

RADON PROTECTION: KNOWING YOUR 'BASIC' FROM YOUR 'FULL'

Rebecca Kench of specialist contractor, ProTen Services Ltd. explains the current requirements for radon protection in newbuilds and extensions, and highlights the danger of employing non-specialists

The current guidance given in Section C1 (Resistance to Contaminants) of Schedule 1 of the Building Regulations 2000 and Approved Document C with regards to providing protection from the naturally occurring radioactive gas, radon, unfortunately leaves many planners and specifiers confused as to what is and isn't required.

In short, the guidance instructs readers to consult BRE Report 211, where maps are shaded to show whether radon protection should be installed in a given location. The shading on the map indicates whether no protection (white areas), basic protection (light grey areas) or full protection (dark grey areas) is required.

If in doubt, don't build without

It is important to note that properties located within the white areas could still be susceptible to high radon levels. The maps are based on extrapolation of historical data, and so, whilst they can give a good indication of areas likely to be most affected, they should never be seen as definitive, and it would be unwise to assume the property will be radon-free. To confuse matters further, areas where the Health Protection Agency and British Geological Survey have estimated between one and three per cent of homes contain high levels of radon are shown as not requiring any protection in the BRE 211 maps. Given the potentially serious consequences to occupants of a building that is not protected from radon, however, it is advisable that all specifiers and developers err on the side of caution.

The mantra 'to test is best' is often applied to existing buildings with regards to radon; however, for radon protection in new buildings the best advice is 'if in doubt, don't build without'.

Basic protection

For areas where the guidance indicates 'basic' protection is required, a radon membrane should be laid across the footprint of a building. The difference in cost between this, which combines as a DPM and vapour barrier, and a basic DPM is negligible; the additional cost for most buildings will be relatively marginal. As far as practicable, membrane joints should be heat welded, rather than taped, to minimise the risk of leakage. Pre-formed collars or 'top-hats' should be used around service inlets.

Full protection

'Full' protection involves incorporating a form of ventilation or provision for future remedial work in addition to a radon membrane. This is best achieved through the use of block-and-beam flooring, which will act as a passive ventilation system. If it is not possible to



include such flooring in the building, a sump beneath the building's foundations should be created. This void will become the point of lowest pressure, and so any gas in the soil will collect here.

An extract pipe that leads from the sump should be capped off at ground level and its location marked, so it can be accessed and the sump can be activated with a fan should it become necessary.

Both methods should be used in conjunction with a membrane.

A job for specialists

It is vital to realise that radon protection should only be carried out by trained specialists. A recent study (Denman et al, 2005) found a staggering 60% of radon membranes installed in new properties had failed to prevent the gas from entering the building. Likely causes of membrane failures include using a material that is either not gas-proof or that is tearable, inadequate jointing, or lack of due care during the installation process. Effective design, quality of materials and standard of specialist workmanship are paramount.

● For further information regarding radon protection please contact ProTen Services on enquiry@protenservices.co.uk or tel: 01225 447960. A one-hour CPD seminar on the subject is also available.