

Loft Conversions and the Building Regulations



The following information has been compiled to help you understand what is required to achieve building regulation for loft conversions.

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Introduction

All roof / loft conversion conversions must comply with the statutory Building Regulations and therefore will require Building Regulation approval from your Local authority or Borough Council. If you fail to comply you will not be able to market your loft space as a **habitable room** when you come to sell your home.

If structural works ie new flooring or other alterations are intended, Building Regulation Consent will be required whether or not the room is for habitable purposes.

The main parts of the regulations which you need to comply with, are listed below and are explained in more detail throughout this document.

- Part A – Structure
- Part B – Fire safety
- Part E – Sound insulation
- Part F – Ventilation
- Part K – Protection from falling, collision & impact
- Part L1B – Thermal insulation

Although at first this list may appear daunting, it is worth recognising that some of the regulations only form a minor part of the “Approved Documents” which are Building Regulations guidance notes to which ABM have to comply with. There is additional information on building regulations on the planning portal website <http://www.planningportal.gov.uk> and there is also a direct link on the **Design and Planning** page on our website.

How to apply

Please note: Building Regulation consent and Planning Permission are two separate approval processes which ABM guide you through and keep you up to date with any correspondence.

Building Regulation Consent

There are two methods of how we inform the local council of your proposed building work and application for permission to proceed with our conversion / building project.

1. Full Plans Submission (longest route, but most recommended)

This is the most used method. ABM prepare plans and submit them to the Local Authority with the appropriate form and charge. The plans are examined to make sure that they comply with building regulations, they are normally approved within 6-8 weeks, we will then carry out any amendments requested to bring your proposal up to this standards expected.

It is best to receive this notification before you actually commence the work, but its not a legal requirement. However, waiting for Building Regulation approval will give you the confidence that if the work is carried out in accordance with the approved plans you will comply with the Building Regulations.

Upon commencement we notify your local council building control officer, who will visit the property to inspect the work at every stage of the build and they may ask to make alterations to the plans / scheme as the works progress. Upon completion you will be provided with a certificate to confirm the work has been completed satisfactorily.

2. A Building Notice (shortest route)

You may also choose to use the Building Notice approach. With this method we submit your proposal forms and can start works within 48 hours once we receive confirmation of receipt of the documentation. You must also allow for a Building Control Surveyor to visit and inspect the work as it proceeds.

The full structural calculations, joist layout and design are still required for a Building Notice but can be supplied while works are in progress.

You will still receive confirmation of satisfactory completion when the work is complete.

The Party Wall Act

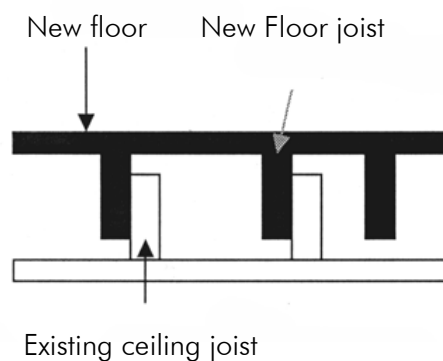
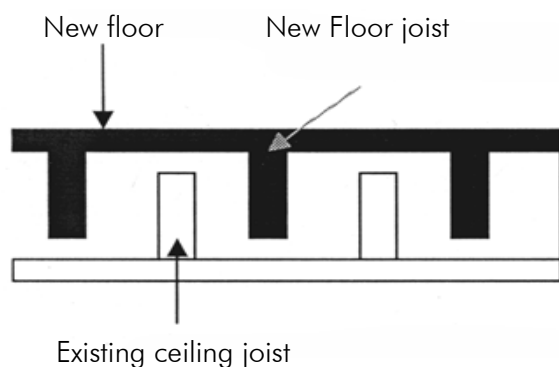
The Party Wall Act will apply to building work affecting a party wall. Neighbour's written consent should be obtained prior to commencing work.

Further information and advice can be found on the **Design and Planning** page on our website under useful links.

Part A - Structural requirements

New floor

Existing ceiling joists are very unlikely to be adequate to act as floor joists. The diagrams below demonstrate three popular methods of constructing a new floor.

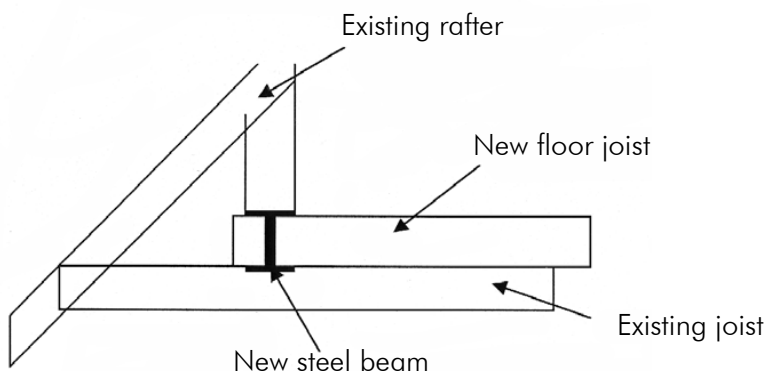


Our Structural Engineer will supply calculations to the local authority for all structural members including joists, rafters, purlins, steel beams as well as all alterations to truss rafters etc.

Calculations will ensure that both the stability of the existing structure and that of the new structure will be adequate. All structural calculations submitted will be checked by the council's engineer to ensure that they comply with the regulations and will form part of your building regulations application.

Existing structure - foundations

Adding additional floor to your loft space will increase the loading on the foundations of your property; it is important therefore to ensure that any new loading is carried by existing load bearing walls and that they are checked. We also expose your existing foundations to ensure that they are suitable to carry additional loading.



For further information please [click here](#).

Existing structure - supporting elements

It is important that your structural investigation covers the existing elements that will be supporting the new structure, for example internal walls, beams etc. These elements need to be load bearing and capable of carrying additional loads. To ensure these elements are adequate they may need to be exposed for inspection prior to the work being carried out. Any previous structural work to the house, for example the removal of a wall and introduction of a steel beam between a dining room and sitting room, will require checking to ensure the additional loading it may take is acceptable.

Roof covering

If converting the loft involves the replacement of the roof covering, the following structural issues should be considered:

1. If the new roof material is heavier, the additional loading on the structure must be calculated and the structure upgraded accordingly.
2. Conversely, if the new roof material is lighter, the possibility of increased wind uplift must also be considered.

Notches and holes in joists

Notches and holes in simply supported floor and roof joists should be within the following limits:

- Notches should be not deeper than 0.125 times the depth of a joist and should not be cut closer to the support than 0.07 of the span, nor further away than 0.25 times the span.
- Holes should have a diameter not greater than 0.25 times the depth of a joist and should be drilled at the joist centre line. They should be not less than 3 diameters (centre to centre) apart and should be located between 0.25 and 0.4 times the span from the support.
- Notches or holes should not be cut in rafters, purlins or binders unless approved by the building designer.
- Rafters restrained by ceiling ties at eaves level may be birdsmouthed at supports to a depth not exceeding one third of the rafter depth.



Part B - Fire Safety

Specifically the Building Regulations acknowledge that the risk to life from a fire occurring in a three storey property is greater than that in a one or two storey dwelling. A dwelling, which is altered to include a third storey, should comply with the following requirements of the Building Regulations:

- Means of escape
- Installation of smoke detectors
- Internal fire spread (structure)
- External fire spread

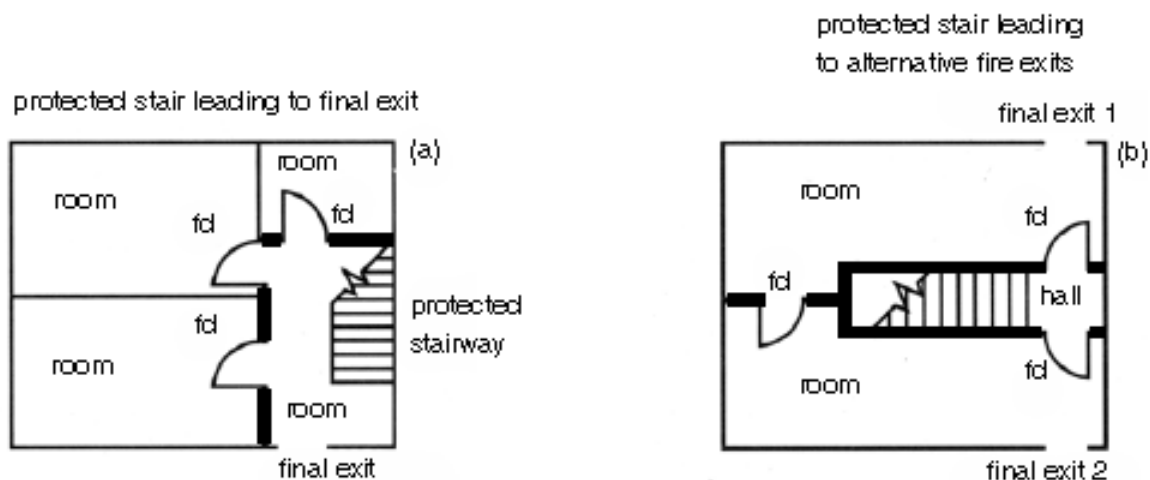
Although the previous list might at first appear complex when it is broken down and applied to your loft conversion, the requirements are usually quite easy to apply.

Means of escape

Means of escape is the structural means whereby in the event of a fire a safe route is provided for people to get from any point in a building to a place of safety without outside assistance.

Regulation B1 requires that a building shall be constructed so that the means of escape is capable of being used at all times.

Alternative arrangements



Key

fd FD20 Fire door

— 30 minute fire resisting construction

If you already have an open plan staircase it will need to be enclosed.

Alternatively, it may be possible to provide sprinkler protection to the open-plan area, in conjunction with a fire resisting partition and door, separating the ground floor from the upper storeys. This door should be so arranged to allow occupants of the loft room to access an escape window at first floor level in the event of a fire in the open plan area.

Any cooking facilities should be separated from the open-plan area with fire-resisting construction.

Staircase design

The new staircase may be located either as a continuation of the existing stairway, or in an enclosure that is separated from the existing rooms. It must open into the existing stairway at first floor level in order to form a protected route.

In a loft conversion a pull down ladder is not acceptable. An alternating tread stair or a fixed ladder may form an acceptable approach in certain circumstances.

Guidelines for the new staircase are covered by Part K and are covered later in this document.

Guidance where upgrading the fire resistance of existing doors to protected stairs.

The approved document to regulation B1 requires FD20 doors to all habitable rooms in a new or altered dwelling houses with one floor more than 4.5m above ground level, where they form part of the enclosure to the stair. If there is desire to retain existing doors within a dwelling house, when undertaking alterations to form habitable rooms, with one floor more than 4.5m above ground level the following may be considered as suitable alternatives to replacing some or all doors.

General provisions

1. In addition to smoke detectors at every storey level, detectors should also be provided at half landing levels adjacent to habitable rooms. A heat detector should be provided in the kitchen and smoke detectors in all habitable rooms entered from the stair enclosure. All alarms should be mains powered with standby battery backup, interlinked so that detection of heat or smoke in one unit operates the alarm in all others.
2. BS 5839:6 recommends optical smoke detectors in circulation areas with ionization detectors better for living and dining rooms. Optical may be better in bedrooms although either type would be considered acceptable.
3. There should be at least one window at first floor level of a size that would permit emergency egress to either a rear garden of sufficient depth or to the front elevation. Window to be a minimum size 0.450m x 0.450m equal to 0.33m² with a sill height between 0.800 and 1100mm above floor.

Panel doors in excess of 32mm thickness

1. The door should be attached to the door frame with steel hinges, not be visibly warped, fits well into its frame and there should be no visible defects particularly in the panels.
2. Any existing glazing to doors or fanlights should be replaced with wired glass or similar fire resistant glazing to provide adequate resistance for integrity and stability.
3. There should be no significant defects to adjacent walls or around door frames forming the stair enclosure.

Existing panel doors less than 32mm in thickness

1. In addition to the recommendations for panel doors in excess of 32mm indicated above, if it is intended to retain doors less than 32mm in thickness a proprietary solution should be sought to upgrade the door. This may include the application of fire resistance materials to the panels and stiles on the room side of the door.

Such doors can be provided with a certificate from a specialist supplies confirming their upgraded suitability.

2. Alternatively, the door can be upgraded, on the room side, by infilling the panel with a fire resistant board and applying a similar board glued and screwed over the entire door.

Hardboard flush doors

Existing hardboard or other lightweight flush doors are not considered adequate to provide a reasonable level of fire protection to a stair enclosure and should be replaced with FD20 doors in accordance with the recommendations of the approved document.

Internal fire spread (structural)

Normally a floor in a three storey property will require a full 30 minutes fire resistance. However, provided the following conditions are satisfied, namely:

1. Only one storey is being added;
2. The new storey contains no more than 2 habitable rooms, and;
3. The total area of the new storey does not exceed 50m²;

Then the existing first floor may have a modified 30mins fire resistance in places where the floor only separates rooms (not stairways or landings).

External fire spread

Occasionally dormer cheeks, and gable ends that are built as a result of the conversion and may be in close proximity to the boundary. In this instance additional precautions will be required to improve the fire resistance (30 minutes fire resistance required) internally and externally of the new construction.

Part E - Sound insulation

Loft conversions will be effected by Regulation E2, which requires sound insulation measures to certain the internal walls and floors of buildings. The guidance relating to this part of the regulations is contained in Section 5 of the Approved Document. In a typical domestic situation stud walls around bedrooms and bathrooms need 75mm studwork with either two layers of plasterboard on each side, and 25mm of sound insulation incorporated within the wall.

Separating timber floors are required to achieve a reasonable level of protection. The new floor should be covered with floor boarding which achieves 15kg/m² (i.e. 21mm tongued and grooved boarding) and this should cover the entire floor and remaining ceiling joists to the eaves. This boarding should also be provided with screw fixings. 100mm mineral wool insulation should be provided between the new floor joists, insulation to be a minimum of 10kg/m² (see diagram below).

Diagram 5.1 Internal wall type A

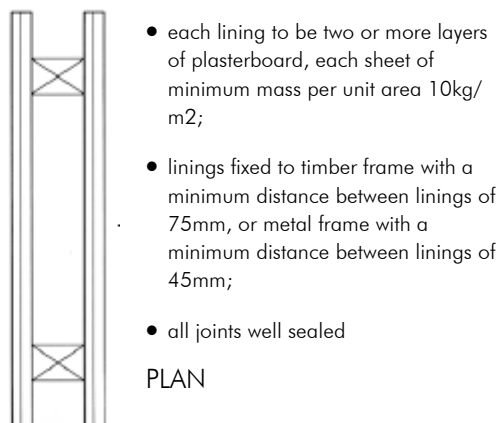


Diagram 5.2 Internal wall type B

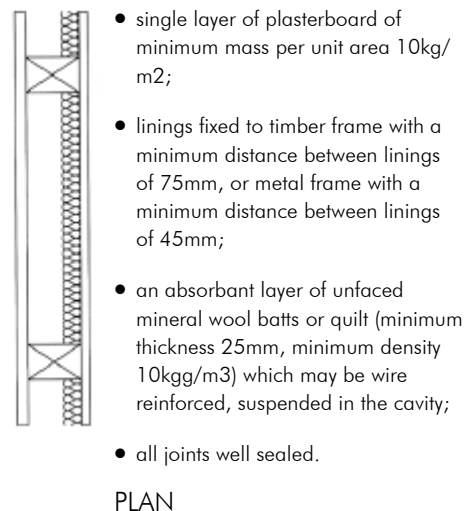
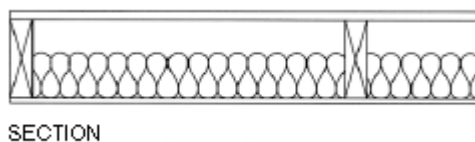


Diagram 5.7—Internal floor type C



- floor surface of timber - or wood - based board, minimum mass per unit area 15kg/m²;
- ceiling treatment of single layer of plasterboard, minimum mass per unit area 10kg/m², fixed using any normal fixing method; • an absorbant layer of mineral wool (minimum thickness 100mm, minimum density 10kg/m³) laid in the cavity

In attached properties the existing separating walls may also require upgrading.

Whilst there is no requirement for these walls to be brought up to new build standards, reasonable provision should be made to improve their sound resistance.

Part F - Ventilation

New habitable rooms

Windows to newly formed habitable rooms must include an opening proportional to the floor area of the room (the new windows must achieve a minimum of 1/20th of the floor area of the room). There must also be background ventilation provided by window trickle vents minimum 8000 mm².

Bathrooms

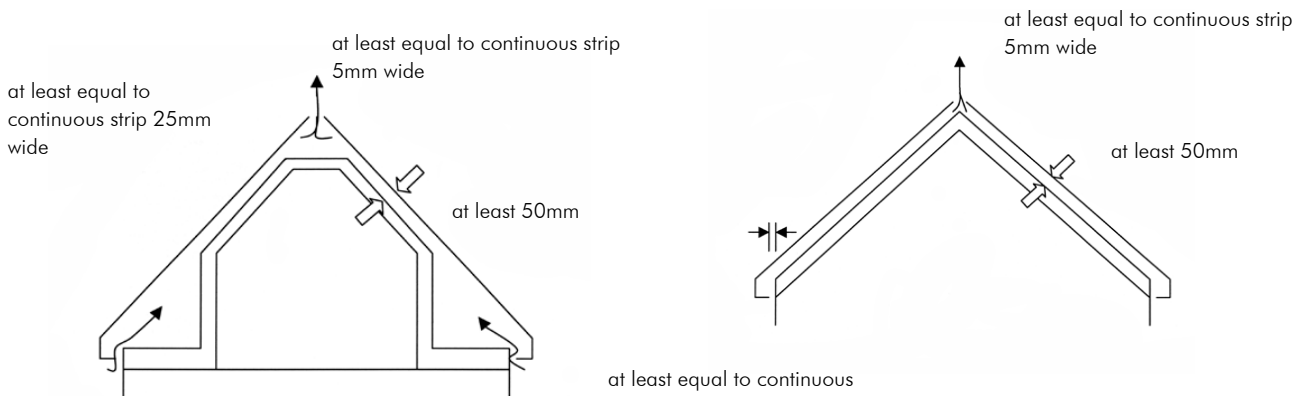
A new bathroom must either have an openable window plus background ventilation minimum 4000mm² and extract ventilation of 15 litres/second. If no windows are present mechanical extract must be provided with a minimum 15 minute overrun.

WC's

If a window is not present mechanical extract of 6 litres/second with a 15 minute overrun must be provided. If a window is present it must have an opening of 1/20th of the floor area.

Roof (cold roof)

The introduction of a room into a previously open roof space will restrict the existing cross ventilation and could cause condensation to form on the underside of the roof. To prevent this the existing eaves ventilation (if any) will need to be increased to at least a continuous strip 25mm wide. An air gap of at least 50mm is needed between the pitched roof and any insulation fitted to ensure cross ventilation. Roof vents must also be added at the ridge equivalent to a continuous strip 5mm wide.



a: Ceiling not following pitch of roof

b: Ceiling following pitch of roof

Breathable felt

An Alternative approach to roof ventilation is where a breathable sarking felt is used. The sarking felt should have an appropriate BBA Certificate and be installed in accordance with the manufacturers specification. If this already exists to the roof system additional ventilation will not be necessary.



Part K - New staircase

The following information describes the main requirements of Approved Document K staircase design. Often the most critical areas relate to headroom, rise and going and landing provision.

When we visit your home we will have to consider the following:

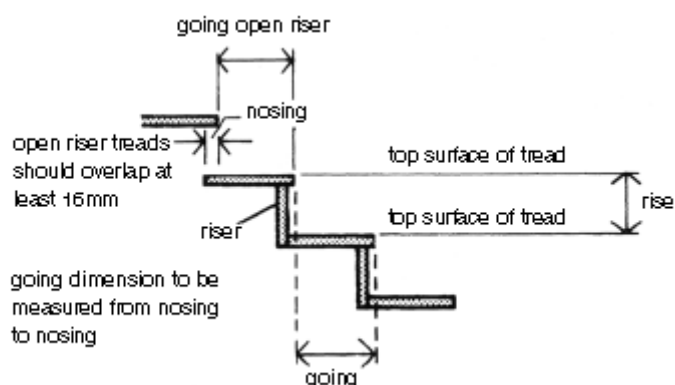
1. Where can the stairway be formed?
2. Will it have adequate pitch?
3. Will the headroom be sufficient?

Steepness of stairs – rise and going

The diagram below illustrates what is meant by the rise and going of a flight of stairs.

The minimum going which a new stair should have is 220mm the maximum rise is also 220mm. However it is not possible to use these two in combination as the result would be a staircase which is too steep (45 degrees). The normal relationship is that twice the rise plus the going should be between 550mm and 700mm.

Diagram 1 Measuring rise and going

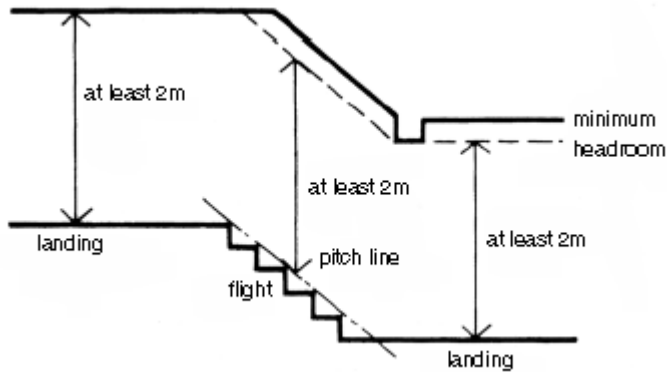


Open riser stairs

It is possible to use a stairway that is open at the back. This open type of stair requires an overlap of at least 16mm (shown on the diagram above). The Approved Document recommends that if children under the age of 5 are likely to use this stair the open rise must not allow the passage of a 100mm sphere to pass through any of the gaps.

Headroom

The diagram below indicates the preferred arrangement for headroom to a new stair.



However the Building Regulations acknowledge that space is at a premium in some loft conversions and provided the arrangements shown in the next diagram are met less headroom may be acceptable.

Diagram 3: Reduced headroom for loft conversions

Where there is not enough space to achieve 2m headroom, reduced headroom as shown will be satisfactory.

Diagram 4:

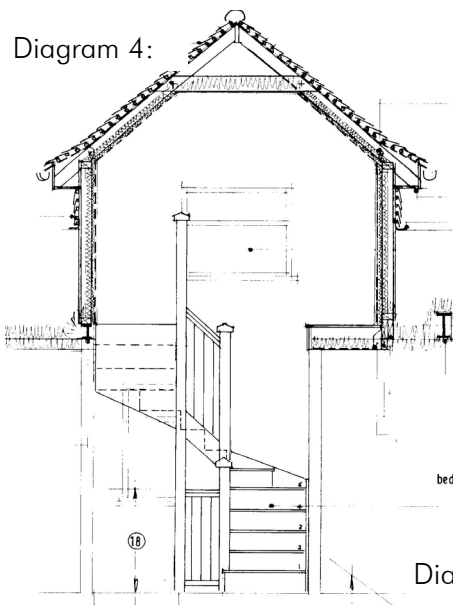
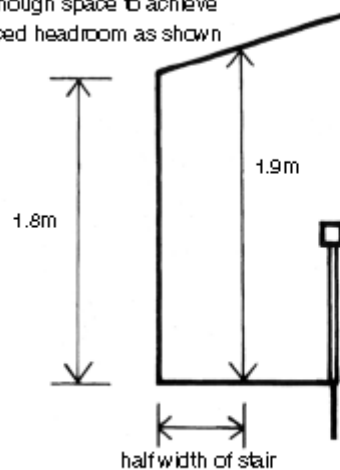


Diagram 4:

Some times we have to form a dormer / alter the existing roof structure to allow for sufficient head height. The minimum size of the dormer will be based on twice the width of the new stairs, this arrangement allows the stairs to turn when entering new loft room.

Diagram 3

Where there is not enough space to achieve 2m headroom, reduced headroom as shown will be satisfactory





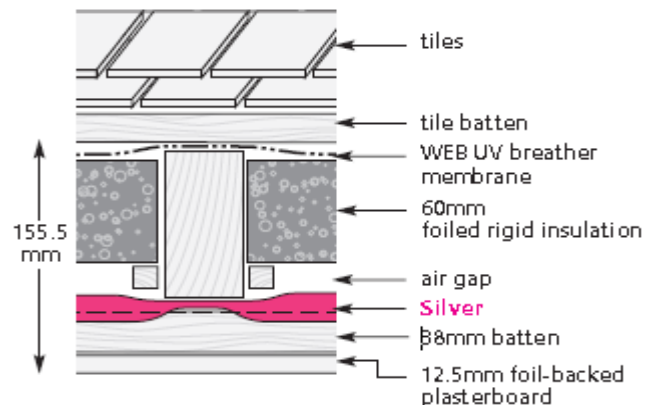
Part L - Thermal Insulation of new room(s)

It is necessary to comply with the Building Regulations with regard to the insulation to the new room(s) in the roof. Although your existing property may not comply with this standard, any new rooms will have to. In simple terms, the walls, roof slopes and ceilings around the new rooms are required to have a resistance against heat loss (known in the Building Regulations as a 'U' Value). The minimum standard that each element is required to meet is shown in the table below:

Standards for thermal elements of W/m^2K or U-values		
Element	(a) Standard for new elements in an extension	(b) Standard for replacement elements in an existing dwelling
Wall	0.30	0.35
Pitched roof - insulation between rafters	0.20	0.20
Flat roof or roof with integral insulation	0.20	0.25
Window, roof window and rooflight	U-value = $1.8 W/m^2K$ or Window energy rating = Band D or Centre-pane U-value = $1.2 W/m^2K$	U-value = $2.0 W/m^2K$, or Window energy rating = Band E or Centre-pane U-value = $1.2 W/m^2K$

Our team of experts will also be able to offer / provide you with further advise on how to increase the energy efficiently of your home. The loft conversion should be constructed so that there are no avoidable 'cold spots' in the insulation caused by gaps between materials, at the joints and at the edges, such as those around window and door openings. Reasonable provision should also be made to reduce unwanted air leakage through the new loft conversion, ie sealing gaps around window openings and floor edges.

Picture below + 60mm foiled rigid insulation



If you are in any doubt you should contact your local planning authority before undertaking any work.

This document provides you with a practical level of guidance to enable you to better understand how Building Regulations might impact on a building project you are doing or considering.

This is not a definitive interpretation of the Building Regulations. Always check with your local building control body if in doubt.

Unless you have a reasonable working knowledge of building construction it would be advisable before any work is started to obtain appropriate professional advice which is relevant to the building work you want to carry out (eg from a building guidebook, specification guide, architect, a structural engineer, a building surveyor, a heating engineer or replacement window specialist) and to choose a registered builder, or a registered installer, to carry out the work.

At the time of preparation, and to the best of our knowledge, information contained in this document relating to building regulations is correct. However, building regulations are always subject to change and ABM Building Services Ltd cannot be held responsible for any information provided in this document which is incorrect. You should always check with your local building control body if in doubt.

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