

June 2014

## Wind Energy Development in Huntingdonshire SPD





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## Introduction and Summary

- 1 Supplementary Planning Documents (SPD) are produced to expand upon the policies contained in the adopted development plan for the area<sup>(1)</sup>. The role of an SPD is to provide guidance on the application of existing Policies in the Adopted Development Plan. The SPD does not form part of the development plan nor is it intended to provide policies beyond those within the development plan. The overall purpose of this SPD is to assist the interpretation and application of those policies concerned with landscape character, visual impacts, and the location of wind turbine developments. The SPD specifically focuses on these issues and does not consider other impacts which may also be associated with wind turbine development. This SPD is composed of two parts:

### Part 1: Landscape Sensitivity to Wind Turbine Development

### Part 2: Cumulative Landscape and Visual Impacts of Wind Turbine Development

- 2 Part 1 of the guidance seeks to:
- provide information on the relative sensitivity and capacity of the district's landscapes in relation to wind turbines;
  - indicate criteria that need to be taken into account when considering specific proposals of this type; and
  - provide guidance on potential mitigation measures where appropriate.
- 3 Part 2 of the guidance seeks to:
- evaluate the current cumulative landscape and visual impacts of wind turbine developments in the district
  - provide guidance on criteria for the assessment of cumulative landscape and visual impacts of wind turbine developments
- 4 Part 1 of the guidance is a revised and extended version of the February 2006 SPD: Wind Power. An earlier revision was subject to public consultation from November 2012 until January 2013, but was not adopted by Council.
- 5 Part 2 originated as a Position Statement "Cumulative Landscape and Visual Impacts of Wind Turbine Developments in Huntingdonshire" prepared for the Council by The Landscape Partnership (TLP) in May 2013.
- 6 Parts 1 and 2 together form comprehensive guidance on all scales of proposed wind turbine development in Huntingdonshire. The SPD is intended to set out a positive approach to guide development rather than absolute thresholds. It should help to guide proposals to the most appropriate locations and ensure that the key features and values of Huntingdonshire's landscapes are safeguarded.

### Summary

- 7 Part 1 includes numeric guidance on the potential capacity of each character area, effectively giving an overview of the relative capacities of the different character areas: equally importantly it also lists site specific guidance criteria for each character area. These criteria must be addressed when considering the potential landscape and visual impacts and the suitability of the actual location of a proposed development.
- 8 **Its analysis of landscape sensitivity is based on a scenario of no existing wind farms – the assessment is purely concerned with how the various landscape characteristics of each area might potentially be affected by different scales of turbine development. Therefore the site specific**

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1 See Chapter 'Policy and Guidance' for details.

# Introduction and Summary

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**guidance criteria given for each of the district's component character areas in Part 1 are valid whatever the current level of turbine development in the district.** If this were not the case then the analysis would have to be revisited after each new development consent – which would be clearly impractical.

- 9** Part 2 is an analysis of the current (as of 1 January 2014) cumulative landscape and visual impacts associated with the operational and consented turbine developments in the district. The scale and extent of the impact of each development is quantified according to the height and number of turbines. The zones of greatest impact are calculated for each LCA.
- 10** **By reference to the overview of the relative capacities established in Part 1, guidance thresholds are proposed in Part 2 which establish an upper limit to the extent of the greatest cumulative impacts in each LCA. The more sensitive the LCA, the lower the guidance thresholds.** The difference between the guidance threshold area and the actual level of impact gives an indication of the “spare” capacity (or lack of it) for future turbine development in each LCA.
- 11** **This SPD is concerned only with the landscape and visual issues which are associated with wind turbine development. Proposals will also need to address other factors that need to be taken into account when assessing the wider potential effects of such proposals, such as biodiversity, the heritage assets, tranquillity, noise, shadow flicker, and the effect upon people living and working in the vicinity. It is essential to stress that every proposed turbine development must be considered on its merits and in the light of each of the component elements of the SPD – site specific guidance criteria, numeric guidance, and thresholds for cumulative impacts. A full and proper assessment of the potential effects of a proposal will only be known when it has been examined with regard to all these factors that make up the SPD.**

## Policy and Guidance

- 12 This section sets out planning policy and guidance relevant to the consideration of landscape and visual impact, including cumulative impacts, of wind turbine development proposals.

### The National Planning Policy Framework (March 2012)

- 13 The National Planning Policy Framework (NPPF) was published in March 2012. The key paragraphs in the NPPF relevant to the cumulative effect of wind turbine development are [97](#) and [98](#).

### The National Policy Statements for Energy EN1 and EN3

- 14 National Policy Statements EN1 and EN3 were primarily produced to advise on large energy infrastructure projects (>50MW). However, the NPPF paragraph 97 also refers to EN1 and EN3 as being relevant considerations and advises that local planning authorities should follow the approach in these documents and for this reason they are still relevant. However, EN1 and EN3 do not include any specific guidance on cumulative landscape and visual effects. However EN1 does state at para 5.9.19 that *'It may be helpful for applicants to **draw attention, in the supporting evidence to their applications, to any examples of existing permitted infrastructure they are aware of with a similar magnitude of impact on sensitive receptors.** This may assist the IPC in judging the weight it should give to the assessed visual impacts of the proposed development.'* This would seem to support the use of other schemes where there may be cumulative impact issues to 'benchmark' any cumulative landscape and visual impact.

### Planning Practice Guidance

- 15 The [Planning Practice Guidance](#) was published by the Department for Communities and Local Government (DCLG) in March 2014. It replaced the previous Planning Practice Guidance for Renewable and Low Carbon Energy published in July 2013 that in turn had replaced the PPS 22 Companion Guide. The guidance has a section that deals with [renewable and low carbon energy](#).

### Placing Renewables in the East of England

- 16 Although the East of England Plan was revoked in 2012 parts of the evidence base remain relevant. The regional renewable energy study 'Placing Renewables in the East of England' produced by Ove Arup in February 2008 considered the potential of the Eastern region to accommodate (among other technologies) wind turbine development. It was based on a regional strategic and largely desk based approach that identified the landscape capacity based on the National Character Area (NCA) scale of unit. The study found that both NCA 46 (The Fens) and NCA 88 (The Bedfordshire and Cambridgeshire Claylands) had a 'low-medium/ medium' sensitivity to wind turbines at a height of 100 to 140m. The findings of this assessment were due to the relatively large scale and simple nature of the two NCA landscapes assessed as a whole. However, there are some marked local variations within the claylands in particular that would indicate more variable sensitivity at a local scale.
- 17 With regard to cumulative impacts an estimate of the theoretical 'maximum' capacity of the NCA's was undertaken. This identified that major visual effects could occur at up to 10km distance (based on research by The University of Newcastle upon Tyne). However, with modifying factors including tree screening in the region it was considered that tolerance of severe-major effects up to 5km may be acceptable in cases where there are fewer receptors, such as sparsely populated and less sensitive landscapes. In these locations a separation distance of 10km between wind farms was therefore examined to assess capacity. Where there were a greater number of receptors or a higher sensitivity landscape, greater separation distances of 15km between wind farms was considered to avoid notable cumulative impact on receptors and overwhelming the scale of the landscape involved.

## Assessing the cumulative impact of onshore wind energy developments

- 18 Scottish Natural Heritage published 'Assessing the Cumulative Impact of Onshore Wind Energy Developments' in March 2012 as an updated version of their earlier 2006 document on cumulative effects. It covers the effect on landscape and birds. This study forms one of the most detailed guidance documents in the UK on assessment of cumulative landscape and visual effects. The majority of the publication guides local authorities, applicants and consultants on how to carry out cumulative assessment for specific applications. However, it also provides guidance on strategic planning. Reference is made to 'Strategic Locational Guidance for onshore Wind farms in respect of the Natural Heritage Policy statement no. 02/02' (SNH) which notes the presence of three zones of sensitivity in Scotland.

### Zone 1:

Lowest natural heritage sensitivity identifies areas at the broad scale with least sensitivity to wind farms, with the greatest opportunity for development, within which overall a large number of developments could be acceptable in natural heritage terms, so long as they are undertaken sensitively and with due regard to cumulative impact. (15% of land area of Scotland).

### Zone 2:

Medium natural heritage sensitivity identifies areas with some sensitivities to wind farms. However, by careful choice of location within these areas there is often scope to accommodate development of an appropriate scale, siting and design (again having regard to cumulative effects) in a way which is acceptable in natural heritage terms. (55 % of land area of Scotland)

### Zone 3:

High natural heritage sensitivity identifies areas of greatest sensitivity to wind farms, which place the greatest constraint on their development, and where, in general, proposals are unlikely to be acceptable in natural heritage terms. There may however be some sites in this zone where wind farm development of appropriate scale and careful design could be accommodated if potential impacts on the natural heritage are fully explored and guarded against by employing the highest standard in siting and design. (30% of land area of Scotland)

- 19 The 2012 SNH cumulative guidance also states at para 18 that in relation to Strategic Planning:

18. In all cases, the focus is on forward planning: setting out the vision for windfarm development; and determining the thresholds of acceptable change, where the most suitable locations for development are, and what might be an appropriate design and scale.

19. The strategic plans (often underpinned by a landscape capacity study) should consider a range of specific scenarios, in terms of the numbers, scale and distribution of windfarm developments to be accommodated. It should then make use of the resulting cumulative impact assessment to draw conclusions as to which of these scenarios is acceptable.

20. The area included within a strategic cumulative assessment should not be constrained by administrative boundaries. Effective assessments should cover the whole of a region, straddling more than one planning authority, or that of a natural heritage management unit such as a National Park or Firth Partnership area.

21. Planning authorities are encouraged by Scottish Planning Policy to:

- define broad areas of search suitable for large scale (>20MW) wind farms (equal to approximately 10no. 125m turbines)
- identify the criteria they should meet through the development of Supplementary Planning Guidance.



22. This approach will have enhanced value if it is also associated with a view of the capacity of the area for such development and identification of the critical factors which are likely to present an eventual limit to development. We have recently published a review of landscape capacity studies which provides useful advice.

20 The above extracts identify that the identification of thresholds is appropriate together with the fact that there would be an eventual likely limit to development. The approach to using various scenarios of development has been undertaken by a number of authorities in Scotland and England. However, no firm figures or hard thresholds are provided in the SNH guidance identifying the likely limit of development. Clearly the landscape capacity and other factors will vary locally.

21 Section 3 of the SNH report notes at paragraph 45:

The cumulative impact of windfarm development on landscape and visual amenity is a product of:

- the distance between individual windfarms (or turbines),
- the distance over which they are visible,
- the overall character of the landscape and its sensitivity to windfarms,
- the siting and design of the windfarms themselves, and
- the way in which the landscape is experienced.

22 These factors are all important and can form a consideration in the development of strategic advice at the local scale for the Council.

### Guidelines for Landscape and Visual Impact Assessment

23 The Guidelines for Landscape and Visual Impact Assessment (GLVIA) is now in its third edition. The updated 2013 version includes for the first time a chapter (7) on cumulative landscape and visual effects. It recognises that the study of cumulative effects for wind turbine development has been at the forefront of the development of cumulative assessment in part due to the number and size of the structures involved. The majority of Chapter 7 in the GLVIA is focused on the process of guidance for carrying out a cumulative assessment for a specific proposal. This is logical as the primary purpose of the GLVIA is to guide those carrying out EIAs. Part of the process includes identification of which other schemes to include in a cumulative assessment. The GLVIA indicates that this should usually be those that are existing, consented or at planning application/appeal stage. Only in exceptional circumstances should it include those not yet submitted as a planning application and in such circumstances this is more likely to apply to nationally significant infrastructure projects (i.e. >50MW for wind turbines).

24 Para 7.17 of the GLVIA sets out a range of types of cumulative effects including the following which are considered to be of particular relevance to wind turbine development:

- *An extension to an existing scheme or a new development that intensifies the landscape and visual effects in addition of other existing schemes*
- *Filling an area with the same or different types of development over time such that it substantially alters the landscape resource, views or visual amenity*
- *Incremental change such that the combined landscape or visual effect becomes significant even though the individual schemes in their own right may not be – this may e.g. apply to a number of smaller turbines within an area*

- 25 In relation to the extent of a study area the GLVIA suggests (para 7.21 and 7.30) that this may be reflected via the use of LCAs as a unit to assess the effects and/ or through combined Zones of Theoretical Visibility (ZTV). The GLVIA also encourages a practical and pragmatic approach to cumulative study areas to ensure that the assessment is focused on identifying the extent of 'significant' cumulative effects rather than recording any level of effect regardless of the level of magnitude that may occur.
- 26 The GLVIA also considers cases where there may be wider concerns about cumulative impacts where it states at para 7.41:

where the cumulative landscape and/or visual effects of the proposal combined with the cumulative baseline lead to a need for the consenting authority to take broader action, such as implementing an overarching mitigation programme or amending planning policies **based on their judgement that the effects on receptors have reached or passed an acceptable threshold.**<sup>1</sup>

- 27 The above extract would indicate that an approach such as that set out in this SPD have a basis for identifying thresholds and criteria to assess current and future applications where cumulative issues are involved.

### The Development Plan

- 28 The development plan is currently made up of saved policies from the Huntingdonshire Local Plan 1995 and Alteration 2002 (except those superseded by the Core Strategy), the Core Strategy 2009, and the Huntingdon West Area Action Plan 2011.
- 29 The Council is in the process of producing a single Local Plan for Huntingdonshire that will replace all current parts of the Development Plan.
- 30 The guidance in this SPD therefore supplements planning policies contained in a number of documents as follows:

### The Adopted Development Plan Policies:

- Core Strategy 2009, policy CS 1: Sustainable Development in Huntingdonshire

### Emerging Development Plan Policies:

- The emerging Local Plan to 2036, policy LP 5: Renewable and low carbon energy<sup>(2)</sup>

### Wind Turbine Development - A Guidance Note for Applicants and Agents

- 31 This SPD is accompanied by a guidance note for applicants and agents. The guidance note provides guidance on the factors to include in the assessment leading to planning applications whether as part of an ES or as supporting information for an application that does not require an ES. There is no specific guidance related to cumulative effects in this note.

### Recent Policy Context

- 32 The effects of climate change have had an important impact on national and international policies towards energy supply. The UK Government has committed itself to achieving significant reductions in greenhouse gas emissions and an increase in the proportion of our energy that comes from renewable sources.

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2 Please note that the Local Plan is currently in the process of being produced and as such the policy reference may not reflect that which is eventually adopted

33 This commitment, coupled with Government support for renewable technologies, has led to an increasing number of applications for wind turbine developments across the country.

34 Paragraph 97 of the National Planning Policy Framework (NPPF) requires that local planning authorities should:

- *have a positive strategy to promote energy from renewable sources;*
- *design policies to maximise renewable and low carbon energy development while ensuring that adverse impacts are addressed satisfactorily, including cumulative landscape and visual impacts; and*
- *consider identifying suitable areas for renewable and low carbon energy sources, and supporting infrastructure, where this would help secure the development of such sources.*

35 The footnote to the above paragraph in the NPPF recommends that planning authorities should follow the approach set out in the National Policy Statement for Renewable Energy Infrastructure (read with the relevant sections of the Overarching National Policy Statement for Energy Infrastructure). Where plans identify areas as suitable for renewable and low-carbon energy development, they should make clear what criteria have determined their selection, including for what size of development the areas are considered suitable<sup>(3)</sup>.

36 The NPPF requires local planning authorities to approve applications if their impacts are (or can be made) acceptable. It also requires that once suitable areas for renewable and low carbon energy have been identified in plans, local planning authorities should expect subsequent applications for commercial scale projects outside these areas to demonstrate that the proposed location meets the criteria used in identifying suitable areas<sup>(4)</sup>.

37 This guidance does not seek to identify suitable areas for wind turbine development, however it does identify:

- the potential capacity of the landscape character areas (LCAs) found in the district to accommodate wind turbine development, of a range of group sizes, without significant adverse changes to the character of the landscape; and
- criteria to be used in the assessment of individual sites so that the landscape and visual impacts of individual proposals can be assessed in a consistent and transparent manner.

38 At the heart of the NPPF is a presumption in favour of sustainable development<sup>(5)</sup>. The primacy of the development plan remains, so development proposals that accord with the plan should be approved unless material considerations indicate otherwise. However, if the plan is absent, silent or relevant policies are out-of-date the presumption in favour of sustainable development means that development proposals should be approved unless any adverse impacts of doing so would significantly and demonstrably outweigh the benefits, when assessed against the policies in the NPPF taken as a whole, or policies in the NPPF indicate that developments should be restricted.

39 The [National Planning Practice Guidance](#) makes it clear that:

- the need for renewable or low carbon energy does not automatically override environmental protections;
- cumulative impacts require particular attention, especially the increasing impact that wind turbines and large scale solar farms can have on landscape and local amenity as the number of turbines and solar arrays in an area increases;

3 [National Planning Policy Framework paragraph 97](#)

4 [National Planning Policy Framework paragraph 98](#)

5 [National Planning Policy Framework paragraph 14](#)

- local topography is an important factor in assessing whether wind turbines and large scale solar farms could have a damaging effect on landscape and recognise that the impact can be as great in predominately flat landscapes as in hilly or mountainous areas;
- great care should be taken to ensure heritage assets are conserved in a manner appropriate to their significance, including the impact of proposals on views important to their setting;
- proposals in National Parks and Areas of Outstanding Natural Beauty, and in areas close to them where there could be an adverse impact on the protected area, will need careful consideration;
- protecting local amenity is an important consideration which should be given proper weight in planning decisions.

## 1 Part 1: Landscape Sensitivity

- 1.1 Part 1: “Landscape Sensitivity to Wind Turbine Development” is based on the original Wind Power SPD (2006) which has been revised in the light of:
- the publication of the National Planning Policy Framework (NPPF);
  - the publication of Planning Practice Guidance for Renewable and Low Carbon Energy (DCLG July 2013)
  - the development of the methodological approach to assessing the landscape sensitivity to wind turbine development that has taken place since 2005;
  - certain inconsistencies that have been identified between the SPD and Wind Turbine Development in Huntingdonshire (2005), the study undertaken by Land Use Consultants that underpinned the SPD (described in this SPD as the LUC study); and
  - the need for guidance on the siting and design of smaller turbines
- 1.2 Clearly, turbines can form a very visible feature in the landscape, although not all landscapes are sensitive to the same degree. This part of the SPD provides strategic guidance on the characteristics that need to be considered, and is intended to set out a positive approach to guide development rather than absolute thresholds. It should help to guide proposals to the most appropriate locations and ensure that the key features and values of Huntingdonshire's landscapes are safeguarded.
- 1.3 **While this part of the SPD provides an initial indication of the relative sensitivity and capacity of different areas it should not be interpreted as a definitive statement that a particular landscape is suitable for a particular development. Every site is unique, and any proposal involving wind turbines must be informed by a detailed site-specific analysis of landscape constraints and impacts.**
- 1.4 This part of the SPD is split into fourteen chapters. This introduction continues with a brief explanation of the basis for the guidance. Chapter 2 'Overview of landscape capacity' then sets out the principles that have informed the work, and provides an overview of the potential capacity of each landscape character area (LCA). This is followed by ten chapters that provide detailed guidance for each of the nine character areas, and additionally for proposals located at the edge of urban areas. There has been no revision to the guidance for proposals located at the edge of urban areas. Chapters 13 and 14 are new; 13 'Siting and design issues for turbines less than 100m' contains advice on the siting of single or small groups of turbines below 100m, 14 'Landscape Sensitivity Criteria' list the criteria on which the landscape sensitivity assessments are based.

### Basis for the guidance

- 1.5 This part of the SPD is a revision of the February 2006 Wind Power SPD which was based upon the research undertaken for the Council in the LUC study. That study built upon earlier work undertaken by Landscape Design Associates to characterise Huntingdonshire's landscapes. This was adopted by the Council as Supplementary Planning Guidance in 2007<sup>(6)</sup>. The Landscape and Townscape Assessment identified nine landscape character areas in Huntingdonshire, ranging from the rolling Wolds in the west to the low-lying Fens in the north-east. These landscape character areas are shown in figure 1.1.
- 1.6 The work carried out by LUC aimed to articulate those characteristics of the landscape character areas that are sensitive to different forms of turbine development, and to combine this with an understanding of any special values attached to those landscapes in order to gain an understanding of their relative capacity for wind turbine development. In recent sensitivity studies the section on landscape values is more likely to be included as perceptual characteristics whose sensitivity to wind turbine development can be assessed alongside the sensitivity of the physical characteristics. Although the approach in the LUC study is more complicated it addresses the same issues and the final capacity judgment reflects both the physical and perceptual sensitivities of the landscape.

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6 Huntingdonshire Landscape and Townscape Assessment (HDC 2007)

# 1 Part 1: Landscape Sensitivity

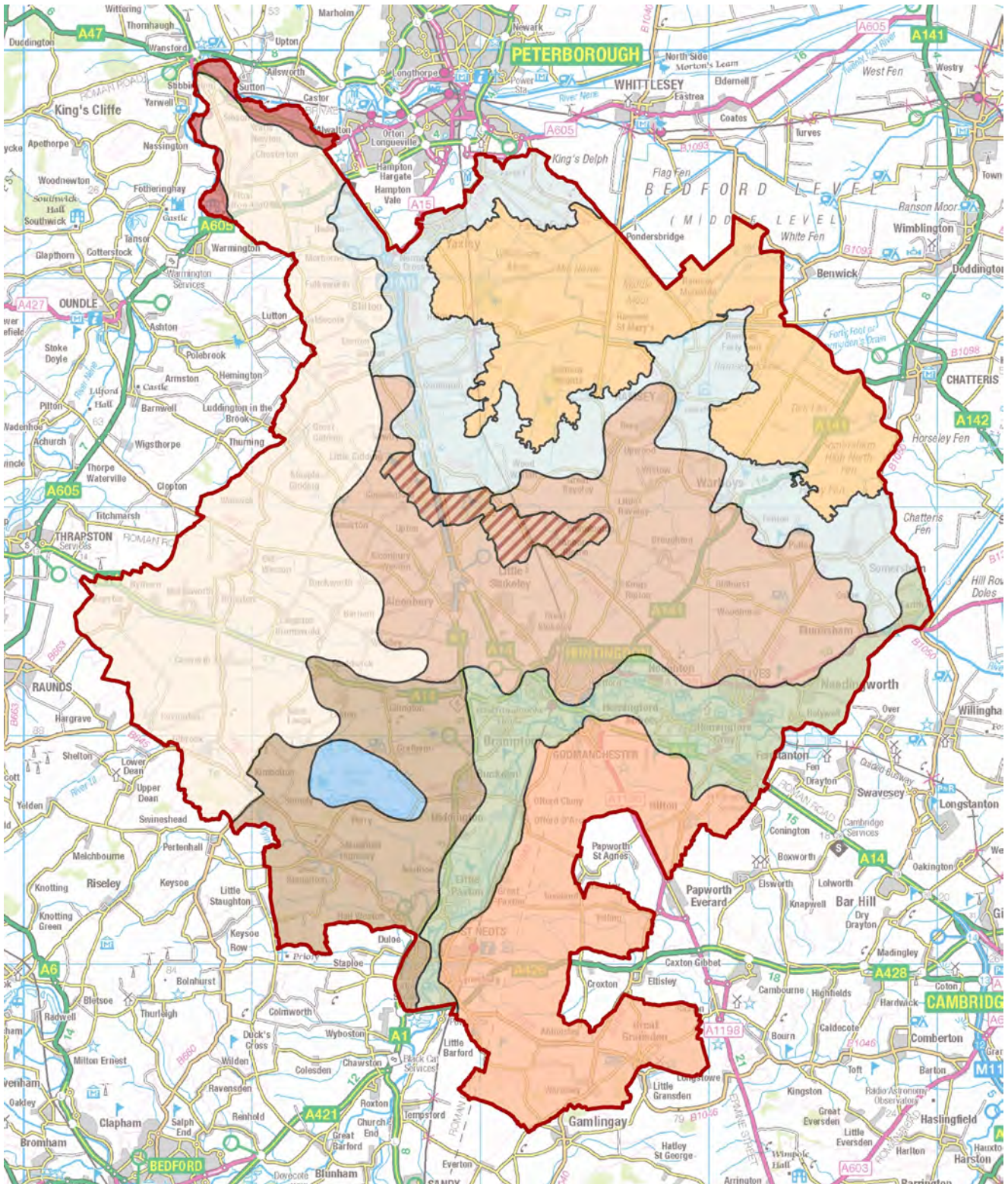
- 1.7 The LUC study was undertaken in accordance with best practice approaches to landscape assessment current in 2005<sup>(7)</sup> and was also informed by an understanding of those types of turbine development most likely to come forward in the area (taking into account prevailing wind speeds and the relative efficiency of different turbine models). The study assumes that commercial turbines of up to 120m in height (to the top of the blade) will be most efficient, but that variations in height of + or - 20m will not be discernible on the ground. Although there are now commercial turbines of up to 150m none of these have yet been proposed for Huntingdonshire. This SPD does not assess the capacity of the landscape to accommodate 150m high turbines although the analysis of the landscape characteristics would be relevant to the assessment of any proposals for turbines above 140m in height.
- 1.8 **When the LUC study was undertaken there were no operational or consented wind turbine developments in Huntingdonshire. The conclusions reached in the study refer to the capacity of the landscape without any existing wind turbines and these conclusions have not been revised. Their inclusion in this revised SPD does not imply capacity over and above those schemes that have been consented or built since the study was undertaken.**
- 1.9 The LUC study was concerned with turbines of between 100 and 140m. In recent years there has been an increase in the number of applications for single turbines below 100m. It is anticipated that these applications will continue and that in addition there may be applications for small groups of say 2 to 3 small turbines. Additional guidance on the siting of turbines below 100m in height has been provided in a new chapter (13 'Siting and design issues for turbines less than 100m').
- 1.10 A number of important points should be borne in mind concerning the scope and use of both the LUC study and this SPD:
- the study was undertaken from the starting point that wind turbine applications will continue to come forward within the district; it does not debate the merits of wind turbines vis-à-vis other forms of renewable energy development or offshore turbine development;
  - the LUC study only considers landscape and visual considerations and, as noted above, there are many other factors which will influence decisions;
  - this SPD provides a starting-point for decision-making, but local variations in character will need to be considered in relation to individual proposals, as part of the detailed site-specific assessment; and
  - Cumulative impacts are dealt with in part 2 of this SPD "Wind Energy Development in Huntingdonshire" (2014).
- 1.11 The Council has prepared a "Guidance Note for Applicants and Agents of Wind Turbine Developments". This sets out what information the Council requires in order to effectively progress Pre-Application discussions and Planning Applications. It can be viewed on the [Council's website](#).

Legend to Figure 1.1



7 The principal guidance is still Landscape Character Assessment: Guidance for England and Scotland (Countryside Agency and Scottish Natural Heritage, 2002)

Figure 1.1 : Landscape Character Areas in Huntingdonshire



# 2 Overview of landscape capacity

## 2 Overview of landscape capacity

### How to use Part 1

- 2.1** This chapter provides an overview of the guidance in Part 1 of this SPD, including the key landscape and visual considerations that need to be assessed and a summary of the potential capacity in the different landscape character areas.
- 2.2** More detailed guidance on the siting, form and arrangement of turbines and ancillary structures is contained in each of the chapters that follow (one for each character area). Where a proposed scheme is close to the boundary between two LCAs the guidance for each LCA will be considered. Further information on the basis for the capacity assessments can be found in the LUC Study.
- 2.3** One of the most significant changes between the original SPD and this revised SPD is the definitions of the scale of turbine development with regard to number of turbines within a group. The LUC study is one of the earliest landscape sensitivity studies undertaken in England. The assessment considered the sensitivity of the landscape to four broad types of development based on the number of commercial turbines and defined these as single (1), small (2-12) medium (13-24) and large (25 plus).
- 2.4** Subsequent wind turbine landscape sensitivity studies which have been undertaken in southern and eastern England both by LUC and other consultants have tended to subdivide the first group and it is now widely recognised that 12 turbines do not represent a small group in terms of the landscapes of southern and eastern England. In more recent studies a small group has rarely included more than 6 turbines and sometimes as few as 3. The important study “Placing Renewables in the East of England” (by Ove Arup for EERA, 2008) categorised a small group as 2-3 turbines. Medium scale groups are generally up to 12 turbines with 12-25 considered either a large group or a medium/ large group. 25 turbines and above are described as large or very large groups. Even within a small group defined as 2-6 turbines it has been accepted at appeal<sup>(8)</sup> that it may be justified to advise that fewer than six (e.g. 2-3 turbines) may be the maximum that can be accommodated.
- 2.5** In the light of more recent approaches to the assessment of landscape sensitivity to wind turbine development the scales of turbine development applied in the original SPD have been refined and the original assessments reviewed.
- 2.6** The new group sizes to be considered are as follows:
- Single turbine
  - Small Group: 2-5 turbines
  - Medium Group: 6-12 turbines
  - Large Group: 13-20 turbines
- 2.7** It must be noted that the upper limit to the “large group” category in no way precludes applications for even larger scale developments – only that the guidance in this SPD would not support such a scale of development, however each case would still be considered on its merits.
- 2.8** Within each of these groups there may be minor qualifications. These will be drawn out from the details of the original LUC study as assessed using professional judgement of suitably qualified landscape personnel, with the aim of making this revised SPD a more usable and coherent document.
- 2.9** The 25 plus group has been omitted from this SPD. Although this group size was initially considered the LUC study concluded that nowhere in the district was suitable for turbine groups of above 25. This conclusion is consistent with current approvals; and considering current and recent schemes in the region it is proposed to amend the upper limit of the “large group” category to 20 turbines.

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8 Appeal Decision APP/L2630/A/08/2084443 Land around Busseys Loke, Hempnall, Norfolk



- 2.10** The largest approved/ operational onshore scheme (not including those schemes with later extensions) in eastern England is a 13 turbine scheme at Wadlow Farm in Cambridgeshire<sup>(9)</sup>. Further support for this conclusion can be found in the 2008 study by Ove Arup for the East of England Regional Assembly<sup>(10)</sup> which undertook a regional level landscape sensitivity and capacity study. This study considered groups of 25 turbines and above but concluded that groups of this size were unlikely to be appropriate in the East of England<sup>(11)</sup>. In the detailed findings of the study the maximum number of turbines considered likely to be acceptable was 16<sup>(12)</sup>. In the light of these figures it is contended that an upper limit of 20 turbines for the “large group” is both realistic and sensible.
- 2.11** Capacity judgements in relation to each scale of development are presented on the following basis:<sup>(13)</sup>
- Low capacity to accommodate wind turbines: development would be likely to result in a significant adverse change in landscape character and/ or affect key landscape values
  - Moderate capacity to accommodate wind turbines, without detriment to landscape character: there are likely to be key sensitivities or values that must be respected in relation to turbine development; in particular, proposals must follow the guidance on siting, form and cumulative impacts
  - High capacity to accommodate wind turbines: there is an opportunity to locate turbine development without affecting key characteristics and/or values in the landscape, although the guidance on siting, form and cumulative impacts should be followed.
- 2.12** Note that in the following chapters detailed guidance is provided only for those character areas where potential capacity has been assessed as either moderate or high.

### Key considerations

- 2.13** This part of the SPD deals solely with landscape and visual matters. There are many other issues that need to be taken into account when considering wind turbine development. Other considerations are set out in the policy documents listed in 'Policy and Guidance', and these must also be addressed in the course of developing specific proposals. However there is a necessary overlap between the assessment of landscape and visual impacts and the assessment of the impact of wind turbines on the setting of heritage assets because in almost all cases the impacts on setting will be as a result of visual changes.
- 2.14** Included in the landscape characteristics identified in the Huntingdonshire Landscape and Townscape Assessment (HDC 2007) are those characteristics of the landscape that are derived from the presence of heritage assets, for example the presence of church spires or towers as landmark features. The impact on the setting of heritage assets will be considered separately as part of a cultural heritage assessment, however where heritage assets play a role in the defining the local landscape character it is essential that they are also considered as part of the sensitivity of the landscape. The “Guidance Note for Applicants and Agents of Wind Turbine Developments” includes further information on the role of photographs and photomontages with regard to effects on cultural heritage assets, landscape character and visual amenity. It can be viewed via the [Council's website](#).

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9 Information derived from Renewable UK's (formerly BREA) UK Wind Energy Database – UKWED

10 Placing Renewables in the East of England, Ove Arup & Partners Ltd 2008

11 Placing Renewables in the East of England Section 6.7.1 Pages 31-2

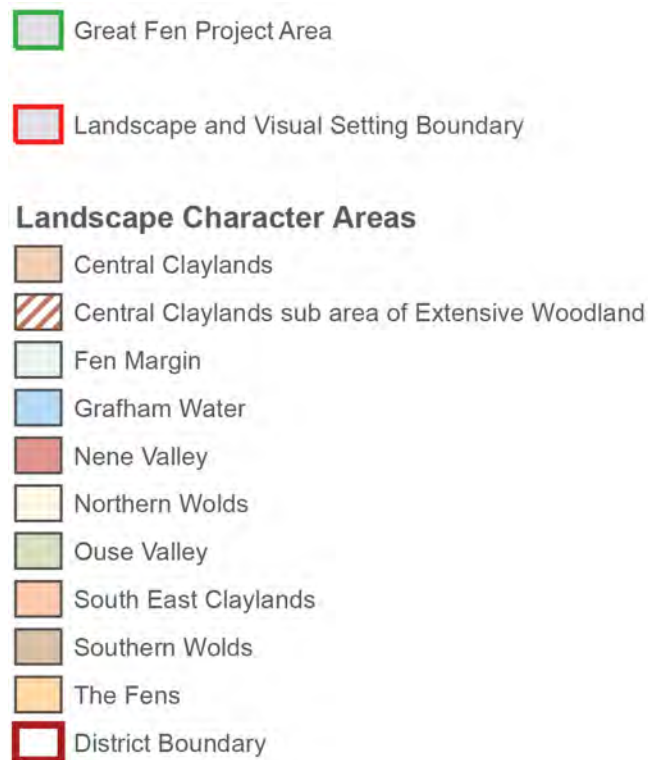
12 Placing Renewables in the East of England Appendix D Pages D11-12

13 In respect of landscape impacts, with reference to National Policy Statement EN-1 (5.9.15) it should be noted that significant adverse impacts do not necessarily render a proposal unacceptable in planning terms if it can be demonstrated that such significant adverse effects would be outweighed by the benefits (including need) for the project.

## 2 Overview of landscape capacity

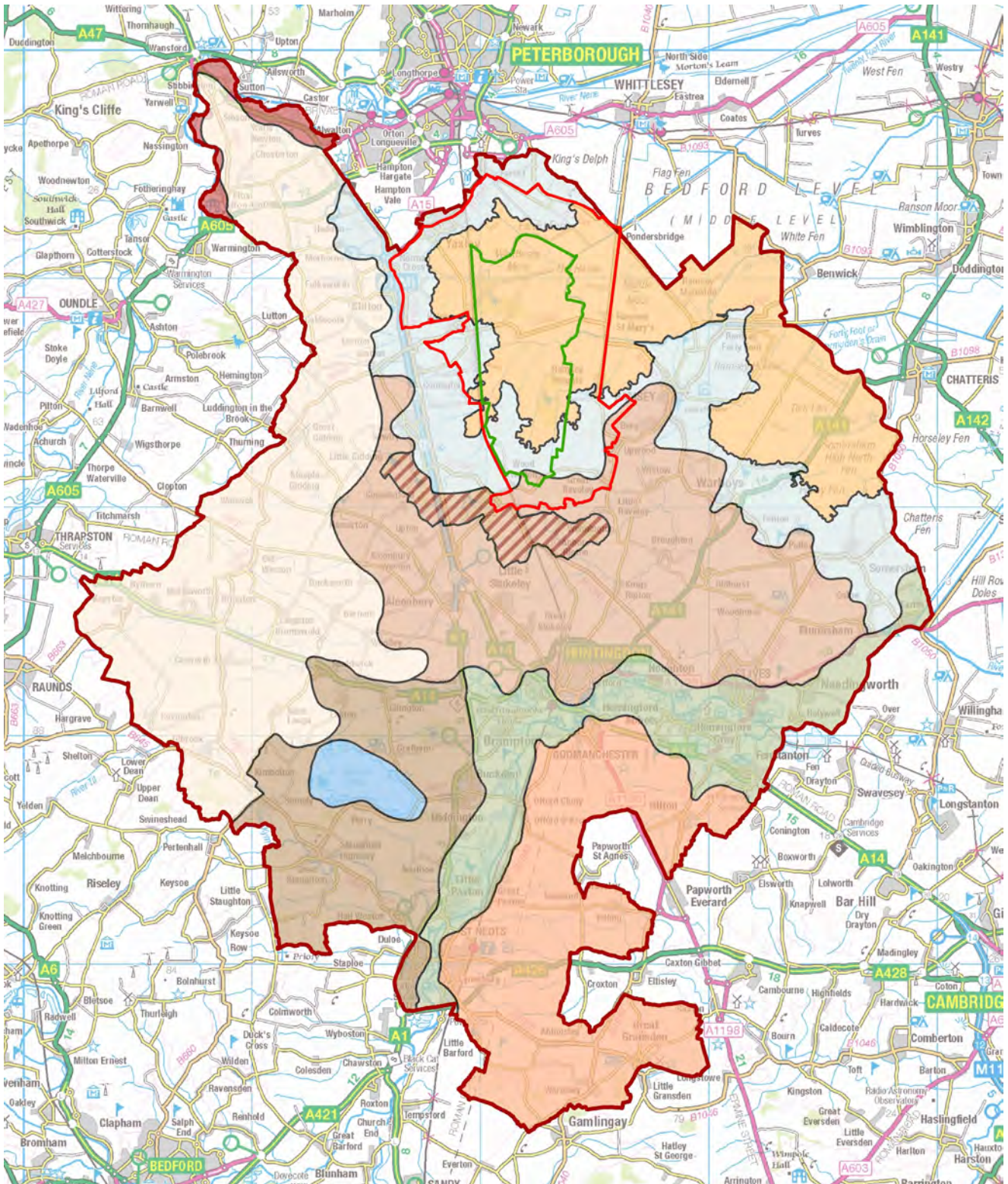
- 2.15** Up-to-date advice on approaches to landscape assessment is set out in Landscape Character Assessment: Guidance for England and Scotland published by The Countryside Agency and Scottish Natural Heritage (2002)<sup>(14)</sup>, and the “Guidelines for Landscape and Visual Impact Assessment,” 3rd edition, The Landscape Institute and Institute for Environmental Management and Assessment, 2013.
- 2.16** The LUC study identifies the landscape attributes, both physical and perceptual against which any proposal for wind turbines should be assessed. However it should be recognised that these headings are closely linked; for example information on scale and enclosure and land cover will influence the extent to which any development is visible in the landscape. The LUC study does not provide a list of criteria for assessing landscape sensitivity to wind energy development but Chapter 14 'Landscape Sensitivity Criteria' contains a list of criteria, derived from the conclusions of the LUC study and from more recent work by LUC<sup>(15)</sup>.
- 2.17** The Great Fen Project had begun at the time of the original SPD but progress has been more rapid than originally envisaged. A landscape and visual setting for the Great Fen has been identified in the report produced by Landscape Design Associates and it is intended that policy protection in this area<sup>(16)</sup> will limit the capacity for wind turbine development. This is illustrated in figure 2.1 which shows the different landscape character areas, the Great Fen boundary, and the boundary of its Landscape and Visual Setting.

### Legend to Figure 2.1



- 14 The accompanying Topic Paper 6 sets out further guidance on approaches to evaluating landscape sensitivity and capacity
- 15 An Assessment of the Landscape Sensitivity to Onshore Wind Energy & Field-Scale Photovoltaic Development in Torridge District November 2011.
- 16 Defining the Landscape and Visual Setting to the Great Fen Project Area, LDA July 2008, and Huntingdonshire's emerging Local Plan to 2036 and the Strategic Green Infrastructure Enhancement policy and supporting text.

Figure 2.1 Landscape Character Areas and the Great Fen Landscape and Visual Setting



## 2 Overview of landscape capacity

### Summary of potential capacity

- 2.18** Table 1 provides a summary of the overall capacity for wind turbine development in Huntingdonshire. It is accompanied by a map showing the various landscape character areas. The map at Figure 2.1 shows the different Landscape Character Areas, The Great Fen boundary, and the boundary of its Landscape and Visual setting.
- 2.19** The information in this table provides a ‘quick guide’ but should not be used in isolation; it must be read in conjunction with the further guidance and information on cumulative development provided in chapters 3 to 13, together with the background material in the LUC Study.

**Table 1 : Summary of landscape capacity for wind turbine development assuming a nil wind farm baseline scenario**

Landscape Character Area	Single turbine (1 turbine)	Small-scale group (2-5 turbines)	Medium-scale group (6-12 turbines)	Large -scale group (13-20 turbines)
1: The Fens	High	High	High	Moderate (lower end of scale e.g. 13-15 turbines)
2: Fen Margin	High	High	High	Moderate (lower end of scale e.g. 13-15 turbines)
3: Central Claylands	High	High	High	Moderate
4: Ouse Valley	High	Moderate (lower end of scale 2-3 turbines)	Low	Low
5: South East Claylands	High	High	High	Moderate
6: Northern Wolds	High	Moderate	Low	Low
7: Grafham Water	High	Moderate (2 turbines only)	Low	Low
8: Southern Wolds	High	High	Moderate	Low
9: Nene Valley	Moderate	Low	Low	Low

**For guidance on cumulative effects and assessment of current operational and consented turbines please refer to chapter 17 'Assessing Cumulative Effects' and Table Table 16 ': Proposed thresholds of capacity for each landscape character area' in part 2 of this document.**

### Cumulative Capacity

- 2.20** Capacity judgements in relation to the potential for cumulative development with regard to each scale of development are presented on the following basis:
- **High capacity:** There is scope to accommodate a number of turbine developments of this scale without significant adverse changes in landscape character or key landscape values. However care will need to be taken in their location and relationship to each other and the specific guidance provided in Chapters 3 -13 should be followed.

- **Moderate capacity:** There is some scope to accommodate a number of turbine developments of this scale without significant adverse changes in landscape character or key landscape values. However there are likely to be key sensitivities or values that will limit the number of potential schemes, care will need to be taken in their location and relationship to each other and the specific guidance provided in Chapters 3-13 should be followed.
- **Low capacity:** More than one development of this scale is likely to result in significant adverse change in landscape character and/ or affect key landscape values.
- **None:** this character area would not be able to accommodate more than one scheme of this scale.

**2.21** There is no assessment of cumulative capacity if the landscape character area has been assessed as unable to accommodate even a single development of the scale under consideration.

**2.22** The assessments for cumulative capacity are given in relation to each scale of development. However there will also be cumulative issues where proposals are for different scales of development. For example, a landscape may have high capacity for a number of single turbines but this capacity will be reduced where there is an existing consent for one or more turbine groups. Similarly the presence of several single turbines may reduce the capacity of a landscape for a group of turbines. **Further guidance on cumulative landscape and visual effects is given in Part 2.**

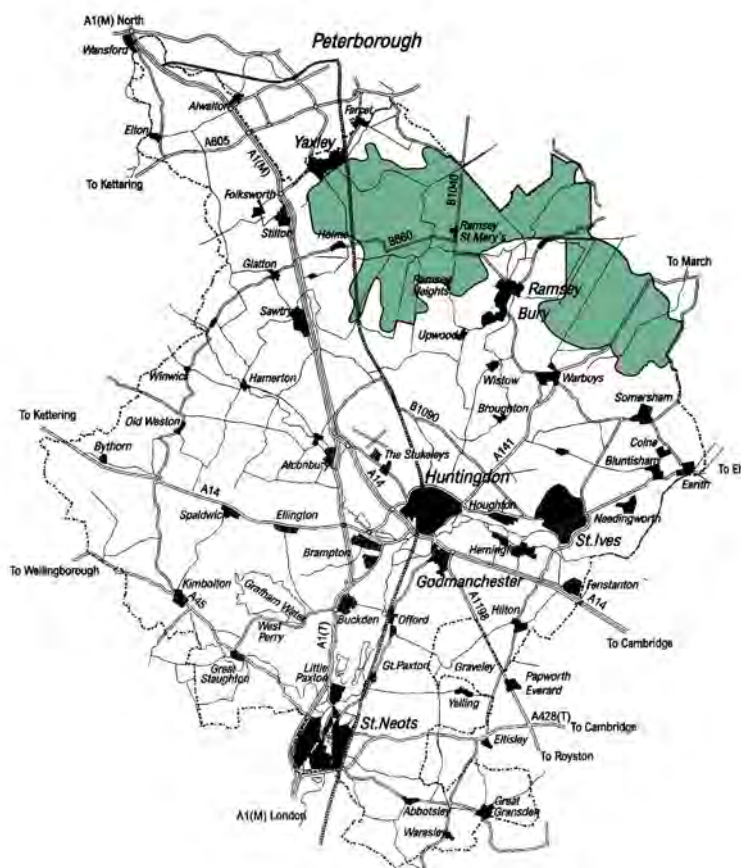
**2.23** Consideration will need to be given in all circumstances to the visual relationship between one turbine or turbine group and another when these can be viewed simultaneously. Visual relationships with other turbines or turbine groups will also be an important consideration when considering the location of turbines under 100m in height. The potential for cumulative impacts as a result of combinations of small, medium and large scale wind turbine developments, both in terms of height and turbine numbers, has added additional complexity to the cumulative assessments required, including assessments for turbines of less than 100m in height.

**2.24** A key consideration will be the avoidance of cluttered or visually confusing images particularly from sensitive locations such as settlements; the location and style of turbines will be important in avoiding such impacts. Consideration will also need to be given to the visual relationship with turbine developments in adjacent landscape character areas and adjacent districts.

**2.25** Cumulative assessments also need to consider the effect on the landscape area of successive and/ or sequential views of single turbines or groups of turbines. It is important to avoid creating areas where wind turbines dominate the landscape character, or areas where turbines become the all pervasive landscape element.

# 3 The Fens

## 3 The Fens



### Single Turbine

3.1 The Fens have a **high** capacity to accommodate a single turbine. The expansive scale of the landscape, flat topography and simple land cover patterns would allow a single turbine to fit well and it could form a landmark feature or focal point. However, care will need to be taken in siting turbines to avoid the sites and setting of valued landscape components. The location of a single turbine should take into account the following guidance:

- a. *Provide a positive contribution providing a focal point within long-range open views.*
- b. *Avoid those areas where there are already a large number of vertical elements (e.g. pylons and communication structures) to ensure that the development does not result in visual confusion and clutter.*
- c. *Consider relationships with the small-scale dispersed settlement pattern. The traditional linear form and single plot depth suggests there is no scope to attach a turbine to a settlement.*
- d. *Relate to existing building clusters in the landscape for example the occasional large farm building, utility buildings or industrial areas. There may also be an opportunity for a single turbine to relate to infrastructure associated with the main roads.*
- e. *Relate to the land cover pattern, in particular the geometric field patterns.*
- f. *Avoid introducing solid built structures into isolated areas, which are generally characterised by the absence of buildings. Additional structures would be better accommodated in relation to existing farm/utility buildings.*
- g. *Avoid the site and setting of valued landscape components notably the remaining areas of peat, and woodland and wetland SSSI, plus areas identified for habitat restoration (Great Fen).*

- h. Consider the visual relationship with existing and proposed turbine developments in the adjacent areas of Fen landscape beyond the district boundary.*
- i. Seek opportunities to achieve wider landscape management objectives identified in the Huntingdonshire Landscape and Townscape Assessment in association with any proposed development, and seek opportunities to provide net gains to biodiversity, such as through creation of new habitat, appropriate to the ecological setting and scale of the proposal.*

### Cumulative development

- 3.2** There is scope for the Fens to accommodate a number of single turbines, but care will need to be taken in their location and relationship to each other. Single turbines within this landscape will act as a point of focus or landmark. Views of more than one turbine could dilute this perceived landmark function and create a potentially confusing viewing experience. Particular consideration should be given to the visual relationship with turbine developments in the adjacent districts. Further guidance on cumulative landscape and visual effects is given in Part 2.

### Small-scale group (2-5 turbines)

- 3.3** The Fens have a **high** capacity to accommodate a small-scale group. Although a more obvious and dominant feature in the landscape a small-scale development could respond well to the landscape structure and pattern. However there are a number of key sensitive elements that will need to be respected, notably the need to conserve isolated tranquil areas and important habitats including the Great Fen and its landscape and visual setting. Particular care will need to be taken in siting turbines to avoid creating visual confusion and clutter where existing vertical elements are already dominant. Providing it was appropriately sited, such a development would not have an adverse impact on key landscape values. The location of a small-scale group should take into account the following guidance:

- a. Avoid those areas where there are already a large number of vertical elements to ensure that the development does not result in visual confusion and clutter. Introduction of new pylon lines will not generally be appropriate in the Fens.*
- b. Avoid the site and setting of valued habitat components (pasture, woodland and wetland) including areas identified as having potential for habitat creation through the Great Fen Project.*
- c. Consider relationships with the dispersed settlement pattern. Small-scale turbine developments should be sited away from settlements.*
- d. Relate to the land cover pattern, in particular the rigid geometric field patterns which could provide a template for the arrangement with a consistent and repetitive spacing of turbines. Note that some areas within the Fens have a more sinuous, organic pattern, where a geometric arrangement would be inappropriate.*
- e. Relate to existing building clusters in the landscape, for example the occasional large farm buildings, utility buildings or industrial areas. Additional buildings or infrastructure associated with turbine development should not be introduced into areas characterised as being remote with an absence of built features.*
- f. Conserve and maintain areas characterised as having a strong sense of remoteness and isolation.*
- g. Consider the visual relationship with existing and proposed turbine developments in the adjacent areas of Fen landscape beyond the district boundary.*
- h. Seek opportunities to achieve wider landscape management objectives identified in the Huntingdonshire Landscape and Townscape Assessment in association with any proposed development, and seek opportunities to provide net gains to biodiversity, such as through creation of new habitat, appropriate to the ecological setting and scale of the proposal.*

### Cumulative development

- 3.4** The landform and land cover pattern provides scope for more than one small-scale turbine group within this landscape. It is essential that there is consistency in form and siting of developments to respect the consistent character of the landscape. In this landscape long-range views are often characteristic and views of more than one type of turbine development could create a potentially confusing viewing experience.

## 3 The Fens

Particular consideration should be given to the visual relationship with turbine developments in the adjacent landscape character area and adjacent districts. Further guidance on cumulative landscape and visual effects is given in Part 2.

### Medium-scale group (6-12 turbines)

**3.5** The Fens have a **high** capacity to accommodate a medium-scale group. Although a more obvious and dominant feature in the landscape a medium-scale development could respond well to the landscape structure and pattern. However there are a number of key sensitive elements that will need to be respected, notably the need to conserve isolated tranquil areas and important habitats including the Great Fen and its landscape and visual setting. Particular care will need to be taken in siting turbines and to avoid creating visual confusion and clutter where existing vertical elements are already dominant. Providing it was appropriately sited, such a development would not have an adverse impact on key landscape values. The location of a medium-scale group: should follow the guidelines set out for a small-scale group. In addition the location of a medium-scale group should take into account the following guidance:

- a. *Consider a clustered arrangement to avoid disrupting long views to the horizon.*
- b. *Respect existing landmark features and the views towards them.*

#### Cumulative development

**3.6** The landform and land cover pattern may provide scope for more than one medium-scale turbine group within this landscape. However the Great Fen and the surrounding policy area constitute roughly 44% of this landscape character area and the consequent limitations on development here will limit the scope for further medium scale schemes. The location of developments should follow the guidance set out for cumulative small scale groups. Further guidance on cumulative landscape and visual effects is given in Part 2.

### Large-scale group (13-20 turbines)

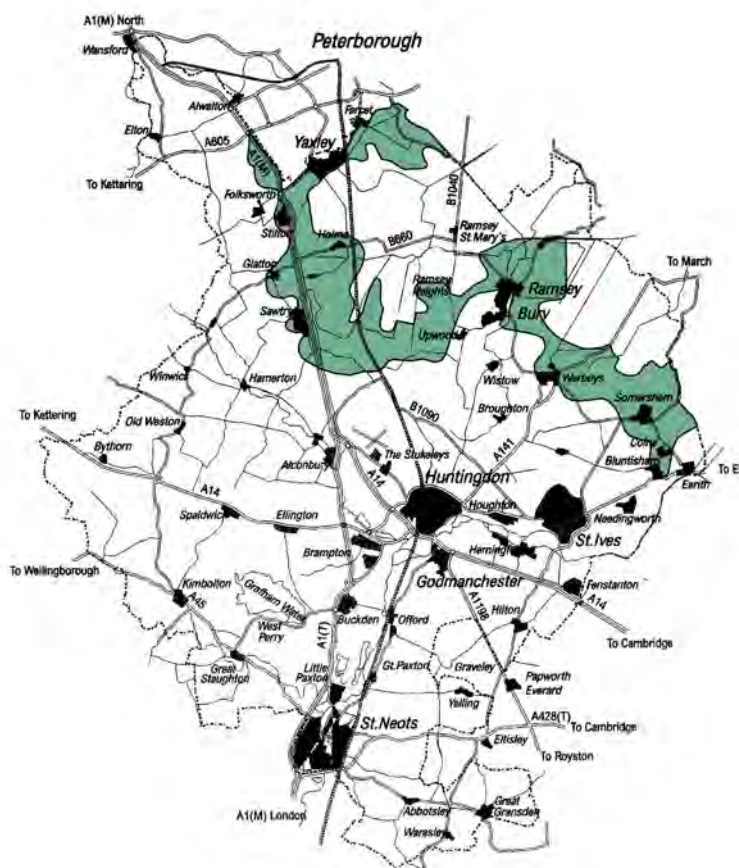
**3.7** The Fens have a **moderate** capacity to accommodate a large-scale group although a group at the lower end of this scale of development will be more appropriate (e.g. 13-15 turbines). Although such a development could be accommodated within the context of the flat landform and expansive open landscape, it could impinge on the sense of remoteness and isolation and be out of scale in the context of the woodland and settlements. Locations for a large-scale group of turbines are constrained and should follow the guidelines set out above for small and medium scale groups.

#### Cumulative development

**3.8** There is unlikely to be capacity for more than one large scale group within this character area. Hence capacity for cumulative development is low. Further guidance on cumulative landscape and visual effects is given in Part 2.



## 4 Fen Margin



### Single Turbine

4.1 The landscape has a **high** capacity to accommodate a single turbine. The scale of the landscape, gentle topography and land cover patterns would allow a single turbine to fit well and it could also correspond to settlement patterns forming a landmark feature or focal point in relation to the edge of larger extended villages. The location of a single turbine should take into account the following guidance:

- a. *Avoid the more intimately-scaled wooded/orchard landscape around Colne.*
- b. *Consider opportunities for a single turbine to provide a landmark 'gateway' feature or focal point in relation to the edge of larger villages such as Yaxley, Somersham, Ramsey and Sawtry. The aim should be to enhance the settlement edge and relationship with the surrounding landscape, and avoiding creation of visual clutter.*
- c. *Avoid impinging on the setting of the smaller historic villages such as Conington.*
- d. *Relate to the land cover pattern in particular the woodland edges and hedgerow field boundaries.*
- e. *Avoid introducing turbines and additional structures into rural areas, which are generally characterised by a sense of tranquillity and isolation with limited access such as the area east of Sawtry.*
- f. *Relate to existing building clusters in the landscape, for example the occasional large farm buildings or industrial areas. There may also be an opportunity for a single turbine development to relate to infrastructure associated with the main road routes (A1).*
- g. *Respect the sites and settings of valued landscape components including the woodlands and historic features.*

## 4 Fen Margin

- h. Consider strategic opportunities for the creation of Fen Edge woodland.*
- i. Seek opportunities to achieve wider landscape management objectives identified in the Huntingdonshire Landscape and Townscape Assessment in association with any proposed development, and seek opportunities to provide net gains to biodiversity, such as through creation of new habitat, appropriate to the ecological setting and scale of the proposal.*

### Cumulative development

**4.2** There is scope for the Fen Margins to accommodate a number of single turbines, however care will need to be taken in their location and relationship to each other. Single turbines within this landscape will act as a point of focus or landmark within long open views and set against dramatic skies. Views with more than one turbine development could dilute the perceived landmark function and could create a confused viewing experience. The skyline ridge forming the backdrop to the Fens is also sensitive to more than one single turbine development. Further guidance on cumulative landscape and visual effects is given in Part 2.

### Small-scale group (2-5 turbines)

**4.3** The landscape has a **high** capacity to accommodate a small-scale group. Although a more obvious and dominant feature in the landscape a small-scale development could respond well to the landscape structure and pattern. However, there are a number of key sensitive elements that will need to be respected, notably the more intimately scaled landscape around Colne and ensuring the development is sited to avoid impacts on valued landscape components, in particular the relationship with the Fens, settlements, and areas identified as having a tranquil and isolated character including the Great Fen and its landscape and visual setting. Proposals for a small-scale group of turbines should take into account the following guidance:

- a. Avoid the more intimately-scaled wooded/orchard landscape around Colne.*
- b. Consider opportunities for a small-scale group of turbines to provide a landmark 'gateway' feature or focal point in relation to the edge of larger villages such as Yaxley, Somersham, Ramsey and Sawtry. The aim should be to enhance the settlement edge and relationship with the surrounding landscape, and avoiding creation of visual clutter.*
- c. Avoid impinging on the setting of the smaller historic villages such as Conington.*
- d. Relate to the land cover pattern in particular the woodland edges and hedgerow field boundaries with consistent, repetitive spacing between turbines.*
- e. Avoid introducing turbines and additional structures into those parts of the area which are generally characterised by a sense of tranquillity and isolation with an absence of built structures and limited access, such as the area east of Sawtry. Note that pylons are not currently a visible feature within the area and could be a very dominant influence cutting across the sloping topography.*
- f. Relate to existing building clusters in the landscape, for example the occasional large farm buildings or industrial areas. There may also be an opportunity for a small-scale turbine group to relate to infrastructure associated with the main road routes (A1).*
- g. Respect the sites and settings of valued landscape components including the woodlands and historic features.*
- h. Consider a linear arrangement along contours as opposed to crossing contours.*
- i. Consider the important visual relationship with the adjacent Fens landscape. The skyline view from the Fens is particularly sensitive*
- j. Consider strategic opportunities for the creation of Fen Edge woodland.*
- k. Seek opportunities to achieve wider landscape management objectives identified in the Huntingdonshire Landscape and Townscape Assessment in association with any proposed development, and seek opportunities to provide net gains to biodiversity, such as through creation of new habitat, appropriate to the ecological setting and scale of the proposal.*

### Cumulative development

**4.4** The landform and land cover pattern provides scope for more than one small-scale turbine group within this landscape. A small-scale turbine development will act as a point of focus or landmark within long open views and set against dramatic skies. Views with more than one turbine development could dilute the perceived landmark function and could create a confused viewing experience. The skyline ridge forming the backdrop to the Fens is also sensitive to more than one turbine development. It is essential that there is consistency in form and siting of developments. Further guidance on cumulative landscape and visual effects is given in Part 2.

### Medium-scale group (6-12 turbines)

**4.5** The landscape has a **high** capacity to accommodate a medium-scale group. Although a more obvious and dominant feature in the landscape a medium-scale development could respond well to the landscape structure and pattern. However, there are a number of key sensitive elements that will need to be respected, notably the more intimately scaled landscape around Colne and ensuring the development is sited to avoid impacts on valued landscape components, in particular the important visual relationship with the Fens, settlements, and areas identified as having a tranquil and isolated character including the Great Fen and its landscape and visual setting. Proposals for a medium-scale group of turbines should take into account the following guidance:

- a. *Avoid the more intimately-scaled wooded/ orchard landscape around Colne.*
- b. *Avoid impinging on the setting of the smaller historic villages such as Conington.*
- c. *Relate to the land cover pattern in particular the woodland edges and hedgerow field boundaries with consistent, repetitive spacing between turbines.*
- d. *Avoid introducing turbines and additional structures into those parts of the area which are generally characterised by a sense of tranquillity and isolation with an absence of built structures and limited access, such as the area east of Sawtry. Note that pylons are not currently a visible feature within the area and could be a very dominant influence cutting across the sloping topography.*
- e. *Relate to existing building clusters in the landscape, for example the occasional large farm buildings or industrial areas. There may also be an opportunity for a small-scale turbine group to relate to infrastructure associated with the main road routes (A1).*
- f. *Respect the sites and settings of valued landscape components including the woodlands and historic features.*
- g. *Consider a linear arrangement along contours as opposed to crossing contours.*
- h. *Avoid siting a development on the Fens ridgeline which forms the backdrop skyline with the Fens.*
- i. *Consider strategic opportunities for the creation of Fen Edge woodland.*
- j. *Seek opportunities to achieve wider landscape management objectives identified in the Huntingdonshire Landscape and Townscape Assessment in association with any proposed development, and seek opportunities to provide net gains to biodiversity, such as through creation of new habitat, appropriate to the ecological setting and scale of the proposal.*

### Cumulative development

**4.6** The landform and land cover pattern provides scope for more than one medium-scale turbine group within this landscape. A medium-scale turbine development will act as a point of focus or landmark within long open views and set against dramatic skies. Views with more than one turbine development could dilute the perceived landmark function and could create a confused viewing experience. However the Great Fen and the surrounding policy area constitute roughly 28% of this landscape character area and the consequent limitations on development here will limit the scope for further medium scale schemes. It is essential that there is consistency in form and siting of developments. Further guidance on cumulative landscape and visual effects is given in Part 2.

# 4 Fen Margin

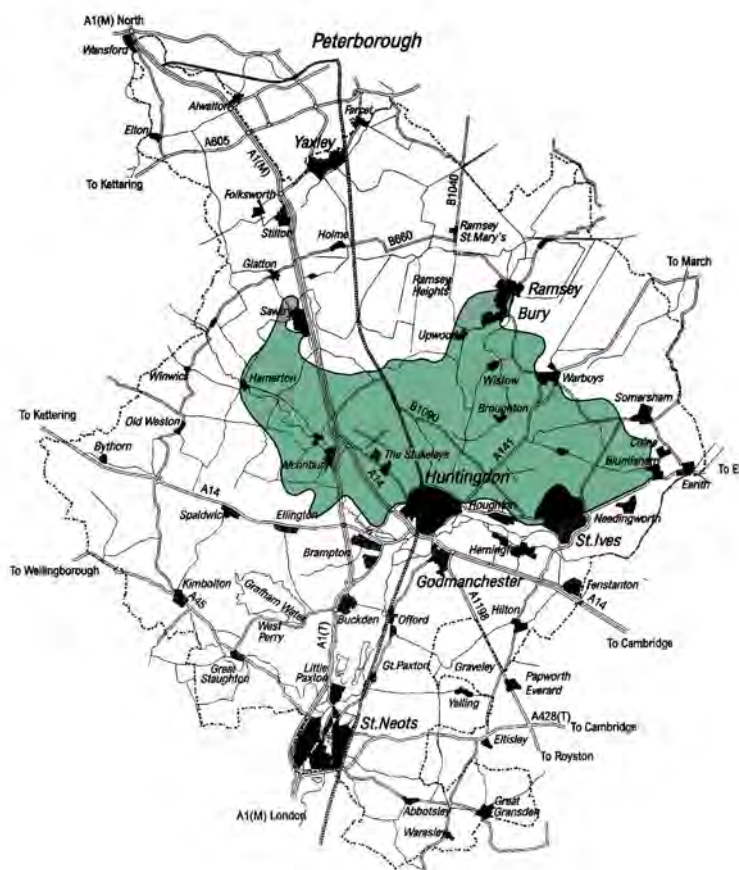
## Large-scale group (13-20 turbines)

- 4.7 This landscape has a **moderate** capacity to accommodate a large-scale group. A large-scale group could relate to the landscape scale and gently sloping topography although it would not fit well in relation to the skyline and views from the Fens where it is considered that such a group could appear over dominant in the landscape. It is suggested that the lower end of a large-scale group (e.g.13-15 turbines) would be more appropriate than a larger number of turbines. Locations for a large-scale group are constrained and the following guidance should be taken into account:
- a. *Where capacity is identified a turbine group at the lower end of the scale (i.e. 13-15 turbines) will be more appropriate.*
  - b. *Avoid the more intimately scaled wooded/orchard landscape around Colne.*
  - c. *Relate to the land cover pattern in particular the woodland edges and hedgerow field boundaries with consistent, repetitive spacing between turbines.*
  - d. *Avoid introducing turbines and additional structures into those parts of the area which are generally characterised by a sense of tranquillity and isolation with an absence of built structures and limited access. Note that pylons are not a feature of this area and would be a very visible intrusion in views from the Fens.*
  - e. *Ensure that the development does not conflict with settlements - a development of this size will be out of scale and over dominating in relation to the villages.*
  - f. *Relate to existing development, for example the occasional large farm buildings or industrial areas.*
  - g. *Respect the sites and settings of valued landscape components including the woodlands and historic features.*
  - h. *Consider the visual relationship of a large-scale group of turbines with the adjacent Fens landscape.*
  - i. *Avoid siting a development on the Fens ridgeline which forms the backdrop skyline with the Fens.*
  - j. *Seek opportunities to achieve wider landscape management objectives identified in the Huntingdonshire Landscape and Townscape Assessment in association with any proposed development, and seek opportunities to provide net gains to biodiversity, such as through creation of new habitat, appropriate to the ecological setting and scale of the proposal.*

## Cumulative development

- 4.8 Given the size of the area and importance of protecting the setting of settlements, the sensitive relationship with the Fens and conserving isolated tranquil areas (including the Great Fen and its landscape and visual setting) it is unlikely that more than one large-scale development could be accommodated. Hence capacity for cumulative development is low. Further guidance on cumulative landscape and visual effects is given in Part 2.

## 5 Central Claylands



### Single Turbine

**5.1** The landscape of the Central Claylands has a **high** capacity to accommodate a single turbine. The large-scale, open landform and simple arable dominated land cover pattern would allow a single turbine to fit well, forming a landmark feature or focal point. There is also scope for a single turbine to relate to existing built structures and development. In considering the location of a single turbine the following guidance should be taken into account:

- Consider the greater sensitivities of the more enclosed wooded landscape to the north west and the intimate orchard-dominated landscape to the east around Bluntisham.
- Avoid rural areas where there are already a large number of vertical elements (e.g. pylons and communication structures) to ensure that development does not result in visual confusion and clutter and respect existing landmarks such as views to church spires.
- Relate to existing building clusters in the landscape, for example utility buildings or industrial areas or buildings associated with disused airfields. There may also be an opportunity for a single turbine to relate to infrastructure associated with the main road routes (A1, A14, A141).
- Consider opportunities for siting in relation to extended urban areas on the edge of the larger settlement such as those at St Ives and Huntingdon. In this way a single turbine could take on a functional role as well as providing a new landmark or gateway on the urban edge (see guidance on urban peripheries in Chapter 12).
- Relate to the landform with turbines sited on the extensive open plateau areas (where this does not conflict with other uses e.g. active airfield use).

# 5 Central Claylands

- f. *Respect the sites and settings of key valued landscape features, particularly areas currently open, but where there are identified opportunities for woodland creation seek to link existing ancient woodland sites in the north west part of the character area.*
- g. *Respect the scale and settings of the intact historic villages and historic landscape features such as the medieval moats.*
- h. *Seek opportunities to achieve wider landscape management objectives identified in the Huntingdonshire Landscape and Townscape Assessment in association with any proposed development, and seek opportunities to provide net gains to biodiversity, such as through creation of new habitat, appropriate to the ecological setting and scale of the proposal.*

## Cumulative development

**5.2** There is scope for the Central Claylands to accommodate a number of single turbines, but care will need to be taken in their location and relationship to each other. Single turbines within this landscape will act as a point of focus or landmark. Views of more than one turbine development could dilute the perceived landmark function of a turbine and create a potentially confusing viewing experience. An exception is the location of turbines along communications corridors where it may be acceptable to have a regular spacing of single turbines relating to existing large-scale infrastructure. Further guidance on cumulative landscape and visual effects is given in Part 2.

## Small-scale group (2-5 turbines)

**5.3** The Central Claylands landscape has a **high** capacity to accommodate a small-scale group. Although a more obvious and dominant feature in the landscape a small-scale development could respond well to the landscape structure and pattern. Providing it was appropriately sited, such a development would not have an adverse impact on key landscape values. The guidance relating to the siting and design of a small-scale group of turbines is essentially the same as that for a single turbine, and the following matters should be taken into account:

- a. *Consider the greater sensitivities of the more enclosed wooded landscape to the north west and the intimate orchard dominated landscape to the east around Bluntisham.*
- b. *Avoid rural areas where there are already a large number of vertical elements (e.g. pylons and communication structures) to ensure that development does not result in visual confusion and clutter and respect existing landmarks such as views to church spires.*
- c. *Relate to existing building clusters in the landscape, for example utility buildings or industrial areas or buildings associated with disused airfields. There may also be an opportunity to relate to infrastructure associated with the main road routes (A1, A14, A141).*
- d. *Consider opportunities for siting in relation extended urban areas on the edge of the larger settlements such as those at St Ives and Huntingdon. In this way a small-scale group could take on a functional role as well as providing a new landmark or gateway on the urban edge (see guidance on urban peripheries in Chapter 12).*
- e. *Relate to the land cover pattern, in particular the large-scale field pattern, with turbines sited in a simple linear or grid arrangement with consistent and repetitive spacing between individual turbines.*
- f. *Relate to the landform with turbines sited on the extensive open plateau areas (where this does not conflict with other uses e.g. active airfield use).*
- g. *Respect the sites and settings of key valued landscape features, particularly areas currently open, but where there are identified opportunities for woodland creation seek to link existing ancient woodland sites in the north west part of the character area.*
- h. *Respect the scale and settings of the intact historic villages and historic landscape features such as the Medieval moats.*
- i. *Avoid introducing additional built structures into rural areas, which are generally characterised by the absence of buildings. Additional structures would be better accommodated in relation to existing farm/utility buildings.*

- j. *Consider impacts on views in relation to the lower lying Fens and Fen Margins.*
- k. *Seek opportunities to achieve wider landscape management objectives identified in the Huntingdonshire Landscape and Townscape Assessment in association with any proposed development, and seek opportunities to provide net gains to biodiversity, such as through creation of new habitat, appropriate to the ecological setting and scale of the proposal.*

## Cumulative development

- 5.4** The landform and land cover pattern provides scope for more than one small-scale turbine group within this landscape. It is essential that there is consistency in form and siting of developments respecting the consistent character of the landscape. In this landscape some long-range views are often possible and views of more than one type of turbine development could create a potentially confusing viewing experience. Decisions will need to be made on a case-by-case basis. Further guidance on cumulative landscape and visual effects is given in Part 2.

## Medium-scale group (6-12 turbines)

- 5.5** The Central Claylands landscape has a **high** capacity to accommodate a medium-scale group. Although a more obvious and dominant feature in the landscape a medium-scale development could respond well to the landscape structure and pattern. Providing it was appropriately sited, such a development would not have an adverse impact on key landscape values. Locations for a medium-scale group of turbines should follow the guidelines set out above for a small-scale group although a medium scale group is unlikely to be suitable as a new landmark or gateway on the urban edge.

## Cumulative development

- 5.6** The landform and land cover pattern provides scope for more than one medium-scale turbine group within this landscape. It is essential that there is consistency in form and siting of developments respecting the consistent character of the landscape. In this landscape some long-range views are often possible and views of more than one type of turbine development could create a potentially confusing viewing experience. Decisions will need to be made on a case-by-case basis. Further guidance on cumulative landscape and visual effects is given in Part 2.

## Large-scale group (13-20 turbines)

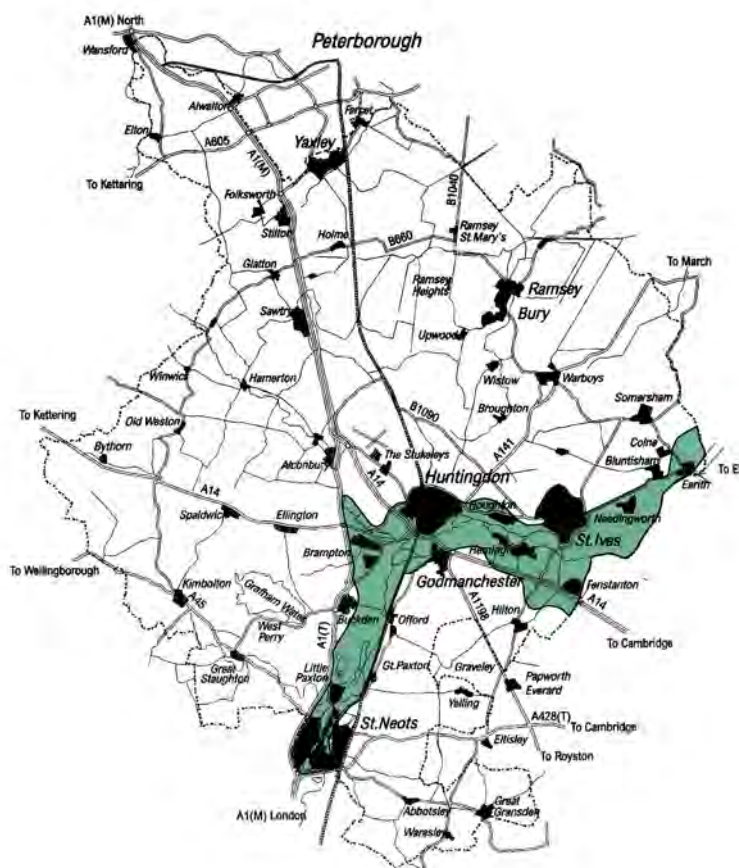
- 5.7** The landscape has a **moderate** capacity to accommodate a large-scale group. Although a more obvious and dominant feature, a large-scale development could respond well to the landscape structure and pattern if efficiently arranged and could relate particularly well to the more open, level plateau areas. The guidance set out for small and medium scale groups applies, although in the case of urban extensions it is considered that more than 12 turbines will usually be too dominant in relation to the size of the market towns.

## Cumulative development

- 5.8** The Central Claylands do have capacity to accommodate more than one large scale turbine group, although locations will be relatively constrained particularly in relation to settlements and impacts on long views, where the open exposed character could result in intervisibility between developments. Further guidance on cumulative landscape and visual effects is given in Part 2.

# 6 Ouse Valley

## 6 Ouse Valley



### Single Turbine

6.1 The landscape has a **high** capacity to accommodate a single turbine. A single turbine would fit well in relation to the more open areas of the flat valley floor and in conjunction with existing built features, for example amenity/ recreational uses or communication corridors. Locations for a single turbine are relatively constrained, particularly with regard to potential effects on nature conservation values. The following guidance should be taken into account:

- a. *Respect the nature conservation interests associated with the wetlands along the valley floor.*
- b. *Retain the sense of tranquillity and relative isolation.*
- c. *Maintain the recreational value of the Ouse Valley landscape.*
- d. *Avoid areas which retain a distinctive valley landscape such as the summer grazing meadows. It is likely that only the more open arable or amenity areas will provide appropriate locations.*
- e. *Consider opportunities for locating a turbine in association with existing infrastructure such as the railway or main roads (A1 and A14). There may be an opportunity for turbine development in relation to existing recreational infrastructure such as a visitor centre or marina.*
- f. *Respect the setting of the small historic villages of the Ouse Valley e.g. Needingworth, the Hemingfords, Holywell.*
- g. *Seek opportunities to achieve wider landscape management objectives identified in the Huntingdonshire Landscape and Townscape Assessment in association with any proposed development, and seek opportunities to provide net gains to biodiversity, such as through creation of new habitat, appropriate to the ecological setting and scale of the proposal.*



## Cumulative development

- 6.2** Whilst there is scope for the Ouse Valley to accommodate more than one single turbine possible locations are constrained. This is a landscape that has an important role in providing an 'escape' for people living in the adjacent towns and is valued for its tranquillity and scenic quality; turbine development should not affect the perception of these qualities. Decisions will need to be taken on a case-by-case basis. Further guidance on cumulative landscape and visual effects is given in Part 2.

## Small-scale group (2-5 turbines)

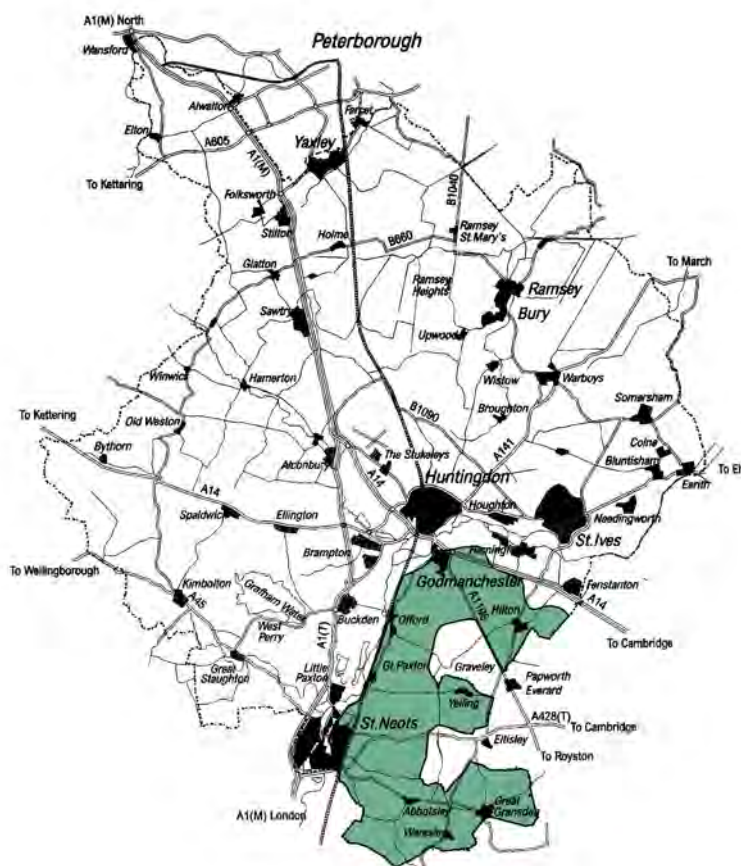
- 6.3** The landscape has a **moderate** capacity to accommodate a small-scale group. However, this capacity relates to the lower end of the scale (i. e. 2-3 turbines). The guidance for single turbines applies equally to this scale of development.

## Cumulative development

- 6.4** There is very little scope for the Ouse Valley to accommodate more than one small-scale group. Decisions will need to be taken on a case-by-case basis. Further guidance on cumulative landscape and visual effects is given in Part 2.

# 7 South East Claylands

## 7 South East Claylands



### Single Turbine

7.1 The landscape has a **high** capacity to accommodate a single turbine. The simple, open landform and medium to large-scale views means that a single turbine has the potential to form a focal point and appear balanced within the landscape. It would not intimidate or dominate the landscape and would not affect any key values. However, care will need to be taken in siting turbines, particularly in the more undulating wooded area in the south, and to avoid creating visual confusion and clutter where existing vertical elements are already dominant. The guidance set out below should be taken into account:

- a. *Seek to provide a positive focal point within medium to long-range open views, mirroring the landmark function of church towers and spires.*
- b. *Avoid those areas where there is already a large number of vertical elements (e.g. pylons and communication structures) to ensure that the development does not result in visual confusion and clutter.*
- c. *Relate to existing building clusters in the landscape, for example the occasional large farm buildings.*
- d. *Relate to the geometric field pattern with the turbine sited at junctions of two or more boundaries.*
- e. *Respect the sites and settings of key valued landscape features, notably remnant historic features.*
- f. *Respect the scale and setting of the small, intact villages and views to church towers and spires.*
- g. *Consider the visual relationship with the Ouse Valley and the 'hidden' tributary valleys that cross the landscape.*

- h. *Avoid introducing solid built structures (e.g. transmission stations) into rural areas, which are generally characterised by the absence of buildings. Additional structures would be better accommodated in relation to existing farm/ utility buildings.*
- i. *Seek opportunities to achieve wider landscape management objectives identified in the Huntingdonshire Landscape and Townscape Assessment in association with any proposed development, and seek opportunities to provide net gains to biodiversity, such as through creation of new habitat, appropriate to the ecological setting and scale of the proposal.*

## Cumulative development

**7.2** There is scope for the South East Claylands to accommodate a number of single turbines, but care will need to be taken in their location and relationship to each other. Single turbines within this landscape will act as a point of focus or landmark. In this open landscape medium and long-range views are often possible and views of more than one turbine could dilute the perceived landmark function of a turbine and create a potentially confusing viewing experience. Further guidance on cumulative landscape and visual effects is given in Part 2.

## Small-scale group (2-5 turbines)

**7.3** The landscape has a **high** capacity to accommodate a small-scale group. Although more obvious and dominant in the landscape, the generally open character of the South East Claylands means that a small-scale group of turbines would not dominate views and could respond well to the landscape structure and pattern. Providing it was appropriately sited, such a development would not have an adverse impact on key landscape values. The following guidance should be taken into account:

- a. *Avoid the more undulating, intact and enclosed landscape to the south (around Waresley).*
- b. *Avoid those areas where there is already a large number of vertical elements (e.g. pylons and communication structures) to ensure that the development does not result in visual confusion and clutter.*
- c. *Relate to existing building clusters in the landscape, for example the occasional large farm buildings.*
- d. *Respond to the geometric field pattern with turbines sited in a simple linear arrangement with consistent and repetitive spacing between individual turbines.*
- e. *Relate to the landform with turbines located along contour lines as opposed to across them.*
- f. *Respect the sites and settings of key valued landscape features, notably remnant historic features.*
- g. *Respect the scale and setting of the small, intact villages and views to church towers and spires.*
- h. *Consider the visual relationship with the Ouse Valley and the 'hidden' tributary valleys that cross the landscape.*
- i. *Avoid introducing solid built structures (transmission stations etc) into rural areas, which are generally characterised by the absence of buildings. Additional structures would be better accommodated in relation to existing farm/ utility buildings.*
- j. *Seek opportunities to achieve wider landscape management objectives identified in the Huntingdonshire Landscape and Townscape Assessment in association with any proposed development, and seek opportunities to provide net gains to biodiversity, such as through creation of new habitat, appropriate to the ecological setting and scale of the proposal.*

## Cumulative development

**7.4** The simple landform and landcover pattern provides scope for more than one small-scale turbine group within this landscape. It is essential that there is consistency in form and siting of developments respecting the consistent character of the landscape. In this open landscape medium and long-range views are often possible and views of more than one type of turbine development could create a potentially confusing viewing experience. Further guidance on cumulative landscape and visual effects is given in Part 2.

# 7 South East Claylands

## Medium-scale group (6-12 turbines)

7.5 The northern part of this landscape character area, (approximately north of the B1046 which runs from St Neots southeast through Abbotsley and Great Gransden) has a **high** capacity to accommodate a medium-scale group. Although more obvious and dominant in the landscape, the generally open character of this part of the South East Claylands means that a medium-scale group of turbines would not dominate views and could respond well to the landscape structure and pattern. Providing it was appropriately sited, such a development would not have an adverse impact on key landscape values. Locations for a medium-scale group of turbines should follow the guidelines set out above for a small-scale group.

### Cumulative development

7.6 The simple landform and landcover pattern provides scope for more than one medium-scale turbine group within this landscape. It is essential that there is consistency in form and siting of developments respecting the consistent character of the landscape. In this open landscape medium and long-range views are often possible and views of more than one type of turbine development could create a potentially confusing viewing experience. Further guidance on cumulative landscape and visual effects is given in Part 2.

## Large-scale group (13-20 turbines)

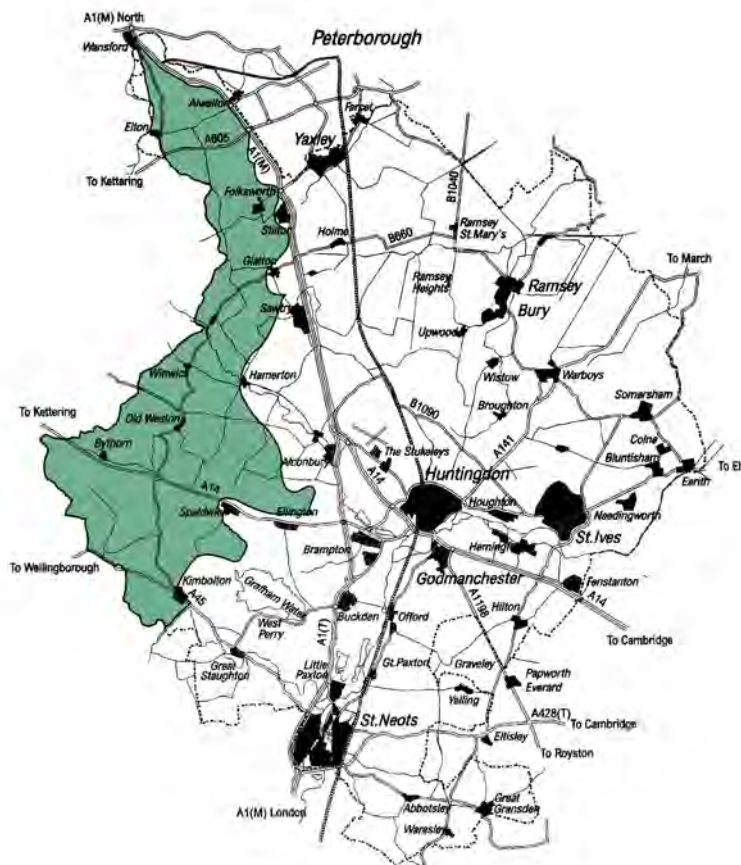
7.7 The northern part of this landscape character area (approximately north of the B1046 which runs from St Neots south east through Abbotsley and Great Gransden) has a **moderate** capacity to accommodate a large-scale group of turbines. This scale of development could fit within the open, medium to large-scale landscape. However particular care will be needed in relation to siting and design to ensure that such a development respects key landscape values, particularly the perception of parts of the area as rural with serene and tranquil aspects. The introduction of transmission lines and additional built structures often associated with this type of development will generally not be appropriate within this open landscape which is characterised by an absence of buildings outside the villages. In considering the location of a large-scale group of turbines the following guidance should be taken into account:

- a. *Respect the small-scale and historic character of the intact villages.*
- b. *Avoid areas where there is already a large number of existing vertical structures.*
- c. *Consider the impact on views from adjacent landscapes, particularly the more sensitive landscapes of the Ouse Valley.*
- d. *Respect the subtle variations in topography – appropriate locations generally being on summits or along contours – and relate to the regularity of the field pattern.*
- e. *Respect the sites and settings of valued landscape components.*
- f. *Seek opportunities to achieve wider landscape management objectives identified in the Huntingdonshire Landscape and Townscape Assessment in association with any proposed development, and seek opportunities to provide net gains to biodiversity, such as through creation of new habitat, appropriate to the ecological setting and scale of the proposal.*

### Cumulative development

7.8 More than one development of this scale could change the perception of the landscape's character and could start to create a landscape which is seen to be dominated by turbines. Capacity for cumulative development is low. Further guidance on cumulative landscape and visual effects is given in Part 2.

## 8 Northern Wolds



### Single Turbine

**8.1** The landscape has a **high** capacity to accommodate a single turbine. A single turbine would fit well with the scale of the landscape and land cover patterns on the arable land of the open plateau and ridges. Key sensitivities relate to the more intimate valleys, historic villages and valued elements, particularly with respect to historic features and the distinctive church towers and spires. The location of a single turbine should take into account the following guidance:

- a. *Respect the landform and relate turbines to the strong ridges and plateau; avoid locating turbines within the more intimate landscape of the valleys and along valley crests where they will be out of scale with the landscape and settlements such as at Kimbolton.*
- b. *Avoid siting turbines on areas of pasture with ridge and furrow.*
- c. *Respect the site and settings of the historic villages which characterise the Northern Wolds.*
- d. *Consider the views to and setting of the distinctive church spires which form a landmark feature, and ensure turbine development does not result in visual clutter in relation to these key views. A single turbine could form a separate focal point in its own right.*
- e. *Consider opportunities to site a single turbine in relation to existing farm/utility or industrial buildings (e.g. disused airfields) creating a functional image.*
- f. *Avoid the introduction of new pylon lines into the Northern Wolds. The area is currently characterised by the absence of disruptive features and pylon lines would be difficult to accommodate in relation to the distinctive ridge and valley topography.*
- g. *Seek opportunities to achieve wider landscape management objectives identified in the Huntingdonshire Landscape and Townscape Assessment in association with any proposed*

# 8 Northern Wolds

*development, and seek opportunities to provide net gains to biodiversity, such as through creation of new habitat, appropriate to the ecological setting and scale of the proposal.*

## Cumulative development

**8.2** While there is scope for the Northern Wolds to accommodate a number of single turbines, care will need to be taken in their location and relationship to each other. This is a landscape highly valued in the district for its 'unspoilt' quality and harmonious character; turbine development should not affect the perception of this special character. Decisions will need to be taken on a case-by-case basis. Further guidance on cumulative landscape and visual effects is given in Part 2.

## Small-scale group (2-5 turbines)

**8.3** The landscape has a **moderate** capacity to accommodate a small-scale group. Although a more obvious and dominant feature in the landscape, a small-scale development could respond well to the landscape structure and land cover pattern. Key sensitivities relate to the more intimate valleys, historic villages and valued elements, particularly with respect to historic features and the distinctive church spires. The location of a small-scale group should take into account the following guidance:

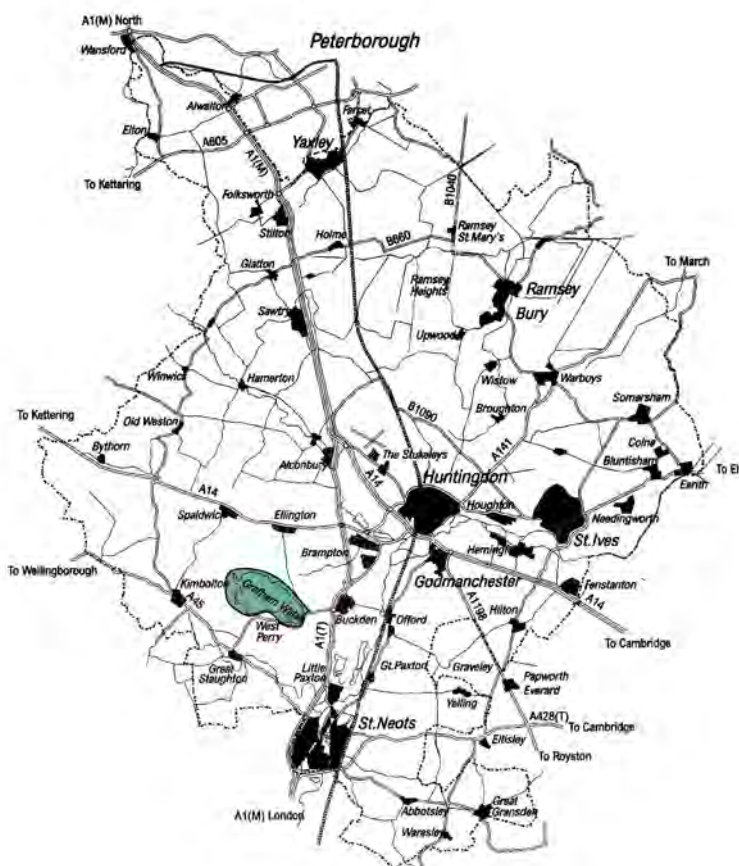
- a. *Respect existing landmark features such as key views to church spires.*
- b. *Respect the landform and relate turbines to the strong ridges and plateau; avoid locating turbines within the more intimate landscape of the valleys and along valley crests where they will be out of scale with the landscape and settlements such as Kimbolton.*
- c. *Avoid siting turbines on areas of pasture with ridge and furrow.*
- d. *Respect the site and setting of the historic villages which characterise the Northern Wolds.*
- e. *Relate to existing building clusters in the landscape, for example the occasional large farm buildings, utility buildings or industrial areas (such as disused airfields).*
- f. *Relate to the land cover pattern, in particular the woodland edges and field patterns with a consistent and repetitive spacing between turbines.*
- g. *Consider the impact on views of the horizon from the Central Claylands, Southern Wolds, Fen Margins and Fens.*
- h. *Consider a linear arrangement along contours as opposed to crossing contours.*
- i. *Avoid the introduction of new pylon lines into the Northern Wolds. The area is currently characterised by the absence of disruptive features and pylon lines would be difficult to accommodate in relation to the distinctive ridge and valley topography.*
- j. *Seek opportunities to achieve wider landscape management objectives identified in the Huntingdonshire Landscape and Townscape Assessment in association with any proposed development, and seek opportunities to provide net gains to biodiversity, such as through creation of new habitat, appropriate to the ecological setting and scale of the proposal.*

## Cumulative development

**8.4** There is very little scope for the Northern Wolds to accommodate more than one small-scale group. This is a landscape highly valued in the district for its 'unspoilt' quality and harmonious character; turbine development should not affect the perception of this special character. Decisions will need to be taken on a case-by-case basis. Hence capacity for cumulative development is low. Further guidance on cumulative landscape and visual effects is given in Part 2.

**Note** – Guidance in the original SPD was that this LCA had high capacity for 2-3 turbines but low capacity for 4-12 turbines. This has been revised to moderate capacity for 2-5 turbines which more accurately reflects the detail of the LUC study and the definitions for low and moderate capacity.

## 9 Grafham Water



### Single Turbine

- 9.1** The landscape has a **high** capacity to accommodate a single turbine. The open character and large scale of the landscape would allow a single turbine to be successfully accommodated in the area.
- 9.2** The recreational value of this landscape also means that there is scope for a single turbine to become a focal point and educational feature in conjunction with the visitors' centre or other amenity/functional buildings. The location of a single turbine should take into account the following guidance:
- Seek to make a positive contribution by providing a focal point in views and signalling the presence of Grafham Water from beyond the site.*
  - Avoid those areas where there are already a large number of vertical elements (e.g. pylons and communication structures) to ensure that the development does not result in visual confusion and clutter.*
  - Relate to existing building structures in the area, e.g. the visitors' centre/ amenity buildings, and consider opportunities for education/interpretation.*
  - Consider potential impacts on the SSSI (bird population).*
  - Seek opportunities to achieve wider landscape management objectives identified in the Huntingdonshire Landscape and Townscape Assessment in association with any proposed development, and seek opportunities to provide net gains to biodiversity, such as through creation of new habitat, appropriate to the ecological setting and scale of the proposal.*

# 9 Grafham Water

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## Cumulative development

- 9.3 There is unlikely to be scope for accommodating more than one single turbine around Grafham Water. In such a small character area more than one turbine would be perceived as a small-scale group. More than one single turbine would effectively rule out the possibility of accommodating a small scale group. Further guidance on cumulative landscape and visual effects is given in Part 2.

## Small-scale group (2-5 turbines)

- 9.4 The landscape has a **moderate** capacity to accommodate a small-scale group of turbines, but only towards the lower end of this range. Although a more obvious and dominant feature in the landscape, a small-scale development could respond well to the landscape scale. However, the available land area is small and there are a number of key sensitive elements that will need to be respected. It is therefore judged that 2-3 turbines would be the maximum number of turbines that could be accommodated. Proposals for a small-scale group of turbines should take into account the following guidance:

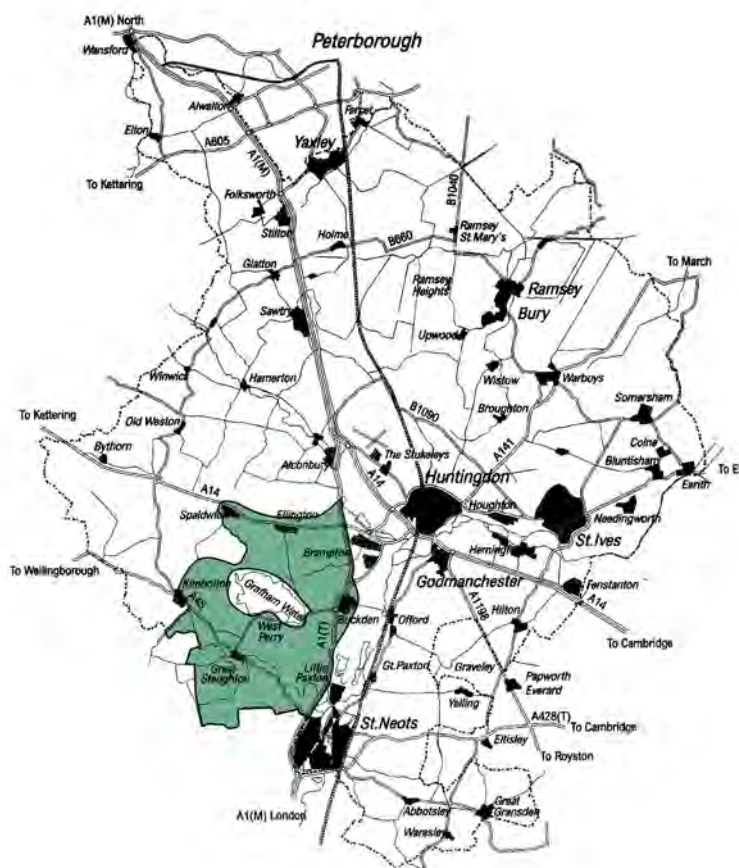
- a. *Respect existing vertical features that form landmarks such as key views to Grafham church spire and towers.*
- b. *Avoid those areas where there are already a large number of vertical elements (e.g. pylons and communication structures) to ensure that the development does not result in visual confusion and clutter.*
- c. *Consider opportunities for siting turbines adjacent to existing structures such as the visitors' centre or in amenity areas rather than the wider farmed landscape.*
- d. *Consider a linear arrangement along contours as opposed to crossing contours.*
- e. *Consider potential impacts on the SSSI (bird population).*
- f. *Seek opportunities to achieve wider landscape management objectives identified in the Huntingdonshire Landscape and Townscape Assessment in association with any proposed development, and seek opportunities to provide net gains to biodiversity, such as through creation of new habitat, appropriate to the ecological setting and scale of the proposal.*

## Cumulative development

- 9.5 The small area of Grafham Water could not accommodate more than one small-scale (2-3 turbines) development. Further guidance on cumulative landscape and visual effects is given in Part 2.



## 10 Southern Wolds



### Single Turbine

- 10.1** The landscape has a **high** capacity to accommodate a single turbine. The medium scale of the landscape, gentle topography and land cover patterns would allow a single turbine to fit well and it could correspond to land cover and settlement patterns forming a landmark feature or focal point.
- 10.2** However, care will need to be taken in siting turbines and to avoid creating visual confusion and clutter where existing vertical elements are already dominant. The location of a single turbine should take into account the following guidance:
- Seek to make a positive contribution by providing a focal point within medium to long-range open views, mirroring the landmark function of church towers and spires.*
  - Avoid those areas where there are already a large number of vertical elements (e.g. pylons and communication structures) to ensure that the development does not result in visual confusion and clutter.*
  - Relate to existing building clusters in the landscape, for example the occasional large farm buildings, utility buildings or industrial areas. There may also be an opportunity for a single turbine to relate to infrastructure associated with the main road routes (A1, A14).*
  - Consider opportunities for siting in relation to extended urban areas on the edge of the larger settlements. In this way a single turbine could function as a landmark or gateway.*
  - Relate to the land cover pattern, in particular the woodland edges and geometric field patterns.*
  - Respect the sites and settings of key valued landscape features, notably the extensive areas of woodland (SSSI).*

# 10 Southern Wolds

- g. Respect the more sensitive ridge which divides the valleys of the Kym and Ellington Brook – this ridge should remain a predominantly rural, wooded skyline.*
- h. Consider the visual relationship of a single turbine with the Ouse Valley.*
- i. Avoid introducing additional solid built structures such as sub-stations into rural areas, which are generally characterised by the absence of buildings. Additional structures would be better accommodated in relation to existing farm/ utility buildings.*
- j. Seek opportunities to achieve wider landscape management objectives identified in the Huntingdonshire Landscape and Townscape Assessment in association with any proposed development, and seek opportunities to provide net gains to biodiversity, such as through creation of new habitat, appropriate to the ecological setting and scale of the proposal.*

## Cumulative development

**10.3** There is scope for the Southern Wolds to accommodate a number of single turbines, but care will need to be taken in their location and relationship to each other. Single turbines within this landscape will act as a point of focus or landmark. Views of more than one turbine development could dilute the perceived landmark function of a turbine and create a potentially confusing viewing experience. In particular the central ridge that divides the valleys of the Kym and Ellington Brook should remain a predominantly rural wooded skyline and should not be cluttered with numerous tall vertical structures. Further guidance on cumulative landscape and visual effects is given in Part 2.

## Small-scale group (2-5 turbines)

**10.4** The landscape has a **high** capacity to accommodate a small-scale group. Although a more obvious and dominant feature in the landscape, a small-scale development could respond well to the landscape structure and pattern. However, there are a number of key sensitive elements that will need to be respected, notably the need to retain the strong wooded skyline afforded by the central ridge between the two valleys. Particular care will need to be taken in siting turbines and to avoid creating visual confusion and clutter where existing vertical elements are already dominant. The location of a small-scale group should take into account the following guidance:

- a. Avoid those areas where there are already a large number of vertical elements (e.g. pylons and communication structures) to ensure that the development does not result in visual confusion and clutter.*
- b. Respect existing landmark vertical features such as key views to church spires and towers.*
- c. Relate to existing building clusters in the landscape, for example the occasional large farm buildings, utility buildings or industrial areas. There may also be an opportunity for a small scale turbine development to relate to infrastructure associated with the main road routes (A1, A14).*
- d. Consider opportunities for siting in relation to extended urban areas on the edge of the larger settlements. In this way a small turbine group (e.g. 2-3 turbines) could function as a landmark or gateway.*
- e. Relate to the land cover pattern, in particular the woodland edges and geometric field patterns with a consistent and repetitive spacing between turbines.*
- f. Consider a linear arrangement along contours as opposed to crossing contours.*
- g. Respect the sites and settings of key valued landscape features, notably the extensive areas of woodland (SSSI).*
- h. Avoid the more sensitive ridge which divides the valleys of the Kym and Ellington Brook – this ridge should remain a predominantly rural, wooded skyline.*
- i. Avoid impinging on skylines that provide enclosure to the river valleys.*
- j. Consider the visual relationship with the Ouse Valley.*
- k. Avoid introducing additional solid built structures, such as transmission stations, into rural areas, which are generally characterised by the absence of buildings. Additional structures would be better accommodated in relation to existing farm/ utility buildings.*
- l. Seek opportunities to achieve wider landscape management objectives identified in the Huntingdonshire Landscape and Townscape Assessment in association with any proposed*

*development, and seek opportunities to provide net gains to biodiversity, such as through creation of new habitat, appropriate to the ecological setting and scale of the proposal.*

### Cumulative development

- 10.5** The landform and land cover pattern provides scope for more than one small-scale turbine group within this landscape. It is essential that there is consistency in form and siting of developments respecting the consistent character of the landscape. In this landscape some long-range views are often possible and views of more than one type of turbine development could create a potentially confusing viewing experience. Further guidance on cumulative landscape and visual effects is given in Part 2.

### Medium-scale group (6-12 turbines)

- 10.6** The landscape has a **moderate** capacity to accommodate a medium-scale group. Although a more obvious and dominant feature in the landscape, a medium-scale development could respond well to the landscape structure and pattern. However, suitable locations will be limited by the number of key sensitive elements that will need to be respected, notably the need to retain the strong wooded skyline afforded by the central ridge between the two valleys. Particular care will need to be taken in siting turbines and to avoid creating visual confusion and clutter where existing vertical elements are already dominant. The location of a medium-scale group should take into account the following guidance:

- a. *Avoid those areas where there are already a large number of vertical elements (e.g. pylons and communication structures) to ensure that the development does not result in visual confusion and clutter.*
- b. *Respect existing landmark vertical features such as key views to church spires and towers.*
- c. *Relate to existing building clusters in the landscape, for example the occasional large farm buildings, utility buildings or industrial areas.*
- d. *Relate to the land cover pattern, in particular the woodland edges and geometric field patterns with a consistent and repetitive spacing between turbines.*
- e. *Consider a linear arrangement along contours as opposed to crossing contours.*
- f. *Respect the sites and settings of key valued landscape features, notably the extensive areas of woodland (SSSI).*
- g. *Avoid the more sensitive ridge which divides the valleys of the Kym and Ellington Brook – this ridge should remain a predominantly rural, wooded feature.*
- h. *Avoid impinging on skylines that provide enclosure to the river valleys.*
- i. *Avoid disrupting long views across the area and the sensitive views into and out of the Ouse Valley.*
- j. *Avoid introducing additional solid built structures, such as transmission stations, into rural areas, which are generally characterised by the absence of buildings. Additional structures would be better accommodated in relation to existing farm/ utility buildings.*
- k. *Seek opportunities to achieve wider landscape management objectives identified in the Huntingdonshire Landscape and Townscape Assessment in association with any proposed development, and seek opportunities to provide net gains to biodiversity, such as through creation of new habitat, appropriate to the ecological setting and scale of the proposal.*

### Cumulative development

- 10.7** Scope for more than one medium-scale turbine group within this landscape is limited due to the presence of key sensitivities within the landscape. It is essential that there is consistency in form and siting of developments respecting the consistent character of the landscape. In this landscape some long-range views are often possible and views of more than one type of turbine development could create a potentially confusing viewing experience. Further guidance on cumulative landscape and visual effects is given in Part 2.

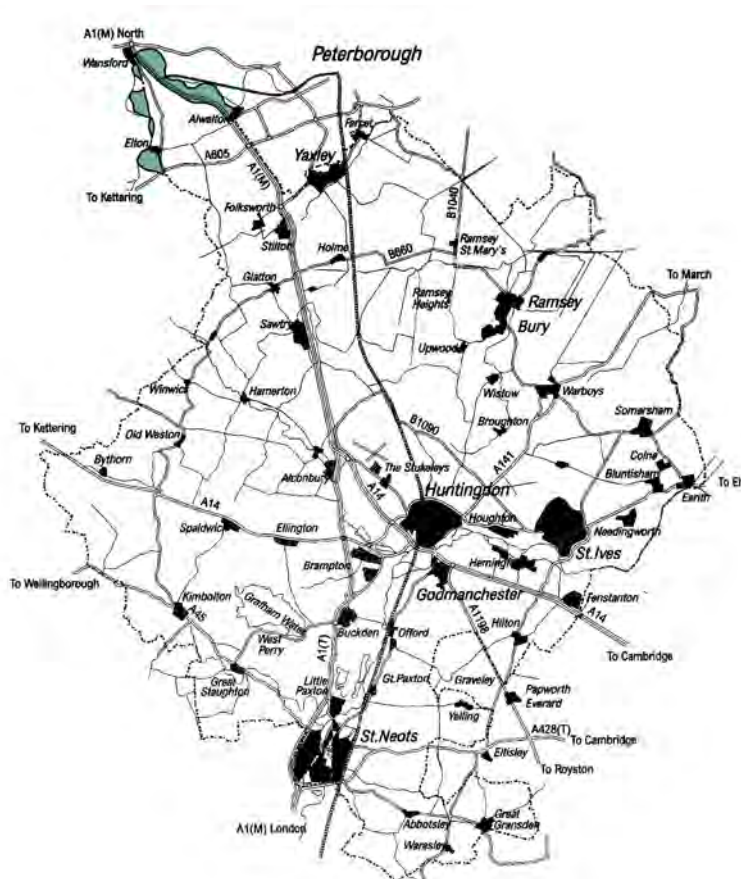
**Note** – Guidance in the original SPD was that this landscape had high capacity for a group of 4-12 turbines but low capacity for a group of 13-24 turbines. This was reviewed due to the change in turbine group sizes and

# 10 Southern Wolds

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the abrupt change in capacity. The assessment has been revised to high capacity for a group of 2-5 turbines and moderate capacity for a group of 6-12 turbines. This reflects the sensitivities identified in the landscape and the definitions for high and moderate capacity.

### 11 Nene Valley



#### Single Turbine

11.1 The landscape has a **moderate** capacity to accommodate a single turbine. The intimate nature and small scale of the landscape and presence of a large number of highly valued landscape features, notably the distinctive limestone villages, historic landscapes and important nature conservation interests suggests that locations for siting a single turbine will be limited to the few open arable areas or in association with existing infrastructure along the A1 corridor. The location of a single turbine should take into account the following guidance:

- a. *Respect the nature conservation interests associated with the wetlands along the valley floor.*
- b. *Respect the sites and settings of historic landscape features including the historic parkland and Scheduled Ancient Monuments.*
- c. *Retain the sense of tranquillity and relative isolation.*
- d. *Maintain the recreational value of the Nene Valley landscape.*
- e. *Avoid areas which retain a distinctive valley landscape such as the water meadows. It is likely that only the more open arable land will provide an appropriate location.*
- f. *Consider opportunities for locating a turbine in association with existing infrastructure along the A1 corridor.*
- g. *Respect the setting of the distinctive limestone villages of the Nene Valley e.g. Stibbington, Water Newton, Elton.*
- h. *Seek opportunities to achieve wider landscape management objectives identified in the Huntingdonshire Landscape and Townscape Assessment in association with any proposed*

# 11 Nene Valley

*development, and seek opportunities to provide net gains to biodiversity, such as through creation of new habitat, appropriate to the ecological setting and scale of the proposal.*

## Cumulative development

- 11.2** The very small geographical extent of the Nene Valley in Huntingdonshire suggests that there would not be scope to accommodate more than one single turbine development. Further guidance on cumulative landscape and visual effects is given in Part 2.

## Small-scale group (2-5 turbines)

- 11.3** The landscape has a **low** capacity to accommodate a small-scale group of turbines for the reasons noted above. However, there may be an opportunity to locate a very small development (e.g. 2 turbines) in association with infrastructure along the A1 corridor. There is no capacity for cumulative development. The guidance in relation to a single turbine should be taken into account.

## 12 Urban peripheries

### Introduction

- 12.1 This chapter provides 'generic' guidance on potential landscape capacity and mitigation requirements in relation to wind turbine development bordering urban areas (e.g. in association with urban extensions).
- 12.2 As well as the issues associated with the landscape adjoining such sites, various other visual considerations may affect the capacity to accommodate development of this type and scale. This guidance sets out these additional factors and should be taken into account when planning wind turbines near urban areas.
- 12.3 Land Use Consultants identified three sets of criteria for gauging the capacity of urban-related sites, which were developed from those used to assess the landscape character areas:

#### Townscape character:

- Landscape setting
- Character of the existing urban edge
- Landform and scale
- Size and form of settlement
- Urban structure
- Role and function

#### Visual sensitivity:

- Key landmarks
- Settlement skyline
- Key views
- Location of sensitive viewers

#### Values:

- Conservation areas
  - Quality and condition of the urban edge
  - Natural and historic values
  - Special cultural associations
  - Intrinsic values
- 12.4 Guidance reflecting these criteria is set out below; it is supported by a 'checklist' of questions contained in Annex A of LUC's report.
  - 12.5 In addition there are three over-arching points that should be borne in mind at the urban periphery:
    - a. *In general turbines should only be located in landscape character areas that have been identified as suitable for development (on the scale proposed) elsewhere in this guidance.*
    - b. *There may be opportunities for locating wind turbines in urban extensions of mixed-use development, or in association with existing or new industrial areas.*
    - c. *Simple, large scale landforms are likely to be best suited to turbine development. Narrow valleys or areas of intimate landform are unlikely to be suitable.*

### Townscape Character

- 12.6 The location of a wind turbine (or group of turbines) should take into account the following guidance in **addition to that for the landscape character area in which the site falls:**

# 12 Urban peripheries

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- a. *Wind energy developments should respond to the scale of the built form on the urban edge. For example, where the scale of built features on the urban edge is large, wind turbines may relate well to the built form.*
- b. *The form of the urban edge (linear, organic etc.) may influence the layout of turbines. However, the landscape pattern will also be important. For example in the fens the rigid field pattern may be a stronger determinate of turbine form than an organic settlement edge.*
- c. *Ensure any boundary treatment (e.g. fencing) or infrastructure accompanying the wind turbine development relates to townscape character and respects local styles and materials.*
- d. *The turbine/ group of turbines should not dominate or overwhelm the urban area – smaller areas are likely to be able to accommodate smaller scale, and fewer, structures.*
- e. *Where historic buildings form a settlement edge, that edge is unlikely to be suitable for turbine development.*
- f. *The turbine/ group of turbines should not have an adverse effect on the visual or physical relationship of the urban area with the surrounding landform.*
- g. *The turbine/ group of turbines should not have an adverse effect on the form or function of 'nodes', 'historic gateways', 'memorable areas' or landscape 'buffers' as identified in the Huntingdonshire Landscape and Townscape assessment.*
- h. *Consider opportunities for a turbine(s) to strengthen urban morphology, through the creation of new nodes, gateways or landmarks.*
- i. *Consider opportunities for a turbine(s) to create a new role for the urban edge.*
- j. *Ensure development does not have an adverse effect upon the function of the area in relation to the town, for example in terms of its recreational function, nature conservation function or open space function.*

### Visual Sensitivity

**12.7** The location of a wind turbine (or group of turbines) should take into account the following guidance in addition to that for the landscape character area in which the site falls:

- a. *Ensure that wind turbines do not obstruct, intrude into, or detract from existing positive landmarks e.g. spires, towers, mills (refer to key landmarks identified in the Huntingdonshire Landscape and Townscape Assessment).*
- b. *Consider opportunities for wind turbines to create a new positive focus in views.*
- c. *Ensure that wind turbines contribute positively to the settlement skyline, particularly as seen from popular viewpoints.*
- d. *Pay particular attention to the 'key views' identified in the Huntingdonshire Landscape and Townscape Assessment and ensure that turbines do not have a significant detrimental impact upon these views.*
- e. *Consider views from sensitive visual receptors, such as local residents, in siting wind turbines.*
- f. *Only use screen planting where it is appropriate to landscape character. For example, in a large scale open landscape it may be inappropriate to provide screen planting.*
- g. *Consider the use of off-site tree planting to filter views of turbines, where appropriate to the landscape character.*

### Values

**12.8** The location of a wind turbine (or group of turbines) should take into account the following guidance in addition to that for the landscape character area in which the site falls:

- a. *Ensure that turbine development does not have an adverse impact upon historic settlement cores or the character of conservation areas.*
- b. *Seek opportunities to improve the condition/ quality of the landscape/ townscape in which the development will occur. Consider off-site as well as on-site improvements which are in accordance with the recommendations provided in the Huntingdonshire Landscape and Townscape assessment.*



- c. *Ensure wind turbines do not have an adverse impact upon any areas known for their special cultural or literary associations.*
- d. *Ensure wind turbines do not have an adverse impact upon any intrinsic values such as nature conservation, heritage or recreational interests.*

# 13 Siting and design issues for turbines less than 100m

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## 13 Siting and design issues for turbines less than 100m

- 13.1** Although prepared for larger turbines the sensitivity assessment in the LUC study and the guidance and criteria to be considered when siting turbines are generally applicable to smaller turbines. A primary objective of the SPD is to guide potential developments to sites where landscape and visual effects (including cumulative effects) are acceptable. Turbines less than 100m height will have varying landscape and visual effects, as commercial scale turbines do, depending on height, cluster size, location and a variety of other factors discussed below. As with commercial scale turbines, smaller turbines must respect the setting of heritage assets<sup>(17)</sup>.
- 13.2** The Council has prepared a “Guidance Note for Applicants and Agents of Wind Turbine Developments” (newly revised version in 2014) which includes advice on projects involving turbines of less than 100 metres height to blade tip. It can be viewed via the [Council's website](#).
- 13.3** In addition to the guidance for landscape character areas (chapters 3-11) and for urban peripheries (chapter 12) the location of a single turbine less than 100m in height should take into account the location of any other single turbines or turbine groups in the area. The guidance on issues to be considered for cumulative development of single turbines within sections 3-11 and visual sensitivity in chapter 12 are of particular relevance.
- 13.4** Scottish Natural Heritage (SNH) has recently produced helpful guidance on the siting and design of small scale wind turbines<sup>(18)</sup>. Although some of that guidance is specific to the landscape of Scotland much of the general advice is relevant to the landscape of Huntingdonshire and is outlined below.
- 13.5** Unlike taller turbines, turbines of less than 100m in height come in a variety of styles, designs and colours, generally with faster rotation speeds. The choice of turbine is a key factor in the ability of any particular landscape to accommodate a small turbine without significant adverse effects. It may be appropriate to reflect the style, rotational speed or the location of existing turbines to avoid complex visual mixes of turbine types in any location. Applicants should show that they have considered a number of different turbine options at the pre-planning stage.
- 13.6** The following paragraphs set out the siting and design issues that are of particular importance to small scale turbines:

### Size and Scale:

- 13.7** Smaller turbines are often located close to built features (such as farms, walls, houses or settlements) and vegetation features like hedges or copses which provide scale indicators in the landscape. It is therefore particularly important to ensure that turbines relate to the scale of adjacent landscape features.
- 13.8** Even small turbines have the potential to dominate small scale topography. Care should be taken not to introduce turbines which would have an overbearing presence on complex or intricate landforms.

### Relationship with settlements:

- 13.9** The following factors need to be considered when small turbines are located close to settlements:
- It is important to consider the height of the turbine in relation to nearby buildings or structures. The turbine should not have an overbearing presence or dominate adjacent buildings;

17 Land at Moorhays Farm, Elm Lane, Charlton Musgrove, Wincanton, APP/R3325/A/11/2162443.

18 Siting and Design of Small Scale Wind Turbines of between 15 and 50 metres in height (SNH March 2012)

- Where a turbine has no direct visual relationship to a building group it is important for its setting to have some logic. Consideration of its relationship to existing settlement pattern is required to give some rationale to its location;
- Greater care will be needed in settled areas designated for their ecological, landscape or historical value, such as the Great Fen (see section 2.15 and Figure 2.1 'Landscape Character Areas and the Great Fen Landscape and Visual Setting') and conservation areas;
- The relationship between small-scale turbines and the setting of and approaches to settlements is important. Care should be taken not to let turbines dominate views of the settlement from main approaches; and
- Views from within the settlement to important sites or distinctive landscape features should also be considered when siting and designing new small scale proposals.

## **Heritage assets:**

- 13.10** As with larger turbines the assessment of the impact on heritage assets should be undertaken separately as part of a cultural heritage assessment. Views to and from heritage assets, both within settlements and in the wider landscape will be an important consideration in the siting of smaller turbines.

## **Landform:**

- 13.11** Smaller turbines have more potential to use landform to restrict their visual impact than larger commercial models. This should be explored, particularly when there are potential adverse impacts on views from sensitive receptors, such as settlements or heritage assets, which could be mitigated through screening. Advantage should be taken of the combined screening properties of topography and vegetation

## **Ancillary infrastructure:**

- 13.12** Attention to the initial siting and design of any ancillary development will help to minimise impacts and reduce visual clutter.

# 14 Landscape Sensitivity Criteria

## 14 Landscape Sensitivity Criteria

**14.1** The criteria that have been applied when assessing landscape sensitivity to wind energy development are described below in two groups, 'physical qualities' and 'perceptual qualities'. Only indicators of sensitivity likely to be relevant to the landscape of Huntingdonshire have been included.

### Physical Qualities

#### Scale and Enclosure

**14.2** Large scale open landscapes are likely to be less sensitive to wind turbine development than small scale intimate landscapes with a strong sense of enclosure. Turbines are more likely to appear out of scale and dominate landscapes with smaller and/ or irregular field sizes and landscapes with frequent human scale features.

**Table 2 : Indicators of sensitivity – Scale and Enclosure**

Least Sensitive				Most Sensitive
Large scale open, elevated landscape	Medium-large scale landscape with limited sense of enclosure	Medium scale landscape, may contain a variety of field sizes, some sense of enclosure	Small-medium scale landscape field sizes mostly smaller, sense of enclosure	Intimate small scale landscape, small irregular fields, strong sense of enclosure

#### Landform and Topography

**14.3** A smooth, convex or flat landform is likely to be less sensitive to wind turbine development than a landscape with a dramatic rugged landform, distinct landform features or pronounced undulations because turbines are less likely to detract from visually important landforms, appear confusing or unsettling (due to turbines being at varying heights or on the crest of valleys).

**Table 3 : Indicators of sensitivity – Landform and Topography**

Least Sensitive				Most Sensitive
Smooth, convex or flat landscape, extensive lowland, elevated plateau	Simple, gently undulating landform, few distinct landform features	Distinct landform, convex hills, plateau incised by valleys	Distinct or irregular landform features, noticeable changes in level	Distinct or irregular landform, sharp/ marked changes in level

#### Land Cover Pattern

**14.4** Simple, regular landscapes with extensive areas of uniform ground cover are likely to be less sensitive to wind energy development than landscapes with more complex or irregular land cover.

**Table 4 : Indicators of sensitivity – Land Cover Pattern**

Least Sensitive				Most Sensitive
Uniform groundcover	Large-scale fields, little variety in land cover	Medium sized fields, some variations in land cover	Irregular smaller scale fields, variety in land cover	Irregular small scale fields, complex and varied land cover

## Settlement Pattern and Density

**14.5** More sparsely settled areas are likely to be less sensitive than more densely settled areas or areas with a high proportion of historic villages as there will be opportunities to site turbines so that they do not dominate distinctive settlements.

**Table 5 : Indicators of sensitivity – Settlement Pattern and Density**

Least Sensitive				Most Sensitive
Sparse settlement	Widely dispersed settlement	Dispersed settlement; modern housing	Frequent villages, some historic, limited sprawl or modern development	Frequent historic villages, historic settlement pattern apparent

## Landmarks and Visible Built Structures

**14.6** Landscapes that contain large scale infrastructure, major communications routes and large-scale developments are less sensitive to wind turbine development although development needs to be carefully sited to avoid visual clutter. Historic landmarks such as important views to distinctive church spires and towers increase sensitivity, especially where they occur frequently.

**Table 6 : Indicators of sensitivity – Landmarks and Visible Built Structures**

Least Sensitive				Most Sensitive
Few or no historic landmark features, landscape dominated by large scale development/ infrastructure or major communication routes	Few historic landmark features, large scale development/ infrastructure or major communication routes present but not dominant	Infrequent historic landmark features, some large development/ infrastructure, or major communication routes	Some historic landmark features, little influenced by large development/ infrastructure, or major communication routes	Frequent historic landmark features, lack of large scale development or infrastructure

## Skyline

**14.7** Prominent and distinctive skylines, or skylines with important landmark features that are identified in the landscape character assessment, are likely to be more sensitive to wind turbine development because turbines may detract from these skylines as features in the landscape, or draw attention away from existing landform or landmark features on skylines.

**Table 7 : Indicators of sensitivity – Skyline**

Least Sensitive				Most Sensitive
Large-scale flat or plateau landscape where skylines are not prominent and/or there are no important landmark features on the skyline	Large-scale landscape where skylines are not prominent and/or there are very few landmark features on the skyline – other skylines in adjacent LCAs are more prominent	Landscape with some prominent skylines, but these are not particularly distinctive. There may be some landmark features on the skyline	Landscape with prominent skylines that may form an important backdrop to views from settlements or important viewpoints, and/ or with many landmark features on the skyline	Landscape comprising prominent or distinctive skylines and/ or with particularly important landmark features on the skyline

# 14 Landscape Sensitivity Criteria

## Visual Connections with Adjacent Landscapes

**14.8** Where the landscape character assessment has identified that views to and from adjacent landscapes are important the sensitivity to wind turbine development may be increased as landscape impacts may extend to adjacent landscape character areas.

**Table 8 : Indicators of sensitivity – Visual Connections with Adjacent Landscapes**

Least Sensitive				Most Sensitive
Self-contained, very limited connections with adjacent LCAs	Occasional views from adjacent LCAs	Intervisibility with adjacent LCAs	Extensive views from adjacent LCAs	Extensive views from adjacent LCAs, these views are a key characteristic of one or more adjacent LCAs

## Perceptual Qualities

**14.9** In the LUC study these are covered in the Landscape Value section although there are no individual sensitivity assessments.

### Human Response

**14.10** Landscapes whose scenic qualities are highly valued within the district are likely to be more sensitive to wind turbine development than landscapes of lower scenic quality or where there has been a loss of character due to agricultural intensification.

**Table 9 : Indicators of sensitivity – Human Response**

Least Sensitive				Most Sensitive
Landscape is considered to have low scenic quality such as an industrial area or despoiled land and is not highly valued	Landscape has low-medium scenic quality, valued locally but has been subject to agricultural intensification	Landscape has a medium scenic quality valued locally for its rural character	Landscape has a medium-high scenic quality, valued for its rural character and/or recreational opportunities	Landscape has a high scenic quality, valued for its recreational opportunities, tranquillity, varied topography, and/ or unspoilt character

### Remoteness and Tranquillity

**14.11** Relatively remote or tranquil landscapes, due to freedom from human activity and disturbance and having a perceived naturalness or a strong feel of traditional rurality, tend to be more sensitive to wind turbine development because wind turbine development will introduce new and uncharacteristic features which may detract from the sense of tranquillity and or remoteness/ naturalness. Landscapes that contain many signs of modern development are generally less sensitive.

**Table 10 : Indicators of sensitivity – Remoteness and Tranquillity**

Least Sensitive				Most Sensitive
Landscape with much human activity and development, significantly affected by major communications routes	Landscape with human activity and dispersed modern development, Some impact from major communications routes	Landscape with some modern development and human activity but retaining some rural and serene aspects	Landscape with little modern human influence and development, rural and serene aspects are most apparent	Tranquil landscape with little modern human influence and development, sense of quiet and isolation are preeminent

# 15 Part 2: Cumulative Landscape and Visual Impact

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## 15 Part 2: Cumulative Landscape and Visual Impact

### Background

- 15.1** The original SPD relating to wind turbines in the landscape was based on the landscape character units identified in the original assessment of Landscape Character Areas (LCAs) in the district that was carried out by Landscape Design Associates in 2002 (adopted in 2007). It was also underpinned by the study “Wind Turbine Development in Huntingdonshire” prepared by Land Use Consultants in 2005. The capacities shown for each of the LCAs in the 2006 SPD were based on a situation where there were no existing wind turbine developments in HDC and therefore represented a projection based on best information and guidance available at the time.
- 15.2** Part 1 offers guidance on siting and the potential capacity of each of the Landscape Character Areas to accommodate various scales of Wind Turbine Development: from a single turbine to a large scale group. It also indicates the cumulative landscape capacity within each landscape character area (LCA) for each group size.
- 15.3** The bulk of Part 1 concentrates on the capacity for turbines between 100m and 140m in height. However, additional general guidance is provided for the siting of turbines below 100m within Chapter 13 'Siting and design issues for turbines less than 100m'. Further discussion about cumulative aspects in the SPD, is provided in Chapter 16 'Review of constraints and existing wind turbine schemes' below.

### Cumulative Landscape and Visual Impact of Wind Turbine Development

- 15.4** This part of the SPD is based upon a work undertaken by for the Council by The Landscape Partnership (TLP). The Council commissioned a Position Statement in February 2013 to consider the cumulative impacts of wind turbines and the future capacity of the landscape to accommodate further wind turbines in the district. This part of the SPD evaluates the current cumulative landscape and visual impacts of existing and consented turbines in the district and also proposes guidance on criteria for the assessment of cumulative landscape and visual impacts arising from future wind turbine proposals.
- 15.5** Cumulative effects have been defined in a generic sense as, *‘impacts that result from incremental changes caused by other past, present or reasonably foreseeable actions together.’*<sup>(19)</sup>
- 15.6** In terms of wind turbine development cumulative impacts have been defined as, *‘the additional changes caused by a proposed development in conjunction with other similar developments or as the combined effect of a set of developments, taken together. In practice the terms ‘effects’ and ‘impacts’ are used interchangeably.’*<sup>(20)</sup>
- 15.7** It should be recognised that cumulative landscape and visual effects are just two aspects of a full range of issues that should be considered in relation to guiding a strategy for wind energy in Huntingdonshire and for any proposal for wind turbine development. Part 1 of this SPD should form the basis for assessing landscape sensitivity. The approach to a number of other issues is set out in “Guidance Note for Applicants and Agents of Wind Turbine Developments”. It can be viewed on the the [Council's website](#).

### Requirements

- 15.8** The Council had identified an urgent need to provide a position statement which dealt with the cumulative impacts of all operational and consented wind turbine developments of all scales and turbine sizes, and an assessment of the remaining capacity within the LCA's and the district as a whole for wind turbine developments. The independent position statement focussed on the cumulative landscape and visual impacts and in particular the remaining landscape capacity in each LCA and the district. The position statement and this part of the SPD are compliant with the NPPF and relevant local policy.

19 Hyder (1999) ‘Guidelines for the Assessment of indirect and cumulative impacts as well as impact interactions’  
20 Scottish Natural Heritage (2012) *Assessing the Cumulative Effect of Onshore Wind Energy Developments*



- 15.9** This part of the SPD studies the current cumulative effects of wind turbines in the district, and offer guidance to officers, members, developers and the general public on the capacity of local landscapes to accommodate further wind turbine development. Its analysis will be used in the consideration of potential cumulative impacts resulting from new wind energy proposals. The evidence it presents will support the Council's emerging local plan policies and the overall SPD, and together with the "Guidance Note for Applicants and Agents" and the 2005 LUC Study "Wind Turbine Development in Huntingdonshire", it forms a suite of documents that inform these policies.
- 15.10** Both the TLP Position Statement and this part of the SPD cover the following issues:
- a. A review of existing renewable policy and the SPD by HDC together with the earlier Draft SPD: "Landscape Sensitivity to Wind Turbine Development" (2012) with regard to guidance on capacity and cumulative impacts
  - b. The identification and plotting in GIS of all single turbine and wind farm developments in the district grouped into the following categories:
    - o operational
    - o consented but not built
    - o planning application or appeal stage, referred to as 'in planning'
  - c. The identification and plotting in GIS of all single turbine or wind farm developments within 10km of the district boundary.
  - d. On site 'ground truthing' of the local context in Huntingdonshire and the current landscape and visual impacts of wind turbines and wind farms with particular reference to the sensitivity and capacity criteria in the previous and revised SPD.
  - e. Review of selected SPD guidance from other local planning authorities' for cumulative effect of wind turbines.
  - f. Recommendations for assessing capacity and for considering current and future applications in Huntingdonshire with regard to the cumulative landscape and visual impact.
- 15.11** This part of the SPD provides a strategic overview of the current situation at a point in time, in this case 1 January 2014. It also sets out a number of criteria which should be used as a guide to identifying and assessing cumulative effects. The recommendations are not to be interpreted as absolute in all respects. For each application there will still be a requirement for developers to undertake a detailed site based assessment of cumulative impacts including for any other consented wind turbine proposals and any others still 'in planning' at the time. Guidance for undertaking these studies is found at Chapter 18 'Guidance to applicants'.
- 15.12** The findings of this part of the SPD are not intended to replace the requirements of an Environmental Impact Assessment (EIA) under The Town and Country Planning (Environmental Impact Assessment) (England and Wales) Regulations 1999 (as amended). Detailed consideration of a site may identify factors specific to that site which will need to be balanced alongside issues identified in this document.

## 16 Review of constraints and existing wind turbine schemes

**16.1** The assessment of cumulative issues involves an appreciation of a number of factors. The original TLP study and this part of the SPD have identified a number of constraints relevant to wind turbine development and represented and analysed this data using GIS. A number of the following topics are illustrated by accompanying Figures 16.1 to 16.4, which can be found at the end of this chapter. Each of the drawings also plot the district and LCA boundaries as well as a 10km zone from the district boundary. The relative capacity of each LCA for wind turbine developments of specific group numbers has been more fully assessed in part 1 of this SPD.

### Topography and watercourses

**16.2** Figure 16.1 illustrates the underlying pattern of landform and watercourses within Huntingdonshire set against the defined LCA's. The Huntingdonshire LCAs are a refinement of the NCAs and provide a district scale focus that is applicable to the assessment of suitability for wind turbine development. The main ridgelines in the district have been shown on figure 16.1 and so gives an indication of the distances between ridges. The pattern of landform and drainage in each of the Huntingdonshire LCAs is summarised below:

#### The Fens

**16.3** The LCA is located to the north east of the district and is essentially a flat landscape with heights ranging by no more than 1 or 2 metres above or below sea level. There is a complex network of drains, dykes and lodes many following the reclaimed geometric field pattern. The area and associated higher land to the west drains into either, the River Nene Old Course, Yaxley Lode or the Fenton Lode/ Twenty Foot Drain on route to the Wash.

#### The Fen Margin

**16.4** The LCA follows the western and southern edge of the Fens. Landform is gently sloping and typically between 2 to 10m AOD. There are localised areas that reach up to about 20 metres e.g. Warboys Heath. The drainage includes a number of tributary streams than run off the claylands into the Fens to the east.

#### The Central Claylands

**16.5** The LCA is a large gently undulating plateau typically 30 to 40m AOD and reaching up to just over 50m to the north west. The area historically hosted a number of airfields. There are some gentle tributary valleys with associated streams in which a number of small villages are located e.g. Abbots Ripton and Broughton. The area mainly drains to the north east with some other areas draining to the south east towards the Ouse and Alconbury Brook to the south West also to the Ouse.

#### The Ouse Valley

**16.6** The LCA comprises the valley of the main river within the district. The valley sides comprise moderate to gentle side slopes with a number of associated secondary tributary valleys. The valley is about 5 to 6km wide between the flanking areas of higher ground. The central flood plain and valley floor is about 2km wide and meanders north and then east through the area. The LCA also includes a series of water bodies associated with former mineral extraction in the valley floor.

#### South East Claylands

**16.7** The LCA forms the north west extension of a more extensive undulating area of clay plateau that continues into South Cambridgeshire to the east. The landform slopes down to the Ouse Valley to the north and west and the land drains via a number tributary streams in shallow valleys. The LCA has similar characteristics to much of The Central Claylands.

## The Northern Wolds

- 16.8** This LCA includes land in the north western part of the district. It includes areas of relatively higher ground between 40 to 70m AOD. There are also a number of more marked ridges and valleys generally running in a north west/ south east orientation. The ridges are separated by a number of valleys with streams including the headwaters of Alconbury Brook and Ellington Brook. The intervals between the ridges vary from between 5.5km to as little as 2km where the landform creates a greater sense of enclosure and rolling undulations.

## The Grafham Water

- 16.9** The LCA is a small area focused on the reservoir and surrounding fringes. The landform encloses the reservoir that hosted the Diddlington Brook before it was dammed. The area is relatively self-contained from wider views.

## The Southern Wolds

- 16.10** The LCA wraps around Grafham Water and extends to the A14 in the north and A1 to the east. The LCA includes a number of plateau areas and undulations but these are not typically as marked as in the Northern Wolds. The River Kym is the main watercourse that flows through Kimbolton eastwards to the Ouse in a broad valley about 4km wide. Other secondary tributaries flow to the Ellington Brook to the north.

## The Nene Valley

- 16.11** This is a very small LCA that forms the southern valley slopes and flood plain of the much larger Nene Valley that meanders through Northamptonshire to Peterborough and eventually to the Wash. The district boundary follows the course of the river from Elton to Alwalton. There are a few tributary streams that flow off the Northern Wolds to the Nene.

## Biodiversity Designations

- 16.12** Figure 16.2 shows the national designations for biodiversity including national nature reserves (NNR), Ramsar sites, sites of special scientific interest (SSSI), special protection areas (SPA), special areas of conservation (SAC) and ancient woodland. None of the designations have been 'buffered'. Consultation on any specific proposals may highlight constraints depending on the wildlife interest and designations affected. This could have fairly modest impacts on the design of scheme e.g. 50 to 100m offsets from a feature such as a hedgerow to prevent effects on foraging bats, while in the case of the most sensitive sites eg SPAs and Ramsar sites this may have a greater impact e.g. if there were an affected flight path related to protected bird species, the scheme may need to be relocated or substantially reduced in scale to avoid significant effects on the species or site concerned. In addition the Great Fen Project has been included together with its identified wider setting area. This area occupies a large part of The Fens and smaller parts of both the Fen Margin and Central Claylands LCAs. It is anticipated that turbine proposals would generally not be acceptable in the Great Fen Project Area and its Landscape and Visual Setting, though each case must be considered on its merits. The emerging local plan contains a policy dealing with strategic green infrastructure enhancement where the supporting text confirms the additional protection afforded to these areas from visual and noise intrusions such as those associated with wind turbine development.

## Heritage

- 16.13** Figure 16.3 illustrates a number of the main heritage designations. These include registered parks and gardens (e.g. Elton Hall), scheduled monuments, conservation areas (which include numerous villages and some larger areas along the River Ouse and at Ramsey) and the Grade I and II\* listed buildings which represent those assets of greatest heritage value. These two classes of listed building are likely to include the majority of the village churches and other major landmark buildings in the landscape. Grade II listed buildings are also considered to be of national value but are not shown on the Figure due to the numbers

# 16 Review of constraints and existing wind turbine schemes

involved. Grade II buildings should also be assessed as part of any proposal. Individual assessment will be required to determine the nature of any direct effects, or effects on the setting of heritage assets that may affect their significance.

## Settlement

**16.14** The pattern of settlement in the district includes a number of towns, villages and individual properties. Proximity of settlement, and in particular residential locations, to wind turbine development is an important constraint. Tables 18 and 19 identify a range of categories of magnitude of visual impact for different heights of turbine. The closest category, termed ‘dominant’ in this study indicates the likely outer extent of where a wind turbine development could have a visual effect on residential amenity resulting in,

*‘an unpleasantly overwhelming and unavoidable presence in main views from a house or garden, (where) there is every likelihood that the property concerned would come to be widely regarded as an unattractive and thus unsatisfactory (but not necessarily uninhabitable) place to live.’*

**Enifer Downs (APP/X2220/A/08/2071880)**

**16.15** Clearly the specific circumstances e.g. localised screening or orientation could reduce this distance. A 2km offset identifies the distance where there are still likely to be significant impacts on visual amenity and the property would be within the ‘prominent zone’ of visual effect. More discussion and information on these issues can also be found in paragraphs 18.24 to 18.29 below.

## Existing Turbines

**Note** - Tables 11-16, figures 16.1-16.8, and text at the relevant paragraphs all reflect the scale of wind turbine development in the district as of 1 January 2014. Obviously this is not a static situation and the numbers of operational, consented and “in planning” schemes will change over time. It would be impractical to update the SPD after each new consent or application, but HDC will update relevant tables, figures and text when significant changes have occurred to the scale of turbine development in the district.

**16.16** The current situation within Huntingdonshire has been assessed in terms of:

- Schemes either constructed or consented but not yet built
- Schemes ‘in planning’ – based on an application having been submitted or at appeal

**16.17** The turbines are shown on Figure 16.4. Figure 16.1 also shows the pattern of wind turbine development in the district and illustrates the position of many of the turbines on the local ridges within the district. Figures 16.1 and 16.4 also show the turbines outside the district but within a 10km zone around the district (excluding those “In Planning”). The turbines outside Huntingdonshire have been plotted based on information from the RESTA data on the [Department of Energy and Climate Change website](#).

**16.18** Schemes included in the “constructed and consented but not built” status are identified in Table 11 below.

**Table 11 : Constructed and Consented schemes in Huntingdonshire as at 1 January 2014**

Site Name	Planning Application Reference	Number of Turbines	Proposed Tip Height
Ashfield, Meadow Road, Gransden	1201268FUL	1	18
Birds Nest, Parkhall Road, Somersham	1200225FUL	1	20
Brook Farm, Ellington	1000887FUL	1	25
Church Farm, Ramsey Mereside	1200669FUL	1	46
Denton Lodge, The Old North Road, Denton	0702290FUL	1	15
Float Fish Farm, Milk and Water Drove, Farcet	0901252FUL	1	18
Glebe Farm, Spaldwick	1002042FUL	1	25
Hamerton Zoo Park, Hamerton	1200670FUL	2	46
Lakeside Lodge, Pidley	0803141FUL	1	19
Woolley Hill, Ellington	1001741FUL	4	130
Foxholes Farm, Leighton Bromswold	1201829FUL	1	34
The Retreat, Wistow	1201985FUL	2	18
Red Tile Wind Farm	0302827FUL	12	100
Mereside Farm, Ramsey Mereside	0101772FUL	1	34
Cotton Farm, Graveley Road, Offord Darcy	0802296FUL	8	125
Mill House, Old Weston	1201408FUL	1	20
Littlebury Farm, Hemmingford Abbots	1200313FUL	1	42
Common Barn, Rectory Lane, Southoe	1200803FUL	3	125
Catworth Lodge, Tilbrook	1300264FUL	1	46
Land at St Mary's Road, Ramsey	1101865FUL	4	127
St Mary's Road, Ramsey	0400031FUL	1	125
Wilson Orchard, Fenside Road, Warboys	1200454FUL	1	20
Cromwell Farm, Warboys Road, Bury	1300274FUL	1	25
Three Fishes Farm, Warboys	1201034FUL	3	18
Tick Fen Farm, Warboys	1300084FUL	1	74
Tick Fen Farm, Warboys	1000119FUL	1	25
Tick Fen Farm, Warboys	1101601FUL	1	46
Tilbrook Grange, Tilbrook	1101420FUL	1	25
Wood Green Animal Shelter	1101886FUL	1	102

# 16 Review of constraints and existing wind turbine schemes

**16.19** The schemes that are currently still ‘in planning’ or at appeal stage include the schemes listed in Table 12. It should be noted that there may be other schemes ‘in planning’ outside Huntingdonshire but these are not included in the list or analysis in GIS on Figures 16.4, 16.7 and 16.8.

**Table 12 : Schemes in Planning or appeal stage in Huntingdonshire as at 1 January 2014**

Site Name	Planning Application Reference	Number of Turbines	Proposed Tip Height
Land South West of RAF Molesworth	1200967FUL	6	126
Molesworth House, Molesworth	1301841FUL	1	25
Galley Hill Farm, Hemingford Grey	1301724FUL	1	42
Haddon Lodge Farm	1301208FUL	1	67
Littlebury Farm, Hemingford Abbots	1301361S73	1	46
Littlebury Farm, Hemingford Abbots	1301463FUL	1	102
North of King’s Bush Farm, Godmanchester	1301687FUL	1	100
West of Bicton Industrial Estate	1300512FUL	3	125

**16.20** A review of the distribution of operational and consented wind turbine developments in Huntingdonshire identifies that the majority of the existing schemes are located either within the Fens and Fen Margin LCAs (e.g. Red Tile and Ramsey) to the north east of the district, in the southern part of the district in the South East Claylands (e.g. Cotton Farm and Wood Green) or on the higher ground of the Northern Wolds (e.g. Woolley Hill and Hamerton). The major proposed schemes would lead to further intensification of turbines in the Southern and Northern Wolds close to the A1 (Common Barn – allowed at Appeal), A14 (Molesworth – Appeal decision awaited) and B645 (Bicton – Appeal still to be heard).

**16.21** An analysis of the influence of operational and consented turbines has been carried out by illustrating two criteria, namely the ‘Prominent Zone’ and ‘Conspicuous Zone’. For a turbine at a height of 100m to 129m to blade tip the outer extents of these two zones are considered to be at a 2km and 5km radius from a single turbine or the outermost turbine of any group. The distances increase or decrease with taller or smaller turbines, as shown in Table 13 below. The reduction in distances do not reflect a straight forward pro-rata reduction based on height alone since smaller turbines are relatively more detracting in the landscape by virtue of the faster rotation speeds of a cycle of the turbine blade. The distances used below have been calibrated in the field by exercising professional judgement in assessing the impacts of existing turbines.

**Table 13 : Distances representing Prominent and Conspicuous Zones**

Height of Turbine	<30m	30m to 69m	70m to 99m	100m to 129m	130m to 150m+
<b>Prominent Zone</b>	=/ <750m	=/ <1.5km	=/ <1.75km	<2km	<2.5km
<b>Conspicuous Zone</b>	750m to 1.5km	1.5km to 3km	1.75km to 4km	2km to 5km	2.5km to 6km

**16.22** The rationale for these two distances is that they provide a reasonable basis for representing the likely extent of ‘significant’ (in EIA terms) landscape and visual effects that would result from wind turbines of each height in the Huntingdonshire landscape.

**16.23** It is recognised that the actual landscape and visual effects would be locally limited by factors including landform, vegetation cover and built development. Furthermore, some factors e.g. landform would be more consistent in flatter LCAs such as the Fens but would vary in other LCAs where there is more variation in landform pattern e.g. Northern Wolds. In some cases areas of intervening high ground may provide

localised partial or complete screening of turbines from some viewpoint locations. Conversely turbines on more prominent ridges may be more widely visible from other ridges or along and across valleys. Clearly the influence of any specific proposal needs to be assessed on a case by case basis. However, the use of Prominent and Conspicuous offsets provides a useful starting point to assess the likely range of influence of a proposal and therefore to also identify locations where significant effects may begin to overlap from more than one scheme. This would thus help identify locations where potential issues of cumulative landscape or visual impact might occur and should be carefully examined as part of any specific application or proposal. This effective “separation” distance of 10km (for a 100-129m turbine) is also comparable to the approach used in the Placing Renewables in the Eastern Region study (Arup) discussed in paragraphs 15.5 to 15.6 above.

**16.24** Based on the built and/ or consented schemes the percentage of the LCAs within the 'Prominent' and 'Conspicuous' zones for all turbines in Huntingdonshire (as listed in Table 11 above) is shown in Table 14 below. The extent of the two zones is also illustrated by Figure 16.5.

**Table 14 : Zones as percentage of Landscape Character Areas as at 1 January 2014, excluding 'In Planning'**

Landscape Character Area (LCA)	Total Area (km <sup>2</sup> )	Percentage in Prominent Zone	Percentage in Conspicuous Zone <sup>(1)</sup>	Total percentage in Prominent/ Conspicuous Zones
The Fens	125	34	38	72
Fen Margin	117	14	35	49
Central Claylands	186	7	30	37
Ouse Valley	79	3	63	66
South East Claylands	116	25	40	65
Northern Wolds	188	15	37	52
Grafham Water	11	21	79	100
Southern Wolds	82	26	51	77
Nene Valley	7	0	0	0
<b>Huntingdonshire</b>	<b>913</b>			

1. NB: Conspicuous Zone Area calculated as difference between inner and outer extents of that zone.

**16.25** From Table 14 it can be seen that the LCAs with the highest proportion affected by the prominent zones are The Fens (34%) and the South East Claylands (25%). The coverage in The Fens is also partially due to the proximity of other schemes in the adjacent Fenland District e.g. Glassmoor. The influence in the conspicuous zone (NB calculated as the ‘donut’ shape excluding the inner prominent zone) is more widely distributed. A number of LCAs having a surprisingly high percentage e.g. Grafham Water and the Ouse Valley. This is a result of schemes in neighbouring LCAs and in the case of the Ouse Valley from schemes located on the adjacent higher ground in neighbouring LCAs. However, the figure for Grafham Water should be tempered by the relatively small size of the area and the fact that there is likely to be a degree of screening by landform to the north. Other areas experiencing a relative high coverage (>35%) are The Fens, Fen Margin, South East Claylands, Southern Wolds and Northern Wolds. The Central Claylands has coverage of 30% despite not having any turbines in the areas. This is again due to the influence from schemes close by but in adjacent LCAs. However it must be noted that there are also further potential “landscape constraints” in the Central Claylands LCA – examples being the “orchard dominated landscape” in the east, and the “existing ancient woodland sites” in the north west, both mentioned in the SPD (Chapter 5).

# 16 Review of constraints and existing wind turbine schemes

**16.26** Figure 16.6 (which combines some of the constraints illustrated in Figures 16.2 and 16.3 with the Prominent and Conspicuous Zones) provides an indication as to where there may be areas of remaining capacity for wind turbine development in Huntingdonshire. It should be remembered that there will be other site specific constraints to consider eg the presence of settlement together with a range of other issues as set out in the Council's "Wind Turbine Developments – A Guidance Note for Applicants and Agents".

**16.27** By including all the schemes still in planning or at appeal (within Huntingdonshire) in the spatial analysis the areas within the 'Prominent' and 'Conspicuous' zones will increase (except where an area in the 'Conspicuous' zone becomes part of the 'Prominent' zone). Should all current applications be approved or allowed at appeal the situation is shown in Table 15 below and illustrated in Figure 16.7.

**Table 15 : Zones as percentage of Landscape Character Areas as at 1 January 2014, including 'In Planning'**

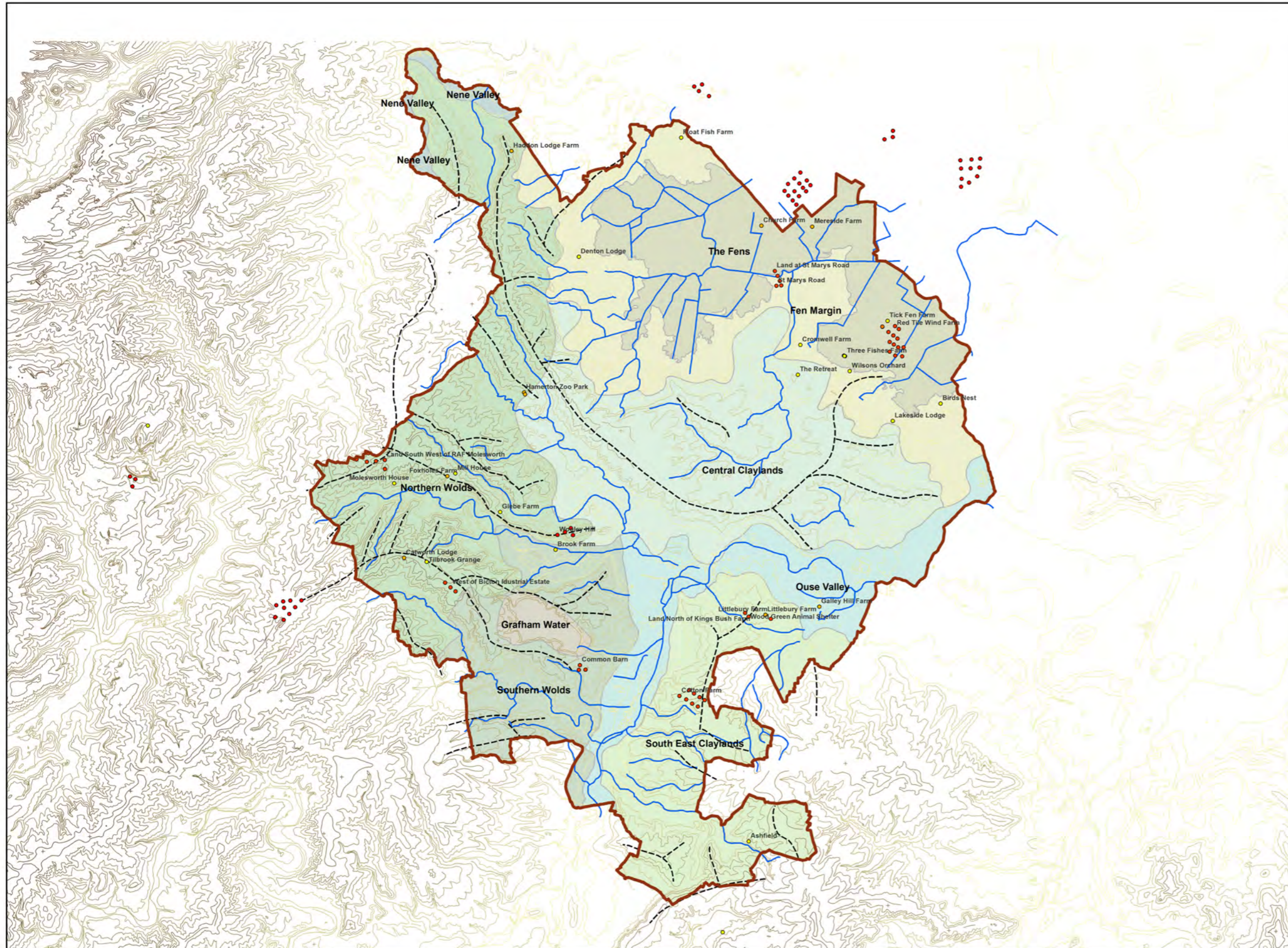
Landscape Character Area (LCA)	Total Area (km <sup>2</sup> )	Percentage in Prominent Zone	Percentage in Conspicuous Zone <sup>(1)</sup>	Total Percentage in Prominent/ Conspicuous Zones
The Fens	125	34	38	72
Fen Margin	117	15	38	53
Central Claylands	186	8	31	39
Ouse Valley	79	13	64	77
South East Claylands	116	29	38	67
Northern Wolds	188	30	45	75
Grafham Water	11	21	79	100
Southern Wolds	82	30	58	88
Nene Valley	7	0	18	18
<b>Huntingdonshire</b>	<b>913</b>			

1. NB: Conspicuous Zone Area calculated as difference between inner and outer extents of that zone.



























**16.28** Based on the above findings it can be seen that the LCA's with the highest proportion of the prominent zone are The Fens (34%), Northern Wolds (31%), Southern Wolds (30%) and South East Claylands (26%). The influence of the conspicuous zone is more widely distributed; with the two LCAs most affected being the Ouse Valley and Grafham Water as a result of schemes in adjacent LCAs. It is important to note that this scenario is based on all schemes being approved. The reality will vary in time and as any new schemes are brought forward, and existing "in planning schemes" are either consented or refused.

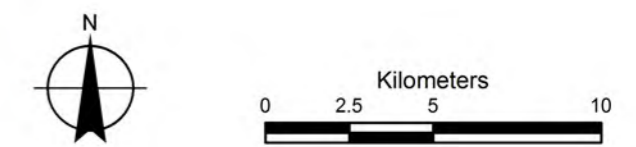
**16.29** The combination of a number of the constraints together with the prominent and conspicuous zones is shown in Figure 16.8. This provides an indication as to where there may be areas of remaining capacity if all the schemes were approved or allowed. The situation will vary over time and should be subject to an assessment at the point of each application. The current cumulative situation should also be read alongside the capacity ranges for each LCA as set out in part 1 for each grouping of turbines.



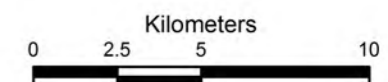
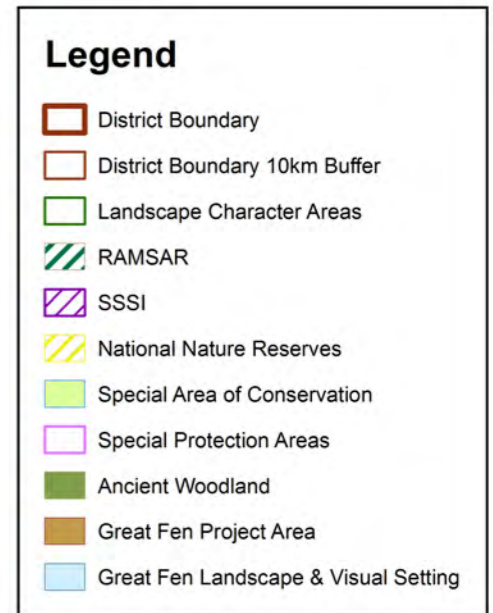
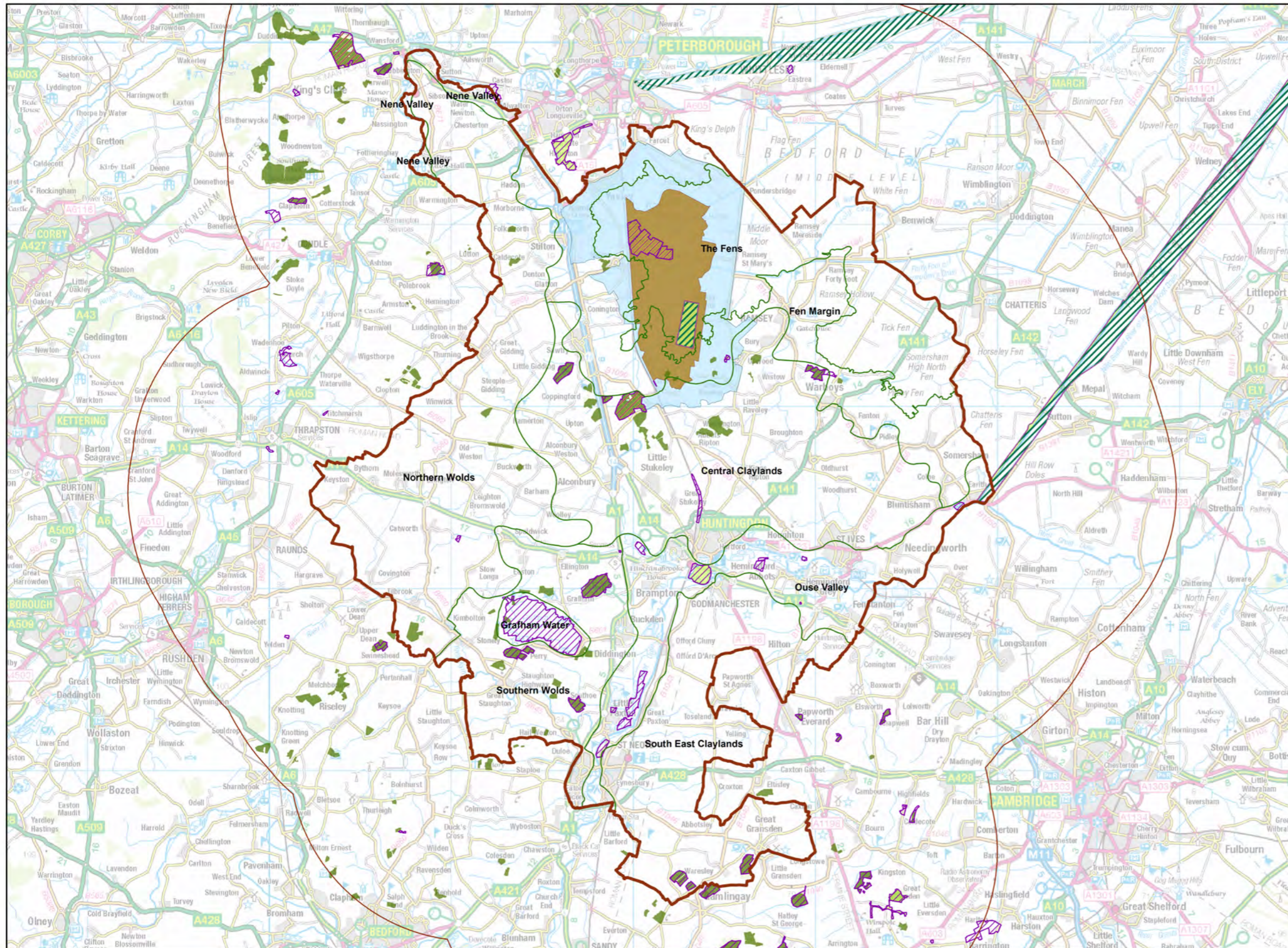


**Legend**

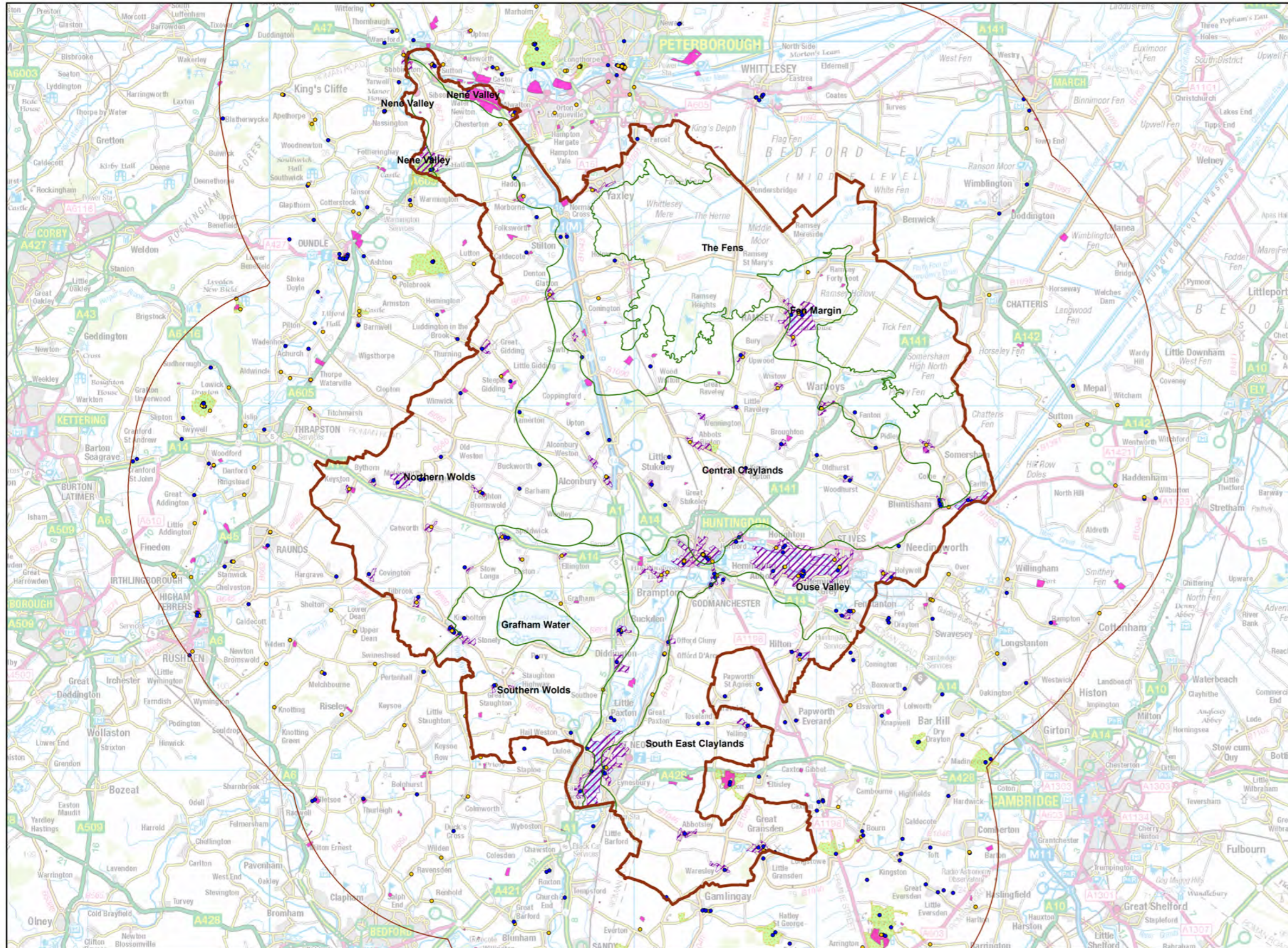
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- Landscape Character Areas**
  -  Central Claylands
  -  Fen Margin
  -  Grafham Water
  -  Nene Valley
  -  Northern Wolds
  -  Ouse Valley
  -  South East Claylands
  -  Southern Wolds
  -  The Fens
-  Ridgelines
-  Water Courses
- Wind Turbines (Including in Planning)**
  -  15 - 29m
  -  30 - 69m
  -  70 - 99m
  -  100 - 129m
  -  130 - 150m
- Neighbouring Turbines**
  -  54 - 69m
  -  70 - 99m
  -  100 - 129m
- Contours**
  -  0 - 20m
  -  21 - 40m
  -  41 - 60m
  -  61 - 80m
  -  81 - 100m
  -  101 - 120m













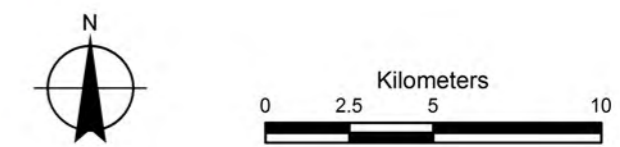






**Legend**

-  District Boundary
-  District Boundary 10km Buffer
-  Landscape Character Areas
-  Conservation Areas
-  Scheduled Monument
-  Registered Parks and Gardens
-  Listed Building - Grade I
-  Listed Building - Grade II\*





**Project:** HDC Wind Energy SPD

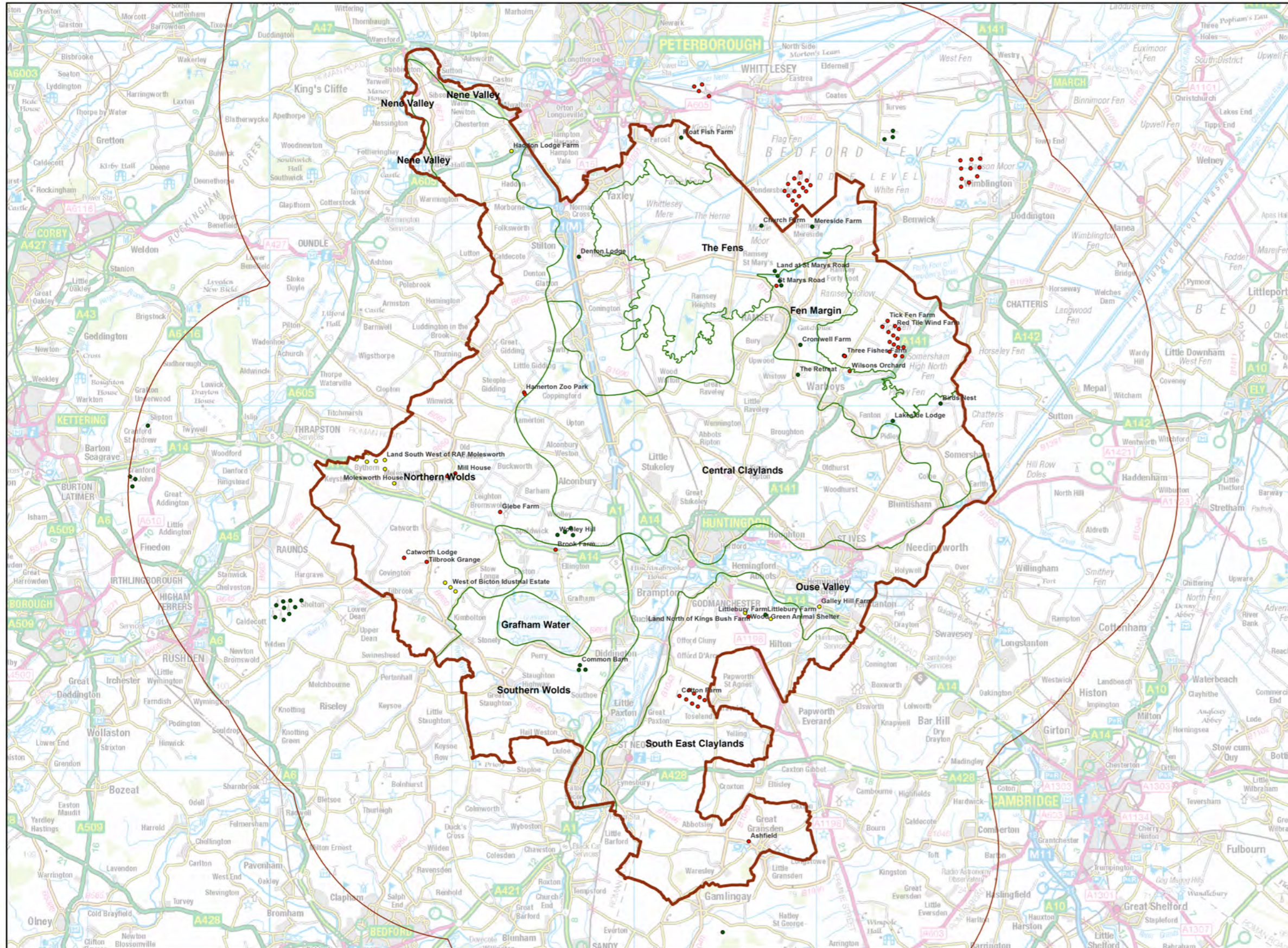
**Drawing Number:** Figure 16.4

**Date:** March 2014

**Drawing Title:** Existing Wind Turbine Schemes Including Those 'In Planning'

**Drawn:** PM

**Checked:** CT



**Legend**

- District Boundary
- District\_Boundary\_10km\_Buffer
- Landscape Character Areas

**Wind Turbines**

- In Planning
- Consented
- Operational

**Neighbouring Turbines**

- Consented
- Operational





**Project:** HDC Wind Energy SPD

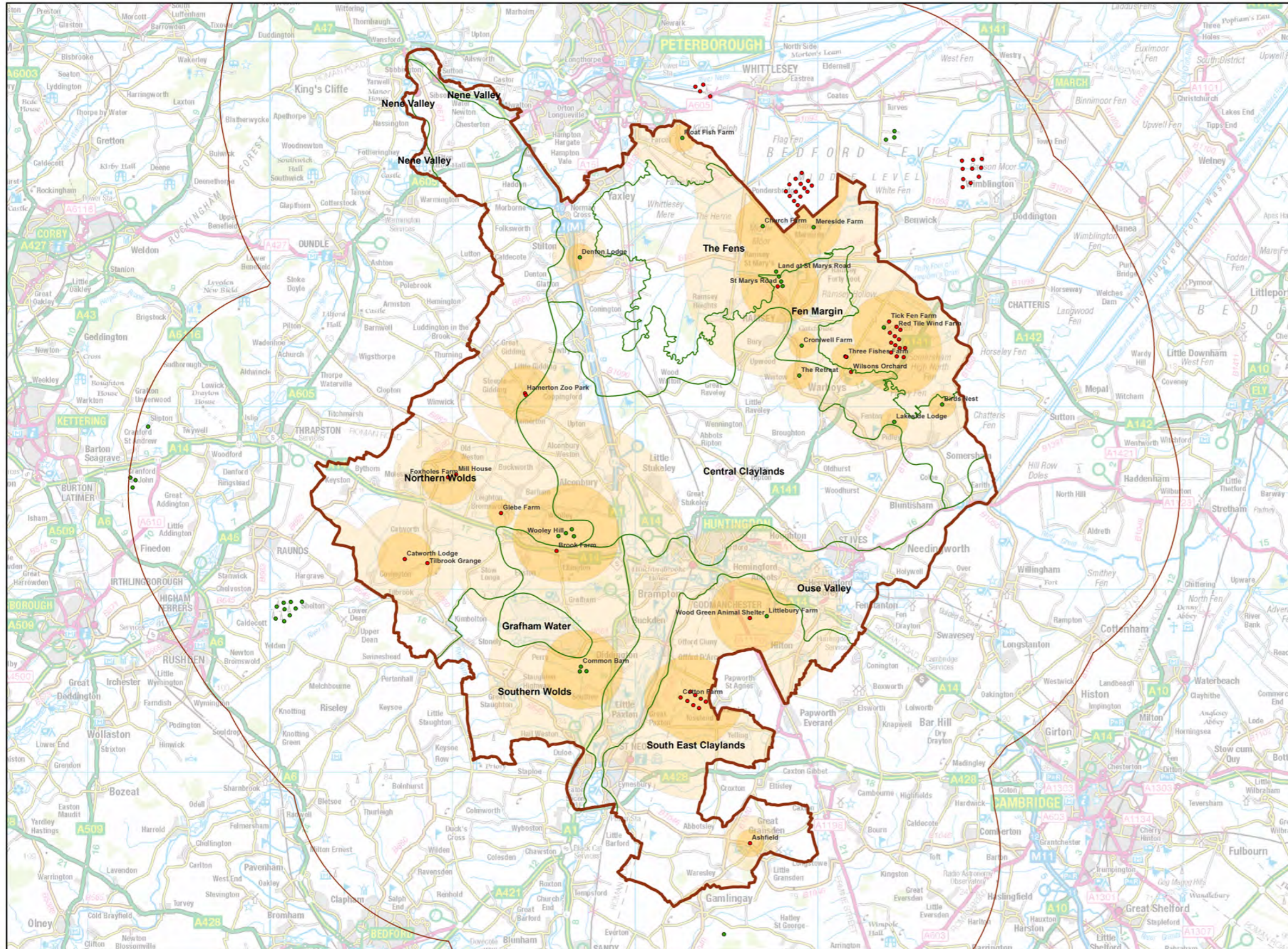
**Drawing Title:** Prominent and Conspicuous Zones (Current Schemes)

**Drawing Number:** Figure 16.5






**Drawn:** PM

**Date:** March 2014 (Minor amendment June 2014)



**Checked:** CT





**Legend**

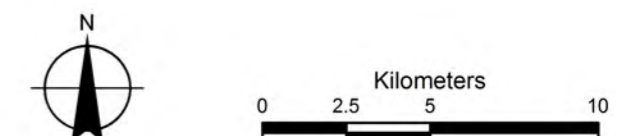
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-  District Boundary 10km Buffer
-  Landscape Character Areas
-  Prominent Zone
-  Conspicuous Zone

**Wind Turbines**

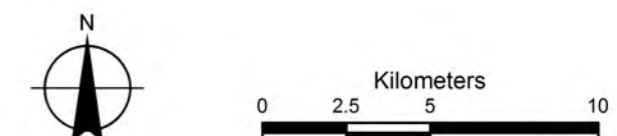
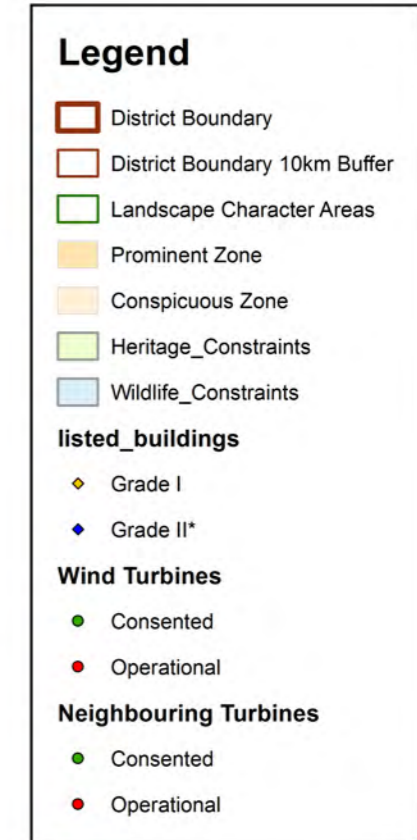
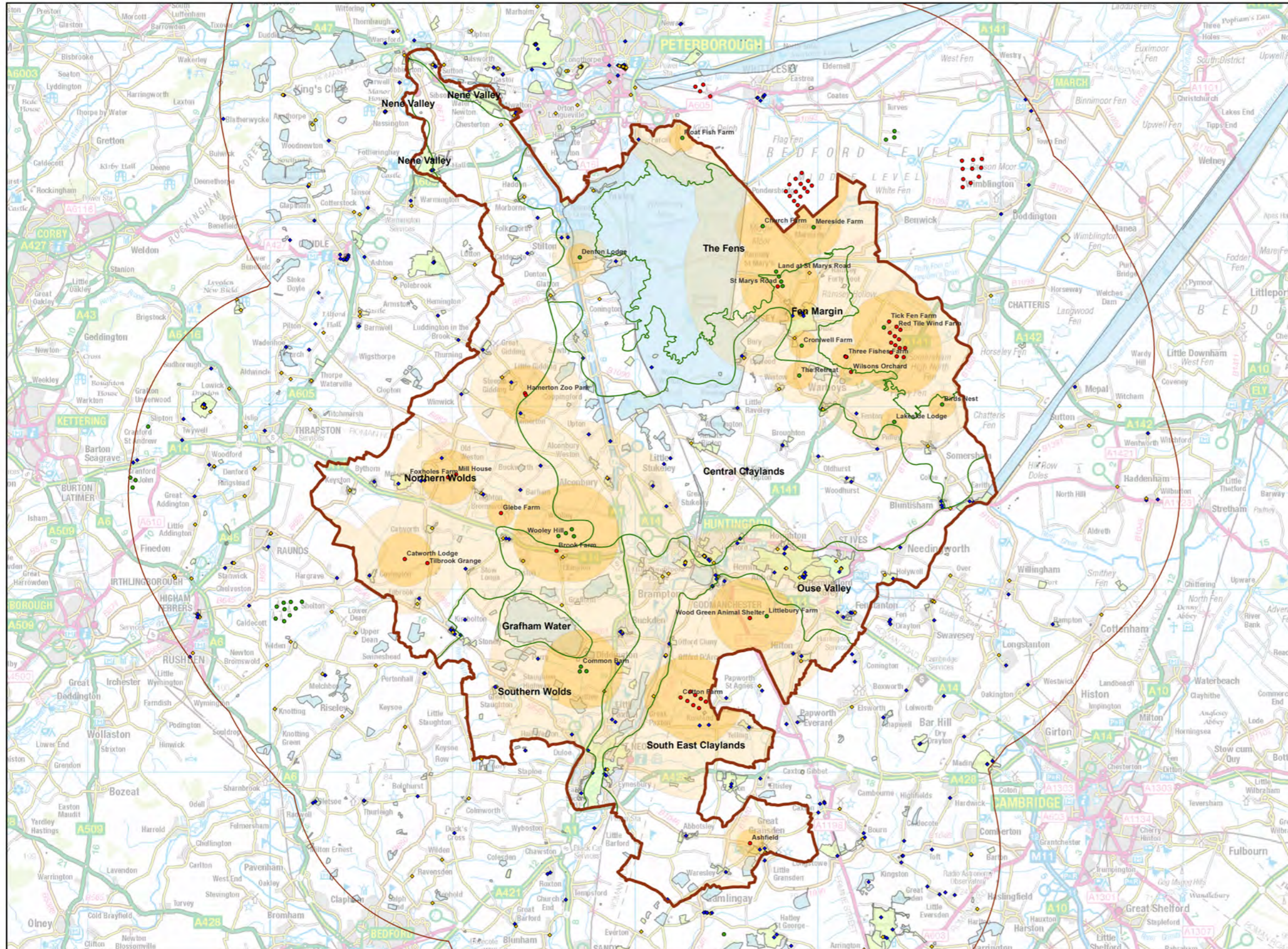
-  Consented
-  Operational

**Neighbouring Turbines**

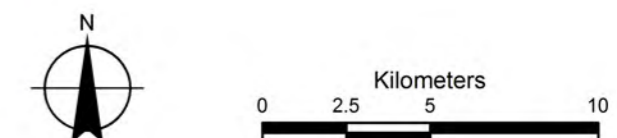
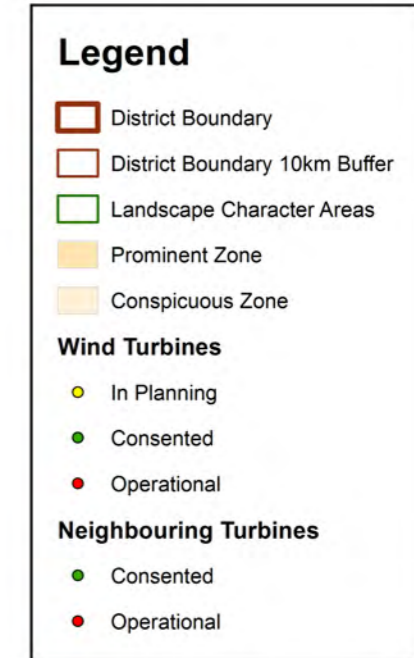
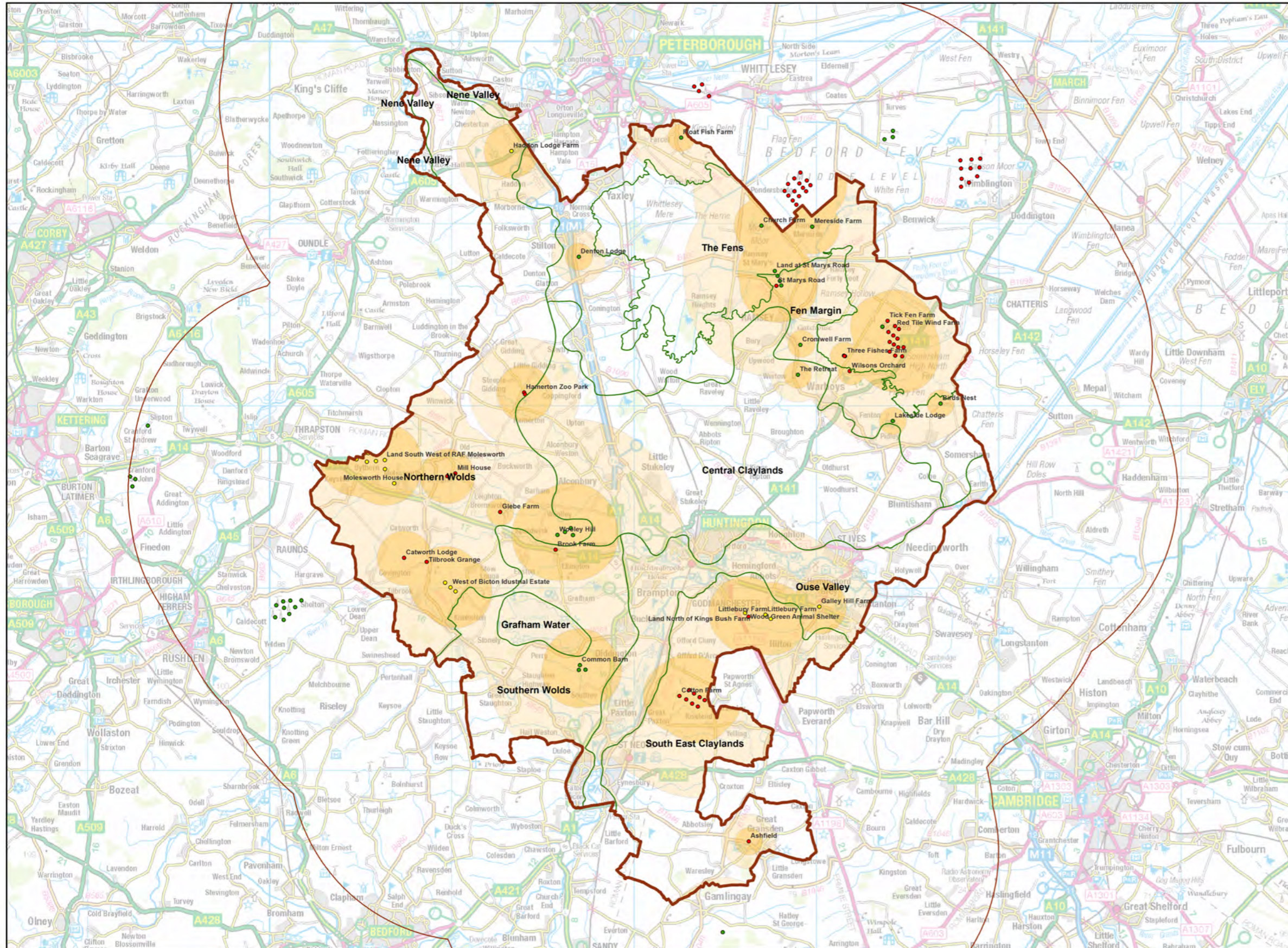
-  Consented
-  Operational



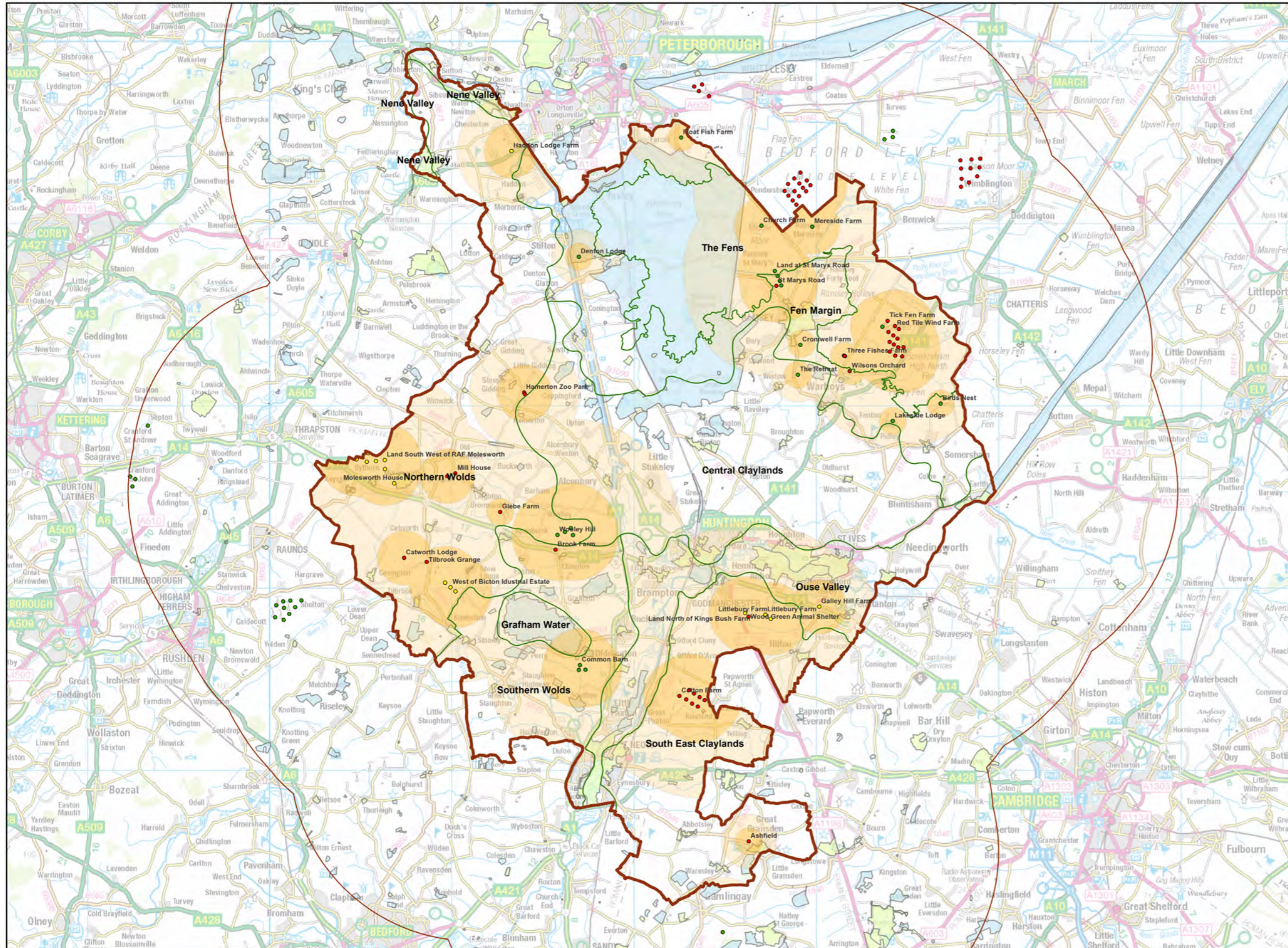












**Legend**

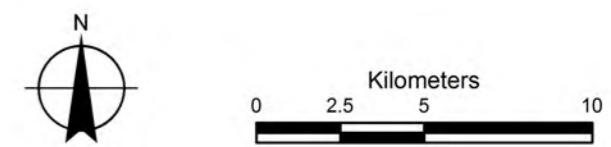
- District Boundary
- District Boundary 10km Buffer
- Landscape Character Areas
- Prominent Zone
- Conspicuous Zone
- Heritage\_Constraints
- Wildlife\_Constraints

**Wind Turbines**

- In Planning
- Consented
- Operational

**Neighbouring Turbines**

- Consented
- Operational







## 17 Assessing Cumulative Effects

- 17.1** A number of criteria are set out below to guide the acceptability of wind turbine development in cumulative landscape and visual terms. Non-compliance with the cumulative landscape and visual criteria should not necessarily preclude turbine development. However, they will form an important part of the assessment of the capacity of the landscape to accept the proposed development. All the environmental factors should be carefully evaluated and then balanced by the decision maker against the requirements to contribute to national targets for renewable energy generation and the benefits of reducing carbon consumption. The guidelines should also always be considered in conjunction with a detailed study of the site and its surroundings, particularly in terms of landform, vegetation and structures that may provide visual mitigation of the cumulative landscape and visual impacts. Whilst analysis and assessment of cumulative effects should respond to guidance thresholds and other tabular information given in part 2 of the SPD, this must be accompanied by a clearly argued written presentation covering the relevant details of each case.

### Cumulative Landscape Impacts

- 17.2** The Scottish Natural Heritage document, 'Assessing the cumulative impact of onshore wind energy developments' (2012) identifies at para 48 and 49 that cumulative landscape effects can impact on either the physical fabric or character of the landscape, or any special values attached to it.
- 17.3** Cumulative effects on the physical fabric of the landscape arise when two or more developments affect landscape components such as woodland, dykes, rural roads or hedgerows. Although this may not significantly affect the landscape character, the cumulative effect on these components may be significant – for example, where the last remnants of former shelterbelts are completely removed by two or more developments.
- 17.4** Cumulative effects on landscape character arise when two or more developments introduce new features into the landscape. In this way, they can change the landscape character to such an extent that they create a different landscape character type, in a similar way to large scale afforestation. That change need not be adverse; some derelict or degraded landscapes may be enhanced as a result of such a change in landscape character.
- 17.5** Windfarms may also have a cumulative effect on the character of landscapes that are recognised to be of special value. These landscapes may be recognised as being rare, unusual, highly distinctive or the best or most representative example in a given area. This recognition may take the form of national or local designations (for example, National Scenic Areas or Special Landscape Areas), citations in development plans, community plans or other documents, or be less formally recognised, such as Search Areas for Wild Land.
- 17.6** While there can be landscape effects on the physical fabric it is less likely to be significant in cumulative terms due the separation distances between most turbine proposals. Most significant cumulative landscape effects will be on landscape character. Chapter 'Policy and Guidance' identifies a number of factors that should be considered in relation to the cumulative effect of wind turbine developments. The cumulative effect relates to the combined impact of separate wind turbine developments on a landscape. Factors to be considered in relation to Huntingdonshire include the effects on the following: Scale and enclosure, landform and topography, settlement pattern, landmarks and visible built structures, skyline and visual connections with adjacent landscapes. They can also include the more perceptual qualities that include a measure of value and tranquillity. A number of turbine schemes including those of differing size and number could have an adverse cumulative effect on the underlying characteristics of the landscape area.
- 17.7** Huntingdonshire now has wind turbine developments that currently impact on the character of its landscapes and this effect will increase as other consented schemes are built e.g. at Woolley Hill near Ellington. Chapter 16 above provides an analysis of the extent of the LCAs affected by turbines within the Prominent

# 17 Assessing Cumulative Effects

and Conspicuous Zones. Part 1 of this SPD in its various sections on “Cumulative Development” also provides an indication of the capacity for further wind turbines at the 100-140m range with regard to each LCA.

- 17.8** Landscapes that are identified in Part 1 as being relatively more sensitive to the changes brought about by wind turbine development (including differing group sizes) have less capacity to accept new wind turbine development without an adverse effect on the key characteristics of the landscape. The capacity of any area for additional turbines will depend on the existing situation in terms of built and consented schemes, the number and location of the turbines proposed and the key characteristics of the landscape. The greater landscape effects will usually be within the Prominent zone with other significant effects also likely within the Conspicuous zone. In a more sensitive landscape effects beyond the Conspicuous zone may also be significant where wind turbine development would form part of a repeated pattern throughout an LCA and which could become a key characteristic. The approach taken in this study is to recommend that more sensitive landscapes/ LCAs should have a smaller part of their total land area within the influence of wind turbine development. This approach is to identify criteria to safeguard and protect the LCAs from an excessive level of wind turbine development. This will allow scope for wind turbine development in each LCA but provide an indicative threshold to restrict this to an appropriate level for each LCA based on its sensitivity and capacity. Indicative thresholds of capacity are proposed below in Table 16 to allow for some further wind turbine development in the district but also to protect the underlying key characteristics of the landscape character types.
- 17.9** The principle of retaining a proportion of each LCA beyond the conspicuous zone of wind turbine development would ensure that there are areas where the influence of wind turbine development is less marked as a major feature in the landscape and not a key characteristic. This approach should apply to all landscapes including those with relatively higher capacity. For example in the Fens the large scale, flat landscape and geometric field pattern can be seen as relatively suitable for wind turbine development. However, the openness, large skies and sense of remoteness and tranquillity are also valued and it is considered appropriate to have areas that retain these characteristics in a relatively unaffected state. This principle has been used in other studies such as South Pennine Study (Julie Martin Associates - 2010) and Fenland Wind Turbine Development Guidance (TLP 2009). The approach also provides a relatively straight forward tool in GIS to calculate and compare existing coverage and current versus potential coverage. Another advantage of this approach is that if a scheme is located close to the boundary of a neighbouring LCA with a lower threshold then this will have a noticeable effect on the capacity for the neighbouring LCA to accommodate further turbines. This approach allows for cross LCA boundary impacts which can be a particular feature of wind turbine development. This is the case for the Ouse Valley which already has experienced an effect from three schemes outside its LCA boundaries. Furthermore, if no “undeveloped” areas are retained then landscape character over a whole LCA will be changed, and wind turbine development could become a defining characteristic of the LCA. This effect would be contrary to one of the main objectives of Part 1 of this SPD, which seek to guide wind turbine development to locations which will avoid these adverse effects on landscape character and to safeguard the key features and values of Huntingdonshire’s landscapes.

**Table 16 : Proposed thresholds of capacity for each landscape character area**

Landscape Character Area (LCA)	Total Area (km <sup>2</sup> )	Current percentage in Prominent Zone <sup>(1)</sup>	Proposed percentage Prominent Zone Capacity Threshold	Current percentage Conspicuous Zone <sup>(1)</sup>	Proposed percentage Conspicuous Zone Capacity Threshold	Current combined percentage Prominent and Conspicuous Zones <sup>(1)</sup>	Total Proposed percentage Prominent and Conspicuous Zones Capacity Threshold
The Fens	125	34	25	38	50	72	75
Fen Margin	117	14	15	35	45	49	60
Central Claylands	186	7	30	30	45	37	75
Ouse Valley	79	3	5	63	50	66	55
South East Claylands	116	25	25	40	50	65	75
Northern Wolds	188	15	10	37	40	52	50
Grafham Water	11	21	5	79	50	100	55
Southern Wolds	82	26	25	51	50	77	75
Nene Valley	7	0	5	0	25	0	30
<b>Huntingdonshire</b>	<b>913</b>						

1. NB: 'Current' numbers relate to constructed and consented schemes only as at 1 January 2014.

**17.10** Table 16 above shows that the Fens LCA is already in excess of it's the proposed threshold of 25% being in the Prominent zone. This is in part the influence of the Great Fen Project in effectively creating an additional constraint in the north west of the Fens and Fen Margin LCAs. This would indicate that that the optimum way that new turbine development might be accommodated (if it were to receive Council support) within The Fens LCA without significant cumulative landscape impacts (subject to other material constraints) would be locating new turbines close to existing turbine developments where the character has already been impacted upon. The Prominent zone threshold has also been crossed in Northern Wolds which has a lower percentage threshold on account of the relatively higher landscape sensitivity and just breached in the Southern Wolds. Within the South East Claylands the Prominent threshold has just been reached. The Conspicuous zone thresholds have to date only been crossed in the Ouse Valley and Grafham Water as a result of wind turbine development in adjacent LCAs, again the threshold has just been breached in the southern wolds. However, the existing coverage of the Conspicuous zone is getting close to the proposed thresholds in the Fen Margin, South East Claylands and Northern Wolds.

**17.11** The above approach also identifies areas where there is still capacity in landscape character terms for further development. The LCA with the most potential is the Central Claylands where there are no turbines schemes currently consented.

## Suggested Thresholds and Criteria

**17.12** The percentage figures given in this section should not be seen as absolute thresholds that preclude development. However, they provide a guide as to when the cumulative landscape effects might be crossing a line where the underlying key landscape characteristics would begin to be affected due to the cumulative influence of wind turbine development. In this respect they are important in identifying potentially

# 17 Assessing Cumulative Effects

significant effects. There will usually be areas of land within each LCA where localised screening and vegetation cover may also play a role. However from more open viewpoints the influence of wind turbine development would be more readily identified in the landscape.

## The Fens

**17.13** This LCA should not exceed 25% of its area being within the 'Prominent' zone or 75% of its area being within the combined 'Prominent' and 'Conspicuous' zones. There are already areas where wind turbine development already exerts some significant cumulative effects e.g. north and east of Ramsey. This is compounded by the variety of turbine heights, models, rotation speeds and group sizes. This threshold allows for the absence of turbines within the Great Fen Project Area and its identified setting.

## The Fen Margin

**17.14** This LCA should not exceed 15% of its area being within the 'Prominent' zone or 60% of its area being within the combined 'Prominent' and 'Conspicuous' zones. The lower threshold compared to The Fens reflects the transitory and contrasting character of the LCA. The LCA has a narrow form and the rising ground is visually more sensitive than the adjacent Fens with some local 'hills' (e.g. Fox Hole Hill, near Warboys) being landmarks. In addition the presence of the Great Fen Project Area and its Landscape and Visual Setting within the LCA the area reduces its capacity.

## The Central Claylands

**17.15** This LCA should not exceed 30% of its area being within the 'Prominent' zone or 75% of its area being within the combined 'Prominent' and 'Conspicuous' zones. This LCA is identified as having the highest relative capacity in the district by part 1 of this SPD. There are currently no large turbines in the LCA and the SPD indicates scope for wind turbine development. However, there are a number of constraints including the wooded character of the sub area to the north west, orchards to the east and a number of listed buildings and small settlements that would need to be given due consideration and suitable protection.

## The Ouse Valley

**17.16** This LCA should not exceed 5% of its area being within the 'Prominent' zone or 55% of its area being within the combined 'Prominent' and 'Conspicuous' zones. The LCA is of particular importance for recreation and biodiversity with a number of designated biodiversity habitats and conservation areas. The narrow sinuous and low lying nature of the LCA also means that it will be affected by turbine developments in adjacent LCAs. In view of the operational and consented schemes in the adjacent LCAs there may be limited opportunity for wind turbine development in this LCA.

## The South East Claylands

**17.17** This LCA should not exceed 25% of its area being within the 'Prominent' zone or 75% of its area being within the combined 'Prominent' and 'Conspicuous' zones. The LCA is already host for Cotton Farm wind farm and a single turbine at Wood Green, although others are "In Planning". More sensitive parts of the LCA include the more undulating and wooded part of the area notably to the south.

## The Northern Wolds

**17.18** This LCA should not exceed 10% of its area being within 'Prominent' zone or 50% of its area being within the combined 'Prominent' and 'Conspicuous' zones. This LCA is identified in Part 1 as a highly valued landscape. It is considered to be more sensitive due to its unspoilt character and the undulating landform of ridge and valley, (see Figure 16.1) which would potentially be undermined by inappropriate wind turbine development. The lower prominent percentage threshold is provided to ensure the key characteristics of the area are retained. The natural pattern of ridges is a key characteristic of the LCA and care should be taken to avoid cumulative wind turbine development that either follows a ridgeline or is visible on adjacent ridges or locations where there are higher levels of intervisibility.

## Grafham Water

- 17.19** LCA should not exceed 5% of its area being within the 'Prominent' zone or 55% of its area being within the combined 'Prominent' and 'Conspicuous' zones. The area is focused around Grafham Water which occupies the majority of the surface area and hence restricts opportunities for turbines. Part 1 indicates that there is limited scope for anything other than a single turbine in this LCA. Furthermore, development of other schemes in the adjacent Southern Wolds may potentially preclude any turbines in the LCA.

## The Southern Wolds

- 17.20** LCA should not exceed 25% of its area being within the 'Prominent' zone) or 75% of its area being within the combined 'Prominent' and 'Conspicuous' zones. Parts of the LCA have been identified as more sensitive to cumulative development including the central ridge that divides the valleys of the Kym and Ellington Brook. Significant cumulative effects could occur from a number of single turbines, groups or combinations of sizes particularly where there is intervisibility on adjacent ridges.

## Nene Valley

- 17.21** LCA should not exceed 5% of its area being within the 'Prominent' zone or 30% of its area being within the combined 'Prominent' and 'Conspicuous' zones. This is a very narrow LCA of high sensitivity close to the River Nene and thus there is very limited scope for wind turbine development in this area.

## Alternative Approaches

- 17.22** Consideration was also given to the use of different offsets (to those shown in Table Table 13 ': Distances representing Prominent and Conspicuous Zones' above) for Prominent and Conspicuous zones applied to each of the LCAs to highlight their relative sensitivity. This would have involved potentially greater offsets for more sensitive LCAs. While this approach has some merit it would result in more complex modelling in GIS on crossing LCA boundaries and the potential for inaccuracies in the GIS analysis. It may also be the case that while one LCA may be more sensitive, site specific features on the ground (e.g. woodland) may locally contain the impact on the landscape in the more sensitive LCAs. In addition there might also be a more gradual change of character at the LCA boundary rather than a clear cut change so that the change in sensitivity may also be more gradual. In any event the varying % thresholds should accommodate the variations in sensitivity at a strategic scale.
- 17.23** Another more technically accurate approach would be to plot the Zones of Theoretical Visibility (ZTV's) of all built, consisted and in planning schemes. This would identify areas where schemes are e.g. 'hidden' by landform. However, this approach would be subject to obtaining the data on all schemes which would be more difficult. It may also require additional and complex GIS mapping to show the localised screening effects. Furthermore, some smaller schemes may not have a computer based ZVT available. For these practical reasons it is not recommended to follow this approach.
- 17.24** A further option is to provide a simple distance between turbine proposals. A 10km separation zone was used in the "Placing Renewables in the East of England" Arup study done for EERA (referred to in Chapter 15 above) with a 15km separation suggested for more sensitive locations. However this method takes no account of the current locations of existing operational and consented schemes which may already be inconsistent with this approach. Likewise the Arup study was based on a NCA scale approach and did not include the more local variations in the landscape as identified in the HDC LCAs. For these reasons the approach is not recommended.

# 17 Assessing Cumulative Effects

## Cumulative Visual Effects

### Assessing Turbine Visibility

**17.25** The National Planning Practice Guidance highlights the importance of identifying the Zone of Visual Influence (ZVI), which is sometimes understood as the Zone of Theoretical Visibility (ZTV), for a turbine development. A Zone of Theoretical Visibility is the area from which a turbine of a given height could be seen on a very clear day, based on the landform of the area. Dependent on the approach taken the ZTV can also allow for major intervening features such as settlement, built forms and major woodland. However localised screening is not typically included. The guidance on ZTVs in the 'Visual Representation of Windfarms: Good Practice Guidance' (Scottish Natural Heritage- 2006) recommends the following Zones of Theoretical Visibility extents for different sizes of turbines:

**Table 17 : Zones of Theoretical Visibility from 'Visual Representation of Windfarms: Good Practice Guidance' (Scottish Natural Heritage- 2006)**

Turbine Height	Zone of Visual Influence
Up to 50m	15km
51 to 70m	20km
71 to 85m	25km
86 to 100m	30km
101 to 130m	35km

**17.26** Although turbines are theoretically visible over these distances, their visual impact is likely to decrease with distance from the turbine location. The Scottish Executive's document PAN45: Renewable Energy Technologies, although now superseded, indicated a range of distances from turbine development and descriptions of the diminishing magnitude of the visual impact. This guidance is not specific about the heights of turbines that this applies to, which can be significant given the variation in ZTVs illustrated above. However, through use of the guidance in PAN45 and field evaluation work by TLP and professional officers, an assessment has been made of the typical magnitude of visual impact of existing turbines within Huntingdonshire. This has resulted in an additional category of visual impact i.e. dominant being included compared to PAN45. The category relates to closer distances to reflect situations where a turbine is in very close proximity and may have an overpowering effect on the viewer e.g. from a public right of way or residential location. Table 18, indicates the typical likely visual impacts anticipated in this study for the 100 to 129m turbine height band at different distances from turbine development.

**Table 18 : Categories of Magnitude for Cumulative Visual Impact of Turbines (100 to 129m band)**

Distance from Turbines	Magnitude of Impact	Description
Within 1km	Dominant	Turbines form the principle element of the view and may overpower the viewer
1km to 2km	Prominent	Turbines form a very large element of the view, commanding and controlling the view
2km to 5km	Conspicuous	Turbines form a large element of the view, standing out from the surroundings and forming an unmistakable feature within the panorama.
5km to 15km	Apparent	Turbines form a medium element of the view, noticeable in panoramas, clearly visible and catching the eye.

Distance from Turbines	Magnitude of Impact	Description
15km to 30km	Inconspicuous	Turbines form a small element of the view, that is visible but not distinct or obvious on first glance or in overcast conditions
30km+	Negligible	Turbines form a very small element of the view, barely visible in clear conditions

**17.27** It should be noted that these definitions apply where there are open or partial views of a wind turbine development. These bandings are intended to indicate the approximate point at which the visual effect of a turbine moves from one category to the next. They should therefore not be interpreted too rigidly and there will often be a transition. Some views could be contained and/or screened by landform or vegetation or both. Equally there may be locations where due to the orientation of the viewer or nature of the view e.g. a framed view that the turbines may appear more visible than distance may otherwise indicate. Factors such as weather conditions will influence the relative visibility at any given time. In addition a level of professional judgement will be required to reflect the individual circumstances of each site.

**17.28** In order to allow for alternative sizes of turbine – both larger and smaller, the bandings of visual impact have been varied as shown in Table 19 below. The distances have been calibrated in the field by visiting a number of existing wind turbine developments within Huntingdonshire and adjacent authorities within a 10km buffer from the district boundary. The schemes have been examined from a number of public viewpoints at varying distances from the developments and their impacts assessed against the descriptions identified above. As set out at Table Table 13 'Distances representing Prominent and Conspicuous Zones' above the distances are not based on a direct pro-rata comparison with height. This is due to the relatively greater visual effect of faster rotation speeds of shorter blades on smaller turbines. Also at the lower end of turbine height, most notably <30m, the screening and relative scale of other features in the landscape e.g. trees and woodland may reduce the extent of visual effects. Each case will be considered on its merits.

**Table 19 : Visual Impacts of Turbines Extrapolated for Different Turbine Heights (rounded to closest 100m at <1km and then to nearest 500m)**

Magnitude of Impact	Height of Turbine				
	<30m	30m to 69m	70m to 99m	100m to 129m	130m to 150m+
Dominant	<400m	<600m	<800m	<1km	<1.2km
Prominent	<750m	<1.5km	<1.75km	<2km	<2.5km
Conspicuous	750m to 1.5km	1.5km to 3km	1.75km to 4km	2km to 5km	2.5km to 6km
Apparent	1.5km to 3km	3km to 8km	4km to 12km	5km to 15km	6km to 18km
Inconspicuous	3 to 5km	8km to 16km	12km to 24km	15km to 30km	18km to 37km
Negligible	>5km	>16km	>24km	>30km	>37km

**17.29** The SNH report “Assessing the cumulative impact of onshore wind energy developments” (SNH) 2012 identifies 3 types of cumulative visual impact. These are:

- **Combined/ simultaneous impact** - occurs where the observer is able to see two or more developments from one viewpoint, without moving his or her head, which is considered to be equal to a 90 degree arc of view. This includes for the main focus of view (central 50 degree arc) and peripheral vision in the same view.

# 17 Assessing Cumulative Effects

- **Successive/ repetitive impact** - occurs where the observer is able to see two or more windfarms from one viewpoint but has to move his or her head to do so, considered to be a 180-360 degree arc of view
- **Sequential impact** - occurs when the observer has to move to another viewpoint to see other developments or a different view of the same development e.g. travelling along a road

**17.30** Figures 16.5 and 16.6 illustrate the current situation in Huntingdonshire in terms of cumulative impact. The coloured circles illustrate the Prominent and Conspicuous zones of visibility for existing and consented turbine developments. Where these circles begin to overlap there is likely to be a significant cumulative visual impact for certain locations.

**17.31** Where the Prominent zones of visibility overlap (e.g. at 4km separation between two 100-129m to blade tip turbines), they are both likely to be easily read in the same view from many locations. As such they are likely to demonstrate a significant cumulative impact from a number of locations and are less likely to be considered acceptable in visual terms. One exception may be if they form a relatively modest extension to an existing turbine development and are read in the same group. This is less likely to be acceptable if the additional turbines are of a different height, spacing or design. Where the Conspicuous zones of visibility overlap (e.g. at 10km separation between two 100-129m to blade tip turbines) this may also result in some significant cumulative visual impact. These impacts could have the potential for combined or successive impacts.

**17.32** In order to minimise Combined/ Simultaneous impacts and Successive/ Repetitive impacts it is considered desirable to limit the extent of turbine visibility within the field of view. This will help to prevent residential properties and settlements becoming unduly affected by the cumulative impact of wind turbines and avoid the potential effect of living within or near a windfarm landscape.

**17.33** In terms of sequential cumulative visual impact this may apply for a number of types of receptors. Users of the main roads in the district, a number of which run north - south (A1M) and east – west (A14) through Huntingdonshire and the main line railway already experience an effect from a number of turbine sites. On these journeys there may be some notable magnitude effects. Despite the speed of travel these receptors may be considered to be of moderate sensitivity as they represent the way in which many people appreciate the landscape – this view is supported by GLVIA3 para 6.33. Users of strategic recreational routes, other rights of way, and recreation facilities with a focus on the landscape, are likely to have a high sensitivity to change due to the slower mode of travel and greater focus on expectations from the experience. This could also be the case for users of minor roads enjoying the countryside, a proportion of whom will be pedestrians, cyclists and equestrians with an interest in the landscape.

## Guideline thresholds and criteria

**17.34** Proposals for wind turbine development where there is an overlap of Prominent zones are less likely to be acceptable in cumulative visual terms unless local factors substantially counteract any significant cumulative effects; however each case must be considered on its merits. An exception (and subject to meeting other criteria) may be where a proposed turbine or group are designed as a logical extension of an existing group using turbines of similar size and design.

**17.35** Proposals for wind turbine development where there is an overlap of Conspicuous zones cumulative effects will need to be carefully considered with regard the cumulative effect. Any significant impacts should be included in the overall significance of effect and these should be considered in turn by the decision maker in carrying out the planning balance.

**17.36** Proposals for wind turbine development should be considered in relation to the sequential visibility of turbine development when experienced along all classes of public highways, railway lines and recreational routes. Cumulative visual assessment should be based on factors including the magnitude of the change, sensitivity of viewer, likely extent and duration of the impact and character of the route including screening and impacts on viewpoints along the route. For more guidance and the level of information required see Chapter 18 'Guidance to applicants'.



## Mitigation of cumulative effects

- 17.37** All turbines within a group should ideally be of the same appearance and size to create visual harmony. This will apply to 'extension' of existing sites or proposals which are visually read as part of an existing group.
- 17.38** Mitigation and/ or compensation including landscape proposals, enhancement of existing features of biodiversity interest, and the creation of habitats within the site (as [NPPF paragraph 118](#)) should be included as part of any application. This should be within the red line or blue line of applications. Off-site planting should also be considered where practical, in order to mitigate visual impacts over a wider area. This could be achieved via a legal agreement or through a Community Trust. Various websites can give further information on this matter, see for instance [energy4all](#). Such proposals should be in keeping with the landscape character and strategy for landscape management and provide a legacy to the local environment during and beyond the life of the scheme.

## 18 Guidance to applicants

- 18.1** The criteria and guidance set out in Chapter 17 'Assessing Cumulative Effects' above should initially be applied at the pre-application, screening and scoping opinion stages, and then in greater detail if the scheme progresses to a full planning application and supporting Environmental Statement.
- 18.2** The requirement for, and geographical extent of, a cumulative assessment shall be established at the pre-application stage and agreed as part of the scoping process. This should include identification of all the relevant schemes to be considered and the radius for the cumulative assessment to be used. Schemes that are either constructed, approved, or have been formally registered as an application will normally form the basis of schemes to be assessed. For schemes with turbines of 100m or more in height this may be required to extend to up to 30km radius.
- 18.3** The cumulative landscape and visual assessments will need to be reviewed as part of the decision making process, having regard to this SPD and other relevant planning policies as well as the contents of the planning application and EIA including other parts of the LVIA sections of the ES.
- 18.4** Environmental Statements should provide detailed assessments of cumulative landscape and visual impacts for the particular scheme following the approach as set out in the Planning Practice Guidance, SNH report 'Assessing the cumulative impact of onshore wind energy developments' (SNH) March 2012, and the latest version (3<sup>rd</sup> edition) of the 'Guidelines for Landscape and Visual Impact Assessment,' Landscape Institute and IEMA (April 2013). Environmental Statements (usually in their LVIA section) should also consider and address the relevant further information and guidance criteria listed for each LCA in the district.
- 18.5** Planning Practice Guidance provides guidance on the assessment of [Cumulative Landscape and Visual Effects](#):

### **How should cumulative landscape and visual impacts from wind turbines be assessed?**

Cumulative landscape impacts and cumulative visual impacts are best considered separately. The cumulative landscape impacts are the effects of a proposed development on the fabric, character and quality of the landscape; it is concerned with the degree to which a proposed renewable energy development will become a significant or defining characteristic of the landscape.

Cumulative visual impacts concern the degree to which proposed renewable energy development will become a feature in particular views (or sequences of views), and the impact this has upon the people experiencing those views. Cumulative visual impacts may arise where two or more of the same type of renewable energy development will be visible from the same point, or will be visible shortly after each other along the same journey. Hence, it should not be assumed that, just because no other sites will be visible from the proposed development site, the proposal will not create any cumulative impacts.

### **What information is needed to assess cumulative landscape and visual impacts of wind turbines?**

In identifying impacts on landscape, considerations include: direct and indirect effects, cumulative impacts and temporary and permanent impacts. When assessing the significance of impacts a number of criteria should be considered including the sensitivity of the landscape and visual resource and the magnitude or size of the predicted change. Some landscapes may be more sensitive to certain types of change than others and it should not be assumed that a landscape character area deemed sensitive to one type of change cannot accommodate another type of change.

In assessing the impact on visual amenity, factors to consider include: establishing the area in which a proposed development may be visible, identifying key viewpoints, the people who experience the views and the nature of the views.

The English Heritage website provides information on undertaking historic landscape characterisation and how this relates to landscape character assessment.

The bullets below set out the type of information that can usefully inform assessments.

### Information to inform landscape and visual impact assessments

- a base plan of all existing windfarms, consented developments and applications received, showing all schemes within a defined radius of the centre of the proposal under consideration
- for those existing or proposed windfarms within a defined radius of the proposal under consideration, a plan showing cumulative 'zones of visual influence'. (A zone of visual influence is the area from which a development or other structure is theoretically visible). The aim of the plan should be to clearly identify the zone of visual influence of each windfarm, and those areas from where one or more windfarms are likely to be seen
- the base plan and plan of cumulative zones of visual influence will need to reflect local circumstances, for example, the areas covered should take into account the extent to which factors such as the topography and the likely visibility of proposals in prevailing meteorological conditions may vary
- maps of cumulative zones of visual influence are used to identify appropriate locations for visual impact studies. These include locations for simultaneous visibility assessments (i.e. where two or more schemes are visible from a fixed viewpoint without the need for an observer to turn their head, and repetitive visibility assessments (i.e. where the observer is able to see two or more schemes but only if they turn around)
- sequential effects on visibility occur when an observer moves through a landscape and sees two or more schemes. Common routes through a landscape (e.g. major roads; long distance paths or cycle routes) can be identified as 'journey scenarios' and the proposals impact on them can be assessed
- photomontages showing all existing and consented turbines, and those for which planning applications have been submitted, in addition to the proposal under consideration. The viewpoints used could be those identified using the maps of cumulative zones of visual influence. The photomontages could be annotated to include the dimensions of the existing turbines, the distance from the viewpoint to the different schemes, the arc of view and the format and focal length of the camera used
- at the most detailed level, description and assessment of cumulative impacts may include the following landscape issues: scale of development in relation to landscape character or designations, sense of distance, existing focal points in the landscape, skylining (where additional development along a skyline appears disproportionately dominant) and sense of remoteness or wildness

# 19 Approaches to Cumulative Effects

Huntingdonshire Planning Policy | SPD: Wind Energy Development in Huntingdonshire 2014

## 19 Approaches to Cumulative Effects

### East Durham Limestone and Tees Plan - North East Regional Assembly (Arup 2008)

- 19.1** This uses scenarios of potential development for cumulative landscape impacts. While the scenario approach is supported by SNH in their 2102 guidance it is not favoured as it can be seen as giving a potential amber/green light to the selected scenarios locations.

### Rugby: Landscape Capacity Study for Wind Energy - White consultants (2011)

- 19.2** This study also uses the scenario approach to including a range of options of different scales of wind turbine development in different areas within the district to assess the likely effects. While, this may be a useful applied theoretical approach it may seem to indicate more suitable sites and while useful internally may be less helpful in the public realm due to the conclusion drawn and preference inferred as to suitability on certain sites and scenarios. This may disadvantage other potential schemes not included as a selected scenario.

### South Pennines – Julie Martin Associates (2010)

- 19.3** This includes some useful principles. It suggests different spacing of wind turbine schemes based on the LCA type and its relative sensitivity. These vary from 6-12km for large schemes or 3-5km if an LCA or site is more appropriate. This reflects the same principal included in the Ove Arup Report “Placing Renewables in the East of England”.

### Perth and Kinross 2005

- 19.4** Indicates a requirement for a 40km separation between wind turbine developments unless they can be shown to not have significant adverse effects. This appears to be potentially be a rather restrictive an approach unless supported by evidence of the sensitivity of the landscape character areas involved.

### Central Bedfordshire Draft SPD (2013/14)

- 19.5** “Wind Energy Development in Central Bedfordshire” – not yet adopted but intended as a future SPD. This identifies 5km as the distance of likely greatest cumulative effect. It states that the scale of the landscape in Central Bedfordshire would be unlikely to successfully integrate two schemes within 10-15km of each other. This authority shares NCA 88 (Bedfordshire and Cambridgeshire Claylands) with HDC. It appears that the Draft SPD sets a lower threshold of adverse cumulative harm than HDC.

### Fenland – Wind Turbine Guidance (2009)

- 19.6** This study was produced for a local authority that was beginning to experience some concerns over cumulative impacts. The report covers a wide range of criteria including some for cumulative landscape and visual effects. The study was subject to public consultation and forms part of the Local Plan evidence base. The study has been tested at Public Inquiry in the context of planning applications for wind turbine development and was afforded ‘substantial weight’ in the Inspectors report for the Burnt House Farm and Floods Ferry appeals (APP /D0515/A/10/2123739 and APP /D0515/A/10/2131194) the latter scheme being dismissed on the basis of cumulative visual effects. The study includes thresholds for acceptable effects on landscape character to assess prominent and conspicuous effects (2km and 5km distances) and thresholds for residential angles of view from cumulative visual effects. This authority shares NCA 46 (The Fens) with HDC.

### South Lanarkshire - Ironside Farrar (2010)

- 19.7** This study describes different types of cumulative impact rather than setting specific limits or thresholds and therefore would focus more on the effects of a specific application.

## **Angus Wind Farms Assessment - Ironside Farrar ( 2008)**

- 19.8** This study includes reference to 'sacrificial areas' as the location to concentrate turbines. This appears to be an approach that had also be used in other parts of Europe. The suitability of this approach in other areas would depend on the character of the landscape involved and the presence of other constraints including the presence and number of receptors.

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## Glossary

### **Ancient woodland**

An area that has been wooded continuously since at least 1600 AD.

### **Conservation Area\***

Areas of special architectural or historic interest, the character or appearance of which it is desirable to preserve or enhance.

### **Cumulative effects\*\***

Cumulative effects are the summation and or additional effects that result from changes caused by a development in conjunction with other past, present, or reasonably foreseeable actions.

### **Cumulative impact**

The combined effect of all developments when taken together, both present and those in the future.

### **Fall over distance**

The height of the turbine to the tip of the blade. Also known as the topple height.

### **Heritage asset\*\***

A building, monument, site, place, area or landscape identified as having a degree of significance meriting consideration in planning decisions, because of its heritage interest. Heritage asset includes designated heritage assets and assets identified by the local planning authority (including local listing).

### **Historic environment\*\***

All aspects of the environment resulting from the interaction between people and places through time, including all surviving physical remains of past human activity, whether visible, buried or submerged, and landscaped and planted or managed flora.

### **Intervisibility**

The extent to which one area can see another and vice versa.

### **Land cover\*\***

Combinations of land use and vegetation that cover the land surface.

### **Landform\*\***

Combinations of slope and elevation that produce the shape and form of the landscape.

### **Landscape Capacity\*\***

The degree to which a particular landscape character type or area is able to accommodate change without unacceptable adverse effects on its character. Capacity is likely to vary according to the type and nature of change being proposed.

### **Landscape Character\*\*\***

A distinct, recognizable and consistent pattern of elements in the landscape that makes one landscape different from another, rather than better or worse.

### **Landscape Character Areas (LCAs)\*\*\***

These are single unique areas which are the discrete geographical areas of a particular landscape type.

### **Landscape Character Assessment (LCA)\*\*\***

The process of identifying and describing variation in the character of the landscape, and using this information to assist in managing change in the landscape. It seeks to identify and explain the unique combination of elements and features that make landscapes distinctive. The process results in the production of a Landscape Character Assessment.

### **Landscape Character Types\*\*\***

These are distinct types of landscape that are relatively homogenous in character. They are generic in nature in that they may occur in different areas in different parts of the country, but wherever they occur they share broadly similar combinations of geology, topography, drainage patterns, vegetation and historical land use and settlement pattern, and perceptual and aesthetic attributes.

### **Landscape Quality (Condition)\*\*\***

A measure of the physical state of the landscape. It may include the extent to which typical character is represented in individual areas, the intactness of the landscape and the condition of individual elements.



**Landscape Value\*\*\***

The relative value that is attached to different landscapes by society. A landscape may be valued by different stakeholders for a whole variety of reasons.

**Listed Building\***

A building of special architectural or historic interest. Listed buildings are graded I, II\* or II with grade I being the highest. Listing includes the interior as well as the exterior of the building, and any buildings or permanent structures (e.g. wells within its curtilage). English Heritage is responsible for designating buildings for listing in England.

**Local Plan**

The plan for the future development of the local area, drawn up by the local planning authority in consultation with the community. In law this is described as the development plan documents adopted under the Planning and Compulsory Purchase Act 2004. (from the NPPF glossary)

**Microgeneration**

Small scale production of heat and/or electricity from low carbon sources.

**Mitigation\*\***

Measures, including any process, activity or design to avoid, reduce, remedy or compensate for adverse landscape and visual impacts of a development project.

**Photomontage**

An illustration of a proposed development that has been superimposed on or combined with a photograph from a recorded location.

**Planning Advice Note (PAN)**

Scottish planning document providing advice on good practice and other relevant information.

**Ramsar Site**

Wetlands of international importance, designated under the 1971 Ramsar Convention.

**Receptor\*\***

Physical landscape resource, special interest, or viewer group that will experience an effect.

**Registered Park and Garden\***

A park or garden of special historic interest. Graded I (highest quality), II\* or II. Designated by English Heritage.

**Renewable Energy\***

Renewable energy is energy flows that occur naturally and repeatedly in the environment, for example from the wind, water flow, tides or the sun.

**Scheduled Monument\***

Nationally important monuments usually archaeological remains, that enjoy greater protection against inappropriate development through the Ancient Monuments and Archaeological Areas Act 1979.

**Sensitivity\*\*\***

A term applied to specific receptors, combining judgements of the susceptibility of the receptor to the specific type of change or development proposed and the value related to that receptor.

**Shadow flicker**

Under certain combinations of geographical position and time of day, the sun may pass behind the rotors of a wind turbine and cast a shadow over neighbouring properties. When the blades rotate, the shadow flicks on and off.

**Site of Special Scientific Interest (SSSI)\***

A site identified under the Wildlife and Countryside Act 1981 (as amended by the Countryside and Rights of Way Act 2000) as an area of special interest by reason of any of its flora, fauna, geological or physiographical features.

**Special Areas of Conservation (SAC)\***

A site designated under the European Community Habitats Directive, to protect internationally important natural habitats and species.

**Special Protection Area (SPA)\***

Sites classified under the European Community Directive on Wild Birds to protect internationally important bird species.

**Supplementary Planning Document (SPD)**

Documents which add further detail to the policies in the Local Plan. They can be used to provide further guidance for development on specific sites, or on particular issues, such as design. Supplementary planning documents are capable of being a material consideration in planning decisions but are not part of the development plan.

**Threshold**

A specified level beyond which impacts are likely to be unacceptable.

**Tranquillity**

A perceptual description applied to landscapes that are perceived to be relatively more natural, peaceful and quiet when compared to other areas which may be visually developed or noisy.

**Visual effect\*\***

Change in the appearance of the landscape as a result of development. This can be positive (i.e. beneficial or an improvement) or negative (i.e. adverse or a detraction).

**Typology**

The classification of items into groups to allow their assessment.

**Zone of Theoretical Visibility (ZTV)\*\*\***

Also known as a Zone of Visual Influence (ZVI). A map, usually digitally produced, showing areas of land within which a development is theoretically visible.

\* as defined in the Glossary of Planning Terms on the Planning Portal website

\*\* as defined in the Glossary section of Guidelines for Landscape and Visual Impact Assessment 2nd edition, The Landscape Institute and Institute for Environmental Management and Assessment, 2002.

\*\*\* as defined in the Glossary section of Guidelines for Landscape and Visual Impact Assessment 3rd edition, The Landscape Institute and Institute for Environmental Management and Assessment, 2013.