

Date: 02/12/02

Ref: 45/4/31

Note: The following letter which has had personal details edited out was issued by our former department, the Office of the Deputy Prime Minister (ODPM). ODPM became Communities and Local Government on 5 May 2006 - all references in the text to ODPM now refer to Communities and Local Government.

Greater Manchester Act 1981: Section 65 (Fire precautions in large storage buildings)

Appeal under sub-section 65(6) against a decision by the Borough Council to reject plans relating to the erection of a factory building containing a raw materials store

The appeal

3. Section 65 of the 1981 Act (Fire precautions in large storage buildings) relates to buildings for storing or depositing goods or materials where more than 7,000m³ of the volume of the building will be so used. Sub-section 65(2) provides that where plans are deposited in accordance with the building regulations for the proposed construction, extension or alteration of a building, or the change of use of a building to which section 65 applies, then a district council shall reject the plans unless they are satisfied, having consulted the fire authority, that they may properly give unconditional consent or give consent conditionally in respect of the matters contained in sub-section 65(3) of the 1981 Act. The matters contained in sub-section 65(3) relate to measures to prevent the outbreak or spread of fire in or from the building or to reducing the danger from fire in the building.

4. Sub-section 65(6) of the 1981 Act provides that a person who is aggrieved by the action of a district council which has rejected plans, or imposed conditions, may appeal to the Secretary of State.

The building work

5. The building to which this appeal relates is a recently constructed single storey factory being used for the production and wholesale distribution of Indian food. The building is a steel portal frame structure with horizontal insulated built up wall cladding panels, powder coated built up roof cladding panels and hygienic flat panel cladding systems.

6. The total plan area is approximately 69m x 194m - the longitudinal elevations being on the west and east sides. The approximate height to the ridge is 11m and 8m to the eaves.

7. There are three separate parts to the main building. At the north end is the raw materials store with an area of 4,435m² which incorporates a cold store room, dry preparation room, grinding room and QA laboratory. From the drawings provided the Secretary of State estimates the volume of this store to be of the order of 39,000m³. Adjacent to the store and in the middle of the building is the food processing area of 7,035m² which comprises a cookhouse, main hall, packaging and storage areas, chillers, frying room and boiler room. At the south end of the building there is the finished goods and distribution area of 1,710m². The three areas are separated by composite panels providing 60 minutes of fire resistance. It is the raw materials store and the application of appropriate fire precaution measures therein, which is the subject of this appeal.

8. Ancillary accommodation for an equipment store, compressors, workshop, boiler room and cans and glasses depot is provided by an area of approximately 20m x 62m in plan connected to and protruding from the west elevation.

9. Office accommodation is provided by a three storey building constructed as an integral part of, but protruding from, the western side of the southern elevation. The plan area is approximately 24m x 28m. There is a compartment wall between this accommodation and the goods and dispatch area.

10. It is understood that the building operates on a twenty-four hour basis of 3 x 8 hour shifts. The raw materials store contains a wide range of ingredients such as vegetables, fruits, rice, flour, organic spices, and additives in raw and dry powder state. These goods may be stored in paper, hessian or plastic bags and metal or plastic drums up to 25 kg in order to satisfy health and safety requirements. The packaged goods arrive stacked together on timber pallets which may also be shrink wrapped in plastic. In total it is expected that upwards of 3,000 pallets will be stored in the warehouse at any one time in high bay pallet racks with a storage height up to a maximum of 8m above ground level.

11. As part of the general working practices any waste packaging in areas where goods are decanted will be collected on a regular basis and removed to a waste compactor located externally. It is also understood that flammable liquids such as cooking oils will not be stored within the building but externally on the site.

12. In addition to the compartment walls referred to above the building is understood to be provided with the following fire protection systems:

(i) a fire alarm system in accordance with *BS 5839: Part 1: 1988 (Fire detection and alarm systems for buildings - Code of Practice for system design, installation and servicing)*, type L2 with automatic fire detection provided in the plant area above the food processing area

(ii) emergency escape lighting to *BS 5266: Part 1: 1988 (Emergency Lighting - Code of practice for the emergency lighting of premises other than cinemas and certain other specified premises used for entertainment)*

(iii) fire safety signage to *BS 5499: Part 1: 1990 (Fire safety signs, notices and graphic symbols - Specification for safety signs)*

(iv) fire extinguishers in accordance with *BS 5306: Part 8: 2000 (Fire extinguishing installations and equipment on premises - Selection and installation of portable fire extinguishers)*

13. A full plans application was deposited for the building. Following concerns expressed by the Borough Council and the Fire Authority about the adequacy of the proposed fire precautions in the raw materials store you commissioned, on behalf of your client, Fire Research Consultants Ltd to review the fire hazard and recommend a suitable design for a smoke ventilation system in the store. In their *Fire Safety Strategy report* it was concluded that the potential for ignition, sustained combustion, rapid fire growth or a large fire to develop, was not considered great. But to enhance fire fighting operations the report proposed the installation of a natural smoke and heat exhaust ventilation system within the raw materials store. It was proposed that an area of 20m² of vent would be evenly distributed throughout the roof with an equivalent area of replacement air being introduced manually by the fire brigade via one of the roller shutter doors serving the raw materials area. The natural vents would operate on activation of the manual fire alarm system, but could also be activated manually via a switch located adjacent to the main fire alarm panel.

14. You were more than willing to carry out these proposals. However, the Fire Authority recommended rejection of the proposals on the grounds that in addition to the natural smoke ventilation system in the raw materials store a sprinkler system was also required. As a result the proposed smoke ventilation system and other additional fire precautions had not been installed and the Borough Council rejected your full plans application on the grounds that the plans did not show sufficient information to determine compliance with the 1981 Act. But you took the view that the natural smoke ventilation system and your other fire safety proposals would satisfy the intentions of the 1981 Act without the need to install sprinklers in addition and you therefore appealed to the Secretary of State against the Borough Council's decision.

The appellant's case

15. Your consultants consider that your fire safety proposals will ensure that the provisions of both the Building Regulations and the 1981 Act are complied with, and that a sprinkler system is not therefore necessary in the raw materials store. With regard to the 1981 Act, in summary, the following measures are proposed for the store:

(i) it will be separated from the processing and high risk areas with compartment walls having a period of fire resistance of 60 minutes

(ii) the provision of an automatic fire detection and alarm system

(iii) good access for fire appliances to the storage building over and above that recommended in *Approved Document B (Fire safety)*, and access to a secondary water supply for firefighting purposes

(iv) a natural smoke ventilation system to aid firefighting and search and rescue operations.

16. Your consultants also state that although there have been many fires in the type of large warehouse buildings in question, they are not aware of any instances where members of the workforce or the public have been trapped and required rescue. They take the view that due to the nature and the size of these buildings, and the configuration of the storage, it is highly improbable that anyone in the building would be trapped by fire and the likelihood of flashover occurring within the first few minutes of the start of an incident is remote. Calculations, produced by your consultants, using a zone type computer fire model indicated that with the proposed smoke ventilation system in place flashover would not occur within 20 minutes. As such they contend that the Fire Service would have the opportunity, if circumstances permit, within that period to conduct search and rescue and or firefighting operations.

17. Furthermore, your consultants dispute the "time line" calculated by the Fire Authority which indicates that firefighters would not enter the building until 26 minutes after the initiation of a fire. Having visited the site and reviewed Fire Service national performance indicators and local indicators, your consultants are of the opinion that entry would take place within 8 minutes.

18. Your consultants add that in terms of property protection the insurers have accepted your proposed level of fire safety measures and conclude that a reasonable standard of life safety has been achieved.

19. In response to the Borough Council's representations to the Secretary of State, you subsequently added that the reason why some of the proposals proposed by your consultants have not been implemented to-date is because the Council and the Fire Brigade would not accept those provisions as being sufficient to conform to the requirements of the 1981 Act. If sprinklers were to be installed you say that this would affect considerably what other works were to be undertaken.

The Borough Council's case

20. The Borough Council is concerned that a number of your consultants' proposals have not been implemented to-date. The main issues they identify are the omission of fire extinguishing systems, and the difference in the "time line" calculations produced on behalf of the appellants and those produced by the Fire Authority.

21. The Council also refers to the Fire Authority's view that an acceptable environment should exist within the affected area to allow fire fighting to proceed efficiently and with an adequate element of safety. The Council adds that they accept the Fire Authority's view that it falls to the Fire Authority to determine the operational aspects relating to the "time line", which your consultants dispute.

22. The Borough Council contends that your proposals do not accord with sub-section 65(2)(b) of the 1981 Act, particularly in relation to "preventing the outbreak or spread of fire in or from the building or reducing danger from fire in the building" which was the main criterion for rejection. The Council concludes therefore that the provision of a suitable fire extinguishing system would alleviate the danger from a fire in the building.

The Secretary of State's consideration

23. The Secretary of State acknowledges that full compliance with Part B (Fire Safety) of the Building Regulations can be achieved without the need for sprinklers or a smoke ventilation system to be installed. However, by virtue of sub-section 65(2) of the 1981 Act the Borough Council has a duty to consider the storage use of the building in respect of fire prevention and appropriate fire precautions, and in doing so to take account of factors over and above that which it might otherwise be appropriate to consider under the Building Regulations alone.

24. In considering this case the Secretary of State therefore takes the view that there are two issues:

- whether it is reasonable in the circumstances for the Borough Council to exercise its powers under section 65 of the 1981 Act to require the installation of a sprinkler system and/or a smoke ventilation system; and
- in doing so whether the specific requirements are proportionate having regard to the potential for fire growth, and the effectiveness and safety with which any subsequent Fire Service intervention could be carried out.

The Secretary of State has therefore approached this case by first considering the nature of the stored materials and the scale of the proposed compartment.

25. It is acknowledged that no flammable liquids, such as cooking oils, will be stored in the raw materials store. It is also considered that a dust explosion is unlikely. However the raw materials store will still contain an extensive fire load comprising not only the stored materials themselves but also the packaging materials and pallets arranged in high-bay pallet racks. In the view of the Secretary of State there is therefore potential for a large and fast growing fire. It follows that he considers that the installation of a sprinkler system and/or a smoke ventilation system would be a justified application of the powers provided by section 65 of the 1981 Act.

26. It is estimated that the volume of the raw materials store is of the order of 39,000m³. This volume is more than five times greater than the specified 7,000m³ which triggers the requirements of section 65(1)(a) of the 1981 Act. It is in the context of this order of magnitude that the appropriateness of the proposed fire precautions must be considered - ie in this case a stand alone smoke ventilation system, or a sprinkler system coupled with an automatic smoke ventilation system.

27. The underlying principle governing the design of a sprinkler system is that it will help control a fire and prevent further conflagration and/or flashover. The expectation is not necessarily that it will always extinguish the fire but that it will contain the fire until the arrival of the Fire Service. When used in combination with an automatic smoke ventilation system, the use of a sprinkler system enables a fire design scenario to be established which, in turn, facilitates a proper design assessment to be made of the required capacity of the smoke ventilation system.

28. In your case you have chosen not to divide and compartment the raw materials store and do not consider it necessary to install sprinklers in order to satisfy the fire precautions provisions of the 1981 Act. Your chosen approach has therefore been to design a stand alone smoke ventilation system of sufficient capacity to reduce the build up of smoke and heat in the building, and thus to delay the onset of flash-over and the resulting rapid escalation of the fire. The design of such a system must first rely on the assumed rate of growth of a fire having regard to the contents of the store, and must derive a time delay compatible with the realistic time within which the Fire Service could attend and intervene. The assumed rate of growth of a fire having regard to the particular contents is therefore crucial to the viability of this approach to fire engineering.

29. Your computer fire model has indicated that flashover would not occur within 20 minutes of the start of a fire. Your consultants believe that the Fire Service could be in attendance and enter within 8 minutes. However, the Fire Service say that their "time line" for attending and entering the building would be 26 minutes after initiation of a fire.

30. Given that your proposals depend on a stand alone smoke ventilation system, it is necessary to take full account of the estimated Fire Service intervention time and the estimated time before flash over might occur. In the circumstances of this case the Secretary of State considers that you have failed to provide adequate justification for your proposals and has therefore concluded that the proposed stand alone smoke ventilation system will not provide an adequate solution.

The Secretary of State's decision

31. The Secretary of State has given careful consideration to the facts of this case together with the representations made by the parties.

32. The Secretary of State takes the view that given the nature of the products to be stored in the raw materials storage area, and the considerable size of that compartment, there is the potential for a large and fast growing fire. From the evidence given and the conflicting assessments of the "time line" for Fire Service intervention, he is not satisfied that a stand alone smoke ventilation system will be an adequate means of controlling such a fire. He has therefore concluded that the Borough Council's request for the provision of a sprinkler system operating in conjunction with an automatic smoke detection system is proportionate and therefore reasonable in the circumstances. Accordingly, he dismisses your appeal.