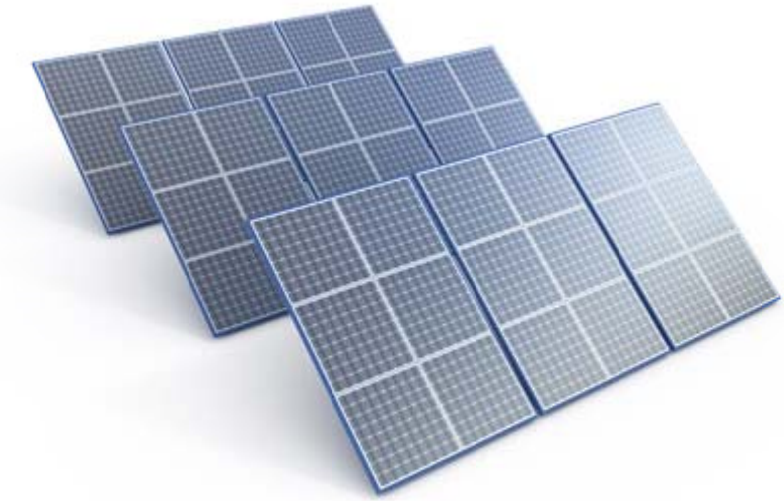
APPENDIX I

Denbighshire County Council

Draft RENEWABLE ENERGY SUPPLEMENTARY PLANNING GUIDE

September 2015



Denbighshire County Council
Strategic Planning and Housing
September 2015

Cyngor sir ddinbych denbighshire County Council

Denbighshire County Council

Draft Renewable Energy Supplementary Planning Guidance

September 2015

Appendices (link to view)

1. INTRODUCTION

1.1 This note is one of a series of Supplementary Planning Guidance notes (SPGs) amplifying the development plan policies in a clear and concise format with the aim of improving the process, design and quality of new development. The notes are intended to offer broad guidance which will assist members of the public, Members of the Council, and officers in discussions prior to the submission of planning applications and assist officers and Members in determining planning applications.

2. STATUS AND STAGES IN PREPARATION

2.1 The Council's Supplementary Planning Guidance (SPG) notes are not part of the adopted development plan. The Welsh Government has confirmed that following public consultation and subsequent Local Planning Authority (LPA) approval, SPG can be treated as a material planning consideration when LPAs, Planning Inspectors and the Welsh Government determine planning applications and appeals. This SPG document was formally approved for consultation by Denbighshire County Council's Planning Committee on XX September 2015.

2.2 This SPG has been prepared in accordance with guidance contained in Planning Policy Wales Edition 7 (2014); Local Development Plans Wales (December 2005); Technical Advice Note 8 – Renewable Energy (July 2005); and Welsh Government Practice Guidance – Planning Implications of Renewable and Low Carbon Energy Development. This SPG introduces the national and local policies concerned with the installation of renewable energy technologies (wind, water, solar, geothermal energy and plant material (biomass)) and in particular on-shore wind energy. Relevant local policies are Denbighshire LDP policies VOE 9 ('On-shore wind energy') and VOE 10 ('renewable energy technologies').

3. BACKGROUND

3.1 The overarching objective of the Supplementary Planning Guide : Renewable Energy, is to insist the consideration of Policy VOE 9 & VOE 10 of the Denbighshire Local Development Plan (2006-2021) which outlines the primary objectives for assessing renewable energy developments under 50MW.

3.2 The Council supports the adoption of renewable energy technologies to address the effects of climate change. Renewable energy technologies have an important role to play, taking advantage of the natural resources in Wales. However, support for renewables has to be balanced with our commitments and aspirations to conserve and enhance natural heritage, including the quality and diversity in Denbighshire. The purpose of this guidance is to help direct renewable energy technologies to those landscapes best able to accommodate them and to offer advice on the level of information required to accompany a planning application for the Council's determination.

3.3 This document should be read in conjunction with Welsh Government's published guidance (in particular): Planning Implications of Renewable and Low Carbon Energy (February 2011).

3.4 In addition, good design principles for wind farms are becoming established following more than a decade of wind farm development in Wales and with a number of medium and large-scale wind farms constructed and operating. Design is a material consideration in the planning process and the Council believes that good siting and design of single turbines and wind farms is important for all parties involved, helping to deliver development which is appropriate to a landscape whilst delivering targets for renewable energy across Wales.

3.5 In Part 1 of the SPG the national planning policy and local planning policy are set out before general guidance is given on key considerations for application submission. Part 2 gives planning considerations for two popular technologies namely onshore wind energy and solar array technology.

4. TECHNICAL STUDY

4.1 The Council in 2013, along with Conwy County Borough Council commissioned landscape architects to identify the existing landscape characteristics for both Local Authority areas. These were then evaluated against a 'sensitivity to onshore wind energy development' criteria. This document is made publically available as an appendix to this SPG. The study is discussed in chapter 7.2. The document is a material consideration and provides a strategic assessment of the relative sensitivity of the landscape to wind energy developments. The Councils commissioned the study to address concerns regarding an increase cumulative impact of 50 metre turbines in the landscape.

PART 1

5 PLANNING POLICY CONTEXT

5.1 National Planning Policy

5.1.1 It is the Welsh Government's aim to enhance the economic, social and environmental wellbeing of the people and communities of Wales and its ambition is to *"create a sustainable, low carbon economy for Wales*". In doing so, the Government wants to ensure that full advantage is taken of the transition to a low carbon economy to secure a wealthier, more resilient and sustainable future for Wales (**Energy Wales: A Low Carbon Transition**).

5.1.2 The UK Government is committed to delivering its share of the EU target for 15% of energy from renewable sources by 2020 as implemented by the Renewable Energy Directive (2009). Welsh Government has an ambition to make low carbon energy a reality in Wales. Welsh Government's energy policy and aspirations are set out in "**A Low Carbon Revolution**" which identifies Wales' sustainable renewable energy potential to 2020/2025. The Welsh Government is committed to pursuing these aspirations and promoting

all forms of renewable energy with onshore wind currently the most viable technology. Welsh Government policy seeks to achieve these targets through the following objectives:

- Maximising energy savings and energy efficiency in order to make producing the energy we need from low carbon sources more feasible and less costly;

- Energy needs must be met from low carbon sources and move to a resilient low carbon energy production via indigenous sources and thus secure renewable energy, on both a centralised and localised basis; and

- By ensuring that this transition to low carbon maximises the economic renewal opportunities for practical jobs and skills. Annually, the Welsh Government aims to double renewable electricity production by 2025 in comparison to 2010. By 2050, at the latest, to be in a position where all local energy needs can be met by low carbon electricity production.

5.1.3 **Planning Policy Wales** 2014 sets out the land use planning policies of Welsh Government and is supplemented by a series of **Technical Advice Notes** (TANs). PPW considers that in order to meet the Government's renewable energy target of 4TWH per annum, local planning authorities should support proposals for renewable energy projects, provided environmental impacts are avoided or minimised, and the integrity of nationally and internationally designated areas are not compromised.

5.1.4 Local Planning Authorities should, it is stated, "facilitate the development of all forms of renewable energy and energy efficiency and conservation measures which fit within a sustainable development framework". They should seek to make positive provision for such developments in order to meet society's needs now and in the future.

5.1.5 Whilst currently there is not a specific target for Denbighshire, the County Council recognises the importance of climate change and the long-term impact that it will have both on communities and the environment.

5.1.6 Planning Policy Wales 2014 defines the size scales of renewable energy projects as follows:

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

5.1.7 In terms of who takes the decision on renewable energy technologies this is dependent on the size of the scheme. For electricity installations (e.g. wind, solar, biomass etc.) it is currently as follows:

Installation Size	Current Consenting Body
Less than 50 MW onshore	Welsh Local Authorities and Welsh Ministers
More than 50 MW onshore	National Secretary of State for Energy and Climate Change; National Infrastructure Planning; Appropriate National Secretary of State.

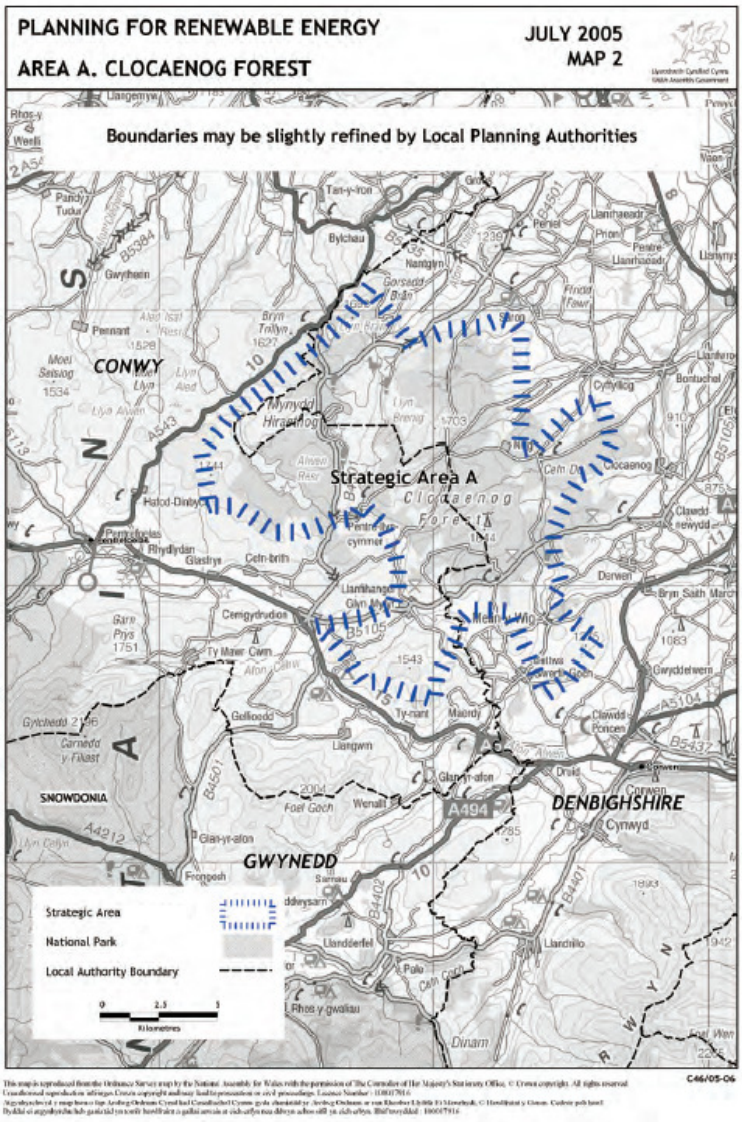
5.1.8 Planning Policy Wales para. 12.10.1 outline relevant national planning considerations which will be used to determine planning applications in addition to the Denbighshire Local Development Plan 2006 – 2021.

On-shore wind energy in Wales

5.1.9 Technical Advice Note 8 (2005) established a Welsh target of 800MW of installed wind energy developments up to 2010 with acknowledgment for a greater capacity. TAN 8 sets out Welsh Government's view that large scale (defined as being over 25MW installed capacity) onshore wind energy developments should be concentrated into particular areas defined as Strategic Search Areas (SSAs). Seven (7) Strategic Search Areas (SSAs) are identified in TAN 8 have been identified by Welsh Government, one of which crosses Denbighshire County Council and neighbouring Conwy County Borough Council boundaries (Strategic Search Area A).

5.1.10 Onshore wind farm development plays a significant role in the Welsh economy. Figures indicate that onshore wind energy alone could be worth more than £2bn to the Welsh economy (www.renewableuk.co.uk – January 31 2013 - Economic Opportunities for Wales from Future Onshore Wind Development report).

Illustration from TAN 8 (2005), Map 2 Clocaenog Forest Strategic Search Area.



Landscape protection in Wales

5.1.11 Landscape is important, not just as scenery but because it links culture with nature, and the past with the present. Well looked after and highly valued landscapes are essential to social well-being and an economically healthy society. Landscapes are valued because of their inherent interest, their contribution to both national identity and local distinctiveness. It is estimated that health and wellbeing of the landscapes 'goods & services' are worth over £9 million to the Welsh economy every year.(www.cprw.org.uk – October 2013 – Why landscape matters)

5.1.12 Technical Advice Note 12: Design (2014) (TAN 12) requires local planning authorities in Wales to appraise the 'character' of the landscape. Furthermore, TAN 12 outlines that the appraisal of the landscape should focus on its quality in terms of geology and geomorphology, vegetation and habitats, visual and sensory quality and historic and cultural quality. Good strategic planning can help to avoid development diminishing landscape diversity within Wales by ensuring that renewable energy technologies are sited within areas which are best able to accommodate them.

5.1.13 Landscape information resources, such as 'LANDMAP', can assist assessment of the impact of proposals and identify where development would be preferable in landscape terms. LANDMAP is one method of assessment which has the potential to provide a framework and information base from which good design and management can be developed. The planning framework in Wales advocates the use of LANDMAP as an information source in decision making.

5.1.14 At the strategic level, landscape character analysis can help in identifying those landscape types best suited to large scale and/or multiple renewable energy developments. Denbighshire, along with Conwy County Borough Council have undertaken a Landscape Sensitivity and Capacity Assessment, which is referred to in chapter 7.2.

Best and most versatile agricultural land

5.1.15 Planning Policy Wales defines land grades of 1, 2, and 3a of the Agricultural Land Classification system to be the best and most versatile. Our best and most versatile agricultural land should be conserved as a finite resource for the future and that such land should be protected from development unless there is an overriding need and lower quality land or previously developed land is not suitable or available (PPW 4.10.1). Planning decision making can attach considerable weight to protect such land from development.

5.1.16 The Agricultural Land Classification (ALC) map for Wales is published at a scale of 1:250,000. This map is produced for use in strategic planning and provides only a generalised indication of the distribution of land quality. The map is not suitable for use in evaluating individual sites. In such cases a resurvey at a larger scale is necessary to obtain a definitive grade. Applicants are expected to submit a Sequential Analysis Study of other sites in the County within a reasonable and justifiable distance (proximity to electricity distribution) (Welsh Government TAN 6 2010)

5.1.17 Where development is proposed on a higher grade agricultural land it should demonstrated to be temporary, capable of removal and reversible (i.e. evidenced that at the end of the life of the development the land can be returned as a minimum to its pre-development condition) (Welsh Government's Practical Guidance on the Planning Implications of Renewable and Low Carbon Energy, February 2011).

The Benefits of Microgeneration

5.1.18 Microgeneration can help to helping to combat climate change through the reduction of carbon emissions by reducing reliance electricity generated in conventional fossil-fuel power stations, it can also benefit householders and businesses more directly. Generating electricity on-site can lead to reduced energy bills, for example when replacing heating oil in those more isolated properties not currently on the gas grid. It can buffer consumers from future energy price rises and in doing so can help make a small but significant

contribution to UK energy security. Other broad benefits of locally embedded electricity generation is the reduction of transmission losses through the national grid associated with centralised electricity generation.

5.1.19 Consumers may be able to achieve returns on their investment in the order of 6%-8% (depending on outputs) through financial incentive schemes, such as Feed-in-Tariffs and the Renewable Heat Initiative (see below). These incentives may enhance the value of a property since the income will continue for a fixed number of years. This beneficial effect would be enhanced by any future energy price rises.

5.1.20 Recent changes in the General Permitted Development Order does away with the need to obtain planning permission for a range of microgeneration technologies for domestic and commercial properties. This means that, provided the proposed development conforms to certain limits, it is not necessary to apply to the local planning authority for permission. Further details on permitted rights are provided in Section 6.2 below.

5.2 Denbighshire County Council Local Development Plan Policies

VOE 9: Onshore wind energy

5.2.1 Denbighshire's LDP Policy VOE 9 sets out criteria against which onshore wind turbine developments will be assessed. A key aim is to ensure that development is proportionate and appropriately sited in the landscape. If developments are acceptable when considered against the policy tests, but where there are negative landscape impacts, the Council will seek to re-site development or reduce its scale.

Denbighshire Local Development Plan (2006-2021)
Policy VOE 9 – Onshore Wind Energy:

"On shore wind turbine developments will be supported subject to an assessment of their environmental and sustainability impacts:

STRATEGIC / LARGE SCALE developments (generating capacity over 25MW) will be supported within the Clocaenog Strategic Search Area (SSA-A).

LOCAL AUTHORITY WIDE SCALE developments (generating capacity between 5MW and 25MW) will only be permitted within the Clocaenog Strategic Search Area where they do not prejudice the development of strategic/large scale schemes.

SUB LOCAL AUTHORITY SCALE developments (generating capacity between 50kW and 5MW) in the form of individual turbines or clusters of turbines will only be permitted within the Clocaenog Strategic Search Area where they do not prejudice the development of strategic/large scale schemes; and in all the above cases, outside the Area of Outstanding

Natural Beauty, Conservation Areas, World Heritage Site and Buffer Zone, and other sites designated for ecological, historic, landscape, or other value, and where they do not adversely affect the setting of these areas.

MICRO / SMALL SCALE turbine developments (generating capacity below 50kW) will be permitted subject to an assessment of localised impacts.

All applications will be subject to normal environmental impact tests and include specific assessment / explanation of all the following criteria:

i) how the proposals are consistent with the Clocaenog Statement of Environmental Master Planning Principles (applicable to strategic/large, local authority wide, and sub local authority scale, where in or on the periphery of the SSA-A); and

ii) impacts, including cumulative impact on the surrounding area and community (e.g. landscape/visual, noise, biodiversity, transport, health impact); and

iii) information on wind resource and the justification for the choice of turbine; and

iv) community engagement; and

v) mitigation proposals; and

vi) the colours to be used on the turbine tower and blades."

National Policy links
Planning Policy Wales:
Chapter 12 – Infrastructure and Services
Technical Advice Notes:
TAN 8 – Renewable Energy

Other Local Development Plan policies of relevance include:

- Policy PSE5 – Rural Economy;
- Policy VOE 1 – Key Areas of Importance;
- Policy VOE 2 – Areas of Outstanding Natural Beauty and Area of Outstanding Beauty;
- Policy VOE 5 – Conservation of Natural Resources;
- Policy VOE 10 – Renewable Energy.

5.2.2 The table below sets out the wind turbine typologies which are used by the Local Authority to categorise the scale of development.

Category (Scale)	**Output (broad output as guidance only)**	**Supplementary criteria (for turbines only) (meets one or more of the criteria)**
Strategic / Large Scale	Over 25MW	• Turbines 10 and over in number. • Turbines over 110m to blade tip. • Viewed as a very large-scale wind farm.
Local authority wide scale	Between 5MW and 25MW	• Turbines up to 9 in number. • Turbines below 80m to blade tip. • Viewed as a large group.

Sub local authority scale	Under 5MW	• Turbines up to 3 in number. • Turbines below 50m to blade tip. • Viewed as a small group.
Micro / Small	Under 50kW	• Single or twin turbine applications. • Turbine below 20m to blade tip.

VOE 10: Renewable Energy Technologies

Denbighshire's LDP Policy VOE 10 sets out the local impact criteria against which renewable energy developments will be assessed. They will be applied to each case to assess the acceptability of schemes

Denbighshire Local Development Plan (2006-2021)
Policy VOE 10 – Renewable Energy Technologies:

Development proposals which promote the provision of renewable energy technologies may be supported providing they are located so as to minimise visual, noise and amenity impacts and demonstrate no unacceptable impact upon the interests of nature conservation, wildlife, natural and cultural heritage, landscape, public health and residential amenity. In areas that are visually sensitive, including the AONB, Conservation Areas, World Heritage Site and Buffer Zone and in close proximity to historic buildings, visually intrusive technologies will not be permitted unless it can be demonstrated that there is no negative impact on the designation or there is an overriding public need for the development.

National Policy links
Planning Policy Wales:
Chapter 12 – Infrastructure and Services
Technical Advice Notes:
TAN 8 – Renewable Energy
TAN 6 – Planning for sustainable rural communities

Other Local Development Plan policies of relevance include:

- Policy PSE5 – Rural Economy;
- Policy VOE 1 – Key Areas of Importance;
- Policy VOE 2 – Areas of Outstanding Natural Beauty and Area of Outstanding Beauty;
- Policy VOE 5 – Conservation of Natural Resources;
- Policy VOE 9 – On-shore wind energy.

6. GENERAL GUIDANCE – relevant to all technologies

6.1 Permitted development rights

6.1.1 Most householders can carry out small extensions or additions to their homes without the need for planning permission. This is known as '**permitted development'**. Recent changes in the General Permitted Development Order have removed the requirement for planning permission for a range of microgeneration technologies for domestic and nondomestic properties. See Appendix 1 for additional information.

6.1.2 Before commencing any work you should check whether the property in question is subject to an Article 4 Direction, or a condition on the original planning permission, which removes permitted development rights.

6.1.3 Different rules apply in case of Listed Buildings, Conservation Areas or World Heritage Sites as there are greater restrictions on the types of equipment that can be installed, particularly on the walls of buildings facing a highway. If you are proposing a wind turbine you should also check if you are within a within an Aviation Safeguarding Area.

6.1.4 In most categories of microgeneration technologies listed in Appendix 1, and in particular for solar electricity (pv) and solar thermal panels, permitted development is conditional on minimising the effect on the external appearance of the house or flat and also on minimizing the effect on the local amenity of the area. It will be a requirement that the equipment must be removed if no longer needed for microgeneration.

6.1.5 Householders and developers should also check to see whether "Buildings Regulations" apply to the technology/ies in question.

6.2 Rural economy considerations

6.2.1 Small-scale enterprises have a vital role in promoting healthy economic activity in rural areas. The need to sustain rural employment throughout the County is recognised and new businesses are essential to sustain and improve rural communities. In order to help endure change in the rural economy, tourism and commercial development, including agricultural diversification will be supported by the Council under Local Development Plan PSE5: Rural Economy.

6.2.2 Planning Policy Wales recognises the '*potential for communities and small businesses to invest in ownership of renewable energy projects or to develop their own projects for local benefit'* (para 12.8.19). PPW also supports community driven renewable energy projects where the benefits are returned to the host community. This is something the Council supports.

6.2.3 Technical Advice Note 6 (TAN6) supports the principle of installing a renewable energy project as being a valid farm diversification activity. Acceptability of a scheme is still subject to appropriate nature and scale of the activity.

Local Development Plan definition of diversification:
"to enter into a new market or industry which the existing business is not currently in, to reduce exposure to risk and to maintain or improve earnings".

6.2.4 Where no business case is submitted the Council will consider the planning application as a commercial development and diversification benefits to the rural economy will not be allowed significant weight.

6.3 Environmental Supporting Documents with planning applications

Environmental Impact Assessment (EIA)

6.3.1 An Environmental Impact Assessment identifies the environmental impacts of projects and potential measures to avoid excessive levels of harm. Where an Environmental Impact Assessment is required, a developer must prepare and submit an Environmental Statement with the planning application. An applicant can ask for a screening opinion in order to establish whether an Environmental Impact Assessment (EIA) is required.

6.3.2 With regards to **onshore wind energy** development, a screening opinion is normally only relevant when:

- more than 2 (two) turbines are proposed; or
- the hub height exceeds 15 metres; or
- the turbines fall within a 'sensitive' area as defined by the Town and Country Planning (Environmental Impact Assessment) (England and Wales) Regulations 1999.

6.3.3 Depending on the size of the **solar PV array** and potential impacts it may be necessary to undertake an Environmental Impact Assessment (EIA). Solar PV arrays are not explicitly listed within Schedule 2 of the EIA Regulations 45 which require an EIA if the project is judged likely to give rise to significant environmental effects due to its size, nature and/or location. Whilst solar PV is not explicitly mentioned they may fall within sub-category (a) of 'Energy industry', i.e. 'industrial installations for the production of electricity, steam and hot water', for which Schedule 2 indicates that developments **more than 0.5 ha** in area may require EIA.

6.3.4 Installations for **hydroelectric energy production** are listed under Schedule 2.3(h) of the Town and Country Planning (Environmental Impact Assessment) (England and Wales) Regulations 1999. Local Planning Authorities are required to screen applications for the need for EIA where the development involves a generating capacity of over 500Kw (0.5MW). Development proposed within sensitive areas, as defined in Regulation 2(1), must all be screened as the thresholds do not apply.

6.3.5 Sensitive landscapes include National Parks, AONBs, Historic Landscapes, Parks & Gardens, World Heritage Sites and non-designated areas which are particularly distinctive for their character, scenic quality, rarity, intactness, sense of place, wildness/tranquillity (identified by LANDMAP and/or site

assessment). The visual settings of National Parks, AONBs, Historic Landscapes, Parks & Gardens, World Heritage Sites, Conservation Areas, Listed Buildings and Schedule Ancient Monuments are also important to conserve and are sensitive areas.

6.3.6 Applicants should make a formal request to the Planning Service's Development Management Section for a screening opinion. All requests for a screening opinion should be accompanied by contact details, a detailed description of the proposal, details of the power output along with the location of the development; a 1:2500 location map, a 1:500 site map, as well as a description of the development's potential effect on the environment. The Council's screening opinion is publicly available.

6.3.7 If it is established that an Environmental Impact Assessment is required, the Local Planning Authority, if instructed by the applicant, will provide a scoping opinion to establish what details should be included in the Environmental Statement

6.3.8 Depending on the scale and location of the proposed development, planning applications should be accompanied by supporting documents and assessments to demonstrate compliance with the relevant national and local planning policy.

Habitat Regulations Appraisal (HRA)

6.3.9 A Habitat Regulations Appraisal (HRA) is required where a plan or project could affect a European Natura site(a Special Protection Area (SPA) or a Special Area of Conservation (SAC)). The process of HRA is quite separate from EIA and is required by the Habitats Regulations.

6.4.10 Thus, in addition to screening for Environmental Impact Assessment, planning authorities must also determine whether an HRA might be required. The key question is whether a proposal could have a likely significant effect on a European (Natura) site. In line with Welsh Planning Policy, proposed European sites (pSPAs and cSACs) should be treated as if they were designated when considering the potential effects of proposals.

6.4.11 If it is determined that a proposal could have a likely significant effect on a European site, Natural Resources Wales should be consulted by the planning authority to confirm this and determine the level of information required to conduct an appropriate assessment. Guidance on HRA is available on the Natural Resources Wales website: http://naturalresourceswales.gov.uk

6.4 Grid connection

6.4.1 In most cases the ability and capacity of a proposed renewable energy development to connect to the electricity distribution grid will not be a planning consideration.

6.4.2 However, given the importance of exporting electricity to the grid in many cases, it is recommended that developers conduct initial discussions with the Distribution Network Operator (DNO) at an early stage in the development of the project. These discussions should seek to identify routes for grid connection infrastructure which avoid areas of high landscape, ecological or archaeological sensitivity.

6.4.3 This will not be an issue in circumstances where it is not proposed to connect the technology to the electricity distribution grid. Examples of this include using the electricity generated directly by the business or household, or using storage solutions, such as batteries.

6.5 Community energy / benefits

6.5.1 Many communities have benefited from becoming involved in renewable energy projects in Wales. Denbighshire Council particularly advocate local communities benefiting by establishing their own renewable energy developments. By having a direct involvement the community has more control over the distribution of any 'outputs' (funds or energy).

6.5.2 The other type of community benefit can be described as a 'goodwill' contribution voluntarily donated by the developer. This approach is kept as a separate entity from the planning application procedure. Developers are encouraged to hold discussions with the community as part of the pre-application discussions.

6.5.3 Community benefits packages are not a material planning consideration. Where a community benefit package has been voluntarily offered by the developer as a means of compensating the local community for hosting renewable energy schemes, these can also be secured by way of a legal agreement.

6.5.4 Local communities in Denbighshire are benefiting from privately negotiated onshore community benefit schemes. Communities such as Derwen and Clawddnewydd have seen funding to secure new equipment for social groups and aesthetic improvements to the village. The village of Nantglyn secured a free energy survey to every household along with hosting a village website, financing the first meeting for start-up groups and community events (some of which are now in their 5+ years and are self-sustaining.

6.6 Legal Agreements

6.6.1 The requirement for developer contributions as a result of a proposed renewable energy development (e.g. to secure road network enhancements or the implementation of habitat management plans) may need to be secured through the use of legal agreements in accordance with Section 106 of the Town and County Planning Act (as amended).

6.6.2 A legal agreement may also be negotiated to ensure a suitable mechanism is in place (e.g. a bond) to ensure that sufficient resources would be available for dismantling the technology and remediation of the site when the planning

permission expires. This may be necessary to prevent large redundant technologies from remaining in the landscape once the end of their operating life has been reached, and acts as a safeguard in case of any financial constraints which may prevent the owner / operator of the equipment from carrying out decommissioning works in future.

6.6.3 Where legal agreements are necessary, the Council cannot issue a Decision Notice until the legal agreement has been completed. To avoid delay, it is therefore advisable for heads of terms to be discussed and prepared at an early stage in the planning process.

6.7. Decommissioning

6.7.1 The Local planning authority will consider using planning conditions to ensure that redundant development (e.g. turbines, solar arrays, biomass plant) are removed when no longer in use and land/site is restored to an appropriate use, usually land restoration to its former quality.

PART 2

7. LAND USE PLANNING CONSIDERATIONS IN RELATION TO ON SHORE WIND ENERGY SCHEMES

7.1 Landscape and Visual Impact

7.1.1 A key consideration of wind energy proposals will be the impact of turbine(s) on landscape character and visual/amenity interests. The effects of wind turbines will vary on a case by case basis depending on the size of the turbine, its location, the landscape setting and the impacts it will have on sensitive areas and receptors. The impacts can be particularly significant if the turbine(s) are too large for the receiving landscape (i.e. the height of the turbine overwhelms the scale of hills, ridges and historic monuments).

7.1.2 To assess the potential impact, planning authorities consider the design and location of all wind farm development carefully to ensure that the landscape and visual impact is minimised. Planning Policy Wales 3.1.4 refers to the number, size, layout, design and appearance of buildings, the means of access, landscaping, service availability and the impact on the neighbourhood and on the environment to be material considerations in the determination of planning applications.

7.1.3 Cumulative impact assessments may also be required where development proposals are close to existing wind energy schemes, or schemes currently subject to a planning application. See Section 7.3.

7.1.4 The Council acknowledge that a simplified form of assessment is more appropriate for small scale development. Whilst the level of assessment required will vary depending on the sensitivity of the location of the turbines, we recommend three indicative levels of assessment based on different wind turbine heights (to blade tip) as described below. An appropriate study area

should be identified on a case-by-case basis, based on a clear rationale derived from the Zone of Theoretical Visibility (ZTV) map.

7.1.5 Zone of Theoretical Visibility (ZTV) analysis is the process of determining the visibility of an object in the surrounding landscape. The process is objective in which areas of visibility or non-visibility are determined by computer software using a digital elevation dataset. The output from the analysis is used to create a map of potential (or theoretical) visibility. The phrase "potential visibility" is used to describe the result because the analysis does not take into account any landscape artefacts such as trees, woodland or buildings etc. The analysis is made on the basis of topography alone.

7.1.6 The results are not intended to show the actual visibility of an object, they are intended to indicate where the object **may** be visible from. Actual visibility can only accurately be determined by site survey since there are a multitude of local variables that may affect lines of sight.

The following requirements will apply for different scales of wind energy development:

<u>i) Turbines with a blade tip less than 20m in height</u>

For turbines with a blade tip height of less than 20m, a formal Landscape and Visual Impact Assessment (LVIA) is less likely to be required. However, as a minimum, detailed information on the location and design of the proposal should be provided to the planning authority with the planning application. It is then for the planning authority to determine whether any additional supporting information for the planning application is necessary. Basic Zone of Theoretical Visibility studies, photomontages and/or wireline drawings may be helpful in certain locations.

<u>ii) Turbines with a blade tip between 20m – 50m in height</u>

A basic level of Landscape and Visual Impact Assessment (LVIA) is likely to be required by the local authority. The details should be agreed by the planning authority but, as a minimum it is recommended ZTV map covering an area up to 15km (radius) from the turbine/outermost turbines; wireline drawings and/or photomontages from a limited number of key viewpoints; an assessment of the sensitivity of the landscape (based on LANDMAP and the Conwy & Denbighshire Landscape Sensitivity and Capacity Assessment for Wind Energy Development).

<u>iii) Turbines with a blade tip height over 50m in height</u>

7.1.5 For turbines of this scale, a more detailed LVIA is likely to be required. A LVIA, as a minimum, should include:

- a detailed description of the landscape character and visual receptors likely to be influenced by the proposal, an assessment of effects upon sensitive landscapes, settings to conservation feature, visual receptors and residential amenity for dwellings within 2km of the proposal.

- A ZTV map up to 35km as appropriate. ZTV maps should be superimposed on a clearly legible base map at a recognised standard scale, such as the OS 1:50,000.
- Wireframes, photomontages and / or visualisations focussing on key viewpoints from within the immediate locality and from the wider landscape. Key viewpoint locations should be informed by the following; Zone of Theoretical Visibility; height of turbine(s) and distance from them; character and sensitivity of the landscape; and the importance of those views.
- An assessment of the sensitivity of the landscape (based on LANDMAP and the Conwy & Denbighshire Landscape Sensitivity and Capacity Assessment for Wind Energy Development), the magnitude of change and residual impacts.
- A map of all operational, consented, and in-planning wind turbine proposals within a 60km radius of the application site.
- A focussed assessment of all operational, consented or in-planning wind turbine proposals within 30km radius of the application site.

7.1.6 The height thresholds are not absolute. For example, a 100m turbine in a low sensitivity location will require less assessment than a 55m turbine in a more sensitive landscape. Therefore, the above requirements are an indication of the level likely to be required, but this should be **tailored to the height of the turbine and the sensitivity of the location**. The assessment should focus on the likely key landscape and visual interactions of the proposal with other constructed, consented or applied-for wind farms, and other significant man-made structures within a 20km radius of the site. In certain circumstances, for example where sequential impacts with other developments may be a key issue, it may be appropriate to extend the study area but this is less likely to be required for small developments.

7.1.7 The majority of projects will require grid connection and may require wider infrastructure (such as substations, access tracks, anemometers, etc). The impact of this infrastructure must be considered as part of the assessment described above.

7.1.8 Landscape and Visual Impact Assessment (LVIA) is a standard process for examining the landscape and visual impacts of a development. The methodology for this is set out in the 'Guidelines for Landscape and Visual Assessment (GLVIA), produced by the Landscape Institute and the Institute of Environmental Management and Assessment.

7.1.9 LVIA follows an iterative process by which alternative sites and designs for a development are proposed, assessed, and amended (a process often referred to as mitigation). Through this process, LVIA identifies the preferred siting and design option for a development, balancing different environmental issues as well as functional, technical and economic requirements. Ultimately, the final scheme is assessed for predicted residual impacts on the landscape and visual resource.

7.1.10 LVIA is usually carried out by Chartered Landscape Architects who apply professional judgements in a structured and consistent way based on landscape design principles. The LVIA should assist decision makers, members of the public and other interested parties by providing a clear and common understanding of the predicted effects of windfarm proposals in an impartial and professional way.

7.1.11 LVIA is a standard process of assessment that may be presented as a separate report or form one part of an Environmental Impact Assessment (EIA) within an Environmental Statement (ES). While a LVIA will usually be required for every windfarm proposal, an EIA is only a statutory requirement for wind energy proposals where the proposal is likely to have significant effects on the environment. Circular 8/20072 sets out when EIA may be required for windfarms.

7.1.12 Effective and early consultation with key stakeholders and the general public are important processes within the EIA and design process.

7.2 Landscape sensitivity and capacity study for on shore wind turbine development.

7.2.1 Denbighshire County Council and Conwy County Borough Council commissioned Gillespies Landscape Architects to carry out the Landscape Sensitivity and Capacity Assessment for Onshore Wind Energy Development which forms an Appendix to this SPG. The objectives of the study were to:

- Provide a strategic assessment of the relative sensitivity of Conwy and Denbighshire's landscape for wind energy development using a defined set of landscape and visual criteria that includes both physical and perceptual aspects as well as a consideration of landscape value.
- Identify the key landscape, visual and perceptual sensitivities of different landscape areas.
- Provide broad guidance on those landscape areas where wind energy development of different scales is potentially most acceptable and those landscapes where development is likely to result in unacceptable adverse landscape and visual effects.
- Comment on any likely cumulative and cross boundary effects of wind energy development

7.2.3 The Conwy and Denbighshire Landscape Sensitivity and Capacity Assessment for Wind Energy Development Final Report, May 2013 (the 'Sensitivity and Capacity Assessment'), is available as Appendix 2 to this SPG and is a material consideration for all wind energy planning applications.

7.2.4 The Assessment used LANDMAP as a data source, and identified 42 '*landscape units'* across the study area (Denbighshire (31) and Conwy (19)). A sensitivity assessment sheet has been produced for each landscape unit, which evaluates a range of sensitivity criteria and concludes with a 'summary of sensitivity to wind energy development', which is accompanied by a score,

based on a five point sensitivity scale: low, medium, medium-high, high and very-high.

7.2.5 The 42 landscape units have also been assessed into 15 larger '*strategy areas'* (Denbighshire (13 units) and Conwy (10)). Each strategy area has been assigned an overall sensitivity rating based on an assessment of their constituent landscape units. Again, the overall sensitivity of strategy areas was judged on a five point scale.

7.2.6 Guidance on how to use the Sensitivity and Capacity Assessment (Appendix 2) is set out on page eleven of the document. In all cases, applicants are strongly advised to have regard to the sensitivity criteria set out in the relevant '*landscape unit'* and '*strategy area'.*

7.2.7 Having regard to the Assessment, the supporting information submitted with a planning application for wind energy development should demonstrate how, by virtue of its siting, layout and design, the wind energy proposal:

- Is located in a landscape strategy area where wind energy development is supported;
- Is at a scale which reflects the typology recommended for the relevant landscape strategy; and
- Fits within the overall indicative capacity identified within the strategy area.

7.3 Designing in landscapes with multiple wind farms - cumulative impacts

7.3.1 The cumulative design objective is one of the most important design objectives with regards to designing multiple wind farms in landscapes. Multiple wind farms will result in different types of cumulative effects. For each wind farm the most appropriate cumulative design objectives should be established, while also taking into account existing developments.

7.3.2 Some landscape character types will be able to accommodate multiple wind farms, while this may be inappropriate in others. Generally, it will be preferable for wind farm development to be limited in the range of landscape character types it covers within a particular area. This is to avoid reduction in the distinction between landscape character types.

7.3.3 In areas with multiple wind farms there is potential for the overall landscape character to be significantly changed. The presence of a number of wind farms and their associated infrastructure (overhead power lines and road access) could make them the dominant characteristic of the landscape such that it becomes a 'wind farm landscape'. It would generally be undesirable for multiple wind farm development to change distinctive skylines or occupy the major proportion of a skyline from key viewpoints or receptors[1].

[1] Sensitive visual receptors include public accessible locations from where enjoyment of the countryside is valued – i.e. public rights of way, tourist and recreation destinations, open access land, community outlooks enjoyed by residents, the road and rail network along scenic routes.

7.3.4 Welsh Government (TAN8) have determined that a 'wind farm landscape' will be appropriate in SSA's although good wind farm design principles still need to be applied. Separate wind farms should generally appear visually separated from each other – unless specifically designed to create the appearance of a single combined wind farm.

7.3.5 The Council can supply a spreadsheet of wind turbine development information by request. Information can also be found in the Landscape Sensitivity & Capacity Assessment for Wind Energy Development (Appendix 2).

7.4 Residential visual amenity

7.4.1 Views from private inhabited buildings and their curtilage have to be considered as these are regarded as a sensitive visual receptor.

7.4.2 Planning Policy Wales 7 states that proposals should be considered in terms of their effect on the amenity and existing use of land and buildings in the public interest. As the Courts have ruled that the individual interest is an aspect of the public interest, it is therefore valid to consider the effect of a proposal on the amenity of neighbouring properties.

7.4.3 Residential visual amenity means visual amenity from residential properties including their gardens. Whilst there is no published guidance on how impacts on residential amenity should be assessed, with respect to wind turbine development, a number of planning appeal decisions set out the factors to be taken into account for any assessment of residential visual amenity.

7.4.4 Having regard to relevant appeal decisions, the Council consider relevant residential visual amenity tests to be whether the proposed turbine(s) would have an unacceptable overbearing and / or oppressive impact on a residential property, which would result in the property concerned being widely regarded as an unattractive place in which to live.

7.4.5 In all cases, impacts on residential amenity should be assessed separately to the landscape and visual impact assessment.

7.4.6 Where the visual impact assessment is based upon selected representative views (i.e. not all sensitive receptors are individually assessed), it may be necessary to schedule all sensitive visual receptors likely to be affected by the development, including a brief statement on the likely effects, to allow cumulative impacts to be considered; this information will be required where there are a high number of residential properties within the locality.

7.5 Ecology

7.5.1 Applicants should consider the potential for a wind energy proposal to impact upon areas of nature conservation and protected species. Areas of nature conservation include statutory designated sites (Special Protected Areas, Special Areas of Conservation, Ramsar Sites, Sites of Special Scientific Interest, National Nature Reserves etc.) and local wildlife sites.

7.5.2 Depending on the size and location of the wind turbine development, a habitat and vegetation survey such as a phase 1 habitat survey may be required, which should encompass the whole development site including the turbine location and any other area of land affected by the development (e.g. access roads, control buildings and land affected by excavation and construction activities).

7.5.3 There are optimal times of year to undertake habitat surveys within the months between April and September. Habitats and species should be considered for their significance locally, regionally, nationally and internationally and particular reference should be made to the Section 42 species and habitats list (NERC Act 2006).

7.5.4 Further ecological assessments may be required to assess the impact on particular flora and fauna (in particular bats and birds).

7.5.5 Ecological assessments may also be required to assess the impact of service roads, excavation, construction activities and other ancillary development. Any impacts on habitats or species must be mitigated and the enhancement of wildlife features is encouraged. In accordance with best practice advice, wind turbines should be set away from linear features such as trees and hedgerows and a buffer zone of 50m should be applied.

7.5.6 Larger wind energy developments are more likely to require comprehensive ecological assessments.

7.5.7 Applicants are advised to contact the Council's Countryside Services department and Natural Resources Wales during the pre-application stages. Local species and habitat information is available from Cofnod, North Wales Environmental Information service; www.cofnod.org.uk.

7.5.8 Other guidance is available in LDP Policy VOE 5 Conservation of Natural Resources and the Biodiversity Code of Practice BS42020:2013 available from BSI.

7.6 Clocaenog Statement of Master Planning Principles (SEMP) – strategic scale onshore wind turbine developments.

7.6.1 The SEMP is a consideration in relation to **strategic (over 25MW)** developments within the Clocaenog SSA in accordance with Policy LDP VOE9. The aims of the Clocaenog Statement of Masterplanning Principles (SEMP) are:

- To identify broad Ecological Character Zones in relation to windfarm development within the SSA, and to draw up simple, but robust schedules of land management in order to maintain, improve or convert habitats within Zones, to be adhered to by developers applying for consent for windfarm development within the SSA.
- To provide certainty to the developer, the local planning authority (LPA) and to the community, as to what the LPA expects from the developer in

terms of land management in respect of planning applications within the Clocaenog Windfarm Zone (WFZ).

- To provide for an agreed strategic land management pattern, in order to avoid a pattern of inappropriate and conflicting land management proposals in respect of onshore wind.
- To assist in meeting the requirement set out in TAN, and in the Denbighshire and Conwy LDPs, to address land management, community benefit and enhancement.
- To provide a strategic analysis and rationale for the spatial location of environmental community benefit.

The SEMP is available via the RSPB website at:
http://www.rspb.org.uk/Images/sempdocument_tcm9-257052.pdf

7.7 Historic Environment

7.7.1 There are many important areas of historic and heritage interest within the County both above and below the ground; this includes scheduled ancient monuments, listed buildings, conservation areas, world heritage site, registered historic landscapes, and parks and gardens of special historic interest.

7.7.2 Where turbines are proposed in close proximity to an area of heritage interest, or where the turbines may have an impact on the setting of a historic feature, it may be necessary to commission a heritage evaluation to assess the implications of the proposal on features of historic interest either through direct loss of a feature or through indirect impacts on the character or appearance and setting of features of historic interest.

7.7.3 Applicants are advised to contact the Council's Conservation Section and County Archaeologist during the pre-application stages. Applicants are also advised to contact the regional archaeological trust - Clwyd Powys Archaeological Trust.

7.8. Noise

7.8.1 Depending on the size and location of the development, and the proximity to noise sensitive receptors, wind turbines can have a detrimental impact on the amenity of occupiers of nearby residential properties and buildings. A noise assessment may be required to determine the impact. Sensitive receptors include dwellings, quiet leisure based businesses, quiet areas that are particularly valued for their acoustic environment and areas of landscape quality or designated sites where noise may have an adverse impact on protected species or other wildlife.

7.8.2 ETSU-R-97 is the industry standard for the Assessment and Rating of Noise from wind turbines, and is cited in Welsh Governments' TAN 8 document as the relevant guidance on good practice. In May 2013, the Institute of Acoustics published 'A good practice guide to the application of ETSU-R-97 for the assessment and rating of wind turbine noise' (IOAGPG) which is also material.

7.8.3 Smaller wind energy developments such as single turbines warrant a simplified procedure commensurate with the size and impact of the turbine; the ESTU-R-97 simplified assessment method advises that turbine noise experienced at the nearest noise sensitive receptor should be limited to 35dBLA90, 10min up to wind speed of 10m/s at 10m height to provide sufficient protection to amenity.

7.8.4 Where turbines are proposed close to residential properties, the Council would need to be satisfied that noise experienced at the nearest residential property would not exceed 35dBA and a noise assessment will be required to demonstrate that an adequate separation distance between the turbine and any nearby residential properties has been applied to ensure amenity is protected.

7.8.5 Where the predicted noise level is greater than 35dBLA90, 10min at 10m/s at 10m height at any nearby property not in the ownership of the applicant and no representative background noise measurements have been included, the applicant will be required to provide justification as to the non-inclusion of such data.

7.8.6 Background noise measurements will only be taken into consideration where it can be demonstrated that they have been taken from a location which is representative of the background noise experienced at nearby residential properties. Background noise surveys should be carried out in accordance with ESTU-R-97 and the guidance contained in IOAGPG chapter 2. IOAGPG SB8 recommends:

- Measurements should be made in amenity areas between 3.5 and 20 metres from a dwelling.
- The measurement position should permit measurement of 'background noise levels judged to be typical/ indicative of the area around the associated dwelling and any other dwellings for which the measurement location will serve as a proxy.
- The influence of noise from local sources should be taken into account when selecting measurement locations.
- The person selecting background noise monitoring positions and visiting these locations should record subjective impressions of sources contributing to local ambient noise levels.
- Residents should be consulted to establish the occurrence of unusual noise events during the monitoring period.
- Photographs showing the positions of measuring equipment should be provided.

7.8.7 <u>Cumulative noise impacts</u>

In situations where a turbine is proposed within or close to a zone of predicted noise influence of another turbine or group of turbines, a cumulative noise impact assessment will be required. The boundary of the 'zone of predicted noise influence' should equate to the 32dBLA90, 10min contour based upon a wind speed of 10m/s at 10m height.

The cumulative noise assessment will need to demonstrate that the combined noise level from all wind turbines will not exceed an overall level of 35dBLA90, 10min or 5dB(A) above background noise levels up to wind speeds of 12m/s at 10m height. The background noise levels and noise assessment should adopt a methodology that makes every endeavour to ensure that the quiet day-time and night-time periods used for the background noise assessment, are not influenced by any nearby wind turbines.

7.8.8 The Council's preferred approach for assessing cumulative noise impact can be read in Bowdler's 2012 report for the Council, which is in Appendix 3. Applicants are advised to contact the Council's Public Protection department during the pre-application stages to discuss.

7.9 Aviation, Communications / Broadcast Equipment

7.9.1 The local planning authority will consult the Ministry of Defence (Defence Infrastructure Organisation) and National Air Traffic Services (NATS) on all wind turbine applications over 11m or above in height and/or rotor diameter of 2m or above, and Airbus Operations Ltd where development proposals fall within the 30km Hawarden Airport Safeguarding Zone. As such, there is no requirement for applicants to consult with these bodies prior to submission of an application.

7.9.2 However, it is the responsibility of the applicant to demonstrate that the proposed turbine(s) will not cause any interference to the operation of any communications or broadcast equipment, through consultation with the operators of any masts or antennae which may be subject to adverse effects from the proposed turbine(s). Consultation responses from any such individuals or organisations should be submitted with the planning application. Pre application advice is encouraged with the MOD.

7.10 Traffic and transport

7.10.1 Traffic movements during the construction and operation of a wind energy development may impact on the local road network during the construction phase, and the Council will need to be satisfied construction vehicles can access the site and the local highway is capable of accommodating construction traffic.

7.11 Recreation and access

7.11.1 Where a wind turbine or any ancillary development such as access roads, construction compounds etc. affects a public right of way or promoted route (e.g. Offa's Dyke Path National Trail and the Regional Routes such as the Brenig Way), an access management plan should be provided that sets out the impact to the whole Public Rights of Way network for the locality as well as promoted recreation routes which are through, alongside or near the site.

7.11.2 In all cases, wind turbine blades should not over sail a public right of way or a promoted route, and the Council would recommend a separation distance of

the tip height of the turbine plus 10% is applied to ensure public amenity is protected.

7.11.3 Horse riders are particularly susceptible to disturbance from wind turbines and the British Horse Society recommends a minimum separation distance of 200m between a wind turbine and any bridleway.

7.11.4 Where public rights of way are directly affected, the Council will apply a planning condition to ensure public rights of way are safeguarded during the construction, operation and decommissioning of wind energy proposals.

7.11.5 If any path forming part of a regional or national promoted recreational route passes through a development and requires temporary closure as part of the construction, a suitable alternative route needs to be agreed with the trail manager and provided on site with associated public notices and diversion signage to inform the public and being provided by the developer for the duration of any closure.

7.12 Hydrology and geology

7.12.1 The construction and decommissioning of wind turbines can have potential impacts on local watercourses, water bodies, groundwater and water supplies. Applicants should consider how the excavation and construction works can be carried out without substantially altering the hydrological and hydrogeological regime of the site and particular consideration should be applied in peatland areas where peat plays an important role in hydrology regimes, and is also recognised as an important store of carbon.

7.12.2 In addition, a number of properties within rural areas of the County are reliant on private water supplies. Depending on the geology of the site and the proximity to sources of supply, construction activities relating to wind turbine development have the potential to cause adverse impacts on the quantity, quality and colouration or water supplies.

7.12.3 The local planning authority may request a hydrological and / or a geological report to be submitted and a scheme of works to be drawn up to ensure hydrological / geological assets are safeguarded during the construction, operation and decommissioning of the turbine(s).

7.12.4 In all cases, mitigation measures to minimise the potential of flood risk and surface water runoff should be applied, and in some cases a drainage report may be requested to ensure no increase in land runoff rates or modifications to local drainage patters as a result of development may be required.

7.12.5 Applicants are advised to contact the Council's Public Protection department during the pre-application stages.

7.13 Shadow flicker

7.13.1 In terms of shadow flicker, applicants should take into account the impact on nearby dwellings. An assessment of potential shadow flicker throughout the

year should be provided for all residential properties within a 10 rotor diameter distance of the proposed location of each wind turbine. Details of each affected property together with photographs, orientation, position of principal windows etc. needs to be included together with monitoring proposals and details of mitigation measures.

7.14 Safety

7.14.1 Safety may be an issue in certain circumstances, but risks can often be mitigated through appropriate siting and consultation with affected bodies:

- *Buildings* - Fall over distance (i.e. the height of the turbine to the tip of the blade) plus 10% is often used as a safe separation distance. This is often less than the minimum desirable distance between wind turbines and occupied buildings calculated on the basis of expected noise levels and due to visual impact;
- *Power lines* - National Grid, and/or the relevant Distribution Network Operators will be able to advise on the required standards for wind turbines being separated from existing overhead power lines
- *Air traffic and safety* - Wind turbines may have an adverse effect on air traffic movement and safety. Firstly, they may represent a risk of collision with low flying aircraft, and secondly, they may interfere with the proper operation of radar by limiting the capacity to handle air traffic, and aircraft instrument landing systems.

7.14.2 There is a 15 kilometre (km) consultation zone and 30km or 32km advisory zone around every civilian air traffic radar, although objections can be raised to developments that lie beyond the 32km advisory zone. There is a c.15km statutory safeguarding consultation zone around Ministry of Defence aerodromes within which wind turbine proposals would be assessed for physical obstruction. See the Town and Country Planning (safeguarded aerodromes, technical sites and military explosives storage areas) direction 2002. Further advice on wind energy and aviation can be found on the Civil Aviation Authority and National Air Control Transport Services websites

- *Defence* - Wind turbines can adversely affect a number of Ministry Of Defence operations including radars, seismological recording equipment, communications facilities, naval operations and low flying aircraft. Developers and local planning authorities should consult with the Ministry of Defence if a proposed turbine is 11 metres (m) to blade tip or taller, and/or has a rotor diameter of 2m or more
- *Radar* - In addition to air traffic radar, wind turbines may affect other radar installations such as weather radar operated by the Meteorological Office.
- *Strategic Road Network* - The Highways Agency / Department for Transport have produced advice for siting wind turbines safely in relation to the strategic road network.

8. LAND USE PLANNING CONSIDERATIONS IN RELATION TO SOLAR ENERGY SCHEMES

8.1 Context and technology overview

8.1.1 Technologies for harnessing the sun's power fall into two main categories; solar thermal and photovoltaic. Solar thermal is a way of heating water from the sun. There are two common systems; the flat plate and the vacuum tube. These photovoltaic and solar thermal technologies can often be integrated into the roof of a building or as standalone structures. Photovoltaic (PV) systems convert sunlight into electricity. The sun collectors collect the sun's rays within cells which creates an electric field causing electricity to flow (DC). This is then wired to a converter to convert the electricity generated into an alternating current (AC) to the buildings main electricity distribution board. An invertor is required to convert DC to AC for exportation to the national grid. The PV cells usually come in the form of a panel that fits on top of a roof. Free standing solar panels arranged in 'solar arrays' on agricultural land or cleared brownfield land sites would constitute a solar farm.

8.1.2 Solar thermal and PV systems come in many sizes. This SPG applies the size designations used in Planning Policy Wales, Chapter 12, see table in paragraph 5.1.6 above.

8.1.3 Micro generation solar technologies on a domestic property, a house, are generally limited to 4kW peak capacity. This is due to single phase connection limits and electrical regulations. This equates to about 16 solar PV panels on the roof of a house. In many cases you will be able to install solar thermal and/or PV without the need for planning permission. Further information on permitted development rights can be found in Appendix 1.

8.1.4 For a roof mounted photovoltaic scheme (industrial buildings, sheds etc) generating energy between 50kW and 50MW planning permission will always be required. Placing solar panels in a field used for agriculture is a material change of use and requires planning permission regardless of size. As a general guidance, each MW of energy generated by photovoltaic installations requires 2.5 to 3.0 hectares of land.

8.1.5 A photovoltaic solar array should be designed so the field can be restored to agricultural use upon cessation of use of the photovoltaic cells (approximately 25-30 years). Evidence will be sought on the reversibility of the development in the context of the aim to conserve high quality agricultural land as a resource for the future. Also, information is required regarding the management of the land to keep the site from becoming overgrown.

8.1.6 The British Research Establishment (BRE) have produced guidance on large scale photovoltaic arrays. Whilst this is based on English legislation much of the advice can be applied to Wales. Please note that it is important to make sure you check any relevant Welsh legislation to ensure there is not a difference.

8.1.7 Proposal should be subject to a sequential test (of suitable and available land) to meet the requirements of Planning Policy Wales paragraph 4.10.1, see also chapter 5.1.15 above.

8.2. Landscape and visual impact

8.2.1 Because solar arrays often need direct sun locations to operate, they have the potential to be visible from numerous points and can sometimes be seen from great distances. Indeed, the landscape impact of an array is likely to be one of the most significant issues applicants will need to deal with. Indeed a solar array can introduce many new industrial elements into the landscape and create an increased urban and industrial influence on the countryside.

8.2.2 It should be noted that different landscapes possess different characteristics and what is considered acceptable in one place may not be acceptable in another. While it is logical that developers will wish to place a solar array on the most southerly sloping site, as this is where solar gain will be the greatest, careful consideration will need to be given to its positioning as this can greatly influence any potential effects on landscape character and visual amenity.

8.2.3 Development of the array will also need to be considered in terms of its design, the layout and future maintenance. Whilst it is important to ensure that the array is not shaded, it is important that existing hedge lines and trees are not removed, and if they must be, these losses will need to be mitigated.

8.2.4 As part of an application a Landscape Visual Impact Assessment (LVIA) must be undertaken and reference to LANDMAP should form part of this work. The Landscape Institute have produced the document 'Guidelines for Landscape and Visual Impact Assessment' you should refer to this when undertaking the LVIA.

8.2.5 Due to arrays needing to be near a grid connection point, when siting a scheme it is important to consider not only the impact this development will have but also the potential cumulative effects with similar proposals and other forms of development. Transformer housing, security fencing, cameras are all associated works which will require consideration in terms of their landscape impact.

8.2.6 Whilst solar panels are designed to absorb light in some instances PV arrays can cause glare and glint. Glint is produced as a direct reflection of the sun on the surface of the PV solar panel. Glare is a continuous source of brightness not by reflecting the actual sun but the bright sky. However if glare is an issue it is possible to get PV systems designed with anti-glare properties. When assessing for glare/glint it is important to consider the combined reflective quality of not only the PV panels, but also the frames.

8.3 Land management

8.3.1 In setting out the design for a solar array consideration should be given to the post construction and post development land management. . Details of management/maintenance programme for the lifetime of the development will

also be a factor in determination. The Council is keen to ensure that the post construction site is maintained to avoid the spread of non-native plant species and native weeds. Maintaining hedgerows and encouraging traditional farmland boundaries and field patterns are encouraged by the Council. If it is necessary to create new access into a field, widen an existing field entrance, or create permanent access or maintenance tracks, consideration must be given to; retaining local character, avoiding urbanisation of rural locations (kerbing, extensive splays), minimising loss of vegetation to create visibility splays and reconstructing hedges to compensate for any losses in the creation of the access.

8.4 Noise

8.4.1 Ground mounted solar PV developments can emit noise during their operational phase, particularly in association with transformers and inverter equipment.

8.4.2 Applicants should consider the following guidance in relation to noise emissions:

- Any noise emitting equipment should be located away from dwellings to minimise harm to residential amenity.
- Where there is a risk of dwellings being adversely affected by noise, machinery should be housed to reduce noise levels.
- The Rating Level (LArTr) of the noise emanating from the proposed development should be at least 5 dB below the measured background noise level at any time at the curtilage of any noise sensitive premises.
- The rating level (LArTr) and the background noise level (LA90) should be determined in accordance with the guidance and methodology set out in BS4142: 1997.

For more information please contact the Council's Public Protection Service.

8.5 Ecology

8.5.1 Along with landscape sensitivity, the ecological sensitivity of the development site will be a key factor in determining acceptability. In finding a site, intensively managed agricultural land is likely to be of least ecological value and possibly more suitable in ecological terms for solar PV.

8.5.2 During construction the ecological impacts may include disturbance of local species and changes to site hydrology or pollution. The design should be informed and influenced by ecological assessments. Issues that may need particular assessment include ground nesting birds, wintering birds, bats, dormice, reptiles and badgers. Employing an ecologist throughout the design process will help ensure the best ecological outcome. Protected species surveys are season-dependent, so contacting an ecologist at a very early stage is advisable.

8.5.3 Ecological assessments should include a 'desk study' of existing ecological records, an evaluation of the likely impacts of the solar PV array upon

ecological features, specify mitigation to avoid or minimise these impacts and list any further surveys required.

8.5.4 Opportunities for ecological enhancement are promoted and may include planting of native wildflowers, beneath, between or around field margins to increase habitat connectivity. Low density grazing by smaller livestock may not risk damage to the solar arrays. Supporting and enhancing biodiversity on schemes is promoted. The BRE have produced guidance with regard to the symbiotic relationship between plants, animals and large solar arrays. Please see, BRE National Solar Centre Biodiversity Guidance for Solar Developments.

8.6 Historic Environment

8.6.1 Denbighshire has an especially important historic environment, a key part of its distinctive cultural heritage. The County has high density of designated historic assets including, Scheduled Monuments, Listed Buildings, Conservation Areas, Registered Parks and Gardens, Historic Landscapes, and a World Heritage Site.

8.6.2 In addition, Denbighshire has a rich heritage of undesignated sites. The County Archaeologist and Conservation Officer can give an indication of where additional protection is required.

8.6.3 Above ground equipment could Impact on the setting of Listed Buildings and Scheduled Monuments as well as impact on the historic landscape of Denbighshire. Below ground equipment could impact on archaeological deposits through ground disturbance.

8.6.4 Paragraph 3.15 of TAN 8 states that other than in circumstances where visual impact is critically damaging to a listed building, ancient monument or a conservation area, proposals for appropriately designed solar thermal and solar PV systems should be supported.

8.7 Aviation

8.7.1 Solar PV development can be safely located near airports. However, when locating a solar PV development in close proximity to a civil or MOD airport or airfield, guidance provided by the Civil Aviation Authority (CAA) and the MOD (as relevant to the site in question) should be followed.. The Civil Aviation Authority CAA have produced interim guidance on PV, you should refer to this prior to submitting your application.

8.8 Site security, safety and lighting

8.8.1 Whilst there is an acknowledged need to ensure solar PV facilities are adequately secured, consideration should be given to the impacts of such security measures on the landscape and visual amenity.

8.9 Glint and glare

8.9.1 Glint is produced as a direct reflection of the sun in the surface of the solar PV pane and/or the frame. Glare is a continuous source of brightness. This is not a direct reflection of the sun, but rather a reflection of the bright sky around the sun. Glare is less intense than glint.

8.9.2 Glint and glare can be a significant issue and should not be underestimated, particularly to the south east of a solar PV development. The potential impacts upon homes, businesses and public highways in particular, should be thoroughly assessed at the pre-planning stage.

8.9.3 Details of the external finish of the frames and panels including any anti-glare covering will be expected with the details of any planning application.

9. OTHER RENEWABLE ENERGY DEVELOPMENTS

9.1 Onshore wind power is likely to make the most substantial contribution towards meeting current renewables targets. Solar is second to wind as the most economically favoured technology. Solar has its limitations in that it is very land cover heavy. There are a range of other technologies available. The development plan supports the development of all technologies regardless of scale. Ensuring that an area's renewable energy potential is realised in a way that is compatible with other development plan policies and objectives is an objective of the Local Development Plan.

9.2 Other forms of renewable energy development that come under the land-use planning system include micro-renewable energy generation, biomass plants, hydro and energy from waste. They are summarised in the following paragraphs. Further information can be found in the Welsh Government publication, *Generating your own renewable energy: A planning guide (2012).*

9.3 Offshore wind, wave and tidal energy are increasing in significance in terms of their potential to contribute to renewable energy targets, however these technologies will not be looked at within this SPG as they are very site specific and the decision making process is outside the Local Authority's control (National Infrastructure Planning).

Hydro

9.3 Simplistically, hydroelectricity is the potential energy of water flowing downhill converted into kinetic energy in a turbine, which drives a generator to produce electricity. The greater the height and the more water flowing through the turbine, the more electricity can be generated.

9.4 The majority of small hydro schemes will be 'run of river', where water is taken from a river from behind a low weir, with no facility for water storage, and returned to the same watercourse after passing through the turbine. Hydro developments could potentially have an impact on water regimes, fisheries and aquatic and riparian habitats and species.

9.5 Hydropower is very site specific and it is likely that most homes will not have access to a suitable resource even if they have a watercourse running nearby. Natural Resources Wales provide guidance before you apply:

https://www.naturalresourceswales.gov.uk/apply-and-buy/water-abstraction-licences-water-discharges/water-abstraction-and-impoundment-licensing/hydropower/?lang=en

Biomass plants

9.6 With regard to biomass, the role of the planning system is to consider the power plant and associated impacts and not the production of the fuel source. The location of biomass plants is likely to be determined by a number of factors related to the economic costs of transporting supply materials from source, the availability of feedstock through the year, the location of the end user and the scale of the plant.

9.7 Biomass plants are industrial in nature but require being located close to sources of feedstock and being accessible to the end users of the product and/or a national grid connection. These factors will be taken into account when considering applications.

9.8 Biomass proposals should include details of site drainage, a description of the combustion appliance and maximum rates of emissions of PM 10 and PM 2.5 when operating at capacity.

Energy from waste

9.9 Energy from waste falls into two broad categories, systems that use biological processes to extract energy from waste and those that use thermal processes. Biological processes include landfill gas; sewage gas; biogas from agricultural waste; digestible domestic or industrial waste. Developments associated with landfill sites or sewage works would tend to be located on-site. Small scale digesters could be located on individual farms to serve their needs. However larger scale energy from waste developments including those that use thermal processes will be industrial in nature and due to their nature, careful siting of any such developments would be required.

9.10 Biomass energy generation, microgeneration, and energy from waste developments have the potential to impact on local air quality. Renewable energy developments which involve thermal or biological processes should not have an unacceptable impact on air quality.

END.

10. RESOURCES

Further information and guidance on the production of supporting documents to accompany planning applications for energy development is set out below:

National:

Energy Wales: A Low Carbon Transition – Welsh Government March 2012
http://wales.gov.uk/docs/desh/publications/120314energywalesen.pdf

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

Technical Advice Notes (TAN's)
Welsh Government (2010) Technical Advise Notes 6: Sustainable Rural Communities
Welsh Government (2008) Technical Advise Notes 8: Renewable Energy
Welsh Government (2014) Technical Advise Notes 12: Design
http://gov.wales/topics/planning/policy/tans/?lang=en

Welsh Government (2012): Generating your own Renewable Energy: A Planning Guide
http://gov.wales/topics/planning/policy/guidanceandleaflets/generaterenewable/?lang=en

Permitted Development:

Copies of the Order can be obtained from the following link:
http://www.legislation.gov.uk/wsi/2012/1346/contents/made

Copies of the MCS Planning Standard are available from the following link:
http://www.microgenerationcertification.org/installers-manufacturers/installerscertification

General:

http://www.energysavingtrust.org.uk/wales/Generate-your-own-energy/About-microgeneration

http://www.planningportal.gov.uk/planning/greenerhomes/generation/

http://www.decc.gov.uk/en/content/cms/meeting_energy/microgen/strategy/strategy.aspx

http://www.decc.gov.uk/en/content/cms/meeting_energy/microgen/microgen.aspx

http://www.legislation.gov.uk/wsi/2012/1346/article/2/made

www.microgenerationcertification.org/

www.carbontrust.co.uk
www.energysavingtrust.org.uk/Generating-energy/Getting-money-back/Feed-In-Tariffsscheme-FITs

http://naturalresourceswales.gov.uk/apply-buy-report/apply-buy-grid/water/abstrationsimpoundment/ hydropower-scheme/?lang=en

The Welsh Government has published a range of documents under the broad heading of: *Generating Your Own Renewable Energy a Planning Guide*
http://wales.gov.uk/topics/planning/policy/guidanceandleaflets/generaterenewable/?lang=en

Landscape and Visual Impact:

LANDMAP and Special Landscape Areas Countryside Council for Wales (2008)
http://naturalresources.wales/our-evidence-and-reports/maps/?lang=en

Design Commission for Wales (2012): Designing windfarms in Wales
http://dcfw.org/publications/view/wind_farm_design/

Guidelines on Environmental Impacts of Wind Farms and Small Scale Hydro Electricity Schemes
Scottish Natural Heritage, 2001
http://www.snh.gov.uk/publications-data-and-research/publications/search-the-catalogue/publication-detail/?id=108

Noise
ETSU-R-97 The Assessment and Rating of Noise from Wind Farms
The Working Group on Noise from Wind Turbines (1996)
http://regmedia.co.uk/2011/08/02/etsu_r_97.pdf
http://www.hayesmckenzie.co.uk/downloads/ETSU%20Full%20copy%20(Searchable).pdf
BS 4412:1997 Method for rating industrial noise affecting mixed residential and industrial areas British Standard (1997)
http://shop.bsigroup.com/en/ProductDetail/?pid=000000000001154363
IOA Good Practice Guide on Wind Turbine Noise - May 2013.pdf

Ecology:
Council Directive 79/409/EEC on the Conservation of wild birds (Birds Directive)
http://ec.europa.eu/environment/nature/legislation/birdsdirective/index_en.htm
The Conservation of Habitats & Species Regulations 2010
http://www.legislation.gov.uk/uksi/2010/490/contents/made
Wildlife and Countryside Act 1981 (as amended)
http://www.legislation.gov.uk/ukpga/1981/69
The Natural Environment and Rural Communities (NERC) Act 2006
http://www.legislation.gov.uk/ukpga/2006/16/contents
UK Biodiversity Action Plan (UKBAP)
http://jncc.defra.gov.uk/page-5155

IEEM Guidelines on Ecological Impact Assessment in the UK
Institute of Ecology and Environmental Management (2006)
http://www.ieem.net/data/files/Resource_Library/Technical_Guidance_Series/EcIA_Guidelines/TGSEcIA-EcIA_Guidelines-Terestrial_Freshwater_Coastal.pdf
Handbook for Phase 1 Habitat Survey: A Technical for Environmental Audit
Joint Nature Conservation Committee (2010)
http://jncc.defra.gov.uk/page-2468
Bat Surveys: Good Practice Guidelines, 2nd Edition
Bat Conservation Trust (2012)
http://www.bats.org.uk/publications.php?keyword=bat+surveys&month=&year=&category=&search=search
Survey Methods for use in Assessing the Impacts of Onshore Windfarms on Bird Communities

Hydrology and Geology:
UKSF Guidelines on Forestry and Water (Forestry Commission 2011)
www.forestry.gov.uk/pdf/FCGL007.pdf/$FILE/FCGL007.pdf
Woodlands for Wales – Water & Soils (Welsh Government 2010)
http://forestry.gov.uk/pdf/Water-&-Soils-WAG-(E).pdf/$FILE/Water-&-Soils-WAG-(E).pdf

Aviation and Communications:
Defence Infrastructure Organisation Safeguarding
www.gov.uk/MOD-safeguarding
Civil and Military Aviation and Defence interests'
www.decc.gov.uk/assets/decc/11/meeting-energy-demand/consents-planning/nps2011/1938-overarching-nps-for-energy-en1.pdf

British Research Establishment (BRE)
Large Scale Solar: https://www.bre.co.uk/nsc/page.jsp?id=3523
BRE National Solar Centre Biodiversity Guidance for Solar Developments:
http://www.bre.co.uk/filelibrary/nsc/Documents%20Library/NSC%20Publications/National-Solar-Centre---Biodiversity-Guidance-for-Solar-Developments--2014-.pdf

RSPB SEMP
http://www.rspb.org.uk/Images/sempdocument_tcm9-257052.pdf

Glossary of terms

AONB: Area of Outstanding Natural Beauty, an area of countryside considered to have significant value in England, Wales and Northern Ireland.

Ancillary infrastructure: The built element and structures of a deveopment, apart from the main technology, which serve the development, such as access tracks, borrow pits, the control building and substation.

Anemometer mast: A mast erected on a windfarm site, usually the same height as the turbine hubs, to monitor wind speed.

Capacity Study: Research which attempts to identify the acceptable limits to development in a given area.

Cumulative Impact: Additional changes caused by a proposed development in conjunction with other similar developments.

Design and Access Statement: A document which aims to create a development with a cohesive design that relates to the surrounding landscape and allows access to all users.

Distribution Network Operators (DNOs): Licensed to distribute electricity from the transmission grid to consumers.

EIA: Environmental Impact Assessment, the process by which the key environmental and socio-economic impacts of a development are assessed to reduce likely negative effects during the construction and operational phases.

Electricity pylons typically support the high voltage transmission network (400kV or 275kV), whereas electricity poles carrying overhead cables support the 33kV and 11kV distribution network.

LIA: Landscape Impact Assessment, part of the LVIA process which explores the potential effects on the landscape of a proposed development (see below).

LVIA Landscape and Visual Impact Assessment – a standard process for examining the landscape and visual effects.

Megawatt (MW) 1,000 kilowatts (kw)

PV: photovoltaic: a way of converting sunlight into energy

Sequential Analysis Study: A sequential analysis looks to test for suitable and available alternative sites within a catchment area defined by local circumstances and the type of development proposed. The following consideration will be relevant:

- Site size (capability of accommodating XXMW of solar panels);
- Topography (flat or gently sloping sites);
- Land availability and ownership;
- Agricultural land classification;

- Capability of viable grid connection;
- Landscape and visual considerations;
- Sensitive areas as defined by EIA Regulations; and
- Previously developed land;
- Proximity to road network (a suitable location which is served by appropriate highway infrastructure);
- Flood risk.

Strategic Search Area: These areas can accommodate large scale (over 25MW) onshore wind developments due to efficiency and environmental reasons amongst others.

Transformers: Role is to step voltages up and down from one part of the grid to another to reduce the amount of energy lost in transmitting energy from power stations to homes.