

# Out of sight, out of mind

21 November 2018

## Are cavity wall problems a failure of the product or the system, asks Ben Gardiner?

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In February 2018, the 6-millionth guarantee for the installation of cavity wall insulation (CWI) was granted, as homeowners throughout England took advantage of the chance to [reduce their energy bills](#). CWI's popularity has been driven by government energy-saving schemes offering free or low-cost insulation that will help reduce the cost of heating the home.

However, unintended side effects in the form of dampness have been widely reported, leading to allegations of poor-quality work and installation in inappropriate buildings. Given the prevalence of CWI in the UK's housing stock, it is vital that residential surveyors understand the potential issues.

A new industry has emerged, including CWI claim companies and CWI extraction contractors. Consumer rights groups have been set up to advise homeowners and help raise awareness, with CWI being debated in both the Welsh Assembly and the House of Commons.

Regardless of varying opinions, CWI continues to play an important role as the government attempts to help low-income, vulnerable and fuel-poor households. All eyes are now on the [Office of Gas and Electricity Markets](#) (Ofgem) as it launches the government's next phase of energy-efficiency policies – the Energy Company Obligation (ECO 3) – towards the end of 2018.

## What is going wrong?

There are several types of CWI, including urea formaldehyde foam insulation, mineral wool insulation – which comprises glass fibres and rock wool – polyurethane foam, and bonded polystyrene beads. They can all create risks of issues such as penetrating dampness, condensation, mould growth and rising damp. All houses are built imperfectly and from my experience all retrospective CWI has at least some deficiency notable in its installation. Many houses can function without any significant adverse effects, although issues can easily occur where CWI has failed. This is not necessarily a failure of the actual product but rather of the system, through a combination of factors. These can be separated into the following 2 general categories.

## Property suitability

Essential with any retrofit project, property suitability for CWI is decided via a pre-installation survey, but until recently was left to the companies doing the work, with little effective third-party monitoring. Unsuitability can be a result of:

- property located in a 'severe' or 'very severe' wind-driven rain exposure zone, as defined in [Approved Document C](#)
- cavity width too narrow or uneven

- deterioration of external fabric
- external ground levels bridging the damp-proof course (DPC)
- lack of effective DPC
- rubble or debris in the cavity
- mortar 'snots' ? that is, excessive mortar protruding into the cavity
- high-ground water levels
- existing, incompatible partial-fill insulation.

## Substandard work

Work is usually found to be substandard where pre-installation surveys have been ignored or the following are evident:

- lack of pre-installation remedial works
- incorrect drill pattern
- incorrect density of insulation
- insufficient quantity of insulation
- poorly mixed or incorrect bonding agent (EPS bead)
- air vents blocked
- inadequate cavity brush.

Other situations where CWI can be affected by external conditions after installation include: flooding; escape of water; fire damage; installation of windows, doors, gas flues or air vents; and new external paving at a high level. Condensation or mould may occur where occupants do not allow for sufficient ventilation in their property after CWI installation; while living habits may not change significantly, the way moisture transfers through external walls does.

Careful consideration must be given to whether CWI has been affected by external events following its installation or has not been properly maintained. The presence of defects and how they may have been affected or caused by the CWI are fundamental questions.

It is a fact that CWI can cause dampness. The risk of water ingress is highlighted both by [Approved Document C](#) and the BRE in its *Good Building Guide 44*, part 2, which states:

'There can be an increased risk of rain penetration if a cavity is fully filled with insulation, i.e. moisture is able to transfer from the outer to the inner leaves resulting in areas of dampness on internal finishes.'

The BBA and NHBC investigated increasing the size of cavity walls to see whether this might affect resistance to rain penetration. Their report, *Full Fill Cavity Wall Insulation in Areas of Very Severe Exposure to Wind-driven Rain* described issues with penetrating damp ingress where blown-in mineral wool insulation was used in a 100mm-wide cavity constructed to 1990s standards.

The report stresses that non-standard test conditions were used, and that the results 'have no bearing on the continuing certification or suitability of existing CWI systems'.

## Approach to surveying

RICS Home Surveys are generally based on non-intrusive inspections, during which the following should be checked where it is possible:

- energy performance certificate
- CWI guarantee certificate

- filled holes
- air bricks or vents
- mechanical ventilation
- exposure to wind-driven rain, using [BS 8104: 1992](#)
- insulation type
- condition of brickwork or stonework, including pointing condition of external render, including any cladding external fabric decoration, such as painted brickwork or waterproof coatings
- efficacy of rainwater goods
- sealants around openings
- height of ground levels, including provision of surface water drainage
- condition of DPC
- weep-holes, as built or retrofitted.

Establishing the type of insulation installed can be difficult, but checks in roof voids, meter cupboards and vents can often reveal traces of the material used.

Where specific defect surveys are commissioned, an intrusive investigation of cavity walls can be carried out. The key tool is a borescope or similar device, which, used in a targeted manner, will allow for a detailed analysis of the cavity wall and insulation. Potential weak spots in the cavity include wall junctions ? internal and external corners ? window and door openings, low-level wall areas ? above and below the DPC ? and other wall penetrations such as gas flues. Where assistance from a contractor is available, bricks can be carefully removed for a more detailed inspection. This is particularly helpful where there is suspected wall-tie corrosion or where CWI has been incorrectly installed in a non-traditional construction type.

For RICS Building Surveys, an argument can sometimes be made that a few minutes? drilling and inspecting a cavity wall using a borescope ? with the owner?s permission ? is justifiable. Compared to time spent struggling with inspection chamber covers or even fixed loft hatches, the performance of an external wall surely deserves the same attention as the below-ground drainage system and roof structure.

## **Extraction as a last resort**

Where CWI has been removed, especially where new insulation has not been installed to replace it, residential surveyors should be wary. Without relevant paperwork or a cooperative vendor, an extracted property may not be readily identifiable. Some signs may be present, such as evidence of replaced brickwork and filled drill holes, although a property will often have been repointed at the same time. Depending on the contractor?s skill, damaged brickwork, DPCs, mortar-stained brickwork and even insulation and debris left in the cavity are quite common.

Some cavity clearance certification schemes are gaining popularity, such as those by Stroma Certification and the BBA. Damian Mercer, Managing Director of Cavity Extraction, which operates under the Stroma scheme, explains:

'CWI extraction is a highly labour-intensive process relying on a methodological approach to ensure a property is completely cleared of insulation and debris. It is up to extraction companies to work with accreditation bodies to increase standards. Both off-the-shelf and bespoke clearance equipment are vital to achieve a successful extraction.'

Mandatory regulation in the cavity clearance sector does not yet exist and is not covered by the Building Regulations. However, chartered surveyors are already working in this area carrying out independent checks and audits and supervising extractions.

Ultimately, the presence of satisfactorily performing CWI can only be established with targeted intrusive investigations and a full survey of the property. Whether CWI is a contributing factor or the overriding cause of dampness, chartered surveyors are arguably best placed to ensure that an independent comprehensive inspection is achieved. For all residential surveys, CWI performance should be at the forefront of a surveyor's mind.

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## **Further information**

- Related competencies include [Building pathology](#) , [Housing maintenance, repairs and improvements](#)
- This feature is taken from the [RICS Property Journal](#) (October/November 2018)
- Related categories: [Damp](#) , [Residential property defects](#)