Explanatory Memorandum to The Building (Amendment) (Wales) Regulations 2019

This Explanatory Memorandum has been prepared by the Building Regulations Team, Planning Directorate within the Natural Resources Department and is laid before the National Assembly for Wales in conjunction with the above subordinate legislation and in accordance with Standing Order 27.1

Minister's Declaration

In my view, this Explanatory Memorandum gives a fair and reasonable view of the expected impact of The Building (Amendment) (Wales) Regulations 2019. I am satisfied that the benefits justify any likely costs.

Julie James
Minister for Housing and Local Government
13 December 2019

1 Description

1.1 These Regulations amend the Building Regulations 2010 (S.I.2010/2214) ("the 2010 Regulations") to restrict the materials that may become part of an external wall, or certain attachments to an external wall, of particular buildings.

1.2 The amendments apply to buildings at least 18 metres in height where:

i) The building contains at least one dwelling;

ii) The building contains a room for residential purposes, including student accommodation and school dormitories;

iii) The building is used as living accommodation for, or for the treatment, care or maintenance of persons (as defined in regulation 2(1) of the 2010 Regulations).

2 Matters of special interest to the Constitutional and Legislative Affairs Committee

2.1 None.

3 Legislative background

3.1 Section 1 of the Building Act 1984 ("the 1984 Act") provides a power to make building regulations for a number of purposes with respect to the design and construction of buildings and the services, fittings and equipment provided in or in connection with buildings. These purposes are securing the health, safety, welfare and convenience of persons in and about buildings, furthering the conservation of fuel and power, preventing waste, undue consumption, misuse or contamination of water, furthering the protection or enhancement of the environment, facilitating sustainable development and furthering the prevention or detection of crime. Schedule 1 to the 1984 Act further relates to matters for which building regulations may provide.

3.2 The Building Regulations 2010 have been made pursuant to the powers in 1984 Act.

3.3 The majority of the Secretary of State's functions conferred by or under the 1984 Act were, so far as exercisable in relation to Wales, transferred to the Welsh Ministers on 31st December 2011, by the Welsh Ministers (Transfer of Functions) (No.2) Order 2009 (S.I. 2009/3019) ("the 2009 order"). In relation to excepted energy buildings in Wales, they were transferred by section 54 of the Wales Act 2017.

3.4 These regulations are being made under sections 1 and 34 of, and paragraphs 7, 8 and 10 of Schedule 1 to the Building Act 1984, and will follow the negative procedure.

4 Purpose and intended effect of the legislation

4.1 Following the Grenfell Tower fire in June 2017, the UK Government commissioned Dame Judith Hackitt to undertake an independent Review of Building Regulations and Fire Safety ('the Hackitt report'). The final report makes recommendations for significant changes in the treatment of high risk residential buildings of 10 storeys or more from their construction through to occupation. The review has looked at the existing regulatory regimes in England, however in the case of fire safety and building regulations, the systems across the UK generally mirror those of England making the review findings equally relevant to Wales.

4.2 As an immediate response to the Hackitt report, the then Minister for Housing and Regeneration made a commitment that subject to a consultation, the Welsh Government will move to ban the use of combustible materials in cladding systems on high-rise residential buildings in Wales.

4.3 In relation to Part B (Fire Safety) of the 2010 Regulations, requirements are made to secure reasonable standards of health and safety for persons in and around the building (and any others who may be affected by buildings, or matters connected with buildings). The 2010 Regulations require that external walls on all buildings adequately resist the spread of fire over the walls and from one building to another (paragraph B4 of Schedule 1).

4.4 Statutory guidance in Approved Document B on Fire Safety Volume 2 (Buildings other than Dwelling Houses) sets out two ways that a building with a storey over 18m above ground, may meet the Building Regulations requirement for resisting fire spread over the external walls:-

- The first is that any insulation product, filler material (not including gaskets, sealants and similar) etc. used in the external wall construction should be of limited combustibility:–
- The second is to meet the performance criteria given in BR135 for cladding systems using full scale test data from BS8414.

4.5 The ban will remove for buildings in scope the discretion to use either of these approaches to demonstrate compliance. It will leave no room for doubt as to what is suitable for use on external walls of relevant buildings 18m or more in height. The ban, by default, will also remove the option of undertaking an assessment of the performance of an external wall system in lieu of tests for buildings in scope.

4.6 In response to comments raised in the consultation, the ban will apply to all new high rise residential buildings (including flats, student accommodation, care homes), and hospitals 18 metres or more in height and will apply to the complete wall assembly and certain attachments to the external wall, including balconies and solar panels.

5 **Consultation**

5.1 The Welsh Government consultation provided proposals to ban combustible cladding on all new residential buildings (flats, student accommodation, care homes) over 18m in height through amendments to the Building Regulations.

5.2 The consultation ran between 19 July and 13 September and generated 71 responses from a variety of different sectors. There was generally strong support for the proposed ban on combustible cladding systems.

5.3 The consultation proposed that the ban would apply to residential building such as blocks of flats, student accommodation and care homes as these present the greatest risk to life. The consultation asked respondents if other buildings should also be covered by the ban; these included hospitals, hotels, offices and a variety of other uses. In line with the comments from consultees, the ban will include hospitals, however, in line with expert advice it is considered unnecessary to apply the ban to buildings which adopt a simultaneous evacuation strategy, such as offices.

5.4 The ban will only apply to existing buildings (blocks of flats, student accommodation, care homes and hospitals) where building work is being carried out and which falls within the scope of the Building Regulations, unless the building works have started on site or an initial notice, building notice or full plans has been deposited and work has started on site within a period of 8 weeks.

5.5 Under the 1984 Act the Welsh Ministers must consult with the Building Regulations Advisory Committee for Wales prior to any amendments or introduction of new policy.

5.6 A BRACW meeting was held prior to the consultation and the laying of the draft regulations. Each area of the consultation proposals and the responses were presented and discussed. BRACW members were in agreement with the outcome of the consultation and the decisions made in relation to the proposals to be taken forward, detailed within this Explanatory Memorandum, and those where the decision was made not to take forward proposals.

6 Guidance

6.1 The Welsh Ministers will issue a Circular to explain how the 2010 Regulations have been amended
https://gov.wales/building-regulations-circulars

5. Regulatory Impact Assessment

5.1 A regulatory impact assessment has been carried out (please see **Part 2**) and published in respect of the proposed amendments to the 2010 Regulations.

PART 2 – Regulatory Impact Assessment

7 Options

Implement Legislation to ban combustible materials in cladding systems on high-rise residential buildings in Wales

7.1 The Welsh Government has powers under the Building Act 1984 ("the 1984 Act") to make building regulations for a number of purposes with respect to the design and construction of buildings and includes securing the ***health, safety, welfare and convenience*** of persons in and about buildings.

7.2 Following the Grenfell Tower fire in June 2017, the emerging "Hackitt report' makes recommendations for significant changes in the treatment of high risk residential buildings of 10 storeys or more from their construction through to occupation.

7.3 The proposal to amend the Building Regulations 2010 in order to ban combustible materials in cladding systems on high-rise residential buildings in Wales will meet the required changes needed in the treatment of high risk residential building, making them safe and preventing the spread of fire.

7.4 The ban will remove for buildings in scope the discretion to use current approaches which allow them demonstrate compliance utilising methods which are open to interpretation. It will also leave no room for doubt as to what is suitable for use on external walls of buildings 18m or more in height. The ban, by default, will also remove the option of undertaking an assessment of the performance of an external wall system in lieu of tests for buildings in scope

8 Costs and Benefits

8.1 Adroit Economics have undertaken a Regulatory Impact Assessment, including a costs analysis of the implantation of the legislation.

Summary

8.2 This analysis assesses the impact of a proposed ban on the use of combustible materials in external wall systems and balconies in 18m+ residential buildings in Wales[1]. Policy proposals will only allow materials

1 Buildings in scope include flats, student accommodation, care-homes and schools with accommodation. Hospitals are included within the ban however for the purposes of the impact assessment it has been concluded that no private hospitals include residential accommodation in buildings over 18m and that all public hospitals are already subject to an effective ban in that the policy requirement for funding is that combustible cladding is not to be used in buildings over 2 storeys)

that are A2-s1, d0 rated[2] (elsewhere referenced as A2 rated) and above (subject to exemptions[3]).

8.3 There are estimated to be a total of 10 to 20 cladding/façade projects on 18m+ residential buildings in Wales per annum. The projects include facades on the exterior of new buildings, façade replacements on existing buildings and retrofitting cladding to existing buildings. Most of the projects are on either blocks of flats or student accommodation. In addition, each year an estimated 2 to 3 of the new build 18m+ residential buildings will also have balconies.

8.4 The policy option is considered against the counterfactual 'Do Nothing' option under which there would be no ban on the use of combustible materials in external wall systems and balconies

8.5 Under the counterfactual, an estimated 15%-30% of projects are using non-A rated components in the facades[4][5]. In addition, an estimated 40%-90% of balconies on new buildings are using non-A rated components. These projects would be required to use A rated components under the policy option.

8.6 The 10 year NPV cost of the policy option to business is estimated to be £1.8m - £2.7m (central estimate of £2.2m). This is broken down as follows:

8.7 One-off transition cost of £70,000 as industry familiarises itself with the changes

8.8 Equivalent annual net direct compliance costs to developers and owners of £210,000-£310,000 (central estimate of £260,000)[6].

2 The minimum performance of A2,s1-d0 has been selected over the current standard of A2,s3-d2 because we believe that no A2 rated facade materials achieve any worse performance for smoke and droplets than s1 or d0 respectively. Consequently, we propose to include the minimum standard of A2,s1-do in the new legislation

3 See Annex A

4 PRP Estimate

5 This is based on a risk-based approach following Grenfell and English ban legislation

6 Since the ban on non-A rated external wall components in England was introduced the cost difference between A2 and non-A2 has changed significantly for several components. This assessment for Wales uses the latest prices (as at 2019). For comparison purposes only, the policy option costs for Wales have also been assessed using the 2018 prices quoted prior to the cladding ban in England. On this basis, the equivalent annual net direct cost to developers and owners is estimated to be £280,000-£430,000 (central £360,000). Transition costs remain the same.

Buildings in scope and number of cladding projects

8.9 The analysis costs the following building types (all over 18m): blocks of flats, student accommodation, residential care homes and dormitories in boarding schools.

Figure 4.1: Current stock and buildings over 18m		
Building Type	Buildings over 18m	Notes
Residential	136	Figures provided by Welsh Assembly Government
Student Accommodation	80	based on pro-rata of England estimate
nursing homes	2	UK figure from CMA market report apportioned to Wales using population. Assume 1% are in buildings over 18m
schools (residential accommodation)	8	based on pro-rata of England estimate

Estimated number of cladding projects

8.10 The analysis considers 3 types of projects, which involve external wall facades that would be subject to building regulations – new buildings; façade replacements and retrofitting cladding onto existing buildings.

8.11 In total the estimated number of external cladding/façade projects per annum for buildings over 18m in Wales are:

- to 12 blocks of flats per annum
- 4 to 9 student accommodation buildings per annum
- For residential care homes and dormitories of boarding schools, because of the limited number of buildings that are over 18m, there is estimated to be only 2 to 3 external cladding projects in total over the 10-year period.

Estimated number of new residential buildings with balconies

8.12 There are estimated to be 2 to 3 new residential buildings over 18m in Wales built with balconies per annum

Policy options assessed

One policy option is assessed, against the counterfactual

- **Option 1 – Counterfactual / Do Nothing**. Under this option there would be no ban on the use of combustible materials in external wall systems. For this option, the undertaking of BS8414 tests and

assessments in lieu of tests would still be a permitted route to demonstrate compliance of an external wall build up with the Regulations.

- **Option 2 – Policy Option – Ban combustible materials in external wall systems of the buildings in scope**. In this option, changes would be made to Building Regulations which would ban the use of combustible materials in external wall systems and balconies. This analysis assumes that blocks of flats, student accommodation, registered care premises, hospitals, and dormitories in boarding schools (all over 18m) are in scope for the ban. This option would require that materials used in external wall systems and balconies require a minimum performance of Class A2 or above under the relevant European classification system set out in BS EN 15301. This analysis assumes that some key materials which are unable to meet the requirement are exempted. **AM to check Annex B - exemptions

Costs and Benefits of each option

Costs Option One: Do Nothing

8.13 The costs of option 1 reflect the total cost of the construction industry continuing to use a mixture of A1, A2 and non-A rated materials in construction projects relating to cladding and balconies. Over 10 years, the present value of discounted costs is estimated to total £225m-£332m. These costs are discounted at the Green Book discount rate of 3.5% over 10 years. In this option a proportion (15%-30%) of projects[7] are estimated to use non-A rated materials. There is also a significant proportion of projects estimated to voluntarily use A2 rated materials and above (70%-85%)[8]. In the do nothing scenario, balconies will continue to use timber decking and joists, which are non-A rated materials. 90% of galvanised steel balconies use non-A rated materials, while for concrete balconies this number is 40%. Only 55%-60% of residential buildings have balconies.

Costs Option Two: A2 rated and above

8.14 The most significant costs of this option are for the cladding and balcony costs for residential buildings over 18m, with student accommodation being the second biggest contributor. The assessment is based on the following estimated number of buildings that will be either installing a façade as part of a new build or refurbishing the façade of an existing building (over a 10-year period):

- 80-100 residential buildings (over 18m)
- 50-80 student accommodation buildings (over 18m).

8.15 The analysis assumes that a proportion of building projects already being carried out in the counterfactual is meeting A2 or even A1 fire standards. In this option, there would be no non-A rated systems installed, owing to the ban. It is assumed that the same proportion of

7 Projects are defined as new build, retrofit of cladding and refurbishments of cladding.
8 Based on estimates provided by the Adroit Economics Consortium.

projects would use A1 rated systems (20%-35%) as in the counterfactual. This is for reasons other than this specific policy (e.g. insurance requirements). A higher proportion would use A2 rated systems under this preferred option (65%-80%) compared to the counterfactual (35%-50%). See Figure 4.2 below:

Figure 4.2: Proportion of A1, A2 and Non-A rated depending on option		
	Option 1	Option 2
A1	20%-35%	20%-35%
A2	35%-50%	65%-80%
Non-A rated	15%-30%	0%

8.16 There are significant differences in the costs per building for refurbishment/retrofit for A2 or above compared to the counterfactual[9].

8.17 The net difference in the costs per building of A2 rated systems compared to non-A rated (counterfactual) differs depending on if it is new build or refurbishment/retrofit. This reflects costs to developers/owners and includes on-costs[10].

Figure 4.3: Cost per building (non-A into A2) option 2 compared to counterfactual			
	Low building	Mid building	High building
New build – Brick	£ 39,000	£ 102,100	£ 150,000
New build – cladding system	£ 20,000	£ 51,000	£ 75,000
Refurbishment – cladding system	£ 19,000	£ -	£ -

8.18 In terms of balconies, the impact per building will depend on the types of balcony installed and the number per building. There are three types of balcony that have been included; recessed galvanised steel (40%), projected galvanised steel (40%) and recessed concrete (20%).

Figure 4.4: Proportion of balcony types depending on option		
	Option 1	Option 2
Recessed Galvanised steel	40%	25%
Projected Galvanised steel	40%	40%
Recessed Concrete	20%	35%

8.19 The cost per balcony ranges from £325-£975, as timber decking and joists are replaced. Please see Annex C a full break down of costs per

9 We used three reference buildings to obtain detailed cost estimates for these different systems. The costs are based on 3 reference buildings of 8 storeys (Low), 15 storeys (Medium) and 21 storeys (High).

10 On-costs include design and development contingencies, contractor preliminaries, professional fees and contractor profits and overheads.

balcony by building type. This means the cost of mandating newly built balconies have A2 or above materials will have an equivalent annual net cost of £120,000-£160,000, compared to the counterfactual.

8.20 For the preferred option as a whole, over 10 years, the present value of discounted costs is estimated to total £227m-£334m. These costs are also discounted at the Green Book discount rate of 3.5% over 10 years. The total transition costs are estimated to be £70k, reflecting the time taken by members of industry to understand the change in policy. The equivalent annual net direct cost to developers and owners of option two over option one is £209k-£311k (central £260k).

8.21 For option 2 the total social cost is £173m-£259m (central £216m), and the net social EANC is £165k-£243k (central £204k). These social costs do not include pure economic transfers, such as VAT.

Figure 4.5: Summary cost table (Business Costs)

	Present value costs (10 years) £m		
	Option 1	Option 2	Net cost
Transition costs	-	0.07	0.07
Total costs	225.3-331.6 (central estimate 278.4)	227.0-334.2 (central estimate 280.6)	1.7-2.8 (central estimate 2.2)
	Equivalent annual cost £m		
Annual cost	26.2-38.5 (central estimate 32.3)	26.4-38.8 (central estimate 32.6)	0.2-0.3 (central estimate 0.3)

Non-Monetised Impacts

8.22 Some of the consultation responses raised the issue of unintended consequences of the ban, in particular a potential loss of space. The reason for this is that A1 rated materials like mineral wool insulation are likely to be bulkier. We have worked with consultants to analyse the potential impact of this. Please see the annex C for further details.

Benefits

8.23 The main benefits that derive from option 2 relative to the counterfactual are that it will make routes to compliance clearer. The experience of Grenfell and from the numbers of high rise residential buildings which have subsequently been discovered to have combustible cladding has revealed that the provisions in the Building Regulations' guidance were not being followed. The purpose of the ban is to make clear exactly what materials can and cannot be used. This will make compliance easier to identify for designers, installers and building control bodies.

8.24 Better compliance will ensure that fire safety risks are better managed and that an event like Grenfell cannot happen in the future. Therefore, this policy should also lead to people feeling safer in their homes and provide reassurance. We have not monetised these benefits.

8.25 Another consequence of the ban will be to rule out the opportunity to use assessments in lieu of tests for external wall systems which may have led to inappropriate approaches to the design and installation of external wall systems incorporating combustible cladding. A clear ban will rule this out.

8.26 By explicitly banning most non-A materials there will be greater clarity about what is permitted to be used on site and in the construction process. This clarity makes it harder for the incorrect materials to be procured and then used in the construction process without being noticed, reducing unintentional non-compliance.

8.27 There are minor cost savings for the design stage of building construction. This is because less time is spent on considering and deciding between the different types of materials and external wall systems, now that there are fewer options to choose from. The costs of undertaking whole system wall tests (BS 8414 tests) will also be avoided.

Risks and Assumptions

8.28 The costs of the policy options are estimated using a number of assumptions. The key areas where assumptions are made are:

- Forecast stock and rate of new build of blocks of flats, student accommodation, registered care premises, hospitals and dormitories in boarding schools over 18m.
- Number and type of external cladding/insulation projects that are installed each year.
- The proportion of buildings and flats that have balconies installed.
- The proportion of projects and balconies that already meeting A1 rating and above and A2 rating and above.
- Differences in the costs per building for refurbishment/retrofit and new build for A1, A2 and non-A rated systems.

8.30 The costs of particular materials such as brick and ACM facades are based on detailed cost estimates produced by the Adroit Economics consortium. These are obtained from a sample of quotes from industry. See Annex A for further details

8.31 We do not expect the ban to have a significant impact on housing supply. As indicated above, a significant proportion of new projects are already using materials which would meet the new requirements. For those which are affected, the extra costs incurred will be small in proportion to the total build cost. See Annex A for per building costs.

8.32 As indicated above, there is a risk that additional space required will add cost. However, after discussions with the Adroit Economics Consortium, we have concluded that outward adjustments to the external wall can be made in most instances. Significant costs are only likely to occur where space constrained buildings already have planning permission or have started on site. Overall, the costs due to space considerations are likely to be modest. More detailed consideration of potential space issues can be found in the annex.

8.33 The Price Base Year and the Present Value Base Year are 2019 and the discount rate of 3.5% is in line with Green Book guidance.

8.34 There is a degree of uncertainty about the estimates and the assumptions. Sensitivity analysis and production of high and low estimates has been carried out to reflect this uncertainty.

9 Competition Assessment

9.1 The main markets affected by proposed changes to Part B (Fire Safety) of the Building Regulations will be the supply chains producing the materials used in the building of the wall assembly, including the inner leaf, insulation and the façade or cladding on high rise residential buildings.

9.2 The proposed changes to regulations will mean that building contractors will have to comply with more stringent regulations in respect to the ban of combustible materials in high rise building.

9.3 It is envisaged that the changes will not have a significant cost impact as suppliers move to provide material that will comply with BS EN 13501. The cost impact on construction companies is envisaged as being low risk, as new build requirements are low and the cost will likely be passed to the consumer through land costs or eventual ownership. For refurbishment requirements, where appropriate, again it is envisaged the cost impact will be low.

10 Impact Assessments

Equality, diversity, inclusion and human rights

10.1 It is envisaged that the proposals will have no impact on human rights. There will also be no additional burdens on the justice system. It is not envisaged that the proposal will have any negative impact on equality in Wales (including equality issues concerning age, disability, faith, gender, race, sexual orientation or transgender), or a negative impact on diversity, social inclusion or human rights, including the rights of children.

Children's Rights Impact Assessment

10.2 It is envisaged that the proposals will have no impact on the rights of children.

Welsh language

10.3 It is not envisaged that the proposals will have an impact on the Welsh language.

Privacy Impact Assessment

10.4 A Privacy Impact Assessment (PIA) has not been undertaken as no personal information, related to groups or individuals, is collected, stored, protected, shared and managed as a consequence of the policy proposals.

Post Implementation Review

10.5 The Department will seek feedback from building control bodies responsible for checking compliance to monitor the operation of the ban. The Department will also use bodies such as the Building Regulations Advisory Committee for Wales to advise on the impacts of the ban.

Annex A: Cost methodology

The equivalent annual cost is calculated by finding the net cost between option 1 and option 2.

The cost of each option is calculated by using the number of building projects with cladding in a year, and multiplying that by the cost of materials for that type of project. The number of projects is a function of the rate of new build and the retrofit/refurbishment rate of the current stock. The cost of materials depends on the size of the building and type of façade. Costs will also depend on whether the building is using spandrel panels or has balconies.

Annex B: Exemptions

Exemptions are:

EPDM (e.g. for sealing windows to external lining board in rainscreen facades)

Vapour barriers

Seals, gaskets and thermal breaks

It should be noted that additional fire safe materials are emerging but are not yet widely available.

A detail list of exemptions is compiled below.

Product	**Definition**
Membranes	Membranes is a common term used in the industry and does not need any specific definition
Roofing materials	Components of a roof that extends to the junction of the external wall
Internal decorative wall finish	Internal wall finish - inner most surfaces directly exposed to the interior of the building on the external wall
Windows	Windows made out of glass and transparent and associated window frame including glazing, features, fixings and ironmongery
Doors	Doors and door sets located on the external wall including associated frames and ironmongery.
Thermal breaks,	Thermal breaks where they are necessary to prevent thermal bridging and meet the requirements of Schedule 1 Paragraph L.
Cavity trays	Cavity trays as part of a masonry wall systems including two leaves of masonry construction
Seal, fixings, gaskets, sealants and backer rod.	Seal, fixings, gaskets, sealants and backer rod
Electrical installations	All electrical installations as defined in the Building Regulation already.
Fire stopping and Intumescent Materials	Fire stopping and intumescent materials where they are necessary to meet the requirements of paragraph B of Schedule 1
Insulation used under ground location	Insulation used where it is located underground.

Annex C: A2 external wall system cost breakdown

Using consultants and empirical data we have estimated the cost of the attributes of the three reference buildings and their make-up, including ACM coverage, European fire rating type and external wall system materials. The costs reflect different architectural design methods, and take into account spandrel panels where appropriate. The costs will differ depending on the façade (brick or ACM) and the type of building project (new build or retrofit/refurbishment). See table below for the cost per building of using A2 instead of non-A rated materials:

Figure AC1	low building	mid building	high building
New build – Brick	£ 39,359	£ 102,308	£ 150,453
New build - Cladding system	£ 19,679	£ 51,154	£ 75,227
Refurbishment - Cladding system	£ 19,493	£ -	£ -

Balconies

Balconies will be affected by this policy. New build residential projects with balconies will no longer have non-A rated materials, resulting in more expensive decking and joists in some buildings. Because not all flats in a building have balconies, the cost per building will depend on the size of that building. See below for the cost difference of having A2 or above standard materials in balconies compared to the counterfactual, including on-costs. Recessed Galvanised steel is the most expensive type.

Additional cost per building of balconies being A2 compared to the counterfactual

Figure AC2: Low Building			
Low Building	**low cost**	**mid cost**	**high costs**
Recessed Galvanised Steel	£ 70,095	94,476	£ 118,857
Projected Galvanised Steel	£ 64,000	91,429	£ 118,857
Recessed Concrete	£ 39,619	39,619	£ 39,619

Figure AC3: Medium building			
	low cost	**mid cost**	**high costs**
Recessed Galvanised Steel	£ 96,922	130,634	£ 164,346
Projected Galvanised Steel	£ 88,494	126,420	£ 164,346
Recessed Concrete	£ 54,782	54,782	£ 54,782

Figure AC4: Tall Building			
	low cost	**mid cost**	**high costs**

Recessed Galvanised Steel	£ 140,933	189,953	£ 238,973
Projected Galvanised Steel	£ 128,678	183,825	£ 238,973
Recessed Concrete	£ 79,658	79,658	£ 79,658

Timber building

The policy prohibits the use of timber materials in the external wall of buildings within the scope. Currently the number of projects above 18m in height where load bearing structural timber elements are used remains relatively small. The effect of the ban on the use of engineered timber remains limited short term. There is however a growing number of buildings above 18m in height using engineered timber as part of their structure. Engineered timber offers an alternative to traditional methods of construction in building within the scope of the policy. It is therefore likely to slow down the use of engineered timber in future development in the medium to long term.

Impact on space requirements

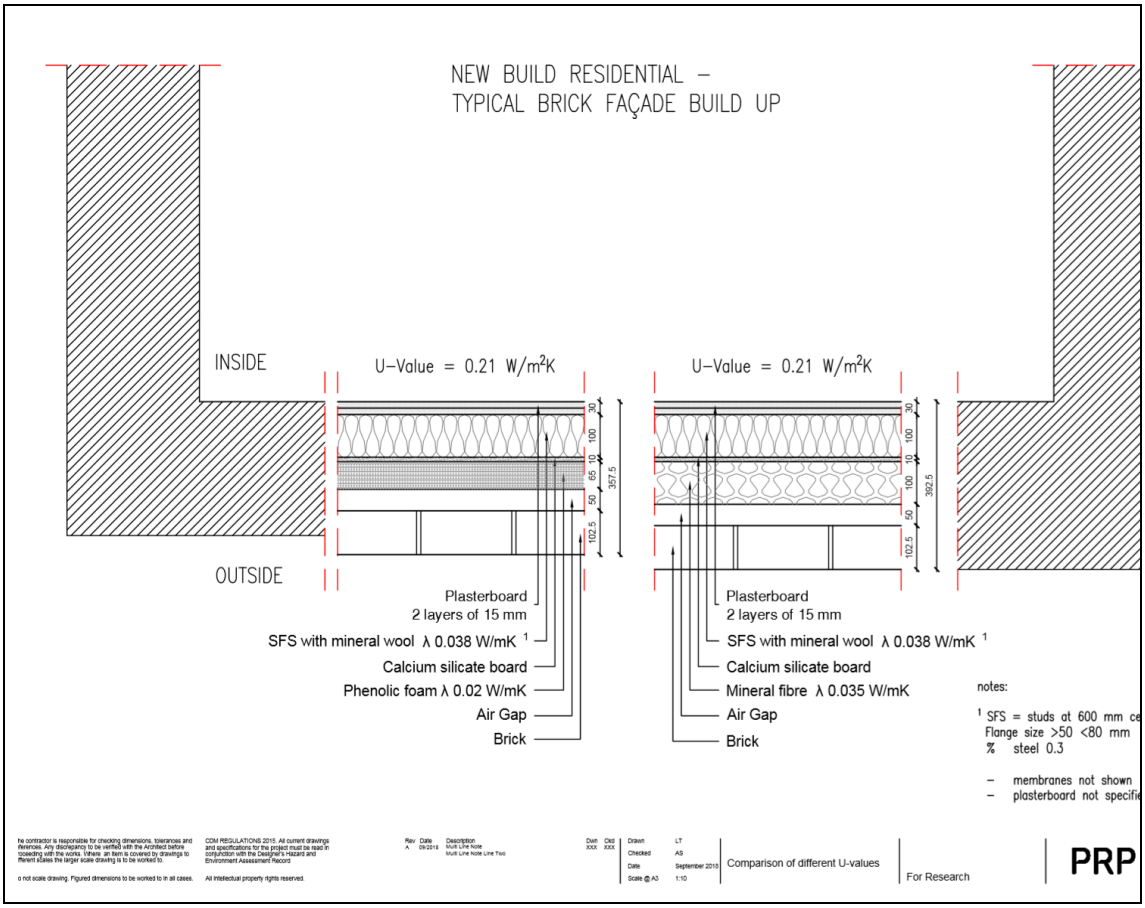
As walls get thicker, ties, brackets, fixings, flashings and structural supports all get deeper which adds costs. This adds weight, along with the thicker insulation, which may impact in the foundation depth and size. However, these costs are estimated to be modest, and therefore it was considered not proportionate to monetise these.

To understand the potential impact of bulkier materials as a consequence of higher fire safety ratings, two drawings of a wall build up for brick and rainscreen ACM facades have been produced to show the impact on wall thickness of changing phenolic insulation to mineral fibre. These drawings can be found below. For both of these, the U value is typical for a new build residential building. If a building is being designed, then any extra wall thickness will result in the wall growing outwards into the external space. The drawings in the annex and Table 9 below show that the impact is minimal.

Figure AC5:: Impact of Mineral fibre on wall thickness

	Phenolic foam	Mineral Fibre	Differences
New build – Brick façade	357.5mm	392.5mm	35mm
New build – Rainscreen ACM façade	293mm	333mm	40mm

Figure AC5 above indicates that for a new build brick façade, an additional 35mm of space would be needed whereas for a rainscreen ACM façade an additional 40mm would be needed from using Mineral fibre insulation rather than phenolic foam. We have concluded that only where a site is very constrained would the impact potentially affect the internal space, and these cases are expected to be rare.



Annex D: Defining the Counterfactual

The analysis assumes that a proportion of building work related to facades already carried out in the counterfactual is meeting A2 or even A1 fire performance standards. For instance, in the counterfactual it is assumed that around 20%-35% are built to an A1 standard and 25%-50% are built to an A2 standard. This is for reasons other than this specific policy (e.g. previous building regulations advice, developer risk, mortgage or insurance requirements).

Where a standard of A2+ is required (Option 2) it is assumed that the same proportion of building will be built to A1 as in the counterfactual. The assumptions for flats are set out below:

Figure AD1: Counterfactual assumptions – Facades		
	Option 1 (counterfactual / do nothing)	Option 2 (Policy)
A1	20%-35%	20%-35%
A2	35%-50%	65%-80%
Non-A rated	15%-30%	0%

Under the counterfactual, the majority of balconies constructed using a galvanised steel structure will include combustible components, such as timber decking.

Figure AD2: Counterfactual assumptions – Balconies		
	Option 1 (counterfactual / do nothing)	Option 2 (Policy)
Recessed Galvanised Steel		
A2+	10%	100%
Non-A rated	90%	0%
Projected Galvanised Steel		
A2+	10%	100%
Non-A rated	90%	0%
Recessed Concrete		
A2+	60%	100%
Non-A rated	40%	0%

Annex E: Cost changes since the England ban

Facades

Construction cost changes were estimated across three reference buildings, representing different height buildings[11].

The net difference in the costs per building of A2 rated systems compared to non-A rated (counterfactual) differs depending on if it is new build or refurbishment/retrofit. This reflects costs to developers/owners and includes on-costs

Figure AE1: Cost per building (non-A into A2) option 2 compared to counterfactual				
		Low building	**Mid building**	**High building**
New Build – Brick	Scenario 1 & 2	£ 40,000	£ 100,000	£ 150,000
New Build – Cladding System	Scenario 1 & 2	£20,000	£50,000	£80,000
Refurbishment – Cladding System	Scenario 1 (2019 prices)	£20,000	-	-
	Scenario 2 (2018 prices)	£70,000	£40,000	£50,000

Balconies

Balconies will also be affected by a ban on combustible material and the impact per building will depend on the types of balcony installed and the number per building. We have assessed the impacts for the 3 main types of balcony.

Figure AE2: Types of balcony assessed		
	Option 1 (counterfactual)	**Option 2 (Policy)**
Recessed Galvanised steel	40%	25%
Projected Galvanised steel	40%	40%
Recessed Concrete	20%	35%

We have assessed the cost differences for A2 compared with the counterfactual for three types of balconies. We have estimated low and high cost estimates for each of the balcony options – The mid cost difference for the different building types are

Figure AE3: Balcony cost scenarios			
	Low building	**Medium building**	**High building**
Recessed Galvanised steel	90,000	130,000	190,000
Projected Galvanised steel	90,000	130,000	180,000

11 The three reference buildings were developed to support the MHCLG assessment - 8 storeys (Low), 15 storeys (Medium) and 21 storeys (High). Design specifications were prepared by PRP and costs assessed by RLF. The costs reflect the cost to the owner so include on-costs and VAT.

Recessed Concrete	40,000	50,000	80,000

Assessment of Fire Performance Costs

We have assumed that under the policy option, the façade is not required to be tested since the components are A2 rated.

Annex F: Impact calculations

Average Annual Equivalent Costs

The equivalent annual net direct cost to developers and owners is estimated to be £210,000-£310,000 (central £260,000).

	Total Costs (10-year NPV)			Equivalent Annual Net Cost (EANDCB)		
External Wall Façade - Costs	Low	Mid	High	Low	Mid	High
Option 1 - Counterfactual	208.20	251.41	294.63	24.19	29.21	34.23
Option 2 - Policy Option: A2+	208.90	252.37	295.85	24.27	29.32	34.37
Balconies installed on New Build Residential - Costs						
Option 1 - Counterfactual	17.10	27.02	36.93	1.99	3.14	4.29
Option 2 - Policy Option - A2+	18.12	28.22	38.32	2.10	3.28	4.45
Transition Costs						
Option 2	0.07	0.07	0.07	0.01	0.01	0.01
Net Policy Costs						
Option 2 - Net Policy Costs	1.80	2.24	2.68	0.21	0.26	0.31

Figure 9.1: Net Policy Costs (£m)

For comparison purposes only, net policy costs using pre-England ban costs

The equivalent annual net direct cost to developers and owners is estimated to be £280,000-£430,000 (central £360,000).

Figure 8.2: Net Policy Costs (£m) based on pre-England ban units costs

	Total Costs (10-year NPV)			Equivalent Annual Net Cost (EANDCB)		
External Wall Façade - Costs	Low	Mid	High	Low	Mid	High
Option 1 - Counterfactual	135.59	167.52	199.46	5.75	19.46	23.17
Option 2 - Policy Option: A2+	137.10	169.57	202.03	15.93	19.70	23.47
Balconies installed on New Build Residential - Costs	Low	Mid	High	Low	Mid	High
Option 1 - Counterfactual	13.13	20.78	28.43	1.53	2.41	3.30
Option 2 - Policy Option - A2+	13.92	21.72	29.52	1.62	2.52	3.43
Transition Costs						
Transition Costs - Option 2 & 3	0.07	0.07	0.07	0.01	0.01	0.01
Net Policy Costs						
Option 2 - Net Policy Costs	**2.38**	**3.06**	**3.74**	**0.28**	**0.36**	**0.43**