



Understanding Traditional Buildings

2 How Old Buildings Work: making the most of your traditional solid-walled building

This leaflet explains how traditional buildings work. It shows how to make the most of the special qualities of your traditional building, whilst also ensuring that it is dry, warm, and fit to last at least another lifetime.



What are 'traditional buildings' and why are they important?

Traditional buildings are generally defined as those built before 1919, with solid - not cavity - walls, from a range of natural materials including stone, earth, brick, wood and lime (used for mortars, renders and paints).

Each traditional building that survives today, regardless of size, type or status, is important. These buildings uniquely reflect the social and cultural history of the area to which they belong and make a major contribution to the character of our countryside, villages and towns.

Many traditional buildings are still in everyday use; they currently provide around a third of all homes in Wales, although the proportion is declining. If you own or live in a traditional building you have an opportunity to take care of a small but

irreplaceable piece of history. However, looking after one properly can be a challenge, particularly with the current need to improve energy efficiency in our homes.

This leaflet explains how to overcome the challenges of caring for a traditional building in the 21st century by understanding how it works and what makes it special.

The problem

The most common cause of problems in old buildings is damp. Damp is also the reason most often given for their failure to meet modern living standards. Traditional buildings do not have to be damp. Because they work in a very different way from modern buildings, they need to be looked after in a different way.

Cover image: Laugharne
Above: Newton House, Dinefwr park, Llandeilo
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What makes traditional buildings different?

In modern construction, impermeable materials (damp-proof membranes, cement renders and synthetic paints) are used to form a barrier that prevents moisture from entering the fabric of a building.

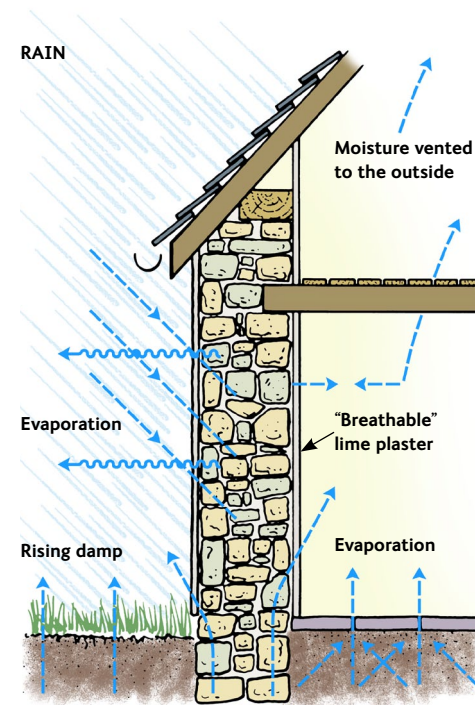
Traditional buildings have solid walls. To stay dry they rely on the physical thickness of the wall and the use of 'vapour-permeable' materials which allow moisture to pass through them. Moisture is absorbed by the fabric of the building during damp conditions, but is free to evaporate away



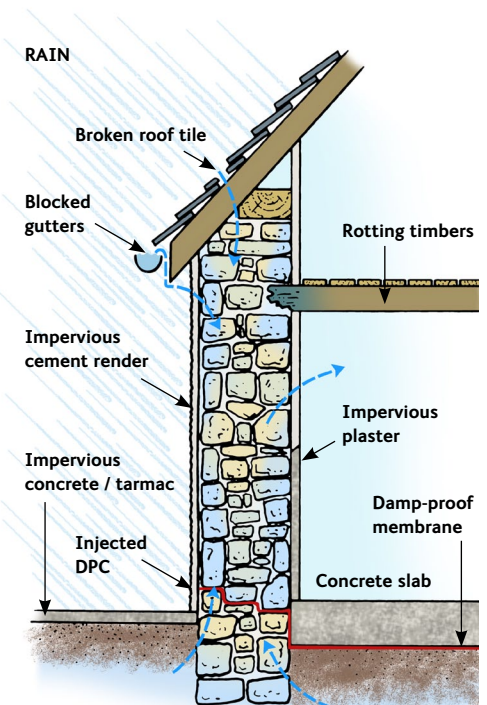
Modern impermeable materials: Carmarthen

naturally when conditions become drier. Evaporation prevents solid walls from becoming continuously damp, but this crucial function is compromised by the use of impermeable materials.

Traditional "breathable" solid wall



Results of using modern impermeable materials





“Clom” walls: Lletty Du Uchaf

However, conventional solutions recommended to treat damp in traditional buildings often serve to exacerbate rather than solve the problem.

The war against damp

Waterproofing

It is almost impossible to ‘water-proof’ solid-walled buildings in a conventional way because moisture enters from a variety of sources.

Ground water

Moisture from the ground travels upwards into dry fabric. This capillary action increases when water is allowed to collect at the base of a wall. Blocked or damaged drains, raised external ground levels, debris build-up and cement or paved hard-standing can all contribute to this problem. Damp-proof courses are not a feature of traditional construction. However, ‘eaves trenches’, dug to channel excess water away from walls have been identified around buildings dating from the Iron Age in Wales.

Absorption

The natural materials from which traditional buildings are constructed can absorb significant amounts of moisture. When walls are covered by impermeable coatings, problems may not become evident until the underlying materials are completely saturated.

Movement

Traditional buildings move and settle naturally, both seasonally (with changing weather conditions), and over longer

Cement in render and pointing, plastic coatings and damp-proof membranes all trap moisture within solid walls. They therefore cause significant damage to old buildings, and are not an effective substitute for traditional technologies.

So why is cement render used on so many old buildings?

The replacement of traditional methods with cavity-wall construction in the early 20th century was accompanied by the development of new synthetic materials that could be mass produced. The availability and rapid setting time of Portland cement led to a decline in the use of lime mortar. Modern materials and techniques were heralded as being superior and began to be applied to traditionally built structures.

The belief that conventional materials ‘improve’ old buildings is alive today, particularly in the war against damp.



Above, left: Cracks in cement render

Above, right: Maintenance matters!

Below, left: Traditional timber sliding sashes

Below, right: Modern double-glazed uPVC window

periods of time. Cement is rigid and extremely brittle, so any movement causes stress cracks, which provide an ideal point of entry for moisture. These cracks are a particular problem when poorly-maintained roofs and guttering allow water to pour down external walls.

Moisture inside traditional buildings

Adequate ventilation is crucial to the well-being of a traditional building and its occupants. Air-tightness is often presented as desirable in modern buildings, but in old buildings draughts from windows, doors and open chimney flues provide essential ventilation.





Left, top: Dry-rot fungus
Left, below: Insect infestation (woodworm)
Right: Thatch, lime plaster and limewash:
 Aberdeunant, Llansadwrn

conduct heat far more rapidly than dry walls. This leads to increased heat loss during cold weather and rising heating bills.

What's the alternative?

Effective moisture management can dramatically improve the well-being of your traditional building, and will create a more comfortable, healthy living environment for you. This can be achieved through regular maintenance, the provision of adequate ventilation and the use of appropriate materials during repair and renovation.

Maintenance Checks:

- Regular checks allow the identification of problems at an early stage.
- Ensure that gutters, downpipes and drains are clear and not leaking.
- Fix broken and loose slates.
- Clear away debris from the base of walls.
- Ensure that adequate drainage is in place to channel water away from the building.

Ventilation:

- Old buildings need not be constantly draughty, but adequate ventilation when and where needed prevents moisture building up internally.
- Kitchens and bathrooms are problem areas: make sure windows can be opened and fit extractor fans if necessary.
- Ensure that any original vents are clear and functioning.

Modernisation, including double-glazing and capping chimneys, often blocks these channels of 'passive ventilation'.

Ventilation helps to dry out building fabric, and prevents warm, moist air from domestic activities becoming trapped inside the building.

The results of damp

Within building fabric damp causes decay (dry-rot, damp-rot) and insect attack (woodworm) which, if left unchecked, can eventually cause structural collapse.

Inside the building damp, coupled with warmth from central heating, creates high humidity levels, which can cause condensation and mould growth. These have been linked to respiratory problems and other health issues. Damp walls



- Ensure eaves vents are clear to maintain air-flow between the top of roof insulation and the underside of roofing material, as well as in the roof space.

Materials:

- Most old buildings have been subject to repairs and 'renovation' using conventional materials at some point. Continuing to use this type of product can compound existing problems and may create bigger ones in the future.
- It is better to carry out any necessary work using appropriate materials. Re-instating breathable materials that work with your building will begin to rectify problems and benefit the building by letting it function as originally intended.

- Lime mortars, renders and washes are vapour-permeable (breathable) and are also able to accommodate the natural movement of a traditional building through a process of micro-cracking and self-healing.
- Lime-wash, casein and clay paints are suitable for use over lime mortars.

Check list

Retain original fabric wherever possible, including any remaining lime mortar which can be repaired rather than replaced

Where replacement is unavoidable, choose components and materials that are as close as possible to the original.



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Town square, Llandoverly

Cement pointing and render can damage softer stone or brick beneath, so removal should always be done carefully with consideration for underlying fabric. Check that the builder you choose understands lime and has experience in using it.

If undertaking major work, check with your local planning/ conservation officer first to see if consent is required.

Further information

The Tywi Centre can provide further information to help you understand and look after your traditional building.

Contacts

Tywi Centre: **01558 824271**

www.tywicentre.org.uk

The Society for the Protection of Ancient Buildings (SPAB): **020 7377 1644**

www.spab.org.uk

Royal Commission on the Ancient and Historical Monuments of Wales (RCAHMW): **01970 621200**

www.rcahmw.gov.uk

Dyfed Archaeological Trust: **01558 823121**

www.dyfedarchaeology.org.uk

Cadw: **01443 336000**

www.cadw.wales.gov.uk

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Cronfa Amaethyddol Ewrop ar gyfer Datblygu Gwledig; Ewrop yn Buddsoddi mewn Ardaloedd Gwledig

The European Agricultural Fund for Rural Development: Europe Investing in Rural Areas



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