‘Greening Homes – an introduction to retrofit’

severn wye

Warm & Well

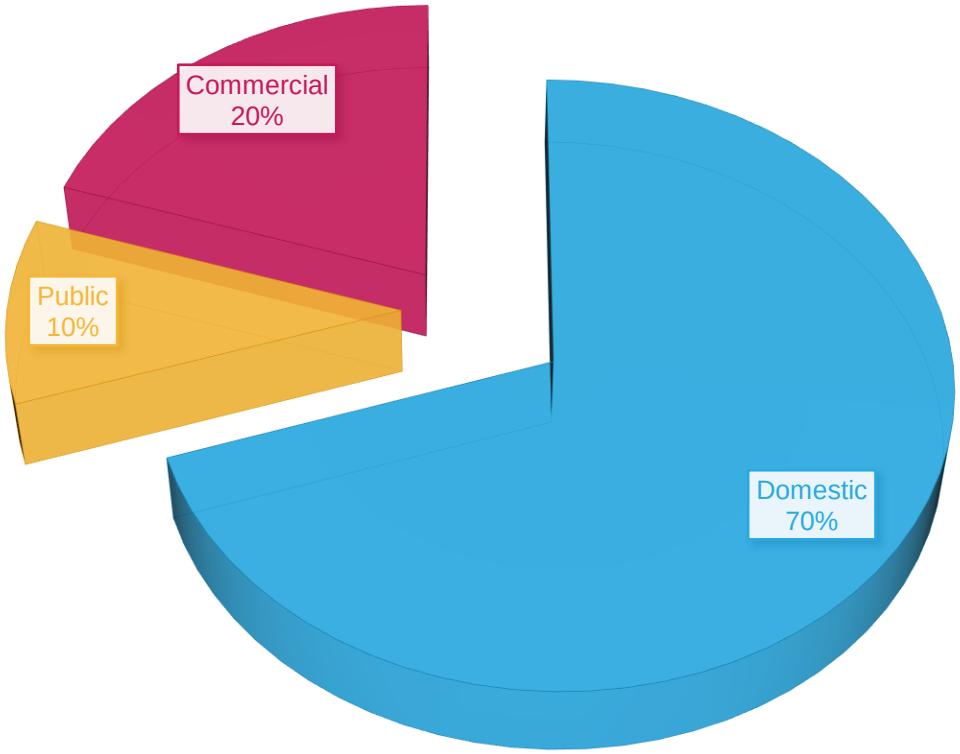
Funded by the Local Authorities and Gloucestershire's Clinical Commissioning Group to provide energy efficiency advice to residents in Gloucestershire and South Gloucestershire.

Our free domestic energy adviceline :

0800 500 3076
Open Mon-Fri
9am to 5pm

Email: warmandwell@severnwye.org.uk
www.warmandwell.co.uk

Carbon emissions from UK Buildings

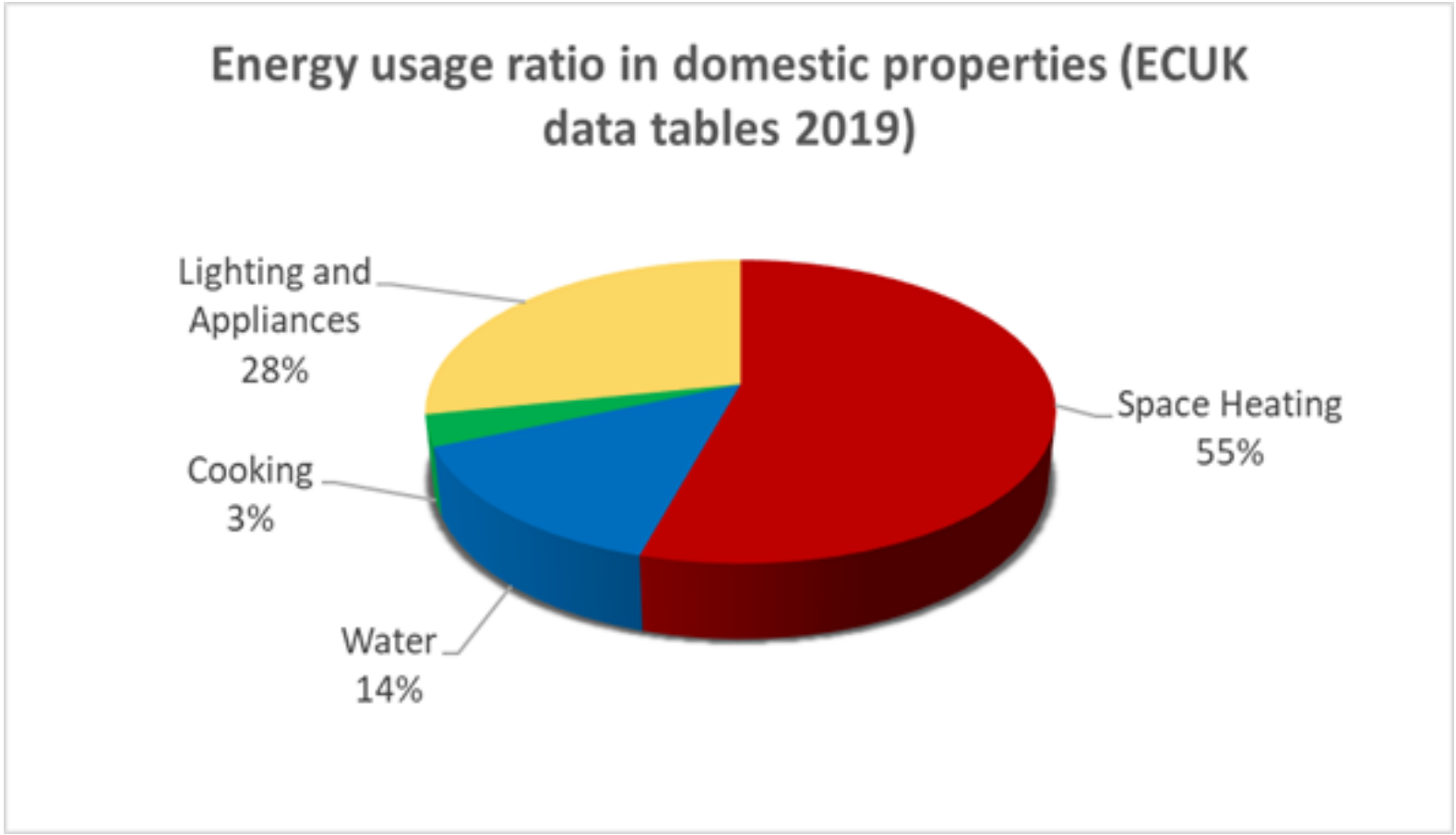


With thanks to Richard Miller Assoc Director Connected Places Catapult

What are we doing with this energy?

The average household spends 69% of their energy costs on heating and hot water

Warm & Well & Gov't grants focus on reducing heat loss and improving comfort.



What is retrofit?

Whole house (retrofit ‘deep’)

Planned

Or phased, incremental

Risk management

Fabric First

Thermal Comfort

Aesthetic

Future Proof

Holistic

Carbon Reduction

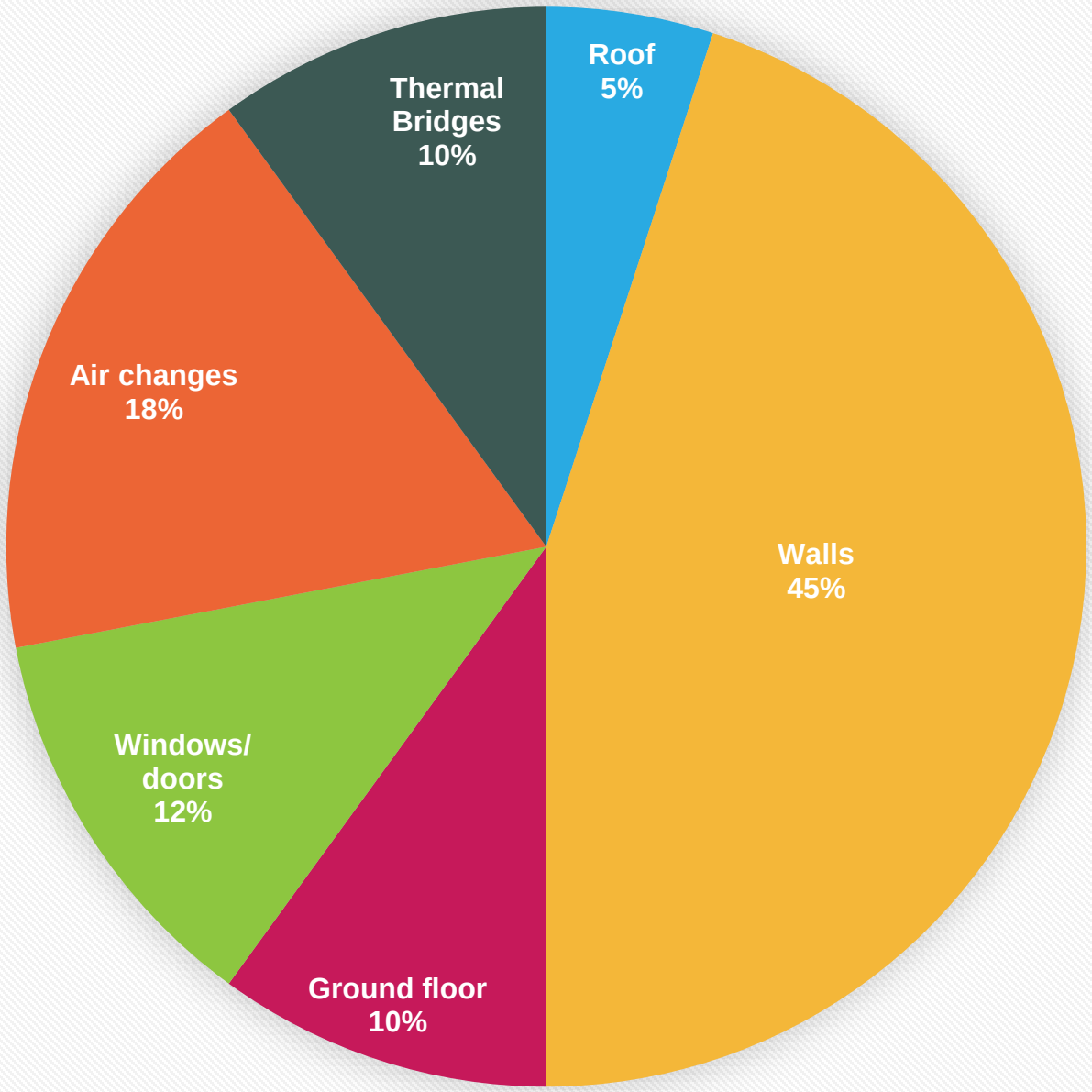
Retrofit roadmap

- Understand how the building works; constructed, thermal performance, damp, exposure, and how it is used/ occupied
- Maintenance! – get building retrofit ready

1. Insulate
2. Airtightness
3. Ventilate
4. Heating systems
5. Renewables

Insulation and airtightness

The cheapest greenest energy is the energy you do not use



Heat loss

Where does the heat go?

Typical semi

- 100mm loft insulation
- Old double-glazed windows
- Uninsulated solid walls and floor

Heat loss – profile changes

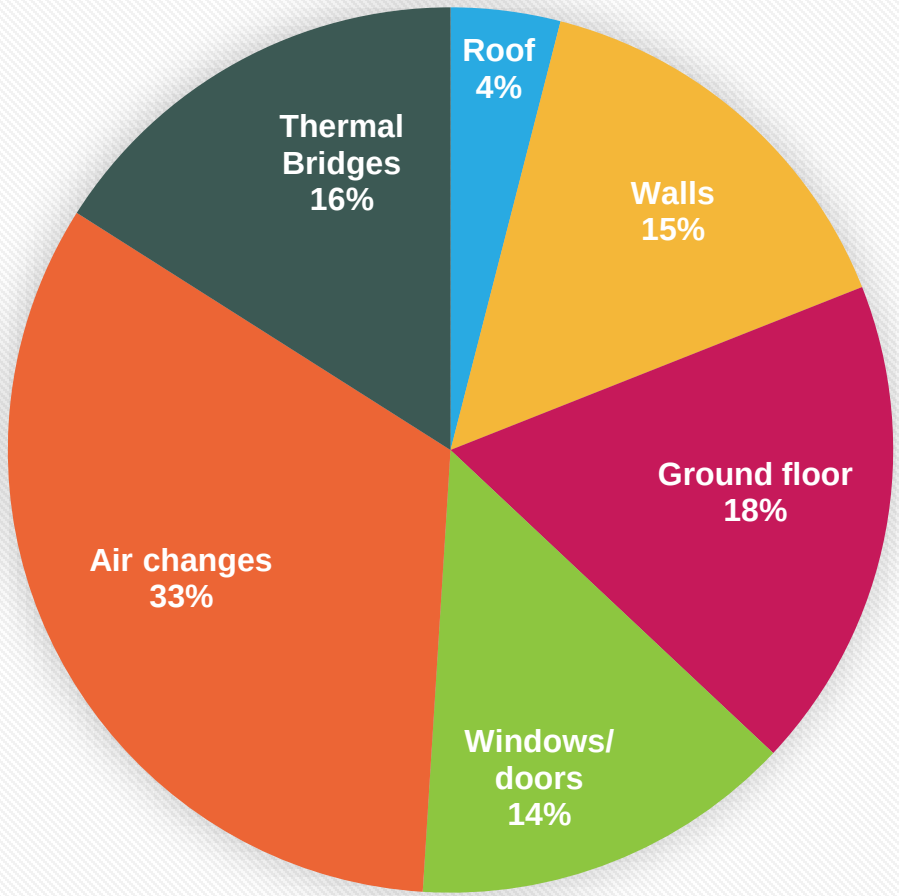
After phase one retrofit has taken place to address **insulation**, overall heat loss is reduced, however the heat loss profile changes.

After wall insulation u value (U=0.3),

loft top-up (U = 0.2)

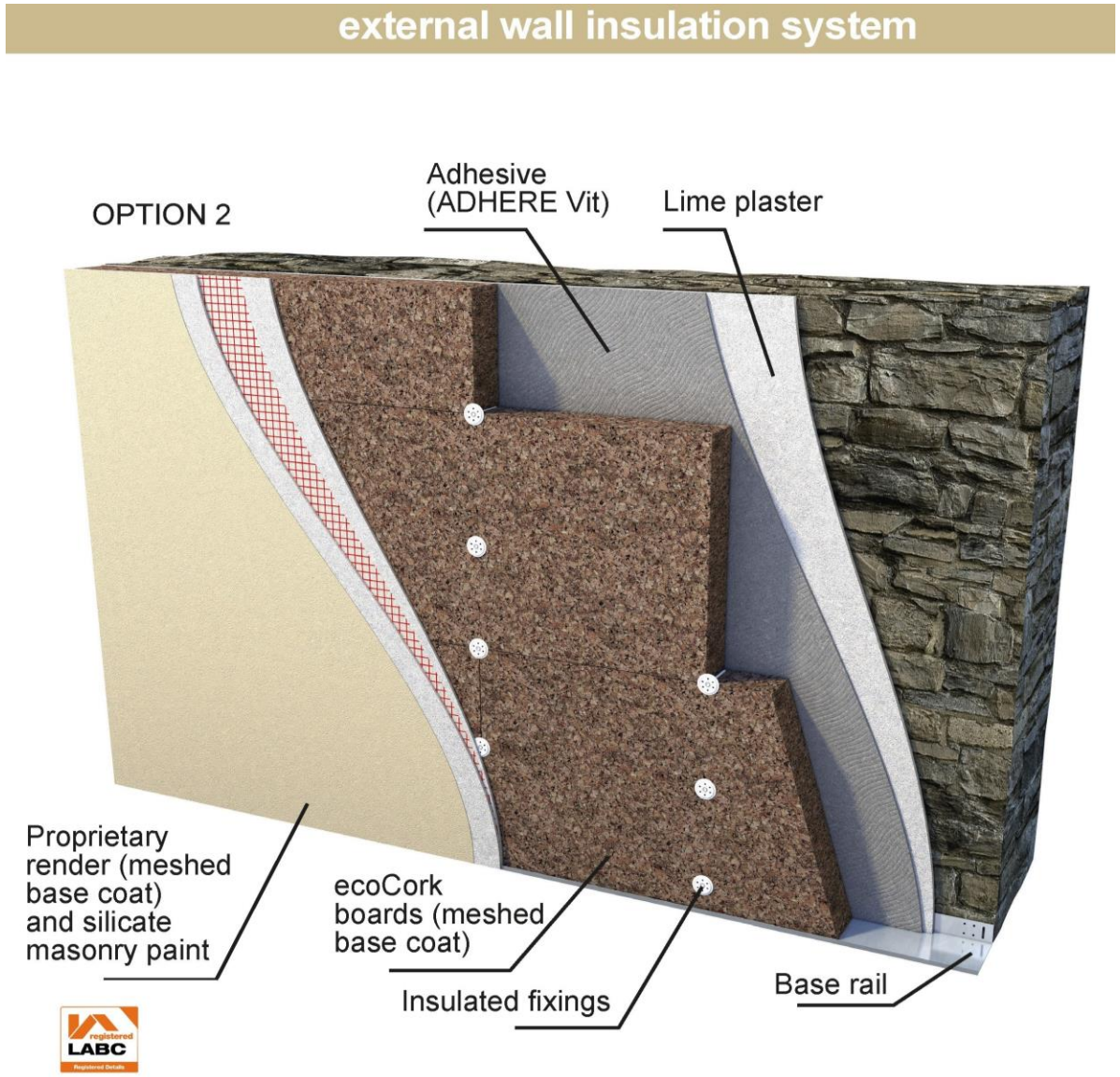
new windows (U=1.6)

no attention to air tightness or thermal bridges



Types of Insulation

- Solid walls
  - External insulation
  - Internal insulation
  - Hybrid – external & internal
- Consider heritage / solid wall properties
- Solid walls ideally insulated with a **vapour permeable** insulation
- Cavity walls / cavity wall insulation
- Floor/ underfloor insulation
- Loft insulation (400 mm recommended)
- Law of diminishing returns



Types of Insulation

- **Natural ‘vapour permeable’:**

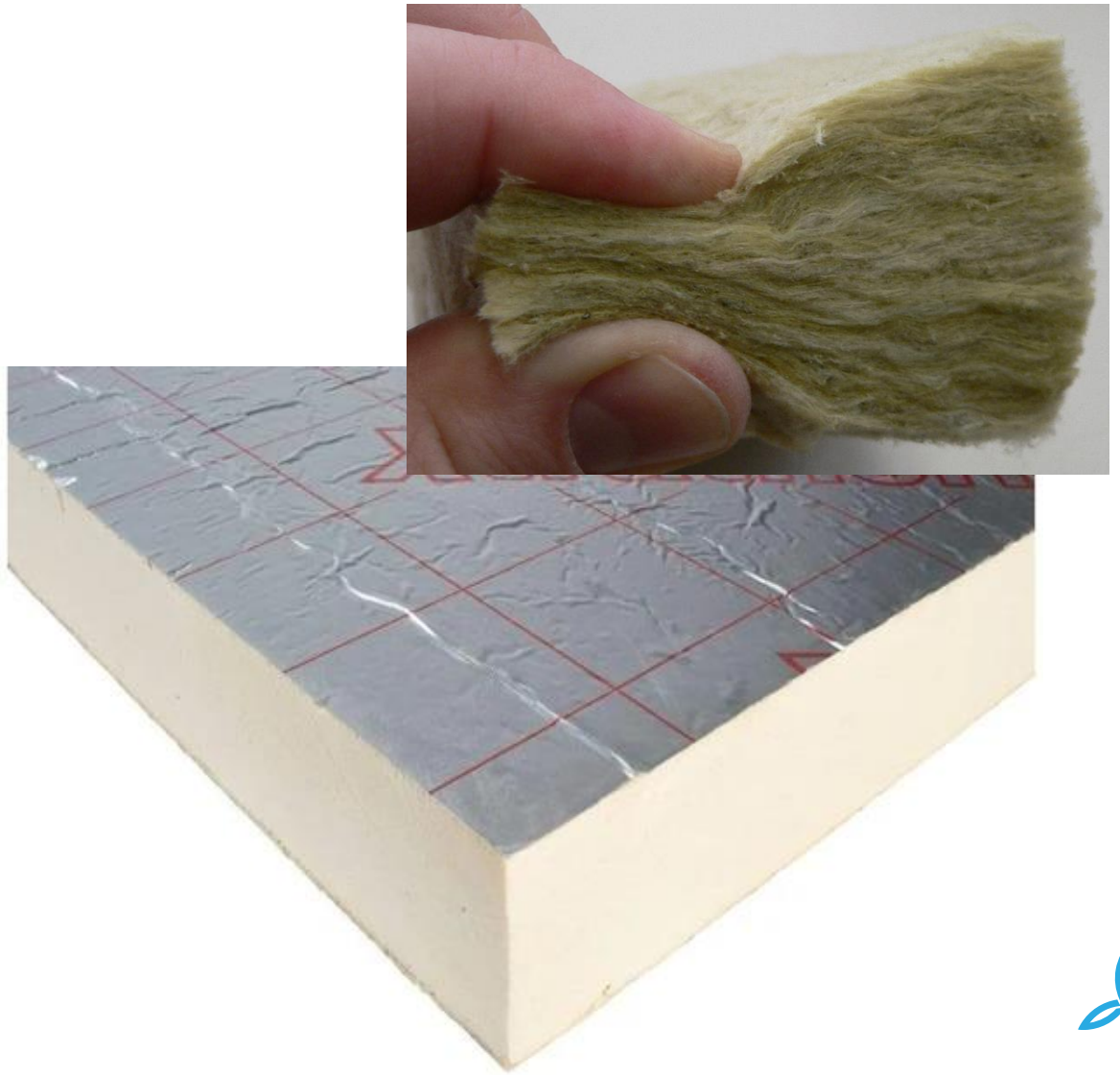
- Woodfibre, hemp, cork, cotton, sheep's wool, jute, cellulose.

- **Pros:** health, low embodied carbon, air quality, non-toxic, bio-degradable, vapour permeable.
- **Cons:** tend to be more expensive, thicker depths required, can cause issues in cavities.

- **Manufactured ‘vapour permeable’:**

- Calcium or Magnesium Silicate, Aerogel (can be very thin)

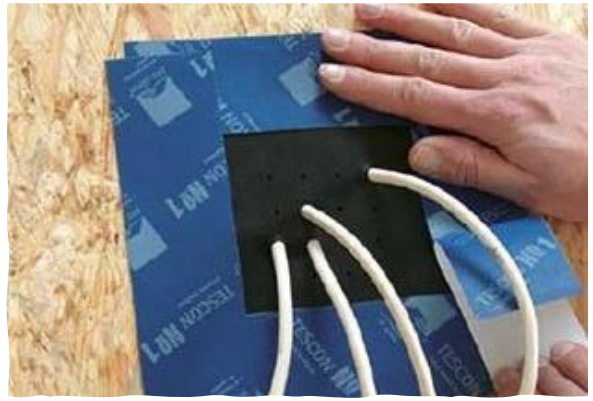
Types of Insulation

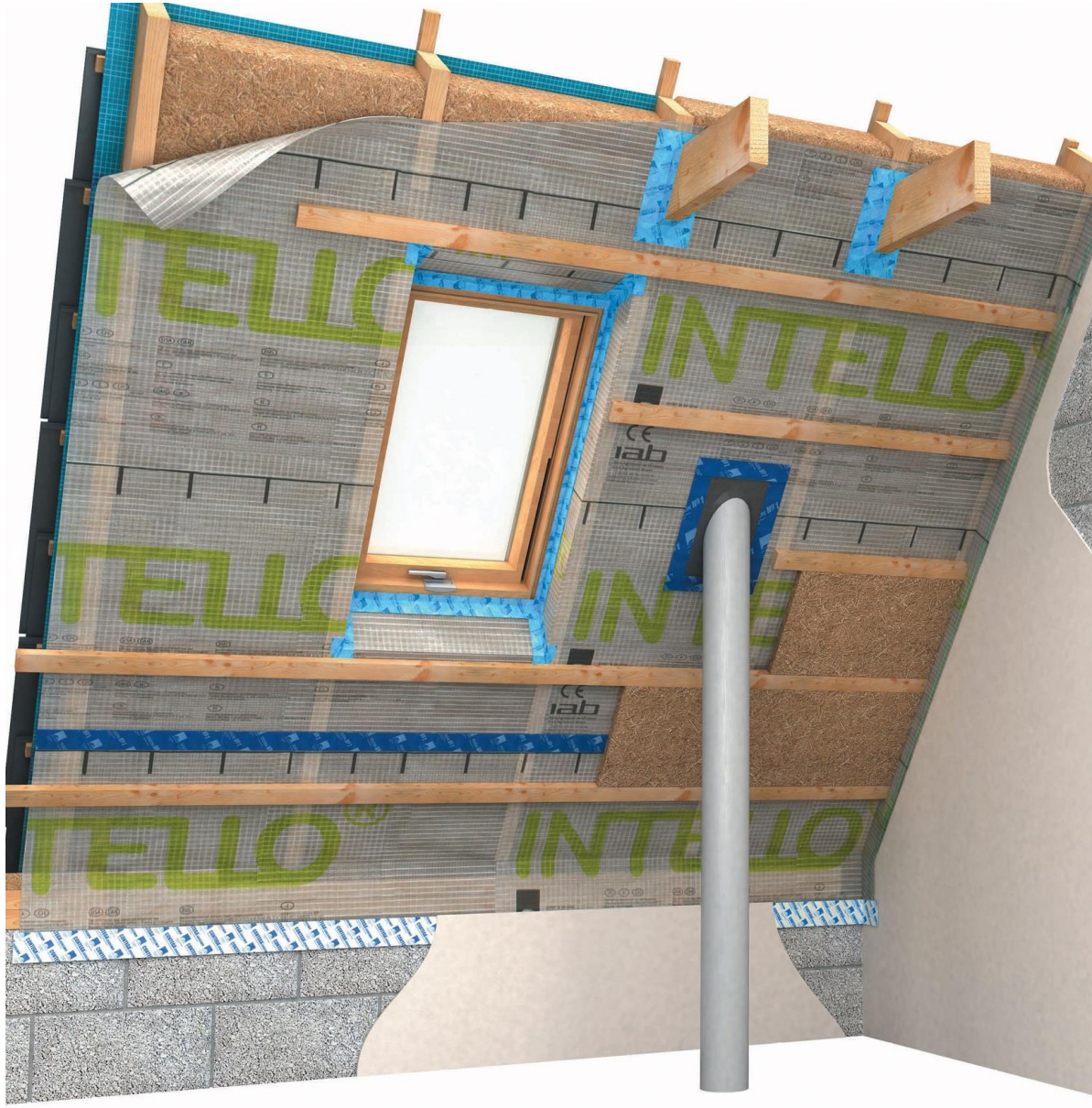


- **Synthetic / non vapour permeable:**
  - PIR / PUR
  - Phenolic foam (Cellotex / Kingspan) board type
  - Polystyrene, recycled plastic – insulation blankets
  - Mineral wool / rockwool, fibre glass
- **Pros:** cheaper than natural, high thermal performance, thinner applications
- **Cons:** manufacturing, embodied carbon, not bio-degradable, off gasing, health, possible moisture risks

Airtightness

- Once insulation has been installed then the percentage of energy lost through uncontrolled ventilation increases.
- When airtightness measures are installed – such as **tapes**, **membranes**, **plasters** then adequate ventilation and extraction must also be planned and installed.
- Deal with uncontrolled air leakage (draughts)
- Plan for controlled ventilation

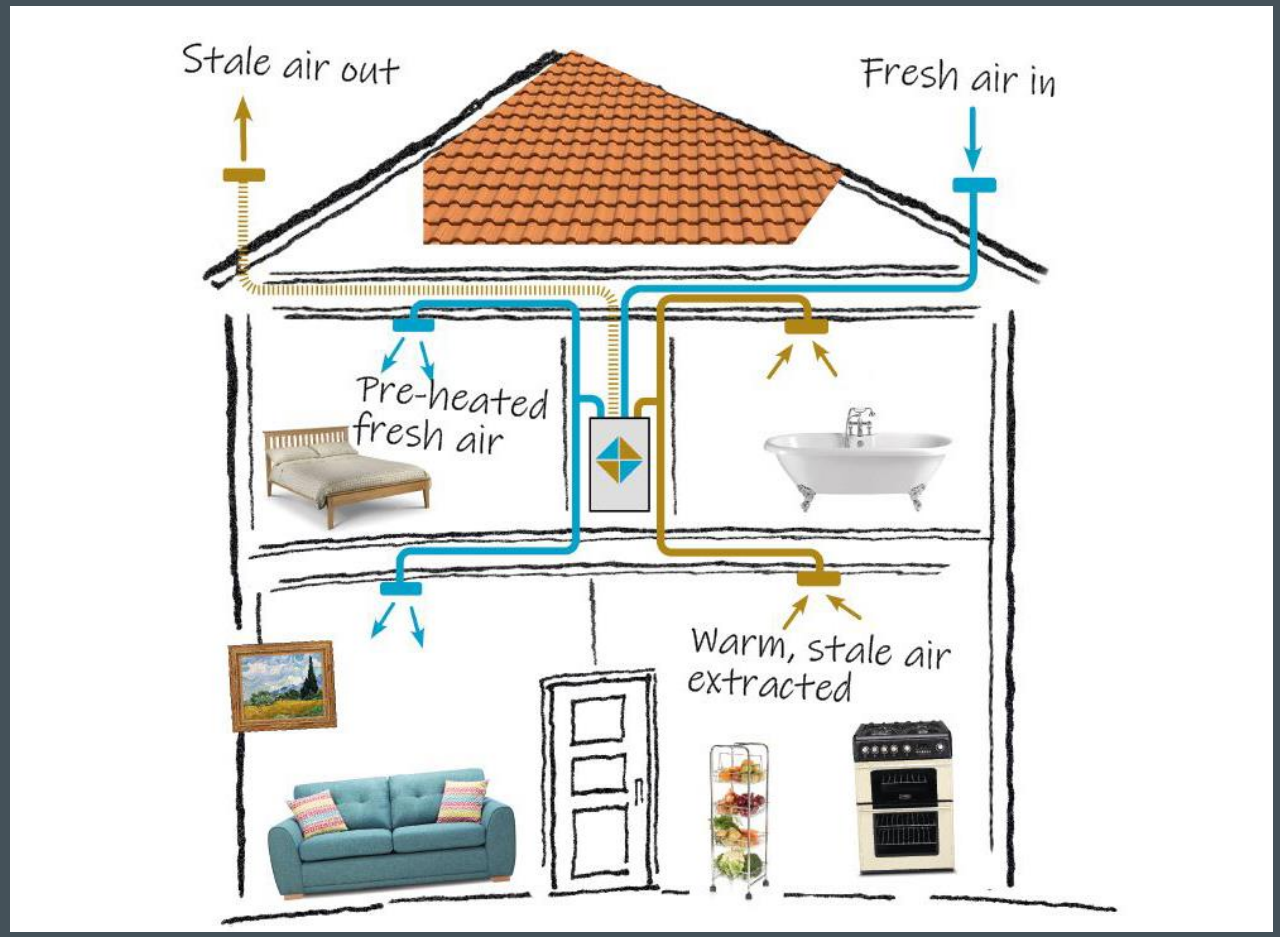




Ventilation options

Whole House

- Difficult to install well in retrofit due to the need to run ducting for most options
- Location of air handling unit



Whole house Mechanical Ventilation and Heat Recovery system
(diagram source www.cse.org.uk)

Ventilation options

Intermittent extract

Intermittent extract with humidity sensor

Purge ventilation

Trickle vents

Continuous extract with heat recovery

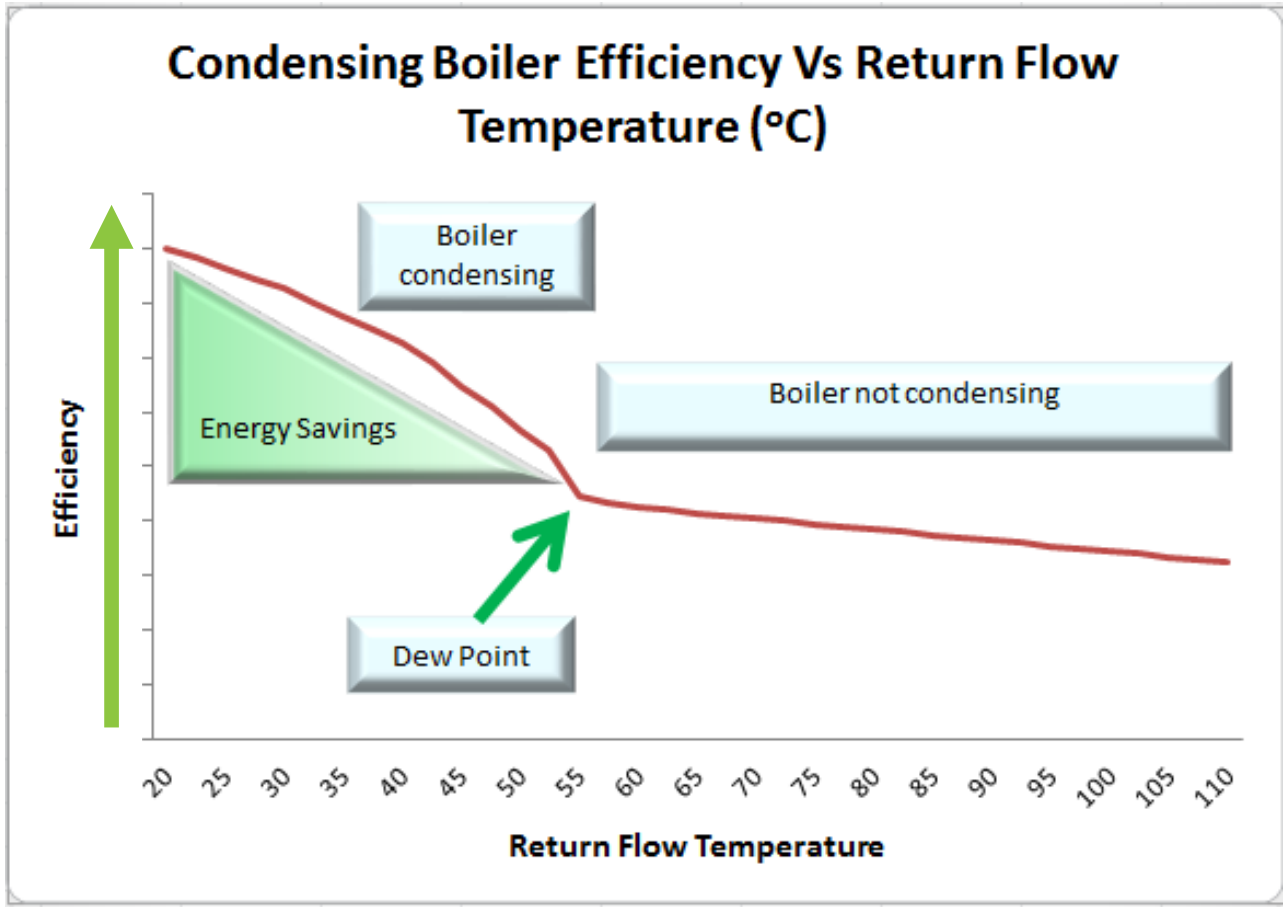
Low carbon heating

- Air source heat pumps
- Ground source heat pumps
- Biomass heating/ boilers
- High heat retention storage heaters

Renewables

- Solar thermal – hot water
- Solar Photovoltaic - electric

Getting the most from your heating



Heating controls options

- Programmer & room stat
- Programmable thermostat
- Thermostatic Radiator Valves
- Smart heating controls
- Temperature compensation

Case studies: Historic and hard to treat properties

Traditional stone cottage, Cotswolds

- Completed in 2010
- Internal wall insulation and sloping ceilings
- Double and secondary glazing
- LED lighting

- £1,026 annual bill saving
- 42% reduction in CO_2 emissions

Sloping ceiling insulation

Secondary Glazing

TOP 10 TIPS

FOR SAVING ENERGY AT HOME

- PROGRAMME YOUR HEATING
- TURN DOWN YOUR THERMOSTAT
- TURN APPLIANCES OFF WHEN NOT IN USE
- USE LOW ENERGY LIGHT BULBS
- WASH YOUR CLOTHES AT 30°C
- ONLY BOIL AS MUCH WATER AS YOU NEED
- INSULATE YOUR HOT WATER TANK
- DRAUGHT PROOF YOUR HOME
- CHECK YOUR FUEL TARIFF

SPEAK TO WARM & WELL
0800 500 3076 | WARMANDWELL.CO.UK

Warm &Well

How do I go about funding and arranging this?

Warm and Well can access funding

- Low-income households
- Local Authority Delivery
- Current ECO3 for Cavity wall and Loft insulation - Flexible criteria
- ECO4 Funding coming April 2022 - will be better for Solid Wall and ventilation - criteria to be defined
- New schemes focus on whole house solutions.

It can be easier to just call our adviceline and run through a situation!

Wider funding

- **Boiler Upgrade Scheme 5k April’22 (towards heat pumps,)**

Next steps

- Consult EPC
- Begin with **retrofit surveys** (establish baselines) and create **plans** – find retrofit assessor / coordinator
- Consider budget/ approach (whole house or phased with whole house plan)
- Talk to other householders who have undertaken retrofit
- Research, attend further talks, webinars
- Trustmark registered installers (PAS 2035)

TRUSTMARK
Government Endorsed Quality

Remember – there's no typical retrofit or house!

What can Severn Wye do to help?

- Over the phone advice **0800 500 3076**
- Provide a paid for **retrofit assessment/ home energy surveys** (varying levels)
- https://severnwye.org.uk/services/
- Access funding for home energy efficiency improvements (Low-income groups)
- www.severnwye.org.uk

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