An overview of domestic retrofit

Alex Slattery

What is retro·fit?

[ˈrɛtrəʊfɪt]

NOUN

1. an act of retrofitting a component or accessory:
   "uninsulated and oddly designed dream houses that are badly in need of a retrofit"

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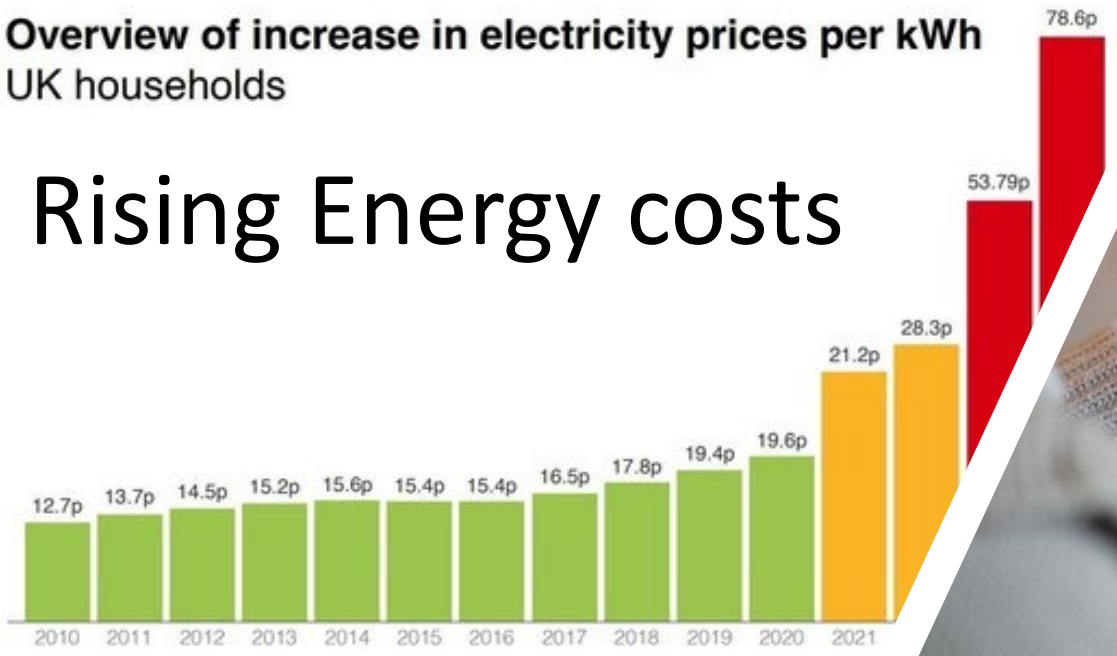
Why do it?

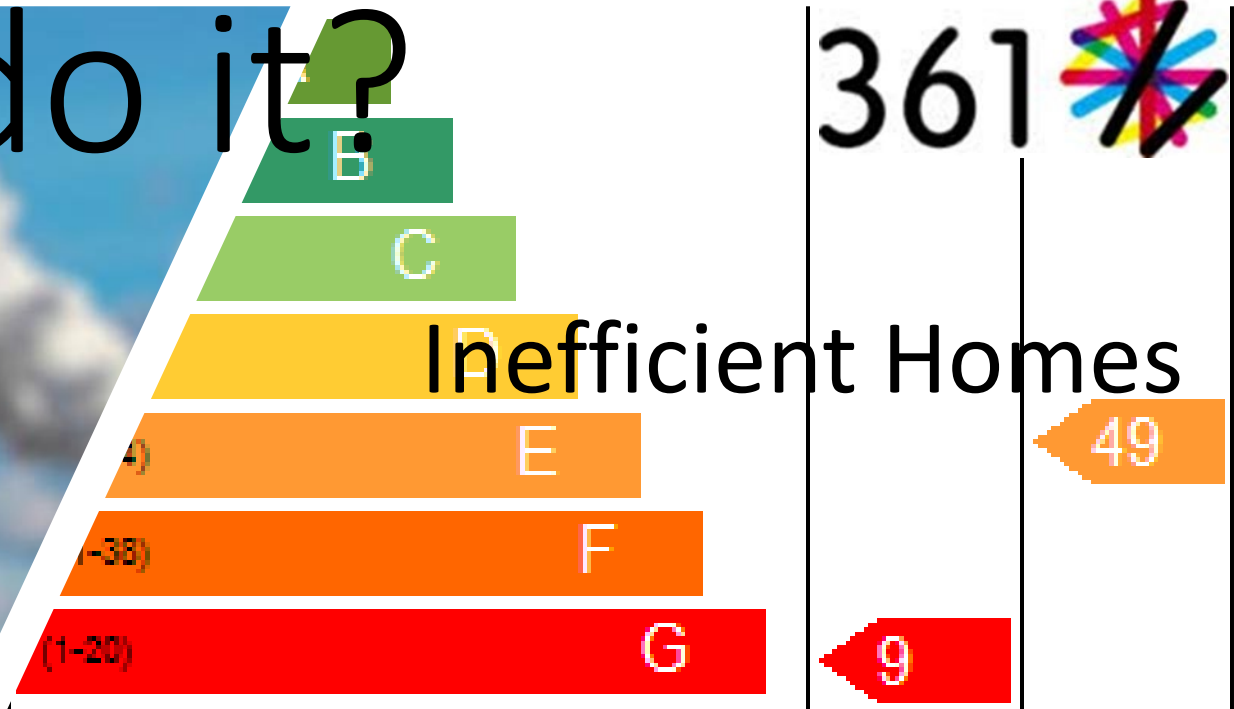
Rising Energy costs



Fuel poverty

Climate Change

Inefficient Homes



Simple, isn't it??

Defects
10% of all solid wall insulation projects resulted in a Type-1 Fail (Ofgem 2013)

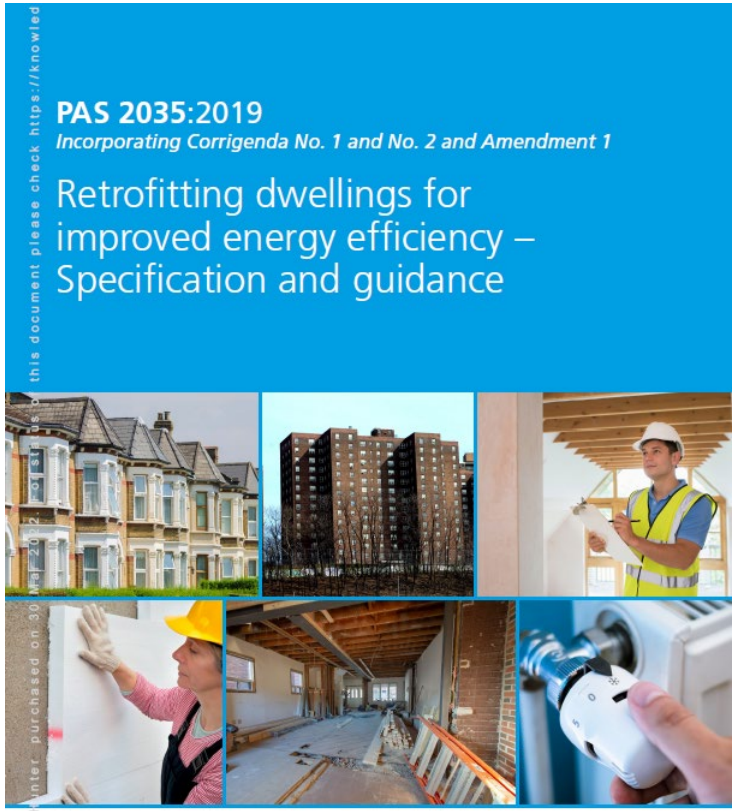
Unintended Consequences
Health and social problems made worse by retrofit, not better

Shallow Retrofit
Availability of funding resulting in the installation of single-measures at the wrong time and place

Accountability
Rules of the game meaning the buck is continually passed on, resulting in litigation

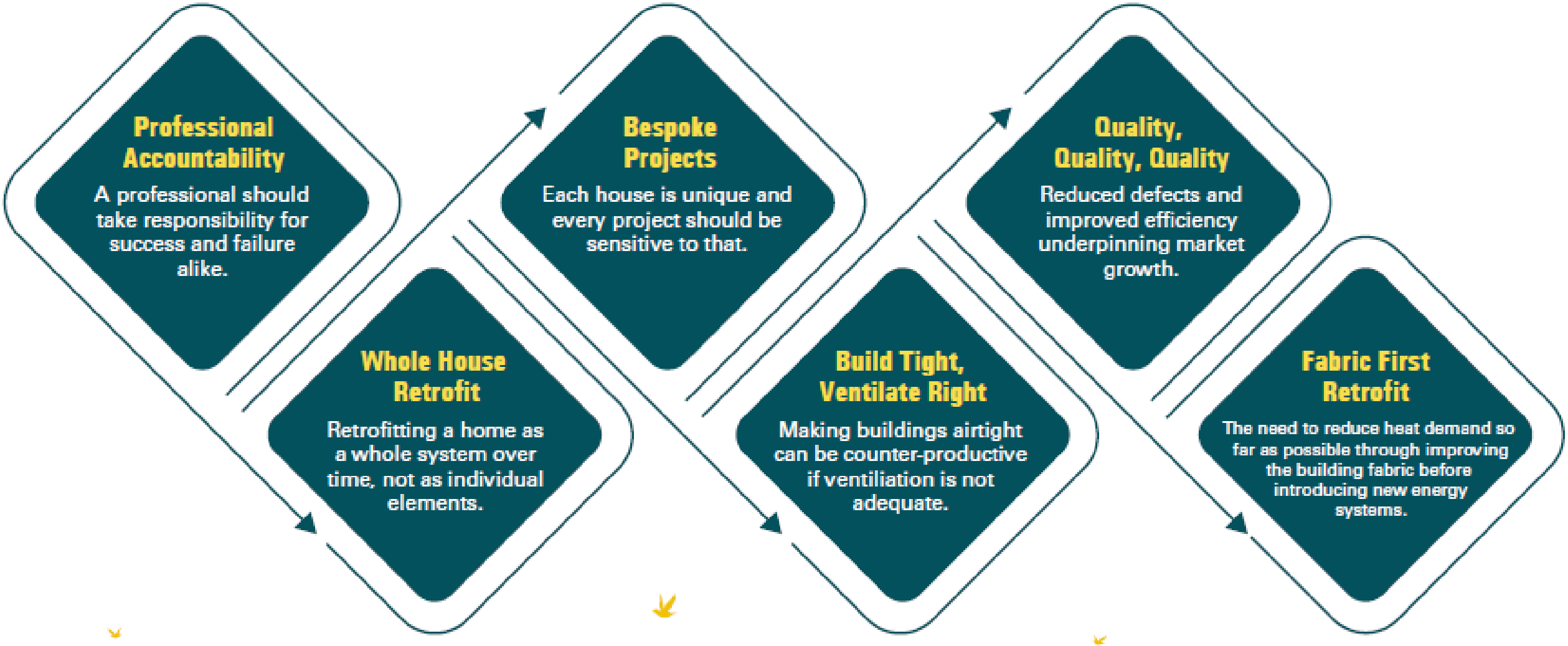
Poor Design
Low profit margins exclude building professionals from engagement in retrofit

Performance Gap
Predicted energy savings not delivered in practice

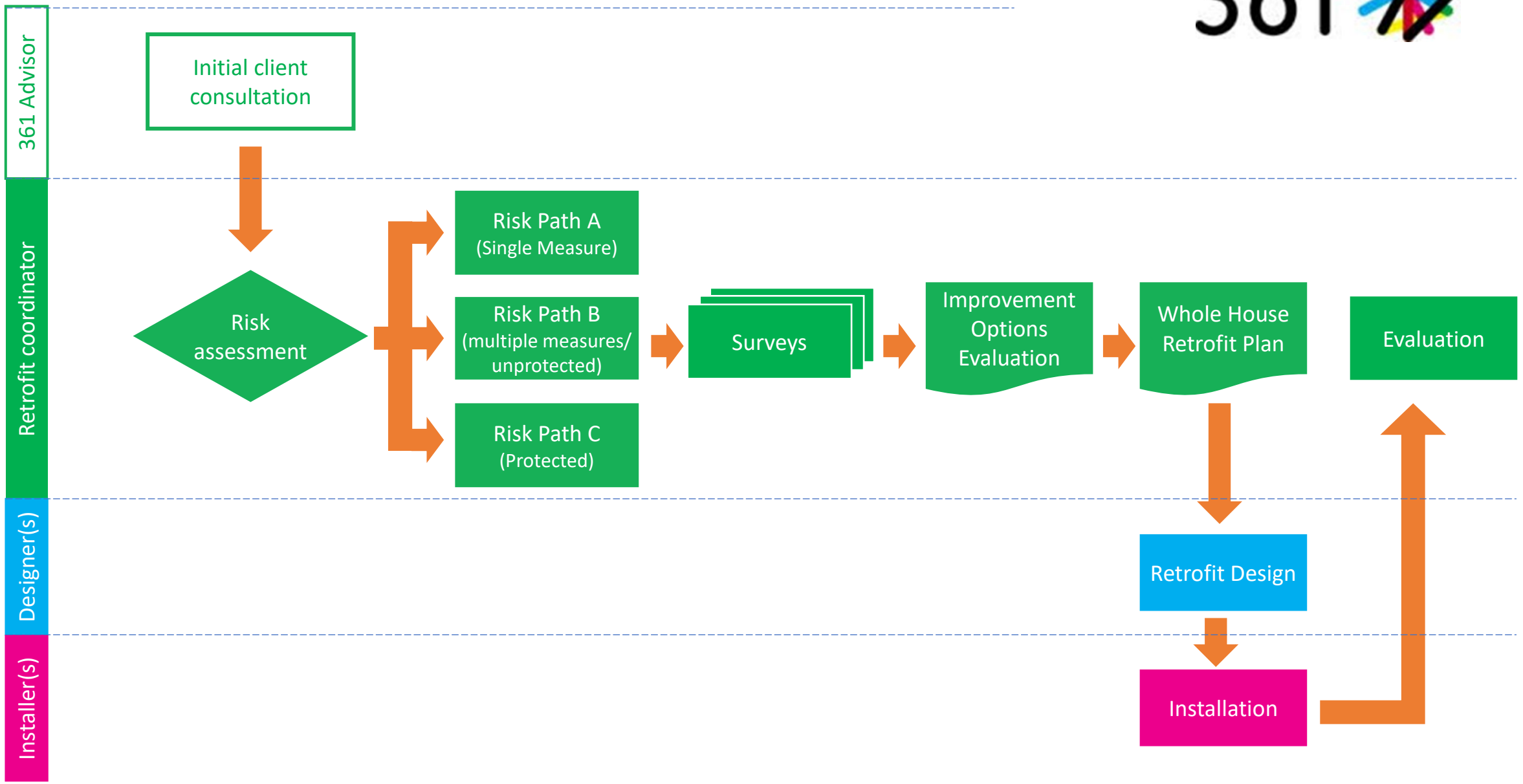


TRUSTMARK
Government Endorsed Quality

Principles of a good retrofit



361 Retrofit Approach



Diary of a Retrofit Project?

The People

Forever HOME

Initial client consultation

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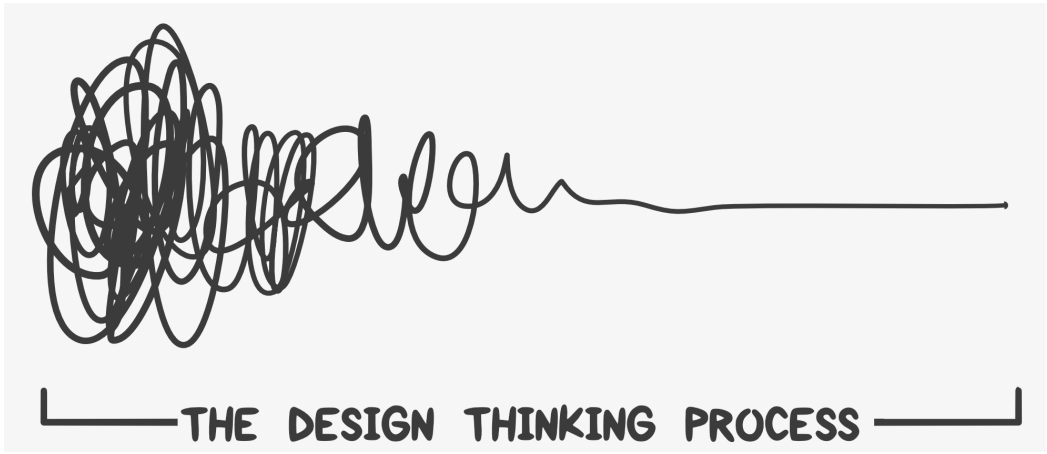
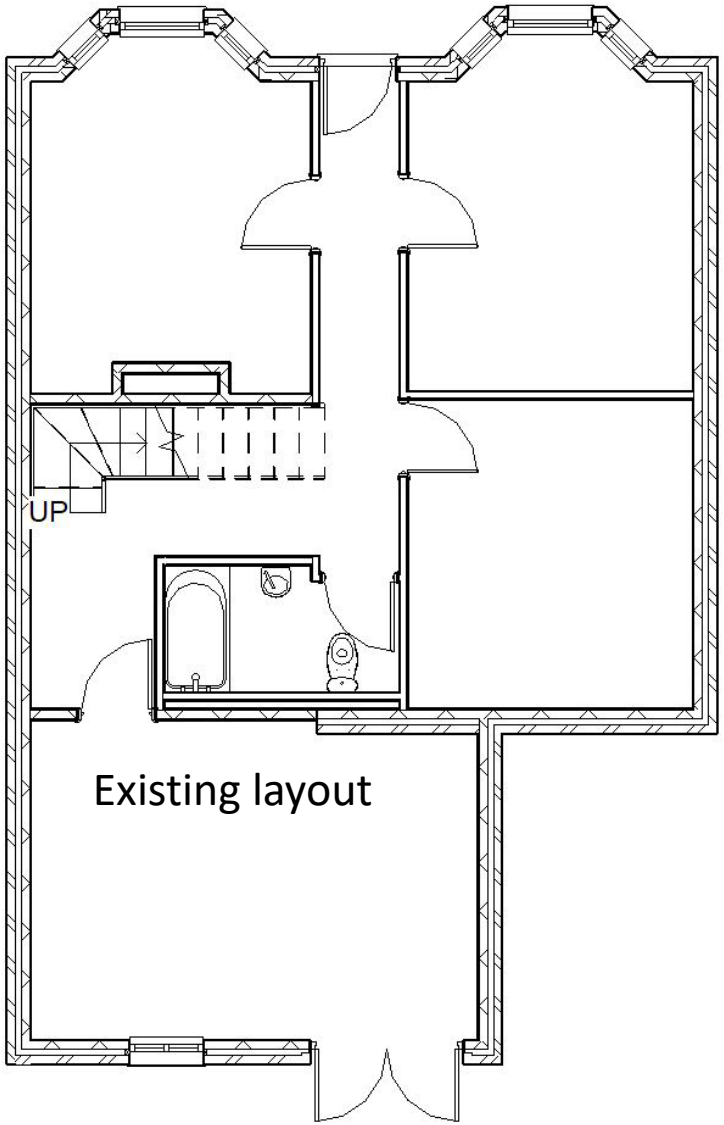
RETROFIT COORDINATOR



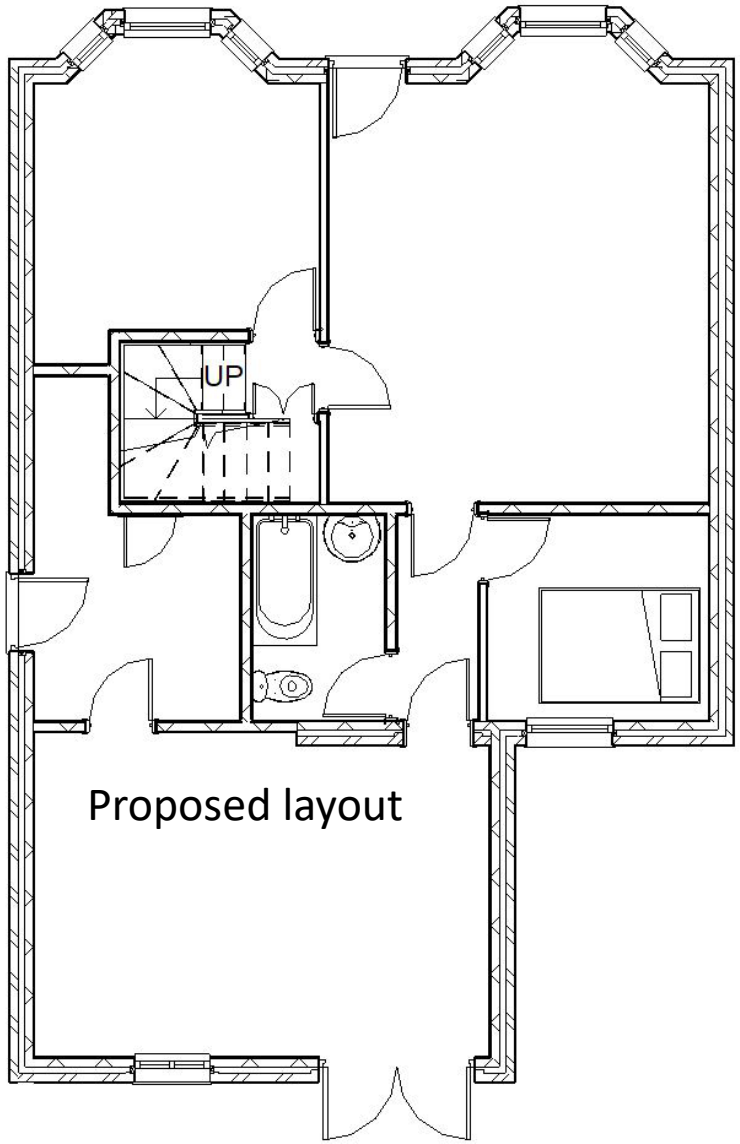
Initial client consultation

The Project

- Revise ground floor layout to optimise space
  - Remove chimney
  - Realign staircase
  - Larger lounge
  - New Utility Room
- Improve energy efficiency
  - Renewable heat and energy sources



Existing layout

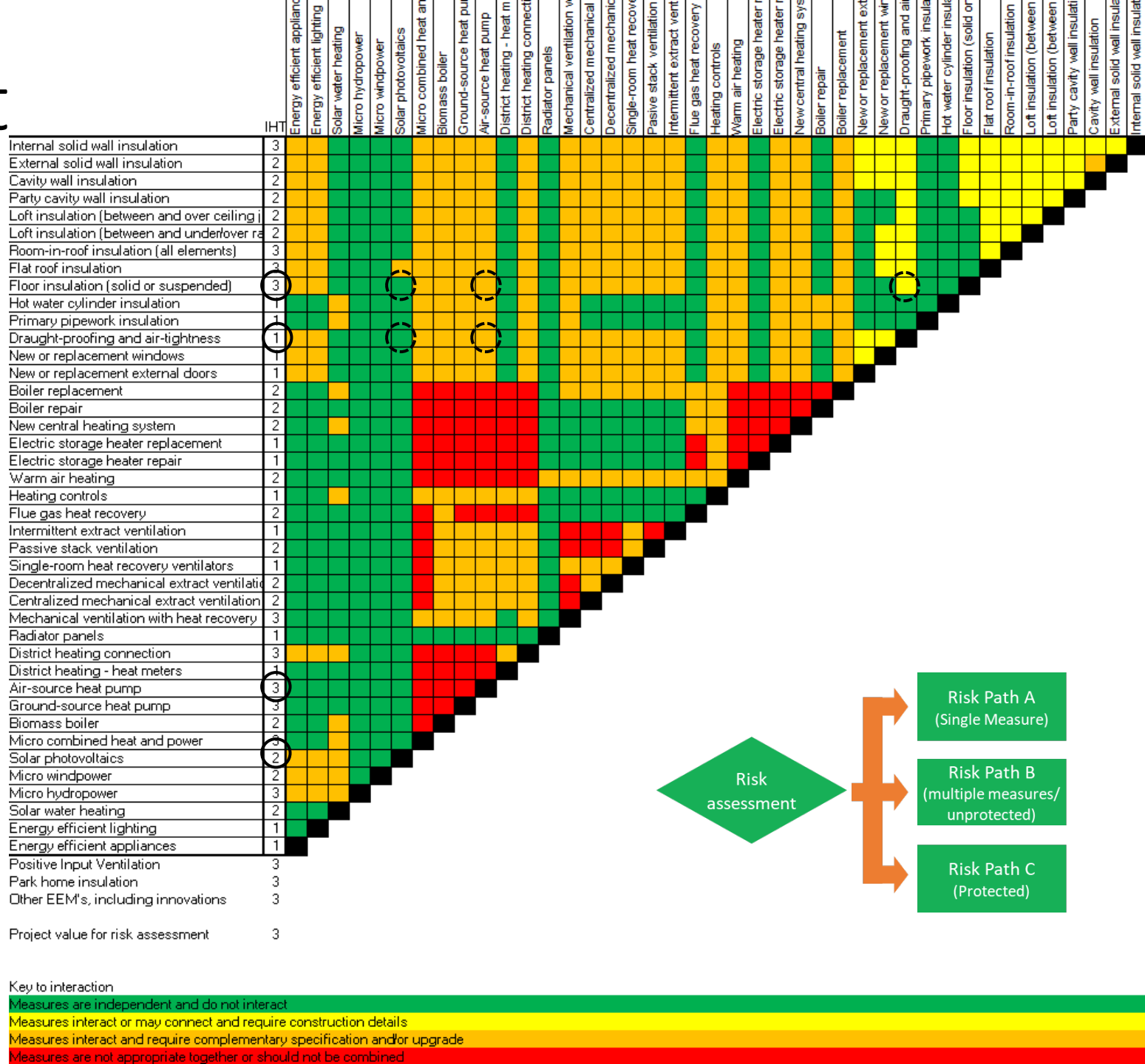


Proposed layout

My risk assessment

- Single dwelling
- Multiple measures
- Inherent technical risk =3 ○
- Measure interaction ◌
- Cavity wall construction
- No statutory protection

RISK PATH B



My Retrofit Assessment

Surveys

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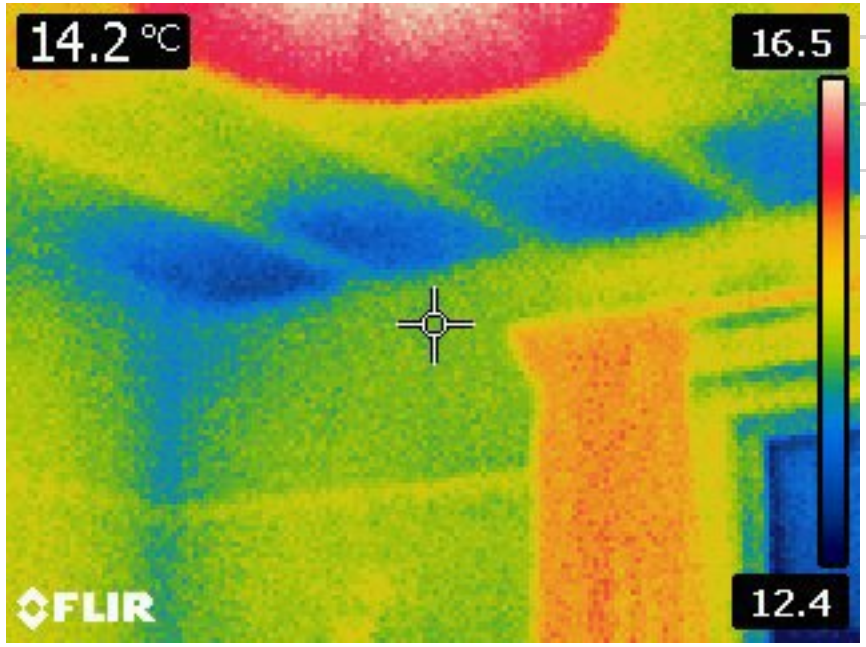
Assessment reports

Ventilation Survey

(please select a report type)
Condition Survey
RdSAP Assessment
Ventilation Survey
Occupancy Assessment
Heritage Significance Survey
Photographic Schedule



Options Evaluation

Improvement Options Evaluation

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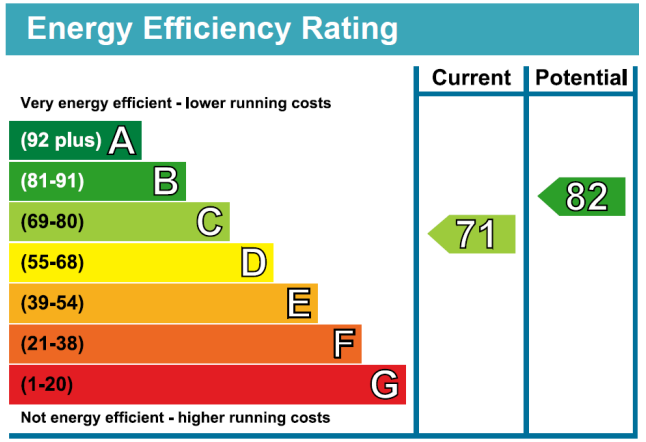
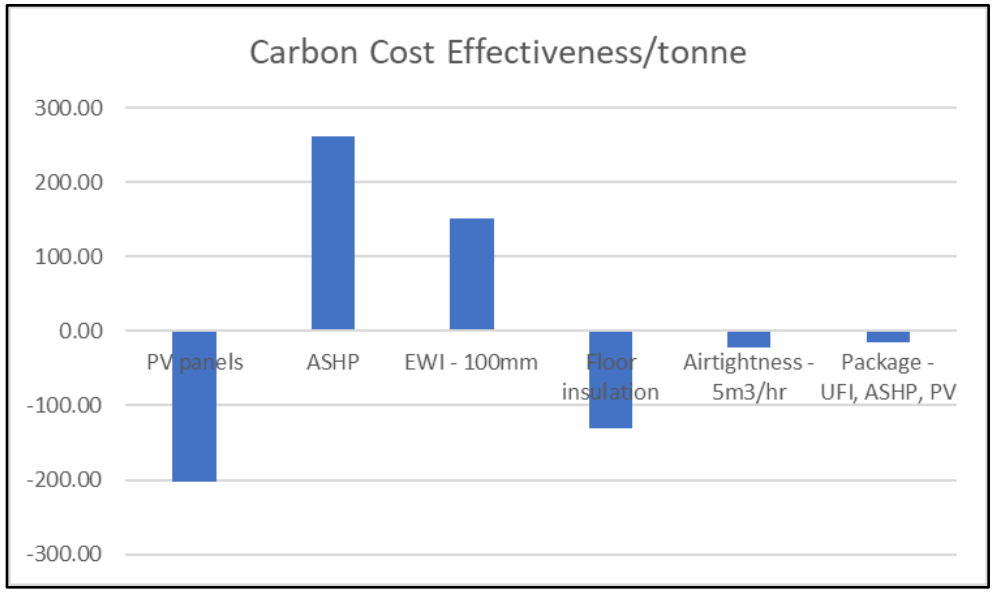
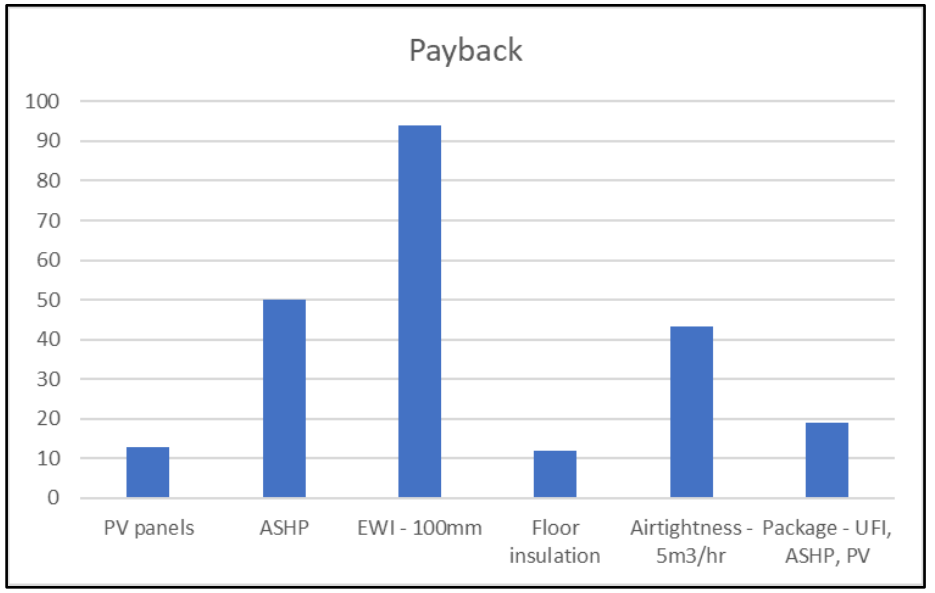
Benchmarks
- kWh
- Fuel costs
- kg CO_2
- Energy Efficiency rating

Evaluation factors
- Capital expenditure
- Life expectancy
- Payback
- Carbon Cost Effectiveness







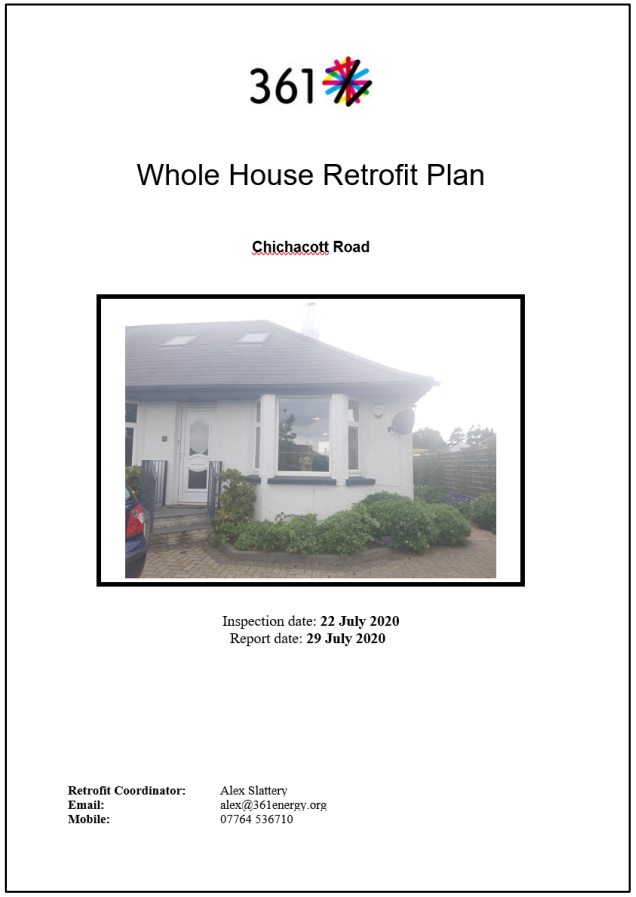
Whole House Retrofit Plan

Whole House Retrofit Plan

- Client Requirements and Expected Outcomes
- About Your Property
  - Building Construction
  - Current Energy Use
  - Occupancy
  - Building Constraints
  - Defects
- Current Energy Performance
- Existing and Potential Energy Efficiency Measures
- Improvement Options Evaluation
  - Potential Energy Efficiency Measures
  - Recommended Measures
  - Expected Post Retrofit Energy Performance
- Design Strategies
  - Ventilation
  - Interaction between measures
  - Overheating Risk Assessment
  - Planning and Regulatory Considerations
- Current funding opportunities
- Next Steps

Recommended measures

- ASHP
- Solar PV
- Underfloor Insulation
- Underfloor heating
- Draughtproofing



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Whole House Retrofit Plan

Chichacott Road

Inspection date: **22 July 2020**
Report date: **29 July 2020**

Retrofit Coordinator: Alex Slattery
Email: alex@361energy.org
Mobile: 07764 536710

Retrofit Design

Retrofit Design

Your chosen system

Air source heat pump

Estimated payments

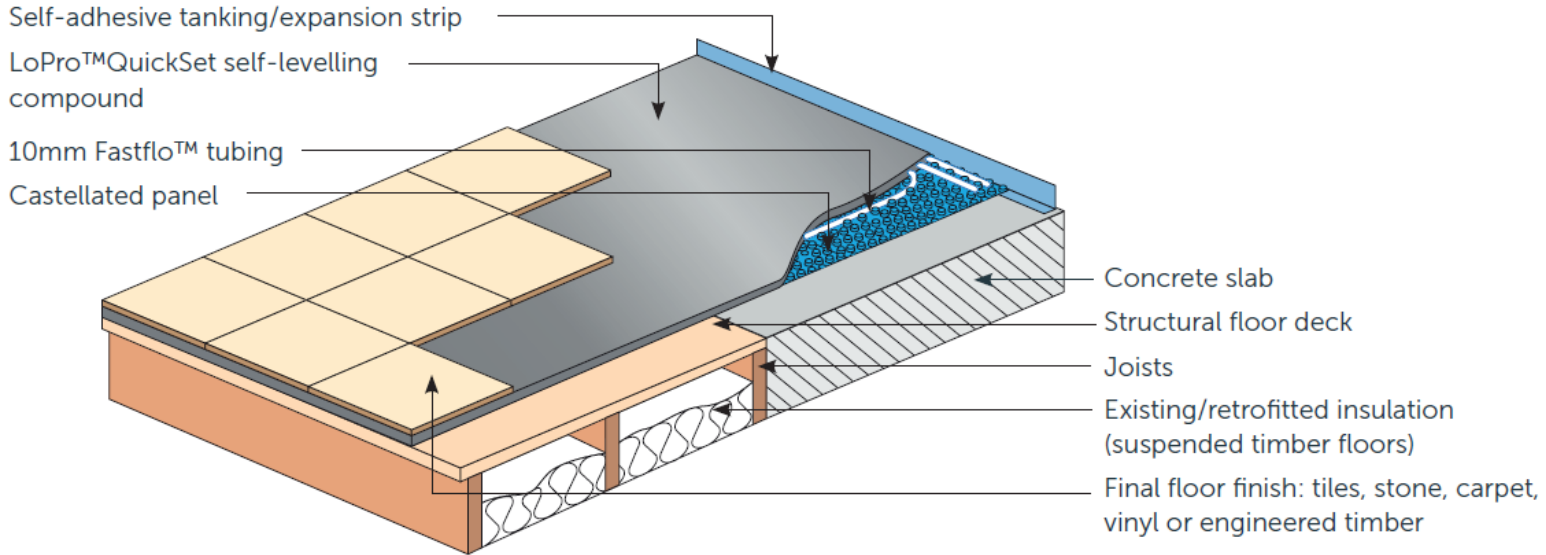
Payment period	Estimated payment (£)
Quarterly payment	£275 per quarter
Annual payment	£1,100
Payment over 7 years	£7,700
RHI Tariff used	10.85 pence/kWh

Tariff Information

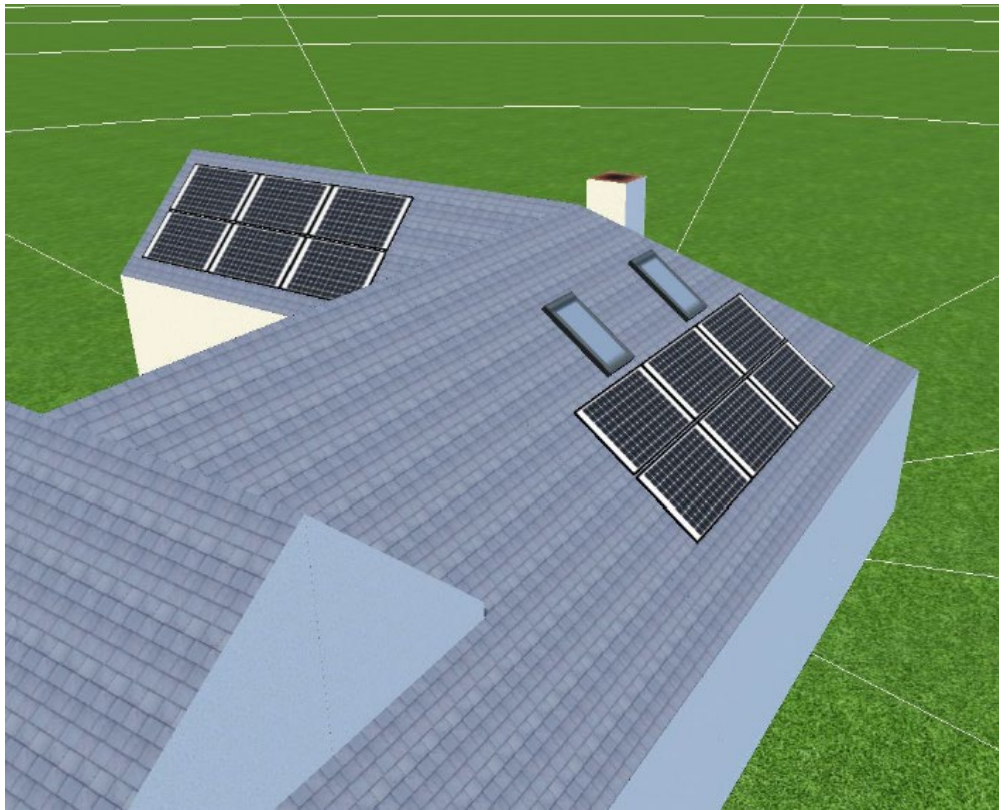
The tariff shown is valid for applications received before **01 July 2020**. The tariffs offered to new Domestic RHI applicants are reviewed quarterly and can be reduced by 10% to 20% should estimated spend on the Domestic RHI reach certain expenditure thresholds. Once you have joined the scheme you will remain on the same tariff rate which will increase each year in line with the Consumer Prices Index. Quarterly announcements are published on the DECC section of the GOV.UK website.

The information you have told us, taken from your EPC

Heat demand	Existing dwelling	Impact of loft insulation	Impact of cavity wall insulation	Impact of solid wall insulation
Space heating (kWh per year)	11,345 kWh	N/A	N/A	N/A
Water heating (kWh per year)	2,825 kWh			



- ASHP
- Solar PV
- Underfloor heating



Procurement of Installers

Installation

- Part funded and self-financed
  - Green Homes Grant
- Relevant experience
  - Technical Supervision

- Current Options
  - Boiler Upgrade Scheme
  - Home Upgrade Grant
  - Self-financing

TRUSTMARK
Government Endorsed Quality

Installation

- Health and Safety (CDM 2015)
- Buildings insurance
- Contractor insurance
- Disruption
- Building Control

Installation

Installation

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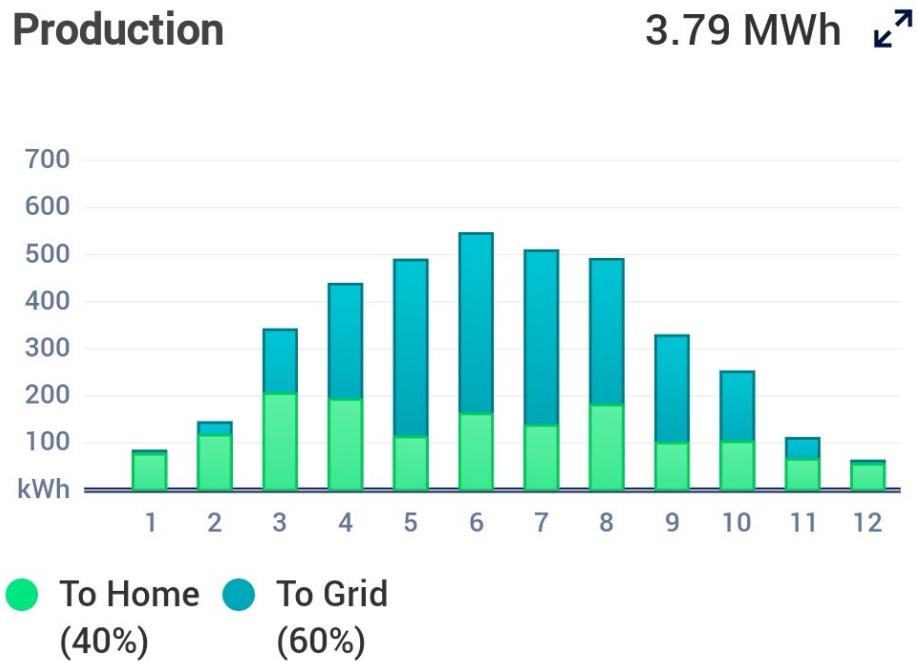
Our installation -fabric

Our installation – Solar PV

Installation

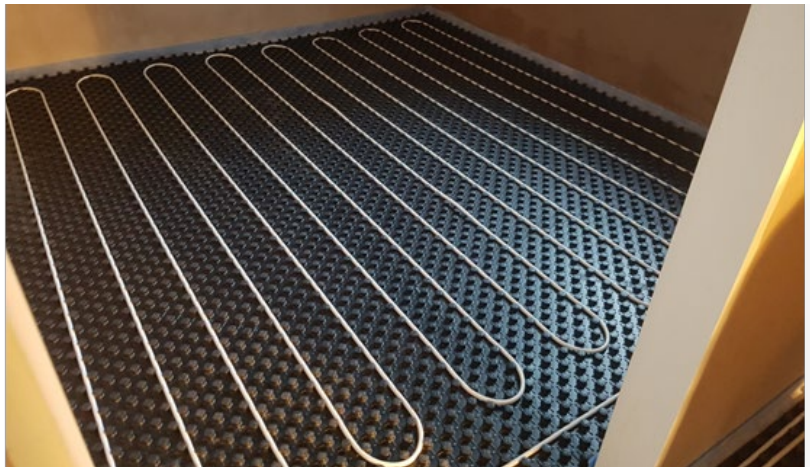


Installed capacity – 4.32kW
Cost of installation - £5460

Our installation – Heating and hot water

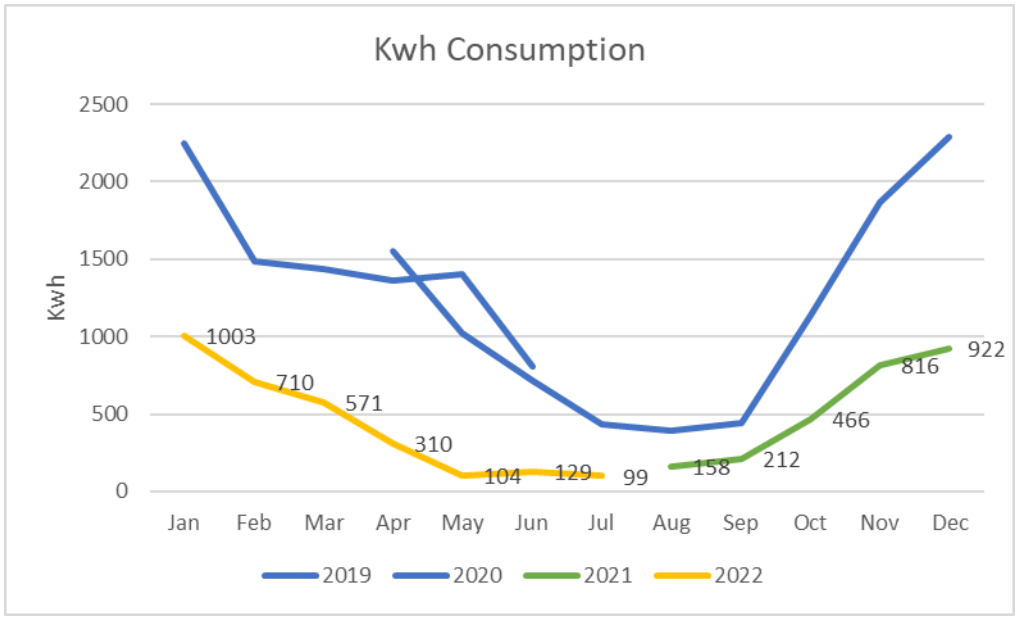
Installation

Heat pump - £10,232
Underfloor heating - £7313 supply only

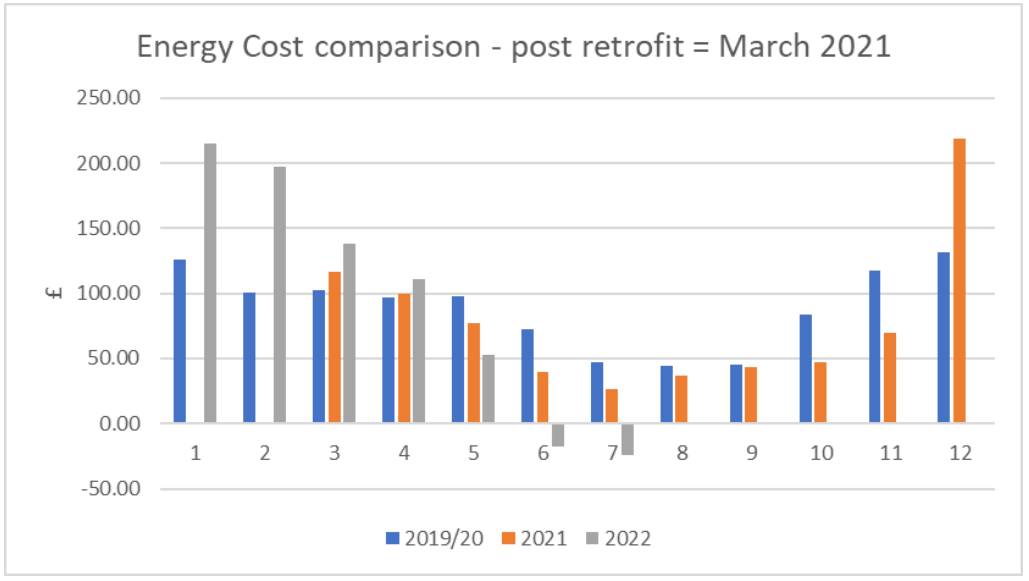


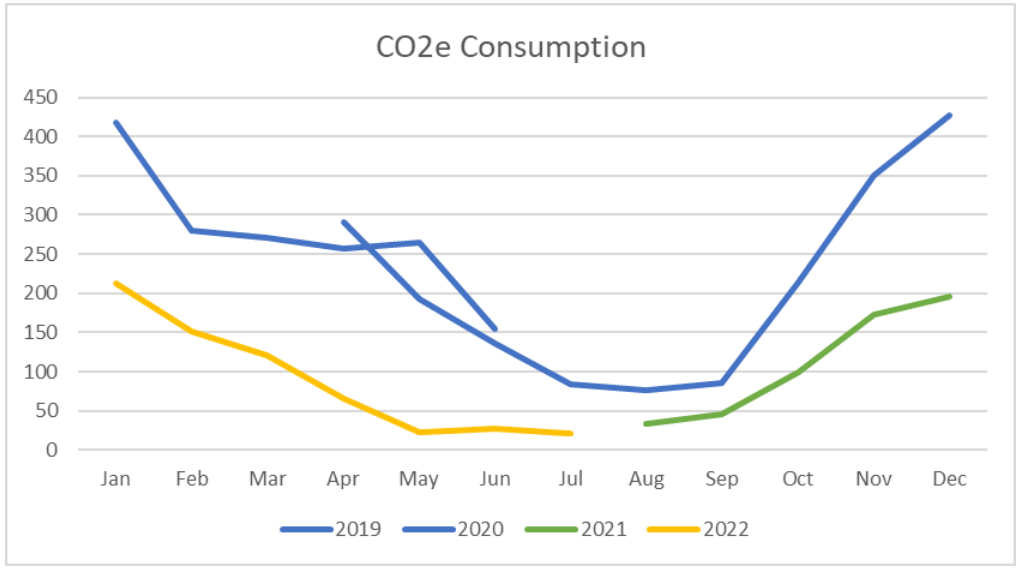
Project evaluation

Evaluation



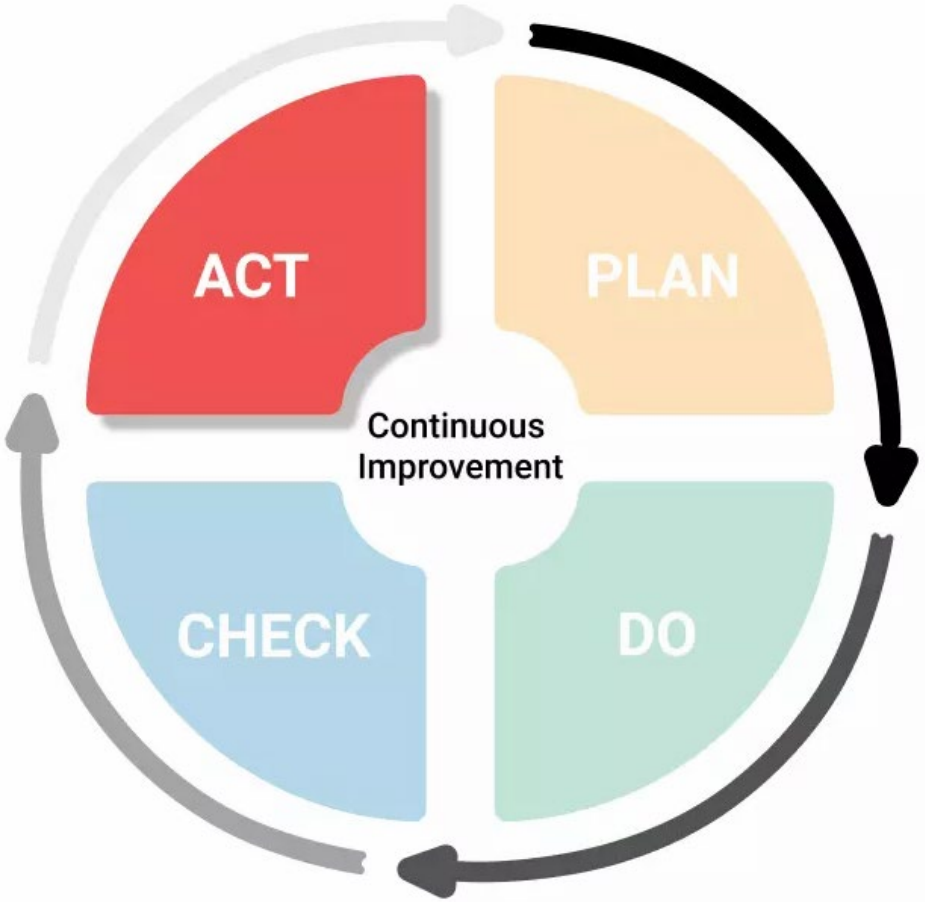
- Intended outcomes
- Human satisfaction
- Unintended consequences





What further changes did we make?

- Electric vehicle and home charging point added
- More retrofit
  - Add more solar panels on gable end wall?
  - Increase air tightness upstairs
  - Consider further insulation to external walls
- Better control
  - Reduce temperature of upstairs UFH, supplement with point of use fan heaters?
  - Towel rails in bathroom
  - Curtain in lounge? Window and stairwell
- Behavioural
  - Amend standard daily routine
  - ‘Reduce’ house size in winter
  - Shutting doors
  - Blankets
  - Dehumidification
- Financial
  - 2 rate tariff



Now it’s your turn!

We offer a service for households eligible for grant funding and one for those who are able to pay

Initial client consultation

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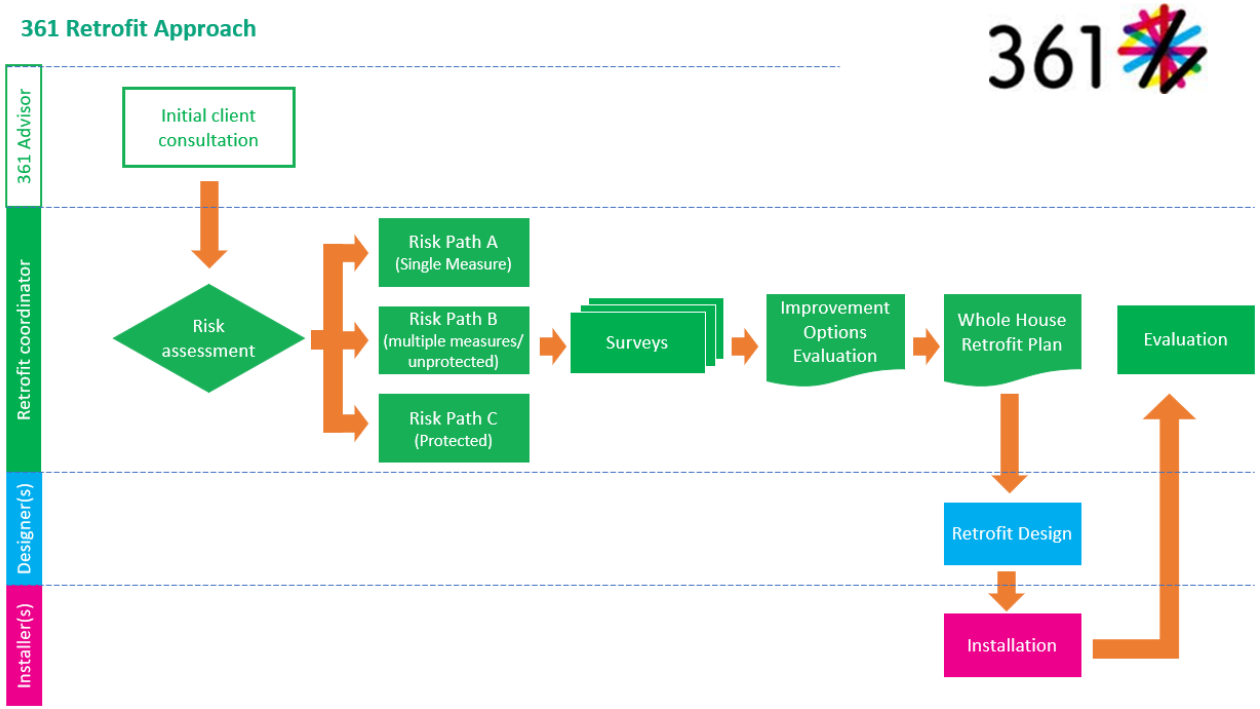

HOME UPGRADE GRANT 2 (HUG2)

ENERGY SAVING DEVON

- Off-gas
- Low income (below £31,000)
- An Energy Performance Certificate (EPC) of D,E,F or G

CONNECTED FOR WARMTH

Energy Company Obligation (ECO)

Retrofit Service

361 Energy employ Trustmark accredited Retrofit Coordinators and Assessors to ensure delivery of a successful retrofit project.

Our service includes

- An **Initial Client Consultation** to provide retrofit advice and discuss your requirements and expected outcomes.
- A **Retrofit Risk Assessment** in accordance with current standards to ensure suitably qualified personnel are used throughout the whole retrofit process
- A whole house **Retrofit Assessment** including surveys of your property's construction, condition, constraints, occupancy, building services, and ventilation.
- A written **Improvement Options Evaluation** report highlighting the recommended retrofit options for discussion.
- A **Whole House Retrofit Plan** which will provide you with a phased and costed installation plan and design strategy.
- If required, we can also coordinate with your appointed **Designer** and **Installer** to ensure the plan is implemented correctly.

For more information on our retrofit service please make an enquiry via our webpage or if you prefer email info@361energy.org or call 01271 599361