Monmouthshire Renewable Energy and Energy Efficiency

Supplementary Planning Guidance

March 2016

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1 Introduction

1.1 Purpose of the Supplementary Planning Guidance (SPG)

1.1.1 Supplementary Planning Guidance is not a statutory Local Development Plan document. It cannot set targets or policies. Its role is to help those seeking to make planning applications involving renewable or low carbon energy by providing further detail and explanation of the relevant policies in the *Adopted Monmouthshire Local Development Plan* (February 2014). It relates in particular to policies S3, S12, SD1, SD2 and DES1(j).

1.1.2 This SPG is intended to provide guidance for emerging renewable and low carbon energy schemes at every scale from small householder to large standalone proposals. As such, it is intended to be of use to a wide range of interested parties including householders, people wishing to adapt business premises, developers of residential and mixed use schemes, developers of stand-alone renewables schemes, planning officers and Councillors.

1.1.3 The SPG will assist by:

- Helping to decide what type of renewable and low carbon technologies to use in a given application;
- Helping to identify whether planning permission and Listed Building Consent will be required;
- Highlighting the need for other consents; and
- Advising on how to make an application and setting out the criteria which will be used to assess that application.

1.1.4 It is important to note that the SPG is developed on the assumption that proposed renewable energy projects and energy efficiency measures are technically and commercially viable. As a result it only deals with the planning issues associated with the proposed scheme.

1.1.5 Planning applicants will be expected to develop their proposals for renewable and low carbon energy schemes in line with this guidance. It will be a material consideration in the assessment of planning applications by Councillors and planning officers.

1.1.6 SPG is needed in this area to help manage the process of moving to more renewable and low carbon energy generation as a means of mitigating the detrimental social, economic and environmental impacts of climate change. Renewable and low carbon energy generation often involves the construction of new generation devices in areas rich in renewable energy sources, which have the potential to be sensitive in nature. Achieving the balance between the need to decarbonise energy supply and maintaining the unique character of Monmouthshire is the challenge of the planning system and a focus of this SPG.

1.1.7 This SPG is to be formally adopted by Monmouthshire County Council.

The Planning Framework

1.1.8 The Adopted Monmouthshire Local Development Plan (February 2014) provides the planning framework for this SPG. Planning policies for renewable low carbon energy in the Local Development Plan (LDP) are set within an overall planning context that requires new development to demonstrate sustainable and efficient resource use.

Policy S12 – Efficient Resource Use and Flood Risk

1.1.9 All new development must:

- *"Demonstrate sustainable and efficient resource use – this will include energy efficiency/increasing the supply of renewable energy, sustainable construction materials/techniques, water conservation/efficiency and waste reduction;*
- *Avoid the siting of inappropriate development in areas at risk of flooding."*

Policy S3 – Strategic Housing Sites

1.1.10 In addition, Policy S3 – Strategic Housing Sites implies consideration of the energy hierarchy in its requirement that:

- *"Any detailed application for development shall include a feasibility assessment for suitable renewable energy and low or zero carbon technologies that could be incorporated into the development proposals."*

1.1.11 Development Management policies SD1 and SD2 address the energy efficiency and renewable energy components of Policy S12 more specifically:

Policy SD1 – Renewable Energy

"Renewable energy schemes will be permitted where:

1. *There are no unacceptable adverse impacts upon the landscape, townscape and historic features and there is compliance with Policy LC5 with regard to protection and enhancement of landscape character;*
2. *There are no unacceptable adverse impacts on biodiversity;*
3. *There are no unacceptable adverse impacts on the amenities of nearby residents by way of noise, dust, odour or increases in traffic;*
4. *The wider environmental, economic, social and community benefits directly related to the scheme outweigh any potentially adverse impacts; and*
5. *The distinct identity of Monmouthshire will not be compromised.*

For all types of renewable energy, cumulative impacts will be an important consideration where there are other renewable energy schemes currently operating in the area.

When the technology is no longer operational there is a requirement to decommission, remove the facility and complete a restoration of the site to its original condition."

Policy SD2 - Sustainable Construction and Energy Efficiency

"Proposals for low carbon design solutions in new buildings will be permitted in accordance with the energy hierarchy of reducing energy demand through passive design, promoting energy efficiency through use of appropriate building fabric and inclusion of renewable or low carbon energy generation technologies.

All new development proposals will be required to incorporate efficient resource use during construction, operation and maintenance.

Where planning permission is required, proposals for the installation of renewable and low carbon technology on existing buildings will be permitted subject to detailed planning considerations."

Policy DES1 – General Design Considerations (criterion j)

1.1.12 All development proposals will be expected to meet general design considerations which are set out in Policy DES1. Policy DES1 requires all development to be of a high quality sustainable design and respect the local character and distinctiveness of Monmouthshire's built and natural environment. DES1 provides twelve criteria in total. Criterion (j) in particular addresses energy efficiency and renewable energy.

"(j) achieve a climate responsive and resource efficient design. Consideration should be given to location, orientation, density, layout, built form and landscaping and to energy efficiency and the use of renewable energy, including materials and technology"

Other Monmouthshire Planning Policy Documents

1.1.13 The Green Infrastructure SPG was adopted in April 2015 and is interrelated with this SPG. The Landscape SPG will also be of particular relevance once adopted.

1.1.14 Green Infrastructure (GI) assets and functions have the potential to deliver a wide range of benefits including mitigation and adaptation of the effects of climate change. The promotion of sustainable energy use is one of the many functions of GI and is obtained through measures such as: reduction in levels of CO_2, carbon storage, energy saving methods including living roofs and natural rather than engineered solutions.

1.1.15 The Landscape SPG is currently under preparation and will provide a definitive up to date Landscape Character Area (LCA) assessment for Monmouthshire and practical guidance for applicants and planning officers on all landscape matters when considering development proposals, including how to address landscape issues in each of the LCAs. Data provided on each LCA will include an evaluation of its landscape sensitivity and capacity, which will assist in establishing its suitability for renewable energy projects.

1.1.16 A Planning Advice Note on Wind Turbine Development: Landscape and Visual Impact Assessment (LVIA) Requirements has been prepared that sets out a methodology to determine whether or not Environmental Impact Assessment is required for wind turbine development and the minimum requirements and standards of information to be submitted with a LVIA. A Wales wide consultation has also been carried out on this planning advice note, led by Blaenau Gwent County Borough Council.

1.2 Climate Change Policy Context

1.2.1 The key policy drivers at national level behind the LDP Policies SD1 and SD2 are those related to climate change and energy (including building regulations) and to planning. These are dynamic areas of policy which are developing as the UK moves towards a so called 'decarbonised' economy.

1.2.2 Monmouthshire County Council has also made a commitment to reducing its own impact on climate change. In 2008, the Council adopted its own climate change and sustainable energy strategy. It is developing strategic policies for sustainable energy in relation to the County Council's own buildings and estate, housing, transport and wider community activities including encouraging community led sustainable energy schemes. The Council is therefore proactive in seeking to encourage sustainable energy initiatives.

1.2.3 The Climate Change Policy context is discussed in more detail in **Appendix 2**. This includes reference to earlier work by Camco, which identifies issues and opportunities around the local energy market. It also identifies and locates potential sources of renewable and low carbon energy in the county

1.3 Planning Policy Context

1.3.1 Planning Policy Wales (PPW) and a series of Technical Advice Notes (TAN's) provide the framework within which local authorities in Wales develop their LDPs. Further detail on planning policy is provided in **Appendix 3**.

1.4 Guiding Principles

1.4.1 The policy framework identified above recognises that it is better to avoid the need to build energy generation capacity by reducing energy consumption to a minimum and ensuring that energy demand is met as efficiently as possible. Where energy generation is required this should come first from renewable (zero carbon) or at least low carbon sources (see **Glossary** in **Appendix 1** for definitions). Only then should fossil derived energy be used.

1.4.2 This is the basis of the Energy Hierarchy that is referred to in Policy SD2 and is the approach that all developers should adopt to energy supply to any development. It is the guiding principle for this SPG and as a result, applicants for planning permission will need to demonstrate that they have followed this hierarchy in developing their schemes in order to comply with policies S3 and S12. More detail regarding the energy hierarchy is provided in **Chapter 2**.

1.5 Using the SPG

1.5.1 This SPG will be used by different groups of people for different purposes and it contains a range of information, not all of which will be relevant to everyone. As a result a route map approach is used to guide the user to relevant parts of the document. The SPG also provides references and links throughout to where further information on a range of issues can be sourced. This is particularly important as technology, policy and practice is evolving quickly in the areas of energy efficiency, low and zero carbon technology.

1.5.2 The remainder of the document is set out as follows. **Chapters 2** to **4** cover issues associated with the energy hierarchy, and the selection of specific technologies to suit the scale and location of development. **Chapters 5** to **7** cover issues associated with the need to obtain planning and other consents. Additional information can also be found in the Appendices. In essence, the SPG is structured to allow the developer / householder to make an informed choice based on energy requirements (**Chapters 2-3**) and suitability of the technology to the site conditions (**Chapters 4, 6** and **Appendix 9**). More detail on the content of each chapter is given below:

Chapter 2 – The Energy Hierarchy and Energy Demand Assessment

1.5.3 This section emphasises the need to consider the energy hierarchy when considering options for energy generation. It also sets out the need to understand energy requirements in terms of times of the day, week, month and year. This is vital information that is needed before thinking about energy efficiency or low / zero carbon technologies. Additional information is provided in **Appendix 4** which explains how energy is measured, and provides links to information on how to assess energy needs.

Chapter 3 – Reducing Demand and Energy Efficiency

1.5.4 This section highlights the need for consideration of energy reduction and energy efficiency measures as a first step within the energy hierarchy – i.e. before low and zero carbon technologies are considered. Key measures are identified.

Chapter 4 – Renewable and Low Carbon Energy Options

1.5.5 The options for renewable and low carbon energy generation are set out and discussed in this chapter. The issues are considered in relation to energy supply and development scale. The developer / householder will need to consider this information together with information in **Chapter 6** and the energy factsheets which relates to the suitability of the technology to the site conditions. Additional information on the contribution of low and zero carbon technologies in reducing greenhouse gas emissions is to be found in **Appendix 5**, along with information on where to get help with carbon energy efficiency calculations for new developments.

Chapter 5 – Do I Need Planning and Other Consents?

1.5.6 This section discusses whether planning permission or Listed Building Consent is required. **Appendix 6** provides more detailed information on this. The chapter also highlights the need for other consents. **Appendix 7** details these, and gives information on who to approach for further help and discussion.

Chapter 6 – Obtaining Permissions and Consents

1.5.7 This chapter sets out the requirements for the planning process and identifies potential impacts and the main issues that will be assessed as part of planning applications. **Appendix 8** lists the heritage, landscape, geological and biodiversity designations which may affect the consideration of a planning application. This chapter needs to be considered together with the information in **Chapter 4** relating to choosing technologies, and the energy factsheets in **Appendix 9**, which look at the planning issues and impacts related to specific technologies.

Chapter 7 – Community Involvement in Renewable Energy

1.5.8 This section outlines the benefits of community involvement in renewable and low carbon technology schemes and looks at opportunities for social benefit for local communities both in general terms, and in Monmouthshire.

Appendix 9 / Energy Fact Sheets

1.5.9 **Appendix 9** is set out as a series of fact sheets which can stand alone. The fact sheets set out information on a series of technologies. They include a technology description and SWOT, spatial implications and key impacts, flow charts setting out the various consents which may be needed, and tables outlining the specific planning issues that need to be considered in relation to each technology (these should be read in conjunction with **Chapter 6** which looks at generic planning issues).

1.5.10 The route maps below (**Figures 2-4**) set out key questions that might be asked by different users of the guide and identify which sections of the document can help in providing information to assist in developing and accessing schemes:

Figure 1.1: Householder / Business Premises Route Map

This route map is intended to help householders as well as people wishing to install low and zero carbon technologies to their business premises.

Questions	Issues to consider	Where to go
Question one: What kind of energy efficiency measures and low / zero carbon technology should I choose?	▪ Assess your home's energy demand ▪ What kind of energy efficiency measures can you implement? ▪ What LZC technology options are there and what is most appropriate for my home / location? ▪ What financial support is available / does Government policy affect my choice?	Chapter 2 (Appendix 4) Chapter 3 Chapter 4 (Appendix 9) (Appendix 2)
Question two: Do I need Planning permission or Listed Building Consent?	▪ What are the Permitted Development (PD) rights for householders? ▪ If I do not need planning permission, I may still need Listed Building Consent	Chapter 5 Appendix 6 Chapter 5
Question three: What other consents do I need?	▪ Do I need consent from other organisations (NRW)	Chapter 5 (Appendix 7)
Question four: What Information do I need to provide in an application?	▪ What information do I need to provide on my decision making process? ▪ Do I need to provide any design or other statements? ▪ What kind of drawings and diagrams are needed?	Chapter 6 Chapter 6 Chapter 6
Question five: How will my application be assessed?	▪ What issues / criteria will be considered	Chapter 6 Appendix 8 Appendix 9

Figure 1.2: Land Developers' Route Map

This route map is intended to help developers of residential, mixed use and other schemes on small, medium and major sites.

Questions	Issues to consider	Where to go
Question one: What kind of energy efficiency measures and low / zero carbon technology should I choose?	▪ Assess the energy demand of your proposed development ▪ What kind of energy efficiency measures can you implement? ▪ What LZC technology options are there and what is most appropriate for the site / general location and size of development? ▪ What financial support is available / does Government policy affect my choice?	Chapter 2 (Appendix 4) Chapter 3 Chapter 4 (Appendix 9) (Appendix 2)
Question two: What consents do I need?	▪ I will need planning permission ▪ Do I need Listed Building Consent? ▪ Do I need consent from other organisations (NRW)	Chapter 5 Chapter 5 (Appendix 7)
Question three: What Information do I need to provide in an application?	▪ What information do I need to provide on my decision making process? ▪ What should I cover in the Design and Access Statement (DAS)? ▪ What kind of drawings and diagrams are needed?	Chapter 6 Chapter 6 Chapter 6
Question four: How will my application be assessed?	▪ What issues / criteria will be considered	Chapter 6 (Appendix 8, Appendix 9)

Figure 1.3: Energy Developers' Route Map

This route map is intended to help developers of standalone low and zero carbon energy schemes, such as wind farms or biomass plants.

Questions	Issues to consider	Where to go
Question one: What consents do I need?	▪ I will need planning permission ▪ Do I need Listed Building Consent in addition to planning permission? ▪ Do I need consent from other organisations (NRW)	Chapter 5 Chapter 5 (Appendix 7)
Question three: What Information do I need to provide in an application?	▪ What information do I need to provide on my decision making process? ▪ What should I cover in the Design and Access Statement (DAS)? ▪ What kind of drawings and diagrams are needed?	Chapter 6 Chapter 6 Chapter 6
Question five: How will my application be assessed?	▪ What issues / criteria will be considered	Chapter 6 (Appendix 8, Appendix 9)

2 The Energy Hierarchy and Energy Demand Assessment

2.1 The Energy Hierarchy

2.1.1 The energy hierarchy is described in **Figure 2.1**. The hierarchy sets out the principle that all developments, whether large or small (including householder and business improvements) should seek to reduce energy demand, and improve energy efficiency, before considering how the energy required should be generated. It then places priority on renewable and low carbon forms of energy generation before resorting to conventional energy sources. As stated in **policy SD2**, any new development is required to follow the energy hierarchy.

2.1.2 There are a number of different approaches to achieving any given carbon and energy targets. As a result, rather than setting out a definitive approach that may not be resilient to changes in technology, policy and market conditions, it is important that the approach to energy supply considers all viable options and opportunities within the energy hierarchy at the time when detailed design is being developed.

2.1.3 The Energy Saving Trust in Wales has a number of free online energy tools to help in assessing options within the energy hierarchy. These can be found by going to the energy saving trust website and searching on 'tools and calculators':

http://www.energysavingtrust.org.uk/wales/

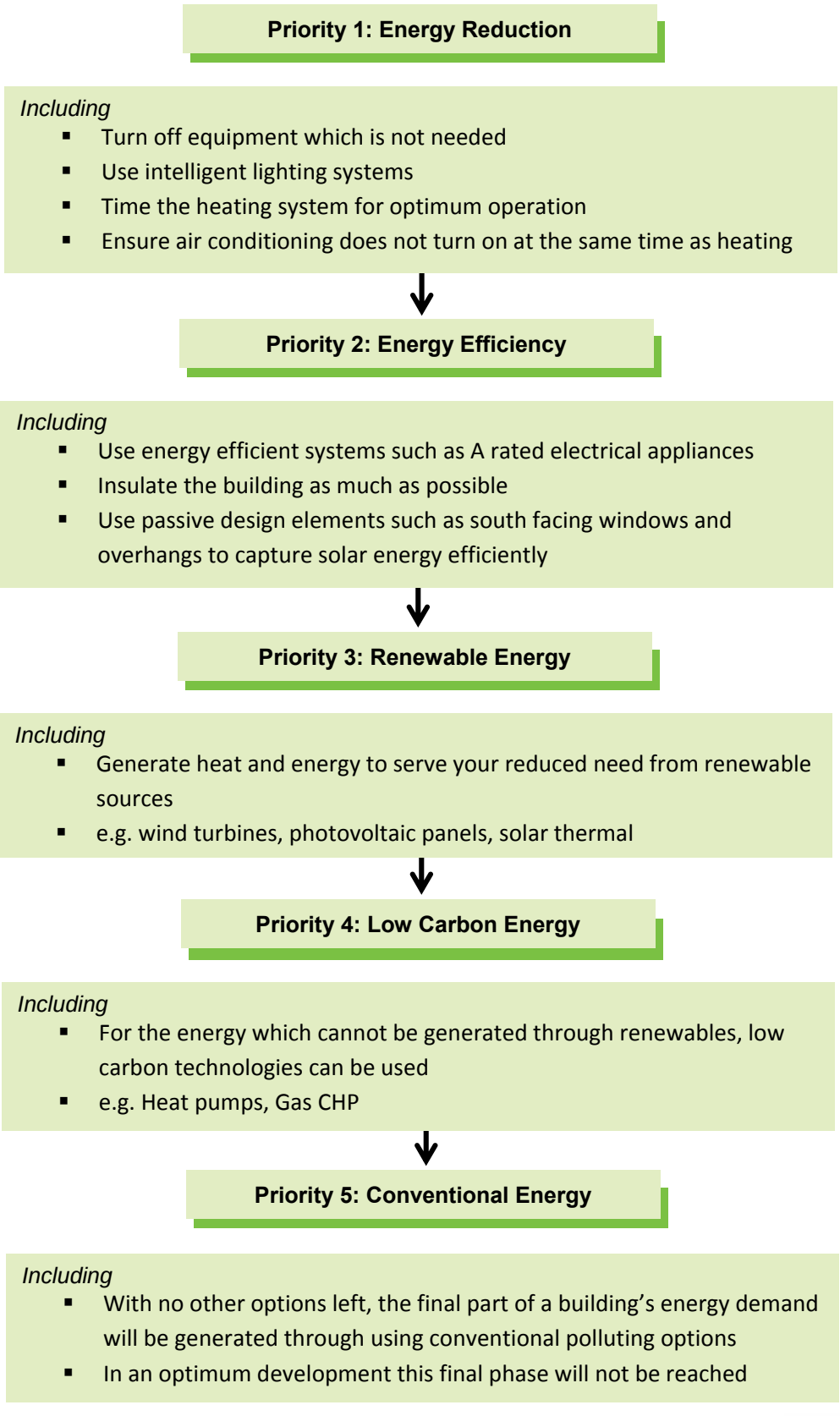
2.1.4 They also provide guidance on the cost of renewable energy technology to enable a decision to be made about the cost of improving fabric energy performance relative to the use of renewable or low carbon technology. This can be found by going to the **energy saving trust** website (above) and searching on the term 'renewable technologies guide'.

2.2 Why Carry Out an Energy Demand Assessment?

2.2.1 Decisions about options within the energy hierarchy (i.e. energy demand reduction, energy efficiency measures and which technology should be used in any new development) should be made based on knowledge about the predicted energy demand of a new development. This is the case whether you are a developer seeking approval for a large residential or mixed use scheme, or a householder or business owner, looking to improve your property. Monmouthshire County Council will look for evidence that energy need has been assessed in planning applications (the Design and Access Statement, where required is the appropriate place to include this information– see **Chapter 6**.

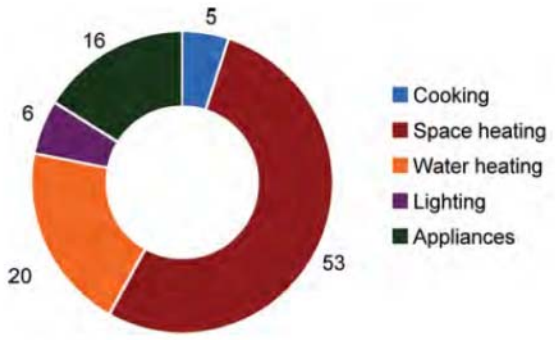
2.2.2 **Appendix 4** provides background information on how energy is measured, and gives links to tools which may assist in producing an energy demand assessment.

Figure 2.1: The Energy Hierarchy



2.2.3 Knowledge about the predicted energy demand of the development can include information on how energy is used at different times of the day and year, and how this breaks down between regulated electricity (i.e. non-discretionary consumption from lighting, heating, hot water etc.) and unregulated electricity (i.e. discretionary consumption from white goods, TV, computers, etc.). An **Energy Demand Assessment**, is used to understand how this breaks down. **Figure 2.2** shows a typical analysis of total carbon emissions against household activities:

Figure 2.2: A Typical Analysis of Total Emissions Against Household Activity

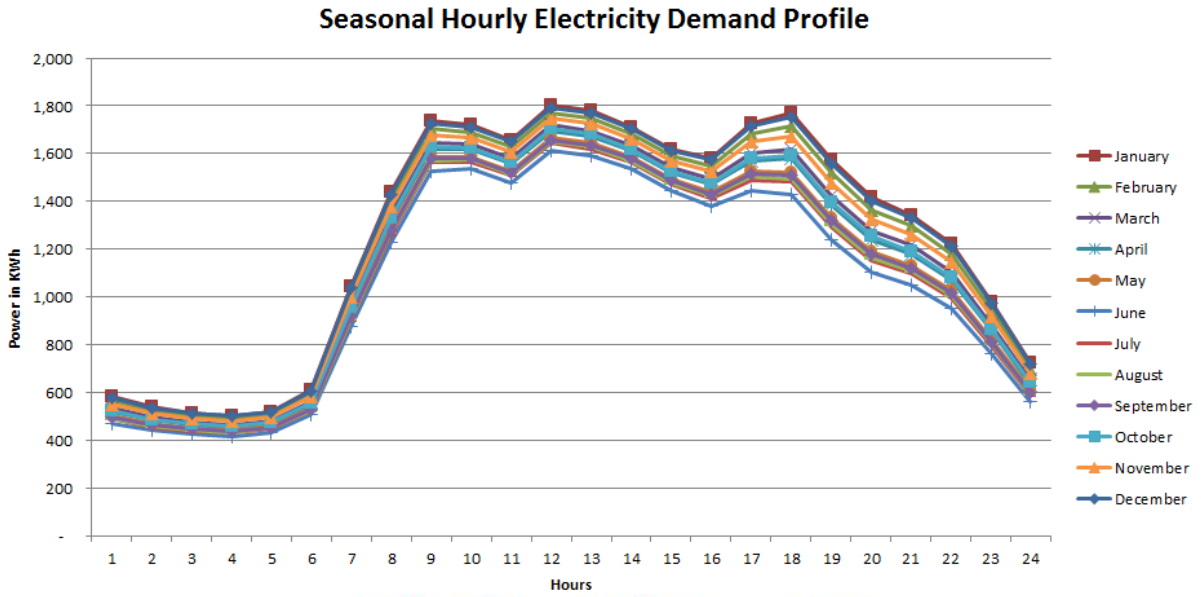


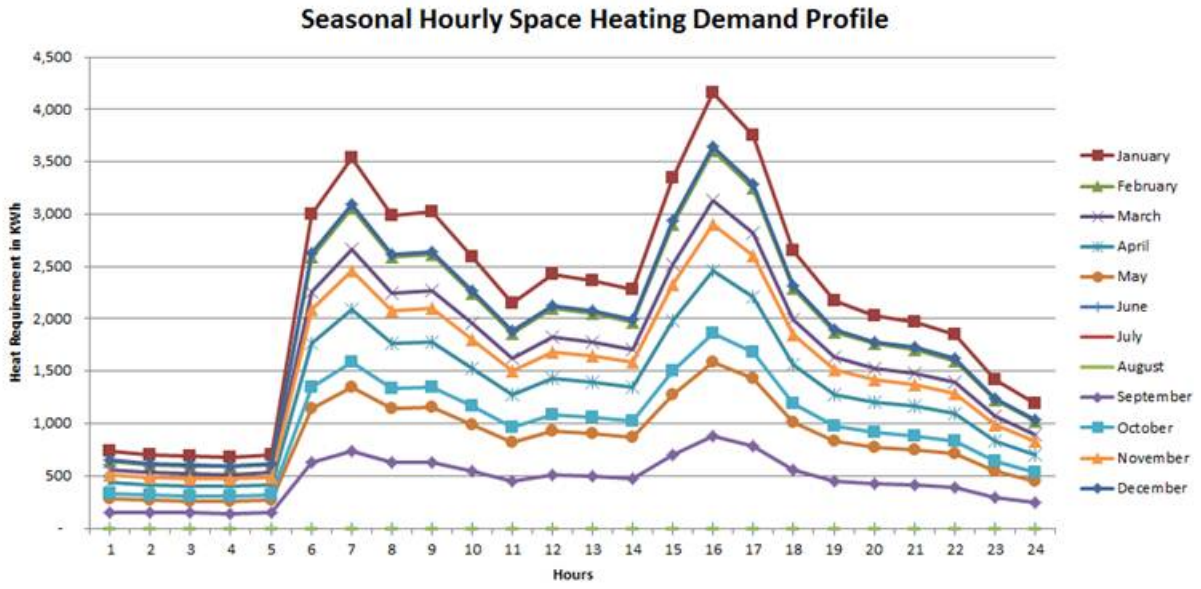
Source: Building a Greener Future: policy statement, DCLG, 2007.

2.2.4 Understanding the predicted energy demand is important for a number of reasons:

- Local planning policy and building regulations will set performance targets to be met in terms of predicted carbon performance and/or contributions from renewable energy relative to the energy demand of the proposed development;
- By calculating the predicted energy demand the impact of improved fabric efficiency or the incorporation of passive design options can be measured and the costs calculated relative to the cost of incorporating renewable or low carbon energy generation to meet a given building's energy or carbon performance;
- Decisions about which type of low and zero carbon (LZC) technology is appropriate can be made. For example different technologies deal differently with diurnal demand. Solar energy is only produced in the day and more is produced in the summer. This does not match with electricity demand for household heating; and
- The capacity of local electricity or gas networks to supply a new development may be insufficient relative to predicted demand. This situation may require a developer to put more investment into reducing energy demand or increasing energy efficiency relative to the required investment in grid reinforcement. (It should be noted however that on-site renewable energy generation will not necessarily remove the need for grid reinforcement).

2.2.5 The two diagrams below provide examples of energy demand profiles for electricity and space heating on a mixed use, residential led development. This shows how demand varies across the day and the year and this can be helpful in supporting the selection of technology to meet the demand profile. For instance, in this illustration clearly the nature of the electrical and heat demands is not ideal to support combined heat and power, given the low heat demand for long periods of the day and year. If a swimming pool or similar were included within this development this could do much to even out these dips in heat demand. It is therefore no surprise that it is common for large swimming pools to include CHP systems.





3 Reducing Demand and Energy Efficiency

3.1.1 Energy efficiency is the subject of Policy SD2 in the LDP. The need to reduce demand and increase options for energy efficiency applies to all proposals, from larger residential and mixed use developments, to applications for planning and other consents relating to households and individual businesses.

3.1.2 There are two forms of energy efficiency – passive and active measures – which can be used together to reduce energy demand and increase the efficient energy use in new developments. Passive measures include design features, such architectural and building fabric selection, that inherently reduce the building energy requirement, and post-occupancy behaviour change. Active measures describe the use of efficient energy consuming equipment, such as LED lighting.

3.2 Passive Measures: Spatial Layout and Design

3.2.1 Spatial layout and design is a consideration within the planning process, and there are opportunities for reducing energy demand and increasing energy efficiency in a number of ways. While most of these suggestions only relate to larger developments, the principles should be considered against any proposed new development. Opportunities include:

- The orientation of buildings on a site or plot to maximise opportunities for passive solar gain (generally considered to be within 30° of south);
- Where possible plot layout and building location to facilitate air movement and enhance natural ventilation;
- Orientation of buildings to reduce the level of uncontrolled shading from overshadowing buildings and green infrastructure;
- Green infrastructure allocated such that it supports energy demand reduction through summer shading or winter wind breaks. This also includes shading of car parking spaces to reduce the use of in-car air conditioning; and
- Green open spaces to provide evaporative cooling at night, reducing any heat island effects.

3.2.2 The Government has agreed that the Zero Carbon Hub has a lead responsibility for delivering homes to zero carbon standards by 2016. Work by the Zero Carbon Hub shows that the energy demand of a new development can be reduced by up to 11% through good spatial orientation alone.

3.2.3 Further advice on spatial layout and design to reduce demand and increase energy efficiency can be found in the following documents which are available online:

- *Sustainable site layout, an introduction to creating a sustainable housing development*, Energy Saving Trust, 2011;
- *Sustainable energy by design, a TCPA design guide for sustainable communities,* TCPA 2006; and
- *Passive solar estate layout, general information report 27,* Energy Efficiency Best Practice Programme (Energy Saving Trust), 1997.

3.3 Passive Measures: Fabric Energy Efficiency

3.3.1 Measures can also be adopted in building design (through fabric energy efficiency and the method and quality of construction) to reduce energy demand requirements from the building use. Increasingly, building regulation is dictating how fabric energy efficiency is approached and sets the desired performance outcomes. The following passive design measures can be incorporated into the design of buildings to reduce energy requirements and may be subject to building regulations approval:

- Reducing the air permeability and thermal bridging coefficient of the building envelope;
- Optimising the U-Values of the external fabric to enable a reduction in energy loss, e.g. through providing additional insulation;
- Incorporating thermal mass to support "free cooling" during summer months;
- Enlarging window areas to maximise the use of natural daylight;
- Locating any plant rooms away from the southern elevation to avoid excessive heat gain and to allow maximum plant efficiency;
- Providing passive shading to avoid overheating; and
- Provision of post occupancy training material.

3.3.2 The Zero Carbon Hub provides detailed design specification for a variety of different fabric energy efficiency standards. Reports from the Hub can be found at:

http://www.zerocarbonhub.org/full-lib

3.4 Passive Measures: Scale of Development

3.4.1 Some of these passive elements require space in which to deliver them, making them only really available to larger development. **Table 3.1** illustrates this point:

Table 3.1: Potential Impact of Scale on Passive Energy Options

Indicative Scale		Passive Measures	
		Spatial Layout and Design	Fabric Energy Efficiency
Small → Large	Single dwelling	Limited	High
	2-5 dwellings	Limited	High
	Single small commercial	Limited	High
	Single small employment	Limited	High
	5-15 dwellings	Low	High
	15-100 dwellings	Medium	High
	100+ dwellings	High	High
	Larger commercial	Medium	High
	Larger employment	Medium	High

3.4.2 In addition, in large developments, the use of 'smart grid' techniques to reduce peaks in electrical demand should also be considered. This can reduce the cost of any required grid reinforcement and can potentially smooth heat and power demand to make CHP more attractive.

3.5 Active Measures

3.5.1 Active energy efficiency measures are associated with the energy efficiency of the equipment used within a building or development such as lighting or heating. These are not linked to scale and should be ubiquitous to all new development. The following measures could be considered:

- Highly efficient boilers;
- Controls to optimise heat output and compensate for heating variations;
- Zonal control of heating to supply different parts of a building via a building management system;
- Time and thermostat control of hot water;
- Variable speed drives fitted to those pumps and fans that will benefit from speed control;
- High efficiency lighting;
- Installation of electricity check meters;
- Include daylight and passive infra-red motion detection systems to lighting to common areas in order to ensure they are only operated when required;
- Ensuring white goods, where supplied, are suitably rated or alternatively, information is provided on selecting energy rated appliances; and

- Reject heat capture and re-use, especially from Heating, Ventilation and Air Conditioning (HVAC) systems, especially in commercial/industrial developments.

3.5.2 Energy efficient technologies as referred to in the energy hierarchy will be internal to any development and thus not an issue for planning. Where there may be issues is the use of new efficient external lighting systems in **heritage areas or Listed Buildings**, or where external insulation cladding systems will change the appearance of buildings. Internal alterations that affect the character of a Listed Building will also need Consent. Active measures are also increasingly becoming influenced by building regulation.

3.5.3 The above lists of passive and active measures are not exhaustive and will need to be considered in more detail by the developer, not least as technology developments in this area are progressing quickly.

4 Renewable and Low Carbon Energy Options

4.1.1 Within the context of the energy hierarchy outlined in **Chapter 2**, some kind of renewable or low carbon energy generation technology is likely to be included in a new development. This section looks at different options for generating energy using low and zero carbon technologies. It explains the differences between low carbon and renewable energy, provides a brief introduction to each technology and looks at what issues will need to be considered when selecting a technology. Further detail on the technologies, and the planning issues associated with renewable technologies can be found in the **Energy Fact Sheets (Appendix 9)**, and in **Chapter 6 (Section 6.4)**.

4.1.2 Monmouthshire County Council will expect to see evidence during pre-application discussions or through the Design and Access Statement (DAS), where required **(see Section 6.2)**, that sound consideration has been given to the issues below in the choice of renewable or low carbon energy technology. This will be particularly important for larger scale developments (e.g. 5-15 dwelling developments in main villages and larger developments including strategic sites identified in the LDP).

4.2 Low Carbon or Renewable Energy?

4.2.1 Low carbon energy is different to renewable energy. While renewables deliver zero carbon energy, low carbon energy typically involves highly efficient use of fossil fuels. One example is heat pumps which use electrical energy to collect, concentrate and deliver thermal energy. Every unit of electrical energy used generates between 2 and 4 units of thermal energy. Another example is Combined Heat and Power (CHP). Here, the thermal energy produced as a secondary product from electrical generation is captured and used, maximising the overall efficiency of input fuel use. **Table 4.1** sets out the low carbon technologies described in this Section.

Table 4.1: Low Carbon Technologies

Technology	Inputs	Outputs
Heat pumps	Electricity	Thermal energy (heat and/or cold)
CHP	Combustible Fuel	Electricity and thermal energy (heat and/or cold)
Fuel Cells	Liquid or gaseous oxidisable fuel*	Electricity and thermal energy (heat and/or cold)

Notes - * Oxidisable fuels include natural gas, biogas, alcohols, hydrogen, etc.

4.2.2 Of course, if the input fuel to low carbon technologies is itself renewable, then these low carbon technologies can be classed as renewable (zero carbon). Examples are where electrical energy from a wind or hydro scheme feed a heat pump, or where the input fuel to a CHP is biomass.

4.2.3 Renewable, or zero carbon technologies, either directly harness renewable natural energy from the sun, wind or flowing water, or burn fuels that are derived from plants. Examples of renewable fuels are biomass, gases produced from the decomposition of biomass or liquid biofuels from oilseeds or bio alcohols. **Table 4.2** sets out the renewable energy technologies considered in this section.

Table 4.2: Renewable Energy Technologies

Technology	Inputs	Outputs
Wind	Natural wind energy	Electricity
Biomass	Wood, straw, energy crops (grasses, wood, etc.) dry biological waste	Heat and/or Electricity
Hydro	Natural water flow	Electricity
Solar water heating	Sunlight	Heat
Photovoltaics	Sunlight	Electricity
Waste combustion	Dry wastes	Electricity, with CHP possible
Anaerobic digestion (AD)	Wet organic wastes, crop by-products, energy crops.	Electricity and or heat.

4.2.4 The UK Government also classifies energy from the biological elements of waste as a renewable technology, although energy from waste occupies a low ranking within the waste hierarchy coming after reduce, re-use and recycle.

4.2.5 Even though the combustion of renewable fuels produces carbon dioxide, this activity displaces the use of fossil fuels. The carbon removed from the atmosphere to create renewable fuels is effectively recycled back into the atmosphere when it is burnt on a short time cycle. As this 'recycled' carbon displaces fossil carbon that is 'new' to the atmosphere, it leads to a reduction in overall carbon emissions.

4.2.6 **Appendix 5** provides details on the contribution of renewable and low carbon energy options to the reduction of greenhouse gas emissions, along with information on where to get help with producing carbon efficiency calculations for new developments, should these be required.

4.3 Renewable and Low Carbon Technologies

4.3.1 This section gives a brief description of each of the renewable and low carbon technologies covered in the SPG. The **Energy Fact Sheets (Appendix 9)** provide much more detail on their use, planning implications and what consents are needed.

- **Heat Pumps (including Air, Ground and Water source pumps)**. Heat pumps are a low carbon option. They use the same principles as a refrigerator to move thermal energy from one place to another. Thermal energy from air, water or ground is absorbed into a fluid and passed through a compressor to raise its temperature. It can then be used to heat buildings. Heat pumps are best used for under floor heating systems as they produce heat at a lower temperature than a standard boiler. Heat pumps often require a small compressor unit located either within or outside the building. They are suited to domestic and non-domestic use.

- **Anaerobic Digestion**. This is a renewable technology which uses a bacteria to break down organic material to produce a methane rich biogas. This can be used instead of fossil gas or burnt to generate electricity and heat. 'Feedstock's' input into the process including organic household or industrial waste, crop residues, or specifically grown crops.

Plants can be quite industrial looking but not dissimilar to agricultural tanks and silos. Anaerobic Digestion can provide both electricity and heat.

- **Biomass**. This is a renewable technology. It uses solid fuels from biological sources which are burnt to provide electricity and/or heat. Fuels include wood, straw and energy crops such as coppice, and grasses such as Miscanthus. Plants can be small domestic or larger scale industrial. Biomass can also be used as a combined heat and power plant (CHP).

- **Energy from Waste.** This is classed as a renewable technology, and can be either a combustion or thermal processing plant. Energy is normally captured in the form of electricity, but CHP is an option where a suitable heat load exists. Plants can be quite industrial and are often associated with municipal recycling facilities. **Fuel Cells**. A fuel cell is a device which converts the chemical energy present within a fuel into electricity using a chemical reaction. This is a low carbon option which produces both electricity and heat. Fuel sources include hydrogen, natural gas and alcohols such as methanol. Fuel cells are smaller than conventional CHP and do not require a flue system.

- **Gas CHP**. Fossil (natural) gas is not a renewable energy, but using it within a CHP system is considered to be a low carbon option because it makes use of the heat produced during electricity generation. Systems can operate at micro (domestic), small and large scale. At micro scale, they can provide a direct replacement for a domestic heating boiler, which generates electricity when the heating boiler is operating. Larger systems recover heat in several different ways, and are often used for specific developments when there is a known heat demand (e.g. swimming pool).

- **Hydroelectricity**. This is a traditional source of renewable energy which can be used to capture electricity. Hydropower schemes comprise a system to direct water into a turbine, the turbine itself, and appropriate fish ladders or other mechanisms to avoid harm to wildlife. Archimedes screws allow hydroelectricity to be harnessed at small scale and can operate in 'lower head' situations (i.e. downstream).

- **Solar Power**. Solar thermal panels capture thermal energy from the sun and can be used to heat water. Solar photovoltaic (PV) systems generate electrical power by converting solar radiation into electricity. Systems can be roof mounted for domestic or business use, or provided at a larger scale through a solar 'array'. This can either be roof mounted on large flat roofs, or on the ground.

- **Wind Energy**. This is a renewable energy collected by blades which are directly connected to a generator. Turbines need to be mounted on tall towers. They automatically align their blades with the wind, and 'feather' their blades in high wind to avoid damage. Energy can be collected at large or small (domestic) scales. Average wind speeds of 6.0 m/s at 45 metres are considered commercially viable, but this may change with rising energy prices. Developers of large schemes often install an 'anemometry mast' to collect data on whether the scheme will be viable.

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4.3.2 Tidal Lagoons are not addressed in this SPG as being predominantly below the High Water Mark, any such schemes will be considered by the Secretary of State rather than Monmouthshire County Council. Whether freestanding or connected to the coast, physical effects on the coastal area in terms of flooding, erosion and sedimentation would need to be thoroughly assessed as would the impacts on the SAC/SPA status of the Severn Estuary's ecology, its archaeology and the landscape setting of the Gwent Levels.

4.4 Which Technology is Appropriate for my Development?

4.4.1 In selecting an appropriate technology for a particular development there is a need to consider both the nature of the energy supply and issues of development scale including the commercial as well as technical viability. This reinforces the need to carry out an Energy Demand Assessment as suggested in **Chapter 2**. This will help you to select the right technology for the nature of the demand. In addition, it will be important to consider the suitability of each technology to the conditions of the site. This chapter should therefore be read in conjunction with **Chapter 6** and the **Energy Fact Sheets (Appendix 9)**, which cover site selection and site planning issues. In summary, the aim is to allow the developer / householder to make an informed choice based on energy requirements and suitability of the technology to the site conditions.

4.5 Energy Supply Issues

4.5.1 Different technologies supply energy in different ways. Some technologies are termed 'intermittent'. These cannot supply electricity continuously, but at specific times related to the availability of their energy source (e.g. wind or solar power). Other technologies are capable of constant generation. These are termed 'baseload' technologies. **Appendix 4** provides a more detailed explanation of intermittent and baseload technologies. **Table 4.3** shows which low carbon and renewable technologies are baseload and which are intermittent technologies:

Table 4.3: Intermittent and Baseload Renewable and Low Carbon Generation Technologies

Intermittent technology	Baseload technology
PV (electricity only) Solar water heating (heat only) Wind (electricity only)	Biomass heating (heat only) Biomass CHP (electricity and heat) Anaerobic Digestion (electricity and heat) Energy from waste (electricity and heat) Gas CHP (electricity and heat) Heat pumps (heat only) Hydro* (electricity only) Fuel cells (electricity and heat)

Note- * Yields may fall during periods of drought

4.5.2 Particular issues to consider in relation to energy supply include:

- Technology like PV generates electricity maximally in the middle of the day during the summer when demand is low. This means that the local electricity network has to have enough capacity to accept this generation capacity, which might be an issue where large numbers of cells are being installed such as on a major development.

- Trying to provide a high proportion of energy demand on a residential or mixed use development from PV may prove impractical, due to the low annual energy output of the cells relative to the area available to fit them to. Similarly, as solar water heating systems generate more energy in the summer, suitable back up is required in the winter.

- Opportunities to combine technologies based on their supply can also be considered. For example, small scale wind will generate more electricity in the winter and can also

generate at night. This compliments PV systems which generate more electricity in the summer and only during the day.

4.6 Development Scale Issues

4.6.1 The scale at which low carbon and renewable technologies can operate is also important when making decisions about which technology is appropriate for a particular development. Some technologies only offer outputs in the kW range whilst others can generate at MW scale. **Table 4.4** shows how renewable and low carbon technologies perform in terms of scale:

Table 4.4: The scale of Energy Generation from Renewable or Low Carbon Technologies

Small scale technology (kW)	Large scale technology (MW)
PV (electricity only)	Biomass heating* (heat only)
Solar water heating (heat only)	Biomass CHP (electricity and heat)
Building scale wind (electricity only)	Anaerobic Digestion* (electricity and heat)
Heat pumps (heat only)	Energy from waste (electricity and heat)
Hydro (electricity only)	Gas CHP* (electricity and heat)
Fuel cells (electricity and heat)	Wind (electricity only)

Notes - *Can also operate at kW levels. Clearly, it is possible to aggregate small scale technology to deliver larger outputs. One example is PV where 6m^2 of cells on a typical domestic roof generates about 1KW of electricity. Some developers have aggregated many hectares of these cells together into 'Solar PV Farms'.

4.6.2 The following summarises some key considerations at different scales of development:

- In general, larger developments will create larger demand for energy and therefore the potential to select renewable or low carbon technologies that can operate at a larger scale **(see Table 4.2)**. In particular larger employment development can have more opportunity to integrate energy generation with any industrial processes within the building. This will impact on technology selection.

- Larger footprint developments can create more space for energy generation schemes, again allowing a greater technology choice.

- Larger residential and mixed use developments can offer more opportunities for larger scale technology and even centralised energy generation options. These can have cost advantages over smaller scale schemes. They also offer the opportunity to consider whether on or off site solutions could be linked with other surrounding developments to achieve greater economies of scale and greater benefits beyond the development itself. This is why the potential for community involvement to increase the market size of the development is potentially important (see **Chapter 7**).

Grid Connections

4.6.3 All schemes will need to check the potential for connection to the national grid, where electricity is to be produced:

- Small (household) scale electricity generation is referred to as low voltage generation (even though it is still at 240 volts) and is currently allowed up to 3.6kW on a single phase and 11kW on a three phase supply. For small household schemes, the installer is likely to check the potential for connection to the grid on your behalf as part of the installation service.

- Above household scale additional arrangements for connection will have to be discussed with the local Distribution Network Operator (DNO) which in Monmouthshire is Western Power (http://www.westernpower.co.uk/). to check that a) the grid system where your connection might be has the capacity to take the proposed level of electricity output. If there are issues of grid capacity, then your scheme may need to include grid capacity strengthening or new connections; and b) any upgrade to the grid connection can be made relative to the timescale for completing your scheme ready for connection. This final point is not a planning consideration – but is a consideration for cash flow predictions.

4.7 District or 'Community' Heating

4.7.1 District heating describes the use of a heat pipe network to take energy from a point where it is generated to a point where it is used. Community energy is sometimes used to describe smaller scale schemes, especially within a single multi-occupant building or small scale development.

4.7.2 While not a renewable or a low carbon energy technology in itself, district heating offers a number of benefits:

- It allows larger combustion plant to be used and these tend to be more efficient than smaller equipment, potentially increasing the cost and carbon efficiency of heating;
- It supports the use of CHP technology by providing the means to distribute the heat produced for beneficial use; and
- In areas where air quality is an issue, it can allow the combustion process to be moved to a different location.

4.7.3 The main problem associated with district heating in new residential developments is that building regulation is increasing building thermal efficiency and thus reducing heat demand. As a consequence, the income from heat sales is reduced to a point where it potentially cannot support the high investment costs in a district energy scheme. The addition of a commercial or industrial load, or possibly connection to users beyond the development, has the potential to overcome this problem. District heating could be usefully considered on mixed use development schemes, such as those proposed for strategic sites in the Monmouthshire LDP.

5 Do I need Planning or Other Consents?

5.1 Introduction

5.1.1 This section provides guidance on whether planning permission or Listed Building Consent will be needed for your project and the information you will need to submit with an application. It also identifies other consents which might be needed.

5.2 Do I Need Planning Permission or Listed Building Consent?

5.2.1 Some renewable, low carbon energy or energy efficiency measures may not require planning permission. These circumstances are often referred to as *'permitted development'* and are set out within the **Town and Country Planning (General Permitted Development) (Amendment) (Wales) Order 2012** (referred to as the GDPO). If you think you do not require planning permission, but your proposal relates to a Listed Building, or to any structure or building that has been within the curtilage of a Listed Building since 1948, you are still likely to require *Listed Building Consent* from the Council.

5.2.2 It is recommended that you always check with Monmouthshire County Council if you think that planning permission or Listed Building Consent will not be required. You can do this by phone or email to the development management team for planning permission on **01633 644 880** or **planning@monmouthshire.gov.uk**. Planning officers can provide you with an informal opinion. If you require a formal opinion you will need to make a request for a Certificate of Lawful Proposed Development, for which a charge will be made. An application form for a certificate of lawful development can be downloaded here: http://www.monmouthshire.gov.uk/home/planning-and-housing/planning/how-to-apply-for-planning-permission/ For queries regarding Listed Building Consent, you will need to contact the heritage team on **01633 644880** or **heritage@monmouthshire.gov.uk** .

5.2.3 The information below gives more detail. There are also flow charts in the **Energy Fact Sheets** (**Appendix 9**) which will help you to identify whether you need planning permission and other consents for the particular technology you wish to install. In addition, the Welsh Government has produced guidance documents summarising when planning permission is needed for both homes and non-domestic properties. These can be accessed at the following link:
http://wales.gov.uk/topics/planning/policy/guidanceandleaflets/generaterenewable/?lang=en .

Domestic Household Development

5.2.4 Many of the energy efficiency measures identified in **Chapter 3** will not need planning permission. Energy efficiency measures such as work to change or enlarge window openings or providing passive shading will not require planning permission, neither will 'active' measures such as installing highly efficient boilers or high efficiency lighting. However, any alterations that affect the character of a Listed Building will require Listed Building Consent. This includes any changes to windows, doors or roofs as well as internal alterations. Building regulations approval may also be required.

5.2.5 Some renewable and low carbon technologies can be installed as 'permitted development' for domestic properties (houses and flats) where they are small scale and deemed to be 'microgeneration', which is defined in the (*Energy Act* 2004) as technologies that:

- Generate less than 50 kilowatts of electricity; or
- Generate less that 45 kilowatts of thermal energy.

5.2.6 **Table A1** in **Appendix 6** summarises the information set out within the GDPO and identifies when planning permission and Listed Building Consent will be required for the installation of low and zero carbon technologies for householders (as at July 2012). This table is provided as a guide, and you should still check with planning officers if you think that you do not need planning permission or Listed Building Consent (see **para 5.2.2**).

Permitted Development Rights for Non-Domestic Premises

5.2.7 **Table A2** in **Appendix 6** summarises the information set out within the GDPO and identifies when planning permission and Listed Building Consent will be required for the installation of low and zero carbon technologies for buildings which are not domestic (i.e. not housing) (as at October 2012). This table is provided as a guide, and you should still check with planning officers if you think that you do not need planning permission or listed building consent (see **para 5.2.2**).

Permitted Development Rights for Stand Alone Low or Zero Carbon Developments

5.2.8 There are no permitted development rights for stand-alone developments except for domestic and non-domestic solar panels as described in **Table A1** and **A2**.

Agricultural and Forestry Permitted Development Rights

5.2.9 Agricultural and forestry units benefit from a number of permitted development rights. Planning permission is not required for the development of some new buildings and changes to existing buildings, provided that they are for the purposes of agriculture or forestry. However, the planning authority has to be informed about many proposed changes in advance, through a procedure called 'prior notification'.

5.2.10 Recent changes to the GDPO (5th October 2012) confirm that planning permission will not be required for buildings on agricultural or forestry land to house microgeneration equipment, including hydro-turbines, biomass boilers and anaerobic digestion systems, and to store associated fuel and waste, provided that the fuel or waste is produced on the agricultural or forestry land or by the boiler system. Buildings to house Biomass boilers and anaerobic digestion systems will still need planning permission if they are within 400m of the curtilage of a Listed Building or Scheduled Ancient Monument.

5.2.11 If a farm or forestry building is listed, any changes or alterations will also require Listed Building Consent. Please check with the heritage team to confirm whether Listed Building Consent will be required for the proposed changes (see **para 5.2.2**).

Cases When Permitted Development Rights Do Not Apply

5.2.12 Sometimes, permitted development rights do not apply and this means that planning permission is required. The circumstances in which this applies include:

- Listed Buildings and buildings or structures that have been within the curtilage of Listed Buildings since 1948 or Scheduled Ancient Monuments (as specified in **Table A1**, **Appendix 6**);
- Sites within a Conservation Area where there are additional restrictions so that planning permission is required if the installation is visible from the road (see **Table A1**, **Appendix 6**); and

5.2.13 Owners of buildings within Conservation Areas which have been identified within Conservation Area Appraisals as making a particularly positive contribution to the character of the area should check with the Local Authority with regard to the status of the permitted development rights related to the building. For futher information on Conservation Area Appraisals can be obtained from the heritage team on **01633 644880** or **heritage@monmouthshire.gov.uk** .

- In sensitive areas, such as AONB or SSSI, or on Safeguarded land (see **Table A1**, **Appendix 6** and **Appendix 8**).
- There is an Article 4 Direction on the property or a planning condition which has removed permitted development rights from the property. You will need to check with the planning department (see **paragraph 5.2.2**) as to whether there are any Article 4 directions in your area.
- Buildings where planning conditions have been placed on the building which remove permitted development rights (this is sometimes the case in Monmouthshire for example where barns have been converted to residential dwellings).

5.2.14 You can check whether your site lies within one of the above designated areas using information in **Appendix 8**.

5.3 What Other Consents Do I Need?

5.3.1 There are a number of other consents which may be required in relation to any planning application, including those involving low and zero carbon energy generation. These are listed in **Appendix 7**. Even where planning permission or Listed Building Consent is not required, you will still need to check whether you need these other consents.

5.3.2 The flow charts in the **Energy Fact Sheets** (**Appendix 9**) will also help you to identify what other consents you need for the particular technology you wish to install.

5.3.3 Applications for Developments of National Significance, such as Wind Farms, will be dealt with by the Planning Inspectorate on behalf of the Welsh Government.

6 Obtaining Permissions and Consents

6.1.1 This section explains what information you need to provide with your planning application, and how this will be assessed. This includes detailed lists of criteria which give information on what planning issues will be considered.

6.2 What Information do I Need to Provide with my Planning or Listed Building Consent Application?

6.2.1 The information in this SPG focuses on the specific aspects of making a planning application that are relevant to renewable or low carbon energy technology and energy efficiency. The level of detail required in any planning application will vary depending on the scale and nature of the development being proposed.

6.2.2 Monmouthshire County Council provides a considerable amount of information about the planning application process generally, including checklists of information that are required to support planning applications and the requirements for site maps, plans and other illustrations of proposed development. Applicants and/or agents are however advised to discuss with Development Management Officers whether their proposals are likely to be acceptable in advance of submitting a planning application. Please note there is a formal pre-application service which is available at a cost, the cost of which is dependent on the level of service required. Certain exemptions apply. Information on the pre-application service is available using the following link: http://www.monmouthshire.gov.uk/planning/pre-application-advice-service

6.2.3 Application forms for planning permission, Listed Building Consent and Conservation Area Consent and checklists of requirements can be downloaded here: http://www.monmouthshire.gov.uk/home/planning-and-housing/planning/how-to-apply-for-planning-permission/.

6.2.4 Paper copies of these documents are also available on request (see **paragraph 5.2.2**).

Listed Building Consent

6.2.5 Applications for Listed Building Consent must show that works which would affect the character of a building are desirable or necessary. Applicants are required to submit a justification statement in addition to the relevant plans. Cadw has produced a document which provides advice on installing low and zero carbon technology in historic buildings. ***Renewable energy and your historic building: Installing micro-generation systems a guide to best practice***. This can be downloaded at: **http://cadw.wales.gov.uk/docs/cadw/publications/Micro_gen_booklet_EN.pdf**

Householder / Business Premises

6.2.6 Proposals to install renewable and low carbon technologies may need to be accompanied by a Design Statement. This is a formal requirement where a development is in a Conservation Area. Elsewhere, Design Statements can also be provided for householder applications as good practice.

6.2.7 A checklist of general requirements for householder planning applications and applications for Listed Building Consent is available at the link in **paragraph 6.2.3**.

New Residential and Other Developments

6.2.8 Planning applications for new residential, mixed use and other schemes on small, medium and major sites will require a number of supporting documents. The checklist at the link in **paragraph 6.2.3** includes a number of requirements.

6.2.9 A **Design and Access Statement (DAS)** will be required for all planning applications of a certain size for residential, mixed use and other schemes. This is a document which sets out the design principles underpinning the proposal and covers issues such as the amount, use, layout, scale, landscaping and appearance of the proposed development. It should provide information on the process that has been undergone in developing the proposal or scheme. Paragraph 4.4 of TAN 12 states: *'applicants can demonstrate how they have appraised the physical, social, economic and policy context of the development, and how their choice of design principles and concepts takes that context into account'.*

6.2.10 The DAS should also include consideration of the results of an energy demand assessment and evidence that the energy hierarchy has been fully considered in developing the scheme. The DAS will need to draw attention to energy efficiency measures and include information on features such as external housing of generators, grid connections, pipelines and other development features associated with any proposals for low and zero carbon technology, as well as buildings. It will need to include information on achieving a good standard of sustainable design, including external spaces, under the Environmental Sustainability heading of the DAS. Although no longer mandatory under the planning application process, developers may wish to explore the potential for designing and building their proposals to meet sustainable building accreditation schemes, such as the Code for Sustainable Homes and the Building Research Establishment Method Scheme (BREEAM). Further information on preparing a Design and Access Statement, information on the Code for Sustainable Homes, and links to accredited code assessors can be found at the following link: http://www.monmouthshire.gov.uk/home/for-businesses/property-and-planning/guidance-on-making-a-planning-application/.

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6.2.11 Technical studies are likely to be required which consider the impacts of the proposals in areas such as ecology, noise, archaeology & heritage, and landscape, and the DAS should also summarise this information. For larger medium and large schemes, full Landscape Impact should be shown. A Landscape and Visual Impact Assessment (LVIA) should include photo montages to show impacts in longer views. A landscape and development checklist can be found here: http://www.monmouthshire.gov.uk/wp-content/uploads/2013/06/landscape_and_development_checklist_2012.pdf .

6.2.12 An **Environmental Impact Assessment (EIA)** may be required for some large scale developments. If this is the case, supporting information covering the rationale for the scheme, and an investigation of possible impacts, must be put into an Environmental Statement, and submitted with the planning application. The regulations governing EIA set out where EIAs are mandatory or discretionary, and provide information on the EIA screening process. Parts 1 and 2 of the Planning Advice Note on Wind Turbine Development: Landscape and Visual Impact Assessment Requirements provide guidance on whether an EIA is likely to be required in relation to proposed wind turbine developments.

Stand-Alone Renewable and Low Carbon Energy Technology Schemes

6.2.13 A **DAS** (see section above) may also need to be prepared for stand-alone renewable and low carbon energy technology schemes. It will need to pay particular attention to the potential impacts of the proposal in terms of landscape, townscape, historic features, biodiversity and amenity. For medium and larger schemes, landscape impact assessment (LVIA) should be undertaken with photo montages to show impacts.

6.2.14 A checklist of general requirements for applications for planning permission, in outline, in full or for reserved matters is available at the link in **paragraph 6.2.3**.

6.2.15 Information should also be provided on the wider environmental, economic, social and community benefits directly related to the scheme.

6.2.16 An Environmental Impact Assessment (EIA) could also be required for some large scale renewable and low carbon energy developments. The regulations governing EIAs set out where EIAs are mandatory or discretionary.

6.3 How Will My Application be Assessed?

6.3.1 Planning applications are considered in relation to planning policies in the LDP in the first instance. Where planning applications are made that fall within the scope of Policies S3, S12, SD1 and SD2, applications need to provide evidence that a sound and well informed approach has been taken to the identification of measures and technologies for energy efficiency, renewable and low carbon technology in the context of the energy hierarchy.

6.3.2 The checklist in **Table 6.1** sets out in broad terms the elements that will be considered in the assessment of planning applications and identifies which type of development each question is relevant to.

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6.3.3 Applications for Listed Building Consent will be assessed in relation to the policies in the LDP, Circular 61/96; Planning and the historic environment and the Planning (Listed Buildings and Conservation Areas act 1990). The Cadw guidance referenced in **paragraph 6.2.5** will also be considered.

Table 6.1: List of Key Considerations in Assessing Planning Applications

Questions	Householder / business	Development schemes	Stand-alone technology	Relevant SPG chapter
Process Issues				
1. Does the DAS / Design statement include evidence that energy need has been assessed?	Y	Y		2
2. Is there evidence that spatial layout and design have been influenced by thinking on passive measures to reduce energy demand? (e.g. building orientation, Green infrastructure use).		Y		3
3. Is there evidence that fabric energy efficiency has been considered in the proposals (e.g. appropriate insulation and materials selection).		Y		3
4. Which renewable and low carbon technologies have been considered? Has an assessment of their merits been undertaken and a justification of choice based on meeting energy needs undertaken which is linked to the type of development proposed, scale and location, technical/commercial merits and feasibility?	Y	Y		4, 6
Issues related to site selection and impacts				
5. Has information on connection to the national grid been provided?		Y	Y	4
6. Are there any actual or potential impacts on landscape, townscape, historic features, biodiversity or residential amenity? If so are there proposals to mitigate or compensate, and are the impacts considered acceptable?	Y	Y	Y	6 App 9
7. Does the proposal comply with policy LC5 with regard to protection and enhancement of landscape character?	Y	Y	Y	6 App 9
8. Would the proposal compromise the distinct identity of Monmouthshire as a result of impacts identified above?		Y	Y	6 App 9
9. If acceptable impacts have been identified in question 6 (above), are there cumulative impacts which mean that this proposal, together with others already implemented, or with planning permission, will be unacceptable?	Y	Y	Y	6 App 9
10. Have the wider social, economic and environmental benefits been considered, along with opportunities for community benefit from the proposal? Do these outweigh any negative impacts?	Y	Y	Y	6, 7 App 9
11. Have satisfactory arrangements been identified for decommissioning and removal of renewable and low carbon energy technology installations and the restoration of the site to its original condition?	Y	Y	Y	6 App 9

6.4 Assessing Impacts: Site Selection and Planning Issues

6.4.1 The options for renewable and low carbon technologies are reviewed in **Chapter 4**, and examined in detail in the **Energy Fact Sheets (Appendix 9).** **Chapter 2** explains how the selection of a renewable or low carbon energy technology needs to respond to the energy demand requirements of the development. However, this selection must also respond to site conditions. The following generic checklist of site planning considerations (**Table 6.2**) will be used in the assessment of all planning applications incorporating renewable and low carbon energy technologies. Applicants should also use it to help develop their proposals. It identifies a series of issues and sets out key questions in relation to each of these issues.

6.4.2 **Energy Fact Sheets** containing more specific technology focused checklists are also included in **Appendix 9**. These should be used in conjunction with **Table 6.2**. The Fact Sheets provide a profile for each technology, including technology description, a flow diagram summarising the need for planning permission and other consents, SWOT analysis, spatial implications and the checklist of technology specific site planning considerations. They consider, for example, issues such as shadow flicker in relation to wind turbines.

6.4.3 Additional technology specific information including information on potential renewable energy resource availability is provided in a previous Camco study referred to in **Chapter 1** and **Appendix 2**.

6.4.4 The Design Statement / Design and Access Statement should cover all the considerations identified in **Table 6.2** below. The extent to which each of these is relevant will depend on the scale and type of development:

- Householder / business premises applications should consider all headings; and
- Developers of proposals for residential, mixed use and other schemes as well as for stand-alone renewable proposals will require more detailed consideration, often supported by the preparation of reports by technical specialists.

6.4.5 Each site planning consideration is potentially a large topic to describe in its own right. This SPG does not seek to provide comprehensive guidance but looks to highlight the key questions to address and signpost to further information.

Table 6.2: Generic Checklist of Site Planning Issues

Landscape Sensitivity, Character and Visual Impact				
The questions below are intended as pointers to highlight key issues. The level of information required to accompany an application in relation to landscape issues will vary significantly, depending on the scale of the proposal and its location. Applicants should consult the Landscape and Development checklist for developers (online link at paragraph 6.2.11), and the MCC landscape officer at pre-application stage in order to establish an overall approach to assessing the landscape impact of the proposal and what level and type of information will be required (contact details can be found in paragraph 5.2.2). The Planning Advice Note on Wind Turbine Development: Landscape and Visual Impact Assessment Requirements provides specific guidance in relation to proposed wind turbine developments. **All applications will be considered in the context of policy LC5.**				
Questions to address.	**Relevant at which scale**			**Points to consider**
	Householder / Business	**Development Schemes**	**Stand-alone technology**	
1. Site information Is the site in a designated landscape area?	Y	Y	Y	Monmouthshire includes areas affected by international, national and local landscape quality designations. These are set out in **Appendix 8**. For sites in or close to international or nationally designated areas, there is a high risk that they will not be suitable for some renewable and low carbon technologies, especially larger scale developments of biomass schemes, anaerobic digesters, wind farms or solar PV arrays. It will be particularly important to avoid visual impacts in designated landscapes. Locally designated sites may not be suitable for some proposals depending on their specific location and scale. In designated landscape areas, even the smallest proposals can have unacceptable impacts, and so a pre-application consultation with a landscape officer will be particularly important here. Reference should be made to the supporting studies for statutory designations (as identified in the LDP). For other designations, some have accompanying studies and methodologies for assessing potential development, and you will need to contact the green infrastructure and countryside team to check whether this is the case at 01633 644850 or **countryside@monmouthshire.gov.uk**.
2. Site context What landscape character area are you in? – What are its key qualities and significance?	Y	Y	Y	The Monmouthshire LANDMAP Landscape Assessment Volume 1 Draft SPG 2001 currently defines the Landscape Character Areas (LCA's) for Monmouthshire. These character areas have been informed by 5 layers of data, comprising the Visual and Sensory, Landscape Habitats, Geological, Historical and Cultural layers, each layer subdivided further and attributed values. These layers are available to view on the Natural Resources Wales website: **http://naturalresourceswales.gov.uk/?lang=en** The LANDMAP character assessment is currently being updated (2012). If your site is in a rural area, or on the periphery of a built up area, understanding the qualities and significance of your landscape character area may influence your choice of technology, the scale of the development, clarify areas of the site which are more sensitive than others and help establish design principals which should be included in the Landscape masterplan. The LANDMAP Landscape Assessment provides a baseline of data outlining key characteristics and qualities

				which will help define important features in the landscape and is the basis from which a more detailed landscape character assessment should be derived. Landscape Character Areas that are particularly sensitive may mean that there is a risk that the site is not suitable for renewable or low carbon technology
3. Visual analysis Have you considered the visibility / appropriateness of the site in its wider setting?	Y	Y	Y	Proposals for new development should consider the visibility of the site and its setting, as this can guide the layout and placement of buildings, structures and planting. For example it might be necessary to protect important views, vistas or landmark features or block/filter unattractive ones from within the site. The following guidelines are useful for considering small or large developments and sites in sensitive locations (including householder developments). Visual analysis should address; • Positive or attractive views from within the site and location of viewpoints and vistas • Location of local landmarks that form the focal point of key views and vistas from the site • Identify key views to be protected and negative views for mitigation • Analysis of views into the site from key locations such as exposed hills that may be inappropriate for development. • Analysis of the scale of the site in relation to its setting. Consideration of scale will assist in determining the massing and location of proposals and their appropriateness.
4. The effect of development on the landscape. Have you carried out your own Landscape Character Assessment / LVIA?	Y	Y	Y	The effect of development on the landscape will depend upon many factors in particular on the location, choice of technology, scale of the proposal and mitigation measures proposed. For example, a small wind turbine in an exposed and sensitive location may have a much greater impact than a large solar PV array that is well screened and in a location which is less sensitive. Therefore, where it is anticipated that development could have a significant effect upon the character of the landscape or townscape or result in the loss of important features, a Landscape and Visual Impact Assessment (LVIA) is often requested. This is an automatic requirement if a project is judged to require an Environmental Impact Assessment (EIA). Householder applications will not usually require a full LVIA, but early consultation with the Green Infrastructure and Countryside team is advised in all cases (contact in **in section 1 above**) to establish whether this will be required. A LVIA or Townscape Assessment should be carried out in accordance with the Guidelines for Landscape and Visual Impact Assessment (GLVIA) as published by the Landscape Institute and Institute of Environmental Assessment (April 2013) Reference should also be made to NRW's LANDMAP Guidance Note 3 May 2013 on how LANDMAP data should be integrated into an assessment. Wind turbine proposals should make reference to the Planning Advice Note on Wind Turbine Development: LVIA Requirements wind turbine developments. Part 3 of this document sets out the minimum requirements and standards of information to be submitted with a LVIA. It is advisable to engage a suitably qualified Landscape Architect to help deliver this assessment.
5.Cumulative Impact Are there other buildings or sites	Y	Y	Y	Cumulative impact should be considered in relation to existing and proposed development for all types of development. For example a single wind turbine may not be visually intrusive in isolation; however, if located on a site where it can be readily seen in combination with

with renewable or low carbon technologies installed or with planning permission within the locality?				other turbines, then it could have a negative visual impact and result in an adverse impact upon the character of the landscape. For larger schemes where a LVIA is requested, cumulative impact should address this issue as part of the process as is required by the 2012 draft guidelines for LVIA. Wind turbine proposals should make reference to the Planning Advice Note on Wind Turbine Development: LVIA Requirements wind turbine developments. Section D of Part 3 of this document relates specifically to the cumulative landscape and visual impact assessment of wind turbines.
Ecology				
The points below relate primarily to planning Consent. However, other consents relating to impacts on the natural environment may also be necessary (see **Appendix 8**). For ecological impacts, the following principle will be applied: 1. Avoid any impacts, 2, if impacts are unavoidable seek to mitigate, 3. If mitigation is impossible then compensation will be sought. All applications will be considered in the context of policy NE1				
Questions to address.	**Relevant at which scale**			**Points to consider**
	Householder / Business	**Development Schemes**	**Stand-alone technology**	
1. Site information / context Is the site in or near a nationally or internationally designated ecological area?	Y	Y	Y	Information on sites designated for their ecological importance is set out in **Appendix 8**. Development schemes for residential or other uses are unlikely to be permitted on these sites. There may be a possibility that such sites are considered for 'stand-alone' renewables schemes. Applications for locations near designated sites must also consider the potential impacts on their habitats and species. On internationally designated sites, a Habitats Regulation Assessment may also be required. Natural Resources Wales will be able to advise whether this is necessary.
2. Site information / context Is the site in or near to a site designated locally as of ecological importance?	Y	Y	Y	Information on sites designated for their ecological importance is set out in **Appendix 8**. If the answer is 'yes' then there is a risk that the site may not be suitable or that significant mitigation measures may need to be put in place to deal with likely impacts.
3. Impact of development. Has the potential for impacts on habitats or species on or close to the site been considered?	Y	Y	Y	Applicants will need to demonstrate that they have considered whether there are any impacts on habitats or species on or adjacent to the site. For larger schemes a technical assessment will normally be required which identifies the nature conservation value of the site and any habitats or species of value, whether the proposals will have any negative impacts, how these can be avoided and opportunities for mitigation and enhancement. Consider whether there could be any direct impact on habitats and species during construction; and if so, how any impact can be avoided/reduced through design or construction techniques.

				Consider the opportunities for improving habitats as a result of works.
4. Cumulative impacts Are there other buildings or sites with renewable or low carbon technologies installed or with planning permission within the locality?	Y	Y	Y	Cumulative impact should be considered in relation to existing and proposed development for all types of development. For example, there may be cumulative impacts on the viability of bird populations associated with wind turbines.
Historic Environment				
All applications will be considered in the context of policy HE1, HE2, and National Policy on Listed Buildings in PPW chapter 6 and Circular 61/96.				
Questions to address.	**Relevant at which scale**			**Points to consider**
	Householder / Business	**Development Schemes**	**Stand-alone technology**	
1. Is the site part of or close to a SAM's or Registered landscapes / parks?	N	Y	Y	Information on historic designations is set out in **Appendix 8**. If the site is at a Scheduled Ancient Monument (SAM), there is a high risk that that the site may not be suitable or that significant mitigation measures may need to be put in place to deal with likely impacts. At locations close to these sites, consideration will be given to whether the technology/development has any adverse impact on the setting of these historic features. Scheduled Monument Consent will be required from Cadw if the proposal affects a SAM.
2. Is the site close to the Blaenavon World Heritage Site or in a Conservation Area?	Y	Y	Y	Information on historic designations is set out in **Appendix 8**. For sites close to the Blaenavon World Heritage Site, there is a risk that they will not be suitable for some renewable and low carbon technologies, especially larger scale developments. Sometimes permitted development rights are removed in Conservation Areas – and in these cases planning permission may be required even for the smallest schemes. In Conservation Areas there will be a need to preserve or enhance the special character of the area, as identified in the Conservation Area Character Appraisal. Renewable or low carbon energy technology installations on individual buildings, and larger developments should be designed, sited and orientated to minimise adverse impacts on the character of the Conservation Area. Impacts of the installation / development on views into and out of the Conservation Area will also be considered.
3. Does the development or installation involve a Listed Building?	Y	Y	Y	For these buildings, Listed Building Consent will also be required (this does not replace the need for planning permission). The impact on the structure and immediate setting of the Listed Building will be important considerations. It should be noted that some buildings can be 'curtilage listed': any building or structure which falls within the curtilage or garden of a Listed Building, also benefits from Listed Building status.

4. Are there any Listed Buildings in the vicinity?	Y	Y	Y	If the answer is 'yes' then a key consideration will be whether the development has an adverse impact on the setting of the Listed Building.
5. Are there any archaeological features of importance on the site?	N	Y	Y	Applicants will need to demonstrate that they have investigated whether there are any features of archaeological interest on the site. This is particularly important in Archaeologically Sensitive Areas (ASA's) (**Appendix 8**). A technical assessment will normally be required which identifies the potential for archaeological features. This may affect the siting, and design of proposals.
6. Cumulative impacts Are there other buildings or sites with renewable or low carbon energy technologies installed or with planning permission within the locality?	Y	Y	Y	Cumulative impact should be considered in relation to existing and proposed development for all types of development. For example, the installation of solar panels within a Conservation Area may not be significant in isolation but its cumulative impact may change the character of the area).

Other useful guidance relating to historic buildings:

1. The Green guide for historic buildings: how to improve the environmental performance of listed and historic buildings, The Prince's Regeneration Trust, 2010.

2. *Renewable energy and your historic building: Installing micro-generation systems a guide to best practice, CADW* **http://cadw.wales.gov.uk/docs/cadw/publications/Micro_gen_booklet_EN.pdf**

Public Rights of Way				
All applications will be considered in the context of policy MV3.				
Questions to address.	**Relevant at which scale**			**Points to consider**
	Householder / Business	**Development Schemes**	**Stand-alone technology**	
1 Do any public or permissive rights of way cross the site?	N	Y	Y	If the answer is 'yes' how will the development impact on these? Will they require diversion? (information on public and permissive rights of way can be found here: http://www.monmouthshire.gov.uk/home/explore-and-enjoy/countryside-services/public-rights-of-way/ Permission is also necessary for footpath diversion, and if you wish to do this you should contact the green infrastructure and countryside team on: **01633 644 850 countryside@monmouthshire.gov.uk**
2. Are there any public or permissive rights of way near to the site?	Y	Y	Y	If so there may be some impact if a view from the right of way is interrupted by the development. Consideration will need to be given to mitigation of any adverse impacts.

Access and Servicing				
All applications will be considered in the context of policy MV1 & MV2.				
Questions to address.	**Relevant at which scale**			**Points to consider**
	Householder / Business	**Development Schemes**	**Stand-alone technology**	
1. Will traffic be generated during construction of the development?	N	Y	Y	Check to ensure that the road network and site access is capable of taking vehicles of the size required to deliver the largest pieces of equipment and whether on site access roads need to be built. Identify what extent of traffic generation will be associated with the construction process. A Transport Assessment may be required, which measures traffic impact during construction as well as operation.
2. Will there be a requirement to service equipment once operational and/or to provide access in order to deliver supplies e.g. fuel.	N	Y	Y	Consider what routine maintenance access will be required, how often it will be and whether there is likely to be noise or nuisance created by this, to neighbouring properties. If so, consider how site layout can help mitigate impacts and also ensure site layout provides the necessary access to equipment for maintenance purposes.

Design of Buildings				
All applications will be considered in the context of policy DES1.				
Questions to address.	**Relevant at which scale**			**Points to consider**
	Householder / Business	**Development Schemes**	**Stand-alone technology**	
1. Is there is a requirement for any building associated with using the technology?	N	Y	Y	If the answer is 'yes' these should be designed with the energy hierarchy in mind, including measures to reduce demand and improve energy efficiency.

On Site Landscaping and Boundary Treatment
All applications will be considered in the context of policy DES 1.

Questions to address.	Relevant at which scale			Points to consider
	Householder / Business	Development Schemes	Stand-alone technology	
1. Are there any trees on the site with preservation orders (TPO) that will be affected by the proposed development?	Y	Y	Y	If the answer is 'yes' then you should check with the planning officer whether permission will be required to pruned or fell the tree. A planning consideration will be whether there is any adverse impact on the preserved trees.
2. In Conservation Areas, are there any trees on the site that that will be affected?				If the answer is 'yes' then you may need to give the Council 6 weeks' notice in writing (by email or letter) of your intention to carry out any works to trees (see **Section 5.2.2** for contact details). You should check the requirements with the heritage team.

Water Management / Hydrology and Flood Risk				
The points below relate primarily to planning Consent. However, consents from NRW may also be necessary (see **Appendix 8**). All applications will be considered in the context of policy EP2.				
Questions to address.	**Relevant at which scale**			**Points to consider**
	Householder / Business	**Development Schemes**	**Stand-alone technology**	
1. Does your development fall within the NRW flood map or Welsh Government's Development Advice Maps referred to in TAN15 Development and Flood Risk?	N	Y	Y	If the answer is 'yes' there is a high risk that the site will not be suitable for development. Information on flood risk zones can be found on the Natural Resources Wales (NRW) website here: **http://naturalresources.wales/?lang=en**
2. Will your development involve use of water or have any impact on watercourses?	N	Y	Y	If the answer is 'yes' then an important consideration will be whether there is any adverse impact on hydrology, water management and water quality; and if so whether this can be mitigated with measures included in the proposal.

Health & Quality of life (Noise, Air quality, emissions, amenity issues)				
All applications will be considered in the context of policy EP1.				
Questions to address.	**Relevant at which scale**			**Points to consider**
	Householder / Business	**Development Schemes**	**Stand-alone technology**	
Will the construction process have unacceptable noise impacts? Will any part of the process and fuel delivery emit any noise that is above background noise levels?				Consider whether there will be noise associated with the construction which will affect neighbours and how this can be mitigated through hours of construction, and timings of deliveries. A noise assessment may be required for larger developments. This should include consideration of acceptable levels against standards and assessment criteria to be agreed beforehand with the Environmental Health Officer If there is potential for any noise from the equipment you propose to install, careful siting will be needed to minimise disruption to neighbours and mitigation measures might be needed to reduce noise. A noise assessment may be required for larger developments.

Agriculture				
Questions to address.	**Relevant at which scale**			**Points to consider**
	Householder / Business	**Development Schemes**	**Stand-alone technology**	
1. Is your development taking place on agricultural land?	N	Y	Y	If the answer is 'yes' there is a risk that the site may not be suitable for development if the agricultural land is of high quality (Grade 1, 2 and 3a). Considerations should include impact of loss of agricultural land on the farm business, extent of irreversible loss of agricultural land and, for stand-alone renewable projects, potential for maintaining agricultural uses on the site alongside the technology.

Community Engagement				
Questions to address.	**Relevant at which scale**			**Points to consider**
	Householder / Business	**Development Schemes**	**Stand-alone technology**	
1. Has there been any community involvement in developing the proposed scheme?	N	Y	Y	Monmouthshire County Council encourages developers to engage in community consultations on renewable or low carbon energy schemes at an early stage in developing proposals and would like to see evidence of this in Design and Access Statements/other information accompanying planning applications.
2. Is there any potential for community partnership or benefit from the scheme?	N	Y	Y	Monmouthshire County Council is keen to prompt developers to work with communities on development proposals where possible and appropriate and hence this question is asked in order to encourage such partnership working (**Chapter 7** provides details).

Decommissioning				
Questions to address.	**Relevant at which scale**			**Points to consider**
	Householder / Business	**Development Schemes**	**Stand-alone technology**	
1. Have you considered what happens to the technology at the end of its lifespan?	N	Y	Y	Monmouthshire County Council will require decommissioning of technologies and their removal (where practicable) and return of land to its former use where this was productive. It will want to know there is a mechanism and organisation in place to carry through decommissioning and will seek to include conditions on planning consents to secure this.

7 Community Involvement in Renewable Energy

7.1 The Benefits of Community Involvement

7.1.1 Fossil fuels like coal, oil and gas are all found underground and need to be extracted, processed and moved to the point of use. This means that fossil fuel resource ownership and consequent energy supply is mainly in the hands of a small number of large organisations.

7.1.2 Renewable energy generation is different. The input energy is either harnessed from natural energy flows such as wind or solar, or comes from renewable fuels such as biomass. These are all above ground resources and are based on the ownership of land assets, not underground reserves. This means that, for the first time, energy generation can be in the ownership of almost anyone. The government is supporting this through the targeting of support mechanisms to smaller scale technology and has liberalised the energy market to support local ownership.

7.1.3 Communities now have the potential to become important players in the energy market in a number of ways. Communities represent energy markets which can be potentially valuable. Land assets with potential value for energy generation projects are often available within the community. More importantly, communities can also benefit from the social and economic benefits that come from retaining the value of energy generation within the local economy.

7.1.4 The second area of potential benefit comes from physically attaching the local community to a new energy scheme. For instance, by supplying the local community with energy as well as a new development, the size and value of the energy market goes up which may enable a more cost effective scale of technology to be used. In addition, technology such as combined heat and power (CHP) may become viable. This approach has the potential to benefit all parties.

7.2 Opportunities and Support for Community Involvement

7.2.1 DECC is supportive of community energy and has a number of practical ways to support community energy development (see **https://www.gov.uk/guidance/community-energy**).

7.2.2 The Energy Saving Trust also has a database of community energy case studies: **http://www.energysavingtrust.org.uk/organisations/community-project-case-studies** .

7.2.3 An example of this approach is the Westmill wind Farm. The Westmill Co-op was established in 2004 for the purpose of constructing and operating a community-owned wind farm at Westmill Farm in Oxfordshire. The Wind Farm involved the purchase, construction and 25 year operation of five wind turbines. More information can be found at **http://www.westmill.coop/westmill_home.asp .**

7.2.4 In Wales, the Welsh Government has created the Arbed programme which also has the potential for community links. Here, the target is to reduce carbon emissions, eradicate fuel poverty and create employment in the low carbon energy sector. New developments involving low carbon energy have a potential to contribute to this programme.

7.2.5 Monmouthshire County Council recognises that community involvement in climate change and sustainable energy work is essential. To this end, their Climate Change and Sustainable Energy Strategy which was adopted in 2008 includes a section on Community.

7.2.6 Projects and initiatives that involve working with the community on renewable and low carbon energy include:

- Establishment of the *Community Climate Champions*. This is an MCC facilitated partnership which includes representatives from community groups working on energy, local renewable energy installers and Council officers and members. They meet quarterly and partners all give an update of the work they have been doing around climate change and peak oil. The Community Climate Champions are a great networking group, but also work on and develop partnership projects.

- An example of a Community Climate Champions project is *Eco Open Doors*. This annual event involves properties across the county with renewable energy and other sustainability features opening up their homes to the public for a weekend, so that members of the public can visit, see how their systems work and chat to the owners, to help them to decide if the technology would be suitable for them. See **http://www.monecoopendoors.org.uk/**.

- MCC are developing a loan scheme for individuals or community buildings who would like to install solar panels.

- Through the Council's Rural Development Programme, the *Vital Villages* project offers energy advice to communities in Monmouthshire, grant support for renewable energy

projects, grants for energy efficiency measures in community buildings and grants for community gardens

- Tailored support can be offered to community groups looking to develop community renewables scheme. Projects that have received support so far include the Tintern Angiddy Hydropower Project (TAP).

7.2.7 Where a new development of buildings or a stand-alone energy scheme is being considered at any scale, this will almost undoubtedly create the opportunity for collaboration between the developer and the local community that can be exploited to mutual benefit. For example, the local community may provide an additional market allowing more cost efficient scales of technologies to be used. Perhaps a community heat market may also unlock the potential for CHP.

7.2.8 Clearly, as a result of these benefits, it is important that all developers planning to invest in a renewable or low carbon energy scheme (irrespective of the size, location or nature) engage with the local community at an early stage, so that any benefits from collaboration can be explored from the outset and included within the development.

7.2.9 This can be achieved by contacting the Sustainability Team at Monmouthshire County Council on 01633 644417. The team are in touch with an extensive network of community groups and organisations, and have a database of community projects that could potentially benefit from collaboration.

7.2.10 Applicants for new standalone renewable energy projects are encouraged, therefore, to carry out an engagement exercise with the local community prior to submitting their planning applications. The aim of the process should be to encourage discussion before a formal application is made and therefore to avoid unnecessary objections being made at a later stage. Such consultation could take the form of public meetings / exhibitions and mail shots to residents living near to an application site. This would provide an opportunity to try and address any concerns raised by the local community prior to submission of the application. In addition, criterion 4 of Policy SD1 also states that renewable energy schemes will be permitted where wider environmental, economic, social and community benefits directly related to the scheme outweigh any potential adverse impacts. Early community engagement provides an opportunity to explore the possibilities for achieving such benefits, as discussed above.

Appendix 1: Glossary

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A	
Anemometry Mast	A mast used to measure wind speed and direction at a particular location.
Article 4 Direction	Article 4 Directions are issued by the Council in circumstances where specific control over development is required, primarily where the character of an area of acknowledged importance would be threatened by home owners installing extensions or works outside of the Planners Control.
AONB	Area of Outstanding Natural Beauty.
C	
Cadw	Cadw is the Welsh Government's historic environment service, working for an accessible and well-protected historic environment for Wales.
CHP (combined heat and power)	CHP is the process whereby the otherwise waste heat produced when fuel is burnt in a gas engine, turbine or steam boiler to generate electricity is captured and used beneficially.
Curtilage	The land immediately surrounding a house or dwelling, including gardens and any closely associated buildings and structures, but excluding any associated `open fields beyond` which may be in the same ownership.
Conservation Area	An area of special architectural or historic interest, the character or appearance of which it is desirable to preserve or enhance.
D	
Design Statement / Design and Access Statement (DAS)	A design statement or Design and Access Statement is a report that sets out, illustrates and justifies the process that has led to the development proposals. It is submitted to accompany certain types of planning applications such as Major Development, Listed Buildings and new dwellings/buildings with a floor space of over 100m^2 located in Conservation Areas.
F	
Feasibility Assessment	An investigation into the technical and commercial/economic feasibility of proposed renewable energy schemes, low carbon technologies and energy efficiency measures.
Feathering Blades	The capacity of a wind turbine to turn its blades so as not to collect wind energy as a protection measure in damagingly high winds or during maintenance.
Feedstock	Fuel entering a process, usually refers to solid fuels.
Flue	A chimney, duct or pipe for conveying exhaust gases from boiler systems.
G	
Gate Fee	The price paid to dispose of waste into a suitable facility.
L	
Listed Building	A building or structure placed on the statutory list of buildings of special architectural or historic interest.
Low Carbon Energy	Highly efficient energy generation compared with standard energy generation techniques. One example is CHP, where the heat produced as part of the process to generate electricity is captured and used (unlike in traditional power stations where it is discarded). Another example is a heat pump, where electrical energy is used to boost thermal energy captured from the air, grounds or water such that for every unit of electrical energy used between 2.5 and 4 units of thermal energy are produced.
N	
NRW	Natural Resources Wales
M	
Major Development	Residential development of over 10 dwellings or 0.5ha. Non-residential development of 1ha (for outline) or floor space over 1000m^2.
MCS	Microgeneration certification scheme.

P	
Parasitic Load	The energy (usually electricity) used within an electricity generation plant that leads to a reduction in exported energy.
Permitted Development	This is the name given to specific minor developments which do not require planning permission as set out in legislation.
Plume	The moisture emitted from a flue or chimney. This is often mistaken as smoke by merely comprises water vapour. It is a particular feature when fuels such as biomass are burnt.
R	
Rankine Cycle	The Rankine Cycle is a thermodynamic cycle which converts heat into work, usually by heating water to raise steam for expansion through a turbine to generate electricity.
Renewable Energy	Energy provided from a renewable source i.e. that which is replaced on a short timescale compared with fossil fuels. Examples include directly harnessed energy as from the wind, sun or hydro sources or those from crops including trees such as biomass. Renewable energy is also known as Zero Carbon Energy.
S	
SAM	Scheduled Ancient Monument.
SSSI	Site of Special Scientific Interest.
Z	
Zero Carbon Energy	Energy that leads to a net zero emission of CO_2. Examples include directly harnessed energy from the wind, sun or hydro sources. Energy sources that emit CO_2 can also be zero carbon, where they effectively recycle carbon recently removed from the atmosphere such as in the production of biomass. Here, as these fuels lead to a displacement of emissions from fossil fuels, they are considered as zero carbon. Zero carbon energy is also known as renewable energy.

Appendix 2: Climate Change Policy

Appendix 2: Climate Change Policy

National Policy

The UK has made binding international commitments to reduce greenhouse gas emissions and we are also subject to EU regulation in this area. The UK has passed legislation which introduced the world's first legally binding targets to reduce carbon emissions through the 2008 Climate Change Act. This sets ambitious targets for reducing UK greenhouse gas emissions by 80% (relative to 1990 levels) by 2050. It also assumes powers to help achieve them, strengthening the institutional framework, enhancing the UK's ability to adapt to the impact of climate change and establishing clear and regular accountability to the UK, Parliament and devolved legislatures.

To help achieve this, a carbon budgeting system has been set in law which caps emissions over a 5 year period. Information on these, the current carbon budget level and the latest Carbon Plan that describes how the budget will be met can be found at:
http://www.decc.gov.uk/en/content/cms/emissions/carbon_budgets/carbon_budgets.aspx .

The Welsh Government has set out its own commitment to reduction of greenhouse gas emissions in two main areas, climate change strategy:
http://wales.gov.uk/topics/environmentcountryside/climatechange/publications/firstprogressreport/?lang=en and low carbon energy:
http://gov.wales/topics/environmentcountryside/energy/difference/?lang=en .

One result of these reforms has been the establishment of more support mechanisms for low and zero carbon energy supply. One area of support is the UK Government's Renewable Energy Policy to increase the proportion of renewable energy that we use. Mechanisms in this are the Renewables Obligation (for 5MW plus schemes), Feed-in Tariff (for schemes below 5MW) and Renewable Heat Incentive.

Of these, the Renewables Obligation is designed to stimulate investment to deliver the Climate Change Act targets, while the Feed-in Tariffs and Renewable Heat Incentive are cash limited schemes that are designed to stimulate the initial uptake of technologies. As such, they can apply from small householder scale schemes to schemes for large developments. As a result, the nature and level of support is subject to regular review and will change. The latest information on renewable energy policy and these schemes can be found at:
http://www.decc.gov.uk/en/content/cms/meeting_energy/renewable_ener/renewable_ener.aspx

Details of the Renewables Obligation and the latest support rates can be found at:
https://www.gov.uk/government/policies/increasing-the-use-of-low-carbon-technologies/supporting-pages/the-renewables-obligation-ro

The Welsh Government has set out its commitments to moving towards low carbon energy solutions. Whilst recognising that energy policy as such is set at the UK Government level, the Welsh Government has the opportunity to use enabling policy areas to help achieve a transition to a low carbon energy policy. Details of proposals from the Welsh Government to use policy to support its low carbon aims are set out in the document 'Energy Wales: A New Carbon Transition' and can be found at:

http://wales.gov.uk/docs/desh/publications/120314energywalesen.pdf

The Welsh Government have consulted on an Energy Efficiency Strategy for Wales which will be of particular importance once finalised.

The UK Government has signalled its intention to significantly reduce energy use in buildings as an important element in its climate change strategy and its approach to securing energy supplies in the future. The minimum energy efficiency requirements in Part L of the Building Regulations are one of the mechanisms through which these reductions are to be achieved.

Since the end of 2011, the Welsh Government has assumed the powers to set Welsh Building Regulations, with the stated intention of improving the energy performance of new housing. The latest information on these regulations can be found at:

http://gov.wales/topics/planning/buildingregs/?lang=en

Monmouthshire's Climate Change and Sustainable Energy Strategy

In 2008 Monmouthshire County Council adopted a climate change and sustainable energy strategy which can be found here:

http://www.monmouthshire.gov.uk/home/for-businesses/advice-and-legislation/environmental-health-and-pollution/sustainable-development/

The objective of this strategy is to reduce carbon dioxide emissions across Monmouthshire through energy efficiency, raising awareness of the issue of climate change and promoting renewable energy sources where appropriate.

Further work supporting the implementation of the strategy has been carried out in the form of two studies. These are the Monmouthshire Renewable Energy and Energy Efficiency Study undertaken in 2010 by Camco and CDN planning and a subsequent addendum to the study completed in 2012. These documents provide valuable reference material in addition to this SPG, in that they give a commentary on energy supply in Monmouthshire such as the extent of the gas grid, County wide energy demand and consideration of fuel poverty issues.

These 'Camco' studies included some useful high level assessment of renewable energy resources within the County, along with the identification of constraints to these resources becoming available. The reports include some mapping analysis of where the renewable energy resources are thought to exist. This is important, as this SPG is developed on the assumption that proposed energy projects are technically and commercially viable and deal only with the resulting planning issues.

The Monmouthshire Local Service Board has also been working with the Kafka Brigade to identify ways to reduce the barriers to micro-renewable energy generation in Monmouthshire and the Brecon Beacons National Park (BBNP). The work brought together a team of people from Monmouthshire County Council (MCC), BBNP, Countryside Council for Wales (CCW), Environment Agency Wales (EAW), Welsh Government (WG) and related organisations. A collective performance review identified ways in which the organisations could work more efficiently together to improve delivery of micro-regeneration projects. One of these areas was to streamline permissions processes (including planning permissions) across the different agencies, and increase understanding and communication between agencies.

Appendix 3: National Planning Policy

Appendix 3: National Planning Policy

Planning Policy Wales (PPW) provides the framework within which local authorities in Wales develop their LDPs.

Section 12 of PPW focuses on energy with the responsibility for all onshore energy development proposals for less than 50 megawatts falling to local authorities in Wales. It makes clear that, in planning policy terms, renewable energy refers to all sources of energy which are continuously and sustainably available whilst low carbon energy covers technologies that are energy efficient. It also makes clear the Welsh Government's commitment to using the planning system to optimise renewable and low carbon energy, whilst also taking into account other issues such as statutory obligations towards protecting designated areas. PPW is updated periodically and the current edition can be found here:

http://wales.gov.uk/topics/planning/policy/ppw/?lang=en

PPW is supported by a series of Technical Advice Notes (TANs) providing further guidance on particular topics. Several TANs are relevant to policies SD1 and SD2 of the Monmouthshire LDP with two of particular relevance highlighted here.

TAN8 (2005) on 'Planning for Renewable Energy' remains relevant although parts have now been superseded by changes to Section 12 of PPW. TAN 8 can be found here:

http://wales.gov.uk/topics/planning/policy/tans/tan8/;jsessionid=qnnQP6TZDgh0YwQlnJSJ0G1bywFxn7QDyhhGnS7n8GsXvFX54HLs!1858592419?lang=en

In addition, a letter setting out PPW changes superseding parts of TAN 8 is set out here:

http://wales.gov.uk/docs/desh/publications/110228ppw4letteren.pdf

TAN 12 (2016) provides guidance on design. TAN 12 makes reference to environmental sustainability and, within that, energy efficiency and carbon reduction. It includes discussion around development layout and approaches within design, together with consideration of built form and fenestration as other factors that can affect environmental sustainability. It also usefully discusses Design and Access Statements (DAS), making clear that environmental sustainability needs to be covered within the DAS. The requirement for a DAS could apply to a number of planning applications incorporating renewable energy and energy efficiency. TAN 12 can be found here:

http://wales.gov.uk/topics/planning/policy/tans/tan12/?lang=en

In addition to this the Welsh Government has produced practice guidance specifically relating to making the most of renewable and low carbon technologies in the design process in Planning Implications of Renewable and Low Carbon Energy (February 2011):

http://wales.gov.uk/docs/desh/publications/110228planimplicationsen.pdf

Practice Guidance has also been produced in relation to integrating sustainable building design principles into proposals in Planning for Sustainable Buildings (July 2014): **http://gov.wales/docs/desh/publications/150311practice-guidance-planning-for-sustainable-buildings-en.pdf**

Monmouthshire Renewable Energy and Energy Efficiency SPG

Appendix 4: Predicting the Energy Demand of a New Development

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Appendix 4: Predicting the Energy Demand of a New Development

How is Energy Measured?

Before looking at energy demand assessment it is useful to consider how energy generation plant is sized and what this means in terms of its energy output.

Energy is measured most commonly in watts. As with normal conventions on metric units, 1,000 watts = 1 kilowatt (kW), 1,000kW = 1 megawatt (MW) and 1,000 MW = 1 gigawatt (GW) and so on.

When domestic energy is traded, this is done kilowatt hours (kWh). This means that if a piece of equipment with a demand of 1kW is connected to the electricity supply for 1h, then it will consume 1kWh. If the energy demand is for heat, then kWh is also the standard unit of consumption. Normal convention is that where both heat and electricity are being considered in the same document that to differentiate between the two, a kWh of electricity is denoted as kWh_e and a kWh of heat as kWh_{th}.

Larger commercial consumption is sometimes measured and traded in MWh.

In the case of electrical generation, the size of the generation plant is quoted as its instantaneous generation capacity. For instance a hydroelectric generator may be rated at 100kWe, which means that for each hour that it operates at maximum output it produces 100kWh of electricity.

The number of hours that a generation plant can physically operate is dictated by a number of factors. If an energy generation plant can operate for 24hours per day and 365days per year, then it will generate for 8760hours per year. The actual 'availability' of any energy generation plant is usually expressed as a % of this maximum (see in the table below).

So called 'baseload' generators can (in theory) operate continuously and so can come close to maximum availability. Examples are those technologies such as biomass that burn a fuel. In this case, providing that a constant supply of biomass is available the plant can operate 24h per day, 365 days per year, giving 8760h of output. In practice, baseload plant are normally taken out of service for a period of time during the year for maintenance giving a typical maximum 'availability' in the region of 90 to 98% of the year. In the case of intermittent technologies such as wind the output is dictated by the availability of wind energy. Here, most wind energy projects are based on an estimated availability which can be as low as 25%. In other words, generation is only expected for 25% of the year or 8760 x 0.35 = 2190h/y. This lower availability is factored in to project economic appraisals.

This means that different technologies require different sizes of generation plant to satisfy a given demand. For instance, a 5MWe biomass plant operating at 95% availability will generate 5MWe x (8760 x 0.95)h = 41610 MWh per year. Assuming an availability of 35%, a wind development would have to comprise over 13.5MW of turbine capacity to generate the same output.

For this reason, both the generation capacity and the intermittency (availability) of a renewable energy technology are important in technology selection, as is the location of intermittent technology. For instance, if the wind energy example given above were in an exposed location such that the availability increased to 50%, then the required turbine capacity will fall to 9.5MW. To put these figures into context, in 2011, Ofgem estimated that an average household consumed 3,300 kWh of electrical energy and 16,500 kWh of thermal energy every year.

The table below shows the indicative impact of scale and availability in terms of average households supplied from various renewable energy technologies based on generalised plant sizes and availabilities. It is for illustration only. More detailed energy yield calculations will require more detailed site-based assessment. The Households served column shows the overall households served. The final column shows the households served per megawatt of technology (households served divided by typical project size). This shows that for example wind development gives a lower output per megawatt than Anaerobic Digestion does.

Technology	Typical Project Size (MW)	Typical Availability (%)	Annual projected output (MWh)	Households Served*	Households served/MW
Anaerobic Digestion	1	85	7446	2256	2256
Biomass power	5	95	41610	12609	2522
Energy from waste	30	90	236520	71673	2389
Hydroelectricity	0.1	99	867.24	263	2628
Solar PV	0.000357	48	1.5	0.45	1274
Wind (large scale)	2	35	6132	1858	929
Wind (Medium scale)	0.1	35	306.6	93	929

*calculation based on MWh x 3,300Kwh (average consumption of electrical energy per household)

Tools for Use in Assessing Energy Needs

It is important that an Assessment of Energy Needs is made for any scale of installation, be it for an individual householder scheme or a large residential or industrial development. Whoever is designing the buildings that will comprise the new development should be able to provide information on the predicted energy demand of the development.

In addition, the following signposts some tools to help in assessing energy needs.

The Standard Assessment Procedure (SAP) is DECC's methodology for assessing and comparing the energy and environmental performance of dwellings. Its purpose is to provide accurate and reliable assessments of dwelling energy performances that are needed to underpin energy and environmental policy initiatives. More information on SAP can be found at:

http://www.decc.gov.uk/en/content/cms/emissions/sap/sap.aspx

A different procedure called the Simplified Building Energy Model (SBEM) is used for non-domestic buildings. It was developed by the Building Research Establishment (BRE) in support of the National

Calculation Methodology (NCM) and the Energy Performance of Buildings Directive (EPBD). The model is described in detail at:

http://www.bre.co.uk/page.jsp?id=706

In addition, householders or builders of single dwellings can get additional information from the Energy Saving Trust (EST). For instance, the EST Home Energy Check tool may be of use to predict carbon emissions from a proposed building design and may be of to help to identify low carbon or renewable energy technology options. This can be found at:

http://www.energysavingtrust.org.uk/Insulation/Home-Energy-Check

Monmouthshire Renewable Energy and Energy Efficiency SPG

Appendix 5: Contribution of LZC Technologies to Reduction in Greenhouse Gas Emissions

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Appendix 5: Contribution of LZC Technologies to Reduction in Greenhouse Gas Emissions

The contribution of each renewable and low carbon energy technology is linked to the amount of fossil energy it displaces and the nature of that fossil energy. This is because the carbon content of different input fuels varies. This is shown in **the table below**, which is reproduced from the Carbon Trust and was published in August 2011.

Carbon Content of Fossil Fuels (as published in August 2011, Carbon Trust)

Fuel	kg CO_2/kWh
Grid electricity	0.5246
Natural gas	0.1836
LPG	0.2147
Fuel oil	0.2674
Burning oil	0.2468
Industrial coal	0.3325

In the case of electricity, its carbon content is dictated by the fuel that it is generated from. The carbon content of grid supplied electricity is subject to change as the mix of generation technologies changes. For instance the move from coal to gas fired power stations leads to a reduction in carbon content, but on the other hand the retirement of nuclear generation leads to an increase. DECC regularly updates the carbon content of grid supplied electricity.

In terms of the individual technologies, heat pumps use electrical energy to drive them. As in round terms, the carbon content of grid electricity is about three times higher than gas, then coefficient of performance or COP (which describes the amount of energy produced relative to the input energy supplied) of the heat pump must be three or more in order to achieve a net reduction in carbon emissions compared with using a high efficiency gas boiler. The required COP of systems replacing oil needs to be lower in order to achieve a carbon benefit.

In the case of fossil gas CHP, the carbon performance of the scheme is related to the efficiency of input gas conversion to electricity, the efficiency of heat capture and the amount of captured heat that is used beneficially. Poorly sized CHP, where there is excess heat produced which is wasted, has reduced carbon (and cost) efficiency compared to a scheme where all of the heat is used.

Renewable technologies are all zero carbon, even those burning a renewable fuel such as biomass. Here, the carbon in the biomass fuel was removed from the atmosphere when the fuel was grown. When used to displace fossil fuel, it prevents new carbon entering the atmosphere leading to a reduction in carbon emissions.

If required to produce carbon efficiency calculations associated with new developments, the Energy Saving Trust Wales has tools to help with this and these use a range of standard input data. These can be found at: **http://www.energysavingtrust.org.uk/corporate/our-calculations** .

Appendix 6: Circumstances When Planning Permission and Listed Building Consent is Not Required

Appendix 6: Circumstances When Planning Permission and Listed Building Consent is Not Required

Table A1: The Need for Planning Permission and Listed Building Consent on Houses and Flats

Technology	Permitted Development	Comments
Solar Photovoltaic	Under 50 kW	Planning permission is not required to install panels on the roof or walls of a house or flat[1] provided the panels do not project more than 200mm from the wall/roof and no part of the panels are higher than the highest part of the roof (excluding chimneys). On flat roofs, the equipment should not be less than 1m from the edge, and should not protrude more than 1m above the roof. Planning permission will still be required on Listed Buildings or Scheduled Ancient Monuments. In Conservation Areas, planning permission is needed if a panel is installed on a wall forming the main or side elevation of the house where it fronts a highway, or on the wall of any building within the curtilage of the house which fronts a highway. Equipment must be located so as to minimise effects on the building's external appearance and the amenity of the area and must be removed once it is no longer needed. Stand-alone solar panels will not require planning permission provided that: ▪ They are within the boundary of the house or flat. ▪ They are set back at least 5m from a highway. ▪ They are not more than 2m high within 5m of a boundary, or 4m elsewhere. ▪ Only one stand-alone solar array (group of panels) is permitted with a total area not more than 9m^2. The array must not exceed 3m in any dimension. ▪ The impact on the amenities of the area and the external appearance of the building must be minimised. ▪ All equipment must be removed if generation ceases. Listed Building Consent will be required for the installation of Solar Panels on roofs or walls on a Listed Building or on any object or structure which has been within the curtilage a Listed Building since 1948. It will not be required for stand-alone solar panels within gardens.
Solar Thermal	Under 45 kW	As above
Biomass heating flues	Under 45 kW	Flues that are part of the heating system do not require planning permission provided they do not go higher than 1m above the highest part of the roof. However on a Listed Building, or on a structure or object that has been within the curtilage of a Listed Building since 1948, they may require Listed Building Consent. Equipment installed internally in the house will not require planning permission, but it will require Listed Building Consent on a Listed Building or on any object or structure that has been within the curtilage of a Listed Building since 1948. In a Conservation Area, the flue will not require planning permission unless it is installed on a wall or roof slope forming the main or side house elevation which fronts a highway.
Combined Heat and Power flues	Under 45kW[2]	As above.

[1] A flat here means a flat within a building that is solely flats. A flat over a shop for example, would not have these same permitted development rights.

[2] Note that the Government's definition does not specifically cover CHP technologies which generate both heat and electricity. If 45kW of heat is generated, then the electrical generation capacity will be lower. If a CHP system generates 50kW of electricity, then the heat output would be higher than 45kW.

Technology	Permitted Development	Comments
Water and Ground Source Heat Pumps	Under 45kW	These do not require planning permission within the boundary of a house/flat. However they may require Listed Building Consent on a Listed Building or on any object/structure that has been within the curtilage of a Listed Building since 1948.
Air Source Heat pumps	Under 45kW	Planning permission is not required to install these on a house, within the curtilage of the house, or on another building within the curtilage provided that: ▪ The heat pump complies with the MCS (Microgeneration certification scheme) planning standards or equivalent standards. ▪ There are no other air source heat pumps or stand-alone wind turbines already at the property. ▪ The volume of the pumps outdoor compressor unit (including housing) does not exceed 1 cubic metre. ▪ The pump is more than 3 metres from the house boundary. ▪ The pump is not on a wall or roof which fronts a highway. ▪ The pump is not on a pitched roof. ▪ The pump is not within 1m of the edge of a flat roof. The pump must be used solely for heating purposes and sited so as to minimise effects on the external appearance of the building and the amenity of the area. The pump must be removed if generation ceases. Planning permission will be required on a Listed Building or a scheduled Ancient Monument. Listed Building Consent may also be required on a Listed Building or on any object or structure that is located within the curtilage of a Listed Building.
Standalone wind turbines	Under 50kW	Planning permission is not required provided that: ▪ The turbine complies with the MCS (Microgeneration certification scheme) planning standards or equivalent standards[3]. ▪ There are no other wind turbines or air source heat pumps already at the property. ▪ The turbine is no more than 11.1 metres in height. ▪ The distance between ground level and the lowest part of any blade would be less than 5 metres. ▪ The turbine is located at a distance from the boundary which is at least as much as its height plus 10% (including blades but excluding guy lines). ▪ The swept area of the blades does not exceed 9.6 metres. Planning permission will be required at Listed Buildings, Scheduled Ancient Monuments, Safeguarded land, Areas of Outstanding Natural Beauty (AONB), World Heritage Sites or Sites of Special Scientific Interest (SSSI). In a Conservation Area planning permission will be required if the turbine is visible from a highway which bounds the property. Listed Building Consent will not be required where turbines are not attached to a building. In addition, the blades must be made of non-reflective materials, and be sited so as to minimise effects on the amenity of the area. When no longer needed, the turbine must be removed.
Temporary anemometry mast (to measure wind speeds)		Planning permission is not required provided that: ▪ There are no other anemometry masts, wind turbines or air source heat pumps already at the property. ▪ The mast is no more than 11.1 metres in height. ▪ The mast is located at a distance from the boundary which is at least as much as its height plus 10% (including blades but excluding guy lines). Proposals will require planning permission within the curtilage of Listed Buildings, Scheduled Ancient Monuments, on safeguarded land, within AONB, World Heritage Sites or SSSI. In a Conservation Area planning permission will be required if the mast is visible from a highway which bounds the property.

[3] www.microgenerationcertification.org/admin/documents/MCS%20020%20Planning%20Standards%20Issue%201.0.pdf

Technology	Permitted Development	Comments
		Planning permission is also required if an anemometry mast has been installed at the property within the last 5 years. The mast must be sited to minimise its effects on the amenity of the area. The developer must notify Monmouthshire County Council in writing of the development and its location within 7 days of installing the mast. The mast must be removed after 12 months. Listed Building Consent will not be required.

Table A2: The need for planning permission and Listed Building Consent for Non-Domestic Premises

Technology	Permitted Development	Comments
Solar Photovoltaic or Solar thermal panels on a building	Under 50 kW	Planning permission is not required to install panels on the pitched roof or walls of a non-domestic building subject to the following conditions: ▪ The panels do not project more than 20cm from the plane of the wall/roof (when measured from the perpendicular with the external wall/roof slope surface). ▪ On a flat roof, the panels should not protrude more than 1 metre above the roof. ▪ The equipment should be more than 1m from the edge of the roof. ▪ On walls, the equipment should be more than 1 metre from the junction of the wall with another wall or with the roof. ▪ On article 1(5) land[4] and at World Heritage Sites, the equipment should not be installed on a wall or roof slope which fronts a highway. Planning permission will still be required on Listed Buildings or Scheduled Ancient Monuments. Listed Building Consent will be required for the installation of solar panels on roofs or walls on a Listed Building or on any object or structure which has been within the curtilage a Listed Building since 1948. Equipment must be located so as to minimise effects on the building's external appearance and the amenity of the area and must be removed once it is no longer needed.
Standalone solar	Under 45 kW	The installation, alteration or replacement of stand-alone solar panels within the curtilage of a building will not require planning permission provided that: ▪ This would mean there was more than one stand-alone solar installation at the property. ▪ The equipment is not more than 4m in height. ▪ On article 1(5) land or within a World Heritage Site the equipment should not be visible from the highway. ▪ They are set back at least 5m from the boundary. ▪ The surface area of the solar panels should not be more than $9m^2$. ▪ The array must not exceed 3m in any dimension. Planning permission will still be required on Listed Buildings or Scheduled Ancient Monuments. Listed Building Consent will not be required for stand-alone solar panels within the curtilage of the building. Equipment must be located so as to minimise effects on the amenity of the area and must be removed once it is no longer needed.
Biomass heating flues	Under 45 kW	Flues that are part of the heating system can be installed, altered or replaced on a non-domestic building or on a building situated within the curtilage of a house or block of flats without planning permission provided that: ▪ The capacity of the system does not exceed 45KW thermal. ▪ The height of the flue is not more than 1m above the highest part of the roof, or higher than an existing flue which is being replaced (whichever is the highest). ▪ There would not be more than one flue on the same building for either Biomass or CHP. ▪ On article 1(5) land or within a World Heritage Site the equipment should not be installed on a wall or roof slope which fronts a highway. Planning permission will still be required for a flue on a Listed Building or within its curtilage, or at a Scheduled Ancient Monument. On a Listed Building, or on

[4] National Parks, Areas of Outstanding Natural Beauty (AONB), Conservation Areas and areas specified under section 41(3) of the Wildlife and Countryside Act 1981 (enhancement and protection of the natural beauty and amenity of the countryside)

Technology	Permitted Development	Comments
		a structure or object that has been within the curtilage of a Listed Building since 1948, flues will require Listed Building Consent. Equipment installed internally in the building will not require planning permission, but it may require Listed Building Consent on a Listed Building or on any object or structure that has been within the curtilage of a Listed Building since 1948.
Combined Heat and Power flues	Under 45kW[5]	Flues that are part of the heating system can be installed, altered or replaced without planning permission on a non-domestic building or on a building situated within the curtilage of a house or block of flats provided that: ▪ The capacity of the system does not exceed 45KW thermal. ▪ The height of the flue is not more than 1m above the highest part of the roof, or higher than an existing flue which is being replaced (whichever is the highest). ▪ There would not be more than one flue on the same building for either Biomass or CHP. ▪ On article 1(5) land or within a World Heritage Site the equipment should not be installed on a wall or roof slope which fronts a highway. Planning permission will still be required for a flue on a Listed Building or within its curtilage, or at a Scheduled Ancient Monument. On a Listed Building, or on a structure or object that has been within the curtilage of a Listed Building since 1948, flues will require Listed Building Consent. Equipment installed internally in the building will not require planning permission, but it may require Listed Building Consent on a Listed Building or on any object or structure that has been within the curtilage of a Listed Building since 1948.
Ground Source Heat Pumps	Under 45kW	Planning permission is not required to install a ground source heat pump within the curtilage of a building provided that: ▪ This would not result in more than one ground source heat pump at the property. ▪ The area of land excavated to accommodate the pump is not more than 0.5 hectares. Planning permission will still be required on Listed Buildings or Scheduled Ancient Monuments. When the equipment has been installed, the land must be restored to its condition before the development took place, or to a condition agreed in writing with the Council. Equipment must be removed once it is no longer needed, and the land restored to the condition it was in before the pump was installed, or to a condition agreed in writing with the Council. Listed Building Consent may be required to install a heat pump on a Listed Building or on any object/structure that has been within the curtilage of a Listed Building since 1948.
Water Source Heat Pumps	Under 45kW	Planning permission is not required to install a water source heat pump within the curtilage of a building provided that The total area covered by the pump (including pipes) is not more than 0.5 hectares. Listed Building Consent may be required to install a heat pump on a Listed Building or on any object/structure that has been within the curtilage of a Listed Building since 1948.

[5] Note that the Government's definition does not specifically cover CHP technologies which generate both heat and electricity. If 45kW of heat is generated, then the electrical generation capacity will be lower. If a CHP system generates 50kW of electricity, then the heat output would be higher than 45kW.

Appendix 7: Additional Consents That May Be Required

Appendix 7: Additional Consents That May Be Required

Tree Preservation Order (TPO) Permission

This will be needed if the development involves pruning or felling a tree covered by a TPO. You can find out whether trees on your premises or site are protected by a TPO by contacting the Council's tree officer at: 01633 644 850 or countryside@monmouthshire.gov.uk. Information on Tree Preservation Orders and a link to download TPO consent forms can be found here: **http://www.monmouthshire.gov.uk/protecting-trees-and-hedges**

Conservation Areas

In a Conservation Area, you must also give the Council 6 weeks' notice in writing (by email or letter) of your intention to carry out any works to trees. You can also use the above contact details to inform the Council about intended works to trees in a Conservation Area

Natural Resources Wales (NRW)

NRW is identified as a statutory consultee under various legislation which relate to development planning. One of NRW's roles is to provide advice on the potential impact of development proposals on Wales's natural resources and environment. NRW encourages potential applicants to contact them before submitting a planning application to discuss proposed development and any potential issues that may need addressed. NRW can also provide advice on any other relevant permits, consents and licences that may be required from them. It is advisable to discuss these other requirements with NRW at the earliest opportunity so they can be parallel tracked with any planning permission required.

Further details on permits, consents and licences NRW issue can be found at **http://naturalresources.wales/splash?orig=/ .**

Hydropower

The following NRW page sets out their role in permitting hydropower schemes and gives some useful information on developing your hydropower scheme: **http://naturalresources.wales/apply-for-a-permit/water-abstraction-licences-and-impoundment-licences/hydropower/before-you-apply/?lang=en**

Forestry Commission Wales

Natural Resources Wales has taken over functions previously carried out by Forestry Commission Wales issues licences for felling trees in woodland. It is an offence to fell trees without a licence if an exemption does not apply. This may be needed if you proposed to fell trees for feedstock's for Biomass.

Further information can be found at **https://www.naturalresourceswales.gov.uk/forestry/tree-felling-and-other-regulations/tree-felling-licences/?lang=en**

Cadw

Cadw are responsible for granting Scheduled Ancient Monument (SAM) Consent in Wales. Consent is required for works which might affect a SAM including demolition, destruction, removal or repair, alteration, addition, flooding or tipping. Further information can be found at: **http://cadw.wales.gov.uk/docs/cadw/publications/Scheduled_Monument_Consent_EN.pdf**

Building Regulations Approval

This is required to construct new buildings and is often also needed to make alterations to existing buildings. This means that it may still be required for energy efficiency measures when planning permission is not necessary. This document does not address the building control requirements, and you are advised to contact the building control department for more information at **buildingcontrol@monmouthshire.gov.uk** or by telephone on: **01633 644833**.

Appendix 8: Designations That Affect How a Proposal Will Be Assessed

Appendix 8: Designations That Affect How a Proposal Will Be Assessed

Parts of Monmouthshire have been designated as being particularly important in terms of heritage, landscape and biodiversity. Different sections of this SPG refer to the need to check whether your property benefits from any kind of designation. This section gives a summary of those designations, and where you can go to check this information.

Heritage Designations

Information relating to the historic environment in Monmouthshire can be found here:

http://www.monmouthshire.gov.uk/planning

You can check whether your property is a Listed Building, within the site of a Scheduled Ancient Monument, within a Conservation Area or part of a site on the register of landscapes, parks and gardens of historic interest, by calling the Heritage team on: 01633 644 880 or emailing heritage@monmouthshire.gov.uk. A list of Conservation Areas, with maps and boundaries, can be found in the LDP:

http://www.monmouthshire.gov.uk/planning-policy/monmouthshire-local-development-plan-2/monmouthshire-local-development-plan

Archaeologically Sensitive Areas (ASA's) have also been identified in Monmouthshire. These are areas where there is a known archaeological resource and sites may be particularly sensitive to development pressure. The location of ASA's can also be obtained from the LDP (link above)

Landscape Designations

There are both Statutory and non-statutory landscape designations in and adjacent to Monmouthshire. PPW Chapter 5 explains statutory and non-statutory designations. Statutory designations include:

- The Blaenavon World Heritage Site;
- The Brecon Beacons National Park; and
- The Wye Valley Area of Outstanding Natural Beauty (AONB).

The Brecon Beacons National Park Authority is the planning authority for the National Park itself. However Monmouthshire County Council will consider the presence of the National Park in assessing proposals close to or impacting on the Park. The LDP Countywide Constraints Map shows the location of the National Park and AONB:

http://www.monmouthshire.gov.uk/app/uploads/2015/07/W-CONSTRAINTS-MAP-14v2.pdf

Non-Statutory designations include the following:

- Historic Parks and Gardens;

- Landscapes of Outstanding or High Historic Interest;
- Conservation Areas;
- Coastal Protection Zone; and
- Green Wedge.

Other designations that should be considered in relation to landscape issues are listed on the Monmouthshire landscape and development checklist: **http://www.monmouthshire.gov.uk/wp-content/uploads/2013/06/landscape-and-development-checklist-mcc-2013.pdf**

Safeguarded Land

Paragraph 13 of Minerals Planning Policy Wales (MPPW) requires that access to mineral deposits which society may need in the future should be safeguarded – i.e. protected from development that would either sterilize them or hinder future extraction. Policy M2 safeguards sand, gravel and limestone deposits, and the LDP proposals map identifies parts of Monmouthshire that are identified as safeguarded land. To check whether your property / site is included contact the planning policy team on 01633 644429 or by email on: planningpolicy@monmouthshire.gov.uk.

For more information on landscape designations contact the green infrastructure and countryside team at: 01633 644 850 or by email at countryside@monmouthshire.gov.uk.

Ecological Designations

Sites of Special Scientific Interest (SSSI) Special Areas of Conservation (SAC's) and other designated ecological areas can be found on the NRW website: **https://naturalresources.wales/our-evidence-and-reports/maps/map-of-special-sites-and-protected-areas-of-land-and-seas/?lang=en** . Monmouthshire includes one area which benefits from European and other international designations. The Severn Estuary is an SPA (Special Protection Area) and a Ramsar site, as well as being an SAC.

Appendix 9: Energy Fact Sheets

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