

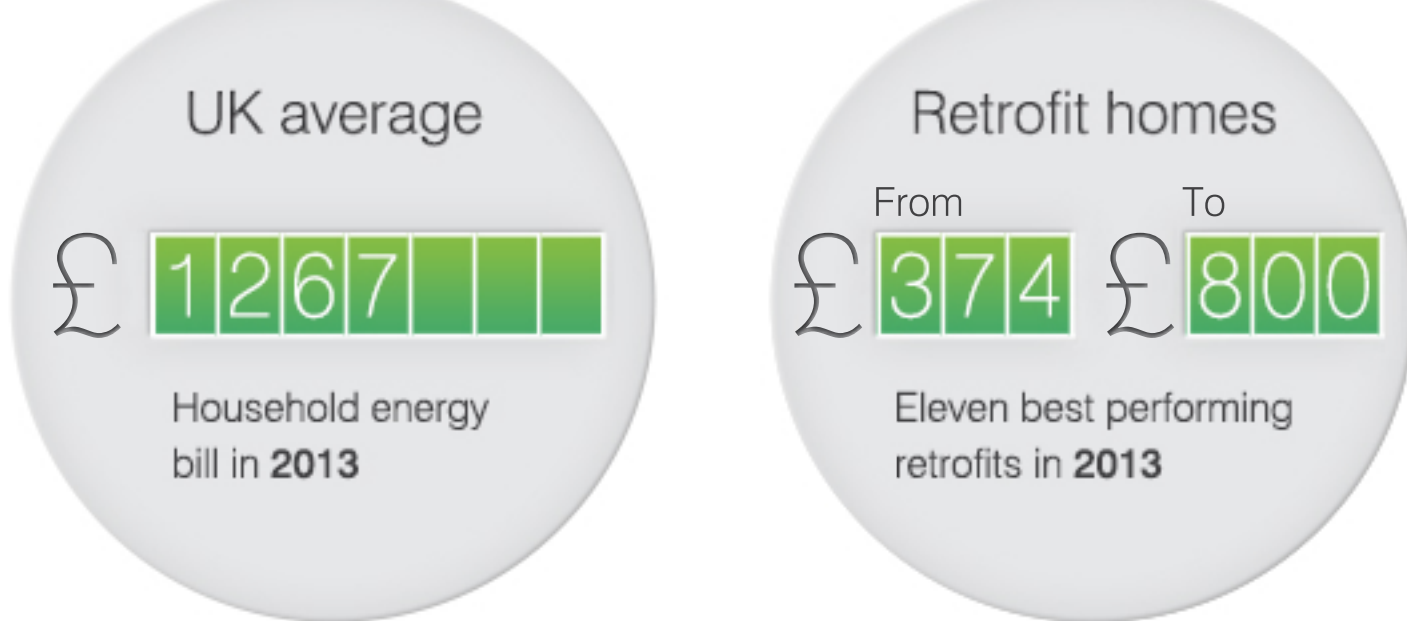
RETROFIT FOR THE FUTURE



ENERGY COSTS

The retrofit work enabled residents to have improved comfort and low energy bills.

RETROFIT ENERGY BILLS, LESS THAN THE NATIONAL AVERAGE



2 homes had **70% less energy costs** than the national average



5 homes had **50% - 70% less energy costs** than the national average



6 homes had **30% - 50% less energy costs** than the national average

The retrofit challenge was to apply **new materials, products** and **technologies** to reduce the energy used in homes.

How the retrofits achieved this:

THE WHOLE-HOUSE APPROACH

The most effective retrofit planning was to take a **‘whole-house’** approach considering **six key themes**.



Each theme affected the others and the whole-house plan.



1. RETROFIT PLANNING

Pre-design considerations incorporating **energy** and **construction solutions, performance targets** and **procurement**.



2. BUILDING FABRIC

Addressing the major area of **heat loss** by adding internal or external wall, loft and floor insulation as well as new windows and doors.



3. INDOOR AIR QUALITY

Balancing the improvement of **airtightness** with the need for **sufficient ventilation** to maintain **air quality**.



4. SERVICES

Ensuring the retrofit elements combine with **heating systems, lighting, renewable energy** and **controls** is integral to the retrofit performance.



5. WORKING ON SITE

Coordinating **complex construction works** and **multiple suppliers**, on and off site, and ensuring quality of on-site delivery.



6. ENGAGING RESIDENTS

Engagement and **collaboration** with residents is vital.