

# Guidance for Sustainable Design in the National Parks of Wales

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## **Who should use this guide and why?**

### **Developers and Land Owners**

To provide an understanding of how the Park Authority will look at your application before you purchase land or devise proposals. To assist in the appraisal of development schemes and the justification of proposals, to ensure any associated costs are considered in the business case for development and that abortive design work is avoided.

### **Designers**

To provide a manual to assist with designing schemes, by clarifying the standards of materials and performance expected. To assist in the preparation of an access and design statement to support an application.

### **Development Plan Makers**

To provide the basis for evaluating the effectiveness of policies and interventions and assist with the preparation of site briefs.

### **Development Control Planners**

To provide a manual to help them assess the design statements submitted with planning applications and make informed recommendations for their determination.

# I. Sustainability in the Welsh National Parks

Although sparsely populated the National Parks of Wales are regarded as 'pinnacles in Welsh landscape quality and heartlands of Welsh culture'. *Review of National Park Authorities in Wales prepared for the Welsh Assembly Government, 2004*

The National Parks of Wales have huge potential to enrich the lives of people in Wales and further afield, and contribute importantly to the economy of the nation. They are cultural landscapes moulded by their communities over millennia, where the interaction of people and place is central to their character.

## Purpose of this guidance

The intention of this guidance is to secure the design and development of sustainable, high-quality buildings that enhance the natural beauty, wildlife and cultural heritage of the three Welsh National Parks. The approach adopted is based on those traditional principles of design which enable the production of locally distinctive, resource efficient buildings that are inextricably linked with their landscape. The aim is to encourage the production of a new generation of contemporary high quality buildings based on the principles of intelligent siting, climate responsive forms, with the use of sustainable materials.

This guidance (summer 2008) has been produced and updated in the light of comments received in response to our May 2007 consultation document. It is generic guidance and will be used by development control staff to assess planning applications in all three Welsh National Parks through a design statement provided with each planning application. It will form the basis for more specific advice to be incorporated in the

forthcoming Local Development Plans produced for each Park.

This guide is intended to be useful to anyone involved in development, be they owner, designer or local resident.

## Background

We are facing a huge environmental challenge. Human activities have, over the last two centuries, been irreversibly affecting the world in which we live and upon which we depend for our survival. However, 'There is still time to avoid the worst impacts of climate change if we take strong action now.' *Stern Report, 2006.*

One of the major impacts of human activity upon the environment has been the generation of 'greenhouse gases' notably carbon dioxide (CO<sub>2</sub>), which are contributing to climate change.

We currently use more than half of all resources in construction and 45% of energy generated across the world is used to heat, light and ventilate our buildings, with a further 5% produced during their construction. If everyone around the world consumed natural resources and generated carbon dioxide at the rate we currently do in the UK we would need 3 planets to support us. We must move toward a one planet lifestyle. *Building a Future for Wales, WWF & WSA 2005*

**All planning applications are required to have a design statement attached, (Ministerial Interim Policy Statement (MIPPS) on Good Design 2008). The Welsh National Park Authorities will expect applicants to use a design statement to demonstrate how their proposals have addressed the sustainability issues covered in this guidance.**

## 2. Sustainable development and planning guidance

There is nothing mysterious about sustainable design; nothing more than applied common sense. Sustainable design and good design are mutually reinforcing.

Design quality is not just defined by how a building, space or place looks, but by how it functions, how it meets the social, economic and environmental needs of the people it serves, and how it can be managed and adapted to meet future needs.

This guidance is accompanied by a sustainability matrix (found in appendix 1) which provides a framework for the preparation of the design statement which should be submitted with all planning applications. The sustainability matrix is designed to be user friendly and to prompt positive actions in sustainable design, whatever the scale of project. The NPAs' ambition is high quality design that is sustainable. Whilst it may be obvious that 'high quality' development must be sustainable, sustainable development on its own does not guarantee quality. This guidance will sit alongside other design advice specific to each NPA.

### Sustainability and place

The conservation of the special character of the Parks and the local distinctiveness of the places within each of the Parks is paramount. Place making is about ensuring the area has an interesting and unique character. However, this does not eliminate good contemporary design. The guidance encourages the appropriate use of elements of local tradition and customs in a new way in order to produce contemporary buildings fit for their purpose. In the preparation of this guidance the aim has therefore been to dovetail these critical issues of sustainability and place-making within the particular context of development in the National Parks.

### Planning Guidance

The context, justification and overall outcomes for this guidance are enshrined in National Planning Policy (see Appendix 2) and set out in development plans. This Planning Guidance document has been prepared to amplify the planning policy of the three Welsh National Park Authorities on sustainable design and development and to explain how that policy is to be implemented through design. Reference should be made to the relevant Development Plans or Local Plans of the respective National Parks.

This document sets out:

- The role of planning powers in relation to sustainable design and development.
- The principles of sustainable design in the context of planning in the National Parks of Wales.
- The sustainable aspects to be incorporated in any development at the planning application stage.

### Welsh Assembly Government Advice - Design

This guidance is framed within National Design Policy and in particular Planning Policy Wales Technical Advice Note 12: Design, in so much as sustainable design "is at the heart of the design process" *Tan 12, 2002*.

In addition, note has been made of the Environmental Strategy 2006 Action Plan and the Ministerial Interim Planning Policy Statement 01/2008 "Planning for good design"

### 3. Advantages of Sustainable Design and Development

Achieving sustainable design is not an optional extra to development. High quality sustainable design and development is essential if we are to minimise long term damage to the environment and economic fabric of the National Parks. Sustainable design also makes sound business sense for developers and will have economic benefits to the occupier and the community as a whole.

A scheme based on the principles of sustainable design will have the following advantages:

- The running costs of a development will be much reduced.
- Design approaches providing for sustainability and incorporating appropriate renewable energy should not add prohibitively to capital costs when valued over the life of the building.
- The development will meet the needs of the local community through addressing local as well as global needs. The development will be more attractive through meeting the principles of sustainability and good design and, therefore, appear more popular with prospective purchasers or tenants. Currently the Home Information Pack requires an Energy Performance Certificate, which rates how efficient homes are on a scale of A-G. (Properties marketed for sale from 14<sup>th</sup> December in England and Wales need a Home Information Pack).

Many of the requirements of sustainable design can be addressed through sensible siting and passive design measures which add little or nothing to the capital cost of a scheme. The provision of sources of renewable energy will add to the capital cost of a scheme but this should be balanced by appraising the implications of future costs or availability of energy from fossil fuel sources.

## 4. Definitions, Planning Policy and Structure

### 4.1 Sustainability

The definition of sustainable development most commonly used and adopted by the UK government is: 'Development that meets the needs of the present without compromising the ability of future generations to meet their own needs.'

<http://www.sustainable-development.gov.uk/index.asp>

### 4.2 Sustainable development in the National Parks of Wales

National and local planning policy promotes sustainability. However, it can be interpreted in many different ways. A clear definition for the National Parks of Wales is given below.

#### Definition – Sustainable

For the purposes of this guidance, Sustainable Development in the National Parks of Wales should ensure a better quality of life, not just now but for future generations as well. It should combine protection of the environment, creation of distinctive place, sensible use of natural resources and social progress.

### 4.3 Marrying design principles, policy and design guidance

The guidance sets out design principles within a sustainable framework in order to promote a creative and innovative approach to design.

Local distinctiveness and design principles acknowledge that designs should preserve and protect as well as enhance. Therefore, the themes of sustainable design that are most relevant to the National Parks of Wales have been structured and grouped in this document in a way which allows developers and their design teams to respond to sustainability through the design process. These

headings were identified in a series of sustainable design workshops involving all key stakeholders in

the development process, held in each of the National Parks.

Common themes that emerged were as follows, arranged in order of the priority expressed in the workshops:-

- **Energy use**
- **Materials and resources**
- **Landscape and biodiversity**
- **Place and local distinctiveness**
- **Robust building**

Community elements of design featured strongly during the consultation workshops conducted throughout the Welsh National Parks. The detailed guidance offered here sits within the wider contribution that appropriately located development can make to a community's material and cultural needs, to sustaining the Welsh language, supporting community services, affordable housing, employment and public transport, and to reducing further traffic growth and flood risk. These and other dimensions of sustainable development and sustainable communities are integral to the three Authorities' Development Plans, and they are not covered in depth here.

#### Definition – Design

For the purposes of this guidance and in line with Planning Policy Wales, design is taken to mean, 'a collaborative, creative, problem solving process - embracing architecture, landscape, infrastructure and urban design – that determines the quality of our environment and that can provide the basis for its sustainable future'. Tan 12, 2002

## 5. Building Our Sustainable Future

### 5.1 A lost tradition

The traditional way of building in the National Parks can be characterised by its understanding of the siting, form, materials and techniques. These techniques were shared locally by builders, designers and occupiers through necessity. However, with the advent of cheap energy and the ability to access materials from anywhere, these skills have been less and less demonstrated.

### 5.2 Ways of building

There are obvious dangers in the literal use of the traditional and the vernacular. The copying or even interpretation of formal qualities of the vernacular often results from this approach, signified by a romanticised or nostalgic vision. Examples of these abound through the National Parks in Wales and whilst this can mitigate the worst excesses of poor design it is leading to a uniformity of building form in all three Parks.

### 5.3 A possible model

The guidance does not propose a style or attempt to impose an aesthetic. However, it does promote and prompt a more thoughtful and deeper approach to the design of the environment in the National Parks of Wales. The traditions of siting and orientation to make the most of climate and to protect buildings and inhabitants should be at the forefront of design practice, as should the use of locally produced and sourced sustainable materials and energy sources. This will involve changing both thinking and practice and it places responsibility on the developer and designers to interpret the principles of good sustainable design in order to meet the demands of their site and the need of today and tomorrow. This approach will boost

training opportunities and skilled employment for local companies.

#### Respecting distinctiveness

The look of Wales is becoming more uniform. Standard building types are often failing to reflect traditional local building styles.

*People, places, futures:  
The Wales Spatial Plan p 33.*



## 6. Principles of Sustainable Design

To be of most use to the designer the design guidance is structured around six key principles of sustainable design. Whilst design is not a linear process, critical issues relating to design decisions are presented first in each section.

The guidance is cross referenced to planning policy, and is set out to follow the major steps in the design process from strategy to detail. There is a

section, in three parts, on each of the key design principles – the first briefly sets out the background issues and how they may be measured. This is followed by approaches that developers and their designers may employ to ensure sustainable design. Wherever possible these are supported by simple diagrams and illustrations. This is supplemented by prompts for designers.

### What is a Design Statement?

Design Statements are now an integral component of a planning application.

The National Park Authorities will expect the applicant to use the Statement as their opportunity to demonstrate:

The design principles and concepts behind the proposal;

How these are reflected in the development's location, layout, density, scale, detailed design and landscape;

- How the design relates to its site and its wider context;
- How the development will meet the Development Plan design policies; and
- How the development has addressed the sustainability issues raised in this guidance. See Appendix I for elements to be included within the statement.

The level of detail required will be proportionate to the scale and type of development proposed. In some cases a short written explanation may suffice, in others detailed illustrative material in plan, elevation and section may be required.

They should be 'living' documents which deal with all the relevant aspects of design throughout the process and life of the development.

### 6.1 Key Principles of Sustainable Design

Key Principle	Aims
1. Energy	Energy consumption and greenhouse gas emissions should be minimised by good siting and best use of materials and energy sources. Use of on site or locally generated energy from renewable sources is encouraged in line with the principles set out in national planning policy, within the Welsh Assembly Government's Planning for Climate Change agenda.
2. Materials and Resources	Local materials from sustainable renewable sources should be used, the use of material from unsustainable sources and all waste in construction should be minimised. Recycled materials and secondary aggregates are also encouraged
3. Water Use	Water saving devices and sustainable draining systems should be employed where appropriate.
4. Landscape and Biodiversity	New development should enhance the quality of landscape, ecology, bio-diversity and cultural heritage.
5. Place and Local Distinctiveness	Distinctiveness is that quality that characterises place. Buildings, and building groups should be responsive to context and local distinctiveness.
6. Robust Building	Buildings should be designed to cope with climate, future needs and uses and be capable of improvement over time Accessibility for all is also a key consideration. A home working space should also be considered for inclusion, as many employers offer home working and with the rising cost of fuel may become more commonplace.

## 6.2 Energy

### The problem defined - background and measures

At present, the majority of the UK's energy comes from burning fossil fuels and buildings in use are the biggest contributors to carbon emissions. The UK Government aims to reduce carbon dioxide emissions by at least 60% by 2050. The guidance that follows is set in this context and is based on two main strategies: to conserve and use energy much more efficiently and to use energy from natural, renewable sources.

Designers are encouraged to adopt an energy assessment methodology. This could be the British Research Establishment's BREEAM standard, as advocated by the Welsh Assembly Government or other similar standards (please see appendix for further details). These standards will provide a tangible standard in terms of the building's energy use and efficiency, and usually take into consideration other aspects of sustainable design.

**Within the Welsh National Parks all applications for built development must be accompanied by:**

- **A sustainable design statement.**
- **An integrated energy strategy must be part of the design statement, which addresses both energy efficiency and effective fuel provision. It needs to cover:**
  - (1) reducing energy demand**
  - (2) carbon efficient energy supply**
  - (3) renewable energy generation**

It is acknowledged that some development proposals will be for building types that use little energy for example porches and garages. However measures can still be implemented so that such development can make a contribution to sustainability.

### Prompts for designers

- Is your building sited and orientated to take advantage of solar gain and shelter?
- Has your building been designed for thermal efficiency?
- Have you carefully placed and sized openings to cater for solar gain and thermal efficiency?
- Is your building predominantly daylight?
- Has your building adequate thermal mass?
- Can your building be detailed for ventilation and minimal air leakage?
- What measures are you taking for the provision of energy from renewable sources eg ground source heat pumps (see Appendix I for details)?
- Have you considered future energy requirements, perhaps if the building could link into a community energy project in the future?
- Flexibility in heating sources in the future, eg a chimney for a wood burner, space for tanks or fuel storage.
- Will the heating system be sited in the most effective place? Are you considering options to reduce heat loss – such as limiting pipe lengths?

### 6.2.1 Energy solutions - design principles

Space heating costs can be reduced to very little through good siting, design, adoption of ventilation principles and draft proofing.

#### Passive design

This means designing with climate in mind so that a building can benefit from aspects such as solar gain (the ability of a structure to absorb the temperature from the sun), daylight and natural ventilation, whilst providing shelter and comfort inside and outside buildings. Designs must balance solar exposure with surface heat losses and internal gains. The daily and annual movement of the sun should be considered, as solar gain's benefits can vary depending on building use and times of building occupation (both during each day and time of year).

In Europe, the 'PassivHaus' movement has shown what can be done in reducing the heating needs of a building. The rigorous PassivHaus standard means that each building requires very conscious design

and construction. If the principles are adhered to, a low-energy building is the product and in many cases there is no need for heating.

The following issues should be addressed through the design process:-

### **Siting**

Buildings and extensions to existing buildings should be sited (positioned) to optimise 'free' aspects of climate. For example a south facing roof that is not shaded by trees or other buildings for solar panels. These include useful solar gain, shading and sheltering, useful wind and ground conditions. Larger windows should face the south, and smaller windows to the north.

Traditionally, buildings were sited to achieve these aims and the principle of 'wrap up warm and face south' can frequently be seen in individual and groups of buildings throughout the landscapes of Wales and the National Parks in particular.

Energy use and human comfort in external amenity spaces can also be improved by considering how siting, layout and landscape may shelter buildings from cold windy conditions that often prevail in exposed elevated rural and coastal sites. Landscaping and tree planting can be used for shelter belts.

Alternatively, having the most efficient insulation and producing electricity using renewable technology can mitigate the negative aspects of poor siting.

### **Mass**

When buildings are designed to collect solar gains through southerly facing windows, consideration must be given to the provision of adequate thermal mass in the building in order to store the solar heat during winter day time, and release it during the night. When the principle of thermal mass is used correctly it can result in a reduction of the need for heating (and cooling) systems.

### **Form**

Whilst compact building forms are inherently energy efficient, this efficiency may be undone when habitable rooms are so deep that they

require mechanical ventilation and electrical illumination. Traditionally, buildings were designed to be climatically responsive and to promote occupant comfort, energy use and health through natural ventilation and daylighting.

This suggests that building form and layout will be based on shallow building depths that enable occupants to be never more than approximately 6m from an opening window. Where deeper rooms are required because of functional needs, the building section should be designed to enable roof or clerestory lighting.

### **Building envelope: walls, floors and roofs**

Well insulated and well detailed building envelopes must be used to prevent heat loss. It is considered good practice to exceed the minimum standards set by building regulations. However, one must design to avoid unwanted heat gain which is increasingly a problem due to solving air infiltration with the building envelope and using better insulation.

In converting or retrofitting existing buildings care must be taken in detailing so as not to eliminate the useful thermal mass. This often occurs when buildings are insulated on the inside face of masonry walls and floors.

### **Openings: Doors and Windows**

#### **Windows**

As well as providing for views and daylight, windows also let a lot of heat out of the building in cold weather. Location, size and type of glazing is important.

For energy efficiency as a general rule it is better to place smaller windows on north elevations and larger ones on the south. There may be exceptions to this where north light is more important than solar gain; in offices for instance.

Windows should ideally be double or triple-glazed with low- E glass to provide better than building regulation insulation standards. Timber window frames of adequate durability have better thermal and environmental properties than other materials used for windows.

In respect of conversion of historic buildings or design in conservation areas it may be inadvisable to use double or triple-glazed windows, in which case insulated shutters, coupled or secondary glazing should be used.

### **Repair**

Windows, especially sash windows, can often be overhauled by local craftsmen, working on the principle of 'repair and re-use, rather than replace'.

### **Conservatories**

Whilst these are often, but not always permitted development it is important to note that heated, unventilated conservatories sited incorrectly have major negative effects on energy use and should not be permitted. Conservatories should be timber built, south-facing, un-heated and properly ventilated with solar collection and release mechanisms. Respective NPA policy should be adhered to with regards to siting.

### **Roof openings**

Roof-lighting can be used to effectively provide daylight to deep plan buildings. Care must be taken in positioning and sizing the opening and the roof light system. Some readily available proprietary roof lighting may not be visually acceptable in conservation areas or prominent locations in the National Parks.

Wind towers and chimneys may be used to promote natural ventilation, but again note should be made of the possible inappropriate form of some in sensitive contexts.

### **Airtightness and ventilation**

Ventilation systems should be designed and should not rely on accidental leaks as a result of poor design. In low energy, low thermal capacity buildings unwanted air leaks can have a dramatic impact on heating costs. There must be evidence of a designed ventilation system based on the principles of 'build tight – ventilate right'.

### **Mechanical systems: heating, lighting, power**

Ensure that systems are supplied with effective controls so that building users can effectively manage the energy use of the building.

Although not a planning matter it is worth considering appliances and low-energy lighting systems: The use of low energy rated (A rated or higher) appliances, e.g. refrigerators, dish washers, etc should be encouraged to reduce energy demand.

## **6.2.2 Renewable energy**

Even if the proposal is an extension or renovation it is worth considering installing an energy efficient system incorporating renewable energy.

**All developments will be expected to consider incorporation of renewable energy technologies, and larger developments will attempt to provide at least 20% of building's predicted energy requirements from a renewable source (See Appendix I for further details). What will be appropriate will depend on the circumstances of each case.**

## Designing for Renewable Energy

	<b>Site Characteristics</b>	<b>Resources and Servicing</b>	<b>Project Size and Function</b>
<b>Solar Water Systems</b>	Not shaded by trees, buildings, hills etc.	Ideally roof mounted at 45° from horizontal facing due South.	Can provide up to 70% of domestic hot water. Ideal for larger residential or small groups of homes.
<b>Solar PV</b>	Not shaded by trees, buildings, hills etc.	Optimum location 45° from horizontal facing due South. Can be integrated with roof or free standing. Does not need direct sunlight.	Suitable for variety of project scales and types. Consider whole life cost and pay back times.
<b>Wind</b>	Exposure to wind – minimal buffering. Elevated or marine locations are ideal. Scale of installation is visually appropriate to surroundings.	Turbines vary in scale. Can be building mounted or free standing.	The first constrain is Wind availability. Further to this it depends on scale of turbine and the turbulence of available wind flow. Small, unobtrusive turbines suitable for domestic scale. Larger turbines suitable for larger scale projects or groups of housing.
<b>Biomass Fuels</b>	Proximity to fuel resource. Access for fuel delivery and ash removal. Space for fuel storage. New properties should be designed with chimney/flues visually appropriate to surroundings.	Reliable and preferably local source of biomass fuel: logs, wood chips, pellets, bio-diesel etc. Delivery of fuel and removal of ash waste.	Depending on system used. May require a minimum energy output level to be suitable. Small projects may not have space for fuel storage.
<b>Micro Hydro</b>	Dependent on availability of suitable water resource.	The type of turbine suitable for a particular project will depend on the height from which the water travels (the 'head') and the flow rate of the water.	Range from a few hundred watts for domestic schemes up to around 300kW for commercial systems.
<b>Ground source heat pumps</b>	Adequate area which can be excavated.	Best with under floor heating system.	

## **Renewable energy may come from a number of sources:-**

### **Solar**

As well as passive solar design that has already been discussed. There are active systems, which include solar hot water (water heated by solar energy), and photovoltaic cells (which convert light to electrical energy). Solar water systems are generally mounted on south facing roofs and can largely offset the cost of hot water. Solar water heating is a cost effective renewable technology, and relatively simple to install. It is particularly useful for larger family homes or small groups of dwellings.

PV's or photovoltaics only need daylight to convert light energy into electric energy. Again these are ideally sited facing south and with no overshadowing. Whilst PV is currently expensive to install, prices are anticipated to fall and it may be installed incrementally over time to provide more energy.

### **Wind**

Whilst solar energy may not be guaranteed all year round, wind power is more reliable in elevated, exposed western areas of the UK. Not all wind turbines need to be large and intrusive in the landscape and small domestic installation may be quite unobtrusive. In sensitive landscapes and conservation areas visual impact of masted turbines will be an issue and great care needs to be taken in siting.

For an average three bedroom home a 1.5 - 3 kw turbine will make a significant contribution to energy needs for around £1500. However there are draw backs, turbines attached to buildings vibrate and transmit these vibrations to the building, causing damage, if the turbine is not sufficiently raised from the roof, the roof top creates turbulence – which interferes with the turbine.

### **Biomass**

Biomass is the term used to describe fuel derived from renewable biological sources such as wood

pellets or chips. Modern biomass boilers are efficient and easy to maintain. If biomass is a possibility, designers need to be aware that space is needed for fuel storage and that a specially designed flue or chimney may be needed.

### **Water**

Water is a resource, not only for drinking and irrigation but sometimes for producing energy. Generating energy through utilising water has a long history, as moving water's energy can be employed for various tasks.

Small scale hydro power has been recognised as being extremely efficient and has a low environmental impact. With the ability to generate power from even a small stream, there are widespread possibilities within the Welsh National Parks.

Hydroelectric generation is a mature and proven technology. Micro-hydro schemes can be an attractive and cost effective means of producing electricity, if a suitable water resource is available and an extraction licence can be obtained.

### **Heat Pumps**

Heat pumps extract thermal energy from various renewable sources including water, the air and the ground, and this energy can be utilised for heating the home.

#### **Ground Source Heat Pumps**

Ground cooling uses the relatively constant ground temperature to provide summertime cooling and winter heating through ground heat exchangers. These heat exchangers could either be air to ground or water to ground.

#### **Air Source Heat Pumps**

As with ground source heat pumps there is no need for storage space of fuels. Air source pumps require less space than ground source pumps as no underground coils need to be installed. There are two types of air source pump: air to air heat pump and air-to-water pump. Both types transfer external air temperature to the other medium – a process with the ability to heat or cool buildings.

## District Heating and Combined Heat and Power

There is scope for incorporating CHP (Combined Heat and Power) and district heating in larger development schemes. Providing either heat or heat and electricity to a development, these systems can be very efficient, provide local jobs and have huge benefits to the local economy and environment. A central boiler, for example a wood chip boiler, with distribution pipes could heat a number of dwellings.

## Design statement requirements: Energy

Sustainable design guide	Energy			
	Energy statement	Siting & building orientation	Renewable target	
			>10%	>20%
Type of Development				
Dwellings 10+	✓	✓		✓
Dwellings 3-9	✓	✓		✓
Dwellings 1-2	✓	✓	✓	
Householder	✓	✓	*	
Non-Residential Major	✓	✓		✓
Non-Residential Minor	✓	✓	✓	
Minerals and Waste	✓	✓		✓

\* For energy intensive extensions, i.e. extensions to living space, the renewable target of at least 10% should be met.

**Energy Statement** – please provide an energy statement, detailing the energy requirements of the building and also steps taken to minimise energy use throughout. It should include a SAP rating produced by a qualified SAP assessor. The occupier of the development should be provided with a

written statement that informs them of all energy saving measures present within the development, and encouraged to install energy efficient household goods only, such as A rated kitchen utilities.

**Siting and building orientation** – layout addresses orientation. Homes facing within 45° of due South, or building design so that the majority of large windows are south facing, ensure maximum utilisation of solar energy for lighting and solar gain. This should be clearly indicated on any plans, alongside a written explanation of how solar gain has been maximised if required.

**Renewables** – a greater than 10% or 20% (per unit, (depending on the type of development) of the building's energy requirement is generated from renewable energy on site. Regardless of development, each one should attempt to facilitate the installation of more renewable technologies at a later point through retrofitting. If the renewable stipulation is not met then a sum must be donated to the Sustainable Fund (or equivalent) of the National Park. In larger developments perhaps a community renewable energy project could be undertaken, such as a small combined heat and power plant or hydro electricity scheme where appropriate.

## 6.3 Materials and resources

### The problem defined - background and measures

The construction industry is a major consumer of land and raw materials and a major contributor to waste production. Around 50% of all global materials are used in construction. Building materials have an embodied energy content related to extraction, processing, manufacture, transportation, maintenance and demolition. Materials should, therefore wherever possible, be selected from natural, renewable or recycled resources and be locally sourced. Additionally, material waste from construction amounts to around 400 million tonnes in the UK each year. Design strategies that minimise waste in construction should, therefore, be promoted.

## Measures

The calculations needed to demonstrate savings in embodied energy over a building's lifetime in a whole building are complex. However, by taking some simple steps such as reducing site waste and selecting materials with a low embodied energy rating, a significant contribution to improving sustainability can be made. The right materials, along with correct siting can significantly cut space heating costs.

## Principles for design - what can be done?

### Economy in the use of land

Sustainable development includes the most sustainable location of development as Planning Policy Wales and TAN 18 state. For the purposes of this guidance this is dealt with effectively in each of the National Parks respective Development Plans. It is important to ensure that developments do not waste land.

### Re-use of existing buildings

The re-use of existing buildings is generally encouraged within the framework of national and local planning policy in order to provide development opportunities and to sustain traditional buildings, landscape and townscape.

## Prompts for designers

- Can recycled or reclaimed materials from accredited sources be used?
- What proportion of the materials for your building are to be locally sourced?
- Are the materials from renewable or 'certificated' sources?
- Have you checked your contractors waste policy?
- Have Sustainable Drainage (SuDs) principles been applied to the scheme?
- Have water-efficient appliances been specified?
- Have compost toilets or bio-digesters been considered?
- Is mains sewerage available? If on-site sewage disposal is required, what measures have been taken to address potential pollution of ground water?

## Design for re-cycling and modern methods of construction

Material specification may be influenced by the deliberate strategy of designing buildings that may be re-cycled.

Likewise, the current promotion of modern methods of construction for speed and resource efficiency may also have added value in terms of sustainability.

## Waste management - Waste produced through the construction process

A site waste management plan should be produced to reduce the amount of waste through the construction process in line with the current DTI best practice guide.

## Building materials

Building materials should be long lasting and ideally sourced locally, renewable or re-cycled sources.

## Local materials

Local materials have traditionally contributed to local distinctiveness and sense of place. The use of local materials is, therefore, to be encouraged provided fitness for purpose within the principles of sustainable design can be proved.

## Re-cycled or salvaged material

Consideration should be given to the use of recycled building materials, either from demolished buildings on site or locally or from second-hand building materials suppliers. Sources of recycled materials should be verified to ensure that they are not taken from vulnerable buildings or landscape elements such as stone field walls.

## Low-impact building materials

New building materials should be selected on the basis of sustainable supply and minimal embedded energy in production and transportation. Timber is a relatively low impact, renewable material but care must be taken that it is sourced from sustainably managed forests.

Other low-impact materials may come from renewable sources such as crops (eg sheeps wool insulation, hemp thermal insulation, Green roofs, straw bale builds) or from materials or components that have low energy manufacturing or processing.



Green Roofs – are roofs which using a waterproof membrane and soil, allow vegetation to grow. They have many benefits including reducing heating and cooling of a building, provide habitat and will reduce water runoff.

Think very carefully before using high energy, polluting materials such as uPVC that are not disposable or re-useable at the end of the building or component life. Such persistent, synthetic materials must be avoided. Timber and aluminium-cladding window frames could be used as a sustainable alternative.

**Design statement requirements: Materials and Resources**

Sustainable design guide	Materials & Resources	
	Recycling Facilities	Materials & Waste Statement
Type of Development		
Dwellings 10+	✓	✓
Dwellings 3-9	✓	✓
Dwellings 1-2	✓	✓
Householder		✓
Non-Residential Major	✓	✓
Non-Residential Minor	✓	✓
Minerals and Waste	✓	✓

**Recycling Facilities** – each development should provide ample recycling facilities. This includes internal and external (if there is a doorstep collection) space for recycling bins. Bin stores will minimise the visual impact of the bins on the surrounding area and should be sited in such a way so that they are easily accessible from the home and the collection site.

**Materials and Waste Statement** – provide written statement detailing the material to be used during construction (we encourage local materials, timber from certified sustainable sources and recycled/reclaimed materials). All materials should be sourced with sustainability in mind and recorded within the waste and minerals statement, for example any timber used should be from a sustainable source. Lifetime costs of the materials should be considered, therefore bearing in mind the costs of the material at all stages of its life, including maintenance and disposal/salvage.

The Lifecycle in terms of environmental impact should also be considered and documented. The materials section should also include consideration of various types of materials and why the final materials were selected. Waste minimisation during construction should be a priority and detailed measures should be included. A list of materials and techniques should be included, with samples if required. Using the ‘considerate constructors’ scheme is encouraged. All matters relating to on-site waste minimisation and materials selection should be discussed with contactors as soon as practical to ensure they are able to provide the services.

**6.4 Water**

**Water conservation and management**

In spite of the wet temperate climate experienced in the National Parks of Wales, water remains and will continue to be a valuable resource. Rainwater harvesting systems to supply water for non-drinking applications should be incorporated into all schemes where possible.

Simple design measures which should be considered include:-

- Specify water efficient taps and showers and low or dual flush toilets.
- Install a rainwater collection system.
- Avoid specifying power showers.
- Install a ‘greenwater’ or ‘greywater’ system for flushing toilets and washing machines.

In developments where larger areas of roof or paved surfaces are planned a sustainable urban drainage system (SUDS) should be designed to ensure controlled surface water runoff. This may be combined with a green system to help regulate water flow from the roof to the drainage system. Also, where access to mains drainage is difficult, grey water recycling and a reed bed drainage system should be considered.

**Design statement requirements: Water**

Sustainable design guide	Water	
	Efficient re-use of water	SUDs
Type of Development		
Dwellings 10+	✓	✓
Dwellings 3-9	✓	✓
Dwellings 1-2	✓	
Householder	✓	
Non-Residential Major	✓	✓
Non-Residential Minor	✓	✓
Minerals and Waste	✓	✓

**Efficient reuse of water** – Rainwater harvesting ('greenwater') for non-drinking purposes and a 'greywater' system (using water from dishwasher and machine washing) for toilet flushing should be considered at an early stage. Developers should provide occupiers with information of fixtures and fittings designed reduce the use of water (e.g. dual flush toilets) and details of a rainwater harvesting and/or grey water reuse system.

**SUDs** – developers will use appropriate SUDs technique to assist in containing rainfall from a 1 in 100 year event. Consult a hydrologist on the various options and technology available to reduce surface run-off and promote reuse. Such methods include green paving, green roofs and collection of

run-off water from roofs. If appropriate measures should be implemented within the design of the development on an individual plot basis.

**6.5 Landscape and Biodiversity**

**Landscape**

Our national parks are essentially cultural landscapes. Their building blocks are physical things like geology, landforms (hills, valleys, lakes, etc), climate and biodiversity. But added to these are the unmistakable human influences of thousands of years of endeavour – farmland, buildings and settlements, roads, hedges and walls. Our landscapes are continuing to evolve. They are re-writable canvasses which reflect how peoples' values and activities change and interact with the physical environment through time.

Buildings and settlements contribute significantly to the character of our landscapes and to the rich diversity of qualities that make them special.

Good building design must be sensitive to the character of its landscape setting, and must seek to enhance rather than detract from its special qualities.

**Biodiversity**

Biodiversity is the term used to describe the rich diversity and variety of life on Earth. Geodiversity describes the rocks and processes that have shaped the landforms that characterise the Welsh National Parks today. Both contribute hugely to the special qualities of the National Parks, which make them treasured landscapes, highly valued by society.

Development has a vital role to play in the conservation and enhancement of bio and geodiversity, and ensuring continuity and enhancement of habitats will be increasingly important if species are to adapt or move in response to climate change. Careful thought needs to be given from design to execution of your project not only to avoiding and minimizing damage to the natural environment but also to making a positive contribution to it wherever possible.

## How can development have a negative impact on bio and geodiversity?

Potential negative impacts can include:

- Outright destruction or damage to semi-natural habitats, such as woodlands and flower rich meadows.
- Loss or damage to wildlife “corridors”, such as traditional field boundaries and rivers, which provide colour to our landscape and link remaining areas of semi-natural habitats, providing routes for bats, birds, small mammals and invertebrates.
- Loss or damage to geological features, for example through quarrying and landscape restoration schemes.
- Loss of traditional bat roosts and bird nesting sites through the demolition or conversion of old buildings. Disturbance to bats and nesting birds is illegal.
- Fragmentation of semi-natural habitats and wildlife corridors through the building of new roads, pipelines, etc.
- Disturbance to wildlife and the landscape quality from the introduction of lighting into a previously unlit area.

Such concerns are not limited to “greenfield” sites, as previously developed land (such as old airfields, quarries and industrial sites) can become valuable to wildlife, which may be sensitive to damage from new uses and other developments.

### Designing for bio and geodiversity: good practice and innovation

With care and understanding new development need not result in damage to the natural environment. The application of good practice and a commitment to innovative design solutions can bring substantial benefits for bio and geodiversity.

**Remember, make early contact with your National Park planners, both to ensure that you are complying with the complex laws protecting wildlife and for advice on making the most of your scheme.**

## Measures

A three point approach to planning is proposed as follows:

- **Information** – applicants should contact the Planning Authority to ascertain site information related to ecology, geology and archaeology.
- **Avoidance or mitigation of harm** – this is an absolute minimum measure for the National Parks.
- **Design for enhancement** – this is good practice and may include measures for new habitats and protection and interpretation of geology or archaeology

Designers should refer to Supplementary Planning Guidance for Biodiversity for the relevant National Park when considering individual approach to design.

### Prompts for designers

- First, found out what habitats, species and other features you have on your site, and if required have a professional survey carried out.
- Assess the impacts of your proposals on the natural environment, and seek guidance on how damage can be avoided or, at the very least, minimised. Retain existing trees and hedges wherever possible.
- Consider how a new or converted building could provide roosting for nesting opportunities for bats and birds. Features like dedicated bat lofts or swift nest boxes/bricks recessed into the roof space could make a significant contribution to local biodiversity.
- Consider landscaping for wildlife: planting trees and shrubs that are native to the area or augment existing trees, hedges and woodland edges, and providing sources of nectar for butterflies and insects. The result – a colourful and exciting garden, which the birds and bats will also love.
- Consider the impact of external lighting on the surrounding area, and seek out designs that minimise “backscatter” and general light pollution. (Cont’d)
- Consider how to minimise the effect of water run-off from hard standings into ditches, rivers and streams.
- Explore ways of protecting and enhancing any habitats and geological features that are individual to your site as an integral part of the design of your scheme.

- Where exterior or street lighting is required consider how light pollution disturbance can be minimised, for example by use of a full cut off fixture and a low pressure sodium light source.

## Design statement requirements: Landscape and biodiversity

Sustainable design guide	Landscape & Biodiversity	
	Landscape character	Protect & Enhance
Type of Development		
Dwellings 10+	✓	✓
Dwellings 3-9	✓	✓
Dwellings 1-2		✓
Householder		✓
Non-Residential Major	✓	✓
Non-Residential Minor	✓	✓
Minerals and Waste	✓	✓

**Landscape character** - Demonstrate how the development contributes to landscape character and also provide a suitable landscaping scheme agreed with the LPA.

**Protect and Enhance** - Any harm to biodiversity should be avoided<sup>1</sup>. However loss of habitat can occasionally be unavoidable. In such cases any loss should be more than compensated for; these measures, for example tree planting, creating a wildflower meadow or placing of nesting boxes must be documented with appropriate evidence. Additional trees and hedgerows should be planted with appropriate native species and existing trees

<sup>1</sup> Please consult the Countryside Council for Wales for details of protected species and habitats

accommodated<sup>2</sup>. Green corridors<sup>3</sup> must be protected and if possible enhanced. Biodiversity must also be considered at the construction stage, and measures must be presented displaying adequate care for the environment during any particularly disruptive phases of construction.

## 6.6 Place and Local Distinctiveness

‘Local planning authorities have an important role in securing the conservation of the historic environment while ensuring that it accommodates and remains responsive to present-day needs. This is a key aspect of local authorities’ wider sustainable development responsibilities.’  
*Planning Policy Wales (p.65)*

### The problem defined - background and measures

The design of buildings and groups of buildings in developments must enhance the quality of their surroundings and be sympathetic to the immediate and wider context of the National Parks. This does not eliminate contemporary design; rather it should promote it.

Buildings, building groups and settlements must respond to their contexts (these landscape contexts being visual, aesthetic, historical, cultural, climatic, and ecological). However creating new, modern contexts can also be encouraged, by designing a modern sustainable building which although it differs from the historical aesthetic of an area, contributes to the landscape, ecological and climatic context.

### Measures

All developments must be accompanied by a short written statement setting out design principles, with accompanying illustrative material in plan, elevation, section and three dimensional drawings.

<sup>2</sup> Please consult the Authority regarding which trees may be protected by Tree Preservation Orders. It is an offence to fell trees protected under such regulations.

<sup>3</sup> Green corridors is the term used to describe the links between two different habitats used by a species, An example of a ‘green corridor’ could be a hedgerow, river or woodland that connect a species roosting site and their feeding ground.

In preparing a design statement, applicants should take an integrated and inclusive approach to sustainable design, proportionate to the scale and type of development proposal. They should be 'living' documents which deal with all relevant aspects of design throughout the process and the life of the development, clearly stating the comprehensive design principles adopted and include illustrative material in plan elevation and section where relevant.

### Prompts for designers

- In what way is your design responsive to context?
  - Is the building visible in the landscape or townscape and what is your approach to this?
  - If within a settlement or building group, how does the proposal relate to the pattern of the settlement?
  - If in the countryside, how does the proposal relate to land form?
  - Are the overall scale, layout, form and materials sensitive to local context?
  - Think about future proofing the design by allowing for further incorporation of renewable energy.
- 
- **All proposed schemes should be taken through the Planning Authorities pre-application process.**
  - **For small scale developments an illustrated design statement must be produced dealing with form, scale, mass and materials. Applications must include scheme design drawings at an appropriate scale in the context of their surrounding landscape and adjoining buildings.**
  - **In addition, for other developments, a comprehensive illustrated design statement must be produced dealing with form, scale, mass and materials.**
  - **The conversion or change of use of a building must be considerate to its architectural and historical qualities.**
  - **See matrix for further details of what needs to be included in the design statement for each development.**

### Design Principles

A variety of information on settlement character may be available to help applicants in designing their schemes to ensure that they sit comfortably in their surroundings. These may include formal Village Design Statements and Conservation Area Statements and Proposals, together with LANDMAP and local landscape and settlement character statements.

LANDMAP is a national, web based information system, devised by the Countryside Council for Wales (CCW), for taking landscape into account in decision making. It presents in a structured form a great deal of information about all elements that contribute to the landscape character of a particular area, which will be invaluable to designers in preparing their schemes.

### Cultural heritage

Distinct identity may be achieved by incorporating aspects of site, landscape and ecology into design. Site-specific design addresses these aspects in order to enhance rather than diminish local distinctiveness. Patterns of historic settlement are often still legible within existing towns and settlements. Where new buildings or groups are planned they must not obscure these patterns but enhance them. For example, within a medieval street plan, development should follow remains of burgage plots or strip fields. New development can enhance and interpret place in this way. Particular care must also be taken with proposals that may impact on Listed Buildings and their setting.

Areas of the three Welsh National Parks have been identified within the 'Register of Landscapes, Parks and Gardens of Special Historic Interest'. Where new developments fall within these areas they must take particular account of the identified special qualities of the landscapes.

### Scale, mass and form

Development should respond to the physical characteristics of site. The three dimensional massing and form should be a response to the

contextual appraisal of site in terms of height, sight lines, building lines, historic development patterns, orientation for design with climate etc. Building form should emerge from this analysis. Building heights should be considered in relation to street, courtyard or forecourt.

**Continuity and enclosure**

Traditionally, buildings in the National Parks have been designed to provide for security and shelter of inhabitants inside and outside the building. Building groups often rely on enclosure through buildings, walls or landscape elements to provide shelter and enclosure and these should be considered.

**Material qualities and detail**

Care should be taken over choice of materials in terms of texture, colour, scale and detail. In certain contexts the visual integrity depends on the use of just one material, while others are dependent on variations in colour or a richer palette of material and detail. The specific context related to material and detail must be carefully considered in design. Note should be made of the preference for local, sustainable materials set out in 7.4 of this guidance.

**Accessibility**

Routes to enable clear links for pedestrians, cyclists and vehicles should be identified and designed at a scale appropriate to context. Safe routes to public transport should be provided, where possible, with larger developments. Whilst safety and ease of vehicular access and car parking are important, the delicate scale and form of important settlements and landscapes are an overriding concern in the National Parks and should be respected. In designing for legibility, the public realm should be considered as a sequence of events e.g. landmark, silhouette, enclosure, vista, focused view etc.

**Diversity and compactness**

A mix of uses can enrich rather than diminish the sense of place and local distinctiveness. This may be achieved horizontally in layout, and vertically with different uses at various levels. Small rural settlements may depend on mixed uses, tenures and property types to sustain them.

Compactness in design may also help to optimise land use and provide for sense of place wherever appropriate to local context and climate. This should be balanced with designing for pleasant microclimate, including making appropriate space for trees and hedges.

**Design statement requirements:  
Place and local distinctiveness**

Sustainable design guide	Place & local distinctiveness	
	Consideration of place and Local distinctiveness	Provide a safe route to public transport
Type of Development		
Dwellings 10+	✓	✓
Dwellings 3-9	✓	✓
Dwellings 1-2	✓	
Householder	✓	
Non-Residential Major	✓	✓
Non-Residential Minor	✓	
Minerals and Waste	✓	

**Consideration of place and local distinctiveness**

Include a paragraph in your design statement describing how the surrounding area has been considered and all measures taken to maintain the local distinctiveness of the surrounding area. The development should fit within the context of the area in which it is sited.

**Provide a safe route to public transport -**

where links to the public transport network are possible, every effort should be made for the development to facilitate its usage. This should include well-lit paths that can be used by people of all physical abilities to get to stops and stations,

along with clear signage.

## 6.7 Robust Building

In the context of this guidance, **robustness** means **'long life - loose fit' buildings**. These qualities ensure a building or development can adapt to changing needs.

### Steps towards robust construction:

- In general, buildings should be designed for a long life.
- Space standards or strategies should, therefore, be capable of accommodating change.
- Dwellings should pay regard to the requirements of lifetime homes.
- If they are for a deliberately short term use – (eg less than 20 years) then they should be designed for re-use or re-cycling.

'The **Lifetime Homes** standards identify 16 features designed to make homes more flexible and accessible. They include: level access to front and back doors; a car parking space that can be enlarged if necessary; wider interior hallways and doors; enough turning space for a wheelchair; easy-to-open windows with low sills; and sockets and switches at heights that are convenient to reach. The specification also ensures that handrails, hoists and lifts can be easily installed, if necessary.'

<http://www.jrf.org.uk/pressroom/releases/240297.asp>

### Home working space

With increasing opportunity to work from home, including a home working space in the development of a dwelling would be advantageous to the occupier and is a requirement of the matrix. Working from home has many benefits, enabling the occupier to choose when to work, rearranging work around child care commitments for example, reducing travel, the associated expenses and travel time.

### Prompts for designers

- What is the design life of the proposed building?

- Does the quality of material and detailing match the needs of the proposed design life?
- Has potential expansion or change of use been considered in the design of the building and does the design strategy take this into account?
- Which parts of the building are permanent and which can be more easily changed?
- Consider elements of future proofing within the design.

### Design for climate change

Climate change will bring more severe weather patterns. Therefore, the building fabric should be designed to cope with spells of hotter, wetter and windier conditions. Materials should, be selected with durability and care of maintenance or replacement in mind. Buildings should be capable of adapting for passive cooling.

Efforts should be made to plan and design for climate change as follows:-

- Preparation of Consequential Flood Assessment and mitigation through siting or design.
- Include sustainable urban drainage systems in appropriate cases.

### Secured by design

All developments should be designed for neighbourhood surveillance without compromising privacy. Window and door openings should be carefully detailed for security. On larger developments (over 2 dwellings) the Police Architectural Liaison Officer should be consulted.

**Design statement requirements:  
Robust building.**

Sustainable design guide	Robust Building		
	Flexibility for the Future.	Health & Wellbeing	Home working space
Type of Development			
Dwellings 10+	✓	✓	✓
Dwellings 3-9	✓	✓	✓
Dwellings 1-2	✓	✓	✓
Householder	✓	✓	
Non-Residential Major	✓		
Non-Residential Minor	✓		
Minerals and Waste	✓		

**Flexibility for the Future** – Encourage buildings to be built to the Lifetime Homes Standard or at least to incorporate appropriate standards. Also consider security issues.

**Health and Wellbeing** – The development must provide adequate private and public open space for residents – each development must meet the local planning Authority’s standards for each dwelling.

**Home working space** – Plans for home working should be included, such rooms should have sufficient power sockets, telephone points and internet access points (broadband internet availability should be checked and mentioned) to allow for home working. The room should also be planned to be of sufficient size to allow a desk and storage drawers. An office may be incorporated into another room, however the kitchen, bathroom, or main bedroom is not a suitable room for home working.



## Appendix I- The Sustainable Design Matrix

Each item with a tick must be considered as part of the application process. Only in exceptional circumstances will these requirements not be required. Such exceptional circumstances will need to be substantiated by sufficient evidence and professional opinion (ie. consultations with installers of renewable energy, hydrologists and ecologists etc).

Sustainable design guide	Energy				Materials & Resources		Water		Landscape & Biodiversity		Place & local distinctiveness		Robust Building		
	Energy statement	Siting & building orientation	Renewable target		Recycling Facilities.	Materials & Waste Statement	Efficient re-use of water	SUDs	Landscape character	Protect & Enhance	Consideration of place and Local distinctiveness.	Provide a safe route to public transport.	Flexibility for the Future.	Health & Wellbeing	Home working space
			>10%	>20%											
Dwellings 10+	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Dwellings 3-9	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Dwellings 1-2	✓	✓	✓		✓	✓	✓			✓	✓		✓	✓	✓
Householder	✓	✓	*			✓	✓			✓	✓		✓	✓	
Non-Residential Major	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		
Non-Residential Minor	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓		✓		
Minerals and Waste	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓		✓		

\* For energy intensive extensions, i.e. extensions to living space, the renewable target of at least 10% should be met.

**Energy Statement** – please provide an energy statement, detailing the energy requirements of the building and also steps taken to minimise energy use throughout. It should include a SAP rating produced by a qualified SAP assessor. The occupier of the development should be provided with a written statement that informs them of all energy saving measures present within the development, and encouraged to install energy efficient household goods only, such as A rated kitchen utilities.

**Siting and building orientation** – layout addresses orientation. Homes facing within 45° of due South, or building design so that the majority of large windows are south facing, ensure maximum utilisation of solar energy for lighting and solar gain. This should be clearly indicated on any plans, alongside a written explanation of how solar gain has been maximised if required.

**Renewables** – a greater than 10% or 20% (per unit) (depending on the type of development) of the building's energy requirement is generated from renewable energy on site. Regardless of development, each one should attempt to facilitate the installation of more renewable technologies at a later point through retrofitting. If the renewable stipulation is not met then a sum must be donated to the Sustainable Fund (or equivalent) of the National Park. In larger developments perhaps a community renewable energy project could be undertaken, such as a small combined heat and power plant or hydro electricity scheme where appropriate.

**Recycling Facilities** – each development should provide ample recycling facilities. This includes internal and external (if there is a doorstep collection) space for recycling bins. Bin stores will minimise the visual impact of the bins on the surrounding area and should be sited in such a way so that they are easily accessible from the home and the collection site.

**Materials and Waste Statement** – provide written statement detailing the material to be used during construction (we encourage local materials,

timber from certified sustainable sources and recycled/reclaimed materials). All materials should be sourced with sustainability in mind and recorded within the waste and minerals statement, for example any timber used should be from a sustainable source. Lifetime costs of the materials should be considered, therefore bearing in mind the costs of the material at all stages of its life, including maintenance and disposal/salvage. The Lifecycle in terms of environmental impact should also be considered and documented. The materials section should also include consideration of various types of materials and why the final materials were selected. Waste minimisation during construction should be a priority and detailed measures should be included. A list of materials and techniques should be included, with samples if required. Using the 'considerate constructors' scheme is encouraged. All matters relating to on-site waste minimisation and materials selection should be discussed with contractors as soon as practical to ensure they are able to provide the services.

**Efficient reuse of water** – Rainwater harvesting ('greenwater') for non-drinking purposes and a 'greywater' system (using water from dishwasher and machine washing) for toilet flushing should be considered at an early stage. Developers should provide occupiers with information of fixtures and fittings designed to reduce the use of water (e.g. dual flush toilets) and details of a rainwater harvesting and/or grey water reuse system.

**SUDs** – developers will use appropriate SUDs technique to assist in containing rainfall from a 1 in 100 year event. Consult a hydrologist on the various options and technology available to reduce surface run-off and promote reuse. Such methods include green paving, green roofs and collection of run-off water from roofs. If appropriate measures should be implemented within the design of the development on an individual plot basis.

**Landscape character** - Demonstrate how the development contributes to landscape character and also provide a suitable landscaping scheme agreed with the LPA.

**Protect and Enhance** – Any harm to biodiversity should be avoided<sup>4</sup>. However loss of habitat can occasionally be unavoidable. In such cases any loss should be more than compensated for; these measures, for example tree planting, creating a wildflower meadow or placing of nesting boxes must be documented with appropriate evidence. Additional trees and hedgerows should be planted with appropriate native species and existing trees accommodated<sup>5</sup>. Green corridors<sup>6</sup> must be protected and if possible enhanced. Biodiversity must also be considered at the construction stage, and measures must be presented displaying adequate care for the environment during any particularly disruptive phases of construction.

**Consideration of place and local distinctiveness** - Include a paragraph in your design statement describing how the surrounding area has been considered and all measures taken to maintain the local distinctiveness of the surrounding area. The development should fit within the context of the area in which it is sited.

**Provide a safe route to public transport** – where links to the public transport network are possible, every effort should be made for the development to facilitate its useage. This should include well-lit paths that

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<sup>4</sup> Please consult the Countryside Council for Wales for details of protected species and habitats

<sup>5</sup> Please consult the Authority regarding which trees may be protected by Tree Preservation Orders. It is an offence to fell trees protected under such regulations.

<sup>6</sup> Green corridors is the term used to describe the links between two different habitats used by a species, An example of a 'green corridor' could be a hedgerow, river or woodland that connect a species roosting site and their feeding ground.

can be used by people of all physical abilities to get to stops and stations, along with clear signage.

**Flexibility for the Future** – Encourage buildings to be built to the Lifetime Homes Standard or at least to incorporate appropriate standards. Also consider security issues.

**Health and Wellbeing** – The development must provide adequate private and public open space for residents – each development must meet the local planning Authority's standards for each dwelling.

**Home working space** – Plans for home working should be included, such rooms should have sufficient power sockets, telephone points and internet access points (broadband internet availability should be checked and mentioned) to allow for home working. The room should also be planned to be of sufficient size to allow a desk and storage drawers. An office may be incorporated into another room; however the kitchen, bathroom, or main bedroom is not a suitable room for home working

