# From Research to Mainstream: An unbridgeable gap?



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#### The issue still being grappled with, how do we improve this building stock...







#### Whilst avoiding this....





We have the knowledge and research base, but is this translating into mainstream retrofit / construction sector?



### Obstacles to mainstream adoption of appropriate measures

- Certification of methods and materials
- Training of contractors
- Training of specifiers / designers etc
- Standards and their application
- Government policy and targets
- Sustainability of retrofit / carbon cost

### Government Policy and funding, part of the problem or part of the solution?

- A limited range of materials receive funding, installed by a limited range of companies
- "The Government has a target to upgrade around one million homes through Eco and other Government domestic energy efficiency schemes."
- Scottish Government Skills Matrix (which includes the Level 3 Award) potentially a good step in the right direction if adopted

#### Warranties / testing / certification

- There does not appear to be consistency of approach regarding warranties between funding streams
- ECO currently has a requirement for a 25 year warranty for certain measures
- Non ECO work 10-12 year warranty typicly
- Is testing fit for purpose? BBA certificates / Grenfell
- This can all act as a barrier to the mainstreaming of appropriate measures

### Targets mostly based around EPC bands, what have we learned?

- A more detailed survey can give a better rating
- Accurate measurement can give a better rating
- Record all retrofit work that is done in sufficient detail to be recorded on EPC
- Unexpected factors such as an infrared heating panel can cost SAP points which can be the difference between a C and a D
- Do we need to pay more for a more accurate survey?

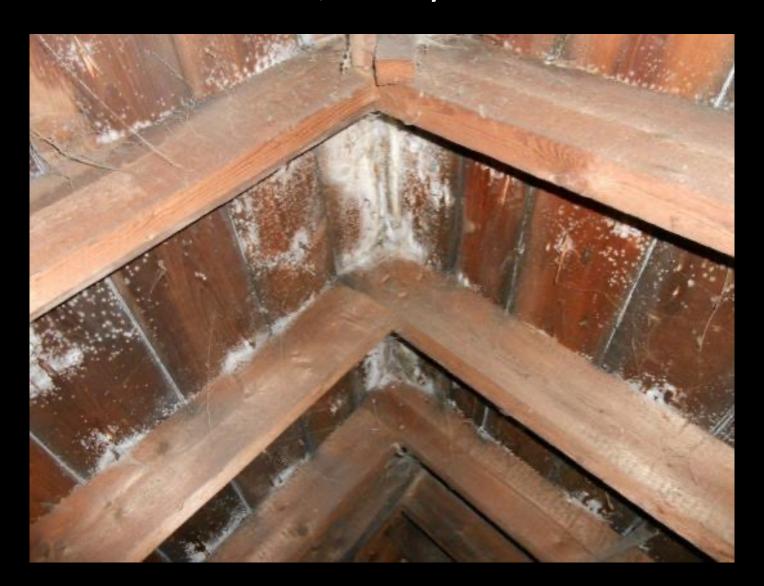
# Meeting Building Standards in Scotland – can be done with vapour open materials (for now...)

| Type of element | Area-weighted average U-value<br>(W/m²K) for all elements of the same<br>type |  |  | HES Case Study Result Achieved  |
|-----------------|---|--|--|---|
|                 | (a) Maximum U-values for conversion of heated buildings                       | b) Maximum U-values for<br>conversion of unheated<br>buildings | (c) Individual<br>element U-<br>Value (W/m <sup>2</sup> K) |   |
| Wall (Solid)    | 0.3   | 0.22   | 0.70   | 0.15 80mm cellulose (KoC) 0.19 80mm WFB (Kild) 0.22 100mm Hemp (SS) 0.29 100mm cellulose (SS) 0.3 50mm bonded bead (Laur) 0.32 50mm bonded bead (SS) 0.32 50mm Aerogel Board (SS) |

Interpretation of Standards critical - The standard for condensation for not mandate a vapour barrier, control of condensation can be met by using vapour open / humidity buffering materials



### If standards seek ever lower u-values does the condensation / decay risk increase?



# Insulated lime plaster... certification?, warranty? EPC?





#### Who is looking at solutions around renewables / services? Ground Source Heat Pump in A listed vernacular building









### Developing and implementing the principles of "Sustainable Retrofit"

- Technical compatibility with traditional fabric
- Upgrade of existing fabric (adding not removing)
- Durability and resilience of interventions
- Ventilation and Indoor air quality
- Measures able to withstand a changed climate
- Carbon impact of measures is understood
- Upgrade materials that sequester carbon
- The building is in good condition.....

# "sustainable" refurbishment? Circular Economy?





#### Training of installers, the NOS are in place...

- New NOS for Insulation and Building Treatment operatives, now mainly at level 3
- New retrofit pathways for construction site managers and supervisors at level 6 and 4 respectively
- Will lead to new qualifications but will the retrofit industry adopt these, some evidence that they wont
- Level 3 Award in Energy Efficiency Measures for Older and Traditional Buildings being delivered

#### The NOS are a good foundation but not enough on their own to bring about mainstreaming

- Training for operatives needs to move into a college / external training setting
- Training and education must be independent of material suppliers as with other sectors of the construction industry
- What about designers and professionals?
   Training, CPD, delivered by whom?

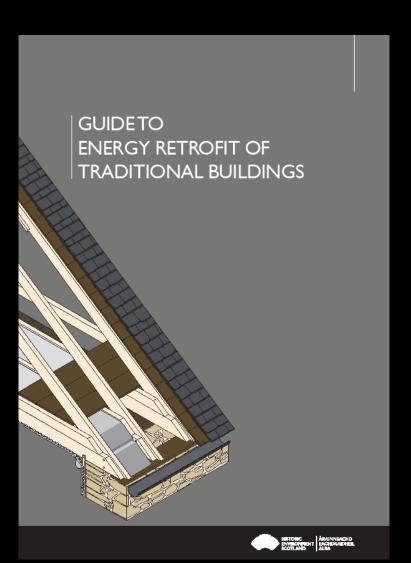
#### What do we need to do?

- Work together (PAS 2038 shows what can be done)
- Support the development of training and education at all levels, beyond just influencing NOS
- Work to ensure warranties / funding / standards offer opportunities not barriers
- Investment is needed at all stages of the process to make traditional buildings more energy efficient using appropriate methods and materials
- Traditional buildings are sustainable but need a careful and considered approach to see them achieve another 100+ years of use

#### Holyrood Park Lodge, Category B listed building in Holyrood Park, Edinburgh, built 1860's, EPC B



# The gap can be bridged, but needs a co-ordinated approach





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