

# RUGBY BOROUGH LANDSCAPE CAPACITY STUDY FOR WIND ENERGY DEVELOPMENTS

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## Final Report

for

Rugby Borough Council

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## Executive Summary

### Introduction

White Consultants were appointed in October 2010 by Rugby Borough Council to undertake a landscape sensitivity and capacity study for wind energy development in the Borough. The study is intended to provide part of a sound evidence base informing the Rugby Borough Local Development Framework and to assist in development control.

A report was prepared and submitted to the Council in January 2011. This was based on the consultants' findings working to a steering group consisting of officers of Rugby Borough Council (RBC). This report was then consulted on and the comments received have informed the final report. A separate consultation report has been prepared.

The brief requires identification of:

- Broad landscape areas at a strategic scale which may be able to accommodate wind energy development
- Specific strategic constraints which may reduce the potential for accommodation of wind energy development
- Any likely cumulative and cross border impacts with other wind energy developments.

### National planning policy

The national planning policy framework of Planning Policy Statement (PPS)1 and PPS22 is supportive of wind energy whilst seeking to minimise adverse environmental effects. PPS7 focusses on the protection and enhancement of the character of the countryside with an emphasis on nationally designated areas which do not occur in and around Rugby. However, PPS22 does refer to Green Belts (PPG2) and states that elements of renewable energy projects may impact on openness and comprise inappropriate development.

### Renewable Energy Study

The Renewable and Low Carbon Energy Resource Assessment and Feasibility Study (2010) for Warwickshire planning authorities defines what level of wind energy development may be viable and deliverable in the Borough. Based on a series of assumptions it estimates that there is potential for between 25 and 48 turbines of 2.5MW in defined 'less constrained areas'. Constraints include dwellings and other historic features but do not include the Green Belt around Coventry as wind energy developments have been consented in green belts elsewhere in the UK. The study recommends the carrying out of landscape capacity assessments for wind energy- hence this report.

### Wind energy development

Wind energy development has developed and matured over the last 20 years. The current standard size of commercially available turbine is around 125m- a 90m diameter blade on an 80m high tower, although smaller sizes are available for less accessible sites and taller towers are used where wind turbulence occurs. This report considers commercial turbines between 80-130m. Ancillary development includes access tracks, electrical sub-station and grid connection.

Three wind energy developments have been consented on appeal to the east of Rugby Borough at Low Spinney, Swinford and Yelvertoft, and also at Tesco at the Daventry International Railfreight Terminal (DIRFT). These wind farms lie along the M1 corridor and the distances between them are around 6.5km, 5km and 2km respectively. Other developments are in scoping or planning, including Bransford Bridge. An anemometer mast has also been erected near High Cross.



## Landscape character

The landscape of the Borough is a gently undulating lowland of hills and vales traversed by the east west running rivers of the Avon and Leam. A plateau rises to the north and ironstone fringe hills lie to the south east. Outside the urban area of Rugby the area is a generally well settled rural landscape with major roads running through it, with associated large scale commercial development. The area includes three national character areas- the Leicester Vales to the north, Dunsmore and Feldon to the south and the Northamptonshire Uplands covering the eastern fringes. The Rugby landscape assessment (2006) provides a more detailed assessment dividing the area into ten landscape character types (LCTs) which are derived from underlying landscape description units. The LCTs are used as the basis for the sensitivity and capacity assessments in this study.

## Constraints and designations

The Borough lies outside designated landscape areas at a national or local level. A Green Belt lies around Coventry and extends as far east as Rugby. There are a number of historic parklands, scheduled ancient monuments as well as conservation areas and listed buildings in and around rural villages outside Rugby. These act as constraints to wind energy development.

## Method

Landscapes have different sensitivities or capacities depending on the form of change or development- in this case wind turbines. The method is based on best practice, policy guidance and experience combined with an understanding of the specific issues regarding the landscapes within Rugby Borough. It has been agreed with Rugby Borough Council officers.

**Sensitivity** is taken to mean the sensitivity of the landscape to a particular type of change ie commercial scale wind energy development. It is a combination of the sensitivity of the physical landscape resource (including its historical and ecological features and elements) and perceptual qualities (such as views). Sensitivity is considered independent of landscape value i.e. whether an area has a landscape designation or not.

**Capacity** is taken to mean the ability of a landscape to accommodate different amounts of change (ie commercial scale wind energy development) without a fundamental change in character and considers receptors and perceived landscape value. It derives from an assessment of potential **cumulative impact** of several wind energy developments and takes into account the potential scale of development and other existing/approved wind farm developments in order to realistically address the current situation.

The study sets out what characteristics make a landscape more or less sensitive (eg large or small scale, simple or complex) and then assesses each landscape character type using criteria set out in a proforma. There are a range of five defined sensitivities from high to low. For each landscape type the maximum *number of turbines* in a single cluster (or wind farm) is given.

Having defined the sensitivity for all landscape character areas/types only those which have some potential to accommodate commercial wind energy development are assessed further to understand their capacity ie the *number of clusters* or wind farms that are acceptable within an area. A range of scenarios from 1-6 turbine clusters are put forward to explore the maximum capacity of each area. These are based on the maximum size of cluster thought appropriate for the area, located in the 'less constrained areas' defined by the Renewable Energy Study (2010), using locations of proposed wind farms to reflect potential viability and, with one exception, at realistic distances from each other and consented wind farms. The scenario cluster locations do not infer preferred locations for development but are used to explore overall area capacity. Each scenario is assessed against criteria and preferred landscape objectives.

for each area set out in a proforma. Based on this, the number of clusters in each area is recommended and proposed landscape mitigation and enhancement measures are suggested eg tree or hedge planting and management.

### Sensitivity assessment

The sensitivity analysis considered that of the 10 landscape character types, three have potential to accommodate commercial wind energy. These are discussed below:

**High Cross plateau-open plateau:** The area is considered to have medium sensitivity to wind energy development. The upper plateau areas are generally large scale, simple, intensively farmed mainly arable landscapes with some large scale tree belts and development along the A5. Pastoral land is associated with settlements. The lower areas on the plateau fringes slope towards the lower surrounding lowlands with potential for dominance, have a slightly higher proportion of pastoral land with stronger tree cover in hedgerows in places although still on relatively simple undulating landform. Settlement clusters are few and overall settlement is sparse although there is higher settlement density on lower areas especially to the west. Wind turbine development is more compatible with the large scale, less settled parts of the area, possibly associated with Magna Park although proximity to Newnham Paddock could be an issue.

**Feldon- vale farmlands:** The eastern part of the type is considered to have high/medium sensitivity to wind energy development. It is a broad, flat, clay vale is dominated by arable farmland with low hedges or fences and has an open character with only a few blocks of trees. Settlement is sparse and mainly focussed on three small rural settlements including the church spire at Grandborough which is a landmark. The area feels tranquil and is rural with no modern manmade vertical elements. Wind turbine development would be a prominent and highly visible new element in this horizontal landscape affecting tranquillity and could diminish the scale and importance of Grandborough spire. However, the area to the south away from the main settlements and ironstone fringe hills may form a neutral setting for turbines providing the relationship with Lower Shuckburgh church spire is taken into account.

**Mease lowlands estate farmlands:** The area is considered to have high/medium sensitivity to wind energy development. This relatively small area of low lying subtle gently rolling landscape is slightly degraded and sparsely settled with power lines to the south and unsightly commercial development to the north all of which are compatible with windfarm development. However, the area is overlooked by settlement to the north and south west as well as being in proximity to Burton Hastings in the south, all of which suggest that wind turbine development may be difficult to accommodate.

The Dunsmore plateau farmlands may have some potential for smaller scale wind energy around Lawford Heath if carefully designed and located.

### Capacity assessment

The capacity of the three areas is discussed below:

**High Cross plateau, open plateau:** Four scenarios are assessed (see Figures 7-10). Based on this analysis, this landscape character type is considered has some capacity for wind farm development- preferably one but one other may be possible. One cluster of 1-7 turbines may be able to be accommodated subject to appropriate design and location which minimises environmental effects on sensitive receptors especially settlements and historic parkland. This may be best located in the core of the upper plateau to the north ie LDU 73 and at a distance to minimise cumulative effects with turbines at Swinford and Low Spinney. It is accepted that LDU 73 is predominantly in Green Belt which is a significant constraint on development and the location and design should reflect this status. One further small cluster (preferably 1-4 turbines) may be able to be accommodated further east but its siting and design needs to ensure that effects are minimised on Churchover and its spire and other settlement as well as on Newnham Paddock and the landscape character of the Swift valley.

**Feldon, vale farmlands:** Two scenarios are assessed (see Figures 11-12). Based on this analysis it is concluded that this area may have capacity for one small cluster, probably to the south of the area. However, effects should be minimised on the views to, and settings of, Grandborough and Lower Shuckburgh church spires, on the apparent scale of the surrounding hills and local field pattern, and views from the Grand Union canal. The effect on the tranquillity of the area should also be taken into account and minimised.

**Mease lowlands, estate farmlands:** Only one scenario explores the capacity of this area due to its size and this is illustrated in Figure 13. The capacity of the area is considered to be limited. It has theoretical intrinsic capacity for a small cluster of wind turbines due to its landform, character and sparsity of settlement. The commercial area at Hinckley to the north gives the area an urban fringe character. Factors that need to be taken into consideration are the limited extent of the area and its location between two urban areas, only 3km apart and virtually joined to the west. Effects should be minimised on the potentially large number of sensitive receptors in residential areas which overlook this landscape. In addition, effects should be minimised on Burton Hastings to the south east in terms of receptors and the church and on the Stretton Baskerville Scheduled Ancient Monument to the east. It is accepted that the area is predominantly in Green Belt which is a significant constraint.

### **Use of the report**

It is recommended that this study is used to inform policy, guidance and development control on wind energy development in the Borough.

## 1. Introduction

- 1.1. White Consultants were appointed in October 2010 by Rugby Borough Council to undertake a landscape sensitivity and capacity study for wind energy development in the Borough. The study is intended to provide part of a sound evidence base for the production and monitoring of the Rugby Borough Local Development Framework.
- 1.2. A report was prepared and submitted to the Council in January 2011. This was based on the consultants' findings working to a steering group consisting of officers of Rugby Borough Council (RBC). This report was then consulted on and the comments received have informed this final report. A separate consultation report has been prepared.
- 1.3. The objectives of the study brief are to:
  - Identify, at a strategic scale, broad landscape areas which may be able to accommodate various scales of wind energy development subject to detailed appraisal;
  - Identify any specific strategic constraints which may reduce the potential of particular landscape areas to accommodate wind energy development;
  - Identify any likely cumulative and cross-border impacts of wind power developments;
  - In doing the above, assist the local planning authority in producing the Local Development Framework policies, future energy and landscape strategies, and scoping opinions and assessments for wind energy development proposals.
- 1.4. The report addresses the planning context, the nature of wind energy development and the landscape character context. It then sets out the method used for assessment. The sensitivity of each of the ten landscape character types in the borough to commercial wind energy is set out. Of these landscape types, those that may have some potential to accommodate wind turbines are assessed in terms of their overall capacity. Detailed sensitivity and capacity assessment sheets are located in Appendix A and B respectively. Baseline data from the Warwickshire landscape assessment relating to the capacity assessment is included in Appendix C.
- 1.5. It should be noted that this study addresses commercial scale wind energy development, not small scale community or domestic scale wind energy which may be appropriate in various parts of the Borough. Commercial scale developments are large scale and are those most likely to contribute to renewable energy targets in the short/medium term although smaller scale development is still of value.
- 1.6. This study is at a strategic scale focusing upon one consideration Rugby Borough Council will have when dealing with wind energy development. As a result this study does not recommend specific sites for wind energy development and so any conclusions on landscape capacity do not necessarily mean that a given area will be able to accommodate wind energy development in practice. A fully iterative design process and full Environmental Impact Assessments including LVIAs should be carried out to ensure that any development minimises adverse environmental effects. The study does not cover other environmental issues such as noise, biodiversity, agriculture, hydrology and transportation/access.

## 2. Planning context and background

- 2.1. Planning policies are entering a period of change following the issue of the Localism Bill in December 2010. This is likely to change how spatial planning is carried out and the effect on wind energy is not yet clear. Regional policies are likely to be removed in due course. In terms of development control, larger wind farms (+50MW) are still likely to be dealt with by the successor body of the Infrastructure Planning Commission within the Planning Inspectorate. Those wind farms below 50MW output are likely to be dealt with at a local level, probably by local authorities.

### National Policies

- 2.2. Development of renewable energy resources is a key plank of government policy. Relevant national policies are Planning Policy Statement 1 (PPS1) and PPS22 which deals with renewable energy. These are due to be further reinforced by the issue of a new combined climate change Planning Policy Statement and new National Policy Statements for energy (including renewable energy). PPS7 sustainable development in rural areas is also of relevance to this study.

### PPS1

- 2.3. In PPS1 the key objectives include facilitation and promotion of sustainable and inclusive patterns of urban and rural development by contributing to sustainable economic development and protecting and enhancing the natural and historic environment, the quality and character of the countryside and existing communities (paragraph 5). A high level of protection should be given to the most valued landscapes with those with national and international designations receiving the highest level of protection (paragraph 17). The latter does not apply in Rugby Borough.

- 2.4. The Planning and Climate Change Supplement sets out how planning should contribute to reducing emissions and stabilising climate change. It states that there is a compelling scientific consensus that human activity is changing the world's climate (paragraph 1) and we are likely to see more extreme weather events including hotter and drier summers and other effects resulting in permanent changes in the natural environment (paragraph 2). There is an urgent need for action on climate change (paragraph 6). It goes on to state that local development policies should be designed to promote and not restrict renewable and low carbon energy and supporting infrastructure (paragraph 19). Local approaches should not preclude the supply of any type of renewable energy other than in the most exceptional circumstances as set out in the key principles and PPS22 (paragraph 20).

### PPS7

- 2.5. The guidance states that planning authorities should ensure that the quality and character of the wider countryside is protected and, where possible, enhanced. They should have particular regard to any areas that have been statutorily designated for their landscape, where greater priority should be given to restraint of potentially damaging development (paragraph 15). As mentioned above this does not apply here.

### PPS22

- 2.6. In its objectives the guidance states that increased development of renewable energy resources is vital to facilitating the delivery of the Government's commitments on both climate change and renewable energy. One of the elements of this is effective protection of the environment by reductions in

- emissions of greenhouse gases and thereby reducing the potential for the environment to be affected by climate change.
- 2.7. The key principles state that renewable energy development should be capable of being accommodated throughout England where technically viable and where environmental impacts can be addressed satisfactorily. Small-scale projects provide a limited but valuable contribution to overall outputs. Local planning authorities should foster community involvement in renewable energy projects and seek to promote knowledge of and greater acceptance by the public of prospective renewable energy developments that are appropriately located. Development proposals should demonstrate environmental benefits as well as how impacts have been minimised through careful consideration of location, scale, design and other measures. Criteria based policies to guide development are encouraged (paragraph 6 and 7).
  - 2.8. In terms of landscape and visual effects it stipulates that policies in local development documents should address the minimisation of effects through siting, layout, landscaping and design and colour of schemes (paragraph 19). It also states that the final decision on visual and landscape effects will be, to some extent, one made by professional judgement. It is acknowledged that wind turbines are likely to have the greatest visual and landscape effects but that in assessing planning applications, local authorities should recognise that the impact of turbines on the landscape will vary according to the size and number of turbines and the type of landscape involved. In addition, these impacts may be temporary if conditions are attached to the planning permissions which require a future decommissioning of turbines
  - 2.9. In terms of Green Belts PPG2 is referred to although this predates renewable energy policies. The guidance indicates that when located in the Green Belt, elements of many renewable energy projects may impact on the openness of the Green Belt and therefore may comprise inappropriate development (see location in Figure 1). Careful consideration would therefore be needed in terms of visual impact. Very special circumstances would need to be demonstrated that clearly outweigh any harm.
  - 2.10. The guidance indicates that planning authorities should take into account the cumulative impact of wind generation projects in particular areas. However, it goes on to state that such impacts should be assessed at the planning application stage and authorities should not set *arbitrary* limits in local development documents on the numbers of turbines that will be acceptable in particular locations (paragraph 21). This is particularly relevant to this study and reinforces the need to provide an evidence base to avoid arbitrary judgements and to inform decisions.

#### Regional Policies and background studies

- 2.11. The weight attributed to regional planning for the area may now be in doubt so policies and targets are not discussed. However, the Renewable and Low Carbon Energy Resource Assessment and Feasibility Study<sup>1</sup> for Warwickshire planning authorities provides a useful background study (henceforth referred to as the Renewable Energy Study). This defines what level of wind energy development may be viable and deliverable in the Borough. The report states that Rugby has potential for between 25 and 48 turbines of 2.5MW (megawatt) supplying 17 to 32% of the Borough's predicted electricity demand (p8). Areas are defined where wind energy might be feasible taking into account basic constraints such as the

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<sup>1</sup> Renewable and Low Carbon Energy Resource Assessment and Feasibility Study, CAMCO, April 2010

- presence of dwellings (using a 600m 'rule of thumb' buffer), national historic and ecological conservation designations and ancient woodland. These are called 'less constrained areas' and are illustrated in **Figure 2**. The 600m buffer derives from the Government guidance from DECC - 'Renewable and Low-carbon Energy Capacity Methodology: methodology for the English Regions' January 2010 (Table 3.1, p9). It relates primarily to noise effects. In practice it may be that wind energy development is located at a different distance from residential properties; it will be for Rugby Borough Council to consider this issue both as part of the process of planning policy development and on a site by site basis.
- 2.12. The study acknowledges that landscape character plays a role in determining wind energy capacity and recommends that a cumulative landscape impact study for wind energy is carried out in Rugby Borough (Recommendation 12 p14)- hence the commissioning of this report.
- 2.13. The report indicates that the constraints applied do not include airport buffer zones (in line with PPS22 recommendations), wireless masts and constraints in neighbouring counties. It does not treat Green Belt as an absolute constraint.

#### Local Policies

- 2.14. The Rugby Local Plan was adopted in 2006. Local Plan Policy GP5 encourages the provision of renewable energy schemes where careful consideration has been given to design and layout and siting in the landscape. It is stated that planning permission will be granted where no material harm would result in relation to residential amenity and the environment. Policy E2- Green Belt cites the West Midlands Green Belt with a general presumption against inappropriate development which will not be approved except in very special circumstances. Developments may be acceptable if they do not compromise the area's open and rural character.
- 2.15. The Local Development Framework Core Strategy was submitted in January 2010. This study is intended to inform a forthcoming Development Management DPD.

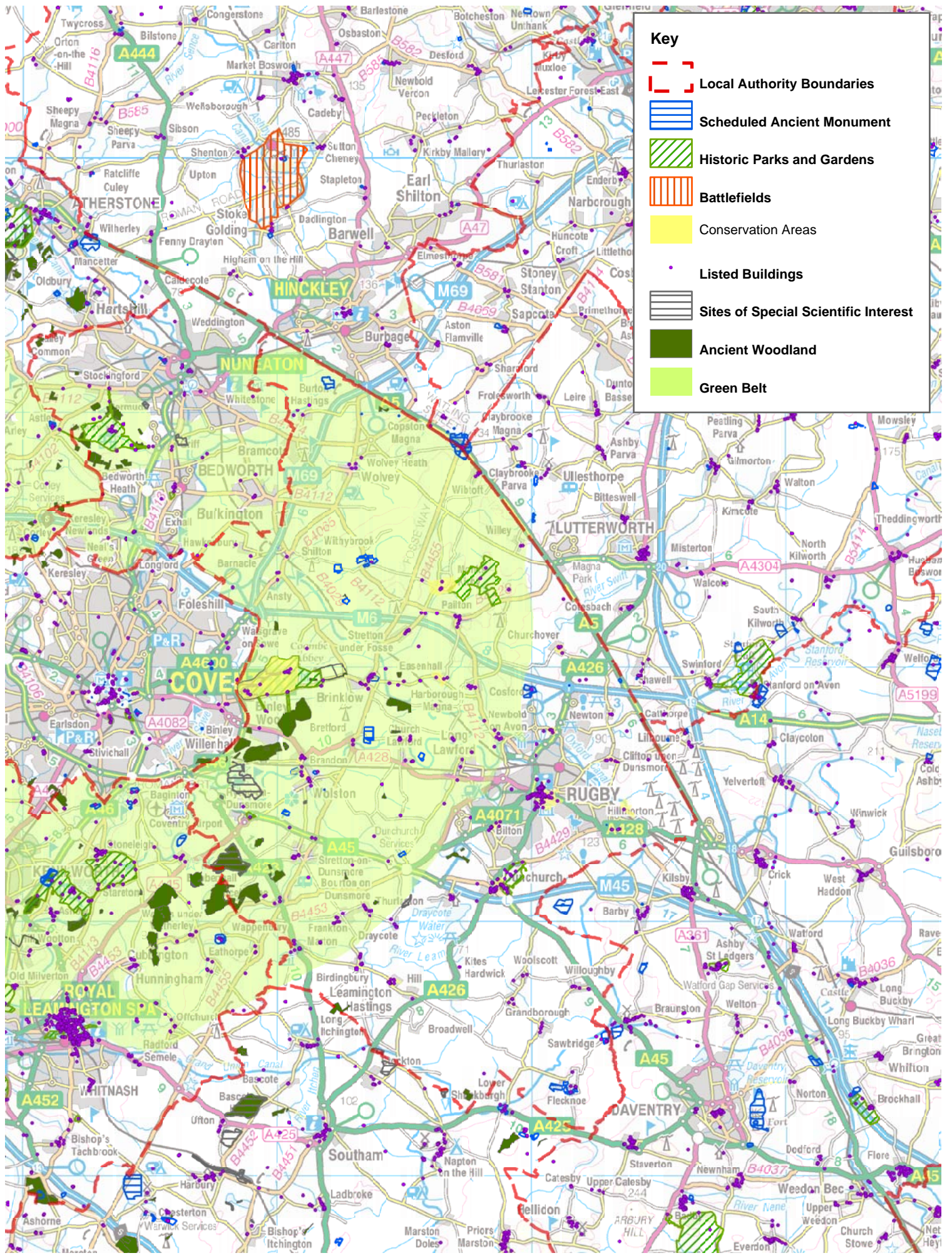
#### European Landscape Convention

- 2.16. The European Landscape Convention<sup>2</sup> (ELC) came into force in the UK in 2007 and has to be taken into account. Its definition of landscape is:
- 'an area, as perceived by people, whose character is the result of the action and interaction of natural and/or human factors.'*
- 2.17. It acknowledges that landscape is an important part of the quality of life for people everywhere, in urban areas and in countryside, in degraded areas as well as in areas of high quality, in areas recognised as being of outstanding beauty as well as everyday areas. It includes land, inland water and marine areas whether they are natural, rural, urban or peri-urban.










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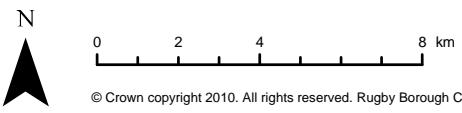
<sup>2</sup> <http://conventions.coe.int/Treaty/en/Treaties/Html/176.htm>





**Key**

-  Local Authority Boundaries
-  Scheduled Ancient Monument
-  Historic Parks and Gardens
-  Battlefields
-  Conservation Areas
-  Listed Buildings
-  Sites of Special Scientific Interest
-  Ancient Woodland
-  Green Belt



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**Figure 1**  
**Designations and Constraints**





**Figure 2**  
**Less constrained areas for wind energy development**



### 3. Wind energy characteristics and current development

- 3.1. Wind energy development has developed and matured over the last 20 years. Almost all commercial sized onshore turbines now have three blades on a horizontal axis hub on towers, usually painted a light grey. Turbine sizes and spacing have increased and there are a significant number of large onshore wind farms on site or approved across the UK. Wind turbines have been developed for lower wind speed sites in lowland areas away from the coast. The size of the turbine structure is now often determined by what can be transported to a site, ie the weight of the hub and the length of blades, as well as environmental and other constraints. The current standard size of commercially available turbine is around 125m- a 90m diameter blade on an 80m high tower, although smaller sizes are available for less accessible sites and taller towers are used where wind turbulence occurs. **Figure 4** indicates the relative scale of a standard turbine to standard objects. Turbines are spaced at a distance whereby they do not interfere with each other's wind yield in relation to the prevailing wind. Spacing is usually 350-500m dependent on site conditions.

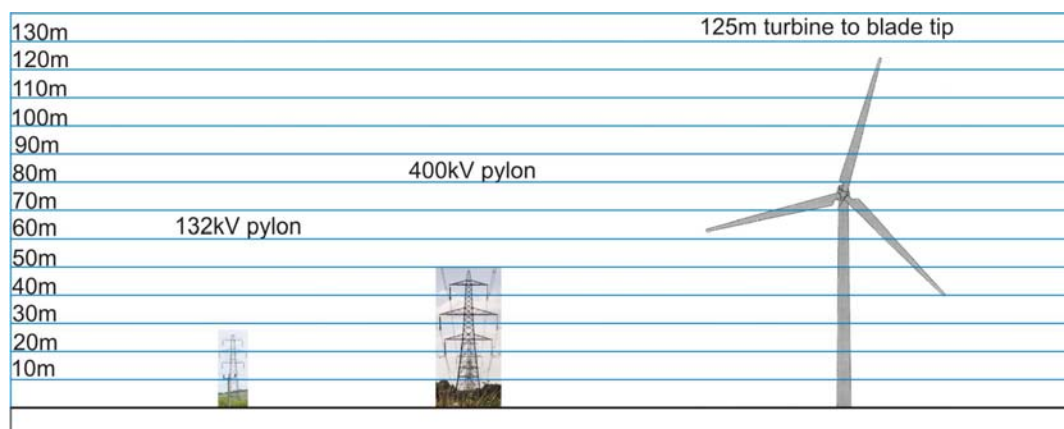
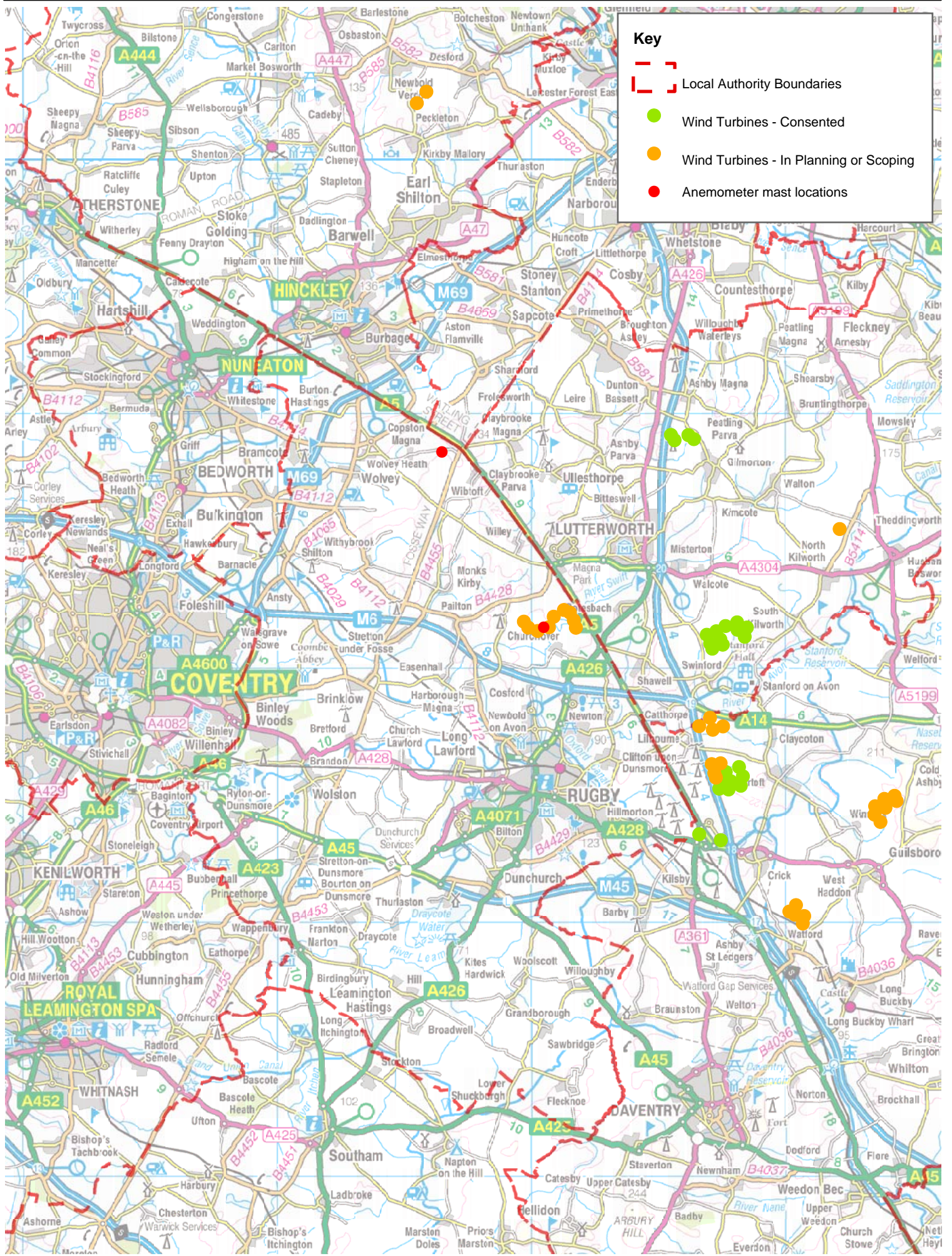


Figure 4 Scale of wind turbine

- 3.2. In addition to wind turbines there is ancillary development which usually includes anemometer masts, access tracks and hardstandings adjacent to turbines for construction and maintenance, transformer buildings, a sub-station, a grid connection (power line) and possible alterations to minor roads to allow construction access. Whilst these elements are usually considered of lesser impact than the turbines they can contribute to altering the character of the landscape.
- 3.3. Three wind energy developments have been consented on appeal to the east of Rugby Borough at Low Spinney, Swinford and Yelvertoft, and also at Tesco at the Daventry International Railfreight Terminal (DIRFT) (see Figure 3). These wind farms lie along the M1 corridor and the distances between them are around 6.5km, 5km and 2km respectively. There are also a number of other developments proposed which are at various stages in the planning process- either in scoping, close to or at planning application stage. Anemometer masts have been erected within the borough south west of High Cross and west of Churchover. These are also illustrated in Figure 3.





**Figure 3**  
**Windfarms consented and in planning or scoping**



## 4. Landscape context

- 4.1. Rugby is located east of Coventry in the county of Warwickshire. The Borough covers an area of 357 square km encompassing the town of Rugby and 39 Parishes. Two thirds of the Boroughs 91,600 residents live in the town with the remainder residing in rural settlements in the countryside ranging in size from 20 to 3000 people. The Borough's central position within England means that it is close to major lines of communication with the M6 and M45 running through it, the A5 to the north and the M1 just to the east as well as an east west railway. Associated with the major roads are established distribution centres just outside the Borough such as DIRFT and Magna Park, near Lutterworth.
- 4.2. The landscape of the Borough is a gently undulating lowland of hills and vales traversed by the east west running rivers of the Avon and Leam. Plateau rises to the north and ironstone fringe hills lie to the south east.

### Background studies

- 4.3. Landscape character assessments have been carried out for the area. Landscape character can be defined as a distinct and consistent pattern of elements that make one landscape different from another, rather than better or worse<sup>3</sup>. A national landscape assessment has been undertaken which divides England into 159 national character areas<sup>4</sup>. These were first assessed in 1995 and updated in 2005. Rugby is divided between the Leicester Vales roughly to the north of the M6, Dunsmore and Feldon to the south with the Northamptonshire Uplands covering the eastern fringes (see **Figure 5**). These areas provide a national spatial framework as a broad context for consideration of landscape issues. Their boundaries in many cases are considered to be broad lines of transition. However, they reflect some key differences between parts of the Borough.
- 4.4. A more detailed landscape character assessment<sup>5</sup> has been carried out for Rugby Borough as part of a Warwickshire wide study. The landscape assessment is based on the Living Landscapes Project method and a report was produced for Rugby Borough Council in April 2006. This study is divided into identification of landscape description units (LDUs) which are the building blocks of the study, a landscape sensitivity analysis and a condition/function analysis. LDUs are discrete tracts of land defined by distinct patterns of physical biological and cultural landscape attributes. They are grouped into landscape character areas (LCAs) and types (LCTs) which form a subset of the areas (see **Figure 5**). The name given to each landscape type does not refer to the land uses within it but serves only to differentiate between types. These types do not follow the same boundaries as the national character areas as they are based on analysis at a finer resolution. As such they have been used as the basis for sensitivity and capacity analysis for wind turbines in this study. The landscape types are:
  - Dunsmore , plateau farmlands
  - Dunsmore, plateau fringe
  - Dunsmore, parklands
  - Feldon, ironstone fringe

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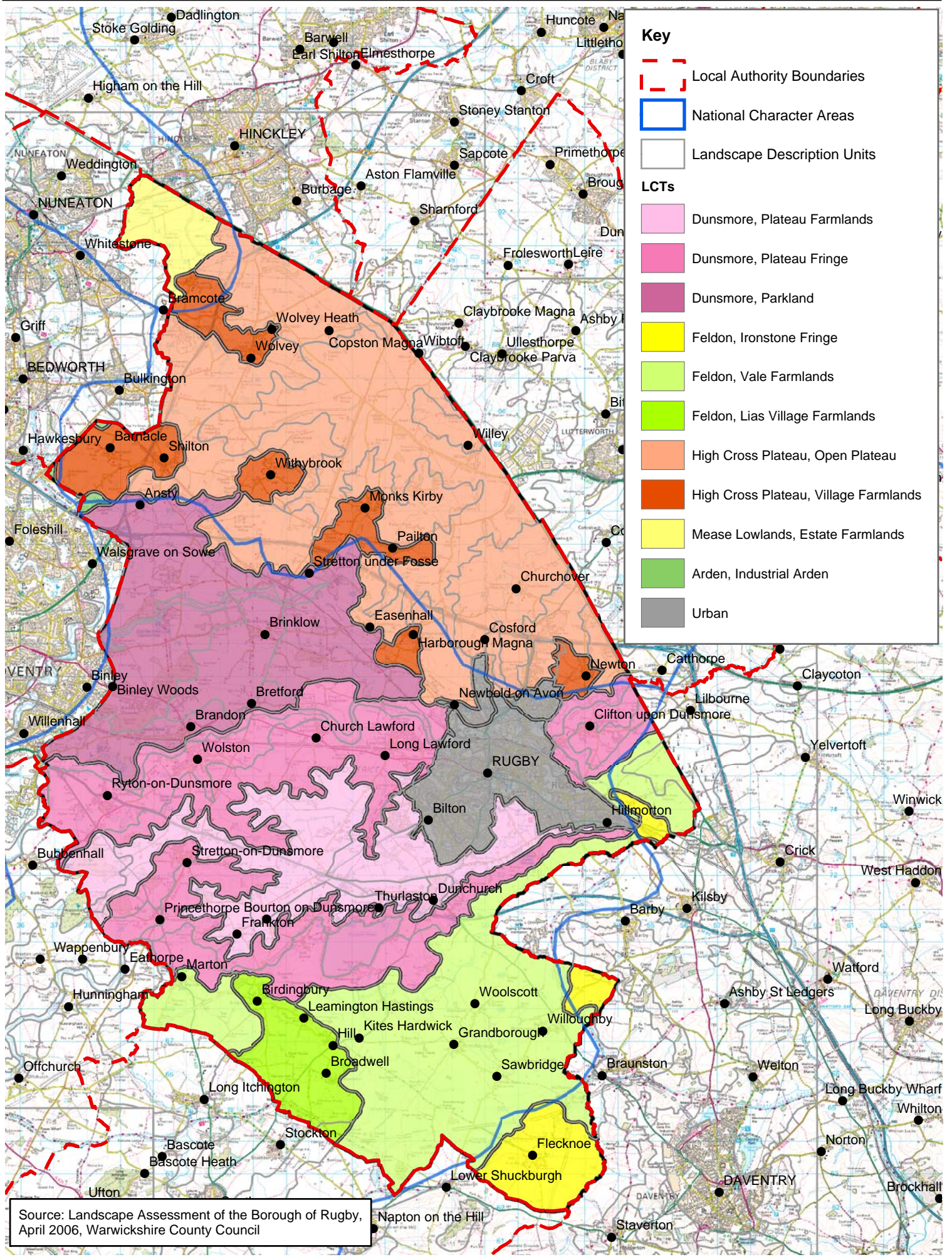
<sup>3</sup> Landscape Character Assessment Guidance for England and Scotland, Countryside Agency and Scottish Natural Heritage, April 2002.

<sup>4</sup> <http://www.naturalengland.org.uk/ourwork/landscape/englands/character/areas/default.aspx>

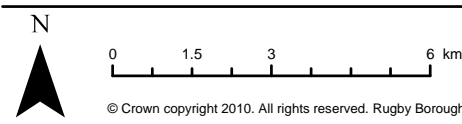
<sup>5</sup> Landscape Assessment of the Borough of Rugby Sensitivity and Condition Study. Warwickshire County Council, April 2006

- Feldon, vale farmlands
- Feldon, lias village farmlands
- High Cross plateau, open plateau
- High Cross plateau, village farmlands
- Mease lowlands, estate farmlands
- Arden, industrial Arden





**Figure 5**  
**Landscape Character Types and Landscape Description Units**



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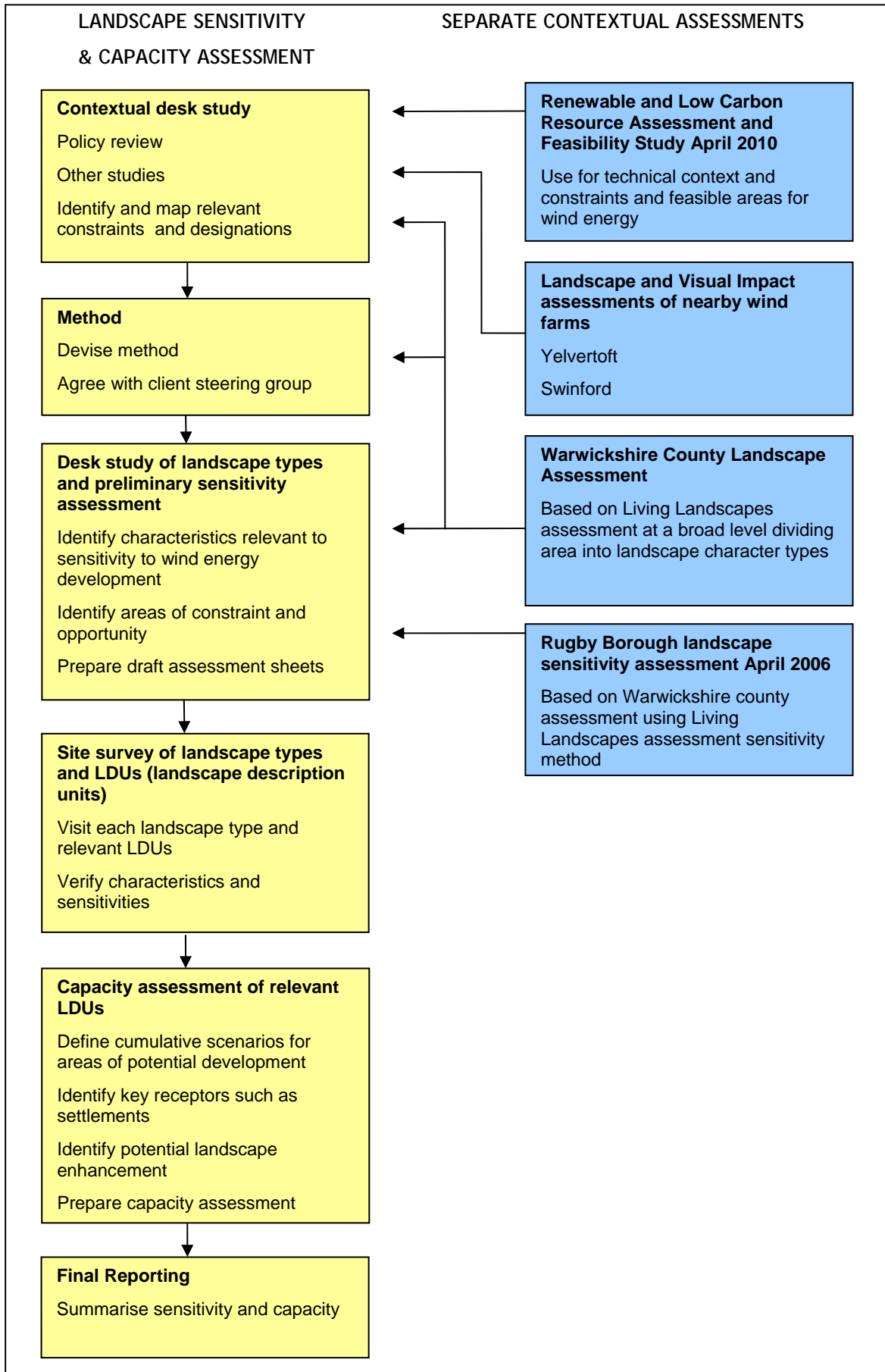


## 5. Study method

- 5.1. The evaluation methodology is based on best practice and policy guidance combined with an understanding of the specific issues regarding the landscapes within Rugby Borough.
- 5.2. There is agreement amongst landscape professionals that landscapes have different sensitivities or capacities depending on the form of change or development e.g. an assessment of a housing development would be different to one for minerals extraction. We have taken into consideration Countryside Agency 'Topic Paper 6: Techniques and Criteria for Judging Capacity and Sensitivity (2004)' as well as studies on wind energy development capacity. While we have defined a glossary of terms in **Appendix C** two key definitions are set out below.
- 5.3. **Sensitivity** is taken to mean the sensitivity of the landscape to a particular type of change ie commercial scale wind energy development. It is a combination of the sensitivity of the physical landscape resource (including its historical and ecological features and elements) and perceptual qualities (such as views). Sensitivity is considered independent of landscape value i.e. whether an area has a landscape designation or not.
- 5.4. **Capacity** is taken to mean the ability of a landscape to accommodate different amounts of change (ie commercial scale wind energy development) without a fundamental change in character and considers receptors and perceived landscape value. It derives from an assessment of potential **cumulative impact** of several wind energy developments and takes into account the potential scale of development and other existing/approved wind farm developments in order to realistically address the current situation. A low sensitivity does not automatically mean a high capacity as this depends on the type and scale of development considered.
- 5.5. The method devised is based on a review of previous landscape capacity studies for wind farms, including the work in Scotland and England by the University of Newcastle and others, Arup/White Consultants study for the NE Regional Assembly in June 2006, and in Wales between 2002 and 2006 in developing and implementing TAN8 in Wales plus the experience of the study team in the Blackdown Hills.
- 5.6. The technical or economic viability of turbines in any given area is not considered in this study as much of the Borough has been assessed as being potentially feasible by the Warwickshire energy study.
- 5.7. An important aspect of the process is to build on the work carried out for the Rugby Borough Landscape Assessment.
- 5.8. There are a number of constraints in the Borough which are likely to influence wind farm development. Most have been mapped as part of the County renewable energy study alongside technical constraints eg parks and gardens, scheduled ancient monuments, ancient woodlands, nature conservation sites etc. These are illustrated in **Figure 1**.

The process is set out in Box 1.

**Box 1: Summary of Method**





## Sensitivity

- 5.9. A matrix is used to assess simple sensitivity for each landscape type (see **Appendix A**). This links a series of objective criteria relating to the physical and perceptual characteristics of a landscape type to the sensitivity of those types to a particular scale of wind farm development. The statements on what characteristics make a landscape more or less sensitive to wind energy development underpin the study's approach. They are derived from the experience of the study team noting the collective approach of similar studies by other assessors.

<i>Main criteria</i>	<i>Specific criteria/factors</i>	<i>Characteristics that are less sensitive to wind farms</i>	<i>Characteristics that are more sensitive to wind farms</i>
<b>PHYSICAL</b>			
<b>Landform scale and enclosure</b>	Scale of landform	Larger scale landforms which may be more able to accommodate large scale wind turbines	Smaller scale well defined landforms which may be dominated by wind turbines
	Topographic form	Upland plateaux, gently rolling or flat landscapes as the turbines may be less easily scaled against the landform	Landforms with well defined changes in level including undulating landscapes, narrow ridges, steep sloping valley sides and hillsides, mountains and narrow valley floors as turbines may reduce apparent scale and drama
	Shape	Simpler landforms which may complement the form of turbines	More complex landforms where large scale turbines may compete with detail and interest in the landscape
	Enclosure	Open and exposed landscapes where turbines, though highly visible, may be logically located	Enclosed landform where this indicates more complex landform, though in places screened by landform
	Skyline	No distinctive landform skylines for turbines to be located on	Skylines which are an important and noticeable component in the landscape eg as a backcloth to lower land and turbines may dominate or compete
<b>Landcover pattern, scale and enclosure</b>	Scale of landcover	Larger scale landcover which is more able to accommodate wind turbines which are large scale objects.	Smaller scale landcover which is less able to accommodate wind turbines due to the contrast with the large scale turbines.
	Type	Forestry plantations, large scale simple agriculture eg arable and possibly moorland where the simplicity of the landcover may complement turbines	Irregular or complex pattern, often pastoral farmland with hedgerows and trees where the scale of the turbines may dominate
	Pattern	Unenclosed land or rectilinear field patterns which may complement the modern aesthetic of the turbine	Irregular field patterns where turbines may detract from the pattern
	Enclosure	Where enclosure limits views of turbines eg forestry	Open, unenclosed landscapes where turbines are highly visible

<i>Main criteria</i>	<i>Specific criteria/factors</i>	<i>Characteristics that are less sensitive to wind farms</i>	<i>Characteristics that are more sensitive to wind farms</i>
	Time depth	More recent landscapes such as reclaimed land, late enclosure land where turbines may help create a new landscape	Older landscapes with significant time depth and associated features where turbines may be seen as large additional intrusive elements
<b>Settlement type and pattern</b>	Settlement pattern	Large scale industrial, infrastructure, warehousing and office uses, modern urban areas where turbines may be seen in scale and character	Rural villages and other clustered settlements especially with historic cores where the modern turbines may compete with traditional character
	Vertical elements	Landscapes with many masts and pylons where turbines may be seen in character	No man made vertical elements where turbines would be out of character and create noticeable new elements
	Movement	Busy major roads and other areas of significant mechanised movement where the movement of turbine blades may be in character	No roads or only quiet country lanes where turbine blade movement could be eye catching
<b>Landscape features/foci/landmarks</b>	Sensitive features/foci	Landscapes with no sensitive features where turbines might detract from settings	Landscapes with landmarks and features such as church spires and towers, follies, parks and gardens, prominent listed buildings and ancient monuments where turbines might compete as landscape foci and detract from settings
	Sensitive features on skyline	Landscapes with no sensitive features on skylines where turbines might detract from settings	Skylines with prominent features, often acting as focal points where turbines might compete as landscape foci and detract from settings
<b>PERCEPTUAL</b>			
<b>How the landscape is experienced</b>	Views	Presence of detractive views with no attractive views where turbines may become new focal points and create interest in the landscape	Presence of attractive views with no detractive views where turbines may detract from, or interrupt, cherished views
	Tranquillity	Area of low tranquillity where the modern, moving elements of turbines may be in character	Area of high tranquillity where the modern, moving elements of turbines may be out of character
<b>Context</b>	Relationship with and intervisibility with adjacent landscapes	Self contained landscape with limited relationship with adjacent areas where the effects of turbines may be limited to the character area eg large consistent character areas with subtle boundaries with adjacent landscape character types	Strong backdrop provided by this or adjacent area where the effects of turbines are noticeable from or are emphasised by adjacent landform eg scarp slopes, steep valley sides, hills adjacent to coastal plains

- 5.10. The criteria for assessing sensitivity are considered of equal weight in principle. However, the overall judgement on sensitivity is not based on an arithmetical adding up of criteria scores, rather a balanced judgement on what is most important in a given area. There may be instances where some criteria in themselves are justification enough for higher sensitivity ratings. Experience suggests that scale, topographic form and relationship with settlements are often significant factors.
- 5.11. The calibration for the sensitivity of landscape character types to commercial scale wind energy development proposed for this study is as follows:

<i>Sensitivity</i>	<i>Definition</i>
<b>High</b>	Key characteristics of landscape are very vulnerable to change and are unable to accommodate development without significant character change. Thresholds for significant change are very low. Commercial scale wind energy development conflicts directly with landscape character.
<b>High-medium</b>	Key characteristics of landscape are vulnerable to change and development can be accommodated only in limited situations without significant character change. Thresholds for significant change are low. Few aspects of commercial scale wind energy development relate to landscape character.
<b>Medium</b>	Key characteristics of landscape are susceptible to change but with some ability to accommodate development in some situations without significant character change. Thresholds for significant change are intermediate. Some aspects of commercial scale wind energy development may relate to landscape character.
<b>Medium-low</b>	Key characteristics of landscape are resilient to change and are able to absorb development in many situations without significant character change. Thresholds for significant change are high. Many aspects of commercial scale wind energy development relate to landscape character.
<b>Low</b>	Key characteristics of landscape are robust and are able to accommodate development without significant character change. Thresholds for significant change are very high. Commercial scale wind energy development relates to landscape character.

- 5.12. The assessment of sensitivity informs a maximum scale of wind energy development or typology which is considered acceptable in a given area ie the number of turbines in a cluster. The more sensitive the landscape the smaller this typology is likely to be and in some cases ie high sensitivity areas, wind energy may be considered unacceptable in terms of landscape character. Factors which can influence the recommended size of cluster include:
- The extent of a landscape character area/type,
  - The size of areas within a landscape character area which may be potentially suitable for wind farm development.
  - The size and shape of consistent landform features within an area and proximity to sensitive features such as distinct changes in level
  - The grain and pattern of the landscape including settlement and road spacings and field pattern.
  - The spacings of landmarks and other features.

This assessment only defines the *size* of a single wind turbine cluster, not the number of clusters overall, which is considered in the capacity assessment (see 5.15 onwards).

- 5.13. The sensitivity of each landscape character area or type to a range of wind turbine clusters (or wind farm) sizes is assessed within the following range:
- Small wind farms often related to the community scale but can be commercial where land availability is restricted or there are specific constraints- upto 5 turbines eg Low Spinney
  - Medium wind farms of a typical commercial scale in England- 6-12 turbines eg Swinford and Yelvertoft
  - Medium/large wind farms which occur where constraints allow- 13-24 turbines
  - Large scale wind farms of 25 turbines and above.
- 5.14. The sizes of wind turbines are based on those currently commercially available ie from 80m to around 130m in height. Turbines at a domestic/smaller scale are excluded from this analysis as these may occur in small quantities at any point in the Borough and are best dealt with on a case by case basis. If there are special situations in some areas such as where distinct landforms occur we specify a limitation on height to reflect local conditions.

#### Capacity- Defining thresholds for acceptable change

- 5.15. Having defined the sensitivity for all landscape character areas/types only those which have some potential to accommodate commercial wind energy development are assessed further to understand their overall capacity.
- 5.16. The landscape character of the area is considered at a finer grain to establish variations in character and to identify areas that may be better able to accommodate wind energy development than others. The Warwickshire landscape character assessment identified Landscape Description Units (LDUs) which underpinned the landscape character types. The GIS based generic classification/descriptions of the physiography, ground type, landcover and settlement pattern of each LDU are set out in **Appendix C**. This information is built upon to inform the assessment and each LDU is described in the Capacity Assessment sheets in **Appendix B**.
- 5.17. In part, the capacity assessment seeks to define the threshold of acceptable change ie the maximum capacity of any given landscape area to a number of wind farms of a particular typology without significant adverse change to its character. For this assessment it is taken to mean that it is unacceptable for wind farms to become the dominant characteristic of the whole or significant part of a character area/type ie a wind farm landscape, whereas it may be acceptable for wind farms to become a characteristic ie a landscape with wind farms. In other areas this may not be acceptable due to intrinsic qualities or other factors such as significant adverse effects on large numbers of sensitive receptors. The assessment will combine the sensitivity of an area with an assessment of the potential cumulative effect of several developments. The capacity assessment will also take into account the effects on landscape value, on designations eg Green Belt and a broad brush consideration of potential effects on sensitive visual receptors.
- 5.18. In order to make the assessment realistic, existing and approved wind farms are taken into consideration. Only those which are closest and likely to have a potential significant effect are taken into account to keep the assessment focussed though it is accepted that others further away may be taken into

consideration by more detailed landscape and visual impact assessments. The locations of anemometer masts for potential proposed development in Rugby borough are also noted.

- 5.19. To test cumulative and individual effects a number of scenarios are developed with one or more indicative wind turbine cluster locations in each area. Criteria for selection are set out in 5.23. The indicative scenario cluster locations do not indicate recommended locations of development, but are used only to explore the overall capacity of an area. This is because they are not informed by full data available to developers and related detailed landscape and visual impact assessments. Therefore the only outcome expected is to arrive at a broad capacity for an area by testing the potential relationship of indicative wind farms with the landscape at various densities, not to recommend potential sites.

Each scenario is tested against criteria in the capacity worksheets (see **Appendix B**) and as below:

<i>Criteria</i>	<i>Aim</i>
<b>Visual criteria</b>	Prevent experience in a settlement of being in a wind farm landscape
	Avoid detrimental effects upon the experience of visitors and those engaging in recreation
<b>Landscape criteria</b>	Minimise adverse effects upon sensitive local landscape character and avoid distortion of the sense of scale
	Avoid over-dominant effects on the skyline, and minimise breaking skylines when viewed from sensitive landscapes and viewpoints
	Minimise adverse effects upon sensitive landscape features/landmarks
<b>Policy criteria</b>	Avoid reducing openness of the Green Belt

- 5.20. In order to inform judgements on potential significant landscape and visual effects which may influence the capacity of an area to accommodate wind farms the calibration of magnitude of visual effects is worthy of consideration. This is intended to explain the basis for judgements in the capacity assessment eg if an indicative wind turbine cluster in a scenario is likely to have a significant adverse effect on a sensitive visual receptor such as a settlement. A University of Newcastle study<sup>6</sup> made a series of definitions on visual effects of wind farm development but without linking this through to terminology commonly used in the assessment of visual effects in environmental impact assessments. For the purposes of this study we have made this link/calibration. The University of Newcastle study defines magnitude, or size class, of effect as the interplay of a number of factors, which include: the physical form of the development, the number turbines and their layout, visibility based on distance and weather effects, and other factors that modify the visual effect, some related to human perception and some related to physical elements and the environment.

<sup>6</sup> University of Newcastle (2002) Visual Assessment of Windfarms Best Practice, *Scottish Natural Heritage commissioned report F01AA303A (Table 18, page 64)*

University of Newcastle criteria to define magnitude (Table 18, p64 of publication ref 6 below)				This study calibration
Size class	Name	Descriptors - appearance in central vision field	Modifying factors	Magnitude of Effects
Very large	Dominant	Commanding, controlling the view	Few	Substantial
Large	Prominent	Standing out, striking, sharp, unmistakable, easily seen	Few	Substantial/ Moderate
Medium	Conspicuous	Noticeable, distinct, catching the eye or attention, clearly visible, well-defined	Many	Moderate
University of Newcastle criteria to define magnitude				This study calibration
Small	Apparent	Visible, evident, obvious	Many  Limit of potential visual significance	Minor
Very small	Inconspicuous	Lacking sharpness of definition, not obvious, indistinct, not clear, obscure, blurred, indefinite	Many  Limit of ZVI	Minor
Negligible	Faint	Weak, not legible, near limit of acuity of human eye	Few	Negligible

- 5.21. It is accepted that changes to the landscape/view caused by wind turbines are not all necessarily adverse or significant. However, in this strategic analysis we have taken a precautionary approach particularly where the degree of change is large. Linking the above tables we have made the following broad calibration of the significance of visual effects which builds on studies of a number of LVIAs as to the likely range of magnitude of effects. In reality this will depend on a number of factors such as whether a view is unobstructed or not/direct or oblique. The table includes consideration of the sensitivity of the receptor to arrive at a judgement of significance. High sensitivity receptors are likely to include dwellings and listed/designated historic features.

From previous table		Sensitivity of Receptor		
		High sensitivity	Moderate sensitivity	Low sensitivity
<b>Magnitude of Effects</b>	<b>Typical distance range</b>	<b>Likely significance of effect</b>		
Substantial	Up to 2 km	Severe	Major	Moderate
Substantial/ Moderate	1-5 km	Severe. Major in some situations	Major. Moderate in some situations	Moderate
Moderate	4-10 km	Major	Moderate	Minor
Minor	7-20km	Moderate	Minor	Minor
Negligible	15km- 30km	Negligible	Negligible	Negligible

- 5.22. Major/moderate significance of effect and above are considered likely to be significant while a number of moderate effects taken together may cumulatively be significant. Whilst no specific judgements are made about the precise effects on specific receptors in this study as it is not a detailed LVIA, the table above indicates the ranges of potential magnitude of effects which inform the commentary on potential effects on settlements and other sensitive receptors in the capacity assessment.

### Choice of Scenarios

- 5.23. As already stated, the scenario 'cluster' locations are indicative and do not infer preferred locations for development. They are used to explore the range of potential effects and therefore reach a conclusion on overall area capacity. As a result, a scenario may be unrealistic due to the number or location of clusters. Each 'cluster', indicated by asterisks on Figures 7-13, are assumed to not exceed the maximum typology recommended for area landscape type eg 5 turbines in Feldon Vale farmlands. They are chosen based on the following criteria:
- To locate clusters in 'less constrained areas' as defined by the Warwickshire energy study (see Figure 2 and Figures 7-13)
  - To locate some clusters at a significant distance from consented wind farms which potentially may result in lesser cumulative effects, and others closer to explore a range of effects.
  - To test a sufficient range of scenarios to explore maximum capacity
  - To generally test realistic scenarios but also test extreme scenarios where useful to explore the effects on a wide range of receptors across the area
  - Reflect spacings of wind turbine clusters which have been consented in nearby areas in order address potential pressures from future developers who may use these as precedent.

## 5.24. The justification for each scenario chosen is set out below:

Scenario Reference	Number of wind turbine clusters	Justification
<b>High Cross Open Plateau</b>		
A Figure 7	1	One wind turbine cluster is located south of High Cross. This is a location on the upper plateau away from the sensitive village farmlands LCAs and at a significant distance from the consented windfarms at Swinford and Low Spinney (around 12km and 9.5km respectively). This distance may assist in reducing cumulative effects with these consented developments and so is worthy of exploration. This is also a potentially realistic location because of developer interest nearby.
B Figure 8	2	A second cluster is added to Scenario A north of Churchover. This location is away from the village farmlands LCAs but is closer to Swinford (6km) and so allows consideration of cumulative effects with this consented development as well as with the Scenario A cluster. This is also a potentially realistic site because of developer interest.
C Figure 9	3	A third cluster is added to Scenario B to the south east to explore the cumulative effects between clusters, the effects when a cluster is located closer to the edge of the character area/type and closer to the village farmlands LCAs. The cluster is at least 5km away from the other clusters to reflect the spacings between consented wind farms to the east and its size reflects the constraints nearby.
D Figure 10	6	Three further clusters are added to Scenario C in order to explore a fuller range of constraints in the LCA and the effects of locating clusters at a variety of locations. It is not expected that this is a realistic scenario. The clusters explore the potential of the A5 corridor and the northern environs of Rugby.
<b>Feldon Vale Farmland</b>		
A Figure 11	1	One wind turbine cluster is located to the south in a very gently undulating area away from ironstone fringe hills LCAs and villages with their associated church spires.
B Figure 12	2	A second cluster is added to Scenario A as far away as realistically possible from the first cluster (approximately 6km) avoiding close proximity to villages and their church spires although close to a prison complex which is atypical of the development character of the area. The second cluster is 6km from the Tesco turbines at DIRFT. This allows consideration of the cumulative effects between the two clusters and potentially with existing development at DIRFT.
<b>Mease Lowlands</b>		
Figure 13	1	One wind turbine cluster is located to the east of the area away as far as possible from the edges of Hinckley and Nuneaton and related receptors whilst still maintaining some distance from the village of Burton Hastings. There would only be potential for one cluster in this area. This will allow exploration of the effects of locating a cluster in proximity to urban areas.

**Mitigation/landscape enhancement**

- 5.25. Where areas are considered suitable for wind energy development, brief recommendations are made on ways to mitigate the effect of the turbines and enhance the landscape. Whilst turbines are unlikely to be screened in most cases, improving the condition of the surrounding landscape would have positive benefits for landscape character and nature conservation.



## 6. Landscape sensitivity to wind turbines

- 6.1. The sensitivity of each landscape character type to commercial wind turbine development is set out in summary in the table below, in Figure 6 and in detail in Appendix A.

### Summary of landscape character type sensitivity

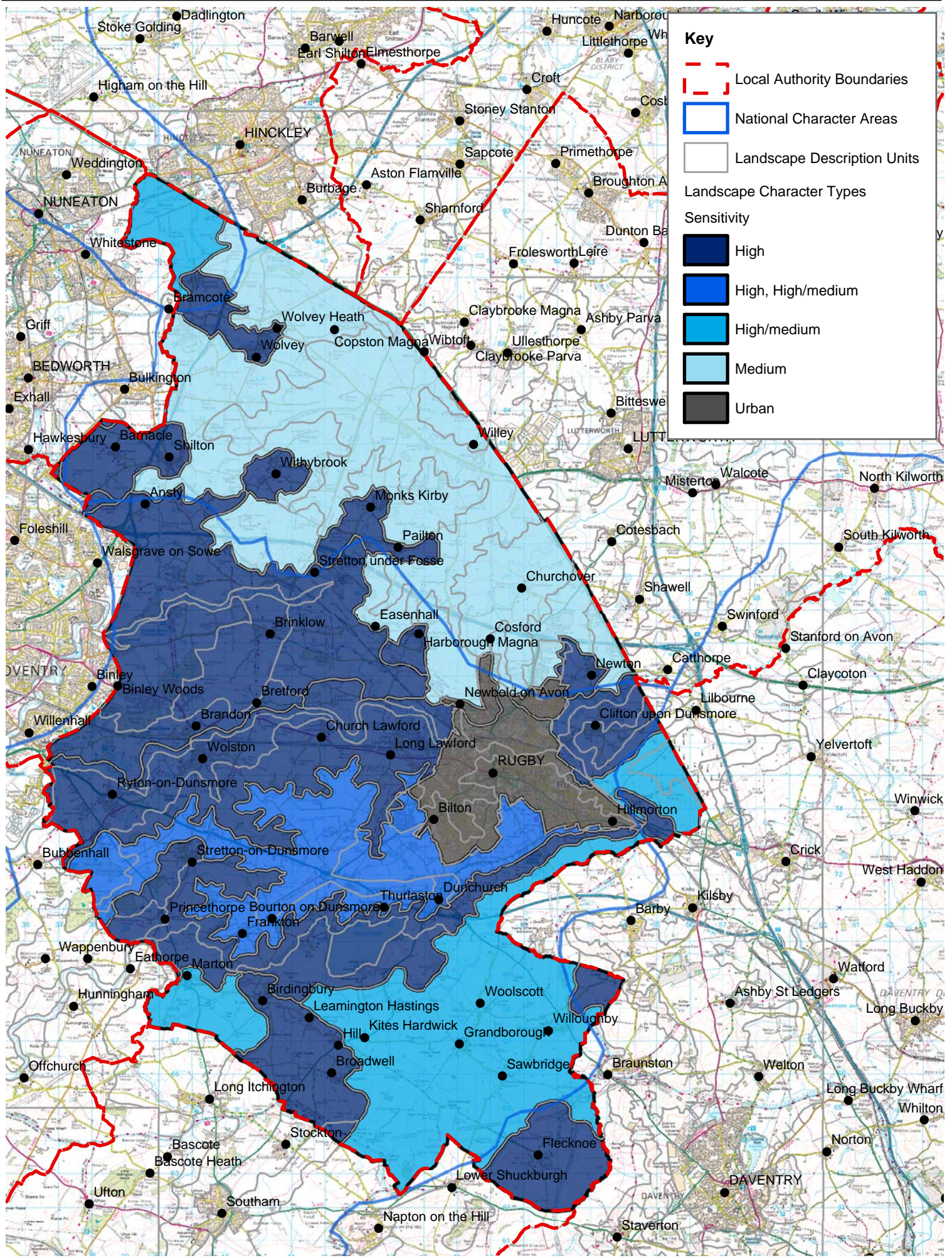
Ref no.	Landscape character type name	Sensitivity	Comments	Scale of development potentially acceptable-number of turbines
1	Dunsmore, plateau farmlands	High, High/medium	This gently undulating plateau runs east west and is settled to the west with linear development on the A45. The area is mainly arable farmland within tree cover and woodland, especially to the west and a tip lies at Lawford Heath. The area forms the skyline when viewed from the north, south and west. It has limited tranquillity due to the A45 road, settlement and the tip. Commercial wind turbine development is likely to be out of scale with the landscape and settlement pattern and would be highly prominent in views from the lower land either side.	Non-commercial at Lawford Heath
2	Dunsmore, plateau fringe	High	A varied landscape which is a gently sloping, well settled, open, arable river valley to the north although there are some steep slopes. To the south, it is a more varied landscape of hills and valleys, with stronger tree cover with the expanse of Draycote Water and the scarp slope to the east. There are a variety of small scale landmarks such as churches and houses. Wind turbine development would tend to dwarf the steep slopes and valleys, compete with and dominate the local landmarks such as churches, be out of scale with the pastoral and well treed areas and with the settlements to the north. Commercial wind turbine development would be out of scale with Draycote Water and its fine grained settled landscape environs.	None
3	Dunsmore, parklands	High	This area has a simple landform with a complex landcover. It is a gently undulating lowland landscape intensively farmed with low cut hedgerows and strong woodland blocks and belts, sometimes enclosing parklands such as Combe Abbey. The area is well settled with a mix of traditional settlement clusters, scattered farms, rural houses, suburban and commercial development especially close to the conurbation of Coventry. Roads and rail cross the area although tranquillity increases to the east. Commercial wind turbine development would be difficult to accommodate satisfactorily in this well settled and complex landscape with parkland without appearing out of scale and character.	None
4	Feldon, ironstone fringe	High	The hills form a distinctive irregular skyline and backcloth to the vale to the west. They are settled and have small scale foci of trees and dwellings. Though the size of the fields with limited hedgerows in places might be compatible with wind energy, as indeed are the masts (though soon to be removed), the other factors weigh heavily against development being appropriate due to it being out of scale and character especially the skyline.	None

Ref no.	Landscape character type name	Sensitivity	Comments	Scale of development potentially acceptable-number of turbines
5	Feldon, vale farmlands	High/medium	<p>East- This broad, flat, clay vale is dominated by arable farmland with low hedges or fences and has an open character with only a few blocks of trees. Settlement is sparse and mainly focussed on three small rural settlements including the church spire at Grandborough which is a landmark. The area feels tranquil and is rural with no modern manmade vertical elements. Wind turbine development would be a prominent and highly visible new element in this horizontal landscape affecting tranquillity and could diminish the scale and importance of Grandborough spire. However, the area to the south away from the main settlements and ironstone fringe hills may form a neutral setting for turbines providing the relationship with Lower Shuckburgh church spire is taken into account.</p> <p>West- This vale with slopes to the east is predominantly arable with rectilinear fields but is well settled with a moderately strong tree cover. It is generally less tranquil than the area to the east with the A423 and the larger village of Marton to the north. Wind turbine development would appear to be out of scale with this settled landscape to the west and may dominate settlement if on higher ground to the east.</p>	1-5 in eastern area
6	Feldon, lias village farmlands	High	This gentle hill and valley landscape is of medium scale although there is a small scale steep slope to the west. It is well settled with a series of villages and intervening scattered dwellings. Trees often restrict views within and to settlements and in hedgerows and clothe the steeper slopes as small scale woodland. The hills form a subtle backcloth to the vale to the east and Leam valley to the north. The settlement pattern and wooded slope to the west are the main constraints on wind turbine development and tree cover would be dwarfed by development.	None
7	High Cross plateau, open plateau	Medium	The upper plateau areas are generally large scale, simple, intensively farmed mainly arable landscapes with some large scale tree belts and development along the A5. Pastoral land is associated with settlements. The lower areas on the plateau fringes slope towards the lower surrounding lowlands with potential for dominance, have a slightly higher proportion of pastoral land with stronger tree cover in hedgerows in places although still on relatively simple undulating landform. Settlement clusters are few and overall settlement is sparse although there is higher settlement density on lower areas especially to the west. Wind turbine development is more compatible with the large scale, less settled parts of the area, possibly associated with Magna Park although proximity to Newnham Paddox could be an issue.	1-7
8	High Cross plateau, village farmlands	High	These small-medium scale river valley landscapes are well settled with a pastoral and arable sub regular fields and strong tree cover in places. There are some landmarks such as churches and many of the villages are conservation areas. These settlements are often located close to valley floors. The open plateau forms a simple skyline in places. Overall wind turbine development would be out of scale and character with these areas.	None

Ref no.	Landscape character type name	Sensitivity	Comments	Scale of development potentially acceptable-number of turbines
9	Mease lowlands, estate farmlands	High/medium	This relatively small area of low lying subtle gently rolling landscape is slightly degraded and sparsely settled with power lines to the south and unsightly commercial development to the north all of which are compatible with windfarm development. However, the area is overlooked by settlement to the north and south west as well as being in proximity to Burton Hastings in the south, all of which suggest that wind turbine development may be difficult to accommodate.	1-5
10	Arden, industrial Arden	High	This series of very small areas is considered to be the same sensitivity as the High Cross Plateau village farmlands with which it is closely associated to the north, south and west of Bulkington although this area has closer proximity to the urban edge of Coventry.	None

- 6.2. The landscape character types which have some potential to accommodate commercial wind turbine development in terms of landscape character sensitivity are therefore High Cross plateau open plateau, Feldon vale farmlands and Mease lowlands estate farmlands. These are discussed further in the capacity chapter. Dunsmore plateau farmlands may have some potential for smaller scale wind energy around Lawford Heath if carefully designed and located. However, this area is not considered suitable for commercial development and so is not considered further in the capacity analysis. The fact that areas may have a sensitivity assessment which means they may be able to accommodate development does not mean that any wind turbine development is acceptable. A fully iterative design process and full LVIA's should be carried out to ensure that any development minimises environmental effects. All wind energy developments will need to be assessed against key policy criteria.
- 6.3. All other areas are sensitive and commercial scale wind energy is not regarded as appropriate. These areas are therefore not considered further in the capacity assessment.





**Figure 6**  
**Landscape sensitivity to wind energy development**



## 7. Landscape capacity for wind turbines

7.1. The capacity of the three potential areas for commercial wind turbine development are discussed. The conclusions are based on landscape capacity, the number of sensitive receptors in and around the area and the presence of existing wind farms which potentially have a cumulative effect on receptors. The text below is a summary of issues and the full capacity assessment in **Appendix B** should be read. Baseline data from the Warwickshire landscape assessment relating to Landscape Description Units (LDUs) is included in **Appendix C**. This informs the assessment in Appendix B.

7.2. It is clear that no location of turbine clusters in any area is without likely significant effect on some receptors.

### High Cross plateau, open plateau

7.3. Four scenarios explore the capacity of this area and are illustrated in **Figures 7-10**. The summary conclusion is that this landscape character type has some capacity for wind farm development- preferably one but one other may be possible. One cluster of 1-7 turbines may be able to be accommodated subject to appropriate design and location which minimises environmental effects on sensitive receptors especially settlements and historic parkland. This may be best located in the core of the upper plateau to the north ie LDU 73 and at a distance to minimise cumulative effects with turbines at Swinford and Low Spinney. It is accepted that LDU 73 is predominantly in Green Belt which is a significant constraint on development and the location and design should reflect this status. One further small cluster (preferably 1-4 turbines) may be able to be accommodated further east but its siting and design needs to ensure that effects are minimised on Churchover and its spire and other settlement as well as on Newnham Paddox and the landscape character of the Swift valley.

7.4. Three wind farm clusters would be likely to make a significant part of the landscape type feel like a wind farm landscape and become a dominant characteristic as well as having unacceptable cumulative significant effects on sensitive receptors.

7.5. This recommended scale and spacing of wind energy development is different from that consented east of, and nearby, the M1 but reflects the area's characteristics and receptors.



Photos of High Cross plateau open plateau areas

### Feldon Vale farmlands

7.6. Two scenarios explore the capacity of this area and are illustrated in **Figures 11-12**. It is concluded that this area may have capacity for one small cluster, probably to the south of the area. However, effects should be minimised on the views to, and settings of, Grandborough and Lower Shuckburgh church spires, on

the apparent scale of the surrounding hills and local field pattern, and views from the Grand Union canal. The effect on the tranquillity of the area should also be taken into account and minimised.

- 7.7. It is accepted that wind turbine development here would introduce a new element into this relatively tranquil area away from major road corridors and other development and infrastructure which appear to have attracted consented wind farms. This makes this area less appropriate for development than the High Cross open plateau.



Photos of Feldon Vale farmlands area

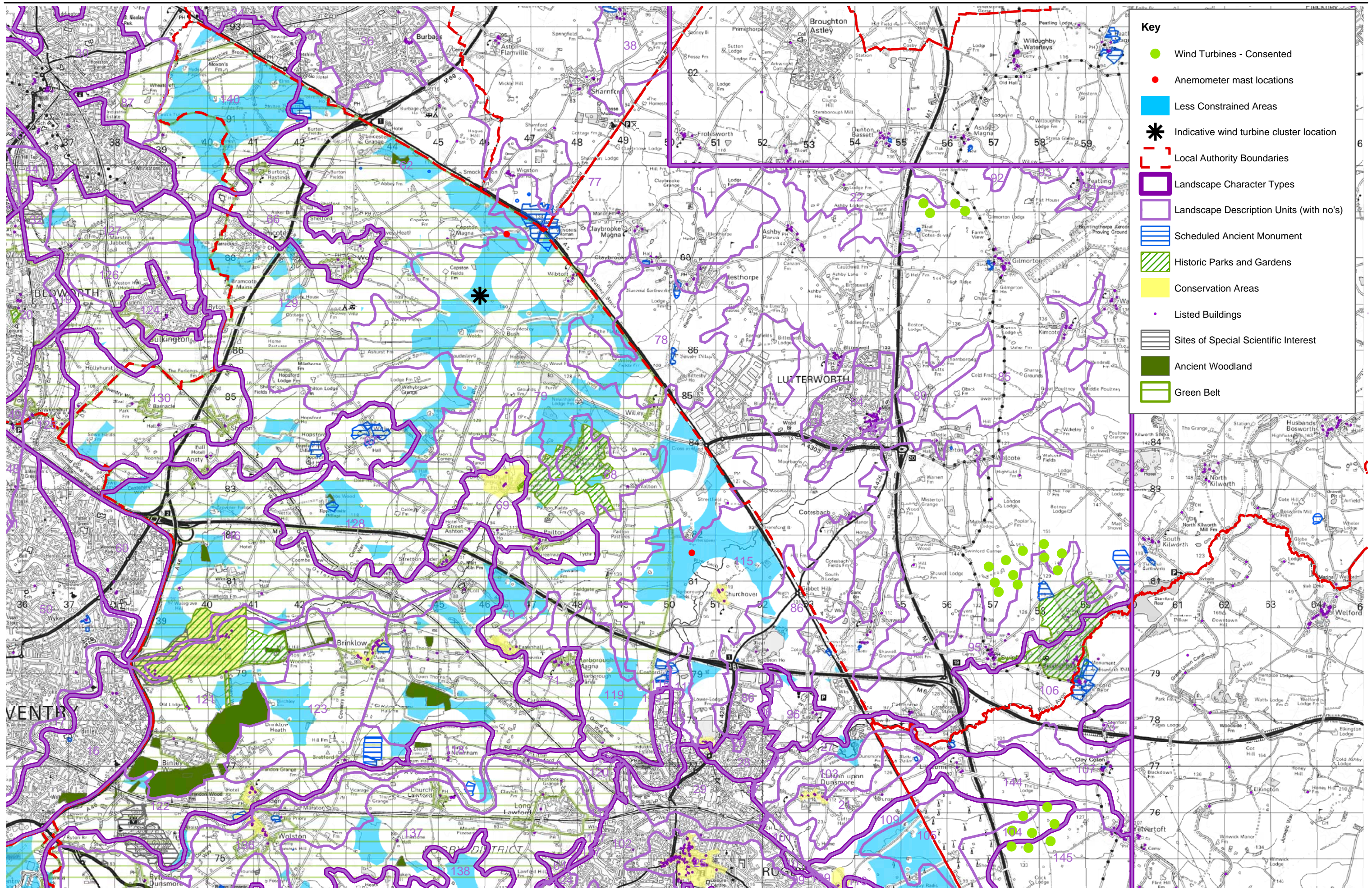
#### Mease Lowlands, estate farmlands

- 7.8. Only one scenario explores the capacity of this area due to its size and this is illustrated in Figure 13. The capacity of the area is considered to be limited. It has theoretical intrinsic capacity for a small cluster of wind turbines due to its landform, character and sparsity of settlement. The commercial area at Hinckley to the north gives the area an urban fringe character. Factors that need to be taken into consideration are the limited extent of the area and its location between two urban areas, only 3km apart and virtually joined to the west. Effects should be minimised on the potentially large number of sensitive receptors in residential areas which overlook this landscape. In addition, effects should be minimised on Burton Hastings to the south east in terms of receptors and the church and on the Stretton Baskerville Scheduled Ancient Monument to the east. It is accepted that the area is predominantly in Green Belt which is a significant constraint.



Photos of Mease Lowlands, estate farmlands





- Key**
- Wind Turbines - Consented
  - Anemometer mast locations
  - Less Constrained Areas
  - ✱ Indicative wind turbine cluster location
  - Local Authority Boundaries
  - Landscape Character Types
  - Landscape Description Units (with no's)
  - Scheduled Ancient Monument
  - Historic Parks and Gardens
  - Conservation Areas
  - Listed Buildings
  - Sites of Special Scientific Interest
  - Ancient Woodland
  - Green Belt



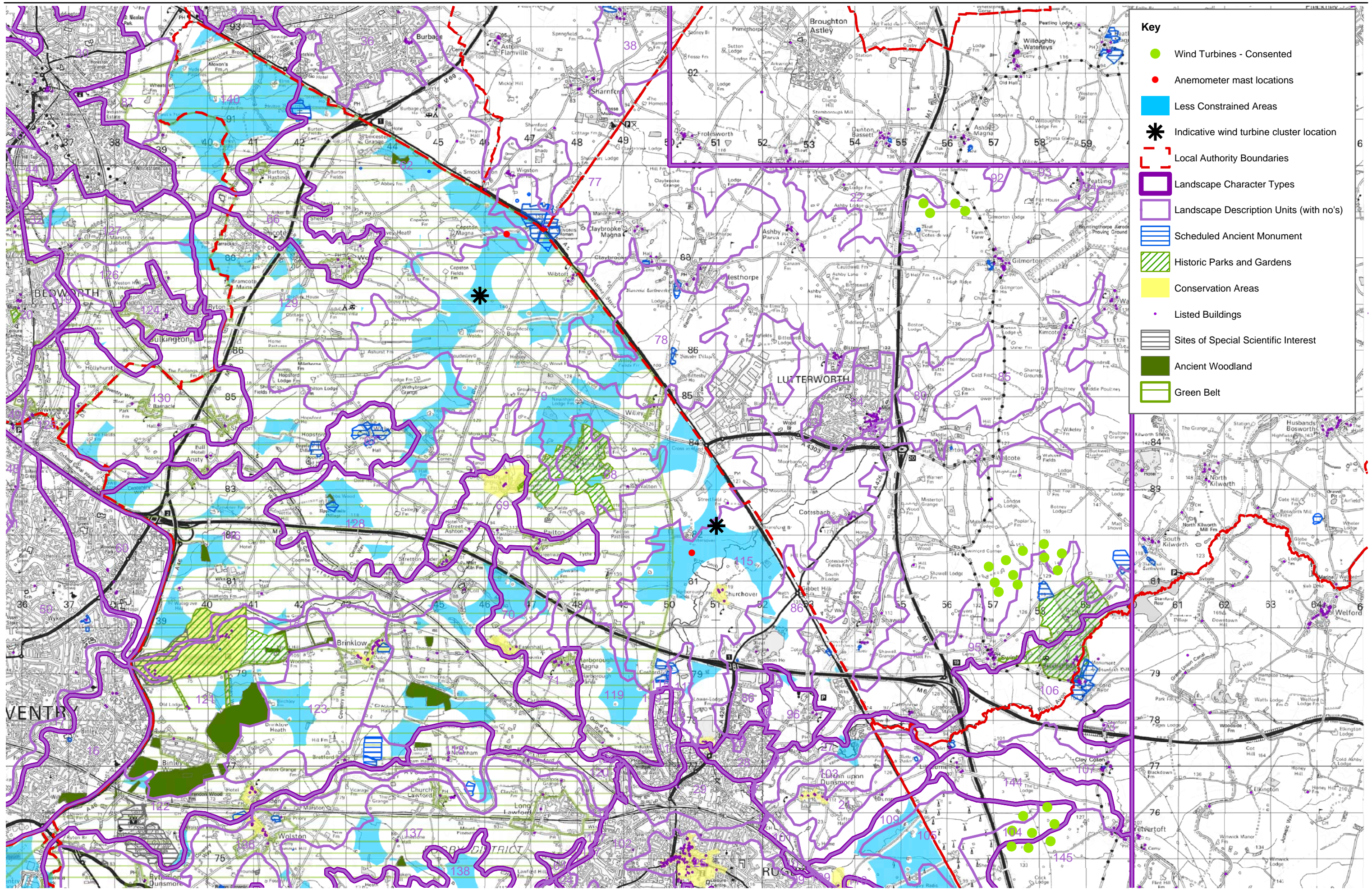
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**Figure 7**  
**High Cross Plateau - Landscape capacity scenario A**  
**[1 cluster]**

Rugby Borough Landscape Capacity Study for Wind Energy Developments





- Key**
- Wind Turbines - Consented
  - Anemometer mast locations
  - Less Constrained Areas
  - ✱ Indicative wind turbine cluster location
  - Local Authority Boundaries
  - Landscape Character Types
  - Landscape Description Units (with no's)
  - Scheduled Ancient Monument
  - Historic Parks and Gardens
  - Conservation Areas
  - Listed Buildings
  - Sites of Special Scientific Interest
  - Ancient Woodland
  - Green Belt



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**Figure 8**  
**High Cross Plateau - Landscape capacity scenario B**  
**[2 clusters]**

Rugby Borough Landscape Capacity Study for Wind Energy Developments