SUPPLEMENTARY PLANNING GUIDANCE
Renewable Energy

October 2016

PEMBROKESHIRE COUNTY COUNCIL

For use alongside:

Local Development Plan: from Adoption (2013) – 2021

Contents

Chapter 1 - Introduction

1.1 International directives[1] transposed into national regulations[2] and guidance support the production of Renewable Energy. The UK has a target of producing 15% of its energy from renewable sources by 2020. The Welsh Government requires that planning policy at all levels should facilitate delivery of renewable energy, with the aim of reducing annual carbon emissions by 3% per year, with a commitment of at least a 40% reduction in all greenhouse gas emissions in Wales by 2020.

1.2 Pembrokeshire County Council's approach to renewable energy is set out in its Local Development Plan (LDP), adopted February 2013. Policy GN.4 "Resource Efficiency and Renewable and Low-carbon Energy Proposals" is of particular relevance. This Supplementary Planning Guidance (SPG) on Renewable Energy elaborates on Pembrokeshire County Council's policy approach to renewable energy.

1.3 This item of Supplementary Planning Guidance has been subject to a formal six week consultation. Once agreed by Cabinet this final document will be published, and will be a significant material consideration in evaluating planning applications.

<u>The purpose of this document</u>

1.4 This SPG elaborates on Plan policies seeking to balance the benefits that renewable energy development can have against the need to protect the natural and historic environment. It focuses primarily on solar, wind and biomass energy. However many of the planning principles and considerations are equally applicable to other renewable energy technologies.

1.5 The aim of the SPG is to:

- Assist and guide applicants and agents regarding information required at pre-application and planning application stages;
- Assist case officers and planning committee members in making informed decisions on renewable energy applications; and
- Help ensure that the benefits resulting from renewable energy generation are balanced with economic, social and amenity impacts on local communities, and with environmental effects, including those on biodiversity and visual and landscape considerations.

[1] EU Renewable Energy Directive (Directive 2009/28/EC, April 2009, which replaced 2001/77/EC and 2003/30/EC)

[2] Planning Policy Wales Edition 7 section 12.8

Chapter 2 - Permitted Development Rights

2.1 Planning permission is not required for certain types of Renewable Energy developments. This is because these types of development are identified as being 'permitted development', under the Town and Country Planning (General Permitted Development) Order 1995 (the "GPDO"), as introduced by the Town and Country Planning (General Permitted Development) (Amendment) (Wales) Order 2012. These changes include minor alterations to homes and the installation of a wide range of micro-generation equipment.

2.2 It is important to consider the wider implications of any permitted development proposals. Although in some circumstances development may not require planning permission, it may still have the potential to adversely impact upon the natural environment. In such instances it is the responsibility of the applicant to ensure no harm results from the development. It is recommended that prior to changes being made applicants seek advice from the County Council or Natural Resources Wales (NRW) in case other (legal) consents are requires, e.g. an abstraction licence.

2.3 Permitted development rights are sometimes removed by Local Planning Authorities. This can happen where an Article 4 Direction is put in place. It can also arise where a condition is put on a planning permission which removes permitted development rights.

2.4 There are Article 4 Directions in place in parts of central Haverfordwest, Pembroke Dock, Goodwick and Lower Town Fishguard. These have removed permitted development rights relating to proposed alterations of roof planes on front elevations of affected properties. Any development proposals (including solar panels) altering roof planes in these areas would therefore require planning permission.

2.5 The Welsh Government provides further details on permitted development rights and renewable energy; please see the 'useful links' at the end of this document.

Chapter 3 - Planning Application Considerations

Scale of Development

3.1 Welsh Government sets out the scale of renewable energy and low carbon energy developments for planning purposes as:

Scale of Development	Threshold (electricity & heat)
Strategic	Over 25MW for inshore wind and over 50MW for all other technologies[3]
Local Authority-wide	Between 5MW-25MW for onshore wind[4] and between 5MW-50MW[4] for all other technologies
Sub Local Authority	Between 50kW-5MW
Micro	Below 50kW

Source: Planning Policy Wales (edition 7, chapter 12, sections 12.8 – 12.10), Welsh Government, 2014

Planning Application Considerations

Planning Policy

3.2 The Authority's key LDP policy on renewable energy is GN.4 'Resource Efficiency and Renewable and Low-carbon Energy Proposals'. This states that development proposals "*which enable the supply of renewable energy through environmentally acceptable solutions will be supported*". This is in accordance with the principles set out in Welsh Government policy on renewable energy. Although the Authority's key policy on renewable energy is GN.4, each development proposal will also need to be evaluated against other relevant policies (and any other material planning considerations). Strategic LDP policies likely to be of particular significance in a renewable energy context include:

SP1 Sustainable Development
SP2 Port and Energy Related Development
SP3 Employment Land Requirements
SP16 The Countryside

3.3 Consideration should also be given to general policies of the Plan. These include those on landscape protection, nature conservation,

[3] The threshold for Nationally Significant Infrastructure Projects (NSIP) is 50MW.
[4] New guidance on Developments of National Significance (DNS) (10MW - 50MW) has been released; see Planning (Wales) Act 2015.

coastal development, archaeology, protection for high quality agricultural land, tourism, built heritage, as well as a general policy which refers to effects on residential amenities. General LDP policies likely to be of particular significance in a renewable energy context include:

GN.1 General Development Policy
GN.2 Sustainable Design
GN.3 Infrastructure and New Development
GN.35 Protection of Open Spaces with Amenity Value
GN.36 Green Wedges
GN.37 Protection and Enhancement of Biodiversity
GN.38 Protection and Enhancement of the Historic Environment

3.4 A balanced approach is needed, weighing the policies that support renewable energy against the degree of environmental, social and economic impacts, and any effects on allocations in the Plan not yet developed.

3.5 Key Documents/Information sources on Renewable Energy proposals include:

Technical Advice Note 8: Planning for Renewable Energy (2005), Welsh Government
Technical Advice Note 5: Nature Conservation and Planning (2009), Welsh Government
Planning Implications of Renewable and Low Carbon Energy (February 2011), Welsh Government
Practice Guidance: Planning for Renewable and Low Carbon Energy – A Toolkit for Planners (21st September 2015)
Pembrokeshire and Carmarthenshire's: Cumulative Impact of Wind Turbines on Landscape and Visual Amenity Guidance, White Consultants (April 2013) [5]
LANDMAP database, Natural Resources Wales
Welsh Office Circular 61/96 – Planning and the Historic Environment: Historic Buildings and Conservation Areas. This document can be accessed via the link and thence the Index of Planning Policy Guidance for Wales (May 2013)
Well-being of Future Generations (Wales) Act 2015
Environment (Wales) Act 2016

[5] This document is available alongside this SPG and will remain Good Practice Guidance.

Pre-application advice

3.6 Pre-application discussions are recommended for all renewable energy schemes excepting those of a domestic (micro) scale. Information on how to submit a pre-application advice request, and the charges which apply for this advice, are available from the Council's web-site: http://www.pembrokeshire.gov.uk/content.asp?nav=1626,109,140,1018&parent_directory_id=646

3.7 Pre-application discussions on renewable energy schemes will help to ensure that information provided at application stage is of adequate scope and quality to inform and expedite decision making. Pre-application advice provides prospective developers with an early indication of whether a proposal is likely to get planning permission (and if not, whether there is scope to modify the proposals to overcome identified constraints). For large scale renewable energy projects, a project-management approach to providing pre-application advice is taken.

3.8 An important element of pre-application discussions will be to agree the scope of the Landscape and Visual Impact Assessment (LVIA) (including viewpoints) prior to its preparation.

Planning Application

3.9 Key information that should be provided with a planning application for a Renewable Energy proposal includes:

- **A Location Plan** – Showing the application site edged red and any other land in the same ownership in blue.
- **Site Plan** – showing proposed development in relation to other site features.
- **A Design and Access Statement** – assessing the design of the proposal and evaluating its context.
- **Elevation, Scale and Capacity Information** – the size (heights) and capacity of the proposal and its energy return.
- **A Landscape Appraisal** – assessing the proposal in its landscape context and the sensitivity of the landscape to change. It should also analyse the likely impact of a proposal on the local and wider landscape character. It should clearly identify any physical effects on the landscape separately from the visual impact.
- **Visual Impact Assessment** – this should identify the visual impact on the landscape character, and may change with the seasons. Sometimes this is done by defining Zones of Theoretical Visibility (ZTV). It is best practice to provide ZTV mapping along with accurate photo-montages from a comprehensive selection of

viewpoints for larger schemes requiring LVIA. For smaller schemes where a landscape appraisal is carried out, photomontages with mapping showing viewpoint locations may be sufficient. Additionally, the assessment should provide information on whether the site will be screened and if so, whether this will make use of existing trees, hedges and hedge-banks or require new fencing or planting.

- **Historic Environment Assessment** – An assessment of the direct impact of proposals on the immediate historic environment, Scheduled Ancient Monuments, Registered Parks and Gardens and Registered Historic Landscape[6], Listed Buildings and their settings, Conservation Areas, buildings of local significance that are not listed and on archaeological sites directly affected by proposals.
- **Economic considerations** – An assessment of the economic costs and benefits of a scheme, for example whether the proposal plays an integral part of the business plan for an existing or proposed business. The assessment should cover potential impacts on tourism. It should also say whether the proposal forms part of a farm business diversification plan. This may include community benefits.
- **Ecological Study** – This should include an ecological survey of any species or habitats present, protected or otherwise. This should include an assessment of the likely impact on the local and wider natural environment, habitats and species and any proposed mitigation and enhancement.
- **Carbon Considerations** – This should include how the project is helping to reach renewable energy targets, net carbon costs/gains.
- **Impact on receptors** – This should consider occupiers of nearby residential and tourist accommodation and business premises and also those using any nearby Public Rights of Way.
- **Traffic Assessment & Infrastructure considerations** – This should take account of impacts on public rights of way and / or road networks and also any requirements for new or upgraded roads to facilitate construction or ongoing servicing. A traffic management plan may be required by condition, depending on the scale of the proposal.
- **Hydrological considerations** – This should consider likely changes to hydrology and surface cover, run-off and possible need for a Flood Consequences Assessment.
- **Noise** – An assessment of any noise implications of a proposal.
- **Light** – An assessment of any light implications of a proposal, considering matters such as security, aviation and shadow flicker.

[6] The assessment of the Registered Landscape may require a full Assessment of the Significance of Impacts of Development on Historic Landscapes 2 (ASIDOHL 2) & advice should be sought from the Dyfed Archaeological Trust on the level of assessment required. For further details see http://www.dyfedarchaeology.org.uk/projects/HistoricLandscapeCharacterisation.htm

- **Cumulative Impact** – An assessment of the proposed development, together with other similar developments, in the immediate and wider area.

3.10 In addition to the above, it is important to remember that other evaluations may be necessary in certain instances. For example, a glint and glare study in the case of solar parks, or a shadow flicker assessment in the case of wind turbines, may be needed. Land stability reports may also be required in areas where minerals (especially coal) have previously been extracted. The scope of necessary evaluations should be agreed early in the pre-application process.

3.11 More general considerations that also need to be taken into account include:

- **Proximity to the Pembrokeshire Coast National Park**[7] and / or whether it is likely to be clearly visible from National Park locations. Special consideration is needed if the proposal is visible from prominent or well-used locations, and if the proposal will have effects on the 'special qualities' of the National Park. As a general rule, the National Park Authority will be consulted on small scale renewable energy applications where visible from the National Park and on all medium and large scale renewable energy applications. The National Park Authority's response will be given weight as a material consideration in the decision making process. For a better understanding of the impact of proposals on Pembrokeshire Coast National Park, consideration should be given to the National Park Authority's Local Development Plan (2010) and its Supplementary Planning Guidance (SPG) documents, including those on Landscape Character Assessment (June 2011) and Renewable Energy (October 2011, Technical Update April 2014) – see 'useful links' at the end of this document.
- **Cultural and historic environment considerations**, having special regard to the visual impact of a proposal and its proximity to Listed Buildings (and their setting), Conservation Areas, Scheduled Ancient Monuments (and their setting) and archaeological areas, both individually and cumulatively. Consideration should also be given to the direct and indirect impact of proposals on **Landscapes of Historic Interest** and registered **Parks and Gardens of Special Historic Interest.** For further information on the impact of proposals on the historic environment see 'useful links' at the end of this document.
- **Connection** to the National Grid and any overhead or underground cables, ancillary buildings and substations.

[7] The Authority has a duty to consider the statutory purposes of Pembrokeshire Coast National Park and its special qualities.

- **General constraints**, including telecommunications and aviation safeguarding requirements, Health and Safety Executive restrictions, and safeguarding zones around mineral extraction sites. The Council has published a Good Practice Advice Note on Safeguarding for Planning Purposes, available at: http://www.pembrokeshire.gov.uk/content.asp?nav=1626,109,141,1014&parent_directory_id=646&id=13224&language=
- **Positive additional benefits** – This may include local energy storage, community resilience and energy security.
- The potential for **pollution**, which may require applicants to submit pollution prevention proposals with their application.
- **Decommissioning** plans will be expected to include firm proposals for the removal of infrastructure and restoration of the land to its former condition, prior to the renewable energy use commencing. However, where prior extraction of minerals has taken place, this will not be possible. Renewable energy permissions generally include conditions imposing a time limit on the development and require restoration of the site and removal of any ancillary infrastructure once the use ceases.

3.12 The next section elaborates on some of the above requirements and details the need for further evaluations.

Landscape Appraisal

3.13 Applications for all renewable energy developments, whether of small or large scale, should be accompanied by a careful consideration of their impact on the landscape character. Such impacts will affect locations within the Council's area of planning responsibility and in some cases may also have impacts on localities in adjacent Counties and / or the Pembrokeshire Coast National Park. National Parks are designated for their natural beauty, wildlife and cultural heritage. Pembrokeshire County Council has a statutory duty to have regard to the purposes of the National Parks when exercising or performing any functions in relation to, or affecting, land in a National Park. Hence the landscape impact within the National Park of proposals within PCC is a material consideration.

3.14 Conducting a landscape appraisal is an essential component of assessing the impact of a proposal, and ensuring that it does not have significant detrimental impacts on landscape character. Landscape character is defined as a distinct and recognisable pattern of elements that occur consistently in a particular type of landscape. Character will be influenced by many factors including geology, landform, soil, vegetation, land use and historic field patterns. Landscape analysis should assess the sensitivity of the landscape and its vulnerability to

potential change. It should also assess the magnitude of change expected and any residual impacts.

3.15 There is a nationally consistent, quality assured, landscape assessment dataset available through Natural Resources Wales that should be used in all landscape assessments. This is called LANDMAP and it identifies and explains the most important characteristics and qualities of the landscape throughout Wales. It uses baseline qualities to assess the impact of a proposal on the Visual and Sensory landscape, and the wider implications on the Cultural Landscape, Landscape Habitats, Historic Landscape and Geological Landscape. These five Evaluated Aspect layers each recognise landscape character and its vulnerability to change, and include recommendations on management and enhancement of the landscape in an appropriate way in the future. It is the use of all five layers of information that promotes sustainable landscape decision-making. What may be less important in one particular layer may be of high importance in another. Giving all five layers consideration ensures no aspect of the landscape is overlooked. Appendix 4 illustrates some landscape and LANDMAP classifications that need to be considered. For those areas within or immediately adjacent to Pembrokeshire Coast National Park Authority it is also advisable that applicants consider the National Park Authority's Landscape Character Assessment (June 2011) and Renewable Energy Technical Update (April 2014) Supplementary Planning Guidance documents – see 'useful links' at the end of this document.

3.16 The landscape appraisal should include reference to designated sites within the vicinity of the development proposal and the quality and grading of agricultural land (illustrated in Appendix 4). The BRE National Solar Centre has published 'Agricultural Good Practice for Solar Farms' – see 'useful links'. The amount of information required will depend on the scale of the proposal and the sensitivity of its setting, including consideration of the historic environment and of important vistas. In certain circumstances a Landscape Management Plan may also be required by condition.

3.17 In terms of landscape impact there are standardised expressions used to determine the magnitude of influence of a proposal. This is defined as the influence a proposal may have in terms of its landscape context. The table below defines the varying levels of influence a proposal may have[8]:

[8] Example table taken from Locogen LVIA Assessment Methodology

Level of Magnitude	Description of change	Definition of Magnitude
High	Dominant	Highly noticeable change, affecting most key characteristics and dominating the experience of the landscape. The introduction of incongruous development. Direct landscape impacts can include loss of features or indirect changes to landscape character. A high proportion of the view is affected or viewpoints lost.
Medium	Conspicuous	Noticeable, partial change to a proportion of the landscape, affecting some key characteristics and the experience of the landscape. The introduction of some uncharacteristic elements. Some of the view is affected.
Low	Apparent	Minor change, affecting some characteristics and the experience of the landscape to an extent. It may include introduction of elements that are deemed to not be uncharacteristic. Little of the view is affected.
Negligible	Inconspicuous	Little perceptible change and no discernible effect upon the view.

3.18 A landscape that is highly valued may still be able to accommodate some development if it is in the right location and if it fits with the characteristics of the landscape. In designated landscapes renewable energy development may be acceptable if it does not compromise the purpose of the designation. In undesignated landscapes renewable energy development may be acceptable if it does not compromise the qualities and values attached to the landscape. Conversely a landscape that isn't designated may be highly sensitive to development if it has particular landscape or visual characteristic.

Visual Impact Assessment

3.19 The Visual Impact Assessment of a scheme on the wider landscape should ensure that all possible effects of change and development on views and visual amenity are taken into account in decision-making. These can vary with a proposal's design, positioning, and with the sensitivity of the landscape to change and will differ amongst receptors. The visual impact of large scale schemes, for example, may be compounded by proximity to other renewable energy projects and / or

major industrial developments. Care should be taken to ensure that the design of schemes is as harmonious to the surrounding area as possible. Consideration should not only be given to the main installation, but also to grid connection infrastructure, cabling and sub-stations, access roads, ancillary buildings, lighting, security fencing and CCTV installations. Issues to consider will include the number of installations, their size, height and alignment, distance from nearby properties and visibility from surrounding land.

Visual impact of solar proposals

3.20 The impact of solar renewable proposals can vary according to the arrangement of micro-generation solar PV panels / tiles. This will be influenced by available building surfaces (usually roofs) with suitable alignments. For large-scale solar PV schemes, the ground layout is usually around a regular pattern, but it is sometimes possible to organise the layout around irregular patterns, perhaps reflecting site topography. Particular care is needed in relation to historic field patterns (such as mediaeval burgage plots) as their integrity is likely to be damaged by large-scale solar arrays. Individual solar PV arrays, and groups of such arrays, can change the visual appearance of the landscape. Therefore a detailed assessment of any potential impact will be required. Details of the potential cumulative impact may also be needed, taking into account existing and approved developments and potential mitigation measure such as screening with hedge banks and woodland. Further issues may arise relating to glint and glare and / or more diffuse reflections of the sun on solar PV panels. An assessment of the effects should be carried out for all visual receptors. In locations where this is deemed potentially hazardous to wildlife, a specialist assessment may be required. Further details on solar schemes can be found in Appendix 1.

Visual impact of wind energy proposals

3.21 In terms of the visual impact of wind energy developments, additional information needed may include details of turbine design, the number of turbines and the scale of the development envisaged. This will include a description of turbine size(s), including hub height and blade dimensions. Visual landscape impact details submitted with a planning application should also include ‘Zone of Theoretical Visibility’ (ZTV) maps, indicating the maximum theoretical extent of potential visibility from the tip height of the turbine. Additional ZTV maps may also be appropriate for the blade swept area, along with photo-montages from a comprehensive selection of viewpoints. Further details may also be needed on the impact of shadow flicker on the wider environment, and also on the impact of any aviation lighting. Table 4 of White Consultant’s ‘Guidance on cumulative impact of wind turbines on landscape and visual amenity: Pembrokeshire and Carmarthenshire’ (April 2013) provides greater detail on:

- The use of location maps;
- Wire-lines and photo-montages in wind energy developments of varying scales; and
- The scope and study areas for cumulative ZTVs.

Detailed Landscape and Visual Impact Assessment information is available from NRW through LANDMAP Guidance note 3 and from the Landscape Institute and IEMA GLVIA 3 guidance (2013). Further details can be found in Appendix 2 and 4, and in the 'useful links' section at the end of this document.

Visual impact of biomass proposals

3.22 As with other forms of renewable energy installations, careful consideration must be given to the location and design of biomass plants, in order to minimise their visual impact. Materials and colours may help integrate a development into its surroundings, as will appropriate planting and screening. Even domestic systems must give consideration to visual impact, particularly where new buildings and infrastructure are needed, such as flues and storage facilities. Further details can be found in Appendix 3.

3.23 Overall it is important to understand how the landscape is experienced, from both fixed and transient viewpoints. Important views should be identified in visual impact assessments, including those:

- To and from different landscape areas;
- Taking in distinctive and iconic features;
- To and from designated landscapes, particularly the Pembrokeshire Coast National Park;
- To and from protected features and designations within the landscape, including historic and heritage assets; and
- With potential impacts on skylines or uninterrupted horizons.

Furthermore the cumulative visual impact should be carefully considered, as should the sequential effects of a development on visibility. For more information on the visual impact of a proposal, please see 'useful links' at the end of this document.

Noise

3.24 Noise from renewable energy sources can arise from traffic, from the mechanics of generators and gearboxes and, in the case of wind turbines, from aerodynamics. Noise may also have a cumulative impact where several sources are located in close proximity. There are established noise levels for wind turbines under ETSU-R-97. The 'useful links' at the end of this document references information available from the Institute of Acoustics. For biomass energy, variations in sizes of plants will determine the noise level accompanying it. Electricity Generation and Combined Heat and Power (CHP) plants will produce noise from plant operations and

combustion processes. Such noise should be considered carefully when assessing an application. Appropriate site layouts and designs can often help mitigate the acoustic impacts of proposals, along with landscaping and noise attenuation features on large scale schemes. Renewable energy proposals should conform to the relevant British Standards (i.e. BS4142, BS 5228, and BS 8233) along with other good practice measures (such as restricted working hours during construction) in order to minimise the noise impact of any scheme. The Council's Public Protection division will be consulted on all applications where there is a perceived noise impact, and its response will be a material consideration in the decision making process.

Habitats and Species

3.25 Pembrokeshire has a rich and diverse tapestry of habitats and species, many of which are protected by European and National Legislation. Applications should include assessment of the potential for impact on protected species and / or habitats, and in particular must consider the potential for 'in combination'[9] effects on sites and species. Ecological surveys are therefore required to support a planning application, to ascertain whether a development will have impacts on any protected species or habitats. In particular, renewable energy proposals near to protected sites, or the cumulative impact of more than one proposal in an area, can have a significant impact on wider populations of species. Ecological Management Plans (also referred to as Environmental Management Plans or Habitat Enhancement Schemes) may be required on certain schemes. The purpose of such plans is to ensure that the requirements of the LDP, of Welsh Government policies on biodiversity, habitats and species and of primary legislation, such as the Wildlife and Countryside Act, 1981, are addressed. Such plans can also incorporate recommendations in relation to individual protected species, such as bats and badgers.

3.26 Requirements specific to wind turbine proposals include a minimum distance of 50 metres from any hedge bank, woodland or wooded copse to the blade tip. Consideration should be given to protected species such as bats and birds, particularly where a turbine may transect migration or foraging routes. It should also be given to the impact of access routes and to cabling proposals, including their impact on ecology. For further details on the consideration of turbines and habitat features please see Natural England's Technical Information Note TIN 051 – 'Bats and onshore wind turbines' under 'Useful Links' at the end of this document.

[9] These refer to effects, which may or may not interact with each other, but which could affect the same receptor or interest feature (i.e. a habitat or species for which a European Site is designated). For instance, bird species could be affected by disturbance from one proposal and habitat loss by another (Conservation of Habitats and Species Regulations 2010).

3.27 Supplementary Planning Guidance on Biodiversity is available and includes information for renewable energy proposals. Furthermore Phase 1 Habitat Survey data and information supplied by the West Wales Biodiversity Information Centre will be of particular significance when assessing the impact of a proposal. Other important considerations include locally protected landscapes and woodland, with data including NRW's Ancient-Woodland Inventory and the Landscape Habitat aspect layer of LANDMAP.

Sensitivity of Receptors

3.28 In a planning context the term 'receptor' is used to identify persons affected by a particular type of development. Often these individuals will be residents living in close proximity to a development proposal. Consideration should also be given to those working in an area, passing through it on a journey or visiting it for social or recreational purposes. 'Receptor' also has a wider meaning in land use planning, referring additionally to affected terrestrial and marine wildlife species and habitats, areas of special value for the architectural and historic interest of the buildings within them, individual buildings of special interest, protected Scheduled Ancient Monuments and areas of special landscape or seascape value.

3.29 Scoping for receptors should take place at an early stage in the preparation of renewable energy proposals, preferably at pre-application stage. Those preparing planning applications should seek agreement of likely receptors with the Council. This should be part of a comprehensive assessment and will be site specific to each application.

3.30 Consideration should be given to individual receptors and also to the number of receptors (i.e. how many people, habitats, species, buildings / monuments, landscapes and seascapes are likely to be affected by a development proposal). Much of the sensitivity of receptors will depend on their context and distance from a proposal, its magnitude, the sensitivity of the landscape, the orientation of the receptor and the duration of the impact. This can vary between receptors and be dependent on location. For example, variations in sequential views may arise, depending on distance and speed of travel, and can be limited by topography, vegetation and buildings.

3.31 The table below sets out a checklist of receptors:

Receptor	Domestic and micro-scale installations[10]	All other installations
Persons affected (or likely to be affected) by the proposal – local residents, workers and visitors.	Unlikely to cause significant impacts, but care is needed to ensure that noise and shadow flicker impacts are minimised.	Likely to cause significant impacts. Consideration should be given to direct impact, as well as the impact of glint, glare, flicker and noise.
Terrestrial wildlife species and habitats.	Domestic scale wind and solar proposals have the potential to impact upon bird and bat species, their habitat and/or feeding ground, and may require an ecological survey. Domestic scale hydro schemes may similarly impact upon protected river environments and species such as otters.	Consideration should be given to birds and bats, hedgerows and trees within a site or along its boundary. The BRE National Solar Centre has prepared advice on how to optimise biodiversity on solar farms.
Areas of special value for the architectural and historic interest of the buildings within them (Conservation Areas).	Domestic and micro scale installations may have a cumulative impact.	Large scale schemes could affect the setting of Conservation Areas.
Individual buildings of special architectural or historic interest (Listed Buildings).	Proposals for roof-mounted installations on a Listed Building will require Listed Building consent.	Large scale schemes could affect the setting of a Listed Building (or a group of such buildings).
Scheduled Ancient Monuments.	Small scale schemes could affect the setting of a Scheduled Ancient Monument.	Large scale schemes could affect the setting of a Scheduled Ancient Monument.

[10] For Wind Energy see Appendix 2 for defined scales.

Receptor	Domestic and micro-scale installations[10]	All other installations
Areas of landscape value – in particular statutory designated landscapes including National Parks and registered Historic Parks and Gardens and Historic Landscapes.	Domestic and micro scale installations may have a cumulative impact.	Large scale schemes could affect National Park locations and registered Landscapes. Great care is therefore needed in locations close to the National Park boundary and in areas clearly visible from it and other areas of designated landscape value.
Landscapes of non-statutory local value.	Domestic and micro scale installations may have a cumulative impact.	Large scale schemes could considerably impact upon landscapes of local value.
Public highways, railways, Public Rights of Way, etc.	Domestic and micro scale installations are unlikely to cause significant impacts, but caution is needed where a proposal is very close to a highway, railway or PROW.	Large scale schemes could affect the local infrastructure. Glint, glare, and flicker and the distraction of schemes should be considered, along with ensuring a suitable safety distance. The distance away from the highway/PROW will normally be the height to blade tip +10%.

Cumulative Impacts

3.32 Applicants for renewable energy proposals with potential for cumulative impacts should address this by including a Cumulative Impact Assessment with their planning application. This should take account of:

- Renewable energy developments that have already taken place (operational);
- Schemes that are consented but not implemented;
- Proposals at application stage; and
- Refused applications that are subject to appeal processes.

Consideration must be given to all proposals in the same general area, their distribution, distance and direction, existing or proposed

installations in the vicinity of the site and nearby major industrial or other major developments. Further cumulative considerations include the visual effect of a proposals and impact on landscape setting, fabric, character and context and on the natural environment. Cumulative Impact on the Pembrokeshire Coast National Park, as well as the area within the County Council's planning jurisdiction, will also be a material consideration.

3.33 Pembrokeshire County Council, in partnership with the Pembrokeshire Coast National Park Authority, has produced interactive maps of solar and wind energy proposals. These should be used to inform any cumulative impact assessment[11]. Additionally, the Council produced a Solar Array monitoring paper as part of its LDP Annual Monitoring Review[12], which may also help in preparation of cumulative impact assessments.

3.34 Further guidance on the cumulative impact of wind energy proposals can be found in GLVIA 3 guidance 2013 (see 'Useful Links' at the end of this document) and in Pembrokeshire's and Carmarthenshire's 'Cumulative Impact of Wind Turbines on Landscape and Visual Amenity Guidance', White Consultants, April 2013. The White Consultants guidance is available alongside this SPG and will remain as Good Practice Guidance – see the 'Useful Links' at the end of this document. The Pembrokeshire Coast National Park Authority consulted the public on the same document and adopted it as Supplementary Planning Guidance in December 2013. There have been a number of planning appeals dismissed on cumulative impact grounds, and these should also be considered when analysing the potential impact of renewable energy proposals.

[11] http://www.pembrokeshirecoast.org.uk/default.asp?PID=528

[12] http://www.pembrokeshire.gov.uk/content.asp?nav=1626,109,141,1014&id=29613&language=

Chapter 4 - Environmental Impact Assessment (EIA)

4.1 Environmental Impact Assessments (EIAs) are used to ensure that the likely effects of significant new developments on the environment are evaluated prior to allowing them to go ahead. Their aim is to prevent, reduce or offset any significant adverse environmental effects a development may pose and to enhance positive effects. EIA requirements derive from two European Directives (85/337/EEC and 2011/92/EU) and, in Wales, became law through the Town and Country Planning (Environmental Impact Assessment) (England and Wales) Regulations 1999 (Statutory Instrument 1999 No. 293), as amended. Environmental Impact Assessment Guidance is set out in Welsh Office Circular 11/99.

4.2 Schedule 1 of the EIA Regulations lists all projects which require an EIA, whilst those listed under Schedule 2 will need to be screened to establish whether a proposal is EIA development, depending on thresholds or locations. If developers are unsure about whether a development will require an EIA they should seek a 'screening opinion' from the planning authority. The screening opinion will determine whether the proposal is likely to give rise to significant environmental effects and consequently whether an EIA is required or not. Furthermore if a proposed project is listed in the 1st column of Schedule 2 and exceeds the relevant thresholds or criteria set out in the 2nd column, the proposal needs to be screened by the LPA. For solar installations with a power capacity of less than 5MW, either Schedule 2.3(a) or 2.3(b) of the EIA Regulations will apply. Biomass schemes similarly fall under Schedule 2.3(a) or Schedule 2.3(b) of the EIA Regulations, and where they process waste they can also fall under Schedule 2.11(c) of the Regulations. For wind energy proposals developments of more than 2 turbines, or where the hub height exceeds 15metres, EIA screening will be required - White Consultants' 'Guidance on cumulative impact of wind turbines on landscape and visual amenity: Pembrokeshire and Carmarthenshire' (April 2013) provides greater detail on this.

4.3 If Environmental Impact Assessment is required, the applicant may apply for a scoping opinion to establish the extent of the Environmental Statement (ES) that must be prepared for submission alongside any planning application. Prospective applicants are advised to discuss the content of such statements with the Council.

4.4 Welsh Government consulted on proposed changes to the Environmental Impact Assessment Regulations and Local Development Orders between 26/03/15 and 18/06/15. The outcome of that consultation has not yet been published.

Chapter 5 - Habitats Regulations Assessment (HRA)

5.1 Habitats Regulations Assessment (HRA) is a requirement of the Conservation of Habitats and Species Regulations 2010, which transpose the Habitats Directive (92/43/EEC). Under these regulations HRA is used to determine whether a plan or project is likely to have significant effects on the conservation objectives for sites designated for their European importance for nature conservation, either alone or in-combination with other plans or projects.

5.2 Special Protection Areas (SPAs), Special Areas of Conservation (SACs), European Offshore Marine Sites (EOMSs), Marine Protected Areas (MPAs) and Ramsar sites are designated to protect biodiversity. Any plan or project which has the potential to affect a European site will be subject to HRA. If HRA is required all relevant information must be submitted with the planning application. Licences and other consents will need to be sought separately from the planning process[13].

5.3 The first step in HRA is for the Local Planning Authority to undertake a screening via a Test for Likely Significant Effect (TLSE). If initial screening indicates that adverse effects are likely, an Appropriate Assessment should be undertaken. This will be carried out by the Council, not the project's promoter, with the applicant supplying the information needed to make that Assessment. The Assessment must precede the decision on a related planning application and where the outcome of Appropriate Assessment is unfavourable to the project (and Imperative Reasons of Overriding Public Interest with compensatory measures is not found) planning consent is not likely to be forthcoming.

5.4 Natural Resources Wales (NRW) has a crucial role in the HRA process, as it is designated as the 'relevant conservation body', meaning that it will be consulted on all proposals requiring HRA. It can also provide advice and guidance to both Local Planning Authorities and prospective developers on HRA matters, including any potential need to secure NRW licences for what is being proposed. NRW also advises more generally on protected species and habitats, supply information on matters such as water abstraction, discharges to water courses, river engineering, environmental permits, waste management, felling licences and environmental impacts. Supplementary Planning Guidance on Biodiversity was adopted by Pembrokeshire County Council in May 2014 – see the 'useful links' at the end of this document.

[13] Examples are UK and European Protected Species Licences. The Natural Resources Wales website will provide further details on species licensing: http://naturalresources.wales/apply-and-buy/protected-species-licensing/?lang=en and for marine licences http://naturalresources.wales/apply-and-buy/marine-licensing/?lang=en

Appendix 1 – Solar Energy

i. Photovoltaic panels capture solar energy and transform solar radiation into electricity. This is a clean and quiet renewable energy technology and can operate at various scales. It is primarily a terrestrial technology and hence will generally fall within the scope of the land use planning system.

ii. Much information is available on the Internet regarding solar energy development, considerations and assessments needed, including the Welsh Government papers 'Planning Implications of Renewable and Low Carbon Energy' (February 2011) and Practice Guidance: Planning for Renewable and Low Carbon Energy – A Toolkit for Planners (21st September 2015):

iii. The technology is not wholly reliant on direct sunshine. However, output is affected by reduced sun, significant cloud cover and / or partial shadow.

iv. Larger scale solar farms require extensive areas of land and can have major landscape impacts. Particular care is required in locations that are clearly visible from the Pembrokeshire Coast National Park. Care is also needed where proposals will affect:

- Listed Buildings;
- Conservation Areas
- Scheduled Ancient Monuments
- Areas of archaeological interest; and / or
- Landscapes of particular sensitivity.

Glint and glare are important considerations.

v. Land areas hosting solar PV arrays have a reduced capacity for growing crops. The range of farm animals that can graze such areas is also restricted. It is preferable to avoid placing solar farms on the best and most versatile agricultural land (grades 1, 2 and 3A).

vi. Roofs of agricultural, industrial and retail buildings can offer extensive areas on which solar PV panels can be placed. This can often provide a lower-impact alternative to their installation on agricultural land.

Solar Energy

Prior to Application considerations:

- Location
- Grid connection & network capacity (11kV lines can support solar arrays with an output of up to 2.5MW and 33kV lines for larger schemes of up to 5MW).
- Costs
- Infrastructure, site & highway access & PRoW
- Ecological assessments & survey work
- Impact on hydrology
- Local landscape sensitivity, topography & ground conditions
- Archaeological assessments & impact on historic environment
- Proximity to other developments

Application Considerations:

Pre Application considerations +plus:

- Equipment detail & design (expected output, equipment typology, colour, finish, etc)
- Scale
- Landscape context & character (LANDMAP, Landscape Management Plan)
- Landscape sensitivity (PCNPA, Landscapes of Historic Importance, statutory designations, etc)
- Quality & Grading of Agricultural Land
- Visual Impact Assessment, sightlines, photomontages (consider the impact on the skyline, important vistas, landscape openness / vegetation / tree cover)
- Glint/Glare & consideration of night time lighting for security purposes
- Sensitivity of receptors – Local resident / tourists / business +/-
- Social & economic impact (business impact/ diversification/ local community benefits)
- Natural environment, ecology & ornithology (Ecological Management Plan)
- Hydrology (Drainage, Flood Consequences Assessment, etc)
- Telecommunications & HSE constraints, including aviation / radar / rail, MOD constraints, etc
- Electronic communication interference
- Pollution considerations
- Access information, including a Construction Method Statement & Management Plan & a Transport Management Plan where appropriate
- Screening / EIA
- AA / HRA
- Cumulative Impact considerations, including the relationship to other solar & consented renewable schemes, and to other large structures within the landscape context, taking care to avoid cluttering or visual discord. Cumulative impact can also include the impact on the natural and historic environment, etc

After Care:

- Decommissioning
- Removal
- Site restoration

Appendix 2 – Wind Energy

i. Much has already been written on wind energy development considerations and the assessments needed and hence is not repeated in this guidance. The Welsh Government's documents 'Planning Implications of Renewable and Low Carbon Energy' (February 2011) and Practice Guidance: Planning for Renewable and Low Carbon Energy – A Toolkit for Planners (21st September 2015):

ii. The following table summarises the key considerations and implications of wind energy developments that should be analysed and appraised at application stage. Further information is readily accessible from various sources, including those listed under the 'useful links' at the end of this document.

iii. As a general guide there are typically four main sizes of wind turbines, which are:

Wind Energy System[14]			
Scale		**Typical rating**	**Typical turbine height to blade tip**
Micro-generation	less than 2.5kW	2.5kW	11m
Small	1.5-50kW	20Kw	20m
Medium	50Kw-750kW	500Kw	65m
Large	Above 750kW	2.5MW	Up to 135m

[14] Planning Implications of Renewable and Low Carbon Energy (February 2011), Welsh Government

Wind Turbine

Prior to Application considerations:

- Wind speeds charts & energy capture / output
- Grid connection confirmation & network capacity
- Costs
- Infrastructure, site & highway access & PRoW
- Ecological assessments & survey work
- Impact on hydrology
- Local landscape sensitivity, topography & ground conditions
- Archaeological assessments & impact on historic environment
- Proximity to other developments

Application Considerations:

Pre Application considerations +plus:

- Equipment detail & design (expected output, equipment typology, colour, finish, etc)
- Scale (height to hub & blade tip & rotor diameter)
- Landscape context & character (LANDMAP, Landscape Management Plan)
- Landscape sensitivity (PCNPA, Landscapes of Historic Importance, statutory designations, etc)
- Quality & Grading of Agricultural Land
- Zone of Theoretical Visibility, Visual Impact Assessment, sightlines, photomontages & wireframes (consider the impact on the skyline, important vistas, landscape openness)
- Light & shadow flicker considerations, aviation lighting impact, etc
- Sensitivity of receptors – Local resident / tourists / business +/-
- Social & economic impact (business impact/ diversification/ local community benefits)
- Noise emission assessment & potential vibrations, impact on tranquillity
- Natural environment, ecology & ornithology (Ecological Management Plan)
- Hydrology (Drainage, Flood Consequences Assessment, etc)
- Telecommunications & HSE constraints, including aviation / radar / rail, MOD sites, etc
- Electronic communication interference
- Pollution considerations
- Access information, including a Construction Method Statement & Management Plan & a Transport Management Plan where appropriate
- Screening / EIA
- AA / HRA
- Cumulative Impact considerations, including the relationship to other turbines & consented renewable schemes, and to other large structures within the landscape context, taking care to avoid cluttering or visual discord. Cumulative impact can also include the impact on the natural / historic environment, etc

After Care:

- Decommissioning
- Removal
- Site restoration

Appendix 3 – Biomass

i. Biomass can generally be defined as material of recent biological origin, derived from plant or animal matter. The most common fuels used to generate biomass energy are wood, waste from forestry sources, energy crops such as miscanthus and animal waste products.

ii. There are two types of biomass energy extraction. One is wet biomass, which generally involves fermentation or digestion. The other is dry biomass, which generally involves heat generation through direct combustion or through processes such as gasification or pyrolysis. Plenty of information is available on the Internet regarding biomass energy developments, considerations and the assessments needed, including Welsh Government's documents 'Planning Implications of Renewable and Low Carbon Energy' (February 2011) and Practice Guidance: Planning for Renewable and Low Carbon Energy – A Toolkit for Planners (21st September 2015):

iii. As a general guide there are three main sizes of biomass energy plant:

Biomass Energy System[15]		
Scale	**Typical capacity**	**Description**
Small	Less than 500kW_{th} (thermal heat capacity)	Small scale applications, below 500 kilowatts, are usually heat plants for domestic and small scale commercial uses. These may be stand alone installations or boilers.
Medium	500kW_{th} – 10MW_{th} (thermal heat capacity)	This range covers the production of heat for a wide range of purposes. The installations may heat individual buildings or multiple buildings. The use of biomass CHP for the production of both heat and electricity currently falls in this category in most cases. However, those proposing larger scale plant are now being encouraged to find ways to utilise any heat that is generated. This is best achieved through co-location with a major heat or power user.
Large	Over 10MW_{th} (electrical output capacity)	Plants at this scale are used primarily for the production of electricity. Some types of biomass fuels are also used in very large conventional power plants alongside coal – this is known as 'co-firing'.

[15] Planning Implications of Renewable and Low Carbon Energy (February 2011), Welsh Government

iv. Applications for new electricity-generating biomass plants of more than 50MW capacity will require consent from the Major Infrastructure Unit within the Planning Inspectorate. For further details please see the Welsh Government Guidance on Planning Implications of Renewable and Low Carbon Energy (2011) - see the 'useful links' at the end of this document. Furthermore development between 10MW – 50MW is now classed as Developments of National Significance (DNS), see Planning (Wales) Act 2015. Developments of this nature may require a permit under the Environment Permitting (England and Wales) Regulations 2010. It is advisable that all permit applications are parallel tracked with planning applications in order for NRW to provide advice at an early stage.

v. In terms of planning considerations, those listed in Chapter 3 of this SPG should be considered. In addition to these, for biomass schemes, consideration should be given to emissions and waste products of the process. The amount of waste will depend on the size of the scheme and products used, but issues such as airborne emissions, emissions to watercourses and ash should all be addressed at application stage. Welsh Government's Technical Advice Note 8 on Planning for Renewable Energy elaborates on planning considerations when biomass energy proposals are put forward. Within this document, particular reference should be made to Section 14 on Energy from Waste, Section 15 on Combined Heat and Power, and Section 16 on Community (or District) Heating.

Biomass Energy

Prior to Application considerations:

- Grid connection & network capacity
- Costs
- Infrastructure, site & highway access & PRoW
- Storage space for fuel
- Ecological assessments & survey work
- Impact on hydrology
- Local landscape sensitivity, topography & ground conditions
- Archaeological assessments & impact on historic environment
- Proximity to other developments

Application Considerations:

Pre Application considerations +plus:

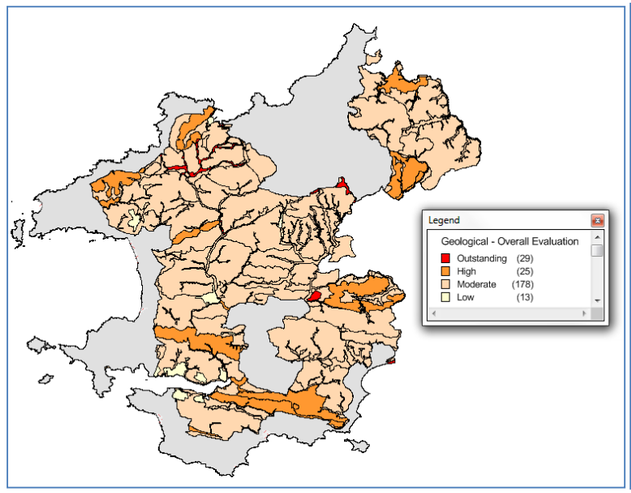
- Scale of development
- Equipment detail & design (expected output, equipment typology, colour, finish, etc)
- Landscape context & character (LANDMAP, Landscape Management Plan)
- Landscape sensitivity (PCNPA, Landscapes of Historic Importance, statutory designations, etc)
- Quality & Grading of Agricultural Land
- Zone of Theoretical Visibility, Visual Impact Assessment, sightlines, photomontages (consider the impact on the skyline, important vistas, landscape openness)
- Sensitivity of receptors – Local resident / tourists / business +/-
- Social & economic impact (business impact/ diversification/ local community benefits)
- Emission assessment, including odour, noise, dust, & potential vibrations, impact on tranquillity, pest control, etc
- Natural environment, ecology & ornithology (Ecological Management Plan)
- Hydrology (Drainage, Flood Consequences Assessment, etc)
- Telecommunications & HSE constraints, including aviation / radar / rail, MOD sites, etc
- Lighting and security considerations
- Access information, including a Construction Method Statement & Management Plan & a Transport Management Plan where appropriate
- Screening / EIA
- AA / HRA
- Cumulative Impact considerations, including the relationship to other consented renewable schemes, and to other large structures within the landscape context, taking care to avoid cluttering or visual discord. Cumulative impact can also include the impact

After Care:

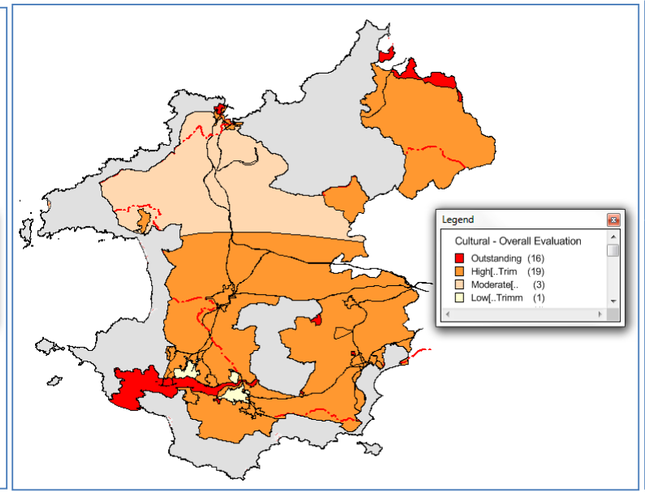
- Decommissioning
- Removal
- Site restoration

Appendix 4 – Landscape Designations

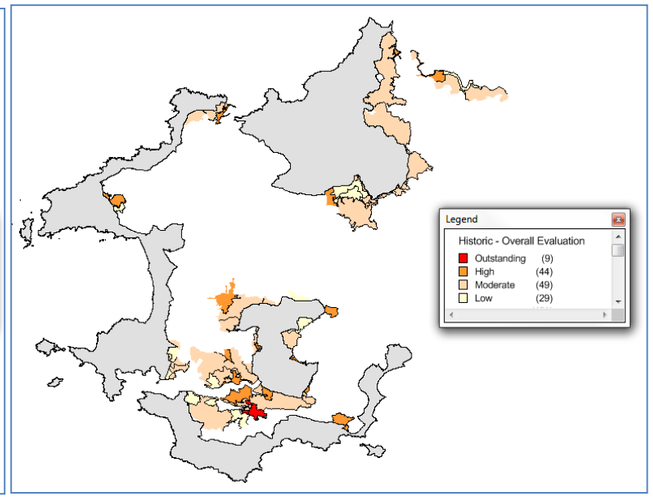
LANDMAP Landscape Classification for each Aspect Area – Overall Evaluation (PCNPA greyed out)



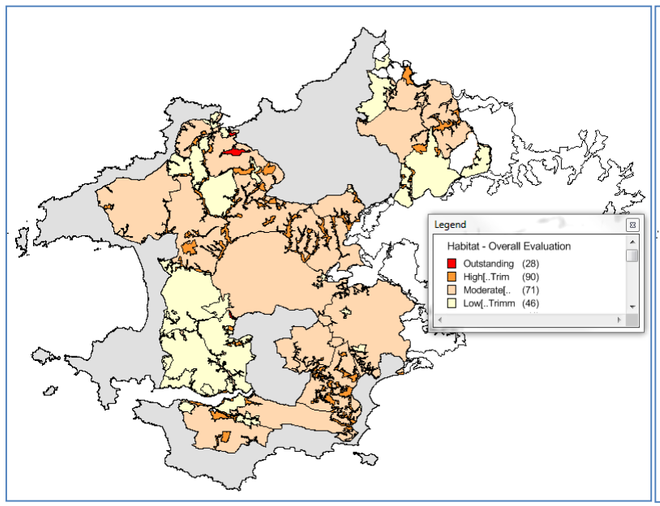
Geological Landscape – Overall Evaluation



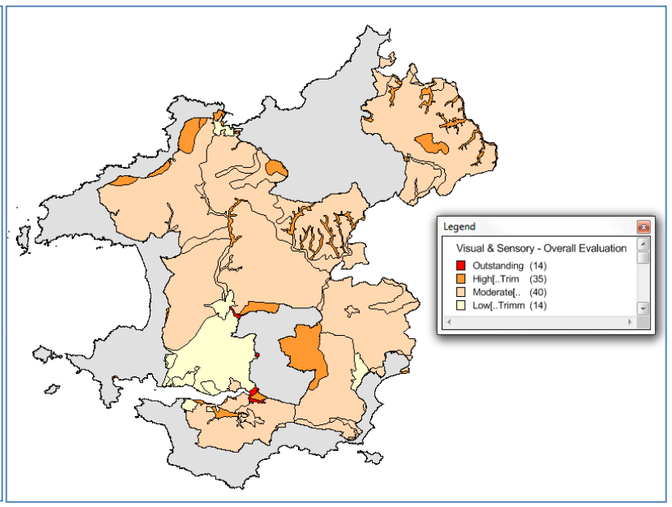
Cultural Landscape – Overall Evaluation



Historic Landscape – Overall Evaluation[16]



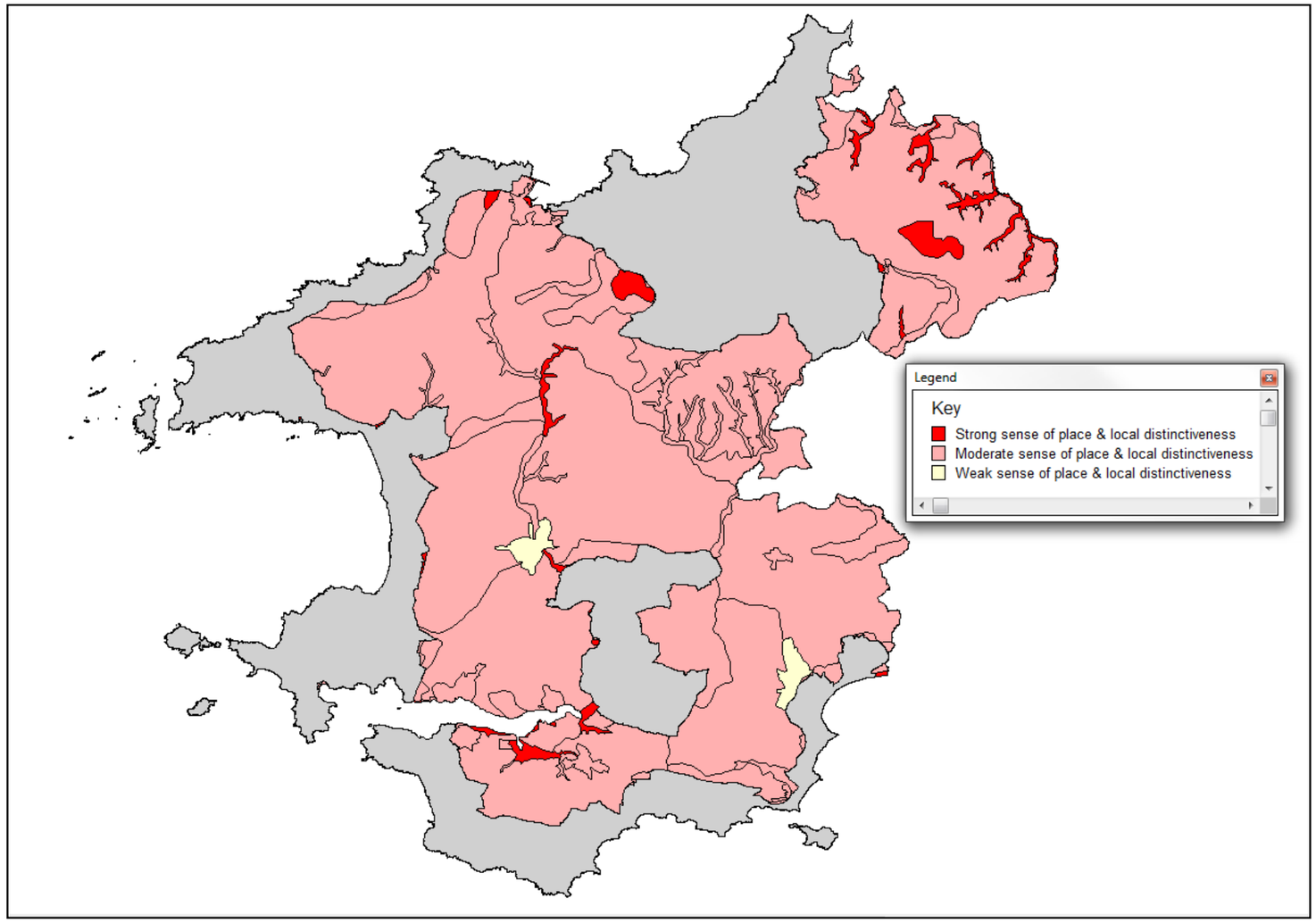
Landscape Habitats – Overall Evaluation



Visual & Sensory Landscape – Overall Evaluation

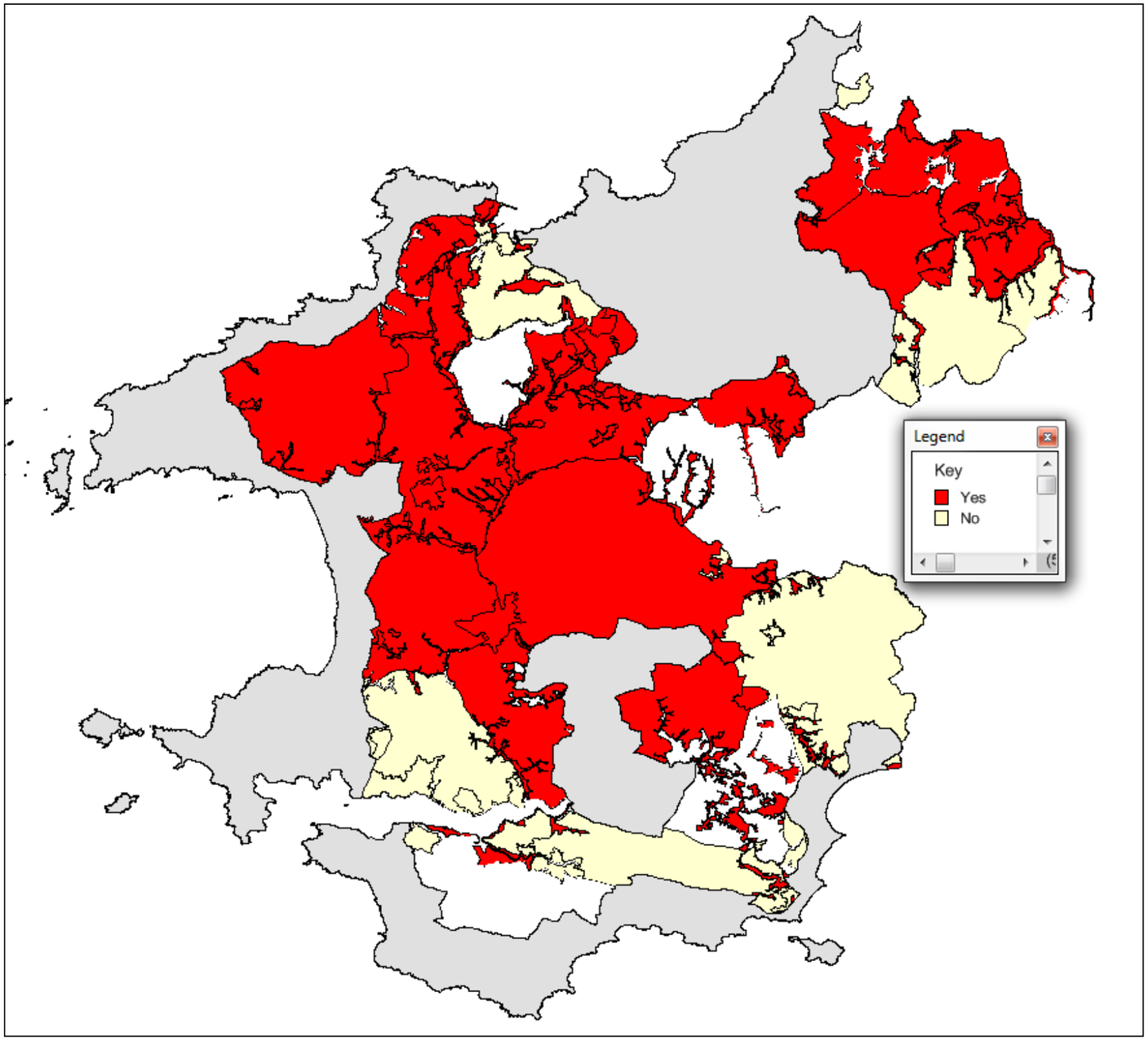
[16] There is no 'overall evaluation' data for the blank area shown on this map. There is however data on this land under other queries within the Aspect Layer, for example Landscape Value (outstanding, high, moderate or low) but for consistency with the other aspect areas they are not shown here.

LANDMAP dataset example: Visual & Sensory Classification of the landscapes sense of place & local distinctiveness (PCNPA greyed out)



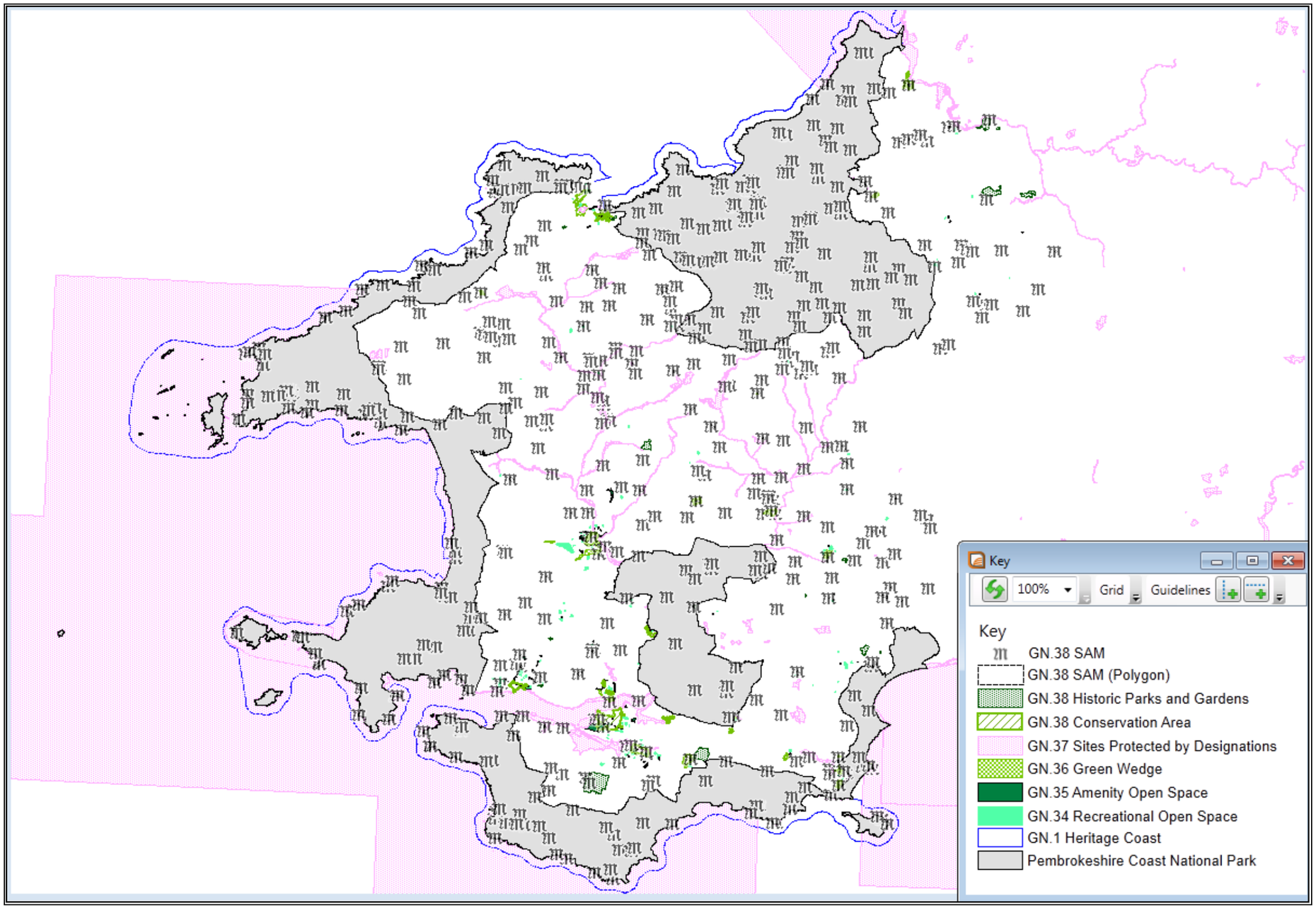
Further detail on scenic quality, character, settlement patterns, landcover etc can be found under this Aspect Area.

LANDMAP dataset example: Landscape Habitats – area containing habitats of international importance (PCNPA greyed out)

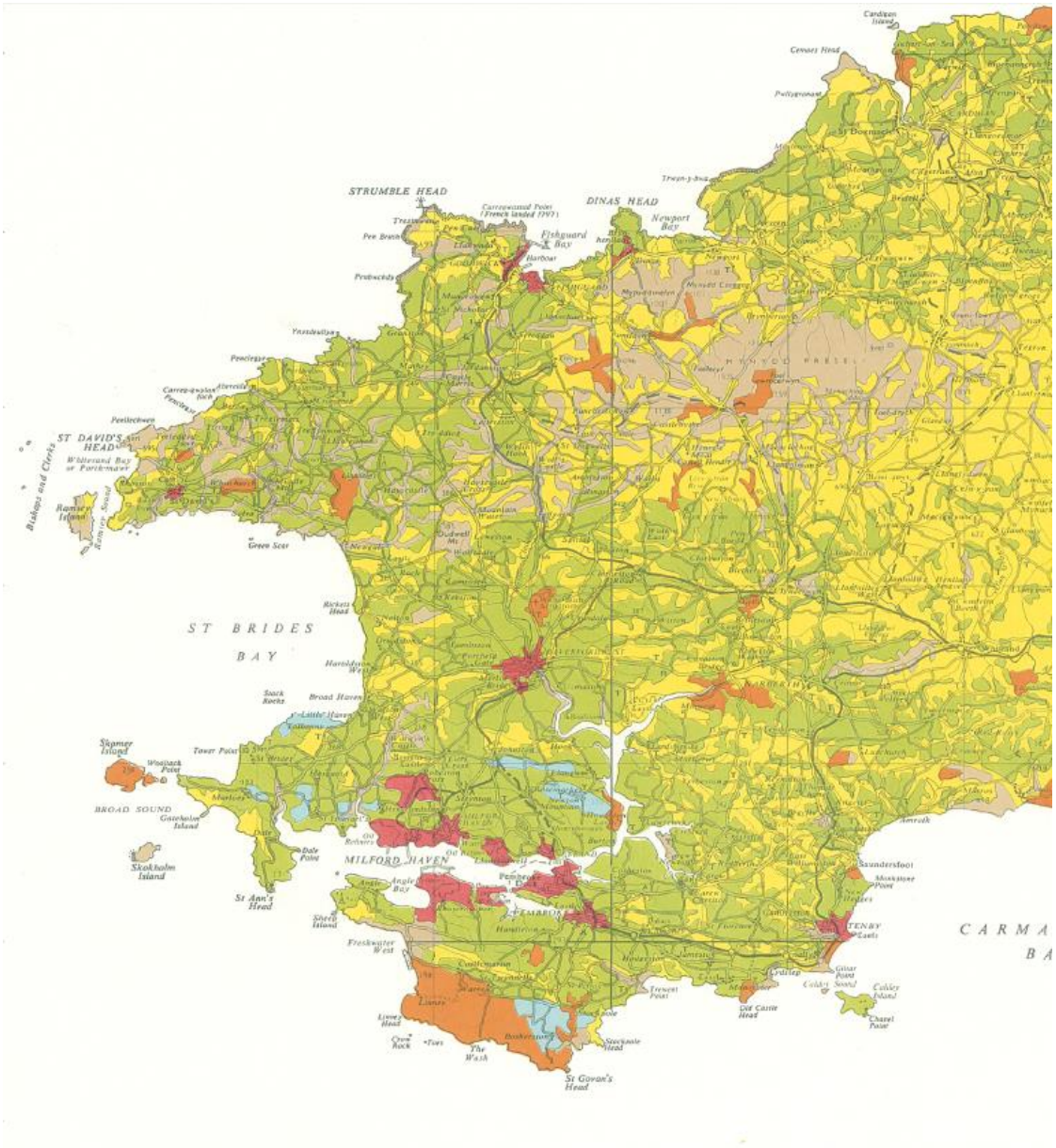


Further detail on habitats of international importance, priority BAP species, protected sites etc can be found under this Aspect Area.

Local Development Plan Landscape & Historic Environment Designations (PCNPA greyed out)



1:25,000 Agricultural Land Classification Map (HMSO, Crown Copyright Reserved 1977)



Contacts Information

For further information on Supplementary Planning Guidance please contact:

Development Planning
Pembrokeshire County Council
County Hall
Freeman's Way
Haverfordwest
SA61 1TP

Telephone: 01437 – 764551
E-mail: ldp@pembrokeshire.gov.uk
Website:
http://www.pembrokeshire.gov.uk/content.asp?nav=1626,109,140,1024&parent_directory_id=646&id=11211&language=

For further information on submitting a Planning Application please contact:

Development Management
Pembrokeshire County Council
County Hall
Freeman's Way
Haverfordwest
SA61 1TP

Telephone: 01437 – 764551
E-mail: planningenquiries@pembrokeshire.gov.uk
Website:
http://www.pembrokeshire.gov.uk/content.asp?nav=1626,109,140&parent_directory_id=646

Useful Links[17]

BRE, 'Agricultural Good Practice Guidance for Solar Farms', Ed J Scurlock (2014): http://www.bre.co.uk/filelibrary/nsc/Documents%20Library/NSC%20Publications/NSC_-Guid_Agricultural-good-practice-for-SFs_0914.pdf

BRE, 'Biodiversity Guidance for Solar Developments', Eds G E Parker and L Greene (2014): http://www.bre.co.uk/filelibrary/pdf/Brochures/NSC-Biodiversity-Guidance.pdf

CADW, 'Renewable energy and your historic building' (2010): http://cadw.gov.wales/docs/cadw/publications/Micro_gen_booklet_EN.pdf

Department for Communities and Local Government, 'Planning practice guidance for renewable and low carbon energy' (July 2013): https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/225689/Planning_Practice_Guidance_for_Renewable_and_Low_Carbon_Energy.pdf

Department of Trade and Industry Report, 'The Assessment and Rating of Noise from Wind Farms (ETSU-R097)': https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/49869/ETSU_Full_copy__Searchable_.pdf

Institute of Acoustics, 'Wind Turbine Noise – various documents' (2014): http://www.ioa.org.uk/publications/good-practice-guide

Joint Nature Conservation Committee, 'Phase 1 Habitat Classification' webpage: http://jncc.defra.gov.uk/page-4258

Landscape Institute & IEMA, 'Guidelines for Landscape and Visual Impact Assessment, 3rd edition' (April 2013): http://www.landscapeinstitute.co.uk/knowledge/GLVIA.php

Natural England, Bats and onshore wind turbines (TIN051), (February 2012) http://publications.naturalengland.org.uk/publication/35010

Natural Resources Wales, Ancient Woodland Inventory webpage: http://naturalresources.wales/forestry/woodlands-and-the-environment/ancient-woodland-inventory/?lang=en

[17] All website addresses correct as of 12th May 2015

Natural Resources Wales, LANDMAP database:
https://naturalresources.wales/planning-and-development/landmap/

Natural Resources Wales, 'LANDMAP and Landscape and Visual Impact Assessment for onshore windfarms' (May 2013):
http://www.ccgc.gov.uk/landscape--wildlife/protecting-our-landscape/landmap/landmap-guidance--newlsletter.aspx

Pembrokeshire Coast National Park Authority, Local Development Plan (Adopted 29th September 2010):
http://www.pembrokeshirecoast.org.uk/default.asp?PID=178

Pembrokeshire Coast National Park Authority, 'Landscape Character Assessment SPG' (June 2011):
http://www.pembrokeshirecoast.org.uk/default.asp?PID=249

Pembrokeshire Coast National Park Authority, 'Renewable Energy SPG' (October 2011, Technical Update April 2014):
http://www.pembrokeshirecoast.org.uk/default.asp?PID=528

Pembrokeshire Coast National Park Authority, 'Cumulative Impact of Wind Turbines on Landscape and Visual Amenity' (December 2013):
http://www.pembrokeshirecoast.org.uk/files/files/Dev%20Plans/Cumulative%20Impact%20SPG%20Final%20Jan2014.pdf

Pembrokeshire County Council, Supplementary Planning Guidance webpage:
http://www.pembrokeshire.gov.uk/content.asp?nav=1626,109,141,1014&id=21476&language=

Pembrokeshire County Council & Pembrokeshire Coast National Park, 'Solar Array Survey' (August 2014):
http://www.pembrokeshire.gov.uk/content.asp?nav=1626,109,141,1014&id=29613&language=

Pembrokeshire County Council & Pembrokeshire Coast National Park, 'Interactive Map: Wind Turbine Applications':
http://www.pembrokeshirecoast.org.uk/default.asp?PID=528

Planning Portal advice on planning applications:
http://www.planningportal.gov.uk/permission/commonprojects/

UK Wind Energy database: http://www.renewableuk.com/en/renewable-energy/wind-energy/uk-wind-energy-database/index.cfm

Welsh Government, 'Planning Policy Wales, Edition 7' (July 2014): http://wales.gov.uk/docs/desh/publications/140731planning-policy-wales-edition-7-en.pdf

Welsh Government, 'Planning: a guide for householders, version 2' (April 2014): http://wales.gov.uk/docs/desh/publications/140422householder-permitted-development-guide-en.pdf

Welsh Government, 'The Town and Country (General Permitted Development) (Amendment) (Wales) Order 2012': http://www.legislation.gov.uk/wsi/2012/1346/contents/made

Welsh Government, 'The Town and Country (General Permitted Development) (Amendment) (Wales) (No.2) Order 2012': http://www.legislation.gov.uk/wsi/2012/2318/contents/made

Welsh Government, 'Planning Implications of Renewable and Low Carbon Energy' (February 2011): http://wales.gov.uk/topics/planning/policy/guidanceandleaflets/planningimplications/?lang=en

Welsh Government, 'Generating your own renewable energy: a planning guide for householders, communities and business' (November 2011): http://wales.gov.uk/topics/planning/policy/guidanceandleaflets/generaterenewable/?lang=en

Welsh Government, 'Planning for Renewables and Low Carbon Energy – A Toolkit for Planners' (July 2010): http://wales.gov.uk/topics/planning/policy/guidanceandleaflets/toolkitforplanners/?lang=en

Welsh Government, 'Technical Advice Note 8: Renewable Energy' (2005): http://wales.gov.uk/docs/desh/publications/050701techical-advice-note-8-en.pdf

Welsh Government, 'Technical Advice Note 5: Nature Conservation and Planning' (2009): http://wales.gov.uk/docs/desh/policy/100730tan5en.pdf

Western Power Distributed Generation Map: http://www.westernpower.co.uk/Connections/Generation/Generation-Capacity-Map/Distributed-Generation-Map.aspx

White Consultants, 'Pembrokeshire and Carmarthenshire's: Cumulative Impact of Wind Turbines on Landscape and Visual Amenity Guidance' (April 2013): http://www.pembrokeshire.gov.uk/content.asp?nav=1626,109,141,1014&parent_directory_id=646&id=13224&language=

West Wales Biodiversity Information Centre webpage: http://www.wwbic.org.uk/