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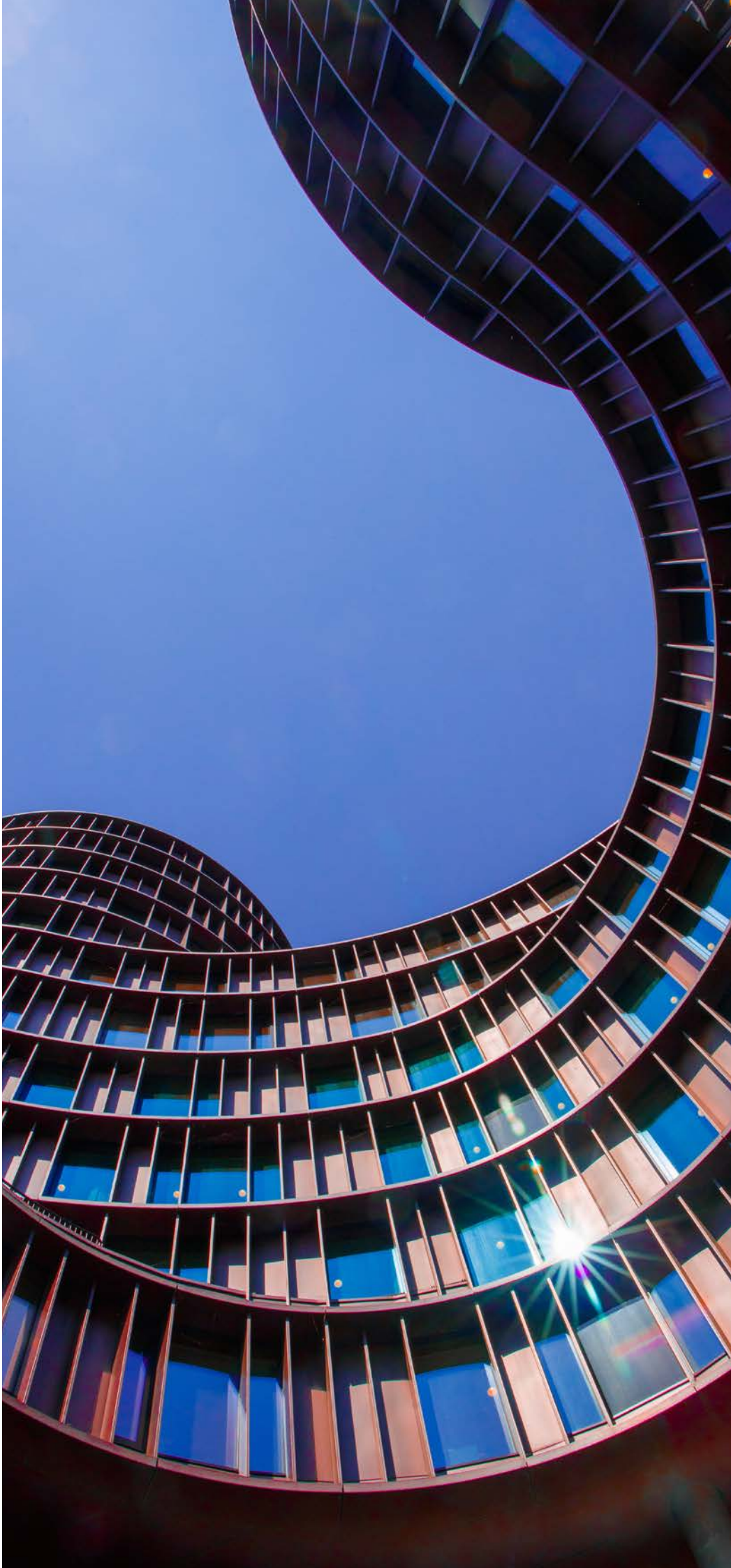

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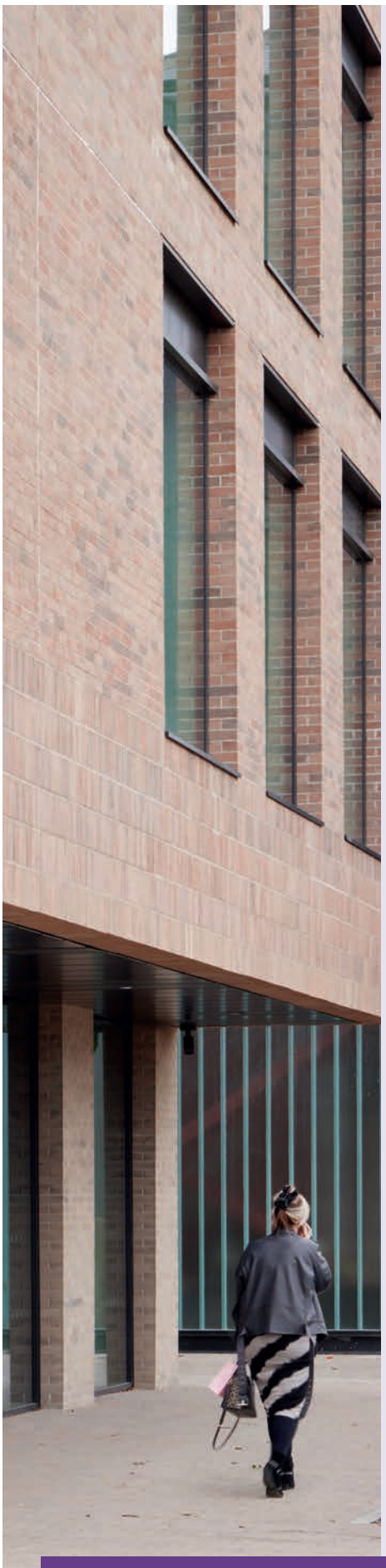

FEATURES 04–48

Editor's welcome

Welcome to the summer issue of ATJ, and I hope the sun is shining for you wherever you are reading this. The weather has been fluctuating a lot over these past few months, but that's not the only thing that's changing. There are many changes afoot for the built environment industry, and this issue gets to grips with some of the biggest for Architectural Technologists and explores what kind of practical shifts they will bring.

In several articles, you'll notice references to Labour's plea to build 1.5 million homes by 2029, a commitment that has massive ripple effects on the industry (articles on pages 6, 12, 38, 40, and 48). And on page 33, experts from Lanpro, Boyer, and Leaders Romans Group discuss how realistic this goal is and whether it will become a reality.

Also discussed across several articles this issue is the Government's commitment to net zero by 2050, and what ATs and design professionals can do to focus on sustainability and designing with a neutral or negative carbon footprint in mind (articles on page 6, 9, 12, 20, 24, and 42). And on page 26, Ellen Huelin from Whitecode Consulting discusses the pilot version of the UK Net Zero Carbon Buildings Standard and the substantial, and positive, impact it is set to have on the construction industry.

As is fitting with all this change, updates on standards and policy are another common factor across articles this issue. Along with his regular policy update (page 48), CIAT's Jack Fleming takes us through the Seventh Carbon Budget on page 12, while Glen Richardson from Carter Jonas discusses updates to the National Design Guide and the National Model Design Code on page 38.

Speaking of changes, there's one thing we're doing a bit differently this issue. We are withholding our regular *Membership news* section – but don't worry, it's just for this issue! Get ready for a jumbo version next time. This is so we can make a special point to celebrate all those new members and fellows who joined or recommitted to the Institute at the time of the 60th Anniversary

That's right: our next issue is the 60 years special, and will also be chockful of our annual AT Awards coverage. To put it better, it's a two-in-one, as the awards ceremony this year will be specially celebrating our diamond anniversary. Even though I've only been at CIAT for one of those 60 years, as a representative of the Institute I have to say a big congratulations to all those whose hard work and dedication have kept us going throughout those years.

Have a wonderful summertime and I'll see you at the next issue!

Tim Fraser
Deputy Editor

AT Awards 2025 close in June and July

The AT Awards opened for submissions and nominations on 1 February 2025 for all categories.

Full details and application forms can be found on the website. Winners will be announced and presented at the AT Awards event on 26 September 2025.

The AT Awards are recognised as the premier accolades that demonstrate outstanding achievement in Architectural Technology and celebrate the technology of architecture.

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Zero carbon social housing: unlocking brownfield potential

Words by Lalit Chauhan FCIAT, Design Director, Zed Pods

The urgent need for social housing in the UK demands innovative approaches. Unlocking the potential of brownfield sites offers a sustainable pathway, delivering net zero homes while regenerating our urban environments for future generations.

The UK's housing crisis demands innovative and immediate solutions. With thousands of people languishing on council housing waiting lists and growing numbers in temporary accommodation. Despite ambitious government targets of 370,000 new homes annually to build 1.5 million new homes over the next 5 years, delivery has consistently fallen short and the need for sustainable, scalable answers has never been more pressing.

As we seek sustainable solutions, expanding into greenfield land poses significant environmental, social, and logistical challenges. Instead, brownfield sites – already embedded within and closer to urban areas or infrastructure – present an opportunity to meet housing needs in a way that respects both the past and the future.

At ZED PODS, we believe unlocking the potential of these underutilised spaces can deliver the zero-carbon social housing the UK urgently needs. Through innovative design, careful planning, and modern construction methods, these overlooked sites can be transformed into vibrant, net zero communities, creating sustainable communities without compromising future generations.

In other words, brownfield sites are not problems to be solved but assets to be unlocked, offering the chance to build homes that are sustainable, beautiful, and deeply connected to place. Below, we explore seven key strategies essential for success.

1. Repurposing existing housing stock
Much of the UK's existing housing stock is outdated, inefficient, and unsuitable for modern living. Rather than extending cities outward, the strategic repurposing or redevelopment of underperforming stock can address housing needs sustainably, offering modern, space compliant and sustainable homes offering an opportunity to meet immediate needs while preserving urban cohesion.

Volumetric modular construction enables old or inefficient sites to be revitalised rapidly, reducing embodied carbon impacts while creating future-proof homes that meet evolving standards and expectations.

2. Building net zero social housing
Social housing must not only respond to today's needs but also anticipate tomorrow's challenges. Building to net zero carbon standards from the outset ensures homes are energy efficient, resilient to future regulations, and cost-effective over the long term.

Modern modular homes incorporate renewable energy systems, superior insulation, high-efficiency services, and passive design features to significantly exceed current regulatory requirements, creating homes that are both sustainable and desirable. Building to net zero standards ensures that future retrofitting is avoided, safeguarding financial and environmental investments over the long term.

This future-ready housing model is not just necessary, it is non-negotiable if we are to meet our net zero commitments by 2050.

3. Maximising brownfield potential within urban limits
Urban brownfield sites – from disused car parks to existing garages to flood plains to redundant industrial plots – offer the unique advantage of location: they are typically close to existing infrastructure, amenities, and public transport. The CPRE's *State of Brownfield 2022* report identified over 23,000 brownfield opportunities across England alone, covering some 27,000 hectares.

Prioritising these sites ensures that development is compact, efficient, less car-dependent, bringing residents closer to workplaces, schools, healthcare, and public transport, supporting national efforts towards decarbonisation and urban regeneration and creating vibrant, walkable neighbourhoods.

4. Urban regeneration with double-edge benefits: housing delivery and green transformation
Unlocking brownfield land provides a rare double-edged benefit: meeting urgent social housing needs while regenerating neglected urban spaces into vibrant, biodiverse environments.

By transforming degraded or contaminated sites into thriving residential communities, developments not only address housing shortages but also turn 'waste' land into urban oases that enhance community wellbeing, biodiversity, and environmental resilience.

Incorporating features such as green roofs, rain gardens, naturalised landscapes, and ecological corridors, these projects deliver Biodiversity Net Gain (BNG) – a statutory requirement under the Environment Act 2021 – while simultaneously mitigating urban heat islands, improving air quality, and strengthening climate adaptation strategies.

Critically, such regeneration reduces site-wide whole life carbon impacts. Reusing existing land and infrastructure minimises embodied emissions; while integrating sustainable drainage systems (SuDS) and ecosystem services helps future-proof communities against environmental risks.

Far from being burdens, brownfield sites present an opportunity to create sustainable, resilient, and desirable places – turning liabilities into assets for generations to come.

5. Sensitive design within historic contexts

Brownfield sites are often located within or near conservation areas, historic centres, or sites of ecological interest. Development must, therefore, tread carefully, balancing the need for new homes with the imperative to respect local heritage and context.

Successful schemes emerge from early engagement with local stakeholders, thoughtful massing and materiality, and a deep appreciation of place. Our award-winning projects in conservation areas and floodplains have shown that, through sensitive designs, responsive massing, and considered materials, brownfield regeneration can enhance, rather than detract from, historic settings.

Unlocking brownfields is not simply a technical exercise, it is a civic responsibility.

6. Delivering complex brownfield projects

At ZED PODS, we have pioneered the delivery of modular, net zero social housing on some of the UK's most challenging brownfield sites. Our multi award winning schemes in Mid Devon, Bromley, Bristol, Newport, and Ashford exemplify how design, manufacturing know-how, and early stakeholder engagement can overcome issues like flood risks, contamination, made ground, buried services, conservation constraints, ecological sensitivities, and planning constraints must be navigated collaboratively.

Key success factors include integrated design and planning from the earliest stages, adaptability to local environmental and planning requirements, robust construction methodologies that incorporate modular flexibility, and close stakeholder engagement to resolve site-specific constraints.

These approaches allow developments to proceed efficiently, sustainably, and in ways that traditional methods may not permit.

7. Bridging standardisation and bespoke design

One size does not fit all, especially in the world of brownfield regeneration. Success depends on blending standardisation for manufacturing efficiency with bespoke design solutions tailored to each site's unique character. By embedding flexibility into modular systems – adjusting layouts, elevations, finishes, and material choices – it is possible to respond to local contexts without compromising efficiency or sustainability.

At its best, this hybrid approach allows developments not just to achieve planning approval more smoothly and deliver high-performance, low-carbon housing, but also to reflect local character and identity and create places where residents feel genuinely at home.

At ZED PODS, my 'Bespokularity' philosophy – the art of combining bespoke beauty with modularity – provides a framework for unlocking difficult sites in ways that are cost-effective, scalable, and community-focused.

In conclusion, Brownfield sites hold immense untapped potential to help solve the UK's housing crisis sustainably. Through a design-led, net zero-focused approach, brownfield development can regenerate urban environments, provide high-quality affordable housing, and support broader environmental and social objectives.

ZED PODS' experience proves that the obstacles presented by brownfields are not barriers but opportunities – opportunities to build better, greener, and more inclusively. If we are serious about tackling the housing crisis, we must start where the land already welcomes us: within our towns and cities, on the forgotten plots waiting to be reborn.

By unlocking the potential of brownfields, we can deliver not just homes, but hope. ■

Overheating in homes: how big is the problem and what can we do to mitigate the effects?

Words by Andrew Nash, Divisional Manager, Nuaire

2024, 2023, 2022 and 2014 are the UK's warmest years on record, according to the Met Office's analysis. In fact, the ten warmest years in the UK since records began in 1884 have all occurred since 2000. The chances of a summer matching the 2022 heat wave in this country could, according to the Met Office, be greater than 50% by 2050.

How does overheating impact people?

Hot temperatures are not just uncomfortable, but have serious health implications, especially for older people and those with existing health conditions. High temperatures raise blood pressure and heart rate, impacting the circulatory, nervous, respiratory and renal systems, which can lead to dehydration, heat exhaustion and heatstroke. In extreme cases it can lead to death: the UK Health Security Agency estimates that there were up to 3,712 deaths attributed to heat in summer 2022, the highest number in any given year.

Mental health is also impacted by hot weather as it can exacerbate the symptoms of psychiatric illnesses.

Even for those people whose health is not directly affected, hot temperatures often prevent us from getting the sleep we need and therefore have consequences for

productivity. The Office for National Statistics estimates that productivity in Great Britain was reduced by an incredible £5.3 billion in 2020 due to heat.

> Not everyone is impacted by overheating equally. Low income households and those living in social housing bear the brunt of overheating.

Are our homes overheating?
Under the Chartered Institution of Building Services Engineers' (CIBSE) 'TM59 Design methodology for the assessment of overheating risk in homes', overheating is defined as when the internal temperature threshold of 26°C is surpassed for over 3% of the annual occupied hours, for predominantly naturally ventilated dwellings. Using the TM59 standard, a 2019 government study on overheating in homes showed that out of eight modelled house and flat typologies, not a single one met the acceptable risk criteria for overheating.

Apartments are particularly susceptible to overheating, with living rooms and bedrooms being the rooms most affected.

Not everyone is impacted by overheating equally. Low income households and those living in social housing bear the brunt of overheating.

Why are our homes overheating?
The Met Office is categorical about the reason behind our increased temperatures: "UK mean temperatures have been shifting over the decades as a result of human-induced climate change".

But global warming isn't the entire story when it comes to increasing temperatures in our homes. Homes built to modern Building Regulations are better insulated and designed to be more air tight and therefore energy efficient. However, this can also lead to raised indoor temperatures.

And then there's the location of our new build homes, the majority of which are in cities. For many residents in built up urban environments, opening windows to allow cooler air in to their homes is not always an option due to noise, pollution and safety concerns.

What can we do to address overheating in homes?
There are wide ranging means by which we can reduce heat levels in our homes.

Ensuring cities have green spaces, especially in urban areas, is an important factor as these are known to have significant cooling effects. The 'Urban heat mitigation by green and blue infrastructure' international study has shown that botanical gardens can cool city air by 5°C, with parks and wetlands also significantly reducing air temperatures.

Whilst this level of intervention needs to be done at town planning level, housebuilders also have a role to play by adhering to Building Regulations, Approved Document O. This provides guidance on mitigating overheating in residential buildings including optimising glazing, solar shading and natural ventilation. The House of Commons' Environmental Audit Committee's fifth report of session 2023–24 on heat resilience and sustainable cooling would like to see Building Regulations Part O be expanded to cover refurbishments of existing properties as well as material changes of use to residential. It is also calling for post-occupancy evaluation to be introduced to ascertain the real-world performance of mitigation measures taken under Part O, within the first year of installation.

Approved Document O rightly stipulates that mechanical cooling may only be used where insufficient heat is capable of being removed from the indoor environment without it. Where this is the case, a cooling hierarchy needs to be followed, which includes acoustic façade vents and mechanical ventilation through to mechanical cooling.

The latter has historically been in the form of air conditioning, but this would need to be on a site-wide basis. Mechanical ventilation in the form of Mechanical ventilation systems with heat recovery (MVHR) are a further option. For many new build homes, these will be able to meet the extract ventilation rates required to help mitigate overheating in the summer if equipped with a third speed to provide a Part O purge.

However, it's well known that many housing developments have 'problem' areas when it comes to overheating, such as corner apartments which may have more glazing area relative to their internal floor area, and that get sunshine for longer. These apartments will most

likely get hotter than surrounding apartments. MVHR is unlikely to succeed in keeping temperatures within the TM59 guidelines in these circumstances and installing air conditioning just to these specific apartments is not a practical solution due to the logistics of the refrigerant pipework and associated cost this brings, not to mention the necessity for centralised cooling plant. In these instances, a hybrid cooling system, such as Nuaire's MRXBOX, is a good option to consider. These new hybrid systems integrate with the MVHR system and operate in conjunction with it. It combines the heat-exchanger coolth recovery of an MVHR system with the cooling effect provided by a DX coil which significantly lowers the temperature of the fresh-air supply. The MVHR is pre-programmed to target a comfortable temperature, maximising free-cooling through its bypass when the external air is cooler than internal, and coolth recovery when hotter external air can be cooled by extracted stale air from wet-rooms. The cooling module activates automatically to lower supply air temperatures when required.

Do we need a national strategy on overheating?

The introduction of Part O represents a significant step in recognising overheating as an issue in this country, and providing actionable guidance on how to mitigate it in the design of our homes.

However, some types of development, such as material change of use whereby existing buildings are repurposed as much needed housing, are not covered and their potential risk of overheating has been undiminished by Part O's introduction.

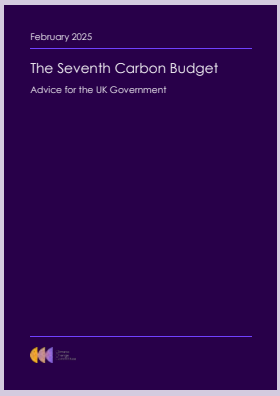
Increasingly, organisations operating in the housing sector are calling on the government to develop a national strategy on overheating that is more ambitious than the current collection of policy and initiatives, and that introduces urgency into combatting and mitigating overheating. The UK Collaborative Centre for Housing Evidence goes as far to call for a lead Minister for heat resilience to act as a focal point and drive forward coordinated action in this area.

Creating and adopting a national heat resilience strategy isn't such a tall order. The government did, after all, sign up to the Global Cooling Pledge initiative at COP28, which has a commitment to produce a national cooling action plan. Ultimately, we will have to wait to see how seriously the government really takes the issue of overheating. ■

The Seventh Carbon Budget: what it means for the built environment

Words by Jack Fleming, Policy & Public Affairs Executive

In February, the Climate Change Committee, which advises government on achieving the UK's emissions reduction targets (including net zero by 2050), published its *Seventh Carbon Budget*.[1] The *Seventh Carbon Budget* recommends a 75% reduction in emissions by 2038-42, and sets out a "balanced pathway" to achieve these emissions reductions over the next 15 years. Built environment professionals will play a key role in the success or failure of the balanced pathway.



The balanced pathway breaks down emissions by sectors, laying out the interventions which the Committee believes will be most achievable and cost-effective to deliver the necessary reductions. Key sectors for the built environment include:

- Electricity supply.
- Residential buildings.[2]
- Non-residential buildings.[2]
- Industry (including construction, raw materials and products).
- Land use (including timber and biofuel).
- Surface transport.

Electricity supply

Decarbonising the UK's electricity supply is a key enabler of achieving emissions reductions elsewhere. Currently, electricity supply accounts for around 9% of emissions. By 2040, electricity supply emissions should fall by 88% (and 97% by 2050). The pathway sees this driven primarily by growth in offshore wind (from 17GW capacity today, to 88GW by 2040) and solar (from 20GW to 82GW). While most growth will be through large scale strategic projects, smaller deployments (such as rooftop solar arrays) will help ease this process, and reduce the amount of land required.

The Committee also highlights the importance of battery storage and smart demand flexibility, to mitigate the variability of renewable energy. Introducing small-scale battery storage and smart energy use measures should therefore increasingly be seen as a standard part of building retrofits.

Residential buildings

Residential buildings account for 12% of current UK emissions (not including embodied carbon or electricity supply emissions). These emissions fall by two thirds in the balanced pathway, through rapid deployment of low-carbon heating and energy efficiency measures.

The share of homes with low-carbon heating rises from 8% in 2023, to 68% in 2040, primarily through the deployment of air source heat pumps (with ground source and hybrid heat pumps, communal heat pumps, heat networks and direct electric heating playing a smaller role). By scaling up deployment rapidly, from 60,000 deployments in 2023, to 450,000 in 2030 and 1.5 million by 2035, it will be possible to replace all existing heating systems with low carbon heating by 2050, without requiring early scrappage of functional systems.[3]

Energy efficiency also plays an important, albeit smaller, role. These measures are front-loaded in the pathway; by the mid-2030s, additional loft insulation is installed in 9% of homes with lofts, completing coverage of all these homes, while cavity wall insulation is installed in 16% of homes with cavity walls, such that 87% of these homes have insulation. Additional low-cost measures such as draught-proofing and hot water tank insulation are widely rolled out.

Notably, the pathway does not foresee a major role for more costly measures such as solid wall insulation. The reason for this is that these measures are deemed less cost effective on a national level than simply increasing heating. However, this approach has significant drawbacks in terms of addressing the health and comfort of homes, as well as requiring higher levels of electricity generation capacity and higher running costs for buildings. These factors fall outside the Committee's remit.

Finally, in the pathway, 9% of reductions in emissions from residential buildings are driven by energy-saving practices and behaviour changes (such as lowering boiler flow temperatures or thermostats).

Non-residential buildings

The pathway for non-residential buildings is very similar to that of residential buildings, with the electrification of heating delivering 49% of the sector's reductions by 2040. But there is a greater role for energy efficiency measures in this sector, including improved energy management (such as zone and timing controls), fabric measures such as insulation, and behaviour changes. In the pathway, this transition is led by the public sector, strengthening supply chains for subsequent private sector decarbonisation.

Industry

Industry (including construction) currently accounts for 12% of emissions, and in the pathway, emissions fall 78% by 2040. Key measures here include electrification of heating processes (such as electric ovens and furnaces, including using electric arc furnaces for steel and iron production) and of machinery. Carbon Capture and Storage (CCS) also plays an important role in decarbonising more complex sectors, including cement production. Hydrogen will also play a role in replacing gas-fired industrial processes in high-volume ceramics, glass, iron and steel production. Given the limitations of hydrogen and CCS, it is also important that industry seek to reduce use of hard-to-decarbonise materials such as steel and especially cement.

Land use

Land use has the potential to act as a carbon sink for the UK. This means that it is important to use land sensitively, including supporting the restoration and expansion of woodland (creating more sustainable timber supply) and peatland, and limiting the geographic spread of urbanisation (through densification of development).

Surface transport

Surface transport is currently the highest emitting sector in the economy, accounting for 24% of all emissions. Cars contribute 59% of these emissions, while HGVs contribute

19% and vans 18%. By 2040, these emissions need to fall by 86% in the balanced pathway.

By 2040, 80% of cars, 74% of vans and 63% of HGVs will be electrified (a small share of HGVs may be hydrogen powered). This will require user choices and infrastructure development, most notably the significant expansion of EV charging facilities in domestic and public settings.

The role of Chartered Architectural Technologists

Though it will be up to government to set policy to deliver the balanced pathway, as leaders in the built environment, Chartered Architectural Technologists can help drive forward many of these shifts through their choices and their recommendations to clients. Here are some tips to get you started.

- Make sustainability a priority in your design, even when it is not explicitly part of the brief.
- Ask yourself questions like "can I reduce the amount of cement or steel in this design?" or "can I incorporate more sustainable timber and bio-based materials?" alongside more common questions like "how can I improve the energy efficiency of this design?"
- Ensure that you are aware of what government support there is for energy efficiency measures, so you can advise clients on how they can affordably implement these measures.
- If you think a client won't favour a lower-carbon but higher-cost design, provide different options and talk them through the costs and benefits. Even if they don't go for the design, you can play a role in tackling misinformation about low-carbon technologies.
- Consider opportunities to 'add-on' energy efficiency or low-carbon measures as part of wider projects. Designing a kitchen extension? That's a great time to switch to a heat pump and induction hob. Building a new garage? Why not add EV charging at the same time.
- When specifying a design, consider what low carbon options may be available, especially for high-volume materials.
- Review your business emissions – your studio's energy use, your transport to site, et cetera, and do the same for your supply chains and contractors.

Chartered Architectural Technologists can help drive forward many of these shifts through their choices and recommendations

Achieving net zero will require huge shifts across the whole economy, but it will also deliver better, more comfortable homes and environments and stimulate economic growth across the UK. By leading from the front, Chartered Architectural Technologists can reap the benefits of this trend. ■

1 Climate Change Committee, Seventh Carbon Budget (February 2025). https://www.theccc.org.uk/publication/the-seventh-carbon-budget/
2 The residential and non-residential buildings sectors focus on "in-use" emissions. Embodied emissions (i.e., emissions resulting from the construction or retrofit of a building are counted in other sectors.
3 The pathway assumes no new homes are built with fossil fuel heating systems or gas grid connections. This will clearly not be met, but it is vital that government rapidly implements the future building standard.

Why fasteners hold the key to optimising metal building envelope performance

Words by Brian Mack, Technical Business Development Manager, EJOT UK

Despite playing a crucial role in the performance of a metal building envelope, fasteners are an often overlooked component at the design stage. As the construction industry rises to the challenge of creating a safer and more sustainable built environment, one of the ways we can provide more certainty about the quality and performance of the envelope is to focus on the fastener specification early, and not leave decisions about these tiny components to chance.

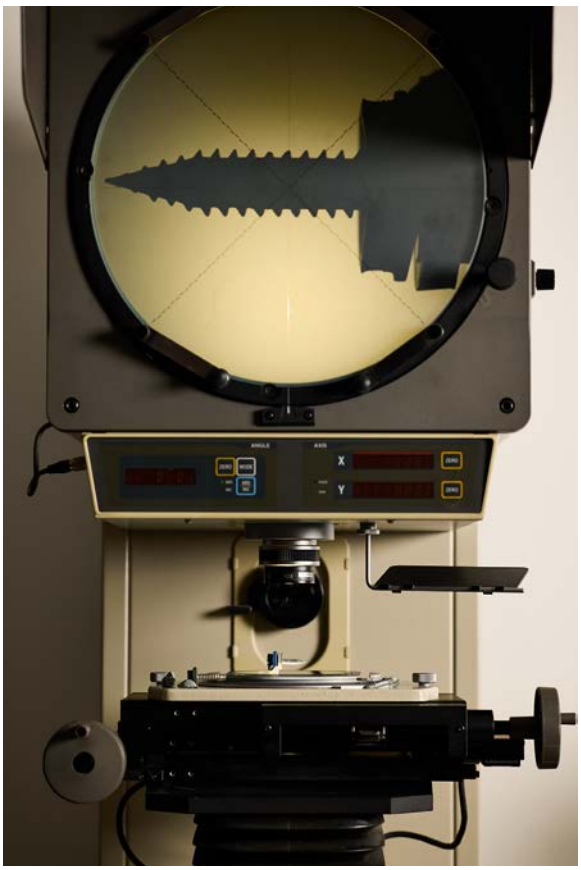
Choosing incorrect fasteners can be detrimental to the performance of the envelope. In many cases, however, the issue may not be due to the wrong fastener being used – it could be because a poor quality product has been selected, or that the correct fastener has being incorrectly installed. All these issues can be mitigated with careful specification.

Early consideration of the fasteners, however, is not only about minimising the risks of issues developing. It could actually determine the form that the envelope takes as a whole. In fact, the fastener choice not only influences the aesthetics of the building, but it can even offer a completely different perspective on the proposed envelope design or system choices.

Types of metals used for fasteners

The majority of metal roofing and cladding sheets, composite systems and sandwich panels used in UK projects are manufactured using steel or aluminium. The recommended fastener material for use with these metals will usually be one of two types of steel:

- **Coated carbon steel** – commonly used for building envelopes in low-risk environments where the potential for corrosion is low. A service life of approximately 25 years is provided for C1 and C2 environment classifications, but this can be improved upon when using high-grade nylon over-moulded heads.
- **Stainless steel** – offers enhanced resistance to corrosion, making it suitable for a much wider range of applications. Given their superior corrosion resistance, stainless steel fasteners can be used in roofing and cladding systems with a service life in excess of 40 years depending upon the stainless steel grade and environmental classification. This can also be enhanced with an over-moulded head.



As stainless steel is a relatively soft metal, many of these fasteners incorporate a carbon steel drill point to create a bi-metallic screw. This ensures they can penetrate (self-drill) and form a thread in substrates for ease of use on-site.

In projects where the environmental conditions are particularly aggressive, such as with swimming pools or when there are certain industrial processes, HCR stainless steel, such as 1.4529, may be required. This has higher molybdenum and nitrogen content, making it even more resistant to corrosion.

Best practice for most projects is to specify stainless steel fasteners as these offer greater certainty in terms of resistance to corrosion. Choosing coated carbon steel may be attractive from a cost-saving perspective, but the risk of corrosion developing will always be greater. Hence why stainless steel offers the lowest whole-life cost.

Maximising air and water-tightness

Given that every fixing point in the metal building envelope penetrates through the outer roof or cladding sheets, when a fastener is installed it must create a reliable seal. Without this, air leakage and water ingress will occur and undermine the performance of the envelope and building as a whole.

A high quality self-drilling fastener will have an integrated washer, typically formed of EPDM bonded to aluminium. This helps to distribute an even clamp load when the fastener is driven into place, ensuring a tight seal to a point where it will compensate for moments when installation cannot be 100% perpendicular.

This type of washer reduces the potential for installation quality to let down the performance of the finished envelope, and it supports the professional installer who is constantly aiming for 'right-first-time' installations. This is a big expectation when a metal building envelope project could involve tens of thousands of fixing points.

Best practice is also for the quality of the self-drilling fastener seal to be tested at regular intervals during installation using a seal testing kit – something that leading contractors are increasingly writing into their own quality procedures. This is a relatively simple process that uses a cup to cover the fastener head in-situ, which can then be connected to a pump to withdraw the air, creating a vacuum and allowing the pressure to be measured.

Unlocking aesthetic potential through colour matching

When self-drilling fasteners feature a head coloured to match the panels, there is enormous scope to add interesting creative features and achieve aesthetically original metal building envelopes, without compromising performance goals.

Three approaches are generally available to achieve colour-matched fastener heads. A powder coated screw could be used, or a standard self-drilling fastener with appropriately coloured cover caps. Let me advocate a third approach, which is to use self-drilling fasteners with an over-moulded head.

Over-moulded fasteners have the metal head completely encapsulated using engineering-grade nylon, which is composed to include a colour pigment to match the sheets it is being used with. It provides a durable, lasting colour with material characteristics that mean it is unlikely to be damaged during installation in the way that powder coated screws can be.

Providing that a high quality over-moulded fastener is specified, it will hold its colour as robustly as a powder coated fastener, despite early myths that they are prone to UV fading, whilst also enhancing long term performance. This is because the moulding process results in total protection for the screw's hex head, thus virtually eliminating the risk of corrosion, and the head design also contributes to an enhanced seal.

Suitability for their structural role

In addition to satisfying the durability, weathertightness and aesthetic functional objectives, fasteners must also be capable of withstanding a range of different loads. This means they are also critical from a structural perspective.

The loads that the envelope fasteners are subjected to include tensile, shear and installation loads, such as the fastener's ability to resist overdriving. In cladding systems, they may also be required to offer resistance to bending and pushdown and provide clamping. Here, a well-designed fastener has advantages, particularly

in terms of the installer being able to achieve the right results on site, as it will give them a clear indication of when a correct clamp is achieved – thus reducing the risk of over-driving.

The importance of third party approvals

Another consideration when determining the fastener specification is whether the product has third party approvals. Amongst the most important approvals and certification schemes available for fasteners are European Technical Assessments (ETAs) and FM Approvals.

Whilst FM Approvals are a relative newcomer to the UK market, this global standard is becoming increasingly sought, given the depth of the assessment process. This examines not just the fastener, but how it works within a complete roof or façade system.

ETAs are another valuable indicator of a fastener's capability. An ETA provides fastener manufacturers with a voluntary route to CE marking, given that the products are not covered by a harmonised standard (hEN) under the Construction Products Regulation (EU) 305/2011. ■

AGM 2025

Notice of the Annual General Meeting 2025

The Annual General Meeting of the Chartered Institute of Architectural Technologists will take place on Saturday 22 November 2025 for the following purposes:

- To consider the Annual Review.
- To consider the accounts and balance sheet as of 30 April 2025.
- To re-appoint the Auditors and authorise Executive Board to fix their remuneration.
- To receive and debate the Resolution(s).
- To announce the results of the election of members to Executive Board, Council, Regional and Centre Committees and aspiration Groups.

Tara Page
Chief Executive
May 2025

CIAT, 397 City Road, London, EC1V 1NH, UK

FAQs

What is the AGM?
The Annual General Meeting (AGM) is the yearly business meeting for the Institute, which is required to comply with the Laws of the Institute (please see the formal notice published here).

Where is the AGM being held?
The AGM will take place at The Radisson Blu Royal Hotel, Golden Lane, Dublin 8, D08 VRR7, Republic of Ireland. The provisional timing for the day is 10:30 – 15:30, however, the AGM agenda and actual timings for the day will be confirmed in September, following the Council meeting (once the business for the AGM is known). The AGM business will be conducted in the morning.

Friday evening social charity evening, hosted by the Republic of Ireland Centre Committee
The Republic of Ireland Centre is in the process of organising a Friday night social event. The event will be held at The Sin Bin at the Mont Hotel on Friday 21 November 2025 and will commence at 19:00. All members and affiliates and their partners (whether they are delegates or not) can choose to attend at their own cost. The event is self-funding, including travel to and from the event. Due to the expected high demand for tickets, you must purchase a ticket in advance of the event, or you will not be permitted entry.

Who attends the AGM?
The meeting is Chaired by the President, who is supported by the Honorary Secretary, Honorary Treasurer and Vice-Presidents. Each Region and Centre has representation at the AGM, namely its Councillor and Voting Delegates, who have been elected to represent the membership by the Regional and Centre Committees. Non-members who attend are the Auditor, to present the accounts, the Chief Executive and support staff.

Can I attend the AGM?
Any member or affiliate can attend the AGM, but you must register your attendance. As a member or an affiliate, you may take part in any debate but cannot vote. The vote has been delegated to the Voting Delegate from the Regions and Centres.

How do I register to attend?
You can book for the AGM and its fringe events including the 60th Anniversary Gala via the website.

If I am a Past Chairman or President, do I still need to register to attend?
Yes, Past Chairmen and Presidents will be invited and will need to register to attend the AGM.

Will I receive papers for the meeting?
All members and affiliates who have registered to attend the AGM will receive a set of papers electronically before the meeting takes place.

How is the vote taken?
Only Voting Delegates can vote, and they are voting on behalf of their Region and Centre as delegated by the Regional and Centre Committees.

How is my vote represented?
Your vote is delegated to your Regional and Centre Committees. You will need to contact them directly; you can find details on the website.

How are the Voting Delegates elected for my Region?
In the first quarter of each year, the Chief Executive advises Regions on the number of Voting Delegates they are entitled to elect to represent the view of their Region. All Voting Delegates must be Chartered Members and all Chartered Members in the Region must be informed of the election of Voting Delegates to ensure fairness.

As agreed by Council, the breakdown is based on membership as of 1 March every year. A Region is entitled to:

Member numbers	Voting Delegates
100	1
100+	2
350+	3
700+	4

How are Voting Delegates elected for my Centre?
In the first quarter of each year, the Chief Executive advises Centres on the number of Voting Delegates they are entitled to elect to represent the view of their Centre. All Voting Delegates must be Chartered Members and all Chartered Members in the Centre must be informed of the election of Voting Delegates to ensure fairness.

Centres elect one Chartered Member, who will have the necessary number of votes according to the Centre's membership with, where appropriate, multiple votes.

The Republic of Ireland and Europe Centre's number of votes is based on the Regional model and will have its number of Voting Delegates based on the member number in the Centre.

What are the Resolution(s)?
The AGM will receive and debate the Resolution(s) put forward. These are typically changes to the Laws of the Institute.

What is the process for Resolution(s) for consideration at an AGM?
Regions/Centres who wish to table a Resolution(s) for consideration at the AGM must submit their Resolution(s) in the prescribed format to the Chief Executive in line with the timetable issued to the Region/Centres in the first quarter of each year. For this year, the deadline is 11 August 2025. For further information please contact Joanne Rowlands in the Chief Executive's Office: j.rowlands@ciat.global.

The Chief Executive will receive and present the necessary papers for the Council's consideration, in consultation with the Regional or Centre Councillor, and the Council will take a decision on whether to place the matter before the AGM, as an Institute Resolution and handled in the same way as any other Council recommended Resolution.

Individual members, other than members of the Regional or Centre Committee, also have the right to put a proposal to be considered at the AGM. Any such member may approach their Regional or Centre Committee for consideration of their views. The member should be invited to the Committee meeting for that specific item of business. If endorsed by the Region or Centre Committee, the proposal would then become a Region or Centre submission. This must also be on the prescribed format.

Alternatively, the member may approach the Chief Executive direct with a request for a proposal to be considered. The Chief Executive issues the notice of an AGM together with the timeframe for submitting Resolution(s) for an AGM, in line with the Laws of the Institute.

When are the Resolution(s) published?
The Resolution(s) are published in September following the Autumn Council meeting. These are circulated to all members and affiliates by email. ■

If your question has not been answered, please contact the Chief Executive's Office by emailing Joanne Rowlands: j.rowlands@ciat.global

BREEAM: The importance of attaining excellence

Words by Ellen Huelin, Sustainability Director, Whitecode Consulting

With sustainability and energy efficiency a crucial part of building design and construction, especially with the UK's 2050 net zero target rapidly approaching, architects and Architectural Technologists across the UK are keen to achieve a Building Research Establishment Environmental Assessment Method (BREEAM) 'Excellent' rating. Doing so demonstrates a commitment to minimising environmental impact and incorporating innovative solutions for long-term sustainability. But how important is it to achieve a BREEAM 'Excellent' rating, and how can designers best approach doing so?

Internationally recognised, the BREEAM certification was designed and developed to drive wellbeing and sustainability across the built environment through a stringent and robust framework that aids the verification and certification of building stock in the UK and across the world.

The UK's Building Research Establishment launched BREEAM in 1990 to set standards that help improve building performance at every stage of the design and construction process – from design and construction through to use and refurbishment.

In addition to rewarding and recognising buildings with a focus on environmentally friendly principles, this influential certification also aimed to improve sustainability in those buildings and the built environment as a whole. As a result, BREEAM is the most common building certification in the UK. It is also applied in more than 85 other countries. In fact, it has been used to certify more than 590,000 assessments to date, including buildings at all stages of their life cycles.

Its popularity is hardly a surprise. While securing BREEAM certification involves various upfront costs, such as certification fees and the appointment of an assessor, a building that achieves an 'Excellent' rating will likely be substantially cheaper to operate than one without certification.

With building owners and facility managers keen to lower operational costs, sustainable design features, such as water conservation and energy efficiency, are becoming increasingly popular. Consequently, building designers will need to incorporate these into the designs of buildings to ensure enhanced performance and adherence to the BREEAM standards.

Additionally, meeting these standards and attaining an 'Excellent' BREEAM rating can help architects and building owners mitigate risks often associated with changing environmental regulations, and demonstrate a commitment to environmental responsibility. The environmental performance achieved through the installation of smarter heating systems, lower water consumption, and improved energy efficiency, can also help to reduce maintenance and replacement costs.

Designing and building a smarter building that incorporates sustainable materials and systems, such as energy monitoring systems and LED lighting, will provide a healthier and more comfortable building for users. The improved acoustic and thermal performance created by regulating temperature, humidity, and noise levels will also help increase productivity and enhance wellbeing for anyone in the building. Additionally, the better thermal and acoustic performance could see the building consuming less energy, reducing the building owner's carbon footprint and cutting energy expenditure substantially.

The design and construction of a sustainable building – and subsequent attainment of an 'Excellent' BREEAM rating – is also a highly effective way of attracting future purchasers and occupiers. The improved occupant health and wellbeing, biodiversity enhancements, reduction in water consumption, sustainable procurement, and energy usage developments will go a long way towards attracting consumers that value environmentally-conscious building design – especially projects that have obtained independent and internationally recognised benchmarks, such as BREEAM.

Of course, it's easy to identify the benefits of attaining an 'Excellent' BREEAM rating, but how exactly can this be done?

The journey towards achieving an 'Excellent' BREEAM rating begins unsurprisingly with early planning and design. Integrating sustainability considerations can enable the seamless incorporation and identification of

environmentally friendly materials and systems into the project. In fact, early planning during the design stage enables architects and designers to explore and implement innovative solutions that align with BREEAM criteria, and consider the optimal choice of materials, site selection and orientation.

Taking such a proactive approach means the key sustainable principles are intrinsic to the building, from conception through to completion and building use. Addressing sustainability concerns early means those involved in the process can optimise design choices and minimise the need for potentially costly retrofitting in the future.

With achieving sustainability and obtaining an 'Excellent' BREEAM rating being fundamentally linked to energy-efficient building design, the implementation of innovative and low-carbon solutions to reduce energy consumption, minimise the environmental impact, and enhance operational efficiency is crucial. Utilising energy-efficient design elements, such as high-performance insulation and glazing, heating, ventilation, and air conditioning (HVAC) systems, and optimised building orientation to maximise natural light, will contribute to reduced carbon emissions and lower energy expenditure.

With occupant health and wellbeing increasingly gaining significance in building design, promoting this through the improvement of natural light, enhancing access to outdoor spaces, and implementing ergonomic design principles can make a huge difference to the environmental performance of the building. Considering these important aspects when designing and building residential and commercial properties across the UK will grant designers a greater opportunity to obtain an 'Excellent' BREEAM rating.

The specification and use of sustainable materials, implementation of construction waste management plans, and reduction of waste through reuse and recycling can all have a significant impact on a building's energy performance and, subsequently, its BREEAM rating.

In fact, sustainable materials often have lower embodied carbon, requiring less energy to produce and transport. They are also frequently derived from renewable sources and designed with durability in mind, reducing the need for frequent replacements.

Of course, it's worth noting that the methods required to improve a building's BREEAM rating will vary depending on the location, building type, and other factors. So, seeking advice and guidance from experienced experts is absolutely essential.

Engaging with sustainability consultants, especially ones that specialise in enhancing energy efficiency and reducing consumption, will substantially improve a building's chances of gaining an 'Excellent' BREEAM certification.

Experienced professionals can assist property designers, and building owners in identifying opportunities for improvement and recommend sustainable design strategies. This will optimise the building's environmental performance and ensure the best chance of obtaining BREEAM compliance.

With sustainability becoming a crucial aspect of building design, gaining BREEAM certification and demonstrating a commitment towards reducing carbon emissions and providing a more comfortable and healthier environment for occupants has never been more important for Architectural Technologists. ■

Photos: Jack Hobhouse via Hawkins\Brown

What makes a responsible construction product manufacturer?

Words by Gary Ferguson, Business Development Manager (North and Scotland), Polyfoam XPS

Clearly communicated values. Good quality product information. Comprehensive specification and sales support. Transparency and responsiveness. All of those things, and more, contribute to a manufacturer feeling more like a collaborative partner than simply a product supplier. Overall, it is about culture.

In the last issue of AT Journal (issue 153, Spring 2025), my colleague, Rob Firman, wrote about the relationship between specifiers and product manufacturers. He talked about how closer engagement between the two can help to deliver more buildable constructions and, ultimately, why the as-built performance we all know is so important.

If a product manufacturer has a good culture, that feeds into positive engagement with design professionals. And it plays a big part in them being seen as responsible. But that culture has to extend past the specification and sales stage.

For many construction product manufacturers, once their product leaves the factory gate, they lose an element of control over how it is used and installed. But that doesn't mean they stop being a crucial part of helping projects reach a successful conclusion.

For over thirty years I worked for my family's roofing business. The success of our business often depended on the attitude manufacturers took to working with us, and I'd like to share a little more about that perspective to help round out the picture we started painting in the last issue.

When I say I 'worked' for the family business, it's more accurate to say that I ran it for the majority of those 32 years. Five years after starting out as a labourer, I became company director.

It likely won't come as a surprise that being responsible for a roofing firm is a stressful job. It was never possible to completely switch off. Weekends, holidays – my phone would be on and I always needed to be available.

In part, being unable to switch off was because I took pride in our work and wanted to make sure our customers were looked after. We worked mainly on industrial roofs, including for some big-name companies. Alongside that, we did church roofs and listed buildings, and also school work with local authorities.

Doing a good job was important. Not just so our customers would come back to us, or recommend us to others, but because I cared about the quality of what we offered. And when you stake your name on quality, and come to be relied upon for that, you need others in the supply chain to support you.

So, what is it like when a manufacturer lets you down? There was one occasion when we were using a particular waterproofing product, and the manufacturer started coming to site. They told us they needed to carry out temperature checks. We asked if there was a problem and they told us no. Not long after that, strong winds caused the roof to rip off.

That year, we had used the same product on 36 different roofs, and the same thing happened to every single building. The waterproofing manufacturer paid compensation and redid the work, but that was beside the point. Quite simply, they lied to us, and those lies caused us a lot of reputational damage with our clients that was hard to recover from.

You can provide consistently good service, but it only takes one negative experience to change how people perceive you. And we had 36 negative experiences happen in quick succession.

The waterproofing manufacturer then simply left the market for that type of waterproofing. For them, they could be seen to have fixed the work and then move onto something else. For us, working in the roofing industry day in, day out, we didn't have the option of moving on to something else. We had to work hard to try and recover from the consequences of the manufacturer's dishonest approach.

With nearly forty years of experience in the construction industry, I have unfortunately seen a lot of dishonest culture. But I do see signs that things are changing, and I expect greater transparency to become the norm. I hope to see people and organisations being properly held to account for their actions.

Being a company director was a stressful way to earn a living. Now, as a Business Development Manager for Polyfoam XPS, I actually enjoy being a member of a team rather than having the responsibility that comes from being a company's figurehead. It allows me to focus my energy on providing good service and working with our customers to deliver exactly what they need.

I particularly like working with clients who want non-stock items, or something new. Sometimes people don't really know what they want and we put in a lot of work with them. When the result of that work is an order, it makes the effort all worthwhile. And then the customer tends to stay with us, because we've invested time in them and they see that effort.

Four decades is a long time, and I've gained a lot of experience in that time. It gives you some perspective. I don't need to make a name for myself, or try to promise people the earth to win an order.

In all the discussions around competence in the construction industry, we keep hearing about the SKEB principles: skills, knowledge, experience and behaviour. It is true that you can have all the skills, knowledge and experience in the world, but it doesn't count for much if it is tied to poor behaviour. But I also think the link between experience and behaviour is interesting.

Being out on the road a lot, I meet a lot of young professionals representing other manufacturers who are keen to make a name for themselves. They promise customers whatever is necessary to win an order.

You can provide consistently good service, but it only takes one negative experience to change how people perceive you.

Hopefully, in time, they will learn they don't need to do that to forge good customer relationships – but manufacturers can also play their part by trying to take off some of the pressure the young reps feel.

Speaking from my experience running a roofing business, manufacturers need to make sure that customers are offered the right solution for their needs, and not just being told what they want to hear. With a responsible approach like that, improvements in competence are bound to follow. ■

Can the construction industry help the UK meet its greenhouse gas reduction targets?

Words by Richard Clark ACIAT BSc (Hons) BA (Hons) BTEC HND Mech Eng

There is an opportunity to significantly reduce the embodied carbon created by the building industry and help the UK meet its net zero target by 2050. As mentioned previously in this issue, the UK built environment is responsible for approximately 25% of total UK greenhouse gas emissions, and at COP29 the UK Government committed to an at least 81% reduction in greenhouse gas emissions by 2035, relative to 1990 levels.

The production of cement, the firing of bricks and the substantial amounts of transportation of these materials contributes to much of the building industries CO2 emissions, so any reduction in the use of these materials will reduce the UK's contribution to greenhouse gases.

A method of build that could make a significant contribution to these targets is using compressed earth blocks (CEBs, with or without the addition of chopped straw) to replace much of the use of concrete blocks in low level builds such as housing and small industrial units. CEBs use waste soil (which is normally transported to landfill, at ever-increasing costs and emissions) from civil engineering projects, perhaps even from the construction site itself, and only require a small amount of CO2 emissions to mix and form before they are ready for use. Any water in the process can easily be harvested from run-off and the product is usable 2 to 4 weeks after forming.

Compared to conventional concrete block walls with common forms of insulation, CEBs are a very low carbon alternative. But CEBs are perceived as a risk because there is little data for architectural practices and construction firms to specify this alternative. There is some data and

My concept design for a low embodied carbon premium property

guidance for monolithic cob structures, but these do not fit with conventional construction methods and involve more time and specialist skills to construct.

For the building industry and architectural practices to take up the use of CEBs, there needs to be solid data to make it clear that it is a low-risk method of building. If conventional blocks are substituted with CEBs, only a small modification of skills and logistic timings would be required. This is because they are very similar to traditional concrete blocks and can be manufactured to the same sizes.

The current use of CEBs in builds include those made of H.G. Mathews and listed on the NBS source as 'Strocks': "A structural block of clay-rich earth and chopped straw. Strocks can be used as the inner skin of an external wall and for internal load-bearing walls typically up to three storeys" and have BRE and Warrington fire certification. Their strength is 2.96 N/mm^2 and they have listed uses, including internal load-bearing walls, high mass internal walls and new build homes.

Similar products are also produced by Heritage Cob and Lime, Mike Wye, Cornish Lime, Cob Block Sales, Lime Stuff, Westcott Sand & Aggregates, Earth Blocks UK, and others. Earth Blocks UK has also been developing machinery for the onsite production of blocks and a hybrid system to fit into the current construction industry, as shown with detail and hybridisation test build.

To ensure such a design meets with the requirements of Part L of the Building Regulations, U-Value calculations need to be carried out for the specific design used. An example to meet the regulations for a domestic new build could look like the table below (Fig 1).

There are currently many monolithic earthen/cob buildings in Leicestershire, Northamptonshire, Devon and Cornwall that are up to hundreds of years old, so durability of the material is not a problem. There has been research into the future of monolithic cob in the UK, mainly centred around Plymouth University. For instance, on improvement to the thermal performance of earthen walls to satisfy current build regulations and their international CobBauge project and builds, such as the CobBauge House in Fakenham, Norfolk. My own research project at Nottingham Trent University aims to study the use of CEBs in place of traditional block construction. It will also address that there is the need to understand the current attitude of the industry, the users and other stakeholders in the sector as to why CEBs are currently not more widely used. Information for increased usage include:

1. Useability. Does the construction industry need to change the way its workers work to use the new materials? (Building Regulation Approved Document 7).
2. Strength and durability of the materials (Build Regulations Approved Document A).
3. Fire resistance (Build Regulations Approved Document B).
4. Sound insulation of bricks and complementary insulation materials (Build Regulations Approved Document E).
5. Storage of the materials on site.
6. Thermal properties and heating and ventilation systems (Build Regulations Approved Document L).
7. Cavity wall insulation, used to keep embodied carbon down and reduce VOC emissions (Build Regulations Approved Document D).

There also needs to be detail information with regards to:

1. Structure and make up of walls and fixing of roofs (i.e. robust details).
2. BIM information.
3. Drawing/modelling (e.g. Revit families).
4. Soil sampling, type of clay (for example, Illites, China clay, or Kaolinite), ranges of aggregate particle size and type adjustments, and brick pre use tests with new soils.
5. Brick and block drying times to ensure they are structurally ready for building.

It will be interesting to see whether, over the next few years, the use of CEBs increases and that the greenhouse emissions related to the construction industry fall. ■

Fig. 1

Material	Thickness (d)	Conductivity (k) (W/m/deg.K)	Resistance (R) (W/m2/deg.K)
External surface resistance (Rse)			**0.400**
Mineral Paint	0.01	0.14	0.071
Lime Render	0.025	0.5	0.050
Cob Blocks	0.1	0.6	0.167
Air cavity	0.05		**0.180**
Sheep Wool Batts	0.15	0.04	3.750
Cob Blocks	0.1	0.6	0.167
Insulating Lime Render	0.05	0.12	0.417
Mineral Paint	0.01	0.14	0.071
Internal surface resistance (Rsi)			**1.300**
		R =	6.573
		U = 1/R	0.152

The UK Net Zero Carbon Buildings Standard: creating a true pathway to the future

Words by Ellen Huelin, Sustainability Director, Whitecode Consulting

The pilot version of the UK Net Zero Carbon Buildings Standard (UKNZCBS) – designed to offer a clear and consistent methodology for defining and achieving net zero carbon in the built environment – is set to have a substantial impact on the construction industry in the coming months. Let's take a look at what the UKNZCBS is, why it is being piloted, and how it could positively impact the construction industry moving forward.

Sustainability has become a major focus for the construction industry in recent years, especially with the UK Government's 2050 net zero target getting ever closer. But a lack of a unified approach has led to confusion and inconsistency around the definition of "net zero carbon" in buildings.

To counter that, the UKNZCBS – developed by some of the built environment's leading organisations and decision-makers – was introduced. While it is seen as a hugely influential set of targets and rules, there are many inside and outside the construction industry that aren't aware of what it is or how it could substantially impact the built environment.

So, what exactly is the UKNZCBS? It is a standard that provides strict but transparent guidelines to help industry professionals prove compliance and demonstrate how their assets align with the UK's carbon and energy targets.

In fact, it sets out clear metrics and limits for operational energy use, on-site renewable electricity, and embodied carbon. Consequently, these new standards will exacerbate the need for property developers, facility managers, and building owners to take advantage of the latest advancements in technology, such as smart buildings.

In recent years, there have been many crucial

inconsistencies in how people have approached looking at net zero and a general ambiguity around what exactly net zero means. For instance, does it include all energy use, or should people only focus on heating?

The new UKNZCBS will heighten the focus on carbon emissions – both in embodied carbon and operationally – and encourage a more cohesive and holistic approach when it comes to decarbonisation. Given the UK's built environment accounted for 25% of the total greenhouse gas emissions in 2024, this is absolutely imperative.

By providing consistent definitions for net zero carbon across existing and new buildings, the UKNZCBS will set clear performance targets for whole-life carbon, embodied carbon, and operational energy.

In fact, these standards will set out a fundamental pass/fail requirement for buildings to be fossil fuel free, with the vital exceptions of essential emergency and life safety and crucial back-up systems that service critical functions. Additionally, they will mandate operational energy limits based on energy consumption during building use at 80% occupation.

This means architects, developers, and designers will be able to align on expectations and ensure more efficient and effective results for the building owners and occupants.

With the UKNZCBS shining a spotlight on operational carbon and embodied carbon, innovative and environmentally friendly solutions, such as circular economy practices and low-carbon materials, will soon become much more commonplace.

Consequently, there will be a stronger drive across the construction industry towards early sustainable design decisions, with designers and architects taking time to consider a building's full lifecycle to encourage adaptability and reuse.

Records suggest there are around 29 million homes currently in need of retrofitting. In addition to illustrating just how much of a task is ahead of the construction industry, it also highlights just how much scope there is to improve energy performance and reduce operational carbon in the existing building stock across the UK.

As a result of the UKNZCBS' clear methodologies and targets, architects, along with asset managers, facility managers, and landlords, will have all the information required to make informed decisions when it comes to the benefits of refurbishment versus redevelopment.

Records suggest there are around 29 million homes currently in need of retrofitting.

With a robust and stringent methodology for verifying and quantifying a building's carbon footprint, the UKNZCBS will also enable architects and building designers to ensure their buildings align with the UK's carbon reduction goals.

Following the standard's recommendations and targets will give architects the opportunity to confidently claim and demonstrate net zero carbon status, enabling them to attract clients who prioritise environmental responsibility and sustainability.

The UKNZCBS has been developed for anyone associated with the funding, procurement, design, or specification of a net zero carbon building. But it's also vitally important that architects understand and acknowledge the key metrics that will come to underpin these standards.

With the collection, maintenance, and management of data likely to be a critical factor when it comes to illustrating conformity to the UKNZCBS, it will be crucial for architects to establish rigorous and trusted data collection systems. These will allow the accurate tracking and logging of upfront and embodied carbon data, in both retrofit projects and new builds.

Offering specific targets and detailed information regarding the quantification and verification of a building's carbon footprint, the UKNZCBS will serve as an incredibly insightful and invaluable tool for professional development. Indeed, architects will be equipped with the crucial knowledge and skills needed to design and implement net zero carbon buildings, proving crucial in a built environment becoming increasingly conscious of its impact on the environment.

While the UKNZCBS is only currently in its pilot stage, it has the potential to align the construction industry in the right way and provide a sharper focus on sustainability and energy efficiency. In fact, encouraging a more cohesive and holistic sustainability approach is going to be vital in the coming years, especially with the UK government's 2050 net zero target rapidly approaching. ■

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Harnessing data for a sustainable built environment

Words by Dr Lee Jones, Head of Sustainability, Hubexo (NBS)

Sustainability in construction isn't just about compliance; it's about rethinking the way buildings are designed, the materials selected, and the supply chains that support them.

From minimising carbon, energy, and water use to sourcing ethically produced materials and ensuring long-term resilience, every specification decision has a lasting impact. The challenge is clear: the industry must innovate, embrace data-driven approaches, and prioritise transparency to build smarter, cleaner, and more future-ready spaces.

Research from the Treasury and the Green Construction Board highlights that the most significant carbon reduction opportunities occur in the early design and planning stages, where strategic choices can yield lasting environmental benefits. As a result, specifiers and design teams must have access to high-quality, reliable data to drive lower-carbon outcomes.

The demand for detailed product information continues to grow, underscoring the need for data-driven decision-making in architectural practise. During the initial design phases – including concept development and spatial planning – specifiers must consider the full lifecycle costs of materials, systems, and the building itself. While some sustainable choices may come with higher upfront costs, they often lead to long-term efficiencies and savings.

Digital tools present invaluable opportunities for assessing whole-life impacts during specification. By leveraging these resources, designers can make well-informed, sustainable choices by using comprehensive, accredited product databases. This ensures that materials and systems are selected with both performance and environmental impact in mind.

With sustainability at the forefront of architectural decision-making, the quality of specifications plays a crucial role in ensuring projects meet environmental and performance targets. To support this, NBS has introduced The Best Practice Guide to Specification Writing, a free framework designed to standardise and improve specification writing across the sector. Developed in collaboration with leading industry professionals, this guide addresses common pain points to enhance consistency and quality across practices and contractor-led projects, serving as a resource for professionals at all stages of their careers, whether they are new to specification writing or experienced specifiers refining their approach.

Sustainable construction is inherently collaborative, requiring input from multiple stakeholders. As digital tools become more widely adopted, every participant in the design and construction process has a role to play in achieving sustainability targets. In particular, manufacturers can contribute by providing detailed, digitally accessible data about the environmental attributes of their products. This transparency empowers specifiers to make informed

decisions that reduce a project's carbon footprint.

But a significant challenge remains: many environmental claims lack independent verification. To ensure credibility, manufacturers should consider supplying Environmental Product Declarations (EPDs) – third-party certified documents that provide clear, verifiable data on a product's lifecycle impact. These declarations equip specifiers with the trusted performance metrics necessary to make sustainable choices with confidence.

With the built environment responsible for around 40% of global emissions, architects and specifiers must lead the charge toward sustainability. Digital tools and comprehensive product data will be fundamental in achieving these goals, helping professionals reduce carbon emissions while still ensuring compliance with other evolving regulations such as the Future Homes Standard, the Building Safety Act, and the Fire Safety Act.

The advantages of embracing digital capabilities are clear. Accurate, accessible data allows specifiers to navigate complex regulatory landscapes while driving sustainable and resilient architectural solutions. ■

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Transforming spaces: the power of underfloor heating combined with smart technology

Words by Richard Bateman, Product Marketing Manager, RWC

As the heating industry shifts towards more sustainable and efficient solutions, underfloor heating (UFH) is quickly becoming the go-to option for many installers. The surge in its popularity, both in new build properties and existing homes, highlights its role in futureproofing homes by providing a reliable and highly efficient heating system that has the versatility to adapt to the specific demands of individual homes.

Underfloor heating systems offer a fundamentally different approach to delivering warmth compared to traditional radiator systems. Operating at temperatures between 45°C and 55°C, UFH can provide consistent heat distribution across a room to create a comfortable environment – and doing so while minimising energy consumption. That's because, in contrast to radiators, which typically require flow temperatures of 65-70°C, much less stress is placed on the heat source.

With recent changes to Part L of the Building Regulations paving the way for the Future Homes Standard, wet central heating systems in new builds must not exceed a flow temperature of 55°C. This makes UFH a straightforward way of achieving compliance, but low-profile systems also make it possible to achieve the same benefits in existing homes and meet the evolving needs of homeowners.

While the installation of UFH is more straightforward in new builds, the renovation of existing home presents a significant opportunity for installers. Using innovative products like JG LowFit systems, which have been designed with retrofit projects in mind, installers can deliver reliable UFH systems while minimising disruption for customers. Panels ranging from 16 to 20mm can be installed easily, fitting seamlessly over existing floors to allow UFH pipework to be installed quickly and efficiently. This adaptability not only broadens the scope of potential projects but also allows homeowners to benefit from enhanced comfort and efficiency without extensive renovations.

Part of the beauty of UFH is its ability to adapt to individual spaces – accommodating different layouts, floor build-ups and room sizes with ease. Systems such as JG LowFit – with interlocking castellated panel, foil, and mesh options – provide installers with the flexibility to tackle every job and floor type. Whether it's a screeded system using castellated panels or a timber floor installation, the LowFit design simplifies every aspect of installation.

Of course, alongside a system that plays ball, installer expertise helps to keep projects on track and ensure every system is perfectly suited to meet homeowner requirements. But that's not all. Installers can enhance the UFH systems they create by using smart controls, supporting homeowners to make full use of their heating to enhance comfort and efficiency.

Smart controls put the user in complete control of their heating systems. These days, we're used to having an app for everything, helping us to manage almost every aspect of our lives more effectively. It's no different with UFH, with smart controls supporting users to manage their heating systems in a way which works for them.

In reality, that could mean choosing to heat rooms or zones independently or using an app to switch on the heating when you're on your way home so it's warm when you arrive. This functionality is all made possible through smart thermostats and controls. With wired and wireless options available when it comes to UFH controls and thermostats, installers can work with their customers to provide the best set-up for them, making it quick and easy for them to control their heating.

Aside from improving comfort, greater control over UFH can also help homeowners to manage their consumption effectively. That's because they can choose which rooms of their home are heated, when and for how long. So, while living spaces might get priority in the daytime, bedrooms can be heated in the evenings. As well as placing less demand on the heat source by requiring less hot water at any one time, greater control can mean reduced energy bills.

At a time when homes need to become more sustainable by prioritising efficiency, UFH has a critical role to play. Their lower operating temperatures, compatibility with old and new heat sourcing, and ability to be controlled effectively all contribute to a home heating system that is fit for today's homes.

For plumbing and heating installers, understanding the full scope of UFH – from installation techniques to smart controls – is essential for meeting customer expectations and navigating the evolving landscape.
With the right knowledge and tools, installers can leverage the advantages of UFH to create efficient, tailored heating systems that meet the demands of modern homeowners. ■

Breaking ground or hitting a brick wall? Exploring whether Labour's 1.5m homes will become a reality

Words by Lanpro, Boyer, and Leaders Romans Group (LRG)

Last year's headlines painted a somewhat bleak picture for the housebuilding industry. Targets looked set to be missed, completion rates were falling and even Prime Minister Keir Starmer admitted the goal was "a little too ambitious". But this year, the mood has shifted slightly. The Government now insists it will hit its 2029 housebuilding target ahead of the next election, and Deputy Prime Minister Angela Rayner has made Labour's position clear: there are "no excuses" for failing to deliver the 1.5 million new homes promised in the manifesto.

There are minor signs of optimism from within the industry, too. A recent survey by Shawbrook found that three in five developers believe achieving the government's 1.5 million homes target will be "easy". But as the lender confirmed, doubt remains. Concerns persist within the sector, and not without reason.

With just four years remaining, several challenges must be tackled for the sector to stay on track and meet the target.

Archaeological constraints

Tackling the target from a heritage angle, Mitchell Pollington, Director (Historic Environment) at Lanpro, shares his insights: "The proposed delivery of 1.5 million homes over the course of this Parliament could pose significant challenges to the archaeology profession, which often plays a key role in the planning process for major residential schemes. Although the number of archaeologists employed in the UK has increased from a low point 10 years ago, there are still issues over the profession's capability to serve numerous large-scale projects simultaneously. At the same time, the capacity of local authority archaeologists to agree and monitor archaeological schemes of work is also stretched, in often poorly resourced teams."

Pollington warns that overly rigid archaeological requirements – especially when not backed by evidence – could further delay planning approvals and drive up developers' upfront costs, putting smaller projects at risk.

He continues: "It is essential for the archaeological profession to continue to attract new staff coming into the industry, supported by better resourced and more

pragmatic approaches from local planning authorities, to help facilitate the Government's targets."

Planning challenges

Of course, with an increase of building comes an increase in planning challenges and, as Lawrence Turner, Director at Boyer, explains: "With the number of homes permitted by local authorities at the lowest level in over a decade, Keir Starmer will, as he has said, face an 'almighty challenge' in delivering housebuilding targets.

"During the last decade, the flow of construction workers into the market has dwindled considerably – and once the flow has been reduced to a trickle, it takes more than mere confident proclamations to turn the tap on and restore it."

The industry, Turner argues, is constrained by the planning system itself. He explains: "The sector only has as many workers as work demands, and until recently, the capacity of the construction industry has been restrained by the planning system, artificially constraining the supply of new homes. Building up an additional workforce will take time to train and recruit."

Even if the government is committed, Turner questions how local authorities will respond when controversial planning applications emerge – particularly on the edges of towns and cities, where opposition tends to be strongest. He adds: "Local politics is just – if not more – important than national politics in delivering targets.

"In the construction and planning sector, we know what needs to be done to deliver more housing, but as we're seeing with current debates over new renewable energy schemes, it's hard to sell that story to the wider public."

There is also the case of controversial planning applications in areas where opposition is rife. Here, Turner believes, "It is plausible that the Government will need to intervene and call in applications, favouring high-profile schemes to underscore the principle that housing needs must prevail over local opposition." He goes on to say: "My concern is that this shift away from appeasing NIMBYs (a stark contrast to that of the previous Government) could prompt local politicians to reconsider their stance on development.

"Before the issue of resourcing construction comes into play, changing the mindset of some local authorities from protecting the status quo to positively embracing growth and investment is an important first step."

Workforce and supply chain concerns

The widely discussed skills shortage remains a major concern and has significant potential to hinder progress toward targets, as Tim Foreman, Managing Director of Land and New Homes at Leaders Romans Group (LRG), warns: "Like many in the housebuilding sector, I am concerned that the Government's well-meaning housebuilding targets will be compromised by an absence of construction workers, trades and craftspeople."

While demand is there, labour and material shortages threaten progress, as Foreman explains: "There is certainly an appetite among developers to increase the number of

homes they build, and the recently announced planning reforms should support this. However, I still have grave concerns about labour and materials shortages.

"We also need to ensure that an increase in quantity does not denote a decrease in quality. While the housebuilding industry heaved a collective sigh of relief when 'beauty' was removed from the NPPF, design standards must be retained."

Foreman also calls for stronger support for SME housebuilders, who are at risk of being squeezed out. He observes: "Overdemand for materials risks smaller housebuilders missing out on vital construction products and as such threatens their existence – ironically, when they are needed most."

While the government has doubled the ENABLE Build scheme to £2 billion, Foreman argues that support must continue throughout the build process, not just at the start.

The role of buyers in meeting targets

Boosting supply is only half the battle. Without buyers, the chain breaks down. "From my perspective – the sales end – it's encouraging to think that with more housebuilding, the market will offer more choice and, with more chance of finding the perfect home, the 'want to move' market segment (as opposed to the 'need to move') will be more inspired to buy," says Foreman.

Yet financial challenges remain a major barrier. "High inflation and diminishing affordability have put a strain on buyers' ability to move," he explains. "Furthermore, impacted additionally by a new, lower Stamp Duty threshold, first-time buyers will experience greater difficulties in accessing the housing market. The HBF has called for targeted Government interventions, which are yet to be responded to."

Without demand to sustain growth, Foreman warns that any productivity gains will be in vain.

The road ahead

Labour's 1.5 million homes target is one that, on paper, appears achievable, but in reality faces significant roadblocks. While optimism is creeping back into the industry, deep-seated challenges remain. Planning constraints, workforce shortages and supply chain pressures all pose serious threats to delivery. Without streamlined planning approvals, a stronger labour pipeline and sustained Government intervention, the industry risks falling short once again.

Ultimately, the success of this housing drive will depend not just on policy, but on the ability to translate commitments into action, turning political promises into built homes. Whether the sector will break ground or hit a brick wall remains to be seen. ■

Like many in the housebuilding sector, I am concerned that the Government's well-meaning housebuilding targets will be compromised by an absence of construction workers, trades and craftspeople.

Restoration sees clay brick buildings live on in spectacular style

Words by Robert Flello, CEO, Brick Development Association (BDA)

Regenerated clay brick buildings are an increasing source of inspiration for designers tasked with bringing new life and commercial purpose to sites of historical interest. This is never more evident than redevelopment projects at Norton Folgate in London, and Shrewsbury Flaxmill Maltings in Shropshire. Let's look at how each refurbishment made use of the existing clay brick infrastructure – rather than demolish it – to bring the sites into the 21st Century in inventive, sustainable style, with their original character retained.

Much old brickwork, where it has been properly detailed and soundly built, will need virtually no maintenance over long periods of its life. But it is inevitable that the rehabilitation and restoration of older properties will often involve repairs to or adaptations of brickwork. In our push towards net zero, we have seen a nationwide focus on refurbishment over demolition, and is why a thorough understanding of the alteration and repair of brickwork has never been more relevant.

Successful restoration hinges on identifying structural issues early and taking a thoughtful approach to repairs and alterations. Done well, it allows heritage buildings to be revitalised with modern purpose while retaining their unique architectural character.

Norton Folgate

A prime example of heritage-led regeneration, Norton Folgate comprises three urban blocks and sits within the Elder Street Conservation Area where it occupies a prominent position within The City Fringe between the City of London and Shoreditch. While the Conservation Area is small, there are dramatic changes in character from one street to the next. The masterplan has been developed to respond to this mixed character, bringing vacant or underused buildings back into use and reconnecting and enhancing the public realm.

Instead of implementing a blanket strategy, the masterplan employs a building-by-building approach to the retained existing buildings, utilising restoration,

refurbishment, extension, remodelling, and façade retention to breathe new life into the architecture. Sensitively designed new buildings have been introduced in a palette of materials, including brick, which was selected for its robustness, quality, and appropriateness to the Conservation Area's character.

Reflecting Norton Folgate's varied architectural character, four different architectural practices were brought together to diversify the architectural approach and style. Allford Hall Monaghan Morris (AHMM) was appointed as masterplanner and designed three buildings: Blossom Yard & Studios, Nicholls and Clarke, and Loom Court. Stanton Williams, Morris + Company, and DSDHA designed Elder Yard and Studios, 15 Norton Folgate, and 16 Blossom Street respectively, with East leading the public realm strategy.

A comprehensive study of the local context was undertaken at the planning application stage to understand and develop the material palettes for the buildings, with the architects liaising and working together to produce a coherent approach to the masterplan materiality. The study showed that there was a wide variety of brick tones in the locality; a variety which is evident in the development – there is a pale Marziale, warm Lindfield Multi, warm Danehill Yellow, red Floren Gothiek and a dark Nelissen Ferro. The respective bricks have all been selected to respond to their context, both retained and new, and to also work together across the development to form a coherent yet diverse new neighbourhood.

Whilst some buildings use brick-faced precast elements and some traditional brickwork, all share the principle of careful detailing to celebrate the brick used. This is evident in the clean, calm lines and reveals on Elder Yard, the piers and textured sawtooth spandrels on Blossom Yard, the dark brick warehouse piers of 16 Blossom Street and the clean articulation of the red brick to 13/14 Norton Folgate. The proportion and scale of the brick façades has been carefully considered to reflect the warehouse heritage of the site, but also to display the brick in the best possible way. The result of using the clay bricks is to instantly anchor the masterplan into the urban context, linking City to Shoreditch, to provide a new frame of reference that encourages people to use and re-adopt the area.

Flaxmill Maltings

Like Norton Folgate, the restoration of Shrewsbury Flaxmill Maltings, the world's first cast iron-framed building, is testament to traditional craftsmanship. Originally built in 1797 as a steam powered flax mill, the building was repurposed as a maltings from 1897 to 1987 before falling into dereliction.

In 2005, Historic England bought the site and partnered with Shropshire Council and Friends of the Flaxmill Maltings, to secure a £20.7 million grant from the National Lottery Heritage Fund in 2017 for the restoration of the Grade I listed Main Mill and the Grade II listed Kiln, repurposing it as a vibrant business hub and heritage destination.

Croft Building & Conservation worked on a comprehensive programme of repair, reuse and retrofitting, combining modern sustainable practice with traditional materials and over 80 skilled craftspeople.

The original five storey Main Mill building, which had a frame comprising three rows of cast iron columns, with beams extending between them and brick arches between the beams forming the floors, had serious structural flaws and required significant strengthening measures. Embedded timber had also rotted, causing walls to delaminate. This compromised the structure and so began a thirteen-step plan to safely remove the timber and reinstate the brick elevations.

The walls were thermally upgraded with wood fibre insulation and finished with lime plaster, and the existing masonry was repointed with lime mortar to ensure that the moisture wicked away. The Main Mill was originally built with 'great bricks' which were approximately one-third larger than standard bricks to reduce the burden of the 18th century brick tax. These were cleaned off and re-laid in lime mortar.

Northcot made 90,000 bespoke oversized bricks in two sizes (75 & 93mm) for three different blends, all hand thrown and kiln fired using traditional methods and weathered to match both colour and texture of the originals. Their size (93mm) required significant hand throwing skills from a team of experienced master brickmakers.

The new bricks were used primarily for the reopening of 110 Flax Mill era windows (bricked up or made smaller when it was a maltings), and for repairing gaps in the floorplates, which were created when the maltings machinery was removed. Special brick squints were made for the splayed window reveals to reduce dust and waste.

Whilst reinstating former window openings, Georgian brick pavers were discovered and skilfully re-used to form the windowsills. New bricks were also used to repair the roof line and where the Main Mill joined the Engine Houses, Jubilee Tower and Kiln structures.

These landmark projects demonstrate the power of restoration to honour the past while shaping the future. With their sensitive use of clay brick, both Norton Folgate and Flaxmill Maltings demonstrate how historic buildings can be adapted for modern use without losing their character. As the industry embraces sustainable construction, restoring and repurposing our built legacy isn't just a design choice, it's a vital pathway to meeting net zero goals with integrity and imagination. ■

National Design Guide and the National Model Design Code updates:

What changes are required and how can they facilitate both quality and speed in housing delivery?

Words by Glen Richardson, Associate Partner, Carter Jonas (Cambridge)

Back in December, the Government confirmed that both the National Design Guide (NDG) and National Model Design Code (NMDC) would be updated this season. While the changes are predicted to be modest, they present an appropriate opportunity to consider how these documents might evolve, and how even small refinements could help accelerate housing delivery without compromising quality.

Essentially a broad checklist for making spaces well-designed and in tune with community needs, the current NDG considers building design, green spaces and road layouts, and aims to create areas that are attractive, healthy and easy to navigate. The NMDC provides a roadmap to local authorities to prepare design codes and builds on the NDG by detailing particulars such as materials, building heights, car-parking and street widths.

Embedded in policy, these national-level guidelines are frequently quoted in planning decisions, appeals and inquiries and offer a useful foundation and point of reference to assess the quality of design.

While last year's NPPF modifications marked a significant shift in national planning policy, the imminent tweaks to the NDG and NMDC are anticipated to be relatively minor – more a case of refinement than reinvention. Crucially, they're not expected to include anything which would delay the process of expediting

planning consents.

The NPPF gives the NDG and the NMDC considerable weight. Paragraph 133 of the revised NPPF outlines that to provide maximum clarity about design expectations at an early stage, all local planning authorities (LPAs) should prepare design guides or codes consistent with the principles set out in the NDG and NMDC.

Meanwhile, paragraph 138 states that the NMDC is, the primary basis for the preparation and use of local design codes and removes the requirement for local design codes to be the primary means for assessing and improving the design of new development.

Ensuring these guides are refreshed is important. In practice, they're not only regularly cited in appeals and real-world applications, but they also serve as a "default" guidance for LPAs overstretched to deliver more homes, especially where time and resources to develop bespoke design codes are limited.

Following the widely welcomed removal of the word "beauty" from the revised NPPF, there's a renewed emphasis on clarity and objectivity in design, as well as substantially increasing housing output. By refreshing the NDG and the NMDC, these guidelines will be brought in line with a more grounded and practical policy direction.

LPAs are stretched, and with Labour's 1.5 million homes target, it is essential to keep processes straightforward. Excessive specifics risk complicating planning and hindering the construction of much-needed market, social and affordable housing. A one-size-fits-all approach, therefore, should be replaced with localised, context-sensitive design.

It makes complete sense, in both architecture and planning, that design codes – where they exist – should be applied at a local level. To suggest that a local authority should have a single design style covering its jurisdiction is the antithesis of good design: places should always respond to their immediate surroundings.

Perhaps more significantly, given the push for growth and the magnitude of national housing targets, it is vital that both the NDG and NMDC support those councils that lack the internal capacity to create their own guidance. As such, the updated documents must remain well-defined, accessible and straightforward to apply, specifically for authorities already under pressure.

There is a misapprehension that good design takes time. In practice, good design policies – those which stem from national policy but are implemented through local policy – are instrumental in allowing schemes to progress quickly, even on difficult sites.

Our recent experience in North West Hatfield illustrates how transparent, early-stage design guidance – aligned with local policy and national principles – can pave the way for complex, large-scale, multi-phase developments. Prepared on behalf of Gascoyne Estates and adopted by Welwyn Hatfield Borough Council, the Supplementary Planning Document (SPD) outlined a phased vision for a new neighbourhood that includes 1,750 homes, primary and secondary schools, employment space and transport and travel links. Carter Jonas' Masterplanning and Urban Design team led the preparation of a Development Framework Supplementary Planning Document which set out key requirements for the delivery of a well-designed, high-quality neighbourhood for Hatfield.

LPAs and developers working on social and affordable homes typically face tighter budgets and more pressing timelines. Updating guides to make them easier to interpret – and to minimise delays caused by design-related back-and-forth – could also benefit resource-strapped housing associations and councils.

There remains a common misconception that the swift rollout of housing – particularly social and affordable types, which are typically in even higher demand than open market units – comes at the expense of quality. But with the aid of the updated NDG and NMDC – as well as the revised NPPF – councils and housing associations will hopefully be better equipped to define what good design looks like. This ease of understanding can remove a lot of the guesswork and, in turn, help reduce unnecessary costs.

For social and affordable housing, fostering inclusive, well-connected and sustainable places – underpinned by tenure-blind design – is a central aim. Creating communities is one of the NDG's core characteristics, with factors such as social interaction, walkability, green space, mixed-use development and inclusion all seen as fundamental. Updates to this document should seek to refine and reinforce these principles, ensuring they continue to support diverse tenures and neighbourhoods, including those with a high proportion of affordable homes.

Ultimately, consistent and clear policy and guidance are what is needed to enable good-quality design and facilitate the timely delivery of market, affordable and social housing. While recent updates to the NPPF have marked an important shift, the forthcoming revisions to the NDG and NMDC must continue this trajectory. Change for change's sake is rarely the right course. While politics may flourish on dramatic twists and turns, policy works best when it remains clear, measured and consistent. ■

Following the widely welcomed removal of the word "beauty" from the revised NPPF, there's a renewed emphasis on clarity and objectivity in design, as well as substantially increasing housing output.

The value of valves: why they are critical for effective plumbing systems in multi-occupancy buildings

Words by Richard Bateman, Product Marketing Manager, RWC

As the rise in multi-occupancy buildings continues, for these properties to be effective and comfortable for every occupant, it is important to optimise plumbing systems. Systems in multi-occupancy buildings are generally more complex than traditional domestic systems, but they can still remain highly efficient with correct specification and installation. Let's explore the role of valves when ensuring essential performance in apartment blocks, student housing, and other multi-occupancy buildings.

There has been a growth in the number of multi-occupancy buildings (those that contain two or more units) in many parts of the UK in recent years, largely down to more people living in urban areas.

Apartments made up around 15% of new home registrations according to NHBC figures in Q3 2024, compared to 12% in the same quarter in 2021. In some regions, including the South East, South West, East of England and West Midlands, the number of houses of multiple occupancy (HMOs) – which is one type of multi-occupancy building – has increased by up to 10%, despite London skewing the national figures.

With 1.5 million new homes targeted by 2029, the need to deliver more housing quickly – and with limited space – ensures the number of apartment blocks, high rise residential buildings, student housing and HMOs are only set to rise further.

The focus now turns to how developers and their contractors can ensure efficient, comfortable living for occupiers.

One of the most important product categories to help deliver that goal is valves, allowing for the effective control

of water throughout the building and ensuring every outlet and appliance can draw on the water pressure required to deliver. Valves play a critical role in making sure every user in a multi-occupancy building has the performance needed for modern homes. When specifying valves, it is important to consider the individual characteristics of the building.

Water will also enter the building at much higher pressures than is safe for individual outlets to handle, so controlling this pressure with the right valves will be essential to performance, longevity, and user safety.

With this in mind, there are a number of specific valves that should be included in multi-occupancy specifications. Here we will explore some of the most important.

Floreg Isolating Valve

This product limits the flow rate of a supply pipe to a set limit, conserving water and limiting water wastage at outlets. Used in individual outlets such as taps and appliances, floreg isolating valves allow plumbers to undertake repairs and maintenance on specific sections of the plumbing system without having to shut off and drain large sections of the system.

Easy to install and suitable for hot and cold water use, they can be used to maintain flow rates of the desired level, which helps to save water and energy, whilst providing even distribution when supplying multiple outlets. Precise flow control enables designers to size systems accurately, with flow regulators available from 4 to 15 L/min.

In addition, interchangeable regulators allow flow rates to be easily altered which makes them ideal for new build and retrofit applications.

Pressure Reducing Valves (PRVs)

PRVs control and regulate water pressure to reduce the risk of burst pipes, flooding and damage to heating systems and appliances.

Vital for delivering safe and stable water supplies, PRVs also conserve energy by slowing down the water pressure to reduce the amount of water that comes out at the point of use and include filters for enhanced water purity. They should be fitted at the point where the mains pipework first enters the property, usually the kitchen.

PRVs are particularly useful in multi-occupancy properties, where more water is typically used than in a single domestic property. This pressure can lead to issues including pipe bursts.

Combination valves

The one-piece Tenant Valve Advance from Reliant Valves provides installers with a single solution that controls water pressure and monitors water usage and supply, whilst overcoming time and space constraints.

Developed specially for multi-unit buildings including residential high-rises and office buildings, it delivers multiple functions within one self-contained unit. In fact, it includes all the elements that make up a chain of valves, which makes maintenance and servicing easier, as there is no need to check every connection point. The one-piece cartridge design also reduces potential leak points and installation labour costs.

Thermostatic Mixing Valves (TMVs)

Commonplace in many plumbing systems, TMVs blend hot and cold water to ensure safe and comfortable water temperature, reducing the risk of accidental injuries and burns.

They are multifunctional by design, preventing backflow and water impurities, as well as providing a fail-safe/emergency shut off and tamperproof adjustment setting.

Approved for basins, bidets, showers and high pressure fill baths, TMVs are quick and easy to install and provide ultimate protection to end users, while reducing water wastage and energy consumption. Crucially, they allow hot water systems to run at a high enough temperature to prevent Legionella bacteria from breeding.

When it comes to sizing TMVs, it is crucial that they are sized correctly for the specific application. Ensuring that a TMV is the right size allows mixed water to be delivered at a constant rate and an accurate set temperature, no matter how many outlets are being used.

With a growing number of people calling multi-occupancy properties home, it is imperative that plumbing and heating professionals have the tools and resources they need to meet the demands of such buildings. Valves are a great place to start, ensuring performance, safety, and stable systems for users. ■

Building a sustainable future: environmental innovations in decorative coatings

Words by Kathryn Tormay, Head of Product, Crown Paints

At a time where sustainability is paramount, environmentally aware product solutions are more crucial than ever when it comes to designing for the built environment. All design decisions, including the choice of coatings, can impact the sustainability credentials of a building.

As the industry evolves, so too do the materials and methods available to those who work to create spaces that are both beautiful and environmentally responsible. The latest advancements in coating technologies offer ATs a range of options that contribute to sustainable design in meaningful ways. The right coatings can reduce the amount of carbon, improve indoor air quality, and even extend the life cycle of a structure.

The development of water-based coatings has been a considerable step forward in reducing the environmental impact of paint products. These are manufactured with significantly lower volatile organic compounds (VOCs), which are known contributors to indoor air pollution. By opting for low-VOC coatings, architects can help create healthier indoor environments and reduce the broader environmental impact of their projects.

Crown Paints provides a wide range of low VOC options that are ideal for projects where indoor air quality is a top priority. These products are designed to minimise the release of chemicals during and after application, making them perfect for residential, commercial, and educational environments where occupant health is paramount.

For projects that need to meet high sustainability standards, choosing coatings that are certified by programmes like BREEAM (Building Research Establishment Environmental Assessment Method) and LEED (Leadership in Energy and Environmental Design) is essential. These certifications ensure that the products have been rigorously tested for their environmental impact, contributing to the overall sustainability credentials of a building.

Last year, we introduced Crown Trade Clean Extreme Clean Air, a new low VOC product which has been certified

as meeting BREEAM and LEED regulations, demonstrating our commitment to producing paints that align with the highest standards in the industry. It is also equipped with innovative technology, which actively contributes to purifying the air within enclosed spaces. By absorbing harmful chemicals like formaldehyde from the surrounding environment, the paint not only provides aesthetic enhancements but also contributes to a healthier indoor atmosphere from the very first coat.

Specifying products that last can also be a route to supporting a more sustainable maintenance cycle for the building. Durable coatings that stand the test of time reduce the need for frequent repaints and maintenance, lessening waste and the need for additional materials.

Beyond product innovation, the manufacturing process plays a huge role in the sustainability of the construction industry. As we move towards Industry 4.0, which will see the next phase of digitisation within the sector, many architects and designers will be searching for manufacturers who are driving this forward.

While 2050 might feel a long way off, it's vital that manufacturers of all size begin acting today to reduce their emissions in line with net zero targets. We started this journey a few years back and at the end of 2021 opened a new materials and packaging warehouse, alongside installing new machinery and technology into our existing factory – including the installation of more than 500 solar panels.

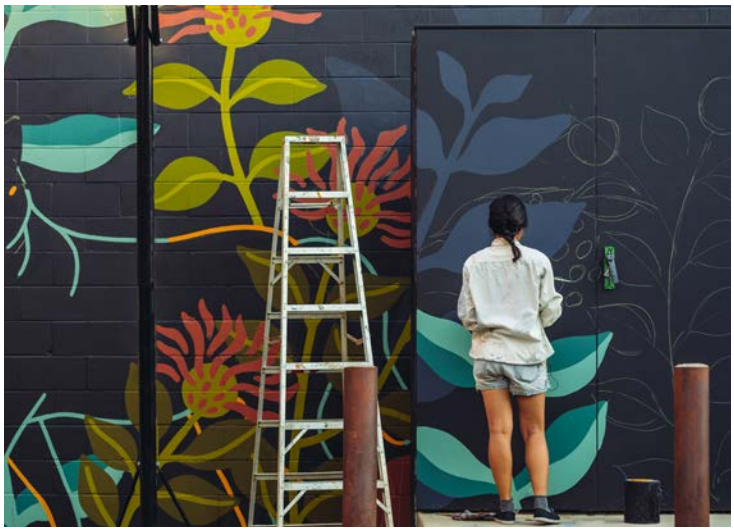
Generating our own green energy through this has enabled us to optimise flows within the factory, which makes us more efficient and reduces our overall carbon footprint. Since 2022, 100% of our owned operations also run-on renewable energy from certified sources – and we're not stopping there.

We have set ourselves goals to achieve complete carbon neutrality across our own operations by 2026 and reduce greenhouse gas emissions across our entire supply chain by 50% by 2030. By 2026, we aim to become a zero waste to landfill business, and all our plastic packaging will contain 80% recycled content by 2025. That is well beyond the UK Plastic Packaging Tax threshold of at least 30%.

The right coatings can reduce the amount of carbon, improve indoor air quality, and even extend the life cycle of a structure.

The construction industry is increasingly adopting practices that support a circular economy, ensuring that materials made use of during development are reused or recycled rather than ending up in landfills. One such initiative is our CanBack scheme: through this, empty plastic and metal paint cans from any brand can be returned to Crown Decorating Centres free of charge, to be responsibly recycled. Integrating responsible practices like this into the design and build process by giving contractors additional sustainability options when working on site can make a significant difference in the overall sustainability of a project.

We believe the journey towards a more sustainable future in architecture and design is one of collaboration, and our experts are on hand to work closely with suppliers early in the design process to ensure that sustainability goals are met with the best possible materials and solutions. ■



Are new towns the future or the past? The role of land assembly in reawakening a vision

Words by Andrew Burton, Planner/ Land Consultant, Boyer (an LRG company)

The concept of building new towns once epitomised a transformative approach to addressing housing and infrastructure challenges in Britain. From early developments, such as Letchworth Garden City, to post-war projects like Milton Keynes, these planned communities provided innovative solutions to overcrowding and economic stagnation. Yet momentum appeared to stall in the 21st Century, raising questions about their relevance today. Can the vision of new towns be revived – as the current Government hopes – or has land assembly become too complex to manage?

Greenfield vs. brownfield

A major challenge in reimagining new towns lies in land assembly, which is politically contentious and costly. Greenfield sites offer a blank slate, but even considering recent relaxations of Green Belt policy (not least the introduction of the 'grey belt' into planning policy), its restrictions pose a major challenge. Meanwhile, brownfield sites, although aligned with sustainability goals, come with significant hurdles, including remediation costs and fragmented ownership. The new government must navigate these competing dynamics to reignite large-scale new town projects.

Greenfield land assembly challenges

Farmers' reluctance to sell land poses a significant roadblock for greenfield development. For many, land represents their livelihood and wealth. Recent tax reforms, such as higher capital gains and inheritance taxes, make selling even less attractive. Farmers often face a substantial tax burden when selling land for development, deterring them unless compensated at a premium. Additionally, concerns about losing long-term security and dealing with a contentious planning process further diminish their willingness to sell.

To overcome this, new Government policies could offer tax incentives or deferrals for landowners willing to sell under specific frameworks. Without such interventions, greenfield land assembly for new towns remains limited, threatening the feasibility of these projects. This would align better to the Government's aspirations of building 1.5 million homes over the parliamentary tenure.

Reimagining new towns
For new towns to regain relevance, I suggest that several policy and practice shifts are needed:

1. **Innovative land assembly approaches**
   Compulsory Purchase Orders (CPOs) have historically facilitated large-scale land acquisition but remain contentious and slow. Streamlining the CPO process or adopting collaborative models, where landowners share in development profits, could reduce opposition. Such models may not ensure optimal site selection, though.

2. **Reconsidering Green Belt priorities**
   The Green Belt protects natural landscapes and curbs urban sprawl, but a more nuanced approach could enable targeted, sustainable development. Identifying fewer sensitive areas for strategic interventions could alleviate housing pressures near urban fringes. Enhanced land mapping and public consultation are crucial to balancing these objectives.

3. **Integrated infrastructure planning**
   Successful new towns require robust infrastructure, including transport links, schools, and healthcare facilities. Public-private partnerships, backed by government funding, could unlock the resources needed for integrated development.

4. **Capturing land value uplift**
   Greenfield new towns can generate significant land value uplift. Mechanisms to capture this uplift – via levies, bonds, or development corporations – could fund infrastructure and community amenities. While not a new idea, it remains underutilised in modern planning.

The political landscape
The feasibility of new towns ultimately depends on political will. Recent governments have focused on urban densification and smaller-scale projects, but the housing crisis persists and currently shows little sign of improving: data from the Office for National Statistics shows that only 38,400 homes were completed in Q1 2024 – the lowest quarterly average since Q1 2016. Public dissatisfaction with incremental solutions could drive renewed interest in large-scale interventions. That said, the new government has made some progress, initially by establishing the New Towns Taskforce, which is due to recommend a list of suitable locations by July. For the new Government, championing new towns could serve as both a bold vision and a practical response to housing shortages.

Delivering a new town requires many disciplines to work together over many decades (Milton Keynes was planned in 1967 and it was not until 1992 that the Development Corporation was wound up) – funding, a legal framework, infrastructure provision, suitable land being available, etc. From a pure town planning perspective, new towns make a lot of sense and should absolutely be part of the solution to the housing crisis. However, unless the Government wins a second or third term in office, or there is genuine cross party support for a 'new town initiative' and an agreed delivery strategy, it is unlikely that new towns will be able to meaningfully contribute to housing delivery for many years. Furthermore, private investment, an integral part of new town delivery, requires political certainty to de-risk their investment.

Whilst building new towns is a sensible and indeed a proven means of delivery housing, it is not exactly a political point scorer. Despite the rhetoric, new towns are unlikely to generate the political and industry interest that they deserve.

A balanced future
New towns are neither relics of the past nor guaranteed solutions for the future. Deployed thoughtfully, they could address contemporary challenges while respecting historical lessons. However, policymakers must overcome hurdles in land assembly, rethink Green Belt priorities, and embrace innovative funding models. Whether driven by economic necessity or visionary ambition, new towns could play a pivotal role in 21st Century planning if political leaders and landowners are prepared to act. ■

How to specify timber stairs

Words by Neil Wycherley, Head of Technical, Staircraft

Timber stairs play a pivotal role in the design and functionality of new homes, offering both aesthetic appeal and structural integrity. But what is the sector doing to make it easier to specify these elements?

There have been more legislative changes recently in the housing sector than at any other time, presenting a challenge for specifiers. Having to keep up to date with them can be time consuming and laborious. Suppliers can help by making sure that compliance issues created by the updates are picked up at the design stage and then offered to designers as fully workable, compliant solutions.

Key to making this work is bringing together groups of manufacturers with specific expertise in all their associated products. For example, when it comes to stairs, it might involve creating a system-based solution with floors, joist and partitioning suppliers – and then sharing these solutions via easy access platforms, either BIM or the new Whole House programme. That gives specifiers the confidence that what they specify has been thought through from day one, with input from all relevant parties.

Specifying any type of stairs requires understanding of various factors, including design standards, materials, load requirements and regulatory compliance. Timber stairs are more than functional elements; they are integral to the overall design and feel of a building. Their selection, as with all types of stair materials, needs to take into account the following factors:

1. Building Regulations

When specifying stairs, it is important to adhere to established design standards. The British Standards Institution (BSI) and the Building Regulations provide guidelines that ensure safety and performance. BS 5395-1 outlines the code of practice for the design of stairs with straight flights and winders constructed of wood-based materials.

Approved Document K includes dimensions, safety features, load-bearing capacities and fire safety regulations.

Dimensions are perhaps the most fundamental aspect outlined in Approved Document K. The rise and run of each step must be carefully calculated to prevent accidents. For instance, the maximum rise of a step is typically set at 220mm, while the minimum going (the depth of the tread) is generally 220mm as well. These measurements are designed to accommodate a wide range of users, including those with mobility requirements.

Safety features are another critical component of Approved Document K. Handrails, for instance, are not merely decorative; they are essential for providing support and stability. The document specifies that handrails must be installed at a height between 900mm and 1000mm above the pitch line of the stairs.

Furthermore, load-bearing capacities are addressed in the document to ensure that staircases can withstand not only the weight of users but also any potential loads from furniture, equipment, or other objects that may be moved up and down.

All stairs must also comply with fire safety regulations, particularly in multi-storey buildings. Timber stairs are often supplied with fire-resistant coatings or treatments, which enhance fire resistance, ensuring compliance with regulations, while providing peace of mind for occupants.

2. Certification and Standards

Working with certified manufacturers and suppliers ensures that the timber stairs meet the necessary standards. The British Woodworking Federation (BWF) Stair Scheme provides accreditation for quality manufacturers, ensuring compliance with industry standards.

3. Whole House

Advancements in technology, particularly Building Information Modelling (BIM), have revolutionised the way timber stairs are specified and designed. The Travis Perkins Whole House platform utilises our Revit models to create digital twins of stair designs, allowing for enhanced visualisation and planning. We also use Revit output for joists and decking as well as Revit to produce BIM models for skirting, architrave and door kits.

Whole House makes it much easier for specifiers to create sustainable building designs, quicker and without wasting valuable resources. The platform, which was developed by a group of over 20 manufacturers, now allows designers to plan, design, and configure an entire home in a matter of hours. It brings together all these separate manufacturer components as verified and workable designs.

With a choice of 2, 3 or 4 bed house types to choose from, specifiers will have confidence that the stairs and all other elements are fully compatible and within building regulations as the manufacturers have already done all the work behind the scenes. Being able to review the design in 3D eliminates any issues, whilst allowing specifiers to try different options to test spatial layouts.

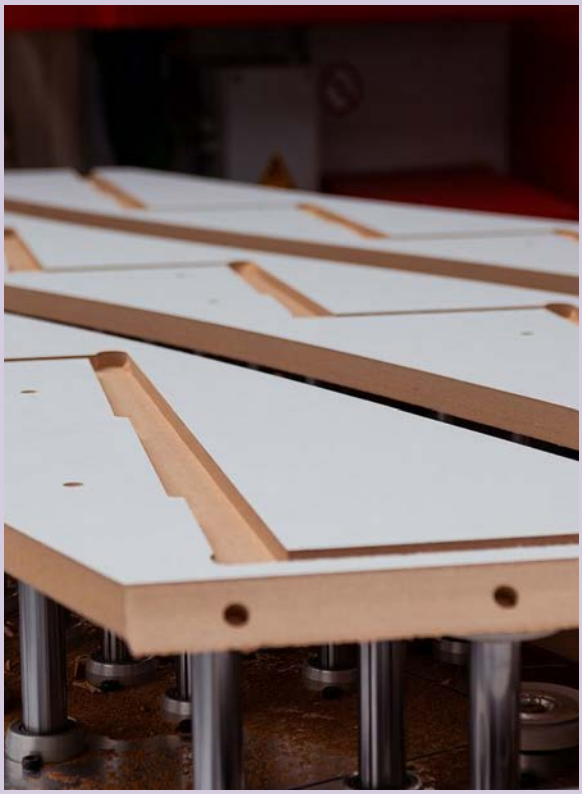
We provide a range of BIM models that can be integrated into the design process. These models include detailed specifications for various timber stair designs. Digital models reduce the likelihood of errors in measurements and specifications, leading to a more efficient construction process.

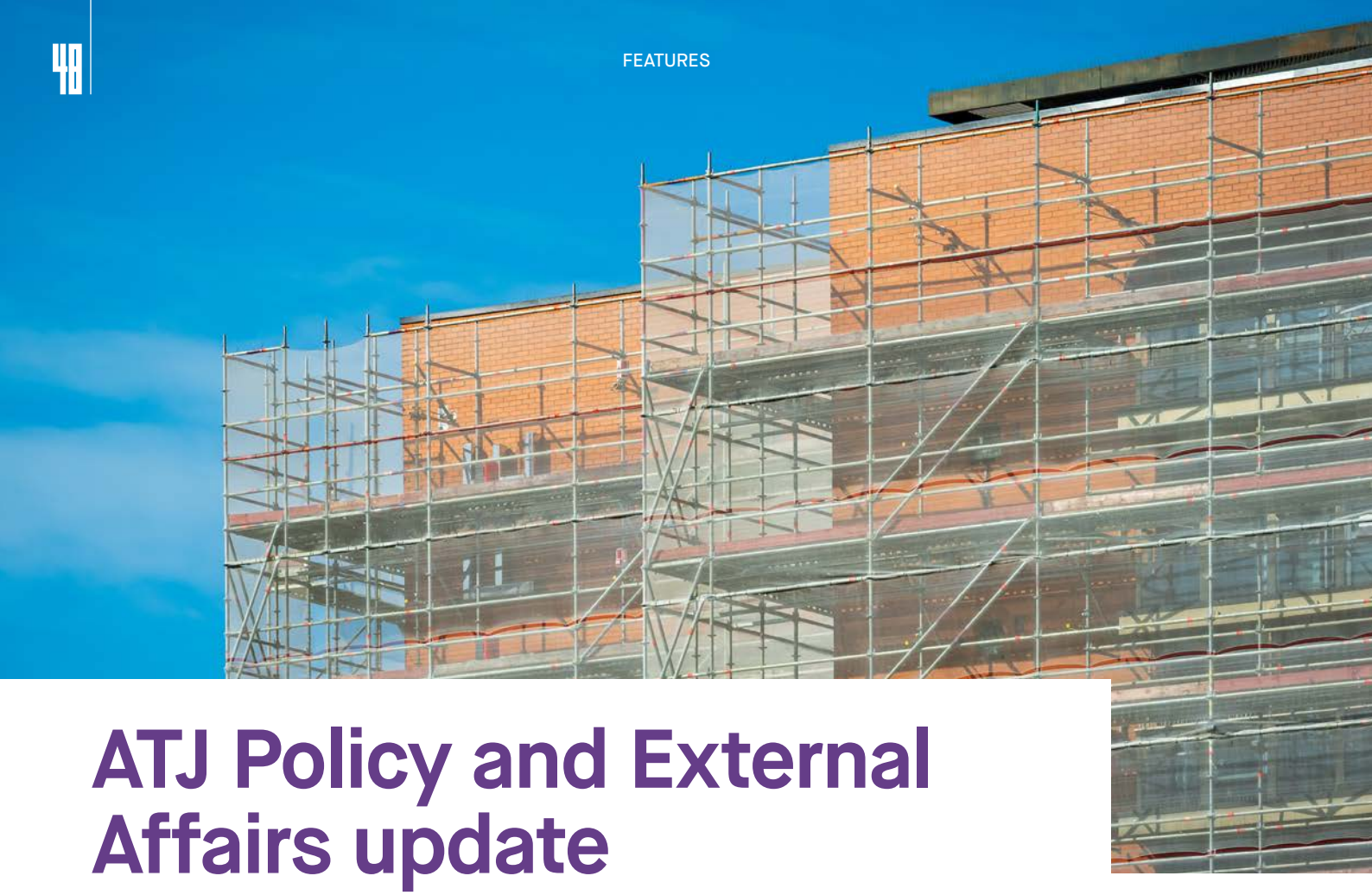
When specifying timber stairs, either via Whole House or by working directly with the supplier's models, it is important to verify that they are PEFC and FSC certified, which means they support environmentally conscious practices that help preserve our planet.

We have taken this a step further by making our floor and stair products carbon negative, which means that not only do these products have a reduced carbon footprint during their lifecycle, but they also actively contribute to reducing carbon dioxide levels in the atmosphere. That means they are helping to combat climate change right from the moment they are installed. Our products maintain their carbon-negative status up to and including installation. This ensures that every step of the process, from manufacturing to fitting, aligns with eco-friendly practices.

Specifying timber stairs involves a multifaceted approach that considers design standards, material selection, load requirements, and compliance with regulations. To make this easier, BIM, and more recently platforms such as Whole House, help specifiers stay up to date with latest legislation, while providing compliant, workable solutions to specifiers.

By leveraging technology, specifiers can ensure that their stairs are not only aesthetically pleasing but are also safe and functional. Ultimately, a well-specified timber stair design contributes to the overall success of a housing project, enhancing both its value and liveability. ■





ATJ Policy and External Affairs update Summer 2025

Words by Jack Fleming, Policy & Public Affairs Executive

Over recent months, the Policy and External Affairs team has continued to build the profile of CIAT among parliamentarians and policymakers, with some positive results, both in terms of shaping key policy and securing broader recognition.

Grenfell Inquiry – Government response

In February, the Government published its response to the recommendations of the Independent Inquiry into the Grenfell Tower Fire. Government accepted every recommendation, either in whole or in part. While details of implementation are still in development for many recommendations, it is important that Architectural Technology professionals (and anyone involved in the construction industry) prepare for further reforms.

Some of the key changes that will be implemented in the coming months and years include:

- Establishing a single construction regulator.
- Appointing a Chief Construction Adviser to government.
- Reviewing the definition of higher-risk buildings.
- Reviewing the form and function of Building Regulations Approved Documents.
- Standardising the information published regarding product testing.
- Licensing principal contractors working on higher-risk buildings.

Some of these changes will impact directly on professional practice, and professionals are advised to pay close attention to new guidance from CIAT, regulators and other bodies. A full summary of all the recommendations and their implications can be found via CIAT's website.

CIAT is currently supporting the Building Safety Regulator with the review of Approved Documents and will engage with other reforms as they are brought forward.

The Planning and Infrastructure Bill

In March, the Labour Government brought forward the Planning and Infrastructure Bill. The Bill follows on from their recent reforms to the National Planning Policy Framework and aims to further streamline planning processes, as part of the Government's plan to deliver 1.5 million new homes and 150 major infrastructure projects over this parliament. Parts two and three of the Bill will be of particular interest to Architectural Technology professionals.

Part two focuses on local planning decisions. Among other changes, it would allow Government to mandate the preparation of "spatial development strategies" – strategic plans for development and land use at a high level (for example combined authority level). It would also allow for a "national scheme of delegation", specifying which planning decisions have to be delegated to officials (with the aim of allowing elected officials to focus on the most significant or contentious developments). And it would enable the Government to set core training requirements for planning authorities, to enable them to better discharge their duties.

Part three, meanwhile, seeks to reduce the burden of delivering nature recovery activity in the context of development. It does this by enabling Natural England to create Environmental Delivery Plans (EDPs) which set out the environmental features (such as habitats) likely to be affected by developing in an area, the measures to be taken to protect those features, and the levy to be paid by developers to cover the cost of these measures. The idea is that paying a central levy will be easier than identifying potential impacts and delivering mitigations on site for developers (particularly SMEs) and will allow Natural England to deliver more impactful interventions at scale (though it should be noted that EDPs are not expected to replace current Biodiversity Net Gain requirements). It should be noted that environmental charities have expressed concerns that the bill will water down environmental protections, so it is likely that this part will face some challenges, but there is a good chance that the net result will be a system which is at least somewhat less complex than the status quo.

Many of these provisions were first discussed in a series of working papers, and CIAT is pleased that several of the proposals the Institute supported are being taken forward in the bill.

Parliamentary engagement

Throughout the Spring, CIAT has continued to meet parliamentarians and provide briefings ahead of key debates. Sustainability has been a particular focus, with proposal for new regulations requiring the installation of rooftop solar panels on new build homes, high-profile issues with domestic retrofit installations, and the Government's Warm Homes Plan expected in the coming months.

The team has met with MPs and Ministers and discussed the importance of holistic design, a theme which is also prominent in CIAT's response to the Department for Energy Security and Net Zero's consultation on the Fuel Poverty Strategy for England. And, at the end of March, CIAT was mentioned in a debate in the House of Lords, with Lord Blencathra proposing that a CIAT representative be among a number of expert representatives of Chartered bodies appointed to the House of Lords to improve the quality of their work. In moving the amendment Lord Blencathra suggested that, if the House of Lords had Peers from CIAT and other built environment professionals, perhaps the long-running work to restore Westminster would have been completed already! ■

To get in touch about CIAT's policy and external affairs work, please email externalaffairs@ciat.global.

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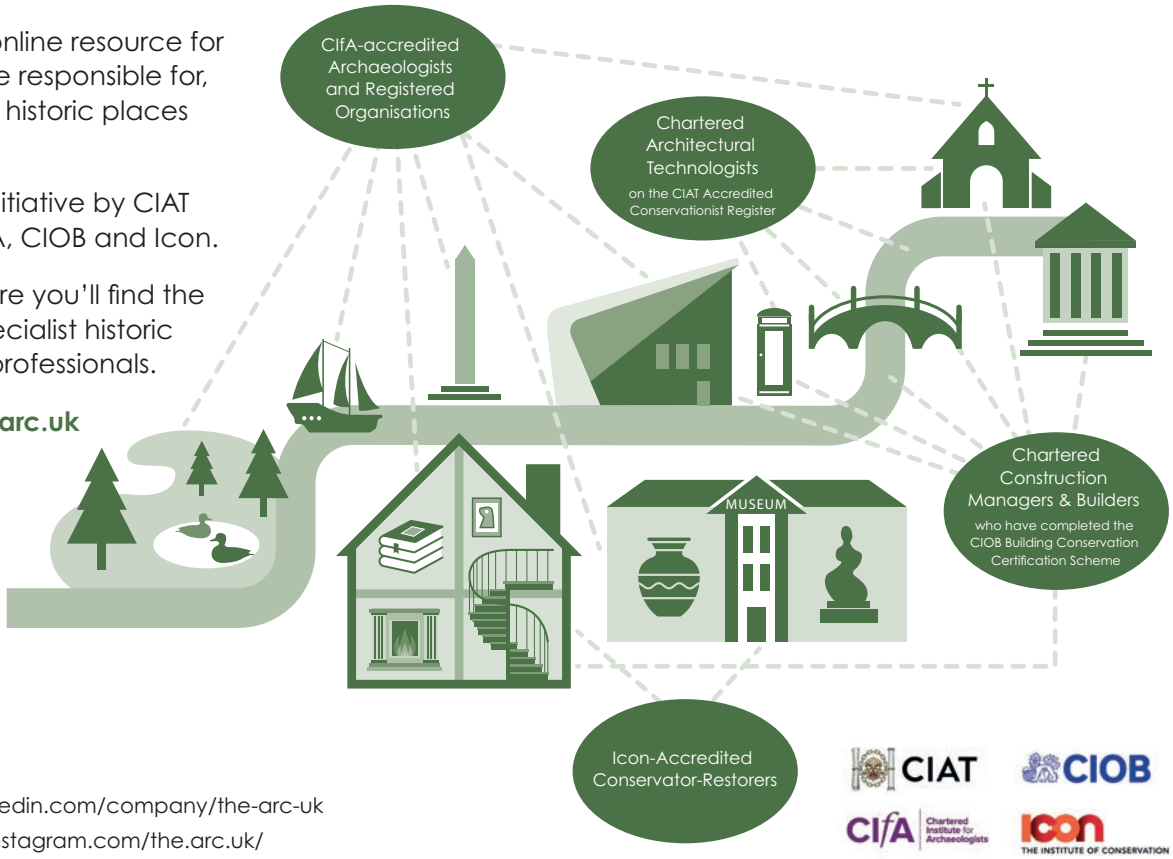

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