

RENOVATING YOUR HOME

*A beginner's guide to home
improvement and the building
regulations*



BUILDING REGULATIONS | PLANNING AHEAD | ENGAGING PROFESSIONALS | RENOVATION PROJECTS



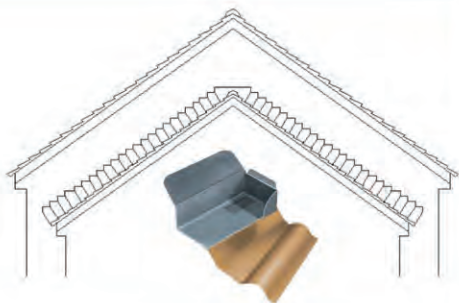
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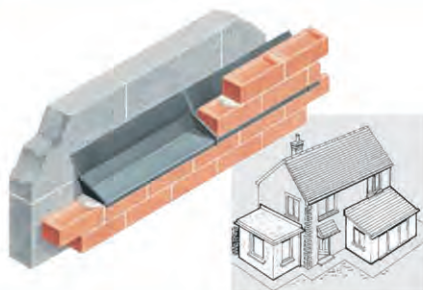
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Introduction



Renovating your home can be an exciting and highly gratifying process. With careful planning, thoughtful design and a considered choice of builder, renovation can not only improve the 'liveability' and sustainability of your home, it can also add significant value to a property.

And while renovating your own home can be a rewarding experience in terms of creative expression and improving your DIY skills, inexperience can often lead to unforeseen social, environmental and financial cost.

Popular television home renovation programmes may make it look easy, but lifecycle outcomes from some renovations can often be poor. Critical medium and long term details, such as thermal performance and water and energy efficiency, are commonly overlooked to achieve a quick turnover that conceals problems and passes them on to the next owner.



There can also be very serious downsides to renovation. If major works go wrong, such as taking down an internal load-bearing wall for example, you could be in serious trouble. The key to any successful renovation therefore is thinking it through first, planning ahead and making contingency plans for any unexpected surprises that may (and often do!) crop up along the way.

What is classed as renovation work?

Renovation work can be broadly divided into two categories: structural or cosmetic.

Structural renovations can include extensions or the conversion of a loft, cellar or basement. It might also include the redesign of floor plans or opening up the living room and kitchen for a kitchen/diner for example. It can also involve projects such as fitting a new bathroom, a conservatory or re-roofing a property.

For more information about adding new space to your property, such as a home extension or loft conversion, please refer to our sister guide www.extendingyourhome.com/farehamandgosportandportsmouth.

Cosmetic renovations do not directly affect the structure of the building and include redecoration and minor repairs – installing new flooring and updating fixtures and fittings would be classed as cosmetic renovation work.

Whatever type of renovation you are considering, careful planning before you begin is crucial in terms of estimating the likely cost and the works programme, and ultimately, delivering a successful, problem-free project.

And if you are choosing the DIY path, it's important to evaluate your skills objectively at the outset and use professional tradespeople at critical stages. Some works are excluded or restricted from the DIY sphere by the building regulations, such as any gas fitting work and much of the electrics. It's also important to be realistic about how much you can achieve. It's not unusual to encounter something unexpected on renovation projects, and it's very easy to underestimate the time a job will take – so it's not a bad idea to double your first estimate of projected timescales!

This guide, while not a substitute for professional advice, should give you a better understanding of the main challenges you are likely to face, and in particular, how the building regulations might affect your renovation project.

This guide focuses on some of the most popular renovation projects, but first it's worth explaining what the building regulations are and why they need to be considered from the outset.



Why choose a local authority building control service?

Choosing to use your local authority's building control service for your renovation project will give you peace of mind and is a positive choice for many reasons:

- We act in your best interest, protecting you the homeowner. Our number one priority is the safety and comfort of residents in their home.
- We'll work with you to ensure your renovation project is safe, healthy, inclusive and efficient, and meets the standards set by the building regulations.
- We'll provide an independent, impartial overview of the key stages of the project, giving you the reassurance that your project is on track.
- Because we are a not-for-profit organisation, we offer homeowners value for money by doing a really good job without compromising on safety.
- We will provide a prompt, professional service, offering same-day site inspections where possible.
- We have been providing building regulation services for longer than anyone else so have extensive knowledge of the local area, including ground conditions and drainage.
- We are always there to support you, even when things get difficult or the unexpected happens.
- With a local authority's building control service, the support doesn't stop when the project does, we're always on hand to provide assistance. If you require a copy of a completion certificate in 10 years' time for example, you can rest assured we will still be around.
- We are backed up by a national network of local authority building control teams (LABC), a 3,700 strong network of professional building surveyors and technical support staff. LABC constantly reviews surveyor competence, ensuring the performance and standards of our teams is of the highest level. LABC also works with manufacturers, trade bodies, professional institutions and other recognised bodies, giving us access to national expertise when required.
- Local authority building control is the biggest building control provider in the country, working on the majority of construction projects in the area.

An introduction to the building regulations



As a homeowner, before you construct or change a building in certain ways you have a duty to check if you need building regulations approval. This includes many aspects of renovation work.

The building regulations are detailed technical standards set down by the Government to make sure houses are built to a reasonable standard and are safe, warm and dry. They cover areas including health and safety inside a building, energy consumption and accessibility.

Building regulations approval is different from planning permission and you might need both, the latter will depend on the scale and extent of your renovation project.

For householders, obtaining building regulations approval is important because it means you get an independent check on the

work being carried out and once completed, a certificate that shows it complies with the building regulations. Failure to do so means the work will have contravened the building regulations and no completion certificate will be issued by your local authority's building control service. Any non-compliant building work will come to light through a local land search enquiry and this will cause problems when you come to sell your property in the future. You or the person carrying out such works could also be liable to prosecution by the local council.



What are the building regulations?

Building regulations relate to how a building should be constructed and to ensure new buildings meet specific health and safety, welfare and sustainability standards. Most building work, including many aspects of renovation work, will need to comply with the building regulations.

Your local authority's building control service has to be notified before work begins, unless the work is carried out by installers registered with a competent person scheme who can self-certify that their work is compliant.

There are some minor works that can be carried out in the DIY sphere without the need to inform a building control body (although the use of competent persons is recommended).

These include:

- Most repairs, replacements and maintenance work (except replacements of combustion appliances, oil tanks, electrical fuse boxes or glazing units which do need to be notified).
- Additional power points or lighting points or any other alterations to existing circuits (except around baths and showers).
- Like for like replacements of baths, toilets, basins or sinks.

Other types of building work can be 'exempt' from the building regulations. These include sheds, summerhouses, conservatories, porches, satellite dishes, detached garages and carports. However, before these can be declared 'exempt' they have to meet certain criteria and it is recommended that proposals for such buildings are checked over by your local authority's building control service. Unless the work you propose is exempt, you will need approval from the local authority's building control service. This can be done by making a building regulations application to the relevant local authority prior to the start of the work.



Changes to the building regulations

Recent amendments to the building regulations have introduced the role of dutyholders in relation to making a building regulations application. All dutyholders, including residential homeowners (now referred to Domestic Clients), must have systems in place to oversee the design and construction stages for compliance with the building regulations. For more information, visit: <https://www.hse.gov.uk/building-safety/assets/docs/regime-overview.pdf>

Which type of Building Regulations application will I need?

There are generally two types of building regulations application: Full Plans and Building Notice.

Full plans

This is the most thorough option where detailed plans for the proposed scheme are submitted to the local authority's building control service, along with an application form and the required fee (this will depend



on the work involved, such as the number of site inspections that will be needed, and with extensions, the total floor area).

The council will then check the details and following consultations with the designer, will issue building regulations approval. You will usually be provided with an inspection plan before you start work. This outlines the stages of work that require inspection, which will vary depending on the size and complexity of your project, age of your home, the construction type, ground conditions and your builder's experience.

Once the work is complete, a completion certificate is issued within eight weeks which proves the work complies with the building regulations.

Building Notice

This type of application is a much quicker process and designed for smaller projects, such as increasing the opening of a main load-bearing wall. You can start work two days after your notice and the correct fee have been

submitted but you do not get formal approval as with a full plans application.

Once work has commenced, a building control surveyor will visit the site to meet the builder to discuss the plans, agree how the work should be carried out and when site inspections will take place. They will also discuss if further information is needed, such as technical drawings or structural calculations. Procedures will need to be followed throughout the build and notifications given to the local authority both during and on completion of the project.

When the project is satisfactorily completed, a completion certificate is issued that shows that the work complies with the building regulations.

Regularisation approval

You can also apply for 'regularisation approval' from a local authority building control body for work that's already started, or completed, without consent. This type of approval only applies to work carried out after 11 November 1985 and alterations may be needed before your local authority's

building control service can agree the work complies with the building regulations and the regularisation certificate is issued.

Competent person schemes

Competent person schemes are a way for tradespeople to prove their ability to carry out certain work to required standards, instead of applying for building regulations approval yourself.

An installer of windows, for example, who is registered with a scheme can self-certify that their work complies with buildings regulations.

If needed, they'll tell your local authority about work on your behalf. They'll also give you a certificate within eight weeks of completion which can be used as evidence of

compliance – it will also show up in solicitors' searches if you wish to sell the property.

Competent person schemes have insurance-backed warranties and complaints procedures if there's a problem with the work.

For more information or to see if there are members in your local area who undertake the type of work that you are interested in, visit: www.competentperson.co.uk.

If you are looking to get electrical work done then you can also visit: www.electricalcompetentperson.co.uk to search for members (see separate article below for more information about finding an electrician).

It's always best to check with your local authority's building control service if you

Finding an electrician

A good place to start searching for someone to undertake electrical work in your home is via the registered competent person online electrical search facility:

<http://www.electricalcompetentperson.co.uk/Choosing-An-Electrician>.

All registered electricians listed on this database are authorised to self-certify that their work is compliant with the building regulations. It also means they have met strict entry requirements set by their scheme operator to ensure they meet the correct standards.

Once you have found your electrician, the scheme offers the following advice:

- Before work commences, agree in writing costs, payment terms and the timetable of work, including expected completion date. This should be signed by both parties.
- If any modifications are required during works, confirm this in writing and ask for a revised quote before any changes are made.
- Avoid paying for services in cash and always request a receipt or statement of account.
- You should raise any concerns you may have with the electrician, or their supervisor/manager, straight away, stating exactly what you are concerned or unhappy about and what you want done, to give the electrician a chance to rectify the problem. If the issue is not resolved in a satisfactory manner, you should contact the operator of the competent person scheme they belong to.
- When the work is complete, the electrician should always provide you with an electrical installation certificate on completion, no matter how big or small the job may be. This shows the work carried out meets the British Standard for electrical safety, BS7671.
- For any work that is notifiable under the building regulations, you should also receive a certificate to confirm the work meets the relevant building regulations.
- Keep these certificates in a safe place as you may need to provide them as proof the work has been carried out safely, particularly if you are looking to sell your property in the future.

can't decide the best route to building regulations approval.

Planning permission and other consents

It is necessary to consider at the earliest stage which aspects of the proposed renovation might require planning permission as the process of obtaining it can take at least a couple of months, sometimes longer. As a general rule, planning departments are not normally concerned about internal works, unless the property is listed. Building regulations approval, on the other hand, may be required for anything other than minor cosmetic works. Other permissions may also be required, such as Conservation Area consent, landlord

approval, Party Wall etc Act 1996 agreement (see page 13), and so on.

The Party Wall etc Act

Some kinds of building work carried out to a property may not be controlled by the building regulations. The Party Wall etc Act 1996 provides a framework for preventing and resolving disputes in relation to party walls, boundary walls and excavations near neighbouring buildings.

A building owner proposing to start work covered by the Act must give adjoining owners notice of their intentions in the way set down in the Act. Adjoining owners can agree or disagree with what is proposed. Where they disagree, the Act provides a mechanism for resolving any disputes.

The Act is separate from obtaining planning permission or building regulations approval. ■



What is a party wall?

The main types of party walls are:

- A wall that stands on the lands of two (or more) owners and forms part of a building – this wall can be part of one building only or separate buildings belonging to different owners.
- A wall that stands on the lands of two owners but does not form part of a building, such as a garden wall but not including timber fences.
- A wall that is on one owner's land but is used by two (or more) owners to separate their buildings.

The Act also uses the expression 'party structure'. This could be a wall or floor partition or other structure separating buildings or parts of buildings in different ownership, such as in flats.

The Act covers:

- New building on or at the boundary of two properties.
- Work to an existing party wall or party structure.
- Excavation near to and below the foundation level of neighbouring buildings.

This may include:

- Building a new wall on or at the boundary of two properties.
- Cutting into a party wall.
- Making a party wall taller, shorter or deeper.
- Removing chimney breasts from a party wall.
- Knocking down and rebuilding a party wall.
- Digging below the foundation level of a neighbour's property.

Further guidance on the Party Wall etc Act is available at: <https://www.gov.uk/government/publications/preventing-and-resolving-disputes-in-relation-to-party-walls/the-party-wall-etc-act-1996-explanatory-booklet>



Planning ahead



The first step is to decide what you want from your renovation project and plan a course of action for delivering it.

Explore such issues as:

- Your goals for your renovation.
- Your needs and your prioritised 'wish list'.
- What you can learn from analysing your current home and lifestyle.
- Your baseline budget.
- Likely sources of professional advice – structural engineers, architects etc.

- Building regulations, including any sustainability targets, and planning permission.
- What's involved in the process of designing and construction.

Based on this investigation, you should be able to develop a brief of your requirements, including your 'must haves' and 'wish list'.

Time spent at the beginning of a project checking if you need building regulations approval,



finding a good builder and setting a realistic budget will help to smooth the renovation process and avoid costly errors.

Firm up on your budget

Cost and affordability are going to be the key considerations that will influence all your subsequent decisions. Most people start with a set budget. You should obtain preliminary cost estimates for each stage of renovation in your plan to allow you to schedule each stage to suit your budget and needs.

Construction costing is based on a rate per square metre. Builders' initial cost estimates rarely come down but they often rise due to unforeseen problems, price increases or changes to the plans. Always set some budget aside, at least 10%, for contingencies that become evident during the renovation process.

Budgets are often over optimistic, as renovators are keen to get on with the work. This can prove risky, as renovation is generally less predictable than new

build, with many 'hidden costs' not being accounted for in the original budget.

Any work that you can do yourself will obviously save money and when employing builders, smaller one-off jobs will be proportionately more expensive than if undertaken as part of a larger project.

If the renovation is more cosmetic, high street lenders could be an option in terms of acquiring the necessary funding for your project. If more substantial structural work is required however, then financing may require a specialist lender. Renovation-specific mortgages are available from some high street banks where only small cash deposits are required. With these types of finance, funds are often released when set stages of the project are completed.

Some grants may also be available for some renovation works, either at a local level from local authorities or at the national level from central government bodies. ■





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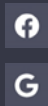


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Engaging professionals



Every renovation project is unique, and the number of steps involved varies depending on the complexity of the project and whether you're renovating a complete house or simply making a few small home improvements.

The first step in developing a home improvement strategy is to seek professional advice. If your renovation proposals are relatively simple, a builder who specialises in this type of work may be able to provide adequate advice and

prepare simple concept plans and cost estimates. More extensive renovations however, with structural alterations and additions, will need an architect or building designer who specialises in this type of work (see article below). You may also need a

The benefits of appointing an architect/designer

Architects/Designers are tailor-made to provide support for more substantial renovation projects. While you'll certainly need the specialised skills of other professionals along the way, architects/designers have the expertise to assist at every stage of a project, from concept stage through to completion.

From the outset of your project they can talk you through ideas that you may not have thought about before, as well as early-stage considerations, such as site orientation and energy efficiency. When planning your project, they can assess your options and identify any possible constraints.

Buying materials is another area an architect/designer can assist with, as well as identifying and evaluating the other contractors who might need to be engaged on the project. In addition to producing conceptual and technical designs, your architect/designer can support you through the planning and building regulations process by making application applications on your behalf and help you with the required certification when you reach completion.



Do I need a project manager?

If your renovation project is substantial, you might also consider appointing a separate project manager to manage the renovation process for you. Project managers, which can also be the architect/designer or a separate third party, will take away a lot of the hassle involved with liaising with different trades, ordering materials and liaising with other professionals, for things such as water and electricity connections, and ensuring that lenders' surveyors and building control surveyors can carry out site inspections at the appropriate time. This can be a time-consuming job, so if you work full-time or have family commitments, it might be helpful to have the project managed for you.

The fees you will have to pay your architect and/or a project manager will be higher than appointing a design/build contractor, but there should be corresponding savings in the payments made to building contractors. Project managers should have a recognised qualification in a construction discipline and be experienced in managing builders, tradesmen and logistics. Ideally, they would belong to a professional institution such as the Association for Project Management and be relatively local, with a sound knowledge of local tradesmen, builders, builders' merchants, etc. so they can be on site regularly and can meet tradesmen and professionals face to face.



project manager to manage the build process (see article above).

As a rough guide, expect the cost of full design and working drawing documentation for a complete renovation of a house to be 3–6% of the total budget, and up to 15% more if project supervision is included. A

good architect/designer who produces a space efficient and sustainable renovation can save you at least as much as the cost of their fees, by helping you reduce upfront construction costs (through efficient use of space and materials) and ongoing energy costs (through sustainable design).



Choosing a builder

Before you get to the stage of choosing a builder, your research and design brief should have produced finished design documents to put out for tender by builders.

Two common ways to choose a builder are:

- Choose a preferred builder and invite them to prepare a quotation or 'tender' (and seek an alternative quotation to ensure competitive pricing)
- Call open or selective tenders from a range of builders and choose on the basis of price.

Condition reports

Before purchasing a property that requires major renovation works, it is wise to get a detailed assessment of the condition of the building. A surveyor should be commissioned to provide a building report identifying essential repairs or further investigation that is needed. This will also help identify the type of construction used throughout the structure which can also provide a steer in terms of appropriate redesign and construction techniques.

Remember, a building will start deteriorating if it is left empty for more than a few months. This can rapidly accelerate if damp gets inside due to broken windows, slipped tiles, and so on. An empty property may also be susceptible to vandalism, trespassing and theft.

It is important therefore that a property is secured and made weathertight before work begins. Metal shutters can be rented, or sheets of plywood used to board up windows and doors. Waterproof sheets can be used to secure missing or damaged roof sections.

Buildings and public liability insurance cover may be required to protect against damage, fire, construction works, and so on.

For major works, particularly where a property will be vacant for any length of time, make a point of notifying your insurers in writing in advance so they can't wriggle out of a claim should you need to make one.



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We make it easy for consumers to easily find HETAS approved professionals and retailers on our website www.hetas.co.uk which gets more than 50,000 visitors per month.





Each method delivers a builder and a quotation but one emphasises best price and the other, preferred builder. In either case, note in your tender documents that you are 'not obliged to accept the lowest or any tender'.

An architect/designer can help choose builders to tender for a project, based on recommendations and past experience. Advertised open tenders can deliver variable outcomes and often exclude smaller specialist builders who do not have time to tender for multiple projects.

Your choice of builder however is almost as critical as your choice of designer. The

principal role of a builder is to coordinate the building works as project manager. This role includes supervising and coordinating each trade; sourcing, quantifying and coordinating delivery of materials and – most importantly – quality-assuring the entire process.

Finding a reputable builder (see article on page 23) is going to be key to the overall success of your project, and if you're prepared to undertake some research, tracking one down shouldn't be too difficult, although you may have to wait a while before they can start – a good builder will always be busy and can have

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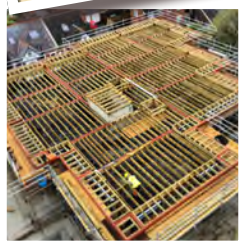
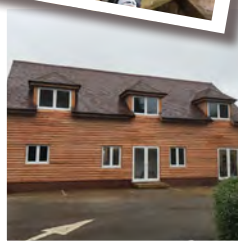
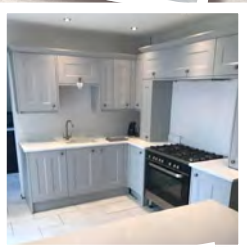
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other jobs lined up for weeks, often months, in advance. Recommendations from family members, friends and neighbours are probably the best way to find a good builder.

Trade directories can be useful resource for finding local builders, but the wide

choice can be confusing, so it's worth checking the builders' websites for further information, previous work, testimonials etc.

Trade association websites can be another source for finding builders. ■

How to find a good builder

Finding a decent, reliable builder is crucial when it comes to renovating your home. But how do you go about looking for one?

A personal recommendation from a family member, friend or neighbour is probably the best reassurance that you are working with a professional. Other tradespeople are also a good source of advice, as they should have access to a network of local builders.

The Federation of Master Builders (FMB) is perhaps the most well-known trade association in the building industry. As well as having their references checked, new members are expected to uphold certain standards and follow a code of conduct.

It's also worth checking out the Guild of Builders and Contractors, as builders who apply to be 'trusted members' have to show that they've been trading for three years and supply financial references. Every member also agrees to provide written contracts and clear payment plans.

Being a member of the National Federation of Builders is an equally good sign. Members are expected to adhere to a code of conduct, as well as supplying references, so membership is a good sign that your builder is competent. The NFB also operates a complaints procedure and all members are covered by public liability insurance.

You should be cautious with builders that can either start straight away – particularly for bigger renovation projects, or submit low bids, as they may cut corners or add extra charges once your project is underway.

Whichever method you use to look for your ideal builder, it is worth getting at least three quotes before you make any decisions. Make sure that every quote includes materials, labour, timeframes, responsibilities – including all subcontracting – and of course, VAT.

Never pay all the money for a job up front. Set up an agreed payment schedule and only pay the final amount when you are satisfied that the work has been completed to a satisfactory standard.

You will save yourself a lot of hassle in the long run by agreeing to a contract in writing. This will avoid any unexpected costs cropping up at the end of the project.



Structural alterations



A relatively inexpensive way to maximise space in a property is to change the internal layout. Removing an internal wall to create an open plan kitchen/diner, removing chimney breasts to free up living space and enlarging openings in main walls to fit glazed doors are popular structural alterations which can transform a property's appeal and add value.

However, in some cases making structural changes can decrease the value of a property, particularly in period properties where attractive original features and layouts are sacrificed. But as long as they're carefully planned, structural alterations can dramatically improve the layout of a property.

Planning and consents

Planning permission is not normally required for internal alterations, including building or removing an internal wall, but if you live in a listed building, you will need consent for any significant internal or external works.

The building regulations, on the other hand, are there to ensure that all properties are structurally safe and the structural integrity of adjoining buildings is not compromised. So if you are planning to make any structural alterations, such as removing a load-bearing wall, it will require building regulations approval. If such works are carried out illegally, without consent, apart from being potentially very dangerous, it could cause major problems when you come to sell your home.



Removing internal walls

Internal walls have a number of functions, some are fundamental to the structure of the property and some offer fire protection, specifically, to stairway enclosures. Other internal walls simply divide up space within the property and could be non-load-bearing which can be altered or removed with very few issues.

There are two types of internal wall: load bearing and non-load bearing.

Load bearing walls are required to hold up a structural part of your home such as the roof, ceiling joists or the upper floors. In some cases, it might be supporting a staircase. These walls must be replaced with a beam to do the work that the wall was doing. The beam can be wooden, concrete or steel, but needs to meet fire safety regulations to ensure it offers at least 30 minutes of fire protection.

DIY wall removal?

While it is possible to remove a wall yourself, getting the experts in is a much safer option. There are qualified architects, engineers and builders that have the specialised skills and equipment to carry out a job of this kind. Either way, if you choose to do it yourself or not, it is vital to understand the process required when knocking down a wall.



Firstly it is crucial to identify the different types of walls:

External or main supporting walls are normally made up from brick or blocks. Knocking through this type of material requires professional supervision and equipment.

Partition walls are commonly four-inch thick brick or block internal walls. These are slightly easier to remove, however it can be a messy job. You will need to re-plaster the wall and tend to the floor where the removal has taken place. Also, it is best to check with an architect or builder whether it is a supporting wall or not.

Stud partition walls are made from a timber frame covered in plasterboard. These non-supporting walls are the easiest type of wall to remove. However, it's not always obvious which walls are holding things up, and which are merely partition walls. But if you get this wrong, you could be in serious trouble. In most properties, especially older buildings, internal walls can be supporting roof loadings, floor joists or walls upstairs.

Careful consideration should be taken therefore before making any structural changes to a property, and seek expert advice before you commence any works.

Removing a load bearing wall will need a sign off by your local authority's building control service.

A non-load bearing wall can be removed without permission, but discussing with your local authority's building control service might be worthwhile, just to make sure. An experienced builder will also be able to identify the type of wall for you.

Altering the walls around your staircase will need careful consideration as they offer protection should you need to escape in the event of a fire. Removing these walls will mean additional fire safety measures are required, including mains operated smoke detection throughout the building. All rooms will need windows that are suitable for fire escape purposes. Your local authority's building control service can offer guidance on what level of fire protection your staircase walls provide and what additional fire safety measures might be needed for any alterations to proceed.

Inserting a new wall

If you are thinking about inserting a new wall to create a new room, you will need to ensure the new room and existing room meets fire safety, thermal separation and soundproofing requirements, as stipulated in the buildings regulations.

Care must be taken not to make any other matters, such as ventilation, worse in any new

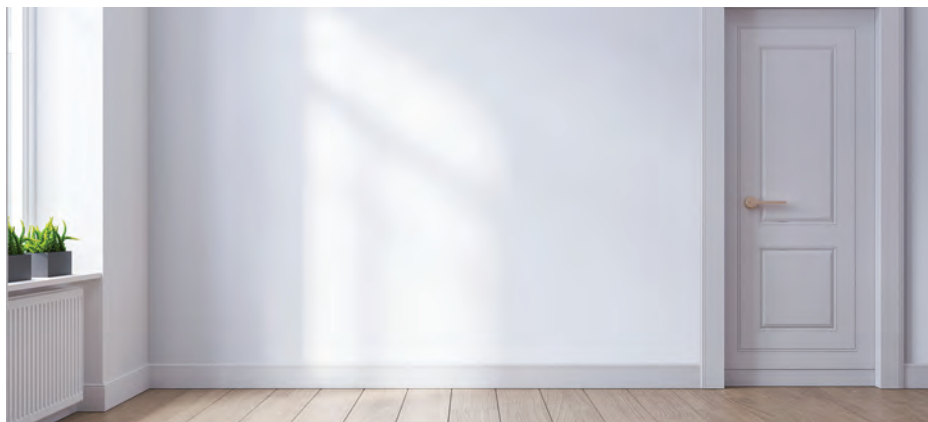
room or the existing room. The type of room will determine how much ventilation is required.

The general rules for ventilating a room are:

- **Purge** - this is achieved by opening the window. The opening should have a typical area of at least 1/20th of the floor area of the room served, unless it is a bathroom which can be any openable size.
- **Whole building** - this is also known as trickle ventilation which can be incorporated in to the head of the window framework, or by some other means.

Both of these forms of ventilation are normally required, however alternative approaches to ventilation may also be acceptable, subject to agreement with the building control surveyor.

Whenever you plan to make any structural changes to a property, it is both crucial and beneficial to seek expert advice. Source a reputable architect or structural engineer who can advise you on your options for removing a wall. They are more than likely to advise you to hire an experienced builder. Although this consultation will cost money, it will be worthwhile in the long run and should reduce the likelihood of something going wrong. ■



Adding a conservatory



Conservatories have enjoyed a significant revival since the 1970s, and as the cost of moving to a new property has increased, adding a conservatory during a renovation project has become a popular way to increase living space in a relatively inexpensive way.

Conservatories come in all shapes and sizes but in the UK, a space is considered to be a conservatory if it has glazing for at least 50% of its side wall area and at least 75% of its roof.

While providing extra useful space, a badly designed conservatory can be a huge energy drain for the house as a whole. The key to avoiding this is to separate the conservatory from the rest of the house, so that it can only be accessed via an insulated external door, so

that it can then be closed off at night and on cold days.

Building regulations will generally apply if you want to build an extension to your home. However, conservatories are normally exempt from building regulations when:

- They are built at ground level and are less than 30 square metres in floor area.
- The conservatory is separated from the house by external quality walls, doors



or windows. There should be an independent heating system with separate temperature and on/off controls.

- Glazing and any fixed electrical installations comply with the applicable building regulations requirements.

You should also check if the structure is going over a shared drain run as you are normally unable to build over a public sewer – you can check to find out if there are any public sewers on your property via your local water authority.

Any new structural opening between the conservatory and the existing house will require building regulations approval, even if the conservatory itself is an exempt structure.

Conservatories should also not be sited where they will restrict ladder access to windows serving rooms in roof or loft conversions, particularly if any of the windows are intended to help escape or rescue in the event of a fire.

Replacement roofing on conservatories

A lot of conservatories are now nearing the end of their natural shelf-life and

there has been a recent trend for replacing existing conservatory roofs with a variety of insulated, non-translucent, roof structures in order to improve thermal performance and ultimately the comfort level of the conservatory. These include adding structural roof timbers, insulation and roof coverings of tiles, slates or metal manufactured roofing systems.

You need to seriously consider if fitting a replacement roof is a viable option and the existing structure, including the foundations, need to be assessed by a qualified professional, such as a structural engineer, to establish suitability for additional loadings. Any necessary upgrading of existing structural elements, or foundations, could prove to be prohibitive in terms of cost and disruption.

If the building control body decides that the conservatory is no longer exempt, then it will be classed as a home extension which will need to fully comply with the building regulations. The best advice would be to contact your local building control body first before carrying out any significant renovation works on an existing 'exempt' conservatory. ■



Replacing doors and windows



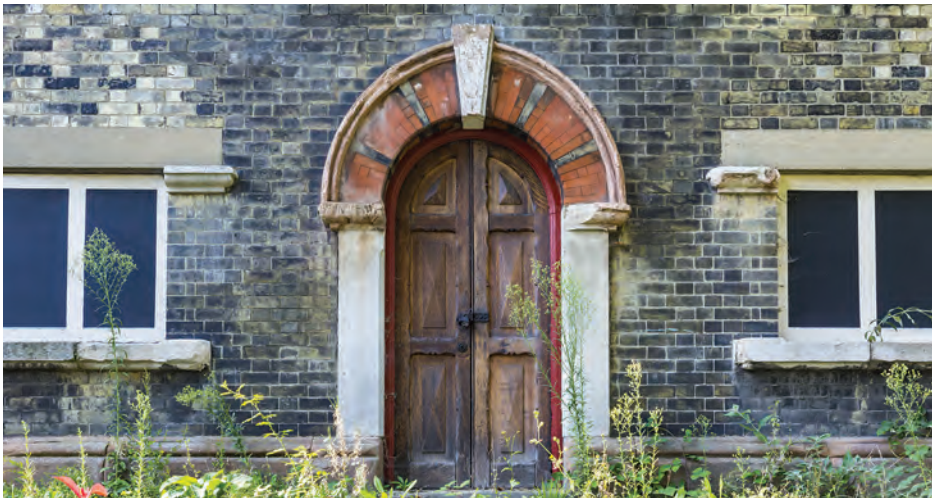
There are lots of reasons for replacing windows and doors. For some renovators, it's about getting rid of draughts and cold spots caused by old, inefficient windows, while for others it's about improving so-called 'kerb appeal'.

You do not usually need to apply for planning permission for any repairs, maintenance, and minor improvements, such as repainting window and door frames, or for the installation of new windows and doors that are of a similar appearance to those used in the construction of the house. But if you live in a listed building, you will need listed building consent for any significant works – both internal and external. If your house is in a designated area (Conservation Area,

National Park or Area of Outstanding Natural Beauty) there may be additional restrictions in place. In all these cases, you are strongly advised to check with your local planning authority before carrying out any works.

Building regulations

Building regulations apply to all replacement glazing. The regulations apply to thermal performance and other areas such as safety, air supply, means of escape and ventilation.





An external window or door is classed as a "controlled fitting" under the building regulations and as a result of this classification these regulations set out certain standards to be met when such a window or door is replaced.

Thermal performance

Dwellings are required to be energy efficient. One method of achieving greater energy efficiency is to take steps to reduce the amount of heat, which is measured as a U-Value, lost through the glazing in both windows and door. A U-Value is simply a measurement of how effective a material is as an insulator on a building. The lower the U-Value is, the better the material is as an insulator. So, if window 1 has a U-Value of 1.1 W/m²K and window 2 has a U-Value of 0.9 W/m²K, window 2 is the better insulator.

Under recent uplifts to the building regulations, all new and replacement windows must be rated as 'B' or higher or have a U-Value of 1.4 W/m²K or lower (see article on page 31 for more details).

Safety glazing

Safety glazing should be provided to any glass in a critical area. Below is a list giving a general view as to when safety glazing is required:

- Any glazed area within a window below 800mm from floor level.
- Any glazed area within a window that is 300mm or less from a door and up to 1500mm from floor level.
- Within any glazed door up to 1,500mm from floor level.

Ventilation

Windows and doors provide ventilation to rooms within a dwelling and rules apply to how much ventilation. The type and extent of ventilation will be dependent on the use and size of the room. For example, rooms where steam will be produced (kitchens, bathrooms, utility rooms etc) should be provided with higher levels of ventilation (normally mechanical fans and windows) than other rooms where suitably sized window openings and background ("trickle") ventilators may suffice.

Fit for the future

New homes in England will have to produce significantly less CO₂ under new rules announced by the government.

The changes to the building regulations, which came into effect in June 2022, aim to reduce CO₂ emissions from new build homes by 31% compared to previous standards, and will affect everyone undertaking home improvement projects including extensions, renovations, conversions and self build.



The changes comprise uplifts to Parts L and F of the Building Regulations which seek to balance the need for carbon reductions with improved ventilation in homes, and the introduction of two new regulations: Part O, which looks at overheating, and Part S, which focuses on the infrastructure for charging electric vehicles.

New minimum energy efficiency standards have been introduced; the new U-value for walls will be 0.18W/m², 1.4 (Window Energy Rating Band B) for windows and rooflights, and 1.4 for doors. There are also recommendations for all new windows to be fitted with trickle vents, unless there is an alternative form of ventilation, such as air bricks or whole house Mechanical Ventilation with Heat Recovery (MVHR).

The changes have also set new minimum energy efficiency standards for heating systems, including 92% ErP for gas boilers and a SCOP of 3.0 for heat pumps. They also require heating systems to be designed to operate at a low flow temperature of 55°C (compared to the standard 80°C)

The uplift to Building Regulations Part F should make it easier to understand the impact of ventilation in a home. Mandated checklists for the installation of mechanical ventilation products will also come with guidance on why ventilation is important.

The new Part O looks at mitigating solar gain (heating due to direct sunlight) but also other causes of overheating due to uninsulated heating pipes, cylinders or lack of heating system controls. This includes the introduction of new glazing limits as well as the levels of cross-ventilation required to remove excess heat.

The Government has also introduced Part S: Infrastructure for charging electric vehicles. As the use of electric vehicles increases, this new regulation ensures electric car charge points are properly planned and installed.

While the amended regulations and the new Approved Documents came into force on 15 June 2022, the government has stipulated transitional arrangements to support businesses and homeowners with compliance. If a building notice or full plans for building work were submitted to a local authority before 15 June 2022, then provided the building work commences by 15 June 2023, work on that individual building is permitted to continue under the previous standards.

The changes to the building regulations are designed to raise standards and are an important step towards a cleaner, greener built environment, paving the way for the Future Homes and Buildings Standard in 2025, which will mean all future homes are net zero ready and will not need retrofitting.

Fire safety

There are two aspects to be considered regarding fire safety:

- Fire spread between properties through "unprotected areas".
- Means of escape in case of fire.

Unprotected areas

External doors and windows may need to have fire resistance and (in the case of doors) be self-closing or (in the case of windows) be fixed shut to limit the risk of fire spread between adjacent properties. The area of walls, doors and windows permitted to have reduced or undetermined fire resistance (known as "unprotected areas") will be dependent on how close these elements are to the boundary.

Structural safety

If the replacement windows are wider than those they replace, or involve the replacement of bay windows, your local authority's building control service will need to be satisfied that proper structural support

is provided above the window. In older buildings, the timber frame of the window was often sufficiently strong to carry the load of a wall or roof above it without a lintel. In these cases, either a lintel needs to be installed when the window is replaced, or the new frame carefully reinforced to carry the load.

Means of escape

When replacing any window, the opening should be sized to provide at least the same potential for escape as the window it replaces. If the original window that is being replaced was larger than necessary for the purpose of escape, then the new window opening could be reduced down to the minimum as specified in the criteria on page 33.

The means of escape should be considered for any new window installed to an extension or existing dwelling. If an escape window is required then criteria set out below should be followed. It is also generally good practice to replace any window on the first floor that is not used as an escape window with an escape window.



See below criteria for escape windows:

- Width and height - either of these are not to be any less than 450mm.
- Clear openable area - no less than 0.33m².
- Sill height - the bottom of the openable area should be no more than 1,100mm above the floor area.
- Only one window per room is generally required.

Access to buildings

When replacing main entrance doors in a dwelling unit that has been constructed after 1999, it is important to ensure that the threshold remains level otherwise the works will not comply with the building regulations as it would be making the threshold worse than it was when constructed. This is to enable people, including those with disabilities, to have continued access to the dwelling.

You could use an installer registered with a competent person scheme to replace your windows and doors. A registered installer will be approved to carry out the work to comply with building regulations without involving local authority building control. When work is complete you will receive a certificate showing the work was undertaken by a registered installer and complies with the building regulations.

More information about competent person schemes can be found on page 81.

Alternatively, you could use an unregistered installer or choose the DIY route, in which case approval can be sought from your building control team. They will check the replacement window(s) or door(s) for compliance and, if satisfied, issue a certificate of compliance.

External doors

External doors have an important role to play in securing a building. The building regulations require that reasonable provision is made to prevent unauthorised access, and

that easily accessible doors are sufficiently robust and fitted with appropriate hardware.

When specifying new doors, those certified to PAS 23/PAS 24 should provide optimum security. Locks should be specified to comply with BS3621. For external doors, the best security locks are five-lever deadlocks, plus a cylinder rim lock for front doors. The easiest type to use are mortises with lever handles that automatically operate a latchbolt and deadbolt.

Door energy rating schemes are similar to windows in that they are based on a traffic-light style A-G ratings system for energy efficiency similar to the labelling system used for fridges, washing machines, cookers and so on. An A rating indicates a good level of energy efficiency, whilst G is the lowest rating. Low rated doors will not normally satisfy building regulations requirements. ■



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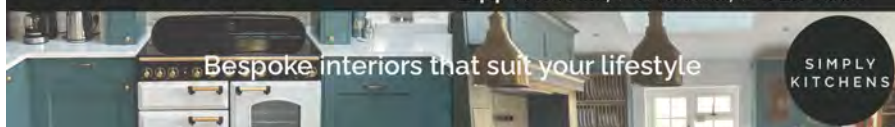
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Refitting a kitchen



The kitchen is widely regarded as the 'heart' of the home and usually the busiest room in the house. It's probably why refitting a kitchen remains one of the most popular renovation projects, not just because of the 'liveability' benefits it can bring, but also in terms of increasing a home's value – improving the kitchen can add up to 10% to the value of your home.

Planning and building regulations

Generally, you won't need planning permission for re-fitting a kitchen, unless it is part of a bigger extension. The exception to the rule is if you live in a listed property in which case it's best to consult your local authority's building control service first as consent is required for any external or internal works.

Works to refit a kitchen with new units and fittings does not generally require building regulations approval either, although drainage or electrical works that form part of the refit may require approval under the building regulations.

If the kitchen is to be provided in a room where there wasn't one before, building regulations approval is likely to be required to ensure that the room will have adequate ventilation and drainage, and meet requirements in respect of structural stability, electrical and fire safety.

Ventilation

Each room in a house should have adequate ventilation for general health reasons. The type of room will determine how much ventilation is required.

The general rules for ventilating a room are:

- **Purge** - this is achieved by opening the window. The opening should have a





typical area of at least 1/20th of the floor area of the room served, unless it is a bathroom which can be any openable size

- Whole building - this is also known as 'trickle' ventilation which can be incorporated in to the head of the window framework, or by some other means.

Both of these forms of ventilation are normally required, however alternative approaches to ventilation may also be

acceptable, subject to agreement with your local authority's building control service.

Mechanical extract fans

Any new kitchen with no openable window should be provided with a mechanical extractor fan to reduce condensation and remove smells. The necessary performance of these extract fans is normally measured in litres per second (l/s). This should be 30l/s if placed

Kitchen design

Kitchens depend on plumbing and electrical connections all being in the right place and so there's more to designing a kitchen layout than first meets the eye. As with any renovation project, it's essential to carefully plan your requirements well in advance, as changing the position of fittings at a later date can cause a lot of extra expense and hassle re-routing electrics, gas pipes and plumbing.

It's important to carefully consider the hot and cold water supply routes, the wastes from sinks, washing machines, and dishwashers, and vents for dryers. Check the position of all the new electric power point sockets and light switches in relation to the new units and appliances.

The kitchen 'work triangle'

The work 'triangle', is the area of activity where the tasks carried out in a kitchen involve the sink, the cooker and the refrigerator. These three elements, connected by imaginary lines, are in close proximity (but not too close) to one another. Hence, the work triangle is designed to minimise traffic within the kitchen and to facilitate access to the three appliances when cooking.

It is recommended to keep the work triangle distance between the sink, fridge and cooker at 7 m or less. Work triangles that exceed 7m make moving from one function to another impractical. The ideal length of the work triangle lies between 4m and 6m.



elsewhere in a kitchen. Alternative rates may be applicable if the ventilation is running continuously.

Drainage

There are two systems of drainage that you need to think about: 'foul' and 'surface water'. In general, these two systems should be kept separate. Each of these has above-ground and underground elements.

Foul drainage carries the used water from sinks, dishwashers and washing machines. The above-ground pipework is referred to as sanitary pipework; the underground pipework is referred to as foul drains and foul sewers.

Pipes need to be sized for the flow of water, to minimise the risk of blockage and to allow air movement.



Sanitary pipework should be designed with access hatches, or be capable of being dismantled, in order to deal with blockages. Sanitary pipework also needs to be ventilated to avoid air from the pipework and drains from escaping into the building.

The normal way of doing this is to extend the pipework (known as the ventilating pipe) to outside the building, leaving the end open (but protected with a mesh to prevent birds getting in). To stop smells entering a building, the open end of the ventilating pipe should be at least three metres to the side of, or extended to 0.9m above, any opening into a building.

If the drainage is already ventilated, additional ground floor appliances (eg. a WC

and washbasin) may be connected directly to the drain without a ventilating pipe. It may be possible to use proprietary valves to avoid the need for ventilating pipes.

You may have to change your plans to suit the depth and location of the underground drain or sewer that you intend to connect to. In order to carry the flow and to avoid blockages, the drain or sewer that you intend to connect to generally needs to be at least 0.8m lower than the ground floor level. If it is less than this, you should seek advice from a builder, architect or drainage engineer.

Locations of rainwater pipes, sanitary pipework stacks and external gullies can indicate where their underground drains are likely to run.

There are many firms which can carry out CCTV surveys that will indicate the condition of the drains as well as their location and depth.

You are strongly advised to seek advice from a builder, architect/designer or drainage engineer before committing to or commencing work.

Electrics

If you are carrying out electrical work in your home, you should use an installer who is registered with a competent person scheme or seek approval from building control. This is true for most work.

However, you do not need to tell them about repairs, replacements and maintenance work or extra power points or lighting points or other alterations to existing circuits (except



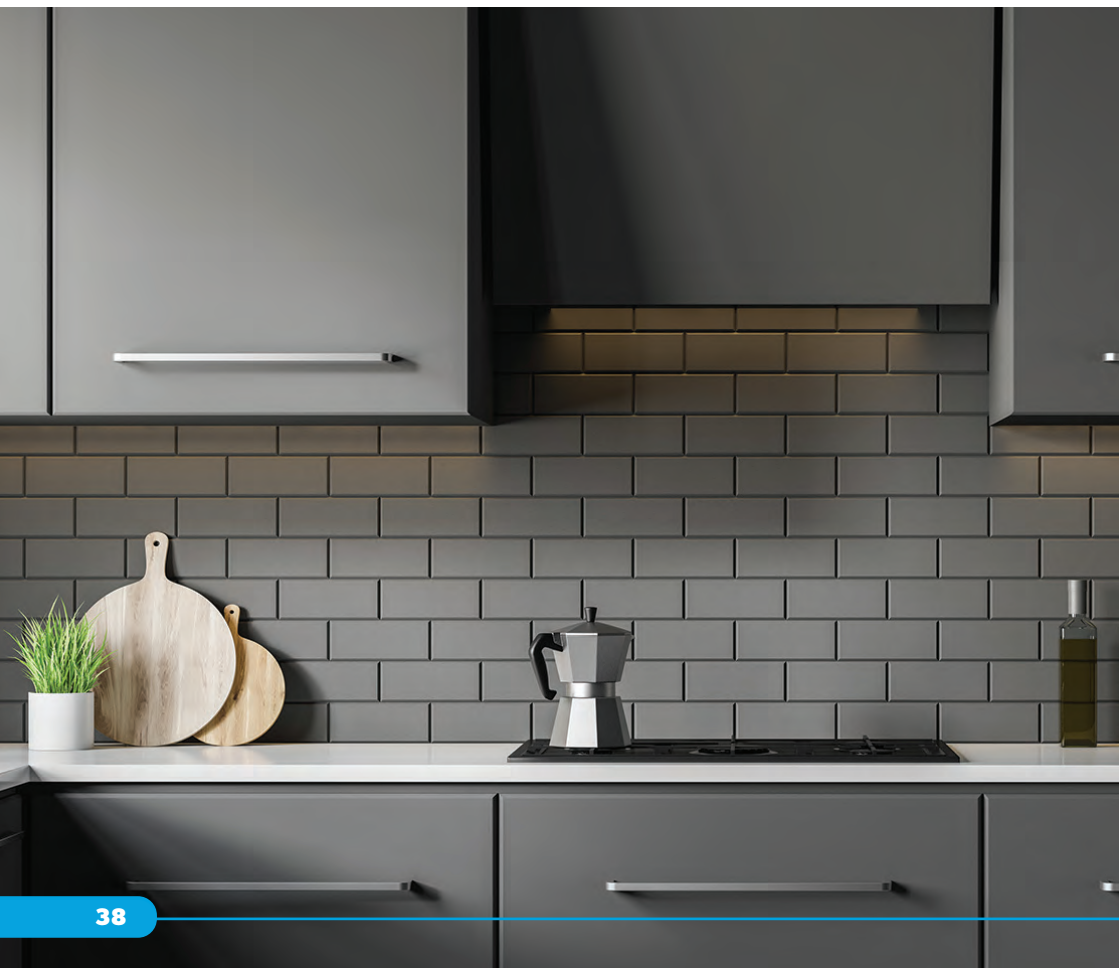
in a kitchen or bathroom, or outdoors). All electrical work should follow the safety standards in BS 7671 (the 'wiring regulations') which can be found on the British Standards Institute (BSI) website. These rules have been introduced to help reduce the number of deaths, injuries and fires caused by faulty installations.

You will need to make a building regulations application to your local authority's building control service if the electrician you employ to carry out the works is not registered as a competent person or if you plan to do the work yourself.

Your local authority's building control service will explain the requisite procedures to you and how they will inspect and check the works you are carrying out.

Minor electrical work can also present a risk to safety. If qualified electricians carry out the work they should give you a Minor Works Certificate which means that they have tested the work to make sure it is safe. If you do the work yourself you may wish to engage a qualified electrician to check it for you.

If your new kitchen or bathroom renovation involves knocking down a structural wall – perhaps to combine two rooms to create an open plan kitchen space – it may be worth speaking to an architect or working with a builder and a structural engineer who will be able to advise on how best to go about the job and ensure you have building regulation approval. ■



Renovating a bathroom



Whether you're planning a family bathroom, en suite, wet room or full-on home spa, renovating a bathroom will need careful planning before you begin any works.



Choosing the DIY route can save up to 60% of the cost, but you should consider the time and difficulty of the job before you decide to take the project on. And while the building regulations do allow DIYers to carry out simple jobs like replacing sockets and rewiring certain fittings, when it comes to environments where water and electrical work are involved, it is really a job for the professionals.

Building regulations

Work to refit an existing bathroom does not generally require building regulations approval, although drainage or electrical works that form part of the refit may require approval under the building regulations.

If a bathroom is to be provided in a room where there wasn't one before, building regulations approval is likely to be required

to ensure that the room will have adequate ventilation and drainage, and meet requirements in respect of structural stability, electrical and fire safety.

Where you want to install a totally new bathroom, the existing hot and cold water supplies will need extending and waste pipes will also need to be carefully planned so they connect into the existing system, plus you may need some new central heating pipework for any additional radiators or towel rails.

The electricians may also need extending, although sockets are not permitted in bathrooms. If space permits, it's normally a good idea to have a separate shower cubicle within a bathroom, rather than just a mixer over the bath.

Pipework

The building regulations require new water supply pipes to be fitted with non-return valves to prevent 'back siphonage', and these can also provide a handy on/off control to allow maintenance works.

To prevent any risk of scalding, temperature controlled thermostats should be fitted to hot water supplies to showers and baths.

Waste pipes

Waste pipes need to be laid to suitable falls with sufficient support-clips so they don't sag. Internal white plastic waste pipes and fittings are push-fit and should be surface run rather than buried in floors. When designing a new bathroom you need to take account of the fact that there is a maximum distance that you can locate your new basin, WC and bath etc from the soil

Bathrooms: A special place

A bathroom is considered to be a 'special place' which comes under Part P of the building regulations. This means that any electrical work undertaken in the bathroom should be carried out by a 'competent person' who is registered with a competent persons scheme. That person will also be required to issue a certificate to show the work has been correctly carried out.

When designing your bathroom, it is worthwhile thinking about some of the electricity restrictions that might apply:

- Regulations split your bathroom into "zones" depending on the electrical risk and the limitations on what you can do in each zone. These mostly apply to how far away each location is from a source of water.
- These range from Zone O which is inside your bath or shower tray to Outside Zones which are far away from water.
- Sockets should not be in bathrooms (unless they can be 3 metres from water) except for shaver sockets (these should not be subject to splashes).
- Light fittings should be enclosed and pull cords used or switches outside of the room.
- Electric heating must be permanently wired and a safe distance from water. The switches for turning the heating on and off should be outside the room or operated by a pull cord.
- An electric shower must be on its own circuit. This is because it is less likely to be overloaded and if it is, it will automatically trip and turn off.





and vent pipe waste stack before there is a risk of 'siphonage' occurring.

Foul and surface water

There are two types of waste water: rainwater from gutters etc, and foul waste, which must be kept separate as it can lead to problems with flooding and pollution, even causing disease. Waste plumbing for new bathrooms must be connected to the underground foul drains, not into rainwater downpipes. This is something that your local authority's building control service will want to check before issuing a completion certificate.

WCs

One of the first questions you need to ask when designing a new bathroom is 'where are the drain runs?' This tells you where it would be realistic to fit new bathrooms without running into plumbing problems. Where a new WC is installed some distance from the foul drains, one possible solution is to install a macerator. These work by mashing up the waste so it can be pumped out through conventional narrow-bore 38mm pipes rather than requiring the normal larger 100mm WC pipes. But because they rely on electrical power, the home must have at least one conventional WC, in case of power cuts.

Baths and structural stability

Most modern baths are either lightweight steel or acrylic, but they still need to support a substantial weight of water and occupant(s) when in use. So it's important that the feet are firmly supported. Some traditional

cast iron baths are extremely heavy with miniscule feet which transfer incredibly high loadings to the floor surface. So it may be necessary to first strengthen the floor.

Showers

To operate effectively, showers often require the water pressure to be beefed up with a powerful pump together with a separate new cold supply. Shower trays can also be prone to developing leaks, the worst offenders being thin acrylic ones which can be prone to distortion. Ceramic or stonecast trays are generally preferable.

Or you could opt for a simple mixer over the bath with a shower screen (although these can be difficult to make fully watertight).

If you are undertaking a bathroom renovation, think about the amount of water you are going to consume. You can usefully reduce this by buying low flush toilets, low flow showers and basin taps and a smaller capacity bath. ■



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Electrical alterations



Renovating a property can be an exciting process but one of the essential elements which is often overlooked is the electrical details. Unfortunately, the consequences of this could transform a renovation project into a life-threatening safety hazard.

If you are carrying out electrical installation work in your home or garden, you must comply with the rules set out in the building regulations. These rules have been introduced to help reduce the number of deaths, injuries and fires caused by faulty installations.

It is best to use an installer registered with a competent person scheme who can self-certify compliance with the building regulations. You can find a list of the organisations which run the competent person schemes for electrical installation work on page 81.

If an installer is not registered, then certain riskier jobs (identified as 'notifiable' in

the building regulations) will need to be inspected, approved and certificated by building control or an electrician registered with a third-party certification scheme (a 'registered third-party certifier').

Notifiable jobs include:

- The installation of a new consumer unit or fuse box.
- The installation of a complete new circuit – for example a ring or lighting circuit, or a new circuit for a cooker, shower or immersion heater.
- Alterations to existing circuits – such as adding an extra power point or lighting point – but only in 'special locations'.



What are minor electrical works?

The building regulations allow certain works (known as non-notifiable or minor work) to be carried out without having to notify your local authority's building control service or using a registered electrician. Such work includes:

- Replacing any electrical fitting (for example, socket outlets, light fittings, control switches)
- Adding a fused spur (which is a socket that has a fuse and a switch that is connected to an appliance eg, heater) to an existing circuit (but not in a kitchen, bathroom or outdoors)
- Any repair or maintenance work
- Installing or upgrading main or supplementary equipotential bonding
- Installing cabling at extra low voltage for signalling, cabling or communication purposes (for example, telephone cabling, cabling for fire alarm or burglar alarm systems, or heating control systems)



In England, special locations are the spaces around baths and showers. In Wales, special locations also include kitchens and outdoors.

The building regulations allow certain works (known as non-notifiable or minor work) to be carried out without having to notify building control or using a registered electrician (see panel above).

Minor electrical work can also present a risk to safety. If qualified electricians carry out the work they should give you a Minor Works Certificate which means that they have tested the work to make sure it is safe. If you do the work yourself you may wish to engage a qualified electrician to check it for you.

All electrical work should follow the safety standards in BS 7671 (the 'wiring regulations') which can be found on the British Standards Institute website.

The building regulations do not restrict who may carry out electrical installation work. If you want to do the work yourself you should make sure that you know what you need to do to comply with the building regulations before starting any works.

If you are not sure whether the work you want to undertake is notifiable, you should contact your local authority's building control service for advice.

Re-wiring

A full rewire usually takes place when substantial structural renovation work is being carried out, such as an extension or conversion, normally before any plastering or decoration.

Having a property rewired can be very expensive and disruptive, especially if the property is occupied, because it will involve the lifting of floor coverings, floorboards

and skirting boards and usually involves a lot of plastering work to make good afterwards. Rewiring usually involves two stages of work; first fix and second fix.

First fix

All first fix work will take place before plastering work, normally at the same time as any central heating and plumbing work. To ensure cabling is hidden, it will involve 'chasing' out channels in the walls and possibly the ceilings. It may also involve fitting new back boxes for all sockets and switches.

As well as rewiring for power and lighting, it is also worth considering rewiring for the following:

- Central heating controls
- Alarms
- Smoke detection and doorbells
- Outdoor lighting and sockets,

- Telephones and television aerial sockets.
- Home network cabling and other 'smart' technology.

Second fix

Once the first fix stage has been completed, walls and ceilings are re-plastered, filled and made good, and the flooring replaced. The second fix work can then proceed, which involves the fitting of sockets and switch plates, light fittings, the consumer unit and wiring any electric fans, cookers, extractor hoods, electric showers and the immersion heater, if there is a hot water storage cylinder.

A full rewire has to be notified to your local authority's building control service so that it meets the appropriate safety standards. A straightforward way of meeting this requirement is to use a contractor with a competent person scheme who can self-certify compliance with the building

Adding extra sockets

If you are renovating a property, the location of your electrical outlets is important, because it could end up changing the entire layout of the room if you don't plan this step thoroughly.

Make sure to consult with your electrician at an early stage and map out where you'd like your furniture and outlets to be. This way, your electrician will be able to come up with the best solution to match your ideas. Technology is an increasingly important part of our daily life, so it's a good idea to find out how much power your home actually needs. If you find out that you do need more power, it may mean your wiring system needs a professional upgrade.

Being eco-friendly is also becoming more important, and while renovating a home, you have a chance to do your bit for the planet. Installing smart thermostats, temperature sensors, smart lights and other electronic systems allows you to control your home's use of energy, and many of them can now be controlled remotely.

Depending on room size, a modern household requires about three or four double switched socket outlets for each bedroom, five or six each for kitchens and living rooms and a couple for halls and landings. The building regulations stipulate that power sockets must be positioned no lower than 450mm above the floor, and light switches no higher than 1,200mm from the floor.



regulations, such as a NICEIC registered contractor. They can self-certify the work and notify your local authority's building control service on your behalf.

It is recommended that electrical systems are tested every 10 years or upon change of ownership. To check the condition of your electrical system it's advisable to arrange for a thorough electrical inspection and test by a qualified electrician, who will provide a test certificate. This is essentially an MOT for your home, and can be a lifesaver.

It typically involves unscrewing and checking around 40% of all sockets and switches and lighting points in the house and takes several hours. This is followed by a series of tests carried out on the wiring as well as testing the insulation resistance to cables, and checking the circuits, consumer unit and RCDs etc.

Earth bonding

Many homes have electrical systems of 25-35 years of age which can still perform adequately with a spot of upgrading to bring them up to modern safety standards. This typically involves fitting 'earth bonding' which protects occupants by connecting the metal components in the house with an earth wire (green and yellow sleeved). The requirement is to bond metal items such as incoming service pipes (water, gas, oil etc) as well as central heating pipes at the boiler, the hot and cold water pipes, and metal baths etc. New copper piping for heating and water needs to be earth bonded to the electrical system.

Bathrooms

A bathroom is considered to be a special place and comes under Part P of the Building Regulations. This means that any work undertaken should be carried out by a competent person who is registered with a government approved scheme. That person will also be required to issue a certificate to show the work has been correctly carried



out. Regulations split bathroom into "zones" depending on the electrical risk and the limitations on what you can do in each zone. These mostly apply to how far away each location is from a source of water. These range from Zone 0 which is inside your bath or shower tray to Outside Zones which are far away from water. Other restrictions include:

- Electrical sockets should be more than three metres from the edge of a bath or shower (unless they are specially designed shaver sockets which can be as close as 600mm).
- Electric showers must have their own circuit as it can have the highest demand of all household appliances. This circuit must be protected by a Residual Current Device (RCD) and connected to the consumer unit.
- Adequate ventilation is also needed in a bathroom and an extractor fan may be required to meet building regulations – this must also be installed by an electrician.
- Electric heating must be permanently wired and out of reach of anyone in the shower or bath. Any thermostats must be away from potential splashing and protected by an RCD.
- All lighting needs to be enclosed and out of reach of water and controlled by a pull cord inside the bathroom or wall switch that is outside of the bathroom. ■



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Replacing boilers and heating systems



The energy efficiency of boilers and heating systems has improved dramatically in recent times, with improvements being made constantly, and an updated boiler in your home could not just make a huge difference to your carbon footprint, but also to your heating bills.

Planning permission is not normally required for installation or replacement of a boiler or heating system if all the work is internal, though if you live in a listed building you should check with your local planning authority first.

If the installation requires an outside flue however, it will normally be regarded as permitted development. Flues on the rear or side elevation of the building are allowed to a maximum of one metre above the highest part of the roof.

If the building is in a designated area, such as a Conservation Area, a National Park, or an Area of Outstanding Natural Beauty, planning permission will be required.

If the building is listed, even if you enjoy permitted development rights, listed building consent will be required. Consent is also likely to be needed for the internal alterations. It is advisable to check with your local planning authority before commencing works.

Work to install a new boiler (or a cooker that also supplies central heating – an Aga for example) needs building regulations approval because of the safety issues and the need for

energy efficiency. This is generally achieved by employing an installer who is registered under a competent person scheme.

For further information on competent person schemes, see page 81.

Boiler types

With a variety of boilers currently on the market, all offering their own different benefits, it can be difficult to work out which one is going to be most suitable for your home and budget. Here are some of the most popular:

Condensing boilers

This is arguably the most common type of boiler found in domestic homes. Condensing boilers boast the ability to be much more efficient than old main gas boilers as they can retain up to 90% of the heat they produce. Another common feature of a condensing boiler is that it contains both the hot and cold water tank in the same unit. This helps to ensure that there is a steady and consistent supply of hot water throughout the house. Their limitations have traditionally been

Towards net zero

Recent changes to the building regulations (Part L) have set new minimum standards for energy efficiency in new build homes (see article on page 31 for more details). The changes are designed to raise standards and pave the way for the Future Homes and Buildings Standard in 2025.

The changes have set new minimum energy efficiency standards for heating systems, including 92% ErP for gas boilers and a SCOP of 3.0 for heat pumps. They also require heating systems to be designed to operate at a low flow 55°C (compared to current standard 80°C) This applies to wet heating systems that are newly installed or fully replaced in existing buildings. Reducing flow temperatures has been shown to reduce gas consumption by around 6-8% so it is a concept worth exploring at any time.

A gas boiler may be among the best current options, but fossil fuel burning heating systems will eventually be phased out, so it might be worth considering renewable energy options to supplement or replace traditional energy sources in your renovation project.

Air and ground source heat pumps are becoming increasingly popular options, with the Boiler Upgrade Scheme driving demand in existing properties. Solar panels, wood pellet/ biomass boilers, log burners, wind and water turbines, and mini domestic combined heat and power generators are common alternatives. Some are very expensive to purchase and install so consider which will give you the best return, based on your budget and the period you expect to live in the property.

Before you consider any of renewable options you will need to assess the design, location, orientation, shading and fabric of the building as these will have a huge impact, particularly on the need for any mechanical heating/cooling system.



in properties with two or more bathrooms as there would only be enough hot water to serve one outlet at a time. Modern wall-mounted boilers have small circular 'balanced' flues that usually project through an external wall.

Oil boilers

Although not as popular as the condensing boilers, there are reckoned to be around four million oil boilers in UK homes. The reason for their reduced popularity is that oil boilers are less cost efficient, sometimes costing homeowners up to £200 extra each year. Alongside this, maintenance and repairs are more costly for this type of boiler, making it

even more crucial that they are durable and long-lasting. On the plus side, this type of boiler is perfect for larger, detached properties.

CHP boilers

Micro-CHP or micro combined heat and power is the small-scale generation of heat and electricity from a single energy source. Micro-CHP is becoming more common in domestic buildings, where it can be installed as direct replacement for gas-fired boilers as micro-CHP units (sometimes referred to as CHP boilers) are similar in size and shape to conventional domestic boilers and can be floor standing or wall hung.



Biomass boilers

Biomass or 'wood pellet' boilers have become increasingly popular over the past few years. These boilers boast impressive green credentials. Firstly, the actual cost of running this type of boiler is much cheaper than fossil fuel counterparts. Biomass boilers are not cheap though and can cost up to three or four times more than a standard fossil fuel boiler. As a rough guide, a standard three-bedroom home's energy requirements would be fulfilled by a 15kW system.

Flues

The rules governing the location of balanced flue terminals are quite complex, but generally they should be at least 300mm away from windows, doors, eaves, gutters, airbricks etc (fan-assisted flues can be closer) and should not discharge into enclosed areas, such as side passages and they must have a free flow of air passing over them. The preferred location for boilers is within garages, kitchens or utility rooms.

Locating them in bedrooms or bathrooms is normally discouraged. Boilers also need



an emergency overflow pipe directed down to ground level along the outer wall surface so that should a fault develop it can safely discharge boiling water at high pressure. Guidance on installing boiler and other combustion appliances, and the building provisions that are necessary to safely accommodate them (air supplies, hearths, fireplaces, flues and chimneys) can be found in Part J of the building regulations. ■



Underfloor heating

There are two different kinds of underfloor heating: water and electric. As a general rule, water is more complicated and expensive to install but cheaper to run, while electric is cheaper to install but more expensive to run. Although this is dependent on the room you're heating.

Underfloor heating can work with almost all types of flooring, including stone, tile, wooden or even carpeted surfaces! This gives you a good range of design options and also is a good solution for the cold, unforgiving nature of stone floor. However, be careful of the set up costs. Generally it's better to install your underfloor heating system to coincide with getting a new floor or other updates.



Radiators can heat up to high temperatures very quickly. However, underfloor heating is more gradual and generally runs at lower temperatures. With traditional radiators the heat is quickly dispersed upwards and away from the desired area, whereas an underfloor heating system will warm your room evenly.

With an underfloor heating system, the source is hidden away under the floor. This makes it perfect for any design of home from traditional to modern and it will give you far more options with the rest of the room. However, you might miss having radiators to hang towels on or warming specific areas.

Underfloor heating uses energy more efficiently than most radiator systems. This can help to reduce the carbon footprint of your house, making it perfect for the eco-conscious renovator.



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As the national solid fuel safety and standards organisation, HETAS, registers the vast majority of solid fuel, wood, and biomass installers, as well as chimney sweeps, service engineers and retailers. We also work with manufacturers through our appliance approvals scheme. Through the provision of training and information, we help registrants keep their knowledge up to date so they can properly advise consumers on appliance and fuel choice, correct operation and maintenance.

We make it easy for consumers to easily find HETAS approved professionals and retailers on our website www.hetas.co.uk which gets more than 50,000 visitors per month.



Chimneys, flues and woodburners



Renovating a property can often involve reinstating a disused fireplace and chimney, maybe to install a stylish wood burning stove.



But given the danger from fire and toxic fumes, it is vitally important to ensure that the chosen chimney and the heating system, as a whole, are suitable for the purpose intended and conform to the relevant building regulations.

Part J of the building regulations sets out the minimum criteria to apply if the chimney, flue and any appliances are to function safely and correctly.

Planning permission

Fitting, altering or replacing a chimney is normally considered to be permitted development, not requiring planning consent, if the conditions outlined below are met:

- You can install, alter or replace a chimney or flue on your house without the need to apply for planning permission if it does not project by more than one metre from the highest part of the roof.

- If you live in a Conservation Area, a National Park, an Area of Outstanding Natural Beauty or a World Heritage Site, the installation, alteration, replacement or removal of a chimney will require planning permission.
- If the building is listed or in a designated area even if you enjoy permitted development rights it is advisable to check with your local planning authority before a flue is fitted. In a designated area the flue should not be fitted on the principal or side elevation that fronts a highway.

As far as the building regulations are concerned, new chimneys are regarded as small extensions, so adding a new one will require building regulations approval before work begins. Installing a wood burning stove in an existing fireplace or lining a flue must also comply with the building regulations. You should take into account factors such as ventilation and general safety and installation should be carried out by a suitably qualified installer. The stove installer should be registered with a competent person scheme, most likely HETAS. Under the scheme they will also



notify your local authority's building control service when the job has been completed.

Chimney principles

The terms flue and chimney are often used interchangeably. The flue is the working part of the chimney, conveying the products of combustion safely to the atmosphere. The chimney includes the shaft within which the flue is housed. A flue works under negative pressure drawing the product of combustion from the appliance.

A successful "chimney draw" is dependent on the following principles:

- The difference in air pressure between the appliance and the top of the chimney (created by the height of the chimney).
- The difference in temperature between the appliance's exhaust gas and the outside temperature.
- The quality of insulation along the length of the chimney.
- The route of chimney (the straighter and more vertical the chimney the better).

It is essential to choose a flue diameter that matches the output from the appliance.

An adequate air supply is also required for the appliance to operate safely and efficiently.

Checking and relining existing chimneys

It is important to check the condition of an old chimney, especially when re-opening one, after many years of not being used. A chimney should contain a sealed flue from the appliance to the chimney pot to transport the products of combustion safely to the atmosphere. Over time the condition of the flue can deteriorate. It was only from 1965 that building regulations required all new chimneys to be built with suitable flue liners of the correct flue size to protect the chimney.

The check should be carried out by a chimney specialist and would entail the following procedures:

- The chimney should be swept to ensure that it is clear of obstructions such as dislodged masonry or bird's nests.
- A smoke test should then be carried out to establish whether there is any major fault that can cause products of combustion to leak through the chimney walls.
- The structural stability should also be checked, as well as making sure the chimney is wind and water tight.

This should identify any repair work that is needed. Often the safest and most economical way to make the flue secure is to reline the chimney shaft with new liners. This can be done with clay, concrete or pumice liners, single wall stainless steel or flexible stainless steel liners.

To reline the chimney with clay, concrete or pumice liners, the liners are lowered down the chimney on guide ropes with locating bands at the joints. The gap between the liners and chimney is then backfilled with a lightweight insulating compound. The existing flue opening has to be made large enough for the liners to be installed. The benefit of this type of relining is its durability. However, the cost can be prohibitive.

The alternative, and much more common route, is to use stainless steel liners, either single wall rigid liners or flexible liners. Stainless steel flexible liners are designed to take on the shape of the chimney. The liners are installed by either lowering them down or pulling them up the chimney. They can go around most bends. Whilst their slim profile enables quick installation into chimneys where other systems might not fit, their life can be reduced if abnormally high corrosive soot or condensate deposits are created and allowed to accumulate in the flue or have not been thoroughly removed from the walls of the existing chimney flue.



If you are relining your chimney then this is classed as 'building work' and you must notify building control before work starts as such work has to be done under the guidance of your local authority's building control service or again, by an installer who is a member of a competent person scheme.

More information on competent person schemes is available on page 81.

Wood burning stoves

All heating appliances, including all wood burning stoves, need air to work efficiently and safely. It is essential that the appropriate permanent air supply, as required by the appliance manufacturer and the building regulations is provided into the room where the appliance is situated. Always refer to the appliance manufacturer's recommendations and the building regulations (Part J) before installation. An inadequate supply of combustion air can create problems. Situations assumed to be "down draught" and spillage of smoke and fumes back into the room, which can be unpleasant and dangerous, are more frequently caused by insufficient provision of combustion air. Either the openings have not been provided, are not large enough or have been simply blocked off. If the appliance does not get all the air it needs to burn the fuel efficiently, incomplete combustion will occur resulting in the production of carbon monoxide and, if badly deprived of air, excessive volumes of soot.

Clean Air Act

The Clean Air Act allows local authorities to create smoke control areas in which smoke emission is prohibited unless arising from the burning of authorised fuel or from the use of an exempt appliance. Wood fuel can be burnt in a smoke control area, if you use an “exempt” appliance.

An “exempt” appliance is one which is permitted to burn unauthorised fuels in smoke control areas. These appliances have passed tests to confirm that they are capable of burning an unauthorised or inherently smoky solid fuel without emitting smoke.

The following website lists the appliances and fuels that are approved for use in smoke control areas and contacts for local authorities – www.gov.uk/smoke-control-area-rules



Carbon monoxide

Carbon monoxide (CO) is an extremely poisonous gas that can be present in the fumes from the combustion of fuel burnt under incorrect conditions. The gas cannot be seen, smelt or tasted, making it difficult to detect.

Carbon monoxide can kill or cause permanent damage to a person's health. Initial symptoms include tiredness, drowsiness, headache, nausea and chest pains (similar to flu).

To reduce the risk of carbon monoxide poisoning the following should be checked to ensure that:

- There is adequate ventilation - remember that the people in the room and also the appliance itself, need air and any draught proofing or double glazing must allow adequate ventilation as required by the building regulations.
- There is correct installation of flue liner and chimney.
- The draught in the flue meets manufacturers' recommendations.
- The correct fuel for the appliance is being used.
- There is regular maintenance, including sweeping the chimney.
- There is a carbon monoxide detector to alert occupants.

HETAS recommends that a carbon monoxide detector is installed with every solid fuel

appliance including existing ones. However, the detector must never be considered as a replacement for correct maintenance or chimney sweeping.

Chimney, flue and appliance on-site identification

When a chimney, flue or a combustion appliance, (irrespective of fuel used), is installed or renovated, it is a mandatory requirement that a Check List and Notice Plate be completed. The purpose of the Check List is to ensure that the installation has been carried out correctly. The Notice Plate is a record of the installation, the appliance and fuels that can be used with the chimney. It must be located in a convenient and accessible location, for example, near a services meter. Completion of the data required on the Notice Plate can be by the heating appliance installer, builder, chimney supplier/installer or other competent person.

Hearths

A solid fuel appliance should be provided with a solid, non-combustible hearth that will prevent the heat of the appliance from igniting combustible materials. Also any part of a dwelling that abuts or is adjacent to a hearth should be constructed in such a way as to minimise the risk of ignition by direct radiation or conduction from a solid fuel appliance located upon the hearth. ■

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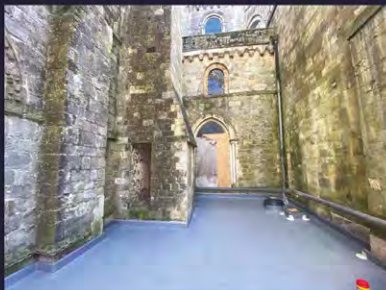
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Renovating a roof

A watertight roof should be at the top of the list when it comes to renovating your home. However, because of the need to work at height, these types of renovations are best left to the professionals.



When it comes to assessing the condition of roofs, take a look down the street at nearby houses of the same age – if a lot of these have new roof coverings, there's a greater chance that yours may also need to be re-clad in the not too distant future. If a roof is leaking or has the odd missing tile, it may simply need some localised maintenance, rather than complete re-covering.

Probably the most common cause of leaks in a roof is from defective flashings at junctions, such as to chimney stacks. Flashings are best made from lead, or failing that from modern GRP. Mortar fillets are very prone to cracking and best replaced.

Valleys where roof slopes meet are another weak point, and need to be cleared from time to time of accumulated leaves and debris. It should be a straightforward task for a roofer

to re-fix the odd slipped or missing tile or replace any that are cracked.

Roof spaces should be well ventilated and are meant to be cold and draughty above the layers of loft insulation because good ventilation helps disperse any damp. Most properties built in the last 60 years have a layer of underfelt beneath the tiles as a secondary barrier against the weather.

One thing to check in older terraced and semi-detached properties, is whether the firebreak party walls are in place – as these were sometimes omitted when originally built. If they are missing, they will need to be built up in lightweight concrete blocks or fire-resistant plasterboard.



Re-roofing your property

You do not normally need to apply for planning permission to re-roof your house or to insert roof lights or skylights.

The permitted development rules allow for roof alterations without the need for planning permission, subject to the following limits and conditions:

- Any alteration to the roof cannot project more than 150 millimetres from the existing roof plane.
- Alterations cannot be higher than the highest part of the roof.
- Side facing windows need to be obscure-glazed and non-opening if they are installed in the side elevation of a house that is within 10.5 metres of a side boundary of the house.
- The appearance of the materials used must, as far as possible, match the appearance of those used on your existing roof.
- Roof lights are not permitted in Conservations Area, National Parks, Areas

of Outstanding Natural Beauty or World Heritage Sites.

- The permitted development regime for solar panels has different limits on projections and in relation to protected areas.
- Planning permission is required if the roof light would result in the provision of a roof terrace, whether or not it would incorporate associated railings, fencing or other means of enclosure.

If you want to carry out repairs on or re-cover less than 25 per cent of the area of a pitch or flat roof, you will not normally need to submit a building regulations application. You will need approval, however, if:

- You carry out structural alterations.
- The performance of the new covering will be significantly different to that of the existing covering in the event of a fire.
- You are replacing/repairing more than 25 per cent of the roof area, in which case, the roof thermal insulation would normally have to be improved.



The building regulations require you to improve thermal efficiency where you're renovating significant areas of the building's 'thermal envelope' (i.e. the roof, main walls or floors). This is something that commonly affects flat roofs because they need re-covering more frequently than main roofs – removal or alteration to any roof elements could affect how the roof works and cause movement to occur. Movement could cause cracks to occur in the walls and, possibly, the eventual collapse of the roof.

When performing work on any roof, care should be taken to ensure the roof will continue to perform effectively and without any movement.

Materials

The materials used to cover the roof should be durable and capable of resisting the elements of the weather. With a pitched roof the type of tile or slate you wish to use will be partly governed by how steep or shallow the slope is. If the roof is close to a boundary, which is often the case, the roof should also have properties to limit the risk from fire spreading across the boundary.

When complete re-cladding is required, re-instating the original tile or slate coverings is normally the best option. Traditional natural slates or clay tiles found on older buildings have a much longer lifespan than today's manufactured concrete tiles, but they are more expensive. However, some types of modern composite fibre slates and tiles are designed to look similar to the real thing and can be a cost effective alternative.

Ventilation

Not all roofs need to be ventilated. Ventilation is not required to a warm roof system, which is where the insulation is placed above the joists or rafters. Otherwise ventilation is required and this is known as a 'cold roof system'. When ventilating a roof the air should be able to enter at one end

and travel through to the other end where it can exit.

When converting areas to liveable space, such as a loft, then it is likely that any existing roof needs to be checked for adequacy in terms of weather resistance and thermal insulation. If the underside of the roof (the ceiling) is to be lined with plasterboard then the resulting void may also need to be ventilated.

Flat roofs

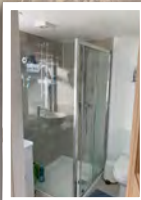
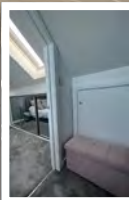
A flat roof will need to be ventilated. Typically, a 50mm gap should be maintained between any insulation and the underside of the roof. Through ventilation is then achieved by incorporating eaves venting.

If the roof is to be re-covered then the insulation can be installed on top of the joists making a 'warm deck' roof (check with manufacturers for details). This avoids the need for ventilation and the roof covering can be re-applied over the top.

Flat roofs must be laid to a suitable angle or 'fall' so the rainwater can discharge into the guttering, and care must be taken to ensure junctions at upstands etc. to adjoining walls are watertight. A surface layer of reflective stone chippings is often applied to protect the roof from the effects of UV sunlight.



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Rooflights

A rooflight is a window that is installed within a pitched roof or flat roof normally to give more light to rooms or spaces within the home. Approval under the building regulations will generally be needed for the installation of a new rooflight for the following reasons:

- To install a rooflight, the roof structure will generally need to be altered to create the opening the roof will have to be able to carry the load (weight) of the new rooflight. If the roof cannot do this then it will need to be strengthened.
- Any rooflight that is installed will also need to prove that it has sufficient insulation against heat loss i.e. is energy efficient.



Pitch roofs

Insulation can be placed between the ceiling joists. Again, the thickness will vary depending on the material you choose to use. If the roof has no ceiling then the insulation can be placed between the rafters and ventilation maintained as described above - in which case the ridge should also have vent tiles installed to allow for through ventilation.

Roof and wall-mounted solar panels

In many cases fixing solar panels to the roof is likely to be considered 'permitted development' under planning law with no need to apply for planning permission.

However, roof and wall mounted solar panels are subject to the following conditions:

- Panels on a building should be sited, so far as is practicable, to minimise the effect on the appearance of the building.
- They should be sited, so far as is practicable, to minimise the effect on the amenity of the area.
- When no longer needed for microgeneration they should be removed as soon as possible.
- They should not be installed above the ridgeline and should project no more than 200mm from the roof or wall surface.
- If your property is a listed building, installation will require planning permission and is likely to require an application for listed building consent.

- If your property is in a conservation area, or in a World Heritage Site, planning consent is required when panels are to be fitted on the principal or side elevation walls and they are visible from the highway. If panels are to be fitted to a building in your garden or grounds they should not be visible from the highway.

If being installed on a flat roof, solar panels cannot be sited within one metre of the external edge of the roof or protrude more than one metre above the plane of the roof.

Access/safety

Falls from height are responsible for many serious and fatal injuries every year. The Working at Height Regulations are designed to prevent such injuries and apply to work carried out two metres or more above ground level. Scaffolding is normally required for roof work and needs to be erected by a 'competent person'. Scaffolding with a handrail, mid rail and toe boards will help protect you from falling and those below from being hit by falling objects.

Ladders

If they have to be used, ensure ladders and stepladders are in good condition, the right type for the work and are not going to move when being used.

Planning even simple jobs can save time, effort and often money. A basic safety plan can also help you and your builder think about the health and safety issues that can arise during the work. ■

Lighting systems



If you're taking on a broader refurbishment project, it could be a good time to get to grips with your home's lighting systems, making some long-term savings and improving aesthetics.



Although the building regulations are concerned with matters such as electrical safety and energy efficiency, they don't normally apply where you're simply changing bulbs or light fittings. However, for bigger renovation projects, such as adding a new bathroom, there are certain rules that need to be followed.

You should either use an installer who is registered with the competent person scheme or make an application to your local authority's building control service.

Energy efficiency

It is now a general aim of the building regulations to make our buildings as energy efficient as possible. You are required to install efficient electric lighting to your house in specific circumstances including:

- When your dwelling has been extended.
- When your existing lighting system is being replaced as part of re-wiring works.

It makes sense to fit the most energy efficient replacement bulbs possible to help reduce bills. LED bulbs are the best option because they're highly energy efficient. Although relatively expensive to buy, LEDs produce a negligible amount of heat and consume a fraction of the energy used by conventional bulbs and last up to 20 times longer – about 50,000 hours.

The next best option in terms of energy consumption and lifespan are compact fluorescent (CFL) bulbs. However, these can take a couple of seconds to light and up to three minutes to attain full brightness, so they may not be suitable for locations such as staircases where immediate full

illumination is required. They work best in areas where lights are left on for long periods.

As a general rule, it's best to choose replacement bulbs rated at 55 lumens per watt or higher. This is three times more efficient than conventional halogen or incandescent lighting, and should last at least three times as long, which helps to justify the higher cost.

External lights

Lighting fixed to an external surface is covered by the building regulations.

External lights must be automatically controlled so they switch off in daylight – the use of sensors means they should only operate when required, automatically switching off when the lit

area becomes unoccupied. Only where lamp efficacy is greater than 45 lumens per circuit-watt can they be manually controlled by a switch.

You should either use an installer who is registered with the competent person scheme or make an application to your local authority's building control service.

If you are installing an external light which is supplied from your electrical system and fixed to the exterior surface of your house then you should ensure that reasonable provisions are made to enable effective control and/or use of energy efficient lamps. Two options for achieving this are:

- Installing a lamp with a capacity which does not exceed 150W per light fitting and the lighting automatically switches off

Lighting design

When planning the lighting for your home there are three basic types:

General lighting

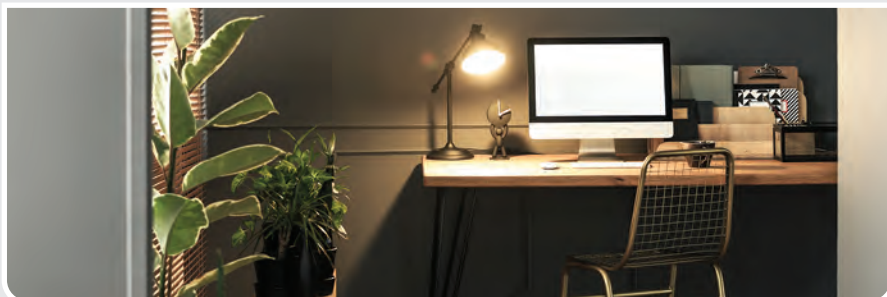
This is the overall 'ambient light' that you need to compensate when natural sunlight isn't up to the job. It's usually provided by ceiling pendants, chandeliers or downlighters.

Task lighting

This is for illuminating an area for a particular function like cooking or reading. When not required for the task, the lamp is normally switched off. Usually provided by portable standard lamps, wall mounted spot lights, desk lamps, or fixed lighting over worktops.

Accent lighting

This type of lighting is for decorative purposes or to display a particular feature such as ceiling beams or a picture on the wall. Accent lighting is often provided by wall or ceiling mounted spot lights.





both when there is enough daylight and also when it is not required at night.

- Ensuring that the lighting fittings you use have sockets that can only be used with lamps having an energy efficacy greater than 40 lumens per circuit-watt.

Light itself, and minor domestic light fittings, are not subject to planning controls. Nevertheless, if you are planning to install external lighting for security or other purposes, you should ensure that the intensity and direction of light does not disturb others. Many people suffer extreme disturbance due to excessive or poorly-designed lighting.

Ensure that beams are not pointed directly at windows of other houses. Security lights fitted with passive infra-red detectors (PIRs) and/or timing devices should be adjusted so that they minimise nuisance to neighbours and are set so that they are not triggered by traffic or pedestrians passing outside your property.

Fluorescent lamps use a lot less electricity when run for long periods and last up to 10 times longer than the ordinary incandescent variety. But they use a lot of current when first switched on so are not very efficient in

places where lights are only used for a short time.

Bathrooms

When fitting new lighting to bathrooms or wet rooms, there are special safety provisions in the building regulations that need to be observed to prevent possible electric shock (see Bathrooms section on page 39 for more details).

No electrical fitting of any type should be touchable from where a person could be in contact with water at the same time, and should be located well away from any risk of shower spray.

All electrical circuits within bathrooms must be protected by Residual Current Devices (RCD). For obvious reasons no power sockets are permitted (other than for shavers). Only specially protected low voltage fittings can be installed in new or re-fitted bathrooms (see earlier section in this guidebook on 'electrics'). For ceiling lighting, shower-proof light fittings are ideal since they're also draughtproof and with LED lights installed consume minimal energy. But fittings need to comply with rules for different electrical 'zones' within bathrooms. ■

Internal decorating



Good quality decoration is perhaps one of the most cost-effective ways to transform a home. And if you are looking to sell your property after renovation, it is particularly beneficial as home buyers are often strongly influenced by first impressions.



Any internal decorating such as wallpapering, new skirting boards or painting will not normally require approval under the building regulations. There are, however, other health and safety issues to bear in mind.

Falls from height

Falls from height is one of the main cause of accidents in the DIY sphere, and you need

to follow the correct procedures before any work at height starts.

Ensure that people are not working underneath you or if this is not possible ensure that all precautions have been taken to prevent materials falling onto them.

Step ladders

Step ladders are often a central part of a paint job, but also a key danger area. Here

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For more information or to find your local registered technician, visit www.oftec.org or call **01473 626 298**

Decorating safety tips

- Before you start work, make sure that the room is as empty as possible and everything is covered by dust sheets.
- Stick dust sheets to the skirting with masking tape so that they remain in place.
- Mask or remove any electrical or other fittings that may be accidentally painted.
- Remember to switch off the electricity at the mains before removing electrical fittings.
- Any paint that splashes on the skin should be removed with a recognised skin cleaner (NOT white spirit or other solvents), followed by soap and water.
- Gloss, undercoat, universal and wood primer and white spirit are all flammable so should be stored well away from any possible source of ignition.
- Paint in a well ventilated area – this will ensure that fumes are not inhaled and will encourage the paint to dry.
- Always make sure ladders are safely erected and secured.
- Wear protective clothing where necessary.



are some tips on how to minimise the likelihood of a ladder-related accident:

Inspect the ladder:

- Take time to check the condition of the ladder both before and after use.
- Check that the ladder is sufficiently robust to support your weight.
- Make sure the steps are free of oil, wet paint, mud, or any other potentially slippery substance.

Erecting the ladder:

- Clear the area around the ladder from any clutter. Make sure that no electrical cords or wire leads are close.
- If the ladder needs to be in front of a door, consider locking the door to prevent surprise openings. Make sure the floor is even and stable. Avoid wet or slippery surfaces.
- Always support the ladder at four points.

Paints and health issues

There are two basic types of paint to choose from: water-based paints, often referred

to as acrylic emulsions, and solvent-based paints. High-quality water-based paints offer not just an excellent all-round performance profile, they are also a good choice from a health and environmental perspective. Solvent-based paints, the more traditional type of paint, require users to exercise a degree of caution to avoid risks relating to potential health hazards.

All solvents are potential health hazards, even if toxicity varies from solvent to solvent. Certain solvent properties, and their known

effects are specific, others are common to a group.

Limited exposure to solvents can be free from harm if under certain thresholds, which vary according to the individual solvent. However, the impact of solvents on health should not be underestimated, as exposure can lead to any of the following:

- Irritation of the skin, eyes and mucous membranes.
- Respiratory problems.

Protecting the environment – top tips

- Consider high quality water-based paints as an option for your job – they are more environmentally friendly and offer an excellent all-round performance profile.
- Always take care to follow the precautions indicated on the can.
- Try to buy exactly as much paint as your job requires – so disposal is not an issue.
- If you do have some paint left, try to find some use for it – maybe apply another coat, or offer it to friends or relatives.
- To store paint for the future, make sure the lid is on tightly – this prevents air and dirt getting in, and helps the paint last longer.
- Contact your local authority for guidance on safe disposal of paint – many have schemes for this purpose.
- If you have to clean tools with a solvent, try to re-use the solvent as many times as possible for cleaning.
- Never pour leftover paint down the drain.
- Never put leftover liquid paint in with your other waste.



- Headaches, dizziness, nausea.
- Light-headedness.
- Effects to the nervous system.
- Blood, liver, kidney diseases.
- Carcinogenic effects.

Working with lead-based paint

Lead is a hazardous substance which if breathed in or swallowed can have serious health implications. Although lead is no longer used in today's paints, it can be present in properties built before the 1960s. Care must be taken when painting in older properties but it is only an issue if the surface is flaking, chipping, or disturbed in any way. The following guidance should be considered:

- If the surface is in good condition or protected already then it is safer to leave it undisturbed.
- If the surface is not in good condition, do not scrape, sand or disturb. Use a lead testing kit for a simple indication of lead presence. Available from trade stores and some retail outlets.

To be absolutely sure if lead-containing paint is present on a surface, the paint needs to be tested by a specialist lab or a professional decorator.

Fire

Every year there are reports of fires and explosions in older properties which severely damage or even destroy premises. A

potential fire hazard for renovators is using a blowlamp or heat gun during redecoration works. As well as the potential fire risk, fumes from burning lead paint can also be hazardous to health.

Asbestos

Many buildings built or refurbished before the mid-1980s will contain asbestos. Small amounts of fibre are also present in some textured ceiling finishes. Breathing asbestos dust can cause serious damage to the lungs and could cause cancer, so any form of sanding, cutting or drilling must be avoided if there is a possibility of asbestos being present.

Asbestos containing materials should be identified before work commences to prevent inadvertent exposure to asbestos. Asbestos insulation board, asbestos coatings and asbestos insulation should only be removed by a licensed contractor.

Personal Protection Equipment

Make sure you have the correct Personal Protection Equipment (PPE) if it is required. PPE should always be the last resort in preventing accidents as it is always better to remove the risk completely, but where this is not possible PPE should be worn.

PPE could be hard hats for head protection, high visibility vests or jackets, ear protection such as full ear muffs or if suitable plugs, safety boots or shoes, overalls etc. Always ensure that PPE is cleaned, maintained and replaced when necessary. ■



Insulation and thermal efficiency



Insulating your home is one of the most cost effective home energy improvements you can make and could reduce heating costs by more than a third.



In most cases you won't need to apply for planning consent. However, the building regulations set minimum standards for thermal efficiency where walls, roofs and floors are renovated. Insulation has to comply with the relevant building regulations, both when installed during construction or when fitted retrospectively, although contractors can normally 'self-certify' any major works.

Cavity wall insulation

Filling the gap between the two walls of a house with an insulating material will significantly decreases the amount of heat

which escapes through the walls. However, not every home is suitable. You may not have a cavity to fill, or you may have a cavity that isn't suitable for insulating. Or maybe you have cavities that can be insulated provided you first carry out some extra work, or if you use a particular insulation material.

Most houses built before 1920 will have solid walls – that is, the walls are made of brick or stone with no gap or cavity in the middle. During the 1920s it became increasingly common to build cavity walls. These have an outer leaf, usually of bricks,



then a gap in the middle, and then an inner leaf made of bricks or concrete blocks.

Most cavity walls can be insulated with mineral wool or polystyrene beads. These are the most common materials, and the

cheapest, but they're only suitable for cavities that meet certain criteria.

You may not be able to fit standard cavity wall insulation if:

- Your house is particularly exposed to driving rain.
- Your cavities are too narrow.
- Your cavities are uneven.
- Your cavities are blocked with rubble.
- You have defective wall ties.
- Your home is prone to flooding.

A certified installer will check all of these criteria before deciding whether they can insulate your walls.

Insulation options for your loft

Mineral wool/batts – This is the most common type of insulation. It comes in rolls of thick material that is simply laid between the floor joists. It is recommended that around 270mm of mineral wool insulation is used to gain the best result.

Blown insulation – This is a loose insulation that is blown into the space between the floor joists and inside any walls. It tends to have a lower thermal value and it is hard to get a deep enough layer to give the desired thermal efficiency levels.

Solid insulation board – As a loft is often boarded out to make it habitable, these insulation boards make a great option. They are often filled with foam and come in varying depths to achieve the right thermal value. The main issue with these is a lack of flexibility as they cannot fill small or awkward spaces effectively.

Spray foam insulation – Many loft conversions are now being insulated with spray foam. The material is sprayed between the floor, wall and roof joists and rafters, giving even coverage that has a great thermal value. Then the foam is simply covered with a plasterboard. In terms of flexibility, this offers the best coverage, although it is more expensive than other insulation types.

Whatever insulation you choose, you will need to check with building control to ensure that you have complied with the rules for your area. This will take into account the number of windows, the size of the space and the type of insulation used. Your local council should be able to advise further.



The installation of cavity wall insulation is specifically defined as notifiable building work in the building regulations. If the installer is registered with the Cavity Insulation Guarantee Agency (CIGA) the installer will in most cases submit the building notice. In any case, building owners should always check that a building notice will be submitted. If your walls are not suitable for cavity insulation, then you could consider internal or external wall insulation. This can sometimes be the most appropriate option even if there is a cavity.

Solid walls

Solid walls lose even more heat than cavity walls; the only way to reduce this heat loss is to insulate them on the inside or the outside. It's not a cheap option, but you will soon see the benefits to your heating bill and it's another way of playing your part in reducing carbon emissions. There are two types of solid wall insulation: external and internal.

External insulation

This involves adding a decorative weather-proof insulating treatment to the outside of your wall. The thickness of the insulation should be between 50-100mm and is usually installed where there are severe heating problems or the exterior of the building requires some form of other repair work.

Re-rendering external walls

If you want to re-render or replace timber cladding to external walls, building regulations may apply depending on the extent of the work.

Where 25% or more of an external wall is re-rendered, re-clad, re-plastered or re-lined internally or where 25% or more of the external leaf of a wall is rebuilt, the regulations would apply and the thermal insulation would normally have to be improved.

Internal insulation

Solid walls can also be insulated by applying internal wall insulation. Types include ready-made insulation/plaster board laminates or wooden battens in-filled with insulation or flexible linings.

Insulation/plaster board laminates usually consist of plasterboard backed with insulating material typically to a total thickness of up to 90mm.

Where a solid wall has been upgraded by the installation of insulation it must meet the minimum energy efficiency values set out in the building regulations.

Loft insulation

Insulating the loft will help maintain a comfortable temperature and help save on energy costs. It can also prevent the build-up of heat in the loft and therefore the possibility of condensation.

Any time that there is a large difference between the temperature in the loft compared to other parts of the home, condensation could develop. This can cause mould, rotten wood timbers and general damp. Insulation can help prevent this.

The installation of insulation in your loft must meet the minimum energy efficiency values as set out in the building regulations (Part L).

If you are installing loft insulation as part of a roof renovation project, where more



than 25 per cent of the roof is being renewed, then the level of insulation should meet the standards set out in the building regulations. Care should be taken not to block any ventilation at the edges (eaves).

Floor insulation

The floors in a typical home account for around 15% of the building's total heat loss. While this figure is less than the amount lost through roofs and walls, it is still significant.

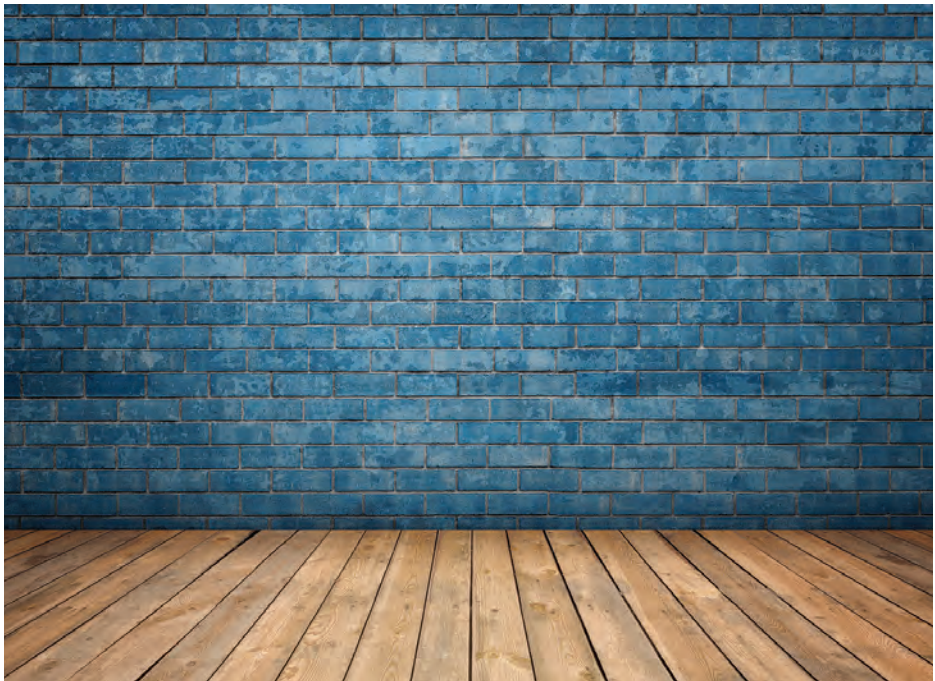
Solid concrete floors can be difficult to insulate because laying a new insulated 'floating floor' on top of the existing surface raises the floor level and this can have knock-on effects to doors, frames and stairs etc.

However, upgrading the thermal efficiency of traditional suspended timber floors can be relatively straightforward. The simplest and cheapest option is to carry out draught-proofing. Draught proofing simply

fills gaps and decreases the amount of cold air entering your home. There are several types of materials available from brushes, foams and sealants to strips and shaped rubber or plastic. You can also use a regular tube sealant, such as silicon to fill gaps between floorboards and skirting boards to stop draughts.

There are other ways suspended timber floors can be insulated, for example rigid insulation can be wedged between joists and secured on battens, or mineral wool quilt batts can be held in place with plywood strips or sheets of breather membrane stapled underneath to the joists.

Where insulation is added to suspended floors it is critical that the ventilation beneath the floor is adequate. A floor void of at least 150mm should be maintained and ventilated by air bricks at frequent intervals on opposite sides of the void. ■





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Improving your outdoor space



Making improvements to the gardens and space surrounding a property can help complete a home improvement project.



Gardens are much sought after spaces and many buyers are willing to pay a premium for a garden that is well maintained and looked after – and special garden features, such as shed, detached garage or summerhouse, can push the price up even higher.

This is an area where the building regulations don't usually apply (except for some larger outbuildings and things like oil and gas tanks). However planning consent is sometimes required.

Planning rules governing outbuildings apply to sheds, greenhouses and garages as well as other ancillary garden buildings such as swimming pools, ponds, sauna cabins, kennels, enclosures (including tennis courts) and many other kinds of structure for a

purpose incidental to the enjoyment of the existing house.

Outbuildings are considered to be permitted development and do not need planning permission, subject to the following limits and conditions:

Siting

- The total area of ground covered by outbuildings cannot exceed 50% of the total area of the curtilage. Outbuildings cannot be located in front of the building line of the principal elevation.
- Outbuildings cannot extend beyond the side elevation of the house when the development would be any closer to a highway than the existing house, or at

least five metres from the highway – whichever is nearest.

- Any part of the development within two metres of a boundary of the house cannot exceed a height of 2.5 metres.
- Any part of the development within two metres of the house cannot exceed a height of 1.5 metres.

Height

- Outbuildings cannot exceed more than one storey.
- The height of an outbuilding cannot exceed four metres when the building has more than one pitch (eg dual pitch and hipped roofs).
- The height cannot exceed three metres when the building has a single pitch or other roof form.
- Flat roof buildings cannot exceed 2.5 metres in height.
- Eaves height of the building cannot exceed 2.5m.

If your property is situated within a National Park, an Area of Outstanding Natural Beauty or a Conservation Area, the following restrictions also apply:

- The total area of ground covered by outbuildings situated more than 20 metres from any wall of your dwelling cannot exceed 10 square metres
- No development can take place on land between the side elevation of the existing dwelling and the side boundary of your property.

If you want to put up small detached buildings such as a garden shed or summerhouse in your garden, building regulations will not normally apply if the floor area of the building is less than 15 square metres and contains no sleeping accommodation.

If the floor area of the building is between 15 square metres and 30 square metres, you will not normally be required to apply for building regulations approval providing that the building contains no sleeping accommodation and is either at least one

Trees and hedges

Many trees are protected by tree preservation orders which means that, in general, you need the council's consent to prune or fell them. In addition, there are controls over many other trees in conservation areas.

If you are unsure about the status of trees which you intend to prune or fell (or you simply require further information) you should contact your local planning authority.

Building regulations do not apply to trees and hedges but foundations can be affected by tree roots and soil moisture.

Such matters should be considered when planting or removing trees or building new structures as certain tree species can affect foundations more than 20 metres away.





metre from any boundary or it is constructed of substantially non-combustible materials.

Building a new attached carport (open on at least two sides) would not normally require building regulations approval if it is less than 30 square metres in floor area.

Building a detached garage of less than 30 square metres floor area would not normally need building regulations approval as long as:

- The floor area of the detached garage is less than 15 square metres.
- The floor area of the garage is between 15 square metres and 30 square metres, provided the garage is at least one metre from any boundary, or it is constructed from substantially non-combustible materials.

If you want to convert an integral or attached garage into habitable use, building regulations will normally apply. If the

regulations do apply to the building then it must be built to reasonable standards.

Fences

Fences, walls and gates do not normally require building regulation approval but the structures must be structurally sound and maintained.

Garden walls

If the garden wall is classed as a 'party fence wall', and depending on the type of building work you intend to carry out, then you must notify the adjoining owner of the work in respect of the Party Wall Act etc 1996. This does not include wooden fences.

Garden and boundary walls should be inspected from time to time to see if any repairs are necessary, or whether a wall needs rebuilding. Such walls are amongst the most common forms of masonry to suffer collapse, and they are unfortunately one of

the commonest causes of death by falling masonry. Your insurances may not cover you if the wall has been neglected.

Besides the general deterioration and ageing of a masonry wall over the years, walls may be affected by:

- An increase in wind load or driving rain if a nearby wall is taken down.
- Felling of nearby mature trees or planting of new trees close to the wall.
- Changes leading to greater risk of damage from traffic.
- Alterations, such as additions to the wall or removal of parts of the wall e.g. for a new gateway.

Safe heights for walls of different thicknesses

There are set height limits for different garden wall thicknesses in different areas of the UK and you should seek expert advice on the safety of any wall which exceeds the height limits for your area of the UK. In very sheltered situations and where piers have been used taller walls may be acceptable.

Patios and driveways

If you are intending to lay or replace a hard surface to the front of your house you must use permeable or porous materials; alternatively surface water run-off from an

impermeable hard surface, such as concrete, must be directed to a permeable or porous surface to the front of your home.

You can replace or repair a small area, up to five square metres, of existing hard-surfacing without using permeable or porous materials - for example to repair pot holes in a driveway, or replace paving slabs in an existing patio.

Significant works of embanking or terracing to support a hard surface might need a planning application. If you live in a listed building, you will need to apply for planning permission to lay a hard surface.

Generally a new driveway or patio area does not require building regulations approval. However, you will need to make sure that any alterations do not make access to the dwelling any less satisfactory than it was before. So, for example, changing levels to introduce steps where none existed before would be a contravention of the regulations.

Dropping kerbs

If you are making a new access into the garden across the footpath you will need to obtain planning permission from the local council to drop the kerbs and the pavement may need strengthening. This is to protect any services buried in the ground such as water pipes. ■



Further information



Below is a list of the types of work covered by competent person schemes in the UK. The respective website links are on pages 82-83.

Installation of cavity wall insulation:

Blue Flame Certification, CERTASS, Certsure, CIGA, NAPIT

Installation of solid wall insulation:

BBA, Blue Flame Certification, CERTASS, Certsure, NAPIT

Installation of gas appliances:

Gas Safe Register

Installation or replacement of hot water and heating systems:

APHC, BESCA, Blue Flame Certification, Certsure, Gas Safe Register, HETAS, NAPIT, OFTEC

Installation or replacement of oil-fired boilers and storage tanks:

APHC, BESCA, Blue Flame Certification, Certsure, NAPIT, OFTEC

Installation or replacement of solid fuel burners:

APHC, BESCA, Certsure, HETAS, NAPIT, OFTEC

Installation of fixed air conditioning or mechanical ventilation systems in dwellings:

BESCA, Blue Flame Certification, Certsure, NAPIT

Any electrical installation work in dwellings:

BESCA, Blue Flame Certification, Certsure, NAPIT, OFTEC

Electrical installation work only in association with other work in dwellings (eg. kitchen installations, boiler installations):

APHC, BESCA, Blue Flame Certification, Certsure, NAPIT

Replacement windows, doors, roof windows, or roof lights in dwellings:

Blue Flame Certification, BM TRADA, CERTASS, Certsure, FENSA, INVEKA, NAPIT

Installation of plumbing and water supply systems and bathrooms and sanitary ware:

APHC, BESCA, Certsure, HETAS, NAPIT

Replacement of roof coverings on pitched and flat roofs (not including solar panels):

NFRC, NAPIT

Installation of microgeneration or renewable technologies:

APHC, BESCA, Certsure, HETAS, NAPIT, OFTEC.



APHC

www.aphc.co.uk



BESCA

www.besca.org.uk



Blue Flame

www.blueflamecertification.com



BM TRADA

www.bmtrada.com



British Board of Agrément
(BBA)

www.bbacerts.co.uk



Certsure LLP
(trading as NICEIC)

www.niceic.com



NFRC Competent Person
Scheme

www.nfrc cps.com



CERTASS

www.certass.co.uk



CIGA

www.ciga.co.uk



FENSA

www.fensa.co.uk



Gas Safe Register

www.gassaferegister.co.uk



HETAS

www.hetas.co.uk



INVEKA

www.networkveka.co.uk



NAPIT

www.napit.org.uk



OFTEC

www.oftec.org

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