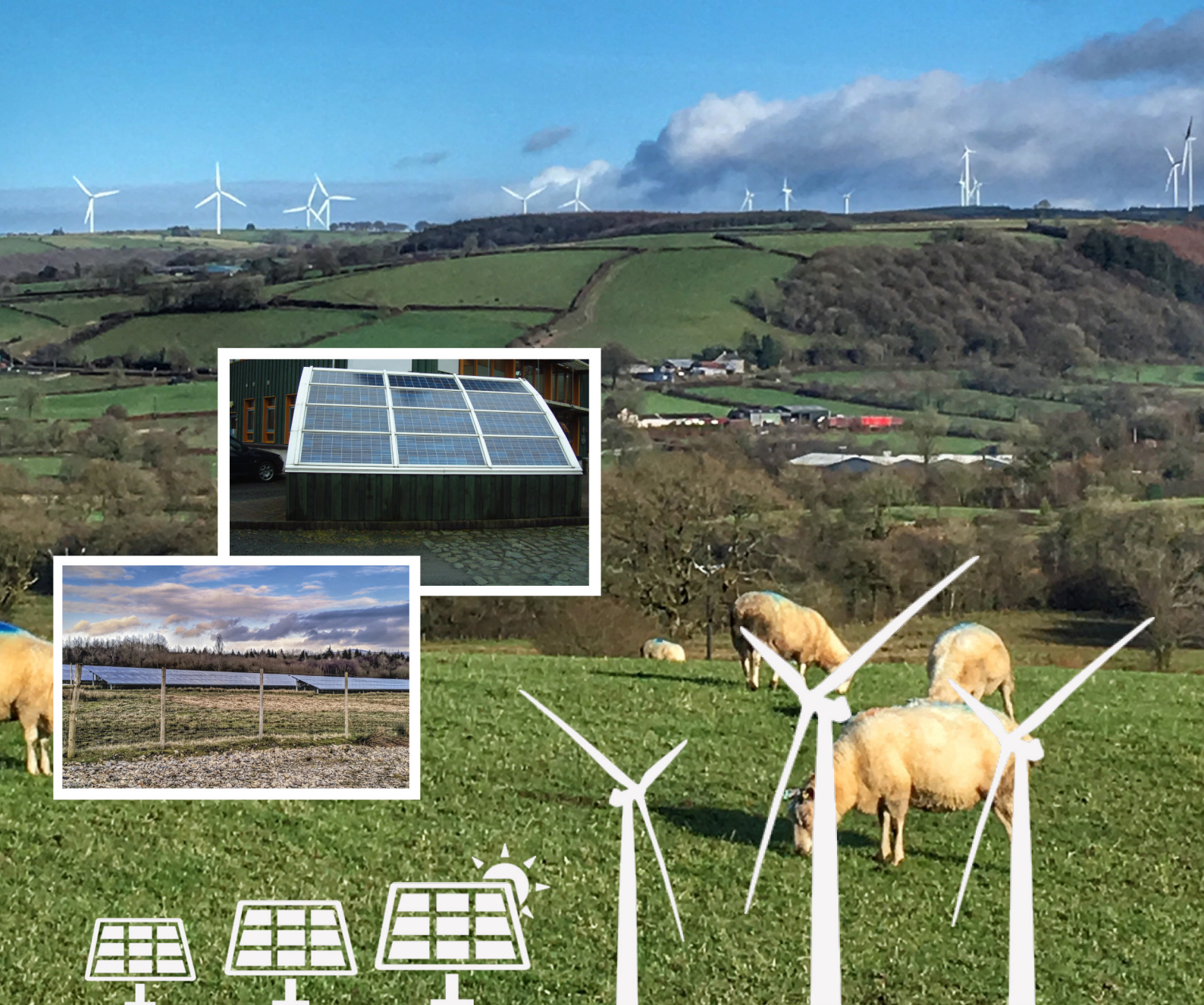


Draft Supplementary Planning Guidance

# Wind and Solar Energy



Carmarthenshire Local  
Development Plan



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**Appendix A: Guidance Document for Assessing Noise Impact from Wind Turbine(s)**

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# 1. Introduction

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1.1 This Supplementary Planning Guidance (SPG) has been prepared to support the Renewable Energy policies contained within the Carmarthenshire Local Development Plan (LDP). This SPG provides further, more detailed guidance for facilitating the development of renewable energy schemes, focusing in particular on wind and solar energy. It is aimed at developers, local communities, landowners and community councils and seeks to provide a better understanding of how planning applications for wind and solar energy may be assessed by the Council. This SPG should be read in conjunction with the Landscape Sensitivity and Capacity Studies for Wind Turbine Development and Solar PV Development and the Pembrokeshire and Carmarthenshire: Cumulative Impact of Wind Turbines on Landscape and Visual Amenity Guidance.

1.2 This draft SPG will be subject to a consultation exercise conducted in a manner consistent with that set out within the Delivery Agreement for the LDP. Following consideration of the responses received, the SPG will be adopted and used in the consideration of renewable energy proposals. The SPG will be a material consideration in the determination of planning applications.

1.3 Reference is made in this SPG to a number of documents and legislation which may be superseded by new or amended documents following publication, where this is the case regard should be given to the most up-to-date and relevant guidance.

## 2. Background

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2.1 Under European Union targets<sup>1</sup>, the UK has a legally-binding target to generate 15% of its energy from renewable sources by 2020. The UK Renewable Energy Strategy<sup>2</sup> sets out the UK Government's vision to ensure that this target is met. The Welsh Government is committed to playing its part by delivering an energy programme which contributes to reducing carbon emissions as part of its approach to tackling climate change<sup>3</sup>. Current government policy and guidance is centred on reducing CO2 emissions in an attempt to slow down climate change, and producing electricity from renewable sources is considered to be part of the solution. The planning system has an important role to play in supporting, encouraging and facilitating renewable energy schemes.

2.2 The Council supports the development of renewable energy schemes within the County and seeks to ensure that they are located in the most suitable locations. The County is well located in terms of tapping into renewable sources of energy, and the number of applications for such schemes, in particular for wind and solar, have increased in recent years. The County's upper areas produce a consistent and high wind-speed, making these areas attractive for wind turbines, whilst the County offers many other opportunities for other technologies, particularly solar.

2.3 Brechfa Forest has been designated a Strategic Search Area (SSA) in Technical Advice Note 8 (TAN 8), for large-scale wind power. In addition to Brechfa, the County also has a small part of the Pontardawe Strategic Search Area within its area. This SPG is not applicable to wind farm schemes located within Strategic Search Areas.

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<sup>1</sup> EU Renewable Energy Directive

<sup>2</sup> [https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/228866/7686.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/228866/7686.pdf)

<sup>3</sup> Planning Policy Wales Edition 9 (Section 12.8.1)

2.4 The Council is responsible for determining planning applications for renewable energy schemes of less than 10MW, excluding those smaller householder schemes that are classed as “permitted development” which do not require planning permission. Permitted Development rights are subject to change over time, the latest guidance is outlined on the Welsh Government<sup>4</sup> website.

2.5 Detailed guidance for Renewable Energy schemes is provided by the Welsh Government their documents: “Practice Guidance – Planning Implications of Renewable and Low Carbon Energy<sup>5</sup>” (2011) and “Planning for renewable and Low Carbon Energy: A Toolkit for Planners” (2015)<sup>6</sup>. It is recommended that developers and householders refer to this document for further, detailed guidance on technologies and general policy.

2.6 Whilst the Council is, in principle supportive of renewable energy developments, it is recognised that they can, in some instances have a variety of impacts. Appropriate weight will be given to local opinions and consultation responses during the planning process. This SPG provides information to applicants and interested parties as to the Council’s expectations and key considerations for planning renewable energy schemes. This guidance does not set out specific locations suitable for renewable energy technologies. The Landscape Sensitivity and Capacity Study should be consulted when considering the siting of schemes.

## 3. Planning Policy Context

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### 3.1 Planning Policy Wales (PPW)

3.1.1 PPW, which is supplemented by Technical Advice Notes sets out the land use policies of the Welsh Government. PPW seeks to ensure that planning policy on all levels work towards delivering UK energy targets. The latest version of PPW is edition 9 which was published in November 2016. It states that the Welsh Government aim “to secure an appropriate mix of energy provision for Wales which maximises benefits to our economy and communities, whilst minimising potential environmental and social impacts” (para 12.8.6).

3.1.2 A definition of renewable energy is provided in para 12.8.7: “renewable energy is the term used to cover those sources of energy, other than fossil fuels or nuclear fuel, which are continuously and sustainably available in our environment. This includes wind, water, solar, geothermal energy and plant material (biomass). These sources of energy can be utilised to generate power, heat, fuels (for transport) and cooling through a range of renewable energy technologies such as solar panels and wind turbines.”

3.1.3 The responsibilities for Local Planning Authorities are set out in paragraphs 12.8.9 and 12.8.10. There is an emphasis of facilitating the development of all forms of renewable and low carbon energy to move towards a low carbon economy.

*12.8.9 Local planning authorities should facilitate the development of all forms of renewable and low carbon energy to move towards a low carbon economy (see 4.4.3) to help to tackle the causes of climate change (see 4.7.3). Specifically, they should make positive provision by:*

- *considering the contribution that their area can make towards developing and facilitating renewable and low carbon energy, and ensuring that development plan policies enable this contribution to be delivered;*
- *ensuring that development management decisions are consistent with national and international climate change obligations, including contributions to renewable energy targets and aspirations;*

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<sup>4</sup> <http://gov.wales/topics/planning/policy/guidanceandleaflets/householder-permitted-development-rights/?lang=en>

<sup>5</sup> <http://gov.wales/topics/planning/policy/guidanceandleaflets/planningimplications/?lang=en>

<sup>6</sup> <http://gov.wales/docs/desh/publications/151021renewable-energy-toolkit-en.pdf>

- *recognising the environmental, economic and social opportunities that the use of renewable energy resources can make to planning for sustainability (see Chapter 4); and*
- *ensuring that all new publicly financed or supported buildings set exemplary standards for energy conservation and renewable energy production.*

12.8.10 *At the same time, local planning authorities should:*

- *ensure that international and national statutory obligations to protect designated areas, species and habitats and the historic environment are observed;*
- *ensure that mitigation measures are required for potential detrimental effects on local communities whilst ensuring that the potential impact on economic viability is given full consideration; and*
- *encourage the optimisation of renewable and low carbon energy in new development to facilitate the move towards zero carbon buildings (see 4.11 and 4.12).*

3.1.4 PPW acknowledges that wind energy continues to offer the greatest potential for delivering renewable energy in the short to medium term. There is however, a recognition that the “introduction of new, often very large structures for onshore wind needs careful consideration to avoid and where possible minimise their impact” (para 12.8.12). Technical Advice Note (TAN) 8: Planning for Renewable Energy (2005) identifies the most appropriate location where large turbines should be sited. The TAN identifies areas known as Strategic Search Areas (SSAs) which will accommodate large-scale (generating over 25MW) wind energy developments.

3.1.5 PPW contains a number of key points to be considered by Local Planning Authorities in the determination of applications and by applicants when designing schemes:

- LPAs should facilitate grid network infrastructure to support SSAs (para 12.8.14).
- The development of large wind farms or other large scale renewable and low carbon energy schemes will not generally be appropriate in internationally or nationally designated areas and sites (para 12.8.14).
- The contribution the scheme would have in terms of delivering renewable energy to meeting national targets and any environmental, social and economic benefits the scheme would bring (para 12.10.1).
- Impacts should be minimised on local communities to safeguard quality of life for existing and future generations and any adverse impacts should be avoided, mitigated or appropriately compensated (para 12.10.1).
- LPAs should consider the likely impact of on existing or other proposed renewable and low carbon energy developments and sources (para 12.10.4).
- Community benefits should be sought but should not be treated as a material consideration (para 12.10.5).
- Planning conditions or obligations should be used to mitigate impacts and secure the benefits and opportunities arising from renewable energy schemes (para 12.10.6).
- Outside Strategic Search Areas, the implicit objective is to maintain the landscape character, whilst within and immediately adjacent to the SSAs, the implicit objective is to accept landscape change. (para 8.4)

## 3.2 Technical Advice Note 8 (TAN 8)

3.2.1 Supplementing the guidance provided by PPW, TAN 8, published in 2005 provides guidance for the land use planning considerations of renewable energy. It is acknowledged in the TAN that wind power offers the greatest potential for achieving these targets, and as such seven Strategic Search Areas (SSAs), which are broad-brush areas suitable for large scale wind power proposals have been identified. SSA Area G: Brechfa Forest and a small part of Area E: Pontardawe fall within the County’s boundary. Indicative targets for each

SSA are set out in the TAN, but have since been revised. The Minister for Environment and Sustainable Development in his letter dated July 2011 set out the maximum capacities for each SSA. For SSA G: Brechfa Forest, the capacity set was 132MW.

3.2.2 Key points from the TAN to be considered by Local Planning Authorities in the determination of applications and by applicants in designing schemes include:

- Most areas outside SSAs should remain free of large wind power schemes. LPAs should consider the cumulative impact of small schemes in areas outside of the SSAs and establish suitable criteria for separation distances from each other and from the perimeter of existing wind power schemes or the SSAs (para 2.13).
- Extending or re-powering existing wind farms outside SSAs should be encouraged (para 2.14).
- Some community benefits can be justified as mitigation, while others may be offered not directly through the planning process (para 2.16).
- The TAN describes a number of other renewable energy processes and their planning considerations including: Anaerobic Digestion (biomass), Bio-fuels for Vehicles, Combined Heat and Power, Community (or District) Heating, Energy from Waste, Fuel Crops (including Woodfuel), Hydro-Power, Methane, Solar Thermal and Solar Photo-Voltaic (PV).
- Appropriate conditions for decommissioning wind farms or turbines, their restoration and proposed after-use of the site should be used (para 6.4).

### 3.3 Practice Guidance: Planning Implications of Renewable and Low Carbon Energy (2011)

3.3.1 This document was published after TAN 8, and provides further guidance to assist Local Planning Authorities in determining applications for renewable energy development. It provides detailed guidance on a range of technologies including: wind; biomass; anaerobic digestion; biofuels; small scale hydro; solar – building integrated and solar PV arrays; ground, water and air source heat pumps; geothermal; fuel cells; combined heat and power and combined cooling heat and power; district heating; and waste heat.

### 3.4 Carmarthenshire Local Development Plan

3.4.1 Adopted in December 2014, the Carmarthenshire Local Development Plan (LDP) sets out the Authority's policies and proposals for future development and use of land. Whilst the Plan should be read as a whole, there are a number of specific policies that apply to renewable energy proposals. This SPG is designed to provide further guidance and detail to support and implement these policies.

3.4.2 The LDP contains four dominant policies specific to renewable energy proposals, Policy SP11 is a Strategic policy, while Policies RE1, RE2 & RE3 are detailed policies.

#### **SP11 Renewable Energy & Energy Efficiency**

Development proposals which incorporate energy efficiency measures and renewable energy production technologies will be supported in areas where the environmental and cumulative impacts can be addressed satisfactorily. Such developments will not cause demonstrable harm to residential amenity and will be acceptable within the landscape. Each proposal will be assessed on a case by case basis.

Large scale wind farms will only be permitted within Strategic Search Areas.

#### **Policy RE1 Large Scale Wind Power**

Large scale wind farms of 25MW and over will be permitted provided that the following criteria can be met:

- a) The development is located within a Strategic Search Area and will contribute to meeting the indicative generating capacity within the Area;
- b) The development will not have an unacceptable impact on visual amenity or landscape character through: the number, scale, size, design and siting of turbines and associated infrastructure;

- c) The development will not result in demonstrable harm to statutorily protected sites and species, and habitats and species identified in the Local Biodiversity Action Plan;
- d) The development will not have an unacceptable impact upon areas designated for their landscape value;
- e) The development will not result in significant harm to the safety or amenity of sensitive receptors and will not have an unacceptable impact on roads, rail or aviation safety;
- f) The development will not result in unacceptable loss of public accessibility to the area; existing footpaths, mountain bike trails and equestrian trails will be safeguarded from development with no permanent loss to their length and quality;
- g) The development will not result in unacceptable electromagnetic interference to communications installations, radar or air traffic control systems, emergency services communications, or other telecommunication systems;
- h) The development will not have unacceptable cumulative impacts in relation to existing wind turbines and those which have permission;
- i) Turbines and associated infrastructure will, at the end of the operational life of the facility, be removed and an appropriate land restoration and aftercare scheme agreed;
- j) Proposals will not cause an unreasonable risk or nuisance to, and impact upon the amenities of, nearby residents or other members of the public.

### **Policy RE2 Local, Community and Small Wind Farms**

- k) Local, Community and Small wind farms or individual turbines will be permitted provided the following criteria can be met in full:
- l) The development will not have an unacceptable impact on visual amenity or landscape character through: the number, scale, size, design and siting of turbines and associated infrastructure;
- m) The development will not have an unacceptable cumulative impact in relation to existing wind turbines and other renewable energy installations and those which have permission;
- n) The siting, design, layout and materials used should be sympathetic to the characteristics of the land-form, contours and existing features of the landscape;
- o) The development would not cause demonstrable harm to statutorily protected species, and habitats and species identified in the Local Biodiversity Action Plan;
- p) Turbines and their associated structures will not be sited in, or impact upon archaeological resources, the setting and integrity of Conservation Areas, Listed Buildings or other areas of historical value;
- q) Proposals will not cause an unreasonable risk or nuisance to, and impact upon the amenities of, nearby residents or other members of the public;
- r) No loss of public accessibility to the area, and existing bridleways and footpaths will be safeguarded from development with no permanent loss to their length and quality;
- s) Turbines and associated infrastructure will, at the end of the operational life of the facility, be removed and an appropriate land restoration and aftercare scheme agreed;
- t) The development will not result in significant harm to the safety or amenity of sensitive receptors and will not have an unacceptable impact on roads, rail or aviation safety;
- u) The development will not result in unacceptable electromagnetic interference to communications installations; radar or air traffic control systems; emergency services communications; or other telecommunication systems.

### **Policy RE3 Non-wind Renewable Energy Installations**

#### **Proposals within Development Limits**

Proposals for non-wind renewable energy installations will be permitted within defined Development Limits, provided they do not cause an unacceptable impact to the character of the local area and to the amenity of adjacent land, properties, residents and the community. Proposals will not be permitted if they negatively impact upon archaeology or the setting and integrity of Conservation Areas, Listed Buildings or other features or areas of historical value.



### **Proposals outside Development Limits**

Proposals for small scale non-wind renewable energy installations outside defined Development Limits are required to satisfactorily justify the need to be sited in such a location. Such proposals should be sited in close proximity to existing buildings and structures and will not cause demonstrable harm to the landscape. Large scale schemes located outside defined Development Limits may be permitted in exceptional circumstances, where there is an overriding need for the scheme which can be satisfactorily justified, and the development will not cause demonstrable harm to the landscape.

Proposals that would cause demonstrable harm to the landscape, visual impact, noise, ecology, or ground and surface water as a result of the cumulative effect of renewable energy installations will not be permitted.

3.4.3 In addition to these dominant policies, there are a number of additional policies which will also be considered as being key to the determination of planning applications. These are:

- GP1: Sustainability and High Quality Design;
- GP3: Planning Obligations;
- GP4: Infrastructure and New Development;
- TR3: Highways in Developments – Design Considerations;
- EQ1: Protection of Buildings, Landscapes and Features of Historic Importance;
- EQ3: Regional and Local Designations;
- EQ4: Biodiversity;
- EQ6: Special Landscape Areas;
- EP1: Water Quality and Resources;
- EP2: Pollution.

## **4. General Guidance**

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### **4.1 Introduction**

4.1.1 This section is applicable to both onshore wind development and solar development. More detailed, specific advice to each of the developments is contained in sections 5 and 6.

### **4.2 Pre-application advice**

4.2.1 Applicants are encouraged to contact the local authority prior to submitting an application in order to ascertain what information would be required to be submitted as part of the application. The local authority will be able to offer pre-application advice before a formal application is submitted in order to guide applicants through the process<sup>7</sup>, which may minimise delays later in processing the application. A fee may be applicable for this service, as set out on the Council's website.

4.2.2 Pre-application discussions can also help the applicant and the planning authority identify areas of concern about the proposed development so that consideration is given to amending the proposal before the application is submitted. The advice and guidance provided at the pre-application stage is given in good faith, however, it does not guarantee or supply a definitive undertaking as to whether the proposal is likely to be acceptable.

### **4.3 Pre-application consultation**

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<sup>7</sup> <http://www.carmarthenshire.gov.wales/home/residents/planning/planning-applications/pre-application-service/#.WCCuoE2b-Uk>

4.3.1 New legislation came into effect on the 16<sup>th</sup> March 2016 with the Planning Wales Act 2015 that requires applicants of “major developments” to submit a pre-application consultation report as part of the application. “Major developments” are defined in the Development Management Procedure Wales Order 2012<sup>8</sup> and for the purposes of Renewable Energy schemes includes “development carried out on a site having an area of 1 hectare or more”. Detailed guidance is set out in Section 17 of the Planning Wales Act 2015 of the requirements for pre-application consultation.

## 4.4 Environmental Impact Assessment

4.4.1 Certain planning applications require an Environmental Impact Assessment (EIA), under the Town and County Planning (Environmental Impact Assessment) (England and Wales) Regulations 1999. An EIA ensures that when assessing planning applications, consideration is given to the environmental effects of that application. The EIA process aims to prevent, reduce or offset any significant adverse environmental effects of development proposals, and enhance positive ones.

4.4.2 Developers should ask for a formal opinion from the Council as to whether or not a scheme requires an EIA, this is known as a screening opinion. A screening opinion is usually sought for wind energy developments when the development consists of:

- the installation of more than 2 turbines; or
- the hub height of the turbine or other structure on the site exceeds 15m; or
- the site is located within a “sensitive area” as defined by the Regulations.

4.4.3 Solar energy developments are not specifically mentioned within the Regulations, however, depending on the size of the array and the potential impacts it may be necessary to undertake an EIA and a screening opinion should be sought.

4.4.4 When requesting a screening opinion, sufficient information should be provided by the applicant, this should include:

- a description of the nature and purpose of the development and of its possible effects on the environment;
- a location and site plan; and
- details of the power output.

4.4.5 Further details on screening opinions are contained within the EIA Regulations.

## 4.5 Habitat Regulations Assessment

4.5.1 In addition to an EIA, some proposals may be subject to Habitat Regulations Assessment (HRA). Under the Conservation of Habitats and Species Regulations 2010, any proposals that are likely to have a significant effect on designated European sites will be required to be assessed. European sites include Special Areas of Conservation (SACs), Special Protection Areas (SPAs), and European Offshore Marine Sites (EOMS), and under Welsh Government policy, Ramsar sites are also treated as being fully designated. Appendix B lists the European sites within the County.

4.5.2 A screening opinion from the LPA through a Test for Likely Significant Effect (TLSE) will be undertaken where a European designated site may be impacted. If the TLSE reveals that significant adverse effects are likely, then an Appropriate Assessment will be required. Appropriate Assessments will be undertaken by the LPA with sufficient information supplied by the applicant to determine whether the proposal complies with the Conservation of Habitats and Species Regulations 2010. Where an appropriate

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<sup>8</sup> Development Management Procedure Wales Order 2012, Article 2:  
[http://www.legislation.gov.uk/wsi/2012/801/pdfs/wsi\\_20120801\\_mi.pdf](http://www.legislation.gov.uk/wsi/2012/801/pdfs/wsi_20120801_mi.pdf)

assessment is necessary, it must be demonstrated that significant effects will be absent with no reasonable scientific doubt remaining.

## 4.6 Grid Connection

4.6.1 Some small-scale installations may not require new overhead connections to the electricity grid network and in the majority of cases, connection to the grid will not be a planning consideration.

4.6.2 The District Network Operator (DNO) is responsible for establishing a connection between the substation and the electricity grid network. The Council encourages developers to undertake early engagement with DNO and the placing of cables should avoid areas of high landscape, ecological and archaeological sensitivity. On site cabling and infrastructure will require careful consideration.

## 4.7 Community Energy

4.7.1 Community energy has the potential to reap many long term benefits for communities by ensuring energy security, saving money on energy bills, generating income streams for communities and ownership to local people. It is the UK Government's ambition "that every community that wants to form an energy group or take forward an energy project should be able to do so, regardless of background or location"<sup>9</sup>.

4.7.2 For the purposes of this guidance, Community Energy can be defined as an energy scheme which is led by, or meets the needs of the local community. The community must have ownership of the development, either in full or shared, whilst maintaining full control over it. As a result of a number of positive case studies and the local benefits involved in such schemes, community energy projects will be given support and encouragement by the Council.

4.7.3 Developers of renewable energy schemes are encouraged to discuss the potential of shared ownership with communities. The benefits of shared ownership are numerous, for example, increased local acceptance, a new financial source from investors in the community, community involvement and education; and financial benefits from Feed-in-Tariffs. Shared ownership could involve a share in the overall generated income from a scheme or part or full ownership of the scheme (for example, the community could own a turbine in a larger scheme).

4.7.4 The decision on the acceptability of a scheme will be made irrespective of who the applicant is and will be based on an assessment of the impacts. Such applications should be accompanied with a "Community Benefit Statement" which meets the requirements of the relevant LDP policies and this guidance. The Community Benefit Statement should include details of the community ownership model, a Terms and Conditions Document, details of the energy and financial benefits of the scheme to the community.

## 4.8 Community Benefits

4.8.1 Community funds via contributions from developers are often offered as part of large schemes to offset negative consequences of development, to help meet local needs or to secure benefits which will make the development more sustainable. Such financial contributions cannot be taken into account in the determination of a planning application and should be used by developers to alleviate any negative consequences of the development and ensure that the community benefits from the development.

4.8.2 Communities and developers are encouraged to work together in deciding how the community fund should be spent.

## 4.9 Agricultural Land

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<sup>9</sup> Department of Energy and Climate Change, Community Energy Strategy Update (2015)  
[https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/414446/CESU\\_FINAL.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/414446/CESU_FINAL.pdf)

4.9.1 Agricultural land within Carmarthenshire is mainly made up of grade 3 and 4, with parcels of grade 2 located to the east of Llanelli. PPW states that land of grades 1, 2 and 3a, being the best and most versatile should be conserved as a finite resource for the future. PPW continues by stating that such land “*should only be developed if there is an overriding need for the development, and either previously developed land or land in lower agricultural grades is unavailable, or available lower grade land has an environmental value recognised by a landscape, wildlife, historic or archaeological designation which outweighs the agricultural considerations*” (para 4.10 PPW).

4.9.2 Renewable Energy schemes should avoid being developed on agricultural land of grades 1-3a. If schemes are proposed on grade 3b land, consideration should be given to siting on less versatile land. If this is not possible, then a full justification should be given in site selection.

4.9.3 In the construction and operation of Renewable Energy schemes, disturbance to agricultural land and boundary features should be minimised. Agricultural land surrounding operational wind turbines should not be sterilised and should still be used for agricultural purposes.

## 4.10 Ecological Considerations

### Ecological Considerations:

- Renewable Energy schemes should not be located on ecologically important sites (including Sites of Special Scientific Interest, Ramsar Sites, Special Protection Areas and Special Areas of Conservation).
- Ecological benefits and appropriate mitigation should be considered as part of the application.

4.10.1 The development of renewable energy schemes has the potential to harm habitats and species. Developers will be expected to maximise the ecological potential of the site, whilst ensuring that there is no demonstrable harm to statutorily protected species, and those habitats and species identified in the Local Biodiversity Action Plan or the Environment Act 2016, Section 7 list of habitats and species of principle importance to biological diversity in Wales. All applications are expected to be accompanied by an **Ecological Survey**, assessing the potential effects on the development on both habitat and species. The level of the survey will be dependent upon the scale of the proposal and the sensitivity of the surrounding habitat and species.

4.10.2 Consideration should be given to enhancing habitats for biodiversity conservation and providing features for protected and priority species. Retained or new habitats or features that are created will likely require ongoing management and maintenance to ensure their longevity, and may require a specific habitat or ecological management plan.

4.10.3 A Preliminary Ecological Appraisal (PEA) of the site and immediate surroundings will be required to support any proposed wind turbine, solar or hydro scheme application regardless of size and number. Guidelines for PEA Requirements can be found in the 2013 document published by the Chartered Institute for Ecology and Environmental Management (2013). Details of any invasive species should be noted within any PEA. The PEA must incorporate an extended phase 1 habitat survey consisting of a broad habitat assessment and mapping exercise, determining protected species interest.

4.10.4 Where habitats are noted of high ecological interest, a further vegetation survey may be requested, a National Vegetation Classification (NVC) survey is a detailed method for determining habitat quality.

4.10.5 Useful information can be found in the following documents:

- Guidelines for Phase 1 survey can be found in the document - Joint Nature Conservation Committee (2010) [\*Handbook for Phase 1 Habitat Survey - a Technique for Environmental Audit\*](#) Reprinted by JNCC, Peterborough.

- Guidelines for NVC survey can be found in the document - Rodwell JS (2006) [National Vegetation Classification: Users' Handbook](#) JNCC, Peterborough.

4.10.6 Reference should also be made to the SPG on Natural Environment and Biodiversity.

4.10.7 The construction stage of any development raises potential for ecological damage through site clearance, construction of temporary access roads, installation of services, or storage of materials. In order to protect a site's biodiversity value, it is often necessary for certain development works and environmental management operations to be undertaken at specific times of the year, and often within a restricted time-scale. The importance of adhering to the correct timing of operations, in line with the results of the Ecological Survey, is essential to ensure that any unacceptable impacts are to be avoided.

4.10.8 Further guidance can be sought from the County Council's Ecologist.

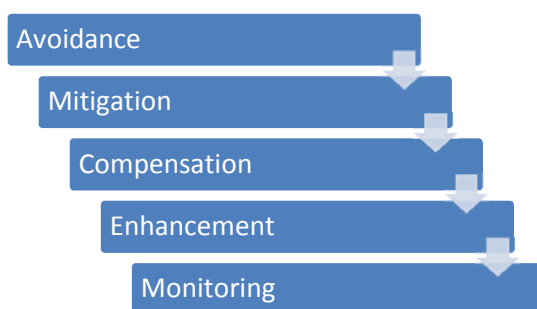
#### Ecological Surveys

- Surveys will be required to be undertaken by a suitably qualified ecologist.
- Surveys should be undertaken early in the process in order to inform the scheme's design and prior to submitting the application, it is preferable that planning permissions will not be conditioned depending upon survey results.
- The timing of ecological surveys is mainly seasonal and can only be carried out at certain times of the year, surveys will be required to reflect this.
- Surveys should follow best practice standards and methodologies.

### 4.11 Mitigation and Enhancement

4.11.1 Some developments and installations may cause a negative impact on the ecology. Careful siting, design and layout of installations can assist in minimising any adverse impacts. Applications are expected to include a Mitigation Plan detailing the measures and the implementation of them. Mitigation measures should aim to avoid, reduce or remedy any significant adverse impacts on the landscape and biodiversity. The SPG on Natural Environment and Biodiversity sets out the Mitigation Hierarchy.

4.11.2 Any mitigation measures proposed should reflect recent survey work and demonstrate a clear understanding of the site and its ecological considerations. Any mitigation requirements should be incorporated and highlighted in ecological assessments and surveys.



4.11.3 Applicants must ensure that they take account of all the potential effects of the proposed development and make sure that avoidance and mitigation are appropriate to the site. All stages of a development must be considered, as should the extent of any required land take or potential indirect effects during the construction, operation, and where applicable the decommissioning of the proposed development.

4.11.4 It is, however recognised that mitigation often still entails the off-setting of some form of harm. Where a site or its surroundings have a clear biodiversity value, and the mitigation measures proposed are

insufficient to reasonably protect its value then, planning permission may be refused subject to all relevant considerations having been taken into account. Proposed mitigation measures that are acceptable in planning terms will likely be a condition of the planning consent. Compensation for lost habitat should not be construed as making an unacceptable development acceptable. If a compensation approach will be likely utilised for a development, early discussion is encouraged with the LPA ecologist and if applicable, Natural Resources Wales. There is also an expectation that biodiversity enhancement is delivered to meet the requirements of the Environment Act Wales 2016.

4.11.5 In instances where harmful damage is unavoidable and will still occur in spite of mitigation, consideration may be given to compensating for any loss by creating a new habitat at an alternative location, (on or off-site). Prior to compensation being considered the developer/applicant will be required to satisfactorily demonstrate that avoidance and mitigation are not possible and that the proposed compensatory measures would not result in a net loss of habitat of the same habitat type.

## 5. Onshore Wind

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### 5.1 Context

5.1.1 Onshore wind development first made an appearance in Carmarthenshire in the 1980s in Pembrey, as part of The Carmarthen Bay Wind Turbine Test Programme. Turbines are a common sight in the Carmarthenshire landscape today due to the favourable wind conditions that exist in parts of the County.

### 5.2 Strategic Search Areas

5.2.1 This SPG is not applicable to wind farm schemes located within the Brechfa Forest Area (Strategic Search Area G).

5.2.2 Major wind turbine developments and wind farms are considered to be necessary in order for the Welsh Government to achieve committed energy targets. TAN 8 identifies seven areas in Wales that are considered to be the most appropriate locations for large scale wind farm development, these areas are known as Strategic Search Areas (SSA). SSA G: Brechfa Forest lies within Carmarthenshire, generating targets and upper limits for search areas are set by the Welsh Government in TAN 8, but have since been reviewed in recognition that SSAs have a finite environmental capacity. The revised upper limit for SSA G is 132MW<sup>10</sup>. SSA E: Pontardawe is mainly located within the Neath Port Talbot and Swansea administrative boundaries, but a small part of it straddles the County boundary to the east of Ammanford.

5.2.3 Welsh Government TAN 8 policy sets out that major wind turbine development and wind farms which are larger than 5MW overall installed generating capacity will be restricted to the Strategic Search Areas.

5.2.4 Alltwalis Wind Farm is currently the only operational wind farm within the SSA, having an installed generating capacity of 23MW from 10 turbines. Brechfa Forest West is currently under construction and is due to be operational in 2018. The scheme comprises 28 turbines, each measuring 145m in height which is anticipated to have an installed generating capacity of 56-84MW. Planning Permission for Brechfa Forest East was approved on the 17<sup>th</sup> December 2013, subject to the applicant entering into a Section 106 agreement with the Council. This scheme comprises 12 turbines, each measuring 145m in height which will contribute 24-36MW of installed capacity.

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<sup>10</sup> Letter from the Minister for Environment and Sustainable Development

5.2.5 Should the Brechfa Forest East application be implemented, together with the existing Alltwalis Wind Farm and the Brechfa Forest West wind farm, then the upper limits for the SSA would be met, or marginally exceeded.

5.2.6 Any new applications for large scale wind farms within SSA G will be discouraged in line with the Minister for Environment and Sustainable Development letter which imposed upper limits of generating capacity in SSAs, whilst these applications are valid.

### 5.3 Wind Turbine Development outside Strategic Search Areas

5.3.1 Individual wind turbine sizes can vary, from roof mounted micro scale turbines up to and exceeding turbines of 145 meters to blade tip (as approved at the Brechfa West Wind Farm). Wind energy development can take the form of an individual turbine or as a group of multiple turbines.

### 5.4 Landscape Sensitivity and Capacity

5.4.1 Wind turbines by their nature are substantial vertical structures, with moving blades. They represent large man-made elements within the landscape which result in inevitable changes to the landscape and visual character of an area. The acceptability of turbine development within an area will depend upon the magnitude of these changes in relation to the sensitivity and capacity of the receiving landscape.

5.4.2 The [Carmarthenshire Wind Turbine Development Landscape Sensitivity and Capacity Study](#) undertaken by Jellard Associates sets out guidance on the sensitivity and capacity of the Carmarthenshire landscape. The study is intended to inform the appropriate design and siting of wind turbine development through setting out a baseline assessment of landscape and visual sensitivity and capacity in relation to a range of typologies relating to turbine size and groupings. The study uses a methodology deriving data from LANDMAP aspect datasets, to provide baseline assessments of landscape and visual susceptibility and landscape value through 80 distinct landscape units covering the entire authority area. Assessments of the sensitivity of each landscape unit to different development typologies, are derived from the baseline assessments.

5.4.3 The guidance and baseline assessments set out in the study should be used as a basis for the design of wind turbine development and the assessment of landscape and visual impacts.

### 5.5 Landscape and Visual Impacts

5.5.1 Appropriate siting and design of wind turbine development in relation to the sensitivity and capacity of the receiving landscape to minimise landscape and visual impacts is fundamental to the acceptability of wind turbine development.

5.5.2 The [Carmarthenshire Wind Turbine Development Landscape Sensitivity and Capacity Study](#) provides landscape unit specific comments on landscape capacity and guidance for siting, and overall guidance on site context, siting and design considerations. The principles of this guidance are set out below:

#### A Factors Relating to Site Context

##### Landscape Character

Impacts on landscape character are likely to be related to:

- Scale of the landscape – whether it is small or large, and whether the proposed turbine(s) is/are of an appropriate scale;
- Topography – turbines can dominate small scale or intricate landform if not carefully sited;
- Skylines – turbines can interrupt the simplicity of skylines or ridges, even if located below such features;
- Settlement pattern – turbines should be sensitively sited in relation to existing buildings and their relationship with the landscape;
- Influence on the tranquillity of the landscape – turbines create movement, the amount depending on the particular model, and this disturbance to tranquillity can be greatly enhanced by a darker land or

vegetation backdrop, where typical pale surface colours for turbines proposed in mitigation for skyline effects are rendered completely ineffective.

### **Areas with a Sense of Remoteness**

Rural areas which are particularly valued for their remoteness can be affected by the introduction of turbines, although this is less likely to be the case if the turbines are of an appropriate scale and if located close to farms or other existing buildings. However, incremental erosion of the special qualities of remoteness and tranquillity should be avoided. Some locations close to centres of population are valued as an important recreational resource yet have a sense of being unspoilt and remote, even though they are close to urban areas. Locating turbines in these areas should be very carefully considered.

### **Valued Landscapes and Cultural Heritage Assets**

Detailed and specific analysis will be required, in order to fully appreciate the nature of the development, the site and its surroundings and the likely effects on any locally designated or valued landscapes, including their essential setting, where appropriate. The siting of turbines should be carefully considered so as to protect views to and from important landscape and cultural heritage focal features (including Listed Buildings and Scheduled Ancient Monuments (SAMs)), and their wider landscape setting, including the defined 'essential setting' of registered parks and gardens.

## **B Factors Relating to Siting**

### **Landform**

Smaller turbines have greater potential to utilise landform (often in combination with vegetation) to help reduce their visual impact than larger scale turbines. It is important that the scale of turbine does not overwhelm the scale of the landform. The human eye tends to be drawn towards the skyline, and turbines should be set back from the edges of plateaus, ridges and skylines, so as to reduce their visibility within the wider landscape. The siting of turbines on distinctive or prominent summits or skylines should generally be avoided, in preference to side slopes or gently undulating landform below ridgelines. Wind turbine developments should preferably be grouped upon the level or gentler sloping parts of the site, so that the development appears to be less visually confusing when viewed from different elevations and directions.

### **Landscape Pattern**

Turbines can be sited to reflect the landscape pattern, for example field and woodland boundaries. Conversely, care must be taken not to site turbines so that they conflict with noticeable patterns in the landscape. The grouping and numbers of turbines can affect how they appear in the landscape. For example, several dispersed turbines could be grouped to form a single feature in a visually complex landscape, whilst in a larger scale landscape, a larger single turbine with the same generating capacity may be preferable. A small group of smaller scale turbines is most likely to be preferable where sited on valley floors and on lower valley slopes.

### **Focal Features**

Turbines are likely to become focal features in the landscape. Care is required to ensure that they do not cause visual conflict or competition with other focal points. The siting of turbines should therefore be carefully considered so as to protect views to and from important landscape and cultural heritage focal features. Turbines can draw the eye to features which would otherwise remain unnoticed. For example, a turbine sited next to an isolated farm could draw attention to its presence when the farm itself is partially hidden by either landform or trees.

### **Settlements and Urban Landscapes**

Turbines should be carefully sited in relation to nearby settlements, buildings and other structures. In sparsely settled rural landscapes, turbines should be located near to existing buildings or structures. Views to or from, or on the approach to settlements (including dispersed properties), should be carefully considered when siting wind energy developments. Turbines should be located in the least visually prominent location. The selection of the scale and design of turbines may be influenced by its proximity to a settlement.



Turbines should be sited to minimise impacts on views obtainable from promoted or locally valued publicly accessible viewpoints.

### **Woodlands and Trees**

Although trees and woodlands can cause turbulence which interferes with the efficiency or longevity of turbines, in some locations there may be the opportunity to screen or assimilate small scale turbines by locating them close to trees and woodland. Care should be taken to site turbines so that they do not visually dominate or compete with prominent vegetation such as parkland trees, trees on knolls, and avenues. Turbines should be located where there is no need to fell trees and woodlands, particularly where these are important features in the local landscape.

## **C Design Considerations**

### **Turbine Selection**

There is a wider range of design and colour options for smaller turbines, and these matters should be carefully considered in relation to the landscape characteristics of the area in which they are to be located. This is particularly important when other turbines are present, in order to ensure that there are no conflicting design characteristics within the same locality.

### **Turbine Colour**

The colour should be chosen to help assimilate the turbine into the receiving landscape. The same colour should be used for all external components of the turbine and should be non-reflective. A pale grey is commonly used because it minimises the visibility of the turbines when they are seen against the skyline, which is how most large scale turbines are viewed. However, muted colours (such as mid to darker greys, or blue-grey tones) for the surface finish of towers, hubs, nacelles and rotor blades should be preferred where there is a significant factor of a land or vegetation backdrop to be considered, when the proposed turbine(s) is/are viewed from sensitive visual receptor locations on higher ground within the zone of visual influence; this is particularly relevant to micro and small turbines sited within or adjacent to dense coniferous or broadleaved woodland. In all cases, the aim should be to minimise the visibility and reflectivity of the external surfaces of all turbine components.

### **Turbine Size and Scale**

Small scale turbines are likely to have fewer landscape and visual effects than large scale commercial models. However, they can still visually dominate the nearby landscape or important component features of that landscape. Identifying the main landscape and visual characteristics of the landscape in which the turbines are to be sited is therefore an important determinant in selecting the most appropriate size. Landscapes with a simple, strong and mainly horizontal form are generally able to accommodate taller turbines and large turbine groups, as the height of turbines appears more proportionate to the landscape. Small scale turbines, smaller groupings or individual turbines tend to be more suited to smaller scale, more complex landscapes where there are other features such as buildings, trees or hedges.

It is also important to understand that smaller turbine rotors appear to rotate more rapidly than larger rotors. If smaller turbines are sited close to larger turbines and appear in the same horizontal arc of view, the relative speeds of rotation can appear discordant, with the tendency of the more rapid movement to draw the eye to the smaller turbines. This may consequently increase the visual effects of the whole of the group of turbines, even though the larger turbines may be more distant

### **Turbine Layout**

Although there may be scope to design a small group of turbines as a coherent visual image, this may be difficult where there are other built elements such as buildings, wood poles, steel lattice towers and communications masts present. Where possible, turbine layout should respond to existing landscape patterns, whether field boundaries, buildings or vegetation patterns. Turbine layout should always seek to avoid the occurrence of overlapping rotor blades - or the 'stacking effect', caused when one or more

turbines are seen as closely juxtaposed when viewed from sensitive receptor locations, resulting in discordant multiple rotor movements being seen within the same angle of view.

In all cases, turbine layout should respect the underlying landform and, where possible, groups of turbines should be located at very similar elevations.

### **Micro-siting**

Relocation of one or more wind turbines from their original position, referred to as micrositing, often takes place during construction, due to unforeseen circumstances, such as ground conditions. This can affect the original design concept, particularly the relationship with nearby vertical features such as trees and masts. It is preferable that developers undertake pre-application ground surveys to collect geophysical data at appropriate sufficient degree of detail, so as to minimise the requirement for micro-siting at the construction stage. It is important to ensure that micro-siting considerations may not only affect wind turbine locations, but also the horizontal and vertical alignment of access tracks, and that these factors are properly considered at the stage of assessing the predicted landscape and visual effects of any wind turbine proposal.

### **Ancillary Infrastructure**

Landscape and visual impacts of any ancillary developments and visual conflicts between turbines and ancillary structures should be minimised by:

- Sensitive siting and design of ancillary equipment and infrastructure (e.g. using local landform, locally appropriate materials, architectural style and colours to more successfully integrate them into their surroundings);
- Using turbines with integral transformers;
- Siting turbines as close as possible to the point of use or grid connection, so as to avoid long sections of overhead power lines or cable runs (more applicable to large scale wind farm developments). In particularly sensitive locations, placing the grid connection underground is the preferred option;
- Utilising existing tracks to avoid tree and hedgerow or other vegetation removal, which may have adverse landscape effects. New tracks, if absolutely necessary, should follow existing landscape features, such as field and woodland boundaries, wherever possible;
- Minimising cut and fill operations, following contours closely wherever possible for access track alignments;
- Designing fencing or walling to fit the local situation, whilst maintaining the required security;
- Identifying locations for new tree and shrub planting to provide long term screening or assimilation, and requiring the appropriate re-seeding of cutting slopes or embankments, in preference to a reliance upon natural regeneration to re-establish vegetation cover.

## **5.6 Landscape and Visual Impact Assessment (LVIA)**

5.6.1 The effect on the landscape can be measured as changes in the character, the experience and/or value of the physical landscape as a result of a change. The significance of the effect on the landscape will be dependent upon a number of factors including the sensitivity of the landscape and its designation, and the magnitude of the proposed change.

5.6.2 The impact upon visual amenity can be a subjective one, but ultimately can be measured as being people's responses to a change in the composition of views as a result of changes within the landscape.

5.6.3 Applications shall be accompanied by an appropriate **Landscape and Visual Impact Assessment (LVIA)**, which is expected to adhere to the guidelines issued by the [Guidelines for Landscape and Visual Impact Assessment](#); Third Edition, April 2013; published by The Landscape Institute and the Institute for Environmental Management and Assessment (GLVIA3). This is the industry standard for undertaking landscape and visual assessments.

5.6.4 The scope and content of an LVIA for a specific development will depend upon the development typology and context. Guidance on information requirements should be sought from the case planning officer as part of pre-application consultation.

## 5.7 Cumulative Landscape and Visual Impact Assessment

5.7.2 Cumulative impact can be defined as “*the additional changes caused by a proposed development in conjunction with other similar development or as the combined effect of a set of developments, taken together*”<sup>11</sup>. Where a Cumulative Landscape and Visual Impact Assessment is required, an assessment of both combined and additional effects will be required.

5.7.3 The guidance and baseline assessments set out in the following documents commissioned by the Council should be fully addressed as part of all cumulative impact assessments: -

- [Pembrokeshire and Carmarthenshire: Cumulative Impact of Wind Turbines on Landscape and Visual Amenity Guidance](#); and
- [Carmarthenshire Wind Turbine Development Landscape Sensitivity and Capacity Study](#)

5.7.4 **Cumulative scoping assessments** should be carried out where the development may be viewed in conjunction with other wind turbine developments that are already operating, have planning permission or where a planning application has been submitted. **Detailed Cumulative Impact Assessments** will only be required where the proposal could result in significant cumulative impact. [Pembrokeshire and Carmarthenshire: Cumulative Impact of Wind Turbines on Landscape and Visual Amenity Guidance](#) provides further, more detailed guidance on undertaking such assessments. Further guidance on information requirements should be sought from the case planning officer as part of pre-application consultation.

## 5.8 Direct Landscape Impacts

5.8.1 Wind turbine development frequently results in direct physical changes to existing landscape elements<sup>12</sup>:

- at constraint points along the proposed turbine delivery route;
- at site access from the public highway;
- from construction of the proposed turbine structure and ancillary elements and from associated construction phase disturbance.

In most situations, adverse direct physical impacts can be effectively mitigated through scheme design, construction phase management, and mitigation and enhancement proposals.

5.8.2 The following additional information will be required as part of applications for larger scale turbines.

- **Physical Landscape Impact Audit (PLIA)**

The PLIA should identify all direct physical effects of the proposed development upon existing landscape elements. The PLIA shall provide clear indication of which landscape elements will be retained, temporarily disturbed, translocated or permanently removed. Whilst sympathetic siting, design and layout can reduce the impact on the landscape, mitigation measures should be considered in order to reduce any adverse impacts.

- **Physical Landscape Impact Mitigation Scheme (PLIMS).**

All direct landscape impacts identified within the PLIA should be mitigated through an appropriate Physical Landscape Impact Mitigation Scheme (PLIMS). The PLIMS should provide sufficient details of all mitigation proposals to enable compliance monitoring and enforcement

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<sup>11</sup> Taken “Assessing the Cumulative Impact of Onshore Wind Energy Development” Scottish Natural Heritage, March 2012.

<sup>12</sup> Landscape Elements are defined in LDP Policy EQ5 as including: existing trees; groups of trees; large shrubs; and all features identified as contributing to biodiversity and local distinctiveness/qualities of the County in the County, namely: “Hedgerows, ditches and banks, stone walls, streams, tree belts, woodlands, veteran trees, parklands, green lanes, river corridors, lakes, ponds, road verges, or habitat mosaics or networks of other locally important habitats including peat bogs, heath-land, wetlands, salt marshes, sand dunes and species rich grasslands”

Further guidance on additional information requirements should be sought from the case planning officer as part of pre-application consultation.

## 5.9 Landscape Compensation & Biodiversity Enhancement Scheme

5.9.1 Wind turbine development inevitably results in changes to local landscape character through the introduction of new, manmade moving landscape elements. The significance of these changes in terms of magnitude and extent of effect are addressed as part of determination of a planning application, in terms of their acceptability against planning policy. However, in most situations, approved turbine development will result in residual adverse impacts upon landscape character. Whilst these impacts may not be of a significance to justify refusal of the application, it is considered that a suitable Landscape Compensation and Biodiversity Enhancement Scheme (LCBES), which ensures the retention, protection and enhancement of existing landscape character should be secured as part of any planning approval. Further guidance on the requirements of a LCBES should be sought from the case planning officer as part of pre-application consultation.

## 5.10 Noise

5.10.1 Turbines produce mechanical noise from generators, gearbox and drivetrain, and aerodynamic noise, which is produced from the movement of their blades through the air. In order to assess the acceptability of noise levels produced by a proposed turbine, all planning applications are expected to be accompanied by a **Noise Assessment**. Appendix A provides further guidance on how the Council will assess noise impact from wind turbine(s).

5.10.2 All turbines are required to accord with ETSU-R-97: The Assessment and Rating of Noise from Wind Farms published by the Department of Trade and Industry. Sites should minimise noise by being located an appropriate distance from noise sensitive locations.

5.10.3 Noise during construction should also be taken into account at an early stage. Measures to minimise instances of significant residential disturbance should be implemented. Actions could include avoidance of weekend and early morning working.

### Noise Assessments

- Assessments must be carried out by a qualified and competent acoustician.
- “A Good Practice Guide to the Application of ETSU-R-97 for the Assessment and Rating of Wind Turbine Noise”, published by the Institute of Acoustics (May 2013) should be used as reference.

## 5.11 Ecological Considerations

5.11.1 General guidance on ecological considerations is provided in Section 4 which is applicable to all renewable energy schemes. However, turbine development has specific concerns relating to bats and birds which require additional consideration. As of this date, these are the Council’s best guidelines but may be subject to change as a result of new guidance or up to date surveys.

### Bats

5.11.2 Bats and their roosts are legally protected by UK and International legislation. All planning applications for turbines will require a **bat survey**, primarily to determine whether the proposed site is used by, or is likely to be used by bats and which species are present. Surveys will also identify what time of the year the bats are utilising the site as activity changes throughout the year, this is particularly important for those species identified as high risk which will exploit open habitats and are more likely to be at risk from collision with turbines, although all species using the site to any significant extent need to be identified. Bat activity across and within the site must be established and any roosts (maternity roosts, swarming sites or

significant hibernation sites) on or close to the site must be located. Any survey must examine any features that may be utilised by bats for commuting and foraging.

5.11.3 Guidance on survey effort, timing and methodology is available in *Bat Surveys - Good Practice Guidelines*, 2nd Edition published by the Bat Conservation (L. Hundt 2012) – Section 10.

#### **Bat Assessments**

- Surveys will be required at least once in spring, autumn and summer for low risk turbine sites or more if a higher risk is identified.
- The applicant may be able to opt for a curtailment of a turbine after one survey has been undertaken, based upon the level of risk this survey identifies. This can only be agreed once initial survey work has been assessed and must be agreed with the LPA Ecologist.
- Both manual (transects) and static surveys are required. Static surveys should be for 5 consecutive day's duration.
- Any manual surveys should be carried out on warmer, drier evenings where the wind speed is low.
- Details of temperature and weather conditions during surveys must be included in final report.

#### **Birds**

5.11.4 A comprehensive desk study must be undertaken to assess the records for bird activity around a proposed turbine site. Cumulative impacts must also be considered. A walkover survey of the site and surrounding area relevant to appropriate disturbance buffer zone distances for relevant species such as Red Kite, must be undertaken to identify if the desk study reflects the situation on the ground and indicate any potential sites of avian importance or species that must be considered.

5.11.5 On the basis of the findings of the desk and walkover studies there may, or may not be a requirement to carry out full vantage point surveys and collision risk assessments. Initial survey work must be assessed and agreed with the LPA Ecologist pre-application to determine whether further survey will be required. Any further surveys will need to be carried out following recognised guidance to ensure it has been carried out to a recognised protocol.

## **5.12 Historic Environment and Archaeological Settings**

5.12.1 Carmarthenshire has an important historic environment, with parts of the County being highly regarded with features of historic and archaeological importance, many of these features are protected by legislation. Consideration needs to be given to the County's historic environment in the early stages of schemes. Such sites include Scheduled Ancient Monuments, Historic Parks and Gardens, Historic Landscapes, Conservation Areas and Listed Buildings.

5.12.2 It is important that turbines do not directly physically impact upon the features of historic interest, or cause unacceptable visual harm to the setting of historic and archaeological sites. Turbines should be sited away from known archaeological sites.

5.12.3 An **Archaeological Assessment** may be appropriate in locations where turbines are proposed close to known or undiscovered archaeological sites. Such surveys should be undertaken by an appropriately qualified professional to standards set by the Institute of Archaeologists. Early engagement with Dyfed Archaeological Trust and Cadw is recommended.

5.12.4 Reference should be made to the Archaeology and Development Supplementary Planning Guidance for further, more detailed advice.

### 5.13 Residential Amenity, Aviation and Electromagnetic Transmissions and Telecommunications Interference

5.13.1 In siting turbines, regard should be had to the amenities of the residents and occupants of nearby properties. This requirement, in line with TAN 8 should reduce the potential nuisance arising from wind turbine operation, noise, shadow flicker, safety risk, and radio or telecommunications interference. Local circumstances will dictate the appropriate distance based on topography, the orientation of nearby properties and the existing nature and landscaping surrounding the site.

5.13.2 Shadow flicker occurs at certain times of the day when the sun passes behind the rotors of the turbine which then casts a shadow which flicks on and off in time with the movement of the rotor. If shadow flicker is liable to occur close to residential properties, an assessment should be undertaken. Mitigation measures to prevent shadow flicker could include shutting down the turbine during affected times or appropriate screening.

5.13.3 Wind turbines have the potential to cause a number of negative effects on aviation, including physical obstructions to air traffic movements, interference to Air Traffic Control and Air Defence radar installations and turbulence. Consultation with the Civil Aviation Authority (CAA), Ministry of Defence (MOD) and the National Air Traffic Services (NATS) should be undertaken at an early stage, in order that any effects on aviation and potential mitigation is identified.

5.13.4 Turbines also have the potential to affect electromagnetic transmissions. Turbines should be sited away from radio and microwave signal corridors and should not impact upon domestic TV, radio reception, and mobile broadband. Where interference cannot be avoided, mitigation measures will be required by the developer.

### 5.14 Safety, Proximity to Roads, Railways, Buildings and Public Open Spaces and Aviation Safety (Including Topple Distance)

5.14.1 Turbines should be located an appropriate distance from roads, railways, buildings and public open spaces. The appropriate distance otherwise known as the “topple distance”, which is calculated as being the height of the turbine.

5.14.2 Turbines should not cause a visual distraction to drivers and should be located away from junctions, tight bends and crossings.

### 5.15 Public Accessibility / Rights of Ways

5.15.1 A Public Right of Way is a route over which the public have a legal right to pass and re-pass. Public Rights of Way include public footpaths, bridleways and byways and are recorded on the Definitive Map and Statement. The Definitive Map and Statement is a legal record of public rights of way in the County.

5.15.2 In public areas or areas, visited by members of the public, it is expected that the developer provides interpretation boards explaining the project.

#### Considerations:

- Consideration should be given to the amenity, health and safety of all users of the right of way. Turbine blades should not over sail public rights of way.
- Where turbines are likely to impact upon public rights of way, whether temporary or permanently, it is recommended to discuss the impacts with the Council’s Countryside Recreation & Access Unit. Existing bridleways and footpaths shall be safeguarded with no permanent loss to the length and quality of trails.

- Horses – A minimum separation of 200m distance, or 3 times blade tip height, whichever is greater, from routes available to horses is recommended. Where this is not achievable, there are a number of factors that should be examined in order to provide an appropriate solution including: the availability of alternative routes; the number and siting of the turbines; and undulating ground.
- Mitigation should be considered as a permanent measure, or temporary during the construction period. Such mitigation measures could include the provision of new routes, improving the current right of way network or interpretation and visitor facilities. Encouragement will be given to enhancing existing facilities and providing new recreational facilities.

## 5.16 Highways

5.16.1 Some turbines will be located in the rural areas served only by minor roads. The construction of wind turbines will require sufficient and safe access to transport the turbine components. Proposals will be required to ensure that they do not give rise to problems of highway safety or have a detrimental effect on the highway network as a result of construction and maintenance traffic, in line with Policy TR2 – Location of Development – Transport Considerations. Applications are expected to be accompanied with a Traffic Management Plan.

### Highway Considerations:

- The developer will be required to demonstrate that traffic during construction and maintenance will be able to travel safely to and from the site and should not cause damage to existing hedgerows and trees. Applicants will also be required to identify if third party land is required for road widening in association with the delivery of the turbine.
- New field access and access tracks should be kept to a minimum. Where they are necessary, they should be constructed causing minimal impact on the surrounding hedgerows and local character. New tracks should follow existing site contours and field boundaries. It will be expected that any new field access will be closed and access tracks, hedgerows re-instated or grassed over to be fully restored upon decommissioning.
- Liaison should be carried out with the Highways Authority after permission is granted in terms of arranging the timing of delivery in order to minimise traffic disruption.

## 5.17 Drainage / Flood management / Water Quality

5.17.1 Due to the groundworks necessary in the construction of turbines, consideration should be given to any resultant effects on land drainage or increase in flood risk. Where developments are likely to cause surface water issues, applications will be expected to be accompanied with a Surface Water Management Plan. Turbines should not be sited in Flood Risk Areas nor adjacent to bore holes. No degradation of water quality should take place as a result of turbine construction.

## 5.18 Decommissioning / Site Restoration / Duration of Planning Permission

5.18.1 Applications are expected to be accompanied with an agreed decommissioning schedule and details of the restoration of the site. In restoring the site, it is expected that the site will revert completely to its state prior to the construction of the turbine(s), all development, ancillary infrastructure and access tracks should be removed and any soils and vegetation restored appropriately. It will be expected that any new field access will be closed and access tracks will be closed, hedgerows re-instated or grassed over to be fully restored.

## 5.19 Site Security / Safety / Lighting

5.19.1 Any security measures should not cause visual harm to the character of the local area. In rural areas, lighting should be kept to a minimum and if, where required should be infra-red for aviation purposes.

### Application checklist

- ✓ Application Form (all)

#### PLANS:

- ✓ Location Plan (1:2,500)
- ✓ Site Plans showing: (all)
  - the site size,
  - site boundary
  - location of the turbine(s) and associated infrastructure
  - proximity to existing dwellings
  - photomontages, wireframe drawings and viewpoints
- ✓ Elevation plan (all)
- ✓ Surface water management plan (if applicable)
- ✓ Decommissioning & Restoration Plan (all)

#### DETAILS:

- ✓ Capacity – electrical output (KW) (all)
- ✓ Estimated energy generation (KW/h/yr) (all)
- ✓ Average site wind speed (minimum of 12 months data) that fully demonstrates the installation(s) is capable of meeting the stated energy generation (all)
- ✓ Site Specific Analysis (all)
- ✓ Pollution prevention method statement (if applicable)
- ✓ For large wind turbines, additional information will be required:
  - Topple zones
  - Radar & Air traffic control interference
  - Microwave transmission buffers

#### SURVEYS:

- ✓ Ecological Survey (all)
- ✓ Landscape Compensation and Ecological Enhancement Scheme(all)
- ✓ Landscape and Visual Assessment (all)
- ✓ Cumulative Impact Assessment
- ✓ Physical Landscape Impact Audit & Physical Landscape Impact Mitigation Scheme (all)
- ✓ Noise Assessment (all)
- ✓ Bat Survey (all)
- ✓ Birds Survey (minimum desk study for all)
- ✓ Archaeological/Heritage Assessment (if applicable)
- ✓ Traffic management plan (all)
- ✓ Vibration, shadow flicker and visual impact assessments (if applicable)

#### OTHER ITEMS THAT MAY BE REQUIRED:

- ✓ Environmental Impact Assessment
- ✓ Appropriate Assessment under the Habitat Regulations
- ✓ Community Benefit Policy for Community Energy Projects



## 6. Solar

### 6.1 Context

6.1.1 Harnessing the sun’s energy for heat and power is becoming a popular and affordable solution for low carbon energy generation. Solar panels are increasingly being used by householders on new-build dwellings by being integrated into roof designs, whilst also being retrofitted to existing roofs. The Authority is also receiving increasing numbers of planning applications for solar farms / arrays covering large areas of agricultural and vacant land.

6.1.2 Solar schemes are categorised by their site area and output for the purposes of this guidance and LDP policy implementation as follows:

	Site Area	Indicative Output Based upon 2ha/MWp
Small	1 ha to 5 ha	0.5 MWp to 2.5MWp
Medium	>5 ha to 15 ha	>2.5MWp to 7.5MWp
Large	>15 ha	>7.5MWp

**Table 2: Solar Typologies**

### 6.2 Types of Technology

#### Solar Thermal Systems / Hot water

6.2.1 Solar energy can be used to provide hot water via solar thermal systems, which usually consist of thermal panels placed on building roofs. For domestic properties outside a conservation area, planning permission may not be required (please see [www.planningportal.gov.uk](http://www.planningportal.gov.uk)).

#### Solar Photovoltaic (PV) / Electricity

6.2.2 The sun’s energy is converted into electricity via Photovoltaic (PV) cells. PV panels can be roof mounted, or are increasingly being installed as commercial scale solar PV arrays. PV arrays normally comprise large numbers of individual panels grouped into “arrays” and mounted on freestanding racks<sup>13</sup>.

### 6.3 Policy Context

6.3.1 For solar proposals, Policy RE3 is applicable in addition to the general policies listed in section 3.4.3. Since the adoption of the LDP, it is clear that further clarification is required in terms of proposals located outside development limits.

#### Proposals outside Development Limits

6.3.2 For the purposes of Policy RE3, the scheme sizes are summarised in table 2.

6.3.3 The policy states that “*large scale schemes located outside defined Development Limits may be permitted in exceptional circumstances*”. The purpose of this statement is to ensure that only feasible schemes will be permitted and will contribute to meeting the national renewable targets. Large solar parks can be very visible in the landscape and applications should be supported by appropriate supporting information to enable a comprehensive assessment of the scheme to ensure it will not cause demonstrable harm to the landscape.

6.3.4 The policy’s amplification (para 6.7.31) explains that in respect of solar parks, “*such schemes can play an important role in assisting WG achieve its renewable energy generation targets, and for this reason, the need for the scheme will be weighed up against the need to protect the landscape from inappropriate development. Such schemes will be assessed against other policies contained within this Plan primarily*

<sup>13</sup> Practice Guidance – Planning Implications of Renewable and Low carbon Energy

*relating to the impact on the landscape and biodiversity of the proposal and the cumulative impact of renewable energy installations”.*

## **6.4 Roof Mounted**

6.4.1 Generally, in many cases, roof mounted panels will not require planning permission as they are permitted development. It is recommended that applicants consult the latest version of the Town and Country Planning (General Permitted Development Order) prior to installation. The Council will also advise whether or not permission is required via the pre-application process.

6.4.2 Encouragement is given to applicants of new buildings to incorporate roof mounted panels into building design at an early stage. There are a number of considerations that applicants should consider when incorporating panels in roof design:

- Visual impact & design – The panels should be well incorporated and blend into the overall design. They should also be placed in locations which would not harm the proportions or take away from the overall design of the building and surrounding buildings. Consideration will be given to the cumulative impact of panels. Outbuildings or extensions could be considered as being suitable to incorporate panels.
- Landscape Considerations – Consideration and allowance should be given to any large trees that may cause shadow to any proposed panels.
- Ecology – Bats and birds use buildings for roosting and nesting and as such, an assessment will have to be undertaken to assess whether any are present in the roof as all bats and some birds are legally protected. The installation of panels should not cause demonstrable harm to important habitats and species.
- Listed Buildings & Conservation Areas – Listed Building Consent and planning permission is normally required to attach solar panels to Listed Buildings, as in most cases they will be fixed to the building which may change its character and/or appearance. Panels should not cause disturbance to, or destroy the historic fabric of the Listed Building. In Conservation Areas, solar panels should be located in unobtrusive areas which would not impact upon the area’s character.
- Glint and Glare – Glint is described as being intense direct reflections of the sun, and glare being diffuse reflections of the bright sky around the sun. Glint and glare can cause particular problems for users to the south-east of a development, for example to homes, businesses and public highways. A glint and glare assessment should be completed and should accompany a planning application if required. Mitigation measures could be put in place to address any harmful impact.

## **6.5 Ground Mounted Panels**

6.5.1 Carmarthenshire has a number of Solar Farms or Solar PV arrays. These consist of free-standing panels or arrays which should face due south and angled at 20-45 degrees in order to achieve the maximum energy generation. Technology is available for some arrays to track the path of the sun, although the cost for these systems is considerably higher.

6.5.2 Large areas of land are required for solar farms, for this reason there are a number of considerations required in order to make the scheme acceptable. The following guidance sets out the considerations that applicants should consider when planning a solar farm, these considerations will also be used when assessing applications.

## **6.6 Landscape Sensitivity and Capacity**

6.6.1 Field scale solar PV developments represent large man-made elements within the landscape which result in inevitable changes to the landscape and visual character of an area. The acceptability of Solar PV

development within an area will depend upon the magnitude of these changes in relation to the sensitivity and capacity of the receiving landscape.

6.6.2 The [Carmarthenshire Solar PV Development Landscape Sensitivity and Capacity Study](#) undertaken by Jellard Associates sets out guidance on the sensitivity and capacity of the Carmarthenshire landscape. The study is intended to inform the appropriate design and siting of solar PV development through setting out a baseline assessment of landscape and visual sensitivity and capacity in relation to a range of Solar PV typologies.

The study uses a methodology deriving data from LANDMAP aspect datasets, to provide baseline assessments of landscape and visual susceptibility and landscape value through 80 distinct landscape units covering the entire authority area. Assessments of the sensitivity of each landscape unit to different development typologies, are derived from the baseline assessments.

6.6.3 The guidance and baseline assessments set out in the study should be used as a basis for the design of solar PV development and the assessment of landscape and visual impacts.

## 6.7 Landscape and Visual Impacts

6.7.1 Appropriate siting and design of solar PV development in relation to the sensitivity and capacity of the receiving landscape to minimise landscape and visual impacts is fundamental to the acceptability of development. Field scale ground mounted arrays have the potential to harm landscape quality and character. In order to minimise harm, the first step applicants should take is appropriate site selection. Thought should be given to the design and layout of the arrays in order to minimise harm to the landscape. The most appropriate sites for ground mounted arrays are those which are south facing and are on flat areas or on lower slopes of lowland landscapes, rather than upland, prominent slopes.

6.7.2 The [Carmarthenshire Solar PV Development Landscape Sensitivity and Capacity Study](#) provides landscape unit specific comments on landscape capacity and guidance for siting, and overall guidance on site context, siting and design considerations. The principles of this guidance are set out below: -

### A Factors Relating to Design

#### Solar PV Layout

When siting development, it is equally important to consider the appearance of the proposed development as it would appear when viewed from those aspects where the supporting frames will be more visible, as well as from the frontal aspect which shows the solar panels in full. The design should ensure that the arrays follow contours wherever possible and fit within existing enclosure patterns - avoid siting panels that are remote from the rest of the group. It will be important to maintain land uses on the site that fit with the character of the area.

For sites which are overlooked by higher ground from where it is close enough to clearly discern the detailed characteristics of the proposed development, the design of the site layout and how it relates to - or is assimilated into - the landscape will be particularly important. Where field scale solar PV is proposed which does not occupy the entire area of one or more fields, then the potential for introducing new boundary features, such as hedgerows or linear belts of woodland, must be carefully examined in relation to the prevailing pattern and texture of the receiving landscape.

The designed height of the solar PV panels should be such that they will be as unobtrusive as possible in the landscape. In areas where mature hedgerows form the field boundaries, the aim should be to site the arrays below the height of the field boundary hedgerows, which should be managed to a top height of around 3 metres above existing ground level on the field side.

### B Factors Relating to Site Context

#### Landscape Character

Impacts on landscape character are likely to be related to:

- Scale of the landscape – whether it is small or large, and whether the proposed solar PV developments are of an appropriate scale which is compatible with that of the receiving landscape;

- Topography – field-scale solar PV development can dominate small scale or intricate landform if not carefully sited;
- Skylines – field-scale solar PV development can affect the perception of the simplicity of skyline or ridges if located on or immediately below these features;
- Landscape pattern – field-scale solar PV development should be carefully sited so as to avoid conflict with existing tangible patterns in the receiving landscape;
- Settlement pattern – field-scale solar PV development should be carefully sited in relation to existing settlement.

#### **Areas with a Sense of Remoteness**

Field-scale solar PV development should be sited away from areas valued for their remoteness, areas free from human influence and perceived wilderness, e.g. extensive tracts of upland moorland.

#### **Valued Landscapes and Cultural Heritage Assets**

Detailed and specific analysis will be required, in order to fully appreciate the nature of the development, the site and its surroundings and the likely effects on any locally designated or valued landscapes, including their essential setting, where appropriate. The siting of field-scale solar PV installations should therefore be carefully considered so as to protect views to and from important landscape and cultural heritage focal features (including Listed Buildings and Scheduled Ancient Monuments (SAMs), and their wider landscape setting, including the defined ‘essential setting’ of registered parks and gardens.

### **C Factors Relating to Siting**

#### **Landform**

Field-scale Solar PV development should be sited on flat lowland or on the lower slopes within gently rolling lowland landscapes; steeper landform - and in particular the higher slopes – are likely to be more sensitive. Such solar PV development in plateau landscapes should be sited in extensive and undulating areas and set back from the edge, so as to minimise any effects on views from adjacent upland areas

#### **Landscape Pattern**

Field-scale solar PV development should be sited so as to reflect and harmonise with tangible patterns in the receiving landscape - for example, those produced by well-defined field and woodland boundaries.

Conversely, care must be taken not to site field-scale solar PV arrays so that they would conflict with such patterns in the landscape.

Small-scale medieval field patterns are generally more sensitive to field-scale solar PV development than more recently enclosed fields, which are likely to be regular in shape and larger scale. Arrays of solar panels should be designed so as to be properly assimilated into the existing field pattern, avoiding the imposition of unsympathetic hard edges and straight lines within landscapes with irregular or curved field boundaries. In addition, when designing a scheme across multiple fields, the following guidance should be fully taken into consideration:

- Preserve the legibility of field patterns by minimising the number of adjacent fields that are developed, and by setting solar PV arrays back from the edges of fields. This will also permit the continuation of efficient and cost-effective boundary hedgerow management;
- Designing a site layout around conserved and enhanced existing field boundary hedgerows, or belts of woodland, will contribute to reducing the massing effect of contiguous field-scale solar arrays.

#### **Woodland and Trees**

Field-scale solar PV developments should be sited within landscapes with some degree of enclosure (by landform, woodland or hedgerows – or combinations of these elements), rather than in open or relatively unenclosed landscapes.

#### **Focal Features**

Consider views from local viewpoints, popular routes, recognised or noted iconic views, and designated landscapes when considering the siting of field-scale solar PV development in the landscape. This is particularly important when a prominent or conspicuous landmark may be present, such as at Paxton’s Tower, which is an important focal point in the landscape. Field-scale solar PV developments should be sited

in such a way that they can be well concealed or properly assimilated into sensitive views. The siting of solar arrays should therefore be carefully considered to protect views to and from important landscape and cultural heritage features

### **Settlements and Urban Landscapes**

Field-scale solar PV development should be carefully located in relation to nearby settlements, buildings and other structures. In sparsely settled rural landscapes, solar PV development should be located near to existing buildings or structures. Views to/from, or on the approach to settlements (including dispersed properties) should be carefully considered when siting field-scale solar PV developments.

5.15 Field-scale solar PV development should be located in the least visually prominent location, and should be sited so as to minimise adverse effects on sensitive public viewpoint locations, promoted recreational routes, roads and other public rights of way.

### **Ancillary Infrastructure**

- Field-scale solar PV developments should utilise existing access points and existing access tracks wherever possible, in order to minimise the introduction of new tracks into the landscape, as well as devising temporary access measures which can be removed completely following the completion of the construction phase of the scheme. Locating access tracks between arrays of panels should be avoided wherever possible.
- Avoid the use of hardworks elements which could have an ‘urbanising’ effect - such as concrete kerbs and posts - in rural situations; and minimise the extent of sealed hard surfaces, the use of urban or industrial styles of perimeter fencing and security gates; CCTV infrastructure; and the use of lighting, particularly in those landscapes with no apparent artificial lighting. Lighting should be avoided unless absolutely necessary. If it is considered to be essential, then the design of the fittings and columns should be sympathetic to the rural context and all lighting should utilise passive infrared (PIR) technology for its activation. The design of fittings should minimise light spillage, particularly onto adjacent or nearby hedgerows, woodland or scrub where it could have detrimental effects on wildlife.
- Existing or new landscape features should be utilised in order to integrate security features into the landscape, such as perimeter security fencing. Security fences can be made to appear less prominent in the landscape if they are set back from hedgerow boundaries on the site’s perimeter, which has the effect of reducing their overall height when viewed from outside the site. Where possible, security fencing should be avoided to minimise visual impact. As an alternative, for example, it may be possible to construct ditches and berms which would control access but in a more sympathetic way. However, if security fencing is deemed necessary, it should be constructed of materials which are sympathetic to the countryside with the means for wildlife to move freely, for instance, by erecting deer fencing as opposed to conventional security perimeter fencing. Planting alongside the fencing can reduce its impact, although there may be surveillance constraints to consider.
- New hedgerow or woodland belts can be planted to screen views of the perimeter fences. In many instances, hedgerows or tree belts will be an important part of creating a visually acceptable setting within the wider landscape for a solar PV array. Such new landscape features need to be appropriate to the character of the local landscape, such as the selection of locally-occurring tree and shrub species, or the creation of hedgebanks in the local vernacular. There is a need to avoid potential shading from boundary screening treatments. The relationship between boundary vegetation height and its distance from the arrays is an important design factor.
- Proposals should ensure that all on-site cables are buried underground (without undue damage to existing hedgerows or archaeology), so as to minimise adverse effects on landscape character and visual amenity. Grid connections should be placed underground wherever possible.
- Inverters should be enclosed within existing buildings wherever possible, particularly where these are of local vernacular, and the scheme design should locate these facilities as close as possible to the site. Switchgear and control cabinets or control buildings should be carefully sited and should generally avoid high or exposed locations, making optimum use of existing and locally occurring vegetation or field

boundary walls to screen or assimilate such features into the receiving landscape. Placing an inverter building within the centre of solar arrays should always be avoided.

- New buildings constructed as part of a field-scale solar PV development should be required to match the local vernacular, in terms of their form and scale, together with the external materials and colours to be utilised.
- Drainage provisions can have significant visual impacts. Often, on flat ground, solar panels can simply drain to the ground with little problem, but sloping sites can cause more difficulties, with the potential for run-off being concentrated and leading to the formation of erosion gullies. SUDS type drainage schemes, utilising a network of appropriately designed ditches, swales and berms, are likely to be the most cost-effective and visually acceptable methods of achieving the satisfactory collection and discharge of surface water run-off in a rural context.

### **Appearance of Solar PV Arrays – Materials and Finishes**

When designing the layout and selecting the materials for the panels, the design process should consider the appearance of the development as it would be viewed from all aspects, not just the aspect in which the arrays would be seen from the front. Dark, recessive colours in natural tones - and non-reflective materials for structures associated with the PV panels (including supporting frames, control cabinets and posts) - are generally considered to be less visually intrusive than reflective materials and bright colours for finishes.

The following considerations should be given in the design of the array:

- The layout and design of schemes should follow the site's contours and respect any landscape features on the site.
- Panels should be considered as a whole and not create a piecemeal development where some panels are sited away from the rest of the group.
- Whilst it is accepted that panels need to be orientated to achieve the best performance, the appearance of the panels from all directions should be considered.
- Consideration should be given to locating panels close to existing buildings, particularly if there are agricultural buildings close to the site.
- The scale of the array should respect its location, particularly within the landscape it lies.
- Existing field enclosures and patterns should be maintained and arrays placed within these enclosures. Consideration should be given to enhancing existing, and reinstating hedgerows. A suitable buffer should be given to hedgerows in order to afford protection to them, they should also be protected throughout the construction period.
- The height of the panels should not be taller than the existing hedgerows in the area, panels should be screened as much as is possible without compromising efficiency.
- An effort should be made to minimising development on the site to only necessary development in rural areas. Hard surfacing, tall fencing and urbanisation should be minimised.
- Cables should be buried underground where possible, particularly on-site and to grid connections. When burying cables, works should not cause harm to important features on the site, including hedgerows.
- Ancillary buildings should be in-keeping with existing local buildings and be screened where possible. Buildings should also be sited in the most appropriate location, avoiding prominent locations.
- Any boundary treatment should be in-keeping with its location, use of landscaping will be encouraged and if fencing is required then it should be of an agricultural form to blend in with the area. Tall, compound-style fencing in rural areas will be resisted.
- New field access and access tracks should be kept to a minimum. Where they are necessary, they should be constructed causing minimal impact on the surrounding hedgerows and local character. New tracks should follow existing site contours and field boundaries. It will be expected that any new field access will be closed and access tracks, hedgerows re-instated or grassed over to be fully restored.
- Reference should be made to the Landscape Capacity and Sensitivity Study, in particular with the relevant landscape unit.

## 6.8 Landscape and Visual Impact Assessment (LVIA)

6.8.1 The effect on the landscape can be measured as changes in the character, the experience and/or value of the physical landscape as a result of a change. The significance of the effect on the landscape will be dependent upon a number of factors including the sensitivity of the landscape and its designation, and the magnitude of the proposed change.

6.8.2 The impact upon visual amenity can be a subjective one, but ultimately can be measured as being people's responses to a change in the composition of views as a result of changes within the landscape.

6.8.3 Applications shall be accompanied by an appropriate **Landscape and Visual Impact Assessment (LVIA)**, which is expected to adhere to the guidelines issued by the [Guidelines for Landscape and Visual Impact Assessment](#); Third Edition, April 2013; published by The Landscape Institute and the Institute for Environmental Management and Assessment (GLVIA3). This is the industry standard for undertaking landscape and visual assessments.

6.8.4 The scope and content of an LVIA for a specific development will depend upon the development typology and context. Guidance on information requirements should be sought from the case planning officer as part of pre-application consultation.

## 6.9 Cumulative Landscape and Visual Impact Assessment

6.9.1 Cumulative impact can be defined as *"the additional changes caused by a proposed development in conjunction with other similar development or as the combined effect of a set of developments, taken together"*<sup>14</sup>. Where a Cumulative Landscape and Visual Impact Assessment is required, an assessment of both combined and additional effects will be required.

6.9.2 Potential cumulative landscape and visual effects should be carefully considered on a case by case basis assisted, where appropriate, by the production of Zones of Theoretical Visibility (ZTVs) and visualisations. Further guidance on information requirements should be sought from the case planning officer as part of pre-application consultation.

### 6.9.3 Cumulative Effects - Considerations

When considering the siting and design for multiple field-scale solar PV developments within same Landscape Unit, the following guidance should be fully taken into consideration:

- When designing any field-scale solar PV development, it is important to consider how the scheme fits with other operational, consented and proposed renewable energy schemes (including those located within neighbouring planning authorities), or with other developments which may have similar characteristics, e.g. polytunnels or glasshouses, so as to minimise any adverse cumulative effects which might arise;
- The design should aim for similarity of design between schemes that would occur within the same type of landscape (in terms of siting, layout, scale, form and relationship to key characteristics), in order to maintain a simple and coherent visual effect which is sympathetic to the prevailing landscape characteristics;
- When designing extensions to operational field-scale solar PV sites, it will be important that the scale and appearance of the panels and arrays are compatible. Individual solar PV developments should generally appear visually separate, unless specifically designed to create the appearance of a single combined development;
- Ensure the area of the combined development remains in scale with the landscape in which it lies;
- It will be important to ensure that field-scale solar PV developments do not have a defining influence on the overall experience of the landscape, and that some open views devoid of solar PV developments are

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<sup>14</sup> Taken "Assessing the Cumulative Impact of Onshore Wind Energy Development" Scottish Natural Heritage, March 2012.

maintained within Carmarthenshire, (i.e. ensure that rural character remains and that solar PV developments do not dominate in any one locality);

- If two or more field-scale solar PV developments are clearly visible in the same arc of view and appear in the same Landscape Unit, they should appear of similar scale (unless the first development is considered too large for its landscape context) and their design should relate to the underlying landscape in the same manner;
- Views from settlements should not be compromised by an accumulation of field-scale solar PV developments in close proximity, as a result of which, a settlement could be seen to be enveloped by such installations.

## 6.10 Noise

6.10.1 Solar farms produce very little noise, and this is generally confined to daylight hours. In order to assess the acceptability of noise levels produced by a solar farm proposal, a **Noise Assessment** may be requested where it is deemed necessary, for example for larger developments where there may be the electrical equipment, inverters and transformers, housed in enclosures or containers around the site.

6.10.2 Permissions will typically include a condition to ensure that the noise rating level will not exceed background noise levels in the locality. In designing solar farms, consideration should be given to locating mechanical equipment in the middle of the site in order to minimise noise to the surrounding areas.

6.10.3 Noise during construction should also be taken into account at an early stage. Applications should also be accompanied with information relating to the method by which the solar panels are to be fixed to the ground and the intended hours of construction associated with the proposal. Measures to minimise instances of significant residential disturbance should be implemented. Actions could include avoidance of weekend and early morning working.

## 6.11 Cumulative Impact

6.11.1 Due to increasing numbers of solar arrays being erected in the Carmarthenshire countryside, there is an increasing need for developers to consider how an additional array will look when assessed against operational schemes and ones with planning permission.

## 6.12 Ecology

6.12.1 In identifying suitable sites, consideration should be given to the type of habitats on the site. The most suitable land for solar arrays would be previously intensively managed agricultural land, being of least ecological value. Sites should not include semi-natural habitats and should not be located on regionally or locally designated sites (including Local Nature Reserves, Regionally Important Geological/Geomorphological Sites, and Sites of Special Scientific Interest).

6.12.2 Sites should also not impact upon priority species, habitats and features of recognised principal importance to the conservation of biodiversity and nature conservation.

## 6.13 Historic Environment

6.13.1 Carmarthenshire has an important historic environment, with parts of the County being highly regarded with features of historic and archaeological importance. Many of these features are protected by legislation. Consideration needs to be given to the County's historic environment in the early stages of schemes. Historic sites include Scheduled Ancient Monuments, Historic Parks and Gardens, Historic Landscapes, Conservation Areas and Listed Buildings. It is important that the solar arrays do not directly



physically impact upon the features of historic interest or cause visual harm to the setting of historic and archaeological sites.

6.13.2 An **Archaeological Assessment** may be appropriate in locations where solar arrays are proposed close to known or undiscovered archaeological sites. Such surveys should be undertaken by an appropriately qualified professional to standards set by the Institute of Archaeologists.

6.13.3 Reference should be made to the Archaeology and Development Supplementary Planning Guidance for further, more detailed advice.

## 6.14 Drainage / Flood Management / Water Quality

6.14.1 Solar arrays have the potential to increase surface water flood risk. Schemes are expected to be accompanied with a Surface Water Management Plan which details how such matters will be dealt with during the construction period and during operation. Consideration should be given to the integration of Sustainable Drainage Systems (SUDS) within schemes. SUDS is a term used to describe the various approaches that can be used to manage surface water drainage in a way that mimics the natural environment in a more sustainable way than conventional drainage systems.

6.14.2 Sites should maintain as much vegetation cover as possible in order to manage surface water naturally. Access tracks should be permeable and any surface water runoff created by tracks should be collected by localised SUDS.

6.14.3 Water courses should have a 7m buffer at each side.

## 6.15 Rights of Ways

6.15.1 A Public Right of Way is a route over which the public have a legal right to pass and re-pass. Public Rights of Way include footpaths, bridleways and byways and are recorded on a Definitive Map and Statement which is the legal record. The Definitive Map and Statement is a legal record of public rights of way in the County.

### Considerations:

- Consideration should be given to the views from public rights of way into the site.
- Where arrays are likely to impact upon public rights of way, whether temporary or permanently, it is recommended to discuss the impacts with the Council's Countryside Recreation & Access Unit. Existing bridleways and footpaths shall be safeguarded with no permanent loss to the length and quality of trails.
- Mitigation should be considered as a permanent measure, or temporary during the construction period. Such mitigation measures could include the provision of new routes, improving the current right of way network or interpretation and visitor facilities. Encouragement will be given to enhancing existing facilities and providing new recreational facilities.

6.15.2 In public areas or areas visited by members of the public, it is expected that the developer provides interpretation boards explaining the project.

## 6.16 Glint and Glare

6.16.1 Full consideration should be given to how glint and glare of solar arrays will affect the environs. Glint is described as intense direct reflections of the sun, while glare as diffuse reflections of the bright sky around the sun, which is a continuous source of brightness. Glint and glare can cause particular problems for users to the south-east of a development, for example to homes, businesses and public highways. Applications for solar arrays will be expected to consider the effects of both glint and glare on the surrounding environment

and should be accompanied with a **Glint and Glare Assessment**. Mitigation measures could be put in place to address any harmful impact.

## 6.17 Site Security / Safety / Lighting

6.17.1 Any site security and safety measures should not cause demonstrable harm to landscape and visual amenity on the site and its surroundings.

- Security fencing should be of an appropriate material and height to the setting of the site, and where appropriate should be screened by existing or new hedgerows.
- Security lighting should be minimised and use made of infra-red lighting in order to minimise light pollution and reduce any impact on biodiversity.

## 6.18 Mitigation

6.18.1 Whilst sympathetic siting, design and layout can reduce the impact on the landscape, mitigation measures should be considered in order to reduce any adverse impacts. Applications will be expected to include a **Landscape Mitigation Plan**, which should include the steps undertaken in site selection, design and layout, and the considerations to minimise any adverse impacts. The Plan should also include details of its implementation and any maintenance required.

6.18.2 As part of applications, consideration should be given to enhancing the landscape. Particular enhancement measures could include hedgerow improvement and management of landscape features and habitats.

## 6.19 Construction Period

6.19.1 During construction, consideration should be given to the protection of residential amenities of properties close to the site, especially in terms of noise.

## 6.20 Highways

6.20.1 The development of solar arrays will require sufficient and safe access to transport during the construction period. Proposals will be required to ensure that they do not give rise to problems of highway safety or have a detrimental effect on the highway network as a result of construction and maintenance traffic, in line with policy TR2 – Location of Development – Transport Considerations.

### Highway Considerations:

- The developer will be required to demonstrate that traffic during construction and maintenance will be able to travel safely to and from the site. Traffic should not cause damage to existing hedgerows.
- Liaison should be carried out with the Highways Authority after permission is granted in terms of arranging the timing of delivery in order to minimise traffic disruption

### Application checklist

✓ Application form (all)

#### PLANS:

✓ Location Plan (1:2,500)

✓ Site plans showing: (all)

- the site size,

- site boundary

- location of the panels and association infrastructure (including sub-station & cabling route)

✓ Design of the module or array (all)

✓ Elevations to show the proposed location (if applicable)

✓ Surface water management plan (if applicable)

**DETAILS:**

- ✓ Capacity / Electrical output (KWp) (all)
- ✓ Estimated energy generation (KWh/yr) (all)
- ✓ Pollution prevention method statement (if applicable)
- ✓ Orientation / roof pitch & details of roof mounting (if applicable)

**SURVEYS:**

- ✓ Landscape and Visual Assessment (all)
  - ✓ Archaeological Assessment (if applicable)
  - ✓ Ecological survey (all)
  - ✓ Traffic management plan (if applicable)
  - ✓ Landscape Mitigation Plan (if applicable)
  - ✓ Visual impact assessment (if applicable)
  - ✓ Glint and glare assessment (if applicable)
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## Appendix A

# Guidance Document for Assessing Noise Impact From Wind Turbine(s)

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This guidance note is not formal supplementary planning guidance but aims to provide information and advice to improve the quality of planning submissions, which will enable officers to provide consistent decision making.

Failure to provide the following information with the full planning application may lead to a delay in Public Health Team providing comment with respect to the application or even the Public Health Team objecting to the application due to insufficient information that has been provided, as the noise impact from the proposed development cannot be sufficiently assessed. Please note that the provision of noise contours or printouts from computer models alone are not considered as sufficient information.

## **1** **Definitions**

### **1.1** **Small Turbine**

A small turbine is defined in accordance with the Renewable UK (formally known as British Wind Energy Association) definition, which is contained in the BWEA Small Wind Turbine Performance and Safety Standard 29 February 2008, which can be accessed using the following link

<http://www.renewableuk.com/>

The definition states that:

“a wind turbine having a rotor swept area of 200m<sup>2</sup> or less. In a horizontal axis wind turbine this equates to a rotor diameter of less than 16m.

### **1.2** **Large Turbine**

Large turbine is any one that does not fall within the above mentioned definition.

## **2.** **The key objective**

The key objective of Carmarthenshire County Council is to try and ensure that the wind turbine noise levels (including cumulative noise from consented and existing turbines in the vicinity) at noise sensitive properties does not exceed:

- 1. Small turbines - 35dB LAeq, t**
- 2. Large Turbine - 35dB LA90, 10mins**
- 3. Financially involved - 45dB LA90,mins**

## **3.** **Site Specific Desktop Noise Assessment**

All applications submitted must include a desktop noise assessment which is specific to the development locality. The assessment must be undertaken by a suitably qualified and competent acoustician. The desktop noise assessment should contain all the following information;

- A twelve figure national grid reference for the precise location of the turbine
- Identification of the nearest noise sensitive premises and details of their respective distances from the proposed development. Property that is in ownership of the applicant

should also be included. A statement should be provided as to whether any properties in ownership of the applicant are let to third parties.

- The make, model, hub height, declared apparent emission sound power level and rotor diameter of the proposed turbine.
- The most recent turbine-specific emission data (usually supplied by the turbine manufacturer) providing information on the derivation of the sound power level of the turbine, including the level of uncertainty.
  - For small wind turbines the assessment must comply with the BWEA Small Wind Turbine Performance and Safety Standard” 29 February 2008.
  - For large wind turbines the assessment must comply with the most recent version of IEC 61400-11.
- An appropriate modelled assessment must be undertaken detailing the predicted level of turbine noise for each identified receptor:
  - For small wind turbines the noise predictions must be undertaken in accordance with BWEA performance and safety standard, 29 February 2008, therefore the predictions must be based on a hemispherical sound propagation. The predictions should be based upon the declared sound power level up to and including wind speeds of 8m/s at hub height.
  - For large wind turbines the noise predictions must be made in accordance with ISO 9613-2 following the IOA guidance with regards the input parameters to be used. The predictions must be based upon the apparent sound power level (plus uncertainty) and a minimum wind speed range (10m Standardised) for background noise surveys;
    - For pitch-regulated turbines: between cut-in wind speed and the wind speed corresponding to its maximum sound power level.
    - For stall-regulated turbines: between cut-in and 12m/s
- Where multiple small or large turbines are proposed, a desktop noise assessment must be submitted that demonstrates that the cumulative noise emissions from the turbine will not exceed the lower fixed noise limits stipulated in ETSU-R-97.
- If the proposed development produces noise levels within 10dB of any existing turbine/s, consented turbine/s and any turbine/s currently the subject of an application at the same receptor location, then a cumulative noise impact assessment is necessary. In the first instance, the cumulative impact assessment must be based upon the consented levels of existing or approved turbines. We appreciate that there may be some circumstances where an alternative approach is more appropriate. If you wish to use an alternative approach, please contact the Public Health Team. Should there be no consented levels then the assessment should be based on the sound power level of the existing or approved turbines. A full explanation on how the cumulative impact has been determined should be submitted as part of the application. For assistance in completing this task then please contact the Carmarthenshire County Council’s planning department on 01267 234567. Carmarthenshire County Council reserves the right to request a wider search radius where large scale developments are involved.
- In instances where wind shear has not been taken directly into account, it will be necessary to apply corrections to address this. Any such corrections should be clearly outlined and detailed in any noise assessment. The Institute of Acoustics “A Good Practice Guide to the

Application of ETSU-R-97 For the Assessment and Rating of Wind Turbine Noise” provides examples of suitable methods to correct predictions to account for wind shear effects.

#### **4. Site Specific Detailed Noise Assessment**

Where the site specific desk top study demonstrates that the proposed wind turbine(s) do not meet the noise limits of:

- 1. Small turbines - 35dB  $L_{Aeq, t}$**
- 2. Large Turbine - 35dB  $L_{A90, 10mins}$**

then the applicant must undertake and submit a site specific detailed noise assessment.

This assessment should include the following:

- Predicted turbine(s) noise levels at the noise sensitive properties undertaken in accordance with the method detailed in point 3.
- A detailed background noise survey undertaken in accordance with requirements stipulated in ETSU-R-97, which are further explained in Institute of Acoustics’ Good Practice Guide. Locations and details of which should be discussed and agreed with the local planning authority. Two weeks’ notice of when the background noise measurements will be undertaken must be provided to the Public Health Team, so that they can attend where appropriate.
- Noise limits specified in ETSU-R-97 and the difference between the predicted noise levels and ETSU-R-97 derived noise limits.

Please Note that the Local Planning Authority of Carmarthenshire County Council so reserve the rights of specifying a single noise limit, which are not specified in ETSU-R-97.

#### **Example Noise Conditions for Small Wind Turbines**

- ❖ The rating level of noise emission from the wind turbines (including the application of any tonal penalty) should not exceed a sound pressure level of 35 dB $L_{Aeq,T}$  within the amenity space of any lawfully existing dwelling, at wind speeds up to an including 8m/s at hub height. Measurements should be made at least 3.5m away from the building facade or any reflecting surface except the ground.

The measurement time period shall be based on BWEA blade length calculation (3.4.1):

$t = 4 * D$  seconds

Where:

t - measurement period in seconds (Subject to a minimum period of 10 seconds)

D – rotor diameter in meters

- ❖ Within 21 days from the receipt of written request from the Local Planning Authority, the operator of the development shall, at its expense, employ an independent consultant approved by the Local Planning Authority to assess the level of noise imissions from the wind turbines using a method agreed with the Local Planning Authority, to ensure that the noise from the development meets the level specified in condition X.
- ❖ During the course of the investigation, should the wind turbine be identified as operating above the parameters specified in the above Condition the wind turbines will be modified, limited or shut down. These measures shall be applied until such time as maintenance or repair is undertaken sufficient to reduce the absolute noise level of the operating turbines to within the parameters specified in the above Condition.
- ❖ In the event that the operational turbine subsequently develops an audible tone, then a penalty shall be added to the measured sound levels in accordance with ETSU-R-97. This

condition applies where no tone has been identified at the assessment stage and no penalty applied.

**Example Noise conditions in relation to a large wind turbine**

- ❖ The rating level of noise immission from the wind turbine/s (including the application of any tonal penalty) should not exceed a sound pressure level not exceeding 35dB  $L_{A90, 10 \text{ mins}}$ , within the amenity space of any lawfully existing dwelling, at wind speeds up to an including 10m/s, standardised/measured to a height of 10m.
- ❖ The noise immission from the wind turbine shall not exceed a sound pressure level  $L_{A90, 10 \text{ mins}}$  of 45dB at the financially involved noise-sensitive property at wind speeds up to and including 10m/s at 10m height.

Where this is not possible ETSU-R-97 conditions will apply, based on the background noise levels and predictions submitted.

- ❖ Within 21 days from the receipt of written request from the Local Planning Authority, the operator of the development shall, at its expense, employ an independent consultant approved by the Local Planning Authority to assess the level of noise immissions from the wind turbines using a method agreed with the Local Planning Authority, to ensure that the noise from the development meets the level specified in condition X.
- ❖ The assessment of the rating level of noise immissions shall be undertaken in accordance with an assessment protocol that shall previously have been submitted to and approved in writing by the Local Planning Authority. The protocol shall include the proposed measurement location where measurements for compliance checking purposes shall be undertaken, the method to assess the presence of any tonal component, and also the range of meteorological and operational conditions (which shall include the range of wind speeds, wind directions, power generation and times of day) to determine the assessment of rating level of noise immissions.
- ❖ During the course of the investigation, should the wind turbine be identified as operating above the parameters specified in the above condition the wind turbine/s will be modified, limited or shut down. These measures shall be applied until such time as maintenance or repair is undertaken sufficient to reduce the absolute noise level of the operating turbines to within the parameters specified in the above condition.
- ❖ In the event that the operational turbine subsequently develops an audible tone, then a penalty shall be added to the measured sound levels in accordance with ETSU-R-97. This condition applies where no tone has been identified at the assessment stage and no penalty applied.

**Useful web links**

1. IOA Good Practice Guide  
<http://www.ioa.org.uk/pdf/ioa-gpg-on-wtna-issue-01-05-2013.pdf>
2. ETSU-R-97  
<http://webarchive.nationalarchives.gov.uk/+http://www.berr.gov.uk/energy/sources/renewables/explained/wind/onshore-offshore/page21743.html>
3. BWEA Small Wind Turbine Performance and Safety Standard 29 February 2008.  
<http://www.renewableuk.com/>

**Appendix B****European Sites**

There are a number of European sites that fall within the County, in addition there are a number that fall outside but should be considered in assessments.

Site	Designation	Location
Afon Tywi River Tywi	SAC	Carmarthenshire
Caeau Mynydd Mawr	SAC	Carmarthenshire
Cernydd Carmel	SAC	Carmarthenshire
Carmarthen Bay Dunes	SAC	Carmarthenshire
Afon Tefi River Teifi	SAC	Carmarthenshire, Ceredigion and Pembrokeshire
Afonydd Celldau / Cleddau Rivers	SAC	Carmarthenshire and Pembrokeshire
Carmarthen Bay and Estuaries	SAC	Carmarthenshire, Swansea and Pembrokeshire
Bae Caerfyrddin / Carmarthen Bay	SPA	Carmarthenshire, Swansea and Pembrokeshire
Cwm Doethie – Mynydd Mallaen	SAC	Carmarthenshire and Ceredigion
Elenydd – Mallaen	SPA	Carmarthenshire, Ceredigion and Powys
Burry Inlet	SPA	Carmarthenshire and Swansea
Burry Inlet	Ramsar	Carmarthenshire and Swansea
Cardigan Bay / Bae Ceredigion	SAC	Carmarthenshire, Ceredigion and Pembrokeshire
North Pembrokeshire Woodlands / Coedydd Gogledd Sir Benfro	SAC	Pembrokeshire
Yerbeston Tops	SAC	Pembrokeshire
Rhos Llawr-cwrt	SAC	Ceredigion
Pembrokeshire Bat Sites and Bosherton Lakes / Safleoedd Ystlym Sir Benfro a Llynnoedd Bosherton	SAC	Pembrokeshire
Gower Ash Woods / Coedydd Ynn Gwyr	SAC	Swansea



Pembrokeshire Marine	SAC	Pembrokeshire (The Carmarthenshire Rivers connect Carmarthenshire with the Pembrokeshire Marine SAC)
Gower Commons / Tiroedd Comin Gwyr	SAC	Swansea
River Wye / Afon Gwy	SAC	Powys (The catchment area for the River Wye is partially within Carmarthenshire)
Gweunydd Blaencleddau	SAC	Pembrokeshire
Preseli	SAC	Pembrokeshire
Mynydd Epynt	SAC	Powys
River Usk, Afon Wysg	SAC	The catchment area for the River Usk is partially within Carmarthenshire
Bristol Channel Approaches	cSAC	Extends across the western approaches of the Bristol Channel, from Carmarthen Bay in South Wales to the north coast of Devon and Cornwall.