


Roland Hill Ltd

Retrofit for the Future




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This session is part of the Northwest Climate Change Local Area Support Programme (CLASP) and also part of the Greenways to Work training project, which is funded by the European Social Fund.

Delivered by



nwiep
north west improvement and efficiency partnership

CLASP.

CAFS
Climate Action for Sustainability

CPTS
Cumbria Planning
Training Service

The Retrofit for the Future competition reported here has been funded by the Technology Strategy Board under the Small Business Research Initiative (SBRI) under the Retrofit for the Future programme. This project is one of 87 projects funded under the programme. Further information on the programme can be found at:
www.innovateuk.org/retrofit

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Introduction

- A competition run by The Technology Strategy Board
- Roland Hill in partnership with Riverside Housing and Home Group in Cumbria and Isos Housing in NE
- Competition split into 2 phases
 - Phase 1 – Design
 - Phase 2 – Implementation
- Roland Hill are the only organisation in Cumbria to be successful in winning TSB bids

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Introduction

- Look at whole house solutions
- Looking at highly innovative technologies.
- Cost is not the main driver innovation is!
- The competition will act as the R&D bed for all social housing in the country.
- All houses will be monitored every 5 minutes for 24 months.

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Target

At least 100 demonstrator refurbishments:

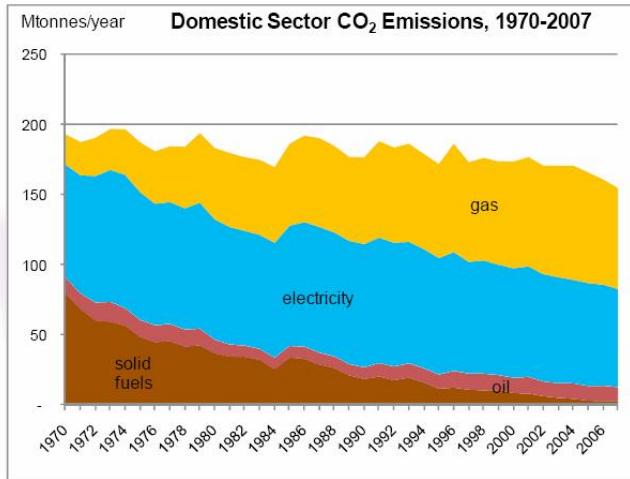
- deep cuts in carbon emissions (80%)
- different home types and locations
- good indoor environment
- cost effective

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UK Emissions

- 26% of all UK emissions are due to housing
- Government have pledged a 80% reduction in CO₂ emission over 1990 levels – based on *Whole House Solutions*

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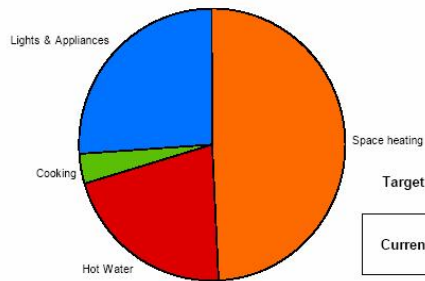


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80% cuts need all energy use to be tackled

UK Domestic Carbon Emissions

2006 GB average 4.8 tonnes Co₂ per household exc travel and food



Target reduction is 80% CO₂

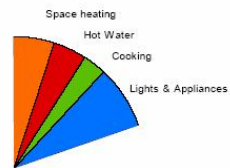
Current reduction is 0% CO₂

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80% cut needs low energy appliances too

UK Domestic Carbon Emissions

2006 GB average 4.8 tonnes Co2 per household exc travel and food



Target reduction is 80% CO2

Current reduction is 80% CO2

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Our Properties

- Roland Hill won through with three projects.
- Two in Cumbria, one in NE
 - North Shields
 - Longtown
 - Whitehaven
- Only organisation to win funding in Cumbria.

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Our Properties

North Shields

- 1910 2 bed End Terrace
- Solid brick walls
- Converted from two 1 bed flats
- Original SAP rating of 43
- Final SAP rating of 85



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North Shields – Implemented Strategies

Insulation

Walls – Internal Vacuum Insulation

Floors – Vacuum Insulation

Roof – 400mm mineral wool

Windows – Inflector Blinds



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North Shields – Implemented Strategies

Heating

- By Daalderop Combinair unit
- Exhaust air heat pump siamesed to gas combi-boiler
- Controls include full weather compensation
- Radiator distribution system



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North Shields – Implemented Strategies

Renewable Technologies

- Heat pump
- Solar thermal pre-heat to gas boiler
- 1.0kWp solar PV
- Itho MVHR

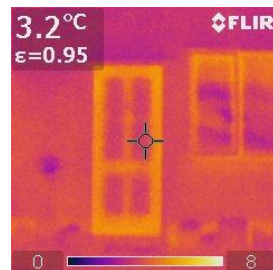
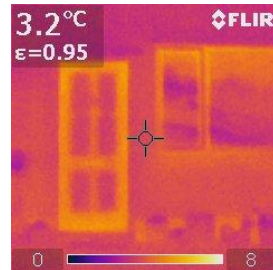
General Items

- Thermally Efficient doors
- Control Systems
- LED lighting
- A+ rated appliances and white goods

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External Doors

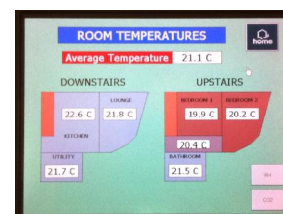
- Doors developed for the competition
- The core of the door uses vacuum insulation panels
- Traditionally constructed timber doors
- Designed using Secured by Design principles



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Control Systems

- Control system reports back to EST
- Records the following every 5 minutes
 - Temperature in each room
 - Electricity on each circuit
 - Gas consumption
 - Humidity in each room
 - Air quality (CO₂) in each room
 - Heat pump effectiveness
 - Solar thermal and PV effectiveness



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Our Properties

Longtown

- 1950 2 bed End Terrace
- Cavity brick walls
- Original SAP rating of 37
- Final SAP rating of 88
- Off – gas property



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Longtown – Implemented Strategies

Insulation

Walls – Internal Vacuum Insulation

Floors – Vacuum Insulation

Roof – 400mm mineral wool

Windows – triple glazed



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Longtown – Implemented Strategies

Heating

- Effected by EnviroPod Heating system
- Radiator distribution system



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Longtown – Implemented Strategies

Renewable Technologies

- Heat pump
- Solar thermal assisting DHW
- 1.0kWp solar PV
- Vent Axia MVHR

General Items

- Thermally Efficient doors
- Control Systems
- LED lighting
- A+ rated appliances and white goods



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Our Properties

Whitehaven

- 1930's 3 bed Semi-detached
- Cavity brick walls
- Original SAP rating of 45
- Final SAP rating of 90
- Property was void



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Whitehaven – Implemented Strategies

Insulation

Walls – External Vacupor Vacuum Insulation, with polymer render

Floors – Vacuum Insulation

Roof – 400mm mineral wool

Windows – triple glazed



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Whithaven – Implemented Strategies

Heating

- A rated combi-gas boiler, with solar thermal pre-heat

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Whitehaven – Implemented Strategies

Renewable Technologies

- Solar thermal pre-heat to gas boiler
- 1.0kWp solar PV
- Vent Axia MVHR

General Items

- Thermally Efficient doors
- Control Systems
- LED lighting
- A+ rated appliances and white goods

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Whitehaven – Implemented Strategies

Other Works

- Rear extension required to replace flying bathroom.
- Manufactured off site with walls and roof at U-value of 0.12 W/m²K



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Involvement in other projects.

East Midlands Housing Association - Leicester

- Manufactured completely off site and finished internally
- Final air tightness 1.5 m³/m²/Hr on the completed house
- A LOFT CONVERSION IN A DAY



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Issues Arising From the Projects

- Hard Issues
 - Effective integration and control of different technologies
 - Ensuring correct installation of new and cutting edge technologies
- Soft Issues
 - Tenant understanding / education
 - Value for money??
 - Roll out potential
 - Whole different way of thinking

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The Future – Opportunities / Challenges

- Following the competition and the 2 year monitoring.
- A roll out programme over a number of years to all the social housing group.
- **Nationally, there are currently 4.5million social housing homes!!**

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Questions???

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