Presented by:

PEOPLE POWERED RETROFIT

For:

Towards Zero Carbon Cumbria

CAfS Cumbria Action for Sustainability

Retrofit Journey for Householders

28th April 2022

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Breaking retrofit down

What is retrofit?

- Anything retrospectively fitted
- “Green” retrofit
- “Whole-house” retrofit

What difference can retrofit make?

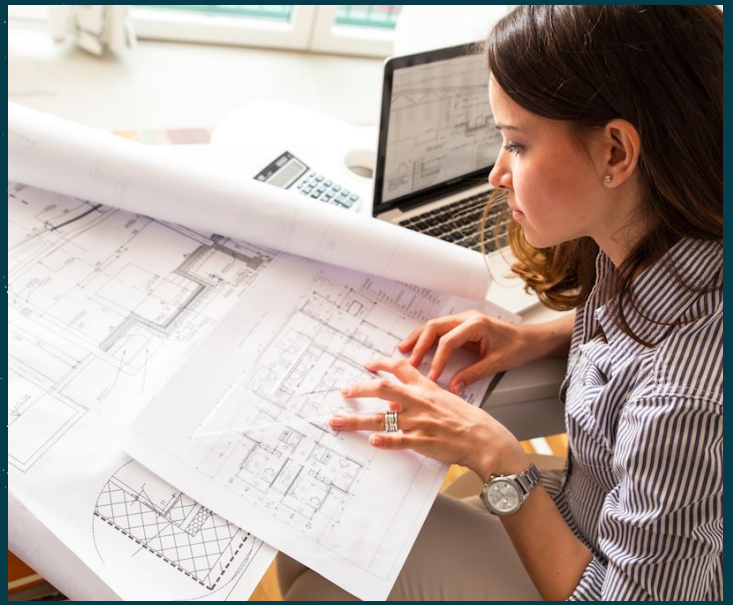
"Our first bill has shown...a 55% reduction in household energy use and a 68% reduction in energy for heating and hot water"

"...the house felt cosier. I didn't find myself grabbing a sweater as often"

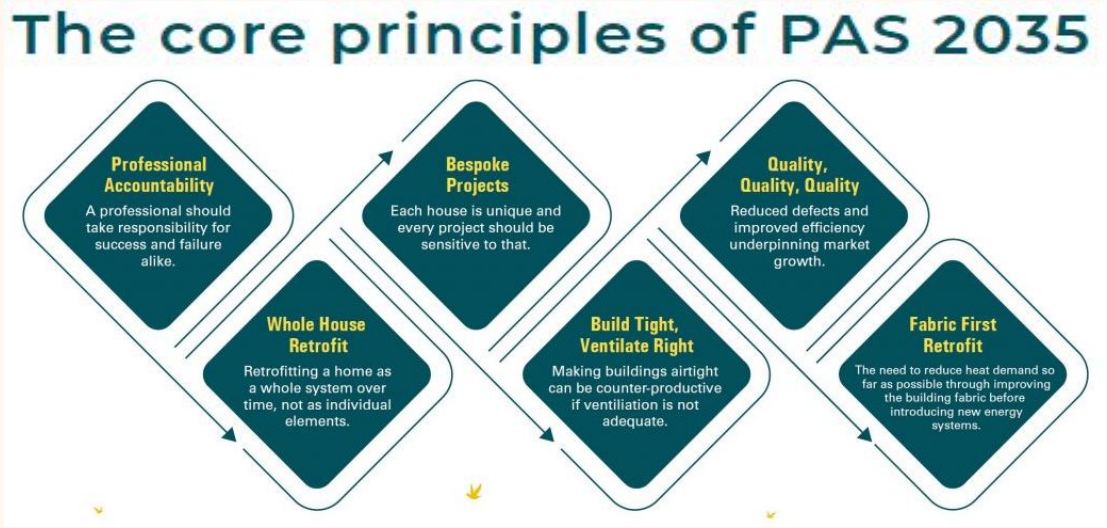
Why can’t you just pick up the phone and order a retrofit?

- It’s complex
- It can be expensive
- There are risks, things can go wrong
- It’s a construction job (see all of the above)

Different models - the same stages



https://www.architecture.com/knowledge-and-resources/resources-landing-page/riba-plan-of-work#available-resources



https://retrobook.co.uk/pas-2035/

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Retrofit stages

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1. Starting out/ getting advice

Retrofit stages

How to create a retrofit project brief

Retrofit project brief - example template

- What should you include in your Retrofit project brief?
  - **Your motivations**: why do you want to retrofit your home? What are your priorities?
  - **Time scales**: Will you do it all in one go or in stages? What's your deadline?
  - **Budgets**: How will you fund the project?

Baselining energy

- Important to understanding the impact and effectiveness of the work (see stage 5!)
- Top Tips: Baselining your energy use
  - Bill data
  - Smart meter data - available from PowerShaper Monitor
  - Tracking internal temperature and humidity
  - Working out degree days (accounts for cold/warm weather)
  - Putting it all together in a spreadsheet

Building a project team

- Retrofit Advisor
- Retrofit Assessor or Domestic Energy Assessor
- Retrofit Designer (could be played by an Architect, Building Surveyor, Structural Engineer, Services Engineer)
- Retrofit Coordinator (could also be a Clerk of Works)
- Structural engineer
- Mechanical and Electrical Systems (M&E) Engineer
- Quantity Surveyor
- Financial Advisor

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2. Making a plan

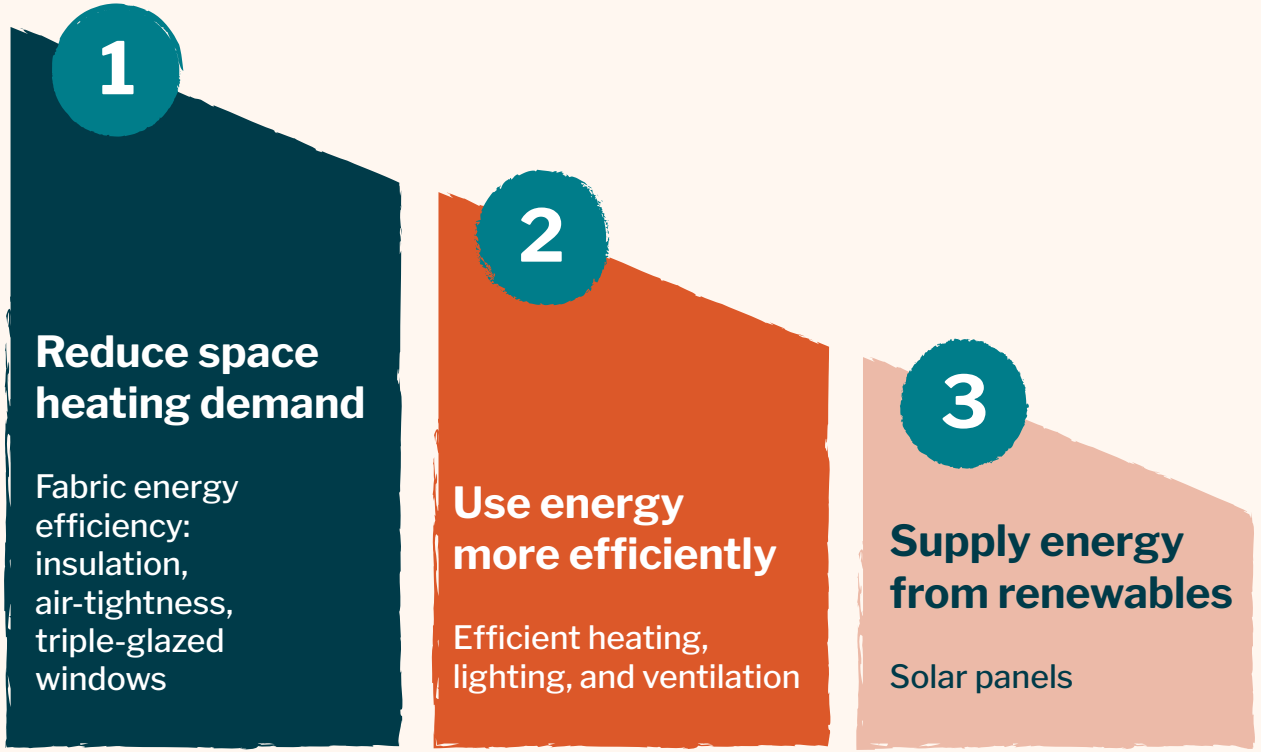
Retrofit stages

Whole house plan

- What is your **level of comfort** and where do you want it to be?
- What about **ventilation and air quality**?
- What are the **maintenance needs** of your property? What needs updating or fixing?
- How about the **aesthetics** of your home?
- How does its **history and heritage** affect your retrofit plans?
- What's the **energy use** of all your appliances?

Fabric First

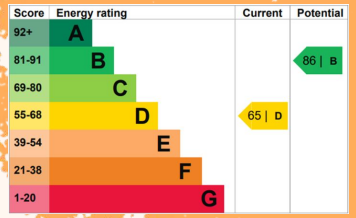
Energy hierarchy



Retrofit Assessment

There are a number of options:

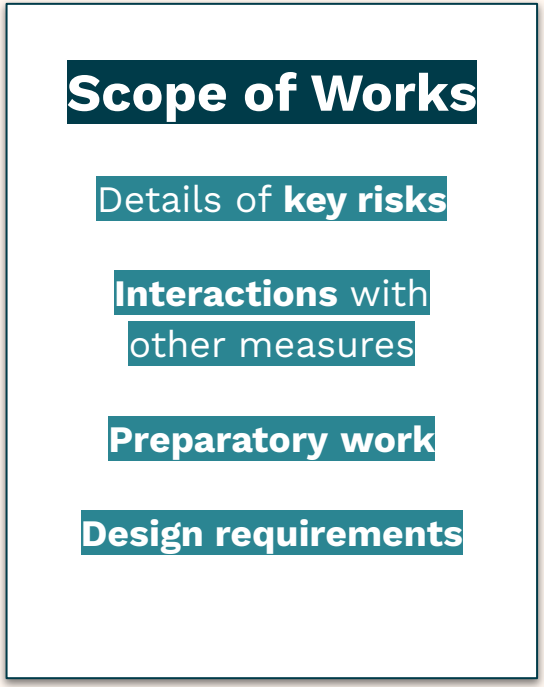
- EPC
  - NB inaccurate and prone to error!
- House Condition Survey
  - Surveyor-based
- Walk-Through Retrofit Survey
  - Uses skill and judgement of assessor, eg thermal imaging surveys
- Detailed Home Retrofit Assessment
  - Eg People Powered Retrofit's Home Retrofit Planner
  - PHPP
  - Other full SAP-based models



Scope of Works

- Sets out the exact retrofit measures you want in your home
- Might want advice on this from an expert or you may feel confident enough to make these decisions yourself

Scope of Works



Should also consider whether any **statutory approvals** and **permissions** (eg planning!), or any **specialist investigations** or **surveys** are needed.

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3. Design and contracting

Retrofit stages

Options for Commissioning Design Work

Design and Build

- Contractor led design
- Appropriate for simple, low risk measures eg solar PV panels
- Likely to follow manufacturers' standard details rather than bespoke design
- Likely cheaper

Options for Commissioning Design Work

Designer-led (eg architect)

- Specialist design
- Appropriate for more complex projects with interactions between measures eg internal or external wall insulation.
- May already require a designer if going through planning
- Likely more expensive.

Daniel McCullough via Unsplash

Commissioning Design Work

- **High-level design** to secure planning
- Detailed **technical design**
  - informs a Schedule of Work that contractors can price from
- **Schedule of Works** and Performance Risk Register

Procurement

Finding the right contractor

- Lead/main contractor + sub-contractors or co-ordination between multiple contractors (and who will do that co-ordination?).
- Size of contractor: sole trader, SME, family firm, larger contractor?
- Try and get min of three quotes for the work!

Procurement

Questions when choosing a contractor:

- ❑ Are they appropriate?
- ❑ Do they have experience?
- ❑ How can you find contractors?
- ❑ What about training for contractors?

Contracts

- Important to ensure you have contracts in place with the people you are working with.
- The are a number of standard construction contracts that can be used.
  - Construction Contracts comparisons
- May 19th - Introduction to Construction Contracts webinar

Cytonn Photography via Unsplash

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4. On site

Retrofit stages

Quality Assurance

- Using a **Retrofit Coordinator** (as set out in PAS 2035)
- Using a **Quality framework** eg a checklist devised by the RC
- Ensuring **proper commissioning** of anything mechanical and electrical by the appropriate installers
- Proper **inductions** for site worker eg via Toolbox Talks
- **Site visits** by the RC timed for specific measures
- **Regular photos** taken at appropriate stages and crucial points to evidence things that will be later covered up
- Including requirements for photos, checklists and commissioning in the **contract**

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5. Handover and evaluation

Retrofit stages

Handover

A handover pack is delivered at the point works conclude and includes:

- Any **user manuals**
- Any **operating controls** clearly labelled
- Having clarity on the **maintenance** plans
- Ensuring copies of **warranties and guarantees** are gathered
- **Building control** certificate/ sign off

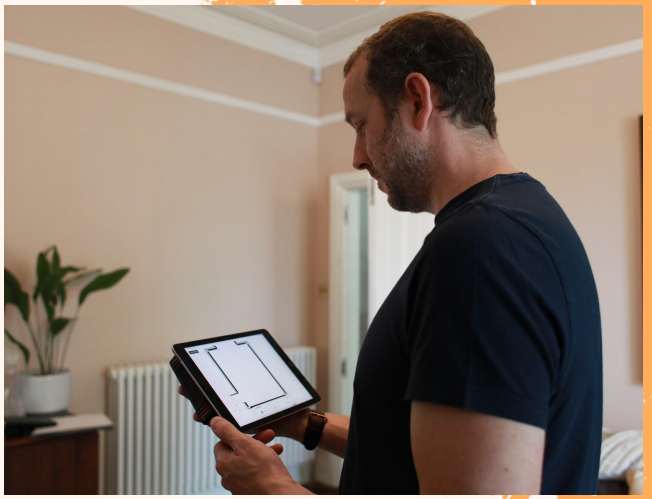
Evaluation

- Go back to your Retrofit Project Brief and look at your goals.
  - **What motivated** you to get this work done in the first place?
  - The answer should underpin your evaluation.
- If your priority was to improve comfort or health, has it worked?
  - Compare **temperature and humidity** readings now to the baseline figures
- How does your home make you feel?
  - Is it **cosy and warm**?
  - Are people breathing more easily and sneezing less?
- If goal was to reduce energy bills and carbon emissions.
  - Check your **energy usage and fuel bills** – have they gone down?
  - By how much?

Evaluation

***Remember**: Good evaluation can only happen if you capture what the conditions were like in your home, pre-retrofit. This will allow you to measure the degree of change.*

- It proves that retrofit actually works
- It shows the value of your retrofit
- It flags errors



Thank you!

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