

Local Authority Building Control

Technical Information Note 1 Radon Guidance

What is Radon - Radon is a naturally occurring radioactive gas which is produced by the decay of certain types of rock - particularly granite. The process which produces radon has been taking place for thousands of years, and for all of those years the gas has been harmlessly diluted in the air when it reaches the surface. When it reaches the surface under a building however, it is possible for the gas to enter the building, and in rare cases this can lead to higher concentrations of radon inside the building than is considered healthy.

Radon in Peterborough 12th 2007 saw the launch of a new radon dataset for England and Wales. The launch, held jointly by the Health Protection Agency and British Geological Survey, introduces a data set that supersedes the previous Radon Atlas of England and Wales. The Radon dataset maps show that there are areas to the west of Peterborough, where radon protection is a mandatory requirement. There are however some areas to the north and west of Peterborough where as a precaution, a basic level of radon protection may be required in new buildings.

New Houses, conversions and Extensions

The Building Regulations 2000(as amended) requires that appropriate measures are installed in dwellings to protect the occupiers from such risks. For the purposes of the Building Regulations, a Radon Risk Report will be required for all new dwellings, conversions or extensions situated in the affected areas. This also applies to extensions where habitable rooms are being formed regardless of whether the existing property has protection or not.

What should you do ?

1. If the area you intend to build in is not highlighted within the linked map on page 7 of this document then you need do nothing, as you are not in an area where any risk from radon is currently identified.

2. If the building is within the shaded areas highlighted within the linked map on page 7 of this document, it is still possible that radon poses no significant risk, but here we must ask you to either –

- Obtain a radon report

These radon reports can be obtained by following the links at www.ukradon.org.

There is a charge for the report of £3.53 (includes VAT). Should the report recommend basic protection measures, then these must be incorporated into the design of the building before we can approve your application. If the full postal address is not available then a report can be

obtained from the British Geological Survey 01235 822622 based on the OS grid reference for the site at approx £40+vat

Or

- Incorporate mandatory or basic radon protection into your design. In many cases this is so simple that applicants elect to provide it anyway (see the diagram below), and if you do so, it will not be necessary to obtain a radon report.

3. How do I incorporate basic radon protection into my design? - See BR 211 extract below for guidance on the details required.

BASIC RADON PROTECTION

Requirement C2 (2004) of the Building Regulations 2000^[3] requires protection against moisture from the ground. In some ground floor constructions this protection comprises a barrier laid within the floor construction which is linked to a damp-proof course (dpc) within the walls of the building. To provide protection from radon, the dpc to a cavity wall should be in the form of a cavity tray to prevent radon entering the building through the cavity. Sealing of joints in the barrier and sealing around service penetrations are also required. It is important that attention should be paid to detailing and workmanship in jointing of the barrier.

If good standards of design and workmanship are applied to the provision of the damp-proof barrier to the floor and walls, adequate protection from radon will be provided along with the general function of excluding moisture. However, in areas with higher radon emission the additional measures described in the later section *Full radon protection* will be required.

Basic radon protection: suspended (beam-and-block) concrete floor (high level barrier)

In the example illustrated in Figure 3, a radon-proof barrier is provided by a vapour-proof membrane which is placed above a suspended concrete floor and linked to a cavity tray in the external walls. The joints between the sheets which form the membrane and the cavity tray must be sealed to make the construction as gas-tight as possible. Seals should also be provided at service penetrations (see Figure 17).

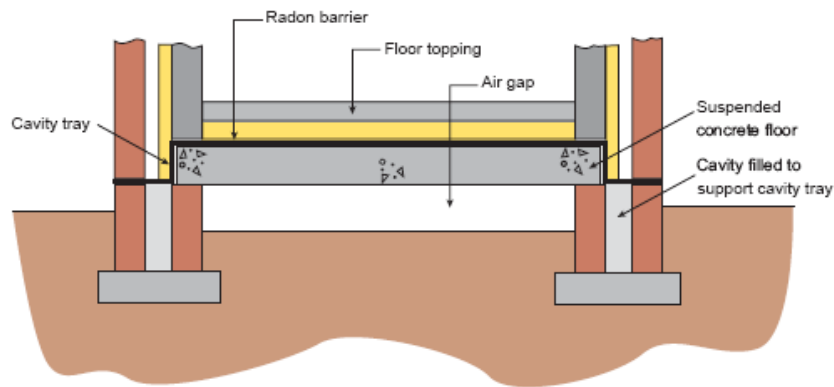
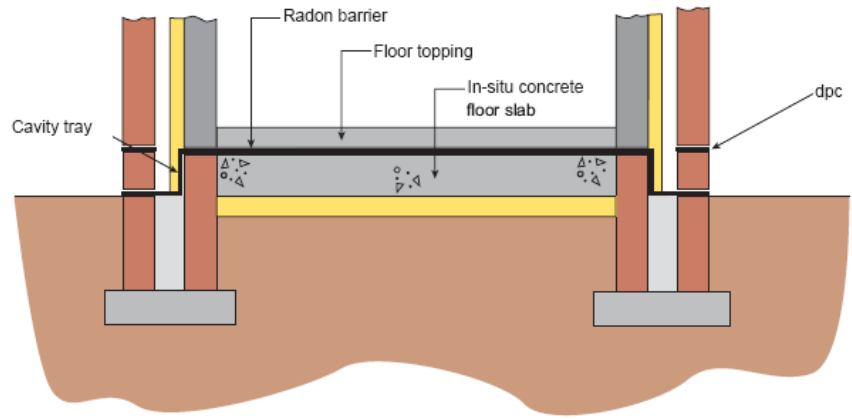
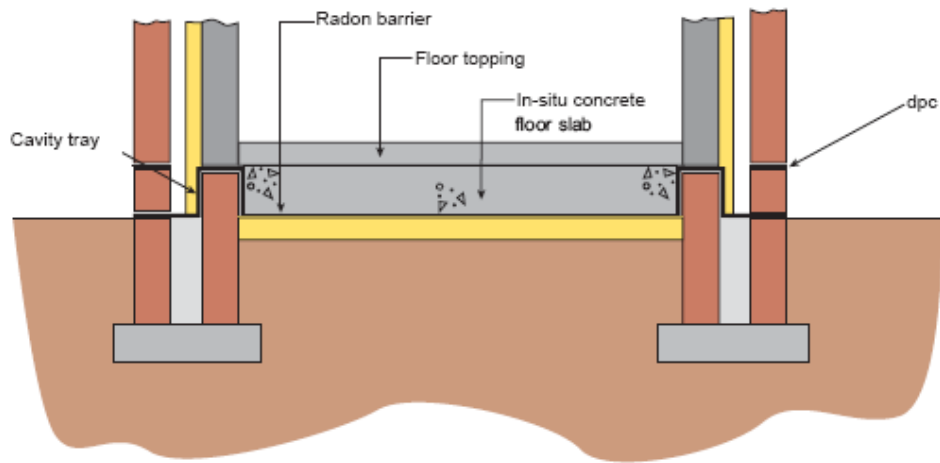


Figure 3: Enhanced damp-proof membrane providing basic radon protection to a suspended concrete floor

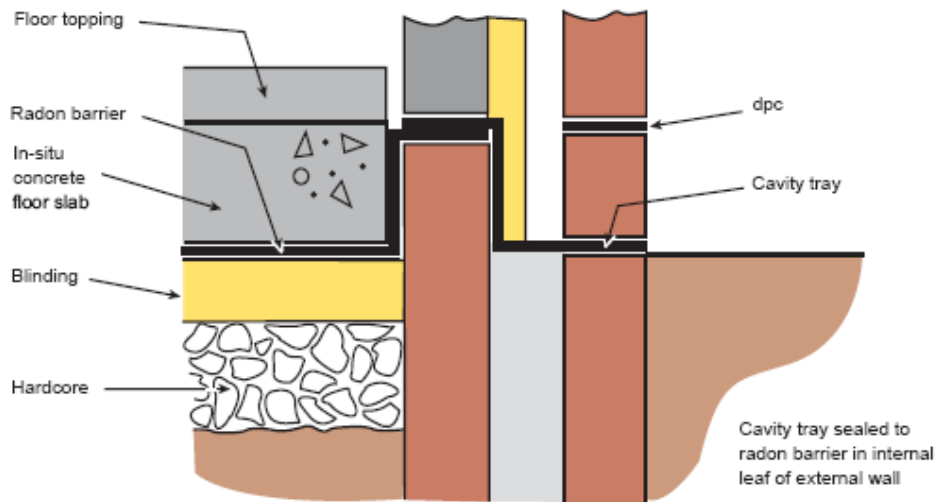
Basic radon protection: in-situ (ground-supported) concrete floor

In the examples illustrated in Figures 5 and 6, the damp-proof membrane provides a radon-proof barrier. The joints between the membrane must be sealed to make them as gas-tight as possible. Service penetrations should also be sealed and the cavity tray must be joined to the floor membrane and sealed.





(a) Enhanced damp-proof membrane providing **basic radon protection**



(b) Possible working of an enhanced damp-proof membrane

Figure 6: Enhanced damp-proof membrane providing **basic radon protection** to an in-situ or ground supported concrete floor with barrier placed beneath

Service penetrations

Where possible, service entries should avoid penetrating the radon-proof membrane. Where this is not possible it will be necessary to construct an airtight seal around each entry (Figure 17). Prefabricated 'top hat' sections are available from some membrane manufacturers for sealing around pipe entries. Penetrations should be avoided at points where the membrane is lapped, because of the greater difficulty of resealing. With careful design, all supply services, with the exception of mains water and drainage to foul outlets, can be brought up the outside of the building to enter through walls. However, accommodating service entries in walls may limit where internal fixtures can be placed. Traps and other services should be located so as not to damage the radon-proof barrier within the floor slab.

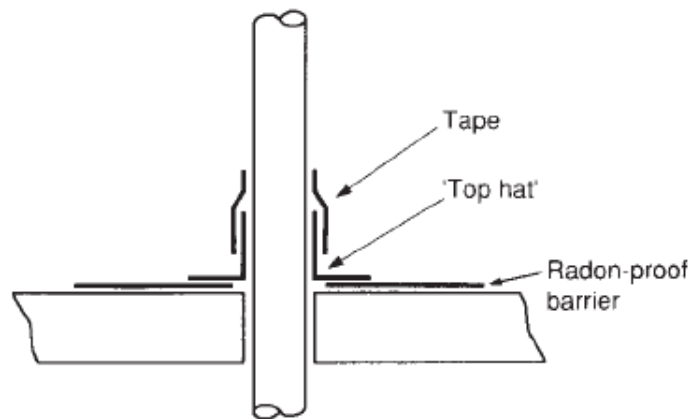


Figure 17: Achieving an airtight seal around service penetrations

Note on illustrations

The figures included in this guidance only illustrate the principles of providing a radon-proof barrier and supplementary subslab ventilation. For clarity the positioning of damp protection, insulation, method of support of the cavity tray, etc, may have been omitted. **They should not be considered working drawings.** It is the designer's responsibility to develop final details suitable for individual buildings.

Areas Affected

Please have a look at a copy of a [radon map](#) for this area indicating the areas where mandatory and basic measures are required.

The map may not be completely accurate and please [contact us](#) for further information or where additional guidance is required.

Additional Information

Whilst every care has been taken in compiling this guidance note the Building Regulations are changed from time to time so it is important that you check that the information here is still current. The details highlighted in this guidance note are for general scenarios and each case should be taken on its own merits.