



# Building Control

## Guidance Note No. 5

### Garage Conversions

Please note that these guidance notes are for advice only and may not cover all situations. It is your responsibility to ensure that they are appropriate for use in your particular circumstances.

## **Aims Of This Guidance Note**

Garage conversions can provide useful extra living space, however the conversion of a garage is deemed to be building work and as such a Building Regulations application will be required.

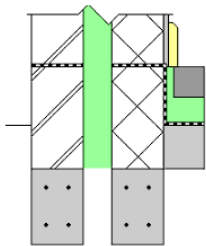
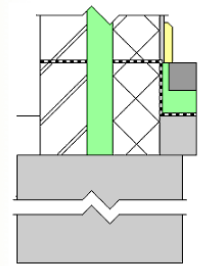
The contents within this leaflet is intended to give general advice on how to convert your attached garage into habitable accommodation, generally a bedroom or living space. The information given is not a statement of law, but is intended to help you understand the main requirements of the Building Regulations. This guidance note is not intended to cover every scenario, and if you are in doubt you should contact AVDC Building Control (AVDC) for further information.

## **Foundations**

Perhaps the most notable adaptation of a garage is the removal of the garage door. Generally this door is replaced with low-level brickwork with a window above. Careful consideration must be given as to how both of these elements are to be supported, but generally this can be achieved in one of two ways: -

In either case, the concrete floor of the garage, across this door opening will have to be broken up and removed. It will then be possible to dig down, to either investigate if the original foundations have been continued across the opening of the garage door. If this is found not to be the case a new concrete foundation will be required. If a foundation is exposed it will be possible to simply build your new wall from it.

The depth of a new foundation, in all likelihood, will be the same as the exposed foundations on either side of this door. This will however depend largely on the type and suitability of the ground conditions, and should be no less than 450mm from finished ground level. This depth may have to be increased depending on the ground conditions.

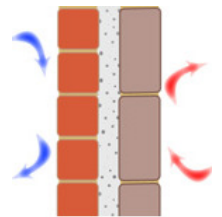


As an alternative to laying a new foundation it is also possible to build this new wall from 2 lintels, this is a method of construction that is only feasible on a single garage door. You should use 2 no 100x150 deep reinforced concrete lintels, or 2 no 100x140 pre-stressed concrete lintels. In either case they should be cut into the existing brickwork below the Damp Proof Course with a minimum 150mm end bearing on either side.

## **Walls**

If the existing walls of the garage are uninsulated cavity walls, all that may be required of you will be to ensure that the cavity is insulated. Blown fill cavity wall insulation could be used to achieve a thermal efficiency/ (U-value), of 0.55W/m<sup>2</sup>K. If on the other hand the cavity is already insulated, you will need to establish that the walls achieve a U-value of no less than 0.70W/m<sup>2</sup>K to avoid adding further insulation.

The new wall to be built across the garage door could therefore be of a similar construction, however as this is a new wall, the insulation value is slightly higher and a U-value of 0.30W/m<sup>2</sup>K must be achieved.



In addition to building this wall from a foundation or lintel, it will also be necessary to tie it into the existing brickwork either side of the opening. This can be achieved by using a proprietary wall starter system (as shown) or stainless steel screw in wall ties. These should be connected to the existing wall, centrally to the proposed brick/ blockwork and tied in at 450 centers.

If the existing garage walls are only 102mm thick (single brick), it will be necessary to both improve their thermal efficiency and create a weather tight envelope. Perhaps the easiest way to do this is to build an inner leaf of lightweight blockwork or timber studwork from the concrete floor of the garage. The garage floor will however have to be assessed for its suitability to carry the load from the new masonry, and a cavity tray will need to be incorporated at the base of this new wall to allow the new cavity to be effectively drained of any moisture that penetrates the brickwork outer leaf.

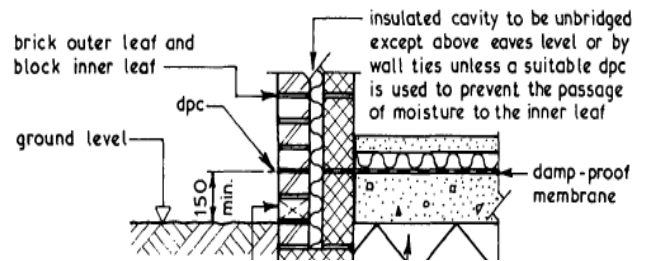
In addition to keeping the water out, it will also be necessary to keep the heat in. If an existing, single skin wall is being renovated, it will have to achieve a U-value of 0.35W/m<sup>2</sup>K. If the new internal skin is a lightweight thermal block then a minimum of 85mm of mineral wool or glass fibre

type insulation batts forming a full fill cavity wall construction could be incorporated into the cavity of the wall. If the new wall is a timber stud wall, 100mm of a similar insulation should be inserted between the 100mm deep studs. In addition, a breather membrane should be fixed to the back of the timber studs and a continuous vapour barrier should be added between the timber studwork and the plasterboard to prevent condensation forming within this new wall.

## Floor

In addition to ensuring that the walls resist the passage of moisture and heat, consideration must be made to how this can be achieved within the garage floor. It is possible to apply a liquid damp-proof membrane directly to the floor, lapping it up the internal wall. Alternatively, lay a 1200g polythene damp proof membrane (DPM) on the floor, again linking it to the internal skin of blockwork. If on the other hand the new internal skin is a timber stud wall, reasonable provision would be to simply link in the DPM to the vapor barrier of the wall, thus creating continuous protection.

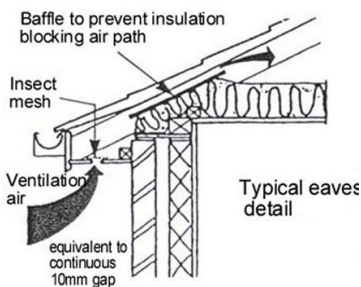
If the garage floor is uninsulated, it will be necessary to thermally upgrade it so it achieves a U-value of  $0.25\text{W/m}^2\text{K}$ . Garage floors are often 100mm lower than the floor within the dwelling, if this is the case then 75mm of a phenolic foam type of insulation can be laid directly on top of the DPM. 22mm chipboard flooring can then be laid on top of this insulation. The floor within the converted garage will then be at the same level as the floor of the main dwelling and the correct thermal value achieved.



## Roof

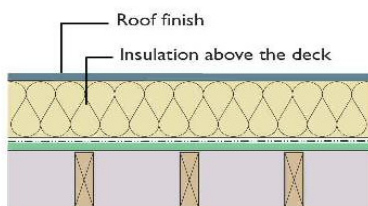
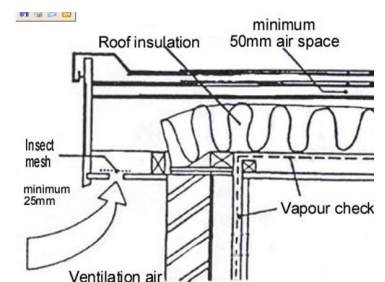
If the garage is integral to your property, and a bedroom is sited over it, nothing need be done to this ceiling, other than to make good and decorate. If on the other hand the attached garage is single storey, it may be necessary to both insulate and ventilate the roof void.

If the garage has a pitched roof and is uninsulated, 100mm of glass fibre or mineral wool quilt insulation needs to be laid between the joists. An additional 150mm layer should then be laid on top, at right angles to the first layer. This construction would achieve the necessary U-value of  $0.16\text{W/m}^2\text{K}$ . In addition to insulating the roof you will also need to ensure that it is adequately ventilated. If the roof does not have a breathable roofing membrane, you will have to provide additional ventilation within the fascia or soffit to achieve satisfactory cross flow of air within the roof void. This will ensure that it is damp free.



If the roof of the garage is an uninsulated flat roof, it will need to be thermally upgraded to achieve a U-value of  $0.25\text{W/m}^2\text{K}$ . If headroom is limited this can be achieved by tightly inserting 100mm of a phenolic foam type of rigid insulation between the existing ceiling joists. Alternatively 50mm of the same insulation can be inserted between the ceiling joists, and an additional 50mm fixed in sheet form beneath the joists.

In addition to insulating the flat roof it is very important that it is adequately ventilated. You should ensure that a minimum 50mm void is created between the top of the insulation and the decking of the roof. In addition the fascia/ soffit should be adequately ventilated to promote a cross flow of air within this void.



Sometimes on a flat roof it is simply not possible to create a cross flow of air due to the direction of the existing flat roof timbers. When this is the case it may be necessary to create a warm deck roof, as ventilation is not then necessary. To do this the roofing felt is removed and the insulation added on top of the decking, the weatherproof layer is then applied on top of the insulation.

## **Fire Safety**

In many cases a doorway will already link the garage to the dwelling, should this not be the case a new opening will undoubtedly be created. If this door leads directly to a circulation space, i.e. the hallway, the means of escape from the new room will be adequate. If on the other hand, the only access to the garage conversion is through another room, the new room is deemed to be an inner room.

Due to the increased risks of being trapped by a fire in an inner room, a secondary means of escape, a window, or door large enough to offer adequate means of escape will need to be provided. To comply with the fire safety standards of the Building Regulations, the window need have a clear opening of 0.33m<sup>2</sup>. In addition one of the sides of the window must be no less than 450mm, and the distance from the floor level to the bottom of the sash should be no more than 1100mm.

In addition to providing adequate means of escape, it is often necessary to upgrade the automatic fire detection within the dwelling. Unless the new room contains a door giving access to the outside, additional fire detection will need to be provided. A fire detection system, conforming to **BS 55839 pt 6**, will then need to be **retrospectively** installed on all floors of the dwelling. The sounders/detectors will need to be positioned within 7.5m of all habitable rooms, be mains wired, interlinked with a battery back up.

## **Drainage**

Should the conversion include a WC or bathroom it is generally necessary to lay additional underground drainage.

The extension of your existing drainage system needs to be considered on a case-by-case basis, and advice, if necessary can be given during the plan check or build process.

## **Ventilation**

In addition to the new window of the garage conversion achieving a U-value of 1.8 W/m<sup>2</sup>K, an opening sash will need to be incorporated in the window. This sash will provide the necessary purge ventilation, and should be of an area of at least 1/20<sup>th</sup> of the floor area of the room. If this window is required to be a means of escape window, or an external door is to be fitted, adequate ventilation will have been achieved on an average garage conversion.

In addition to the purge ventilation, background ventilation will also have to be provided. Generally this is achieved through fitting a controllable trickle vent in the windows. These should have no less than 5000mm<sup>2</sup> equivalent area in all habitable rooms, and 2500mm<sup>2</sup> equivalent area in wet rooms. Should the conversion include a bathroom, windowless WC, kitchen or utility, it will also be necessary to provide mechanical extraction. This extraction should meet the following provisions: -

- **Kitchen:** 30litres per second if sited over the hob, 60 litres per second otherwise.
- **Utility:** 30litres per second.
- **Bathroom:** 15litres per second.
- **WC:** 6litres per second

## **Lighting/ Electrical**

Any new electrical circuits should be installed by a registered self certifying electrician or by a competent person who can issue an electrical installation certificate under BS 7671.

In addition the new room should be fitted with a light fitting that will only accept energy efficient lamps.

## **Summary**

Though not possible to cover all eventualities, this guidance note contains most of the salient points which need to be considered when contemplating a conversion of a garage to habitable accommodation.

Should you have any further questions or issues you wish to discuss please do not hesitate to contact one of our Building Control Surveyors via the numbers attached.