



Fire Engineering Consultants

**Appeal Against Conditions attached to
Fire Safety Certificate (FSC 1606/18)**

Appeal Ref: ABP-302319-18

Project **DIT Campus, East Quad, Former St.
Brendan's Hospital Site,
Grangegorman, Dublin 7**

Local Authority **Dublin City Council**

Date **25 October 2018**

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1.0 INTRODUCTION

This case concerns the appeal of one condition attached to the Fire Safety Certificate for the proposed East Quad building at the DIT campus, Grangegorman. A Fire Safety Certificate was granted by Dublin City Council for the building on 20 July 2018 with two conditions attached. These were:

Condition 1

A life safety sprinkler system complying with BS EN 12845 shall be installed throughout the building (other than hazard areas having an alternative fire suppression system).

Reason:

To ensure compliance with Part B of the Second Schedule to the Building Regulations, 1997 to 2017 and to limit the size of a fire, control fire spread, provided additional time to evacuate, limit fire damage and be beneficial in terms of operational continuity.

Condition 2

Except as modified by the above condition, the additional information received on 11/07/2018 from Michal Slattery Associates shall be incorporated in the development.

Reason

To ensure compliance with Part B of the Second Schedule to the Building Regulations, 1997 to 2017.

The appellant is appealing condition 1.

2.0 INFORMATION REVIEWED

The following information was reviewed in the assessment of this case:

- Appeal submission by Michael Slattery Associates (MSA) dated 10 August 2018
- Revised Fire Safety Certificate application by MSA to DCC dated 4 May 2018
- Revised FSC Compliance report and letter from MSA to DCC date 11 July 2018.
- Fire Safety Certificate grant with submissions issued by DCC dated 20 July 2018
- Submission from MSA to DCC on condition 3 dated 15 March 2018
- DCC Fire officers report on appeal dated 29 August 2018

3.0 DISCUSSION

3.1 Condition 1

Condition 1

A life safety sprinkler system complying with BS EN 12845 shall be installed throughout the building (other than hazard areas having an alternative fire suppression system).

Reason:

To ensure compliance with Part B of the Second Schedule to the Building Regulations, 1997 to 2017 and to limit the size of a fire, control fire spread, provided additional time to evacuate, limit fire damage and be beneficial in terms of operational continuity.

3.1.1 BCA's Reasons for Condition

The BCA have provided a long list of technical reasons as to why they consider full sprinkler protection is required in the building. They state that life safety sprinklers will:

1. Limit the fire size
2. Control the spread of fire
3. Provide additional time for occupants to evacuate the building
4. Reduce fatalities and injuries in the event of fire
5. Limit fire damage
6. Assist operational fire fighters by controlling the fire size
7. Reduce the possibility of flashover
8. Reduce the possibility of backdraught
9. Be beneficial in terms of operational continuity.

Other reasons stated include:

- A fire strategy solely reliant on passive measures is susceptible to reliability failure and the provision of sprinklers would help to alleviate this.
- DFB have a policy of conditioning sprinklers in residential care homes.
- The guidance in Technical Guidance Document B is outdated and it is expected that forthcoming revision will require sprinklers in a building such as the East quad.
- Unsprinklered transient fire loads in the atrium space could compromise the smoke venting system.
- The building is designed to BS 9999: 2017 which permits much larger compartment sizes than permitted under Technical Guidance B.
- BS 9999: 2017 would require sprinklers for an atrium building such as this.
- An alternative design should provided a standard of fire safety equivalent to Technical Guidance Document B.
- Since 2007, sprinkler systems in all new school buildings have been mandatory in Scotland and Wales.

3.1.2 Appellants Case for Appeal

In appealing the condition for sprinklers in the building the appellant has stated the following arguments:

1. At a meeting on 17/08/2017, DFB requested that the basis of design for the East Quad be in accordance with current version of BS 9999 2017.
2. The Department of Environment and Local Government have endorsed the use of BS 9999 as the basis for achieving compliance with the Functional Requirements of Part B of the Second Schedule to the Building Regulations.
3. BS 9999 is widely used on many large scale and high profile buildings in Ireland and the UK and provides a more flexible approach to a very large building such as the East quad when compared to the Technical Guidance Document B.
4. BS 9999 sets out three general criteria for buildings which would require sprinkler protection. These are
 - a. Buildings greater than 30m in height to the top storey
 - b. Certain buildings where atria penetrate compartment floors; or
 - c. Shopping centres which doesn't apply to the East Quad.
5. The height of the highest occupied storey in the East Quad is 20.55m and therefore, the building is significantly less than 30m and sprinklers are not required due to building height.
6. BS 9999 limits compartment area in this risk profile building (B2) to 4,000m² no limit on compartment volume. The East Quad is within the compartment area size, and as there is no limit on volume, there is no requirement for compartment floors as the building is less than 30m in height.
7. As the atrium does not breach compartment floors then the guidance in Annex B and C of BS 9999 does not apply.
8. As the building is less than 30m high and the atrium does not breach compartment floors, there is no requirement for sprinklers to comply with the minimum recommendations of BS 9999:2017.
9. The guidance that atria code requirements are not required where the atrium does not breach compartment floors is also contained in other national guidance such Approved Document B (England Wales), CIBSE Guide E, and Technical Booklet E Northern Ireland is put forward as justification that the ethos of the recommendations in BS 9999 are valid.
10. The appellant then goes through the various separate Building Regulations requirements from B1, B3, B4 to B5 to demonstrate compliance with BS 9999 for a B2 risk profile in the absence of sprinklers.
11. The fire strategy is summarised as follows
 - a. Means of escape has been designed in accordance with BS 9999:2017 including the recommendations on open spatial planning.
 - b. All stairs will be sized for simultaneous evacuation
 - c. All voids will be enclosed in smoke retarding construction although in some places a 1m deep downstand will be provided.
 - d. There will be a category L1 fire detection and alarm system with a voice alarm system.

- e. A natural smoke clearance system will be provided achieving 10% of the floor area of the voids.
 - f. External fire spread for B4 has been assessed in accordance with BS 9999 and BR 187:2014
- .
12. A cost benefit analysis was carried out by the Scottish Building Standards Division which concluded that there was no justifiable requirement for extensive sprinkler coverage in new hospitals beyond which currently provided for in the Scottish Technical Standards and HTM Guidance. The appellant notes that whilst the East Quad is not a hospital, the fire risk is lower.
 13. Its not within the remit of DFB to condition sprinklers for property protection or business continuity.
 14. The fire strategy includes a number enhancements which were added following concerns raised by Dublin Fire Brigade. These include reassessing the building to Risk Profile B2 as opposed to profile A2 (occupants awake and familiar). This resulted in cores being redesigned to accommodate wider stair widths, storey exit widths and reduced travel distances.

3.1.3 Consideration

In considering the requirement for sprinklers the following issues are key:

1. What is the correct basis of compliance – TGD B or BS 9999?
2. Is the building less than 30m in height?
3. Are compartment floors required?
4. Does the guidance in BS 9999 for atria apply?
5. Is the issue of open spatial planning adequately addressed?

Basis of Compliance

Both the BCA and the appellant agree that the guidance in TGD B is outdated, having not been properly revised in over 20 years. Furthermore, as pointed out by the appellant, the Department of Environment and Local Government have endorsed the use of BS 9999 as an acceptable basis of achieving compliance with the functional requirements of the Building Regulations. BS 9999 is also now routinely accepted by fire authorities throughout the country as an acceptable basis of design. In my view, therefore, the use of BS 9999 in this case is correct.

Building Height

Section 30.2.2 of BS 9999 recommends that buildings > 30m in height should be sprinklered. However, the height of the top storey above the adjacent ground level at the East Quad is approximately 20.55m. Sprinklers are not required therefore, to comply with BS 9999 due to the height of the building.

Compartment Floors

Section 31.3.2 (b) of BS 9999 recommends compartment floors in buildings of risk profile B where - "every floor above ground floor level, or separated part of the building, has a storey with a floor at a height more than 30m above ground level."

As noted above, the height to the top storey of the East Quad is less than 30m therefore, compartment floors are not required.

Atrium Guidance

Section 31.3.1.1 of BS 9999 states

“Where a building contains an atrium, the recommendations of Annex B should be followed where the atrium affects compartmentation between storeys, except for connections between levels in a dwelling.”

Furthermore, although not the basis of compliance, it is noted that section 3.2.7.7 of TGD B also states;

“ Detailed guidance on all issues relating to the incorporation of atria in buildings is given in BS 5588 Part 7 Code of Practice for the incorporation of atria in buildings. However, it should be noted that for the purposes of TGD B, the standard is relevant only where the atrium breaches compartmentation”.

It is noted that Annex B and C of BS 9999 superseded the guidance in BS 5588 Part 7.

It is clear therefore that as the East Quad does not have compartment floors, that the atrium does not breach compartmentation and that the guidance in Annex B of BS 9999 does not apply. As pointed out by the appellant this approach is also endorsed in other recognised guidance such as ADB England and Wales and Technical Booklet E in Northern Ireland.

Open Spatial Planning

Whilst the atrium does not breach compartmentation, escape from the rooms on the upper levels are in towards and within 4.5m of the void edge which does not comply with fire code guidance. However, apart from at ground floor, the voids are enclosed on all levels with smoke retarding construction. Where the enclosure is breached by accommodation stairs, 1m downstands have been provided to delay smoke spread. Having reviewed the the FSC compliance report and drawings I am satisfied that this has been adequately demonstrated.

Summary

It is clear from the above that the building is less than 30m in height and the atrium does not breach compartmentation. External fire spread has been assessed with an enclosing rectangle the full height of the compartment without sprinklers. The atrium is enclosed throughout its height in smoke retarding construction. In my opinion therefore, the condition for sprinklers throughout the building is not warranted and should be removed.

4.0 RECOMMENDATIONS

The Building Control Authority should be directed to

Condition 1

The BCA should be directed to remove this condition.

Signed.....
Martin Davidson
B.Eng MSc (Fire Eng) CEng MIEI

Date: 25th October 2018