



**Rialtas na hÉireann**  
Government of Ireland

# Technical Guidance Document C

Site Preparation & Resistance to Moisture

# Three Sections

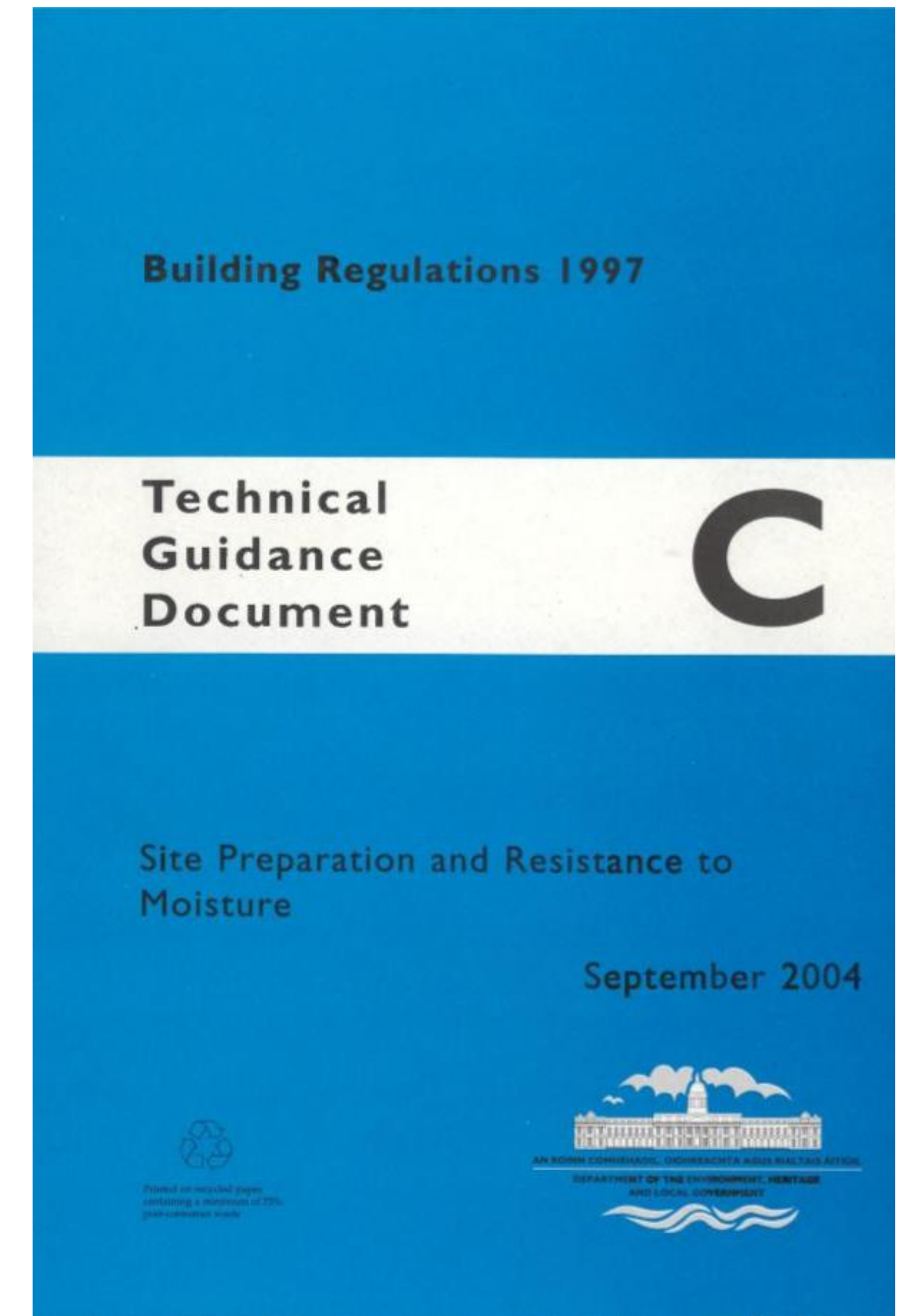
Site preparation and site drainage

Dangerous substances

- Radon
- Landfill gases

Resistance to weather and ground moisture

- Floors next to the ground
- Walls
- Cladding to walls and floors





# 2

# Dangerous substances

# Regulation C3



*Reasonable precautions shall be taken to avoid danger to health and safety caused by substances (including contaminants) found on or in the ground to be covered by a building.*

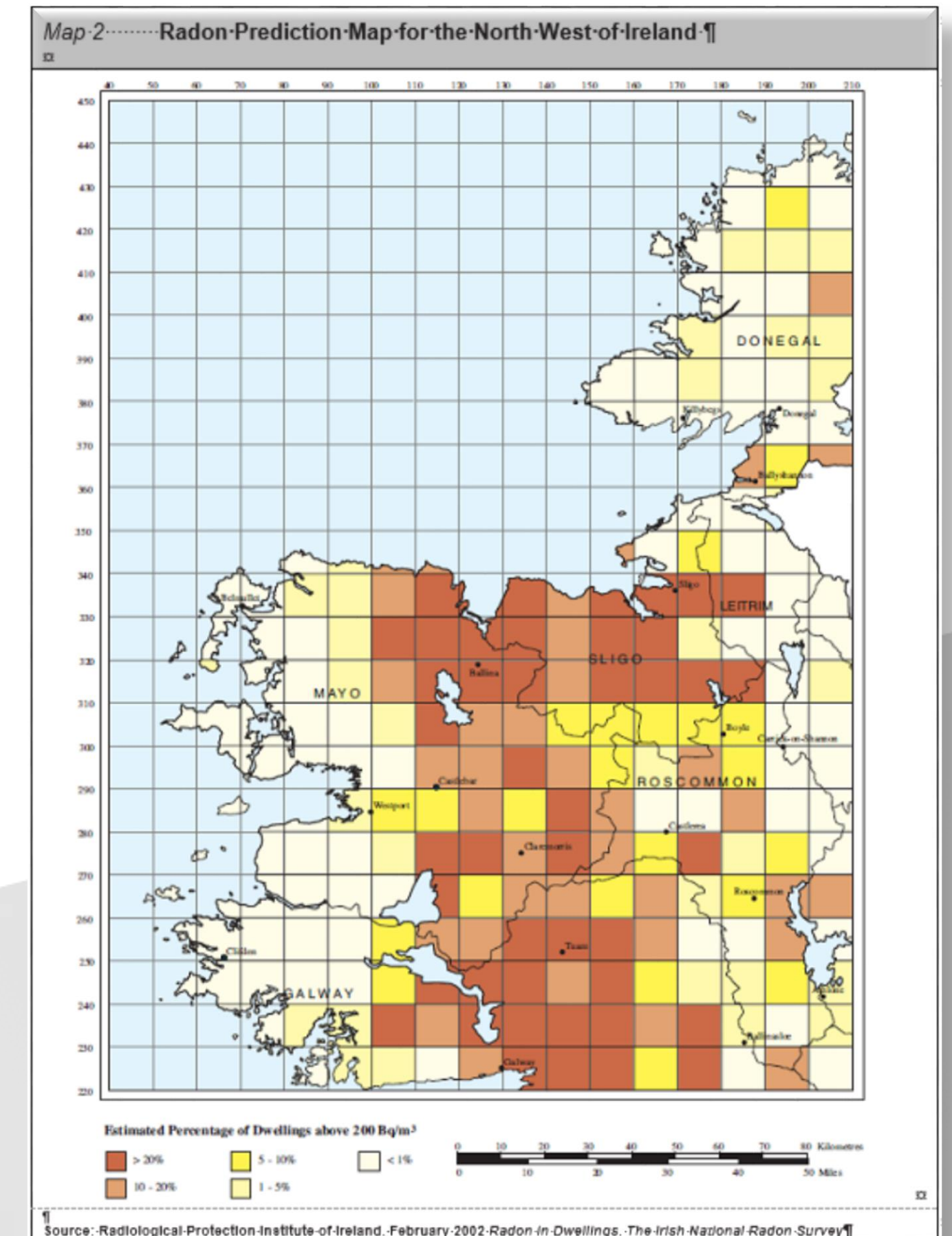
*In this Part -"contaminant" includes any substance which is or could become flammable, explosive, corrosive, toxic **or radioactive** and any deposits of faecal or animal matter;*

# 2.7 National Reference Levels



***Dwellings:*** The National Reference Level (NRL) for long-term exposure to Radon in dwellings is 200 Becquerels per cubic metre, or 200Bq/m<sup>3</sup>.

***Workplaces:*** SI No. 125 of 2000 ... sets a National Reference Level (NRL) for Radon Gas in Workplaces of 400Bq/m<sup>3</sup> averaged over any three months.



## 2.10 Dwellings or other long-stay residential buildings



**(a) High Radon Areas:** measures should be taken to protect the building from Radon in the ground.

For example, in the case of a noncomplex building of normal design and construction, a **fully sealed membrane** of low permeability over the entire footprint of the building and a potential means of extracting Radon from the substructure such as a **standby Radon sump** or sumps with connecting pipework or other appropriate certified systems should be provided.

## 2.10 Dwellings or other long-stay residential buildings



**(b) Areas other than High Radon Areas:** the building should be provided with a potential means of extracting Radon from the substructure should that prove necessary after construction.

For example, in the case of a non-complex building of normal design and construction, the provision of a **standby Radon sump** or sumps with connecting pipework or other appropriate certified systems should be adequate.

# 2.11 Other Buildings



The designer should consider the provision of measures to protect buildings against high Radon concentrations. In the absence of specific guidance, provisions similar to those in 2.10 may be adopted.



# 2.12 Membranes



Membranes used for Radon protection should be appropriate for this use.

- Fitness established by independent certification by an approved body e.g. by the NSAI Irish Agreement Board.
- The parameters certified should include those in Table 3.
- Minimum performance levels set for Low Density Polyethylene (LDPE) membranes.
- Equivalent performance for non-LDPE materials

# Table 3



Table 3 Minimum Performance Level for LDPE Radon Proof Membranes		
Parameter	Test	Performance Level
Radon Permeability	Laboratory Test with Radon Gas – Rn 222	$12 \times 10^{-12} \text{m}^2/\text{s}$
Tensile Strength	I.S. EN 12311-2:2000 or IS EN ISO 527-3	MD > 12Mpa CD > 12Mpa
Elongation	I.S. EN 12311-2:2000 or I.S. EN ISO 527-3	$\geq 100\%$ (at break) Un-reinforced LDPE $\geq 12\%$ (at max. load) Reinforced LDPE
Tear Resistance	I.S. EN 12310-2:2000	> 100N
Moisture Vapour Resistance	BS 3177	> 50MNs/g
Low Temperature Flexibility	I.S. EN 495-5:2000	No cracking at -25 deg C

# Summary of passive prevention measures in Ireland



Radon risk area (% testing above ref level)	<3%	3-10%	>10%	<3%	3-10%	>10%
	New Dwellings			Other New Buildings		
Radon-proof membrane (1200 gauge polythene)	✓	✓	✓			
Membrane sealed to walls	✓	✓	✓			
Membrane sealed to pipes/cables	✗	✗	✓			
Standby radon sump	✓	✓	✓			

‘... provisions similar to those used in dwellings may be adopted.’

# Summary of passive prevention measures in UK

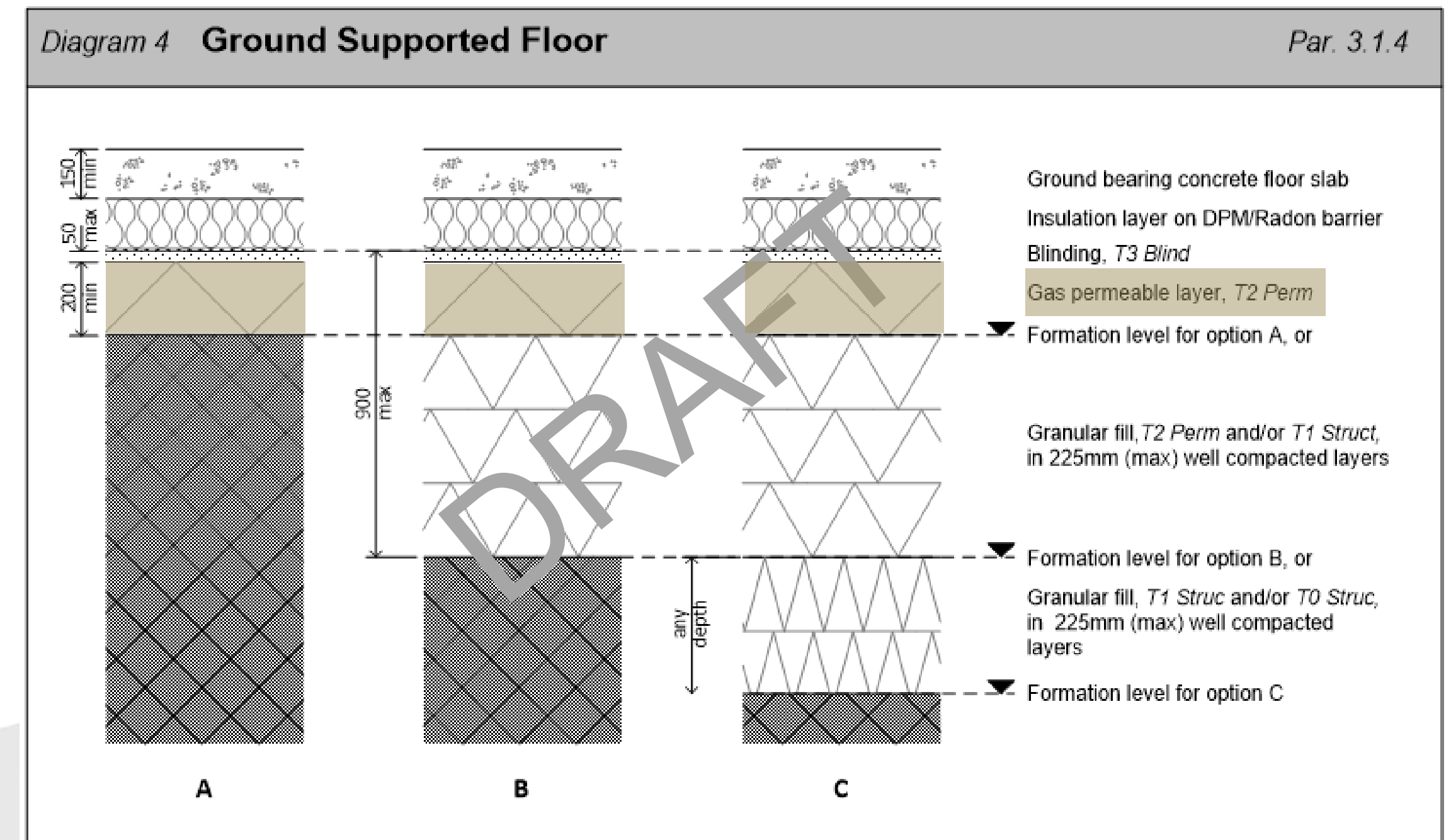


Radon risk area (% testing above ref level)	<3%	3-10%	>10%	<3%	3-10%	>10%
	New Dwellings			Other New Buildings		
Radon-proof membrane (1200 gauge polythene)	✓	✓	✓	“Health and Safety guidance for workplaces ... techniques ... similar to those used in dwellings ... but with caution”		
Membrane sealed to walls	✓	✓	✓			
Membrane sealed to pipes/cables	✗	✓	✓			
Standby radon sump	✗	✗	✓			

# Proposed amendment to TGD-C (2019)



1. Implementation of the recommendations of the Pyrite Board
2. Incorporate S.R. 21:2014 + A1:2016 (aggregates)
3. Draft text for public consultation
4. Notification to EU Commission
5. Public Consultation
6. Review of submissions
7. Consolidated text of TGD amendment
8. Publication of updated TGD-C



# Support to Industry in Delivering on the TGD-C Provisions



1. Stakeholder Engagement on Revisions and Amendments

2. Training for Radon Measures on Site

- Approved curriculum
- 87 people upskilled in 2017
- Courses ongoing

3. NUIG Research into:

- The effectiveness of the permeable aggregate layer
- The effectiveness of the sealed membrane

4. Further research into passive sumps

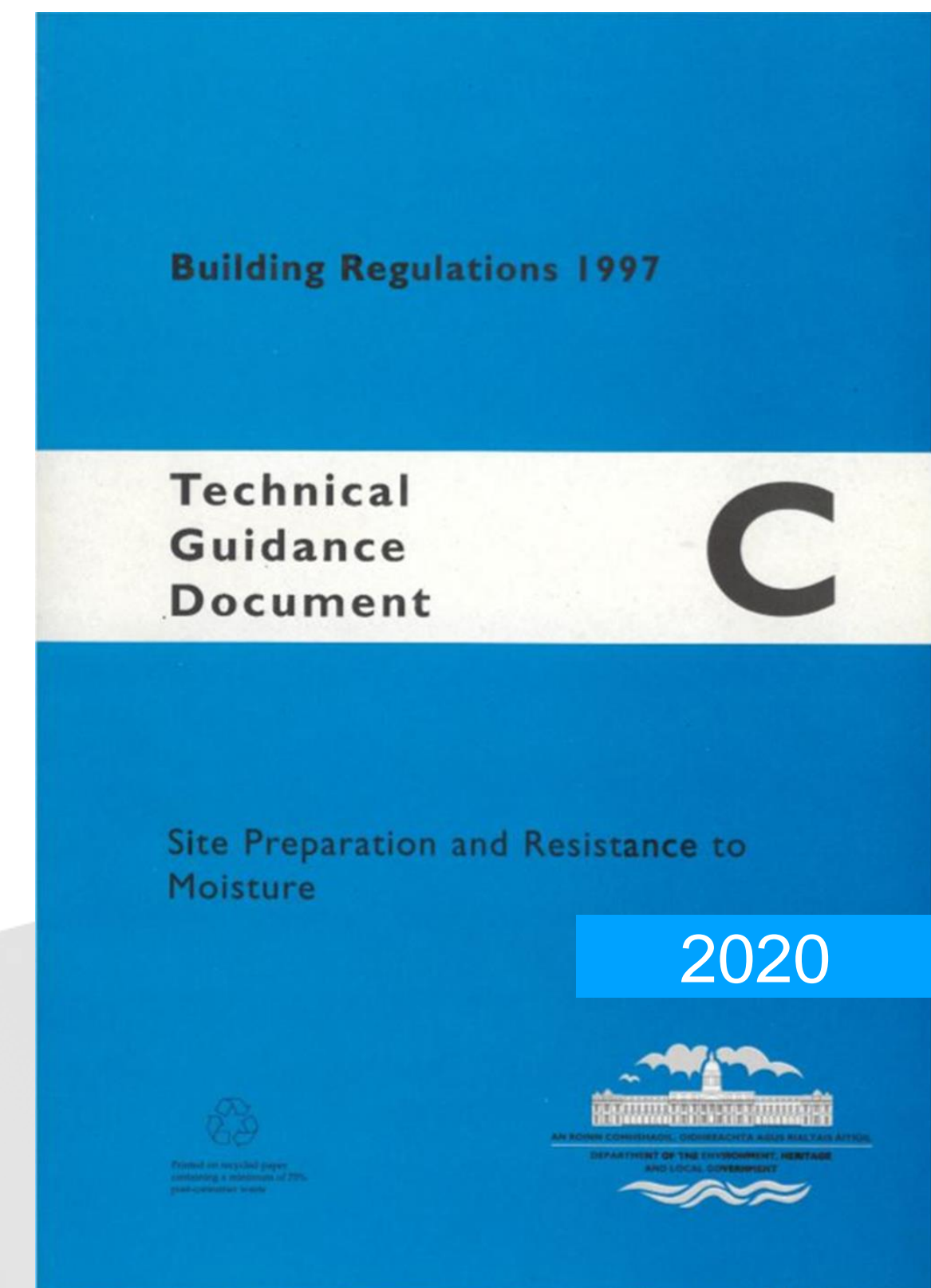
The screenshot shows the CIF Training website for the 'CIF/EPA Radon Prevention Measures on Site' course. The header includes the CIF TRAINING logo and a menu icon. The main banner features a worker in a hard hat and safety vest. Below the banner, there is a 'READY TO BOOK?' button with a link to the booking form. The 'Training Course Information' section provides details about the 'Half Day Programme', including its target audience (General Operative and Site Foremen), CPD points, and a description. A 'Snapshot' section lists the fee (€45 for members and non-members), course times (4:00pm - 6:15pm), duration (Half Day), and location (Dublin, Cork, Galway). A 'BECOME A MEMBER' button with a 'JOIN NOW' sub-button is also visible.

# Planned Review of the TGD-C (2019-20)

## Key Stages



1. Stakeholder consultations
2. Draft text for public consultation
3. Notification to EU Commission
4. Public Consultation (proposed Q1, 2020)
5. Review of submissions
6. Consolidated text for S.I. and TGD
7. Statutory Instrument signed
8. Publication of updated Technical Guidance Document





# Any Questions?