

Date: 30/09/98

Ref: 45/1/171

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

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

Determination of compliance with Requirement K1 (Stairs and Ramps) of the Building Regulations 1991 (as amended) in respect of the replacement of a spiral stair by a ships ladder in a two storey flat

The proposed work

4. The building to which the proposed work relates is an existing two storey, conversion flat forming part of a larger domestic building of several storeys and comprising two bedrooms and a bathroom at basement level, and a kitchen and lounge at ground floor level. The two levels are connected by a small, internal spiral stair. Both levels have access to the outside, so the spiral stair is not considered to be an escape stair.

5. The proposed work is to replace the spiral stair, which is regarded as unsatisfactory, by a ships ladder. The existing spiral stair is approximately 600mm wide (ie radius). The ships ladder would have a pitch of 55 degrees, a rise of 186mm, and a tread of 220mm.

6. Because of the need to structurally trim the upper floor to install the ships ladder the work falls to be considered as a material alteration under Regulation 3(2) and (3). Under Regulation 4(2) after all building work has been completed the building is required to comply with the relevant requirements of Schedule 1 to the Building Regulations, or where it did not comply, is required to be no more unsatisfactory. In this particular case it is Requirement K1 which falls for consideration under Regulation 4(2).

7. These proposals were the subject of a full plans application which was rejected by the Borough Council on grounds of non-compliance with the Requirement A1 and Requirement K1. The notice of rejection stated that although the width of the existing spiral stair was not desirable it would be deemed acceptable given that it does not form part of an escape route; whereas the proposed ships ladder was not considered to comply with the requirements of Requirement K1. However, you take the view that in this particular instance the existing spiral stair is far too small and tight, and that the ships ladder of 55 degree pitch would be safer than this. It is in respect of this question that you have applied for a determination.

The applicant's case

8. Your client purchased the leasehold interest in the flat last year. He finds the present spiral stair too tight and potentially dangerous; and in your view it should never have been installed. Your client would have preferred to have a conventional stair installed but there is insufficient headroom and space with the result that it is considered that the only solution is a ships ladder with a pitch of 55 degrees.

9. Aside from the question of minimum going and tread dimensions, the Borough Council has also raised the question of the proposed guarding to the ships ladder and the fact that it is climbable. However, you argue that it is unlikely that the flat will be occupied by a family with children because it is too small and has no garden. Moreover, your client is a professional person who uses the flat only when he is in London.

The Local Authority's case

10. In support of their judgement that your proposals do not comply with Requirement K1 the Borough Council has drawn on the guidance in *Approved Document K (Stairs, ramps and guards)[1992 edition]* and have made the points summarised below (the numbers in brackets refer to the relevant paragraphs in the Approved Document):

(i) fixed ladders are only recommended for loft conversions with one habitable room, and then only when there is insufficient space without alteration for a normal stair (1.25)

(ii) the going (ie nosing to nosing) is 130mm compared to the minimum recommended dimension of 220mm (1.4)

(iii) $g(\text{going}) + 2 \times r(\text{rise})$ is less than the recommended minimum value of 550mm (1.5)

(iv) the pitch of 55 degrees exceeds the recommended maximum of 42 degrees for a private stair(1.4)

(v) the gaps between the treads exceed 100mm (1.9)

(vi) the guarding is less than the recommended 900mm above the fixed line (1.27), and has gaps through which a 100mm diameter sphere could pass (1.29)

(vii) the guarding is climbable (1.29).

There is now a *1998 edition of Approved Document K (Protection from falling, collision and impact)* but given the date of determination of your application the Borough Council referred to the 1992 edition.

11. By virtue of the fact that consideration of your building work falls for consideration under Regulation 4(2) the Borough Council states that notwithstanding the issue of the compliance of the proposed ships ladder in respect of Requirement K1, the issue is whether or not the ladder would be as safe or safer than the spiral staircase which exists. In their opinion a spiral staircase is safer than ladders; but they accept that they have no evidence to support this.

The Department's view

12. In this case the Department takes the view that the question in the first instance is whether the proposed ships ladder would be in conformity with Requirement K1. If it would not be, the question in the second instance is whether the ships ladder would be better, or no more unsatisfactory, in relation to compliance with Requirement K1 than the existing spiral stair.

13. The Borough Council has presented a list of detailed design issues which seek to demonstrate that the proposed ships ladder does not accord with the guidance in *Approved Document K*. Although some of these points refer to the separate guidance for stairs and ladders the Department accepts that the Borough Council has raised issues of principle which need to be considered.

14. Taking first the question of safety in the specification of the going of a stair or ladder, the Departments views are as follows. Normal stairs are used on pitches ranging from about 26 degrees to 42 degrees and ladders are normally used from about 55 degrees to 90 degrees of pitch. Pitches between and on the borders of these ranges are the most difficult to design for safety. Ladders differ from stairs mainly in that the user will generally ascend and descend facing the ladder, but in the pitch zone between a stair and a ladder (ie the lower pitch of a ladder where a ship's ladder is used) users may find it practical to, and therefore opt to, descend facing away from the ladder. The small going of a ships ladder will present a hazard for a user descending facing away from the ladder because the tread above will act as a stop on the back of the leg resulting in only the back and heel part of the users foot being able to be placed on the tread below. However, the lower the pitch the greater will be the area of the user's foot and heel on the tread below. Thus ship's ladders designed at the low pitch end of the range may encourage user-descent facing outward but the inherent design of a ships ladder will always result in the user's foot only having partial contact with each tread if used in this descent mode. On this basis a low pitch ship's ladder can be considered unsafe and therefore undesirable.

15. Turning to the question of the existing spiral stairs, the Department notes that *Approved Document K* contains little guidance but refers instead to the detail provided in BS 5395: Part 2: 1984, *Code of Practice for the design of helical and spiral stairs*. This Standard recommends that a main spiral stair in a dwelling should have a minimum clear width of 800mm. It also recommends that a spiral stair of 600mm width should only be used to serve one room in a dwelling or similar situation. For the purposes of this case the Department has assumed that the spiral stair in question conforms to the design guidance given in the BS.

16. The Borough Council have correctly noted that the *1992 edition of Approved Document K* removed the guidance on width of stairs because it was not considered to be a safety issue. However, in the Department's view this should not be taken as applying to spiral stairs because, unlike straight stairs, the width has a direct relationship to the going which in turn will affect safety. In the Department's view, therefore, the existing spiral stair in this case is below the recommended minimum width. The question at issue therefore resolves itself into one of whether an unsatisfactory ships ladder will be at least as safe as the existing unsatisfactory spiral stair.

17. As already noted, the stair or ladder installed will be the sole means of moving internally between two principal areas of accommodation within the flat - i.e. the kitchen and lounge above, and the bedrooms and bathroom below. Aside from the obvious advantages of safety presented by a straight stair, such a stair would also enable bulky goods to be carried up and down between the two levels. However, whatever design option might be used, the option of moving such objects via the external route would remain. On the assumption that the design constraints on installing a straight stair are immutable, the main safety difference between the use of a spiral stair and a ships ladder centre on the consequence of a mis-step on the two types of stairs. A mis-step on the ships ladder is likely to lead to a direct downward fall; whereas, a mis-step on the spiral stair is less likely to lead to a direct fall because the user will be likely to gravitate towards the guarding which would offer them the opportunity of regaining their balance.

18. Finally, with regard to the question of guarding and design safety for children the Department's views are as follows. Although your client claims that the flat would be unlikely to be occupied by a family because it is too small and has no garden, the fact remains that the flat has two bedrooms and the absence of a garden makes the accommodation no different from the majority of flats. The proposals must therefore be taken to relate to domestic accommodation in which it is conceivable that children might live, or which they certainly might visit and stay in from time to time. Compliance with Requirement K1 can be a matter of life safety. This concern is heightened where it is reasonable to assume that children of any age may either reside in or have occasion to use the flat and therefore use the proposed ships ladder.

The Determination

19. The Secretary of State has given careful consideration to the particular circumstances of this case and the arguments put forward by both parties. He has sympathy with your clients objective of wanting to improve on the safety afforded by the present spiral stairs. However, he has concluded that although the existing spiral stair is below the minimum width and may well be unsatisfactory in safety terms, the ships ladder does not show compliance with Requirement K1 and may indeed be less safe than the spiral. The Secretary of State therefore determines that your proposal for a ships ladder does not comply with Requirement K1 of Schedule 1 to the Building Regulations 1991 Act (as amended); and, moreover, does not satisfy Regulation 4(2) of the Building Regulations 1991 (as amended).