guidance on LVIA which states that at distances over 5km wind turbines of the scale proposed are:

*“Only prominent in clear visibility – seen as part of the wider landscape.”<sup>31</sup>*

#### *Construction versus Operational Effects*

- 5.373 Potential visual effects resulting from the operation of the proposed development are assessed below. See ‘Effects During Construction’ for an assessment of likely visual impacts arising during the construction phase.

#### *Effects on Views and Visual Amenity*

#### *Overview / Executive Summary*

<sup>31</sup> Scottish Natural Heritage and University of Newcastle (2002) ‘Visual Assessment of Windfarms: Best Practice’ (Table 3, page 10)

- 5.374 The proposed wind park would cause a relatively small number of significant visual effects at specific locations within 5km of the application site, in general no more than approximately 2km from the nearest proposed turbine. Although the flat topography and open, expansive character of the fenlands promotes extensive views, in practice visibility is curtailed and constrained by the characteristic tree cover (shelterbelts and woodland blocks), built form (dwellings and farm buildings) and embankments (dykes) etc. In addition the man-made agricultural landscape of the detailed study area displays some ‘developed’ characteristics including major roads, electricity transmission infrastructure, large scale buildings, telecommunications masts and urban settlement.
- 5.375 These built elements emphasise the man-made, engineered character of the fenlands, as described in published assessments, providing a structure for the ‘natural’ components of landscape which co-exist with it. The predominantly man-made, geometric baseline character of the site and surrounding area with its ‘developed’ elements would temper the effect of the proposed wind turbines, and gives the receiving environment a medium to high capacity, in landscape and visual terms, to accommodate a wind energy development of the scale and type proposed. This interpretation / conclusion is in accordance with recent government guidance on the siting of wind farms published by Natural England<sup>32</sup> and Scottish Natural Heritage<sup>33</sup>

#### *Isolated Properties, Hamlets and Villages within 3km*

- 5.376 Significant visual effects would potentially occur at certain exposed residential properties and settlements situated adjacent to the site, up to around 2-3km distance, where uninterrupted views of the proposed turbines from main windows or gardens are available. According to current guidance 2km is the distance within which turbines are likely to be perceived as ‘prominent’ features in the landscape<sup>34</sup>.
- 5.377 Residential properties located within 3km of the site are shown on **Figures 5.4**; the location of settlement in the detailed study area (15km) is given on **Figure 5.8**. A plan and schedule of residential properties (based on ‘address point’ data) lying within 3km of the nearest proposed turbine is provided at **Appendix 5.10** together with an assessment of the potential effect on the visual amenity of each dwelling, or group of dwellings. This visual assessment, together with the summary set out below under the thoroughfare / post code headings for each property group, is supported by the photomontages and wirelines presented at **Figure 5.11** with viewpoint references provided in brackets as appropriate.

#### Dwellings on Clay Bank and Cow Drove, South Kyme Fen – LN4 4AH / 4AJ

- 5.378 These residential properties are located between 1 and 3km to the north / north west of the proposed wind park and are generally enclosed and / or orientated in such a way so as to prevent significant visual effects arising on them. The two exceptions to this are Mill Green Farm (1km to the north – see **Photomontage 1**) and Pattingden Cottage Farm just over 2km to the north north west which are open to the south and would have views of the proposed turbines front their front

<sup>32</sup> Natural England (2009) ‘Assessing the Environmental Capacity for On-Shore Wind Energy Development’ – Consultation Draft ( pages16 and 42 – Human Influence)

<sup>33</sup> Scottish Natural Heritage (2009) ‘Siting and Designing Windfarms in the Landscape – Version 1’ (pages 15 and 21)

<sup>34</sup> Scottish Natural Heritage and University of Newcastle (2002) ‘Visual Assessment of Windfarms: Best Practice’ (Table 3, page 10)

aspects / main rooms. The predicted levels of visual change and effect are presented in **Appendix 5.10**.

Dwellings on Side Bar Lane, Heckington Fen – NG34 9LY / 9LZ

- 5.379 Twelve dwellings, located between 1 and 1.5km to the west of the proposed wind park are generally open and / or orientated in such a way as to be significantly affected visually. These would include: Nos 2-3 The Bungalow, Derwent Cottage, Broad Green, Fen Farm, Fen School, Nos 1-4 New Cottages, Five Willow Wath Farm and The Bungalow. The exception to this is Chapel House and Glebe Farm situated 1km to the west (**Photomontage 3** is illustrative of uninterrupted views from nearby) which are enclosed by vegetation and buildings which would interrupt views towards the application site and prevent significant visual effects arising. The predicted levels of visual change and effect at these dwellings are presented in **Appendix 5.10**.

Dwellings on or off Kyme Road / Littleworth Drove, Star Fen – NG34 9NA / 9NB / 9ND

- 5.380 Residential properties in this group would not be significantly affected visually.

Dwellings on Browns Drove including Skirth Drain, Swineshead Bridge / The Rakes – PE20 3PX / 3PY

- 5.381 Six exposed dwellings on Browns Drove situated within 1-2km of the nearest proposed turbine would be significantly affected visually, namely: College Farm, Catlins Farm, The Cottage, The Bungalow and 13-14 Browns Drove. The remainder would not be affected to any significant degree due to their orientation away from the application site and enclosure by vegetation and / or built form. The predicted levels of visual change and effect are presented in **Appendix 5.10**.

Dwellings on Main / Station Road (A17), Swineshead Bridge – PE20 3PB / 3PJ / 3PS / 3PT / 3PZ

- 5.382 Residential properties in this group would not be significantly affected visually – **Photomontage 5** is illustrative of views from Swineshead Bridge.

Dwellings on the A1121 (Swineshead Bridge Road), Swineshead Bridge – PE20 3PB 3PH / 3PT / 3PU / 3RA

- 5.383 Residential properties in this group would not be significantly affected visually – **Photomontage 5** is illustrative of views from Swineshead Bridge.

Dwellings on the A17 / Main Road, East Heckington – PE20 3QA / 3QB / 3QF / 3QG / 3QQ

- 5.384 Broadly speaking properties to the south of the A17 / Main Road would not be affected visually to any significant degree due to their location and orientation. Regarding those to the north of the road, the majority between East Heckington hamlet and Sidebar Lane would have relatively uninterrupted views of the proposed wind park at close range (approximately 1km) and would therefore be subject to significant visual effects, including: Rose Cottage, Rainbow Cottage, Beech House, Oatsheaf Cottage, Rectory Farmhouse, Rosena, Rectory Cottages, Nos 1-11 Council Houses, Tarasachi / Chambers House, Elm Grange, The Laurels / Home Farm and Six Hundred Farm House – twenty-two in total (**Photomontage 2** is illustrative of uninterrupted views from the A17 at this point). The remaining dwellings making up East Heckington hamlet and north of the A17 including: Park View, The Wheel, The Old Church, School House, Ashleigh House, Eastdene, Evergreen, Nos 1-2 Old Post Office, The Lodge and Blacksmiths Cottage, would not be significantly

affected because of their orientation and enclosure by buildings and vegetation. The predicted levels of visual change and effect are presented in **Appendix 5.10**.

Dwellings on Lineside, Harrisons/Ulyat's Drove & Claydike Bank – PE20 3RA / 3RD / 3RE / 3RL / 3RN

- 5.385 Residential properties in this group would not be significantly affected visually.

Dwellings on Maryland Bank and Sutterton Drove, Amber Hill – PE20 3RS / 3RW

- 5.386 These residential properties are located between 1 and 2km to the north east of the proposed wind park and are generally open and / or orientated south west looking across the application site, so that they would have views of the proposed turbines front their front aspects / main rooms and be subject to significant visual effects. This would apply to the following nine dwellings: 1-2 Maryland Bank, The Old Church, 1-2 Church Cottages, Unidentified House (PE203RW), The Bungalow x 2, Last Bungalow. **Photomontage 4** is illustrative of uninterrupted views from nearby, slightly farther away at the edge of Amber Hill. The remaining dwellings in this group are enclosed and / or orientated in such a way so as to prevent significant visual effects arising on them. The predicted levels of visual change and effect are presented in **Appendix 5.10**.

Dwellings on Sutterton/Mains Cross Drove & Chapel Lane, Amber Hill – PE20 3RF / 3RG / 3RJ / 3RQ

- 5.387 One property in this group – Charnwood House would be significantly affected visually due to the relatively uninterrupted views afforded from it looking towards the application proposal. Otherwise residential properties at Amber Hill would not be significantly affected visually – **Photomontage 4** is illustrative of the level of visual change to uninterrupted views from Amber Hill.

*Settlements within 3 to 5km*

- 5.388 Regarding larger settlements surrounding the application site residential properties with uninterrupted views of the turbine rotors from front windows and gardens located within 3-5km of the nearest proposed turbine have the potential to experience significant visual effects in particular circumstances. The following rural settlements fall within, or partly within, the 3-5km distance range.

South Kyme

- 5.389 Views of the application proposal would be available from the southern edge of South Kyme, for example dwellings on Low Road and South Parade. **Photomontage 6** shows the predicted view from Low Road looking towards the application site. The exposed location represents the worst case visibility from South Kyme; other properties in the village would have a range of more restricted and fragmented views.
- 5.390 The proposed wind park would be visible at medium range occupying about 25% of the 70 degree field of view. Taking account of the large scale, expansive character of the Fens (NCA 46), combined with the sense of separation provided by the open foreground, the interruption of visibility by the farm woodlands, and the upstanding built features in view (eg. high voltage transmission lines and pylons and Bicker Fen Windfarm) the predicted magnitude of visual change at South Kyme would be on the lower side of 'medium' which, at exposed high sensitivity receptors at the margins of the village such as residential properties on Low Road, places of interest (South Kyme Golf Course) and public rights of way / highway (Cow Drove), would translate into a 'moderate' effect at most which would not be significant in terms of the EIA Regulations.



Heckington

- 5.391 Parts of the application proposal would be visible from the eastern edge of Heckington, for example dwellings on Kyme Road. **Photomontage 9** illustrates the predicted view from the public footpath linking with Kyme Road looking towards the application site. The exposed location represents the worst case visibility from Heckington.
- 5.392 The upper part of the proposed wind park (rotors and blades) would be visible at medium range occupying just over 15% of the 70 degree field of view. Bearing in mind the partially enclosed character of the landscape and the strong human influence evidenced by built structures in view, the predicted magnitude of visual change at this point would be low which, at exposed high sensitivity receptors at the margins of the village such as residential properties, places of interest (Heckington Mill) and public rights of way, would give rise to a 'minor / moderate' effect at most which would not be significant in EIA terms.
- 5.393 It should be noted that dwellings within Heckington village (situated immediately to the west of this viewpoint), which generally enjoy a higher degree of enclosure, would be subject to lower magnitude of change and lesser potential visual effects.

Swineshead

- 5.394 The proposed wind park would be visible from the northern edge of Swineshead and its environs, for example dwellings at North End some 4km from the application site. **Photomontage 11** is indicative of the predicted view looking north west from the A52 east of the village. The exposed position at this point is representative of the worst case visibility of the proposal (where available) from the remainder of Swineshead.
- 5.395 The proposed wind turbines would be visible from the north edge of Swineshead / North End at medium range occupying around 20% of the 70 degree field of view. Considering the expansive man-made character of the Fens landscape (NCA 46), the intervening tree belts and hedgerows, and the human influence / built structures evident in the view, the predicted visual change at this point would be low to medium which, at exposed high sensitivity receptors at the periphery of the village such as residential properties, places of interest and public rights of way, would generate a 'moderate / minor' effect at most which would not be significant from an EIA perspective.

Hubbert's Bridge

- 5.396 Views of the application proposal would be available from Hubbert's Bridge where visibility is not interrupted by vegetation and built form, as it is for example from the A1121 and the properties adjacent to South Forty Foot Drain. **Photomontage 8** shows the predicted view from the south side dyke, at a point approximately level with the western extremity of Boston West Golf Club Road, looking towards the application site. The exposed location and proximity to the site represents the worst case visibility from Hubbert's Bridge; other properties in the village would generally have a variety of more limited and fragmented views. The proposed wind park (towers, rotors and blades) would be visible at medium range occupying about 15% of the 70 degree field of view. Considering the expansive man-made character of the Fens landscape (NCA 46), the trees and hedgerows, and the human influence / built structures apparent in the view, the predicted visual change at this point would be low to medium causing a 'moderate / minor' visual effect at exposed high sensitivity receptors at the edge of the settlement, such as residential properties, places of interest (Boston

West Golf Course) and public rights of way, which would not be significant in terms of the EIA Regulations.

Langrick Bridge / Langrick

- 5.397 The proposed wind park would be visible from the Langrick area situated between 5 and 7km from the application site. **Photomontage 10** is indicative of the predicted view looking west from the east side dyke at Langrick Bridge. The exposed position at this point is representative of the views from the Langrick and the immediate surrounding area. The proposed wind park would be seen at medium range extending across approximately 15% of the 70 degree field of view partially interrupted by intervening vegetation and built form. Taking account of the man-made context and expansiveness of the Fens landscape, together with the characteristic mix of 'natural' and engineered elements under huge skies, the predicted visual change at this location would be low to medium magnitude which, at exposed high sensitivity receptors at the margins of the village such as residential properties, places of interest and public rights of way, would give rise to a 'moderate / minor' effect at most which would not be significant in EIA terms.

Holland Fen

- 5.398 Uninterrupted views towards the application site are available from much of the extended linear settlement of Holland Fen along North Forty Foot Bank at distances of between 4 to 6km; **Photomontage 7** shows the predicted view of the proposed wind park from a point immediately to the north east of the settlement nucleus. The exposed location represents the worst case visibility from the Holland Fen area; some properties in the village would have more restricted / fragmented views due to surrounding vegetation and built form. The proposed turbines would be visible at medium range extending across approximately 20% of the 70 degree field of view. Taking into consideration the fairly homogenous, man-made context of the Fens, the blend of 'natural' and engineered landscape elements and the broad skies, the visual change predicted to arise at this location would be low to medium magnitude which, at exposed high sensitivity receptors forming part of the settlement such as residential properties, places of interest and public rights of way, would give rise to a 'moderate / minor' effect at most which would not be significant from an EIA point of view.

Settlements within 15km

- 5.399 With regard to large villages and towns in the detailed study area, dwellings with uninterrupted views of the turbine rotors from front windows and gardens located within 5-15km of the site would not normally have the potential to be affected to a significant degree. The following settlements fall within, or partly within, the 5-15km distance range.

Sleaford / Kirkby la Thorpe

- 5.400 Sleaford is a large market town located approximately midway between its nearest larger neighbours: Lincoln, Grantham and Boston, about 12km to the west of the application site lying within the Southern Lincolnshire Edge (NCA 46) and the Central Plateau (NKDC LCA 11); the town has an urban character as distinct from its more rural neighbours. Views towards the application site from Sleaford and its environs are generally interrupted by the characteristic, varied landform and tree / hedgerow vegetation of the area. The upper part of the proposed wind park would be visible in some views, seen at medium to long range (between 10-15km) in the background forming a small element of views, occupying approximately 10% of the 70 degree field of view –

**Photomontage 18** is illustrative of worst case visibility from the Kirkby la Thorpe and the eastern edge of Sleaford. Bearing in mind the partially enclosed character of the landscape, the interrupted nature of visibility and the human influence evidenced by built structures in view, the predicted magnitude of visual change at Kirkby la Thorpe would be low at most. It should be noted that dwellings within Sleaford, Kirkby la Thorpe and other villages in the vicinity, which generally have a higher degree of enclosure, would be subject to lower magnitude visual change. The worst case visual effect arising at exposed high sensitivity receptors in the Sleaford area such as residential properties, places of interest and public rights of way would be 'minor / moderate' which would not be significant in EIA terms.

#### Helpringham

- 5.401 Helpringham is located within the Southern Lincolnshire Edge (NCA 47) at the transition of the national character area with The Fens (NCA 46). Uninterrupted views towards the application site are available from the eastern edge of the fenland fringe settlement at a distance of around 7km; **Photomontage 13** shows the predicted view of the proposed wind park from the B1394 at the northern edge of the village. The exposed location represents the worst case visibility from the Helpringham area; some dwellings within the settlement would have more restricted / fragmented views due to surrounding vegetation and built form. The proposed wind park (or parts of) would be visible at medium to long range extending across approximately 20% of the 70 degree field of view. Having regard for the man made character of the Fens, the expansive nature of views, the partial interruption of visibility by vegetation and the built structures in view, the magnitude of visual change at this general location is predicted to be low at most which, at exposed high sensitivity receptors such as residential properties, places of interest and public rights of way, would give rise to a 'minor / moderate' effect at most which would not be significant in terms of the EIA Regulations.
- 5.402 It should be noted that dwellings within Helpringham village (lying immediately to the west and south of this viewpoint), which generally has a higher degree of enclosure, would be subject to lower magnitude visual change.

#### Billingborough

- 5.403 Billingborough is situated within the Kesteven Uplands (NCA 75) at its transition with The Fens (NCA 46). **Photomontage 23** is illustrative of the change in character and views across the fenland from the rising ground west of Billingborough. As with its neighbour Helpringham to the north, medium to long range views towards the application site are available from the north eastern edge of the village. However, at distances of around 13km the visual change caused by the proposed wind park would be very low. Predicted effects at exposed high sensitivity receptors such as dwellings and PRoW would be minor and not significant from an EIA perspective.

#### Donington / Quadring / Gosberton

- 5.404 Donington and its neighbours are located within the settled part of The Fens (NCA 64) approximately 10km south of the application site. **Photomontage 17** illustrates the character of views from the vicinity and the predicted level of visual change resulting from implementation of the proposed development. When visible the proposal would extend across about 10% of the 70 degree field of view, seen relatively uninterrupted at medium to long range beyond Bicker Fen. Taking account of the man-made character of the Fens landscape: its homogeneity, the co-existence of 'natural' and engineered features and the broad skies, the visual change predicted at

this location would be low magnitude which, at exposed high sensitivity receptors such as residential properties and public rights of way, would give rise to a 'minor / moderate' effect at most which would not be significant in EIA terms.

#### Kirton / Sutterton / Algarkirk

- 5.405 Views towards the application site from this settled part of The Fens (NCA 46) tend to be interrupted by settlement and associated tree and hedge / shrub vegetation as illustrated in **Photomontage 21**. Where views are available the upper part of the proposed wind park (rotors and blades) would be partly visible at medium to long range occupying less than 10% of the 70 degree field of view. Taking into account the partially enclosed and large scale character of the landscape, the interrupted nature of visibility and the human influence evidenced by built structures and traffic / movement in this settled area, the predicted magnitude of visual change locally would be very low which, at exposed high sensitivity receptors such as residential properties and public rights of way, would give rise to a 'minor' effect at most which would not be significant from an EIA perspective. It should be noted that dwellings within Algarkirk, Sutterton and Kirton, which generally are enclosed by vegetation and built form, would be subject to lower levels of visual change.

#### Boston

- 5.406 Boston is a large market town and port located near the Wash about 10km to the east of the application site lying within the settled part of The Fens (NCA 46); the town has an urban character as distinct from its more rural neighbours in the Fens. It would be possible to see the proposed wind park from the western margins of the settlement and from certain tall buildings / elevated positions with the town. **Photomontages 15 and 20** are illustrative of these two extremes. When and where visible the proposed wind park would be seen, relatively uninterrupted at medium to long range, extending across about 10% of the 70 degree field of view. Taking into account the man-made context of the Fens landscape, its homogeneity, the blend of 'natural' and engineered characteristics and the huge skies, the visual change predicted to occur at this location would be low magnitude which, at exposed high sensitivity receptors such as residential properties, places of interest (Boston Stump / Maud Foster Mill) and public rights of way, would give rise to a 'minor / moderate' effect at most which would not be significant in EIA terms. It should be noted that dwellings within Boston generally enjoy higher levels of enclosure by built form and vegetation than those at the periphery and, therefore, would be subject to lower levels of visual change.

#### Sibsey / Frithville

- 5.407 Sibsey lies in the 'reclaimed' part of The Fens (NCA 46) at the edge of the detailed study area and is the location of Sibsey Trader Windmill, one of the few intact / operational traditional windmills in Lincolnshire. Views across the flat fenland towards the application site are interrupted by intervening vegetation and built form as illustrated in **Photomontage 22**. The upper part of the proposed wind park (blades and rotors) would be partially visible from the Sibsey area seen at long range taking up less than 10% of the 70 degree field of view. Considering the large scale character of the landscape, the separating distance involved, the interrupted nature of visibility and the human influence apparent in this dynamic view, the predicted magnitude of visual change at this general location would be very low which, at exposed high sensitivity receptors such as residential properties, places of interest (Sibsey Trader Windmill) and public rights of way, would give rise to a 'minor / moderate' effect at most which would not be significant from an EIA point of view.

Wildmore / Bunkers Hill

- 5.408 Views towards the application site from the Wildmore Fen area of The Fens (NCA 46) are similar to that presented in **Photomontage 7** from Holland Fen, albeit at greater distances of between 7-10km. The proposed wind park would be visible in certain views and is predicted to cause a low magnitude of visual change which at exposed high sensitivity receptors such as residential properties and public rights of way, would give rise to a 'minor / moderate' effect at most which would not be significant in EIA terms.

Coningsby / Tattershall / Chapel Hill

- 5.409 Views from Tattershall and Coningsby situated in the Central Lincolnshire Vale (NCA 44) looking across The Fens (NCA 46) towards the application site are generally interrupted by the intervening tree / hedgerow vegetation and built form which surrounds the settlements. This phenomenon is depicted in **Photomontage 19** taken from the top of Tattershall Castle keep which shows the enclosed / developed facilities of Tattershall Lakes Country Park and RAF Coningsby airbase in the foreground. Where visible at more open locations such as Chapel Hill, or between gaps of vegetation and buildings, the proposed wind park is predicted to cause a low magnitude of visual change at most which, at exposed high sensitivity receptors including residential properties, places of interest (Tattershall Castle and Lakes Country Park) and public rights of way, would give rise to a 'minor / moderate' effect at most which would not be significant in terms of the EIA Regulations.

North Kyme / Billingham

- 5.410 Views looking across the flat fenland towards the application site would be possible from the North Kyme / Billingham area located at the edge of The Fens (NCA 46) between 8-10km to the north north west of East Heckington. **Photomontage 16** is illustrative of southward views from Billingham. The proposed wind park would be visible in certain views and is predicted to cause a low magnitude of visual change which, at exposed high sensitivity receptors such as residential properties, places of interest and public rights of way, would give rise to a 'minor / moderate' effect at most which would not be significant in EIA terms.

Anwick / Ruskington

- 5.411 Visible towards the application site from the Anwick / Ruskington area tend to be interrupted by the characteristic varied landform and tree / hedgerow cover of the Southern Lincolnshire Edge (NCA). **Photomontage 14** illustrates the predicted view from the south eastern edge of Anwick. The proposed wind park would be visible in certain medium range views and a low magnitude of visual change is predicted to arise which, at exposed high sensitivity receptors such as residential properties, places of interest and public rights of way, would cause a 'minor / moderate' effect at most which would not be significant from an EIA perspective.

Ewerby / Ewerby Thorpe / Howell

- 5.412 Ewerby is a fenland fringe settlement located within the Southern Lincolnshire Edge (NCA 47) with its characteristic gently undulating landform, scattered farm woodlands and hedges with occasional mature trees, a scene depicted in **Photomontage 12** which is are illustrative of views looking towards the site from the Ewerby / Howell area. Ewerby Thorpe, an outlying hamlet situated at the transition of NCA 47 and the neighbouring Fens (NCA 46) is slightly elevated above and the

fenland and has extensive eastward views across the lower lying area similar, but at a greater distance, to those from South Kyme as depicted in **Photomontage 6**.

- 5.413 Where views are available from the Ewerby / Howell area the proposed wind park would be visible occupying slightly more than 10% of the 70 degree field of view, seen at medium to long range partially interrupted by intervening hedgerows and tree vegetation. Bearing in mind the gently undulating, semi-enclosed landscape context and expansiveness of the adjacent Fens landscape, combined with the characteristic mix of 'natural' and man-made elements under a big sky, the visual change at this location is predicted to be low magnitude which, at exposed high sensitivity receptors such as residential properties, places of interest and public rights of way, would give rise to a 'minor / moderate' effect at most which would not be significant in EIA terms.
- 5.414 From Ewerby Thorpe the proposed wind park would be visible uninterrupted, at medium to long range, taking up about 20% of the 70 degree field of view. Considering the large scale, expansive character of the Fens, combined with the sense of separation provided by the open foreground the upstanding built features in view (e.g. high voltage transmission lines and pylons and Bicker Fen windfarm) the predicted magnitude of visual change would be on the lower side of 'low to medium' which, at exposed high sensitivity receptors such as residential properties, places of interest and public rights of way, would give rise to a 'moderate / minor' effect at most which would not be significant from an EIA point of view.

*Settlements in the Wider Landscape*

- 5.415 Towns, villages and isolated properties in the wider study area have very restricted visibility of / towards the application site due to the fenland location and landscape context. Where long range views of the proposed wind park are available at distances in excess of 15km the resulting visual effects would be limited to minor significance at most (based on a very low magnitude of visual change potentially occurring within the 15-20km distance band) and generally negligible / minor or lower (assuming on a negligible magnitude of visual change potentially occurring within the 20-35km distance band). The reason for the low levels of visual effect is due to the character of the Fens with its combination of flat topography and characteristic tree cover relating to the agricultural land use and settlement which interrupts visibility and increasingly closes down views with distance. As one moves farther away from the application site the more varied topography and higher proportion of woodland / tree cover would tend to further limit visual change. A summary of predicted effects arising on high sensitivity receptors at main settlements in the wider study area is provide below together which references to illustrative photomontages:

Spalding / Holbeach

- 5.416 A negligible / minor visual effect is predicted to occur in the Spalding / Holbeach area where uninterrupted views of the proposed wind park are possible – **Photomontage 26** is illustrative.

Bourne

- 5.417 A negligible / minor visual effect is predicted to arise in the vicinity of Bourne where uninterrupted views of the proposed wind park are available – **Photomontage 28** is illustrative.

Grantham

- 5.418 Generally no intervisibility with the proposed wind park therefore the predicted effect in the Grantham area would be negligible / none.

Lincoln

- 5.419 The proposed wind park would theoretically be visible from elevated parts of Lincoln, but in practice views towards the site are generally blocked by surrounding / intervening built form and vegetation, and the majority of the city lies outside the ZTV (with screening) of the proposal. Where views do occur in very favourable atmospheric conditions (Met Office excellent visibility category) for example from the tower of Lincoln Cathedral, a negligible / minor to negligible effect is predicted due to the separation distance of over 30km – **Photomontage 30** shows depicts the view from the low-lying fenland east of Lincoln and is illustrative of the distance and view direction involved.

Woodhall Spa / Horncastle

- 5.420 A minor visual effect at most is predicted to occur in the Woodhall Spa where uninterrupted views of the proposed wind park are possible – **Photomontage 25** is illustrative of the closest distance and view direction involved. Otherwise, for instance at / around Horncastle, the anticipated level of visual effect would be negligible / minor of lower.

Spilsby

- 5.421 A negligible / minor visual effect is predicted to arise in the vicinity of Spilsby where uninterrupted views of the proposed wind park are available.

Wainfleet / Friskney / Wrangle

- 5.422 A negligible / minor visual effect is predicted to arise along the coastal strip from Wainfleet to Boston including Friskney, Wrangle and Old Leake where uninterrupted views of the proposed wind park are available.

**Summary of Visual Effect on Dwellings and Settlements**

- 5.423 The proposed wind park has the potential to significantly affect visually certain residential properties and parts of some settlements within approximately 2km of the application site and occasionally up to 2.5km at exposed locations. Significant visual effects are not predicted to occur more than 3km from the nearest turbine due to the underlying character of the fenland landscape which limits the extent of visibility and the proposed layout of the turbines which reflects the geometric patterns of the man-made landscape.
- 5.424 Having carried out a visual assessment of residential properties lying within 3km of the nearest proposed turbine, it is predicted that the proposal would potentially have a significant visual effect (moderate / major to major) on a small number of dwellings (approximately 52) situated within about 2.5km of the application site where uninterrupted views exist from front aspects / main windows and gardens. This is likely to include the following dwellings / farmsteads in the vicinity of the site:
- (2) Mill Green Farm, Pattingden Cottage Farm on / off Clay Bank, South Kyme Fen
  - (14) First Cottage, Nos 1-3 The Bungalow, Derwent Cottage, Broad Green, Fen Farm, Nos 1-4 New Cottages, The Bungalow and Chapel House on Sidebar Lane, Heckington Fen
  - (4) College Farm, Catlins Farm, the Cottage and 14 Browns Drove, The Rakes / Browns Drove

- (19) Rose Cottage, Rainbow Cottage, Beech House, Oatsheaf Cottage, Rectory Farmhouse, Rectory Cottages, Nos 1-11 Council Houses, Tarasachi and Chambers House, East Heckington
- (10) 1-4 Maryland Bank, The Old Church, 1-2 Church Cottages, The Bungalow x 2 and Last Bungalow

- 5.425 However a significant change to views or visual amenity at a particular dwelling does not mean that the turbines would be overbearing, or the visual effect harmful in planning terms. It is important to note that the proposed site layout would ensure that reasonable residential amenities of existing properties would be protected in accordance with normal development control criteria. Mitigation measures incorporated into the wind park layout at the design stage in order to avoid or minimise potentially significant impacts are set out in **Chapter 3: Site Selection** and summarised in the Consideration of Alternatives section of this chapter below.

- 5.426 Isolated dwellings and settlement situated between 3-5km from the site would not be affected to any significant degree, although there would be moderate levels of visual change at some exposed locations, such as the southern edge of South Kyme, but the effect on visual amenity would not be significant from an EIA point of view. Towns and villages in the wider study area would be relatively unaffected due to the inherent characteristics of the local landscape, in particular the flat, expansive fenland and the increasingly limited visibility across the Fens as one moves farther away from the site. In addition the man-made, geometric character of the fenland which gives the application site the capacity to accommodate a wind energy development of the scale proposed.

- 5.427 In summary, a small number of residential properties (approximately 52) situated within 3km of the nearest proposed turbine at East Heckington, Swineshead Bridge, Amber Hill and on Sidebar Lane / Littleworth Drove would be significantly affected visually by the wind park proposals. However, none of the people living in the properties so affected would have their visual amenity changed to the degree that the proposed developed becomes overbearing or unacceptably intrusive. No significant visual effects are predicted to arise beyond 3km and the vast majority of residential properties and settlements in the study area would not be affected visually by the proposed wind park to any significant degree. It is notable that no significant visual effects are predicted to occur at South Kyme, Heckington and Swineshead, the closest villages to the application site.

**Public Rights of Way and other Recreational / Cycle Routes**

- 5.428 This section examines public rights of way (PRoW) lying within 3km (and occasionally up to 5km) of the application site and falling within the ZTV of the proposals (see **Figures 5.4** and **5.8**) to establish the potential visual effects on users of them. Long distance paths / recreational and cycle routes in the wider study area are also considered. Significant visual effects are not predicted to arise at distances in excess of 3km due to the expansive, man-made character of the local landscape, in particular the flat topography, geometric field patterns, shelter-belts / woodland blocks, built form, main roads and electricity infrastructure. However, in certain cases routes are assessed up to approximately 5km from the site, in particular Cow Drove south of South Kyme.
- 5.429 No PRoWs are located within, or cross the application site (red line area). There is one public footpath crossing the application land holding (blue line area) recorded on County Council's

definitive map<sup>35</sup> – Heck/15/1 at the north west corner. A further nineteen PRowS (or stretches of) lie within 3km of the nearest proposed turbine, namely (ordered by quadrant and distance from the site; linked routes assessed together).

#### *Note on the Visual Assessment of PRow*

5.430 The level of visual change experienced by people using public rights of way, and the degree of residual effect arising (assuming a high sensitivity receptor), would depend partly on:

- a) the nature of visibility from the path and its immediate landscape context – uninterrupted or interrupted by vegetation and built / engineered form; and
- b) in part on the alignment of the route – paths leading toward the application site would tend to be subject to slightly higher levels of visual change than those aligned at right angles to it and *vice versa*.

5.431 The reasoning for this is because when on the move walkers tend to look forwards and appreciate the prospect up ahead, and therefore changes to views aligned to the route would generate a higher magnitude of visual change and be experienced by people enjoying the countryside as a larger effect than those seen at right angles. Oblique views from paths would represent a halfway-house and need to be treated accordingly.

#### NW and SW Quadrants (South Kyme and Heckington / Great Hale)

5.432 People using public footpath Heck/15/1 between Crab Lane and Head Dike as far as Holland Dike, where it terminates, would pass within 500m of the nearest proposed turbines and, because of the open landscape character and unrestricted nature of views, would be subject to very high magnitude of visual change. Walkers are high sensitivity of the receptors and would experience the change as a major and significant visual effect. The predicted magnitude of visual change on users of the footpath at its junction with Sidebar Lane would be lower – high (see **Photomontage 3**), due to the greater separation distance of over 1km, a level of change which would be felt as a major / moderate effect.

5.433 Walkers using SKym/3/1 footpath and the public highway leading to Mill Green Farm from Sidebar Lane would also have unrestricted visibility of the proposed wind park (see **Photomontage 1**) and, at approximately 1km distance, would be subjected to a high magnitude of visual change which would be experienced as a major / moderate and significant effect. The same would apply to people walking along footpath SKym/2/1 towards the application site between Car Dyke and Sidebar Lane within approximately 2km of the nearest proposed turbine. Beyond this distance, between 2-2.5km, the magnitude of change would decrease to medium to high, which would be perceived by walkers as a moderate / major and significant change due to the unrestricted nature of views and the alignment of the path leading towards the application site. Between 2.5-3km would decrease farther still so that at 3km distance the predicted magnitude of change would be medium producing a moderate visual effect which would not be significant in EIA terms.

<sup>35</sup> <http://microsites.lincolnshire.gov.uk/countryside/definitive-map/>

5.434 Regarding footpaths SKym/1/1, Heck/13/1 and Heck/3/1, located between 2.5 and approximately 3km from the nearest proposed turbine, due to the alignment at rights angles or oblique to the application site, the magnitude of visual change would generally be medium resulting in a moderate effect for walkers which would not be significant from an EIA point of view. Beyond 3km the magnitude of visual and resulting effect would be lower and diminish with distance from the site. Consequently people walking or riding along Cow Drove from South Kyme as far as footpath SKym/1/1 would experience no more than moderate and not significant visual effects. The same would apply to users of footpath Heck/12/1.

5.435 People using circular footpath GtHa/cs/1 situated to the south of East Heckington and the A17 would be subject to a medium to high magnitude of visual change at most, when walking towards the proposed wind park, which would be experienced as a moderate / major effect – **Photomontage 2** from the north side of A17 at East Heckington illustrates a slightly higher magnitude of visual change that would be felt from the path. The reason for the slightly lower level of visual effect than might be expected is because of the separation of the path from the site provided by the settlement and the main road which would ameliorate the magnitude of change to a degree.

#### NE and SE Quadrants (Amber Hill and Swineshead)

5.436 Users of footpath Ambe/4/1 walking from Sutterton Bridge towards Claydike Bank would be subject to medium to high magnitude of visual change, which would be perceived by walkers as a moderate / major and significant effect, due to the unrestricted nature of views and the alignment of the path leading towards the application site. **Photomontage 1** is illustrative of views from the path looking towards the proposed wind park.

5.437 Footpaths Ambe/3/1, Ambe/2/1 and Kirt/12/1 are grouped around Amber Hill settlement and also afford relatively unrestricted views towards the application site. Walkers using them would experience medium to high levels of visual change, due to the proximity and / or alignment of the routes, resulting in moderate / major and significant effects.

5.438 Footpath Ambe/5/1, also linking Sutterton Drove with Claydike Bank, is situated about 2.5km from the nearest proposed turbine and aligned obliquely to the site. Walkers using the route would be subject to a medium magnitude of visual change which would be experienced as a moderate effect and not significant in EIA terms.

5.439 Bridleway Swhd/13/1 follows the southern bank of South Forty Foot Drain linking with the A17 at Swineshead Bridge where it is situated just over 2km from the nearest proposed turbine. Riders and others using the route. Although the landscape is open the bridleway is separated from the application site by a variety of built features including the waterway, railway, A17 and some of the buildings and associated vegetation making Swineshead and East Heckington settlements. This and the alignment of the route at right angles to the site would restrict the magnitude of visual change to medium or less, resulting in moderate or lower effects being experienced by riders and walkers. The same levels (or lower) of visual change and effect would occur in relation to users of linked footpaths Swhd/14/1, Swhd/16/1 and Ambe/8/1, and Swhd/15/2 and Swhd/15/1. **Photomontage 5** is illustrative of north west looking views from the paths at Swineshead Bridge.

5.440 Regarding long distance recreational routes there are two in study area: The Water Rail Way passing through the detailed study area east of the site; The Macmillan Way to the south of the site; and The Viking Way crossing the northern part of the study area.



- 5.441 The Macmillan Way crosses the southern part of the study area originating from Boston before cutting across the fenland towards the Kesteven Uplands (NCA75), at its closest point passing within approximately 11km of the proposed wind park. There would be some long distance views of the proposals from the expansive area of fenland -The Fens (NCA46) - for example to the north of Pinchbeck; illustrated in **Photomontage 26**, Views across The Fens would be restricted given the separation distance and screening effect of intervening vegetation and built form. In such instances the magnitude of visual change would be very low which, by high sensitivity users of the long distance path, would be experienced as a minor effect at most and not significant in EIA terms.

#### The Viking Way

- 5.442 The Viking Way crosses the north western part of the study area from the Lincolnshire Wolds to the Vale of Belvoir passing within 17km of the application site at the closest point – Woodhall Spa. There would be long views of the proposed wind park from elevated stretches including the southern edge of the Lincolnshire Wolds (NCA 43), for example around Fulletby and the Southern Lincolnshire Edge (NCA 47), for instance from Ermin Street south of Wellingore. In both these worst cases the separation distance and other mitigating factors would restrict the magnitude of visual change to very low which, by high sensitivity receptors, would be experienced as a minor effect at most and not be significant in EIA terms – **Photomontages 30 and 27** respectively are illustrative of views and the predicted visual change from these two points along the Viking Way.

#### *National Cycle Network other Cycle Routes*

##### National Cycle Route 1

- 5.443 Except for a short stretch at Holland Fen, National Route 1 follows the embankment / dyke along the River Witham between Boston and Woodhall Spa. Elsewhere in the detailed study area and the wider study area the cycle route follows local roads, rights of way and other public routes, as it does for about 10km at Holland Fen, where it passes with 4km of the nearest proposed turbine at the closest point. Visibility across the open fenland at this general location is relatively unrestricted and visual change for cyclists, seeing the proposed wind park obliquely or at right angles to the route is predicted to be medium magnitude which would be experienced as a moderate / minor visual effect for medium sensitivity receptors – **Photomontage 7** is illustrative of views and the predicted visual change from Holland Fen.

##### The Water Rail Way

- 5.444 The Water Rail Way cycle route follows the course of the River Witham, along a disused railway, running parallel with the eastern bank most of the way from Boston to Woodhall Spa via Tattershall Lakes. At its closest point just north of Langrick Bridge the cycleway passes about 5km from the proposed wind park which would be visible much of time from the route due to the relatively open landscape on the fenland and unrestricted nature of visibility. At 5km distance, taking account of the man-made context and expansiveness of the Fens landscape, together with the characteristic mix of 'natural' and engineered elements under huge skies, the predicted visual change in the vicinity of Langrick Bridge would be low to medium magnitude which, assuming a high sensitivity receptor, would be experienced as a moderate / minor and not significant effect – **Photomontage 10** is illustrative of views and the predicted visual change from this general location. Farther afield effects would reduce with distance.

#### *Navigable Waterways*

##### River Witham (Boston to Woodhall Spa)

- 5.445 The River Witham is navigable from the Wash, through Boston, upstream as far as Woodhall Spa. Like the parallel Water Rail Way, at its closest point just north of Langrick Bridge the waterway passes about 5km of the application site. However due the lower level of the water in the river and the high banks / dykes either side, it is unlikely that there would be much visibility of the proposed wind park for people in boats using the route. However, assuming there are unrestricted views across the relatively open fenland landscape from tall pleasure craft, the predicted visual change at 5km distance would be the same of for users of the Water Rail Way, namely low to medium magnitude, resulting in a moderate / minor and not significant effect for high sensitivity receptors.

#### **Summary of Visual Effect on Public Rights of Way and Recreational Routes**

- 5.446 In summary the proposed wind park would significantly change views from a small number of public footpaths crossing the application land holding at Heckington Fen and in the immediate surrounding area within approximately 2km (and occasionally up to 3km depending on route alignment) of the nearest proposed turbine. The footpaths so affected would be:

- Heck/15/1
- SKym/2/1 and SKym/3/1
- GtHa/cs/1
- Ambe/4/1

- 5.447 However the effect on visual amenity experienced by users would not be unacceptable, nor would people be prevented from using and enjoying the routes. Indeed some users would experience the change positively. No other public rights of way, long distance paths, cycle routes and navigable waterways within the study area would be visually affected in a significant way.

#### *Land with Public Access (Common Land and CRow Act Land)*

- 5.448 The areas of land with formal public access situated within the ZTV, located mainly within the detailed study area, are assessed below (listed roughly in order of distance from the site). Other areas of incidental open space used by the public for informal recreation are dealt with as part of the assessment of public highways / rights of way. Formal recreation areas are assessed in the Public Open Space sub-section below.

##### Haven Bank, Wildmore Fen

- 5.449 The access land at Haven Bank lies adjacent and to the east of the River Witham. It is the closest recorded area of such publicly accessible land to the application site. There would be relatively unrestricted views of the proposed wind park from Haven Bank. At about 6km distance from the nearest proposed turbine, bearing in mind the man-made landscape context and expansiveness of the Fens, together with the characteristic mix of 'natural' and engineered elements under big skies, the predicted visual change at this location would be low to medium magnitude which, for a high sensitivity receptor, would be perceived as a moderate / minor and not significant effect – **Photomontage 10** is illustrative of views and the predicted visual change nearby in the vicinity of Langrick Bridge.

##### Crossgates Farm, Drayton / Bicker

5.450 The access land at Crossgates Farm is situated adjacent to the A52 south of Swineshead. Views of the proposed wind park would be partially interrupted by settlement and associated vegetation. At a distance of approximately 7km from the nearest proposed turbine, considering the fenland landscape context and intervening settlement and vegetation, the predicted visual change at this point would be low magnitude which, assuming a high sensitivity receptor, would be experienced as a moderate / minor and not significant effect – **Photomontage 11** illustrates the view from nearby Swineshead and the predicted visual change due to the proposed development.

#### North Kyme Common, Billingham

5.451 The access / common land at Billingham and North Kyme lies adjacent to the south of Billingham Skirth at a closed distance of about 8km from the nearest proposed turbine. There would be relatively unrestricted views of the proposed wind park from the linear common. Considering the large scale, man-made character of the Fens, combined with the sense of separation provided by the open foreground and the upstanding built features in view (including electricity infrastructure and Bicker Fen Windfarm) the predicted of visual change would be low magnitude which, would be perceived by high sensitivity receptors as a moderate / minor and not significant effect – **Photomontage 16** is illustrative of views and the predicted visual change from this general location.

#### West Fen Drain / Cowbridge

5.452 The access land at Cowbridge is located between Boston and Sibsey around 12km from the nearest proposed turbine. Visibility of the proposed wind park would be relatively unrestricted. Bearing in mind the separation distance and the expansive fenland context the predicted visual change at this point would be very low magnitude which, assuming a high sensitivity receptor, would be experienced as a minor and not significant effect – **Photomontage 22** illustrates the scale view from, and the predicted visual change at, nearby Sibsey.

#### *Public Open Space*

5.453 Areas of open space with public access for formal and informal recreation situated in the detailed study area within 10km of the application site, such as playing fields and recreation grounds, are assessed below under the relevant settlement heading in order of distance from the application site. Public Open Space (POS) within 10km of the nearest proposed turbine is marked on **Figure 5.8**. POS lying more than 10km from the site is considered to be located too far away from the proposals to be susceptible to significant visual effects, taking account of the fenland landscape context and other mitigating factors.

#### Amber Hill (Amber Hill / Toftstead primary school)

5.454 The primary school at Amber Hill is enclosed by tall deciduous hedgerows and mature trees which tend to interrupt views towards the application site. The turbines would be visible from parts of the grounds, particularly in winter, which would generate a medium magnitude of visual change due to the partially interrupted nature of views which at this high sensitivity receptor would cause a moderate effect which would not be significant in EIA terms. **Photomontage 4** illustrates the scale of predicted visual change from an exposed viewpoint nearby.

#### Holland Fen (Parish Hall / Church burial ground)

5.455 The burial ground at Holland Fen is surrounded by tall deciduous trees and buildings which tend to break up views towards the application site. Glimpses of the wind park would be afforded from the grounds, particularly in winter, which would cause a low to medium magnitude of visual change because of the interrupted nature of views which at this high sensitivity receptor would give rise to a moderate / minor effect at most which would not be significant in EIA terms. **Photomontage 7** is illustrative of the predicted visual change from a viewpoint nearby where uninterrupted views are available.

#### South Kyme (St Mary and All Saints churchyard)

5.456 The churchyard at St Mary and All Saints Church is surrounded by mature trees and hedges and separated from the application site by several properties with mature gardens. Where available views of the proposed wind park, for example in winter when there is little foliage on trees and hedges, would be fragmented and filtered by vegetation. The predicted of magnitude of visual change would be very low which, would be perceived by high sensitivity receptors as a minor and not significant effect – **Photomontage 6** from the southern edge of South Kyme is illustrative of the scale of worst-case visual change at this general location.

#### Swineshead and Donington

5.457 The recreation areas / playing fields at Swineshaed are located at the southern edge of the settlement, surrounded by buildings and associated vegetation to the north which would block views of the proposed wind park. The predicted magnitude of change at this location would be negligible which, for high sensitivity receptors would result in a negligible / minor effect.

5.458 Donington has several areas of POS within the settlement, for example adjacent to Cowley Secondary School, which tend to be enclosed by built form and mature vegetation. The proposed wind park would not generally be visible from these areas and any views gained would be fragmented and heavily filtered, in which the application proposal would be seen at about 9km distance beyond the much closer, operational Bicker Fen Windfarm. The magnitude of change at this location is predicted to be negligible which would result in a negligible / minor effect at high sensitivity receptors. **Photomontage 17** illustrates the scale of worst-case visual change from the Donington area.

#### Heckington / Helpringham

5.459 The recreation areas / playing fields at Heckington and Helpringham are both surrounded by settlement and associated vegetation which blocks views towards the application site. The predicted magnitude of visual change at these two locations is negligible which, at high sensitivity receptors would cause a negligible / minor effect.

#### Boston

5.460 Exposed outdoor recreation facilities at the western edge of Boston would potentially have views of the proposed wind park. The Peter Paine Sports Centre on Rosebery Avenue falls into this category. The predicted magnitude of visual change at 10km distance would be very low, taking into account the urban context and the man-made character of the intervening fenland to the west. The visual effect arising at this high sensitivity receptor would be minor at most. **Photomontage 15** wireline illustrates the scale of predicted visual change at Boston's western periphery.

#### Billingham

5.461 Billingham recreation area / playing field is situated at the southern edge of the settlement, west of the A153. It is enclosed by a tall, mainly deciduous hedge with trees which interrupt southward views. Some visibility of the proposed wind park may occur during the winter months when there is little leaf cover but, at 9km distance the magnitude of visual change would be negligible. Consequently, any visual effects arising in relation to high sensitivity receptors would be negligible / minor. **Photomontage 16** illustrates the worst-case visual change from the Billingham area.

5.462 There are incidental public open spaces within the various settlements surrounding the site which have been dealt with as part of the assessment of residential properties and settlements above.

#### *Country Parks*

5.463 The two Country Parks located in the detail study area, as shown on **Figure 5.8**, are assessed below.

##### Witham Way

5.464 Visibility towards the proposed wind park from Witham Way Country Park would be similar to the relatively unrestricted views from the access land at West Drain Fen, Cowbridge nearby to the north, albeit slightly closer. Taking account of the separation distance of around 10km, the urban fringe context and the expansive fenland context the predicted visual change at this general location would be very low magnitude which, for high sensitivity receptors, would cause a minor and not significant effect – **Photomontage 15** wireline illustrates the predicted scale of visual change at the western edge of Boston.

##### Tattershall Lakes

5.465 Tattershall Lakes is located approximately 10km to the north of the application site and is generally enclosed by tree planting / woodland, hedges and residential buildings. Where uninterrupted views towards the application site are available, between gaps in vegetation and built form, the predicted visual change would be low at most and generally very low which, for high sensitivity receptors would be perceived in the round as a minor visual effect which would not be significant in EIA terms. **Photomontage 16** wireline is illustrative of the scale of visual change at around 10km distance in views from the north.

#### *Places of Interest within 15km*

5.466 A number of places of interest including cultural heritage resources with public access are located in the detailed study area and fall within the ZTV of the wind park proposals as shown in **Figures 5.7** and **5.8**. A comprehensive assessment of cultural heritage resources is provided in **Chapter 6: Cultural Heritage**. The following is an assessment, from a landscape and visual perspective, of places of interest situated within 15km of the site (plus Lincoln Cathedral) falling within the ZTV of the proposals (in order of approximate distance from the site). Places of Interest lying more than 15km from the site are considered to be located too far away from the proposals to be susceptible to significant visual effects, taking account of the fenland landscape context and other mitigating factors. The exceptions to this are Revesby Abbey (18km) and Lincoln Cathedral (33km) which are included in this assessment due to sensitivity, exposed location and potential intervisibility with the proposed turbines.

##### South Kyme Golf Course

5.467 Notwithstanding the generous swaths of tree planting, South Kyme Golf Course is relatively open and so there would be some visibility of the proposed wind park from within it when looking south. The predicted magnitude of visual change, bearing in mind the separation distance of 4km, and the man-made landscape context and expansive nature of the fenland, would be low to medium at most where uninterrupted views are available in winter. The visual effect arising at this high sensitivity receptor would be moderate / minor or less and not significant in terms of the EIA Regulations. **Photomontage 6** shows the worst-case visual change from the South Kyme area.

##### Kyme Tower

5.468 Kyme Tower is privately owned, but open to the public by appointment. Although the base of the Tower is enclosed by hedgerows, trees and buildings and vegetation associated with The Manor, there would be elevated views from the south side of the Tower where access permits. The magnitude of visual change, assuming unobstructed visibility of the proposed turbines and taking into account the man-made fenland context and 360 degree nature of views from the Tower, would be medium which, at this high sensitivity receptor, would be experienced by observers as a moderate and not significant (in EIA terms) visual effect. **Photomontage 6** is illustrative of the scale of visual change where uninterrupted views of the proposal occur from the South Kyme area.

##### Heckington Mill

5.469 Heckington Mill is the only eight sailed traditional windmill still in existence in Britain. A tall tower mill built in the 19<sup>th</sup> century, refitted 1892<sup>36</sup>, it represents the latest technology of the time, the height of wind-milling. The mill building is open to the public and has 5/6 storeys above ground. There would be views of the proposed wind park from the upper levels of the mill, a scene which would bring together the old and new technologies of harnessing the wind, and which would be of interest to some visitors. At a distance of just over 5km from the nearest proposed turbine the predicted visual change, bearing in mind the landscape contexts of both the viewpoint and the proposal, would be low magnitude which for high sensitivity receptors would be perceived as a minor / moderate effect and not significant in EIA terms. **Photomontage 9** wireline illustrates the scale of predicted visual change at Heckington.

##### Boston West Golf Club

5.470 Boston West Golf Course is relatively open to the west so there would be some visibility of the proposed wind park from within it, notwithstanding the belts of tree planting which would block / break up views to an extent. The predicted magnitude of visual change, taking account of the separation distance of over 5km, and the man-made landscape context and expansive nature of the fenland, would be low to medium at most where uninterrupted views are available in winter. The visual effect arising at this high sensitivity receptor would be moderate / minor or lower and not significant from an EIA perspective. **Photomontage 8** shows the predicted view from Hubbert's Bridge in the vicinity of the western part of the golf course.

##### Battle of Britain Memorial Flight Visitors Centre

<sup>36</sup> Dolman, P. 1986, 'Lincolnshire Windmills: a contemporary survey', Lincolnshire County Council – page 17.



5.471 The BBMF Visitors Centre is located immediately to the north of RAF Coningsby surrounded by large scale buildings and landscape associated with the airbase. There are long range views towards the application site from the approaches to the visitors centre which are partially interrupted by vegetation and buildings. The proposed wind park (or parts of) would be visible – the predicted magnitude of visual change would be very low due to the separation distance and the built-up, dynamic context of the airbase surroundings. Assuming a high sensitivity receptor the resulting effect would be minor and not significant in EIA terms. **Photomontage 16** wireline is illustrative of the scale of visual change at around 10km distance in views from the north.

#### Boston Stump

5.472 Boston Stump is the tower of St Botolph's Church which is located in the centre Boston. There are no views towards the application site from the bottom of the church, but the tower is open to the public year round and there are elevated, 360 degree panoramic views from the viewing gallery including towards the site. The magnitude of visual change when looking out from the western or southern galleries of the tower is predicted to be low due to the urban context in the foreground combined with the large scale, expansive nature of the Fens with its vast sky – see **Photomontage 20**. The visual effect experienced by high sensitivity observers would be minor / moderate which would not be significant in terms of the EIA Regulations.

#### Tattershall Castle

5.473 Tattershall Castle is situated at the south western edge of Tattershall settlement. It is open to the public from spring to autumn and there are elevated, 360 degree panoramic views from the top of the keep including towards the application site. There is no / negligible visibility towards the site from the base of the castle or the grounds. The predicted magnitude of change when looking south from the top of the keep would be low due to the large scale, expansive character of the Fens with its huge sky, combined with the sense of separation provided by the man-made recreational landscape and airfield in the foreground, and the open, arable land beyond – see **Photomontage 19**. The visual effect experienced by high sensitivity observers would be minor / moderate which would not be significant from an EIA point of view.

#### Maud Foster Mill, Boston

5.474 Maud Foster (or Ostler's) Mill is the one of the tallest tradition windmills still standing and operating in Britain today. Built in the 1819<sup>37</sup> it represents the latest technology of the early to mid 19<sup>th</sup> century, the height of wind-milling. The large tower mill is open to the public and has about 6/7 storeys above ground. There would be all-round views from the upper levels of the mill, including of the proposed wind park in the distance, a scene which would bring together the old and new wind-harnessing technologies, and which would be of interest to some visitors. At a distance of just over 10km from the nearest proposed turbine the predicted visual change, bearing in mind the urban context of the foreground, would be very low magnitude which for high sensitivity receptors would be perceived as a minor effect and not significant in EIA terms. **Photomontage 20** wireline illustrates the scale of predicted visual change in the centre of Boston.

#### Money's Mill, Sleaford

5.475 Money's Mill is another tall traditional windmill, intact but minus cap and sails, located in the centre of Sleaford, recently restored and converted into a cafe and gallery (Curio Cafe). Dating from the late 18<sup>th</sup> century and rebuilt and modernised c 1810<sup>38</sup>, the tower mill has 8 storeys and stands approximately 70ft tall. It is open to the public and there would be all-round views from the upper levels of the mill, including of the proposed wind park set within the distant fenland, a scene which would be of interest to some visitors, bringing together old and new wind-harnessing technologies. At approximately 12km from the nearest proposed turbine the predicted visual change, bearing in mind the urban context of the foreground, would be very low magnitude which for high sensitivity receptors would be experienced as a minor effect and not significant in EIA terms. **Photomontage 18** wireline illustrates the scale of predicted visual change at Kirkby la Thorpe which, although at 9km distance is closer to the application site, is representative of the view direction and approximate elevation.

#### Sibsey Trader Windmill

5.476 Like Heckington and Maud Foster Mills, this one near Sibsey is a 6 storeys tower mill, restored to working order and open to the public. It is the youngest of the three, built in 1877<sup>39</sup>, and considered by some to be the best looking tower mill in Lincolnshire, reflecting the perfection of the technology in the latter part of the heyday of wind-milling. There are uninterrupted 360 degree views across the surrounding fenland from the upper storeys. The predicted magnitude of visual change when looking in the direction of the proposed wind park would be very low, bearing in mind the separation distance of 14km, the man-made landscape context and the synergic relationship between the old and new wind-harnessing technologies. – **Photomontage 22** illustrates the predicted view from the A16 at Sibsey with the traditional windmill visible in the foreground.

#### Revesby Abbey

5.477 The well-treed character of Revesby Abbey (Historic Park and Garden) combined with the more wooded character of the Central Lincolnshire Vale (NCA 44) where the designed landscape is located would significantly restrict visibility of the proposed wind park at Heckington Fen. Some rotors and blades are likely to be visible intermittently through gaps in tree / hedge planting from the edge of the Historic Park and Garden. However, at distances of around 18km this would generate negligible change to views and visual within the historic parkland bearing in mind the heavily filtered, fragmented and intermittent nature of visibility and the expansive, man-made nature of the adjacent Fens (NCA 46) across which partially interrupted views would extend. As a result the predicted magnitude of visual change at / within Revesby Abbey Park and Garden would be negligible and the potential visual effect assuming a high sensitivity receptor would be negligible / minor or lower. **Photomontage 25** is representative of views and the predicted visual change east of Mareham le Fen not far from Revesby Park.

#### Lincoln Cathedral

5.478 Lincoln Cathedral is located within and overlooking the city on south facing slopes. It lies within the ZTV of the proposals and, although there would be no visibility from ground level, there would

<sup>37</sup> Ibid – page 12

<sup>38</sup> Ibid – page 25

<sup>39</sup> Ibid – page 25

theoretically be views of the proposed wind park from the tower. However, at around 33km distance, on the relatively small number of days a year when very favourable atmospheric conditions exist (Met Office 'excellent' visibility category), the predicted visual change when looking in the direction of the application site would be very low magnitude. For a high sensitivity observer visiting the cathedral tower the visual effect experienced would be minor at worst-case and not significant in terms of the EIA Regulations. It was beyond the scope of this LVIA to photograph the view and prepare a visualisation from the top of the tower. **Photomontage 30** wireline shows the turbine array at a similar distance and view direction but much lower elevation (3m AOD); **Photomontage 29** illustrates the predicted visual change looking from the Lincolnshire Wolds at a similar elevation (95 AOD) and distance but different view direction. Consulting these two visualisations may be helpful in ascertaining the scale of change on the relatively few occasions a year when the proposed wind park would be visible to the naked eye.

### **Summary of Visual Effect on Publicly Accessible Land and Places of Interest**

- 5.479 The proposed wind park would not significantly change views from, or the visual amenity of any recreational resources and places of interest in the study area, including the small number of such resources surrounding the application site within approximately 5km of the nearest proposed turbine. This would include the recreation area at Amber Hill, All Saints churchyard, Holland Fen, South Kyme Golf Course, Kyme Tower and St Mary and All Saints churchyard, South Kyme.

### **Local Landmarks / Focal Points**

- 5.480 Although not visual receptors in themselves landmarks make a contribution to landscape character and act as focal points in views. The local landmarks located within the detailed study as identified in Baseline 4: Visual Environment section above and shown on **Figure 5.7** are assessed below.
- 5.481 The local landmarks are predominantly church spires displaying a slim conical form typical of lowland England. The design objective of church spires is alert people to the existence of the place of worship and associated settlement. Consequently they tend to denote the location of historic settlement in the landscape, which in this particular case is on the slightly higher ground surrounding and within the Lincolnshire Fens, in particular the fenland fringe and 'islands'.

### Fenland Fringe

- 5.482 The fenland fringe landmarks lying within the detailed study area are:
- St Andrew's Church, Helpringham
  - St Andrew's Church, Heckington
  - St Andrew's Church, Asgarby
  - St Andrew's Church, Ewerby
  - St Edith's Church, Anwick
  - St Michael & All Angel's Church, Billingham
- 5.483 The spires of these churches trace the line of historic settlements marking the slightly higher ground of the western fringe of the Fens (NCA 46). Their role as local landmarks / focal points is evident in **Photomontage 18** which looks west from Kirkby la Thorpe towards the Fens. In this photograph the spires of three of the St Andrew's fenland fringe churches – (from left to right) Asgarby,

Heckington and Helpringham are visible set within the slightly undulating and moderately wooded Southern Lincolnshire Edge (NCA 47). Also visible in this prospect are the high voltage transmission lines / pylons and Bicker Fen Windfarm (towards the right of the frame).

- 5.484 The proposed Heckington Fen Wind Park is set apart from the fenland fringe landmarks which form a loose linear group marking the margin of the Fens, located predominantly more than 5km from the application site. Due to the separating distance and expansive, man-made character of the fenland, the wind park proposal would not significantly compete with these landmark structures which would still perform their role in the landscape marking the position of their host settlements.

### Fenland 'Islands'

- 5.485 The fenland 'island' landmarks situated in the detailed study area include:
- Boston Stump (the Stump is the tower of Church of St Botolph)
  - St Mary's (and the Blessed Virgin) Church, Sutterton
  - St Mary's Church, Swineshead
  - St Mary's (and the Holy Rood) Church, Donington
  - Kyme Tower
- 5.486 These church spires mark the position of historic settlements occupying slightly higher ground within the Fens (NCA 46), including the 'settled' fenland which extends south west from Boston. The role of these as local landmarks / focal point in views is illustrated in **Photomontage 21** which is taken looking north across the 'settled' fenland from near the A16 / A17. In this view the spire of St Mary's and the Blessed Virgin Church, Sutterton is visible placed within the large scale, open Fens, enclosed by mature tree and hedge vegetation associated with the 'island' settlement. Bicker Fen Windfarm is also visible towards the left of the frame on the skyline.
- 5.487 As with their fenland fringe counterparts the Heckington Fen proposals would be situated over 5km from the nearest fenland 'island' landmark at Swineshead; the other landmarks are located over 9km away to the south and east. The adequate separation distance would prevent any significant affect arising, bearing in mind the fenland landscape context.

### Bicker Fen Windfarm

- 5.488 Bicker Fen Windfarm comprises 13 turbines situated approximately 6km to the south of the application site, about 3km north west of Bicker and Donington. The existing windfarm is relatively compact and set apart from the nearest settlements of Bicker, Donington and Helpringham, placed approximately midway between them, adjacent to an intersection of two high voltage transmission lines as shown on **Figure 5.8**. The presence of the windfarm in the fenland landscape, and its role as a landmark / focal point in views can be gauged in **Photomontages 6, 7, 10, 11, 13 17, 18 and 29**.
- 5.489 The proposed Heckington Fen Wind Park is located a sufficient distance away from Bicker Fen Windfarm to prevent any cumulative landscape and visual effects occurring, a matter which is dealt with in more detail in the Cumulative Assessment section below.

### **Summary of Visual Effect on Landmarks**

- 5.490 The role of identified landmarks in the study area to stand out in the landscape as markers, and contribute to landscape character or act as a focal point in views, would not be compromised by the proposed wind park and no significant landscape or visual effects are predicted to arise in relation to them.

#### *Transport Routes – Public Highways and Railways*

- 5.491 Public highways and railways are visual receptors of low sensitivity in visual; terms because observers using them are generally not able to engage with the landscape in the same way as walkers, equestrians and cyclists who experience the environment 'in the flesh' as it were. Horse riders and cyclists using dedicated minor roads, for example the National Cycle Network, are treated as medium sensitivity receptors.
- 5.492 Major and minor roads in the wider study area situated more than 15km from the site, falling within the ZTV of the proposals, would be unaffected visually by the proposed wind park due to their lower sensitivity and separating distance from the site. Consequently, only those highways lying within 15km of the site are examined in this section with a focus on local roads within 5km of the nearest proposed turbine.

#### *Main Roads within 15km*

- 5.493 Views of the proposed wind park from main roads crossing the larger outer part of the detailed study area (2-15km distance) would be subject to minor to negligible effects at most (i.e. at 2km) where the turbines are visible. The relatively low level of visual change predicted is due to their low visual sensitivity, the separation distances involved, roadside / intervening planting and the fenland landscape context which is predominantly man-made and influenced by built elements such as major roads, electricity infrastructure and the wind turbines at Bicker Fen. Particular stretches of road affected in this way would be (listed in order of approximate distance of the closest stretch to the site; illustrative photomontage references are provided in brackets):
- The majority of the A17 between Sleaford and the A16 intersection (see **Photomontages 5, 18 and 21**);
  - The A1121 between the A17 junction and Boston (see **Photomontages 5, 8, and 15**);
  - The B1192 between Kirton and Coningsby via Hubberts Bridge (see **Photomontages 8 and 10**);
  - B1394 between south of Billingborough and Heckington (see **Photomontage 13**);
  - The A52 between the A15 intersection and Boston (see **Photomontages 11, 15, 17 and 23**);
  - The A153 between Sleaford and Horncastle via Tattershall / Coningsby (see **Photomontages 14, 16 and 25**);
  - The A152 between the A16 junction and Donington (see **Photomontage 17**);
  - The A155 between the A16 junction and Coningsby (see **Photomontage 25**);
  - The A16 between Spalding and the A155 junction south of Spilsby (see **Photomontages 21 and 22**);
  - The B1183 between Boston and the A155 intersection (**Photomontage 25** is illustrative of the northern end of the route); and

- The A15 between north of Sleaford and Folkingham (see **Photomontages 23 and 24**).

- 5.494 Main roads in the wider study area, situated between 15-35km from the application site, would be too far away to be affected visually in a significant way by the proposed wind park. **Photomontages 23, 24, 25, 28 and 29** illustrate the levels of visual change predicted from a range of main roads in the wider study area.

#### *Local Roads within 5km*

- 5.495 A well-developed network of minor roads exists in the study area. It is considered that A, B and unclassified roads situated more than 2km from the nearest proposed turbine and falling within the ZTV of the proposed wind park would not experience significant visual effects due to their low sensitivity in landscape and visual; terms, the separation distances involved and the fenland landscape context with its flat topography, characteristic tree belts and woodland blocks, geometric land use patterns and developed features. Public highways lying within 5km which would fall into this category (more than 2km from the nearest proposed turbine) are those stretches listed below in order of approximate distance of the closest stretch to the site (illustrative photomontage references are provided in brackets):
- B1395 from A153 junction to South Kyme Fen near Head Dike (**Photomontage 6** is illustrative of the route in the vicinity of South Kyme);
  - Sutterton Drove from the A1121 onwards (see **Photomontage 4**);
  - North Forty Foot Bank and Kirton Drove from the B1192 to Cheethams Lane (see **Photomontage 7**); and
  - Howell / Thorpe Road between Heckington and the B1395 (**Photomontage 12** is illustrative of partially restricted views towards the site between Heckington and Ewerby).
- 5.496 Within 2km of the nearest proposed turbine, because of the flat, open landscape and expansive views across the fenland looking towards the application site, stretches local road would potentially be significantly affected visually by the proposed development, due to the close proximity of the observer and the relatively unrestricted visibility. Stretches of public highway affected in this way would be the following within approximately 1km, and no more than 1.25km from the nearest proposed turbine:
- The A17 passing through East Heckington between Rakes Farm entrance and Elm Grange (see **Photomontage 2**);
  - Sidebar Lane / B1395 between the Fen Farm group of properties and the junction with the road leading to Mill Green Farm (see **Photomontage 3**);
  - Browns Drove around Cattle Holme Farm onwards; and
  - Short stretch of Claydike Bank / Maryland Bank east of the site around The Old Church and 1-4 Maryland Bank.
- 5.497 Sections of local road located more than approximately 1km from the nearest proposed turbines would not be affected in a significant way due to the low sensitivity of the visual receptor. **Photomontages 4 and 5** is illustrative of views towards the site from approximately 2km distance from the nearest proposed turbine which is too far away for observers travelling in vehicles to experience significant visual effects.

*Highways Safety*

- 5.498 In relation to highways safety, due to the flat, open character of the Fens, drivers using roads crossing the detailed study area would be conscious of Heckington Fen Wind Park from some way off, aligned with the road ahead or seen obliquely, when making journey between local settlements. Along stretches of road running close to the application site the proposals, or parts of, would be seen well in advance, in both directions, in addition to being briefly visible, more or less at right angles to the road alignment, when passing the site. **Photomontages 15, 8, 5 and 2**, showing the series of views from the A17 and A1121, viewed in that order, illustrate this.
- 5.499 Relatively unrestricted views of the turbines, either at close range adjacent to the site, or at medium range, are not considered to be a highways safety issue. Government guidance stresses that there is no evidence to support suggestions that they are<sup>40</sup>. Being able to observe the proposed wind park up ahead when approaching the site in either direction, drivers would be expecting to see the wind turbines fairly close to when passing the site – at which point the nearest turbine would be set back at least 1km from the highway. In addition drivers are used to having to cope with a range of visual stimuli in the normal course of a journey. Consequently the proposed wind park would not be a significant distraction to drivers when approaching or passing the site.

*Railways within 15km*

- 5.500 Views from railways would generally be limited to those seen obliquely or at right angles to the track alignment; it is not usually possible for rail passengers to see straight ahead as in road vehicles. As with roads views of the proposed wind park from railways crossing the larger outer part of the detailed study area (2-15km distance) would be subject to low levels of visual change where the turbines are visible due to the separation distances involved, intervening vegetation and the man-made, fenland context influenced by built elements. Stretches of railway affected in this way would be (listed in order of approximate distance of the closest stretch to the site; illustrative photomontage references are provided in brackets):
- Sleaford to Skegness via Boston (see **Photomontages 5, 8 and 15**); and
  - Peterborough to Lincoln via Spalding and Sleaford (**Photomontages 13, 17 and 26**).
- 5.501 There are no railways passing closer than 2km from the nearest proposed turbine. Consequently, no significant visual effects would be experienced by rail travellers crossing the study area, including those making the journey between Sleaford and Boston which passes within just over 2km from the proposed wind park at Swineshead – **Photomontage 5** is illustrative of the predicted magnitude of visual change at this point.

**Summary of Visual Effect on Transport Routes**

- 5.502 To sum up the vast majority of public highways and all railways in the study area would not be affected to any significant degree because they are either situated too far away from the application site, or they lie outside the ZTV 'with screening' of the proposals in the visual shadow of landform, vegetation and buildings. Short stretches of the A17, Sidebar Lane (B1395) and Claydike /

Maryland Bank passing within approximately 1km of the nearest proposed turbine, would be subject to moderate / major effects which is just above the threshold of EIA significance. The remainder of the public highway network in the study area would not be affected visually to any significant degree, and at distances in excess of 10km people travelling in vehicles would generally not be aware of the proposed wind park due to the character of the fenland local landscape.

**RESIDUAL VISUAL EFFECTS**

- 5.503 A small number of people locally would experience medium to high and (at one point adjacent to the site) very high magnitude changes to views and visual amenity as a result of the proposals which would remain as **moderate / major to major** residual effects for the lifespan of the proposed wind energy development. These **significant, but reversible, visual effects** are likely to be experienced by residents of a small number of adjacent properties (approximately 52) and users of public rights of way close to the site, in general within 2km of the nearest proposed turbine, occasionally up to between 2.5km at exposed locations and up to approximately 3km in the case of certain public rights of way. Travellers in vehicles using roads adjacent to the proposed wind park, within approximately 1km, including short stretches of the A17, Sidebar Lane and Claydike / Maryland Bank would experience moderate / major visual effects for a short time when passing the site which would be significant in EIA terms, but not unacceptable. However, drivers would not be distracted by the proposals from a highways safety perspective because they would have plenty of time on the approaches to become accustomed to the wind turbines in views from roads in the locality.
- 5.504 **Significant visual effects are not anticipated to arise beyond approximately 2.5km** from the proposed wind park. The wider visual amenity of The Fens national character area and special qualities of the Lincolnshire Wolds AONB would be preserved. Places of interest in the study area including cultural heritage resources with public access would not be affected to any significant degree visually. In addition popular recreational routes including National Cycle Route 1, the Water Rail Way, Macmillan Way and Viking Way and would for the most part be relatively unaffected visually

**Night-Time Effects**

- 5.505 Article 133 of the Air Navigation Order requires that obstacles over 150m be lit (the proposed turbines are 125m maximum height). There is no statutory requirement for lighting of any onshore structures less than 150m tall. Neither the CAA nor the MOD requested that aviation lighting be fitted to the Heckington Fen wind park proposal. *It is likely that IRR lighting will be used which is not visible to the human eye and consequently would have no visual impact.* However, in order to address *the worst case scenario*, in the event of a request from Defence Estates subsequent to the submission of this application for obstruction lighting' to be mounted on the proposed turbines, Ecotricity has provided an assessment of potential landscape and visual effects at night time as set out below.
- 5.506 It should be noted that the Ministry of Defence (MOD) has recently certified the use of Infra Red lights for lighting onshore wind turbines as an alternative to steady red obstruction lighting. Infra Red lights are used with Night Vision Goggles by the MOD and can be seen up to 10 nautical miles away, however, they are not visible to the naked eye. Currently the MOD is approving different standards of infra red lighting which can be used on future wind turbine projects, subject to final clearance. The use of Infra Red lighting would mitigate all impacts arising from aviation lighting.

<sup>40</sup> Planning Policy Statement 22 (PPS22): Planning for Renewable Energy: A Companion Guide – Technical Annex: Wind (p.171, para 54)

**Proposed Turbine Lighting**

- 5.507 The proposed lighting is 32 candela, steady ready aviation / obstruction lights fixed to the top of the turbine nacelle at an approximate height of 80m above ground level. Although Defence Estates have recently certified 25 candela aviation lighting for use in wind energy developments, it is understood that 32 candela lighting is the minimum rating currently available and therefore this is the level assessed and observed during fieldwork.
- 5.508 Obstruction lights are red, omni-directional fixed lights with a middle-range luminous intensity of at least 10 candela (Cd) in the horizontal beam range (-2° to +8°). 25-32 candela lighting has an intensity similar to that of a car rear light (not the brake light). It is understood to be difficult (if not impossible) to tell the difference between 25 and 32 candela lighting in the field with the naked eye.
- 5.509 Each of the twenty-two proposed turbines would be lit at hub height. For the purposes of this assessment, it has been assumed that the lights would be operational at all times and therefore potentially noticeable on dull days as well as at night and dawn and dusk.

**Light Pollution and Mitigation of Night-Time Effects**

- 5.510 The issue of light pollution is included as a material consideration for planning applications in Annex A of PPS 23: Planning and Pollution Control. Light pollution, or obtrusive light, can be defined as – the spillage of light into areas where it is not desired. The components of light pollution which could cause adverse visual effects at night time are as follows:
- Direct line of sight: The lights would be visible as pin points of red light. The lights would be directly visible from the ground in clear conditions and would be more noticeable in a dark sky that lacks other illuminations;
  - Sky Glow: the localised brightening of the night sky caused by upward light interacting with particles in the air. Upward light comprises light emitted by lighting above the horizontal as well as downward light reflected upwards from illuminated surfaces. This effect is more noticeable on humid nights when there is mist or a low cloud base;
  - Light Spill: the unwanted spillage of light onto adjacent areas or objects that may affect sensitive receptors. In this case there may be red light spill onto the parts of the blades closest to the nacelle as they rotate pass the lights; and
  - Blinking: The lights would appear to blink as the turbine blades temporarily screen them from view during operation.
- 5.511 The proposed 32 candela lights are not bright enough when mounted at a height of 80m above ground level to cause light spill at ground level. In other words, although it may be possible to see the red light source at ground level from the area surrounding the wind park, due to the low intensity of lighting proposed, light would not reflect off objects on the ground and therefore the degree of light pollution at any location would depend solely on the direct visibility of the light source and its intensity.
- 5.512 Appendix A of PPS 23 advises of “the need to limit and, where possible, reduce the adverse impact of light pollution, e.g. on local amenity, rural tranquillity and nature conservation”. To mitigate the effects of light pollution all lighting should normally comply with the Guidance Notes for the Reduction of Obtrusive Light published by the Institute of Lighting Engineers (ILE 2005). This guidance generally relates to directional and screened lighting, but in this case the lighting is

required to be visible from the air. Although it is theoretically possible to screen ground level views towards the lights with a shielding housing, or by recessing them, the final design is yet to be confirmed, and therefore this appraisal is based on the assumption of fitting ‘unscreened’ lighting. As a consequence, views from any altitude/elevation have been assessed as experiencing potential visibility.

**Baseline Conditions at Night**

- 5.513 An appraisal of existing lighting at night in the detailed study area (within 15km of the site) was carried out in June 2011. There are a number of significant existing light sources surrounding the site, most notably:
- Street and building lighting within 5km of the application site – within the village of East Heckington, at Swinshead Bridge including along the A17, Amber Hill and South Kyme;
  - Fenland settlement within 10km of the site – street, building and other lighting including at Heckington, Swinesbridge, Bicker, Donington and Billingham;
  - Urban settlements of Boston, Sleaford and Coningsby / Tattershall within 15km of the site – street lighting, building lights and other lighting;
  - ‘Settled Fenland’ development 10-15km from the site north and south of Boston – street and building lights and other lighting including at Sibsey, Kirton, Sutterton and Algarkirk;
  - Major lighting sources at RAF Coningsby and Boston Stump; and
  - Significant recreational, agricultural, commercial and industrial light sources in the countryside including various agricultural business / glasshouse complexes, Boston West Golf Club, Princess Royal Sports Arena and Tattershall Lakes.

**Potential Night-Time Effects**

- 5.514 Due to the relatively high levels of existing background lighting outlined above which forms the context to night-time views combined with the low intensity of lighting proposed (32 candela), potential landscape and visual effects resulting from the turbine lighting would be limited to the same extent and receptors as with daytime effects. Significant visual effects arising at night as a result of fitting the proposed turbine lighting would be restricted to a small area surrounding the site, within approximately 2.5km (and occasionally up to 3km in the case of certain public rights of way) of the nearest proposed turbine. Beyond this distance threshold the turbine lighting would not be sufficiently bright to be prominent in night views and any visual effects arising would be not significant.
- 5.515 The likelihood of a potential effect occurring at night would be confined to those areas where clear views of the wind park are available during the day. Specific landscape and visual receptors with the potential to be affected in a significant way visually at night would include:
- Approximately 52 residential properties within approximately 2.5km of the nearest proposed turbine;
  - One public footpath crossing the site / landholding and several adjacent non-vehicular routes with 2km and occasionally up to 3km; and
  - Character of the host landscape – The Fens (NCA 46) / Fenland (NKDC LCA 13) / Holland Reclaimed Fen (BDC LCA A1) up to 1.5km from the nearest proposed turbine.



- 5.516 No landscape designations or places of interest including cultural heritage resources with public access would be significantly affected at night in landscape or visual terms; including Kyme Tower, Tattershall Castle, Boston Stump and the Lincolnshire Wolds AONB. No significant effects would arise on public highways surrounding the site at night save the ones within approximately 1km identified above.
- 5.517 It should be noted that although significant visual effects have been identified at certain private properties and public routes within approximately 2.5km of the site, the living conditions and / or amenity of residential properties and public places / routes at night would not be compromised.

### Trans-Boundary Effects

- 5.518 The study area is based on a 35km radius from the application site and incorporates a large part Lincolnshire incorporating several local authorities. The assessment of effects has been carried across local authority boundaries and therefore trans-boundary effects at the LPA level have been taken into account in this topic / chapter.

### Effects During Construction

- 5.519 Construction is proposed to take 27 weeks. The programme of works is set out in Chapter 11: Transport and Access. Table 11.5 shows an outline of the construction programme highlighting the indicative timing of activities such as civil engineering and electrical works.

### Onsite Landscape Effects

- 5.520 There are no features identified for their landscape value on the site such as mature trees / woodland protected under TPOs. Any trees or hedgerows with the potential to be affected would be protected throughout the works in accordance with best practice guidance in BS5837: Trees in Relation to Construction (2005). Although none are proposed these measures would also apply to any off-site works if required.
- 5.521 An area of approximately 0.75 hectares of arable land would be required to build the construction compound and turbine bases resulting in the temporary loss of this resource. The access tracks, crane hardstanding areas and other development elements would remain in situ during operation of the wind park and so are included in operational phase assessment. The temporary loss of intensive arable land represents approximately 0.1% of the total site resource which would be temporary and reversible which is insignificant in landscape and visual terms. There would be no other direct landscape effects arising during construction.

### Effects on Landscape Character / Value

- 5.522 During the construction stage a crane, heavy plant, site compound and materials would be present on site in addition to the erection of turbines and rotors etc following delivery. This would temporarily affect landscape character to a similar degree as with the operational impacts. The character of the site and immediate surroundings would be changed to a moderate / major to major degree during construction but the The Fens character unit would experience a minor to moderate effect overall which is not significant in EIA terms. There would be no significant effect on valued landscapes in the study area, including the Lincolnshire Wolds AONB.

### Visual Effects

- 5.523 Regarding views and visual amenity, approximately the same residential, recreational, places of interest and local road receptors would be affected in the construction phase as during operation of the proposed wind park. This judgement, and that above in respect of landscape character / value effects, is based on the assumption that onsite construction activities, involving erection of the proposed turbines using a crane, and associated equipment / infrastructure, would have a similar zone of theoretical visibility as the operational phase.
- 5.524 Broadly speaking, moderate / major and some major visual effects are likely to occur during construction at the same sensitive receptors located within approximately 2.5km (and occasionally up to 3km in the case of certain public rights of way) of the nearest proposed turbine in the area immediately surrounding the application site. These visual receptors include the residential properties, PRoWs and roads specified in the operational assessment of effects section above. Significant visual effects are not anticipated to occur during construction at receptors situated beyond this approximate 2.5km threshold.

### Summary of Construction Effects

- 5.525 In summary, during construction, the proposed wind park would cause a limited number of moderate / major and major visual effects within approximately 2.5km of the nearest turbine where views permit in the area immediately surrounding the application site which would be significant in EIA terms. The character of the site landscape would be altered significantly, but the wider landscape of The Fens would not. Landscape and visual effects arising during construction would be temporary in nature and confined broadly to the same ZTV as the operational phase. Furthermore, construction of the wind park would be finite, enduring for a relatively short period of time, and the proposed development in general would be reversible.

### Decommissioning Effects

- 5.526 Decommissioning is proposed to take approximately one to two days per turbine. The programme of work is set out in Chapter 11: Transport and Access. Anticipated landscape and visual effects would be similar to those during construction and would be short-lived, culminating in the reinstatement of the site to its original state and character.

### Mitigation

- 5.527 The scope for mitigating the likely landscape and visual effects of wind energy development is very limited. A number of mitigation measures have been incorporated into the design proposals including: a) the site layout and turbine location iterations as recorded in Chapter 3: Site Selection and described in the Consideration of Different Site Layouts section below ; b) the off-white turbine colour; and c) the replacement grassland / arable crop (over most of the turbine base area) during operation. Other mitigation features include the use of existing access points and tracks which would minimise onsite landscape impacts and allowing the majority of the land to be farmed throughout the lifespan of the wind park.
- 5.528 The following additional mitigation measures are recommended within the land holding:

- new tree / hedge planting using appropriate native / naturalized species to screen and / or break up views of the proposed turbines from adjacent residential properties at strategic locations ;
- establishment and management of species rich grassland / field margins to maximize biodiversity where possible; and
- repair and restoration of hedgerows and woodlands and management for wildlife benefit.

5.529 It should be noted that these measures would not necessarily alter the significance of residual landscape and visual effects within the design life of the wind park. However, the suggested further mitigation would provide some amelioration to identified visual effects as well as enhancing landscape character and visual amenity, albeit to a small degree, and therefore would be desirable.

### Consideration of Different Site Layouts

5.530 Information on alternative turbine layouts for the proposed Heckington Fen Wind Park is provided in Chapter 3: Site Selection based on feedback from the various environmental topics including Landscape and Visual. The following explanation of how landscape and visual matters have informed the design and layout of the application site is supported by the graphic information provided in **Figure 5.16: Landscape Mitigation in Site Layout**.

5.531 The proposed site layout is the product of several design iterations which take into account key landscape and visual constraints and issues that were identified during the EIA process as summarised below:

- Landscape character of the application site and surrounding area, in particular The Fens (NCA 46), Fenland (NKDC LCA 13) and Holland Reclaimed Fen (BDC LCA A1).
- Views from / visual amenity of residential properties, settlements and associated public realm and rights of way within approximately 3km of the site (and occasionally up to 5km), particularly in relation to East Heckington, Swineshead Bridge, Amber Hill, Holland Fen, South Kyme and Heckington;
- Views from / visual amenity of key landscape and visual receptors including places of interest (incorporating cultural heritage resources with public access), and publicly accessible land, recreational routes and public highways within 5km of the site (and occasionally up to 10km), particularly those in / near South Kyme, Tattershall and Boston.

5.532 The site design process involved formulating a turbine layout which best reflects the character of the local landscape and, as far as possible, reads as a coherent composition in views from the surrounding area, particularly those from sensitive receptors such as residential properties and places of interest. A design rationale was developed which used the geometric patterns of the man-made fenland in which the proposal would be located, as described in published landscape character assessments, to create a grid system for determining the turbine locations.

5.533 This 'design grid' was used as the starting point from which to develop the layout taking into account a range of key constraints including: energy generation, onsite utilities / infrastructure, hydrology / drainage, micro-wave links, noise, shadow-flicker, ecology and cultural heritage. It should be noted that certain 'overriding constraints' have informed the final 'optimised' layout which is the reason why the application scheme slightly departs from the design grid. The design grid's dimensions and orientation are primarily a function of the following criteria and / or parameters:

- Geometric landscape pattern and rectilinear patchwork of arable fields;
- Orientation and alignment of onsite drainage channels;
- 'Ovals' based on the minimum separation distance between turbines – V90 ovals = 5 X 3 rotor diameters = 450m x 270m

5.534 The above criteria / parameters and how they were applied in the site design process are shown in graphic form in **Figure 5.16a**. The resulting site design and layout evolution (Layouts 2, 3 and 4) are presented in **Figure 5.16b**.

5.535 In summary, potential impacts arising on landscape character and visual amenity in the vicinity of the application site have been minimised by means of careful site design and layout using local landscape character as a key driver in the design process. The resulting application proposal for 22 wind turbines thus minimises, as far as possible (taking the full range of development constraints into account), the potential significant landscape and visual effects arising on the range of specific receptors and places of interest surrounding the site, in addition to slightly reducing levels of landscape and visual change across the wider study area.

## CUMULATIVE ASSESSMENT

### Introduction

5.536 This section deals with the potential cumulative effects arising from the proposed Heckington Fen Wind Park and should be read in conjunction with **Figure 5.12a: Cumulative Assessment Area of Search (70km)**, **Figure 5.12b: Cumulative Assessment Schemes and Study Area (35km)**, **Figure 5.13: Cumulative Assessment Zone of Theoretical Visibility (Individual Schemes)** and **5.14: Cumulative Assessment Wirelines** in addition to **Appendix 5.7: Cumulative Assessment Schedule**.

### Assessment Approach and Scope

5.537 The cumulative assessment has been carried out in accordance with current best practice guidance as set out in the Methodology section above, in particular:

- Department of Trade and Industry and ETSU (2000) 'Cumulative Effect of Wind Turbines'; and
- Scottish Natural Heritage (2005) 'Cumulative Effect of Windfarms – Version 2'.

5.538 Cognisance was also given to:

- Scottish Natural Heritage (2009) 'Cumulative Effect of Windfarms – Version 3 Consultation Draft' and
- Entec (for Dept of BERR) (2008) 'Review of Guidance on the Assessment of Cumulative Impacts on Onshore Windfarms'.

5.539 The scope of this assessment includes all operational, consented / approved or 'in-planning' wind energy schemes situated within a 70km radius of the application site as at the time of writing. Approximately 78 'cumulative schemes' were identified within the 'area of search', as shown on **Figure 5.12a**. These were appraised individually and in groups, as set out in the table below, to establish the extent of visibility between them and the application proposals using a 'bareground' Zone of Theoretical Visibility (ZTV) analysis. The cumulative schemes (groups A to P; # denotes individual schemes) are listed in clockwise order starting from the north.

**Table 5.6 Cumulative Assessment Scoping (70km Area of Search)**

Group	Nearest Settlement and County	Transport Corridor	Distance to Heck. Fen (km)	Cumulative Schemes (operational, under construction, consented, or in-planning)
#	Cleethorpes, Lincolnshire	A180	64-67	Stallingborough
A	Louth, Lincolnshire	A1031	50-58	Newton Marsh Treatment Works, Conisholme Fen (Fen Farm) and planned extension
B	Maplethorpe, Lincolnshire	A1031 / A52	42-46	Bambers Farm I and II, and Langham

C	Skegness, Lincolnshire	N/A	45-50	Lyn & Inner Dowsing and Lincs offshore
D	Skegness, Lincolnshire	A158 / A52	32-37	Orby Marsh resubmission and The Hollies
E	Swaffham, Norfolk	A47	70+	Swaffham I (Ecotech Centre), Swaffham II and North Pickenham and extension
#	Boston, Lincolnshire	A52	18	Ings Lane
#	Kings Lynn, Norfolk	A149	50	Queen Elizabeth Hospital
#	Kings Lynn, Norfolk	A148	61	Chiplow
F	Spalding, Lincolnshire	A17	24-26	Gedney Marsh (Red House) and Holbeach Marsh
G	Wisbech, Lincolnshire	A17 / A1101	36-38	The Grange and Treading Wind
H	Spalding, Lincolnshire	A16	28-30	Deeping St Nicholas and Vine House Farm
I	Wisbech, Lincolnshire	A47	37-42	French Farm, Nuts Grove Farm and Wyrde Croft resubmission
J	March, Cambridgeshire	A141	48-52	Stags Holt / Coldham and extensions, Long Hill Road, Foundry Way and March Landfill
K	Peterborough / Chatteris, Cambridgeshire	A141	53-62	Glass Moor, Red Tile and Ramsey repowering
L	Whittlesey, Peterborough	A605	45-50	McCains Foods, Whittlesey and extension
#	Huntingdon, Cambridgeshire	A1(M)	63	West Bullock Road
M	Corby, Northamptonshire	A6116 / A508	65-70	New Albion and Barnwell Manor
#	Stamford, Leicestershire	A6121 / A1	47	WW Steadfold Lane
N	Leicester / Melton Mowbray, Leicestershire	A46 / A606 / A607	54-64	Queniborough, Asforby and Old Dalby
#	Nottingham, Nottinghamshire	A52	56	Stoke Bardolph Farm
O	Newark-on-Trent / Mansfield, Nottinghamshire	A616 / A617	50-65	Lindhurst, Old Bilsthorpe Colliery, and Hockerton Community Turbine
#	Newark, Nottinghamshire	A17	32	Beckingham
P	Worksop / East Markham, Nottinghamshire	A57	54-66	B&Q Manton Wood and Walker & Sons Hauliers



- 5.540 It was concluded from this ‘first-sift’ appraisal that those schemes located more than approximately 35km from the application site would not give rise to any significant cumulative landscape and visual effects. This is because the underlying topography, landscape character / value, and separation distances involved would tend to restrict intervisibility between the proposed wind park and cumulative schemes situated over 35km away from the application site and limit potential cumulative landscape and visual effects. The exception to this would be the proposed Orby Marsh (resubmission) Windfarm situated north east of Skegness approximately 37km from the application site at Heckington Fen which is ‘scoped-in’ to the Cumulative Assessment. The reason for including Orby Marsh as a CAS and not others located within 40km is because it is located relatively close to the Lincolnshire Wolds AONB and would potentially be visible simultaneously, ‘in succession’ with the application proposal at Heckington Fen.
- 5.541 As a result of the first-sift appraisal the following cumulative schemes, individuals and groups totalling approximately 50 in number, were ‘scoped-out’ of the LVIA:
- Stallingborough in north Lincolnshire
  - Queen Elizabeth Hospital and Chiplow, Norfolk
  - Groups A to C in north east Lincolnshire
  - Group E in west Norfolk
  - Groups G and I in south Lincolnshire
  - West Bullock Road, Cambridgeshire
  - WW Steadfold Lane, Leicestershire
  - Stoke Bardolph Farm, Nottinghamshire
  - Groups J to P, Peterborough, Cambridgeshire, Northamptonshire, Leicestershire and Nottinghamshire
- 5.542 The remaining 9 wind energy projects lying within approximately 35km of the application site are included in the cumulative assessment, as listed in the table below, ordered according to distance from the application site. 35km is the Cumulative Assessment Study Area. The Cumulative Assessment Schemes (CAS) comprise 6 projects in operation and 3 in planning. The location of each CAS is shown in **Figure 5.12b**. The 70 or so schemes scoped-out of the assessment situated between 35km and 70km from the site are marked on **Figure 5.12a**.

Table 5.7 Cumulative Assessment Schemes (35km Study Area)

Windfarm Scheme	Status	Distance (km)	No of Turbines	Max Height	Figure No 5.14
Bicker Fen	Operational	7	13	100	A
Billngborough	In planning	13	17	127	B
Ings Lane	Operational	18	2	76	C
Gedney Marsh (Red House) and Holbeach Marsh	Operational / Planning	25	6 / 8	100 / 111	D
Deeping St Nicholas (incorporating Vine House Farm)	Operational	28	8	100	E

Noble Foods (Beckingham)	Operational	32	3	90	F
The Hollies	Operational	33	2	91	G
Orby Marsh resubmission	In planning	37	9	81	H

- 5.543 For the purposes of this assessment the following schemes are treated as a single combined scheme as shown on their respective Cumulative ZTVs:
- Gedney Marsh (Red House) and Holbeach Marsh (**Figure 5.14d**).

Nature of Cumulative Effects

- 5.544 Cumulative landscape and visual effects would potentially occur when one or more wind farm is apparent in views from certain locations or routes. Seen together two or more wind farms may affect landscape character, valued landscapes, views and / or visual amenity. Potential cumulative effects can arise ‘simultaneously’, for example at a settlement or popular vantage point, or ‘sequentially’ along a road or recreational trail. Sequential effects may occur ‘frequently’ or ‘occasionally’, or somewhere in between. Simultaneous effects may be experienced either in ‘combination’ or ‘succession’. Objects are considered to be perceived ‘in combination’ when they are visible in the same 70 degree field of view. When it is necessary to turn ones head right or left to view objects in other directions / fields of view, they are held to be seen ‘in succession’. Successive visibility of CAS would tend to generate lower levels of cumulative landscape and visual change than that seen ‘in combination’.

Assessment of Cumulative Effects

- 5.545 The assessment considers the potential impact of the nine CASs within the study area from the point of view of:
- main settlements (**Figures 5.1 and 5.4**)
  - main roads – (**Figures 5.1 and 5.4**)
  - designated landscapes (**Figure 5.5**)
  - landscape character (**Figure 5.6**)
  - long distance trails, cycle routes and land with public access (**Figures 5.7 and 5.8**)
  - recreational resources and places of interest including cultural heritage resources with public access (landscape and visual context only) (**Figures 5.7 and 5.8**)
- 5.546 A summary of anticipated cumulative effects on views, visual amenity, landscape character and valued landscapes in the study area, resulting from the implementation of the proposed wind park is provided at **Appendix 5.7** in respect of the photomontage / cumulative wireline viewpoints. The predicted effects are described below.

Cumulative ZTVs and Intervisibility of Cumulative Assessment Schemes

- 5.547 **Figures 5.13a-5.13h: Cumulative Assessment ZTVs** show the Zone of Theoretical Visibility ‘with screening’ (to the blade-tip) of each CAS in the cumulative assessment study area in yellow

- overlaid with the proposed Heckington Fen Wind Park ZTV in blue; the green areas denote where any part of both schemes would be theoretically visible together, including a single blade-tip.
- 5.548 There would be a complex pattern of intervisibility across the cumulative study area involving one or more CAS viewed together with the proposed wind park either simultaneously, in combination or succession from a particular viewpoint, or sequentially one after the other from a route. As a rule, although the landscape is flat and open, intervisibility within and / or across the low-lying Fens rapidly becomes restricted with increasing distance from the site due to the combination of level topography, characteristic tree cover (shelterbelts and woodland blocks), built form and infrastructure / engineered features, including embankments (dykes) etc which, working in concert, tend to fragment, filter or block visibility and interrupt views. This is apparent when studying the photomontages at **Figure 5.11** which demonstrate how visibility of the proposed turbines is progressively closed down with distance as one moves farther away from the site.
- 5.549 The exception to this is where the land is slightly rising or elevated above the general level of the fenlands relatively close to the application site, as is the case at the western fringes of the Fens, for example at Ewerby Thorpe, located about 7km west of Heckington Fen. **Photomontage 12** shows the predicted view from the fenland fringe, a transitional area in landscape character terms, at a point midway between Ewerby Thorpe and Ewerby where the ground is gently rising at the eastern edge of the Southern Lincolnshire Edge. Moving west away from the Fens visibility becomes progressively more interrupted by woodland and hedgerows, as depicted in **Photomontage 14** looking south west from Anwick, almost 10km from the application site.
- 5.550 In broad landscape terms, in the context of the national character assessment, intervisibility of the Heckington Fen proposals and one or more of the CAS within the detailed study area would theoretically occur across a large tract of the host National Character Area – The Fens (NCA 46) parts of the immediately adjacent NCAs, namely the:
- Central Lincolnshire Vale (NCA 44);
  - Southern Lincolnshire Edge (NCA 47); and
  - Kesteven Uplands(NCA 75).
- 5.551 In practice, however, the inherent characteristics of the fenland landscape described above would significantly limit visibility so that, on the ground, the proposed wind park and the CASs would have a progressively lower presence in views with increasing distance from the application site. At distances of over 15km intervisibility across The Fens between the proposed wind park and CAS situated within the 35km study area would be very restricted and intermittent. Further afield, within the adjacent Southern Lincolnshire Edge, Central Lincolnshire Vale and Kesteven Uplands, intervisibility would be increasingly fragmented and occasional with distance from the application site due to the gently rising and undulating landform and the more prevalent tree cover, including large woodland blocks. Here views of the Heckington Fen proposals and other CAS would be intermittent and long range, as **Photomontages 23, 24, 25 and 27** show.
- 5.552 The exception to this is the Lincolnshire Wolds (NCA 43) – an area of open, upland situated about 20km to the north of the application site at its nearest point, designated as an AONB – from where elevated, panoramic views are available from its southern fringes looking south across the Central Lincolnshire Vale towards The Fens beyond – see **Photomontage 30** and **Cumulative Wireline 30**. This matter is examined in more detail below.
- 5.553 It is important to note that the proposed Heckington Fen Wind Park would have very little visual influence beyond the National Character Areas mentioned above. Analysis of the ZTVs of the proposed wind park at **Figures 5.9 and 5.10** and the CAS ZTVs at **Figure 5.14(a-h)** indicates that there would be negligible visibility of the application proposal and the CAS within the following adjacent NCAs:
- Lincolnshire Coast and Marshes (NCA 42);
  - Northern Lincolnshire Edge with Coversands (NCA 44); and
  - Trent and Belvoir Vales (NCA 48);
- 5.554 The exception to this is the three operational Noble Foods Wind Turbines at Beckingham where the Southern Lincolnshire Edge / Lincoln Cliff significantly restricts its intervisibility with the other CAS and the proposed wind park – see relevant Cumulative ZTV at **Figure 5.14f**. In this case the Lincoln Cliff escarpment creates a clear ‘viewshed’ between the Trent and Belvoir Vales to the west and The Fens in the east. The Lincolnshire Wolds provides another viewshed between the Lincolnshire Coast and Marshes and the Central Lincolnshire Vale and to a lesser extent The Fens. This visual characteristic is supported by analysis of the Cumulative Wirelines provided in **Figures 5.15**.
- 5.555 In general, due to the inherent landscape characteristics of The Fens and its medium to high capacity for accommodating the scale of wind energy development proposed, the visual environment of the fenland and adjacent character area(s) would be relatively unaffected at distances greater than 10km from any of the medium to large scale CAS. Where views of the proposed Heckington Fen Wind Park and one or more CAS are available, whether in combination, succession or sequentially, the turbines would be perceived as relatively small elements forming part of the wider landscape. **Cumulative Wirelines 17 to 30** illustrate this tendency.

#### Cumulative Wirelines

- 5.556 A set of nine ‘wireline’ visualisations is included in the LVIA at **5.15: Cumulative Assessment Wirelines** based on the photomontage viewpoints presented at **Figure 5.11**. The purpose of the ‘cumulative wirelines’ (CW) is to assist in the assessment of potential cumulative landscape and visual effects, primarily in relation to landscape character and visual amenity. The selected viewpoints for the CWs are listed below together with the selection rationale.

**Table 5.8 Cumulative Assessment Wirelines**

CW VP	Location	Dist (km)	CASs visible*	VP sntvy**	Selection Rationale
4	Amber Hill, Sutterton Drove	1.9	3	High	Fenland settlement with open south west looking views across the Fens (NCA 46) in which Bicker Fen Windfarm is visible
6	South Kyme	3.9	5	High	Fenland settlement with open southward views across the Fens in which Bicker Fen Windfarm is visible

12	Ewerby, Clay Pit Lane (junction with Thorpe Rd)	7.2	5	High	Slightly elevated viewpoint from edge of Ewerby within Southern Lincolnshire Edge (NCA 47) affording panoramic views across the Fens in which Bicker Fen Windfarm is visible
13	Helpringham, B1394	7.2	6	High	Fenland settlement with open eastward views across the Fens in which Bicker Fen Windfarm is visible
19	Tattershall Castle, Tattershall	11.0	5	High	Panoramic elevated viewpoint from top of historic building affording 360 degree views across the Fens in which Bicker Fen Windfarm is visible
20	Boston Stump (St Botolph's Church)	11.4	4	High	Panoramic elevated viewpoint from historic building tower affording 360 degree views across the Fens in which Bicker Fen Windfarm is visible
23	A52, approaching A15 near Osbournby	15.5	7	Low	Slightly elevated viewpoint from within Southern Lincolnshire Edge affording panoramic views across the Fens in which Bicker Fen Windfarm is visible
24	A15 near Cranwell (Westcliffe Rd)	16.6	7	Low (High)	Viewpoint within Southern Lincolnshire Edge affording long range views towards the Fens in which Bicker Fen Windfarm is visible
28	A151, Bourne	26.2	7	Low (High)	Fenland fringe settlement edge with open north east views looking across the Fens in which Bicker Fen Windfarm is visible
29	A153, Foxendale Hill	28.2	6	Medium (High)	Panoramic elevated viewpoint from the south east boundary of the Lincolnshire Wolds AONB (NCA 43) affording long range views towards the Fens in which Bicker Fen Windfarm is visible

\* number of CASs theoretically visible simultaneously (in combination) within the same 70 degree field of view in addition to the application proposal

\*\* landscape / visual sensitivity of viewpoint

### Simultaneous Effects

- 5.557 This section deals with the potential simultaneous cumulative effect of the proposed development and the identified CAS located within the study area; that is landscape and visual effects potentially arising from visibility of the wind park when seen in combination or succession from a particular location or area by a stationary observer. This would include static visual receptors and viewpoints, for example residential properties / settlement, places of interest, recreational resources and tracts of land such as character areas and designated landscapes. Linear receptors such as roads, railways and public rights of way are dealt with in the Sequential Effects sub-section that follows.

### Cumulative Effect on the Site Landscape

- 5.558 As none of the existing or proposed CAS are / would be located within the application site or land holding there would be no cumulative effect on the fabric of the site landscape.

### Cumulative Effect on Landscape Character

- 5.559 Landscape character areas in the study area are shown in **Figures 5.6(a-c) Landscape Character** based on published assessments at the national and local level. The information source is stated on the relevant figure in each case. The extent of visibility across the various character areas for each CAS can be determined from the Cumulative Assessment ZTV plans provided at **Figures 5.13(a-h)**. The approximate scale of development visible and potential degree of change to landscape character views is illustrated in the cumulative wirelines provided at **Figure 5.14: Cumulative Assessment Wirelines**.
- 5.560 The assessment of the potential effect of the Heckington Fen proposal on local landscape character indicates that significant change would be limited to 1.5km and 2km at the most from the nearest proposed turbine where the presence of the wind turbines is strongly felt; in other words where there is uninterrupted visibility towards the wind park. Bearing in mind the similar (or smaller) size and scale of the closest existing and proposed wind energy developments at Bicker Fen (6km) and Billingborough (13km) combined with the very similar landscape context (notwithstanding slight local differences in adjacent landscape character), it is reasonable to suggest that the worst-case extent of significant character effects (approximately 2km) is / would be broadly the same in each case.
- 5.561 The existing Bicker Fen Windfarm and the proposed Billingborough Windfarm and Heckington Fen Wind Park would be placed approximately evenly spaced in The Fens forming a gentle, north-south arc. The spacing of around 6km provides sufficient distance between the schemes, bearing mind the flat, expansive man-made landscape and huge skies, to prevent significant cumulative effects arising on landscape character. The next closest CAS is Ings Lane, a small scale, 2 turbine scheme in operation near the A52 north east of Boston. The 76m maximum height turbines have a very small presence in the settled fenland landscape beyond 5km and therefore would cause a negligible cumulative character effects with the Heckington Fen proposal. The Cumulative Wirelines presented at **Figure 5.14** illustrative this point.
- 5.562 The other CAS, namely: Holbeach Marsh, Gedney Marsh, Deeping St Nicholas, The Hollies and Orby Marsh are all located more than 25km from the proposed wind park and set within a similar low-lying, flat landscape – The Fens or Lincolnshire Coasts and Marshes (NCA 42); the exception to this being the three Noble Foods Wind Turbines situated at Beckingham in The Trent and Belvoir Vales (NCA 48) to the west of Lincoln Cliff. Furthermore, apart from Orby Marsh and The Hollies Windfarms both situated at the north eastern extremity of the study area, roughly 5km apart, the remaining CAS (Nos. 3-9) are spaced over 15km from one another. Within these fenland / coastal marsh landscapes views are closed down with distance by the combination of level topography, tree/hedge cover and settlement, so that at distances of over approximately 5km the presence of any one CAS in the landscape is / would be very low or negligible so that individual CAS would cause minor to negligible cumulative effects in relation to each other and / or the application proposal.
- 5.563 In summary, the addition of Heckington Fen Wind Park within The Fens national character area (NCA 46), and Fenland (NKDC LCA 13) / Reclaimed Holland Fen (BDC A1) local character areas

would not significantly change the character of the NCA / LCAs as a whole in a cumulative way, as experienced in views from local settlement / dwellings, rights of way, highways etc, including at East Heckington, Swineshead Bridge / Swineshead, Amber Hill, South Kyme, Heckington, Helpringham, Donington, Boston, Tattershall / Coningsby and Sleaford. In addition no significant cumulative landscape effects would be experienced by people enjoying popular recreation resources and places of interest including those at South Kyme, Heckington, Boston Tattershall and Sleaford, and the character of the wider landscape including the Lincolnshire Wolds (NCA 43) would not be affected cumulatively to any significant degree as a result of implementing the application proposals at Heckington Fen.

### **Cumulative Effect on Areas of Landscape Value**

- 5.564 Areas of landscape value in the study area are shown in **Figure 5.5 Landscape Planning Context**. They include the Lincolnshire Wolds Area of Outstanding Natural Beauty (AONB), a relatively open upland area (broadly coterminous with NCA 43) affording views from its plateau edges over the surrounding low-lying areas including the: Lincolnshire Coast and Marshes (NCA 42), Central Lincolnshire Vale (NCA 44), and The Fens (NCA 46).
- 5.565 Apart from Orby Marsh and The Hollies windfarms (CAS Nos 8 and 9), which are both situated roughly 5km apart at the north eastern extremity of the study area approximately 5km from the south eastern edge of the AONB, the other CAS (Nos. 1-7) are / would be sited over 20km from the AONB boundary, separated from one another at distances of between 6-30km. These 7 CAS (not including The Hollies and Orby Marsh) would be located mainly in the large scale, expansive Fens (NCA 46) which has a good capacity for accommodating medium to large scale wind energy development; Noble Foods Wind Turbines (CAS No.7) would be located some 40km from the AONB in the Trent of Belvoir Vales (NCA 48) which lies to the west of the South Lincolnshire Edge (NCA 47) in the visual shadow of Lincoln Cliff.
- 5.566 There are panoramic, long range views available from the edges of the Lincolnshire Wolds AONB looking across the Central Lincolnshire Vale, The Fens and the Lincolnshire Coast and Marshes. The AONB Management Plan identifies those from High Street and Bluestone Heath Road as being important in terms of its 'special qualities'<sup>41</sup>. However, as brought out in Tennyson's poem quoted in the Assessment of Effects section above, the focus of attention for people enjoying the AONB's special qualities is mainly elevated views from the plateau / escarpment edge, looking across the low-lying coastal marshes towards the sea; in other words eastward views looking away from the application site.
- 5.567 Orby Marsh and The Hollies Windfarms (CAS Nos 8 and 9) are likely to be visible in some of these views, seen at medium to long range set within the coastal marsh landscape between the Wolds and the sea. The potential effect of these two CAS on the special qualities of the AONB was / is assessed elsewhere as part of the individual scheme planning submissions and it is up to the relevant planning authorities to determine whether any landscape or visual effects arising on the designated area as a result of implementing these two CAS are significant.
- 5.568 From the point of view of this planning application the addition of the proposed Heckington Fen Wind Park would have a negligible effect cumulatively on the special qualities of the Lincolnshire

Wolds AONB. This is because the application proposal would be situated in The Fens over 20km from southern boundary of the AONB, in the same field of view as, and appearing to coincide with, the operational Bicker Fen Windfarm and the proposed Billingborough Windfarm, at minimum distances from the designated landscape of approximately 26km and 32km respectively. The difference in landscape character, the large separation distances involved and the alignment of the three closest large scale CAS would prevent significant cumulative effects from occurring within the AONB. **Photomontage 29** and **Cumulative Wireline 29** at **Figure 5.14** showing the predicted change to views and landscape character when looking south from the AONB boundary near Fulletby illustrate this point.

- 5.569 Designed landscapes including registered historic parks and gardens are shown on **Figures 5.7 and 5.8**. Revesby Abbey near Mareham le Fen is the closest designed landscape to the application site. Revesby Abbey historic park and garden is set within the Central Lincolnshire Vale (NCA 44) which is more wooded and enclosed than its southern neighbour The Fens which would interrupt views towards the application proposal and CAS and insulate the designed landscape from potential cumulative effects – **Photomontage 25** is illustrative of the predicted change to existing views in the Revesby area. The predicted cumulative landscape change is negligible magnitude which would generate a negligible / minor cumulative effect at most taking account of the high sensitivity of the resource. The same negligible / minor levels of cumulative effect or lower would be experienced at the other designed landscape in the study area.
- 5.570 To sum up, the proposed Heckington Fen Wind Park would not significantly alter the character or value of designated landscapes surrounding the application site as a whole in a cumulative way, particularly in respect of the Lincolnshire Wolds AONB. The indirect cumulative change to the landscape character and special qualities of nationally important designated area as experienced in views from local settlement and popular recreation resources, for example in the vicinity of Fulletby, High Street and Bluestone Heath Road would be negligible magnitude which would cause no more than negligible / minor indirect landscape effects to the high sensitivity AONB landscape. No designed landscapes or historic parks and gardens located in the study area would be cumulatively affected.

### **Cumulative Effect on Other Landscape Factors**

- 5.571 A number of other aspects of landscape may be affected cumulatively by wind energy proposals. These include the following landscape factors as described in more detail in current guidance on cumulative effects<sup>42</sup>:
- sense of scale
  - sense of distance
  - existing focal points
  - skylining
  - sense of remoteness or wildness
  - other special landscape interests

<sup>41</sup> Lincolnshire Wolds AONB Management Plan (2004-2009) – Table 1: Special Qualities

<sup>42</sup> Scottish Natural Heritage (2005) 'Cumulative Effect of Windfarms' Version 2

5.572 An assessment of the potential cumulative effect on these landscape factors caused by the proposed Heckington Fen Wind Park and the various Cumulative assessment Schemes is provided in the table below.

**Table 5.9 Cumulative Assessment Landscape Factors**

Landscape Factor	Potential Cumulative Effect	Rationale
Sense of scale and distance	The sense of scale would be affected to a minor degree cumulatively by the proposed wind park and the CAS, in particular the proposed Bicker Fen Windfarm due to its proximity to the application proposal.	The existing windfarms (eg Bicker Fen) and majority of CAS in the Fens comprise broadly similar sized turbines (height and blade diameter) each with a similar vertical scale which would minimise any potential distortion of sense of scale and distance.
Existing Focal points	The role of Bicker Fen Windfarm and other local landmarks as focal points would be affected cumulatively to a minor degree by the Heckington Fen and Billingborough proposals due to their relatively close proximity to one another.	The existing windfarm at Bicker Fen is located over 5km from the Heckington Fen proposal which in turn is almost 15km from the Billingborough CAS factors which would restrict any potential adverse effect on existing focal points.
Skylining	The fenland skyline would be altered by the Heckington Fen proposal to a degree, but not significantly so. The existence of Bicker Fen Windfarm and implementation of the proposed Billingborough Windfarm would cause minor additional cumulative effect due to the relative proximity of these two CAS to the application site within the same broad skyline of the Fens. The distant skyline of the Lincolnshire Wolds would be unaffected.	The Fens are characterised by expansive open landscape and huge skies. The Heckington Fen proposal, Bicker Fen Windfarm and proposed Billingborough Windfarms would not create a skyline in which wind energy development becomes proportionally dominant. The surrounding skylines created by the higher ground to the west and north (the Lincolnshire Wolds) lie over 20km from the application site, sufficiently far away to prevent any potential effect occurring on their respective skylines.
Sense of remoteness and wildness	There would be a low to medium level of cumulative change on the sense of remoteness locally which would be of moderate / minor significance.	The Fens landscape is characterised by a sense of remoteness, but as a man-made landscape there is little or no wildness present.

Other interests	There would be a low magnitude of cumulative change on other special landscape interests in the study area, such as the landscape setting of settlements, which would be of minor / moderate significance.	The landscape setting of some settlements within approximately 10km of the application site would be altered cumulatively to a degree up to low to medium magnitude resulting in an additional moderate / minor cumulative effect at East Heckington and Swineshead Bridge due to the proximity of Bicker Fen Windfarm and the proposed Heckington Fen Wind Park. There are no other known special landscape interests in the study area which would be adversely affected cumulatively to a significant degree by the application proposal and the various CAS, save those dealt with elsewhere in this cumulative assessment.
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#### **Cumulative Effect on Views and Visual Amenity**

5.573 The proposed Heckington Fen Wind Park would be visible, in combination and / or succession, with the Cumulative Assessment Schemes (CAS) from a range of static viewpoints across the study area. The intervisibility between the application proposal and the various CAS is shown for each scheme on **Figures 5.13(a-h)**. The key landscape and visual features and receptors situated within the detailed study area considered in this part of the cumulative assessment are shown on **Figure 5.8**. Sensitive receptors located within the study area as a whole are shown on **Figure 5.7**.

5.574 The focus of this part of the cumulative assessment is the detailed study area (within 15km of the application site). Consideration is also given to potential cumulative effects arising across the wider study area where applicable. The following key static receptor groups have been assessed:

- main settlements (see **Figure 5.1**)
- isolated dwellings or dwelling groups (see **Figure 5.4** and **Appendix 5.10**)
- popular recreation facilities and places of interest, including cultural heritage resources, and land with public access (**Figures 5.7 and 5.8**)

5.575 The visual amenity of (incorporating views from) isolated dwellings in the detailed study area is generally dealt with together with that of the nearest settlement. Exceptions to this are assessed in the relevant sub-sections.

#### **Note on Scope and Extent of Significant Cumulative Effects**

5.576 The Cumulative Assessment Schemes which have potential to cause significant cumulative effects, when seen simultaneously (in combination or succession) with the application proposals, bearing in mind the man-made, expansive nature of the fenland landscape context, are mainly those situated within 20km of the proposed Heckington Fen Wind Park, namely the three closest as follows:

- operational Bicker Fen Windfarm (13 turbines – maximum height 100m) situated approximately 6km south of Heckington Fen;
- proposed (submitted / in scoping) Billingborough Windfarm (17 turbines – maximum height 127m) located approximately 13km south south west of Heckington Fen; and

- operational Ings Lane Windfarm (2 turbines – maximum height 76m) situated approximately 18km east of Heckington Fen.
- 5.577 Of these Ings Lane would have the smallest potential to cause cumulative landscape and visual effects due to its small scale and relatively distant location from Heckington Fen.
- 5.578 Between 10 and 20km distance from the application site it is considered that significant cumulative visual effects would not arise at key receptors bearing in mind the baseline character and landscape context. This is because views towards the proposed wind park and various CAS tend, or would tend to be interrupted by the characteristic shelterbelts, woodland blocks and settlement (built form and associated vegetation) of The Fens (NCA 46), the flat, expansive man-made landscape which extends in every direction from Heckington Fen except westwards. Visibility from the west looking eastwards across the adjacent fenland, from the Southern Lincolnshire Edge (NCA 47) is at its greatest at the fenland fringe, for example at Ewerby Thorpe / Ewerby – see **Photomontage / Cumulative Wireline 12** and Helpringham – see **Photomontage / Cumulative Wireline 13**, both of which viewpoints lie between 5-10km from Heckington Fen.
- 5.579 Within approximately 10km of the application site therefore, bearing in mind the landscape context and the distribution of existing and proposed CAS across the study area, there is potential for significant cumulative visual effects to arise at certain sensitive locations / key receptors due to the relative proximity of the proposed wind park and one or more CAS. In practice, however, taking into account the expansive, man-made character of the fenland and partially developed landscape context, where simultaneous cumulative visual changes occur at separation distances greater than 5km significant effects are not predicted to result. In other words where / when two CAS or more are located more than 10km apart an observer placed midway between them would be on the 5km threshold of separation (and theoretical limit of potential cumulative visual effects) from each of the CAS in question.
- 5.580 These judgments take into account current best practice guidance in relation to the ‘prominence’ of wind turbines in the landscape which states that, at distances more than 5km away, turbines of the scale proposed would be ‘only prominent in clear visibility – seen as part of the wider landscape’<sup>43</sup>. A cumulative assessment from each photomontage viewpoint is set out in the schedule at **Appendix 5.7**.
- 5.581 CAS located in the wider study area (more than 20km from the application site) would not cause significant cumulative visual effects when viewed in combination and / or succession with the application proposal from key receptors due to the relatively large distances separating the various CAS (or pairs of) and the application proposals, in excess of 15km on both counts, taking into consideration the underlying character and general landscape context of each.
- 5.582 Consequently the remaining six CAS have, as a rule, been discounted from the cumulative visual assessment except in the cases of certain high sensitivity receptors which have the potential to be affected in a cumulative way from a landscape or visual point of view, in particular Lincoln Cathedral and the Lincolnshire Wolds AONB as follows:

- operational Noble Foods Beckingham Wind Turbines (3 turbines – maximum height 90m) located approximately 32km west north west of Heckington Fen and about 15km south south west of Lincoln Cathedral; and
- operational Hollies Windfarm (2 turbines – maximum height 91m) and the proposed / in planning Orby Marsh Windfarm (9 turbines – maximum height 81m) situated approximately 5km from both each other and the south eastern boundary of the AONB, and between 33km and 38km respectively north east of Heckington Fen.

#### ***Isolated Dwellings, Settlement and Places of Interest etc within approximately 5km***

- 5.583 Small settlements, individual residential properties and places of interest / recreational resources situated within 5km of the nearest proposed turbine at Heckington Fen are shown on **Figure 5.4**, **Figure 5.8** and **Appendix 5.10b**.
- 5.584 Dwellings, groups of properties and rural settlements surrounding the application site, within approximately 5km of the nearest proposed turbine would to varying degrees have visibility of both the proposed Heckington Fen Wind Park and Bicker Fen Windfarm; the proposed Billingborough Windfarm would have a low presence in the landscape and views from this general area and when visible would tend to be perceived as relatively remote. **Cumulative Wirelines 4, 6, 12 and 13** illustrate the relative scales of the CAS in views looking towards the application site from Amber Hill, South Kyme, Ewerby Thorpe and Helpringham. It should be noted that the cumulative wirelines simulate the bareground visibility and do not take into account the landcover provided by crops, hedges, trees, buildings, engineered structures (eg dykes) and other local topographic variations.

#### Amber Hill, Holland Fen, Langrick Bridge and Hubbert’s Bridge

- 5.585 Looking south west from the Amber Hill area across The Fens (NCA 46) the proposed wind park would be in the foreground of views with the operational Bicker Fen behind and the proposed Billingborough beyond, potentially visible in combination one behind the other – see **Cumulative Wireline 4**. (Note that Deeping St Nicholas Windfarm is theoretically visible on the horizon to the left of Bicker Fen Windfarm.) The intervening distances (of approximately 6km in each case) between the proposal and the CAS is sufficient to prevent any sense of coalescence of the three wind energy schemes and would prevent significant cumulative landscape or visual effects arising on dwellings, places of interest and recreational resources when / where uninterrupted visibility occurs. It is remarkable that in views from the Amber Hill area, as depicted in **Photomontage 4**, it is difficult to pick out Bicker Fen Windfarm (the closest CAS) due to the screening effect of intervening vegetation and built form. This phenomenon is repeated in views across the study area.
- 5.586 As one moves farther away from the application site eastwards or northwards potential cumulative landscape and visual change, caused by in combination visibility of the proposed Heckington Fen Wind Park with the operational Bicker Fen Windfarm and proposed Billingborough Windfarm would diminish with distance and would be well below levels that might generate significant effects. The predicted levels of visual change involved at Holland Fen, Langrick Bridge and Hubbert’s Bridge are shown in **Photomontages 7, 9 and 11** where Bicker Fen Windfarm is partly visible beyond the built-up / tree lined skyline on the left of the photos.
- 5.587 In summary the magnitude of simultaneous (in combination or succession) cumulative visual change at residential properties, places of interest and other high sensitivity receptors in this

<sup>43</sup> Scottish Natural Heritage and University of Newcastle (2002) ‘Visual Assessment of Windfarms: Best Practice’ (Table 3, page 10)



general area is predicted to be low at most and the resulting effect minor / moderate or less and not significant in terms of the EIA Regulations.

#### South Kyme

- 5.588 Southerly views from the South Kyme area, where they are available at the southern edge of the village and its environs, would encompass the application proposal, Bicker Fen Windfarm and the proposed Billingborough Windfarm, located within The Fens, potentially seen in combination receding into the distance at a regular interval – see **Cumulative Wireline 6**. (Note that Gedney / Holbeach Marsh and Deeping St Nicholas Windfarm CAS are theoretically visible on the horizon behind the application proposal and Bicker Fen / Billingborough Windfarms.) In practice, however, visibility from the village and its surroundings is interrupted by woodland and built development, as shown in **Photomontage 6**, which blocks or breaks up southward views thus preventing significant limiting cumulative landscape and visual effects at dwellings, places of interest and recreational resources in the vicinity.
- 5.589 The predicted magnitude of simultaneous (in combination or succession) cumulative visual change at residential properties, places of interest and other high sensitivity receptors in the vicinity including South Kyme Golf Course and Kyme Tower, is predicted to be low or less and effects arising minor / moderate at most and not significant from an EIA perspective.

#### Ewerby, Heckington and Helpringham

- 5.590 In views looking east across The Fens from the fenland fringe at the rim of the Southern Lincolnshire Edge (NCA 47) between Ewerby Thorpe and Helpringham, at distances of around 5km from the application site and slightly more, the Heckington Fen proposal would be visible in combination with Bicker Fen Windfarm, both in the foreground and, theoretically, with Ings Lane and Gedney / Holbeach Marsh CAS in the background beyond – see **Cumulative Wirelines 12 and 13**. It is notable that in views from the Heckington, Ewerby and Helpringham areas, as shown in **Photomontages 8, 12 and 13**, it is difficult to pick out Bicker Fen Windfarm (the closest CAS) due to the screening effect of intervening vegetation and built form. Although views are relatively open and uninterrupted from this general location, the separation distances between the proposal and various CAS would be sufficient to prevent significant landscape and visual effects arising at dwellings, places of interest and recreational resources.
- 5.591 The magnitude of simultaneous (in combination or succession) cumulative visual change at residential properties, places of interest and other high sensitivity receptors in this fenland fringe area is predicted to be low at most and the resulting effect minor / moderate or less and not significant in EIA terms.

#### East Heckington (including Sidebar Lane), Swineshead Bridge, Swineshead and Bicker

- 5.592 Regarding changes to landscape character and visual amenity in the area between the proposed Heckington Fen Wind Park and the operational Bicker Fen Windfarm, situated within 5km of the application site, which includes settlement in and around East Heckington, Swineshead Bridge, Swineshead and Bicker, the application proposal would be visible together with Bicker Fen Windfarm from this general area, seen usually in succession at distances varying between 1km to 5km.

- 5.593 At East Heckington and Bicker, for example one or other of the CAS / proposed wind park would be potentially visible at close range in one direction, whilst the other would be seen (where uninterrupted views allow) in the opposite direction. The predicted level of visual change in the Bicker / Donington area for instance, albeit at nearly 10km distance and seen in combination, is shown in **Photomontage 17** where Bicker Fen Windfarm is visible in the foreground with the application proposal in the background on the right.
- 5.594 At the other extreme, looking south from Mill Green Farm 2km north of East Heckington, as depicted in **Photomontage 1**, Bicker Fen Windfarm is visible in the background, set within and beyond the Heckington Fen proposal, seen on the skyline some 9-10km away. In both these cases the close proximity of the one scheme to the receptor in question is likely to generate significant landscape and visual effects in their own right. However, the separation distances involved both between the wind energy schemes and the receptors, ranging between 5-7km, is sufficient to prevent cumulative landscape and visual effects arising on dwellings, places of interest and recreational resources at these locations.
- 5.595 The predicted magnitude of simultaneous (in combination or succession) cumulative visual change at residential properties, places of interest and other high sensitivity receptors in the vicinity of East Heckington and Bicker, is predicted to be low at most and cumulative effects arising minor / moderate or lower and not significant from an EIA point of view.
- 5.596 Midway between the application proposal and Bicker Fen Windfarm, at North End, Swineshead for instance, the separation distances would be 3-4km in each case / direction which would be sufficient to avoid significant cumulative landscape and visual effects arising at dwellings, places of interest and recreational resources. This judgment takes account of the man-made landscape context of the Fens and the developed characteristics in view including high voltage transmission lines and pylons. An indication of the predicted levels of visual change involved at this general location is apparent in **Photomontage 11** where Bicker Fen Windfarm is partly visible beyond the built-up / tree lined skyline on the left of the frame, seen in combination with the rotors and blades of the proposed Heckington Fen Wind Park on the right.
- 5.597 The magnitude of simultaneous (in combination or succession) cumulative visual change at residential properties, places of interest and other high sensitivity receptors in this settled fenland area is predicted to be low to medium or less resulting in a moderate / minor effect at most and not significant in EIA terms.
- 5.598 Another example of potential cumulative landscape and visual effects in the area south of Heckington Fen is at Swineshead Bridge where the application proposal would be visible at approximately 2km distance in north west looking views, and Bicker Fen in south west views seen in succession at about 4-5km distance. **Photomontage 5** illustrates the scale of visual change looking north west from Swineshead Bridge due to visibility of the proposed wind park; the level of change to south west views would be similar to that shown in **Photomontage 11** in respect of the Swineshead area west of the A17, which lies a similar distance away from Bicker Fen Windfarm to the north east. The separation distance and fenland landscape context would be such that any cumulative landscape and visual effects arising on dwellings, places of interest and recreational resources would not be significant.
- 5.599 To sum up the predicted magnitude of simultaneous (in combination or succession) cumulative visual change at residential properties, places of interest and other high sensitivity receptors in this general area would be low at most resulting in a moderate / minor or less cumulative effect which

would not be significant in terms of the EIA Regulations. In all the scenarios discussed and assessed above the other CAS including Billingborough Windfarm would have a progressively low presence in the landscape and views, diminishing with distance from the viewpoint. Visibility from area immediately south of East Heckington (including Swineshead Bridge) of the Billingborough Windfarm proposal, in combination or succession with the proposed Heckington Fen Wind Park or other CAS, would not cause an additional significant cumulative landscape and visual effect to arise at dwellings, places of interest and recreational resources within 5km of the application site.

#### **Settlement and Places of Interest etc within 15km**

- 5.600 Towns, villages, outlying residential properties and places of interest / recreational resources located over approximately 5km, and within 15km of the application site are shown on **Figure 5.8**. These include Sleaford, Ruskington, Billinghay / North Kyme, Tattershall / Coningsby, Sibsey, Boston, Kirton, Sutterton, Donington and Billingborough.
- 5.601 Settlements surrounding the site lying 5km or slightly more from Heckington Fen, including Ewerby, Heckington / Great Hale, Helpringham and Swineshead have been dealt with above in the previous section where it was established that no significant additional cumulative landscape and visual effects would arise in the vicinity of them, due to the fenland landscape context and separation distances between the settlement, the application proposal and the various CAS. This judgement is confirmed when looking at **Cumulative Wireline 12 and 13** from Ewerby and Helpringham. **Photomontages 9, 12 and 13** are also helpful in gauging the predicted levels of landscape and visual change in relation to the application proposal and Bicker Fen Windfarm from the fenland fringe immediately west of the Heckington Fen site between Ewerby and Helpringham.

#### Sleaford and Ruskington

- 5.602 Sleaford and Ruskington are located within the Southern Lincolnshire Edge and would have similar outlooks and combinations of schemes potentially visible, where occasional views towards The Fens and the proposed Heckington Fen Wind Park and various CAS are available from elevated positions, such as the upper storeys of tall buildings including Money's Mill. **Photomontage 18** illustrates the scale of visual change at the western edge Sleaford in which the proposed wind park and Bicker Fen are visible, in combination, in interrupted views at a distance of approximately 10km; the Billingborough proposal would also be partly visible, potentially, in succession at about the same distance to the south. The level of potential visual change at the western approaches to Ruskington is shown in **Photomontage 14** in respect of the Anwick area. In south east views from this area the proposed wind park is visible in part beyond intervening hedges and trees which block views of Bicker Fen Windfarm and would do the same for other CAS including Billingborough located some 15km to the south of Anwick.
- 5.603 The magnitude of simultaneous (in combination or succession) cumulative visual change at residential properties, places of interest and other high sensitivity receptors in this general area is predicted to be very low at most and the resulting effect minor or less and not significant in EIA terms.

#### Billinghay and North Kyme

- 5.604 Billinghay and North Kyme are located at the north western edge of The Fens about 8-10km north west of the application site. **Photomontage 16** shows the predicted visual change from the A153 at Billinghay. The proposed wind park is visible in combination with the operational Bicker Fen on

the right in the background at a distance of approximately 15km; the Billingborough proposal would potentially be visible in combination at about 20km to the south (**Cumulative Wireline 19** is illustrative of the relationship between the various CAS at this general location, albeit from an elevated vantage point 5km to the north east), but in practice this is unlikely due to intervening vegetation and built form which would tend to interrupt views from both Billinghay and North Kyme. The cumulative landscape and visual change in the Billinghay / North Kyme area is predicted to be very low and the resulting effects at residential properties, places of interest and other high sensitivity receptors minor at most and not significant from an EIA perspective.

#### Tattershall and Coningsby

- 5.605 The linked settlements of Tattershall and Coningsby are located in the southern part of the Central Lincolnshire Vale (NCA 45) which is more wooded than the neighbouring Fens to the south. At over 10km distance there would be limited intervisibility with the application proposal and the CAS from dwellings and places of interest etc in the area due to the characteristic tree cover and intervening vegetation and buildings. Where views of the proposed Heckington Fen Wind Park are afforded Bicker Fen Windfarm and the proposed Billingborough Windfarm would theoretically be visible in combination behind and beyond at distances of approximately 20km and 25km respectively, sufficient distances apart to prevent significant landscape and visual cumulative effects occurring at dwellings, places of interest and recreational resources. **Photomontage 19** shows the scale of visual change caused by the application proposal when looking south from the top of Tattershall Castle; **Cumulative Wireline 19** illustrates the relationship between various CAS and the Heckington Fen proposal. The two operational turbines at Ings Lane to the north east of Boston are too small a scale to cause any noticeable cumulative effect at this distance (15km).
- 5.606 The predicted magnitude of simultaneous (in combination or succession) cumulative visual change at residential properties, places of interest and other high sensitivity receptors in the Tattershall / Coningsby area, would be very low and cumulative effects arising minor or lower and not significant from an EIA point of view. This would include Tattershall Castle, Tattershall Lakes Country Park and the Battle of Britain Memorial Flight Visitors Centre.

#### Sibsey and West Fen area

- 5.607 Views across The Fens towards Heckington Fen from the Sibsey / West Fen area are characteristically expansive, but tend to be interrupted by the occasional tree / hedge cover and settlement, as depicted in **Photomontage 22**. The operational Bicker Fen Windfarm and proposed Billingborough Windfarm are / would be theoretically visible in combination beyond (to the left of) the application proposal – **Cumulative Wireline 18** is illustrative of the relationship between the various CAS at this general location, albeit from an elevated viewpoint. However, in practice the CAS would be hardly noticeable because visibility is fragmented and blocked by the intervening vegetation and built form (as shown in the photomontage). The Ings Lane turbines theoretically visible in succession to the south east have low presence in the local landscape due to their small number (2) and scale. The same applies to the two larger CAS (the operational Hollies and proposed Orby Marsh Windfarms) situated to the north east at the periphery of the study area between approximately 15-20km away. Consequently cumulative landscape and visual change is predicted to be negligible in the Sibsey / West Fen area and effects at residential properties, places of interest and other high sensitivity receptors would be negligible / minor at most.

#### Boston and Kirton



5.608 Boston would be relatively unaffected by the proposed Heckington Fen Wind Park, due to its urban context set within the settled part of The Fens – see **Photomontage 15**, and is / would be insulated to cumulative landscape and visual change for the same reasons. There would be certain locations in and around the town, such as tall structures and peripheral buildings, from where the application proposal and CAS would be / are visible, as shown in **Photomontage 20. Cumulative Wirelines 20(i-iii)** illustrative the relationship between the various CAS and the proposed wind park at Boston, albeit from the elevated vantage point of Boston Stump.

5.609 The predicted magnitude of simultaneous (in combination or succession) cumulative visual change at residential properties, places of interest and other high sensitivity receptors in the Boston / Kirton area, would be very low and cumulative effects arising minor or lower and not significant in EIA terms. This would include Boston Stump, Maud Foster Mill, Witham Way Country Park and Princess Royal Sports Arena.

#### Sutterton and Donington

5.610 From the vicinity of Sutterton, Algarkirk and Donington views towards Heckington Fen across The Fens tend to be interrupted by the characteristic tree belts, hedges and built form of the settled fenland, as depicted in **Photomontage 21**. The operational Bicker Fen Windfarm and proposed Heckington Fen and Billingborough wind energy schemes are / would be theoretically visible in combination beyond the wooded and partly built-up skyline, but in practice would have a very low presence in the landscape and views due to the intervening vegetation and settlement. The Gedney / Holbeah Marsh CAS would be theoretically visible in succession to the south east but would be hardly noticeable due to the separation distance and fenland landscape context. The same applies to Deeping St Nicholas Windfarm situated to the south west at the periphery of the study area about 15km away. As a result cumulative landscape and visual change is predicted to be negligible in the Sutterton / Donington area and the resulting effects at residential properties, places of interest and other high sensitivity receptors negligible / minor at most.

#### Billingborough

5.611 Views are available from the Billingborough area, situated in the fenland fringe at the edge of the Kesteven Uplands (NCA 75), looking north east across The Fens at distances of between 10-15km from the application site. The proposed Heckington Fen Wind Park would be visible in combination with and beyond Bicker Fen Windfarm, with the proposed Billingborough Windfarm in the foreground, sometimes seen in combination, at other times in succession; the Ings Lane, Gedney / Holbeach Marsh and Deeping CAS would be theoretically visible in the background of views – **Cumulative Wireline 23** is illustrative. It is worth noting that it can be difficult to see Bicker Fen Windfarm (the closest CAS) in views from the vicinity of Billingborough, for instance from the A52 approaching the A15 intersection near Osbournby, as shown in **Photomontage 23**, due to the screening effect of intervening hedgerows, trees and woodland. Although views are relatively open and uninterrupted from this general location, the separation distances between the proposal and various CAS would be sufficient to prevent significant cumulative landscape and visual effects arising.

5.612 The magnitude of simultaneous (in combination or succession) cumulative visual change at residential properties, places of interest and other high sensitivity receptors in this general area is predicted to be very low at most and the resulting effect minor or less and not significant in EIA terms. The slightly higher magnitude of cumulative effect at this location is due to its elevation relative to the Fens and proximity to the Billingborough Windfarm proposal.

#### ***Settlement and Places of Interest etc in the Wider Study Area***

5.613 Large towns, cities, outlying settlement and places of interest / recreational resources located more than approximately 15km from the application site, within the wider study area, are shown on **Figure 5.7**. These include Holbeach, Spalding, Market Deeping, Bourne, Grantham, Lincoln, Horncastle, Spilsby, and the settled fenland adjacent to the Wash from Boston to Wainfleet.

#### Holbeach and Spalding

5.614 Views towards the application site from the Holbeach / Spalding area tend to be interrupted by the trees, hedges and built form characteristic of the settled fenland. It would be difficult to discern the proposed wind park at Heckington Fen at these distances, between approximately 20-35km, as illustrated in **Photomontage 26**, and unusual to see it in combination or succession with the other CAS (Bicker Fen and Billingborough, and Gedney / Holbeach Marsh and Deeping St Nicholas respectively). Consequently, there would be very low potential for cumulative landscape and visual change in this general area and no significant cumulative effects are predicted at dwellings, places of interest and recreational resources.

#### Bourne and Market Deeping

5.615 Views looking north east and north across The Fens are available from the fenland fringe between Bourne and Market Deeping area, situated at the edge of the Kesteven Uplands. However, at a distance of between 20-35km from the application site, views tend to be interrupted by the characteristic tree belts and settlement with its associated vegetation, so that distant tall structures are lost within the wider landscape, as depicted in **Photomontage 28**. The proposed Heckington Fen Wind Park would be theoretically visible in combination with and behind Bicker Fen Windfarm in the background, with the proposed Billingborough Windfarm in the middleground; Gedney / Holbeach Marsh and Deeping CAS would be theoretically visible in succession to the east in medium to long range views – see **Cumulative Wireline 28**. It is worth noting that it is very difficult to see the operational Bicker Fen Windfarm from Bourne (see **Photomontage 28**) due to the screening effect of intervening vegetation and built form.

5.616 Although views are relatively open and extensive from this general location, the landscape context combined with the separation distances between the application proposal and various CAS would be sufficient to prevent significant cumulative landscape and visual effects arising at dwellings, places of interest and recreational resources. The magnitude of simultaneous (in combination or succession) cumulative visual change at residential properties, places of interest and other high sensitivity receptors in this general area is predicted to be negligible and the resulting effect negligible / minor or less.

#### Grantham

5.617 Grantham is located at the southern edge of the Trent and Belvoir Vales (NCA 48) which is separated from The Fens by the Lincoln Cliff escarpment which marks the abrupt western rim of the Southern Lincolnshire Edge. There is / would be no intervisibility with the application proposal at Heckington Fen or the other CAS including the Noble Foods Wind Turbines at Beckingham some 15km to the north of the town. As a consequence no cumulative landscape and visual effects would arise on dwellings, places of interest and recreational resources.

#### Lincoln

5.618 The city of Lincoln is situated between 30-35km north west of the application site at the junction of five national character areas: The Fens, Central Lincolnshire Vale, Northern Lincolnshire Edge (NCA 45), Trent and Belvoir Vales, and South Lincolnshire Edge. It lies mainly outside the ZTV of the proposed Heckington Fen Wind Park and the various CAS, except the operational Noble Foods Wind Turbines at Beckingham which is visible from parts of the city (see **Figure 5.13f**). Lincoln Cathedral is a high sensitivity place of interest located within the city on a spur of higher ground at approximately 65 AOD. The tower is 83m tall and has public access to the viewing gallery near the top. Noble Foods Wind Turbines are visible from the tower and it would be theoretically possible, in favourable atmospheric conditions, to see the application proposal in the distance from this elevated vantage point, in combination with the Bicker Fen and Billingborough Windfarms; the other CAS, although theoretically visible in combination and succession, would be too far away (50+km) to discern, except in exceptional conditions. Consequently there would be a negligible landscape and visual change at Lincoln and, as a result, no significant cumulative effects would arise on dwellings, places of interest and recreational resources in and around the city. **Photomontage 30** wireline shows the scale of visual change at a low-lying location near Lincoln.

#### Horncastle and Woodhall Spa

5.619 Horncastle and Woodhall Spa are located in the Central Lincolnshire Vale, a gently undulating landscape, wooded in parts, separating the Lincolnshire Wolds to the north from The Fens to the south. At over 15km distance there would be limited visibility from this lowland vale area of the application proposal and the CAS due to the characteristic woodland and intervening hedges and buildings. Where long range views of the proposed Heckington Fen Wind Park are afforded Bicker Fen Windfarm and the proposed Billingborough Windfarm would theoretically be visible in combination behind and beyond each other at distances of over 25km and 30km respectively, sufficient separation distances to avoid significant landscape and visual cumulative effects arising at dwellings, places of interest and recreational resources. **Photomontage 25** wireline shows the scale of visual change resulting from introduction of the application proposal when looking south west from near Mareham le Fen at a distance of about 17km from the application site.

5.620 There would be no intervisibility with The Hollies and Orby Marsh Windfarms across the Woodhall Spa / Horncastle area and the two operational turbines at Ings Lane to the north east of Boston are too small a scale to cause any noticeable cumulative effect at this distance (15km or more) where limited visibility with the proposed wind park (in succession) may occur south of Horncastle.

#### Spilsby and the Lincolnshire Wolds AONB

5.621 Visibility of the proposed Heckington Fen Wind Park and the CAS, in combination and succession, from the Lincolnshire Wolds would be / is restricted to the south west through to east facing slopes which mark the southern edge of the Wolds plateau and which encompass the settlement of Spilsby – compare **Figure 5.13(a-h)** with **Figure 5.3** and **Figure 5.6a**. Where uninterrupted, long range views towards the application proposal are possible from elevated vantage points the operational Bicker Fen Windfarm and the proposed Billingborough Windfarm would theoretically be visible in combination behind each other at distances of over 35km and 40km respectively. Such an alignment and distance would prevent significant landscape and visual cumulative effects from arising at dwellings, places of interest and recreational resources within the AONB including in the vicinity of Bluestone Heath Road. **Cumulative Wireline 29** and **Photomontage 29** show the scale of landscape and visual change predicted to arise in this area.

5.622 The Hollies and Orby Marsh Windfarms are / would be located within 5km (to the east) of the Lincolnshire Wolds AONB and there would be potential intervisibility (in succession) with the Heckington Fen proposals at the high ground north east of Spilsby (north of Candlesby). The two operational turbines at Ings Lane to the north east of Boston are too small a scale to cause any noticeable effect at this distance (15km or more). Although The Hollies and Orby Marsh CAS may cause a significant cumulative effect on the AONB in their own right, the Heckington Fen proposal would be situated too far way (over 30km) to cause an appreciable or significant cumulative landscape and visual effect with any of the CAS at this location.

#### Wainfleet, Friskney and Wrangle

5.623 Wrangle, Friskney and Wainfleet form part of a string of settlement along the margins of the Wash between Boston and Skegness. There would be negligible visibility of the proposed Heckington Fen Wind Park from this area due to the separation distance (over 15km) and landscape character of this settled part of The Fens. The only CAS which would have visual presence in this coastal strip, to a greater or lesser degree in descending order from the closest CAS), would be Ings Lane, The Hollies, Orby Marsh and Gedney / Holbeach Marsh. Consequently, there would be negligible cumulative effect arising on dwellings, places of interest and recreational resources situated between Boston and Skegness, due to implementation of the application proposal at Heckington Fen.

#### **Summary of Simultaneous Cumulative Effects**

5.624 In summary, no significant additional cumulative landscape and visual effects would be experienced simultaneously, either in combination or succession, by people living in properties surrounding the site or in the wider study area, or from places of interest and recreational resources in the study area due to implementation of the proposed Heckington Fen Wind Park.

#### **Sequential Effects**

5.625 The proposed wind park would theoretically be visible in sequences of views within the study area from a number of highways, railways, public rights of way and various other non-vehicular routes or waterways. The focus of this subsection concerns main roads, key recreational routes and waterways, in particular those stretches within, or passing close to, the detailed study area from where the proposals would be theoretically visible in combination with any of the CASs, including the:

- A15, A16, A17, A52, A151, A153 / A155 and A1121;
- B1395, B1192, B1391, B1394, B1188 / B1189, B1183; and
- Viking Way, Macmillan Way, Water Rail Way and River Witham.

5.626 The visual amenity of minor roads linking with the above is considered when assessing the main roads and recreational routes. The visual amenity of PRoW within 5km of the application site is also assessed.

5.627 Other recreational trails and highways (including stretches of the above located outside the detailed study area) either fall outside the ZTV of the application proposals and / or the CASs, or are generally located too far away from the application site to cause any significant cumulative effect. Exceptions to this included routes crossing nationally important landscapes, for example the

Lincolnshire Wolds AONB, and areas where high sensitivity receptors have the potential to be affected in a cumulative way due to their visual exposure, for instance the Viking Way south of Lincoln.

### **Public Rights of Way and minor roads within 5km**

5.628 Public rights of way within 3km of the site are shown on **Figure 5.4**; those crossing in the detailed study area are marked on **Figure 5.8**. For the purposes of this cumulative assessment PRoW surrounding the application site are grouped as follows (definitive references numbers as indicated on Figure 5.4):

#### North, East and West of Heckington Fen

- Heck/3/1, 12/1, 13/1, 15/1 and Littleworth Drove and Star Fen Drove
- SKym/1/1, 2/1, 3/1 and Cow Drove
- Ambe/2/1, 3/3, 4/1, 5/1, Kirt/12/1 and Claybank, Maryland Bank and Sutterton Drove

#### South of Heckington Fen

- Swhd/13/1, 14/1, 15/1, 15/2, 16/1, Ambe/8/1 and Brown's Drove and Hallam's Drove
- GtHa/cs/1 and Great Hale Drove

5.629 Regarding cumulative changes to visual amenity of non-vehicular routes and minor roads within 5km of the proposed Heckington Fen Wind Park, PRoW and minor highways to the north, east and west of the application site would lie at least 5km from the closest CAS – the operational Bicker Fen Windfarm which at such distances has a relatively low presence in the landscape. This is apparent in **Photomontages 1, 4 and 6** where Bicker Fen Windfarm appears in the background of views seen in combination with the application proposal from the various routes. This low level of visual change would be experienced relatively frequently by people using routes in this area. The addition of the proposed Billingborough Wind farm some 12-15km to the south west would be barely discernable from PRoW and minor roads in the vicinity of Star Fen, Heckington Fen, Amber Hill and South Kyme and the other CAS are / would be located too far away to cause any appreciable cumulative landscape and visual change – see **Cumulative Wirelines 4 and 6**. On balance the level of sequential cumulative landscape and visual change in this area would be low magnitude and predicted effects would be moderate to minor and not significant in terms of the EIA Regulations.

5.630 To the south of Heckington Fen, in the area between the proposed wind park and the operational Bicker Fen Windfarm, which includes PRoW and minor roads in and around East Heckington, Swineshead Bridge, and Swineshead, the application proposal would be visible sequentially together with Bicker Fen Windfarm from routes in this area, seen relatively frequently usually in succession at distances varying between 1km to 5km. South of East Heckington from public footpath GtHa/cs/1 for example, the proposed Heckington Fen Wind Park would be visible at close range to the north whilst Bicker Fen Windfarm would be visible at medium range, potentially (where uninterrupted views allow) in the opposite direction around 5km away. Another example is at Swineshead Bridge where the application proposal would be visible from routes approximately 2km to the north west with Bicker Fen to the south west seen sequentially in relatively frequently and usually in succession at about 4-5km distance. **Photomontage 5** illustrates the scale of visual

change resulting from visibility of the proposed wind park looking north west from near PRoW Swhd/13/1, 14/1, 15/1, 15/2, 16/1 and Ambe/8/1.

5.631 Predicted levels of sequential cumulative landscape and visual change to users of PRoW and minor roads immediately south of East Heckington would be low magnitude giving rise to a minor / moderate and not significant cumulative effect. The proposed Billingborough Windfarm would be over 10km away beyond Bicker Fen Windfarm and would have a very low presence in views which would have a negligible cumulative effect. The other CAS are / would be located too far away to make any appreciable contribution to cumulative landscape and visual change.

5.632 Midway between the application proposal and Bicker Fen Windfarm, for example in the vicinity of North End / Swineshead and Great Hale Fen, the distances separating these two schemes would be 3-4km in each direction which would be sufficient to avoid significant cumulative landscape and visual effects arising sequentially on PRoW and minor roads. An indication of the predicted levels of visual change from PRoW and minor roads in this area is apparent in **Photomontage 11** where Bicker Fen Windfarm is partly visible in combination with the proposed Heckington Fen Wind Park. Similar degrees of visual change would occur relatively frequently from routes in this area. **Cumulative Wireline 13** shows the relationship between the application proposal and the various CAS from Helpringham just over 5km away from Heckington Fen. The magnitude of cumulative landscape and visual change experienced at PRoW and minor roads in the intermediate area south of East Heckington is predicted to be medium at most, and generally lower, which would limit any sequential cumulative effects arising to moderate or less and not significant in EIA terms.

5.633 The scenarios assessed above take into account the other CAS, including the proposed Billingborough Windfarm, which at distances generally in excess of 10km in the fenland landscape would have a progressively low presence in the landscape and views, decreasing over distance. Sequential visibility of the CAS together with the proposed Heckington Fen Wind Park from this general area would not cause a significant cumulative landscape and visual effect to arise on PRoW or minor roads within 5km of the application site.

### **Key Recreational Routes in the Study Area**

5.634 The following key recreational routes cross the study area and pass within. or close to, the detailed study area (listed in order of distance from the application site):

- National Cycle Route 1
- Water Rail Way
- River Witham (navigable waterway)
- Macmillan Way
- Viking Way

#### National Cycle Route 1 / Water Rail Way / River Witham

5.635 National Route 1, the Water Rail Way and River Witham follow broadly the same route across the detailed study area passing within 4-5km of the application site between Boston and Tattershall. The only significant differences between them being that National Route 1 passes slightly closer to Heckington Fen than the other two in the Holland Fen area (4km as opposed to 5km) and the River Witham is enclosed by raised banks / dykes for much of its course. **Photomontages 7 and 10**

show the character of views this section of the routes. Although significantly closer to the site **Cumulative Wireline 4** is illustrative of the relative positions of the CAS and the application proposal at this point.

- 5.636 Taking into account the fenland landscape context (notwithstanding the sometimes frequent visibility of any particular CAS) the relative separation distances between the proposed Heckington Fen Wind Park, the various operational and proposed CAS and these recreational routes are / would be large enough to prevent significant sequential effects from arising on them. **Cumulative Wirelines 19 and 20** illustrate (albeit from elevated viewpoints) the relationship between the application proposal and the various CAS from the Tattershall and Boston areas, both situated between 10-15km away from the Heckington Fen site. For an indication of the scale of change to views from these routes in the wider study area refer to **Photomontages 26 and 30**. Sequential cumulative landscape and visual change is predicted to be low magnitude or less along these routes and users would experience minor / moderate effects at most which would not be significant from an EIA perspective.

#### The Viking Way

- 5.637 The Viking Way long distance path crosses the study area from the Lincolnshire Wolds in the north to the Vale of Belvoir in the west, passing within approximately 15km at Woodhall Spa and slightly over 20km north east of Sleaford. There would be occasional sequential visibility of the proposed Heckington Fen Wind Park, seen partially and intermittently, at long range, from sections of the route around Fulletby north of Horncastle (25-30km distance) and along Ermin Street / High Dike between Wellingore and the A17 east of Sleaford (20-25km).
- 5.638 There would be negligible or no visibility of the application proposal from other parts of the route including at Woodhall Spa and as far as Lincoln, due to the screening effect of mainly trees and woodland and occasionally landform. **Photomontages 25 and 30** illustrate this tendency. The same occasional, low level visibility would apply in respect of the other CAS which are / would be all located farther away from the Viking Way. The only exception to this would be in relation to the operational Noble Foods Wind Turbines which is potentially visible from much of the route south of Lincoln at distances between 5-15km.
- 5.639 Regarding sequential cumulative effects along the Viking Way as a whole, the occasional nature of views available, combined with the separation distances between the long distance path, the application proposal and the various CAS, would restrict the magnitude of potential landscape and visual change to negligible. **Cumulative Wirelines 24 and 29** illustrate the relationship between the proposed wind park at Heckington Fen and the various CAS as seen from the two parts of the route where intervisibility exists or might occur. Consequently, sequential cumulative effects potentially arising along parts of the Viking Way would be negligible / minor at most and not significant.

#### **Main Roads and Railways in the Detailed Study Area**

- 5.640 People making journeys across the study area and within the detailed study area, either by car or rail, will experience a range of sequential views of the proposed Heckington Fen Wind Park and the various CAS, particularly Bicker Fen and Billingborough Windfarms, seen in different combinations at different stages of the journey. This section of the cumulative assessment focuses on those routes and journeys where significant sequential visibility is available or would occur, namely within

the detailed study area from the following main roads and railways (listed in order of distance from the application site):

- B1395 between North Kyme and East Heckington;
- A17 between Sleaford and Holbeach;
- A1121 between Boston and Swineshead Bridge;
- Railway between Sleaford and Boston;
- B1192 between Kirton and Woodhall Spa;
- B1391 Swineshead to Kirton / Boston
- B1394 / B1137 between Heckington and the A15 junction;
- Railway between Sleaford and Spalding;
- A153 / A155 between Sleaford and Horncastle / A16 junction;
- A52 between the A15 intersection and Boston
- A16 between Spalding and A155 junction
- A15 between Folkingham and the B1191 junction.

- 5.641 Unless otherwise stated the above vehicular routes have a low landscape and visual sensitivity.

- 5.642 The B1188, B1189, B1183 and other A and B roads in the study area are located sufficiently far away from the proposed wind park and the various CAS, bearing in mind the landscape context, to be unaffected from a sequential cumulative landscape and visual effects point of view.

#### B1395 between North Kyme and East Heckington and the A17 junction;

- 5.643 Travelling south from North Kyme the operational Bicker Fen Windfarm would be frequently visible, at distances of between approximately 5-12km, seen aligned to the route beyond the proposed Heckington Fen Wind Park which would be in the foreground of views when approaching the A17 / East Heckington. The Billingborough Windfarm proposal would be occasionally visible at distances of between 12-20km. The other CASs would either not be visible from the route or would have a very low and / or infrequent presence in views. The predicted cumulative change to landscape character and views along the low sensitivity route as a whole would be medium magnitude at most which at would give rise to a minor / moderate sequential cumulative effect. **Cumulative Wireline 6** shows the level of cumulative landscape and visual change at South Kyme; **Photomontage 1** illustrates the scale of visual change along the route due to the application proposal with Bicker Fen visible in the background.

#### A17 between Sleaford and Holbeach;

- 5.644 Between Sleaford and Holbeach, travelling in either direction, the operational Bicker Fen Windfarm would be frequently visible, at distances of between about 5-15km, seen obliquely or at right angles to the route. The proposed Heckington Fen Wind Park would also be visible at right angles, obliquely and aligned to the route at similar distances, but closer – within 1km when passing through East Heckington – see **Photomontage 2**. The Billingborough Windfarm proposal would be occasionally visible at distances of between 10-20km. With the exception of the Gedney / Holbeach Marsh Windfarm cluster which would be frequently visible approaching Holbeach, the

other CASs would either have a very low and / or infrequent presence in views or would not be visible from the road. The predicted cumulative change to landscape character and views along the route as a whole would be medium magnitude at most (at East Heckington) which would give rise to a minor / moderate sequential cumulative effect. **Photomontages 5, 19 and 21** indicate the character of views from the route and illustrate the predicted cumulative effect in relation to Bicker Fen Windfarm and the application proposal at these points.

#### A1121 between Boston and Swineshead Bridge;

- 5.645 Travelling east from Boston to Swineshead Bridge the operational Bicker Fen Windfarm would be frequently, but intermittently visible in combination with the proposed Heckington Fen Wind Park, at distances of between approximately 5-12km seen obliquely to the route. The Bilingborough Windfarm proposal would be occasionally visible at distances of between 10-18km. The other CASs would not be visible from the route due to their relative locations and the fenland landscape context. The predicted cumulative change to landscape character and views along the route as a whole would be low to medium magnitude at most which at would give rise to a minor sequential cumulative effect. **Cumulative Wireline 20** shows the relationship between the CAS and the application proposal seen from an elevated at position at Boston. **Photomontages 15, 8 and 5** illustrate the character of the route and the scale of landscape and visual change moving in an easterly direction.

#### Railway between Sleaford and Boston;

- 5.646 Views from the railway along this section of track would be similar to those available to travellers using the A17 / A1121 between Sleaford and Boston. The operational Bicker Fen Windfarm would be frequently visible, at distances of between about 5-10km, seen obliquely or at right angles to the route. The proposed Heckington Fen Wind Park would also be visible at right angles, obliquely and aligned to the route at similar distances, but farther away– just over 2km when passing through Swineshead Bridge – see **Photomontage 5**. The Bilingborough Windfarm proposal would be occasionally visible at right angle / obliquely at distances of between 10-15km. The other CASs would either not be visible from the route or would have a very low and / or infrequent presence in views. The predicted cumulative change to landscape character and views from the railway as a whole would be low to medium magnitude at most which at would give rise to a minor sequential cumulative effect. **Photomontages 8, 9 and 15** indicate the character of views from the route and illustrate the predicted cumulative effect in relation to Bicker Fen Windfarm and the application proposal at these points.

#### B1192 between Kirton and Woodhall Spa via Hubbert's Bridge;

- 5.647 Travelling between Kirton and Coningsby / Woodhall Spa in either direction the operational Bicker Fen Windfarm would be occasionally visible, at distances of between about 6-15km or more, seen obliquely or at right angles to the route. The proposed Heckington Fen Wind Park would also be visible at right angles, obliquely and aligned to the route at similar distances – within 5km when passing through Hubbert's Bridge and Langrick Bridge – see **Photomontages 8 and 10** for an indication of the character of views from the route and illustration of the predicted cumulative effect in relation to Bicker Fen Windfarm and the application proposal at those points. The Bilingborough Windfarm proposal would be occasionally visible (theoretically) at distances of between 15-25km. The other CASs would either have a very low and / or infrequent presence in views or would not be visible from the road. The predicted cumulative change to landscape character and views along the

route as a whole would be low magnitude at most (around Hubbert's Bridge) which would give rise to a negligible / minor sequential cumulative effect.

#### A52 between the A15 intersection and Boston

- 5.648 This east west route across the Fens passes relatively close (within 3km) to both the operational Bicker Fen Windfarm and the proposed Bilingborough Windfarm. The application proposal at Heckington Fen lies about 5km to the north east of the road at its closest point near Swineshead – see **Photomontage 11**. The other CASs would either not be visible from the route or would have a very low and / or infrequent presence in views. The predicted cumulative change to landscape character and views from the route attributable to the proposed Heckington Fen Wind Park would be low magnitude at most which would give rise to a negligible / minor sequential cumulative effect. **Photomontages 15, 17 and 23** indicate the character of views from the route and illustrate the predicted cumulative effect in relation to Bicker Fen Windfarm and the application proposal at these points. **Cumulative Wireline 23** shows the arrangement of CAS in relation to the application proposal from the western end of the route about 5km north west of Bilingborough.

#### B1391 Swineshead to Kirton / Boston

- 5.649 A short journey through the settled fenland in which the operational Bicker Fen Windfarm would be occasionally visible aligned to the route when travelling west at distances of between approximately 3-10km, and with the proposed Heckington Fen Wind Park seen obliquely or at right angles to the road,. The Bilingborough Windfarm proposal would be occasionally visible at distances of between 10-20km. The other CASs would not be visible from the route due to their relative locations and the landscape context. The predicted cumulative change to landscape character and views along the route as a whole would be low magnitude at most which at would give rise to a negligible / minor sequential cumulative effect. **Photomontage 11** illustrates the character of the route and the predicted visual change towards the western end of the journey.

#### B1394 / B1137 between Heckington and the A15 junction;

- 5.650 A north south route following the fenland fringe running broadly parallel with, and west of, the line of wind energy schemes (proposed and operational) formed by the Bilingborough, Bicker Fen and Heckington Fen schemes which are / would be spaced fairly regularly at an approximate interval of 5-6km apart. Bilingborough would be the closest scheme to the route whereas Bicker Fen and Heckington Fen are / would be set back at least 5km at the closest points. With respect to the Heckington Fen proposal the spacing, separation distances and landscape context would limit the magnitude of landscape and visual change to low and be sufficient to prevent significant sequential cumulative effects arising on the route. **Cumulative Wireline 13** illustrates the scale of cumulative landscape and visual change in the vicinity of Helpringham which would be negligible / minor at most.

#### A153 / A155 between Sleaford and Horncastle / A16 junction;

- 5.651 Between Sleaford and Horncastle (on the A153),and the A16 junction (on the A155) travelling in either direction, the operational Bicker Fen Windfarm would be occasionally visible, at distances of between about 15-25km, seen obliquely or at right angles to the route. The proposed Heckington Fen Wind Park would also be visible at right angles, obliquely and aligned to the route but closer – between 10-20km. At distances of between 15-35km and bearing in mind the fenland landscape context the Bilingborough Windfarm proposal would be too far away to generate any appreciable

cumulative effect. The other CASs would not be visible from the road, except for The Hollies Windfarm and to a lesser extent the proposed Orby Marsh Windfarm, both of which would (in theory) be glimpsed occasionally aligned to the route approaching its eastern end, but would have a very low presence in views,. The predicted cumulative change to landscape character and views along the route as a whole would be very low magnitude at most (around Billingham / North Kyme) which would give rise to a negligible sequential cumulative effect. **Photomontages 14, 16 and 25** indicate the character of views from the route and illustrate the predicted cumulative effect in relation to Bicker Fen Windfarm and the application proposal at these points.

#### Railway between Sleaford and Spalding:

- 5.652 Between Sleaford and Spalding the railway crosses the open fenland passing in between the operational Bicker Fen Windfarm and proposed Billingham Windfarm which would both be frequently visible, at distances of between about 2-10km or more, seen obliquely or at right angles to the track. The proposed Heckington Fen Wind Park would also be occasionally visible at right angles or obliquely to the route, but farther away— approximately 8km at the closest point in the vicinity of Helpringham – see **Cumulative Wireline 13**. The other CASs would either not be visible from the route or would have a very low and / or infrequent presence in views, including Deeping St Nicholas Windfarm situated to the south of Spalding. The predicted cumulative change to landscape character and views from the railway attributable to the application proposal would be low magnitude at most which would give rise to a negligible / minor sequential cumulative effect.

#### A16 between Spalding and A155 junction

- 5.653 Apart from the operational Deeping St Nicholas Windfarm south of Spalding the CAS and the proposed Heckington Fen Wind Park would have a very low and / or infrequent presence in views from the A16 due to the built-up and well vegetated character of the settled fenland through which the route runs when crossing the detailed study area – **Photomontages 21, 22 and 26** are illustrative of this. The predicted cumulative change to landscape character and views along the route as a whole would be very low magnitude at most which would generate a negligible sequential cumulative effect.

#### A15 between Folkingham and the B1191 junction.

- 5.654 The A15 crosses the low plateau landscapes of the Kesteven Uplands and Southern Lincolnshire Edge which afford some long distance views looking east across the adjacent Fens in which the application proposal and the closest CAS would be visible. **Cumulative Wirelines 23 and 24** show the relative positions of CAS in relation to the application proposal from sections of the route south and north of Sleaford respectively. At about 5km separation distance around Folkingham the proposed Billingham Windfarm would be closest to the route followed by Bicker Fen Windfarm (10km) and the proposed Heckington Fen Wind Park (14km). At a minimum distance of around 15km the predicted sequential cumulative change to views from the route attributable to the proposed wind park is predicted to be very low magnitude which would cause negligible cumulative effect.

#### **Summary of Sequential Cumulative Effects**

- 5.655 In summary, no significant additional cumulative landscape and visual effects would be experienced sequentially by people using, or making journeys on roads, railways, public rights of way and other

non-vehicular routes surrounding the site, or in the wider study area due to implementation of the proposed Heckington Fen Wind Park.

#### **RESIDUAL CUMULATIVE EFFECTS**

- 5.656 The proposed wind park would **not cause any significant additional cumulative landscape or visual effects** in the study area. No significant cumulative effects would arise on the character of The Fens (NCA 46), the Fenland (NKDC LCA 13), Reclaimed Holland Fen (BDC A1), or the neighbouring Southern Lincolnshire Edge (NCA 47); the distinctive landscape and special qualities of the Lincolnshire Wolds AONB would be unaffected. Views from residential properties, places of interest, publicly accessible areas, recreational resources and public rights of way surrounding the application site within 15km would not be significantly affected in a cumulative way including East Heckington, Swineshead Bridge, Amber Hill and South Kyme, plus Kyme Tower, Tattershall Castle, Boston Stump, National Cycle Route 1 and the Water Rail Way. None of the settlements, places of interest, long distance paths / cycle routes and other landscape resources in the wider study area would experience significant cumulative landscape and visual effects including the Macmillan Way, Viking Way and Lincoln Cathedral. No public highways in the study area would be affected cumulatively to any significant degree, including the B1395 Sidebar Lane, the A17 and the A1121.



## SUMMARY AND CONCLUSIONS

- 5.657 The application site is located at Heckington Fen, near Heckington in Lincolnshire, within the jurisdiction of North Kesteven District Council. The current development plan is the North Kesteven Local Plan – Adopted 2007. There are no valued or protected landscape features on the site within the red-line or blue-line areas. The proposed wind energy development consists of up to 22 wind turbines with an approximate height of 80 metres to the hub and 125 metres to the blade-tip. The preferred turbine is the Vestas V90 which has a rated output of 3MW, giving the wind park a total generating capacity of 66MW.
- 5.658 The application land holding is situated adjacent to A17 in undesignated countryside about 20km from the nearest designated landscape –the Lincolnshire Area of Outstanding Natural Beauty (AONB). The site and its immediate surroundings is characterised by intensive arable farmland set in fenland, delineated by drainage ditches with some remnant hedgerow, occasional trees and a few small deciduous woodland blocks. The surroundings are rural, open and settled, consisting mainly of small villages, hamlets and isolated dwellings / farmsteads. Major roads, electricity infrastructure and large scale agricultural buildings are prominent features in the landscape.
- 5.659 The proposals site is located in the ‘The Fens’ national character area (NCA 46), and the North Kesteven District Council ‘Fenland’ landscape character area (LCA 13). The Fens / Fenland is a large scale, man-made landscape, very flat land and open with extensive some views and huge skies. The wider landscape is made up of The Fens which extend north, south and eastwards to the Wash, the gently rising Southern Lincolnshire Edge (NCA 47) immediately to the west, and the gently undulating and more wooded Central Lincolnshire Vale (NCA 44) to the north with the Lincolnshire Wolds (NCA 43) further to the north east.
- 5.660 The local countryside displays some ‘developed’ characteristics due to the prominent built and/or man-made features located within it, including main roads, railways, electricity transmission lines / pylons, large scale farm buildings and, to a lesser extent, urban settlement. These developed landscape elements, combined with the underlying large-scale, man-made character and geometric pattern of drainage ditches, lower the sensitivity of the landscape and give the site a medium to high capacity to accommodate a wind energy development of the type and scale proposed.
- 5.661 Implementation of the proposed wind park would result in the loss, for the lifetime of the development, of about 10 hectares of arable land to accommodate the turbines and associated infrastructure. Approximately 139 linear metres of field boundary / ditch would need to be permanently modified / bridged / culverted to accommodate around 10,664m of access tracks, although the latter would be allowed to grass over in the longer term. These losses represent a fraction (approximately 1.6% and 0.3% respectively) of the total landscape resource of the land holding which is of low to medium sensitivity. On balance, therefore, the proposals would have a **negligible / minor** direct impact on the site landscape in the medium to long term which would be insignificant in EIA terms and would be reversible.
- 5.662 The proposed development would create a ‘wind farm’ landscape type or subtype in the immediate vicinity of the application site (up to approximately 1.5km and occasionally 2km from the nearest turbine within the ZTV of the proposals). This localised change in character would represent a significant landscape effect across a small part of the ‘The Fens’ national character area and the contiguous ‘Fenland’ / ‘Holland Reclaimed Fen’ local character areas up to approximately 1.5km from the nearest proposed turbine. No significant effect would arise on the adjacent character areas, and the character of the wider landscape would be relatively unaffected due to the large-scale, man-made landscape context combined with its partly ‘developed’ characteristics. On balance, the predicted effect overall on the host character area(s) would be **minor to moderate** which would be **not significant** in EIA terms. The effect on adjacent character units in the locality would be lower, diminishing with distance, and the wider study area would be relatively unaffected character wise.
- 5.663 **No significant landscape character effects** would arise on land designated for its landscape value in the study area as a result of implementing the proposed wind park. The special qualities and valued characteristics of Lincolnshire Wolds AONB would be preserved, and the panoramic views across the Lincolnshire fens and coastal marshes from the elevated vantage points in the Wolds would be unaffected. No Registered Historic Parks and Gardens or other designated areas would be affected from a landscape and visual point of view.
- 5.664 A small number of observers locally would experience **major**, or **moderate to major residual visual effects** for the lifespan of the wind park. These significant, but reversible, effects relating to local views and visual amenity are likely to be experienced by residents of approximately 52 residential properties and users of several public rights of way on, adjacent and / or very close to the site within roughly 2.5km of the nearest proposed turbine (and occasionally up to 3km in the case of certain public rights of way). Drivers using the A17 and B 1395 Sidebar Lane are predicted to experience moderate / major effects when passing the site within approximately 1km of the nearest proposed turbine which would be significant in EIA terms. However, drivers would not be distracted by the proposals from a highways safety point of view.
- 5.665 It is important to note that a significant visual effect at a particular private property or public location does not mean that the proposal would be overbearing or visually intrusive to such an extent that it would be harmful to residential or public amenity in planning terms. In addition, views of the wind park would not necessarily be perceived negatively. In general significant visual effects are not anticipated to arise beyond approximately 2.5km from the nearest proposed turbine.
- 5.666 During construction the proposed wind park would cause a small number of **major**, or **moderate to major visual effects**, where views permit, immediately surrounding the application site within roughly 2.5km of the nearest turbine. These effects would be broadly the same significance, or slightly less, than those identified for the operational phase of the wind park. It should be stressed that all construction effects would be temporary in nature and reversible, and confined broadly to the same ZTV as the operational phase.
- 5.667 The proposed wind park would cause **no significant additional cumulative landscape or visual effects** in the study area. No significant cumulative effects would arise at residential properties, settlements or towns in the area surrounding the application site, or in the wider study area along popular recreation routes including the Viking Way, Macmillan Way, Water Rail Way and National Cycle Route 1, or at places of interest and recreation resources such as Kyme Tower, South Kyme Golf Course Tattershall Castle and Boston Stump. In addition the special character and qualities of the Lincolnshire Wolds AONB would be unaffected from a cumulative point of view.



**STATEMENT OF RESIDUAL SIGNIFICANCE**

- 5.668 The proposed Heckington Fen Wind Park would cause a small number of significant landscape and visual effects during construction and operation within approximately 2km of the application site. These significant, but not unacceptable, effects would potentially occur at approximately 50 dwellings surrounding the site, short lengths of several public rights of way and highways within approximately 2.5km, occasionally up to 3km in the case of certain public rights of way, and the character of the host landscape within about 1.5km of the nearest proposed turbine. The remaining residential properties, public rights of way and other landscape resources in the study area would not be affected to any significant degree. No designated landscapes, popular recreation resources or places of interest (including cultural heritage features with public access) would be significantly affected. The special qualities of the Lincolnshire Wolds AONB, including panoramic views looking south across the Fens, would be conserved and no significant effects would arise on it or any other designated area or valued landscape.

5.669

**Table 5.10 Summary of Significant Landscape and Visual Effects**

Stage of development	Feature (Receptor)	Sensitivity	Description of Potential Effect	Effect Before Mitigation		Summary of Mitigation	Effect After Mitigation						
				Magnitude of change	Significance before mitigation		Magnitude of Change	Positive/Negative *	Landscape Policy (ie. PPS7)	Direct / Indirect /Secondary/ Cumulative	Short/ medium/ long term	Permanent/ Temporary	Residual Significance
O/C/D	Certain residential properties situated within 2.5km of the nearest turbine #1	High	Change to views / visual amenity	High / Medium to High	Major / Moderate to Moderate / Major	N/A	High / Medium to High	N/A	Adverse	Direct	Medium term	Permanent / Reversible	Major / Moderate to Moderate / Major
O/C/D	Landscape character up to 1.5km from nearest turbine #2	Medium to Low	Change to landscape character	Very High / High	Moderate / Major	N/A	Very High / High	N/A	Adverse	Direct and Indirect	Medium term	Permanent / Reversible	Moderate / Major
O/C/D	PRoW crossing and adjacent to site up to 1km from nearest #3turbine #3	High	Change to views / visual amenity	Very High	Major	N/A	Very High	N/A	Adverse	Direct	Medium term	Permanent / Reversible	Major
O/C/D	Rights of way between 1 to 2km (occasionally up to 3km) from nearest turbine #4	High	Change to views / visual amenity	High / Medium to High	Major / Moderate to Moderate / Major	N/A	High / Medium to High	N/A	Adverse	Direct	Medium term	Permanent / Reversible	Major / Moderate to Moderate / Major
O/C/D	Main roads adjacent to the site (within 1km) #5	Low	Change to views / visual amenity	High to Very High	Moderate / Major	N/A	High / Medium to High	N/A	Adverse	Direct	Medium term	Permanent / Reversible	Major / Moderate to Moderate /

**NOTES**

\* See Chapter 5 LVIA Methodology section for explanation of the nature and 'valency' of potential effects.

#1 Dwellings with potential to be significantly affected visually in a moderate / major way are restricted to approximately 52 with relatively open aspects looking towards the proposals at East Heckington (A17) and on Sidebar Lane, Clay Bank, Claydyke Bank and Brown's Drove. However a significant visual effect at a particular property does not mean that it would be overbearing or harmful in planning terms. It is important to note that the proposed site layout would ensure that reasonable residential amenities of existing properties would be protected in accordance with normal development control criteria.

#2 Small tract of The Fens (NCA 46) / Fenland (NKDC LCA 13) / Holland Reclaimed Fen (BDC LCA A1) national / local character area(s) incorporating application site / landholding within approximately 1.5km of nearest proposed turbine.

#3 Definitive Footpath Heck/15/1 lies within 0.5-1km of the nearest proposed turbine.

#4 Sections of Definitive Footpaths. SKym/2/1, SKym/3/1 (including public track to Mill Green Farm), GtHa/cs/1 and Ambe/4/1 lying between 1km and approximately 3km from the nearest proposed turbine.

#5 Short stretches of the A17 and B1395 Sidebar Lane passing the application site within approximately 1km of the nearest proposed turbine.

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## GLOSSARY OF TERMS

AAL – Area of Attractive Landscape

AGLV – Area of Great Landscape Value

ALLI – Area of Local Landscape Importance

AONB – Area of Outstanding Natural Beauty

CAS – Cumulative Assessment Scheme

DECC – Department of Energy and Climate Change

HMGCC – Her Majesty's Government Communications Centre

JCA – Joint Character Area

LCA – Landscape Character Area

LVIA – Landscape and Visual Impact Assessment

MW – Megawatt

NCA – National Character Area

NNR – National Nature Reserve

POS – Public Open Space

PPS – Planning Policy Statement

PRoW – Public Right of Way

SLA – Special Landscape Area

SAM – Scheduled Ancient Monument