

# **RADON SAFETY POLICY, ARRANGEMENTS & PROCEDURES**

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## 1 Introduction

This document sets out the policy and strategy to minimise the risk from exposure to radon and its decay products to employees and persons using County Council buildings.

This document should be used in conjunction with any relevant legislation, Approved Codes of Practice, Health and Safety Executive (HSE) / Public Health England (PHE) guidance and other recognised procedures relating to the presence of radon in buildings.

Within the United Kingdom natural radioactive decay within rocks and soils can give rise to higher concentrations of radon gas. Areas where it is estimated by PHE that 1% or more of homes have a radon level above 200 Becquerel's/m<sup>3</sup> (Bq/m<sup>3</sup>) are designated 'radon affected areas'.

The workplace action level specified in the Ionising Radiations Regulations (IRR) is 300 Bq/m<sup>3</sup> as an annual average. Employers should make it unlikely that employees will receive a dose greater than 1millisievert (mSv) per year. The recommended residential action level is 200Bq/m<sup>3</sup> annual average.

## 2 Management Policy Statement

The Council recognises its responsibilities and will reduce exposure to radon to the lowest level reasonably practicable and in all cases below the specified action levels by:-

- Identifying and monitoring all County Council properties that may be affected by radon.
- Having clear procedures in place for the management of radon in affected buildings.
- Developing and maintaining records of radon gas levels in the Council's premises.
- Maintaining a central database of all records.
- Providing suitable information and advice to employees and other persons likely to be exposed to levels of radon gas in the Council's premises.
- Consulting, where necessary, with a recognised Radiation Protection Adviser (RPA).
- Ensuring that any remedial measures put in place to reduce the level of radon in a property are monitored and maintained effectively.
- Reviewing the policy and procedures as required.

## **3 Organisational Responsibilities**

### **3.1 Strategic Directors (Employer)**

Whilst Strategic Directors have overall responsibility for health and safety within the Council the management of radon in DCC properties is delegated to the Director of Property.

Strategic Directors will:

- Familiarise themselves with the County Council's policy and procedures for managing potential exposure to radon of employees and other persons.
- Ensure through delegated responsibility that the policy and procedures for managing exposure to radon are observed at all times.

### **3.2 Director of Property (Responsible Person Radon Safety)**

- Ensure so far as is reasonably practicable that the Radon Safety Management System is established and maintained.
- Advise the Elected Members on the resources required to maintain Radon Safety Management within the Authority.
- Ensure effective management systems are in place to ensure the operating procedures for the management of the risk from radon in Council properties.
- The monitoring, remedial installation, maintenance and record keeping of the identified premises radon levels will be carried out in a manner that maintains a safe working environment for employees and others who occupy the identified premises.
- To appoint an Appointed Person Radon Safety in writing.

### **3.3 Safety, Health & Environment Manager (Appointed Person Radon Safety)**

- Management of the radon policy and procedures.
- Implement a strategy for undertaking and monitoring the County Council's premises for radon
- Provide advice and guidance to Strategic Directors
- Where necessary provide information for heads of establishments, premises managers, employees and other people affected
- Where necessary appoint in writing and liaise with a Radiation Protection Adviser
- Implementation of changes to the policy occurring as a result of a review.
- Ensure that any training undertaken is suitable and appropriate.
- Implementation of radon monitoring surveys.
- Maintain an effective record system.
- Undertaking and reviewing risk assessments
- Implementation of measures, where necessary to restrict access to radon affected areas.

### **3.4 General Responsibilities within Departments**

#### **3.4.1. Departmental Health and Safety Advisers**

- Provide guidance to Heads of Establishments/Premises Managers as required.
- Audit employees and establishments for compliance with the radon management policy and procedures.
- Where establishments have areas with access restrictions to limit radon exposure, to audit employees personal exposure records to ensure persons are not exposed to more than their annual allowable dose.
- To liaise, where necessary, with the Appointed Person on the Council's radon policy, procedures and personal exposures.

#### **3.4.2. Heads of Establishments, Premises Managers or Other Nominated Persons**

- Where installed check and record that any mechanical remedial measures to reduce the level of radon in their premises are in operation.
- Where employees are required to keep records of personal exposure to radon, monitor such exposure to ensure the annual allowable dose is not exceeded.
- To liaise, where necessary, with the Appointed Person on the Council's radon policy, procedures and personal exposures

#### **3.4.3. Employees**

- Where required will receive the appropriate information, instruction and training to enable them to comply with any procedures and other control measure that are in place to ensure radon safety is correctly managed within DCC Properties.
- To liaise, where necessary, with the Appointed Person on the Council's radon policy, procedures and personal exposures.

### **3.5 Responsibilities for Managing Radon in DCC and other Relevant Premises**

#### **3.5.1. DCC Corporate Buildings**

DCC is responsible through Property Section and the management of the particular establishment.

#### **3.5.2. Local Authority Controlled Schools**

DCC is responsible through Property Section and the Head Teacher.

#### **3.5.3. Voluntary Controlled Schools**

DCC is responsible through Property Section and the Head Teacher.

#### **3.5.4. Voluntary Aided Schools**

The Governing Body is responsible for managing the premises radon safety.

The efficient management and compliance with applicable regulations will be monitored by DCC.

#### **3.5.5. Foundation Schools**

The Governing Body is responsible for managing the premises radon safety.

The efficient management and compliancy with applicable regulations will be monitored by DCC

#### **3.5.6. Properties leased in to DCC**

The Employer is responsible for radon safety.

The Landlord is responsible in the first instance for leasing the premises in a suitable condition. Property Section are responsible for checking that radon safety is in place prior to the occupation of the premise by a new tenant and informing the Responsible person of these actions.

There after DCC is responsible through Property Section and the management of the particular establishment.

#### **3.5.7. Property leased to a third party by DCC**

DCC is responsible in the first instance for leasing the premises in a suitable condition. Property Section are responsible for checking that radon safety is in place prior to the occupation of the premise by a new tenant and informing the Responsible person of these actions.

There after the tenant is responsible for the premises radon safety.

### **3.6 Responsibility in non DCC Controlled/Funded Premises**

#### **3.6.1. Academy Schools**

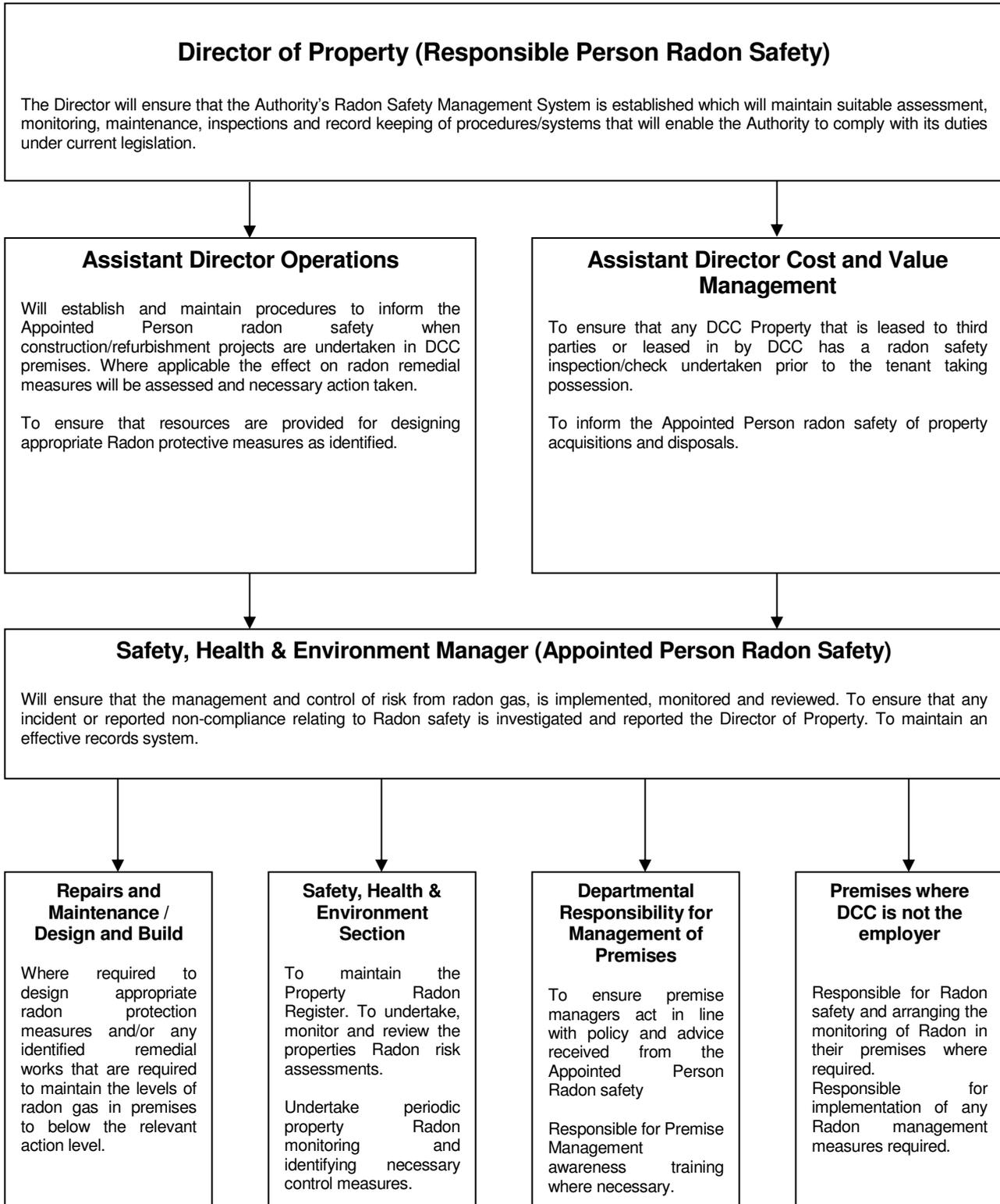
The Governing Body is responsible for managing the premises radon safety.

#### **3.6.2. PFI Schools**

The Employer is responsible for radon safety. A Facilities Management Contractor is appointed to manage the facility.

DCC staff have a duty cooperate with the Facilities Management Contractor and comply with their arrangements, policies and procedures. The efficient management and compliancy with applicable regulations will be monitored by DCC.

### 3.7 Responsibilities under Derbyshire County Councils Radon Safety Management Flow Chart



## 4 Procedures for the Management of Radon

### 4.1 Risk Assessment

DCC premises will be risk assessed to identify the potential for the presence of radon gas. The assessment will refer to the Public Health England's indicative atlas of radon in England and Wales which indicates the likely extent of the local radon hazard in all buildings within 1km grid squares.

Where identified premises that reside within shaded areas will as part of the risk assessment be monitored for the potential for radon gas. (Refer to appendix 1)

### 4.2 Monitoring Programme

Radon monitoring will be carried out at suitable intervals commensurate with the risk based upon published geological information, radon data and/or previous monitoring results.

- All County Council premises or premises where County Council employees are permanently based, in radon affected areas will be monitored for the presence of radon.
- Premises in areas not designated as 'radon affected' will be regularly reviewed and may be monitored based on an assessment of the risk.
- In premises where the level of radon is found not to be above the relevant action level as specified in current legislation, re-monitoring will be carried out based on an assessment of the risk.
- Premises where remedial measures have been installed to reduce the level of radon will be immediately monitored to assess that such measures are functioning correctly and effectively.
- Premises where remedial measures are in place to reduce the level of radon will be monitored on a regular basis to ensure that remedial measures remain effective.
- The Repairs and Maintenance Section as part of the premises annual condition survey will check that these remedial measure checks have been undertaken by the premise's duty holder.
- All below ground workplaces (a work place that is occupied >52hrs/yr) in DCC properties will be risk assessed for radon.

#### 4.2.1. Frequency of Monitoring

The frequency of monitoring will be determined by risk assessment for each individual property. Generally these guidelines will be followed:-

Where levels of radon are found to be significantly less than 300 Bq/m<sup>3</sup> (200 Bq/m<sup>3</sup> for residential premises) at the initial measurement, the monitoring of radon levels will be monitored at 10 year intervals.

Re-monitoring will be undertaken after any significant refurbishment or change of use

Where radon levels are found to be above the action level 300 Bq/m<sup>3</sup> (300 – 1000 Bq/m<sup>3</sup>) for commercial premises or 200 Bq/m<sup>3</sup> (200 – 500 Bq/m<sup>3</sup>) for residential premises following the initial measurement a Radiation Protection Advisor will be consulted where necessary and steps will be taken to immediately manage the occupational exposure of persons affected.

Where an engineering remedial solution is identified as the most appropriate reduction method, this will be undertaken as soon as practically possible. After the engineering solution has been installed, direct monitoring of the radon levels will be undertaken to assess the effectiveness of the measures to ensure the effectiveness of the remedial measures. Monitoring will be undertaken for 6 months following the remedial work installation, then annually for 3 years and thereafter at suitable intervals. Re monitoring will be undertaken after any significant refurbishment or change of use.

Where levels are above 1000 Bq/m<sup>3</sup> commercial properties (500 Bq/m<sup>3</sup> for residential premises) a Radiation Protection Advisor will be consulted where necessary and steps will be taken to immediately manage the occupational exposure of persons affected. Closure or restrictions of entry to the affected area will be considered.

Where restrictions on entry are implemented, personal monitoring will be carried out.

Where an engineering remedial solution is identified as the most appropriate reduction method, this will be undertaken as soon as practically possible. After the engineering solution has been installed, direct monitoring of the radon levels will be undertaken to assess the effectiveness of the measures. To ensure the effectiveness of the remedial measures, monitoring will be undertaken for 6 months following the remedial work installation, then annually for 3 years and thereafter at suitable intervals. Re monitoring will be undertaken after any significant refurbishment or change of use.

### **4.3 Maintenance of Records**

#### **4.3.1. DCC Radon Data Base**

The Property asset management data base identifies each DCC property by a Unique Property Reference Number (UPRN). Radon information relating to a property is filed under the UPRN in the Electronic Document Records Management (EDRM) system. Records are to be held for 50 years from the date of production.

The radon gas data base is a live document and will contain:-

- The historic details of the properties radon level measurements.
- Risk posed by the properties location and occupation.
- Monitoring strategy – Refer to section 4.2
- Details of all radon related remedial works (installation/maintenance) undertaken at the property to control the levels of radon in the premise.
- Areas of controlled access.
- Correspondence relating to the premise.

#### **4.3.2. On-Site Records**

The radon risk assessment for a premise will be made available and be retained on site. (Refer to appendix 1)

The Head of Establishment/Premises Manager should keep a copy of the results of any monitoring carried out.

Where mechanical ventilation is installed to reduce radon levels the Head of Establishment/Premises Manager should keep a record of any checks carried out to ensure the ventilation is operating. (Refer to appendix 6)

Where access restrictions are in operation to assist in controlling personal exposure to radon, such persons are required to fill in a personal exposure record form, these forms should be retained on site. (Refer to appendix 4).

An employee should not receive an effective radiation dose greater than 1mSv per year from the workplace. Anyone required to work in a radon affected area will be required to record their time spent in that area on the personal exposure record form. (The risk is cumulative. Short, infrequent visits are not of concern).

From the site specific risk assessment and time spent in the affected area, the cumulative dose can be calculated.

If a cumulative dose of 0.5 mSv is reached (i.e. 50% of the annual allowable dose) then their line manager should be informed.

## 5 Building Protection

### 5.1 New Buildings

It is better to prevent radon from entering a building than to try to remove it once present. All the Council's new buildings in radon affected areas and those areas where the Building Research Establishments 'guidance on protective measures for new buildings' recommend radon protection measures will be designed and built with the recommended radon protection measures in place.

### 5.2 Existing Buildings

Where an existing building has been shown, through monitoring, to have a radon level above the recognised action level remedial measures will be designed and implemented as soon as is reasonably practicable. Any such measures will be appropriate to the levels of radon detected, the type of building affected and the occupancy rates.

Following the introduction of remedial measures the premises will be monitored as detailed in Section 4.

In certain circumstances access restrictions may be introduced on a temporary basis until it is shown that radon levels have been reduced to an acceptable level.

## 6 Use of Contractors

All contractors working on County Council buildings must be approved through the Council's procurement contractor selection and vetting procedures.

Any contractor instructed to carry out radon remedial work must be familiar with the principals of such work and, dependent upon the type and amount of work involved, comply with the Council's arrangements on:-

- Entry into the Council's premises
- Asbestos
- Hot Work
- Fire Precautions
- Confined spaces
- Radon
- Emergency Procedures

## 7 Radon Reporting

In line with the Ionising Radiation Regulations radon levels in excess of the relevant action levels will be notified to the Health and Safety Executive.

## 8 Review of the Policy and Procedures

### 8.1 Regular Review

The radon policy will be continually monitored and reviewed as required by the Appointed Person.

Any changes to the policy that result from the review will be reported to the Director of Property and actioned by the Appointed Person.

### 8.2 Review as a result of legislative changes

It is the responsibility of the Appointed Person to ensure that legislative changes relating to radon are monitored and any necessary actions, including amending the policy, are implemented.

### 8.3 Review as a result of incidents, complaints or corrective action

It is the responsibility of the Appointed Person to monitor and act upon incidents, complaints and any corrective action taken relating to the management of radon that will have an impact upon the effectiveness of the radon policy.

Any changes to the policy that result from this review will be actioned by the Appointed Person.

## Appendix 1 – Premise Radon Risk Assessment

Premise Radon Risk Assessment	
Premise address:	
UPR No:	

Section 1	
<p>a) Does the premise reside in a Radon affected area?*</p> <p>*Refer to Public Health England's Indicative atlas of Radon</p>	<input type="checkbox"/> Yes <input type="checkbox"/> No
<p>b) Does the premise have a basement which constitutes a workplace and is occupied &gt;52 hours/year?</p>	<input type="checkbox"/> Yes <input type="checkbox"/> No
<p>Note</p> <p>If both answers are negative at Section 1 then the premise is considered to be at low risk of radon and therefore the radon risk assessment is complete. The risk assessment will be reviewed at increments of 10 years, proceed to Section 4.</p> <p>Otherwise continue to Section 2</p>	

Section 2	
<p>a) Has the premise been measured for the presence of radon gas previously?</p>	<input type="checkbox"/> Yes <input type="checkbox"/> No
<p>b) Where measured are numbers of measured locations considered to be sufficient according to regularly occupied ground and basement floor areas?</p>	<input type="checkbox"/> Yes <input type="checkbox"/> No
<p>c) Were most recent measured levels below the relevant action level?</p>	<input type="checkbox"/> Yes <input type="checkbox"/> No

Note

If the answers to questions a, b, and c in Section 2 are all positive then the radon risk assessment is complete. The risk assessment will be reviewed at increments of 10 years, proceed to Section 4.

Otherwise continue to section 3

Section 3

Review the available Property data and select the measure/s required:

- a) Does the premise require measurement for the potential for radon gas?

- Yes  
 No

The premise manager/head teacher will be informed of number and locations of radon monitors required.

- b) Do installed radon remediation measures require review?

- Yes  
 No

The premise manager/head teacher will be informed of any remedial measures installation measures/alterations required.

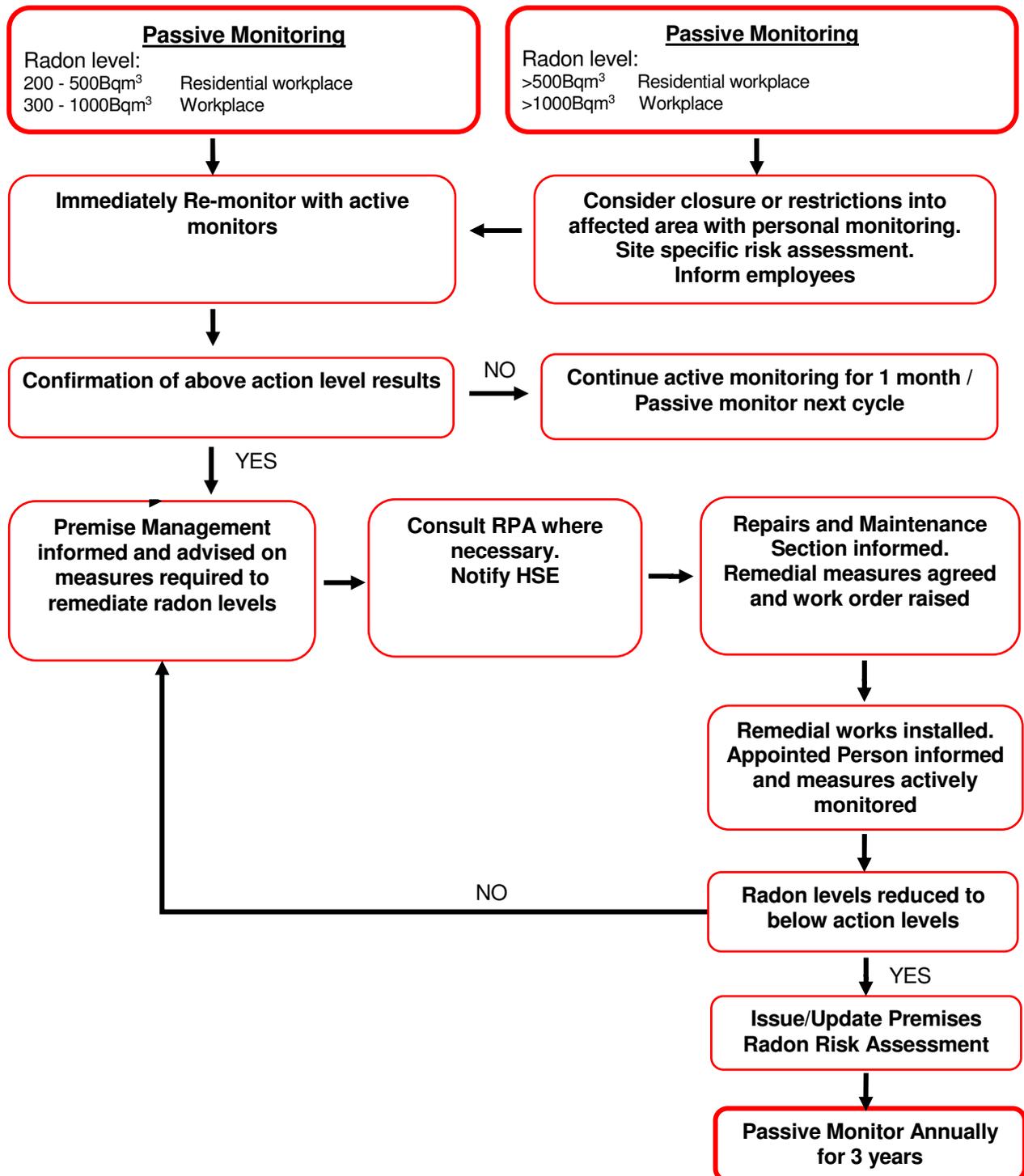
Section 4

Name		Signature	
Position		Date	

A copy of this assessment shall be made available to the premise manager/Head teacher. Radon will continue to be managed in line with DCC Radon Policy.

## Appendix 2 – Identification of Suitable Radon Remedial Control Measures

### Action protocol following radon monitoring



## Appendix 3 – Generic Risk Assessment for Exposure to Radon

Following monitoring and verification of radon levels within a building the table below indicates the course of action to be taken.

Measured radon level Bq/m <sup>3</sup>	Management Action
< 100	<ul style="list-style-type: none"> <li>- None required</li> </ul>
101 - 299 Workplace 101 - 199 Residential	<ul style="list-style-type: none"> <li>- Continued monitoring of radon levels in affected areas</li> <li>- Consideration given to the installation of remedial measures.</li> </ul>
300 - 1000 Workplace 200 - 1000 Residential	<ul style="list-style-type: none"> <li>- Continued monitoring of radon levels in affected areas.</li> <li>- Remedial measures introduced.</li> <li>- Monitoring continued until remedial measures shown to be effective and radon levels are reduced to below relevant action level.</li> </ul> <p>Note: - If remedial measures are not implemented then restrictions on access to affected area based upon site specific risk assessment must be put in place.</p>
> 1000	<ul style="list-style-type: none"> <li>- Restrictions on access to affected area based upon site specific risk assessment.</li> <li>- Personal monitoring of radon exposure of persons required to enter affected area to ensure that they do not exceed a dose greater than 1mSv per year.</li> <li>- Continued monitoring of radon levels in affected areas.</li> <li>- Remedial measures introduced.</li> <li>- Monitoring continued until remedial measures shown to be effective and radon levels are reduced to below relevant action level.</li> </ul> <p>Information and consultation with all people concerned.</p>



## Notes

The radon workplace action level specified in the Ionising Radiation Regulations is 300 Bq/m<sup>3</sup> expressed as an annual average figure.

**MAE** = Maximum Annual Exposure = 1 milliSievert (mSv)

Example:-

In the basement of a building the measured radon level was 640 Bq/m<sup>3</sup>. Therefore 774 hours exposure at 640 Bq/m<sup>3</sup> would be required in one year to reach a dose of 1mSv.

Therefore 7 hours exposure in the area is approximately equivalent to 1.0% of the MAE.

Time spent in the affected area should be entered onto the form in appendix 4, e.g.

Area	Date	Task	Time (hrs)	% of MAE
Basement	10/01/11	Filing	5	0.7
"	11/01/11	"	4	0.6
"	13/01/11	"	5.5	0.8

$$\% \text{ MAE} = \frac{\text{Hours spent in area}}{\text{Hours equivalent to 1\% MAE}}$$

This form should be returned to your manager when either:-

- a) 50% of your MAE has been reached, or
- b) one year from the first entry.

## Notes for Managers

No person should receive an exposure of more than 1mSv from their workplace activities in any rolling year.

If a person has received 50% of their exposure, especially in a relatively short period of time, then working practices should be examined to determine if exposure times can be reduced. If this is not possible then job rotation will be necessary.

## Appendix 5 – Example of restricted access notice

# **CONTROLLED AREA**

**THIS AREA IS AFFECTED BY RADON  
GAS.**

**LIMITATIONS ON ACCESS ARE:-**

**ANY PERSON REQUIRING TO WORK IN THIS  
AREA FOR LONGER THAN 2 HOURS IN ANY ONE  
DAY**

**CONSULT PROPERTY SAFETY, HEALTH AND  
ENVIRONMENT SECTION ON EXT 36825**

**BEFORE PROCEEDING.**

## Appendix 6 – Checking and recording the operational state of remedial measures

Where mechanical equipment has been installed to reduce the level of radon within a building each fan should have been fitted with a fan 'proving device'. This device indicates as to whether or not the fan is operating. If a fan fails for any reason the device activates a light.

Each fan should be checked weekly and its operational condition recorded. If an indicator light is showing the area Business Unit should be informed in order that repairs can be undertaken.

### Guidance Notes

- Mechanical remedial measures to reduce radon gas should operate constantly and should not be switched off for any reason other than repair or maintenance.
- The neon light attached to the fused spur outlet should be illuminated at all times. This indicates that the power is on. It does not indicate that the fan is working.
- The risk assessments identified fan checking method must be followed.
- Where a fan failure device is fitted, a separate, second box adjacent to the fused spur has an amber neon light, when illuminated indicates that the fan has failed.
- Air bricks identified that form part of the ventilation system – clear/good condition.
- Radon vent stack check to prevent damage/incorrect use. Look for:
  - Inappropriate connecting waste water to vent stack
  - Removing the rain caps to vent stack
  - Vent stack being capped off when re-roofing
  - Vent stack damaged due to vandalism
- If you have any concerns regarding the correct operation of the system contact your Business Unit immediately.

