

Date: 28/07/98

Ref: 45/1/146

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.

Text of DETR determination letter dated 28 July 1998 (Reference: 45/1/146)

**Building Act 1984 - Section 16 (10)(a)
Determination of compliance with Requirement B4(2) (External Fire Spread) of the Building Regulations 1991 (as amended) in respect of the acceptability of the construction of a roof on an entrance building to a Zoo**

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 subject of this determination is the proposed top layer to the roof covering to a recently constructed, mainly two storey, structure which is provided with a monopitch roof. The building has a volume of 4387 cubic metres. The accommodation forms the entrance to the zoo, the ground floor comprising of a visitors centre with associated toilet facilities and a shop. Offices, staff facilities and a library are positioned on the first floor level. The plant room is located at mezzanine level immediately between the first floor and the upper roof level.

5. The roof structure, which is supported on steel purlins, is made up in layers and consists of:

- (i) profiled metal decking
- (ii) proprietary underlayer on 50mm deep insulation on a vapour barrier
- (iii) proprietary rootbar
- (iv) two layers of proprietary foil
- (v) 62mm deep reservoir board
- (vi) 100mm thick plant substrate.

The top layer has a growing composition comprising of a sprayed application of sedum, herbs and shrubs, which is stated by you to be of a succulent nature.

6.To the west of the site boundary there is a large car park associated with a superstore which are built on a former landfill site. The lamp standards for the superstore site also act as ventilation columns to dissipate ground borne methane gas and a number of these are situated immediately along the boundary. The north west corner of the zoos visitor centre is within 11.2 metres of this boundary.

7.These proposals were the subject of a full plans application. In the absence of a UK standard and BS designation, the borough were not prepared to accept that the composition of the roof covering would be in compliance with Requirement B4 and Regulation 7. Because the roof covering would eventually consist solely of plant matter the Borough were concerned that its performance could not be established and therefore rejected the proposals on grounds of non-compliance with Requirement B4 (External fire spread) and Regulation 7 (Materials and workmanship). However you contend that this form of roof covering satisfies German standards and has a DIN classification. On this basis, you believe that the roof covering is in compliance with Requirement B4(2) and it is in this respect that you have applied for this determination.

The applicant's case

8.By way of background you explain that your client has three main objectives - conservation, education, and recreation. The entrance building forms part of a development programme; and part of the application of this programme is to provide alternative construction solutions to emphasise conservation objectives and provide education for the visitors. You consider the green roof system clearly contributes to this message.

9.You state that the borough council's contention is that there is no British Standard or Agreement Certificate for the growing composition to be sprayed on the roof, thus its fire designation cannot be clarified. You further confirm that the borough council have agreed that they judge the construction of the roof up to the growing composition, as compliant with the Building Regulations and does not provide any fire risk. You state that the growing composition consists of a sprayed application of sedum, herbs and shrubs, ie plants of a succulent nature.

10.You state that you have installed an irrigation system within the new roof construction which will help to ensure that sufficient moisture is maintained within the plant substrate, so as to enhance plant growth. You confirm that if deemed necessary you are willing to upgrade the irrigation system by installing a time clock and associated pump arrangement which would discharge water at regular pre-planned intervals. You go on to state that the zoos own horticultural department will be responsible for the maintenance of

the roof, ensuring that suitable conditions exist and unwanted weeds and grass are controlled.

11. You state that the appointed consulting engineers for the existing superstore, on the adjoining site, have confirmed that they do not believe that the proximity of the methane vent stacks, positioned on the shared boundary line, constitutes any safety risk.

The borough council's case

12. The borough council rejected the plans on the grounds that no evidence had been submitted which showed that the roof covering complied with Requirement B4. The borough council cite the provisions relating to external fire spread, contained within *Section 14 of Approved Document B (Fire safety)*, which limits the use, near a boundary, of roof coverings which will not give adequate protection against the spread of fire over them.

13. The borough council state that the designation of a roof covering is dependent upon its performance when tested in accordance with the methods specified in *BS 476 Part 3:1958*. The borough council concluded that as no test of the roof covering had taken place, in accordance with this British Standard, it was unable to establish its performance. The borough council therefore used the designation referring to thatch and wood shingles as the nearest equivalent to this roof covering when utilising *Table 17 (within Approved Document B)* in an attempt to assess the allowable minimum distance the roof should be from a relevant boundary. The borough council noted that the building was to be positioned less than 12 metres away from the relevant boundary and that note (1) in column 2 of Table 17 states that such a roof covering (ie thatch or wood shingles) this close to a relevant boundary is not acceptable on a building of this purpose group where it is larger than 1500 cubic metres. They concluded that this criterion applied and that the proposed roof covering was unacceptable.

14. The borough council view the roof covering as being a possible safety risk to the building occupants in the event of fire spreading unseen across the roof. They have also expressed concern that further ignitable materials could be introduced onto the roof by the airborne seeding of grass and weeds. Moreover, the borough council also consider there to be a slight risk that any possible fire might be fuelled by methane gas in the atmosphere surrounding the building.

15. The borough council also cite Regulation 7 in support of their judgement for rejecting the application. They argue that because of the lack of conformity to an acceptable standard, the final roof covering may not be viewed as a proper material in accordance with the requirements.

The department's view

16. In the department's view the main question for this determination concerns the proposal to apply by spray sedum, herbs and shrubs of a succulent nature to form the final roof covering.

17. The department accepts that *paragraph 14.4 of Approved Document B* recommends, in conjunction with *Table 17*, the minimum distances which various forms of roof covering may be sited from a relevant boundary. These distances take into account the performance of a roof covering in relation to their classification under BS 476:Part 3: 1958.

18. The department also accepts that no fire test has been carried out in accordance with BS 476: Part 3: 1958 on this particular roof covering. However you state that the roof covering includes an irrigation system which would ensure that sufficient moisture is maintained within the plant substrate, so as to enhance growth. The department also notes that a 62mm deep reservoir board is also positioned within the construction, which will further aid water retention capabilities of the roof construction.

19. You point out that the roof will be maintained by the zoos own horticultural department, who will ensure that all unwanted weeds and grasses are controlled. The department has noted the objectives of your client in respect of conservation, education and recreation, and accepts that these are unlikely to be met if the roof is allowed to dry out and die.

20. The department has noted that the roof covering in parts is 11.200m away from a relevant boundary and that the nearest methane vent is 14.500m away. However, the department has also noted the opinion of the appointed engineer for the adjacent development which is that the vents do not pose a risk to the building.

21. The department has considered all the relevant circumstances of this case and is of the opinion that the roof covering complies with the functional requirements of Requirement B4(2). This opinion is reflected in the guidance to *section 4 of Approved Document B* which states that in the Secretary of States view the requirements of B4 will be met if the roof is constructed so that the risk of spread of flame and/or fire penetration from an external source is restricted. The extent to which this is necessary is dependent on the use of the building, its distance from the boundary and, in some cases, its height.

The determination

22. The Secretary of State has given careful consideration to the particular circumstances of this case and the arguments of both parties. He has concluded, and hereby determines that your proposal to apply a growing composition comprising of a sprayed application of sedum, herbs and shrubs to the five layers of roofing specified in your proposals complies with Requirement B4(2) (External fire spread) of Schedule 1 to the Building Regulations 1991 (as amended).