

**Report to An Bord Pleanála**

on

**Appeal against Conditions No's 1 and 2**

**Fire Safety Certificate (FSC 2662/16)**

by

**Dublin City Council**

for

**New 7 Storey Office Building over Basement**

at

**4-5 Harcourt Road, Dublin 2**

CLIENT	:	AN BORD PLEANALA
AN BORD PLEANALA REF NO	:	29B.FS0550
BCC REF No.	:	FA/16/1109
OUR REF.	:	17082_ 29B.FS0550_Issue 2
DATE	:	8 <sup>th</sup> March 2017

## 1.0 Introduction

### 1.1 Subject Matter of Appeal

This report sets out my findings and recommendations on the appeal submitted by Jeremy Gardner Associates [hereafter referenced as JGA] on behalf of their Client, Green REIT (HR) Ltd., against Conditions No's 1 and 2 attached to the Fire Safety Certificate (BCA Reg. Reference No. FA/16/1109) granted by Dublin City Council [hereafter referenced as DCC] in respect of an application identified in the Grant of Certificate as follows:

*“Construction of a new building: It is proposed to construct a new office building on Harcourt Road. The building has 7 floors including a mezzanine level above ground floor. The building also has a single storey basement and a roof level with an open air plant room.”*

The conditions being appealed are as follows:

#### **Condition 1**

*The fire-fighting stairs shall comply with Table 6 of BS 5588 Part 5: 2004 and be provided with either:*

- 1. A 1.0m<sup>2</sup> openable vent/window at each upper storey/landing; or*
- 2. An openable vent having a clear openable area of not less than 1.5m<sup>2</sup> situated at the top of the stair enclosure in the horizontal position (not in the vertical position as indicated in the application). This vent shall be provided with a remote control mechanism located adjacent to the fire service access doorway capable of opening and closing the vent in accordance with section 13.2.3.3 of BS 5588 Part 5: 2004.*

*Reason: To comply with Part B5 of the Second Schedule to the Building Regulations, 1997 to 2014*

#### **Condition 2**

*The section of external wall located at grid line 2-A, which creates an internal junction with the fire-fighting shaft shall comply with the recommendations of section 7.1.5 of BS 5588: Part 5: 2004, shall have a fire resistance of not less than 120 minutes and shall be of robust construction in accordance with section 5.3.4 of Technical Guidance Document B. The use of fire curtains as indicated in the application shall not be permitted.*

*Reason: To comply with Part B5 of the Second Schedule to the Building Regulations, 1997 to 2014*

Having regard to the nature of the Conditions under appeal, it is considered that the appeal can be adjudicated upon without consideration of the entire of the application.

## 1.2 Documents Reviewed

- 1.2.1 Fire Safety Certificate Application and Supporting Documentation submitted by JGA on behalf of their Client on 01/03/2016.
- 1.2.2 Additional Information submitted by JGA on behalf of their Client on 06/06/2016.
- 1.2.3 Additional Information submitted by JGA on behalf of their Client on 30/06/2016.
- 1.2.4 Additional Information submitted by JGA on behalf of their Client on 21/09/2016.
- 1.2.5 Additional Information submitted by JGA on behalf of their Client on 06/08/2016.
- 1.2.6 Appeal submission to An Bord Pleanála by JGA dated 09.11.2016.
- 1.2.7 Fire Officers Report on Fire Safety Appeal dated 05/12/2016
- 1.2.8 Response to Fire Offices Report by JGA dated 22.12.2016.

## 2.0 Building Control Authority's case

### Condition 1

It is the Fire Officer's view that the provision of two 1.5m<sup>2</sup> automatic opening vents (AOV) located in the walls at the top of the fire-fighting stairs are not equivalent to one 1.5m<sup>2</sup> AOV in the roof of the stairs.

They state that in accordance with Table 6 of BS 5588 Part 5: 2004 a 1.5m<sup>2</sup> AOV is required at the top of the stairs i.e. the full surface area of the vent should be located at the highest point of the stair enclosure. Alternatively a 1.0m<sup>2</sup> openable vent should be provided on the external wall of the stairs at each storey.

The Fire Officer deems that the appellant's proposal could compromise the safety of the fire-fighters and is unsatisfactory for fire-fighting operations.

Finally the Fire Officer dismisses the appellant's reference to a similar scenario in a recently granted Fire Safety Certificate by noting that DCC assesses each Fire Safety Certificate on their own merits.

### Condition 2

It is the Fire Officer's view that the provision of a fire curtain is not equivalent / or will not offer the same level of protection to fire-fighters as a 120 minute fire resisting wall of robust solid construction. They are of the opinion the proposal could compromise the safety of fire-fighters and is unsatisfactory for fire-fighting operations.

They state that in accordance with Section 7.1.5 of BS 5588 Part 5: 2004: -

- The side internal to the fire-fighting shaft of any exterior wall facing or adjacent to the accommodation should have a fire resistance of 2 hours; and
- Shall be of robust construction so that the fire resistance is unlikely to be impaired by mechanical damage.

They are of the opinion that the use of an automatic fire curtain and glass panel to separate the fire curtain from the office accommodation cannot be classified as robust construction and is likely to be impaired by mechanical damage. In addition they state that the automatic fire curtain may not achieve 120 minutes fire resistance in terms of insulation as per Table A1 of TGD-B.

They also point out that the applicant acknowledges that the fire curtain on a floor may fail to operate when required and that fire-fighters would be expect to use an alternative stairs (stair 2) to access all floor levels (basement to sixth floor). However stair 2 does not provide access to the plant areas at roof level nor is stairs 2 provided with a fire fighters lift, ventilated lobby or protected by a 120 minute fire resistant fire-fighters shaft.

### 3.0 Apellant's Case

In their appeal submission to An Bord dated 09.11.2016 the Appellant makes the following arguments in support of their case for removal of Conditions 1 and 2.

#### **Condition 1**

*The fire-fighting stairs shall comply with Table 6 of BS 5588 Part 5: 2004 and be provided with either:*

- 1.0 *A 1.0m<sup>2</sup> openable vent/window at each upper storey/landing; or*
- 2.0 *An openable vent having a clear openable area of not less than 1.5m<sup>2</sup> situated at the top of the stair enclosure in the horizontal position (not in the vertical position as indicated in the application). This vent shall be provided with a remote control mechanism located adjacent to the fire service access doorway capable of opening and closing the vent in accordance with section 13.2.3.3 of BS 5588 Part 5: 2004.*

*Reason: To comply with Part B5 of the Second Schedule to the Building Regulations, 1997 to 2014*

The Appellant makes the following points/arguments:

- It is proposed that the AOV's to Stair 1 will be provided at roof level on the elevations of the stair. Due to the nature of the stair it is not possible to provide the AOV horizontally as the roof of the stair is an entirely glazed panel.
- They state the Section 13.2.3.1 of BS 5588 Part 5 requires a 1.5m<sup>2</sup> AOV at the top of the stairs. Similarly, BS 9999 specifies that the AOV should be located at the head of the stairs. Neither code specifies that the AOV is required to be horizontal or on the roof.
- In addition they note Stair 1 will be provided with two 1.5m<sup>2</sup> AOV's at the top of the stair. These will be situated vertically on the south and west elevations and will be bottom hung so that the opening is at a high level. They state that this arrangement ensures that there will be no adverse wind affects.
- They maintain that their proposed AOV location arrangement is at least as good as the option of providing 1.0m<sup>2</sup> openable vents at each level.
- Finally they refer to an office building which was granted in 2014, the RCSI on York Street (FSC 1699/14) which had the same arrangement.

#### **Condition 2**

*The section of external wall located at grid line 2-A, which creates an internal junction with the fire-fighting shaft shall comply with the recommendations of section 7.1.5 of BS 5588: Part 5: 2004, shall have a fire resistance of not less than 120 minutes and shall be of robust construction in accordance with section 5.3.4 of Technical Guidance Document B. The use of fire curtains as indicated in the application shall not be permitted.*

*Reason: To comply with Part B5 of the Second Schedule to the Building Regulations, 1997 to 2014*

The Appellant makes the following points/arguments:

- Building Regulation guidance recommends that the exterior wall within 5m of the fire-fighting shaft should have a fire resistance of 2 hours from the accommodation side. They propose that a 120 minute fire resistant (integrity only) fire curtain provided on 1<sup>st</sup> to 6<sup>th</sup> floor along a small section of the east elevation that is activated on detection of smoke or fire within the building meets this recommendation.
- They state that the section of glazing that is provided with the fire curtain is at a right angle to the firefighting stair and is not parallel to it at any point.
- To ensure that the fire curtain descends fully there will be a management procedure in place to test it regularly. It will also be ensured that there are no desks, chairs, coat racks etc. within the vicinity of the fire curtain. This will be ensured by providing a permanent glass panel to separate the fire curtain from the office thus ensuring that the fire curtain channel will be kept free from obstruction and reducing the risk of the curtain from not descending fully.
- Stair 2 has been provided with a dry riser and therefore can be used as a reserve firefighting stair should the fire curtain fail.
- A fire curtain has been installed in other similar buildings to protect the fire fighting shaft such as Heuston South Quarter Brunel Building 7A (FA 06/1673) and Block H Central Park (15/8012/7day)

## 4.0 Consideration

### Condition 1

Section 13.2.3.1 of BS 5588; Part 5; 2004 states: -

#### 13.2.3.1 General

Openable vents should be provided in accordance with Table 6.

**Table 6 — Recommendations for fire-fighting shafts ventilated by natural means**

Fire-fighting provisions within building		Openable vent	
Fire-fighting stair or lobby	Position of stair or lobby	Geometric area of vent m <sup>2</sup>	Position of vent
Stair	On external wall	1.0	At each storey
Stair	Not on external wall	1.5	At top of stair
Stair	Serving only basement levels less than 10 m depth and leading directly to a final exit	—	None <sup>a</sup>
Lobby	Above ground level on an external wall	1.0	Near to ceiling direct to open air
Lobby	Above ground level not on an external wall	1.5	At each storey to a smoke shaft
Lobby	At each basement level	1.0	High level direct to open air or to a smoke shaft serving only that level
Smoke shafts should be in accordance with 13.2.3.2.			
Openable vents should be in accordance with 13.2.3.3.			
<sup>a</sup> The door to the final exit serves as a vent.			

It is noted that the guidance in BS 5588 Part 5 does not state whether or not the Automatic Opening Vent (AOV) at the top of the stair needs to be on the horizontal or vertical. It is further noted it does not recommended that 'the full surface area of the vent should be located at the highest point of the stair enclosure' as stated by DCC in their response.

It is noted that the height of the roof over the top landing of a stair has to be only 2.1m. Therefore an AOV on the horizontal only has to be 2.1m from the landing. In this instance the full vents on the vertical are above this height.

Therefore the main distinction between the positions of the AOV's is their susceptible to adverse wind affects. An AOV on the vertical would be typical more susceptible. The appellant counters this issue by providing two 1.5m<sup>2</sup> on the Southern and Eastern elevations. However as these are not on opposing elevations, as would be expected, they are still both potentially susceptible to a South-East wind. The appellant has not demonstrated that the provision of the two AOV's removes any potential susceptibility to adverse wind affects.

## Condition 2

Section 7.1.5 of BS 5588 Part 5: 2004 state following: -

### *7.1.5 Fire resistance of fire-fighting shafts*

Where a fire-fighting shaft is sited against an exterior wall, if any glazed area or opening in the exterior wall of the fire-fighting shaft is less than 500 mm from the junction of the fire-fighting shaft with the exterior wall, then the fire resistance of the external wall immediately adjacent to the glazed area or opening should be not less than 1 h from both sides for a horizontal distance of 500 mm [see Figure 8a)].

If one or more walls enclosing a fire-fighting shaft are exterior walls, one of the following recommendations apply unless the distance between the fire-fighting shaft and the accommodation is not less than 5 m [see Figure 8b), Figure 8c) and Figure 8d)]:

- a) either the side nearest the accommodation of any exterior wall facing or adjacent to the fire-fighting shaft should have a fire resistance of 2 h; or
- b) the side internal to the fire-fighting shaft of any exterior wall facing or adjacent to the accommodation should have a fire resistance of 2 h.

It is further noted that Paragraph 4 of:

### *7.1.4 Layout of fire-fighting shafts*

Whenever possible a fire-fighting shaft should not be exposed to the dangers of radiant heat from an adjacent face of the building. Where this is not possible, the construction of the fire-fighting shaft should be designed to take into account the heat radiation it could be exposed to during a fire.

There are two options to consider;

- a. does the proposed solution meet the 2hr fire resistance requirement and in particular the recommendation that a fire-fighting shaft should not be exposed to the dangers of radiant heat from an adjacent face of the building?

The appellant proposes a 120 minute fire resistance curtain (integrity only). They have therefore ignored the radiant element / risk. That is not to say that it cannot be demonstrated that the fire curtain with respect to the stair core does not expose the stair to the risk, they just have not done so.

- b. Is a fire curtain a reliable solution?

Given the proposal to provide the curtain behind glazing, and the acceptance of the use of curtains in fire safety engineering and codes of practice (i.e. BR368, BS9999 etc.) it is my opinion that the use of a curtain is an acceptable solution. It is noted that management of the system is important, as is the specification of the curtain.



## 5.0 Recommendations

Having considered the above with respect to the Conditions 1 and 2 it is my recommendation that the appellant be given the opportunity to provide an Bord with the following supporting documentation / information: -

### **Condition 1**

The appellant is asked to demonstrate that a location of the proposed AOV's on the vertical will not make them susceptible to adverse wind affects.

### **Condition 2**

The appellant is asked to demonstrate using recognised fire engineering methods that the fire-fighting stair will not be adversely affected / exposed to the dangers of radiant heat from the adjacent face of the building.

Furthermore the appellant is asked to provided a full and detail maintenance regime proposed for the fire curtains and confirm that all proposed components meet the recommendations of relevant IS / EN standards.



### **Des Fortune**

Director | Chartered Engineer | BSc(Eng) DipEng MSc (Fire Eng) CEng MIEI

Date: 8<sup>th</sup> March 2017