

Date: 08/05/98

Ref: 45/1/160

*Note: The following letter was issued by our former department, the Department for Environment, Transport and the Regions (DETR). DETR is now Communities and Local Government - all references in the text to DETR now refer to Communities and Local Government.*

### **Building Act 1984 - Section 16 (10)(a)**

Determination of compliance with Requirement B3 (Internal Fire Spread (Structure)) of the Building Regulations 1991 (as amended) in respect of a four storey office building

3. In making the following determination, the Secretary of State has not considered whether the plans conform to any other relevant requirements.

#### **The proposed work**

4. The proposed building work relates to alterations to a new four storey office building. The office accommodation is at ground floor, first floor and second floor levels; with car parking and plant areas at basement level. The building is essentially triangular in footprint with four wings and a concave facade to the hypotenuse of approximately 200 metres in length. In the centre is an atrium at each storey level. Its configuration is complex and involves five linked open spaces extending vertically through the building beneath a glazed roof covering.

5. The complex atrium design incorporates a natural ventilation system which operates in tandem with a P1 (property protection type) smoke detection system installed in accordance with BS 5839: Part 1: 1988 (Fire detection and alarm systems for buildings - code of practice for system design, installation and servicing). The means of escape provisions are based on the assumption of a total evacuation via escape stairs. The perimeter stairways incorporate dry risers, have two hour fire resistance, and are designated as fire fighting stairs.

6. Your client proposes to accommodate a separate tenant on the second floor. Requirement B3 (Internal fire spread (structure)) specifies that " *To inhibit the spread of fire within the building it shall be sub-divided with fire-resisting construction to an extent appropriate to the size and intended use of the building*" The implication of this is that the service shafts passing through and between the first and second floors will need to become protected shafts or alternatively a complete barrier would need to be provided within the service shafts at second floor level. Your client is proposing to adopt the former solution and does not intend to up-grade the current 30 minute fire resistance of the protected shafts.

7. These proposals were the subject of a full plans application which was rejected by the District Council on grounds of non-compliance with Requirement B3. The District Council were not prepared to accept that your proposed level of protection of 30 minutes for the service shafts passing from the first floor to the second would be in compliance with Requirement B3. They cited the guidance given in *Approved Document B (Fire safety)* and contended that there should be a 60 minute level of protection. However, you believe that the proposed separate occupancies do not increase the fire risk and that the level of fire separation between the first and second floors of 30 minutes, currently proposed for the building as a single occupancy building, will remain adequate when separate tenancies are introduced to the second floor. Accordingly, you believe that this proposal would be in compliance with Requirement B3 and it is in respect of this question that you have applied for this determination.

### **The applicant's case**

8. In support of your case you contend that your proposals to fire-stop small openings in the general areas of the second floor slab and to maintain the existing 30 minute fire enclosure of the service shafts at all floor levels, including the second floor, will form an adequate fire separation between the first and second floor. You consider this to be especially so since you have not been asked to provide fire resisting glazing to the circulation areas around the atria or to the external walls.

9. You make the following additional points in support of your submission:

- i) All parts of the building will be used for office or ancillary purposes and the sub-division of the building into separate tenancies will not affect this. Although with the introduction of more than one tenancy security controls on access within the building will be introduced, the means of escape provisions will not be affected by the sub-division.
- ii) Separate occupation of the second floor will not increase the fire loading of the building; nor can it be considered to have an impact on the overall fire risk. You point out that the smoke control analysis carried out by your fire consultants already assumes that escape from the second floor will be the critical factor.
- iii) The tenancy on the second floor will need to be divided off from the escape stairs in order to maintain the provision for safe escape and this would allow efficient fire-fighting from any stair enclosure.
- iv) You have agreed with the District Council that the existing curtain walling to atria and courtyards, together with the external glazing, will not require fire resistance. Therefore in your view increasing the fire resistance of the service risers would not appear to have any detrimental effect on fire spread from the lower office areas to the second floor offices.

v)The alarm and detection systems are automatic throughout and will be monitored by full time security personnel.

### **The District Council's case**

10.The District Council consider that it is necessary for adequate compartmentation to be provided between the first and second floors in order to prevent the rapid spread of fire between separate occupancies. In their view reliance upon the existing 30 minutes fire resistance will not achieve compliance with Requirement B3. On the assumption that adequate compartmentation is in place, and on the basis of the smoke control analysis, they consider the non-fire resisting glazing forming the enclosure to the atrium to be acceptable.

11.The District Council state that the structural fire precautions for the building have been designed and checked in accordance with *Approved Document B (Fire safety)* and in particular Section 8 (Compartmentation) of that document. They point out that paragraph 8.10 of the Approved Document suggests that a wall or floor provided to divide a building into separate occupancies should be constructed as a compartment wall or floor. The Approved Document further suggests (paragraph 8.30) that if the floor is a compartment floor then the service shafts passing through the floor are deemed to be protected shafts and as such the standard of fire resistance of the service shafts should be updated to achieve 60 minutes fire resistance in accordance with Tables A1 and A2 on pages 96 - 98 of the Approved Document.

### **The Department's view**

12.The Department agrees that the guidance given in *Approved Document B* suggests that a floor dividing a building into separate occupancies should be constructed as a compartment floor with the consequence that service shafts passing through that floor should be constructed as protected shafts with the appropriate level of fire resistance, in this case 60 minutes, to maintain the compartmentation. However, the question being put in this particular case is whether the service shafts, which are only provided with 30 minutes fire resistance, are acceptable.

13.The Department notes that a full alarm and detection system will have been provided throughout the building which, you state, will be monitored by full-time security control personnel. The Department accepts that the alarm system will form part of the fire engineering package solution for the atria design, although in the Departments view such an alarm system would be of benefit elsewhere in the building in that it will give early warning of fire in other areas such as in the service duct locations. *Approved Document B* does not give recommendations for alarm systems in office type buildings. Therefore the installation of such a system could be considered to be a compensatory feature in lieu of the full 60 minutes fire resistance of the service risers.

14. In this case you have stated that the second floor of the building is to be tenanted. In the Department's view it appears that the amount of space available for a tenancy could vary. Notwithstanding this the Department considers that the building as a whole will remain in single overall ownership.

15. After having considered all the relevant aspects of this case, the Department takes the view that the risk of fire spread from the first to the second floor is no greater because of the proposed tenancy than if the building remained in single occupation. The Department therefore considers that it is unreasonable in this case to ask for a higher standard of fire resistance for the protected shafts than the standard of 30 minutes already proposed.

### **The determination**

16. The Secretary of State has given careful consideration to the facts of this case and the arguments put forward by both parties regarding the circumstances whereby the tenancy will be created. He has concluded, and hereby determines, that your proposals to maintain the 30 minutes level of fire resistance to the service shafts between the first and second floors are in compliance with Requirement B3 of Schedule 1 to the *Building Regulations 1991 (as amended)*.