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*Chartered Engineers*  
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**Report 3696**

**An Bord Pleanála Appeal regarding the attachment of  
Condition No. 2 by Dun Laoghaire Rathdown County Council  
to grant of a Fire Safety Certificate  
for removal of construction of a new residential building at  
Roselawn, Stillorgan Road, Foxrock, Dublin 18**

Client: An Bord Pleanála,  
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FAO: The Secretary

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**BUILDING CONTROL ACT, 1990 to 2014 – APPEAL**

**FIRE SAFETY CERTIFICATE APPLICATION FOR  
CONSTRUCTION OF A NEW RESIDENTIAL BUILDING  
AT ROSELAWN, STILLORGAN ROAD, FOXROCK, DUBLIN 18**

**APPEAL AGAINST THE ATTACHMENT OF CONDITION NO. 2  
TO FIRE SAFETY CERTIFICATE (REG. REF. 19/8085) ON 24<sup>th</sup> JULY 2020**

**AN BORD PLEANÁLA APPEAL REFERENCE 307983-20**

Local Authority: Dun Laoghaire Rathdown County Council  
Appellant: Granville Hall Partnership c/o Jeremy Gardner & Associates

### **RECOMMENDATION**

In my opinion, the Board may NOT rely on Article 40(2) of the Building Control Regulations and may NOT consider the subject appeal on the basis of Conditions only.

The appellant has received a Fire Safety Certificate from Dun Laoghaire Rathdown County Council on the basis that the residential building has been designed in compliance with BS 9991:2015. The information made available in the course of the subject appeal makes it clear that there are sufficient major deviations from BS 9991 guidance to give rise to an undue life safety risk and non-compliance with Part B1 of the Building Regulations 1997-2017, including:-

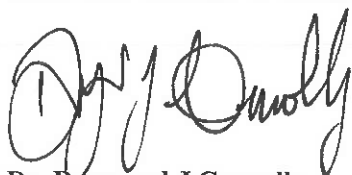
- (i) Inappropriate design of mechanical smoke ventilation system resulting in inadequate protection of the common means of escape from the effects of heat and smoke.
- (ii) Insufficient ventilation of lobbies between the basement car park and the residential escape stairs.
- (iii) Absence of sub-division of stairways between basement and upper levels.
- (iv) Inappropriate level of fire protection to basement car park.

It is recommended that the appeal be set aside and the Fire Safety Certificate be REFUSED.

**Reason:** Failure to comply with Part B1 to the Building Regulations 1997-2017.

### **Reasons & Considerations**

Having regard to the form, use and layout of the building, to the fire safety design measures proposed in accordance with BS 9991:2015 which is accepted as a basis for demonstrating compliance with Part B1 of the Building Regulations, to the submissions lodged in connection with the Fire Safety Certificate application and the appeal and to the report and recommendation of the reporting Inspector, it is considered that the appeal should be determined under Section 40(1) of the Building Control Regulations 1997-2017 as if the application had been made to the Board in the first instance and the discretion under Section 40(2) should not be exercised in this case. The original grant of the Fire Safety Certificate (with Conditions) by Dun Laoghaire Rathdown County Council, should be annulled and the Certificate should now be refused as the proposed works would not achieve an adequate level of fire safety that would comply with the requirements of Part B1 (Means of Escape in case of fire) of the Second Schedule of the Building Regulations, 1997 to 2017.



**Dr. Raymond J Connolly**

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**1. RELEVANT INFORMATION**

- i. Application for a Fire Safety Certificate by Jeremy Gardner Associates on behalf of Granville Hall Partnership Limited to Dun Laoghaire Rathdown County Council dated 24<sup>th</sup> May 2019.
- ii. Compliance Report (CI/4165/R1 Issue 1) by Jeremy Gardner Associates and associated drawings dated 24<sup>th</sup> May 2019.
- iii. Letter of additional information and associated drawings dated 7<sup>th</sup> February 2020 from Jeremy Gardner Associates to Dun Laoghaire Rathdown County Council.
- iv. Letter of additional information, associated drawings and report by One Simulations Limited dated 28<sup>th</sup> May 2020 from Jeremy Gardner Associates to Dun Laoghaire Rathdown County Council.
- v. Fire Safety Certificate (19/8085) granted by Dun Laoghaire Rathdown County Council dated 24<sup>th</sup> July 2020 (subject of 6 no. Conditions).
- vi. Letter of appeal from Jeremy Gardner Associates on behalf of Granville Hall Partnership to An Bord Pleanála dated 18<sup>th</sup> August 2020.
- vii. Fire Prevention Section, Dublin Fire Brigade Fire Officer's Report to An Bord Pleanála dated 22<sup>nd</sup> September 2020.
- viii. Letter of response to Fire Officer's Report from Jeremy Gardner Associates to An Bord Pleanála dated 21<sup>st</sup> October 2020.
- ix. Fire Prevention Section, Dublin Fire Brigade Fire Officer's Report to An Bord Pleanála dated 16<sup>th</sup> November 2020.

## **2. BACKGROUND**

Jeremy Gardner Associates acting as agent for Granville Hall Partnership made an application to Dun Laoghaire Rathdown County Council in May 2019 for a Fire Safety Certificate in respect of the construction of a residential building in 2 no. blocks over a shared basement car park at Roselawn, Stillorgan Road, Foxrock, Dublin 18.

The Fire Safety Certificate was granted by Dun Laoghaire Rathdown County Council (under Reference 19/8085) on 24<sup>th</sup> July 2020 subject to 6 no. Conditions including *inter-alia*:-

### Condition No. 2

*Store rooms in apartments shall be enclosed in a minimum 30 minutes fire-resisting construction c/w FD30 fire doors.*

### Reason:

*To comply with Part B1 of the Second Schedule of the Building Regulations, 1997 to 2020.*

On 18<sup>th</sup> August 2020, Jeremy Gardner Associates as agent for Granville Hall Partnership appealed to An Bord Pleanála against the attachment of Condition No. 2 to the granted Fire Safety Certificate. The residual Conditions (Conditions No.'s 1, 3, 4, 5 and 6) are not subject of the current appeal.

### **3. REPRISE OF APPEAL (AS PRESENTED)**

The subject works comprise the construction of a new residential building, comprising 2 no. blocks over a shared basement car park. The design includes open plan sprinkler protected flats designed in accordance with BS 9991 *Fire Safety in the Design, Management and Use of Residential Buildings – Code of Practice* (2015). The issue subject of this appeal is the need for fire protection to household storage cupboards internally within individual flats and specifically the requirement imposed by the Approving Authority (by means of the attachment of Condition No. 2) that such cupboards be enclosed with 30 minutes fire-resisting construction, including FD30 fire doors.

The appellant states that the design of the open plan apartments complies with BS 9991:2015 and includes provision of sprinklers to BS 9251:2014 and Type LD1 (Grade D) automatic fire detection and alarm within flats. Furthermore, a project specific assessment by Building Research Establishment (BRE), using its CRISP model, did not give rise to any requirements to enclose cupboards in fire-resisting construction. It is noted that this finding by BRE is substantially predicated on the effectiveness of residential sprinkler systems in maintaining occupant tenability in the case of a fire.

The Fire Authority's initial response to the appeal confirmed its view that storage rooms in open-plan flats should be enclosed in fire-resisting construction on the basis that:-

- (i) Store rooms are likely to be filled to capacity given the absence of alternative storage.
- (ii) The provision of fire-resisting enclosure does not affect the open plan design.
- (iii) The measure is a relatively inexpensive measure to improve fire safety, particularly where small store rooms (< 2 m<sup>2</sup> in area) are not fitted with sprinkler protection.

In response, the appellant highlighted that the stated view of the Fire Authority is not supported by any published policy document. Furthermore, the recently issued Technical Guidance Document B (2020) makes no reference to a need to enclose store rooms within apartments and therefore the attachment of the Condition goes beyond statutory guidance. The appellant also disputes whether the proposed fire-resisting enclosure to store rooms would indeed be relatively inexpensive and whether such a measure would improve fire safety given the open plan nature of the apartment (including cooking facilities), the provision of sprinklers within store rooms larger than 2 m<sup>2</sup>, the findings of the BRE CRISP modelling and the absence of any codified design requirement to underpin the proposal.

In a subsequent contribution, the Fire Authority clarified that its use of the term inexpensive was relative to the overall cost of the development and advised that the requirement to enclose the cupboards had been advised to the applicant in the early stages of the process, i.e. in July 2019.

A further 5 no. Conditions were also attached to the current application but same are not subject of this appeal. However, two of these other Conditions require further consideration, namely:-

Condition No. 3

*The maximum travel distance from apartments shall be in accordance with Figure 6 of BS 9991:2015.*

Reason:

*To comply with Part B1 of the Second Schedule of the Building Regulations, 1997 to 2020.*

and

Condition No. 6

*The layout of the fire-fighting shafts at fire and rescue service access level shall comply with Clause 20.2.2 and Figure 21 of BS 9999:2017.*

Reason:

*To comply with Part B1 of the Second Schedule of the Building Regulations, 1997 to 2020.*

These 2 no. Conditions (not subject of appeal) and other aspects of the design that have been considered in the context of this appeal prevent the current appeal being evaluated on the basis of Conditions only under Section 40(2) of the Building Control Regulations 1997-2017 and due to the important life safety issues involved, the entire application requires consideration *de novo*.



#### **4. CONSIDERATION**

##### Condition No. 2

*Store rooms in apartments shall be enclosed in a minimum 30 minutes fire-resisting construction c/w FD30 fire doors.*

The view of the Fire Authority that store rooms within sprinkler protected open plan flats should be enclosed in fire-resisting construction is not substantiated by any technical argument beyond that such a store room could represent a concentration in fire load. The view is not based on design guidance used to underpin current national practices such as BS 9991:2015 or Technical Guidance Document B:2020. Any additional information or empirical real-fire experiences, e.g. fire incident reports available to Dublin Fire Brigade, as might underpin the view that an absence of fire-resisting enclosure to store rooms in flats is contributory to increased fatalities or fire-fighting difficulties has not been presented.

BS 9991:2015 makes clear that there is a benefit in enclosing spaces in solid construction. The code makes allowances for unprotected enclosed entrance hallways and also for the enclosure of kitchens in flats exceeding 32 m<sup>2</sup> in area (but not necessarily in fire-resisting construction). If the code permits the enclosure of kitchens (the highest risk spaces) in unrated construction as being appropriate in a sprinkler protected open plan flat, then it can be reasonably inferred that any absence of guidance to enclose store rooms with fire-resisting construction in a similar scenario is not an omission or oversight. It is reasonable to conclude that enclosure of combustible materials within a store room by solid but non fire-rated construction is likely to be equally effective as the similar unrated enclosure required for larger kitchens and by extension the inclusion of enclosed but unrated store rooms in sprinkler protected open plan flats is compliant.

##### Condition No. 3

*The maximum travel distance from apartments shall be in accordance with Figure 6 of BS 9991:2015.*

##### Reason:

*To comply with Part B1 of the Second Schedule of the Building Regulations, 1997 to 2020.*

The proposed design includes observation of a 15 metres single direction travel distance from the most remote flat to the lift lobby door. This is not the basis for measurement allowed for in BS 9991:2015 and the appellant acknowledges this fact, relying on the argument that the lift lobby is a sterile area and a place of relative safety. It is unclear whether the attachment of Condition No. 3 by the Fire Authority is in effect rejecting this argument.

Figure 6(a) in BS 9991:2015 outlines the design option of measuring travel distance from flats to a lobby door (as opposed to the stair door). The proposed design does not meet this guidance in two significant ways:-

- (i) The limiting travel distance imposed by Figure 6(a) is 7.5 metres, whereas the submitted design includes 15 metres dead end travel. No increase in travel distance due to provision of sprinklers is allowed.
- (ii) The lobby should be protected by a smoke control system, whereas the submitted design includes a smoke control system to protect the longer dead-end corridor.

Figure 6(b) outlines the basis of design including smoke ventilation to the longer dead-end corridor (of the type most similar to what is proposed by the appellant). However, this Figure clearly includes measurement to the stair door (not the lobby door). This issue only increases the dead-end travel distances marginally, say from 15 metres to 17 metres, and is not of itself a reason to require *de novo* consideration. Notwithstanding same, the design as presented is not compatible with Condition No. 3.

#### Condition No. 6

*The layout of the fire-fighting shafts at fire and rescue service access level shall comply with Clause 20.2.2 and Figure 21 of BS 9999:2017.*

#### Reason:

*To comply with Part B1 of the Second Schedule of the Building Regulations, 1997 to 2020.*

BS 9999 relates to buildings other than blocks of flats and it is unclear why it is being referenced in this regard. However, on the basis that the intent is that the Fire Service be allowed to enter and exit the building either directly from the stairway or via a passageway that is not shared with the fire-fighting lift, it is clear that the design as presented is not compatible with Condition No. 6.

#### Further issues requiring consideration

A significant number of further considerations arise with this application that are significant to the overall fire safety design of the building to an extent that in my opinion gives rise to a fundamental non-compliance with Part B1 to the Building Regulations. I am satisfied that the Board cannot responsibly restrict itself to the consideration of Condition No. 2 in isolation and to allow the Fire Safety Certificate to stand with the Board's effective *imprimatur*.

The following is a schedule of design short-comings:-

(i) The mechanical smoke ventilation system has not been appropriately designed. Specifically:-

- The statement of intent to meet the particular design code for the mechanical smoke ventilation, i.e. Section 14.2.4 of BS 9991:2015, has been modified in respect of the applicant's setting aside of the requirement that the smoke shaft should be located at the remote end of the corridor away from the staircase. The applicant has based his design on the smoke shaft being located adjacent to the staircase, with no ventilation being proposed at the remote ends of the corridor.
- The components of the mechanical smoke ventilation system are not identified within the compliance documentation nor are sufficient performance specifications offered, e.g. fan temperature ratings. The applicant's Fire Safety Compliance Drawings do not identify the proposed smoke shaft locations nor detail their sizes. More worryingly, the make-up air paths identified in the CFD model report as comprising 0.6 m<sup>2</sup> natural openings from the lift lobbies are not detailed and the lobbies in question are land-locked and devoid of riser shafts (as might offer obvious make-up air paths).
- The CFD modelling underpinning the design of the mechanical smoke ventilation system is incorrectly framed and focusses on the protection of the fire-fighting stairs against smoke ingress. In fact, the extent of dead-end travel distances requires that the tenability conditions for escape along the corridors need to be validated to allow the single direction travel distance to be justified in line with the applicant's original undertaking that the CFD study "would demonstrate conditions within the corridor that are equivalent or better than the natural ventilation system that it replaces".
- The CFD modelling underpinning the design of the mechanical smoke ventilation system includes an assumed timeline of events that is predicated on the "stay put" escape model that underpins BS 9991:2015. This evacuation model is not used in Ireland, where a single phase simultaneous evacuation model is national practice, and is correctly the basis of the current application. This means that stair door on the storey of fire origin will likely be open for significantly longer durations than assumed in the modelling and also that doors into the stairs on multiple levels will be open simultaneously and over a range of time intervals. Of more concern, is the fact that after the initial escape of those occupants leaving the flat of fire origin and the closing of the stair door, the ramping down of the extraction fan to avoid undue negative pressure differentials (as would potentially impair the ability to open doors) would exacerbate untenable conditions within the corridor meaning that persons evacuating neighbouring flats would potentially be impaired.

- The CFD modelling assumed triggering of the corridor smoke ventilation system based on sprinkler operation within any individual flat. Again this reflects UK practice. In Ireland, there will be centralised Type L2/L3X building-wide fire detection within flats (as per Condition No. 5 attached to the Fire Safety Certificate) which would be a more appropriate trigger for the smoke fans.
- The CFD modelling uses a design fire size of 317 kW for a sprinkler-controlled fire within a flat. This is not a sufficiently large design fire size and the results of the modelling cannot be relied upon as being appropriate to the size of fire as might occur.
- The CFD modelling does not include any measures of tenability. It is stated that during the escape phase (from 163 seconds to 183 seconds), i.e. 20 seconds in duration, the corridor fills with smoke but no smoke enters the stairs or its lift lobby. This is scarcely surprising considering that the stairs is fitted with an AOV (assumed open) and the lift lobby fitted with an unidentified 0.6 m<sup>2</sup> natural smoke path. However, no analysis is given as to the conditions arising within the dead-end corridor (as would be faced by occupants of neighbouring flats making their escape). Furthermore, the duration of door openings is not compatible with simultaneous evacuation model as appropriate to the subject development.
- The CFD modelling identifies smoke within the lift lobby for up to 60 seconds. This is not compatible with the applicant's measurement of travel distance to the lobby door as opposed to the stairway door, i.e. the storey exit.
- BS 9991 requires that mechanical smoke ventilation systems be validated by comparison of the conditions arising with the equivalent conditions arising for a code compliant natural ventilation system. No such comparison has been undertaken.
- The contours illustrating conditions in the corridor are insufficiently detailed to allow confirmation of tenability – notwithstanding that no quantitative tenability acceptance criteria have been proposed by the applicant.
- The chosen fire scenario may represent the worst case for the protection of the stairway against smoke ingress, but the onset of fire in a flat most remote from the smoke extraction point would be more onerous in terms of occupant tenability along their escape route.
- The CFD modelling has the evacuation and fire-fighting phases all completed some 500 seconds after ignition. The Fire Service may not be in attendance at the storey of fire origin

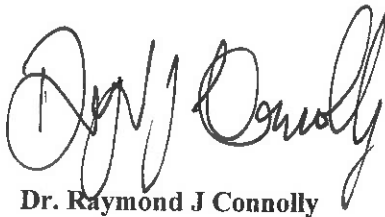
within this relatively short interval and are certainly unlikely to have completed operations as assumed.

- (ii) The residential stairways are not sub-divided at ground floor level in Block A as required by Figure 32 of BS 999:2015.
- (iii) Section 32(c) and Table 13 of BS 9991:2015 requires that enclosed car parks be separated from stairs serving as the escape route from flats overhead by fire-resisting lobbies fitted with 1.0 m<sup>2</sup> automatic opening ventilation – not 0.4 m<sup>2</sup> as proposed by the applicant. The extent of ventilation proposed between the 4 no. stair cores and the car park is therefore inadequate.
- (iv) Notwithstanding the reference to Technical Guidance Document B in the applicant's letter of additional information (dated 7<sup>th</sup> February 2020), the basement is proposed to be designed to BS 9991. Section 48 of BS 9991 outlines the basis for design of enclosed car park. Clause 48.1(d)(3) makes it clear that the fire resistance rating required for elements of structure in car parks beneath a building more than 18 metres in height is 90 minutes. The applicant has proposed installation of 60 minutes fire resistance on the basis of Table 4 of BS 9991 and the relaxation of the requirement for 90 minutes fire protection to 60 minutes in the case of buildings fitted with BS 9251:2014 (Category 2) sprinkler protection. The car park is not proposed to be fitted with sprinkler protection and accordingly the relaxation in fire rating from 90 minutes to 60 minutes is inappropriate. The proposed omission of sprinkler protection to the car park conflicts with Section 13 of BS 9991:2015 which states "*where a building is otherwise provided with sprinkler protection, any enclosed car park accessed from within the building should also be provided with sprinklers in accordance with BS EN 12845.*" The level of fire protection specified at basement level is therefore inadequate.
- (v) Given the height of the proposed building exceeds 18 metres, Clause 18.2 of BS 9991:2015 prohibits the use of combustible cladding materials, including timber, and combustible insulation materials within the external wall construction (unless proven by full scale fire test to BS 8414 to meet the criteria given in Building Research Establishment Report BR 135. This prohibition applies to all elevations of the building where walls that do not comprise twin leaf masonry (as per Figure 25 of BS 9991) are proposed. The application does not include any details on the materials to be installed within the elevations.

## **5. CONCLUSION**

In my opinion, the Board may not rely on Article 40(2) of the Building Control Regulations to consider the subject appeal on the basis of Conditions only and needs to consider the application de novo as if it had been made to the Board in the first instance.

It is recommended that the Board annul the original decision to grant (with Conditions) the Fire Safety Certificate and now to REFUSE the application on the basis that the proposed design does not demonstrate compliance with Part B 1 to the Building Regulations 1997-2017.



**Dr. Raymond J Connolly**

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