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Ref: 45/4/4

*Note: The following letter which has had personal details edited out was issued by our former department, the Department for Transport, Local Government and the Regions (DTLR). DTLR are now Communities and Local Government - all references in the text to DTLR now refer to Communities and Local Government.*

### **Berkshire Act 1986: Section 37 (Fire precautions in large storage buildings)**

**Appeal under Section 37(6) of the Berkshire Act 1986 against the decision by the then District Council to reject proposals for a smoke venting system in a warehouse known as X**

#### **Summary**

2.Your client's appeal has been against the decision of the Council to reject proposals for the installation of a smoke venting system at X because it was not combined with provision for a sprinkler system. Having regard to their powers in section 37 of the 1986 Act, the Secretary of State has determined that the Council were justified in rejecting your proposals.

3.The Secretary of State has exercised his discretion under section 37(6) of the 1986 Act to vary the Council's decision by approving your client's proposals for the smoke venting system and the automatic fire detection system, subject to the condition, inter alia, that an ESFR sprinkler system shall be installed to operate on the basis of retention of the existing solid shelving.

#### **The appeal**

4.The appeal comprises Mr A's letter of 28 August 1996 which lodged the appeal on behalf of your client; Mr A's proof of evidence on behalf of your client submitted with your letter of 9 February 1998; and Mr A's rebuttal submitted with your letter of 12 October 1998. The Council submitted proofs of evidence and exhibits from Mr B, Mr C and Divisional Officer D with their letter of 23 June 1997. The Council also submitted further submissions (dated 1 June 1998) with their letter of 5 June 1998, and a rebuttal to your client's rebuttal from Mr C with their letter of 24 November 1998. The submissions, attachments and exhibits are detailed in full in the body of this letter. Correspondence relating to clarification of certain procedural matters concluded on 31 January 2001.

5. Section 37 of the Berkshire Act 1986 (Fire precautions in large storage buildings) relates to the use of a building for storing or depositing goods or materials where more than 7,000 cubic metres of the building will be so used. Section 37(2) provides that where plans are deposited in accordance with building regulations and those plans show that the proposed work will consist of the construction, extension, or alteration of a building for or change of use of a building to the purpose to which the section applies, then a district council shall reject the plans unless they are satisfied, having consulted the fire authority, that they may properly give consent either: unconditionally; or conditionally in respect of the matters contained in Section 37(3) of the 1986 Act. The matters in Section 37(3) relate to measures to prevent the outbreak or spread of fire in or from the building and to reducing the danger from fire in the building.

6. Section 37(6) of the 1986 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 for the Environment, Transport and the Regions. In determining such an appeal the Secretary of State may dismiss or allow the appeal, or vary the decision of a district council against which the appeal is made.

### **The proposed building work which is the subject of the appeal**

7. The building work which is the subject of this appeal relates to a completed warehouse, known as X, which is sited within an industrial estate, south of an A road. The main line railway is 200 metres to the south. A small watercourse runs alongside the western boundary of the site. The area encompassing the site falls from the A road to the canal and river complexes to the south.

8. The building is a very large single storey, steel framed one approximately 80m long x 73m wide. Its height is approximately 11m to the eves and approximately 14m to the apex. The floor area (excluding the office inset see paragraph 9 below) is approximately 5,600 square metres and the volume is approximately 72,000 cubic metres. The external walls are clad in profile metal sheets of a sandwich construction supported by the steel frame and sheeting rails, together with wind bracing. The roof finish is sandwich construction profile metal sheeting supported by Z Purlins fixed to the main steel roof members. The building is used for the storage of carpets on solid chipboard shelving mounted on racking. From the plans provided it appears that the racking is generally spaced approximately 7m to 8.5m apart, and that the storage area provided by the top shelves is uncovered.

9. Attached to the south west corner of the building is a two storey office building. Approximately one quarter of the plan area is inset into the warehouse area with the remainder projecting forward of the elevations. It is separated from the warehouse by a masonry compartment wall to the full height of the building. Its construction is not an issue in this appeal.

10.Three sides of the warehouse building were considered to be close enough to the boundary for the fire resistance of these external walls to be taken into account. The distances of these elevations to the respective boundaries are: 3m, 16m and 19m. As constructed, the walls have been provided with two hours fire resistance in accordance with the Council's requirements under the 1986 Act.

11.The starting point for this appeal was a full plans application for building regulations approval and approval under section 37 of the 1986 Act deposited on 26 July 1996 for the installing of a smoke venting system to the warehouse in order to comply with an approval granted on appeal by the Secretary of State on 29 November 1994 under section 37(6) of the 1986 Act. That approval had been conditional on a suitable smoke venting system being provided but which to that date had not been installed.

12.Your client's proposals of 26 July 1996 comprised the dividing up of the warehouse into two separate smoke zones, venting via one zone and bringing replacement air in from the other. The smoke control system was based on a 5 Mw 3m x 3m fire with an 11.5m height of rise, which it is understood would be activated by an automatic smoke detection system incorporating auto dialling to the emergency services.

13.The proposals were rejected by the Council on 12 August 1996 on the grounds that they were for smoke venting alone with no internal sprinkler system, and that the former was not shown adequately. The Council concluded that the proposal therefore failed to meet the Secretary of State's criteria in his decision letter of 29 November 1994 for the system to prevent fire spread, particularly along the roof.

14.However, your client took the view that the sprinkler system options suggested by the Council to work in combination with the smoke venting system would be either totally ineffective and/or would represent unwarranted expenditure. Mr A therefore lodged this appeal on behalf of your client on 28 August 1996 against the rejection of the proposals by the Council.

### **The appellant's case**

15.Mr A is your client's fire consultant. He is the principal of .. Limited which was established in 1991. His letter of 28 August 1996 refers to the appeal decision letter of 29 November 1994. That letter indicated that your client and the Council should consider the provision of a suitable smoke venting system as an appropriate alternative system which would require neither an automatic extinguishing system nor the increasing of the fire resistance of the walls to an excess of one hour. The letter stated that '*The system would have to be capable of preventing the top levels of storage being ignited by radiation from, or immersed in, the hot gas layer along the roof.*'

16.Mr A did consider with other parties concerned a suitable venting system based on a 5 Mw 3m x 3m fire, but the view was taken that a sprinkler system would also be required and that a high level, fast response, large droplet sprinkler system (ie an ESFR system see paragraph 35) would suffice. Although Mr A did not share the view that a sprinkler system would be necessary he asked a sprinkler manufacturer for their opinion. This is attached to his letter of 28 August 1996. It states that given the nature of the material stored, and the height of that storage, high level sprinkler protection would not be effective because the water spray would be dissipated before impinging on the seat of any fire, and because of the extended delay due to the transfer of heat growth from any fire at low level to the roof level where it would trigger sprinkler protection. The advice concludes that to legitimise the provision of sprinklers in the premises, additional appropriate low level sprinkler protection to the racking (ie an 'in-rack' system see paragraph 34) would be necessary. Mr A states that your client could not accept the expenditure incurred for such a system which he contended would give no benefit to the fire strategy.

17.At this point in time it was known that the then DoE was anticipating a review of the statutory guidance for Part B of the Building Regulations ie, *Approved Document B (Fire safety)* - involving possible amendments to the document, including the guidance in respect of the need for sprinklers in large single storey buildings above certain thresholds of compartment size. Mr A's view at that time was that any change to *Approved Document B* would not include warehouse-type buildings. He therefore argued that it would seem totally unreasonable to provide an in-rack sprinkler system at considerable expense together with a smoke venting system.

18.Mr A further comments in his letter of 26 August 1996 that he feels strongly about the application of isolated Local Acts and refers to his comments in his Company's letter of 11 February 1994 which lodged your client's appeal against the Council's notice of rejection of plans of 4 February 1994.

19.Notwithstanding your client's misgivings, Mr A makes the point that the application of 26 July 1996 made provision for a smoke venting system, with two reservoirs, based on a 5 Mw 3m x 3m fire. He accepts that such a system will have limitations in that it will not maintain a clear layer above the racking, but does contend that '*it will undoubtedly provide a clear air space at a lower level to assist fire fighting and help to reduce the temperature build-up at higher level.*' He also points out that this provision would be to a greater standard than the guidance given in the then extant *Approved Document B*.

20.Mr A's understanding at the time was that the Council was insisting on a full in-rack sprinkler system and a fully designed smoke control system. He therefore asked that the Secretary of State '*accept that the health and safety of persons resorting in or around a building of this nature is satisfactory without the additional, prohibitively expensive,*' provisions being required under the powers in the 1986 Act.

## **The Council's case**

21.Following the Department's invitation to comment on the initial appeal statement by Mr A on behalf of your client (ie his letter of 28 August 1996), the Council produced three proofs (23 June 1997): one from Mr B, Principal Building Control Officer of the Council; one from Mr C, Managing Director of a specialist firm of Fire Engineering Consultants; and one from Divisional Officer D of the Fire & Rescue Service.

### **Mr B's proof**

22.Mr B's proof contains two appendices. Appendix 'A' details the location and construction of the warehouse, and identifies the attached map and plans (1 8). Appendix 'B' chronicles the history of the development from its inception to the lodging of this current appeal. It lists and encloses relevant correspondence (8 44).

23.Mr B expresses the Council's view that this appeal raises considerations of county-wide and potentially national interest because the measures proposed can currently only be enforced through Local Act legislation and not through the Building Regulations. He states that the Council has the unequivocal support of the Fire and Rescue Service, as well as the Fire Brigade and the Chief and Assistant Chief Fire Officers Association.

24.For the Council Mr B draws attention to the wording of the Secretary of State's decision of 29 November 1994 already cited at paragraph 15 above. The Council argue from this '*that the Secretary of State accepted the importance and sense of having a system in the building which accords with the Berkshire Act 1986, even though the Building Regulations do not require such controls.*'

25.The proof refers to subsequent discussions between Mr A and experts for the other parties concerned. These included an independent expert from the then Fire Research Station (Building Research Establishment) Dr E. The proof reports that at that stage Dr E's view was that sprinklers and vents were best for the building in terms of fire suppression; but that Mr A did not agree that these should be installed as, in his opinion, this was a matter for the insurance company and the building owner.

26.Mr B expresses the Council's view that the absence in the application submitted on 26 July 1996 of a sprinkler system of any sort fails to recognise expert advice that a sprinkler system would be necessary. To reinforce the Council's case, the proof quotes paragraph 3 from Dr E's letter to the Council, dated 12 February 1996. It states that for a fire in the poorer type of material, smoke ventilation without any sprinklers is unlikely to have any significant beneficial effect because the fire would develop at the maximum rate possible for the material and its configuration. Once the fire has spread beneath the ceiling materials will ignite at the top of other racks due to heat radiation even if the ventilation succeeds in keeping the hot fire gases above the racks. The paragraph stresses the rapidity of this process and concludes that once a fire

is fully involved, conditions for fire fighting would be effectively impossible; and that therefore smoke ventilation on its own would be of very little value to the fire service.

27. Mr *B* also contends that the application of the 1986 Act is not solely concerned with insurance or a matter for the building owner. He considers the safety of persons, the public costs of such fires, and the safety of firefighters to be of vital importance. Mr *B* states that the application of the 1986 Act greatly enhances the safety of fire fighters and other personnel attending the fire. There are also wider implications for those living and working in the administrative area.

28. Mr *B* also expresses the Council's concern about the potential of a fire to create air and water pollution for which it, and the Environment Agency, have certain statutory duties. The earlier a fire is tackled or prevented, the less chance there will be of pollution. A further concern is the chance of fire spread and the destructive effect of smoke. Mr *B* refers in particular to the proximity of the A road, the main line railway and surrounding waterways; and to the potentially uncompensatable costs to local industry of a significant fire. The British Waterways and the Environment Agency support the Council's concerns.

29. For the Council Mr *B* further points out that it is not possible to rely upon the ability of the fire service to attend quickly enough to suppress a fire and compares this position with the efficient workings of an adequate fire extinguishing and smoke venting system. He states that 'The absence of such a system greatly increases the risk of a substantial fire occurring with the attendant greater risks.'. In his view, because of the internal layout and the high calorific value of the stored materials in the building there is an inherent ability for a fire to generate, spread quickly, and become uncontrollable.

### **Mr C's proof**

30. Mr *C* heads his own consultancy and was appointed in March 1996 by the Council to examine the documentation, and review and comment on the technical issues relating to fire and the required fire safety measures. He visited the building on 23 April 1996 a report on which is contained in section 7 of his proof.

31. Section 5.1 of Mr *C*'s proof analyses the manner and spread with which a fire will grow in a typical warehouse, containing large quantities of combustible goods stored vertically in racking and often close to the ceiling. He states that the combination of radiant heat and the hot layer of smoke and gases beneath the ceiling will be sufficient to cause spontaneous ignition at the top of adjacent high level racks; and that secondary fires will also occur at low level due to falling brands. The result is extremely rapid fire spread which is likely to lead to a total loss of the building and contents. Fire fighting operations would almost certainly be too late to successfully control the fire, and fire fighters' safety could be jeopardised by high level fire spread unseen in the smoke layer.

32. Section 5.2 of Mr C's proof deals with different types of sprinkler systems and the applications for which they are best suited. It states that sprinkler systems have proven over many decades of use to be a very reliable and highly effective fire protective measure.

33. Mr C explains that most commercial and industrial risks can be dealt with by a conventional ceiling mounted sprinkler system. However, warehouses represent a special case because the speed of fire growth and the height of racking can result in the fire being very large by the time the sprinkler operates. Mr C states that a conventional system is therefore not capable of dealing with high racked storage warehouses.

34. Mr C's proof goes on to explain in Section 5.2 that in-rack sprinklers have been developed to deliver water directly to a fire developing within a racked storage system. The objective of this type of system is to control the fire spread by operating sprinklers at intermediate storage levels at a much earlier stage than the roof level sprinklers. However, the speed of fire development can be such that the effectiveness of the system can be significantly impaired and the selection of quick response heads is therefore necessary. The proof adds that in-rack systems are expensive and that they can be accidentally damaged.

35. Mr C's proof then explains that Early Suppression Fast Response (ESFR) sprinkler systems were developed specifically for storage applications. It says that the fundamental difference between these systems and conventional ones is that the ESFR is designed to suppress or extinguish a fire in the early stages, rather than to control it. To ensure early operation an ESFR system uses quick response type heads with a low Response Time Index. In addition, water delivery rate from an ESFR head is increased by using a larger orifice head. Section 5.2 of the proof concludes that this combination of early operation and large volumes of water allows the use of ceiling only sprinklers and the use of in-rack sprinklers is not necessary.

36. Section 5.3 of Mr C's proof goes on to consider the design and function of smoke venting systems. It explains that the objective of such systems is to maintain a smoke free layer at low level to allow means of escape; to improve conditions for fire fighting; and also to reduce smoke damage to the building and contents. The proof states that in many buildings it is possible to design a smoke vent system without sprinklers; but that in a high racked storage warehouse a smoke vent system will be of limited benefit unless a sprinkler system is installed.

37. Section 6.1 of Mr C's proof affirms his view that X has the potential problems identified in section 5 of his proof, and that without sprinklers and smoke vents it '.does not comply with the Berkshire Act'. It also states that no technical arguments by your client have been identified other than the applicability of the 1986 Act.

38. Section 6.2 of the proof considers the Secretary of State's appeal decision of 29 November 1994. Mr C's view is that if the storage in the building was only stacked a few metres from floor level it would be possible to do without a sprinkler system. However, because of the height and design of the racking, and its proximity to the ceiling and the fire load, he also is of the opinion that the performance criteria set for a smoke venting system in the decision letter 29 November 1994 could not be achieved.

39. Section 7 of Mr C's proof reports on his site visit in April 1996. He notes that the aisles between the racks were much wider than a typical palletised storage warehouse in order to allow a forklift truck to manoeuvre with a length of carpet roll on its lifting arm. He considers that '*The wide aisles between the racks would probably delay fire spread by radiant heat across the aisles.*', but he considers '*this to be less significant than the vertical fire spread in the racking and under the ceiling to the tops of adjacent racks.*'. From this site visit Mr C concludes that an EFSR system would be unlikely to be effective with the existing '*solid shelving effectively shielding such a large plan area from the operation of the ceiling sprinklers.*'. In his view for an EFSR system to be effective the shelving would have to be altered to a more open type to allow water penetration to the seat of the fire.

40. Section 8 of Mr C's proof recommends that both a smoke vent and a sprinkler system must be installed in the warehouse. This section suggests alternative sprinkler systems (later to be referred to in the Council's rebuttal of 1 June 1998 as part of systems 'A' & 'B'). One is a sprinkler system complying with BS 5306 Part 2 and the LPC Rules. The system would comprise roof level and in-rack sprinklers at each tier of storage and alternate rack ends. The in-rack sprinklers would be 15 mm nominal head size of a quick response type with a K factor of 80.

41. The alternative sprinkler system would be an ESFR one designed in accordance with NFPA 13 and the Factory Mutual Data sheets 2-3 and 8-9. Mr C again states that for this type of system it would be essential to replace the solid chipboard shelves with a more open type of shelving. Although Mr C states this alternative might not fully comply with the design guidance above, in his view it may be possible to design an ESFR system as an aid to fire fighting which, used in conjunction with a smoke control system, would '*provide a reasonable standard of fire precautions and satisfy the intentions of the Berkshire Act.*'.

42. Mr C's proof concludes at section 8 by recommending a natural smoke vent system '*with the roof space divided into a minimum of 2 smoke reservoirs. The smoke vents and any smoke curtains should comply with BS 7346. Operation of the smoke vent system is to be by sprinkler flow switch and in addition provision should be made for manual operation on attendance by the fire brigade.*'

## **Divisional Officer D's proof**

43. Divisional Officer *D* is the Fire Safety Technical Officer of the Fire and Rescue Service. His proof is provided on that fire authority's behalf and contains various exhibits (1-4), including articles on fires in large single storey buildings. It refers to the fact that the fire authority is a statutory consultee under section 37(2) of the 1986 Act.

44. D.O. *D*'s proof notes that your client agreed to install an automatic fire detection system in accordance with the relevant British Standard, together with emergency lighting. However, in respect of your client's full plans application of 26 July 1994 and the subsequent appeal, D.O. *D* states that it was the fire authority's firm recommendation that automatic fire detectors, sprinklers, and smoke ventilation systems should be provided to secure the objectives of the 1986 Act; and that this was conveyed to the Council and to the then DoE.

45. D.O. *D* refers to the extremely strong historical evidence of the value and need for sprinkler systems to be installed in premises such as X. The proof also refers to the national concern by fire authorities over a number of Local Act appeals against the provision of sprinklers and ventilation systems which were upheld by the Secretary of State. The proof refers to an increasing number of total loss fires in single-storey retail units and warehouses. It cites two examples of large retail units. As a result of such incidents the proof goes on to explain how the fire safety industry and fire professionals began to campaign for sprinklers to be installed in large single-storey buildings.

46. D.O. *D*'s proof then considers the issue of attendance times by the fire service. He notes that X is in a category 'C' risk area, as determined by the Home Office, in respect of attendance times of fire appliances. The proof notes that when considering a potential fire in a building such as X, a 'fire size' must first be arrived at as a base for calculations. It reports that evidence exists to show that in a warehouse fire the doubling time of a fire can be as short as 20 seconds as opposed to other rapidly developing fires which can double every two minutes. D.O. *D* argues therefore '*that without the controlling effect of sprinklers, Fire Fighting Units arriving at the warehouse would be faced in all probability with a very well developed fire.*'

47. D.O. *D*'s proof goes on to consider the potential for loss of life or injury to fire fighters in situations when a fire has developed. It states that if fire crews need to search for unaccounted persons or attack the seat of the fire they would be entering a totally smoke-logged building involving extensive internal travel distances through high rack storage of carpeting involved in the fire. D.O. *D* considers the potential for loss of life or injury to firefighters to be self-evident and cites the then Fire Research Station (Building Research Establishment) records of three serious carpet store fires, in two of which a fireman was killed, and in the third of which a fire went through the roof of a retail carpet depot in five minutes. D.O. *D* therefore argues that the provision of a smoke controlled system in conjunction with a sprinkler system would control the growth of the fire prior to an appliance arriving and reduce the

volume of smoke produced to provide a relatively smoke-free working area for the fire fighters to operate within.

48.D.O. *D*'s proof then turns to concerns over environmental issues. A fully developed fire in a carpet warehouse of this size would, he states, give rise to large volumes of toxic smoke and airborne contamination, with potential affects on adjacent rail and road, and residential areas. Thousands of litres of water would be needed to extinguish such a developed fire and would create tremendous problems of containing contaminated water. D.O. *D* argues that a smoke control system in conjunction with sprinklers would control such a fire and thereby limit these effects. The proof adds that the resource costs of fighting an avoidable major fire - in terms of equipment, fire fighting personnel and support services - would run into thousands of pounds.

49.D.O. *D*'s proof concludes by reference to the Secretary of State's appeal decision of 29 November 1994, noting that it stated that there was justification for an automatic smoke ventilation system and laid down the criteria to be met. It rehearses the fact that subsequent examination resulted in the Fire Brigade and others concluding that '.sprinklers would be necessary to at least support a smoke ventilation system.'. Reference is made to the meeting attended by Dr *E*, of the then Fire Research Station. D.O. *D*'s proof states that Dr *E*'s advice was '*that whilst in-rack sprinklers and ceiling mounted sprinklers will undoubtedly give the best measure of control, a roof level 'early suppression fast response' type system would be sufficient to support a smoke ventilation system by achieving a degree of fire control which would allow the ventilation system to create a relatively smoke-free area at ground floor level enabling Fire Brigade hose streams to be brought to bear.*'.

50.In conclusion D.O. *D*'s proof reports that the brigade supports Mr C's recommendation that a smoke control system in conjunction with sprinklers is the appropriate level of fire protection. D.O. *D* comments that 'Sprinklers and an integrated smoke ventilation system which will control the fire and provide good visibility below the fairly buoyant smoke layer should enable the fire brigade to effect any rescues and fight the fire.'

51.D.O. *D*'s proof adds that he also supports Mr C's recommendation for a smoke venting system operated by sprinkler flow switch coupled with a roof level and in-rack sprinkler system. Alternatively, although not the optimum solution, D.O. *D* states that the Fire Brigade would also support the alternative of an ESFR sprinkler system, coupled with a smoke control system, and provided the solid shelving was changed to a more open type. D.O. *D*'s proof concludes that either of these suggested options would slow the growth of the fire so '*that the likelihood of 'flash-over' and smoke and fumes totally filling the building is reduced creating a greater chance of appliances arriving before the fire has become virtually impossible to fight.*'.

## **The appellant's case and rebuttals**

52.Mr A responded (9 February 1998) on behalf of your client to the evidence submitted by Mr B Mr C and D.O. D, on behalf of the Council. The majority of Mr A's proof relates to Mr B's proof. It attaches two appendices containing photocopies of Table 12 of the then extant *Approved Document B (Fire safety' (1992 edition)* and the then proposed replacement table for the revised Approved Document which had by then been included in the Consultation

Document issued in December 1997.

### **Rebuttal in respect of Mr B's proof (the Council's case)**

53.Mr A agrees the site and building description in Mr B's proof.

54.Mr A views the position in terms of what is 'reasonable'. He believes the Council is not being reasonable in requiring both a smoke venting and a sprinkler system. Mr A contends that your client's scheme not only complies with the Building Regulations but contains additional measures over and above the requirements of the regulations. In his view the issue is whether and to what extent the Council should require additional measures under the 1986 Act. He refers to the assertions throughout the Council's proofs that the premises '*fail to comply with the Berkshire Act.', but contends that the 1986 Act does not set any empirical standards for fire safety or prevention. He believes the question for this appeal is therefore 'whether those requirements are reasonable.'*'

55.In respect of the issue of the application of the 1986 Act, Mr A comments that in areas of the country where there are no Local Acts it would be entirely lawful to erect a building such as X and no further requirements could lawfully be insisted upon by the local authority. This is the position in The rest of the country.' which he says '*is full of such buildings.'*

56.Mr A's proof then turns to the question of additional fire precautions in large single-storey buildings and the review of the then extant *Approved Document B(Fire safety)* Mr A notes that this debate had been a live one for a number of years and representation had been made at government level about changes to the Building Regulations to deal with the issue. He notes that Table 12 in the then extant *Approved Document B* (Appendix 1 of his proof) covers the question of these precautions but only in respect of multi-storey buildings it is silent as to single-storey buildings.

57.Mr A attaches at Appendix 2 to his proof, a table (headed Table 13) which is identical to the proposed replacement table published for consultation purposes as a replacement to the then extant Table 12 in Approved Document 'B'. He points out that this table does now deal with the maximum size of single-storey buildings and indicates that 4,000 square metres of shop premises would be the maximum allowable unless further precautions were provided. Very strikingly, Mr A argues, the consultation draft of the Approved Document still shows that buildings such as X would still comply as they

stand. Mr A argues that very great weight should be given to the draft Approved Document (as it then stood) in respect of the reasonableness of what the Council is requiring given that, in his view, it is still their position that they are requiring a very much higher standard of Building Regulations even as presaged for revision.

58.Mr A does not dispute much of what Mr B's proofs say about fire safety in some respects and to that extent he agrees that a sprinkler and smoke venting system, and the other proposed measures, would improve fire safety. However, his strong view is that the purpose of regulation in fire safety is not to ensure that the building is as safe as it can be, regardless of expense referred to in the submissions as a '*Rolls Royce approach*'. "*Rather, it is to ensure that the building is reasonably safe at a reasonable cost.*".

59.Mr A asserts that if he designed a building of the size of X with every possible fire protection, each of which would make a contribution towards the safety of its occupants and addressing the possibility of a major fire, the cost would be approximately £1m greater than designing the building to comply with the Building Regulations. His point is that '*.the Council here are erring in seeking to require a standard of fire prevention which is simply not justifiable in the overall context of overall requirements for public safety, bearing in mind that no public occupancy is envisaged.*'.

60.Mr A states that he does not disagree with Dr E's view that sprinklers and vents would be best for fire suppression; but he does disagree that they ought reasonably to be required for installation in X. He adds that none of the major insurance companies will require smoke venting as a condition of cover; and equally they will not require sprinkler systems unless these are required under the Building Regulations. He also notes that in his letter of 12 February 1996 Dr E says he was unaware of any tests having been conducted on the particular combination of materials and geometry presented by X, and that to achieve quantitative certainty of his view would require full-scale fire tests simulating the circumstances of the building.

61.Mr A considers that this caveat by Dr E on his judgement about the most appropriate combination of smoke vent and sprinkler systems is relevant to the differential which he has described above between an ideal system and one which complies with the Building Regulations. Mr A argues that in any event the proposals under appeal do not represent the bare minimum to comply with the Building Regulations. He states that in addition to the smoke venting system the application provides for an automatic smoke detection system which would automatically call the emergency services; and he considers that the Council should therefore be satisfied with these additional measures of control.

62.Mr A's proof then refers to Mr B's reference to pollution in paragraph 4.18 of the latter's proof. Mr A regards Mr B's reference to pollution as irrelevant because the 1986 Act contains no reference to pollution control. Mr A also refers to paragraph 4.19 of Mr B's proof. This refers to the chance of spread of fire to other buildings via sparks or otherwise and the destructive effects of

smoke on surrounding employment, industry and communications. Mr A considers these concerns are unjustified because the unprotected areas of X were calculated on an un-sprinklered fire and the fire resistance of the relevant elevations is two hours and in accordance with the 1986 Act.

### **Rebuttal in respect of Divisional Officer D's proof (the Council's case)**

63.Mr A's proof then considers that of D.O. D's. Mr A understands D.O. D's concern for the safety of his officers but does not consider that this means that sprinklers should be required in all cases. Mr A contends that even after lengthy consultation on the revision of Approved Document 'B' the DETR still did not consider them necessary. Mr A refers to paragraph 17 of D.O. D's proof which refers to a number of successful Local Act appeals to the Secretary of State against the provision of sprinkler and ventilation systems which Mr A considers reinforces his view of the reasonableness, in this situation, of the type of scheme which your client is proposing.

64.Mr A then refers to D.O. D's emphasis in his proof (paragraph 17) on fires at a Tesco and a Sainsbury's stores. Mr A contends that there are a number of very substantial differences between a retail store and a wholesale carpet warehouse in terms of public safety and access not least the fact that the public do not have to resort to the latter type of building. He re-affirms his view that the building as constructed is not an unacceptable risk to fire safety and that with the proposed additional provisions will represent '*a significant improvement*'.

### **Rebuttal in respect of Mr C's proof (the Council's case)**

65.Mr A refers back to comments (paragraph 3.13) on his (Mr A's) proof which compares an ideal system with one which complies with the Building Regulations.

66.Mr A refers to page 20 of Mr C's proof which deals with his specification for a natural smoke vent system in conjunction with a sprinkler system. Mr A comments in respect of the smoke control system that '*all the matters that are the subject of this appeal do comply with those requirements.*'; and adds that the only difference is that the smoke vent system is operated by automatic smoke detection rather than sprinkler flow switch, which he contends is actually faster in its operation.

### **Conclusion of Mr A's rebuttals**

67.Mr A concludes his rebuttals by stating that the Council's proposed system for X is significantly in excess of that required by the then extant Building Regulations and Approved Document 'B' in respect of this type of building, and even by the then proposed amendments to the Approved Document. He considers it iniquitous that owners of buildings covered by Local Acts should be put to considerably greater expense than those in the rest of the country.

He contends that 'A reasonable exercise of its discretion by the Council under these proceedings would not perpetuate this anomaly, which is unreasonable, illogical, and anti-competitive.'

## **Subsequent and final rebuttals from the parties, 1 June 1998 to 24 November 1998**

68.Paragraphs 15-67 constitute the main exchanges of submissions between your client's expert (Mr A ) and the Council's experts. There then followed further submissions dated 1 June 1998 from the Council replying to Mr A's proof. This was followed by a rebuttal by Mr A on behalf of your client dated 12 October 1998 (which included an appendix setting out volumetric calculations). This was followed by a final rebuttal by Mr C on behalf of the Council, dated 24 November 1998, rebutting Mr A's rebuttal.

### **Comparison of systems 'A', 'B' & 'C'**

69.On page 2 of the Council's submissions of 1 June 1998 they set out the components of each of the three systems being referred to by the parties. The Council emphasises the operational and practical differences between systems 'A' and 'B' proposed by them, and System 'C' proposed by your client. In their view system 'C' will have some benefit in terms of maintaining visibility but this would be very quickly over-whelmed as the fire expands; and would have a minimal effect on the dissipation of heat and no effect on fire suppression. The Council also refers to the cost implications in terms of resources and utilisation of neighbouring fire brigades if no sprinkler system is installed.

70.The Council further argues that given the building and the materials stored in it, a fire which was not controlled by sprinklers could not safely be fought by the normal response of only two crews. Further resources would need to be committed probably in excess of fifteen appliances. The Council state that although Mr A makes much of the difference between retail and storage buildings, in practice there will be little material difference once the fire brigade arrive. The Council consider that whether or not the building was in use by the general public, there would still be the risk of persons being unaccounted for thus requiring fire officers to enter the building. The Council consider that Mr A's view that there would be no need to fight the fire and that it would simply be a matter for the insurers once evacuation has taken place, is unsustainable in such circumstances.

71.In the same rebuttal, the Council provide estimates of the costs of the works which they are seeking (i.e. systems 'A' and 'B') and also of System 'C'. The total for System 'A' is £197,000; for System 'B' £192,000; and for System 'C' £30,000. The Council points out that this is nothing approaching Mr A's reference to £1m albeit that the latter figure appears to represent the maximum level of fire protection rather than the specific requirements which they are seeking.

72.These costs are not challenged by Mr A on behalf of your client in his rebuttal of 12 October 1998 but he believes that storage and efficiency costs have not been taken into account. Mr A explains the purpose and function of the building in terms of a 24 hour delivery service and the use of forklift trucks to lift the rolls of carpets to insert or remove them from the bays. Appendix 1 of the rebuttal sets out a detailed assessment of the resulting loss of roll spaces if an in-rack system was installed, and is calculated to be 5,696 out of a total of 14,470 ie a loss of 40 per cent. Mr A considers the loss would be greater in terms of profit, and considers this to be the most graphic illustration of how anti-competitive the Berkshire Act is compared with say a location in neighbouring Oxfordshire.

73.In the Council's final rebuttal of 24 November 1998, Mr C first challenges Mr A's statement that it is extremely unlikely that a sprinkler system would suppress a fire in rolls of stored carpet. He then refers to Mr A's rebuttal of 12 October 1998 and corrects Mr A's mis-understanding insofar as the proposed System 'B' is an ESFR ceiling level sprinkler system with no in-rack sprinklers. Mr C states that in-rack systems are the norm in high bay warehouses requiring sprinkler systems and there is always some risk of damage to them. However, he is very surprised by Mr A's estimate of a 40 per cent reduction in storage capacity of the warehouse if in-rack sprinklers were to be installed. Mr C then, on behalf of the Council, goes on to say that given that the 'catastrophic effect' of installing in-rack sprinklers as anticipated by your client, then System 'B' would avoid this problem.

## **The 1986 Act and the geographical coverage of other Local Acts**

74.In their submissions of 1 June 1998 the Council is concerned to refute any impression that the 1986 Act is unique. There are some thirty Local Acts requiring consideration to be given to fire protection measures in addition to the Building Regulations, and of these eight require additional fire protection in certain large buildings. The Council does not therefore consider that it is taking an isolated stance in opposing this appeal and refers to an appeal against the provision of sprinklers in a single storey warehouse under the Leicestershire Act 1985 which was dismissed by the Secretary of State.

75.Mr A considers in his rebuttal of 12 October 1998 that using the Council's own figure of eight other Local Acts with similar powers to the 1986 Act, the Council has powers which are very much in the minority. With regard to the Leicestershire Act 1985 case, Mr A's same rebuttal points out that the storage use was not for carpets but for other materials, and that the submission documents for this case would have been exchanged before the proposed review of *Approved Document B (Fire safety)*.

## **Extent of 1986 Act**

76.In their submissions of 1 June 1998, the Council assert that the measures which they are seeking are perfectly legitimate within the terms of the 1986 Act. The Council considers that Mr C's proposed solutions have not been challenged by your client other than on the grounds that the proposed fire safety measures would be in excess of the Building Regulations. They consider that this argument has already been rejected by the wording in the Secretary of State's decision letter of 29 November 1994 ie '*it is reasonable for the District Council to ask for measures which are in excess of those indicated in Approved Document B'*

77.The Council also reject the idea that they are seeking a 'Rolls Royce' system and consider that they are only seeking the minimum level of fire protection necessary to comply with the provisions of section 37 of the 1986 Act.

78.Mr A responds in his rebuttal of 12 October 1998 that your client is not asking the Secretary of State to ignore the existence of the Local Act but that your client does not believe the Council's '*failure to give consent is reasonable.*' In Mr A's view the alternative systems proposed by the Council have, in effect, been rejected by the Secretary of State in his decision letter of 29 November 1994.

79.The rebuttals also contain argumentation about the vires of the Council to take pollution into account. In their rebuttal of 1 April 1998 the Council cite the long title of the Act as the basis of their powers in this respect; whereas Mr A considers that the Council should not have to resort to the long title to establish their vires. He contends that any decision to reject plans other than on the basis of the specific matters contained in section 37 would be unlawful.

## **Proportionality**

80.The Council in their rebuttal of 1 June 1998 raise the issue of 'proportionality'. They state that the level of fire safety measures should be appropriate to the risk of a fire starting in the building with its particular contents, and should be judged against the consequences of such a fire. The Council are clear that the measures which they are suggesting are lawful, rational and in proportion to the fire risk; and are based on expert evidence which has effectively not been challenged. The Council adds that there are continuing examples of unnecessarily severe fires in uncompartimented, unsprinklered single storey large volume buildings which demonstrate the need for the measures required by the Council. Two examples of retail buildings are cited.

81.For your client Mr A in his rebuttal of 12 October 1998 asks whether, having regard to national legislation, what the Council require is proportionate, reasonable and necessary. He believes it is not, particularly bearing in mind the effect on the competitiveness of your client's business. He makes the point that the 1986 Act applies only to storage buildings and refers to his

previous evidence which dealt with the difference between retail and storage buildings. Mr A also argues that if the warehouse were to be converted to a factory manufacturing carpets, then no sprinkler system would be required although the implications as far as fire safety would be just the same only the Building Regulations would apply.

## **Review of Approved Document 'B'**

82. As noted at paragraph 17 above, at the time this appeal was first lodged it was known that the then DoE was anticipating proposing amendments of the guidance given in *Approved Document B (Fire safety)*. The formal Consultation Document was issued in December 1997.

83. In the Council's submissions of 1 June 1998 they contended that there was still much pressure to include in the revised document guidance that sprinklers should be installed in warehouses. However, Mr A in his rebuttal of 12 October 1998 opined that the then current draft of the Approved Document in respect of this matter would be promulgated as it stood ie, without reference to sprinklers being required in large storage buildings. He considered that this should carry considerable weight in this appeal.

## **The Secretary of State's consideration of the appeal**

### **Introduction**

84. The Council have argued in this case that their insistence on a smoke ventilation system being combined with a sprinkler system is based on the following concerns:

- the need to contain a fire from its outset and prevent it becoming out of control in a very short period of time;
- the need to take account of fire brigade attendance times and the need to enhance the conditions for the fire brigade to effect any rescues and safely fight the fire; and
- the need to prevent the effects of an uncontained fire affecting the surrounding environment with consequential pollution of air and water in particular.

85. Although there has been much deliberation in the evidence about the relative efficiency and practicality in use of the Council's alternative smoke venting and sprinkler systems 'A' and 'B', the Council appear to be content, having regard to the particular circumstances, that System 'B' would be as efficacious as System 'A' and would reflect the particular concerns about loss of storage space and operational difficulties which your client has argued would be inherent in an in-rack system. Nevertheless, your client has of course maintained that there is no necessity for any form of sprinkler system

and has challenged the way the Council has sought to use the powers contained in the 1986 Act to secure this.

## **Prevention of pollution**

86.Your client has argued that the Council does not have the powers under the 1986 Act to take account of environmental issues. The Council has responded by relying upon the long title in the 1986 Act which refers, *inter alia*, to the environment.

87.In the Secretary of State's view insofar as Section 37 ('Fire precautions in large storage buildings') contains a clear expression of intent and purpose it is for the purpose of '*preventing the outbreak or spread of fire in or from the building or reducing danger from fire in the building*'; and that the power to give effect to these intentions is contained in the power to reject plans or apply conditions as to consent, the content and type of which are prescribed in sub-section 37(3)(a)-(f). Thus, although the Secretary of State respects the Council's concern over the environmental implications of an uncontrolled fire and acknowledges that other legislative powers and duties may well impose certain duties upon the Council, it is his view that Section 37 of the Act does not provide express power to take account of the environmental implications of a fire.

## **The Building Regulations and the 1986 Act**

88.Your client has challenged the reasonableness of the Council failing to give consent, given that the proposals (ie to exclude provision of sprinklers) accorded with the then extant Building Regulations and the guidance in the then extant *Approved Document B (Fire safety)*. At the time of submission of your client's main proof of 9 February 1998, the DETR's consultation on revisions to Approved Document B was under way. In the Secretary of State's view the issue for revision in respect of sprinklers was principally their possible application in single storey retail buildings; although as the Council report there was pressure for inclusion of provision for sprinklers in other single storey buildings. After full consideration of the consultation responses and receipt of advice from the Building Regulations Advisory Committee, the Secretary of State published the new edition of *Approved Document B* (which came into effect on 1 July 2000) which contains guidance as to sprinklers in single storey retail buildings but which, as in the then extant Approved Document, does not do so with respect to warehouse buildings.

89.There is therefore no dispute as to whether the proposals comply with the then, or now, extant Building Regulations in respect of Part B, or the guidance thereto. However, in the Secretary of State's view the powers contained in Section 37 of the 1986 Act are as much about the storage use of the building as with the physical construction of the building. The power to consider the storage use of the building exists both in respect of the initial construction and/or the subsequent extension of the building, as well as in respect of any change of storage use of the building once constructed.

90.In this case the Council has expressed its concern about the type of material to be stored (ie carpets and in particular those carpets which are foam backed) and the manner in which it is to be stored (ie horizontally on shelves supported on a racked system reaching nearly to ceiling height) and reflected this in its decision. It is part of your client's case that had a building of the same size and description been the subject of a building regulations application in an area not covered by the 1986 Act, or any similar Local Act, it would have fallen to be considered only in respect of its compliance with the Building Regulations and, in particular, the requirements of Part B.

91.However, the Secretary of State is satisfied that the Council has the power and duty under the 1986 Act 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 be able to consider under the Building Regulations alone. It follows that he considers the issue as to whether or not insurance companies require smoke venting or sprinkler systems as a condition of cover is not directly relevant to the Council's decision, in any particular circumstance, to require such systems. The Secretary of State has therefore concluded that the main issue in this case is 'proportionality' ie, whether the additional provisions being required by the Council are reasonable in the circumstances.

## **Proportionality**

92.Your client has argued that the Council's requirements are not proportionate to the fire risk. However, the Council state that their measures are rational and in proportion to the fire risk. They have provided a list of additional requirements which they consider they might have requested over and above what they considered proportionate. In addition, they have cited examples of what they judge to be unnecessarily severe fires in uncompartimented, unsprinklered single storey large volume buildings as evidence of the need for the measures which the Council is requiring. However, your client has noted, that these examples relate primarily to retail buildings; and it is part of your client's case that there is a difference between single storey retail and storage buildings insofar as the latter are not a resort of the public.

93.However, having regard to the Council's duty under section 37 of the 1986 Act and their concern regarding the particular storage use of the building, the Secretary of State agrees with the Council's view that they are entitled to have regard to fire safety precautions not just in respect of helping to contain a fire but also in respect of enhancing the conditions in or about the building to assist fire personnel carrying out their fire fighting and rescue operations.

94.To achieve the objective of helping to contain a fire, and to enhance conditions in the event of a fire, the Secretary of State therefore accepts that the proposed smoke venting system should be combined with a sprinkler system comprising the principles of either System 'A' or 'B'. He is therefore content that the Council's requirements for one or other of the sprinkler

systems is reasonable and proportionate, having regard to the particular storage use of the building.

## **Response times**

95.In considering the question of proportionality the Secretary of State has additionally noted that part of the Council's case is that the warehouse unit is located in a category 'C' area for the purpose of determining the attendance of the fire service. As a result the number of appliances which the fire service is required to provide will potentially be significantly less, and the maximum time for their attendance significantly longer, than that which would be required in a city or other built up area.

96.The Secretary of State accepts that such issues are of direct relevance to operational matters in any particular fire incident. However, he considers that even if X were situated in a higher category area in terms of shorter response times it must be recognised that a fire crew may already be on call, or crew and appliances may not be at full strength because of some earlier call. The Secretary of State therefore considers that it is not appropriate to take attendance and response times into account when considering the appropriate and proportionate design of the fire precautions to be required.

## **Other appeals**

97.Finally, the Secretary of State notes that both parties have sought to substantiate their case by referring to previous decisions on Local Act cases concerned with the provision or otherwise of smoke venting and/or sprinkler systems in single storey buildings. In particular, your client has referred to some appeals where the Secretary of State accepted the non-provision of sprinklers in some cases by upholding the appeal. However, the Secretary of State is of course under a duty to consider each case on its individual merits, and the circumstances of any one case may not necessarily be applicable to any other.

## **Systems 'A' and 'B'**

98.Having accepted the Council's case for a sprinkler system to be installed to work in conjunction with your client's smoke venting system, the Secretary of State has proceeded to consider the issues raised in the parties' evidence regarding the technical and practical advantages and disadvantages of the two systems proposed by the Council (viz: 'A' a roof level and in-rack sprinkler system, and 'B' an ESFR sprinkler system with lattice or grid shelving; both as specified on pages 7 and 8 of the Council's further submissions of the 1 June 1998). In doing so he has taken into account the purpose of the proposed precautions, namely to help contain a fire; to help prevent the top levels of storage being ignited by radiation from, or immersion in, the hot gas layer along the roof; and to help enhance conditions which will assist the fire brigade. The Secretary of State has also taken into account the arguments pertaining to the technical differences in systems 'A' and 'B'; the effects which

these might have on your client's operation; and the reasonableness of the requirement in terms of potential cost viz a viz actual effectiveness of the two systems.

99. The Secretary of State has noted that System 'A' could present difficulties in terms of your client's operations. He has also noted your client's estimate of a resulting 40 per cent reduction in storage capacity - although he notes the surprise of the Council at this high percentage. Finally, he has noted that the Council appear to be content from their submissions of 1 June 1998 to accept the practical difficulties of System 'A' anticipated by your client and that in the circumstances consider that System 'B' would be acceptable.

100. Although the Secretary of State considers there could be additional benefits to the protection of the building and property by the use of System 'A', he equally recognises that the practical balance of advantage rests with System 'B'. He has therefore sought to examine further the appropriateness of System 'B'.

101. The Secretary of State has noted in particular the Council's specification for System 'B' that the existing shelving should be replaced by open (i.e. grid or lattice) shelving to ensure that water from the ESFR sprinkler system will penetrate to the lower racks. The ESFR system is designed to deliver large volumes of water which, with open shelving, could potentially penetrate to the lower shelves. However, the efficacy of open shelving depends upon the type of materials or goods being stored on them. In the Secretary of State's view in this case the rolls of carpet placed along any replacement open shelving would not necessarily ensure any significant water penetration to the lower shelves because of the potential for the rolls to block this process. A fire is more likely to start in the lower racks and in such circumstances it follows that it would be shielded from water penetration by the obstructive effect of rolls of carpet on the open shelving above.

102. The Secretary of State has therefore gone on to consider how effective the ESFR system would be if the solid shelving was retained. He considers that the ESFR sprinklers operating in conjunction with the proposed smoke ventilation system should be capable of suitably containing the fire within the rack where the fire started; and - provided the storage area on the top shelves is not covered in any way - would also drench the top levels of storage thus ensuring that they were neither ignited by radiation from, nor immersed in, the hot gas layer which would otherwise build up along the roof. In addition, the Secretary of State considers that such an ESFR system, combined with the relatively wide aisles between the racks, should enhance conditions for fire fighting operations.

103. The Secretary of State has therefore concluded, taking account of the reasonableness of the requirement for sprinklers, that the ESFR sprinkler system with the retained solid shelving would be an acceptable solution in the circumstances, and that on grounds of reasonableness there is not a significant enough case for the Council to require the changing of the shelving from solid to open. This would add to the cost and be a potentially disruptive

exercise; and although the Secretary of State would not consider putting cost above safety, he considers it would not in all the circumstances be reasonable to require this.

### **The Secretary of State's decision**

104. The Secretary of State has fully and carefully considered all the submissions and rebuttals provided by both parties and their respective experts. He has concluded as follows. He considers that your client's proposals to install an automatic fire detection system and a venting system comprising two smoke reservoirs, based on a 5 Mw 3m x 3m fire, but without provision for a fire extinguishing system by way of some form of sprinkler system, will not meet the intentions of the Council. The Secretary of State has examined those intentions in the context of the powers conferred on the Council in the 1986 Act and considers those pertaining to the building to be appropriate and proportionate under the particular circumstances. He has therefore concluded that the Council were justified in refusing your application under section 37(2) of the Berkshire Act 1986.

105. The Secretary of State has gone on to consider what would be the most appropriate sprinkler system having regard to the reasonableness of that requirement; the efficacy of the system in use; and the particular circumstances of the case. He has determined that the principle of the Council's System 'B' which comprises an ESFR system would be the most appropriate in the circumstances; but he does not consider it would be appropriate to require the replacement (as specified in System 'B') of the solid shelving by open shelving.

106. In exercise of his discretion contained in Section 37(6) of the Berkshire Act 1986, the Secretary of State therefore hereby varies the decision of the Council by approving your client's proposals as deposited under Section 37(2) of the Act to install:

- a smoke venting system based on a 5 Mw 3m x 3m fire and comprising two separate smoke reservoirs; and
- an automatic fire detection system incorporating auto dialling to the emergency services;

subject to the conditions that:

- (i) your client shall install an ESFR sprinkler system as specified in the Council's System 'B' but with the exception that the system shall operate on the basis of retention of the existing solid shelving, and that the storage area provided by the top shelves shall remain uncovered; and
- (ii) the ESFR system shall incorporate a flow switch (as well as a manual switch) for the automatic operation of the smoke venting system.