

AN BORD PLEANALA REPORT

REF ABP-315985-23

On

Appeal against Conditions 2 & 3

of

Granted Fire Safety Certificate No. FSC2205032SD/7DN

FSC Submission No. 3009150

For

The construction of Blocks E/F consisting of 120 apartments ranging from 6-7storeys, communal facilities at ground floor basement level containing water storage rooms, car parking and bicycle parking

At

Airton Road, Tallaght, Dublin 24

Report Prepared By: Bryan Dunne

Ref No.: ABP/2023-R03

Date: 19th October 2023

1. INTRODUCTION

This report sets out my findings and recommendations on an appeal submitted by Maze Fire Consulting (the appellant), acting on behalf of their client Ardstone Homes against Conditions No. 2 & 3 of Fire Safety Certificate FSC2205032SD/7DN granted by South Dublin County Council (the Local Authority) on the 14th February 2023 in respect of the construction of a mixed use development with apartments at Airton Road, Tallaght, Dublin 24. The Granted Fire Safety Certificate (FSC) has 13 conditions. Only conditions 2 & 3 are being appealed and as such none of the other 11 conditions have been reviewed as part of this assessment.

CONDITIONS SUBJECT OF THIS APPEAL

CONDITION 2:

The Basement Car Park shall be sprinkler protected in accordance with IS EN 12845: 2015 + A1: 2019.

Reason:

To comply with the provisions part B of the Second Schedule of the Building Regulations 1997 to 2022.

CONDITION 3:

Ancillary areas at Basement Level shall be Sprinkler protected in accordance with BS 9251:2021.

Reason:

To comply with the provisions part B of the Second Schedule of the Building Regulations 1997 to 2022.

2. DOCUMENTATION REVIEWED

1. Letter of appeal by the appellant to An Bord Pleanála of the 2nd March 2023.
2. Fire Safety Certificate application form, drawings and report produced by the appellant and submitted to the BCMS system on the 14th September 2022 with additional information submitted on the 20th December 2022.
3. Fire Safety Certificate Grant issued by the Local Authority, Ref FSC2205032SD/7DN, Managers Order No: FSC/031/23 dated 14th February 2023.
4. Appeal submission by Maze Fire Consulting dated the 2nd March 2023.
5. Letter from An Bord Pleanála (dated the 8th March 2023) to the Planning Department of South Dublin County Council requesting a copy of all documents pertaining to this application.
6. Appeal submission by the Local Authority - Fire Officer Report dated the 13th of April 2023.
7. Submission by the appellant dated 28th of April 2023.

3. CASE PUT FORWARD BY THE LOCAL AUTHORITY

CONDITION 2

In support of their case for sprinkler protecting the proposed basement car park the Local Authority report can be summarized as follows:

1. Dublin Fire Prevention Observations

The Local Authority states that to assist individuals, comply with the requirements of the Building Regulations, Article 7, allows for the publication of 'Technical Guidance Documents'. The current edition advising compliance with fire safety is Technical Guidance Document – B: 2006 (Reprint 2020) (which will be referred to as TGD-B in this report).

They state that the guidance provided in TGD-B cannot prescribe to every aspect of building design, that it has to be interpreted and applied appropriately so that the overarching functional requirements of the Building Regulations are met and that consideration should be given to new hazards due to changes in technology & materials that may not be addressed in the current edition of TGD-B.

In reviewing the initial application the Local Authority raised concerns with the appellant with regards to the potential for EV car fires at basement level and noted that due to these concerns it was now their policy to sprinkler protect basement car parks. The appellant responded by way of additional information stating that the building had been designed to comply with the recommendations of TGD B & BS 5588 Part 1 and as such is deemed to comply with Part B of the Second Schedule of the Building Regulations. They say that to deal with the open plan nature of the proposed apartments, residential sprinklers (in accordance with Section 1.6.3 & 1.8 of TGD B) are being provided and that while BS 9251 (referenced in Section 1.8) recommends basement carparks are sprinkler protected this is not a TGD B requirement as the apartment design wont impact on the risk profile of the basement car park.

2. Evidence derived from research into the fire risk associated with modern vehicles

The Local Authority undertook a review of the following research :

- a) Fire Note No. 10: Fire and Car-Park Buildings, E.G. Butcher, G.J. Langdon-Thomas and G.K. Bedford. Ministry of Technology and Fire Offices Committee, Joint Fire Research Organization, 1968

- b) BRE, Fire spread in car parks, BD 2552, Department of Communities and Local Government, 2010 and
- c) NFPA, Modern Vehicle Hazards in Parking Garages & Vehicle Carriers, 2020

They review each document and provide a summary of the key points:

a) Fire Note No. 10

This document produced by the Ministry of Technology and Fire Officers' Committee Joint Fire Research Organisation in 1968 explored the likelihood of fire spread from one vehicle to another which in turn determined the fire resistance requirements of structures. Until then the structures were classified as 'light storage' and constructed of reinforced concrete which achieved the one hour requirement of the 1965 Building Regulations.

In particular the Local Authority highlighted the following findings and assumptions:

- Cars manufactured in the 50s were much smaller than the car park spaces provided. This meant that the distance between cars was greater thus reducing the effects of radiant heat. Cars today are much larger thus reducing the distance between vehicles.
- While it was identified that one of the major hazards considered was the disruption of the petrol tank and the petrol flowing under adjoining cars the research makes note that in no case did this occur. The Local Authority make the point that under the BRE Fire Spread in Car Parks BD 2552P.12 85% of European vehicles have plastic tanks.
- During the tests the smoke layer was mainly at ceiling level which would have caused the fire brigade little or no concern.
- It was difficult to see how a sustained fire could take hold on the basis that in the city fire brigade attendance was within 3m in 4 out of 5 fires.

This research produced in 1968 formed the basis for the fire resistance ratings in UK and Ireland which haven't changed since then.

b) BRE, Fire Spread in Car Parks

The Local Authority considered the fire test data in this document when evaluating the risk posed by modern vehicle fires. They summarise the following main points:

- Sprinklers were effective in controlling both a developing and fully developed fire, without sprinklers the fire is likely to spread from car to car and dangerous levels of smoke are likely for long periods
- Fire conditions in partially and fully closed car parks are much more severe than in open sided car parks

- Fire in apartment buildings show an injury rate that is quite high when compared to other building types
- As well as structural damage caused by a fire, spalling can be dangerous to fire fighters
- The ease at which a car fire could spread easily to nearby cars was demonstrated

c) NFPA, Modern Vehicle Hazards in Parking Garages & Vehicle Carriers, 2020

This document which, among other things, contained an assessment of the main hazards associated with car parks and modern cars had the following main points:

- The increase in the use of plastics in the production of modern vehicles has added to the total fuel load of the average vehicle, equating to faster flame spread, easier ignition and more rapid fire spread to neighbouring vehicles
- Based on tests carried out on modern vehicles which have shown rapid spread between vehicles it is clear that test data from older vehicles should not be used in the development of codes and regulations
- The presence of sprinklers appeared to control a vehicle fire until the arrival of the fire brigade
- It found that the spread of fire between vehicles, especially to the second and third vehicles is critical in the ability of the fire services to successfully control and extinguish the fire and that the presence of sprinklers in enclosed car parks appeared to control the vehicle fire until the arrival of the fire service

CASE STUDIES

A number of case study examples are put forward by the Local Authority both globally and within Dublin Fire Brigades jurisdiction identifying incidents where fire spread beyond the vehicle of origin along with a table which summarised and compared the risks associated with modern vehicles which Dublin Fire Brigade typically encounter.

STRUCTURAL INTEGRITY/FIRE PROTECTION CONCERNS

The Local Authority 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 failing to the car park structure.

TGD B – BASEMENT CAR PARK VENITLATION

The Local Authority express their concern on the 2.5% natural ventilation requirement set out in Section 3.5.2 of TGD- B, stating that such ventilation systems are unlikely to be appropriate for multiple vehicle fires. They also raise concerns over the higher volumes of smoke produced by EV car fires and on the toxic fumes from EV car batteries that may compromise means of escape and firefighting operations.

BROADER IMPLICATIONS CONSIDERED

Other factors considered by the Local Authority include:

- The increased water supply needed to extinguish an EV car
- The policy for managing fire water runoff from an environmental point of view
- The requirement to have new fully charged breathing apparatus equipment for each EV fire event
- Additional resources put on Dublin Fire Brigade personnel and resources

CONCLUSION

It's the Local Authorities opinion that based on research available and on the experience of their operational staff the assumption that *"the fire load is defined and not particularly high"* cannot be relied upon and that the functional nature of the Building Regulations allow, in their view, for the consideration of new hazards/risks associated with new technology and materials. For these reasons they felt it appropriate to put on the condition to allow for both safe means of escape from evacuees and safe access by responding fire service personnel.

It is for the reasons identified above that the Local Authority request An Bord Pleanala uphold condition 2.

4. CASE PUT FORWARD BY THE LOCAL AUTHORITY

CONDITION 3

The Local Authority make the case that in using BS 9251: 2021 to justify the open plan apartment layout the appellant should have also addressed sections 4.1 & 5.4 and the requirement to sprinkler protect other parts of the building not just those associated with the open plan apartments. On the basis that the assessing Fire Officer felt that these sections were not adequately addressed by the appellant this condition was put on the Granted FSC.

It is for the reasons identified above that the Local Authority request An Bord Pleanála uphold condition 3.

5. CASE PUT FORWARD BY MAZE FIRE CONSULTING

The following case was put forward by Maze Fire Consulting (the appellant) in their submission of the 28th of April 2023.

In relation to Conditions 2 and 3 the appellant notes that compliance with Part B “Fire Safety” of the Building Regulations is demonstrated by complying with Technical Guidance Document B 2020 and as a result where a building has been designed to comply with TGD B it is deemed to comply with Part B “Fire Safety” of the Second Schedule of the Building Regulations.

CONDITION 2

In the case put forward by the appellant in response to condition 2 they state that they are complying with the requirements of TGD B on the basis that:

- The requirements for sprinklers in TGD B are only required for buildings is in excess of 30m or in residential buildings where they include open plan apartments designed to comply with section 1.6.3 of TGD B. In this instance the building in question doesn't have a floor in excess of 30m but does have open plan apartments
- Section 5.4.3.1 of TGD B specifically states *“that basement carparks are not normally expected to be fitted with sprinklers”*
- In addition, the exit stairs serving Blocks E and F will be fitted with an internal fire mains which will continue down to basement level. That the provision of internal fire mains in buildings of this size is not normally required and therefore their addition constitutes an enhancement of the minimum requirements of TGD B

CONDITION 3

Similarly in their response to condition 3 the appellant states that compliance with TGD B has been shown by them as the only references for sprinkler coverage in TGD B are:

- Where a building is in excess of 30 meters high which is not the case here
- Where a residential building includes open plan apartments because the design of which will comply with section 1.6.3 of TGD B which makes no reference to sprinkler protection having to extend to any ancillary areas at basement level

CONCLUSION

The appellant sums up by concluding that sprinkler protection is not required within a basement carpark nor is it required in the ancillary area at basement level to comply with the requirements of TGD B.

6. ASSESSMENT

CONDITION 2

While the Local Authority goes to some lengths to explain their reasoning for this condition, the fact remains that the requirement in Section 5.4.3.1 of TGD B (see below) is very clear in that *“basement car parks are not normally expected to be fitted with sprinklers”*. In addition, it is worth noting that even though TGD B was updated in 2020 there were no amendments made to this section.

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 m² 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 providing sprinklers in a basement car park 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. It is also worth point out that conditions such as this that are imposed by some Local Authorities, lead to inconsistency in building design nationally which is something I believe is to be avoided.

CONDITION 3

In the reprinted edition of TDG-B in 2023 sprinkler protection is required:

- If a building has a floor level over 30m
- Within open plan flats where the maximum travel distance within the flat exceeds 9m (Section 1.6.3)
- Within flats (in single stair buildings) where the maximum travel distance in the protected corridor/lobby increases from 7.5m to 15m (Section 1.7.1)

The building to which this appeal relates has a top floor under the 30m height threshold, however, due to the open plan nature of the apartments the proposal in this application is to sprinkler protect those apartments and the common corridors serving those apartments. While Section 5.4 of BS 9251: 2021 states that *"sprinkler protection should be provided in all parts of the premises"* it would be my view that the introduction of sprinklers in Section 1.6.3 of TGD B has only been brought in as a compensatory measure for a particular design issue i.e. the open plan nature of apartments. In my view it wasn't the intention of TGD-B (2020 edition) that designers of open plan apartments would have to design to the full requirements of BS 9251.

7. RECOMMENDATIONS

On the basis of my assessment, I am of the opinion that neither the basement car park or the ancillary basement areas require sprinkler protection. On that basis the Local Authority should be instructed to remove both Conditions 2 and 3.

Signed:



Bryan Dunne

MSc(Fire Eng), BSc(Eng), Dip(Eng), CEng, MIEI, Eur Ing

Date: 19th October 2023