

Retrofit and Replicate

A case study in achieving an 80% reduction in CO₂ emissions to a 1930's house

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Retrofit and Replicate

- Hyde and its objectives
- The Project
- Monitoring and results

The Hyde Group

- One of the largest RSL Groups in country
- London and South East based
- Own/manage over 44,000 homes
- Develop over 1,000 new homes each year
- Invest £40m per annum in existing homes
- 10 stock transfers from LA's to meet DCH

Context

- Existing homes are more expensive to run and produce more CO₂ than new build homes
- Existing homes are responsible for 27% of UK's carbon emissions
- Over 80% of existing homes likely to remain in 2050
- Retrofitting existing homes could save 15 times more CO₂ by 2050 than by proposed demolition and new build

Project Objectives

- Identify how to achieve 80% reduction
- Measure cost effectiveness of solutions
- Assess impact on occupants
- Inform future stock investment
- Contribute to best practice

 CourtFarmRd01



Castleton Road

Kimmeridge Road

Dittisham Road

Court Farm Road

Chilham Road

Castlecombe Road



Property base position

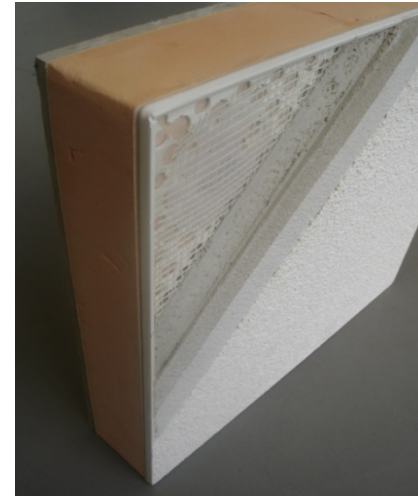
- Poor quality double glazing
- Gas combination boiler
- Limited loft insulation
- SAP rating of 60
- Air tightness test better than current building regulations
- A challenge to achieve 80% reduction

Key deliverables

- Minimise heat loss from fabric of building
- Install a replicable, efficient form of space and water heating
- Reduce the energy requirements for lighting
- Utilise most appropriate forms of micro-generation

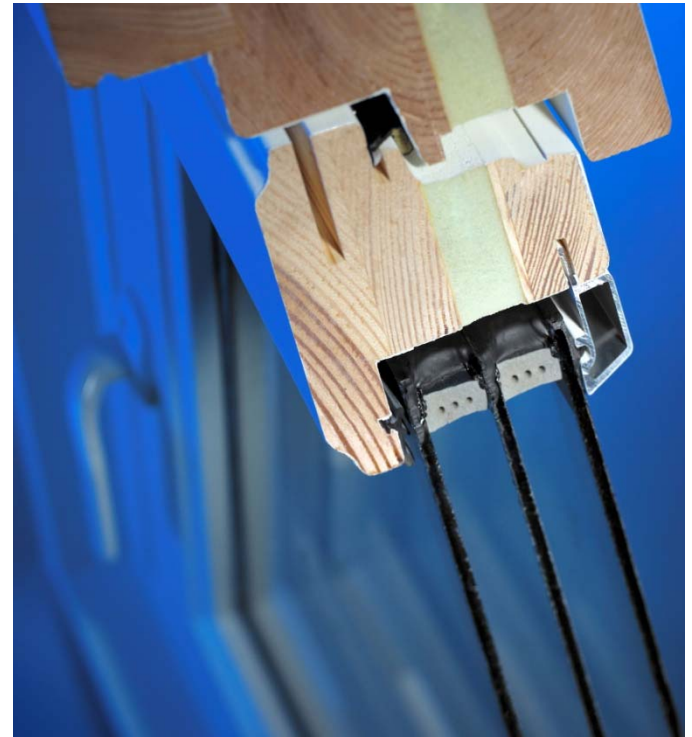
Minimising heat loss Insulation

- Insulation added to external walls, floors and roof
- Thermal performance and ease of installation
- U value = $0.15 \text{ W/m}^2\text{k}$ walls
- U value = $0.10 \text{ W/m}^2\text{k}$ roof



Minimising Heat Loss Windows and doors

- Weakest element in air tightness test
- New triple glazed, frame insulated windows (U value = $0.7 \text{ W/m}^2\text{k}$)
- New insulated doors (U value = $1 \text{ W/m}^2\text{k}$)



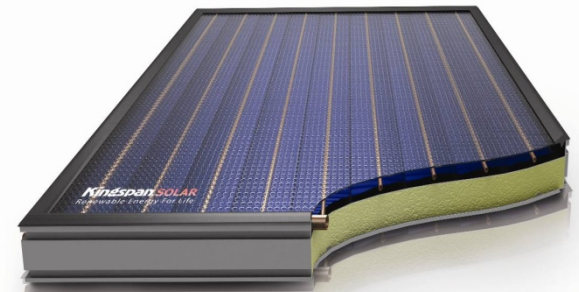
Efficient and replicable space and water heating

- Mechanical ventilation system
- Reclaims 90% of heat from kitchens and bathrooms and re-circulates
- Efficient condensing boiler delivers remaining heat



Micro-generation – solar thermal collectors

- Panels installed on east and west facing roof pitches
- Better performing panel intelligently favoured
- Generates c.70% of annual need (1,240 kWh)
- Backed up by condensing gas boiler



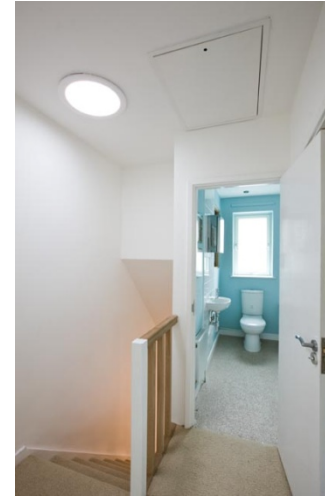
Micro-generation Solar Photovoltaics

- 8 x 170w panels
- Located on rear flat roof
- Generate 1088 kWh/yr
- Offsets 618kg CO₂/yr
- 50% grant funded

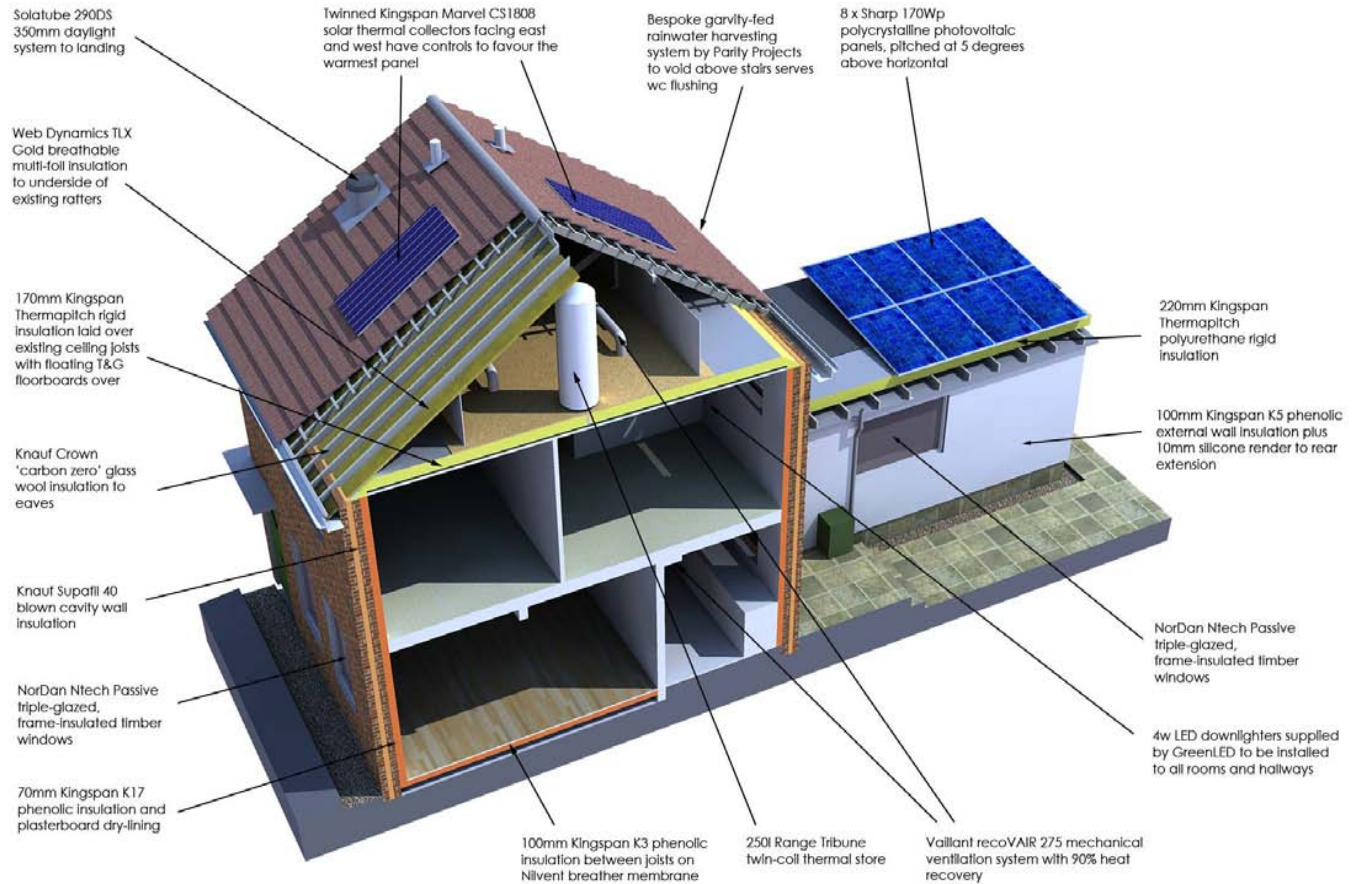


Reducing energy through lighting

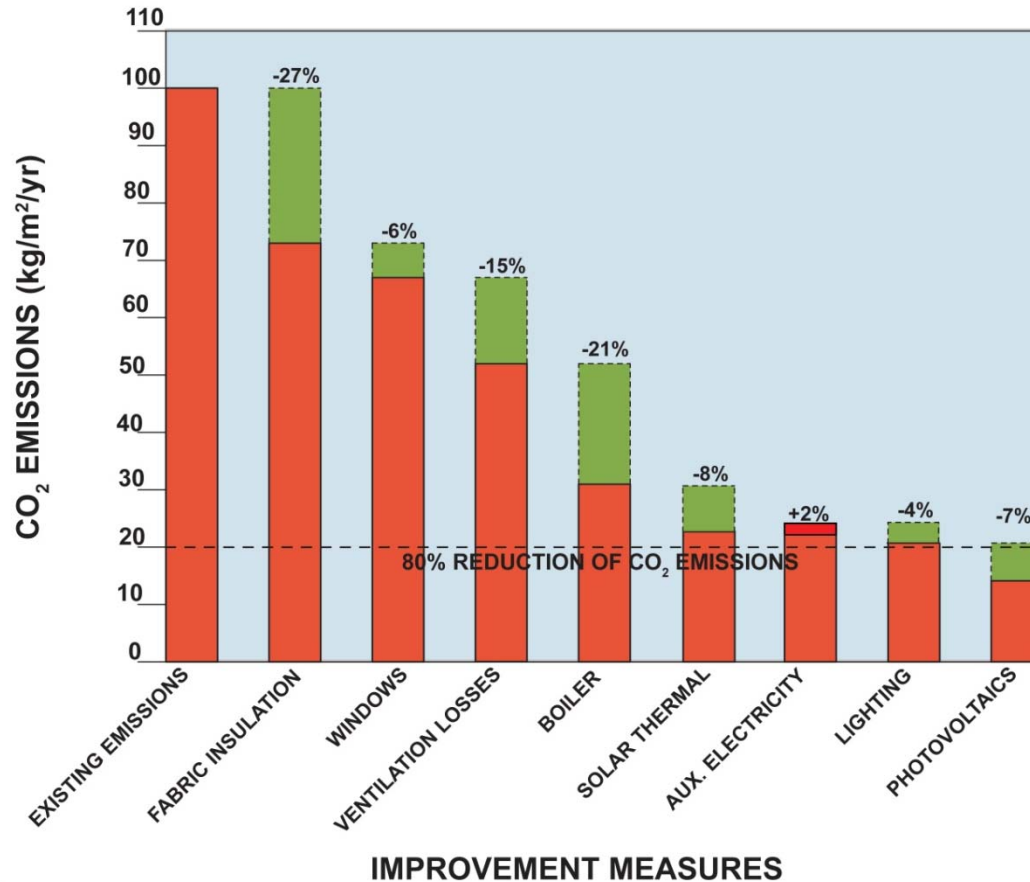
- Minimising electricity loads from lighting
- Solar tube daylight system to landing
- 3.7 watt LED lamps
- 50,000 hours of use



The end result



The predicted end result



Provisional Costs - Extra over costs to DHS work package

Fabric insulation - £8900

Triple-glazed windows - £4540

Condensing boiler - £600 (additional insulated pipework)

MVHR/airtight measures /testing - £3200

Solar collectors and storage - £5300

LED Lighting - £2505

Photovoltaics - £4950 (with 50% LCBP grant)

Total - £29,995

Ongoing assessment

- Selection and education of tenants
- Performance monitoring
- Energy consumption savings
 - £600 per annum?
- Post occupancy interviews
- Information sharing
- Informing future investment decisions

Partner Involvement

