



***Fire Engineering Consultants***

**Appeal Against Conditions attached to  
Fire Safety Certificate (FS16/073)**

**Appeal Ref: 16. FS0560**

Project	<b>The Plaza Hotel, Castlebar Street, Westport, Co. Mayo</b>
Local Authority	<b>Mayo County Council</b>
Date	<b>18th August 2017</b>

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## 1.0 INTRODUCTION

This case concerns the appeal of a condition attached to a revised Fire Safety Certificate submitted by Keith O'Connell Chartered engineer on the 12 September 2016 to Mayo County Council for the Plaza Hotel, Castlebar Street, Westport.

The application was for a Fire Safety Certificate for:

1. Inclusion of smoking area occupancy calculations by virtue of the creation of a direct visual and physical connection between the ground floor nightclub areas, incorporating the previous circulation corridor and smoking area
2. Omission of previously proposed partition doors on the first floor
3. Retain roof covering of external fire escape at the plaza hotel Castlebar Street, Westport Sligo.

The Fire Safety Certificate was granted with four conditions. This appeal is against condition 1 which read:

*"The external smoking area is ancillary to the ground and first floor night club. Ancillary areas are not permitted to contribute to exceeding the maximum capacity of the Night Club and accordingly are disregarded for establishing the maximum number of persons permitted to enter the nightclub on foot of site inspection".*

## 2.0 INFORMATION REVIEWED

The following information was reviewed in the assessment of this case:

- An Bord Pleanala appeal reference number FS16.FS0449
- Fire Safety Certificate drawings and accompanying letter and calculations received by Mayo County Council 12 September 2016
- Pro-Fire Occupancy and Exit Capacity Analysis 16158-CR-00 R2 received by Mayo County Council 12 September 2016
- The Castle Late Night Venue received by Mayo County Council 12 September 2016
- Smoking Area Report by Keith O'Connell received by Mayo County Council 12 September 2016
- Letter from Mayo Council dated 2/11/16 enclosing initial comments on application
- Revised Fire Safety Certificate drawings received by Mayo County Council 9 January 2017
- Revised Pro-Fire report 16158-CR-00 R4 received by Mayo County Council 9 January 2017
- Letter from Keith O'Connell dated 9<sup>th</sup> January 2017
- Request for Additional information from Mayo County Council dated 8 February 2017
- Additional information submission from Keith O'Connell dated 22<sup>nd</sup> February 2017
- Revised Fire Safety Certificate drawings received by Mayo County Council 22 February 2017
- Fire Safety Certificate grant dated 15 March 2017
- Appeal submission by Keith O'Connell Chartered Engineer dated 12<sup>th</sup> April 2017
- Response from Mayo County Council dated 17<sup>th</sup> May 2017
- Response from Keith O'Connell dated 29<sup>th</sup> May 2017
- Response from Mayo County Council dated 16<sup>th</sup> June 2017
- Response from Keith O'Connell dated 7<sup>th</sup> July 2017.

### 3.0 DISCUSSION

There is a long history with this case with a previous appeal made in 2010. Both the appellant and the BCA have cited various reasons for their position and numerous submissions and revised designs have been included. However, the issue can be summarised as follows:

- a. The BCA insist that the occupancy of the internal areas of the nightclub must include the occupancy numbers in the external smoking area.
- b. The appellant insists that there is adequate means of escape for all of the occupants in the internal parts of the nightclub, in addition, to the number of occupants in the smoking area.

In my opinion the issue is relatively straightforward.

If the external smoking area was covered and became an integral part of the nightclub, then its occupancy would be considered in addition to the existing nightclub occupancy and sufficient exit width would have to be provided for the combined occupancy.

It cannot be less safe therefore, to have an external area as opposed to an internal one. As a separate exercise to the means of escape analysis submitted by the appellant, I have reviewed the following fire scenarios.

#### 3.1.1 Occupancy

Ground floor - 743  
First Floor - 518  
Smoking Area - 330

#### 3.1.2 Exits Provided

##### First floor

Stair 1 – 1,083mm – 220 persons  
Stair 2 – 1,355mm – 271 persons  
Stair 3 – 1,280mm\* – 256 persons  
Stair 4 – 1,260mm – 252 persons

\* limited by stair width at ground

##### Ground floor

1 x 1,570mm – 314 persons  
1 x 1,770mm – 354 persons  
1 x 1,165mm – 233 persons  
1 x 1,585mm – 317 persons

##### Smoking area

1 x 1400mm (280 capacity)

### 3.1.3 Fire at first floor

For a fire at first floor access to stair 2 is discounted as the largest exit leaving capacity for 728 persons at that level. The occupancy is 518 which represents spare capacity for 210 persons.

At ground floor all exits are available, however, there will be a merging flow of occupants from ground and first floor into stair 3. The occupant capacity for occupants using this exit at ground can be determined from:

$$W = ((N/2.5) + (60S))/80$$

Where

W = final exit width (m)

S = stair width (m)

N = number of occupants entering stair at ground

In this case W= 1.585m and S = 1.28m.

$$(80 \times 1.585) = N/2.5 + (60 \times 1.28)$$

$$N = 125 \text{ persons}$$

The total occupant capacity at ground therefore is as follows:

Exit 1 – 354

Exit 2 – 233

Exit 3 – 125

Entrance - 314

For a fire at first floor therefore, the capacity of the ground floor is 1,026 and the occupancy is 743 which represents spare capacity of 283.

In the smoking area, there is an exit providing capacity for 280 persons. This means that there are 50 persons remaining. These could be dealt with by the exits in the ground floor nightclub where there is spare capacity for 283.

### 3.1.4 Fire at ground floor internal

For a fire at ground floor all exits at first floor are available. There is capacity for 999 at this level and the calculated occupancy is 518 which results in spare capacity of 481 at this level. As only 46 occupants would need to use stairs 2 and 3 the full capacity of these exits are available at ground floor i.e. merging flow can be discounted.

The total occupant capacity at ground therefore, discounting the largest exit 1, is as follows:

Exit 2 – 233

Exit 3 – 271 \*

Entrance - 314

\* Assumes all 46 persons descend stair 3 and these are deducted from the capacity of the final exit 1585mm.

For a fire at ground floor therefore, the capacity of the ground floor is 818 and the occupancy is 743 which represents spare capacity of 75.

In the smoking area, there is an exit providing capacity for 280 persons. This means that there are 50 persons remaining. These could be dealt with by the exits in the ground floor nightclub where there is spare capacity for 75.

### **3.1.5 Fire in smoking area**

For a fire in the smoking area, all storey exits are available in the ground floor and first floor of the night club. As shown above at first floor there is spare capacity for 481.

At ground floor the exit capacity is increased by the addition of exit 1 which is now available. The total capacity is now 1,184 and the occupancy is 743 which represents spare capacity of 441. If all of the occupants of the smoking area (330) entered the nightclub, there would be sufficient capacity and still have 111 spare.

## **3.2 Summary**

Building Regulations guidance for means of escape design is a physical flow model. Occupant response and human behaviour is generally not considered and the only requirements are that travel distances are limited and adequate exit capacity for the anticipated design occupancy is provided. Some acknowledgement is given to the fact that in assembly buildings occupants prefer to exit the building via the route they entered. Code guidance recommends that 1/3 of the exit capacity should be provided via the main entrances and that is achieved here.

One of the BCA's concerns with the original submission was that access to the smoking area was via a corridor and that this could cause bottle necks. The appellant subsequently revised the design to remove this corridor which would address this concern.

The BCA also stated that revised designs were submitted after the appeal was made and that they had not had opportunity to consider this. I would concur with this and have only made my assessment above on the last submission of the fire safety certificate application.

Notwithstanding the above calculations which demonstrate that adequate capacity is available, nightclubs represent a higher fire safety risk than other building types and I would therefore, recommend the following additional measures.

1. The 955mm door from the smoking area into the entrance area be reversed to open in the direction of escape and signed as an exit. This will provide capacity for a further 52 persons from the smoking area when combined with the 1,570mm exit from the nightclub leading to the entrance.
2. The doors between the smoking area and the nightclub are upgraded to FD30s fire resisting door-sets. In the event of a fire in the ground floor of the nightclub, occupants of the smoke area will be afforded additional protection and therefore, provided with more time to escape.
3. The occupancy of the first floor be limited to 518, the ground floor 743 and the smoking terrace 330.

4. Fire alarm sounders be provided in the smoking terrace linked to the fire detection and alarm system in the nightclub.
5. Emergency lighting will be provided to IS 3217: 2013 and I.S. EN 1838: 2013 to adequately indicate and illuminate all escape routes within and from the smoking area.



## 4.0 RECOMMENDATIONS

The Building Control Authority should be directed to remove condition 1. The following conditions should be attached:

### Condition 1

The occupancy of the first floor be limited to 518, the ground floor 743 and the smoking terrace 330.

### Reason

To comply with Part B1 of the second schedule to the Building Regulations, 1997 to 2014.

### Condition 2

The 955mm door from the smoking area into the entrance area be reversed to open in the direction of escape and signed as an exit. The door be either free from fastenings or fitted with panic bolts complying with I.S. EN 1125 2008.

### Reason

To comply with Part B1 of the second schedule to the Building Regulations, 1997 to 2014.

### Condition 3

The doors between the smoking area and the nightclub are upgraded to FD30s fire resisting door-sets. These doors can be held open with electromagnetic devices to release in the event of a fire.

### Reason

To comply with Part B1 of the second schedule to the Building Regulations, 1997 to 2014.

### Condition 4

Fire alarm sounders be provided in the smoking terrace linked to the fire detection and alarm system in the nightclub.

### Reason

To comply with Part B1 of the second schedule to the Building Regulations, 1997 to 2014.

### Condition 5

Emergency lighting will be provided to IS 3217: 2013 and I.S. EN 1838: 2013 to adequately indicate and illuminate all escape routes within and from the smoking area.

### Reason

To comply with Part B1 of the second schedule to the Building Regulations, 1997 to 2014.

Signed.....  
Martin Davidson  
B.Eng MSc (Fire Eng) CEng MIEI



Date: 29th August 2017