

# Room for a basement?

A basement can be the perfect way to add extra living space to your home and need not cost any more than building above ground, reports Mark Brinkley.

**Britain has the unenviable** record of building the smallest houses in Europe. Many self-builders find that space constraints or planning requirements prevent them from adding to the footprint or the overall height of the home they would like to build. The obvious solution to this problem is to build a basement.

Basements have gone from being an expensive problem waiting to trap the unwary to something approaching a must have item, an aspirational choice to rank alongside the hardwood floor, the underfloor heating system and the kitchen range. All of a sudden the basement is a self-build fashion item. What's going on?

A little history is in order. There have been periods in our history when basement building has been commonplace – you only have to visit many of the 18th and 19th century inner city areas of our major cities to see plenty of examples of homes built with basements, or cellars as they were called in those days. However, with the coming of the railways and the opening up of the suburbs and the countryside to housebuilding, building land became cheap and plentiful and the basement fell from fashion.

In other countries the basement has prospered. In the USA and Canada many new homes are regularly constructed with basements. In some areas, such as the midwest Tornado alley, they are built as storm shelters as much as anything. But other parts of North America just value the amenity value of a basement, a room which is usually used as a utility and storage area.

Germany is another country with a strong basement culture. Here, at least part of the reason is that the planning regime is very

strict about house sizes and ridge heights but discounts basement space from the overall living area – so there is immediately a strong incentive for Germany's huge number of self-builders to start off by building down. Whilst the number of basements being built in the UK is measured in hundreds per year, in Germany the figure is in hundreds of thousands. Not surprisingly, the Germans have developed a number of advanced techniques for building basements, some of which are beginning to appear in the UK.

The renaissance of the British basement seems to be coming about partly through high land prices (which make it worthwhile spending extra money on construction) and partly because of new, easier ways of building a basement. Self-builders in particular want larger than average homes and planning constraints often prevent them from building out sideways, so the idea of building down starts making a lot of sense. What every new home in Britain has had for the past 40 years is a garage, yet we increasingly use garages for storage and park cars outside. The penny has dropped for many self-builders who realise that the typical family home is built with far too little space and adding a basement is an entirely sensible response.

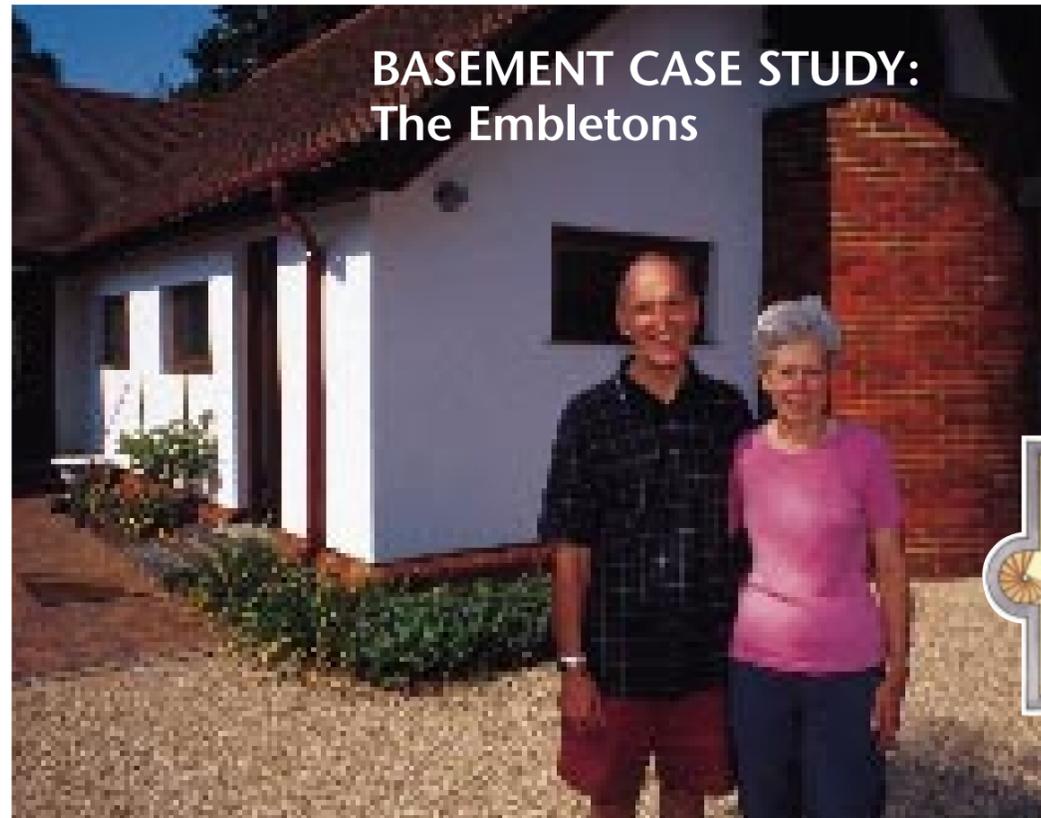
**How to do it:** The UK would probably have seen many more new basements during the last century if the knowledge of how to build them hadn't largely died out with the Victorians. Today, many architects and builders will try to steer you clear of having anything to do with a basement with lots of head shaking and tut-tutting accompanied by lurid tales of collapsing trenches and damp walls. The chances are that they will never

have built a basement and all these stories are nothing more than that – stories. That's not to suggest that there aren't problems in building basements but by and large there is nothing that can't be dealt with if it's designed correctly and built according to the specifications.

**"In every instance where claims have been made, the problem was poor workmanship..."**

Barry Fryer is a widely experienced surveyor who has overseen the construction of many basements. "To ensure a problem free basement, you need to undertake specialist investigation. The design needs to address the nature and type of ground conditions and take account of what the basement will be used for. You need to use top quality materials, ideally experienced contractors and the supervision must be very thorough. I recommend at least one daily inspection from an independent professional such as an architect

## BASEMENT CASE STUDY: The Embletons



### Basement Store

Self-builders Mike and Joyce Embleton incorporated both attic rooms and a basement in their bungalow in Twyford. They chose to use the attic for additional accommodation and their basement, built like the rest of their home using the Beco Wallform System (01652 651641) for storage. Average build costs were £600/m<sup>2</sup>.

or surveyor to ensure that the work is carried out correctly. I also strongly advise that photos are taken of each step before it is covered." Barry has also been involved in basement remediation claims and in every instance the cause of the problem has been identified as poor workmanship, most frequently incomplete or damaged waterproofing membranes.

The waterproof element is the key issue in basement design. The structural matters relating to the foundations and the strength of the retaining walls are rarely anything out of the ordinary for experienced engineers and groundworkers. However the requirement to build a waterproof tank – a reverse swimming pool as it's sometimes called – calls for careful design and painstaking installation. In certain conditions, high water tables will exert considerable hydrostatic pressure on the basement walls and any weakness in the tanking details will soon be exposed.

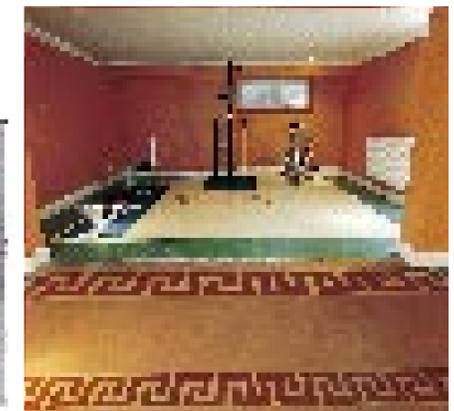
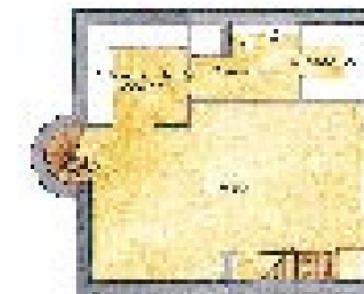
Just how you go about waterproofing the basement depends on a number of factors. These are detailed in a publication called the Approved Document: Basement for Dwellings

## ALTERNATIVE ONE: The Gym

The Embletons could have chosen a number of alternative uses for their basement space, which is reached via a spiral staircase from their utility room. A basement is the ideal for rooms that do not require windows with a view, such as a home gym with bathroom and sauna facilities.

Natural light can be brought in either via a light well or by using special basement windows.

Non habitable rooms do not need a fire escape. Adequate ventilation is always an important consideration and would need to be designed to suit the special needs of a gym and sauna.



# Using the GREY MATTER

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which defines four grades of waterproofing. Which grade you go for depends on how you plan to use the space, whether it is acceptable to be musky and occasionally damp or whether it needs to be as dry and airy as above ground living areas. What measures are necessary to achieve your chosen grade depend on a close analysis of the ground conditions you are faced with. However, they broadly fall into three categories which Basements for Dwellings defines as Types A, B and C.

Type A waterproofing is often thought of as being the simplest and cheapest to undertake. This involves adding a waterproof membrane around the basement, which is usually applied externally but can also be sandwiched inside the walls. Typically this would involve some form of membrane laid under the floor and sealed to a tanking layer or sheet running up the the basement walls. It is commonplace as well to build in some french drains at the external base of the walls to aid the removal of groundwater. If the basement is on a sloping site, these drains can be directed around the basement and on down the hill but on a flat site the collected water would have to be pumped away at some point.

## “Planners’ attitudes are changing as everyone realises the need to make effective use of land...”

Whereas a Type A basement walls can be built out of blockwork, a Type B basement has to be built from a water resistant concrete because the walls themselves become the main barrier to water penetration. Actually many basement builders choose to combine Types A and B so that there are effectively two water barriers, the reinforced concrete walls and the external tanking. Type C basements are most frequently seen in basement renovations and where basements are dug out from under an existing house.

Here, any water penetrating the external walls is channelled away to a sump where it is later pumped off site. Guardian Basements specialise in building under existing houses and the Type C design is the one they favour for their unique approach which is more like tunnelling than traditional excavation.

There are several other design considerations to take on board if you are considering a basement. If you are considering using the space for habitable rooms (usually defined as either bedrooms or living rooms but, interest-

## ALTERNATIVE TWO: The Bedsit

The Embletons could have used their basement to provide a self contained flat or annex. This design shows a second staircase providing independent access, but more importantly, a safe means of escape in the event of fire – a mandatory requirement for all habitable rooms in a basement, as defined by the Building Regulations Approved Document – Basements for Dwellings.



ingly, not kitchens) then you must have more than one fire exit route from the basement. This is easily accommodated on a sloping site but will require an escape window or a door on a fully below ground basement.

Ventilation is another key issue. Basements have a reputation for being dank and mouldy – this is due as much to poor ventilation as it is to damp penetration. The solution is to install a background ventilation system which removes the stale air – particularly important when building a Type C basement which allows water to penetrate the external walls.

Getting light into a basement is also critical: this is relatively easy in a partial basement but may require the construction of lightwells in a fully below ground basement.

**Estimating the Cost:** One of the major factors holding back the construction of basements is the presumption that they are very expensive to build. Evidence from recent basement studies suggest that, whilst not cheap, basements are little different to above ground building costs though the finished costs are usually very dependent on just what the basement area is used for and how it is finished. In the USA (where building costs are considerably cheaper than the UK in any event), basements are routinely constructed under new homes for as little as \$25/ft<sup>2</sup> (equivalent to £150/m<sup>2</sup>). Recent British experience suggests that our newbuild basements are costing from £300-450/m<sup>2</sup>, not dissimilar to building on the equivalent extra space as an extension or a detached garage.

On the one hand, a basement involves specific costs not found in above ground

construction such as reinforcement in the walls, floor rafts and waterproofing. On the other hand, there are a number of obvious savings such as not having to build an external skin and not having to build a roof.

**Planning Permission:** Many people wrongly assume that because a basement is barely visible it won't need planning permission. This is not the case. Neither is obtaining planning permission a routine matter. Attitudes to basements appear to vary considerably in different planning authorities. At one extreme, Surrey self-builder Richard Evans commented: "I was told any 'underfloor' habitable space would be deducted from my above floor plans and that if I went ahead after planning was agreed they would slap an Enforcement Notice on me." Contrast this with Richard Owen's experiences building a basement in Gwent. "You could put six cars or a light industrial unit in the basement space we are building. The planners didn't even blink. The only concerns the planners raised were that the patio doors became French Windows and that they reserved the right to approve the colour of the balustrading. I was surprised and amazed."

Several self-builders have been stymied in their attempts to add a basement to their house plans. No planning department seems to regard this as a minor amendment – all want an entirely new submission which not only involves much extra cost but also a potential delay of months.

The crucial point of dispute seems to be how the local authority regards the extra space added by the basement. Many author-

ities have guidelines about just what size of house should be permitted on each individual plot and the addition of a basement may be enough to break these space guidelines. It's a strange and, to many, intrusive aspect of our planning system that gives local authorities such arbitrary powers but it remains a fact of life that at the present time, some planning departments are not basement friendly. Indications are, however, that this attitude is rapidly changing as everybody begins to appreciate the need to use our available building land more effectively.

Another aspect worth bearing in mind is the use to which the basement will be put. Planners are less happy with additional bedrooms or living space, seeing this as unjustifiable overdevelopment. But uses such as utility areas, garages, hobby rooms, gyms and swimming pools are harder to argue against as these could later be placed in independent buildings in the garden, often without the need for any planning permission.

**Party Wall Act:** The other problem that basement builders are likely to face is the Party Wall Act which has applied to England & Wales since 1996. The idea behind this piece of legislation is to protect the neighbouring properties from damage when your construction work is carried out. With regard to deep foundation work such as carried out to build a basement, the Act is very specific about where and when it comes into effect.

If your foundations are to be deeper than your neighbours' buildings, you must observe the Party Wall Act provisions if you are within three metres of those buildings – note not

boundary, but buildings. In addition to this, there is a provision which states that if you are building much deeper than the neighbouring house's foundations, then you may still be affected by the provisions of the Act at a distance of six metres. You can obtain a copy of the Party Wall Act for free off the web at [www.hmsso.gov.uk/acts/acts1996/96040](http://www.hmsso.gov.uk/acts/acts1996/96040).

If the Party Wall Act does come into effect – and in many urban areas it is likely to if you want to build a basement – you are obliged to notify your neighbour and to assuage their concerns that your building work may damage their property. Often this can be done with an informal exchange of letters but, if the neighbour is worried about what you are up to, then he or she is entitled to hire, at

## ALTERNATIVE THREE: The Games Room

A basement is often the largest single room in the house and as such is ideal for a number of special uses. Here, the Embletons' basement is shown as a dedicated games room.



## Useful Contacts

- Basement Development Group:** 01344 725756.  
Acts as a contact point for basement designers and builders and has lots of detailed literature including the Approved Document: Basements for Dwellings
- Kellerbau:** 0151 625 2604.  
Specialise in building in-situ reinforced concrete basements.
- Guardian Basements:** 0117 951 8158.  
Specialise in putting basements under existing houses.
- HB Basements:** 020 8669 0066.  
Specialise in precast basements, a technique widely used in Germany. The walls are prefabricated under factory conditions and craned into position resulting in very fast construction times.
- ThermoneX:** 01204 576123.  
Precast wall, floor and roof elements in lightweight concrete.
- Beco Wallform:** 01652 651641.  
Their hollow polystyrene blocks can be used to build complete houses but they are also frequently used for basements.

your expense, a qualified structural engineer or surveyor to verify your plans. This can become a long and involved process as the two surveyors have to reach agreement about just how the work should be undertaken – bear in mind however, that your neighbour cannot prevent you undertaking this work. The majority of rural self-build plots are, in any event, large enough to enable you to build a basement without having to abide by the provisions of the Party Wall Act. ■