Construction of a mixed use development building comprising 9 floors of apartments / office over ground floor retail/office area, over a basement carpark at 76 Sir John Rogersons Quay, Dublin 2

Consideration of Appeal against Conditions 2, 3, 4, 8, 9 & 12 attached to Fire Safety Certificate (Reg Ref: FA/15/1359)

MSA Reference > 16019
ABP Reference > FS0523

For An Bord Pleanála

MSA

CONTENTS

/1 INTRODUCTION

This report sets out my findings and recommendations on the appeal submitted by G. Sexton & Partners Ltd. (GSP) against Conditions 2, 3, 4, 8, 9 & 12 attached to the Fire Safety Certificate (Reg Ref No. FA/15/1359) granted by Dublin City Council on 23rd February 2016, for the construction of a mixed use development building comprising 9 floors of apartments / office over ground floor retail/office area, over a basement carpark at 76 Sir John Rogersons Quay, Dublin 2.

1.1 Subject of Appeal

An application was made by G. Sexton & Partners Ltd. to Dublin City Council on 24th August 2015 for the construction of a mixed use development building comprising 9 floors of apartments / office over ground floor retail/office area, over a basement carpark at 76 Sir John Rogersons Quay, Dublin 2.

The Fire Safety Certificate granted on 23rd February 2016 with 14No. Conditions attached, 6 of which are the subject of this appeal. The conditions being appealed are;

Condition 2: *"All residential stair cores – Stair R1, Res Stair 02 & Res Stair 03 as per Ground Floor plans submitted 27/01/2016, (drawing number 150809FSC-004) are to stop at Ground Floor Level (they shall not continue to basement).*

All Basement Stairs to these Staircores are to discharge directly to an independent final exit, from the upper residential storey's.

***Reason:** To comply with Part B1 of the Second Schedule to the Building Regulations 1997-2014"*

Condition 3: *"The ESB networks substation shall be moved/located such that it complies with their Specification for Medium Voltage substation building (13320) specifically the doors to same (substation doors) shall be located at least 10 metres from escape stairways and other such risk e.g. vents.*

***Reason:** To comply with Part B1 of the Second Schedule to the Building Regulations 1997-2014"*

Condition 4: *"The width of escape routes shall not narrow in the direction of escape at any point, they shall be the same width at all points along escape route. For example Office stair 1, escape route at ground floor level narrows from 2110mm to 1700mm this is not permitted.*

***Reason:** To comply with Part B1 of the Second Schedule to the Building Regulations 1997-2014"*

Condition 8: *"The enclosure to all smoke shafts penetrating through to the 8th floor terrace & 7th Floor Roof Garden as per drawings 150809FSC-009 Rev B & 150909FSC-008 Rev B received on 29/01/2016 to be continued to minimum height of 2.5m from finished 8th floor Terrace & 7th floor roof level and this height enclosed to minimum 120minutes Fire Resisting Construction. Furthermore these smoke shafts are to comply with Section 14.2.3.2 – (a) to (j) inclusive of BS 9991: 2015.*

***Reason:** To comply with Part B1 of the Second Schedule to the*

Building Regulations 1997-2014"

Condition 9: *"Residential Block 1 to be sprinklered in accordance with IS EN 12845 2015.*

***Reason:** To comply with Part B1 of the Second Schedule to the Building Regulations 1997-2014"*

Condition 12: *"All electrical & mechanical services riser penetrations in the entire proposed development to be enclosed in 120 minute fire resisting enclosure complete with FD120S Doorsets.*

***Reason:** To comply with Part B1 of the Second Schedule to the Building Regulations 1997-2014"*

1.2 Documents Reviewed

Fire Safety Certificate Application and Supporting Documentation

- Application for a Fire Safety Certificate to Dublin City Council submitted on 24th August 2015 comprising of;
  - Fire Safety Certificate Compliance Report; prepared by G. Sexton & Partners Ltd. (GSP Report Ref. R01 Issue 01)
    - Plans, Sections and Elevations; by G. Sexton & Partners Ltd.
  - Supplementary Submissions (Revised Reports and Drawings) submitted by GSP to Dublin City Council on 15th December 2015 & 27th January 2016
- Dublin Fire Brigade Report dated 23rd February 2016 with recommendation to grant the FSC subject to 14 Conditions.
- Appeal submissions to An Bord Pleanála
  - Submission dated 21st March 2016 lodged by G. Sexton & Partners Ltd.
    - Submission dated 20th April 2016 lodged by Dublin City Council
    - Submission dated 4th May 2016 by G. Sexton & Partners Ltd.

/2 FINDINGS & RECOMMENDATIONS

2.1 Condition 2

"All residential stair cores – Stair R1, Res Stair 02 & Res Stair 03 as per Ground Floor plans submitted 27/01/2016, (drawing number 150809FSC-004) are to stop at Ground Floor Level (they shall not continue to basement). All Basement Stairs to these Staircores are to discharge directly to an independent final exit, from the upper residential storey's.

***Reason**: To comply with Part B1 of the Second Schedule to the Building Regulations 1997-2014"*

2.1.1 Case made by Appellant

The Appellants case is based on the following key points:

- The design as proposed is based on the recommendations of BS 9991 2011 which it is being suggested permitted stairs and walls in single stair

apartment building to continue down to basement level if the basement is sprinkler protected in accordance with BS EN 12845.

The wording in clause 13.2 of BS 9991 2011 is reproduced as follows:

Single stair residential buildings

For buildings where the top floor of the building is no more than 11 m above ground level or where there are no more than three storeys above ground level or, where the basement of the building has a sprinkler system in accordance with BS EN 12845 and a single stair within a residential building connects with the basement level, then it should conform to the following.

a) The basement and upper storeys should be separated within the staircase at ground floor level by fire-resisting construction including an FD30S self-closing door.

b) A fire resisting lobby should be provided at basement level between the accommodation and the staircase and any associated lift shaft.

c) A dry falling main should be provided.

d) The lobby should be provided with a vent in accordance with Table 1.

It is noted that "Table 1" referred to recommends that the lobby between the stair and carpark should have a $1m^2$ automatic opening vent.

A double lobby arrangement is being additionally proposed by the Appellant for basement carpark level with a 0.4 m^2 permanent vent only being provided to the outer lobby.

While the Appellant acknowledges that the BS 9991 2015 does not permit single stair in taller apartment building (>11m etc.) connect with basement levels even with provision of sprinklers, he makes the case that the design was developed on the basis of the 2011 edition of the Code and that is unreasonable to have to redesign this building to meet the more onerous standard in the 2015 edition of the Code.

The Appellant notes also that the double lobby arrangement is an enhancement which is over and above the requirements of BS 9991 2011.

2.1.2 Case made by the Building Control Authority

Dublin Fire Brigade in their submission of 20/04/2016 noted that the original Fire Safety Certificate Application was made in August 2015 based on BS 5588 Part 1 1990 notwithstanding that the Code had been withdrawn in December 2011 and superseded with BS 9991 2011.

They noted that BS 9991 was updated in 2015 with the second (current) edition published in October 2015.

The applicant was continuing to develop the fire strategy in period October to December 2015 to respond to Dublin Fire Brigade queries and should in Dublin Fire Brigade's view have at that stage been aware of the revised BS 9991 2015.

The Dublin Fire Brigade are of the view that;

- Removal of this condition will compromise the means of escape from residential buildings greater than 30m in height and will also risk smoke penetrating into the fire-fighting shafts.
- The design should be based on the most up to date guidance.

2.1.3 Conclusions and Recommendation

In regard to the Code recommendations the original BS 5588 Part 1 did not permit single stair be carried down to serve any basement storey except in a small single stair building (<11m height) etc.).

This recommendation is consistent with the recommendation in the current 2015 edition of BS 9991 whereas the 2011 edition of BS 9991 relaxed the position where the basement is sprinkler protected.

The key issue aside from compliance with the latest guidance is the degree of increased risk to the single staircases having regard to the height above ground of the apartments where served by these stairs. Clearly the provision of sprinklers in the carpark as is proposed reduces the risk significantly.

The concern in this regard is that while this appears to be recognised as a sufficient mitigation measure in the 2011 edition of BS 9991, the 2015 edition reversed this position for some reason which would suggest that a risk assessment may have been undertaken on behalf of BSI which lead to the change in position.

While sprinklers will reduce the risk of major fire spread in the carpark, large volumes of smoke will still be generated by a sprinklered carpark fire. For example, BS 7346 Part 7 – 2013 *"Code of Practice on functional recommendations and calculation methods for smoke and heat control systems for covered car parks"* specifies a design fire for smoke venting analysis in a sprinklered carpark to be 4MW (10m^2) as compared with an 8MW (25m^2) in an unpsrinklered carpark, which suggests that although the fire risk / fire size is reduced, there is still a significant fire & smoke potential even with sprinklers.

The key weakness in the Appellant's position is that he hasn't submitted any comparative assessment of the risks and is simply relying on BS 9991 2011 which is now superseded, with some enhancement provided by the double lobby protection to the stairs. It is noted that the Appellant is proposing a 0.4m2 vent to the outer lobby with no venting to the stair / lift lobby whereas BS 9991 2011 would have required a 1.0m^2 vent to the stair/lift lobby as per Table 1.

Furthermore, the Appellant is relying on a simple mechanical smoke clearance system in the basement carpark designed to Section 3.5.2.5 of TGD-B 2006.

On the other hand;

a) If, in addition to sprinklers, an engineered mechanical venting system designed to BS 7346 Part 7, possibly using impulse ventilation was being proposed with a design objective to protect the means of escape (specifically to potentially avoid smoke movement towards the staircase)

Or

b) If the carpark was to be naturally vented as well as being sprinklered

it could possibly be demonstrated with sufficient venting that the risk to the stairs at basement level was being reduced to an acceptable level.

In the absence of any such enhanced proposal or adequate fire engineering justification of the current proposal, there is no justification for removal of this Condition.

Recommendation

On the basis of the foregoing considerations I am recommending that appeal of Condition 2 not be allowed and that accordingly this Condition in its current wording be upheld.

2.2 Condition 3

"The ESB networks substation shall be moved/located such that it complies with their Specification for Medium Voltage substation building (13320) specifically the doors to same (substation doors) shall be located at least 10 metres from escape stairways and other such risk e.g. vents.

***Reason**: To comply with Part B1 of the Second Schedule to the Building Regulations 1997-2014"*

2.2.1 Case made by Appellant

It is not clear as to why the Appellant is appealing this Condition, in so far as the main stairway egress route is already shown on the drawings to be 10m away from the door to the substation.

The main point in the Appellants submission is that the ESB Specification has no statutory basis or relevance under the Building Regulations and that there is no similar provision in Technical Guidance or in any of the BS Codes and Standards referenced in the guidance.

2.2.2 Case made by the Building Control Authority

In Dublin Fire Brigade's response to the appeal, they noted;

"The purpose of this condition regarding ESB substation was to ensure that the fire authority were not misconducted as approving significant departures from the ESB MV guidelines. It is not the role of the fire authority to adjudicate on ESB substation design aside from the B3 element of design. However where a design differs from ESB provisions it cannot be assumed that this has been accepted by the Authority. This is the role and function of ESB."

In the Dublin Fire Brigade submission they also noted particularly that the ESB Specification recommended that the ESB substation doors should be located at least 10m from the main entrance / exit, which in reality in this case is the design submitted for approval i.e. the ground floor plan shows a 10m dimension is being achieved.

2.2.3 Findings and Recommendations

It is evident from the Dublin Fire Brigade's submission of 20/04/2016 that they acknowledge that there is no requirement under Part B (Fire) of the Building Regulations to comply with the ESB Specifications *"aside from the B3 (Fire) element of the design"*, which relates to the provision of adequate fire resisting construction between the substation and the adjoining parts of the building. The normal 240 minimum fire separation is already being provided in the design submitted.

In my opinion there is no basis for the application of this Condition and it appears that this opinion is not at odds with the position set out in the Dublin Fire Brigade's submission of 20/04/2016.

Accordingly, I recommend that the Building Control Authority be directed to remove this Condition.

2.3 Condition 4

"The width of escape routes shall not narrow in the direction of escape at any point, they shall be the same width at all points along escape route. For example Office stair 1, escape route at ground floor level narrows from 2110mm to 1700mm this is not permitted.

***Reason:** To comply with Part B1 of the Second Schedule to the Building Regulations 1997-2014"*

2.3.1 Case made by Appellant

The Appellant make the case that this condition in the generality of its wording is illogical and could not practically be implemented in many buildings such as corridors with subdividing doors.

In regard to the specific reference in the Condition to the final part of escape route from stair 1 narrowing in width from 2110mm to 1700mm, the Appellant also suggests that the current proposal is satisfactory on the basis that the stair width (1200mm) + 500mm for fire-fighter access equates to the final exit width.

2.3.2 Case made by the Building Control Authority

Dublin Fire Brigade in their response of 20/04/2016 raise their concerns regarding a potential "stack effect" due to the converging flows and narrowing of the final exit width to 1200mm from 2110mm corridor width.

2.3.3 Findings and Recommendation

In my opinion Dublin Fire Brigade have been overly conservative in their interpretation of the Code on this issue and in their wording of the Condition.

On the other hand the Appellant has failed to account for the additional flows into the corridor from the ground floor office at reception (up to 60 persons) and from the basement carpark (141 persons). From calculations I have undertaken I consider it to be prudent to increase the final exit width by 200mm to 1900mm to account for these potential additional flows and avoid congestion.

It is noted that this increase in final exit width is readily achievable in a structural ope width of 2100mm.

Recommendation

I recommend that the Board direct the Building Control Authority to remove this condition and replace it with a new condition which reads;

"The final exit door leading to Britain Quay from the lobby / exit corridor from stair 1 is to be increased in width from 1700mm to 1900mm clear width where clear width is as defined in 1.0.10(c) of Technical Guidance Document B.

***Reason:** To comply with Part B1 of the Second Schedule to the Building Regulations 1997-2014"*

2.4 Condition 8

"The enclosure to all smoke shafts penetrating through to the 8th floor terrace & 7th Floor Roof Garden as per drawings 150809FSC-009 Rev B & 150909FSC-008 Rev B received on 29/01/2016 to be continued to minimum height of 2.5m from finished

8th floor Terrace & 7th floor roof level and this height enclosed to minimum 120minutes Fire Resisting Construction. Furthermore these smoke shafts are to comply with Section 14.2.3.2 – (a) to (j) inclusive of BS 9991: 2015.

***Reason:** To comply with Part B1 of the Second Schedule to the Building Regulations 1997-2014"*

2.4.1 Case made by Appellant

The Appellant contends that in so far as the top storey lobby is separately vented and does not connect to the shaft that this design satisfies the requirement of extending to a min height of 2.5m above the ceiling of the highest storey served by the shaft.

The Appellant also contends that the location of the vent shaft outlets at roof terrace level will not be subject to adverse wind effects by reference to the recommendations in BS 9991 and will not compromise escape from the roof terrace in so far as all escape routes are greater that 3m distance from the vent outlets.

2.4.2 Case made by the Building Control Authority

Dublin Fire Brigade in the submission of 20/4/2016 note the concern that the locations of the vent outlets will compromise the single means of escape from the roof terrace noting in particular their more serious concerns regarding the communal roof garden.

2.4.3 Findings and Recommendation

The Appellant has invoked the 3m separation distance normally used for escape across flat roofs where such an escape route is one of two or more egress routes from the storey (refer 17.3.10 of BS 9999)

In the case of the communal garden terrace 7th floor level there is a single exit only from the terrace and from a significant part of the terrace, escape is only possible towards the proposed vent outlets, which in my opinion compromises this escape route.

On the other hand, in my opinion, escape from the private terrace at 8th floor level is not being compromised by the location of the vent outlets.

In the case of the 7th floor communal garden terrace, it is therefore necessary, in my opinion, to extend a shaft enclosure from both the 1.5m^2 lobby AOV and the 1.5m^2 smoke shaft to an adequate distance above roof level sufficient to protect the escape route.

In my opinion 1.5m above roof rather than 2.5m should be sufficient to meet this requirement.

Recommendation

I recommend that the Board direct the Building Control Authority to amend Condition 8 to read as follows:

"External vertical shaft enclosures having a minimum 30mins fire rating are to be provided from both the 1.5m^2 lobby AOV and the 1.5m^2 smoke shaft at 7th Floor Communal Roof Garden, extending to a distance of at least 1.5m above roof level. Furthermore the smoke shafts in both residential Blocks 02 & 03 are to comply with Section 14.2.3.2 (a) (b) (d) (e) (f) (g) (h) (i) (j) of BS 9991 2015.

Reason: *To comply with Part B1 of the Second Schedule to the Building Regulations 1997-2014"*

2.5 Condition 9

"Residential Block 1 to be sprinklered in accordance with IS EN 12845 2015.

Reason: *To comply with Part B1 of the Second Schedule to the Building Regulations 1997-2014"*

2.5.1 Case made by Appellant

The Appellant makes the following key points

- BS 9251 is the more appropriate design code for the residential floors
- While the commercial (office areas) and basement carpark are being provided with sprinklers designed to BS EN 12845 there is no logic in requiring that the Residential Block sprinklers be designed to the same standard.
- Accordingly the condition is unduly restrictive in so far as it doesn't allow for design flexibility as provided for under BS 9991.

2.5.2 Case made by the Building Control Authority

The Dublin Fire Brigade response of 20/04/2016 simply states that the level of sprinkler protection in a single stair residential building should be consistent throughout the entire building and therefore should be in accordance with BS EN 12845 2015.

It is noted that the Appellant in the further submission of 04/05/2016 in response to the Dublin Fire Brigade submission note that Section 4.1 Note 2 of BS 9251 2014, does allow use of both BS 9251 and BS EN 12845 in a building with a mix of uses i.e. BS 9251 2014 in residential areas and BS EN 12845 2015 in commercial / non-residential areas.

This note does go onto say that this does not preclude the use of either standard being applied throughout such a building subject to full evaluation, consultation and agreement with the AHJ (authority having jurisdiction).

2.5.3 Findings and Recommendation

The requirement for sprinklers in Residential block 1 is arising in this instance by reference to 11.1 and Table 2 of BS 9991, which states that all buildings with a floor higher than 30m above ground should be fitted with sprinklers in accordance with BS 9251 Category 2 or BS EN 12845 OH 1.

As noted above BS 9251 also provides for a mix of the two standards being used in a building with a mix of residential and non-residential uses.

Accordingly, in my opinion, there is no justification in the Dublin Fire Brigade position and that accordingly, the condition should be set aside.

I am satisfied that the proposals on the extent of sprinkler coverage in the different areas of the development and the design standards proposed meet the requirements of Part B (Fire) of the Second Schedule to the Building Regulations 1997-2014.

Recommendation

I recommend that the Board direct Building Control Authority to remove this Condition.

2.6 Condition 12

"All electrical & mechanical services riser penetrations in the entire proposed development to be enclosed in 120 minute fire resisting enclosure complete with FD120S Doorsets.

***Reason**: To comply with Part B1 of the Second Schedule to the Building Regulations 1997-2014"*

2.6.1 Case made by Appellant

The Appellant's case is that this is an unduly onerous condition in so far as it precludes the alternative option of fire stopping of shafts at each floor as an alternative to treating the service risers as fully protected shafts.

They note both options are addressed in the Fire Safety Certificate Application submitted.

2.6.2 Case made by the Building Control Authority

Dublin Fire Brigade in their submission to the Board note that there is ambiguity in the Fire Safety Certificate Application between the annotation on the drawings which include protected shafts and the content of the report. They state that the objective of this condition is to address this ambiguity and not to impose / restrict compartmentation of the vertical plane.

2.6.3 Findings and Recommendation

Dublin Fire Brigade are correct in their assertion that there is ambiguity in the documents submitted, as:

- The drawings indicated 120min fire rated protected (service) shafts with FD 120S doorsets.
- The Compliance Report in 3.4.3 identifies two options for treatment of service risers.

  Option1: Fire Stop at floor level to achieve 120min fire rating.

  Option: 2 Treat the service risers as protected shafts enclosed in 90min fire resisting compartment walls and FD 90S doorsets (not 120min rating as shown on the drawings).

It is necessary to address this ambiguity by way of a condition which is worded differently to Condition 12, so as to eliminate the ambiguity and at the same time not impose undue restriction.

Recommendation

I recommend that the Board direct the Building Control Authority to amend Condition 12 to read as follows:

"All electrical and mechanical service risers in the entire development be designed and constructed so as to fully satisfy the recommendations in Section 3 Technical Guidance Document B with respect to achievement of adequate compartmentation and resistance to fire spread in the building. In advance of commencement of the works the applicant is to submit to the Building Control Authority for approval, detailed drawings and performance specifications demonstrating compliance with the recommendation of Section 3 of Technical Guidance Document B and with the requirements of B3 (Fire) of the Second Schedule of the Building Regulations 1997-2015.

***Reason**: To comply with Part B1 of the Second Schedule to the Building Regulations 1997-2014"*

Signed: _____

Michael Slattery, BE MSc (Fire Eng) CEng FIEI MSFPE EUR ING