Domestic Extensions
Key things to consider

Friendly and helpful support from your local authority building control team

Introduction

If you need more space and you do not want to move house you may wish to consider extending your home. Your home is probably your most valuable asset so it is important that your extension project is carefully planned. This guide is not a substitute for professional advice but has been written to provide you with useful information about how the Building Regulations will affect your extension.

Suitability

Most houses are suitable for extending, providing that you have the space. When you are thinking about whether your house is suitable for extending you might like to consider:

1. How will you access your extension?

2. What effect will your extension have on the circulation in and around your home?

3. What effect will your extension have on your existing house and garden? Will it block out light from existing rooms or make some rooms unusable? Will you still be able to get into your garden?

4. Is your existing house built from an unusual construction for example prefabricated panels, concrete frame etc?

If you can resolve all of these issues then your house may well be suitable for extending.

How to Proceed: extensions are complex projects and unless you are experienced in construction you will need to get some professional advice. The introduction contained advice about obtaining this and with this in place we can now consider some of the technical issues that affect domestic extensions.

Technical Issues

Foundations: the foundations are one of the most important parts of your extension and often one of the most expensive. For domestic extensions trench fill foundations are the most common, these should be taken down into firm natural ground and should be a minimum of 750mm deep. In areas with clay subsoil, trees up to 20m away can have a significant effect on foundations which generally means that they need to be deeper, sometimes as much as 2.5m.

Ground Floor

The ground floor of your extension performs a number of tasks: it must support the floor loading, keep out damp and provide thermal insulation. Generally a ground floor is a multilayer structure, the top soil under the extension floor area is removed and a layer of compacted stone is placed over the site. This is covered or 'blinded' with sand and a layer of 1200g polythene is then placed over the sand and lapped in with the damp proof course in the wall. A layer of insulation is then provided and a concrete slab at least 100mm thick is poured over the insulation. The concrete can either be float finished or a screed applied at a later date. On some sites where the ground floor is significantly higher than external ground level or where the site has been affected by trees, a suspended floor may be needed, these can be formed from either concrete or timber.

Walls

the walls of your extension must carry the loads from the floors and roof, keep the weather out of the extension and provide thermal insulation. Cavity walls are commonly used for domestic extensions. These are constructed of

bricks and blocks and the cavity filled with insulation as the work proceeds. When building walls ensure that you have adequate buttressing at the corner of your extension, lintels over all openings, wall ties to join the leaves of your cavity wall together and a suitable damp proof course. If you are building up against your neighbour's house you will also need to ensure that your wall provides adequate sound resistance.

First Floor

Two storey extensions will require a first floor, these are generally constructed with timber floor joists which span between load bearing walls, floor boarding above and plasterboard on the underside of the joists to provide a ceiling finish and fire resistance, joist sizes will depend on the span. In addition you will also need to include sound insulation, which in domestic extensions, will generally comprise 100mm of sound deadening mineral wool placed between the joists.

The Roof Structure: the roof of your extension will need to be designed to keep out the rain and snow and may need to cope with some loading from loft storage. Generally two types of roof are used for domestic extensions:-

Flat Roofs: this is the simplest type of roof structure and for some extensions, generally single storey; a flat roof can provide a practical and economic solution. Timber joists are used to span between the load bearing walls and beams which are covered with a plywood decking. Thermal insulation is then placed over the roof decking and then generally finished with a waterproof covering of three layers of bonded roofing felt. Critical things to consider in this type of roof are the size and support of the roof joists and the way that the roof will be insulated, and if necessary, ventilated.

Pitched Roofs: These are generally more substantial structures that are finished with roof tiles or slates. The supporting structure of the roof can be formed in two ways:

1. Trussed Rafter Roofs: these are quick to construct, measurements are taken from site and roof trusses are made up in a factory, which are delivered to site ready for installation. Each roof is individually designed by the roof truss manufacturer using specialist computer software and the carpenter's time on site can be significantly reduced.

2. Traditional Roofs: A carpenter cuts a traditional roof on site. The roof structure will generally be designed by an Architect or Structural Engineer the timber is delivered to site where the carpenter will set out the roof and cut each of the individual timbers to size before installing them. This type of roof offers the greatest flexibility in roof shape and is often the only way of roofing complicated extensions, especially where the new roof must join onto an existing structure.

The size of the timbers and supporting beams required in a roof will depend on the loadings and spans involved in each case, complex roofs will require a Structural Engineer's design but our Building Control Surveyors will be happy to assist your builder in designing simple roof structures.

The timber roof carcase must be covered to provide weather protection, the finish generally comprising of tiles or slates with a roofing membrane or felt under them. The tiles are supported on the rafters by timber battens, and to provide weather resistance the tiles overlap each other. For extensions it is common to use tiles or slates that match the main house.

Stairs: if your extension has more than one storey you may need to install a staircase and careful design of this can be critical to the success of the extension. If a stair is installed it should be designed in accordance with the following guidance.
Width: there is no minimum width for stairs in the Building Regulations however they will need to be useable. Generally stairs are 850–1000mm wide.

Pitch: the maximum pitch for the stair should not exceed 42 degrees.

Rise and Going: the maximum rise of each tread of a domestic stair should not exceed 220mm and the going should be at least 220mm.

Headroom: the clear headroom over the stair should be at least 2m.

Handrails and Balustrades: the stair should be provided with a handrail at least 900mm high and any exposed edges of stairs or landings should be provided with balustrading at least 900mm high and have no gaps that would permit a 100mm sphere to pass through (protection for young children from falling).

Fire Precautions: it is important you consider fire precautions when designing your extension. Fires tend to occur at night when everyone is asleep and to give you awareness of a fire the Building Regulations suggest that mains operated smoke detectors should be installed on each floor of the house when it is extended.

To prevent people being trapped by a fire all rooms that do not open directly onto a hall and all first floor rooms should have a window or door that is large enough for people to escape through. If you are using a window as your secondary fire escape it should have a clear opening of at least 0.33m² at least 450mm wide with a cill height of between 800 and 1100mm above floor level.

Fire is a very dangerous thing and careful design and planning are required to ensure that the risks it poses are minimised.

Ventilation: fresh air is essential to healthy living and the Building Regulations require your extension to have adequate ventilation, generally an opening window with a 'trickle vent' is all that is required, the window should have an openable area equivalent to at least 1/20th of the floor area of the room that it is ventilating. The trickle vent is a small slot type vent that you can leave open to allow some background ventilation without the need to open the window, generally these are found in the top of the window frame. If your extension contains a kitchen, utility room or bathroom you will need to provide an extract fan in these areas and your Building Control Surveyor will be pleased to provide you with more detailed advice when they call on site.

Drainage: it is usually possible to connect drainage from extensions into the existing drainage systems. Drainage can be divided into either foul water or rainwater and generally speaking the drainage systems should be kept separate. Foul drainage is discharged through a series of pipes and manholes to a public sewer, although some properties will have septic tanks or private sewage treatment plants. When planning your extension look for manholes and try and find out where your drains are running so that you can work out how any new drains will connect to them. It is important that all new underground drain pipes have a diameter of at least 100mm so that they do not block, are watertight and have manholes or access points so that any blockages can be cleared. Where possible rainwater drainage should not be discharged to foul sewers as this can cause problems with flooding, the preferred solutions are to discharge rainwater to soakaways located in your garden at least 5m from any building or to storm water sewers if they are available.

Heating: most extensions will need to be heated and you will need to check with your heating engineer that your existing system has sufficient capacity to heat your extended house. You may also need to move your boiler; if for example, your extension will cover the flue outlet. Any alterations to your heating system should be carried out by a suitably qualified plumber or heating engineer registered with Gas Safe for gas fired boilers or OFTEC for oil fired boilers. Any new boilers will need to be highly efficient condensing boilers and the new radiators that you install in your extension should be fitted with thermostatic radiator valves so that you can ensure they use heat efficiently.

Thermal Insulation

CO^2 emissions are a major concern in today's environment and you will need to provide a high level of insulation within your extension. Your extension should provide an insulated envelope to minimise loss of heat from the building. The roof, walls and floors of your extension should all include thermal insulation; walls generally have insulation placed within the cavity, roofs generally have insulation in the loft area and sheets of insulation can be placed beneath the concrete of your ground floor.

Another major area where heat is lost from buildings is the windows and these require special attention: 24mm double glazing units incorporating low emissivity glass are generally required and, unless energy improvements are carried out in the existing house, the window area of your extension is limited by the Building Regulations to 25% of the floor area plus the area of any existing openings covered by the extension.

High levels of insulation can result in problems with condensation and care must be taken to ensure adequate ventilation is available to rooms and particularly in roof voids. As well as insulating your extension you will need to consider the efficiency of any services you put into it. Low energy light fittings should be used where possible and any new heating systems should work to high levels of efficiency and have suitable thermostats and controls.

Sound Insulation: to reduce unwanted noise the walls and floor around bedrooms will need to be insulated to reduce sound transmission, this is generally achieved by placing 100mm of sound deadening quilt in the floor void and in the partitions around the bedrooms.

Electrical Installations: as part of the Building Regulations process you will need to supply British Standard Test Certificates for most new electrical installations, when selecting your electrical contractor please ensure that they are competent to provide you with these test certificates as otherwise you are likely to incur additional costs for testing the circuits.

Glazing: to reduce the risk of people injuring themselves, glazing in and around doors and all glazing within 800mm of floor level should be either toughened or laminated glass.

Planning Permission

The extension of your house may require planning permission, this will depend on a number of factors that could include its size, height above ground level, position in relation to boundaries and adjoining roads, and whether the house has had any form of extension built onto it at some time in the past.

Consequently you are strongly advised to check with your local council's Development Control section before starting work.

Conclusion

Whereas a well designed and constructed extension is a definite asset to your home that can provide useful extra space and add value to your property, a poorly thought out extension can reduce your property's value and in some cases compromise your safety and the structural integrity of your home. It is important to ensure that you plan your extension carefully and get the work carried out by an experienced contractor.