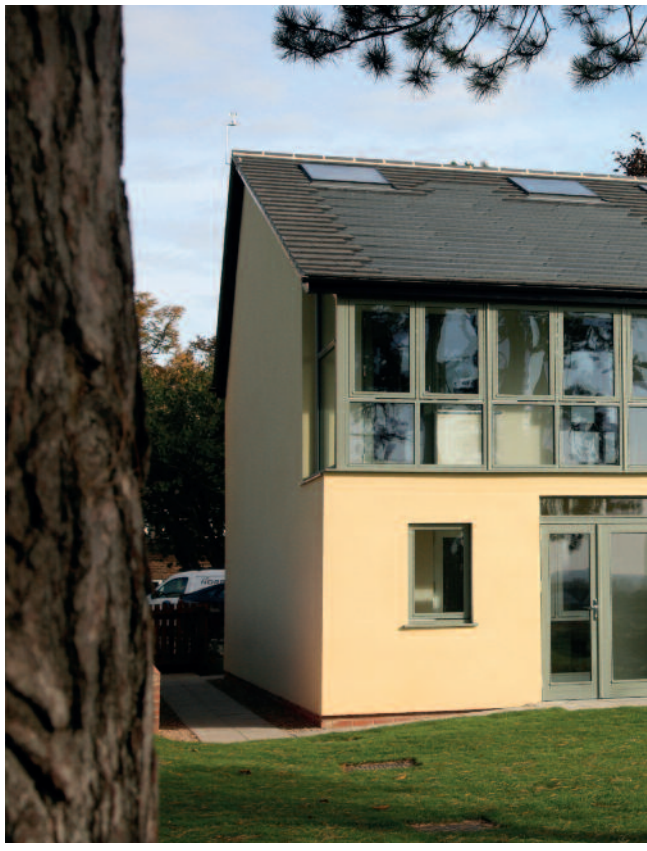
Morris Homes' Vista development

The zero hour

With the zero carbon deadline looming and the government moving the goalposts with the amendments to Allowable Solutions, ROGER HUNT explores the impact on present and future housebuilding



THIS PAGE

ABOVE Barratt London's Renaissance development, which was designed by Assael Architecture

ABOVE MIDDLE Semi-detached houses, built by Tarmac Building Products (part of Lafarge Tarmac), at Nottingham University's School of the Built Environment. Designed by architect Bill Dunster's Zed Factory, one property was built to Level 4 Code for Sustainable Homes and the other to Level 6 using existing masonry materials and techniques

RIGHT Morris Homes' Vista development

RIGHT BELOW Hill's Virido 'concept home' project

OPPOSITE PAGE

TOP Hill's Virido development

BOTTOM Barratt Homes' Hanham Hall

Back in 2007 it seemed like an exciting if challenging idea that government policy required all new homes to be constructed to meet a zero carbon standard from 2016. There was just one question, what is zero carbon? Over the last eight years this point has occupied many minds, not least those at the Zero Carbon Hub, the non-profit organisation established to take day-to-day operational responsibility for achieving the zero carbon homes target.

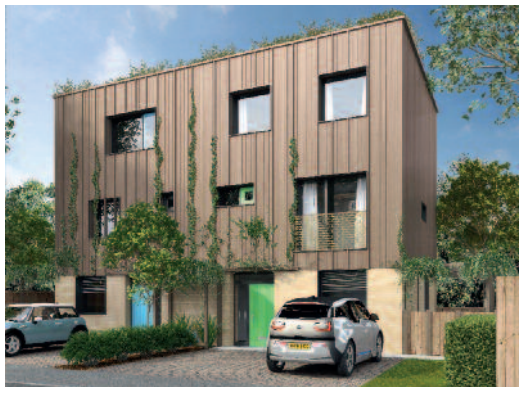
At the time of writing, the Hub states that there are three core requirements that must all be met for a home to qualify as zero carbon. Firstly, the fabric performance must, at a minimum, comply with the defined standard known as the Fabric Energy Efficiency Standard (FEES). Secondly, any remaining CO_2 emissions due to heating, cooling, fixed lighting and ventilation, must be less than or equal to the Carbon Compliance limit established for zero carbon homes. Thirdly, any remaining CO_2 emissions, from regulated energy sources (after requirements one and two have been met), must be reduced to zero. Requirement three may be met by either deliberately 'overperforming' on requirements one and two so that there are no remaining emissions, or by investing in Allowable Solutions.

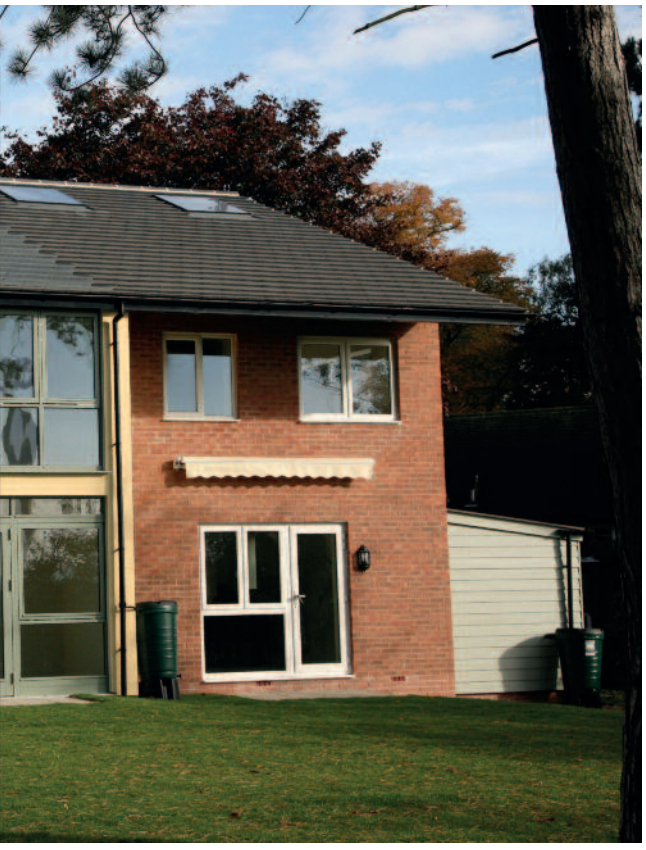
The specific framework under which Allowable Solutions will operate has not yet been defined but legislation, which "will allow for the creation of an Allowable Solutions scheme to enable all new homes to be built to a zero carbon standard", was announced in the Queen's Speech in June 2014.

The idea of Allowable Solutions is not new. The concept was first raised when it was realised that the now defunct Code for Sustainable Homes Level 6, which required all carbon emissions (including from appliances) to be mitigated on site, was impractical in many cases and too costly for mainstream housing production. Allowable Solutions offers a way out of this conundrum by allowing the remainder of the zero carbon target not met on site to be met through cost-effective off-site carbon abatement measures.

Neil Cutland, a director of Cutland Consulting and a member of various Zero Carbon Hub working groups, believes Allowable Solutions make sense. "The early work we did concluded that there were going to be some sites, especially small sites, heavily constrained sites and sites with lots of flats, where you wouldn't be able to do pure on-site zero carbon, so it was very sensible to have a mechanism to deal with what was left of the carbon."

What was not immediately clear from the brief phrase in the Queen's Speech is that, while the Zero Carbon Home standard will be set at Level 5 of the Code, the legislation will allow developers to build to



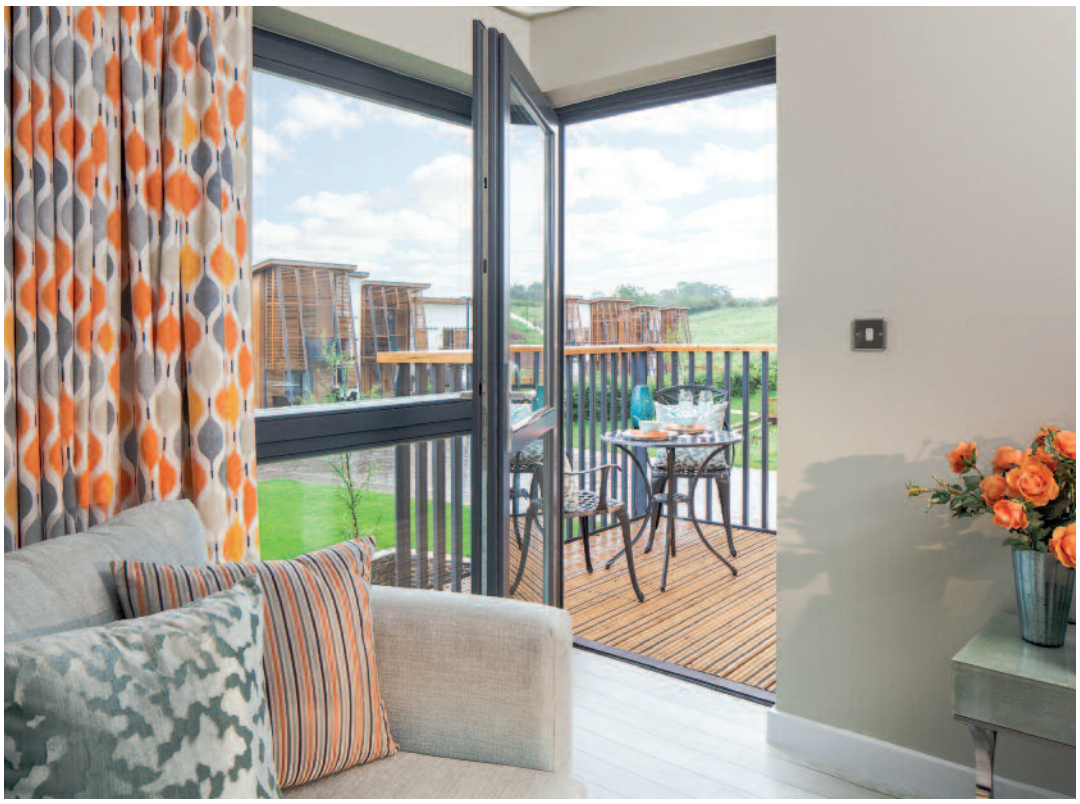


the significantly lower Code Level 4 as long as they offset through the Allowable Solutions scheme to achieve Code 5.

Louise Sunderland, senior sustainability advisor at the UK Green Building Council, is among those disappointed that the government has indicated its intention to reduce the standard that homes will have to be built to from 2016. "The industry came to consensus in 2011 on a workable definition for zero carbon homes from 2016. Since then the cost of reaching this standard has halved and is projected to fall further by 2020. We would therefore like to see the evidence on which government has based its decision that the agreed standard is no longer workable and, further, on which it has decided the standard should be Code Level 4."

This is not the UK-GBC's only concern. Small sites, which are most commonly developed by small-scale housebuilders, will be exempt from the Allowable Solutions part of the definition with the aim of reducing the costs of building for small housebuilders. The consultation process for this is due to end on 7 January, with the government's preferred option to exempt sites of 10 units or fewer.

The UK-GBC believes the figures in the consultation indicate this could mean one fifth of new homes built might be exempted. "The proposed exemption of one fifth of new homes from part of the zero carbon standard is deeply disappointing. The zero carbon standard should provide householders, whether living in a small or large development, with the highest level of energy efficiency and the opportunity to generate their own free, clean power," says Sunderland.

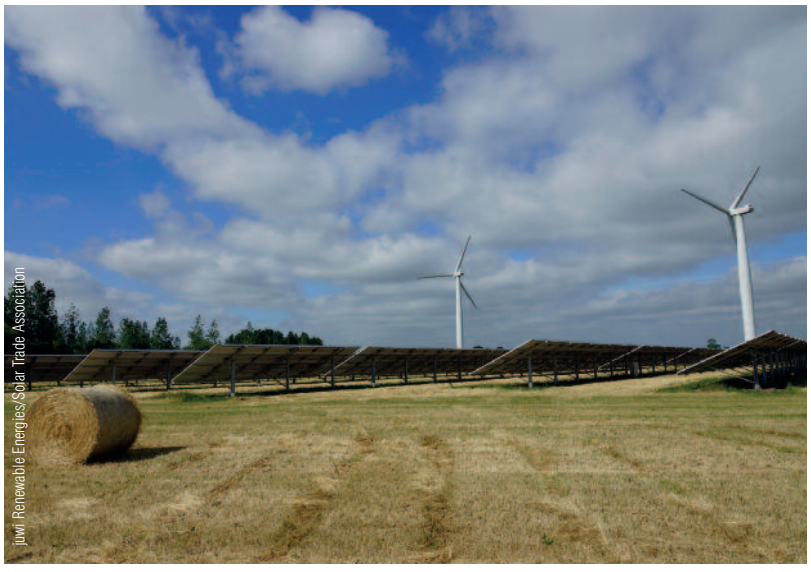


Stewart Dalgarno, director of product development at the Stewart Milne Group, believes zero carbon targets are missing the point. "Given regulation will not cover unregulated energy coming from household appliances and technology, including fridges, computers, and televisions; the label of 'zero carbon' is misleading, with the 'low carbon or low energy' approach being a more pragmatic and realistic standard for the industry to work to."

One housebuilder that has pioneered the zero carbon approach is Barratt Homes. The company's Hanham Hall development of 185 homes in Bristol recently won Best Sustainable Development at the What House? Awards and is one of the flagship Carbon Challenge schemes promoted by the Homes and Communities Agency. It was designed at the height of the market when Code for Sustainable Homes Level 6 was the benchmark for sustainable design. In 2010 Barratt decided to pilot the new zero carbon definition while retaining all the elements of Code Level 6 that were possible to achieve on the site.

Among those responsible for the scheme is Rory Bergin, partner, sustainable futures at HTA. He believes that the homes have ended up being pretty much the same standards in terms of the fabric as was originally intended. "The fabric is very, very good with an airtightness of 1.5 routinely across the scheme so it demonstrates that, if you go for very good fabric, the rest of your life is made much easier. It gives us huge savings in terms of the energy use and the energy demand from the dwellings is tiny so, although it's employed on most homes, there's very little PV."

The full definition of Code 6 was embraced by Barratt London at its Renaissance development in ▶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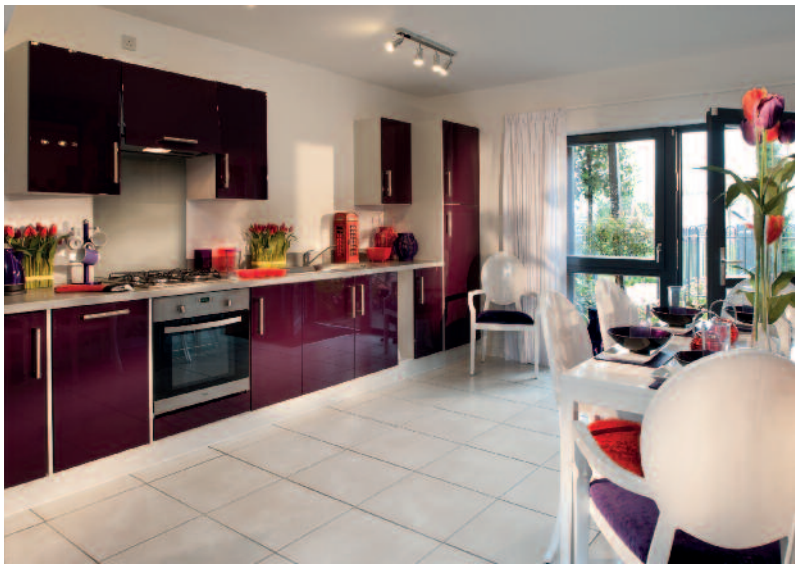

Lewisham, which was designed by Assael Architecture. Construction began in 2008 and, while most of the 788 homes are Code 4, 11 of the townhouses, which form part of the 35% of affordable housing, are Code 6.

In 2010, Tarmac Building Products constructed a Code 6 semi-detached home in partnership with the University of Nottingham. Emma Hines, senior manager, sustainable construction at Lafarge Tarmac, says the additional cost to build this property was £6,400. "According to the Zero Carbon Hub, at today's prices the typical additional cost of building a zero carbon semi-detached home is less than £5,000. These savings have been driven by ongoing reductions in the cost of solar photovoltaics, better understanding of the cost of delivering energy-efficient homes and changes to the level of the carbon reduction required."

With its Vista development of 295 homes, Morris Homes claims to have opened the UK's largest zero carbon village in Peterborough's South Bank area. Morris Homes won the opportunity to develop the site after entering the Peterborough Carbon Challenge, part of a government initiative to respond to climate change. The company claims that implementing the features has only slightly increased build costs and that these costs have not impacted on buyers, with house prices reflecting local market averages.

South of Cambridge city centre, Hill is to build 208 Code Level 5 homes at its Virido development. Running alongside these is a 'concept home' project where a family will live for a year in a carbon zero prototype during which time data will be collected on the impact of zero carbon on sustainability habits, health and wellbeing.

In the coming years, the way in which individual housebuilders achieve zero carbon could be contentious. Neil Cutland believes that, when working with the current definition of zero carbon, one home may be built with on-site technologies and other measures that ensure it is zero carbon at the point of use, while another home may be built to a lower standard on site and will use the Allowable Solutions mechanism.

"Both will be legitimately zero carbon, the difference being that where they have PVs or other energy generation on site, the residents' energy bills will be very low and, indeed, may even be negative. On the other hand, people living in the home built essentially to building regulations, but where the energy is being generated elsewhere, are going to have very real fuel bills. That's going to be hard to explain and will be a marketing rather than a technical challenge." sh

ABOVE Off-site renewables
ABOVE RIGHT & BELOW Barratt Homes' Hanham Hall

CONTACTS

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HTA www.hta.co.uk
Stewart Milne Group www.stewartmilne.com
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