STBA
SUSTAINABLE TRADITIONAL BUILDINGS ALLIANCE

STBA / SPAB Conference

Retrofit tool development

28th September 2021

Peter Draper – STBA Director

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2017 – STBA BEIS TEIF Project: Whole House Retrofit

2019 – PAS 2035: Whole House based retrofit

2021 – BS 40104: Assessment of dwellings for retrofit

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STBA BEIS TEIF Project: Survey tool 2018

Trial of initial paper based survey
Developed into online survey tool

2020:

Internal review changed survey into a room-by-room based tool as PAS requirements became clearer

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2021:

Updated to reflect BS 40104

Room by room online tool upgraded for use by phone, tablet and computer

Outputs reviewed:

- Link to options appraisal tool
- O/O report
- Excel spreadsheet

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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

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Key features:

(not exhaustive)

Physical context: Location, wind driven rain index, exposure

Social context: Occupation, vulnerable people, ownership, motivation, awareness

Heritage context: Streetscape, status, significance

Planning context: Flooding, right to light, TPOs

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Key features:

(not exhaustive)

External factors: Drains, garden walls, ventilation, access, weather conditions

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Key features:

(not exhaustive)

Walls: Type, age. Insulation but more importantly:

'Breathability' where is may be compromised and by what.

Bridged DPCs etc

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Key features:

(not exhaustive)

Doors and Windows: Type, frame, sill, seals, draught-proofing, security.

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Key features:

(not exhaustive)

Services: Heating, systems, renewables etc

Other issues:

Behaviour / use of services esp. laundry

Health and safety

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Key features:

(not exhaustive)

Survey: Methods, equipment, measurements, additional specialist surveys

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Paper on-site version:

(not exhaustive)

New conventions required.

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STBA·Survey·conventions·KEY¶

Drawing·1·–·Externals¶

External·features¤	¤	¤
Orientation¤	·N¶ ↑¤	¤
DPC·bridge¤	DPC¤	¤
Guttering·issue¤	G¤	¤
Drainage·issue¤	D¤	¤
Wall·issue·(cracking,·external·soil·height·etc)¤	W¤	¤
Window·issue·(sill,·seal·etc)¤	Wi¤	¤
Door·issue·(seal·etc)¤	Do¤	¤
Roof·issue·(eave,·gable·overhang,·condition·etc)¤	R¤	¤
EWI·restriction¤	EWI¤	¤
Roof·vent¤	R¤	¤
Underfloor·vents¤	UF¤	¤

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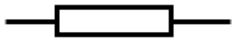
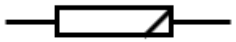
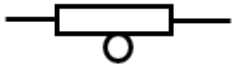
Drawings·2+·—·Internal·Dimensioned·Drawing¶

One·floor·plan·per·floor¶

Internal·features¤	¤	¤
Window¤	¶ ¤ 	¤
Window·with·vent¤	¶ ¤ 	¤
Un·Draught-proofed¶ ¤	¶ ¤ 	¤
Secure¶ ¤	¶ ¶ ¤ 	¤
Glazing·type¤	SG·—·Single·glazing¶ preDG·—·double·glazing·pre·2002¶ DG·—·Double·glazing·post·2002¶ TG·—·Triple·glazing¶ Sec·—·Secondary·glazing¤	¤
Internal·door¤	 ¶ ¤	¤
Internal·door·with·vent¤	¶  ¶ ¤	¤

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Restrictions·for·insulation¤	¤ ¤
IWI·restriction¤	IWI¤ ¤
Condition·issues¤	¤ ¤
Damp¤	¤ ¤
Mould¤	¤ ¤
Structural·issue¤	¤ ¤
Rot¶ ¤	® ¤ ¤

¶

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Ventilation¤	¶ +¶ **IEV**·—·Intermittent·extract¶ **DMEV**·—·Decentralised·Extract·Vent¶ **PIV**·—·Positive·Input·Ventilation¶ **VENT**·—·Location·of·Centralised·system¶ **Out**·—·Outlet·for·CMEV·/·MVHR·/·PS·system¶ **In**·—·Inlet·for·CMEV·/·MVHR·system¤
Toilet¤	**WC**·+¶ **DF**·—·Dual·Flush¶ **SF**·—·Single·Flush¤
Shower¤	**ES**·—·Electric·Shower¶ **DHWS**·—·DHW·Fed·Shower¶ **PS**·—·Power·Shower¤
Shower·head¤	**WSH**·—·Water·Saving·Head¤
Waste·Water·Heat·Recovery·¤	**WWHR**¤
Wall·and·floor·types¤	¤
Heat·loss·perimeter¤	¶ ¤
Party·wall¤	¶ ¤
Dry·lined·wall¶ ¤	¤
Solid·floor¤	¤
Suspended·floor¤	¶ ¤

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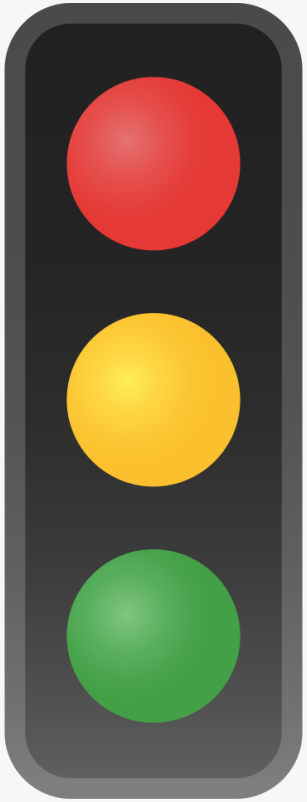
Summary ‘Retrofit Ready’ feature:



Serious issues affecting the opportunity for retrofit, property requires further investigation / planning by specialists or is not suitable for retrofit.

Significant issues exist and care is required in order to ensure that they are addressed before any retrofit commences.

Property is retrofit ready and standardised, but PAS2035 Co-Ordinator approved, refurbishment can be undertaken.

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Outputs:

Owner Occupier Report	**Housing Association / Landlord / Estate Owners Spreadsheet**	**API link to Options appraisal tool**
Report that takes inputted data and produces a standardised report on the property that highlights the issues that need to be taken into account when planning a retrofit.	A simple Excel spreadsheet that provides a record of the survey so that it can be used by owners to integrate into their individual property software.	Individual items of data feed into the options appraisal tool that then summarises the carbon and moisture implications associated with the different material options available for EEMs

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Options Appraisal tool

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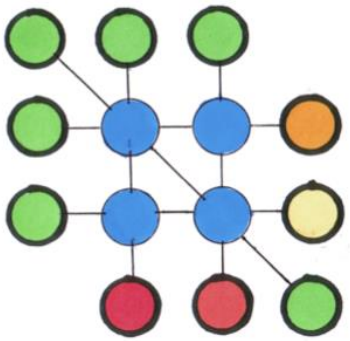
Partners:

HISTORIC ENVIRONMENT SCOTLAND | ÀRAINNEACHD EACHDRAIDHEIL ALBA

GBC

Green Building Calculator



Department for Business, Energy & Industrial Strategy

Purpose

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Indicative tool

For O/O, RSLs, Landlords, Estates etc
Not designed as a specialist ‘precise’ carbon calculator

Provide carbon and moisture context for options appraisal

What is the effect of using different materials for EEMs in terms of sequestered, embodied carbon and does the moisture risk profile change?
What difference does it make to opt for different standards

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WORLD GREEN BUILDING COUNCIL	https://www.worldgbc.org/embodied-carbon
BBC NEWS	https://www.bbc.co.uk/news/science-environment-58667328
Historic England	https://historicengland.org.uk/research/heritage-counts/2019-carbon-in-built-environment/carbon-in-built-historic-environment/
RICS	https://www.rics.org/uk/news-insight/latest-news/press/press-releases/construction-groups-unite-to-hit-net-zero-target-with-proposed-new-carbon-reporting-rules/
LONDON ENERGY TRANSFORMATION INITIATIVE	https://www.leti.london/ecp
RIBA	https://www.architecture.com/-/media/gathercontent/whole-life-carbon-assessment-for-architects/additional-documents/11241wholelifecarbonguidancev7pdf.pdf

Key features:

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Wider carbon tool

- Embodied carbon
- In use carbon
- Sequestered carbon

Moisture risk indication

Underpinning data

- ICE 3 database (cradle to gate)
- AD Part L / PHPP / “STBA Traditional” / Scottish Building standards technical handbook U value targets

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Data assumptions

- Window sizes and number per property type
- House sizes (for floor, wall,roof areas)
- Occupation rates

All assumptions will be highlighted and opportunities given to over-ride with actual where possible

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Key features:

Online options appraisal will have two inputs:

- STBA Survey tool
  (API in development)
- Online form
  (in development)

responsible-retrofit.tools

stbauk.tools

(not live as yet)

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Future Opportunities:

- Sero HEDGEHOG tool (a tool to enhance the level of detail and accuracy in our assessment of potential savings)
- Link directly to STBA ‘Greenwheel’ via API to illustrate interconnectness of measures
- More accurate moisture risk analysis via research from UKCMB / AN Other

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Demonstration time

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Timeline
(Beta versions)

Survey form: Mid October 2021

Carbon tool: End October 2021

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Many thanks