

Sustainable Refurbishment

Reducing carbon and
improving energy efficiency



Above all, it's about people

A proven yet pioneering partner

Wates Living Space delivers approximately 30,000 new and refurbished affordable homes for social landlords throughout the country every year. With our financial stability as part of the Wates Group, plus our reputation for being innovative, forward-thinking and responsive to our customers' needs, we understand the demands facing Housing Associations, ALMOs and Local Authorities – including the pressure to meet the Government's target of an 80% reduction in carbon emissions by 2050.



Steve Trusler
Strategy Director

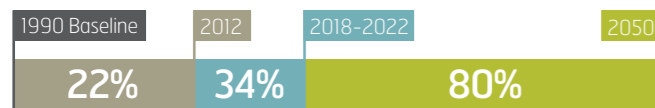
With the UK's homes consuming approximately 30% of the energy used in the country – in turn accounting for 45% of CO₂ generated – the need to increase energy efficiency and reduce emissions from social housing stocks is very clear. Not only does Wates

Living Space have an exemplary record of delivering both new and improved homes for tenants, but we're

actively at the forefront of the latest funding and research that will make these improvements possible.

We are already helping our customers to access CESP financing and generate revenue from FIT, and as part of pioneering research like the Government's Retrofit for the Future programme and the Energy Technology Institute's project to improve energy efficiency of the UK's homes on a mass scale, we are perfectly positioned to not only assist our customers to meet carbon reduction targets, but also to help alleviate fuel poverty for residents too.

The Carbon issue



Glastonbury House, Pimlico

The first large scale INTEGER project, this 23 storey refurbishment is a showcase for environmentally friendly systems, including photo voltaic panels to generate energy for the block and its residents.



Current and forthcoming initiatives

2010

- Feed In Tariff (FIT)
- Community Energy Saving Programme (CESP)

2011

- Feed In Tariff (FIT)
- Community Energy Saving Programme (CESP)

2012

- Feed In Tariff (FIT)
- Renewable Heat Incentive (RHI)*
- ECO New Supplier Obligation*
- The Green Deal*
- Smart Meters/Grids (SG)*

* Wates Living Space will release further information on these schemes as it is made available.

Unlocking CESP funding for housing refurbishments

The Community Energy Savings Programme (CESP) is an obligation placed on energy suppliers and generators to reduce carbon emissions by investing in energy saving refurbishment of existing properties in the lowest 10% of key deprived areas described as Low Super Output Areas (LSOAs), or Datazones in Scotland.

Each energy generator or supplier has been set a carbon emissions reduction target that they must achieve by 2012 by delivering a package of energy efficiency measures tailored to each individual property.

Wates Living Space is working with a number of selected energy suppliers (such as British Gas) to deliver their CESP commitments, undertaking retrofit and refurbishment work including installation of renewable energy sources and improving insulation and heating in some of the UK's most in-need homes. Through these partnerships, we

have direct access to CESP funds that can usually make up to 80% and in some cases 100% of the cost of improvements available to landlords. CESP funding works on a basis that encourages whole house refurbishment – the more energy saving works carried out the greater the proportion of funding available as a percentage of the overall cost. Tenants will then benefit from improved energy efficiency and reduced fuel bills, reducing fuel poverty now and in the future.

For more information on CESP, please contact John Flower, Project Director, on john.flower@wates.co.uk



Applicable measures



Insulation

- External wall
- Internal wall
- Cavity wall
- Loft
- Underfloor
- Flat roof
- Draught proofing



Heating

- G to A rated boiler
- Fuel switching
- Heating controls
- Communal heating
- Biomass
- Combined heat and power



Renewables

- Solar thermal
- Photo voltaics
- Wind
- Micro hydro
- Air source heat pump
- Ground source heat pump



Other Measures

- Home energy advice
- Glazing
- Smart metering

How it works

This flowchart details the process Wates Living Space helps our clients to follow to apply for and secure CESP funding.



Generating long term revenue via Feed In Tariffs

Feed In Tariffs (FiT) are quarterly payments made by the energy companies to owners of domestic renewable energy systems in both new build or refurbished homes. The payments differ depending on the technology, but are all based on the energy generated and guaranteed for 20 or 25 years.

Homes generating their own energy not only benefit from a reduction in the energy they require from the national grid, they can export power back to it for additional payments.

For the Housing Associations with whom we work, FiTs have multiple benefits. By installing renewable energy systems in social homes, tenants' energy bills are reduced, whilst the Housing Associations receive the FiT payments for energy generated and exported as the owners of the system.

Wates Living Space provides a complete feed in tariff service for photo voltaics, from identification of schemes through to delivery of works. We are accredited under the Microgeneration Certification Scheme (MCS) for Solar Photo Voltaics and members of the Renewable Energy Association Assurance Scheme, adhering to the REAL Code of Conduct.

For more information on Feed In Tariffs, please contact Paul Davies, Sustainable Technologies Manager, on paulb.davies@wates.co.uk



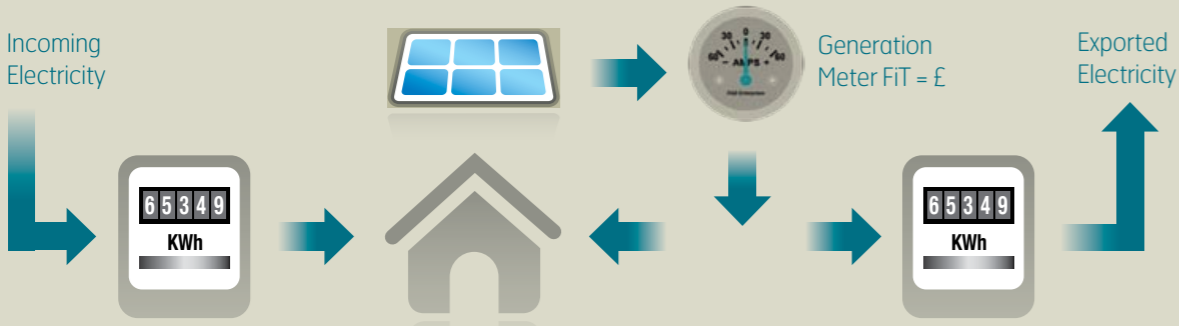
EXAMPLES OF HOW FEED IN TARIFFS CAN WORK FOR RETROFIT AND NEW BUILD PROJECTS

Retrofit	New Build
100 two bed properties	100 two bed properties
50 three bed properties	50 three bed properties
50 four bed properties	50 four bed properties
Cost of installation circa £1.5m	Cost of installation circa £1.5m
25 years income from FiT circa £2.5m	25 years income from FiT circa £2m
Maintenance circa £180,000	Maintenance circa £180,000
Surplus circa £1m	Surplus circa £0.5m

Bowater House, West Bromwich
The first social housing project to utilise renewable energy sources.



How does it work?



Pioneering research

With housing the single biggest contributor to the UK's CO₂ emissions, Wates Living Space is part of an industry-leading projects exploring how best to retrofit the 26 million existing homes that will still be in use by 2050. This ensures that our customers will be able to share and use the very latest research findings from both the public and private sectors.

Retrofit for the Future

Housing actually accounts for over a quarter of all carbon emissions, so social landlords will be pivotal in the UK's success in meeting its carbon reduction targets. The Government's Retrofit for the Future programme aims to identify the most effective solutions for refurbishing homes that vary widely in age, size, design and construction methods.

Wates Living Space is part of a consortium that has secured funding from the

Technology Strategy Board to work on six Retrofit for the Future programmes which will test and compare some of the latest energy saving technologies and methodologies.

As well as measuring performance, the research considers other important factors for the social housing market, including how easy each technology is to install in occupied properties, how well residents engage with

it and how performance is affected by residents' behaviour. The knowledge gained from these ground breaking projects will be used to assist our clients in delivering the requirements of widescale low carbon refurbishment in the future.

For more information on Retrofit for the Future, please contact Paul Davies, Sustainable Technologies Manager, on paulb.davies@wates.co.uk



PROJECT:

Clyde Road terrace

CLIENT:

Peabody

DESCRIPTION:

- Four properties
- Communal heating
- Solar thermal
- External insulation



PROJECT:

Bolton eco retrofit

CLIENT:

Bolton at Home

DESCRIPTION:

- One property
- Ground source heat pump
- Photovoltaics
- Mechanical ventilation with heat recovery



PROJECT:

Shaftesbury Park terrace

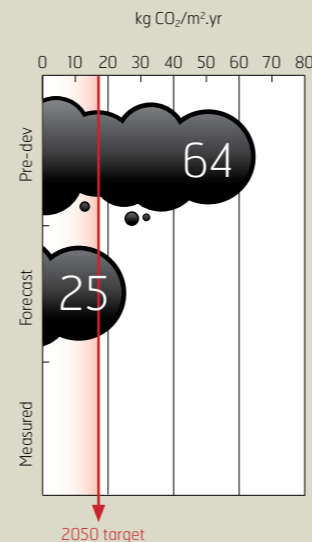
CLIENT:

Peabody

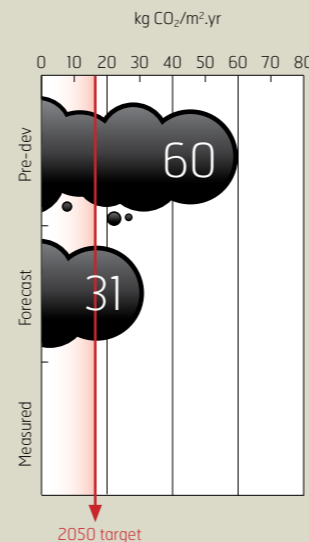
DESCRIPTION:

- One property
- Solar thermal
- Photovoltaics
- Mechanical ventilation with heat recovery
- Aerogel insulation

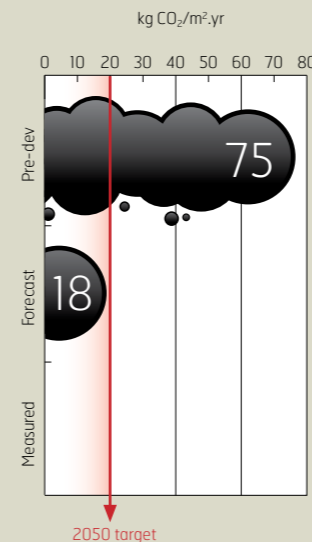
Annual CO₂ emissions



Annual CO₂ emissions



Annual CO₂ emissions



Accelerating towards CO₂ reduction

The only construction company within a public-private partnership assembled by The Energy Technologies Institute (ETI), Wates Living Space is helping to examine how a broad range of homes across the UK can be best refurbished on a mass scale to improve their energy efficiency.

The broad remit of the £3million two year research aims to identify technical issues for various types of properties. It will then make recommendations how to deliver cost-effective and efficient whole house conversions at volume, whilst minimising the impact of the works on the homes' occupants.

The project will also deliver a model capable of running scenarios at local, regional and national levels to identify CO₂ impact and the costs of different mass retrofit plans. This information will benefit Local Authorities and a large portfolio of owners who are vital stakeholders in delivering this transformation at a national level.

Our involvement again positions us firmly at the forefront of the industry, and we look forward to making its findings available to help our customers to deliver carbon reductions and their residents to enjoy improved energy efficiency in their homes.

Project Structure



Making it happen

Wates Living Space is not only driving strategies and pioneering partnerships to research the best ways of helping our customers to meet the Government's carbon reduction targets, but we are already actively delivering sustainable homes in which residents' fuel bills are reduced, and the effectiveness of the latest energy efficiency measures is put to the test in real environments in residents' homes.



Rethinking Housing Refurbishment with the BRE

The BRE's Rethinking Housing Refurbishment project aims to highlight the contribution that housing refurbishment has to play in reducing UK carbon emissions and by encouraging industry to raise its standards of practice.

bre Wates Living Space is delighted to be working in partnership with the BRE on its flagship project, a Victorian Terrace Retrofit, in which we are transforming a disused stable block at the centre of their Innovation Park site in Watford into three 21st century energy-efficient terraced homes showcasing dozens of sustainable housing technologies.

Our carefully selected project team balanced their knowledge and experience in dealing with the repair and refurbishment of period buildings with an openness to the new – and in some cases prototypical – techniques and materials required, to confidently design and manage a safe and logical sequence of repairs and alterations to the building structure during the first phase of works.

In future phases the BRE will upgrade two more units of the terrace, again using both conventional and innovative products with the aim of improving the



building's energy performance from F to a B rating.

All the technologies implemented will be closely monitored

by the BRE, which will then publish refurbishment specifications based on the terrace's CO₂ savings and energy efficiency performance.

At an open day to celebrate the completion of the first phase of works in October 2010, Peter Bonfield, the BRE's chief executive, said: "To achieve emission reduction targets, the average EPC rating for all housing will have to be upgraded to a band B or better, a level currently achieved by only 1-2% of homes. The Victorian Terrace will act as a laboratory test bed from which we will create an evidence base of knowledge and guidance that can be assessed by the construction industry, stakeholders and householders to deliver a step change in the roll out of sustainable housing refurbishment fit for future generation."

For more information on the BRE Victorian Terrace, please contact Lucy Boreham on lucy.boreham@wates.co.uk

Greener homes for Redbridge Council



Wates Living Space has refurbished 19 previously unoccupied houses in Ilford to meet the Code for Sustainable Homes as part of an East Thames Group pilot scheme in partnership with Redbridge Council, the Building Research Establishment (BRE) and construction consultancy Pellings.

To ensure that East Thames Group met its end of year targets for property completion, Wates Living Space reduced the 12 week programme and refurbished the properties, which varied from Victorian to modern timber frame, each with its own bespoke scope of works, in just 8 weeks.

The project – funded by the Homes and Communities Agency (HCA), Redbridge Council and the NHBC Foundation – is examining measures to improve water and energy efficiency, with the homes being fitted with a range of technologies including smart meters to help residents to monitor their energy use, cavity wall insulation, water-saving toilets, taps and bathroom fittings, solar panels and solar hot water systems, and energy efficient LED lighting and heating systems.

Residents moving into the homes will be provided with guidance on making the most of these features as, for the

next two years, they will be extensively monitored to assess actual energy and water savings achieved, and the effects of residents' behaviour on each home's carbon footprint. The results will contribute to a National Sustainability Standard for Refurbished Homes.

George Moroney, Business Manager, London & South East said: "We are delighted to have been involved in this groundbreaking project. If we are to deliver the vision of a sustainable Britain we will need to find cost effective and practical solutions that deliver real savings in both energy use and carbon emissions. We are hoping that the solutions used within these properties will be replicable across more of our housing stock."

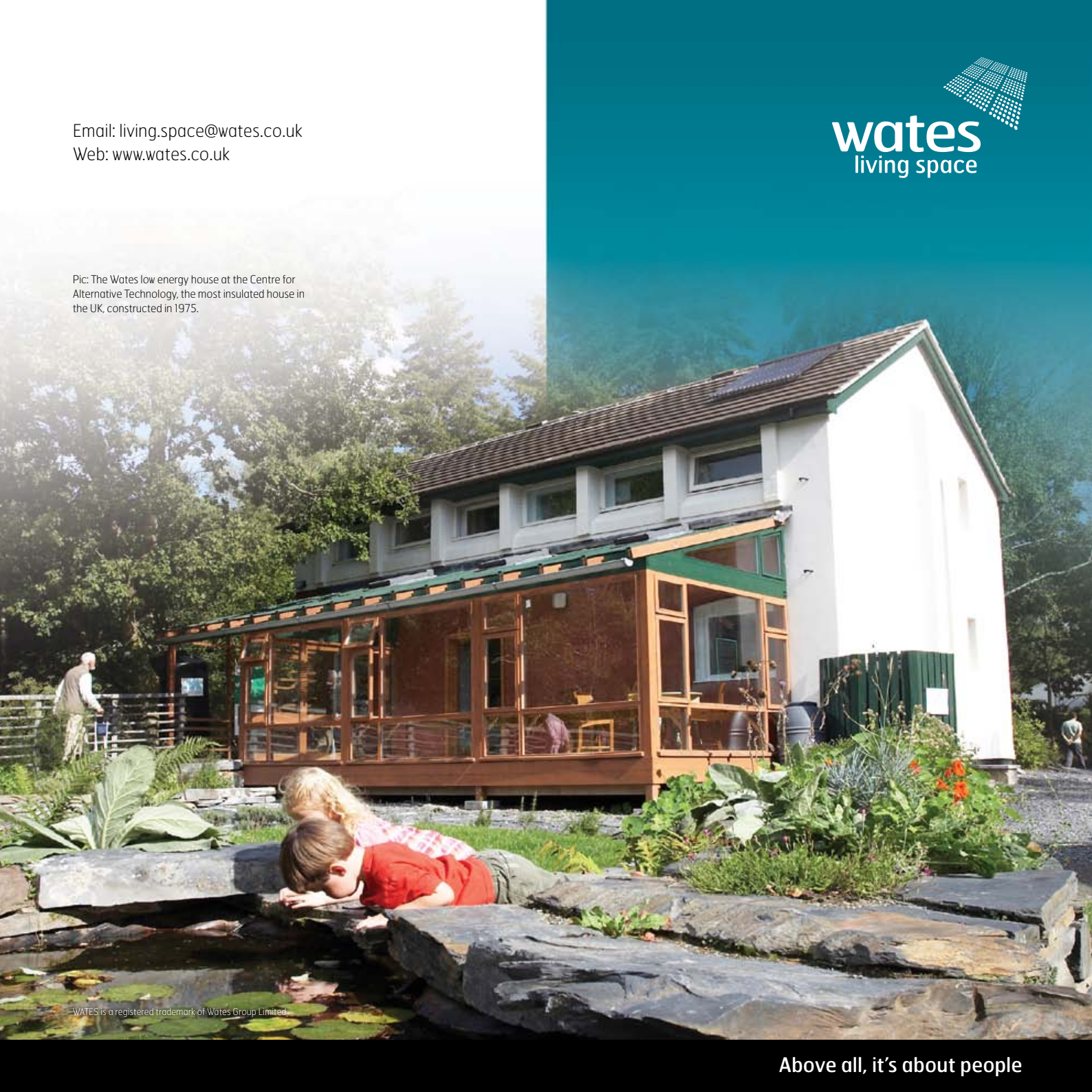
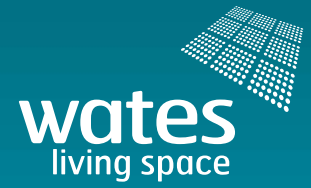
For more information on the pilot scheme at Redbridge, please contact George Moroney on george.moroney@wates.co.uk



Winner of domestic building - large scale (multiple dwellings)

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Pic: The Wates low energy house at the Centre for Alternative Technology, the most insulated house in the UK, constructed in 1975.



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