



Department for  
Business, Energy  
& Industrial Strategy

# Appendix – Retrofit Demonstrator Programme: Project-level and Overarching Theories of Change

BEIS Research Paper Number 2021/55

October 2021

## Project level Theories of Change (ToCs)

For the five projects still operating, the project-level ToC – in terms of intended steps and assumptions - has remained mostly constant across the programme; the one aspect of the original ToC that has ceased to be a core part of the scheme is the development of a project finance offer.

The ToC recognises the key assumptions around customers being motivated and able to engage, the website providing a route for customer journey progression, the benefits that can arise from local advocacy, and the proposition being attractive to some supply chain. In addition, many of the intended early steps of the ToC – service design, customer recruitment and progress, and coordinator recruitment – have been realised.

The ToC also accounts for the issues described in this chapter, reflecting that the later intended stages of the customer journey, particularly progression to retrofit and outcomes from that, have not been sufficiently evidenced to date. The ToC also reflects that a number of intended steps for supply chain recruitment remain unproven.

The assessment reflects that these assumptions and steps have not been proven / realised as yet; it allows for the fact that these could still be realised, albeit outside the intended timescales, as the ToC reflects the scheme within the programme funding period.

For the Homeworks project, whilst the ToC recognises that some early intended scheme design and development stages were realised, those around the customer journey and supply chain engagement were not, and many of the assumptions underpinning the scheme are unproven or disproven.

# Overarching Theory of Change (ToC)

As well as per project theories, evidence across the evaluation has been used to create and update an overarching Theory of Change for the Demonstrator Programme. The structure of this overarching ToC – in particular the rationale underpinning it - has remained largely unchanged since the outset; the only significant adjustment, acknowledged in the diagram, is that the development of a finance offer has not been a priority for projects, despite it initially forming part of some original project offers / customer journeys.

## Customers

For the intended stages of the ToC focused upon customers, across at least five of the individual projects there has been clear evidence of successful customer engagement and generally good customer satisfaction with the services provided. There has also been some customer progression to the later stages of the process, with some retrofit activity (though not all of it 'whole-house') taking place. However, partly due to the limited numbers, and partly the timing<sup>1</sup>, of retrofit, as of March 2021 there was little to no robust evidence of:

- Post-works benefits being realised by customers (energy savings, bill savings, comfort gains etc.); even for the completed retrofit projects, it has generally been too soon for such outcomes to be properly measured.
- Post-works project stages and their anticipated effects (e.g. QA building customer trust and satisfaction).

In terms of the customer-related assumptions underpinning the ToC, many have been at least partially proven. The services offered by the pilots seem to have appealed to significant numbers of customers – albeit relatively few have progressed to action - and effective feedback mechanisms have been operating. There has also been some evidence that despite the pandemic, the ability of many able-to-pay customers to invest in works has been relatively unaffected. The assumptions around correct installation and its resultant benefits remain unproven.

## Supply chain

For the intended stages of the ToC focused upon the supply chain (in particular installers), there has been some successful engagement (albeit not uniform across sub-sectors) and supplier willingness to engage in training has been particularly strong.

However, as for customers, it is the later stages and assumptions around retrofit works happening, and the knock-on effects of that on supplier training and engagement, that have yet

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<sup>1</sup> Most retrofit has been delivered in Year 3, towards the end of the evaluation and funding period.

to be realised. In particular, the benefits to suppliers arising from collaboration and coordination (e.g. economies of scale) have not yet been realised.

## Inputs and outcomes

The intended inputs to the programme and projects – the BEIS funding but also projects sharing insights and ideas – have been largely realised, albeit the level of funding was reduced in Year 2.

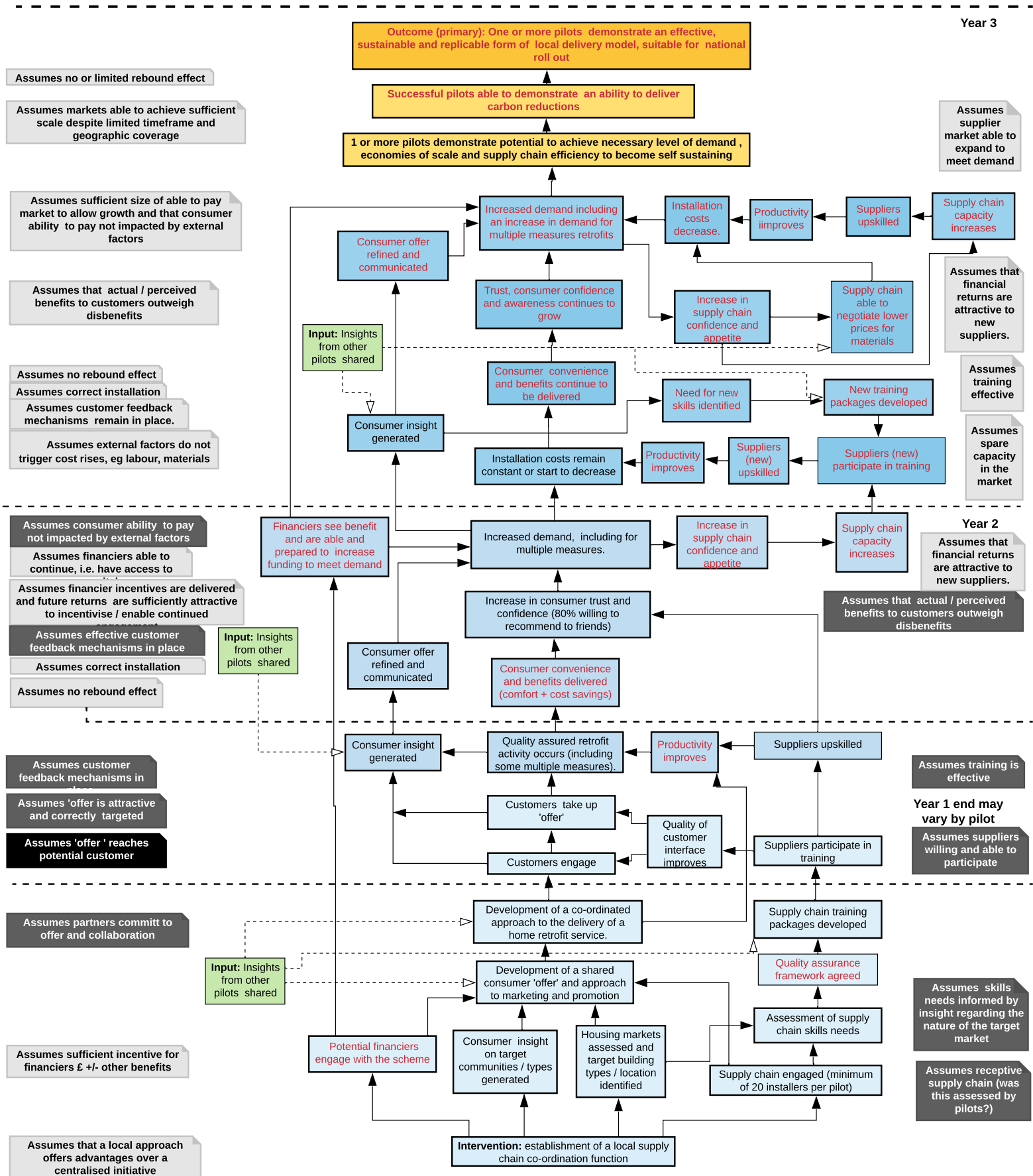
And despite the limited evidence of the later stages and assumptions in the ToC being realised, it is still fair to conclude that five projects demonstrate the potential to achieve the necessary level of demand, economies of scale and supply chain efficiency to become self-sustaining.

However, reflecting the limited evidence surrounding retrofit activity and its outcomes, it is not possible to say, to date, that the projects have clearly demonstrated the ability to deliver significant carbon reductions. Nor, moving to the primary goal of the programme, is it possible to state that any of the projects have – as yet - demonstrated an effective, sustainable and replicable form of local delivery model, suitable for national rollout.

This last point should be emphasised. Whilst they have been operating in some unhelpful conditions (described throughout the report), there have also been a number of potentially favourable ones which raise questions regarding project sustainability and replicability:

- Targeting latent demand of an engaged ‘early adopter’ market – what is the size of this group to sustain the existing projects (considering thousands of initial enquiries have resulted in less than one hundred retrofit projects) and how do projects move beyond this to tackle the mass market?
- Services subsidised by the grant, and continuing to be cross-subsidised in many cases by partners’ other activities – would this be feasible for less established organisations with new projects?
- Mainly economically strong, urban areas where there is a good level of supply chain, and householder and supply chain appetite to engage – would the same outcomes have been realised in smaller towns with a smaller supply chain and less strong economies?

# Theory of Change for Local Supply Chain Demonstrators Phase 3 (V1.0) 14.4.2021



**KEY**

Assumption proven / supported
Assumption partially proven / supported
Assumption unproven (insufficient information to make a judgement)
Assumption unsupported

**Inputs:** Five million pounds, evenly split between 5 pilots, over a period of 3 years.

**Rationale:** The Clean Growth Strategy includes an aspiration for as many homes as possible to be EPC Band C by 2035. However, current levels of housing retrofit activity are low and mostly associated with Government subsidy scheme. The 'Building a Market for Energy Efficiency Call for Evidence' identified a number of barriers, both demand and supply side, to market growth and, to address the latter, suggested that Government consider funding third-party organisations as a means of improving co-ordination within, and ultimately growing, local supply chains dealing with the 'able to pay' (non-subsidised) domestic market. The Local Supply Chain Demonstrator Programme is intended to pilot this approach through different organisations, in different operational environment and through locally designed interventions.

**KEY**

'Gold' boxes describe the interventions target outcomes. Text in **black** indicates outcomes that have demonstrated in practice. Text in **red** indicates outcomes that have NOT yet been confirmed.

Blue boxes (all shades of blue) illustrate the logic chain / causal path. Text in **black** indicates those elements of the programme theory that have demonstrated in practice. Text in **red** indicates those parts of the programme theory that have NOT yet been confirmed.

# Theory of Change: Ecofurb (London) supply chain pilot v0.1 (phase 3)

## 13.4.21

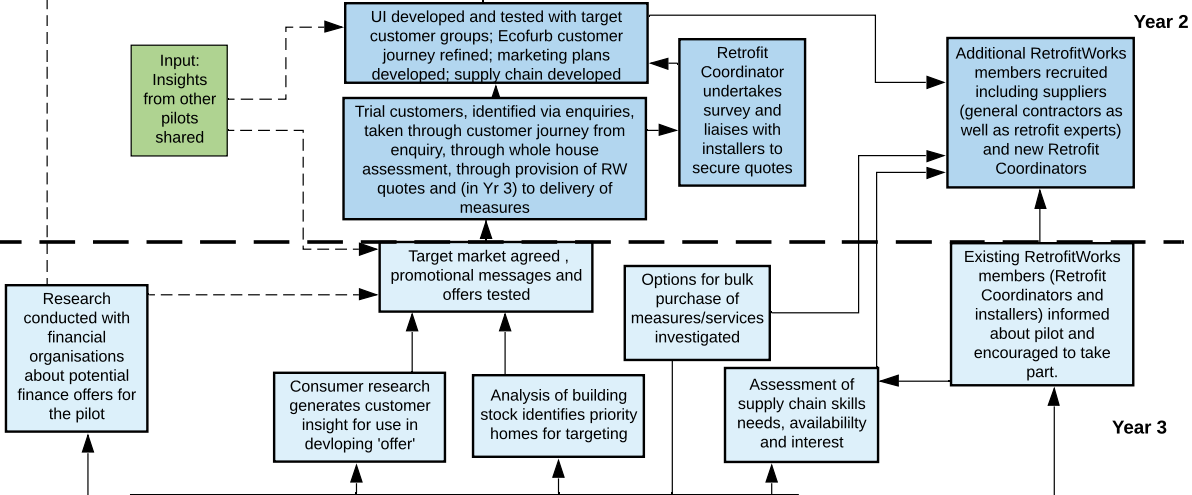
**ASSUMPTIONS**

- Assumes no or limited rebound effect
- Assumes markets able to achieve sufficient scale despite limited timeframe and geographic coverage
- Assumes sufficient size of able to pay market to allow growth
- Assumes that actual / perceived benefits to customers outweigh disbenefits
- Assumes scheme can become self-sustaining without subsidies
- Assumes supplier market able to expand to meet demand
- Assumes customer monitoring and feedback mechanisms remain in place.
- Assumes UI and UX able to develop sufficiently to enable whole house retrofit to be offered
- Assumes non-scale factors do not trigger cost rises, eg labour, materials
- Assumes that financial returns are attractive to new suppliers and that new retrofit coordinators coming in at this stage will be prepared to cover their own training costs
- Assumes some installations would not have happened in the absence of the pilot
- Assumes consumer ability to pay not impacted by external factors
- Assumes correct installation
- Assumes that customers decide to progress retrofit measures (within or outside Ecofurb project)
- Assumes that actual / perceived benefits to customers outweigh disbenefits
- Assumes supplier training, if it takes place, is effective
- Assumes customers motivated and able to engage
- Assumes increased demand and direct marketing attract more RetrofitWorks members

- Assumes increased demand necessitates need for more RetrofitWorks members
- Assumes new RetrofitWorks member installers don't need technical training
- Assumes customers are engaged by website to proceed to next step

- Assumes incentive for financiers £ +/- other benefits
- Assumes Retrofit Coordinator role is paid for out of the Ecofurb Plan and Spec cost to customer and installation fee to contractor.
- Assumes sufficient receptive suppliers available for early stages of pilot
- Assumes that a local approach offers advantages over a centralised initiative
- Assumes funding sufficient to cover costs in all Phases, in combination with funding contributions from Parity Projects

- KEY**
- Assumption proven/supported
  - Assumption partially proven/supported
  - Assumption unproven (insufficient evidence to make a judgement)
  - Assumption unsupported



**Inputs:** BEIS Funding Yr 1 £190k, Yr2 £240k, Yr3 £370k. Plus knowledge sharing with other pilots. Use of existing RetrofitWorks delivery model and software and Retrofit Coordinator training package.

**Intervention:** development of existing local supply chain co-ordination function, moving from subsidised to non-subsidised retrofit market.

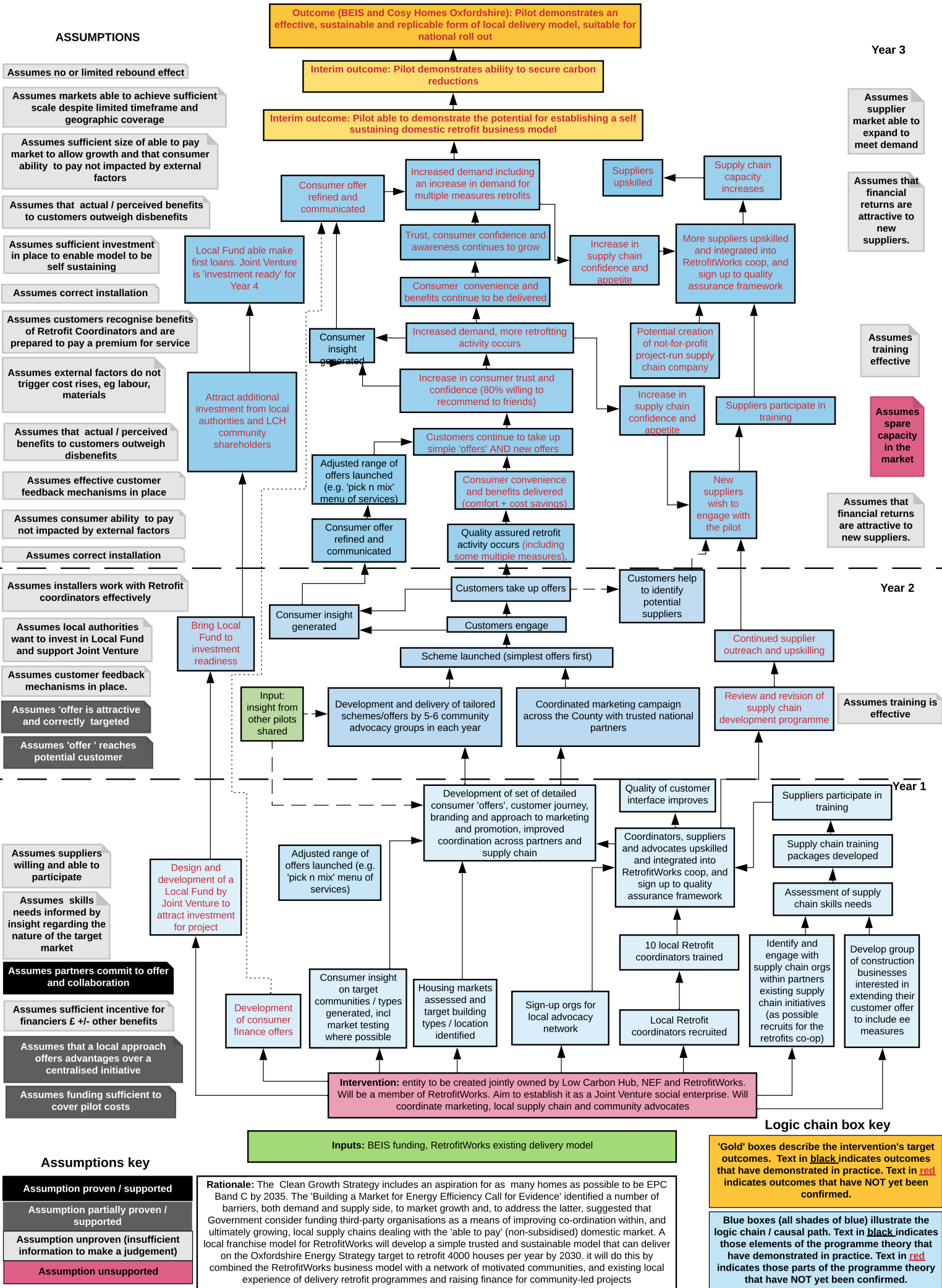
**KEY**

Blue boxes (all shades of blue) illustrate the logic chain / causal path.

Text in **black** indicates those elements of the programme theory that have been demonstrated in practice. Text in **red** indicates those parts of the programme theory that have NOT yet been confirmed.

**Rationale:** The Clean Growth Strategy includes an aspiration for as many homes as possible to be EPC Band C by 2035. There is a recognition that, for a variety of reasons, domestic energy efficiency retrofit activity is low outside of Government funded schemes. In 'Building a Market for Energy Efficiency Call for Evidence' it was suggested that Government consider funding third-party organisations as a means of providing support for local supply chain growth and coordination to effect greater uptake amongst the 'able to pay' market. The Retrofit Together pilot will build the whole house retrofit market in London through building on the existing RetrofitWorks model to offer tailored energy efficiency packages to property owners, with targeted marketing and possible bulk discounts, delivered by a quality assured local supply chain.

# Theory of Change: Cosy Homes Oxfordshire supply chain pilot 21.4.21



# Theory of Change: Warmer Sussex supply chain pilot v1.0

21.4.21

**Outcome (BEIS and Warmer Sussex): Pilot demonstrates an effective, sustainable and replicable form of local delivery model, suitable for national roll out**

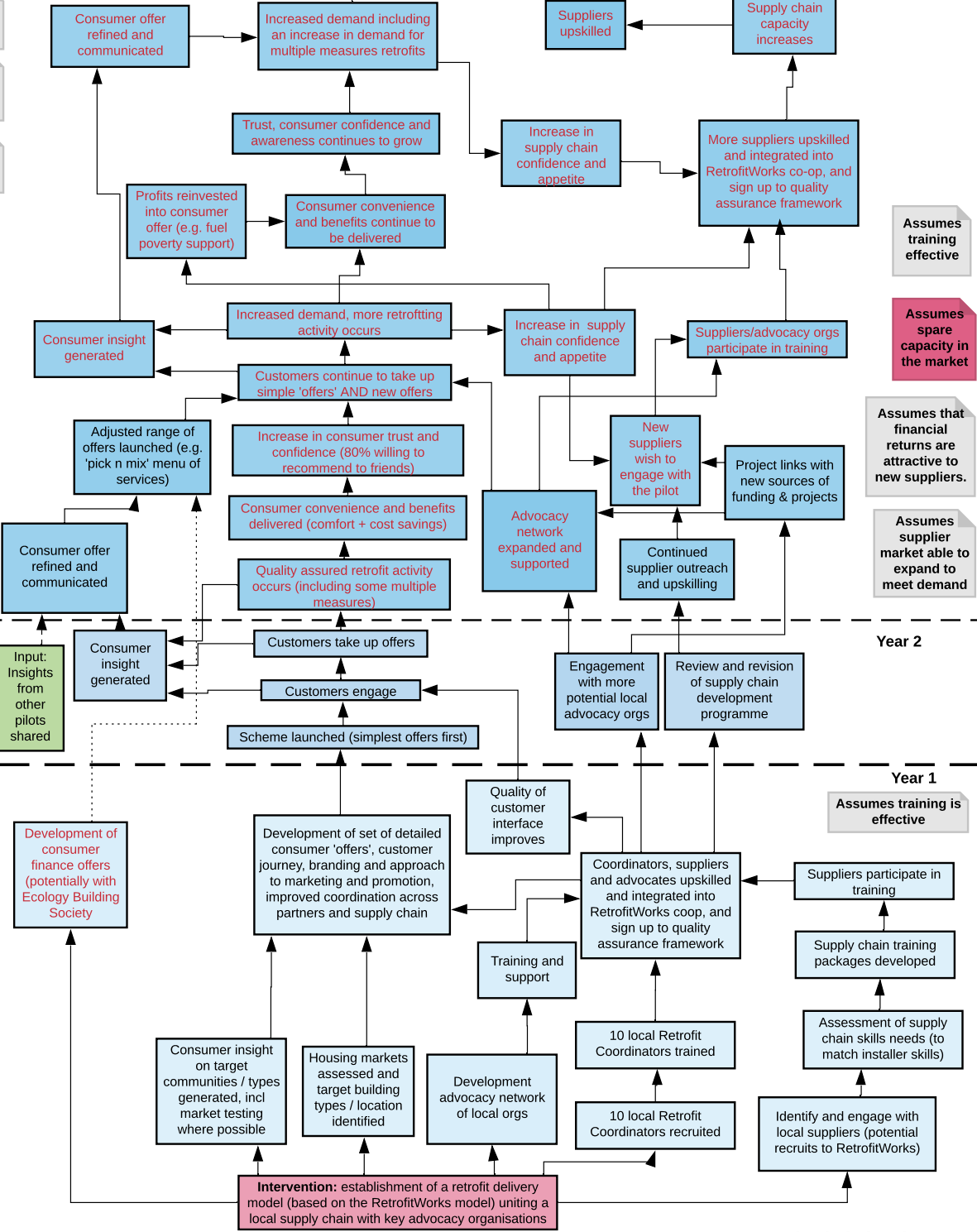
**Interim outcome: Pilot demonstrates ability to secure carbon reductions**

**Interim outcome: Pilot able to demonstrate the potential for establishing a self sustaining domestic retrofit business model**

Year 3

**ASSUMPTIONS**

- Assumes no or limited rebound effect
- Assumes markets able to achieve sufficient scale despite limited timeframe and geographic coverage
- Assumes sufficient size of able to pay market to allow growth and that consumer ability to pay not impacted by external factors
- Assumes that actual / perceived benefits to customers outweigh disbenefits
- Assumes correct installation
- Assumes external factors do not trigger cost rises, eg labour, materials
- Assumes customers recognise benefits of Retrofit Coordinators and are prepared to pay a premium for service
- Assumes effective customer feedback mechanisms in place
- Assumes consumer ability to pay not impacted by external factors
- Assumes advocacy orgs route/approach is successful
- Assumes that actual / perceived benefits to customers outweigh disbenefits
- Assumes installers work with Retrofit coordinators effectively
- Assumes correct installation
- Assumes customer feedback mechanisms in place.
- Assumes 'offer' reaches potential customer
- Assumes 'offer is attractive and correctly targeted
- Assumes sufficient incentive for financiers £ +/- other benefits
- Assumes suppliers find RetrofitWorks offer attractive
- Assumes suppliers willing and able to participate
- Assumes skills needs informed by insight regarding the nature of the target market
- Assumes partners commit to offer and collaboration
- Assumes that a local approach offers advantages over a centralised initiative
- Assumes funding sufficient to cover pilot costs



**Inputs:** BEIS Yr1 £186k, Yr2 £240k, Yr3 tbc). RetrofitWorks existing delivery model. Citizens Advice energy advice network. In-kind resources from Hastings BC (from related projects).

**Rationale:** The Clean Growth Strategy includes an aspiration for as many homes as possible to be EPC Band C by 2035. The 'Building a Market for Energy Efficiency Call for Evidence' identified a number of barriers, both demand and supply side, to market growth and, to address the latter, suggested that Government consider funding third-party organisations as a means of improving co-ordination within, and ultimately growing, local supply chains dealing with the 'able to pay' (non-subsidised) domestic market. Warmer Sussex's retrofit delivery model will unite suppliers and key advocacy organisations under one umbrella. The aim is to unveil quick-to-launch retrofit offers than can generate a profit, to lay the ground for a longer-term approach that will meet local warmer homes energy targets. It will be based around RetrofitWorks, a 'realistic commercial model' that will support a technically expert, quality-assured and nationally scalable delivery model.

**'Gold' boxes describe the intervention's target outcomes. Text in black indicates outcomes that have demonstrated in practice. Text in red indicates outcomes that have NOT yet been confirmed.**

**Blue boxes (all shades of blue) illustrate the logic chain / causal path. Text in black indicates those elements of the programme theory that have demonstrated in practice. Text in red indicates those parts of the programme theory that have NOT yet been confirmed.**

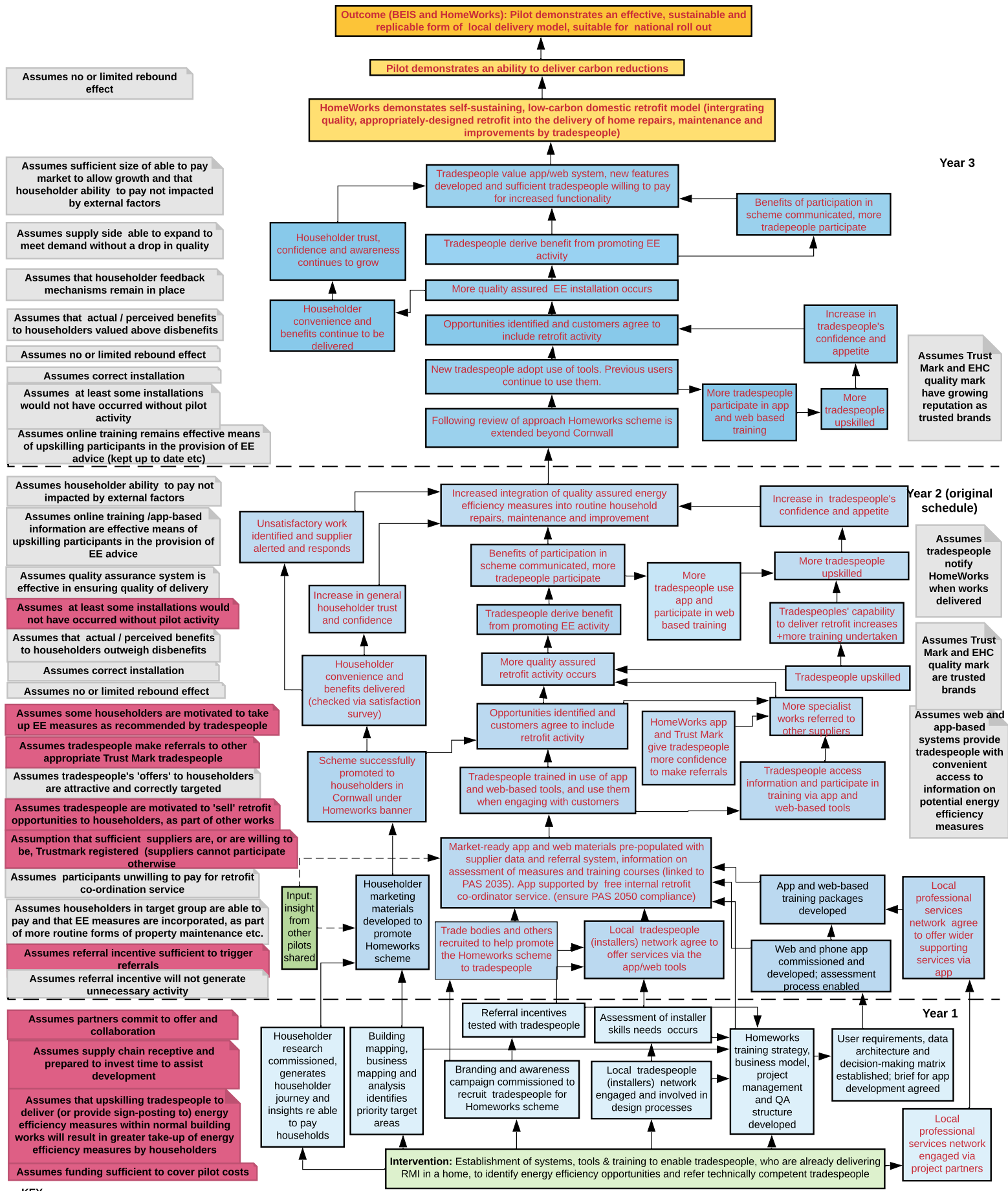
**Assumptions key**

Assumption proven / supported
Assumption partially proven / supported
Assumption unproven (insufficient information to make a judgement)
Assumption unsupported

**Logic chain box key**



# Theory of Change: HomeWorks (Cornwall) supply chain pilot (Phase 3 draft V1.0) 12.04.21



**KEY**

Assumption proven / supported
Assumption partially proven / supported
Assumption unproven (insufficient information to make a judgement)
Assumption unsupported

**KEY**

**Rationale:** The HomeWorks Demonstrator pilot aims to tackle supply chain fragmentation through the development of web tools and a mobile phone 'app' which will enable general construction contractors to identify energy efficiency measures to householder clients during other forms of building maintenance or refurbishment work, providing the information they need to refer their customers with confidence to technically competent tradespeople, for appropriate EE retrofit measures.

**'Gold' boxes describe the interventions target outcomes. Text in black indicates outcomes that have demonstrated in practice. Text in red indicates outcomes that have NOT yet been confirmed.**

**Blue boxes (all shades of blue) illustrate the logic chain / causal path. Text in black indicates those elements of the programme theory that have demonstrated in practice. Text in red indicates those parts of the programme theory that have NOT yet been confirmed.**

# Theory of Change: Futureproof (South West) local supply chain pilot. Phase 3b (V2.3) 21.04.21

By end of Year 3

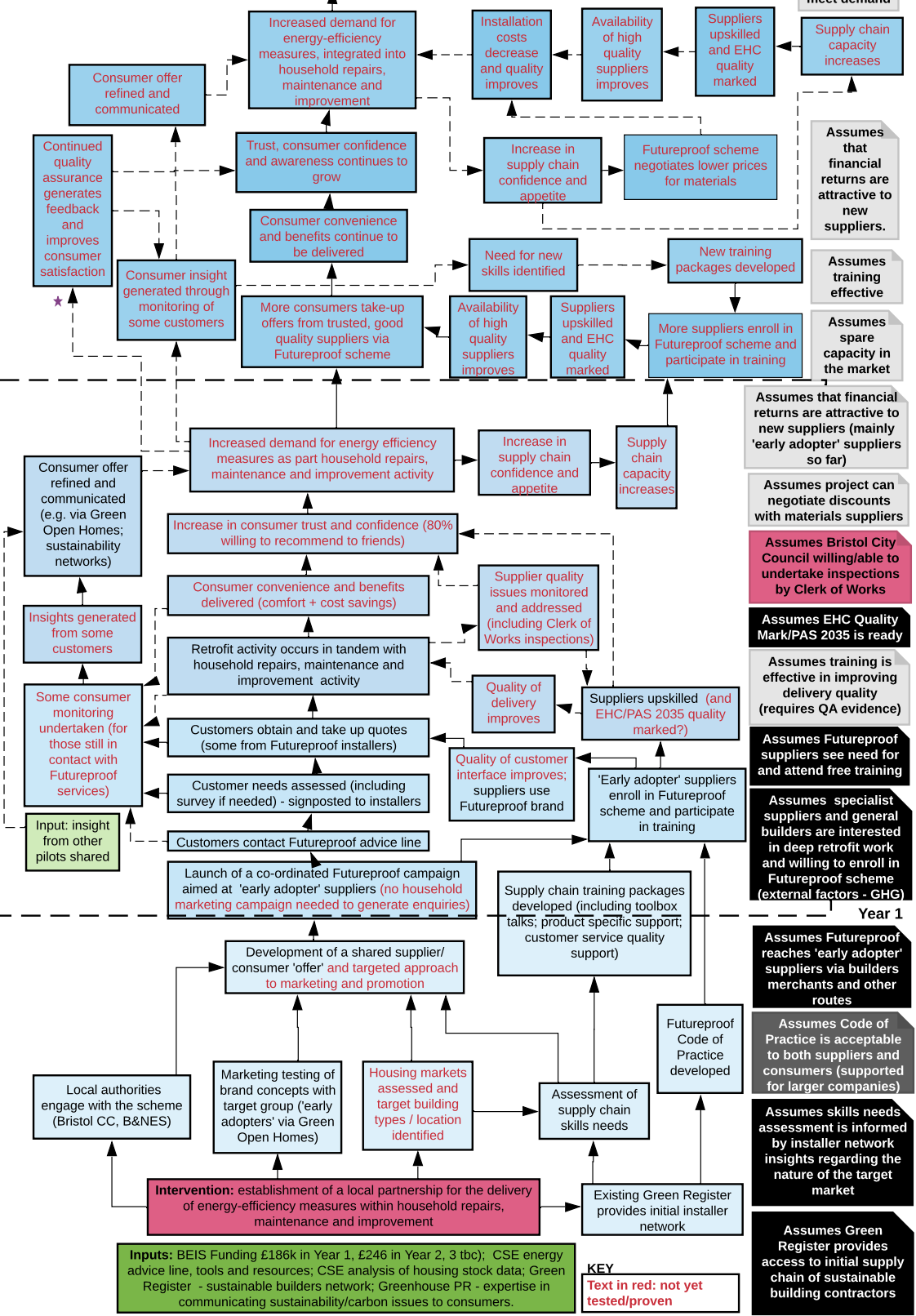
## ASSUMPTIONS

- Assumes markets able to achieve sufficient scale despite limited timeframe and geographic coverage
- Assumes Futureproof business model is viable and sustainable (using combination of installer service fees and householder service fees, as appropriate)
- Assumes sufficient size of able to pay market to allow growth and that consumer ability to pay/install not impacted by external factors
- Assumes that actual / perceived benefits of measures outweigh disbenefits to consumers
- Assumes that quality issues identified through quality assurance can be addressed through training
- Assumes some rebound effect (mix of carbon savings and comfort taking/increased spend on other goods & services)
- Assumes correct installation (QA system works)
- Assumes customer feedback mechanisms remain in place (not yet fully in place)
- Assumes external factors do not trigger cost rises, eg labour, materials (GHG impact)
- Assumes planning permission for measures can be obtained where necessary
- Assumes that perceived benefit of using Futureproof justifies any consumer fees (untested)
- Assumes that Futureproof continues to be perceived as a trusted brand
- Assumes consumer ability to pay/install not impacted by external factors (Covid impact)
- Assumes satisfied Futureproof customers willing to participate in Green Open Homes, to market benefits to potential customers
- Assumes effective customer feedback mechanisms in place (not yet fully in place)
- Assumes correct installation (QA system works)
- Assumes that actual / perceived benefits of measures outweigh disbenefits to consumers
- Assumes some rebound effect (mix of carbon savings and comfort taking /increased spend)
- Assumes that increased access to trusted, quality suppliers increases take-up of EE measures by 'early adopters' within household repairs, maintenance, improvements (small numbers)
- Assumes that 'early adopters' develop trust in Futureproof brand and some customers choose to use retrofit coordinator/QA service (small numbers)
- Assumes that some customers use suppliers willing to engage with Futureproof and accept training
- Assumes scheme has capacity to assess needs (and surveys can be funded if needed) (small numbers)
- Assumes 'offer' is attractive and correctly targeted to 'early adopters' (partial - rise in enquiries from fuel poor because of Covid-19)
- Assumes partners commit to offer and to collaboration on marketing and co-ordination (no BCC Clerk of Works)
- Assumes Futureproof campaign can be effectively targeted at 'decision points' for home repairs, improvements and maintenance (no targeting)
- Assumes 'early adopters' are owner-occupiers that are motivated and able to incorporate energy-efficiency measures into household works, but held back by lack of trusted supplier (in some cases)
- Assumes 'early adopter' households are able to pay for energy efficiency measures within home repairs, maintenance and improvements (small numbers)
- Partnership able to access full range of necessary skills and expertise (not BCC Clerk of Works)
- Assumes that a bottom up approach more effective than top down
- Assumes funding sufficient to cover initial pilot costs, until Futureproof fee income becomes sustainable

**Outcome (BEIS and Futureproof): Pilot demonstrates an effective, sustainable and replicable form of local delivery model, capable of being rolled out nationally**

**Interim outcome: Pilot demonstrates ability to secure carbon reductions**

**Interim outcome: Pilot able to demonstrate the potential for establishing a self-sustaining domestic retrofit business model**



**Inputs:** BEIS Funding £186k in Year 1, £246 in Year 2, 3 tbc); CSE energy advice line, tools and resources; CSE analysis of housing stock data; Green Register - sustainable builders network; Greenhouse PR - expertise in communicating sustainability/carbon issues to consumers.

**KEY**  
Text in red: not yet tested/proven

**Rationale:** The Clean Growth Strategy includes an aspiration for as many homes as possible to be EPC Band C by 2035. However, current levels of housing retrofit activity are low and mostly associated with Government subsidy scheme. The 'Building a Market for Energy Efficiency Call for Evidence' identified a number of barriers, both demand and supply side, to market growth and, to address the latter, suggested that Government consider funding third-party organisations as a means of improving co-ordination within, and ultimately growing, local supply chains dealing with the 'able to pay' (non-subsidised) domestic market. The Local Supply Chain Demonstrator Programme is intended to pilot this approach through different organisations, in different operational environments and through locally designed interventions. The Futureproof project in South West England aims to unlock latent demand for energy efficient retrofit by helping 'early adopter' consumers (who are already motivated and able to pay) to find trusted, good quality suppliers. This is expected to demonstrate demand to suppliers, causing more suppliers to enter the market for energy efficient retrofit, making it even easier for consumers to find a trusted, good quality supplier, and creating a virtuous circle of increasing demand and supply.

KEY
Assumption proven/supported
Assumption partially proven/supported
Assumption unproven (insufficient information to make a judgement)
Assumption unsupported

# Theory of Change: People Powered Retrofit local supply chain pilot Phase 3 (V1.0) 14.4.2021

**Outcome (BEIS and Carbon Co-ops): Pilot demonstrates an effective, sustainable and replicable form of local delivery model, suitable for roll out via a national domestic retrofit programme**

**Interim outcome: Pilot demonstrates ability to secure carbon reductions**

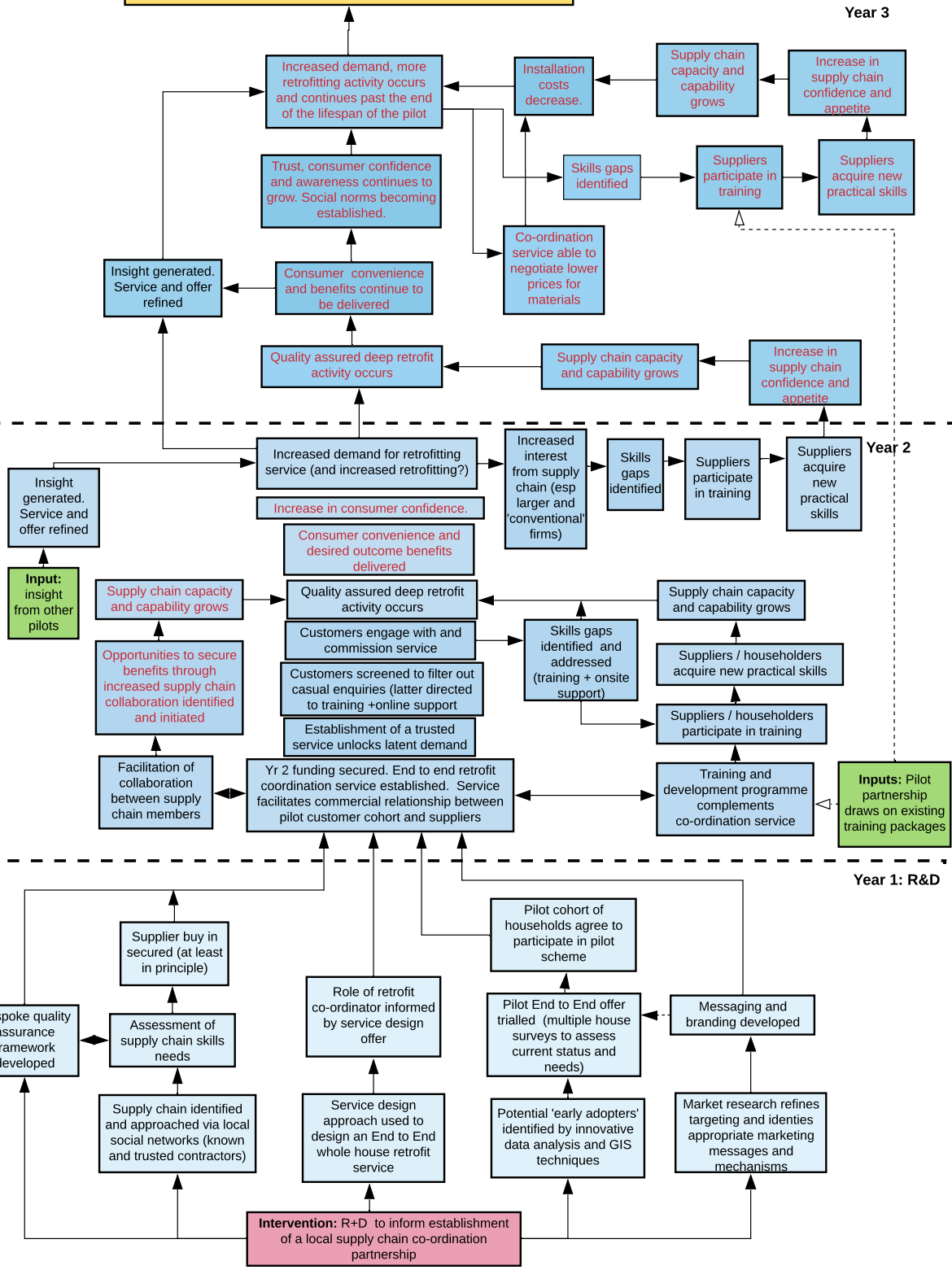
**Interim outcome: Pilot able to demonstrate the potential for establishing a self sustaining domestic retrofit business model**

- ASSUMPTIONS**
- Assumes no or limited rebound effect
  - Assumes markets able to achieve sufficient scale despite limited timeframe and geographic coverage
  - Assumes suppliers participate in training and that it is effective
  - Assumes sufficient size of able to pay market to allow growth and that consumer ability to pay not impacted by external factors
  - Assumes marketing methods effective in extending reach beyond early adopters
  - Assumes that actual / perceived benefits to customers outweigh disbenefits
  - Assumes consumer behaviour allows benefits to be achieved
  - Assumes correct installation (QA works)
  - Assumes external factors do not trigger cost rises, eg labour, materials
  - Assumes suppliers willing and able to meet demand**

- Assumes consumer ability to pay not impacted by external factors
- Assumes there is an appetite for to pay for service outside of the initial customer base
- Assumes market attractive to conventional building sector
- Assumes consumer behaviour allows benefits to be achieved
- Assumes correct installation (QA works)
- Assumes that customer perceptions of actual / perceived benefits outweigh disbenefits
- Assumes there is scope to establish and secure benefits through increased supply chain collaboration
- Assumed that customers prepared to pay for a retrofit service
- Assumed that customers are aware of service**
- Assumes demand for training and that it is effective**

- Assumes cost savings are not the only driver, customers recognise other benefits**
- Assumes marketing methods effective in engaging target market interest**
- Assumes data allows for effective market targeting**
- Assumes a targeted marketing approach is more cost effective than a general campaign**
- Assumes PAS 2035 unsuitable for small contractors**
- Assumes finance is not a major barrier for most in the able to pay market**
- Assumes partnership able to access full range of required skills and expertise
- Assumes bottom up approach more effective than top down
- Assumes funding sufficient to cover all costs required for pilot to be effective.

- KEY**
- Assumption proven / supported
  - Assumption partially proven / supported
  - Assumption unproven (insufficient information to make a judgement)
  - Assumption unsupported



**Rationale:** The Clean Growth Strategy includes an aspiration for as many homes as possible to be EPC Band C by 2035. There is a recognition that, for a variety of reasons, domestic energy efficiency retrofit activity is low outside of Government funded schemes. In 'Building a Market for Energy Efficiency Call for Evidence' it was suggested that Government consider funding third-party organisations as a means of providing support for local supply chain growth and coordination to effect greater uptake amongst the 'able to pay' market. The Local Supply Chain Demonstrator Programme is intended to pilot this approach through different organisations, in different operational environments and through locally designed interventions. The Carbon Co-op recognises the need for local level supply chain co-ordination but considers that there is also a need to promote domestic retrofit and for any associated marketing to be targeted at those who are both able to pay and predisposed to undertake retrofit activity.

**KEY**

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