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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?



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

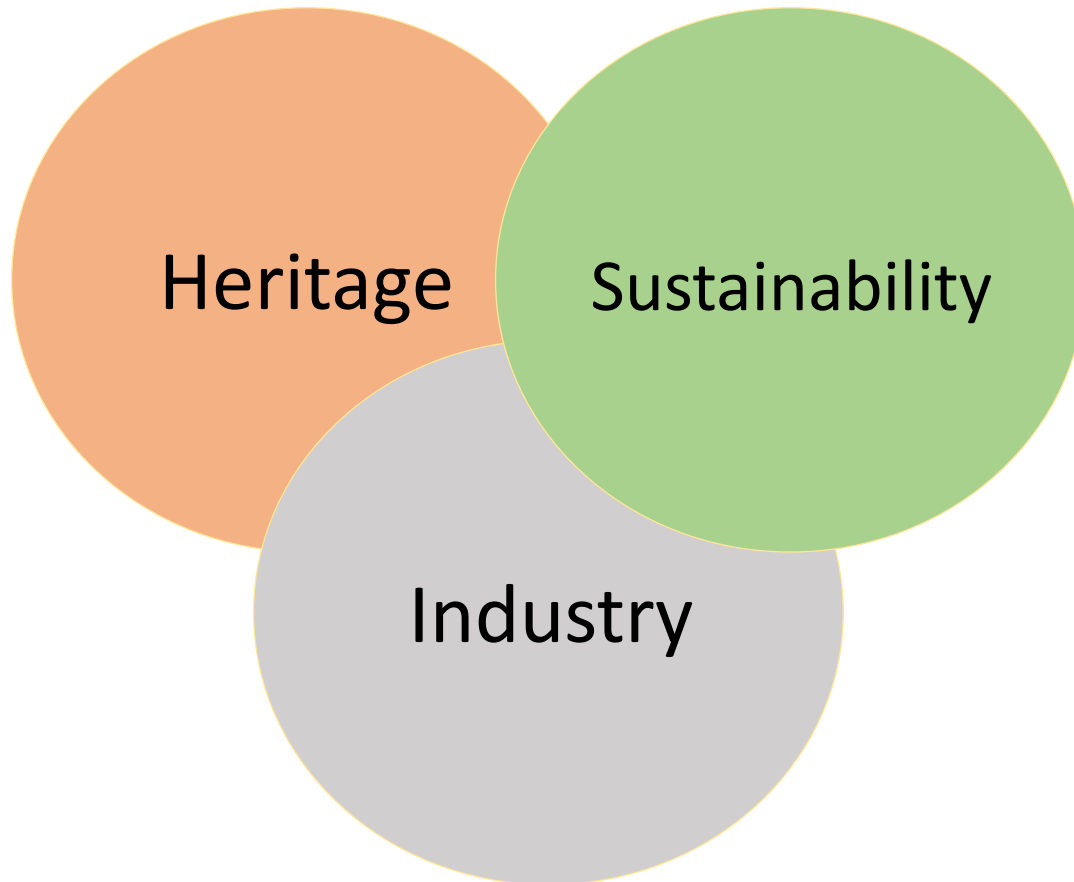


Usable
BUILDINGS



Who are we?

Three pillars of the Alliance

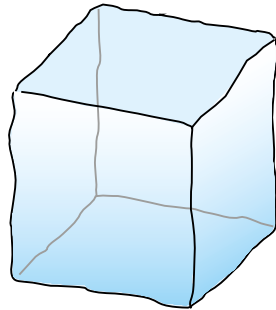


1. Generic Risks

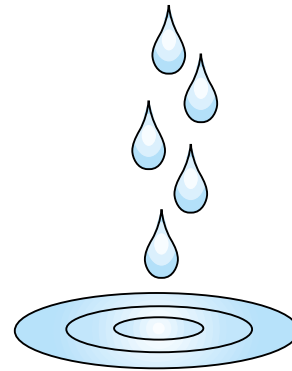


1. Generic Risks – Moisture States

Figure 1 – States of water



As a solid – ice



As a liquid – liquid water



As a gas – water vapour

1. Generic Risks – Moisture Sources

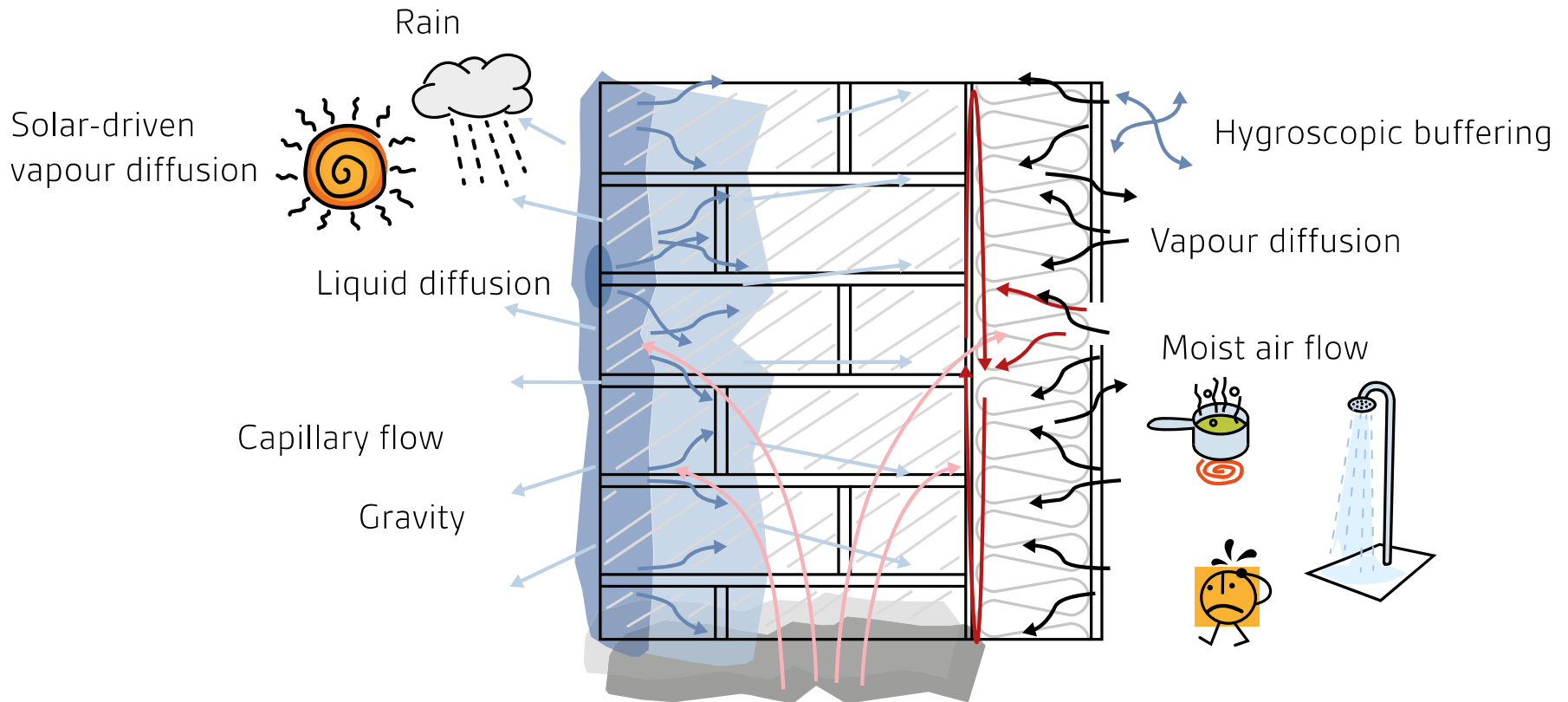


Diagram: BSI White Paper Moisture in Buildings

2. Risks arising from Retrofit



2. Risks arising from Retrofit

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

Oliver Struhschke, Alexandra Neomilan, Michael Davies and Neil May
University College London. Email: oliver.struhschke.08@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 CO₂ 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



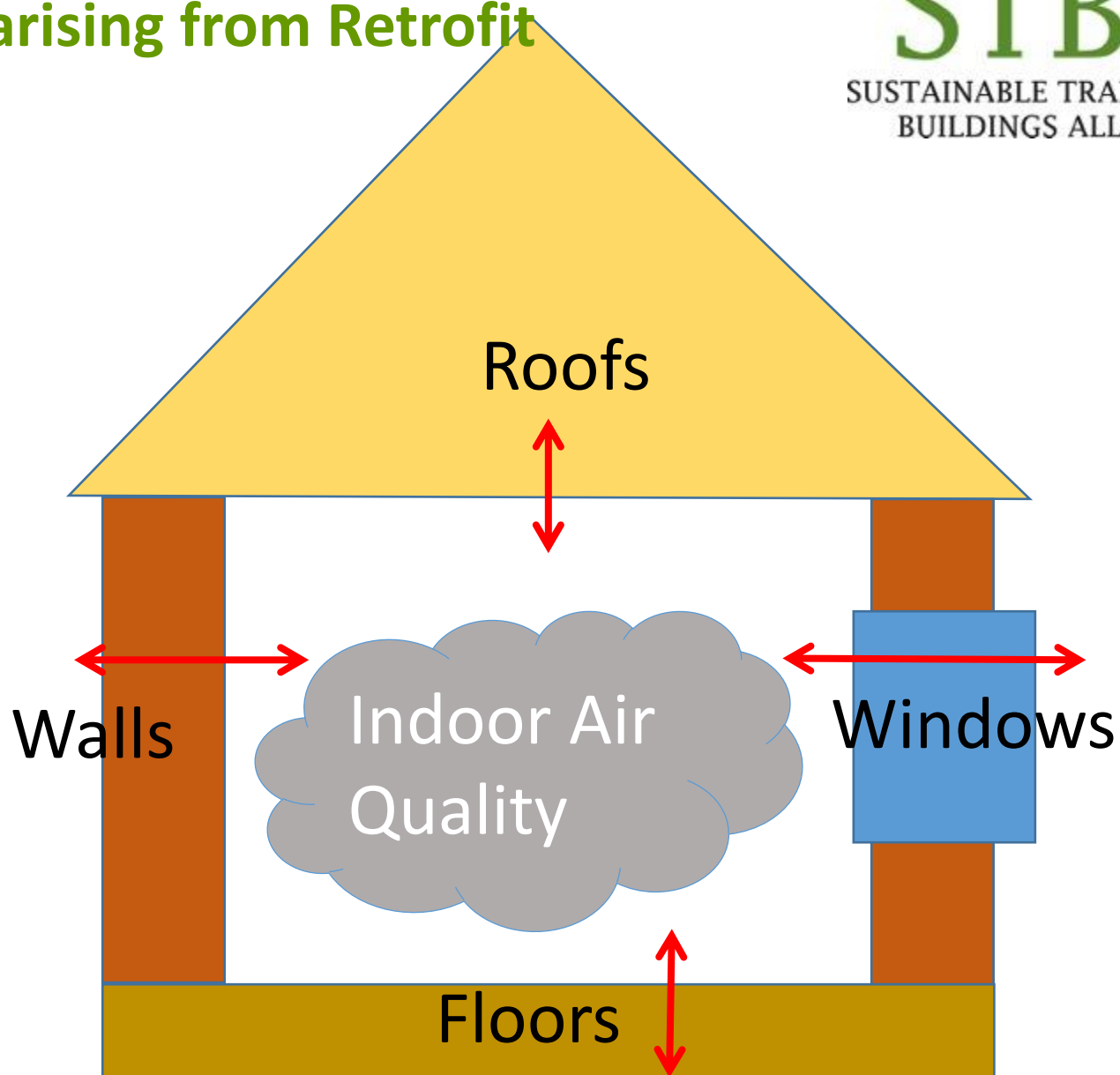
(Actual examples of building failures within 2 years of installation of Solid Wall Insulation)

Moisture + Heat + Organic Material = Compost

2. Risks arising from Retrofit



2. Risks arising from Retrofit



3. Tools & Guidance from STBA



3. Tools & Guidance from STBA

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Importance of Maintenance

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

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

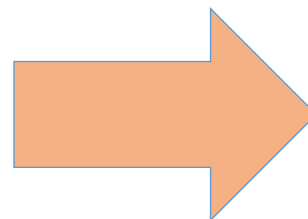
A well maintained building functions as it was intended by the builders.



©Oriol 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



Stays DRY

3. Tools & Guidance from STBA

Planning responsible retrofit of traditional buildings



MOISTURE RISK ASSESSMENT AND GUIDANCE



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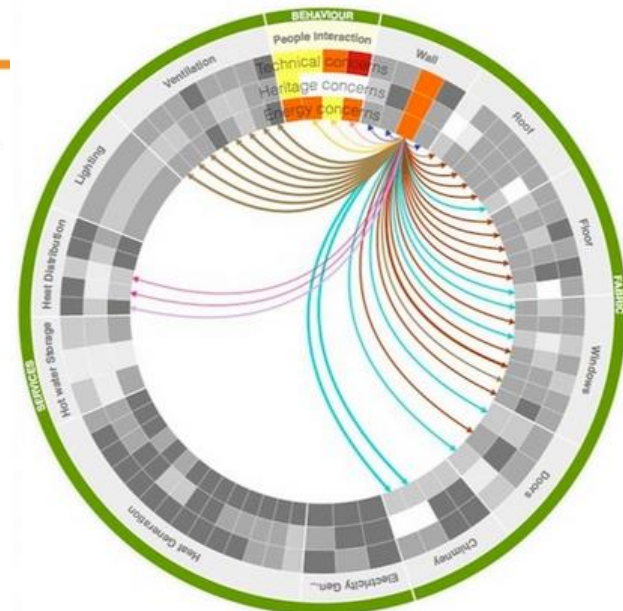
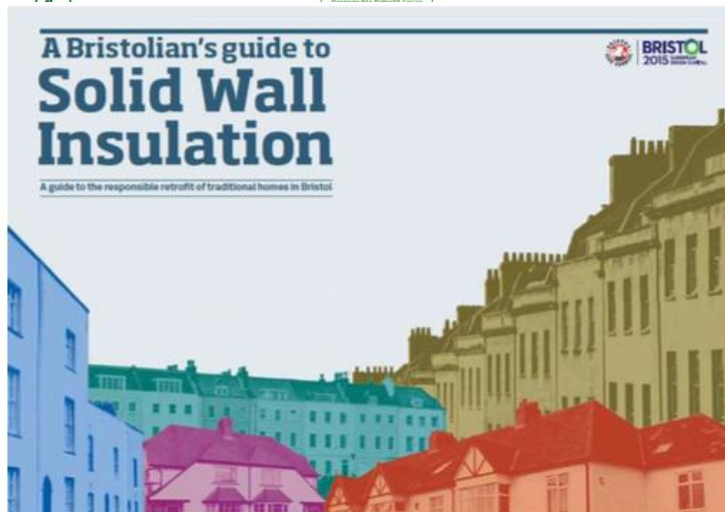
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What is whole house retrofit ?

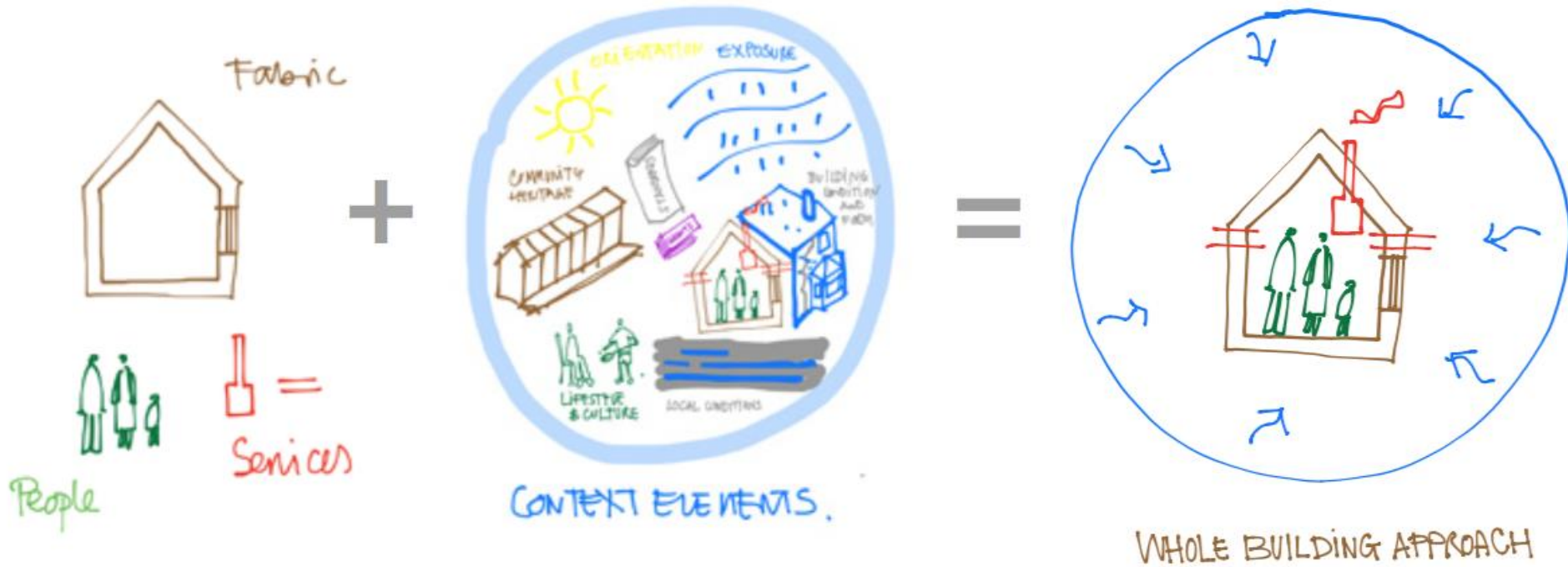
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3. Tools & Guidance from STBA Whole Building Approach

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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



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.

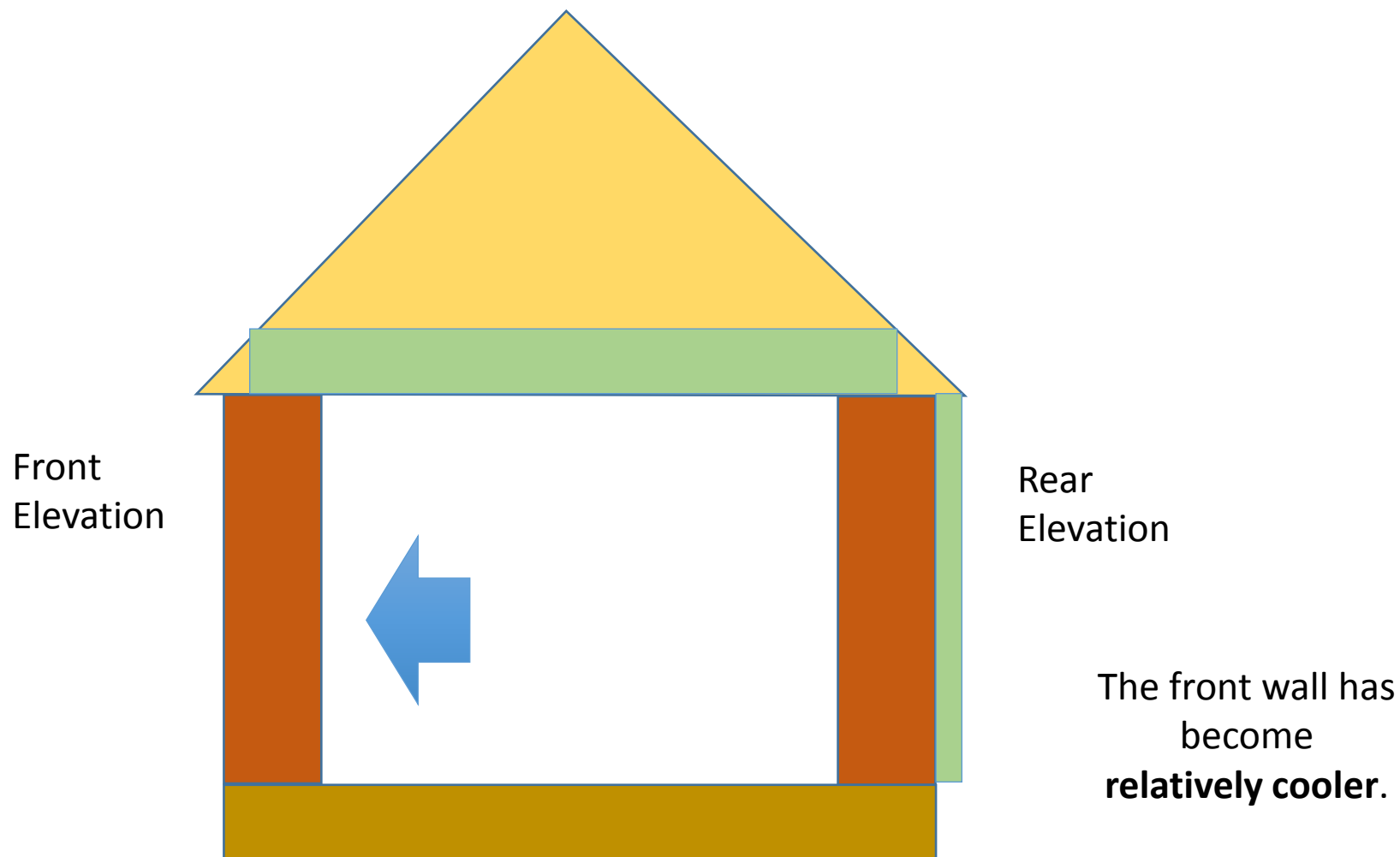
Many of these effects are not fully understood and much of the information upon which we base our design, construction and use is uncertain or lacking.

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



3. Tools & Guidance from STBA Moisture Risk Assessment

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Department
of Energy &
Climate Change

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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



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

Neil May and Chris Sanders

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

RESPONSIBLE RETROFIT
GUIDANCE WHEEL

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GETTING STARTED ABOUT GLOSSARY REPORT

► Colour key

▼ Building context

Please select the context of your building here:

Heritage
What is the heritage value of the building?
Character building (Building with some charact

Condition/State of repair
What is the condition/state of repair of the building?
Poor (Poor condition, needs immediate repairs

Exposure
What is the exposure of the building to wind driven rain? (see B.Reg's AD C diagram 12 shows map for UK zones). Apply correction factors if known and as described in BS 8104:1992
Severe (Wind driven rain (in l/m2 per spell) 56.

Energy User Type
How does the energy user compares with others in terms to energy use as assessed in the Green Deal Occupancy assessment?
Medium (Typical) Energy Use (Within 20% eith

User interest and involvement In Operation
What is the user's level of motivation and knowledge when operating the building?
Uninterested User

Number of exposed sides
How many sides of the building are exposed to wind for ventilation?
Single (Dwelling has a single exposed side)

Reset wheel

4. UK Centre for Moisture in Buildings



UK CENTRE FOR MOISTURE IN BUILDINGS

- [Home](#)
- [Why Moisture in Buildings?](#)
- [About UKCMB](#)
- [Partners and People](#)
- [Research](#)
- [Resources](#)
- [Training and CPD](#)
- [News and Events](#)
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Core Knowledge Partners:
The following organisations are Core Knowledge Partners in the UK Centre for Moisture in Buildings



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.



4. UK Centre for Moisture in Buildings



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



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**Thank you for
listening**

www.stbauk.org

www.responsible-retrofit.org

Nigel Griffiths, Director, STBA