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Estimated Costs & Benefits of 'Safer Buildings in Wales' – for design and construction works

Prepared by Adroit Economics

For and on behalf of

Welsh Government

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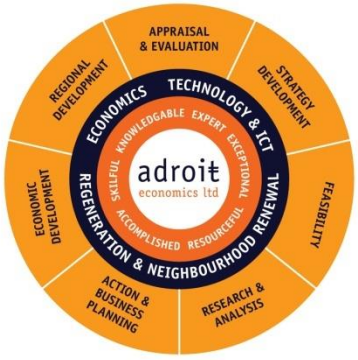

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1. Introduction

1.1 This document sets out the estimated costs and benefits of the policy proposals outlined in the Legislative consent motion for the Building Safety Bill. These proposals were also included within the Welsh Government's White Paper: 'Safer Buildings in Wales' for design and construction works. These policy proposals shall be referred to as the Building Safety regime throughout this document and includes:

- The construction and refurbishment of Category 1 buildings (buildings 18m or more in height or more than 6 storeys and containing two or more dwellings);
- Wider dutyholder responsibilities for all construction projects.

2. Executive Summary

Buildings in scope

- Category 1 Buildings - the analysis is based on assuming 150 buildings in scope[1], containing approximately 10,000 flats. The analysis estimates that the stock of Category 1 buildings will increase by 3% (4 to 6 buildings) per annum.
- Other building work where building regulations are triggered[2] – the analysis is based on assuming 2,500 developments per annum are impacted by additional dutyholder requirements.

Benefits

Types of benefit

2.1 The Building Safety Regime proposals for residential buildings are expected to provide the following benefits:

- For Category 1 buildings (buildings 18m or more in height or more than 6 storeys and contain two or more dwellings), three main types of benefits will derive:
  - = Reduced casualties, fatalities, building and other damage/loss resulting from reduced fire spread and structural failure;
  - = Avoided costs of resolving another systemic issue;
  - = Other cost savings to the construction industry, building owners and leaseholders.
  - = Wider benefits to the construction industry through enhanced skills, expertise and improved systems, processes and techniques.
- For additional dutyholder responsibilities on other building works – the proposals will increase the time spent checking that the work is compliant with building regulations, and information and activities are co-ordinated across dutyholders. This is expected to reduce the amount of non-compliant work being undertaken per annum as well as providing clearer accountability for compliance. No benefits have been quantified at this stage.

Extent of benefit

Category 1 Buildings

2.2 The analysis estimates that the Building Safety Regime proposals for Category 1 buildings will give rise to annual benefits of between £1.4m to £3.3m[3] (central estimate of £2.3m pa). Table 2.1 provides a breakdown:

[1] As of September 2020, Welsh Government had identified 148 high rise residential buildings that meet the Category 1 criteria in Wales

[2] This includes Category 2 buildings as well as all other building construction projects that trigger building regulations.

[3] EAB – equivalent annual benefit over a 10 year policy period.

- Reduced fire spread accounts for between £0.2m to £1.0m annual benefits (central estimate of £0.5m pa);
- Avoided costs of resolving systemic issues accounts for between £0.3m to £0.6m annual benefits (central estimate of £0.5m pa).
- Other avoided costs account for between £0.4m to £0.7m annual benefits (central estimate of £0.6 pa).
- Wider benefits account for between £0.5m and £1.0m annual benefits (central estimate of £0.7m)

Table 2.1	High-scenario		Central Estimate		Low-scenario	
	70yr Present Value	10yr Equivalent Annual Benefit	70yr Present Value	10yr Equivalent Annual Benefit	70yr Present Value	10yr Equivalent Annual Benefit
	PV £m	EAB £m	PV £m	EAB £m	PV £m	EAB £m
Reduced fire spread	8.88	0.97	4.91	0.54	1.48	0.16
Avoided costs of resolving systemic issues	5.33	0.62	3.99	0.46	2.66	0.31
Other avoided costs	6.24	0.72	4.80	0.56	3.36	0.39
Wider benefits	8.22	0.95	6.32	0.73	4.42	0.51
Total – Category 1 Buildings benefits	**28.65**	**3.27**	**20.02**	**2.29**	**11.93**	**1.38**

Non-monetised benefits

2.3 In addition, there are a range of benefits which have not been monetised, either because there is a lack of robust data and evidence base available or because it was not considered proportionate to carry out this analysis.

2.4 The most significant of these non-monetised benefits relates to reassuring residents that risks to their safety and their homes have been reduced. This would mitigate negative mental health and wellbeing impacts arising from any existing uncertainty/concerns as to the safety of people's homes.

2.5 The majority of these benefits however relate to improving the safety of, and confidence in, existing buildings rather than to future new buildings.

Methodology

2.6 The benefit estimates set out here have been calculated over a 70-year appraisal period. This includes benefits experienced in the 10-year policy appraisal period (equal to that used to estimate costs) and benefits that may persist over the lifespan of a

building, assumed to be 60 years. This is to best capture all the benefits and reflects HM Treasury's Green Book[4] guidance on 'persistence' of benefits. For example, benefits associated with improvements in the construction quality of new builds will likely last the lifespan of the building.

2.7 A more detailed description of the methodology used to estimate these monetised benefits is set out in Annex A.

Costs

Types of cost

2.8 The Building Safety Regime proposals for residential buildings are expected to generate costs. The analysis estimates costs for the new requirements of the regime under the headings of Gateways; Dutyholder responsibilities; Golden Thread; Key Dataset; Sanctions; Appeals; and other regulator costs.

2.9 Costs will be borne by the regulator[5] and by industry and will involve transition costs plus annual ongoing costs.

Extent of costs

Table 2.3

	Present Value (10yr)			Annual Cost (EAC)		
	Low	Central	High	Low	Central	High
Category 1 Buildings	£9.05m	£13.40m	£17.59m	£1.05m	£1.56m	£2.04m
Wider Dutyholder Role	£4.77m	£5.96m	£7.16m	£0.55m	£0.69m	£0.83m

Category 1 Buildings

2.10 The analysis estimates that average annual cost of meeting the new requirements of the Building Safety Regime will be between £1.1m and £2.0m (central estimate of £1.6m).

- The average annual cost **to industry** is estimated to be between £0.7m and £1.3m (central estimate of £1.0m);
- The average annual cost **to the Regulator** is estimated to be between £0.4m and £0.7m (central estimate of £0.6m).

Wider dutyholder costs for all buildings

2.11 There will be additional requirements for dutyholders in all building work where building regulations are triggered. The analysis estimates:

[4] https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/685903/The_Green_Book.pdf

[5] The term Regulator is used to refer to the regulatory function in relation to Building Control fall to the Building Authority, those relating to Building Inspectors, approvers and operation standards will rest with Welsh Government.

- Transition costs of between £0.4m and £0.7m[6] (central estimate of £0.5m);
- Annual on-going costs[7] of £0.5m to £0.8m (central estimate of £0.6m).

3. Benefits

Reducing the risk of fire spread

Table 3.1: Reduced fire spread	High Estimate		Central Estimate		Low Estimate	
	70yr Present Value	10yr Equivalent Annual Benefit	70yr Present Value	10yr Equivalent Annual Benefit	70yr Present Value	10yr Equivalent Annual Benefit
	PV £m	EAB £m	PV £m	EAB £m	PV £m	EAB £m
Category 1 Buildings	8.88	0.97	4.91	0.54	1.48	0.16

3.1 The Building Safety Regime proposals are expected to reduce the risk of fires spreading across multiple dwellings within an in-scope building (referred to here as fire incidents), and in particular to reduce the risk of major fires. This will be achieved through stronger oversight, clearer accountability for, and stronger duties on, those responsible for the safety of buildings in scope throughout design and construction, and stronger enforcement and sanctions to deter and rectify non-compliance.

3.2 The Building Safety Regime proposals complement and build on other recent policies to reduce the risk of future incidents and the impact that they would have. Relevant policies include the combustible materials ban, and changes to Assessments in Lieu of tests in Approved Document B. Changes to industry practice may also act to reduce this risk.

3.3 The Building Safety Regime proposals are expected to further reduce the risk of fire spread in in-scope buildings and consequently the risk of fatalities and injuries to residents. There are also expected to be reductions in negative impacts on the mental health of residents involved in such incidents, their family members and others, as well as the avoidance of the cost and disruption of rehousing residents, site management and demolition costs, and loss of property.

3.4 Estimates of the scale of these benefits take account of the projected residual risk of such incidents in the absence of the Building Safety Regime proposals (but after the measures already taken, some of which are discussed above), the extent to which the proposals will reduce this risk, and the expected harm caused by such incidents. While the uncertainty around each of these factors makes any monetised estimates of the

[6] Present Value over a 10-year appraisal period
[7] Equivalent Annual Costs (EAC)

scale of benefits highly uncertain, an indicative range of £0.2m - £1.0m per annum is suggested.

3.5 Substantially reducing the risk of fire spread in buildings in scope is likely to have the important additional benefit (not monetised in this impact assessment) of reassuring residents and making them feel safer in their homes. This is further discussed in the section on non-monetised benefits below.

Avoided costs of resolving systemic issues – Category 1 Buildings

Table 3.2: Avoided costs of resolving systemic issues	High Estimate		Central Estimate		Low Estimate	
	70yr Present Value	10yr Equivalent Annual Benefit	70yr Present Value	10yr Equivalent Annual Benefit	70yr Present Value	10yr Equivalent Annual Benefit
	PV £m	EAB £m	PV £m	EAB £m	PV £m	EAB £m
Category 1 Buildings	5.33	0.62	3.99	0.46	2.66	0.31

3.6 There are wider costs associated with weaknesses in the current regime, where construction does not meet the necessary requirements and so buildings require subsequent and urgent remediation (which may or may not be triggered by an incident involving a specific building). An example of this is the remediation of unsafe Aluminium Composite Material (ACM) cladding on multi-occupied residential buildings over 18 metres following the Grenfell Tower fire and the emergence of other concerns requiring remediation during investigation. This has involved costs for remediation, waking watch fees, and related investigative/legal costs.

3.7 There is a risk that a similar systemic crisis could emerge in future and necessitate a similar response. The Building Safety Regime proposals are expected to reduce the risk of this happening and therefore to reduce the likelihood that such associated costs are incurred.

Other avoided costs – Category 1 Buildings

Table 3.3: Other avoided costs	High Estimate		Central Estimate		Low Estimate	
	70yr Present Value	10yr Equivalent Annual Benefit	70yr Present Value	10yr Equivalent Annual Benefit	70yr Present Value	10yr Equivalent Annual Benefit
	PV £m	EAB £m	PV £m	EAB £m	PV £m	EAB £m
Category 1 Buildings	6.24	0.72	4.80	0.56	3.36	0.39

3.8 The Building Safety Regime proposals are likely to lead to the avoidance of some costs to the construction industry. It is estimated that the overall package of additional checking and information-gathering will lead to a reduction in re-work costs relating to defects identified during and at the end of the construction period, as well as fewer latent defects identified during building occupation.

3.9 Information requirements would help to reduce costs from future invasive surveys and for general asset management.

3.10 Finally, there are expected to be some costs avoided relating to replacement of windows and balconies and structural incidents in buildings.

Wider benefits – Category 1 Buildings

Table 3.4: Wider Benefits	High Estimate		Central Estimate		Low Estimate	
	70yr Present Value	10yr Equivalent Annual Benefit	70yr Present Value	10yr Equivalent Annual Benefit	70yr Present Value	10yr Equivalent Annual Benefit
	PV £m	EAB £m	PV £m	EAB £m	PV £m	EAB £m
Category 1 Buildings	8.22	0.95	6.32	0.73	4.42	0.51

3.11 The proposals may also have wider benefits. The affected Welsh industries would be likely to gain skills and expertise which could enhance their international competitiveness.

3.12 Additionally, the improved systems, processes and techniques that may be adopted by industry in response to regulator activities, will drive innovation across the industry resulting in productivity gains/ further cost savings

3.13 Annex A provides further details of the methodology for estimating the benefits.

4. Costs of the Building Safety Regime for Design and Construction

4.1 Costs of the Building Safety Regime have been estimated over a 10-year policy period. The costs have been presented separately for

- Category 1 buildings (18m or more in height or more than 6 storeys and contain two or more dwellings);
- Wider dutyholder role across all construction projects.

Category 1 Buildings

4.2 There are an estimated 150 Category 1 buildings containing approximately 10,000 flats.

4.3 The analysis assumes that the stock of buildings is increasing by 3% p.a. with an additional 5-6 new buildings being added to the stock every year over the 10-year appraisal period.

Total cost for Category 1 Buildings

4.4 Total average annual costs[8] of the Building Safety Regime for Category 1 buildings are estimated to be between £1.1m and £2.0m (central estimate of £1.6m).

Costs will comprise transition costs and annual ongoing costs

Transition costs

4.5 Transition costs will mainly be incurred in the first two years, to allow for adjustment to the new regime. These costs include training costs and familiarisation with the policy changes.

4.6 Transition costs are estimated to be:

- For industry, the Present Value of transition costs ranges from £0.05m to £0.15m:
- For regulators, the Present Value transition costs are estimated at £0.14m to £0.30m.

Annual ongoing costs

4.7 Once the Building Safety Regime is established, the analysis estimates that ongoing annual costs[9] will be between £1.0m and £2.0m with a central estimate of £1.5m.

4.8 The analysis estimates that:

- The annual cost to industry of meeting the new requirements of the Building Safety Regime[10] will be between £0.7m and £1.3m (central estimate of £1.0m)[11];

[8] Equivalent Annual Costs (EAC)
[9] Equivalent Annual Cost (EAC) over a 10-year appraisal period
[10] These annual costs exclude the costs of undertaking fire and structural remediation works to address faults with existing buildings.
[11] These costs exclude any additional fees or charges from the Regulator to recover the cost of enforcing the building safety regime

- The annual cost to regulators of meeting the new requirements of the Building Safety Regime[12] will be between £0.4m and £0.7m (central estimate of £0.5m). This estimate represents the cost of a regulator function in Wales to oversee proposed additional requirements of the Building Safety Regime. The calculated figure makes no pre-judgement of the regulatory approach to be adopted in Wales or how it could be implemented. The intention is that the local authorities are the regulator for Category One buildings and that Welsh Government is responsible for the oversight of the building profession.

Table 4.1: Category 1 Buildings – breakdown of costs by regulator/industry							
		Present Value (10yr)			Annual Cost (EAC)		
		Low	Central	High	Low	Central	High
Industry	Transition	£0.05m	£0.10m	£0.15m	£0.01m	£0.01m	£0.02m
Regulators	Transition	£0.14m	£0.23m	£0.30m	£0.02m	£0.03m	£0.04m
Industry	Annual	£5.57m	£8.40m	£11.21m	£0.65m	£0.98m	£1.30m
Regulators	Annual	£3.29m	£4.67m	£5.94m	£0.38m	£0.54m	£0.69m
Total	**Total**	**£9.05m**	**£13.40m**	**£17.59m**	**£1.05m**	**£1.56m**	**£2.04m**

Additional personnel requirements

4.9 The analysis estimates a need for 4-7 Full Time Equivalent (FTE)[13] additional regulatory staff to oversee the design and construction process. These estimates are included as a guide and will be subject to further review once the regulatory approach has been determined.

Breakdown of costs by element

4.10 Table 4.2 shows the breakdown of costs to all parties by element:

- Gateways are expected to give rise to the largest proportion of costs between £0.5m and £1.1m per annum (central estimate of £0.8m);
- Dutyholder responsibilities account for the next largest share of costs between £0.3m and £0.4m per annum (central estimate of £0.3m);
- Other regulator costs to strengthen the oversight of building regulations is also expected to cost between £0.2 and £0.3m per annum (central estimate of £0.3m);

Table 4.2: Category 1 Buildings – breakdown of cost by element						
	Present Value (10yr) £m			Annual Cost (EAC) £m		
	Low	Mid	high	Low	Mid	high

[12] The regulator costs are expected to be partially offset by income from fees and charges raised from regulated parties.
[13] if 65% utilisation rate is applied

Gateways	4.07	6.79	9.51	0.47	0.79	1.10
Mandatory Occurrence Reporting	0.13	0.16	0.19	0.01	0.02	0.02
Remediation	-	-	-	-	-	-
Dutyholder	2.10	2.64	3.19	0.24	0.31	0.37
Golden Thread	0.25	0.56	0.84	0.03	0.07	0.10
Key Dataset	*	*	*	*	*	*
Sanctions	0.55	0.69	0.82	0.06	0.08	0.10
Residents Voice	-	-	-	-	-	-
Appeals	0.02	0.04	0.08	0.00	0.01	0.01
Refurbishment	0.24	0.28	0.32	0.03	0.03	0.04
Other Regulator Costs	1.69	2.23	2.63	0.20	0.26	0.31
	9.05	**13.40**	**17.59**	**1.05**	**1.56**	**2.04**

** producing a key dataset is estimated to result in a low additional annual cost (<£500 p.a. in total)*

4.11 Annex B provides a further breakdown of the cost methodology for each of the elements identified in Table 4.2

Average cost per building

4.12 The average cost per building is estimated to be :

- New Build project – £165,000.
- Major Refurbishment project – £40,100;

Table 4.3: Category 1 Buildings costs per building

	Per New Build	Per Major Refurbishment
Gateways	£132,900	£21,100
Dutyholder	£20,500	£17,100
Golden Thread	£7,900	£1,500
Key Dataset	< £100	<£100
Sanctions	£2,600	£300
Appeals	£900	-
Total average per building	**£164,800**	**£40,100**
Average per flat	£2,400	£600

Costs of additional requirements for dutyholders in all building work

4.13 There will be additional requirements for dutyholders in all building work where building regulations are triggered. The analysis estimates:

- Transition costs, with a Present Value of between £0.4m and £0.7m[14] (central estimate of £0.5m);
- Annual on-going costs with an EAC[15] of £0.5m to £0.8m (central estimate of £0.6m).

Table 4.8: Wider Dutyholder Role – All buildings

		Present Value (10yr)			EAC		
		Low	Mid	high	Low	Mid	high
Industry	Transition	£0.44m	£0.54m	£0.65m	£0.05m	£0.06m	£0.08m
Industry	Annual	£4.34m	£5.42m	£6.50m	£0.50m	£0.63m	£0.76m
Total		**£4.77m**	**£5.96m**	**£7.16m**	**£0.55m**	**£0.69m**	**£0.83m**

4.14 These costs include one off familiarisation costs for some firms including; familiarising with the new requirements, amending scopes of services and contracts and having systems in place so that their work can be delivered in accordance with building regulations.

4.15 The costs that will arise annually as a result of this policy are assumed to fall on all dutyholders identified under CDM[16] now undertaking additional work to ensure compliance.

4.16 The calculations assume that on average:

- Principal designers and principal contractors will require an additional 0.5hrs per project to gather the relevant information and ensure work complies with building regulations:
- Designers and contractors will require an additional 0.25hrs per project.

4.17 The calculations also assume that additional time of 2hrs will be required for the person (client), for whom the work is being carried out for:

- To undertake additional competence checks and challenge the systems and arrangements of those they appoint to ensure they can demonstrate compliance with Building Regulations.

4.18 The above average time allowances reflect a broad range. The actual time required will vary based on the type of project. For example, the analysis allows for more time per dutyholder for more complex projects such as a block of apartments[17] and less time for projects such as single dwellings.

[14] Present Value over a 10-year appraisal period
[15] Equivalent Annual Costs (EAC)
[16] The Construction (Design and Management) Regulations, 2015
[17] That are out of scope of the more stringent regime

5. Annex A: Benefits Methodology

Appraisal period and discount rates

5.1 The benefit estimates set out in the assessment have been calculated over a 70-year appraisal period. This includes benefits experienced in the 10-year policy implementation period (equal to that used to estimate costs) and benefits that may persist over the lifespan of a building, assumed to be 60 years. This is to capture all the benefits and reflects the Green Book guidance on 'persistence' of benefits. For example, benefits associated with residents' engagement are likely to last for the 10-year policy period (and for a brief period thereafter), while improvements in the construction quality of new builds will likely last the lifespan of the building.

5.2 For the first 30 years of the appraisal period, a discount rate of 3.5% has been applied to costs and non-health related benefits and 1.5% to health-related benefits. For the subsequent 40 years, 3% and 1.29% discount rates have been applied respectively. This is in line with guidance in HM Treasury's Green Book - Appraisal and Evaluation in Central Government[18].

Reducing the risk of fire incidents

Overview

5.3 It is expected that the Building Safety Regime proposals will reduce the risk of fire spreading within and across in-scope buildings and therefore the human and material costs of such fires. This section sets out the methodology used to estimate the scale of this benefit.

5.4 In essence, this analysis rests on estimates of the risk of fire incidents in the counterfactual, the expected cost of such incidents, and the extent to which the Building Safety Regime proposals will mitigate this. This can be summarised as follows:

5.5 Expected avoided costs of fire incidents of type i in year j = (I) Expected frequency of fire incidents of type i in year j in the counterfactual * (II) Expected cost per fire incident of type i in year j * (III) Expected percentage reduction in fire incidents of type i in year j caused by the activity of the Building Safety Regulator.

5.6 The results are summed across types to calculate the annual impact, then discounted and summed over time to give the present value benefit over the appraisal period.

Expected frequency of fire incidents in the counterfactual

5.7 We examined published statistics and a series of case studies to understand the historical frequency of fires of varying severities in in-scope buildings. Through a combination of statistical analysis[19] and judgment, we then made initial high, medium

[18] https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/685903/The_Green_Book.pd
[19] Modelling the occurrence of larger scale (and less frequent) fire incidents as a Poisson process

and low estimates of the frequency with which fires of a range of severities would be expected to occur in the absence of the Building Safety Regime proposals.

5.8 The historical evidence we referred to is unlikely to fully capture the impact of recent developments in this area, including policy measures already taken that have the effect of reducing the risk of fire in in-scope buildings. The impact of each of these measures on the risk of fires has been considered and a judgment made of the aggregate impact of these measures on the expected frequency of fires. This judgment was then applied to the frequency estimates based on the historical data discussed above to derive high, medium and low estimates of the frequency with which fires of varying severities would be likely to occur if the Building Safety Regime proposals were not introduced.

5.9 This analysis does not account for any future trends in the frequency of fire ignitions. The frequency of fire ignitions could, for example, be affected by changes in the quality and safety of household appliances used in flats, but it was not considered proportionate to model the profile of this technological change. The frequency of fires could also be affected through increased homeworking, as a result of COVID. It is not yet clear whether this will result in an increase or decrease and hence, it is too soon to attempt to model COVID impacts on frequency change.

Impact of fire incidents

5.10 Through case studies and industry knowledge, and taking into account developments following the Grenfell tragedy (e.g. the introduction of waking watch in some high-risk buildings and changes to FRS policies regarding evacuation), high, medium and low estimates have been made of the expected impact of fires of varying severities in in-scope buildings.

5.11 Impacts considered include casualties and fatalities (valued using DfT Transport Appraisal Guidance figures[20]), mental health impacts, property loss, demolition and operational costs.

5.12 Combining the estimated frequency of fire incidents in the counterfactual with the estimated impact of each type of incident gives an estimate of the expected impact of fires over the appraisal period in the absence of the Building Safety Regime proposals.

5.13 Potential future changes which could affect the impact of fire incidents, such as emergency services' response to fires, changing demographics of residents of in-scope buildings, and changes in the ability to treat the physical and mental harm caused by fires have not been modelled

Effectiveness of the Building Safety Regulator in preventing fire incidents

5.14 It is then necessary to make an assumption on the extent to which the Building Safety Regime proposals will reduce the risk of fire spread in in-scope buildings (and how this would vary over time). In the absence of data relevant to these specific circumstances,

[20] £2.0m per fatality and £230k per casualty (2019 prices) – Table A 4.1.1. TAG Databook

judgments were made as to reasonable high, medium and low estimates of risk reduction. Feeding into this judgement were estimates of the rate of new building and refurbishments that will be subject to the Building Safety Regime proposals (and so the proportion of the total building stock that these will make up), and the anticipated profile of safety case reviews and subsequent remediation works in the existing stock.

5.15 As discussed above, this impact assessment estimates benefits that will arise from a 10-year policy period as a result of safer buildings. Some of the benefits are expected to persist over the life of a building (typically 60 years) and as a result, a proportion of the benefits are anticipated to persist (for example, benefits resulting from improved build quality will persist for the lifespan of the relevant building). Conversely, for various reasons one would expect that the impact of the actions of the Building Safety Regulator during the policy period on the frequency of fires is likely to decline as the end of the appraisal nears (that is, the quality of engagement with residents and the safety benefits resulting from this may decline over time if it were no longer mandated).

5.16 However, given that the regulatory regime introduced by the Building Safety Regime will have a number of interconnected aspects, the effects of which might be expected to persist for different periods of time, it is disproportionate to attempt to quantitatively disentangle the effect of each of these aspects on the evolution of the expected frequency of fires over the appraisal period. Therefore, assumptions as to the rate at which the impact of the Building Safety Regulator on the expected frequency of fires will decline over the appraisal period have been based on judgment, having regard to the range of aspects of the functions of the Building Safety Regulator, the profile of the building stock over time and so on.

Avoided costs of resolving systemic issues

5.17 The use of unsafe building products or practices in the construction and refurbishment of buildings can make them unsafe and subject to risk. In some cases, this can occur across a wide portfolio of buildings (when poor practice is systemic), and when identified, the issues need to be addressed through remediation, incurring potentially substantial cost (cost of putting in place interim protection measures, cost of investigation, cost of remediation works etc.). These costs are in addition to the costs incurred if these products or practices result in a fire or structural incident. For example, the installation of ACM cladding on buildings has, in addition to the human and wider costs caused by fires, led to significant expenditure required to mitigate the risk posed by such cladding (for example, waking watch) and ultimately to remove and replace the cladding.

5.18 It is expected that the Building Safety Regime proposals will reduce the probability that unsafe products or practices are used in buildings constructed or refurbished during the policy period. This would mean that costs of mitigating or remediating the systemic use of such products or practices would be avoided, representing a benefit to society.

5.19 It is assumed that this benefit will only apply in respect of new in-scope buildings and buildings undergoing major refurbishments (the Building Safety Regulator cannot retrospectively prevent past systemic poor construction in the existing stock, although it can identify and mitigate the risks posed by them).

5.20 We cannot know the exact nature and scale of future potential systemic issues, therefore in this assessment we have assumed a future issue would be similar in terms of number of buildings effected and scale of cost to that of the ACM issue (i.e. affecting 3.4% of the stock, at an average cost of £3.5m per building[21]). Therefore, in the counterfactual, it is assumed that 3.4% of new buildings or those undergoing major refurbishments would be subject to issues that would later (over the next twenty years) require mitigation and remediation (it should be noted this approach of making an estimate based on a single historical example is subject to significant uncertainty).

5.21 It is not certain that the Building Safety Regime proposals will prevent, at the time of construction or refurbishment, all future potential systemic issues. For example, problems with certain materials or construction processes, currently deemed compliant, may only be identified after buildings start failing. Reflecting this, it is assumed that the Building Safety Regime proposals would reduce the risk of such issues arising in new buildings or buildings subject to major refurbishment during the policy period by 60%. This is based on a judgment. Due to the lack of evidence to support a specific range or confidence interval on this estimate of risk reduction, sensitivities of +/- 30%, applied to the mid-point estimate of the benefit value, have been tested. This same approach was taken with respect to the benefits discussed in the following sections

Other avoided costs

5.22 The additional scrutiny of plans and construction works due to the Building Safety Regime is expected to result in reduced defects both during and at the end of construction and reduced latent defects identified during occupation. This will result in the avoidance of costs incurred to remedy such defects. Following the introduction of the proposed regime, reducing defects that are typically identified and resolved during construction are assumed to have an average cost saving of £37,500[22] per new building whilst defects identified at the end of construction are assumed to have an average cost saving of £40,000 per new building and avoiding latent defects identified during occupation are expected to lead to a cost saving of £37,500 in rework costs per building.

5.23 Other indirect benefits to the construction industry are estimated to arise from:

- Reduced design rework costs, as a result of Planning Gateway one requirements. It is assumed that greater design certainty following planning consent being

[21] The estimated cost per building was based on industry knowledge and a set of three case studies.

[22] These figures are based on subsidiary assumptions as to the number of such defects that would be expected in the counterfactual, what each one would be expected to cost, and how many would be avoided as a result of the Building Safety Regime proposals. These assumptions are in turn based on a combination of case studies and judgment

granted will reduce design rework during the detailed design stage. Such costs are assumed to be avoided in 10% of new buildings, saving 75 hours of work per building on average.

- The requirement for pre-approval of works by the Building Safety Regulator at Gateway two is expected to reduce construction rework costs. The requirement to have approval for works before they commence is expected to avoid instances where products or systems that are not approved are installed or delivered to site and subsequently have to be replaced. This is assumed to apply to 15% of new buildings with an average saving of £80,000.
- The requirement for a record of information at Gateway three has the potential to reduce asset management and invasive survey costs. An accurate record of building layouts and installed systems products is expected to facilitate more efficient asset management, with 37.5 hours per annum per new building assumed to be saved in asset management time, while one invasive survey per new building is assumed to be avoided every five years, at an average cost of £5,000.

Wider benefits

5.24 Potential wider benefits of the proposals have been identified in the form of providing a spur to innovation and increased export potential.

5.25 Based on a combination of live project experience and judgement, it has been assumed that the Building Safety Regime will encourage and nurture innovation in the construction technology industry resulting in a 1% reduction in costs passed on to UK consumers (after building up for four years). It is further assumed that such innovation will drive a 1% increase in total UK architectural and construction industry services exports.

5.26 The value of these benefits were calculated for the UK, in the England IA. A proportion of the value will be attributable to Wales, calculated as follows:

- Based on the 2020 ONS data, 4% of construction firms in the UK are based in Wales;
- Applying this ratio suggests that Welsh firms could benefit by between £1.0m to £2.0m per annum;
- However, the calculations in the England IA do not specify what proportion of these benefits derive from design and construction, as opposed to buildings in occupation;
- For the purposes of the Wales calculations, it has been assumed that 50% of the innovation and export benefits derive from design and construction phase activities and that the remaining 50% are attributable to occupation activities including remediation/safety cases/information management.

5.27 Applying these assumptions would suggest benefits to Welsh firms of between £0.5m to £1.0m per annum (£0.7m central).

Non-monetised benefits

5.28 In addition, there are a range of benefits which have not been monetised, either because there is a lack of robust data and evidence base available or because it was not considered proportionate to carry out this analysis.

5.29 The most significant of these non-monetised benefits relates to reassuring residents that risks to their safety and their homes have been reduced. This would mitigate negative mental health and wellbeing impacts arising from any existing uncertainty/concerns as to the safety of people's homes.

5.30 The majority of these benefits however relate to improving the safety of, and confidence in, existing buildings rather than to future new buildings.

6. Annex B: Cost Methodology

Category A Buildings

6.1 The additional cost of the proposals has been estimated using the following steps:

- Estimate stock of buildings in scope, number of new build and number of major refurbishments per annum.
- Estimate the additional time/cost per building required to prepare or undertake the regulator requirements
  - = For new build and refurbishments – the costs are estimated per project
  - = For occupied buildings – the costs are estimate per annum

6.2 Table 6.1 provides further detail of the cost methodology.

Table 6.1: Category A Buildings - cost methodology	
Gateways	Estimate the additional time required to fulfil the proposed requirements of the Building Safety Regime ▪ Gateway 1 ○ Client to prepare a fire statement ○ Fire and Rescue Service to become statutory consultee ▪ Pre-application ○ Regulator to establish multi-disciplinary team ○ Pre-application meeting between Client and multi-disciplinary team ▪ Gateway 2 ○ Client submits application to start on site ○ Client to prepare a Statement of Approach ○ Client to prepare a fire and emergency plan ○ Client to prepare a change control plan ○ Review of plans by regulators and Principal Designer ▪ During construction ○ Safety changes reported by Principal Designer/Contractor and reviewed by multi-disciplinary team ○ Site inspections/audits undertaken by Principal Designer and Multi-Disciplinary Team

	○ Complex cases – additional review by Multi-Disciplinary Team ▪ Gateway 3 ○ Principal Designer to prepare Completion certificates ○ Other submissions ○ Safe for occupation application Delays to construction programme ▪ Number of extra weeks added to construction programme to accommodate Gateways estimated and costed based on lost rent/additional financing charges etc.
Dutyholder	▪ Building handover between Client and Accountable Person ▪ Licence review and approval ▪ Competency checks ○ Checks on the competency of the design and construction teams Principal designer, principal contractor
Golden Thread	▪ Create digital record for building safety information ▪ Maintain a common data environment during construction ▪ Prepare a dataset of key building information
Sanctions and appeals	▪ Estimate the frequency and type of intervention by regulators due to non-compliance ▪ Escalation process ▪ Appeals at key decision points
Refurbishment	▪ Major refurbishments to go through Gateways as per new build ▪ Other notifiable building works ○ update safety case and inform regulator ○ regulator to provide oversight where deemed necessary
Central Costs (not allocated to other areas)	▪ Oversight/data analysis ▪ Policy and guidance ▪ Research ▪ Regulator/industry competency ▪ Communications ▪ Concerns and advice support
Familiarisation Costs	▪ Training and dissemination events

Wider Dutyholder Responsibility – costing methodology

6.3 Table 6.3 sets out the methodology and assumptions used to estimate the costs of the wider dutyholder responsibility.

Table 6.3: Dutyholder – Wider Responsibility – All construction – costing assumptions.	
Dutyholder checks on all building projects	Full plans checks On-site inspections As-built information checks
Profile	All building projects (except Category 1 buildings)
Familiarisation	Firms undertaking building works – 0.25hr Organisations to amend scope of works – 1hr Organisations to improve processes – 2hr Firms to introduce new processes (10%) – 2hr
Average additional time for dutyholder roles per project	Principal designer – 0.5hr Principal contractor – 0.5hr Designer – 0.25hr Contractor – 0.25hr Client – 2hrs