European Radon Solutions Database

Prepared by

: ERRICCA 2 *European Radon Research and Industry Collaboration Concerted Action*

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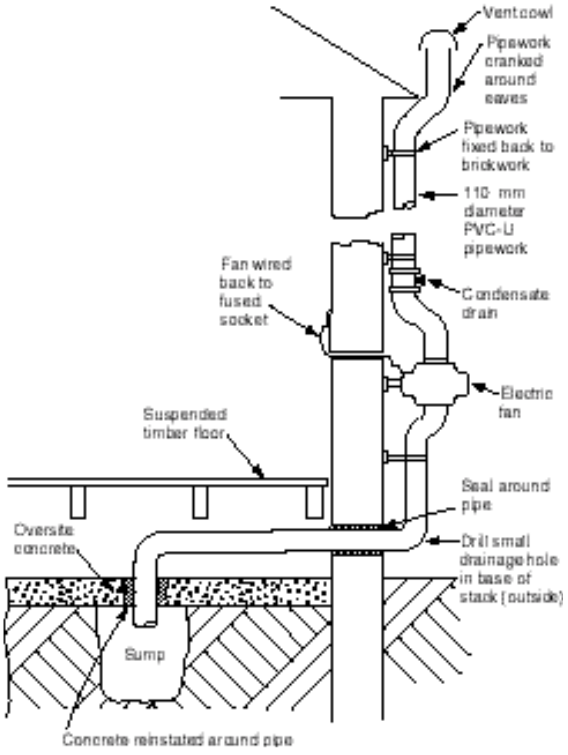
Existing Buildings

Case Study

Sheet N° UK/CS/003

Type	Communal externally excavated mini-sump system
Country	United Kingdom

Illustration



Description

The properties are located in Cornwall in the South west of England and comprise a terrace of four bungalows built during the 1970's. Constructed with rendered concrete blockwork cavity walls, suspended timber ground floor with concrete covering the soil below. The terrace of bungalows is set on steeply sloping ground with bungalow 1 at the top of the slope and bungalow 4 at the bottom. There is a 750mm step approximately halfway across each bungalow resulting in an upper and lower ground floor level in each bungalow. There is a

further 750mm step between each bungalow, resulting in a drop in level of about 6 metres between Bungalows 1 and 4.

The system installed comprises a single externally excavated mini-sump system extracting from a sump beneath the concrete which covers the soil beneath the upper ground floor of bungalow 2.

Selection

A communal approach to remediation was made possible by the four dwellings being owned by a Housing Association. The initial radon problem had been drawn to the attention of the Housing Association by the occupier of Bungalow 2 who had taken up the offer of a free radon measurement under a government measurement programme. The Housing Association asked BRE for advice on solving the problem in Bungalow 2. In order to gain greater understanding of radon reduction within terraces of houses BRE agreed to pay for the installation of a sump system in Bungalow 2. This was on the understanding that the radon levels in the other bungalows in the terrace could be measured before and after the sump system was installed.

As can be seen from the results shown below Bungalow 3 in fact had a far higher indoor radon level than Bungalow 2. As such if we had not already offered to install the sump system in Bungalow 2 then Bungalow 3 would have been a more logical location for the system. Despite this the sump system has given a considerable reduction in the radon levels of all four bungalows. The result is all the more impressive in that the bungalows are stepped up a very steep sloping site. The trial shows that several dwellings can be remedied using a single sump system, resulting in savings in both installation and running costs.

Pre-installation Diagnosis

Apart from a general construction survey of Bungalow 2 no additional diagnostic work was carried out in this property.

Radon reduction achieved

Radon level before :

Bungalow 1.	
Living room	611 Bq/m^3
Main bedroom	312 Bq/m^3
Seasonally corrected annual average	447 Bq/m^3
Bungalow 2.	
Living room	832 Bq/m^3
Main bedroom	429 Bq/m^3
Seasonally corrected annual average	610 Bq/m^3
Bungalow 3.	
Living room	2288 Bq/m^3
Main bedroom	1157 Bq/m^3
Seasonally corrected annual average	1666 Bq/m^3
Bungalow 4.	
Living room	312 Bq/m^3
Main bedroom	86 Bq/m^3
Seasonally corrected annual average	187 Bq/m^3

Radon level after:

Bungalow 1.	
Living room	22 Bq/m^3
Main bedroom	19 Bq/m^3
Seasonally corrected annual average	20 Bq/m^3
Bungalow 2.	
Living room	35 Bq/m^3
Main bedroom	35 Bq/m^3
Seasonally corrected annual average	35 Bq/m^3
Bungalow 3.	
Living room	128 Bq/m^3
Main bedroom	47 Bq/m^3
Seasonally corrected annual average	84 Bq/m^3
Bungalow 4.	
Living room	57 Bq/m^3
Main bedroom	54 Bq/m^3
Seasonally corrected annual average	56 Bq/m^3

Problems

No problems were encountered during installation of the system. However long term there remains a possible problem in maintaining the system. At present all four properties are owned by a single landlord. If Bungalow two were to be sold there could be a potential problem in that the new own could switch off the system which would result in radon levels increasing again in all four properties. With this particular installation the landlord is paying for the running cost in order to encourage the occupier of bungalow 2 to keep the system running.

System enhancements

The system has performed well since installation and no additional enhancements have been necessary.

Further Information

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