



BECCI

Built Environment Climate
Change Innovations



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**Refurbishment as a Manufacturing Industry (REMI)
Built Environment Climate Change Innovations (BECCI)**



European Union

European Regional
Development Fund

23 February 2016

Subject to contract approval this project will be part funded
by the European Regional Development Fund.

BECCI provides:

- Free advice and guidance
- Workshops and events
- Product development planning
- BECCI research and Industry Challenges
- BECCI one to one corporate mentoring
- Assessments
- Equipment trials; thermal camera, air tightness



Seeable with BECCI at Faraday Wharf,
Birmingham during Technology Showcase
June 2015

“Development and adoption of products and services that can be used to reduce energy consumption within housing, commercial and public buildings.”

Scene Setting - Condition

Prediction is that 80% of current housing stock will still be around in 2050

The condition of existing homes – source 2014 survey

- UK thermal performance – walls, roofs, floors – well below average
- Up to 44% of UK homes living with problems (draught, condensation, mould)

Scene Setting – Energy Costs

In England there are 2.35 million homes in fuel poverty. West Midlands being worst with 320,000 homes (13.9%)

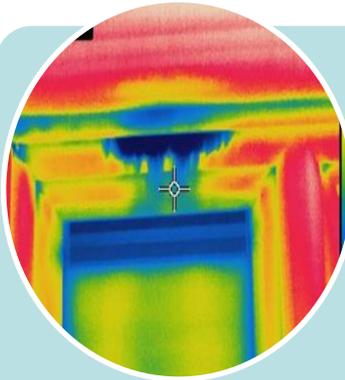
Energy Consumption

- Housing accounts for approximately 30% all UK energy consumption
- Energy spend by UK household - £1,190 pa
- Per household £740 pa is space heating; and £214 pa is hot water (80%)

BECCI focus:



Air tightness



Heat loss



Moisture content

Air leakage:

Combination of air permeability (as-built integrity of the building fabric) and infiltration (unintentional introduction of external air)

Research - Occupant Behaviour

Why did we do this project?



Housing group

- Understand how to save tenants money
- Understand the efficiency of their current “Home Energy Visits”
- Understand how to improve Home Energy Visits
- Get a better understanding of energy usage, occupant behaviour, air quality and health in houses

Occupants

- Learn strategies to save money
- Learn how others save money

University of Wolverhampton

- Research possibilities in new areas:
machine learning,
occupant behaviour
health / wellbeing
- Possible involvement of BECCI researchers in the analysis of the data
- Promote collaborative work among different university faculties
- Promote funding bids



- ❑ **Measured the properties**



- ❑ **Structured questions of occupants about their behaviour and energy use**



- ❑ **Installed sensors inside the properties to measure different aspects such as:
energy in, heating efficiency, air quality, temperature, humidity and occupant activity**

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Themes of air tightness, moisture content, heat loss

Activities planned immediately & for next 3 years:

- Events
 - 14/4 BECCI Kick off - Marches LEP
 - 19/4 BECCI Kick off - Black Country LEP
 - 9/6 'Retrofitting Traditional Buildings seminar' (University of Wolverhampton)

- Technical review workshops – 9 over next 3 years

- Industry Challenges – One per annum for 3 years

- Technology Showcases – One per annum for 3 years



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