

sustain' magazine v10 i03

RECEIVED

07 JUL 2009

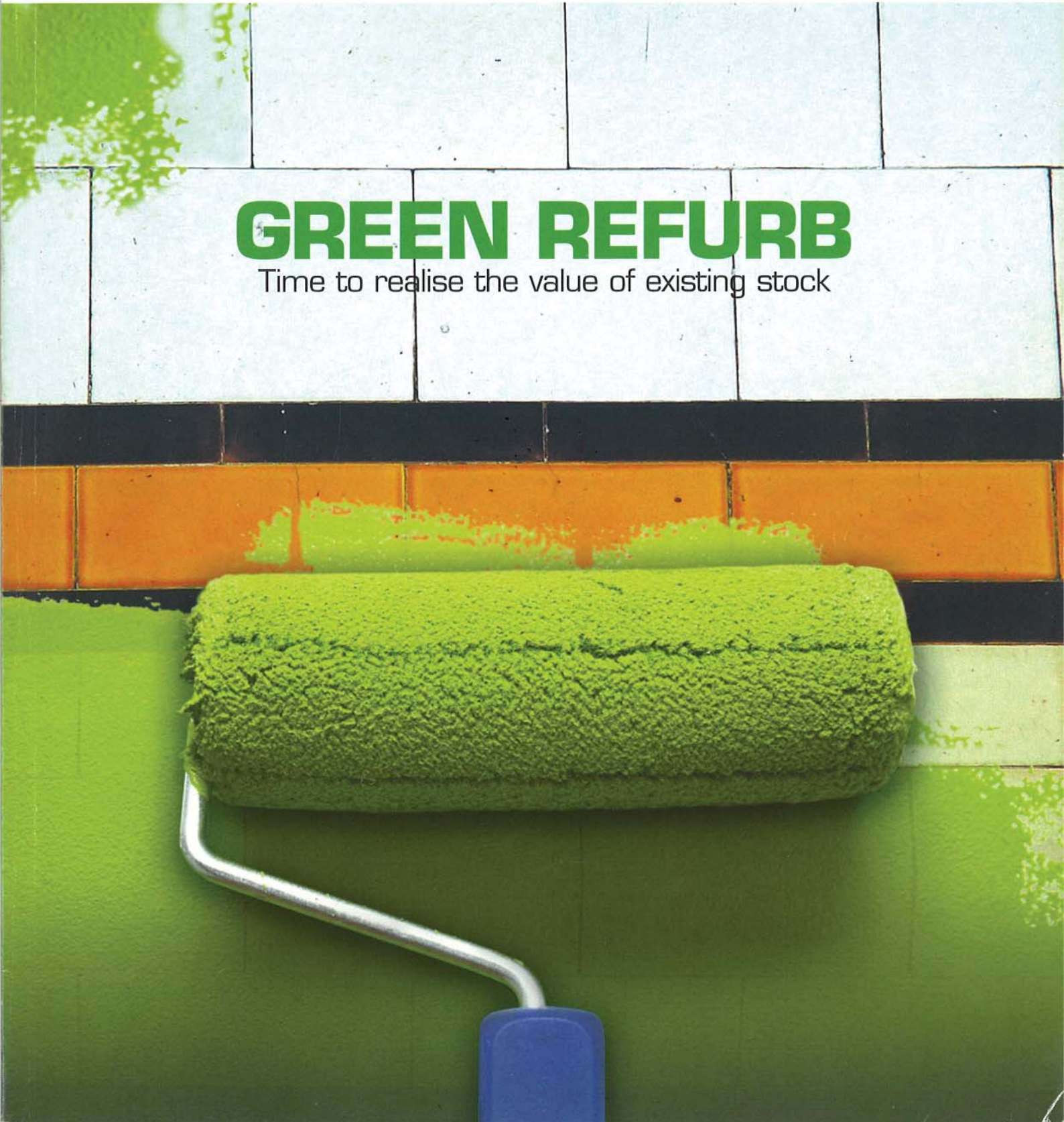


sustain'

B U I L T E N V I R O N M E N T M A T T E R S

GREEN REFURB

Time to realise the value of existing stock



Landscape for Change

► The first landscaping scheme to be evaluated for the Code for Sustainable Homes has been completed by Macfarlane Wilder. Here, PETER WILDER reflects on some of the lessons learned from the project and how creative landscape designers can work towards the creation of sustainable communities...

There was a time when sustainability was only about fuel efficiency and getting more from less through innovation in engineering technology. Although there is still a strong emphasis on technology as an important factor in our ability to tackle climate change, there is also a growing awareness that our habits too are going to have to change if we are ever going to live within our means.

It is little wonder then that the present government has identified housing as one of the key issues in adapting to climate change. Not merely because housing construction consumes large amounts of resources and energy, but that the design and quality of our homes can have a dramatic effect on our lifestyle choices and a commitment to greener living.

In April 2005, John Prescott launched the design for Manufacture Competition in the belief that the key to sustainable communities lay in the ability to produce good-quality homes at an affordable price and quickly. Aimed at creating affordable housing for key workers in the south east of England, the homes had to demonstrate that they could deliver sustainability through modern methods of construction (MMC) and through more efficient heating, passive ventilation, insulation, air tightness and a range of sustainably sourced materials. Based largely on the BREEAM EcoHomes rating, they also had to provide a serious attempt to integrate issues such as surface-water management, biodiversity and high-quality public realm into the built environment.

A SYMBIOTIC RELATIONSHIP

Nine shortlisted consortia competed for the right to develop ten English Partnerships sites. Whilst most innovations in building technology were reached during the early stages of the competition, the relationship between building and landscape continued to evolve. Public realm, which began as a complement to the architecture, started to become far more integrated into the sustainable function of the building and closely allied to the vision of a socially integrated and environmentally responsible community. The connection between built form and environment merged ever closer until at last, in some of the closing stages of the competition, there was an

almost symbiotic relationship between the two.

The Design for Manufacture Competition had revealed the importance of good urban design in the creation of sustainable communities, not merely as a passive element, but as an active element of the buildings' climate, energy, and transport strategy. In schemes such as Rowan Road in Merton, stormwater wetlands, filtration lagoons and flood-alleviation zones are carefully woven into 2.6ha of public open space that forms the perimeter of parkland and buffers the development from the adjoining suburban edge. While these attributes increase the ability of the site to reduce surface-water runoff and improve the quality of site discharge, they also provide a closeness to nature that enriches the living experience and biodiversity of the site.

A NEW CHALLENGE

In February 2007, part of the successful SIXTYK consortia (Crest Nicholson, Kingspan, Sheppard Robson, Arup, Macfarlane Wilder) re-assembled in order to tackle a new challenge. They would attempt to design and build the first zero-carbon house at the BRE and achieve code level 6 under the new Code for Sustainable Homes. The code, introduced by the Department for Communities and Local Government in April 2007, adopted many of the lessons learned from the Design for Manufacture Competition, but achieving level 6 would push the team to the limits of technical design. Whilst Design for Manufacture had been a cost-driven exercise, the target for Offsite 2007 was a no-holds-barred attempt to produce a home that was innovative in every respect. Like other manufacturers at Offsite's Big Build, passive ventilation formed a major component of the building design and energy efficiency through insulation, air tightness, heat recovery and low-consumption appliances was a baseline condition. Water was also a primary consideration in the design of the Kingspan Lighthouse, and Macfarlane Wilder was commissioned to design a holistic approach to the water-management strategy. This meant not only exploring the ability of the building to collect, store and re-use rainwater, but also how overflow and discharge were dealt with in the landscape.


Our initial sketches for the project were of a building very much in harmony with the landscape around it. Sitting at the edge of a swale, the house would collect and store rainwater in underground tanks that then discharged into a stormwater wetland complete with an attenuation pond and reedbed filtration system. This



IMAGE: Kingspan Lighthouse

would not only reduce the potable water demand of the Lighthouse, but improve the hydrology and biodiversity of the surrounding landscape. Then we started taking things further. We investigated UK companies that were manufacturing innovative or sustainable materials, vortex-flow control devices, and even bespoke furniture for wireless networking. It was then that the concept of the Innovation Park was born. Rather than just a venue for the display of innovative construction techniques, the Innovation Park was set to become a benchmark for the Code for Sustainable Homes. With support from all of the BRE build partners, the Innovation Park was given a construction budget of £35,000. With just a week to construct the works, the design had to be simple, cost-effective and imaginative and fulfil the exacting criteria of the Code.

The swale and attenuation pond were designed to accommodate 61 per cent of all site rainfall in any peak storm event, exceeding the 50 per cent required for the site under the Code. All of the paved surfaces on the site are permeable and additional storage from rainwater-harvesting tanks was excluded from the



The connection between built form and environment merged ever closer until at last, in some of the closing stages of the competition, there was an almost symbiotic relationship between the two.

About:

Macfarlane Wilder

Macfarlane Wilder was established in 2003 and its work spans the sectors of urban, environmental and land planning. It provides particular innovation in areas such as roof-deck construction, green-roof systems, sustainable drainage design and brownfield regeneration. The practice is currently co-authoring an English Partnerships publication entitled *Sustainable Suburbia* with MacCormac Jamieson Prichard Ltd. Peter Wilder has lectured in sustainable design at the University of Greenwich and the Corvinus University in Budapest and is a member of the Landscape Institute Policy Committee on Adaption to Climate Change.

calculations. Paving from recycled aggregates was used in all hard-landscaped areas, and the timber decking came from oak trees grown on the Duchy of Cornwall Estate. Even the pond liners supplied by DuPont used low-carbon technology with zero chloride. The vortex flow control, which regulates the discharge of the surface water to 7.5litres/second/hectare (equivalent green field runoff), was manufactured in the UK by Sustainable Drainage Systems Ltd. The landscape, which set out to showcase the best in UK technology, also had a few foreign imports like the latest model of the Envac waste-disposal system developed for Hammerby Sjöstadt in Stockholm. The scheme is also crammed with native flora for biodiversity and over 95 native plant species have been introduced to the 0.62ha site. The majority of these are within the swale and the meadows, but native tree and hedgerow species have also been accommodated on the tiny site.

LESSONS LEARNED

Having designed the first landscape assessed under the Code for Sustainable Homes, and helped to

design the first code level 6 building, it is probably a good time to reflect on the lessons learned. The Code is just that – a guideline. It will not create places in which people wish to live, and therefore a sense of place is of critical importance when designing for communities. The philosophy of the Innovation Park was to create a sense of shared ownership for a series of buildings that would never contain occupants, but the challenge remains the same. Dexterity of plant knowledge is required and landscape architects who know more than their top 20 shrubs will be required to invent creative ways to use native plants without losing year-round appeal in the built environment. A sense of adventure is required and the use of recycled materials requires forethought. We intended to use paving from recycled rubber tyres, but were told that the lead time was six months due to the nature of the product. We will have to prepare ourselves for this until recycled products become more mainstream, but perhaps non uniformity expresses the delight and spontaneity of sustainable living. The rainwater harvesting, intended to be used for internal washing

and landscape irrigation, suffered terrible staining from the sweet-chestnut cladding on the roof. In the future, perhaps collection from a sedum roof would not only reduce thermal reflectivity, but also help to filter rainwater runoff prior to collection and increase the biodiversity of the building.

The Code for Sustainable Homes provides a benchmark for sustainable design which is still very energy orientated. Whilst the Code recognises the need to look at other issues such as potable-water consumption and sustainable drainage, these issues are still under represented considering their importance in the wider scheme of sustainable communities. The code is also ambivalent in its requirement for renewable-energy sources which may or may not be the most appropriate method, and issues such as offsite versus onsite or micro versus CHP are left to be weighed up by developers. The true value of the Code will not lie in whether we are able to build efficient buildings, but whether we can produce communities that encourage people to adopt sustainable lifestyles as a preference rather than an imposition □