An Bord Pleanála

FSC Report
ABP-319296-24

Appeal v Condition(s)	Appeal against Condition 2
Development Description	Unit 31, Naas Enterprise Park, Newhall, Naas, Co. Kildare
Building Control Authority Fire Safety Certificate application number:	FSC2304498KE
Appellant	Mr. Gerard Kelly
Agent	Maurice Johnson & Partners
Building Control Authority:	Kildare County Council
Inspector	Bryan Dunne

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1.0 **Introduction**

1.1. The proposed unit will consist of a 7,220m2 storage/industrial unit with ancillary office space over ground and first floor, consisting of canteen, toilets, drying room, comms room and office space.

1.2. The application made to the Building Control Authority (BCA) was for a standard Fire Safety Certificate application.

1.3. A decision was made by the BCA to grant a Fire Safety Certificate (FSC) with three conditions, of which, only Condition 2 is being appealed.

> *Condition 2:*
>
> *The building or part thereof shall not be used to accommodate high rack storage (i.e. storage greater than 4 meters in height), unless a suitable automatic sprinkler system is designed, installed and maintained in accordance with IS EN 12845:2015 (+AC:2016) (+A1:2019) including annex F requirements.*
>
> *Reason:*
>
> *To ensure compliance with the Building Regulations.*

2.0 **Information Considered**

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

- An Bord Pleanála Case No. ABP-319296-24.
- A copy of the drawings and report lodged to the BCMS system on the 14th of July 2023 by Maurice Johnson & Partners
- A copy of the Additional Information Issue 1 (drawings and report) lodged to the BCMS system on the 27th of October 2023 by Maurice Johnson & Partners
- A copy of the Additional Information Issue 2 (drawings and report) lodged to the BCMS system on the 14th February 2024 by Maurice Johnson & Partners
- A copy of the granted Fire Safety Certificate FSC2304498KE dated 20th of February 2024

- Appeal submission by Maurice Johnson & Partners to An Bord Pleanála dated 20th February 2024
- A copy of the Fire Officers Report dated the 16th of May 2024
- A copy of Maurice Johnson & Partners report of the 2nd July 2024

3.0 **Relevant History/Cases**

3.1. I am not aware of any relevant Building Control history relating to this appeal site. There was no documentation of any previous Fire Safety Certificate (FSC), Revised FSC, Regularisation FSC or any dispensation/relaxation of the Building Regulations (relating to this site) included in the file being reviewed.

4.0 **Appellant's Case**

4.1. The appellant states that the Fire Safety Certificate (FSC) application follows TGD B 2006 + A1 2020 in its entirety and that that in itself is noted as achieving prima facie compliance with Part B of the Building Regulations.

4.2. In their response to the case put forward by the BCA the appellant made the following comments:

1. <u>KCFS Introduction</u>
   The appellant does not agree with the statement put forward by the BCA that high rack storage should be treated as high risk and accordingly should be sprinkler protected.

2. <u>Why Kildare County Council consider high-rack storage "High Risk" under Appendix E of TGD B</u>
   The appellant points out that a number of the standards/codes referenced by the BCA which mandate sprinklers are not relevant to their application on the basis that their application was submitted using TGD B 2006 + A1 2020 which is considered to achieve prima facie compliance with Part B of the Building Regulations. In particular they note that TGD B 2024 which is cited by the BCA and includes for high rack storage does not come into effect until the 1st May 2025.

3. Sprinkler requirements from codes

   The appellant points out that the BCA reference several design standards which are not applicable to the proposed warehouse under to the scope of their application (i.e. TGD B 2006 + A1 2020). They reference Table 3.1 and note that the reference to sprinklers here is in relation to the provision to allow for doubling the compartment size. The appellant notes that in their case the warehouse is just over half the 14,000m3 limit for a normal hazard use building.

4. "High Rack" storage

   The appellant noted that the BCA use examples of lower rise racking to substantiate a position which is not in line with the National Guidance in TGD B 2006 + A1 2020.

5. Analysis of smoke ventilation system

   The appellant highlights that as a compromise the amount of smoke venting proposed to this unit was significantly higher than that set out in TGD B 2006 + A1 2020 and stressed that there were no deviations in their design regarding compliance with this code.

6. Conclusion

   The appellant is of the opinion that the position of the BCA is at odds with TGD B 2006 + A1 2020 and that storage warehouses are considered Normal Hazard unless the proposed use includes the storage of hazardous materials. They state that their design complies with TGD B 2006 + A1 2020 which is prima facie compliance with Part B of the Building Regulations and that if the end user ever proposed to store hazardous materials a new revised FSC would be required.

   The appellant makes the point that this position adopted by the BCA is akin to that taken by Dublin Fire Brigade regarding the imposition of sprinklers in residential car parks. This policy which does not align with National Guidance and creates inconsistencies across Ireland is regularly appealed and successfully overturned.

   Finally, the appellant gives a number of examples of appeals where the provision of sprinklers in warehouses was overturned, stating that sprinkler appeals have not

been successful where the design deviated from full compliance with TGD B 2006 + A1 2020 and were for design where travel distances were significantly extended.

It is for the reasons stated above that the appellant is of the opinion that Condition 2 is not required and should be removed.

NOTE: the ABP files referred to above were Ref. No. 307387-20, 308031-21 and 307147-20. However, without having sight off all three FSC applications and ABP submissions I'm not in a position to comment on these files further.

5.0 Building Control Authority's (BCA) Case

5.1. In support of their case for sprinkler protecting the part of the building containing high rack storage the BCA's response to this appeal was broken down under the following headings:

1. Introduction
2. Why Kildare County Council consider high rack storage, high risk under Appendix E of TGD B
3. Sprinkler requirements from codes
4. High rack storage
5. Analysis of smoke ventilation system
6. Conclusion

1. <u>Introduction</u>

The BCA note that on two occasions where the appellant was requested to treat the building as 'high hazard' the appellant did not on the basis that in their view they did not consider high racking as high risk.

The BCA highlights the fact that:

- as part of the additional information provided by the appellant, they stated that *"this is a speculative development the precise use of the space is not yet known"*

- the roof ventilation proposed to control the products of combustion took account of a medium growth fire as opposed to an “Ultra-fast” growth of fire experienced for high rack storage

2. Why Kildare County Council consider high rack storage, high risk under Appendix E of TGD B

The BCA provides the following extract from Appendix E of Technical Guidance Document B for the definition of High Risk:

> *“the presence of materials lightly, when ignited, to cause the rapid spread of fire, smoke or fumes. The materials may be solid, liquid, or gaseous and as well as the normal forms may be present as dust, spray, mist or vapor;”*

It is the view of the BCA that based on a literary review they carried out from various codes, high rack storage has the potential for an “Ultra-fast” fire growth rate and therefore meets the criteria to be considered high risk. The BCA carry out a literature review of various documents where High Rack Storage is classified as High Risk. A summary of their literature review includes:

TGD B 2024 Appendix D2 Assessment of Fire Hazard

Factors which lead to the assessment of premises or parts of the premises as being of high hazard include the following:

(f) The presence of un-sprinklered racking, where the topmost shelf has a height greater than 7m above floor level

BS 9999: 2017

Table 3 identifies high racked storage as having an Ultra-fast fire growth rate which from Table 4 has a risk profile A4 which is a category that is unacceptable within the scope of BS 9999 unless effective localised suppression or sprinklers are introduced.

PD 7974-1

Section 8.3.3 for stacked storage of goods and commodities states that careful consideration should be given to buildings in which stacked and racked storage of goods are a feature because of the potential for rapid vertical flame spread both within and up the exterior of the stacks.

Fire Safety Risk Assessment in Factories and Warehouses

Section 1.2 under the heading Stacked Goods and High Stacked Storage states that in a fire, flames will tend to spread very rapidly and vertically through the stored goods to the top of the stack or racking and then spread laterally to all levels. When fires occur in these conditions they can spread extremely quickly, presenting greater life risk to occupants.

The Code of Practice for the Design of Automatic Sprinkler Systems, BS 5306: Part 2: 1990

Under Section 5.4 Commercial and Industrial occupancies having abnormal fire loads shall be classified as high hazard and subclassified as high piled storage hazards. Note 1 of Table 1 states that intermediate sprinklers shall be fitted under shelves where the maximum height specified are exceeded. The BCA also make reference to Section 5.4.3 where *"goods including packaging and stored so as to be likely to produce exceptionally intense fires with a high rate of heat release shall be classified as high hazard".*

BR 459 – Fire Safety Engineering a Reference Guide

Section 1.1 lists high rack storage as having an 'Ultra-fast' heat release rate.

BR 368 - Design Methodologies for Smoke and Heat Exhaust Ventilation

Section 12.4 notes that for high rack storage a SHEVS (smoke and heat exhaust ventilation) system will be of very limited value since it is incapable of affecting the primary problem of rapid-fire growth and spread. In these circumstances, only fixed automatic extinguishing systems can be applied successfully to control the fire.

3. Sprinkler Requirements from Codes

The BCA carry out a further literature review of various documents where there is a requirement to sprinkler protect industrial/storage buildings. A summary of their literature review includes:

TGD B

The doubling of compartment sizes is allowed where sprinkler systems are provided.

BS 5588: Pt 11: 1997

Section 37.2.2(3) recommends large storage buildings be sprinkler protected.

BS 7346: Pt 4 - Components for smoke and heat control systems – Part 4: Functional recommendations and calculation methods for smoke and heat exhaust ventilation systems, employing steady-state design fires - Code of practice

Under Section 6.1.2 the code states that a SHEVS based on steady state design fires should be regarded as unsuitable for any un-sprinklered fuel array taller than 4 meters. SHEVS alone, i.e. no sprinklers, are unlikely to protect a building containing high rack storage.

BR 368 - design methodologies for smoke and heat exhaust ventilation

Section 12.4 stipulating that in high rack storage only fixed automatic extinguishing systems can be applied successfully to control the fire.

Smoke Ventilation Technical Specification, Issue 3

Under Section 7.2.7 – In un-sprinklered warehouses, the current fire experience has been the total involvement, and subsequent loss, of the building. The speed of fire growth in all but the least combustible of materials (e.g. steel) is such that venting is ineffective for practical considerations of stock protection and firefighting operations.

Under Section 9.2 – Un-sprinklered high racked storage buildings have been commonplace, but due to the fire experience in such environments are now becoming less frequent. However, if a design is required for such a building the fire risk will be substantial, and experience has shown that smoke ventilation has provided very limited additional escape time, sufficient to save lives, but cannot be depended upon to aid the fire brigade in fighting the fire. Flashover in these circumstances is almost certain to occur. The smoke ventilation system designer should strenuously recommend the installation of a sprinkler system.

4. "High-Rack" Storage

BCA acknowledge the fact that there is no international definition of high-racking and that different codes in different countries identify different cut off heights ranging from 3.7m to 9m depending on the commodities stored and fire loadings and are of the view that certain commodities stored at a height of 4m and above would be considered "High Hazard".

5. Analysis of Smoke Ventilation System

   The BCA point out that the ventilation system being proposed by the appellant is based on a “Medium” growth fire not an “Ultra-fast” fire or even a “Fast” growth fire which they believe is possible where high rack storage is used.

   They are of the view that the fire load used to size the roof ventilation is inappropriate for high rack storage in an un-sprinklered building and note that the proposed building is speculative, and the information being provided on the exact nature of the fuel being stored is unknown.

   Finally, the BCA make the point that as the height of storage increases, it becomes necessary to consider the simultaneous upward growth of the fire as well as the horizontal i.e. when the fire is spreading in three dimensions, which they note is particularly important to consider as the predominantly convective mode of heat transfer in fires means that upward spread occurs more rapidly than horizontal or downwards.

6. Conclusion

   The BCA are of view that:

   - high rack storage above 4m is considered ‘High Risk’ and should be sprinkler protected, and
   - smoke ventilation alone will have very limited benefits when used on high rack storage

   Finally, they make reference to Fire Safety Building Regulations – The Requirement section of TGD B which states *“A building shall be so designed and constructed that there is adequate provision for access for fire appliances and such other facilities as may be reasonably required to assist the fire service in the protection of life* ***and*** *property.”*

   It is for the above reasons that the BCA attached Condition 2 to the granted FSC.

6.0 Assessment

6.1. *De Novo assessment/appeal v conditions*

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

6.2. ***Content of Assessment***

The key issue to be considered in this appeal is whether high-rack storage is considered high risk under TGD B 2006 + A1 2020 and it is on this point that both parties disagree. It is the opinion of the BCA that due to the potential storage configurations of the unit i.e. depending on what's being stored and at what height there is the potential for an 'ultra-fast' fire which they classify as high risk.

The appellant disagrees with this view taken by the BCA insofar as the material being stored can range from inert to hazardous and they claim that the BCA are adopting a generic approach which they say contradicts the standards set out in TGD B 2006 + A1 2020.

Having reviewed the cases put forward by both parties I have the following comments:

- In Appendix A of the FSC report the appellant states that the proposed use of the unit is speculative in nature and that the precise use of the space is unknown but reiterates that the products stored will fall under the category 'Normal Hazard'. On this point it is hard to see how, with the unit being speculative, the type of the material stored in it can be classified as normal hazard.
- Also, in Appendix A the appellant states that if at a future date any of the items identified in either Section E2 or E3 of Appendix E of TGD B 2006 + A1 2020 were to bring the use of the unit into High Risk a new FSC application would be required. Again, I don't see how they can ensure that this would happen. It would be my experience that in units such as this, once the FSC has been granted and the unit built there is very little future involvement/interaction between the tenant and fire safety consultant. In my opinion it would be very difficult to police this and ensure that its done.

- In Appendix C of the FSC report they note that the unit may be provided with high rack storage. While the appellant is correct in stating that the guidance provided in TGD B 2024 is outside the scope of their application it is worth noting that in this updated revision a new factor which leads to the assessment of a premises or part of the premises as being high hazard now includes *'the presence of unsprinklered racking, where the topmost shelf has a height greater than 7m above floor level'.*

Having reviewed the cases put forward by both parties I would be of the view that the appeal be refused and Condition 2 stand on the basis that the application is:

- speculative in nature
- trying to cater for a wide range of layout configurations, including potentially high rack storage
- trying to cater for normal hazard materials without giving any specifics on the actual products being stored

7.0 **Recommendation**

On the basis of my assessment, I recommend that the appeal be refused for the reasons and considerations set out below.

8.0 **Reasons and Considerations**

Having regard to design proposed by the appellant in the original FSC application and appeal made, I am of the opinion that on this occasion Condition 2 originally attached by the BCA is reasonable to satisfy the requirements of Part B

9.0 **Conditions**

N/A - on this occasion Condition 2 should remain.

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.

Bryan Dunne
MSc, BSc, Dip (Eng), CEng, MIEI, Eur lng

19th March 2025