

**Introduction:** This technical update article provides additional guidance on radon contamination. It is important that all workmanship carried out during construction is completed in accordance with the relevant tolerances.

## Radon Contamination

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### Background

Radon is a naturally occurring radioactive colourless and odourless gas which is formed in small quantities by radioactive decay wherever uranium and radium are found. It can move through the subsoil and so into buildings. It comes from minute amounts of uranium that occur naturally in all rocks and soils. Some parts of the country, notably the West Country, have higher levels than elsewhere. Exposure to high levels for long periods increases the risk of developing lung cancer. To reduce this risk all new buildings, extensions and conversions, whether residential or non-domestic, built in areas where there may be elevated radon emissions, may need to incorporate precautions against radon.

### Details

Section 20 – Ground conditions in our Technical Manual relates to ‘Site Investigation reports, Geology and Contamination. One of the Functional Requirements in this Chapter is that “site investigation and remedial measures must meet the relevant Building Regulations..” I.e. England and Wales, Scotland and Northern Ireland.

For example, ‘Requirement C1’ of the Building Regulations for England and Wales; defines a contaminant as “any substance which is or may become harmful to persons or buildings including substances which are corrosive, explosive, flammable, radioactive or toxic.”

It is therefore necessary on sites where we are undertaking either Warranty or Building Control to ensure adequate steps have been taken to identify Radon, please refer to the documents referenced at the end of this article, which will help identify the areas likely to be affected and the measures to be taken where this is confirmed.

Whilst we will always assist the customer, it is their responsibility to provide evidence of the actual risk from Radon when we have identified the potential for Radon, often though this can reduce their costs as the maps may identify a High Risk, requiring expensive works, whereas a property report may find a Low risk or indeed none at all.

A report may identify one of three outcomes:

1. No protective measures required.
2. Basic protective measures – usually a membrane barrier and passive ventilation.
3. Full protective measures – usually a combination of a protective barrier and sub floor mechanical ventilation system.

## Recommendations

The public are more aware of the need for Radon protection, due in part to Local Authority Searches and Home Buyer Reports. Testing of completed properties by BRE has found deficiencies due possibly to lack of initial identification, poor specification and/or poor detailing on site.

Therefore robust methods of construction and thorough checks must be undertaken: To remedy a failed Radon barrier would be a very costly procedure!

Further recommendations can be found in Section 20 – Ground conditions of our Technical Manual.

Guidance on the areas susceptible to radon and practical protective measures has been published by the BRE as Report BR 211 Radon: guidance on protective measures for new dwellings 2007 Edition. There is also a suite of other BRE Guides and practice notes that have been produced on this topic including GBG73 2009 which is effectively a 9 page cut down version of BRE 211.

## References:

BRE

BR 211: Radon: guidance on protective measures for new buildings

Good Building Guide 73 (2008) Radon protection for new domestic extensions and conservatories with solid concrete ground floors

Good Building Guide 74 (2008) Radon protection for new dwellings. Avoiding problems and getting it right!

Good Building Guide 75 (2009) Radon protection for new large buildings

Report 413: Radon: guidance on protective measures for new dwellings in Northern Ireland

Report 376: Radon: guidance on protective measures for new dwellings in Scotland

*Every care was taken to ensure the information in this article was correct at the time of publication. Guidance provided does not replace the reader's professional judgement and any construction project should comply with the relevant Building Regulations or applicable technical standards. For the most up to date Premier Guarantee technical guidance please refer to your Risk Management Surveyor and the latest version of the Premier Guarantee technical manual.*