Pembrokeshire Coast National Park Authority

Pembrokeshire Coast National Park Local Development Plan 2

Sustainable Design & Development

Future-proofing buildings in the Pembrokeshire Coast National Park – including residential and agricultural development

Draft Supplementary Planning Guidance

This item is also available in Welsh/ Mae'r eitem hon ar gael yn Gymraeg hefyd

Consultation: September 2020

Adoption: Approval Date

Who should use this guide and why?

1. If you are considering developing in the National Park we would urge you to delve into this document and take on board the design principles and considerations outlined in it – the National Park is a very special landscape and deserves the highest consideration and care to maintain it as one which others would aspire to live in and use. As designers, planning applicants, planning officers and policy makers we will be judged on what we leave behind in terms of built development and the impact it will have on the natural resources, the landscape and the communities who will in time be inheriting our developments. It is down to us to consider with care the short, medium and long term effects on what we do – this document highlights the climate change issues and topic areas that we already know are requiring further careful thought.

2. To future-proof developments we need to think wider than the immediate use of the land and building and also be thoughtful of what others around us are doing too. Whether your development will require planning permission or not, there are useful pointers in this document which would be relevant to all buildings, whether a garden shed, a new housing estate, a community building, tourist attraction or agricultural sheds. 'Planning' in the widest sense of the word – spending time prior to construction thinking through all aspects of the development - will be time well spent.

3. Officers of the Authority would be delighted to help; there is a pre-application service which can provide information and also direct you to key documents and regulations than need to be adhered to. Let's embrace this logical way of working and build for a future we can all be proud of.

Sustainability in the Pembrokeshire Coast National Park

Purpose of this guidance

4. The aim of this guidance is to promote high quality, sustainable design that enhances the natural beauty, wildlife and cultural heritage of the Pembrokeshire Coast National Park. The aim is to ensure that the design of developments includes high quality buildings and spaces, based on the principles of intelligent siting, climate-responsive structures, using sustainably sourced materials.

What types of developments need to be sustainable?

5. Basically we need to ensure all types of new developments and modifications to existing buildings are sustainable. In Pembrokeshire Coast National Park the focus tends to be on residential development, agricultural development, visitor attractions and accommodation, and commercial and business development.

Background – where has this guidance come from?

6. As at 5th January 2020, 25 countries have made national declarations of a climate emergency[1].

7. On 10 May 2019 Pembrokeshire County Council – which provides many public services within the National Park - also declared a climate emergency.[2]

8. The National Park Authority responds to climate change across its functions, for example via carbon reduction and sequestration, adaptation and mitigation. The Authority is also considering where it can take further action.

9. According to the Technology Strategy Board, the construction, operation and maintenance of the built environment accounts for 45% of total UK carbon emissions (27% from domestic buildings and 18% from non-domestic buildings).

10. The UK Green Building Council says that around 10% of the UK's carbon dioxide emissions are directly associated with construction. This includes the CO_2 generated through the entire building process.

11. It is therefore no surprise that the focus on buildings and the reduction of their impact on the environment - whilst being built and then when occupied - needs serious consideration. Time spent carefully designing prior to construction will be repaid with environmental, social and economic gains in the future.

---

[1] Wikipedia Climate Emergency Declaration, 4th February 2020.
[2] Wales Newsonline Climate Emergency Declared by Pembrokeshire County Council May 10 2019

12. If this pattern of consumption were repeated on a global scale, we would require the resources equivalent to 3 of our worlds to support our existence. This level of consumption is unsustainable.[3]

13. Better design and construction techniques will assist with lowering harmful emissions, whilst also offering economic and social benefits through more sustainable supply systems, improved energy efficiency, aesthetic improvements to our future built heritage and enhanced community cohesion.

14. Design quality is not just how a structure looks, but how it functions and meets the social, economic and environmental needs of the people it serves. A well designed building will also allow for flexible use of its spaces to enable adaptations to be made to assist with it being used to its full potential and taking into account future needs.

Planning context – where does this guidance sit?

15. Since the previous Pembrokeshire Coast Local Development Plan and the original Supplementary Planning Guidance on Sustainable Design (adopted 22nd June 2011, technical update December 2013) and the separate Supplementary Planning Guidance on Siting and Design of Farm Buildings (adopted 13th June 2012), there has been a huge increase in the understanding and need to address the consequences of climate change. The Welsh Government has been at the forefront of attempting to make changes to planning to combat the negative effects that climate change is having on Wales, and Welsh Government's ambition is for Wales' public sector to be carbon-neutral by 2030. There is now substantial guidance in the form of Planning Policy Wales (PPW) 10 (please note in particular the national sustainable placemaking outcomes and section 5.8.3 of PPW10) and Technical Advice Note (TAN) 12 which demonstrate how the Welsh Government sees 'Planning' addressing the matter of sustainability. A further overview and direction (not just for planning purposes) comes from the Wellbeing of Future Generations Act (2015). The ways of working towards a more sustainable future with an ambition of being zero carbon is contained in the Commissioner's for Wellbeing of Future Generation's literature. These documents need to be read to understand the context of sustainability thinking for Wales.

16. This guidance has been produced to support in particular Policy 29 Sustainable Design and Policy 30 Amenity - Pembrokeshire Coast National Park Local Development Plan 2 in September 2020. It forms supplementary planning guidance to the Local Development Plan 2. It will be used by the Pembrokeshire Coast National Park Authority to assess whether planning applications comply with the policies of Local Development Plan 2.

17. A report of consultations detailing how this Supplementary Planning Guidance was consulted upon will be made available to view on the Authority's website when the guidance is adopted.

[3] Quote from Building a Future for Wales, WWF & WSA 2005.

Definitions, planning policy

What is Sustainable Development?

18. "Sustainable Development" means the process of improving the economic, social, environmental and cultural well-being of Wales by taking action, in accordance with the sustainable development principle, aimed at achieving the well-being goals.

19. Acting in accordance with the sustainable development principle means that a body must act in a manner which seeks to ensure that the needs of the present are met without compromising the ability of future generations to meet their own needs. (Planning Policy Wales 10 - Introduction)

20. 'Good design is not inevitable. It requires a collaborative, creative, inclusive, process of problem solving and innovation - embracing sustainability, architecture, place making, public realm, landscape, and infrastructure.' TAN 12, 2016.

Advantages of sustainable design and development

21. Achieving sustainable design cannot be an optional extra to development. High quality sustainable development is essential if long term damage to the environment of the National Park is to be minimised.

22. 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. An Energy Performance Certificate, which rates how efficient homes are on a scale of A-G, is required for all homes marketed for sale or to let in England and Wales.
    - As occupiers recognise the benefit of lower running costs the properties will become more marketable
    - The building will minimise its own and its occupiers' impact on it's surrounding – including visual, environmental, light and sound.

23. 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 in the longer term can be positively balanced against lower future energy costs and lower environmental impact.

Building a sustainable future

24. Traditional methods of construction in the National Park can be characterised by buildings which we appreciate for adding value to the landscape, being read as part of their setting and being distinct in the local area. Local building techniques using local resources 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 are dwindling. This has resulted in the building design becoming homogenised - no distinction between areas and no difference in character. It is interesting to note that it is often the older, more traditionally-built settlements that remain favoured by us in terms of appreciation of aesthetics – creating locally distinct places.

25. This guidance promotes a thoughtful approach to the design of buildings in the National Park. The traditions of sensible siting and orientation which make the most of the local topography to maximise sunlight and minimise exposure should be at the forefront of design practice, as should the use of locally produced and sourced sustainable materials and energy sources.

26. New technologies give us the opportunity to explore radical design solutions and to a point the National Park Authority will embrace such ideas – so long as it can be demonstrated that the outcome will be a high quality addition which will enhance the National Park ethos. Sustainable buildings and developments which are in unsustainable locations, i.e., remote and inaccessible are very rarely appropriate and will be resisted.

Principles of sustainable design

27. The principles of sustainable design most relevant to the National Park have been grouped together in the following themes:

    1. Energy use
    2. Materials and resources
    3. Landscape and biodiversity
    4. Water
    5. Place and local distinctiveness
    6. Robust building

28. A check list of the aims is set out below:

Key Principle	Aims
1. Energy	Energy consumption and climate altering gas emissions should be minimised by good siting, layout and design, 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.
2. Materials and Resources	Local materials from sustainable renewable sources should be used; and the use of materials 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 drainage systems should be employed where appropriate.
4. Landscape and Biodiversity	New development must consider and enhance the quality of landscape and biodiversity.
5. Place and Local Distinctiveness	Distinctiveness is that quality that characterises place. Buildings and building groups should be responsive to context, local distinctiveness and cultural heritage.

Key Principle	Aims
6. Robust Building	Buildings should be designed to cope with climate change, future needs and uses and be capable of improvement over time. Accessibility for all is also a key consideration. A home working space should be considered for inclusion in any residential design as home working becomes more commonplace.

What is a Design and Access Statement?

29. A Design and Access Statement (DAS) is required with planning applications for major development. Lower thresholds apply in Conservation Areas and World Heritage Sites, where some smaller applications must also be accompanied by a DAS. Listed building consent applications must also include a DAS. Applications for waste development, a material change of use, engineering or mining operations do not need to be accompanied by a DAS. To check the up to date requirements and whether your planning application requires a DAS please contact the Pembrokeshire Coast National Park Authority.

30. The 2017 publication *Design and Access Statements in Wales* provides detailed advice on how such a statement should be set out and the topics it needs to cover.

31. Pembrokeshire Coast National Park Authority will expect the DAS 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 the wider context;
- How the development will meet Local Development Plan 2 design policies; and
- How the development has addressed the sustainability issues raised in this guidance.

32. The level of detail expected will be proportionate to the scale and type of development proposed. In some cases a short written explanation which covers the points raised in the above paragraph 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.

33. What will be achievable in respect of each design principle will depend on the circumstances of each scheme, its site and its setting.

34. Where a DAS is not a mandatory planning requirement to accompany a planning application, applicants may wish to produce a similar summary document explaining to the planners what issues have been covered and considered as part of the design process.

Energy

The problem defined - background and measures

35. At present, the majority of the UK's energy still comes from burning fossil fuels, mainly for heating buildings. 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 founded on two main principles: to conserve and use energy efficiently and to promote the use of appropriate renewable energy.

36. Designers are encouraged to undertake energy assessments for developments. Technical Advice Note 12 section 5.4 *Climate Responsive Development and Sustainable Buildings* provides advice on how designers should assess opportunities to reduce the energy requirement and carbon emissions of a development.

37. Certain types of planning applications need to be accompanied by:

- A sustainable design statement incorporated in a design and access statement if required.
- An integrated energy/carbon reduction strategy as part of the design and access statement, which addresses both energy consumption and possible production. It should promote:
    a. Reducing energy demand
    b. Low carbon energy supply – ideally from renewable energy sources
    c. Appropriate renewable energy generation.

38. It is acknowledged that some development proposals will be for structures that use little energy, for example porches and garages. However, even small developments should seek to improve where possible a building's energy performance and also improve its aesthetic qualities.

39. Prompts for designers and commissioners of development
- 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 daylit?
- Does your building have 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 e.g., ground source heat pumps?
- Have you considered future energy requirements, and perhaps the building could link into a community energy project in the future?
- Flexibility in heating sources in the future.
- Will the heating system be sited in the most effective place? Are you considering options to reduce heat loss – such as limiting pipe lengths?
    - Could you store electricity or export to the grid?

Energy solutions - design principles

40. Heating costs can be reduced through good siting, design, adoption of ventilation principles and draught proofing. The following options should be considered as a means of improving a building's energy performance.

Passive design

41. 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.

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

Siting

43. Buildings and extensions should be sited to optimise 'free' aspects of climate. 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. Take care, however, to avoid unacceptable overlooking and light spillage.

44. Traditionally, buildings were sited to take advantage of these aspects; the principle of 'wrap up warm and face south' is evident throughout the traditional architecture of the National Park.

45. Energy use and amenity value 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 native tree planting can be used for shelter belts. This can be especially important when considering large agricultural buildings and their vehicular access requirements which can have a substantial impact on the landscape.

Siting of agricultural buildings

46. Preference should be given to new buildings which sit within or are well related to existing building complexes, since the existing development can help to provide a context which is less intrusive than new isolated development. However, it is recognised that such siting is not always appropriate, for operational, pollution control or other practical reasons. It may also be possible to integrate with or extend existing buildings. Practical

considerations include ease of access for machinery, vehicles and livestock; shelter; sun / shade requirements; security and drainage needs. In addition, the following advice should help to lessen the building's impact on the landscape:

- avoid prominent sites including those near to public highways and public rights of way;
- where possible site the building below the skyline;
- use existing or new planted vegetation to screen the building or to soften its appearance;
- use the building as an opportunity to screen any existing unattractive buildings;
- avoid siting near to residential properties - potential smell and noise should be taken into account;
- where possible site new buildings parallel or at right angles to existing buildings;
- avoid removing or concealing features of interest such as ponds, trees, hedges or traditional walls and buildings;
- consideration needs to be given to the potential for renewable energy technology, i.e., solar panels on large south facing roof slopes.

47. A building on the skyline will break the natural line between the sky and land, and will tend to dominate the landscape and be intrusive. In most cases this can be avoided. Siting below the skyline considerably reduces the potential intrusion of modern farm buildings into the landscape. Where this is not possible careful attention needs be given to the design, size, outline, reflectivity of materials, lighting and colour of the building and its relationship with the contours of the land. The outlines of the building should be interesting and well balanced in proportion. The distant views of buildings in this situation are particularly important.

Topography of rural sites

48. Sloping sites should not be ignored as they may have several advantages:

- Setting a building into a slope will minimise its impact on the landscape and will help it to merge into its surroundings.
- The slope can give shelter and a warm aspect.
- The spoil from excavation can often be used to reduce the apparent height of the building through sensitive ground shaping through the creation of banks and mounds.

49. Cut and fill can be the best method of providing a level building site on a steep slope and of setting a building into the landscape. Appearance will be improved by keeping the cut and fill to a minimum. In addition, "stepped" buildings can produce interesting roof patterns. Extensive cut and fill can however result in large expanses of unattractive retaining walls and bare slopes and should be avoided.

Mass

50. When buildings are designed to collect solar gains, though 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

51. Whilst compact building forms are more energy efficient, this efficiency may be undone when rooms are so deep that they require mechanical ventilation and electrical lighting. Traditionally, buildings were designed to be responsive and provide comfort and efficient energy use by natural ventilation and day-lighting.

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

Form of agricultural buildings

53. Modern farm buildings need to be carefully designed. Large single span buildings can potentially cause the greatest visual impact.

54. Consideration should be given to:
    - using multi-span structures which reduce the bulkiness of the roof and enable the gable elevation to be in more than one plane;
    - varying the standard rectangular plan;
    - breaking up large flat expanses of walls by using materials of a different colour and texture (e.g. stone below timber cladding, timber doors, etc.);
    - using different coloured materials for the walls and roof;
    - good construction detailing;
    - dividing the building into two smaller ones which can then be more easily incorporated into an existing group.

55. The type and colour and texture of external construction materials will greatly affect the impact the building has on the landscape. (Breeze block walls for example can be of relatively poor appearance and are not considered appropriate in sensitive or prominent locations, although account will be taken of the justification for choosing this form of construction).

Building envelope: walls, floors and roofs

56. 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, it is also important to prevent unwanted heat gain when converting or retrofitting existing buildings. Care must be taken to prevent loss of thermal mass, this often occurs when buildings are insulated on the inside face of masonry walls and floors.

Openings: doors and windows

57. Windows provide for views and daylight, but can also let a lot of heat out of the building in cold weather and allow light spillage. The location, size and type of glazing is important.

58. To improve energy efficiency, smaller windows should be placed where practicable on north elevations and larger windows on southern walls. There may be exceptions to this general rule, for example offices, which need to ensure acceptable levels of daylight for employees.

59. Windows should ideally be double or triple-glazed with low- E glass to provide better than building regulation insulation standards. However, installing such windows may be inadvisable in historic properties or in Conservation Areas. In such circumstances, the use of insulated shutters, coupled with secondary glazing may be appropriate and will help to retain the character of the original building.

60. The use of internal or external shutter systems may become more appropriate to mitigate climate change and they could be beneficial in keeping in heat in inclement weather and alternatively resisting excessive solar gain in heatwaves. Shuttering systems with a sliding barn door mechanism could be useful additions to properties in exposed locations. The detailing and materials need careful consideration.

61. In some circumstances the addition of an enclosed porch rather than merely a porch roof over a door will be useful way of preventing heat loss when entering a building.

Repair

62. Traditional sash windows can be repaired and draught proofed by skilled craftspeople. Reusing and recycling existing windows is always advisable as it negates the use of new materials, and will conserve a building's traditional appearance.

63. Persistent, synthetic materials such as uPVC should be avoided. If they are to be used, aim to install recycled products. Timber and aluminium-cladding window frames would be more sustainable alternatives. A report for the Wood Window Alliance, March 2013, by Dr Gillian Menzies, Institute for Building and Urban Design, Heriot Watt University, Edinburgh, together with the earlier Service Life Planning and Whole Life Cost studies, shows that timber window frames are the most environmentally-friendly choice and offer the best value in normal conditions. For best value in high-rise and severe exposure conditions, modified timber or aluminium-clad timber window frames provide an environmentally-friendly alternative.

64. There was a time where uPVC windows were seen as the perfect replacement for old and unreliable wooden windows prone to unwanted draughts and noises. Wooden window frames, however, are now able to offer not only a longer lasting, more reliable option but also a more environmentally friendly one.

Conservatories

65. Conservatories are often considered as an easy option for extending a house as they normally benefit from permitted development rights and therefore don't require a planning application. But with no insulation and additional heating being required they are often not as useful as first envisaged, getting far too hot in summer, cold in winter and noisy in poor weather. A better solution may be a sun room – a well insulated room with a covered roof but with fully insulated glazed elevations. Although such additions to a house may require planning permission, time spent on the design stage will reap longer term benefits.

Roof openings

66. Roof-lighting can be used effectively to 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 Park. In conversions of buildings the inclusion of roof lights can be a compromise in bringing a building back into use. However, new buildings incorporating roof lights highlight the limitations of the design, and, where possible, the use of traditional vertical plane windows into living spaces should be considered first. Dormer windows need to respect the proportions of the building and not be over-bearing.

67. Wind towers chimneys and sunpipes may be used to promote natural light and ventilation, but again note should be made of the possible inappropriate form of some in sensitive contexts. Metal chimneys or flues for woodburners need to be sensitively located on the building and be in a position and colour which does not dominate. Dark matt coloured flues tend to be the best design

solution. Shiny metallic flues attract the eye and can also create unacceptable glare for neighbours over a long distance.

Roof lights in agricultural buildings

68. Normally non-opening these are designed to maximise day light in large single span buildings. However their use has wide ranging implications in the National Park in terms of allowing light pollution into dark skies and limiting the mitigation of having darker coloured materials to blend in to the landscape. Special consideration should be paid to their position (a chequer-board effect should be avoided as this further high-lights the light pollution).

Airtightness and ventilation

69. Ventilation systems should be designed and not rely on accidental leaks resulting from 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.

Renewable energy

70. All proposals, however small, should consider the energy efficiency and the installation of appropriate renewable energy systems, but what will be appropriate will depend on individual circumstances.

Solar

71. In addition to passive solar design, there are active systems, including 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.

72. PV or photovoltaics need daylight to convert light energy into electric energy. Again, these are ideally sited facing south and with no overshadowing from other buildings or trees.

73. Although solar panels tend to be roof mounted there is the option of ground mounted panels which should also be considered in sensitive locations and if roof mounting is inappropriate, for example on listed buildings.

74. Panel design is standardised in terms of width length and depth. The frame of the panel is normally reflective aluminium which can create a jarring visual impact. It is worth seeking out frameless panels or those with black trim;

these look more discreet. New roofs can incorporate roof tiles which have PV properties which are an option especially in entirely new buildings.

75. Batteries are now becoming much more commonplace to store excess energy. Combining solar panels and batteries together with power supplies for electric items, including cars, would be leading towards self-sufficiency in term of energy requirements.

76. Agricultural buildings offer an ideal opportunity for a large roofspace to be utilised for energy creation. Rising costs of electricity are adding to the overheads faced by farmers and affect profitability. Farm buildings can provide large, uncomplicated roof spaces which are ideal for PV installations which can help farmers significantly reduce their energy bills. Where a south-facing roof with a suitable pitch can be incorporated into a design, solar panels should be considered for installation at construction stage or for the future. The initial design of the building should ensure it is strong enough to support the installation of panels on it. Putting solar panel details in the planning application for such additions should be considered a worthwhile option. Care should be taken to consider the visual impact – a darker roof (as panels can be) can assist with a building melting into the landscape thus creating a win-win situation.

Wind

77. In sensitive landscapes and Conservation Areas the visual impact of masted turbines can be an issue and great care needs to be taken in their siting.

78. For an average three bedroom home a 1.5 – 3 kw turbine will make a significant contribution to energy needs.

79. Wind turbines on farms should also be considered at a size and scale required for the farm's energy requirements. As these are likely to be larger than domestic installations further advice from the Pembrokeshire Coast National Park Authority should be sought. The Authority has prepared Supplementary Planning Guidance on Renewable Energy which provides further advice on turbines and other technologies listed below.

Biomass

80. 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 heating is appropriate, designers need to consider fuel storage, fuel delivery and the need for a specially designed flue or chimney.

Water

81. Generating energy through water, or hydro power, is an age-old, proven technology. Small scale hydro power has been recognised as being extremely efficient with low environmental impacts. Owing to their topography, large parts of the national parks of Wales are ideally suited to appropriately scaled run-of-the river hydro power schemes. Micro-hydro schemes can be an attractive and cost-effective means of producing electricity in areas with suitable water flow. Abstraction licences are required for hydro power schemes and potential ecological impacts need to be considered.

Ground Source Heat Pumps

82. Heat pumps use relatively constant ground or water temperature to provide summertime cooling and winter heating through heat exchanging pipes laid underground. These heat exchangers could either be air to ground or water to ground. Once installed, they are relatively low maintenance and are best suited to under floor heating/cooling systems for new or renovated buildings.

Air Source Heat Pumps

83. Air source pumps require less space than ground source pumps as no underground pipes 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

84. There is scope for incorporating Combined Heat and Power (CHP) and district heating in larger development schemes. Providing 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.

85. For more guidance on renewable energy see the Supplementary Planning Guidance on Renewable Energy.

Summary: Designing for renewable energy

	Site Characteristics	**Resources and Servicing**	**Project Size and Function**
Solar Water Systems	Not shaded by trees, buildings,	Ideally roof mounted at 45°	Can provide up to 70% of domestic

	Site Characteristics	Resources and Servicing	Project Size and Function
	hills.	from horizontal facing due South.	hot water. Ideal for larger residential or small groups of homes.
Solar PV	Not shaded by trees, buildings, hills.	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.
Wind	Exposure to wind – minimal buffering. Elevated or marine locations could be suitable. Ensure scale of installation is visually appropriate to surroundings.	Turbines vary in scale. Can be building mounted or free standing.	The first constraint 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.
Biomass Fuels	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.
Micro Hydro	Dependent on availability of suitable water resource.	The type of turbine suitable for a particular project will depend on the height from which	Range from a few hundred watts for domestic schemes up to around 300kW for

	Site Characteristics	Resources and Servicing	Project Size and Function
		the water travels (the 'head') and the flow rate of the water.	commercial systems.
Heat pumps	Adequate area which can be excavated.	Best with under floor heating system.	-

Materials and resources

The problem defined - background and measures

86. 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 be selected from natural, renewable or recycled resources and be locally sourced. Material waste from construction amounts to around 400 million tonnes in the UK each year.

Measures

87. Calculations demonstrating savings in embodied energy 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. A Construction Management Plan (CMP) should be submitted with all major planning applications. The CMP should detail how waste will be processed on site, reducing and reusing where possible. The right materials, along with correct siting of the development, can significantly cut space heating costs.

Economic use of land

88. It is important that developments are not wasteful in their use of land, and that all available land is used to enhance its sustainability, for example through energy generation, habitat creation or by providing outdoor amenity. Designers, architects and builders need to think of the development of the site as a whole and design in sustainability in the widest sense of the word – using outdoor space to enhance habitats and encourage occupiers to understand the need for maintaining such spaces in the future. External space can often be multi-functional – for example a recreational space can also provide swales for water run-off and a habitat for wildlife, which can form part of the Sustainable Drainage applications.

Re-use of existing buildings

89. 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, townscape and local communities.

Design for re-cycling and modern methods of construction

90. Materials can be selected to ensure they can be reused or recycled in the future. Likewise, the current promotion of modern methods of construction for speed and resource efficiency may also have added value in terms of sustainability.

91. Prompts for designers

- Can recycled or reclaimed materials from accredited sources be used?
- What proportions of the materials for your building are to be locally sourced?
- Are the materials from renewable or 'certificated' sources?
- Have you checked your contractor's 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?

Building materials

92. Building materials should be long lasting, locally sourced and from renewable or re-cycled sources; such materials include those salvaged from demolished buildings – this can help tie-in newly constructed buildings with their surroundings. However, such materials need to be verified to ensure they have not been removed from vulnerable buildings or stone walls.

Local materials

93. Local materials have traditionally contributed to distinctiveness and sense of place. The use of local materials is to be encouraged, provided they are fit for purpose within the principles of sustainable design. Consideration should be given to reusing materials found onsite. For instance, stone removed from the interior of existing traditional buildings to increase room size could easily be

reused to provide stone boundary walling and create a local sense of place. Boundary treatment for all types of development (including agricultural) is particularly important in ensure a development contributes and enhances the public realm. All too often the sensitive consideration of gates, gate piers, and boundary treatments are not given sufficient weight in the overall design.

Low-impact building materials

94. 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.

95. Other low-impact materials may come from natural sources for example, sheep's wool insulation, hemp thermal insulation, turf roofs and straw bales. Alternatively they may be derived from materials and components that are low energy in manufacture or processing.

Types of Materials for agricultural uses

96. Traditional local stone is a material which blends well with the rural environment. Local stone can be used to good effect as a plinth to a portal framed and timber clad building.

97. Vertical timber boarding is a popular cladding material, in particular for livestock buildings, and usually blends successfully with traditional buildings. Horizontal boarding can also be acceptable but needs to be considered with care as it tends to emphasis the horizontal width of buildings, which in the case of large span buildings is something which needs to be reduced not emphasised. Careful use of preservative treatments can also have a positive blending effect for buildings – colours do fade and weather over time and this should be considered when making the choice. Plywood, blockboard, hardboard and similar sheeted timber materials are generally visually unsatisfactory, and are unacceptable.

98. Plastic coated metal sheeting can have a good appearance if a suitable colour is chosen. It requires no maintenance, has an extremely long life, erection is simple and the sheets can be re-used. It is available in a range of suitable colours and profiles. Coloured fibre cement sheeting is also acceptable. As a general rule, the bigger the building, the bigger should be the profile (i.e. the distance between the corrugation which gives the ripple appearance). For smaller buildings traditional rounded corrugation is appropriate.

Colour of Materials in the landscape

99. The use of appropriate colour is very important when trying to make the building fit into its surroundings. Dark colours have less visual impact. Most materials come in a range of colours and the following general advice is given:

- use dark matt finishes or roofs and walls such as brown, dark green, black or dark grey which blend well with the landscape and a building will appear to be smaller.
- choose a darker colour for the roof – the roof reflects more daylight than the walls and so will appear lighter if coloured the same as the walls.
- avoid a large expanse of a single colour for walls – a blend of materials or shades can be preferable.
- colour-coated sheets are preferable to some through-colour pigmented sheets, as they give more even and long-lasting results.

100. Natural Resources Wales has produced guidance on the benefits of using colour in base line analysis to manage change in the landscape.[4] Key points from feedback and discussion in the preparation of the guidance and how this may be used for planning proposals are set out below:

- Consensus that colour was a significant factor in considering development.
- Understanding the role colour plays in contributing to local identity is fundamental to the successful management of change and the integration of new built form into the landscape.
- Guidance for colour and materials selection can also help conserve and promote some of the special qualities of a landscape.
- Previously samples would have been used, but now appreciate that understanding the context is also important to get the colour right in a setting.
- Winter surveys – are best to give an all year-round starting point for the assessment.
- It allows for greater prescription when dealing with sensitive development by using a colour assessment, conditions can then be applied to the development.
- Use of complementary colours and using specific codes will aid with compliance issues. Codes will help with court cases.
- Colours can unify different built elements, enhance legibility or break down monotony.
- White or light colours are commonly used – like a tradition – e.g. farm houses, but the approach makes them stand out in the landscape. Potential to use environmental colours to camouflage new buildings in the landscape in effect, to reduce the clutter or visible mass of new development.

Construction Details on agricultural buildings

101. As farm buildings often consist of large expanses of flat surfaces, good detailing can greatly enhance their appearance. Detailing worthy of

[4] Web address from Natural Resources Wales pending

consideration include eaves, rooflights, gutters, rainwater pipes, doors, windows and ventilation units. Prominent or sensitive locations are likely to require close attention to detail.

102. In sensitive locations the following can improve the appearance of the building:

- the apparent scale of the building will be reduced if the roof overhangs the walls, as a horizontal shadow line is created (natural ventilation will also be improved);
- gutters and rainwater pipes can be important design elements and care should be taken to ensure that they cannot be damaged by livestock and farm machinery;
- doors, windows and ventilation units should be in proportion to the whole building.

103. Problems often arise with large doors, particularly on gable ends. The upper corners of the door openings and the 'runners' should be kept well away from the roof to improve appearance. An industrial appearance to doors should be avoided.

Green Roofs

104. Green or turf roofs use a waterproof membrane to allow vegetation, such as *Sedum*, to grow. They have many benefits including reducing heating and cooling costs, providing wildlife habitat, reducing water runoff and helping developments to blend in with the landscape. There are ample opportunities to provide green roofs on ancillary buildings e.g. garages, garden sheds and stores, both residential and agricultural.

Recycling Facilities

105. Each development should provide ample recycling facilities and adequate storage. This includes internal and external space for recycling bins and waste segregation. Bin stores will minimise the visual impact of the bins on the surrounding area and should be sited in such a way that they are easily accessible from the home and the collection site. An undercover recycling area on farms is also considered best practice and farmers need to ensure that to maximise recycling of plastic wrap and other plastic waste this is kept clean and stored separately.

Water

Water conservation and management

106. In spite of the wet temperate climate experienced in Pembrokeshire Coast National Park, water remains a valuable resource. The prediction is that we will endure more extreme weather conditions with the expectation that we will have hotter periods too. 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:

- water efficient taps and showers and low or dual flush toilets.
- a rainwater collection system.
- avoid specifying power showers.
- a 'greenwater' or 'greywater' system for flushing toilets and washing machines.
- water butts on downpipes
- compost toilets

107. In all new developments a Sustainable 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. Changes to legislation – Schedule 3 to the Flood and Water Management Act in Wales means that developments normally need to provide for SuDS within their boundaries and not expect to divert surface water off their site onto highways or mains drainage systems.

108. SuDS are designed to reduce the impact of new and existing developments with respect to surface water drainage discharges.

109. The idea behind SuDS is to try to replicate natural systems that use cost effective solutions with low environmental impact to drain away surface water run-off through collection, storage, and cleaning before allowing it to be released slowly back into the environment, such as into water courses. This is to counter the effects of conventional drainage systems that can result in flooding, pollution of the environment – with the resultant harm to wildlife – and contamination of groundwater sources used to provide drinking water.[5]

110. All new developments of more than 1 house or where the construction area is 100m^2 or more, require SuDS for managing surface water; Drainage systems for all new developments must be designed and built in accordance with statutory SuDS standards; Local authorities are the SuDS Approving Body (SAB); and SuDS schemes must be approved by the local authority acting in its SAB role before construction work begins. The SAB has a duty to adopt compliant SuDS so long as it is built and functions in accordance with the approved proposals, including any SAB conditions of approval. Pembrokeshire County Council is the SAB for the National Park.

[5] More detailed information is available on the: SudsWales website.

111. Pervious surfaces can be either porous or permeable. The important distinction between the two is:

- Porous surfacing is a surface that infiltrates water across the entire surface but
- Permeable surfacing is formed of material that is itself impervious to water, but by virtue of voids formed through the surface, allows infiltration through the pattern of voids.

112. Pervious surfaces provide a surface suitable for pedestrian and/or vehicular traffic, while allowing rainwater to infiltrate through the surface and into the underlaying layers

113. Advantages of such systems include:

- Reducing peak flows to watercourses
- Reducing the risk of flooding downstream
- Reduced effects of pollution in runoff
- Can be used in high density developments
- Reduced need for deep excavations for drainage – reducing costs
- Flexible and tailored solution that can suit the proposed usage and design life
- Allows dual use of space, so no additional land take
- Removes the need for gully pots and manholes
- Eliminates surface ponding and ice
- Often very resilient to lack of maintenance

114. Dŵr Cymru / Welsh Water is looking at solutions with its 'Rainscape' project and has identified the following useful SuDS:

- **Basins and Planters:** Shallow landscaped basins that capture the surface water runoff from roofs and road and store and treat the surface water. The water filters through the plants within the basin, removing contaminants before being released into the soil or the sewer network. These can be small, and fitted to individual downpipes, or they can be larger, and used within road schemes.
- **Swales:** Long, shallow, landscaped channels that reduce the speed of surface water - cleaning it and where possible allowing it to gradually infiltrate into the soil. Where it is not possible for the water to infiltrate the water into the ground, the swales gradually return the water into the sewer network at a slower rate.
- **Porous paving:** Paving that is designed to allow surface water to pass through it, rather than over it into nearby drains. Porous paving comes in a variety of appealing designs.
- **Filter strip:** Filter strips are strips of ground where water running off a site can pass through it, allowing some or all of it to soak away. The rest often enters a swale or another sustainable drainage system.

- **Grass channels:** These are strips of grass that can be installed on side streets and back alleys of terraces to provide a permeable surface for water to soak through.
- **Geocellular storage:** Geocellular systems can be used to control and manage surface water runoff either as a soakaway or as a storage tank. These can be installed beneath roads and kerbs and help to reduce the speed at which surface water enters the sewer network.[6]

Efficient reuse of water

115. 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 in the design process. Developers should provide occupiers with information on 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.

Landscape and Biodiversity

Landscape

116. National Parks are essentially cultural landscapes. Their building blocks are provided by internationally renowned geology and natural heritage. Landforms have subsequently been moulded by millennia of human habitations – farmland, buildings and settlements, roads, hedges and walls. 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. The Pembrokeshire Coast National Park Authority has prepared Supplementary Planning Guidance on landscape character.

Landscaping for development in a rural setting

117. Tree planting and natural boundary treatments will often be required to integrate and help blend new buildings into the landscape. It will also provide protection from strong winds and habitat for wildlife. The need for tree planting will be influenced by the scale and prominence of the building and the adequacy of any existing trees or planting which screens the building from main viewpoints. Careful siting and choice of materials may reduce the need for tree planting. In agricultural prior notification cases, if the building is likely to have a significant impact on its surroundings, landscaping may be essential if other ways of reducing the impact cannot be found. Landscaping will always

[6] Dwr Cymru-My Wastewater Service RainScape

be a matter for detailed consideration for developments which require planning permission. Artificial bunds even when planted can look out of place and should be considered very carefully as a solution.

118. Submitted planting schemes should consider:

- planting in groups and not in evenly spaced rows,
- choosing species which do well locally and are native to the area;
- planting some distance away to protect sensitive viewpoints.
- the risk of damage to buildings from falling branches, gutters becoming blocked with leaves or root damage to foundations.

119. Planting requirements will normally be the subject of conditions imposed on planning permissions or on approval of details submitted under the agricultural prior notification procedure. These will normally cover the means of protection for existing landscape features within the site, the carrying out of the planting within a specified timescale and future maintenance responsibilities. New trees should be protected from rabbits and stock by appropriate fencing. Maintenance conditions will include a requirement to replant any trees which fail to survive for five years.

120. The Authority has produced a list of native trees and shrubs which occur naturally within the National Park to assist and is available on the Authority's website. Advice is also available from the Authority's Tree and Landscape Officer.

Biodiversity and geodiversity

121. 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 National Park.

122. In recognition of the cultural and historical importance of landscapes and their need for careful management, Cadw has produced a Register of Landscapes of Outstanding and Special Historic Interest in Wales identifying 58 Historic Landscapes across Wales that are of national importance. Both contribute hugely to the special qualities of the National Park.

123. There is now a recognition that biodiversity is not merely a nice-to-have addition in a development, but a necessity if we are to ensure our own futures. As stated in Planning Policy Wales 10: By protecting and enhancing biodiversity, and our natural environment more generally, it will be possible to future proof economic assets in response to the challenges presented by climate change, to promote low carbon and appropriate resource choices which address the causes of climate change and to provide cost effective ecosystems services such as clean air and water.

124. The emphasis on maintaining and creating wildlife habitats through the planning process has been clarified by Welsh Government in a letter from the Chief Planner to all Heads of Planning in October 2019:

> 'where biodiversity enhancement is not proposed as part of an application, significant weight will be given to its absence, and unless other significant material considerations indicate otherwise it will be necessary to refuse permission.'[7]

125. All development including residential, community, tourist and agricultural has a vital role to play in the conservation and enhancement of biodiversity and geodiversity of our National Park. 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, to avoid and minimise damage to the natural environment. The Authority is preparing supplementary planning guidance on biodiversity.

How can development have a negative impact on biodiversity and geodiversity?

126. 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 landscape tranquillity with the introduction of noise – including unintended (e.g. vehicular) and intended (e.g. bird scarers).
- Disturbance to wildlife and the landscape quality by the introduction of new lighting into a previously unlit area and changes in intensity and duration of lighting.

127. Such concerns are not limited to "greenfield" sites; previously developed land - such as old airfields, quarries and industrial sites, can be invaluable to wildlife.

[7] Biodiversity enhancements: guidance for heads of planning | GOV.WALES

Designing for biodiversity and geodiversity: good practice and innovation

128. 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 biodiversity and geodiversity.

Measures

129. A three-point approach is proposed:

- Information – applicants should contact the National Park Authority to request any details that are already known about their site including ecology, geology and archaeology.
- Avoidance or mitigation of harm – this is an absolute minimum measure as set out by National policy.
- Design for enhancement – this is good practice and may include measures for new habitats with protection and interpretation of geology or archaeology

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

131. Prompts for designers

- First, find out which habitats, species and other features exist on the site, and if required have a professional survey carried out. Factor in sufficient time for survey work, as they are often only able to be done in certain seasons.
- 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 and 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 to 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.

- Consider how to minimise the effect of water run- off from hard surfaces into ditches, rivers and streams with the use of SuDS.
- 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 necessary – question how light pollution disturbance can be minimised, for example by use of a full cut off fixture and a low-pressure sodium light source.

Place and Local/Historic Distinctiveness

132. Conservation of the National Park's special qualities and local distinctiveness is paramount. Place making is about ensuring that this protected landscape retains its unique character. The guidance encourages the use of appropriate aspects of local design traditions to produce developments which are fit for purpose – now and into the future. In the preparation of this guidance the aim has therefore been to dovetail these critical issues of sustainability and place-making within the setting of the Pembrokeshire Coast National Park.

133. This is not to say that we shouldn't look at new technologies, but rather take innovative design and fit it into the landscape context. We may on occasion be at the forefront of innovative design and look back and learn from these. Design issues may take the occupation of a building – say 10 years on from construction - for us to ascertain its true sustainability credentials.

134. New developments should be designed to enhance the quality of their surroundings, being sympathetic to the immediate and wider context. This does not eliminate contemporary design; rather it should promote it.

135. Buildings, building groups and settlements must respond to their landscape settings and their visual, aesthetic, historical, cultural and ecological aspects. Traditional form and vernacular details of existing building should be treated with respect. However creating new, modern contexts can also be encouraged, by designing a modern sustainable building which differs from the historical aesthetic of an area, but which makes an enhanced contribution to the landscape and ecology.

136. Modifications including extensions to our older traditional buildings will need to reflect the local character and historic context. Traditional vernacular design and materials would normally be requested for applications affecting windows, doors, porches, chimney stacks, roofs and curtilage buildings. All proposed schemes should be taken through the National Park Authority's pre-application service, which will closely consider conservation aspects.

Design Principles

137. 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 Conservation Area Statements and Proposals for some of the settlements in the National Park, together with the Landscape Character Supplementary Planning Guidance for the National Park. Taking into account landform will be extremely pertinent to new buildings and their impact on the landscape – so this useful source of information is important to such applications.

138. LANDMAP is a national, web-based information system, devised by Natural Resources Wales, 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

139. Providing development with a 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.

140. Patterns of historic settlement are often still evident within existing farmsteads, towns and settlements. Where new buildings or groups are planned they must not obscure these patterns but should seek to 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 settings.

141. Areas in the National Park have been identified by Cadw within the ‘Register of Landscapes, Parks and Gardens of Special Historic Interest’. Where new development falls within these areas it must take particular account of the identified special qualities of the landscape.

Scale, mass and form

142. Development should respond to the physical characteristics of a site, respecting the height, sight lines, building lines, historic development patterns and orientation of development within the locality. Building heights should be considered in relation to street, courtyard or fore-court.

Continuity and enclosure

143. Traditionally, buildings in the National Park 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.

Material qualities and detail

144. Care should be taken in choosing 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.

Accessibility

145. Routes to enable clear links for pedestrians, cyclists and vehicles should be identified and designed at an early stage. Safe routes to public transport should be provided within developments. Whilst 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 Park and should be respected. In designing for legibility, public space should be considered as a sequence of events, e.g. landmark, silhouette, enclosure, vista, focused view, etc. New developments should make clear legible links to the public transport network. Every effort should be made to enable the occupiers of the development to easily access public transport. This should include safe paths with good surveillance that can be used by people of all physical abilities to get to stops and stations, along with clear signage.

146. The argument that there is no public transport in an area is not a reason to reduce opportunities for long term sustainable solutions – the ability to access main vehicular routes with sensitive pedestrian links should be possible. People in rural and isolated areas require more opportunities to use public transport. This may be either by better access to existing services or by the provision of new and innovative services – all of which require safe stops for passengers or safe resting points for peripatetic services such as mobile banks and shops. The Authority is also preparing supplementary planning guidance on parking.

Rural and Farm access routes

147. Existing access roads should be used where at all possible. Extensions to existing access roads or new access roads to farm buildings can have a significant impact on the countryside, particularly where the land is undulating or features of interest are removed. Junctions of new farm roads and the public road will have to satisfy the requirements of the Highway Authority, who may request an alternative siting or specification, for reasons of highway safety or maintenance.

148. New or extended existing access roads should:

- avoid causing harm to features of interest, such as trees and woodland, ponds, the settings of listed buildings or ancient monuments, etc.;
- follow established field boundaries or contours;
- consider the impact on any neighbouring dwellings not connected with the farm;
- new accesses should be constructed in permeable materials;
- take into account public rights of way (such as public footpaths, bridleways, restricted byways and byways and their users; advice should be sought from the public rights of way section before any changes are made to the surface of any public right of way;
- consider dark surfacing as permeable tarmacadam or crushed aggregate can be less noticeable in the landscape. Any hard surfacing of a bridleway running along an access road requires prior consultation and consent of the public rights of way team;
- consider whether new tree planting or hedge banks are appropriate
- seek to reduce visual intrusion into the site – this can be achieved with curving accessways and using hedgebanking and hedging at the point of access onto the highway to limit views into the site and soften the impact of new or improved access ways. (This would also be an opportunity to increase biodiversity and wildlife corridors.)
- Install high quality boundary features and gates and piers rather than merely widening existing gateways.

Diversity and compactness

149. 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.

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

Robust Building

151. 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

152. In general, buildings should be designed for a long life.

- Space standards or strategies should be capable of accommodating change.

- Dwellings should pay regard to the requirements of ‘lifetime homes’.
- If buildings are designed for a deliberately short term use (e.g. less than 20 years) then they should be designed for re-use or re-cycling.

153. The ‘Lifetime Homes’ standard identifies 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.

154. Some of these features can also help mitigate the results of climate change – buildings built with potential flooding in mind will have electrical sockets above ground level. Wider hallways could provide suitable drying space for outdoor clothing. Wider, covered car ports and car charging points would be useful too.

155. 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.

Secure by Design

156. All developments should be designed for neighbourhood surveillance without compromising privacy. Window and door openings should be carefully detailed for security. Secure by Design is a police initiative and there are detailed design guides to assist.

Health and Wellbeing

157. The development must provide adequate private and public open space for residents.

Home working space

158. With increasing opportunity to work from home, providing a space for home working in each dwelling would be advantageous. Working from home has

many benefits, enabling family friendly working hours, reducing commuting pressures and the associated expenses and travel time as well as reducing carbon emissions.

159. 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 normally a suitable room for home working.

Extensions and Annexes

Amenity

160. While there is no right to a view from a residential dwelling, some extensions can appear unreasonably dominant and overbearing when seen from neighbouring houses. Whether or not a proposed extension will be compatible with the residential amenity of neighbouring property will be assessed on the merits of the individual proposal. Factors to be taken into account include:

(a) the shape and size of the extension;
(b) its distance from, and alignment with, overlooking windows;
(c) whether the site is higher or lower than the neighbouring house.

161. Unreasonable domination is an issue only where a main window to a habitable room in an adjacent dwelling will directly overlook a proposed extension. In addition, for unreasonable domination to be demonstrable, the extension must be either(see Figure 1):

(a) higher than a line, perpendicular to the window wall, rising at 25 degrees to the horizontal from the mid-point of the affected windows, or
(b) closer than 10.5 metres to the window.

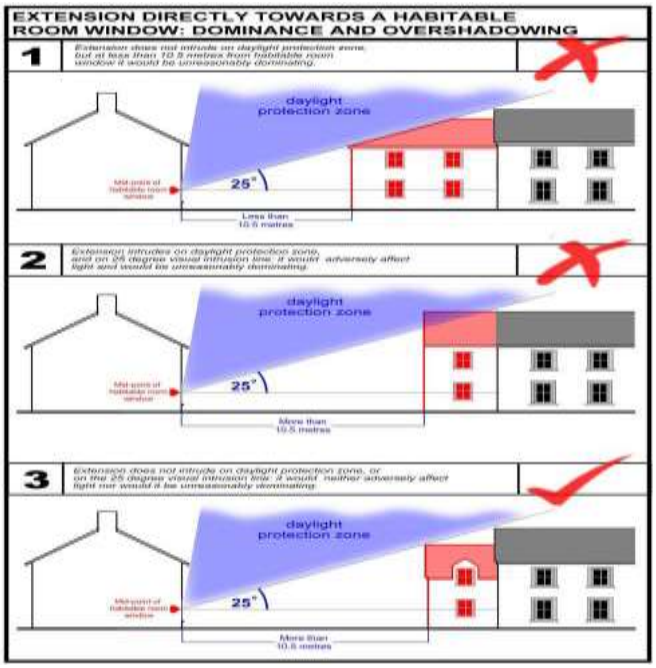


Figure 1

162. It is emphasised that this is only a general indicator of the possibility of dominance. It is not a rigid definition of unreasonable dominance. It mainly relates to the outlook from existing habitable room windows in the front or rear of an adjacent house.

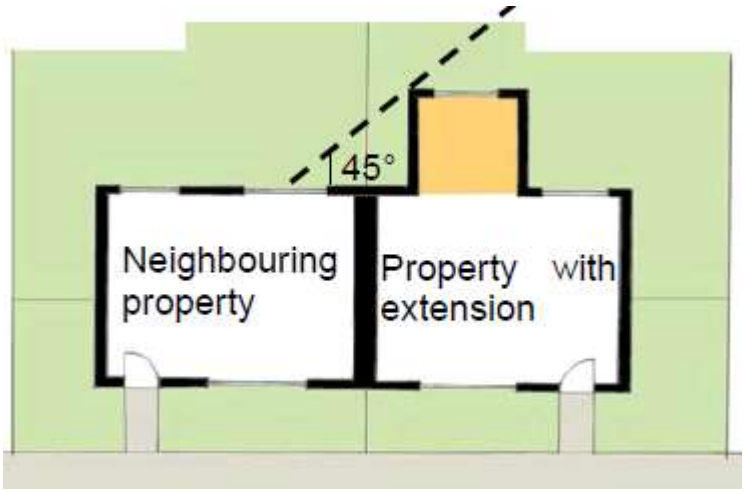
Overshadowing

163. A poorly-designed extension can reduce daylight and sunlight to an unreasonable extent. Neighbouring houses and their gardens can be made gloomy and unattractive.

164. The assessment of loss of light is comprehensively covered by the Building Research Establishment Report 'Site Layout Planning for Daylight and Sunlight – A Guide To Good Practice' (1991). Based on that report the following guidelines are given as an indication of possible overshadowing problems.

165. A habitable room window may be adversely affected by an adjoining extension whose nearest wall is perpendicular to the window if the extension intrudes on daylight protection zones defined by lines drawn at 45 degrees from the mid-point of the window on plan and elevation. Note that if the extension intrudes only on plan, or only on elevation, the reduction in skylight received by the window is unlikely to be significant. See Figure 2.

Figure 2



166. Sunlight is most important in main living rooms in adjoining dwellings and can affect the usefulness of garden areas. Substantial loss of sunlight due to a new extension of an adjoining property can seriously affect residential amenity. An extension that is situated within 90 degrees of due south of an adjoining property may affect the sunlighting of that property, depending on its height, size, and proximity.

167. Providing the information necessary to assess overshadowing with the application can help ensure a quick decision. The application should therefore show the adjacent properties and identify on plan and elevation the habitable room windows likely to be affected by the proposed development. Site layout plans should clearly show a north point. Site section drawings will assist in detailing the topography differences between sites which can also assist officers to consider any potential impact on overshadowing.

Annexes

168. A common reason for house extensions is the need to accommodate relatives. The annexe should be well integrated to the host dwelling, not form a separate dwelling, and not conflict with other guidance notes.

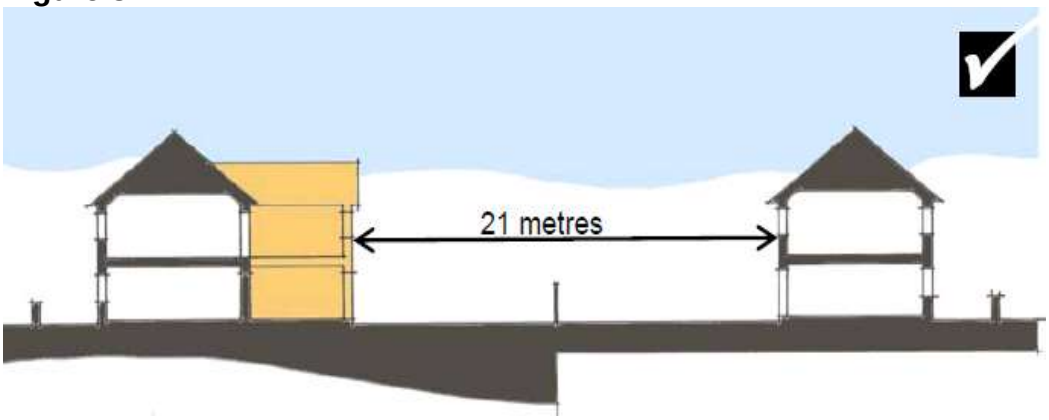
169. In the countryside, an extension that forms an annexe detached from the host dwelling is particularly unacceptable, because of the strong policy constraint on new houses in rural areas. In the countryside the new accommodation should be of small size and be carefully designed to be very easily re-used as part of the original dwellinghouse when family circumstances change.

Privacy

170. A sense of privacy within the house and a freedom from overlooking in at least a part of the garden are aspects of residential amenity. New house extensions should not unreasonably diminish those qualities in neighbouring housing.

171. The minimum distance between directly facing habitable room windows in adjacent properties should normally be 21 metres. Reductions may be acceptable where:
(a) permanent screening can be provided between facing ground floor windows;
(b) the overlooking is between windows fronting on to a highway where established building lines are less than 21 metres apart;
(c) the overlooking is between windows fronting on to a public space where the buildings are used to define spatial enclosure;
(d) the angle of overlooking between windows is not direct, allowing the distance between windows to be reduced as the angle between them is increased;
(e) the overlooked window is a secondary window;
(f) either the overlooked or overlooking window is high level, or is permanently obscured glazed and fixed – usually appropriate only if there is a second clear glazed and opening window serving the same room.

Figure 3.



172. If the extended building is on higher land than the overlooked building, the minimum overlooking distance may need to be increased to maintain the privacy of the latter.

173. Two-storey extensions to the rear of houses can affect privacy if first-floor habitable room windows overlook the backs of adjacent properties. To reduce the loss of privacy it is recommended that the minimum distance from the new habitable room window to the boundary should be 10.5 metres (if directly facing a boundary), increasing to12 metres if the window is to a first floor living room, because of the extended day-time occupancy of such a room.

174. While few rear gardens are entirely private some features can create a sense of unreasonable overlooking in neighbouring property. Balconies often cause the greatest difficulty, but sideways facing windows can also be undesirable. If a balcony is proposed it should be located or screened to prevent or minimise overlooking. The proposed screening solutions could be conditioned to be retained in perpetuity as part of any formal planning process to ensure the privacy is maintained.

Do I need Planning Permission?

175. The site's history, the size of a building and the proposed use of any development will influence whether or not a proposal needs planning permission. The Pembrokeshire Coast National Park Authority offers a pre-application service and can give you further detailed guidance on this question. Please contact the Authority for further advice.

176. Further advice is available from the National Park Authority via the pre-application enquiry procedure. Advice is also available on access, archaeology, landscape character, landscaping, trees, building conservation and biodiversity matters.

177. Please direct your enquiries regarding development and planning matters in the Pembrokeshire Coast National Park Authority to:

Development Management
Pembrokeshire Coast National Park Authority
Llanion Park
Pembroke Dock
Pembrokeshire
SA72 6DY

Tel: 01646 624800 Fax: 01646 689076 Email: dm@pembrokeshirecoast.org.uk

Useful Contacts

Design Commission for Wales

4th Floor
Cambrian Buildings
Mount Stuart Square
Cardiff
CF10 5FL

Tel 029 2045 1964
Email connect@dcfw.org

https://dcfw.org/design-review/

The Design Review Service offered by the Design Commission for Wales can provide independent advice and feedback on individual schemes and framework documents.

Planning Aid Wales

www.planningaidwales.org.uk

Tel 02920 625000
Email info@planningaidwales.org.uk

Planning Aid is an independent charity providing advice and support on all aspects of land use planning.

Natural Resources Wales

Customer Care Centre
Ty Cambria
29 Newport Rd
Cardiff
CF24 0TP

Tel 0300 065 3000 (Mon-Fri, 9am-5pm)

Email enquiries@naturalresourceswales.gov.uk

NRW's LANDMAP https://landmap-maps.naturalresources.wales/

Pembrokeshire County Council (PCC)
County Hall
Haverfordwest
Pembrokeshire
SA61 1TP

Tel 01437 764551
Email enquiries@pembrokeshire.gov.uk

PCC is the highway and SABS authority for the National Park.

Pembrokeshire Coast National Park Authority (PCNPA)

Llanion Park,
Pembroke Dock
SA72 6DY

Tel 01646 624800
Email info@pembrokeshirecoast.org.uk

PCNPA is the planning authority for all land within the National Park.

Cadw

Welsh Government
Plas Carew
Unit 5/7 Cefn Coed
Parc Nantgarw
Cardiff
CF15 7QQ

Tel 0300 0256000
Email cadw@gov.wales

https://cadw.gov.wales/advice-support

Dyfed Archaeological Trust

The Corner House
6 Carmarthen Street
Llandelio
SA19 6AE

Tel 01558 825986
Email info@dyfedarchaeology.org.uk

Dŵr Cymru/Welsh Water

https://www.dwrcymru.com/en/Developer-Services.aspx

National Farmers Union Cymru

Tel: 01982 554200

Farmers Union of Wales

Llys Amaeth Plas Gogerddan Aberystwyth Ceredigion SY23 3BT Tel 01970 820820 Email post@fuw.org.uk
Farmers Union of Wales Pembrokeshire branch Unit 4 Haverfordwest Business Centre Merlins Court Winch Lane Haverfordwest Pembrokeshire SA61 1SB Tel 01437 762913 Email pembrokeshire@fuw.org.uk
Planning Portal (Wales) Please ensure you are on the Wales planning site and not the site relating to planning in England – planning law is slightly different. https://www.planningportal.co.uk/wales_en/
West Wales Biodiversity Information Centre Landsker Business Centre Whitland Carmarthenshire SA34 0NG Tel 01994 241468

Weblinks accessed March 2020