AN BORD PLEANALA REPORT

REF ABP-315367-22

On

Appeal against Condition 7

of

Granted Fire Safety Certificate No. FSC22020801DR/7DN

Submission No. 3006542

For

The Construction of a mixed use development with apartments

At

Deansgrange Rd, Deansgrange, Blackrock, A94X2F3, Co. Dublin

Report Prepared By: Bryan Dunne

Ref No.: ABP/2023-R02

Date: 31st July 2023

1. INTRODUCTION

This report sets out my findings and recommendations on an appeal submitted by Ryan & Associates (the appellant), acting on behalf of their client Mr. Cormac O'Reilly against Condition No. 7 of Fire Safety Certificate FSC2202081DR/7D granted by Dun Laoghaire Rathdown County Council (the Local Authority) on the 28th November 2022 in respect of the construction of a mixed use development with apartments at Deansgrange Rd, Deansgrange, Blackrock, Co. Dublin. The Granted Fire Safety Certificate (FSC) has 17 conditions. Only condition 7 is being appealed and as such none of the other 16 conditions have been reviewed as part of this assessment.

CONDITION SUBJECT OF THIS APPEAL

CONDITION 7:

A suitable automatic sprinkler system is to be installed throughout the development (within the flats and the common areas) and the basement. The sprinkler coverage to these spaces will need to be sufficient to protect against the fire hazards within both the residential and non-residential areas. In this regard it is considered appropriated to protect the residential parts of the building using BS 9251: 2021 and the non-residential parts using IS EN 12845: 2015 + A1: 2019 as advised by Clause 4 of BS 9251: 2021.

Reason:

To comply with part B of the Second Schedule of the Building Regulations 1997 to 2021.

2. DOCUMENTATION REVIEWED

1. Letter of appeal by the appellant to An Bord Pleanála of the 14th December 2021 (assuming the year is a typo).
2. Letter from An Bord Pleanála (dated the 19th December 2022) to the Planning Department of Dun Laoghaire Rathdown County Council requesting a copy of all documents pertaining to this application.
3. Fire Safety Certificate application form, drawings and report produced by the appellant and submitted to the BCMS system on the 14th March 2022 with additional information submitted on the 10th October 2022.
4. Fire Safety Certificate Grant issued by the Local Authority, Ref FSC2202081DR/7DN, Managers Order No: FSC/227/2022 dated 28th November 2022.
5. Appeal submission by the Local Authority – Fire Officer Report dated the 13th of January 2022.
6. Letter from An Bord Pleanála to Ryan & Associates on the 19th January 2023 requesting any additional submissions or observations they wish to make in relation to the Fire Officers Report.
7. There was no additional submission made by Ryan & Associates attached in the file.

3. CASE PUT FORWARD BY THE LOCAL AUTHORITY

CONDITION 7

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

1. **Background**

   The application is for a mixed use development over basement with ground floor commercial units and 120 No. apartments over.

   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.

   As part of their assessment of this application the Local Authority say they had to consider whether or not the guidance considered in TGD-B and BS 5588 – 1 has been interpreted in a manner which demonstrated compliance with the Building Regulations. They go on to say that where deviations from the guidance documents occur (using the example of lifts and stairs connecting to the basement car park) they need to consider if the justifications provided address the potential risk and demonstrated compliance with the Regulations.

   The Local Authority considered the following information in addition to that provided in TGD-B and BS 5588 – Part 1:

   (A) Evidence derived from global research into the performance of modern vehicles, including research demonstrating fire spread between parked vehicles and research into the effectiveness of sprinklers in controlled fires in car parks

   (B) Case studies within Dublin and globally where fires within car parks spread beyond the vehicle of origin

(A) EVIDENCE DERIVED FROM RESEARCH INTO THE FIRE RISK ASSOCIATED WITH MODERN VEHICLES

The Local Authority undertook a review of the following research to help them determine if the guidance contained within TGD-B and BS5588 pt 1 fully addressed the risk associated with modern vehicle fires:

1. 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
2. BRE, Fire spread in car parks, BD 2552, Department of Communities and Local Government, 2010 and
3. NFPA, Modern Vehicle Hazards in Parking Garages & Vehicle Carriers, 2020

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

1. Fire Note No. 10

One of the conclusions of these fire tests was that a fire in a single parked vehicle was unlikely to cause uncontrollable fire spread within a car park. The findings of this study were used as a basis for the recommendations contained in Approved Document B (AD-B), see below:

11.1 Car parks call for different measures to restrict fire spread within buildings for the following reasons.

a. The fire load is well defined.

b. The probability of fire spreading from one storey to another in a well ventilated car park is low.

These recommendations found in Section 11.1 of AD-B are very similar to those found in TGD-B, extract below:

(a) The fire load is well defined and not particularly high;

(b) Where the car park is well venitlated, there is a low probability of fire spread from one storey to another.

The Local Authority make the point that the research that influenced the recommendations in the current guidance documents is out of date and that it does not accurately capture the risk posed by modern vehicles.

In addition, the Local Authority state that later research such as that documented in BD 2552 noted higher test fire temperatures in excess of those previously recorded and it was also

demonstrated that fire spread beyond the vehicle of origin.

2. 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
- Car park fires in apartment buildings showed a higher injury rate when compared to other building types
- Using sprinklers limited the spread of fire between cars
- The report demonstrated the ease at which a basement car park fire could spread between vehicles
- Gas temperatures exceed those in Fire Note No. 10

3. NFPA

The main points of this document put forward by the Local Authority are:

- 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
- 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

(B) <u>CASE STUDIES</u>

A number of case study examples are but 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.

In addition, the Local Authority make the following observations with respect to the submission

made by the appellant:

1. BS9251: 2021: Fire sprinkler systems for domestic and residential occupancies, code of practice and Approved Document – B (ADB).
   In respect to this standard the Local Authority are of the opinion that the appellant didn't offer sufficient explanation as to why parts of the standard were disregarded or why the appellant didn't provide justification for deviations they made from the code, in particular clauses 4.2.1 / 4.3 / 6.2.6 & Footnote D of Table 2. Each of these clauses identifies potential interaction with the relevant authority having jurisdiction (AHJ's). The Local Authority state that while the appellant makes a number of references to the standard, they do not explanation why parts of the standards have been disregarded nor do they provide any justification for deviating from the recommendations contained within the standard.

2. The non code compliance withing the development
   The Local Authority highlights the risk associated with single stair buildings and in particular the fact that it can be a single point of failure within the build which can prevent occupants from evacuating the building and can also represent significant challenges to firefighting personnel attending a fire.

   They note that the single stair arrangement proposed in this application would not be permitted under clause 14.4.2 of BS5588-1: 2004 (i.e. the buildings single escape stair continuing down to serve the basement level) and while the appellant has provided double lobby protection to the basement with 0.4 meter squared ventilation in the outer lobby no analysis or explanation for this arrangement has been provided.

   Finally, the Local Authority make the point that in their view the fuel load and the fire size presented by vehicles in car parks represents particular risks which should have been considered in the FSC application on the basis that Section 0.2.1 of TGD-B allows for alternative approaches from the guidance to be taken:
   "….it would be appropriate to take into account a range of fire safety features, some of which are dealt with in this document, and some of which are not addressed in any detail, and to set these against an assessment of the hazard and risk peculiar to the particular case".

   Conclusion

In their conclusion the Local Authority make the following points:

- Dublin Fire Brigades operational staff have first-hand experience in tackling fires involving modern vehicles and the assumption in respect of car parks that *"the fire load is defined and not particularly high"* can no longer be relied upon and could lead to incorrect conclusions in respect of achieving adequate fire safety levels within buildings
- Dublin Fire Brigades operational staff are also encountering larger fires in car parks which are spreading to multiple vehicles which appears to be in line with global trends and recent research
- The Local Authority state that the aim of the Building Regulations is to provide for the safety and welfare of people in and about buildings and that consideration of new hazards due to changes in technology and materials need to be reviewed as they may not reflect modern fire risks

It is for the reasons identified above that the Local Authority request An Bord Pleanala uphold condition 7.

4. CASE PUT FORWARD BY RYAN & ASSOCIATES

In the case put forward by Ryan & Associates (the appellant) they review each section of TGD-B as follows:

1. **B1: Means of Escape**
    - all travel distances and the means of escape provisions meet the requirements of Part B
    - The proposed apartments are open plan and in line with section 1.6 and 1.7 of TGD-B
    - Domestic sprinters in accordance with BS9251: 2014 will be provided with coverage within the units to be BS9251: 2021
    - Ventilation to residential corridors will comply with Section 1.7 of TGD-B
    - There is no reference TGD- B for sprinkler protection in basement carparks
    - Sprinkler protection is only required as a compensatory measure to facilitate open plan residential units and to facilitate extended travel distances in apartment communal corridors
    - The appellant notes that if the residential units were not open plan and if travel distances in communal corridors did not exceed 7.5 meters sprinkler protection would not be required in the building

2. **B2: Internal Fire Spread (Linings)**
    - All basement linings comply with section B2 of the Building Regulations

3. **B3: Internal Fire Spread (Compartmentation)**
    - Section 3.5.2 of TGD- B states that for the reasons identified below car parks are not normally expected to be fitted with sprinklers:
        - the fire load in a carpark is well defined and not particularly high
        - car parks are will ventilated and there is a low probability of fire spread from one story to another

The appellant states that the basement compartment will comply with Section B3 of the Building Regulations and therefore the provision of sprinklers is not required.

4. **B4: External Fire Spread**

This section of TGD- B deals with all external surfaces of the building and the potential for fire spread to neighbouring buildings. It is not relevant to basements therefore the provision of sprinklers is not

a requirement to satisfy Section B4 of the Building Regulations.

5. **B5: Fire Fighting Facilities**

The appellant highlights Section 5.4.3.1 of TGD- B which states that sprinkler protection is not required in the basement carparks.

REQUIREMENTS FOR SPRINKLERS IN PART B OF THE BUILDING REGULATIONS

The appellant identifies the following as requiring sprinkler protection under TGD-B, stating that none are applicable in this instance:

- Shopping centers
- Atria depending on the design
- Open plan flats\extended travel distances in residential corridors
- To satisfy the limits in respect to area and volume of Table 3.1 of TGD-B
- To satisfy space separation requirements
- Basements (other than car parks) where the area exceeds 200 square meters of the depth is more than three meters and natural ventilation is not achievable
- As required by table A2

BS 9251:2021

The appellant states that this code is not referred to in TGD-B 2006 (reprinted 2020) and as such is not relevant. They note that it's a code of practice and should not be used as a specification document.

They state that the code is for residential buildings with more than four stories or greater than 18 meters but that the maximum height of the top floor of their building is 13 meters.

In it's update in 2021 the third paragraph of the forward indicates that guidance on the application of sprinkler systems is given in Approved Document B. It should be noted that Table B4 of Approved Document B updated in 2020 does not require sprinkler protection in corridors, stairs and common areas which are sterile.

Approved Document B Volume 1: Dwellings and Approved Document B Volume 2: Buildings other than Dwellings 2022

Section 16.11 of Volume 1 (Dwellings) states that "*car parks are not normally expected to be fitted*

with sprinklers (see Section 11 of Approved Document B Volume 2)"

Section E3 of Volume 2 (Buildings other than Dwellings) states that's *"Where required, sprinkler systems should be provided throughout the building or separated part, unless acting as a compensatory feature to address a specific risk".*

The appellant states that TGD-B only requires sprinklers in the residential units to facilitate the open planned nature of the apartments and also the extended travel distances within the common corridors.

EV Chargers

The appellant makes the point that's while they note Dublin Fire Brigades concern in respect to electric vehicles they are of the opinion that basement sprinklers would create an even more dangerous environment for basement occupants i.e. electrocution. They note that the property will be provided with the fire man's switch which can be used by the fire department to turn off the electrical power to the basement allowing fire fighters fight the source of fire.

The appellant gives a recent example of an appeal submitted by MB McNamara which concluded that the provision of sprinklers in basement car parks were not required.

CONCLUSION

In their conclusion the appellant states that the provision of sprinklers is not a requirement of TGD-B or Approved Document B to satisfy the requirements of the Building Regulations and that's Appendix E of the latter document sprinklers are provided as a compensatory measure they are not required to comply with all sections of BS 9251.

5. ASSESSMENT

Condition 7 attached to the Granted Fire Safety Certificate identifies both residential and non-residential areas of the building to be sprinkler protected. The areas identified are the individual flats, the common areas and the basement.

(a) Flats & (b) Common Areas

In the reprinted edition of TGD-B in 2020 three new sections were included in Section B1 – Means of Escape in Case of Fire:

1.6 Open Plan Flats

1.7 Protected Corridors / Lobbies Serving all Flats

1.8 Domestic Sprinkler Systems

TGD-B requires sprinkler protection:

- 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 to top floor under the 30m height threshold but due to the layout proposed for the apartments and common protected corridors 'domestic' sprinklers are being provided within the individual apartments to comply with Sections 1.6.3 and 1.7.1 of TGD-B (see below).

1.6.3 Internal Layouts. The means of escape requirements in open plan flats are determined by the maximum travel distance within the flat. Where the travel distance is less than or equal to 9 m, the provisions of 1.1.2 apply. Where the maximum travel distance exceeds 9 m, and where the appropriate alternate means of escape (see 1.1.2) has not been provided, the following provisions apply (see Diagram 9A):

(a) a sprinkler system in accordance with Section 1.8 should be provided,

1.7.1. Corridor / Lobby Travel Distances in Buildings with a Single Stairway

Where every flat to a protected corridor / lobby on the same storey is provided with a sprinkler system (see 1.8), and the same protected corridor(s) / lobby(s) are provided with a smoke control system, the travel distance on that storey can be further extended up to a maximum of 15 m.

In both these sections it is clear that the type of sprinkler system to be provided is of a 'domestic' nature with no requirement for the installation of sprinklers within the building common areas.

On this basis the appeal to remove the requirement to provide sprinklers in the common areas should be upheld.

(c) Basement

In relation to the basement car park, while the Local Authority go to some length to explain their reasoning behind their requirement for sprinkler protecting car parks, including evidence derived from research and real-life case studies, the fact remains that TGD-B is very clear *"basement car parks are not normally expected to be fitted with sprinklers".* Even in the most recent published version of TGD-B in 2020, the Department of Housing, Planning and Local Government did not alter the guidance in relation to the need to sprinkler car parks. Where a Local Authorities imposes a condition on a development with a basement car park for sprinklers (which are currently not required in TGD-B), they are going over and above the requirements set out in the guidance document. Conditions like this, which are imposed by some Local Authorities, lead to inconsistency in building design nationally. While there is no doubt merit in the case being put forward by the Local Authority, they should be putting their case to the Department of Housing, Planning and Local Government to have the guidance changed nationally. Until that time if building designers design their buildings to comply with the requirements of TGD-B then they are complying with the requirements of Part B of the Building Regulations.

On this basis and to keep a common national approach on this particular issue, the appeal to remove the requirement to provide sprinklers in the basement car park should be upheld.

<u>BS 9251</u>

While the Local Authority are correct when they say that the appellant did not address all aspects of BS 9251 (including liaising with the *'Authority Having Jurisdiction'*), it would be my opinion that the intend of the wording in Sections 1.6 - 1.8 of TGD-B is for the domestic sprinkler system to comply with the design requirements of BS 9251 only and that not all aspects of that standard need to be addressed. The British Standard is only being used for a very specific reason i.e. the installation of domestic sprinklers where the maximum travel distance in an open plan flat exceeds 9m or where the travel distance in a protected corridor/lobby is extended up to a maximum of 15m.

<u>POINT TO NOTE</u>

There are a number of flats on the floor plans which are identified as having travel distances of 9m

or less e.g. flat 47 on first floor. The travel distance in these instances have not been taken from the furthest point within the flat, which, had it been, the distance would be over the 9m threshold. *Note: dimensions on the floor plans were not easily measured as the drawings provided were not to scale.* On page 4 of their report the appellant states that all apartments will be provided with domestic sprinklers which they have also stated on some (but not all) of the proposed floor plans.

For clarity I would be of the view that all the open plan apartments in this development should be sprinkler protected and would recommend that to avoid any confusion Condition 7 should be retained but redrafted, see Section 6 below.

6. RECOMMENDATIONS

On the basis of my assessment, I am of the opinion that neither the common areas nor the basement car park requires sprinkler protection to meet the functional requirements of Part B of the Building Regulations.

To avoid any confusion with regard sprinkler protecting the individual open plan flats I recommend that Condition 7 be retained but redrafted as follows:

Condition 7

All open plan flats to be provided with a domestic sprinkler system in accordance with BS 9251: 2014 with the minimum design requirements and extend of protection within the flat to comply with BS 9251: 2021.

Reason:

To comply with part B of the Second Schedule of the Building Regulations 1997 to 2021.

Signed: 

Bryan Dunne

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

Date: 31st July 2023