warm|shell

Internal

Interior Wall Insulation

Site Assessment Checklist

Publication date: 10/2021

The following Checklist is designed to help ensure that a sufficient assessment has been made on an existing property prior to the specification and instillation of Warmshell Internal.

Project Name		Date	
Project Address			
Assessor's Name			
Company			
Phone Number		Email	

General

Is, or when was, the building occupied?	
Buildings intended use	

1 Wall Type and Build up

See guide ◢

Principle Material			Thickness mm	Action Required? If bad leave note:	Image taken?
☐ Brick	☐ Solid Wall	☐ Cavity Wall			☐
☐ Stone	☐ Solid Wall	☐ Cavity Wall			☐
☐ Timber					☐
☐ Concrete					☐
☐ Other Description:					☐

2 Mortar Type

See guide ◢

Mortar Type	Action Required? If bad leave note:	Image taken?
☐ Lime		☐
☐ Cement		☐

3 Existing Internal Lining

See guide ◢

Existing internal lining	Thickness mm	Action Required? If bad leave note:	Image taken?
☐ None			☐
☐ Plasterboard			☐
☐ Gypsum			☐
☐ Lime			☐
☐ Other Description:			☐

4 Existing Internal Finish

See guide ◢

Existing internal finish	Action Required? If bad leave note:	Image taken?
☐ None		☐
☐ Paint		☐
☐ Wallpaper		☐
☐ Other Description:		☐

5 Existing External Finish

See guide ◢

5. Existing external finish	Thickness mm	Action Required? If bad leave note:	Image taken?
☐ None			☐
☐ Cement Render			☐
☐ Lime Render			☐
☐ Paint			☐
☐ Other Description:			☐
Colour description:			
Texture description:			

6 External Condition

See guide ◢

External Condition
Condition of the rainwater goods, (guttering, drainpipes etc.), and other water pipework, such as soil pipes, for leaks and signs that water is running down the wall.
Condition of all wall penetrations, ensuring they are adequately sealed with mortar or appropriate weathering seal.

Condition of the window frames that they are in good condition and the seal between the frame and wall is in sound condition.	
☐ Rising damp	☐ Wall drainage

What are the ground conditions adjacent to the external wall?

What is the floor make-up adjacent to the internal wall?

Is there salt contamination shown as efflorescence at low level with possible dark stains approximately 200mm above the efflorescence?	Yes ☐ No ☐

Internal Condition

Brown damp patches, or stains?	Yes ☐ No ☐
Black mould, or internal condensation?	Yes ☐ No ☐

Additional Information

How is the building ventilated?

Are there any sections of the wall where the external ground level is higher than the internal floor level?	Yes ☐ No ☐
Are there any electrical services mounted on the inside of the external walls, can these be moved to other internal walls?	Yes ☐ No ☐
Are there any other services found on the inside of the external walls, water or gas?	Yes ☐ No ☐
Thermal Bridging	Yes ☐ No ☐

Additional Material (required if a WUFI Pro. Calculation needs to be undertaken. See guidance notes)	Image taken?
Ground floor plan marked North or Google maps image	☐
Plan views of room layout with walls requiring IWI marked out.	☐
Plan views of room layout with services on external walls marked out.	☐
External and internal pictures	☐
Elevation and sections, if available	☐
Drawing or Sketch of approximate location of adjacent buildings and trees, with approximate heights	☐

Name (Printed)	
Signed	
Date	

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Interior Wall Insulation
Site Assessment Guide

Publication date: 10/2021

Lime Green's Warmshell Internal is an internal wall insulation solution designed to radically improve the thermal performance of existing solid masonry buildings while ensuring moisture is controlled at safe levels within walls.

This moisture control is essential and ensures that the structural integrity of the building is maintained and the health of the occupants are not compromised. Additional benefits of Warmshell Internal include improved internal acoustics, very low VOCs, which help along with the antiseptic properties of lime, to maintain good air quality. With the absence of biocides and toxic chemicals Warmshell Internal is safer to produce and use.

Warmshell Internal comes with a 25 year warranty against material manufacture defects as outlined in our Warmshell Internal Warranty Terms document.

As with any product or system designed for the retrofit of existing buildings it is key that support is provided through the three key areas of Assessment / Design / Installation.

It is important to understand that when insulation is added to a building, to improve its thermal performance, the physics of the building are changed. The effect on the building, as a result of these changes, must not be underestimated. By solving the problem of an inefficient building, by adding insulation, you can actually create problems that you did not have previously. These can include affecting the integrity of the building fabric, or more seriously affecting the health of the occupant.

This Guidance runs alongside Lime Green's Warmshell Internal, Site Assessment Checklist to provide a background and overview as to the relevance of each area within the checklist.

General

For Warmshell Internal to be installed the property must be in sound condition, both inside and out, as defined by the parameters laid out in the following assessment guidance.

Is, or when was, the building occupied. If there are excessive moisture levels in a building, pre retrofit, the sources, or causes, of the moisture levels are more easily understood if it is know whether they come from human activity, the condition the building is in, or both. Damp caused by a broken down pipe is not affected by occupancy. Damp caused by clothes dried excessively on radiators is.

Buildings intended use. This is important information in terms of what activities will take place when the property is in use, post retrofit, and what additional considerations may be required such as ventilation solutions.

1 Wall Type and Build up

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While typical wall constriction in the UK, particularly in regard to residential properties, is often brick there are also a wide variety of alternative construction such as timber frame, steel frame, cast concrete, or precast concrete, cob etc. Warmshell Internal is suitable for many constructions this guide is based on brick and stone walls.

> If your project has wall materials that fall outside of this please contact Lime Green for guidance info@lime-green.co.uk.

Brick

The majority of pre 1930's residential properties in the UK are solid wall and approximately nine million of them are still in use today. Solid brick walls can be identified by the external, or if exposed, internal brick pattern where 'headers' in the brick, that is the end, as opposed to the length, of the brick are clearly exposed in the surface of the wall. (See Image 1.)

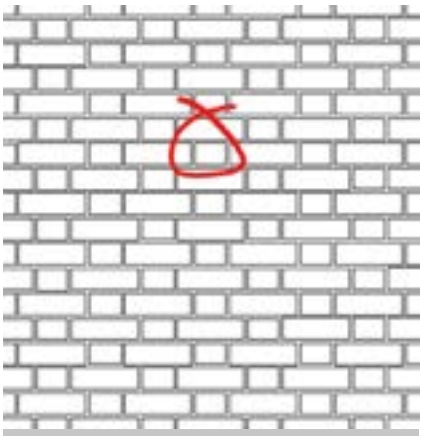

Image 1.

It is important to establish the nature of a brick wall if Warmshell Internal is being considered as further guidance is required for cavity walls than is outlined here. This guidance is based primarily on solid wall construction. If a cavity wall is being considered contact Lime Green info@lime-green.co.uk.

The success of Warmshell Internal, as with any internal wall insulation solution, is dependent on the external condition of the brickwork and the mortar between it. It must be remembered that brickwork is porous and will absorb moisture, both liquid and vapour. Moisture levels within the brickwork will vary depending on the local climate and will be subject to rain penetration, dependent on the local weather and the surrounding environment, buildings, trees, etc.

Condition of the brickwork

Is the original surface of the brick still intact? Is there any spalling, (See Image 2.), any efflorescence, (See Image 3.), or any signs of rising damp? Is there any staining, or damp areas around rainwater goods, soil pipes, down pipes etc.?

Image 2.

Image 3.

Stone

Many of the dynamics for brick are the same with stone, with the added dynamic that water penetration for stone type varies even more than brick. For example a Limestone or Gritstone is relatively porous, whereas Garnet is far less so, remaining almost moisture closed.

As with brickwork the stone wall should be assessed for spalling, and, rising damp, (See Image 4.) and damp areas in general.

Image 4.

2 Mortar Type

Back ◢

Mortars are either lime, or cement, based and will have different porosities (absorption of moisture). As with renders, lime base mortars are generally more porous than cement, allowing a greater freedom of moisture movement and thus assisting, the drying out of the brick or stonework.

It is important however to note that it is the porosity that is key and that it does not hold moisture in the brick, or stone, leading to freeze thaw damage (See Image 2.). To test a materials property simply spray or flick water on the surface and see if it absorbed over approximately a five to ten minute time period.

3 Existing Internal Lining

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The existing internal lining of the external wall is an important aspect of the assessment of the building.

None

Where there are no internal linings the wall should be examined for lose materials, voids, cracks etc.

Plasterboard

If plasterboard is present it must be removed as it is invariably applied using ‘dot and dab’ which creates a void. It also contains paper. Under no circumstances should Warmshell Internal be installed over plasterboard.

Gypsum

Gypsum plaster must be removed before applying Warmshell Internal due to concerns over bonding, and gypsum crystalising. (See map)

Additionally plaster with tanking additives sand & cement internal plasters with mix ratio stronger than 6:1, and browning gypsum should be removed and plaster unable to absorb moisture (be careful of coating on plaster).

Lime

Well adhered existing lime plaster is an ideal substrate for Warmshell Internal. However the condition of the plaster should be assessed in all areas where Warmshell Internal is to be applied. Loose or badly cracked plaster will need removing and filling. Undulating plaster, greater than +/- 4mm should be dubbed out with Lime Green Duro.

Clay

While Clay is a suitable internal plaster it is not suitable to remain between the existing wall and Warmshell Internal and should therefore be removed.

Additional works required

N.B. in addition to any material removal, as listed above, walls should be made good, deep voids should be filled and a parge coat, or dubbing out coat, of Lime Green Duro, should be applied to the whole area, +/- 4mm (over 1.5 meters).

4 Existing Internal Finish

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Paint

If paint is present and the substrate, based on the assessment of (Section 3). Existing Internal Lining, is to remain, then assess if it is impermeable, such as an oil based product. Emulsion based paints are more moisture open, but will require preparation work. Under no circumstances should Warmshell Internal be installed over an impermeable painted surface.

Wallpaper

Wallpaper should not remain on any wall that is to take Warmshell Internal. Under no circumstances should Warmshell Internal be installed over wallpaper.

Works required

In addition to any material removal listed above remove impermeable coatings, such as oil based paints. Scratch and score existing emulsion paint. N.B. It is preferable to remove wallpaper without steam to reduce excessive moisture being pushed into the wall, which in turn can damage old lime based plasters and increase drying times.

5 Existing External Finish

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Cement Render

The properties of cement renders vary significantly from being very moisture closed to being almost as open as some lime based renders. Most monolithic solid wall properties were designed to let moisture dry out to both the inside and the outside.

Image 5.

An impervious cement render can often compromise this dynamic. Cement renders must be in sound condition free from cracks and blown render, unlike the example (See Image 5.), otherwise it should be removed.

As with mortars, to test a materials property simply spray, or flick, water on the surface and see if it absorbed over approximately a five to ten minute time period.

Lime Render

Lime render is typically far more moisture open than cement based products, allowing a monolithic solid wall to dry out towards the outside as well as the inside. It is important however that the render is kept in good repair, free from excessive and large cracks and without areas of blown render, similar to that in (Image 5.)

Paint

External masonry paint, like cement, can be significantly vapour closed. If there is damage in the paint surface moisture can get trapped behind the paint, saturating the wall. Again, similarly to cement render, trapped moisture can lead to significant damage of the wall and surrounding materials, or even compromise the structure of the building.

Works Required

List all necessary removal and making good of materials as listed above.

Texture

Texture plays a role in dissipating energy from driven rain. Again, it is useful to make a record of the depth and scale of any textured render during assessment.

6 External Condition

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Review the outside of the property working from the top down. Excessive moisture within a wall, due to leaks and poor maintenance, cause so much damage it is imperative that all rainwater goods, (guttering, drainpipes etc), and other pipework that carries water, such as soil pipes, are in good condition and leak free.

All wall penetrations should have appropriate weather detailing and all window and door frames must be well sealed at the interface to the wall. Significant amounts of water can penetrate a solid wall if they are not. This will, as before, lead to significant damage of the fabric of the building.

If there are significant wet areas in the wall, due to poor repair of the aforementioned, then the wall should be allowed to dry out after repairs have been made and before Warmshell Internal is fitted to the inside of that area of the property. When reviewing the inside of the property, including any rooms that are not being considered for Warmshell Internal, look out for any brown damp patches, or stains. These are useful 'markers' and most likely caused by external defects.

Rising Damp

It is often assumed that rising damp is caused by a blown or non existent damp proof cause, this is often not the case. As explained previously solid monolith brick, or stone, walls were designed to dry out to both the inside and the outside.

In addition to this, solid floors, adjacent to the inside wall and hard standing, adjacent to the outside, would have also been moisture open when the building was originally constructed. This allowed moisture in the ground to more easily evaporate and helps to regulate the moisture in the wall.

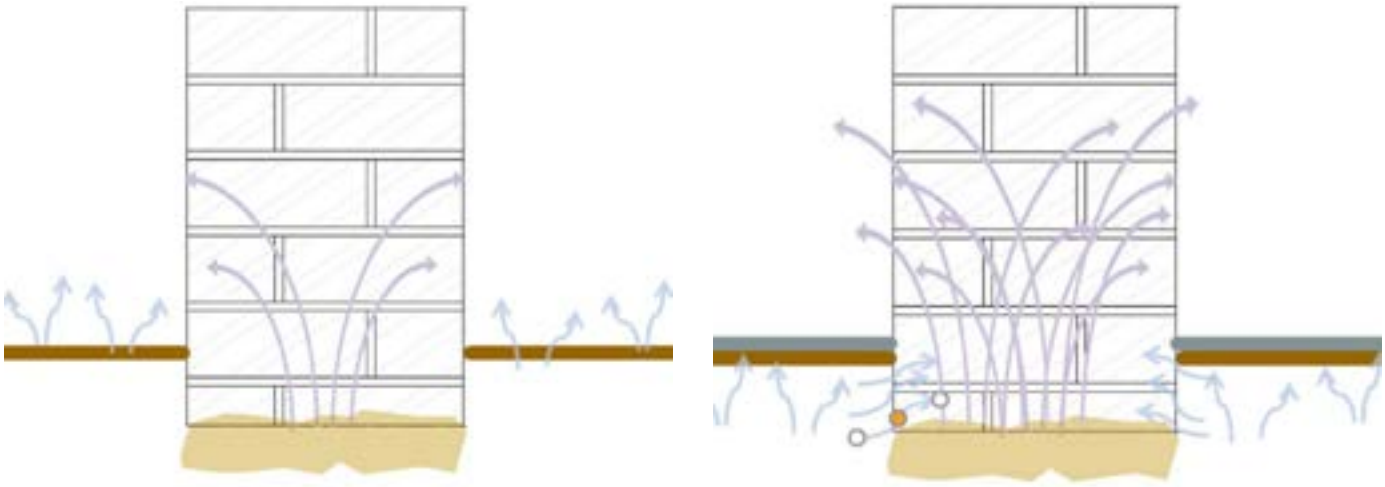

Diagram 6.

The introduction of more impervious hard standing surfaces externally, such as paving and tarmac externally, or DPCs and concrete screeds internally can significantly affect the levels of moisture, as seen in Diagram 6.

As a result of these changes made at a later date, the wall in effect acts as a kind of 'wick', as it maintains its moisture open properties, resulting in a substantial increase in moisture within the wall becoming visible as rising damp, with its associated problems.

Works Required

If rising damp is present then possible actions include; The removal of external hard standing or internal screed floors; The installation of an external French drain adjacent to the wall, or the installation or reinstatement, of a damp proof course. If there is efflorescence, which are sulphates, or darker staining above the efflorescence, which are nitrates, then further treatment of the wall will be required once the source of damp has been removed.

> **Contact Lime Green for advice on these further treatments if required** info@lime-green.co.uk

Additional Information

It is important to note if there is sufficient ventilation in the 'wet rooms' (e.g. bathroom, kitchen etc.). Ventilation needs to be balanced against the moisture source. The greater the amount of water being used in a room the greater the number of air changes required. A ventilation technician will ensure the right level of air changes. Black mould, or internal condensation (black mould will only grow in clean water) are good indicators that either surfaces are too cold (Warmshell Internal will rectify this), or that there is inadequate ventilation.

It should be noted that there is a risk of compromising Internal wall Insulation, if the ventilation is not adequate.

While assessing the condition of the property's walls both internally and externally the following is also important to note;

Are there any areas where the external ground level is higher than the internal floor level? See drawing IWI 005d. in the Design Details. Under no circumstances should the Warmshell Woodfibre insulation be applied below DPC or external ground level.

Are there any electrical services mounted on the inside of the external walls? It is a more effective solution if these can be moved to other internal walls for simplicity of the Warmshell Internal installation and future servicing of the electrical services, if required.

Are there any other services found on the inside of the external walls, water or gas. These should either be re-routed or brought directly through the Warmshell Internal.

Works Required

Note any requirement for Warmshell Internal system for below ground level. Ensure all works required in relation to services are noted.

Additional Material

If the projects address falls within an exposure zone 3, or 4, then a WUFI pro. calculation is required. Supporting Material is required for this calculation.

- Ground floor plan, marked North, or Google maps image
- Plan views of room layout with walls requiring IWI marked out.
- Plan views of room layout with services on external walls marked out.
- External and internal pictures
- Elevation and sections, if available
- Drawing or Sketch of approximate location of adjacent buildings and trees, with approximate heights

To check if the project falls within exposure zones 3 or 4 contact Lime Green on info@lime-green.co.uk