An Bord Pleanála

FSC Report

ABP-312605-22

Appeal v Refusal or Appeal v Condition(s)	Appeal v Condition 2 & 6
Development Description	Construction of new 6 storey apartment building with commercial units on ground floor and associated works At 5 Second Avenue, Cookstown Industrial Estate, Tallaght, South Dublin, Dublin 24
An Bord Pleanála appeal ref number:	ABP-312605-22
Building Control Authority Fire Safety Certificate CE/Managers Order No:	FSC/003/21
Appellant & Agent:	Applicant : MB Mc Namara Construction Ltd Agent : Warringtonfire Consulting Ireland Ltd
Building Control Authority:	South Dublin County Council
Date of Site Inspection	NA
Inspector/ Board Consultant:	Maurice Johnson
Appendices	NA

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2.0 Introduction

2.1 Subject Matter and Background to the Appeal

This report sets out my findings and recommendations on the appeal submitted by Warringtonfire Consulting Ireland Ltd [hereafter referenced as WCIL] on behalf of their Client, MB Mc Namara Construction Ltd., against Conditions No. 2 and 6 attached to the Fire Safety Certificate (Building Control Authority Fire Safety Certificate CE/Managers Order No: FSC/003/21) granted by South Dublin County Council [hereafter referenced as SDCC] in respect of Construction of new Single storey basement and six storey residential block above (Block A) at 5 Second Avenue, Cookstown Industrial Estate, Tallaght, South Dublin, Dublin 24

The development comprises a single storey basement below three apartment blocks A, B and C. The current FSC application is for the basement, which accommodates car parking and other ancillary accommodation (i.e. bin stores and bicycle parking), and residential Block A only. Blocks B and C are subject to a separate FSC application. It is noted that Block A comprises 6 storeys over ground and Block B is stated to comprise 6 to 9 storeys and Block C is stated to comprise 8 storeys. The height of the topmost apartment floor occurs therefore in Block B and is indicated on FSC drawing P21-134DA to be at a height of 26.775m above podium/ground level. The basement car park accommodates 65 car parking spaces and is stated to have a floor area of 2072.09m^2 and a clear height of circa 3m. The car park is also stated to be naturally ventilated with permanent ventilation openings having a free area exceeding 2.5% of the car park floor area.

The Fire Safety Certificate was granted on 4th January 2022 with 10 conditions attached. The appeal to An Bord relates to Conditions 2 and 6 only – the other conditions are not being appealed.

Conditions 2 and 6, which are the subject of the appeal, reads as follows:

Condition 2:
The proposed basement car park (including Ancillary Areas at Basement Level) shall be provided with a sprinkler system in accordance with BS9251:2021

With the stated reason for the condition being*:*

Reason*: To comply with the provisions of Part B of the Second Schedule to the Building Regulations 1997-2019*

Condition 6:
An isolation valve should be provided to each individual flat. It should be located within the flat, near the main entrance door, and should be accessible as per Section 1.8.1 of Technical Guidance Document B 2020 (reprint)

With the stated reason for the condition being*:*

Reason*: To comply with the provisions of Part B of the Second Schedule to the Building Regulations 1997-2019*

De novo consideration is not warranted and the Board can rely on the provisions of Article 40(2) of the Building Control Regulations and deal with the appeal on the basis of Conditions 2 and 6 only.

2.2 Documents Reviewed

2.2.1 Fire Safety Certificate Application and Supporting Documentation and Additional Information submitted by WCIL on behalf of their Client

2.2.2 Further Information requests, decision and grant by SDCC on 4th January 2022 with 10 conditions attached.

2.2.3 Appeal submission to An Bord Pleanala by WCIL dated 26.01.2022 and 16.03.2022

2.2.4 Appeal submission to An Bord Pleanala by SDCC - Fire Officers Report dated 11.02.2022

3.0 Consideration of Arguments by Appellant and BCA

Condition 2

The proposed basement car park (including Ancillary Areas at Basement Level) shall be provided with a sprinkler system in accordance with BS9251:2021

With the stated reason for the condition being*:*

Reason*: To comply with the provisions of Part B of the Second Schedule to the Building Regulations 1997-2019*

Insofar as the reason stated in the Grant of Fire Certificate for the imposition of Condition 2 is generic in nature it is considered appropriate to set out, in the first instance, the reasoning of SDCC as outlined in more specific detail in their appeal submission to ABP titled *Fire Officers Supplementary Report on Fire Safety Certificate Appeal* dated 11.02.2022.

Case made by SDCC in respect of imposition of Condition 2

In their submission to An Bord, SDCC has set out in a substantial report a response covering the following topics/issues:

I. **Review of the FSC application**.
In this section SDCC note that the Applicant had proposed sprinklers in their initial FSC submission but had withdrawn this proposal in subsequent supplementary submissions on the basis that sprinklers in car parks were not a requirement of TGDB 2020 - other than in buildings with a height to the top floor exceeding 30m which is not the case in this application.
SDCC also note that the Applicant did not respond to their query with regard to the risk of runaway fires in the lithium-ion batteries in EV vehicles other than to propose that the electrical charging would be interlinked with the fire detection and alarm system for the car park and the chargers would be depowered in the event of alarm activation

II. **Review of the BS9251:2021 requirements**.
In this SDCC contend that BS9251:2021 requires that sprinkler protection be provided throughout the entire of an apartment building in circumstances where sprinkler protection is provided in any part of the building. In this instance the Applicant has proposed sprinkler coverage of the apartments and the common corridors serving the apartments on the basis that the sprinklers are being provided as part of the fire strategy to enable open-plan apartment typologies and also to offset increased travel distance in the common corridors compared to the limits applying to unsprinklered apartments.

III. **Review of TGDB provisions in 1997, 2006 and 2010 edition and in the Draft Building Regulations (brown book) which preceded the introduction of the Building Regulations in 1992**.
SDCC note that sprinklers were a requirement for basement car parks in Part Q - *Access for Fire Appliances and Means of Assistance for the Fire Service* - of the Draft Building Regulations but was removed in the Technical Guidance Documents B 1991 which supported the Building Regulations in 1992 and in subsequent amendments to TGDB. SDCC do not however make any

reference to the fact that the Draft Regulations contained no requirement for heat/smoke ventilation of car parks in either Part Q - *Access for Fire Appliances and Means of Assistance for the Fire Service* or Part N S*tructural Fire Precautions* whereas TGDB requires either natural or mechanical heat/smoke ventilation of all car parks.
SDCC argue that the provision of the Draft Regulations should be reintroduced particularly having regard to the changes in the materials and fuel types used in cars in the interim.

SDCC also note that a reference in TGDB 1997 that *"there is evidence that fire spread is not likely to occur between one vehicle and another"* was removed in the subsequent 2006/2020 editions of TGDB and appear to interpret this as identifying a weakness in the ventilation provisions which are unchanged in the 1997 and 2006/2020 editions. It is clear however from reading the totality of the text from the 1997 Edition that this statement was in the context of *"open sided"* car parks which are overground car parks, and which are provided with double the quantity of natural ventilation compared to the *"normal"* naturally ventilated car park i.e. 5% for *"open-sided"* versus 2.5% for *"normal"* natural ventilation. It is noted that *"open sided"* car parks are subject to much reduced fire ratings compared to *normally* ventilated car parks i.e. 15 minutes ratings versus 60 -120 minutes.

IV. **Background Research into Car Fires.**

In this section SDCC quote from research studies undertaken in 1968 for the UK Government (i.e. Fire Note 10) and a subsequent report in 2007-2010 for the UK Department of Communities and Local Government (Report BD2252 Fire Spread in car Parks undertaken by UK Building Research Establishment). It is not proposed to reproduce the various comments and observations which SDCC make in relation to these two studies.
The latter study is stated in the introduction to the report to be specifically concerned with gathering data on fires involving the current design of cars – with the increased use of plastics and plastic fuel tanks specifically noted - to inform any changes which might be necessary to update the guidance in UK Approved Document B 2006 i.e. the UK equivalent of the Irish TGDB. It is noted that the research essentially endorsed the guidance in TGDB 2006 which remained unchanged in subsequent amendments to UKADB in 2010, 2013 and 2019/2020. It is noted however that this research work, which was undertaken in 2006-2010, focussed on vehicles fuelled by petrol and diesel as EV cars were only entering the market around that time.

SDCC contend that this research is now out of date having regard to current car design and fuel types.

V. **Case Studies.**

In this section SDCC reference various car park fires in Ireland, Europe and Korea in the period 2004-2020 in which multiple cars were ignited.
SDCC conclude that these incidents illustrate that fires in car parks can spread beyond the vehicle of fire origin and appear to go onto conclude that the current guidance (i.e. in TGDB 2020), which they say is based on the assumption that "*fires do not spread from the vehicle of fire origin*", is inadequate.

VI. **Electric Vehicles.**

In this section SDCC set out the specific challenges associated with fire occurrence/risks in EV vehicles compared to Internal Combustion Engine (ICE) vehicles and note that there is an ongoing change from ICE to EV vehicles driven by climate change considerations. SDCC note in

particular that significantly greater water volumes are required to deal with a fire occurrence in the battery packs of an EV vehicle than a fire in an ICE vehicle and they note that the fire may continue over an extended period of time.

SDCC argue that sprinklers are necessary to allay these concerns with EV vehicles and also to offset the increased use of plastics in modern vehicles.

VII. **Conclusions.**

SDCC contend that the current guidance in TGDB is out of date on the basis that it does not take into account the increased use of plastics in modern vehicles including plastic fuel tanks nor does it take account of the fire risks associated with EV vehicles. They contend that this is particularly the case with basement car parks given the increased challenges in dealing with a fire occurrence below ground.

SDCC go onto conclude that the sprinkler protection is necessary to offset these risks in basement car parks and is necessary to achieve compliance with Part B of the Building Regulations in relation to means of escape and fire-fighting.

Case made by WCIL in respect of Condition 2

For their part, WCIL make the following key arguments:

I. WCIL note that the fire design is based on Technical Guidance Document B 2020 which is also acknowledged in the SDCC submission to An Bord referenced above.

WCIL go onto note that TGDB 2020 does not require sprinklers in apartment buildings other than those which exceed 30m in height or to offset a specific aspect of the fire design such as in open plan apartments and/or as an enhancement to allow increased travel distances in the common corridors serving the apartments. They therefore conclude that sprinklers are not required in the car park as the buildings above – i.e. Blocks A, B and C – all have heights to the top floor not exceeding 30m.

WCIL go onto also note that Section 5.4.3.1 of TGDB 2020 specifically states the following:

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

II. In relation to the SDCC contention that BS9251:2021 requires sprinkler protection throughout the apartment block, including in the car park, in circumstances where sprinklers are installed in part of the blocks, WCIL respond by way of a comparative analysis. In this analysis they qualitatively compare an unsprinklered apartment block having apartments designed with enclosed entrance hallways and of similar height to the subject development (i.e. less than 30m height), with the subject building having open plan apartments fitted with sprinklers.

WCIL conclude that the basement car park fire risk is identical in both designs and on that basis they contend that it makes no sense to require sprinklers in the car park simply because the internal planning of the apartments above is different.

Condition 6

An isolation valve should be provided to each individual flat. It should be located within the flat, near the main entrance door, and should be accessible as per Section 1.8.1 of Technical Guidance Document B 2020 (reprint)

With the stated reason for the condition being*:*

Reason*: To comply with the provisions of Part B of the Second Schedule to the Building Regulations 1997-2019*

Case made by SDCC in respect of imposition of Condition 6

In their submission to An Bord, SDCC refer to Section 1.8.1 of TGDB 2020 which states the following: *"An isolation valve should be provided to each individual flat. It should be located within the flat, near to the main entrance door, and should be readily accessible"*

SDCC note that the Applicant has based their design on Section 1.6.3 of TGDB 2020 which in turn refers to Section 1.8 for details of sprinkler protection. SDCC go onto note that whilst the Applicant had referred to the provision of an isolation valve *"located above the entrance door to the apartment" (*quoting from para 24 of WCIL Supplementary FSC Submission dated 04.11.2021) SDCC had interpreted that to mean that the Applicant was proposing that the valve be on the outside of the apartment entrance door and not inside the apartment.

SDCC go onto state that the Applicant had made no case for this variation from the siting recommendation in 1.8.1 of TGDB 2020 and hence Condition 6 was imposed.

Case made by WCIL in respect of Condition 6

For their part, WCIL argue that it is more appropriate to site the isolation valves outside the apartment entrance door in the common area as that will enable the valve to be accessed by maintenance personnel for maintenance purposes and should there be a fault or leak in the sprinkler system within the apartment. WCIL argue that a leak could result in very significant water damage if the isolation valve is only accessible from within the apartment and if the apartment is unoccupied.

WCIL reference BS9251:2021 in support of their position. In particular they quote Clause 5.1 of BS9251:2021 which states that

"The sprinkler system should be designed to facilitate easy maintenance. Parts requiring service or adjustment should be located in accessible locations e.g communal locations"

4.0 Assessment

Condition 2

The proposed basement car park (including Ancillary Areas at Basement Level) shall be provided with a sprinkler system in accordance with BS9251:2021

With the stated reason for the condition being*:*

Reason*: To comply with the provisions of Part B of the Second Schedule to the Building Regulations 1997-2019*

Having considered the arguments made by both parties my assessment considerations are as follows:

I. I concur with WCILs interpretation of TGDB 2020 – being the basis of compliance for their fire design – that sprinklers are not a requirement of the Technical Guidance Document for car parks in buildings of less than 30m height to the top floor – as is the case in this instance. I note also that TGDB 2020 was revised and reprinted in 2020 following a period of Public Consultation and in this revision the provisions in relation to car parks remained unchanged from the 2006 version of TGDB.
It is further noted that a more general update of TGDB is currently being undertaken by the DHLG. Any changes which arise in that revision will however only apply from the applicable date which typically includes a transitional timeline from date of publication.

II. In regard to the assertion by SDCC that sprinklers are required in the car park as a consequence of Clause 5.4 of BS9251:2021 I note the following:

a. TGDB 2020 is clear in Section 1.6.3(a) in respect of open plan apartments, Section 1.7.1 para 4 in respect of extended travel distances in dead-end corridors (which design option has been adopted in this scheme), and in Section 1.8 in respect of sprinkler system design requirements that sprinkler coverage is only required in the apartments and not in other parts of the building, including car parks. A possible exception to this is buildings which exceed 30m to the top floor which it is noted is not the case in this instance.
Accordingly, TGDB 2020 does not require sprinkler protection in car parks – including car parks with EV vehicles - attached to or underneath apartment blocks in which sprinkler coverage has been provided on the apartment floors to offset increased travel distances in the apartment corridors and/or open plan apartments. This aligns with the arguments advanced in the submission by WCIL to ABP dated 16.03.2022 where they challenge the theory of requiring sprinklers in the car park simply because the design has open plan sprinklered apartments and extended corridors on the upper floors.

b. BS9251:2021 is a code of practice - not a specification – and takes the form of guidance and recommendations. The specification for the system, which in my view includes defining the extent of required sprinkler coverage, is developed by the sprinkler designer and is noted in Clause 4.2.2 of BS9251:2021 as taking account of the fire strategy for the premises. In this instance the fire strategy is not based on full sprinkler protection of the building as might be the case had the building exceeded a height of 30m to the top floor, but rather is

based on partial sprinkler coverage to offset means of escape considerations within the individual apartments and in the common corridors serving the apartments.

c. In the Foreword to BS9251:2021 the code identifies that amongst the principal changes in the revised standard compared to BS9251:2014 the document includes *"Further recommendations for non-residential occupancies in **protected buildings**".*
It is in the context of *"protected buildings"* (i.e. which in the Irish context potentially arises for apartment buildings exceeding 30m in height) that Clause 5.4 of BS9251 is relevant in my view and not in the context of buildings which have partial sprinkler protection to offset a specific means of escape consideration as is the case in this instance.

Accordingly, I do not concur with the SDCC assertion that sprinkler protection of the car park is necessary to comply with Part B of the Irish Building Regulations as a consequence of Clause 5.4 of BS9251:2021

III. SDCC assert that the guidance in TGDB 2020 is based on out of date data which does not reflect the current generation of cars in terms of construction and fuel types and go on to assert that in the absence of sprinklers the guidance in TGDB 2020 for basement car parks fails to satisfy the requirements of Part B of the Building Regulations - which in the case of fire outbreak is concerned with securing the health, safety and welfare of persons in or about buildings or affected by buildings.
Whilst I would concur that an up to date analysis of car park fires is desirable, SDCC do not in my opinion offer data to support their assertion that the current guidance in TGDB 2020 fails to satisfy the requirements of Part B of the Building Regulations.
SDCC reference 2 multi-car fires in Ireland but offer no assessment as to why those incidents – in which there were no fatalities or serious injuries to my knowledge – form a justification for the imposition of sprinkler protection per Condition 6. Furthermore, a cursory review of the fire statistics as published on the gov.ie website for the period 2000 to 2021 would indicate that fires which the fire service attended and which occurred in motor vehicles in the period 2010 to 2021 was, on a yearly average, reduced by a factor of 50% compared the number of motor vehicle fires in the preceding 10 year period from 2000 to 2009 (*refer Locations of Fire Statistics on gov.ie*).
Furthermore, during the period 2000 to 2021 the statistics indicate that there have been no fatalities as a consequence of fires in car parks – the only fatalities recorded in cars during that period appear to have all occurred in road traffic accidents or individuals in a single car fire occurrence (*refer Fire Fatalities Statistics on gov.ie*).
In any event were SDCC to be of the view that the prima facie guidance in TGDB ought to be amended, the appropriate forum for presenting those views is the Public Consultation stage of the next/forthcoming Revision to TGDB.

IV. SDCC also refer to the proposal to install electric car recharging points in the car park in support of the imposition of Condition 6. It is noted that the provision of recharging points and associated infrastructure is now a requirement of S.I No 393/2021 – European Union (Energy Performance of Buildings) Regulations 2021. These facilities are in turn required to be installed in accordance with the specific wiring and safety requirements of the National Rules for Electrical Installation I.S 10101:2020 including in particular Part 722 *Supplies for Electrical Vehicles*. Accordingly, the risk from this type of electrical installation can be expected to be very low.

In relation to the risk of Thermal Runaway due to overcharging which is also raised by SDCC it is my understanding that EV vehicles are fitted with battery management systems which protect against the occurrence of overcharging.

V. SDCC note that fires in battery packs of EV vehicles can be difficult to extinguish and may require protracted water hose application/cooling. In this regard it is noted that the car park is to be fitted with 2 fire main landing valves – one in each of the 2 staircores – which will facilitate the fire service in applying firewater as the fire service will not be required to run charged hoses down the stairs with associated risk from doors being wedged open. It is noted that the provision of dry main landing valves is not normally required in single storey basements of this type and thus constitutes an enhancement on the minimum requirements of TGDB 2020 i.e. 5.1.2(b) of TGDB 2020 requires internal fire mains for basements which exceed 10m in depth whereas the subject basement is circa 3m in depth.

Furthermore, it is noted that the subject building is located in close proximity - circa 1.9km - to the local fire station and thus travel times for the fire service will be very short i.e. of the order of 3-4 minutes.

VI. It is also informative to note that had this basement been used for general storage (i.e. Purpose Group 7(a)(a)) it would not have required sprinklers having regard to its size and the presence of natural smoke/heat venting and in those circumstances the fire service might well be confronted by a fully involved flashed over fire incident.

VII. It is noted that ABP have previously adjudicated on similar car park sprinkler conditions and have found the imposition of sprinklers to be unjustified and directed the Building Control Authority to remove the condition – e.g. file FS06D.300409 and ABP-305955-19

On the basis of the foregoing considerations, I conclude that SDCC are unjustified in imposing sprinkler protection of the car park in this case and, on that basis, I consider that the appeal should be upheld and Condition 2 removed.

Condition 6

An isolation valve should be provided to each individual flat. It should be located within the flat, near the main entrance door, and should be accessible as per Section 1.8.1 of Technical Guidance Document B 2020 (reprint)

With the stated reason for the condition being*:*

Reason*: To comply with the provisions of Part B of the Second Schedule to the Building Regulations 1997-2019*

Having considered the arguments made by both parties my assessment considerations are as follows:

I. It is noted that WCIL have proposed that the sprinkler system on the residential floors conforms with BS 9251:2021 and that a zone valve be provided for each apartment located in the common corridor close to the apartment entrance door. It is further noted that BS 9251:2021 in Section 5.1 requires that all such zone valves be secured open, be provided with devices for monitoring the status of the valve (i.e. open or closed), that a flow switch be provided downstream of each

zone valve to provide an alarm signal and that a permanent test and drain valve be provided downstream of the flow valve to simulate operation of a sprinkler. The code also requires in section 7.1.2 that these valves and flow switches be subject to routine testing at intervals not exceeding 12 months.

II. TGDB 2020 on the other hand recommends that an isolation valve be provided for each apartment within the apartment near the apartment entrance door. Thereafter TGDB 2020 recommends that the system comply with BS9251:2014 which in turn requires an alarm valve and flow switch at each floor level i.e. not for each apartment.

III. It is noted that BS9251:2021 was not issued when TGDB 2020 was published. It is therefore assumed that the logic behind the guidance in 1.8.1. of TGDB – i.e. to provide an isolation valve in each apartment – was concerned with ensuring that the valve was not tampered with by parties other than apartment occupant.

IV. Having regard to the following:

a. the proposal by WCIL to comply with BS9251:2021 and to provide zone valves at each apartment, and

b. the additional precautions in BS9251:2021 to prevent interference with the valves (i.e. the valves must be secured open), and

c. the additional requirement in BS9251:2021 to have remote monitoring of the status of each zone valve thus alerting management to an individual valve being inappropriately closed, and

d. the requirement in BS9251:2021 for flow switches and test devices to be provided for each zone valve and the requirement that these devices be the subject of routine testing at intervals not exceeding 12 months

I consider the proposals by WCIL – i.e. to locate the zone valves outside the apartment in the common corridor area where they are accessible to management for routine testing/maintenance and to potentially shut off sprinklers in the event of a leak within an individual apartment which could be unoccupied - to be a logical and reasonable alternative to the provisions in 1.8.1 of TGDB 2020 and on this basis I consider that the appeal should be upheld and Condition 6 removed.

5.0 Conclusions/Recommendation

On the basis of my assessment in 4.0 above I consider that the imposition of Conditions 2 and 6 is not justified and I consider that the Bord should uphold the appeal and direct the Building Control Authority to remove both conditions.

6.0 Reasons and Considerations

On the basis of the assessment in 4.0 above I conclude that the imposition of Conditions 2 and 6 is not justified.

Accordingly, I conclude that the appeal should be upheld and the Building Control Authority should be directed to remove both conditions.

7.0 Conditions

Direct the Building Control Authority to remove Conditions 2 and 6

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MAURICE JOHNSON
Chartered Engineer I BE, CEng, FIEI, MIStructE, MSFPE
Consultant/Inspector

Date : _____