Neuadd y Sir
Y Rhadyr
Brynbuga
NP15 1GA

County Hall
Rhadyr
Usk
NP15 1GA

Tuesday, 1 March 2016

Dear Councillor

INDIVIDUAL CABINET MEMBER DECISIONS

Notice is hereby given that the following decisions made by a member of the cabinet will be made on Wednesday, 9 March 2016.

1. **APPLICATION FOR FLEXIBLE RETIREMENT** 1 - 10

Division/Wards Affected: All Wards
CABINET MEMBER: County Councillor P Murphy

PURPOSE:
To approve a request for flexible retirement from the Private Sector Housing Manager. The request supports the Housing & Communities Cabinet project mandate.

REPORT AUTHOR: Ian Bakewell, Housing & Communities Manager

CONTACT DETAILS:
Tel: 01633 644479
E-mail: ianbakewell@monmouthshire.gov.uk

2. **MONMOUTHSHIRE LOCAL DEVELOPMENT PLAN RENEWABLE ENERGY AND ENERGY EFFICIENCY SUPPLEMENTARY PLANNING GUIDANCE** 11 - 278

Division/Wards Affected: All Wards
CABINET MEMBER: County Councillor P Murphy

PURPOSE: The purpose of this report is:

To advise the Cabinet Member of the results of the consultation on Draft Supplementary Planning Guidance (SPG) on Renewable Energy and Energy Efficiency (REEE) to support the policies of the Monmouthshire Local Development Plan (LDP) and a Draft Planning Advice Note on Wind Turbine Development: Landscape and Visual Impact Assessment (LVIA) Requirements.

To seek the Cabinet Member's agreement to formally adopt the SPG

and Planning Advice Note.

REPORT AUTHOR: Martin Davies (Planning Policy Manager)

CONTACT DETAILS:
Tel: 01633 644826
E-Mail: martindavies@monmouthshire.gov.uk

Yours sincerely,

Paul Matthews
Chief Executive

monmouthshire
sir fynwy

CABINET PORTFOLIOS

County Councillor	Area of Responsibility	Partnership and External Working	Ward
P.A. Fox (Leader)	**Organisational Development** Whole Council Performance, Whole Council Strategy Development, Corporate Services, Democracy. **Environment, Public Services & Housing** Development Control, Building Control, Housing Service, Trading Standards, Public Protection, Environment & Countryside.	WLGA Council WLGA Coordinating Board Local Service Board SEWTA SEWSPG	Portskewett
R.J.W. Greenland (Deputy Leader)	**Innovation, Enterprise & Leisure** Innovation Agenda, Economic Development, Tourism, Social Enterprise, Leisure, Libraries & Culture, Information Technology, Information Systems.	WLGA Council Capital Region Tourism	Devauden
P.A.D. Hobson (Deputy Leader)	**Community Development** Community Planning/Total Place, Equalities, Area Working, Citizen Engagement, Public Relations, Sustainability, Parks & Open Spaces, Community Safety.	Community Safety Partnership Equalities and Diversity Group	Larkfield
E.J. Hacket Pain	**Schools and Learning** School Improvement, Pre-School Learning, Additional Learning Needs, Children's Disabilities, Families First, Youth Service, Adult Education.	Joint Education Group (EAS) WJEC	Wyesham
G. Burrows	**Social Care, Safeguarding & Health** Adult Social Services including Integrated services, Learning disabilities, Mental Health. Children's Services including Safeguarding, Looked after Children, Youth Offending. Health and Wellbeing.	Gwent Frailty Board Older Persons Strategy Partnership Group	Mitchel Troy
P. Murphy	**Resources** Accountancy, Internal Audit, Estates & Property Services, Procurement, Human Resources & Training, Health & Safety.	Prosiect Gwrydd Wales Purchasing Consortium	Caerwent
S.B. Jones	**County Operations** Highways, Transport, Traffic & Network Management, Waste & Recycling, Engineering, Landscapes, Flood Risk.	SEWTA Prosiect Gwyrdd	Goytre Fawr

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Sustainable and Resilient Communities

Outcomes we are working towards

Nobody Is Left Behind

- Older people are able to live their good life
- People have access to appropriate and affordable housing
- People have good access and mobility

People Are Confident, Capable and Involved

- People's lives are not affected by alcohol and drug misuse
- Families are supported
- People feel safe

Our County Thrives

- Business and enterprise
- People have access to practical and flexible learning
- People protect and enhance the environment

Our priorities

- Schools
- Protection of vulnerable people
- Supporting Business and Job Creation
- Maintaining locally accessible services

Our Values

- **Openness:** we aspire to be open and honest to develop trusting relationships.
- **Fairness:** we aspire to provide fair choice, opportunities and experiences and become an organisation built on mutual respect.
- **Flexibility:** we aspire to be flexible in our thinking and action to become an effective and efficient organisation.
- **Teamwork:** we aspire to work together to share our successes and failures by building on our strengths and supporting one another to achieve our goals.

Cymunedau Cynaliadwy a Chryf

Canlyniadau y gweithiwn i'w cyflawni

Neb yn cael ei adael ar ôl

- Gall pobl hŷn fyw bywyd da
- Pobl â mynediad i dai addas a fforddiadwy
- Pobl â mynediad a symudedd da

Pobl yn hyderus, galluog ac yn cymryd rhan

- Camddefnyddio alcohol a chyffuriau ddim yn effeithio ar fywydau pobl
- Teuluoedd yn cael eu cefnogi
- Pobl yn teimlo'n ddiogel

Ein sir yn ffynnu

- Busnes a menter
- Pobl â mynediad i ddysgu ymarferol a hyblyg
- Pobl yn diogelu ac yn cyfoethogi'r amgylchedd

Ein blaenoriaethau

- Ysgolion
- Diogelu pobl agored i niwed
- Cefnogi busnes a chreu swyddi
- Cynnal gwasanaethau sy'n hygyrch yn lleol

Ein gwerthoedd

- **Bod yn agored:** anelwn fod yn agored ac onest i ddatblygu perthnasoedd ymddiriedus
- **Tegwch:** anelwn ddarparu dewis teg, cyfleoedd a phrofiadau a dod yn sefydliad a adeiladwyd ar barch un at y llall.
- **Hyblygrwydd:** anelwn fod yn hyblyg yn ein syniadau a'n gweithredoedd i ddod yn sefydliad effeithlon ac effeithiol.
- **Gwaith tîm:** anelwn gydweithio i rannu ein llwyddiannau a'n methiannau drwy adeiladu ar ein cryfderau a chefnogi ein gilydd i gyflawni ein nodau.

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CYNGOR monmouthshire COUNTY COUNCIL sir fynwy

SCHEDULE 12A LOCAL GOVERNMENT ACT 1972
EXEMPTION FROM DISCLOSURE OF DOCUMENTS

REPORT: **Flexible Retirement Request**

AUTHOR : **Ian Bakewell, Housing & Communities Manager**

MEETING AND DATE: **Individual Cabinet Member Decision – 8th March 2016**

I have considered grounds for exemption of information contained in the report referred to above and make the following recommendation to the Proper Officer:-

Exemptions applying to the report:
Information relating to a particular individual as described in Paragraph 12 of Part 4 of Schedule 12A to the Local Government Act 1972.

Factors in favour of disclosure:
Openness & transparency in matters concerned with the public purse

Prejudice which would result if the information were disclosed:
Implied term of mutual trust and confidence in contract of employment.

My view on the public interest test is as follows:
Factors in favour of disclosure are outweighed by those against.

Recommended decision on exemption from disclosure:
Maintain exemption from publication in relation to the report

Date: 9th February 2016

Signed: Ian Bakewell

Post: Housing & Communities Manager

I accept/~~do not accept~~ the recommendation made above

Signed:

Date: 18 Feb 2016.

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SUBJECT:	**MONMOUTHSHIRE LOCAL DEVELOPMENT PLAN RENEWABLE ENERGY AND ENERGY EFFICIENCY SUPPLEMENTARY PLANNING GUIDANCE**
MEETING:	**INDIVIDUAL CABINET MEMBER**
DATE:	**9 MARCH 2016**
DIVISION/WARDS AFFECTED:	**ALL**

1. PURPOSE:

The purpose of this report is:

1.1 To advise the Cabinet Member of the results of the consultation on Draft Supplementary Planning Guidance (SPG) on Renewable Energy and Energy Efficiency (REEE) to support the policies of the Monmouthshire Local Development Plan (LDP) and a Draft Planning Advice Note on Wind Turbine Development: Landscape and Visual Impact Assessment (LVIA) Requirements.

1.2 To seek the Cabinet Member's agreement to formally adopt the SPG and Planning Advice Note.

2. RECOMMENDATIONS:

2.1 To formally adopt the Draft REEE SPG as SPG to support the Monmouthshire LDP.

2.2 To formally adopt the Draft Planning Advice Note on Wind Turbine Development: LVIA Requirements as an advice note to assist in the determination of planning applications for Wind Turbine Schemes.

3. KEY ISSUES:

3.1 Background

In 28 January 2015, the Cabinet Member for Environment, Public Services and Housing took the decision to issue the documents that are subject of this report for consultation. The original report is attached as **Appendix A**.

3.2 The consultation took place for a period of 6 weeks from Thursday 19th February 2015 to Thursday 2nd April 2015. A notice was placed in the Monmouthshire Free Press on 18 February 2015 and 348 individual notifications were sent out to:

- Specific (including Town and Community Councils), General and Other consultees, as identified in the LDP Community Involvement Scheme;
- Residents who were on the LDP consultation data base and had specifically requested to be notified of the SPGs;
- Agents/developers who work in the Council area.

3.3 8 replies were received in response to the consultation on the SPG. These have been split into 46 representations that are summarised, together with the suggested Council response, in the Report of Consultation provided as **Appendix B.** Generally, no significant objections were received and only minor amendments to the SPG documents have been necessary. It is considered, therefore, that the documents can be formally adopted as SPG to support the Monmouthshire LDP. An amended and updated SPG is attached as **Appendix C**. Energy Fact Sheets provided as supporting information in Appendix 9 of the SPG are attached as **Appendix D**.

3.4 No comments were received in relation to the Draft Planning Advice Note on Wind Turbine Development: LVIA Requirements. The document was subject to a regional consultation, however, the results of which are attached as **Appendix E**. The amended Advice Note is attached as **Appendix F**.

4. REASONS:

4.1 Under the Planning Act (2004) and associated Regulations, all local planning authorities are required to produce a LDP. The Monmouthshire LDP was adopted on 27 February 2014 and decisions on planning applications are now being taken in accordance with policies and proposals in the LDP. The REEE SPG provides further explanation and guidance on the way in which the relevant policies of the LDP will be implemented.

5. RESOURCE IMPLICATIONS:

5.1 Officer time and costs associated with the publication of the SPG document and Planning Advice Note. These will be within the existing Planning Policy budget and carried out by existing staff.

6. SUSTAINABLE DEVELOPMENT AND EQUALITY IMPLICATIONS:

6.1 These were considered in the report that was presented to the Cabinet Member on 28 January 2015 and which is attached as **Appendix A**.

6.2 A Future Generations Evaluation is attached.

7. CONSULTEES

- Head of Planning
- SLT
- Cabinet
- Planning Committee (1 March 2016)

8. BACKGROUND PAPERS:

- Monmouthshire Adopted LDP (February 2014)

9. AUTHOR & 10. CONTACT DETAILS:

Martin Davies (Planning Policy Manager**).**
Tel: 01633 644826.
E Mail: **martindavies@monmouthshire.gov.uk**

monmouthshire sir fynwy

Future Generations Evaluation
(includes Equalities and Sustainability Impact Assessments)

Name of the Officer completing the evaluation	**Please give a brief description of the aims of the proposal**
Martin Davies **Phone no:01633 644826** **E-mail:**	The Local Development Plan (LDP), which was adopted on 27 February 2014, sets out the Council's vision and objectives for the development and use of land in Monmouthshire, together with the policies and proposals to implement them over the ten year period to 2021. Supplementary Planning Guidance (SPG) sets out guidance on the way in which the policies of the LDP will be applied. The Renewable Energy and Energy Efficiency (REEE) SPG specifically sets out guidance to support LDP Policies S3, S12, SD1, SD2 and DES1(j) in order to help manage the process of promoting energy efficiency and moving to more renewable and low carbon energy generation as a means of mitigating the detrimental effects of climate change.
Name of Service Planning Policy	**Date Future Generations Evaluation** form completed 11/02/2016

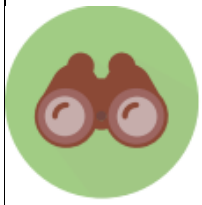
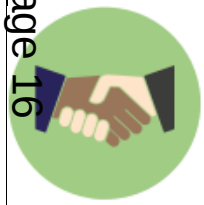
NB. Key strategies and documents that may help you identify your contribution to the wellbeing goals and sustainable development principles include: Single Integrated Plan, Continuance Agreement, Improvement Plan, Local Development Plan, People Strategy, Asset Management Plan, Green Infrastructure SPG, Welsh Language Standards, etc

1. **Does your proposal deliver any of the well-being goals below?** Please explain the impact (positive and negative) you expect, together with suggestions of how to mitigate negative impacts or better contribute to the goal.

Well Being Goal	Does the proposal contribute to this goal? Describe the positive and negative impacts.	What actions have been/will be taken to mitigate any negative impacts or better contribute to positive impacts?
A prosperous Wales Efficient use of resources, skilled, educated people, generates wealth, provides jobs	**Positive contribution.** The SPG seeks to promote use of low and zero carbon energy and energy efficiency measures, thereby securing efficient use of resources. REEE also offers potential economic benefits in relation to, for example, supporting the local green economy and providing low cost energy.	**Better contribute to positive impacts:** Ensure that the policies set out in the SPG are implemented fully and that their effectiveness is monitored on an annual basis.
A resilient Wales Maintain and enhance biodiversity and ecosystems that support resilience and can adapt to change (e.g. climate change)	**Positive contribution.** The SPG seeks to promote use of low and zero carbon energy and energy efficiency measures, thereby offering considerable benefits in relation to mitigating against the adverse impacts of climate change. **Negative contribution.** Renewable energy technologies can sometimes have adverse impacts on biodiversity and ecosytems.	**Better contribute to positive impacts:** Ensure that the policies set out in the SPG are implemented fully and that their effectiveness is monitored on an annual basis. **Mitigate any negative impacts:** The SPG sets out criteria that need to be considered in assessing a development proposal and it will be ensured that biodiversity, landscape interests etc. are taken into account in determining planning applications.
A healthier Wales People's physical and mental wellbeing is maximized and health impacts are understood	**Positive impact.** The SPG seeks to promote energy efficiency measures in home, thereby assisting in good health through providing warm, secure living conditions. **Negative contribution.** Renewable energy technologies can sometimes have adverse effects on amenity, health, noise etc.	**Better contribute to positive impacts:** Ensure that the policies set out in the SPG are implemented fully and that their effectiveness is monitored on an annual basis. **Mitigate any negative impacts:** The SPG sets out criteria that need to be considered in assessing a development proposal and it will be ensured that health and quality of life issues are properly considered in determining planning applications
A Wales of cohesive communities Communities are attractive, viable, safe	**Positive contribution.** The SPG seeks to promote opportunities for local communities to participate in	**Better contribute to positive impacts:** Ensure that the policies set out in the SPG are implemented fully

Well Being Goal	Does the proposal contribute to this goal? Describe the positive and negative impacts.	What actions have been/will be taken to mitigate any negative impacts or better contribute to positive impacts?
and well connected	REEE provision.	and that their effectiveness is monitored on an annual basis.
A globally responsible Wales Taking account of impact on global well-being when considering local social, economic and environmental wellbeing	**Positive contribution** .The SPG seeks to promote use of low and zero carbon energy and energy efficiency measures, thereby contributing to overall global sustainability targets. The SPG supports the implementation of the Monmouthshire LDP, which has been subject to a Sustainability Appraisal and Strategic Environmental Assessment to ensure that social, economic and environmental objectives are met, thereby contributing to sustainable development and global well-being.	**Better contribute to positive impacts:** Ensure that the policies set out in the SPG are implemented fully and that their effectiveness is monitored on an annual basis.
A Wales of vibrant culture and thriving Welsh language Culture, heritage and Welsh language are promoted and protected. People are encouraged to do sport, art and recreation	The SPG has a neutral impact on culture, heritage and language.	N/A
A more equal Wales People can fulfil their potential no matter what their background or circumstances	**Positive contribution** .The SPG seeks to promote energy efficiency measures, thereby reducing energy costs and avoiding fuel poverty.	**Better contribute to positive impacts:** Ensure that the policies set out in the SPG are implemented fully and that their effectiveness is monitored on an annual basis.

2. How has your proposal embedded and prioritised the sustainable governance principles in its development?

Sustainable Development Principle	Does your proposal demonstrate you have met this principle? If yes, describe how. If not explain why.	Are there any additional actions to be taken to mitigate any negative impacts or better contribute to positive impacts?
 Balancing short term need with long term and planning for the future	The LDP covers the period 2011-21. The SPG supports the implementation of the LDP. By its nature, therefore, it cannot look beyond the next five year period but the SA/SEA of the LDP would have ensured consideration of the impact on future generations. The SPG seeks to promote use of low and zero carbon energy and energy efficiency measures, thereby contributing to future aspirations to mitigate climate change and avoid the use of fossil fuels.	Ensure that the LDP and its policies have been subject to SA/SEA.
 Working together with other partners to deliver objectives	The Draft SPG has been subject to a public consultation, targeted to those who are considered to have a specific interest in the topic but also including all town and community councils, notices in the press. Individuals and organisations currently on the LDP consultation data base have been given the opportunity to request to be notified of the SPG should they wish.	The 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, developers, local communities, planning officers and councilllors. It will be necessary therefore to ensure that its contents are widely disseminated and that interested parties have a stake in its implementation.
 Involving those with an interest and seeking their views	The Draft SPG has been subject to a public consultation, targeted to those who are considered to have a specific interest in the topic but also including all town and community councils, notices in the press. Individuals and organisations currently on the LDP consultation data base have been given the opportunity to request to be notified of the SPG should they wish.	The 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, developers, local communities, planning officers and councilllors. It will be necessary therefore to ensure that its contents are widely disseminated and that interested parties have a stake in its implementation.

Sustainable Development Principle		Does your proposal demonstrate you have met this principle? If yes, describe how. If not explain why.	Are there any additional actions to be taken to mitigate any negative impacts or better contribute to positive impacts?
	Putting resources into preventing problems occurring or getting worse	The SPG seeks to promote use of low and zero carbon energy and energy efficiency measures, thereby contributing to future aspirations to mitigate climate change and avoid the use of fossil fuels.	Ensure that the policies set out in the SPG are implemented fully and that their effectiveness is monitored on an annual basis.
	Considering impact on all wellbeing goals together and on other bodies	The SPG supports the implementation of the LDP which has been subject to a Sustainability Assessment that balances the impacts on Social, Economic and Environmental factors.	The SPG supports the implementation of the LDP which has been subject to a Sustainability Assessment that balances the impacts on Social, Economic and Environmental factors.

Are your proposals going to affect any people or groups of people with protected characteristics? Please explain the impact, the evidence you have used and any action you are taking below. For more detailed information on the protected characteristics, the Equality Act 2010 and the Welsh Language Standards that apply to Monmouthshire Council please follow this link:http://hub/corporatedocs/Equalities/Forms/AllItems.aspx or contact Alan Burkitt on 01633 644010 or alanburkitt@monmouthshire.gov.uk

Protected Characteristics	Describe any positive impacts your proposal has on the protected characteristic	Describe any negative impacts your proposal has on the protected characteristic	What has been/will be done to mitigate any negative impacts or better contribute to positive impacts?
Age	See below	None	See below
Disability	See below	None	See below

Protected Characteristics	Describe any positive impacts your proposal has on the protected characteristic	Describe any negative impacts your proposal has on the protected characteristic	What has been/will be done to mitigate any negative impacts or better contribute to positive impacts?
Gender reassignment	See below	None	See below
Marriage or civil partnership	See below	None	See below
Pregnancy or maternity	See below	None	See below
Race	See below	None	See below
Religion or Belief	See below	None	See below
Sex	See below	None	See below
Sexual Orientation	See below	None	See below
Welsh Language	See below	None	See below

Protected Characteristics	Describe any positive impacts your proposal has on the protected characteristic	Describe any negative impacts your proposal has on the protected characteristic	What has been/will be done to mitigate any negative impacts or better contribute to positive impacts?
Positive: The LDP should bring positive benefits to all members of Monmouthshire's population through policies that seek to achieve the five main aims of the Welsh Spatial Plan, namely Building Sustainable Communities, Promoting a Sustainable Economy, Valuing our Environment, Achieving Sustainable Accessibility and Respecting Our Environment. All the policies of the plan have been subject to a Sustainability Appraisal that measures their performance against sustainability objectives, including such matters as providing equitable access to jobs, services and facilities, allowing all people to meet their housing needs, protecting people from health risk and providing opportunities for healthy lifestyles, supporting all members of the community and promoting community cohesion. The adoption of SPG is a means of supporting and delivering the LDP. The SPG seeks to promote use of low and zero carbon energy and energy efficiency measures, thereby benefiting Monmouthshire residents through, e.g. reducing pollution, reducing energy costs, promoting economic development and contributing to broader environmental goals such as mitigating the effects of climate change. **What has been/will be done to mitigate any negative impacts or better contribute to positive impacts?** Ensure that the policies set out in the SPG are implemented fully and that their effectiveness is monitored on an annual basis			

4. **Council has agreed the need to consider the impact its decisions has on important responsibilities of Corporate Parenting and safeguarding. Are your proposals going to affect either of these responsibilities?** For more information please see the guidance http://hub/corporatedocs/Democratic%20Services/Safeguarding%20Guidance.docx and for more on Monmouthshire's Corporate Parenting Strategy see http://hub/corporatedocs/SitePages/Corporate%20Parenting%20Strategy.aspx

	Describe any positive impacts your proposal has on safeguarding and corporate parenting	Describe any negative impacts your proposal has on safeguarding and corporate parenting	What will you do/ have you done to mitigate any negative impacts or better contribute to positive impacts?
Safeguarding	N/A	N/A	
Corporate Parenting	N/A	N/A	

5. **What evidence and data has informed the development of your proposal?**

An extensive evidence base was established to support the LDP.
The evidence included a number of studies that have informed the LDP energy policies. The LDP has been subject to a Sustainability Appraisal/Strategic Environmental Assessment at every main stage.

6. SUMMARY: As a result of completing this form, what are the main positive and negative impacts of your proposal, how have they informed/changed the development of the proposal so far and what will you be doing in future?

The main positive impacts of the SPG relate to the environmental benefits that arise from the promotion of low and zero carbon energy technologies and energy efficiency measures.

It is recognized that individual energy projects can sometimes have adverse impacts on the local environment and residential amenity. The SPG sets out criteria that need to be considered in assessing a development proposal and it will assist in ensuring that environmental and quality of life issues are properly considered in determining planning applications

7. ACTIONS: As a result of completing this form are there any further actions you will be undertaking? Please detail them below, if applicable. N/A

What are you going to do	When are you going to do it?	Who is responsible	Progress

8. **MONITORING: The impacts of this proposal will need to be monitored and reviewed. Please specify the date at which you will evaluate the impact, and where you will report the results of the review.**

The impacts of this proposal will be evaluated on:	A regular basis in the LDP Annual Monitoring Report, which will be presented to Council and Welsh Government and be publicly available.

9. **VERSION CONTROL: The Future Generations Evaluation should be used at the earliest stages of decision making, and then honed and refined throughout the decision making process. It is important to keep a record of this process so that we can demonstrate how we have considered and built in sustainable development wherever possible.** N/A. The SPG supports the implementation of the Monmouthshire LDP, which has been subject to a Sustainability Appraisal and Strategic Environmental Assessment to ensure that social, economic and environmental objectives are met, thereby contributing to sustainable development. At each stage of the LDP preparation process amendments were made in accordance with the findings of the SA and SEA.

Version No.	Decision making stage	Date considered	Brief description of any amendments made following consideration

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APPENDIX A

SUBJECT:	**MONMOUTHSHIRE LOCAL DEVELOPMENT PLAN RENEWABLE ENERGY AND EFFICIENCY SUPPLEMENTARY PLANNING GUIDANCE**
MEETING:	**INDIVIDUAL CABINET MEMBER**
DATE:	**28 JANUARY 2015**
DIVISION/WARDS AFFECTED:	**ALL**

1. PURPOSE:

1.1 The purpose of this report is to seek the Cabinet Member's endorsement of Draft Supplementary Planning Guidance (SPG) on Renewable Energy and Energy Efficiency (REEE) to support the policies of the Monmouthshire Local Development Plan (LDP) and a Draft Planning Advice Note on Wind Turbine Development: Landscape and Visual Impact Assessment (LVIA) Requirements, with a view to issuing both for consultation purposes.

2. RECOMMENDATIONS:

2.1 To endorse the Draft REEE SPG and a Draft Planning Advice Note on Wind Turbine Development: LVIA Requirements with a view to issuing both for consultation purposes.

3. KEY ISSUES:

3.1 <u>Background</u>

The Monmouthshire County Council LDP 2011-2021 was adopted on 27 February 2014, superseding the Monmouthshire Unitary Development Plan (UDP), to become the adopted development plan for the County (excluding that part within the Brecon Beacons National Park). The LDP contains sufficient policies and proposals to provide the basis for deciding planning applications, and for determining conditions to be attached to planning permissions, but it was necessary to ensure that it avoided excessive detail. Selective use of SPG is a means of setting out more detailed thematic or site specific guidance on the way in which the policies of an LDP will be applied in particular circumstances or areas.

3.2 LDP Wales (2005) at paragraph 5.2 states that:

'SPG does not form a part of the development plan but must be consistent with it. It may take the form of site specific guidance such as master plans, design guides or area development briefs, or thematic such as shopfront guidance or detailed car parking standards. It should be clearly cross-referenced to the relevant adopted plan policy or proposal, which it supplements, and may be issued separately from the plan. It should be made publicly available and its status made clear.'

3.3 Paragraph 5.3 of LDP Wales further emphasises that SPG can be a material consideration in the determination of planning applications, provided that appropriate consultation has been undertaken and that it has been approved in accordance with the Council's decision making process:

'While only the policies in the development plan have special status under section 38(6) of the 2004 Act in deciding planning applications, SPG may be taken into account as a material consideration. SPG should be prepared in accordance with an authority's CIS [Community Involvement Scheme]*; consultation should involve the general public, businesses, and other interested parties and their views should be*

taken into account before the SPG is finalised. It should then be approved by a Council resolution. A statement of the consultation undertaken, the representations received and the authority's response to those representations should be made available with the approved SPG, either in an annex or in a separate document. In making decisions on matters that come before it, the Assembly Government and the Planning Inspectorate will give substantial weight to approved SPG which derives out of and is consistent with the development plan, and has been prepared consistent with the above advice.'

3.4 A programme for the preparation of SPG was endorsed by Planning Committee on 7 October 2014 and by Individual Cabinet Member decision on 22 October 2014. First priority was given to work that had significant policy and/or financial implications for the implementation of the LDP. The REEE SPG was given second priority as a document that would be beneficial to the planning application process but did not have the same urgency as the projects in Priority One. A completed consultants' draft of the REEE SPG is available, having been completed in May 2013 (using funding from the Welsh Government's Planning Improvement Fund) but the project was not progressed due to the need to prioritise work on the LDP Examination. The Draft SPG has now been updated, particularly in relation to new government guidance and the deletion of TAN22, Planning for Sustainable Buildings. The Draft SPG is attached as **Appendix A**. Energy Fact Sheets provided as supporting information in Appendix 9 of the SPG are attached as **Appendix B**.

3.4.1 In addition, Monmouthshire officers have recently been participating in work at a regional level to prepare guidance for wind turbine development and associated LVIA requirements. This has resulted in a Draft Planning Advice Note being 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. This is not strictly a SPG document as it provides generic advice and does not expand on any specific policy in the Monmouthshire LDP. It is cross-referenced within the Renewable Energy and Energy Efficiency SPG, however, and would carry additional weight by going through a local consultation and adoption process. A Wales wide consultation has also been carried out, led by Blaenau Gwent County Borough Council. The Draft Planning Advice Note is attached as **Appendix C**.

3.5 As set out in the Draft, SPG is needed in this field 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, as emphasised by recent planning applications and appeals in the County that have involved renewable energy projects.

3.6 The SPG will assist in this process 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.

3.7 The SPG is not intended to be prescriptive. It cannot set out policies stating where a development may or may not be acceptable. Its role is to help those seeking to make planning applications involving renewable or low carbon energy by providing further details and explanation of the relevant policies in the Adopted Monmouthshire LDP. It relates in particular to policies S3, S12, SD1, SD2 and DES1(j). There are also links to other SPGs currently in preparation or in draft. In particular, Landscape SPG is being prepared that 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 analysis of its landscape sensitivity and capacity, which will assist in establishing its suitability as a location for renewable energy projects. In addition, a SPG on Green Infrastructure (GI) is currently out for consultation. 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.

3.8 Next steps

3.8.1 As referred to in paragraph 3.3 above, for SPG to be given weight in the consideration of planning applications, appropriate consultation needs to be undertaken and any comments received should be taken into account in the Council's decision making process. Following a resolution to consult, targeted notifications will be sent to those considered to have an interest in the SPG topic, although all town and community councils will be consulted and notices will be placed in the press. Individuals and organisations currently on the LDP consultation data base have been given the opportunity to request to be notified on some or all SPGs that they are interested in. All consultation replies will be analysed and responses/amendments reported for Members' consideration when seeking a resolution for the adoption of any SPG document.

4. REASONS:

4.1 Under the Planning Act (2004) and associated Regulations, all local planning authorities are required to produce a LDP. The Monmouthshire LDP was adopted on 27 February 2014 and decisions on planning applications are now being taken in accordance with policies and proposals in the LDP. The REEE SPG provides further explanation and guidance on the way in which the relevant policies of the LDP will be implemented.

5. RESOURCE IMPLICATIONS:

5.1 Officer time and costs associated with the preparation of the SPG document and carrying out the required consultation exercises. These will be within the existing Development Plans budget and carried out by existing staff.

6. SUSTAINABLE DEVELOPMENT AND EQUALITY IMPLICATIONS:

6.1 Sustainable Development

An integrated equality and sustainability impact assessment was carried out in connection with the Deposit LDP. Under the Planning Act (2004), the LDP was required, in any event, to be subject to a Sustainability Appraisal (SA). The role of the SA was to assess the extent to which the emerging planning policies would help to achieve the wider environmental, economic and social objectives of the LDP. The LPA also produced a Strategic Environmental Assessment (SEA) in accordance with the European Strategic Environment Assessment Directive 2001/42/EC; requiring the *'environmental assessment'* of certain plans and programmes prepared by local authorities, including LDP's. All stages of the LDP were subject to a SA/SEA,

therefore, and the findings of the SA/SEA were used to inform the development of the LDP policies and site allocations in order to ensure that the LDP would be promoting sustainable development. This SPG is expanding and providing guidance on existing LDP renewable energy and energy efficiency policies, which were prepared within a framework promoting sustainable development. The SPG has obvious benefits in sustainability terms in relation to the promotion of renewable and low carbon technologies, although these benefits need to be weighed against impacts on landscape, amenity etc.

6.2 Equality

6.2.1 The LDP was also subjected to an Equality Challenge process and due consideration given to the issues raised. As with the sustainable development implications considered above, the SPG is expanding and providing guidance on these existing LDP renewable energy policies, which were prepared within this framework. New SPG is also subject to an Equality Impact Assessment to ensure that informed decisions can be made. Where practicable and appropriate, consultation will include targeted involvement of those with the relevant protected characteristics.

6.2.2 Assessments of Equality Impact will be required throughout the Plan's implementation wherever there is likely to be significant impact. In this respect, the LDP will be subject to an Annual Monitoring Report that will include consideration of Equality Impacts.

7. CONSULTEES

- Head of Planning
- Planning Committee (6 January 2015)
- SLT
- Cabinet

8. BACKGROUND PAPERS:

- Monmouthshire Adopted LDP (February 2014)

9. AUTHOR & 10. CONTACT DETAILS:

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Renewable Energy and Energy Efficiency Supplementary Planning Guidance Report of Consultation March - 2016

Respondent Number	8	Representation Number	1
Respondent Name		Alistair Macdonald (RPS)	
Respondent Organisation		Bovis Homes	
Summary of Representation		Bovis Homes recognises the purpose of the proposed SPG in providing further detail and explanation of relevant policies in the LDP. It is acknowledged that the SPG relates in particular to policies S3, S12, SD1, SD2 & DES1(j).	
Requested Change		No change requested.	
LPA Response		Comment Noted.	
Recommendation		No change required.	

Respondent Number	8	Representation Number	2
Respondent Name		Alistair Macdonald (RPS)	
Respondent Organisation		Bovis Homes	
Summary of Representation		Bovis Homes support the principle of delivering energy efficiency through new development, understand the benefit of setting aspirational targets and work towards Central Governments Zero Carbon by 2016 initiative. Bovis has carried out significant work ensuring their new homes are designed to be highly energy efficient by concentrating first on providing their customers with optimising built-in measures before turning to 'bolted-on' renewable technology. Bovis consider their approach to have benefits such as; built in fabric improvements that last the lifetime of the home, an energy blind approach, technologically light fabric improvements that require no interaction with home owners and tackling the highest use of energy first- space heating. These measures align with the concept of 'passive measures' encouraged in the SPG.	
Requested Change		No change requested.	
LPA Response		Comment noted.	
Recommendation		No change required.	

Respondent Number	8	Representation Number	3
Respondent Name	Alistair Macdonald (RPS)		
Respondent Organisation	Bovis Homes		
Summary of Representation	Bovis Homes believes it is important to ensure that the LDP sets out a policy framework that is proportionate and deliverable, and does not set targets that could potentially affect overall project viability and, ultimately, delivery of those projects. Importantly, that framework should recognise the potential of both 'passive' and 'active' energy efficient measures, and ensures that a flexible approach to meeting standards is promoted to developers. Refer to paragraph 6.3.12 of the LDP noting support in principle but request the SPG makes it clear that it will be sufficient in development control terms to conform with minimum standards where appropriate. The SPG provides an opportunity to set out a clear position on this, ensuring applicants/developers can have confidence that achieving minimum standards will be acceptable when looking at development feasibility, and ensuring there is provision within the adopted policy framework to interrogate viability/feasibility if necessary, along with a clear mechanism to do that.		
Requested Change	No specific change requested, further details provided in further representations.		
LPA Response	Comment noted.		
Recommendation	No change necessary.		

Respondent Number	8	Representation Number	4
Respondent Name		Alistair Macdonald (RPS)	
Respondent Organisation		Bovis Homes	
Summary of Representation		In accordance with their 'Fabric First' principles Bovis Homes is also keen that the potential of passive energy efficiency measures is clearly identified and supported by the Councils policy guidance. Simply, it should be recognised in the SPG that is passive measures alone can satisfy energy efficiency requirements, there should not be a need to incorporate additional renewable technologies.	
Requested Change		Provide recognition that passive measures alone can satisfy energy efficiency requirements as noted above.	
LPA Response		Chapter 3 of the SPG goes into specific detail on passive measures in order to reduce demand and energy efficiency. It is not considered appropriate to specify in the SPG that there should not be a need to incorporate additional renewable technologies, each application will be determined on a case by case basis, feasibility assessments should provide evidence in relation to suitable renewable energy and low or zero carbon technologies that could be incorporated into the Strategic Housing Sites.	
Recommendation		No change required.	

Respondent Number	8	Representation Number	5
Respondent Name		Alistair Macdonald (RPS)	
Respondent Organisation		Bovis Homes	
Summary of Representation		Without prejudice to these representations Bovis Homes draw reference to the Ministerial Statement released on 27th March 2015 confirming the Government's intention to amend Part L and to withdraw the Code for Sustainable Homes, further requesting that local planning authorities refrain from setting any additional local technical standards relating to construction or performance of new dwellings. It is noted the SPG does not set any firm targets but the Council are likely to need to consider the implications for this SPG as a result of the planned changes.	
Requested Change		No change requested.	
LPA Response		Noted, any updates to national policy will be taken into consideration prior to the publication of the final SPG.	
Recommendation		No change requested.	

Respondent Number	8	Representation Number	6
Respondent Name	Alistair Macdonald (RPS)		
Respondent Organisation	Bovis Homes		
Summary of Representation	Suggest amending paragraph 1.1.4 to ensure the SPG sets out a clear position with regard to commercial as well as technical viability for energy efficiency measures.		
Requested Change	Amend paragraph 1.1.4 to 'It is important to note that the SPG is developed on the assumption that proposed renewable energy projects and energy efficiency measures incorporated to new residential development are technically and commercially viable. As a result it only deals with the planning issues associated with the proposed scheme'.		
LPA Response	Noted, reference will be made to both renewable energy and energy efficiency measures in this paragraph to provide clarity.		
Recommendation	Amend wording of first sentence in paragraph 1.1.4 to read '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.'		

Respondent Number	8	Representation Number	7
Respondent Name	Alistair Macdonald (RPS)		
Respondent Organisation	Bovis Homes		
Summary of Representation	Suggest Figure 1.2 (the Land Developers Route Map) should be amended to 1: encourage developers to identify at the outset what the minimum required standards are, in order that these can be built into upfront development viability calculations, and 2: to encourage developers to consider what, if anything, they can do to try and exceed those minimum standards.		
Requested Change	Suggest two additional issues to consider are included in the table: 'What is the minimum standard the development is required to achieve' and 'Is there potential to exceed minimum standards through either passive or active measures, or a combination of both'. The 'Where to go' section should be updated to include a reference to 'TAN22, PPW, Part L of current Building Regulations (or equivalent/updated' and to 'feasibility/viability assessment if required'.		
LPA Response	Noted, the intention of the Route Map is to provide easy navigation of the SPG rather than reference to external documents, it is not considered appropriate to add in the additional issues or amend the where to go section. In any event TAN22 has now been deleted.		
Recommendation	No change necessary.		

Respondent Number	8	Representation Number	8
Respondent Name		Alistair Macdonald (RPS)	
Respondent Organisation		Bovis Homes	
Summary of Representation		Concerned there is no clarification of what 'sound consideration' means in the context set out in paragraph 4.1.2 of the SPG. Suggest there could be potential for confusion about what justification might be expected for the inclusion/discounting of different technologies, and what standards are expected to be achieved.	
Requested Change		Suggest paragraph 4.1.2 be amended to state 'Monmouthshire County Council will expect to see evidence during pre-application discussions or through the Design and Access Statement (DAS) (see Section 6.2), that minimum standards of energy efficiency can be delivered through the development and that sound consideration has been given to the issues below in the choice of passive measures and/or additional renewable or low carbon energy technology including consideration of opportunities to exceed minimum standards subject on feasibility. 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)'.	
LPA Response		Comment noted, this chapter of the SPG refers specifically to renewable or low carbon energy options. It does not refer to energy efficiency, as such it would not be appropriate to amend paragraph 4.1.2 to include references to energy efficiency and passive measures.	
Recommendation		No change necessary.	

Respondent Number	8	Representation Number	9
Respondent Name		Alistair Macdonald (RPS)	
Respondent Organisation		Bovis Homes	
Summary of Representation		Bovis Homes is concerned that there should be recognition of the potential effect of viability on the selection of appropriate technologies in paragraph 4.4.1.	
Requested Change		Suggest amending the first sentence of paragraph 4.4.1 to include the following wording 'including the commercial as well as technical viability'.	
LPA Response		Noted, this should be updated for clarity.	
Recommendation		Add the following additional wording to the end of paragraph 4.4.1 'including the commercial as well as technical viability'.	

Respondent Number	8	Representation Number	10
Respondent Name		Alistair Macdonald (RPS)	
Respondent Organisation		Bovis Homes	
Summary of Representation		With reference to paragraphs 6.2.9 and 6.2.10 Bovis Homes welcomes the use of the DAS as a platform for explaining the approach to energy efficiency taken for a particular development. In Bovis's view the DAS is the probably most appropriate place to consider the siting, design and feasibility assessment that has to be carried out when considering the incorporation of energy efficiency measures to a development.	
Requested Change		It is suggested that this section be amended in order to recognise the need to consider the potential for maximising built-in/passive energy efficiency measures as well as considering the potential for 'bolt-on' renewable technologies.	
LPA Response		Noted. Paragraph 6.2.10 does provide reference to energy efficiency measures, it is not considered necessary to add anything further.	
Recommendation		No change necessary.	

Respondent Number	8	Representation Number	11
Respondent Name		Alistair Macdonald (RPS)	
Respondent Organisation		Bovis Homes	
Summary of Representation		Bovis Homes also welcomes the transparency provided by Table 6.1 in setting out the 'list of key considerations in assessing planning applications'. A small change is suggested to item 4 under the heading 'Process Issues'.	
Requested Change		Suggest amending question 4 to 'Which renewable and low carbon technologies have been considered, including both passive and active energy efficiency measures? Has an assessment of their technical and commercial merits and feasibility 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?'.	
LPA Response		Comment noted. It is not considered appropriate to include the changes relating to passive and active energy efficiency. Questions 2 and 3 in Table 6.1 cover these topics. Agree a reference to technical and commercial merits and feasibility could be added to the end of the question for clarity.	
Recommendation		Add 'technical/commercial merits and feasibility' to the end of question 4 in Table 6.1.	

Respondent Number	8	Representation Number	12
Respondent Name		Alistair Macdonald (RPS)	
Respondent Organisation		Bovis Homes	
Summary of Representation		It would be helpful if the glossary at appendix 1 included a definition for the term ‘feasibility assessment’. Specifically the term features in Policy S3 of the LDP, but is not elaborated upon at that point. Explanatory text at paragraph 6.3.9 of the LDP goes a little further but in Bovis Homes view this can be usefully clarified using the SPG.	
Requested Change		Suggest the following words are inserted into the glossary in Appendix 1 for Feasibility Assessment 'An investigation into the technical and commercial/economic feasibility of proposed renewable energy schemes and energy efficiency measures'.	
LPA Response		Noted. It is considered appropriate to include a glossary entry for a feasibility assessment to provide clarity. LDP Strategic Policy S3 refers to the inclusion of feasibility assessments for suitable renewable energy and low or zero carbon technologies that could be incorporated into development proposals.	
Recommendation		Insert a glossary entry for Feasibility Assessment to state 'An investigation into the technical and commercial/economic feasibility of proposed renewable energy schemes, low carbon technologies and energy efficiency measures'.	

Respondent Number	8	Representation Number	13
Respondent Name		Alistair Macdonald (RPS)	
Respondent Organisation		Bovis Homes	
Summary of Representation		Bovis Homes believe it would be useful to also include guidance in the SPG on the potential benefits of passive energy efficiency measures, such as increased insulation, optimised U-Values and architectural and design considerations, expanding on the themes explored in sections 3,.2, 3.3 and 3.4 of the document. This information would be logically presented as an addition to Appendix 9.	
Requested Change		Include additional section in Appendix 9 as above.	
LPA Response		Comment noted, it is not considered appropriate to include an additional fact sheet in relation to this topic, sufficient information relating to passive and active energy efficiency measures is presented in Chapter 3 of the SPG. In addition to this key measures are identified within Chapter 3. Additionally, the fact sheets relate to specific Renewable Energy and Low Carbon Technologies, passive and energy efficiency measures do not fit within this framework.	
Recommendation		No change necessary.	

Respondent Number	22	Representation Number	1
Respondent Name		Amanda Spence	
Respondent Organisation		Design Commission for Wales	
Summary of Representation		Suggest a reference could be added to Design Commission for Wales' guide, Designing Wind Farms in Wales; http://cdn.dcfw.org.uk/Designing-Windfarms-in-Wales-2014.pdf .	
Requested Change		Add link to Designing Wind Farms in Wales in the SPG.	
LPA Response		The Designing Wind Farm guide is predominately aimed at schemes of over 50MW. TAN8 stipulates schemes of over 25MW should be concentrated in Strategic Search Areas, to which there are none in Monmouthshire. It does not appear relevant to include a link to this document specifically in the SPG, it is nevertheless appropriately referenced in the LVIA Planning Advice Note.	
Recommendation		No change required.	

Respondent Number	62	Representation Number	1
Respondent Name		Roy Nicholas	
Respondent Organisation		Llangattock Vibon Avel Community Council	
Summary of Representation		No comments.	
Requested Change		No change requested.	
LPA Response		Comment noted.	
Recommendation		No change necessary.	

Respondent Number	71	Representation Number	1
Respondent Name		Gemma Beynon	
Respondent Organisation		Natural Resources Wales	
Summary of Representation		Question 1 in Table 6.2 relating to Water Management/Hydrology and Flood Risk should be amended to 'Does your development fall within NRW flood map or Welsh Government's Development Advice Maps referred to in TAN15 Development and Flood Risk?'.	
Requested Change		Amend wording of Question 1 as above.	
LPA Response		Agree this will provide a consistent approach.	
Recommendation		Amend Question 1 of Table 6.2 relating to Water Management/Hydrology and Flood Risk to 'Does your development fall within NRW flood map or Welsh Government's Development Advice Maps referred to in TAN15 Development and Flood Risk?'.	

Respondent Number	71	Representation Number	2
Respondent Name		Gemma Beynon	
Respondent Organisation		Natural Resources Wales	
Summary of Representation		It is questioned whether it is necessary to include Appendix 7 as the information is set out on each fact sheet. If information is required to be set out as a separate Appendix the following wording is recommended: '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/apply-and-buy/?lang=en .	
Requested Change		Delete Appendix 7 or amend wording as above.	
LPA Response		Comment noted. Whilst information is set out in the individual energy fact sheets, Appendix 7 provides a quick reference summary of additional consents that may be required.	
Recommendation		Delete existing text in the section relating to NRW and add the following text: '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/apply-and-buy/?lang=en'	

Respondent Number	71	Representation Number	3
Respondent Name		Gemma Beynon	
Respondent Organisation		Natural Resources Wales	
Summary of Representation		The NRW hydropower link in Appendix 7 has changed.	
Requested Change		Please update link to: http://naturalresources.wales/apply-and-buy/water-abstraction-licences-water-discharges/water-abstraction-and-impoundment-licensing/hydropower/?lang=en	
LPA Response		Agree, the link was appropriate when the draft SPG was being finalised, it is unfortunate the previous link is no longer working, the link should as a consequence be updated. It is noted that since NRW submitted comments the link has changed further.	
Recommendation		Update link as appropriate to: http://naturalresources.wales/apply-for-a-permit/water-abstraction-licences-and-impoundment-licences/hydropower/before-you-apply/?lang=en	

Respondent Number	71	Representation Number	4
Respondent Name		Gemma Beynon	
Respondent Organisation		Natural Resources Wales	
Summary of Representation		Please move Forestry Commission Wales section in Appendix 7 to the NRW section.	
Requested Change		As above.	
LPA Response		Agree it would be appropriate to move the section on Forestry Commission Wales.	
Recommendation		Move Forestry Commission Wales section to the NRW section as appropriate.	

Respondent Number	71	Representation Number	5
Respondent Name		Gemma Beynon	
Respondent Organisation		Natural Resources Wales	
Summary of Representation		The links shown to the NRW website in Appendix 8 are no longer in use. NRW's protected sites and landscapes map is currently unavailable. Please check with NRW before publishing the SPG.	
Requested Change		Remove links and check with NRW to see whether they have been reinstated elsewhere.	
LPA Response		Noted. As the NRW links are still unavailable it is suggested the LDP Countywide Constraints Map is used as an alternative, as this relates to the designations within Monmouthshire. The Constraints Map shows the designated areas within the Monmouthshire County Council Boundary.	
Recommendation		Remove NRW link and in its place add link to Monmouthshire Local Development Plan Countywide Constraints Map.	

Respondent Number	71	Representation Number	6
Respondent Name		Gemma Beynon	
Respondent Organisation		Natural Resources Wales	
Summary of Representation		In most of the Energy Fact Sheets in Appendix 9 there is a reference to contact NRW for information on whether a consent may be required 'as this can take some time to obtain'. This wording should be amended.	
Requested Change		Amend wording to 'It is advisable to contact NRW at the earliest opportunity if you think you need their permission, consent or license for your project. There are varying statutory deadlines depending on the permit, consent or licence you apply for.'	
LPA Response		Comment noted.	
Recommendation		Will amend wording accordingly listed in the energy fact sheets from 'as this can take some time to obtain' to 'It is advisable to contact NRW at the earliest opportunity if you think you need their permission, consent or license for your project. There are varying statutory deadlines depending on the permit, consent or licence you apply for.'	

Respondent Number	71	Representation Number	7
Respondent Name		Gemma Beynon	
Respondent Organisation		Natural Resources Wales	
Summary of Representation		NRW generally use the term 'hydropower schemes' when referring to hyrdoelectricity installations. Several terms are used within the document and we recommend using 'hydropower schemes' to be consistent with NRW documents and to help with understanding.	
Requested Change		Amend any reference to hydroelectricity to 'hydropower scheme' for consistency.	
LPA Response		Comment noted, it is appreciated different organisations use different terms.	
Recommendation		Change references to 'hydro schemes' and 'hydroelectric schemes' to 'hydropower schemes'. The main headings referring to hydroelectricity should remain, as hydroelectricity is the comprehensive term relating to the generation of electricity by hydropower.	

Respondent Number	71	Representation Number	8
Respondent Name		Gemma Beynon	
Respondent Organisation		Natural Resources Wales	
Summary of Representation		The description and impacts of specific turbines in the 3rd and 4th paragaph of the Technology Description in the Hydroelectricity Energy Fact Sheet are not necessarily true for all proposals. It often depends on site constraints and environmental requirements.	
Requested Change		Recommend it is stated that there are a range of options that should be fully considered with an appropriate advisor before selecting an option.	
LPA Response		Comment noted.	
Recommendation		An additional sentence will be included at the end of paragraph 4 noting 'A range of options should be fully considered with an appropriate advisor before selecting an option'.	

Respondent Number	71	Representation Number	9
Respondent Name		Gemma Beynon	
Respondent Organisation		Natural Resources Wales	
Summary of Representation		Recommend using the same terminology as NRW in the 5th paragraph of the Technology Description in the Hydroelectricity Energy Fact Sheet.	
Requested Change		Recommend replacing 'fish ladders' with 'fish passage' when describing structures to aid movement of fish.	
LPA Response		Agree this should be consistent with NRW terminology.	
Recommendation		Replace 'ladder' with 'passage in 5th paragraph of the Hydroelectricity Energy Fact Sheet.	

Respondent Number	71	Representation Number	10
Respondent Name		Gemma Beynon	
Respondent Organisation		Natural Resources Wales	
Summary of Representation		The reference to 'very high availability' in the 2nd bullet point of the strengths section in the hydroelectricity SWOT Analysis table could be misleading. Agree there are many watercourses throughout Monmouthshire, however that does not mean they are suitable for a hydropower scheme.	
Requested Change		Recommend this point is deleted.	
LPA Response		It is agreed that this could be misinterpreted.	
Recommendation		Delete bullet point 'very high availability'.	

Respondent Number	71	Representation Number	11
Respondent Name		Gemma Beynon	
Respondent Organisation		Natural Resources Wales	
Summary of Representation		Recommend deletion of the 2nd bullet point of the weaknesses section in the hydroelectricity SWOT Analysis table that notes 'Achieving environmental permits can be protracted'.	
Requested Change		Delete 2nd bullet point referred to above.	
LPA Response		Noted, it should be stated within this SWOT analysis table that environmental permits are required, nevertheless the wording could be changed. A similar amendment to the wording should be made as per 71.6.	
Recommendation		Amend wording of 2nd bullet point in the weaknesses section to read 'There are varying statutory deadlines that depend on the environmental permit applied for'.	

Respondent Number	71	Representation Number	12
Respondent Name		Gemma Beynon	
Respondent Organisation		Natural Resources Wales	
Summary of Representation		Recommend amending the 1st bullet point of the threats section in the hydroelectricity SWOT Analysis table.	
Requested Change		Suggest changing 'wildlife' to the more general term of 'environment'.	
LPA Response		Comment noted, it is agreed there is potential for impact on both habitats and species in the watercourse and surroundings.	
Recommendation		Replace 'wildlife' with 'environment' in the 1st bullet point of the threats section in the hydroelectricity SWOT Analysis table.	

Respondent Number	71	Representation Number	13
Respondent Name		Gemma Beynon	
Respondent Organisation		Natural Resources Wales	
Summary of Representation		Question why EA (i.e. NRW) has only been mentioned in the 2nd bullet point of the threats section in the hydroelectricity SWOT Analysis table. Other requirements such as planning permission and grid connections can cause delay and add to costs.	
Requested Change		Recommend deletion of the bullet point referred to above.	
LPA Response		Comment noted, it was not intended to single NRW out, although they are listed specifically as this point relates to the process in attaining the relevant environmental permits, as noted in the response provided for 71.11. One of the aims of this SPG is to help streamline the planning application process which is also the aim of the pre-application advice service. This SPG outlines the information that will need to be submitted with applications and identifies other consents that may be needed. If the appropriate information is submitted from the outset this should in turn speed up the planning application process.	
Recommendation		Reword bullet point 2 as noted above to state 'NRW has varying statutory deadlines depending on the environmental permits applied for which can lengthen the process. Other requirements such as grid connections can also cause delays'.	

Respondent Number	71	Representation Number	14
Respondent Name		Gemma Beynon	
Respondent Organisation		Natural Resources Wales	
Summary of Representation		Refer to the 2nd bullet point of the technology section in the hydroelectricity energy fact sheet, noting that small hydropower schemes do not necessarily require grid connections and that it is possible that a small hydropower scheme can just serve a domestic property.	
Requested Change		No change requested.	
LPA Response		Comment noted, the wording notes schemes generally feed directly into the grid.	
Recommendation		For clarity the wording should be amended to include the following additional wording at the end of the bullet point 'It is nevertheless possible that an individual dwelling could be served by a small hydropower scheme'.	

Respondent Number	71	Representation Number	15
Respondent Name		Gemma Beynon	
Respondent Organisation		Natural Resources Wales	
Summary of Representation		Refer to the planning permission and other consents section in the hydroelectricity energy fact sheet, noting there are a number of permits, consents and licences that may be required from NRW.	
Requested Change		Recommend amending the wording to 'Planning permission is required for hydropower schemes along with various permissions, consents and licences from NRW'.	
LPA Response		Comment noted, the additional wording could provide clarity.	
Recommendation		Amend first sentence to 'Planning permission is required for hydropower schemes along with various permissions, consents and licences from NRW'.	

Respondent Number	71	Representation Number	16
Respondent Name		Gemma Beynon	
Respondent Organisation		Natural Resources Wales	
Summary of Representation		Refer to the Getting Consents: A Summary of the Process section in the hydroelectricity energy fact sheet. Recommend changing the heading and the text within the box. Also recommend this section references the need for grid connections.	
Requested Change		Amend the heading to 'NRW permissions, consents and licences' and the text within the box to 'You will require various permissions, consents and licences from NRW'. Include reference to the need for grid connections.	
LPA Response		Comment noted. The text within the box should be changed for clarity in order to provide sufficient information to support the heading. It would not be appropriate to change the heading of the box as this would be inconsistent with the other energy fact sheets and would also duplicate the text below. It is noted in the spatial elements section that grid connection is likely to be required, for consistency with other energy fact sheets it is not considered appropriate to include this as a separate heading in the summary of the process.	
Recommendation		Amend the text beneath the NRW consent heading to 'You will require various permissions, consents and licences from NRW'.	

Respondent Number	71	Representation Number	17
Respondent Name		Gemma Beynon	
Respondent Organisation		Natural Resources Wales	
Summary of Representation		The Hydroelectricity - Site Selection and Planning Issues table uses the terms hydroelectric plant, plant, projects, system development and site to describe the proposed project.	
Requested Change		Recommend changing these terms to 'hydropower scheme' to reduce confusion and provide consistency.	
LPA Response		Comment noted, see response provided for 71.7.	
Recommendation		Change references within the table 'to 'hydropower schemes'. The main heading referring to hydroelectricity should remain, as hydroelectricity is the comprehensive term relating to the generation of electricity by hydropower.	

Respondent Number	71	Representation Number	18
Respondent Name		Gemma Beynon	
Respondent Organisation		Natural Resources Wales	
Summary of Representation		Refer to the first bullet point of the Ecology section of the Hydroelectricity - Site Selection and Planning Issues table. Recommend that 'migratory patterns of fish' is replaced with 'fish movements' as fish movements within a stream is just as important as at migratory periods.	
Requested Change		Replace 'migratory patterns of fish' with 'fish movements'.	
LPA Response		Noted, this should be updated to be consistent with NRW terminology.	
Recommendation		Replace 'migratory patterns of fish' with 'fish movements' in the first bullet point of the Ecology section of the Hydroelectricity - Site Selection and Planning Issues table.	

Respondent Number	71	Representation Number	19
Respondent Name		Gemma Beynon	
Respondent Organisation		Natural Resources Wales	
Summary of Representation		Refer to the first bullet point of the Ecology section of the Hydroelectricity - Site Selection and Planning Issues table. Recommend that 'whether protected species exist' is replaced with 'what species are present'.	
Requested Change		Replace 'whether protected species exist' with 'what species are present'.	
LPA Response		Noted, this should be updated for clarity.	
Recommendation		Replace 'whether protected species exist' with 'what species are present' in the first bullet point of the Ecology section of the Hydroelectricity - Site Selection and Planning Issues table.	

Respondent Number	71	Representation Number	20
Respondent Name		Gemma Beynon	
Respondent Organisation		Natural Resources Wales	
Summary of Representation		Refer to the second bullet point of the Ecology section of the Hydroelectricity - Site Selection and Planning Issues table. Recommend that fish 'passage' is replaced with 'movement'.	
Requested Change		Replace 'passage' with 'movement'.	
LPA Response		Noted, this should be updated to be consistent with NRW terminology.	
Recommendation		Replace 'passage' with 'movement' in the second bullet point of the Ecology section of the Hydroelectricity - Site Selection and Planning Issues table.	

Respondent Number	71	Representation Number	21
Respondent Name		Gemma Beynon	
Respondent Organisation		Natural Resources Wales	
Summary of Representation		Refer to the first bullet point of the Water management, hydrology and flood risk section of the Hydroelectricity - Site Selection and Planning Issues table. Recommend that 'mitigation measures may be needed' is changed to 'mitigation measure(s) will be needed'.	
Requested Change		Change 'mitigation measures may be needed' to 'mitigation measures will be needed'.	
LPA Response		Comment noted, whilst it is appreciated mitigation measures are generally needed it is not a certainty that mitigation measures will always be required.	
Recommendation		Amend wording to state mitigation measures 'are usually needed' in the first bullet point of the Water management, hydrology and flood risk section of the Hydroelectricity - Site Selection and Planning Issues table.	

Respondent Number	71	Representation Number	22
Respondent Name		Gemma Beynon	
Respondent Organisation		Natural Resources Wales	
Summary of Representation		Refer to the second bullet point of the Water management, hydrology and flood risk section of the Hydroelectricity - Site Selection and Planning Issues table. Recommend replacing 'consent' with 'permissions, consents and licences'.	
Requested Change		Replace 'consent' with 'permissions, consents and licences'.	
LPA Response		Comment noted, the additional wording could provide clarity.	
Recommendation		Amend wording to 'permissions, consents and licences' in the second bullet point of the Water management, hydrology and flood risk section of the Hydroelectricity - Site Selection and Planning Issues table.	

Respondent Number	71	Representation Number	23
Respondent Name		Gemma Beynon	
Respondent Organisation		Natural Resources Wales	
Summary of Representation		Refer to the Energy from Waste energy fact sheet. Under Environmental Permitting Regulations (EPR) NRW permit any activity where the thermal input is greater than or equal to 50MW, including aggregated values from more than one piece of equipment. There are set criteria by which we permit the incineration of waste as follows: 10tonnes/day of hazardous waste are burnt; or 3tonnes/hour of non-hazardous waste are burnt; or any gaseous compound containing halogens is burnt. Processes falling outside of these criteria but within the scope of EPR may still require permits from the local authority.	
Requested Change		No change requested.	
LPA Response		Comment noted.	
Recommendation		No change necessary.	

Respondent Number	71	Representation Number	24
Respondent Name		Gemma Beynon	
Respondent Organisation		Natural Resources Wales	
Summary of Representation		Refer to the Biomass energy fact sheet.Under the key issues table it states that emissions are controlled by NRW. This is incorrect and should be removed from the table or explained in full. NRW only regulate the burning of biomass in appliances with a rated thermal input of 50MW and above. In the case of biomass that is classified as waste, we regulate appliances with a rated thermal input of 3 MW and above.	
Requested Change		Either remove reference to emissions being controlled by NRW or explain in full detail.	
LPA Response		Comment noted.	
Recommendation		'(Emissions are controlled by NRW)' should be removed from the last bullet point in the key issues table of the Biomass energy fact sheet to avoid confusion.	

Respondent Number	71	Representation Number	25
Respondent Name		Gemma Beynon	
Respondent Organisation		Natural Resources Wales	
Summary of Representation		Refer to the Getting Consents: A Summary of the Process section in the biomass energy fact sheet. We recommend that you replace the wording under 'NRW consent' with 'NRW regulate the burning of biomass in appliances with a rated thermal input of 50MW and above or if the biomass is classed as waste a rated thermal input of 3MW and above. Any proposal below the above criteria may still require a permit from the Local Authority'.	
Requested Change		Replace wording under the NRW consent heading with NRW regulate the burning of biomass in appliances with a rated thermal input of 50MW and above or if the biomass is classed as waste a rated thermal input of 3MW and above. Any proposal below the above criteria may still require a permit from the Local Authority'.	
LPA Response		Noted, for clarity it is considered it is appropriate to amend the wording.	
Recommendation		Amend the first section of text under the NRW Consent heading to 'NRW regulate the burning of biomass in appliances with a rated thermal input of 50MW and above or if the biomass is classed as waste a rated thermal input of 3MW and above. Any proposal below the above criteria may still require a permit from the Local Authority' in the Getting Consents: A Summary of the Process section in the biomass energy fact sheet.	

Respondent Number	71	Representation Number	26
Respondent Name		Gemma Beynon	
Respondent Organisation		Natural Resources Wales	
Summary of Representation		The reference to Forestry Commission should be changed to NRW in the Biomass Site Selection and Planning Issues Table.	
Requested Change		Remove reference to Forestry Commission and replace with NRW.	
LPA Response		Agree this reference should be updated to NRW.	
Recommendation		Remove 'Forestry Commision (FC)' and 'FC' and replace with NRW in the Biomass Site Selection and Planning Issues Table.	

Respondent Number	80	Representation Number	1
Respondent Name		Rachael Bust	
Respondent Organisation		The Coal Authority	
Summary of Representation		No specific comments to make.	
Requested Change		No change requested.	
LPA Response		Comment noted.	
Recommendation		No change required.	

Respondent Number	112	Representation Number	1
Respondent Name		Judith Doyle	
Respondent Organisation		Glamorgan Gwent Archaeological Trust	
Summary of Representation		The impact that proposals may have on archaelogical resource is a consideration, archaeological investigation and recording may be a requirement of any application. Impact on setting of heritage assets also requires consideration. Development may have a direct physical impact on buried and upstanding archaeological remains and an indirect visual impact on heritage assets. Less than 2% of these are on average Scheduled Ancient Monuments: Cadw have responsibility for the SAMs and must be consulted for Consent if any development is proposed that may impact them. For sites with non-statutory designations, archaeological mitigation work may be required both pre and post determination to ensure that development complies with Planning Policy Wales Chapter 6: Conserving the Historic Environment, and the Welsh Office Circulars 60/96 and 61/96. Any developments of a large scale within a Registered Historic Landscape/Parks and Gardens may need a Assessment of the Impact of Development on a Historic Landscape (ASIDHOL) report.
Requested Change		No change requested.	
LPA Response		Comment noted, Cadw are a statutory consultee and are consulted as a matter of course on applications that are close to Scheduled Ancient Monuments.	
Recommendation		No change required.	

Respondent Number	412	Representation Number	1
Respondent Name		Lisa Bullock	
Respondent Organisation		Network Rail	
Summary of Representation		Wind turbine masts are considered to be fixed structures that could be constructed in close proximity to Network Rail (NR) property boundaries. Wind turbine blades on the contrary are not fixed structures and their placement and operation is considered as a specific issue. NR will not permit third party operation of turbine blades above operational infrastructure and require a minimum distance of at least one blade length away from NR property boundary. NR should be consulted on any application where an operator intends to construct new turbines in close proximity to an operational railway. Each proposal will be considered on a case by case basis.	
Requested Change		No change requested.	
LPA Response		Comment noted. The table relating to Wind Energy - Site Selection and Planning Issues in the Wind Energy Fact sheet contains a planning issue relating to aviation and telecommunications. A reference to railways could be made in this field to ensure Network Rail are consulted when necessary.	
Recommendation		Add 'railways' to the aviation and telecommunications field in the Wind Fact Sheet and provide an additional point to consider stating 'Network Rail should be notified of proposals in close proximity to railways. New turbines should be located with a minimum Wind Turbine Setback to be related to the proposed mast height and blade length. You should check with Network Rail to ensure the distance is appropriate to ensure turbines do not interfere with railway operations'.	

Respondent Number	412	Representation Number	2
Respondent Name		Lisa Bullock	
Respondent Organisation		Network Rail	
Summary of Representation		Advise that the provision of any reflective material used in the solar collecting equipment should not interfere with the line of sight of train drivers and the potential for glare or reflection of light from the panels that may impact on signalling must be eliminated. Panels should either not be reflective or appropriate fencing/screening should be erected to avoid any incidents happening.	
Requested Change		No change requested.	
LPA Response		Comment noted. The table relating to Solar Power - Site Selection and Planning Issues in the Solar Power Energy Fact sheet contains a planning issue relating to aviation and telecommunications - glint and glare. A reference to railways could be made in this field to ensure Network Rail are consulted as and when necessary.	
Recommendation		Add 'railways' to the aviation and telecommunications field in the Solar Power Fact Sheet and provide an additional point to consider stating 'Consider whether the site is located in proximity to a railway. Consultation with Network Rail will be required if the proposal is located in the line of sight of train drivers or where glare/reflection could impact on signalling. It should be demonstrated that panels are not reflective to ensure solar panels do not interfere with railway operations, screening may also be required'.	

Respondent Number	2284	Representation Number	1
Respondent Name		Sacha Rossi	
Respondent Organisation		NATS Safeguarding	
Summary of Representation		Refers to Appendix 6 Table A1 in relation to standalone wind turbines under 50kW. Under the TCPA Safeguarding Direction 2003, safeguarded land is that defined by a safeguarding map lodged with a LPA. The NATS map lodged for turbines covers the whole of the UK which suggests planning permission is required for all turbines. This debate has been had with other LPAs and CLG, whilst happy for the document to remain as it is, Monmouthshire as the LPA should consult NATS on all turbines, even those under GPDO. Provide a FAQ that can be shared with applicants.	
Requested Change		No change requested.	
LPA Response		Comment noted. The LPA will not be notified of all wind turbines that come under the GPDO, only those where a certificate of lawful use is applied for to formalise the use. It is not practicable and would be unreasonable to expect authorities to notify of something out of their jurisdiction. A paragraph has been added to the Wind Turbine Fact Sheet under Planning Permission and Other Consents to identify NATS as a statutory consultee.	
Recommendation		No change required.	

Monmouthshire Renewable Energy and Energy Efficiency

Draft Supplementary Planning Guidance

February 2016

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Image: Llancayo Solar Farm, Source: Morspan Ltd, Llancayo, Usk

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Document Control Sheet

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	Name	Position	Signature	Date
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Rev 00	9 October 2012	Final Draft	C Mitcham P Maryan	C Mitcham	J Baker
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Rev 02	18 December 2014	Factual update	S Jones (MCC)	M Davies (MCC)	M Davies (MCC)
Rev 03	February 2016	Factual update	S Jones (MCC)	M Davies (MCC)	M Davies (MCC)

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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/

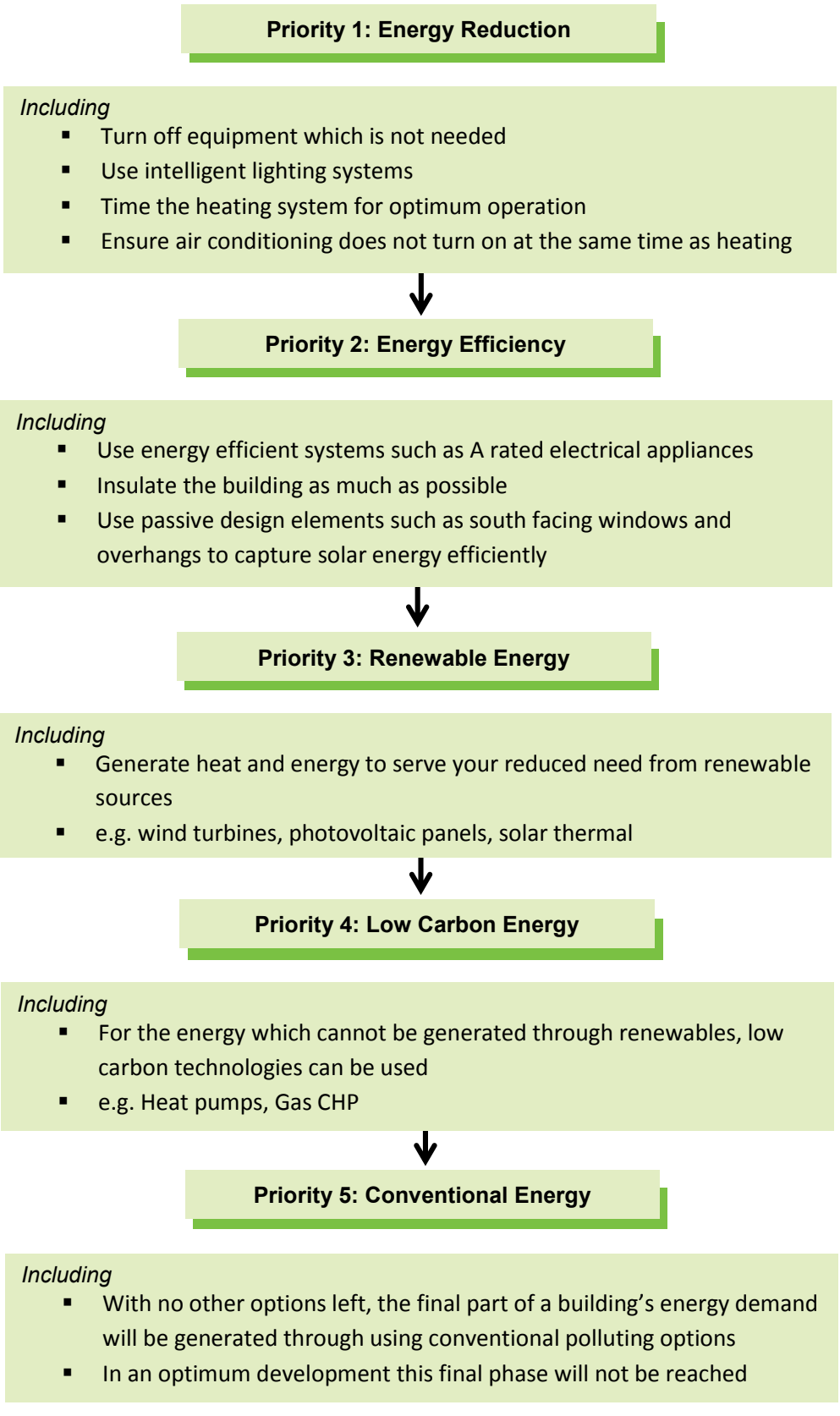
2.1.4 They also provide guidance on the cost of renewable energy technology to enable a decision to be made about the cost of improving fabric energy performance relative to the use of renewable or low carbon technology. This can be found by going to the **energy saving trust** website (above) and searching 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 is the appropriate place to include this information– see **Chapter 6**.

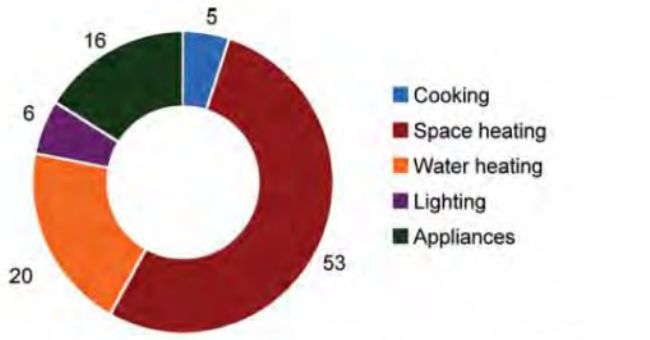
2.2.2 **Appendix 4** provides background information on how energy is measured, and gives links to tools which may assist in producing an energy demand assessment.

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

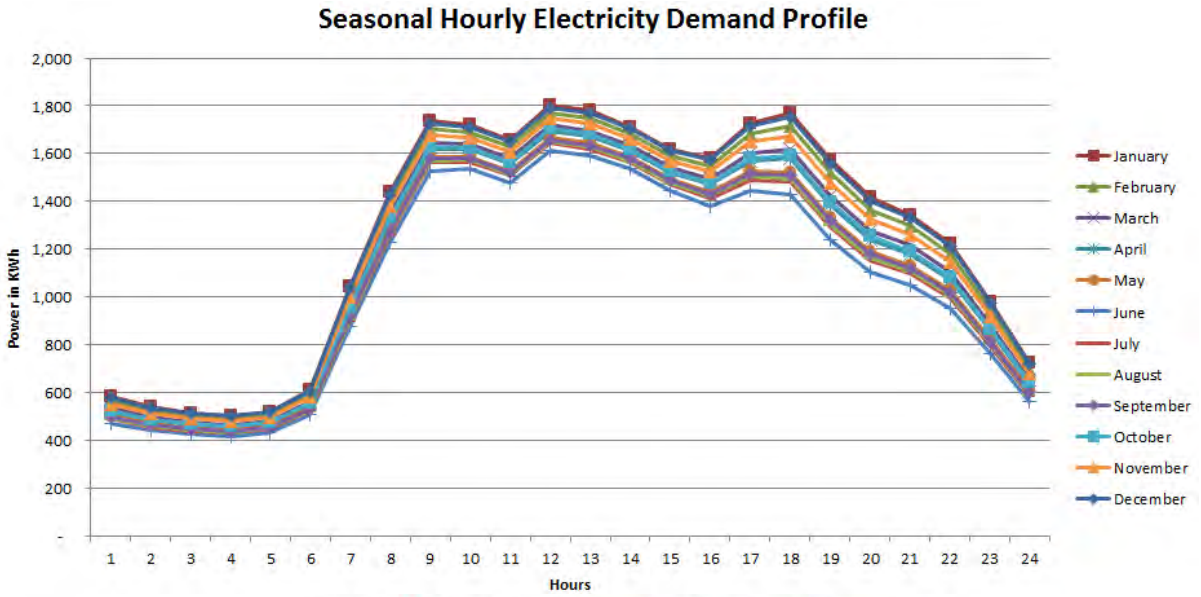


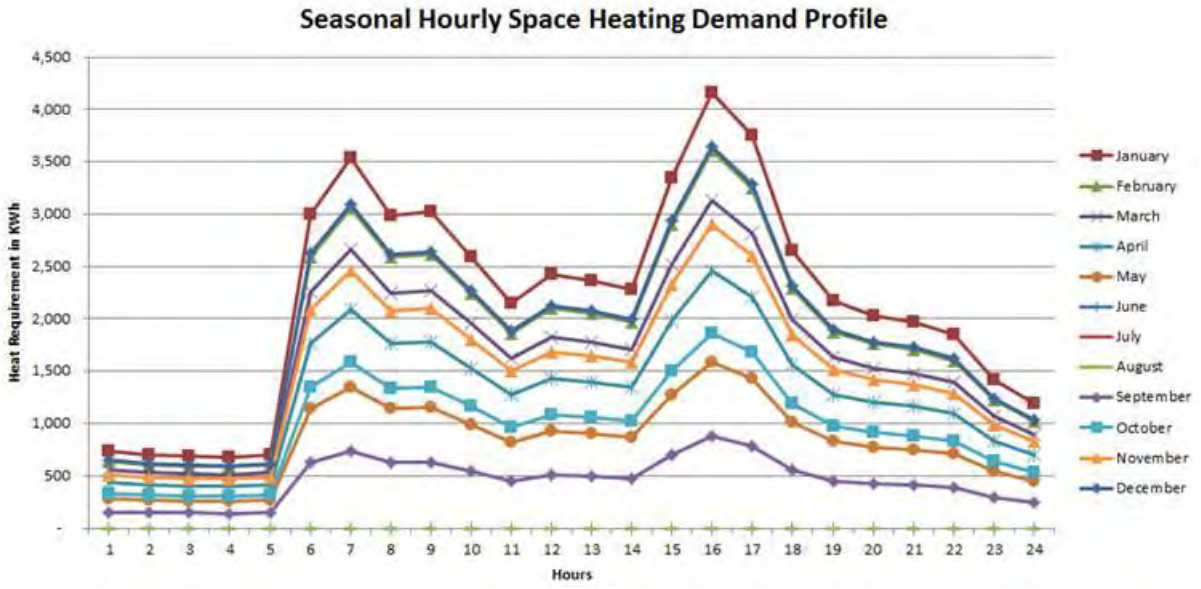
Source: Building a Greener Future: policy statement, DCLG, 2007.

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) **(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.

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 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.

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 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. Appendix 1 of TAN 12 states: *'the applicant must explain how the proposal has appraised and taken into account national/local policy and other relevant aspects of the context of the site".*

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/.

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) will 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.

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 a planning application.
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	
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 (2014) 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) in an Appendix, 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**

Appendix 4: Predicting the Energy Demand of a New Development

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

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

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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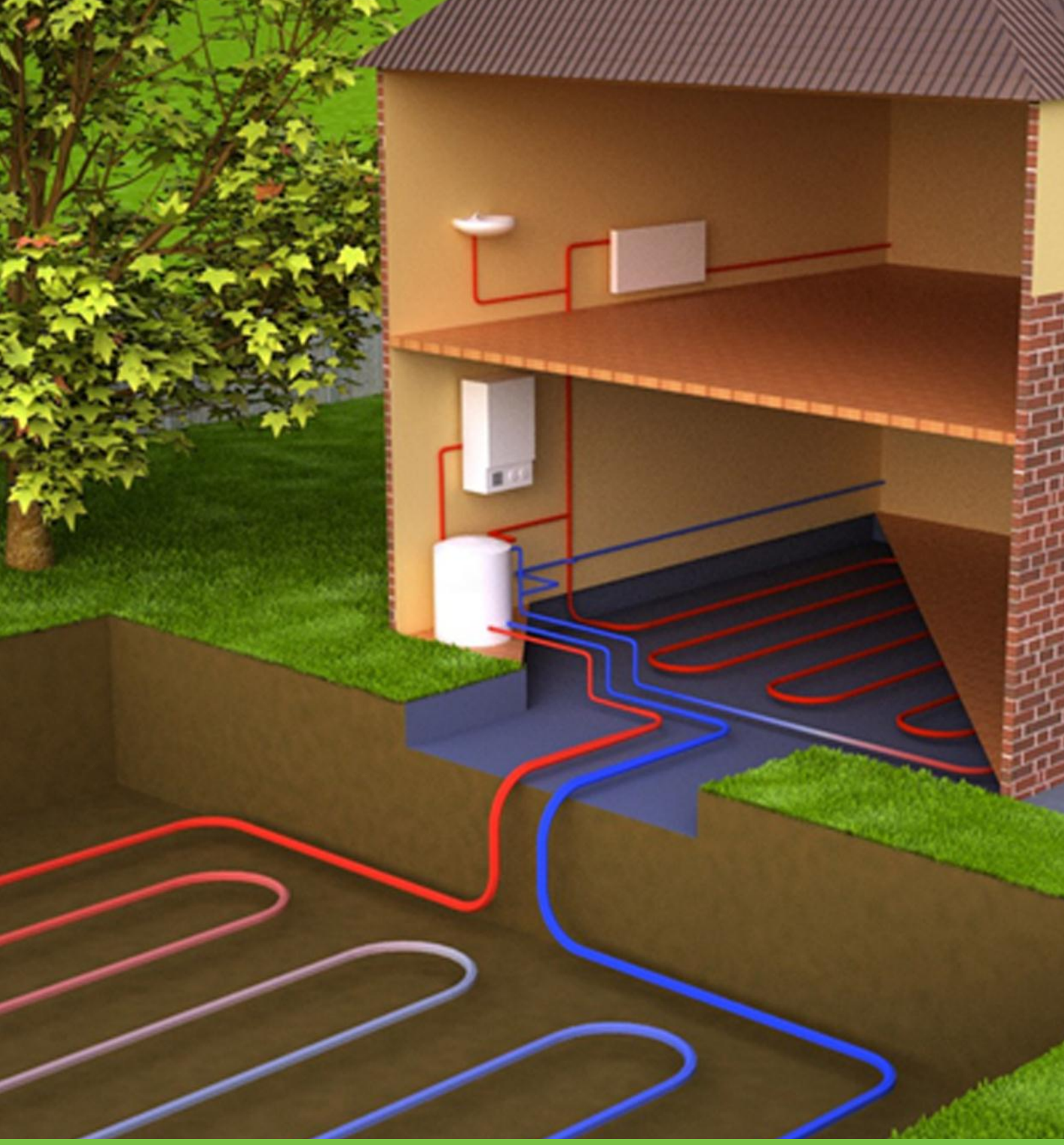

Heat Pumps: Water, Air and Ground Source

monmouthshire
sir fynwy

Cover image: Schematic of a ground source heat pump
source: http://www.homesinharmony.co.uk/images

Air Source Heat Pumps

Technology Description

Heat pumps use the same principles as applied in a refrigerator to effectively move thermal energy from one place to another. In the case of air source heat pumps, these take thermal energy from the ambient air and move it into a property to provide space heating, even at ambient temperatures as low as -15^{o}C. Heat from the outside air is absorbed into a fluid, which then passes through an electrically driven compressor where its temperature is increased before entering the heating and/or hot water circuits of the house.

Heat pumps produce output heat at a lower temperature than from a standard boiler. As a result, it is not normally possible to use a heat pump to directly replace a boiler in standard low water volume radiator systems. Instead, they are best used in under floor heating systems or in high volume radiator systems such as those using traditional large, cast iron radiators. Air source heat pumps are also ideal when used to supply warm air distribution heating systems. Here, reversible heat pumps can be used to provide warm air in the winter and cool air in the summer.

Heat pumps require electrical energy to operate with each unit of electrical power producing many times more units of heat energy (the so called 'coefficient of performance' or COP). This makes them a low carbon technology if the electrical power is from a fossil source. However, if the heat pump is driven by a renewable electricity source then it will also become a renewable technology.

Air source heat pumps usually comprise a heat collector and compressor unit. These can be arranged such that the compressor unit is inside the building meaning that only the heat transfer system is mounted externally. However, some systems can comprise a free-standing, ground mounted, outside unit that is visually similar to packed air-conditioning units, which are in effect the same technology but providing cooling not heating.

Air Source Heat Pumps – SWOT Analysis

Strengths	Weaknesses
▪ Highly efficient. ▪ Can be easily fitted to any building. ▪ Baseload heating supply across the year. ▪ Based on well understood technology with a mature supplier base. ▪ (Unlike ground or water source heat pumps) no need to install collector systems. ▪ Not constrained by ground conditions or water volumes as are ground and water source heat pumps respectively. ▪ Where required, can be used reversibly to provide winter heat and summer cooling. ▪ Can negate the cost of gas connection, liquefied gas or oil tanks, etc. in new build situations.	▪ Requires electrical energy to operate. ▪ Where electricity costs are high relative to heating fuels this can render the technology less commercially attractive. ▪ Air source heat pumps are less efficient than ground or water source heat pumps. ▪ Cannot directly replace existing heating boilers in low water content, radiator based heating systems ▪ Only a truly renewable technology when supplied with renewable electricity. ▪ Can be more visually intrusive than ground or water source heat pumps. ▪ Few possibilities for community benefit, but may have a role in the alleviation of fuel poverty in some circumstances.
Opportunities	**Threats**
▪ Highly flexible in application, especially in new build situations. ▪ A potentially simple replacement for oil or liquefied gas in rural locations away from the gas grid, but this may require changes to the existing radiator system.	▪ Can increase local electrical demand and cumulatively this may require local electricity grid upgrade. ▪ Physical space may prevent use. ▪ Cumulative impacts may lead to noise and visual issues.

Ground Source Heat Pumps

Technology Description

Heat pumps use the same principles as applied in a refrigerator to effectively move thermal energy from one place to another. In the case of ground source heat pumps, these make use of the constant temperature of the earth below around 1.5m depth as a source of energy to provide space heating. Thermal energy from the ground is absorbed into a fluid which then passes through a compressor where its temperature is increased before entering the heating and hot water circuits of the building. This process is achieved either by using a closed loop collector system installed in trenches underground, or by the use of boreholes into which a closed loop collection system is installed. In both cases the surface area of the collector must be sized to allow sufficient energy to be absorbed to meet demand. This in turn is linked to the capacity of the ground to dissipate thermal energy. Wet, dense soils tend to have greater capacity to dissipate thermal energy than do dry, open soil structures.

Heat pumps produce heat at a lower temperature than a standard boiler. As a result it is not normally possible to use heat pump technology for direct boiler replacement in standard low water volume radiator systems. Instead they are best used in under floor heating systems or in high volume radiator systems such as those using traditional large, cast iron radiators. All heat pumps are also ideal for supplying air distribution heating systems, especially as in these applications reversible heat pumps can be used to provide warm air in the winter and cool air in the summer.

Heat pumps require electrical energy to operate with each unit of electrical energy producing many times more units of heat energy (the so-called coefficient of performance or COP). This makes them a low

carbon technology if the electrical power is from a fossil source. If the heat pump is coupled to a renewable electricity source then it will also become a renewable technology.

Ground source heat pumps usually comprise an underground collector and collector/compressor unit. The size of the collectors is based on the load to be met and the capacity of the ground to supply or dissipate energy. Compressors can be located within the building or in a small outside container.

Ground Source Heat Pumps – SWOT Analysis

Strengths	Weaknesses
▪ Can be easily fitted to most buildings where the collector is large enough to meet the required demand. ▪ Baseload heating supply across the year. ▪ Based on well understood technology with a mature supplier base. ▪ Where required, can be used reversibly to provide winter heat and summer cooling. ▪ Can negate the cost of gas connection, liquefied gas or oil tanks, etc. in new build situations.	▪ Requires electrical energy to operate. ▪ Only a truly renewable technology when supplied with renewable electricity. ▪ Where electricity costs are high relative to heating fuels this can make it less commercially attractive. ▪ Requires installation of an underground collector system (unlike air source heat pumps). ▪ Ground conditions can limit outputs. ▪ Cannot directly replace existing heating boilers in low water content, radiator based heating systems.
Opportunities	**Threats**
▪ Highly flexible in application, especially in new build situations. ▪ A potentially simple replacement for oil or liquefied gas in rural locations away from the gas grid, but may need some modification to the heating system. ▪ Any ground works create the opportunity to install heat pump collectors	▪ Can increase local electrical demand and cumulatively this may require local electricity grid upgrade. ▪ Physical space may prevent use, especially for collector systems. ▪ Cumulative impacts may lead to ground freezing/heating, noise and visual issues.

Water Source Heat Pumps

Technology Description

Heat pumps use the same principles as applied in a refrigerator to effectively move heat energy from one place to another. In the case of water source heat pumps, these make use of the thermal energy in bodies of water as a source of energy to provide space heating.

Water source heat pumps can be close or open loop in design. Closed loop systems employ a closed loop collector system submerged in the water, similar to the approach used in ground source heat pump systems. This is useful if the water is saline. Open loop systems physically draw the water through the system and extract thermal energy directly. Here, particles, water purity, etc. can be an issue.

The thermal energy collected from the water is absorbed into a fluid, which then passes through a compressor where its temperature is increased before entering the heating and hot water circuits of the building. A big issue with water sourced heat pumps is the potential to either warm or cool the 'donor' water body and the impact that this might have on wildlife.

Heat pumps produce heat at a lower temperature than a standard boiler does. As a result, it is not normally possible to use heat pump technology for direct boiler replacement in traditional low water volume radiator systems. Instead, they are best used in under floor heating systems or in high volume radiator systems such as those using traditional large, cast iron radiators. All heat pumps are also ideal

for supplying air distribution heating systems, especially as here reversible heat pumps can be used to provide warm air in the winter and cool air in the summer.

Heat pumps require electrical energy to operate with each unit of electrical energy producing many times more units of heat energy. This makes them a low carbon technology if the electrical power is from a fossil source. If the heat pump is coupled to a renewable electricity source, then it will also become a renewable technology.

Water source heat pumps usually comprise either a submerged closed loop collector or suitable extraction and filtration systems in the case of open loop systems. Both open and closed loop systems

are then linked to a collector/compressor unit, which can be located within the building or in a small outside container.

Water Source Heat Pumps – SWOT Analysis

Strengths	Weaknesses
▪ Can be easily fitted to most applications where the available water body is of sufficient volume or flow to meet the required demand. ▪ Supplies baseload heating supply across the year. ▪ Based on well understood technology with a mature supplier base. ▪ Where required, can be used reversibly to provide winter heat and summer cooling. ▪ Can negate the cost of gas connection, liquefied gas or oil tanks, etc. in new build situations.	▪ Requires an available water body. ▪ Requires electrical energy to operate. ▪ Only a truly renewable technology when supplied with renewable electricity ▪ Where electricity costs are high relative to heating fuels this can render the technology less commercially attractive. ▪ Requires installation of a collector system (unlike air source heat pumps). ▪ Water volumes can limit outputs ▪ Cannot directly replace existing heating boilers in low water content, radiator based heating systems
Opportunities	**Threats**
▪ Highly flexible in application, especially in new build situations. ▪ A potentially simple replacement for oil or liquefied gas in rural locations away from the gas grid. ▪ Any water containment systems, areas of standing water (lakes/ponds) or flowing water can be used.	▪ Can increase local electrical demand and cumulatively this may require local grid upgrade. ▪ Thermal impact on the donor water body can prevent use. ▪ Varying water flow/rainfall, etc. can affect water volume and thus thermal capacity.

The Technology – Spatial Elements

- Heat pumps are small scale with spatial implications at the micro level. All require compressor units as the central element of the heat pump system, which interfaces with the heating or cooling system. Ground and water source heat pumps require collectors to link with this system. Air source heat pumps draw thermal energy directly from external air.

- Heat pumps retrofitted into existing properties are more likely to have connectors/compressor units externally fitted. New build properties could include these as internal to the building. Collectors for ground source heat pumps are located under the ground either in vertical boreholes or horizontal trenches with coiled collectors. For new developments these can be located under parts of the scheme e.g. under car parking areas, to make best use of land.

- Heat pumps are suitable for domestic and non-domestic uses. They are well suited to rural locations as an alternative to fossil fuels (which are either absent or costly). Air source heat pumps are well suited to commercial property as they can provide both warm air as heating in winter and cold air in summer.

- They can be used in larger developments by having a bank of heat source pumps to heat a larger building. It could even be possible to have a ground or water source heat pump supplying a small group of residential properties (e.g. 2 or 3 properties), if the right energy output can be achieved. They could be used for a housing development e.g. an air source heat pump per property.

Planning Permission and Other Consents

The flow chart will help you to identify whether planning permission, Listed Building or other consents are required for your heat pump. Permissions and consents should be applied for in parallel to ensure

that there are no delays in taking projects forward. It is advisable to contact NRW at the earliest opportunity if you think you need their permission, consent or license for your project. There are varying statutory deadlines depending on the permit, consent or licence you apply for (see **Appendix 7**).

Where planning permission is required, **Section 6.4** gives guidance on how your application will be assessed and the kinds of issues you need to consider in preparing your application. You will also need to consider the issues which relate specifically to heat pumps.

Heat pumps do not generally give rise to significant impacts.

Draft Monmouthshire Renewable Energy and Energy Efficiency SPG

Key issues in assessing planning applications are likely to be:

- Visual intrusion if compressor units are externally fitted – particularly if there are cumulative impacts; and
- Impacts on hydrology / water flow from water source heat pumps.

Examples of heat pump proposals in Monmouthshire can be found on the Eco Open Doors website:

http://www.monecoopendoors.org.uk/ . Many of these schemes are small scale or domestic in nature and the web site includes contact details for property owners.

Collector loops for a water source heat pump being installed in the Scottish Borders

Image source: **http://www.ihs.com/products/energy-consulting/index.aspx**

Getting Consents: A Summary of the Process

Planning Permission

Air Source Heat Pump:
Will your installation require any kind of enclosure/equipment to be mounted outside the building?

- **Yes** → Planning permission is likely to be required – although if you propose construction of an outhouse this may be permitted development as part of your general householder permitted development rights for extensions to properties.
- **No** → Planning permission not required if the installation is entirely internal.

Ground and Water Source Heat Pumps:
Is your installation for a domestic property and are you applying as an individual householder?

- **Yes** → Planning permission not required if the installation is entirely internal.
- **No** → Installation could be 'permitted development' if within the limits set out in **Appendix 6**. If these limits are exceeded planning permission will be required.

Planning permission will be required.

Ground Source Heat Pumps:
You may need to carry out an archaeological investigation as part of any planning application.

Listed Building Consent

Is your building listed?
Check with the HeritageTeam **(paragraph 5.2.2).**

- **Yes** → Listed Building consent may be required, possibly even if the installation is internal.
- **No** → Listed Building consent will not be required.

Trees

Tree Preservation Orders (TPO):
If you plan to fell or do any works to trees you should check whether they are covered by a TPO (**Appendix 7** for contacts)

Conservation Areas:
If you plan to fell or do any works to trees in a Conservation Area you need to inform the Planning Department in writing 6 weeks beforehand (**Appendix 7** for contacts)

Building Regulations

You will also need to check with Building control to find out whether you need building regulations approval (**Appendix 7** for contacts)

NRW Consent

Water Source Heat Pumps:
You may need consent from NRW.

You may also need a specific consent if your site is a SSSI or affects protected species.

Heat Pumps – Site Selection and Planning Issues

This table should be read in conjunction with **Table 6.2**:

Planning issue (See Table 6.2)		Points to Consider
Landscape sensitivity, character and visual impact	Have you considered the visibility of the site in its wider setting?	▪ Installations should avoid siting at the front or sides of properties facing onto a road, to minimise visual impact. ▪ If the installations will be visible consider ways in which you can minimise impacts on landscape or townscape e.g. by screening enclosures or matching the colour of your enclosure/equipment to its surroundings. ▪ Visual impacts are likely to be minimal, and will usually be associated with air source heat pumps.
Ecology	Could the installation affect ecological habitats or species?	▪ If you are installing water source heat pumps, consider whether operation of the heat pumps will have any impact on habitats and species associated with the water source (i.e. warming of water).
Historic Environment	Is the site within a designated area of historic interest (see **Appendix 8**) Will the installation of equipment affect a Listed Building?	▪ If you are installing ground source heat pumps you may need to undertake archaeological investigations (see section 5.2.2 to contact the Heritage team). ▪ If your installation is in a Listed Building, you will specifically need to consider the impact of installation on the structure of the Listed Building and Listed Building Consent will be required, even if the installation is internal.
Access and servicing	Will routine access be required to any part of the system?	▪ Consider how access for delivery of fuel for heat pump operation will be achieved with minimum disruption. This consideration may affect where you can locate installations within your site.
Design of buildings	Is the installation of equipment externally attached to a building or a freestanding building?	▪ Consider how the design of any building housing equipment fits with the design of the building to which it is attached; or it if is free standing, consider the link with adjacent buildings.
Water management, hydrology and flood risk	Would the installation involve use of water and/or affect the hydrology of an area? Does your water or ground source heat pump system involve use of chemicals?	▪ If you are installing water source heat pumps, consider whether use of the water source will have any effect on hydrology in the area (e.g. affecting the water table) as this should be avoided. ▪ If you need to dig trenches for water or ground source heat pump equipment consider if there will be any impact on the hydrology of the area resulting from the earthworks. ▪ If you are in an area of flood risk, consider the location of external pumps and connectors to ensure they are above potential flood levels. This in turn might have an impact on visibility that you will need to consider. ▪ Bear in the mind the best type of soils for ground source heat pumps are those in wetter soil types as these provide better heat conversion than drier soils – so location in an area of flood risk or where soils are more boggy is not necessarily an issue for ground source heat pumps and could be a benefit. ▪ Consent from NRW (Natural Resources Wales) may be required for water source heat pumps. ▪ Consider whether there is any risk of chemical pollution arising from operation of the system into watercourses and how this can be avoided/mitigated.
Health / Quality of life (Noise & soil stripping / storage)	Will the external equipment emit any noise?	▪ 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 such as screening/planting to reduce noise. Bear in

Planning issue (See Table 6.2)		Points to Consider
	Will the installation of equipment require digging, stripping and storage of soil?	mind that for air source heat pumps, an air flow is essential so external equipment cannot be fully enclosed. ▪ For ground and water source heat pumps you will need to consider how you manage the stripping and storage of soil on site during installation to avoid visual intrusion and minimise disruption to neighbours during installation.
Cumulative impacts	Are there other similar installations nearby?	▪ Whilst visual and ecological impacts are likely to be minimal, these may increase if there are a number of installations within a small area; if the area is particularly sensitive (such as in a Conservation Area) then this could begin to have a detrimental impact.
Social considerations / engagement	Have you considered any level of community partnership in association with this scheme?	▪ Consider whether there is potential for a water or ground source heat pump system that could be shared between more than one property. If so, consider if there is any opportunity for a community partnership and community benefit from the scheme (e.g. a community partnership could own the heat pumps and sell heat to occupiers). If you have not considered this, would you welcome working with the local community to share some of the risks and benefits to this development?
Decommissioning	Have you planned for removal of the equipment at the end of its lifetime?	▪ This is the same as replacement of any refrigeration plant. ▪ There is unlikely to be any issues with hazardous waste. ▪ The fate of any heat collector system will depend on its condition and the ease with which underground systems can be accessed for replacement.

Anaerobic Digestion

monmouthshire
sir fynwy

Image source: http://blog.emap.com/footprint/2011/07/22/footprintwire-220711/

Anaerobic Digestion

Technology Description

Anaerobic digestion (AD) is a natural process, similar to that which occurs in the stomach of cows. In the absence of oxygen, bacteria digest (break down) organic materials to produce a methane rich biogas. After cleaning and drying, this gas can be used to displace fossil gas or can be burnt in an internal combustion engine or small turbine to generate electricity and heat.

This treatment process is almost identical to that used to create 'sewage gas' from the treatment of human sewage in sewage treatment plants.

Feedstock's for AD can include the organic fraction from household waste, organic wastes from industrial processes including food processing, crop residues or crops grown specifically as a feedstock. It is also possible to co-digest sewage and other organic materials.

Depending on the feedstock, co-products can include a fibre fraction and a liquid fraction, both of which are potentially useful as fertilisers.

Because the feedstock for AD will typically be sourced locally, this creates the potential for economic benefits of an AD energy project to be retained locally as well.

A typical AD plant will comprise an area to receive and store the feedstock, a process to macerate or pulp the feedstock, holding tanks and the digester tank itself. The gas produced will then go through a clean-up process to dry it and remove acidic elements before being stored and/or used in either an on-site gas engine to support power generation or CHP or piped to a remote location for use.

500m^2 AD plant at Newcastle University. Image Source: http://blog.emap.com/footprint/2011/07/22/footprintwire-220711/

Anaerobic Digestion – SWOT Analysis

Strengths	Weaknesses
▪ Baseload generation with the potential for gas storage to minimise risks from plant outage. ▪ Accepts a large range of organic wastes from households, industrial processes, catering, food processing, etc. ▪ Can adapt to changing feedstock. ▪ Proven technology with many suppliers across the development chain. ▪ Commercial waste attracts a gate fee improving the economic performance of AD schemes using this waste. ▪ Local job creation and wealth retention. ▪ Can feed CHP or displace grid gas supply. ▪ AD can operate from kW to MW scale. ▪ All products from the process have a value. ▪ Methane is a more powerful greenhouse gas than CO_2 enhancing environmental benefits of the beneficial use of methane generating wastes such as animal slurry for energy generation.	▪ Relative to the amount of feedstock required, AD is an inefficient source of renewable energy. ▪ The process can have a large physical footprint which means that land-take can be problematic in some applications. ▪ In many cases, waste will need to be transported to the site of the digester creating possible issues. ▪ There is the perception that odour may be a problem leading to potential local opposition. ▪ Additional permitting is associated with waste based processes and will be required for AD. ▪ Limited (but growing) operational capability outside of the water industry. ▪ Has some visual impact, potential for low level noise, transport impacts and air quality issues, all of which need to be considered.
Opportunities	**Threats**
▪ As a rural county, Monmouthshire potentially has a range of AD feedstock's available including animal waste. ▪ Can reduce the cost of waste processing from food production increasing profitability. ▪ The process can fit well into a farm business. ▪ Visually, AD resembles other existing agricultural processes. ▪ As landfill taxes rise, AD will become more economically attractive as a route for organic waste treatment. ▪ AD is recognised as having value in controlling nitrate release in agriculture.	▪ As a biological process, there is the potential for contamination to stop the process leading to failure of energy supply and potentially breaches of any discharge consents. ▪ Possibility of EU waste legislation to change impacting on AD viability.

The Technology – Spatial Elements

- The combination of buildings, tanks, space for storage and access for delivery of feedstock's, means that AD plants can be quite industrial looking, but not dissimilar to other agricultural tanks and silos. There is no standard number or size of buildings, tanks, or other structures needed. This will depend on the size of the project, type of feedstock's to be used, the selected digestion process and the nature of the energy output. For instance, whether gas storage will be involved, or whether extra thermal stores of hot water will be needed. There may also be a requirement for on-site treatment of co-products from the process such as fibre for composting, although this treatment can also be off-site such as in an existing local composting facility. Additional treatment activities will add to the space requirement and may have other impacts.

- AD plants are often constructed as standalone units, but they can also be associated with other developments, especially where these produce the feedstock that will be used in the AD process.

- An AD system could be used to heat and/or power a residential development although fitting the spatial requirements into a residential 'landscape' would need careful thought. One possibility may be in association with rural housing sites.

- AD is more usually associated with industrial or agricultural businesses where it can be used to process waste products into energy and further products (compost) both of which have a value. AD plants could also be attached to public facilities such as hospitals, to deal with waste products.

- While AD generally applies at the larger scale, in theory it can operate at small, even domestic scale as well. This means that at the individual farm or business level AD may be an option.

Planning Permission and Other Consents

The diagram on the following page sets out the need for planning permission and other consents. It is advisable to contact NRW at the earliest opportunity if you think you need their permission, consent or license for your project. There are varying statutory deadlines depending on the permit, consent or licence you apply for (**see Appendix 7**).

Section 6.4 gives guidance on how your application will be assessed and the kinds of issues you need to consider in preparing your application. In addition, you will need to consider the issues in the table below which relate specifically to Anaerobic Digestion.

Key issues in assessing planning applications are likely to be:

- Landscape and visual impact (depending on the location) – how large an area will be needed, and how tall will the buildings need to be?

- For large scale civic amenity sites transport / access is likely to be a key issue; and

- Impacts on ecology and human health through disturbance of habitats and species, noise pollution, water pollution, pests and air quality.

Getting Consents: A Summary of the Process

Planning Permission

Planning permission is required. Although this is under review by the Welsh Government and may change.

Listed Building Consent

Is your site within the curtilage (garden/boundary) of a Listed Building? Check with the Heritage Team (**para 5.2.2**)

Yes

Listed Building consent may be required if your proposal includes alterations existing structures/buildings.

No

Listed building consent will not be required.

Trees

Tree Preservation Orders (TPO):
If you plan to fell or do any works to trees you should check whether they are covered by a TPO (**Appendix 7** for contacts)

Conservation Areas:
If you plan to fell or do any works to trees in a Conservation Area you need to inform the Planning Department in writing 6 weeks beforehand (**Appendix 7** for contacts)

Building Regulations Approval

Building regulations approval will be required.

NRW Consent

If your scheme uses waste you likely require consent from NRW.

You may also need a specific consent if your site is a SSSI or affects protected species.

Anaerobic Digesters – Site Selection and Planning Issues

This table should be read in conjunction with **Table 6.2**:

Planning issue (See Table 6.2)	Key questions	Points to Consider
Landscape sensitivity, character and visual impact	Will the AD plant be located in a designated landscape? (see **Appendix 8**) Have you considered the visibility of the site in its wider setting?	▪ If you are considering an AD plant in the Wye Valley AONB or on the edge of the Brecon Beacons National Park, size and siting of a potential development will be particularly important planning considerations. ▪ Smaller scale plants well integrated with agricultural sites are more likely to get planning permission than large industrial units in or close to designated landscapes. ▪ Consider how to reduce visual impact by use of screening or selection of colour and type of materials. Other factors such as the need for delivery access, and where heat is piped to will also influence site layout and therefore how visual impact can be reduced. ▪ If the AD plant is located on the edge of a settlement consider the wider visual impact on townscape character and views to/from the plant and the settlement. ▪ Consider how on-site boundary treatment can be used to reduce visual impact.
Ecology	Could the AD plant affect ecological habitats or species? (see Appendix 8 for designations)	▪ The potential for contamination should be considered and if possible avoided (both on and off site). Mitigation measures (e.g. bunding to contain spillage) may be required. Particular care should be taken close to designated sites.
Historic Environment	Is the site within a designated area / site of historic interest, on a listed building or within a Conservation Area? (see **Appendix 8**)	▪ At these sites, smaller schemes well integrated with the site in terms of building design, or using vegetation as screening are more likely to be acceptable.
Access & Servicing	What feedstock's will you be using and how often will they be delivered?	▪ If your AD plant is intended to use feedstock's from sources other than your own, you will need to identify how often and in what sort of vehicle supplies will be made, in order to identify the potential impact of traffic movements to and from the site. Consider how delivery of feedstock can be managed in terms of timings if there is likely to be disruption in terms of noise and nuisance, particularly where a site is relatively close to residential properties. A Transport Assessment may be required. ▪ Ensure that the site layout has sufficient space for on-site vehicle movements generated as a result of delivery of feedstock's.
Water management, hydrology and flood risk	Are there any watercourses near to the potential site?	▪ You will need to plan protection measures against process failures that might lead to release of high strength liquid waste into the environment. This might require mitigation measures such as bunding to contain leakages. AD plants will need to be compliant with environment legislation, with the appropriate licenses obtained. You are likely to require consent from NRW.
Human Health & quality of life (pests & odours)	Will the plant attract pests? Is there potential from unpleasant odours?	▪ There is potential for impacts on human health related to the storage of waste and pest control, and proposals should seek to ensure that storage facilities take account of this. ▪ Your planning application will need to include information on whether there is potential for odours to be emitted and how this can be mitigated.

Planning issue (See Table 6.2)	Key questions	Points to Consider
Agriculture	Is the AD plant likely to take any agricultural land?	▪ Developments should be well related to existing buildings rather than taking land in agricultural use where associated with existing farm enterprises.
Cumulative Impact	Are there any other anaerobic digesters in the vicinity of your proposed installation?	▪ Check whether there are any other AD units existing or proposed in the vicinity. The potential for cumulative impacts will be particularly important in relation to landscape, visual, historic environment and ecological impacts.
Social considerations / engagement	Where will your fuel supply come from? Have you involved the local community in the development of your project? Have you considered any level of community partnership in association with this AD scheme?	▪ If possible fuel supplies should be sourced locally as this can help to reduce local waste as this minimises transport impacts and can help to reduce the burden on local landfill sites. It can also help to support local businesses that grow feedstock's. ▪ Consider the opportunity to work with a local community through early consultations and discussions in the development of your project (discussions and outcomes can be recorded in the Design and Access Statement/information accompanying the planning application) ▪ Consider whether there is any opportunity for a community partnership and community benefit from the AD scheme. If you have not considered this, would you welcome working with the local community to share some of the risks and benefits to this development?
Decommissioning	Have you planned for removal of the equipment at the end of its lifetime?	▪ Monmouthshire County Council will require decommissioning of technologies and their removal and return of land to its former use where this was productive. It will seek to include conditions on planning consents which require a mechanism and organisation in place to decommission.

Farm scale AD

Image source: **http://www.ambergreenenergy.co.uk/anaerobic-digestion-ad-plant/**

Biomass

Image source: http://www.hotel-magazine.co.uk/hotel-goes-green-to-slas
bills/

Biomass Combustion

Technology Description

Biomass is the term that describes solid fuels coming from biological sources, such as wood and straw. Biomass can also be produced from energy crops such as coppiced trees and energy grasses such as Miscanthus. The term Biofuel is usually used to describe liquid fuels such as oils from oilseeds or bio-alcohols. The usual characteristic of biomass is that the material is dry, not least as this increases the effective energy yield from the material.

Biomass combustion is used to serve heat applications. Biomass for power generation or CHP is dealt with in another section of this SWOT analysis.

Small scale (domestic) combustion of biomass can be in stoves or larger batch fed combustion plant. Batch combustion systems are usually connected to a large insulated water tank that acts as a thermal store to provide day-round heat. These systems tend to burn logs or whole straw bales.

Larger scale combustion systems can be from large domestic to industrial scale. They are typically based on designs similar to traditional coal combustion systems and are fed by pelleted or chipped wood or by chopped straw. They are normally automatic in operation, including fuel feed. Ash production is typically low compared with coal. Matching fuel quality to the specification of the combustion plant is essential in terms of moisture content and particle size. Biomass that is too wet for the design of combustion system can lead to poor air quality, excessive plume, smoke, etc. and material that is over or under size can cause failure of the fuel feed mechanisms.

Biomass energy systems have the capacity to deliver a range of local economic and social benefits associated with fuel supply, especially for smaller combustion systems. This is because wood fuel supply creates a market for otherwise uneconomic woodland management activities such as thinning, removal of poor quality trees, harvesting residues, etc. In effect this means that the value of fuel sales is retained locally and potentially available to deliver these wider benefits.

A typical biomass system comprises a fuel reception/storage facility, a combustor within a building or container and a flue or chimney. Flue gas clean-up to remove particles, etc. is also always included in larger plant.

It can sometimes be more cost effective for biomass heating to take the baseload and to use other systems such as a gas boiler to 'top-up' as required.

Biomass Combustion – SWOT Analysis

Strengths	Weaknesses
▪ Biomass can provide a valuable income from un-merchantable material such as wood harvesting residues, pre-commercial thinning operations, removal of dead trees, etc. ▪ Biomass harvesting can contribute to bringing woodlands back into production and the creation of habitat and biodiversity.	▪ Air quality can be an issue with biomass use that has the capacity to limit uptake. ▪ Solid fuel supply will increase transport movements. ▪ Plant size is large relative to similar plants using fossil fuel systems.

Strengths	Weaknesses
▪ Money spent on biomass fuel is retained within the local supply chain. ▪ Jobs will be created from biomass supply. ▪ Biomass is a baseload energy source. ▪ Biomass fuel costs are not directly linked to oil (as with most fossil fuels) potentially leading to more stable fuel prices into the future.	▪ The need for on-site solid fuel storage adds to land take and cost.
Opportunities	**Threats**
▪ Monmouthshire is a wooded county creating opportunities for fuel supply. ▪ The rural nature of the county makes it ideally placed to create and support a biomass supply infrastructure. ▪ There is an existing forest products industry in South Wales. ▪ Monmouthshire has good access to other potential sources of biomass fuel giving potential to create a larger and thus more sustainable biomass industry. ▪ Biomass can provide income into local woodland management activities further enhancing the attractiveness of the county. ▪ Good opportunities for community owned biomass combustion schemes.	▪ If no credible, dependable fuel supply infrastructure exists then a biomass scheme will not be 'bankable' and cannot be developed. ▪ The large physical size of a biomass system may render it inappropriate for some developments.

Domestic scale biomass boiler

Image Source: http://www.mgrenewables.com/product/Biomass_Systems.html

Biomass Combined Heat and Power (CHP)

Technology Description

Biomass is the term that describes solid fuels coming from biological sources such as wood and straw. Biomass can also be produced from energy crops, such as coppiced trees, and energy grasses, such as Miscanthus. The term Biofuel is usually used to describe liquids fuels, such as oils from oilseeds or bio-alcohols. The usual characteristic of biomass is that the material is dry, not least as this increases the effective energy yield from the material.

Biomass CHP is used to generate electricity and heat applications. Biomass combustion for heat only generation is dealt with in another section of this SWOT analysis.

Biomass CHP is usually only considered at large (MW) scale due to issues around the efficiency of electricity generation; however, as new conversion processes that are capable of operating efficiently at smaller scale become commercialised, this ceiling will fall.

Biomass CHP is achieved either by using combustion systems or so called advanced conversion processes. Combustion systems are based on designs similar to traditional coal combustion systems and can be grate or fluidised bed designs. These are almost all fed by chipped wood or whole bales of straw/energy grasses, with the latter usually progressively fed into the combustion process rather than using a batch fire approach. These combustion processes are used to create steam to drive a turbine using a rankine cycle, the same as in coal fired power plant. Most large scale biomass plants are at the 10's MW scale; however, using organic fluid based heat transfer systems in the rankine cycles can be more effective in smaller scale plant.

Advanced conversion comprises gasification or pyrolysis. In simple terms, these processes burn the fuel in limited oxygen such that the combustion process is stopped at the point of gas formation. This is similar to the way in which 'town gas' was produced from coal prior to the supply of natural gas to our homes. In pyrolysis systems the product is a liquid. These systems have the potential to operate efficiently at far smaller scales, even down to kW levels. This is because the gas or liquid products can also be used in engines or turbines significantly increasing the efficiency of electrical generation.

When operating as CHP, around 2-3 times as much heat is produced as electricity, making the availability of a large, base heat load essential. This is usually serviced using a heat main, also known as a district heating network. In reality, it is the availability of the heat demand which dictates the economic viability of a CHP system.

A typical biomass system comprises a fuel reception/storage facility, a combustor within a building or container and a flue or chimney. Associated plant such as for water purification where steam is being generated will also be required. Flue gas clean-up is also always included. Unless the heat demand within the CHP application can guarantee that all of the heat will be used as soon as it is generated, then a cooler/condenser unit will be required as a heat sink. These are unlikely to comprise traditional cooling towers but instead will use systems in which fans draw air through a 'radiator' system.

Biomass CHP – SWOT Analysis

Strengths	Weaknesses
▪ Biomass can provide a valuable income from un-merchantable material such as wood harvesting residues, pre-commercial thinning operations, removal of dead trees, etc. ▪ Biomass harvesting can contribute to bringing woodlands back into production and the creation of habitat and biodiversity. ▪ Money spent on biomass fuel is retained within the local supply chain. ▪ Jobs will be created from biomass supply. ▪ Biomass is a baseload energy source. ▪ Biomass fuel costs are not directly linked to oil (as with most fossil fuels) potentially leading to more stable fuel prices into the future.	▪ Traditionally biomass CHP plant are by their very nature very large, although smaller plant are becoming available. ▪ Solid fuel supply will significantly increase transport movements. ▪ The fuel supply requirements of a large scheme will likely exceed the capacity of the may limit the capacity to supply smaller heat-only projects. ▪ Air quality is an issue with any combustion process. ▪ The limited availability of large, constant heat loads restricts the uptake of any CHP system. ▪ If coolers are required to dissipate unwanted heat this will add to cost and the parasitic electrical load. Issues with noise may also result.
Opportunities	**Threats**
▪ Monmouthshire is a wooded county creating opportunities for local fuel supply. ▪ The rural nature of the county makes it ideally placed to create and support a biomass supply infrastructure. ▪ There is an existing forest products industry in South Wales. ▪ Constant heat loads can be serviced by a CHP, giving the increased benefit of electricity generation ▪ Monmouthshire has good access to other potential sources of biomass fuel giving potential to support a larger biomass CHP plant.	▪ If no credible, dependable fuel supply infrastructure exists then a biomass scheme will not be 'bankable' and cannot be developed. ▪ The large physical size of a biomass system may render it inappropriate for some locations. ▪ The increasing thermal efficiency of new buildings makes new development an increasingly unviable option as a heat load restricting the uptake of CHP systems in new developments.

The Technology – Spatial Elements

- For small scale domestic biomass heating systems, structures will be internal apart from the flue/chimney required (which is where there may be a planning implication). For larger schemes including most biomass CHP, there will be a combination of buildings and space for storage and access for delivery of the biomass used. This means that biomass CHP can be quite industrial looking. There is no standard number or size of buildings and storage space needed. It will depend on the extent of energy output. A particular consideration with biomass CHP is whether preparation of the biomass fuel (to bring fuel to the right moisture content for use, for example) is required and whether this will be done on-site or elsewhere. On-site fuel storage will be required however, with the size of the storage facility dictated by operational considerations.

- Biomass heat systems are suitable for domestic and non-domestic uses. They are well suited to rural locations as an alternative to fossil fuels (which are either absent or costly). They can be used to drive industrial processes. Individual biomass heat systems can be used as the individual property /business level.

- Biomass CHP is larger scale and could be used to support heat and electricity needs in both residential and non-residential developments. An important consideration at all scales is the sourcing of biomass fuel; what will be used, where will it be sourced and will it be regularly and reliably available. This is important as biomass systems are specified to the fuel source that is used and if alternative biomass fuels are used this can cause problems in functioning of the system.

Planning Permission and Other Consents

Planning permission is likely to be required for biomass heating and CHP systems. However, small scale domestic biomass heating installations may not require planning permission. The diagram on the following page sets out the need for planning permission and other consents. Permissions and consents should be applied for in parallel to ensure that there are no delays in taking projects forward. It is advisable to contact NRW at the earliest opportunity if you think you need their permission, consent or license for your project. There are varying statutory deadlines depending on the permit, consent or licence you apply for (see **Appendix 7**).

Section 6.4 gives guidance on how your application will be assessed and the kinds of issues you need to consider in preparing your application. In addition, you will need to consider the issues in the table below, which relate specifically to Biomass combustion and CHP.

Key issues in assessing planning applications are likely to be:

- Visibility issues and impacts on landscape and townscape, particularly in historic areas. Mitigating the impact of buildings and in particular flues (even on domestic scale projects) will be important;
- Traffic and noise associated with delivery of feedstock's;
- Noise from plant operation – noisy elements such as the air cooling condenser should be located away from sensitive areas; and
- Air quality – emissions from plant operation and odour from some biomass fuels.

Examples of Biomass proposals in Monmouthshire can be found on the Eco Open Doors website: **http://www.monecoopendoors.org.uk/** . Many of these schemes are small scale or domestic in nature and the web site includes contact details for property owners.

Getting Consents: A Summary of the Process

Planning Permission

Is your installation for a domestic property and are you applying as an individual householder?

Yes

Installation could be permitted development if within the limits set out in **A1 (Appendix 6)**. If these limits are exceeded planning permission will be required.

No

Planning permission will be required

Listed Building Consent

Is your site within a Listed Building or within the curtilage (garden/boundary) of a Listed Building?

Check with the Heritage Team **(para 5.2.2)**

Yes

Listed Building consent may be required if your proposal includes alterations to existing structures/ Buildings.

No

Listed Building consent will not be required.

Building Regulations

Building regulations approval may be required.

NRW Consent

NRW regulate the burning of biomass in appliances with a rated thermal input of 50MW and above or if the biomass is classed as waste a rated thermal input of 3MW and above. Any proposal below the above criteria may still require a permit from the Local Authority.

Trees

Tree Preservation Orders (TPO):
If you plan to fell or do any works to trees you should check whether they are covered by a TPO (**Appendix 7** for contacts)

Conservation Areas:
If you plan to fell or do any works to trees in a Conservation Area you need to inform the Planning Department in writing 6 weeks beforehand (**Appendix 7** for contacts)

Biomass – Site Selection and Planning Issues

This table should be read in conjunction with **Table 6.2**:

Planning issue (See Table 6.2)		Points to Consider
Landscape sensitivity, character and visual impact	Will the Biomass plant be located in a designated landscape (see **Appendix 8**) Have you considered the visibility of the site in its wider setting?	▪ Very careful consideration of siting within the landscape will be required if you are considering a biomass plant at anything larger than domestic scale in the Wye Valley AONB or on the edge of the Brecon Beacons National Park. ▪ If you are installing biomass heating in a domestic property where planning permission is required (and even if not required) then consider the impact of the flue that you will require; will it be visible in the landscape? ▪ Consider how to reduce visual impact by use of screening or selection of colour and type of materials. Ensure that buildings are not in the direct line of vision of neighbouring properties. The height of the flues will be an important consideration. ▪ Consider whether there will be a wider impact on the townscape character of an area from a biomass plant if located in or on the edge of settlements; and if so, how this can be minimised by careful siting and screening.
Ecology	Could the Biomass plant affect ecological habitats or species? (see **Appendix 8** for designations)	▪ If the Biomass plant is proposed near to a designated or sensitive ecological area, impacts on species from delivery and storage of feedstock's should be avoided. ▪ Consideration of habitats and species on site will also be important. Schemes should be designed to avoid habitat loss or disturbance from emissions or noise, either through careful siting or as part of re-creation of habitats within the overall development.
Historic Environment	Is the site within a designated area / site of historic interest? (see **Appendix 8** for designations)	▪ At sites of Listed Buildings or SAM's, smaller, domestic scale schemes well integrated with the site in terms of building design or screening are more likely to be acceptable. ▪ If you are located in or on the edge of a Conservation Area, the visual impact of flues will be important and should preserve or enhance the character of the area. This is true for domestic properties as well as CHP plants.
Access and servicing	What feedstock's will you be using, where will these be sourced and how often will they be delivered? What kind and size of vehicle will be used?	▪ The potential impact from delivery of biomass feedstock's will need to be considered. For larger plant you will be expected to provide information on numbers and regularity of deliveries to the plant and consider what the impact of traffic generation will have on surrounding properties and on the road network. (A Transport Assessment may be required) ▪ Ensure that the road network to the potential site is capable of taking the level of traffic likely to be generated in terms of delivery of biomass feedstock. ▪ Ensure that the site layout has sufficient space for on-site vehicle movements generated as a result of deliveries
Human health and quality of life (air quality)	Will any plume of smoke be emitted from the process?	▪ Careful siting of flues/chimneys will be important in relation to factors such as prevailing wind conditions, to minimise any adverse impacts from emissions on nearby properties. You should check with the equipment supplier whether any licences or

Planning issue (See Table 6.2)		Points to Consider
		permissions are required for your installation. Impacts may vary with weather and seasons.
Cumulative Impact	Are there any other Biomass plants (or similar – e.g. Energy from Waste) in the vicinity of your proposed installation?	▪ Check whether there are other Biomass plants existing or proposed in the vicinity. The potential for cumulative impacts (including from Energy from Waste and Gas CHP plants) will be particularly important in relation to the visual impact of flues on landscape or townscape.
Social considerations / engagement	Where will your fuel supply come from? Have you involved the local community in the development of your project? Have you considered any level of community partnership in association with this Biomass scheme?	▪ If possible fuel supplies should be sourced locally as this can help to reduce local waste as this minimises transport impacts and can help to reduce the burden on local landfill sites. It can also help to support local businesses that grow feedstock's. Biomass energy has great potential to return economic benefit to the local community from local fuel supply. Note that woodland thinning requires a licence from the (Natural Resources Wales NRW) (Appendix 7). Consent is also required from NRW for afforestation projects such as short rotation coppice or forestry above certain thresholds. ▪ Consider the opportunity to work with a local community through early consultations and discussions in the development of your project (discussions and outcomes can be recorded in the Design and Access Statement/information accompanying the planning application) ▪ Consider whether there is any opportunity for a community partnership and community benefit from the AD scheme. If you have not considered this, would you welcome working with the local community to share some of the risks and benefits to this development?
Decommissioning	Have you planned for removal of the equipment at the end of its lifetime?	▪ Typically the time-expired boiler and associated ancillary equipment will be disposed of as scrap metal – in the same way as other CHP or boiler systems. ▪ There are unlikely to be any issues with hazardous waste.

Retrofitted biomass boiler and fuel store at Roden Dogs Trust, Shrewsbury

Image source: **http://organicenergy.wordpress.com/**

Energy from Waste

Image source: http://www.nce.co.uk/awards/bci-awards/bci-awards-2013-civils/5207821.article

monmouthshire
sir fynwy

Energy from Waste

Technology Description

Energy from Waste describes the process whereby waste is disposed of by combustion or thermal processing and energy is captured from the process, normally in the form of electricity. CHP becomes an option where a suitable heat load exists.

Waste combustion is normally undertaken in plant based on coal combustion equipment. The Waste Incineration Directive (WID) legislation is implemented through Environmental Permitting Regulations in Wales and ensures that the combustion process is efficient and leads to no harmful emissions. However, the cost of compliance of the WID tends to favour larger (district scale) combustion plant.

In the past, most energy from waste plants were so called 'mass burn' incinerators, where the entire amount of waste collected was burnt normally after the removal of metal and glass. These days, the increase in recycling and the increased commodity values associated with recovered materials from recycling means that these materials are removed prior to combustion. This means that most plastic, paper and card is removed from the waste stream for recycling and is not burnt.

As a result, energy from waste plants are now smaller and not based on mass burn approaches. In addition, it is normal to have a recycling facility associated with the energy facility to specifically remove recyclates prior to combustion of the residual material. These smaller plants are ideal for advanced conversion processes, which include gasification and pyrolysis. In simple terms, these processes burn the waste in limited oxygen such that the combustion process is stopped at the point of gas formation. In pyrolysis systems the product is a liquid. Other advanced technologies such as those based on plasma are also now available. One benefit of advanced conversion plant is that they have the potential to operate commercially at town scale.

Energy from waste is an essential element of any zero waste to landfill strategy, as there will always be material which cannot be recycled for reasons of non-hazardous contamination, poor quality or lack of a ready market.

When operating as CHP, around 2-3 times as much heat is produced as electricity making the availability of a large, base heat load essential. This is usually serviced using a heat main, also known as a district heating network. In reality, it is the availability of the heat demand which dictates the economic viability of a CHP system.

As described above, most energy from waste plants are co-located with a Municipal Recycling Facility (MRF) to separate out the recyclable materials leaving only the non-recyclable combustible fraction to be used for energy. In addition to the MRF, a typical waste to energy plant comprises a fuel reception/storage facility, a combustor within a building or container and a flue or chimney. Flue gas clean-up is also always included. Unless the heat demand within the CHP application can guarantee that all of the heat will be used as soon as it is generated, then a cooler/condenser unit will be required as a heat sink. These are unlikely to comprise traditional cooling towers but instead will use systems in which fans draw air through a 'radiator' system.

Energy from Waste – SWOT Analysis

Strengths	Weaknesses
▪ Energy from waste is an essential element of a zero waste to landfill policy providing re-use of combustible materials that cannot be recycled. ▪ The WID Directive ensures that energy from waste is a clean process. ▪ The payment of a gate fee to dispose of waste can make energy from waste a commercially attractive option. ▪ Is a baseload technology. ▪ Underpins a zero waste to energy strategy.	▪ Until small (kW) scale energy from waste plant become generally available only large scale, stand-alone applications will be possible. ▪ Energy from waste requires long term waste supply contract and the involvement of a waste contractor, so it is inappropriate for a community based scheme. ▪ Transport of fuel can create local issues. ▪ If coolers are required to dissipate unwanted heat this will add to cost and the parasitic electrical load. Issues with noise may also result.
Opportunities	**Threats**
▪ Waste is ubiquitous as is the need to manage it in an acceptable way making waste effectively a 'constant' supply option (subject to legislation). ▪ The advent of technology that can support smaller scale applications. ▪ Annual increases in landfill tax will make this an increasingly attractive option compared to landfill. ▪ Increasing transport costs will make small, localised energy from waste systems based on advanced conversion processes.	▪ Continued poor perception of energy from waste based on 1970's incineration plant performance reduces public acceptance. ▪ EU waste legislation has the potential to impact on the future availability of feedstock for energy generation.

The Technology – Spatial Elements

- A combination of components is required in energy from waste system. In addition to the combustion system and fuel store these include fuel pre-processing, flues/chimneys, possible water treatment plant store/pump if heat needs to be moved. And a cooling tower/air blast condenser system if the heat produced is not all used beneficially. While usually these are housed in a single building, multiple building configurations are also possible. These can appear industrial in nature.

- Energy from Waste can be used in relation to waste from domestic and non-domestic uses, it could be appropriate for new residential, including, potentially the strategic sites identified in the LDP given the level of waste that might be generated. However, it is most likely to be used as part of an industrial process or development.

- As noted above Energy from Waste Plants are often associated with municipal recycling facilities

Planning Permission and Other Consents

Planning permission is required for energy from waste plants. The diagram on the following page sets out the need for planning permission and other consents. Permissions and consents should be applied for in parallel to ensure that there are no delays in taking projects forward. It is advisable to contact NRW at the earliest opportunity as their consents can take some time to obtain (see **Appendix 7**).

Section 6.4 gives guidance on how your application will be assessed and the kinds of issues you need to consider in preparing your application. In addition, you will need to consider the issues in the table below, which relate specifically to Energy from waste plants.

Getting Consents: A Summary of the Process

Planning Permission

Planning permission is required.

Listed Building Consent

Is your site within a Listed Building or within the curtilage (garden/boundary) of a Listed Building?

Check with the Heritage Team (**para 5.2.2**).

Yes

Listed Building consent may be required if your proposal includes alterations to existing structures/ buildings.

No

Listed Building consent will not be required.

Building Regulations

Building regulations approval may be required. Consult with Building Control **(Appendix 7)**

NRW Consent

You will require consent from NRW.

You may also need consent if your site is a SSSI or affects protected species.

Trees

Tree Preservation Orders (TPO):
If you plan to fell or do any works to trees you should check whether they are covered by a TPO (**Appendix 7** for contacts).

Conservation Areas:
If you plan to fell or do any works to trees in a Conservation Area you need to inform the Planning Department in writing 6 weeks beforehand (**Appendix 7** for contacts).

Key issues in assessing planning applications are likely to be:

- Visibility issues and impacts on landscape and townscape, particularly in sensitive areas. Mitigating the impact of buildings and in particular flues (even on smaller scale projects) will be important. Plants can look quite industrial and so are best suited to areas which are less visually sensitive. (e.g. existing industrial areas, or well screened sites);
- Potential for impacts on human health and environment from pollution due to emissions, noise, odour and pest issues from waste storage, and leakage into groundwater. This may be more about public perception than actual risk, and so this needs to be addressed at an early stage;
- Discussions with community and stakeholders need to be opened early on in the process to address and avoid any misconceptions about the plant and its likely impacts and to help avoid and mitigate any impacts;
- Traffic and transport issues associated with deliveries; and
- The role of the plant in the waste hierarchy needs to be identified – beneficial re-use and recycling of waste should take priority over combustion of waste as an energy solution.

Energy from Waste – Site Selection and Planning Issues

This table should be read in conjunction with **Table 6.2**:

Planning issue (See table 6.2)		Points to Consider
Landscape sensitivity, character and visual impact	Will the energy from waste plant be located in a designated landscape? (**Appendix 8**) Have you considered the visibility of the site in its wider setting?	▪ If you are considering a plant in the Wye Valley AONB or on the edge of the Brecon Beacons National Park then siting and design of the building will be particularly important. Early consultation with a landscape officer is recommended in order to address the potentially significant impact of large facilities. ▪ In any location, visual impact on surrounding properties, landscape setting and townscape character will be a key issue. Design, colour, materials and screening and on-site boundary treatment will all be important. ▪ If the Energy from Waste plant is part of a strategic site, its location within the overall scheme from a visual perspective is an essential consideration and it is likely that it may be better located within/adjacent industrial uses, given the industrial nature of this type of development.
Ecology	Could the energy from waste plant affect ecological habitats or species? (see **Appendix 8**)	▪ **Refer to Table 6.2**
Historic Environment	Will the energy from waste plant be located in within a designated	▪ Proposals close to or on the site of Listed Buildings or other designated historic sites should avoid any visual or other impacts on those buildings or sites. The relationship between the plant and the setting of

Planning issue (See table 6.2)		Points to Consider
	area/site of historic interest? (see **Appendix 8**)	any Listed Buildings will be important considerations, and mitigation measures through design and screening are likely to be required. Larger plants are likely to be more difficult to accommodate in a way which is acceptable. ▪ If there is to be trenching associated with the plant, then archaeological investigations may need to take place before any groundwork's are undertaken.
Access and servicing	What waste products will you be using, where will these be sourced and how often will they be delivered? What kind and size of vehicle will be used?	▪ Identify where waste materials will be sourced from, how often and in what sort of vehicle supplies will be made, in order to identify the potential impact of traffic movements to and from the site. Consider how delivery of waste can be managed in terms of timings if there is likely to be disruption in terms of noise and nuisance, particularly where a site is relatively close to residential properties. ▪ Ensure that the road network is capable of taking the level of traffic likely to be generated in terms of delivery of waste. ▪ Ensure that the site layout has sufficient space for on-site vehicle movements generated as a result of delivery of waste.
Water management and Hydrology	Are measures being taken to avoid pollution of groundwater and local water courses?	▪ Consider potential for heat and chemical pollution from underground pipe systems. Appropriate measures should be put in place during the construction phase to prevent contamination.
Human Health and Quality of life (Noise, air quality, odour and pest control)	Do you expect any plume, smoke or odour to be produced from the process? Will there be issues of pest control that could cause local nuisance?	▪ The operation of the Energy from Waste plant should comply with the EU Waste Incineration Directive and consent will be required from NRW. The planning application will need to demonstrate that these would be met. ▪ Consider how you will ensure that your buffer store of waste fuel does not harbour pests.
Cumulative impacts	Are there other Energy from Waste or similar (e.g. Biomass) plants in the vicinity?	▪ Check whether there are other Energy from waste or similar plants existing or proposed in the vicinity (e.g. biomass, Gas CHP) The potential for cumulative impacts is greatest in relation to the visual impact of flues on landscape or townscape.
Social considerations / engagement	Have you considered opportunities to sell heat or power to nearby communities?	▪ Consider the potential of strategic sites identified in the LDP for Energy from Waste plants – operations could be located close to new residential communities. It may be possible to work with the developer to provide a district heating network. In addition, bringing communities on board early can be of benefit to all and reduce opposition to the scheme. Heat could be sold at an attractive price to communities, whilst still making a profit for the operator. Early discussions with community and developers are important. (discussions and outcomes can be recorded in the Design and Access Statement/Environmental Statement accompanying the planning application).
Decommissioning	Have you planned for removal of the equipment at the end of its lifetime?	▪ Typically the time-expired boiler and associated ancillary equipment will be disposed of as scrap metal, as with any heating or CHP system.

Tyseley energy from waste plant – Birmingham.

Image source: **http://openbuildings.com/buildings/tyseley-energy-from-waste-plant-profile-24123**

Fuel Cells

monmouthshire
sir fynwy

Image source: courtesy of Ballard Power Systems Inc

Fuel Cells

Technology Description

A fuel cell is a device that converts the chemical energy present in a fuel into electricity by using a chemical reaction involving oxygen or another oxidizing agent, with water or CO_2 created depending on the nature of the fuel. In this regard, the process is similar to combustion which also involves the oxidation of a fuel to release energy along with water or CO_2 but, in the case of combustion, the form of energy produced is mainly heat.

There are many types of fuel cells but they all comprise an anode (negative side), a cathode (positive side) and an electrolyte that allows charges to move between the two sides of the fuel cell. In some designs, the electrolyte itself creates the separation between the anode and cathode, in others a membrane is used.

Hydrogen, hydrocarbons such as natural gas and alcohols like methanol can all be used as fuel sources but the fuel cell is designed to use only a single fuel source. Where the hydrogen alcohol or gas is from a renewable source, then the fuel cell system will itself become a renewable energy technology. In most power generation applications, solid oxide fuel cells are used, not least as these can run on natural gas.

The main advantage of fuel cells is that as the chemical process produces electricity as the main product, the efficiency of fuel use is very high. As the balance of heat and electricity output better favours electricity, the lower levels of heat produced match a wider range of heat load demands thus increasing the market for CHP applications from fuel cells.

Fuel cells can range in output from kW to MW, with typically larger output systems comprising banks of smaller fuel cells.

Fuel cells are typically also much smaller than conventional CHP systems and do not require a flue system, making the typical fuel cell installation no more than a simple container. It can sometimes be more cost effective for fuel cells to take the baseload and to use other energy to ‘top-up’ as required.

Fuel Cells – SWOT Analysis

Strengths	Weaknesses
▪ High efficiency of fuel conversion. ▪ Small size. ▪ Baseload generation. ▪ Can operate at a wide range of scales. ▪ Can operate from readily available fuels such as natural or liquefied gas. ▪ No emissions issues and no flues are required. ▪ Silent in operation. ▪ Flexible locations. ▪ Fuels are typically high density and liquids or gases, removing fuel storage issues.	▪ Only a low carbon technology unless the fuel can be created from a renewable resource. ▪ Until in volume production, costs will be high. ▪ The best fuel for a fuel cell is hydrogen, but this will require a new fuel infrastructure to be created.
Opportunities	**Threats**
▪ Capable of operating at the domestic scale, right up to community scale if required. ▪ Can support CHP operation. ▪ The low impact nature of the technology and flexibility of location make it applicable to a very wide range of applications.	▪ The technology is just entering full commercialisation leading to perceived risk. ▪ Longevity of the cells over decades has yet to be demonstrated.

The Technology – Spatial Elements

- Fuel cells are small units and are likely to be internally situated, especially where they are used on an individual basis. If banks of fuel cells are used in a development they may be externally situated and this is where spatial implications might arise.

- Fuel cells could be used in domestic and non-domestic situations. As they are in early stages of development, there is limited experience of their use in different types of development.

Planning Permission Requirements

Planning permission is required for non-domestic fuel cell plants, and may be required for individual domestic installations. The diagram on the following page sets out the need for planning permission and other consents. Permissions and consents should be applied for in parallel to ensure that there are no delays in taking projects forward. It is advisable to contact NRW at the earliest opportunity as their consents can take some time to obtain (see **Appendix 7**).

Section 6.4 gives guidance on how your application will be assessed and the kinds of issues you need to consider in preparing your application. In addition, you will need to consider the issues in the table below, which relate specifically to Fuel Cells. Key issues in assessing planning applications are likely to be:

- Visibility issues and impacts on townscape, particularly in historic areas.

Getting Consents: A Summary of the Process

Planning Permission

Is your installation for a domestic property and are you applying as an individual householder?

- **Yes** → Is your installation completely inside the property?
  - **Yes** → Planning permission will not be required.
  - **No** → Will the installation be attached to the property?
    - **Yes** → Planning permission is likely to be required.
    - **No** → If you propose to house one or more fuel cells in an outhouse, this may not require planning permission.
- **No** → Planning permission is required.

Fuel cells are a new technology so requirements for planning permission may change – you should check with the planning department (**para 5.2.2**).

Listed Building Consent

Is your site within a Listed Building or within the curtilage (garden/boundary) of a Listed Building?

Check with the Heritage Team (**para 5.2.2)**

- **Yes** → Listed Building consent may be required if your proposal includes alterations to existing structures/ buildings.
- **No** → Listed Building consent will not be required.

Trees

Tree Preservation Orders (TPO):
If you plan to fell or do any works to trees you should check whether they are covered by a TPO (**Appendix 7** for contacts).

Conservation Areas:
If you plan to fell or do any works to trees in a Conservation Area you need to inform the Planning Department in writing 6 weeks beforehand (**Appendix 7** for contacts).

Building Regulations

Building regulations approval will be required.

NRW Consent

You may need consent if your site is a SSSI or affects protected species.

Fuel Cells – Site selection and Planning Issues

This table should be read in conjunction with **Table 6.2**:

Planning issue (See table 6.2)		Points to Consider
Landscape sensitivity, character and visual impact	Will the fuel cell installation be located in a designated landscape? (**Appendix 8**) Have you considered the visibility of the site in its wider setting?	▪ If you are considering a bank of fuel cells, you will need to consider the impact on the landscape setting. The size of individual fuel cells is such that any landscape issues are likely to be minimal. ▪ Installations on buildings should be avoided at the front or sides of properties facing onto a road, to minimise visual impact and any wider impacts on townscape character. ▪ If the installations will be visible consider ways in which you can minimise this e.g. by screening, design or colour.
Historic Environment	Is the site / building within a designated area / site of historic interest? (**Appendix 8**)	▪ Installations on Listed Buildings should be located so as to avoid any impacts on the character of the building. ▪ If your installation is in a Listed Building or within its curtilage, Listed Building Consent will be required.
Access and servicing	Will any routine access be required to any part of the system? Will you need to deliver fuel by road to the system?	▪ Where fuel cells are using anything other than mains supplied natural gas, consider how access for delivery of fuel for fuel cells will be achieved with minimum disruption. What type of vehicle and how many vehicle movements will be involved? This consideration may affect where you can locate installations within your site.
Cumulative impacts	Are there other fuel cells in your area?	▪ Check whether there are other externally located fuel cells within the immediate vicinity. Given the scale of fuel cells, cumulative impacts are more likely to be an issue at townscape level, rather than in relation to landscape setting.
Decommissioning	Have you planned for removal of the equipment at the end of its lifetime?	▪ Depending on the nature of the fuel cells, specialist disposal to appropriate recycling facilities may be required.

Gas CHP

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Image: Gas CHP system linked to a District Heating network at a leisure centre.
source: http://www.tecogen.com/our-customers-recreational-facilities.htm

Gas CHP (Including Micro CHP)

Technology Description

While fossil (natural) gas is not a renewable energy, using it to fuel a CHP system is considered to be low carbon in that it captures and makes beneficial use of the heat produced in the electricity generation process. This heat is typically lost from large power stations.

Micro CHP systems are typically targeted at domestic scale application of a few KWe. They can comprise very small gas engines of the kind described below but, increasingly, the capacity to generate electricity is incorporated into the domestic gas boiler. Typically technology such as the Stirling engine is employed to deliver this outcome. The Stirling engine is based on external combustion, where a heat source external to the engine (in this case the gas combustion process) expands a transfer medium which drives a piston and turns a micro generator. These systems generate electricity opportunistically when the heating boiler is operating rather than being led by the electrical demand. However, they can provide a direct replacement for the domestic heating boiler.

Outside of the micro technology area, there are two main technology options for gas CHP systems. At smaller scale (up to around 5MWe) gas fired internal combustion engines are often used linked to an appropriate alternator systems. Heat is recovered from the engine water jacket and the exhaust system. These gas engines are highly efficient compared with steam cycle based generation systems and can also be scaled to kW sizes.

Larger systems tend to use gas turbines, although micro-gas turbines are available and are in use. The exhaust heat from the turbine can either be captured in a heat recovery boiler system to service a heat market, or used to drive a second turbine, with the remaining thermal energy captured in a heat recovery boiler.

Clearly, access to a good gas supply is essential in all cases.

A typical gas CHP system comprises a gas infeed/control system, the prime mover (an engine or turbine) and alternator or generator. Larger systems where the heat demand within the CHP application cannot provide a guarantee that all of the heat will be used as soon as it is generated, then a cooler/condenser unit will be required as a heat sink. These are unlikely to comprise traditional cooling towers but instead will use systems in which fans draw air through a ‘radiator’ system.

Gas CHP (including micro CHP) – SWOT Analysis

Strengths	Weaknesses
▪ Is a well-developed and low cost technology. ▪ Fuel supply is not seen as a risk. ▪ Well established technology supply chain. ▪ Efficient use of gas fuel, especially compared with large gas fired power stations. ▪ The scalability of the technology makes it potentially applicable to a number of situations.	▪ Not a renewable technology. ▪ The carbon performance of the technology relative to renewables is poor, making it a poor option to meet increasingly tight carbon compliance in new build situations. ▪ As with any combustion process, there is potential to impact on air quality.
Opportunities	**Threats**
▪ Constant heat loads can be serviced by a CHP, giving the increased benefit of electricity generation. ▪ A retrofit option (especially at the micro scale). ▪ Small footprint makes it applicable to town centre and other 'tight' locations.	▪ More gas is being imported and the world price of gas is linked to the price of oil. The benefit of CHP is often down to the cost advantage of electricity compared to gas. Where this is eroded by rising gas prices, schemes can quickly become unviable. ▪ Is likely to become less competitive compared with renewables where renewables are subsidised.

The Technology – Spatial Elements

- At the small scale, the main spatial implication of gas CHP will be external flues/chimneys; other equipment is likely to be internal to the property. At the large scale there may be a requirement for buildings to house large scale combustion systems, boilers, turbines and cooler/condensers (if heat has to be stored) depending on the system used, making it quite an industrial looking development . Access to a reliable gas supply is essential meaning that in some rural locations without mains gas access, this technology is not an option.

- Gas CHP is suitable for domestic and non-domestic uses at the building scale. Larger gas CHP plants can be used to supply specific users or developments where there is a known heat demand.

- Gas CHP applies at the small building scale and the large scale and could be appropriate for new developments including strategic sites proposed in the LDP.

Planning Permission Requirements

Planning permission is required for non-domestic externally located and stand-alone Gas CHP systems. The diagram on the following page sets out the need for planning permission and other consents. Permissions and consents should be applied for in parallel to ensure that there are no delays in taking projects forward. It is advisable to contact NRW at the earliest opportunity as their consents can take some time to obtain (see **Appendix 7**).

Section 6.4 gives guidance on how your application will be assessed and the kind of issues you need to consider in preparing your application. In addition, you will need to consider the issues in the table below, which relate specifically to Gas CHP.

Key issues in assessing planning applications are likely to be:

- Visibility issues and impacts on landscape and townscape, particularly in historic areas. Mitigating the impact of buildings and in particular flues (even on domestic scale projects) will be important; and
- Noise from plant operation – noisy elements should be located away from sensitive areas.

Getting Consents: A Summary of the Process

Planning Permission

Is your installation for a domestic property and are you applying as an individual householder?

- **Yes** → Is your installation completely inside the property?
  - **Yes** → Planning permission will not be required.
  - **No** → Installation could be permitted development if within the limits set out in **Appendix 6**. If these limits are exceeded planning permission will be required.
- **No** → Planning permission is required.

Listed Building Consent

Is your installation on a Listed Building or within the curtilage (garden/boundary) of a Listed Building? Check with the Heritage Team (**para 5.2.2**).

- **Yes** → Listed Building consent may be required if your proposal includes alterations to existing structures/ buildings.
- **No** → Listed Building consent will not be required.

Building Regulations

Building regulations approval will be required.

NRW Consent

Consent from NRW may be required (see **Appendix 7**).

You may also need consent if your site is a SSSI or affects protected species.

Trees

Tree Preservation Orders (TPO):
If you plan to fell or do any works to trees you should check whether they are covered by a TPO (**Appendix 7** for contacts).

Conservation Areas:
If you plan to fell or do any works to trees in a Conservation Area you need to inform the Planning Department in writing 6 weeks beforehand (**Appendix 7** for contacts).

Gas CHP – Site Selection and Planning Issues

This table should be read in conjunction with **Table 6.2**:

Planning issue (See table 6.2)		Points to Consider
Landscape sensitivity, character and visual impact	Will the Gas CHP plant be located in a designated landscape? (**Appendix 8**) Have you considered the visibility of the site in its wider setting?	▪ Very careful consideration of siting within the landscape will be required if you are considering a gas CHP in the Wye Valley AONB or on the edge of the Brecon Beacons National Park. ▪ If you are installing CHP heating in a domestic property where planning permission is required (and even if not required) then consider the visual impact of the flue that you will require. ▪ Gas CHP needs to be located so as to minimise visual impact on surrounding properties and the wider townscape. Ensuring that buildings and flues are not in the direct line of vision of neighbouring properties or taking mitigation steps such as screening/planting to reduce visibility or using colour of construction materials will be important.
Ecology	Could the Gas CHP affect ecological habitats or species? (**Appendix 8**)	▪ Consideration will be needed in relation to potential adverse impacts on nearby sites as a result of any emissions from flues/chimneys.
Historic Environment	Will the in Gas CHP be located within a designated area / site of historic interest? (**Appendix 8**)	▪ At sites of Listed Buildings or SAM's, smaller, domestic scale schemes well integrated with the site in terms of building design or screening are more likely to be acceptable. ▪ Visual impact will need to be considered for small scale installations and their flues/chimneys as well as larger installations). ▪ If your installation is in a Listed Building or within its curtilage, Listed Building Consent will be required.
Human health and quality of life (air quality)	Will any smoke be emitted from the process?	▪ Careful siting of flues / chimneys will be important in relation to factors such as prevailing wind conditions, to minimise any adverse impacts from emissions on nearby properties. Impacts may vary with weather and seasons.
Cumulative impacts	Are there other CHP plants (or similar) in the vicinity of your installation?	▪ Check whether there are any other CHP plants / installations existing or proposed in the vicinity. (Biomass and Energy from Waste plants should also be considered). The potential for cumulative impacts will be particularly important in relation to landscape, visual and historic environmental impacts.
Social considerations / engagement	Have you involved the local community in the development of your project?	▪ By consultation with the community close to any new development it might be possible to identify a heat demand that will make CHP commercially viable to the benefit of all involved. ▪ Consider the opportunity to work with a local community through early consultations and discussions in the development of your project (discussions and outcomes can be recorded in the Design and Access Statement/information accompanying the planning application).
Decommissioning	Have you planned for removal of the equipment at the end of its lifetime?	▪ Typically the time-expired boiler and associated ancillary equipment will be disposed of as scrap metal, as with any boiler or CHP system.

Schematic of a domestic gas CHP system

Micro gas CHP

5kW Small scale CHP

Image source: **http://www.baxi-senertec.co.uk/documents/Sales_brochure_July_2010.pdf**

Hydroelectricity

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sir fynwy

Cover Image: Archimedes Screw system at Shane's Castle, Randalstow
Antrim

Source: http://ecoevolution.ie/blog/category/small-scale-hydro/

Hydroelectricity

Technology Description

Water is heavy, dense and cannot be compressed. When moving in rivers or other locations, the force of the water flow can be harnessed for energy. This has been well understood for centuries making hydro power a traditional energy source.

Hydropower schemes all comprise a turbine system that is designed to capture the energy in the water and use it to turn a turbine. Large (MW scale) hydropower schemes comprise a dam to hold back water and to create a head and a turbine through which water moves to drive a generator. It is highly unlikely that new dams will be created solely to generate energy. Instead, low head, or 'run of river' schemes are the options of choice.

In the past, most hydropower schemes involved the installation of a separate water collection device (usually called a penstock) which comprised a sluice or gate or intake structure that controls water flow, or an enclosed pipe that delivers water to turbine. These required what could be significant engineering activities and delivered water typically to a Kaplan type turbine in which internal fin arrangements capture water energy within a housing to turn a generator. The issue with these devices is that they can be damaging to fish and other wildlife, requiring extensive by-pass arrangements to be put in place. These can be costly and can reduce the available flow of water to the turbine.

Other options involve the use of Archimedes screws to capture the water energy. These can be mounted singly or in multiple units and typically require less invasive engineering and can also operate in lower head situations. They can also have less damaging impact on fish, although provision for fish and other wildlife is still required. A range of options should be fully considered with an appropriate advisor before selecting an option.

Hydropower schemes therefore comprise a system to direct water into the turbine, the turbine itself and appropriate fish passage or similar.

Hydroelectricity – SWOT Analysis

Strengths	Weaknesses
▪ A renewable technology that can generate electricity to service baseload application. ▪ Proven technology. ▪ Well established supply chain. ▪ Correctly planned, impacts can be minimal.	▪ Electrical connection can be an issue in remote locations, where the cost of connection can make the scheme non-viable. ▪ There are varying statutory deadlines that depend on the environmental permit applied for.
Opportunities	**Threats**
▪ All water outflows, weirs, etc. are potentially suitable for hydro. ▪ Low head applications can be serviced with appropriate technology. ▪ Monmouthshire has the potential for a number of hydro applications. ▪ Man-made water outflows (such as treatment plant) have potential as sites for hydro generation.	▪ Potential impact on environment will remain an issue. ▪ NRW has varying statutory deadlines depending on environmental permits applied for which can lengthen the process. Other requirements such as grid connections can also cause delays.

The Technology – Spatial Elements

- Hydropower schemes use a turbine system to capture energy from water flow. The spatial implications vary depending on whether a traditional Kaplan turbine type of system is used (in which case there are on land requirements for the turbine and water collection/transport devices, a grid connection, as well as devices in the river itself to hold back and create a head of water) or an Archimedes Screw (where all the equipment requirements are based within the water itself and the only on land implication is a connection to the grid supply). The Archimedes Screw system can work effectively where there is less head of water (in gentler gradients of river and without the need for a dam, penstock or other means of delivering water to the turbine). This means it has greater potential for use in more situations, where rivers or other water sources create some weight of water flow.

- Hydroelectric power is suitable for domestic and non-domestic uses. Schemes generally feed directly into the national grid and are not usually associated directly with developments/users. It is nevertheless possible that an individual dwelling could be served by a small hydropower scheme.

- Generally hydropower schemes are standalone schemes. If the circumstances were appropriate for an individual residential or non-residential user located adjacent a water course where an Archimedes screw installation could be made, it might be possible for a hydropower scheme to apply to an individual property.

Planning Permission and Other Consents

Planning permission is required for hydropower schemes along with various permissions, consents and licences from NRW. The diagram on the following page sets out the need for planning permission and other consents. Permissions and consents should be applied for in parallel to ensure that there are no delays in taking projects forward. It is advisable to contact NRW at the earliest opportunity as their consents can take some time to obtain (see **Appendix 7**).

Section 6.4 gives guidance on how your application will be assessed and the kinds of issues you need to consider in preparing your application. In addition, you will need to consider the issues in the table below, which relate specifically to Hydroelectricity.

Key issues in assessing planning applications are likely to be:

- Ecology – Disturbance of aquatic habitats and species is often an issue, and injury or death of fish will have to be avoided. Impact on habitats and species on the river bank is also likely to be an issue for many schemes in rural areas.

- Visibility issues and impacts on landscape may be an issue, although smaller scale schemes often developed in rural areas can often be successfully designed and screened to sit into the landscape.

- Impacts on historic structures such as Listed Buildings and Scheduled Ancient Monuments can be an issue, particularly in areas where there are historic mills, weirs or dams which are related to the project. Industrial archaeology can also be an issue in such areas.

- Riverbanks are often the location of public footpaths, so diversion may be needed.

An example of a hydropower scheme in Monmouthshire can be found on the Eco Open Doors website: **http://www.monecoopendoors.org.uk/** . Many of these schemes are small scale or domestic in nature and the web site includes contact details for property owners.

Getting Consents: A Summary of the Process

Planning Permission

Planning permission is required.

Listed Building Consent

Is you site within the curtilage (garden/boundary) if a Listed Building?

Check with the Heritage Team (**para 5.2.2**).

Yes

Listed Building consent may be required if your proposal includes alterations to existing structures/ buildings.

No

Listed Building consent will not be required.

Building Regulations

Building regulations approval will be required.

NRW Consent

You will require various permissions, consents and licences from NRW.

Trees

Tree Preservation Orders (TPO):
If you plan to fell or do any works to trees you should check whether they are covered by a TPO (**Appendix 7** for contacts).

Conservation Areas:
If you plan to fell or do any works to trees in a Conservation Area you need to inform the Planning Department in writing 6 weeks beforehand (**Appendix 7** for contacts).

Scheduled Ancient Monument Consent

If you are proposing works to the site of a Scheduled Ancient Monument, then consent will be required from Cadw (see **Appendix 7**).

Hydroelectricity – Site Selection and Planning Issues

This table should be read in conjunction with **Table 6.2**:

Planning issue (See table 6.2)		Points to Consider
Landscape sensitivity, character and visual impact	Will the hydropower scheme be located in a designated landscape? Have you considered the visibility of the site in its wider setting?	▪ If you are considering a hydropower scheme in the Wye Valley AONB or on the edge of the Brecon Beacons National Park, size and siting of a potential development will be particularly important planning considerations. (The level of visual impact – and hence the potential acceptability of the scheme is associated with both scale and location). ▪ Hydropower schemes are often located in rural areas. Associated structures with potential for impact include turbine houses, weirs, dams, leats, fencing and power lines. The appearance of waterfalls can also change as a result of water abstraction. Smaller scale operations are likely to be more easily integrated into the landscape with planting to screen structures. ▪ Where buildings cannot be screened, high standards of design and use of materials will help to minimise impacts.
Ecology	Could the plant affect ecological habitats or protected species? (see **Appendix 8** for designations)	▪ Consideration needs to be given to both river bank and the watercourse itself. Careful consideration will be needed in relation to potential adverse impacts related to buildings and structures on the bank or placing of equipment in the watercourse. There is potential for disturbance to aquatic ecosystems and to fish movements, as well as their injury. It is possible that surveys will be required to establish what species are present. Siting should seek to avoid impacts, and if this is not possible mitigate, or compensate. ▪ Specific consideration needs to be given to fish movements up and down the river/watercourse and potential impacts on these. There will be a requirement to incorporate fish passes for any scheme which interrupts fish movement on a watercourse.
Historic Environment	Is the site within a designated area / site of historic interest? (see **Appendix 8** for designations)	▪ There may be opportunities to re-use historic structures such as mills, weirs and dams within hydropower schemes. ▪ Archaeological potential, particularly where there are historic structures such as industrial structures or leat systems in the area, will need to be investigated.
Rights of Way and Permissive Paths	Will the site of the hydropower scheme cut across any rights of way or permissive paths?	▪ Check whether there are any rights of way or permissive paths near the site, and, if so, whether these will require diversion and how this can be achieved. This may be a particular issue along riverbanks. If you need to divert a path contact the green infrastructure and countryside team on 01633 644850 **countryside@monmouthshire.gov.uk**
Water management, hydrology and flood risk	Will the hydropower scheme impact on water management and hydrology in the area?	▪ Diverting water into a hydropower scheme may impact on water management and quality; and mitigation measures are usually needed. NRW is a statutory consultee, and they encourage pre-application discussions for such schemes. ▪ Permissions, consents and licences from NRW will also be required (**Appendix 7**).
Cumulative Impact	Are there any other hydropower schemes in the vicinity of your proposed installation?	▪ On water courses which are particularly attractive as sources of hydroelectricity there is the possibility of multiple turbines along the length of the water course. This can create multiple impacts on fish, wildlife and visual amenity.
Social considerations / engagement	Have you involved the local community	▪ Consider the opportunity to work with a local community through early consultations and discussions in the development of your project (discussions and outcomes

Planning issue (See table 6.2)		Points to Consider
	in the development of your project? Have you considered any level of community partnership in association with this Hydropower scheme?	can be recorded in the Design and Access Statement/information accompanying the planning application.) ▪ Consider whether there is any opportunity for community partnership. If you have not considered this, would you welcome working with the local community to share some of the risks and benefits to this development?
Decommissioning	Have you planned for removal of the equipment at the end of its lifetime?	▪ It is a feature of hydropower schemes that they have a long operational life. ▪ The main issues with decommissioning will be the physical disruption to the site during component removal and potential detrimental impact on wildlife. ▪ Once removed, all components can be recycled.

Osbaston Hydro project, Monmouthshire – Archimedes screw system
Image source: Monmouthshire County Council

Solar Power

Cover Image source: Stock Xchange

monmouthshire
sir fynwy

Solar Power

Solar Water Heating

Technology Description

Solar thermal panels capture thermal energy from the sun. While this water can be used for space heating (usually in conjunction with other heat sources), its major use is to supply hot water.

To achieve this, a liquid (usually water or water plus an antifreeze agent) in a closed loop is passed through either glass plate collector systems, or evacuated tube systems which are usually mounted on a roof or suitable surface. Orientation to optimise energy yield is important, with south facing systems at an angle of tilt 35^{o} to the horizontal being ideal.

The thermal energy produced is then usually stored in a water cylinder. This system is integrated into normal hot water supply systems such that solar derived hot water is used preferentially to water heated by fuel use.

Given that solar water systems are made from glass, systems are designed to avoid or overcome damage from water freezing.

Typical solar water heating systems usually comprise suitably located panels usually linked to a second water cylinder and a separate pumped circuit to service the solar panels/tubes plus appropriate controls.

Solar Water Heating – SWOT Analysis

Strengths	Weaknesses
▪ A proven renewable technology. ▪ Low maintenance costs/high reliability. ▪ Better unsubsidised economic performance than PV systems. ▪ Hot water can be stored and used as required.	▪ Heat is a lower value product than electricity. ▪ As the carbon content of natural gas is lower than that of grid electricity, the carbon performance of solar water heating is lower than for renewable electricity generating technologies. ▪ Water content can add to weight. ▪ More efficient evacuated tube systems may require replacement if vacuum seals fail.
Opportunities	**Threats**
▪ Can be located on many roof systems. ▪ Easily integrated into hot water supply systems.	▪ As a glass based system, solar water heaters can be fragile. ▪ Some potential issues with solar water heating systems harbouring Legionella potentially adding to operating costs.

Solar Photovoltaics (PV)

Technology Description

Solar photovoltaic (PV) systems generate electrical power by converting solar radiation into direct current electricity using semiconductors to create voltage or electric current on exposure to light.

Photovoltaic power generation employs a number of solar cells containing a photovoltaic material sealed within a glass fronted solar panel. The materials that can be used in PV cells include monocrystalline silicon, polycrystalline silicon, amorphous silicon, cadmium telluride, and copper indium gallium selenide/sulphide. Other approaches use photovoltaic materials printed directly onto flexible film. While these systems are less efficient, they can also be produced at far lower cost.

PV systems generate direct current electricity at low voltage requiring the use of an inverter to convert the voltage to alternating current and boost it to mains voltage. These inverters can either be built into the PV system, or more usually located remotely from it.

To maximise energy yield, PV cells are usually oriented such that they face south and at an angle of tilt 35^{o} to the horizontal. PV cells can be mounted on traditional pitched roofs, on flat roofs, on a frame, or as free-standing modules on a suitable support.

Evacuated tube system in Northern British Columbia,Canada

Image source: **http://stage3renewables.com/blog/wood-heat-and-solar-thermal-perfect-match/**

Solar Photovoltaics (PV) – SWOT Analysis

Strengths	Weaknesses
▪ Well established technology with an established supply chain. ▪ Can be used widely in a number of applications. ▪ One of the few technologies that can deliver 'free' energy to households, which might be important if used to help people to escape from fuel poverty. ▪ The PV cells require little maintenance.	▪ The energy yield is relatively low, requiring large areas of cells to meet large demands. ▪ An intermittent technology with considerable variation in output across the day and year. ▪ Inverters can have a relatively short lifetime compared to the project life of the PV cells, adding to on-going operational costs.
Opportunities	**Threats**
▪ Most new developments can accept a PV system. ▪ Possible to integrate PV elements into building structure such as cladding, solar shading.	▪ There is evidence of the performance of traditional PV cells falling off with age. ▪ Free standing cells may be vulnerable to vandalism. ▪ The Committee on Climate Change identified PV as one of the most expensive renewable energy technologies. ▪ Where installed in large numbers such as in new housing developments, the maximum generation peak in the middle of the day in summer coincides with low demand and can cause issues with oversupply into the local grid which may cause damage and require costly upgrade to overcome.

The Technology – Spatial Elements

- Solar heat and PV panels are suitable for domestic and non-domestic uses. They are well suited to rural locations as an alternative to fossil fuels (which are either absent or costly) although the fact that they are an intermittent technology needs to be borne in mind.

- Installations are either roof based or ground mounted. External implications of building scale solar heating and PV panels are the panels themselves, as the remainder of equipment needed would be internal to the property.

- Solar heat and PV panels apply at the small scale individual building level. Although building scale, they can be used across large residential and non-residential developments. Solar PV panels can also be aggregated into large scale solar arrays, which have additional requirements for invertors and grid connections, which carry spatial implications. Generally solar arrays are ground mounted. However, in industrial settings, roofs may be an option for development of solar arrays.

- In new developments, solar tiles could be considered instead of panels. However, these suffer from high cost and poor performance relative to panels. This is because electrical output falls with increasing temperature, and when tiles become heated by the loft, they generate less electricity. Whilst tiles are a good option from an aesthetic point of view, from an energy and carbon perspective, they are less attractive.

Planning Permission and Other Consents

The diagram on the following page sets out the need for planning permission and other consents. Permissions and consents should be applied for in parallel to ensure that there are no delays in taking projects forward. It is advisable to contact NRW at the earliest opportunity as their consents can take some time to obtain (see **Appendix 7**).

Section 6.4 gives guidance on how your application will be assessed and the kinds of issues you need to consider in preparing your application. In addition, you will need to consider the issues in the table below, which relate specifically to Solar panels.

Key issues in assessing planning applications are likely to be:

- Landscape sensitivity, visual impact, glint and glare. This will be particularly important for large solar arrays in rural areas, and cumulative impacts of smaller projects installed on buildings. However, domestic installations on buildings may not need planning permission and so control is limited to visibility of installations on non-domestic buildings.
- Historic environment. Townscape impacts of installations on buildings are likely to be a particular consideration in relation to cumulative impacts; however, planning control is largely limited to non-domestic buildings.
- Ecology. Knowledge about negative impacts of panels on species is limited; however, there are potential issues with lighting and fencing in relation to large scale solar arrays. Ecology is an important issue in terms of the potential to enhance or improve biodiversity through new landscape planting.

Examples of Solar projects in Monmouthshire can be found on the Eco Open Doors website: **http://www.monecoopendoors.org.uk/ .** Many of these schemes are small scale or domestic in nature and the web site includes contact details for property owners.

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Getting Consents: A Summary of the Process

Planning Permission

Is your installation for a domestic property and are you applying as an individual householder?

Yes

Installation could be permitted development if within the limits set out in **Appendix 6**. If these limits are exceeded planning permission will be required.

No

Planning permission is required.

Listed Building Consent

Is your installation on a Listed Building or within the curtilage (garden/boundary) of a Listed Building? Check with the Heritage Team (**para 5.2.2**).

Yes

Listed Building consent will be required if your proposal includes alterations to existing structures/ buildings.

No

Listed Building consent will not be required.

Building Regulations

Building regulations approval will be required.

NRW Consent

Consent from NRW will not be required for domestic schemes. For larger arrays it is unlikely to be required unless close to a river (see **Appendix 7**).

You may also need consent if your site is a SSSI or affects protected species.

Trees

Tree Preservation Orders (TPO):
If you plan to fell or do any works to trees you should check whether they are covered by a TPO (**Appendix 7** for contacts).

Conservation Areas:
If you plan to fell or do any works to trees in a Conservation Area you need to inform the Planning Department in writing 6 weeks beforehand (**Appendix 7** for contacts).

Solar Panels – Site Selection and Planning Issues

This table should be read in conjunction with **Table 6.2**:

Planning issue (See table 6.2)		Points to Consider
Landscape sensitivity, character and visual impact (including glint and glare)	Will the panels be located in a designated landscape? (see **Appendix 8**) Have you considered the visibility of the site in its wider setting and the potential for glint and glare?	▪ Careful siting will be required to prevent unacceptable impacts on landscape settings. Siting of panels on the front roof elevation of properties should be avoided if possible. If your property has several buildings, those which are less prominent, well screened or more 'industrial' might be appropriate for use. In addition, the colour of panels should be selected to be appropriate in its context. If you are considering solar panels or arrays in the Wye Valley AONB or on the edge of the Brecon Beacons National Park or other designated landscapes, this will be particularly important. ▪ Large scale ground mounted solar arrays are less likely to be acceptable in designated landscapes. Landscape sensitivity will be a major planning consideration for all such applications and a LVIA will be essential to accompany a planning application. This needs to include the panels themselves, any buildings required (e.g. for inverters), access and any grid connections. The latter is important - if pylons are required to carry electricity from a solar PV array to the grid, this will have a visual impact even if the solar arrays themselves can be well screened. ▪ For all ground mounted arrays you will need to consider screening. Long views may be an issue, particularly on sites located on hillsides or adjacent to higher ground. Existing hedges could be allowed to grow to a greater height to screen the array and new hedges planted or other forms of screening used. However, you will need to consider the existing landscape character and ensure that new planting does not change that character. ▪ Adverse impacts from glint and glare from the front facings of the panels also needs to be considered – both in urban and rural contexts; Detailed layouts may be able to mitigate this, whilst still retaining appropriate orientation and slope of panels in relation to the sun. An anti-reflective coating can also be used which reduces glint and glare. ▪ In new developments, solar energy tiles which do not project above the roof level could be considered, although their energy performance is inferior to traditional panels.
Ecology	Could the installation of solar energy panels affect ecological habitats or species? (**Appendix 8**) Does your installation involve security lighting/fencing?	▪ For solar array projects, opportunities to retain and improve existing habitats through changes in hedgerow management or strengthening should be explored. In addition, there may be opportunities to improve ground cover species between panels. ▪ Consider the potential impacts of security lighting and fencing on any important habitats and species. Lighting associated with large scale projects in rural areas is unlikely to be appropriate; Security fencing should not cut across regular routes used by animals crossing the site.
Historic Environment	Is the site within a designated area of historic interest?	▪ Proposals for building mounted panels or solar arrays close to Listed Buildings or Scheduled Ancient Monuments should be located so as to minimise impact on those buildings. Where this is not possible mitigation should be considered – perhaps through screening. ▪ On Listed Buildings, panels are unlikely to be appropriate on the roof or visible elevations of the main building. If there are modern additions, or visually concealed areas, then these may

Planning issue (See table 6.2)		Points to Consider
		be more appropriate locations for panels. Colours should be chosen to blend with the roofscape. The structural impact as well as visual impacts should be considered. ▪ If the site is in a Conservation Area, changes to the roof scape and external elevations that are clearly visible from the street may have a detrimental or 'modernising' effect on the Conservation Area. Colours should be chosen to blend with the roof scape.
Water management, hydrology and flood risk	Would the installation affect the hydrology or flood risk of an area?	▪ If you are in an area of flood risk, consider the location of connectors to ensure they are above potential flood levels where installations are on individual properties. ▪ For larger scale solar arrays, consider whether there might be an surface water runoff issues from solar panels that might impact on hydrology and potential flood risk and whether any mitigation measures might be needed e.g. water collection and holding area.
Aviation, telecommunications and railways. Glint and glare	Are there any airfields or railways in the vicinity of the site?	▪ Consider whether the site is in the flight path of an airfield and therefore whether there might be any adverse impacts from glint and glare of solar panels. Consultation with the CAA/airfield may be required. ▪ Consider whether the site is located in the line of sight of train drivers or where glare/reflection could impact on signalling. It should be demonstrated that panels are not reflective to ensure solar panels do not interfere with railway operations, screening may also be required.
Design of buildings	In residential or mixed use developments, is the layout design to maximise building orientation within 30degrees of south?	▪ Consider spatial orientation and include evidence of this in your Design and Access Statement/Environmental Statement (if required).
Cumulative impact	Are there any other solar energy installations within the same vicinity as the potential site, or are any proposed?	▪ Cumulative impact is most likely to be an issue for roof mounted individual installations. However planning permission will often not be required for domestic installations. If you propose a solar array or panel on non-domestic buildings, then you will need to consider this issue.
Social considerations / engagement	Have you involved the local community in the development of your project? Have you considered any level of community partnership in association with the solar energy installation?	▪ Consider the opportunity to work with a local community through early consultations and discussions in the development of your project (discussions and outcomes can be recorded in the Design and Access Statement/information accompanying the planning application). ▪ Consider whether there is any opportunity for community partnership. If you have not considered this, would you welcome working with the local community to share some of the risks and benefits to this development?
Decommissioning	Have you planned for removal of the equipment at the end of its lifetime?	▪ PV systems can contain traces of expensive rare elements and so should be recycled.

Solar thermal Flatplate system, Gloucestershire

Image source: **http://www.shineenergy.co.uk/solar-solutions/solar-pv/case-studies**

Roof mounted

Image from **http://gallery.hd.org/terms.html**

Wind

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Wind

Technology Description – Large Scale (1MW or more)

Wind energy is collected by blades that are directly coupled to a generator. Older machines employed a gearbox between blades and generator; however, compared to modern machines, these were less efficient and noisy.

Energy yield rises at the cube of wind speed. For this reason, turbines are mounted on tall towers. Turbines automatically align with the wind and 'feather' their blades in high wind to avoid damage. Turbulence in built up, wooded or similar areas can be a problem for capturing wind energy, with the issue being wind shear, where the wind pressure loading is not the same across the blades.

In lower wind speed areas, larger diameter blades can increase the efficiency of wind capture. Average wind speeds of 6.0 m/s at 45 metres above ground level are considered to be commercially viable; however, as energy costs rise, the economic threshold for wind speed will fall. Larger wind farm projects often install an anemometry mast ("met mast") to collect real on-site wind data in support of an investment decision.

Space is required for clearance of the turbine blades; exclusion zones are typically 50 – 100 metres, depending on height of turbine. Noise issues relative to background noise can restrict proximity to housing, especially in quieter rural locations.

Vertical axis machines have blades (usually in the form of a cage like structure) which spin around a vertical shaft. They offer some benefits as they can capture energy in more turbulent air compared with the traditional configuration. As such they are often used at a smaller scale in associated with domestic or commercial use.

A typical large wind energy project comprises a number of turbines each with a foundation and a tower. Larger wind farms may also incorporate a small electricity sub-station connection point.

Technology Description – Small Scale (Less than 0.5MW)

The technology employed is essentially the same as for larger machines. At the intermediate scale (100's kW) smaller machines can be viable on lower masts to minimise visual impacts.

Building scale wind turbines refer to machines of a size that can be physically attached to a building. These can suffer from lower wind speeds at lower levels. There can also be issues with noise and vibration where the machines are mounted directly onto a building, especially due to turbulence and wind shear over rooftops. There can also be problems with the physical strength of buildings being insufficient to take the stress of turbines in high winds.

As noted above, vertical axis designs are often better suited to small scale application, especially in the built environment.

Wind Energy – SWOT Analysis

Strengths	Weaknesses
▪ A well-established technology with a mature supply chain. ▪ Good economic performance relative to other generation options. ▪ Can make a significant contribution to energy supply. ▪ Few perceived financing risks.	▪ Intermittent technology. ▪ Building mounted machines subject to a range of potential issues. ▪ Site access and grid connection can be an issue. ▪ Location to dwellings can be an issue due to shadow flicker and noise.
Opportunities	**Threats**
▪ Industrial sites or those close to roads, etc. can provide lower impact opportunities. ▪ Examples of community owned projects delivering local benefits. ▪ Siting close to commercial development found to be beneficial. ▪ Directly linking wind projects to energy markets creates economic benefit.	▪ Poor public acceptability leading to planning risk. ▪ Radar and microwave link interference can prevent development. ▪ Building mounted machines can cause physical damage.

The Technology – Spatial Elements

- Wind turbines can be ground mounted, although building mounting of micro turbines is possible. Grid connection sub stations may be required for larger wind developments, where grid connection cabling to the nearest connection point will also be required, which may be under or above ground.

- Domestic wind turbines will be mounted in good wind flows above the roof line, between buildings or mounted on poles in gardens. In some of these applications vertical axis machines may be preferred.

- Wind turbines are suitable for non-domestic situations. They can be used to provide power into the national grid or into industrial processes or commercial applications and can be co-located with industrial or commercial premises. As such they could be appropriate in employment land developments and as part of energy supply into strategic sites proposed in the LDP. Large scale wind farms are generally stand-alone developments and usually only provide power directly into the national grid.

- Wind turbines can vary greatly in size, with larger, higher industrial sized turbines producing much more energy per turbine than the smaller, lower turbines used for standalone schemes. This is explored in the Monmouthshire Renewable Energy and Energy Efficiency Study, 2010. (Appendix 2).

Planning Permission and Other Consents

NATS provides air traffic control services in the UK. Wind turbines can impact on NATS infrastructure, as such NATS are a statutory consultee for planning applications received for wind turbines. NATS offer additional advice on their website including tools to ascertain whether your development is likely to have an impact or not:

http://www.nats.aero/services/information/wind-farms/

The diagram on the following page sets out the need for planning permission and other consents. Permissions and consents should be applied for in parallel to ensure that there are no delays in taking projects forward. It is advisable to contact NRW at the earliest opportunity as their consents can take some time to obtain (see **Appendix 7**).

Section 6.4 gives guidance on how your application will be assessed and the kinds of issues you need to consider in preparing your application. Reference should be made to the Planning Advice Note on Wind Turbine Development: LVIA Requirements which 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. In addition to this Planning Advice Note and the information provided in **Section 6.4** you will need to consider the issues in the table below, which relate specifically to wind turbines:

Getting Consents: A Summary of the Process

Planning Permission

Is your installation for a domestic property and are you applying as an individual householder?

Yes

Installation could be permitted development if within the limits set out in **Appendix 6**. If these limits are exceeded planning permission will be required.

No

Planning permission is required.

Listed Building Consent

Is your installation on a Listed Building or within the curtilage (garden/boundary) of a Listed Building? Check with the Heritage Team (**para 5.2.2**).

Yes

Listed Building consent will be required if your proposal includes alterations to existing structures/ buildings.

No

Listed Building consent will not be required.

Building Regulations

Building regulations approval will be required if you plan to attach your turbine to a building & for electrical installations.

NRW Consent

Consent from NRW may be required if close to a river and proposals raise the floodplain (see **Appendix 7**).

You may also need consent if your site is a SSSI or affects protected species.

Trees

Tree Preservation Orders (TPO):
If you plan to fell or do any works to trees you should check whether they are covered by a TPO (**Appendix 7** for contacts).

Conservation Areas:
If you plan to fell or do any works to trees in a Conservation Area you need to inform the Planning Department in writing 6 weeks beforehand (**Appendix 7** for contacts).

Key issues in assessing planning applications are likely to be:

- Landscape sensitivity and visual impact. This will be particularly important for standalone schemes in designated landscapes. The specific location of turbines within the site can help to mitigate impacts – e.g. by locating turbines in well screened locations, or on slightly lower ground. Cumulative impacts of large standalone schemes within wider landscape settings will also be particularly important. The Planning Advice Note on Wind Turbine Development: LVIA Requirements should be referred to which provides further detail on these matters.

- Historic environment. Whilst planning permission is no longer required for many domestic schemes, in Conservation Areas, it will still be required when the turbine is visible from a highway which borders the property. Planning Permission will also be required on Listed Buildings. Wind turbines can have a modernising effect on the townscape, and it may be difficult to locate a wind turbine in a way which does not have a detrimental effect on the historic environment, including the setting of listed buildings, in these circumstances.

- Ecology. Schemes should consider the impacts on both bird and bat species in nearby woodland or other habitats in particular, as well as seeking to mitigate for any habitat loss.

- Noise and shadow flicker. Mechanical noise from turbines has been reduced in recent years. Nevertheless, it will be important to consider potential impacts from noise and shadow flicker on neighbouring properties, and how these can be mitigated.

- Access and Servicing. Some Turbines require the transportation of large individual elements to the site. Turbine blades can be up to 40m long and require special transport arrangements. Consideration needs to be given to the capacity of the local road network to accommodate the necessary vehicles, and the likely impact of such vehicles on traffic, as well as to subsequent servicing needs.

An example of a wind turbine project in Monmouthshire can be found on the Eco Open Doors website: **http://www.monecoopendoors.org.uk/** . Many of these schemes are small scale or domestic in nature and the web site includes contact details for property owners.

Wind Energy – Site Selection and Planning Issues

This table should be read in conjunction with **Table 6.2**:

Planning issue (See table 6.2)		Points to Consider
Landscape sensitivity, character and visual impact	Will the wind turbine be located in a designated landscape? (see **Appendix 8**) Have you considered the visibility of the site in its wider setting? (see **Appendix 8**)	▪ If you are considering a wind turbine(s) in the Wye Valley AONB or on the edge of the Brecon Beacons National Park, size, height and siting will be particularly important planning considerations. ▪ Developments of more than building scale wind turbines could be difficult to accommodate without significant landscape implications in designated landscapes. ▪ Visual impacts can include direct impacts from loss of vegetation and more indirect impacts on the landscape character of the whole area. Views from settlements, routes, footpaths, viewpoints and neighbouring properties will be considered. ▪ For smaller developments, the height and specific location will be important – there may be locations which are less visible than others within the site. This will need to be considered against the best locations in terms of wind speed and avoiding turbulence. ▪ Colour and design of the turbine can also help to mitigate visual impacts. ▪ For larger developments, the visual impact of roads, grid connections, new pylons and substations and hardstandings will all be considered as well as the turbines themselves. ▪ Consider the potential for wind turbines in industrial and commercial locations where choice of design of wind turbines (e.g. use of vertical blade wind turbines) could make them more visually acceptable. ▪ Reference should be made to the Planning Advice Note on Wind Turbine Development: LVIA Requirements which provides further details on these matters.
Ecology	Could the turbine / wind farm affect ecological habitats or species? (see **Appendix 8**)	▪ Consider whether there are any important sites for birds or bats nearby. Investigations may need to be carried out to establish whether the site is on bird / bat flight paths. The specific location of turbine(s) may need to be changed to avoid these routes. The document 'Bats and Wind Turbines' (by CCW, Natural England and SNH) gives further information **http://www.snh.gov.uk/docs/B999258.pdf** ▪ Wind farm developments in upland areas have the potential to impact on the ecology of peatland areas. These areas should be avoided if possible.
Historic Environment	Is the site within a designated area / site of historic interest? (see **Appendix 8**)	▪ Proposals close to or on the site of Listed Buildings or other designated historic structures will need to be carefully designed so as to minimise the impact on the site / buildings and on their setting. The height, specific location and potential for screening turbines at designated sites will be important. ▪ If your wind turbine is to be attached to a Listed Building, Listed Building Consent will be required. There are particular concerns relating to the structural impacts of micro turbines attached to Listed Buildings (see **Cadw guidance para 6.2.5**). ▪ You may also need to undertake archaeological investigations. GGAT (Glamorgan Gwent Archaeological Trust) would welcome early pre-application contact from applicants to discuss the

Planning issue (See table 6.2)		Points to Consider
		potential for archaeology in the vicinity of proposed turbines (contact **01792 634223 planning@ggat.org.uk**).
Access and Servicing	Will local roads be able to accommodate the size of vehicles required to transport the turbines to site? Is there an easily available connection to the national grid?	▪ Turbines include large parts (particularly the blades) and these require large vehicles to transport them to the site. ▪ A travel plan may be necessary to ensure that abnormally large vehicles use roads at quiet times and minimise disruption to local travel patterns. ▪ New overhead power lines may be required to achieve this connection and consideration will need to be given to the impacts of this.
Human health and quality of life (noise, shadow flicker)	Have you considered the potential noise impacts? Will shadow flicker impact on local residents, commercial or industrial properties?	▪ The potential for increase in ambient noise levels due to both mechanical noise and aerodynamic noise should be considered particularly in relation to potential impacts on nearby residents. ▪ Predicted operational noise levels should fall within the limits set by ETSU-R-97 (*The assessment and rating of noise from wind farms*). However work is underway to update this so you will need to check the latest version. ▪ Shadow flicker occurs when the sun moves behind moving turbine blades – the resulting shadow 'flickers' on and off. This can have an impact on the amenity of residential properties. ▪ This can be avoided by siting turbines away from properties, through tree / shrub planting, and shutting down turbines for short periods of time during sunshine.
Aviation, telecommunications and railways	Are there any airfields, radar stations, telecommunication links or railways in the vicinity of the site?	▪ Wind turbines can adversely impact on radar and air traffic control for airfields. If the potential site is in the vicinity of an airfield you may need to check with the CAA/airfield operator to ensure there is no interference to airfield operations. ▪ Telecoms can also be an issue as turbines can interfere with TV, radio and phone signals. You can check this with Ofcom. Where there are potential impacts, these can often be mitigated by changing the specific location of turbines within a site. ▪ Network Rail should be notified of proposals in close proximity to railways. New turbines should be located with a minimum Wind Turbine Setback to be related to the proposed mast height and blade length. You should check with Network Rail to ensure the distance is appropriate to ensure turbines do not interfere with railway operations.
Cumulative Impact	Are there any other wind turbines plants in the vicinity of your proposed installation, or are any proposed?	▪ Check whether there are other existing or proposed wind farms in the area. There are potential cumulative impacts in relation to landscape, visual, historic environment and ecological issues. This requirement is potentially important for large scale wind farms, where visual impact in the landscape will be a key consideration; and for small building scale installations in Conservation Areas.
Social considerations / engagement	Have you involved the local community in the development of your project? Have you considered any level of community partnership in association	▪ Consider the opportunity to work with a local community through early consultations and discussions in the development of your project (discussions and outcomes can be recorded in the Design and Access Statement/information accompanying the planning application). ▪ Consider whether there is any opportunity for community partnership where wind farms or smaller clusters of turbines are proposed e.g. could the

Planning issue (See table 6.2)		Points to Consider
	with the wind turbine scheme proposed?	community take ownership of one turbine and receive the income from it. If you have not considered this, would you welcome working with the local community to share some of the risks and benefits to this development.
Decommissioning	Have you planned for removal of the equipment at the end of its lifetime?	▪ All elements of the turbine are recyclable. ▪ There is a potential high cost in relation to foundation removal.

6kW wind turbine

Image source: Photo taken by Robert Bridges, www.windenergyplanning.com

Vertical Axis wind turbine at Caroline Haslett School

Source: **http://www.quietrevolution.com**

Planning Guidance for Smaller Scale Wind Turbine Development Landscape and Visual Impact Assessment Requirements Supplementary Planning Guidance

Consultation Report

Gillespies were commissioned by Blaenau Gwent County Borough Council on behalf of the Heads of the Valleys Local Authorities to prepare this study. The assessment approach was developed with the client group and with representatives from the South Wales Landscape Liaison Group.

This report sets out the consultation that was undertaken on the draft document, including a summary of the responses received and how they have been taken into account by the Group.

A 6 week consultation exercise was carried out between 7th November 2014 and 19th December 2014. The consultation included an email to over 100 organisations which included all Welsh Local Planning Authorities, Statutory Bodies, National Organisations, local interest groups and Planning and Landscape Consultants. The email informed them of the consultation and provided a link to the document and comment form.

A consultation event was held on Tuesday 16th of December at the Norwegian Church, Cardiff. This was well attended by environmental groups, local authority planners and landscape architects and landscape consultants.

Ten responses to the consultation were received. These were from a range of Local Planning Authorities, Industry Representatives and Environmental Groups including NRW.

The following table contains the representations made during the consultation period and the response to them. Where appropriate, the document has been amended to take account of the views received.

Questionnaire Results

- All 7 agreed that guidance is required to ensure landscape and visual impacts of wind turbines are addressed in a consistent manner.
- 4 agreed and no one disagreed with the typologies proposed in the guidance
- All agreed with the size of the study areas being proposed for each typology
- 3 agreed and 3 neither agreed or disagreed with the minimum requirements for the submission of an EIA screening
- 4 agreed and 3 disagreed with the methodology proposed for EIA screening
- 6 agreed and 1 disagreed with the proposed approach to cumulative effects and the proposed search distances
- 4 agreed and 2 disagreed with the proposed cumulative threshold for other infrastructure

- All 7agreed with the general minimum requirements of information to be provided for Landscape and Visual Impact Assessment 6 agreed and 1 disagreed with the specific requirements for Landscape and Visual Impact Assessment
- 5 agreed and 1 disagreed with the use of LANDMAP as part of the Landscape and Visual Impact Assessment

Please note that not everyone answered the questionnaire and not everyone answered every question.

Respondent	Agree Disagree Neither Agree or Disagree	Comment	Response	Change
Q1: Do you agree that guidance is required to ensure landscape and visual impacts of wind turbines are addressed in a consistent manner? If you agree please indicate below what status should the guidance have, should it be Supplementary Planning Guidance, a Planning Advisory Note or simply for information?				
Phil Ratcliff, Development Planning Officer Rhondda Cynon Taf County Borough Council	Agree	Planning Advisory Note status is more appropriate than SPG, since the material is procedural rather than policy. However, it will be a matter for individual Local Planning Authorities to decide.		
Sarah Chapple Landscape Architect Soltys Brewster Consulting	Agree			
Judith Jones Head of Town Planning Merthyr Tydfil CBC	Agree	In terms of status, the guidance would most likely be adopted as a planning advisory note for the purposes of Merthyr Tydfil due to the procedural nature of the guidance and the non-direct link to the requirements of renewable energy and landscape related policies within the Local Development Plan.		
Oliver Buxton Project Manager Seren Energy Ltd	Agree	Supplementary Planning Guidance		

Respondent	Agree Disagree Neither Agree or Disagree	Comment	Response	Change
Peter Seaman Chairman Campaign for the Protection of Rural Wales (CPRW)	Agree	Guidance is very welcome in principle. Guidance encourages LPAs to go through a systematic process and demand a minimum of maps of proper scale, precise information about locations and details of turbines applied for and of other turbines (in planning, consented and operational), precise details of distances from dwellings, correct ZTVs, photomontages and wireframes, and other key features. We have witnessed the hasty determination of many wind turbine applications without the Developer being required to supply very basic essential information of the proper quality. Consistency in EIA screening is very welcome. EIA, where appropriate, tends to provide better quality environmental information and gives a better time-scale for third parties to respond to bring up important environmental information missed by Developers. We agree that there should be a transparent relation between threshold for EIA and both the scale of development and environmental sensitivity of the location. Guidance would carry most weight as SPG applied throughout Wales.	Noted	
Mary O'Connor Associate Director WYG Group	Agree	For information only.	Noted	
Natural Resource Wales	Agree	Optional to each planning authority, they may use as guidance or adopt as SPG.	Noted	

Respondent	Agree Disagree Neither Agree or Disagree	Comment	Response	Change
Q2: Do you agree with the typologies being proposed in the guidance (pages 0.3 and 0.5)? (Introduction)				
Phil Ratcliff Development Planning Officer Rhondda Cynon Taf County Borough Council	Neither Agree nor Disagree	The typologies are simple but seem to be quite restrictive. With most wind energy sensitivity studies, the size of turbine and the number of turbines are separated to allow flexibility in the future with changes in technologies and pattern of development. Single or double turbines over 109m to VBT are now coming forward so it is likely that the Very Large category will be challenged. It is apparent that the strategy is to concentrate any Large or Very Large developments in SSAs and Medium or smaller developments everywhere else. Whilst this might be true of the HOV study area, we are not sure that this will achieve government policy/targets if applied everywhere in Wales. The only difficulty encountered with applying the typologies is where one development comprises turbines in more than one height category e.g. 3 at 100m plus 7 at 120m. Splitting the scheme into two typologies results in one Large typology adjacent to one Very Large typology, which should probably be treated as one Very Large typology. A note to cover this situation is needed.	Not entirely sure what is meant by i*t is likely that the Very Large category will be challenged*. These would fall within the V large category. We are unable to comment on government policy/targets. Generally we think that schemes which incorporate different turbines should be discouraged. The scheme described would fall under the very large typology due to the number of turbines involved (10). I believe such situations, which are likely to be rare, can be left to the good sense of the planning officer. In addition the scheme described would be greater than 5MW and we are proposing to make it clearer that the guidance is aimed at under 5MW schemes.	

Respondent	Agree Disagree Neither Agree or Disagree	Comment	Response	Change
Sarah Chapple Landscape Architect SoltysBrewster Consulting	Agree		Noted	
Judith Jones Head of Town Planning Merthyr Tydfil CBC	Agree	The proposed typologies in Table 1 are generally considered to be appropriate. There are, however, inaccuracies in Figure 1 (Illustrative Example) and it is considered that this illustration could cause confusion. There is a minor concern that the typologies could encourage a high number of wind turbines within certain landscape units. For instance, certain landscape units are identified as having no capacity for large/very large scale wind turbines, but some capacity for medium scale wind turbines. In order to generate 2MW of energy within this landscape, a developer is likely to propose four, 0.5 MW, medium scale turbines rather than one, 2MW, large scale turbine. Would the former have a less detrimental impact on the landscape than the latter?	Noted If an area has been assessed as having no capacity for large /very large turbines that is a landscape judgment. A developer could put forward a scheme with 4 turbines up to 45m although there is not much evidence that this is the current pattern of development proposals. Such a proposal would fall to be judged on its merits and whether it was consistent with the siting criteria.	Inaccuracies have been corrected
Oliver Buxton Project Manager Seren Energy Ltd	Agree		Noted	

Respondent	Agree Disagree Neither Agree or Disagree	Comment	Response	Change
Peter Seaman Chairman Campaign for the Protection of Rural Wales (CPRW)	Neither Agree nor Disagree	A clear typology is useful in principle but: Incorporating the potentially independent variables of turbine tip-height and turbine number into a single typology of "development size" causes conceptual difficulties. The information could be clearer. Introduction Table 1 says "*To decide in which typology a development belongs it must satisfy both the height and the turbine numbers criteria. See the examples on page 0.5*." This is misleading as you cannot necessarily satisfy both. Deciding on development size is a sequential process: you have to decide turbine height and, after this, apply the number to find the minimum development size. If the advantages of a single typology are accepted, is this typology the best possible for purpose? The results are often difficult to reconcile with ordinary experience: examples are: 1 x 80m turbine, 4 x 80m turbines and 4 x 50m turbines are all in same medium type which does not necessarily require EIA; 5 x 50m turbines do not necessarily require EIA; 3 x 50m turbines are three magnitudes of type different from 6 x 50m turbines. A "small" 50m turbine is	You must satisfy both criteria to be included in a typology. So, for example, more than five turbines of any size would constitute a very large scheme. This is not however a common development scenario and we considered that significant numbers of small turbines would be likely to have significant impacts and therefore justify being included in a typology for which the requirements are more onerous We looked at a number of typologies . Most are concerned with 'wind farms' rather than smaller scale development and have not come across a better example that addresses smaller scale development The guidance cannot state categorically that any development which is not Schedule 1 (EIA regs) must have an EIA, that is the role of the LPA. Any typology will have a range across a category where the top of the range is closer to the bottom of the range	

Respondent	Agree Disagree Neither Agree or Disagree	Comment	Response	Change
		already 3 times higher than most neighbouring buildings and towers over trees. In view of the devastating negative impact turbines can have on our landscape, visual receptors, and residential amenity, we think the "numbers" contribution to the final typology is too permissive (number in each typology too high) with respect to EIA being required.. Suggest reducing the numbers to reflect impact: Small - 2 or fewer; Medium - 3 or fewer; Large - 4 or fewer The Typologies have not addressed the problem of same Developer adding to existing development.	above. Consequently our requirements have been considered in terms of being sufficient for the top of the range (not the middle) although sometimes this may make them appear quite demanding from the lowest point of the range. This change is minor and we do not feel it is justified This is addressed in the cumulative section	
Mary O'Connor Associate Director WYG Group		The category "very large" is confusing; surely even six wind turbines especially at over 100m height must constitute a "wind farm" scale development? Categories might be better expressed in a matrix	This is a good point. I think it has become clear that we need to explicitly exclude 'wind farms' (over 5MW) from the guidance. This will need a revision to the introductory sentence and to be made explicit on the matrix proposed in response to comment below. As the topologies have not been well	Revise introduction. *This guidance is aimed at smaller community based wind farm schemes (generally less than 5 MW) as described in Planning Policy Wales Technical Advice Note 8 Planning For Renewable Energy as suitable for areas outside Strategic Search Areas.* Add matrix - use the

Respondent	Agree Disagree Neither Agree or Disagree	Comment	Response	Change
		where the height of turbines and the number of turbines can be accounted for Other categories seem logical	understood we will add a matrix	matrix to exclude schemes above 5MW
Natural Resource Wales	Neither Agree or Disagree	We would prefer to have typologies that also refer to power output in addition to heights. An example of this multi faceted typology is evident in the recently adopted Conwy LDP, elements copied below*. There are many similarities to the typology of this guidance and combining some of the additional detail from this approach would be more informative and our preferred approach. • Align the terminology used in Table 1 to be consistent with the thresholds used for SSAs and NSIPs to provide clarity. • State the range in all typologies rather than 'or less'. For example, small to medium with range 50-79m • Identify the size of turbines and range of cluster sizes separately to give multiple contexts to the scale of development in the note at the bottom of the	The guidance is intended to help LPAs dealing with small scale development proposals. It is very hard for guidance that tries to cover everything to provide the nuanced guidance that we were asked to prepare for the range of small scale wind turbine applications that the LPAs are having to deal with. We will make the guidance more explicit that it is excluding schemes that would considered as wind farms within an SSA. this will automatically also rule out NSIPs. The landscape and visual impact of WTD is not dependant on the power output and we therefore do not think it is useful to include it. We have removed the range from all the tables as 'less than' is more accurate.	Add note to intro that this guidance is not intended for either SSAs or NSIPs projects Range removed from all tables

Respondent	Agree Disagree Neither Agree or Disagree	Comment	Response	Change
		table. There is a considerable difference between 6 or more small scale turbines and 6 or more very large turbines. For example, could a medium class be either 51-80 m OR comprising of 4 turbines? • Any modifications in the typologies may need to be reflected in updated study area distances and the document updated accordingly. • It would be important to link any changes to the typology & study areas with any Natural Resources Wales Turbine and Vertical Structures guidance for consistency. Natural Resources Wales would welcome engaging in any discussion relating to any proposed amendments/additional information to be included in the typology. *We would prefer to have typologies that also refer to power output in addition to heights, example from Conwy. Micro Under 50kW • Single or twin turbine applications. • Turbine below 20m to blade tip. Small Under 5MW • Turbines up to 3 in number. • Turbines below 50m to blade tip. • Viewed as a small group. Medium Over 5MW but below 25MW • Turbines up to 9 in number. • Turbines below 80m to blade tip. • Viewed as a large group. Large Over 25MW • Turbines over 10 in number.	We would welcome discussions with NRW in achieving consistency with any forthcoming guidance on Wales Turbine and Vertical Structures. See comment above	

Respondent	Agree Disagree Neither Agree or Disagree	Comment	Response	Change
		• Turbines over 80m to blade tip. • Viewed as a large-scale wind farm. • Located within the SSA. Very Large Over 25MW • Turbines over 10 in number. • Turbines over 110m to blade tip. • Viewed as a very large-scale wind farm. • Located within the SSA. Strategic Over 50MW • Typically over 15 in number • Turbines typically over 100m to blade tip. • Viewed as nationally strategic • Located within the SSA Applications for which are determined by National Infrastructure Planning delivered through PINS.		
Q3: Do you agree with the size of study areas being proposed for each typology				
Phil Ratcliff Development Planning Officer Rhondda Cynon Taf County Borough Council	Agree	Need to state in all the tables that the study area is a radius from the turbine site (i.e. not a diameter!).	Agreed	Will add
Sarah Chapple Landscape Architect SoltysBrewster Consulting	Agree		Noted	
Judith Jones Head of Town Planning Merthyr Tydfil CBC	Agree		Noted	

Respondent	Agree Disagree Neither Agree or Disagree	Comment	Response	Change
Oliver Buxton Project Manager Seren Energy Ltd	Agree		Noted	
Peter Seaman Chairman Campaign for the Protection of Rural Wales (CPRW)	Agree (given revision of numbers in Typologies)	A clear definition of "**study area**" would help non-professionals not to confuse this with the variable search areas for specific features in Q4	Will add however this guidance is aimed at professionals, both those submitting applications and those reviewing them and some level of knowledge has to be assumed. It is our experience that non-professional who are interested in wind turbine applications quickly become very knowledgeable.	Will add clearer definition of study area
Mary O'Connor Associate Director WYG Group	Agree	No evidence base is given for the study area extents; however, the range of "minimum" study areas is reasonable & possibility of flexibility in relation to presence of sensitive receptors beyond these	Noted	
Natural Resource Wales	Agree	NRW has provided comments previously on the size of the study areas proposed. The study area distances have been slightly increased following these discussions so we are happy with the current relationship of height to study area. If there are any changes to the height classes in the typology then	Noted	
Q4: Do you agree with the minimum requirements for submission of an EIA screening opinion for each typology				

Respondent	Agree Disagree Neither Agree or Disagree	Comment	Response	Change
Phil Ratcliff Development Planning Officer Rhondda Cynon Taf County Borough Council	Neither Agree nor Disagree	Page 1.1 states that Large and Very Large developments will require a detailed LVIA, which seems to be the explanation of why there is no Section D or E for Large and Very Large developments. Could this important point be made more clear and prominent? Should it say LVIA *and CLVIA*?		We will reiterate this point and include CLVIA as well as LVIA
Sarah Chapple Landscape Architect SoltysBrewster Consulting	Agree		Noted	
Judith Jones Head of Town Planning Merthyr Tydfil CBC	Agree		Noted	
Oliver Buxton Project Manager Seren Energy Ltd	Neither Agree nor Disagree		Noted	

Respondent	Agree Disagree Neither Agree or Disagree	Comment	Response	Change
Peter Seaman Chairman Campaign for the Protection of Rural Wales (CPRW)	Agree (given revision of numbers in Typologies)	Mention that Public Rights of Way must be clearly visible Each section mentions the on-line database: All parts of Wales need an online wind turbine data base. The database for S.Wales is an exceedingly impressive and powerful tool. The amount of development, reporting and data-input required may make it too costly and technically ambitious as a model for all other areas. However it would be very useful if a reduced version with more limited data and features were required for all areas of Wales. As an absolute minimum LPA's should be required to have an up-to-date map of all OCP turbines with location and height in order to verify application information and to inform developers and third parties. Maps could be backed up by clearly arranged tables of applications awaiting data entry.	It is not within the power of this guidance to require this.	Will add
Mary O'Connor Associate Director WYG Group	Neither Agree nor Disagree	Generally agree except requirements re "other large scale infrastructure" (c10, d10) for which the information may not be readily available; heights of mast and pylons are not likely to be available.	If they are unavailable that will be sufficient 'defence' for not providing them. It would be useful if the demand for such data promoted its more ready availability.	
Q5: Do you agree with the methodology for EIA Screening				

Respondent	Agree Disagree Neither Agree or Disagree	Comment	Response	Change
Phil Ratcliff Development Planning Officer Rhondda Cynon Taf County Borough Council	Disagree	"Indicates that EIA is required" replaces the draft version "EIA required" in 2 places, as mentioned in the 16/12/14 presentation. For clarity, I think the phrase needs to be "Indicates that EIA is required on landscape and visual grounds". The heading "Turbine Class" is confusing. Does "class" here mean "height" or "typology"? It would be logical for the heading to be "Turbine Typology", which means the chart can be simplified slightly: • Under "Micro", only 1 turbine is possible, so the confusing "2 turbines or more" line can come out. • Under "Small", only 1, 2 or 3 turbines are possible, so the confusing "4 turbines or more" line can come out. • Under "Medium", only 1 to 4 turbines are possible, so the confusing "5 turbines or more" line can come out. The four sub-headings are confusing. They appear to refer to the typologies (which are already defined earlier by height and number), yet have overlapping height specifications (e.g. 50m is in both small and medium), which must be unnecessary anyway. There should be no need for the "No. Of Turbines" line of boxes, for the same reason – i.e. the typologies are already defined by height and number.	Proposed changes will improve the clarity	Will add Diagram to be changed
Sarah Chapple Landscape Architect SoltysBrewster Consulting	Agree			

Respondent	Agree Disagree Neither Agree or Disagree	Comment	Response	Change
Judith Jones Head of Town Planning Merthyr Tydfil CBC	Agree	In general, the methodology for EIA Screening is considered to be acceptable. The recognition in the explanatory notes that professional judgement will still be required in certain circumstances is particularly welcome given that the distance thresholds are likely to indicate that more EIAs may be required. It is recommended that the methodology be tested against previous screening opinions and directions to ascertain whether it is broadly in line with previous decisions. Finally, Figure 2 indicates that both small and medium scale wind turbines include 50 m high turbines. This should be amended to avoid confusion.	This would only confirm that the guidance is in line with current practice. It would not provide any information on whether current practice is based on sound and consistent principles. It is the principles set out in the guidance that we need to be agreeing.	Will amend
Oliver Buxton Project Manager Seren Energy Ltd	Agree		Noted	
Peter Seaman Chairman Campaign for the Protection of Rural Wales (CPRW)	Agree (given revision of numbers in Typologies)		Noted	

Respondent	Agree Disagree Neither Agree or Disagree	Comment	Response	Change
Mary O'Connor Associate Director WYG Group	Disagree	The methodology provides a simplified approach to screening, and where "EIA may be required", the focus should be on whether the proposal is likely to give rise to significant effects In Note 1, p2.2, distinction should be made between landscape & visual impact assessment (LVIA) forming part of an EIA and landscape and visual appraisal which is outside the EIA framework. The guidance in GLVIA3 and Landscape Institute's Statement of Clarification in this regard should be followed. (http://landscapeinstitute.org/PDF/Contribute/GLVIA3StatementofClarification1-13.pdf)	The presence of sensitive receptors within certain distances **is an indicator** of whether the proposal is likely to give rise to significant effects. However professional judgements will still be required as their presence may not give rise to significant effects (due for example to screening) or receptors beyond the distance identified may have very heightened sensitivity. This can only be judged in the context of a particular application	Note added to the bottom of page 0.2. *There is a difference between a landscape and visual assessment that forms part of an EIA, a Landscape and Visual Impact Assessment (LVIA), and one that does not form part of an EIA which is described as a Landscape and Visual Appraisal (LVA). Throughout this guidance the term LVIA has been used to cover both kinds of assessment.*

Respondent	Agree Disagree Neither Agree or Disagree	Comment	Response	Change
		Query whether the LANDMAP requirements are consistent with Guidance Note 3		*Guidelines for Landscape and Visual Impact Assessment Third Edition Statement of Clarification 1/13 published by the landscape Institute provides further clarification.*
Natural Resource Wales	Disagree	• The assessment for whether a project requires an Environmental Statement (ES) should be based on whether a project is a schedule 2 project and then meets the thresholds as set out in Circular 11/99. The criteria in figure 2 in assessing whether an ES is required are misleading and removes the judgement from the decision maker as to whether significant effects are likely.	The presence of sensitive receptors within certain distances **is an indicator** of whether the proposal is likely to give rise to significant effects. Professional judgements will still be required as their presence may not give rise to significant effects (due for example to screening) or receptors beyond the distance identified may have very heightened sensitivity. This can only be judged in the context of a particular application	

Respondent	Agree Disagree Neither Agree or Disagree	Comment	Response	Change
		• The figure 2 methodology should take on board the comments in question 2 on definitions of turbine class. The Environment Circular 11/99 Indicative Criteria/ Thresholds states 'the likelihood of significant effects will generally depend upon the scale of the development, and its visual impact, as well as potential noise impacts. EIA is more likely to be required for commercial developments of 5 or more turbines, or more than 5 MW of new generating capacity'. • Figure 2 requires a reconsideration to take this point on board. As an example, if a scheme consists of 5 turbines or more it does not automatically mean an ES is required. All it means is that an ES is more likely to be required and this is where an assessment of the significance of effects is important.	Unclear what the point here is. the Environment Circular 11/99 Indicative Criteria/ Thresholds states that developments of more than 5 turbines are likely to require an EIA. However EIAs have been required of many smaller schemes and the brief for this work was to help LPAs decide when they should be asking for an EIA for schemes that are less than 5 turbines / 5MW but above the EIA regs schedule 2 criteria. Figure 2 is clear that it cannot say that an EIA is required this is a decision for the LPA it can only provide guidance on when it is likely.	
Q6: Do you agree with the approach to cumulative effects and the proposed search area distances				

Respondent	Agree Disagree Neither Agree or Disagree	Comment	Response	Change
Phil Ratcliff Development Planning Officer Rhondda Cynon Taf County Borough Council	Disagree	There is a slight confusion throughout page 2.3 and table 3 where turbines are said to have / belong to a typology. This is confusing because *turbines* have heights, whereas *turbine developments* have typologies. For example: • Where it says "Small turbines within 8km", I believe it really means "Small developments within 8km"; • In table 3, instead of "Typology of Application Turbine(s)", for clarity it needs to say "Typology of Application Development" • In table 3, I believe "the typology will be determined by the height to blade tip criteria only" is meant to say "the typology will be determined only by (a) the height to [vertical] blade tip and (b) the number of turbines" - unless the existing sentence is factually correct, in which case some more explanation would be helpful. For clarity, a definition is needed within the body of table 3, e.g. the CSA will be land within the stated distance of the application development.	The online database only categories turbines by height. It does not consider turbine numbers. We do not consider that this causes a problem with regard to CLVIA issues as turbine heights are the most determinative feature with regard to the distance at which there is potential for cumulative issues. Page 2.3 and Table 3 have been revised to make this clearer.	Page 2.3 and Table 3 revised to clarify the fact that the Online database only categorises turbines in terms of height
Sarah Chapple Landscape Architect SoltysBrewster Consulting	Agree		Noted	
Judith Jones Head of Town Planning Merthyr Tydfil CBC	Agree		Noted	

Respondent	Agree Disagree Neither Agree or Disagree	Comment	Response	Change
Oliver Buxton Project Manager Seren Energy Ltd	Agree		Noted	
Peter Seaman Chairman Campaign for the Protection of Rural Wales (CPRW)	Agree	Make clear that this refers to EIA screening and LPAs have discretion to increase distances in scoping requirements for LVIA	This is the case for all the distances given in this section of the guidance .	
Mary O'Connor Associate Director WYG Group	Agree		Noted	
Natural Resource Wales	Agree	As with Q3, NRW has provided comments previously on the size of the study areas proposed. The study area distances have been slightly increased following these discussions so we are happy with the current relationship of height to study area. If there are any changes to the height classes in the typology then the study area distances would require appropriate amendment based on the agreed parameters to redefine the study and search areas.	Noted	
Q7: Do you agree with the proposed cumulative thresholds for Other Infrastructure				

Respondent	Agree Disagree Neither Agree or Disagree	Comment	Response	Change
Phil Ratcliff Development Planning Officer Rhondda Cynon Taf County Borough Council	Agree	Last paragraph above Table 4: • "... potential cumulative *landscape and visual* impacts ..." • There is some confusion here as the first sentence refers to EIA and the second to LVIA /CLVIA. This needs expanding to say what it really means, which isn't clear now. I suspect the first sentence should refer to LVIA/CLIA and not to EIA.	Do not agree that there is any confusion here. This part of the guidance relates to EIA screening. the comment is making a separate point that even if an EIA is not required large and very large developments will always require a detailed assessment of landscape and visual effects and cumulative landscape and visual effects .	added
		Other Large Scale Infrastructure is defined elsewhere in the document, but the definition needs repeating in table 4. Need to clarify in Table 4 that occurrence of only *existing* OLSI is being taken into account.	Definition repeated. It would be reasonable to assess large scale infrastructure that was consented or in planning so we do not thing we should stress existing	Definition repeated.
		Important Note on page 2.4: Need to add another caveat to the effect of: "This guidance only considers landscape and visual effects. Even if the LPA concludes that EIA is not necessary on landscape and visual grounds, EIA may still be necessary on the grounds of likely significant effects other than landscape and visual effects."	We don't think this is necessary as the Guidance says early on that it is only concerned with L&V effects. The note here is to address an approach we have come across in applications that say because no EIA was required it means there can be no significant effects and no reasons for refusing it.	

Respondent	Agree Disagree Neither Agree or Disagree	Comment	Response	Change
Sarah Chapple Landscape Architect Soltys Brewster Consulting	Agree		Noted	
Judith Jones Head of Town Planning Merthyr Tydfil CBC	Agree	Although examples of other infrastructure can be found within the document, it would be helpful if they were clearly defined within this section.		Definition repeated.
Oliver Buxton Project Manager Peren Energy Ltd	Agree		Noted	
Peter Seaman Chairman Campaign for the Protection of Rural Wales (CPRW)	Disagree	**Table 4.** Given the vast range of possibilities, it seems too ambitious (and provocative) to establish these cumulative thresholds. Table 4 is confusing because micro, small, and medium seem to apply to application typology but it is not clear to this reader to what turbine heights the numbers of turbines in the (horizontally colour-coded) second column apply and how anyone can establish a threshold when there is a mixture of turbine sizes and infrastructure of different height in any study area	The second column is derived from the cumulative search areas in Table 3. Professional judgement will be required. The thresholds are indicative	add within cumulative search areas to Table 4
Mary O'Connor Associate Director WYG Group	Disagree	"other large scale infrastructure" is not defined; Why only infrastructure and not other forms of development? Comment re distinction between LVIA and appraisals above applies here too.	Large scale infrastructure is the most likely to be an issue but professional judgment may bring in other forms of development	Definition repeatedLVIA /LVA distinction referred to in introduction

Respondent	Agree Disagree Neither Agree or Disagree	Comment	Response	Change
Natural Resource Wales	Neither Agree nor Disagree	• P.2.3 Table 4 – do the distances in Table 3 apply? E.g. more than 15 medium (80m) turbines within 12km would be a threshold for EIA? 15 seems like quite a lot – significant effects could potentially result from less than this if they were close to a sensitive asset? • Table 4 sets out cumulative thresholds. Whilst this may be useful as a guide, it should always be based on a case by case assessment depending on the topography, landscape, setting and so on.	Note added about case by case assessment. This stage in the screening process only comes into play if it has been concluded that there are **no other reasons** (such as the presence of sensitive assets) that might trigger an EIA	
Q8: Do you agree with the general minimum requirements of information to be provided for Landscape Visual Impact Assessments				
Phil Ratcliff Development Planning Officer Rhondda Cynon Taf County Borough Council	Agree	Non-EIA LVIAs are often called landscape and visual appraisals (LVAs). Need to specifically include this term to clarify that they are covered by the guidance.		Note added to introduction
Sarah Chapple Landscape Architect SoltysBrewster Consulting	Agree		Noted	
Judith Jones Head of Town Planning Merthyr Tydfil CBC	Agree		Noted	
Oliver Buxton Project Manager Seren Energy Ltd	Agree		Noted	

Respondent	Agree Disagree Neither Agree or Disagree	Comment	Response	Change
Peter Seaman Chairman Campaign for the Protection of Rural Wales (CPRW)	Agree	Suggest amendment to include: The details of any road construction/road improvement schemes required to provide access to the proposal site beyond the site boundary should be included in the minimum requirements. The preferred route or options for any new grid connections should be included even if there is no definitive decision.		Added Added
Mary O'Connor Associate Director WYG Group	Agree	Make & model of turbine is unlikely to be known at this stage Details of grid connection is unlikely to be known at this stage Comment re distinction between LVIA and appraisals above applies here too.	It says where known It says where known	 Added to introduction
Natural Resource Wales	Agree		Noted	
Q9: Do you agree with the proposed specific requirements for Landscape Visual Impact Assessment				

Respondent	Agree Disagree Neither Agree or Disagree	Comment	Response	Change
Phil Ratcliff Development Planning Officer Rhondda Cynon Taf County Borough Council	Agree	3.3 • The Typology column is confusing by including qualification of the listed typologies with overlapping height criteria (e.g. 50m is both Small and Medium), but the typologies are defined by height and number in the repeated Table 2 on page 3.2, so the typologies shouldn't need any qualification in Table 5. • Need to state Study Area is radius. Suggest it should be called a Minimum Study Area. The requirement for a written assessment has been missed out for Large and Very Large – or is written assessment implicit in "Full CLVIA"? **Application of LANDMAP data:** 2nd sentence is inaccurate. Should read: "Aspect areas outside the site should be considered in line with LANDMAP Guidance Note 3: using LANDMAP for landscape and visual impact assessment of onshore wind turbines" (see Part 3: Section C of this guidance).	We were asked to add heights as a quick reminder so people didn't need to keep referring back to the original table. Although Table 2 is opposite in the document here people often print out single pages. I think the document as a whole makes it clear that typologies also include number of turbines Table 2 says it is a minimum study area radius to be clarified elsewhere Yes implicit in full CLVIA	Adjusted to avoid overlap Will consider adding numbers as well Will consider adding to this table Revised in line with suggestion *All aspect areas affected by the footprint of the development should be considered in detail. Aspect areas outside the site should be considered in line with LANDMAP Guidance Note 3: Using LANDMAP for Landscape and Visual Impact Assessment of Onshore Wind Turbines. (See Part 3: Section C of this guidance).*

Respondent	Agree Disagree Neither Agree or Disagree	Comment	Response	Change
Sarah Chapple Landscape Architect SoltysBrewster Consulting	Agree		Noted	
Judith Jones Head of Town Planning Merthyr Tydfil CBC	Agree		Noted	
Oliver Buxton Project Manager Seren Energy Ltd	Agree		Noted	

Respondent	Agree Disagree Neither Agree or Disagree	Comment	Response	Change
Peter Seaman Chairman Campaign for the Protection of Rural Wales (CPRW)	Agree with reservations	**Objective visualisation of the proposed scheme, easily understood by the public, is important for all schemes.** A 25m Micro turbine is higher than surrounding residences and a visualisation of its relation to existing buildings is important in assessing impact. Wirelines alone should not be sufficient for Small and Medium Types as they do not give the LPA and the public a clear enough impression of the impact of the proposal on its site and surroundings . **Residential Study Areas** We agree that it is better to have Residential Study Area as a function of tip height rather than Development Type but query the smaller Residential Study Areas generated for Micro and Small Types and suggest a minimum RSA of 500m to allow impact on residential amenity to be properly assessed. **Public Access** Although National Trails are mentioned in the guidance, there is no mention of other rights of way or the impacts of any scheme when viewed from land designated as Open Access land under the CROW Act. There does not seem to be any discussion of key visual receptors which should be included in a LVIA. Any micro siting allowance should be included in the application information and all distances adjusted accordingly. Without this, the indicative distances in the guidance can be breached.	It is not considered proportionate to ask for wirelines or photomontages for micro turbines.It is not considered proportionate to insist on photomontages for small and medium turbines but LPAs may request them if they believe they are dealing with a particularly sensitive location. 10 x blade tip height has been generally shown to include all properties where it is likely that unacceptable effects will occur. The note says that if there is clear visibility then properties just beyond this distance should also be included The Guidance says the assessment should be carried out in accordance with GLVIA3 which sets out how an assessment should be undertaken and, for example it identified that the users of PRoWs and open access land have high sensitivity. Agreed that Micro-siting can be a significant issue with regard to the residential assessment so a note has been added to this effect	Residential study area note to be amended to include a reference to micro siting T*he Residential Study Area is the area within which a residential visual amenity*

Respondent	Agree Disagree Neither Agree or Disagree	Comment	Response	Change
Mary O'Connor Associate Director WYG Group	Disagree	Computer generated ZTVs should not be required; manually drawn zone of visual influence or visual envelopes may be acceptable – the emphasis should be on the purpose i.e. to identify where visual receptors may be found. The LANDMAP requirements should be consistent with Guidance Note 3	Computer generated ZTVs are a commonly expected requirement for wind turbines We have worked with NRW to agree requirements	
Natural Resource Wales	Agree		Noted	
Q10: Do you agree with the proposed use of LANDMAP as part of the Landscape Visual Impact Assessment				
Phil Ratcliff Development Planning Officer Rhondda Cynon Taf County Borough Council	Agree		Noted	
Sarah Chapple Landscape Architect SoltysBrewster Consulting	Agree		Noted	
Judith Jones Head of Town Planning Merthyr Tydfil CBC	Agree		Noted	
Oliver Buxton Project Manager Seren Energy Ltd	Agree		Noted	

Respondent	Agree Disagree Neither Agree or Disagree	Comment	Response	Change
Peter Seaman Chairman Campaign for the Protection of Rural Wales (CPRW)	Agree with reservations	We appreciate the importance of LANDMAP for Wales and the advantages of the "layer/aspect" methodology but nevertheless we recognise that LANDMAP data is more robust in some instances than others and evaluations made in the past are themselves a matter of judgement and may not always reflect contemporary situations or value attributed by the public. We think it is important to allow flexibility to take this into account to avoid excessive wind energy development on aspect areas which are highly valued by the public but not classified as high or outstanding in Visual/Sensory Scenic quality or Character.	Agree that the quality of LANDMAP data can be variable and have added a note to this effect to the note at the bottom of page 3.6	It is essential that the LVIA analyses and interprets the LANDMAP data and does not merely quote from it. *The quality of LANDMAP data can be variable.*
Mary O'Connor Associate Director WYG Group	Neither Agree nor Disagree	Any LANDMAP requirements should be consistent with Guidance Note 3 It is not always straightforward to "interpret" the LANDMAP information and the interaction of the aspects	Agreed	
Natural Resource Wales	Agree	Under initial consideration • The first sentence 'all aspect layers' should be changed to 'all aspect areas' • Second paragraph, add 'regardless of their overall evaluation' at the end (so that it is clear that if the turbine is located within an aspect area it is considered fully even if it is not outstanding or high) Under detailed consideration • The first sentence 'all aspect layers' should be changed to 'all aspect areas'	I think adding this note may be confusing here. It is stressed n Table 6 in the heading to column 4	Changed to all aspect areas Changed to all aspect areas

Respondent	Comment	Response	Change
Phil Ratcliff Development Planning Officer Rhondda Cynon Taf County Borough Council	Part 3 section C photomontage guidance: As stated above, the visual representation of windfarms good practice guidance, SNH 2014 should be referred to. Therefore the Highland Council guidance is not needed.	2014 SHN Guidance will be referenced. Highlands Council Standards have not been superseded. As we are in Wales photomontages are not required to be done to either of these standards but it is worth pointing developers to the Highlands Council Standards as we consider they are less onerous than the latest SNH guidance and as informative, especially when dealing with small scale developments.	
Kay Foster Senior Landscape Officer Conwy Council	I would like to say that I find the document very concise	THANK YOU - WE TRIED HARD	
Sarah Chapple Landscape Architect Soltys Brewster Consulting	I attended the consultation seminar at the Norwegian Church which was really helpful. One comment – Is there anyway a 'How to Use' guide could be produced for the ICLOUD Mapping system It looks like a great resource but it would be helpful if there was some kind of tutorial available to make better use of the system	This may depend on if funding is available. There is some quite good guidance on the GIS cloud site	

Respondent	Comment	Response	Change
Colette Bosley Principal Landscape and Countryside Officer Monmouthshire County Council	• Introduction 0.7 – A statement on the need for suitably qualified Landscape Architect here would be helpful to ensure landscape consultants are at the table from the beginning. e.g. "Developers and agents considering the submission of a planning application for wind development are advised to engage a Landscape Consultant from an early stage to ensure professional judgement is applied in undertaking the Landscape and Visual Impact Assessment (LVIA). A LVIA will be required of all wind turbine applications. This document however clarifies that the scope of the LVIA study varies and is to be proportionate to the scale of proposed development and sensitivity of its landscape and visual context, and sets out the steps and considerations required in establishing whether or not the proposal requires an Environmental Impact Assessment." • Part one; minimum requirements for the EIA screening It came up in the seminar, but needs clarification in the document after section D the information to be provided for Large and Very large developments, otherwise it appears there are some missing pages. • 3.4 note 3. "The choice of viewpoints and which ones require photomontage visualisations will need to be agreed with the determining authority". • 3.11 – the text loses the message. Suggest inserting at the top – The assessment of cumulative effects often needs to look beyond the Typology Study Area	We have added a note about a Landscape Consultant but we think the other part reiterates what is said elsewhere Note on page 1,1 given more emphasis and note added to Page 1.2 under turbine typologies	Added *Developers considering the submission of a planning application for wind development are advised to engage a Landscape Consultant from an early stage to ensure professional judgement is applied in undertaking the Landscape and Visual Impact Assessment (LVIA)* *The location of viewpoints and visualisations will need to be agreed with the planning authority.* Text revised

Respondent	Comment	Response	Change
Barbara Morgan Network Rail	Network Rail has been consulted by Blaenau Gwent County Borough Council on the Wind Turbine Development. Thank you for providing us with this opportunity to comment on this Planning Policy document. Network Rail is a statutory undertaker responsible for maintaining and operating the country's railway infrastructure and associated estate. Network Rail owns, operates, maintains and develops the main rail network. This includes the railway tracks, stations, signalling systems, bridges, tunnels, level crossings and viaducts. The preparation of development plan policy is important in relation to the protection and enhancement of Network Rail's infrastructure. In this regard, please find our comments below. Developers of turbines must consider shadow flicker and its effect upon railway infrastructure. Network Rail would request that developers must consider when constructing wind turbines or wind farms the likely effect upon the railway, particularly where safety is critical. There may be a minimal risk to driver's vision (how they perceive signalling, the route ahead, stopping in the case of emergency etc.) which may be impacted by a wind turbine(s). Network Rail utilises radio/signalling equipment and we would not want to see this interfered with by wind farms/wind turbines, particularly as it is safety critical and absolutely integral to the operation of the railway. There is some concern that vibration from turbines can affect ground conditions; with the possible issue here being embankments and potential instability, in which case Network Rail would raise an objection to any applications for turbines close enough to the railway to create these issues and would wish consultation on a possible repositioning. The construction of the towers, heavy blades, gearbox and generator as well as guy lines	I do not think that any of these comments are relevant to the landscape and visual aspects of wind turbine development	

Respondent	Comment	Response	Change
	to hold the tower in place put strain on the ground at the base of the structure. Many wind turbines are now a minimum of a 45 metre long tall tower with concomitant long blades, as such it may be necessary for the developer of any proposal for a wind turbine or turbines to gain consent from Network Rail's Structures Engineers and Level Crossing Managers to cross Network Rail infrastructure in particular over a Network Rail bridge prior to construction on site. Consent may be needed as bridges have a maximum load and a wind turbine(s) plus blades and vehicle transporting said equipment may be over the limit for that bridge. Network Rail should be consulted on applications for wind turbine(s) as standard, and this should be added to the council's policy. We would also request the policy to require applicants to engage in pre-application consultation with the Network Rail Asset Protection Team to determine if a proposed wind turbine(s) / wind farm(s) impacts upon Network Rail land and the safety, integrity and operation of the railway and its infrastructure for the reasons as stated above. At this stage the construction and usage of wind turbine(s) is relatively rare, but Network Rail Town Planning has seen an increase in applications and it is highly probable that the numbers of developments with wind turbine(s) will increase as the drive toward sustainable, renewable, carbon neutral energy production increases.		

Respondent	Comment	Response	Change
Oliver Buxton Project Manager Seren Energy Ltd	I welcome this more prescriptive advice for smaller scale wind development. However my only concern is the line "*it is likely that all wind turbine development where the turbine height to blade tip is greater than 80m or where there are more than five turbines will require an EIA.*" There is already clear guidance from a circular in regards to EIA thresholds and guidance. This additional threshold for 80m tip is unnecessary. A single turbine with a tip height of, for example 86.5m (Enercon E53 800kW) in an appropriate location away from sensitive landscapes should not be subject of an EIA. The screening process is already suitable and this addition is unnecessary.	Many authorities do not find the existing guidance clear enough hence commissioning this guidance. The guidance says 'it is likely an EIA will be required'. In the example given of a turbine towards the bottom end of its typology in a non-sensitive location it would be up to the developer to put forward a case as to why an EIA was not required.	
Peter Seaman Chairman Campaign for the Protection of Rural Wales (CPRW)	CPRW welcomes a fairer, clearer and more consistent approach to EIA screening and LVIAs for wind energy applications which can be applied throughout Wales. **Third Parties should be mentioned in the Guidance.** The guidance says it is written for Planning Officers and Developers to introduce clarity, consistency and avoid lengthy discussion of irrelevant issues. Third Party stakeholders are not mentioned. All those current and future generations who derive health and pleasure from the countryside, Welsh residents and independent organisations, including conservation charities, are also stakeholders – perhaps the most important ones. They have a right to public consultation processes and an interest in improved information and fair process resulting from good guidance. **A plan for on-going assessment and timely review and updating of the guidance should be included.** The problems of applying out-dated guidance are amply illustrated by the plight of wind farm neighbours resulting from the retention of ETSU-R-97 guidance for noise assessment of wind turbines.	We agree that third parties should be involved. With regard to the process of deciding what should accompany an application for WTD this involvement will be via consultation with the LPA. It is beyond the remit of this guidance to prescribe what those consultation processes should be - that would need a separate piece of work. I don't know what provision there is for review of the document	

Respondent	Comment	Response	Change
	We can predict neither the future of onshore wind energy nor the unintended consequences of this guidance. We have all witnessed how rapidly the wind energy sector changes in response to energy and planning policy, economic incentives, technological development and the decrease in available sites. It is significant that we are calling the 79m single turbines so popular with Developers "medium developments" when these turbines are larger than those making up extensive windfarms a decade ago. 70m to 80m turbines are usually derated to 500kw in order to avoid the step-decrease in feed-in tariff over 500kw, demonstrating how quickly development adapts to economic incentives. The proposed guidance itself could have an analogous impact on patterns of application by making it clear how to bring a development in under the EIA threshold – like the impact of the recently abolished stamp-duty "slab-tax" on house prices. For instance, the guidance might encourage the peppering of the countryside with small groups of 3 turbines just under either 51m or 81m.	Whilst there is truth in this comment, taken to its logical conclusion it would mean that no guidance was ever produced and no thresholds set for fear of unintended consequences. A review of the effectiveness / consequences of the Guidance would be good practice.	
	It should be made even clearer at the outset that this is not guidance for making planning decisions.	It is clear in the name - one of the reasons for sticking with a long winded name instead of something snappy	
	Perhaps the "Important notes" (2.4.) should be highlighted in the introduction.	We think that it is better where it is. the heading **Important Note** should make it hard to overlook.	
	Ultimately an ES is a Developer's business case targeted at LPA permission and it is only too easy for a demonstration of superficially correct <u>procedure</u> to be interpreted by Planning Officers and Statutory Consultees as a demonstration of correct information and correct <u>planning conclusions.</u> This very slippery slope should be avoided at all costs. ETSU-R-97 illustrates how	A well produced, clearly written assessment that includes all the correct information is always a help and never a hindrance in	

Respondent	Comment	Response	Change
	"*guidance for assessment of wind turbine noise*" has made it virtually impossible for Planning Officers not to accept any Developer's noise assessment, whatever the scientific shortcomings.	determining applications.	
	If the current approach is to be successful: · All EIA screening assessments and scoping exercises should be undertaken by accredited staff. Staff should be required to complete specific professional training in this approach and should only be accredited when they have demonstrated their competence in applying the methodology.	We do not have a remit to impose this	
	A public register of all turbine schemes should be maintained and the outcome of any screening / scoping exercise of any such scheme should be included in the register.	We do not have a remit to impose this but the online database is planned to include information of refused and withdrawn applications as well as approved ones	
	· An Authority should be required to publish their decisions, with reasons, why a scheme submitted to them does not require an EIA screening request or how a EIA screening decision is reached.	It is unclear as to whether this is already required by the EIA regs with regard to Schedule 2 development	
	We are also aware that the success of this approach relies heavily on the quality of the data and landscape information upon which any judgements are based. We therefore believe that any such assessment must be based upon professionally and independently accredited landscape capacity and sensitivity studies which themselves use the same methodology.	Independently accredited landscape capacity and sensitivity studies are currently being undertaken for various areas within Wales	
	An on-line Database is essential to this project As an absolute minimum LPA's should be required to have an up-to-date map of all OCP turbines with location and height in order	We do not have a remit to impose this	

Respondent	Comment	Response	Change
	to verify application information and to inform developers and third parties. Maps could be backed up by clearly arranged tables of applications awaiting data entry.		
Mary O'Connor Associate Director WYG Group	Photomontages: the guidance referred to is now out of date: revised SNH guidance has been published in July 2014 and supersedes Highland Council guidance; the LI Advice Note is under revision in response to the new SNH guidance; NB: the SNH guidance on visualisations is for commercial scale wind farms in Scotland (see Introduction to the Guidance) not for smaller scale development and not for developments outside of Scotland; it should be reviewed critically before adopting it for less than commercial scale wind developments in Wales and only adopted so far as it is usefully applicable. p3.12: there is confusion here about location and visual receptor – see GLVIA3 which is clear that the visual receptor is the person viewing the landscape and not the location of the person e.g. the national trail as stated here. Consistency should be ensured between this and the Carmarthenshire & Pembrokeshire Guidance. The Online WT Database is very welcome; support should be	To be updated Agreed Agreed This has been achieved as far as possible although one of the key purposes of this guidance was to establish study and search areas which more accurately reflected likely significant effects and this has meant a reduction in the minimum study areas from some existing guidance. If we keep consistency with everything that has gone before we can't bring in change. Agreed	We will revise this section in the light of the updated guidance and add a note on scale. Changed

Respondent	Comment	Response	Change
	sought from Welsh Government to extend it to all Wales.		
Natural Resource Wales	Natural Resources Wales welcomes this guidance and the collaborative approach that has been instrumental in developing it. We have engaged in providing feedback on this document on previous occasions whilst it was still in draft form, notably on 5th March, 6th March, 4 June, 9 June and 1 July 2014. Our comments have been considered and included at all stages and where they have not been included – satisfactory explanations have been given. Therefore only additional comments are included in this document. An officer has recently used this draft guidance in a live case as a test and found it to be a very logical process that will help in deciding on EIA requirements. Previously a ZTV would have been requested for the extent of visibility in order to inform their decision, but as the flow chart in figure 2 follows a logical process based on distances from more sensitive landscape areas, they felt it would make the screening process much simpler. Natural Resources Wales would be very pleased to work with you to arrange an event to launch and communicate the Guidance to Local Planning Authorities, Natural Resources Wales staff, consultants and developers. Additional comments on the draft document follow: 0.1 Suggest replace 'Environmental assessment is a procedure that ensures that the environmental implications of proposals are taken into account before decisions are made. An Environmental Impact Assessment (EIA) assesses the possible impact that a proposed project may have on the environment and this information is submitted to the Local Planning Authority (LPA) or the Welsh Government in the form of an Environmental Statement (ES)'. With:	This wording followed legal advice and we would like to keep it. It is more strictly factual with regard to EIA regulations than the suggested replacement.	

Respondent	Comment	Response	Change
	'Environmental Impact Assessment (EIA) is a process by which information about the likely environmental effects of certain projects is collected, assessed and taken into account both by the applicant, as part of project design, and by the decision making body (Local Planning Authority or if called in, by Welsh Government) in deciding whether permission should be granted. Thus EIA has two roles – improving decision making and project planning.'		
	Introduction p.2 - CLVIA – should this say that other development as well as wind turbines should be considered (as referenced on p.4 Part 2)?		Reference added
	P.1.2 a8 – it would be helpful if the site plan showed features such as mature trees/woodland/hedgerows as well as contour lines/spot heights.	This would not be a usual requirement at a screening stage. If an applicant was relying on such screening as a reason for not requiring an EIA it would be up to them to add it to their plans and make their case.	
	P1.3 b4 –Include sensitive seascapes?	We are not aware of an agreed definition of a sensitive seascape	
	P.1.5 – the screening distances e.g. 3km from the National Park for medium, there could be significant effects within the 5km study area?	Effects with 5km would be assessed even if an EIA was not required. The purpose of the screening is to identify likely triggers for an EIA not to cover all possible significant effects	

Planning Guidance for Smaller Scale Wind Turbine Development
Landscape and Visual Impact Assessment Requirements

APRIL 2015

Prepared by Gillespies LLP
for
The Heads of the Valleys
Landscape Officers and Planners
with support from
The South Wales Landscape Liaison Group

Introduction

The Purpose of the Guidance

Who should use this Guidance?

This guidance is concerned with smaller community based wind farm schemes (generally less than 5 MW) identified in *Planning Policy Wales Technical Advice Note 8 Planning for Renewable Energy* as being suitable for areas outside Strategic Search Areas. Such schemes are described in this guidance as smaller scale wind turbine development.

This guidance is intended for:

- Anyone considering submitting a planning application for smaller scale wind turbine development (Developers); and
- Planning Authority Planning Policy and Development Management Officers (Local Planning Officers) dealing with pre-application enquiries or with planning applications for smaller scale wind turbine development.

This guidance is only concerned with landscape and visual issues and does not address other potential environmental impacts.

Does the Development require an Environmental Impact Assessment?

Environmental assessment is a procedure that ensures that the environmental implications of proposals are taken into account before decisions are made. An Environmental Impact Assessment (EIA) assesses the possible impact that a proposed project may have on the environment and this information is submitted to the Local Planning Authority (LPA) or the Welsh Government in the form of an Environmental Statement (ES).

The Town and Country Planning Environmental Impact Assessment (England and Wales) Regulations 1999 (EIA Regulations) set out which developments require an EIA. An EIA is required for proposals likely to have significant effects on the environment by virtue of their nature, size or location. The National Assembly for Wales Planning Series includes a *Quick Guide to Environmental Impact Assessment*.

Wind turbine development which involves the installation of more than 2 turbines, or where the hub height of any turbine or height of any other structure exceeds 15 metres, is classed as a Schedule 2 development under the EIA Regulations.

A Developer of a Schedule 2 wind turbine development may:

- decide that an EIA is required and submit an ES with the planning application; or
- before submitting a planning application, request a **screening opinion** from the LPA.

There is a statutory obligation for the LPA to provide a screening opinion stating whether or not an Environmental Impact Assessment is required.

1. Part One:
Minimum requirements for submission of a request for an EIA screening opinion with regard to landscape and visual issues.

2. Part Two:
Methodology to be employed for EIA Screening

3. Part Three:
Minimum requirements and standards of information to be submitted as part of an LVIA for both EIA and non-EIA applications

Introduction

The Structure of the Guidance

Overview

Parts 1 and 2 of this guidance are intended to help LPAs determine whether a Schedule 2 wind turbine development is likely to have significant effects on the landscape or on visual amenity by virtue of its nature, size or location. An EIA will be required if it is considered likely that significant effects may arise.

Part 3 sets out the minimum requirements and standards of information to be submitted with a landscape and visual impact assessment (LVIA). All wind turbine applications will require some consideration of landscape and visual impact.

This guidance reflects the principle that potential landscape and visual impacts from wind turbine development are related to the size and scale of the proposed development and to the sensitivity of the location. Consequently, the information sought and the level of LVIA required from Developers will be determined by:

- the scale of the proposal; and
- the sensitivity of the location.

Table 1 sets out a series of typologies for wind turbine develoment. The typologies are determined by the height to blade tip of the turbine(s) and the number of turbines. The level of LVIA required will usually be less for smaller proposals than for larger proposals.

LANDMAP is the Welsh approach to landscape assessment. All LVIAs should use LANDMAP data to inform their assessments.

Online Wind Turbine Database for South Wales

LVIAs for wind turbine development must include a consideration of cumulative landscape and visual impacts (CLVIA) that may arise as a result of other wind turbine development or other large scale infrastructure. To assist in the preparation of CLVIAs an **Online Wind Turbine Database for South Wales** (Online Database) has been developed. The Online Database contains information on the dimensions and location of all operational and consented turbines and turbines for which a planning application has been submitted. The latter are described in this guidance as 'in planning' turbines.

For cumulative assessment purposes the typologies relate only to the height of the operational, consented and in planning turbines. Turbines within the database will be classified according to their height to blade tip only.

In the future the Online Database will also contains information on turbines for which a screening opinion has been requested and applications that have been refused or withdrawn. Details on how to access the Online Database can be found at the end of this Guidance.

Notes on Landscape and Visual Assessments

There is a difference between a landscape and visual assessment that forms part of an EIA, which is called a Landscape and Visual Impact Assessment (LVIA), and one that does not form part of an EIA which is known as a Landscape and Visual Appraisal (LVA). However, for simplicity the term LVIA has been used throughout this guidance to cover both kinds of assessment.

Guidelines for Landscape and Visual Impact Assessment Third Edition Statement of Clarification 1/13 published by the landscape Institute provides further clarification on the difference between a LVIA and a LVA.

Developers considering the submission of a planning application for wind development are advised to engage a Landscape Consultant from an early stage to ensure professional judgement is applied in undertaking the LVIA.

Introduction

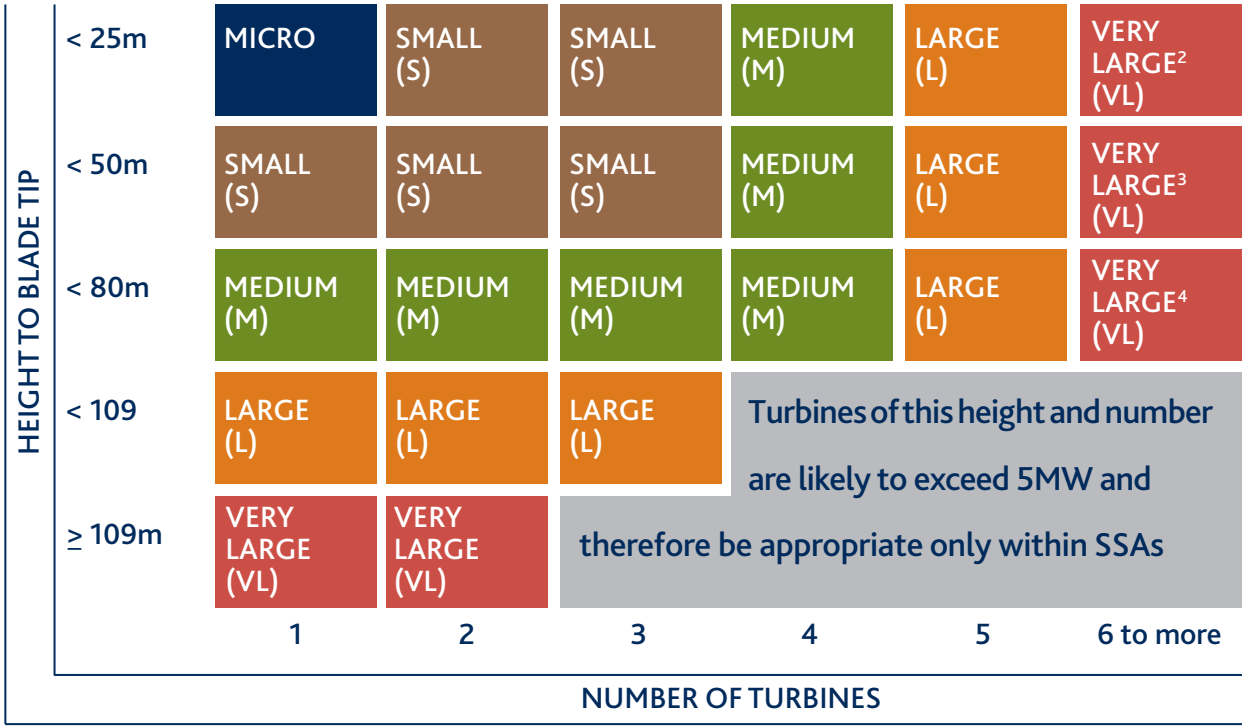
Typology

Table 1: Typologies

	Turbines development in this typology will have a blade tip height of:	and will consist of:
MICRO (Mi)	Less than 25m or roof mounted	Only one turbine
SMALL (S)	Less than 50m	Three turbines or fewer
MEDIUM (M)	Less than 80m	Four turbines or fewer
LARGE (L)	Less than 109m	Five turbines or fewer
VERY LARGE (L)	109m or greater	Any number of turbines

Note: Any group of six or more turbines will belong to the very large typology irrespective of the height of the turbines.

To decide in which typology a development belongs it must satisfy **both** the height and the turbine numbers criteria. See the examples on page 0.5.



Notes:
1. Or roof mounted
2. To exceed 5MW about 250 turbines would be required
3. To exceed 5MW about 22 turbines would be required
4. To exceed 5MW about 10 turbines would be required

Introduction

The Structure of the Guidance

Part 1:
Minimum requirements for submission of a request for a screening opinion

Part 1 of the guidance sets out the minimum information that Developers should provide in order that Local Planning Officers can determine whether a particular development is likely to have a significant effects on the landscape or on visual amenity and therefore require an EIA.

Part 2:
Methodology for EIA Screening

Part 2 of the guidance contains a methodology for Local Planning Officers to use when determining whether an EIA is required. The methodology provides a clear indication of how the information required (as set out in Part 1) will be used to determine:

- the characteristics of the development; and
- the environmental sensitivity of the geographical areas likely to be most affected by the development.

This information, considered in the light of the potential impacts, will determine whether an EIA is required due to likely significant effects on the landscape or on visual amenity.

The screening criteria in Parts 1 & 2 are indicators of the key landscape and visual issues likely to arise in relation to smaller scale wind turbine development and include the likelihood of:

- significant impacts on sensitive landscape receptors;
- significant impacts on residential properties and other sensitive visual receptors; and
- cumulative effects with other wind turbine developments and with existing large scale infrastructure.

The screening criteria use distances, defined by the typology, to indicate the potential for sensitive receptors to be significantly affected by the development. **These distances are indicative and not absolute. Each development will raise its own issues and will be considered by the LPA on a case by case basis**.

Sensitive landscape and visual receptors are not necessarily the same as 'sensitive areas' as defined in the EIA regulations.

Part 3:
Minimum Requirements for EIA and Non–EIA Development

Part 3 of the guidance identifies the minimum requirements for the landscape and visual information to be submitted with a planning application for wind turbine development. It is based on the different typologies and should be used to agree the scope of the LVIA with the LPA. Associated infrastructure (e.g. access tracks, and grid connection where known) should be considered as part of the assessment.

It is likely that all wind turbine development where the turbine height to blade tip is greater than 80m or where there are more than five turbines will require an EIA although if requested an LPA will provide a screening opinion. All wind turbine development of this scale will require a detailed LVIA. It is recommended that Developers proposing wind turbines of this scale should move to Part 3 of the guidance which sets out the minimum requirements and standards of information to be submitted which should be used as the basis for agreeing the scope of the LVIA with the LPA.

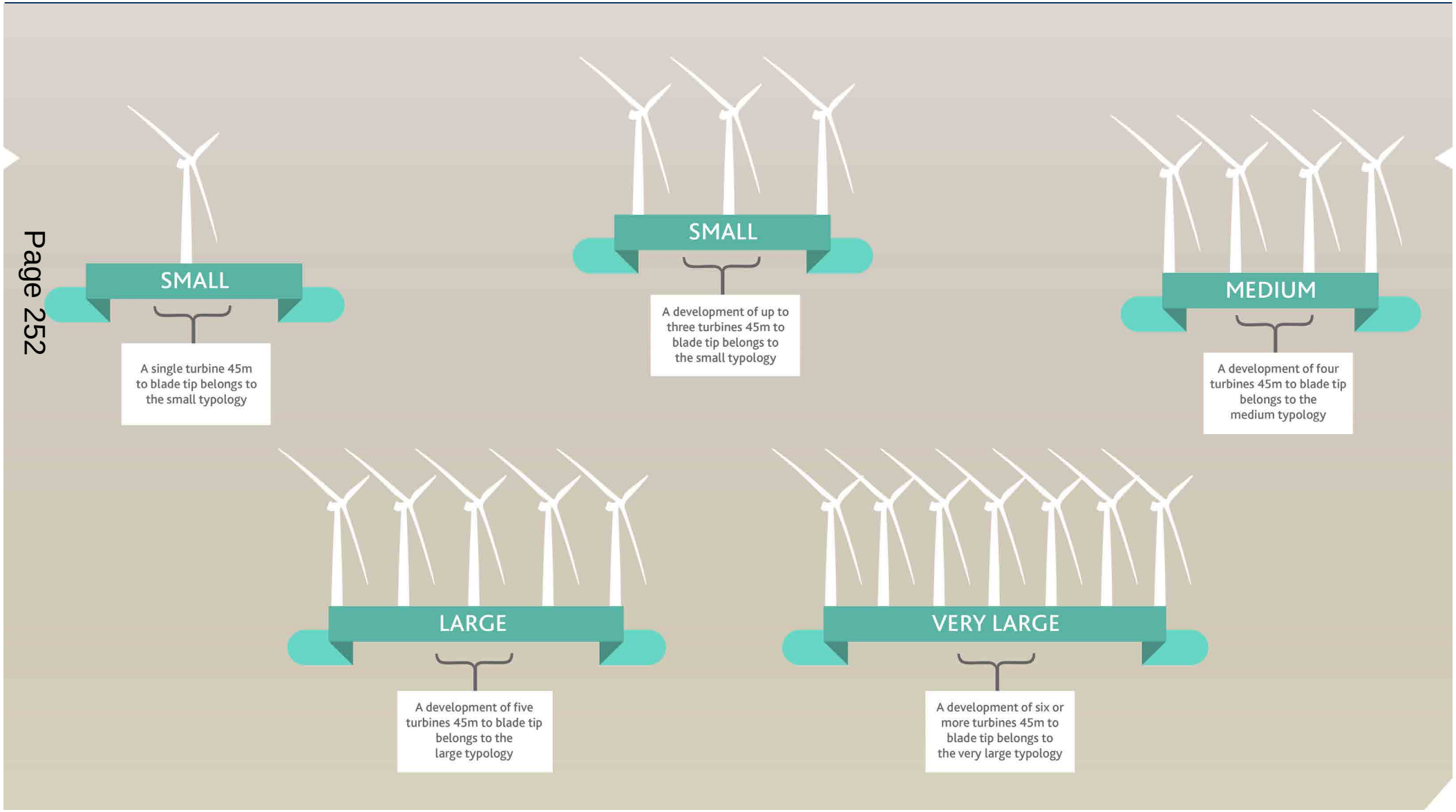
Agreeing the scope of the LVIA is important both for EIA and non-EIA development. Part 1 and Part 3 of the Guidance should be used by Developers to inform Scoping Reports for LVIA, and by Local Planning Officers when agreeing the scope of the LVIA.

Throughout this guidance the information required is determined by the typology into which the development falls.

Introduction

Typologies: Illustrative Example

Figure - 1 Illustrative example of the relationship between turbine height, number and typology



1. Part one:

Minimum requirements for submission of a request for an EIA screening opinion with regard to landscape and visual issues

Part One: Minimum requirements for submission of a request for an EIA screening opinion

Introduction

Scope of this Part

This part of the guidance sets out the minimum requirements for submission of a request for an EIA screening opinion with regard to landscape and visual effects only. This includes visual effects on residential properties (a residential visual amenity assessment). It does not include the requirements for a screening opinion with regard to other environmental impacts, such as ecology or cultural heritage, or for other residential amenity issues such as noise or shadow flicker.

Table 2 opposite:

- sets out the criteria for determining the typology of a development; and
- the study area required for each typology.

The study area is measured as a radius from the application turbine(s).

Part One contains four sections

Section A: Information to be provided with all requests for screening opinions

Section B: Information to be provided with requests for screening opinions for Micro developments

Section C: Information to be provided with requests for screening opinions for Small developments

Section D: Information to be provided with requests for screening opinions for Medium developments

Large and very large developments will require detailed LVIA and CLVIA. Developers of large or very large developments should refer to Part 3 of this guidance.

Table 2: Typology and Study Areas

TYPOLOGY	HEIGHT	TURBINE NUMBERS	STUDY AREA
	Turbine development in this typology will have a blade tip of:	and will consist of:	
MICRO (Mi)	< 25m or roof mounted	Only one turbine	2km
SMALL (S)	< 50m	Three turbines or fewer	5km
MEDIUM (M)	< 80m	Four turbines or fewer	8km
LARGE (L)	< 109m	Five turbines or fewer	11km
VERY LARGE (VL)	≥ 109m	Any number of turbines	15km

Note: Any group of six or more turbines will belong to the very large development typology irrespective of the height of the turbines.

The study area, which is measured as a radius from the application turbine(s),is the minimum that will be required for a typical development.
A larger study area may be required if particularly sensitive landscape / visual receptors are located beyond the study area. This may result in an asymmetrical study area and should be agreed on a case by case basis.

Part One: Minimum requirements for submission of a request for an EIA screening opinion

Section A: Information to be provided for all screening requests

Information required	Notes
a1. Turbine Typology	From Table 2 Above Large and very large developments will require detailed LVIA & CLVIA. Developers should refer to Part 3 of this guidance.
a2. Maximum height to blade tip	A dimensioned plan will be required at the application stage
a3. Height to hub	
a4. Rotor diameter	
a5. Number of turbines	A development of five turbines or more will require detailed LVIA & CLVIA.
a6. A six figure easting and six figure northing grid reference should be provided for each turbine.	
a7. 1:2,500 location plan	Plans to be based on an Ordnance Survey extract giving sufficient information to indicate the position of the application turbine(s) in the landscape. Public Rights of Way should be clearly shown.
a8. 1:500 site plan	Plans should provide basic topographic information for the site and its surroundings in the form of contour lines.
a9. Scaled plan showing the study area (See Table 2) on A3 sized paper.	The scale of the plan will be determined by the extent of study area required.

Part One: Minimum requirements for submission of a request for an EIA screening opinion

Section B: Information to be provided for a MICRO development

Sensitive landscape and visual receptors

Sensitive landscape and visual receptors should be identified according to the distance from the turbine as set out below. Each sensitive landscape or visual receptor should be:

- identified by name; and
- shown on one of the plans submitted.

Information regarding the distances between the receptors and the application turbine(s) should be provided in a table.

Distances given are from the application turbine or from the nearest application turbine when the proposal is for more than one turbine.

Within 10x the height to blade tip:

b1 World Heritage Site

b2 Statutorily designated landscape (National Park, Area of Outstanding Natural Beauty)

b3 Locally designated landscape (e.g. Special Landscape Area) or Heritage Coast

b4 LANDMAP aspect areas where the overall evaluation for Visual and Sensory, Historic Landscape or Geological landscape is Outstanding

b5 Land on the Register of Landscapes of Historic Interest in Wales or Land on the Register of Parks and Gardens of Special Historic Interest in Wales

b6 Residential Property

Operational, consented or in planning (OCP) turbine development:

b7 Using the Online Database identify all OCP turbines within 2km.
Each OCP turbine or group of turbines should be:

- identified by name; and
- shown on one of the plans submitted.

Information should be provided in a table regarding the distances between the OCP turbines and the turbine that is the subject of the application.

Part One: Minimum requirements for submission of a request for an EIA screening opinion

Section C: Information to be provided for a SMALL development

Sensitive landscape and visual receptors

Sensitive landscape and visual receptors should be identified according to the distance from the turbine as set out below. Each sensitive landscape or visual receptor should be:

- identified by name; and
- shown on one of the plans submitted.

Information regarding the distances between the receptors and the application turbine(s) should be provided in a table.

Distances given are from the application turbine or from the nearest application turbine when the proposal is for more than one turbine.

Within 2km:

c1 World Heritage Site

c2 Statutorily designated landscape (National Park, Area of Outstanding Natural Beauty)

Within 1km:

c3 Locally designated landscape (e.g. Special Landscape Area) or Heritage Coast

c4 LANDMAP aspect areas where the overall evaluation for Visual and Sensory, Historic Landscape or Geological landscape is Outstanding

c5 Land on the Register of Landscapes of Historic Interest in Wales or Land on the Register of Parks and Gardens of Special Historic Interest in Wales

c6 An ancient monument, listed building or conservation area

c7 National Trail

Within 10x the height to blade tip

c8 Residential Property

Operational, consented or in planning (OCP) turbine development:

c9 Using the Online Database identify:

- **all** OCP turbines within 2km; and
- **small, medium, large or very large** OCP turbines within 8km.

Each OCP turbine or group of turbines should be:

- identified by name; and
- shown on one of the plans submitted.

Information should be provided in a table regarding the distances between the OCP turbines and the turbine or nearest turbine that is the subject of the application.

c10 Other large scale infrastructure (e.g. pylons, motorways, major trunk roads and telecommunications masts) within 1km should be:

- identified by name; and
- shown on one of the plans submitted;

Information should be provided in a table regarding:

- the distances between the large scale infrastructure and the turbine or nearest turbine that is the subject of the application; and
- the heights of vertical structures such as masts and pylons where this information is available.

Part One: Minimum requirements for submission of a request for an EIA screening opinion

Section D: Information to be provided for a MEDIUM development

Sensitive landscape and visual receptors

Sensitive landscape and visual receptors should be identified according to the distance from the turbine as set out below. Each sensitive landscape or visual receptor should be:

- identified by name; and
- shown on one of the plans submitted.

Information regarding the distances between the receptors and the application turbine(s) should be provided in a table.

Distances given are from the application turbine or from the nearest application turbine when the proposal is for more than one turbine.

Within 3km:

d1 World Heritage Site

d2 Statutorily designated landscape (National Park, Area of Outstanding Natural Beauty)

Within 1.5km:

d3 Locally designated landscape (e.g. Special Landscape Area) or Heritage Coast

d4 LANDMAP aspect areas where the overall evaluation for Visual and Sensory, Historic Landscape or Geological landscape is Outstanding

d5 Land on the Register of Landscapes of Historic Interest in Wales or Land on the Register of Parks and Gardens of Special Historic Interest in Wales

d6 An ancient monument, listed building or conservation area

d7 National Trail

Within 10x the height to blade tip:

d8 Residential Property

Operational, consented or in planning (OCP) turbine development:

d9 Using the Online Database identify

- **all** OCP turbines within 2km;
- **small** OCP turbines within 8km; and
- **medium, large or very large** OCP turbines within 12km.

Each OCP turbine or group of turbines should be:

- identified by name; and
- shown on one of the plans submitted.

Information should be provided, either on a plan or in a table, regarding the distance to the turbine proposed or the nearest turbine when the proposal is for more than one turbine.

d10 Other large scale infrastructure (e.g. pylons, motorways, major trunk roads and telecommunications masts) within 1.5km should be:

- identified by name; and
- shown on one of the plans submitted;

Information should be provided in a table regarding:

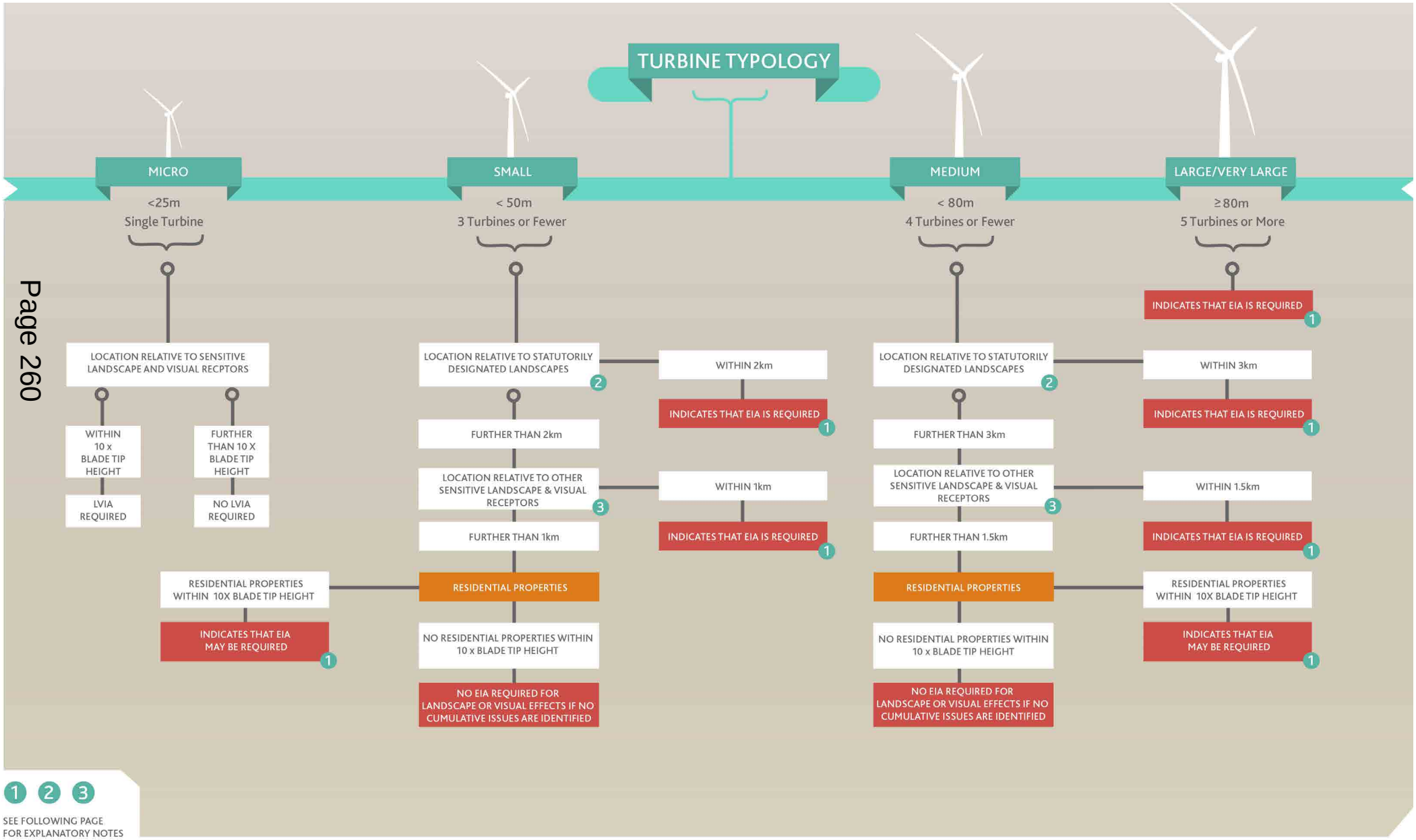
- the distances between the large scale infrastructure and the turbine or nearest turbine that is the subject of the application; and
- the heights of vertical structures such as masts and pylons where this information is available..

2. Part two:

Methodology to be employed for EIA Screening with regard to Landscape and Visual Issues

Part Two: Methodology for EIA Screening

Figure 2: Methodology Flow Chart



Part Two: Methodology for EIA Screening

Explanatory notes

Note 1

Indicates that an EIA may be required

It is likely that a development that meets these criteria will require an EIA for landscape and visual reasons. However where the development only just meets the criteria the screening process should continue. For example where a turbine is at the lowest end of its typology (e.g. a 26m blade tip height turbine in the small typology) or is only just within the distance specified (e.g. a small turbine is 1.9km from a statutorily designated landscape) a judgement can be made to move on to the next criteria.

If the landscape and visual impact of a development is the only aspect that appears to require an EIA the scope of the EIA may be narrow. For example it could be restricted to a Residential Visual Amenity Assessment. The screening process will identify the key sensitivities that must be considered in the LVIA whether it is undertaken as part of the EIA or as a standalone assessment.

Note 2

Statutorily designated landscape

National Park,
Area of Outstanding Natural Beauty

Although not statutorily designated World Heritage Sites should be included at this stage of the screening.

Note 3

Other sensitive landscape and visual receptors

Locally designated landscape
(e.g. Special Landscape Area)

Land on the Register of Landscapes of Historic Interest in Wales

Land on the Register of Parks and Gardens of Special Historic Interest in Wales

Heritage Coasts

LANDMAP Aspect Area that has an overall evaluation of *Outstanding* for the Visual and Sensory layer, the Historic Landscape layer or the Geological layer.

Ancient monument
Listed building
Conservation area
(These will also be considered in the cultural heritage assessment)

National Trail

If a Developer considers that no significant effects are likely to arise within the specified distance a justification with supporting evidence may be submitted with the screening opinion. For example, evidence to support a claim that no residential properties within 10x the blade tip height would be subject to significant visual effects because all properties within that distance were effectively screened by existing vegetation.

It is important to note that the distances given in Part 1 and in the Methodology Flow Chart are the distances at which it is considered that the presence of a sensitive landscape or visual receptor might trigger an EIA.

The LVIA must assess all sensitive landscape and visual receptors within the study area required for the typology, with the exception of residential properties.

The study areas for residential visual amenity assessments should be 10x the blade tip height or as agreed in scoping .

Part Two: Methodology for EIA Screening

Cumulative Issues

An EIA may be required due to potential significant cumulative effects. The potential for a cumulative effect will depend on the proximity of other turbines and their height. For example an existing micro turbine might raise cumulative issues but only if it is within 2km.

The online wind turbine database categorises turbines according to their height and for CLVIA only the typologies are determined by height alone.

Table 3: Cumulative Search Areas sets out the distances at which different height turbines need to be considered in a CLVIA. For example an application for a medium typology development would need to consider the following operational, consented or in planning turbines:

- Micro turbines within 2km,
- Small turbines within 8km and
- Medium, large or very large turbines within 12km.

Table 3: Cumulative Search Areas

Height of Operational, Consented or in Planning Turbine(s)	Typology of Application Turbine(s)				
	Mi	S	M	L	VL
Mi <25m	2km	2km	2km	2km	2km
S <50m	2km	8km	8km	8km	8km
M <80m	2km	8km	12km	12km	12km
L <109	2km	8km	12km	17km	17km
VL ≥109	2km	8km	12km	17km	23km

The distances given are the distance from the turbine(s) within the application development.

Turbines that are operational, consented or in planning (OCP) can be scoped out if they are outside the search area relevant to their height. For example no micro turbines beyond 2km need to be considered in CLVIA. For more details on cumulative search areas see Table 7 and Figure 3 in Part 3 of this Guidance.

The distances given in Table 3 are reflected in the information requested in Part 1. OCP turbines that fall within the relevant search areas must be considered in a CLVIA.

An EIA will be required if it is considered that the number of OCP turbines, or the presence of existing large scale infrastructure is likely to give rise to significant impacts.

Table 4 sets out the thresholds at which an EIA may be required on account of potential landscape and visual cumulative impacts with regard to other turbines or large scale infrastructure (e.g. pylons, motorways, major trunk roads and telecommunications masts). These thresholds are indicative only and applications must be judged on a case by case basis.

Large and very large developments will always require detailed LVIA and CLVIA.

Table 4: Cumulative Thresholds : Other Infrastructure

Typology	No. of Operational, consented and in planning turbines within cumulative search area	Occurrence of large scale infrastructure within cumulative search area
Micro	More than 5 turbines	2 or more within 10x blade tip height
Small	More than 10 turbines	2 or more within 1km
Medium	More than 15 turbines	2 or more within 1.5km

Part Two: Methodology for EIA Screening

Important Note

This guidance is intended to help Developers and Local Planning Authorities decide on whether an EIA is required on account of likely significant landscape and visual effects.

Where it is determined that no EIA significant effects are likely and an EIA is not required this does not automatically imply that the effects that do occur are acceptable or that an application will be approved.

Landscape and visual effects that are not considered EIA significant may still be relevant to the planning balance to be struck between the benefits of the development and any identifiable harm.

3. Part three:

Minimum requirements and standards of information to be submitted as part of an LVIA for both EIA and non-EIA applications

Part Three: Minimum Requirements and Standard of Information for LVIAs

Section A: Information to be provided for all applications

Scoping

Agreeing the scope of the LVIA is important both for EIA and non-EIA development. Parts 1 and 3 of this Guidance identify the information that will be required for each typology and should be used by Developers to inform Scoping Reports for LVIA. Parts 1 and 3 of this Guidance should also be used by Local Planning Officers when agreeing the scope of the LVIA. For ease of reference some of the Tables from Parts 1 and 2 have been repeated in Part 3.

Information	General Requirements
Details of turbine(s)	Typology (Table 2) Maximum height to blade tip Height to hub Rotor diameter Make and model of turbine where known Colour of blades, hub and tower Dimensioned elevations of the turbine A six figure easting and six figure northing grid reference for each turbine
Details of ancillary infrastructure	Details of any other structure, plant or engineering works that are proposed as part of the development including any new tracks and control buildings Details of grid connection where known and options/preferred route when not known.
Details of Construction Access	Details of any road construction/road improvement schemes beyond the site boundary required to provide construction access.
Plans	1:2,500 location plan 1:500 site plan Plans to be based on an Ordnance Survey extract giving sufficient information to indicate the position of the application turbine(s) in the landscape and its relationship with other buildings, nearby dwellings, woodland, hedges, rivers and ponds. Plans should provide basic topographic information of the site and its surroundings in the form of contour lines. Access routes from the highway, routes to connect to the electricity network/grid and any associated building should be shown. Plan showing the study area (Table 2) at A3. The scale of the plan will be determined by the extent of Study Area required.

Part Three: Minimum Requirements and Standard of Information for LVIAs

Section A: Information to be provided for all applications

Table 2: Typologies and Study Areas (Repeated from Part One)

TYPOLOGY	HEIGHT	TURBINE NUMBERS	STUDY AREA
	Turbines development in this typology will have a blade tip height of:	and will consist of:	
MICRO (Mi)	< 25m or roof mounted	Only one turbine	2km
SMALL (S)	< 50m	Three turbines or fewer	5km
MEDIUM (M)	< 80m	Four turbines or fewer	8km
LARGE (L)	< 109m	Five turbines or fewer	11km
VERY LARGE (VL)	≥109m	Any number of turbines	15km

Note: Any group of six or more turbines will belong to the very large development typology irrespective of the height of the turbines.

The study area, which is measured as a radius from the application turbine(s), is the minimum that will be required for a typical development.
A larger study area may be required if particularly sensitive landscape / visual receptors are located beyond the study area. This may result in an asymmetrical study area and should be agreed on a case by case basis.

Part Three: Minimum Requirements and Standard of Information for LVIAs

Section B: Typology Specific requirements

Table 5: Information required for each Typology

Typology	Study Area	ZTV 1	Visualisations 3	Cumulative Assessment 5	Residential Study Area 6	Application of LANDMAP Data	Seascape Assessment
Micro (Mi) <25m	2km	No 2	Not required	Location plan Written assessment	10 x blade tip height	Identification of Aspect Areas within study area.	
Small (S) <50m 1 Turbine or fewer	5km	Yes	3-5 visualisations. If EIA is required the location and number of visualisations will be agreed in scoping. Wirelines without photomontages may be acceptable. 4	Location plan. Cumulative ZTV may be required. Cumulative wirelines / photomontages may be required. Written assessment.	10 x blade tip height	All aspect areas affected by the footprint of the development should be considered in detail. Aspect areas outside the site should be considered in line with LANDMAP Guidance Note 3: Using LANDMAP for Landscape and Visual Impact Assessment of Onshore Wind Turbines. (See Part 3: Section C of this guidance). LANDMAP Guidance Note 3: Using LANDMAP for Landscape and Visual Impact Assessment of Onshore Wind Turbines provides more detailed guidance (See Part 3: Section C of this guidance).	Where the ZTV for the study area extends across coastal areas the Seascape Assessment of Wales (CCW 2009) and any other local seascape assessments should be taken into account
Medium (M) <80m 4 Turbines or fewer	8km	Yes	5-7 visualisations. If EIA is required the location and number of visualisations will be agreed in scoping. Wirelines without photomontages may be acceptable.	Location plan. Cumulative ZTV likely to be required. Cumulative wirelines / photomontages likely to be required. Written assessment.	10 x blade tip height		
Large (L) <109m 5 Turbines or fewer	11km	Yes	The location and number of visualisations will be agreed in scoping. Photomontages and wirelines required.	Location plan. Cumulative ZTV Cumulative wirelines / photomontages required. Full CLVIA.	10 x blade tip height or as agreed in scoping		
Very Large (VL) ≥109m more than 6 Turbines	15km	Yes	The location and number of visualisations will be agreed in scoping. Photomontages and wirelines.	Location plan. Cumulative ZTV. Cumulative wirelines / photomontages. Full CLVIA.	10 x blade tip height or as agreed in scoping		1 2 3 4 5 6 SEE FOLLOWING PAGE FOR EXPLANATORY NOTES

Part Three: Minimum Requirements and Standard of Information for LVIAs
Section B: Typology Specific requirements

Notes

1 The **Zone of Theoretical Visibility** (ZTV) is a computer generated plan that shows the visibility of the turbine(s) in the surrounding landscape.

ZTVs are based on topography and because they do not take into account screening elements within the landscape such as trees, woodland or buildings they indicate theoretical visibility only.

Sometimes significant screening elements in the landscape, such as settlements and woodlands are mapped to give a more accurate but still theoretical zone of visibility.

2 Micro schemes within 10x blade tip height of a statutorily designated landscape or a World Heritage Site may require a ZTV and visualisations.

3 All locations chosen for visualisations must be within the area where the ZTV indicates that the turbine(s) may be visible.

Visualisations should be representative of the study area and should illustrate a range of distances from the turbine(s). However it is essential that the area closest to the turbine(s) is well represented.

Visualisations should be prepared with reference to either the current Scottish Natural Heritage Guidance or the current Highlands Council Guidance.

Single turbines and small groups of turbines will not usually require panoramic photomontages.

The location of viewpoints and visualisations will need to be agreed with the planning authority.

4 Both wirelines and photomontages must be accompanied by a photograph of the existing landscape.

Where wirelines are presented without an accompanying photomontage they should be superimposed on a photograph.

5 For cumulative search areas see Table 3.
For detailed Guidance on CLVIA see P*embrokeshire and Carmarthenshire: Cumulative Impact of Wind Turbines on Landscape and Visual Amenity guidance* prepared for Carmarthenshire County Council, Pembrokeshire Coast National Park Authority, and Pembrokeshire County Council 2013. (See Part 3: Section D of this guidance)

6 The Residential Study Area is the area within which a residential visual amenity assessment should be undertaken. Properties just beyond 10x the height to blade tip should be included if clear visibility is indicated. If micro-siting allowances are being proposed the study area should be increased proportionately.

Part Three: Minimum Requirements and Standard of Information for LVIAs
Section C: LVIA Guidance

Key Guidance
Where a wind turbine landscape sensitivity study has been undertaken for the area in which the turbine is proposed it must be considered in the LVIA.
Consideration must be given to the methodology used in the preparation of the relevant sensitivity study.

A range of guidance for the preparation of LVIAs and CLVIAs is available most of which is available online.
There are two key documents with regard to wind turbine development in Wales:

- *Guidelines for Landscape and Visual Impact Assessment Third Edition* (GLVIA3), Landscape Institute and IEMA,2013 (not available online) provides general guidance on best practice with regard to both LVIA and CLVIA.
- *LANDMAP Guidance Note 3: Using LANDMAP for Landscape and Visual Impact Assessment of Onshore Wind Turbines* (Guidance Note 3) is specific to Wales and to wind turbine development.

Guidelines for Landscape and Visual Impact Assessment Third Edition (GLVIA3)

Guidelines for Landscape and Visual Impact Assessment*:*

- sets out the key principles behind LVIA;
- stresses the importance of proportionality; the length and detail of the assessments should reflect the scale of the development and the sensitivity of the receptors;
- encourages the use of narrative text and analysis; and
- recommends that tables and matrices should be used to support and summarise the descriptive text not to replace it.

Scoping Reports should indicate that they have understood the principles of GLVIA3 and that these principles will be reflected in the assessment.

Establishing the baseline landscape and visual conditions is the first task of an LVIA. In Wales establishing the baseline condition will be informed by an analysis of LANDMAP data alongside any published landscape character assessments. Site survey work is essential to confirm the baseline landscape and visual conditions against which the changes will be assessed.

Landscape effects are effects on the landscape as a resource and on the character of the landscape. Landscape effects should be considered separately to visual effects, which are effects on visual amenity as experienced by people. However, the key effect of wind turbine development on the character of the landscape is as a result of visual changes and the analysis of visual change will inform both the landscape and visual assessment.

Assessing the significance of landscape and visual effects is a matter of judgement. It is essential that the basis of such judgements is clearly expressed so that the underlying assumptions and reasoning can be understood.

A step-by-step approach should be taken to making judgements of significance combining judgements about the sensitivity of the receptor and the magnitude of change.

The LVIA, the CLVIA and the residential visual amenity assessment should be prepared in a manner that will help decision makers understand the significance of proposed changes to the landscape and to visual amenity.

Part Three: Minimum Requirements and Standard of Information for LVIAs

Section C: LVIA Guidance

LANDMAP Guidance Note 3: Using LANDMAP for Landscape and Visual Impact Assessment of Onshore Wind Turbines (Guidance Note 3)

General principles

LANDMAP consists of five spatial layers that are divided up into discrete geographical units (polygons in GIS) known as aspect areas. The five spatial layers are Cultural Landscape, Geological Landscape, Historic Landscape, Landscape Habitats and Visual & Sensory. Together they form a complete all-Wales GIS based landscape resource where landscape characteristics and qualities, and influences on the landscape are recorded and evaluated within a nationally consistent dataset.

LANDMAP Guidance Note 3:
- sets out the essential role of LANDMAP in the LVIA/ EIA process, including at the scoping stage;
- provides advice on the geographical area to assess; and
- advises that larger study areas may be required for particularly sensitive receptors such as National Parks and Areas of Outstanding Natural Beauty

Key principles that underpin the use of LANDMAP when undertaking a wind turbine development LVIA are:
- all five aspect layers should be considered in the assessment;
- the study areas for the different aspect layers will vary; and
- the ZTV and the LANDMAP database should be used to identify where turbines would be visible from aspect areas with high or outstanding evaluations. Other aspect areas may not require consideration in the detailed assessment.

Landscape effects on access routes should be assessed as road widening or straightening may have direct impacts on the landscape as well as effects on the existing character of the landscape.

Initial consideration

All aspect areas in which the turbine(s) is located must be considered in the initial assessment

For the Cultural Landscape, Geological Landscape and Landscape Habitat aspect layers only the aspect area in which the turbine(s) is located, or the immediately adjacent aspect areas, will require consideration.

For the Historic Landscape and Visual & Sensory aspect layers all aspect areas within the study area, as defined in this guidance, should be considered.

Detailed consideration

All aspect areas in which the turbine(s) is located must be considered in the assessment.

A ZTV should be used to scope out aspect areas within the study area, as defined in this guidance, where there is either no visibility or very limited visibility

Aspect areas can be scoped out of the detailed assessment if they:
- do not have an overall evaluation of high or outstanding;
- do not have an evaluation of high or outstanding for scenic quality or character in the Visual and Sensory layer; and
- no turbines are located within them.

Guidance Note 3 includes a summary of the approach. Table 6 has been adapted from Guidance Note 3 but reflects the fact that this Guidance is primarily intended for smaller scale wind turbine development.

The LANDMAP website should be checked for the current version of Guidance Note 3.

It is essential that the LVIA analyses and interprets the LANDMAP data and does not merely quote from it. The quality of LANDMAP data can be variable.

Part Three: Minimum Requirements and Standard of Information for LVIAs
Section C: LVIA Guidance

Table 6: LANDMAP Aspect Areas to be consider in LVIA

Aspect	Aspect areas to be considered	Typical study area radius	Identification of adjacent aspect areas for detailed assessment. All aspects areas in which the turbine(s) is located must be considered regardless of the evaluation.	Useful thematic maps to inform study (can be overlaid with ZTV)
Cultural Landscape	Aspect area in which the turbine(s) is located. Immediately adjacent aspect areas where a special relationship is identified.	>2.5km	Outstanding or high for: • Overall evaluation	Overall evaluation
Geological Landscape	Aspect area in which the turbine(s) is located. Immediately adjacent aspect areas where a special relationship is identified.	>2.5km	Outstanding or high for: • Overall evaluation	Overall evaluation Rarity/uniqueness
Landscape Habitats	Aspect area in which the turbine(s) is located. Immediately adjacent aspect area if connectivity / cohesion is identified.	>2.5km	Outstanding or high for: • Overall evaluation	Overall evaluation Connectivity/cohesion
Visual and Sensory	Aspects areas from which the development would be visible.	Study area according to typology as defined in Table 2	Outstanding or high in any of the following: • Scenic quality • Character • Overall evaluation	Overall evaluation Scenic quality Character
Historic Landscape	Aspects areas from which the development would be visible.	Study area according to typology as defined in Table 2	Outstanding or high for: • Overall evaluation	Overall evaluation

Other useful guidance

Pembrokeshire and Carmarthenshire: Cumulative Impact of Wind Turbines on Landscape and Visual Amenity guidance
Carmarthenshire County Council, Pembrokeshire Coast National Park Authority, Pembrokeshire County Council 2013

This guidance is considered in more detail in the following section on cumulative assessments.

Designing Wind Farms in Wales
Design Commission for Wales 2012
The purpose of this document is to set out the design objectives and considerations for the sensitive development of large scale wind farms and ancillary development in Wales. Although the current guidance is concerned with smaller scale developments some of the principles in *Designing Wind Farms in Wales,* in particular those within the section on cumulative impacts, are relevant to smaller developments.

Scottish Guidance

A number of guidance documents have been produced by Scottish Natural Heritage. These are specific to Scotland and the Scottish landscape and cover issues other than landscape and visual impact assessment. Some of them have been prepared with larger scale wind farm developments in mind. However, many of the principles are relevant to wind turbine development in Wales. In particular the following documents are useful:

Siting and designing windfarms in the landscape, Version 2
Scottish Natural Heritage 2014

Siting and design for small scale wind turbines between 15 and 50 metres in height
Scottish Natural Heritage 2012

Assessing the Cumulative Impact of Onshore Wind Energy Developments
Scottish Natural Heritage 2012

Photomontage Guidance

There are currently two sets of guidance with regard to the preparation of wind turbine photomontages and an advice note from the Landscape Institute on the general use of Photography and Photomontages in Landscape and Visual Assessment. Both sets of guidance are for wind turbine development in Scotland and the Scottish Natural Heritage guidance is intended for commercial scale wind farms. However both provide useful advice for the preparation of photomontages for smaller scale wind turbines and photomontages prepared according to either guidance would be acceptable.

Both sets of guidance recommend that photomontages should be around 24-26cm in height.

Visual Representation of Wind Farms Version 2.1
Scottish Natural Heritage (December 2014)

Visualisation Standards for Wind Energy Developments
The Highland Council (2013)

Photography and Photomontages in Landscape and Visual Assessment Landscape Institute (2011) Landscape Institute Advice Note 01/11

Part Three: Minimum Requirements and Standard of Information for LVIAs
Section D: Cumulative Assessment

Cumulative Landscape and Visual Impact Assessment

All wind turbine development applications need to consider whether a CLVIA is required. A CLVIA will be required if there are operational, consented or in planning turbines (OCP) within the defined search areas set out in **Table 7: Cumulative Study and Search Areas.**

There are two principles underlying Table 7:

- The potential for cumulative impacts is a function of both distance and the height of the turbines. Therefore smaller turbines only need to be considered when they are close to the application turbine(s). Larger turbines potentially have a landscape and visual effect over a much greater distances and therefore it is necessary to consider larger turbines at greater distances from the application turbine(s). The Online Database should enable a quick identification of OCP turbines of different heights.
- Turbines located beyond the study area may have cumulative impacts within the study area. Therefore the area of search is larger than the study area.

Table 7 sets out the search areas for cumulative assessments. Figure 3 provides a diagrammatic representation of how developments outside the study area may give rise to cumulative impacts within it.

The methodology for undertaking a cumulative assessment should be based on the approach set out in *Pembrokeshire and Carmarthenshire: Cumulative Impact of Wind Turbines on Landscape and Visual Amenity guidance* (Pembrokeshire and Carmarthenshire CLVIA guidance) prepared for Carmarthenshire County Council, Pembrokeshire Coast National Park Authority, and Pembrokeshire County Council 2013. CLVIAs should also reflect best practice as set out in GLVIA3.

Figure 3 is derived from Figure 6 of the Pembrokeshire and Carmarthenshire CLVIA guidance.

Developers should refer to the approach adopted in that guidance when undertaking a cumulative assessment although the search and study areas considered should be as set out in this guidance.

Landscape Objectives

The Pembrokeshire and Carmarthenshire CLVIA guidance sets out a number of key objectives for the landscape which have been largely adopted for this guidance.

The key objectives are:

- To maintain the integrity and quality of landscape character within nationally designated landscapes:
  no significant adverse change to the special qualities and sensitive characteristics from cumulative wind turbine development. The threshold for acceptable change in these areas is likely to be low.
- In other landscapes outside the strategic search areas, to maintain the landscape character:
  no significant adverse change in landscape character from cumulative wind turbine development. Significant change here is taken to mean where wind turbines become either the dominant or a key characteristic of a landscape, depending on its sensitivity which shall be defined by the assessment.
- Within the strategic search area, to accept landscape change:
  significant change in the landscape character from wind turbine development although not all areas may be suitable and there is still a role for best positioning in the landscape.
- To avoid development which, in combination, creates the experience of a settlement being in a wind turbine landscape, such as wind turbines on two or more sides.
- To avoid development cumulatively creating significant adverse effects on sensitive landscape or visual receptors as defined in Part 2 of this guidance.
- To avoid turbines of markedly different designs or scales being located or viewed in juxtaposition with each other.
- To avoid significant adverse effects when viewed in conjunction with other types of development.

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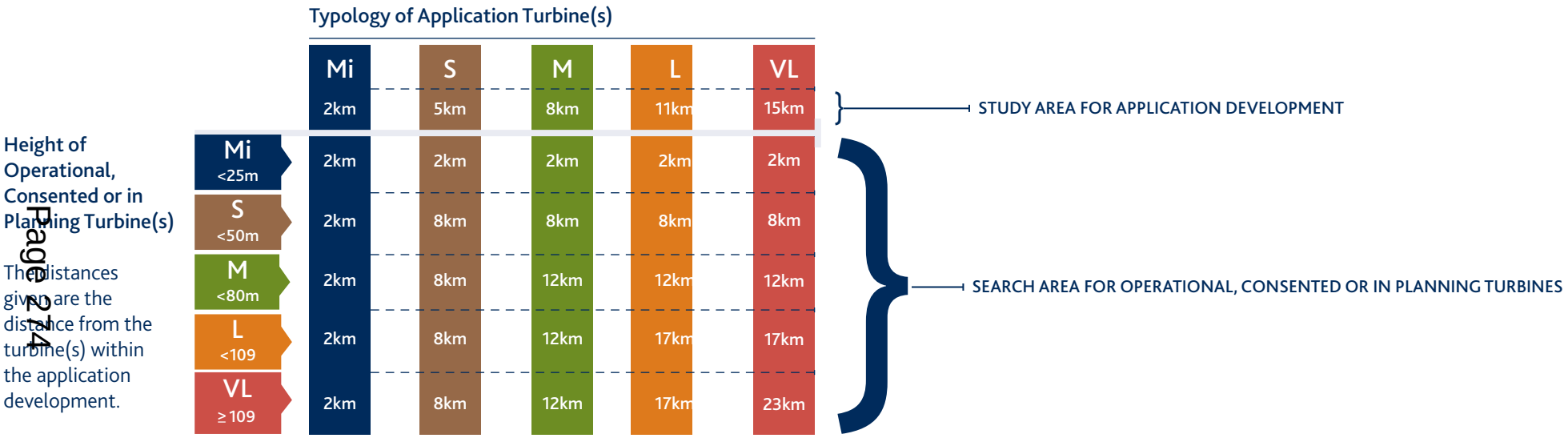
Table 7: Study Areas and Cumulative Search Areas



The distances given are the distance from the turbine(s) within the application development.

Turbines that are operational, consented or in planning can be scoped out if they are outside the search area relevant to their typology.
For example:

- no micro turbines beyond 2km need to be considered in CLVIA;
- no small turbines beyond 8km needs to be considered in CLVIA;
- no medium turbines beyond 12km need to be considered in CLVIA.

An application for a large development would need to consider the following operational consented or in planning turbines

- micro turbines within 2km;
- small turbines within 8km;
- medium turbines within 12km; and
- large or very large turbines within 17km

The study area is the minimum that will be required for a typical development.
A larger study area may be required if particularly sensitive landscape / visual receptors are located just beyond the study area.
This may result in an asymmetrical study area and should be agreed on a case by case basis.

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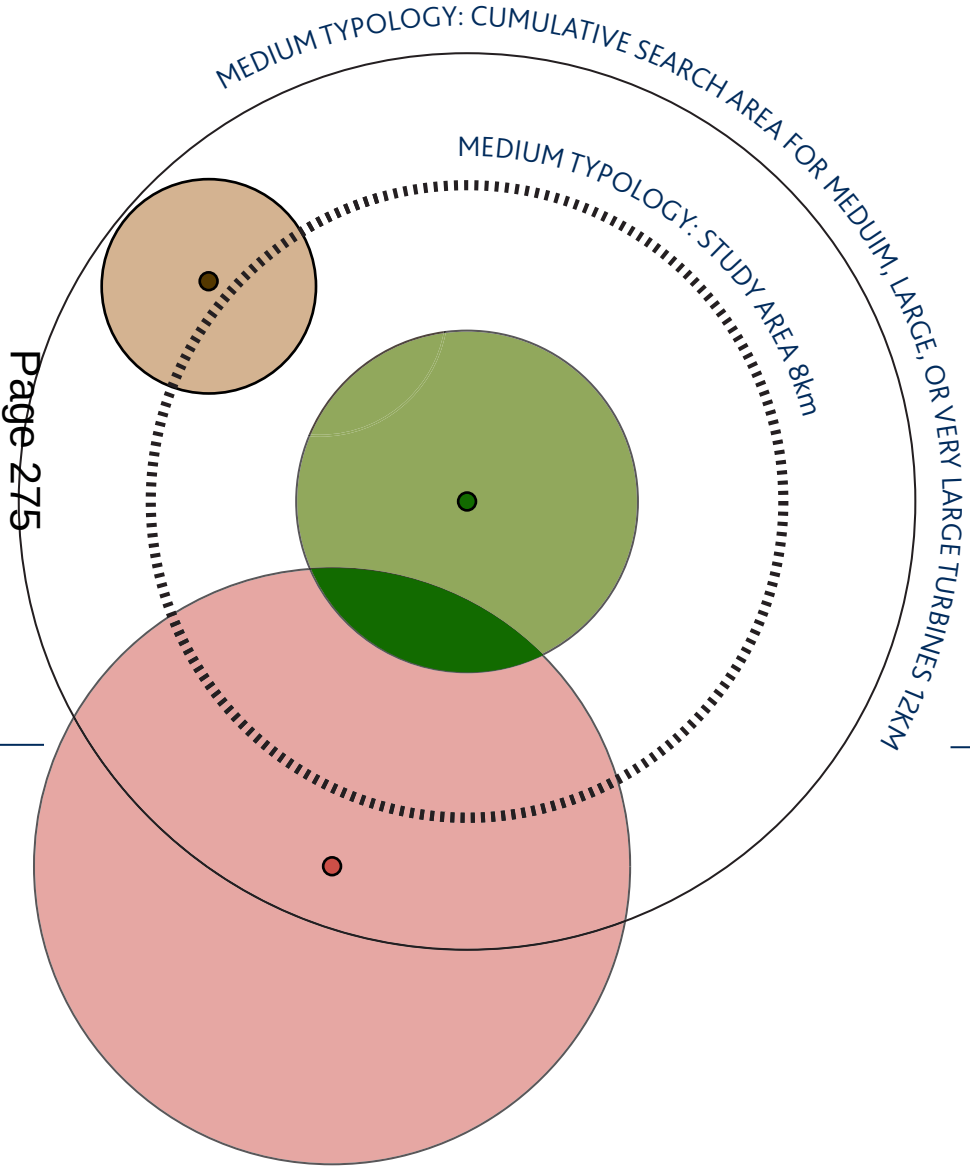
Figure 3 - Diagrammatic representation of Search and Study Areas for a medium typology



Search and Study Areas
The assessment of cumulative landscape and visual effects needs to look beyond the Study Area identified for the LVIA.

Figure 3 illustrates the LVIA study area for a medium typology development and the CLVIA search area. Only effects that occur within the study area are assessed but these may be as a consequence of development that is located outside the study area. The search area represents the area where it is considered possible that the presence of other developments may result in a cumulative impact.

In the example represented diagrammatically on Figure 3 the coloured circle for each turbine represents the area within which the assessment concludes that significant effects occur. The overlap between the coloured areas represents where the assessment concludes that significant cumulative effects occur. The very large turbine is outside the study area but results in cumulative effects within in. A small turbine at the same distance has no overlap and does not result in cumulative effects.

A search area for operational, consented and in planning turbines will always be larger than the study area in which the effects occur. The greater the height of the turbine the more extensive the required search area will be.

- Medium turbine subject of planning application
- Small turbine
- Very large turbine

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Section D: Cumulative Assessment

The cumulative landscape assessment should provide an assessment of combined and additional cumulative landscape effects focussing mainly on interaction with closest turbines. The assessment should identify:

- whether the turbines combined change the landscape character of an area and if so identify the contribution made by the application turbine(s) to that change; and
- whether the combined turbines meet the objective for the area.

Section 3 of the Pembrokeshire and Carmarthenshire CLVIA guidance provides additional guidance.

The cumulative visual assessment should provide an assessment of cumulative visual effects focussing mainly on interaction with the closest turbines. The assessment should identify:

- whether the application turbine(s) is intervisible with other turbines from key viewpoints;
- the visual effect where there is intervisibility; and
- whether the application turbine(s) with others meet the objectives for the area.

Section 4 of the Pembrokeshire and Carmarthenshire CLVIA guidance provides additional guidance.

The cumulative visual assessment should provide an assessment of sequential effects on potentially sensitive receptors, such as users of National Trails. The assessment should consider the effects on a sensitive receptor making a journey along a National Trail, for example, where more than one wind turbine development can be seen, one after the other over a period of time. Sequential effects will concern users of linear routes and these may extend beyond both the study area and the search area.

The CLVIA should include an assessment of cumulative effects that might arise from other large scale infrastructure. The following issues should be considered:

- whether there is any visual conflict or confusion with other large scale infrastructure such as pylons; and
- whether the addition of the application turbine(s) changes the character of the landscape such that large scale infrastructure, including wind turbine development, becomes the defining characteristic.

Section 6 of the Pembrokeshire and Carmarthenshire CLVIA guidance provides additional guidance.

References

How to access Online Wind Turbine Database for South East Wales

To view the Online Database map please click on the link below:
Online Wind Turbine Database for South East Wales

Please note that you require Chrome (or a browser that supports HTML 5) to view the map to ensure you have the full functionality.

If the link above does not work the Online Database map can be found on the GIScloud website, **http://www.giscloud.com/**. You will need to register to use the site but it is free.

On the home page choose *Create, upload, author, publish & share my spatial data* and click on **Start.** Search for wind turbines and you will find the Wind Turbines in South East Wales map.

The database will be updated every 3 months. In future further information on screening opinions, refusals, withdrawn and expired planning applications will be added.

Minor correction to Table 1 June 2015

Commissioning of this Guidance

This guidance was funded by the Welsh Government's Planning Improvements Fund.

The development of the project came about in the following way;
The project was raised as an issue by the South Wales Landscape Liaison Group and discussions were then developed through a Renewable Task and Finish group focusing on particular concerns raised by Heads of Valleys Landscape Officers and Planners. It was agreed that Blaenau Gwent County Borough Council would submit the application on behalf of the South Wales Landscape Liaison Group working jointly with Monmouthshire County Council to deliver the proposal.

The South Wales Landscape Liaison Group (comprising representatives of 13 local authorities, 2 National Parks and representatives of National Resources Wales (NRW)and the Welsh Government) assisted in developing the project.

This guidance was prepared by Gillespies LLP in consultation with a project team identified for the commission.

Members of the South Wales Landscape Liaison Group

Blaenau Gwent
Brecon Beacons NP
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Merthyr Tydfil
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Torfaen
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