

How to look after your witchert building

2.3

'All an earth wall needs are good boots and a good hat to keep it dry'

What is witchert?

Witchert or wychett, meaning white earth, is the name given to the local earth building material, known as cob in other parts of the country. It is found in a belt from the Oxfordshire border north-east through Long Crendon, Haddenham, Chearsley, Cuddington, Dinton, Stone to Aylesbury and beyond to Bierton. It also extends northwards to Ludgershall and in pockets up to Grendon Underwood and Twyford. The subsoil in these areas mainly consists of decayed Portland limestone and clay. When thoroughly mixed with water and chopped straw, it produces a walling material of high quality. Most were built in the 17th & 18th centuries, some as recently as 1920.



An early 19th century witchert house in Grendon Underwood, recently lime-rendered and lime washed after its pebble-dash had been removed

The walls are constructed as follows. A plinth of rubble stones, known locally as 'grumplings' or 'grumblings', is constructed. This is essential to prevent rising damp and to allow penetrating rain to soak away freely. The taller the grumplings the better the protection from splash-back and surface water.

The well-prepared witchert is put onto the stone foundation in layers, known as berries, of about 0.45 m (18") or more along its length and left to dry before the next berry is added. The sides are trimmed with a sharp spade. The walls may then be rendered for decorative purposes, but garden walls are usually left without a coating and do very well.



Witchert wall showing three berries above the grumplings. The coping is formed from plain and half round tiles

Traditionally most house and boundary walls had thatched roofs, which ensured good protection against the weather. In most instances thatch has been replaced with clay tiles (plain and pantiles), called coping. Along the narrow lanes of Haddenham the witchert walls with their red tile copings are an attractive feature.

Some problems encountered with the care of witchert walls

'All an earth wall needs are good boots and a good hat to keep it dry' is a saying often quoted in literature on the subject of earth buildings. Unfortunately this simple rule worked well only until cement, modern plasters, renders and paints came on the market in the second half of the 20th century.



Small thatched witchert stable, the walls are pockmarked by masonry bees, but remain sound and dry under the overhanging thatch and above the unaltered stone plinth

THE CAUSES AND EFFECTS OF DAMPNES IN EARTH WALLS

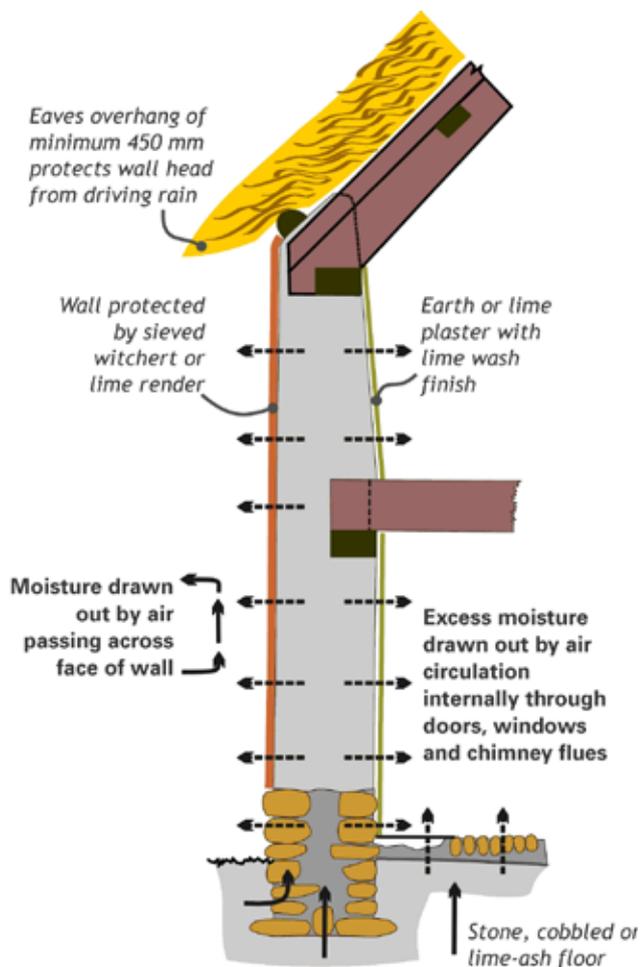


Figure 1A Wall of unaltered earth building showing how a state of moisture equilibrium is achieved

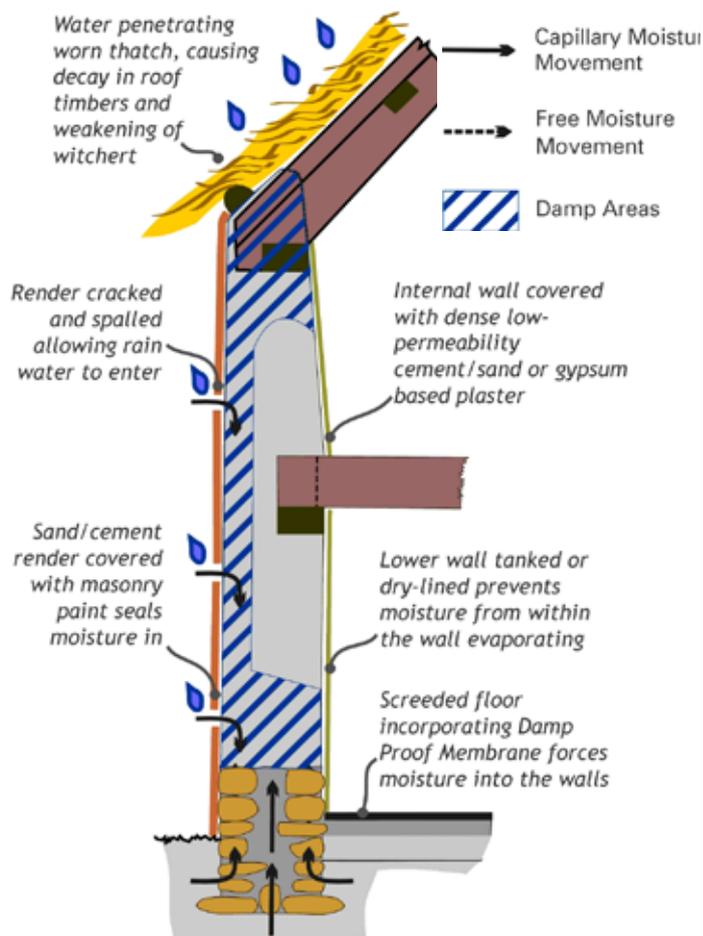


Figure 1B Neglect combined with inappropriate repair/maintenance can upset the balance by retaining moisture within the walls and lead to rapid deterioration

REMEDIAL WORKS & REPAIRS WHICH HELP TO KEEP WITCHERT WALLS IN GOOD HEALTH

- Repairs to roofs, gutters, down pipes & drains
- Prevent earth from building up over the grumplings
- Prevent creeper growth from covering the walls

Essential maintenance

- Replacing cement pointing with lime mortar in the grumplings
- If render extends to the ground, cut out carefully at the top of the grumplings, remove and repoint as above
- Removal of concrete paths under thatch eaves, but never allow excavations below the level of the shallow grumplings

Very beneficial for the health of the building. Work to the grumplings should be done in short sections only. Great care is required not to damage the stones when removing cement mortar

- Removal of cement render, modern plaster and paints
- Removal of high and dense ground surfaces inside and outside, without however going below the often shallow wall foundation

Work needs to be carried out with greatest care by specialists after consultation with the Council's Historic Buildings Officer

Cement-rich renders and dense plasters, coated in impervious paints, create strait-jackets, which stop buildings from breathing, trap moisture and prevent early detection of trouble caused by decay of the binding material. A prolonged, high moisture content can create conditions which will wash out the fines and may rot the straw. Moisture allows the build up of soluble salts, which in turn breaks down the materials, transforming the non-shrinkable clays into fine shrinkable clay. This

loose material in turn is washed down the narrow channels created within the wall by water. The results are pockets or layers, usually near the bottom of the wall, of friable witchert that has lost its strength and even drying out may not cure.

The sudden failure or removal of this strait-jacket can lead to collapse of an entire wall, the lower sections of which may have been substantially weakened over a long period.

Appropriate types of render

Traditionally boundary walls and those of farm buildings were rarely rendered. House walls are rendered externally and plastered internally for aesthetic reasons.

Roughcast: This is applied to exterior surfaces as a wet dash with a dashing trowel. An appropriate mix for this would be 1 part lime putty, 2 parts sharp sand, 1 part gravel (both river washed).

Smooth Render and Plaster: The simplest and most appropriate render mix consists of sieved witchert. A lime render consisting of 1 part lime putty to 3 parts well graded sharp, river washed sand and ½ of hair will also be acceptable.

The use of earth (i.e. witchert) and lime based renders gives greater porosity and flexibility. If re-rendering, fixing of chicken wire or metal laths over the entire elevation should be avoided. This is a short-term solution creating long-term problems.

Finishes: Traditionally these were either a fine earth/clay slurry or a lime wash. They can be applied directly to the witchert or to a rough-cast surface but are usually put on for decorative purposes after the wall has been rendered or plastered. Only breathable paints should be used internally as well as externally on witchert buildings.

Damp in walls

Damp is the main reason why a witchert wall may become unstable. The reasons for damp becoming trapped inside a wall are:

- Defective gutters, down pipes and drains;
- Splash-back, especially from hard surfaces below dripping thatch eaves or caused by traffic on nearby road;
- Ground levels have been allowed to be built up above the grumplings;
- High internal floors. Top of grumplings should be exposed;
- Grumplings having been pointed with cement-based mortar. This prevents the plinth from doing its job, traps moisture and forces it into the witchert;
- Cement render has been extended down to the ground over the grumplings;
- Modern wallpaper and paints, which prevent walls from breathing and which can trap moisture (N.B. Even condensation generated by householders can have a detrimental effect on walls which are unable to breathe);

- Concrete floor which forces moisture up into the walls;
- Cracked cement renders. Even hair-line cracks attract and trap moisture through capillary action;
- Failed roof coverings, which expose the top of the walls;
- Failed flashings around chimneys.

The greatest danger to a building can occur when dense render or plaster is removed from large areas that have suffered from trapped moisture for a long time. Structural failure of walls can be the consequence. Never

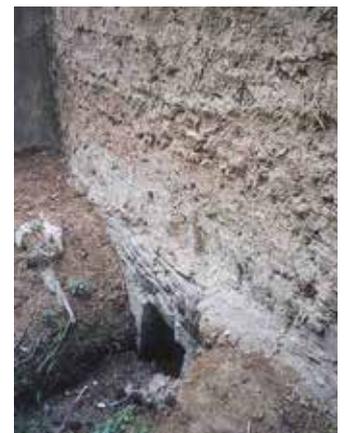
undertake such works on a DIY basis or allow an inexperienced builder to do so. Experienced professionals must always undertake removal of wall covering in small sections. Moisture content must be monitored during this process and the wall be allowed to dry out gradually. Repairs must be carried out to decayed areas as they are revealed working from the bottom upwards.

Repairs to witchert walls need to be carried out using earth materials. Sound witchert can be reconstituted or freshly dug from the ground and applied in berries when wet. Alternatively the material can be shaped into blocks, allowed to dry and used like bricks with a witchert slurry as mortar.

Because the use of dried witchert blocks avoids the problem of shrinkage this is one of the most straightforward repair methods. Small areas of hollows and depressions can be dubbed out with earth or lime mortar, having been cut back to sound material first. The new material must be allowed to set before a plaster or render is applied.



Cement mortar pointed grumplings and cement render. Cracks in both are drawing in water through capillary action. The moisture is unable to escape through dense render and cement mortar



Newly rebuilt witchert wall over stream before trimming

Damp Proof Courses (DPCs) and Underpinning

Neither of these should ever be introduced to a witchert building. If your mortgage company or adviser disagrees, show them a copy of this leaflet. A DPC on its own in the porous rubble stone of the grumplings will most certainly be totally ineffective and may also damage the stones. A DPC combined with cement mortar pointing and waterproof render and plaster will trap moisture and inevitably lead to decay of the witchert. A DPC put directly into the witchert may cause long term damage as free thermal movement, essential for the health of the wall, is impeded. This can result in the formation of cavities and moisture reservoirs, leading to major structural failure in the long term.



The photograph shows what happens when the solid ground on which the earth walls are founded, is dug away from below its foundations in order to underpin it. Witchert is a monolithic building material, which cannot cope with the stresses imposed by such massive intervention

Consents for works when altering or extending

A witchert building is likely to be listed or contained within a conservation area. Please remember that, if this is the case, you may need to apply to the Council for Listed Building and/or Conservation Area Consent before commencing works. Planning permission may also be required for major works. Where an individual witchert structure such as a wall or outbuilding is not in itself listed, but stands in the grounds of a Listed Building, it will be protected as a 'curtilage building' by the same legislation. If in doubt contact your Historic Buildings Officer before starting any works. Even minor repairs, if carried out incorrectly, can cause long-term damage.

Acknowledgement: The contents of this leaflet have been put together with help and advice from experienced specialists in the field of repairs of earth structures.

Where appropriate, photographs are used with the owners permission.

Summary of advice

If you are the owner of a witchert building please remember that this is a tried and tested earth building material that has been in use in one form or another for several thousand years in different parts of the world. The material also has excellent insulating qualities.

If your building has a hard modern render, which many witchert houses have acquired over the years, but shows no signs of distress such as cracking and bulging, do not rush into carrying out alterations. Ensure that existing render and paintwork are well maintained which will prevent damp penetrating through capillary action.

Essential maintenance as discussed above should be carried out at regular intervals.

Also consider the careful removal of cement pointing between the stones, which make up the grumplings, removal of render covering the grumplings and build up of soil above their top course. Once the grumplings can do their work again, your building will find its own moisture control mechanism made so much easier.

In the case of thatched roofs, removal of hard surfaces below the eaves drip area should also be a high priority.

If you have garden walls without render, do not render them; just keep their copings repaired. Any repairs that become necessary will have to be carried out using only traditional materials.

Remember; 'All an earth wall needs are good boots and a good hat to keep it dry'. Cement, modern plasters and paints have no part to play in the care of your witchert building.

Email your Historic Buildings Officer for advice if you have concerns about the condition of your building or call 01296 585679.

For an audio or large print version of this leaflet, please phone 01296 585454

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