

An
Coimisiún
Pleanála

FSC Report

ACP-324139-26

**Appeal v Refusal or Appeal v
Condition(s)**

Appeal v Condition
(Condition 1)

Development Description

Construction of a seven-storey
residential development comprising
149 no. apartment units over a
basement car park
at
Blocks 7, 8 & 9 Jacobs Island, Mahon,
Cork.

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

FSC2406672CY/7DN
(Submission No. 3024029)

Appellant

Mr. Joshua Guy

Appellant's Agent

Mr. Stefan Hyde,
Maurice Johnson & Partners

Building Control Authority:

Cork City Council

Inspector

Colin Barden

Contents

1.0 Introduction	3
2.0 Information Considered	4
3.0 Relevant History/Cases	4
4.0 Appellant's Case	5
5.0 Building Control Authority Case	7
6.0 Assessment	7
7.0 Recommendation.....	17
8.0 Reasons and Considerations.....	18
9.0 Conditions.....	19
10.0 Sign off.....	19

1.0 Introduction

The proposed development at Blocks 7, 8 & 9 Jacobs Island, Mahon, Cork consist of the construction of a seven-storey residential development comprising 149 no. apartment units over a basement car park.

- 1.1. A Fire Safety Certificate Application, with Building Control Authority (BCA) Ref. FSC2406672CY/7DN was submitted to the BCA on 20/09/2024. That Fire Safety Certificate Application was Granted subject to one Condition on 13/02/2026. An appeal against Condition 1, below, was lodged with An Coimisiún Pleanála (ACP) on 12/03/2026.

“Condition:

The Basement Car Park shall be installed with an Automatic Sprinkler System throughout in accordance with I.S. EN 12845:2015 (+AC:2016) + (A1:2019) Fixed Firefighting systems – Automatic Sprinkler Systems - Design, Installation and Maintenance.

Reason:

To comply with the provisions of Part B of the Second Schedule to the Building Regulations, 1997 to 2025.”

- 1.2. The subject of this report is an appeal v condition (Condition 1).

2.0 Information Considered

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

- Statutory and supporting documents submitted with the application on 20/09/2024.
- Revised information submitted on 09/05/2025.
- Revised information submitted on 13/09/2025
- Revised information submitted on 04/02/2026.
- Grant of Fire Safety Certificate with 1 Condition attached dated 13/02/2026.
- Appeal by the Agent, Mr. Stefan Hyde, Maurice Johnson & Partners, on behalf of the Appellant, Mr. Joshua Guy, lodged with ACP on 12/03/2026.
- BCA response to the appeal, dated 14/04/2026.
- Further submission to ACP by the Agent on behalf of the Appellant, dated 12/05/2026.

For clarity, references to the 'Appellant' in this report include submissions made on their behalf by their Agent in this appeal process. The term 'Applicant' is used when referring to the Fire Safety Certificate Application process.

3.0 Relevant History/Cases

3.1. I am not aware of any relevant building control history relating to the appeal site, including any previous FSC, Revised FSC, Regularisation FSC or/and any dispensation or relaxation of the Building Regulations.

3.2. This appeal concerns the provision of sprinklers in a basement car park. There have been other relevant Commission decisions at other locations that may be of assistance to the Commission in determining this case, a non-exhaustive list is given below.

- ABP 312605-22
- ABP 315367-23
- ABP 315985-23
- ABP 317213-23
- ABP 318731-23
- ABP 319294-24

4.0 Appellant's Case

4.1. The Appellant is appealing the attachment of Condition 1 to the Grant of Fire Safety Certificate Application on the basis that compliance with Part B of the Building Regulations can be demonstrated without sprinklers in the basement car park. The following points are set out in support of the appeal:

- The proposed design has the following features:-
 - The single-storey basement car park incorporates approximately 6% natural smoke ventilation distributed throughout to maximise performance.
 - The residential apartments overhead are fully protected by independent sprinkler systems designed to BS 9251:2021.
 - Complete structural separation is maintained between the basement stairs and the upper-level residential stairs.
 - Both the basement stairs and upper-level stairs exit directly to the outside to preserve residential escape routes in the event of a car park fire.
 - Protection of the stair cores is enhanced through the implementation of double lobby protection from the car park.
 - Dry rising mains are provided within the cores to assist fire service operations.
 - The sloping topography of the site positions the east elevation of the basement at grade, providing two direct external access routes that offer full tactical flexibility for fire services.
 - The proposed basement is structurally isolated from the existing basement under Blocks 5 and 6 by 90-minute fire-rated construction.
 - A 90-minute fire-rated shutter is provided at the connecting vehicle access ramp between the basement levels.
 - Lift access to the basement level was previously accepted by the Building Control Authority due to the inclusion of double lobby protection and enhanced 6% natural ventilation.

- Sections 3.5.2 and 5.4.3.1 of Technical Guidance Document B explicitly state that basement car parks are not normally expected to be fitted with sprinklers.
- The requirement for a commercial sprinkler system on a development of this scale is considered unduly onerous and could exacerbate the current housing crisis.

4.2. Following receipt of the BCA's response to the initial appeal submission the Appellant also makes the following additional points:

- The Appellant strongly contends that the proposed apartment scheme represents a common building situation in Ireland, meaning full adherence to Technical Guidance Document B (TGD-B) indicates prima facie compliance without requiring an alternative fire engineering solution.
- The heights of the top storeys for the blocks range from 16.725m to 20.5m, remaining well below the 30m threshold where TGD-B (Clauses 0.1.5 and 0.3.8) introduces mandatory sprinkler protection for tall and complex residential buildings.
- The Appellant cites recent local precedent within the Cork City Council area where a block of similar design over a basement car park was approved without sprinklers in December 2023.
- The basement car park is not fully subterranean and features open doors at the eastern end, enabling fire appliances to drive directly to the location.
- Compliance with Part B1 is maintained as final stair exits are positioned well away from car park ventilation openings, eliminating risk to escaping occupants.
- Contamination of upper floors by smoke is prevented because the common residential corridors use natural ventilation shafts that open exclusively on the specific floor where fire activation occurs.
- Passenger lifts are robustly protected against smoke transfer by double lobbies, with the outer lobby featuring a 0.4 square meter permanent vent to the outside.

- Compliance with Part B3 structural stability is achieved through a robust reinforced in-situ concrete slab approximately 950mm deep, supported by 800mm by 200mm columns.
- Compliance with Part B5 firefighter access is enhanced by six distinct firefighter access doors, including two entry points directly from the outside on the eastern elevation.
- Past Irish car park fires did not result in catastrophic structural outcomes despite occurring in older developments with lower safety specifications than the current design.
- Risk of fire spread along the car park soffit is explicitly minimised by finishing the basement insulation with a non-combustible board.

5.0 Building Control Authority Case

5.1. The BCA set out their response to the appeal as follows:

- Cork City Fire and Building Control Department maintains that while a seven-storey development is a common building type, the inclusion of a basement car park under same presents an uncommon building situation due to the potential for very large fires.
- The Building Control Authority claims that fire engineering judgement must be applied under Clause 0.1.4 of Technical Guidance Document B to address changing circumstances rather than strictly adhering to outdated guidance in TGD-B and that very large fires in car parks have the potential to overwhelm the mitigations provided for in TGD-B (i.e. structural fire resistance, smoke lobbies, smoke ventilation etc.). They expand on this point as follows:-
 - Academic data indicates that the peak Heat Release Rate per vehicle has increased by 42% on average between older tests (1993 to 2008) and more recent tests (2009 to 2023).
 - Recent fire testing data demonstrates that the total heat energy released by a vehicle fire has increased by 89% on average compared to pre-2009 data.

- The average time taken for a vehicle fire to reach its peak intensity has lengthened, which increases the likelihood of concurrent, fully developed fires in adjacent vehicles.
 - Modern vehicle hazards have escalated due to a substantial increase in the volume of combustible plastics used in vehicle construction and on vehicle exteriors.
 - Electric vehicles introduce severe risks involving thermal runaway and explosive gases, creating protracted incidents that are almost impossible for firefighters to manage without mitigation.
 - Real-world evidence from 2017 to 2024 confirms a trend of large-scale car park fires globally and nationally, including incidents involving up to 50 vehicles directly beneath residential complexes.
 - Historical smoke ventilation guidance of 2.5% was developed in the 1970s for post-fire smoke clearance rather than active fire spread mitigation.
 - Large multi-vehicle fires continue to occur even in car parks with 5% ventilation because fire spreads through hot smoke layer radiation irrespective of the ventilation provided.
- Compliance with Part B1 is threatened because very large volumes of smoke in an enclosed area could compromise the escape routes on the upper residential floors.
 - Compliance with Part B3 is threatened due to the risk of very significant heat energy negatively impacting the building structure within the basement car park.
 - Compliance with Part B5 is threatened because intense heat could severely inhibit fire service personnel from accessing and fighting a fire within the basement.
 - The Building Control Authority concludes that limiting fire size and fire spread via an automatic sprinkler system is the only credible solution to prevent large-scale fires from overwhelming the structural and life safety mitigations built into this development.

6.0 Assessment

6.1. *De Novo* assessment

Having regard to the nature of the appeal which is solely against Condition 1, and 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 Commission 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

The reason given with the attachment of Condition 1 to the Grant of Fire Safety Certificate is *“To comply with the provisions of Part B of the Second Schedule to the Building Regulations, 1997 to 2025.”* In their subsequent submission to the Commission the BCA clarifies that Condition 1 was attached in order to comply with Regulations B1, B3 and B5. Regulation B2 and B4 are not expanded upon, therefore Regulations B1, B3 and B5 will each be considered below. There is also some discussion by both parties regarding the scope of TGD-B and therefore that item will be considered initially.

6.2.1. Scope of TGD-B

In their response to the appeal the BCA state that the proposed seven storey residential over single level basement is an uncommon building type and therefore effectively outside the scope of the *prima facie* guidance in Technical Guidance Document – B. The BCA state that section 0.1.4 of TGD-B (Alternative Solutions) should be applied.

The Appellant strongly contends that the provision of a residential development over a basement car park is a common building type in Ireland and therefore is of the opinion that the *prima facie* guidance in TGD-B applies and that Section 0.1.4 does not need to be relied upon. The Appellant also notes that when TGD-B 2006 was updated in 2020 (to TGD-B 2006 + A1 2020) two specific clauses were added to deal

with tall and complex buildings containing flats. There are Clause 0.1.5 and 0.3.8. However these clauses come into effect when the building height exceeds 30m which is not the case for this project.

I note the use of TGD-B as *prima facie* guidance and the use of an alternative approach are both enabled as design options by Article 7 of the Building Regulations. In March 2024 the Department of Housing, Local Government and Heritage published an Information Note on '*Alternative Approaches to Demonstrate Compliance with the Building Regulations*'. The purpose of this Information Note was to "*provide clarity on the provisions of Article 7 of the Building Regulations 1997 (S.I. No 497 of 1997) (as amended) and a pathway for alternative approaches to demonstrate compliance with the Second Schedule to the Building Regulations.*".

This Information Note states that Article 7(3) of the Building Regulations provide for the application of methods alternative to that set out in the Technical Guidance Documents provided that the relevant requirements of the Regulations are complied with. The Information Note states that, for complex buildings, an 'Alternative Approach' other than that outlined in the Technical Guidance Document may be applied, and in some cases, may be necessary. The Information Note goes on to give examples of complex building types as follows:-

- Buildings with difficult site conditions,
- Buildings with unusual occupancies or high levels of complexity,
- Very large or very tall buildings,
- Engineered timber buildings,
- Some buildings that incorporate modern construction methods,
- Existing building e.g. Buildings of architectural or historical interest.

While I acknowledge that the list above is indicative of complexity only and was not intended to be a comprehensive list it is also clear, in my opinion, that a new circa 20m tall residential development over a single level of basement car park would not by itself be considered to be an uncommon or complex building type in Ireland.

I therefore agree with the Appellant on this point, there is no requirement for Section 0.1.4 to be applied in this case, the prima facie guidance within TGD-B is appropriate for use.

6.2.2. Regulation B1

The BCA state that the proposed design does not comply with Regulation B1 due to the potential for very large volumes of smoke to impact the means of escape, particularly on upper floors. The BCA relate smoke volume to expected fire size however fire size will be considered under B3 and B5 below.

The Appellant notes that the proposed design has the following features:-

- Single storey basement car park with 6% (i.e. >2.5% required) natural ventilation distributed evenly.
- Complete structural separation between the basement stairs and the upper-level residential stairs.
- Both upper level stairs and basement stairs discharge directly to outside.
- Final exits from stairs are located well away from car park ventilation.
- Lift access to upper levels provided with double lobby protection with the outer lobby featuring a 0.4 square meter permanent vent to outside.

The BCA's concerns about smoke volume in confined spaces are understandable, however, having considered the above I would agree with the Appellant on this point, there is no requirement in TGD-B to provide sprinklers under Regulation B1.

6.2.3. Regulation B3

The BCA state that the proposed design does not comply with Regulation B3 due to the risk of very significant heat energy negatively impacting the structure within the basement car park.

The BCA support this claim by reference to a paper titled "*Systematic Literature Review on Passenger Car Fire Experiments for Car Park Safety Design*" by Miechówka and Węgrzyński, 2025. The BCA state that this paper demonstrates that the peak Heat Release Rate (HRR) per vehicle has increased by 42% on average between older tests (1993 to 2008) and more recent tests (2009 to 2023) and that

the Total Heat Release (THR) increased by 89% on average across the same timespan. Having read the Miechówka and Węgrzyński paper I note that while the figures quotes by the BCA are not incorrect however the papers own Authors caveat the interpretation of these figures. For example Table 7 in that paper is as follows:-

Table 7 Simple statistical analysis of chosen fire parameters distribution in the database, by the decade of test

	before 2001	2001—2010	2011 and after
<i>Peak HRR [kW]</i>			
Average	4361 	3263	5623
Median	4167	3332	5882
5th percentile	1663	932	2463
95th percentile	8580	6890	8080
99th percentile	8854	9722	10,582
Standard deviation	2357	1985	1864
<i>Time to peak HRR [min]</i>			
Average	18,80	26,99	22,27
Median	16,40	25,00	18,50
5th percentile	9,80	2,54	5,91
95th percentile	29,05	54,60	49,95
99th percentile	33,14	65,99	63,26
Standard deviation	6,77	17,65	14
<i>THR [MJ]</i>			
Average	4315 	3444	6770
Median	3954	3150	6795
5th percentile	2775	130	3111
95th percentile	7250	8202	10,014
99th percentile	7955	9037	10,275
Standard deviation	1586	2859	2232

As can be seen from the above the Average HRR and THR actually decreases after 2001 up to 2011. The Authors of the paper also note that the Time to peak HRR increases, even after 2011 and specifically point out the 99th percentile at 33 mins before 2001 increases to 63 mins after 2011, which would point to less severe fire exposure. In relation to the increase in average peak HRR after 2011 the Authors guard against an assumption that this is due to any change in the design of cars. They note that this may be due to a change in predominant test methods post 2011 and conclude that “*the use of the ignition of the car from underneath is questionable, as an ignition mode that accelerates the growth of the fire and leads to a higher peak HRR that may not correspond to natural fires of cars. Future studies need to balance out the ignition location, to provide a more complete image of the course of car fires.*”.

Given the above I do not read the Miechówka and Węgrzyński paper as being wholly supportive of the BCAs case that there is an increased exposure from a modern car fire.

The Appellant notes that the proposed design has the following features:-

- Single storey basement car park with 6% (i.e. >2.5% required) natural ventilation distributed evenly.
- Complete structural separation between the basement stairs and the upper-level residential stairs.
- B3 structural stability is achieved through a robust reinforced in-situ concrete slab approximately 950mm deep, supported by 800mm by 200mm columns.
- The proposed basement is structurally isolated from the existing basement under Blocks 5 and 6 by 90-minute fire-rated construction.
- Section 3.5.2 of TGD-B explicitly states that basement car parks are not normally expected to be fitted with sprinklers.

The BCA contend that the guidance in 3.5.2(a) of TGD-B 2006 (2020 reprint) is out of date and does not account for the fire load of modern vehicles. I note that the version of TGD-B used as the design code in this application (the 2020 reprint) was subject to public consultation in 2019. I further note that the more recent version of TGD-B 2024 which came into effect on 1st May 2025 also underwent extensive public consultation, with the guidance relating to car parks in TGD-B 2024 having been updated and a new Section 8 added specifically dealing with sprinkler systems. During this most recent review of TGD-B there was opportunity for due consideration of the fire load of modern vehicles and the increased presence of EVs however the 2024 edition has not been amended to require sprinklers in basement car parks.

The BCA also make reference to the NFPA (Phase 1 Report) on *Modern Vehicle Hazards in Parking Structures and Vehicle Carriers*, 2020 and suggest that that report identifies an increased risk of fire spread between cars due to the increased presence of plastics in vehicle construction. However 3.5.2 (b) of TGD-B does not refer to a low probability of fire spread between cars as interpreted by the BCA but only that fire spread between storeys is a low probability. For a non-open sided basement car park TGD-B 2006 (2020 reprint) specifies ventilation requirements and

an increased fire resistance requirement (compared to open-sided car parks) but does not require sprinklers. Both of these design features appear to have been met or exceeded in the proposed design.

Also I note that the “*Modern Vehicle Hazards in Parking Structures and Vehicle Carriers*”, 2020 technical report is part of a 3 phase project being sponsored by the National Fire Protection Association (NFPA). This project does not examine the need for sprinklers in covered car park in terms of life safety. The stated aim of this project is to quantify the fire hazard of modern vehicles in parking structures and vehicle carriers to provide guidance for the applicable technical committees (e.g. NFPA 13, NFPA 88A, and NFPA 301) which already assume a degree of sprinkler coverage. NFPA Codes tend to have a different focus than Irish codes, for example the purpose of NFPA 13 as stated in that standard is “*to provide a reasonable degree of protection for life and property from fire*”. Whereas Irish building regulations are primarily concerned with life safety. In my opinion this technical research paper is a useful piece of research but the inclusion of property protection in it’s scope, and the assumption that sprinklers will be provided means that it does not map directly onto the life safety basis of Irish regulations.

Although the BCA do raise some valid items of consideration regarding fires in modern vehicles TGD-B is the *prima facie* guidance for compliance with Part B of Building Regulations and, neither TGD-B 2006 (2020 reprint), (as used as the primary design code in this case), nor the more recent TGD-B 2024 require sprinklers in basement car parks for a building of this design and height. I would therefore agree with the Appellant on this point, there is no requirement in TGD-B to provide sprinklers under Regulation B3.

6.2.4. Regulation B5

The BCA state that the proposed design does not comply with Regulation B5 due to very significant heat severity inhibiting firefighting personnel access to a fire location in the basement car park.

The Appellant notes that the proposed design has the following features:-

- Dry rising mains are provided within the cores to assist fire service operations.
- The basement car park is not fully subterranean and features two direct external access routes at the eastern end, providing tactical flexibility for fire services.
- Compliance with Part B5 firefighter access is enhanced by six distinct firefighter access doors, including two entry points directly from the outside on the eastern elevation
- Section 5.4.3.1 of TGD-B explicitly states that basement car parks are not normally expected to be fitted with sprinklers.

The BCA also refer to a report titled '*Covered car parks – fire safety guidance for electric vehicles*', Arup, 2023 to support their claim that thermal runaway fires are almost impossible to deal with from a firefighting perspective and will lead to more protracted incidents. This Arup paper compares full-scale fire tests between Internal Combustion Engine (ICE) and Electric Vehicles (EV) and concludes that although the heat release rate was found to be effectively the same the EV fire does tend to have two peaks (the second peak occurring when the battery becomes involved) as per Figure 5 (extract) below. The Arup report does acknowledge that fighting fires in EVs is 'different' but is more measured than the BCA's submission suggests in its coverage of firefighting measures, while still acknowledging the EV fires present real additional challenges.

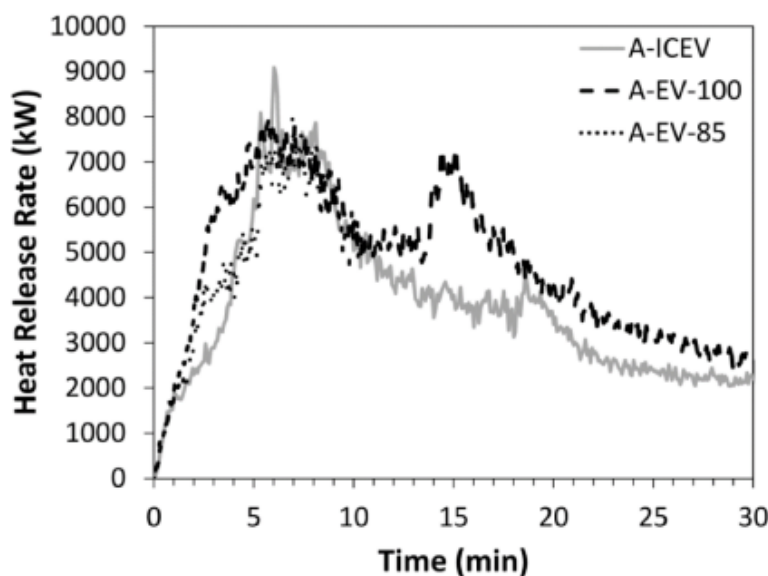


Figure 5: HRR for ICEV and EV fire tests (including a 2MW burner contribution) [42]

The full-scale fire tests which have been undertaken to date [42] suggest that the overall fire size, in terms of heat release rate, are the same between EV and ICEV fires. Both have a peak size of approximately 8 MW, which includes a 2MW burner contribution [42].

The Arup report acknowledges that the duration of an EV fire is likely to be longer than their ICE counterparts (from 6 to 49 minutes for an EV, compared to 5 minutes for ICE). However the Arup report also notes that the frequency of EV fires is significantly lower than ICE cars as per Figure 7 (extract) below.

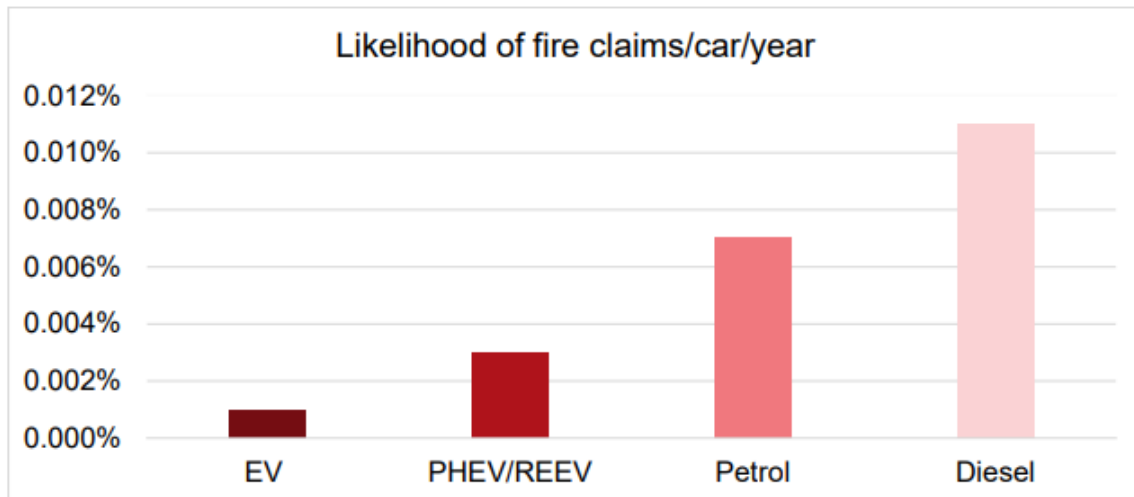


Figure 7: Illustration of likelihood of fire claims per car per year, sorted by propulsion type [10]

The Arup paper therefore paints a picture of longer duration EV fires but with a comparable peak HRR and occurring at a much reduced frequency. However, based on the Miechówka and Węgrzyński, 2025, paper discussed above this does not mean that EV fires are inherently more severe, since at the 95th and 99th percentiles the ICE fires were actually larger (as per Table 5 extract below).

Table 5 Simple statistical analysis of chosen fire parameters distribution in the database, by the type of the car

	Peak HRR [kW]	t_{PHRR} [min]	THR [MJ]
<i>ICEV</i>			
Average	4148	22,80	4386
Median	3700	19,90	4112
5th percentile	1179	3,62	189
95th percentile	8521	48,48	9221
99th percentile	10,635	64,95	10,254
Standard deviation	2354	14,22	2752
<i>BEV</i>			
Average	5959	21,57	6951
Median	6100	20,50	6700
5th percentile	3705	6,58	4578
95th percentile	7970	41,75	8910
99th percentile	8562	44,81	9023
Standard deviation	1481	11,42	1677

As Miechówka and Węgrzyński conclude *“there is a clear need for more studies on fires in cars in setups that are more representative of actual car park structures. Furthermore, the use of the ignition of the car from underneath is questionable, as an ignition mode that accelerates the growth of the fire and leads to a higher peak HRR that may not correspond to natural fires of cars.”*

Whilst I acknowledge the BCAs point that, based on the Arup paper, EV fires in a basement car park may take longer to deal with than ICE fires there is no requirement under Regulation B5 to limit the timespan of fire service incidents. The Arup paper does itself provide recommended guidance and mitigation measures regarding EV fires in covered car parks.

The BCA’s caution regarding fires in modern vehicles is a legitimate concern, however, having considered the above I would agree with the Appellant on this point, there is no requirement in TGD-B to provide sprinklers under Regulation B5.

6.3. Conclusion

My conclusion is that this appeal should be upheld and that the BCA should be directed to remove the attached Condition (Condition 1).

7.0 Recommendation

Having regard to the above assessment it is recommended that the appeal be upheld and that the Building Control Authority be directed to remove Condition 1 for the reasons and considerations set out below.

8.0 Reasons and Considerations

- 8.1. Having regard to the statutory and support documents submitted with the Fire Safety Certificate Application, the documents submitted by the Appellant as part of this appeal regarding the construction of a seven-storey apartment block consisting of 149 no. apartments over basement car park at Blocks 7, 8 & 9 Jacobs Island, Mahon, Cork, to the guidance provided in 3.5.2 (Car Parks) and 5.4.3.1 (Basements) of Technical Guidance Document-B 2006 (2020 reprint), and to the report and recommendation of the reporting inspector, it is considered that it has been demonstrated by the first party Appellant that the basement car park does not require sprinkler protection to meet the requirements of Part B of Building Regulations (as per the *prima facie* guidance set out in Technical Guidance Document B - 2006 (2020 reprint)). Therefore, the attachment of Condition 1 to the Grant of Fire Safety Certificate was considered by the Commission to not be warranted. The Commission was satisfied that it has been demonstrated that the works, if constructed in accordance with the design presented within the application and appeal, would comply with the requirements of Part B of the second schedule to the Building Regulations 1997, as amended.

9.0 Conditions

Should the Commission decide to uphold the appeal, the BCA should be directed to remove Condition 1 from the Grant of Fire Safety Certificate.

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.

Colin Barden

BEng (Hons) (Fire Eng.), MSc (Fire Eng.), CEng MIEI

22/06/2026