IN THE FIRST-TIER TRIBUNAL
PROPERTY CHAMBER
(RESIDENTIAL PROPERTY)

Case ref: LON/00BJ/LSC/0286

In the Matter of: The Landlord and Tenant Act 1985; Section 27A

B E T W E E N:

THE MAYOR AND BURGESSES OF THE
LONDON BOROUGH OF WANDSWORTH

Applicant/ Landlord

and

VARIOUS LEASEHOLDERS OF
100 HIGH-RISE RESIDENTIAL BLOCKS
IN THE LONDON BOROUGH OF WANDSWORTH

Respondents/ Leaseholders

APPENDIX [17 – Final Regulatory Impact Assessment, DCLG, December 2006]

TO THE STATEMENT OF CASE
ON BEHALF OF
THE LONDON BROUGH OF WANDSWORTH

Communities and Local Government

Final Regulatory Impact Assessment

Changes to Part B (Fire safety) *of the Building Regulations 2000 (as amended) and Approved Document B*

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Final Regulatory Impact Assessment

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December 2006
Department for Communities and Local Government : London

On 5th May 2006 the responsibilities of the Office of the Deputy Prime Minister (ODPM) transferred to the Department for Communities and Local Government.

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Changes to Part B *(Fire safety)* of the Building Regulations 2000 (as amended) and Approved Document B

Purpose and intended effect

OBJECTIVE

1. The objective is to improve the overall level of fire safety in buildings in England and Wales where relevant building work is carried out by reducing the size and consequence of fires and thereby saving lives and preventing injuries.

2. This Regulatory Impact Assessment (RIA) discusses changes to the Building Regulations 2000 (as amended) and to Approved Document B (AD B), which provides practical guidance on implementing the functional requirements of the Regulations with respect to Part B: *Fire safety*. The review which led to these changes drew upon the findings of recent research and experience and took account of a number of legislative and procedural changes.

3. The changes include a number of deregulatory and better regulation measures, for example, by providing alternatives that permit greater flexibility and encourage innovation, or by clarifying or simplifying existing guidance. The changes also seek to assist with the implementation of the Regulatory Reform (Fire Safety) Order 2005 (RR(FS)O), which came into force on 1 October 2006. This is a major deregulatory measure which has consolidated over 100 pieces of existing legislation that contain fire safety provisions, and also removed the building certification requirement by repealing the Fire Precautions Act 1971.

4. A draft AD B incorporating proposed amendments, together with a supporting draft RIA, was made available for public consultation from July 2005 to November 2005[1]. In the light of comments received the proposed changes were reviewed and some further amendments made. In addition, the Government commissioned additional research to provide a firm evidence base to ensure that the measures proposed are taken forward on a cost-effective and evidential basis. A final version of AD B incorporating all the amendments has been prepared and can be accessed via www.communities.gov.uk/buildingregs.

5. The changes will affect all those dealing with relevant building work (typically the erection, extension or material alteration of a building) in England and Wales. (Separate legislation applies in Scotland and Northern Ireland.) This may include architects, developers, builders, Building Control Bodies (BCBs), manufacturers, property owners/occupiers, care home providers, insurers etc.

1 A copy of the Part B public consultation package can be found at: www.communities.gov.uk/index.asp?id=1131416

6. The preliminary stages of this review of Part B were undertaken by the former Office of the Deputy Prime Minister (ODPM). The development of Building Regulations in England and Wales is now undertaken by Communities and Local Government.

STRUCTURE OF THE RIA

7. This RIA is intended to set out the impacts, including costs and benefits, of amending AD B and is presented under the following headings:

- the **purpose and intended effect** that such amendments might have (pages 1 to 8);
- details of relevant **consultation** (pages 8 to 9)
- the **options** that have been considered (pages 9 to 13);
- the **sectors and groups affected** which includes a **race equality assessment, health impact assessment** and **rural considerations** (pages 13 to 14);
- the **benefits** (social, economic and environmental) that could result (pages 14 to 23);
- the **costs** (social, economic and environmental) that may be incurred, in particular the compliance costs for builders, building owners, developers etc., as well as other costs that may accrue (pages 23 to 32);
- the **small firms' impact test** (pages 32 to 35);
- **enforcement and sanctions** (page 35);
- proposals for **implementation and delivery plan** (page 35); and;
- arrangements for **monitoring and review** (page 35).

8. A **summary and recommendations** is given on pages 36 to 38.

9. Further information is set out in Annexes A to E on pages 39 to 58.

BACKGROUND

Building Regulations and Part B

10. The Building Regulations 2000 (as amended) apply to most **building work** in England and Wales, typically the erection, extension or material alteration of a building. (Separate legislation applies in Scotland and Northern Ireland.) **The Building Regulations do not, therefore, affect the majority of existing buildings.** Building Regulations may be made for a number of purposes but Regulation 8 currently limits the locus of many of the Parts, including Part B, to **ensuring reasonable standards of health and safety of persons in and around buildings**.

11. The five existing requirements of Part B are written in a functional manner requiring the building work to achieve a performance that is adequate, reasonable or appropriate. These are broadly:

B1. To provide appropriate means of warning and escape

B2. To adequately resist internal fire spread (linings)

B3. To adequately resist internal fire spread (structure)

B4. To adequately resist external fire spread

B5. To provide reasonable access and facilities for the fire and rescue service.

12. It is for the relevant BCB, and ultimately the Courts, to decide whether any specific piece of building work meets these requirements on a case by case basis. The guidance given in AD B has been approved by the Secretary of State as being one method that, if followed, will tend to show compliance with the statutory requirements. However, other methods may be used if the BCB is satisfied that in that case the functional requirements have been met, thus preserving design freedoms.

13. AD B was last subject to significant technical review during the period 1997 to 1999 and came into force on 1 July 2000. This edition was subsequently amended in 2002 to give visible recognition to the new European harmonised product standards and the supporting test standards produced in support of the Construction Products Directive. These amendments came into force on 1 March 2003. A consolidated version is available at: www.planningportal.gov.uk/approveddocuments.

14. However, this did not amend any of the existing technical guidance in the 2000 edition of AD B. A major review of the wider technical elements of the fire safety aspects of the Building Regulations and AD B was announced in the Government's White Paper "*Our Fire and Rescue Service*". This set out the Government's desire to reduce the number of fires that currently occur by moving much more towards a fire prevention strategy. The Building Regulations are seen as one of the 'main strands' for delivery of this strategy, alongside Community Fire Safety and the Reform of Fire Law.

15. At the time of updating AD B to incorporate the new European fire test methods and classifications, some stakeholders suggested that the production of smoke and burning droplets from construction products used to form walls and ceilings be controlled within the AD. Provisions in AD B for greater control of smoke production and burning droplets from these construction products were assessed using a cost-benefit analysis[2], but the results showed that they could not be justified. The costs to industry in terms of moving to alternative products and re-engineering existing products, as well as the burden of additional testing and certification, amounted to many millions of pounds, whereas the benefits in terms of reduction in risk of death and injury were minimal. As a result the amendment was not pursued further in developing the revised AD B or this RIA.

2 *"The production of smoke and burning droplets from products used to form ceiling linings"*. BRE Report for ODPM. For availability see Footnote 3.

Developments in the fire safety arena

16. Since the 2000 edition was published there were a number of developments which have been taken into account when reviewing AD B. These include:

- changes in construction methods and trends (e.g. a trend towards much larger single storey warehouses);
- actual incidences of fire;
- relevant research findings;
- new or amended standards (e.g. a new standard for residential sprinklers, BS9251); and;
- changes to other policies and legislation which have an effect on fire safety in buildings (for example, DfES has prepared its own, more detailed guidance on fire safety in schools).

17. In particular, ODPM commissioned a number of pieces of research to look at various aspects of fire safety such as the effectiveness of sprinklers in residential premises and the ventilation of common access corridors in blocks of flats. Also, following the World Trade Centre incident of September 11 2001, ODPM commissioned a number of pieces of research concerned with fire safety in tall buildings, as directed by the Building Disaster Assessment Group (BDAG). The results of all this research have been considered when preparing this revision of AD B.

18. All of the above developments are discussed further in Annex A.

Stakeholder engagement

19. ODPM commissioned a "Backward Look"[3] to evaluate the implementation of the 2000 edition of AD B (see paragraph 13). It identified 55 changes in the AD (from a total of over 600) as being significant. Around 80 stakeholders from various types of organisation (e.g. clients, contractors, designers, manufacturers, Building Control Bodies, a Fire Authority, trade associations and professional organisations) were interviewed about these changes to help assess their impact in terms of economy, safety and workload. One of the key results was that stakeholders felt it would be helpful if significant changes were highlighted and that greater explanation of the changes should be provided to show how old and new guidance differ. In particular, BCBs requested help in explaining to clients why specific changes were required. Another important result was that understanding the implications of a change has a cost even if the change is a simple alteration.

20. To complement the Backward Look, ODPM also commissioned a "Forward Look"[3] to determine what issues a new AD B should address. In all over 200 people including architects, building control surveyors, fire service officers, fire consultants, local authorities and manufacturers contributed through a series of regional workshops and an electronic web-based questionnaire. Although fire safety is a broad subject, three strong common themes did emerge:

3 The "Backward Look", the "Forward Look", BDAG research and other research supporting this revision to Part B can all be obtained or accessed from: www.bre.co.uk/adb

(a) **fire safety management** and particularly the importance of ensuring that information about the fire safety design of the building is passed on to the person responsible for its continued management;

(b) the important role of **residential sprinklers**; and;

(c) the need for improved guidance with respect to **means of escape for disabled people**.

21. The findings of both of these evaluation exercises have been taken into account in the review of AD B.

22. One further recommendation of the Forward Look, was to separate the current AD B into two: one to deal with dwellings, and another to deal with buildings other than dwellings. This reflects the fact that the audiences for the two documents are often very different and, as AD B is one of the most extensive and technically complex ADs, it was considered that this would make the guidance easier to understand, particularly for many (typically smaller) construction companies who specialise in domestic work. A similar approach has been adopted with the current edition of AD L *Conservation of fuel and power*.

23. This proposed split was broadly welcomed by respondents to the public consultation (further details of the consultation are given in paragraphs 31 to 35). One further change suggested by respondents was to move the guidance on blocks of flats[4] into the AD covering buildings other than dwellings. This is because the fire safety provisions for these types of buildings are often quite complex and can form part of a 'mixed use' building so they are more closely aligned to those for non-domestic buildings. This grouping of building types is also consistent with the proposed changes to fire safety legislation discussed in paragraph 3 since the provisions of the Regulatory Reform (Fire Safety) Order apply to both non-domestic buildings and the common areas of blocks of flats. This approach has been adopted for the final versions of the ADs and as a consequence the guidance for dwellinghouses should be much more accessible for those firms that focus on domestic work.

RISK ASSESSMENT – OVERVIEW

24. During the 5-year period from 1995 to 1999 the annual number of accidental building fires (i.e. not arson) in England and Wales remained fairly constant at about 70,000. Over the last five years the number of such fires has fallen until in 2004 (the most recent year for which data is available) the number of such fires was just over 60,000. During this whole 10-year period the proportion of such fires in dwellings has remained fairly constant at about 66 to 69%.

25. Since the early 1980s the number of fatalities in accidental building fires in England and Wales has fallen steadily. In the mid 1990s the annual number of deaths was about 420 but since then it has fallen again – albeit in an erratic fashion – until in 2004 the number of recorded deaths was 245. The proportion of these deaths that occurred in dwellings has remained reasonably constant at 90-95%.

4 In the consultation it had been proposed that the term apartment and multi-storey apartment would be used to refer to flat and maisonette respectively. However, following consultation it was felt that it would be preferable to retain the word "flat" (as this is defined in the Building Act 1984 (as amended)) but to refer to "multi-storey flat" rather than "maisonette", to avoid confusion over its alternative usage.

26. Conversely, since the 1980s the number of non-fatal casualties in accidental building fires in England & Wales rose substantially reaching a peak of about 12,000 in 1997. Much of this rise results from the considerable increase in such casualties in dwelling fires, and can be attributed to an increase in the number of "precautionary check-ups" arising from the referral of less seriously injured people to hospital[5]. Since 1997 the number of non-fatal casualties has fallen steadily until in 2004 it numbered just under 9,300. In much the same way as fatalities the number of non-fatal injuries is dominated by dwelling fires in which about 90% of all injuries are recorded – a figure that has remained fairly constant for the last 10 years.

27. Indications are that the falling trend for the number of building fires is levelling out, and that the number of deaths in such fires is still subject to rises (e.g. in 2003 there was a sharp increase compared to 2002 before there was a subsequent fall in 2004). Therefore, if no further measures are introduced, the numbers of fires and fire casualties is unlikely to continue to fall.

28. More detailed risk assessment is given in Annex B where individual changes to AD B are considered.

Consultation

WITHIN GOVERNMENT

29. This review of the Building Regulations has been conducted by Communities and Local Government in conjunction with the Building Regulations Advisory Committee (BRAC) who are appointed as independent statutory advisors to the Secretary of State. The Part B Technical Working Party (WP) steering the review includes Members of BRAC and representatives from both the Business and Community Safety Forum and the Practioners' Forum. It also includes a number of seconded experts and personnel from Communities and Local Government and the devolved administrations. Further, this RIA has been subject to review by Communities and Local Government's Better Regulation Unit, Cabinet Office Better Regulation Executive and the DTI's Small Business Service.

PUBLIC CONSULTATION

30. The changes discussed in this RIA were originally developed from issues raised during consultation with a broad cross-section of the industry through both the "Backward Look" and the "Forward Look" (see paragraphs 19 and 20 respectively). The proposals were then assessed by the Part B WP which includes a number of members drawn from industries directly affected by the proposed changes, including the Fire and Rescue Service.

5 Non-fatal casualties consist of persons requiring medical treatment beyond first aid given at the scene of the fire and those sent to hospital or advised to see a doctor for a check-up or observation (whether or not people actually do). People sent to hospital or advised to see a doctor as a precaution, but having no obvious injury, are recorded as "precautionary check-ups". Further details can be found in the Home Office publication *'Fire statistics: A user guide for research'*.

31. As mentioned in paragraph 4 above, these proposals were then subject to a 4-month public consultation. Nearly 1000 hard copies of the consultation package were distributed and the documents were also available electronically on the ODPM website. In support of the written consultation, ODPM officials also participated in 18 separate speaking engagements at which the proposed changes were discussed, reaching a total audience of around 1,000 delegates.

32. There were around 240 formal responses to the Part B Consultation paper with two-thirds of respondents coming from the fire and rescue services, BCBs, trade bodies, manufacturers and consultants. The remaining third of respondents were made up of academic/professional organisations, individuals and other organisations. There were also around 40 informal responses from other sources (e.g. a number of people submitted comments through their Member of Parliament).

33. In broad terms the vast majority of the proposed amendments were welcomed by respondents with a large number receiving very high approval ratings. There were a few exceptions though where a more mixed response was received. These were the proposal to remove the provision relating to self-closing devices from internal doors within dwellings, the introduction of a maximum unsprinklered compartment size for single storey storage buildings, the potential change to the maximum unsprinklered compartment size for single storey retail buildings and the intention to refer to Building Bulletin 100 (BB100) with respect to schools.

34. Consultees' responses have been reviewed by Communities and Local Government in conjunction with the Part B WP. In a number of cases, particularly those where consultees had the most concerns or where the costs and benefits were less easily identified, Communities and Local Government commissioned further research projects to try to provide as firm a base as possible for taking forward the proposals on a cost-effective and evidential basis. The results of this research are freely available[3] and have been used to further refine the proposals. Specific changes to proposals in the light of the consultation are discussed below, and they are also summarised in Table 1.

35. A summary of the results of the public consultation exercise is available on the Communities and Local Government website at www.communities.gov.uk/index.asp?id=1131416

Options

36. The options considered were:

Option 1. Do nothing

Option 2. Encourage industry to draw up a voluntary code of practice and promote best practice

Option 3. Implement changes to AD B as proposed

37. Option 1 is self-explanatory.

38. Option 2 would involve working within the context of existing Government dissemination programmes related to fire safety. It would involve running road shows, producing guidance material, holding seminars etc to encourage the industry to adopt the changes with regard to fire safety. The focus of this activity would be those changes considered under Option 3.

39. Option 3 consists of a series of changes to AD B, which fall into four main categories:

(i) responses to changes in construction practice or to fire experiences that indicate that present guidance may not give sufficient protection;

(ii) updating to take account of changes to British and European Standards as well as other technical references;

(iii) updating to take account of changes to associated legislation; and

(iv) deregulatory and/or better regulatory measures that clarify an area that experience has shown is subject to misunderstanding, or to lessen a particular provision in the existing guidance that is now considered to be onerous.

40. Accordingly, a number of significant changes have been proposed for each building purpose group[6], and these are summarised in Table 1. **All, except the proposed introduction of a legislative requirement on the provision of fire safety information for non-domestic buildings and blocks of flats, take the form of amendments to the guidance in AD B**. The rationale for proposing these measures and the risks they are designed to address are discussed in Annex B.

41. It should be noted that, although all these proposals are being considered as a package of measures for the purposes of this RIA, **they are not mutually exclusive, i.e. one or more of them could be disregarded or amended**.

42. Furthermore, the consultation document clearly identified a number of proposed amendments that ODPM was "**minded**" to make subject to detailed information on the potential impacts, particularly costs and benefits, received as part of the consultation process. Some of these proposals have also been subject to the additional research referred to above in paragraph 34. As a consequence many of these have been taken forward, with the remainder being either amended or rejected. Table 1 summarises the changes to all of the proposals (not just the minded to ones) in the light of the consultation.

43. As well as the amendments set out in Table 1, there are a number of amendments which will provide **alternatives to existing provisions**. For example, the potential to provide sprinkler protection instead of an alternative escape route where currently provided in both houses (typically 4 storeys and above) and multi-storey flats. These new options will provide greater design freedoms and promote innovation and may, in some cases, produce a cost saving compared to current alternatives. However, as their use will be optional, the potential impacts have not been formally appraised in the Costs and Benefits sections of this RIA.

6 **Purpose group** is a classification of a building according to the purpose to which it is intended to be put. These are given in Appendix D of AD B.

44. It should also be noted that the requirements of Part B (specifically B3(3) internal fire spread structure) have also been amended to include reference to the use of suitable automatic suppression systems appropriate to the size and intended use of the building. This is to give explicit recognition to the use of such systems and, in itself, will not have an impact. However, where relevant, the impact of additional or amended guidance with respect to such systems in AD B is covered in this RIA.

45. When considering the potential costs and benefits of these measures it should be noted that the changes will only apply to **new** applications for building work (i.e. submission of a building notice, full plans or an initial notice) after these amendments come into force. The changes will predominantly impact upon new buildings, currently estimated to be about 1% of current building stock per annum. The rate of construction of new dwellings and flats is obtained from DTI and NHBC housing statistics for 2005, and for non-domestic buildings this data has been obtained from analysis of planning applications in 2005/06.

46. It should be noted that there will still be some cost of dissemination as described in Option 2. However, this will take the form of a one-off programme of events at the time that the revised AD B is published to inform people of the changes, rather than a rolling programme designed to encourage improvements.

Table 1: **Summary of amendments to Part B broken down by purpose group**

Purpose Group	*Building type*	*Proposed amendment*	*Change since consultation*
1(a)	Flats *As noted in paragraph 23 the guidance for blocks of flats is now contained in the AD for buildings other than dwellinghouses.*	Remove provision for any form of self-closing device on doors within flats, other than doors opening onto common escape routes.	'Minded' to proposal – adopted. See paragraphs B3 to B6.
		Revise guidance on the provision of ventilation systems suitable for the protection of stairways.	No change.
		Provide sprinkler protection in new high-rise (30m+) blocks of flats.	'Minded' to proposal – adopted.
1(b) and 1(c)	Dwellinghouses	Remove provision for any form of self-closing device on doors within a dwellinghouse, other than doors to garages.	'Minded' to proposal – adopted. See paragraphs B3 to B6.
		Clarify that a suitable system of smoke alarms should be provided where an extension is proposed.	No change.
		Remove separate loft conversion guidance so that, with respect to the provisions for means of escape, all "loft conversions" in 2-storey houses are treated in the same way as a new 3-storey house.	Minded' to proposal – adopted but **amended to allow for some alternative approaches.**
		Amend guidance on provision of 100mm upstand between a house and an integral garage so that the garage floor can be laid to fall as an alternative.	**New provision.** This proposal was not in the consultation but is de-regulatory. See paragraphs B20 to B24.

Table 1: **Summary of amendments to Part B broken down by purpose group *(continued)***			
Purpose Group	*Building type*	*Proposed amendment*	*Change since consultation*
1(a), (b) and (c)	All Dwellings	Include a provision for an additional smoke alarm in the main bedroom.	This proposal has been rejected. Although many respondents welcomed this proposal, further research since the consultation has shown that it is not cost-effective. See paragraphs B10 to B15.
2(a)	Residential, institutional (e.g. hospital, home, school, establishment used for living accommodation or care of elderly or disabled people etc.)	Introduce a provision for sprinkler protection in residential care homes.	'Minded' to proposal – amended to **either free-swing closing devices on bedroom doors or sprinklers but, if more than one bed per bedroom, sprinklers only**. See paragraphs B25 to B29.
3, 4 & 5	Office (e.g. buildings used for administration, handling money, communication etc.) Shop and Commercial (e.g. buildings used for retail trade or business etc.) Assembly and Recreation (e.g. studios, museums, galleries, stations, clubs, cinemas etc.)	Include a provision for a series of measures regarding inclusive design on: (i) Warning for people with impaired hearing; (ii) Management procedures to assist escape of all people, including those with disabilities; (iii) Level thresholds for final exits; (iv) Refuges for disabled people awaiting assistance; (v) Emergency voice communication (EVC) to facilitate evacuation of people waiting in refuges.	No change.
5	Assembly and Recreation	Provision for fire fighting shafts[7] for buildings over 7.5m and under 18m tall *[Note removal of this provision to buildings falling into Purpose Group 7(a)]*.	'Minded' to proposal – adopted.
6 & 7(a)	Industrial (e.g. factories and other premises used for manufacturing etc.) Storage (e.g. place for storage or deposit of goods)	Introduce a (national) maximum unsprinklered compartment size for single storey warehouses of 440,000m^3. Repeal the relevant parts of Local Acts.	Amended to a limit of **20,000m^2 and/or 18m high**. Repeal to be taken forward as part of a wider review of Local Acts. See paragraphs B31 to B34.
7(a)	Storage	Provision for ½-hour fire protection to all corridors in warehouses.	'Minded' to proposal – rejected, but **self-storage buildings re-classified as Shop & Commercial (Purpose Group 4)** See paragraphs B35 to B39.
		Remove provision for fire fighting shafts in buildings over 7.5m and less than 18m tall *[Note application of this provision to buildings falling into Purpose Group 5]*.	No change.
2 to 7	All buildings other than dwellings	Discount an escape stair in tall (30m+) buildings with phased evacuation.	'Minded' to proposal – amended: the threshold has been **raised to 45m** and **alternatives** offered to provide **flexibility**.

7 A protected enclosure (i.e. enclosed in fire-resisting construction) containing a firefighting stair, firefighting lobbies, fire-resistant doors, ventilation and, where provided, a firefighting lift, together with its machine room.

Table 1: **Summary of amendments to Part B broken down by purpose group *(continued)***			
Purpose Group	*Building type*	*Proposed amendment*	*Change since consultation*
1(a) and 2 to 7	All buildings other than dwellinghouses	**Require** the provision of information on fire safety design and procedures for operating and maintaining a building's fire protective measures.	This proposal is to be adopted, and the **requirement extended to blocks of flats** which is consistent with the scope of provisions of the Regulatory Reform (Fire Safety) Order as discussed in paragraph 23.
		Provide dry rising mains in escape stairs in all unsprinklered buildings between 18 and 30m tall.	'Minded' to proposal – amended to retain **provision of two firefighting shafts where floor area is more than 900m²** in addition to the additional dry risers in escape stairs.
		Design compartment walls to take account of the deflections that occur in the structural frame of the building during a fire.	No change.
1 to 7	All buildings	Enhance provision for cavity closure around windows and doors and introduce provision for cavity barriers in floor voids.	No change.

Sectors and groups affected

OVERVIEW

47. Both Option 3 and, to a lesser extent, Option 2 would impose burdens across all sectors of the building industry (developers, builders, manufacturers etc.) and on clients who are requiring relevant building work to be carried out. There will clearly be some burdens on builders and developers who would have to provide additional fire protection and smoke control in some buildings.

48. The proposal to remove the provision to install self-closing devices on doors in flats (excluding doors to common areas) and dwellinghouses (except for doors to integral garages) is likely to impose the greatest burden on manufacturers of such devices. In addition, the proposals generally may have a disproportionate impact on large scale non-domestic developments (e.g. office blocks) as the long timescale for procurement, design and construction mean that changes to AD B need to be anticipated. However, some proposals would provide alternative approaches for compliance which would give builders and developers greater design scope (e.g. sprinklers could be provided instead of an alternative escape route from floors above 7.5m ground level in dwellinghouses).

49. BCBs, along with the rest of the industry, including the Fire and Rescue Service, would have to bear the cost of training and familiarisation with the proposed new guidance. Although this is regarded as a general business expense rather than a burden the costs have been included in this RIA as a one-off cost in Year 1 (see also paragraphs 120 to 122). In addition, the intention of many of the proposed amendments is to clarify guidance and to make compliance more straightforward which should result in a more effective and efficient building consent process.

50. There could also be impacts on charities and the voluntary sector in respect of the measures to improve fire safety in residential care homes. Attempts have been made to lessen this burden by offering two alternatives: sprinklers or free-swing closing doors. Although the latter option will not reduce risks by as much as a general blanket provision to install sprinklers, the provision of free-swing closing doors will be more cost-effective (see paragraphs 98 to 100).

51. Overall, the proposed changes are unlikely to have a significant adverse effect on the industry, nor would they place an unfair burden on small businesses. However, firms spend a significant amount of time keeping up to date with revised and new regulations, and the cost of this is likely to be proportionately higher for small firms than large ones.

RACE EQUALITY ASSESSMENT

52. The race equality impacts of the proposals have been assessed and it is felt that they would not lead to a disproportionate impact on any particular racial group.

HEALTH IMPACT ASSESSMENT

53. Option 1 would have no health impacts (see paragraph 55). Options 2 and 3 would have health impacts which are discussed in general terms in paragraphs 56 to 58 (Option 2) and paragraphs 59 to 61 (Option 3), and in specific terms for Option 3 in paragraphs 69 to 87.

RURAL CONSIDERATIONS

54. The proposed amendments under each option have been reviewed using the Countryside Agency's rural proofing checklist and it is felt that they would not lead to a disproportionate impact on people living, businesses located or developments in rural areas.

Benefits

OPTION 1

55. Option 1 would produce no additional benefits. In fact, it would not keep pace with changes in risk and developments in technology. It would also leave Part B out of step with related regulations, standards and guidance which would cause confusion within the industry. Indeed, the industry suggested a number of areas that AD B needed to consider in the "Forward Look" (see paragraph 20) and these would not be addressed. Further, the potential benefits of Options 2 and 3 would be foregone because the lives saved and injuries prevented under these options would not be realised.

OPTION 2

56. Option 2 would produce benefits, but these are likely to be small because only a small proportion of the industry – probably that in the public sector – is likely to adopt the changes. This is supported by experience gained from, for example, DTI's Construction Best Practice (now Constructing Excellence) which suggests that only a small proportion (about 20%) of the target market has used the Programme, although this figure is much higher (nearly half) in respect of public sector clients. Given that life safety should have equal priority across all building types and sectors an option that is not implemented uniformly may give rise to problems.

57. A further difficulty is that AD B is an extensive document addressing a disparate range of building issues and hence is of interest to a very broad audience. Given the multitude of proposed changes it is difficult to target guidance on best practice easily and cost-effectively.

58. The benefits produced would be predominantly social, in terms of a reduction in the incidence of fires as well as a reduction in risk of fatality and injury attributable to fire. There would also be some economic and environmental benefits. Further details on the nature of all three impacts are discussed under Option 3.

OPTION 3

59. Option 3 would produce the greatest benefits which would be mostly social but would also have some associated economic and environmental benefits. It has the advantage over Option 2 in that it provides clear and consistent guidance to all parties. In tall blocks of flats the provision of sprinklers would lead to reductions in deaths and injuries, and the improved guidance on ventilation systems to control smoke in such buildings will also lead to risk reductions and alternative approaches. Similarly, sprinklers and free-swing closing doors in new residential care homes would have a positive benefit. In non-domestic buildings the provisions would assist in occupants escaping from fires and help the Fire and Rescue Service to affect search and rescue and, consequently, limit fire spread.

Social benefits

60. The basic approach for assessing social benefits is to determine the annual risks of death and injury per accommodation unit, estimate how the proposed revision would reduce these risks and then calculate the number of lives saved and injuries prevented over 25 years in a set of buildings constructed during that time. (The specific risks being addressed by each of the proposals are described in Annex B.) A 25-year period has been considered simply to allow a measurable number of lives saved to be realised, as well as providing a common basis for comparing each of the proposals. **The consultation document considered a period of 10 years** but, given the estimated life of a building and the materials and products used within it, a 25-year period was considered to be more appropriate. This is also consistent with the 25-year period used for investment appraisal in the HM Treasury "Green Book". In order to calculate a financial benefit, deaths and injuries have been converted into a cash sum using standard valuation figures agreed with

Communities and Local Government economists. Specifically, the value of life used was £1.32m and value of injury was £40.8k[8] (both are based on Department for Transport figures expressed at 2006 prices).

61. There can be other social benefits associated with reducing the severity and incidence of fires, such as reducing the distress and disruption caused by fire (e.g. the upset at the loss of a person's home and belongings etc.). These may be considerable but are far harder to quantify and therefore a figure has not been included in this RIA. They are also outside the current locus of Part B (see paragraph 10) and so can only be of secondary consideration when deciding whether a measure should be introduced under the Building Regulations, as the case must be made on health and safety grounds.

Economic benefits

62. The economic benefits of Option 3 could also potentially be quite extensive. For example, although property protection is generally addressed through insurance, by introducing certain life safety measures, the Building Regulations may indirectly help to reduce damage to property. These impacts are also beyond the current locus of Part B (and, wider, beyond the current locus of much of the Building Regulations, see paragraph 10) and so, as explained in paragraph 61, are of secondary consideration. However, such benefits have been included in this RIA where it has been possible to identify and quantify them.

63. There may be substantial savings in terms of avoiding the economic loss associated with buildings and their contents damaged or destroyed by fire. For example, a recent Government publication[9] estimated the average property loss per fire at £7,300 for domestic properties and £27,700 per fire for commercial properties. Particular examples of this are cavity barriers and sprinklers which can prevent extensive fire spread and hence damage. Where relevant these savings from avoided property damage are estimated. In the case of very large fires the negative impact on the local community/business could be significant. Where the amendments give alternative approaches to meeting the requirements of Part B (see paragraph 43) this could produce cost savings in terms of reduced construction costs. They also provide greater design freedoms and promote further innovation.

Environmental benefits

64. The environmental benefits of Option 3 would arise from further limiting the size and hence the consequence of fires. Combustion products, including smoke and toxic substances, from fires can not only lead to localised deterioration in air quality (which can cause respiratory symptoms, including asthma) but also larger, particularly industrial fires, may have a widespread effect both on people and on the natural environment. Water usage as a result of action to extinguish fires depletes resources and the run-off can lead to pollution of water courses.

65. It is estimated that some 40 fires per year result in a Category 1 or 2 pollution incident[10]. Fewer, smaller fires would reduce water usage and help to reduce air and water borne pollution. Although these impacts cannot be considered directly within the current locus of

8 Note: the value of injury is a weighted average of 'serious' and 'minor' injuries. The draft RIA in the consultation used a value of £58k but this new value reflects the inclusion of 'precautionary checks' (see Footnote 5) which are deemed to have a negligible value.

9 ODPM "The economic costs of fire: estimates for 2004" (April 2006). Can be obtained from www.communities.gov.uk/index.asp?id=1165171

10 Source: Environment Agency Pollution Incident Statistics 2001-2003.

Part B (see paragraphs 10 and 61) they are a secondary consideration. However, such benefits are extremely difficult to quantify and so figures have not been included in this RIA, although they are likely to be small in comparison to the social benefits.

Compliance

66. All relevant building work must comply with the Building Regulations, compliance is therefore assumed to be 100%. However, because the Regulations are written in a functional, non-prescriptive way, it may be that compliance is achieved through means other than those set out in the guidance in AD B, such as those discussed in this RIA.

67. There is no mechanism under the Building Regulations for ensuring ongoing compliance once consent is given. However, the majority of the measures discussed in this RIA are physical measures often involving design changes which would be virtually impossible, or very expensive, to remove at a later date. For example, if a tall building is designed on the basis that a stair is discounted for means of escape purposes (see paragraph 84), the building would need to have wider stairs or additional stairs. Furthermore, for those buildings covered by the RR(FS)O (i.e. non-domestic buildings and the common parts of blocks of flats) there is ongoing control by the Fire and Rescue Service, and for domestic properties (i.e. dwellinghouses and individual flats) there are mechanisms under the Housing Act 2004, enforceable by the local authority. The benefit of such physical measures is therefore assumed to be ongoing.

68. One area where we are aware that physical measures provided under the Building Regulations are often removed at a later date is that of self-closing devices on doors within dwellings. It is for this reason that the guidance on installing such devices is to be removed for the majority of situations (see paragraph 69). The associated benefits of this are the annual cost savings of not fitting such devices in the future. It is expected that, without the need to fit them to comply with the Building Regulations, the majority of people will choose not to install such devices.

Benefits by Amendment

Remove provision for self-closing devices in flats (except doors opening onto common escape routes) and dwellinghouses (except garage doors)

69. The 2000 edition of AD B provides that most doors within flats, dwellinghouses with 3 or more storeys and in 2-storey dwelling houses where the loft is being converted, should be fitted with self-closing devices (see Annex B, paragraphs B3 to B6). The most common type of door closer is a spring or chain device which is concealed in the door jamb and the door itself. The material and labour cost for installing a self-closing device on doors is about £13 so the total cost per dwelling is likely to be about £40-70. Therefore, based on current construction rates (see paragraph 45), it is estimated that the **saving** arising from the removal of this provision is about £8.2m per year. The resources saved would be used to better target life safety measures through other means.

Amend the provisions for smoke ventilation of common access areas in blocks of flats

70. The number of flats constructed annually has been rising over the last five years in response to the need to increase housing densities. Flats are now the most popular form of new housing in England & Wales and make up nearly a half (47%) of all new dwellings[11].

11 Prior to 2000 detached houses were the most common form of construction making up nearly 45% of all dwellings with flats making up only about 16%. Since 2000 the proportion of detached houses has fallen, and in 2005 made up about 17% of new dwellings.

Based on these figures and the data presented in paragraph B9 it is estimated that installing improved ventilation systems in blocks of flats could reduce the risk of death or injury by about a half, thereby saving 19 lives and preventing some 1,200 injuries over 25 years (which is equivalent to a benefit of £3.0m per year). There may also be a small economic benefit in terms of a net cost saving (see paragraph 93).

100mm garage upstands

71. Research, as described in paragraphs B20 to B24, shows that although the existing provision for 100mm upstand between a house and an integral garage did prevent the flow of fuel (liquid or vapour) into the house, a similar benefit could be achieved by allowing the fuel to flow away from the house by laying the floor to fall. Therefore, an alternative approach of laying the garage floor to fall is to be offered. This is effectively de-regulatory and will provide potential economic and social benefits whilst being risk neutral. It will also provide greater flexibility, may result in cost savings and may also improve access to and from the house, particularly for those with mobility impairments.

Provide for a suitable system of smoke alarms where an extension is proposed

72. This is a clarification of existing guidance. The current edition of AD B is widely interpreted to "require" this already so the amendment would produce no significant additional benefit in terms of reductions in casualties. However, the clarification would ensure that there is a consistency of approach across England and Wales and would reduce risks of deaths and injury in those areas where the guidance was not previously interpreted in this way. Following the consultation exercise the guidance has been further clarified in respect of single storey extensions.

Remove the separate guidance on loft conversions in dwellinghouses

73. This removes the separate means of escape guidance in AD B in relation to loft conversions in existing 2-storey dwellinghouses, with respect to means of escape, so that they would be treated in the same way as new 3-storey dwellinghouses, thereby removing confusion and ensuring consistency of approach. It also overcomes the difficult issue of allowing people to wait in a burning dwelling to be rescued. However, following the consultation, the guidance has been further amended to allow for the possible retention of existing doors (albeit some upgrading may be needed) in some circumstances, where they are of historical importance or architectural merit and to give additional guidance with respect to existing open-plan ground floor arrangements and the potential for suppression as a compensatory feature. There may be potential for small cost savings depending on the size and layout of individual properties (see paragraph 95) but it is expected to produce no significant economic benefits.

Provide for sprinkler protection in high-rise blocks of flats

74. The introduction of a provision for sprinkler protection in high-rise blocks of flats (i.e. 30m+ which is assumed to be 10-11 storeys or more in height) was subject to a preliminary analysis which showed that it would be cost-effective[12]. Extension of this analysis suggests that providing sprinklers in such high-rise flats could save 18 lives and prevent 280 injuries over a 25-year period which is equivalent to a benefit of £1.4m per year. (NB this does not include the provision of sprinklers in the common areas.) In addition to this, it is estimated that there will be economic benefit arising from reduced property damage which, based on the unit costs in paragraph 63, amounts to £0.84m per year over the 25-year period.

12 "The effectiveness of sprinklers in residential premises". BRE Report for ODPM. For availability see Footnote 3.

Provision of sprinklers or free-swing closing doors in residential care homes

75. The risks associated with fires in residential care homes (i.e. those for the elderly, children and disabled persons) are discussed in paragraphs B25 to B29. In order to reduce these risks it is proposed to provide sprinklers or free-swing closing doors depending on bedroom occupancy. Both of these alternatives will limit the spread of fire and hence reduce casualties. Based on detailed analysis of fire statistics and experimental studies it is suggested that sprinklers will have a slightly greater impact in terms of risk reduction compared to free-swing closing doors[13]. Specifically, it is estimated that both approaches will save about 5-7 lives and prevent 57-77 injuries over a 25-year period. The exact figures will depend on the levels of occupancy of bedrooms, but they are likely to be at the lower end of these ranges as single bed occupancy appears significantly more popular (over 95% of homes currently being built are designed on the basis of single bed occupancy) and so free-swing closing doors are likely be more prevalent. This is equivalent to an annual benefit of £0.9-1.2m. In addition to this, it is estimated that there will be economic benefit arising from reduced property damage which, based on the unit costs in paragraph 63, amounts to £3.0–4.0m per year over the 25-year period.

Provide for cavity barriers in dwellings and non-dwellings

76. This change provides for cavity barriers in floor voids and enhances cavity closure to ensure adequate fire protection. With respect to floor voids the buildings affected are likely to be the in the non-domestic sector, but not exclusively. For dwellings this would have most impact on cavity closure around windows and doors (see also paragraphs 101 and B45 to B46). As many buildings already adopt these measures it is considered that this would produce no significant additional benefit in terms of reductions in casualties. However, it would ensure consistency of approach and would reduce the risk of casualties (in particular the need for precautionary checks[5]) where not previously adopted.

Introduce provisions for measures on inclusive design

77. These changes bring AD B into line with the Approved Document that supports Part M to the Building Regulations[14] as well as other supporting British Standards. They are also required to help businesses meet their duties under Part III of the Disability Discrimination Act 1995 (DDA). As these changes will help to clarify the existing requirements of such legislation (and which will have been taken into account in their relevant RIAs) they are therefore considered to produce no significant **additional** benefits.

Amend the provisions for firefighting shafts

78. This change removes the provision for firefighting shafts in buildings over 7.5m high but less than 18m from Purpose Group 7(a) – storage buildings and introduces it to Purpose Group 5 – assembly and recreation buildings. On balance this would save lives because the casualty risk in Purpose Group 5 is considered to be greater and more buildings of this type are constructed each year (see paragraph B30). This therefore targets resources on those buildings with a greater risk of fire casualties. Using these figures it is suggested that overall this change could save 1 life and prevent 18 injuries over a period of 25 years.

13 "Sprinkler Effectiveness in Care Homes". BRE Report for ODPM. For availability see Footnote 3.

14 Part M *Access to and use of buildings*. Can be found on the Planning Portal at: www.planningportal.gov.uk/approveddocuments

Introduce a maximum unsprinklered compartment sizes for warehouses (Local Acts)

79. This amendment introduces a single national limit for the maximum unsprinklered compartment size for storage and industrial buildings, It is also proposed to eventually repeal (as part of a larger exercise) those sections of Local Acts which deal with this issue. This is a deregulatory move and would ensure consistency of approach across the England and Wales as well as remove local distortions in the location of such buildings. Specifically, there is some evidence to suggest that planned warehouses have been moved to areas where a local authority's requirements are less demanding than an adjacent authority[15]. Furthermore, whilst statistics indicate that this type of building is not currently a major risk, as warehouses are becoming increasingly large the risk of death and/or injury is increasing. The change can, therefore, also be seen as a proactive measure to reduce future risks of death and/or injury of occupants and firefighters alike.

80. The research reported in paragraphs B31 to B34 shows that a national unsprinklered compartment limit of 20,000m^2 in area and/or of 18m in height can be justified on cost-effectiveness grounds, and evidence suggests that 20-50% of large warehouses (greater than 10,000m^2) are often sprinklered anyway for insurance purposes. Therefore, this proposal would produce social and economic benefits in terms of reductions in injuries and property damage, and it will ensure clarity and consistency of approach across England and Wales.

Self-storage warehouses

81. The main concern here is the rapid growth of a new type of building ('self-storage' warehouses) where there are risks to both occupants and fire-fighters as discussed in paragraphs B35 to B39. Following consultation, the proposal to require ½-hour fire protection of corridors in all warehouses has been withdrawn. Instead self-storage facilities have been re-classifed as Purpose Group 4 (Shop and commercial). The main consequence of this would be the introduction of a maximum unsprinklered compartment size of 2,000m^2. It is difficult to quantify the benefits of this proposal as there are no historic figures for this type of building, therefore this can be regarded as a proactive measure to address these risks.

Improve guidance on provision of firefighting shafts in tall buildings

82. As noted in paragraph B42, the work on fire safety in tall buildings in the light of the World Trade Centre incident showed that firefighters may not be able to safely penetrate more than 34m into a 'compartment' to rescue a casualty. This conflicted with guidance in the 2000 edition of AD B which set out a minimum distance from any point on the floor to the fire main landing valve in a firefighting shaft to 60m. It also provided for a minimum number of firefighting shafts in a given floor area.

83. The new guidance on firefighting shafts and rising mains is based entirely on performance in terms of the distance that firefighters would need to lay hose although AD B retains a minimum provision for two shafts in buildings with a floor area greater than 900m^2. In addition to maintaining the 60m hose distance to a fire main in a firefighting shaft, the revised guidance also provides that no point on the floor should be more than 45m from a fire main in a protected shaft. This thereby goes some way towards addressing the potential

15 "Sprinkler installation trends and fire statistics for warehouse buildings". BRE Report for ODPM. For availability see Footnote 3.

conflict[16] over penetration distances. Other measures to assist firefighters in such situations include consideration of changes to fire-fighters' clothing, equipment and procedures, which are being considered elsewhere within Government and with the Fire and Rescue Service.

Discounting Stairs and Alternatives in Tall Buildings

84. The proposal to discount a stair in certain tall buildings (over 45m) with phased evacuation also stems from research undertaken in the light of the World Trade Centre incident. As noted in paragraph B42 the relationship between stair width and evacuation requirements of buildings has shown that there is a potential conflict between persons escaping down a stair and firefighters undertaking firefighting and search and rescue operations over several levels within the same stair enclosure. Whilst statistics indicate that these issues have not been a problem in the UK, there is evidence that they may increasingly become so in light of modern firefighting procedures and as the number of high rise buildings, and the height to which they are built, increases. This is, therefore, a proactive measure to ensure that, in the future, the means of escape for occupants and firefighting and search and rescue operations can be more effective. However, it should also be noted that discounting a stair is only one approach to resolving the potential conflict. The new guidance also allows for designers to adopt alternative solutions, including management based approaches, in consultation with the relevant fire and rescue service.

Design compartment walls to take account of deflections during a fire

85. The amendment incorporates into AD B existing guidance (BS5950 Part 8 and SCI Publication 288) already in the public domain. As a number of buildings already adopt these measures it is considered that this would produce no significant additional benefit in terms of reductions in casualties, however, it would ensure consistency of approach and would reduce the risk of casualties where not previously adopted.

Require the provision of information

86. It was originally proposed that for non-domestic buildings builders/ developers should be required to pass on information on fire safety design and procedures for operating and maintaining a building's fire protective measures to the owner/occupiers. However, in the light of comments from consultees, this requirement has been extended to the common parts of blocks of flats. This is in accordance with the fact that the guidance on blocks of flats has been moved to the non-domestic AD following the consultation (see paragraph 23 above). This would help to reduce risks of casualties that might occur as a result of failure to adopt appropriate management procedures for the design of the building or through failure to maintain protective measures (e.g. damaging a cavity barrier when running computer cabling). This is seen as particularly important given the greater use of, and increasing complexity of, fire engineering in building design.

87. There would also be potential cost savings as drawing this information together at the construction stage would reduce future costs of sourcing and assessing this information at a later date. (For example, if a different contractor/client is involved between base-build and fit-out, when a building is refurbished or when a new owner or tenant takes over.) It would particularly assist owner/occupiers in the production of their risk assessment under the terms of the RR(FS)O, which came into force on 1st October 2006.

16 "Economic impact of the inclusion of BDAG proposals for the provisions of firefighting equipment and facilities in the revised Part B of the Building Regulations". BRE Report for ODPM. For availability see Footnote 3.

Summary of benefits

88. The benefits arising from Option 3 are summarised in Table 2:

Table 2: **Benefits arising from Option 3**	
Proposed amendment to Part B	*Benefit*
Remove the provision for self-closing devices on doors.	Economic benefit (cost saving) of £8.2m per year. Better targeting of resources.
Revise guidance on the provision of ventilation systems suitable for the protection of common stairways in blocks of flats.	Social benefit. Save 19 lives and prevent 1,200 injuries over 25 years (equivalent to £3.0m per year). Possible small economic benefit (cost saving).
Clarify that a suitable system of smoke alarms may be needed where a domestic extension is proposed.	No significant additional benefit but should ensure consistency of approach.
Remove separate loft conversion guidance for means of escape so that loft conversions are treated as for a new 3-storey house. Additional guidance and flexibilities also provided.	No significant additional benefit. Removes confusion and ensures consistency of approach.
As an alternative to existing provision for 100mm upstand between a house and an integral garage, the garage floor can be laid to fall.	Potential economic and social benefits. De-regulatory and provides greater flexibility and may result in cost savings as well as improved access to and from house.
Sprinkler protection in new high-rise (30m+) blocks of flats.	Social benefit. Save 18 lives and prevent 280 injuries over 25 years (equivalent to £1.4m per year). There is also a benefit from reduced property damage which is estimated to be £0.84m per year over 25 years.
Enhance requirement so that cavity closure around windows and doors meets a reasonable standard of fire resistance.	Social benefit in terms of reducing disruption and distress caused by fire. Environmental and economic benefits in terms of reducing fire spread and hence fire size and fire damage.
Introduce provision for cavity barriers in floor voids.	No significant additional benefit (already largely done by industry) but should ensure consistency of approach.
Introduce a provision for sprinkler protection or free-swing closing doors in residential care homes.	Social benefit. **Sprinklers:** Save 7 lives and prevent 77 injuries over 25 years (equivalent to £0.47m per year). There is also a benefit from reduced property damage which is estimated to be £4.0m per year over 25 years. **Free-swing closing doors:** Save 5 lives and prevent 57 injuries over 25 years (equivalent to £0.35m per year). There is also a benefit from reduced property damage which is estimated to be £3.0m per year over 25 years.
Incorporate measures regarding inclusive design to bring Part B into line with other guidance.	No significant additional benefit but should ensure consistency of approach.
Provide firefighting shafts in buildings over 7.5m tall in PG 5 and remove this requirement for buildings falling into PG 7(a).	Social benefit. This is intended to better target resources and could save 1 life and prevent 18 injuries over 25 years (equivalent to £0.1m per year).

Table 2: **Benefits arising from Option 3 *(continued)***	
Proposed amendment to Part B	*Benefit*
Repeal parts of Local Acts requiring a maximum compartment size for unsprinklered storage and replace with a single national requirement of 20,000m^2 and/or 18m high.	Proactive as storage buildings become increasingly large and risks increase. Economic benefit from reduction in property damage. Deregulatory as national limit should ensure consistency of approach across England & Wales.
Assign self-storage warehouses to Purpose Group 4 (Shop and Commercial).	Social benefit. Proactive measure to address risks posed by a new type of building.
Improve guidance on firefighting shafts in tall buildings and provision of additional dry risers.	Social benefit. Proactive measure to improve future firefighting and search and rescue operations.
Discounting stairs and alternatives in tall (over 45m) buildings	Social benefit. Proactive measure to improve future firefighting and search and rescue operations.
Design compartment walls to take account of the deflections that occur during a fire, bringing AD B into line with other guidance.	No significant additional benefit but should ensure consistency of approach.
Introduce a **requirement** to provide information on fire safety design and procedures for operating and maintaining a relevant[17] building's fire protective measures.	Primarily economic benefit. Reduce future costs in sourcing and assessing this information/assist with preparation of risk assessments under RR(FS)O. Would have some social benefit by indirectly reducing risk of death/injury by ensuring all stages of design are joined up and ongoing maintenance/management is appropriate.
Total	**37 lives saved and 1,480 injuries prevented over a 25-year period (equivalent to £4.4m per year) and reductions in disruption and distress caused by fire in *dwellings*. Also, reduced property damage amounting to £0.84m per year.** **6-8 lives saved and 75-95 injuries prevented over a 25-year period (equivalent to £0.45-£0.57m per year) in *non-dwellings*. Also, reduced property damage amounting to £3.0-£4.0m per year.** **Proactive measures to improve future fire-fighting and search and rescue operations, and others which address increasing risks.** **Cost saving of £8.2m per year. Economic benefits also include a number of deregulatory proposals, better targeting of resources and potential cost savings from alternative approaches.** **Clarification and consistency of application.** **Environmental benefits.**

17 A relevant building is one to which the RR(FS)O applies. This includes non-domestic buildings and blocks of flats.

Costs

OPTION 1

89. Option 1 imposes no direct costs, although the benefits realised under Options 2 and 3 would be missed.

OPTION 2

90. Option 2 would impose some costs on Government to fund efforts to encourage industry to adopt best practice principles and produce guidance material to show how this could be achieved. Such costs are difficult to estimate but based on experience gained running comparable dissemination programmes this could amount to £0.5m per year. There would also be a cost on those parts of industry that choose to adopt best practice. As with the potential benefits (see paragraph 56), these costs are difficult to estimate since they depend on the take-up rate but they could amount to about a tenth of Option 3 and it is likely that take-up would be highest in the public sector.

OPTION 3

91. The key changes to Part B (Option 3) are summarised in Table 1. Overall it is considered that all costs are economic, i.e. there are no significant environmental or social costs associated with these measures. The costs for each of the amendments, as well as general costs of implementation, are discussed below.

Remove provision for self-closing devices in flats (except doors opening onto common escape routes) and dwellinghouses (except garage doors)

92. As discussed in paragraph 69 the annual national saving arising from the removal of this provision is about £8.2m. However, there may be an indirect economic impact on the manufacturers and installers of self-closing devices in terms of reduced turnover.

Amend the provisions for smoke ventilation of common access areas in blocks of flats

93. The key change is to amend the guidance on the installation of smoke ventilation in the common access areas of blocks of flats to provide more effective protection for occupants. The costs of using this new approach would be similar to existing practice and, in many cases, could provide a cost saving as it would increase the amount of floor space available per flat. However, as current practice already adopts many aspects of the amendments, any additional costs are unlikely to be significant.

Provide for a suitable system of smoke alarms where an extension is proposed

94. This should not lead to significant cost increases because (as noted in paragraph 72) this is a clarification, and the 2002 edition of Part B is widely interpreted to require this already. However, there may be a small cost in those locations which do not currently adopt this interpretation.

Remove the separate guidance on loft conversions in dwellinghouses

95. Currently all new-build 3-storey houses should have a protected stairway, i.e. all doors leading onto the stairway need to have 20-minute fire resistance and be fitted with self-closing devices. However, when converting an existing 2-storey house to a 3-storey house by means of a loft conversion, the current guidance allows for existing doors onto the stair to be retained, provided they are fitted with self-closing devices, the fire resistance of the floor/ceiling is improved to give ½-hour fire protection[18] and a suitable assisted escape window/rooflight is installed. This amendment would mean that this alternative approach would be removed and a protected stair would need to be provided in all cases.

96. For a typical 3-bedroom semi-detached house this would cost approximately £1,000 (assuming 5 additional[19] fire resisting doors at £200 per door), which is comparable to the current provision (i.e. £1,000 to increase the fire resistance of a 40m^2 floor and £300 for a suitable window)[20]. There may even be a small net saving overall, although in some cases the floor area might still require upgrading (at least in part) or more doors might be required depending on the design. It is therefore assumed that this amendment will impose no significant additional cost. Further, because the window will not be needed for assisted escape, the guidance allows for greater freedom in terms of the window's size and position. In those situations where the BCB considers it possible to retain existing doors there may be cost savings; and where suppression (eg sprinklers) is accepted as compensation for an existing open-plan ground floor arrangement, the cost is likely to be similar to the reinstatement of a protected stair.

Provide for sprinkler protection in high-rise blocks of flats

97. The cost to install sprinklers has been subject to a preliminary analysis[12]. Although flats now comprise the most popular form of dwelling type currently constructed (see paragraph 70) the number of so-called high-rise (30m+) blocks of flats is small, with NHBC data showing that less than 1% of its housing sites fall into this category. For blocks of flats the cost is about £900 per flat which amounts to an annual national compliance cost of £0.9m for those buildings 11 or more storeys in height. (NB Sprinklers would not be provided in common areas.)

Provision of sprinklers or free-swing closing doors in residential care homes

98. The preliminary analysis[12] showed that sprinkler costs vary widely. Based on the typical size of new-build care homes though the costs to install sprinklers is estimated to £6-7k for a small care home (e.g. those built for children and disabled persons) and £16-17k for a larger care home for the elderly. These costs include the provision of a tank and pump to ensure an adequate water supply. The annual compliance cost for all new residential care homes is estimated to be £2.9m including ongoing maintenance costs.

99. Discussions with industry suggest that the cost of free-swing closing doors is likely to be cheaper than sprinklers. The revised guidance would provide for a door to be fitted with a free-swing device (instead of a conventional self-closing device), which would also require an input/output device for connection to the to the fire alarm system. The total additional

18 For example, by fixing 12.5mm plasterboard to the ceiling – see "Increasing the fire resistance of existing timber floors" BRE Digest 208.

19 A fire-resistant door would need to be fitted to the loft conversion itself in either scenario.

20 The need to fit self-closing devices (or not) applies equally to new build 3-storey houses and loft conversions in existing 2-storey houses.

cost (including installation) would be about £150 per door. For a small care home therefore the additional cost of such devices would be about £2k and for a large care home the additional cost would be nearer £9k. This amounts to an annual compliance cost of £1.5m.

100. Both sprinklers and free-swing closing doors are calculated to be cost-effective. Although sprinklers have a slightly greater impact in terms of lives saved and injuries prevented (i.e. higher annual benefit) as shown in paragraph 75, free-swing closing doors are estimated to be more cost-effective because of their lower cost.

Provision of cavity barriers (Dwellings)

101. The amendments relating to cavity barriers in dwellings would have most impact on cavity closures around windows and doors. The vast majority of new houses are covered by the NHBC warranty or the Zurich building guarantee. Inspection[23] of their supporting technical guidance highlights a concern that installation of PVC-u and aluminium frames in timber frame construction does not provide adequate cavity closure in the event of a fire and so additional fire-resistant products would need to be installed. There would be no impact on traditional masonry construction regardless of the window and door frame type.

102. It is understood though that house builders are adopting the Robust Details guidance that supports Part L or equivalent and, as such, meet all the proposed requirements for cavity closure. Therefore, there would be no cost impact for new-build dwellings. There would however be an impact for PVC-u and aluminium window replacements in the existing stock where the dwelling is of timber framed construction.

103. Data from the English House Condition Survey (EHCS) suggests that just under 2% of dwellings in England and Wales have this form of construction. Data from FENSA[21] show that there are some 1.2 million replacements per year of which the vast majority are PVC-u and aluminium frames. Excluding like for like[22] replacements, it is therefore estimated that there are about 20,000 window/door replacements of this type in timber frame dwellings.

104. Assuming an average window size of 2.5m^2 gives an average window perimeter length of 6.3m, and, based on the total number of installations, this equates to a total cavity length of 136,000m per year which would require proper closure. Investigations on the cost of suitable materials amongst relevant suppliers suggest that this ranges from about £1 to £11 per linear metre so the total cost would be £130k to £1.4m (average £760k) per year. Given the relative ease of application of these materials it is assumed additional labour costs are minimal.

Cavity barriers (Buildings other than dwellings)

105. This amendment provides for cavity barriers in floor voids and enhances the provision of cavity closures to ensure adequate fire protection. Discussions[23] with industry indicated that cavity barriers are specified in new-build and refurbishment work, and that 20m spacing

21 See www.fensa.org.uk. FENSA is the scheme set up to ensure that the replacement external fenestration in dwellings meets the thermal requirements of the Building Regulations and that it makes the building no worse in terms of the other requirements of the Building Regulations, including Part B.

22 Replacing old PVC-u frames with new PVC-u frames would not necessarily make the compliance with the Building Regulations worse than at present and so the requirements of Part B would not generally apply.

23 "Impact assessment report for proposed changes to AD(B) on cavity barriers". BRE Report for ODPM. For availability see Footnote 3.

was often used in accordance with Loss Prevention Council (LPC) guidelines. Part E provisions for sound insulation between offices often meant that barriers were installed in floor voids to prevent sound transmission. Further, the changes would be unlikely to have much impact because the material used for sound insulation purposes is often already based on typical ½-hour fire protection designs (it is covered in foil to facilitate handling). In addition, such materials were also used where air conditioning systems were present to help improve distribution of air throughout the building.

106. In conclusion it is suggested that introducing the provision would have no significant cost impact in this case.

Introduce provisions for measures on inclusive design

107. These amendments bring AD B into line with the Approved Document that supports Part M to the Building Regulations[14] as well as other supporting British Standards and are also required to help businesses meet their duties under Part III of the Disability Discrimination Act 1995 (DDA). As these changes will help to clarify the existing requirements of such legislation (and which will have been taken into account in their relevant RIAs) they are therefore considered to impose no significant additional cost.

Amend the provisions for firefighting shafts

108. To construct a firefighting shaft in a building over 7.5m tall (but less than 18m tall) would cost about £100k. Such a shaft would consist of a firefighting lobby, fire-resistant doors, firefighting stairs and possibly a smoke shaft, but not necessarily a firefighting lift for access/means of escape. However, as the majority of such buildings would already have a stair, to upgrade this to a fire-fighting shaft would cost around £24k per building. The amendment so as to replace the provision of firefighting shafts in Purpose Group 7(a) buildings with those in Group 5 would produce some savings, but overall there would be a cost because of the greater number of buildings in Group 5 that are constructed. Based on the differences in current construction rates of these buildings of this height it is estimated that the annual compliance cost would be £1.5m.

Self-storage warehouses

109. The key consequence of reclassifying 'self-storage' type warehouses as Purpose Group 4 (Shop and Commercial) is that they will be restricted to a maximum unsprinklered compartment size of 2,000m^2. Data from the self-storage industry suggests that a typical storey floor area for such buildings is less than 2,000m^2 so in these buildings there will be no additional cost implications. However, if storey floor area is greater than 2,000m^2 then either the compartment would need to be divided with compartment walls (at a cost of perhaps £30-50k per building based on a unit cost[24] of £50-80 per m^2) or sprinklers would need to be installed (at a cost of about £120-180k per building based on a unit cost24 of £20-30 per m^2). Compartment walls are likely to be a cheaper and more appropriate option; further, sprinklers may not be that effective because of the potential for shielded fires in these types of buildings. Based on information from the industry it is estimated that about 30 of these buildings are constructed each year. If compartment walls are needed in all of these then the national cost would be £1.0 to £1.6m per year, or if sprinklers were used instead the national cost would be £3.6 to £5.4m per year.

24 Unit costs taken from Spon's Architects' and Builders' Price Book.

Maximum unsprinklered compartment sizes for warehouses (Local Acts)

110. Analysis of planning applications suggest that about 16% of warehouses and related industrial buildings are built in areas covered by Local Acts. Planning data suggests that about 50 such buildings are captured annually by the current compartment limit in Local Acts (see paragraph B31). Repealing the sections of Local Acts that have requirements for a maximum compartment size for unsprinklered storage space and replacing with a single, national limit at the higher threshold of 20,000m^2 will mean that about 10 buildings are captured each year. Removal of these Local Act provisions will produce savings, but these will be offset by the cost of providing sprinklers in large warehouses outside of those areas currently covered by the Local Acts. Based on a sprinkler cost of £30 per m^2 it is estimated that there could be a national cost of about £1.4m per year. Constructing compartment walls to ensure that compartment limits are not exceeded is a cheaper alternative to the provision of sprinklers but warehouse operators prefer not to use them as they can restrict movements within the building, e.g. fork lift truck activities, conveyor belt routing etc.

111. However, because of the assumptions underlying the derivation of these figures, the fact that the available planning data cannot uniquely define all affected buildings and also many large warehouses are already sprinklered for insurance purposes (see paragraph 80), it is suggested that there is a fair degree of uncertainty in the above cost impacts and that the overall proposal may well be cost neutral.

Improve guidance on provision of firefighting shafts in tall buildings

112. A more detailed assessment of the cost impacts of the proposed change to the guidance in AD B was undertaken during the consultation process[25]. This suggested that, removing the floor area based minimum provision for larger floor areas and moving to a purely performance based provision could result in building layouts being designed differently and potentially fewer firefighting shafts being provided. Since that assessment the guidance has been further modified so that the provision for buildings with a floor area greater than 900m^2 to have a minimum of two firefighting shafts is retained (as discussed in paragraph 82).

113. A comparison of the 2000 Part B provisions with the new guidance show that in practice there may be no significant change to provisions in tall buildings with floor areas up to 2,000m^2. Under both sets of guidance those of up to 900m^2 should be fitted with at least one firefighting shaft and those of between 900 and 2,000m^2 should be fitted with at least two firefighting shafts. However, depending on the layout, the route for laying hose may be such that additional fire mains in protected shafts will be needed. For larger buildings, particularly those with very large floor areas (i.e. greater than 5,000m^2) the difference is likely to be more significant. By moving to entirely performance-based provision, the layout and shape of the building could be such that, in some cases, fewer firefighting shafts might be provided than previously, however additional fire mains in a protected stair will probably be needed.

114. To estimate the national cost impacts of this proposal, planning application data was analysed to see how many tall buildings are constructed each year and their floor areas. As noted, there are unlikely to be any significant cost increases for tall buildings with floor areas of 2,000m^2 or less. To assess the costs impacts for tall buildings larger than this, the

25 "Economic impact of the inclusion of BDAG proposals for the provisions of fire-fighting equipment and facilities in the revised Part B of the Building Regulations". BRE Report for ODPM. For availability see Footnote 3.

number of affected buildings together with the unit costs for firefighting shafts and fire mains in protected shafts from the aforementioned report[25] were used. Assuming that firefighting shafts are located at the corner of buildings it is estimated that the impact of this proposal could produce an annual **saving** of up to £2m or an annual cost of up to £2.4m depending on the number of firefighting mains required. However, although locating such shafts centrally in a building is more space efficient and therefore cost effective it does present architectural constraints. It is therefore unlikely that most buildings will be designed in this way and the full potential savings are unlikely to be realised. Given the assumptions and uncertainties underlying the derivation of these figures, the trends in planning data and in architectural design, it is suggested that on balance the proposal is likely to be cost neutral.

Discounting Stairs and Alternatives in Tall Buildings

115. The proposal to discount a stair in certain tall (over 45m) buildings with phased evacuation means that in some buildings the stairs would need to be constructed wider or an additional stair provided. The exact impact would vary from building to building and would depend on the floor area of each storey, the number of persons per floor and the number of stairs. The increase in stair width would range from 70 to 1,400mm (as a maximum this is equivalent to a new stair), but typically it would be about 300-400mm. This equates to a floor area increase of about 0.5 to 3%, with a typical value of just over 1%[26].

116. Either floor space would be lost to accommodate the wider/new stair within the existing footprint or the building would need to be made larger (or maybe a combination of the two). This would result in one of two cost impacts: within the existing footprint the key cost would be loss of floor space for rental (the costs of stair construction are assumed to be offset by the savings in floor construction) whilst outside the existing footprint the main cost would be the increase in construction costs (assuming no additional land needs to be purchased). The additional construction cost would range from £14-54k per storey, with an average of about £34k and the annual loss of rental per storey would range from £3-13k, with an average of about £8k[26]. The exact cost would be dependent on the total floor area and the number of stairs serving it.

117. Analysis of planning applications suggests that the proposal could potentially affect 17 new-build offices, hotels etc. in England and Wales each year. However, it is not clear what proportion of these affected buildings would use phased evacuation as opposed to simultaneous evacuation. Certainly the proposed amendment would shift the balance between these two alternatives. However, it should also be noted that discounting a stair is only one approach to resolving the potential conflict. The new guidance also allows for designers to adopt alternative solutions, including management based approaches, in consultation with the relevant fire and rescue service. It is estimated that about a third will choose to discount stairs with the balance opting for management alternatives in consultation with the local fire and rescue service. Overall, therefore, it is suggested that the cost impact nationally would be £4.0m in terms of increased construction costs per year.

26 Hartless,R. & Purser,D. "BD2437 Relationship between stair width and evacuation requirements for workplaces and public buildings: Initial impact assessment". BRE Report 213245(6), December 2004.

Design compartment walls to take account of deflections during a fire

118. The proposal is to locate compartment walls where floor deflections are likely to be low. An alternative approach is to provide deflection heads to accommodate the anticipated movement, or even to design the wall to accommodate the increased load. As noted in paragraph 85, it is considered that the proposal is merely adopting guidance in the public domain which is already widely used in buildings. Therefore, it is likely to pose no significant additional cost.

Require the provision of information

119. The proposed requirement for builders/developers to provide information to owners/occupiers on fire safety design and procedures for operating and maintaining a building's fire protective measures (see paragraph 86) is already widely, though not universally, adopted and is seen as good practice. The main impact would be on Building Control Bodies (BCBs) who would be required to satisfy themselves that adequate information has been collated and is available. In some cases this is likely to be a very simple procedure, but in others there may be a need to review the documentation. This arguably constitutes a small new admin burden at the Building Control stage and there may be a small charge by BCBs for this activity. However, the information would need to be sourced by those preparing risk assessments under the RR(FS)O, so ensuring the information is made available at the design stage would reduce the costs of this work and the policy costs of complying with the RR(FS)O. It is therefore assumed that overall this measure is cost neutral (and may even give rise to some cost savings).

Implementation costs – training and familiarisation

120. Although there will be a small cost of publishing the new edition of AD B, the main implementation cost will be the need for training and familiarisation with the new legislative requirement and the amended guidance in AD B. An industry sector that would require particular training is the BCBs who are responsible for enforcing compliance. These can be either local authority building control departments or Approved Inspectors (AIs)[27]. Currently there are about 400 LA building control departments[28] and 24 individual AIs and 24 corporate AIs[29]. Together these Bodies employ some 4,000 staff directly engaged in building control activities in England and Wales. These are the specific public services that would be affected by the proposed changes to Part B. As such a Public Services Threshold Test (PSTT) has been undertaken – see Annex C. From this we calculate that the training and familiarisation cost for BCBs is likely to be some £0.56m.

121. There are also going to be training and familiarisation costs for all parts of the construction industry including builders, developers, consultants, contractors etc as well as for the Fire and Rescue Service. Based on attendance levels at training seminars for the changes to the Building Regulations that came into effect in April 2002, the cost of training related to one part of the Building Regulations has been estimated at £3.5 million. This cost would tend to occur in year one and includes both external training and in-house training often using materials from seminars and workshops sponsored by Government, professional bodies and trade associations.

27 A number of companies and individuals have been appointed as Approved Inspectors under Part II of The Building Act 1984, and are BCBs in their own right. Under the provisions of the Act, an alternative building control service can be offered to designers and developers working on schemes throughout England & Wales.

28 See www.labc-services.co.uk/

29 See www.cic.org.uk/services

122. Although this cost has been included in this RIA as a one-off expense in the first year, in practice it is considered to be a general business expense rather than a burden. Good employment practices recommend that at least 1% of the employer's wage bill should be spent on training. Professional institutions that include designers, building control surveyors and project managers in their membership require that at least 20 hours a year are spent on continuing professional development. This indicates that employers in the construction industry should spend at least £7.5m a year on training. Building Regulations are a considered to be a core skill for all building designers and supervisors. It is also possible that some of the cost may be offset by the greater clarity and consistency the proposals would bring.

Summary of costs

123. The costs for Option 3 are summarised in Table 3.

Table 3: **Costs of meeting Option 3**

Proposed amendment to Part B	*Cost*
Remove the provision for self-closing devices on doors.	Cost saving of £8.2m per year – negative impact on manufacturers/installers.
Revise guidance on the provision of ventilation systems suitable for the protection of common stairways in blocks of flats.	Potential small cost saving (cost of installing measures offset by benefits of space savings and hence larger flats).
Clarify that a suitable system of smoke alarms is needed where a domestic extension is proposed.	No significant additional cost – small cost in those areas where not current practice.
Remove separate loft conversion guidance for means of escape so that loft conversions are treated as for a new three storey house.	No significant additional cost (cost of meeting current loft conversion guidance comparable to cost of meeting requirement for treating as 3-storey house).
As an alternative to existing provision for 100mm upstand between a house and an integral garage, the garage floor can be laid to fall.	Deregulatory measure potentially offering cost savings.
Sprinkler protection in new high-rise (30m+) blocks of flats.	Cost is about £900 per flat. Amounts to an annual national cost of £0.9m.
Enhance requirement that cavity closure around windows and doors meets a reasonable standard of fire resistance	Material cost of £1-£11 per m to effect closure, amounting to cost of £0.8m per year in affected houses.
Introduce provision for cavity barriers in floor voids.	No significant cost (already largely met by industry).
Introduce a provision for sprinkler protection or free-swing closing doors in residential care homes.	**Sprinklers:** Cost about £6-17k per care home. Annual cost of £2.9m. **Free-swing closing doors:** Cost about £2-9k per care home. Annual cost of £1.5m.
Measures regarding inclusive design – bringing Part B into line with other guidance.	No significant additional cost.
Provide for firefighting shafts for buildings more than 7.5m but less than 18m tall in PG 5 and remove this requirement for buildings falling into PG 7(a).	Additional cost to upgrade facilities to provide a fire-fighting shaft is about £24k per building. Equates to a national cost of £1.5m per year.

Table 3: **Costs of meeting Option 3 *(continued)***	
Proposed amendment to Part B	*Cost*
Repeal parts of Local Acts requiring a maximum compartment size for unsprinklered storage buildings and replace with a single national requirement of 20,000m² and/or 18m high.	Possible cost of up to £1.4m per year for the provision of sprinklers, but construction of compartment walls a cheaper alternative. However, many large warehouses already sprinklered so proposal **may well be cost neutral**. Deregulatory, and there will be savings in these areas currently covered by Local Acts.
Assign self-storage warehouses to Purpose Group 4 (Shop and Commercial).	Unlikely to have a cost impact, although self-storage warehouses with a compartment size greater than 2,000m² will require sprinklers at a cost of about £120-180k per building, or compartment walls at a cost of £30-50k per building.
Improve guidance on firefighting shafts in tall buildings, and provision of additional dry risers.	Impact will depend on shape and layout of buildings but there could be a cost **saving** of up to £2m or a **cost** of up to £2.4m. Overall it is suggested that this will be cost neutral.
Discounting stairs and alternatives in tall (over 45m) buildings	New-build construction costs estimated to be £4.0m per year for those that choose to discount stairs but others will opt for a management approach.
Design compartment walls to take account of the deflections that occur during a fire, bringing AD B into line with other guidance	No significant additional cost – small cost where guidance not currently adopted.
Introduce a **requirement** for the provision of information on fire safety design and procedures for operating and maintaining a relevant building's fire protective measures	Small cost for BCBs to inspect information – unlikely to be significant – and offset by need to have information for RR(FS)O. Overall may even give a cost saving to businesses.
Total	**Compliance cost £1.7m per year in *dwellings*.** **Cost *saving* £8.2m per year [see benefits] but negative impact on door closer manufacturers** **Overall *non-domestic* cost impact could have a broad range: from £5.0m to £12.2m per year. More likely to be £7.0m to £9.4m per year.**

Small Firms' Impact Test

124. Firms spend a significant amount of time keeping up to date with revised and new regulations. The cost of this is likely to be proportionately higher for small firms than large ones. Accordingly, a small firms' impact test was undertaken. On the basis of responses to the public consultation five small firms (defined as having less than 50 employees) were identified in a number of the key sectors impacted upon by changes to Part B. The firms were:

- A small loft conversion company specialising in domestic loft design
- A fire engineering consultancy
- A local authority building control department

- An Approved Inspector
- An architectural firm specialising in the residential care home sector.

125. Full details of the Small Firms' Impact Test can be found in Annex D. In general terms they all supported many of the Part B changes, although they also all had concerns with one or more specific aspects and the impacts these would have, mostly on their clients as opposed to themselves.

126. The loft company was concerned with the proposed changes to the loft conversion guidance. In essence this requires the provision of a protected stairway as opposed to possibly increasing the fire resistance of the floor and providing a means of escape window. Providing a protected stairway could require the replacement of existing doors to achieve the required fire-resistant. This could be costly and result in the loss of period doors. In response to this concern (which has been expressed by other consultees) the guidance has been changed so that this issue is highlighted and alternatives may be acceptable, e.g. upgrading the fire resistance of existing doors, although heavy period doors may already have the necessary fire resistance. The increased cost of familiarisation with the changes was felt to be minimal as the company has a good working relationship with the local BCB.

127. The fire consultant also felt that the changes would have minimal impact on their working practices. The consultant sees it as part of his job to keep abreast of changes to Part B and related standards and guidance. The company has training days for staff as part of their Continuing Professional Development (CPD) to alert them to changes – one was held when the Part B consultation version was published and another is likely to be held when final version published. One cost impact for clients the consultant did identify was the provision of information on fire safety design. He felt that pulling such information together or preparing a separate report would inevitably have a cost. However, he often sees the fire safety strategy that his company has developed is integrated into health and safety manual for office developments, although it is not so common in other development types (e.g. residential). The RIA recognises that this is a potential cost but suggests that this could result in future savings when a building is sold, has a new tenant or is refurbished as this information will be more readily available.

128. The local authority building control officer did not see the proposed changes to Part B as that radical and staff should easily assimilate them so there is unlikely to be any changes to their fee structure. He felt that the recent changes to Part L were much more significant. Training days for staff and clients are provided, and a technical working group meets to help identify changes and to disseminate them. Provision of information was unlikely to be much of a burden in his area as he worked in a large city centre dealing with bigger companies which tend to do this already, but other smaller local authorities were concerned as they would need to set up information storage and communication facilities. However, as whole the proposal was supported because of the resulting benefits. The main concern was the proposed removal of self-closing devices as they saw these as an important fire safety feature. In its job the BCB was seeing a large growth in innovative design in city centre apartment blocks. As a result, designers were eschewing traditional passive fire protection solutions in favour of water mist, sprinkler and alarm systems etc. In his experience, many modern blocks now have fire engineered solutions which they need to assess as meeting the requirements of Part B.

129. The Approved Inspector felt that the changes were not that radical and would be assimilated easily by staff. He had concerns about the use of sprinklers to off-set structural fire protection in the residential sector and the expertise of people in making these assessments, although guidance on this subject has recently been published. He felt provision of information would have a cost. In particular the as-built fire drawings which can be difficult to obtain from designers and architects so that they can be integrated into the health and safety file. The additional cost might be £1-2k per project for drawings to be finally checked and logged. However, there could be substantial future savings on enforcement with the availability of such information to assess improvement works undertaken by an occupier that could have compromised fire safety features. Finally, the impact on them as a company was assessed as minimal because changes are relatively minor and keeping up with build regulation changes are seen as part of staff CPD.

130. The architect's main concern was for his main clients which were residential care home providers. He felt that the proposed requirement for sprinklers in all new care homes in the consultation would increase the construction cost of new homes such they would no longer be viable. There would be costs of not just the sprinkler system but also for the structural improvements that would probably be needed to accommodate the water tanks that are often required. In his experience sprinkler systems are rarely installed in care homes. As discussed above, the guidance in AD B has been amended to reflect these concerns – which were expressed by a number of consultees – so that free-swing closing doors can be installed as a cheaper alternative. The increased costs to the firm because of familiarisation and training were felt to be minimal. Staff attend weekly lunchtime seminars as well RIBA and RICS seminars as part of their CPD, and information is disseminated through the company. Basically he sees keeping familiar with the building regulations changes as part of their job.

131. The training and familiarisation impacts as discussed with all of the small firms have already been considered in this RIA, see paragraphs 120 to 122. We have consulted the Small Business Service who are content with our approach.

Competition Assessment

132. It is expected that there would be minimal impact on UK competitiveness (as Building Regulations apply to building work and it makes no difference whether the work is carried out by or on behalf of UK or non-UK firms) or on competition within the UK markets (except where indicated above).

Offsetting Measures

133. While some measures in this package will increase costs to certain sectors, these will be offset by savings elsewhere. For example, the removal of guidance relating to the provision of certain door closers in dwellings (see paragraphs 69 and 92) giving an estimated cost saving of £8.2m pa. Also important are:

- the split of AD B into two documents (which will assist small firms specialising in domestic work);

- incorporating guidance on the design of small premises (which will save firms needing to source the guidance from elsewhere); and;

- the provision of information (which will save firms needing to source the guidance at a later date – and at a higher cost – in order to prepare their risk assessment under the RR(FS)O).

134. Additionally, the opportunity has been taken to provide greater clarity and aid interpretation of the guidance, to give recognition to new British or European standards and to provide alternative ways of complying. For example, there is:

- improved guidance on progressive horizontal evacuation in care homes (including a new diagram);

- a new paragraph on replacement windows in dwellings;

- new text on the provision of fire dampers giving additional guidance and recognition of the new European test methods;

- the section on concealed spaces has been redrafted to provide clarity; and;

- references have been added to the new British Standard on residential sprinklers and their suitability as an alternative/compensatory feature in certain situations.

135. It should also be noted that a wholesale review of the Building Regulations regime has recently begun. This will be considering all aspects of the Regulations and associated guidance to identify how the regime may be simplified and made more effective. We are also planning to review and potentially repeal the provisions of Local Acts.

Enforcement and Sanctions

136. Intended work that is subject to the provisions of Part B, or of any other Part of Schedule 1 to the Building Regulations 2000, must be notified to the local authority. The work is subject to inspection by the LA building control department, or, at the election of the person carrying out the work, by an Approved Inspector.

137. Failure to comply with the requirements of Schedule 1 to the Building Regulations 2000 is a criminal offence. Local authorities also have powers to require the removal or alteration of work that does not comply with the requirements of Schedule 1. The local authority's enforcement powers are suspended in a case where building control is being carried out by an Approved Inspector. However, if a person carrying out building work fails to comply with instructions from an Approved Inspector to rectify non-compliant work, the Inspector must cancel the 'initial notice' which brought the project under his supervision. Building control then reverts to the local authority.

138. No changes to this process are proposed as part of these amendments.

Implementation and Delivery Plan

139. The revised Part B and AD B is to be published in 2006 so as to come into force in 2007. Formal notification will be by means of a circular letter from Communities and Local Government to BCBs. This will be accompanied by a series of workshops and seminars.

Post-Implementation Monitoring and Review

140. The draft RIA and proposals were reviewed in the light of the response to consultation and further supporting evidence resulting in a revised package of amendments to the Building Regulations and AD B. A final version of these documents and accompanying RIA have now been prepared. It is Communities and Local Government's practice to investigate experience a reasonable time (usually about 3 years) after implementation to monitor how the changes are working in practice. This is likely to take a similar form to the "Backward Look" report (see paragraph 19) and will consider the actual impacts of the amendments in practice, including the issues explored in this RIA.

Summary and Recommendations

141. This RIA considers a number of revisions to Part B of the Building Regulations (England and Wales) and the guidance in AD B which are concerned with Fire Safety. The amendments will typically impact upon new buildings and those existing buildings that are extended or materially altered.

142. Three options have been considered: (i) do nothing; (ii) encourage good practice; and (iii) implement the changes to Part B/AD B as set out in Table 1.

143. A summary of costs and benefits for the three options is given in Table 4 below. More details of the key measures of the package comprising Option 3 in terms of costs and benefits of are discussed in the relevant sections and Tables 2 and 3. (A side-by-side comparison of costs and benefits of these measures is set out in Table E1 in Annex E.)

Table 4: **Summary of costs and benefits in England and Wales arising from implementation of changes to AD B**		
Option	Costs	Benefits
Option 1	• No direct costs – but would forego benefits of Options 2 and 3.	None.
Option 2	• £0.5m per year Government/ industry good practice campaign. • £0.5m per year for all buildings[a].	Small.
Option 3	• £1.7m per year for dwellings. • £7.0-9.4m per year for buildings other than dwellings. • £0.56m familiarisation for BCBs (first year only)[b]. • £3.5m familiarisation for industry (first year only)[c]. • Negative impact on self-closing device manufacturers.	• Cost saving £8.2m per year in dwellings from removal of the guidance on the provision of door closers. • 37 lives saved and 1,480 injuries prevented in dwellings in a 25-year period (equivalent to annual benefit of £4.4m). Also, reduced property damage of £0.84m per year. • 6-8 lives saved and 75-95 injuries prevented in buildings other than dwellings in a 25-year period (equivalent to annual benefit of £0.45-0.57m). Also, reduced property damage of £3.0-4.0m per year. • Additional benefits in terms of: - reduction in distress and disruption due to fire; - future economic savings; - environmental benefits (e.g. less water pollution, less water usage, improved air quality etc.); - improved clarity of guidance and consistency in application. • proactive measures to reduce future risk and assist in fire-fighting and search and rescue operations.

a As noted in paragraph 90 about 10% of the industry would adopt measures for Option 2.

b For derivation of this cost see Annex C.

c The cost should be accommodated by the industry's basic training budget (see paragraph 121).

144. Table 4 shows that Option 1 should be rejected as, although it imposes no direct costs, it produces no benefits and would leave Part B out of step with related regulations and guidance. The benefits of Options 2 and 3 would be foregone.

145. Option 2 would have some costs which would be dependent on the take-up rate of the industry. The social housing sector is most likely to respond but this would leave large sectors unaffected. Given that life safety should have equal priority across all building types and sectors an option that is not implemented uniformly may give rise to problems.

146. Option 3 gives the highest costs of about £8.7-£11.1m per year, most of which would be in the non-domestic sector (£7.0-£9.4m). There would also be a one-off cost of around £4m to cover training and familiarisation of the industry. However, much of the non-domestic cost concerns the provision of proactive measures and so address future risks in new building types, as well as assist firefighting and search and rescue operations in tall buildings, particularly in the light of the World Trade Centre incident. As a consequence it is not possible to quantify the benefits that might accrue from these particular proposals at this time.

147. Option 3 gives the largest benefits. In total the benefits are quite substantial in terms of lives saved and injuries prevented, i.e. 43-45 and 1,555-1,575 respectively over a 25-year period which is equivalent to an annual benefit of £4.8-£5.0m. There would also be a saving of £3.8-£4.8m per year due to reduced property damage from fire and an annual cost saving of £8.2m from removal of the guidance on the provision of door closers. The vast majority of these benefits would be in dwellings.

148. It should be noted that the benefits in terms of lives saved and injuries prevented are cumulative, i.e. the benefits for the properties built in year 1 are experienced again in year 2, together with those for the properties built in year 2, in year 3 the benefits are experienced for properties built in each of the three years etc. and continue to accrue in this way over the lifetime of the buildings. However, other than a small element of routine maintenance associated with some measures (e.g. sprinklers), the costs and/or savings associated with building the properties in accordance with the revised guidance in Option 3 are only experienced when the properties are built. **Cost-benefit analysis has shown that, the measures become increasingly cost-effective in the longer term (over 50 years).**

149. For both building types Option 3 would bring other extensive benefits in terms of reducing distress and disruption due to fire as well as reducing environmental impacts in terms of water pollution (less water run-off), less water usage and improved air quality. There would be substantial economic benefits in terms of reducing damage and loss of buildings and contents (£3.8-£4.8m per year) but this goes beyond the current locus of Building Regulations.

150. There are also a considerable number of changes to AD B that would not have a significant cost impact but they will improve clarity of the document and ensure consistency of application and thereby constitute better regulation.

151. In many ways the changes to Part B are not significant (excepting proactive measures addressing future risks and improving firefighting and search and rescue operations), but this review has taken the opportunity to use risk assessment to target resources more effectively so as to maximise the number of lives saved and injuries prevented. It therefore represents a justified evolution of the guidance and an opportunity to clarify and improve upon existing provisions.

152. In terms of cumulative impacts, this sector is subject to a number of requirements under the Building Regulations in addition to Part B (Fire safety). Non-dwellings may also be subject to legislation governing fire safety in buildings in use (e.g. the RR(FS)O), environmental and health and safety legislation, and the Disability Discrimination Act 1995. Dwellings may also be subject to the requirements of Housing legislation, such as the need to carry out a risk assessment in Houses in Multiple Occupation. Although the changes considered in this document would place additional burdens on this sector, they are not considered onerous given the potential risks to life safety that they address.

153. It is therefore proposed that Option 3 be adopted.

Contact Point

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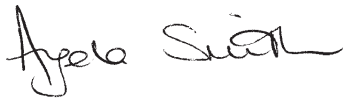
Ministerial Declaration

I have read the Regulatory Impact Assessment and I am satisfied that the benefits justify the costs.

Signed:



Angela Smith MP
Parliamentary Under Secretary of State
Communities and Local Government

13 December 2006

ANNEX A
Developments in fire safety arena leading to the review and changes to Part B and AD B

FIRE WHITE PAPER

A1. A key development was the publication of the Government White *Paper Our Fire Service*[30] in June 2003. This sets out the Government's desire to reduce the number of fires that currently occur by moving much more towards a fire prevention strategy. In particular, the White Paper, as well as the Public Sector Agreement (PSA3) target, calls for a 20% reduction in the number of accidental fire deaths in dwellings by 2010. Building Regulations is seen as one of the main strands for delivery of this strategy, alongside Community Fire Safety and the Reform of Fire Law. However, it should be noted that, as changes to Part B/AD B are unlikely to come into force much before the end of 2006, and as only approximately 1% of the building stock is affected by Building Regulations each year, their overall contribution to meeting this target in the short term will be relatively small compared to measures that impact on the majority of, particularly existing, buildings.

UNDERPINNING EVIDENCE

A2. The (then) ODPM commissioned a number of pieces of work related to fire safety that have fed into this review. High profile pieces of research work undertaken include 'The Effectiveness of Residential Sprinklers', 'The design of common access areas of flats and maisonettes', 'Cavity barriers' and 'The propensity of linings to produce smoke and burning droplets'[3].

A3. A further high profile research project sponsored by ODPM is on the subject of fire safety in tall buildings. Specifically, the Building Disaster Assessment Group (BDAG)[31] was established to consider the issues, for fire authorities and their fire brigades in the UK, that have been highlighted by the World Trade Centre incident of 11 September 2001. The terms of reference of BDAG were:

> *"To consider the potential implications, for the UK fire service, of terrorist activities within the built environment, taking into account fire authorities responsibilities for ensuring the provision of appropriate fire precautions for buildings in use and safe operating procedures that reflect building design."*

30 Further details can be found at: http://www.communities.gov.uk/index.asp?id=1123889

31 Further details can be found at: http://www.communities.gov.uk/index.asp?id=1125161

A4. More generally, BDAG is looking at the interaction between fire brigade operational responses and building design, assessing the way the underlying assumptions behind building regulations are based on traditional fire service operational practices, and whether they are still appropriate in the light of current fire service operational practices. To this end, BDAG is managing a group of research projects including:

- physiological performance criteria for fire-fighting,
- fire-fighting in under-ventilated compartments, and,
- fire-fighting media in high-rise buildings.

ANNEX B
Rationale and risk assessment behind proposed amendments to Part B and AD B

INTRODUCTION

B1. The risks of death and injury in fires within each purpose group and, where possible and appropriate, for each of the amendments in Table 1 have been evaluated. Generally, where the amendment is merely offering an alternative approach or is bringing AD B into line with other standards and guidance it is considered that the change is risk neutral and is not discussed below.

B2. In a few cases (e.g. additional smoke alarm in the principal bedroom) further research on estimating risks and quantifying risk reductions has lead to changes in the amendments following consultation. These changes are summarised in Table 1 and are discussed further below.

PURPOSE GROUP 1(A) – BLOCKS OF FLATS

Self-closing devices

B3. The use of self-closing devices on fire doors has been queried because some types do not effectively close the door and their use can reduce the fire resistance of the door. Further, householders regularly complain that these devices are a hazard to children and are a nuisance to other occupants. As a result such closers are often disabled or removed soon after occupation.

B4. The proposal generated a lot of response during the consultation. Some respondents supported the proposal because they agreed that door closers were regularly removed or disabled. Others felt that closers could be omitted if additional measures, such as fire detection or sprinkler protection, were provided. Another group felt that the proposal was unacceptable because a fire door is only effective if it is closed and this could not be relied upon without a closer.

B5. In order to better understand how householders interact with self-closing devices a survey[32] of householders was undertaken following the consultation. This has shown that around two thirds of households which ought to have self-closing devices fitted to their doors did not have such devices present. Where the devices were present, around two thirds of

32 "Householder interaction with self-closing devices on doors". Report by Andrew Irving Associates for ODPM. For availability see Footnote 3.

households propped their doors open at least some of the time. However, it also showed that those households with self-closing devices fitted to their doors were slightly more likely to close their doors at night.

B6. The benefits of closing doors, especially at night, is already referred to in AD B and reinforced via community fire safety programmes. A further fire safety education campaign specifically targeting the benefits of closing doors at night is also proposed, which would have the additional benefit of targeting all households, not just the 1% of building stock affected by Building Regulations each year. Consequentially, the amendment to remove the provision for self-closing devices on doors (other than those opening onto common escape routes) is considered to be broadly risk neutral. See also paragraph B18 Dwellinghouses.

Smoke ventilation of common access areas

B7. Research[33] has shown that the provisions in the 2000 edition of AD B in respect of external wall ventilation to control smoke in stairwells and lobbies and corridors of blocks of flats are inadequate. There is concern that occupants trying to escape from a fire can be overcome by smoke. Analysis of fire statistics shows that some 60 people outside the room of fire origin die each year in blocks of flats and about 70% of these are overcome by smoke, gas or toxic fumes. A further 10% are killed by a combination of burns and being overcome by smoke/gas.

B8. However, although the fire statistics show whether a death or injury occurred outside the room of origin, they do not reveal whether a casualty was in another room in the affected flat. It is suggested that many of these casualties are in the flat itself and so would not be addressed by this amendment. The statistics do however identify casualties on floors other than that where the fire took place, and these would be addressed by the revised guidance.

B9. On this basis, there are some 15 fatalities per year and 50% of them are overcome by smoke/gas. In addition, there are nearly 1,000 injuries per year and again about half of them are affected by smoke/gas; a further third are for precautionary check-ups (see paragraph 26).

Additional smoke alarm

B10. BS 5839 Part 6 (Code of practice for the design and installation of fire detection and alarm systems in dwellings) includes the provision of a heat alarm in the principal habitable room. The concern with installing a smoke alarm in such a room is that false alarms may lead to the alarm being disabled. However, smoke alarms do potentially give householders more time to escape as they are more sensitive than heat alarms, particularly if located in other rooms in the dwelling.

B11. Accordingly, it was proposed in the consultation document to require the installation of an additional smoke alarm in the main bedroom in both blocks of flats and dwellinghouses. Following the consultation a detailed research project with three elements (statistical analysis, computer modelling and a cost benefit analysis) was undertaken[34].

33 "Smoke ventilation of common access areas of flats and maisonettes and their relationship to the provision of compartmentation and means of escape procedures". BRE Report for ODPM. For availability see Footnote 3.

34 "Determining the best option for the provision of additional smoke alarms in dwellings and houses". BRE Report for ODPM. For availability see Footnote 3.

B12. Examination of the fire statistics suggested that the presence of working smoke alarms was highly beneficial. The majority of the fatalities in the period studied occurred in dwellings in which either fire alarms are not fitted or were not working at the time of the fire. The statistical analysis then attempted to identify the number of people who might be saved by additional alarms, extra to those recommended by the 2000 version of AD B. The circumstances of each fatality where alarms were present and working were examined. This suggested that about half of the deaths would **not** benefit from additional detection. This left a maximum of 20 casualties per year where it is conceivable that changes to the number or position of fire detection in a property **might** have changed the outcome.

B13. The modelling work led to similar conclusions to the statistical study. The presence of any alarm could reduce the risk of death by up to a factor of three, compared to a dwelling where no alarm was present. However, additional alarms beyond those currently recommended by AD B did not lead to any discernable further reductions in risk.

B14. The cost-benefit analysis showed that fitting mains-powered detectors would be cost-effective (84% confidence level), compared to a baseline case of no detection. However, further detectors beyond the recommendations of AD B would not be cost-effective (confidence level less than 4%).

B15. Therefore, because this proposal has been shown not to be cost-effective it has been rejected.

Sprinkler protection for high-rise blocks of flats

B16. There is continued concern about the number of deaths and injuries arising from fires in dwellings (see paragraphs 24 to 27). Extensive work in assessing the risks in a range of dwelling types shows that the risks are greater in flats compared to most houses, and that the risk of death and injury increases with height of the block of flats[12]. However, more detailed analysis undertaken subsequently shows that a large proportion of deaths occur at ground floor level, typically as a result of a fire at that level. One explanation may be the poorer security of much of the older existing stock of high-rise blocks of flats in England and Wales, which also tends to be located in areas where there is a high degree of social deprivation. This was therefore consulted on a "minded to" basis.

B17. This proposal received significant support from consultees and, despite the evidence regarding the prevalence of ground floor fires, the analysis would still suggest that sprinklers are cost-effective in high-rise blocks of flats. It is therefore proposed that the guidance be amended so that sprinklers are installed in these types of new buildings (i.e. blocks of flats up to 30m+ tall which is equivalent to 10 to 11 storeys high).

PURPOSE GROUP 1(B) AND 1(C) – DWELLINGHOUSES

Self-closing devices

B18. This issue is the same as that discussed in paragraphs B3 to B6 for blocks of flats. Consequentially, the amendment to remove the requirement for self-closing devices on doors (other than those opening to garages) is considered to be broadly risk neutral. The need to close doors, especially at night, is referred to in AD B and is reinforced via community fire safety programmes.

Remove separate loft conversion guidance

B19. This was proposed because the suggested new guidance on fire doors (without self-closers) and smoke alarms is considered to make it obsolete. Also, the current loft conversion guidance is the only situation whereby the Approved Document effectively acknowledges that occupants may have to wait to be rescued by means of a ladder, as opposed to the basic principle that occupants should generally be able to make their own escape, unassisted, from a fire.

100mm garage upstands

B20. The 100mm upstand currently provided for in AD B between integral garages and associated dwellings is intended as a barrier to the spread of heavier than air fuel vapour which could result in a fire within the dwelling. This provision first appeared in Building Regulations during the late 1960s/early 1970s when integral garages became popular and in response to concerns that this may present a fire hazard.

B21. The upstand has been a particular problem for house designers attempting to provide adequate access for people with mobility problems who would not be able to easily traverse a step of this height. There are differing interpretations from different Building Control Bodies as to whether wheelchair access from an integral garage to a house is a requirement of Part M of the Regulations. Further, in its most recent review of the Scottish Building Standards the Scottish Building Standards Agency decided to remove this provision as it was not considered to be necessary.

B22. As a result, Communities and Local Government commissioned research to assess the effectiveness of such upstands[35]. The research findings show that the upstand does provide a small level of protection from fuel spillages in a garage in certain conditions. Given typical daytime temperature conditions in England and Wales of around 15°C, the vapour that could be produced from a fuel spill of up to 5 litres would be contained to acceptable levels. However, the effectiveness of the upstand is likely to reduce as ambient temperatures increase above 15°C, which would be the case during the summer months.

B23. The risk of fire as a result of fuel spills in integral garages is difficult to quantify but it is considered to be very low. The research findings, to date, tend to show that the upstand does provide some protection from such incidents but that this protection is likely to be reduced during the summer months. AD B does not ask for doors to integral garages to be smoke sealed but they are likely to be draught-proofed following the energy efficiency provisions of Part L.

B24. Given that a 100mm upstand would only effectively contain a fuel spill of up to 5 litres, it could be suggested that the level of protection offered is of no material value but, rather than its removal from the AD, an alternative approach of laying the garage floor to fall will be offered.

35 "A study of the effectiveness of 100mm up-stand between integral garages and associated dwellings". BRE Report for ODPM. For availability see Footnote 3.

PURPOSE GROUP 2(A) – RESIDENTIAL, INSTITUTIONAL

Sprinkler protection or use of free-swing closing doors in residential care homes

B25. As noted above in paragraph B16 there is concern about the number of deaths and injuries in dwellings and other residential premises. In particular, there was a major fire at an elderly persons' care home in Uddingston, Scotland in January 2004 where 14 people died. This was followed by fires in elderly persons' care homes in Pembrokeshire (which resulted in 2 deaths and 4 injuries), Cambridgeshire (which resulted in 2 deaths and 3 injuries) and Redcar (which resulted in 1 death and 1 injury). Communities and Local Government is keen to explore all approaches for reducing these risks and so wishes to introduce measures to reduce the risk of death and injury from fires in residential care homes.

B26. Such a provision would not just cover care homes for the elderly but also those for children and the disabled. There are more fire-related deaths each year in elderly persons' care homes but this is simply a consequence of there being more of these types of homes. Although the annual occurrence of death and injury in care homes is relatively small in comparison to those seen in single occupancy dwellinghouses, the annual risk of death in a fire in all three types of home is much greater.

B27. Research has been undertaken which shows that the provision of sprinklers in residential care homes can be cost-effective[12]. Further research into the effectiveness of sprinklers in care homes though shows that they are very unlikely to save the life of an elderly person involved in a clothing/bedding fire[13]. Such a fire is common in elderly persons' care homes and often arises because the resident was smoking in bed. Experience indicates that bedrooms in such care homes are invariably single-occupancy so in the majority of cases the person in the room of fire origin is the only casualty. However, there is potential for the fire (and smoke) to spread from the room of origin if the bedroom door is not closed and so cause further casualties.

B28. Sprinklers are effective in preventing the spread of fire and thereby reducing casualties. Similarly though, free-swing closing doors can achieve a comparable effect. These doors are linked to the fire alarm system and will automatically close when the alarm is triggered. Such a door would replace a door fitted with a self-closing device which, as discussed in paragraphs B3 to B6, can have its self-closing device disabled or be wedged permanently open.

B29. In conclusion, the guidance has been amended so that for single bed occupancy bedrooms in new residential care homes, free-swing closing doors should be installed, and for multiple occupancy bedrooms sprinklers should be installed. In the latter case sprinklers will improve the chances of occupants to survive a fire in their bedroom that they are not intimately involved with.

PURPOSE GROUP 5 – ASSEMBLY AND RECREATION

Firefighting shafts

B30. In the 2000 edition of Part B, buildings in Purpose Groups 4, 6 and 7(a) were required to have firefighting shafts if they are more than 7.5m tall but less than 18m tall. (All buildings over 18m tall require firefighting shafts.) Analysis of fire statistics shows that the risk in terms of the number of casualties per fire is greater for buildings in Purpose Group 5 compared to those in Purpose Group 7(a), specifically 75 casualties per 1,000 fires

compared to 47 casualties per 1,000 fires. Therefore, the provision of firefighting shafts for buildings in Purpose Group 7(a) over 7.5m but less than 18m in height (equivalent to around 3-7 storeys) is being removed and being applied to buildings in Group 5 instead. Analysis of planning applications shows the rate of construction of affected buildings in this Purpose Group is about ten times greater than those in Purpose Group 7(a).

PURPOSE GROUP 6 AND 7(A) – INDUSTRIAL AND STORAGE

Local Acts and compartmentation

B31. There are over 20 Local Acts that contain provisions relating to the control of buildings (including the London Building Acts). However, a number of these Acts contain provisions that are similar to other legislation. They include provisions for large storage buildings, tall buildings and parking places in respect of fire alarms, smoke control, sprinklers and fire service access. Research into the impact of the additional requirements of Local Acts showed that they have no significant impact on life safety, but do improve property protection in warehouses and car parks[36]. Typically, the Local Acts specify a maximum unsprinklered compartment size of 7,000m^3 which is equivalent to a floor area of about 640m^2 for a warehouse height of 11-12m (the maximum height that can be reached through normal fork-lift truck operations).

B32. There is evidence that warehouses are increasing in size as suppliers and retailers consolidate their storage operations into fewer distribution centres[15]. The concern here is that this leads to an increase of the fire risk for people working in such buildings. Particular risk factors are: storage of dangerous goods; the very large travel distances involved; large numbers of occupants; danger of structural collapse of building and physiological issues on fire-fighters entering the building.

B33. It was therefore proposed to repeal those sections of Local Acts requiring a maximum compartment size for unsprinklered storage and replace them with a single national requirement. For the consultation exercise a maximum compartment size of 440,000m^3 was proposed. This is equivalent to a floor area of about 40,000m^2 for a typical warehouse height of 11-12m. Although the majority of respondents welcomed the proposal most of them felt that the proposed limit was too large. Following the consultation further work was undertaken to try to identify a limit that could be justified on cost-effective grounds[15]. This included analysis of warehouse sizes and fires, cost-benefit assessment and discussions with the industry.

B34. There is a high degree of uncertainty in the analysis because of the sparseness of data but the conclusion reached was that sprinklers could be reasonably justified in warehouses with a compartment size limit of 20,000m^2. Very occasionally very tall (up to 20m) warehouses are constructed which can potentially also increase risk so the amendment also provides for sprinklers if a warehouse height is greater than 18m. It is still intended to repeal the relevant parts of Local Acts but that this will be taken forward as part of a wider review of such legislation.

36 "Effect of Local Acts on fire risks". BRE Report for ODPM. For availability see Footnote 3.

PURPOSE GROUP 7(A) – STORAGE

Self-storage warehouses

B35. In recent years there has been a tremendous growth in so called self-storage warehouses. These buildings are subdivided into a series of secure spaces which are then rented out to private individuals and businesses.

B36. The operators have limited control over the fire loading in the buildings (i.e. flammable materials may be introduced) and there is typically no fire resistance between each storage space. The extensive subdivision of these buildings also results in a more complex layout than has been assumed for storage buildings in the past. In particular, users of such facilities may be unfamiliar with escape routes, and some of these warehouses have out-of-hours access when staff would not be present. There is therefore some concern that a significant fire in one of these buildings may be inevitable and would present a considerable risk to both the occupants and to fire-fighters.

B37. Information from the Self-Storage Association of the UK (SSAUK)[37] suggests that there are currently about 300 such facilities in England and Wales which are run by its members, although there are probably more run by organisations and individuals that are not members of the SSAUK. Given that these types of buildings have only appeared in the last few years any incidents would not have been recorded in the available fire statistics. Anecdotal evidence suggests that whilst there have been some minor fires associated with self-storage warehouses, there have been no deaths or injuries. But, given the potential for problems (paragraph B36) and the tremendous growth rate in this sector (about 35% per year – though this is expected to fall to nearer 10% per year), it is considered that these buildings require additional fire protection.

B38. In the consultation exercise it was proposed to require ½-hour fire protection of warehouse corridors but the costs of such a provision (£90k per storey or £270k for a typical 3-storey facility) are high and cannot be justified on the basis of risk reduction using currently available evidence. Although the proposal was welcomed by the majority of respondents a number felt that sprinkler protection should be included as an alternative to fire-resistant construction. Other respondents were concerned that a specific reference to self-storage warehouses was required to ensure that only these buildings were affected and that corridors were not, in effect, required in open rack warehouses.

B39. This proposal has therefore been rejected and instead such facilities have been re-classified as Purpose Group 4 (Shop and Commercial). The key consequence of this is likely to be that such buildings will have a maximum unsprinklered compartment size of 2,000m^2.

Firefighting shafts

B40. As discussed in paragraph B30 the requirement for firefighting shafts in these types of buildings has been moved to buildings in Purpose Group 5 because of the greater risks in Group 5 buildings.

37 For further details see: http://www.ssauk.com/

PURPOSE GROUPS 2 TO 7

Discounting Stairs and Alternatives in Tall Buildings

B41. Research into the relationship between stair width and evacuation requirements of buildings has shown that there is a potential conflict between persons escaping down a stair and firefighters undertaking firefighting and search and rescue operations over several levels within the same stair enclosure[38]. It is therefore proposed to discount an escape stair (i.e. assume it would not be available for escape purposes in the event of a fire) in tall buildings with phased evacuation, as evacuation should be completed by the time that the fire and rescue service arrive. (Such buildings with simultaneous evacuation are not affected.) As a result staircases in some of these buildings would need to be made wider or, alternatively, an additional stair may need to be constructed. Again whilst statistics indicate that these issues are not a problem in the UK, there is evidence that they may increasingly become so as the number of high rise buildings, and the height to which they are built, increases. The proposal is, therefore, a proactive measure to ensure that in the future fire-fighting and search and rescue operations can be more effective. Although the proposal originally consulted upon was based on a threshold of 30m, discounting a stair is only one approach to resolving the potential conflict. The new guidance also allows for designers to adopt alternative solutions, including management based approaches, in consultation with the relevant fire and rescue service. As such it is likely that only a small proportion of buildings (approximately 30% of those over 45m in height) will need to incorporate additional stair capacity.

PURPOSE GROUPS 1(A) AND 2 TO 7

Improve guidance on provision of firefighting shafts in tall buildings

B42. A key element of the work on fire safety in tall buildings (see paragraph 17 as well as paragraphs A3 to A4) has been a physiological assessment of fire-fighting and search and rescue operations in the built environment. Firefighters were asked to carry out a set of firefighting and rescue exercises whilst measurements of their core body temperature and other physiological parameters were recorded. A key conclusion from this work is that firefighters may not be able to penetrate safely more than 34m into a compartment to rescue a casualty. This conflicts with guidance in the 2000 edition of AD B which sets out a minimum number of firefighting shafts for a given floor area and also sets a minimum distance from any point on the floor to the fire main landing valve in those shafts to limit the distance that firefighters would need to lay hose (hose distance) to 60m.

B43. The amended guidance is based entirely on direct hose distance to a fire main. It retains the maximum distance to a fire main in a firefighting shaft at 60m but introduces a new provision for a maximum of 45m to an additional fire main in a protected shaft and thereby goes someway towards addressing this potential conflict. Other measures will include consideration of changes to firefighters' clothing, equipment and procedures. Whilst statistics indicate that these issues are not a problem in the UK, there is evidence that they may increasingly become so as the number of high-rise buildings, and the height to which they are built, increases. The proposal is, therefore, a proactive measure to ensure that in the future firefighting and search and rescue operations can be more effective.

38 Purser,D. "Relationship between stair widths and evacuation requirements for workplaces and public buildings". BRE Report 213247, June 2004.

Design compartment walls to take account of deflections during a fire

B44. Research[39] into the performance of compartment walls in a fire indicates that unless appropriate measures are taken deflections can lead to a breach of the wall thereby leading to fire and smoke spread, compromising means of escape and ultimately premature structural collapse. Fire statistics do not indicate that there is a particular problem although any failure of the wall would be likely to occur in the latter stages of a fire, when any occupants would be more in danger from toxic fumes rather than structural collapse. Nevertheless, there is sufficient concern that the guidance is being amended so that compartment walls are properly designed to ensure this does not happen.

ALL PURPOSE GROUPS

Cavity barriers

B45. There is concern that if cavity barriers in floor voids and cavity closure around windows and doors is inadequate, there is scope for uncontrolled fire spread in buildings thereby increasing the risk of death and injury.

B46. Unfortunately, fire statistics do not record the level of detail required to establish exactly the role played by fires in floor voids and cavities. However, a report[40] for ODPM describes a number of incidents where fire spread through building cavities, including a town house, a warehouse, a dwellinghouse and a timber frame block of flats. Currently, the quantities and types of cables used in service voids is uncontrolled and the surfaces of products such as pipe insulation is restricted to Class 1. Both these products offer a potential risk for unlimited, unseen fire spread to occur within the floor void when no cavity barriers are present. Certainly damage caused by such fires can be extensive as shown by the incident in timber framed block of flats where 15 flats were damaged due to lack of adequate fire stopping. On the basis of limited statistics it is suggested that there may be a handful of such fires each year but that there appears to be no injuries or deaths directly attributable to such fires. The main problem is that of damage resulting from extensive fire spread.

39 "The integrity of compartmentation in buildings during a fire". BRE Report for ODPM. For availability see Footnote 3.

40 "A review of the guidance in AD(B) on the provision of cavity barriers". BRE Report for ODPM. For availability see Footnote 3.

ANNEX C
Public Services Threshold Test (PSTT) for Part B

C1. As discussed in paragraph 120 the proposed changes to Part B would directly affect Building Control Bodies. The estimated costs for training and familiarisation – which are a one-off – are set out in Table C1.

Table C1: **Cost calculation table for PSTT for proposed changes to Part B**

Number of public service staff affected (per group)	*Time impact per person* *Total additional days*	*Time impact per group** *Total additional days*	*Total additional monetary cost (£ million)***
400 Local Authority Building Control Departments	1 day	3,500	£0.49
24 individual Approved Inspectors and 24 corporate Approved Inspectors	1 day	500	£0.07
Total	**1 day**	**4,000**	**£0.56**

* Based on 4,000 staff in England and Wales engaged on building control activities.

** Based on average annual salary of £35k.

ANNEX D
Small Firms' Impact Test (SFIT) for Part B

INTRODUCTION

D1. As discussed in paragraph 124 a small firms' impact test was undertaken to gauge the impact of the proposed changes to Part B on small firms (defined as those with less than 50 employees). Five firms that had responded to the public consultation for Part B were selected at random in each of the key sectors affected by the proposed changes. These were:

- A loft conversion company
- A fire engineering consultancy
- A local authority building control department
- An Approved Inspector
- An architectural firm.

D2. The specific respondent to the consultation was identified and contacted. They were then interviewed over the telephone and asked to identify the key changes to Part B from their point of view. They were also asked to highlight any impacts – particularly cost impacts – these changes would have on their own company's operations and also on those of their clients. The results of these interviews are summarised below.

LOFT CONVERSION COMPANY

D3. This is a small (2 person) loft conversion company located on the South coast that specialises in domestic loft conversions. It is a practice that carries out all the design and structural calculations which is then passed onto a local building firm to undertake the actual construction work. The company is involved in some 35-40 loft conversions annually – each one typically costing £30k – in a 35-mile 'arch' from its base on the coast. The local building stock means that they are often working on 'period' properties which were built between the 1900s and the 1960s.

D4. The company's main concern with the proposed changes to the guidance was the possible need to remove existing (possibly period) doors and their replacement by fire doors. Not only could this lead to change in character but also additional expense, potentially £1k. He felt that the scope to upgrade old doors, for example, through the use of plasterboard, to

achieve required fire protection was limited because an owner was likely to remove this once building consent was given. However, he also felt that owners were likely to remove self-closing devices.

D5. He acknowledged that there would be scope for savings in that a means of escape window (costing £500-600) would not be required, and that there would also be more scope for improved positioning of windows to provide more light in large loft spaces without excessive solar gain. The respondent felt that savings from not having to increase the fire-resistance of existing timber floors would be minimal as this is rarely needed except in cases of common areas and staircases in flats.

D6. The company feels it has built-up a good relationship with the local BCB and so produces pragmatic and practical solutions. It uses additional smoke and heat detection alarms in kitchens and bedrooms as a way to achieve the desired level of safety, often exceeding building regulation requirements. This he sees as the way forward.

D7. He feels that there will be a minimal cost for training and familiarisation. Again, the company's close working relationship with the local BCB and early submission of plans helps to ensure changes are addressed.

FIRE ENGINEERING CONSULTANCY

D8. The consultancy consists of 12 fire engineers, although it is part of a larger Mechanical & Engineering services company. It works primarily in the non-domestic sector covering all building types including airports and large apartment blocks. It works with architects, developers and building services engineers to help develop fire engineered solutions in buildings in order to achieve compliance with building regulations. The company will undertake fire and smoke CFD modelling as well as evacuation modelling to help in assessments. Ultimately it provides evidence for architects and developers to demonstrate building regulation compliance to BCBs.

D9. It sees provision of fire safety information of a building as a cost. The consultant felt that, inevitably, to collect information together or to prepare a specific guidance document on the fire safety provisions of a building/development will present a cost. The company often sees its fire safety strategy integrated into health and safety manual for office developments but not so common in other development types (e.g. residential). He was unable to provide indication of the cost as company is not involved in the final certification stage with BCBs – that role is fulfilled by an architect.

D10. He felt that there would be a cost for installing deflection heads at the underside of a slab or beam to prevent deflection of floor at a compartment wall as he feels that this practice is not as common as supposed, but he was unable to provide costs as he is not a structural engineer. In principle he agreed with the removal of self-closing devices but was concerned that education through community fire safety programme would not necessarily encourage more people to shut their doors at night. He was also concerned that requiring a developer – as opposed to the fire services – to provide fire hydrants where there was inadequate mains supply could have prohibitive cost in the case of small-scale residential sites (although this guidance is only likely to apply to big buildings).

D11. Overall he could not see the company changing their fees as a result of changes to Part B, as changes were not too radical. He considers that it is their job to keep abreast of changes to Part B and related standards and guidance. The company has training days for staff to alert them to changes – one was held when consultation version was published and another is likely to be held when the final version is published.

LOCAL AUTHORITY BUILDING CONTROL DEPARTMENT

D12. This is a large city centre building control department which responded to the Part B consultation on behalf of itself and 10 other associated local authorities. They have a technical working group that regularly meets to co-ordinate responses to consultations and agree interpretation of ADs etc. The city centre department has 61 staff (including administration) although only 41 are in post at the moment. The other local authorities are smaller and each have 8-15 in post. It is having a problem with recruitment and retention but this is also a nation-wide issue. All sectors, both domestic and non-domestic are covered in its work.

D13. The key issue arising from the consultation from its point of view was the proposed removal of self-closing devices on fire doors. In the city centre the department is seeing a lot of innovation in apartment blocks which leads to wider proposed use of water mists, sprinklers and alarm systems as an alternative to traditional passive fire protection. This is particularly the case in prestigious developments where builders and developers are keen to adopt creative designs so that their apartments stand out. This allows them to charge a price premium. Many apartment blocks have fire engineered solutions so need to ensure the requirements of Part B and the supporting guidance – which is much more prescriptive – are met.

D14. Although supporting the proposal for the provision of information there was some concern about the practicalities, particularly amongst the smaller building control departments. In the main city centre such information is readily compiled and stored, but this is not undertaken as frequently in the smaller authorities so there were concerns about cost implications arising from the need to set up suitable information storage and exchange facilities. However, this should facilitate communication between each of the authorities and with AIs. Also, where different building firms are involved in the stages of construction (e.g. in retail where one company is responsible for the building shell and another undertakes fit-out), then information on fire safety provisions will be more readily available.

D15. There was also concern that adoption of a national compartment size for warehouses would undermine the perceived benefits arising from the Local Act provisions which have a more demanding maximum compartment size. The respondent can understand the rationale for having a national limit, but the benefits – particularly in terms of reducing the size of a fire and the extent of a building lost – of a more demanding local limit would be lost.

D16. Overall he did not see the proposed changes to Part B as that radical and staff should easily assimilate them so there is unlikely to be any changes to their fee structure. He felt that the recent changes to Part L were much more significant. Training days for staff and clients are provided, and the technical working group meets to help identify changes and to disseminate these to all authorities.

APPROVED INSPECTOR

D17. The company has a total of about 80 AIs involved in building control activities although the company has more staff that are surveyors, fire engineers etc.

D18. Overall, the respondent felt that the proposed changes were not that radical but there could be some cost impacts for clients. One issue was sprinklers in residential sector and their use in offsetting structural fire protection. He had a concern about the expertise of some of those making judgement in this area. Although some guidance had recently been produced he was not sure how widely it had been read. One issue raised was that although management systems in place at the time of inspection may be satisfactory, will they still be adequate in few years' time? He accepted that the RR(FS)O should help to ensure that such provisions are maintained throughout the life of a building.

D19. He felt that the provision of information would have a cost impact. In particular, he stated that the as-built fire drawings can be difficult to obtain from designers and architects in order that they can be integrated into the health and safety file. He estimated the additional cost might be £1-2k per project for drawings to be finally checked and logged. There could also be a difficulty in enforcement in that a building complies in all respects with the requirements of the regulations but cannot be signed off because the relevant information is not provided. In this case enforcement reverts to the local authority building control department. However, there could be substantial future savings on enforcement with the availability of such information to assess improvement works undertaken by an occupier that could have compromised fire safety features.

D20. He also suggested that further future savings could be made if AIs could provide as-built plans for the client. They have to do this anyway for compliance purposes so duplicating the exercise creates inefficiencies. However, this cannot be done though as Regulation 10 prevents an AI from having a financial interest in a building.

D21. The impact on the company is likely to be minimal because changes are relatively small and keeping up with build regulation changes is seen as part of the staff's CPD. Changes to Part B have already been budgeted into the company's CPD programme.

ARCHITECTURAL FIRM

D22. The company is based in 3 offices with 60 staff including architects, chartered surveyors, builders, technicians and interior designers. Its focus is the care homes sector, and it has a large portfolio of projects under development at any one time which are at various stages of planning and construction. Projects vary from small extensions to dwellings, 12-15 bedroom extensions of existing care homes and large new care homes (80-100 bedrooms).

D23. The respondent's main concern is the impact on clients from the proposed requirement for sprinklers in care homes. Initially it was thought this would include both existing (when licence is renewed) and new-build cases, although this is not meant to be the case. In their experience many carehomes are built on brownfield sites so there are often remediation costs. If additional costs are incurred through the need for sprinklers, especially with the provision of a water tank and the associated requirement for structural improvements to accommodate it, then the extra costs could lead to a project becoming non-viable. He noted that sprinklers are hardly ever installed currently.

D24. As with the other respondents it was felt that there would be limited impact on the company in terms of training etc. The company has a CPD programme which includes weekly lunchtime seminars, and staff attend RIBA and RICS seminars and disseminate information to others. It also receives information from company representatives which is disseminated as appropriate. He basically felt that keeping familiar with building regulation changes as part of the job.

ANNEX E
Costs and Benefits by Proposal

Table E1: **Costs and Benefits by Proposal**		
Proposed amendment to Part B	*Benefit*	*Cost*
Remove the provision for self-closing devices on doors.	Economic benefit (cost saving) of £8.2m per year. Better targeting of resources.	Cost saving of £8.2m per year – negative impact on manufacturers/installers.
Revise guidance on the provision of ventilation systems suitable for the protection of common stairways in blocks of flats.	Social benefit. Save 19 lives and prevent 1,200 injuries over 25 years (equivalent to £3.0m per year). Possible small economic benefit (cost saving).	Potential small cost saving (cost of installing measures offset by benefits of space savings and hence larger flats).
Clarify that a suitable system of smoke alarms may be needed where a domestic extension is proposed.	No significant additional benefit but should ensure consistency of approach.	No significant additional cost – small cost in those areas where not current practice.
Remove separate loft conversion guidance for means of escape so that loft conversions are treated as for a new 3-storey house. Additional guidance and flexibilities also provided.	No significant additional benefit. Removes confusion and ensures consistency of approach.	No significant additional cost (cost of meeting current loft conversion guidance comparable to cost of meeting requirement for treating as 3-storey house).
As an alternative to existing provision for 100mm upstand between a house and an integral garage, the garage floor can be laid to fall.	Potential economic and social benefits. De-regulatory and provides greater flexibility and may result in cost savings as well as improved access to and from house.	Deregulatory measure potentially offering cost savings.
Sprinkler protection in new high-rise (30m+) blocks of flats.	Social benefit. Save 18 lives and prevent 280 injuries over 25 years (equivalent to £1.4m per year). There is also a benefit from reduced property damage which is estimated to be £0.84m per year over 25 years.	Cost is about £900 per flat. Amounts to an annual national cost of £0.9m.
Enhance requirement so that cavity closure around windows and doors meets a reasonable standard of fire resistance.	Social benefit in terms of reducing disruption and distress caused by fire. Environmental and economic benefits in terms of reducing fire spread and hence fire size and fire damage.	Material cost of £1-£11 per m to effect closure, amounting to cost of £0.8m per year in affected houses.
Introduce provision for cavity barriers in floor voids.	No significant additional benefit (already largely done by industry) but should ensure consistency of approach.	No significant cost (already largely met by industry).

Table E1: **Costs and Benefits by Proposal *(continued)***		
Proposed amendment to Part B	*Benefit*	*Cost*
Introduce a provision for sprinkler protection or free-swing closing doors in residential care homes.	Social benefit. **Sprinklers:** Save 7 lives and prevent 77 injuries over 25 years (equivalent to £0.47m per year). There is also a benefit from reduced property damage which is estimated to be £4.0m per year over 25 years. **Free-swing closing doors:** Save 5 lives and prevent 57 injuries over 25 years (equivalent to £0.35m per year). There is also a benefit from reduced property damage which is estimated to be £3.0m per year over 25 years.	**Sprinklers:** Cost about £6-17k per care home. Annual cost of £2.9m. **Free-swing closing doors:** Cost about £2-9k per care home. Annual cost of £1.5m.
Incorporate measures regarding inclusive design to bring Part B into line with other guidance.	No significant additional benefit but should ensure consistency of approach.	No significant additional cost.
Provide firefighting shafts in buildings over 7.5m tall in PG 5 and remove this requirement for buildings falling into PG 7(a).	Social benefit. This is intended to better target resources and could save 1 life and prevent 18 injuries over 25 years (equivalent to £0.1m per year).	Additional cost to upgrade facilities to provide a fire-fighting shaft is about £24k per building. Equates to a national cost of £1.5m per year.
Repeal parts of Local Acts requiring a maximum compartment size for unsprinklered storage and replace with a single national requirement of 20,000m^2 and/or 18m high.	Proactive as storage buildings become increasingly large and risks increase. Economic benefit from reduction in property damage. Deregulatory as national limit should ensure consistency of approach across England & Wales.	Possible cost of up to £1.4m per year for the provision of sprinklers, but construction of compartment walls a cheaper alternative. However, many large warehouses already sprinklered so proposal may well be cost neutral. Deregulatory, and there will be savings in these areas currently covered by Local Acts.
Assign self-storage warehouses to Purpose Group 4 (Shop and Commercial).	Social benefit. Proactive measure to address risks posed by a new type of building.	Unlikely to have a cost impact, although self-storage warehouses with a compartment size greater than 2,000m^2 will require sprinklers at a cost of about £120-180k per building, or compartment walls at a cost of £30-50k per building.
Improve guidance on firefighting shafts in tall buildings and provision of additional dry risers.	Social benefit. Proactive measure to improve future firefighting and search and rescue operations.	Impact will depend on shape and layout of buildings but there could be a cost saving of up to £2m or a cost of up to £2.4m. Overall it is suggested that this will be cost neutral.

Table E1: **Costs and Benefits by Proposal *(continued)***		
Proposed amendment to Part B	*Benefit*	*Cost*
Discounting stairs and alternatives in tall (over 45m) buildings	Social benefit. Proactive measure to improve future firefighting and search and rescue operations.	New-build construction costs estimated to be £4.0m per year for those that choose to discount stairs but others will opt for a management approach.
Design compartment walls to take account of the deflections that occur during a fire, bringing AD B into line with other guidance.	No significant additional benefit but should ensure consistency of approach.	No significant additional cost – small cost where guidance not currently adopted.
Introduce a **requirement** to provide information on fire safety design and procedures for operating and maintaining a relevant[41] building's fire protective measures.	Primarily economic benefit. Reduce future costs in sourcing and assessing this information/assist with preparation of risk assessments under RR(FS)O. Would have some social benefit by indirectly reducing risk of death/injury by ensuring all stages of design are joined up and ongoing maintenance/ management is appropriate.	Small cost for BCBs to inspect information – unlikely to be significant – and offset by need to have information for RR(FS)O. Overall may even give a cost saving to businesses.
Total	**37 lives saved and 1,480 injuries prevented over a 25-year period (equivalent to £4.4m per year) and reductions in disruption and distress caused by fire in *dwellings*. Also, reduced property damage amounting to £0.84m per year.** **6-8 lives saved and 75-95 injuries prevented over a 25-year period (equivalent to £0.45-£0.57m per year) in *non-dwellings*. Also, reduced property damage amounting to £3.0-£4.0m per year.** **Proactive measures to improve future fire-fighting and search and rescue operations, and others which address increasing risks.** **Cost saving of £8.2m per year. Economic benefits also include a number of deregulatory proposals, better targeting of resources and potential cost savings from alternative approaches.** **Clarification and consistency of application.** **Environmental benefits.**	**Compliance cost £1.7m per year in *dwellings*.** **Cost *saving* £8.2m per year [see benefits] but negative impact on door closer manufacturers** **Overall *non-domestic* cost impact could have a broad range: from £5.0m to £12.2m per year. More likely to be £7.0m to £9.4m per year.**

41 A relevant building is one to which the RR(FS)O applies. This includes non-domestic buildings and blocks of flats.