Small scale housing development

- individual new houses and developments up to five homes in the countryside

Argyll Bute COUNCIL

Argyll and Bute Council; Sustainable Design Guidance 1 September 2006

Introduction

Small-scale developments located in rural areas have the chance to play an important role in the future success of Argyll and Bute as an environmentally friendly, economically successful, high quality place in which to live and work. In addition to suggesting ways to make new developments attractive, energy efficient and flexible, this Design Guidance suggests points to consider when designing and siting buildings so that they do not spoil their landscape setting. It also gives guidance as to what kind of information is needed for each stage of the planning process.

This is the first stage of the Design Guidance, and is intended as a general introduction to the topics noted below. Each topic is published as standalone guidance in order to make it as easy as possible to meet the needs of applicants and the authority when considering specific types of developments in Argyll and Bute.

Topic 1 **Small Scale Housing Development** - individual new houses and developments of up to Five homes in the countryside.

Topic 2 **Larger Housing Developments** - that extend existing settlements or are standalone.

Topic 3 **Working with Argyll and Bute's built heritage** - urban infill developments; extending and re-using existing buildings; Listed Buildings and Conservation Areas.

Topic 4 **Illustrating Opportunities** - case studies sourced from throughout Scotland, as well as the Argyll and Bute area.

The Design Guidance is viewed as an ongoing reference document and it is intended that more detailed Guidance and actual examples of good practice within Argyll and Bute can be added at a later date - such as completed houses or small developments and sample design statements.

This Guidance takes into account Planning Advice Note 68*, (PAN 68) published by the Scottish Executive in August 2003. It sets out the role that Design Statements can play in ensuring appropriate, sustainable developments and explains how Design Statements can be used as a tool for applicants and planning officers to test the thinking behind design decisions, and to consider whether or not proposals are suitable for their landscape setting. It also stresses the importance of constructive discussion and negotiation between applicants, designers and planning officers at an early stage in the Design Process. It recommends that Local Authorities should provide Design Guidance for specific topics and areas, as well as encouraging applicants to use Design Statements in the planning application process. All of this is to ensure that in the future, the community benefits from better, more sustainable buildings and successful public places.

In line with the aims outlined in PAN 68, this Guidance considers the specific issues that applicants and designers should think about when preparing proposals for rural developments. It outlines some appropriate solutions and illustrates examples of good designs, both within Argyll and Bute and elsewhere in Scotland.

Whilst this guidance aims to illustrate why certain designs will not work well in particular situations, it is not intended to restrict applicants' options for developing innovative and individual design solutions for sites in Argyll and Bute. Instead, this guidance aims to encourage individual, high quality design solutions for the very special sites and places within the Planning Authority's area.

(*can be found on the internet at http://www.scotland.gov.uk/library5/planning/pan68-00.asp)

Sustainable Development

What is sustainable development?

"development that meets the needs of the present, without compromising the ability of future generations to meet their own needs".

[Meeting the Needs - Scottish Executive Environment Group]

Both the new Local Plan and this Design Guidance are intended to encourage high quality **sustainable development** that reflects the technology and aesthetics of the 21st century.

More than half the resources consumed globally are used in construction, and 45 per cent of energy generated across the world is used to heat, light and ventilate buildings, with a further 5 per cent arising from constructing them. A sustainable approach to development aims to minimise any adverse impact on the environment by reducing the resources that buildings use, both in terms of energy and materials. The Scottish Executive's Climate Change Programme seeks to highlight the important contribution that energy efficiency can make to good design through the correct siting and orientation of buildings, and the right choice of materials.

The overall aim of the Design Guidance is therefore to include advice about sustainable choices for materials and renewable technologies.

Argyll and Bute has such a diverse range of landscape and settlements that sustainable solutions suitable for one location may not be appropriate for another. The aim of this Guidance, therefore, is to explain the broad principles which underlie sustainable design, rather than to recommend specific products, suppliers, manufacturers or systems. This Guidance therefore highlights:-

- **Making the best use of available resources** - by reducing energy loss, using less energy in construction and using renewable energy sources
- **Minimising environmental damage** - by minimising pollution and designing healthy spaces and places
- **Minimising the effect of climate change** - by considering the impact of higher rainfall, stronger winds and the increased risk of flooding

More information about sustainability and sustainable development is available from the Scottish Executive Web Site - **www.scotland.gov.uk.**

Consultation

As part of the ongoing local plan review process, Argyll and Bute Council (in partnership with SNH), have worked with Anderson Bell Christie to provide a practical Design Guide intended as a catalyst for good sustainable design.
An initial consultation document was posted on the Argyll and Bute Council's website and a series of workshops were held which were attended by stakeholders, building professionals and members of the public in order to maximise opportunities for consultation
Contributions and suggestions of good and bad design from attendees have been incorporated into this document; locations and buildings suggested at the workshops are used as examples and case studies in the Design Guidance

Key Aims

In response to the feedback obtained through the web-based consultation document and workshops , this Design Guidance therefore :-

- **Identifies good design as fundamental** - not as an "optional extra" to be tagged on if the budget allows

- **Recognises that there are a range of possible design solutions** - from good quality buildings whose architectural style has been developed from the traditional buildings around them, to innovative contemporary design.

- **Integrates new development into a distinctive area** - "integrated not invisible" - Argyll and Bute has an outstanding, beautiful landscape and is an area with its own very definite history and identity. This Design Guidance seeks to encourage designers to learn from the past but not copy it; to gain an understanding of how traditional buildings respond to their setting and to use this knowledge to develop proposals that will be appropriate and contribute to the area.

- **Promotes local distinctiveness** - the Guidance suggests that new designs should respond to the identity and character of buildings located beside and around them. Designers should use these principles to create houses which reflect local character, providing a range of developments which sit happily in their landscape setting and avoiding those that 'could be anywhere'.

- **Provides a loose framework, which can grow organically** - Argyll and Bute needs to retain and attract skilled, entrepreneurial workers to a large number of geographically diverse rural locations, for a sometimes very individual way of life. The Design Guidance needs to recognise this, and be sufficiently flexible to address the needs of residents for new homes that respond to their requirements now and in the future.

Small Scale Development

The construction of new small groups of houses in the countryside supports existing services and facilities such as schools and local shops, and helps to sustain economically viable, attractive and sustainable communities. In general it is presumed that such groups might best be extensions of existing towns and villages, but in some cases new homes will be sited in undeveloped areas or open landscape referred to as **Rural Opportunity Areas** within the Local Plan. In these areas it is important that the design of new homes and the way that they are sited is attractive and appropriate.

In submitting an application for Planning Consent, applicants or their agents will need to demonstrate that they have thought carefully about the specific, key issues associated with their designs and that they have arrived at the right kind of design solution. Applicants are strongly advised that they should engage the services of a suitably qualified and skilled designer.

Design proposals should not only be developed from the Client's development brief, but should also be based on **an analysis of the site itself.**

Applicants will be asked to demonstrate that their proposals are both designed and sited to suit their particular location.

Although this Guidance does not seek to be prescriptive about the issues which need to be considered, a skilled and informed designer will generally formulate proposals as a result of an individual response to the issues outlined below;-

Key Issues

The Site

Site/Area Appraisal - This should not be confined to the immediate boundary of the site, but should consider the wider area within which the proposed development sits. It should be analysis of the following: -

- **Site Character** – contours, orientation, exposure, adjacent development pattern, planting, boundaries, prominence etc.
- **Site Function** – existing and proposed roads, pedestrian routes, access, overlooking, blight etc.
- **Site Opportunities** – views, connection to services (eg. water and sewerage) and transport, retention of features, sources of material; the ability of a development to be a landmark, to stimulate or consolidate other development etc.
- **Site Specific Issues** – historic, architectural; cultural, economic etc.

The Brief

Size and type of dwelling/s

- **Garden/s -** their size and disposition private and public
- **Car parking** - type and location
- **Other brief specific issues**

Contents

Action Checklist 9

Developing Proposals 12

Siting

1.1 overview 16
1.2 the problem - poor siting 18
1.3 better siting - learning from the traditional approach 20
1.4 sustainable siting - settlement patterns 22
1.5 sustainable siting - prominence and visibility 24
1.6 sustainable siting - sunpath and shelter; flexibility; plot size; security; underbuilding 26
1.7 infrastructure - access 30
1.8 infrastructure - servicing 32
1.9 infrastructure - designing for climate change 33
1.10 infrastructure - renewable energy 34

Character

2.1 massing, proportion and scale 38
2.2 material choices 44
2.3 construction details 48
- minimising energy use 55
- materials with low embodied energy 56
- healthy spaces and places 57
- dealing with climate change 59

Acknowledgements and Bibliography 61

Action checklists
Developing proposals

Action checklists; small scale development

1 **Establish a** PATTERN FOR THE DEVELOPMENT **-** The site layout or siting of the building should be based on a considered response to the development pattern of settlements and buildings in the immediate area.
LEARN FROM THE PAST - AVOID the worst features of some new developments such as linear ribbon development (road frontage sites), mounding, developments which intrude on the skyline and inappropriate groupings.
CONSIDER a contemporary interpretation of the traditional approach using contours for shelter and grounding buildings in the landscape.

2 **Consider the LANDSCAPE AND BUILT SETTING -** New development must be carefully considered in the context of its setting The natural landscape and features of Argyll and Bute will often be the most dominant visual feature and development must appear appropriate for its setting. Most buildings need to be well integrated into the landscape. To achieve this, retain as much as possible of the existing landscape and boundaries within a site or consider renewing or replacing existing planting with appropriate species. Consider the prominence of a proposed development, either-
MINIMISE IMPACT ON LANDSCAPE SETTING by integrating sensitive, low-key, cohesive development within its surroundings or INTRODUCE HIGH QUALITY through the design of exemplar contemporary landmark buildings

3 **Design for LONG TERM SUSTAINABILITY -** take account of the need for shelter (natural and built features and wind direction) and utilise solar gain and natural ventilation. Site buildings to allow for future extensions such as garages or outbuildings. Plan buildings and design layouts taking account of security. Housing types and size should be appropriate for their plot. Design-out opportunities for overlooking by good planning - not simply by setting buildings apart form each other.

4 **Design for ACCESSIBILITY** - think about access issues at the earliest possible stage of site development. Refer to relevant publications to ensure that plan dimensions are suitable for all **(eg. Lifetime Homes; Joseph Rowntree Foundation, Housing for Varying Needs Guidelines; Communities Scotland; RIBA Guidance Notes for the Disability Discrimination Act)**

5 **Consider a SUSTAINABLE DESIGN FOR INFRASTRUCTURE, ACCESS, PARKING AND SERVICING -** Consult early with service providers to ensure that design proposals can realistically accommodate their requirements, and with the Roads Department to establish access requirements can be complied with and if necessary check dimensions; use simple, contemporary entrance treatments. Ensure adequate parking can be provided without dominating the proposals.

Provide a suitably screened location for storage of fuel and waste; provide facilities for recycling.
Use lighting which is appropriate for its rural location and which minimises light pollution.
Consider the use of a sustainable sewerage treatment system and recycling rainwater.
Consider the use of renewable energy systems such as wood fuel, solar energy, wind and water power

6 **Consider the MASSING, PROPORTION AND SCALE of the house or development** - Scale buildings to suit landscape and house type; larger buildings need bigger sites. Simple, well proportioned building forms based on a narrow plan are often appropriate in the rural landscape. Most large houses require to be designed as a series of elements in terms of massing. Minimise the extent of unused and undesigned underbuilding.

7 **Consider MATERIALS AND CONSTRUCTION DETAILS** - take account of the building's location when choosing materials; many materials and details are less appropriate for exposed locations. Consider the use of locally appropriate, traditional colours. Avoid 'artificial' decorative features which are not related to the context, locally appropriate tradition or the buildings function. Where the site is prominent – unless design is of the highest quality, use a more traditional choice of materials so that the development is sensitive. Where site is less visible – a more individual approach can be taken.

Action checklists; small scale development

8 **Carefully design WINDOWS AND OPENINGS** Provide the right balance between wall and windows. Larger openings work well if they are modelled on those used in traditional buildings. It is often appropriate to emphasise the 'solidity' or mass of walls as generally existing buildings in Argyll and Bute have a larger proportion of wall to window. Generally maintain vertical proportions of windows and openings, using other proportions to create features. Dormer windows should be designed very carefully taking account of their construction and materials. They are most often successful as a continuation of the wall, or as smaller 'light and elegant' features within the roof. Avoid dormers with clumsy, heavy detailing and proprietary verges. Use windows of a material appropriate to the design of the house. e.g. some UPVC windows have section sizes which are larger than metal or timber ones and this has an impact on the character of the building.

9 **Consider the use of PORCHES AND SUNSPACES** Design porches and conservatories appropriately taking account of how they will affect the existing building. Avoid proprietary porch designs which look incongruous with some traditional buildings. Sunspaces/conservatories should be located and designed taking account of their visual impact as well as their thermal performance. Where possible incorporate draught lobbies at exposed entrances to houses. Where appropriate locate building entrances in the most sheltered area or design the plan to give them shelter.

10 **GARDENS AND PLANTING** Use landscape to integrate buildings with their setting. Reduce the openness of the site by breaking it down into different areas
Buffer the house from the road **by using naturalistic planting leaving existing hedges intact wherever possible**

BOUNDARY TREATMENTS Retain rural character by using appropriate materials in the right way – **Timber, Post and Wire Fences, Hedges, Stone**

Sustainable Design Summary

DESIGN FOR MINIMAL ENERGY USE	PAGE
It is important to orientate buildings for shelter (wind direction) and solar gain (sun path)	26, 27,49
Provide an integrated package of energy efficiency measures (these can include for example,extra insulation and low energy glazing)	50, 55
Consider main source of heat and power (use renewables if possible)	34, 35
For larger developments consider deriving 10% of power from renewable sources	
DESIGN FOR MINIMAL ENVIRONMENTAL IMPACT	
Use materials with low embodied energy - renewable materials, local skills and materials, recycled and reclaimed materials	45, 56, 57, 58
Minimise water use - design drainage and sewerage to avoid flooding and pollution	32, 33
Recycle waste	32, 33
DESIGN FOR CLIMATE CHANGE	
Design for higher rainfall	33, 59
Design for flood risk	33, 59

Developing proposals

Are you planning to develop a small site for a new house or houses? If so you are STRONGLY advised to appoint an Architect or suitably qualified professional person with the design and technical experience and skills to ensure that your project makes the most of this 'once in a lifetime' opportunity, safeguards the special qualities of Argyll and Bute and contributes to its long term sustainable development.

The first stage for your proposed project is to obtain Planning Consent from Argyll and Bute Council. Below is the process that the Council recommends in order that you or your Architect might most efficiently develop and discuss your proposals with Development Control and therefore most swiftly obtain a decision on your development.

Determine The STATUS Of Your Site

Refer to the Local Plan; what designation does your site have ?
see the Argyll and Bute Council website for details **(http://www.argyll-bute.gov.uk/localplans/index.htm)**

Is The Setting For Your Proposals Designated As "Special?"

- Is it in a Conservation Area or is a Listed Building ?
- Is it beside a Listed Building or Scheduled Ancient Monument?
- Is it within Open Countryside?
- Is it within an SNH Protected area such as a SSSI (Site of Special Scientific Interest) NSA (national scenic area) or NNR (national nature reserve)

Find out by contacting your local Planning Department - ask to speak to the local Development Control Officer

NO

DEVELOP YOUR INITIAL IDEAS

Taking account of the following Design Guidance analyse your site and develop your initial ideas in 'sketch' form.

KEY THINGS to consider at this point are:-

- **What development pattern do you intend to adopt?**
- **Where do you intend to put the building/s on the site?**
- **What size is the development relative to the site?**

KEY CONSULTATIONS

- **Scottish Water** - is there potential for a mains supply to the site
- **SEPA/Scottish Water** - what are requirements for sewerage and land drainage?
- Where the site will accommodate more than a single house, **think about SUDs drainage systems** from the outset of the project.
- **Argyll and Bute Council Roads Department** - check requirement for the location of new access roads and the possible upgrading of older access ways and entrances.

YES

If so, this may affect what you can do – the Development Control Officer will advise.

Extra consents may be required (such as Listed Building Consent)
Outline Planning Consent may not be accepted in some areas

You will need to consult other organisations such as Historic Scotland and SNH, in addition to the Planning Department, in order to ensure that your proposals fit in with their requirements.

You can find out more by contacting your local Planning Department and asking to speak to the local Development Control Officer

DESIGN STATEMENTS

You are encouraged to compile a Design Statement* which explains how proposals are designed to fit in with their context and how proposals are seen from key viewpoints. This does not need to be a lengthy document and should not duplicate the content of the Planning Application. Illustrations should relate clearly to the text and can include photographs, sketches, diagrams, photomontages, concept diagrams, computer-based images and artists' impressions. You can start to collect information for your Design Statement from the earliest stages of the process outlined on this chart

**there is guidance on Design Statements in Scottish Executive Planning Advice Note 68; Design Statements.*

INITIAL 'PRE-APPLICATION' MEETING

"an exploratory dialogue "

Arrange to meet and discuss your initial ideas and the site with the relevant Development Control Officer. It is important to get the most out of this meeting so it useful to send the Development Officer some information, by post, in advance. The following information will be very helpful:-

- **A map or drawing clearly identifying the site location and boundaries**

Clearly identify all the information that you have at this stage, such as roads, paths, field boundaries, rivers or streams, adjacent buildings and any other features. Provide the OS Grid reference.

- **Site photographs and sketches to illustrate the context i.e. the surrounding buildings and landscape**

It is important to be clear about what you want to develop on the site. Bring any material to illustrate your initial ideas for the site eg. sketches or photographs of relevant similar developments elsewhere.
All of the material above should be used to describe the site and allow you to illustrate what you consider is important about how it should be developed. It will help the Planning Officer to form a view about the site and hopefully allow you to discuss and agree a broad approach to the development.

If you are considering applying for Outline Applications, note that they are generally discouraged in the following areas;-

- **Conservation Areas**
- **setting of Listed Buildings**
- **NSA's**
- **Enabling Development**
- **Developments of 3 or more houses in the open countryside**

DEVELOP YOUR PROPOSALS

If it is successful, the Pre-application Meeting should allow you to take forward your proposals to a full Planning Application (or in some cases Outline Consent) – if not you should be in a good position to see where your ideas might be re-thought or revised and developed.

In the latter case you should arrange a further meeting to discuss the revised proposals.

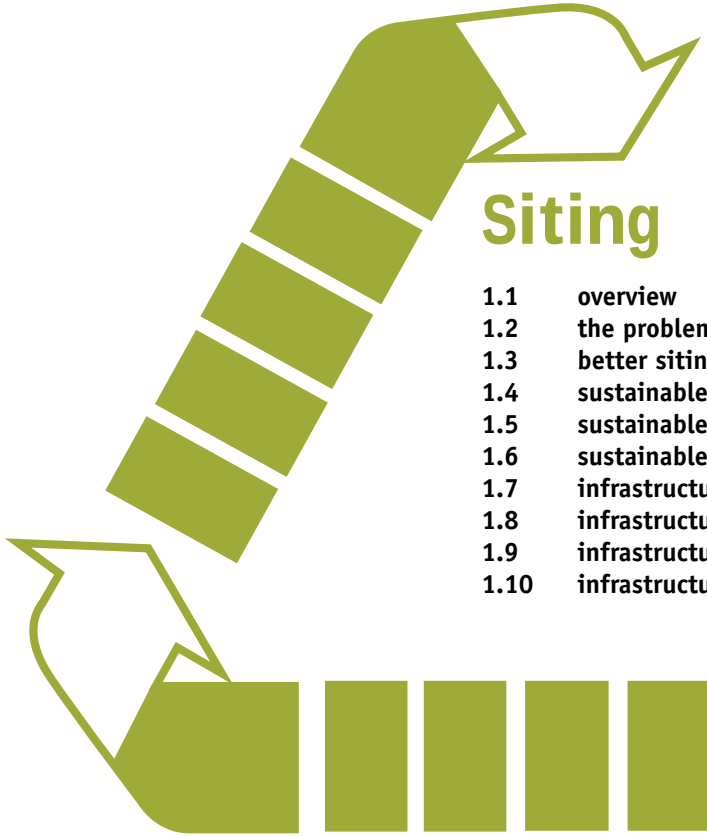
PLANNING APPLICATION

Once you have agreed the broad approach to the development you should develop the proposals and make a Full Planning Application, or an Outline Application.

The guidance for Planning Applications states the minimum drawing (illustrative) information which should be provided as part of an Application but in order that your proposals are clearly understood you are advised to provide additional information to illustrate the key issues about the development that you have considered.

Suggested Additional Illustrative Material of Proposals;- In providing additional illustrative information it is important to home in on the design KEY ISSUES and provide additional information about the development that the 'prescribed' drawings do not show. Where appropriate this might be photos or drawings that:-

- Provide photographs which illustrate the context i.e. the surrounding buildings and/or surrounding landscape and how proposals relate to their location
- Site sections showing how the development addresses the sites' contours
- Provide details of the site boundaries and how it will be seen from main road and important views
- Illustrations of the massing of the building on the site – simple 3d sketches are usually very useful in this regard.



Siting

1.1	**overview**	
1.2	**the problem**	poor siting
1.3	**better siting**	learning from the traditional approach
1.4	**sustainable siting**	settlement patterns
1.5	**sustainable siting**	prominence and visibility
1.6	**sustainable siting**	sunpath and shelter; flexibility; plot size; security; underbuilding
1.7	**infrastructure**	access
1.8	**infrastructure**	servicing
1.9	**infrastructure**	designing for climate change
1.10	**infrastructure**	renewable energy

1.1 Overview

This section of the Guidance looks at the factors which make one area of Argyll and Bute different from another, and explores the reasons why some houses and smaller developments sit happily within their setting and why others do not.
It gives advice on how to ensure a new development will successfully relate to its landscape setting and to adjacent homes and settlements

Heritage; Iona

Waterside; Loch Creran

Waterside; Seil Island

Farmland; Kilmartin

Hillside; Oban

Woodland; Mull

Argyll and Bute consists of an intricate relationship of different landscape and settlement types that give the area its distinctive character, and it is important that this is not lost as development is introduced.

New developments within the rural landscape need to be handled very sensitively. Often **the wrong kind of development can have a disproportionate effect on its surroundings.** Even small developments can have a significant impact on their landscaped setting. Sometimes new developments can look completely out of place even though they have used similar building materials and details to the older settlements around them.

New developments should be integrated into the landscape, using appropriate, carefully chosen modern materials, construction methods, and an aesthetic which reflects the 21st century.

1.1 Overview

Buildings need to be integrated into their setting.....it is easy to spot those buildings and settlements which are compatible with their settings and those which are not

Garelochhead as it is today.....

.....and as it might look, if insensitively developed!!

These houses are too prominent, are built to a much bigger scale than those around them and are laid out in a very structured "urban" fashion which is not sympathetic to its location

House integrated into woodland setting ....

This woodland location (in Dumfries and Galloway) means that this large house is well integrated with its setting.

....and as it might look, without landscaping

Without the trees, however, it looks too prominent as it is located at the top of a rise.

This photograph of Gigha shows a typical view of countryside and sea

These houses look inappropriate for their location - even though they have slated roofs and white rendered walls - because their proportions and layout are much more suited to an urban locale.

1.2 The problem poor siting

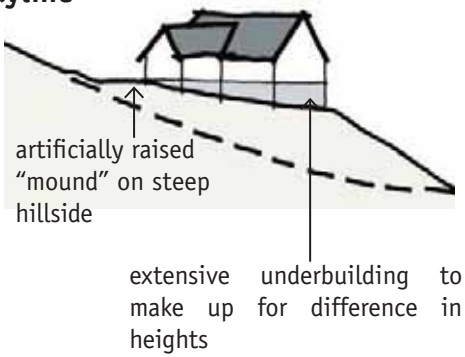
Rural sites.... where it doesn't work

Although new developments are often well sited, some demonstrate poor siting – where landscape character has been detrimentally altered. Typical examples of poor developments include;-

- **Road frontage sites - where there are linear ribbons of development**
- **Development which has too high a profile as a result of, and development which intrudes on the skyline**
- **Inappropriate groupings**

Mounding and development which intrudes on the skyline

Ignoring the contours of the landscape in developments leads to buildings that are sited differently to other, older buildings in the locality. Working against the contours means that, often, significant ground re-levelling is undertaken to make the site suitable for construction. Buildings often are located on an artificial mound that makes them unduly prominent – an unnatural platform which gives little shelter and which is totally unlike the surrounding landscape.



PRE - DEVELOPMENT groundworks for future new house

POST - DEVELOPMENT photomontage; 'hypothetical' new house

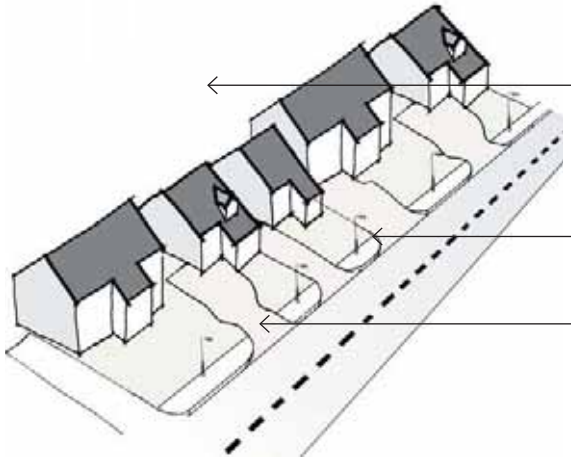
The photomontage above shows a hypothetical new bungalow which has been built on top of a raised mound. It is given a prominence which it does not merit - unlike the older property beside it which lies below the horizon, hugging the ground. As a result the older building is much better integrated into the landscape.

1.2 The problem poor siting

Ribbon Development (road frontage sites)

Much recent development in the countryside uses the road frontage edge of what were previously fields. These sites are easy to access but their development generally results in the removal of much of the surrounding roadside hedges and trees.

Buildings come to dominate the view, often on approach to a town or village, and incongruous suburban gardens are introduced into the landscape. The character of the countryside is fundamentally altered, and when this development pattern is repeated, it leads to ribbon development and a subsequent loss of rural character.



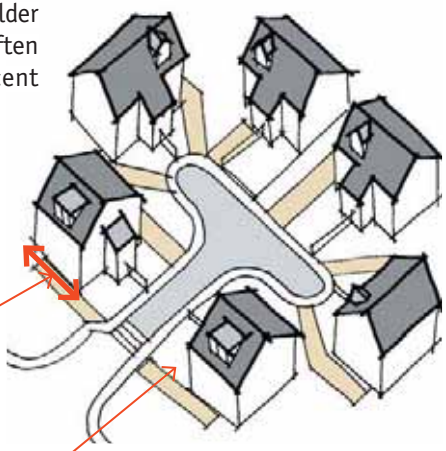
'suburbanisation' of countryside prevents development of land to rear

pavement and street lighting may be required

traffic problems caused by cars manoeuvring out of drives so increased risk of accidents and on-road parking

Inappropriate grouping

Some smaller developments in the country have adopted a traditional suburban 'cul-de-sac' form of development. They can look very unlike older groupings of houses beside them and often have poor physical connections to adjacent existing villages or settlements.



Houses have a deep plan to minimise the width of individual house plots. This way, more houses can be "fitted-in" around the road and turning-head.

Small front gardens means that it is difficult to reconcile levels between higher back gardens and the road, which is lower, leading to more underbuilding than is needed

underbuilding

1.3 Better siting learning from the traditional approach

Every successful smaller settlement has its own distinctive identity. This is determined, in part, by the architectural style of individual buildings but an equally significant factor is how they are sited - the relationship of these buildings to each other and to the landscape surrounding them.

Siting within the landscape

Traditional builders knew their local landscape and its weather, and they would have gained a thorough understanding of a building site's advantages and disadvantages. The concept of shelter from wind and rain was the most important consideration when placing a dwelling – much more than, say, views from the house or distance from a road. The tops of hills are unfriendly places to build as they can be cold and exposed in the winter, so traditional dwellings are generally found in sheltered positions using the landscape and planting (such as a shelter belt of trees) as protection from the elements.

New development areas are less likely to look out of place in their landscape setting if they are located in a similar way to traditional buildings - sheltered between hills or ridges and grounded within the landscape. Traditionally, buildings within the countryside;-

- **are grounded within the landscape**
- **work with the contours for shelter**

Siting relative to other buildings

The aim of this Design Guidance is to ensure that Argyll and Bute's own distinctive identity is maintained and that future development is in sympathy with its landscape and surroundings. In order to achieve this, there is a need to consider both the relationship of new dwellings to their landscape setting and their relationship to other buildings within their immediate area. The layout, or footprint, of many smaller settlements has as much influence on their character as the choice of building materials and the design of individual dwellings.

These local patterns of development are referred to as **"Settlement Patterns "**

By way of illustration of this approach a brief analysis of some alternative traditional settlement patterns for up to Five properties is considered overleaf , together with suggested approaches for small developments.

Anonymous, suburban patterns of development will be strongly resisted.

Traditional buildings work with a site's contours for shelter - they sit parallel to, and in-between, hills and ridges. Existing trees, hedgerows, buildings, slopes or other natural features provide a backdrop to development and link buildings with the landscape.

Isle Of Gigha; buildings sit in line with horizon

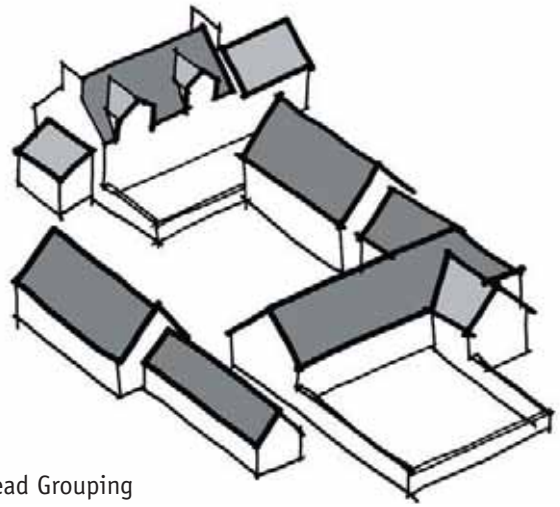
Isle Of Gigha; buildings sit below horizon and are sheltered by planting

Easdale Island; buidlings are sheltered from weather

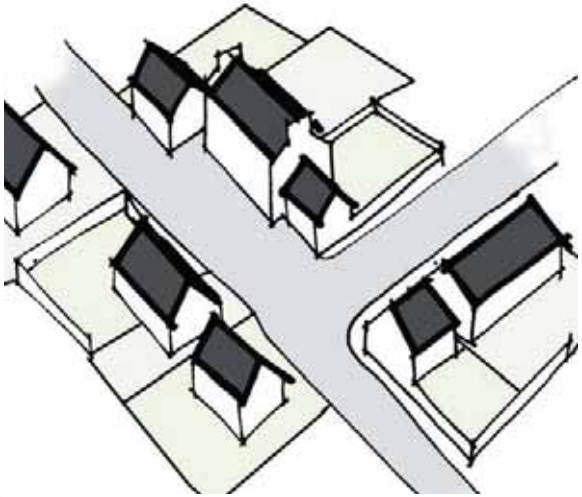
1.4 Sustainable siting settlement patterns

Traditional development pattern
Clusters (The Isle of Gigha)

Development on Gigha is generally made up of small clusters of buildings sitting in the landscape. In many cases these are larger farm steadings. There is no dense village "centre", instead buildings are clustered into groups centered on Ardminish, or are clustered into groups sitting in the landscape.



Farmstead Grouping



"Village" Grouping

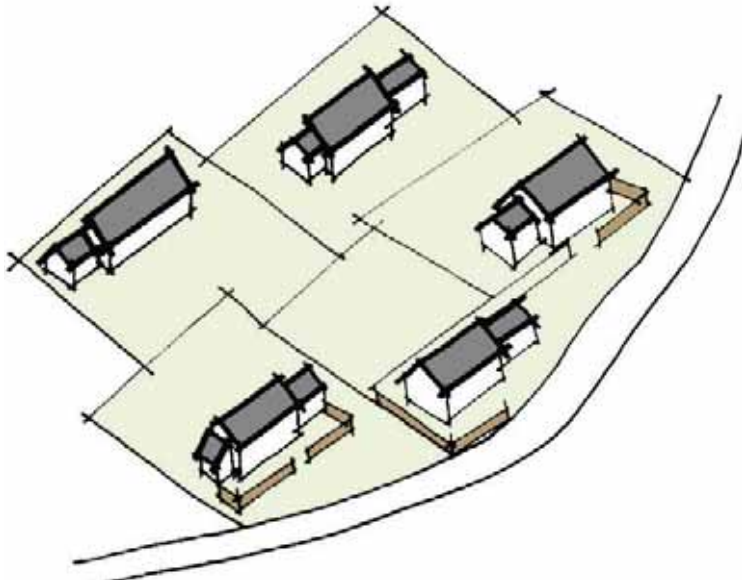
Typical clusters of development on Gigha
top and centre farmsteadings; **bottom** village

Good quality contemporary reinterpretation of a 'Gigha' type development pattern

1.4 Sustainable siting settlement patterns

Traditional development pattern
Crofting Townships (Tiree)

Tiree has a dispersed, small-scale development pattern. Individual houses form a low-density development located in an open landscape, which is typical of many islands. This type of development can be called a "Crofting Township" because although buildings are far apart, they are home to a distinct community, with its own identity. It is usually associated with a more open treeless landscape.



linear house with outbuilding

development pattern extended to provide short row of houses

Contemporary reinterpretations of a 'Tiree' type development pattern

1.5 Sustainable siting prominence and visibility

Some sites are much more prominent than others because:

- they can be seen from a particularly important approach, for example, the main road or a ferry route
- their topography and location in the landscape means that they are highlighted, for example, property on the coast
- they are adjacent to popular routes and paths

Others are less visible because

- they are not seen from paths and routes
- they are located in a dip or hollow
- they are screened by planting or trees

Very prominent sites Some areas are so prominent that any development at these locations would have a major impact on Argyll and Bute's landscape, and these are not generally seen as suitable for **any** development.

A more prominent (landmark) development should have either:

- a high level of design quality and control which is appropriate for the importance of the site

or

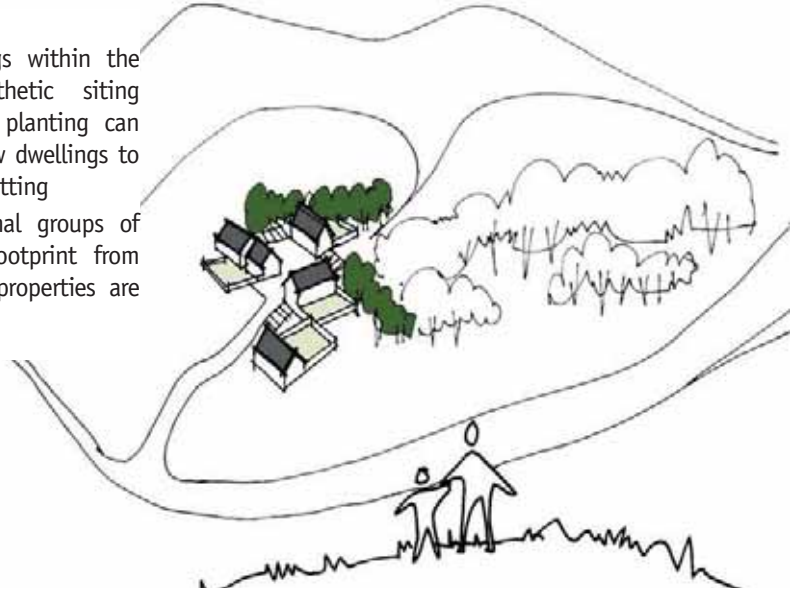
- a cohesive, low-key development which integrates sensitively into its surroundings.

Sites which are least visible are good candidates for more adventurous and individual design because they are less likely to have significant visual impact on their surroundings.

New developments should minimise their impact on their landscape setting.

This can be achieved by:

- carefully locating buildings within the landscape through sympathetic siting in sheltered locations; new planting can provide shelter and help new dwellings to sit comfortably within their setting
- providing low key, informal groups of buildings which derive their footprint from the way that neighbouring properties are located relative to each other.



Poorly designed developments have much more impact on their setting

- buildings are not integrated with the landscape
- their siting and grouping looks out of place and is unlike the way that neighbouring properties are located.

1.5 Sustainable siting prominence and visibility

Integrated landmark development

Many buildings in the rural areas of Argyll and Bute are either single storey or One and a half storey (in other words, they have a ground floor plus rooms in the attic with dormer windows). Because of their small scale, they are generally well integrated with their landscape setting. There are significantly fewer larger (Two storey or greater) buildings. Where they do occur, they usually-

- Have a clear community role (such as a church, manse or hotel)
- Sit within their own larger grounds or landscaped setting
- Are complemented by the scale of the surrounding landscape
- Form part of a cluster of buildings with a number of One and a half or single storey buildings surrounding them

building sits within larger grounds (Gigha)

larger building integrated with landscape setting (Tiree)

clear community role (Tiree)

Contemporary landmark buildings

Not all new developments have to be low-key and similar to their neighbours. Individual developments can incorporate an appropriate landmark feature or new buildings can act as landmarks themselves.
This approach will only work if new developments in prominent locations have an outstanding design which is "out of the ordinary". Their location needs to be complemented by a quality design and choice of materials.
It should be remembered that generally such a design can only be achieved at a high financial cost.

1.6 Sustainable siting sunpath and shelter

Sunpath and Shelter

Managed exposure to the sun's heat and light can reduce heating bills and improve energy efficiency - provided that it is well insulated, the building form itself can capture solar energy for heating and save around 10-15% on annual heating costs* - this is called solar gain. Buildings should be located on a site so that they are best placed to manage solar gain, (the heat gained from the sun).

South facing facades will get the most free heat from the sun so it is sensible to locate larger areas of glazing to south facing facades and smaller glazed areas and more solid walls to the north.

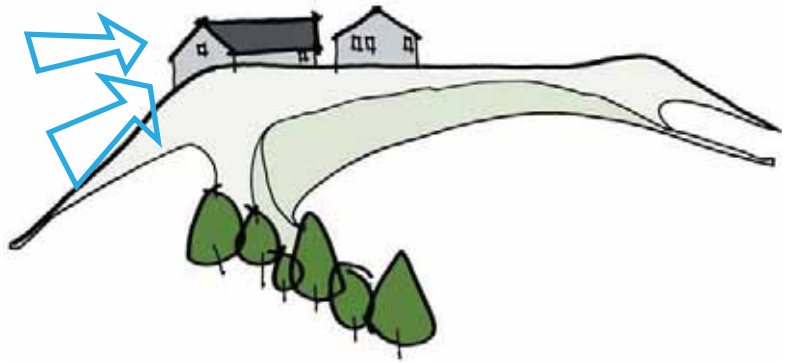
There is little point in designing to make the most of solar gain if a dwelling has a poor overall thermal performance - in other words if it poorly insulated and loses heat quickly. If dwellings are not insulated the heat gained during the day will be rapidly lost at night. Inadequate shading of larger areas of glazing can mean that buildings can easily overheat.

Design for solar gain should therefore be thought of together with requirements for shading, sizing for heating systems, and levels of insulation.

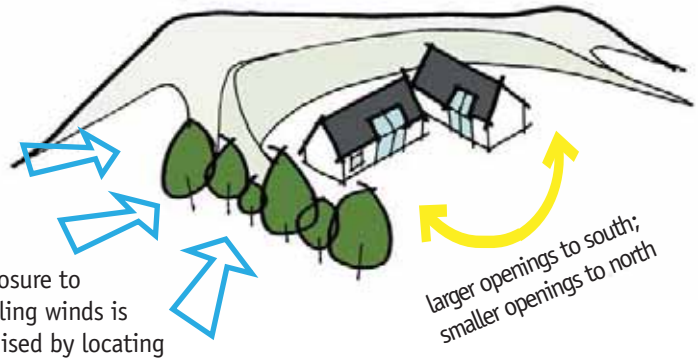
Siting buildings where they are exposed to the worst of the wind will increase heat loss, so it is worth considering locating dwellings in a sheltered position. Often, buildings located to make the most of solar gain will also be well positioned to avoid the worst of prevailing south-westerly and north-easterly winds.

Solar gain and shelter - poor siting

- houses are exposed to prevailing winds
- small south facing windows do not allow for much solar gain



Solar gain and shelter - better siting



- exposure to prevailing winds is minimised by locating houses so that they are not exposed - sitting in a hollow rather than on the ridge of a hill

- Sunspaces and glazing on the southerly aspect of houses maximises solar gain

1.6 Sustainable siting flexibility

Flexibility

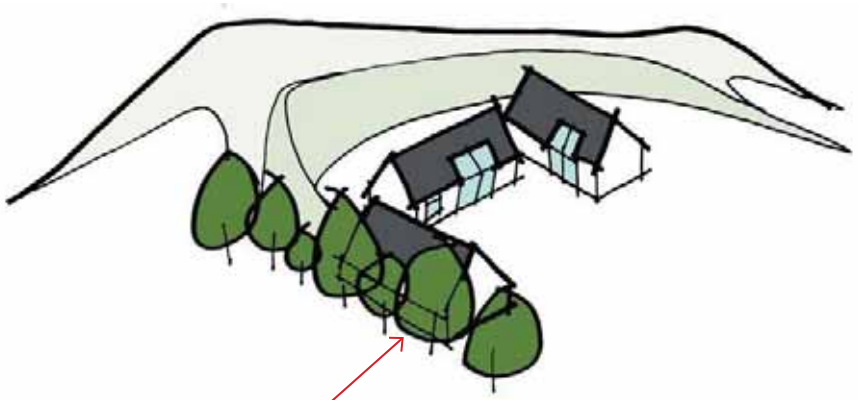
It is important to consider how further extensions and additional outbuildings can be integrated into a development in the future so that they do not look out of place.

- **'Live-work' units** – a significant number of people now wish to work from home – particularly in scenic areas such as Argyll and Bute. New houses should be designed so that they can easily be adapted to suit their needs – this might simply be the provision of extra sockets for a home office or the provision of additional storage space.
- **Design to allow for future change** - Many traditional buildings in the countryside are no longer used as they were originally intended - for example a number of different building types, such as barns, schools and churches have been converted to houses. Over the years many houses have themselves been altered and extended to meet changing needs. So it is very likely that new developments will not be used in exactly the same way in thirty or forty years time as they are today.

Where possible buildings should be located on the site to allow for future extensions and outbuildings which can be sited so that they will complement the existing property.

Flexibility - poor siting

- extension to development is very obvious and impacts on its landscape setting



Flexibility - good siting

- extension to development is unobtrusive, and fits in with other buildings

1.6 Sustainable siting plot size and overlooking

Plot size

It is important to get the relationship between a property and its plot (or site) size right. A good rule of thumb is that a house should have a garden which is in proportion to its size. So a large country house should sit in larger grounds than a small, single storey cottage.

However, this is not always the case, and it is worth taking account of how adjacent existing properties occupy their plots. Sometimes, it will be more important for new buildings to sit on their sites in a similar way to the existing buildings beside them - the way that previous sites have been developed will dictate the size of a new plot and the location of the new dwelling on it.

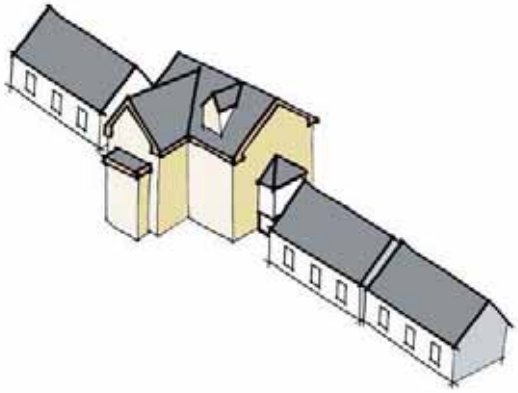
The ideas which underpin the design of the buildings themselves should extend to the external areas around them. A large house may sit in its own landscaped grounds, whereas a group of smaller dwellings organised around a courtyard are more likely to have a number of shared garden and parking spaces located between buildings.

Overlooking

It is important to ensure that occupants of new developments do not overlook their neighbours, so dwellings need to be designed to avoid clear views from one property into neighbouring living rooms and bedrooms. This can be achieved through careful siting, but where development needs to be more compact (for example, if based around an existing farm steading) consider planning building interiors so that living rooms and bedrooms face do not face each other and carefully position of doors and windows.

It is worth making sure that a new development does not significantly reduce the southerly aspect of existing homes, and thus their ability to make the most of solar gain.

plot size is appropriate for the scale of the property



plot size is too small for larger property

1.6 Sustainable siting security underbuilding

Security: key aims

Places that promote a sense of ownership, respect, responsibility and community are less likely to suffer from vandalism and burglary.

All spaces immediately accessible to the public (such as driveways or access roads) should be overlooked as far as possible by the occupants of the development and should be designed so that it is clear to passers-by that they are private spaces.

The most secure place to park a car is in a garage, or in a driveway preferably behind gates. However, this is not always possible, especially when the intention is to design higher density housing, such as a 'steading' type developments. If there is no in-curtilage parking, cars should be parked where they can be seen from the dwelling that they serve. Courtyard parking, as with all types of communal parking, should be small in size and close to the owners' homes.

Refer to the "Secured By Design"website www.securedbydesign.com **for more details of how to make your home safer, and for details of contacts in the Argyll and Bute area**

Underbuilding

Most traditional Argyll and Bute houses have ground floors which are very close to the ground levels outside. In contrast, many newer houses have ground floor levels which are built up to compensate for their sloping sites, and which can result in areas of underbuilding which begin to look out of place.

As far as possible, minimise extensive underbuilding by carefully siting buildings so that it is not required or is minimised.

Alternatively, make use of the underbuilt area below a dwelling by using it as garage or storage space.

this house is located on a steeply sloping site, so it needs a significant level of underbuilding

this house is located on a flatter area of its site, so it sits more comfortably in its surroundings

Building on a steeply sloping site.

This self-build house in Portincaple illustrates one way to tackle an Argyll and Bute problem - how to build on a very steep plot, indeed so steep that it remained unsold for many years. The house is vertically arranged around a 10 metre tall void containing the stairwell, and has an 8 metre long entrance bridge.

It uses cedar cladding, aluminium gutters which need no painting and are recyclable and has a zinc roof which will be low maintenance and recyclable. Large overhangs dry the wall and protect the materials.

1.7 Infrastructure and access

Entrances and Routes

Access roads to smaller developments are designated by the Planning Department as private roads and do not, therefore, need to be built to the specifications needed for the Council's own adopted roads. They should be informal and rural in nature with, wherever possible, footpaths remote from the road. Entrances and access roads to smaller developments need to be designed safely; so even where private access ways already exist, Argyll and Bute Council Roads Department may ask for removal of obstructions to sightlines at junctions, the introduction of passing places and localised road widening.

It is important that the potential visual impact of these measures is considered in detail. Many private access ways are more prominent than the properties that they serve, so every alteration to the road surface and boundaries needs to be as carefully designed as possible in order to avoid an overly detrimental impact on the surroundings of a development site.

Surfacing could include gravel from a local source as a good sustainable option. Alternatively, reclaimed materials such as cobbles or tarmac or part-tarmac surfaces could be used in lieu of more sub-urban concrete slabs or pavers. In some rural locations consider grasscrete or its equivalent as a surface for access routes to single properties.

Generally, the entrances to existing farm tracks and properties are very low-key with only a sign, and perhaps a mail box visible. New entrances should aim to continue this approach. Signage is important and a set of well crafted but unfussy signs in timber or metal that are produced in the area can instil a local character.

Priority should be given to links to local cycle and pedestrian routes.

provision needed for wheelie bin

difficult to manoeuvre

Parking

Car parking areas should not be a visually dominant feature of new developments. In order to successfully integrate car-parking into designs for gardens or shared spaces, it should be considered from the earliest design of the site layout

The aim should always be to minimize the visual impact of the car in any development. Where possible buildings and landscape should screen parking areas as much as possible, and for this reason parking is generally better located at the rear or side of a house rather than to the front. Large paved or tarmacadam areas beside roads should be avoided, as they are very visible to passers-by.

Parking spaces should be big enough for a wheelchair or pram to negotiate comfortably with paths to a suitable gradient, rather than steps, and there should be provision for visitor parking. Parking surfaces should use local materials (for example, gravel from local quarries could be used) Proprietary coloured (red or pink) brick paviours are generally out of place in rural settings.

The ideas which underpin the design of the buildings themselves should extend to the external areas around them. For example, if the intention is to design a courtyard development based on a farmstead, parking areas could be located in communal areas in between buildings and designed to look like courtyards using traditional materials which enhance their setting. Alternatively, if houses are designed to sit within their own large landscaped grounds, individual garages designed to be in sympathy with the new dwelling would be a more appropriate solution.

parking is very visible

parking is within courtyard

parking is to side of property
(will need to be seen from dwelling)

Lighting

New developments and access drives should not have standard "street lights" in rural areas as they are urban in character and are a source of light pollution. Alternatives that could be considered include-

ROUTE MARKING - cats eyes and solar studs

LOCAL PLACE LIGHTING - solar bollards; other bollard lighting

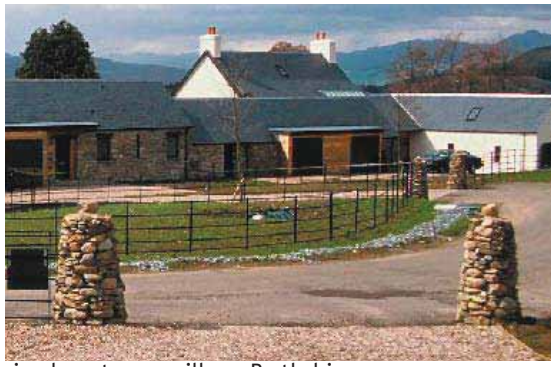
PROPERTY LIGHTING - movement activated floodlights

Lighting should point down towards the ground to avoid glare

1.7 Infrastructure and access

Examples of simple, good contemporary entrances

primary school entrance: Kilmartin



simple entrance pillars; Perthshire

Isle of Gigha; simple entrance

Kilmartin Museum; entrance

Duachlas house; turfed wall, simple entrance

Kilmartin Museum; turf at head of wall

Examples of parking and access which are integrated with its landscape setting

pedestrian and vehicular surface is shared; different surfaces define different uses

cellular grass parking; Kilmartin Museum

Grass route, Tiree

part tarmac/part grass access, Tiree

1.8 Infrastructure servicing

Servicing

Previous sections of the Design Guidance have explained that good siting will help to sit a building comfortably in the landscape so it is important to consider how a building plot is serviced at the earliest possible stage, as this can have a significant impact on exactly where on the site a building can be located. Potential factors which need to be considered include;-

- **the location of new entrances and access ways** (Argyll and Bute Roads Department will stipulate where new entrances can be located on an existing adopted road)
- **the location of new septic tanks** (access is needed for draining the tank periodically and the tank will often need to discharge into a percolation area downhill from the septic tank
- **the location of a private water supply** (relative to the septic tank and percolation area)
- **the location of renewable energy sources** (wind generators can be noisy; solar collectors need to be orientated correctly)

Applicants should therefore consult the Roads Department SEPA, Scottish Water and all other relevant agencies at the earliest opportunity

- **Water supply**

  Water supply in rural areas is limited. Even if it is currently adequate for an existing number of properties in an area, a mains supply may not be able to cope with even a small development of new housing. In this case, and where new houses are located in areas that are remote from the water main, they will need their own water supply. Consultation with the Council's Environmental Health Department is necessary to determine their requirements for treatment of private water supplies and a qualified hydrologist's report is often needed.

  Rainwater run-off is generally to a soakaway, but given the possibility of a limited water supply it would be prudent to consider reusing rainwater for gardens, WCs etc. New houses should therefore consider incorporating provision for rainwater-saving and recycling together with the specification of water-saving appliances and fittings

- **Sewerage connection**

  Although there are some public sewerage systems in the Argyll and Bute area, the vast majority of rural buildings or group of buildings are served by their own "stand alone" drainage provision.

  In this situation, foul drainage is generally accommodated by a Septic Tank which needs to be desludged regularly by lorry and is partnered with a secondary treatment system, such as a soakaway. Very often the location of the septic tank and the soakaway's percolation area – which are determined by the fall across the site – will have a significant impact on the position of a new building. This has to be carefully considered in order that the overall design and siting of the development is not compromised.

- **A Sustainable Sewage Treatment** system* uses plants and micro-system to process sewage sludge and it is possible to purchase a small-scale sewage treatment plant. Note that these require a power supply and will need regular maintenance. If space allows, a Wetland or Reedbed Treatment System can be used for secondary sewage treatment . Alternatively, consider the use of a Composting Toilet

  No matter what solution is adopted, it will need to comply with Scottish Water, SEPA and Building Control's standards. Consultation about future proposals should be made at the earliest possible stage, and potential development sites will need a specialist to report on whether ground conditions are suitable for the particular design.

(*Primary treatment happens within the septic tank - the septic tank process relies on anaerobic culturing in the settled sludge to provide a degree of treatment. Secondary treatment enhances the quality of water run-off moving into surrounding watercourses.)

Rainwater Harvesting system

This timber house at Rudha Riabhach, near Oban incorporates a system for the collection and use of rainwater as the sole source of domestic water and installed a reed-bed filtration system which treats sewerage.

1.9 Infrastructure designing for climate change

• Drainage

Built-up areas such as hard standings for cars need to be drained to remove surface water and Scottish Water generally look for separate provision for foul drainage and rainwater. In the past, drainage systems have been designed to move water as quickly as possible to a soakaway, or an adjacent watercourse.

Newer methods of drainage, such as SUDs systems are designed to disperse and treat water locally, before it is returned to the natural drainage system. It is best to minimise paved and hard standing areas in order to reduce the size of the proposed drainage system.

• Waste disposal and screening

Dwelling owners and occupants need to be able to recycle their rubbish and a screened area should be provided to screen rubbish bins and compost heaps. At an early stage, designers should ensure that there is an appropriate screened space for locating bins, tanks etc. that is easily accessible but does not affect the amenity of the dwelling or development.

• Flood Risk*

It is becoming increasingly difficult to predict whether potential development sites will be subject to flooding or not. With increasing rainfall, higher storm frequency and rising sea levels (Scottish Executive figures point to a sea level rise of 150mm affecting Argyll and Bute in the next 50 years) the threat of flooding is increasing from a variety of sources. Flooding areas have been associated with wind driven tidal surges; inadequate culverts that are vulnerable to blockage and tightly confined flood plain areas bordering river courses.

Floodline is operated by the Scottish Environment Protection Agency and provides information on the possible risks of flooding in your area– **phone 0845 988 1188 or www.sepa.org.uk/flooding**

** from Planning Advice Note PAN 69*

1 2 *1. swale*
2. SUDs at Falkirk Wheel - permeable paving

Sustainable Drainage (SUDs)

• Permeable Paving

Surface water is directed into the paved area and then stored or released into the environment in a controlled manner. Most permeable and porous pavements use some form of block paving to create the surface layer. The choice of paver should be appropriate for the developments location.

• Infiltration and attenuation systems

Attenuation cells, (also known as Storm Cells, Soakaway Modules, or Storm Crates) are the modern equivalent of a soakaway. They allow surface water to be stored in one location and gradually released back to the ground, rather than in one sudden deluge, as happens during a storm or downpour. In effect, the transfer of water from the surface to the ground is *attenuated* - slowed down and stretched out over a longer period.

• Swales

Swales look similar to any grass verge, but have a gentle depression at the centre and gentle incline to give flow direction. They slow down transfer of water into the ground and allow time for filtration and sedimentation

1.10 Infrastructure renewable energy

Much of the energy we use comes from burning non-renewable fossil fuels – oil, gas and coal - to heat (or cool) our houses and workplaces. These fuels release 'greenhouse gases' (carbon dioxide, nitrous oxide and methane) which contribute to climate change. Recent Government Policy has, therefore, set a target of generating 20% of the UK's electricity from renewable sources by 2020. In order to meet these aims, the renewable energy sector is set to increase.

The Argyll and Bute area is well placed to make the most of this new technology because it will -

- **contribute to the area's economy**
- **exploit the area's significant natural resources** (through wind generation, Biomass CHP (Combined Heat and Power), tidal and wave power.)
- **allow occupation of very remote areas** using self sufficient energy production for heat and electrical power.

The aim of this Design Guidance is not to duplicate the good quality advice already available for those already contemplating the use of Renewable Energy. Rather, it is intended as a brief overview of the technologies available to encourage their further investigation and use. Local advice on both renewable energy and energy efficiency is available from ALI Energy (tel 01631 565 183 or **www.alienergy.org.uk**)

Ground Source Heat Pumps

Ground source heat pumps provide a new and clean way of heating buildings in the UK although they have been widely used in other parts of the world, including North America and Europe, for many years. Generally they cost more to install than conventional systems; however, they have very low maintenance costs and can be expected to provide reliable and environmentally friendly heating for in excess of 20 years. They make use of renewable energy stored in the ground, providing one of the most energy-efficient ways of heating buildings. They can be installed using a borehole or shallow trenches or, less commonly, by extracting heat from a pond or lake. Ground Source Heat Pumps are normally made up of Three principal elements;-

1 Heat collecting pipes located in a closed loop, containing water (with a little antifreeze) are buried in the ground. The length of the loop depends on the heat requirement.

2 A heat pump/exchanger is used to pass the heat onto the heating system. The only energy used by Ground Source Heat Pump systems is electricity to power the pumps. Typically, a Ground Source Heat Pump will deliver Three or Four times as much thermal energy (heat) as is used in electrical energy to drive the system.

3 A system of heat transfer Ground Source Heat Pumps work best with heating systems which are optimised to run at a lower water temperature than are commonly used in UK boiler and radiator systems. As such, they make an ideal partner for underfloor heating systems which are best fitted when buildings are being constructed.

Small Scale Wood Fuel

Timber is a good sustainable fuel source because it is "carbon neutral". (the carbon released during burning equals the carbon absorbed by an equivalent number of new trees when planted.) Wood fuel use ranges from individual wood stoves located in houses, through to wood chip boilers used in larger properties, to communal district heating systems.

- Wood burning stoves provide a "stand-alone" source of heat for a single room; higher output versions can incorporate a back-boiler to provide domestic hot water and to heat radiators. If a wood-burning stove is used for an individual property, it can be combined with design for solar gain and high insulation levels to make the most of the heat it produces.
- Wood fuel boilers are used for central heating and hot water in the same way as their gas or oil equivalent and use logs, wood chip and wood pellets* Wood pellet/chip boilers use large hoppers for automatic loading; many boilers can use either wood pellet or chips
- For any wood fuel system, space is needed to store wood and access will be needed to the boiler for delivery and loading. A local wood fuel supplier will also need to be located.

(* wood pellets - wood is compacted to form a fuel source with a low moisture content which is capable of giving a high level of heat for its bulk. Although more expensive than wood chip it is comparable in price to fossil fuels. It is easy to handle and good for automated systems.)

1.10 Infrastructure renewable energy

An TallaTiree

Wind power

Wind power produces no pollutants during the operation of the wind turbines. The land occupied by the turbines can still be part of the agricultural system and jobs are often created both in the short and long term in their building and maintenance. A typical wind turbine for electrical generation will repay the energy used in its manufacture in the first 6-9 months of its operation. The main issue with wind power is its visual impact. Careful siting is needed to balance the need to minimise visual impact, with the best location for electricity generation.

Solar

Solar energy can be captured by solar panels. There are Two main types of system deployed in Argyll:

- **Solar Water Heating collectors:** These panels absorb the energy from the sun and transfer it to heat water. There are 2 types of solar water heating collector:- flat plate and evacuated tubes. Most domestic users have roof mounted south facing solar panels which heat water in conjunction with the existing heating system thus reducing their power bill. This is the traditional use of solar power and still the most common.

- **Photovoltaic systems (PV).** These panels transform the solar radiation directly into electricity in a clean, quiet and renewable way. When first introduced onto the market they were used in conjunction with batteries to store the power when no sunlight was available.

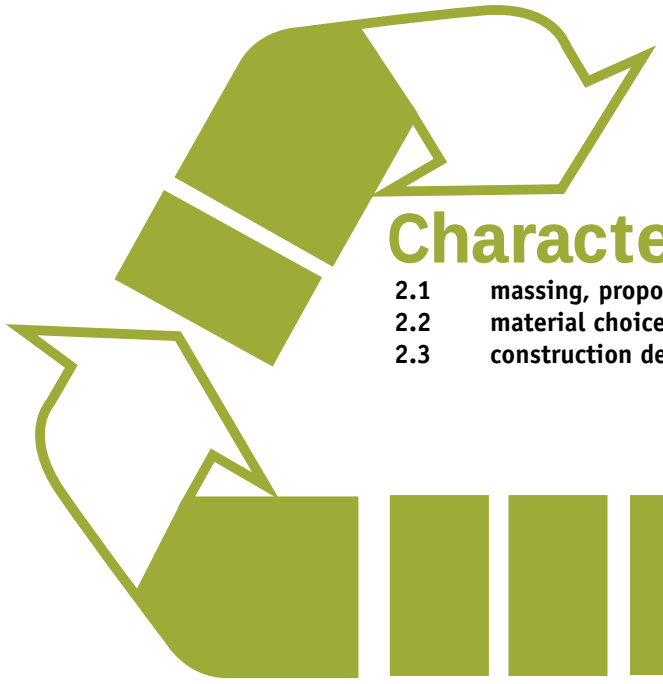
Today the best solution is to connect PV systems to the grid; this can be achieved within a home or business with an inverter, to convert the DC output to AC, and a metering system. If more power is produced than is required then the system can produce an income stream by passing this excess onto the power company.

Although the daylight needed is free, the equipment is expensive and it can take many years before receiving any payback. However, in remote areas where grid connection is expensive, PV can be a cost effective power source.

Microhydro

Small scale and micro hydro represents an option for many community or business schemes in Argyll and Bute. With the vast number of small rivers and burns available, it is potentially a very viable resource for hotels and distilleries etc. One developer, Innogy Hydro (now part of npower Renewables), has a number of such small hydro schemes across Argyll. With improvements in small generator technology, it is now quite feasible to produce enough energy to power a small workshop or house in a remote location and on islands with no proper electricity infrastructure.

Any hydropower technology uses a turbine. Turbines either use water “dropped” from behind a dam or from natural “run of the river” with no water storage reservoir. Various consents and licences are required for a hydro project. These are generally dealt with by the Environment agency and local planning authorities. south facing solar panels which heat water in conjunction with the existing heating system thus reducing their power bill. This is the traditional use of solar power and still the most common.



Character

2.1 **massing, proportion & scale**
2.2 **material choices**
2.3 **construction details**

minimising energy use
materials with low embodied energy
healthy spaces and places
dealing with climate change

2.1 Massing, proportion and scale

"Rural buildings for rural locations"

Previous sections of the Design Guides have considered how new houses should be designed to suit their landscaped setting and other adjacent building groups. This section considers how the size and shape of houses themselves (referred to as "massing"), together with their individual parts such as walls, roofs and windows (referred to as a building's proportions) relate to each other.

It also looks at the other details involved in the successful design of rural housing such as scale, sustainable materials and construction methods, and advises on the issues which need to be considered in order for a new development to provide a lively, sustainable, linked addition to an existing area.

Rural sites.... where it doesn't work

Sometimes new houses can look out of place, even though they use materials and architectural features which are based on local traditional buildings in the same area. Other new houses can lack local character and seem anonymous and suburban. Often the reason why buildings look out of place is because their basic shape and size is out of keeping with their location.

Although this Guidance does not ask for proposals which copy the design of traditional buildings, it does require the design of new homes which complement them. To achieve this, it is important that applicants understand the key elements which underpin the proportions, scale and massing of existing buildings.

The principles of "proportion", "scale" and "massing" are very important aspects of development and are illustrated on the following pages. If these principles are not carefully considered, it is all too easy for new houses to look out of place and inappropriate. In most cases, if new houses are made up of components which are the right size and shape for their setting, then there are opportunities for designers to consider more contemporary ideas for doors, windows, and material choices.

Applicants and their designers should therefore ensure that, not only are their design's suitable for their landscape setting (previously considered under "siting") **but that they also complement the proportions of adjacent buildings.**

2.1 Massing, proportion and scale

Poor Contemporary Proportions

Many modern buildings look out of place in their rural location, even when they incorporate traditional materials like render or use details such as stone quoins.

Often the basic plan is complex – an individual house can have a form which steps in and out, perhaps an L or a T shape. Because of this larger and more complex plan form such homes are less likely to sit comfortably in the landscape and will need greater levelling and reshaping of the land. For reasons of economy on a sloping site, new buildings often have a considerable area of unutilised underbuilding.

This appears incongruous as it introduces areas of blank walling at the ground where traditionally doors would have given to gardens, and changes the fundamental proportion of elevations.

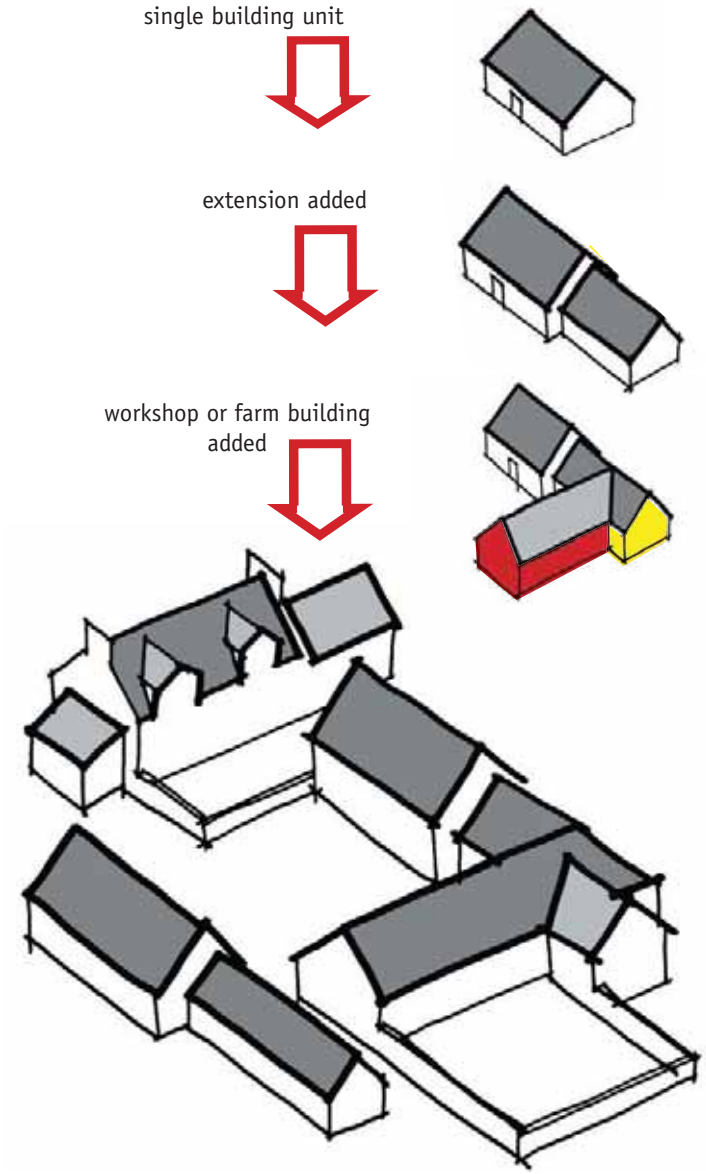
Advances in building technology mean that the basic plan form can be much deeper from front to back. Consequently, new homes generally have a proportionally larger pitched roof, often with dormers located in the middle of the roof slope.

Because of changes in construction techniques and materials some newer buildings appear clumsy and crude in a rural setting. This is most noticeable at roofs where they often incorporate heavy verge and eaves details, over-large dormers and heavy detailing at porches. In order to take advantage of the view most new homes have bigger windows. Garages and extensions are often located on a site in an obtrusive and unsympathetic way.

deep plan detached house
problems arising from plan and layout

deep plan terraced houses
problems arising from plan and layout

2.1 Massing, proportion and scale



Traditional House: Massing

The plan form of rural buildings arose from the method of roof construction. Because of the limited length of available roofing timbers the span of the roof was restricted, so that buildings were generally a single-room in depth. A series of rooms then produced the familiar linear plan.

For generations Scottish builders have used a pitched, slated roof. In sheltered areas, traditional materials can be used as low as 30 degrees to the horizontal; exposed conditions could raise this to over 40 degrees; but the range 32-38 degrees covers most circumstances. Galvanised corrugated steel sheet ('corrugated iron') was sometimes used for cheapness, but generally on lean-to sheds (stores) and outbuildings rather than dwelling houses. This thin material could be laid at a lower pitch - and often was.

In the country, you would not usually extend to the 'front' of a house, but generally build on the side or at the back. The front might have a wind porch added, but seldom more. An alternative to extension at the sides or the back would be to add another storey to the house. The house therefore tended to grow longer (and perhaps higher) over time. Rear extensions were added, too, often linked directly to outbuildings.

2.1 Massing, proportion and scale

Traditional House: Proportions

Traditionally, rural buildings consist of three main visual elements. They have a steeply pitched symmetrical roof and walls that are interpreted by the eye as large, horizontal planes. This horizontal emphasis is offset by windows and openings that have a vertical emphasis. Extensions and additions are usually to the ends of a property, thus maintaining the same proportions. The result is a balanced composition of elements.

Generally, traditional rural buildings are small in scale with low ceilings heights, narrow plans and small windows. This has the advantage that they integrate well with their landscaped setting. The disadvantage is that their interiors can be dark and claustrophobic.

Their proportions look "right" because they are generated by a traditional building's wide frontage and narrow plan which have, in turn, been determined by the way that the building was originally used and the technology available at the time. If these proportions are altered, a building can start to look less pleasing to the eye. It is therefore important to determine the proportions which are most appropriate to Argyll and Bute

traditional house + house plan

contemporary design based on vernacular

2.1 Massing, proportion and scale

Proportion and scale: recommendations

A good designer will always aim to rise to any challenge, and can often design imaginatively to create appropriate and attractive buildings on particularly problematic sites. It is not intended that this Guidance should be prescriptive and discourage applicants from alternative approaches, but as a general guide the following points should be borne in mind to avoid developing proposals that repeat past mistakes.

Scale and Massing

- **Buildings should be *scaled* appropriately for their setting.** It is important to recognise that larger houses need more space around them, and are generally better located on larger plots. Badly designed new properties can look particularly out of place if they are located directly beside smaller "Argyll and Bute" single storey or one and a half storey cottages.
- **Larger houses can be successfully broken up into smaller elements in terms of massing.**

Proportions

- **New houses which have a floor plan with a complicated overall shape often result in designs which have multiple changes in heights of eaves and complex roofs. These look unnatural and inappropriate in any rural location.**
- **Gables and dormers should be used in an appropriate way – not as heavily detailed "stick-on" features to the front of a building.**
- **Houses with "deep" floor plans have fundamentally different proportions than those with "narrow" plans.** (see previous page) In prominent rural sites simple, well proportioned building forms based on a narrow plan are a better basis for proposals.

Buildings should be scaled for their setting - it is important to recognise that larger houses need space around them.

Gables and dormers should be used in an appropriate way – not as heavily detailed "stick-on" features to the front of a building as shown below

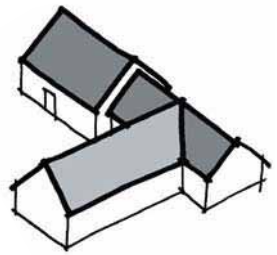
Deep plans fundamentally alter building proportions. In prominent rural sites simple, well proportioned building forms based on a narrow plan are a good basis

• House steps down slope

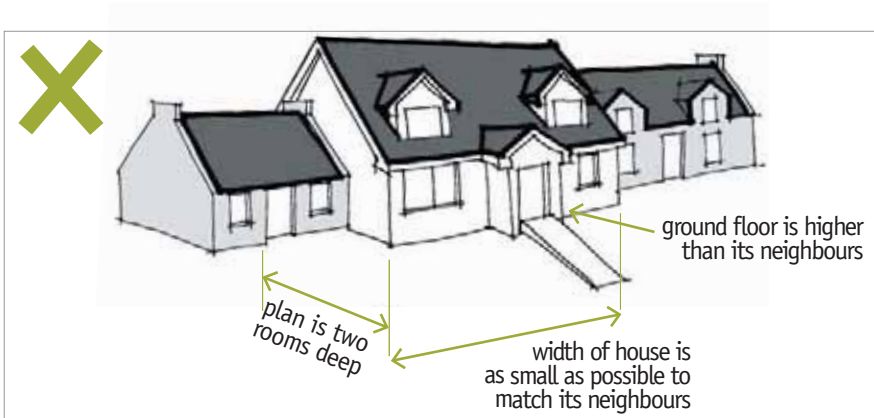
Complex plan shapes with discontinuous eaves heights and complex roofs look unnatural and inappropriate in any rural location.

inappropriate 'anywhere' massing

more appropriate 'Argyll and Bute' massing

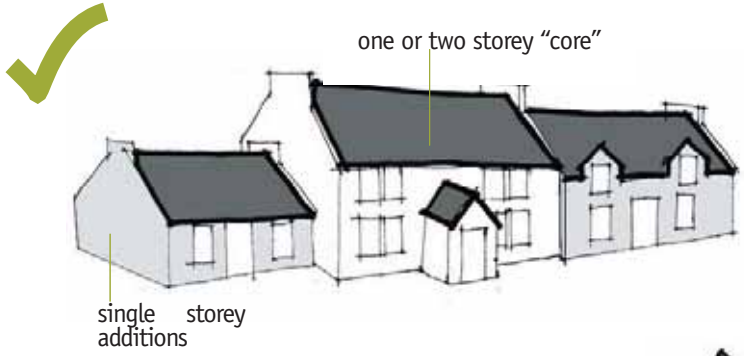


2.1 Massing, proportion and scale



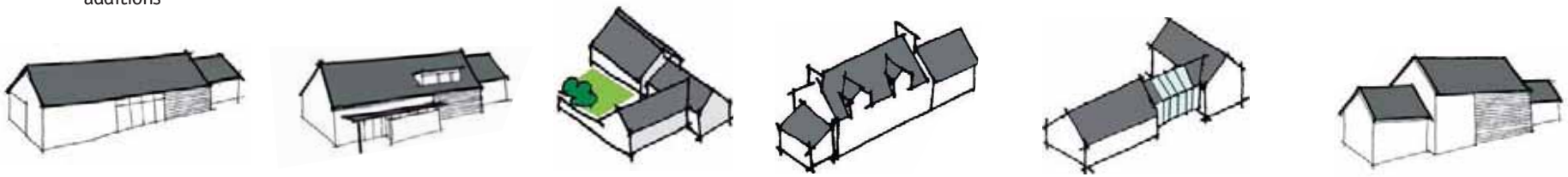
RECENT DEVELOPMENT - the problem, the "big box" one & a half storey house

This newer one and a half storey timber kit house has been designed to look as much like its neighbours as possible, - it is symmetrical with one and a half storeys, dormer windows, a "traditional" type porch, and vertical windows.
However, it is a big house with a much larger floor area than its neighbours so it has a deep plan in order to make the building look as compact as possible when viewed from the front.
Although the house has the same architectural features as its neighbours, the deep plan and the large roof and dormers means that the scale of the house changes - it starts to look too big.



RECENT DEVELOPMENT - The "Argyll and Bute" solution

Traditional rural "Argyll and Bute" houses have a plan based on the depth of a single room. More acceptable options for new, larger dwellings could be based on a one or two storey "core" supplemented by single storey additions added in typical rural fashion. Alternatively, single storey houses could be arranged in the same way as typical farm steadings and outbuildings.
(see photographs and diagrams below).



Larger buildings can be successfully broken up into smaller elements in terms of massing

2.2 Material choices

Around 30 million tonnes of material are used by the construction industry in Scotland every year. However, improvements in the way that buildings are designed, and the materials that are used, offer opportunities to use materials in a more discriminating way. This Guidance therefore considers choices of materials in terms of their visual impact and goes on to consider the best choices for sustainable materials.

This Design Guidance aims for a balance:- creating opportunities for exciting and individual design while preserving and enhancing Argyll and Bute's character. Today, traditional materials (for example render (harling) and stone) are not always appropriate to all scale and types of buildings.

There are opportunities to use materials that are not considered to be traditional but can be sourced locally, fabricated locally or easily transported from other areas. However, their use should be underpinned by an understanding of the essential ingredients of local distinctiveness.

Designers need to consider the landscape setting, and existing buildings and patterns of development in the area when choosing materials, and their selection should be considered from initial stages of design development.

Consider either:

- **incorporating the successful aspects of existing adjacent material choices and construction details into new designs**

Or

- **the use of carefully considered material choices and construction details;** see table opposite for suggested choices of materials

Preferred material choices

Walls

- **Polymer render** (Polymers in factory-made renders give consistency and control of what is a powder material. They are less susceptible to cracking and crazing when compared to traditional sand and cement.)
- **Traditional wet dash render**
- **Natural stone**
- **Drystone walling**
- **Timber cladding** (horizontal or vertical timber boarding)
- **Corrugated metal cladding** (to match/complement traditional corrugated iron cladding)
- **Lime based render**

Roofing

- **Blue grey slate**
- **High quality metal sheeting (e.g. zinc, lead)**
- **Plain concrete tiles with a small profile, to mimic slate**
- **Fibre cement slates (artificial slate)**
- **Timber shingles**
- **Corrugated metal roofing** (to match/complement traditional corrugated iron roofing)
- **thatch**
- **Turf**

Materials and details which can be detrimental to local character

- Facing brick
- Marble chip finishes to render systems
- Proprietary plastic roof accessories such as verges and eaves details
- uPVC doors and windows
- False window astragals
- Red pantiles

Avoid artificial decorative features that are not related either to local traditional finishes or the building's function. Typically these include –

- Brick window surrounds
- Artificial stone features such as quoins & door surrounds
- Complex preformed metal decorative features

Materials and details which are less appropriate for a rural setting

2.2 Material choices

Timber - a renewable material

Renewable materials come from a source which is capable of naturally regenerating and which is therefore considered to be sustainable. Renewable materials include, for example, timber, flax, cork and wool.

Within Argyll and Bute, a good example of a locally available material resource is timber. It is plentiful locally, has the potential to be part of a low energy and healthy building, a supply chain is readily identifiable, and it is a versatile material which can be used for a number of building components.

There are many different types of Scottish timber available and it needs to be carefully specified. Much Scottish timber grows very quickly in Scotland's warm, wet climate and is not suitable for either structural use or for cladding. However, some timber types are suitable for construction including scotch pine, oak, elm, and sycamore, as well as durable softwoods such as Douglas fir and estate-sourced European larch.

Most timber used in Scotland comes from abroad. Despite the cost of transportation from countries like Canada and Siberia, it is still relatively low in embodied energy. The main source of concern when using timber from outside of the UK is whether it comes from a sustainable source or not. FSC certification confirms that timber is being produced in a sustainable manner

(The Forest Stewardship Council (FSC) is an international network to promote responsible management of the world's forests. It accredits independent third party organizations who can certify forest managers and forest product producers to FSC standards. Its product label allows consumers worldwide to recognize products that support the growth of responsible forest management worldwide.)














Examples of timber used in Scotland

1, 2 Oak from Argyll woodlands used as cladding and structural timbers; Here We Are Centre, Cairndow (David Sumison) 3 Private house, Perthshire; Arc Architects 4 Timber rainscreen cladding; Mount Stuart Visitor Centre, Bute 5 Painted timber cladding; Tarbert;- opaque colour finish complements other brightly coloured buildings in Tarbet 6 Kilmartin Museum; green oak conservatory. 7 Local Scottish timber; Maud House, Struy 8 Housing at Gremista; Shetland - preservative treated softwood cladding is carefully detailed to allow ventilation and drainage, and given an opaque, water-repellant coating 9, 10 Timber clad houses; Scotland 11 Offices for Loch Fyne Oysters Ltd; Painted Scots pine timber cladding to the external walls 12 Timber cladding; housing Edinburgh 13 David Douglas Pavilion Pitlochry; shingles were sourced from a sawmill in Argyll and Bute; 14 Larch cladding; Edward Street Dunoon; 15 Timber-clad extension; Crinan

1	2	3
4	5	6
7	8	9
10	11	12
13	14	15

2.2 Material choices

Colour

Consider the use of locally appropriate traditional colours. The use of an appropriate colour will reduce the impact of larger buildings located in the landscape.





Stonework

Limited areas of stonework are a cost effective way of making buildings more interesting; coursed rubble elements can be used to firmly locate a building on its site.

It is important that these elements do not appear as a two dimensional 'veneer', applied to the facade.








2.2 Material choices

Chimneys

Chimney location is determined by the plan form of the building, so the location of fireplaces needs to be considered at an early stage of the design process. Traditionally, chimneys are located either sitting on the ridge of the roof, or flush with the gable ends of the building where they are contained within the gable wall until they reach the roofline.

Care must also be taken in the design of chimney copes and the choice of chimney pots.

Dormers

Dormers should be in proportion to the roof of which they form a part.

In a One and a half or Two and a half storey traditional house, the roof pitch is generally high enough to allow the majority of the roofspace to be used. As a result dormers could be incorporated as a continuation of the existing external wall. Any dormers within the roof tended to be small and delicately constructed and detailed.

Many modern houses however have dormers that sit back into the roof either as a result of the use of a deep plan or a shallower roof pitch. These often appear over-large or break up the main roof into a lot of smaller, 'fussy' bits and pieces. When these are constructed (as detailed earlier) with heavy tiles, flashings, fascias etc., the resulting building looks clumsy and heavy.

2.3 Construction Details

Roofs

The design of roof edges should complement the proportions and style of the other elements of a building.

Although individuality and variation in design is encouraged, care must be taken to ensure that eaves and verges do not become an intrusive element of the building's composition. Many new buildings are constructed with a roof which oversails the walls (not a problem in itself) but are finished with heavy proprietary eaves and verge details. These details are unlike the traditional way in which roofs were finished and generally look inappropriate.

The build up, or thickness, of modern roofs is getting increasingly deeper because of increasing levels of insulation sitting within roof spaces. In order to avoid thick, clumpy details at the edges of roofs, considerable care must be taken when detailing verges and eaves.

Although this Guidance does not seek to be prescriptive, it is worth noting that low-key developments which integrate sensitively into their surroundings generally have steeper symmetrically pitched roofs. Where this approach is not adopted (for instance where roofs are at a lower pitch, or are asymmetrical or monopitch) a high level of design quality and control will be needed, which is often only achievable at a high cost.

2.3 Construction Details

Conservatories

Traditional rural houses generally have conservatory spaces added as a kind of "lean-to". They are a valuable way to extend the amount of time that "sitting out" spaces can be used. Modern Conservatories come in a range of standard designs and are often made of uPVC. The size of a conservatory should be selected carefully so as not to overwhelm the property to which it is attached.

Sunspaces

A sustainable type of conservatory space is the "sunspace" which collects the sun's heat through large, south-facing windows. Once the heat is inside the sunspace , it is "captured" by an element with "thermal mass" within the building. This is generally a masonry floor or wall which warms up slowly during the course of the day. This releases heat into the air within the house which in turn is slowly circulated throughout the building - often passively through windows, doors or vents. Sunspaces are not intended as heated spaces so they are usually separated from the rest of the building with doors and/or windows so that levels of heating within the house are not affected by any temperature variations within the sunspace.

A sunspace can be built as part of a new home or as an addition to an existing one. The simplest and most reliable sunspace design is to install vertical windows with no roof glazing. It is difficult to shade sloped glass and a properly sized overhang can shade vertical glass. The orientation of these spaces is crucial as they will need to face onto the sun for a significant proportion of the day in order to function efficiently.

Sunspaces can have a significant impact on a building's appearance and their location needs to be carefully considered. If sunspaces need to be located directly beside a road, or in a location where privacy is affected, consider screening them with deciduous planting which will provide shade during the summer. In winter, when leaves have fallen, more low-level sunshine will then be able to enter through into the sunspace.

Kilmartin House Museum; sunspace used as cafe

Porches

Traditional single storey houses often have porches added to the front, side or rear walls. Within rural areas traditional porch design is generally very simple, using the same materials as the main building. Alternatively, in some traditional properties, internal draught lobbies were provided.

Many modern homes have an "add-on" porch which can look overcomplicated and out of proportion because they use heavy eaves and verge details and heavy tiles for the roof construction.

2.3 Construction Details

Windows and Openings

A fundamental consideration should be to minimise heat loss and make the most of solar gain. This can be done by reducing the size of north facing windows and making south facing windows larger to make the most of solar gain. Heat loss can be further decreased by using low emissivity and triple glazing. Traditionally windows were made of timber, which can be easily repaired. Timber as a product is environmentally sustainable. The manufacture of uPVC uses elements from a finite source and is energy intensive.

Use low energy glazing systems

Most traditional single-glazed windows offer little resistance to the passage of heat so although larger windows allow more daylight to enter buildings, any benefits from solar gain were lost very quickly.

The latest Scottish Building Standards now ask for a good standard of thermal performance for glazing systems so that heat is retained within buildings. In general, double or triple glazed units - with argon used to fill the space between the panes and a low-e coating* - will give a good level of thermal insulation. In addition, double glazing provides improved security, sound insulation and minimises condensation.

Lifestyle

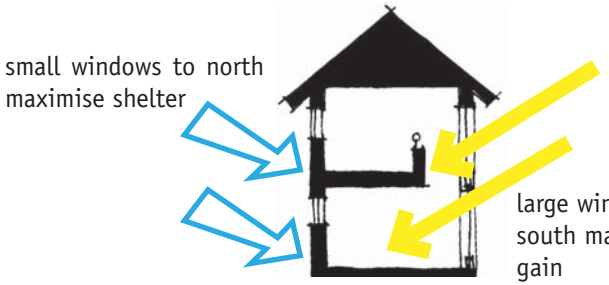
Older traditional properties have pleasing proportions of large areas of walling and smaller areas of, generally, vertically proportioned windows. The small size of many traditional windows is no longer compatible with modern lifestyles which require lots of sunlight and where good views are a desirable feature of any new house or smaller development.

Large picture windows make the most of views in many newer properties but can sometimes be badly proportioned and look out of place. Because the walls of newer houses are not as thick as their traditional counterparts, windows sit closer to the outside edge of the building and the 'depth' of traditionally constructed walls is no longer seen at window and door openings

The challenge for contemporary designers is to maximise light and views while maintaining pleasing designs which are appropriate for their location

(*Low-e Glazing;- Low E glass has a special invisible coating that reflects heat back into the room).

Designing for shelter and solar gain



Lifestyle

Large picture windows make the most of views but are often badly proportioned and look out of place. The wall depth in new houses is much less than previously, so the 'depth' of traditional design at reveals and mullions is no longer always a feature of the façade of a building.

Solar gain and heat loss

Tiree: shutters
This building has an exposed location; new windows are located in a larger opening which can be closed off with shutters at night, minimising energy loss.

2.3 Construction Details

Contemporary Windows

- **keep proportions of traditional larger openings**
- **smaller windows can be incorporated into larger opening**
- **mass of wall emphasised.**

Consider maintaining the traditional relationship between walls and windows so that large areas of glazing are counterbalanced by larger areas of wall. Larger areas of glazing in the proportions of bigger traditional openings,-where glazing is carried down to floor level with the window head at door height - often look right.

Traditional

Examples of good contemporary windows

2.3 Construction Details

Planting and gardens; Garden spaces

It is important to get the relationship between a property and its plot (or site) size right. In other words a house should have a garden which is in proportion to its size, so a large country house should sit in larger grounds than a small, single storey cottage.

The overall aim should be to achieve a natural-looking relationship between the rural landscape and new gardens. As outlined below, the use of walls and fences is an important factor in this. Well sited and appropriate planting can also be used effectively.

Integration into landscape

Garden spaces, boundary treatments and planting can be used to integrate developments into their surroundings. In the best developments gardens and the ground around buildings flow naturally into the landscape and, if possible, there should be no 'unnatural' discontinuation of this relationship. Boundary treatments and planting can be sited to naturally break up clusters of houses into groupings that match the local scale of similar buildings and gardens.

Shelter

Wind shelter can be provided by tree planting and boundary walls or fencing. Where a development is for four or five homes it is worth considering a landscape design for the site as a whole which can locate shelter planting for the whole development.
In the summer, consider providing partial shade to sunspaces using deciduous trees and planting

Screening

Views to and from access roads can be "buffered" by using native planting - in other words planting can provide a comfortable degree of separation. Consider retaining existing hedges and trees intact wherever possible, or by planting new ones - this is a useful approach from the biodiversity point of view.
Unsightly activities or elements associated with new buildings e.g. fuel storage, work areas or storage areas for machinery etc. should be sensitively sighted and screened from general public view.

Boundary treatments

If fences or walls are required they should aim to match traditional existing boundary treatments in the same area - for example, drystone walling or simple post and wire fencing. Rear boundaries or any boundary onto fields and rural open spaces should be unobtrusive - post and wire fences are much less obvious than timber screen fencing.

Where fences and walls are required for security, they can have a significant impact on their surrounding environment. The aim should therefore be to create safe, contained places that are also attractive. The use of low hedges and prickly native planting is a highly useful way of providing security and marking the public/private divide.

Ancillary Buildings

The siting and design of smaller ancillary buildings such as garages, sheds and greenhouses needs to be as carefully considered as a property itself. The key points to consider are;-

- Consider the relationship between main property and any "ancillary buildings". They should sit together as "parts of a whole" and not as a series of disjointed elements.
- Think about the character of any spaces created in between a property and ancillary buildings, such as gardens or between a house and a garage.
- Use materials and details which will enhance the main property

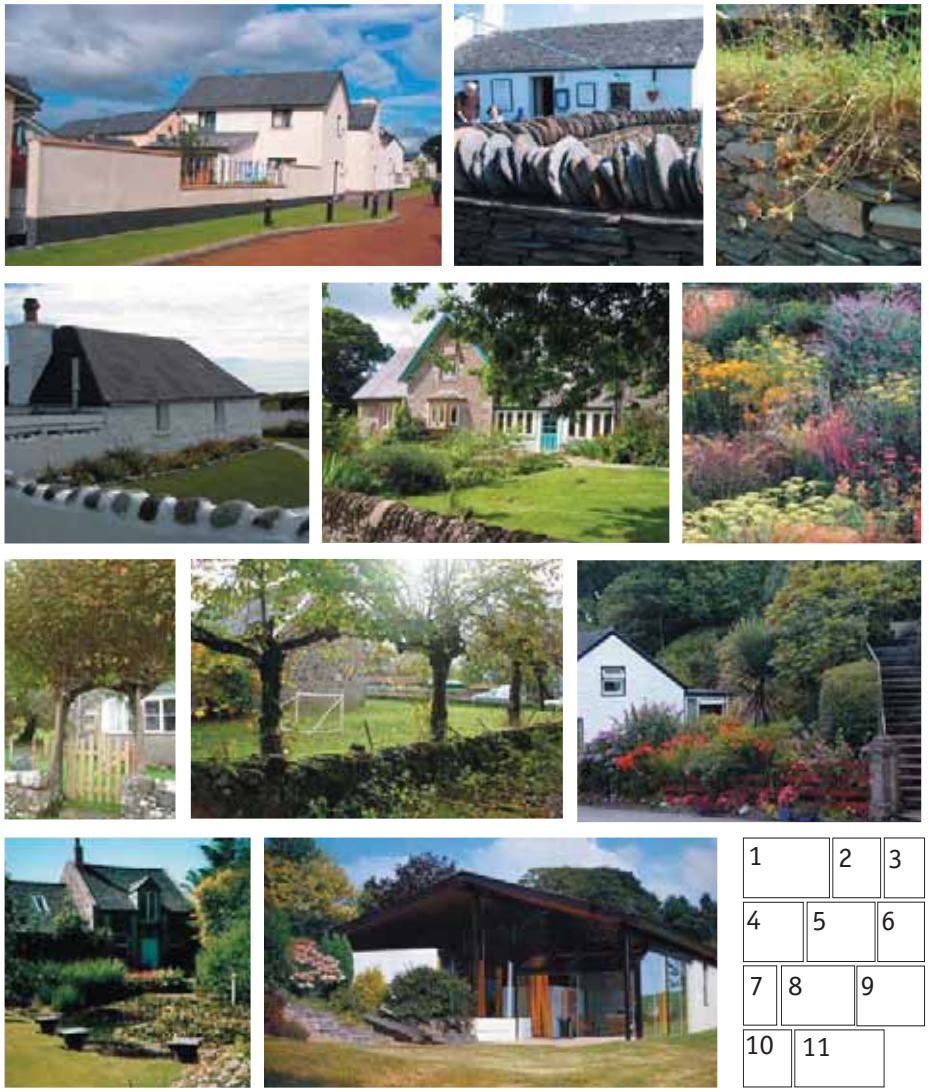
Biodiversity

Sustainable design seeks to promote biodiversity. In smaller scale developments it is appropriate to;-

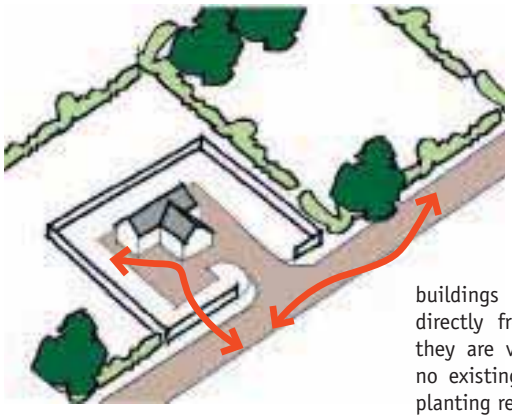
- Minimise any disturbance to existing land
- Identify any wildlife habitats within or adjacent to the development site at an early stage
- Enhance biodiversity by creating different kinds of wildlife habitat eg. woodland, water, hedgerows
- Leave areas of grass uncut to provide wild meadow habitat
- Discontinue the use of pesticides and fertilisers
- Use native species for landscaping
- Provide bird boxes
- Provide ponds or swales (linked to SUDs land drainage systems) which can be used by wildlife
- Retain mature trees

***Argyll and Bute is home to a diverse range of plants and animals together with their habitat. They capture and store energy, decompose organic material, help to cycle water and nutrients throughout the ecosystem, control erosion or pests and help to fix atmospheric gases and regulate climate. "Biodiversity" is a term used to describe this process.**

2.3 Construction Details



1. Screen walling to road **2.** Dry stone wall; Easdale Island **3.** Stone wall provides habitat; good for biodiversity **4.** Boundary wall integrated with dwelling; Tiree **5.** Boundary walls; School, Kilmartin **6.** Scottish planting; Fife **7.** Entrance to dwelling; Mull **8.** Boundary wall and planting; Mull **9.** Garden links house to landscape, near Oban **10.** House and pond; Lanarkshire **11.** Garden links house to landscape



buildings are accessed directly from the road - they are very visible and no existing boundaries or planting remain

less appropriate landscape
no integration with planting and landscape; house becomes inappropriately prominent

better landscape
planting and landscape integrates building into countryside

2.3 Construction Details

Design For Life - "barrier free design "

Buildings and their environment should be designed to be accessible and useable by everyone, from mothers with prams and buggys, to elderly people, and those with a disability such as wheelchair uses. An individual's housing needs will almost certainly change throughout their lifetime , and new homes should make it as easy as possible for a person to live independently as they get older.

For example, (in addition to the downstairs WC suitable for use by a disabled or elderly person required by the building regulations), the following can be "designed-in" at an early stage to increase the flexibility of new housing-

- Stairs which are suitable for a future stairlift to be easily fitted
- A downstairs space which could be easily converted to a future shower (for example a cupboard)
- Bathroom walls suitable for fixing grab rails
- Corridors which are wider than normal so that all areas of the building are, as far as practically possible, negotiable by a wheelchair user

Level access

A key feature of 'barrier free' design is the need for level access to new buildings. To achieve this, the following points need very careful consideration: -

- **Parking spaces** need to be large enough for a wheelchair use to get in and out of a car, and they need to be reasonably close to a property
- **Access paths** need to have a gradient shallow enough to allow a wheelchair user or ambulant disabled person to access a property. This point needs to be considered very carefully at the beginning of the design process because a site is unlikely to be completely level.

If the gradient along a path is to be kept to a minimum it is likely that the path will need to be significantly longer than might be expected - if this is the case, the minimum path length will start to influence a building's location on the site and its position relative to parking areas.

Materials used for access paths need to be carefully considered - for example, gravel is difficult for a wheelchair user

- **Level thresholds** at entrance doors are mandatory; it is difficult to make this type of detail weatherproof so it is important to consider the following at an early stage-

- Locating entrances in a sheltered position
- Providing a suitable porch or canopy
- Providing suitable run off/land drainage for the area around an entrance door

Refer to the Scottish Executive's Planning Advice Note "Inclusive Design" (PAN 78) for more information about how places can be designed so that they can be used by everyone

Flexibility

'Live-work' units – Significantly more people work from home than previously – particularly in scenic areas such as Argyll and Bute. New houses can be designed to provide for their needs – this might simply be the provision of wiring and sockets for a home office or additional storage.

Designing to allow for future change - Many traditional buildings in the countryside are no longer used as originally intended - for example a number of different building, such as barns, schools and churches, have been changed to houses.

Over the years many houses have themselves been altered and extended to meet changing needs. It is very likely that new developments will not be used in exactly the same way in thirty or forty years time, as they are today.

New buildings should be sited and designed to allow for changes to suit future needs. For example, they could include loft spaces which can be easily converted into future living areas, or even bedrooms with extra power and telephone points so that they can be easily converted into home offices.

Non-structural partitions can be designed so that they can be repositioned relatively cheaply.

Problems facing wheelchair users

Solutions - covered entrances and level thresholds...

.....adequate space for parking

2.3 Construction Details minimising energy use

Reducing the amount of energy that is used within buildings on a day to basis will not only impact on global warming, but will lead to increased energy efficiency and reduced energy bills. To reduce energy use consider integrated proposals for maximising energy efficiency and minimising air loss

Maximise energy efficiency within the building

- **Make the most of insulation to get the full benefit of energy retained through solar gain.**

Orientating buildings for shelter and solar gain will increase the amount of heat which they can collect (and lose), but the effects of correct siting and design will quickly be negated unless the building is well insulated. The more insulation in the external fabric of a building, the less heat will be lost - well insulated buildings have heating systems which are significantly smaller than usual.

- **Using the right size of heating system.**

A heating system should be correctly sized to match the heat loss from a building;- if it is oversized and produces too much heat, energy will be wasted. Heating controls must be easy to understand and adjust by the user so that a building's occupants do not waste energy.

- **Maximise daylighting.**

Electricity consumption, particularly for lighting, can account for a large proportion of total energy costs. Reduce energy costs by maximising available daylight through larger windows. Where buildings have a deep plan, resulting in rooms without an external wall, introduce roof- lighting.

- **Choose appliances and fittings which use less energy.**

Use time switches to control the amount of time a fitting or appliance is used, for example communal lighting can be controlled with time switches. Specify low energy lighting and appliances.

Minimise air loss

Even if a building is very well insulated, heat will be lost if there are gaps in the building fabric where air can escape, so this needs to be controlled. Typical situations where this occurs include;-

- around windows & external doors
- air leakage paths where different materials meet (such as chipboard flooring and plasterboard internal walls)
- gaps around services where they enter the building

If air loss has been minimised it is important to maintain an adequate level of ventilation to reduce the risk of condensation, and to ensure that occupants are comfortable (if not, they will open the windows, resulting in substantial heat loss!)

Provide an integrated package of energy efficiency measures

Insulation, heating and ventilation all need to be considered together. There are various methods, such as BRE EcoHomes by which alternative energy efficiency measures can be measured and compared.

Ventilation

All buildings need to have some degree of air moving through them - those that do not will fail to comply with the building regulations and are likely to suffer from condensation.

Although newer buildings can minimise energy use by insulating the building fabric, maximising solar gain and using an efficient heating system, a significant proportion of heat is lost through air movement within ventilation systems.

The costs involved can be a significant proportion of space heating costs - up to one half in a modern well-insulated dwelling and typically one third in older properties. At the same time, newer, more energy efficient and sustainable buildings are designed to allow much less air to pass through the building fabric than was previously the case, in order to conserve heat and minimise energy use, so a serviceable ventilation system is essential.

A more energy-efficient alternative to conventional extract ventilation is passive stack ventilation (PSV). This system uses the ability of air to rise up through a building naturally - exhaust air exits through extract pipes that typically exit at the ridge of a roof. It requires no power and has no moving parts. It is not suitable for all locations (for example, it is less suitable for ground floor WCs located in porches).

Mechanical heat recovery systems can recover heat lost through ventilation by extracting heat from exhaust air and using it to pre-heat incoming fresh air.

2.3 Construction Details materials with low embodied energy

"Embodied Energy" is a way of describing the total amount of energy used in a material's manufacture, transport, assembly, subsequent use and final disassembly. This embodied energy includes the energy it takes to extract minerals and raw materials from the Earth, the fuel it takes to transport the material to the manufacturing site, and the energy used at the plant to make the product. Also included is the energy it takes to use and, later, dispose of the product, or the building itself. The shorter and simpler this process is, the less harm done to the environment, and the lower the embodied energy a material is considered to have.
For example, unfired earth blocks have significantly lower embodied energy than fired bricks.

Materials and construction methods which minimise energy use and their impact on the environment include;-

Using Renewable Materials A renewable material comes from a source which is capable of naturally regenerating. Renewable materials include, for example, timber, flax, cork and wool.

Minimising assembly & construction time. Many parts of Argyll and Bute are remote and travel time is lengthy. Not only are transportation costs high for materials, but there can also be costs associated with accommodating site personnel. It therefore makes sense to;-

- Tailor construction methods and materials to those which are locally available
- Avoid building materials and techniques which are time consuming and labour intensive
- Minimise the use of very specialist materials and details if cost and rapidity of construction are important
- Consider the use of more prefabrication. Prefabricated components can range from the use of timber kit to the prefabrication of entire houses
- Minimise maintenance. By carefully selecting and detailing the right materials, it is possible to conserve resources which would otherwise be used for new construction and new products.
- Use long lasting and durable materials which are easy to maintain
- Consider carefully the use of technology and components which need specialist maintenance.

Designing for deconstruction and reuse. Buildings should be designed to facilitate the easy and economical re-use and recycling of components (such as doors, windows and kitchen units) and materials.

Using recycled and reclaimed materials Using recycled products, (or products with recycled content) helps the environment and the economy in several ways. Material that would otherwise have ended in landfill sites after its useful life can be reprocessed for use in other products. Newspapers can be converted into cellulose insulation, for instance. Reclaimed materials can include the reuse of building materials such as slate and local stone, and the reuse of individual components such as doors, fireplaces etc.

Housing for Dunbritton H.A. Garelochhead

Local contractors received training to become registered installers of a prefabricated structural insulated panel system.

Housing for Fyne Homes; Dunoon

Houses are constructed from a prefabricated locally made timber-kit which offers faster construction time than standard masonry construction

Taransay Pods

"Pods" from the TV show 'Castaway 2000' were designed and prefabricated elsewhere. Their mainframes are made from oak and Douglas Fir. Pods were dismantled and removed at the end of the 12 month period; two have been re-erected as an artists retreat near Kilcreggan.

2.3 Construction Details healthy spaces and places

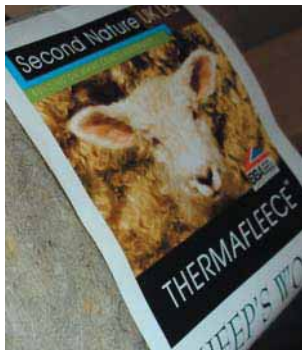
There is concern over the negative health effects of toxic chemicals used within buildings. Many modern building materials - including paint and wood products - contain solvents and other volatile organic compounds which can "off- gas" i.e. they leach into the atmosphere, contaminating the indoor environment. More effective air tightness and controlled ventilation means that these contaminants are less likely to be dissipated than was the case in older buildings; using healthy materials which are low in toxins becomes more of a priority.

Ecological building products

Ecological building materials and products are non toxic and actively promote healthy and comfortable living conditions. Typically, they include insulation made out of flax, cellulose or sheep wool; boards made from a composite of clay, reed and hessian; fired clay blocks; clay and lime based plasters and woodfibre boards.

These basic technologies have been extensively tested by many years of weather and habitation. Many of them help with moisture control and regulation because of their vapour permeability and water absorbing properties, leading to a reduced risk of condensation. Developers should seek to specify products and materials which minimise their negative impact on the environment.

For example, the manufacture of UPVC construction components is extremely energy intensive requiring the use of a range of petrochemicals (which are not a renewable resource). In contrast, the timber used in construction is renewable and sustainable, its growth is considered environmentally appropriate and it has a low embodied energy.



PVC product	Alternative
Rainwater guttering and drainpipes	steel, cast iron, hdpe
Water supply pipes,	Polyethylene
Sewerage and drainage pipes	Vitrified clay pipes or High Density Polyethylene piping
Doors, windows and conservatory frames	Timber from a sustainable source; high quality timber window systems
PVC floor & PVC (vinyl)	Linoleum, cork, stone,

Timber treatment

Over the last 50 years a number of toxic chemicals (such as DDT and Lindane) have been used to preservative-treat timber against fungal and insect attack. Recently a new generation of timber treatments has been introduced with much lower acute toxicity. These include Permethrin, organic zinc compounds, IPBC, Dichlofluanid and Propiconazole. Although these are much less toxic than the earlier treatments, health and environmental concerns remain.

In order to avoid treating timber with toxic preservatives try to either;-

- **use durable timber which does not require treatment**

or

- **use very low toxicity preservatives without toxic solvents such as inorganic borates**

Dun Beag, Tighnabruiach

Dun Beag is a project concerned with the revitalisation of 30 acres of ancient oak woodland. It has developed innovative ways of using the extracted timber for building. The trees are felled and milled in-situ; the cut timber is then treated with Tim- Bor. (a natural boron salt preservative)

Products containing formaldehyde

Wood based boards are ubiquitous in modern interiors and in some cases formaldehyde based resins are used to bond together the constituent parts. Even at a low level, exposure to formaldehyde though inhalation can cause irritation to the eyes, nose and throat; it is also a suspect carcinogen.
Low formaldehyde wood-based boards are available; alternatively timber can be specified.

Paint treatments

Conventional synthetic paint consists of numerous ingredients to give it the properties required for its purpose, including resins, pigments, drying agents, and solvents.
Many of these components may be toxic, but the primary concern relates to the use of volatile organic compounds (VOC's) used as a solvent, as thinners and in cleaning materials.

After the paint is applied, the toxic ingredients can be given off ('off gassing') for some time afterwards, and there is concern about the neurological effects of solvents.
Mineral and plant based paints can be considered to be generally environmentally benign (although minerals are not renewable), but in some cases there can be disadvantages, such as durability, drying time, ease of application and cost. Alternative paint treatments are available - the table, right, details them in ascending order of environmental acceptability.

Generic paint type	Example supplier
Petroleum origin, solvent based paints	Most conventional paints
Minimal VOC paints 0.00 to 0.29 % (water based paints)	Crown "breathe easy" range Low odour covermatt emulsion range Acrylic Eggshell http://
Low VOC 0.3 to 7.99% (water based paints)	Crown Indulgence and Easy Clean range http://
Mineral based paints are low maintenance and environmentally friendly- they are waterborne, odourless, non-toxic and provide a breathable, semi-permeable membrane.	Keim Mineral Paints for external render, stonework and masonry
Natural Paints and Finishes are made from natural raw ingredients such as plant oils and dyes; bees' wax, earth and mineral dyes. Natural paints have minimal embodied energy; some are 100% biodegradable and many ingredients are from renewable sources.	Biodur paint systems for timber and internal walls http:// www.biodur.net/ Auro organic paints http:// www.auro.co.uk/

worst

better

2.3 Construction Details dealing with climate change

Climate change will have direct and indirect impacts in Scotland. Over the next century, it is likely that Scotland will become warmer, sea levels will rise, rainfall and severe gales will increase, and there will be an increased risk of flooding. There is likely to be less snow lying during winter.

Yearly rainfall is likely to increase by between 5 and 20 per cent by the end of the next century, with autumn and winter seeing the biggest increases. The amount of rain falling at one time is likely to increase, leading to increased risk of flooding.

Floodline is operated by the Scottish Environment Protection Agency and provides information on the possible risks of flooding in your area– phone 0845 988 1188 or www.sepa.org.uk/flooding.

Higher rainfall

It is worth considering how buildings can be designed for higher rainfall. Typical measures can include;-

- **providing rainwater guttering and pipework which are large enough to cope with increased rainfall.**
- **using sturdy, durable roofing systems**
- **ensuring all building components (such as roof, eaves and verges, and door thresholds) are designed to cope with increased exposure to storms and heavy rainfall**

Increased Risk of Flooding

Prior to design and construction, consider measures to minimise flood risk. These can include;-

- **ensuring that new houses are not located on a part of the site which may be susceptible to flooding** - this may be an intermittent problem related to the existing water table and existing patterns of drainage
- **minimising hard landscaped areas** so that storm water runoff is reduced.
- **using porous paving schemes (SUDs)** or where only one house is constructed, a soakaway
- **land to the side of new access roads can be used as a "swale"** to collect storm water which has drained from the road

Construction and Materials for Flooding

(this advice is based on PLANNING ADVICE NOTE 69: Planning and Building Standards Advice on Flooding)

If there is no alternative to locating a new building in an area of known flood risk , then it is likely that applicants will be asked to include design features which will reduce the extent of flood damage.
There are two basic approaches that may be appropriate for the protection of buildings against the effects of flooding.

Dry proofing prevents flood water from entering a building in the first place; it uses waterproof barriers at openings, and non-return valves on drains. It is not easy to "dry-proof" a building - simple measures will only protect a dwelling for a few hours and more complex methods are unlikely to work if buildings are subject to flooding for long periods.

Simple methods could include (among others);-

- **Air bricks** –utilise higher air bricks connected to the solum (underfloor area) with a periscope ventilator.
- **Porches** – these can be designed so that they form an added barrier to flood water reaching the front or back door.
- **Boundaries** – can be used to create a solid, relatively waterproof barrier
- **Landscaping** – contoured to encourage water to drain away from the house.
- **Drainage** - use of SUDS

Wet proofing assumes that houses will tolerate flooding - that materials will be used which will suffer minimal damage after immersion in water. It is important to bear in mind that services (such as electric wiring) will need to be located above the maximum flood level and there will need to be methods for water to drain easily from the building following a flood.

Simple points to consider at construction and design stage, in an area of known flood risk could include;-

Floors - raise floor levels, use dense concrete screeds or solid concrete floor slabs and use steel joists and wall plates as an alternative to timber.

Walls - Fix plasterboard horizontally so that lower sheets can be more easily removed

Interiors - Replace door hinges with butt hinges that allow doors to be removed

Services - Locate service meters above ground floor level where this is possible

Steel gutters and downpipes (alternative to UPVC)
Galvanised sheet steel rainwater systems combine a good performance with fast and easy assembly This type of system is installed in 90% of buildings in Sweden.

Bibliography
Acknowledgements

Acknowledgements

Guidance documents incorporate illustrations from the following sources;-

- RCAHMS
- Gokay Devici
- Claudia Ferguson-Smyth
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- Fyne Homes
- Mike Davis
- Mike Hyatt
- Tiree Development Partnership
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- Gaia Architects
- the Easdale Island Trust
- Gareth Roberts
- Arc Architects
- Richard Gibson Architects
- Richard Murphy Architects
- David Blair
- Blast Architects
- Malcolm Fraser Architects
- Dualchas
- Isle of Gigha Trust
- West Highland Housing Association
- Vernon Monaghan
- Sills Associates
- Jamie Troughton
- Page and Park
- Chris Stewart Architects
- Kingdom Housing Association

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Argyll and Bute Council
The Local Plan is available digitally from the Argyll and Bute Council website at;- **http://www.argyll-bute.gov.uk/content/planning/developmentpolicy**

Argyll and Bute Council **Library and Information Service's Local Collection** Highland Avenue, Sandbank Dunoon PA23 8PB Tel: 01369 703214 Fax: 01369 705797 Contact Eleanor Harris, Local Studies Librarian, for more details (eleanor.harris@argyll-bute.gov.uk).

Each branch library holds a small Local Collection specific to its area, but the bulk of the material, including books, pamphlets, maps and postcards is held at Library Headquarters

Publications
The Buildings of Scotland, Argyll and Bute by Frank Arneil Walker
ISBN 0140 710 795
A guide to historic buildings in the Argyll and Bute Area

Argyll and the Islands: An Illustrated Architectural Guide byFrank Arneil Walker
ISBN: 1873190522
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ISBN: 1873190077
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The Stenlake Publishing Series 'Old Islay' etc. -compilations of old photographs are available at **www.stenlake.co.uk**

The CANMORE database contains details of archaeological sites, ancient monuments and buildings in Scotland. It also provides an index to the catalogued collections of RCAHMS and images of some of the photographs or drawings in the collection and can be found at **www.rcahms.gov.uk**

Buildings at Risk Register for Scotland - redundant buildings of architectural interest which have the potential to be redeveloped
http://www.buildingsatrisk.org.uk

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Potential Adaptation Strategies for Climate Change in Scotland
Andy Kerr, Andy McLeod; University of Edinburgh Scottish Executive Central Research Unit 2001

Sustainable Housing Design Guide for Scotland
Fionn Stevenson and Nick Williams
HMSO

ALI Energy
ALI Energy is a local charitable organisation dedicated to increasing the use of renewable energy and increasing energy efficiency. The can give advice on both the technology and funding available.
Their website can be found at http://www.alienergy.org.uk. Alternatively email **enquiries@alienergy.org.uk or tel 01631 565 183**

SEPA
SEPA is responsible for the protection of the environment in Scotland so it deals with issues related to pollution, sewerage and waste disposal. Their website is a good source of information and can be found **at http://www.sepa.org.uk**
SUDs information is available on their website at **http://www.sepa.org.uk/publications/leaflets/suds/index.htm**
SEPA is the Flood Warning Authority for Scotland. The section of their website dealing with flooding is located at **http://www.sepa.org.uk/flooding/floodline/index.htm** and details products and publications. SEPA are developing internet flood maps for Scotland

The Energy Saving Trust
The Energy Saving Trust is a public body which encourages energy efficiency and the use of renewable energy. It provides comprehensive advice and can provide funding.
It's web site is located at **http://www.est.org.uk/**

Scottish Ecological Design Association has links to a number of useful websites and is available at **http://www.seda2.org/**

WRap - information about recycling and reclaimed products is available at this website **http://www.wrap.org.uk/**

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The Scottish Executive have compiled a range of Guidance on design within both rural and urban areas. Relevant Guidance can be accessed from their website at **http://www.scotland.gov.uk/Topics/Planning-Building/Planning** and includes -

- PAN 78 Inclusive Design
- PAN 77 Designing Safer Places
- PAN 72 Housing In the Countryside
- PAN 69 Planning & Building Standards Advice on Flooding
- PAN 68 Design Statements
- PAN 67 Housing Quality
- PAN 65 Planning and Open Space
- PAN 61 Planning and sustainable urban drainage systems
- PAN 52 Planning in Small Towns
- PAN 44 Fitting New Housing Development into the landscape **(PAN 44 incorporates a detailed illustrated consultants manual of design and analysis techniques prepared by Gillespies.)**

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Historic Scotland
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This Comprehensive guidance for working within conservation areas and working with Listed Buildings can be downloaded from the Historic Scotland database

Other Information about Historic Scotland's policy & guidance available includes;-

- Maintaining Your Home: A Short Guide for Homeowners
- Scotland's Listed Buildings; a guide for owners and occupiers
- Passed to the Future; Historic Scotland's Policy for the Sustainable Management of the historic environment
- Looking after your sash and case windows; a short guide for homeowners

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Edinburgh Standards for Urban Design
Edinburgh City Council

Institute of Civil Engineers Knowledge Database - this internet site has many useful briefing documents such as "Briefing Document Places, streets and movement (Supplement to DB 32)" the site is located at **http://www.ice.org.uk/knowledge/**

Urban Design Compendium
LLewelyn-Davies for English Partnerships and the Housing Corporation

Safety and Security

"Secured By Design"
Improving home security - website address which lists contact names in the Argyll and Bute Area - **http://www.securedbydesign.com.** Alternatively, contact **ACPO Crime Prevention Initiatives**; 7th Floor, 25 Victoria Street, London SW1H 0EX
Tel: 020 7227 3423 E-mail: acpocpi@acpo.pnn.police.uk