



Homes fit for the Future

Retrofit Towards a Sector-wide Roadmap 2020

Erin Walsh, Director of Strategic Analysis

Connected Places Catapult



Coming together

Interviews



Workshops



Roundtables



Housing Associations

Private Estate Owners

Developers

Local Government

SME/Start-ups

Academia

Central Government

Foundation/Non-profit

Retrofit Specialists

Stakeholders

A2dominion

AECB building knowledge

AECOM

Airey Miller

Anthesis Group

Atkins

BEIS

Bow Tie Construction

BRE

C40 Cities

Catalyst

Chair of Good Homes Alliance

Construction Projects Association

Department for Business, Energy &

Industrial Strategy

Energy Systems Catapult

Energiesprong

Facilitating the Future

Flagship Group

Gapogroup

GLA

Green Alliance

Grosvenor

Hyde Housing Association Ltd

Innovate UK

Max Fordham LLP

Mnemonic Space

New London Architecture

Patrick Wilson Architects

Prewett Bizley

PRP

Pupil

Q-Bot

Resideo

SD Foundation

South Yorkshire Housing Association

Sustainable Energy Association

Telemental

The Institute of Engineering and
Technology

The Guinness Partnership

The Retrofit Academy CIC

Turner & Townsend

UK Centre for Moisture in Buildings,
University College London

UK Green Building Centre

Ventive

Waterstons

Welsh School of Architecture

Special thanks to Richard Miller, Miller Klein, Associate Director at Connected Places Catapult.



HOMES FIT FOR THE FUTURE

RETROFIT TOWARDS A SECTOR-WIDE ROADMAP 2020



Deep Retrofit at scale

A whole-house strategy that takes a property from its current state to near net-zero energy demand. It is sensible, but it is just not happening.

In this report we have looked at what needs to change to enable us to roll-out deep retrofit in volume, at speed and cost-effectively.

We have identified key changes required by both buyers and sellers to open up the market, and identified a number of projects that could begin to bridge the gap between them.

Speakers



Susannah Stearman, Connected Places Catapult



Mike Pitts, Challenge Director - Transforming Construction



Richard McWilliams, Director, Programme Advisory



Rick Hartwig, Built Environment Lead





Susannah Stearman

Economist

Connected Places Catapult

CATAPULT
Connected Places

 HOUSING
INNOVATION
PROGRAMME



HOUSES FIT FOR THE FUTURE

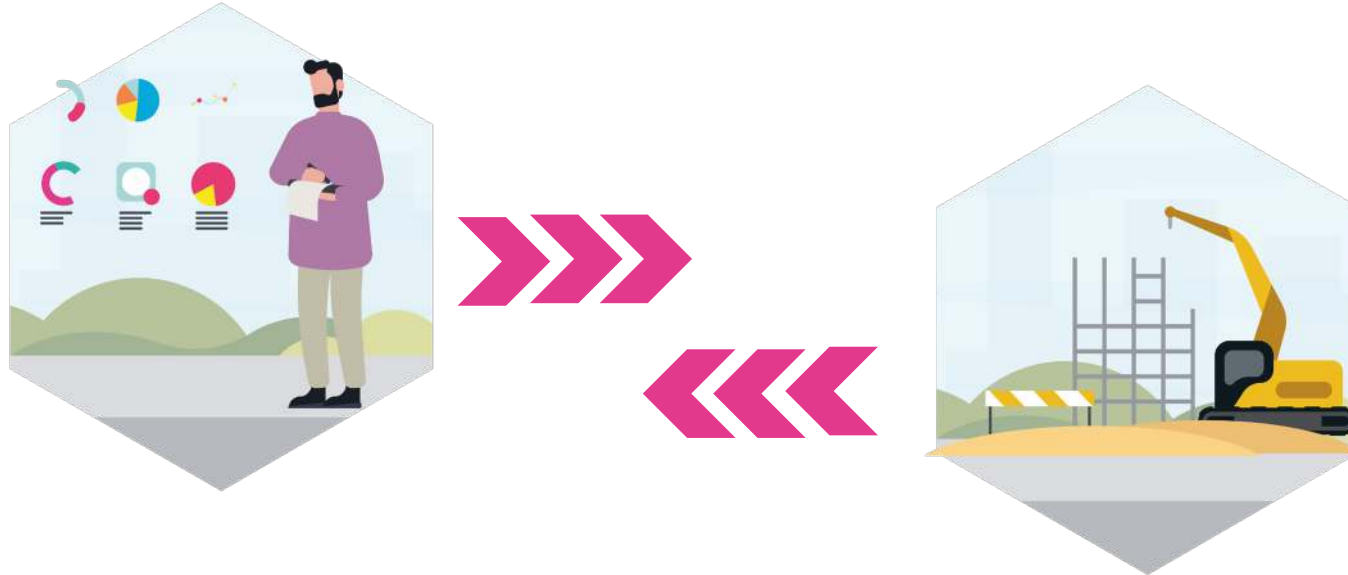
RETROFIT TOWARDS A SECTOR-WIDE ROADMAP 2020



TABLE OF CONTENTS

1	INTRODUCTION	6
2	THE NATION'S CASE FOR CHANGE	8
3	THE HISTORY OF UK RETROFIT	10
4	THE VALUE OF DEEP RETROFIT	14
5	THE UNMET MARKET NEEDS	18
6	ENABLING THE MARKET: FOUNDATIONS FOR A ROADMAP	22
7	MOVING FORWARD	30
8	APPENDICES	32

Unmet Market Needs



Demand

We have defined buyers as social housing landlords and private landlords

Supply

We have defined sellers or suppliers as retrofit specialists and other retrofit product sellers

“What needs to be true for housing owners to invest in deep retrofit?”

Unmet needs of the market

Buyers need...

Confidence in the product and the service

A good business case to calculate positive returns, a worthwhile payback period and demonstrate value

Information & Knowledge from independent and reliable sources

Policy & regulation with clear government direction and supportive and integrated regulation

A better offer that allows tailored solutions to be implemented quickly and with less hassle



“ If these are the needs of housing owners, what changes do suppliers need to help them develop and deliver solutions? ”

Unmet needs of the market



Suppliers Need...

Information & evidence to provide more data on the existing housing stock

A **Market** they have confidence will sustain into the long term

Policy & regulation with both incentives and requirements

Guaranteed performance to assure there is a pathway to net-zero

Skills in new methods of construction, new designs and new materials

Developing practical ideas to meet the needs

Workshop produced a **wide range of ideas**

Interviews and roundtables distilled these into **four ideas** based on **common themes** and best **chance of success**

We need you and your organisation to develop and propel these ideas into a workable reality



Enabling the market:

Foundations for a roadmap

1. National Housing Stock Database



3. Mass Customisation



2. Retrofit Kit



4. Retrofit finance platform



“Suppliers don’t know what to tackle because data on housing stock is poor.”

“I need good, clean data.”

Idea #1: A National Housing Stock Database







A national database and classification system that links existing information with building models and aims to fill in any data gaps.

Value proposition: a national database and classification system enabling existing data to be linked into housing modelling tools allowing different retrofit strategies to be assessed.

Idea #1: A National Housing Stock Database



Primary impacts

- Efficiency and productivity  example of BIM saving equivalent of 2-3% of whole-life costs
- Accelerated rate of retrofitting  cut the time from design to delivery
- Performance quality  reduce risk of complications and remedial work
- Innovation  a common evidence base of performance in use data

Scale-Up and Longer-term:

Recognisable and certified value for property purchase and rental markets

“The retrofit industry is fragmented into lots of small single measure organisations that are not capable of 'whole-dwelling' deep retrofit.”

Idea #2: the 'Retrofit Kit'



A 'menu of components' that work together reliably, predictably and flexibly in a wide range of building situations

Value proposition: a menu of components, based on standard interfaces and connections, that are reliable, predictable and flexible and which could be used to construct a solution for any property.

Idea #2: the 'Retrofit Kit'



Primary impacts:

- Improvements in speed, cost and reliability, leading to increased carbon savings
- Boosted consumer confidence in retrofit solutions, helping to drive demand

Scale-Up & Long term:

- Innovation to expand the range of homes and integrate with the changes to the energy supply system

“ I need to offer products at a price point that is affordable by developing my supply chain in the same way. ”

Idea #3: Mass Customisation







Modern methods of construction and local skills base

Value proposition: modern methods of construction that combine mass factory production with adaptation of standard kits, 'pop-up' factories and local supply chains.

Idea #3: Mass Customisation



Primary impacts:

- efficiency  flying factories reducing cost by 44%
installation times by 65%
quality defects by 75%
reduce waste and air emissions
- reduced cost per unit  economies of scale and learning curve
e.g. 5,000 homes at £35,000 = £175m
- local skills base  creation of new skills base
- local feel  adaption of solutions to local aesthetics

Idea #3: Mass Customisation



Scale-Up & Long term: Considering a regional targeting strategy

- Social housing is 17% of stock and able to reach economies of scale
- Worst performing housing stock: 5.1 tonnes of carbon per year for EPC 'D' and 'E'-rated homes compared to 3 tonnes for 'C' (Leeds data)
- Suitability of homes for core retrofit kits: leverage the database and Retrofit Kit to scale faster
- Excess Winter Mortality Rates: 40% in Carmarthenshire, Wales. Deep retrofit tackles fuel poverty and reduces the costs to health and social care
- Gross disposable household income: indicator of fuel poverty

“ I wish I could build investor confidence in retrofit – a one-stop shop for finance and knowledge for retrofit. ”

Idea #4: Platform for Retrofit Finance



A platform that brings together housing and finance providers, offering standardised risk assessment tools, business models and contracts, and accessible finance packages.

Value proposition: a platform that brings together housing and finance providers, offering standardised risk assessment tools, business models and contracts, and accessible finance package.

Idea #4: Platform for Retrofit Finance



Primary impacts:

- Better understanding and knowledge of business case and financing tools
- Increase access to finance for landlords/housing associations and retrofit specialists

Scale-Up & Long term:

- Ability to package projects into more investable assets
- Increasing certification tracking to give a better investment offer
- Creation of a new green finance product

How do each of these ideas meet buyer and seller needs?



**National Housing
Stock Database**



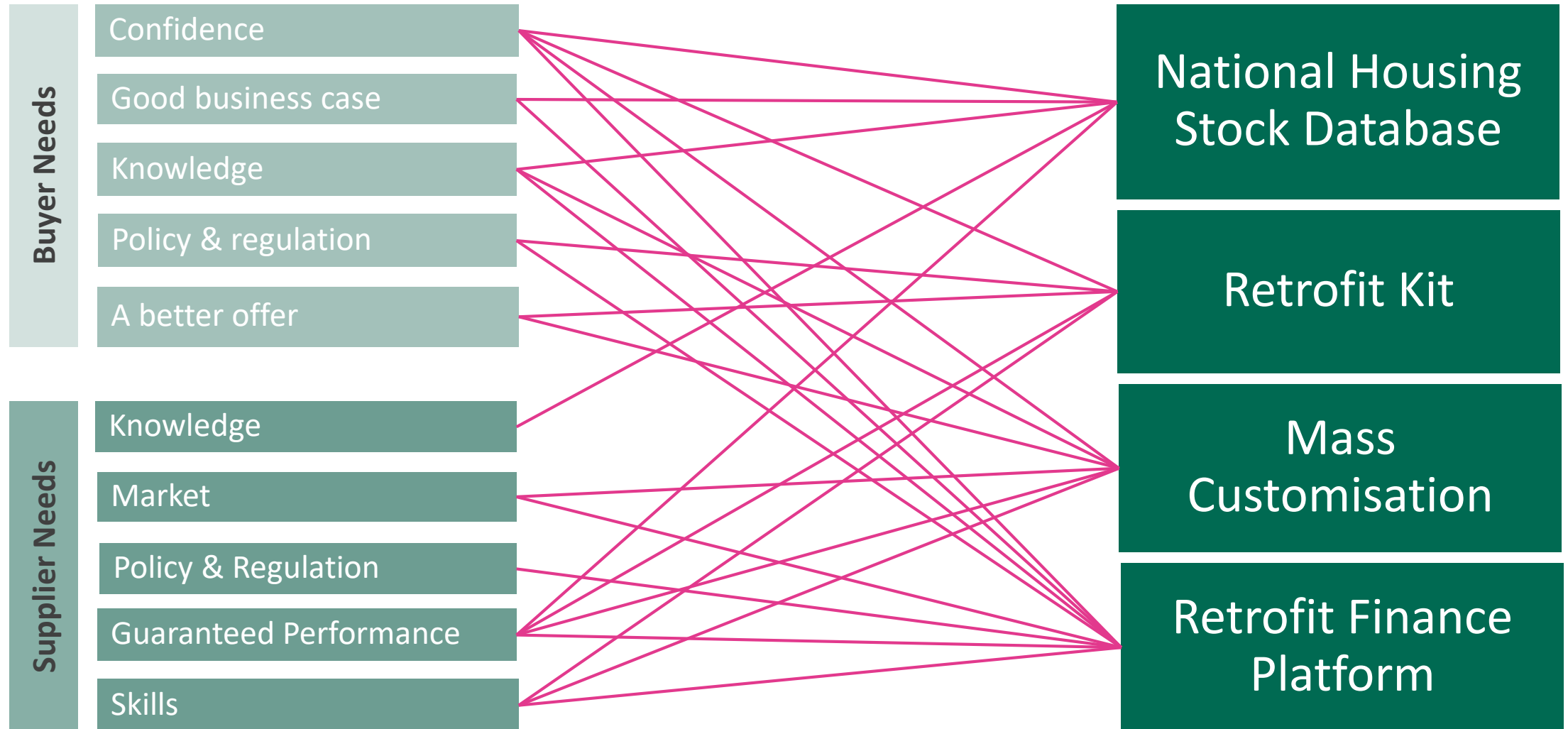
Retrofit Kit



Mass Customisation



Retrofit finance platform





Panel & Q&A

Developing practical ideas to meet the needs

1. National Housing Stock Database

Value proposition: a national database and classification system enabling existing data to be linked into housing modelling tools allowing different retrofit strategies to be assessed.



2. Retrofit Kit

Value proposition: a menu of components, based on standard interfaces and connections, that are reliable, predictable and flexible and which could be used to construct a solution for any property.



3. Mass Customisation

Value proposition: modern methods of construction that combine mass factory production with adaptation of standard kits, 'pop-up' factories and local supply chains.



4. Retrofit finance platform

Value proposition: a platform that brings together housing and finance providers, offering standardised risk assessment tools, business models and contracts, and accessible finance package.



Register your interest



iPad / Phone



Website

[Opportunities for scaling deep retrofit survey](#)



Thank you & Close