Beginner's Guide To Retrofit

Welcome!

Letchworth Garden City
6th November 2024
Marianne Heaslip

Agenda

- Aims and Introductions
- Retrofit: the big picture
- Retrofit is happening, and near you!
- What do we mean by good quality retrofit?
- Things to consider - putting together a brief
  - Priorities
  - Constraints
  - Getting it done
- Next steps

1. Aims and introductions

Aims of the session

- Unpack some jargon
- Understand the basics of what retrofit is and why it’s important
- Define some key terms and concepts
- Next steps in Letchworth

Introduce yourselves **what are the questions you have about retrofit?**

2. Retrofit: the big picture

Retrofit in context

Boris Afinogenov; Photo credit: People Powered Retrofit

Green Open Homes; Photo credit: Carbon Coop

Superhomes Ireland; Photo credit: Carbon Coop

Birmingham Climate Strike; Photo credit: UK Student Climate Network

Householder barriers to retrofit…

It’s complicated

Don’t know who to trust

Don’t have the headspace

Time consuming

Don’t know where to start

It’s expensive

It’s a risk

No one I know has done this

Some solutions to these barriers…

Knowledge, information

Find trusted sources

‘Bundle up’ complementary works into packages

Get an assessment, come up with a plan

Visit examples of retrofit done locally.

Break it down into stages

Sources of grants and finance - and the strings attached

Understand the risks - and how they can be mitigated

Working together, co-operation

3. Retrofit is happening, and near you!

Case studies

www.youtube.com/@carbonco-op

Quantifying impacts

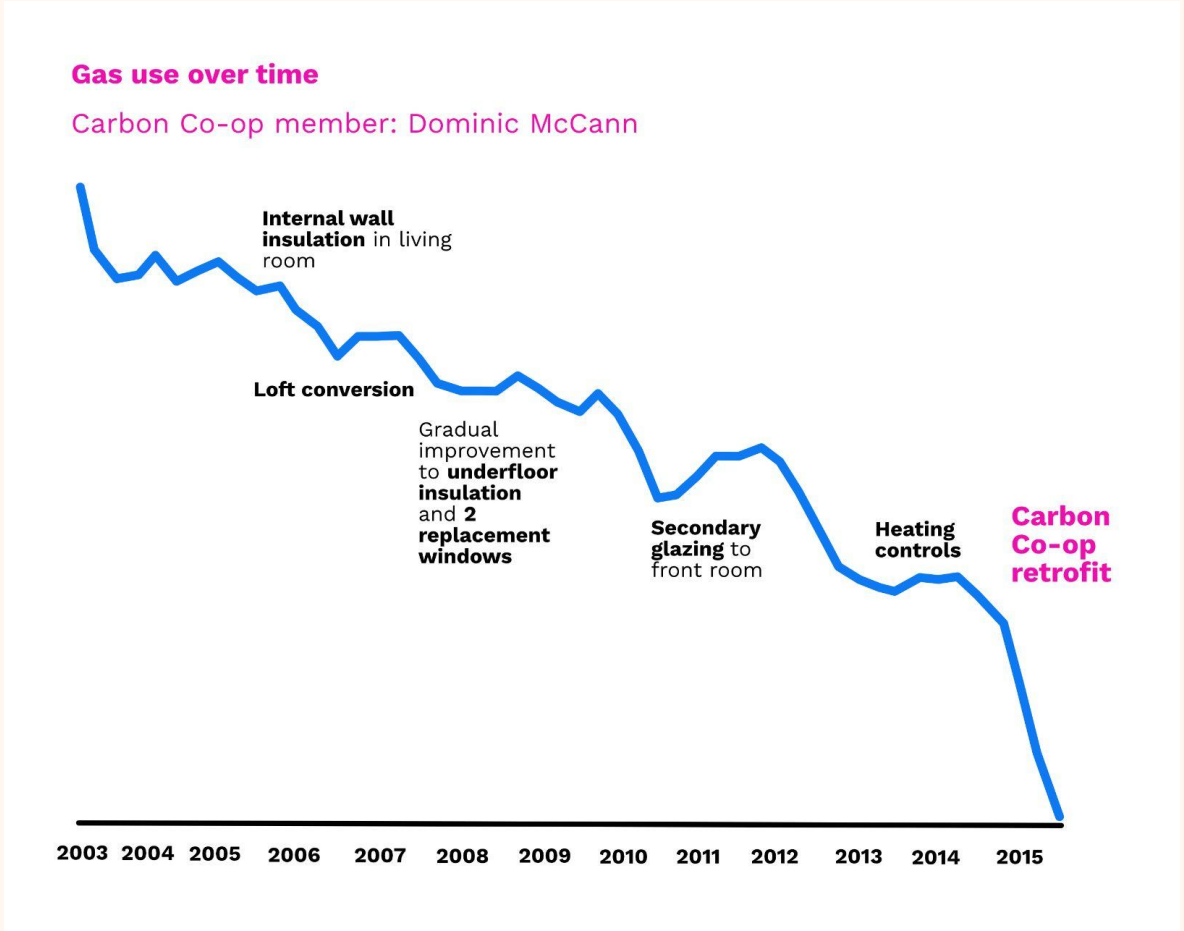
- Average heating savings: 47%
- Average CO2 savings: 62%
- Average bill savings £915
- Average bill total £280 (net)
- But… average £40,000 works costs for this scale of impact!

NB figures from 2015!! | Full report

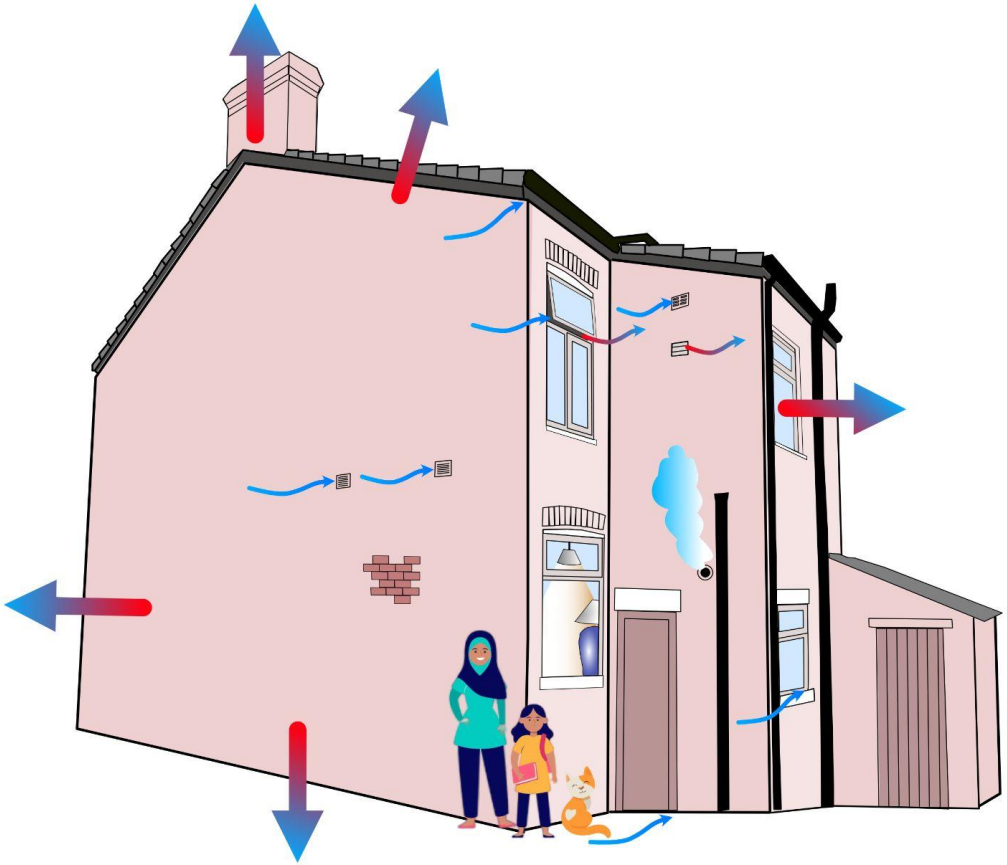
Improvements

- Lower bills
- Less worry about future bills
- Warmer in winter, cooler in summer
- Improved air quality with impacts on health
- More comfortable living space and more rooms in use.

A staged approach



4. What do we mean by good quality retrofit?



Homes are a system

- Condition and construction
- Heat loss
- Draughts
- Ventilation
- Heating
- Lighting and appliances
- People and animals!

Homes are connected

- The energy system is changing
- Much more renewable energy
- More decentralised energy

Climate resilience

- High summer temperatures
- Intense rainfall, and surface water risks

Responsible retrofit

- Considering the interactions between improvements
- Considering and mitigating risk
- Considering context and existing construction materials
- Building condition and repairs should always come first!

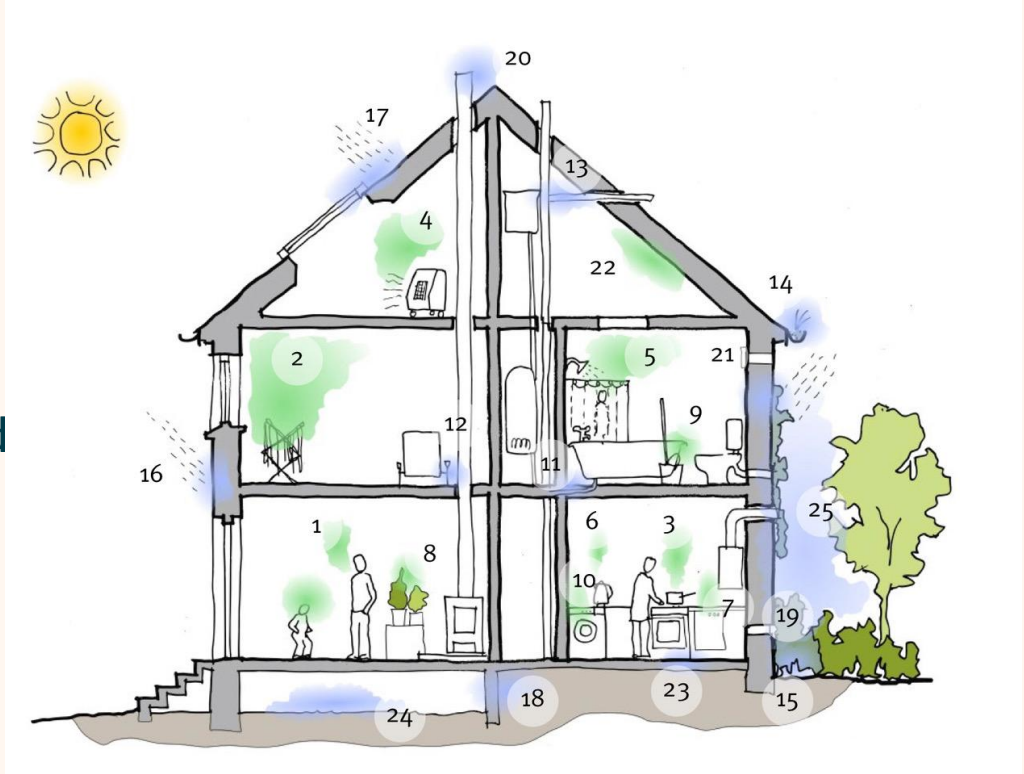
Installed and commissioned with care

- Attention to detail - e.g. airtightness!
- Commissioned with care
- Communicated well

5. Example retrofit improvements

Get retrofit ready!

- Repairs and maintenance first, always.
- Draughtproofing and airtightness
- Ventilation (health!) are good first steps
- Solid wall insulation needs careful consideration!



Moisture in the home; Photo credit: John Gilberts Architects

Draught proofing

Photo credit: Carbon Coop

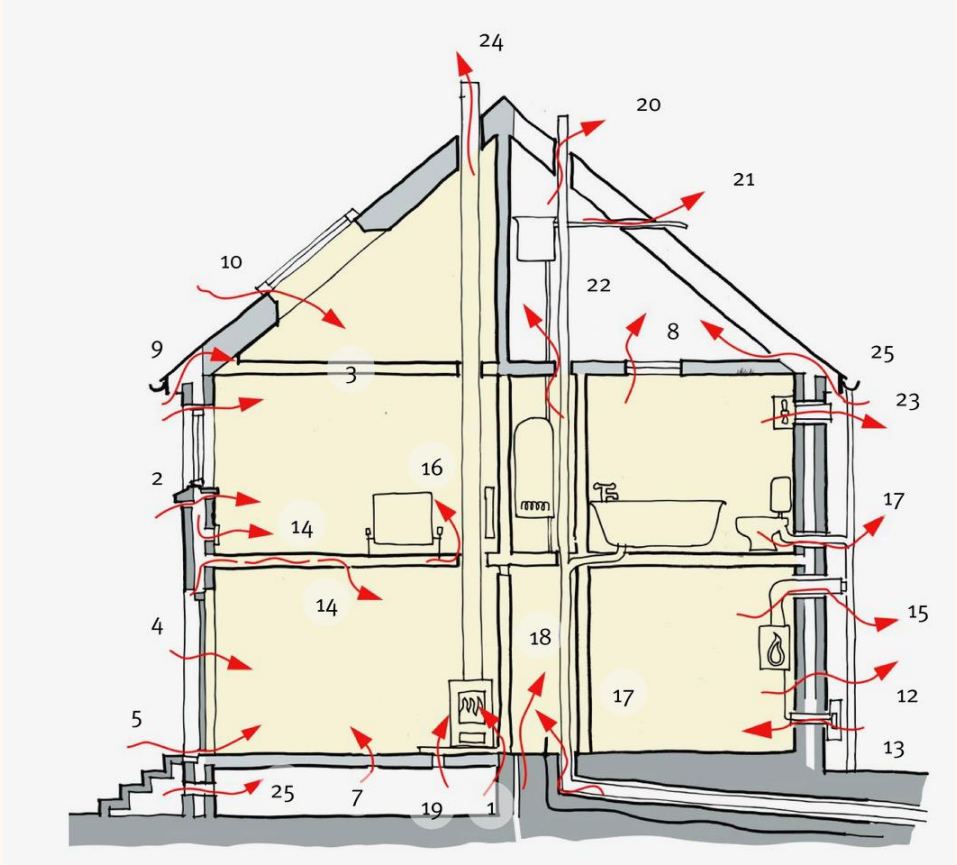
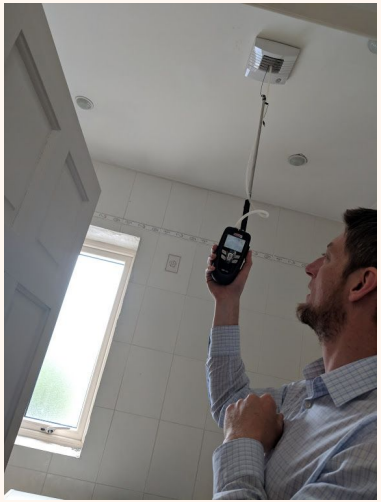


Photo credit: John Gilbert Architects

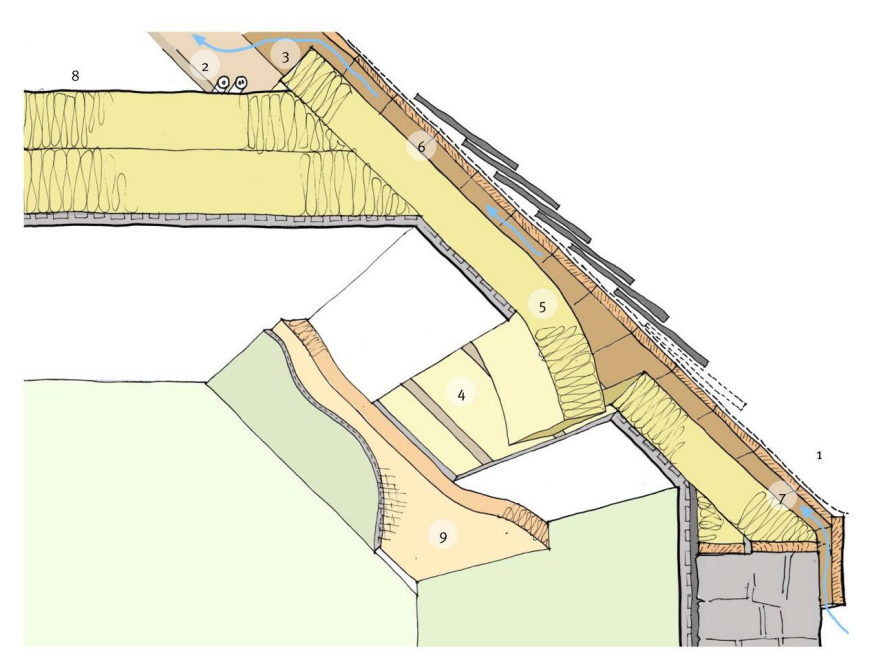
Ventilation



Need a combination of:

1. **Extract** from wet rooms to remove humidity and pollutants.
2. **Background** for fresh air in the whole home)
3. **Purge** for when you've burnt the toast!

Floor and loft insulation



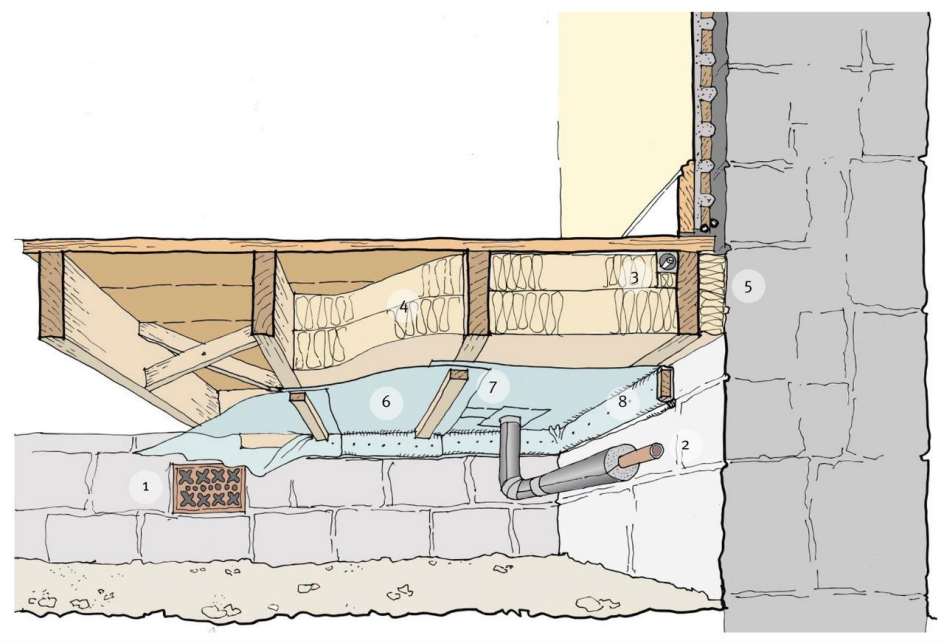


Photo credits: John Gilbert Architects

https://www.thepebbletrust.org/sustainable-renovation-guide/

Windows

Photo credits: Carbon Coop

Internal wall insulation

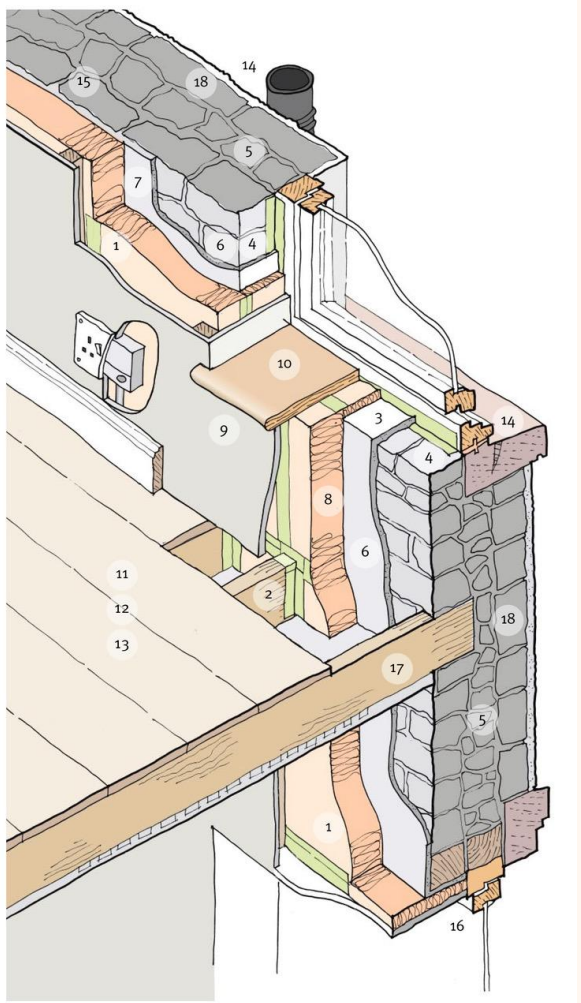


Photo credit: John Gilbert Architects

External wall insulation

Solar panels

Photo credit: Carbon Coop

Solar panels

Heat pumps

Photo credits: Carbon Coop

Are you Heat Pump Ready?

Factors to consider:

- Unlike (older) gas boilers, heat pumps produce **‘low grade’ heat**
- Heat pumps work best at a lower, constant level of heat - rather than switching on and off for short periods - but so do existing condensing gas boilers!

So….

- Are you heating your home continuously now?
- Are your radiators well sized?
- How much heat does your home use? Is it difficult to get warm even with the heating on all day?

Heat Pump Ready?

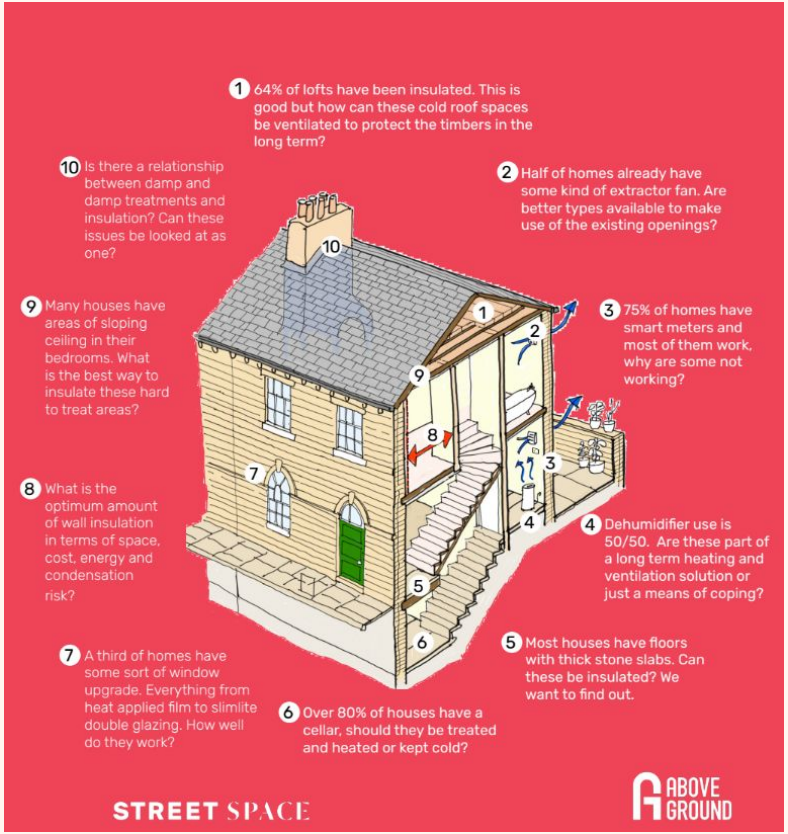
Research report - The right time for heat pumps in retrofit (Passive House Trust) Visit the QR code, or go via www.passivhaustrust.org.uk

You can also https://app.visitaheatpump.com/

Success factors

- If you can run an existing heating system at 45 degree flow temperature, and you mostly control it by the thermostat rather than switching t off for long periods, then it should cost roughly the same at 2024 energy prices to move to a heat pump and all electric.
- It’s likely that some new radiators might be needed and/or some improvements to airtightness and insulation - but you rarely need deep retrofit or replace all your radiators to make moving to a heat pump possible.
- Check your electrics! They need to be safe and have capacity.
- Pe-payment meters make taking advantage of special heat pump tariffs harder.

Bringing it all together…



https://www.above-ground.co.uk/saltaire-retrofit-reimagined

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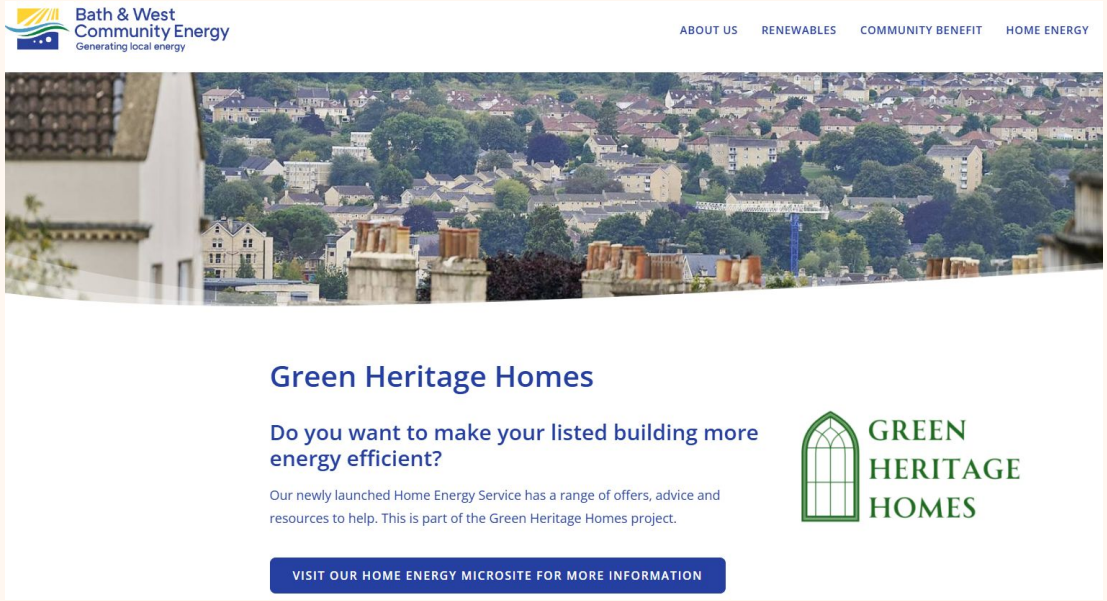

https://www.bwce.homeenergy.coop/listed-buildings

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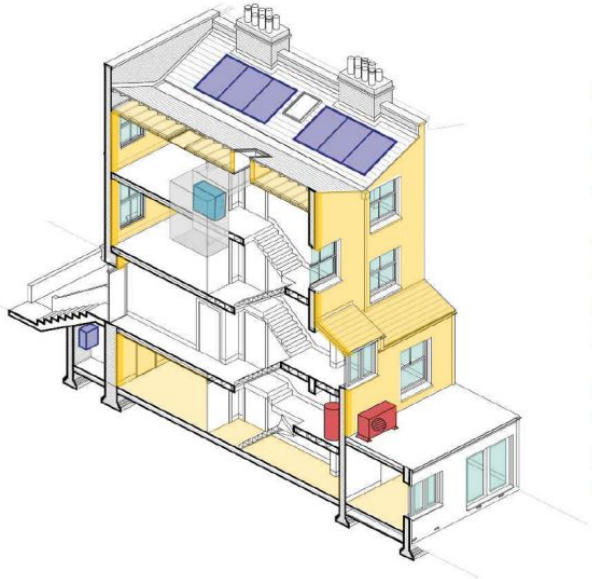


Defining the end result instead of working out the next step of retrofit each time is one of the key objectives of a whole house retrofit plan.

It will help to maximise opportunities and reduce the risk of later improvements being made difficult by earlier work.

A whole house retrofit plan is a useful tool to prepare and provides a pragmatic and coherent way to deliver this ambition.

https://files.websitebuilder.prositehosting.co.uk/ae/fc/aefc33f7-d928-4a7c-88d1-a29bf28b3e57.pdf

6. Your retrofit project

Things for a householder to consider

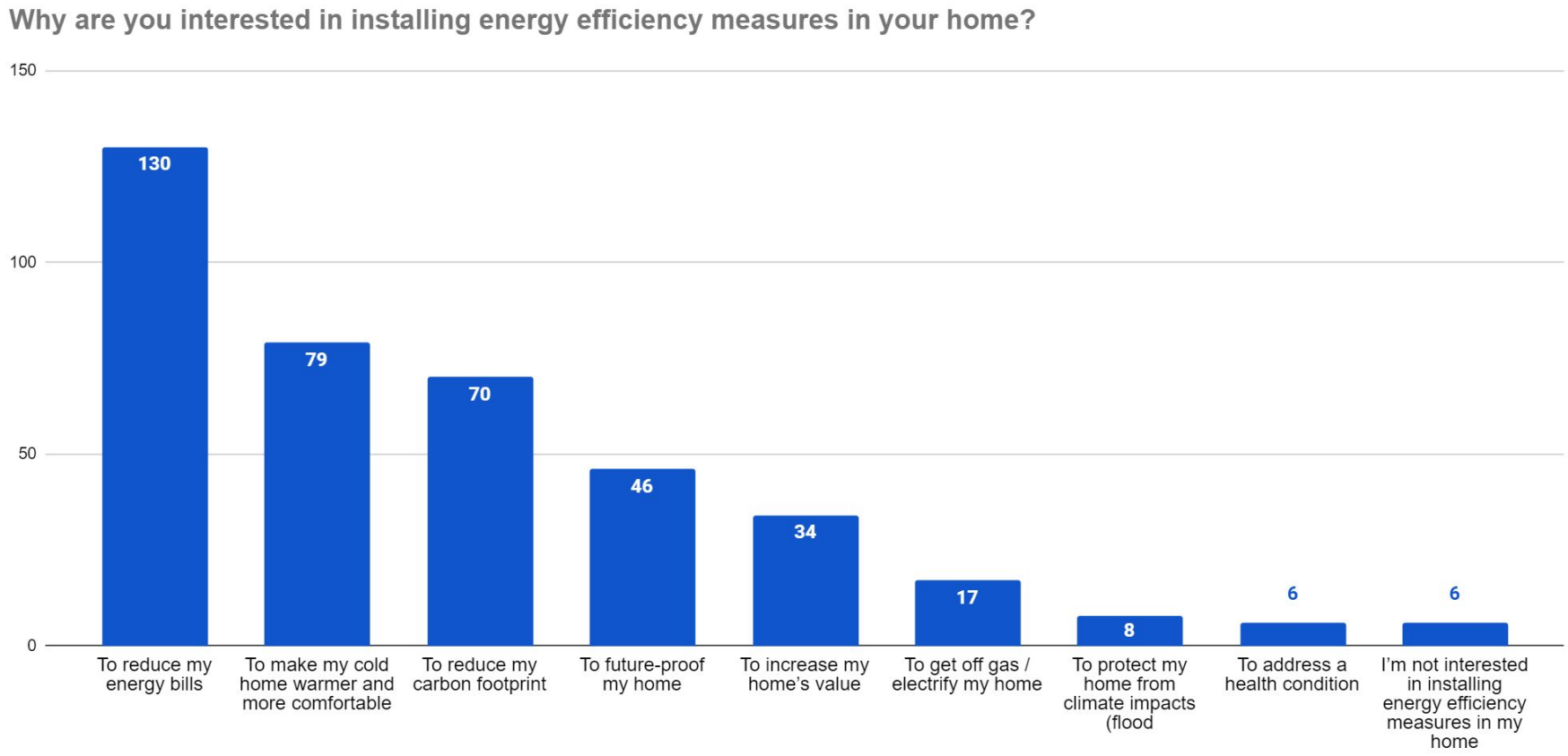
1. What are your aims?
2. What are your constraints?
3. How are you going to get the work done?

1. What are your aims?

- Your top three motivations
- Your top priority

Reduce energy use	Combine with other building work
Reduce energy bills	General modernisation, maintenance and repairs
Reduce carbon emissions	Future proof home (e.g. for later life)
Be warmer in winter	Improve climate resilience (e.g. flood resilience)
Improve air quality	Reduce summer overheating
Resolve condensation, damp, and mould issues	Improve energy rating (e.g. EPC/SAP)
Decarbonise heating	Protect or enhance architectural heritage

1. What are you aiming for? What are your top priorities?



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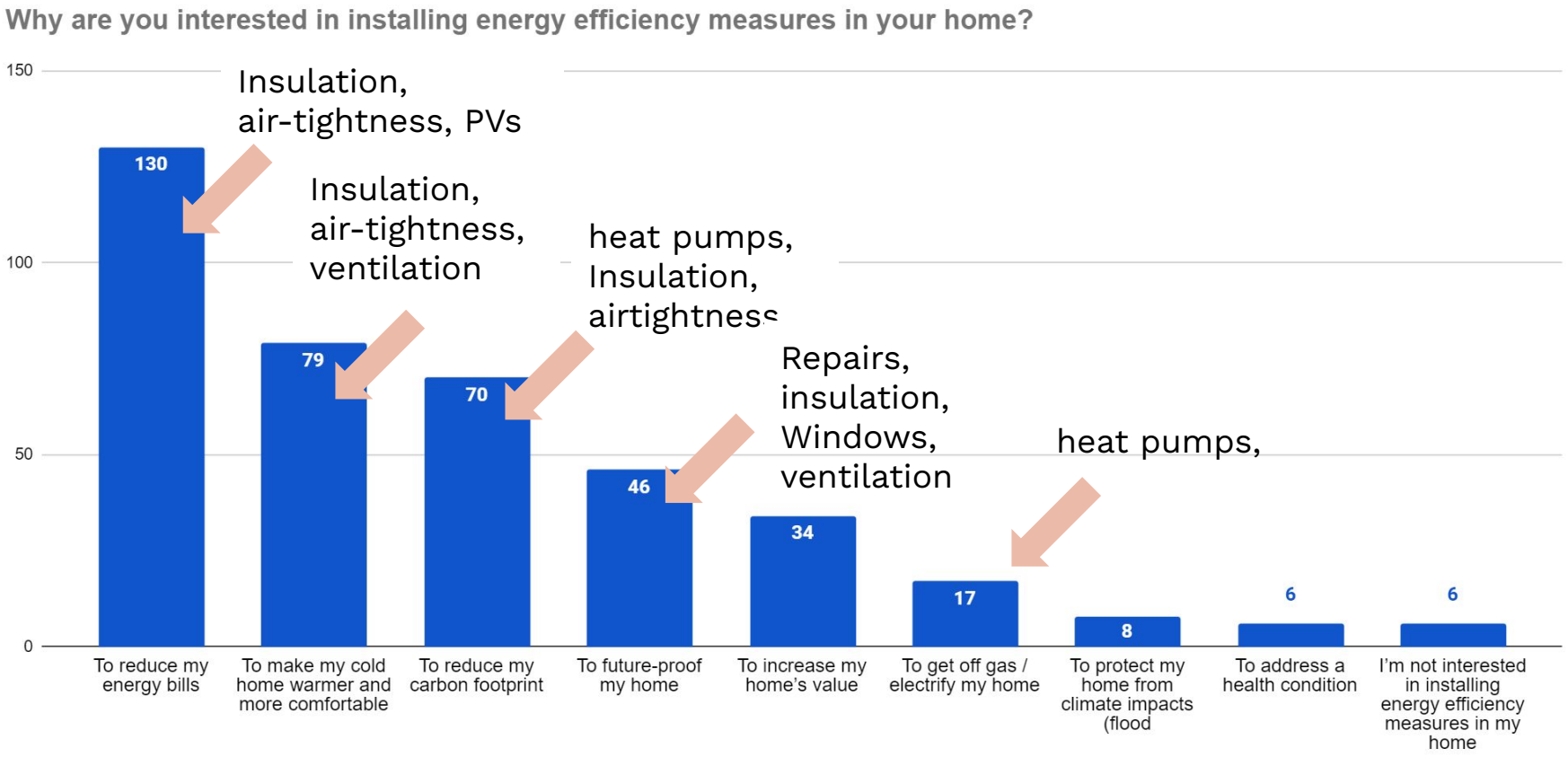


1. Combined projects?

1. Other drivers?

...all ‘natural’?...all ‘local’?

...hi-tech efficiency?

...eco-aesthetics?

...healthy buildings?

1. Other drivers? - Heritage

2. What are your constraints?

Budget?

- **Fixed budget:** be realistic about what you can achieve, think about costs and hold contingencies!
- **Financial return:** is this important to you (e.g. for paying back a loan)? If so, be clear and understand the caveats.
- **Funding:** ‘free money’ but usually comes with strings attached! ie approved installers, approved products, deadlines, higher costs, endless forms.....etc!

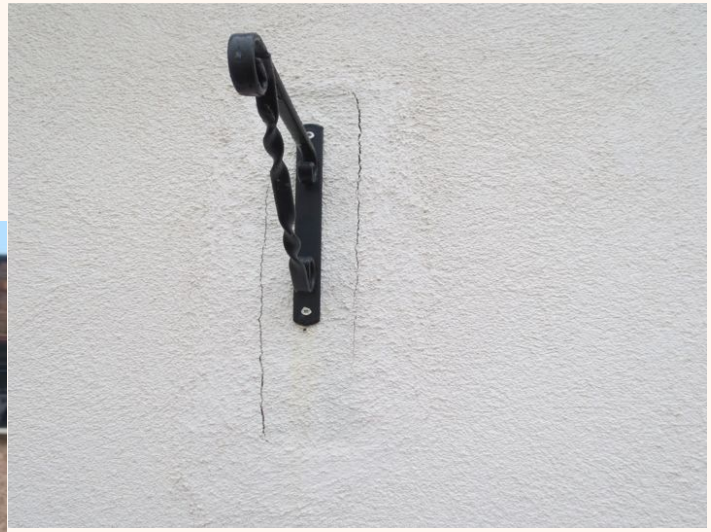
2. What are your constraints?

Timescales?

- **Disruption:** Be realistic about what you can live with and for how long.
- **Deadlines:** does the work need to be done by a certain date? (Don’t say Christmas!)
- **Staging:** Do you need to break the work up into phases to manage disruption or money?

2. What are your constraints?

Quality!



2. What are your constraints?

Quality!

2. What are your constraints?

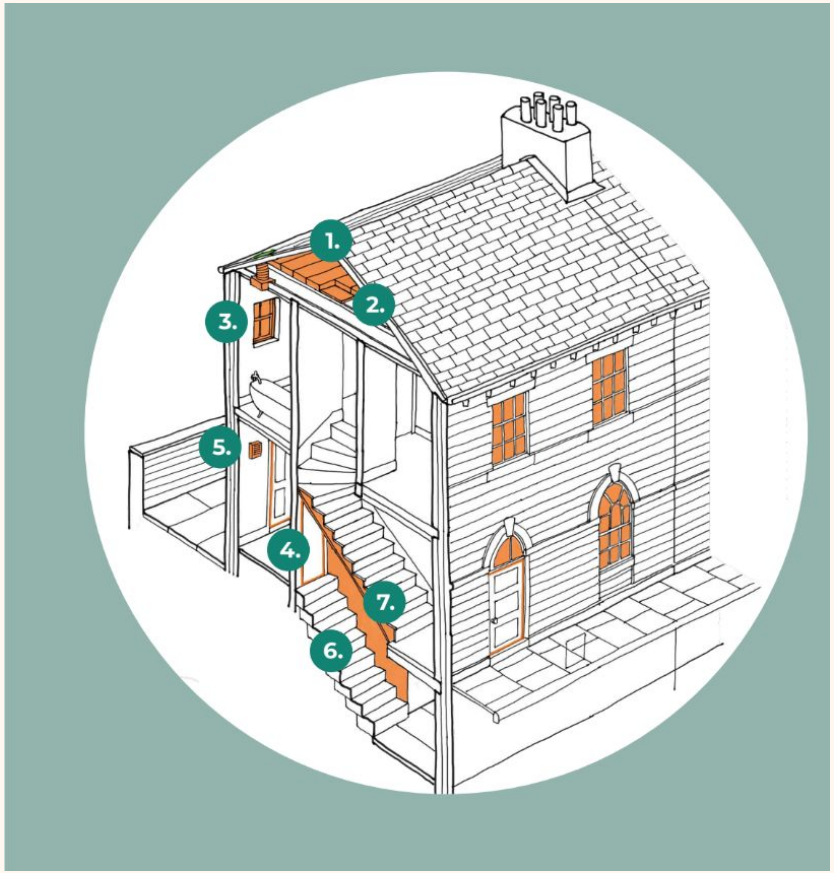
Balancing:

- Time
- Cost
- Quality

3. Getting the work done - Assessment

Understand the context

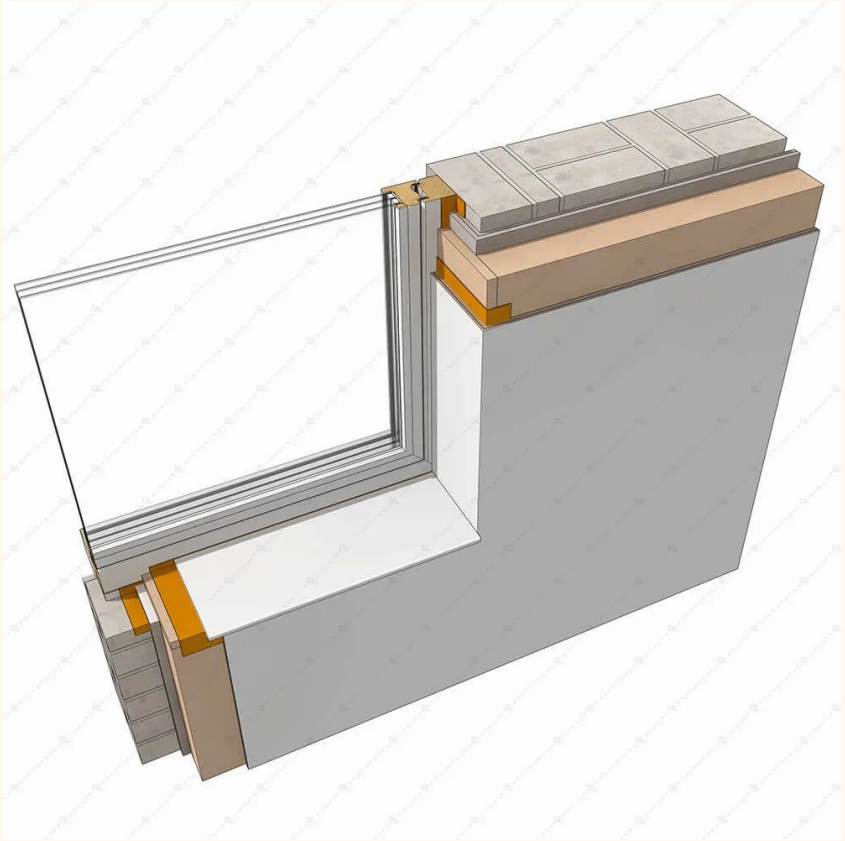
3. Getting the work done - Making a plan



https://drive.google.com/file/d/1xpmv9A1b2icQasti323QwgUKtWA8ZXFi/view

3. Getting the work done - Design

Good design is important!



https://www.firstinarchitecture.co.uk/detail-library-new-details-october-2024/

3. Getting the work done - Procurement

- DIY
- Mainstream contractors
- Specialist contractors

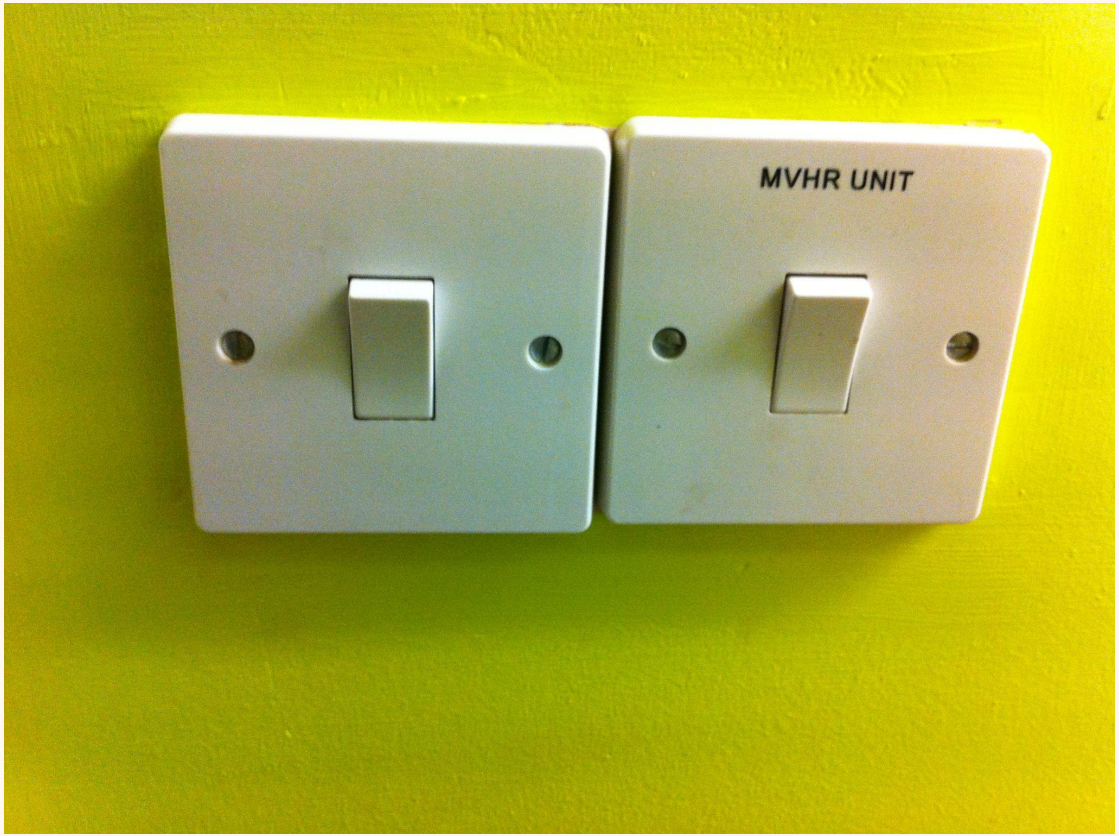
Getting a good builder

- Ask for recommendations or ask how people found their contractors
- Try and get 2 or 3 quotes (or build trust/dialogue)
- Check out online records and reviews, ask for client references.

Issues with recommending specific contractors

- There aren't that many of them
- Performance and service can change
- Accrediting is costly and time consuming and doesn't give you the full picture.

3. Getting the work done - handover and commissioning



7. Next steps

Studies and options development - looking at houses in more detail