# Solid Wall Insulation – Technical Reference Guide

## Contents

# Section 1 - Introduction

The introduction of Green Deal and ECO funding aims to increase uptake of home energy efficiency measures including Solid Wall Insulation by allowing homeowners to install measures without paying for the improvements upfront. This is likely to lead to an increase in the number of installations of Solid Wall Insulation in domestic properties.

This document offers a reference point for technical guidance for all of those involved in the process of insulating a solid wall whether funded individually or via the Green Deal and ECO schemes, including householders, planning officers, building control officers, conservation officers and installers. The note presents detailed guidance on the associated planning and building control requirements and provides a technical overview of design implications and common problems associated with Solid Wall Insulation in different property types.

If you are a homeowner considering insulating the solid walls of your property it is recommended that you read the Suffolk County Council Solid Wall Insulation Introductory Guide for Householders in the first instance and refer to this note for more detailed guidance if you wish to find out further, more specific information.

## Solid Wall Insulation and Energy Efficiency

Many existing properties have poor levels of energy efficiency and there are multiple benefits to tackling this. Improving the energy efficiency of homes reduces energy demand and as such will reduce the $CO_2$ emissions contributing to climate change. Improving energy efficiency in homes will also reduce fuel bills and help tackle fuel poverty, resulting in better living standards and conditions for people with low incomes, fewer winter deaths and reduced costs for the NHS[1].

Houses built before 1920 and some in later years typically have solid external walls with no cavity. Many of these will be of 'traditional construction', i.e. made of permeable materials (including lime mortar) and not incorporating barriers to external moisture, so that moisture is absorbed and readily evaporated – these properties are often referred to as being able to 'breathe'. Later forms of solid wall construction incorporate damp-proof membranes and use impermeable Portland cement mortars, and can be considered 'non-traditional'.

***External Wall Insulation*** is generally made up of a layer of insulation fixed with either mechanical fixings or adhesive to the external face of the wall and covered with a protective decorative finish of render or cladding.

***Internal Insulation*** can be applied to the internal face of the outside wall and finished using plasterboard or wet plaster. Alternatively insulated plaster boards are available in one combined board.

Insulating solid walls is not a simple measure however, and should be approached with care in properties of traditional construction, to ensure that its breathing performance is maintained. Whether insulating internally or externally there are a variety of insulation materials, finishes and fixings available ranging in permeability and flexibility. The method should be carefully selected based on the characteristics of the property. In addition to these technical design considerations, proposals to insulate some property types may require planning permission. Sections 2 and 3 provide further information on planning and building control requirements and section 4 details the technical design considerations. The Suffolk County Council Introductory Guide for Householders[2] suggests a number of alternatives to Solid Wall Insulation for improving energy efficiency, which should be considered first.

[1] See Suffolk's Annual Public Heath Report: http://www.suffolkobservatory.info/JSNASection.aspx?Section=95&AreaBased=False

[2] http://greensuffolk.onesuffolk.net/assets/Greenest-County/SGBN/Householder-Guide.pdf

## *Scope for Solid Wall Insulation in Suffolk*

Suffolk is home to over 90,000 properties with solid walls, but the suitability and cost of installing Solid Wall Insulation will vary for different properties depending on planning requirements as well as aesthetic, technical and practical considerations.

If you live in a listed building Solid Wall Insulation will rarely if ever be appropriate, but you should contact your Local Authority for advice.

Suffolk is home to 160 conservation areas made up of approximately 39,000 solid wall properties. In these properties, the changes to character and appearance from External Wall Insulation are unlikely to be acceptable, especially if the changes would be readily visible (i.e. on a front or side elevation). Table 1 below shows the number of solid walled properties in Suffolk, as well as the number in conservation areas.

| | Babergh | Forest Heath | Ipswich | Mid Suffolk | St Edmunds-bury | Suffolk Coastal | Waveney | TOTALS |
|---|---|---|---|---|---|---|---|---|
| **No. solid walled properties** | 12,422 | 5,669 | 16,037 | 12,920 | 10,945 | 17454 | 19,119 | **94,566** |
| **Approximate no. solid walled properties in conservation areas*** | 6234 | 2913 | 3909 | 3954 | 6719 | 7433 | 8405 | **39,567** |
| *Assumes 100% properties in Conservation Area are solid walled (note – this is likely to be an overestimate). (data sources: Council GIS, www.ruralfuelpoverty.org.uk) | | | | | | | | |

**Table 1: Solid wall properties in Suffolk and solid wall properties in conservation areas.**

For all traditionally constructed ('breathable') buildings, the installation of Solid Wall Insulation should be approached with care and an independent surveyor or local authority conservation officer should be contacted for further advice.

Solid Wall Insulation is likely to be most suitable for '**non-traditional**' properties – i.e. brick dwellings constructed with impermeable cement-based mortars and incorporating a damp-proof course. These are less likely to pose moisture-related problems. Such properties are increasingly common from the early part of the 20$^{th}$ Century, and where there is little external detailing the process of installing External Wall Insulation will be simpler. Section 4 details key design considerations.

# *Section 2 – Planning*

## *Permitted Development*

Since January 2013, External Wall Insulation has been included under Class A Permitted Development rights for single houses for the enlargement, improvement or other alteration of a house[3].

Permitted development rights only extend to houses and proposed materials must be of a ***similar appearance*** to those used in the construction of the exterior of the existing house. See Table 2 below for examples of what may be judged as 'similar appearance'. This table is for guidance purposes only and the ultimate decision rests with the planning department and will be decided on a case by case basis. All proposals should therefore be discussed with the Local Planning Authority prior to starting works to be sure.

| *Existing house* | *Finishing material* | *Permitted Development ?* |
|---|---|---|
| Brick | Brick slips | Usually – contact Local Planning Authority for confirmation |
| Render | Same colour render | Usually – contact Local Planning Authority for confirmation |
| Render | Different colour render | Not Usually – contact Local Planning Authority for confirmation |
| Brick | Render | Not Usually – contact Local Planning Authority for confirmation |

**Table 2 – Some examples of 'Similar Appearance' where permitted development rights may apply.**

## *Full planning permission*

Planning permission for **External Wall Insulation** will always be required in the following cases:

- Listed buildings (Listed Building Consent will also be required).
- Houses in conservation areas, Areas of Outstanding Natural Beauty (AONBs) or the Broads
- Blocks of flats
- Houses where the proposed cladding material will not be of 'similar appearance' to the existing property

Planning permission is not required for **Internal Insulation**, but if you live in a listed building, you will need to apply for Listed Building Consent (see details above).

In all cases, whether or not planning permission is needed, Suffolk Local Authorities encourage householders to undertake works such that they maintain the character of the surrounding area.

For properties requiring planning permission, the Borough and District council planning departments will take into account a range of considerations when making a decision. In all cases the impact of the proposals on the appearance of the property itself and neighbouring properties will be taken into account and it is important to engage with the planning department early in the decision making process.

If you propose to insulate the solid wall of a traditionally constructed property, conservation and building control officers will look at how proposals have been designed to maintain breathability and prevent damage to the existing fabric of the property.

[3] See Section A1.d (page 13) of: http://www.planningportal.gov.uk/uploads/100806_PDforhouseholders_TechnicalGuidance.pdf

# *Section 3 – Building Control*

## *Building Regulation Requirements*

Building Regulations (Part L1B)[4] sets energy efficiency requirements where more than 50% of a **thermal element** (see below) or more than 25% of the overall building envelope is being renovated. The following renovation works are subject to Building Regulations

- applying a new layer (cladding or rendering the external surface or dry-lining the internal surface)
- replacing an existing layer (e.g. stripping the wall back to brick and rebuilding)

In the case of walls the **thermal element** refers to a wall which separates the thermally conditioned (heated or cooled) part of the building from the external environment.

This means that all Solid Wall Insulation is therefore notifiable with Building Control. It also means that whatever renovation is being undertaken, if it affects more than half the wall (or more than a quarter of the overall building envelope) insulation will need to be added to improve the thermal performance of the whole of that individual thermal element.

**The Building Regulations (Part L1B) requirement is to ensure walls undergoing renovation have an area-weighted U-value[5] of no more than 0.30 W/m$^2$K.** Please refer to Section 4 for more details on what this requirement means in practice.

## *Exemption and Cases for Special Consideration*

Exemption from the above energy efficiency requirements applies where compliance with the requirements would unacceptably alter the character or appearance of the following buildings:

- Listed buildings
- Buildings in a conservation area; or
- Scheduled ancient monuments.

Three further classes of buildings where special considerations in making reasonable provision for the conservation of fuel and power may apply are:

- Buildings which are of architectural and historical interest and which are referred to as a material consideration on the Local Authority's Local List.
- Buildings which are of architectural and historical interest within national parks, areas of outstanding natural beauty (AONB), registered historic parks and gardens, registered battlefields, the curtilages of scheduled ancient monuments and world heritage sites. (Suffolk Coast & Heaths AONB. Dedham Vale AONB and the Broads)
- Buildings of traditional construction with permeable fabric that both absorbs and readily allows the evaporation of moisture.

When undertaking work on or in connection with a building that falls within any of the six classes listed above, the aim should be to improve energy efficiency as far as is reasonably practicable. The work should not prejudice the character of the host building or increase the risk of long-term deterioration of the building or fittings[6]. The guidance given by English Heritage should be taken into account when determining appropriate energy performance standards for building work in historic buildings[7].

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[4] Building Regulations Part L1B: http://www.planningportal.gov.uk/uploads/br/BR_PDF_ADL1B_2010.pdf

[5] The U-value is a measure of the flow of heat through a thermal element. The lower the U-value the better and insulator it is.

[6] Source: Paragraphs 5.7 and 5.8 of the Building Regulations Part L1B

## *Building Control process*

Full information on the Building Control process and the associated fees can be found on the Borough and District Council websites which are listed at the end of this document in Appendix A.

A Building Notice Form will need to be submitted prior to work commencing. You will need to describe the works to be undertaken, and should include the name and type of insulating material to be used, and state whether or not the insulating material is approved by the British Board of Agrément or conforms to a British Standard specification and whether the installer is approved under PAS 2030. Multiple properties within the same street can apply under one Building Notice, but if more than one street is being insulated, a separate Building Notice will be needed for each street.

If you propose to insulate a Party Wall (even if it is just the end of the party wall where it joins the front elevation) a Party Wall agreement will be required. A Party Wall Notice should therefore be sought at least 2 months prior to starting work.

[7] English Heritage guide to insulating solid walls in historic properties: http://www.english-heritage.org.uk/publications/eehb-insulating-solid-walls/eehb-insulating-solid-walls.pdf

# *Section 4 – Design Considerations.*

This Section deals with the various design considerations that need to be taken into account when deciding whether or how to insulate the solid walls of a property. The issues discussed are not exclusive and should all be considered together to make an informed decision. If the appropriate insulation method is selected for the construction type, and it is installed correctly, common problems associated with Solid Wall Insulation can be avoided.

## *Meeting Building Regulations Requirements.*

As discussed in Section 3, properties that are not exempt from the building regulations energy efficiency requirements will need to achieve an area-weighted U-value of 0.30 $W/m^2k$ to meet the necessary thermal performance standards. In practice this will mean approximately 50-150mm insulation.

## *Damp and Condensation*

If your property has a problem with damp or condensation prior to the installation of External Wall Insulation, it is important to work out the cause of the problem before deciding how or whether it is appropriate to insulate.

*Penetrating Damp:* This refers to the penetration of moisture through the fabric from the outside to the inside of the property. Where this is caused by driving rain, the installation of External Wall Insulation can help to stop the problem by creating a weatherproof barrier to the external wall. The breathing performance of the existing wall construction will need to be carefully considered when deciding which materials to use (for further detail see the 'Structural Considerations – Breathability and Flexibility' section below).

If applying Internal Insulation, the penetrating damp problem must be rectified prior to installation otherwise moisture will either collect between the wall and the insulation or it will soak into the insulation.

Penetrating damp in external walls can also be the result of defective construction such as blocked gutters or downpipes causing water to overflow onto the wall, or defective flashings which may cause the wall to become saturated. These types of problems should be rectified prior to installing insulation to avoid the insulation becoming saturated.

*Rising Damp:* If the property has an existing issue with rising damp this must be rectified prior to the installation of insulation. Installing insulation to a wall with an existing rising damp problem will lead to further problems as the insulation will most likely become damp and damaged and may start to decay.
In some cases it may be possible to inject a damp proof course (DPC) into the external wall to stop damp creeping up the wall.

To prevent rising damp from becoming a problem following the installation of External Wall Insulation, the insulation should be stopped above DPC level. This will impact on the visual appearance of the lower perimeter but it is possible to reduce this (see the 'Aesthetic Considerations' sub-section below).

*Surface Condensation:* If the property has existing problems with surface condensation and mould growth, this is likely to have been caused by thermal bridging (see Section below) or where the property is not properly heated. Condensation forms where moist internal air meets a cold spot on the wall or a cold internal surface. The moist air is cooled and loses its capacity to hold moisture, depositing it on the cold internal surface. Damaged internal surfaces should be replaced or repaired prior to installing Solid Wall Insulation. External Wall Insulation will keep the external wall warmer and may reduce the problem of surface condensation however care should be taken to avoid creating thermal bridges and maintaining the breathing performance of the existing wall (see Section below) as failure to do so could cause further problems.

Internal Insulation can also reduce surface condensation by providing a warm face to the external wall. However, the insulation materials and provision of a vapour control layer should be carefully considered in line with the existing building fabric to avoid the formation of interstitial condensation and to maintain the breathing performance of the existing wall where appropriate (see ‘‘Structural Considerations – Breathability and Flexibility’ Section below).

*Interstitial Condensation:* This is condensation that forms within the wall between layers. It occurs in walls when warm, moist air from inside a building penetrates into the wall construction and meets a cold surface. This causes the air to cool, lowering its capacity to carry moisture, and resulting in condensation on the cold surface. Applying External Wall Insulation to a solid wall will not usually lead to interstitial condensation because the wall is inside the insulated envelope. When considering Internal Insulation the permeability of the insulation and vapour control layers will need to be carefully considered to control the passage of moisture through the insulation. This is discussed in further detail in the ‘Structural Considerations – Breathability and Flexibility’ Section below. In some instances it may be appropriate to separate the Internal Insulation from the wall by creating a cavity. In these instances it is important to consider the air movement in the cavity and whether the cavity will need to be ventilated.

## *Structural Considerations - Breathability and Flexibility.*

As demonstrated in Table 1 in Section 1, there are over 94,000 dwellings with solid walls in Suffolk. Many of these will be of ‘traditional construction’, i.e. made of permeable materials (including lime mortar) and not incorporating barriers to external moisture such as cavities, rain-screens, damp-proof courses, vapour barriers and membranes which are standard in modern construction. These types of permeable wall constructions have been designed to “breathe”, meaning that moisture is exchanged readily with the indoor and outdoor environment. Where Solid Wall Insulation is introduced it is important that the existing breathing performance is taken into consideration so as not to trap moisture and avoid causing damp problems and associated decay of the building fabric.

In addition to this, some historic structures (particularly timber framed properties) have been designed to flex. When insulating solid walls it is important that the insulation applied does not limit this flexing as doing so could damage the property by causing the structure to crack, weakening the structure and allowing moisture in, which could lead to damp and decay.

Certain insulation materials, finishes and fixing types will be more appropriate for different wall types. These should be carefully selected in order to maintain an equivalent level of breathability and flexibility. Table 4 shows examples of how this can be achieved in different scenarios.

*Materials*

As a general rule of thumb, the layers of an insulated solid wall should become progressively more permeable from the interior to the exterior[8]. If the existing structure is permeable to moisture, it will have a certain degree of moisture within it. It is important not to trap this moisture as this could lead to decay of the structure or mould growth. The most appropriate material will depend on whether you propose to insulate externally or internally and ventilation within the property should also be considered.

| Impermeable Insulation | Impermeable Finishes | Permeable Insulation | Permeable Finishes |
|---|---|---|---|
| Expanded polystyrene<br>Polyurethane<br>Polyisocyanurate | Brick slips<br>Cement based mortars and renders<br>Silicone-based renders | Hemp-lime composites,<br>Mineral wool,<br>Wood fibre panels,<br>Sheep’s wool batts,<br>Hemp/ flax/ cellulose | Lime based mortars and renders<br>Rain-screen cladding (e.g. tile hanging with lapped joints) |

**Table 3: Insulation and finishing Material**

[8] Source - English Heritage guide to insulating solid walls in historic properties: http://www.english-heritage.org.uk/publications/eehb-insulating-solid-walls/eehb-insulating-solid-walls.pdf

*Fixings*

Insulation can be secured internally or externally. The following examples are the some of most common fixing methods:

Mechanical/ dry fixings – fix insulation onto the face of the wall and are similar to a large screw-type fixing. The wall will be tested for suitability using a 'pull-out' test to check the substrate is strong enough to support the fixing. This type of fixing will not inhibit breathability.

Adhesives – these fix insulation boards directly onto the face of the wall. The adhesive can be applied over the entire surface of the insulation board or around the board perimeter with a dot and dab arrangement on the back of the board to cover a minimum of 40% of the board before securing to the wall. In all cases where using adhesives at least one or two mechanical fixings per board are recommended. An adhesive fixing may be more appropriate where the external wall is not strong enough to support a mechanical fixing. Adhesive applied all over the wall will create an impermeable layer.

Rail fixings - these fixings can be used to create airspace between the existing structure and the insulation, to maintain breathability. Movement joints can be incorporated allowing the existing structure to flex.

Frame - a stand alone frame can be created (most commonly for Internal Insulation). Insulation can be installed within the frame structure. This approach may be useful for proposals to listed buildings where the existing fabric cannot be altered.

*External Wall Insulation*

The External Wall Insulation and fixing system should generally follow the same principles as the existing structure to maintain the same level of breathability and flexibility. Table 4 below provides guidance on various technical considerations and suggests appropriate insulation, fixing type and finishes for different external wall types.

| External Wall Type | Technical Considerations | Suggested External Wall Insulation, Fixing-type and Finish. |
|---|---|---|
| Brick with lime/ earth based mortar and pointing. | Lime mortar allows passage of moisture and breathability should be maintained. | Permeable insulation mechanically fixed on face of wall. Permeable finish. |
| Timber frame and clay lump/ wattle and daub. | Breathability must be maintained to a similar level. The existing structure has been designed to flex and this flexibility should be maintained. | Permeable insulation fixed using a rail system, permeable finish. |
| Brick with cement mortar. | Existing structure does not allow passage of moisture. | Any insulation type, any fixing (dependant on strength of brick), impermeable finish. |
| Cement render finish on impermeable blocks. | Existing finish does not allow passage of moisture. | Any insulation type, any fixing (dependant on strength of block), impermeable finish. |

**Table 4: Technical Considerations and suggested External Wall Insulation solution.**

Internal Insulation

Where Internal Insulation is proposed, it is necessary to carefully consider the control of moisture from the warm internal air so that it does not enter and condense within the insulation or the existing solid wall. A vapour control layer or the use of closed-cell foam (impermeable to moisture) is recommended on the internal surface behind the plaster finish. It is important that this vapour control layer is not damaged during construction (e.g. fixing of plasterboard) or in use (e.g. by hanging pictures). It is possible to create

a frame by fixing battens over the vapour control layer to create a service zone. The plasterboard can be fixed to the battens and reduces the risk of damage to the vapour control layer.

Where Internal Insulation is proposed on an extremely permeable construction (such as a traditional timber frame), the breathing performance of the wall should be maintained and a vapour control layer should not be introduced as this would stop the movement of moisture.

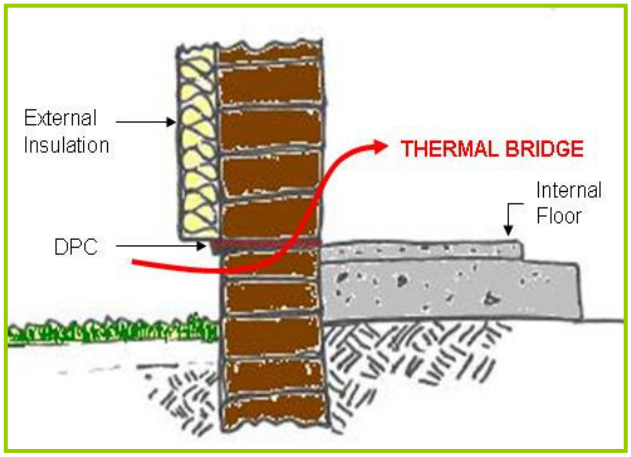
Further information on maintaining breathability can be found in the English Heritage guide to insulating solid walls in historic properties[9].

## *Thermal Bridging*

Thermal bridging (sometimes referred to as cold bridging or cold spots) occurs when the insulation layer is interrupted by another material or is reduced in thickness (usually at corners or junctions). Where thermal bridging occurs, the internal surface will be colder. When warm moist air inside the property comes into contact with these cold surfaces, condensation and eventually mould growth may occur. The addition of Solid Wall Insulation can in many cases reduce thermal bridging by providing a continuous layer of insulation. However, the following are a few key areas to watch out for and care should be taken when applying Internal or External Wall Insulation to avoid creating thermal bridges.

Window reveals: To prevent thermal bridging at these points, insulation should be extended into window and door recessed areas. This will slightly reduce window sizes and in some cases may impact window functionality. If windows are to be replaced at the same time they can be brought forward so that the wall insulation will adjoin the window frame without having to be extended into the recess.

Wall - Floor junction: If the External Wall Insulation is stopped at DPC level, a thermal bridge will be created through the un-insulated part of the external wall (right) below the DPC level. This thermal bridge can be reduced by insulating below the DPC level using a different type of insulation. There would need to be a physical gap between this and the insulation above DPC level to prevent the passage of ground moisture.




Wall - Roof junction: To reduce thermal bridging at this junction, the roof insulation should be extended as close as is practicable to the External Wall Insulation; ensuring roof ventilation is maintained where necessary.

Between floors: if insulating internally, the insulation will need to stop at the ground floor ceiling level and continue from first floor level. To avoid a thermal bridge between the floors, insulation between floor joists at the junction with the external wall can be added.

[9] English Heritage guide to insulating solid walls in historic properties: http://www.english-heritage.org.uk/publications/eehb-insulating-solid-walls/eehb-insulating-solid-walls.pdf
Further guides to insulating historic properties with timber frame: http://www.english-heritage.org.uk/publications/eehb-insulating-timber-framed-walls/eehb-timber-framed-walls.pdf and early cavity wall construction: http://www.english-heritage.org.uk/publications/eehb-early-cavity-walls/eehb-early-cavity-walls.pdf

## *Aesthetic Considerations*

Adding External Wall Insulation to a property will change its appearance and the resulting increase in wall thickness may have an impact on the following elements of the property.

- Windows - will appear further inset into the wall. To reduce this, windows can be moved further forward, thereby maintaining a similar inset to the original property.
- Window sills will most likely need to be replaced or extended by the use of oversills.
- Roof overhangs will be decreased. They will need to extend beyond the finished system by 35-40mm. This can be achieved by verge trims. Alternatively it is possible to extend the roof to maintain the same depth of overhang, but this may be expensive.
- External pipe work may need extending or relocating. This is relatively simple and easily achieved in most cases.
- Canopies (for example over porches) or window boxes, should be removed so that insulation can be installed behind to reduce thermal bridging. It is often possible to add such features back on following the installation of insulation – see example below. Special fixings are available that will reduce the extent of thermal bridging created by re-attaching these features.
- Where the façade has particular architectural features (e.g. ornate cornicing around windows) or the property is in a conservation area External Wall Insulation may result in a loss in character of the property or the surrounding area. It may be more appropriate to consider Internal Insulation. Alternatively it may be possible to maintain or replace architectural features if desired, but this is likely to be at an extra cost to the householder rather than being funded via the Green Deal or ECO schemes. Individual cases should be discussed with a Green Deal provider.
- Eaves detailing can often be maintained by stopping the insulation short of the eaves – see example below.

***Pre – wall insulation***

***Post – wall insulation***

- Some dark-coloured render systems may present issues with overheating due to a higher level of the suns heat absorption. This can in some cases damage the insulating layer. Suffolk pink, a common colour in Suffolk properties has not previously been associated with overheating problems.
- Lower perimeter – as mentioned earlier in the 'Damp and Condensation' section of this document, the main body of External Wall Insulation should start above the existing DPC level. It is possible to install separate insulation below DPC level to maintain visual continuity but a special insulation material would need to be used and there would need to be a physical gap between this and the insulation above DPC level to prevent the passage of ground moisture. Alternatively insulation can be installed over the entire surface of the wall and extended below DPC level but significant groundworks will be required to control the movement of moisture to prevent it from penetrating the insulation and this is likely to be an expensive and time consuming option.

### *Conservation Areas - A Practical Example*

The images below show a property in a conservation area which had insulation installed on the internal face of the front wall of the property and 120mm of insulation applied externally to the side and rear elevations.

The side insulation was brought flush with the front of the property and by installing insulation internally to the front of the property, all the window features and external detailing at the front of the property have been retained and the front elevation remains very similar following the works.

***Pre – Wall Insulation***

***Post – Wall Insulation***

It is possible to see that the eaves detail at the side of the property has been slightly compromised by the addition of the external insulation and careful consideration should be given in situations where elevations are largely visible from public highways or footpaths as this may affect the visual appearance of the building or the surrounding area.

## *Space Issues*

Installing External Wall Insulation will impact slightly on the footprint of the property. In most cases this is unlikely to cause a problem, however there are some instances alternatives will need to be considered. For example where there is a passageway to the side of a property applying External Wall Insulation may make the passageway too narrow, restricting disabled access or the ability to roll wheelie bins down the passageway. In these cases, a thinner layer of insulation on the external face or Internal Insulation should be considered on the affected wall. Internal Insulation will impact slightly on room size and if rooms are already small it may not be appropriate.

## *Workmanship and Materials Standards*

The addition of wall insulation should be undertaken by a qualified contractor. Building Control will ensure that the insulation is installed to the manufacturer's specifications. Householders should check that the insulation system they are using either has a British Board of Agrément (BBA) certification or European Technical Approval (ETA). If the work is to be conducted via Green Deal or the Energy Companies Obligation (ECO) then the installer will need to carry the Green Deal Mark to demonstrate they comply with the Green Deal standards.

If the work is conducted via the Green Deal, the Green Deal Provider is responsible for considering whether the building is "vulnerable" (i.e. a historic building or a building that is built in such a way that

special care is required to ensure that improvements do not result in damage or deterioration of the building fabric). Where this is the case, the Green Deal Provider must take specific action as listed in the Green Deal Code of Practice[10], including considering whether an architect, surveyor or the local authority historic buildings or conservation officer should be consulted.

To gain ECO funding the insulation will need to be accompanied by a SWIGA (Solid Wall Insulation Guarantee Agency) or equivalent guarantee, or if the property is too high for SWIGA then need Building control and clerk-of-works sign off.

Consideration should be made of timings. The installation process is weather-dependent; external temperatures need to be between 5°C and 30°C, with low rain risk and will take approximately 7 days.

[10] Green Deal code of practice – see Annex B items 41-45
https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/69090/Green_Deal_Code_of_Practice__version_2.pdf

# *Appendix A - Contact details for the Borough and District Councils in Suffolk*

### Babergh District Council

Website: www.babergh.gov.uk
Planning: www.babergh.gov.uk/planning-and-building/
Email: info@babergh.gov.uk

Telephone: 01473 822801

### Forest Heath District Council

Website: www.forest-heath.gov.uk
Planning: www.forest-heath.gov.uk/info/200074/planning
Email: info@forest-heath.gov.uk

Telephone: 01638 719000

### Ipswich Borough Council

Website: www.ipswich.gov.uk
Planning: www.ipswich.gov.uk/site/scripts/documents.php?categoryID=200074
Email: enquiry@ipswich.gov.uk

Telephone: 01473 432000

### Mid Suffolk District Council

Website: www.midsuffolk.gov.uk
Planning: www.midsuffolk.gov.uk/planning-and-building/
Email: customer.service@csduk.com

Telephone: 0845 606 6067

### St Edmundsbury Borough Council

Website: www.stedmundsbury.gov.uk
Planning: www.stedmundsbury.gov.uk/planning-and-building-control/
Email: stedmundsbury@stedsbc.gov.uk

Telephone: 01284 763233

### Suffolk Coastal District Council

Website: www.suffolkcoastal.gov.uk
Planning: www.suffolkcoastal.gov.uk/yourdistrict/planning/
Email: scdc@suffolkcoastal.gov.uk

Telephone: 01394 383789

### Waveney District Council

Website: www.waveney.gov.uk
Planning: www.waveney.gov.uk/site/scripts/documents.php?categoryID=200074
Email: info@waveney.gov.uk

Telephone: 01502 562111

# *Appendix B - Relevant Case Studies in Suffolk*

### Victorian Externally Clad End Terrace, Ipswich

External Wall Insulation (Themafleece wool) was added to the end gable of this solid walled property, covered with a breathable membrane and a cladding of stained fire retardant treated feather-edged timber boarding, a traditional local building material. The glazing was upgraded at the same time.

For further information please see: http://www.greensuffolk.org/sgbn/suffolk-case-studies/gable-ipswich/

### Housing Association Properties, Kedington

External Wall Insulation added to 3 No. solid-walled semi detached houses built in 1931 in the centre of the village of Kedington and owned by Havebury Housing Partnership. The glazing was upgraded at the same time.

For further information please see: http://www.greensuffolk.org/sgbn/suffolk-case-studies/housingassociation-kedington/

### The Tithe Barn, Sproughton

External Wall Insulation made from reconstituted saw mill waste was added to this timber framed barn conversion. The glazing was upgraded at the same time. As a result, it was decided that it was not necessary to upgrade the heating system.

For further information please see: http://www.greensuffolk.org/sgbn/suffolk-case-studies/tithebarn-sproughton/

### Barn Conversions, Wyverstone

Listed Tudor timber framed barn insulated between the wooden studwork using Heraklith “wood-wool”

In the main barn, Celotex rigid insulating expanded polyurethane foam board is used to insulate the timber framed walls.

For further information please see: http://www.greensuffolk.org/sgbn/suffolk-case-studies/wyverstone/