



SPAB / STBA Annual Conference 2021 (summary)

Day 1: Retrofit Tools and Solutions (Chaired by STBA Director Peter Draper)

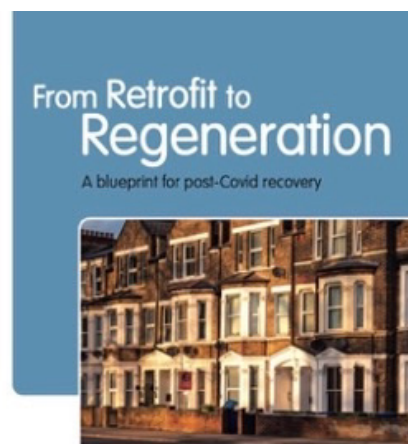
Keynote Speaker, **Lynne Sullivan OBE** gave a balanced overview of **UK's Retrofit Policy** took in the Climate Change Committee's 2021 Progress Report and, the need to "accelerate transition". She stressed the financial incentives required and this came too from a less common source in the former Governor of the Bank of England, Mark Carney, suggesting, how we can "create an ecosystem in which society's values broaden the market's conceptions of value".

UK's EXISTING BUILDINGS – THE INDUSTRY VIEW OF A HOLISTIC APPROACH

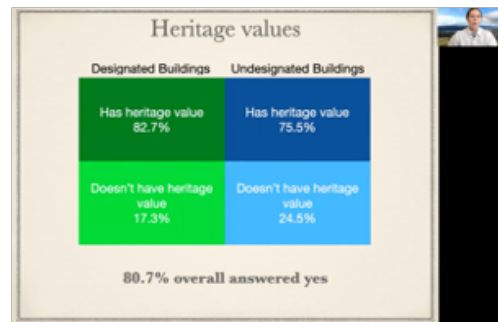
- The National Retrofit Strategy is even more ambitious than CCC's pathway
- Proposes Net Zero energy plans and an interlock of skills, standards and partnership approach to funding; requires government investment in skills and fuel poverty programmes; target Energy Use Intensity in kWh/m² to benchmark standards – more specific than EPC ratings
- Median energy demand (total) ~62kWh/m² with space heating demand around 50 but according to planned packages compatible with property type; heat pump efficiencies linked with energy efficiency etc.
- Proposes central delivery agency coordinating communications and regional/ local hubs with the potential to create new and higher skilled jobs in every region and community and boost existing players (including SMEs and their supply chains)
- Delivering quality – assured end to end Quality Control to generate confidence in owners and investors
- Proposes Government policy and investment will kickstart supply chain and private investment and economic opportunities
- A comprehensive approach deploying digital techniques, renovation passports and buildings profiling to open up markets for packaged approaches, streamlined industrialisation, and easier recognition of optimal conditions for alternative approaches eg heat networks, energy management

Greening Our Existing Homes
National retrofit strategy
GREEN CONSTRUCTION BOARD

Nigel Griffiths unveiled the latest STBA paper: '**From Retrofit to Regeneration**'. As author, Nigel enthused on localism, community spirit, and contingencies in meeting the targets set by decision-makers for the retrofitting and regeneration of our homes. Outlining the merits of focused and considerate strategies he emphasised how this paper could enable works to traditional homes with skilled personnel and, with significant input from people who live in them.



Freya Wise from the **Open University** presented us with '**Retrofitting residential heritage buildings: remember the people**' which pinpointed the importance of community engagement with retrofitting heritage buildings. This work was undertaken in Cumbria and reported on "the views, values and behaviours of residents of older buildings". Amongst her findings was the number of homes which were not designated 'heritage' buildings but were felt to be historically significant by their owners. This suggests a broadening of the definition 'heritage' and the types of retrofit that are treated as 'protected' needs to be considered.



Professor Will Swan presented the '**Salford Energy House**' – a purpose built house/laboratory, with multiple retrofit test scenarios including **BEIS Demonstration of Energy Efficiency Potential (DEEP)**. The studying of an occupied home would be difficult to carry out, given the numerous intrusions on the inhabitants to facilitate sufficient data and warrant testing at scale. Professor Swan and his team have put in place a suite of monitoring sites which would replicate a full retrofit, u-value and Smart Energy systems.

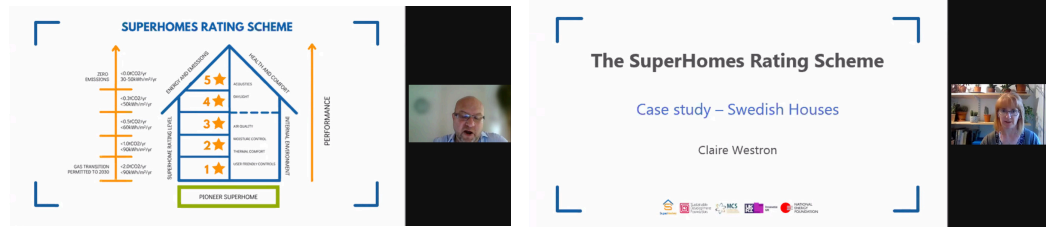


Peter Draper presented on the '**STBA Whole House Tool Development**'. STBA's tools are free to access and use and its Responsible Retrofit Guidance Wheel is already the go-to resource for the heritage sector. This presentation focused on a survey tool that would work with the forthcoming British standard - BS4104 (assessing buildings for retrofit) and a carbon calculator 'options appraisal' tool that should be ideal for the home owners large estate owners alike. The tools are being developed as part of a wider project and a partnership with HES and Green Building Encyclopedia

Key features:

- A focus on traditional buildings and their significance
- Still applicable for all build types due to pathology of all older properties
 - Outside to inside
- Deliberate focus on edges, junctions etc
- Notes system to re-enforce knowledge

Claire Westron & Paul Ciniglio presented the conference with an overview of the **SuperHomes Rating Scheme**. Based on PAS2035 this scheme is focused on RSLs and owners who wish to highlight the credentials of their retrofit and also prove its effectiveness through Post Occupancy Evaluation. Based on wider metrics than just carbon savings this provides a new 5 star rating system that is based on reality rather than predictions.



Andy Sutton from Sero Homes focused on their work with the Optimised Retrofit Programme in Wales. The team at Sero are developing a **Pathways to Zero suite of digital tools** which will help take homes to Net Zero in a risk assessed manner. Based on PAS2035 principles and lead by a knowledgeable team in retrofit these tools are aimed at larger RSLs.

Digital Tools and Standards Capture Survey

- Captured digitally and captures all the information and parameters using the 4 C's principle
- Captures all the information to create the carbon footprint baseline
- Provides additional guidance and background information on suitability of measures.
- Ensure compatibility of measures for selection in the pathways tool
- Primary design is to capture elements or features that indicate a building is not "Retrofit Ready"
- Reduces the risk of Unintended Consequences



Day 2: Significance, Policy & Research (Chaired by SPAB Technical & Research co-Chair Sally Stradling)

Keynote speaker **Sally Stradling** reflected on Day 1 and introduced the audience to a day of significance, policy and research.

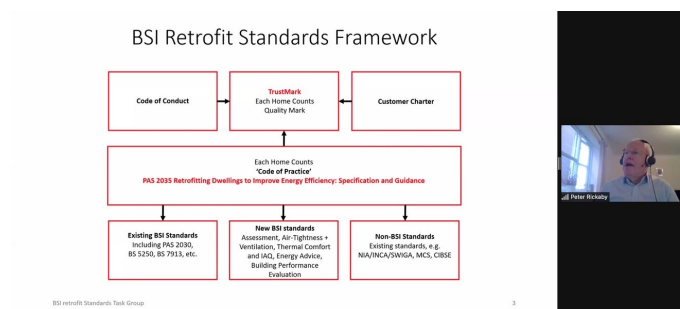
Dr Moses Jenkins from HES presentation '**From Research to Mainstream**' began Day 2 and debated that in spite of a strong knowledge and research base, the way forward is not always clear. The poignant question was: What do we need to do next?



Morwenna Slade from HE gave an **Overview of Historic England's Research**. Evidence based case studies and practical 'real-life' advice were shone in this presentation as she highlighted, issues with EPCs, 'flooding', and 'heat pumps'.



Dr Peter Rickaby presented on the newly released **PAS 2038: the new UK standard for non-domestic retrofit** from the BSI Retrofit Standards Task Group (noting that she steering group for the authorship this document included members of STBA, HE, HES, Cadw, UKCMB.) With over two million non-domestic buildings in the UK (ranging from corner shops to The Shard) he illustrated how the complexities of the market had affected the standard and gave some direction as to how the standard would be used and applied.



Toby Cambray from UCL delivered his latest findings from his SPAB sponsored research project: **Water Repellent Treatments and Historic Masonry** and in particular the work around 'Hydrophobic treatments' and its "enabling technology" in retrofit.

UCL Institute for Environmental Design and Engineering
UCL

Context

- Hydrophobic Treatments (HPT's) have been used for several decades to try to reduce water uptake in masonry:
 - To address moisture problems resulting from "penetrating damp"
 - To arrest deterioration in historic masonry
- More recently to mitigate moisture risks associated with IWI. (e.g. Martel et al 2021).
- As such HPT's may be an "enabling technology" in retrofit.
- SPAB issued a statement in 1995, updated in 2000, effectively advising against the use of HPT's.

Retrofit of Historic Timber-Framed Buildings

To date, research into the retrofitting of historic and traditional buildings has focused on the retrofitting of solid walled masonry construction
(Scott & Ryan, 2014; COFT & RYE, 2014; Muhammadpourfarhad & Sharpley, 2013; Gendri et al., 2012)

Historic timber-frame Dwellings account 8% of the pre-1850 Housing Stock, with approximately 68,000 pre-1850 timber-framed buildings surviving in the UK
(NCCO et al., 2014; Whitman C.A 2015).

English Housing Stock by Age since 1850

“Cottage houses of England” - source: wikipedia

York, from “The Fairy Land of England” - source: flickr

Val Juhasz presented the initial finding for SPAB with **Moisture Movement in Porous Masonry: New Findings**. Val showed us documentation of rising damp which appeared as early as 1844. He showed conference his preliminary laboratory experiments for monitoring the migration of moisture and breathability in solid bricks.

SOIL EVAPORATION

- Soil evaporation is a **standalone wetting mechanism**, does not depend on other moisture sources (rainwater ingress, condensation).
- Soil evaporation ~~is~~ the mysterious and eluding rising damp that confused so many.
- Its fundamental mechanism is **vapour rise not capillary action**. However, it can lead to liquid moisture accumulation and movement through **several stages**, capillary action being at the very end.

1
Vapour Diffusion
Monolayer Adsorption

2
Vapour Diffusion
Multilayer Adsorption

3
Vapour Diffusion
Capillary Condensation

4
Vapour Diffusion
Capillary Flow

5
Non-saturated
Capillary Flow

6
Saturated
Capillary Flow

Day 1 was fantastic, really informative presentations and a good range of subject matter. I particularly enjoyed hearing about the Superhomes and Sero Homes initiatives and the support being made available to homeowners and housing associations/LAs.

Generally, all very good. Like the 2 half days format. Zoom was ok and understand why that is an appropriate way to meet at present.