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SUSTAINABLE TRADITIONAL BUILDINGS ALLIANCE

Moisture in Traditional Buildings

ASBP

9th November 2017

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Moisture in Traditional Buildings

1. Generic risks

2. Risks arising from retrofit

3. Tools & guidance from the STBA

Who are we?

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Sustainable	For people **AND** the environment
Traditional	Pre 1919 (mainly masonry)
Buildings	Domestic and Non-domestic
Alliance	Not-for-profit organisations

Who are we?

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International Council on Monuments and Sites
Conseil International des Monuments et des Sites

Who are we?

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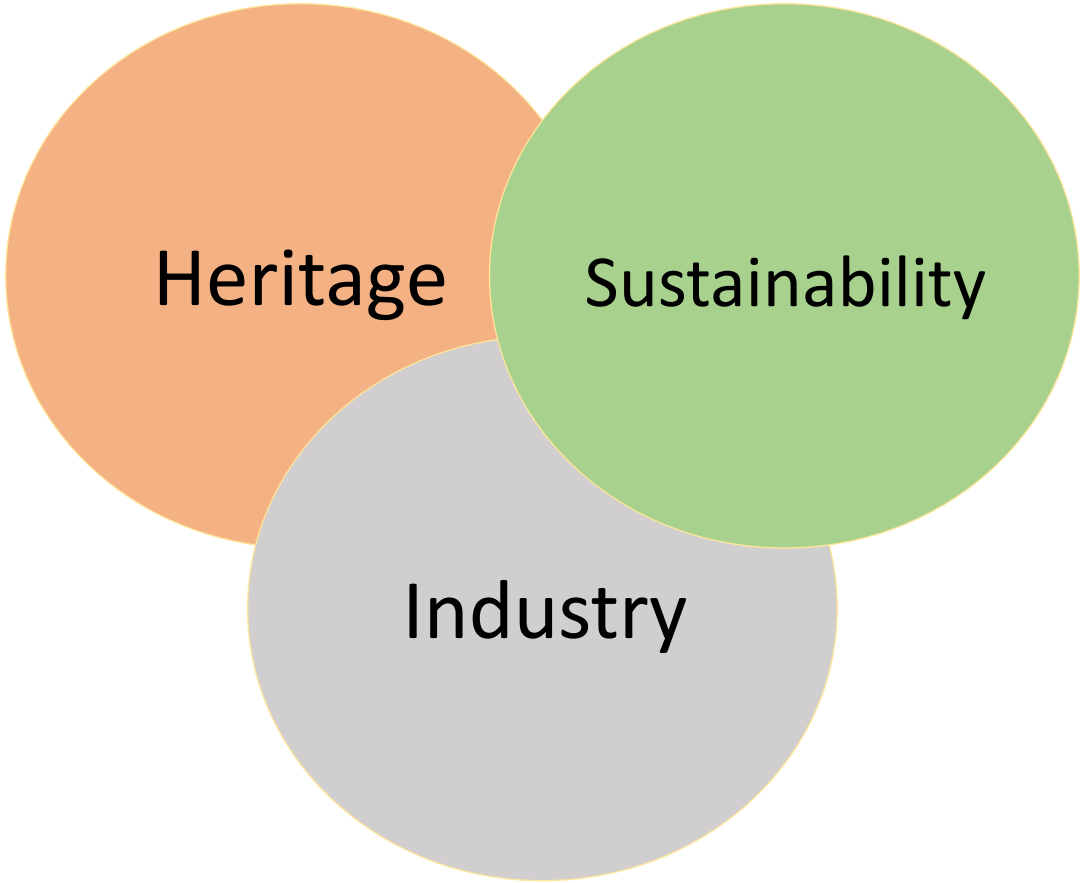
Three pillars of the Alliance



1. Generic Risks

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1. Generic Risks – Moisture States

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Figure 1 – States of water

As a solid – ice

As a liquid – liquid water

As a gas – water vapour

Diagram: BSI White Paper Moisture in Buildings

1. Generic Risks – Moisture Sources

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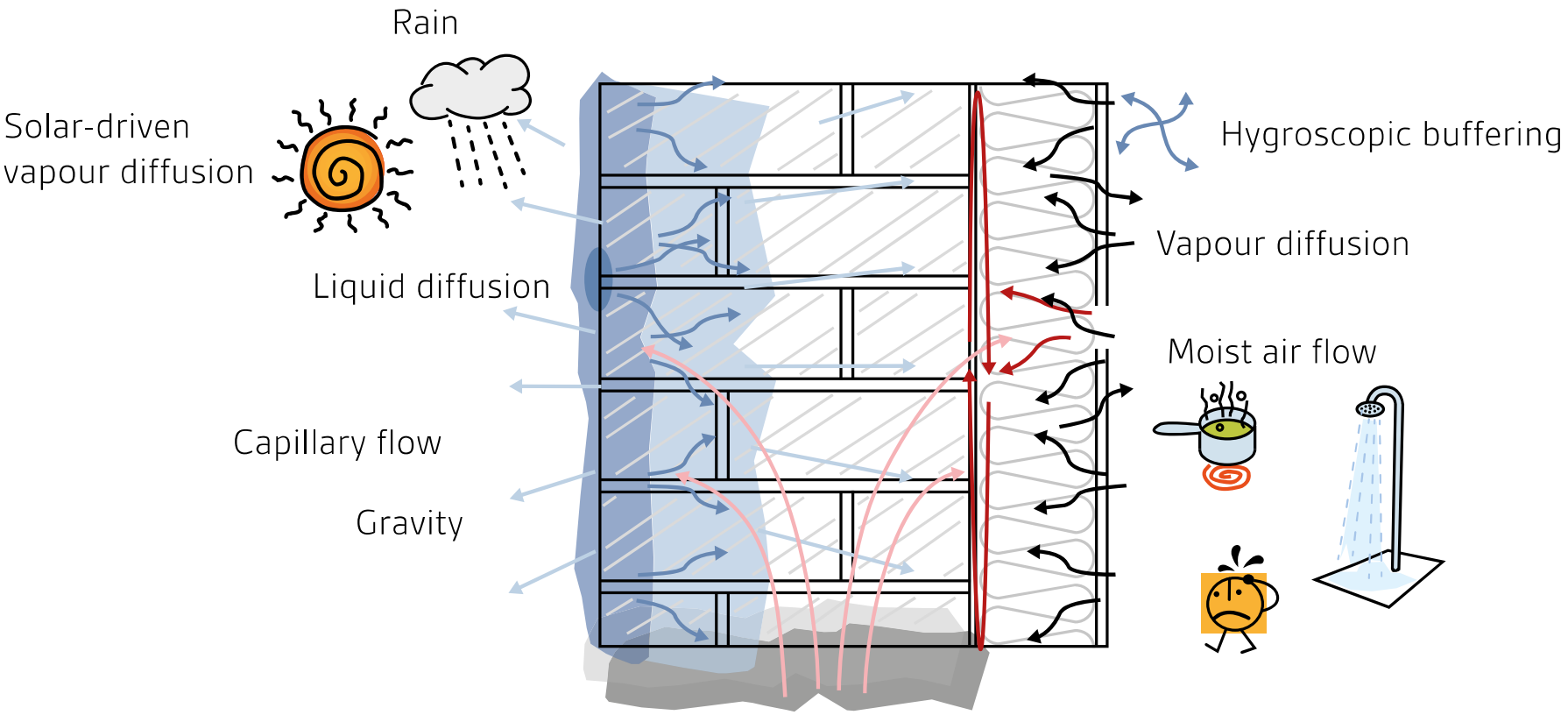

Diagram: BSI White Paper Moisture in Buildings

2. Risks arising from Retrofit

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2. Risks arising from Retrofit

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100 unintended consequences of policies to improve the energy efficiency of the UK housing stock*

Clive Shrubsole, Alexandra Macmillan, Michael Davies and Neil May
University College London. Email: clive.shrubsole.09@ucl.ac.uk

UCL

- Climate Change: Re-affirmed by the IPCC as a "*major global threat to human survival*".
- Government Response: Legally binding targets to reduce emissions by 80% by 2050 relative to 1990 levels. Increasing interventions on housing; levels of insulation, draft proofing, double glazing, making homes more airtight and energy efficient.
- The Problem: Sole focus on CO_2 emissions reduction; little account taken of the wider impacts such policies inevitably have on buildings, people's wellbeing and the environment; policy resistance, failure to achieve the desired outcomes and even possibly making things worse.

2. Risks arising from Retrofit

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(Actual examples of building failures within 2 years of installation of Solid Wall Insulation)

Moisture + Heat + Organic Material = Compost

2. Risks arising from Retrofit

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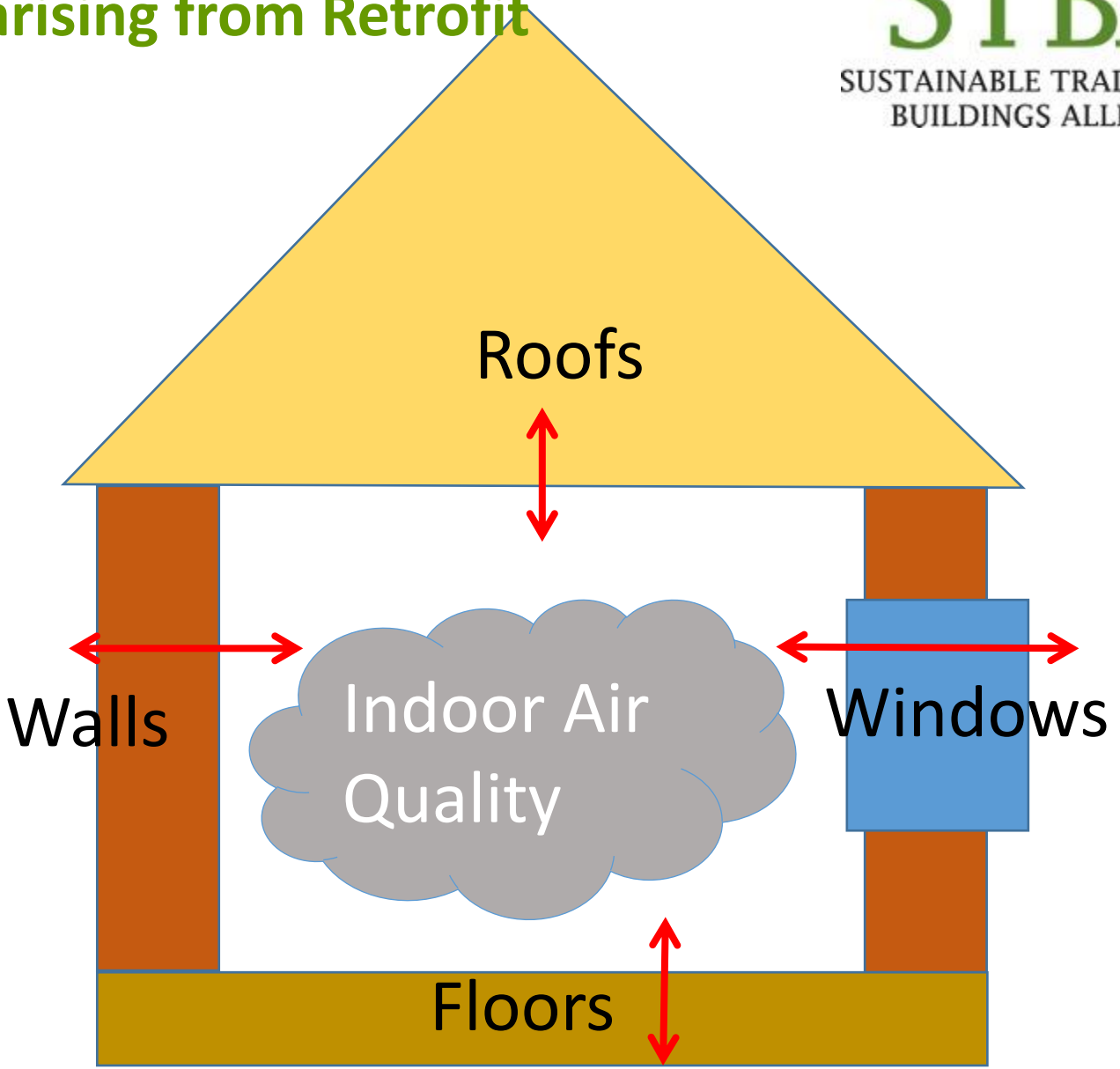

3. Tools & Guidance from STBA

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Importance of Maintenance

A dry wall has a much lower u-vaue than a wet wall which conducts heat fast.

To say nothing of human health, appearance of the building, etc

©Oriel Prizeman

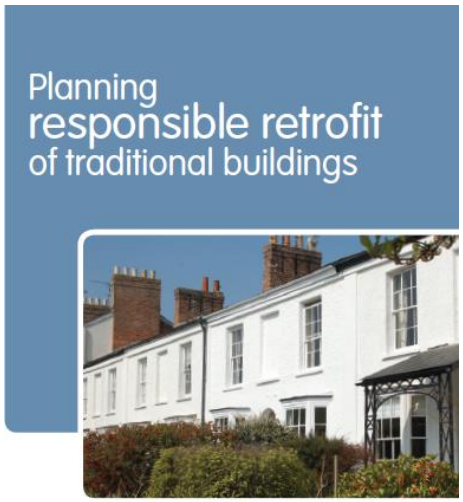
Correlating maintenance, energy efficiency and fuel poverty for traditional buildings in the UK

A scoping study funded by Cadw, Historic Environment Scotland and Historic England

A well maintained building functions as it was intended by the builders.

Stays DRY

3. Tools & Guidance from STBA



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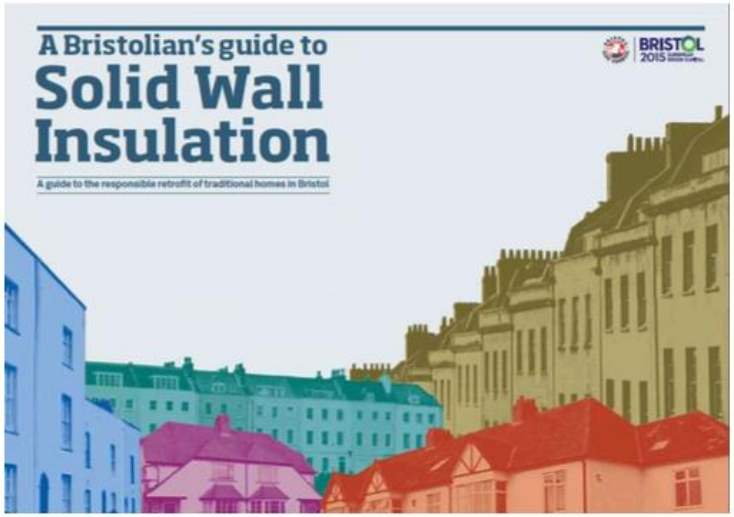

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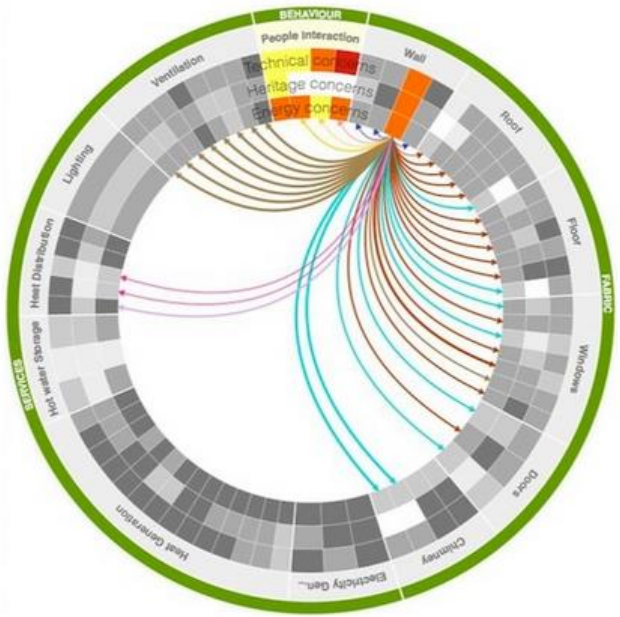

3. Tools & Guidance from STBA Whole Building Approach

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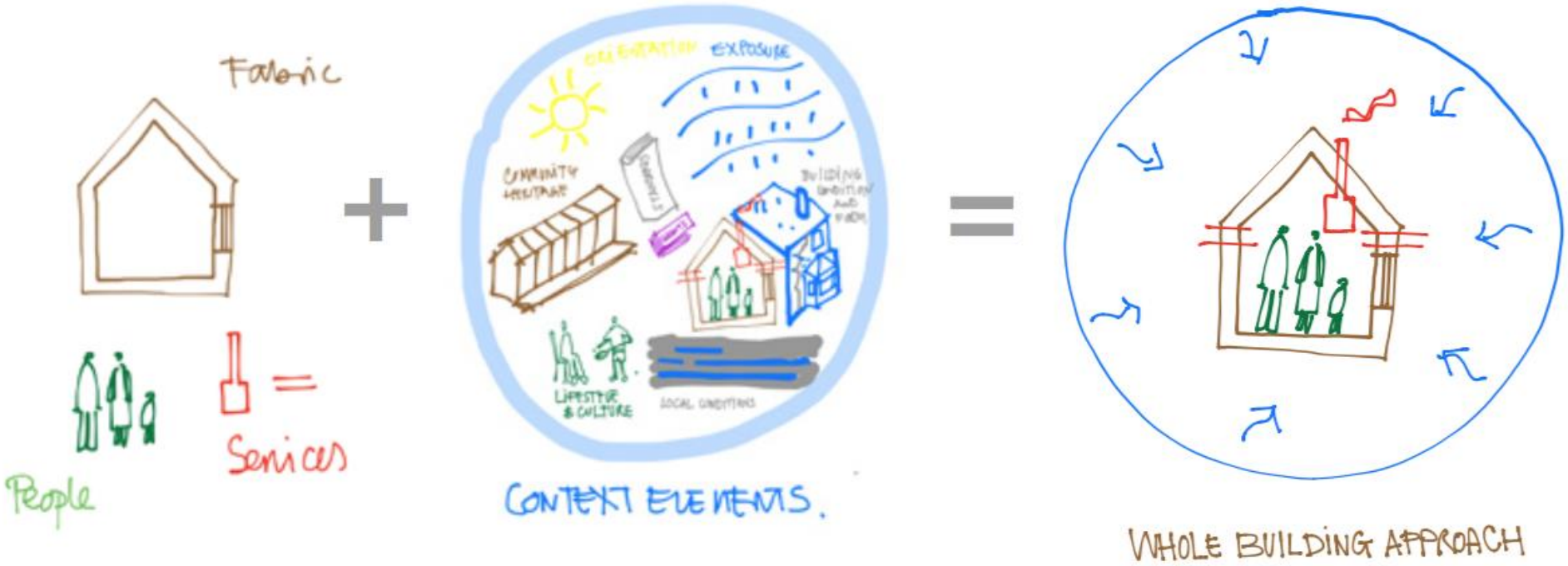

This approach is accepted and recommended in the “Each Home Counts” report, also . . . Wales, Ireland, France.

3. Tools & Guidance from STBA
Whole Building Approach

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Most problems in retrofit occur not in single building elements but either at interfaces between elements, technologies or building processes, or through interactions between measures, people and buildings.

Many of these effects are not fully understood and much of the information upon which we base our design, construction and use is uncertain or lacking.

Some of this uncertainty is due to the fact that buildings and people behave differently in different environmental, social and economic contexts.

For example:

- When you make one part of a building warmer, you make another part relatively cooler – not just thermal bridging, whole elevations
- Any reduction in air leakage can affect air quality

3. Tools & Guidance from STBA
Whole Building Approach

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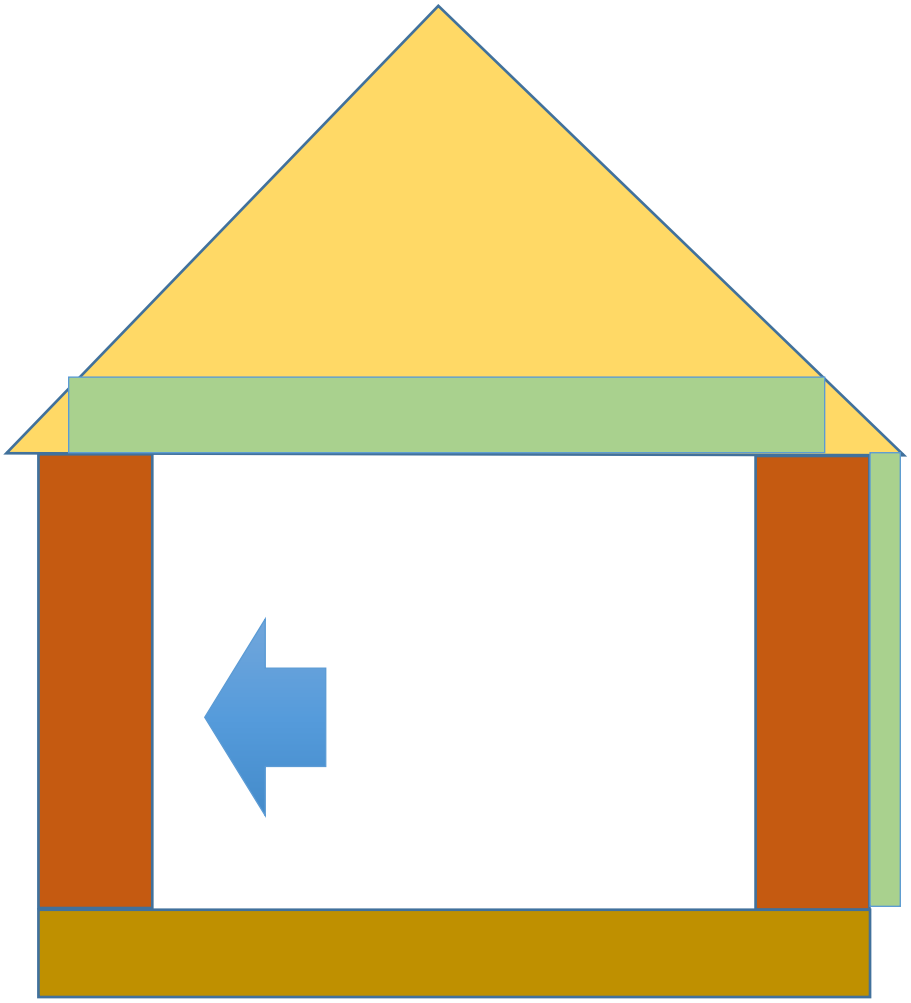

Front Elevation

Rear Elevation

The front wall has become **relatively cooler**.

3. Tools & Guidance from STBA
Moisture Risk Assessment

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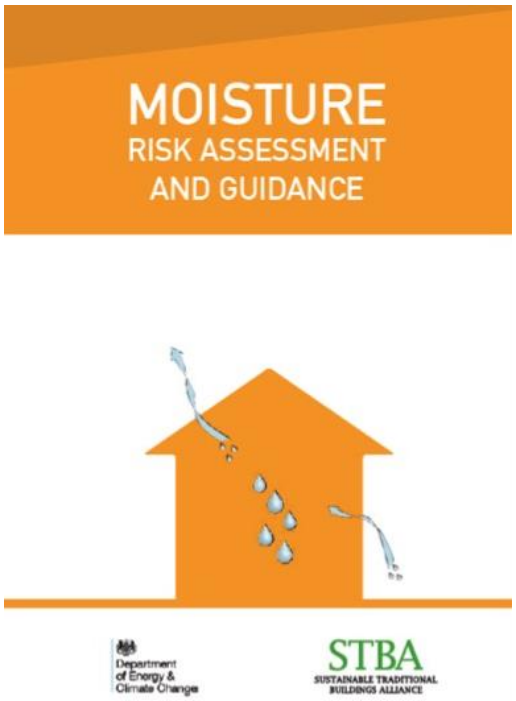

Moisture in buildings:
an integrated approach to
risk assessment and guidance

Neil May and Chris Sanders

bsi.

3. Tools & Guidance from STBA
Moisture Risk Assessment

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Moisture in buildings:
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Principles of a whole building approach to Moisture

1. **Context:** understand
2. **Coherence:** approach, detailing
3. **Capacity:** errors & uncertainties
4. **Caution:** in use and maintenance

3. Tools & Guidance from STBA Guidance Wheel

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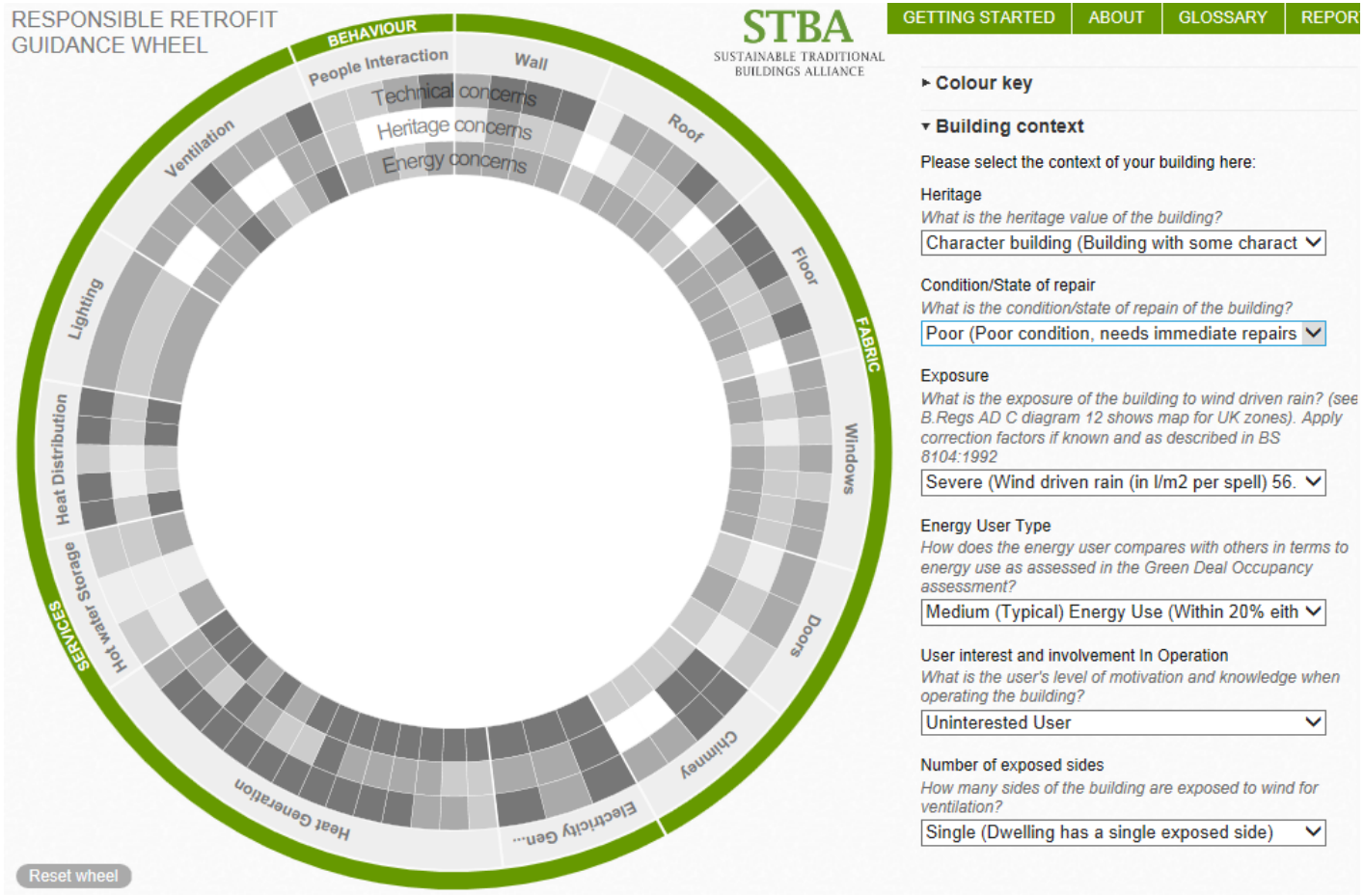

4. UK Centre for Moisture in Buildings

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UKCMB

UK CENTRE FOR MOISTURE IN BUILDINGS

Search Go!

- Home
- Why Moisture in Buildings?
- About UKCMB
- Partners and People
- Research
- Resources
- Training and CPD
- News and Events
- Contact us

Core Knowledge Partners:

The following organisations are Core Knowledge Partners in the UK Centre for Moisture in Buildings

UCL
UCL IEDE
LONDON SCHOOL of HYGIENE &TROPICAL MEDICINE
HERIOT

Many substantial building problems (including health problems) are caused by excessive or insufficient moisture. And yet we have very little research in the UK on moisture in buildings, a lack of good guidance, and minimal public and industry understanding. The UK Centre for Moisture in Buildings has been set up to address these issues.

Why moisture in buildings?

Research areas

4. UK Centre for Moisture in Buildings

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https://www.youtube.com/watch?time_continue=7&v=aBWlXLMnqBk

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Thank you for listening

www.stbauk.org

www.responsible-retrofit.org

Nigel Griffiths, Director, STBA