

Title: Review of the ban of combustible materials in and on the external walls of buildings IA No: N/A RPC Reference No: N/A Lead department or agency: Department for Levelling Up Housing and Communities Other departments or agencies: N/A	Impact Assessment (IA)			
	Date: 31/05/2022			
	Stage: Final			
	Source of intervention: Domestic			
	Type of measure: Secondary Legislation			
Contact for enquiries: Enquiries.BR@levellingup.gov.uk				
RPC Opinion: Not Applicable				

Summary: Intervention and Options

Cost of Preferred (or more likely) Option (in 2019 prices, 2020 present value, all other figures presented in Feb 2022 prices and 2022 present year)

Total Net Present Social Value /	Total Net Present Value to Business	Net cost to business per year	Business Impact Target Status
-£262.8m	-£250.1m	£29.1m	Non qualifying provision

What is the problem under consideration? Why is government action or intervention necessary?

Following the Grenfell Tower Fire on 14 June 2017, swift government action was needed to address the potential for future building works to use combustible materials in and on external walls of high-rise residential buildings. The ban came into force in December 2018 and was reviewed in the autumn of 2019. The review led to proposals to change: the scope, including the ban height threshold; the exemptions; clarify guidance; and ban metal composite materials with an unmodified polyethylene core in and on the external walls of buildings.

What are the policy objectives of the action or intervention and the intended effects?

The overall policy objective is to provide clarity about materials to be used in the external walls of buildings and as a result ensure that residents are and feel safe in buildings. The intended effects of the policy are to provide a proportionate approach to risk, reduce the potential for external fire spread in buildings; resolve where appropriate issues with the application of the ban without compromising the intention of the ban; and ensure that industry is able to appropriately design the external walls of buildings within scope of the ban.

What policy options have been considered, including any alternatives to regulation?

A range of interventions have been assessed in this impact assessment. This is a summary of the proposed policy options:

- Change the building type included within the ban** –Inclusion of hotels, hostels and boarding houses within the scope of the ban (option 1),
- Issue an amendment to Approved Document B** - Retain the regulatory ban at 18m and introduce new guidance for external walls and balconies for blocks of flats between 11m and 18m in height (option 5),
- Metal Composite Materials** - Introduce a complete ban on the use of the type of metal composite material that was used on Grenfell Tower (metal composite material with an unmodified polyethylene core) in the external walls of all new buildings and buildings undergoing building works, regardless of height or use (option 6),
- Attachments** – Inclusion of curtains and slats of solar shading devices within scope of the ban, with a limited exemption for ground floor awnings (option 8),
- Exemptions** – Amendment to the list of materials exempted from the combustible materials ban to include fibre optic cables, water proofing materials and insulation used below and up to 300mm from ground level,
- An 18 month “type relaxation” on cavity trays (option 10),
- Performance Requirements** – Update the classification that materials must meet to comply with the combustible materials ban to the current version and allow the top layer of a balcony floor to meet the required standard using the horizontal-testing equivalent of the existing standard.

A “do nothing” option was considered for each area where a policy decision was made. A third option was considered in relation to the height threshold of the ban: decreasing it from 18m to 11m.

Will the policy be reviewed? It will be reviewed. If applicable, set review date: Annually

Is this measure likely to impact on international trade and investment?	No			
Are any of these organisations in scope?	Micro Yes	Small Yes	Medium Yes	Large Yes
What is the CO ₂ equivalent change in greenhouse gas emissions? (Million tonnes CO ₂ equivalent)	Traded: N/A		Non-traded: N/A	

I have read the Impact Assessment and I am satisfied that, given the available evidence, it represents a reasonable view of the likely costs, benefits and impact of the leading options.

Signed by the responsible:

Stephen Greenhalgh Date:

31/05/2022

Summary: Analysis & Evidence

Preferred Policy Options

Price Base Year	PV Base Year	Time Period Years	Net Present Social Value (£m)		
			Low: -£214.0m	High: -£397.3m	Best Estimate: -£305.7m
2022	2022	10 Years			

COSTS (£m)	Total Transition (Constant Price) Years		Average Annual (excl. Transition) (Constant Price)	Total Cost (Present Value)
Low	£1.0m	0	£25.6m	£214.0m
High	£1.8m	0	£47.5m	£397.3m
Best Estimate	£1.4m	0	£36.5m	£305.7m

Description and scale of key monetised costs by 'main affected groups'

A significant proportion of the costs to society detailed arise from the provisions for 11m to 18m new builds which use Approved Document B to demonstrate compliance (£38.0m (EANC)). Additional to this is the amendment to the pre-existing ban to widen the scope to include hotels, hostels and boarding houses, requiring all new builds and substantially refurbished buildings to comply with the 18m+ ban (£4.3m (EANC)). The 18-month cavity tray relaxation is also expected to reduce costs for businesses (-£7.0m (EANC)).

Other key non-monetised costs by 'main affected groups'

There are no hypothesised non-monetised costs modelled in this impact assessment.

BENEFITS (£m)	Total Transition (Constant Price) Years		Average Annual (excl. Transition) (Constant Price)	Total Benefit (Present Value)
Low	£0.0m		£0.0m	£0.0m
High	£0.0m		£0.0m	£0.0m
Best Estimate	£0.0m		£0.0m	£0.0m

Description and scale of key monetised benefits by 'main affected groups'

There are no benefits that have been monetised in this impact assessment.

Other key non-monetised benefits by 'main affected groups'

- Widening the scope of the ban to hotels, hostels, dormitories in boarding schools above 18m in height will make compliance easier to identify for designers, installers and building control bodies. Improved compliance will ensure fire safety risks are better identified and managed – leading to safer buildings.
- Changes to the combustible ban list and the temporary relaxation for cavity trays will reduce unintended consequences and the potential delivery impacts for some projects.
- Clarifications on ADB provisions will provide a clearer route to compliance for designers and developers and reduce potential non-compliance and therefore improve the safety of buildings.

Key assumptions/sensitivities/risks	Discount rate %	3.5
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Some key assumptions have been made for modelling purposes:

- Forecast growth rates of building stock,
- Estimated number of substantial external wall refurbishments,
- Number and type of external cladding/insulation projects that are installed each year.

There is no guidance that requires the construction industry to use the specific materials that have been modelled in the costings and so actual costs may differ than those outlined in this impact assessment.

BUSINESS ASSESSMENT

Direct impact on business (Equivalent Annual) £m:			Score for Business Impact Target (qualifying provisions only) £m:
Costs: £33.8m	Benefits: £0.0m	Net: -£33.8m	
			N/A

Introduction

1. Following the Grenfell Tower fire on 14 June 2017, the government recognised the need to take immediate action.
2. The Ban on Combustible Materials in and on the external walls of buildings, Building (Amendment) Regulations 2018, Statutory Instrument (SI) 2018/1230 came into force on 21 December 2018. The SI (Statutory Instrument) amended the Building Regulations 2010 and restricted the use of materials in an external wall and specified attachments to those achieving Class A2-s1, d0 or Class A1 in accordance with BS EN 13501-1:2007+A1:2009, the two most onerous classifications.
3. In the Explanatory Memorandum published alongside the SI the government committed to review the effectiveness of the ban annually through engagement with building control bodies and the Building Regulation Advisory Committee (BRAC).
4. In June 2019, we commissioned a study of the impact of the ban through an online survey issued in July 2019 to 100 relevant organisations, of which 34 responded. The majority of respondents reported difficulties with implementation and sourcing alternative products but 65% think the ban has provided benefits, with only 18% suggesting that the benefits do not outweigh the costs.
5. In late 2019, the government further engaged with experts including the BRAC and industry partners to better understand views on the ban, and its impact on industry. This included discussion about the scope, exemptions, and attachments covered by the ban.
6. Following the review of the ban, on 20 January 2020 a [public consultation](#) was launched including proposals informed by the views gathered during the review. The consultation covered:
 - a. buildings in scope of the ban including changing the building types and height threshold,
 - b. metal composite materials,
 - c. attachments,
 - d. exemptions including cavity trays, roof components and materials below ground level, and,
 - e. performance requirements including floor testing and an update of BS EN 13501-1.
7. The consultation closed on 25 May 2020 and received over 850 responses. The government response to this consultation is here: <https://www.gov.uk/government/consultations/review-of-the-ban-on-the-use-of-combustible-materials-in-and-on-the-external-walls-of-buildings>
8. This impact assessment considers several policy decisions. As the interaction of policy decisions are discussed, continuous numbering has been used for the policy options rather than restarting at 1 for each policy area.

Buildings in Scope of the Ban

Changing the building types

9. We are aware of several recent fires in hotels that have raised concerns that this type of building should fall within the scope of the ban. Industry experts and stakeholders also raised concerns following the announcement of the ban and during the review that hotels, hostels and boarding houses were not within scope.
10. These buildings can be staffed overnight, have multiple routes of escape, signage and emergency lighting to assist evacuation, operate a simultaneous evacuation and have a higher level of detection and alarm systems than residential buildings. However, these are premises where occupants sleep and are generally less familiar with their surroundings than in their own residences. This may impede their escape in the event of a fire and therefore increases the overall level of risk.

Options

11. The consultation proposed to include hotels, hostels and boarding houses within scope of the ban. A significant proportion of respondents agreed with this proposal (38% agreed, 21% disagreed, 41% said that they did not know).
12. Two options are considered:
 - a. Option 1 (preferred): To include hotels, hostels and boarding houses within the scope of the ban if they meet the height threshold.
 - b. Option 2: Do nothing – to not include hotels, hostels and boarding houses within the scope of the ban.

Costs

13. The inclusion of hotels, hostels and boarding houses with the bottom of their top storey more than 18m in height will impact an estimated 29 buildings per year. This causes an additional equivalent annual net cost of £3.0m-£5.6m, with a central estimate of £4.3m.
14. The main driver of this increase in cost is an expected £1.4m-£2.7m for new build 18m+ hotel, hostel and boarding houses facades' each year, with a central estimate of £2.0m. Façade refurbishment is expected to account for £1.2m-£2.3m of the equivalent annual net cost, with a central estimate of £1.8m.

Risks and assumptions

15. We estimate that around 25-32 hotels, hostels and boarding houses greater than 18m would be built or refurbished each year and that in the absence of the intervention, around 50% of these would have installed rainscreen façades that do not meet the requirements of the ban (which are the main driver of cost increases under this intervention).
16. The intervention is expected to increase costs by £0.2m-£0.3m per building per year, with a central estimate of £0.2m. This is because rainscreen façades including materials meeting the performance requirement of the ban costs on average £69 per sqm more than one which does not.
17. Our modelling also accounts for the cost of replacing the following components in all newly built or during refurbishments in hotels, hostels and boarding houses over 18m with alternatives that meet the requirements of the ban:

- a. Concrete Structural Frames,
 - b. Mineral Fibre Board waterproofing,
 - c. Steel Frame and Aluminium Decking Balconies,
 - d. Aluminium Solar Shading; and
 - e. PPC Steel glass balustrades.
18. Together, these are expected to have a total equivalent net cost between £0.3m-£0.6m each year, with a central estimate of £0.5m.
19. These costs, and all the costs mentioned throughout, have a degree of uncertainty around them. They are based on the materials currently procurable and successfully installed on site. Cost estimates were used for materials that are 'most likely' to be used by industry, however, the legislation does not prescript what materials should be used, but rather what functional requirements external wall systems should meet. Therefore, modelled costs could be higher, or lower, than costs occurred in the real world.

Changing the height threshold

20. The ban currently applies to buildings with a top storey more than 18m above ground level. There have been calls to change this height threshold following fires in buildings just under 18m. We proposed lowering the height threshold of the ban, in Regulation 7(4)(a), to include buildings with a storey at least 11 metres above ground level. A large research project was also proposed that would aim to improve our understanding of building risk in relation to height and other factors, in order to support an appropriate height threshold for the ban in the future.
21. The majority of consultation respondents who expressed a preference disagreed (44%) with the proposal to reduce the height threshold to 11m (24% agreed, 32% said 'don't know'). Respondents cited concern over the impact to industry by applying a blanket restriction to such a large number of buildings and restrictions on the use of structural timber, which is seen as having significant environmental benefits.
22. Many stakeholders considered the ban as a "blunt instrument" that does not allow designers etc. to consider the risk of individual buildings. The ban applies to the full wall rather than just particular elements (e.g. cladding) which can cause unintended difficulties to industry in designing walls (e.g. including low-risk plastic components such as fibre optic cables) and sourcing materials. This was proportionate for buildings above 18m in height. However, considering that the level of risk is to some extent related to the height of a building, a strict ban for buildings between 11 and 18m could be disproportionately restrictive.

Options

23. Three options are considered:
 - a. Option 3: Lowering the height threshold of the ban to include buildings with a storey at least 11 meters above ground level.
 - b. Option 4: Do nothing – Retain the ban at 18m.
 - c. Option 5 (preferred): Retaining the ban at 18m and introducing new statutory guidance in Approved Document B for buildings between 11m and 18m, setting recommended limits on the combustibility of materials used in the wall which would reduce the inappropriate use of combustible materials in these buildings.
24. Option 3 was set out in section 4.2 as a proposal for lowering the height threshold of the ban, in Regulation 7(4)(a), to include buildings with a storey at least 11 metres above ground level. A research project was also proposed that would aim to improve our understanding of building risk in relation to height and other factors, in order to support an appropriate height threshold for the ban in the future.
25. Respondents to the consultation raised concerns about the potential unintended difficulties a blanket ban would impose such as the perceived need to increase the exemptions to the ban and the potential impact it could have on the mortgage lending and insurance market.
26. The government recognises the potential environmental benefits of the safe use of timber framed construction. Concerns were raised in the consultation about the potential environmental impact of banning the use of structural timber in mid-rise buildings. The current market for timber frame buildings is currently focused on buildings less than 11m in height. However, there is a concern that this option could negatively impact the uptake

of timber frame construction in buildings above 11m in height and that an unintended effect may be a decrease in the uptake of timber frame construction in buildings below 11m.

27. Option 5 is preferred. This option would reduce the inappropriate use of combustible materials in buildings between 11m and 18m, which should contribute to residents' increased feelings of safety, while avoiding some of the unintended technical difficulties associated with a ban.
28. The level of risk in buildings is relative to their height, amongst other factors. The preferred option therefore gradually increases the constraints on designers and developers with the increased height of buildings.
29. This option relies on designers to appropriately use the guidance when using their professional judgement about the level of risk from fire within the building due to design and construction choices; this guidance will provide advice on the minimal performance standard expected.
30. This option addresses the environmental concerns raised by respondents, allowing the use of structural timber and should prevent a decreased uptake of structural timber in buildings.

Costs

Option 3

31. Lowering the height threshold of the ban to 11m is estimated to have an equivalent annual net cost of £70.6m-£131.1m (not including hotels, hostels and boarding houses and additional exemptions), with a central estimate of £100.8m. Almost 80% of this increase in costs stems from the use of materials meeting the performance requirements of the ban on 11-18m flats.
32. This option may increase the likelihood of lenders requiring EWS1 forms on all buildings above 11m, including to those which the ban would not apply. However, this risk is mitigated by the recent passage of the Building Safety Act (2022) which means that qualifying leaseholders will be protected in law from costs of cladding remediation and costs for non-cladding defects will be subject to a firm cap. Furthermore, over 40 developers have committed to remediate buildings with safety defects that they played a role in developing, passing on no costs to leaseholders. These changes significantly reduce the risk for lenders of leaseholders being faced with unaffordable remediation bills. It is unknown to what extent this issue could arise.
33. There are additional costs associated with this option should preferred option 1 be chosen relating to the inclusion of hotels, hostels and boarding houses in the ban. By increasing the scope of the ban to include these buildings, lowering the height threshold of the ban to 11m is estimated to have an additional equivalent annual net cost of £6.9m-£12.7m, with a central estimate of £9.8m.
34. We anticipate local authorities to substantially refurbish around 366 11m-18m over the appraisal period. This has an estimated equivalent annual net cost of £4.2m-£7.8m for these buildings to comply with the ban, with a central estimate of £6.0m. Costs have not been modelled for new builds completed by local authorities as we do not anticipate many 11m-18m completions of this type.

Option 5

35. There is an additional cost of this option since all 11m to 18m buildings that are newly built or are undergoing substantial refurbishment must have external wall systems that meet the new guidance or otherwise meet the requirement at B4 of Schedule 1 of the Building Regulations. This can be completed by following the guidance in Approved Document B or

through additional tests and assessments. The equivalent annual net cost, excluding hotels, hostels and boarding houses, is £26.6m-£49.5m, with a central estimate of £38.1m. Our central estimate suggests this is 35% of the additional estimated annual cost of option 3, when excluding hotels, hostels and boarding houses.

36. This option may increase the likelihood of lenders requiring EWS1 forms on all buildings above 11m, increasing the negative effects on the housing market. It is unknown to what extent this issue could arise; however, the passage of the Building Safety Act (2022) provides mitigations (described above) and it is expected that relative to option 3, this is likely to occur to a lesser extent.
37. There are additional costs associated with this option should preferred option 1 be chosen relating to the inclusion of hotels, hostels and boarding houses in the ban. By increasing the scope of the ban to include these buildings, lowering the height threshold of the ban to 11m is estimated to have an additional equivalent annual net cost of £2.0m-£3.8m, with a central estimate of £2.9m. Our central estimate suggests this is 30% of the estimated annual cost of option 3 when including hotels, hostels and boarding houses in scope.
38. We anticipate local authorities to substantially refurbish around 366 11m-18m over the appraisal period. This has an estimated equivalent annual net cost of £1.3m-£2.4m for these buildings to comply with the new statutory guidance in Approved Document B, with a central estimate of £1.8m. Costs have not been modelled for new builds completed by local authorities as we do not anticipate many 11m-18m completions of this type.

Risks and assumptions

39. In the absence of government intervention (option 4) around 86% of 11m to 18m buildings whose use is within scope of the ban would have installed rainscreen façades that do not meet the performance requirements of the ban. Preventing the installation of these rainscreen façades is the main driver of the cost increase under this intervention. More specifically in 11m to 18m apartments, it costs an additional £35,000-£144,000 per building to use non-combustible materials in the external walls system, depending on façade type.
40. Option 5 allows for a less expensive route to demonstrate compliance since it allows for more materials to be used. Lower rated materials are allowed in the external wall system if that exact wall system can achieve a BR135 classification. Since there are more materials available the average costs may be lower and, in some instances, not be required to change during substantial refurbishment. Therefore, option 5 has lower costs than option 3.
41. Option 5 includes modelling using a linear route to compliance. We have assumed that across the industry, new-builds and refurbishments, 60% of buildings will choose this route to compliance. The only costs associated with this is the removal and remediation of materials that are achieving class B-s1,d0 or below when the building undergoes refurbishment affecting the external wall. Therefore, there are no further additional costs of this route to compliance.
42. We have estimated that 5% of new builds and refurbishments will commission a BS-8414 test at a cost of around £50,000 per assessment. This involves testing the whole wall construction in a lab, and upon successful completion a BR135 classification is achieved. However, although the overall industry capacity for these tests has increased recently it remains restricted. This may impact market capacity to deliver these tests if there is a significant increase of buildings using this route to compliance.
43. We have further estimated that 25% of new-builds and refurbishments will commission an 'Assessment in lieu of a test' (AIILOT). This is a written assessment by an industry

professional using pre-existing assessments for similar wall constructions. This has an estimated additional cost of £5,000 per assessment.

44. It is also likely that some buildings will use an exact external wall system that is already used on another building that has already achieved a BR135 classification. We have assumed that 10% of new builds and refurbishments will use this route to demonstrate compliance. A lower cost report is needed that will confirm the proposed wall construction is the same as that which has received the BR135 classification. This is estimated to have an additional cost of £1,200.

Metal Composite Materials

45. Research [into the fire performance of materials](#) published by the Department in April 2020 demonstrated that metal composite material (MCM) panels with unmodified polyethylene core poses an unparalleled fire risk. The Department therefore considers that an outright ban on its use on any buildings, regardless of height or purpose, is justified.
46. This is in line with the [advice](#) issued by the Independent Expert Advisory Panel in January 2020.
47. Our consultation proposed to extend the ban to all buildings, regardless of height, purpose or use, only in relation to the use of metal composite materials with a polyethylene core in and on external walls and in specified attachments. This would include the aluminium composite material that was used as cladding on Grenfell Tower and similar materials.
48. This ban will prohibit these materials and comparable products from being used on all new buildings and all buildings undergoing a refurbishment which affects the external wall. There was strong support for this proposal in the consultation responses. 48% of the consultation respondents agreed with this proposal, 18% disagreed and 34% said that they did not know.

Options

49. Two options are considered:
 - a. Option 6 (preferred): Ban the use of MCM (Metal Composite Material) with an unmodified polyethylene core and similar materials in and on the external wall of new buildings or buildings undergoing a refurbishment, regardless of height or building use.
 - b. Option 7: Do nothing – do not ban the use of MCM with an unmodified polyethylene core in and on the external wall of buildings.

Costs

Option 6

50. The evidence gathered to date suggests that MCM with unmodified PE core is not being installed on any buildings. Our analysis also demonstrated that it is currently exceedingly difficult to procure this type of material on the open market to use as a cladding material.
51. We therefore do not anticipate any cost associated with prohibiting the use of this material.
52. This option might increase the likelihood of lenders requiring EWS1 forms on all buildings that currently have metal composite materials with unmodified polyethylene core regardless of their height. There may also be lender concerns if the external wall construction is unknown. Therefore, there may be further negative effects on the housing market, however, the passage of the Building Safety Act (2022) provides mitigations (described above). It is unknown to what extent this issue could arise. To mitigate this, the Department continues to work with lenders and insurers to drive a proportionate, risk-based approach to ensure a proper balance between people's safety and protecting consumers from unnecessary costs.

Attachments

53. Solar shading devices cover a number of systems used to control the amount of solar energy entering into a building. This includes, but is not limited to, blinds and shutters.
54. Solar shading devices can be an effective way of reducing heat gain in buildings. However, we continue to believe that solar shading devices made of combustible materials on the external walls of a building could create a path for a fire to spread, though some respondents contested this view.
55. Following a Judicial Review, solar shading products such as blinds, shutters, awnings, brise soleil, and similar are not required to meet the performance requirements of the ban.
56. Non-combustible sun shading and light deflecting products are currently available on the market, although these tend to be non-retractable and not made from flexible materials, for example, brise soleil. Some respondents argue that fixed systems are not as effective as they are not able to adapt to changing sun-light conditions. However, the clearest way to ensure safety is to apply the requirements of the ban on the use of combustible materials to solar shading products attached to the external walls of buildings in scope.
57. The consultation proposed to extend the ban to include solar shading devices, including but not limited to external blinds and shutters as a specific attachment. 38% of the consultation respondents agreed to the proposal, 24% disagreed and 38% said that they did not know.
58. Consultation responses highlighted that the ban would prohibit the use of dynamic solar shading devices which are able adapt to changing sunlight conditions. The responses argued that some small components necessary for this type of device to function cannot be made to achieve the required performance. We are therefore proposing to exempt small components enabling dynamic solar shading to achieve their function.
59. Retractable awnings are often used at ground floor level for shop fronts or similar purposes as they may provide benefits for commercial premises at ground level of mixed-use buildings. We consider that the risk posed by these is limited if their use is restricted to ground floor level only.
60. The consultation further proposed to include an exemption for ground floor awnings and similar sun shading and light deflecting products. 49% of the consultation respondents agreed to the proposal, 13% disagreed and 38% said that they did not know.

Options

61. Two options are considered:
 - a. Option 8 (preferred): To extend the ban to apply the requirements of the ban (Class A1 or A2-s1,d0) to the curtains and slats of solar shading devices, with a limited exemption for ground floor solar shading devices. The ban does not apply to internal blinds and shutters.
 - b. Option 9: Do nothing – do not include solar shading devices within the scope of the ban.

Costs

Option 8

62. There are no significant cost differences between solar shading devices with Class A1 or A2-s1,d0 rated curtain or slats than products that use a combustible curtain or slats. This results in Option 8 being cost neutral in regard to new-builds.

63. During external wall refurbishment, it is likely that new solar shading attachments would have to be bought, so there is no increase in costs as a result of this option to industry regarding as and when current buildings undergo refurbishment.
64. Solar shading products that meet the performance requirements of the ban already exist but are not currently used due to their physical appearance. By including solar shading devices in the ban, less aesthetically pleasing alternatives must be used. This has an unmonetizable cost to residents in buildings in scope where solar shading and light deflecting products are used.
65. The inclusion of hotels, hostels and boarding houses will have minimal impact as very few buildings of this type will use any form of solar shading devices or attachments.

Risks and assumptions

66. We have assumed that around 14% of the buildings in scope of the original ban will use solar shading that has combustible components, typically made of a combination of metal and wood. The other 86% will use non-combustible products, typically using solely metal components.
67. We have considered solar shading separately from ground floor awnings since these may provide a commercial benefit to ground floor premises.
68. There may be the option that developers no longer wish to use solar shading attachments that meet the functional requirements of the ban because they are not as aesthetically pleasing. However, with the risk of increased overheating and other building regulations not being met if solar shading attachment are not used, it is assumed there will be no reduction in the use of solar shading. Therefore, each existing solar shading device that does not meet the functional requirements of the ban will be exchanged with a product that does meet the requirements. This means there will be no impact on the thermal comfort of occupants in buildings within scope.

Exemptions

Cavity Trays

69. Cavity trays are an essential wall component, installed in wall cavities to capture moisture that penetrates the outer face of the wall, preventing damp. Cavity trays between two leaves of masonry construction are already exempted from the ban however cavity trays in other types of construction systems are not.
70. We are aware that industry was struggling to find non-combustible cavity trays, often opting for sheet metal that is shaped on site. Currently, the materials used are less durable than the cavity trays in use before the introduction of the ban. Products are starting to appear on the market however industry stakeholders have concerns over the installation of these products. We are aware of some further manufacturers developing non-combustible alternatives, but these are not fully market ready.
71. We were, also, aware that some developers are having some issues in getting new homes warranty, making the homes unsaleable, due to concerns over the safety and performance of non-combustible cavity trays.
72. Our consultation proposed a temporary 18-month "type relaxation", under S.11 of the Building Act 1984, to temporarily exempt cavity trays in all forms of construction from the ban to deal with this urgent issue quickly but also to keep pressure on industry to develop adequate non-combustible alternatives. The BRAC fire safety group supports this proposal and 35% of respondents to the consultation also said that they agreed, 16% said they disagreed and 49% said that they did not know.

Options

73. Two options are considered:
 - a. Option 10 (preferred): Introduce a temporary 18-month "type relaxation" to exempt cavity trays.
 - b. Option 11: Do nothing – do not exempt cavity trays from the ban for non-masonry construction.

Costs

Option 10

74. For buildings in scope over 18 metres, excluding hotels, hostels and boarding houses, Option 10 is expected to result in an equivalent annual net total saving of £4.9m-£9.1m over the next 18 months, with a central estimate of £7.0m.
75. There are additional cost savings should option 1 be chosen. The exemption to hotels, hostels and boarding houses is expected to result in an equivalent annual net saving of around £0.1m over the next 18 months.
76. After this point, we expect suitable non-combustible alternatives to come to the market which may reduce the cost impact to industry compared to using the only viable product that meets the requirements of the ban at the moment.
77. There will be minimal cost savings here for the public sector due to the small volume of new build completions that have not been modelled.

Risks and assumptions

78. We have modelled that around 85% of buildings in scope of the original version of the ban will have a non-A rated polypropylene cavity tray installations. On average, stainless steel cavity trays cost an additional £62 per sqm over the non-compliant counterpart.
79. The labour costs associated with the installation of the stainless-steel cavity trays are significantly higher than the polypropylene, £7.75 per metre than £2.50 per metre, and so there are higher costs to industry of installation on this alternative. We expect installation costs to fall once new viable alternatives have been developed and industry familiarise themselves with the complexities of the installation process.

Roof components

80. The design of the junction between an external wall and a roof often requires that membranes used in the roof construction extend into the external wall with the aim of inhibiting the entry of water. Roofing materials passing through the external wall are exempted from the requirements of the ban.
81. Following the targeted survey and discussions with industry experts there appears to be some uncertainty around the continuation of membranes used in a roof system when it is continued into the external wall. A majority of the consultation respondents providing a view agreed (29% agreed and 25% disagreed) that further clarification should be provided in guidance on the performance requirement for roofing membranes.
82. We will clarify in guidance the performance requirements for roofing membranes, which are exempt from the ban.
83. There are no costs associated with this change as it is a clarification of the guidance rather than an alteration to the ban.

Materials below ground level

84. Water proofing and insulation materials used in external wall construction below ground level are exempt from the requirements of the ban. This is because these products also need to be water resistant and non-combustible materials are not typically water and moisture resistant.
85. The review raised a practical issue of these materials needing to be continued above ground to prevent moisture penetrating the external walls, which could lead to issues with water ingress and damp.
86. We do not believe that such a limited exemption would increase the risk of fire spread along the external wall. In the consultation we asked for views on amending the current exemption for water proofing materials and insulation to include material used below and up to 250mm above ground level. 67% of consultation respondents agreed to this proposal, 5% disagreed and 28% said that they did not know. However, several respondents highlighted that 250 mm may not be enough to account for sloping sites and a larger allowance would be required.
87. We will amend the current exemption for water proofing materials and insulation to include material used below and up to 300mm above ground level.
88. There are no costs associated with this change as our intelligence suggests this is already being done.

Performance requirements

Floor testing

89. The A2-s1, d0 and A1 classifications apply to materials tested vertically as a wall. There are alternative classifications Class A2fl-s1 and A1fl that are available for materials tested horizontally as a floor. Currently, several products used for balcony floors are only tested to A2fl-s1 or A1fl classification and as such do not meet the requirements of the ban. The classification A2fl-s1 and A1fl require materials to achieve similar requirements as Class A2-s1, d0 or A1 as both must undergo BS EN ISO 1716 testing.
90. In the consultation we proposed to expand the classifications required for materials used horizontally to include Class A2fl-s1 and Class A1 fl. A large majority of respondents agreed with our proposal to allow the use of these additional classifications (37% agreed and 13% disagreed). We will therefore allow the use of these additional classifications for materials tested horizontally (A1fl, and A2fl-s1) and update this into the latest version of the Regulations.
91. The costs have not been modelled as we do not expect this to decrease the materials available for industry to use or change their associated prices. Therefore, there are no anticipated additional costs or risks.

Update of BS EN 13501-1

92. The standard referred in the ban has been superseded and withdrawn. An updated version, BS EN 13501-1:2018, was published in January 2019 by the British Standards Institution. The updated version of the document does not impact classification A1 and A2-s1, d0. The main update of the document relates to classification F which is not used in the building regulations.
93. In the consultation we asked for views on amending the Building Regulations to reference the updated version of the standard to ensure that the most recent version of the British Standard is referenced in the regulations. A large majority of respondents (49%) agreed with our proposal and only 6% disagreed.
94. The costs have not been modelled for this since it does not change the materials we expect industry to use that are compliant with the performance requirements of the ban. Therefore, there is no change in the anticipated costs or risks.

Additional technical changes

95. The consultation responses highlighted issues encountered by industry that warrant additional limited exemptions. One issue raised is the need to exempt fibre optic and similar non-electrical cables. The ban currently exempts electrical installations within the external wall construction such as wiring cables and sockets. However, this does not extend to fibre optic cable as these wires do not carry current. It is relatively common for fibre optic and similar cables to be routed through the external walls of buildings when retrofitting them.
96. We will exempt fibre optic and similar non-electrical cables from the ban to rectify the anomaly currently present.
97. There are no associated costs or risks with this proposed change.

Familiarisation Costs

98. As with any change to buildings regulations, there is a need for industry officials to familiarise themselves with the new guidance. We do not believe that any additional training would be required for the recommended changes, only the need for familiarisation.
99. It is most likely that industry professionals will familiarise themselves with the changes to the guidance in Approved Document B and the Buildings Regulations when they come to use it the first time following the update.
100. Whilst some policy options will cause additional familiarisation costs, we estimate that around 20,000 people will need to familiarise themselves with changes relating to 18m+ buildings, costing £0.4m-£0.7m, with a central estimate of £0.6m.
101. By changing the height threshold of the ban to 11m or more (option 3) or amending Approved Document B (option 5) in relation to buildings of 11m –18m, we estimate a further 29,000 people would need to familiarise themselves with the changes. This would cost an additional £0.6m-£1.1m above the expected familiarisation costs outlined in the paragraph 97, with a central estimate of £0.9m¹.
102. The additional familiarisation costs have been estimated using the assumption that 15% of the designers/engineers who currently use ADB in their work and 35% of building control officers and fire safety officers will need to familiarise themselves with the guidance at 0.5 hours per person.
103. In total, familiarisation costs are estimated to be around £1.0m - £1.8m, with a central estimate of £1.4m.

¹ Note that familiarisation costs may not add up due to rounding.

Benefits

104. The Government's Buildings Safety Programme has identified buildings which have combustible external wall systems which did not follow the provisions of the Building Regulations and its guidance. The purpose of the ban introduced in 2018 was to make clear exactly what materials can and cannot be used, in the external wall of buildings within scope of the ban.
105. Widening the scope of the ban by including hotels, hostels and dormitories in boarding schools with a storey more than 18 m in height, including solar shading devices and a complete ban on metal composite materials with unmodified polyethylene core will make compliance easier to identify for designers, installers and building control bodies. Better compliance will ensure that fire safety risks are better identified and managed by developers, which will reduce the level of risks in buildings and make buildings safer. This reduction in risk has not been monetised.
106. Our proposed changes to the ban of combustible materials will extend the list of exempted materials where issues have been identified in achieving the performance requirement of the ban and the level of risk has been demonstrated to be low. These limited additions to the exemption list as well as our proposed temporary relaxation for cavity trays will facilitate the design of external walls. This will reduce the unintended consequences and the impact of the ban on the delivery of some projects. These benefits have not been monetised.
107. Finally, our proposed changes to Approved Document B (ADB) will clarify the provisions in ADB for the external walls of building between 11 and 18m in height and the guidance with regards to roofing membranes. This will provide a clearer route to compliance for designers and developers and reduce the potential for non-compliances reducing the level of risk in these buildings. This reduction in risk has not been monetised.
108. We have estimated that there are nearly 80,000 more buildings which will be affected by these changes over the next 10 years.
109. There are further unmonetized benefits from the increase in the perception of safety for residents. The clearer route to compliance and so, the reduction in the use of combustible materials, should improve residents' attitudes towards the safety of their residence. This is difficult to monetise as there is insufficient evidence to value the impacts of feeling safe on mental health. However, this has been explored in switching value analysis.

Switching Values

110. It is noted that a large non-monetised benefit will be providing reassurance to residents that they are safe in their homes. Due to the lack of suitable existing research on residents' wellbeing and perceptions of safety, it is not currently possible to robustly monetise this benefit.
111. However, we have tried to estimate what value residents may place on the reassurance of safety through switching value analysis.
112. The value of reassurance to households considered in option 5, as well as the potential increase in the safety of these buildings, would need to total £245.2m for the benefits of the proposed preferred options to exceed the monetised costs that affect 11m-18m residents. This equates to approximately £202.17 per resident of 11m-18m flat that we estimate will be built or undergo substantial refurbishment during the appraisal period.

Rationale for approach

113. The modelling utilised input from a number of consultants, who had good and diverse industry knowledge. Where assumptions had to be made, they contributed their professional opinion.
114. Adroit Economics consortium obtained a sample of quotes from industry to create an estimate of the costs of specific replacement components.
115. The costs and benefits of the policy options have been estimated using a number of assumptions. The key areas where assumptions have been made:
 - a. Forecast stock and the rate of erection of new buildings for the 10-year period (flats, student accommodation, registered care premises, hospitals, hotels, hostels and dormitories in boarding schools over 18m)
 - b. Forecast rate of existing buildings undergoing refurbishment in the next 10 years.
 - c. Number and type of external cladding/insulation projects that are installed each year. The modelling has made this assumption for simplicity purposes, but there is no legislation change that requires industry to use the specific products we have modelled, rather the products industry will use must meet the new functional requirements. Therefore, industry still have a choice of materials to use, which will naturally vary in costs. The costs modelled may differ from the actual costs occurred by industry.
 - d. The proportion of buildings and flats with combustible materials
 - e. The proportion of buildings that already achieve class A1 or A2-s1, d0.
116. For modelling purposes, it has been assumed that the cost of specific materials per unit is the same for across the country for each building.
117. Where relevant, costs have been modelled for 18m+ apartments, care homes, hospitals, student accommodation, medical centres and office conversions into residential flats. These are buildings that are currently in scope. Office conversions into residential flats often do not require much external wall system work, and so whilst they have been considered in this impact assessment, the costs associated with this type of work are minimal.
118. Additional costs associated with an increase in the scope of buildings outlined in this document (options 1 and 5) affected by the ban have been highlighted separately in this impact assessment. For example, the inclusion of hotels, hostels and boarding houses, or including 11m+ buildings have been costed, and presented separately to show the impact of the inclusion of the preferred options which affect the buildings in scope.
119. Modelling is to the standard as set out in the Green Book, using a discount rate of 3.5% over the 10-year appraisal period, using 2022 as the Price Base and Price Value year.
120. There is a degree of uncertainty about the estimates and the assumptions that have been made to model the costs. Therefore, to reflect this uncertainty, high and low estimates have been calculated.

Wider Impacts

Equalities

121. An initial equalities screening of the preferred policies was carried out and determined that a full equalities impact test was not required as the proposal is unlikely to disproportionately affect any groups sharing a protected characteristic.

Social

122. Changes brought about by the preferred policy choices will not affect family relations or the use and privacy of data. It was therefore determined that no further social impact tests are required.

Competition

123. The ban mandates which materials can be used where on the external wall systems of buildings in scope. As such it does not make any long-term significant impact on competitiveness of English companies within the UK or elsewhere in Europe.
124. Therefore, the preferred policies in this document will apply in a proportional and equitable way.

Small Firms

125. We have considered the impact on small businesses and concluded that the impacts and costs of the preferred policy choices will not disproportionately affect businesses with a low turnover.

Environment

126. The preferred policy choices will drive a switch from construction products that do not meet the performance requirements of the ban to products that do meet the requirements of the ban.
127. The design, production, and installation methods may differ between these and so may have different demands in energy during these processes. However, we have concluded that it would not be proportionate to measure whether the ban would cause a switch to more energy intensive processes and so we have not monetised the associated costs of this.
128. There may be small positive impacts as a result of the preferred choices. By increasing the number of buildings where the route to compliance is clearer, the occurrence of a fire spreading beyond the compartment of origin may be reduced. There may be a marginal improvement in air quality and reduction in water pollution incidents (from water run-off) as a result of a reduction in the number of fires.

Summary and Implementation

129. This impact assessment has examined the costs and benefits of the following proposed changes:

- a. **Change the building type included within the ban** –Inclusion of hotels, hostels and boarding houses within the scope of the ban (option 1);
- b. **Issue an amendment to Approved Document B** - Retain the ban at 18m and introduce new guidance for external walls and balconies for blocks of flats between 11m and 18m in height (option 5);
- c. **Metal Composite Materials** - Introduce a complete ban on the use of the type of metal composite material that was used on Grenfell Tower (metal composite material with an unmodified polyethylene core) in the external walls of all new buildings and buildings undergoing building works, regardless of height or use (option 6);
- d. **Attachments** – Inclusion of curtains and slats of solar shading devices within scope of the ban, with a limited exemption for ground floor awnings (option 8);
- e. **Exemptions** – Amendment to the list of materials exempted from the combustible materials ban to include fibre optic cables, water proofing materials and insulation used below and up to 300mm from ground level.
- f. An 18 month “type relaxation” on cavity trays (option 10);
- g. **Performance Requirements** – Update the classification that materials must meet to comply with the combustible materials ban to the current version and allow the top layer of a balcony floor to meet the required standard using the horizontal-testing equivalent of the existing standard (which requires materials to be tested vertically).

130. Throughout, the policy choices have been considered in isolation of each other, except where the inclusion of hotels, hostels and boarding houses impact the option in question. The below table shows the cumulative costs associated with the interaction of all the preferred options, including the estimated value of the exemptions.

Preferred Policy Option	EANC £m, central estimates
Option 1: Inclusion of Hotels, Hostels and Boarding houses, 18m+	£4.3m
Option 5: ADB route to compliance, 11m-18m, including Hotels, Hostels and Boarding Houses (Private Sector)	£36.2m
Option 5: ADB route to compliance, 11-18m, including Hotels, Hostels and Boarding Houses (Public Sector)	£1.8m
Option 10: 18 month “type” relaxation of cavity trays, 18m+, including Hotels, Hostels and Boarding Houses	-£7.0m
Total Cost of preferred options ²	£35.3m
Familiarisation Costs (from all preferred options) ³	£1.4m
Total Transition Costs	£1.4m

131. The estimated equivalent annual net cost of the main proposal, option 5 is £38.1m in 11-18m flats. This is split between £36.2m dedicated to the private sector and £1.8m to the

² Note that options 6 and 8 are not expected to incur a cost to business,

³ Transition costs are presented in total value, rather than annual cost.

public sector. However, there are significant unmonetized benefits from increasing residents feeling of safety. This would need to be worth around £202 per resident so that benefits are at least equal to the societal cost of the preferred options.

132. Further information about the changes introduced and the Government's response to the consultation can be found here : <https://www.gov.uk/government/consultations/review-of-the-ban-on-the-use-of-combustible-materials-in-and-on-the-external-walls-of-buildings> .

Monitoring and evaluation

133. In the Explanatory Memorandum to the Statutory Instrument that implemented the Combustible Materials Ban, the Department stated its intention to review the ban annually.
134. This Statutory Instrument is the outcome of such a review.
135. It is the Department's intention to review the provisions in this Statutory Instrument alongside the provisions in the Combustible Materials Ban. This will be done through monitoring arrangements and advice from bodies such as Building Regulations Advisory Committee for England as well as seeking feedback from building control bodies responsible for checking compliance to monitor the operation of the ban.