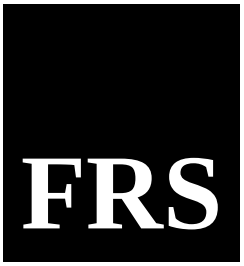

Fire & Risk Solutions Ltd.
Chartered Engineers
Professionals in Fire and Safety

Report 3144

An Bord Pleanála Appeal regarding the attachment of Condition by Dublin City Council to grant of Fire Safety Certificate for proposed material alterations at ground and first floors of the existing Student Centre, as well as an extension at first floor and construction of a new second floor, at Dublin City University, Collins Avenue, Glasnevin, Dublin 9

Client: An Bord Pleanála,
64 Marlborough Street,
Dublin 1

FAO: The Secretary

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BUILDING CONTROL ACT, 1990 – APPEAL

FIRE SAFETY CERTIFICATE APPLICATION FOR PROPOSED MATERIAL ALTERATIONS AT GROUND AND FIRST FLOORS OF THE EXISTING STUDENT CENTRE, AS WELL AS AN EXTENSION AT FIRST FLOOR AND CONSTRUCTION OF A NEW SECOND FLOOR, AT DUBLIN CITY UNIVERSITY, COLLINS AVENUE, GLASNEVIN, DUBLIN 9

APPEAL AGAINST THE ATTACHMENT OF CONDITION NO. 2 TO FIRE SAFETY CERTIFICATE (REF. FSC3025/16) ON 11th JANUARY 2017

AN BORD PLEANÁLA APPEAL REFERENCE 29B.FS0553

Local Authority: Dublin City Council

Appellant: Dublin City University c/o Jeremy Gardner Associates

RECOMMENDATION

In my opinion, the Board may rely on Article 40(2) of the Building Control Regulations and consider the subject appeal on the basis of Conditions only. It is recommended that this appeal be rejected.

The subject Condition No. 2 attached to the Fire Safety Certificate as granted by Dublin City Council (under Reference FSC035/16) on 11th January 2017 should remain with the reason for same modified as follows:-

Reason:

To comply with Part B of the Second Schedule to the Building Regulations, 1997 to 2014. Section B1: Means of escape in case of fire.

The remaining 1 no. Condition (Conditions No. 1) attached to the granted Fire Safety Certificate is not subject of this appeal and should also remain. The granted Fire Safety Certificate should therefore remain subject of 2 no. Conditions.

Dr. Raymond J Connolly

BE, PhD, CEng, MIEI, MIFireE, MSFPE

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1. RELEVANT INFORMATION

(i) Application for Fire Safety Certificate by Dublin City University to Dublin City Council dated 6th May 2016.

(ii) Fire Safety Certificate (FSC3025/16) granted by Dublin City Council issued on 11th January 2017 (subject of 2 no. Conditions).

(iii) Compliance Report Z1/3221/R3 Issue 1 (dated 6th May 2016) by Jeremy Gardner Associates and associated drawings.

(iv) Letter of additional information from Jeremy Gardner Associates to Dublin city Council dated 24th October 2016 including Compliance Report Z1/3221/R3 Issue 2 (dated 24th October 2016) and associated drawings.

(v) Letter of additional information from Jeremy Gardner Associates to Dublin city Council dated 8th December 2016 and associated drawings.

(vi) Letter of appeal from Jeremy Gardner Associates on behalf of Dublin City University to An Bord Pleanála dated 2nd February 2017.

(vii) Letter sent by Dublin City Council to An Bord Pleanála dated 2nd February 2017 outlining observations/comments by Fire Prevention Officer.

(viii) Letter of appeal from Jeremy Gardner Associates on behalf of Dublin City University to An Bord Pleanála dated 2nd February 2017.

2. BACKGROUND

Jeremy Gardner Associates on behalf of Dublin City University made an application to Dublin City Council for a Fire Safety Certificate for the proposed material alterations at ground and first floor, extension of first floor and construction of new second floor of the existing Student Centre at Dublin City University, Glasnevin, Dublin 9. The Fire Safety Certificate was granted by Dublin City Council (under Reference FSC035/16) on 11th January 2017 subject to 2 no. Conditions including *inter-alia*:-

Condition No. 2

The large voids shown at first floor and second floor levels as indicated on Drawing No. Z1/3221/3/05 Rev B dated 07/12/16 and Z1/3221/3/06 Rev A dated 14/09/16 respectively, are all to be enclosed by either solid fire-resisting construction or fire-resisting shutters or curtains may be used as appropriate. The automatic fire-resisting shutters or curtains, are to provide adequate separation between the lower floor and the upper floor to allow for means of escape.

- *they are to operate on the activation of the smoke detection and alarm system and/or power failure.*
- *they are to be held rigid in place on operation.*
- *there is to be a controlled descent, even in the event of power failure.*
- *the path of the automatic roller shutters is to be kept clear at all times to allow the roller shutter to operate unimpeded when required.*

Reason:

To comply with Part B of the Second Schedule to the Building Regulations, 1997 to 2014. Section B3: Internal Fire Spread (Structure).

On 3rd February 2017, Jeremy Gardner Associates on behalf of Dublin City University appealed against the attachment of this Condition (Condition No. 2) to the Fire Safety Certificate. The residual Condition (Condition No. 1) is not subject of the current appeal.

3. REPRISE OF APPEAL (AS PRESENTED)

The subject works comprise the proposed material alteration and extensions at first floor and new second floor of the existing Student Centre at Dublin City University. The works include the introduction of tiered open bench seating at ground floor extending to first floor level forming an open gallery. The space sits under an atrium at second floor, which is to be separated from the adjacent second floor accommodation by drop down automatic 30 minutes fire-resisting curtains. The existing openings in the first floor above the hub walkway are proposed to be largely retained but to include partial enclosure by down automatic 30 minutes fire-resisting curtains. This partial enclosure of the openings in the first floor slab may protect adjacent escape routes but retention of openings will permit transmission of smoke and heat between ground and first floor levels.

The appellant has proposed that existing atrium (comprising 2 no. openings in the first floor slab above the hub walkway) was designed and approved on the basis of compliance with Figure 2 of BS 5588:Part 7. This design approach includes a presumption that occupants of the building shall be awake and familiar with their surroundings. The appellant has suggested that the subject application properly treats the proposed atrium (comprising an opening in the first and second floor slabs above the tiered seating) in a similar manner to heretofore, i.e. in compliance with Figure 3a of BS 5588:Part 7 with fire precautions including:-

(i) All stairs to be sized for simultaneous evacuation
(ii) Category L2 automatic fire detection and alarm throughout
(iii) Second floor to be enclosed in smoke retarding construction
(iv) A smoke clearance system comprising 20 m2 of automatic opening vents to be installed above the atrium
(v) Fire load at the base of the atrium to be relatively low

The appellant confirms that the size of the building is such that floors are not required to be compartment floors. The proximity of open floor voids to escape routes in a number of locations is to be addressed through the provision of either solid construction or automatic drop down smoke/fire curtains, so as to avoid a requirement to make escape within 5 metres of an open balcony edge.

In addressing the appeal, the Local Authority express the view that the design of the atrium is not in compliance with BS 5588:Part 7 because the extent of fire load in the accommodation adjoining the atrium at ground floor level is not comparable with fire load in these spaces adjoining the atrium at upper levels, i.e. the ground floor assembly spaces represent an increased fire risk than implied in BS 5588:Part 7.

The Local Authority also expresses the concern that both Stairs No. 2 and No. 3 are located immediately adjacent the open void in first floor and that the direction of escape is towards the void as opposed to away from it as recommended in Technical Guidance Document B. There is also a risk identified by the Local Authority that the simultaneous flow of smoke up through the voids in the first floor slab could prejudice access to both Stairs No. 2 and No. 3 at the same time and undermine the means of escape strategy for the building.

The appellant addresses the concerns of the Local Authority by emphasising that the wording in BS 5588:Part 7 with respect to fire loading in the base of the atrium is intended to permit increased fire loading in the base of the atrium to an extent comparable with the adjoining areas. The appellant states that the fire load in the base of the atrium, including the adjoining Nu Venue, would be less than might exist in an equivalent office arrangement. The appellant explains that the stage in the Nu Venue is a demountable platform and does not include scenery, props or demountable lighting.

The appellant points out that solid construction has been introduced to protect the storey exits to a distance not less than 5 metres in line with the recommendations of Technical Guidance Document B.

The appellant suggests that beyond complying with compartment sizes limits in Technical Guidance Document B and atrium design to BS 5588:Part 7, there is no requirement to consider the scenario of lateral smoke spread on the first floor. The appellant suggests that smoke logging of the first floor could only come to pass once the second floor atrium volume were filled - notwithstanding the presence of 20 m^2 automatic opening ventilation in the roof. The appellant also highlights that the reason given by the Local Authority for attachment of Condition No 2 was to achieve compliance with building Regulation B3 even though their commentary regarding the appeal related in their entirety to issues around Building Regulation B1.

4. CONSIDERATION

The appeal may be considered as presented and no new issues arise as would demand a *de novo* consideration.

The proposed works include a new atrium above an open auditorium/bleacher seating area extending from ground to first floor. This atrium is enclosed on its top storey with smoke containing construction and the head of the atrium is fitted with 20 m^2 of automatic smoke ventilation comprising in excess of 10% of the c.155 m^2 area of the atrium (as measured where it passes through second floor level). At first floor level the footprint of the atrium exceeds 200 m^2 and in such a context the extent of smoke ventilation proposed is inadequate, i.e. < 10% of atrium's plan area.

No details are offered regarding the provision of make-up air paths for the new atrium other than to identify the presence of openable doors at ground level. There are 2 no. hinged double doors exiting to fresh air at ground level as might be suitable to provide about 25% of the required make-up air. There is no indication whether these doors are proposed to be automatically opened on fire detection as would be appropriate given the roof level automatic opening vents. Opening of roof level vents in the absence of equivalent make-up air paths at low level could result in depressurisation of the building to an extent as would inhibit the opening of escape doors.

It is noted that the new sliding doors at opposite ends of the hub will require automation to permit their presence on an escape route. These doors may provide further paths for make-up air but again no details are offered by the appellant and their additional cumulative area would appear to be insufficient to bring the extent of make-up air up to the requisite level. The retention of the previously approved automatic smoke vents above Hub Street will also demand their own matching extent of make-up air at low level, which should be in addition to the air paths required for the new atrium. No details are provided by the appellant regarding any of these issues.

The 2 no. openings in the first floor slab above Hub Street are existing and the associated atrium is previously approved, i.e. with 10% ventilation provided overhead at roof level. The partial enclosure of the perimeter of these openings in order to protect first floor escape routes should not adversely or unduly impact the previous design strategy for the atrium. No cross-section drawing was provided capturing Hub Street and the new atrium and the pathways for smoke flow between

both spaces are therefore uncertain at first floor level. However, the continuous volume connecting all 3 no. first floor voids at ground floor does give credence to the Fire Authority's concern of a single seat of fire impacting simultaneously on all 3 no. voids - particularly given the extent of the accommodation adjoining same. The appellant's treatment of both atria as being entirely separate and independent in fire safety terms is not explained or justified in his submissions.

The issue regarding fire load in the base of the atrium has not been correctly interpreted by the Local Authority in that there is no intention within BS5588:Part 7 to reverse engineer limitations on fire load in buildings should they contain atria. The appellant is correct in his interpretation that the intent of the code is to give guidance on whether the fire load in the base of atria needs to be controlled relative to the fire load in the adjoining spaces and not the reverse.

The open ends of the Hub Street voids facing each other on first floor level effectively impose a potential restriction on the movement of persons across this "bridge" in the event of smoke rising from ground floor. The "bridge" is less than 10 metres in width and therefore potentially affected by a rising smoke plume on both sides. The requirement to discount movement across this route in the event of a fire on Hub Street undermines the appellant's justification of widths for Stairs No. 1 and No. 2 in that these two stairs could face larger exit demand than Stairs No. 3 and No. 4. In such a scenario, Stairs No. 1 and No. 2 would be undersized. It is noted that the requirement to introduce a central handrail in stairs wider than 1800 mm mitigates against increasing their width. The alternatives are to protect the "bridge" as suggested by the Local Authority or to introduce measures at ground floor to ensure that one single fire source cannot simultaneously affect both voids.

It is a reasonable expectation that a building of this type could include an open atrium or indeed a number of open atria subject to appropriate design. BS 5588:Part 7 offers a basis for same and Occupancy Category A (persons awake and familiar with their surroundings) is indeed appropriate for the Student Centre. However, the appellant is deficient in his design of the new atrium as follows:-

(i) The plane of reference used to measure the area of the atrium at second floor is unduly favourable and underestimates the extent of smoke ventilation required.

(ii) Provisions for make-up air at low level are ill defined and inadequate.

The 2 no. openings above Hub Street potentially compromise the means of escape design for the first floor. The replacement of the revolving doors with sliding doors is not detailed and the potential impact on means of escape and make-up air inflows is potentially problematic.

Given that the atria are not properly designed as things stand, the only way forward in the context of this appeal is to enclose them in fire-resisting construction, so that they no longer need to be treated as openings in the floors. This effectively means that the Condition No. 2 attached by the Local Authority should be retained in principle with modifications only to clarify the reason for attachment of the Condition. This outcome should not preclude a re-design of the atrium to comply with BS 5588:Part 7 (Occupancy Category A) subject to meeting those concerns highlighted in this appeal.

5. CONCLUSION

It is recommended that this appeal be rejected.

The subject Condition No. 2 attached to the Fire Safety Certificate as granted by Dublin City Council (under Reference FSC035/16) on 11th January 2017 should remain with the reason for same modified as follows:-

Condition No. 2

The large voids shown at first floor and second floor levels as indicated on Drawing No. Z1/3221/3/05 Rev B dated 07/12/16 and Z1/3221/3/06 Rev A dated 14/09/16 respectively, are all to be enclosed by either solid fire-resisting construction or fire-resisting shutters or curtains may be used as appropriate. The automatic fire-resisting shutters or curtains, are to provide adequate separation between the lower floor and the upper floor to allow for means of escape.

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Reason:

To comply with Part B of the Second Schedule to the Building Regulations, 1997 to 2014. Section B1: Means of escape in case of fire.

The remaining 1 no. Condition (Conditions No. 1) attached to the granted Fire Safety Certificate is not subject of this appeal and should also remain.

The granted Fire Safety Certificate should therefore remain subject of 2 no. Conditions.

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