

Types of buildings



Community buildings come in many forms but are usually loosely defined as buildings owned by or run by the community or a nonprofit or third sector organisation for the benefit of the community. Given their varied age, current condition, nature of construction, geographical location, and use, quantifying their energy use and efficiency can be complex, along with understanding which retrofit measures are appropriate.

Examples of retrofit options for different building types

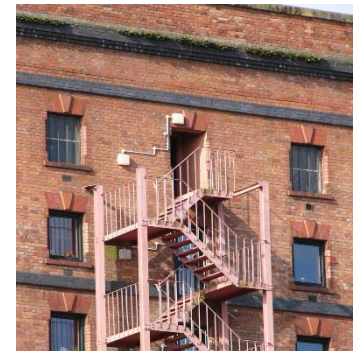
Places of worship

- Occupant comfort** - Ask user groups what they require from the spaces they occupy.
- Good controls** - Break the building into smaller zones depending on use.
- Localised heat source** - Consider how to heat people not the space.
- Fabric insulation** - Opportunities to insulate may be limited, due to the significance.
- Window upgrades** - Consider secondary glazing but be aware of condensation risks.
- Solar PV** - May be well situated for solar PV, consider any negative impacts on fabric.
- Upgrade rainwater goods** - Take opportunities to sensitively upgrade where possible.



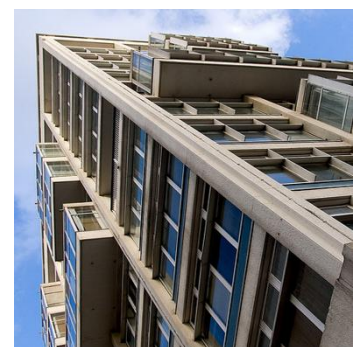
Former industrial

- Understand user needs** - Look for opportunities to improve the indoor environment.
- Intelligent controls** - Incorporating controls and sensors helps reduce energy.
- Fabric insulation** - Insulate roof voids, external walls (internally) and ground floor.
- Window upgrades** - Consider upgrading with double, triple or secondary glazing.
- Heat pumps** - The roof or outside space could be a good location for a heat pump.
- Solar PV** - May have large expanses of roof space, consider any negative impacts.
- Reduce overheating** - Consider integration of internal or external shutters.



Modern buildings

- Occupant comfort** - Understand how occupants are experiencing the building.
- Efficient services** - Engage a services engineer to review energy efficiency.
- Fabric insulation** - Roof, floor, cavity wall or the inside face of the external walls.
- Window upgrades** - Consider upgrading with double, triple or secondary glazing.
- Heat pumps** - The roof or outside space could be a good location for a heat pump.
- Solar PV** - May have large expanses of roof space, consider any negative impacts.
- Reduce overheating** - Consider an overheating analysis and daylighting study.



Know your location and local climate

When we zoom in on the UK, we have national and regional varieties in our housing stock, for example;



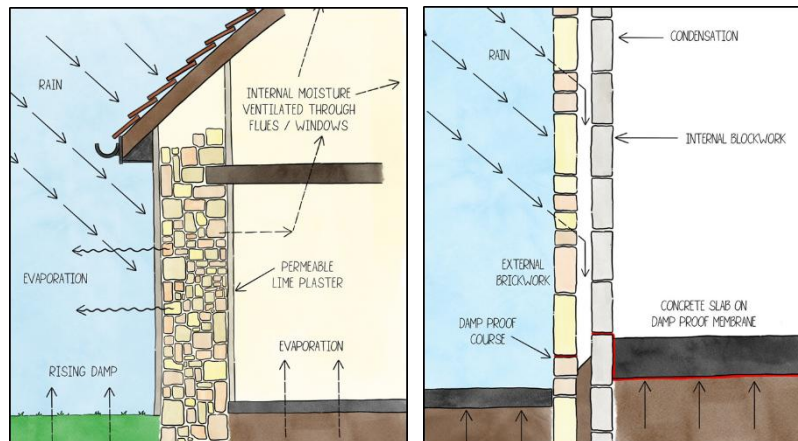
A house in northwest Scotland has an exposed location, it's built with local stone, has small windows to let air in so the fire can burn, it's designed for its location and use.



A house on the east coast of England has a sheltered location, it's built with local timber, has larger glass windows due to its function, it's designed for its location and use.

Know your construction – traditional vs modern fabric

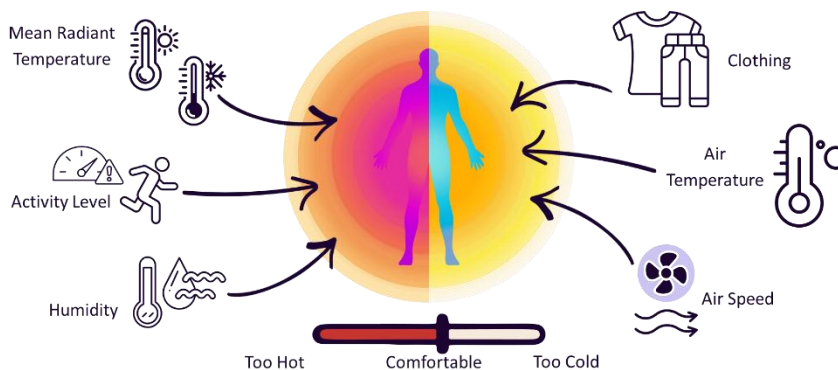
Traditionally built solid stone wall - allows for moisture to evaporate.



Modern cavity walls - rely upon a gap in-between the two 'skins' to keep the inner 'skin' dry. Known as a cavity.



Understanding use and thermal comfort



Thermal comfort is the condition of the mind that expresses satisfaction with the environment. Two people in the same room will experience comfort differently.

Understanding what impacts upon this can help to inform our decisions. The image shows some of the key factors that impact our perceptions of thermal comfort in buildings.

Calculating simple payback

'Payback' (or 'break even') refers to the time it will take you to make operational (ongoing) savings that equal the initial investment in the installed measure or system.

$$\frac{\text{Total Initial Investment}}{\text{Annual Savings}} = \text{'Payback' period (yrs)}$$

To calculate the payback time, you will need -

- The capital cost of the installed measure or system.
- The charges for doing the work, plus VAT.
- Reliable data on anticipated energy cost savings.

Contractor considerations

- Skills and experience in modern building methods alone are not enough for work on traditional buildings.
- Ask around locally for recommendations.
- Search the national registers for members of construction industry trade associations.
- Look at other jobs the contractor has completed and check references, ask about training and qualifications.
- Obtain 3 free quotes, have the contractors been to site before quoting.
- Ensure the contractor understands the scope you have set out and can commit to this level of work.
- Agree a payment plan/method that you are comfortable with and obtain everything in writing.
- Check that the contractor complies with the relevant trade body.
- Understand what guarantees and warranties are provided for the equipment your contractor is installing.
- Are there any maintenance requirements and what are ongoing costs of this, if any.

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