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MAKING BUILDINGS BETTER

TECHNICAL BULLETIN

FOR RESIDENTIAL SURVEYORS

BARRIERS TO CLIMATE CHANGE

CAN WE REALLY REDUCE THE DEMAND FOR ENERGY IN RESIDENTIAL PROPERTIES IN THE UK BY 2035?

CLIMATE CHANGE

DOMESTIC BATTERY STORAGE

SAFETY GLASS

CONTINUING PROFESSIONAL DEVELOPMENT 60 Minutes

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THE TECHNICAL BULLETIN

FOR RESIDENTIAL SURVEYORS

Welcome to the Technical Bulletin. This Bulletin is designed primarily for residential surveyors who are members of RICS and other professional bodies working across all housing sectors. Other professionals may also find the content useful.

Produced by Sava, you will find technical articles, regulation updates and interpretation and best practice. We hope you find this useful in your day-to-day work and we welcome any feedback you may have and suggestions for future publications.

Who we are

We are a team of building physicists and engineers, statisticians, software developers, residential surveyors, gas engineers and business management specialists.

CONTACT

Head office

4 Mill Square Featherstone Road,
Wolverton Mill,
Milton Keynes,
MK12 5ZD

01908 672787

bulletins@sava.co.uk

www.sava.co.uk
https://resources.sava.co.uk

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CAN WE REALLY REDUCE THE DEMAND FOR ENERGY IN RESIDENTIAL PROPERTIES IN THE UK BY 2035?

EXPLORING THE TECHNICAL, FINANCIAL, BEHAVIOURAL, AND POLITICAL BARRIERS

JOHNNIE LEATHER, BA CLASSICAL CIVILISATION, MA SOCIAL AND PUBLIC POLICY, PUBLIC POLICY RESEARCHER, SAVA

To prevent global climate temperatures from surpassing 1.5°C above pre-industrial levels, most countries signed the Paris Climate Agreement. For this agreement to be met there is a need for every nation to massively decarbonise. The UK government took ownership of their part in this in 2019 when they passed legislation to meet net zero greenhouse gas emissions by 2050. With the housing sector accounting for 17% of the UK's emissions in 2019, it is evident if we are to achieve this, domestic energy demand must be reduced.

Introduction

Is there a genuine potential to reduce the demand for energy consumption in residential properties in the UK by 2035 or is this just wishful thinking?

If we agree that this is not up for debate, then what are the technical, financial, behavioural, and political barriers to achieving this?

The findings from academic research indicate that there is a cost-effective potential of reducing energy demand by 25% and a technical potential of 55%, however, fundamental financial, political, and behavioural barriers are currently prohibiting this. For these barriers to be overcome there is a need for decisive national policy that will fund and inform.

Setting the scene

It has been estimated that approximately 80% of current properties will still be in use by 2050, meaning it will be impossible to reach net zero homes without significantly improving the energy efficiency of our existing stock.

To work toward this target, the government set an interim goal of improving every home to a minimum EPC rating of band C by 2035. However, the government are far off reaching this, with the Green Alliance estimating that currently, only 29% of homes are at a band C level. In addition, the UK's housing stock is thought to be the least energy efficient in Europe, further displaying the potential and need to cut emissions via retrofitting.

Unfortunately, this is not new information. Retrofitting UK housing has long been seen as one of the most cost-effective and technologically ready sectors for greenhouse gas emissions reductions.

With space heating accounting for 63% of household energy usage this is the key area to target for reducing emissions. When the current cost of living crisis is also taken into consideration - with millions more being pushed into fuel poverty following drastic increases to the energy price cap - it becomes evident the benefits are multifaceted and the need for change urgent. On top of this, the ongoing turbulence of the international energy market warrants further support for greater fuel security which can be achieved by reducing our domestic energy demand.

With the potential to fulfil a multitude of agendas by pursuing enhanced domestic energy efficiency, it poses the question - why has so little progress been made?

Policy background

The UK has had a series of stop-start national retrofit programmes. Past examples include: -

- The Green Deal, which offered loans to improve the energy efficiency of homes, paid back through bills savings
- The Warm Front, which offered grants to low-income energy inefficient homes
- The Carbon Emissions Reduction Target, which required energy suppliers to achieve reduction targets for carbon emitted by customers

Whilst these programmes saw some energy demand reduction, they were not particularly successful. With the government's most recent scheme, the Green Homes Grant, also coming to an untimely end after receiving minimal uptake, there is a policy gap for national funding of retrofit.

Given this context, there are two key questions: -

1. What is the greatest potential energy demand reduction offered by retrofit in the UK by 2035?
2. What are the most significant barriers to achieving energy demand reduction via retrofit?

Which leads onto a third: is there a need for a national programme to fund retrofit, replacing the Green Homes Grant?

What is the greatest potential energy demand?

To answer these questions information has been gathered from a variety of different literature sources such as academic journals and reports from the government and not-for-profits. The full quantity of technically possible retrofit measures in the UK is depicted in *Figure 1.*, with the left side highlighting the specific measure.

The chart is also divided into three portions, where each percentage represents a different scenario: -

- Limited ambition is what the UK is currently on track for by 2035 based on policy continuation
- Cost-effective scenario, which includes measures that could be deployed by 2035 and deemed cost-effective according to the UK governments appraisal criteria for public policy and projects
- Technical potential is the remaining portion and represents what is achievable if all possible retrofit measures were to be carried out.

An estimate of the mitigation potential of implementing the retrofit measures of each scenario is shown in Figure 2. Based on the literature's findings, the cost-effective scenario, yielding a 25% energy reduction is the most plausible for the UK. This is because whilst the technical potential would offer greater reductions, it is widely agreed there are too many barriers for this scenario to be fulfilled.

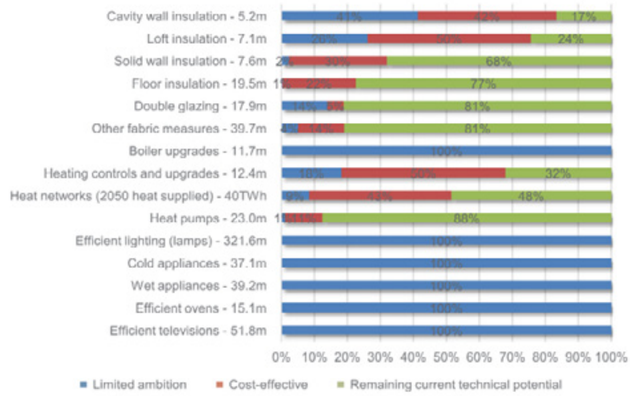


Figure 1. Estimate of the remaining number of measures available for improving the energy efficiency of the housing stock. Each bar is split into the proportion of ease with which the measure can be carried out (Rosenow et al, 2018).

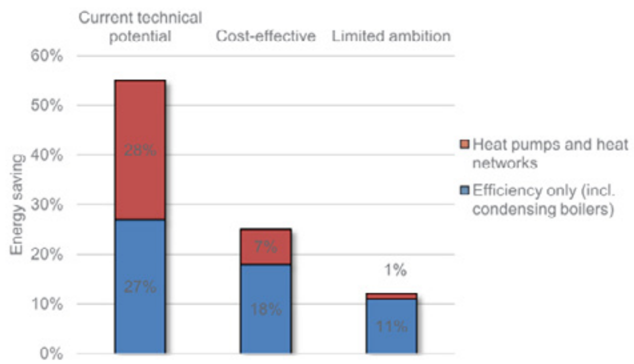


Figure 2. The estimated potential for energy savings in the existing housing stock as a percentage of 2015 energy consumption (Rosenow et al, 2018).

The estimated 25% energy reduction in the housing stock is achieved by carrying out all the cost-effective retrofit measures listed in Figure 1. compared to a baseline scenario where no efficiency improvements are made. The measures are carried out at a rate informed by their historical deployment, following a traditional S-curve trajectory for market diffusion. This figure has been adjusted to consider a rebound effect of 15% as commonly used as a rough estimation. The justification for the cost-effectiveness of these measures is based on a discount rate of 3.5%, and accounts for energy cost savings, greenhouse gas emissions reductions and places a monetary value on improvements in comfort and air quality.

What are the most significant barriers?

The reviewed literature identified four key categories which most of the barriers can be split into: Technical, financial, behavioural, and political.

Paper	*Barrier category*			
	Technical	Financial	Behavioural	Political
Alabid et al (2022)	9	8	6	2
Bankers for Net Zero (2020)	0	3	3	1
Serrenho et al (2019)	2	3	1	1
Camprubi et al (2016)	1	4	4	1
CCC (2019)	10	11	3	4
CCC (2021)	0	2	0	1
Dowson et al (2012)	4	4	3	1
Fylan et al (2016)	4	4	4	1
Gillich et al (2019)	3	1	0	2
Green Alliance (2019)	1	2	3	1
Gupra, Gregg (2016)	3	1	3	1
Hamilton et al (2013)	2	1	1	0
HM Government (2021)	2	3	0	0
Jones, Patterson (2013)	3	4	1	0
Kaveh et al (2018)	3	4	5	1
Kerr, Winskel (2020)	1	2	2	3
Li et al (2022)	2	1	1	1
Lingard (2020)	4	2	4	1
McManus et al (2010)	2	2	2	1
Rosenow et al (2018)	3	2	1	2
Wade, Eyre (2015)	1	2	2	1
Total	***60***	***66***	***49***	***26***

Figure 3. The individual barriers mentioned in each fully reviewed piece of literature grouped by category.

Figure 3. illustrates the number of times an individual barrier was mentioned for each of the four key categories from the reviewed sources. Financial barriers were the most frequently occurring, with an individual financial issue being mentioned a total of 66 times in all sources. Closely following this is the technical category with 60 and finally the behavioural and political on 49 and 26, respectively. Whilst Figure 3. shows which categories have the most individual barriers, it is limited in that frequency does not equate to significance.

Of all the identified barriers for each category there were a few recurrent issues which are clearly the most prohibitive to domestic energy demand reduction. These are shown in the table on the right

Technical barriers include: • hard to treat homes • under-skilled construction industry • disruption to home life • accurately estimating energy savings	Financial barriers include: • long pay back periods • high upfront costs • cost-effectiveness • split incentives.
Behavioural barriers include: • split incentives • disruption to home life • aesthetics of the house • environmental knowledge	Political barriers include: • lack of long-term policy • lack of effective policy

Is there a role for the government?

It is unanimous that government intervention is required to encourage retrofit uptake. Not only were barriers relating to the high cost of implementing measures mentioned 66 times, but the importance of public policy to influence the market by simultaneously addressing supply and demand stakeholders also came up frequently.

When policy recommendations were made in studies, they always mentioned the need for government funding to support private-sector investment, further emphasising the need to replace the Green Homes grant.

What is possible – physical barriers

In theory, there are a vast number of retrofit measures that could be carried out. Figure 1 estimates a total of 608.4million individual measures that could be taken to improve the efficiency of the UK housing stock. So, why is there still so much to do? Well, to better understand the gap between technical possibility and reality, we need to assess the significance of the key barriers from each category, starting with technical.

The decision on how to target retrofit measures is a complex one, with there being two fundamental approaches:

- shallow retrofit
- deep retrofit

Retrofit measures do not equally impact efficiency as they are highly dependent on building form, condition, and typology. This means not all properties are suitable for deep retrofitting. Additionally, as the UK has the oldest housing stock in Europe, this brings unique challenges when trying to improve domestic energy efficiency. With older homes being both less energy efficient, therefore require more action to reach a net zero level and less uniform, this makes it difficult to employ a nation-wide approach, such as Passivhaus in Germany or Energiesprong in the Netherlands.

> A study by Gupta & Gregg (2016) where a full house approach like Energiesprong was taken demonstrated emissions reductions of 75% for a Victorian house but only 53% for a modern house (as compared to the retrofit programme baseline). Additionally, a whole house approach may not be appropriate for the whole of the UK as even the better performing of the two houses reduced emissions by 75%, 25% short of the net zero standard of Energiesprong.

To harness the greatest possible energy savings from the UK housing stock, a more tailored 'low energy first, then low carbon' approach would be more appropriate. This should be done by initially targeting fabric insulation, a strategy supported by Professor Sarshar, co-author of Scaling Up Retrofit 2050, who claimed it to be the simplest approach and the first step for the future of retrofit. As solid walls, typically found on pre-1919 homes are the least efficient wall type, prioritising insulation on these kinds of homes would offer the best return on energy savings. Where installing multiple insulation measures is an option, this should be done as studies prove emissions reductions can reach around 40% when multiple measures are taken.
Once a high level of insulation is achieved, heat pumps should be deployed at a rapid rate surpassing the current yearly rate of 600,000. As the increased deployment of heat pumps will place greater stress on the energy grid, electricity generation will have to be scaled up accordingly.

If this is done effectively by utilising green generation, there is potential to massively reduce domestic emissions. This is because not only are heat pumps much more efficient, therefore, require less energy than traditional boilers, but as 83% of homes rely on gas for heating and hot water the switch to electricity-powered heat pumps will drop emissions further. Especially if the grid continues to decarbonise at the same scale, it is now, averaging a 9% emissions reduction each year from 2009 to 2019.

Despite the results displaying a high number of individual technical barriers, this overstates the actual significance of technical obstacles, as financial and behavioural problems are often generators to many technical barriers. For example, the technical barriers of hard-to-treat homes would be reduced if more funding was available to cover the added excess of retrofitting hard-to-treat homes. Similarly, the barrier of disruption to home life is dependent on the resident's tolerance to the retrofit, which stems from their perceived value of it, a core behavioural barrier.

What is possible – other barriers

So, what about the financial, behavioural, and political barriers?

One key behavioural barrier for the 'able to pay' is a lack of environmental concern. This is a serious issue as it means even when there are none of the other typical barriers like high upfront costs, efficiency improvements are still not made. With present hikes in energy prices this barrier may become less of an issue as there is now greater financial incentive for the 'able to pay' to reduce their energy demand. Equally, with reports such as the recently published 'Buying into the Green Homes Revolution, Santander October 2022' highlighting the growing market demand for green homes, it will be interesting to see if and how quickly this barrier is removed.

> Many people would like to make green improvements to their home, both to protect the environment, but also because they see it as a way of bringing down their own energy bills in the future. What's often less known is that retrofitting now puts a price premium on our homes, with better EPC (Energy Performance Certificate) ratings, insulation, solar panels and heat pumps fast becoming levers in the housing market.

Source: Buying into the Green Homes Revolution, Santander October 2022 https://www.santander.co.uk/assets/s3fs-public/documents/buying_into_the_green_homes_revolution_report.pdf

Perhaps the most significant and certainly the most frequently mentioned barrier to retrofitting homes is the cost, with all measures from basic insulation improvements to high-tech PV panels having a considerable upfront cost. This means even when a homeowner might wish to improve their energy efficiency or where measures reduce bills enough to pay for themselves in the long run, many still can't afford to part with the money in the first place. This is where national funding policy must come in.

The literature coincides with this, suggesting energy demand reduction via retrofit can't reach its full potential without supportive government policy. One solution, though lacking extensive evaluation, would be to give greater policy control to local authorities. This could be done in a system like the 'Better Buildings Neighbourhood Program' (BBNP) from the US, that awarded funding to the best local level retrofit programmes, so long as they met government standards. This works well as it ensures there is national funding for retrofit measures whilst simultaneously allowing local authorities to devise a programme tailored to their specific housing stock. Equally with all programmes complying to the same set of national quality criteria the BBNP maintained an adequate country-wide level.

Whilst there are some local level programmes already established in the UK like the Greater Manchester Retrofit Accelerator, an initiative run by the Greater Manchester Combined Authority but funded by the government through their Green Homes Grant Local Authority Delivery Scheme (LAD). Programmes like this are few and far between. Undoubtedly caused by the uncertainty of future LAD funding, with the government yet to announce another round of support since their second Phase, Phase 1B which closed December 4th 2020.

Considering one scholar, Gillich, explicitly stated the possibility of transferring the successful programme steps of the BBNP to the UK market and the previous flurry of failed nationally run programmes - the argument for more local retrofit programmes supported by government funding is compelling.

Conclusion

Overall, it is undisputed there is great untapped potential for reducing household energy demand via retrofit. Whilst the initial findings suggested that financial and technical barriers are the most prohibitive to retrofit, after a deeper analysis of the four categories, it is clear the impact of the technical barriers are limited. Instead, the financial, behavioural, and political barriers seem to bare the most significant problems to achieving real household energy demand reduction.

In addition to this, there is a need to further evaluate the applicability of increased local level retrofit programmes like the Greater Manchester retrofit Accelerator across the country. As the current research into retrofit policy of this kind upholds the suitability of a series of local authority lead UK programmes, it is worthy expanding on this to gauge the full policy potential.

Finally, as the focus of this piece was the potential for domestic energy demand reduction by 2035, the findings serve as an indicator that the government will struggle to reach net zero by 2050 without much more ambitious action and policy.

Johnnie Leather, BA Classical Civilisation, MA Social and Public Policy, Public Policy Researcher, Sava

Johnnie Leather is a Public Policy Researcher. He has an MA in Social and Public Policy and carries out research on energy policy and sustainability in the built environment.

CLIMATE CHANGE

HOW IT AFFECTS OUR HOMES

HILARY GRAYSON BSC EST MAN (HONS) DIRECTOR OF SURVEYING SERVICES, SAVA
TIM KENNY ASSOCRICS, TIM KENNY SURVEYING LTD

After a year of extreme weather events and in the month that the RICS launched its revised consumer guide on flooding warning that extreme flooding could become more common in the UK due to the effects of climate change, we look at climate change and how it might impact on our homes.

Introduction

It is now accepted that climate change poses a significant global threat. Governments, their agencies and big and small corporations have announced climate emergencies and made commitments towards Net Zero emissions across a range of target dates.

Regulators, including the Bank of England, have tasked the financial institutions under their authority in both the insurance and banking sectors to stress test their existing portfolios and ongoing lending practices against existing and emerging climate-associated risks such as flooding, coastal erosion, storm, and subsidence, and to produce forward facing forecasts across the perils and the natural, physical and societal risks.

If the primary function of our houses is to provide shelter, then surveyors have a role to play when advising their clients on the resilience, or otherwise, to climate change of the property they are inspecting. From rainwater goods to overheating, it is important to understand how more extreme and frequent weather patterns could shape how we live in our homes and what can be done to mitigate the associated risks. In this article, we consider how climate change could impact homes in general.

Climate change in a nutshell

Whilst science tells us that the temperature of the planet has fluctuated throughout history, since the 1850s, average global temperatures have risen by more than 1°C and it is now accepted that human activity, particularly since the industrial revolution, has contributed to this rise in temperature over the last 170 years.

The United Nations defines climate change as:
"Climate change refers to long-term shifts in temperatures and weather patterns. These shifts may be natural, such as through variations in the solar cycle. But since the 1800s, human activities have been the main driver of climate change, primarily due to burning fossil fuels like coal, oil and gas.

Burning fossil fuels generates greenhouse gas emissions that act like a blanket wrapped around the Earth, trapping the sun's heat and raising temperatures."

The 2016 Paris Agreement came into force in November 2016. This is a legally binding international treaty on climate change and was adopted by 196 parties at the twenty-first session of the Conference of the Parties (COP). The intention of the agreement is to limit global warming to well below 2, preferably to 1.5 degrees Celsius, compared to pre-industrial levels.

From this, the UK made a target to reach 'net zero' by 2050, meaning any greenhouse gas emissions produced will be less than or equal to the amount taken away. There are various papers and policies that have been published, and the Committee on Climate Change (CCC), an independent, statutory body established under the Climate Change Act 2008, have been a key driver in pushing for legislation and action to be taken in the UK. (There is more about the Committee on Climate Change here https://www.theccc.org.uk/)
For the UK, the key environmental perils being reported are:

- Flooding (surface, and coastal)
- Coastal Erosion
- Ground Subsidence
- Windstorm

Property professionals are ideally placed to use their core skill set to recognise the risks and advise on how to improve a property to lower its contribution to climate change and achieve net zero.

Subsidence

According to the Met Office, 2022 was the 6th driest summer on record (103mm) for England, and the driest since 1995 (66mm), with southern England experiencing the driest summer on record. For the UK overall, it was the 10th driest summer (156mm) and the driest since 1995 (106mm).

With dry weather comes the risk of subsidence, and according to the 'This Is Money' website, the total number of subsidence insurance claims for 2022 is likely to surpass 2018's record (when 23,000 claims were made amounting to a bill of £145m). The insurer LV has already reported a 205 per cent jump in claims between June and July, and 'This Is Money' website indicates that other firms are reporting cases rising five-fold.

Subsidence can impact on the value of a property, and some lenders will often refuse to offer a mortgage until any subsidence has been resolved. While there are home insurance policies that will cover for subsidence, firms will ask new customers if there has been a problem in the past. If there have been issues, some insurers will refuse cover and premiums can be more expensive. The RICS has produced a consumer guide on subsidence, and it can be found here: https://www.ricsfirms.com/media/1196/rics-consumer-guide-subsidence.pdf
Of course, not all subsidence is the result of seasonal changes in shrinkable clays, and it is imperative that surveyors understand the underlying soil conditions, the range of potential problems that may occur and how they may impact the subject property. As part of the Sava Diplomas (both the 'Residential Surveying' and 'Residential Surveying and Valuation' qualifications), there is detailed content on where residential properties are built and the issues around site investigations (including environmental considerations, online research, watercourses and flooding), environmental considerations, testing, and hazards. The subject is too broad to go into detail in this article.

Overheating

When talking about net-zero there has been a considerable focus on insulating homes, making them more airtight to reduce heat loss and therefore using less energy to generate heat. If we have the heating on in the winter and feel hot, we can turn it down. However, when the temperatures are high and during heatwaves, homes can receive too much 'solar gain' and can overheat.

Following the 2022 heatwave (when some locations recorded temperatures in excess of 40 degrees Celsius for the first time ever) initial analysis by the UK Health Security Agency (UKHSA) indicated that there were an estimated total 2,803 excess deaths in England in the age group 65 and over (this excluded coronavirus). This is the highest excess mortality figure during heat-periods observed since the introduction of the Heatwave plan for England in 2004 and from 17 to 20 July, when temperatures were at their highest, there were an estimated 1,012 excess deaths in those aged over 65. These figures demonstrate the possible impact that hot weather can have on the vulnerable, often the elderly, and how quickly such temperatures can lead to adverse health effects in at-risk groups.

Of course, not all subsidence is the result of seasonal changes in shrinkable clays and it is imperative that surveyors understand the underlying soil conditions, the range of potential problems that may occur and how they may impact the subject property. As part of the Sava Diplomas (both the 'Residential Surveying' and 'Residential Surveying and Valuation' qualifications), there is detailed content on where residential properties are built and the issues around site investigations (including environmental considerations, online research, watercourses and flooding), environmental considerations, testing, and hazards. The subject is too broad to go into detail in this article.

There is a formal definition of overheating. The Chartered Institution of Building Services Engineers (CIBSE) define overheating as: 'conditions when the comfortable internal temperature threshold of 28°C is surpassed for over 1% of the time.' CIBSE also defines 35°C as the internal temperature above which there is a significant danger of heat stress.

A study led by Loughborough University, in partnership with the BRE, found that 4.6 million English bedrooms (19% of the stock) and 3.6 million living rooms (15%) were subject to overheating (these results were weighted to the national housing stock).

The other key findings from the study were:

- Overheating was more prevalent in bedrooms at night than in living rooms during the day.
- The prevalence of living room overheating was significantly greater in flats (30%) than other dwelling types.
- Improved fabric energy efficiency did not significantly

increase the risk of overheating.
- The prevalence of monitored overheating was greater in households living in social housing, with low incomes or with members aged over state pension age.

Approved Document O – Overheating only came into effect in June 2022. The new regulations are likely to have an impact on the design of future homes, particularly in 'high-risk' areas like London. Requirement O1 states:

Requirement

Requirement	*Limits on application*
O1 Overheating mitigation	
(1) Reasonable provision must be made in respect of a dwelling, institution or any other building containing one or more rooms for residential purposes, other than a room in a hotel ("residences") to— (a) limit unwanted solar gains in summer; (b) provide an adequate means to remove heat from the indoor environment.	
(2) In meeting the obligations in paragraph (1)— (a) account must be taken of the safety of any occupant, and their reasonable enjoyment of the residence; and (b) mechanical cooling may only be used where insufficient heat is capable of being removed from the indoor environment without it.	

The document details a 'simplified method' for demonstrating compliance with the above requirement whereby the strategy to reduce overheating risk should be selected according to the location of the new residential building and whether it has cross-ventilation.

The alternative method involves dynamic thermal modelling for demonstrating compliance.

The document lists strategies for limiting solar gains, including fixing shading devices such as shutters, external blinds, overhangs, and awnings.

It also states excess heat should be removed by any of the following means:
- Opening windows
- Ventilation louvres (A set of angled slats that allow air or light to pass through) in external walls
- A mechanical ventilation system
- A mechanical cooling system

There is a useful article here on overheating in buildings and design strategies that might help.

In 2016 the BRE published an assessment protocol for Overheating in Dwellings. The protocol sets out how to inspect a property, which will be more than familiar to surveyors, but it also includes recording the occupiers (since different occupiers will have different susceptibility to overheating). It also discusses how to identify the characteristics and deficiencies likely to increase excessively high indoor temperatures, and also those that may mitigate against high temperatures or provide protection.
Matters increasing the likelihood of overheating:

- Located in an urban heat island – resulting in relatively high external night-time temperatures.
- Located on the top floor of an apartment block – increasing heat gain.
- Located at ground level or adjacent to an access balcony in an apartment block – possible lack of security deterring opening of windows.
- Located adjacent to a busy road, railway lines, industrial plants, or airport – sources of noise deterring the opening of windows.
- Windows to rooms facing South through to West – increasing solar heat gain.
- Little thermal insulation – increasing heat gain.
- Highly insulated and relatively air-tight (i.e. tightly fitting doors or windows) – retention of internally generated heat and solar heat gain.
- High thermal mass – retention of heat to be given off at night.
- Single aspect apartment facing South through to West – high solar heat gain and no means of through-ventilation.
- Little or no insulation of internal heat sources – e.g. un-insulated hot water tanks and pipes.

It also notes those matters that provide protection from overheating:

> An urban heat island is an urban/metropolitan area that is significantly warmer than its surrounding rural areas because such locations replace the natural land cover in rural areas with concentrations of pavements and roads, buildings, and other surfaces that absorb and retain heat.

- External greenery in urban areas – that can reduce reflected heat.
- Windows to rooms facing North through to East – providing 'cool' rooms.
- External shutters, blinds or awnings to windows facing South through to West which can prevent solar heat gain.
- Internal shutters, blinds or heavy curtains – providing a small reduction in solar heat gain.
- Thermal insulation to roof – reducing heat gain.
- Windows to rooms to first floor or above – allowing night-time purge ventilation.
- Air conditioning – reducing internal ambient temperatures.

The above are not issues that surveyors would currently consider within their remit, but if we see a rise in the incidence of extreme heat events this may be something surveyors should consider including, particularly if they are aware of the vulnerability of clients.

There is more about the BRE assessment protocol here https://www.designingbuildings.co.uk/wiki/Overheating_-_assessment_protocol

Extreme wind and rain

Wind

Although they have been surpassed by other extreme weather events in 2022, we should remember that in February 2022, three named storms affected the UK within the space of a week. It was the first time that this had occurred since storm naming was first introduced in 2015/2016. The Met Office issued two rare red warnings for storm Eunice, the most severe and damaging storm to affect England and Wales since February 2014. Eunice battered exposed coastal locations with winds gusting at over 81mph, with one gust of 122mph recorded at Needles Old Battery on the Isle of Wight. This was a new England gust speed record.

These storms were part of a turbulent spell of wet and windy weather for the UK that was associated with a powerful jet stream. Storms Dudley and Franklin also brought winds gusting widely at over 69mph across southern England.

These storms created mayhem. The Met Office reports that four people died in the UK and Ireland as a result of falling trees, and in excess of 1 million homes were left without power due to damaged powerlines. The ongoing power cuts lasted several days, also affecting schools and businesses, and there was major transport disruption, with trains cancelled and roads blocked by fallen trees and overturned lorries. It has been estimated that Eunice caused in excess of £360 million worth of damage in the UK.

There is more about the impact of Eunice, Dudley and Franklin here https://www.ambientalrisk.com/impact-of-storms-dudley-eunice-and-franklin-in-the-uk/

Obviously, strong winds can damage buildings, the classic examples being slim chimneys, damage from falling trees, and damage to roofs. Clearly, where there is already a weakness, a structure is going to be more susceptible to wind damage. This is also true if a property is in an exposed location.

The question as to whether surveyors should comment on risks of storm damage is likely to be very controversial, but certainly it is valid for surveyors to advise clients that the existing condition may impact any insurance claim relating to storm damage. The financial ombudsman investigates complaints where an insurance claim has been declined because there's a dispute either about what actually constitutes a 'storm' or whether the damage was actually caused by a storm. In investigating this, they will investigate if the main cause of the damage reported was due to a storm event or if there were other factors that meant the damage might have happened anyway.

Flooding

Flood risk comes from a variety of sources such as rivers spilling into their flood plains, high tides, and storm surges inundating coasts and estuaries, rainfall running off land, drainage systems being overwhelmed or ground water rising from below.

According to the third UK Climate Change Risk Assessment (CCRA3) Evidence Report 2021 (https://www.ukclimaterisk.org/wp-content/uploads/2021/06/CCRA3-Briefing-Housing.pdf)

"Flooding is already a severe risk to UK housing and is projected to increase with climate change. Flooded homes can cause long-term and severe impacts on mental health and wellbeing, alongside the obvious damage to property. This risk is already high magnitude with 1.9 million people across all areas of the UK exposed to frequent flooding from either river, coastal or surface water flooding, and is projected to increase even further in the absence of higher levels of adaptation."

The risk of flooding to people is considered one of the most severe climate hazards for the population, both now and in the future, with 1.9 million people across the UK currently living in areas at significant risk from either river, coastal or surface water flooding. According to CCRA3 this number could double over the next 25-30 years.

As property professionals, we usually just consider the impact on buildings, but flooding can have a significant impact on those who experience it through:

- Death or injury directly attributed to flooding (currently this is relatively small)
- long-term and severe impact on mental health and wellbeing
- financial implications
- disrupted access to employment, education and health provision
- illness from water-borne pathogens or chemical contaminants arising from floods.

Of course, water can impact a property and its inhabitants in other ways, not just through flood damage. While there is no direct evidence which links other issues directly to climate change, water can have a significant impact on both the property fabric and the occupants. Indoor air quality will impact occupant health and wellbeing and may cause or aggravate allergic and asthma symptoms, airborne respiratory infections, chronic obstructive pulmonary disease, cardiovascular disease and lung cancer.

A flood risk check is an important and established part of the surveyor's role so a buyer can make an informed choice and obtain adequate insurance cover should they purchase the property at risk.

Flood insurance is possible for a home at increased risk of flooding. Policies do vary but for buildings insurance, cover can include the removal of debris, drying your home over an extended period, repairs to structure, repairs to fixtures and fittings and legal expenses. For contents cover, furniture, appliances and carpets can be covered.

If a property is in an area which is considered at higher risk of flooding, it can be harder to find a mortgage for the property. However, there are usually mortgage options which will vary depending on the significance of the flood risk, with lenders reluctant to lend when they perceive the property as risky. Lenders may offer to lend but subject to the homeowner having sufficient insurance cover in place.

Some lenders are also more sophisticated at assessing the risk to individual properties even though a location may be identified as being at high risk; this would be where flood mitigation has been considered, for example, if the ground floor of a property is above the ground level.

Flood Re is a joint government insurance industry initiative that makes insurance available and affordable for homes affected by flooding.

Flood Re take on the high flood-risk elements of home insurance and works as follows:

- They collect an annual tax from home insurers in the UK. This levy raises £180m every year that Flood Re use to cover the flood risks in home insurance policies.
- The insurer passes on any high flood-risk part of the policy to Flood Re and takes responsibility for the flood-risk part of the policy. When a valid claim is made against a policy, Flood Re reimburses the insurer from the central fund.

Over time, it is estimated that Flood Re will benefit over 350,000 households by providing access to more affordable policies.

Homes of the future?

As 'once in a century' weather events are turning into 'twice in a decade' weather events, then it is inevitable that the way we build, adapt, insure and value our homes will have to change and surveyors will have to adapt the way they report on and advise clients. We would be interested to hear your views on this and how you are already adapting your practice.

Hilary Grayson BSc EST MAN (Hons),

Hilary Grayson BSc EST MAN (Hons) is Director of Surveying Services at Sava and is focused on developing new qualifications, as well as Sava's activities within residential surveying. Hilary has a wealth of experience within the built environment, including commercial property, local government and working at RICS.

TIM KENNY AssocRICS, TIM KENNY SURVEYING LTD

Tim is a residential surveyor and runs his company, Tim Kenny Surveying Ltd. Alongside his day-to-day work, Tim is also responsible for the Residential Building Defect and Defect Database content on isurv.com, and a trainer for the Sava Diploma in Residential Surveying and Valuation. More content from Tim can be found on his YouTube channel or through LinkedIn.

DOMESTIC BATTERY STORAGE

A SOLUTION TO THE ENERGY CRISIS?

JOHNNIE LEATHER, BA CLASSICAL CIVILISATION, MA SOCIAL AND PUBLIC POLICY, PUBLIC POLICY RESEARCHER, SAVA

Johnnie Leather discusses the prospect of using domestic battery storage to power our homes and how they can help combat the ongoing energy crisis.

The use of batteries in our society is now an everyday occurrence from torches to cars. However, the concept of using batteries to power our homes may seem a strange thought. Yet this is fast becoming a reality with companies like Tesla and Moixa producing their own domestic energy storage units. In this article we explore the use of batteries in the home.

Why domestic energy storage batteries?

Using batteries for domestic energy storage has two key benefits. They can provide a clean alternative to grid-supplied electrical energy, and they have the potential of offering considerable economic advantages to consumers via savings on energy bills.

Domestic batteries are most effective when used in conjunction with solar PV panels as they can store excess electricity generation. With domestic energy demand patterns not always matching that of solar generation, a battery can store excess electricity when generation is high, but demand is not. This energy can then be used when demand is high, but generation is low, like at night-time, maximising the generated electricity. This not only saves an occupier money on their energy bill by reducing their use of grid electricity, but it is also far greener than grid electricity as it comes direct from solar generation.

New time-of-use tariffs can also be used to optimise the benefits of batteries. Like economy 7 tariffs, time-of-use tariffs charge different electricity prices at different times of the day, reflecting the wholesale cost. Households can then utilise the prices offered by the tariff, charging up their battery at the cheapest times to use at their convenience, offering great economic advantages. As renewable energy is the cheapest form used by the grid, electricity during the lower costing periods tends to be less carbon-intensive too, creating another environmental benefit to battery use.

Despite clear financial and environmental benefits, the uptake of batteries in domestic properties has been limited by high upfront costs. Whilst this is starting to change with the rising adoption of Electric Vehicles (EVs) helping to bring down the price of modern lithium-ion

(Li-ion) batteries, for many, domestic batteries are an unrealistic expense in today's circumstances.

What are domestic energy storage batteries?

The most common types of domestic energy storage batteries are lead acid. A lead acid battery is a type of rechargeable battery that uses a chemical reaction between lead, water, and sulfuric acid to store electrical energy. The technology is not new, and the batteries are proven to be robust, reliable, and cheap to make and use.

While lead acid batteries can still be a good choice, newer lithium batteries technologies are rapidly improving with the benefit that the batteries are likely to become more convenient and compact.

An important driver of Li-ion technology uptake is the establishment of a good recycling market. Currently, due to the relative infancy of large Li-ion batteries there is yet to be a robust recycling market for them. Whilst there are some companies carrying out recycling services like GS Yuasa Corporation, it is a fragmented market with no overly dominant figures. As the use of Li-ion batteries continues to rise, the recycling market will also grow as this will create more demand for it. This will result in the cost of Li-ion batteries dropping further, making them more accessible and increasing their uptake.

Batteries vary in size, weight, and storage requirements between brands. However generally, batteries can operate at temperatures from -20°C to 50°C degrees, require access to the home's electrical wiring, weigh anywhere from 100 to 250kg and are often floor-mounted and fixed against a wall. Batteries have similar noise levels to a fridge, and it is recommended they are kept inside for optimal operation and to avoid risk of vandalism. For all these reasons, the ideal storage space for a battery is in a garage or a utility room.

As a garage or utility room is not an option for everyone, there is also potential to keep batteries on the wall in rooms like the kitchen or living room. Whilst this only really works with smaller battery systems, as domestic batteries become more common and the technology more compact, this could be the norm, with batteries consciously designed to incorporate with the interior of homes. This is a direction Moixa seem to be heading in, with pictures on their website displaying wall-mounted batteries assimilating with their surroundings.

Technology development

Looking to the longer term there is an array of emerging energy storage technologies such as flow batteries, metal air batteries, supercapacitors, flywheels, and hydrogen batteries to name but a few. As many of these are currently used on an industrial scale, it is likely we will have different, even more effective types of domestic energy storage batteries in the future.

Batteries and energy security

Batteries have an important role to play in improving the UK's energy security by reducing grid demand. The UK's energy supply is partially reliant on importing electricity, which makes us susceptible to the volatility of international energy markets. This limits the security of both our energy supply and pricing, but with greater use of domestic battery storage, there is an opportunity to reduce import requirements, support grid balancing and increase security.

One way batteries reduce grid demand is by storing excess solar PV generation which allows homes to utilise their own generation and reduce their reliance on grid electricity. This gives heightened supply security to both battery owners, who can rely on their own generation, and the UK, by cutting overall grid demand and therefore importation requirements.

A slightly more complex way in which batteries can increase energy security is by assisting with grid balancing schemes. As part of many tariffs offered to battery owners, energy companies are allowed to take energy from batteries when supply is struggling to keep up with demand. This is known as grid balancing and will be especially important this winter with fears of energy supply shortages caused by Russia constraining its gas supply to Europe.

Another interesting feature of domestic batteries is that they can power homes in an outage. Due to the current size of most systems, it is unlikely they will be able to power everything, with essential and non-essential loads normally separated. But it still offers another form of security, which, unfortunately, may be needed this winter if the UK's supply is not properly managed.

Available options

Tesla is probably the most familiar of the modern residential battery options because of the success of the Tesla EV. But, like the cars, they come at a premium. The Tesla Powerwall 2 costs between £6,700 to £8,700, has a capacity of 13.5kWh, a peak power output of 7kW and a continuous power of 5kW. This means they are not necessarily a cheap alternative to grid electricity, although with the cost of Li-ion batteries constantly declining and the cost of fuel on the up, it is likely they could reach price parity soon.

Moixa, however, provides cheaper alternatives, offering three different capacity systems. Their cheapest option, the 4.8kWh 'smart battery' comes in at £4,450, whilst their larger system the 'optimised battery' comes in either 7.2 kWh or 9.6 kWh systems, costing £5,250 or £6,250 respectively. All of which are cheaper but also lower capacity than the Tesla Powerwall 2.

When it comes to batteries, bigger does not always mean better. An oversized battery can be an unnecessary expense as it will be more costly than a smaller battery, yet the extra storage space is redundant if not used. On the other hand, too small a system will mean a house can't store all its excess solar generation and will have to export it to the grid. Therefore, it is important the battery is an appropriate size for the specific house, their usage levels, and the amount of solar energy they generate.

Policy context

Unlike other energy-saving green technologies like PV panels and heat pumps, there is currently no government policy to solely support the uptake of domestic batteries. One way the government could fit batteries into their net zero plans is via community battery schemes. These work by splitting the costs and benefits of PV's and larger centralised batteries between members of the local community. By sharing the system, the individual risk and cost drops which could encourage uptake. The government could further increase these kinds of schemes by partially funding them through grants or loans. This would have a multitude of benefits for the UK, from reducing emissions, to creating energy-secure community 'microgrids' and even providing more energy storage units to aid grid balancing programmes.

Although the government is yet to fully utilise batteries in their net zero strategy by supporting consumers to enter the market, the energy saving properties of batteries are now recognised in SAP. SAP version 10.2 rewards new homes with a battery in conjunction with PV panels with a higher SAP rating.

In the current climate of high energy bills, supply insecurity and empty net zero targets, domestic battery storage units are part of the solution to many of the energy problems the UK is facing. Equally, with the price of Li-ion batteries constantly dropping, it is a technology we can expect to see more of in our homes.

Living with a battery

Whilst this all sounds promising on paper, to get a feel for what it is like living with a battery, I spoke to Andy and Rob, who recently moved into a property with a fully integrated system. The four-bed, based in Gosport, Portsmouth, is on a new development built by the award-winning Elite NuGEN, who are renowned for prioritising sustainable practices in their work.

Their fully integrated Wondrwall system includes solar PV panels, a 6.5 kWh battery, an inverter, roof fitted heating panels, and smart switches which automatically adjust the heating and lighting to match the households use patterns. Pair this with the homes near-Passivhaus level of insulation and it makes for an extremely energy efficient home, estimated to have 75% lower running costs than an average house.

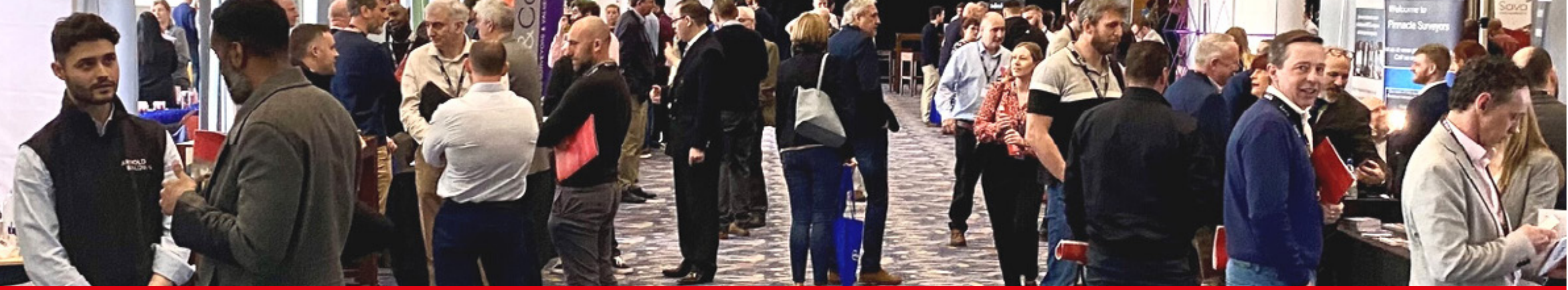
Andy and Rob praised the energy efficiency of the building, paying only £3.15 for a day's electricity on average in summer. A price that gets even lower when the £20.79 earned for exporting excess electricity to the grid in August is taken off the couple's bill.

Now it is winter and there is less solar gain, Andy and Rob have switched over to a time-of-use tariff. This was done automatically by their energy provider, Octopus, as part of their exclusive Octopus Go tariff which automatically switches customers to the best deal for them. Here, Octopus works with the system to understand their usage patterns and ensures their battery is never drained when they need it. This is one feature Andy and Rob were especially fond of, as it means they get the cheapest electricity, with no risk of being left without.

Although there were no complaints raised about the cheaper energy bills afforded by the battery and its fully integrated system, the same cannot be said for the usability of the system. Completely controlled by an app, Andy and Rob noted the complexity of setting up the system, which they would have struggled to do had it not been for a Wondrwall representative being on hand to assist. They also expressed difficulty trying to set their own heating and lighting controls rather than using the settings suggested by the system's AI. Having previously lived in a property with a similar system but a different app, Andy and Rob expressed their old Newheat system was far less complicated. However, they did also mention that the Wondrwall app is new so expect it to become more user friendly as it develops.

Johnnie Leather, BA Classical Civilisation, MA Social and Public Policy, Public Policy Researcher, Sava

Johnnie Leather is a Public Policy Researcher. He has an MA in Social and Public Policy and carries out research on energy policy and sustainability in the built environment.



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MAKING BUILDINGS BETTER

SAFETY GLASS

TYPES, STANDARDS, AND REPORTING

LARRY RUSSEN MA BSC FRICS FCABE C.BUILD.E, MFPWS PGCE

In this article, we look at some of the different types of glass used in residential property, the standards of safety glass, and the reporting requirements of residential surveyors.

Why is safety glass so important?
'Safety glass' is toughened or laminated so that it is less likely to splinter when broken, as well as less likely to break, compared to non-safety glass. Injuries caused by broken glass are relatively common in the UK. Broken glass from bottles, windows and glass doors can be extremely serious and lead to long-term scarring and serious lacerations, and even, albeit in extreme circumstances, death.

Ola Brunkert, the drummer of ABBA, died after falling through a glass door at his house in Spain in 2008. He had hit his head against a glass door in his dining room, which made the glass shatter and caused serious cuts in the back of his neck. Despite horrendous injuries, he had managed to wrap a towel around his neck and leave the house to seek help but collapsed in the garden.

Consequently, it is important to use safety glass in certain situations to reduce the risk of injury to occupants and users of a building/space. Surveyors should therefore be able to identify 'critical location' where use of safety is recommended, identify whether it is actually safety glass and recommend when action is required to reduce any risk.

What is safety glass?
The most common glass used today is Float Glass. The 'Float Process', where a continuous 'ribbon' of flat glass is formed on a bath of molten tin creating a glass that does not require polishing, was developed by Sir Alastair Pilkington in 1952. This enabled larger and more consistent panels of glass to be manufactured than previously. Float plants now produce glass panels up to 3 metres in width and between 0.4mm and 25mm thick. However, this glass product would be relatively fragile (cracking with a change in temperature or a small physical shock) unless it is 'annealed' at the end of the float process.

Annealing is where metal or glass is allowed to cool slowly, in order to remove internal stresses and toughen the final material by relieving any internal stresses in the glass. For example, copper tubing will be brittle if it is not cooled correctly after bending.
This 'annealed glass' is a product formed from the annealing

stage of the float process and is used as a base product to form more advanced glass types.

Tempered (or toughened):
Tempered (also known as toughened) glass is annealed glass that has been processed by controlled thermal or chemical treatments to increase its strength. The finished 'toughened' glass is much stronger than annealed glass. When tempered glass breaks, it does so into small, regular, typically square fragments rather than long, dangerous shards (the name of the Shard building in London references these shapes). For this reason it is the most common glass used for architectural applications such as balustrades.

Laminated:
Laminated glass consists of two layers of glass with a plastic film bonded in between them. If the glass breaks, the plastic film will hold the glass safely in position. Basic annealed glass can be laminated, but so can toughened glass. Laminated glass is commonly used where there is a security issue – the bonding film holds the glass together if it is broken. The strongest security glass can withstand close-range impact from explosives and guns.

Wire glass:
This glass includes a wire mesh to hold it in place if it breaks. Wire glass is used in fire-rated windows and doors as it meets most fire codes, However, it is not strengthened glass and is not safety glass.

Thickened Annealed glass gains its strength through its thickness. It is cheaper than other types of glass as it hasn't been through any additional manufacturing processes to strengthen it. The maximum dimensions for annealed glass of different thicknesses for use in large areas forming fronts to shops, showrooms, offices, factories and public buildings with four edges supported is shown in the below diagram, taken from Approved Document K.

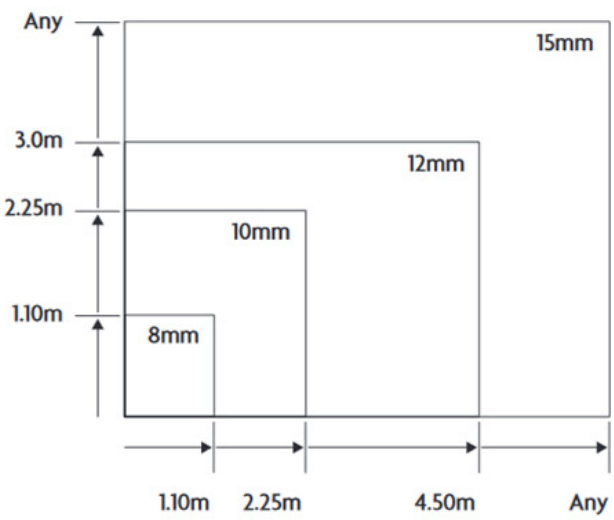


Figure 1: Annealed glass thickness and dimension limits (taken from Approved Document K)

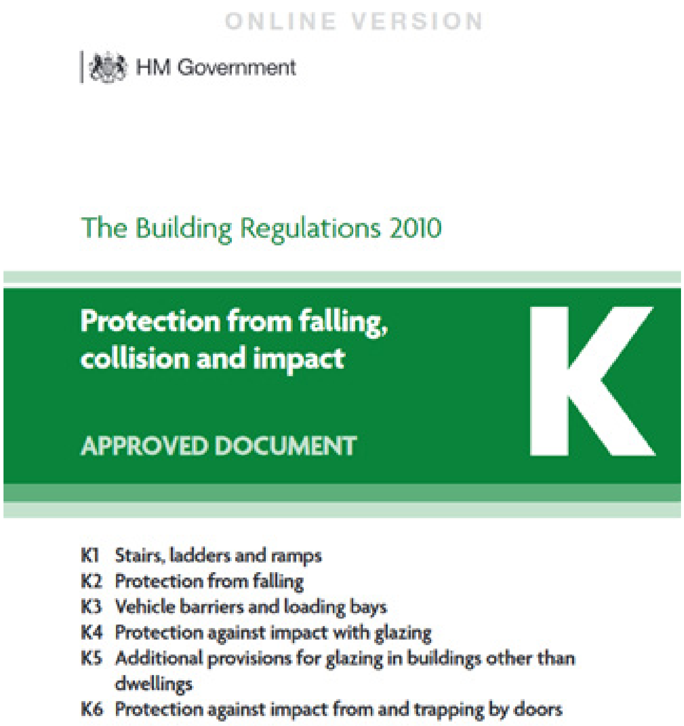
There is useful additional information on the types of glass here https://www.basystems.co.uk/blog/glass-types/

Glass blocks and polycarbonates
Approved Document K describes polycarbonate and glass blocks as inherently strong. Glass blocks became a popular design choice in the 1930s and 1940s, especially for bathrooms, and they are even making a comeback today.

Although not glass, polycarbonate is a popular material choice for greenhouses.

Building Regulations
Since 1 April 2002, Building Regulations have applied to all replacement glazing and cover thermal performance and other areas such as safety, air supply, means of escape and ventilation. Previously in Approved Document N, the Building Regulations relating to glass are now in Approved Document K – Protection from falling, collision and impact, and explained under "Section K4, protection against impact with glazing".

Surveyors need to inspect, measure and record all glazing


ONLINE VERSION

HM Government

The Building Regulations 2010

Protection from falling, collision and impact

APPROVED DOCUMENT

K

K1 Stairs, ladders and ramps
K2 Protection from falling
K3 Vehicle barriers and loading bays
K4 Protection against impact with glazing
K5 Additional provisions for glazing in buildings other than dwellings
K6 Protection against impact from and trapping by doors

The Building Regulations require that glass fitted in critical locations such as in glazed doors, side panels and areas below 800mm is safe.

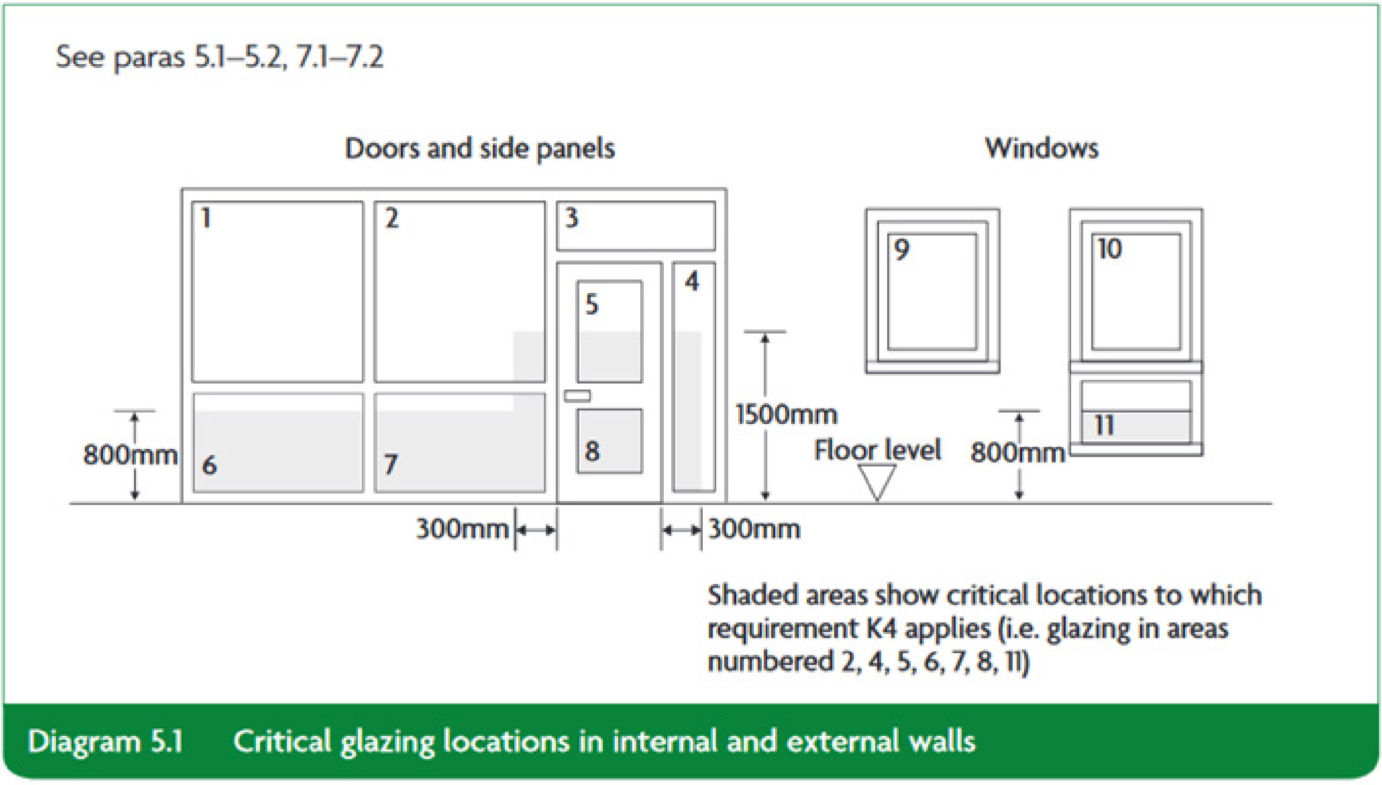


Figure 2: Critical glazing locations in internal and external walls, taken from Approved Document K

types in their site notes so they can confirm that any glass windows and doors comply with the requirements above.

Below is an extract from Approved Document K explaining the safe breakage requirements and standards for glazing:
BS 6262 is a series of standards on glazing for buildings.
BS 6262-4 gives safety recommendations for the use of glass and plastic glazing sheet materials in locations likely to be subject to accidental human impact. BS 6262-4 also gives recommendations for the type of glass or plastic glazing sheet materials to be used in sloping overhead glazing.

The recommendations are intended to reduce impact-related injuries and in particular the risk of cutting and piercing injuries. In the case of sloping glazing, this also covers the risk from falling glazing.

NOTE: These recommendations do not apply to: glazing for furniture and fittings, glazing for commercial greenhouses, glazing for domestic greenhouses.
The below numbers are product numbers that identify the type of glass:

- BS EN 12150 – to identify toughened glass
- BS EN 14449 – to identify laminated glass
- BS EN 14179 – to identify heat soaked, thermally toughened glass.

Safe breakage
5.3 Safe breakage is defined in BS EN 12600 section 4 and BS 6206 clause 5.3. In an impact test, a breakage is safe if it creates one of the following.
a. A small clear opening only, with detached particles no larger than the specified maximum size.
b. Disintegration, with small, detached particles.
c. Broken glazing in separate pieces that are not sharp or pointed.
5.4 A glazing material would be suitable for a critical location if it complies with one of the following.
a. It satisfies the requirements of Class 3 of BS EN 12600 or Class C of BS 6206.
b. It is installed in a door or in a door side panel and has a pane width exceeding 900mm and it satisfies the requirements of Class 2 of BS EN 12600 or Class B of BS 6206.

How can you tell if it's safety glass?

Safety glass needs to be permanently marked and the marks must be visible to the eye after installation.
The NHBC has a useful technical guidance document on the marking of safety glass: https://www.nhbc.co.uk/binaries/content/assets/nhbc/tech-zone/nhbc-standards/tech-guidance/6.7/marking-of-safety-glass.pdf

It explains:
In practice, not all safety glass will be marked, and if you come across glass that isn't marked, it would be safer to assume that it isn't safety glass unless there is evidence to confirm otherwise. Wherever you come across 'issues that potentially impact safety' a good mantra to adopt is better safe than sorry.

The comparisons between the classification systems under BS 6206 and BS EN 12600 are shown below. Both BS 6206 and BS EN 12600 use pendulum impact tests with similar drop heights and grades safety glass under one of three impact performance classifications.

- BS 6206 grades are 'A, B or C' with 'A' being the highest performance grade.
- BS EN 12600 grades are '1, 2 or 3' with '1' being the highest performance grade.
  For comparison purposes between the two Standards grade 'A' = '1', 'B' = '2' and 'C' = '3'.

To identify the grade of safety glass used each pane should be indelibly marked so that the marking is visible after installation.
The markings should include:

- The manufacturer's name or trademark
- The product number for the type of glass *
- The impact performance classification e.g. 1, 2 or 3 to BS EN 12600 or A, B or C to BS 6206.

* e.g. BS EN 12150 toughened glass, BS EN 14449 laminated glass, BS EN 14179 heat soaked thermally toughened glass

Figure 3: Example of safety glass mark

Figure 4: Example of toughened safety glass

BSI Kitemark

BSI Kitemark is an established quality mark that shows a particular product meets the applicable and appropriate British, European, international or other recognised standard for quality, safety and performance and the BSI tests and certifies a range of different glass products.

There is more than one BSI Kitemark for glass reflecting the different processes and applications.

Here is a sample from some manufacturers' product specifications.

- BS 6180: 1999 - Code of practice for barriers in and about buildings.
- BS 6206: 1981 - Specification for impact performance requirement for flat safety glass and safety plastics for use in buildings.
- BS 6262: 1982 - Code of practice for glazing for buildings.
- BS 6399: - Loading for Buildings – All Parts.
- BS EN 12150-1:2015 - Glass in building - thermally toughened soda lime silicate safety glass.

BSI standards do not remain constant – some will be retired or updated as the industry changes. The BS numbers most residential surveyors will see are BS 6202 and BS EN 12150.

What is unlikely to be safety glass?

Horticultural glass is the lowest grade of glass produced and therefore, the cheapest. It's considered dangerous because if it breaks, the shards tend to be large, dangerous pieces which are very sharp and can inflict serious injury. Many greenhouses are made with horticultural glass, especially older greenhouses, and Building Regulations do not apply to greenhouses found in the gardens of domestic properties, so this should be considered if you are assessing a property with a greenhouse on the grounds.

Reporting

As a surveyor, it is our duty to report on any glazing that we inspect doesn't meet current safety standards, notwithstanding the age of the property. The RICS Home Survey Standard lists "absence of safety glass to openings and outbuildings" as a common safety hazard that can be found during an inspection of a residential property. If it isn't safety glazing, it is a potential health and safety hazard, and your clients should be notified. This should be included in the appropriate section of the report and cross-referenced in the health and safety section. It may also be prudent to inform the current occupiers of the potential hazard.
Whilst absence of safety glass in critical locations is a hazard, such absence should not automatically result in a CR3. A significant proportion of dwellings have non-safety glass fitted, and the properties are not replete with severed limbs or bodies.

People have been living within non-safety glass for centuries, but as suggested above, where issues of health and safety are concerned it is better to be safe than sorry. A suggested approach to applying condition ratings might be that set out in the Sava Condition Rating Protocol. Briefly, the surveyor should note, record and report on every hazard 'in' or that 'could affect' people in the property so long as that potential hazard is not too remote. The best benchmarks to identify hazards are in the Building Regulation Approved Documents (BRADs). The client is then aware of those hazards.

However, the surveyor should also make a decision about whether the resultant hazard requires appropriate action to be taken i.e is the hazard a CR2 or a CR3? To do this, a simple risk assessment based on 'likelihood' and 'severity' can be recorded. This does not need to be longwinded or too onerous. Indeed, in time, surveyors will find a standardised risk assessment process is helpful. Once you have risk-assessed one glass door, a similar process for similarly situated doors can be applied.

Conclusions

Surveyors and the reports they produce directly affect people's lives. By correctly inspecting, identifying, recording and reporting on safety (or non-safety) glass (and indeed other hazards that may be present) we can help ensure our clients' lives are positively affected.

LARRY RUSSEN MA BSc FRICS FCABE C.Build.E MFPWS PGCE

Larry Russen MA BSc FRICS FCABE C.Build.E MFPWS PGCE A Chartered Building Surveyor and Spurs fan with more than 40 years' experience in residential, commercial and industrial property in King's Lynn and surrounding areas, Larry completed a MA German Language, Culture and History in 2019 at UCL just for fun! With a Post Graduate Certificate in Education as well as training surveyors across the UK, he helps keep Sava trainers up to date. When he is not travelling the world to visit his family, he can most likely be found sailing the Essex and Suffolk rivers and Thames estuary in his 93-year-old wooden cutter 'Wallop', skiing, playing 5-a-side football, running 5k or cycling to Caffe Nero to drink coffee.

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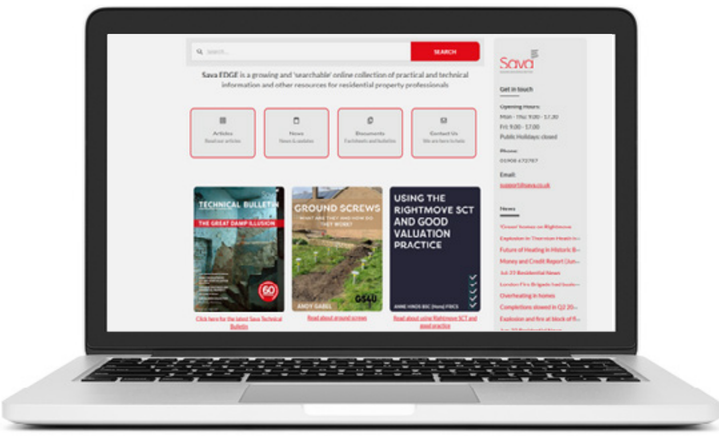

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