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

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

Determination of compliance with Requirement B1 (Means of warning and escape) of the Building Regulations 2000 in respect of a loft conversion

The proposed work

4. The proposed building work comprises an extension to a two storey, two bedroom, end of terrace house to form a third bedroom and en suite bathroom at a new third storey level (ie second floor level). The dwelling is approximately 12.5m x 3.75m in width. The main part of the house has a pitched roof with a small flat roof over the first floor bathroom at the rear.

5. The new accommodation will be created in part within the roof space (ie the loft) and in part by opening up the rear slope of the roof and building up the rear elevation to within 200mm of the ridge. This rear elevation will contain french doors opening on to the flat roof at the rear. Two top hung roof windows - one above the other - are to be installed the front slope of the roof above the en suite bathroom. The lower window is to be of appropriate dimensions and position to form an escape window suitable for assisted escape.

6. The ground floor of the house contains an open plan living and dining area, with a kitchen, also open to the rest of the floor, occupying the rear third of the depth of the property. The first floor contains two bedrooms - one in the front and the other to the rear - with the bathroom at the back located above the kitchen. The ground to first floor stair rises in the middle of the open plan area at right angles to the party wall. It is proposed that this open plan arrangement shall be retained.

7. The proposed new stair from first to second floor will rise in parallel with the existing stairwell. It will be protected at first floor landing level with a thirty minute fire resistant self-closing door with smoke seals and enclosed by a new stud and plaster board wall to achieve thirty minutes fire resistance. The existing bedroom doors are to be up-graded with self-closing devices.

8. Mains wired smoke alarms are proposed in the existing bedrooms and the new third bedroom, together with one at first floor landing level and a single smoke alarm provided centrally at ground floor level so that all the ground floor accommodation is within a 7.5m radius from the alarm.

9. To compensate for the omission of enclosure of the stair at ground floor level, two fast response concealed sprinkler heads are to be provided in an existing ceiling bulkhead, above the route from the foot of the stair to the front door, and close to the flank wall furthest from the foot of the stair. The first sprinkler is located opposite the foot of the stair; the second is within 2m of the front door. The sprinkler system is to be designed in accordance with the code of practice *BS DD251: 2000 Sprinkler systems for residential and domestic occupancies*.

10. These proposals formed the basis of a full plans application which was rejected by the Borough Council on grounds, inter alia, that your proposals incorporated the retention of the open plan arrangement at ground floor level and would therefore result in non-compliance with Requirement B1 of the Building Regulations. The rejection notice stated that to achieve compliance a protected stair would be required to the final exit.

11. However, your client wishes to retain the open plan arrangement at ground floor level and instead of a protected escape route from the foot of the stair to the front door, you have proposed a domestic sprinkler system which in the event of a fire, you believe would maintain a safe escape route. You believe that this would be in compliance with Requirement B1 and it is in respect of this question that you have applied for a determination.

The applicant's case

12. You accept that your client's proposal to maintain an open plan arrangement at ground floor level means that you are unable to comply with what you consider to be prescriptive standards in *Approved Document B(Fire safety)*. However, you believe that your proposed alternative approach would be equally effective in providing protection to the occupants of the house in the event of a fire and you have provided documentation supporting this approach.

13. You are proposing to install a domestic sprinkler system, to protect the escape route at ground floor level, which will be designed in accordance with the recommendations of *BS DD251: 2000*. You have referred to Annex A of this code of practice which allows for partial coverage of the dwelling where sprinklers are being used as a means of meeting the fire safety requirements of the Building Regulations. In your view, in the event of an emergency, the sprinklers would extinguish a fire in this area to maintain a safe escape route.

The Borough Council's case

14. The Borough Council takes the view that your proposals do not comply with Requirement B1 as they are not in accordance with the guidance in *paragraph 2.18 of Approved Document B*. The Council accepts that the inclusion of sprinklers may be a solution for meeting the requirements of the Building Regulations in some instances where open plan arrangements are desirable due to the configuration of the dwelling and restricted availability of space.

15. However, the Borough Council points out that in this case your plans show an open plan arrangement whereby the principal escape route from the second floor will discharge on to an open plan living room at ground floor level. As a consequence there will be neither a fire resisting enclosure at ground floor level that extends to a final exit, nor the alternative of access to at least two escape routes at ground level delivering to final exits and separated from each other by fire resisting construction.

The Secretary of State's consideration

16. The Secretary of State takes the view that the main consideration in this case is the safety of the occupants of the new second floor if a fire occurs on the ground floor. In the case of a loft conversion to an existing two storey dwelling-house it is considered reasonable to demonstrate that adequate means of escape would be achieved by the provision of a primary escape route supplemented by an assisted escape route from the habitable room at second floor level.

17. When following this approach it would normally be necessary to upgrade existing stairway enclosures by making existing doors self-closing and by replacing conventional glass with fire resisting glass. If, as in this case, there is no existing enclosure at one or more levels in the house then additional doors and partitions necessary to complete the enclosure should be provided. However, in this case you are proposing to make the doors self-closing only at the first floor level, leaving the ground floor as existing in an open plan arrangement.

18. You consider that your proposal for the installation of smoke alarms covering all of the habitable rooms, in addition to a domestic sprinkler system intended to cover the route from the foot of the stair to the front door, is an adequate alternative to the physical enclosure of the stairway at ground floor level. In the Secretary of State's view sprinkler protection could be used as a compensatory feature in cases where the normal fire protection measures expected for a loft conversion cannot be provided. However, each case must be judged on its merits.

19. In this case sprinklers are to be provided as an alternative to the provision of a physical enclosure between the foot of the stair and the front door. Such an enclosure would normally serve to protect the primary escape route from the upper stories from the smoke and flames generated by a fire at ground floor level. The risk to be addressed, therefore, is the effect of a fire occurring anywhere in the ground floor accommodation.

20. In this context, where sprinkler protection is proposed as a compensatory feature it is very important to ensure that the system is adequately designed and installed to an appropriate specification. The Secretary of State considers that your proposals fail to meet these criteria for the following reasons:

(i) Your proposals provide for only two sprinkler heads intended to cover the route from the foot of the stair to the front door. No attempt has been made to provide for the suppression of fire elsewhere on the ground floor or to address the additional risks presented by the open plan kitchen.

(ii) Moreover, you have proposed to use a concealed type sprinkler head which are generally slower in response than conventional pendant type heads. To ensure that the sprinkler system would react to a fire as quickly as possible the sprinkler heads would need to be selected carefully and be of the quick response type (as defined in *BSEN 12259 pt 1: Fixed fire-fighting systems. Components for sprinkler and water spray systems. Sprinklers*).

(iii) Although you have also proposed mains wired smoke alarms as part of your plans, at ground floor level you have provided only a single alarm located so that all the ground floor accommodation is within a 7.5m radius from the alarm. Whilst this radius is in accordance with current good practice it is important to recognise that a better standard can be achieved by increasing the number of alarms and that this may be necessary where alternative solutions to normal practice are being proposed.

The determination

21. The Secretary of State has given careful consideration to the particular circumstances of this case and the arguments presented by both parties. On the basis of your proposals as submitted he does not consider that your specific proposals in respect of the number, location, and technical specification of the smoke alarms and sprinkler system provide an adequate compensation for the omission of enclosure of the stair and final exit at ground floor level. He has therefore concluded that your proposals do not make adequate provision for safe escape and hereby determines that they do not comply with Requirement B1 (Means of warning and escape) of Schedule 1 to the Building Regulations 2000.