

Environmental sustainability

Environmental issues are an increasingly important aspect of housebuilding in all of the regions in which we operate.

The way that we use land has major environmental implications. We aim to take environmental considerations into account at every stage of planning and construction, from undertaking environmental action plans and remediation at the early stages through to creating energy-efficient homes that will emit fewer carbon emissions over the lifetime of the building.

We are in the process of building 1,900 homes to level three and 285 homes to level four of the Code for Sustainable Homes at developments that are under construction. We continue to build to EcoHomes standards at many of our developments. Examples of developments planned or under construction to EcoHomes Excellent standard include Oakham Manor at our Lightmoor Village in Lawley, Newton Leys and Oxley Gate in Milton Keynes as well as Leybourne Grange near Maidstone and Greenwich Millennium Village. Our North American Divisions are also building increasingly energy-efficient homes. All homes built in Denver and Houston are Energy Star certified while all homes built in California must meet or exceed Title 24 guidelines for energy conservation.

Renewable energy use

We have many examples of integrating renewable energy into our developments. We often use solar water heating systems and regularly use photovoltaic cells for generating electricity. In 2008, we have examples of using air source heat pumps (for example, at Regis Park in Reading where we are building 50% of homes to Code level three and 50% to Code level four).

Our Academy Central development in Barking, East London will provide heat to 1,042 apartments and houses through a combined heat and power (CHP) district heating system which will provide electricity as well as heat. This will provide a total carbon dioxide emissions reduction from a Building Regulations compliant scenario of 40% and 20% on-site reduction. The development will also include two energy centres with biomass boilers serving all homes and apartments.

The homes that we build are extremely energy efficient. A recent study of a standard Taylor Wimpey townhouse and a Victorian terraced house of similar size showed that those living in the home we built could use 55% less energy, save 65% of heating, lighting and hot water bills and generate 72% less carbon dioxide emissions. This study was undertaken by an independent energy assessor at our request.

72%
fewer carbon dioxide emissions
than an older home

2,185

homes being built to Code for Sustainable Homes levels





Monarch Homes has recently been granted a loan through the Toronto Atmospheric Fund at its Red at Equinox skyscraper development. This loan is being used to purchase energy-efficient materials and equipment in order to improve energy efficiency by over 30% in comparison with an average equivalent building. The cost savings in energy consumption will be used to pay off the loan.

**Improving energy
efficiency by over
30%**

Water use

Along with using water-efficient fittings and appliances, we have many examples of other water conservation techniques. We are starting development at Oxley Gate in Milton Keynes where, as a water conservation measure, we will be using recycled bath water for flushing toilets in 48 affordable units. A number of our developments now integrate features such as green or brown roofs and rainwater harvesting. Our Academy Central development will have green or brown roofs on the vast majority of houses and apartment blocks and some of our condominium developments in Toronto also have green roofs.

Many of our developments integrate Sustainable Urban Drainage Systems (SUDS). For example, at Newton Leys in Milton Keynes we are using an existing lake and creating additional lakes to act as balancing ponds as well as wildlife habitats. We are constructing the elements of the SUDS to deal with a one in 100 year flood with an allowance for climate change. This ensures that the flood risk for the development and areas downstream is not increased.

A number of our Divisions in North America integrate drought-resistant planting, including all homes built in the Phoenix area. Most of our communities in South West Florida use local native flora that tend to be more drought-tolerant and also use reclaimed water for irrigation purposes. In Florida and California we use reclaimed water for irrigation at specific communities.

Encouraging a greener lifestyle

Building highly energy and water-efficient low-carbon homes has a major impact on our customers' personal carbon emissions as well as their energy bills. There are many other ways in which we provide customers with opportunities to reduce their carbon footprint.

We develop green transport plans for many of our UK sites and regularly build cycleways and footpaths or fund new bus routes to service our developments. A number of our developments include cycle storage or washing facilities (see page 19) and some, such as our Grand Union Village development, include car clubs. We also promote local authority car share schemes. An increasing number of our developments integrate Home Zone design principles to create streets that give priority to pedestrians and cyclists over car users (see page 20). We are often involved in the provision or funding of education, healthcare and leisure facilities as well as retail space so that our customers have useful amenities on their doorstep and less need to travel. We regularly include recycling facilities within our developments and also increasingly provide composting facilities and water butts.

All of our customers are automatically put on a green energy tariff from British Gas or Scottish Power when they move into their new home. Please see our section on customer care (pages 17 and 18) for more details on how we communicate with customers about sustainability issues.

Our Greenwich Millennium Village development uses biomass boilers and Combined Heat and Power (CHP). The latest phase of the development has a fully functional biomass boiler that provides heat and hot water to 122 apartments. The CHP plant supplies power to undercroft car parks and sells surplus back to the grid. Taylor Wimpey is operating these systems, which has given us hands-on experience that we have used when planning developments elsewhere in the UK. The heat for the next phase of the development will be supplied by CHP energy centres incorporating biomass and gas boilers with biomass providing 20% renewables.

122 apartments served
by a biomass boiler



Exploring best practice in sustainability

We are working in close collaboration with the National Trust and Redrow on our Stamford Brook development in Cheshire and, in 2008, we co-published a report entitled *Delivering Sustainable Housebuilding*. The document provides a national report on the future of large scale housebuilding in the UK, particularly in the context of delivering environmentally-friendly and zero carbon communities.

The report includes details of what worked at Stamford Brook as well as the difficulties and challenges that we faced in building a sustainable housing development. It addresses our practical experience of issues such as delivering low carbon standards, energy performance, community engagement, procurement, masterplanning and design as well as the natural environment.

The final report of a major research project at Stamford Brook was also published in 2008. Led by Leeds Metropolitan University and partly funded by the Department for Communities and Local Government, the research points the way to achieving significant improvements in the thermal performance of masonry-built housing and will guide future changes to Part L of the Building Regulations.

Analysing the Code for Sustainable Homes

During 2008, we undertook a detailed analysis of the implications for our business of the Code for Sustainable Homes and upcoming changes to building regulations. This included an examination of the pros and cons of all existing low and zero carbon technologies that we can use to achieve different Code levels. As a result, we fully understand the future requirements facing our Company and are well placed to respond to these changes. We have also introduced new specifications to our UK businesses on how best to achieve Code levels three and four.

All of our customers are automatically put on a green energy tariff from British Gas or Scottish Power when they move into their new home.

Our Glasdir development in Ruthin, Denbighshire is the BREEAM EcoHomes 2008 award winner for Wales and the first development in Wales to be built to EcoHomes Excellent standard. Glasdir integrates features such as roof rainwater harvesting, cycle storage and segregated bins for recycling as well as benefiting from good transport links despite its rural location and being within 1,000 metres of local amenities.

Award-winning EcoHomes



Our analysis raised a range of issues, particularly in terms of the cost of achieving different levels of the Code. As one example worked out with our suppliers and based on a standard mid-terrace 2.5 storey house type, building a Code level three home would cost £6,000 more than a conventional home with additional costs of nearly £15,000 and over £30,000 for a level four and five home respectively. These are significant additional costs, given that our average selling price per UK home in 2008 was £171,000.

We are discussing our research findings with the HBF (Home Builders Federation) and with Government representatives. We are engaging with these groups to ensure that the Code for Sustainable Homes is achievable and is also financially viable for housebuilders, landowners and local authorities. We also have to make certain that the homes we build will be affordable and appealing to customers.



Further details of our analysis of the Code for Sustainable Homes are available on-line at www.taylorwimpey.com/code