Ireland

Ireland has guidance documents, Building Regulations - Technical Guidance Document B - Fire Safety, which if followed *"will, prima facie, indicate compliance with Part B of the Second Schedule of the Building Regulations. However, the adoption of an approach other than that outlined in the guidance is not precluded provided that the relevant requirements of the Regulations are complied with."*

The guidance is split into two volumes with Volume 2 being dwelling houses and Volume 1 most other buildings. Both are on this web site. They make many references to sprinklers, with the most significant below.

Volume 1 – 2024

1.4.5.6 In residential care buildings, walls between bedrooms need not be fire resisting and in Diagram 11, administrative areas (nurse's stations) may be open to protected corridors where the building is provided with a sprinkler system. Under **3.4.4.7.1** the same apples to ancillary accommodation in residential care buildings

1.4.9 In student accommodation, "*The maximum travel distance in the protected entrance hallway is 9 m, but this may be increased to 15 m, where a sprinkler system is provided within the unit.*"

"***1.5.5.4 Phased evacuation*** *- The concept of phased evacuation is based on evacuating persons on a sequential basis, commencing with those on the storeys most affected by the fire in its early stages. That is the storey of fire origin and the one immediately above. By designing on the basis of phased evacuation, stairway widths less than those needed for total evacuation are possible. However, for stairways in such buildings, all of the following provisions should be met:*

(c) if the building has a storey with a floor with a floor over 30m above ground level, the building should be protected throughout by an automatic sprinkler system."

"*1.6.2.3.5 Open-Plan Flats with a Travel Distance of More Than 9 m located at any level*

If the flat is not "*Located at Basement, Ground or < 4.5 m Above Ground Level…, the following provisions apply:*

(d) (i) The flat should have a sprinkler system in accordance with Para 8.4.1" Details are given in Diagram 20.

"1.6.3.2 Maisonettes with a Floor Situated More Than 4.5 m above Ground Level

The maisonette should be designed such that:

(d) Where any floor within the unit is more than 7.5m above the level of the entrance of the maisonette, a sprinkler system (see Para 8.4.1) should also be provided."

"1.6.6.3.2 Single direction of travel
In a building or portion of building with a single direction of travel, the following provisions apply:

(a) The maximum travel distance, in a single direction (dead end) in a protected corridor provided with a smoke control system (see Subsection 6.6), irrespective of the topmost floor level, is 7.5 m.

(b) Where every flat to a dead-end protected corridor / lobby on the same storey is provided with a sprinkler system (see Para 8.4.1), and the same protected corridor(s) / lobby(s) are provided with a smoke control system (see Subsection 6.6), the travel distance on that storey can be further extended up to a maximum of 15 m. This provision applies to ancillary accommodation on the same storey."

This is illustrated in Diagrams 28-30.

"***Table 15 Maximum Area and Cubic Capacity of a Building or Compartment Para 3.4.4***" shows that the maximum area of an unsprinklered shop, whether single storey or multi-storey, is 2,000 m^2. This increases with sprinklers to 8,000 m^2 for single storey shops and 5,600 m^2 for multi-storey shops.

In the same Table 15, the high hazard storage compartment limit is 1,000 m^2 for storage use and can be increased to 14,000 m^2 if sprinklers are provided. In Appendix D.2 "*Factors which lead to the assessment of premises or parts of the premises as being of High Hazard include the following:*

(f) the presence of unsprinklered racking, where the topmost shelf has a height greater than 7m above floor level."

Table 15 Maximum area and cubic capacity of a building or compartment Para 3.4.4				
Use	**Purpose Group**	**Building form**	**Maximum floor area [(1)] of any one storey in the building or of any one storey in a compartment (m^2)**	**Maximum cubic capacity [(1)] of building or compartment (m^3)**
Residential (dwellings)	1(c)	Any	No limit	No limit
Residential (care facility) [(5)]	2(a)	(a) single storey (b) > one storey	3,000 [(2)] 1,500 [(3)]	No limit [(3)]
Other Residential	2(b)	(a) single storey (b) > one storey	No limit 2,000 [(3)]	No limit No limit [(3)]
Office	3	(a) single storey (b) > one storey	No limit 4,600	No limit 28,000
Shop	4(a)	Single storey (unsprinklered) Single storey (sprinklered) > one storey (unsprinklered > one storey (sprinklered)	2,000 8,000 2,000 5,600	No limit No limit 7,100 14,200
Shopping Centre	4(b)	Any	See Para 3.4.4.6	No limit
Assembly and Recreation, Day Centre, Other non-residential	5(a), 5(b), 8	(a) single storey (b) > one storey	No limit 1,900	No limit 21,000
Industrial [(6)]	6 (a) Normal Hazard	(a) single storey (b) > one storey	93,000 7,500	No limit No limit
	6 (b) High Hazard	(a) single storey (b) > one storey	33,000 2,800	No limit 17,000
Storage [(6)(7)]	7 (a) Normal Hazard	(a) single storey (b) > one storey	14,000 2,800	No limit 21,000
	7 (b) High Hazard	(a) single storey (b) > one storey	1,000 500	No limit 4,200
	7 (c)	Car park	No limit	No limit

Notes:

(1) Other factors may also determine the provision of compartment walls and floors (see Para 3.5.4)

(2) For buildings of any purpose groups, other than 2(a), 2(b), 4(a) and 7(b), these figures may be doubled if the building is provided throughout with an appropriate automatic sprinkler system (see Para 8.4.4)

(3) In buildings of purpose groups 1(c), 2(a), 2(b), all floors other than the lowest floor should be constructed as compartment floors (see Para 3.4.4.2 – 3.4.4.4).

(4) In the case of Purpose Groups 2(a) and 2(b), the maximum area of compartment is the limiting factor.

(5) For Purpose Group 2(a), a minimum of 2 compartments per storey are required.

(6) See Appendix D for guidance on assessment of hazard in industrial and storage buildings.

(7) Where a Purpose Group 7(b) building is sprinklered, the compartment limits for an unsprinklered Purpose Group 7(a) building may be applied.

"*3.5.10 Junction of a Compartment Floor with an External Wall*

For a building with a topmost floor > 15 m where a compartment floor meets an external wall, the compartmentation should be maintained by providing one of the following (see Diagram 48):

(a) In all buildings, except residential (care facility) buildings (Purpose Group 2(a)), an appropriate sprinkler system, in accordance with Section 8; or"

3.8.3.3 and **3.8.3.4** require sprinklers in atria for residential and care buildings unless there is no fire load in the atria.

"3.8.3.5 Atria in Shops, Assembly and Recreation Buildings, and Other Non-Residential Buildings

(e) A sprinkler system (see Para 8.4.4) should be provided in associated floor areas of the atrium."

Table 21 shows the "***Minimum distance between side of building and relevant boundary (m)***" and in a note repeats the guidance in 4.4.6.1 that "*For buildings or compartments which are fitted throughout with an appropriate automatic sprinkler system (see Section 8), the values in columns (a) or (b) of Table 21 may be halved.*"

4.4.7 and Diagram 69 clarify that for space separation between buildings, where an atrium is fitted with sprinklers the maximum external area without fire resistance is based on the assumption that the fire is contained to one storey. This allows much more of that area not to have fire resistance.

5.4 Vehicle Access

Where there is restricted fire brigade vehicle access and "*the building is fitted throughout with an automatic sprinkler system (see Section 8), the maximum hose distance can be increased from 45 m to 60 m.*" In effect this allows the fire engine to be parked further from the building.

"*5.5.4 Buildings with a Topmost Floor > 11 m but < 20m*"

5.5.4.1 Buildings with Compartment Floors

Each storey should be designed such that the maximum distance, measured on a route suitable for laying hose when measured from the door to the stairway to all points on the storey should be no more than 45 m. To achieve this requirement, the building may require additional stairways in excess of the minimum number of stairways required. Where the building is fitted throughout with an automatic sprinkler system (see Section 8), this distance can be increased from 45 m to 60 m." This can save a staircase.

"***5.5.6 Provision and Number of Firefighting Shafts***

Each storey should be designed such that the maximum distance, measured on a route suitable for laying hose when measured from the door to a firefighting shaft to all points on the storey should be no more than 45 m. To achieve this requirement, the building may require additional shaft(s) in excess of the minimum number of shafts required. Where the building is fitted throughout with an automatic sprinkler system (see Section 8), this distance can be increased from 45 m to 60 m."

"***6.4.2 Smoke Clearance Systems***

Where a natural smoke clearance system is specified within an atrium, the system should either:

(a) Be a natural ventilation system, with a total area of vents should not be less than 10 % of the maximum plan area of the atrium, and with the vents located at the top of the enclosure; or

(b) Be a mechanical ventilation system which provides replacement air changes every hour based upon the total volume of the atrium, including the largest floor open to the atrium with an inlet at low level, at four air changes per hour in sprinklered buildings see Section 8) or six anges per hour in unsprinklered buildings.

"***8.2 Provision for Sprinkler Systems.***

8.2.1 Buildings Containing Flats
A sprinkler system should be provided in any building containing flats (Purpose Group 1(c)) with a topmost floor height > 15 m. Such a system should be designed and installed in accordance with Para 8.4.1.

8.2.2 Residential (Care Facility) Buildings
An automatic sprinkler system should be provided throughout a residential (care facility) building where the building has bed spaces on any level other than the ground level. Such a system should be designed and installed in accordance with Para 8.4.2.

8.2.2.1 Extensions to Buildings
In the case of an extension to an existing building, an automatic sprinkler system should be provided, within the extension, where:

(a) the existing building is sprinklered; or

(b) the extension exceeds 400 m^2, or otherwise exceeds ¼ of the floor area of the existing building, and bed spaces are to be provided on any level other than the ground level.

8.2.2.2 Exempted Areas
There may be areas within a residential (care facility) building that are exempt from the need for sprinklers installed in accordance with Para 8.4.2, as follows:
(a) Any part provided with a suitable alternative fixed fire-suppression system; or

(b) Any part for which an automatic sprinkler system is inappropriate (in which case that area should be provided with an alternative fixed fire-protection system).

8.2.3 Student Accommodation Units
A sprinkler system should be provided in any student accommodation unit (Purpose Group 2(b)) with a topmost floor height > 15 m. Such a system should be designed and installed in accordance with Para 8.4.3.

8.2.4 Shopping Centres
A sprinkler system should be provided throughout any covered shopping centre. However, there may be areas within the shopping centre that are exempt from the need for sprinklers. Among these areas are:

(a) Any mall where there are no combustibles present. (However, where an area of the mall is designed for other purposes, such as kiosk sales, displays, food courts, sprinkler protection should be provided to this area. In this situation the position and height of the sprinkler heads needs careful consideration to ensure that they provide the desired protection); or

(b) Any part provided with a suitable alternative fixed fire suppression system; or

(c) Any part that comprises a separate occupancy and is used for a purpose for which an automatic sprinkler system is inappropriate (in which case it should be provided with an alternative fixed fire protection system); or

(d) Other occupancies/main uses which are part of the centre as a whole but which are totally fire-separated, which do not share the means of escape, and which meet the relevant provisions for the relevant purpose group as set out in this document.

Any fires which originate in any unsprinklered portion of a shopping centre may seriously jeopardise the efficacy of fire protection in any adjacent sprinklered zone. Consequently, careful consideration needs to be given to any potential fire load before omitting sprinklers from any part of the shopping centre.
The design of the sprinkler system should be in accordance with Para 8.4.4.

8.2.5 Sprinkler Systems to Separated Stages
A sprinkler system should be installed where a separated stage (see Para 1.4.8) is provided. It should cover the stage area of a separated stage, dressing rooms, scene docks, other store rooms and workshops.
The sprinkler system should be designed in accordance with Para 8.4.4.

8.2.6 Other Buildings (Uses) with a topmost floor height > 30 m
A sprinkler system should be provided throughout any office (Purpose Group 3), shop (Purpose Group 4(a)), assembly and recreation (Purpose Group 5(a)), day centre (Purpose Group 5(b)), industrial (Purpose group 6(a) or 6(b)), storage (Purpose Group 7 (a), or 7(b)), car park (Purpose Group 7(c)) or other non-residential (Purpose Group 8 building, with a topmost floor height of > 30 m (see Appendix A, Table 32).
The design of the sprinkler system should be in accordance with Para 8.4.4.

8.3 References to sprinkler systems
Sprinklers are specified throughout Sections 1 – 7, for a variety of use, or development-specific circumstances. For reference, citations for the application of sprinklers, are listed below.

- *Para 1.2.1: Hospitals (Purpose Group 2(a)(i)).*
- *Para 1.4.5.3: Care Facilities - designing for Progressive Horizontal Evacuation.*
- *Para 1.4.5.6. Care Facilities - bedrooms*
- *Para 1.5.5.2: Discounting of stairways*
- *Para 1.5.5.4: Buildings designed for phased evacuation.*
- *Para 1.6.2.3.5 (d): open plan flats.*

- *Para 1.6.3.2(d): Maisonettes.*
- *Para 1.6.6.3.2 (b): Extended single direction of travel in common protected corridors.*
- *Para 3.4.4.5, Table 15: Compartmentation.*
- *Para 3.4.4.7.1: Ancillary accommodation.*
- *Para 3.5.10: Junction of a compartment floor with an external wall.*
- *Para 3.5.11: Junction of a compartment wall with an external wall*
- *Para 3.8.3.3: Atria in residential (care facility) buildings.*
- *Para 3.8.3.4: Atria in residential (other) buildings.*
- *Para 3.8.3.5: Atria in shops, assembly and recreation buildings, and other non-residential buildings*
- *Para 3.8.3.6: Atria in offices*
- *Para 4.4.6.1: Methods of calculating acceptable unprotected areas*
- *Para 4.4.7: Atria*
- *Para 5.4.2.2: Buildings that cannot achieve Table 25*
- *Para 5.5.2.2 Basements < 10 m with 2 or more floors > 900 m2*
- *Para 5.5.4 Buildings with a topmost floor > 11 m, but < 20 m.*
- *Para 5.5.6 Provision and number of firefighting shafts.*
- *Para 6.4.2: Section 6 - Smoke clearance systems.*
- *Subsection 6.5: Section 6 - basements.*
- *Para 7.1.4.3: Existing buildings - maisonettes accessed directly from the outside.*
- *Para 7.4.3.2: Existing Buildings – external fire spread - material change of use.*

Table 32 in Appendix A shows that if sprinklers are fitted the minimum periods of fire resistance may be reduced by 30 minutes at certain threshold heights for offices, shops, assembly buildings, industrial buildings, storage and commercial buildings. It also clarifies that for these purpose groups (occupancies) buildings must be sprinklered if they are higher than 30 m.

Appendix A

Table 32 Minimum Periods of Fire Resistance for Elements of Structure								
Use (Purpose group) of buildings			Minimum period (minutes) for elements of structure in a:					
			basement storey (including floor over) #		ground or upper storey			
			Depth (m) of lowest basement (3)		Height of top storey in building or separated part (3)			
			more than 10	not more than 10	not more than 5	not more than 20	not more than 30	more than 30 (4)(5)
1c	Flats and maisonettes		90	60	30*	60**	90**	120**
2a	Residential (care facility)		90	60	60	60	90	120ø
2b	Residential (other)		90	60	30*	60	90	120ø
3	Office	Not sprinklered	90	60	30*	60	90	X
		Sprinklered (1)	60	60	30*	30*	60	120ø
4a	Shop	Not sprinklered	90	60	60	60	90	X
		Sprinklered (1)	60	60	30*	60	60	120ø
4b	Shopping Centre		120	120	120	120	120	120
5a, 5b	Assembly and recreation, day centre	Not sprinklered	90	60	60	60	90	X
		Sprinklered (1)	60	60	30*	60	60	120ø
6a, 6b	Industrial	Not sprinklered	120	90	60	90	120	X
		Sprinklered (1)	90	60	30*	60	90	120ø
7a, 7b, 8	Storage, other non-residential	Not sprinklered	120	90	60	90	120	X
		Sprinklered (1)	90	60	30*	60	90	120ø
7c	Car parks	Open-sided	X	X	15*	15*	15*	X
		Other	90	60	30*	60	90	120ø
Notes								
X	Not permitted							
*	Increased to 60 minutes for separating walls							
**	Reduced to 30 minutes for any floor within a maisonette (but not if the floor contributes to the support of the building as a whole							
ø	Reduced to 90 minutes for elements not forming part of the structural frame							
#	The floor over a basement (or if there is more than 1 basement, the floor over the topmost basement) should meet the provisions for the ground and upper storeys if that period is higher.							
(1)	"Sprinklered" means that the building is fitted with an automatic sprinkler system meeting the provisions of Section 8.							
(2)	The car park should comply with the relevant provisions in Section 3, 3.8.2. Refer to Table 31 for specific provisions of test.							
(3)	For height of top storey or depth of basement, see Appendix C, Diagram 91.							
(4)	Buildings with a topmost floor height > 60 m are outside the scope of this document (see Para 0.1.2)							
(5)	Buildings within Purpose Groups 3 to 7(c) require sprinklers where there is a top storey above 30 m. The sprinkler system should be provided in accordance with Section 8.							
Refer to Table 31 for specific provisions of fire-resistance tests for elements of structure.								

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"1.3.4 Dwelling Houses with more than one floor more than 4.5 m above ground level (Purpose Group 1(b))

(g) Where a dwelling house is constructed using timber frame construction, an automatic sprinkler system should be installed in accordance with BS 9251:2014: Fire sprinkler systems for domestic and residential premises – Code of practice."