



An  
Bord  
Pleanála

## FSC Report Template (June 2024 version)

**ABP-318078-23**

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**Appeal v Condition(s)**

Appeal against Condition 2

**Development Description**

Construction of an 8 story residential development with 275 apartments split over Blocks A - C at Airton Road, Tallaght, Dublin 24

**Building Control Authority Fire Safety  
Certificate application number:**

FSC2302586SD

**Appellant**

Ardstone Homes

**Agent**

Maze Fire Consulting

**Building Control Authority:**

South Dublin County Council

**Inspector**

Bryan Dunne

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## 1.0 Introduction

- 1.1. The application is for the construction of a new 8 story residential development with 275 apartments split over Blocks A - C at Airton Road, Tallaght, Dublin 24. Each floor level contains residential apartments. The ground floor level shall also contain ancillary\communal facilities including car parking under the podium (1<sup>st</sup> floor) level, mechanical and electrical rooms, bin storage areas, communal facilities including a gym and retail area. The ground floor level communal facilities shall also be extended to the first floor level which shall include ancillary offices directly above the male/female gym area.
- 1.2. The application made to the Building Control Authority (BCA) was for a normal Fire Safety Certificate (FSC) application.
- 1.3. A decision was made by the BCA to grant an FSC with eleven conditions, of which, only Condition 2 is being appealed.

### Condition 2:

*The proposed Car Park shall be provided with a Sprinkler System in accordance with I.S.E.N. 12845: 2015+A1: 2019.*

### Reason:

*To comply with the provisions of Part B of the Second Schedule of the Building Regulations 1997-2022.*

## 2.0 Information Considered

2.1. The information considered in this appeal comprised of the following:

- An Bord Pleanála Case No. ABP-318078-23.
- FSC application form, drawings and report produced by the appellant and submitted to the BCMS system on the 2<sup>nd</sup> May 2023.
- BCA's request for additional information dated the 24<sup>th</sup> July 2023.
- A copy of the additional information submitted by the appellant to the BCMS system on the 10<sup>th</sup> August 2023.

- Fire Safety Certificate Grant issued by the BCA, Ref: FSC2302586SD, Managers Order No. FSC204/23 dated the 7<sup>th</sup> September 2023.
- Appeal submission by the appellant to An Bord Pleanála dated 19<sup>th</sup> September 2023.
- Appeal submission by the BCA – Fire Officer’s Report dated the 11<sup>th</sup> October 2023.
- Further submission by the appellant to An Bord Pleanála on the 20<sup>th</sup> November 2023.

### **3.0 Relevant History/Cases**

3.1. I am not aware of any relevant Building Control history relating to this appeal site.

There was no documentation of any previous Fire Safety Certificate (FSC), Revised FSC, Regularisation FSC or any dispensation/relaxation of the Building Regulations (relating to this site) included in the file being reviewed.

### **4.0 Appellant’s Case**

4.1. The appellant is appealing the attachment of Condition 2 to the grant of the FSC on the basis that it sets out requirements that are not necessary to demonstrate compliance with Part B of the Building Regulations. The following points are set out in support of their appeal:

- The appellant states that the building has been designed to comply with Technical Guidance Document B (TGD B) 2020 which states “Where works are carried out in accordance with the guidance in this document (TGD B), this will, prima facie, indicate compliance with Part B of the Second Schedule of the Building Regulations”. Therefore, where a building has been designed to comply with TGD B 2020, it is deemed to comply with Part B Fire Safety of the Second Schedule of the Building Regulations
- The appellant points out that TGD B 2020 only references sprinkler coverage in buildings in two instances:
  - Buildings more than 30 meters high, and

- Where a residential building includes open plan apartments the design needs to comply with Section 1.6.3 of TGD B

In this particular instance, the building does not exceed 30 meters in height but it will contain open plan apartments and as such sprinklers will be provided in accordance with Section 1.6.3. They also point out that Section 1.8 of TGD B outlines the design criteria for a residential sprinkler system and this section does not stipulate the sprinklers are required within car parks of an apartment building

- The appellant also points out that Section 5.4.3.1 of TGD B specifically states “that basement car parks are not normally expected to be fitted with sprinklers”
- The point is made that TGD B was updated in 2020 following public consultation and the revisions in relation to the need to provide sprinklers in car parks remained unchanged from the earlier versions of TGD B
- The appellant included the following to aid with firefighting operations:
  - The building in question is provided with three firefighting shafts providing the car parking area with access to three fire mains through double lobby protection
  - Full perimeter access with 13 number individual entry points shall be provided to facilitate the fire department's response to any fire incident in the car park
- The appellant provides a brief comparative analysis between open plan apartments (requiring sprinkler coverage in accordance with BS9251: 2021) and apartments that included a protected entrance hall in accordance with BS5588 Part 1 where no sprinkler protection is required. They point out that the provision of open plan apartments on the upper floors doesn't impact on the risk profile of the car park which remains the same regardless of whether the apartments are open plan or provided with protected entrance halls and as they are not mandated in TGD B, sprinklers are not required in car parks
- The final point put forward is that due to the level of car park ventilation being provided (which is in accordance with Section 3.5.2 of TGD B), sprinkler protecting the car park is not necessary

On the basis of the above points the appellant recommends the removal of Condition 2.

## **5.0 Building Control Authority's (BCA) Case**

5.1. In support of their case for sprinkler protecting the proposed basement car park the BCA's response to this appeal was broken down under the following headings:

- (a) Observations and Assessment of the FSC Application
- (b) Review of evidence derived from research into the fire risks associated with modern vehicles
- (c) Case Studies
- (d) Structural Integrity / Fire Protection concerns
- (e) TGD B - basement car park ventilation
- (f) Conclusion

### **(a) Observations and Assessment of the FSC Application**

- The BCA open their rebuttal by pointing out that Technical Guidance Documents (TDG B in this instance) are provided to assist individuals in complying with the requirements of the Building Regulations and that these documents cannot prescribe to every aspect of building design. They believe that they need to consider changes in technology and materials that may not currently be addressed in the guidance documents.
- At an early stage in the application process the BCA made the appellant aware that it was their policy to sprinkler protect the basement car parks due to the additional risks associated with EV and internal combustion engine cars.
- The BCA believe that if sprinklers in accordance with BS 9251 are being provided in buildings, even if it is only to take account of open plan apartments (which is the case in this Fire Safety Certificate application) then the extent of sprinkler coverage recommend in the standard should be followed. It is their view that as Section 5.4 of BS 9251: 2021 doesn't include car parks and as such they need to be sprinkler protected. Section 5.4 states '*Sprinkler protection should be provided in all parts of the*

*premises, however, sprinkler protection may be omitted from the following areas unless it is required by a fire strategy or risk assessment”.*

- Another reason for this sprinkler condition was the fact that the appellant wasn't providing hose reels in the car park which would be required under Section 1.4.16 of TGD B as the floor area exceeds 500m<sup>2</sup>.
- In addition, the BCA asked the appellant to review the basement ventilation requirements with a view to increasing it. The appellant responded with additional information showing that the level of car park venting being provided was more than 2.5% requirement under Section 3.5.2.4 of TGD B.
- The BCA highlights the fact that they have made a comprehensive submission in support of the provision of sprinklers in car parks within the recent Public Consultation for the Draft Technical Guidance Document B 2023 Volume 1.

**(b) Review of evidence derived from research into the fire risks associated with modern vehicles**

As part of their submission the BCA makes reference to the following documents:

1. Fire Note 10 “Fire and Car Park Buildings” produced by The Ministry of Technology and Fire Offices Committee Joint Fire Research Organisation, 1968 – this document explored the likelihood of fire spread between vehicles which in turn determined the fire resistance requirements of structures.
2. “Fire Spread in Car Parks” produced by the BRE in 2006 after been commissioned by the UK Department of Communities and Local Government
3. NFPA, Modern Vehicle Hazards in Parking Garages & Vehicle Carriers, 2020

A summary of the research above identified the following key points:

- Cars manufactured in the 50's were smaller than the car park spaces provided and as such there was greater distance between cars, thus reducing effects of radiating heat

- 4 out of every 5 fires in metropolitan areas were attended to within 3 minutes therefore it was difficult to see how a sustained fire could take hold
- In a number of incidents, a running fuel fire was reported, which spread the fire (BD 2552 Car Fire p.14)
- Sprinklers are effective in controlling a developing and fully developed fire, without sprinklers fire is likely to spread from car to car and dangerous levels of smoke are likely for long periods (BD 2552 Research p.15)
- Fire conditions in partial or fully closed car parks are much more severe than in open sided car parks (BD 2552 research p.16)
- Between 1970s and 2018 (in western markets) there has been a large increase in the use of plastic materials in vehicle construction adding to the total fuel load of the average vehicle
- Some tests of modern vehicles in parked garages have shown rapid fire spread between vehicles. Based on these findings it's clear the data from older vehicles should not be used as a basis for development of codes and regulations
- The requirement for sprinkler protection appears adequate to control a vehicle fire until firefighting personnel arrive

The BCA point out that in a publication dated the 28<sup>th</sup> November 2022, the NFPA stated that the ever growing presence of lithium ion batteries in our day-to-day lives are changing the fire characteristics of our built environments and fire professionals need to stay on top of these changes to ensure the safety of people and property.

### **(c) Case Studies**

The BCA includes a list and brief summary of relevant case studies from car park fires both nationally and internationally where fire spread beyond the vehicle of origin and involved multiple vehicles which in some instances resulted in fatalities. They also set out some of the specific challenges that operational personnel typically face with both Internal Combustion Engine & Electrical Vehicle car fires.



#### **(d) Structural Integrity/Fire Protection Concerns**

In this section the BCA make reference to the research carried out by Mr. Martin Shipp et al for the BRE on enclosed car park fires which concluded that as a result of the presence of alternative fuels further research should be undertaken on the structural protection to enclosed car parks. They give the example of a Merseyside car park fire which caused significant spalling to the car park structure.

#### **(e) Basement Car Park Ventilation**

They note that under Section 3.5.2 of TGD-B the current minimum ventilation requirements for mechanical or natural ventilation are typically 10 air changes per hour or 2.5% of the car park floor area, with the ventilation being provided primarily to move the products of combustion away from the fire location which in turn assists in the control of fire spread and protects the lives of fire fighters. The BCA make the point that there is currently no requirement in BS 7347-7: 2013 to meet any set visibility or temperature criteria for either the means of escape or the firefighting phase of any fire incident and that the existing ventilation requirements are very likely to be inappropriate for multiple vehicle fires.

In addition, they note that EV car fires produce higher volumes of smoke with a prolonged burn period which in turn exasperates the risk in the basement from both a means of escape and firefighting operations point of view.

Finally, they question whether or not the current recommended ventilation requirements in basement car parks are adequate for the higher volumes of smoke along with the vapor cloud produced when Li-Batteries are in Thermal Runaway and reference the recent research carried out by Professor Paul Christensen et al in Durham and Darlington in 2022.

#### **Broader Implications Considered**

The BCA argue that management of EV car fires require an overhaul as the following considerations present:

- The significant amount of water required to extinguish an EV fire

- An increase in the number of responding appliances to 2 possibly 3 pumps per incident
- The high quantity of toxic water runoff
- Toxic gases contaminating firefighters PPE requiring a full change after each EV fire
- The increase in the number of EV's increases the potential for multi-EV incidents putting additional demands on BCA resources
- The transport of the EV post suppression to mitigate against the potential for re-ignition
- The likely hood of the fire brigade having to escort the transported EV post fire incident
- The possible need for the BCA to consider full vehicle immersion technology post suppression

It is their view that the provision of sprinkler systems in basement car parks allows for suppression and control of a developing fire to allow for both safe means of escape of building occupants and to allow fire crews access the basement for firefighting. In addition, they make the point that the provision of sprinklers would also alleviate concerns relating to the fire protection to structural elements e.g. floors/columns and beams.

#### **(f) Conclusion**

The BCA state that based on their first-hand experience in tackling fires involving modern vehicles, past assumptions in relation to car park fires e.g. *the fire load is defined and not particularly high* can no longer be relied upon. They are of the view that the provision of sprinklers in sizeable basement car parks is appropriate based on the fire load and rate of fire spread associated with modern vehicle fires.

To further support their reasons for sprinkler protecting the car park the BCC put forward the following points:

- The apartment escape stairs from each apartment block continues down to the car park

- BS9251: 2021 doesn't exclude car parks for being sprinkler protected
- The fact that there are no hose reels being provided in the basement car park which is contrary to the guidance provided in section 1.4.16 of TGD B

For the above reasons, the BCA included Condition 2 on the granted FSC.

## **6.0 Assessment**

### **6.1. *De Novo assessment/appeal v conditions***

Having considered the drawings, details and submissions on the file and having regard to the provisions of Article 40 of the Building Control Regulations 1997, as amended, I am satisfied that the determination by the Board of this application as if it had been made to it in the first instance would not be warranted. Accordingly, I consider that it would be appropriate to use the provisions of Article 40(2) of the Building Control Regulations, 1997, as amended'.

### **6.2. *Content of Assessment***

While the BCA goes to some lengths to explain their reasoning for this condition the fact remains that the requirement under Section 5.4.3.1 of TGD B (reprinted edition 2020) is very clear in that "basement car parks are not normally expected to be fitted with sprinklers", see below.

**5.4.3.1 Basements** - Smoke ventilation from basements generally take the form of outlets vents connected directly to the open air. Such ventilation should be provided from every basement storey except in the following:

- (a) a basement in a dwelling house (Purpose Group I(a) and I(b));
- (b) a basement having an area less than 200 m<sup>2</sup> and a floor which is not more than 3 m below the adjacent ground level.

Smoke vents should be sited at high level and should be distributed around the building perimeter to maximise the effectiveness of cross-ventilation. The clear cross-sectional area of all smoke vents, allowing for frames and louvres, should not be less than 2.5% of the basement storey served. Where a basement is compartmented, each compartment should be ventilated separately. Generally, smoke vents from basements should be permanently open and unobstructed, but where they are readily accessible from the outside, consideration can be given to suitably indicated removable covers. Smoke vents should not be positioned where they would prevent the use of the means of escape from the building.

As an alternative to outlet vents as described above, a system of mechanical extraction may be provided, where the basement is also protected by an appropriate sprinkler system complying with BS 5306: Part 2: 1990. The ventilation system should meet the criteria set out in 3.5.2.5 and should operate automatically on activation of the sprinkler system.

Basement car parks are not normally expected to be fitted with sprinklers.

It would be my opinion that not having the basement car park sprinkler protected is in compliance with Section 5.4.3.1 of TGD B which would generally be accepted as prima facie compliance with Part B of the Second Schedule of the Building Regulations. In addition, I would be of the view that conditions such as this that are imposed by some BCA's lead to inconsistency in building design nationally which is something I believe is to be avoided.

With relation to the other points put forward by the BCA for including this condition I have the following comments:

- The introduction of double lobby protection (with ventilation to the outer lobby, as is proposed in this application) at basement level in lieu of splitting the stairs at ground floor level has been previously approved in FSC applications made to the BCA and is recognised as a compensatory measure.
- The provision of hose reels in my view would not be appropriate on the basis that, it would be highly unlikely that they would be used by the responding fire service personnel and their presence could make an untrained member of the public stay and tackle a fire putting them in more danger than is necessary.

Finally, it is worth noting that a new version of TGD B (2024) has recently been published by the Department of Housing, Local Government and Heritage and there is no mention of basement car parks requiring sprinklers.

## 7.0 Recommendation

On the basis of my assessment, I recommend that An Bord Pleanála grant the appeal and instruct the BCA to remove Condition 2 from the Fire Safety Certificate for the reasons and considerations set out below.

## 8.0 Reasons and Considerations

Having regard to the original FSC application and appeal made, I am of the opinion that the appellant has demonstrated that there is no requirement for the basement car park to be sprinkler protected to meet the requirements of TGD B. Therefore, condition number 2 as originally attached by the BCA to the fire safety certificate is not necessary to meet the guidance set out in TGD B or accordingly to demonstrate compliance with Part B of the Second Schedule to the Building Regulations 1997, as amended and should be removed.

## 9.0 Conditions

N/A - on this occasion Condition 2 should just be removed.

## 10.0 Sign off

I confirm that this report represents my professional assessment, judgement and opinion on the matter assigned to me and that no person has influenced or sought to influence, directly or indirectly, the exercise of my professional judgement in an improper or inappropriate way.



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Bryan Dunne

MSc, BSc, Dip(Eng), CEng, MIEI, Eur Ing  
19<sup>th</sup> September 2024