

Cornwall Design Guide | PART FOUR

This pdf is best viewed at full screen mode.

Live links appear in [blue](#) or are indicated by arrows ([»](#)), or both.

Use the supplementary navigation tools as well as Adobe functionality (mobile and tablet devices use own proprietary navigation).

Previous page

Contents of overall Cornwall Design Guide

Contents of individual sections

Next page



[main contents](#)

[section contents](#)



Section 7
Building design »

Section 8
The spaces between buildings »

Section 9
Energy conservation »

Section 10
Rural buildings »

Acknowledgements »



Building design



Penryn College utilises energy saving features throughout.

Section 7 Building design

- 7.1 » Construction site management
- 7.2 » Re-using existing buildings and materials
- 7.3 » Built form and character
- 7.4 » Buildings in their plots, plot layout
- 7.5 » Integrating non residential and multi-occupancy buildings
- 7.6 » Materials
- 7.7 » Roofs, chimneys, dormers and roof lights
- 7.8 » Facades and elevations
- 7.9 » Walls
- 7.10 » Outbuildings, curtilage structures and storage
- 7.11 » Property boundaries and entrances
- 7.12 » Waste, recycling and collection
- 7.13 » Building maintenance and management
- 7.14 » Water conservation
- 7.15 » Pollution

7. Building design

The benefits of incorporating sustainable building measures

More than a quarter of the UK’s carbon emissions comes from the energy we use every day to heat, light and run our homes. There are a number of ways in which you can increase the efficiency of homes and buildings. For further information on improving the efficiency it is suggested that you look at

[The Energy Saving Trust »](#)

and the

[Council’s Sustainable Building Guide »](#)



Insulating the new school building at Lanlivery.

© ARCO2 Architecture

7. Building design

7.1 Construction site management

Have you ensured that your construction site is managed efficiently to minimise waste and maximise recycling of site materials?

Have you taken measures to minimise disturbing the surrounding environment when construction is in progress?

Look for guidance on waste minimisation from the:

Waste and Resources Action Programme »
(WRAP)

We recommend:

- Ensuring that where site waste management plans are required they are produced before starting site works;
- Ensuring that environment management plans are produced before starting work. These should include details of noise and dust control.



Ensuring site safety at all times.



Efficient removable of waste material.

7. Building design

7.2 Re-using existing buildings and materials

Have you made efficient use of existing buildings?

Have you reduced your energy use by re-using building materials?

Have you considered investing in energy saving technologies to help reduce energy demand for new buildings, extensions and existing buildings?



Reusing existing building material in the St Pol de Leon residential housing project near Penzance.

We recommend:

- Considering converting existing buildings rather than demolishing and rebuilding;
- Re-use or recycle building materials;
- Using materials with low-embedded energy or materials that can be recycled;
- Obtaining materials from local sources wherever possible;
- Checking that materials have low toxicity;
- Designing new buildings and extensions so that they can be used in different ways;
- Seek advice from a Building Control Officer regarding whether the building is capable of conversion and how to meet the requirements of Building Regulations;
- Asking an ecologist to check for evidence of roosting bats or birds prior to any building work, and planning work to ensure continued use by wildlife;
- Conversions should retain the essential character of the original building;
- and
- If a building is listed; English Heritage has also produced a

[Framework of Conservation Principles »](#)

7. Building design

7.3 Built form and character

Is your building form simple and drawn from local building traditions?

Have you adhered to simple traditional forms and used local materials?

Will your scheme create a harmonious streetscape and protect the distinctive character of the countryside?

Have you built in flexibility to the building to allow for future conversion of roof space or use of your building for another purpose?

Where possible designs should follow the principles described in:

Joseph Rowntree Foundation

© Atelier 3 Ltd



We recommend:

- Designing house/bungalow plans based upon the traditional rectangular form with a simple pitched roof spanning the narrower dimension creating a horizontal 'long and low' emphasis;
- Creating larger or more complex buildings through groupings of the basic forms to make up 'L' plans or 'T' plans with rear extensions or a deeper plan by adding a parallel range behind with a M-shaped roof and central valley avoiding square or big boxy plan

forms which may produce uncharacteristic pyramid-shaped roofs;

- Designing the form and internal layout of smaller houses (2 bedroomed to smaller) to allow for adaptation to meet future requirements;
- Using traditional purlin/rafter construction to allow for future conversion of roof voids; and
- Ensuring rooms are of adequate size;

We recommend that you avoid:

- Narrow frontage detached houses which create a discordant building line and do not reflect the wider frontage local characteristic, join up smaller houses in terraces to create an overall rectangular form; and
- Heavy and unnecessary front projections other than porches and bays where appropriate – house plans should normally be flat fronted.

7. Building design

7.4 Buildings in their plots, plot layout

The way in which a new building sits within its plot, or site, is a critical factor in terms of how well it fits in with its neighbours and contributes to the overall character of the street.



© Mitchell Architects

We recommend:

- Creating well enclosed streets and improve natural surveillance by placing buildings at the front of the plot and continue any existing consistent building lines;
- Ensuring the principal access to all buildings should be from the street to encourage activity, social interaction and safe access to properties;
- Where buildings are located on a corner plot, ensure that they turn the corner with windows or doors on both outer elevations to avoid blank gables;
- Ensuring that the fronts of properties face each other across the street and that private rear gardens of properties are positioned against each other; and

Fluent landscaping adds beauty to utility.



Juxtaposition of houses can help create a pleasant community environment.

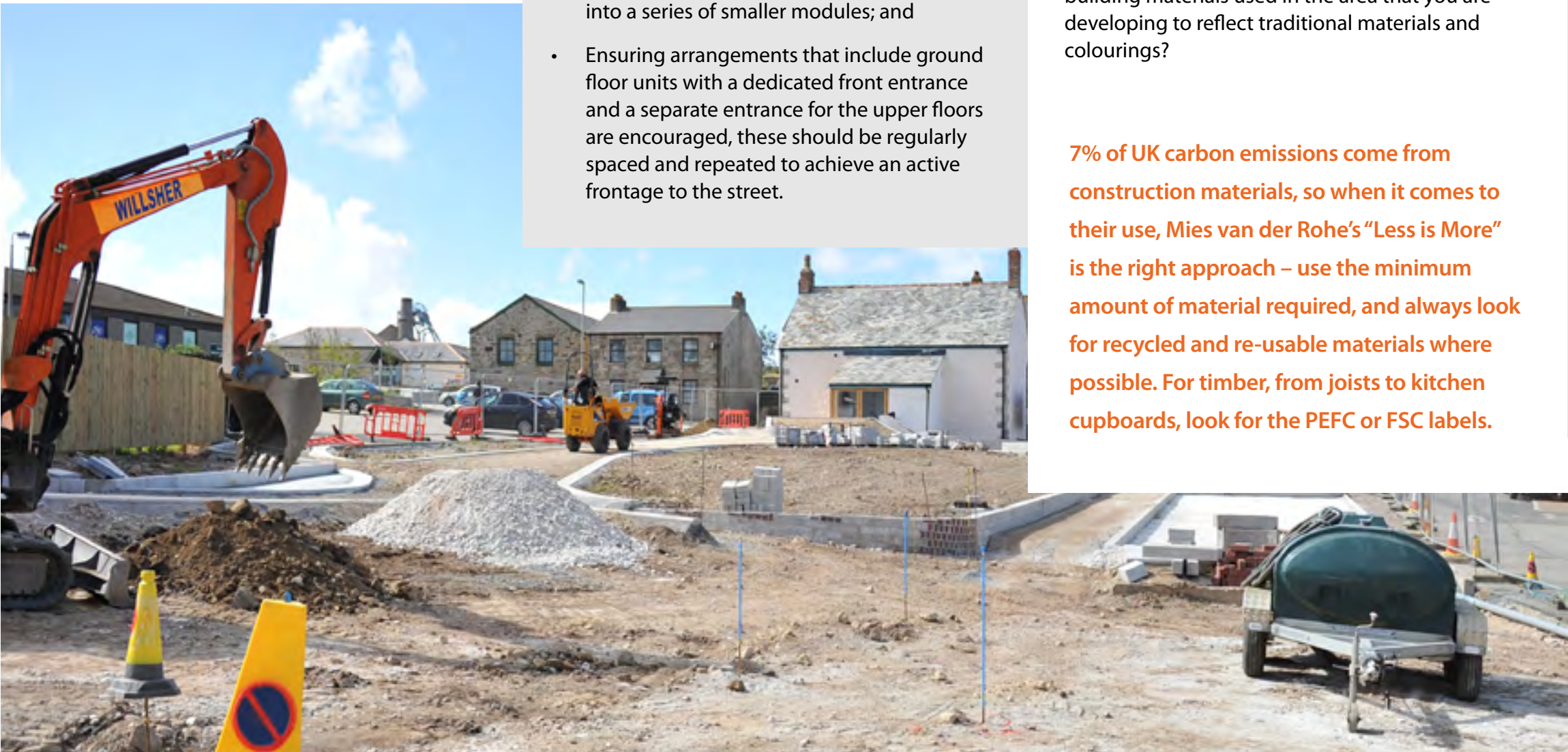
- Maximising opportunities for solar gain by orientating blocks within 30 degrees of the east-west axis.

7. Building design

7.5 Integrating non residential and multi-occupancy buildings

Have you considered how the external form of the building relates to other buildings in the locality rather than reflecting the internal arrangement?

Does your building create an active frontage?



We recommend:

- Organising multi-occupancy and non-residential buildings with several vertical circulation and service cores rather than one large single core;
- Organising buildings with larger floor areas into a series of smaller modules; and
- Ensuring arrangements that include ground floor units with a dedicated front entrance and a separate entrance for the upper floors are encouraged, these should be regularly spaced and repeated to achieve an active frontage to the street.

7.6 Materials

Sustainable natural resources

Is your use of material based on an understanding of the significance of the historic environment?

Have you considered the palette of colours of building materials used in the area that you are developing to reflect traditional materials and colourings?

7% of UK carbon emissions come from construction materials, so when it comes to their use, Mies van der Rohe’s “Less is More” is the right approach – use the minimum amount of material required, and always look for recycled and re-usable materials where possible. For timber, from joists to kitchen cupboards, look for the PEFC or FSC labels.

We recommend:

- The selection of materials should be considered as an integral part of the conceptual design process and not left until the detailed design stage. To assist Cornwall Council has produced:

[The Cornish Building Stone & Slate Guide »](#) and

[Cornwall and Scilly Historic Environment Record »](#)

- The reuse of local stone and slate where appropriate for small scale buildings;
- Taking the opportunity for the re-use of materials found on site, either as a result of demolition or excavation; and
- Using a subdued palette of colours including renders based on natural lime wash finish or coloured earth based pigments.

We recommend that you avoid:

- Imported natural materials to imitate local materials unless it would prove unacceptable on environmental grounds to source enough material locally;
- Larger scale salvage that could cause significant damage to the character of Cornwall; and
- Large scale use of brick.

The mixed use Heartlands regeneration development at Redruth.

7. Building design

7.7 Roofs, chimneys, dormers and roof lights

The predominant roof form in Cornwall is a simple pitch with gable ends with a, long, relatively low pitch demonstrating uncomplicated ridgelines on individual buildings.

Have you considered locally distinctive forms of roofing including pitch and materials?

Have you considered appropriate roof structures that allow for the use of renewables?

A rooflight installed at an angle and orientation similar to solar renewables will capture the same energy from the sun, but instead of generating power it is likely to cause localised overheating in the internal space. Consider relocating the window, sun-pipes, dormer windows or some form of external shading.



Skylights must fit in style with type of period roofing.

We recommend:

Roofs

- Continuing use of real slate where there is an appropriate local source, such as Delabole slate;
- Using reconstituted mid/pale grey slate roofing where real slate is unavailable;
- Using traditional, local slate sizes, and methods of laying. The strong prevailing south westerly winds in the area have generated eaves and gable details which are tight against the building and are preferably constructed with no or minimal exposed timber work;
- Using simple roof shapes that express the building form rather than obscure it;
- Integrating position of downpipes into the design of the roof and facades of the building to minimise impact of pipes on the overall design;
- Using an appropriate pitch. Parallel/double pitch or lean-to roofs can be used to accommodate buildings with a deeper plan;
- Keeping eaves and verges tight and simple which suit the form and style of the building as well as its location; and
- Using simple trim details to produce uninterrupted eaves lines.

© CTD / imijstudio

© CTD / imijstudio



Cornish style chimneys and traditional slate roof tiles.



We recommend:

Chimneys

- Providing a working chimney on the ridgeline proportionate to the scale of the building and in a suitable material.

Dormers

- Using traditional pitch roof dormers set above eaves level and below the ridgeline, proportionate to the size of the roof and usually with blind cheeks;
- Positioning dormers to line up with openings on the main façade to create symmetry.

Roof lights

- Using roof lights sparingly and set flush with the roof plane on rear elevations;
- On traditional buildings conservation style roof lights should be used with a vertical band and thin external surround;
- If using sun pipes, select a design that is appropriate for the building and the location.

We recommend that you avoid:

- Very long monotonous runs of buildings with the same roofline;
- Flat, shallow or steeply sloping pitches; and
- The use of standard box shape eaves and projecting fascia and bargeboards unless already in the existing feature.

7. Building design

7.8 Facades and elevations

Have you used traditional proportions of mass and void?

Have you created a symmetrical arrangement of openings?

Do windows and doors enhance and compliment the building and are they appropriate to the rural or urban setting?

© CTD / imijstudio



Unless designing specifically with solar modelling, it's likely that more than 25% of a southern façade will cause more heat gain problems than it generates in benefits.

We recommend:

A good example of maintaining original proportions and using indigenous materials.

- For narrow front-facing gables opt for single openings on ground and first floor levels rather than pairs;
- Traditionally the general pattern of openings are both horizontally and vertically aligned i.e. windows in any given storey are in a row, while upper windows tend to line up above lower ones;
- Retaining, adapting and reinstating original window designs and patterns where possible, to preserve the character of the building;

- Using styles which copy the details of windows and doors on the main building when designing an extension;
- Using simple well proportioned door designs that suit the character of the building;
- Ensuring that timber window and door frames are from renewable sources and of good, durable quality;
- Using traditional materials and finishes for doors and windows, and match these to the

- use and character of the building; including slate or stone for window sills in preference to timber where possible;
- Using paint as the traditional finish for windows and doors; and
- If using a porch this should reflect the form and size of those distinctive to the locality and utilise the same roofing material as found on the main building.

We recommend that you avoid:

- Opening arrangements which are almost, but not quite, symmetrical;
- uPVC in sensitive historic and designated landscape areas unless to match existing on extensions;
- The addition of external shutters as they are not a local tradition;
- Fake styles – like ‘sash’ casements which are top hung, or self adhesive lead lattice;
- As replacements in older buildings try to avoid aluminium, uPVC and tropical hardwood windows and doors;
- Using wood stain or varnish;
- Large flat roofed porches; and
- Balconies on older properties.

7. Building design

7.8 Facades and elevations (continued)

Porches that are heated as part of the house have a high surface area compared to their volume and as such reduce the efficiency of the house. Where possible, use porches as draught-lobbies only set outside of the insulated envelope of the building.



A sympathetic extension.

We recommend:

Meter boxes and satellite dishes

- Ensuring meter boxes are sited conveniently for external access but be located so as not to have a detrimental visual impact on principal building façades;
- Ensuring you choose boxes that are in keeping with the materials used in the buildings and position satellite dishes away from principal façades.

Balconies

- Should only be used where they would not adversely affect the privacy of neighbouring properties;
- Should be designed to complement proportion and character of the property and should line with and follow the detail of windows on the original house; and
- Guarding to balconies should be unclimbable.

Balconies should be outside the thermal bridge.



When specifying glass, consider using differing glazing for differing orientations: On southern sides, poorer U-Values (levels of insulation) may be acceptable as a trade off for better G Values (better resistance to solar gain), whereas on northern sides the reverse is likely to be true.

Balconies cantilevered from buildings make avoiding thermal bridges challenging. Consider whether balconies can be independently supported or formed on the insulated roof of a building element beneath.

7. Building design

7.9 Walls

Have you considered the influence of local geology on walling materials for your scheme? The use of Cornish stone, such as slate and granite, promote local industries and are the most appropriate response to the locality.

Have you used local or reclaimed materials wherever possible?



Well considered local materials used at North Point, Padstow.

We recommend:

- Using local materials, including locally sourced aggregates in renders or coatings;
- Using local granite, slate or other local stone for walls, with granite for lintels, quoins and openings;
- Matching existing local stone size, colour and coursing as closely as possible;
- Using cob or rammed earth walling as a traditional building material, where appropriate.

Render

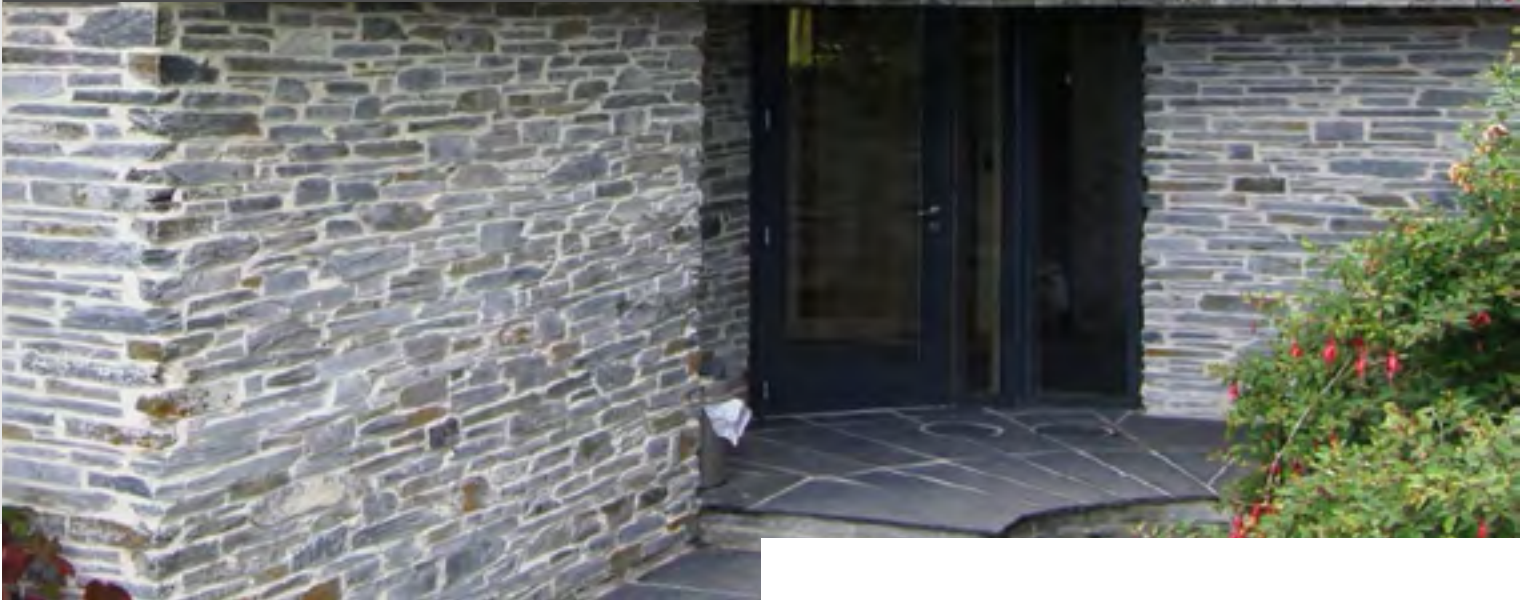
- Using render as an alternative to stone;
- Considering traditional buildings which may warrant traditional methods of render such as limewash or hand applied mortar;

Slate hanging

- Using slate hanging as a feature for walls, repair existing slate hanging with local or second-hand slate; and
- Retaining air movement behind slates to keep the fabric of the building ventilated and dry- avoid coatings, painting or mortaring existing slate hanging.

We recommend that you avoid:

- The use of brick as a walling material other than for traditional detailing;
- Ribbonded or struck pointing to stone walls – generally use lime mortar in preference to hard cement mortar;
- Areas of token stonework.
- Cold grey coloured cement render; and
- Expansion joints or if unavoidable shield with down pipes.



7. Building design

7.10 Outbuildings, curtilage structures & storage

Have you considered the provision of sufficient storage for bins, cycles and other equipment?

Are outbuildings sited to avoid dominating the property or neighbouring dwellings?

Do property boundaries reflect the local character?

We recommend:

- Considering siting garages, car ports and larger outbuildings in a way which links them visually to the main building and one another;
- Locating additional structures to the rear or set back to the side of the main building where they are less visible;
- Ensuring that garages are simple, functional buildings of moderate size and scale and should not compete with the main building in terms of footprint or height. They should generally be single storey, simple in design, avoiding the use of domestic features;
- Matching the character of the outbuilding to the main building – keep it simple and fit for purpose;
- Creating a set back for large garage doors, use two single doors, vertical boarded timber doors are generally suitable in traditional context or styles to match the parent building;
- Ensuring bin storage should be in accordance with Council requirements for general waste, composting and recycling;
- Ensuring storage is accessible via the front, side or rear of plots. Residents should not have to access them through a building;
- Providing adequate cycle storage provision, ideally incorporated within each dwelling. Large space bicycle storage buildings that do not benefit from good natural surveillance should be avoided; and
- Ensuring convenient cycle storage should be provided in workplaces, outside community facilities, shops, schools, colleges and stations.

Using common materials and building styles to achieve a harmonious whole.

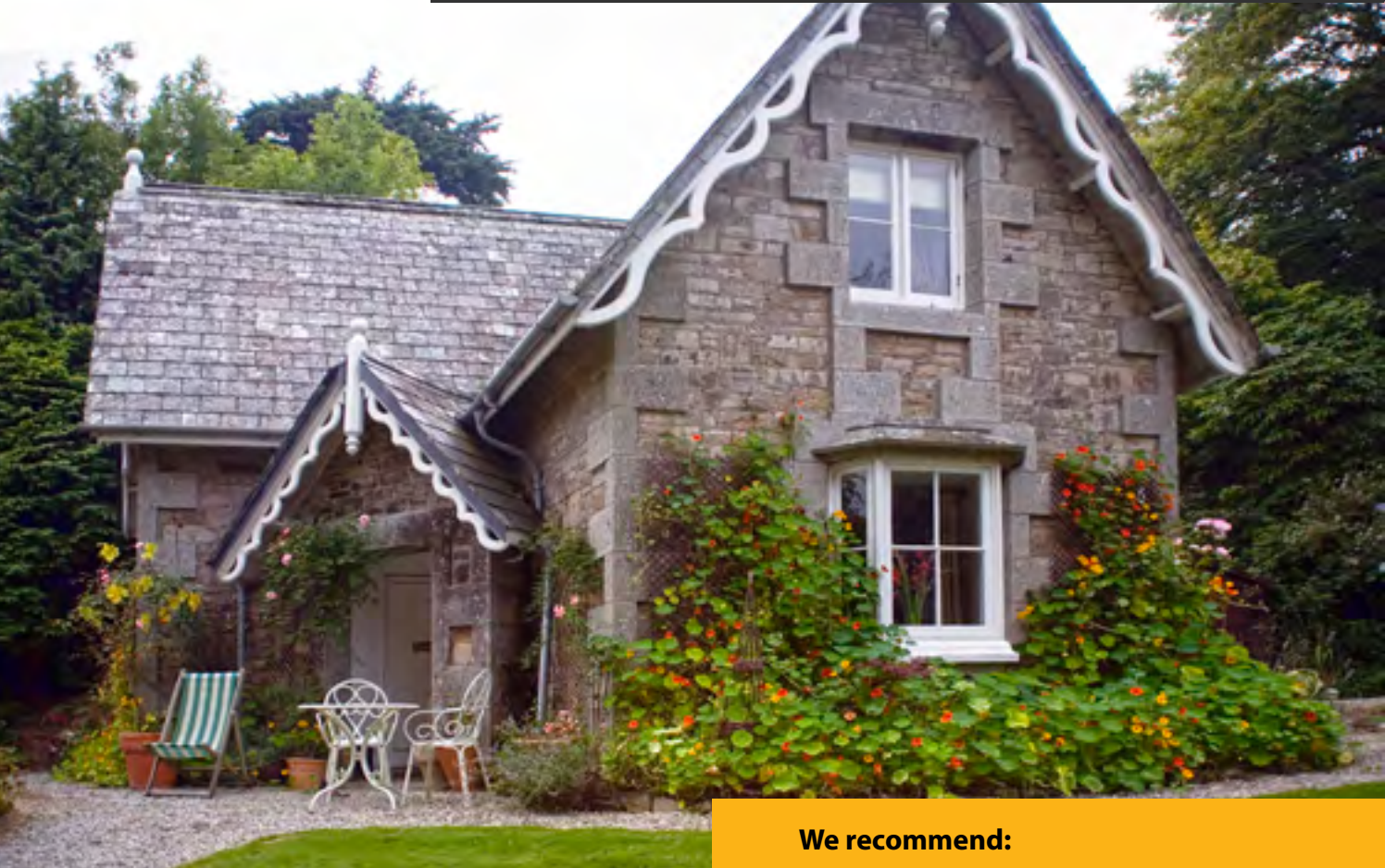


© ARCO2 Architecture

7. Building design

7.11 Property boundaries and entrances

Always aim to preserve or enhance the local character of of your surroundings ...



We recommend:

- Ensuring the proposal reflects the local character and does not urbanise rural areas;
- Planting should be of local native species and not be ornamental in rural areas;
- Consideration is given to the highway verge outside the property which in rural areas

... using methods and materials that complement the site.



We recommend that you avoid:

- Dotting outbuildings over the plot with odd angles to the main building line or boundary features.

7. Building design

7.12 Waste, recycling and collection

Easy use of facilities for householders is critical to the participation in the Council's:

Waste and recycling »

collections schemes and the impact they have on the environment.


Early dialogue with the Council's Waste Management Service is essential when planning new facilities and developments to ensure that waste collection services are adequately accounted for in any new development or alteration to existing properties.

Further information can also be found in the ADEPT document

Making space for waste »

© CTD / imijstudio

We recommend:



Integrated waste storage conveniently close to pickup point.

- Ensuring storage space of a sufficient volume for recycling, composting bins and refuse containers both outside and in the kitchen;
- Ensuring access to the point of collection for waste from the side or rear of the property be designed at the planning stage;
- Considering collection crews where ever possible;
- Considering that bin stores for individual or communal storage must always be maintained and managed by the site owners, should have a minimum impact on the street scene and be easily accessible to householders and collection crews;

- Consideration of the access, ventilation, floor covering and the ability to manoeuvre containers should be made;
- Ensuring litter bins should be provided on sites with the Council's agreement;
- Ensuring that the site layout and design must dramatically reduce or eliminate the need to reverse a collection vehicle (this being identified as a high risk operational issue);
- Ensuring that waste collection vehicles should not be required to pass under archways;
- Ensuring site layouts are designed to enable waste collection vehicles to turn;

We recommend that you avoid:

- Communal collection points

Cornwall Design Guide | Cornwall Council 2013

« section contents »

75

7. Building design

7.13 Building maintenance and management

Have you provided a Home/Property User Guide for each property to include simple instructions for occupiers on how the energy performance of the building is designed to work and how the energy and water systems work?

Have you made provision for the maintenance and management of developments via adequate management and maintenance schemes to ensure their long-term success and effectiveness?

We recommend:

- When selling or renting a building, prepare a simple and non-technical User Guide that covers information relevant to the occupants about operation, environmental performance and maintenance of the home. The information should be available in alternative formats and ideally it should also include tips for sustainable living;
- Designing a flexible building, which can be extended and modified to increase its lifespan and reduce the risk of demolition, follow guidance for Lifetime Homes;
- Designing inspirational and low maintenance buildings and landscape areas to reduce energy, resources and time in upkeep and repair;
- Follow:
[Considerate Constructors Scheme »](#) procedures;
- Committing to the
[Secured by Design – New Homes »](#) principles.

- Creating buildings and areas of public realm that utilise good quality, robust materials that are locally distinct, will withstand local climatic conditions over time and used in a way that will facilitate ease of maintenance;
- Creating a building or an area of public realm, which is both easy to manage and maintain within economical budgets;

- Ensuring landscape areas need to be low maintenance from the inception of the scheme; and
- More information is available from the:
[BRE Trust »](#)
[Energy Saving Trust »](#)
and
[Cornwall Sustainable Buildings Trust »](#)



© CTD / imijstudio

Innovative and convenient solutions for the scheduling of maintenance and ease of implementation.

7. Building design

7.14 Water conservation

Have development proposals used sustainable water sources and design methods for efficient use of water resources for both internal and external water consumption?

Further information and case studies using practical solutions refer to the

[Sustainable Building Guide »](#)

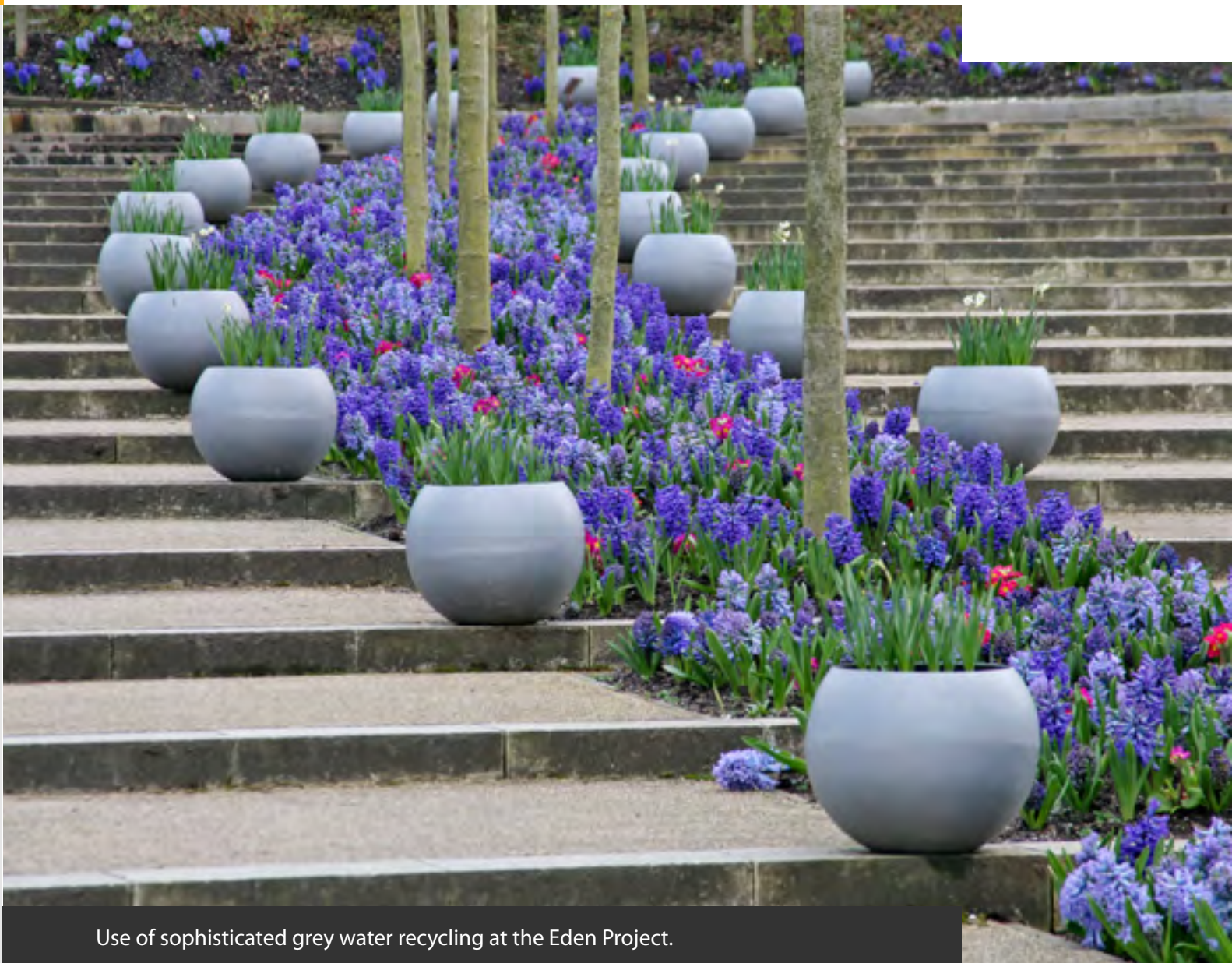
and

[Cornwall Sustainable Building Trust website »](#)

When specifying water fittings, consider their use. Kitchen taps will be used to fill pots and pans, so the actual volume of water is important, whereas hand-basin and sink taps are primarily for washing, where the volume of water is less important but the sensation of wetness is key; this can be met by very low flow rate, aerator.

We recommend:

- Installing water meters, water-saving devices, efficient fixtures and appliances such as dual flush / low flush toilets, aerated spray taps, low flow showers and low volume baths;
- Designing gardens to be drought resistant by using indigenous planting;
- Diverting rainwater to a soak-away instead of a sewer and receive a discount to your water bill;
- Installing advanced rainwater harvesting systems (unless site conditions are such that it is not possible) where rainwater is stored and used in non-potable applications such as toilet flushing, laundry, cleaning and garden use. If installation is within a historic building, any required storage tanks and pumps should be sensitively positioned to avoid damaging the original fabric;
- Installing grey water recycling systems where basin and shower water is filtered and treated for use in the toilet or garden; and
- Re-opening and make usable historic wells and village pumps to provide additional communal water source to towns and villages.



Use of sophisticated grey water recycling at the Eden Project.

7. Building design

7.15 Pollution

Have you put in place systems that minimise polluting emissions to water, air and soil during construction and occupation of the building?

We recommend:

- Minimising noise, dust and light nuisance to neighbours during construction by working within daylight hours and clearing any waste from the site responsibly;
- Testing soil before excavating it to avoid disturbing contaminated material;
- Disposing of any asbestos safely;
- Minimising any emissions from heating, cooling and ventilation systems. Specify heating plants with low nitrous oxide emissions and cooling systems which do not use ozone depleting or global warming substances;
- Reducing noise pollution during occupation by installing adequate sound insulation in walls, floors and plant rooms, especially in flats and terraced / semi-detached houses;



- Reducing noise impacts from roads, railways and industrial sites by using double glazing on all aspects exposed to high noise levels. Natural ventilation may not be a practical option on aspects exposed to high noise levels;
- Reducing light pollution by using directional and appropriate external lighting;
- Reducing internal air pollution by using natural finishing products, such as paints and floor coverings;
- Removing stale and pollution air and reduce damp related to condensation through natural and mechanical ventilation where appropriate;
- Minimising embodied pollution by specifying local natural materials which are manufactured without toxic chemicals;
- Following procedures described in the

- Considerate Constructors Scheme »** ; and
- Traffic related emissions should be mitigated through Transport Assessment and Travel Plan.

8

The spaces between buildings – getting the detailing right



Section 8 The spaces between buildings – getting the detailing right

“ Emphasis should be as much about the spaces between buildings, the public realm, as the buildings themselves. To create successful neighbourhoods, good quality housing needs successful streets and public spaces. ”

CABE

Have you considered incorporating green infrastructure as part of your scheme of tying existing communities together?

Have you involved the local community with your proposal and identified opportunities for public art?

- 8.1 » Public art
- 8.2 » Street furniture
- 8.3 » Signs
- 8.4 » Street lighting
- 8.5 » Surfacing materials
- 8.6 » Boundaries & edges

8. The spaces between buildings – getting the detailing right

8.1 Public art

‘The drummer’ on Lemon Quay in Truro.



We recommend:

- Commissioning public art works early in the design process;
- Considering the use of lighting, water, detailing and materials. This can be powerful as a form of public art. Similarly artworks, which interact with people, can engage people for example the

Exchange Penzance »

changes colour with movement.

- Considering the use of artists, as part of the design team from the design concept phase to help to interpret the place, its history and people's memories within the local community;
- Seeing the public realm as a space for the community to hold temporary exhibitions, installations, performances, local choirs and bands to perform;
- Providing small amounts of artist's workspace within your development can provide a base for artists and a creative vibe to your development;
- Public realm, buildings and homes with elements of artist designs, and/or use of colour could provide a key selling point for your

development making your development stand out from the crowd; and

- When commissioning an artist/artwork determine the scope, structure and project budget at this outset. The commissioning process should take into account the full lifetime of the work/scheme including its cost, durability, quality, maintenance and management over time.



The delightful copper 'fish banister' at Well Lane in Falmouth.

8. The spaces between buildings – getting the detailing right

8.2 Street furniture



Period replica benches fit well into this historic location.

© CTD / imijstudio

We recommend:

- Considering street furniture, signage and lighting which should be kept to a minimum to create a harmonious streetscape;
- Using unobtrusive, high quality, fit for purpose, coordinated materials and colour which are low in maintenance and reflect local details in the design to reinforce character; and
- Locating street furniture along desire lines and avoid obstruction to openings and footways.

A lovely touch that will last many years.



© Cornwall Council

8.3 Signs

We recommend:

- Retaining and maintaining existing traditional street signage as far as possible;
- Using wall-mounted signage, on buildings and boundary walls wherever possible; avoid stand-alone signage as it adds to street clutter, and in particular plastic signage as it is poor quality visually; and
- Reducing highway signage to all that is necessary in collaboration with informative and safely designed traffic schemes to respect the character of the particular area.



Using regional natural material helps to give signage authenticity and long levity.

© CTD / imijstudio

8. The spaces between buildings – getting the detailing right

8.4 Street lighting



We recommend:

- Ensuring that all new development is adequately lit unless the location prohibits its use;
- Ensuring street lighting is considered as part of the overall design;
- That the design of lighting and planting schemes should be integrated to avoid the potential for conflict or compromise;
- That the character of the area will be reflected in the scale and colour of lighting. In general the height of lighting columns should not be greater than the predominant eaves height of buildings defining the street;
- Where possible use building/wall mounted lighting to help keep the public realm simple;
- Lighting provision should reflect the street’s function and activity. For example, street lighting in the centre of a town may be more intense than that in rural villages;
- Lighting schemes should seek to design out crime and be located to prevent dark areas; and
- Lighting is designed to minimise disturbance to bats.



Lighting should be in keeping with its surroundings and provide adequate luminance for safety reasons.

We recommend that you avoid:

- Lighting schemes that interfere with key views, features and landmarks.

© CTD / imijstudio

© CTD / imijstud

8. The spaces between buildings – getting the detailing right

8.5 Surfacing materials

Have you considered how your choice of surface materials integrates new development into the existing townscape, and reinforces the character and locally distinct features of a particular area by the use of local materials and methods?

Does your choice of surface material allow for ease of access and maintenance, and replacement for like-for-like materials to minimise the visual evidence of repair?

Is your paving and other hard surfaces designed to suit the character of the locality and is it made from high quality, natural materials wherever possible, to last longer, look more attractive and can be recycled?

Have you, in historic townscape areas, taken into account retention of granite setts and pavements and other historic surfacing that adds patination and historic distinction to areas. English Heritage has produced detailed advice on:

Street design & good practice »

We recommend:

- Using high quality, natural materials for paving and hard surfaces;
- Using robust materials that reflect the tradition of the location, e.g. tarmac for access roads or a grey aggregate top type in rural areas or hard core (hoggin) for country lanes and paths. Use greys avoiding brown or red which is not locally distinct; wherever possible create permeable surfaces to reduce run off;
- Using materials in construction and maintenance that are resilient to the impacts of climate change, and provide access and ease of maintenance in terms of services and utilities;
- Using recycled waste products generated from transport maintenance and improvement schemes, taking into account the best use of that material;
- Protecting and maintain existing historic or unique surface materials. Where works are necessary seek guidance from the Council’s Historic Environment Service prior to commencement and liaise with the local community to assess their requirements. The damage or loss of historic or unique fabric can cause



- negative impacts on the character and quality of heritage assets that form part of the public realm;
- Considering the use of porous and natural materials in areas, which warrant a light touch due to the character of the particular location, or for areas of infrequent use i.e. grasscrete in conjunction with sustainable urban drainage systems;
- Limiting surfacing materials to a palette of 3 materials; do not create large expanses of a single material; and
- Using different materials to break up and define areas; keep paving patterns simple – stretcher bond pattern for paving rather than elaborate patterns.

© Cornwall Council

8. The spaces between buildings – getting the detailing right

8.6 Boundaries and edges

Have properties got a defined boundary, which segregates private and public space?

Does the type of boundary proposed fit in with the character of the location and any distinctive local traditions?

Have you incorporated planted boundaries to ensure biodiversity and biodiversity corridors and retained locally distinct features?



We recommend:

- Defining boundaries clearly and consistently to create harmony and a strong unified identity and sense of place – tie new and old developments together;
- Choosing appropriate types of boundary such as:

Cornish hedgerows & hedge banks»

to delineate field boundaries and form part of domestic boundaries where they border the open countryside;

- Designing boundaries to reflect those in the immediate vicinity to the site and the location of the site;
- Ensuring front boundary type does not unduly compromise surveillance particularly to footpaths and cycle routes; and
- Neighbouring boundary treatments around the building must provide adequate security and be overlooked wherever possible, e.g. corners, gable ends.

Stone walls

- Using local granite, Killas or other local stone for walls with granite posts at entrances being typical;
- Matching existing local stone size, colour and coursing as closely as possible;

The Dry Stone Walling Association »

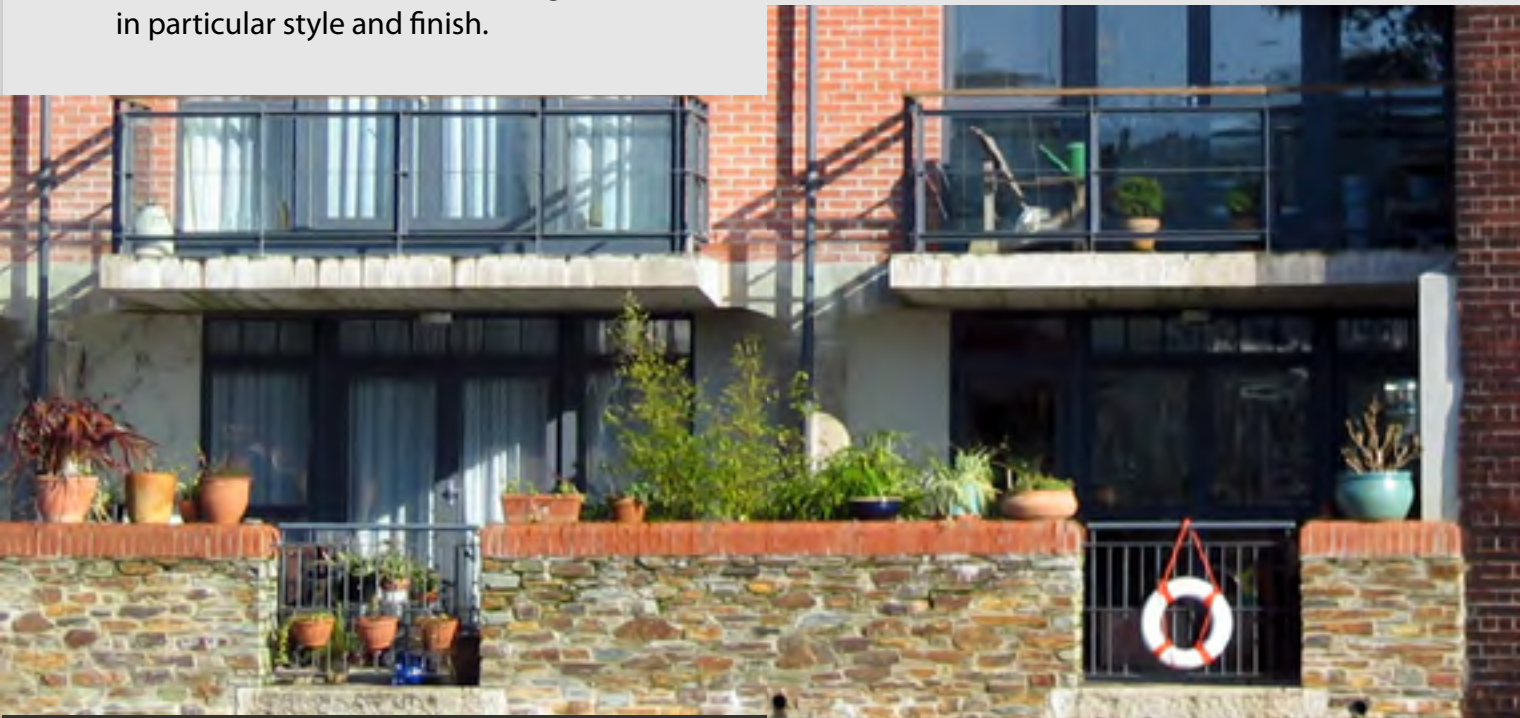
has produced detailed information on the construction and maintenance of walls, banks and hedges. Cornish hedges are historically stone-clad hedges with an earth core.

Fences & railings

- Using simple timber fences, of appropriate height and colour finish where necessary and appropriate; and
- Railings may be appropriate, advice should be sought from Cornwall Council or the Parish Council in the use of railings, in particular style and finish.

Gates & entrances

- Entrance gates should be simple and should match the style of adjacent boundaries, the character, scale of the property and the street scene;
- In general timber gates are more attractive and conducive to rural character areas than metal – often taking the form of field gates; and
- Metal gates give distinctive entrances to many older/traditional buildings and spaces, e.g. schools, parks, cemeteries.



Yards at the river's edge utilise native stone & brick at Truro water front.

9

Energy conservation



A holistic approach to energy conservation using a mix of insulation, thermal mass passive heating and wood stove at this rural dwelling near Constantine.

Section 9 Energy conservation

In order to improve the environmental sustainability of homes in the UK, the

[Code for Sustainable homes »](#)

was published by CLG to provide a national standard to reduce the impact in running them.

For office and industrial development a different system of assessment is used known as the BREEAM rating.

The design philosophy should be consistent with an [Integrated Energy Design »](#) created for the project.

[Government »](#)

[English Heritage »](#)

[Cornwall Council »](#)

Cornwall Council has also produced guidance on energy conservation in historic buildings.

[Improving Energy Efficiency in Cornish Historic Buildings »](#)

- 9.1 » Insulation
- 9.2 » Thermal mass
- 9.3 » Passive & active solar design
- 9.4 » Solar photovoltaics & solar thermal water heating
- 9.5 » Wind turbines
- 9.6 » Ground & air source heat pumps
- 9.7 » Choose appliances & systems to minimise energy & resource demand

9. Energy conservation

9.1 Insulation

Huge energy savings can be made through the

Retrofitting of insulation in older properties »

and the incorporation of high levels of insulation in new buildings. A variety of insulating materials are available with different levels of insulation efficiency. For further information also see

Energy Conservation in Historic Buildings »

In existing buildings, ensure the insulation used is appropriate to the retained building construction – vapour permeable constructions (typical of older buildings) will need vapour permeable insulation, whereas vapour impermeable construction can tolerate impermeable insulation (such as polystyrene and many other modern insulants).

We recommend:

- Insulation should be installed in all main elements of a building: walls, roofs and floors so that all sections overlap with no breaks in the thermal envelope, and should be environmentally friendly;
- Insulation should be fitted correctly to avoid thermal bridges (cold spots);
- Windows and doors should be double or triple glazed; and
- Fitting insulating products that are as environmentally friendly as possible for example locally produced wool batts, recycled newspaper and hemp.

9.2 Thermal mass

Have materials with a high thermal mass such as stone, brick terracotta and concrete been used to ensure a steady temperature throughout the day and the night?

Has the type of use and consequent heating of a building been taken into account to determine whether high or low thermal mass structure is more appropriate?

We recommend:

- Ensuring with the help of an appropriate professional advisor, a choice of materials with high thermal mass that suit the character of the area;
- Considering various factors including: the arrangement of the materials, type, number and position of doors and windows; other heat sources, occupation levels and the external environment;
- Factoring in that you may need extra insulation to achieve the desired thermal capacity; and
- Considering that some surface finishes such as carpet can reduce a material’s ability to store and release heat. You should consider this when deciding on internal finishes.

Thermal mass can be solar-linked or internal. Solar-linked uses the mass to capture the sun’s heat and retain it, whereas internal captures internal heat from the space. Solar-linked thermal mass will need active management and careful solar design, whereas internal will need less management and acts as a “thermal flywheel” to moderate the extremes of temperature inside a space.



Innovative design making full use of south-facing aspect & thermal mass.

9. Energy conservation

9.3 Passive and active solar design

Have buildings been positioned and oriented in their plots so they get maximum sunlight in garden areas and plenty of daylight inside?

Will buildings get passive solar gain in winter and passive solar cooling in summer?



© Paul Smoothy

The optimum theoretical building form to retain heat is a sphere, as this has the largest volume within the smallest surface area. Conversely, buildings with very large surface areas proportional to their volume tend to need to use excessive energy to maintain comfort conditions internally.



The spacious interior of a passive solar gain house.

We recommend:

- Placing windows where they will give enough daylight to every habitable room. Consider installing roof lights and 'sunpipes' to provide daylight to areas without windows;
- Painting rooms in light colours to help make the most of natural light;
- Positioning living rooms to the south of a building to get the best natural heat and light. Position service rooms and circulation areas to the north;
- Including materials with high thermal mass within the building structure to absorb the sun's heat energy;
- Considering, where possible, using 'sunspaces' or conservatories on southern facades to capture and store heat during the daytime which can then be released into the house at night or be used as a buffer zone to the outside air temperature;
- Providing shading to south facing windows to prevent overheating in summer months; and
- Where appropriate reducing the building's exposure to the external environment by setting it into the ground and designing compact plan designs which also reduce the external wall surface.

We recommend that you avoid:

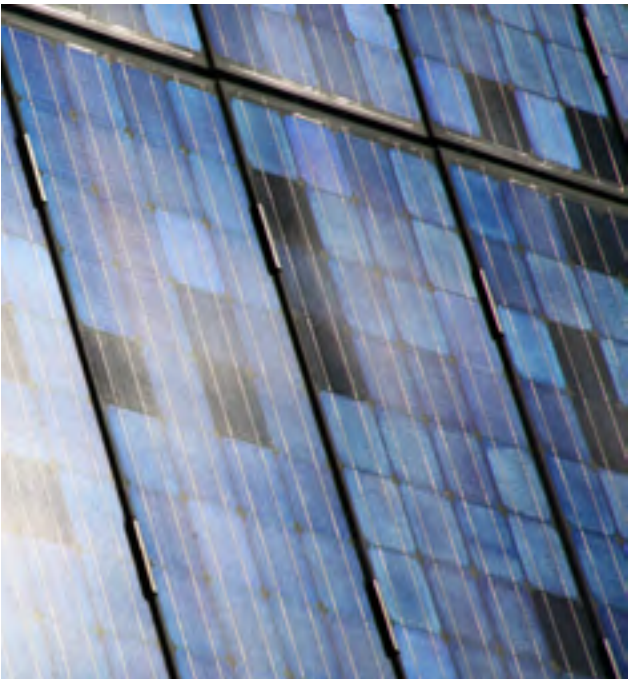
- Projections on buildings that would cause permanent shade on north facades.

9. Energy conservation

9.4 Solar photovoltaics and solar thermal water heating

We recommend:

- Positioning panels on building surfaces that face south within 90 degrees. They work best if they are not overshadowed and ideally on a pitch of between 30 and 40 degrees;
- Making sure that roofs are strong enough to hold the PV system and that the design allows for system maintenance; and
- Reducing your total build cost by using PV instead of standard roof tiles or slates where appropriate.



Have solar photovoltaics (PV) been incorporated into the design of the scheme/buildings?

You can include systems into designs for homes, offices, factories, public buildings etc. The electricity produced can be used directly, fed back into the national grid or used to charge batteries.

Detailed planning guidance for PV can be found on the

[Cornwall Council website »](#)



Integration of a photovoltaic installation on a newly built house.

9. Energy conservation

9.5 Wind turbines

© CTD / imijstudio



Minimise impact on the surrounding area.

Detailed planning guidance for wind turbines can be found on the [Cornwall Council website](#) »

We recommend:

- Detailed local wind data should be collected to find out the best place to put the turbine and how well it will work. Generally, turbines work best on towers or masts away from excessive turbulence and obstructions, such as trees and buildings. However, some types have been specially designed for urban locations;
- Turbines should be located to ensure that the visual and noise impacts are as little as possible. Consider the character of the area and individual buildings; and
- Particular care is taken when installing wind turbines in areas of historic importance (within conservation areas, the World Heritage Site; and close to listed buildings, ancient monuments and historic parks and gardens).



The vertical axis wind turbine at Falmouth School.



© CTD / imijstudio

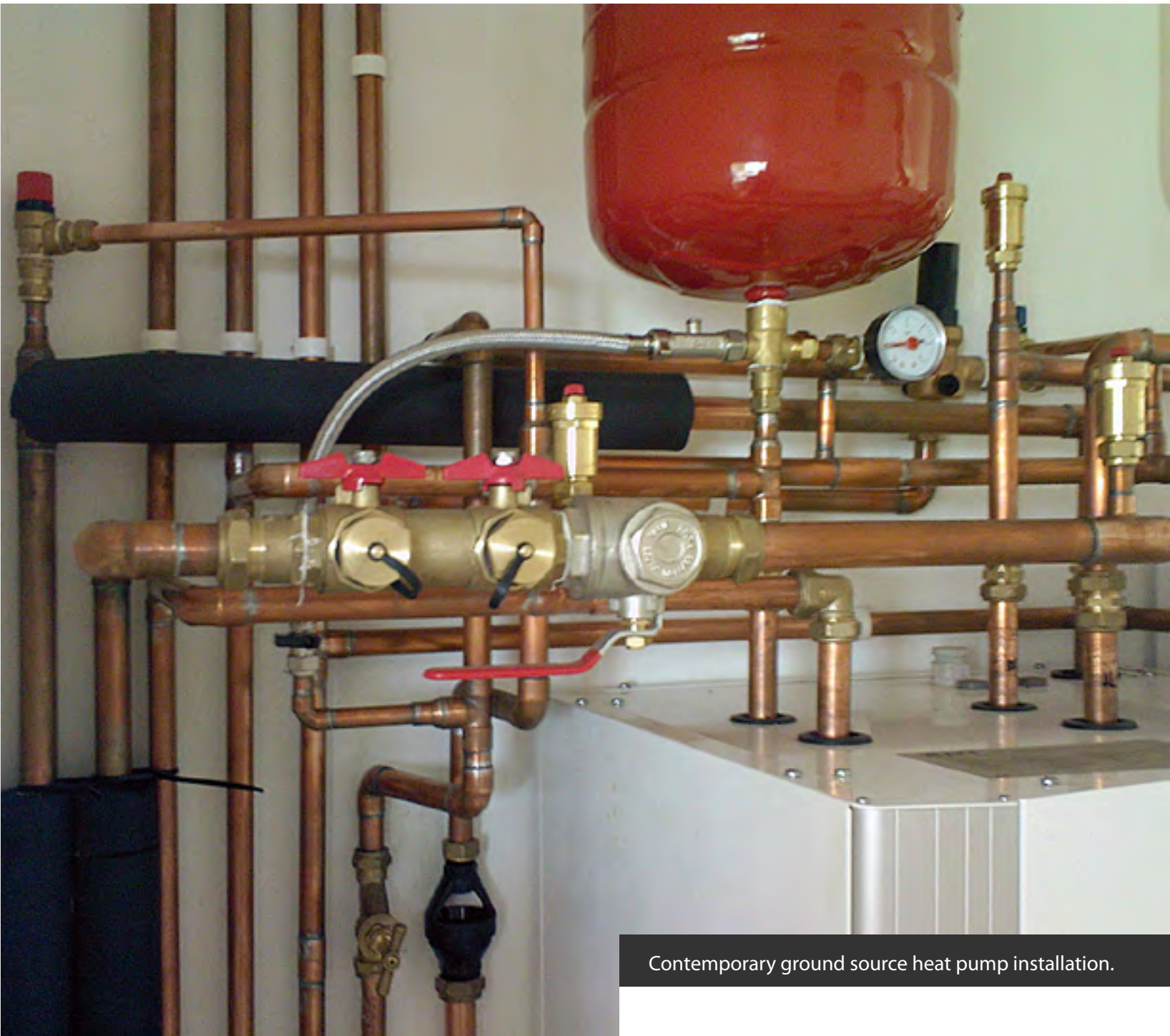
9. Energy conservation

9.6 Ground and air source heat pumps

When installing ground surface finishes, consider whether the flexible ground pipes used for ground coupling or ground source heat pumps can be included at a minimal extra cost whilst the groundworks are underway, the ground pipes can then lay dormant until needed, saving considerable costs in installation later.

We recommend:

- Checking the site to see if it is suitable. Ground loops are either inserted vertically in boreholes or in straight/spiral horizontal runs. These are cheaper but require more land area;
- Considering on existing properties reducing heating needs by improving insulation prior to finding out the size of the most efficient heat pump. Heat pumps work best in reasonably well insulated and air tight buildings. If a building is not well insulated then additional heating systems may be needed in the coldest months; and
- For greater efficiencies in new buildings try to combine the system installation with other building works.



Contemporary ground source heat pump installation.

9. Energy conservation

9.7 Choose appliances and systems to minimise energy and resource demand

Mechanical systems such as heating, hot water and lighting systems should be as efficient as possible to minimise energy use in buildings.

We recommend:

- Getting the right size heating appliances to meet your needs with minimal energy wasted;
- Designing larger buildings with integral environmental management systems to maximise efficiency of mechanical installations.

If designing for real fires, look for closed combustion, single fuel stoves. These limit the fuel to wood (therefore avoiding coal) and draw their air from a dedicated intake directly from outside, sealing the stove from the room and preventing draughts and heat loss. If an open fire is unavoidable, ensure the chimney can be closed when it's not in use.



© Paul Smoothy

High specification stove at Porthtowan.

10 Rural buildings



Rural idyll within the heart of Cornwall which needs preseving for future generations.

10. Rural buildings

Has the design and siting of the building taken into account the impact upon existing settlements and landscape settings?

Has consideration of the proposals from all view-points been taken?

Has natural landform and topography been used to help screen larger buildings?

We recommend:

- Fitting layout of the buildings to the characteristic natural grain of the landscape;
- Retaining existing trees, hedges and walls to inform the new landscaping structure and to integrate the new buildings with their surroundings;
- Aligning buildings parallel with the contours on sloping sites;
- Siting new buildings in folds of the landform to provide screening and shelter and better integration within the landscape, retaining trees and hedges and respecting field patterns;
- Making use of existing yards and roads wherever possible rather than introducing new features into the landscape;
- Avoiding positioning buildings on the crest of hill and reducing visual impact by relating the colour and materials to the landscape;
- Where a large amount of accommodation is required, place smaller units towards the main views to minimise the visual impact;
- Digging large buildings into the ground in rural or urban fringe locations on sloping sites may be appropriate if compatible with local landscape character, and only after an archaeological assessment;



Farmhouse at Zennor, West Penwith.

- Ensuring consistent building lines and set backs create a coherent pattern of buildings and consider sensitivity in terms of visibility and impact upon views and vistas;
- Using modular buildings and multi-span structures rather than single span structures, the use of L,T,U or E shaped building plans can help to break-up the apparent mass of new, large buildings;
- Breaking up large areas of roof and walls, to emphasis horizontal or vertical features; or well-positioned elements such as doors, downpipes and timber boarding. Make roofs darker than walls;
- More formal areas of hard standing should use locally distinct materials – slate, hoggin or granite chippings to define spaces;
- Keeping signage and lighting to a minimum while fulfilling its function;
- Enhancing and protecting existing and opportunities for biodiversity, including providing roosting spaces for bats and nesting places for swifts, swallows, house martins, house sparrows and barn owls as appropriate; and
- Using appropriate materials, cladding, colour and a limited colour palette. Tones of grey, grey green, dark green, and brown make the building appear more recessive in the landscape; colours should get their cue from the surrounding context.


© Graeme Kirkham

10. Rural buildings

10.1 Agricultural and equestrian

We recommend:

The listed, post medieval small moorland farm in need of sympathetic restoration.



- Generally relating buildings to the farm complex unless they warrant isolation for practical reasons;
- Grouping new buildings together, especially in the 'open countryside' where they should follow traditional farmstead patterns;
- Breaking up large areas of roof and walls with the use of well positioned downpipes, doors and timber boarding;
- Matching roof pitches to existing buildings, especially in small farmyard groups;

- Designing the treatment of external areas around new agricultural buildings to be sympathetic to the local context;
- Using boundary treatments that are appropriately low key and rural in character. Keep entrance gates simple and match with the style of adjacent boundaries – timber gates are preferable; and
- Locating unsightly areas from public view points and provide adequate, appropriate screening.

Cornwall Design Guide

© **Cornwall Council**
Planning & Regeneration Service
First published in March 2013



Design, layout & production:

Christian Topf Design (CTD)
www.ctd-studio.co.uk »

All content believed correct at time of publication. While Cornwall Council endeavours to ensure the accuracy of all content it cannot be held responsible for any errors that may be contained within this guide.

Contributors:

- ARCO2 Architects
- Artchart Architecture
- Atelier 3 Ltd
- BfL Building for Life
- BRE
- Catchfrench Design – Chartered Architects
- Design Council CABE
- Dransfield Owens Architects

- Graham Kirkham
- Harrison Sutton Partnership
- Innes Architects
- Mitchell Architects
- RIBA
- Paul Smoothy
- Poynton Bradbury Wynter Cole Architects
- Simon Conder Associates

- Ward Williams Associates
- Barclay Plumbing & Heating

Publications

- Quality Reviewer
Rob Cowan, Scott Adams and David Chapman, published by Thomas Telford, 2010.
- Shaping Neighbourhoods:
A guide for Health, Sustainability and Vitality.
H Barton, M Grant and R Guise, 2003

Editors:

- Katie Cooke
- Tony Lee
- Rachel Smith
- Charlie Ratcliffe
- Nitin Bhasin
- Rob Lacey
- Stephen Kirby



Cornwall Council

Planning & Regeneration

Circuit House
Truro, Cornwall
TR1 1GT
01726 223 461