Planning and best practice guidance: a route map to help householders with their energy saving refurbishment

Warm Up Bristol City-wide retrofitting initiative

BCC Energy Service
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• Why is retrofit important?
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Warm Up Bristol

- 4 year energy efficiency programme within current legislative framework
- Tenure – private owner-occupied and private rental sector
- Area based roll out scheme
- Measures based approach – Green Deal
- Kick-started with £7.2million Green Deal Communities Funding
  - Focus on external wall insulation
  - Any other energy efficiency measures
Warm Up Bristol

Goals of Warm Up Bristol

• Increase uptake of energy efficiency measures, 30,000 measures over 4 years
• Reduce domestic energy consumption
• Reduce fuel poverty in Bristol
• Increase capacity in local supply chain
• Support community energy engagement
• Contribute to BCC CO$_2$/energy reduction targets
Why is retrofit important?

THE BIG PICTURE

• UK Carbon reduction targets 80% by 2050 on 1990 baseline levels – Binding agreement
• 27% UK’s CO₂ emissions from domestic property
• 25 million properties in UK – most will still exist in 2050
• Towns and cities make up over half GHG emissions
• Keep within 2°C global average temp rise?
Why is retrofit important?

Bristol

- 41% energy used in domestic sector, of which 78% used for gas.
- Approx. 13% of Bristol households in Fuel Poverty
- Worst wards increases to 27%
- Improvements – cleaner air; warmer homes; better quality of life; reduction in key social and health issues

CO2 reduction targets

<table>
<thead>
<tr>
<th>Location</th>
<th>2020</th>
<th>2050</th>
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<tbody>
<tr>
<td>Europe</td>
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<tr>
<td>UK</td>
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<tr>
<td>Bristol</td>
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Percentage reduction target

0% 20% 40% 60% 80% 100%
Why is retrofit important?

Business

• Significant economic growth and employment
  – 2000 jobs (cost effective)
  – 8000 jobs (cost neutral)

• £2.2Bn investment solutions by 2025 (Cost neutral)

• £300m reduction in energy bills (cost neutral)

<table>
<thead>
<tr>
<th>Cost effective</th>
<th>Cost neutral</th>
<th>Realistic potential</th>
</tr>
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<tbody>
<tr>
<td>Only measures that are cost effective on commercial terms</td>
<td>Measures that could be afforded if the benefits are captured and reinvested in other low CO2 measures</td>
<td>All measures deployed to estimated maximum realistic potential irrespective of cost</td>
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The Challenge

• Legislative framework
  – Measures based funding

• Customer knowledge & engagement

• Planning
  – Listed buildings
  – Conservation areas
  – Traditional buildings and the built realm

• Industry preparedness
Legislative Framework

• Green Deal
  – Funding to support specific measures, not a holistic approach
  – Certification limits entry for smaller local contractors, local knowledge?

• ECO
  – Predicted carbon savings, not measured
Customers

• Engaged and want to do ‘something’
• Limited understanding of best approach
  – Led by grants available
  – Unaware of potential unintended consequences & underperformance
  – No engagement with behaviour, mitigation or maximising potential
• Complicated process
  – Planning permissions, permitted development and highways
Planning

• Listed buildings & conservation areas covered by planning legislation
• Managing our public realm – local interpretation of planning legislation
• Non-designated areas
  – Permitted development on houses
  – Decorative features
  – Highways
Designated Conservation areas in Bristol
Percentage Solid Wall properties in Bristol
Conservation areas and solid wall properties in Bristol
Typical non-designated homes
Highways
Industry preparedness

• Move from social to private
• Managing the customer journey
  – Customer choice
    • Vanilla or Chocolate with sprinkles?
  – Customer expectations
    • Noise, intrusion, mess....
• Supporting customers with consents
Tackling the challenge - Customers

• Identification of what’s best for customer, house type, age and occupancy

• Encourage holistic approach
  – Best solutions may be no solutions?
  – Develop a energy refurbishment plan?

• Provide examples of no, low cost and unfunded interventions
Typology - typical heat flows through walls only

- Terrace flat backed
- Terrace with extension
- Terrace end
- Semi detached
- Detached

Specific heat loss

- Heat loss kWh/m²/a external wall
- Heat loss kWh/m²/a window
- Heat loss kWh/m²/a floor
- Heat loss kWh/m²/a roof
- Ventilation heat loss kWh/m²/a
Tackling the challenges

Online support tool

https://warmupbristol.co.uk
Tackling the challenges – Best Practice

• Building science
  – Thermal bridging
    • Windows & Doors – reveals
    • Eaves, parapet walls and base of walls
    • Bay windows
    • Meter boxes & solid fuel ventilation grilles
  – Moisture open/closed
  – Ventilation
extension of rafters

WATCH POINTS:
Risk of water penetration almost eliminated at head
Work requires skill and care to avoid damage that may require further roof stripping
Fixing of bottom tiles not easy
New bottom tiles may look different
May require separate trade to prepare roof edge prior to EWI work

Cold bridge significantly reduced. Less energy loss and improved internal wall surface temperature along this zone which reduces risk of condensation and mould growth.

Figure ............

New tiles, battens and extended membrane fitted at base of roof.
Dotted line indicates line of extended rafter
Roof extent close to 100mm further forward.

Ability of wall to dry out to the weather side reduced by imposition of layers of insulation, adhesive and render.
Tackling the challenges – Planning consents

• Make it as clear as possible!
  – Listed buildings & conservation areas
  – Non-designated areas
    • Identify the grey areas where consent is required
    • Link to duty officers/planning portal etc
  – Provide links to professionals for support and further advice
    • Difficult for local authorities
**Tackling the challenges – Industry knowledge & training**

- **Industry regulation and standards**
  - Inca; NIA; PAS2030; systems providers; Ofgem; ECO

- **Bristol kite-mark?**
  - All installers working on Warm Up Bristol scheme to be accredited – site co-ordinators & team members
  - Assessors and architects?
Conclusions

• We can’t do ‘nothing’ if we are going to fulfill binding international agreements
• But….we must respect our built environment
• Holistic approach not one-size or one measure approach
• Improve our service to customers
  – Informed decision making
• Joined up approach, funders; local authority depts; systems manufacturers; assessors; installers etc.
Further Information

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