GUIDE TO GARAGE CONVERSIONS

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Guide No.6 Garage Conversions

Introduction

The conversion of an attached garage into living accommodation is a great way to add value and increase the habitable space in a house without the upheaval and expense of a completely new extension. It is work that is controlled under the Building Regulations and an owner is legally required to make an application before commencing the work. Hertfordshire Building Control can offer help and advice on this process and throughout the work. The following information gives some basic guidance on some of the issues to consider:

Foundations

This type of work usually involves the infilling of the existing garage door opening with a new masonry external wall. That means that a suitable foundation is needed to support the wall. Very occasionally the owner might be lucky enough to find that the existing house foundation is continued under the garage door but in most cases a new section of foundation is needed as the edge of the garage floor slab is often not adequate to support the load. Another option to support the wall is to install suitable reinforced concrete beams or lintels spanning between the existing foundations or brickwork either side.

Infilling the Garage Door Opening

This is usually done with a new brick and block cavity wall, incorporating a suitable damp proof course (DPC) that is lapped to the damp proof membrane (DPM) in the floor.

The wall cavity should extend to at least 225mm below the DPC and the DPC should be at least 150mm above ground level. The masonry must be tied to the existing by tooth bonding or by using proprietary stainless steel fixing profiles. Alternatively, a timber framed panel can be used on its own or as an alternative to the inner blockwork skin of the masonry cavity wall. All infill panels must be durable, weather-proof, and adequately thermally insulated.

New Floor

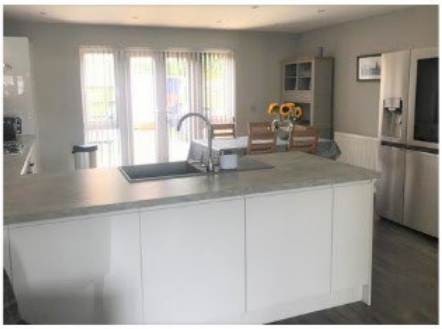
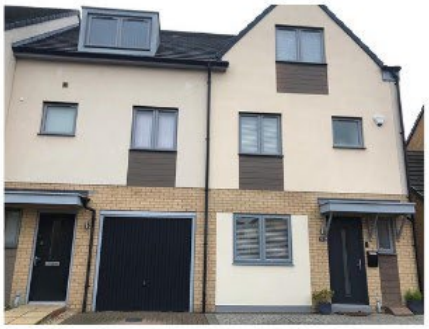
Various methods of forming a floor are acceptable and the amount, if any, that the floor level needs to be raised to match the house will influence choice. The four most popular methods are:

Solid —where levels are made up with a finishing screed on insulation and a DPM. Note that a sand and cement screed directly over insulation should be at least 65mm thick or 50mm and reinforced to prevent cracking.

Floating Timber — Where flooring grade tongued and grooved chipboard is laid with glued joints on a vapour control layer on a suitable insulation board over the existing concrete slab and incorporating a suitable PM linked to the DPC.

Suspended Timber — The formation of a traditional floor with joists bearing on timber wall plates on a damp-proof course bedded on honeycomb brick sleeper walls. This is insulated with a suitable material between the joists. The void under the floor needs to be ventilated to outside air with air bricks on two opposing sides (or connected to an existing vented subfloor void).

Solid battened– with this technique the timber boarding is fixed onto treated timber battens plugged and screwed into a concrete slab beneath. Insulation can be placed between the battens (fully filling the void) with a vapour control layer. If using this system, it is essential that the existing floor slab has an effective DPM linked to the DPC in the walls.


Weather Resistance

Many garages have exposed walls that are of single-leaf construction and whilst that's ok for a garage, it doesn't provide the necessary weather resistance for a habitable room. There are three main methods of achieving adequate weather resistance.

Firstly, the existing masonry wall can be made impervious to moisture. This usually involves the application of a suitable approved liquid waterproofing material applied directly to the inner face of the wall. The waterproofing should be continuous with the existing DPC and floor DPM. Although very effective, this method might restrict the natural permeation of air through the wall. Once the waterproofing has been completed it may be possible to fix a suitable composite insulation/plasterboard to the wall, but this must

be done using a suitable adhesive. Alternatively, an independent timber frame could be provided to accommodate the insulation and plasterboard.

A second method would be to construct a new blockwork inner leaf. This should be positioned to create at least a 50mm wide cavity and incorporate a suitable DPC. Due to the additional weight of the block work the existing foundation or floor will require exposing sufficient to show that they are adequate. If they are found to be unsuitable then the blockwork could be replaced by a timber frame in the same position. The timber frame should sit on a DPC bedded on masonry at least 150mm above floor level.

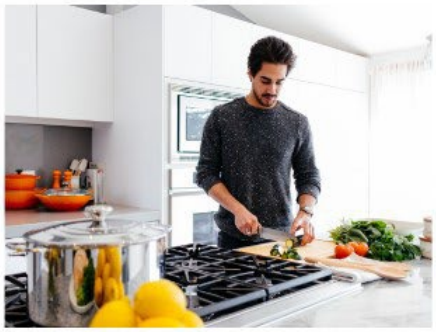
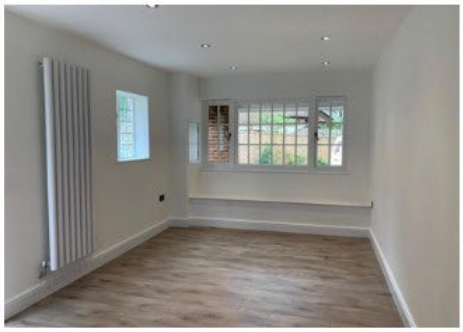
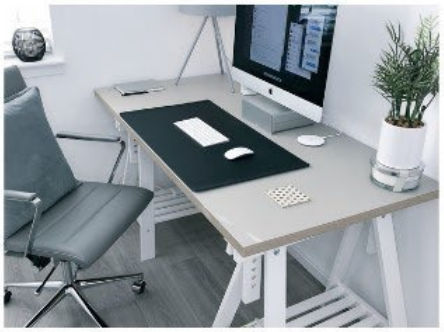
The third method is to fix a suitable vapour permeable water-resistant membrane against the brickwork. Over which 50mm vertical treated timber battens are plugged and screwed to the wall. High-performance insulation boards can then be fixed onto the battens followed by a vapour control layer and plasterboard finish.

Insulation

To keep the converted room warm and energy efficient, the thermal insulating properties of the existing external walls, floors and roofs require upgrading. Existing walls need to achieve a U-value of 0.3, existing roofs a U-value of 0.16 and the existing floors should achieve a u-value of at least 0.25. Any new walls or floors require a U-value of 0.18 and new roofs a U-value of 0.15. You can get extra information on the sort of insulation specifications that meet the regulations in our separate guidance note 'U Values of Elements'. Additionally, insulation manufacturers also give good technical guidance on their websites.

Flat roofs can be more problematic than pitched roofs when upgrading insulation. Adding thermal insulation to a previously uninsulated roof raises a risk that condensation might occur within the structure, so it is necessary to cross ventilate the roof void. This can be difficult to achieve in some cases so designers might opt for what is termed a warm deck roof arrangement where the insulation is placed above the deck on a vapour control membrane. This removes the need for ventilation but raises the level of the roof by around 130mm and necessitates replacement of the waterproofing finish.

Occasionally it can be difficult to fit insulation into an existing floor that does not need to be raised much to match the house. In these cases, our Building Control Surveyors will usually accept a lesser standard rather than ask for the floor to be broken out and rebuilt as this would not generally be considered technically, functionally, or economically feasible. Also, there is scope to make up for a shortfall in the insulation value elsewhere.

Windows

Any new or existing windows should meet the minimum energy efficiency standards which means a U-Value of 1.4 or an energy rating of band B or better.

For fire safety reasons, if a new habitable room can only be accessed via another room (rather than a hallway or an external doorway) then a suitable escape window will be required. This means a clear opening with a minimum height or width dimension of 450mm and area of at least 0.33m² (i.e., 450mm x 733mm). The bottom of the openable area should not be more than 1100mm above the floor. Escape windows are not usually needed if the conversion only forms a bathroom or kitchen or similar.

Adequate ventilation to habitable rooms can be achieved by having clear window (and door) openings equal to at least 1/20th of the floor area of the room (1/10th of the floor area if the window opens by more than 15° and less than 30°). The windows can also be used to provide the necessary background ventilation via trickle vents. Habitable rooms require 8000mm2 of background ventilation and wet rooms such as kitchens, utility rooms and bathrooms require 5000mm2.

Sound Proofing

This is only a consideration if one of the garage walls is a party wall between properties. A single 100mm thick brick or block wall is not adequate to insulate against sound transmission so an upgrade is needed. One way to do this is by forming an additional 100mm dense blockwork lining for the full height of the wall. For a more lightweight solution an independent timber studwork wall lined with 30mm total thickness of plasterboard and with at least 35mm of mineral wool quilt between studs. There should be at least 15mm clearance between studs and brickwork.

Electrical

Certain electrical works are controlled under the Building Regulations. Where the work involves a new circuit or replacement consumer unit or if the new room is a bathroom, shower room or sauna it is likely to be classed as notifiable under Part P of the regulations. The most straightforward route to compliance is by using an electrician who is registered under a suitable Competent Person Scheme. Otherwise, we would need to check the notifiable work for compliance for which we have to make a charge in addition to the usual application fee.
Please see government guidance on competent person schemes.

Other Considerations

Mechanical ventilation is required to remove excess water vapour. The extract capacity required for certain fans is as follows: bathrooms 15 litres per second, utility rooms 30l/s, kitchens 60l/s or 30l/s if fitted in a cooker hood. These fans should exhaust to outside air and where these fans are fitted in rooms without an openable window, they should have a 15minute overrun facility. To aid air exchange there should be a 10mm gap below doors.

The fire safety rules dictate that there may be a need to install mains powered and linked smoke detectors in existing circulation spaces (hallways and landings). This applies when a new habitable room or kitchen is provided and there is no outside door to the room. The alarm system should be at least a Grade D2 Category LD3 standard in accordance with BS 5839-6 and Approved Document B.

Further advice

This is one of a range of Guides available from Hertfordshire Building Control.
See the full range here.

You can obtain further advice on Building Regulations and Garage Conversions from Hertfordshire Building Control. See our contact details below:

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