Final stage impact assessment

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1. Summary of proposal

1.1 The energy efficiency requirements set out in Part L of the Building Regulations 2010 for new non-domestic buildings, the calculation of energy efficiency target rates and the accompanying Approved Document guidance have been amended. In addition, the associated amendments have been made to the Building (Registered Building Control Approvers etc.) (England) Regulations 2024. These changes collectively form the Future Buildings Standard (FBS). The FBS is a zero-carbon ready standard, which means that new buildings built to this standard will not require any retrofit work to achieve zero carbon emissions in use, once the electricity grid is fully decarbonised.

1.2 This Impact Assessment (IA) covers the new performance targets for new non-domestic buildings, the transitional arrangements to support industry adaptation to new standards, as well as the range of other technical and legislative amendments that make up the FBS.

1.3 The Building Regulations are a devolved matter and the changes in this IA apply to England only. Enforcement of the Building Regulations is undertaken via the Building Control process.

1.4 This IA focuses solely on the FBS, which applies to new non-domestic buildings only. A separate set of policies, known as the Future Homes Standard, has introduced similar changes for dwellings. These are addressed in a separate IA.

2. Strategic case for proposed regulation

2.1 Climate change is a major national and international challenge, and one which the UK is committed to tackling. In June 2019, the UK Government legally committed to achieving Net Zero greenhouse gas emissions by 2050. To achieve this commitment, interim targets are set out through Carbon Budgets and the Net Zero Strategy. In 2025, the Climate Change Committee (CCC) recommended a reduction of emissions of 87% or 18.1 MtCO2e relative to 1990, by 2040, the middle year of the Seventh Carbon Budget period[1].

2.2 Greenhouse gas emissions accelerate and exacerbate climate change, which is having and will continue to have severe transboundary impacts. These include but are not limited to extreme weather events, flooding, dangerous high temperatures, water scarcity and ecological breakdown. There are also immediate social costs of greenhouse gas emissions and fossil fuel combustion through a reduction in air quality. It is therefore imperative to take action to reduce the UK's greenhouse gas emissions.

2.3 While there has already been progress in reducing emissions from non-domestic buildings, 30% of emissions from the buildings sector are currently from non-residential buildings, and the buildings sector as a whole remains the second highest emitter after transport. Switching to low-carbon sources of heat in all new non-domestic buildings represents a significant opportunity to reduce carbon emissions and to make progress towards the Government's Net Zero targets. Non-domestic buildings are indicated to contribute around 6% to total UK emission savings by 2040 in the CCC's balanced pathway, predominately through rapid uptake of heat pumps and heat networks across the non-domestic building sector[2].

2.4 There was an uplift to the energy efficiency standards for new buildings in the Building Regulations in December 2021, which came into effect in June 2022. This uplift has already delivered meaningful improvements in this area. However, further progress is needed. The 2021 uplift was intended as a transitional step towards the more ambitious Future Buildings Standard, which future-proofs new buildings with low-carbon heating, high fabric standards and renewable energy generation where technically possible. The FBS is a key component of the UK Government's efforts to meet its Net Zero targets.

2.5 The Building Regulations should be used to reduce carbon emissions and help achieve HMG's 2050 Net Zero Target only where it can be shown that the market would not make these changes of its own accord, or that other measures (regulatory or otherwise) are not already driving this change. The Building Regulations represent the primary tool for setting standards for new buildings.

Rationale for intervention

2.6 The Building Regulations should be used to support the Government's decarbonisation targets only where market failures mean that buildings would not otherwise decarbonise. Uplifts to the Building Regulations can help to overcome the following market failures that act as barriers to action:

[1] Seventh Carbon Budget, Climate Change Committee (2025)
[2] Section 7.9 Non-residential buildings. Available: The Seventh Carbon Budget - Climate Change Committee

- **Split incentives:** for new non-domestic buildings, particularly some types such as warehouses, developers have limited incentives to build better-performing buildings as they do not typically enjoy the benefits. Lower energy bills, and the additional income from energy generated by renewable technologies benefit the building occupant or owner, which is often a separate organisation from the developer. Developers may not be able to sell a building for a premium to recover all the additional costs they accrue, despite the building being more energy efficient. These misaligned incentives mean that developers may fail to make improvements to the energy performance of buildings that benefit occupants.

- **Credit/Resource Constraints:** A failure to set standards at the point of build can lock a building into higher energy consumption. There may be limited scope for building owners to improve energy efficiency later, as retrofitting is disruptive and around 66-80% more expensive[7]. Lack of capital, lack of information and a limited tolerance for disruption can all act as barriers to consumers who may want to renovate and improve existing buildings, even if these works would be cost-effective over the medium or long term. The large upfront costs of energy efficiency upgrades can also take a long time to recover, given the lengthy payback periods resulting from lower fuel bills. Hence business occupants of non-domestic buildings who are credit constrained may lack the ability to refurbish their buildings to higher energy standards. Locking buildings into higher energy efficiency standards at the point of construction removes the reliance on building owners having enough capital to make the improvements themselves, and can also help improve longer term market prices, as developers building en masse can benefit from economies of scale.

- **Negative externalities:** organisations with offices, warehouses or other premises do not incur the full cost of the emissions they emit by heating and powering their buildings. The prices consumers pay for fuel do not reflect the social costs of greenhouse gas emissions and air pollution. Consumers may therefore choose fossil fuel heating systems even when the high social costs of these systems mean that a low-carbon alternative is socially optimal.

- **Multiple equilibria:** A complex system like the construction industry can be held back from moving to a new, low-carbon equilibrium because of a failure of coordination. New, low-carbon technologies such as heat pumps are often initially more expensive than existing fossil fuel dependent technologies. Economies of scale and increased investment are likely to bring down the capital costs of these technologies over time. However, the costs to each actor of independently adopting a new technology may outweigh the benefits, preventing a socially optimal transition. Government intervention is justified in such a case to support a sector to transition from a high-carbon equilibrium to a low-carbon equilibrium, overcoming the coordination problem.

- **Imperfect information:** The first three market failures on this list address misaligned incentives. However, even if incentives were properly aligned and market prices reflected the high social costs of carbon emissions and air pollution, consumers might not respond by changing their choices.

Owners and occupiers of buildings may not know that certain improvements are cost-effective. For example, owners of new non-domestic buildings may not choose better-performing ventilation even though it would reduce their energy bills. Consumers may also have misapprehensions about the effectiveness of low-carbon heating systems that lead them to overlook these technologies.

2.7 The FBS has been developed whilst taking into account many other Government policies that already exist to decarbonise or improve elements of the energy system and that would also benefit the energy efficiency of buildings. Whilst segments of the new non-domestic buildings market do already meet standards equivalent to the FBS driven by client demand, this has not been sufficient to achieve whole-scale zero carbon ready buildings, even with these segments, such as offices. There are several policy interventions designed to improve the energy performance of buildings already in place, as well as other future policies, such as rebalancing the levies on gas vs electricity and the planned decarbonisation of heat networks, which may have a future impact. However, in combination, these measures and client demand are still not currently proving sufficient to overcome all the above market failures and ensure that all newly built buildings are energy efficient and zero carbon or net zero ready, with extremely low carbon emissions. For example:

- **Energy Performance Certificates (EPCs)** are provided at the point of sale and provide buyers with information about the energy efficiency of a building. Whilst this can help buyers to make informed decisions about the buildings they purchase and the potential running costs, it does nothing to improve the standards of buildings or reduce the long term operational costs. As such, EPCs alone will not improve the energy efficiency of buildings, or reduce the long-term operational costs to buyers.

- The **existing Building Regulations** have already delivered meaningful improvements to the energy performance of buildings. However, these do not go far enough to future-proof buildings and ensure that new buildings are zero-carbon ready. Without further intervention, more buildings will be built without the benefit of high standards, increasing the need for future retrofit, which is more costly and more disruptive to organisations and businesses than meeting higher standards at the point of being built.

2.8 Setting a single national standard that clearly requires zero carbon ready new non-domestic buildings therefore seems appropriate in the context of current energy efficiency measures not having been sufficient to overcome market failures in this area, and particularly so, given the urgency of responding to climate change and reaching net zero. The Building Regulations represent the appropriate point of intervention to overcome these market failures in the construction sector. Action at the point of build has the advantage of locking in low-carbon technologies and energy efficient design, reducing the overall energy demand of the building and avoiding the need to retrofit in the future.

2.9 The policy will also help enable other government policies and strategic objectives. Notably, the transition to low-carbon technologies in new non-domestic buildings may have indirect benefits that will support government efforts to decarbonise other existing non-domestic buildings. Non-domestic buildings often have significantly more complex heating needs than housing, meaning there is room for new

innovative low carbon products to be developed and supply of these products to be expanded to meet these more complex requirements. The increased demand for these low-carbon technologies more suited to non-domestic buildings' needs will support markets and supply chains, likely increasing availability and driving down costs. The policy will also increase business consumer familiarity with these products, likely leading to increases in demand. This will help decrease barriers to the retrofit of existing non-domestic buildings, which will in turn lead to further reductions in carbon emissions. There are also wider expected benefits for areas such as health and growing the green economy.

2.10 The Future Buildings Standard has been a UK Government commitment since 2019 and shows the UK's commitment to meeting its net zero legal targets.

3. SMART objectives for intervention

3.1 The overarching aim of the Future Buildings Standard is to use the performance-based targets set through the Building Regulations and accompanying Approved Documents to reduce the carbon emissions from non-domestic buildings, and thus to support the UK Government's statutory target to reach Net Zero by 2050.

3.2 The Government is committed to delivering clean power by 2030 and accelerating the transition to Net Zero. The Future Buildings Standard supports these goals by setting higher energy efficiency requirements, enabling low-carbon heating, and encouraging the use of renewable technologies such as solar panels. In doing so, it helps reduce emissions from new non-domestic buildings, cuts reliance on fossil fuels, and supports the growth of a cleaner, greener economy. The Future Buildings Standard may also have indirect benefits for government efforts to retrofit low carbon technologies in existing non-domestic buildings, as the inclusion of these technologies in more new builds will support low-carbon supply chains and increase business consumer familiarity. This in turn will provide further support for the Government's overarching goals and commitments by enabling building decarbonisation.

SMART Objectives

3.3 The **specific** policy objectives of the Future Buildings Standard are outlined below. The accompanying Theory of Change model (Section 4) provides more detail on how these objectives are supported by the activities and outputs of the FBS.

- **New non-domestic buildings built to the FBS will be zero-carbon ready by default, with the FBS implemented as soon as is reasonably possible whilst giving the sector adequate time to adjust.** This means that buildings constructed to meet the FBS will not require retrofitting to become zero carbon in use once the electricity grid is fully decarbonised. This includes the mainstream adoption of low-carbon technologies such as solar photovoltaic (PV) systems, wastewater heat recovery, and low-carbon heating. Implementing the FBS as soon as possible will mean maximum carbon savings are achieved, but this must be balanced against allowing the sector adequate time to adjust and reducing additional burdens on business where possible, to encourage economic growth.
- **Regulated operational energy use from new non-domestic buildings will be reduced** compared to typical existing buildings.
- **Grid-connected non-domestic buildings will contribute more on-site renewable generation** as most new non-domestic buildings will be constructed with solar PV.

- **Energy costs for occupants will be more predictable.** The transition away from the use of fossil fuels for heat and power will make sure that occupants are protected from fossil fuel price volatility.
- **New non-domestic buildings will be high-quality and comfortable.** Occupants will experience thermal comfort in non-domestic buildings completed to the FBS.
- **New non-domestic buildings will be cost-effective, affordable, practical and safe**, meaning they are deliverable by industry given likely capacity, skills and supply chains, on sites across the country.

3.4 The above objectives are **measurable,** principally through monitoring the number of non-domestic buildings being constructed to the FBS over time. Full detail on how the FBS will be continually monitored and evaluated is set out in Section 8.

3.5 These objectives are **achievable** and **realistic**. The FBS builds upon previous uplifts to the energy efficiency standards in the Building Regulations, notably the 2021 Uplift, which was designed as a stepping stone towards this policy. Updates to the Building Regulations are an established mechanism for improving the energy performance of new buildings, and so is a tried-and-tested method to achieve these objectives. The FBS has been signalled in advance to industry, allowing developers and supply chains time to prepare and adapt.

3.6 These objectives are **time-bound** and in line with the UK Government's legal commitment to achieving Net Zero greenhouse gas emissions by 2050. As the transitional period concludes, an increasing proportion of new non-domestic buildings being completed each year will meet the FBS. We expect that, by 2031, the vast majority of non-domestic buildings being completed will be FBS-compliant and therefore contribute to achieving the above objectives.

4. Description of proposed intervention option and explanation of the logical change process whereby this achieves SMART objectives

4.1 We set standards using a 'notional building' approach. A notional building is a reference building used to set tailored target performance standards and developers' designs must meet the same level of performance (energy usage and carbon emissions) as the reference building. Under the Future Buildings Standards, we have set the notional building for new non-domestic buildings to include:

- Good fabric standards to minimise heat loss from windows, walls, floors and roofs.
- Low carbon heating (a heat pump for side-lit spaces and radiant electric heating in top-lit spaces. A separate notional building has also been created for buildings connected to a heat network.)
- Enhanced lighting efficacy, but lower than the level proposed at consultation
- Enhanced heat recovery efficiency
- Solar PV panel coverage equivalent to 40% of the building's foundation area for all building types, except those classed as High-Risk Buildings.

4.2 This approach supports delivery of the SMART objectives outlined in Section 3 by setting a notional building specification that ensures new buildings are zero-carbon ready by default. The combination of low-carbon heating, solar PV, enhanced lighting efficacy and enhanced heat recovery efficiency significantly reduces operational energy use and emissions. It also means that new buildings will no longer rely on fossil fuels, protecting occupants from fossil fuel price volatility and making their energy bills more predictable. The high standards that we have set for building fabric (walls, roofs, floors, etc.) support the objective that new buildings are high-quality and comfortable.

4.3 While the key intervention options for the FBS are centred around the notional building, the FBS consists of a wider package of changes to the regulations and Approved Documents which will support the SMART objectives outlined in Section 3. The most significant of these is the inclusion of guidance on energy efficiency for lifts, escalators, moving walkways and external lighting in the Approved Documents. These building elements have not previously been regulated. Including this guidance ensures these components contribute appropriately to the energy efficiency and sustainability objectives of the Future Buildings Standard.

4.4 To support the deliverability of the FBS and manage impacts on industry, we have set out associated transitional arrangements. These, comprise a 12-month period between the legislation being laid (written into law) and it coming into force, followed by a 12-month transitional period. In practice, this means that developers have 12 months after the legislation is laid to submit an initial notice, a building notice or full plans application to the local authority, and a further 12 months to commence construction. If they meet both these deadlines, then they are permitted to continue

building to the 2021 standards for that specific building; if they do not meet these deadlines, they are required to meet the FBS. These arrangements give industry time to adapt to the new standards and allow work which is already in progress to be completed without major disruption.

4.5 High-risk buildings[4] (HRBs) must pass through a Gateway process before construction and occupation can occur. For some HRBs, particularly those with basements or complex construction programmes, this would be challenging to achieve within the transitional period. Separate transitional arrangements have therefore been set for HRBs. To benefit from the transitional arrangements, a successful Gateway 2 application must be submitted to the Building Safety Regulator within 18 months of the legislation being laid, and construction must start within 3 years of the application being submitted.

4.6 The transitional arrangements support the FBS objectives by providing a clear and manageable pathway for industry to prepare for and adapt to the new standard.

Extension of existing regulation and use of tried-and-tested methods

4.7 The Future Buildings Standard continues to build on existing energy efficiency requirements within the Building Regulations, maintaining the performance-based targets and established calculation methodologies introduced in previous standards, including the 2021 uplift for non-domestic buildings.

4.8 The Future Buildings Standard applies familiar compliance routes and regulatory mechanisms, ensuring continuity and clarity for developers and industry. Any updates to the notional building specification, lighting efficacy, and heat recovery reflect refinements within this established legislative framework rather than new regulatory approaches.

Theory of Change

4.9 The Theory of Change in table 1 below summarises how the preferred package of interventions is expected to deliver against the policy objectives outlined in Section 3:

- **Activities** include publishing new notional building specifications for non-domestic buildings; updating calculation methodologies (National Calculation Methodology (NCM), Simplified Building Energy Model (SBEM)); strengthening requirements for commissioning and certification of fixed building services; enabling connections to low-carbon heat networks; setting transitional arrangements and sunsetting outdated transitional arrangements; and permitting the use of fossil fuel back-up heating in buildings delivering critical care and resilience.

- **Outputs** include revised regulations, Notices of Approval, and Approved Documents; updated calculation tools and guidance for non-domestic buildings; clearer standards for performance and commissioning; new pathways for low-carbon heat network connections; and regulatory clarity on transitional arrangements.

- **Outcomes** include developers adapting their building practices to comply with the new standard; significant reductions in operational energy use and

emissions; increased adoption of low-carbon technologies such as solar PV and wastewater heat recovery; improved alignment between industry practices and Net Zero objectives; and better occupant experience in terms of comfort.

- **Impacts** include all new non-domestic buildings are zero carbon ready by default; long-term carbon savings from new non-domestic buildings; strengthened delivery of the UK Government's statutory Net Zero target; and improved energy performance without the need for future retrofit.

Table 1: Theory of Change

Activities	Outputs	Outcomes	Impacts
• Publish new notional building specifications for non-domestic buildings • Update calculation methodologies (NCM, SBEM) • Strengthen commissioning and certification of fixed building services • Enable connection to heat networks with low-carbon heat • Set clear transitional arrangements and sunset historic transitional arrangements • Permit installation of fossil fuel back-up heating systems to buildings providing critical care and resilience	• Builders adopt zero-carbon ready designs • Revised Building Regulations, Notices of Approval, and Approved Documents issued • Notional building specifications published for non-domestic buildings • Clearer commissioning and performance standards introduced • New guidance and pathways for connecting to low-carbon heat networks • Transitional and sunsetting arrangements established	• Developers adapt building practices to comply with the new standard • Operational energy use and emissions from new buildings are significantly reduced • More buildings are constructed with solar panels • Low carbon technologies such as solar PV, wastewater heat recovery, and low-carbon heating become mainstream • Builders, developers, and suppliers are aligned with a Net Zero market e.g. strengthened skills and supply chains in low-carbon technologies • Energy costs for occupants are more predictable and they are better protected from fossil fuel price volatility • Occupants experience improved comfort and health	• All new non-domestic buildings are zero-carbon ready by default • Significant and permanent carbon savings from new buildings • Supports the UK Government's statutory target to reach Net Zero by 2050 • New buildings future-proofed, requiring no retrofit to meet climate commitments • Stimulated innovation and green economic growth in construction sectors

5. Summary of long-list and alternatives

5.1 The following section gives an overview of the longlist of options identified, and the rationale for which options were shortlisted and progressed to consultation.

5.2 Options consist of two different notional buildings, and two different timelines for transitional arrangements, as well as BAU and non-legislative approaches.

5.3 To set the requirements in the options for the notional buildings outlined, we modelled many different building specifications. We used different reference values and modelled different representative building types, engaging throughout with industry and other experts, until we were satisfied that we had identified building specifications that achieve the most appropriate balance of delivering against our SMART objectives, while maintaining practicability for the sector.

5.4 Transitional arrangements need to be proportionate to the scale of the delivery challenge, providing a reasonable period of time for industry to adapt whilst making sure that the momentum towards our net zero targets is maintained. We considered 18-month transitional arrangements, as this is the precedent set by the 2021 uplift to Part L. To acknowledge the challenges of adjusting to potentially significant increases in building standards, we also considered a 24-month transition period. Transition periods longer than 24 months were not included, as this would reduce the carbon savings of the FBS by delaying the implementation, with diminishing returns for increases in supplier capability. Transition periods shorter than 18 months were not considered, as it was considered unlikely that these would offer industry sufficient time to adjust.

5.5 Table 2 contains a detailed description of the options considered at long-list stage, and an assessment of how well each aligns with our SMART objectives and the critical success factors (CSFs). This is based on our views of each option, prior to formal consultation. The shortlisted options were then taken to consultation – for a description of how consultation feedback impacted our considerations, please see Section 6.

Table 2: Assessment of longlisted policy options against the SMART objectives and the Green Book Critical Success Factors, before going to consultation.

Option 1 (Do maximum)	
Summary of policy	The notional building specification for new buildings would include: • Good fabric standards to minimise heat loss from windows, walls, floors and roofs. • Low carbon heating (a heat pump for side-lit spaces and radiant electric heating in top-lit spaces. A separate notional building was created for buildings connected to a heat network.) • Enhanced lighting efficacy • Enhanced heat recovery efficiency • Solar PV coverage equivalent to 40% of the foundation area for side-lit spaces (e.g. offices) and 75% for top-lit spaces (e.g. warehouses).

RAG rating against SMART objectives		**New non-domestic buildings built to the FBS will be zero-carbon ready by default, with the FBS implemented as soon as is reasonably possible whilst giving the sector adequate time to adjust** The low carbon technologies included in the notional building mean new buildings would be constructed to be net-zero ready by default, meaning this objective would be met, as long as the right transitional arrangements are selected. **Regulated operational energy use from new non-domestic buildings will be reduced** The combination of low-carbon heating, good fabric standards, and enhanced lighting efficacy and heat recovery efficiency significantly reduces operational energy use and emissions. **Grid-connected non-domestic buildings will contribute more on-site renewable generation** The ambitious levels of solar PV coverage required in the notional building mean this objective will be met. **Energy costs for occupants will be lower and more predictable** The low carbon technologies included in the notional building would make energy costs more predictable by protecting occupants from fossil fuel price volatility. Energy bill cost savings were monetised as £950m (2022 prices) over the appraisal period[3], when compared to the Part L 2021 counterfactual. Buildings constructed to these standards would deliver lower energy bills than a typical existing building. **New non-domestic buildings will be high-quality and comfortable** The combination of low-carbon heating, good fabric standards, and enhanced lighting efficacy and heat recovery efficiency will lead to high-quality and comfortable buildings. **New non-domestic buildings will be cost-effective, affordable, practical and safe** The high level of ambition of these standards would mean that buildings are more expensive and complicated for developers to construct, so this objective would not be fully met, although in the long term the market may adjust to accommodate (for example through changing land prices). Other existing Building Regulations are intended to protect people's safety, health and welfare, setting acceptable standards for new building work. This will remain unchanged, regardless of the option chosen for the FBS.
RAG rating against CSFs		**Strategic fit and meeting of business needs:** This option offers strong support for the SMART objectives, and therefore meets business needs well. The high ambition for improved standards means this option would achieve the most significant contribution to the UK's carbon reduction goals. **Potential value for money:** Capital costs will be higher under this option than under Option 2 due to the higher solar coverage in the notional building. These were monetised as £2,350m (2022 prices) over the consultation appraisal period (compared with £1,250m (2022 prices) for Option 2). However, these are offset to a greater extent by energy savings, which is monetised as £92/tCO2e (2022

[3] Consultation IA appraisal period.

		prices) for non-traded emissions (compared to £163/tCO2e (2022 prices) for Option 2). Both Options meet the criteria of cost effectiveness against the calculated social cost of carbon of £252/tCO2e (2023). **Supplier capacity and capability, and potential achievability:** This is a high-ambition option, representing a significant increase in energy efficiency standards, and therefore may pose capability and achievability changes for suppliers adopting new practices. **Potential affordability:** The proposed level of lighting efficacy would result in higher capital cost uplift for new non-domestic buildings. There would also be higher capital, maintenance and replacement costs relative to Option 2 due to the higher proportion of solar PV coverage. This option does not impose any direct costs on HMG. However, as new non-domestic buildings, such as public hospitals and schools will be required to comply with the updated standard, the government will face increased capital expenditure associated with constructing these facilities to meet the new requirements.
Overall RAG rating and assessment		This high-ambition option delivers strongly against our SMART objectives and the CSFs, although there are some concerns around supplier capability and achievability.
Progressed to shortlist stage?	Yes – included in consultation.	
Option 2 (Do minimum)		
Summary of policy	The notional building specification for new buildings would mirror Option 1, with the exception of the solar PV coverage. Under Option 2, solar PV coverage equivalent to 20% of the foundation area was proposed for side-lit buildings and 40% for top-lit buildings.	
RAG rating against SMART objectives		**New non-domestic buildings built to the FBS will be zero-carbon ready by default, with the FBS implemented as soon as is reasonably possible whilst giving the sector adequate time to adjust** The low carbon technologies included in the notional building mean new buildings would be constructed to be net-zero ready by default, meaning this objective would be met, as long as the right transitional arrangements are selected. **Regulated operational energy use from new non-domestic buildings will be reduced** The combination of low-carbon heating, good fabric standards, and enhanced lighting efficacy and heat recovery efficiency significantly reduces operational energy use and emissions. **Grid-connected non-domestic buildings will contribute more on-site renewable generation** The lower level of solar coverage compared to Option 1, in particular for side-lit buildings, means this objective will not be as strongly met. **Energy costs for occupants will be lower and more predictable** The low carbon technologies included in the notional building would make energy costs more predictable by protecting occupants from fossil fuel price

		volatility. However, due to reduced solar coverage compared to Option 1, energy bill costs under Option 2 would be higher than in the Part L 2021 counterfactual. Energy bill cost increases were monetised as £1,050m (2022 prices) over the appraisal period[4], when compared to the Part L 2021 counterfactual. Buildings constructed to these standards would still deliver lower energy bills than a typical existing building. **New non-domestic buildings will be high-quality and comfortable** The combination of low-carbon heating, good fabric standards, and enhanced lighting efficacy and heat recovery efficiency will lead to high-quality and comfortable buildings. **New non-domestic buildings will be cost-effective, affordable, practical and safe** The high level of ambition of these standards would mean that buildings are more expensive and complicated for developers to construct, so this objective would not be fully met, although in the long term the market may adjust to accommodate (for example through changing land prices). Additional costs for this Option are lower than for Option 1, however. Other existing Building Regulations are intended to protect people's safety, health and welfare, setting acceptable standards for new building work. This will remain unchanged, regardless of the option chosen for the FBS.
RAG rating against CSFs		**Strategic fit and meeting of business needs:** This has a weaker strategic fit than Option 1, as the objective for renewable energy generation is not as strongly met, and therefore the amount of renewable energy generated as a result is lower. This means this will provide less support for the transition to net zero. **Potential value for money:** The NPV is negative, suggesting this option represents poor value for money. The calculated non-traded cost effectiveness indicator of £163/tCO2e (2022 prices) is below the social cost of carbon figure for the relevant year of £252/tCO2e. Therefore meets the definition of value for money laid out in the Green Book supplementary guidance[5]. **Supplier capacity and capability, and potential achievability:** This option represents a significant increase in energy efficiency standards, and therefore may pose capability and achievability changes for suppliers adopting new practices. However any capability and achievability challenges will likely be less significant that for Option 1, due to the lower solar coverage. **Potential affordability:** The proposed level of lighting efficacy would result in higher capital cost uplift for new non-domestic buildings. However, costs are lower here than for Option 1. These were monetised as £1,250m (2022 prices) over the consultation appraisal period (compared with £2,350m (2022 prices) for Option 1) Higher capital, maintenance and replacement costs relative to the preferred option.

[4] Consultation IA appraisal period.

[5] For information about how we quantify and value energy and greenhouse gas emissions, including an explanation of the cost-effectiveness metric, please see this document: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1129242/valuati on-of-energy-use-greenhouse-gas-emissions-for-appraisal.pdf

		This option does not impose any direct costs on HMG. However, as new non-domestic buildings, such as public hospitals and schools will be required to comply with the updated standard, the government will face increased capital expenditure associated with constructing these facilities to meet the new requirements.
Overall RAG rating and assessment		This is a lower ambition option than Option 1, with overall weaker alignment with the SMART objectives and CSFs. However it would decrease build costs compared to Option 1, and may be more achievable for the sector.
Progressed to shortlist stage?	Yes – included in consultation.	
Option 3 (18-month transitional arrangements)		
Summary of policy	The notional building for new non-domestic buildings would be set as per Option 1 or Option 2. There would be a **6-month period** between the laying date of the Future Homes and Buildings Standard regulations and publication of full technical specification and the regulations coming into force, followed by a 12-month transitional period **(18 months total).**	
RAG rating against SMART objectives		The support for each SMART objective will depend on whether the notional building is set according to Option 1 or Option 2. This option represents a quicker transition than Option 4, meaning the objectives would be achieved more quicky. However, 18 months may not be sufficient time for industry to adapt (as is a requirement for our first SMART objective).
RAG rating against CSFs		**Strategic fit and meeting of business needs:** This option represents a quicker transition than Option 4, meaning the objectives would be achieved more quickly. This would lock in carbon savings sooner and offer earlier support for the transition to net zero. The shorter transitional arrangements under Option 3 are estimated to increase non-traded emission savings by 1 MtCO2e or around 8% over the appraisal period compared to Option 4. However, there is a risk that this option does not allow sufficient time for industry to adjust. **Potential value for money:** The value for money of this option could be higher than that of Option 4, if the benefits of FBS implementation are realised more quickly. However, this would need to balance against the achievability of these timelines for the sector, at a time when the Government also wishes to encourage economic growth. **Supplier capacity and capability, and potential achievability:** The proposed transition period may not allow sufficient time for all parts of the industry to adapt to the new standard. **Potential affordability:** This option does not impose any direct costs on HMG. However, as new non-domestic buildings, such as public hospitals and schools will be required to comply with the updated standard, the government will face increased capital expenditure associated with constructing these facilities to meet the new requirements. Shorter transitional arrangements mean these cost increases would come sooner than for Option 4, more

		broadly than just public buildings, and may impact some sectors' economic growth.
Overall RAG rating and assessment		The faster transitional arrangements compared to Option 4 will mean carbon reductions are locked-in more quicky, although there is a risk that these timelines would not be sufficient for the sector to adjust.
Progressed to shortlist stage?	Yes – included in consultation.	
Option 4 (24-month transitional arrangements)		
Summary of policy	The notional building for new non-domestic buildings would be set as per Option 1 or Option 2. There would be a **12-month period** between the laying date of the Future Homes and Buildings Standard regulations and publication of full technical specification and the regulations coming into force, followed by a 12-month transitional period **(24 months total).**	
RAG rating against SMART objectives		The support for each SMART objective will depend on whether the notional building is set according to Option 1 or Option 2. This option represents a slower transition than Option 4, meaning the objectives would be achieved less quickly. However, this may allow more time for industry to adapt to the new standards. This is essential for meeting our first SMART objective, and minimising unintended consequences that could be associated with a faster transition, whilst also reducing any impact of increased costs on economic growth.
RAG rating against CSFs		**Strategic fit and meeting of business needs:** This option represents a slower transition than Option 4, meaning the objectives would be achieved less quickly. This would mean slightly reduced carbon savings, as it would miss the opportunity to lock in carbon savings sooner and offer earlier support for the transition to net zero. The longer transitional arrangements under Option 4 are estimated to reduce non-traded emissions savings by 1 MtCO2e or around 7% over the appraisal period compared with Option 3. However, this option allows more time for industry to adjust, reducing possible impacts on business and economic growth. **Potential value for money:** The value for money of this option could be lower than that of Option 4, if the benefits of FBS implementation are realised more slowly. **Supplier capacity and capability, and potential achievability:** This option likely has a higher supplier capability and achievability, as it offers the sector more time to adjust to the new standards. **Potential affordability:** This option does not impose any direct costs on HMG. However, as new non-domestic buildings, such as public hospitals and schools will be required to comply with the updated standard, the government will face increased capital expenditure associated with constructing these facilities to meet the new requirements. Longer transitional arrangements mean these cost increases would come later than for Option 3, allowing more time to prepare.

Overall RAG rating and assessment		The slower transitional arrangements compared to Option 3 will mean the opportunity to lock in carbon reductions more quickly is lost. However, this would allow industry more time to adjust, reducing possible impacts on business and economic growth.
Progressed to shortlist stage?	Yes – included in consultation.	
Option 5 (counterfactual/BAU)		
Summary of policy	A business as usual approach would retain the existing 2021 energy efficiency standards for buildings.	
RAG rating against SMART objectives		There would be no improvement against any of the SMART objectives.
RAG rating against CSFs		**Strategic fit and meeting of business needs:** Option 5 would not support any of the SMART objectives, or contribute any carbon savings, and so has a very poor strategic fit. **Potential value for money:** New buildings may require retrofit which is generally more expensive and can be disruptive to occupants. Therefore, counterfactual/BAU may offer poor value for money for occupants over time. There are also no additional carbon or air quality improvements benefits with this option. **Supplier capacity and capability, and potential achievability:** No significant changes are required from suppliers, as the energy efficiency and heating system standards remain at 2021 levels. Therefore, in the immediate term, this has high supplier capability and achievability. While this scenario poses no immediate challenges to supplier capacity, it also offers little incentive for innovation or growth in low-carbon technologies, potentially slowing the development of future-ready supply chains. As such, this could represent a missed opportunity to increase supplier capability. **Potential affordability:** The counterfactual/BAU has no additional costs on industry or HMG.
Overall RAG rating and assessment		Doing nothing would not achieve progress towards our SMART objectives, or towards our net zero commitments.
Progressed to shortlist stage?	Yes – included in consultation as the counterfactual.	
Option 6 (non-legislative options)		
Summary of policy	Non-legislative options, designed to encourage and enable developers to construct buildings to higher energy efficiency standards, without mandating this through the building regulations.	
RAG rating against SMART objectives		As set out in Section 2, market failures such as imperfect information to consumers, split incentives for developers, and co-ordination failures mean that there is little incentive for developers to be early adopters of low carbon and energy efficient building, as the additional costs incurred cannot always be recouped at the point of sale or end-clients and purposes for the building may change during the build. This could put early adopters at a commercial

		disadvantage compared to developers who chose not to adopt higher energy efficiency standards. While non-legislative options can incentivise better standards, they lack the enforceability and uniformity provided by the Building Regulations. As such, while non-legislative options may lead some developers to make some progress towards lower emission, more energy efficient buildings, this would not be sufficient to meet any of our objectives.
RAG rating against CSFs		**Strategic fit and meeting of business needs:** Option 5 would not support any of the SMART objectives, or contribute any carbon savings, and so has a very poor strategic fit. **Potential value for money:** New buildings may require retrofit which is generally more expensive and can be disruptive to occupants. Therefore, non-legislative options that do not require the sector to improve building standards across the board may offer poor value for money for occupants over time. There are likely very reduced additional carbon or air quality improvements benefits with this option, compared to Options 1 and 2. Unlike Option 5, this option would likely incur costs for HMG, and is therefore the poorest value for money option. **Supplier capacity and capability, and potential achievability:** Engagement with non-legislative policy programmes would be optional. This would mean that suppliers with limited capability, or developers for whom engagement is not achievable, would not be directly adversely impacted. While this scenario poses no immediate challenges to supplier capacity, it also offers little incentive for innovation or growth in low-carbon technologies, potentially slowing the development of future-ready supply chains. As such, this could represent a missed opportunity to increase supplier capability. **Potential affordability:** This option could incur some additional costs for HMG, depending on the programme identified and progressed. Any additional costs to industry resulting from this would be optional, as the programme would be non-legislative.
Overall RAG rating and assessment		Non-legislative options were not considered to be a viable approach to achieving the SMART objectives set out in Section 3. Changes to the Building Regulations are a tried and tested approach to improving energy efficiency standards, setting a national minimum that ensures consistency and compliance. Therefore, a non-legislative option was not considered for the FBS, as it would not guarantee the same level of adherence and effectiveness in achieving the SMART objectives set out in Section 3.
Progressed to shortlist stage?	No.	

6. Revised assessment of options shortlist and identification of preferred option

6.1 The following table outlines how our assessment of each of the shortlisted options was revised following consultation feedback.

Table 3: Revised assessment of shortlisted policy options against the SMART objectives and the Green Book Critical Success Factors, following consultation.

Option 1 (Do maximum)		
Summary of policy	The notional building specification for new buildings would include: • Good fabric standards to minimise heat loss from windows, walls, floors and roofs. • Low carbon heating (a heat pump for side-lit spaces and radiant electric heating in top-lit spaces. A separate notional building was created for buildings connected to a heat network.) • Enhanced lighting efficacy • Enhanced heat recovery efficiency • Solar PV coverage equivalent to 40% of the foundation area for side-lit spaces (e.g. offices) and 75% for top-lit spaces (e.g. warehouses).	
Revised RAG rating against SMART objectives		Many respondents to the consultation provided positive feedback on Option 1, suggesting the high level of ambition was welcome. However, concerns were raised that caused us to revise our assessment of this option against the following SMART objective. As a result, we have revised our RAG rating against SMART objectives from Green to Amber. **Grid-connected non-domestic buildings will contribute more on-site renewable generation and help manage peak demand** Concerns were raised that the proposed levels of solar coverage would have been impractical to meet in many situations, in particular for top-lit buildings such as warehouses. This would therefore have increased the number of exemptions sought, thereby undermining the aim to maximise onsite renewable energy generation overall, or even resulted in businesses deciding not to locate warehouses in England, which is not conducive to the Government's desire to encourage economic growth. As such, this option offers poorer support for this objective than we had considered at long-list stage.
Revised RAG rating against CSFs		Concerns were raised that caused us to revise our assessment of this option against the following CSF. As a result, we have revised our RAG rating against CSFs from Amber to Red. **Supplier capacity and capability, and potential achievability:** Concerns were raised that the level of solar coverage in top-lit spaces would be impractical in many situations, the level of solar coverage could be difficult to achieve while still accommodating

		essential roof features, such as space for maintenance, and the need for rooflights to provide natural daylight.
Overall revised RAG rating and assessment		The poor achievability of the high levels of solar PV coverage may lead to more exemptions being sought, counter to the FBS's aim or lead to less toplit buildings such as warehouses being built in England which is not supportive of economic growth. However, many respondents provided positive feedback on this option, suggesting that the overall approach has potential.
Option 2 (Do minimum)		
Summary of policy	The notional building specification for new buildings would mirror Option 1, with the exception of the solar PV coverage. Under Option 2, solar PV coverage equivalent to 20% of the foundation area was proposed for side-lit buildings and 40% for top-lit buildings.	
Revised RAG rating against SMART objectives		Concerns were raised that caused us to revise our assessment of this option against the following SMART objective. As a result, we have revised our RAG rating against SMART objectives from Amber to Red. **Grid-connected non-domestic buildings will contribute more on-site renewable generation and help manage peak demand** Many respondents to the consultation argued that the level of solar panel coverage proposed in Option 2 was too low. Having investigated this argument, we believe that a higher level of solar panel coverage for side-lit buildings (like in Option 1) would be practical to achieve and would better support the SMART objectives set out in Section 3. As such, this option offers poorer support for this objective than we had considered at long-list stage.
Revised RAG rating against CSFs		Concerns were raised that caused us to revise our assessment of this option against the following SMART objective. As a result, we have revised our RAG rating against SMART objectives from Amber to Red. **Strategic fit and meeting of business needs:** The feedback from respondents that the solar panel coverage is too low suggests that this option has lower strategic fit, compared to what industry feels is achievable, than we had initial considered at longlist stage.
Overall revised RAG rating and assessment		The lower requirements for solar PV coverage are what differentiates this option from Option 1. The feedback that the levels proposed in this option are not ambitious enough suggests this option is not worth pursuing.
Option 3 (18-month transitional arrangements)		
Summary of policy	The notional building for new non-domestic buildings would be set as per Option 1 or Option 2. There would be a **6-month period** between the laying date of the Future Homes and Buildings Standard regulations and publication of full technical specification and the regulations coming into force, followed by a 12-month transitional period **(18 months total).**	

Revised RAG rating against SMART objectives		Consultation responses were largely positive about 18-month transitional arrangements. However, concerns were raised that caused us to revise our assessment of this option against the following SMART objective. As a result, we have revised our RAG rating against SMART objectives from Amber to Red. **New non-domestic buildings built to the FBS will be zero-carbon ready by default, with the FBS implemented as soon as is reasonably possible whilst giving the sector adequate time to adjust** Concerns were raised about whether these transitional arrangements would give the sector adequate time to adjust. This included concerns that this would not give industry sufficient time to upskill in key areas (e.g., heat pump installation), and supply chains would face disruption. It was also noted that shorter transitional arrangements may have a negative impact on small and medium-sized developers, who may lack the capacity to respond quickly to regulation changes. As such, we do not believe it is reasonable to expect all parts of industry to adapt to the new standards within 18 months. As such, this option offers poorer support for this objective than we had considered at long-list stage.
Revised RAG rating against CSFs		Concerns were raised that caused us to revise our assessment of this option against the following CSF. As a result, we have revised our RAG rating against the CSFs from Amber to Red. **Supplier capacity and capability, and potential achievability:** Responses suggest that 18-month transitional arrangements would not give industry sufficient time to adjust, therefore this option offers poorer support for this CSF than we had considered at longlist stage.
Overall revised RAG rating and assessment		Consultation responses suggest that the 18-month transitional arrangements would not give industry sufficient time to adjust, and that therefore this option is not viable.
Option 4 (24-month transitional arrangements)		
Summary of policy	The notional building for new buildings would be set as per Option 1 or Option 2. There would be a **12-month period** between the laying date of the Future Homes and Buildings Standard regulations and publication of full technical specification and the regulations coming into force, followed by a 12 month transitional period **(24 months total).**	
Revised RAG rating against SMART objectives		Concerns were raised that caused us to revise our assessment of this option against the following CSFs. As such we have revised this RAG rating from Amber to Green. **New non-domestic buildings built to the FBS will be zero-carbon ready by default, with the FBS implemented as soon as**

		is reasonably possible whilst giving the sector adequate time to adjust The concerns raised around 18-month transitional arrangements, outlined for Option 3, suggest that 24 months is the shortest transition period that would still give the sector adequate time to adjust. As such, this option offers stronger support for this objective than we had considered at long-list stage.
Revised RAG rating against CSFs		Concerns were raised that caused us to revise our assessment of this option against the following CSFs. As such, we have revised the RAG rating from Amber to Green. **Strategic fit and meeting of business needs:** Feedback on transitional arrangements suggests that 24 months is the minimum needed for industry to adjust, whilst still bringing about carbon savings as quickly as possible. This increases the strategic fit for this option, compared to Options 3. As such, this option offers stronger support for this CSF than we had considered at long-list stage.
Revised Overall RAG rating and assessment		Consultation responses suggest that the 24-month transitional arrangement timeline would give industry adequate time to adjust to the new standards, whilst locking in carbon savings as soon as possible.
Option 5 (counterfactual/BAU)		
Summary of policy	A business-as-usual approach would retain the existing 2021 energy efficiency standards for buildings.	
RAG rating against SMART objectives		Unchanged following consultation.
RAG rating against CSFs		Unchanged following consultation.
Overall RAG rating and assessment		Unchanged following consultation.

Identification of preferred option

Building specification

6.1 Following consultation feedback, our revised assessment of Options 1 and 2 indicated that neither was fit for purpose; Option 2 lacked sufficient ambition to achieve our SMART objectives and contribute adequately towards legally binding carbon reduction requirements, particularly when it came to side-lit buildings and solar; and Option 1 was impractical due to the high solar PV coverage requirements for top-lit buildings. In addition further economic analysis of the improved lighting efficacy standards showed they were imposing a disproportionate cost burden comparative to the benefits they provided – this was because the lighting market had not developed to the consultation proposed lighting efficacy levels, meaning products meeting this standard are still very high cost.

6.2 As such, we developed a new option to mitigate these issues.

6.3 Given that feedback on Option 1 was otherwise positive, we developed an option that mirrored Option 1, but with a reduced PV requirement in the notional building for toplit buildings, meaning that the PV requirement for both toplit and sidelit buildings is now set at 40%. As part of this, Higher-Risk Buildings (HRBs) have been exempted from a solar requirement as they have very limited roof space, which may also be needed for other practical purposes, improving the achievability and safety of the standard for HRBs.

6.4 In addition, we lowered the lighting efficacy standards to a more cost effective level. This new option has the benefit of reduced costs compared to Option 1, making this standard more achievable for the sector, whilst still being more ambitious than Option 2, contributing more to required carbon emission reductions.

Transitional arrangements

6.5 Following consultation feedback, our revised assessment of Options 3 and 4 indicates that Option 4, transitional arrangements totalling 24 months, is the most appropriate. This is because it is the shortest possible timeframe for implementing the FBS and achieving the associated reductions in carbon emissions, whilst also allowing industry sufficient time to adapt.

6.6 The preferred, longer transitional arrangements mean that developers seeking to build to 2021 standards have 12 months after the legislation is laid to submit an initial notice, a building notice or full plans application to the local authority, and a further 12 months to commence construction. If they do not meet these deadlines, they are required to meet the FBS. We expect that during the 12 months after the legislation is laid, there may be an increase in applications to local authorities from developers seeking to secure transitional arrangements to build to 2021 standards for some of their projects. This may lead to a small increase in the number of buildings constructed to 2021 Part L standards, with poorer energy efficiency and higher emissions.

6.7 Although the impact of this issue may be larger with 24-month transitional arrangements, compared to 18-months, the same issue would still occur if we implemented shorter transitional arrangements. Transitional arrangements are a necessary component of changes to Building Regulations, giving businesses vital time to familiarise themselves with new requirements and adapt smoothly, particularly for SMEs and MSEs. This is particularly important for the FBS, as the high ambition of the preferred option will see a significant paradigm shift from fossil fuel to low-carbon heating. The success of the FBS and adoption of the standard, is dependent on industry being given sufficient time to adapt to and prepare, and this justifies the use of longer transitional arrangements, even if a temporary increase in planning applications results.

Higher-Risk Buildings

6.8 A Higher-Risk Building (HRB) is a building which is at least 18m in height or has at least 7 storeys and contains at least 2 residential units, or is a care home or hospital. Some HRBs are mixed use, meaning they can contain non-domestic building elements.

6.9 Through the Building Safety Act 2022, HRBs are required to go through more stringent building control procedures (known as the Gateway process) as part of reform efforts to ensure safety in high-rise buildings. This process is managed by the Building Safety

Regulator (BSR). In particular Gateway 2 (GW2) requires developers to submit detailed plans to the BSR for approval.

6.10 At the time of the FHBS consultation, the new Higher-Risk Building scheme had only recently come into force. As a result we did not consult on alternative arrangements for HRBs at the time. However, the consultation and experience of undergoing Gateway submissions since then highlighted to us that the standard FHBS transitional arrangements are not suitable for HRBs. In particular, HRBs and the accompanying requirements of the Gateways process are significantly more complex and require more time to undertake. Before being able to proceed further, HRB developers must await BSR approval which adds significant additional time into their delivery timelines. As such, we have created an extended set of transitional arrangements for HRBs – they will be allowed 18 months from the FBS SI being laid to file a successful Gateway 2 application. Following on from this they will then have 3 years to commence construction (this is a provision already in the Building Safety Act). Whilst this seems substantially longer than for other new buildings, we believe HRBs are incentivised to commence building as soon as they can given the level of investment and expected returns these projects require. As such, a different, earlier deadline was not considered necessary or practical.

6.11 It has not been possible to fully estimate the impact this extended timeline for HRBs will have on the FBS overall objectives. Whilst we have some indications that HRBs make up approximately 20% of the new build market, it has not been possible to estimate what proportion of these may be mixed use and therefore also subject to FBS requirements. However, it is likely to be low, meaning any delayed carbon savings as a result of this policy for the FBS will be low. This possible reduction in carbon savings has been weighed against the benefits of having HRBs be subject to the same transitional arrangements under the FHS and FBS making both standards more achievable for any mixed use HRB buildings.

Assessment of preferred option against SMART objectives and CSFs

6.12 The table below outlines our assessment of the preferred option against the SMART objectives and CSFs.

Table 4: Assessment of preferred option against the SMART objectives and the Green Book Critical Success Factors, following consultation

Preferred option	
Summary of policy	The notional building for new non-domestic buildings would include: • Good fabric standards to minimise heat loss from windows, walls, floors and roofs. • Low carbon heating (a heat pump for side-lit spaces and radiant electric heating in top-lit spaces. A separate notional building has also been created for buildings connected to a heat network.) • Enhanced lighting efficacy, but lower than the level proposed at consultation • Enhanced heat recovery efficiency • Solar PV panel coverage equivalent to 40% of the building's foundation area for all building types, except those classed as High-Risk Buildings. There would be a **12-month period** between the laying date of the Future Homes and Buildings Standard regulations and publication of full technical specification and the

		regulations coming into force, followed by a 12 month transitional period **(24 months total).**
RAG rating against SMART objectives		**New non-domestic buildings built to the FBS will be zero-carbon ready by default, with the FBS implemented as soon as is reasonably possible whilst giving the sector adequate time to adjust** The low carbon technologies included in the notional building mean new buildings would be constructed to be net-zero ready by default, meaning this objective would be met. 24-month transitional arrangements mean the carbon emission savings of the FBS can be delivered as quickly as possible, while still giving industry adequate time to adjust, reducing impacts on business and economic growth. **Regulated operational energy use from new non-domestic buildings will be reduced** The combination of low-carbon heating, good fabric standards, and enhanced lighting efficacy and heat recovery efficiency significantly reduces operational energy use and emissions. **Grid-connected non-domestic buildings will contribute more on-site renewable generation** The levels of solar PV coverage required in the notional building – which are more ambitious than in Option 2, but more achievable than in Option 1 - mean this objective will be met at the right level. **Energy costs for occupants will be lower and more predictable** The low carbon technologies included in the notional building would make energy costs more predictable by protecting occupants from fossil fuel price volatility. Buildings constructed to these standards would deliver lower energy bills than a typical existing building. **New non-domestic buildings will be high-quality and comfortable** The combination of low-carbon heating, good fabric standards, and enhanced lighting efficacy and heat recovery efficiency will lead to high-quality and comfortable buildings. **New non-domestic buildings will be cost-effective, affordable, practical and safe** The level of ambition inherent in a zero carbon ready standard and this option mean that buildings are more expensive and complicated for developers to construct, so this objective would not be fully met, although in the long term the market may adjust to accommodate (for example through changing land prices). However, this preferred option imposes lower costs, in some cases significantly so, than those options presented at consultation, meaning it is more affordable and cost effective. Other existing Building Regulations are intended to protect people's safety, health and welfare, setting acceptable standards for new building work. This will remain unchanged with this option too.
RAG rating against CSFs		**Strategic fit and meeting of business needs:** The preferred option offers better for value for money compared with the counterfactual/BAU and consultation options as demonstrated by the monetised benefits to society as well as lower capital costs when compared with the options taken to consultation. The 24 month transitional arrangements will allow these benefits to be realised as quickly as possible, whilst still allowing industry sufficient time to adjust to the new standards. **Potential value for money:** Similar NPV to Option 1, but lower capital costs for developers constructing new non-domestic buildings compared to Option 1.

		Supplier capacity and capability, and potential achievability: This option was designed to be more achievable and less challenging for suppliers by reducing the solar PV coverage required, compared to Option 1, whilst still maintaining a higher level of ambition than Option 2. This is also why the lighting efficacy requirements were lowered compared to what was consulted upon, reducing costs and improving achievability further. Achievability is also ensured through the selection of 24-month transitional arrangements, to give industry adequate time to adjust. **Potential affordability:** The preferred option results in lower capital costs relative to the consultation options, therefore offering better affordability for businesses. This option does not impose any direct costs on HMG. However, as new non-domestic buildings, such as public hospitals and schools will be required to comply with the updated standard, the government will face increased capital expenditure associated with constructing these facilities to meet the new requirements.
Overall RAG rating and assessment		This high-ambition option delivers strongly against our SMART objectives and the CSFs, and includes enough flexibility, with the right transitional arrangements, to be achievable for industry. It was therefore selected as the preferred option.

Small and Micro Business Assessment (SaMBA) and Medium-Sized Business Impact

6.13 Micro, small and medium-sized businesses in the non-domestic building sector primarily include specialist contractors, developers, architects, and building services engineers. The impacts of the Future Buildings Standard on these businesses are expected to vary depending on their size and technical capacity. For micro and small sized businesses, we do not consider the impacts to be significant, as we do not believe a significant proportion of non-domestic buildings are completed by these types of businesses given the usual larger scale of non-domestic buildings such as offices, hospitals and warehouses.

6.14 Developers and technical specialists responsible for integrating low-carbon heating and solar PV systems may face some operational and cost adjustments, while other parties may experience primarily short-term changes to practices and understanding of new requirements.

6.15 Those SMB and MSB developers that are impacted by the Future Buildings Standard may face a distinct challenge from the introduction of new energy efficiency regulation in that they may lack access to the in-house technical or analysis capacity which would be available to a larger developer. This means it is harder for them to understand and adjust to new requirements at pace and may increase their familiarisation costs. Conversely, SMBs and MSBs may benefit from increased agility compared to their larger counterparts, as they generally have fewer developments undergoing planning approvals at any given time, and often have shorter contracts with suppliers. This may offset some of the impacts of this policy on SMBs and MSBs.

Small and Micro Business Assessment (SaMBA) and Medium-Sized Business Mitigations

6.16 There is insufficient data on the proportion of non-domestic buildings constructed by SMEs and MSEs as defined by the Better Regulation Framework (i.e. enterprises split

by numbers of employees – 0-9; 10-49; and 50-499). As such, it has not been possible to quantitatively assess the extent to which introducing an exemption for SMBs and MSBs would sacrifice the benefits of the proposal.

6.17 Any mechanism for exempting buildings constructed by SMBs and MSEs would have to be robust enough to prevent exploitation by larger developers, as any exploitation would likely prevent the overarching policy objectives from being achieved. A blanket exemption for buildings developed by businesses with fewer than 500 employees, for example, would be without precedent in previous updates to Part L. Such a mechanism would likely not prevent exploitation of the exemption by larger developers through the setting up of separate smaller legal entities which could have fewer than 500 employees. More broadly, an exemption for SMBs and MSEs could therefore create a complex regulatory environment in the construction sector, where monitoring and enforcing compliance with multiple varying standards based on developer size would become prohibitively challenging for building control bodies. As well as this, it would create a permanent stock of new buildings requiring later, much more expensive, retrofitting in order to achieve net zero, significantly undermining the aims of the FBS. As such, the approach of exempting small, micro and medium sized businesses from new regulatory requirements would be inappropriate in this situation.

6.18 The solar PV coverage requirement in the preferred option offers developers of all sizes greater flexibility in meeting the standard compared to Option 1 in the consultation. As well as this, the notional building specification model means that developers have increased flexibility to reduce more costly elements (depending on the nature of their build), for example, solar, by increasing energy efficiency elements elsewhere to compensate. Unlike in the FHS, the FBS notional building retains greater flexibility for this kind of design trade-off, given the greater variety of different types and designs of non-domestic buildings. Furthermore, the reduction in lighting efficacy levels compared to the levels proposed in the consultation also provides greater flexibility to developers. This could offer particular benefits to micro, small and medium-sized businesses, who often face tighter cost constraints and site-specific limitations. In addition, for the FBS the current calculation methodology, the National Calculation Methodology (NCM), will be retained meaning familiarisation with this methodology is already high, which will help SMB and MSB developers when adapting to the FBS.

6.19 The publication of the full technical specification in 2026 well in advance of the regulations coming into force in 2027 is intended to give businesses sufficient time to prepare and adapt. The transitional arrangements have also been designed to provide flexibility and reduce disruption across the sector. The decision to implement the longer option for transitional arrangements was partially informed by targeted engagement to understand the likely impact of the standards on Small and Medium-sized Enterprises (SMEs), where it became clear the additional time will be important for SMEs to adapt.

7. Regulatory scorecard for preferred option

(1) Overall impacts on total welfare		Directional rating Note: Below are examples only
Description of overall expected impact	The regulation is estimated to have a positive impact on social welfare. Given the size of the estimated net present social value of the policy which have been monetised, it is unlikely that any non-monetised impacts will be sufficient to switch this assessment.	**Positive** **Based on all impacts (incl. non-monetised)**
Monetised impacts	Total £874m Net Present Social Value (NPSV) (central) (low £699m and high £1,049m) ranges) Overall, the policy produces a positive NPSV of £874m. This is largely driven by the carbon savings delivered by the policy, specifically the reduction in non-traded gas emissions. This delivers £2,028m of benefits in carbon emission savings. There is also an estimated £71m improvement in air quality from the policy. There are costs associated with the preferred policy option. The total financial cost of the policy is estimated at £1,178m over the appraisal period. There is an estimated £800m increase in capital, maintenance, and replacement costs required for the new standard. In addition, energy bills for occupiers are expected to rise by £362m overall. This is driven by the requirement for low-carbon heating with an associated higher unit cost of electricity than gas. We have conducted a range of sensitivity tests in Appendix C. Only one of these sensitivity tests results in a negative NPSV, which is the use of low carbon values provided in the Green Book (which reduces the monetary benefit associated with carbon savings). In all other sensitivity tests the policy continues to have a positive NPSV. For example, even if building occupiers receive no income from exporting to the grid, or if they were to replace their gas heating system with an electric heating system at the end of its lifespan in the counterfactual/BAU.	**Positive** **Based on likely £874m NPSV**
Non-monetised impacts	The policy may have a small short-term impact on the demand and supply of new buildings. The estimated capital cost uplift of the new standard varies by building types, ranging from 0.6% for a hospital to 2.6% for a hotel. For certain building types, in particular top-lit buildings, the additional energy costs which might arise could further challenge financial viability for occupiers. However, it is worth noting that non-domestic buildings are diverse in terms of type, size, and usage. Factors such as occupancy patterns and operational decisions vary widely across different building types, contributing to significant variability in energy demand.	**Positive**

	As a result, there is considerable uncertainty associated with estimating the energy consumption and savings of non-domestic buildings. While these impacts may influence market behaviour, they are not expected to be substantial enough to warrant monetisation in the current analysis. The analysis has not monetised any increases in costs from reinforcing the electricity grid. Analysis does not quantify the costs associated with redesigning buildings in response to the FBS. In practice, developers frequently revise their designs – particularly for non-domestic buildings, where standardised layouts are less prevalent than in residential construction. As such, it is challenging to isolate the redesign costs directly attributable to the policy from those that developers would incur as part of their routine design updates. The FBS sets performance-standards, rather than prescriptive standards and is therefore technology agnostic. This is expected to incentivise innovation of low/zero carbon energy efficiency technologies through allowing businesses the freedom and market incentive to develop more cost-effective routes to complying with the performance standards [6]. There are also potential further benefits associated with energy security and more stable prices which have not been monetised. Higher standards of energy efficiency and moving to cleaner sources of heat through the FBS can help England to reduce reliance on other countries for non-renewable energy sources thus increasing energy security. Being energy secure means less susceptibility to external supply and price shocks and lessens the negative impact on economic growth of these shocks. If monetised, they would have a positive impact on NPSV.	
Any significant or adverse distributional impacts?	There are no significant distributional impacts as a result of this policy. Certain archetypes such as schools and offices experiencing bill savings whilst energy bills rise for other archetypes, in particular warehouses.	**Neutral**

[6] Gann et al., 1998. *Do regulations encourage innovation? - the case of energy efficiency in housing.* Available: https://doi.org/10.1080/096132198369760

(2) Expected impacts on businesses		
Description of overall business impact	Overall, the policy is expected to have a negative impact on businesses. The policy is likely to require higher increased capital costs to meet the new standard for all building types, though this varies and is minor relative to total building costs. The impact of the policy on occupiers' energy bills will also vary with some buildings (such as offices) expected to see reductions in energy bills, whilst other buildings, in particular top-lit buildings, are likely to face higher energy costs. The aggregate impact is expected to be higher energy bills. However, it is worth noting that non-domestic buildings exhibit a much greater diversity in terms of type, size, and usage. Factors such as occupancy patterns and operational decisions vary widely across different building types, contributing to significant variability in energy demand. As a result, there is considerable uncertainty associated with estimating the energy consumption and savings of non-domestic buildings.	**Negative**
Monetised impacts	Business NPV £-452.1m Approx net financial cost to business EANDCB £52.5m. The direct costs determined to be in scope of the EANDCB are transition costs, upfront capital costs, installation costs, some maintenance costs and some replacement costs. Transition costs associated with the policy are estimated at £16.3m. Over the policy appraisal period i.e., 2026-2035, upfront capital costs form the largest component of the direct costs to business. The present value of these costs in 2025 prices is estimated at £355.4m. For the remainder of the full appraisal period, maintenance and replacement costs contribute most of the direct costs. There is no pass-through of costs to households involved in these estimates.	**Negative**
Non-monetised impacts	The non-monetised impacts on businesses form most of the overall non-monetised impacts of the policy on total welfare, described above. For example, the policy may have a small, negative supply impact on non-domestic buildings due to the capital costs associated with the policy. This impact has not been monetised for this analysis. On the other hand, zero carbon ready businesses could benefit in the long-term from greater energy security if the grid is decarbonised. Being energy secure will result in firms being less susceptible to external supply and price shocks.	**Uncertain**
Any significant or	The impact of the policy on business with regards to capital costs and energy bills will vary by business sector. For example, of the 7 archetypes modelled in this analysis the	**Uncertain**

adverse distributional impacts?	capital cost uplift (relative to a Part L 2021 building) varies between 0.6% for a hospital to 2.6% for a hotel. Relatedly, the impact on energy bills (relative to a Part L 2021 building) also varies by building type. In this modelling, top-lit buildings experience the largest rise in energy bills. For offices and hospitals there are energy savings from the policy, whilst the rise in energy bills for hotels and schools is relatively small. In particular, the rise in energy bills is driven by the unit cost of electricity being more expensive than gas. However, for side-lit buildings the replacement of gas boilers with a heat pump absorbs some of this cost increase as heat pumps are far more efficient than gas boilers (approximately three times as efficient in this analysis). This is not the case for top-lit buildings whereby gas radiant heating is replaced by electric radiant heating with no efficiency gains.	

(3) Expected impacts on households		
Description of overall household impact	N/A	**Neutral**
Monetised impacts	N/A: There are no monetised costs to households	**Neutral** **Based on likely household £NPV**
Non-monetised impacts	N/A	**Neutral**
Any significant or adverse distributional impacts?	N/A	**Neutral**

Part B: Impacts on wider government priorities

Category	Description of impact	Directional rating
Business environment: **Does the measure impact on the ease of doing business in the UK?**	The FBS enhances the UK's business environment by promoting innovation and flexibility. By setting performance-based standards without prescribing specific technologies, it allows developers and firms to choose the most efficient and cost-effective solutions. This innovation could open up export opportunities, especially in markets with similar sustainability goals, creating opportunities for UK manufacturers. However, the overall impact will depend on factors such as the UK's comparative advantage, international standards, and global market prices. The FBS is likely to reduce market concentration by encouraging a broader range of suppliers, manufacturers, and service providers to innovate and compete. The lack of mandated technologies opens the market to diverse approaches, fostering competition across the supply chain.	**Supports**
International Considerations: **Does the measure support international trade and investment?**	There are no major impacts on international trade and investment. Increased capital costs for firms which export internationally may have reduced trade. This will vary significantly by sector and depending on comparative advantage. Innovation of new technologies may increase international demand for energy efficient technologies and support UK manufacturing.	**Supports**
Natural capital and Decarbonisation: **Does the measure support commitments to improve the environment and decarbonise?**	The FBS plays a central role in decarbonising energy use in non-domestic buildings by setting higher energy performance standards for new builds and major refurbishments. This directly reduces emissions from heating, cooling, and electricity use, supporting long-term climate goals. By promoting low-carbon heating and energy-efficient technologies, the FBS helps cut greenhouse gas emissions and harmful pollutants, contributing to improved air quality and healthier ecosystems. These environmental benefits—particularly carbon savings and air quality improvements—are key outcomes of the policy and are detailed in the main IA.	**Supports**

8. Monitoring and evaluation of preferred option

8.1 MHCLG will monitor and evaluate the Future Buildings Standard and publish the evaluation findings in a timely manner, consistent with our policy for publication of research.

What will be monitored and evaluated?

8.2 MHCLG monitoring of the implementation of Part L 2021 for non-domestic buildings is less developed than that for domestic properties but also uses Energy Performance Certificate (EPC) lodgement data. This provides information on the energy efficiency characteristics of new buildings, in particular whether they have installed a heat pump, solar PV panels, etc. This monitoring will continue and adapt to enable effective monitoring of FBS implementation, and therefore feed into the evaluation.

8.1 At this stage we anticipate that our evaluation work will cover three broad areas: process, impact and value for money.

Process evaluation

8.3 To examine how the FBS was and is likely to be implemented by developers (timing of evaluation to be determined at the planning phase) including:

8.4 Compliance routes (different technologies and reasons for developers choosing these routes, including for example stakeholder engagement to understand the role of leaseholder/building owner attitudes and perspectives)

8.5 The phase-in time in practice (what are the drivers for time taken to implement new regulations, including how transitional arrangements and sunsetting impacted developer readiness).

Impact evaluation

8.6 This will aim to assess to what extent the FBS achieved the expected outcomes, to what extent observed changes can be attributed to the implementation of the FBS and whether these impacts vary across different groups. The FBS long-term SMART objectives, covered within Section 3, identified through our Theory of Change (detailed in Section 4) include:

- New non-domestic buildings built to the FBS will be zero-carbon ready by default, with the FBS implemented as soon as is reasonably possible whilst giving the sector adequate time to adjust;
- Regulated operational energy use from new non-domestic buildings will be reduced compared to typical existing buildings;
- Grid-connected non-domestic buildings will contribute more on-site renewable generation as most new non-domestic buildings will be constructed with solar PV;
- Energy costs for occupants will be more predictable;
- New non-domestic buildings will be high-quality and comfortable; and
- New non-domestic buildings will be cost-effective, affordable, practical and safe.

Value for money evaluation

8.7 To assess the extent to which the original cost-benefit assumptions hold true and whether the FBS has delivered outcomes efficiently and economically relative to the resources invested.

8.8 Across all three areas, we will aim to consider whether outcomes have varied across stakeholders, for example by:

- Geographical location;
- Developer size; and
- Archetype

8.9 MHCLG will also aim to review the Public Sector Equality Duty assessments carried out that considered the impact of the FBS on those with protected characteristics and update them if and when any new information arises.

Proposed research questions

8.10 The proposed research questions are designed to support the SMART objectives set out in Section 3 and to explore how delivery will be assessed post-implementation. The impact evaluation questions will be used as the primary test of whether the intended outcomes have been achieved, including the extent to which the objectives have been met and how outcomes vary across building types and locations. The process evaluation questions will support interpretation of those findings by assessing how effectively the changes have been implemented in practice, including levels of awareness, compliance, and the key barriers and enablers influencing delivery. The value for money question will then assess whether the objectives have been delivered proportionately, including the balance of costs and benefits and any distributional or unintended impacts.

8.11 For a list of proposed research questions, see table 5.

Challenges of evaluation

8.12 Establishing a robust counterfactual/BAU to assess the impact of the FBS and separating out changes which would have happened irrespective of the legislation will be challenging. This is particularly difficult for the impact evaluation because there are several related, concurrent policies, such as DESNZ's regulation of heat networks and wider clean heat policies, and the Planning and Infrastructure Bill, alongside external factors like prices. These factors need to be controlled for in the evaluation analysis. This makes it difficult to separate out effects due to the FBS alone.

8.13 Further difficulty can stem from the transition period, which is the phased implementation timeline of the regulations that allows the industry affected to adapt to new regulations. This can limit the applicability or reliability of certain impact evaluation techniques, particularly those that rely on clear-cut treatment and control groups. Both qualitative and quantitative methods will be explored as far as possible.

To address these challenges, the evaluation could adopt a mixed-methods approach, combining qualitative insights with quantitative analysis. Theory-based evaluation and stakeholder engagement will be considered to strengthen causal inference and contextual understanding.

Monitoring and Evaluation Approach and Timing

8.14 A Post Implementation Review will be published five years from implementation. Given the 24-month transitional period, this timeframe strikes a balance between allowing some time for the changes to take effect and early identification of issues and outcomes.

8.15 A phased approach will be taken, beginning with the development of a Theory of Change for the FBS (outlined in Section 4 of the IA) which will provide a sound framework for M&E planning. It is anticipated that much of the early M&E work will make use of stakeholder engagement and focus on monitoring using EPC lodgements data and other existing data sources (see below).

8.16 Further phases of evaluation will aim to assess longer-term impacts. As a number of the outcomes and impacts are long-term related to energy use and climate change, we expect the evaluation to continue beyond 2031, the timing of the initial PIR. Funding to resource evaluation is naturally reliant on the Department's financial budgets, and ongoing engagement with the Exchequer in the routine way. MHCLG are working with DESNZ to explore opportunities within existing evaluations.

Early Work on Potential Data Sources

8.17 MHCLG has undertaken some early work to explore potential data sources to address the evaluation areas and themes. Further work will be undertaken as part of the planning phase.

8.18 For a list of potential data sources for the proposed evaluation questions, see table 6. These data sources are:

- **EPC Lodgements data for new non-domestic buildings**: MHCLG has developed methods to clean the register data including removing duplicate certificates. This is currently used for Part L 2021 monitoring. The EPC lodgements data is well suited to provide estimates of new non-domestic buildings by energy efficiency characteristics in particular of heat pump and solar PV installations and possibly other technological improvements. An EPC record level open dataset is published. The feasibility of linking the EPC data to other datasets will also be explored as far as possible. This is aimed at providing a richer data source.

- **Change to the stock of non-domestic buildings over time** by type of building using VOA data on hereditaments to provide an indication of any unintended consequences of the changes to the Building Regulations.

- **Stakeholder engagement** including other government departments and external organisations.

- **Data on energy consumption in the non-domestic sector** will be explored, for example, the Non-Domestic National Energy Efficiency Data-

Framework (ND-NEED). Data are available by building type, floor area, and annual gas and electricity consumption.

Table 5: Proposed research questions

Type of evaluation	Question
Process Evaluation	To what extent was the FBS implemented as planned, including publication of revised specifications and updated compliance tools?
	To what extent were industry (builders, assessors, local authorities, supply chains, wider stakeholders, etc.) aware of the changes brought about by the FBS? How clear was the guidance and messaging from central government?
	How did industry and local authorities respond to FBS requirements, including zero-carbon ready buildings and new commissioning rules? What behavioural changes occurred?
	What worked well or less well in the implementation of FBS measures? Were there unintended consequences or compliance challenges? Are there any examples of good practice?
	What impact did transitional arrangements and the sunsetting of previous arrangements have on builder readiness and innovation adoption?
	What role did external factors (e.g. costs, skills and supply chain availability) play in shaping the pace and quality of implementation?
	How are FBS requirements becoming embedded in business-as-usual practices for industry and how does it compare across the sector (SMEs vs volume builders)?
Impact Evaluation	To what extent did the FBS meet its objectives as intended?
	What behavioural changes have occurred among builders, developers, and occupants in response to FBS (e.g. design choices, commissioning, energy management)?
	Were there any unintended or adverse consequences of the FBS? What contribution did the FBS make to these impacts relative to other contextual factors?
	How have outcomes varied across different contexts such as building type, location, or builder type?
	To what extent have external factors influenced the achievement and/or scale of the FNS outcomes?
Value for money	To what extent did the FBS as a whole deliver value for money?
	To what extent have the changes delivered by the FBS been delivered without undue cost to the public purse?
	What scale of energy, carbon, and cost benefits must be achieved for FBS to represent good value for money and is this being realised?
	How have the costs and benefits of the FBS been spread across society?

8.19 The proposed research questions are designed to support the SMART objectives set out in Section 3 and to explore how delivery will be assessed post-implementation. The impact evaluation questions will be used as the primary test of whether the intended outcomes have been achieved, including the extent to which the objectives

have been met and how outcomes vary across building types and locations. The process evaluation questions will support interpretation of those findings by assessing how effectively the changes have been implemented in practice, including levels of awareness, compliance, and the key barriers and enablers influencing delivery. The value for money question will then assess whether the objectives have been delivered proportionately, including the balance of costs and benefits and any distributional or unintended impacts.

Table 6: Potential data sources for each evaluation area/theme

Evaluation questions	Potential data sources
Process: How the FBS was implemented by developers: • Compliance routes (different technologies and reasons for developers choosing these routes) • The phase-in time in practice (what are the drivers for time taken to implement new regulations, including how transitional arrangements impacted developer readiness) • Implementation issues	• EPC lodgement data • Stakeholder engagement/developer survey; also via OGDs, and other external organisations/consortiums (reasons for chosen routes; drivers; issues)
Process: Leaseholder/ building owner attitudes and perspectives.	Stakeholder engagement as above, including developer engagement to assess their perceptions of occupier attitudes
Impact: • New non-domestic buildings built to the FBS will be zero-carbon ready by default; • Regulated operational energy use from new non-domestic buildings will be reduced compared to typical existing buildings; • Grid-connected non-domestic buildings will contribute more on-site renewable generation as most new non-domestic buildings will be constructed with solar PV; • Energy costs for occupants will be more predictable; • New non-domestic buildings will be high-quality and comfortable; and • New non-domestic buildings will be cost-effective, affordable, practical and safe. • •	• EPC lodgement data • Energy usage data (to be explored) • Grid-connection data (to be explored) • Stakeholder engagement/ survey data (to be explored)
Impact: Unintended consequences, for example, impact on non-domestic buildings supply	• VOA data on stock by type of building over time.
Value for money Testing the original assumptions in the cost benefit analysis.	• EPC lodgement data • Consultancy cost data

9. Minimising administrative and compliance costs for preferred option

9.1 The FBS represents an improvement on standards published in 2021 but does not introduce new regulatory requirements or require additional checks by local authorities, as such it is not expected to notably increase the administrative burden for industry or local authorities. Any increases in administrative effort are balanced against the environmental and carbon reduction benefits of the policy.

9.2 To help minimise the administrative and compliance costs associated with the Future Buildings Standard, the policy design and implementation approach has been developed to, where possible, limit burdens on businesses, regulators, and individuals.

9.3 The Approved Documents provide clear guidance to support technical compliance with new standards for non-domestic buildings, including lighting, heating systems, and fabric performance. These practical resources reduce the need for bespoke designs or extensive interpretation and are expected to particularly benefit small and medium-sized enterprises who may have limited in-house technical expertise.

9.4 The proposals outlined have been refined and revised to ensure that the regulatory burden is minimised:

- The NCM used to assess the energy performance of non-domestic buildings allows for a variety of compliance options whereby energy can be generated or saved in individual buildings. This flexibility allows designers to create buildings, if required, that enable a variety of activities across all local conditions.

- The differentiation between PV requirements for side-lit and top-lit buildings has been removed to simplify requirements for designers and building control officers.

- The lighting efficiency used in the notional building has been revised to directly reflect the enhanced minimum standard proposed in the consultation to reduce the number of checks required by building control officers.

- The FBS has provided the opportunity to align the regulations for both domestic and non-domestic Higher-Risk Buildings to ensure that the combination of building types within one structure does not create a barrier to the design of safe buildings.

Declaration

Department:

…

Contact details for enquiries:

…

Minister responsible:

Minister for Building Safety, Fire and Democracy, Samantha Dixon MBE MP

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: Sign here

Date: Date

Summary: Analysis and evidence

Price base year: 2025

PV base year: 2026

	1. Business as usual (baseline)	**2. Future Buildings Standard (Preferred Option)**
Net present social value	Used as baseline for the analysis.	Overall, the policy produces a positive social net present value of £874m. This is largely driven by the carbon savings delivered by the policy, in particular the reduction in non-traded gas emissions. This delivers £2,028m of benefits in carbon emission savings. There is also an estimated £71m improvement in air quality from the policy. There are costs associated with the preferred policy option. The total financial cost of the policy is estimated at £1,178m over the appraisal period. There is an estimated £800m increase in capital, maintenance, and replacement costs required for the new standard. In addition, energy bills for occupiers are expected to rise by £362m overall. This is driven by the requirement for low-carbon heating with an associated higher unit cost of electricity than gas.
Public sector financial costs	Used as baseline for the analysis.	The net financial cost to the public sector of the policy is estimated at £45m. This is driven by an additional £119m in capital, maintenance, and replacement costs. However, this is mitigated by energy savings estimated at £74m. Our analysis assumes that the public-private split among new schools and hospitals will follow the same approximate pattern as in the current stock. To this end, we include 90% of the expected new-build school floorspace

		and 80% of the expected new-build hospital floorspace in the public sector analysis. 4% of office floorspace is also included in the public-sector focused analysis. All hotel and warehouse floorspace is excluded from public sector analysis.
Significant un-quantified benefits and costs	Used as baseline for the analysis.	The policy may have a small marginal impact on the supply of new buildings in the short term where developers are unable to absorb increased costs or pass them onto landowners. As the estimated capital cost uplift of the new standard is small relative to total build costs, the impact is expected to be small (cost varies by building types, ranging from 0.6% for a hospital to 2.6% for a hotel). The analysis has not monetised any increases in costs from reinforcing the electricity grid. Analysis does not quantify the costs associated with redesigning buildings in response to the FBS. In practice, developers frequently revise their designs – particularly for non-domestic buildings, where standardized layouts are less prevalent than in residential construction. As such, it is challenging to isolate the redesign costs directly attributable to the policy from those that developers would incur as part of their routine design updates. We expect the policy to facilitate further decarbonisation in addition to what is captured by the quantitative analysis. The added demand for low-carbon technologies will help bring down their costs over time and encourage innovation. There are also potential further benefits associated with energy security and more stable prices which have not been monetised. Higher standards of energy efficiency and moving to cleaner sources of heat through the FBS can help England to reduce reliance on other countries for non-renewable energy sources thus increasing energy security. Being energy secure means less susceptibility to external supply and price shocks and lessens

		the negative impact on economic growth of these shocks. If monetised, they would have a positive impact on NPSV.
Key risks (and risk costs, and optimism bias, where relevant)	Used as baseline for the analysis.	The Impact Assessment follows Green Book guidance and makes use of a methodology that has been refined over successive Impact Assessments for updates to Part L of the Building Regulations. Nonetheless, the methodology makes a number of assumptions where there is some uncertainty, including establishing the counterfactual/BAU (which is, by nature, unobservable) and the energy usage of buildings which is highly variable depending on building use, size, occupancy etc. To mitigate these risks, extensive sensitivity analysis has been carried out to assess the likely scale of impacts.
Results of sensitivity analysis	Used as baseline for the analysis.	The results of the sensitivity analysis are outlined in Appendix C. The size of the ranges reflects the uncertainty in some of our assumptions.

Evidence Base

10. Overview of Analytical Approach

10.1 To assess the overall costs and benefits of these uplifts to the energy efficiency requirements to the Building Regulations, the consultation stage Impact Assessment (IA) has been updated. This IA refines some of the assumptions used in the FBS consultation stage IA, reflecting final policy positions, improvements in the evidence base following consultation and further engagement with industry, as well as most recent data. MHCLG analysts have taken the following steps. (The rest of this chapter provides more detail on each step).

10.2 Similar to the consultation, modelling was commissioned to industry consultants[7] of the capital costs, energy use and carbon dioxide emissions of seven building 'archetypes' or representative typical buildings constructed and associated floorspace to each standard. At consultation, a Part L 2021 standard 'counterfactual' was compared against two policy options: FBS option 1 and FBS option 2. For the final IA, two options were modelled, (i) the preferred option (see section 6 and 11 for more detail on preferred option), and (ii) a Part L 2021 counterfactual/BAU. A summary of technical specification changes for both side-lit and top-lit buildings are outlined in Table 7 and 8.

Table 7: Summary of changes to technical specification for side-lit buildings, FBS (preferred policy option) vs Part L 2021 (counterfactual/BAU)

SIDE-LIT	Part L 2021	FBS (preferred specification)
Heating system	Gas boiler	Heat pump
Onsite generation	PV coverage 20% of the foundation area	PV coverage 40% of the foundation area
Ventilation	Heat recovery unit 76% efficiency	Heat recovery unit 80% efficiency
Electric lighting efficacy	95lm/W for all buildings	105lm/W for all buildings

[7] An AECOM-led consortium comprising, AECOM, Currie and Brown, Adroit Economics, Four Walls, Pollard Thomas Edwards and Mary Livingstone (sole trader)

Table 8: Summary of changes to technical specification for top-lit buildings, FBS (preferred policy option) vs Part L 2021 (counterfactual/BAU)

TOP-LIT	Part L 2021	FBS (preferred specification)
Heating system	Gas radiant heating	Electric radiant heating
Ventilation	Heat recovery unit 76% efficiency	Heat recovery unit 80% efficiency
Electric lighting efficacy	95lm/W for all buildings	105lm/W for all buildings
Additional requirements	Air tightness level at $5m^3/h{\cdot}m^2$ at 50 Pa for warehouses	Improved air tightness levels for warehouses to $3m^3/h{\cdot}m^2$ at 50 Pa for warehouses

10.3 In collaboration with industry consultants, projections of annual floorspace expected to be constructed were refined. Estimates were also improved of the proportion of buildings that developers would build to each proposed standard under the counterfactual/BAU scenario along with several other key assumptions. These refinements enabled the scaling of capital costs, energy consumption, and emissions from a per-square-metre basis to an economy-wide level. This approach facilitated the modelling of the preferred policy option against the Part L 2021 counterfactual/BAU to estimate the associated costs and benefits.

Prices and Valuation of Energy Savings

10.4 Costs and benefits are shown in real 2025 prices. Net present values and the Estimated Annual Net Direct Cost to Businesses (EANDCB) are also shown in 2025 prices and a 2026 base year. A discount rate of 3.5% has been used for the first 30 years of the building's life and 3% for subsequent years in line with Green Book guidance.

10.5 This IA follows the approach to valuing energy use that the Green Book recommends. The analysis uses the fuel prices, traded and non-traded carbon values and emission factors from the November 2023 update to the Green Book's supplementary guidance[8] on valuing energy use and greenhouse gas emissions for appraisal.

10.6 The analysis of business impacts (e.g. Table 14) values energy savings using retail prices in accordance with the supplementary Green Book guidance. This reflects the actual financial savings that businesses occupying the building are expected to realise as a result of improved energy efficiency. The social analysis, meanwhile, values energy savings at the long-run variable cost (LRVC) rate. This is to ensure that the true economic cost of energy production is reflected in the analysis and to avoid inclusion of transfer payments in the IA, which are not considered real economic gains in this context.

[8] Green Book supplementary guidance: valuation of energy use and greenhouse gas emissions for appraisal - GOV.UK

10.7 Solar export prices are based on Ofgem's Smart Export Guarantee combined average tariff for 2023/24. They are projected forward as a fixed percentage of the Green Book retail electricity price for commercial buildings. In Appendix C, a sensitivity analysis was conducted whereby the solar export price is set to zero. This is to serve as a proxy for a situation whereby a building occupier is unable to secure a grid connection to export solar generation to the grid.

Appraisal Period

10.8 The stock of new buildings in the first ten-years of the policy is used for estimating the impacts of the policy (2026-2035). This approach is consistent with other Impact Assessments associated with the construction industry, including the Impact Assessment undertaken for changes to the energy efficiency requirements in 2021.

10.9 However, as the policy impacts on assets with a lifespan of 60 years, the full impact of the policy extends beyond the initial appraisal period. Therefore, to capture the complete life cycle costs and benefits of the assets – including buildings completed in Year 10 - the total appraisal period is 70 years (see Appendix B for assumptions on asset lifespan).

Building archetypes and floorspace projections

10.10 Assumptions used in the consultation floorspace projections were refined, resulting in revised estimates in the final IA.

10.11 Similar to the consultation phase, the analysis is based on the following seven building archetypes. Given the complexity and diversity of non-domestic buildings, this archetype-based approach remains a reasonable and practical methodology. This is set out in Table 9.

Table 9: Building archetypes used for final IA

Building archetype	Wall type	Floor type	Floor area per unit (m^2)	Illumination
Office: deep-plan, air-conditioned	Metal frame	Raised	12,100	Side-lit
Office: shallow-plan, naturally-ventilated	Masonry	Ground-contact	2,160	Side-lit
Hotel	Masonry	Ground-contact	1,087	Side-lit
Hospital	Metal frame	Ground-contact	13,387	Side-lit
Secondary School (includes sports facilities)	Masonry	Ground-contact	7,864	Side-lit
Retail Warehouse	Metal frame	Ground-contact	4,962	Top-lit
Distribution Warehouse	Metal frame	Ground-contact	4,962	Top-lit

Data sources

10.12 To estimate the amount of new non-domestic floorspace, planning data are used. Analysis of historical data suggests planning approvals are relatively stable. There is no evidence to suggest that current trends will change significantly. Therefore, for the purposes of this IA, floorspace assumptions are based on data from 2020/21 to 2022/23 and are assumed to remain constant into the future with some adjustments (see below).

10.13 Additional data sources were explored to validate the estimates, including the Energy Performance Certificate (EPC) database, and the Valuation Office Agency's (VOA) statistics. The overall floorspace estimate, and those for each archetype were generally consistent between the planning data used and the EPC database, providing confidence in the results. Given the similarity in results between the two databases, planning data was selected to maintain consistency with the consultation approach. Unlike the EPC database, the planning data covers planned developments in future so provides a leading indicator of any future changes in non-domestic developments. The VOA data was unsuitable for use as many buildings categorised as education, health and hotels are excluded from VOA floorspace statistics because they are not valued based on their floor area.

10.14 The assumption that 79% of planning approvals result in construction each year was retained, based on planning data. To account for the proportion of approvals likely to be conversions (where the standard does not apply) rather than new builds, a 10% downward adjustment was uniformly applied across all building archetypes.

10.15 The mapping of building categories in the planning data to the seven archetypes remain unchanged from the consultation.

Refinements

10.16 Projected floorspace by building archetype was updated and refined for inclusion in the final Impact Assessment. Table 10 sets out both the consultation projections alongside the final IA projections used in the analysis.

Table 10: Floorspace projection (annual) by building archetype, consultation vs final IA

Building archetype	Wall type	Floor type	Floor area (m^2) Consultation	Floor area (m^2) Final IA
Office: deep-plan, air-conditioned	Metal frame	Raised	1,100,000	1,300,000
Office: shallow-plan, naturally-ventilated	Masonry	Ground-contact	700,000	900,000
Hotel	Masonry	Ground-contact	700,000[9]	900,000
Hospital	Metal frame	Ground-contact	200,000	300,000
Secondary School (includes sports facilities)	Masonry	Ground-contact	400,000[10]	600,000
Retail Warehouse	Metal frame	Ground-contact	400,000	500,000
Distribution Warehouse	Metal frame	Ground-contact	3,200,000	1,400,000
			Total: 6,800,000	**Total: 5,900,000**

10.17 Firstly, in both the Part L 2021 and FBS consultation it was assumed that 50% of distribution warehouses are 'conditioned', meaning they are heated to typical employee comfort levels (e.g., similar to office environments) and may also be cooled or heated to prevent frost or overheating. The remaining 50% are considered 'unconditioned' and therefore fall outside the scope of Part L regulations. The 50% assumption was based on consultant-derived assumption made at the time of consultation due to a lack of robust empirical data.

10.18 Following the consultation IA, available evidence was reviewed to refine this assumption, drawing on emerging data from the National Buildings Database (under development). This data suggested that the proportion of conditioned distribution warehouses is estimated to fall within the 10% to 25% range. This is based on the observation that floor areas classified as 'warehouse', 'plant', 'process', and 'storage' which are typically unheated account for between 75% and 95% of total floor area, depending on the warehouse type. In addition, input from consultants and technical specialists supports a revised estimate of approximately 20% as a realistic and appropriate central assumption. Given the inherent uncertainty, a sensitivity range of 15% to 25% has been applied, with a central estimate of 20%, to reflect potential variability. This sensitivity test is outlined in Appendix C.

[9] Note: During the consultation, the projected floorspace for hotel was mistakenly recorded as 400,000 and for secondary schools as 800,000. This was an error. The correct figures are 800,000 for hotel and 400,000 for secondary schools. This discrepancy has been corrected in the final analysis.
[10] As above

10.19 Secondly, extensions have been incorporated into the projected floorspace figures. The Approved Document Part L 2021 considers extensions as new buildings if the total useful floor area is both greater than 100m² and exceeds 25% of the existing building's floorspace. The planning data includes projects with floor areas over 100m², and these have been allocated to the relevant building archetypes. The planning data, however, does not include information on the existing building's floor area. Assumptions on floorspace for extensions may therefore be slightly overestimated if there any extensions which are over 100m2 but do not exceed 25% of the existing building's floorspace. The inclusion of extensions contributed to an increase in projected floorspace across each of the building archetypes presented in Table 7. For example, incorporating extensions increased the floorspace of schools and hospitals by 50%. The increase was proportionately lower in all other archetypes.

10.20 Overall, total projected floorspace has decreased by 13% compared to the consultation projection, primarily driven by a significant reduction in 'conditioned' distribution warehouse floorspace, which has fallen by 56%. Excluding this category, all other building archetypes show an increase in projected floorspace. The significant reduction in distribution warehouse floorspace is attributed to revising the proportion of conditioned distribution warehouse assumption downwards from 50% to 20%. This change has a greater impact on the overall floorspace projection than the inclusion of extensions, thereby explaining the overall reduction in total projected floorspace to be built.

Onsite Electricity Generation

10.21 The assumptions regarding onsite solar generation usage have been updated from those used in the Consultation IA modelling. Previously, it was assumed that 50% of solar-generated electricity would be consumed on-site, with the remaining 50% exported to the grid. Under the revised modelling, solar electricity is now assumed to meet on-site electricity demand, excluding heating, with only surplus energy exported. Notably, surplus exports are expected to occur primarily in top-lit spaces, such as warehouses, which are more likely to generate excess PV electricity. This updated assumption uses heating as a proxy for when solar panels cannot meet energy demand as they are not generating electricity, such as at night or in winter. As a result, the revised approach better proxies for the practical limitations of solar energy availability and usage patterns. These assumptions are tested in the sensitivity analysis (see Appendix C).

Compliance

10.22 In some buildings, a gap can exist between the designed and as-built performance, known as the 'performance gap'. Buildings that are assessed as complying with energy performance standards may have different energy consumption patterns in practice if building activities differs from the estimated usage patterns used for assessment.

10.23 The National Calculation Methodology (NCM) uses a Simplified Building Energy Model (SBEM) to assess the energy performance of non-domestic buildings. SBEM uses a simple activity database to estimate the energy performance of individual buildings. SBEM is intended for use as a compliance tool and it is not suitable for predicting energy consumption in an occupied building where activity patterns may

differ from the standardised activity database and process energy will form the bulk of energy consumption.

10.24 Differences between the standardised activity database and actual usage patterns, including process energy, are the principal factor creating the recorded discrepancies between energy performance predicted by SBEM and actual energy performance.

10.25 It is not possible to account for variations in future building occupancy using existing assessment tools. For the purposes of this IA, only the energy consumption associated with fixed building appliances as defined in the Building Regulations has been considered. It has been assumed that the energy consumption of future non-domestic buildings will follow the patterns estimated by SBEM using the standardised activity templates.

10.26 In addition, compared to domestic dwellings, non-domestic buildings exhibit a much greater diversity in terms of type, size, and usage. Factors such as occupancy patterns and operational decisions vary widely across different building types, contributing to significant variability in energy demand. As a result, there is considerable uncertainty associated with estimating the energy consumption and savings of non-domestic buildings.

10.27 We are making changes focused on providing clearer guidance rather than introducing new regulatory requirements to narrow the performance gap in non-domestic buildings. These changes include amending guidance on the commissioning and installation of fixed building services in Approved Documents F and L. This includes clarifying the importance of following manufacturers' instructions for heat pump installations and stating that competent person schemes should be used when installing a heat pump or mechanical ventilation. We have also retained the proposal from the consultation for guidance on commissioning of hot water storage vessels. These measures aim to support better compliance and installation practices without imposing additional burdens on industry.

Counterfactual

10.28 Some new buildings would meet the proposed new standards regardless of the policy change. As such, MHCLG analysts needed to estimate how many buildings developers would have built each year, under the counterfactual/BAU, to either of the following standards (in increasing order of stringency):

- Part L 2021
- Future Buildings Standard 2026

10.29 The estimates were informed by an assessment of the following sources:

- Energy Performance Certificate database
- Industry consultants

10.30 The Energy Performance Certificate database provides information on the fuel source and floor coverage of each heating source in new non-domestic buildings. The EPC data helps inform the counterfactual/BAU assumption for both side-lit and

top-lit buildings. The FBS notional building for side-lit buildings includes heat pump systems, whilst top-lit buildings include electric radiant heating. The fuel source for heating all non-domestic buildings that meets the Future Building Standard is electricity.

10.31 The proportion of newly constructed buildings where electric heating systems cover the majority of floorspace was identified as a proxy for meeting the FBS. This reflects a new analytical approach since the Consultation. Previously, for side-lit buildings, the fraction of total floorspace of all buildings covered by heat pumps was assessed for each archetype. In contrast, counterfactual/BAU assumptions for top-lit buildings during the Consultation were based on a review of local authority plans. The updated approach improves the analysis for top-lit buildings by relying on more direct evidence from the EPC database. It also accounts for the presence of multiple heating systems within buildings, refining the previous method used for side-lit buildings.

10.32 Through this measure, it was estimated that 66% of new offices are currently meeting the FBS, representing an increase from 40% in the Consultation IA. Whereas for other side-lit buildings (hospitals, hotels, and schools), the estimate has reduced from 70% of new buildings meeting the standard in the Consultation, to 61% in this Impact Assessment. Finally, for top-lit buildings, 25% of new warehouses are estimated to meet the FBS. This has marginally decreased from 26% in the Consultation IA. These updates reflect the new analytical approach, in addition to the use of more recently available data (up to 2024).

Gas replacement

10.33 The proportion of heating system replacements involving a switch from gas to electric systems was assessed as part of the counterfactual/BAU scenario. Determining whether building occupiers would replace gas systems with gas or electric systems is complex. MHCLG analysts concluded that much of the motivation for switching to electric systems stems from developers' anticipation of future regulations. Therefore, assuming that gas systems would be replaced with electric systems under the counterfactual/BAU would overlook this regulatory influence. As a simplifying assumption, it was judged more appropriate to assume that all gas systems would be replaced with gas systems in the counterfactual/BAU. However, a sensitivity analysis was conducted using an alternative assumption, with headline results recreated accordingly, see Appendix C.

11. Preferred Option

Additional costs and benefits

11.1 The below, Table 11 lists the key additional monetised costs and benefits of the preferred option relative to the counterfactual/BAU. These are discussed in more detail in the results and business impacts sections below.

Table 11: Key additional monetised costs and benefits of the preferred option relative to the counterfactual/BAU

Agent		Additional costs	Additional benefit
Businesses (all private buildings)	**Developers**	One-off additional capital costs of building a FBS building (relative to a Part L 2021 building)	
	Developers and other building professionals	One-off familiarisation costs	
	Building owner/occupiers	Average energy bill increases in warehouses and hotels Maintenance and repair costs	Average energy bill savings from more energy efficient buildings in offices
Local/national Government (public buildings i.e. hospitals and schools)		One-off additional capital	
Local/national Government (public buildings i.e. hospitals and schools)		Maintenance and repair costs	Average energy bill savings from more energy efficient buildings
Social impacts		As business and local/national government costs	Air quality improvements
		Energy bill increases in some building types (warehouses and hotels)	Energy savings from more energy efficient buildings in some building types (offices, hospitals, and schools)
			Carbon savings

11.2 Appendix B provides a quantitative summary of the increase in capital costs from achieving the 2025 requirements, compared with counterfactual/BAU for the different building types as well as a breakdown of the elemental cost.

Phase-in assumptions and transitional arrangements

11.3 Assumptions regarding the proportion of new non-domestic buildings expected to be constructed in accordance with the FBS each year have been refined based on more recent analysis. Table 12 presents these updated assumptions alongside those used during the consultation phase.

11.4 Evidence from the EPC register was reviewed to assess the uptake of Part L standards in 2013 and 2021, indicating that non-domestic buildings have historically adapted quickly to new regulations. Based on this, it is assumed that 5% of new non-domestic buildings completed in 2026 will be built to the FBS (as construction would have commenced during the transition period), increasing to 20% in 2027, with a gradual rise each year until full adoption is reached by 2031.

11.5 Modelling is based on the legislation being laid in 2025, and it will come into force in 2026. For modelling purposes, the analysis therefore considers the first year of the policy to be 2026. As discussed in section 4, a twelve-month transition period has been factored into the modelling.

11.6 High-rise residential care homes and hospitals (those that are at least 18 meters in height or have at least 7 storeys) meet the definition of a High-Risk Building (HRB). Buildings meeting this definition are required to proceed through the Gateway process managed by the Building Safety Regulator (BSR). Considering the extensive preparation required to submit a Gateway 2 (GW2) application, the subsequent Building Safety Regulator review period, as well as the level of works required to meet the definition of "commencement" of work, it is not realistic to expect construction on HRBs to commence within the standard 12-month transition period applied to other building types.

11.7 Developers of HRBs will be required to submit a successful GW2 application within 18 months of the FBS being laid. No separate deadline has been imposed for the commencement of construction, as existing legislation already requires building work to begin within 3 years of submitting a GW2 application. Therefore, giving developers of HRBs a maximum of 4.5[11] years from the date of laying the FBS legislation to commence construction of HRBs that will be constructed to previous standards.

11.8 No separate phase-in or transitional arrangements have been modelled for HRBs due to limited numbers of 18m+ residential care homes and hospitals affected by this provision. Internal analysis of the Building Safety Regulator's Key Building Information (KBI) dataset identified eight buildings categorised as 'Residential institutions' (e.g. a care residential or nursing home, prison, hospital or boarding school) which were constructed in the time period aligned with our planning data sample (2021-2023). Even under the assumption that all eight buildings are residential care homes and/or hospitals, they would represent just 4% of new residential care homes and/or hospitals from the planning data. Given this small proportion, it was therefore deemed disproportionate to model a separate phase-in for HRBs.

[11] This is the sum of 18 months (transitional arrangement) and 3 years (as permitted by existing legislation).

Table 12: Annual Adoption Assumptions for New Non-Domestic Buildings Under FBS

Year of Policy	0	1	2	3	4	5 onwards
	2026	2027	2028	2029	2030	2031
Consultation IA: % works captured by 2025 uplift	0%	5%	50%	95%	100%	100%
Final IA: % works captured by 2025 uplift	5%	20%	50%	80%	95%	100%

Heat networks

11.9 New non-domestic buildings – particularly those with high heat demand in dense urban areas – are likely to be required to connect to a heat network. These buildings are expected to have their heat demand met primarily through such networks. However, due to the uncertainty on future locations of heat networks, it has not been possible to model the impacts of heat networks on non-domestic buildings. Capital and energy costs to businesses are considered to be similar for heat networks and buildings heated with electricity.

Lifts, escalators and moving walks costs

11.10 The definition of fixed building services used in the Building Regulations will be extended to include lifts, escalators and moving walks. This will allow minimum standards for these building services to be included within the guidance. Industry engagement and analysis of lifts, escalators and moving walks available for installation in new buildings indicate the proposed minimum standards are already currently being met by many new buildings. It is therefore assumed that these changes will have minimal additional costs.

12. Results

12.1 The impact of the preferred option has been modelled relative to the 'counterfactual/BAU' scenario, which maintains the Part L 2021 uplift. Table 13 provides a quantitative summary of the results. The below Table 13 presents negative net present values in brackets; these numbers represent costs. The figures represent the aggregate impact across the mix of building types and all figures in this section are based on the central estimate.

12.2 For new non-domestic buildings, the initial capital costs will fall on the developers, and maintenance/replacement costs will be borne by the building owner but may be passed on in the form of higher purchase costs for non-domestic spaces/higher rents for buyers/renters. Over the medium-long term, costs may be passed to landowners as developers willingness to pay for land falls, however in the short term this is unlikely. For public buildings (schools and hospitals), the cost will be

incurred by local or national government. For all types of buildings, wider society will benefit from reduced carbon emissions and improved air quality.

12.3 The preferred policy option results in a net financial cost (before accounting for social benefits) of £1,178m over the appraisal period in net present value terms. This is primary due to increases in capital and energy costs.

12.4 The preferred policy option results in a capital cost increase of £800m across all building types. This uplift is primarily driven by the adoption of heat pumps in side-lit buildings (i.e. all building types except warehouses), which have higher upfront costs compared to gas systems. Additional contributions to the capital cost increase come from increased solar PV coverage, enhanced lighting efficacy, and ventilation (or heat recovery systems). In the case of top-lit buildings (retail and distribution warehouses) the primary contributors to capital cost increases are improvements in lighting efficiency followed by improvements in airtightness.

12.5 The preferred policy option increases energy costs relative to Part L 2021 standard, costing occupiers an additional £362m. This is mostly driven by the unit cost of electricity being more expensive than gas. Option 1 in the Consultation resulted in £934m of energy savings for occupiers, whereas Option 2 resulted in a £1043m increase in energy costs. The new preferred option keeps solar coverage at the same level (40%) as Consultation Option 2 for top-lit buildings (warehouses), whilst raising solar coverage to 40% in all other buildings i.e., side-lit buildings, which is equivalent to Consultation Option 1. This results in an energy cost impact in between the two consultation options.

12.6 Whilst there is an overall £362m increase in energy costs, this differs by building type with offices, hospitals, and schools experiencing bill savings whilst energy bills rise for other archetypes, in particular warehouses. As discussed in paragraph 10.26, there is significant variability regarding energy usage and consequently bills even within building types, as each non-domestic building has its own distinct energy demand. This can vary with building size, occupancy patterns, and end use.

12.7 The majority of energy cost savings in Consultation Option 1 were derived from warehouses. Warehouses made up the majority of overall floorspace in the Consultation and received significant energy savings. The reduction in warehouse floorspace as a result of the updated warehouse heating assumption (as stated in paragraph 10.17-10.18), and lower solar coverage has removed these savings.

12.8 The other driver of the relative change in energy costs is the new modelling assumption regarding the proportion of electricity generated by solar that can be exported. As described in paragraph 10.21, the new assumption increases the proportion of solar generation used to serve on-site electricity demand. This is beneficial for occupiers' energy bills, as on-site self-consumption is more valuable than exporting to the grid, given exporters receive a fraction of the price paid to import from the grid. In Appendix C, a sensitivity analysis has been conducted which uses the Consultation assumption that 50% of solar will be exported and the

other 50% will serve on-site consumption. This results in an overall energy cost increase of £421m, around £59m higher than the central assumption.

12.9 There has also been a minor increase in energy costs relative to the Consultation modelling for all archetypes as a result of a relative reduction in lighting efficiency standards in the notional building. However, this is significantly outweighed by the capital cost savings relative to the Consultation resulting from a revision to the lighting efficacy used for the notional building. It is important to caveat that energy bills are based on estimates of energy consumption which can vary significantly from actual energy consumption and across the various archetypes.

12.10 In terms of carbon savings, the preferred option delivers substantial carbon savings of 11.8 MtCO2e (Table 13) equating to £1,982m. The vast majority of the carbon savings come from the non-traded sector, through the mitigation of gas consumption. The weighted average Non-Traded Cost Comparator (NTCC)12 is £171 per tCO2e. Whereas, the policy delivers each tonne of non-traded carbon savings at a cost of £97 per tCO2e. This is lower than the NTCC of £171/tCO2e, therefore the policy is cost-effective.

12.11 These substantial carbon savings combined with air quality benefits of the preferred policy option produce a positive net present social value equating to £874m.

12.12 Appendix D outlines the key assumptions which have contributed to the differences in costs, benefits and emissions between the estimates presented in the consultation stage Impact Assessment (IA) and those in this final IA.

12 Valuation of energy use and greenhouse gas (GHG) emissions

Table 13: Central Estimate, Summary of Costs and Benefits to society, buildings constructed in 2026-2035 with a 60 year asset life (£m NPV, 2025 prices and 2026 base year). The table presents costs in brackets to indicate that their net present value is negative.

	Preferred option
Transition costs	(16)
Energy savings	(362)
Capital, maintenance and replacement costs	(800)
Total financial benefit/(cost)	**(1,178)**
Carbon savings – non traded	2,028
Carbon savings – traded	(46)
Total carbon savings	**1,982**
Air quality savings	71
Total carbon and air quality savings	**2,053**
Net benefit/(cost)	**874**
Amount of gas saved (GWh)	65,023
Amount of electricity saved (GWh)	(26,606)
Amount of CO2 Saved – non-traded (MtCO2e)	12
Amount of CO2 Saved – traded (MtCO2e)	(0.19)
Total carbon savings	**11.8**
Cost effectiveness – non-traded (£/tCO2e)	97
Cost effectiveness – traded (£/tCO2e)	n/a

13. Business Impacts

Net Present Cost to Business

13.1 The changes to the energy efficiency requirements of the Building Regulations for new non-domestic buildings will result in increased costs to business of £452.1m over the 10-year policy period.

13.2 Table 14 shows the split between administrative costs, which are the transitional costs to business, policy costs which represent capital and maintenance costs to business and benefits which are essentially energy savings.

Table 14: Additional Net Present Costs to Businesses of the preferred option relative to the Part L Counterfactual, buildings constructed in 2026-2035 with a 60 year asset life (£m NPV, 2025 prices and 2026 base year)

Type of Cost	Cost
Business Net Present Cost	**452.1**
Administrative Costs	16.3
Policy Costs	355.4
Benefits	-80.3

Equivalent Annual Net Direct Cost to Business (EANDCB)

13.3 The impact of the changes to the energy efficiency requirements of the Building Regulations for all new non-domestic buildings will result in increased costs to business of £52.5m per year over the 10-year policy period (2025 prices, 2026 PV base year).

13.4 The EANDCB has been calculated over the first 10-years of the policy and excludes the maintenance and replacements costs which incur beyond the 10-years. This approach is designed to reflect the timing and distribution of costs incurred by businesses as a result of the regulatory uplift. The majority of costs — particularly capital and installation costs — are incurred in the first 10-years.

13.5 The alternative approach would be to include all costs and calculate the EANDCB over 70 years thereby incorporating all future maintenance and replacement costs. However, this would significantly reduce the EANDCB figure by spreading costs over a much longer timeframe. Such an approach risks understating the true financial impact on businesses, given that the bulk of costs are concentrated in the early years.

13.6 The direct costs considered within the scope of the EANDCB include (i) transition costs; (ii) upfront capital costs, and (iii) maintenance and replacement costs. A substantial proportion of these costs are capital costs which are expected to fall on the building developer as well as transition costs, with some maintenance and replacement costs falling on the building occupier.

13.7 As developers and occupiers are mostly businesses, most of the costs of the policy fall on business (private buildings). The exception is the case of public buildings, most importantly schools and hospitals which are excluded for the purposes of estimating the EANDCB.

13.8 The analysis assumes that the public-private distribution of new schools and hospitals will mirror the current stock[13]. Accordingly, the business-focused analysis

13 Schools: School characteristics, Data set from Schools, pupils and their characteristics - Explore education statistics - GOV.UK (2025); hospitals: Valuation Office Agency Data

excludes 90% of the projected new-build school floorspace and 80% of the projected new-build hospital floorspace, reflecting the anticipated public sector share.

13.9 Businesses occupying the buildings will benefit from energy savings from the new requirements, except for publicly-owned non-domestic buildings. The majority of these energy savings will benefit occupiers in the following 60 years. Wider society will benefit from reduced carbon emissions and improved air quality.

Transition Costs/Familiarisation costs

13.10 To estimate the familiarisation costs that are likely to occur, the same methodology was applied as used in the 2021 IA and the FBS Consultation[14], as set out by Adroit Economics:

- Identify the types of business/organisations that will be affected.
- Identify the types of familiarisation activity required.
- Discussion among consultant consortium to identify the time and cost likely to be required, based on industry experience and data from the Office for National Statistics.
- Scale-up costs across the industry based on the number of businesses / organisations.

13.11 The types of profession that will incur familiarisation costs include the following:

- Energy Consultants
- SBEM Assessors
- Contractors and developers
- Architects
- Engineers (energy modellers)
- Building Control
- Planners

13.12 The required familiarisation activities include the following:

- Preparing training course material
- Delivering/attending training courses
- Self-study

[14] Consultation published in 2023

13.13 In addition to the time for familiarisation, it is anticipated that some of the changes will also involve attendance at external training courses. These are included in cost estimates.

13.14 Developers and associated professional services personnel will require training to ensure that the designs of future buildings comply with the new regulations and that they procure appropriate components. The analysis also assumes that building control personnel would require training to enable them to assess the building applications and work to the new standards.

13.15 The analysis used to estimate the familiarisation costs divides the changes to be introduced by the FBS as follows:

13.16 Requirements: changes to the notional building and minimum standards

13.17 SAP/SBEM: the adoption of the new versions of the Standard Assessment Procedure (SAP) and SBEM as the approved methodologies for calculating energy efficiency

13.18 Other changes, including tweaks to how the regulations are written

13.19 MHCLG estimated the total familiarisation time required per professional activity by multiplying the expected familiarisation time per person by the number of affected persons in each category. Total familiarisation costs were then calculated by multiplying the required time per activity by average hourly employment cost estimates. Employment cost estimates were gathered from the Office for National Statistics. Assumptions on time spent and numbers of professionals receiving training are outlined in Appendix E.

13.20 Table 15 sets out the estimates of the total familiarisation costs by policy change, by organisation category and in total.

Table 15: Estimated total familiarisation costs (£m, 2025 prices)

Estimated total familiarisation costs, by professional activity (£m)	**Policy change**			**Total**
	Requirements	**Drafting of regulations**	**SBEM**	
Energy consultant	0.45	0.26	0.21	**0.92**
Engineer – energy modeller	0.18	0.04	0.11	**0.33**
Designer – architects	0.40	0.04	0.02	**0.46**
Designer – engineers	1.84	1.89	1.89	**5.62**
Heat pump commissioning	0.28	-	-	**0.28**
Contractors	6.56	0.27	0.53	**7.36**
Developers	0.08	-	-	**0.08**
Building control	0.06	0.07	0.18	**0.30**

Planners	-	-	0.26	**0.26**

Additional Capital Costs

13.21 Table 16 shows the increase in capital costs from achieving the 2025 requirements, compared with the continuation of 2021 standards. Further breakdown of the costs of the different elements is provided in Appendix B.

Table 16: Additional capital costs compared to Part L 2021 Counterfactual/BAU estimates (£m, 2025 prices)

Building type	Additional capital costs of preferred option compared to 2021 requirements, (£/m^2 Gross Internal Floor Area (GIFA[15], 2025 prices)	Cost uplift as % of Part L 2021 build costs
Office: deep-plan, air-conditioned	40	1.2
Office: shallow-plan, naturally-ventilated	65	2.6
Hotel	79	2.6
Hospital	28	0.6
Secondary School (includes sports facilities)	59	2.0
Retail Warehouse	20	1.1
Distribution Warehouse	21	1.1

Source: Currie and Brown provided costs estimates; Adroit Economics provided new build estimates

Impact on medium, small and micro businesses

13.22 It is estimated that 99.6% of England's 57,240 building and development enterprises and 98.7% of England's 112,475 architectural practices are small or micro. It is also estimated a further 0.3%, of building and development enterprises and 1.3% of architectural practices are medium. Table 17 breaks down the numbers of medium (50-499), small (10-49 employees) and micro (0-9 employees) businesses in the affected sectors. These England-only figures are from the UK Business Counts dataset of the Office for National Statistics, broken down by employment band and SIC code[16], rounded to the nearest five. Due to data limitations, some of the businesses listed may not be specific to non-domestic buildings, and certain relevant professions may be missing from the analysis. As such, the figures should be treated with caution and used only as indicative of overall scale.

[16] 7 Standard Industrial Classification (SIC) of Economic Activities is a five-digit code used by the ONS to classify businesses' main area of economic activity, and group businesses by the categories of economic activity in which they are engaged. ONS (2024), Nomis Official Census and Labour Market Statistics, https://www.nomisweb.co.uk/query/select/getdatasetbytheme.asp

Table 17: Number of Medium, Small and Micro Businesses in scope of the regulation changes (England)

Business (5-digit SIC code)	Micro Businesses (0 to 9 employees)	Small (10 to 49 employees)	Medium-sized (50 to 499 employees)	Total number of businesses	SMBs as a % of total	MSE as a % of total
Builders and developers[17]	55,010	2,015	200	57,240	99.6%	0.3%
Architects	11,430	880	160	12,475	98.7%	1.3%

13.23 There is insufficient data to accurately estimate the proportion of new non-domestic buildings currently delivered by SMBs, though qualitative analysis detailed below suggest they only account for a small proportion. As such, the analysis cannot specifically quantify the impact of these proposals on those businesses.

13.24 In 2021, the government published an uplift to the energy efficiency and ventilation requirements in Part L and Part F of the Building Regulations, which then came into force in June 2022. As with the Future Buildings Standard, the changes impacted any building work where Part L and Part F of the Building Regulations applied. The uplift was intended as an interim step towards the full Future Buildings Standard, providing a meaningful and achievable reduction to carbon emissions in new non-domestic buildings and allowing industry to build readiness ahead of the full standard being introduced.

13.25 The FBS builds on the 2021 uplift, increasing the level of solar coverage in the notional building for certain building types, effectively precluding the use of fossil fuel heating systems, and ensuring that all new non-domestic buildings are constructed to a zero-carbon ready standard.

13.26 For the 2021 Part L uplift, MHCLG commissioned Adroit Economics to explore whether small developers would be disproportionately affected by the proposed changes. Whilst the magnitude of the impact of the FBS is larger than the 2021 uplift, the nature of the businesses in scope of the regulatory changes is the same. Therefore, the findings below relating to the involvement of smaller businesses in the non-domestic construction industry are likely to also be applicable to the FBS:

- **Small builders/developers:** Adroit concluded that the extent to which small builders and developers would be disproportionately impacted by the changes would be negligible. When contracting, it is typical for small builders to procure or buy-in the necessary technical work from others and pass on the cost. Additionally, Small and micro builders (SMBs) do not typically engage in the planning and development of non-domestic buildings.**Small architects**: Adroit concluded that the extent to which small architects would be disproportionately impacted by the changes would be

[17] Builders and developers combines 2025 ONS business counts in England “Construction of commercial buildings” (SIC 41201) and “Development of building projects” (SIC 41100). Note that “Construction of commercial buildings” does not include public buildings, such as schools and hospitals. Therefore, will be an underestimate of total number of businesses involved in the construction of non-domestic buildings

negligible. Familiarisation costs are expected to be broadly similar across the industry, regardless of practice size. Smaller firms often rely on less formal methods of information exchange compared to larger organisations, potentially reducing the need for structured training events. As a result, small and micro architectural practices are likely to require a similar amount of time per person for familiarisation as larger businesses.

- Currie and Brown also judged (SMBs) were unlikely to be affected disproportionately by the changes, based on their meetings with regional developer groups. Small and micro builders were broadly familiar and comfortable with these technologies. The small sample studied appeared to have secured good costs from their supply chain, unlike larger builders

13.27 While the overall impact of the standards on SMBs appears to be limited, as discussed in section 4, the decision to implement a longer transitional arrangement and provide additional time reflects a proactive approach in supporting SMBs to adjust to the new standards.

Mitigating the impact on medium, small and micro businesses

13.28 There is insufficient data on the proportion of non-domestic buildings constructed by SMBs and MSEs as defined by the Better Regulation Framework (i.e. Enterprises split by numbers of employees – 0-9; 10-49; and 50-499.) As such, it has not been possible to quantitatively assess the extent to which introducing an exemption for SMBs and MSEs would sacrifice the benefits of the proposal.

13.29 Any mechanism for exempting buildings constructed by SMBs and MSEs would have to be robust enough to prevent exploitation by larger developers, as any exploitation would likely prevent the overarching policy objectives from being achieved. A blanket exemption for buildings developed by businesses with fewer than 500 employees, for example, would be without precedent in previous updates to Part L. Such a mechanism would likely not prevent exploitation of the exemption by larger developers through the setting up of separate smaller legal entities which could have fewer than 500 employees. More broadly, an exemption for SMBs and MSEs could therefore create a complex regulatory environment in the construction sector, where monitoring and enforcing compliance with multiple varying standards based on developer size would become prohibitively challenging for building control bodies. As well as this, it would create a permanent stock of new buildings requiring later, much more expensive, retrofitting in order to achieve net zero, significantly undermining the aims of the FBS. As such, the approach of exempting small, micro and medium sized businesses from new regulatory requirements would be inappropriate in this situation.

13.30 As set out above, MHCLG expects the regulation to have only a proportional impact on small or micro businesses. Therefore, there is no specific mitigation planned for these businesses. MHCLG will, however, continue to engage proactively with industry, including representatives of small, micro and medium-sized businesses, as the FBS is introduced.

13.31 There is insufficient data on the proportion of non-domestic buildings constructed by SMBs and MSEs as defined by the Better Regulation Framework (i.e.. Enterprises split by numbers of employees – 0-9; 10-49; and 50-499.) As such, it has not been possible to quantitatively assess the extent to which introducing an exemption for SMBs and MSEs would sacrifice the benefits of the proposal.

13.32 Any mechanism for exempting buildings constructed by SMBs and MSEs would have to be robust enough to prevent exploitation by larger developers, as any exploitation would likely prevent the overarching policy objectives from being achieved. A blanket exemption for buildings developed by businesses with fewer than 500 employees, for example, would be without precedent in previous updates to Part L. Such a mechanism would likely not prevent exploitation of the exemption by larger developers through the setting up of separate smaller legal entities which could have fewer than 500 employees. More broadly, an exemption for SMBs and MSEs could therefore create a complex regulatory environment in the construction sector, where monitoring and enforcing compliance with multiple varying standards based on developer size would become prohibitively challenging for building control bodies. As well as this, it would create a permanent stock of new buildings requiring later, much more expensive, retrofitting in order to achieve net zero, significantly undermining the aims of the FBS. As such, the approach of exempting small, micro and medium sized businesses from new regulatory requirements would be inappropriate in this situation.

13.33 The rationale for non-exclusion and outlined mitigations for SMBs also apply to medium-sized businesses in the context of the FBS, as exempting medium-sized businesses would create the same issues around enforcement, and would undermine the carbon emission saving aims of the FBS.

14. Non-monetised Impacts

14.1 There are several non-monetised costs and benefits that are not captured in the cost-benefit analysis, including those outlined below.

Grid infrastructure reinforcements and connections costs to businesses

14.2 As mentioned in Section 12, non-domestic buildings can benefit financially by exporting excess solar generation to the electricity grid. This will be particularly relevant for buildings such as warehouses, which have a large foundation area and low on-site energy consumption. The estimated potential income from exporting solar generation has been included in the analysis. However, Distribution Network Operator approval for an appropriate connection is required in order to export generated electricity to the local electricity network. Local grid infrastructure may require upgrades to allow connection and this may incur either cost or delay depending on the building location and the required export capacity. DESNZ has indicated that export connection costs vary significantly and no standard or average cost is available. It is, however, expected that as the UK's electricity grid infrastructure is improved, both costs and delays will reduce over time. For generating capacities over 5MW, approval is required from the national grid which can incur significant costs. It is, however, estimated that less than 1% of new buildings will generate capacities of 5MW or higher. Additional grid infrastructure (reinforcement) costs that might be incurred by businesses and society from this policy have not been estimated. If estimated, they might have a marginal negative impact on business and social costs.

Redesign Costs

14.3 This analysis does not attempt to estimate the costs associated with redesigning buildings in response to the FBS. In practice, developers frequently revise their designs – particularly for non-domestic buildings, where standardised layouts are

less prevalent than in residential construction. As such, it is challenging to isolate the redesign costs directly attributable to the policy from those that developers would incur as part of their routine design updates.

Supply Chain Development

14.4 The FBS encourages deployment in low-carbon technologies such as solar PV (particularly in side-lit buildings e.g. offices, schools, and hospitals), heat pumps and electric radiant heating systems relative to the counterfactual/BAU. The FBS will help stimulate growth in sustainable construction materials and products and green infrastructure. It will also help create green jobs and create opportunities for UK manufacturers. If monetised, these would have a positive impact on the NPSV.

14.5 Further supporting low-carbon technologies will reduce costs and possibly increase performance over time through innovation, as supply chains develop and barriers that customers currently face are reduced through technologies being deployed successfully. Reduced unit costs have been monetised in the main cost-benefit analysis but the potential performance improvement benefits are not quantified. If monetised, they would have a positive impact on the NPSV.

Innovation

14.6 There should be the potential for new firms to enter the market due to the setting of higher standards and the flexibility for developers to choose building technologies to meet these standards. This should encourage innovation among manufacturers.

14.7 The FBS will set performance-based standards, rather than prescriptive standards. This means the standards are technology agnostic and businesses will have flexibility in their routes to compliance so long as the specified energy efficiency standards are met. The freedom and market incentives to develop low/zero carbon heating technologies that performance-based standards encourage may result in innovations.

14.8 The standards will result in an increased use of low/zero carbon heating technologies. There is competition in the supply of such technologies with a mix of large and small suppliers. As the cumulative production of such technologies rises, learning effects coupled with competition should bring down the unit cost. This learning effect has been built into our modelling of costs in the main cost benefit analysis.

Improved Energy security and stable prices

14.9 The FBS aims to deliver higher energy efficiency and transition buildings to low-carbon heating systems, significantly reducing England's dependence on imported fossil fuels. By promoting the use of cleaner, domestically generated energy, the FBS enhances energy security, a critical enabler of sustainable economic growth. These benefits have not been monetised. If monetised, they would have a positive impact on NPSV.

14.10 Energy-secure buildings are less vulnerable to external shocks, such as geopolitical conflicts or global pandemics – that can disrupt energy supply and inflate prices. Historical events like Covid-19 and the Russo-Ukrainian war have shown how such shocks can directly hinder economic performance. The OBR estimates that responding to future gas price shocks could be twice as costly as direct public

investment needed for the Net Zero transition[18], reinforcing the economic rationale for the FBS:

11. Imported gas tends to have more volatile prices than electricity due to geopolitical risk, international market exposure, and supply chain disruptions. It is often sold through short-term contracts.

12. Decarbonised electricity prices are generally more stable, especially with diversified renewables, domestic sources, longer-term contracts and stable policy support. Additionally, gas storage limitations contribute to price volatility, while renewable electricity grids benefit from storage systems and demand-response mechanisms, further reducing price swings.

13. Recent energy price increases and shocks have highlighted the urgent need for improved energy efficiency and to decrease energy demand.

Supply of non-domestic buildings

14.1 In cases where developers are unable to absorb increased costs or pass them onto landowners, there may be a minor impact on the viability of commercial property supply. However, given that the capital cost increases represent only a small fraction of overall development costs and commercial property prices/rents (see Table 16), the overall impact on project viability and supply is expected to be negligible.

14.2 Areas in London are likely to be more resilient to these cost pressures due to the wider margin between development costs and rental/sale values compared to regions with lower commercial property values. Conversely, brownfield sites with significant land remediation requirements may face greater viability challenges as a result of the policy-driven cost increases.

14.3 Over the longer term, developers are expected to pass increased costs onto landowners through reduced land prices, as the regulation establishes a level playing field across the market. The extended lead-in period between the publication of the standard and the end of the transition phase provides developers with sufficient time to adapt to the new requirements, thereby minimizing disruption and limiting the regulation's impact.

14.4 Non-domestic building supply impacts have not been estimated. If estimated, this might have a marginal negative impact on NPSV in the short-term and a redistribution impact in the long-term.

15. Impact on Wider Government Priorities

15.1 The FBS is a key part of HMG's decarbonisation plans for non-domestic buildings, providing several growth impacts. The FBS will deliver higher standards of energy efficiency and move to cleaner sources of heat improving the quality of non-domestic buildings and contributing to greater energy security. This will increase build costs

[18] OBR: UK's current gas reliance likely to be as costly as net-zero transition, 'The OBR states that if gas price spikes occur every decade, it could cost the UK between 2-3% of GDP annually, adding 13% of GDP to public debt by 2050. Under these scenarios the dependence on gas could be twice as costly as the net-zero transition.', https://www.edie.net/obr-uks-current-gas-reliance-likely-to-be-as-costly-as-net-zero-transition/

but there will also be wider benefits through increased investment to local supply chains for renewable technologies and skills development for the future.

15.2 The way buildings perform can impact the energy bills occupants incur and the comfort they feel. More efficient lighting and improved fabric can reduce running costs, and the addition of renewable energy generation (such as solar photovoltaic panels) can reduce annual costs for occupiers by offsetting energy use and provide additional energy resilience. There is uncertainty and significant variation in real-world energy consumption and running costs across the full range of building types. Improvements to energy efficiency and ventilation can also prevent damp and mould, excess cold and heat, and improve air quality.

Business Environment

15.3 The introduction of higher performance standards, coupled with the flexibility for developers to determine how best to meet them, is expected to stimulate innovation across the construction and building services sectors, and potentially enable the entry of new firms into the market. By not prescribing specific technologies, the FBS encourages the development and adoption of a range of low-carbon and energy-efficient solutions.

15.4 As deployment of these technologies increases, learning effects and market competition are expected to drive down unit costs over time. These dynamic effects have been incorporated into the cost modelling to reflect anticipated reductions in technology costs as uptake grows.

15.5 The FBS is expected to drive innovation across the supply chain through multiple channels. Manufacturers will be incentivised to develop new low-carbon technologies and enhance existing products to meet higher performance requirements. Equally, installers and contractors will need to adopt more advanced methods, tools, and practices to ensure efficient and compliant delivery on-site. Overall, this will encourage firms to invest into Research and Development which can lead to the potential to export knowledge to other markets and sectors and help create opportunities for UK manufacturers.

International Considerations

15.6 The more stringent energy efficiency standards for 2025 are set out in the Approved Document guidance standards for a range of products across the new stock. Performance based standards are set through the notional building specification and approved methodologies, which do not mandate the specific technologies or products to be used.

15.7 However, given that many businesses will decide to follow the Approved Document guidance, this decision could lead to an increase in costs where the suggested standard is set above the current market level, leading to businesses needing to produce more efficient products. If these firms are unable to absorb the costs and are actively engaged in international trade, then this could lead to exports falling as these goods become less competitive. However, this depends on a wide range of factors, including; whether the market is predominantly domestic or international; if England has a comparative advantage/disadvantage in these goods; what overseas standards there are, and; the price of goods on the international market. HMG also

has a suite of policies in place to support. businesses and consumers to bring more heat pump manufacturing to the UK[19].

15.8 Neighbouring markets, such as the EU, have taken significant action to require new buildings to be highly energy efficient. As of 2020, new buildings in the EU have been required to be 'nearly-zero energy buildings'. This is being increased to a 'zero-emission buildings' requirement, starting from 2028 for new buildings owned by public bodies and 2030 for all other new buildings. The Future Buildings Standard aligns with this trajectory and sets a clear direction forward for UK based developers, manufacturers, supply chains and innovators. International cases suggest that clear performance signals can help maintain competitiveness and avoid trailing in markets where energy-efficient design is already standard practice.

15.9 There could also be some indirect economic impacts, particularly by encouraging innovation. If product innovation occurs, particularly in lower carbon forms of heat, this could lead to the development of new products and higher demand in clean growth/renewable markets. If there is global demand for these goods then businesses will be incentivised to sell their products abroad, thus increasing international trade. This could also lead to benefits for key UK sectors, such as manufacturing, if innovation takes place in a market where the UK holds a comparative advantage.

Natural Capital and Decarbonisation

15.10 A primary objective of the FBS is to support the decarbonisation of regulated energy usage in non-domestic buildings. By setting higher energy performance standards for new buildings and major refurbishments, the FBS directly reduces emissions from heating, cooling, and powering buildings and will be an important policy over the long term to decarbonise the building sector.

15.11 The FBS encourages low-carbon heating and energy efficient technologies which in turn helps lower emissions of harmful pollutants and benefiting ecosystems and human health. Lower greenhouse gas emissions reduces the pressure on natural systems affected by climate change, such as forests, water bodies, and biodiversity.

15.12 The most important environmental impacts such as carbon emission savings and improved air quality are both covered in the main results of this IA in section 12.

16. Equalities assessment

16.1 Under the Equalities Act 2010, all public authorities are required to have due regard to the need to:

a. Eliminate unlawful discrimination, harassment and victimisation and other conduct prohibited by the Act.
b. Advance equality of opportunity between people who share a protected characteristic and those who do not.

[19] HM Government (2023). Heat Pump Investment Roadmap. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1166439/heat-pumps-investment-roadmap.pdf

c. Foster good relations between people who share a protected characteristic and those who do not.

16.2 This means there is a statutory duty to consider the impacts of the policy changes in this IA on people with the protected characteristics of age, disability, gender reassignment, marriage or civil partnership, pregnancy and maternity, race, religion or belief, sex, and sexual orientation.

16.3 MHCLG have carried out a Public Sector Equality Duty assessment for the policies implemented under the FBS. The evidence base for making this assessment included engagement with industry stakeholders, a review of correspondence received by the Department and responses to the consultation. This process has helped identify where the FBS can support those with protected characteristics. MHCLG have made adjustments to the Future Buildings Standard where appropriate and have not identified any significant or disproportionate impacts resulting from the final standard on individuals with protected characteristics.

Appendix A – Standard Uptake Assumptions

Tables A.1-A.3 set out the estimated proportions of new-build floorspace that the analysis assumes developers would build to each standard under each option. Under the counterfactual/BAU, the FBS row estimates the floorspace that would have been built to FBS standards or beyond in the absence of the policy, so the policy has no direct costs or benefits. Paragraphs 10.28-11.5 explain how MHCLG arrived at these assumptions.

Warehouses

Table A.1: Assumptions on proportion of warehouse floorspace built to Part L 2021 and FBS standards under the counterfactual/BAU and preferred option (%)

	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035
Counterfactual/BAU										
Part L 2021	72.0	69.0	66.0	63.0	60.0	57.0	54.0	51.0	48.0	45.0
FBS	28.0	31.0	34.0	37.0	40.0	43.0	46.0	49.0	52.0	55.0
Preferred option (FBS)										
Part L 2021	68.4	55.2	33.0	12.6	3.0	0.0	0.0	0.0	0.0	0.0
FBS	31.6	44.8	67.0	87.4	97.0	100.0	100.0	100.0	100.0	100.0

Offices

Table A.2: Assumptions on proportion of office floorspace built to Part L 2021 and FBS standards under the counterfactual/BAU and preferred option (%)

	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035
Counterfactual/BAU										
Part L 2021	32.0	30.0	28.0	26.0	24.0	22.0	20.0	18.0	16.0	14.0
FBS	68.0	70.0	72.0	74.0	76.0	78.0	80.0	82.0	84.0	86.0
Preferred option (FBS)										
Part L 2021	30.4	24.0	14.0	5.2	1.2	0.0	0.0	0.0	0.0	0.0
FBS	69.6	76.0	86.0	94.8	98.8	100.0	100.0	100.0	100.0	100.0

Secondary schools, hotels and hospitals

Table A.3: Assumptions on proportion of secondary schools, hotels, and hospitals floorspace built to Part L 2021 and FBS standards under the counterfactual/BAU and preferred option (%)

	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035
Counterfactual/BAU										
Part L 2021	37.0	35.0	33.0	31.0	29.0	27.0	25.0	23.0	21.0	19.0
FBS	63.0	65.0	67.0	69.0	71.0	73.0	75.0	77.0	79.0	81.0
Preferred option (FBS)										
Part L 2021	35.2	28.0	16.5	6.2	1.5	0.0	0.0	0.0	0.0	0.0
FBS	64.9	72.0	83.5	93.8	98.6	100.0	100.0	100.0	100.0	100.0

Appendix B – Cost Breakdown and Asset Lifespan

Currie & Brown's cost specialists developed these cost estimates, drawing on evidence from their internal cost datasets, recent published cost data and information provided by suppliers.

The cost analysis attempts to reflect typical national costs from Q2 2025. The analysis considers the costs of developers with design development, construction processes and a supply chain that are all reasonably efficient. The costs that individual organisations incur will vary according to the organisations' procurement strategies, the location of their activity and the detail of their products. These variations in design, location and delivery method could result in a cost range of +/-c.20%. Notwithstanding these variations, the proportional uplifts associated with moving from one specification to another are likely to be similar across different market segments.

To provide context to the cost variations assessed in the study, Currie & Brown estimated an indicative overall build cost (£/m^2) for each building archetype, using internal data. This figure is indicative of the level of cost Currie & Brown could expect for a building built in accordance with the requirements of Part 2021. The build cost should be taken as indicative only, as it is sensitive to a wide range of design and specification variables in addition to the variations discussed previously.

Table B.1 presents base costs for future years in 2025 prices, subject to adjustments for learning for technologies that have not yet reached a mature market position. Construction costs can vary considerably and rapidly with market conditions, particularly where activity levels result in a change in the availability of skills and materials. In these situations, it is fairly typical to see a large (several percentage points) change in overall costs over a period of months.

Table B.1 includes details of the cost information for the specification options for new non-domestic buildings, including any variations between building types. The numbers include costs only for those specifications that vary between the considered options, including the 'Do nothing' option in which the 2021 standards are maintained.

Table B.1: Cost data for elements that vary between the selected specifications for new non-domestic buildings

Element	Specification	Unit	New cost (£ per unit)
Airtightness – warehouses only	5 m^3 m^2 hr	m^2 Gross Internal Floor Area	£0
	3 m^3 m^2 hr		£9
Light fittings – general	95 llm/cW	m^2 lit floor area	£76
	105 llm/cW		£86
Light fittings - display	95 llm/cW	m^2 lit floor area	£45
	105 llm/cW		£50
Ventilation heat recovery	76%	m^3/second delivered air	£9,816
	80%		£10,175
Gas boiler	93%	kW capacity	£54
Air source heat pump		kW capacity	£535
High temperature air source heat pump		kW capacity	£722
Heating sundries (gas system) – flue, gas supply, pumps, controls, etc		m^2 Gross Internal Floor Area	£14
Heating sundries (heat pump system) – power supply, pumps, controls, etc		m^2 Gross Internal Floor Area	£10
Instantaneous point of use hot water		m^2 serviced floor area	£2
Radiant panel heaters (gas fired)		m^2 serviced floor area	£26
Radiant panel heaters (electric)		m^2 serviced floor area	£21
Roof mounted - photovoltaic panels mounted on frames on accessible concrete flat roof	Variable costs	Per kWp installed	£1,084

Cost projections

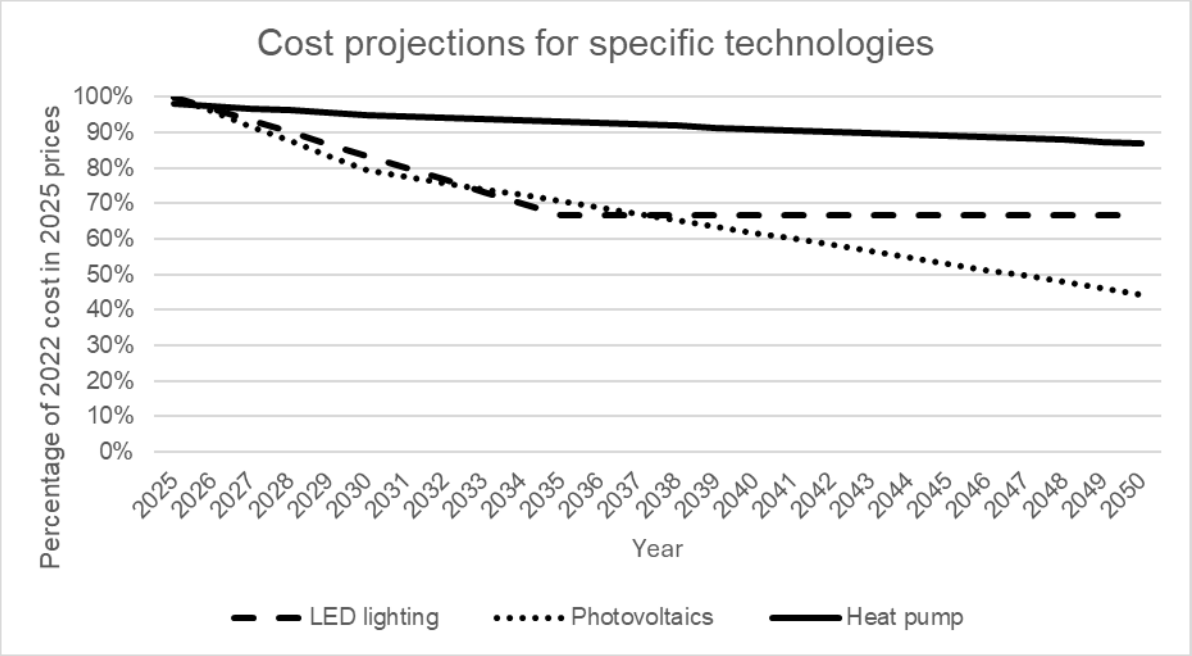
Currie and Brown assigned cost projections to each specification option to capture any expected change in the current cost over time. For many building elements they applied no adjustment to the current costs because the technology is mature and unlikely to experience a significant reduction in cost per unit of performance. This assumption does not

imply that cost will not change, only that it is not expected to change by an amount disproportionate to the wider construction cost base.

For less mature specifications, Currie and Brown assessed the potential for future reductions in cost through learning. This analysis generated these projections using published cost projections or by applying appropriate learning rates to global market projections.

Figure B.1 shows the future cost projections of technologies where learning rates were applied: heat pumps, LED lighting and photovoltaic panels. These cost projections are relative to 2022 costs and do not account for other economic and market factors that will impact costs over this period (e.g., market conditions, interest and exchange rates, skills availability and commodity prices).

Figure B.1 Projected variation in base costs as a result of learning



Asset lifespan

For building fabric insulation (external walls, floors, roofs) the assumed asset life is sixty years, except for external windows which was assigned an asset life of thirty years. These assumptions are in line with values provided in Appendix E of BS EN 15459 Energy performance of buildings – Economic evaluation procedure for energy systems in buildings.

The analysis assumes the following asset lifetimes:

- 15 years for gas boilers
- 20 years for light fittings and ventilation equipment
- 20 years for thermostatic radiator valves (TRVs) to align with the asset life for heat emitters
- 10 years for lighting controls

The analysis only considered the elements of lifecycle costs that differed from the costs incurred in the counterfactual/BAU. For example, general repair and decoration costs were

excluded from the analysis, as these would be common to all new constructions, irrespective of the energy performance options presented in this document.

Replacement costs were assigned to each component within a specification, thereby enabling us to model individually the lifecycle costs of components with different life expectancies. For example, the modelling of air-source heat pump replacements did not include the replacement of associated electricity supply components. These components should last longer than heat pumps, so were assessed separately with their own replacement costs and cycles. The replacement costs included an allowance for the disposal of the end-of-life components.

Consequently, the analysis estimates the ongoing costs associated with maintenance and replacement, along with the benefits from energy savings and associated air quality and carbon savings, over a sixty-year period for each building. The learning rates have been applied to account for reductions in costs for less mature technologies.

Appendix C – Sensitivity Analysis

There is uncertainty on various assumptions that feed into the cost-benefit analysis. MHCLG analysts have explored the sensitivity of the results to changes in the key assumptions. The proportion of warehouse floorspace that is heated is particularly uncertain (see paragraphs 10.17 - 10.18), so a specific sensitivity analysis explored the effect of varying these assumptions. The same is true for the replacement of gas systems under the counterfactual/BAU (see paragraph 10.33). Further, a sensitivity was applied to the solar export price to account for the fact that solar export revenue is dependent on a grid license which may not be available (see: paragraph 10.7). Finally, the value of carbon savings was varied in accordance with Green Book guidance.

Sensitivity analysis 1: Solar export

Two sensitivity tests were conducted to reflect the uncertainty around solar export benefits (see table C.1). The first sensitivity test set the solar export price to zero (see paragraph 10.7), reflecting the risk that the income from solar exports is contingent on securing a grid export license which is not guaranteed.

Counterintuitively, this assumption increases the policy's net benefit by £31m, due to a smaller rise in occupiers' energy bills. While energy bills are lower in the central case, owing to income from solar exports, the net benefit relative to the counterfactual/BAU is reduced.

This follows from the central assumption that solar electricity offsets on-site electricity demand excluding heating, with any surplus exported to the grid. Only top-lit buildings export to the grid in this analysis, as side-lit buildings do not generate sufficient solar to offset all of their non-heating electric demand.

Although both FBS and Part L 2021 warehouses generate the same amount of solar (both have identical PV coverage), FBS warehouse export less to the grid. This is due to the fact FBS warehouses have higher on-site electricity demand, primarily from electric heating. Consequently, any income received from exporting will reduce the net benefits of the policy as more income will accrue to Part L 2021 warehouses than FBS warehouses. Thus, setting the solar export price to zero improves the net benefit of the policy.

The second sensitivity test varied the proportion of solar generation used for self-consumption. The central assumption is that solar offsets all non-heating electricity demand, with surplus exported (see paragraph 10.21). In the modelling it is only warehouses that export any solar, as all side-lit buildings generate less electricity through solar than their non-heating energy demand.

In the sensitivity test, 50% of solar generation was assumed to be self-consumed and 50% exported, consistent with the Consultation IA assumption. This reduced the net benefit of the policy by £59m, as expected, due to lower energy savings.

Solar generation used for self-consumption directly offsets grid electricity, yielding full retail savings. In contrast, the price received for solar export is a fraction (approximately 60% in the central case) of the price paid for importing electricity from the grid. Therefore, increasing the proportion of solar generation used for self-consumption (and reducing the proportion exported) results in lower energy bills via this offsetting effect.

Table C.1: Solar export sensitivity analysis, summary of costs and benefits, buildings constructed in 2026-2035 with a 60 year asset life (£m NPV, 2025 prices and 2026 base year)

	Central estimate	**Zero solar export**	**50:50**
Transition costs	(16)	(16)	(16)
Energy savings	(362)	(331)	(421)
Capital, maintenance and replacement costs	(800)	(800)	(800)
Total financial benefit/(cost)	**(1,178)**	**(1,147)**	**(1,237)**
Carbon savings – non traded	2,028	2,028	2,028
Carbon savings – traded	(46)	(46)	(46)
Total carbon savings	**1,982**	**1,982**	**1,982**
Air quality savings	71	71	71
Total carbon and air quality savings	**2,053**	**2,053**	**2,053**
Net benefit/(cost)	**874**	**905**	**815**
Amount of gas saved (GWh)	65,023	65,023	65,023
Amount of electricity saved (GWh)	(26,606)	(26,606)	(26,606)
Amount of CO2 abated – non-traded (MtCO2e)	12	12	12
Amount of CO2 abated – traded (MtCO2e)	(0.19)	(0.19)	(0.19)
Total carbon savings	**11.8**	**11.8**	**11.8**
Cost effectiveness – non-traded (£/tCO2e)	97	95	102
Cost effectiveness – traded (£/tCO2e)	n/a	n/a	n/a

Sensitivity analysis 2: Replacement of gas boilers

The analysis presented in Table C.2 explores the effect of varying the assumption around the replacement of gas systems at the end of their lives under the counterfactual/BAU: see paragraph 10.33.

Table C.2: Effect on the results for the preferred option of assuming that building occupiers replace gas with electric systems at the end of their lives. Summary of costs and benefits to society, buildings constructed in 2026-2035 with a 60 year asset life (£m NPV, 2025 prices and 2026 base year). The table presents costs in brackets to indicate that their net present value is negative.

	Gas replaced by gas (central-case)	**Gas replaced by electricity**
Transition costs	(16)	(16)
Energy savings	(362)	152
Capital, maintenance and replacement costs	(800)	(522)
Total financial benefit/(cost)	**(1,178)**	**(387)**
Carbon savings – non traded	2,028	754
Carbon savings – traded	(46)	(29)
Total carbon savings	**1,982**	**725**
Air quality savings	71	25
Total carbon and air quality savings	**2,053**	**750**
Net benefit/(cost)	**874**	**363**
Amount of gas saved (GWh)	65,023	17,055
Amount of electricity saved (GWh)	(26,606)	(6,577)
Amount of CO2 abated – non-traded (MtCO2e)	12	3
Amount of CO2 abated – traded (MtCO2e)	(0.19)	(0.09)
Total carbon savings	**11.8**	**2.91**
Cost effectiveness – non-traded (£/tCO2e)	97	126
Cost effectiveness – traded (£/tCO2e)	n/a	n/a

As expected, assuming a counterfactual/BAU scenario in which building occupiers replace gas systems with electric systems diminishes the impacts of the policy. The carbon savings, air quality benefits, gas savings, and capital cost increases of the preferred policy option all diminish. These benefits of decarbonising heating and hot water decrease when more buildings are using electric systems anyway.

Electricity consumption still rises but by a reduced amount, as expected when the proportion of buildings using electricity for heating anyway in the counterfactual/BAU increases.

Electricity savings and energy savings of the policy are higher when gas is replaced by electricity under the counterfactual/BAU. Assuming that gas systems would be replaced by electric systems under the counterfactual/BAU means that electricity consumption is greater under the counterfactual/BAU. Changing this assumption increases the benefits of the FBS because electricity consumption is offset by greater solar PV coverage under this option.

Sensitivity analysis 3: Carbon values

Sensitivity analysis was taken forward using the higher and lower estimates of carbon values, using Table 3 in the November 2023 Green Book Supplementary Guidance[20] (see below). Figures used are consistent with the target-consistent approach and reflect the marginal abatement cost required to meet the UK's statutory carbon budgets and Net Zero commitments. This is the recommended approach as laid out in Government guidance on valuation of greenhouse gas emissions[21].

Table C.3: Green Book Carbon Values (£/tCO2e) (2025 Prices)

Year	Low	Central	High
2026	154	309	463
2027	157	313	470
2028	159	318	477
2029	161	323	484
2030	164	328	492
2031	166	333	499
2032	169	338	507
2033	171	343	514
2034	174	348	522
2035	177	354	530

20 Green Book supplementary guidance: valuation of energy use and greenhouse gas emissions for appraisal - GOV.UK

21 DESNZ/BEIS, 2021. Available: Valuation of greenhouse gas emissions: for policy appraisal and evaluation - GOV.UK

The range of values are used to portray potential changes in the valuation of carbon used in appraisal. Lower carbon values result in lower monetary benefits associated with the carbon saved, and so may reduce the net benefits of the policy options. Higher carbon values increase the value of carbon saved in the policy options, and so may appear as a larger net benefit. The results for new non-domestic buildings are as follows:

Table C.4: Carbon Value sensitivity analysis, summary of costs and benefits, buildings constructed in 2026-2035 with a 60 year asset life (£m NPV, 2025 prices and 2026 base year)

	Central estimate	**High carbon values**	**Low carbon values**
Transition costs	(16)	(16)	(16)
Energy savings	(362)	(362)	(362)
Capital, maintenance and replacement costs	(800)	(800)	(800)
Total financial benefit/(cost)	**(1,178)**	**(1,178)**	**(1,178)**
Carbon savings – non traded	2,028	3,041	1,014
Carbon savings – traded	(46)	(68)	(23)
Total carbon savings	**1,982**	**2,973**	**991**
Air quality savings	71	71	71
Total carbon and air quality savings	**2,053**	**3,044**	**1,062**
Net benefit/(cost)	**874**	**1,865**	**(117)**
Amount of gas saved (GWh)	65,023	65,023	65,023
Amount of electricity saved (GWh)	(26,606)	(26,606)	(26,606)
Amount of CO2 abated – non-traded (MtCO2e)	12	12	12
Amount of CO2 abated – traded (MtCO2e)	(0.19)	(0.19)	(0.19)
Total carbon savings	**11.8**	**11.8**	**11.8**
Cost effectiveness – non-traded (£/tCO2e)	97	99	95
Cost effectiveness – traded (£/tCO2e)	n/a	n/a	n/a

The low carbon value sensitivity test is the only sensitivity test applied which results in the policy being a net cost to society overall. In the low carbon value sensitivity, the value of carbon is halved relative to the central estimate (as seen in Table C.4). Carbon savings generate the majority of the benefits of the policy in the central modelling estimate. Halving the benefit associated with carbon savings thus has a sizeable impact on the overall value of the policy, such that it becomes a net cost.

The carbon values used in this analysis are from the Green Book and reflect the estimated marginal abatement costs of meeting the UK's climate targets. This aligns with Government guidance on the valuation of greenhouse gas emissions, which recommends use of target-

consistent values. As seen in Table C.4., these marginal costs are not constant over time. There are two main driving forces behind these marginal costs. On the upside, increased ambitions regarding emissions reductions which will require more expensive technologies to be adopted. On the other hand, marginal abatement costs may fall due to reductions in technology costs through innovation and deployment. Therefore, the low carbon value scenario may arise due to the UK weakening its climate ambition, or through substantial green technology innovation which lowers costs. If the latter were to be the case, then it is likely there would be significant changes to other aspects of the monetised impact, with the financial cost to businesses falling also with cheaper technologies associated with the Future Buildings Standard.

Sensitivity analysis 4: Warehouse heating

The proportion of distribution warehouse floorspace that is heated has reduced from 50% in the Consultation to 20% in this analysis. This reflects emerging data from the National Buildings Database (under development). The remaining 80% of distribution warehouse floorspace is considered ‘unconditioned’ and therefore falls outside the scope of Part L regulations. It is therefore omitted from the modelling. The new assumption of 20% is also supported by input from consultants and technical specialists. However, there is still a significant degree of uncertainty in this value. As a result, two sensitivity tests have been conducted in Table C.5 with a high scenario assuming 25% of distribution warehouse floorspace is heated, and a low scenario where 15% of distribution warehouse floorspace is heated.

As expected, in the scenario with high warehouse floorspace (25% of distribution warehouse floorspace is heated) the net benefit of the policy increases, and the opposite is true in the low warehouse floorspace scenario. The net benefit of the policy increases by £85m in the high warehouse floorspace scenario. This is despite the total financial cost of the policy rising, as this is more than offset by greater carbon savings.

Table C.5: Warehouse heating sensitivity analysis, summary of costs and benefits, buildings constructed in 2026-2035 with a 60 year asset life (£m NPV, 2025 prices and 2026 base year)

	Central estimate	**High warehouse floorspace**	**Low warehouse floorspace**
Transition costs	(16)	(16)	(16)
Energy savings	(362)	(456)	(268)
Capital, maintenance and replacement costs	(800)	(837)	(764)
Total financial benefit/(cost)	**(1,178)**	**(1,309)**	**(1,048)**
Carbon savings – non traded	2,028	2,242	1,813
Carbon savings – traded	(46)	(53)	(38)
Total carbon savings	**1,982**	**2,189**	**1,775**
Air quality savings	71	78	63
Total carbon and air quality savings	**2,053**	**2,268**	**1,838**
Net benefit/(cost)	**874**	**959**	**790**
Amount of gas saved (GWh)	65,023	71,917	58,130
Amount of electricity saved (GWh)	(26,606)	(30,904)	(22,309)
Amount of CO2 abated – non-traded (MtCO2e)	12	13	11
Amount of CO2 abated – traded (MtCO2e)	(0.19)	(0.22)	(0.16)
Total carbon savings	**11.8**	**12.8**	**10.8**
Cost effectiveness – non-traded (£/tCO2e)	97	98	96
Cost effectiveness – traded (£/tCO2e)	n/a	n/a	n/a

Appendix D – Consultation comparison

Several factors have contributed to the differences in costs, benefits, and net present values between the estimates presented in the consultation stage Impact Assessment (IA) and those in this final IA. Table D.1 below outlines the main assumption which contribute to the change in costs and benefits relative to the consultation stage IA.

Table D.1 Key Assumptions Driving Changes in Costs and Benefits Compared to the Consultation Stage IA

Assumption	Consultation stage assumption	Final IA assumption (including rationale for change)	Impact on Capital costs	Impact on energy savings	Impact on carbon emissions
Solar Offset	50% of solar generation used for self-consumption, other 50% exported to the grid	PV generation offsets non-heating electricity demand. PV only exported to the grid if any surplus PV generation above this demand.	No impact	Increase (i.e., lower energy bill increase)	No impact
Floorspace		Incorporated extensions, and reduced warehouse floorspace in line with updated warehouse heating assumption.	Decrease	Increase (i.e., lower energy bill increase)	Decrease
Standards uptake (counterfactual/BAU and phase in)		Updated assumptions regarding phase-in and counterfactual/BAU which has impacted standards uptake. Has improved NPV by £356m, ceterus paribus.	Decrease	Decrease (i.e., higher energy bill increase)	Decrease

Option 1:

- Good fabric standards to minimise heat loss from windows, walls, floors and roofs.
- Low carbon heating (a heat pump for side-lit spaces and radiant electric heating in top-lit spaces. A separate notional building was created for buildings connected to a heat network.)
- Enhanced lighting efficacy
- Enhanced heat recovery efficiency
- Solar PV coverage equivalent to 40% of the foundation area for side-lit spaces (e.g. offices) and 75% for top-lit spaces (e.g. warehouses).

Option 2:

- The notional building specification for new buildings would mirror Option 1, with the exception of the solar PV coverage. Under Option 2, solar PV coverage equivalent to 20% of the foundation area was proposed for side-lit buildings and 40% for top-lit buildings.

Table D.2 *Summary of costs and benefits to society, monetary units (£m, 2022 prices and 2025 PV). The table presents costs in brackets to indicate that their net present value is negative.*

	Option 1	Option 2
Transition costs	(11)	(11)
Energy savings	934	(1,043)
Capital, maintenance, and replacement costs	(2,348)	(1,253)
Total financial benefit/(cost)	**(1,425)**	**(2,307)**
Carbon savings – non-traded	2,164	2,164
Carbon savings – traded	43	(100)
Total carbon savings	**2,207**	**2,064**
Air quality savings	47	43
Total carbon and air quality savings	**2,254**	**2,108**
Amount of gas saved (GWh)	79,251	79,251
Amount of electricity saved (GWh)	25,619	(49,044)
Amount of CO_2 abated – non-traded ($MtCO_2e$)	14.5	14.5
Amount of CO_2 abated – traded ($MtCO_2e$)	0.21	(0.48)
Total carbon savings	**14.7**	**14.0**
Cost effectiveness – non-traded (£/tCO_2e)	92	163
Cost effectiveness – traded (£/tCO_2e)	n/a	n/a

Appendix E – Familiarisation Cost Estimates

Table E.1 shows the estimated number of individuals that will need to become familiar with the changes.

Table E.1 Estimated number of individuals need to become familiar with the regulation changes, by profession Note: these rounded estimates may not sum to the rounded total

Organisation category	Estimated number of organisations to incur familiarisation costs
Energy consultant	4,970
Engineer – energy modeller	400
Designer – architects	12,730
Designer – engineers	10,300
Heat pump commissioning	1,700
Contractors	19,740
Developers	18,840
Building control	1,000
Planners	11,550
Total	**91,680**

Table E.2 shows the estimated average familiarisation time per person for each organisation category.

Table E.2: Number of hours spent per profession to familiarise with new policy changes (hours)

Profession category	Policy change			Total
	Requirements	Drafting of regulations	SBEM	
Energy consultant	6	4	12	**22**
Engineer – energy modeller	6	4	23	**33**
Designer – architects	15	1	3	**18**
Designer – engineers	26	12	12	**49**
Heat pump commissioning	45	0	0	**45**
Contractors	9	12	24	**45**
Developers	90	-	-	**90**
Building control	5	6	12	**23**
Planners	0	0	1	**1**

Appendix F – Glossary

This annex defines terms used in this impact assessment.

Approved Documents	Statutory guidance that provides practical guidance on ways of complying with the requirements of the Building Regulations.
As-built performance	The actual energy performance of a building once it has been constructed and commissioned, which may differ from performance estimated at the design stage.
Asset lifespan / maintenance and replacement costs	Lifecycle concepts used to assess costs and benefits over time, including scheduled maintenance and replacement of building components.
Building archetypes / archetypes	Representative building types used in modelling to estimate costs, energy use and emissions impacts.
Building Regulations	Statutory regulations made under the Building Act 1984 that set functional requirements for the design and construction of buildings, including provisions for safety, health, energy efficiency, and ventilation.
Business as Usual (BAU) / Counterfactual	The scenario used in the impact assessment to represent what would happen in the absence of the Future Buildings Standard, based on continued application of Part L 2021 requirements.
EANDCB (Equivalent Annual New Direct Cost to Business)	An annualised metric reporting the net direct cost or benefit to business arising from regulatory change.
Familiarisation costs / familiarisation time	One-off costs and time incurred by industry and regulators to understand and adapt to new regulatory requirements.
Fixed building services	Services that are integral to the operation of a building and whose energy use is regulated under the Building Regulations. These include heating, hot water, cooling and mechanical ventilation systems, and fixed internal and external lighting. Under the Future Buildings Standard, the scope of regulated fixed building services is extended to include lifts, escalators and moving walkways.
Gateway process / Gateway 2 (GW2)	A regulatory approval stage for higher-risk buildings that must be successfully completed before construction can commence. It involves the Building Safety Regulator reviewing and approving detailed design and safety documentation to ensure compliance with building regulations.
Heat Networks	District or communal heating systems referenced as an alternative notional building route and in pathways for connecting buildings to low-carbon heat.
Lighting efficacy	A measure of lighting performance, expressed as lumens per watt (lm/W), with different efficacy levels specified in the notional building comparison.
Mechanical ventilation	Ventilation provided by mechanically driven fans that extract air from, or supply air to, a building in order to achieve adequate indoor air quality by extracting or supplying air.
National Calculation Methodology (NCM)	The methodology used to assess the energy performance of non-domestic buildings for compliance with the Building Regulations.

Net-Zero ready	A standard under which a building is designed and constructed to ensure that it can achieve net zero carbon emissions in use, without requiring retrofit works, by balancing any remaining operational emissions. This can include the offsetting of carbon emissions.
Notional building	A reference building specification used to set energy and carbon performance targets, against which a proposed building's performance is assessed.
Notional building specification	The set of assumed features and technologies in the notional building, including building fabric, heating systems, lighting, photovoltaic coverage and heat recovery, used to set compliance targets.
Regulated energy use	The energy consumption in a building from fixed, controlled building services, such as heating, cooling, lighting and ventilation.
SBEM (Simplified Building Energy Model)	The calculation tool used within the National Calculation Methodology to assess the energy performance of non-domestic buildings for regulatory compliance.
Sunsetting	The process of ending or removing historic transitional arrangements after a defined period.
Zero-carbon ready	A standard under which new buildings constructed to the Future Buildings Standard will not require retrofit work to achieve zero operational carbon emissions once the electricity grid is fully decarbonised. This cannot include the use of offsetting of carbon emissions.