Report for An Bord Pleanala

on

Appeal against Condition 11, 17, 18 and 27 to Fire Safety Certificate (FSC2102732DC)

for

Proposed Construction of an 8 Storey Office Building Over Basement Car Park

at

Hume House, 128 Pembroke Road, Dublin 4

Client:	An Bord Pleanala
An Bord Pleanala Ref:	313346-22
Our Ref:	ABP_R015_Issue 1
Date:	1st September 2022

1.0 Introduction

This report sets out my findings and recommendations on the appeal submitted by MSA, acting on behalf of Irish Life, against Condition 11, 17, 18 and 27 to Fire Safety Certificate (FSC2102732DC/SN3002080) by Dublin City Council in respect of an application for works related to the Proposed Construction of an 8 Storey Office Building over Basement Car Park at Hume House, 128 Pembroke Road, Dublin 4.

It is noted that 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.

1.1 Subject of Appeal

Condition 11, 17, 18 and 27 of the Fire Safety Certificate (FSC2102732DC) granted by Dublin City Council are as follows: -

Condition 11:

The elements of structure and compartmentation shall have a minimum period of fire resistance of 60 minutes based on the height of the top storey above access level being not more than 30m and the provision of a sprinkler system provided throughout the building to IS EN 12845: 2015 +A1: 2019 in accordance with Table 23 of BS9999: 2017. Should two floors be added in the future, as referred in the accompanying compliance report and thereby increasing the height of the top storey to more than 30m above access level, the minimum period of fire resistance and compartmentation shall be 120 minutes. Where one element of structure supports or give stability to another element of structure, the supporting elements shall have no less fire resistance than the other element.

Reason:

To comply with Part B of the Second Schedule to the Building Regulations, 1997 to 2019.

Condition 17:

Stair 01 shall be constructed as a protected shaft and shall discharge by way of a protected exit passageway to a final exit. The protected exit passageway shall have the same standard of fire resistance and lobby protection as the stairway it serves and the final exit shall be in accordance with clause 15.6.6 of BS9999: 2017

Reason:

To comply with Part B of the Second Schedule to the Building Regulations, 1997 to 2019.

Condition 18:

The central lift lobby located between grid line D-E and 3-6 shall be compartmented from the adjacent accommodation on all floor levels by not less than 60 minute fire resisting construction complete with fire door-sets per clause 32.1 of BS9999: 2017, except as modified by condition 11 herein.

Reason:

To comply with Part B of the Second Schedule to the Building Regulations, 1997 to 2019.

Condition 27:

The entrance doors to the Fire Fighting Shaft serving Fire Fighting Stair 04 shall be located along gridline 10 at ground level (fire and rescue service access level) and shall be clearly signposted. Fire Fighting Stair 04 shall be accessed by way of a protected corridor and in accordance with clause 20.2.2 of BS9999: 2017.

Reason:

To comply with Part B of the Second Schedule to the Building Regulations, 1997 to 2019.

2.0 Documentation Reviewed

2.1 Fire Safety Certificate Application (application form, compliance report and fire safety drawings) submitted by MSA, on behalf of Irish Life Assurance, on 26th March 2021.

2.2 Further information requested by Dublin Fire Brigade on 26th May 2021 (contents of requested information not provided).

2.3 Additional Information (letter, additional information, revised compliance report and revised drawings) submitted by MSA on 29th June 2021.

2.4 Further information requested by Dublin Fire Brigade on 11th August 2021 (contents of requested information not provided).

2.5 Additional Information (letter, additional information, revised compliance report and revised drawings) submitted by MSA on 9th September 2021.

2.6 Further information requested by Dublin Fire Brigade on 21st October 2021 (contents of requested information not provided).

2.7 Additional Information (letter, additional information, and revised drawings) submitted by MSA on 18th November 2021.

2.8 Granted Fire Safety Certificate No. FSC2102732DC (Managers order No: FSC1114/22) from Dublin City Council dated 16th March 2022.

2.9 Letter of Appeal from MSA, acting on behalf of Irish Life, received by An Bord Pleanála on 14th April 2022.

2.10 Fire Officer's report on the Fire Safety Certificate Appeal dated 13th May 2022 to An Bord Pleanála giving comments in relation to appeal of Condition 11, 17, 18 and 27.

3.0 Building Control Authority's Case

Condition 11:

The application included a proposal to add an additional two floors to the building in the future, thereby increasing the height of the top storey to 36m. The minimum level of fore resistance for elements of structure for buildings, with a height of the top storey above 30m is set down in Table 23 and Table 24 and clause 30.1 of BS9999: 2017

Table 23 gives recommendations for fire resistance of elements of structure and other parts of a building based upon the fuel load density and assuming an unventilated fire. Table 24 gives recommendations for fire resistance of elements of structure based upon the ventilation conditions given in Table 25.

Table 24 should only be used if the ventilation conditions given in Table 25 can be met. If these conditions cannot be met, then Table 23 should be used.

The applicant failed to demonstrate if the ventilation conditions given in Table 25 could be met:

- Glazing systems are designed to withstand varied weather load conditions and meet safety and security standards, however no analysis was carried out on the mechanical strength of the glazing and whether or not the system was liable to fail in a fire in order to achieve the 5% ventilation necessary.

- Glazing systems are evolving to meet energy rating obligations and sustainability targets. This is leading to advancements in glazing technologies, materials, strength, durability, thermal insultation and solar control properties. No details were provided in relation to the glazing system specification and no analysis was carried out on the glazing system to assess if it would perform as required to satisfy the ventilation parameters.

In addition, as per NOTE 2 of Table 24 it states that Table 24 is not suitable for applications in atria or light wells. The design of the building incorporates light-wells and in this regard Table 24 is not suitable and Table 23 should be used.

Following the guidance in Table 23, for a risk profile of A1 and a proposed height of 36 meters, the fire resistance period of elements of structure should be 120 minutes and the building provided with a sprinkler system conforming to IS EN 12845: 2015 +A1: 2019.

Condition 17:

Each of the floors throughout the proposed building are designed as compartment floors. Stairs 01 penetrates all nine compartment floors. It serves every floor from the basement car park level to the seventh floor (top floor) level and passes directly from compartment to another. In this regard, and in accordance with clause 3.98 of BS9999: 2017, it is defined as a protected shaft designed to delay or prevent the spread of fire between compartments.

The construction enclosing the protected shaft should form a complete barrier to fire and smoke between the different compartments which the shaft connects, having the

appropriate fire resistance given in Tables 22 and 23 and comply with clause 31.4.6.2 of BS9999: 2017 for the construction of compartment walls.

Under clause 31.4.6.3 of BS9999: 2017, a stair linking one compartment to another should be in a protected shaft and the fire resistance performance of the enclosure of a protected shaft containing a stairway should be the same as the fire resistance performance of the compartment.

Stair 01 is situated beside the reception and provides direct access to the central lift lobby serving both the main entrance accessible from Pembroke Road and the rear entrance accessible from Shelbourne Lane. Stair 01 also serves as the primary circulation route between all floors throughout the building. It is extremely unlikely that this stair will not be used by persons escaping in the event of an emergency. It is most appropriate therefore, in this instance, that Stair 01 discharge by way of a protected exit passageway (such as the escape route leading to Shelbourne Lane) to a final exit in accordance with clause 3.99 of BS9999: 2017.

Condition 18:

Each of the floors throughout the proposed building are designed as compartment floors. The seven lift shafts (lift wells) in the central lift lobby located between grid lines D-E and 3-6 penetrate all nine compartment floors. The lifts serve every floor from the basement car park to the seventh floor (top floor) level and pass directly from one compartment to another. In this regard and in accordance with clause 3.98 of BS9999: 2017, each of the lift wells are defined as protected shafts designed to delay or prevent the spread of fire and smoke between compartments.

Under clause 15.8 of BS9999: 2017 for fire protection of lift installations, lift wells should either be contained within the enclosures of a protected stairway, or be enclosed throughout their height with fire resisting construction. A lift well connecting different compartments should form a protected shaft. The nature of lift doors is such that they cannot be designed with a smoke seal. And for this reason the central lift lobby should be compartmented from the adjacent accommodation on all floor levels by not less than 60 minutes fire resisting constriction complete with fire door-sets per clause 32.1 of BS9999: 2017 except as modified by condition 11.

Condition 27:

The design proposal to locate the entrance to the Fire Fighting Shaft and Fire Fighting Stair 04 underneath the floor slab within the building, recessed and orientated at 90 degrees to the external elevation and next to an ESB Switch Room, ESB Substation and LL Switch Room is in contravention of Figure 20 and Figure 21 of BS9999: 2017.

Furthermore, the MSA statement that 'Stair 04 discharges to a double height space which is effectively the open air given that 2 of the elevations are completely open to the outside.', is an inaccurate statement. A double height space is not effectively open air and only one of the elevations, the elevation onto Shelbourne Lane is open to outside.

DFB provided the definition of 'open-air' as being an open-air place or event is outside rather than in a building. If you are in the open air, you are outside rather than in a building.

As per clause 20.1.1 of BS9999: 2017, arrangement of the fire-fighting shaft should be logical and simple, so that fire and rescue service personnel have no difficulty in finding the fire-fighting shaft and fire fighting operations are not impeded or delayed.

As per clause 20.2.2 of BS9999: 2017, entry to a fire fighting shaft at fire and rescue service access level should be available either: -

a) directly from the open air (see Figure 20 and Figure 21); or
b) by way of a protected corridor not exceeding 18m in length. The corridor is deemed to be part of the fire fighting shaft, and any access to it form the accommodation should be by way of protected lobbies.

In both scenarios the fire and rescue service entrance door at fire and rescue service access level is accessed directly from the open air, providing a safe and effective area for initiating fire-fighting operations as illustrated in Figure 20 and Figure 21 of BS9999: 2017.

4.0 Appellant's Case

Condition 11
Internal fire spread structure with particular regards to elements of structure which was designed utilising the guidance in Section 32 and Table 24 of BS9999: 2017. Section 32 of BS9999: 2017 states that the fire resistance periods should be determined from Table 24 subject to the ventilation conditions given in Table 25 being met.

The ventilation conditions in Table 25 are being met as determined in Section 3.3 of MSA compliance report and as restated in appeal letter.

In the event of the 2 additional floors being added, this brings the height of the top storey to over 30m but not more than 60m, the actual height of top storey will be 36m. The required period of fire resistance and compartmentation required under Table 24 of BS9999: 2017 is therefore 75 minutes and not 120 minutes as required in condition 11.

The proposed level of fire resistance provided in the event of the 2 additional floors being added is 90 minutes; this is considered to be acceptable on the following basis: -

- In the event of the top storey being less than 30m the required period of fire resistance required under Table 24 of BS9999: 2017 is 60 minutes and the Fire Safety Certificate has been granted on this basis permitting the use of Table 24 of BS9999: 2017.
- The building is being provided with a sprinkler system in accordance with IS EN 12845 2015 +A1: 2019.
- The risk profile for the building is Risk Profile A1 i.e. occupants who are awake and familiar with the building.
- For a building height of greater than 30m but less than 60m (i.e. the 2 additional floors being constructed), the required period of fire resistance required under Table 24 of BS9999: 2017 is 75 minutes.
- The proposed period of fire resistance of 90 minutes as committed to under Table 15 of MSA compliance report in the event of 2 additional floors being added.

Condition 17
As outlined in Section 1.5 of MSA compliance report, the building is being provided with 4 stairways as detailed below: -

- Stair 1 – Protected stairs serving all levels from Basement to Seventh floor. This stair is an accommodation stair only and is not being used as part of the means of escape of the building.
- Stair 2 – escape stairs serves all levels from Lwr Ground to Fifth floor.
- Stair 3 – Firefighting and escape stairs serves all levels from Basement to Seventh floor.
- Stair 4 – Firefighting and escape stairs serves all levels from Basement to Seventh floor.

The stairs capacity for the building above ground has been clearly demonstrated in Table 10 of MSA compliance report and as restated in appeal letter.

As Stairs 01 has been designed as an accommodation stair only and has not been taken for in the stair capacity for the building both above and below ground level, it is therefore considered acceptable for the stairs not to discharge direct to outside or via a protected exit passageway.

As outlined in MSA compliance report the proposed Stair 01 is already being designed as a protected shaft and is being enclosed in 90 minutes REI fire resistance rating as required under Table 22 and Table 24 of BS9999: 2017.

Condition 18

In accordance with Section 15.8 of BS9999: 2017 there is no requirement for the lift lobbies to be compartmented off from the office floors or protected lift lobbies on the basis of the following: -

- The building has been designed for simultaneous evacuation and not phased evacuation.
- The building does not contain any sleeping accommodation.
- The lifts do not serve any floors containing high risk area. By reference to Section 13.4 and Section 31.4.7 of BS9999: 2017, offices are not considered a place of high fire risk.
- Protected lift lobbies are provided on Lwr Ground floor and Basement floor ensuring compliance with Section 15.8 of BS9999: 2017.
- The central lifts located between grid line D-E and 3-6 are compartmented (in protected shafts) from the adjacent accommodation on all floor levels by 90 minute fire resisting construction as required under Table 22 and Table 24 of BS9999: 2017 allowing for future additional floors.

Condition 27

The final exit of Firefighting Stairs 04 discharges to a double height space which is effectively the open air given that 2 of the elevations are completely open to the outside as illustrated in the 3D model.

A fire curtain achieving 60 minutes fire resistance is provided at the mouth of the ramp thereby protecting it from a fire at basement level. This fire curtain is linked to the fire alarm to drop upon activation of the fire detection and alarm system.

The final exit of Stairs 04 is considered to effectively discharge direct to outside on the following basis: -

- The overhanging slab is positioned 7.4m above finished floor level at the final exit of the firefighting Stairs 04 and given that the 2 elevations (opposing and perpendicular) are completely open to the outside air it is considered that this will not have any adverse effects on the means of escape or Fire Fighting Entrance to the building.

- A fire curtain achieving 60 minutes fire resistance is provided at the mouth of the ramp thereby fire separating off the car park form the final exit of the stairs.
- The ESB substation door is situated in excess of 3.0m away from the final exit of Stairs 04 thereby complying with the ESB specification 2019.

6.0 Consideration

Condition 11:

BS9999: 2017 allows for the determination of the required Fire Resistance for element of structure using Table 23 or Table 24. Table 24 is based on ventilation conditions as given in Table 25 and results in lower fire resistance recommendations. DFB do not agree with the use of this approach for two reasons; that it has not been demonstrated that the ventilation requirements in Table 25 have been met (5% of percentage of floor area for Office use) and the use of Table 24 is not suitable for application in atria or light-wells.

NOTE 2 of Table 25 of BS9999: 2017 states the following: -

'The potential area of ventilation refers to any construction where it is reasonably expected to fail during a post flashover fire, e.g. non-fire resisting glazing is the prime example. It does not imply that the designer has to assess what area of glazing will fail in the fire process.'

Given that the glazing is not fire resistant and that only the glazing area is being used to determine the percentage of ventilation provided then it is clear that the recommendations of Table 25 have been met. DFB have not provided any valid reason why further assessment in excess of what is recommended should be provided.

Designing Buildings (The Construction WIKI) defines a light well as follows: -

'A light well is an architectural feature that can be used to take natural light into the interior spaces of a building. It takes the form of a vertical shaft within the volume of a building that typically penetrates from roof level down to lower levels, allowing the transmission of natural light to areas that would otherwise require artificial lighting.'

It is noted that the elevation of the proposed building facing Franklin House has a section of the elevation recessed from the site boundary. However, this area is not a vertical shaft within the volume of the building and therefore in my opinion does not meet the definition of a lightwell. There are no other potential lightwells in the building. The single storey void between Ground and First floor is neither a lightwell nor an atrium.

Indeed, whether or not there is a building in the location of this boundary should be irrelevant, the design for buildings with respect to Part B should be with respect to the site boundary and not what is beyond that boundary. The only allowed exception to this is where there are roads and the relevant boundary distance is measured to the middle of the road and not the site boundary for space separation purposes. However, in this instance both sites can measure to the middle of the road.

Condition 17:

Stair 01 has been designed as a protected shaft, however it has not been designed as a protected escape stair. By having it as protected shaft the floor by floor compartmentation has been maintained (i.e. allowing for floor by floor tenants etc). There is no protected escape route from the stair at Ground level leading to outside.

DFB make the arguments that it is extremely unlikely that this stair will not be used by persons escaping in the event of an emergency and therefore a protected escape passageway to a final exit (outside) should be provided.

MSA counter that the building has been designed on the basis that this stair is an accommodation stair only and is not relied upon for the means of escape design of the building. In other words, the Stair 02, 03 and 04 provide sufficient exit capacity for the peak demand within the building.

It is noted BS9999: 2017 defines an accommodations stair as follows: -

'Stair, additional to that or those required for escape purposes, provided for the convenience of occupants.'

Furthermore section 17.2.2 of BS9999: 2017 states the following: -

'Every internal escape stair should be a protected stair (i.e. it should be within a fire-resisting enclosure). A protected stair (e.g. an accommodation stair) may, however, form part of an internal route to a storey exit or final exit, subject to an appropriate risk assessment.'

It is clear from the above that accommodation stairs are allowed and indeed can be utilized as part of an escape route. However, in the proposed building this is not even the intention. The proposed accommodation stair, Stair 01, is not an escape route and has not been indicated as such. The means of escape from the building has been designed on the basis of discounting this stair and not trying to utilize any capacity that it may have.

Condition 18:

Section 15.8 of BS9999: 2017 deals specifically with the recommendations for lifts, it states the following with regard lobbies: -

'In buildings designed for phased or progressive horizontal evacuation, where the lift well is not contained within the enclosures of a protected stairway, the lift entrance should be separated from the floor area on every storey by a protected lobby.'

It is clear from this clause that in a building not designed for phased or progressive horizontal evacuation then a lift lobby is not needed. It is further noted that this clause comes after the clause recommending that a lift well connecting different compartments should form a protected shaft. BS9999: 2017 therefore does not require lift lobbies in this instance.

Condition 27:
Cambridge Dictionary defines open air as the following: -

'Anywhere that is not inside a building.'

This is similar to the definition provided by DFB that stated 'open-air' as being an open-air place or event is outside rather than in a building. If you are in the open air, you are outside rather than in a building. The area of the under croft is in open air as it is clearly not inside a building.

DFB have stated that statement by MSA that the under croft has two open elevations is an inaccurate statement. This however is not an inaccurate statement. The under croft clearly has 2 open sides (as shown by the 3D model) and as indicated on the proposed Ground floor plan.

Although the entrance to the Firefighting Stair 04 is slightly recessed and an appliance approaching on Shelbourne Lane from the Northeast will not have a direct line of sight to it, an appliance approaching on Shelbourne Lane from the Southeast will have a direct line of sight to the entrance. Appropriate signage (as is required) will ensure that the location of the entrance is clearly identifiable from both directions.

It is noted that if the entrance is moved in line with grid line 10 as per the condition, then the slight lines will be reversed i.e. an appliance approaching on Shelbourne Lane from the Northeast will have a direct line of slight but now an appliance approaching on Shelbourne Lane from the Southeast will not have a direct line of sight. Furthermore, it is noted that Shelbourne Lane is not a one way street so an appliance could approach from either direction.

The proposed location of the entrance is in an open-air location under a high under croft (two storey) and is less than 2m from the Shelborne Lane. Relocating this entrance to gridline 10 could have a detrimental effect on the layout of the car park entrance and access to the ESB substation for little or no substantial gain.

7.0 Conclusions

Condition 11
The appellant's use of Table 24 of BS9999: 2017 to determine the proposed fire resistance for the elements of structure within the building if two additional floors are added is reasonable. Therefore, it is recommended that this Condition is removed.

Condition 17
The provision of accommodation stairs is allowed with a BS9999: 2017 approach. The appellant's design does not try to include Stair 01 in the proposed means of escape design and the proposed design works with the provision of Stair 02, 03 and 04. Therefore, it is recommended that this Condition is removed.

Condition 18
Section 15.8 of BS9999 which concerns the design of lifts within a building does not look for lobby protection to lifts to office accommodation where the building has been designed for simultaneous evacuation. Therefore, it is recommended that this Condition is removed.

Condition 27
Given the proposed location of the entrance to the Fire Fighting Stair (Stair 04) is in an open-air location under a high under croft (two storey) and is less than 2m from the Shelborne Lane it is not considered necessary to relocate the entrance as per the Condition. Therefore, it is recommended that this Condition is removed.

6.0 Recommendation

On the basis of my findings and conclusions I recommend that the applicants appeal is granted and that the Fire Safety Certificate is reissued with Condition 11, 17, 18 and 27 removed.

Signed by:

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Des Fortune
MSc(Fire Eng), BSc(Eng), CEng MIEI, MIFireE

Date: **1st September 2022**