Central
Bedfordshire
Council
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Monks Walk
Chicksands,
Shefford SG17 5TQ

TO EACH MEMBER OF THE
SUSTAINABLE COMMUNITIES OVERVIEW & SCRUTINY COMMITTEE

21 February 2013

Dear Councillor

SUSTAINABLE COMMUNITIES OVERVIEW & SCRUTINY COMMITTEE - Wednesday 6 March 2013

Further to the Agenda and papers for the above meeting, previously circulated, please find attached the following additional report(s) which were listed to follow:-

9. Planning Guidance on Wind Energy Development in Central Bedfordshire

To consider the adoption of a technical guidance document on wind energy development in Central Bedfordshire for development management purposes in order to provide comments to the Executive.

Hard copies of the Appendix have been circulated to Members of the Committee only.

Should you have any queries regarding the above please contact the Overview and Scrutiny Team on Tel: 0300 300 4634

Yours sincerely

Jonathon Partridge,
Scrutiny Policy Adviser
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Meeting:	**Sustainable Communities Overview and Scrutiny Committee**
Date:	**6 March 2013**
Subject:	**Planning Guidance note on Wind Energy Development in Central Bedfordshire**
Report of:	**Cllr Nigel Young , Executive Member for Sustainable Communities – Strategic Planning and Economic Development**
Summary:	The report considers and recommends the adoption the technical guidance document on wind energy development in Central Bedfordshire for development management purposes by Executive.

Advising Officer:	Gary Alderson, Director of Sustainable Communities
Contact Officer:	Stephen Mooring, Acting Environmental Policy Team Leader
Public/Exempt:	Public
Wards Affected:	All
Function of:	Council

CORPORATE IMPLICATIONS

Council Priorities:

1. Putting in place clear guidance how wind farm and renewables developments will be considered will provide a greater degree of certainty as to what is most suitable and where. This will provide all stakeholders with a greater degree of certainty confidence and contribute to the delivery of Council's priorities in the Medium Term Plan, particularly in relation to 'Enhancing Central Bedfordshire – creating jobs, managing growth, protecting our countryside and enabling businesses to grow'.

Financial:

2. Failure to have sound technical guidance in place for development management purposes with regards to wind developments may lead to more appeals against council decisions and the subsequent costs of these against the Planning Section's budget. For the Langford Wind farm appeal this was estimated to be in the region of £50k.

Legal:

3. No major issues anticipated. Comments from to be verbally reported back if necessary at the OSC meeting.

Risk Management:

4. None

Staffing (including Trades Unions):

5. Not Applicable.

Equalities/Human Rights:

6. None.

Public Health

7. The guidance proposes that impacts relating to noise etc which can have impacts on the health of residents living near to wind developments are assessed through the use of national guidance ETSU-R-97.

Community Safety:

8. The Council has a statutory duty under Section 17 of the Crime and Disorder Act 1998 to do all that it reasonably can to reduce crime and disorder in its area. This duty applies to all of the Councils functions and there should therefore be a mechanism in place to ensure that this is considered when planning applications for large scale wind developments are received as this falls outside the scope of the Planning Design Guide.

Sustainability:

9. Renewables, such as wind turbines play an important role in reducing CO_2 emissions and contributing to the global effort to mitigate climate change. However there are a range of technologies available and this technical guidance aims to help inform planners, developers and members decisions to ensure that the right balance is achieved between the deployment of the appropriate technologies in the most appropriate places, limiting negative impact on landscape character, biodiversity and heritage, whilst at the same time ensuring local communities receive maximum benefits.

Procurement:

10. Not applicable.

RECOMMENDATION(S):

The Committee is asked to consider the draft document and recommend that Executive adopt it as technical guidance for development management purposes.

Introduction

11. The Council's Climate Change Strategy (adopted in June 2010) acknowledges that climate change is a real and immediate threat for us all. Carbon dioxide (CO_2) levels have already reached their highest level for almost half a million years and are rising faster than ever. Decarbonisation of the UK's energy supply through the increased deployment of renewable and low carbon energy generation technologies is a key element of the UK Government's approach to meeting the tough carbon reduction targets set in law by the Climate Change Act (2008), these being to reduce green house gas emissions by 34%, from 1990 levels, by 2020 and 80% by 2050. In addition to this the UK is also committed to generating 15 per cent of energy from renewable sources by 2020 (through the European Renewable Energy Directive).

12. This has and will lead to an increase in planning applications and developments of renewable energy generation technologies across the UK. In order to ensure maximum deployment, national planning policy via the National Planning Policy Framework (NPPF) and the National Policy Statements for Energy (EN-1 and EN-3) place a presumption in favour of 'sustainable energy developments'. This is reflected in the decisions in favour of the applicants in the Langford Wind Farm appeal decision and the approval of the Covanta Energy from Waste plant at Rookery Pit by parliament.

13. Not withstanding the positive stance required under national policy, the NPPF and Energy Policy Statements provide scope for Planning Authorities to guide development to areas as suitable for renewable and low-carbon energy development. This has to demonstrate that the process of selecting areas has been done through the use of a criteria based approach, making it clear what criteria have determined the selection and include guidance on what size of development in these areas would be considered suitable (paragraph 97 NPPF). However the Planning Authority should also subsequently approve the application if its impacts are (or can be made) acceptable. Once suitable areas for renewable and low carbon energy have been identified in plans, local planning authorities should also expect subsequent applications for commercial scale projects outside these areas to demonstrate that the proposed location meets the criteria used in identifying suitable areas (paragraph 98 of the NPPF).

14. Policy 46 of the Council's emerging Development Strategy covers renewable and low carbon energy development (see page 4 of the draft technical guidance note – Appendix A). This guidance stems from that policy and provides further clarification of how proposed developments will be directed to those areas where negative impacts can be most effectively mitigated – particularly in relation to impact on visual amenity. This will ultimately take the form of a series of technical guidance notes for development management purposes, each focusing on specific technologies. The first of these considers wind generation (see Appendix A) with the range of technologies being covered and timescales for delivery of subsequent technical guidance notes to be confirmed.

15. This takes forward the approach to large scale renewables set out in North Core Strategy which set stated in policy the Council will consider favourably proposals for renewable energy installations as long as they satisfied a range of criteria. These include including that they are not harmful to residential amenity, including noise and visual amenity; are located and designed so as not to compromise the landscape and scenic beauty of the Chilterns AONB; and also that in other areas identified through the Landscape Character Assessment as having high sensitivity, be located and designed so as to respect the character of the landscape. There was no specific policy regarding large scale renewables in the draft joint Core Strategy and no further technical guidance was ever produced.

16. The approach now being taken is intended to help all those concerned in renewable energy to understand the Council's approach and therefore help achieve development that is both suitable in scale and has least impact etc. Wind development has been focused on in the first instance to reflect the public concerns about the perceived impact of large scale wind development in rural locations.

17. The ultimate aim to produce a series of technical guidance notes for development management purposes considering a range of technologies is in line with national policy, as set out in the UK Government's Renewable Energy Roadmap (2011). This states that encouraging a diverse mix of energy sources, including renewables, is the best way to meet the UK's decarbonisation objectives, protect consumers against rising energy prices and ensure the lights stay on. Therefore providing clarification on the planning issues relating to a range of Renewables technologies will support the deployment of a wider range of technologies in Central Bedfordshire, allowing the most appropriate use of technology for the proposed location.

18. It is important to also note that applications for wind farms with a generating capacity over 50MW (equivalent to 25 Vesta V90 turbines, which are the type being use at Langford) would not be considered by the Council but by the Planning Inspectorate, who would in turn make a recommendation to the Secretary of State for approval or not. The council would be a consultee and this technical guidance would inform the Council's response.

The approach taken

19. Wind developments unquestionably have a significant impact on the landscape and other sensitive receptors, including biodiversity, local heritage assets and communities living adjacent to them. The technical guidance therefore considers:

    (a) The capacity of the landscape to accommodate wind development alongside other sensitivities relating to biodiversity, heritage and communities.

    (b) It defines and provides examples of 'cumulative impact' of wind developments, including the larger wind farms being built outside of, but near to the Council's boundary.

    (c) Assesses the capacity of landscape to accommodate wind developments and at what scale, and also;

    (d) Provide an overview of the most and least sensitive areas in Central Bedfordshire to wind developments.

20. The technical guidance considers and applies the requirements of the National Planning Policy Framework, the National Policy Statements for Energy (EN1 and EN3) alongside the key policies in the Council's emerging Development Strategy. It does not promote specific sites for the location of wind developments.

21. It is important to reiterate that this document does not provide comprehensive guidance in relation to all the issues that developers would need to consider in relation to wind developments. For instance noise issues are not considered as ETSU-R-97 – 'The Assessment and rating of noise from wind farms', is the current best practice guidance on which noise assessments of wind developments are based in the UK.

The main conclusions made in the technical guidance

22. The scale and industrial character of turbines will always result in dramatically changed landscapes, but in an acceptable location the strong form and connection with green energy can result in the creation of a positive landmark and play a role in combating climate change. The latter being a key factor leading to the loss of valued features within the landscape.

23. However it is essential that schemes are in scale with the setting and do not detract from valued landscapes or cause unacceptable intrusion to communities.

24. Such suitable sites are likely to be limited in number due to the dense settlement pattern in Central Bedfordshire, the variation in landscape character (character areas are often narrow or limited in extent) and landform creates a greater sensitivity than the judgements on landscape character alone suggest. In relation to landscape sensitivity and impact the key conclusions below would be used to help steer planning decisions. Where developers propose a wind development contrary to these principles, the onus would be on them to clearly define how impacts would be mitigated and why the conclusions reached don't apply with regard to their planning application.

    (a) The capacity for medium scale wind developments (between 3 to 5 turbines) is considered to be low. The Central Bedfordshire landscape is not appropriate to accommodate large scale wind developments (of more than 10 turbines).

    (b) There is potential to support a limited extent of small to medium sized wind developments, particularly within the clay landscapes to the north east of Central Bedfordshire.

    (c) The cumulative impact of a series of single turbines is considered to be of a greater consequence than a single medium sized farm of 3 to 5 turbines. Only an exceptional site would allow a second installation without a serious threat of overwhelming cumulative impact.

    (d) The Central Bedfordshire countryside is too complex, populated and varied in its landform to be able to successfully accommodate more than one farm within a 10km setting.

    (e) The exception to this would be in the large-scale arable clay-farmland landscapes, largely to the north east of Central Bedfordshire, which do offer some potential for farms to be in close proximity. This landscape type is still very limited in Central Bedfordshire compared to similar landscapes in other counties, for example the Bedfordshire and Cambridgeshire Claylands and the East Anglian Chalk National Character Areas, as demonstrated on p52 of the Draft Technical Guidance (Appendix A).

    (f) There may be greater scope for the installation of single turbines towards the east of Central Bedfordshire or where they can be used positively to create nodal features along trunk roads, business estates and new large scale developments.

25. The technical guidance clarifies and provides advice on a range of other key issues. The key points being:

    (a) **Green belt:** Highlights that Policy 36 in the emerging Development Strategy sets out the general presumption against inappropriate development in the green belt. Also that very special circumstances would need to be demonstrated if turbines and their associated infrastructure (access tracks, substation etc) were proposed within an area of green belt.

(b) **Heritage and Archaeology:** Highlights the need to assess the impact of each application on a case by case basis. Particularly important considerations include the impact on the setting of designated and non-designated heritage assets and the direct physical impact or loss of features of a heritage, historical interest or on archaeological remains. The National Policy Statements places a presumption in favour of conservation of heritage assets over sustainable energy development, but only where direct damage is likely to occur. Scheduled ancient monuments were also included in the mapping appraisal of highly and low sensitivity locations for wind developments in Central Bedfordshire.

(c) **Biodiversity:** Highlights the importance of site selection and the location of turbines within that site with regards to avoiding impacts on wildlife. The impact of turbines on bats and birds (depending on site location) could be significant and further guidance is provided as to what expected measures should be taken. Areas of ecological value are also considered in the mapping appraisal of high and low sensitivity locations for wind developments in Central Bedfordshire.

(d) **Communities:** Highlights the importance of communities being engaged at the earliest possible opportunity and the need for there to be clear benefits, whether financial or other, to those communities affected. It also highlights how community lead schemes will be supported in principal and as long as other impacts and issue covered in the technical guidance are adequately addressed.

Consultation responses

26. The technical guidance went through a four week period of consultation from the 14th January to the 11th February 2013. The Council has been proactive in seeking views from local stakeholders and communities by communicating this alongside the consultation for the emerging Development Strategy. This included highlighting the consultation period to all contacts on the development strategy database, relevant trade associations and wind developers.

27. Over thirty responses were received. The scope of responses ranged from:

(a) A number from individuals who wanted to express general opposition to wind developments, and wind turbines as a technology. These were not valid with regards to the wind guidance document as this does not consider whether wind turbines are effective or not. The NPPF, EN-1 and EN-3 state that the general pro's and cons of a particular technology should not be considered as part of the planning process. More constructive comments were also received with regards to how the guidance defers to national guidance for noise and other issues that could be considered in scope e.g. low frequency noise, shadow flicker and health impacts.

(b) Responses were received from strategic stakeholders such as Natural England, the Environment Agency and Highway's Agency. These were either in general support of the approach or highlighted relevant areas of concern and standards to their organisations that they believe should be considered or referenced. For instance the Highways Agency wanted their guidance on locating wind turbines close to trunk roads and motorways to be referenced and the Environment Agency highlighted issues relating to flooding and the control of water and ground pollution.

(c) Comments were received from two wind developers, these being FCC – who are preparing applications for wind developments at Brogborough (up to eight turbines) and Arlesey (1 turbine) on the former landfill sites they operate. Whilst they understandably opposed the guidance, useful feedback was provided to allow the Council to make the guidance clearer and more robust. Comments were also received from T G Landscape Architects, on behalf of Co-operative Estates, the developers of the Langford/Biggleswade Wind Farm. They considered the guidance to be a 'helpful and comprehensive approach to evaluating the capacity of the district to accommodate wind energy development…' but also noted that there were a number of fundamental aspects that needed to be addressed before the guidance could be considered to be sufficiently robust.

(d) Comments were also received from South Bedfordshire Friends of the Earth who deemed the guidance (and the emerging Development Strategy Policy 46 that this provides further guidance on) to be unsound and not in compliance with the requirements of the NPPF, largely due to the requirement for Local Authorities to have a 'positive strategy for mitigating and adapting to climate change'. Our view is that this is met through the commitments made in the Council's Climate Change Strategy, positive policies on resource efficiency in the emerging development strategy and pragmatic and open approach to developments of all renewable energy generating technologies (not just wind) – ensuring that the most appropriate technology is located in the most appropriate place.

28. A number of actions are being carried out to address the concerns raised through the consultation process. This includes:

(a) Providing clarification of the methodology used to develop the criteria used for the evaluation of landscape impacts in the guidance. This will acknowledge the differing impact that wind turbines have depending on their height. Further clarification will also be provided as to how the assumption that the capacity of the landscape in Central Bedfordshire cannot accommodate wind developments of more than 11 turbines was reached.

(b) Supporting the assessment with a documented 'ground proofing' or site visit exercise, particularly focused on the critical boundaries between landscape character areas.

(c) Include further clarification as to how national standards for noise and other issues will be applied and what they are.

(d) Provide additional advice on the reversibility of wind developments after 20 to 25 years and how this should be considered in landscape terms.

Conclusion

29. National planning policy places a presumption in favour of sustainable energy developments. This potentially makes it difficult to refuse planning applications for wind developments without sound and robust reasons.

30. To clarify the Council's approach for planners, developers, communities and other stakeholders alike, should be seen as a proactive approach to enable wind developments proposal in Central Bedfordshire to be located in the most suitable areas, with least negative impact. It is envisaged, and shown in part through the consultation that developers would welcome the clarification this technical guidance provides.

31. The technical guidance should provide the Council with a more robust platform for negotiation with developers and ensure that those communities affected are in a position to benefit as much as possible from the development. This clarity should also limit the potential of refused planning applications going to appeal – which ultimately delays deployment and costs considerable sums of money.

Next Steps

32. The technical guidance document is currently due to be considered by Executive on the 19th March 2013, with a recommendation that it be approved in the interim as technical guidance for development management purposes until the Council's emerging Development Strategy is adopted in early 2014. It will then become a Supplementary Planning document supporting Policy 46 of the Development Strategy. The intention is for subsequent additions to the series focusing on other technologies, to also be approved in the interim as technical planning guidance and ultimately adopted as Supplementary Planning Documents (SPD).

Appendices:

Appendix A – Renewable Energy Guidance; Guidance Note 1: Wind Energy Development in Central Bedfordshire (Hard copies have been distributed to Members of the Committee only). A full copy is available from the following link:-

(http://www.centralbedfordshire.gov.uk/Images/140113%20Renewable%20energy%20guidance%20-%20Wind%20CONSULTATION%20V1.0_tcm6-39299.pdf#False)

Background papers and their location: (open to public inspection)

Copy of the guidance and consultation questionnaihttp://www.centralbedfordshire.gov.uk/planning/strategic-planning/consultation-and-news.aspx

Central Bedfordshire Council
www.centralbedfordshire.gov.uk

Appendix A

Renewable Energy Guidance (for consultation)

January 2013

1.0 Introduction

1.1 Renewable energy is a broad term covering a range of sustainable energy sources which cannot be depleted. National policy actively promotes and supports the development and deployment of renewable energy. The government has committed to generating 15 per cent of energy from renewable sources by 2020 (through the European Renewable Energy Directive). This will in turn contribute the commitments made in the Climate change Act (2008) to reduce green house gas emissions by 34%, from 1990 levels, by 2020 and 80% by 2050.

1.2 At the local level policies in the emerging Development Strategy for Central Bedfordshire take a positive approach to renewable energy generating schemes providing their impact can be made acceptable. This Supplementary Planning Document has been produced to expand upon the policies contained in the emerging Development Strategy. Its purpose is to assist the interpretation and application of those policies and in particular help steer development to locations where the impact will be reduced or where there is demonstrable benefit to new communities.

1.3 Central Bedfordshire is producing a series of renewable energy planning guidance notes will be provided to steer and assist developers and communities in bringing forward their development ambitions.

1.4 These will focus on ensuring that planning applications for the most appropriate and effective renewable technologies are targeted to the most suitable places in Central Bedfordshire, ensuring that the area can contribute towards the delivery of national targets for carbon reduction and deployment of Renewables, whilst at the same time protecting and enhancing all of the local features and assets that make Central Bedfordshire such a great place to live and work.

1.5 The first of these guidance notes focuses on onshore wind generation and considers the capacity of the landscape to accommodate development in Central Bedfordshire alongside sensitivities relating to biodiversity, heritage and communities.

1.6 Future guidance notes will also be produced relating to large scale solar photovoltaic farms and biomass.

National planning policy – NPPF and EN1

1.7 This guidance is shaped by the requirements of national planning policy, which ultimately steers and shapes how the Council's planning policies are set within the emerging Development Strategy. With regards to renewable energy generation development the key points are as follows.

National Planning policy framework (NPPF)

1.8 The NPPF sets out the key national planning priorities for England and is a material consideration in planning and development management decisions. It states that to contribute to the increase in the use and supply of renewable and low carbon energy, local planning authorities should recognise the responsibility on all communities to contribute to energy generation from these sources. They should:

- have a positive strategy to promote energy from renewable and low carbon sources;
- design their policies to maximise renewable and low carbon energy development while ensuring that adverse impacts are addressed satisfactorily, including cumulative landscape and visual impacts;
- consider identifying suitable areas for renewable and low carbon energy sources, and supporting infrastructure, where this would help secure the development of such sources;
- support community-led initiatives for renewable and low carbon energy, including developments outside such areas being taken forward through neighbourhood planning.

1.9 With regards to wind energy developments the NPPF states that in assessing the likely impacts of the potential development, identifying suitable areas, and in determining planning applications for such development, 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, including that on aviation impacts).

1.10 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. This is covered in the guidance note for wind generation.

1.11 When determining planning applications, local planning authorities should:

- not require applicants for energy development to demonstrate the overall need for renewable or low carbon energy and also recognise that even small-scale projects provide a valuable contribution to cutting greenhouse gas emissions; and
- approve the application if its impacts are (or can be made) acceptable. Once suitable areas for renewable and low carbon energy have been identified in plans, local planning authorities should also expect subsequent applications for commercial scale projects outside these areas to demonstrate that the proposed location meets the criteria used in identifying suitable areas.

Overarching National Policy Statement for Energy (EN-1) and National Policy Statement for Renewable Energy Infrastructure (EN-3)

1.12 The NPS's set out national policy for delivery of the nationally significant energy infrastructure, including renewable energy. They are a material consideration in decision making on applications that fall under the Town and Country Planning Act 1990 (as amended).

1.13 Whether, and to what extent, the NPS's are a material consideration will be judged on a case by case basis. The NPS's set out assessment principles for judging impacts of the energy projects. Those principles can be used by local planning authorities in preparing the local impact reports. The specific principles relating to each of the main criteria areas are focussed on in the technology specific guidance elements of this SPD.

The emerging Central Bedfordshire Development Strategy – Policy 46: Renewable and low carbon energy development

1.14 The Council recognises the environmental, social and economic benefits of renewable energy and is committed to work with renewable energy developers to deliver most appropriate sized and located schemes, with the most effective technology, in a way that is fully compliant with Central Bedfordshire's planning policy requirements.

1.15 In order to manage the impacts of renewable energy the emerging Development Strategy includes a specific Renewable and low carbon energy development policy (detailed below).

Policy 46: Renewable and low carbon energy development

The Council recognises the environmental, social and economic benefits of renewable or low-carbon energy. It will work with developers to ensure that proposed developments are:

- directed to those areas where negative impacts can be most effectively mitigated. Any unavoidable adverse impacts, including cumulative impacts, such as noise, pollution and harm to visual amenity, should be mitigated through careful consideration of location, scale, design and other measures;
- have good accessibility to the transport network;
- located and designed so as to have no unacceptable adverse impact on heritage assets, sensitive landscapes such as the Chilterns AONB, or any area identified through the Landscape Character Assessment as being of high sensitivity; green belt areas and townscapes.

Cont… Policy 46: Renewable and low carbon energy development

- All developers of renewables schemes are required to engage with all affected stakeholders, including local communities, at the earliest stage in order to proactively mitigate impacts and provide adequate compensation and benefits.

Where a district heating scheme is proposed, where technically and economically viable and appropriate, all occupiers must be connected to that installation.

1.16 Renewable energy development should be directed to areas where the negative impacts can be most effectively mitigated and made acceptable.

1.17 Those areas most suitable for each of the renewable energy technologies will be highlighted in the technology specific guidance notes that form part of this document. The criteria used for identification of these areas will also be outlined and discussed in these documents. It is important to note that any development proposals outside these areas will have to demonstrate how its location, scale and design meet these criteria, as supported by NPPF.

1.18 Renewable energy proposals requiring regular access to transport network will be required to demonstrate how negative impacts are avoided or mitigated to acceptable levels.

1.19 The Council will support community-led initiatives for renewable and low carbon energy where other impacts have been satisfactorily mitigated. It is also key that developers of renewables schemes take a proactive approach to working with affected communities at the earliest stage in order to mitigate impacts and to provide adequate compensation and direct benefits.

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Guidance Note 1: Wind Energy Development in Central Bedfordshire

January 2013 (for consultation)

Contents

1.0 Introduction

1.1 This document has been prepared to assist all parties involved in the renewable energy development process. It is intended that this guidance note will be adopted by the Council as a "Supplementary Planning Document" (SPD) following adoption of the Council's emerging Development Strategy proposed in 2014.

1.2 This document is part of a series of notes yet to be produced, to guide development for renewable energy. It has been produced by the Environmental Policy team at Central Bedfordshire Council and follows national best practice guidance and the detailed guidance contained with the Landscape Character Assessments for Central Bedfordshire.

1.3 It will be subject to public consultation from the 14th January to the 11th of February 2013, following which comments will be considered and changes made to the document. The Council intends to endorse the document for use as a material consideration in determining planning applications prior to the Development Strategy being adopted.

What this guidance covers

1.4 This document aims to provide planning guidance in respect of on onshore wind generation and considers the capacity of the landscape to accommodate onshore wind development in Central Bedfordshire alongside other sensitivities relating to biodiversity, heritage and communities.

1.5 Those areas that could be deemed as least sensitive to the impacts of wind generation developments identified in this document based on a detailed assessment of landscape. The key aspects which form the basis of the criteria are based on a study of:

- Landscape sensitivity and visual impact
- Impact on biodiversity and other natural assets
- Impact of heritage and historic assets
- Impact on local communities, including the scope for positive engagement and community benefits

1.6 Any development proposals outside these geographic areas identified as being 'least sensitive' will have to demonstrate how its location, scale and design meet these criteria, as supported by NPPF.

1.7 All wind farms developments require planning permission through one route or another. Larger installations, above the 50MV out put will be considered by the Planning Inspectorate who will then make a recommendation to the Secretary of State to approve or not. This document will inform the Council's response and comments to large

scale applications should they come forward. In general it is considered that within Central Bedfordshire opportunities would be very limited due to a lack of shortage of suitable areas that are large enough to accommodate the number of wind turbines needed to generate 50MW or more.

1.8 For installations with an output below 50MW (typically equivalent to a wind farm of 25 Vesta V90 wind turbines[1]) Central Bedfordshire will determine applications for planning permission.

1.9 Micro or domestic scale wind turbines fall under permitted development rules, however this guidance does include some information, particularly in relation to biodiversity, that should be considered.

1.10 This guidance has been split into a number of sections:

- It sets out and explains the basis for this guidance and highlights the key national planning policy requirements steering how the Council will consider applications for onshore wind.
- Clarifies the key elements that the emerging Development Strategy policy relating to renewables requires with regards to onshore wind
- Highlights the requirements of other key Development Strategy policies that will need to be considered and addressed as part of a planning application for a wind development, for example Heritage and the Historic environment , Biodiversity and Landscape
- Identifies the key criteria and issues that will need to be considered by developers in determining site suitability.

What is not Included

1.11 It is important to reiterate that this document does not provide comprehensive guidance in relation to all the issues that developers would need to consider in relation to wind generation developments. For instance noise issues are not considered as the Institute for Acoustics (IOA) are currently preparing new guidance in relation to assessing the noise impacts of onshore wind farms.

1.12 Details of additional useful sources of information, such as this can be found in the references section of this guidance. Other issues not covered are impact on public amenity and the affects of shadow and flicker. Developers will need to demonstrate that the potential for negative impacts have been assessed and where appropriate mitigation measures proposed.

[1] The Vesta V90 wind turbines are the type of turbines being installed at the Langford wind farm. They have a height of 110m to the tip of the blade – 65m to the hub with 45m blades.

The principal objectives of this guidance

1.13 The principal objectives of this guidance document are to:

- Clarify the approach for assessing individual applications with regards to the criteria covered.
- Highlight those areas the Council views to be unsuitable for the development of onshore wind turbines. Thus enabling developers time and effort to be spent focusing on those areas that are deemed more suitable.
- Clarify how cumulative impacts will be considered, particularly in relation to the capacity of the landscape to accommodate wind turbines.
- To protect residential amenity from any unintended impacts of wind turbine developments, whilst at the same time encourage greater community engagement, leadership, participation and opportunities to benefit from these developments.

2.0 Basis for the Guidance

2.1 Wind farm developments unquestionably have a significant impact on the landscape and other sensitive receptors, including biodiversity, local heritage assets and communities living adjacent potential wind farm developments.

2.2 Given the significance of visual impact on landscape and heritage assets the main body of this guidance seeks to identify those areas most sensitive to the impact of wind farm developments.

2.3 As part of this, the ability of the landscape to accommodate wind farm developments ranging from a single turbine to large wind farms of up to eleven or more turbines is discussed. The evidence base for these judgements includes the detailed consideration of landscape character and how this would be affected, with specific consideration of the factors affecting visual sensitivity. A mapping process helped to identify areas of higher and lower sensitivity, through an assessment of:

- landscape character,
- key assets likely to be affected by the introduction of turbines
- tranquillity
- proximity to communities

2.4 The study was undertaken from the starting point that wind turbine applications will come forward in the area; it does not debate the merits of wind turbines against other forms of renewable energy development.

2.5 This guidance provides a starting point for decision making, but it is essential that local variations in character are considered in relation to individual proposals.

National Landscape Policy and Guidance

2.6 National landscape policy sits within the framework of the European Landscape Convention (2000) which emphasises the need to ensure national policies change from focussing on "outstanding " areas to an approach which embraces the "quality of all living surroundings ". This approach had already been progressed by the Countryside Agency (now Natural England) through the development of the National Character Areas and landscape character assessment.

2.7 The importance of the local landscape was further endorsed by Natural England with the publication of the Policy Document "*All Landscapes Matter"* in 2005. This emphasises the importance of local landscapes to the communities that live within them and access them as a local facility for recreation and work. This policy underlines the importance of having objective landscape character assessments to help determine the suitability of a particular landscape to accept change.

2.8 There is a lack of national policy guidance to assess the impact of wind energy on the lowland landscape, despite visual impact invariably being a key concern with the underlying principles being set out in the National Policy Statements for Energy (EN-1 and EN-3).

What the NPPF says

2.9 That planning authorities should 'design their policies to maximise renewable and low carbon energy development while ensuring that adverse impacts are addressed satisfactorily, including cumulative landscape and visual impacts'. It also states that the planning system should contribute to and enhance the natural and local environment by protecting and enhancing valued landscapes, geological conservation interests and soils.

What the National Policy Statements for Energy (EN-1 and EN-3) say:

2.10 All proposed energy infrastructure is likely to have visual effects for many receptors around proposed sites. It will have to be judged whether the visual effects on sensitive receptors, such as local residents, and other receptors, such as visitors to the local area, outweigh the benefits of the project. Within a defined site, adverse landscape and visual effects may be minimised through appropriate siting of infrastructure within that site, design including colours and materials, and landscaping schemes, depending on the size and type of the proposed project.

2.11 EN-3 highlights that modern onshore wind turbines that are used in commercial wind farms are large structures and there will always be significant landscape and visual effects from their construction and operation for a number of kilometres around a site. The arrangement of wind turbines should be carefully designed within a site to minimise effects on the landscape and visual amenity while meeting technical and operational siting requirements and other constraints.

Other guidance:

2.12 Natural England, who would comment on any Applications within or close to the AONB, have prepared strategic guidance on the assessment of landscape in relation to onshore wind. This outlines the key principles for consideration based on scale, feature, perception and use. Whilst the document was intended for use by Natural England's own officers the guidance has wider relevance.

2.13 The most accepted practical guidance regarding site selection is found within the Scottish Natural Heritage document "Visual Assessment of Wind farms" (2202), produced by Newcastle University and Scottish Executive, (PAN45: Renewable Energy Technologies).

2.14 Reference has also been made to policies and guidance produced by other local authorities, in particular by Cornwall and Lancashire County Councils and Fenland and Huntingdonshire District Councils.

2.15 The Council's emerging Development Strategy includes policies designed to shape, guide and steer all future development in Central Bedfordshire. It provides clarification of where policy will be used to protect and enhance Central Bedfordshire's landscape, natural and heritage assets. The policy relating specifically to landscape is as follows:

The emerging Central Bedfordshire Development Strategy – Policy 58: Landscape

The Council will ensure that the highest level of protection will be afforded to the landscape of the Chilterns AONB primarily through conservation and enhancement of the natural beauty of the area. Any development which has an unacceptable impact on the Chilterns landscape will be refused except in exceptional circumstances and where it can be demonstrated the proposals are in the public interest and that there are no suitable alternative sites. This will, where relevant, include development outside of the AONB which is judged harmful to the AONB, through for example, adverse impacts due to visual intrusion including noise and light pollution.

Cont… Policy 58: Landscape

Elsewhere landscapes will be conserved and enhanced in accordance with the Landscape Character Assessment. Proposals that have an unacceptable impact on the landscape quality of an area will normally be refused. In particular, proposals will be refused that have an adverse impact on important landscape features or highly sensitive landscapes.

Where appropriate development proposals will be required to include plans for landscape improvements in accordance with the findings of the Landscape Character Assessment and 'Design in Central Bedfordshire: A Guide for Development'. This will apply in particular to the Strategic Allocations, the built edge of existing settlements and along prominent transport corridors**.**

3.0 Overview of the Landscape of Central Bedfordshire

3.1 Central Bedfordshire Council has a rich and varied landscape which includes the Chilterns "Area of Outstanding Natural Beauty", the distinctive landform of the Greensand Ridge and many areas of attractive countryside which retain traditional features and are locally distinctive. The landscape is enriched by its extensive cultural heritage and sites of ecological value, providing landscapes which are highly valued by local communities.

3.2 Central Bedfordshire is characterised by its many villages and hamlets, meaning that although many areas have strong rural characteristics, it is also a heavily settled landscape. Central Bedfordshire has a productive countryside, recognised for bringing significant economic benefit and contributing to society, health and well-being. It has greatly valued as a recreational resource and is seen as a growing asset in the promotion of local tourism.

3.3 Rural and urban landscapes have an important role in providing sites for renewable energy. Site location for wind energy requires the most careful and objective selection. Unlike other forms of development where mitigation measures can reduce visual impact over time, the scale of wind turbines means that the best method of limiting intrusion is to locate the development in the right place and with the optimum layout.

3.4 This requires understanding and respect for landscape sensitivity and is a key principle with regards to the Council's decision making process with regards to planning applications for wind developments.

4.0 Landscape Character Assessment

The National Character Map

4.1 Central Bedfordshire contains four National Landscape Character Areas:

87 East Anglian Chalk
88 Bedfordshire and Cambridgeshire Claylands
90 Bedfordshire Greensand Ridge
110 Chilterns

(Nb The East Anglian Chalk, is present in such a limited extent that for the purposes of this study it has been considered part of the adjoining clay landscape.)

4.2 A study to assist with the understanding of the capacity for wind energy across the eastern region, based on the National Character Areas has provided useful baseline information – see Appendix 1 (ARUP Report).

Local Level Assessment

4.3 Landscape Character Assessments at the district scale of 1:25,000 were carried out for the former legacy authorities of Mid Bedfordshire and South Bedfordshire, the areas of which are now covered by Central Bedfordshire Council.

4.4 The reports were based on extensive fieldwork and public consultation and identified 7 broad landscape character types such as the *Clay River Valley* or the *Chalk Escarpments*. These landscapes can be compared with others elsewhere in the country, which has relevance for the strategic approach to the location of renewable energy. The landscape types have been subdivided into 38 discrete and unique landscape character areas.

4.5 The high number of distinctive areas highlights the complexity of Central Bedfordshire's countryside. Many of the areas are small and display marked contrasts with the adjacent or surrounding character areas. This complexity contrasts with examples of clayland landscapes elsewhere, for example in Cambridgeshire, where there is a more extensive and uniform landscape character.

4.6 The complexity of the Central Bedfordshire landscape is further defined in the "East of England Landscape Framework", which identifies a typology of11 landscape character types, based on the study of land description units (Landscape East, 2010).

4.7 The major conclusion arising from these studies is that all but one of the landscape character areas are considered to have declined or be declining in terms of landscape character.

4.8 There is a correlation between landscapes where loss of feature has weakened landscape character and where the underlying landform has a simple form. For example, in the claylands, agricultural intensification has greatly altered the appearance of farmland in the vales and plateau areas. These landscapes already tend to be the main focus for growth and may also offer the greatest scope for wind energy.

4.9 Any development would be required to respect the landscape strategy for the character area, supporting appropriate renewal or management of landscape features.

Landscape Designations

4.10 In Central Bedfordshire there are two extensive areas subject to national landscape designations, these are:

i) The Chilterns "Area of Outstanding Natural Beauty"
The "outlier " within Bedfordshire has it's own varied and distinctive character, with narrow sinuous escarpments, the rounded hills at Barton –le Clay but with much less woodland cover than further west. The AONB in Central Bedfordshire extends over 5,800 ha and in places meets the urban boundaries of Luton and Dunstable .The downland Country Parks at Dunstable Downs and Sundon Hills are regionally important visitor attractions and provide panoramic views over the surrounding countryside. Increased pressure on the Chilterns is expected as populations rise; it is also the closest AONB to London. The Chilterns Conservation Board has an advisory role regarding major planning and development issues. Central Bedfordshire Council has a duty to conserve and enhance the AONB. Proposals for wind energy must consider the likely impacts on the AONB and its setting.

ii) The Forest of Marston Vale
Established as one of twelve Community Forests in 1991, the Forest extends over 61square miles between Bedford and the M1, with the aim of regenerating a landscape degraded by former brick-working in an area which is also subject to growth pressures. The key target is to increase woodland cover from 3% to 30% by 2031, achieving this through partnership working and community involvement. The Marston Vale is now a growing centre for recreation, biodiversity has been enhanced and significant new woodlands have been planted e.g. 70ha Rectory Wood at Cranfield. The Marston Vale is subject to further residential and employment growth and has a turbine permitted within the Millennium Country Park.

5.0 Landscape Planning For Wind Energy

Key Considerations in Determining the Scale of Impact

5.1 The landscape and visual impacts of wind energy are not necessarily proportional to the size of the development. A single turbine can be extremely intrusive if located in a setting valued for its rural qualities and open skylines. The movement of blades can be disturbing and the scale and industrial nature of the feature be incongruous in a pastoral or wooded landscape.

5.2 The impact will be affected by the magnitude of change brought to the landscape and how this is perceived by the community, for example whether the views are obtained from a domestic or recreational site or a less sensitive setting such as a road or workplace.

5.3 The degree of impact will also be affected by the appropriateness of the location e.g. whether the turbine is sited where it would:

- Break or dominate the sky-line.
- Be looked down on by the viewer – e.g. where it is set on low lying or convex slopes.
- Allow only partial views of the blades to be seen eg. arising over a horizon or from beyond a woodland.
- Be seen in contrast against a sunset
- Contrast with domestic scale buildings –which would provide a reference to the change of scale.

5.4 Landscape sensitivity is the degree to which a particular landscape can accommodate change without detrimental effects on its character. As sensitivity is derived from assessment of different aspects of character, it will vary in significance even over the extent of the relatively small landscape character areas identified within Central Bedfordshire.

5.5 The magnitude of the visual change will also vary according to different factors and in particular:

- the degree of contrast or integration with the existing landscape
- the condition of the landscape features in the view
- the perception of the view and how it is valued by the community or by visitors.

5.6 The distance between the viewer and the development is obviously a key factor. The frequency and ease of which the development will be seen from a particular viewpoint is also critical.

5.7 To assist with analysis, most guidance refers to the table of categories of magnitude prepared by Scottish Natural Heritage which sets out the typical degree of visual impact caused by a "standard" turbine as seen over increasing distance.

5.8 The following table has been prepared to reflect circumstances within the Central Bedfordshire countryside. It is important to note that each site will bring its own factors influencing inter-visibility but in general Central Bedfordshire is lightly wooded with little containment of views so that large structures will have a major influence over long distances.

Table 1: Description of the Likely Visual Impact as perceived over Distance

Distance from turbine	Magnitude of Impact	Perception Level
Within 500m	Dominant	Turbines form the principle feature in view, with the columns a striking element. Presence and movement can be overwhelming.
500m-2km	Prominent	Turbines form a very large part of view, the commanding element of the scene.
2-5km	Highly noticeable	Turbines form a large element of the view, standing out from the surroundings and forming an unmistakable feature within the panorama.
5-10km	Noticeable	Turbines form a medium element in the view, clearly visible and eye-catching. Intervening vegetation may aid integration or lead to partial views.
10-15 km	Minor impact	Turbines form one element of the view, being visible but of less significance depending on the scale of other features.
15- 20km	Low impact	Turbines form a small element of the view, this may not be distinct especially in overcast conditions.
20-25 km	Negligible	Turbines distant and a very small part of the view. They may not always be seen depending on the direction of blades.

5.9 Consideration of the magnitude of the impact over distance helped inform the sensitivity study. The scale of expected visual impacts has influenced the extent of visual impact zones mapped around the landscape assets.

5.10 This is intended to demonstrate impact rather than indicate an absolute constraint to development. Some assets may require a much greater separation from development, in other cases a lesser zone may be required to avoid unacceptable harm.

6.0 Cumulative Impact

6.1 The main guidance on cumulative impact has also been produced by Scottish Natural Heritage: The Cumulative Effects of Wind farms ". Cumulative impact relates to the combined impact of wind energy developments, which will vary depending on the scale and height and spacing of the turbines. The report identifies three types of cumulative visual impact:

- **Combined /simultaneous impact** – this occurs when the observer is able to see two or more different wind farms from one viewpoint without moving the head.
- **Successive/repetitive impact** – this occurs when the observer is able to see two or more wind farms from one viewpoint but has to move the head to do so.
- **Sequential impact** – this occurs when the observer has to move to another viewpoint to see other developments or a different view of the same development, for example when travelling by road or rail.

6.2 Turbines within 5km of each other will have the greatest cumulative impact, the developments will be prominent in the same view from many locations. The level of visual intrusion does not necessarily increase with the size of the farm. The turbine height, design of the array, appropriateness of the landscape setting and number of residents affected are key and important determinants.

6.3 If a landscape is considered appropriate and has the scale to accept additional turbines, the least damaging solution may be to extend an existing wind farm in proportion to the site and its setting. In Central Bedfordshire it will only be an exceptional site which would allow a second installation without a serious threat of overwhelming cumulative impact. The scale of landscape also limits the potential of successful integration of a separate wind farm within a 10-15km radius.

6.4 When assessing the sequential impact of turbines the following factors are important considerations:

- The direction of view, whether this is direct or oblique.
- The distance from nearest turbine.
- The number of turbines visible.
- How much of turbine is visible.

6.5 It is important to consider other existing large or intrusive elements within the locality as the visual intrusion of wind energy cannot be assessed in isolation from other elements. Such features could include positive landmarks such as churches, woodlands and water-towers as well as those viewed more negatively such as pylons or industrial development considered out of scale with the setting.

6.7 The Council is aware of the dramatic change to landscape character that can occur when wind farms are either clustered or installed in a close sequence. For example in neighbouring authorities, areas of the Fens have been changed visually out of all recognition over a very short timescale. The landscape character in this area is now being described in places as “a turbine landscape” which conflicts with a landscape where a valued key characteristic are it’s wide open skies.

6.8 To date, Central Bedfordshire Council has granted planning permission for a single turbine in the Marston Vale and another at Heath & Reach, both in areas affected by mineral extraction. At Langford, a wind farm of 10 turbines was granted planning permission on Appeal. Construction of all three schemes is expected during 2013.

6.9 The need to assess cumulative impact is essential as more wind farms are becoming established or planned. Three further proposals in Central Bedfordshire were being progressed in 2012 (see below) which together with the development of wind energy in adjacent Counties raises the prospect of certain areas being subject to disproportionate development. The increasing requirement to produce low-carbon energy will lead to further exploration of the potential within the Unitary Area.

6.10 It is only possible to evaluate cumulative impact theoretically as currently only the Milton Keynes wind farm (Petsoe End) exerts a visual impact in Central Bedfordshire.

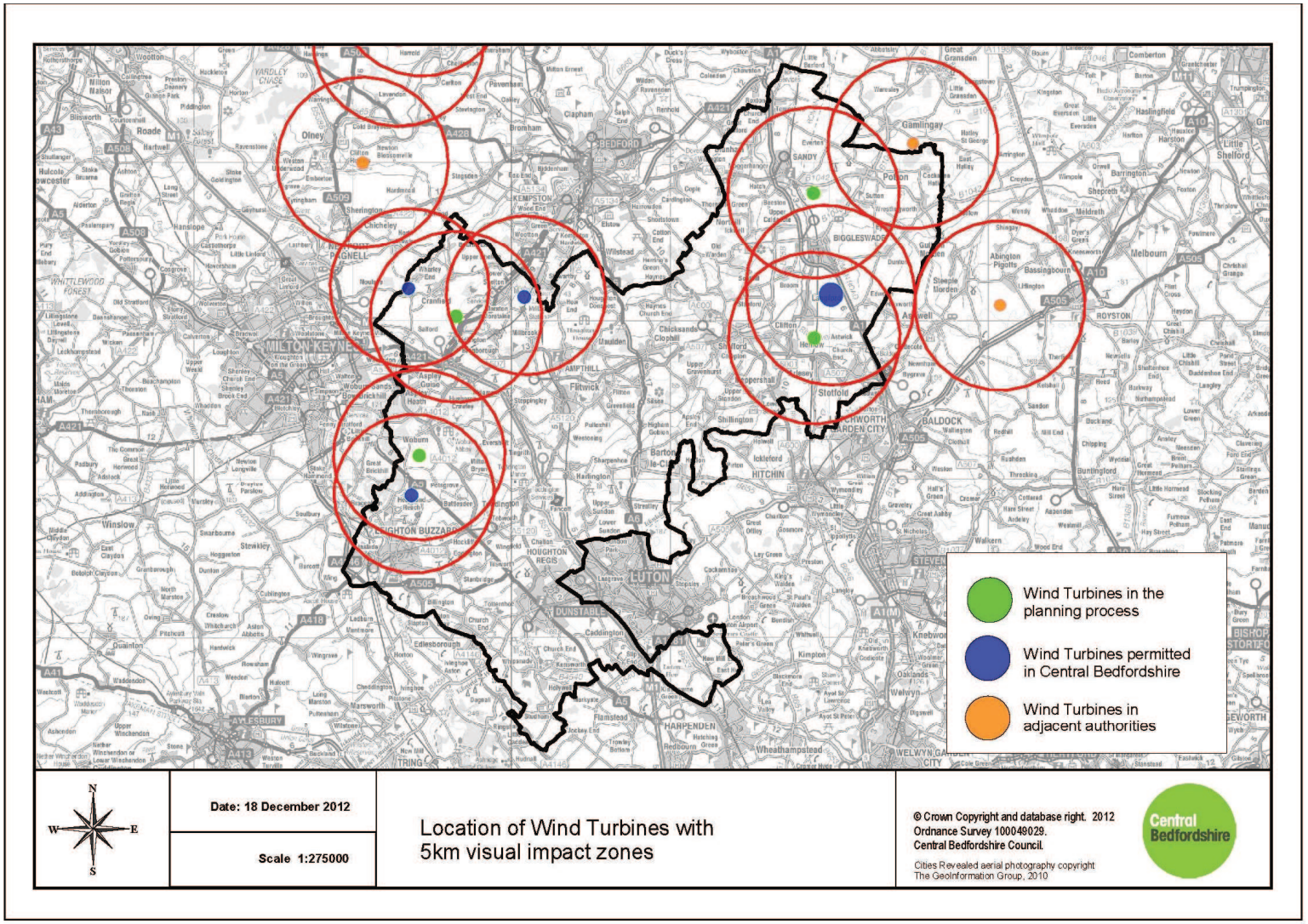
6.11 The expected increase in applications could result in schemes in close proximity to each other, exacerbating the level of intrusion experienced.

6.12 Areas subject to applications for more than one wind farm (as of Dec 2012):

- **The Marston Vale** - one permitted at Millennium Country Park, farm of 8 turbines proposed at Brogborough Landfill Site.
- **The Greensand Ridge (east)** – an application for a single turbine at the RSPB HQ in Sandy is in planning process, with a single “Community Turbine permitted as part of EcoHub at Gamlingay, Cambridgeshire.
- **The Greensand Ridge (west)** – a large single turbine (149m) has been permitted at Double Arches quarry near Heath & Reach. A further single turbine is proposed for Woburn Estates and currently in the planning process. The extremely tall (149m) turbine permitted at Double Arches quarry will dominate the local countryside, raising the issue of visual conflict if other more typical turbines are installed within a 10km radius.

6.13 This issue will become of greater concern in the future, although it is recognised that there can be advantages in clustering wind energy in those areas where the conditions are most suitable. The balance has

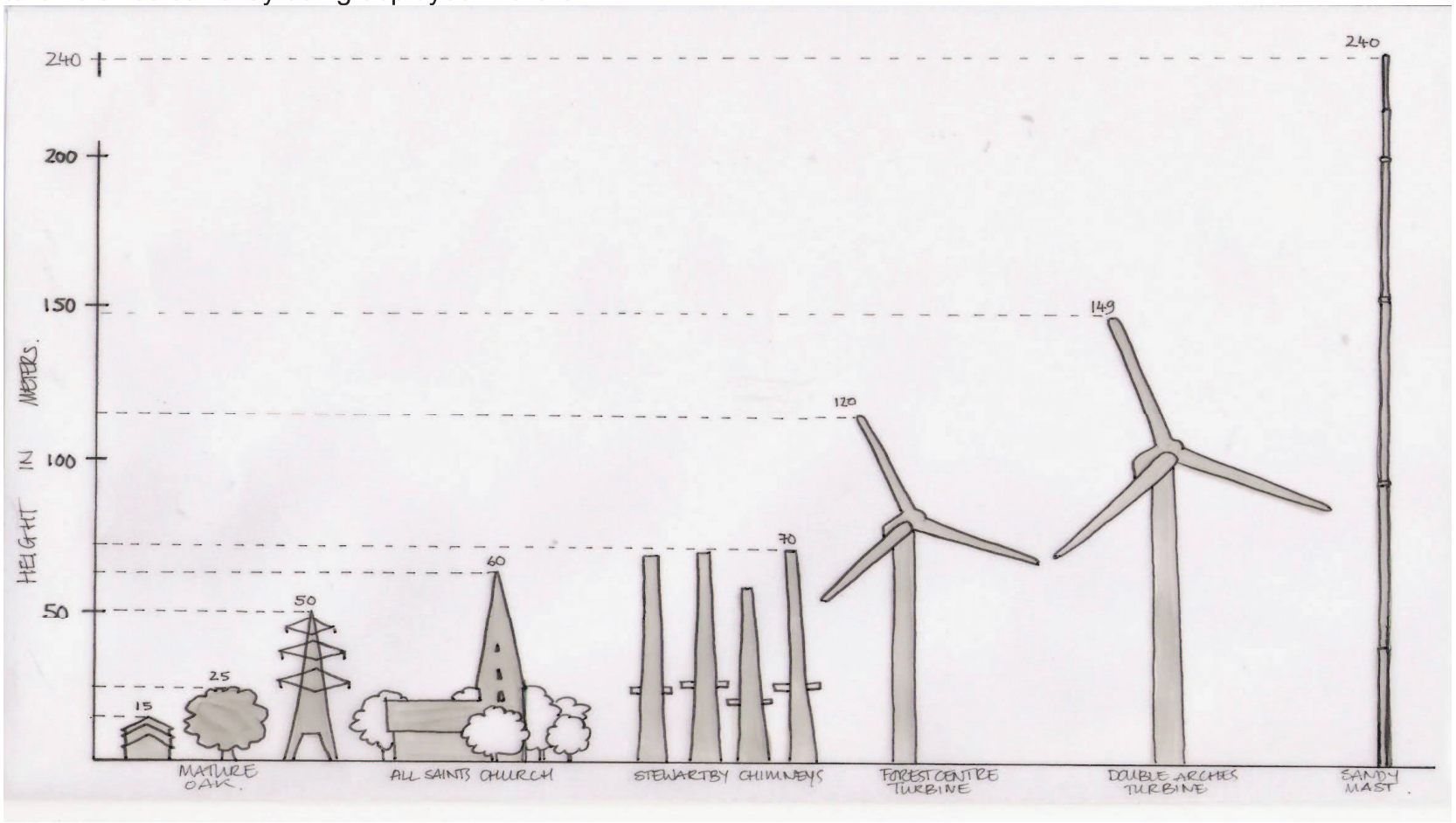
to be made as to whether the new proposal will take development beyond the landscape capacity of the location.



Map 1: Wind turbine developments with planning permission, going through the planning system and in neighbouring areas with visual impact zones

Visualising wind turbines against existing tall structures Central Bedfordshire

6.14 In order to help visualise how different turbine heights relate to other more familiar structures and landmarks in Central Bedfordshire the illustration below sets out some existing structures and their heights alongside a range of onshore wind turbine sizes currently being deployed in the UK.



7.0 Assessing the suitability of Central Bedfordshire's landscape for wind developments

7.1 To take the level of guidance provided beyond a strategic level study, the detailed knowledge of the local landscape held by specialist local authority officers and other stakeholders has been applied to identify those geographic areas most sensitive to the impact of wind farm development.

Evaluation by grouped landscape character areas

7.2 To help provide guidance at an appropriate scale, the landscape character areas have been grouped into eight sub-divisions of the Central Bedfordshire area.

These are shown on Map 2:

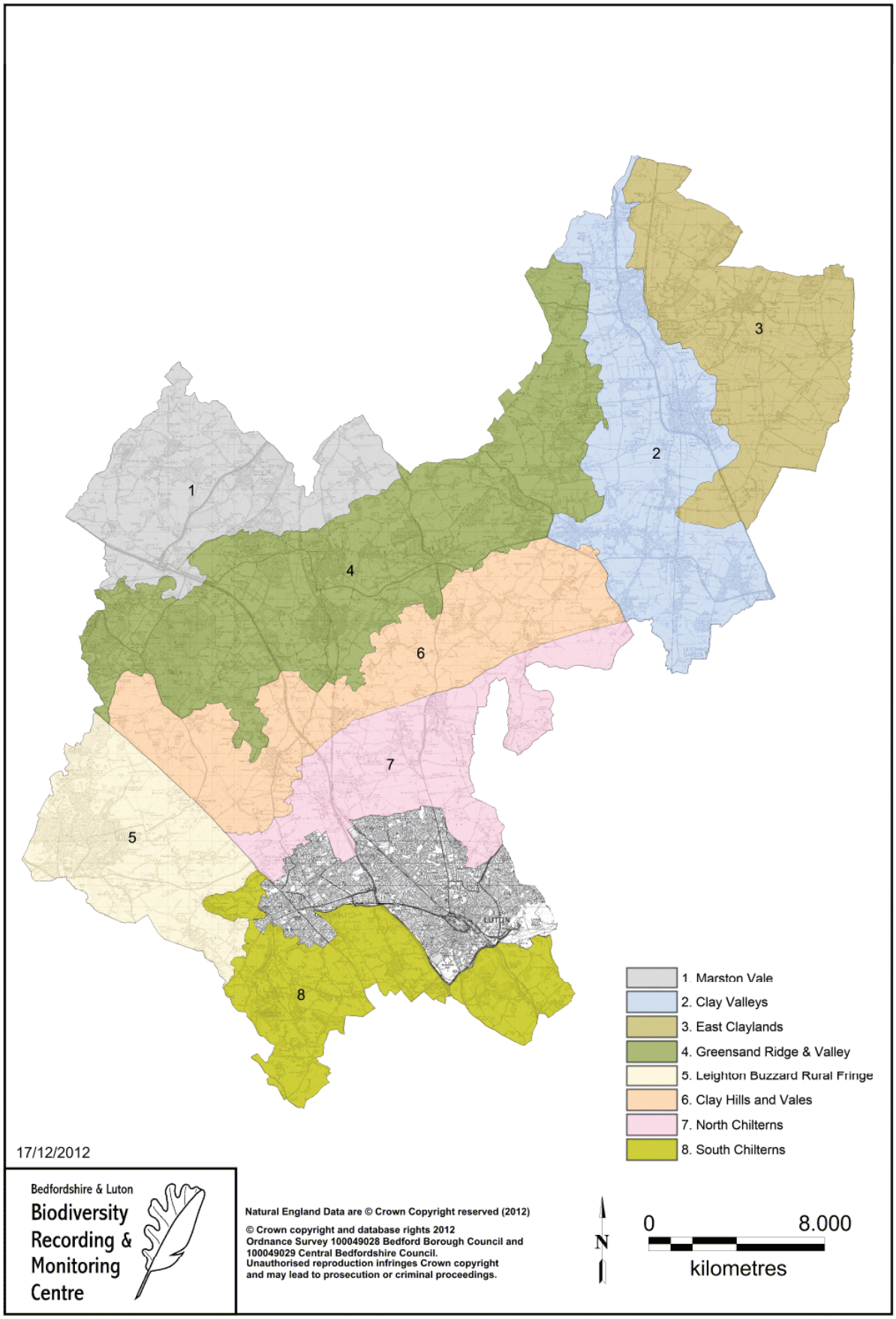
3) Marston Vale
4) Clay Rivers
5) East Claylands
6) The Greensand Ridge and Flit Valley
7) Clay Hills and Vales
8) Leighton Buzzard rural-urban fringe
9) North Chilterns
10) South Chilterns

7.3 The process of identifying sensitivity has entailed:

- A detailed study of the 1:25,000 Landscape Character Assessments.
- The use of accepted criteria to evaluate sensitivity to three levels, these being Low, Moderate and High Sensitivity to wind energy development.
- The mapping of selected landscape constraints, with appropriate visual impact zones .
- A consideration of tranquillity, using the CPRE map of Bedfordshire.

7.4 For each Landscape Character Area, a review of the specific qualities and attributes likely to be most affected by major structures was undertaken. This includes a study of:

- Key Characteristics
- Sensitivity
- Distinctive features and landmarks
- Development considerations.
- Renewables – information on current Applications



Map 2: Landscape evaluation areas

7.5 A sensitivity appraisal was then undertaken applying a three point scale to assess the likely impact of a small wind farm e.g. a cluster of 3-5 turbines against the qualities determining the appropriateness of the landscape to accept a wind energy development.

7.6 The criteria selected to assess sensitivity has been widely used by Natural England in their guidance and by many landscape consultants and other Local Authorities. These criteria involve the consideration of physical factors such as the scale of the landscape, the qualities of the landform and the current land use.

7.7 This led to the “Outline Sensitivity Tables” beneath the review of Landscape Character.

7.8 Consideration was also given to the sensitivity ratings for ‘Landscape Character’ and ‘Visual Sensitivity’ made by LUC in the Landscape Character assessments, together with the landscape strategy recommended for each character area. A judgement on overall sensitivity (but not capacity) was then made enabling the production of the Landscape Sensitivity Map (see Map 4).

7.9 The evidence base informing this is contained in Appendix 1

Table 2: FACTORS INFLUENCING SENSITIVITY

Characteristic/attribute	Greater ability to accommodate wind energy development	↔	Lesser ability to accommodate wind energy development
Wind Turbines			
Landscape Scale	Larger scale landscape; e.g. intensive arable farmland. Absence of human scale indicators.	↔	Smaller scale landscape; Presence of human scale indicators such as houses or trees and hedges, farm buildings.
Landform	Absence of strong topographical variety; Lacking features, convex or flat.	↔	Presence of strong topographical variety or distinctive landform features.
Landscape pattern and complexity	Simple; Regular or uniform.	↔	Complex; irregular field patterns.
Settlement and man-made influence	Larger urban areas; Presence of contemporary structures e.g. utility, infrastructure or industrial elements.	↔	Dispersed settlement pattern; Absence of modern development.
Skylines	Non-prominent or fragmented skylines; Presence of existing modern man-made features.	↔	Distinctive, undeveloped skylines; Skylines that are highly visible over large areas or exert a large influence on landscape character Skylines with important historic landmarks.
Perceptual aspects (sense of remoteness, tranquillity)	Close to visibility and audible signs of human activity and development. Poor public access.	↔	Physically or perceptually remote, peaceful or tranquil; valued recreational use.

n.b. Adapted from 'Natural England – Making space for Renewables'

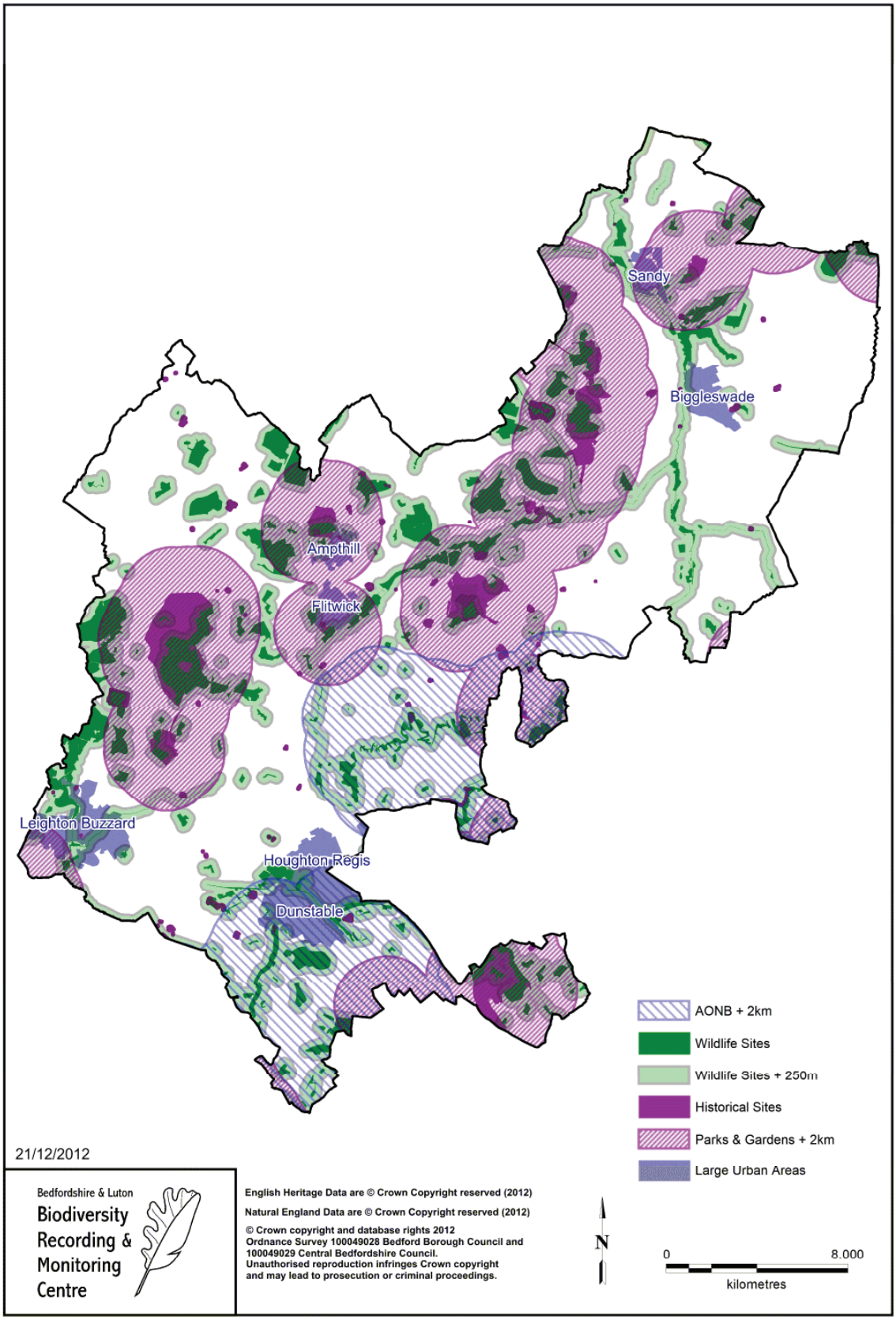
Landscape Character

7.10 The Mid Bedfordshire and South Bedfordshire Landscape Character Assessments have provided objective descriptions of the character areas, which include identification of the key landscape character and visual sensitivities, allowing for an assessment of Sensitivity for both issues.

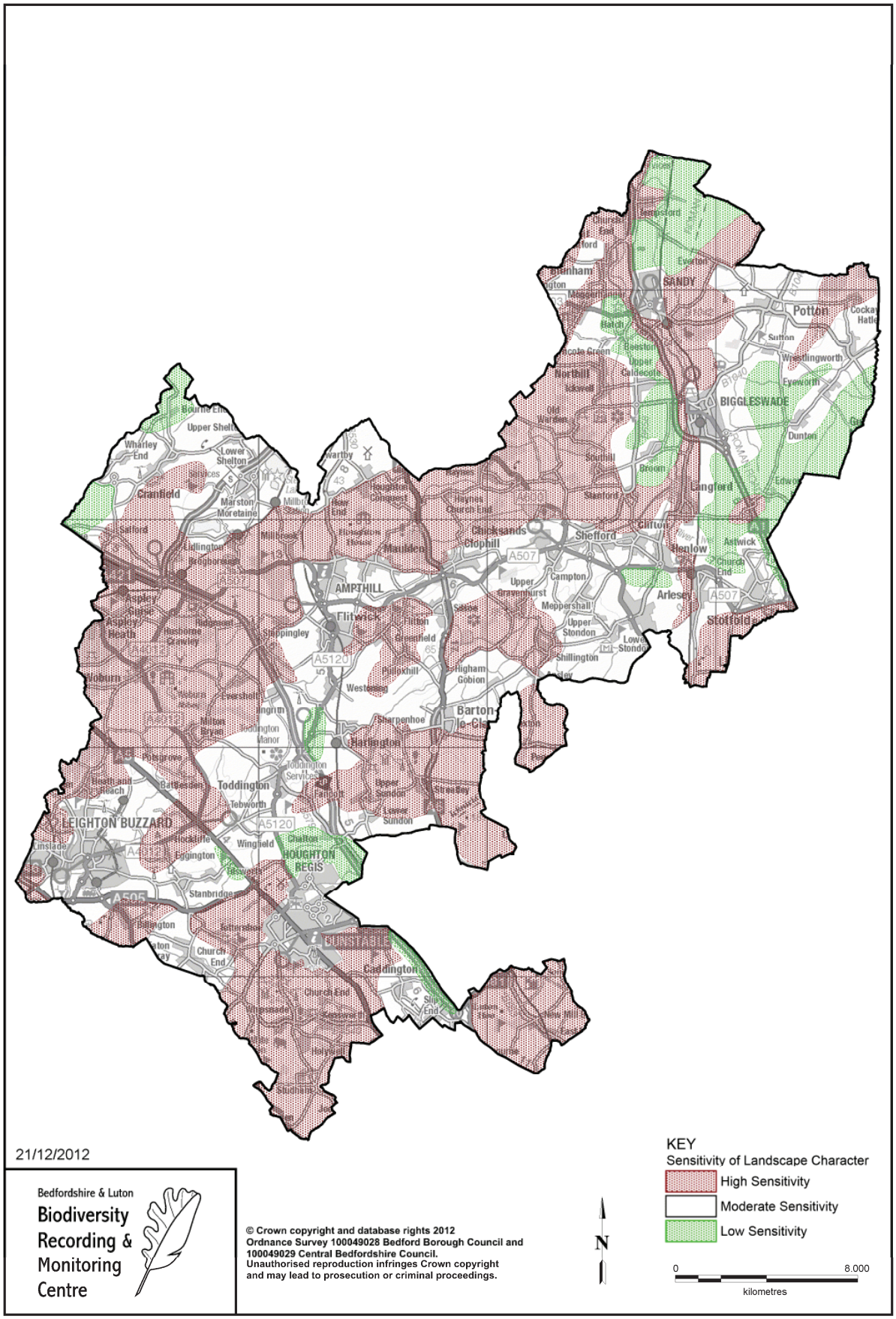
7.11 Using the assessment of visual sensitivity as a baseline, further consideration has been given to the levels of constraint required to ensure the protection of important and valued attributes and so support the landscape strategy for each area. These include:

- Conservation of the AONB and an effective buffer, to safeguard views. This will vary in the required extent dependant on location.
- Conservation of the landscape and setting of Registered Parks and Gardens, including consideration of relic parklands.
- Conserve the setting of ancient woodland and the amenity and integrity of distinctive habitat e.g. heathland, chalk downland and riverside pastures.
- Conserve the skylines of the Greensand Ridge and Chalk Escarpments
- Conserve setting of landmarks, particularly those of historic or cultural significance.
- Conserve areas of recognised tranquillity.

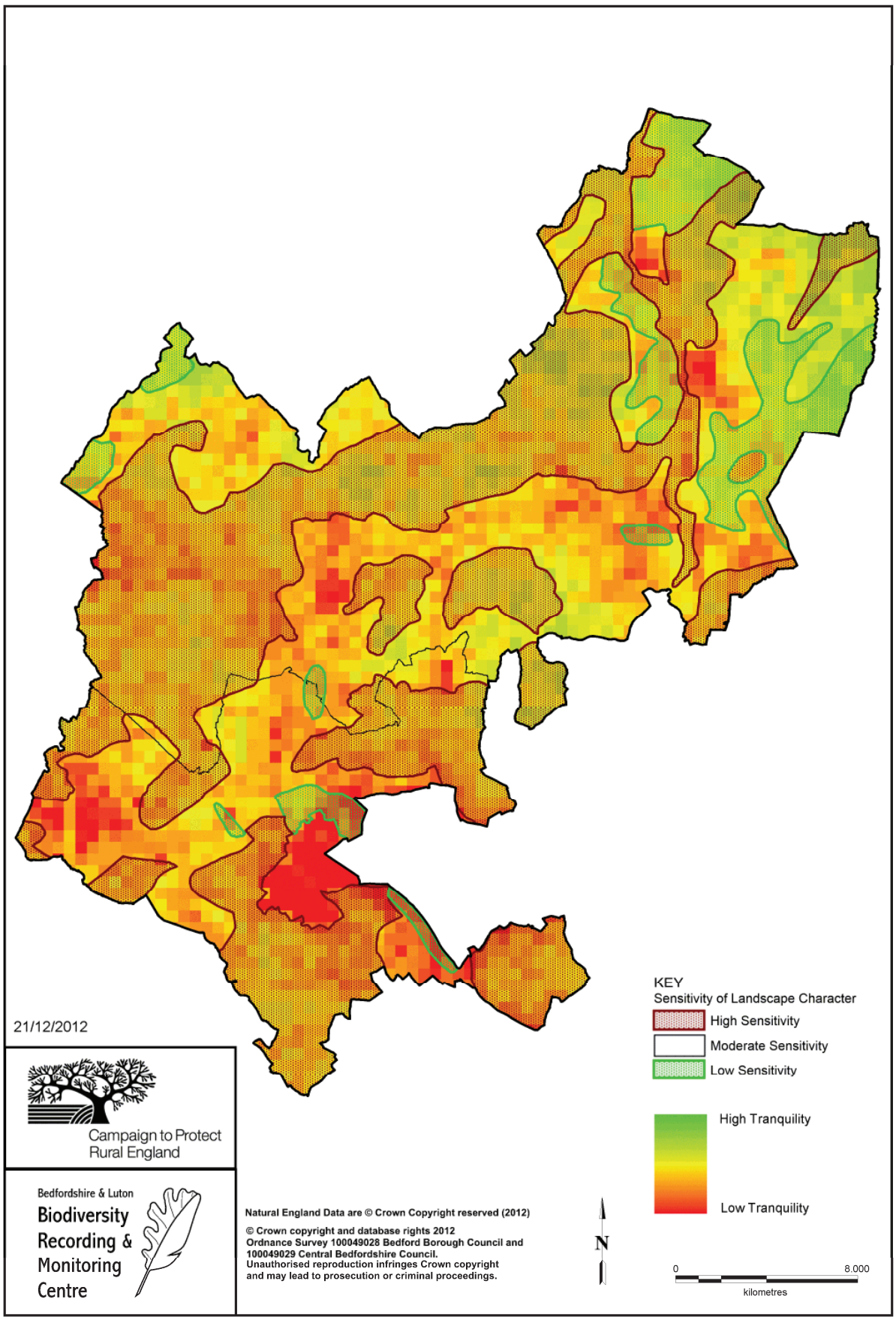
These are shown on Map 3.



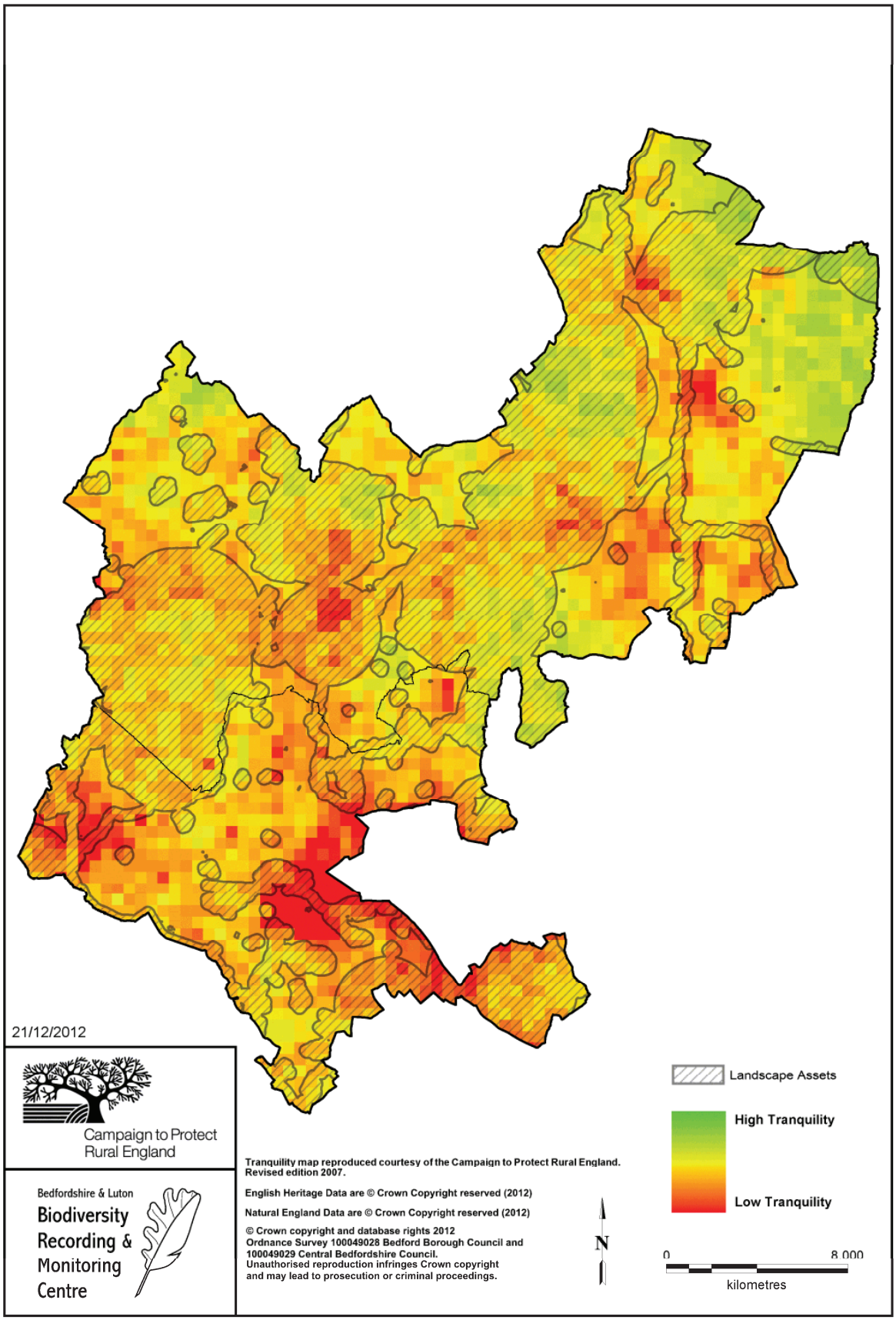
Map 3: Landscape Assets in Central Bedfordshire



Map 4: Landscape sensitivity



Map 5: Landscape sensitivity and tranquillity



Map 6: Landscape Assets and tranquillity

8.0 Overall Assessment based on Landscape Sensitivity

Areas requiring the greatest constraint

8.1 The landscape sensitivity study has identified that there are only limited areas of countryside considered appropriate for wind energy development. Landscapes of increasing complexity but with some limited potential for wind energy have been mapped as having moderate sensitivity; these areas still contain factors constraining development which would significantly limit the size and scale of development in order to prevent unacceptable loss of character and quality. Areas of greatest constraint are mapped as having **High Sensitivity** and include:

- Areas of Outstanding Natural Beauty (AONB)
- The Greensand Ridge
- River corridors
- Areas of significant cultural heritage

8.2 The smaller scale and complexity of the landscape outside of the clay vales is such that vertical features such as turbines would almost invariably be out of character.

8.3 Landscapes that are identified as being more sensitive to change have less capacity to accept wind energy. Sensitivity will vary depending on the location within the character area.

8.4 Central Bedfordshire is densely populated and with areas undergoing rapid change as a result of growth area pressures for housing and industry. The area has no truly remote countryside and yet there are locations close to the major towns that are appreciated for their tranquillity, are accessible and retain traditional features. It will be vital to conserve these areas from inappropriate development. These are arguably more precious than more extensive tranquil areas associated with open arable land.

Landscape Sensitivity and Capacity

8.5 The study of landscape character has provided broad judgements about the acceptability of wind energy across each of the Evaluation Areas. To provide guidance on the appropriateness of different scales of development, comparative tables have been prepared which outline the scope or concerns associated with wind installations of increasing size.

8.6 The typology for the turbines used is as follows and assumes a maximum height of 120m.

- A single turbine
- Cluster of 1-3 turbines
- Medium scale wind farm e.g. 3-6 turbines
- Large scale wind farm e.g. 7-11 turbines

The detailed analysis is contained in Appendix 2.

8.7 The assessment of capacity has used the following approach:

Scope: ability to accommodate development at this scale without significant adverse change to the landscape character and value.

Moderate Capacity: some ability to accommodate development at this scale but some key sensitivities or value will limit the number of schemes possible.

Low :Will be difficult to locate turbines at this scale ;more than one development at any scale will result in major adverse change to landscape character or cause an unacceptable decline in landscape value.

Limited: Will be very difficult to locate turbines at this scale: more than one development at any scale will result in major adverse change to landscape character or cause an unacceptable decline in landscape value.

None: The area would not be able to accommodate development at this scale without unacceptable adverse change to landscape character and value.

Table 2:

Evaluation Area	Single Turbine	Cluster 1-3 turbines	Medium Scale 3-6 turbines	Large Scale 7-11 turbines
Marston Vale	Moderate	Moderate	Low	None
Clay Valleys	Moderate	Low	Low	None
East Claylands	Scope	Moderate	Low	Limited
Greensand	Low	Limited	None	None
Leighton Buzzard area	Moderate	Moderate	Limited	None
Clay Hills ,Vales	Moderate	Low	Limited	None
North Chilterns	Moderate	Limited	Limited	None
South Chilterns	Low	Limited	None	None

Opportunity Areas

8.8 The landscape sensitivity study has identified that there are only limited areas of countryside considered appropriate for wind energy without there being a significant loss of character and quality.

8.9 These areas are mapped as having **Low Sensitivity** (Map 4 on page 30), indicating that only the clay landscapes of the Marston Vale, east Bedfordshire and the southern clay vale are suitable.

8.10 The smaller scale and complexity of the landscape outside of the clay vales is such that tall features such as turbines would almost invariably be out of character. This reflects the findings of the regional study undertaken by ARUP.

8.11 When the study of Landscape Constraints (Map 3) and Tranquillity (Map 5) are also considered, it will be seen that there is a conflict between the area identified as having greatest tranquillity i.e. in the Eastern Claylands which otherwise is generally of low sensitivity.

8.12 This factor reduces the scope for either a large wind farm in this area or the permission of dispersed single turbines as both scenarios would detract from tranquillity. Central Bedfordshire has experienced a marked loss of tranquillity over recent years and peaceful countryside with open uncluttered views is a precious resource.

8.13 If considering only landscape grounds, the following areas are seen as having some potential for wind development as shown in detail in appendix 2:

- Land to the south and east of Biggleswade
- Marston Vale – minor scale only
- North Houghton Regis
- West of the A5 – minor scale only

8.14 The scale of development would be critical to acceptability as would satisfaction that the impacts on other sensitive receptors, such as biodiversity and local communities were mitigated to an acceptable level.

8.15 As with other renewable energy generation technologies, there is scope to develop wind energy in association with the Growth Areas identified in the Council's emerging Development Strategy, particularly in line with any future requirements placed on developers through the 'Allowable Solutions' mechanism.

8.16 Growth areas provide the opportunity for major new features to be integrated as part of major change and urbanisation. In addition, there are opportunities to associate turbines close to large scale industrial development such as business parks and major transport corridors if the landscape setting is appropriate.

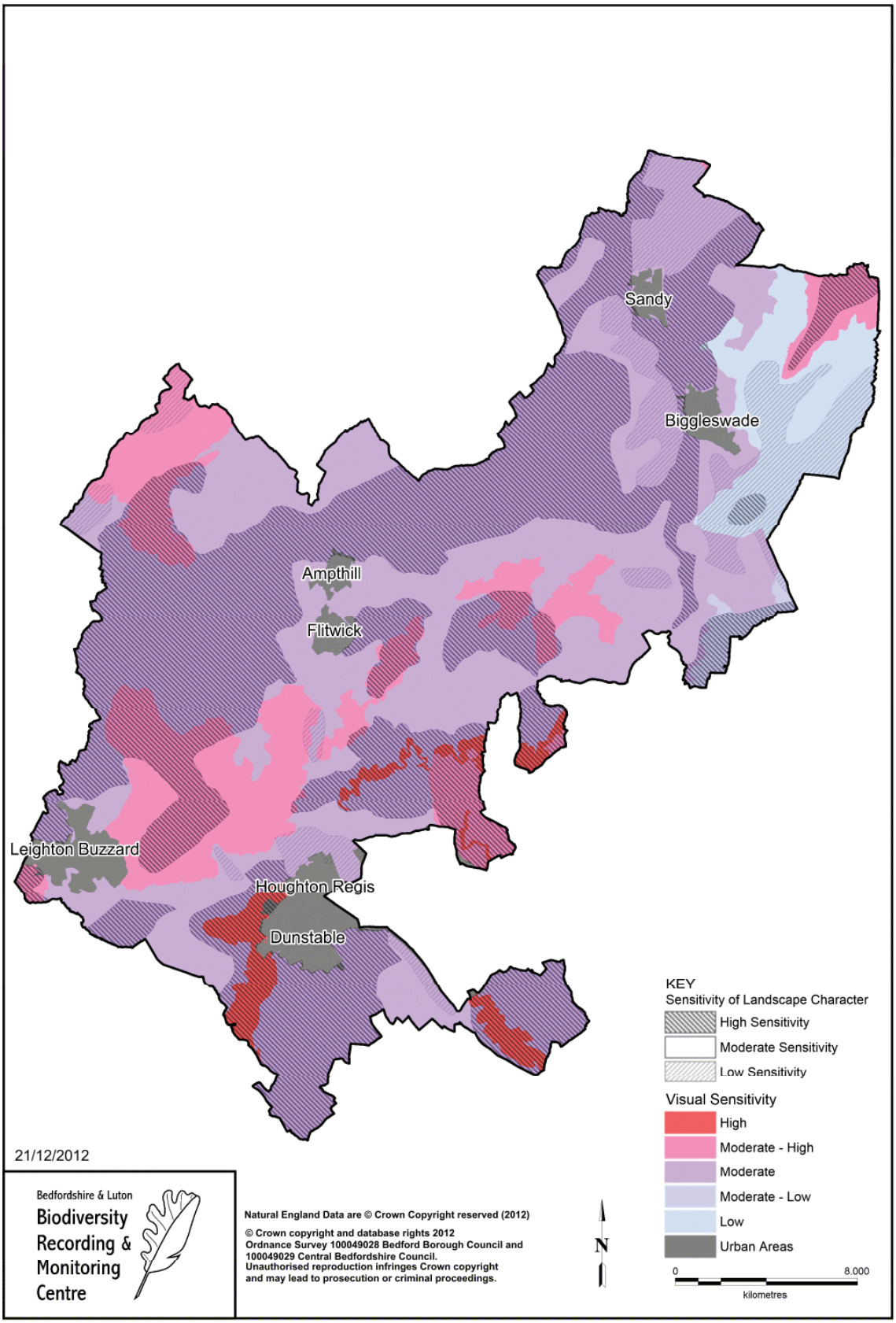
8.17 This could include the following areas.

- North Houghton Regis growth area
- M1 and A1 corridor
- Arlesey – northern expansion area – minor scale only
- Stratton Business Park, Biggleswade.

Creating a positive feature

8.18 A wind energy development is most likely to be seen as a positive feature if:

- It is positioned beyond the 2km zone from communities to avoid extreme dominance of the structures in the view.
- It is clearly visible and set on level ground, it is important to avoid sites where part of the column or tips of blades are visible on the skyline.
- Be in scale with the landscape and avoid conflict with the human scale of farms, residential properties and features such as woods and hedgerows.
- Ensure that impact on recreational enjoyment is minimised – this includes more passive recreation such as enjoyment of valued views and panoramas as well as use of rights of way.
- Avoids detraction from landform and sense of place, e.g. where there are subtle changes in level or where tall structures would conflict with dramatic changes in contour, for example between a vale and escarpment.



Map 7: Sensitivity of landscape character and visual sensitivity

9.0 Conclusions

9.1 The scale and industrial character of turbines will always result in dramatically changed landscapes. In an acceptable location the strong form and connection with green energy can result in the creation of a positive landmark and it is recognised that the installation of wind energy has a role in combating climate change, which is a key factor leading to the loss of valued features within the landscape.

9.2 However, in view of the visual impact, it is essential that schemes are in scale with the setting and do not detract from valued landscapes or cause unacceptable intrusion to communities.

9.3 Within Central Bedfordshire such sites are likely to be limited in number: the dense settlement pattern and the variation in landscape character (character areas are often narrow or limited in extent) and landform creates a greater sensitivity than the judgements on landscape character alone might suggest. If not managed carefully this could give the prospect of certain areas being subject to disproportionate development.

9.4 The capacity for medium scale wind farms has been seen to be low. It is also concluded that the Central Bedfordshire landscape is not appropriate to accommodate large scale wind farms.

9.5 There is potential to support a limited extent of small-medium sized wind farms, particularly within the clay landscapes. Central Bedfordshire may also be able to accommodate a limited number of single turbines, although the visual impact of a single turbine can be considered disproportionate to the energy output.

9.6 The cumulative impact of a series of single turbines is considered to be of a greater consequence than a single, medium sized farm of 3-5 turbines. In Central Bedfordshire it will only be an exceptional site which would allow a second installation without a serious threat of overwhelming cumulative impact.

9.7 It is the Council's view that the Central Bedfordshire countryside is too populated, complex and varied in it's landform to be able to successfully accommodate more than one farm within a 10km setting.

9.8 It is only the large-scale arable clay-farmland landscapes which offer any potential for farms to be in close proximity. This landscape type is still very limited in extent to similar landscapes in other Counties i.e. the Bedfordshire and Cambridgeshire Claylands and the East Anglian Chalk National Character Areas.

9.9 Where the installation of single turbines is concerned – there may be scope to accept more single turbines towards the east of the County or where they can be used positively to create nodal features along the trunk roads.

10.0 Other Policy Considerations

Green Belt

10.1 Some parts of Central Bedfordshire are designated as green belt particularly in the south and west of the area. Whilst some of the green belt will be released to enable development of the Strategic Urban Extensions the rest will be maintained to help protect the character and openness of the landscape.

10.2 The emerging Development Strategy policy 36 sets out the general presumption against inappropriate development in the green belt. Very special circumstances would need to be demonstrated if turbines and their associated infrastructure (access tracks, substation etc) are proposed within an area of green belt.

Heritage

10.3 Central Bedfordshire's historic environment is at the heart of the area's local character and plays an important role in shaping what makes the area a great place to live and work.

10.4 Our heritage assets and their settings are a non-renewable resource and the Council is committed to their protection, enhancement and conservation, to allow for them to be enjoyed by the whole community, both now and in the future.

10.5 **What the NPPF says** One of the core planning principles that should underpin both plan-making and decision-taking process is to 'conserve heritage assets in a manner appropriate to their significance, so that they can be enjoyed for their contribution to the quality of life of this and future generations'.

10.6 Heritage assets & the historic environment generally are, in terms of the NPPF & local planning policies, an important consideration in weighing the "presumption in favour of sustainable development" (NPPF Introduction paragraph 14) against "adverse impacts that significantly & demonstrably outweigh the benefits".

10.7 **What the National Policy Statements for Energy (EN-1 and EN-3) say:** EN-1 sets out the desirability of '…sustaining and, where appropriate, enhancing the significance of heritage assets, the contribution of their settings and the positive contribution they can make to sustainable communities and economic vitality'.

10.8 They place a presumption in favour of the conservation of designated heritage assets. The more significant the designated heritage asset, the greater the presumption in favour of its conservation should be. Once lost heritage assets cannot be replaced and their loss has a cultural, environmental, economic and social impact.

10.9 Onshore wind turbines are generally consented on the basis that they will be time-limited in operation therefore the length of time for which consent is sought should be considered as part of the decision making process when considering any indirect effect on the historic environment, such as effects on the setting of designated heritage assets.

The emerging Central Bedfordshire Development Strategy – Policy 45: The Historic Environment

The Council will conserve, enhance, protect and promote the enjoyment of the historic environment: This will be achieved by:

- requiring developers (where applicable) to describe the significance of any heritage assets affected by development, including any contribution made by their setting, and the role they play in defining local character and distinctiveness.
- requiring the highest quality of design in all new development, alterations and extensions and the public realm in the context of heritage assets and the historic environment. Design which positively contributes to local character and distinctiveness, and sustains and enhances the character or appearance of Conservation Areas and the setting of Listed Buildings will be encouraged and supported.
- safeguarding and promoting improvements to Central Bedfordshire's historic environment including securing appropriate viable and sustainable uses and improvements to Listed Buildings and reducing the number of Listed Buildings "at risk".
- requiring applications that affect heritage assets with archaeological interest to give due consideration to the significance of those assets, and ensure that any impact on archaeological remains, which occur as a result of a development are appropriately mitigated.
- encouraging the conservation, enhancement and enjoyment of the historic environment by supporting appropriate management and interpretation of heritage assets.
- refusing development proposals that will lead to harm to or loss of significance of a heritage asset whether designated or non-designated, unless the public benefits outweigh the harm or loss**.**

10.10 Heritage Assets include: Listed Buildings, Scheduled Monuments, Conservation Areas, Registered Parks and Gardens, Historic Landscapes, Archaeological Sites and Monuments and other non-designated assets. The impact of onshore wind generation developments broadly fall into the following categories:

1) Where the visual impact of the development has a detrimental effect on the character, appearance and setting of features of heritage or historic interest. This could lead to a compromise in the visual amenity of the wider landscape and detract from the historic character and sense of place.

2) Where the development results in a direct physical impact or loss of identified features of historic interest or heritage value, this includes historic landscapes and undiscovered archaeology. The biggest impact is likely to relate to foundations for the turbines, track ways and substations structures. This ground disturbance would be limited in comparison to other forms of development and

negative impacts could be reduced through micro-siting of the individual components.

10.11 The Core planning principles of the NPPF (paragraph 17) provides the key guidance for decision making and judgements, stating that heritage assets should be conserved in a manner appropriate to their significance, so that they can be enjoyed for their contribution to the quality of life of this & future generations. Landscape sensitivity overlaps considerably with heritage assets & their settings and this issue is considered as part of the landscape character guidance in this document.

10.12 Specific requirements to support applications for planning permission, which affect heritage assets and settings, are provided in the Council's validation checklists. These are based on the provisions of paragraph 128 of the NPPF (Chapter 12: Conserving & enhancing the historic environment). The checklists help the applicant to describe the significance of any heritage assets affected and the setting in sufficient detail. This is in a manner proportionate to the scale & likely impact of the proposal, and allows for the determination of the application on that information submitted.

10.13 With the previous applications for wind farms or individual wind turbines considered by the Council, a standard approach to such impact assessments alongside zones of inter-visibility has been agreed with the developers.

Archaeology

10.14 There are two specific issues relating to archaeology:

1) The impact on the setting of designated and non-designated heritage assets with archaeological interest, and;

2) The direct physical impact on archaeological remains.

10.15 Definitions of these elements are contained in the *NPPF* and are covered more fully in the English Heritage guidance. Both the *NPPF* (Paragraph 132) and EN-1 (5.8.14) set out the presumption in favour of the conservation of designated heritage assets and say that substantial harm to or loss of designated assets of the highest significance should be wholly exceptional.

10.16 However, it is important to recognise that not all nationally important archaeological remains have been designated as Scheduled Monuments and the *NPPF* (Paragraph 139) and EN-1 (5.8.5) both say that non-designated heritage assets of archaeological interest that are demonstrably of equivalent significance to Scheduled Monuments, should be considered subject to the policies for designated heritage assets.

10.17 Although the significance of non-designated heritage assets may be apparent from information held in the Historic Environment Record held by the Council, it is more likely to be recognised through information acquired as part of the application process.

11.0 Biodiversity

11.1 Central Bedfordshire contains a variety of habitats and landscapes which are integral to its character. These not only have an intrinsic value but also make a vital contribution to improving the quality of life of the people who live here.

11.2 Within the locality some areas are designated as being of particular importance for biodiversity and geology/geomorphology. They include 32 nationally designated Sites of Special Scientific Interest (SSSIs) such as Dunstable Downs, Sundon Chalk Quarry, Marston Thrift, Flitwick Moor, Wavendon ponds and Sandy Warren. There are also three National Nature Reserves (NNRs) at King's Wood near Heath and Reach, Barton Hills and Knocking Hoe near Shillington.

11.3 Additionally there are also 11 Local Nature Reserves (LNRs), numerous County Wildlife Sites and Local Geological Sites.

11.4 Central Bedfordshire Council also has a duty under Section 40 of the NERC Act *"…to have regard, so far as is consistent with the proper exercise of those functions, to the purpose of conserving biodiversity."* The Act also maintains lists of species and habitats which are of principal importance for the purpose of conserving biodiversity in England and Wales in section 41.

11.5 The Wildlife and Countryside Act 1981 is the primary legislation which protects animals and plants in the UK.

11.6 **What the NPPF says:** The planning system should contribute to and enhance the natural and local environment by 'minimising impacts on biodiversity and providing net gains in biodiversity where possible, contributing to the Government's commitment to halt the overall decline in biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures'.

11.7 **What the National Policy Statements for Energy (EN-1 and EN-3) say:** As a general principle EN-1 states that development should aim to avoid significant harm to biodiversity. The developer should show how the project has taken advantage of opportunities to conserve and enhance biodiversity and geological conservation interests.

11.8 Planning consent would be refused where harm to the habitats or species and their habitats would result, unless the benefits (including need) of the development outweigh that harm. In this context the EN-1 states that substantial weight should be given to any such harm to the detriment of biodiversity features of national or regional importance which it is considered may result from a proposed development.

11.9 The national Policy Statement for Renewable Energy Infrastructure (EN-3) highlights that there is the potential for rotating blades of a wind turbine to strike birds and adversely affect bats, resulting in death or injury.

The emerging Central Bedfordshire Development Strategy – Policy 57: Biodiversity and Geodiversity

The Council will seek a net gain in biodiversity and geodiversity and support the maintenance and enhancement of habitats, identify opportunities to create buffer zones and restore and repair fragmented biodiversity networks.

Where appropriate, planning permission will not be granted for development that fails to enhance or create wildlife habitats or sites of geological interest.

The Council will refuse planning permission for proposals that would result in harm to designated or proposed Sites of Special Scientific Interest (SSSI) or National Nature Reserves (NNR), unless the reasons for the development clearly outweigh the nature conservation value of the site and the national policy to safeguard such sites. Where such development is permitted, measures will be required to mitigate or compensate for the effects of the development.

Development that would impact on the strategic ecological network causing fragmentation or otherwise prejudice its effectiveness will not normally be permitted.

Where the need for development outweighs its impact and is permitted within, adjacent to, or in proximity to designated sites or known locations of protected species or elements of the ecological network, adequate mitigation to minimise such impacts will be necessary.

11.10 Site selection is an important factor in avoiding impacts to wildlife. Wind turbines are often proposed in exposed rural areas to benefit from high average wind speeds. Such locations in Central Bedfordshire may contain some of the most important and sensitive habitats and species, some of which are legally protected. There is a need to ensure any potentially significant or damaging effects on these habitats and species are avoided or minimised.

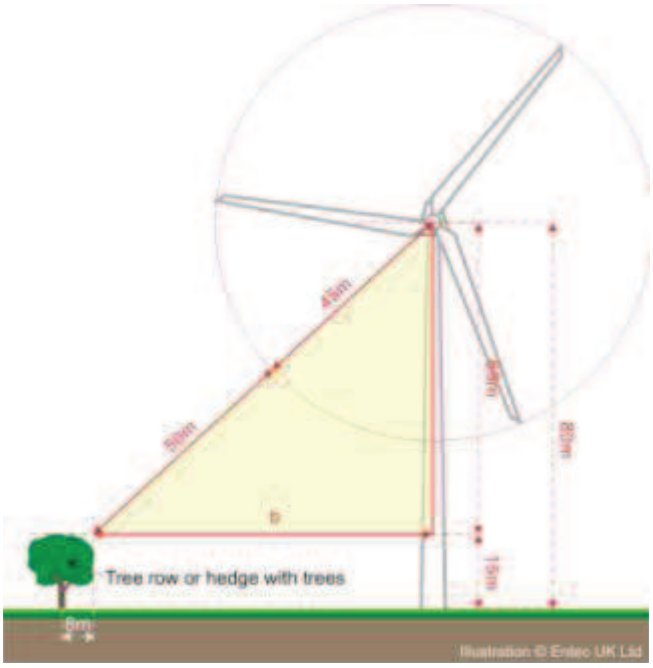
11.12 The impact of a wind turbine on bats and birds can be significant depending on the proposed location. All bats and many bird species are legally protected and therefore surveys should be undertaken before a planning application can be determined.

Bats

11.13 Bats and the places they use for shelter or protection (roosts) receive European protection under the Habitat Regulations 2010. They receive further legal protection under the Wildlife and Countryside Act 1981 (as amended). This legislation makes deliberate / intentional disturbance, capture, injury or killing of a bat an offence.

11.14 The siting of turbines may be an issue for bats in the UK, not only because of the risk of direct collision if turbines are placed on migration or commuting routes, but also because of displacement from foraging habitat.

11.15 To minimize risk to bat populations Natural England advice is to maintain a 50m buffer around any feature (trees, hedges) into which no part of the turbine should intrude. This 50m buffer should be measured from the rotor-swept area (NOT the hub / base of the turbine) to the nearest part of the habitat feature.



$$b = \sqrt{(50 + bl)^2 - (hh - fh)^2}$$

where: bl = blade length, hh = hub height , fh = feature height (all in metres). For the example above, b = 69.3 m.
Diagram copywright Entec UK Ltd.

11.16 Owner/occupiers wishing to install microgeneration technologies will need to consider bats if they are to avoid potential crimes from being committed under the Conservation of Species and Habitats Regulations 2010.

11.17 Potential impact on bats will arise from either:

(a) the installation of equipment and materials that passes through a roof void where a bat roost is located within the development.

(b) operationally where there is a risk for bat strike against moving turbine blades where a micro-turbine is in the vicinity of a bat roost or along flight lines. This maybe within the development or nearby.

Birds

11.18 The European Birds Directive prohibits the deliberate killing or capture of wild birds within Europe, the Wildlife and Countryside Act 1981 makes intentional killing or injury of any wild bird an offence.

11.19 The available evidence suggests that wind farms can harm birds in three possible ways – disturbance, habitat loss (both direct and/or indirect) and collision. Collision risk and disturbance displacement are considered the two predominant effects. Cumulative impacts resulting from several wind farms in the same area or affecting the same species are of particular concern.

11.20 To minimise the potential for adverse effects on all wild birds, including the risk of collisions, wind farm developers should be made aware of known bird migration routes, local flight paths, foraging areas and inland wetland sites.

Designated sites; SSSI, NNR, LNR, CWS, CWS

11.21 It is not only the end product which requires consideration but the potential damage caused to habitats as a result of construction / connection process.

11.22 Where wind farms are proposed, their development should not cause significant disturbance to, or deterioration or destruction of, key habitats of species listed in Annex IV of the Habitats Directive.

11.23 "Important" hedgerows (as defined in the Regulations) are protected from removal (up-rooting or otherwise destroying) by the Hedgerows Regulations 1997. Various criteria specified in the Regulations are used to identify "important" hedgerows for wildlife, landscape or historical reasons. Important & species rich hedgerows are recognised on the UK, LBAP & HABAP.

11.24 Where wind farms are proposed, their development should respect, and where possible further, the objectives and targets identified for priority habitats and species listed in the UK Biodiversity Action Plan. Biodiversity opportunity mapping has been undertaken for Central Bedfordshire and impacts on these corridors should be considered during the site selection process.

11.25 Continuation of the existing land use underneath wind turbines allows the landscape to flow underneath and around the wind turbines, linking adjoining land uses especially if this can create more robust semi-natural habitats and reduce habitat fragmentation.

THE DEVELOPMENT: Broad Range of Biodiversity Considerations.

Temporal:	**Spatial:**	**Cumulative:**
• Pre-installation • Construction • Operation • Decommissioning	• On site/off site buffer area/area of influence • Cable route • Other (eg construction site, spoil disposal sites)	• Over time • In combination with other wind farms • In combination with other projects/activities

12.0 Communities

12.1 Impacts of wind development on local communities are of a paramount concern to the Council. The Council recognises that the benefits of most wind farm developments tend to be much less concentrated in the area around the development.

12.2 The Renewables Advisory Board toolkit 'Delivering community benefits from wind energy development' highlights that there are concerns over whether there is a sense in some local communities that wind developments are 'done to them'.

12.3 The Council is therefore keen that developers of renewables take a proactive approach to working with affected communities at the earliest stage in order to mitigate impacts and provide adequate compensation and benefits.

12.4 The 'Delivering community benefits from wind energy development toolkit' aims to help to make meaningful community benefits more routine and systematic in UK wind energy projects. There are a range of options open to developers when exploring Community engagement and benefits. These could include:

- Entering into voluntary agreements with affected communities to reward them for hosting the development. Rewards can range from grants to carry out one off significant improvements to local facilities (e.g. a new community hall or leisure facilities) through to the set up of annual funding to support longer term projects (e.g. energy efficiency programmes, environmental enhancement projects).

- The compensation may be secured through Section 106 obligations agreements. These agreements require the developer to provide for any matters that are necessary to make a development acceptable in planning terms. This can include contributions to the provision of services and infrastructure that benefit affected communities, such as roads, education and health facilities.

12.5 In all cases the Council will expect that the community benefits are proportionate to the size and impact of the development.

12.6 Fundamental to community engagement is to ensure a high standard of public engagement. Developers are encouraged to carry this out at the earliest opportunity. This should be a two-way process and give all stakeholders (including communities and developers) the opportunity to raise and address concerns as well as beginning dialogue as to how local community benefits will be realised and delivered.

12.7 As part of this engagement process communities should be given the opportunity to identify what they would deem as an appropriate level of reward/compensation/benefit for the community to receive.

Community led schemes

12.8 Whilst the majority of proposed wind developments will realistically come from developers and energy companies, community led and owned schemes elsewhere

in the UK, such as the Westmill Co-operative wind farm in Wiltshire[2], provide an excellent example of how communities can be engaged with, contribute and lead on renewables schemes.

12.9 The Council will therefore support truly community-led initiatives for renewable and low carbon energy, where the benefits – be they financial or the generated electricity are realised by the communities most affected (and as long as other impacts as mitigated and addressed as detailed in the remainder of this guidance).

13.0 Other issues

Noise

13.1 ETSU-R-97 – 'The Assessment and rating of noise from wind farms', is the current best practice guidance on which noise assessments are based. The Institute of Acoustics (IOA) has launched a consultation on "Good Practice Guidance to the application of ETSU-R-97 for wind turbine noise assessment, with the aim of producing a final version of the Good Practice Guide for publication early in 2013.

13.2 This will supplement the ETSU-R-97 document where used for wind turbine noise assessments and should be used to guide noise assessments in Central Bedfordshire.

[2] http://www.westmill.coop/westmill_home.asp

14.0 References and other useful sources of information

National Policy Planning Framework, available from: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/6077/2116950.pdf

National Policy Statements for Energy Infrastructure, available from: http://www.decc.gov.uk/en/content/cms/meeting_energy/consents_planning/nps_en_infra/nps_en_infra.aspx

Biodiversity and wind turbines:

BWEA's guidance on wind farm development and nature conservation (2001)

Eurobats Resolution 4.7 Wind turbines and bats (2003)

Eurobats Resolution 5.6 Wind turbines and Annex generic guidelines (2006)

Natural England Technical Information Note: TIN051 - Bats and onshore wind turbines (2012)

Natural England Technical Information Note: TIN059 - Bats and Single Large Wind Turbines (September 2009)

Natural England Technical Information Note: TIN069 Assessing the effects of onshore wind farms on birds (2010)

RSPB Research Report No 35 - Mapped and written guidance in relation to birds and onshore wind energy development in England (2009)

A joint publication by Scottish Rewables, Scottish Natural Heritage, Scottish Environment Protection Agency and the Forestry Commission Scotland Good Practice During Wind Farm Construction (October 2010)

SNH Guidance Note on Methods for Monitoring Bird Populations at Onshore Wind Farms (January 2009)

Heritage and the historic environment

English Heritage guidance 'Wind Energy and the Historic Environment' (currently under revision)

Communities

The Renewables Advisory Board report – 'Delivering community benefits from wind energy development: a toolkit'.

15.0 Glossary

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

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.

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

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 –** The distinct and recognizable pattern of elements that occurs consistently in a particular type of landscape, and how this is perceived by people. It reflects particular combinations of geology, landform, soils, vegetation, land use and human settlement. It creates the particular sense of place of different areas of the landscape.

Landscape Character Area – A unique geographic area with a consistent character and identity, defined by geology, landform, soils, vegetation, land se, settlement and field pattern.

Landscape Character Assessment –** An umbrella term for description, classification and analysis of landscape.

Landscape Character Type –** A landscape type will have broadly similar patterns of geology, landform, soils, vegetation, land use, settlement and field pattern discernable in maps and field survey records.

Landscape Quality –** About the physical state of the landscape and its intactness, from visual, functional and ecological perspectives. It also reflects the state of repair of individual features and elements which make up the character in any one place.

Landscape Sensitivity –** The extent to which a landscape can accept change of a particular type and scale without adverse effects on its character.

Landscape Value –** The relative value or importance attached to a landscape (often as a basis for designation or recognition), which expresses national or local consensus, because of its quality, special qualities including perceptual aspects such as scenic beauty, tranquillity or wilderness, cultural associations or other conservation issues.

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.

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

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.

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)* – A Supplementary Planning Document is a Local Development Document that may cover a range of issues, thematic or site specific, and provides further detail of policies and proposals in a 'parent' Development Plan Document.

Supplementary Planning Guidance (SPG)* – Supplementary Planning Guidance may cover a range of issues, both thematic and site specific and provide further detail of policies and proposals in a development plan.

Threshold – A specified level beyond which impacts will be unacceptable.

Zone of Theoretical Visibility (ZTV) – Also known as a Zone of Visual Influence (ZVI), Visual Envelope Map (VEM) and Viewshed. This represents the area over which a development can theoretically be seen, based on digital terrain data.

* = 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

APPENDIX 1

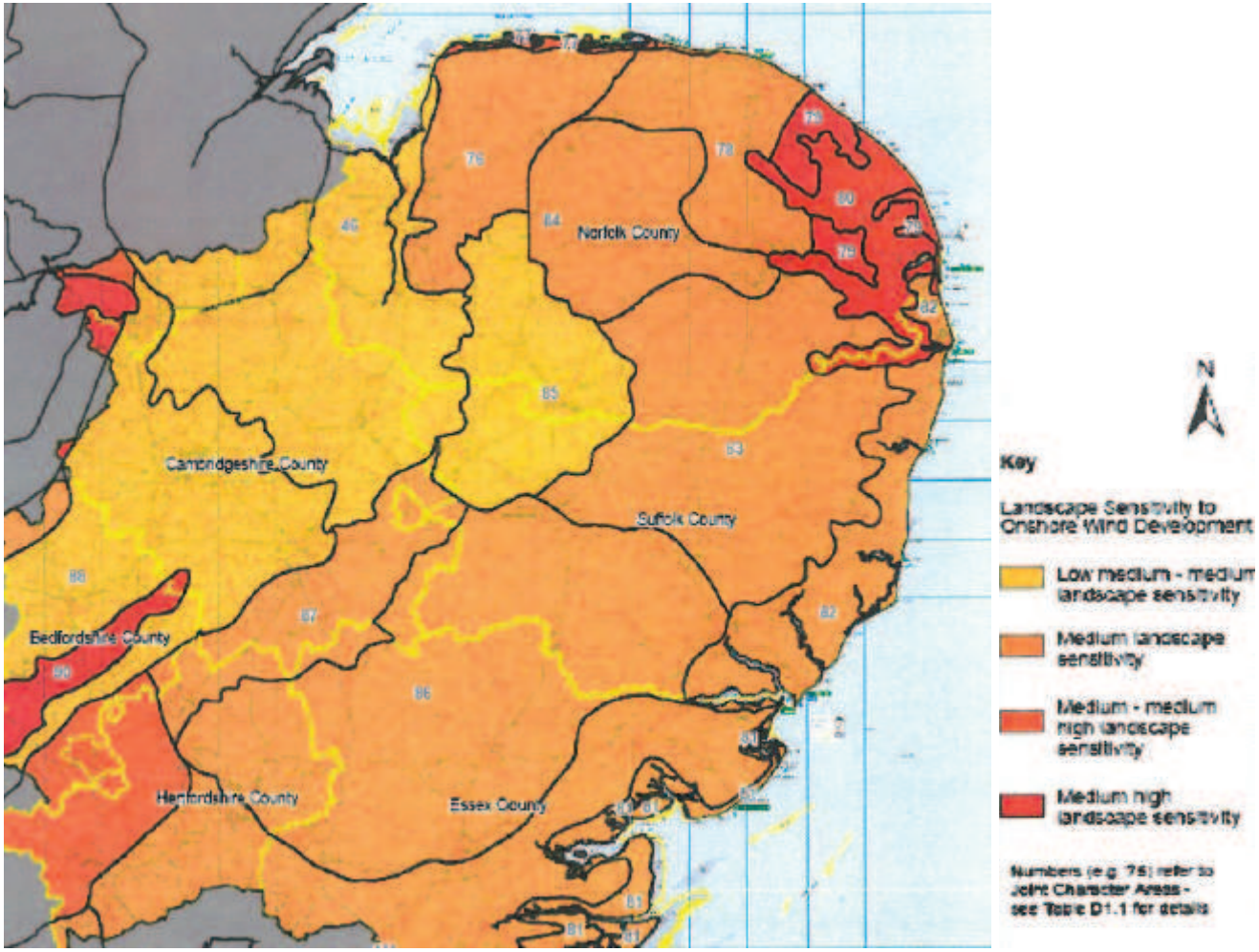
Regional Guidance on Capacity

The ARUP Report: Placing Renewables in the East of England

1. Map 7 'Landscape Sensitivity to Onshore Wind Development' from 'Placing Renewables in the East of England' Ove Arup & partners (2008)
2. Table derived from:

Table D1.3 Sensitivity Tables

Table D1.4 Estimated maximum Landscape Capacity of National Character Areas



From: 'Placing Renewables in the East of England' Ove Arup 7 partners (2008)

Higher resolution copy of map to follow

Table3: Assessment of sensitivity of National Character Areas in Central Bedfordshire's capacity to wind turbine developments

National Character Area		Sensitivity Rating	Description	Wind Turbine Typology (maximum sixe of farm)	Capacity Using 15km centres *(CBC comment in italics)*
87	East Anglian Chalk	Medium Sensitivity	A large scale rolling landform – avoid turbines in the smaller scale landscape of the river valleys (i.e. the portion within CBC)	Medium :4 -12 turbines Suggest no more than 8	Report recommends10 turbines across an extensive character area. ***Conclude: Minor area within CBC influenced by river valley and not a prime area of search.***
88	Bedfordshire and Cambridgeshire Claylands	Low- Medium / Medium Sensitivity	The broad landform and relatively simple nature of this area makes it of low sensitivity but sensitivity increases related to variations in scale.	Medium to large: 9 -16 turbines Suggest no more than 12.	Potentially 48 turbines across the extensive character area. Development permitted: 10 at Langford 1 at Marston Vale MCP ***Conclude: CBC proportion met.***
90	Bedfordshire Greensand Ridge	Medium – High Sensitivity	The medium to small-scale of the landscape and distinctive narrow escarpment increase the areas sensitivity to wind development.	Small: 2-3 turbines, Suggest no more than 2.	Report recommends 2 turbines. Development permitted: Double Arches turbine adjacent to west of Ridge. Community turbine at Gamlingay at eastern extent of Ridge in Cambridgeshire. ***Conclude: Capacity of Greensand Ridge met.***
110	Chilterns	Medium / Medium to High Sensitivity	The prominent scarp slope and enclosed intimate valleys are areas of increased sensitivity.	Small –Medium wind farm i.e. 3-7 turbines, suggest 4.	Recommends a maximum of 4 turbines across a landscape extending to Oxfordshire ***Conclude: Complexity and small extent of Bedfordshire's Chilterns limits area of search.***

APPENDIX 2

Detailed sensitivity analysis tables

Marston Vale					
Factor	**Single Turbine**	**Small 1-3**	**Medium 3 -6**	**Large 7 -11**	**Comment**
Scale – Medium scale field pattern	Moderate potential. Would need to avoid visual conflict with turbine in Country Park	Low potential – would need to form positive feature e.g. as a gateway to the Vale & avoid visual conflict with turbine in Country Park.	Low potential – would need to be linked to highly disturbed areas e.g. linked to M1 motorway.	Not suitable - Field pattern not considered extensive enough for large scale farm	Vale subject to major residential growth which will limit scope for wind energy. Lower height turbines more acceptable – this is a landscape characterised by growth of villages.
Landform Mainly flat clay vale which is strongly enclosed to south by the Greensand Ridge and to west by clay ridge	Would need to be sited to avoid conflict with the Greensand and Clay ridges. Scope where turbine contrasts with open, horizontal character.	Would need to be sited to avoid conflict with the Greensand and Clay ridges. Scope where turbine contrasts with open, horizontal character.	A medium scale group would have an unacceptable impact in vicinity of Greensand and Clay ridges. Limited extent of level ground able to accept development at this scale.	Not suitable -Would cause unacceptable visual impact in vicinity of Greensand and Clay ridges. Extent of level vale not sufficient for a large scale farm.	Landform of the Vale varies – the centre is much modified by the brickwork legacy of lakes and landfill. Land raising limits potential. Area also includes steep clay ridge at Cranfield – development would be visually dominant on elevated ground.
Land cover Arable farmland, some pasture , blocks of ancient woodland ,new woodland planted by Community Forest	Moderate potential in heart of Vale, less scope where more complex field patterns and land use. If biodiversity If biodiversity allows, could create a feature in scale with open lake.	Moderate potential in heart of Vale, less scope where more complex field patterns and land use.	Low potential – concern that turbines would be incongruous in this mixed land use : ancient woodland blocks in Vale and historic pastures .	Not suitable -out of character and scale.	Division of landscape increasing as a result of Community Forest and creation of leisure links such as the Bedford – Milton Keynes Canal.
Enclosure Low or gappy hedges prevalent, greater enclosure of small fields to west. FMV planting increasing screening.	Moderate potential but avoid conflict with strongly enclosed landscape to west of Vale and proximity to blocks of ancient woodland.	Moderate potential but avoid conflict with strongly enclosed landscape to west of Vale and proximity to blocks of ancient woodland.	Low potential – medium scale wind farm would extend over field pattern to detriment of landscape character.	Not suitable –large scale wind farm would extend over field pattern to detriment of landscape character.	Enclosure pattern changing in Vale as FMV planting maturing. This can help screen development but also increases risk of visual conflict and disturbance of newly acquired recreational land.
Skyline Views to wooded skyline of Greensand Ridge. Mixed land use on Cranfield Ridge including visible development.	Important to site even a single turbine away from elevated land or foreground to both the Greensand and Clay Ridges.	Important to site turbines away from elevated land and the foreground to both the Greensand and Clay Ridges.	Important to site turbines away from elevated land and the foreground to both the Greensand and Clay Ridges.	Important to site turbines away from elevated land and the foreground to both the Greensand and Clay Ridges.	The skyline in the Vale now includes land-raised hills. It is still important to avoid visual conflict with these new features.

Factor	Single Turbine	Small 1-3	Medium 3 -6	Large 7 -11	Comment
Development Nuclear villages in Vale , Cranfield linear , many dispersed farms ,increasing residential and employment use as growth area	A single turbine could be linked to industrial areas on the edge of settlements e.g. in the A421 corridor.	A small turbine group would be out of scale with the settlements in the Vale. Some limited potential linked to the M1 corridor or other areas of high disturbance.	A medium scale wind farm would be out of scale with the settlements in the Vale.	A large scale wind farm would be out of scale with the settlements in the Vale.	Concern that Vale is becoming re-industrialised with major development such as Covanta. New residential growth offers limited potential but scale must not overwhelm village settings or the woodland which aids integration.
Landmarks Brickpit chimneys, Airship Sheds, church towers – can be locally dominant and be seen throughout Vale	Single turbine at Country Park will become a new landmark. Concern that any additional turbines will appear fragmented and unplanned.	A small group could form a gateway feature if associated with the M1 or where industry has already increased scale of development	Medium scale farm would conflict with the heritage landmarks of the Brickpit chimneys and village scale features such as the church towers. If located to the east would conflict with the unique Airship Sheds.	Large scale farm would conflict with the heritage landmark of the Brickpit chimneys and village scale features such as the church towers. If located to the east would conflict with the unique Airship Sheds.	Vale is continuing to transform from an industrial to a recreational landscape. Potential new roofscape landmark if NIRAH developed. Covanta Energy from Waste plant to become new industrial landmark dominating Vale.
Tranquillity Disturbance high close to roads but many rights of way cross pockets of peaceful and relatively remote countryside.	A single turbine would increase visual disturbance and would need to be associated with development.	A cluster would significantly increase visual disturbance and would need to be associated with major development.	Medium scale farm would bring significant visual intrusion and an unacceptable cumulative impact with the Petsoe End Farm.	Large scale farm would bring significant visual intrusion and an unacceptable cumulative impact with the Petsoe End Farm.	Visual disturbance has decreased over years with removal of brickpit chimneys. Noise disturbance increasing but Vale gaining significant green infrastructure. Covanta plant will form major intrusion and severely impact on tranquillity.
Rarity Locally distinctive part of claylands – historic land use re brick working, now one of 12 Community Forests.	Scope for a single turbine without excessive change to the character type.	Scope for a cluster of turbines without excessive change to the character type.	Limited scope to integrate a medium scale wind farm without overwhelming sense of place.	Not appropriate –a large scale wind farm would overwhelm the sense of place.	Marston Vale has a strong sense of place but is experiencing rapid change. Important to conserve areas of diverse countryside to counter increasing scale of development.

Clay Valleys					
Factor	**Single Turbine**	**Small 1-3**	**Medium 3 -6**	**Large 7 -11**	**Comment**
Scale – Medium scale field pattern	Moderate potential ; e.g. if associated with A1 corridor or other disturbed landscape.	Low potential – would need to form positive feature where existing development of appropriate scale.	Low potential –out of scale with field pattern. Ivel Valley is narrow in extent , development would conflict with adjacent slopes of Greensand Ridge .	Not suitable – Field pattern not considered extensive enough for large scale farm. Ivel Valley particularly is narrow in extent, development would conflict with adjacent slopes of Greensand Ridge.	Farmland associated with the river landscapes in decline in terms of landscape feature – hedgerow removal has denuded landscape.
Landform Mainly level clay vale which is strongly enclosed to east and west by the Greensand Ridge.	Would need to be sited to avoid conflict with the Greensand and small scale of the river valley landscape.	Would need to be sited to avoid conflict with the Greensand and small scale of the river valley landscape.	Low potential. Conflict with the Greensand Ridge and small scale of the river valley landscape.	Concern impact of wind turbines in vicinity of Greensand Ridge and small scale of the river valley landscape.	Landscape much modified in places by mineral working – restoration enhancing habitat and increasing woodland cover .
Land cover Arable farmland, linear plantations linked to mineral working , small woodland blocks	Scope if turbine does not conflict with traditional riverside landscapes ,parkland or woodland blocks	Low potential – would need to ensure farm does not conflict with traditional riverside landscapes ,parkland or woodland blocks	Low potential would need to ensure farm does not conflict with traditional riverside landscapes ,parkland or woodland blocks	Out of character and scale. Wind farm would dominate scale woodlands and pasture.	Mineral restoration has increased planting associated with river valleys.
Enclosure Upper Ivel has poor hedgerow network and limited woodland. More enclosure in Upper Ivel and Ouse Valley.	Many open views – turbine would be highly visible, but also risk of wooded features causing partial views.	Many open views – turbine would be highly visible, but also risk of wooded features causing partial views.	Many open views – turbines would be highly visible, but also risk of wooded features causing partial views.	Many open views – turbines would be highly visible, but also risk of wooded features causing partial views.	Turbines would form the new focus in views from Greensand Ridge – would be incongruous if associated with riverside landscape.
Skyline Wooded skyline of Greensand Ridge at Sandy	Single turbine – concern about cumulative impact with Langford wind farm	Cluster of turbines has limited scope, would need to be central in area concern about cumulative impact with Langford wind farm.	Medium scale wind farm would be highly conspicuous and dominate subtle skylines. Concern re cumulative impact with Langford wind farm.	Large scale wind farm would dominate skyline. Concern re cumulative impact with Langford wind farm	LCA emphasises need to keep undeveloped character of skylines – this includes avoiding development at foot of slope.
Development Sandy and Biggleswade subject to growth, linear villages – many on banks of Ivel.	Potential for a single turbine to be linked with growth or disturbed areas such as mineral workings or the A1 corridor.	Potential for a cluster to be linked with growth or disturbed areas such as mineral workings or the A1 corridor.	Medium scale wind farm would be overwhelm setting and scale of settlement unless sited in context of existing major commercial development.	Large scale wind farm would be dominate setting and scale of settlement .	Density of settlements will limit scope. Association with business development offers some limited potential.

Factor	Single Turbine	Small 1-3	Medium 3 -6	Large 7 -11	Comment
Landmarks River bridges. Views to Sandy transmitter, water towers. Water mills. Langford wind farm (to be constructed 2013)	Need to avoid conflict with the small scale and limited landmarks within this area.	Need to avoid conflict with the small scale and limited landmarks within this area.	Need to avoid conflict with the small scale and limited landmarks within this area.	Need to avoid conflict with the small scale and limited landmarks within this area.	Important to avoid visual conflict with Transmitter or extend impact of pylons.
Tranquillity Disturbance high close to roads but many rights of way cross pockets of peaceful and relatively remote countryside.	A single turbine would increase visual disturbance and would need to be associated with development.	Need to avoid conflict with the limited landmarks within this area.	Medium scale farm would bring significant visual intrusion	Large scale farm would bring significant visual intrusion	Urbanisation a concern, causing decline in river valley landscapes. A subtle landscape which must not be overwhelmed by modern development.
Rarity Unusual confluence of rivers. River Ivel and Ivel Navigation distinctive – perceived as a hidden landscape –mainly accessible on foot.	Limited potential for a turbine to integrate into landscape without overwhelming scale.	Limited potential for turbines to integrate into landscape without overwhelming scale and disrupting sense of place.	Medium scale farm would overwhelm landscape and cause unacceptable change to setting and sense of place.	Large scale farm would dominate landscape and cause unacceptable change to setting and sense of place.	Confluence of River Ouse and Ivel locally important; countryside visits promoted by Hidden Britain as Waters meet area. Many tranquil areas – increasing colonisation by otters.

Eastern Claylands					
Factor	**Single Turbine**	**Small 1-3**	**Medium 3 -6**	**Large 7 -11**	**Comment**
Scale –large scale field pattern typical. Some smaller fields associated with villages. Wide open skies.	Scope -some potential if sited away from villages and avoid conflict with landscape features e.g. woodland	Moderate-some potential if sited away from villages and avoid conflict with landscape features.	Moderate potential – would need to be sited on most open and extensive farmland.	Low potential - would need to be sited on most open and extensive farmland.	Arable farmland offers greatest potential but open character allows views over significant distances.
Landform Extensive clay plateau with local variation e.g. ridges at Sutton and Cockayne Hatley.	Would need to be sited to avoid conflict with slopes of Greensand Ridge.	Would need to be sited to avoid conflict with slopes of Greensand Ridge.	A medium sized farm has potential to conflict with visual amenity in vicinity of Greensand Ridge. Open plateau farmland would allow group of turbines to form a simple contrast to the level landform.	Concern re visual impact of a large farm if sited in foreground to Greensand Ridge. Open plateau farmland would allow group of turbines to form a simple contrast to the level landform.	Careful modelling would be required to ensure any development was still in scale with the field pattern.
Land cover Arable farmland, some pasture , blocks of ancient woodland ,new woodland	Moderate potential for turbine to be linked to farm buildings or where it would form a structural element in landscape; less scope where more complex field patterns and land use.	Moderate potential – need to avoid visual conflict with woods and hedgerows. Aim for turbines to form a structural group in more open settings.	Moderate potential –lack of intervening vegetation limits opportunities for foreground screening. Aim for turbines to form a structural group in more open settings.	Concern re visual impact of a large farm in vicinity of ancient woodland as these blocks are important landscape features.	Large field pattern provides scale for wind energy . Landscape strategy of enhancement would aid integration.
Enclosure Low or gappy hedges prevalent.	Could associate a single turbine with nodal points in landscape – e.g. beside straight roads or to create a feature responding to field patterns.	Some potential to site a cluster of turbines to create a feature responding to field patterns.	Some potential to site a medium scale wind farm to create a feature responding to field patterns.	Despite open scale of landscape there is only limited potential to site a larger scale group without it dominating setting.	Landscape strategy of enhancement would aid integration. Areas where there are few “indicators of scale “ offer greatest scope in terms of reducing visual impact.
Skyline Enclosed to south and west by wooded skyline of Greensand Ridge ,	Careful siting required to avoid conflict with undeveloped skylines and cumulative impact with other vertical features.	Careful siting required to avoid conflict with undeveloped skylines and cumulative impact with other vertical features.	Careful siting required to avoid conflict with undeveloped skylines and cumulative impact with other vertical features.	Careful siting required to avoid conflict with undeveloped skylines and cumulative impact with other vertical features.	Respect required for subtle skylines – woodland and village development occur on skyline in places.
Development Villages are well spaced, even isolated .Scattered farms but mainly unpopulated countryside.	Potential for single turbine to link with farm or isolated business use.	Avoid cluster close to development; this area provides opportunities at a distance from properties.	Avoid location close to development; this area provides opportunities at a distance from properties.	Careful siting required as large scale wind farm would dominate village scale.	Potential for community led scheme.

Factor	Single Turbine	Small 1-3	Medium 3 -6	Large 7 -11	Comment
Landmarks Sandy transmitter. Single turbine at Gamlingay. Small scale – churches , Sutton ford ,	Need to avoid conflict with existing vertical structures and historic features.	Need to avoid conflict with existing vertical structures and historic features.	Need to avoid conflict with existing vertical structures and historic features.	Need to avoid conflict with existing vertical structures and historic features.	Larger scale development would need to avoid visual dominance of the few landmarks in this open landscape.
Tranquillity Disturbance high close to roads, otherwise extensive areas of peaceful countryside.	A single turbine would increase visual disturbance and would need to be associated with development.	A cluster would significantly increase visual disturbance and would need to be associated with	Medium scale farm would bring moderate visual intrusion if sited at an acceptable distance from communities.	Large scale farm would bring significant visual intrusion and would need to be remote from communities.	Area has greatest extent of tranquil countryside in CBC. Although area has potential for wind energy, care must be taken to avoid unacceptable cumulative impact.
Rarity Character area extends extensively through Cambridgeshire .Heathland qualities around Potton distinctive.	Single turbine would not detract from key characteristics if well sited.	Cluster of turbines would not detract from key characteristics if well sited.	Medium scale farm would not detract from key characteristics if well sited.	A large scale farm likely to create unacceptable impact on character and tranquillity.	High level of tranquillity is a strong and unusual characteristic.

Greensand Ridge and Valley					
Factor	**Single Turbine**	**Small 1-3**	**Medium 3 -6**	**Large 7 -11**	**Comment**
Scale – Medium scale field pattern, some larger fields on eastern dip slope. Flitt Valley has small scale fields –pony paddocks and pasture.	Low potential – turbine would conflict with rural character: very limited scope for any vertical development without loss of quality to skyline.	Very limited potential – turbines would conflict with rural character: very limited scope for any vertical development without loss of quality to skyline.	Not suitable – development would conflict with complexity of arable, pastoral and woodland which creates intimate character albeit on an extensive escarpment or dip slope.	Not suitable – Field pattern not considered extensive enough for large scale farm. Development would conflict with complexity of arable, pastoral and woodland which creates intimate character albeit on an extensive escarpment or dip slope.	Lower height turbines more appropriate – this is a landscape characterised by distinctive vernacular buildings and small villages.
Landform Dramatic steep north facing escarpment. West facing dip slope with gentler slopes. Combines with Flitt Valley Outlier to east separated by River Ivel .	Would need to be sited to avoid conflict with the wooded and undeveloped skyline.	Very low potential Would need to be sited to avoid conflict with the wooded and undeveloped skyline. Only scope likely to be on dip slope and where associated with other major development.	Unacceptable – Greensand Ridge is a unique landform. Wind farm at this scale is an industrial feature which would dominate and detract from the dramatic landform.	Unacceptable – Greensand Ridge is a unique landform. Wind farm at this scale is an industrial feature which would dominate and detract from the dramatic landform.	Greensand Ridge subject to a "Landscape Partnership "Heritage Lottery Bid – celebrating the unique landform and supporting its role in recreation, tourism and employment.
Land cover Arable farmland, pasture, parkland blocks of ancient woodland extensive coniferous plantation.	Complexity of land cover limits potential even for a single turbine.	Complexity of land cover limits potential for a small cluster.	Highly sensitive landscape – wind farm would dominate the distinctive pattern of land use.	Highly sensitive landscape – wind farm would dominate the distinctive pattern of land use.	Tourism based on enjoyment of countryside, cultural heritage or natural history e.g. Woburn Abbey , RSPB Rushmere Country Park. New Center Parcs development in heart of Greensand Woodland.
Enclosure Strongly enclosed landscape, particularly on northern escarpment and on land farmed by major Estates.	Hedgerows and woodlands create a complex landscape, which could aid integration but also introduces potential conflict with valued rural features and biodiversity.	Hedgerows and woodlands create a complex landscape, which could aid integration but also introduces potential conflict with valued rural features and biodiversity.	Hedgerows and woodlands create a complex landscape, which could aid integration but also introduces potential conflict with valued rural features and biodiversity.	Hedgerows and woodlands create a complex landscape, which could aid integration but also introduces potential conflict with valued rural features and biodiversity.	Strong enclosure can contain views but can result in unacceptable partial views of turbines.
Skyline Mainly wooded but with characteristic mixed farming creating attractive mosaic appearance in views from Marston Vale and Ivel Valley Churches form an occasional landmark.	Highly sensitive skyline on north facing escarpment particularly vulnerable to change. Few vertical features interrupt horizon.	Highly sensitive skyline on north facing escarpment particularly vulnerable to change. Few vertical features interrupt horizon.	Highly sensitive skyline on north facing escarpment particularly vulnerable to change. Few vertical features interrupt horizon.	Highly sensitive skyline on north facing escarpment particularly vulnerable to change. Few vertical features interrupt horizon.	The undeveloped nature of all the skylines is a key characteristic of this landform which dominates views across Central Bedfordshire.

Factor	Single Turbine	Small 1-3	Medium 3 -6	Large 7 -11	Comment
Development Nuclear villages on Ridge, historic Ampthill central to Ridge and Flitt Valley. Sandy, Ampthill and Flitwick subject to growth.	Historic villages often with strong vernacular character – highly sensitive to change. Some potential for single turbine linked to growth around Leighton Buzzard.	Historic villages often with strong vernacular character – highly sensitive to change. Limited potential for cluster of smaller turbines linked to growth around Leighton Buzzard.	Historic villages often with strong vernacular character – highly sensitive to change. Medium scale wind farm considered to conflict with settlement pattern across the Greensand.	Historic villages often with strong vernacular character – highly sensitive to change. Large scale wind farm considered to conflict with settlement pattern across the Greensand.	The sensitivity of the Ridge suggests that only turbines of lower height are appropriate, to help limit visual intrusion. This would also help create a clear hierarchy with the permitted turbine at Double Arches pit, Heath and Reach.
Landmarks Cultural heritage – abbeys, mansions, including Houghton House ruins. Churches. Sandy transmitter.	Essential that any turbine avoids conflict with the many cultural and ecologically important features on the Greensand.	Essential that any turbine avoids conflict with the many cultural and ecologically important features on the Greensand.	Essential that any turbine avoids conflict with the many cultural and ecologically important features on the Greensand.	Essential that any turbine avoids conflict with the many cultural and ecologically important features on the Greensand.	The visual unity of the Greensand Ridge is itself an extensive landmark. Great care must be taken to safeguard the undeveloped horizons which are such a valued characteristic.
Tranquillity Majority of Ridge valued for peaceful recreational opportunities. Flitt Valley and urban fringe landscapes more disturbed.	The structure and movement of any turbine will introduce conflict with this sensitive landscape.	The structure and movement of any turbine will introduce conflict with this sensitive landscape.	Would bring unacceptable intrusion .The structure and movement of a wind farm would conflict with this sensitive landscape.	Would bring unacceptable intrusion .The structure and movement of a wind farm would conflict with this sensitive landscape.	"Timeless "qualities of Estate landscapes a valued attribute. Tranquillity of Ridge can contrast with adjacent areas such as the Marston Vale and especially with city of Milton Keynes to west.
Rarity Very unusual landscape type, only occurring here and on Isle of Wight.	Limited extent of landscape character type a factor increasing its sensitivity and the requirement to conserve its integrity.	Limited extent of landscape character type a factor increasing it's sensitivity and the requirement to conserve it's integrity	Limited extent of landscape character type a factor increasing it's sensitivity and the requirement to it's conserve integrity	Limited extent of landscape character type a factor increasing its sensitivity and the requirement to conserve its integrity..	Ridge has strong visual relationship with adjoining character types and towns associated with it.

Leighton Buzzard Rural Fringe					
Factor	**Single Turbine**	**Small 1-3**	**Medium 3 -6**	**Large 7 -11**	**Comment**
Scale – Medium scale field pattern with localised small scale landscape e.g. in Ousel Valley. Mineral workings at Leighton Buzzard increase scale.	Some potential e.g. in arable landscape or associated with growth.	Low potential – would need to form positive feature associated with growth or trunk roads and of low height.	Low potential – would need to form positive feature associated with growth or disturbed land . Important to avoid visual conflict with Greensand Ridge.	Not suitable - field pattern not extensive enough to accommodate a large farm; conflict with village scale .	Landscape varies across this area – open land in A5 corridor and associated with mineral workings south of A505.
Landform Combination of undulating clay landscape north and west of Hockliffe and Greensand landscape north of Leighton Buzzard.	Most potential on landform modified by mineral working or growth . Avoid conflict with Greensand Ridge.	Would need to be sited to avoid conflict with the Greensand and small scale of the Ousel and Clipstone valleys.	Low potential. Conflict with the Greensand Ridge and small scale of the Ousel and Clipstone valleys.	Concern impact of wind turbines in vicinity of Greensand Ridge and small scale of the river valley landscape.	Landscape modified in places by mineral working – restoration enhancing habitat e.g. to heathland and increasing woodland cover. Important to avoid visual disruption to the Greensand Ridge .
Land cover Arable farmland, extensive coniferous plantations, ancient woodland, heathland country parks.	Scope if turbine does not conflict with traditional riverside landscapes, parkland or woodland blocks.	Low potential – would need to ensure farm does not conflict with traditional riverside landscapes, parkland or woodland blocks.	Low potential would need to ensure farm does not conflict with traditional riverside landscapes, parkland or woodland blocks.	Out of character and scale. Wind farm would dominate scale of features present.	Mineral restoration has created varied landscapes including lakes in Vale and created important recreational assets.
Enclosure Mostly well contained – well managed hedges, plantations ;more open to east of area.	Some scope in more open areas, especially if linked to growth or road network.	Very limited potential to integrate a cluster without conflict with enclosure pattern.	Not suitable – enclosure pattern limits scale of open land . Medium scale wind farm would contrast and dominate the surviving historic landscape.	Not suitable – enclosure pattern limits scale of open land. Large scale wind farm would contrast and dominate the historic landscape.	Views from Greensand Ridge critical – important to avoid open views of turbines. Some longer distance views from Billington and Totternhoe and the Chilterns
Skyline Wooded skyline of Greensand Ridge at Heath and Reach. Locally important skyline at Hockcliff .	Single turbine – concern about cumulative impact with large turbine at Double Arches.	Cluster of turbines has limited scope, in terms of conflict with Greensand skylines. Concern re cumulative impact with large turbine at Double Arches.	Medium wind farm would be highly conspicuous and dominate subtle skylines and skyline of Greensand Ridge. Concern re cumulative impact with large turbine at Double Arches.	Large wind farm would dominate subtle skylines and skyline of Greensand Ridge. Concern re cumulative impact with large turbine at Double Arches.	LCA emphasises need to keep undeveloped character of skylines – this includes avoiding development at foot of slope.
Development Nuclear town of Leighton Buzzard which is subject to growth east. Clayland villages tend to be linear.	Important to conserve integrity of historic villages	Important to conserve integrity of historic villages	Low potential as a medium scale wind farm would dominate the setting of historic villages.	Low potential as a large scale wind farm would dominate the setting of historic villages.	A settled landscape limiting scope. Association with growth or transport corridors may be possible but turbine height should be restricted to avoid conflict with sensitive settings.

Factor	Single Turbine	Small 1-3	Medium 3 -6	Large 7 -11	Comment
Landmarks Very large turbine permitted at Heath and Reach. All Saints Church, Leighton Buzzard, village churches and vernacular. Buildings. A5 Watling Street a linear landmark with rolling contours.	Any turbine must be sited to avoid conflict with valued features and be secondary in scale to turbine at Double Arches.	Any turbine must be sited to avoid conflict with valued features and be secondary in scale to turbine at Double Arches.	Any turbine must be sited to avoid conflict with valued features and be secondary in scale to turbine at Double Arches.	Any turbine must be sited to avoid conflict with valued features and be secondary in scale to turbine at Double Arches.	Local landmarks are distinctive but generally small-scale – need to ensure new development does not overpower heritage.
Tranquillity Disturbance high close to roads but many rights of way cross pockets of peaceful and relatively remote countryside.	An additional single turbine would increase visual disturbance within the largely undeveloped panoramas.	A cluster of turbines would increase visual disturbance within the largely undeveloped panoramas.	Medium scale farm would bring significant visual intrusion in the vicinity of the Greensand Ridge or the historic villages.	Large scale farm would bring significant visual intrusion in the vicinity of the Greensand Ridge or the historic villages.	Important to conserve the tranquillity and remoteness of this countryside which is well used for recreation and serves a large population.
Rarity The Greensand and Ousel Valley is a small and complex juxtaposition of landscape types .	Important to safeguard rural quality in an area subject to growth	Important to safeguard rural quality in an area subject to growth	Important to safeguard rural quality in an area subject to growth	Important to safeguard rural quality in an area subject to growth	Many highly attractive landscapes combine with mineral workings and farmland to form a varied urban fringe.

Clay Hills and Vales					
Factor	**Single Turbine**	**Small 1-3**	**Medium 3 -6**	**Large 7 -11**	**Comment**
Scale – Medium to large scale field pattern .Long distance views over undulating countryside and low hills.	Moderate potential - would need to be sited in open arable land or close to existing development .	Low potential – the inter-relationship between the hills and vales is complex. Tall structures would be out of character.	Low potential – the inter-relationship between the hills and vales is complex. Tall structures would introduce industrial character and be overwhelming.	Not suitable - Field pattern not considered extensive enough for large scale farm. Development would introduce industrial character and dominate the farmed landscape.	Lower height turbines more acceptable – this is a landscape characterised by dispersed farms and villages.
Landform Undulating clay vale with a series of clay hills, enclosed to north by the Greensand Ridge and to south by the Chiltern Hills.	Avoid location on elevated land which would lead to greater prominence. Would need to be sited to avoid conflict with the Greensand and chalk hills.	Avoid location on elevated land which would lead to greater prominence. Would need to be sited to avoid conflict with the Greensand and chalk hills.	A larger group would have an unacceptable impact on the flow of this landscape, interrupting the connection between the settled hills and the sweeping vales.	Not suitable – the landform varies in elevation –there is insufficient open land between characteristic changes in contours to enable development of a large farm without significant loss of character.	This is a complex clay landscape. Contrasts in level help create the sense of place. The hills provide wide ranging views and are focus for historic villages.
Land cover Arable farmland, pasture and pony paddocks, spinney's but little woodland.	Moderate potential if low height in open vale but limited scope where more complex filed patterns and land use.	Low potential unless on very open land or associated with development,	Low potential –turbines at this scale would be incongruous in this mixed farmland and settled landscape.	Not suitable -out of character and scale, turbines would industrialise a rural landscape.	Area has a strong rural character but is vulnerable to increasing urban influence.
Enclosure Varied – many thick hedgerows or narrow tree belts. Vales can be open allowing extensive views to Greensand and chalk landscapes.	Single turbine would be highly visible – area more suited to low height. Would need careful siting where it can be seen as a simple structure contrasting with level rather than sloping or elevated land.	Cluster would be highly visible – avoid conflict with wooded features.	Medium scale farm would create a dominant feature and overwhelm setting.	Large scale farm would create a dominant feature and overwhelm setting.	Field pattern a factor in much of this area being judged as having moderate to high visual sensitivity.
Skyline Varied skylines as views to Greensand Ridge and Chiltern Hills; horizons formed by clay hills locally important.	Moderate potential – smaller scale single turbine may be acceptable if sited to avoid elevated land.	Low potential – smaller scale single turbine may be acceptable if sited to avoid elevated land.	Very limited potential – a medium scale group would have a major impact in this visually sensitive area.	Unsuitable -a large scale group would have an unacceptable impact in this visually sensitive area.	Pylons and communication masts – skyline vulnerable to cluttering. The unsettled slopes of the hills are important in retaining rural character and form a backcloth to the Vales.
Development Dispersed hilltop villages and scattered farms- some linear , others nuclear but with "Ends "	Some scope to site a single turbine distant to communities, possibly associated with larger fields or development.	Limited scope to site a cluster distant to communities, possibly associated with larger fields or development.	Very limited potential – a medium scale group would have a major impact on the settlement pattern and historic character of development.	Not suitable – a large scale group would have an unacceptable impact on the settlement pattern and historic character of development.	Distinctive sense of place largely created by the individual character of the historic villages. Contrasts in scale to growth area to south and expansion of towns in the A1 corridor.

Factor	Single Turbine	Small 1-3	Medium 3 -6	Large 7 -11	Comment
Tranquillity Disturbance high close to roads but many rights of way cross pockets of peaceful and relatively remote countryside.	A single turbine would increase visual disturbance and would be best associated with development.	A cluster would significantly increase visual disturbance and would need to be associated with major development.	Medium scale farm would bring significant visual intrusion in area of strong rural character and be widely seen in views from AONB.	Large scale farm would bring unacceptable visual intrusion in area of strong rural character and be widely seen in views from AONB.	Visual disturbance has increased in area. Important to safeguard setting of AONB.
Rarity Unusual sequence of hills and vales; complex clay landscape when compared to elsewhere in eastern region.	A single turbine could be acceptable if carefully sited not to detract from key characteristics.	Only very limited potential for a cluster to be acceptable. Would need to be carefully sited not to detract from key characteristics.	Only very limited potential for medium wind farm to be acceptable. Would need to be carefully sited not to detract from key characteristics.	Not suitable – development at this scale would dominate and detract from key characteristics.	Area is important as a rural buffer between urbanisation to the south ,the expanding settlements to the east and the mixed development around Flitwick.

North Chilterns					
Factor	**Single Turbine**	**Small 1-3**	**Medium 3 -6**	**Large 7 -11**	**Comment**
Scale – Medium- large scale arable field pattern .Some pasture and pony paddocks of smaller scale.	Low potential as all turbines will conflict with views from AONB. Scope only in arable landscape or associated with growth.	Low potential as all turbines will conflict with views from AONB. Scope only in arable landscape or associated with growth.	Not possible without major conflict with AONB.	Not suitable - field pattern not extensive enough to accommodate a large farm	The more level ground associated with new growth may offer a limited potential but only for smaller turbines to minimise visual intrusion to AONB.
Landform Steeply sloped linear escarpments, rounded hills at Barton le Clay. Undulating or rolling chalk dip slope.	Very limited scope – would need level ground where a turbine would form a simple contrast with setting, at a distance from escarpments.	Would need to be sited to avoid conflict with the AONB and more complex undulating landscape outside of the designated area.	Would conflict with the AONB landscape and more complex undulating landscape outside of the designated area.	Would conflict with the AONB landscape and more complex undulating landscape outside of the designated area.	Dip slopes are an integral part of the AONB landscape, which is of the highest sensitivity as nation's finest countryside. Important to respect an effective buffer zone to the AONB – re CBC and CCB policies.
Land cover Arable farmland, some pasture, downland –grass woodland and scrub.	Low potential -careful siting on arable land or associated with growth. Would need to ensure turbine does not conflict with traditional land uses e.g. downland, pasture or woodland.	Low potential –some potential in growth area. Would need to ensure cluster does not conflict with traditional land uses e.g. downland, pasture or woodland.	Low potential would need to ensure wind farm does not conflict with traditional chalk land features.	Out of character and scale. Wind farm would dominate scale of farming pattern.	A mixed land use, typical of the Chiltern Hills but with less woodland than elsewhere in the AONB.
Enclosure Varies – large open fields, gappy hedges north of Luton and Barton. Stronger hedgerow pattern around Harlington.	Very limited scope to integrate a turbine without unacceptable impact – lack of enclosure allows open views throughout area.	Very limited scope to integrate a cluster without unacceptable impact – lack of enclosure allows open views throughout area	Not suitable – development at this scale would cause unacceptable visual impact – lack of enclosure allows open views throughout area.	Not suitable – development at this scale would cause unacceptable visual impact – lack of enclosure allows open views throughout area.	Elevated landform allows panoramic views over vales – development would be highly intrusive.
Skyline .Open undeveloped skylines, downland, scrub and woodland mosaic. Communication towers disrupt views in places.	Single turbine would create an intrusive focal point in view from Chilterns.	Cluster of turbines has limited scope; would form unacceptable impact on skyline.	Medium wind farm would Dominate skyline and would be highly visible in reciprocal views.	Large wind farm would dominate skyline and would be highly visible in reciprocal views.	LCA emphasises need to keep undeveloped character of skylines – this includes avoiding development at foot of slope.
Development Historic villages with urban fringe influence, larger villages such as Barton –le Clay subject to further growth, major expansion of Luton south of AONB includes	Important to conserve integrity of historic villages.	Important to conserve integrity of historic villages	Low potential as a medium scale wind farm would dominate the setting of historic villages.	Low potential as a large scale wind farm would dominate the setting of historic villages.	A settled landscape limiting scope. Association with growth or transport corridors may be possible but turbine height should be restricted to avoid conflict with sensitive setting of AONB.

Factor	Single Turbine	Small 1-3	Medium 3 -6	Large 7 -11	Comment
M1-A6 link.					
Landmarks Sharpenhoe Clappers –hill top woodland. Barton Hills , Warden and Galley Hills,. Hilltop churches. Totternhoe Knolls/Castle and Edlesborough Hill, relic orchards.	Essential to avoid visual conflict with cultural and historic features.	Essential to avoid visual conflict with cultural and historic features	Essential to avoid visual conflict with cultural and historic features	Essential to avoid visual conflict with cultural and historic features	Local landmarks are linked to landform. Cultural Heritage such as Icknield Way; landmark sites regionally significant for recreation and tourism. Potential to create new landmark e.g. associated with growth or the M1.
Tranquillity Disturbance high close to roads and urban edge but many rights of way cross extensive areas of tranquil and relatively remote countryside.	A single turbine would impact on tranquillity, forming a focal point out of character with a rural setting. May be acceptable if associated with disturbed land or growth area.	A cluster would create a major change, detracting from tranquillity, May be acceptable if associated with disturbed land or growth area.	Not suitable – development at this scale would cause unacceptable loss of tranquillity through the introduction of an industrial feature in the AONB or its setting.	Not suitable – development at this scale would cause unacceptable loss of tranquillity through the introduction of an industrial feature in the AONB or its setting.	Important to conserve the tranquillity and remoteness of this countryside which is well used for recreation and serves a large population. Land to north east of Luton particularly valued for tranquillity.
Rarity Eastern edge of Chiltern AONB. Drainage ditches, chalk streams distinctive.	Important to safeguard rural quality in an area subject to growth	Important to safeguard rural quality in an area subject to growth	Important to safeguard rural quality in an area subject to growth	Important to safeguard rural quality in an area subject to growth	Juxtaposition of Luton and AONB increase significance of rural quality. Sweeping open undeveloped views important e.g. from Sundon Hills and Warden Hill to north. Tranquillity valued.

Chilterns South					
Factor	**Single Turbine**	**Small 1-3**	**Medium 3 -6**	**Large 7 -11**	**Comment**
Scale – Medium –large scale field pattern with sweeping valleys.	Low potential – would need to form positive feature.	Low potential – would need to form positive feature associated with growth or previously disturbed land.	Limited potential –out of scale with field pattern and density of scattered settlement.	Not suitable - Field pattern not considered extensive enough for large scale farm.	M1 has impact on scale south of Luton. Generally area has strong sense of place and intimate character.
Landform Elevated plateau, extensive sinuous downland at Whipsnade. Narrow valleys between plateaux.	Careful siting required to avoid visual conflict with scarp slopes and to avoid elevated land which would accentuate feature.	Limited potential as important to retain integrity of landform without development detracting from changes in contour.	Development not suitable at this scale –many vertical structures would create an unacceptable contrast with AONB landform.	Development not suitable at this scale –many vertical structures would create an unacceptable contrast with AONB landform.	.Important to conserve the integrity of the chalk escarpment and dip slopes- avoid development which detracts from the dramatic change in contours.
Land cover Mixed – more woodland than north area, arable, pasture, pony paddocks, parkland.	Low potential unless associated with disturbed land or a feature beside a trunk road.	Very low potential unless associated with disturbed land or a feature beside a trunk road.	Not suitable – complexity of landscape types creates rich interplay between plateau and valleys – turbines would be out of scale with landscape and conflict with views within and beyond AONB.	Not suitable – complexity of landscape types creates rich interplay between plateau and valleys – turbines would be out of scale with landscape and conflict with views within and beyond AONB	Highly sensitive to urbanisation – need to protect rural quality of woodlands, pasture and lanes.
Enclosure Valleys strongly enclosed by tall hedgerows and woodland. Greatest extent of deciduous woodland.	Low potential as a turbine would be incongruous in the enclosed landscape setting.	Low potential as a cluster would be incongruous in the enclosed landscape setting.	Inappropriate - a wind farm would be incongruous in the enclosed landscape setting and detract from the AONB.	Inappropriate - a wind farm would be incongruous in the enclosed landscape setting and detract from the AONB.	Woodland extensive on Caddington plateau, and around Studham. Strong visual relationship between valleys and plateaux – this is a landscape with a sequence of landscape character areas creating variation characteristic of the Chilterns.
Skyline Largely undeveloped skylines, some areas with communication towers.	Very important to conserve uncluttered skylines. Even a single turbine would bring unacceptable visual intrusion.	Very important to conserve uncluttered skylines. A cluster would become a dominant feature and unacceptably disrupt the skyline or views to it.	Not suitable- a medium scale wind farm would become a dominant feature and unacceptably disrupt the skyline or views to it.	Not suitable- a medium scale wind farm would become a dominant feature and unacceptably disrupt the skyline or views to it.	Open elevated plateaux at crest of escarpments highly sensitive to any development –tall structures would have high visual impact over wide area.
Development Varied –historic villages but subject to suburbanisation. Luton Airport dominates skyline to east. Growth area at Dunstable.	Low potential but scope to create a feature linked to growth or disturbed land to avoid conflict with small scale settlement.	Limited potential but scope to create a feature linked to growth or disturbed land to avoid conflict with small scale settlement.	Not suitable – a development at this scale would overwhelm villages or conflict with the AONB or parkland setting of the towns.	Not suitable – a development at this scale would overwhelm villages or conflict with the AONB or parkland setting of the towns.	Important to respect the AONB and urban – rural fringe which is important for recreation. Some scope to create a landmark linked to M1 or other transport corridor.

Factor	Single Turbine	Small 1-3	Medium 3 -6	Large 7 -11	Comment
Landmarks Dunstable Downs and White Lion, Whipsnade Zoo, Tree Cathedral. Luton Hoo parkland.	Need to avoid conflict with the heritage and landmarks within this area.	Need to avoid conflict with the heritage and landmarks within this area.	Need to avoid conflict with the heritage and landmarks within this area.	Need to avoid conflict with the heritage and landmarks within this area.	Many long distance views to landmarks ,also panoramic views from elevated land. Need to ensure development is appropriate to rural character and not urbanise AONB and its setting.
Tranquillity Disturbance high close to roads but many rights of way cross extensive areas of peaceful and relatively remote countryside.	A single turbine would increase visual disturbance and would need to be associated with development .	A cluster would bring significant visual intrusion .	Medium scale farm would bring significant visual intrusion	Large scale farm would bring significant visual intrusion	Luton Airport – visually intrusive as well as noise from aircraft. Airport set to expand.
Rarity Part of AONB. Strong relationship as setting to Dunstable.	A single turbine would detract from key characteristics unless located as a new landmark in an urbanised setting.	Not suitable – turbines would urbanise the AONB and its setting.	Not suitable – turbines would urbanise the AONB and its setting.	Not suitable – turbines would urbanise the AONB and its setting.	Area experiencing decline in quality as urbanisation extends influence into rural setting.

Landscape sensitivity: analysis of evaluation areas

Landscape sensitivity: Analysis of the Landscape Character of the Evaluation Areas

Abbreviations key

LCS - Landscape Character Sensitivity VS - Visual Sensitivity

1. Marston Vale

Location and Landscape Character Areas	CBC boundary south from Wixams to M1 1A Cranfield to Stagsden Clay Farmland 5C Salford – Aspley Clay Vale 5D North Marston Vale 5E East Marston Vale
Key Characteristics	Medium scale often rectangular pattern in Vale Marston Vale Community Forest (FMV) with newly established woodland strengthening character. Regeneration and restoration: landscape quality is improving M1 corridor- Bedford : increasing scale re duelled A421, distribution units, increased impact of lighting
Key Sensitivities	Small scale pastoral landscape Interface with Greensand Ridge and clay ridge at Cranfield – long ranging reciprocal views Local skylines where subtle changes occur in landform
Distinctive Features/Landmarks	Cardington Airship Sheds- dominate to east. Brick pit chimneys iconic link to former industry; regionally significant Church towers – often modest in scale Cranfield airport Ancient woodland
Development Considerations	Growth Area – increasing scale of residential and industrial development resulting in loss of rural quality. City of Milton Keynes expanding to west of Vale Increasing recreational/tourism use – Millennium Country Park; Bedford - Milton Keynes Canal. Risk of urbanisation of rural roads Covanta- major industrial building in rural setting. NIRAH- potential iconic tourist destination.
Renewable Energy	Views to Wind farm at Petsoe End Generation of landfill gas at Brogborough Landfill Site Single turbine permitted at Millennium Country Park. Wind farm of 8 turbines proposed for Brogborough landfill site. Potential for short rotation coppice Energy from waste at Covanta.

SENSITIVITY ASSESSMENT – Summary Judgement of attributes:

Strength of Character			
Landform		Moderate	
Landcover		Moderate	
Enclosure	Weak		
Skyline			High
Rarity		Moderate	
Tranquillity	Low		
Visual Sensitivity			
Inter-visibility adjacent LCAs			High
Historic/Cultural landscape		Moderate	
Visual unity/integrity/sense of place		Moderate	

Assessment from Landscape Character Assessment

	LCS	VS	Condition	Strategy
1A Cranfield Clay Farmland	Mod	Mod- High	Declined	Enhance/ Renew
5C Salford – Aspley Clay Vale	Mod	Mod	Declined	Enhance/ Renew
5D North Marston Vale	Mod	Mod	Declined Improving	Enhance/ Renew
5E East Marston Vale	Mod/ Weak	Mod	Declined Improving	Renew/ Create

Value - As Community Forest, a recovering landscape.

Recreation – Sustrans, promoted trails eg Bunyan Way, Clayway ,Timberland Trail.

Brick Pit Lakes – ornithology and water sports

Judgement - Moderate but improving landscape.

FMV bringing new landscape structure and woodland mosaic.

A421 corridor –increasingly visually disturbed with industrial development, including turbines which are out of scale with village settlements and residential character. Very limited potential for additional wind energy as resulting cumulative impact would dominate landscape and communities.

2. Clay Valleys

Location and Landscape Character Areas	Ouse and Ivel Valleys, to include Sandy and Biggleswade , Arlesey and A1 corridor 4A Great Ouse Clay Valley 4B Lower Ivel Clay Valley 4C Upper Ivel Clay Valley 10D Fairfield Chalk Farmland
Key Characteristics	Shallow valleys with mineral lakes formed from gravel extraction. Busy transport corridors; focus for industry. Towns subject to growth eg Sandy and Biggleswade. Market gardening once extensive. Urban fringe influence – horse paddocks. Linear villages with historic cores
Key Sensitivities	Traditional pastures with riverside trees Open water from mineral workings. Bridges and minor roads; small scale features. Slopes forming foreground to the Greensand Ridge; views to Greensand Ridge Areas of small-scale farming with strong hedgerow network eg at Astwick. Parkland – Tempsford, Southill also remnant areas.
Distinctive Features/Landmarks	River corridors – riverside trees and meadows. Confluence of Ouse and Ivel rivers Floodplain – Biggleswade Common pastures. Bridges and Mills Blue and Green lagoons Shelterbelts and pollards. Poppy Hill, Henlow Fairfield Hospital,now part of residential development
Development Considerations	Risk of extension of urban-fringe influence Conserve rural quality of river valleys Important to conserve historic villages and small scale field patterns eg Astwick Conserve rural setting of Biggleswade and Sandy/ enhance with woodland Conserve character of secondary roads Need to create sympathetic interface between development and farmland. Respect rural fringe re Letchworth Garden City.
Renewable Energy	Langford wind farm won on Appeal, 2012, 10 turbines, 20 MW generating capacity. Landfill gas – Arlesey Landfill site, also short rotation coppice .

Landscape Character: Sensitivity of Attributes

Strength of Character			
Landform			High
Landcover		Moderate	
Enclosure		Moderate	
Skyline			High
Rarity			High
Tranquillity		Moderate	
Visual Sensitivity			
Inter-visibility adjacent LCAs			High
Historic/Cultural landscape		Moderate	
Visual unity/integrity/sense of place		Moderate	High

Assessment from Landscape Character Assessment

	LCS	VS	Condition	Strategy
4A Great Ouse Clay Valley	Mod	Mod	Declining	Enhance
4B Lower Ivel Clay Valley	Mod	Mod	Declining	Renew Create
4C Upper Ivel Clay Valley	Mod	Mod	Declining	Enhance Create
10D Fairfield Chalk Farmland	Mod- Low	Mod-Low	Declined	Renew Create

Value - Accessible urban fringe countryside, peaceful beauty spots, ecogically rich river corridors. Ivel Valley retains traditional treed and pastoral landscape.

Judgement – important to conserve rural quality as urbanisation and disturbance a continued threat to valuable local countryside. Limited scope for wind energy as this is a small scale and complex settled landscape.

3. East Claylands

Location and Landscape Character Areas	East of Ivel Valley / A1 to CBC boundary 1D Cockayne Hatley Clay Farmland 5F Biggin Wood Clay Vale 5G Dunton Clay Vale 6C East Greensand Ridge
Key Characteristics	Relationship between clay plateaux and Greensand Ridge Dominant wooded and undeveloped ridgeline when viewed from west Secondary ridgelines important Large scale arable farmland extensive throughout but small scale remnants of market gardening and orchards. Sparsely settled outside towns Historic nucleated villages Pylons and electrical lines associated with railway intrusive. Large blocks of ancient woodland e.g. Potton Wood Historic parkland, Tempsford Airfield WW2 history.
Key Sensitivities	Wooded skyline of Greensand Ridge Heathland landscape ,mineral restoration at Sandy. Wide skies and open panoramas e.g. between villages and over Cambridgeshire borders. Elevated ridge at Eyeworth provides long open views. Tributary valleys create subtle topography. Ancient woodland. Most extensive area of high tranquillity within CBC
Distinctive Features/Landmarks	Sandy Transmitter – important night time landmark RSPB headquarters – role in heathland restoration Small –scale interest e.g. Sutton ford Woodland blocks and shelterbelts. Access – tracks provide open views Churches and water towers Iron age hillforts – Sandy
Development Considerations	Change highly visible in flat open landscape Concern re structures cluttering skylines or interrupting slopes leading up to the plateaux. Conserve the undeveloped wooded and open ridgeline and the contrast between the ridge and vale –especially change of slope. Conserve rural quality of roads. Conserve panoramic views
Renewable Energy	Application for single turbine at RSPB ; Community turbine approved at Gamlingay in Cambs.

Landscape Character :Sensitivity of Attributes

Strength of Character			
Landform		Moderate	High
Landcover	Low	Moderate	
Enclosure	Low		
Skyline		Moderate	
Rarity	Low	Moderate	
Tranquillity			High
Visual Sensitivity			
Inter-visibility adjacent LCAs		Moderate	
Historic/Cultural landscape		Moderate	
Visual unity/integrity/sense of place		Moderate	

Assessment from Landscape Character Assessment

	LCS	VS	Condition	Strategy
1D Cockayne Hatley Clay Farmland	Mod- High	Mod-High	Good	Conserve/ Enhance
5F Biggin Wood Clay Vale	Low	Mod	Declining	Enhance
5GDunton Clay Vale	Low	Low	Declining	Enhance/ Renew
6C East Greensand Ridge	High	Mod- High	Declining	Conserve/ Enhance

Value - Rural countryside with extensive arable farmland, remote and tranquil.

Judgement - Area requiring significant landscape renewal. There is landscape capacity for wind energy at a moderate scale. Developer contribution could support renewal of landscape pattern to strengthen character.

4. Greensand Ridge and Valley

Location and Landscape Character Areas	Between A5 / Woburn and Ivel Valley 6A Woburn Greensand Ridge 6B Mid Greensand Ridge 7A Flit Greensand Valley
Key Characteristics	Large scale elevated landscape ,providing extensive views Strong undeveloped horizons Series of historic parks and gardens Presence of well-managed estates influencing management style and retaining enclosure. Active and restored mineral sites Regionally important for recreation – country parks, long-distance trail, tourist facilities such as Woburn House and Safari Park, Center Parcs, Shuttleworth Collection and Swiss Gardens Flit Valley – distinctive treed landscape but subject to urban-fringe influence.
Key Sensitivities	Prominent landform with distinctive skyline which forms the horizon in views from much of Central Bedfordshire. Parkland and estate landscapes Crests of Flitt Valley slopes Valley mires and wetland character Small field systems eg at Eversholt Access- especially Greensand Ridge Walk Ancient woodlands
Distinctive Features/Landmarks	Sandstone churches – punctuate skyline but of village scale and vernacular material. Historic houses Plantation woodlands and avenues and scots pine shelterbelts Relic heathland and acid grassland Panoramic views
Development Considerations	Conservation of the visual relationship with the clay vales- important to avoid development at the base of the northern escarpment and to retain undeveloped valley crests. Important to avoid development on the skyline –change would be highly visible over great distances. Avoid urbanisation e.g. limit scale of industrial development and avoid urbanisation of rural roads.
Renewable Energy	Single turbine permitted at Heath and Reach to west. Application for single turbine at Battlesden.

Landscape Character: Sensitivity of Attributes

Strength of Character			
Landform			High
Landcover			High
Enclosure			High
Skyline			High
Rarity			High
Tranquillity		Moderate	
Visual Sensitivity			
Inter-visibility adjacent LCAs			High
Historic/Cultural landscape			High
Visual unity/integrity/sense of place			High

Assessment from Landscape Character Assessment

	LCS	VS	Condition	Strategy
6A Woburn Greensand Ridge	High	Mod-High	Declining	Create Enhance
6B Mid Greensand Ridge	High	Mod- High	Declining	Create Enhance
7A Flit Greensand Valley	Mod	Mod-High	Declined	Enhance Renew

Value - Highly valued, rare and distinctive character area; the only example in the mainland UK.

High cultural, biodiversity and recreational value, with a long-distance trail.

Regionally significant for tourism.

Judgement - Landscape considered in decline.

Highly sensitive to inappropriate change, especially to skyline and northern scarp slopes.

Complex pattern of rural landuse – landscape inappropriate for any medium of largescale industry.

Not suitable for commercial wind energy.

5. Leighton Buzzard – Urban Fringe

Location and Landscape Character Areas	South West of the A5, to chalk escarpments. 5A Eaton Bray Clay Vale 6A Woburn Greensand Ridge 7B Ousel Greensand Valley 8A Toddington-Hockliffe Clay Hills 8B Billington Clay Hill
Key Characteristics	Large scale, low lying open arable landscape in the east and south. Greater enclosure and woodland to north. Knoll of Billington Hill – a distinct focal point. Views into urban environments of Leighton Buzzard. Sand quarries and restored sites create varied urban fringe. Strong visual relationship with Greensand Ridge, Clay Hills and Chalk Escarpments of Chilterns. Growth area - east of Leighton Buzzard. Historic Parkland and associated Estate woodlands. Picturesque and historic villages, intimate Ouzel Valley and canal corridor.
Key Sensitivities	Flat open character – strongly rural in places. Enclosure landscape and hedgerow network. Clear views to the prominent backdrop of Toddington-Hockliffe Clay Hills and Chalk Escarpments. River Ousel corridor and wetland habitats; also pastures and course of Clipstone Brook Flooded former mineral workings.
Distinctive Features/Landmarks	Panoramic views from Greensand and Billington Hill over vales. Remnant orchards especially at Eaton Bray. Pastures and trees associated with the Ouzel. Linslade Church, Billington Church and Manor Hockliffe – historic Grange and Church. Ascott area Narrow Gauge railway and history of stoneworks
Development Considerations	Conserve the contrast between Ridge and Vales avoid development which would impact on transition of slopes. Conserve open views to clay hills and chalk escarpments. Ensure scale and form of new development applicable to flat landform. Seek strong landscape setting for areas of growth. Retain village identity and scale; enhance village entrances. Ensure restoration of pits sympathetic to landscape objectives. Monitor development of tall structures –avoid cluttering of subtle skylines and Greensand escarpment. Avoid suburbanisation e.g. of rural roads.
Renewable energy	Single turbine at Heath and Reach; extensive short rotation coppice.

Landscape Character: Sensitivity of Attributes

Strength of Character			
Landform		Moderate	High
Landcover		Moderate	
Enclosure		Moderate	High
Skyline			High
Rarity		Moderate	High
Tranquillity		Moderate	
Visual Sensitivity			
Inter-visibility adjacent LCAs			High
Historic/Cultural landscape		Moderate	
Visual unity/integrity/sense of place			High

Assessment from Landscape Character Assessment

	LCS	VS	Condition	Strategy
5A Eaton Bray Clay Vale	Moderate	Moderate	Declined	Enhance Renew
6A Woburn Greensand Ridge	High	Moderate-High	Declining	Conserve Enhance
7B Ousel Greensand Valley	High	Moderate	Declined	Enhance
8A Toddington-Hockcliffe Clay Hills	Moderate	Mod-High	Declining	Enhance
8B Billington Clay Hill	Moderate	Moderate	Declining	Enhance

Value - Diverse rural urban fringe, many recreational sites e.g. golf and sports pitches. Important in views from Chiltern Hills.

Judgement - Leighton Buzzard imparts a strong urban influence, with abrupt land use change in places.

Some potential for wind energy linked to growth or road corridors but would need to be in scale with the limited areas of expansive field pattern.

6. Clay Hills and Vales

Location and Landscape Character Areas	Toddington and east of A5 to Arlesey 5A Eaton Bray Clay Vale 5B Barton le Clay Clay Vale 8A Toddington-Hockcliffe Clay Hills 8C Harlington-Pulloxhill Clay Hills 8D Upper Gravenhurst- Meppershall Clay Hills
Key Characteristics	Strong landform formed by series of elevated hills Medium sized fields, mixed land use Little woodland Tall structures – pylons and communication masts Settlements on the hills – give clear views over vales
Sensitivity	Strong rural character-vulnerable to urban influence Remaining irregular field pattern and hedged enclosure landscape Rural quality between Greenfield and Pulloxhill Subtle skylines
Distinctive Features/Landmarks	Pulloxhill water tower Harlington Church , stone churches MI and Toddington Service Station Toddington village on skyline
Development Considerations	Conserve the clear views and visual relationship with the clay vales and the Greensand Ridge Risk of urban fringe influence.

Landscape Character: Sensitivity of Attributes

Strength of Character			
Landform		Moderate	High
Landcover		Moderate	
Enclosure		Moderate	
Skyline		Moderate	
Rarity		Moderate	
Tranquillity		Moderate	
Visual Sensitivity			
Inter-visibility adjacent LCAs			High
Historic/Cultural landscape		Moderate	
Visual unity/integrity/sense of place			High

Assessment from Landscape Character Assessment

	LCS	VS	Condition	Strategy
5A Eaton Bray Clay	Moderate	Moderate	Declined	Enhance Renew
5B Barton le Clay Clay Vale	Moderate	Moderate	Declined	Enhance Renew
8A Toddington – Hockcliffe Clay Hills	Moderate	Mod-High	Declining	Enhance
8C Harlington- Pulloxhill Clay Hills	Moderate	Moderate-High	Declining	Enhance
8D Upper Gravenhurst - Meppershall Clay Hills	Moderate	Moderate-High	Declining	Enhance

Value – Distinctive settled rural landscape, with varied views and good access

Judgement - Highly complex landscape with strong inter-relationship between hills and vales and containment from both Greensand and Chiltern escarpments.

Very limited potential for wind energy without compromising rural quality.

7. North Chilterns

Location and Landscape Character Areas	North of Luton and to north of Dunstable Downs in west. 5B Barton le Clay Clay Vale 9B Totternhoe Chalk Escarpment 9C The Clappers Chalk Escarpment 9D Warden Hill – Stopsley Common C-E 9E South Dunstable Chalk Escarpment 10A Totternhoe, Dunstable Rolling Chalk Farmland 10B Houghton Regis – North Luton R-C-F 10C Barton Hill R-C-F
Key Characteristics	Steeply sloped linear escarpments. Mosaic of down land ,woodland and scrub High biodiversity and cultural value. Nationally significant for recreation as part of the AONB. Locally valued for gliding, kite flying. Abrupt transition between urban and countryside, including to the AONB Urban fringe –pony paddocks
Key Sensitivities	Striking escarpment landform. Perceptual qualities of openness, elevation. Panoramic views over vales Largely undeveloped and uncluttered skylines Tranquility eg north and east of Luton
Distinctive Features/Landmarks	The striking downland landscape e.g. Totternhoe Knolls. Green Lanes Chalk Hill, Houghton Regis Quarry- cliff edge Sharpenhoe Clappers beech woodland Churches and Water towers
Development Considerations	Conserve the largely undeveloped nature and rural character of the scarp- the open skyline would be sensitive to any form of further development that interrupt the smooth lines of scarp. Tall structures on the plateaux part of the dip slope would also be intrusive. Conserve clear views and visual relationship with the adjacent foothills and vales. Avoid development on lower reaches of scarp slopes. Conserve tranquillity.

Landscape Character: Sensitivity of Attributes

Strength of Character			
Landform		Moderate	High
Landcover	Low	Moderate	
Enclosure	Low	Moderate	
Skyline			High
Rarity		Moderate	
Tranquillity		Moderate	High
Visual Sensitivity			
Inter-visibility adjacent LCAs			High
Historic/Cultural landscape		Moderate	High
Visual unity/integrity/sense of place		Moderate	High

Assessment from Landscape Character Assessment

	LCS	VS	Condition	Strategy
5B Barton le Clay Clay Vale	Moderate	Moderate	Declined	Enhance Renew
9B Totternhoe Chalk Escarpment	Moderate	High	Declining	Enhance
9C The Clappers Chalk Escarpment	High	High	Declining	Conserve Enhance
9D Warden Hill – Stopsley Common Chalk Escarpment	High	High	Declining	Conserve Enhance
10A Totternhoe-Dunstable Downs Rolling Chalk Farmland			Declining	Enhance
10B Houghton Regis RCF	Moderate	Moderate	Declined	Enhance
10C Barton Hill Rolling Chalk F.	Moderate-High	Moderate-High	Declining	Enhance

Value - AONB, rural contrast to urban area, much valued for recreation , biodiversity interest and tranquillity.

Judgement - Nations finest landscape – but outside AONB area subject to growth pressures.

Very important to maintain urban-rural contrast.

Very limited potential for wind energy – need to safeguard views from AONB.

8. South Chilterns

Location and Landscape Character Areas	Studham, Kensworth, Caddington 10A Totternhoe-Dunstable Rolling Chalk Farmland 11A Whipsnade Chalk Dipslope 11B Caddington – Slip End Chalk Dipslope 11C Luton Hoo Chalk Dipslope 11D Luton Airport – Chiltern Green Chalk Dipslope 12A Gade Chalk Valley 12B Ver Chalk Valley 12C Slip End Chalk Valley 12D Lea Chalk Valley Five Knolls, Dunstable Downs
Key Characteristics	Large scale landscape of flat elevated plateaux interspersed with sweeping valleys. Arable farmland with large woodland blocks. Undeveloped horizons. Strong sense of enclosure – hedged lanes. Pylons and communication masks, can be dominant on skylines. Strong visual relationship.
Key Sensitivities	Strong rural character. Ancient irregular field patterns. Dramatic landform – combes. Views from lower ground to high plateaux. Rural views within the enclosed valleys. Woodland blocks as strong features in views. Inter-relationship dipslope with valleys.
Distinctive Features/Landmarks	Whipsnade Zoo Five Knolls, Dunstable Downs. Luton Hoo Estate Parklands and woodland Luton Airport on skyline Someries Castle Green Lanes Village greens and commons Recolonised chalk quarries
Development Considerations	Conserve integrity for the chalk escarpment and dipslope transition. Conserve open plateaux landscapes. Monitor further tall structures on the open ridges and plateaux – consider local and wider visual impact. Avoid development on valley crests

Landscape Character: Sensitivity of Attributes

Strength of Character			
Landform			High
Landcover		Moderate	
Enclosure		Moderate	High
Skyline			High
Rarity			High
Tranquillity	Low	Moderate	
Visual Sensitivity			
Inter-visibility adjacent LCAs			High
Historic/Cultural landscape			High
Visual unity/integrity/sense of place		Moderate	

Assessment from Landscape Character Assessment

	LCS	VS	Condition	Strategy
9E South Dunstable Chalk Escarpment	Moderate	Moderate	Declined	Enhance Renew
10A Totternhoe-Dunstable Rolling Chalk Farmland	Moderate	High	Declining	Enhance
11A Whipsnade Chalk Dipslope	High	Mod-High	Declining	Conserve Enhance
11B Caddington – Slip End Chalk Dipslope	Moderate	Moderate	Declined	Renew
11C Luton Hoo Chalk Dipslope	Moderate	High	Declining	Enhance
11D Luton Airport – Chiltern Green Chalk Dipslope	Moderate	Moderate	Declining	Enhance
12A Gade Chalk Valley	Moderate	Moderate	Declined	Enhance Renew
12B Ver Chalk Valley	Moderate	Moderate	Declined	Enhance
12C Slip End Chalk Valley	Moderate	Moderate	Declined	Enhance Renew Create
12D Lea Chalk Valley	Moderate	Moderate	Declined	Enhance

Value - AONB, rural contrast to urban area, well wooded landscape much valued for recreation , biodiversity interest and heritage..

Judgement - Nations finest landscape – but outside AONB area subject to growth pressures. Very important to maintain urban-rural contrast. Very limited potential for wind energy – need to respect complexity and scale of landscape types.

For further detail – please refer to Landscape Character Assessments

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