

**Report for An Bord Pleanála**

**on**

**Appeal against Refusal to Grant Fire Safety Certificate (Reg. Ref. 18/8199)**

**for**

**Material Alterations to Remove an External Stair**

**at**

**Ardmore House, UCD, Belfield, Dublin 4**

Client:	An Bord Pleanála
An Bord Pleanála Ref:	ABP-304851-19
Our Ref:	ABP_R004_Issue 1
Date:	6 <sup>th</sup> December 2019

## **1.0 Introduction**

This report sets out my findings and recommendations on the appeal submitted by JGA (Jeremy Gardner Associates), on behalf of their client University College Dublin, against the decision to refuse to issue a Fire Safety Certificate (FSC/DR/311/19) by Dun Laoghaire-Rathdown County Council in respect of an application for Material Alterations to Remove an External Stair at Ardmore House, UCD, Belfield, Dublin 4.

## **1.1 Subject of Appeal**

Dun Laoghaire-Rathdown County Council issued a Refusal to Grant the Fire Safety Certificate for the following reason: -

***Reason:***

*The proposed development does not comply with the design requirements of Part B1 – Means of escape in case of fire and Part B3 – Internal fire spread (structure) of the Second Schedule to the Building Regulations, 1997 to 2017.*

## **2.0 Documentation Reviewed**

- 2.1 Fire Safety Certificate Application (application form, compliance report and fire safety drawings) submitted by JGA on behalf of their client UCD, on 23<sup>rd</sup> October 2018.
- 2.2 Fire Officer's Report on Fire Safety Certificate Recommendation for Refusal dated 7<sup>th</sup> June 2019.
- 2.3 Notice of Refusal to Issue a Fire Safety Certificate from Dun Laoghaire-Rathdown County Council dated 11<sup>th</sup> June 2019.
- 2.4 Letter of Appeal from JGA, on behalf of their client UCD, dated 5<sup>th</sup> July 2019
- 2.5 Fire Officer's report on Fire Safety Certificate Appeal dated 25<sup>th</sup> July 2019 to An Bord Pleanála.
- 2.6 Letter from JGA, on behalf of their client UCD, dated 16<sup>th</sup> September 2019 in response to Fire Officer's report.

### 3.0 Building Control Authority's Case

The decision of the Building Control Authority to refuse the application is for the following reasons: -

- JGA were previously advised that if they proposed any material alterations to the existing building that the single means of escape would have to be protected, the floors upgraded etc. (the building requires to be fully compliant).
- The CFAST Analysis is deemed unsuitable and inadequate as: -
  - It compares the design (high ceiling) to a normal ceiling height building but not a TGD-B complaint building.
  - There is a smoke layer of height 2.1m after approximately 150 seconds with no analysis showing that the occupants would be able to escape the building with 150 seconds (i.e. pre-movement, alarm time, travel time etc not addressed)
- To remove the existing external stair the application needs to include the entire Ground Floor and First Floor levels because of the extent of upgrading works required to comply with TGD-B.
- The means of escape from the building does not comply with Section 1.2 of TGD-B for horizontal escape as follows: -
  - The separation of the circulation routes from stairways does not comply with Section 1.2.3.5 of TGD-B in that the escape stairway forms part of the primary circulation route between different parts of the building at the same level.
  - The corridors do not comply with Section 1.2.5 of TGD-B in that dead-end corridors are not protected corridors.
- The means of escape from the building does not comply with Section 1.3 of TGD-B for vertical escape as follows: -
  - The enclosure of the stairway does not comply with Section 1.3.6.2 of TGD-B as the enclosure of stairway is not situated within a fire resisting enclosure.
  - Not all exits from the stairway comply with Section 1.3.6.3 of TGD-B as the alternative escape at Ground Floor level adjacent the toilets does not go by way of a protected exit passageway.
  - Section 1.3.6.5 of TGD-B use of space within protected stairways has not been addressed.
  - Section 1.3.6.6 of TGD-B fire resistance and openings in external walls of protected stairways has not been addressed.
  - Section 1.3.6.7 of TGD-B gas service pipes in protected stairways has not been addressed.
  - Section 1.3.6.8 of TGD-B separation of special fire risk areas has not been addressed.
  - Section 1.3.8 of TGD-B protected lobbies and corridors to escape stairways has not been addressed.

- Clause 9.1 of BS 5588: Part 11 commentary states: -

‘Whilst it is recognised that in practice accommodation stairs will be used for escape if free from smoke and heat, they are discounted when assessing protected stairway capacity. Therefore, they should not be the sole means of access between different storeys (except where permitted from mezzanines, see 8.4 and in small premises, see 10.2.4).’

Clause 9.1.2 clearly states that ‘Accommodation stairs should be so sited that their location does not prejudice the access to the means of escape at the upper floor level(s)’.

In this instance, the accommodation stairs (main stairs) clearly prejudices the access to the means of escape at the upper floor level in order to access the new protected stairwell the occupants will have to travel through the accommodation stairs. Therefore, the means of escape does not comply with Clause 9 of BS 5588: Part 11.

- The existing building has not been dealt with in accordance with Section 3.1 of TGD-B loadbearing elements of structure in the compliance report. It is only stated that ‘any new elements of structure will achieve 60 minutes fire resistance’ which relates to the Fire Safety Application Reg. Ref. 18/8058.
- No fire resisting construction indicated on the Section through the existing building.
- JGA state in their case for appeal that ‘elements of structure within the existing areas of the building will be treated to achieve 60 minute fire resistance’. The wording should be modified to ‘all elements of structure (existing and proposed) within the existing areas of the building will be treated to achieve 60 minute fire resistance’ which would comply with Section 3.1, Table A1 and A2 of TGD-B.

They conclude that the design proposed by JGA does not provide adequate means of escape in case of fire from the building to a place of safety outside the building, capable of being safely and effectively used.

## 4.0 Appellant's Case

The appellant's case for against the refusal is as follows: -

- During assessment of Fire Safety Certificate Application Ref. No. 18/8058, it was agreed that omission of the external stair would be addressed in a separate application. At no point was any upgrade works to the existing building discussed.
- The original portion of the building was constructed circa 1800 and therefore due to conservation restrictions on the existing building it is considered unduly restrictive / impracticable to achieve a fully code complaint solution.
- Therefore, a fire engineering solution based on the current layout and high ceilings is proposed as an alternative approach. CFAST simulations show that due to the high ceilings present in Ardmore House, the levels of the fire safety are much better in terms of temperature, smoke layer height and visibility when compared with a similar building with more typical ceiling heights.
- Section 1.4.5 of TGD-B 2006 states 'All escape routes should have a minimum clear headroom of not less than 2m and there should be no projection below this height, except for any door frame, which would impede the free flow of persons using them'. The CFAST modelling considered a normal ceiling height of 2.4m. Therefore, the CFAST comparison was more onerous than it needed to be and the 3.6m ceiling height in the existing building could have been compared to a ceiling height of 2m.
- The CFAST analysis was a comparison model. Therefore, the pre-movement, alarm time and travel time should be identical in both models and addressing these would be unnecessary.
- The revised Fire Safety Certificate application did consider the Ground and First Floor areas. Where applicable, the relevant section of the Technical Guidance Document B was addressed and the extent of this was highlighted within the compliance report.
- The accommodation escape stair has always formed part of the primary circulation route between different parts of the building at First Floor level. Therefore, it is clear that the proposed works do not cause any greater contravention to the existing situation. It would not be possible to relocate the primary circulation route throughout the First Floor plan without making significant impractical alterations to the protected building.
- The original portion of the building was constructed circa 1800 and therefore due to conservation restrictions on the existing building, it is not possible to achieve a code compliant solution with regards dead end corridors. As a compensating measure the automatic fire detection and alarm system from the previously approved Fire Safety Certificate (Ref. No. 08/8058) will be extended into the existing areas which achieves an L3 standard. L3 fire detection and alarm system will alert the building's occupants of a fire occurring at a much earlier stage compared to a code compliant building provided with manual call points, allowing occupants to then be able to evacuate to a relative

place of safety at an earlier stage compared with a building fully compliant with Building Control Regulations where only a manual fire detection & alarm system would be required. As stated in Section 1.0.11.3 of TGD-B 2006 enhanced levels of life safety protection by automatic fire detection and alarm systems is an acceptable compensatory measure.

- The accommodation stairs are inherently not enclosed in a fire resisting enclosure therefore section 1.3.6.2 is not applicable. In accordance with Section 9.1 of BS 5588 Part 11 the accommodation stair can be considered for means of escape as it is not the sole means of escape from the First Floor of the building. In addition to this it is noted that the new protected stair was provided therefore improving the standard of safety within the existing building.
  - Section 1.3.6.3 of TGD-B 2006 is not applicable to an accommodation stair
  - Section 1.3.6.5 of TGD-B 2006 is not applicable to an accommodation stair
  - Section 1.3.6.6 of TGD-B 2006 is not applicable to an accommodation stair
  - Section 1.3.6.7 of TGD-B 2006 is not applicable to an accommodation stair. It is noted that there are no gas service pipes contained in this area.
  - There are no areas of special fire risk that communicate directly with the accommodation stair.
  - As per Section 1.3.8 of TGD-B 2006 there is no recommendation to provide a protected lobby / corridor to the existing accommodation stair in Ardmore House.
- The elements of structure within the existing areas of the building will be treated to achieve 60 minute fire resistance which is considered an improvement in the standard of safety for a pre-dated building.

They conclude that given the CFAST simulations it is demonstrated that the proposed design is in compliance with Clause 9 of BS 5588 Part 11 and therefore in light of the above they request that the Refusal to Grant is overturned.

## 5.0 Consideration

It is noted that both parties have different recollections of the events preceding the lodgement of the Fire Safety Certificate application under consideration of this Appeal. However, these have no bearing on this report and the following considerations and recommendations which are based on the technical merits only of the Appeal.

Section 0.1.5 of TDG-B 2006 states the following: -

**0.1.5** In the case of an existing building there may be constraints that would not exist with a new building and some variation of the provisions set out in this Document may be appropriate. Alternative solutions (see 0.1.4), whether applied to all or part of the building or to specific provisions, may be employed in these situations.

Many fire safety provisions are inter-dependant and should not be considered in isolation. Where a particular provision outlined in this Document can not be practicably achieved, account may be taken of compensating fire safety measures, depending on the nature and circumstances of each particular case. Such measures would include active and / or passive provisions. Active provisions are those which come into action on detection of fire (such as fire suppression systems) while passive provisions relate to the defence against fire provided by the fabric and construction of a building (such as floors and walls).

The approach with alterations to existing buildings is that the existing is acceptable so long as there is no new or greater contravention of the Building Regulations. However, it is clear that the removal of an existing external stair does cause a new or greater contravention of the Building Control Regulations. For example, occupants of room F10 (as per Dwg. No. BI/3753/1/12) have use of this external stair for means of escape, without this stair they have to use an accommodation stair or pass by an accommodation stair (open void between floors).

Therefore, as there is a Material Alteration proposed that potentially adversely impacts the existing means of escape from the building the onus is on the Appellant to demonstrate the proposed design is compliant with Part B1 of the Second Schedule to the Building Regulations. That is not to say it has to comply with the recommendations of TGD-B 2006 or BS 5588 Part 11 but where it does not comply with these an alternative approach based on fire safety engineering or other fire standards has to be demonstrated.

The key aim of this consideration is to assess whether or not the Appellant has demonstrated that the proposed Material Alterations are compliant with Part B1 of the Second Schedule to the Building Regulations. In other words, has the Appellant



demonstrated that they have adequately compensated for the removal of the existing external stair.

With respect to accommodation stairs BS 5588 Part 11 states the following: -

### **9.1 Accommodation stairs**

#### **9.1.1 Commentary**

*Whilst it is recognized that in practice accommodation stairs will be used for escape if free from smoke and heat, they are discounted when assessing protected stairway capacity. Therefore, they should not be the sole means of access between different storeys (except where permitted from mezzanines, see 8.4, and in small premises, (see 10.2.4).*

*The siting of accommodation stairs in open wells allows the passage of smoke from one storey to another, and therefore it is necessary to ensure that any fire at the lower level(s) will not adversely affect the escape routes on the upper floor level(s).*

*NOTE The provision of vertical escape from process plant buildings is covered in 11.2.*

#### **9.1.2 Recommendation**

Accommodation stairs should be so sited that their location does not prejudice the access to the means of escape at the upper floor level(s).

In accordance with this it is necessary to ensure that any fire at Ground Floor will not adversely affect the escape routes on the upper floor level.

The Appellant's has two main arguments: -

- The CFAST Simulations
- The extension of the fire detection and alarm system into the existing building to provide L3 coverage as opposed to Manual.

With the CFAST simulations they have compared the existing situation with a similar design but with lower ceilings. These simulations demonstrate, as would be expected, that a building with higher ceiling will give occupants a greater time to escape.

However, they have not demonstrated: -

- that the occupants can safely evacuate the building.
- that the proposed design offers an equivalent level of safety as a code compliant design
- that smoke from a ground floor fire will not adversely affect the escape route on the upper floor level.

Therefore, the CFAST simulations put forward by the Appellant are fundamentally flawed and do not support the removal of the existing external stair. All that these simulations achieve is that they show that because of the high ceilings there will be more time to escape than if the ceilings were lower. They don't quantify whether this extra time compensates for the removal of the external stair, or that it is sufficient to allow people to pass by the open accommodation stair without encountering untenable conditions. The simulations are essentially a comparison of two non-compliant designs.

With respect to the Fire Detection and Alarm system, it is noted that section 1.4.14 of TGD-B states that: -

Buildings should be provided with a fire detection and alarm system to warn the occupants of the existence of fire where the building is of such a size, layout or occupancy that the fire itself may not provide adequate warning to the occupants so as to enable them to escape safely.

Where a fire detection and alarm system is provided, the system should comply with the recommendations relevant to design and installation contained in CEN TS 54: Part 14: 2004, Fire detection and fire alarm systems - Guidelines for planning, design, installation, commissioning, use and maintenance (European) or I.S. 3218: 1989, Code of practise for fire detection and alarm systems for buildings – system design, installation and servicing. The type of system provided should be appropriate to the uses of the building and for protection of life (types L and M systems). Guidance on the fire detection and alarm systems for certain building types is contained in the following paragraphs.

It is noted that Annex I of IS 3218: 2013 recommends that 'Other Buildings' have a category L1 to L4 (with L1 systems are often provided in large or complex buildings). With this in mind, a L3 system would be expected in an office building and therefore cannot be considered as a compensatory feature.

Considering the above, it is clear that the Appellant has not demonstrated that the proposed Material Alterations (i.e. the removal of the external stair) do not adversely impact the means of escape from the building.

## 6.0 Recommendation

On the basis of my findings and conclusions I recommend that An Bord Pleanala should reject the Appeal and uphold the Dun-Laoghaire-Rathdown decision.

**Signed by:**

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

**Date:** 6<sup>th</sup> December 2019