

# CULTURAL revolution



Making housing greener will take a monumental shift in business culture at every stage of the housebuilding process, but, says **ROGER HUNT**, the rewards will be life changing for all



Gusto Home's Woodlands Edge scheme of 29 new homes in Lincoln. The homes are built to such a high standard that they do not require central heating systems, are entirely electric and cost only £1 per day to heat, light and provide with hot water

As the new millennium dawned, an age of good, sometimes exciting, sustainable housing seemed possible, even likely. Now, two decades on, the housebuilding industry is far short of where it needs to be; policies and initiatives that had the potential to be groundbreaking have stalled or been scrapped and the green shoots of optimism have withered. Globally we have reached a state of climate emergency that is already affecting the lives of millions and will profoundly impact the wellbeing of future generations.

But maybe there is hope. The coronavirus pandemic has changed the way we live, think and work. There has been a new realisation that health and home matter. Good homes have proved their worth; the not so good have revealed their inadequacies. In future, homebuyers are likely to think more carefully about what they value in a new home and shy away from those that are deficient in design, specification and energy efficiency.

A point has been reached where the housebuilding industry at all levels has to act and understand that high quality, sustainable development must become the norm. As climate activist Greta Thunberg recently said, the world needs to learn the lessons of coronavirus and treat climate change with similar urgency. The response to the pandemic proves that drastic change can happen. There is an opportunity to mitigate the climate emergency and to alleviate fuel poverty while driving economic activity within the housebuilding sector.



**THIS PIC** PLACE/Ladywell is a modular scheme designed by Rogers Stirk Harbour + Partners, and constructed by SIG Offsite for Lewisham Council.

**BELOW** Berkeley Group has tackled the issue of housing density head on by developing the Berkeley Urban House. At the first houses to be built at Kidbrooke Village, the Berkeley Homes' development in Greenwich, south-east London, the front utility space offers the availability of a charging point for an electric car

**BOTTOM** Urban Splash modular factory



Politics, money and laziness cannot be allowed to stand in the way. Houses must be built to the highest possible standards and the loopholes closed. Building regulations must no longer be exploited to allow historic consents to be used to build poorly performing homes. Sustainability must not be sold simply on the back of water-saving taps, low-energy lightbulbs and high-efficiency boilers which, although laudable, are required simply to meet minimum standards.

The price of inaction is high, both for the climate and consumers. It has been reported that those owning new-build homes in England have collectively paid more than £58m in additional energy costs since 2015 because of a failure to introduce a zero carbon homes policy. Consumers cannot shirk all responsibility. The English Housing Survey revealed that over a quarter of those that have moved are not aware of the energy-efficiency rating of their current home. Education is required by government and housebuilders.

Genuine sustainability is about the kind of tomorrow we want to leave to our children, it touches every facet of a home and the community within which it stands. Housing is central to wellbeing as well as a green future but it has to be equitable and inclusive; the rigid dichotomies of the past must be laid to one side, and the rising elderly population and disadvantaged embraced. Basic measures such as heat pumps and tree planting, that respectively provide low-carbon energy and offset emissions, have to be the norm. Good indoor air quality, daylighting and space standards are crucial. Resilience to climate change, be it overheating or flooding, is essential.

None of this is easy. Meeting and exceeding today's urgent sustainability and energy-efficiency targets means grasping opportunities rather than looking for costs to be avoided. For many, this will necessitate a shift in business culture and a move from outmoded ideas. Accountability is everything. There is a vital need to overcome complacency and to change the public's perception of the new build industry by gaining trust and building reputation through positive action. This is the moment to turn the sector and its supply chain into a proactive, inspirational, challenging driver at the wheel of environmental change. Poor design, cheap and inadequate materials and a purely profit-centric mentality have no part in this. A culture of minimum standards for the cheapest price is unacceptable.

Delivering high-quality housing at scale and speed is undoubtedly challenging, but not impossible, and the industry can be transformed by the greater use of modern methods of construction. Modular construction, in particular, offers the potential to increase the speed at which buildings can be erected and has the added benefit of improving quality and reducing embodied carbon. For occupants, there is the bonus that they are likely to pay around 20% less to heat their home compared to a traditionally built new property.

Just as with any other construction method, the success of modular relies on excellent quality control right through the supply chain. Design excellence at all levels is equally important. The components must be designed to integrate perfectly and the layout and aesthetics of the home must not be constrained by the need to fit the modular format.



**RIGHT** Mosaics, in Oxford, a Hill Group development that comprises 237 homes in Barton Park, part of a joint venture project between Grosvenor and Oxford City Council. Hill Group has recently formed a joint venture partnership with Bioregional Homes to build zero-carbon, affordable homes that are for sale to local people

**BELOW** Architype's Passivhaus scheme for South Shropshire Housing Association in Much Wenlock, Shropshire

**BOTTOM** Solar panels



Modular construction offers the opportunity to close the performance gap. For energy efficiency to be achieved in new housing, homes must meet or exceed their designed energy and carbon performance. A fabric-first approach is essential; it is no longer acceptable to have homes where levels of airtightness or thermal insulation are poor. One way of ensuring that new homes meet the requisite standards is through a programme of post-occupancy testing. Measurability is vital if carbon reduction and sustainability goals are to be met. Hopefully, the new Future Homes Standard will provide a benchmark but its introduction in 2025 is a long way off when considering the current climate crisis. It is also questionable whether the Standard and Part L 2020 are ambitious enough.

One low energy design standard that already exists is Passivhaus. Over 65,000 buildings have been designed, built and tested to this standard worldwide.



The methodology represents a highly effective way of reducing energy use and carbon emissions from buildings while providing high standards of comfort and building health. The value of Passivhaus is demonstrated at Goldsmith Street in Norwich, where energy costs for the 105 homes are around 70% cheaper than the average. Winning the 2019 Stirling Prize for architecture, the social housing scheme also proves that good design counts.

Fuel poverty in England affects around 2.40 million households. Excellent social housing has never been more necessary and many of the providers working in this sector have pioneered sustainable schemes that embrace new techniques and technologies. One of the reasons for this forward-looking approach is undoubtedly the long-term interest that these organisations have in the properties they are building.

It is likely that three-quarters of the homes that will be occupied in 2050 have already been built so energy-efficient retrofitting of this vast existing housing stock is vital. The challenge is enormous: some 29 million homes across the UK must be made low-carbon, low-energy and resilient to a changing climate. Despite tried, tested and proven techniques being available, a massive injection of money and skills is needed to move beyond the painfully slow rate of retrofits currently being competed.

With all homes, there is an urgent need to decarbonise heat. Heating and hot water in homes account for 25% of total energy use and 15% of greenhouse gas emissions. Why are we not seeing solar PV on every roof? Gas has no place in any new home; heat pumps are now the technology of choice for new build homes in places such as Germany and

the Nordic countries. Such a route can result in well-insulated homes producing more energy than they consume.

Fabric and energy cannot be considered in isolation. There is growing evidence that homes are at risk of overheating, and that this will increase with climate change. It has consequences for occupiers and the environment. If left unchecked, related health problems and deaths will increase and energy demand to cool buildings will rise with consequential emissions and financial costs. The problem must be tackled at the early design stages of a development to identify both the risks and mitigation measures. Coupled with overheating, poor indoor air quality is exacerbated by the increased airtightness of homes due to energy-efficiency measures and poor ventilation. Data indicates links between indoor dampness, fungi and human health while air pollutants can also affect the heart and broader cardiovascular system.

Addressing indoor air quality through both mechanical and passive means is vital. There must be a better understanding of the issues across the industry; systems need to be detailed and installed with attention to detail. Leaking and poorly installed ductwork, for example, is just not acceptable. Another aspect of the air quality debate is the selection of materials. Off-gassing from paints, plastics and insulation materials contributes to poor indoor air quality, so the careful specification of materials is essential if homes are to be healthy.

Understanding materials and evaluating them from cradle to grave is crucial to the creation of ►

low-impact buildings. Responsible sourcing – using natural, local and renewable materials wherever possible – is another step in cutting carbon emissions and minimising environmental damage. The supply chain is a vital part of this and there is a continuing need for innovation, collaboration and R&D, with waste minimisation and end-of-life recycling essential considerations. The housebuilding industry and planners have to be braver in the use of materials and design. Bio-based products such as wood and hemp enable carbon sequestration and the ‘locking up’ of carbon within a building’s structure.

High-quality design counts. Excellent architecture, carefully considered masterplans, spatial planning and well-implemented landscaping help achieve successful sustainable development. Local thinking and understanding creates vibrant, connected communities where cycling and walking take precedence over the car. Conversely, identikit housing standing in streets that lack identity and a sense of place is dehumanising and unsustainable.

Good planning is part of this. Recently the RTPI launched its Plan The World We Need campaign to ensure that planners are at the centre of a sustainable, resilient and inclusive recovery post-Covid. While acknowledging that housing is a key issue, it urges a holistic approach, with priority given to decarbonisation and climate resilience, design and beauty, connectivity and accessibility, wellbeing and public health, as well as economic growth. For new housing to be sustainable, it has to produce something better than what was there before. Natural habitats cannot be sacrificed in the rush to build more homes. Biodiversity is crucial to the survival of the human race and green spaces are central to community life – they also add financial value.

Water – the most precious of resources – is part of this mix. At around 140 litres per person per day, average daily water consumption in the UK is already higher than many other European countries. This has to be cut: by 2050, between 27 and 52 million people will be living in areas with water supply problems. Simultaneously, flooding is an increasing threat so flood-alleviation measures have to be robust. Too often there is little provision for their management and maintenance once a housing scheme is complete.

Some of these issues may have faded into the background during lockdown but, as we emerge



**THIS PIC** Goldsmith Street in Norwich designed by Mikhail Riches with Cathy Hawley for Norwich City Council. It is a dense, mass housing development of 45 houses and 60 flats. Annual energy costs are estimated to be 70% cheaper than for the average household  
**BELOW** Athena, a scheme by Hill in Cambridge. Built to Code for Sustainable Homes Level 5 and Lifetime Homes standard, the design of the homes results from a collaboration between two award-winning architects: Alison Brooks Architects and Pollard Thomas Edwards  
**BOTTOM** Mosaics, in Oxford, a Hill Group development that comprises 237 homes in Barton Park, part of a joint venture project between Grosvenor and Oxford City Council

Tim Crocker



into a ‘new normal’, the housebuilding industry faces an enormous challenge if it is to successfully negotiate a route to net zero carbon and meet the wider environmental challenges.

For the last two years, the Good Homes Alliance has run a Vanguard’s Campaign, creating a network of local authority members that, between them, have direct influence over around 50,000 new homes to be built in the next 10 years. They have all declared climate and ecological emergencies and the GHA hopes this network will be a catalyst that will force government to listen and increase its ambition regarding net zero carbon new homes.

But this is not enough. The Royal Institute of British Architects has declared an environmental and climate emergency and has committed to an action plan with a guide that aligns with the UN Sustainability Development Goals. Surely, the UK housebuilding industry should stand proud on the issue of sustainability and make a similar declaration?

The industry must commit to building better and must set a goal to meet the zero carbon targets set by government ahead of time. Those in the industry who wish to prevaricate would do well to note Greta Thunberg’s powerful speech to world leaders at the 2019 UN climate action summit in New York. She ended with the words “change is coming whether you like it or not”.

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