



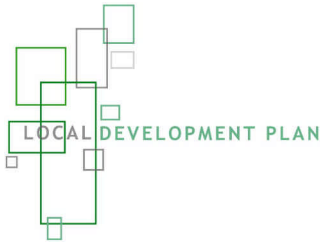
SHETLAND ISLANDS COUNCIL

INTERIM PLANNING POLICY AND GUIDANCE

Reducing Carbon Emissions in
New Development



SEPTEMBER 2008



Shetland Islands Council

Interim Planning Policy Reducing Carbon Emissions in New Development

As part of its commitment to achieving sustainable development the Council requires to assess the environmental impacts of building and construction projects and ensure that the Scottish Government's target for zero and low carbon developments are met, through the use of energy efficient, micro-generating and decentralised renewable energy systems. Energy requirement is determined at the design stage and there is significant potential to minimise energy demand through adopting good practice in the design and construction phases.

This Interim Planning Policy and Guidance responds to the Scottish Government's requirements within SPP6 : Energy. The publication of SPP6 postdates both the Shetland Structure Plan and Shetland Local Plan, however, in responding to the Scottish Government's requirements the Interim Planning Policy provides an interpretation of Shetland Structure Plan Policy SPENG5:

Proposals which seek to minimise energy consumption by means of location, layout, design, construction and alternative technology will be considered favourably where the proposal does not conflict with other Structure and Local Plan policies.

This Interim Planning Policy and Guidance will apply to all new developments in Shetland which trigger the threshold outlined in Policy LPZCD Policy 1.

Status

Although this Interim Planning Policy is not itself part of the statutory plan, it provides the interpretation of Policy SPENG5 in the light of national guidance issued by the Scottish Government in SPP6. It is the latest statement of Council Policy and is therefore a material consideration for all developments which trigger the threshold outlined in Policy LPZCD Policy 1.

Additional Guidance

The Development Plan Officers within the Planning Service are currently preparing a Guidance Note entitled *Towards Sustainable Construction* which will provide additional detailed guidance which is considered appropriate in the Shetland context.

Policy LPZCD Policy 1 Reducing Carbon Emissions in New Development

All **applications proposing development** where the cumulative total of floor space exceeds 500 sq.m. require to incorporate on-site zero and/or low carbon equipment or methods contributing at least an extra 15% reduction in CO₂ emissions beyond the 2007 Building Regulations Carbon Dioxide Emissions Standard.

Applicants should consider how to meet the requirements of this guidance at an early stage of planning. An energy statement should be submitted with the planning application outlining the methods to be taken to meet the requirements of this guidance.

In order to demonstrate that the requirements of this policy are being met the following information must be submitted as a supporting document to the planning application:

- For dwellings: The Government's Standard Assessment Procedure for Energy Rating (SAP 2005) should be undertaken.
- For all other developments: The Simplified Building Energy Model (SBEM) should be undertaken.

Justification: National policy regarding renewable energy is determined by SPP6. Paragraph 36 of SPP6 sets a target for the provision of on-site low carbon and renewable sources of energy in new developments. The target is at least an extra 15% reduction in carbon dioxide emissions beyond the 2007 Building Standards Carbon Dioxide Emissions Standard and this standard is to apply to all future applications proposing development with a total cumulative floor space of 500 sq.m. metres or more.

The SBEM software program incorporates a range of factors, which influence energy use to predict the overall CO₂ emission levels. The building designer selects and inputs details of the design of the building into the relevant program which then calculates the predicted emissions. This provides the designer with the flexibility to vary technologies to achieve the policy target. At this stage location, siting and building design should be considered. This will reduce the overall energy requirements of the building and therefore the contribution from low zero carbon equipment that is needed to meet the percentage reduction target.

Software Availability

BRE approved SAP 2005 software is available to the public¹. It incorporates a function that with 'Scotland' selected automatically generates the target carbon dioxide emissions level (TER) when the fuel type is selected and the notional dwelling dimensions and living area fraction have been entered into the program. The information submitted should demonstrate that the Dwellings Emission Rate (DER) is at least an extra 15% reduction on the Target Emission Rating (TER).

The SBEM is also available². The Target Emissions rating (TER) should be calculated by inputting the size and shape data into the calculation methodology, the Scottish standard package of construction and building services performance measures and include the formula that reflects the type of heating and cooling system for the building. The Building Emission rate (BER) is calculated by inputting the data for the proposed building design. These calculations should show that the resulting BER indicates at least an extra 15% reduction on the TER.

Location and Design

Locational siting and design considerations have the potential to reduce the total energy demand and CO₂ emissions so that the actual amount, which the 15% represents will be proportionally reduced. This in turn will result in less low and zero carbon equipment being necessary.

Carbon Reducing Technologies

The following technologies can be used to reduce carbon emissions from new developments. The Energy Saving Trust³ can provide further details on renewable technologies.

Passive Energy Efficiency Measures	Operational Energy Efficiency Measures	Renewable Technologies	Emerging Technological Measures
<ul style="list-style-type: none"> • orientation • day lighting • natural ventilation • air tightness • avoidance of wind chill 	<ul style="list-style-type: none"> • heating system • insulation • lighting & appliances • glazing • (micro) combined heat & power • heat exchange recovery systems 	<ul style="list-style-type: none"> • photovoltaic • solar power • solar water heating • micro wind • biomass • micro-hydro • heat pumps (ground, water, air) 	<ul style="list-style-type: none"> • hydrogen fuel cells • gas from anaerobic digestion • solar air collectors • geothermal

¹ Information on software and guidance can be obtained from www.bre.co.uk/sap2005

² A version of SBEM is available at www.ncm.bre.co.uk

³ www.energysavingtrust.org.uk

**Policy LPZCD Policy 2
Technical Constraints**

In the event that technical constraints exist and the development cannot meet the 15% reduction in CO₂ emissions beyond the 2007 Building Regulations Carbon Dioxide Emissions Standard, the applicant must demonstrate that all practical methods to meet the requirements have been investigated.

Provision of equivalent carbon savings **off-site** will apply where the planning authority agrees that sufficient justification has been provided. This may involve the installation of equipment on another site or building or offsetting. The amount of carbon emissions to be provided will be 15% of the 2007 Building Regulations CO₂ emissions standard for the application site. Alternative provision may be secured by a Section 75 Agreement.

Financial considerations on their own do not constitute a technical constraint.

Justification: It will be exceptional to find that all types of low zero carbon equipment are technically constrained on a site, however, there may be situations where space is limited or locations restrict particular emissions (air quality management areas). Other material considerations such as built heritage designations may require to be considered. The provision of alternative provision **where justified** will however ensure that every development is contributing to carbon emission reduction and meets the targets specified by SPP6.

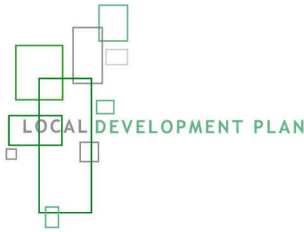
**Policy LPZCD 3
Installation of Zero or Low Carbon Development Equipment**

Planning applications **which trigger the threshold outlined in Policy LPZCD 1** should clearly identify the zero or low carbon development equipment or methods being incorporated to meet the 15% reduction in CO₂ emissions beyond the 2007 Building Regulations Carbon Dioxide Emissions Standard.

The siting, location and operation of individual equipment must comply with the Shetland Islands Council policies relating to amenity and safety.

Justification: Whilst encouraging and supporting micro-generation proposals on existing buildings that address the target requirements, proposals must satisfactorily address the Council's environmental, amenity and safety safeguards within existing development plan policies.

(Adopted by the Council on 10 September 2008 as Interim Planning Policy)



Shetland Islands Council

Reducing Carbon Emissions in New Development

Guidance Note

SPP6 : Renewable Energy (2007)

<http://www.scotland.gov.uk/Publications/2006/02/14104926/0>

Low and Zero Carbon Developments (LZC)

A key role of the planning system will be to support a move towards new low and zero carbon developments through the use of energy efficient, microgenerating and decentralised renewable energy systems so that carbon reductions are considered and secured at the design stage of projects.

The planning system already supports the delivery of sustainable development in new buildings through locational, siting and design considerations. In addition, development plans must include policies on the provision of low carbon and renewable sources of energy which complement the increasingly high levels of energy efficiency required by building regulations. Policies should ensure that in all instances opportunities for incorporating these technologies are fully explored by developers as part of the planning application process. All future applications proposing developments with a total cumulative floorspace of 500 sq.m. or more should incorporate on-site zero and low carbon equipment contributing at least an extra 15% reduction in CO₂ emissions **beyond** the 2007 building regulations carbon dioxide emissions standard.

Applications should only be exempt from these targets where developers are able to demonstrate that technical constraints exist and in such circumstances policies should ensure that developers provide equivalent carbon savings elsewhere in the area.

PAN 84 : Reducing Carbon Emissions in New Development (2008)

<http://openscotland.gov.uk/Publications/2008/03/06133051/0>

Scotland's net CO₂ emissions have fallen by 14% since 1990, but demand for energy continues to rise. Everyone must take responsibility by using less energy and using energy more efficiently. Standards on CO₂ emissions obliges a designer to consider new buildings in a holistic way – energy performance requires to be dealt with as a complete package rather than looking only at individual elements. The Scottish

Government's *Designing Places* (2004) confirms that design is a material consideration. It highlights the opportunity for making efficient use of resources from an early stage in the design of development. SPP6 refers to this in terms of locational siting and design considerations.

Location	Proximity	... to a variety of uses, such as retail, leisure and offices, will encourage people to walk, cycle and use public transport rather than the car
	Higher Density	...development in a suitable well connected location will use land more efficiently
	Re-use	... of existing buildings will reduce requirements for new materials which are often energy intensive to manufacture
Siting	Shelter	... from the elements provided by landform, trees and other buildings will reduce exposure and loss of energy from buildings.
	Orientation	... of buildings to maximise solar gain will reduce energy demand.
	Passive Measures	... such as those above can also reduce maintenance costs
Building Design	Layout	...of rooms within buildings: habitable rooms should be located to the south
	Adaptable	... buildings that can be adapted to a variety of uses.
	Materials	... re-use materials and select materials which can be re-used and use materials which have high performance standards, e.g. timber frames, wall insulation and glazing.

The inclusion of the above measures in the design of development will reduce their total energy demand and CO₂ emissions so that the actual amount which the 15% represents will be proportionally reduced. This will result in less low and zero carbon equipment being necessary.

Energy Statement

Applicants should consider how to meet the requirements of this guidance at an early stage of planning. The energy statement to be submitted with the planning application should:

- demonstrate how the developer intends to incorporate the use of renewable resources in the development
- demonstrate how they propose to minimise the use of non-renewable resources within the development
- demonstrate how the design minimises energy demand (for example, through environmentally friendly layouts, energy efficient design and thermally efficient buildings)
- demonstrate how the proposed renewable energy technologies suitably address the energy demand.

The energy statement should detail the measures to be taken to meet the required standards which may involve any of the following measures (or others not listed, given the emerging nature of this technology):

- improved building insulation – walls and roof
- reduction of heat loss through higher build quality, door frames, window frames, etc.
- draught proofing and reduction in wind speed across the development site by working with the topography of the site
- reduction in heat loss through higher build quality glazing
- maximise the use of solar gain by south facing developments or orientation of main habitable rooms on the south elevation or use of sunspaces which enhance passive solar gain and reduce heat loss
- exploit south elevation or larger and higher number of windows with less glazing and smaller windows on the north elevation (nb: use of extremely large windows on the south elevation may outweigh solar gain)
- avoid overshadowing by adjacent buildings
- connect to district heating where available
- exploit solar power, passive solar systems, photovoltaic cells and solar water heating systems for energy use in the home
- exploit wind power for energy use in the home
- utilise heat pumps for energy use in the home – ground source, water source or air source
- consider alternative and emerging means of construction to achieve greater insulation and energy efficient build quality
- the long term design of the house should be considered from the outset in order to avoid expensive and obtrusive extensions

Larger developments:

- redevelopment of brownfield land
- the location of development should encourage use of more sustainable forms of transport

Useful Clarifications

- The 15% reduction cannot be applied to a change of use as this equates to a *conversion* under the building regulations. This Interim Planning Policy does not relate to development which triggers a change of use application, or the conversion or re-use of buildings.
- Cumulative floorspace of 500 sq.m. or more – may be more than one dwelling or building such as a block of flats or a housing development in which the aggregate floor area of all the proposed dwellings exceeds the threshold. The target is a material consideration for all development exceeding this threshold. Equipment may be attached to the building or within the site boundary.
- PAN 84 p.8 provides definitions and eligible LZC equipment.
- Information on issues relevant to particular technologies can be found in PAN45 (Renewable Energy Technologies (2002) *for micro-hydro* and PAN 45 Annex:

Planning for Micro Renewables (2006) *for micro-wind, solar, heat pumps and biomass*)

- The planning policy is a separate requirement to the building standard
- The applicant has to provide the necessary information to demonstrate that the proposal complies with the policy target when submitting a planning application or discharging a planning condition. PAN 84 p.10 and 15-21 provide the required calculations. Planning authorities should be able to accept the calculations provided by the applicant in the same way as other information, such as proposed materials are accepted. It is not expected that planning officers will carry out the calculations.
- The policy target in SPP6 is specific to CO₂ emissions from **energy performance** which is distinct from **environmental performance**.
- Outline planning permissions: the developer should provide a statement of the intended LZC equipment to meet the target percentage reduction rather than finalise the details of the actual buildings. Once the applicant completes the design of the development they should submit the energy calculations within an energy statement with the reserved matters application. Details of the process and model conditions can be found on p.12 of PAN 84.

Technical Constraints:

(on their own, financial considerations do not constitute a technical constraint)

Examples:

- areas where the supply of natural energy sources may be obstructed by another building or structure (overshadowing or wind screening)
- areas where space is limited (storage, pipes, delivery of fuel)
- locations which restrict particular emissions
- locations with an unsuitable type of ground or building for the location of the equipment
- buildings with limited roof/wall areas or angles suitable for the equipment

Constraints may also be imposed by designations (eg listed buildings, conservation areas). but should be considered in relation to the merits of individual applications.

Provision of Equivalent Carbon Savings Elsewhere

Provision will apply where the planning authority agrees that there are technical constraints to achieving the emissions reduction target on-site. These should normally be secured by s.75 Agreement and may involve the installation of equipment on another site or building, offsetting or payment into a local authority fund, which is used to reduce carbon emissions if this is available. The amount of provision will be directly related to the requirement for the application site.

It should be noted that whilst tree planting is generally accepted as a means of offsetting CO₂ outputs where technical constraints prevent buildings meeting the emissions target, trees in Shetland are generally smaller and slower growing and therefore the quantity of carbon that they sequester and the rate at which they do so will also be lower. To achieve permanent sequestration it would be necessary to either establish a self-sustaining woodland in which trees regenerate naturally or ensure repeated replanting. Conditions within Shetland would generally mitigate against the establishment of a self-sustaining woodland and repeated replanting may be difficult to monitor and control over long periods of time. Where quantified carbon offset is required, a more assured means of achieving this should be considered first.

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