HOUSING BRIGHTON

Collaboration and innovation through modern methods of construction (MMC)

Debansu Das
Director of business development,
Zed Pods and chair,
Housing Diversity Network

Katy Bourne OBE
Police and crime commissioner for Sussex

CIH HOUSING BRIGHTON

7 - 8 MAY 2025

Collaboration & Innovation through MMC

Picture: Making of “Fortis House” by using volumetric offsite construction methodology

Katy Bourne OBE

Sussex Police & Crime Commissioner

Sussex Police & Crime Commissioner

PBH

Debansu Das

Business Development Director, ZED PODS

Chairman (NED), Housing Diversity Network

2024

PRISONERS BUILDING HOMES (PBH)

Delivering socially-responsible, high-quality, low-carbon homes at scale and pace

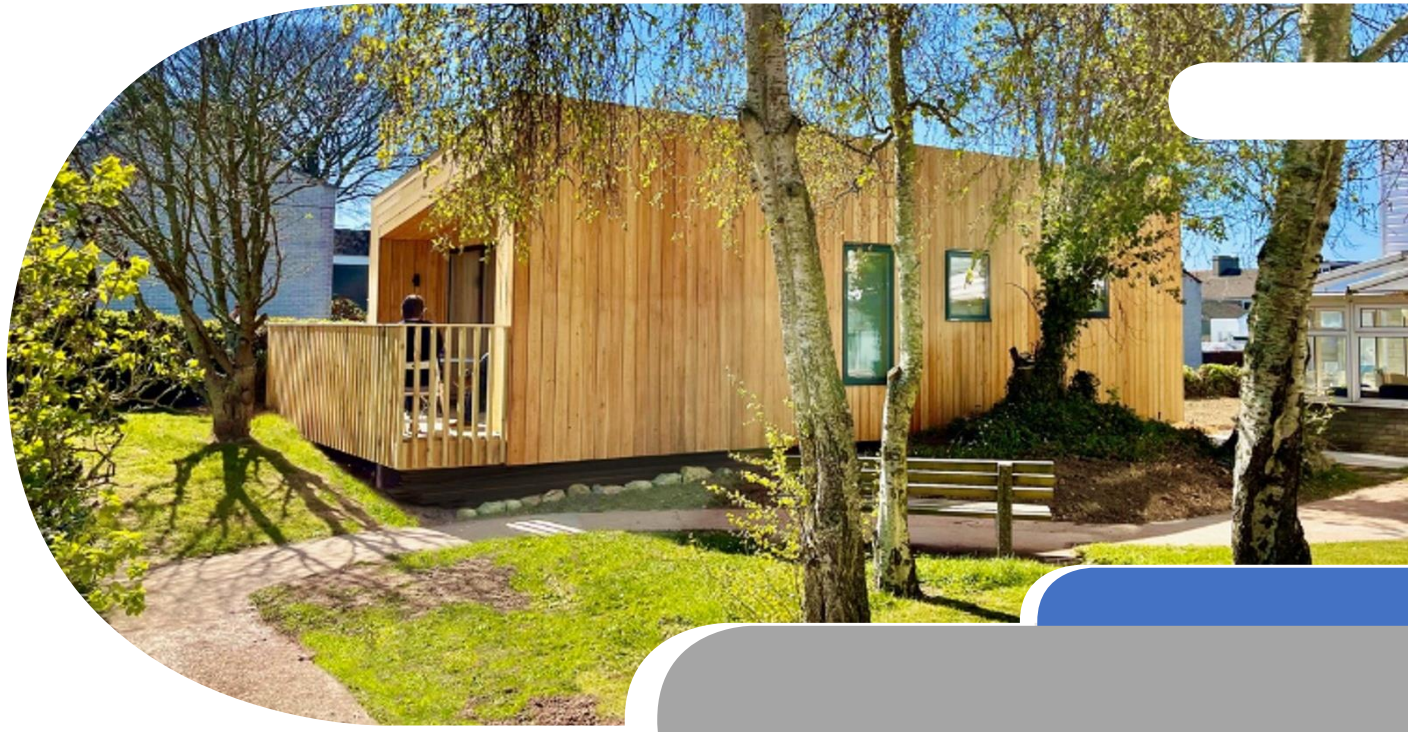
Housing Brighton 2025

PBH

What is PBH?

- **PBH unlocks land to address housing pressures - delivering affordable, high-quality, low carbon, eco-friendly, sustainable homes nationally**

- **Whilst creating job opportunities for serving prisoners and prison leavers to enable them to turn their lives around and reduce the cycle of reoffending**



PBH

AWARD WINNING, CROSS GOVERNMENT PROGRAMME

Sponsored by:

- **Ministry of Housing, Communities and Local Government**
- **Ministry of Justice**
- **Police and Crime Commissioners**

Supported by:

- **Cabinet Office/Local Government Association-run One Public Estate Programme**
- **Her Majesty's Prison and Probation Service**
- **Local Partnerships** (owned by the Treasury, Local Government Association and Welsh Government)

* The above partners make up our governance board

Government grant funding available to provide end-to-end housing delivery to enable local authorities to advance smaller parcels of land for new affordable schemes - includes planning/infrastructure revenue funding and capital funding for infrastructure works.

PBH

Fortis House

An innovative MMC approach to achieving sustainable high-energy performing housing on an underutilised brownfield carpark site in a flood zone:

Interview of Tracey Kerley (CEO of Ashford Council) by Edward Jezeph (Homes England):

https://www.youtube.com/watch?v=oBOzaWyBrmY&t=47s

PBH

Ashford Borough Council

POD S

Sussex Police & Crime Commissioner

About us

Debansu Das
Business Development Director, ZED PODS
Chairman (NED), Housing Diversity Network

ZED PODS – a bit different

1. **Design & build zero-carbon homes** using integrated design & delivery (**full turnkey**)
2. **Leverage Net Zero** as a solution to address social & environmental inequality in housing.
3. **Unlock constrained market failure sites** by inhouse design & operations team.
4. **Embed digital construction** for improved quality, speed & efficient maintenance.
5. Working with **30 public sector clients** with secured pipeline of 1000+ homes

RIBA Stage 0 Strategic Definition

ISO 9001 QUALITY MANAGEMENT
ISO 14001 ENVIRONMENTAL MANAGEMENT
ISO 45001 HEALTH & SAFETY MANAGEMENT
SSIP Certification Body Member
LRQA CERTIFIED BIM BIM: ISO 19650 : 2018
ConstructZERO The Construction Industry's Zero carbon change programme BUSINESS CHAMPION
CIAT CHARTERED PRACTICE
CONSIDERATE CONSTRUCTORS
BOPAS Buildoffsite Property Assurance Scheme
ICW ICW Endorsed
UKAS PRODUCT CERTIFICATION 6445

Our Flagship Zero Operational Carbon Projects

St Andrews House, Cullompton — 6 units

Shapland Place, Tiverton — 8 units

Fortis House, Ashford — 23 units

Hope Rise, Bristol — 11 units

Hill Street House, Newport — 12 units

Kevin Fenton Mews, Bromley — 25 units

Captain Sir Thomas Moore House — 10 units

Crofts Estate, Sandford — 5 units

About Fortis House

POD S®

2024

The Context

Challenges

- **TA Crisis**: 185 households (incl. 111 children) in TA, 70% in B&Bs.
- **TA cost** grew by 163% in last 4 years.
- **90% of sites** within ABC's Local Plan are **'on hold'** due to "nutrient neutrality".
- ABC faces **financial strains**, intense regulatory pressure, limited resource.

Aims & Objectives

- To build **rapidly** good-quality homes
- To achieve **carbon-neutrality** by 2030
- **Maintenance team** aims to digitise the asset for cost-effective upkeep.
- To set up **council-specific** advanced BIM protocol for future development.
- Reduce **TA cost**
- "Giving (local) **people** the opportunity to start again" Cllr Andrew Buchanan, ABC

Development Opportunity: Many car parks lie **underutilised** especially after Covid-19

The Outcome

In collaboration with Ashford Borough Council

Funding Support: Homes England; Department for Levelling Up, Housing & Communities

PBH

PODS

Before: Car Park in Flood Zone 3A

Volumetric (Cat 1) MMC Construction

Design & Build (Full Turnkey) using BIM

After: "Fortis House"

23 High-quality, short-stay social-rented, zero-operational-carbon modular homes **(a first of its kind in the UK)**

This project give residents a chance to rebuild their lives while protecting the environment. ***Fortis House is a beacon of hope and progress for our borough."***

Cllr Noel Ovenden
Leader of Ashford Borough Council

This new accommodation ranks up there because ***it is a miracle! A warm house to get back to, warm water to shower and bath.*** *Clean and brand new bedroom carpeted with great style. Own keys and balcony to enjoy within ones enclosure. Come 'on spring days ~ Plenty of storage in the kitchen and spacious enough for a sit-down meal. A view with trees and birds nesting in the distance, wow!!* ***Feels so good with lifting my spirit in terms of mental health."***

Nsude
Resident of Fortis House

Fortis House project – key features

Sustainability:

- Zero-operational-carbon 'Move On' housing scheme
- "Fabric First" - superior energy efficiency (SAP100A+)
- Renewables - 230 PV panels & 23 heat pumps
- Potential Zero energy bills (with optional battery storage)
- Supports ABC's climate and housing strategies

Accommodation Schedule		
Unit Type	GIFA / Unit (m^2)	No. of units
1 Bed 2 Person (1-storey)	52	9
1 Bed 2 Person (2-storey maisonette)	59	4
2 Bed 4 Person (1-storey) 3 of which are wheelchair accessible units	72	9
3 Bed 5 Person (1-storey)	101.18	1
Total No. of units	23	

Design and Construction:

- 3-storey (L-shaped) building above 2.4m high steel podium with lift access
- 23 dual-aspect, NDSS homes with 3 wheelchair-accessible units
- Offsite factory construction (Cat 1), 14 inmates worked offsite under PBH
- Rapid onsite works (13 months) involving local supply chain
- Unlocked constrained site (Flood Zone 3A, Nutrient Neutrality, bio-diversity)
- Reduced waste, traffic, and disruption to local community

Technology:

- "Digital Twin" with ISO 19650 BIM protocol embedding "Golden Thread"
- 2000 hours of BIM training to 36 collaborators

Others:

- Procured via direct-award call-off (LHC NH3 framework)
- Onsite ABC officer providing wrap-around support for tenants

Making Modular Work

POD S®

2024

Guiding principles

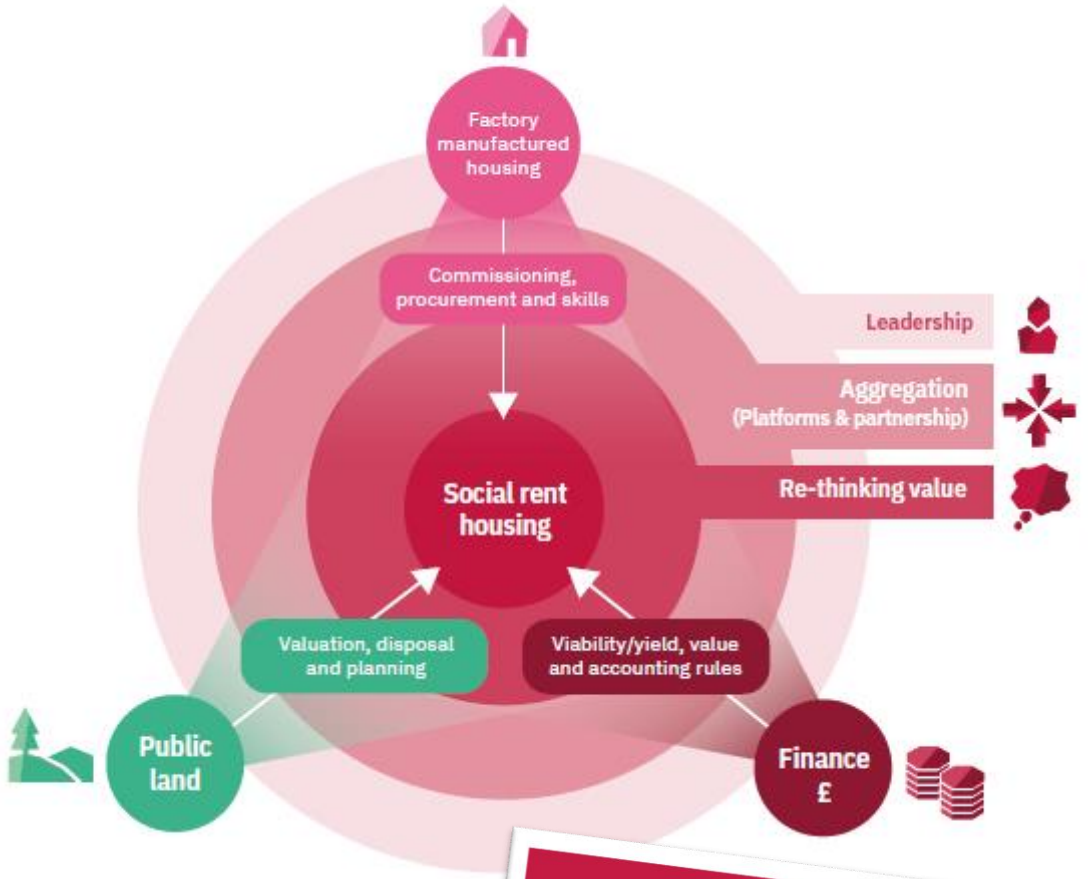
Brownfield First: unlocking constraint site to build design-led good-quality zero-carbon social rented homes

Sustainability at Core: Superior environmental and thermal performances for low utility bills to help residents facing “fuel poverty” & help achieve clients’ carbon neutrality target.

Wellbeing : user first approach, architectural excellence, healthy homes, fire safety, environmental performance, no toxic materials, post occupancy wraparound support.

Community First: Minimising disruption and combat NIMBY-ism with engagement with the local community;

“Value for Money” always: Life cycle cost savings + Collaboration + Streamline process (speed & quality)



Social rent housing at pace: The MMC playbook

#1: Set strategic drivers & clear definition of value

Exemplar Leadership

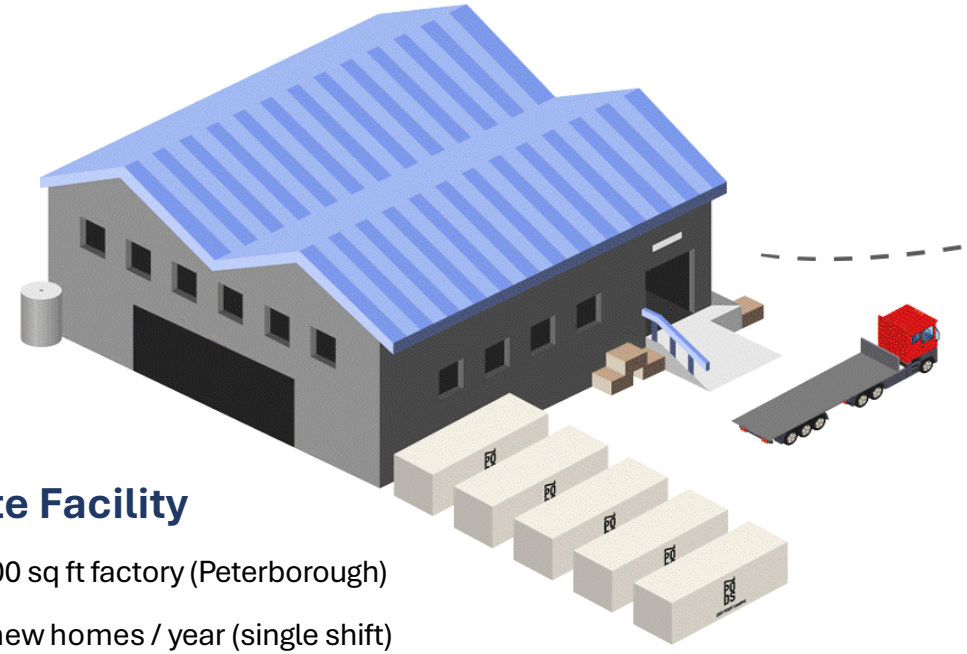
- **Innovative** use of MMC volumetric (Cat 1) construction (a first for ABC)
- **"Green Pioneer":** Sustainable Design-led Development (a first for ABC)
- Establish a Council Specific ISO 19650 **BIM Protocol** (a first for ABC)
- **Digitise** asset for cost-effective maintenance regime (a first for ABC)

- **Wellbeing**: max daylight, private balconies, garden, low running cost
- **Upskill** inhouse team & local businesses on MMC & BIM construction
- Secured £1.8m AHP **funding** from Homes England
- Financial **savings** on TA cost (over the life of the project)
- **Perseverance**: Flood Zone, Nutrient Neutrality, Bio-diversity, SUDs

#2: Win "Hearts & Mind" of project stakeholders early

MMC Eco-system:

#3 Offsite-Onsite Integration is Critical (e.g. tolerance level of +/- 3mm)

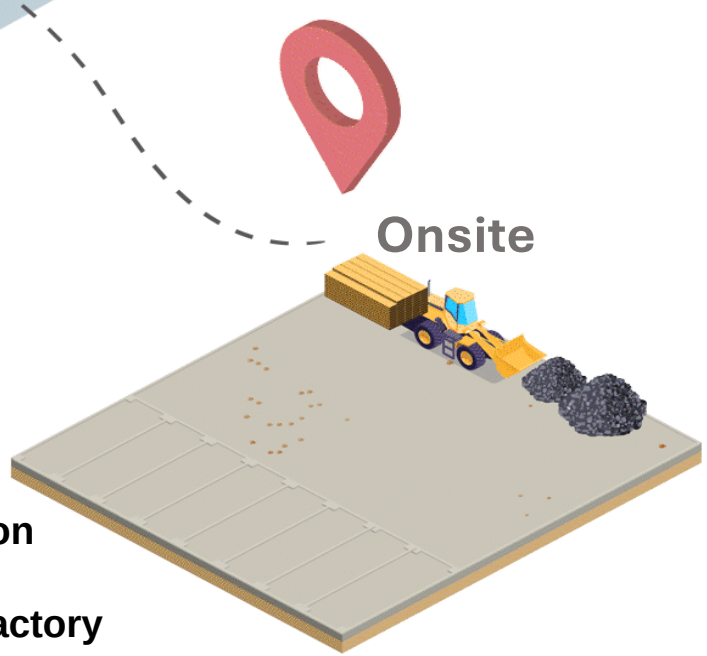


Offsite Facility

- 54,000 sq ft factory (Peterborough)
- 400 new homes / year (single shift)
- Largest Employer of the PBH Program

Designers & Technologists

- Design, Planning, CM, PMO & PC roles
- Full Turnkey: from concept to completion
- Bespoke design using BIM (ISO 19650)



Onsite

Modular construction achieve up to 90% completion in our factory

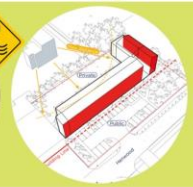
Collaboration Model:

#4 Early Collaboration & sharing risks can unlock barriers

Client (Ashford Borough Council)

Initial Briefing → Procurement (LHC NH3) → Feasibility Study → Internal Approvals → Public Consultation → **PCSA** Contract Signed → **JCT D&B** Contract Signed → Funding Approval From HE → Project Monitor

Full Turnkey Contract (PODS)



Viability Check Flood Zone 3A Nutrient-Neutrality → 1st Pre-App → 2nd Pre-App → RIBA Stages 2-3 Planning Approval (9 months) → Planning & EA Approved → RIBA 4A Tech Design → Final Build Cost → **BIM** Implement & Training → Align Payment Schedules → Construction Works → **Completion & Handover**

Sub Contractors

Local Supply Chain → Local Consultants Onboarding → Local Consultants → Local Supply Chain Onboarding → Offsite Factory Manufacturing → Onsite Local Groundwork → Local Labour

Offsite (6 months)

Onsite Goundworks & Installation (13 months)

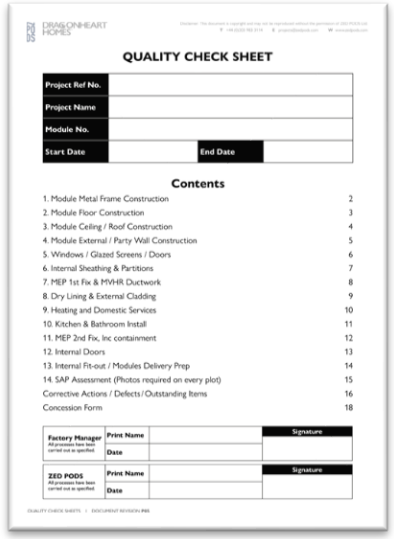
Time Frame	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
	2020		2021				2022				2023				2024			
Contractual	Site Viability Study		PCSA Work Period								JCT Contractual Work Period							

Digital Design & Construction

- Flood Mitigation – EA approved
- Nutrient neutrality, biodiversity safeguard
- Tree Root protection
- Max Natural Daylight & Ventilation
- Robust palette of materials
- Prioritise Residents' **wellbeing**
- Enhanced Green Spaces
- Reduced waste (onsite & offsite)
- Reduced disruption
- Design for Manufacture & Assembly (DfMA)
- Quality control, PMV 80%
- Minimise Programme & Cost

Grid-based design, collaborative workflow, data driven processes and precise computer aided production

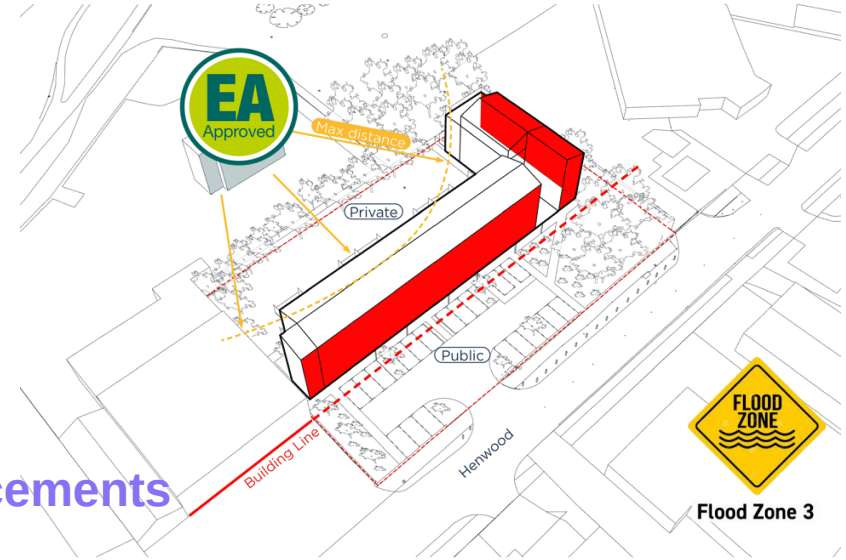
Photographic Quality Control


QUALITY CHECK SHEET

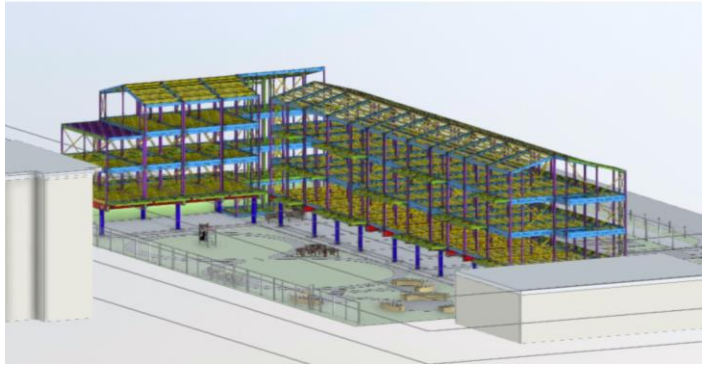
Project Ref No.	
Project Name	
Module No.	
Start Date	End Date

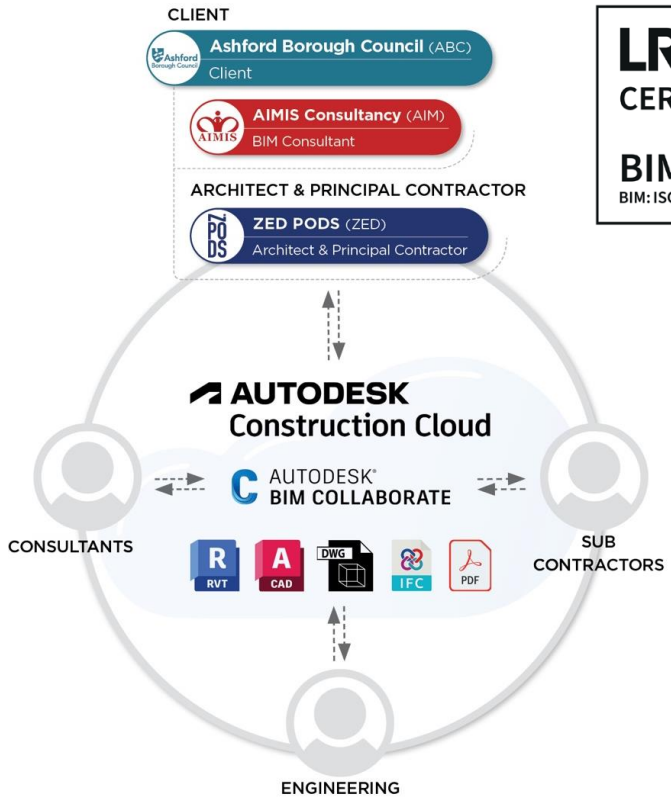
Contents

Factory Manager	Print Name	Signature
	Date	
ZED PODS	Print Name	Signature
	Date	



BIM ISO19650





LRQA CERTIFIED BIM BIM: ISO 19650:2018

#5 Embed Technological advancements

Sustainability

REDUCED HEAT LOSSES

- **Reduced U-Values**
  All element U-Values below **0.15**W/m²K
  Triple-glazed windows and doors
- **Reduce thermal bridging**
- **Airtightness**
  As-built: **1.02** m²/(h.m²) @ 50 Pa

Super-insulated & Air-tight External Wall Build-up


Triple-glazed Windows & Doors

CLOSING THE PERFORMANCE GAP

- Factory Built Quality Control
- BOPAS Approved QC System
- Designed vs Built Performance

ONSTIE RENEWABLE

Number of PV	230
Total capacity (kWp)	104.55

- 230 Photovoltaic Panels
- Batteries & Inverters
- Combined MVHR & Heat Pump

WATER SAVINGS
554,040
Litres/yr

REDUCED ENERGY CONSUMPTION

- Natural Daylighting
- Water Efficacy
  Max of 100L/P/Day
- Energy Efficient Appliances
  Specifying A+ Ratings


Dual flush WC


Aerated tap


Shower Kit

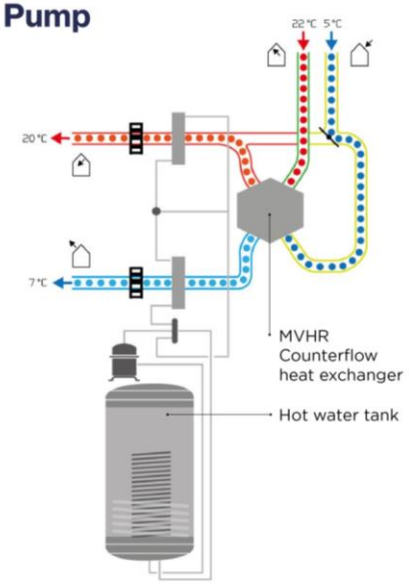
Energy Consumption

Predicted annual energy use

38,285 kWh

Combined MVHR & Heat Pump


Above: Nilan Unit



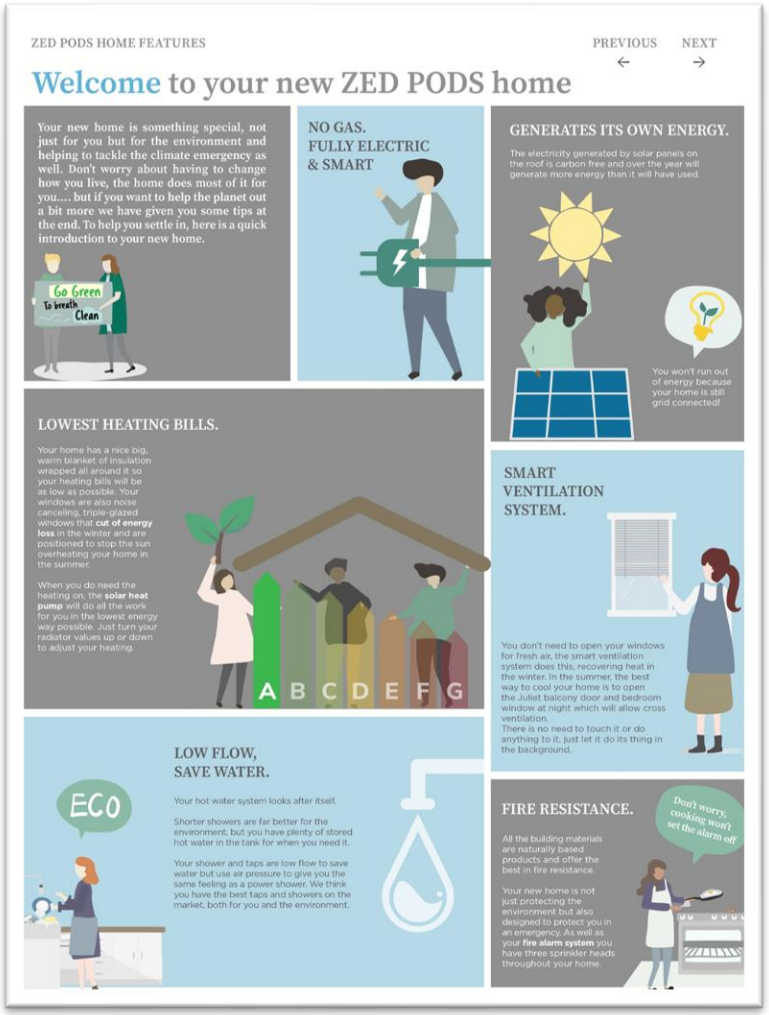
CARBON SAVINGS
41
Tonnes/yr

#6 Build future-proof homes adapted to climate change

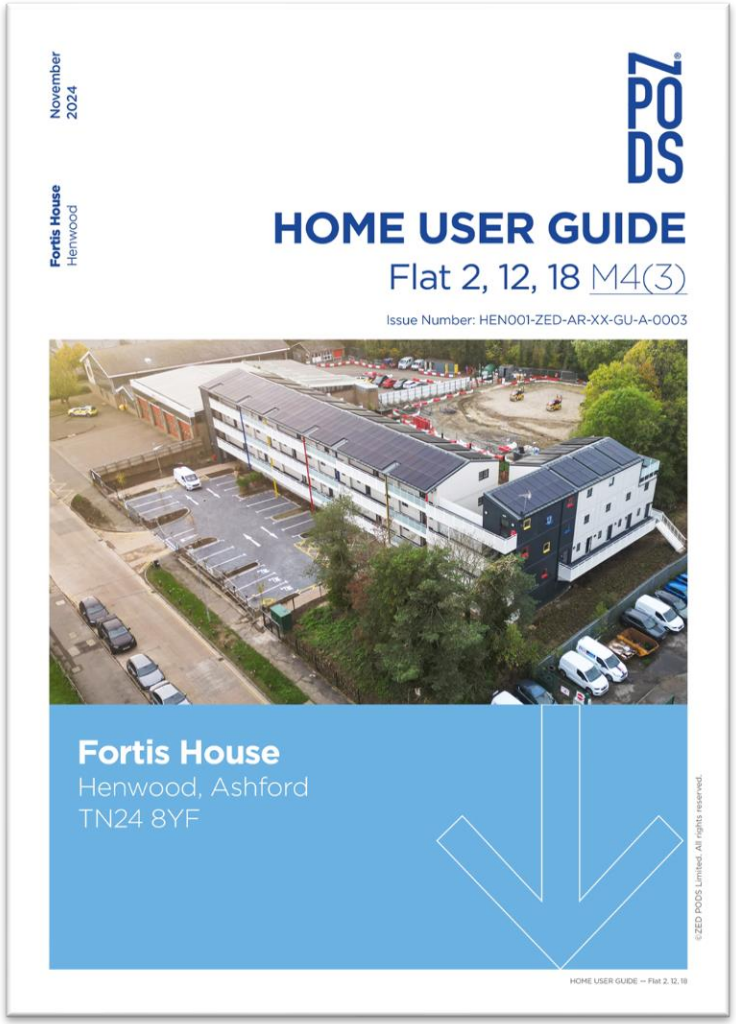
‘Low Carbon Living’ & Future Upkeep

#7 Drive Behavioural Change, embed awareness & training

Home Welcome Leaflet
— Low-carbon living



Home User Guide
— Tenants / Client Satisfaction & Care



Maintenance Schedule
— Golden thread of information

Socio-environmental benefits

#8 Recognise SV impacts for all stages – design, offsite & onsite works

Offsite – "Boston Boys" (PBH)

- 14 day release prisoners worked on the project
- Living wage paid + NVQ training
- Reduced recidivism (£1.7m saved on re-offending cost)

Luke, a participant in the PBH from our factory, said: "*The opportunity I have been given has been really good for my **mental health** and way of life in prison. It has boosted my self-esteem. The work placement has shown me living in a normal way and has provided me with **a second chance**, and I can see myself as the owner of a successful construction business building houses in five years*."

Localism

We pushed the boundary to source local

Design & Planning:

- Planning Consultant: DHA Planning (DHA)
- BIM Consultant: AIMIS Consultancy (AIM)
- Structural Engineer: Imperium (IMP)
- Arboricultural Consultant: TMA Associates (TMA)
- Archaeological Consultant: SWAT Archaeology (SWA)
- Fire Consultant: Quality Fire Safety (QFS)
- Landscape Designer: Hill-Wood & Co (LHW)

Manufacturing & Construction:

- **Knauf plasterboard Sittingbourne Kent** instead of Siniat based in Bristol (previous supplier)
- **Cellecta Flooring Rochester Kent** instead of chipboard that is imported
- **Benchmarx Kitchens manufactured in Kent** instead of Howdens (manufactured aboard)

Rethinking value

Benefit / Cost Ratio

4.95

Outcomes-based approach underpins project evaluation & impact measurement

- Calculate VfM over longer period
- Include ‘opportunity costing’ i.e. forgone savings & revenue
- Factor in positive fiscal benefit
- SV Model based on HMT’s Green Book

Outcome of Fortis House:
Healthier, happier and more prosperous tenants living in high-quality, low-carbon social rented homes.
The project will change lives – both offsite & onsite.

#9 Incorporate social & environmental impact into decision-making & VFM evaluation

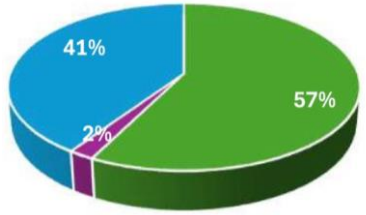
Benefits

Total Discounted Benefits	**£36,647,692**

Benefit Class	Total	Total Discounted Benefits
Cash Releasing	£47,370,857	£21,060,985
Non Cash Releasing	£770,000	£743,961
Societal	£35,193,461	£14,842,745
Unmonetisable	£0	£0
Total	**£83,334,317**	**£36,647,692**

Metrics

Total Discounted Benefits	£36,647,692
Total Discounted Costs (assumed incurred Yr 0)	£7,400,000
Benefit / Cost Ratio	**4.95**
Net Present Social Value	**£29,247,692**
Payback Year	**2028**



Cash Releasing

- Avoided costs of providing temporary housing
- Savings on maintenance of brownfield land sites.
- Income uplift through increased council tax receipts.
- Lower annual maintenance costs
- Reduced lifecycle costs with fewer replacements.
- Avoided land acquisition costs (net of any acquisition expenses).
- Avoided homelessness-related costs.
- Reduced reoffending rates, lowering imprisonment costs.
- Future-proofed homes, avoiding future retrofit costs.

Societal

- Operational Efficiency and Reduced Carbon Emissions
- Use of local SME's and Local Employment
- BIM training for supply chain
- Improved resident health outcomes by avoiding fuel poverty (QALY benefit).
- Zero standing charge
- Increased supply of affordable housing

Non Cash Releasing

Land value uplift (where LA retains land)

Key Lessons Learnt

#1: Set strategic drivers and a clear definition of value (outcomes-led approach)

#2: Win “hearts and minds” of project stakeholders early

#3: Beware about Offsite-onsite integration

#4: Early collaboration and risk-sharing can unlock barriers

#5: Embed technological advancements esp BIM protocol

#6: Build homes for the future - homes adapted to climate change

#7: Behavioural change is required through awareness & training programmes

#8: Recognise social value (SV) impacts for both offsite & onsite works

#9: Incorporate social & environmental impacts into decision-making and VFM evaluation

#10: “By changing nothing, nothing changes...” learn from others.

How would you rate the homes in terms of overall quality?

9.0 average rating

How would you rate the building in terms of its design and layout?

8.7 average rating

How would you rate the interior of the apartments?

8.9 average rating

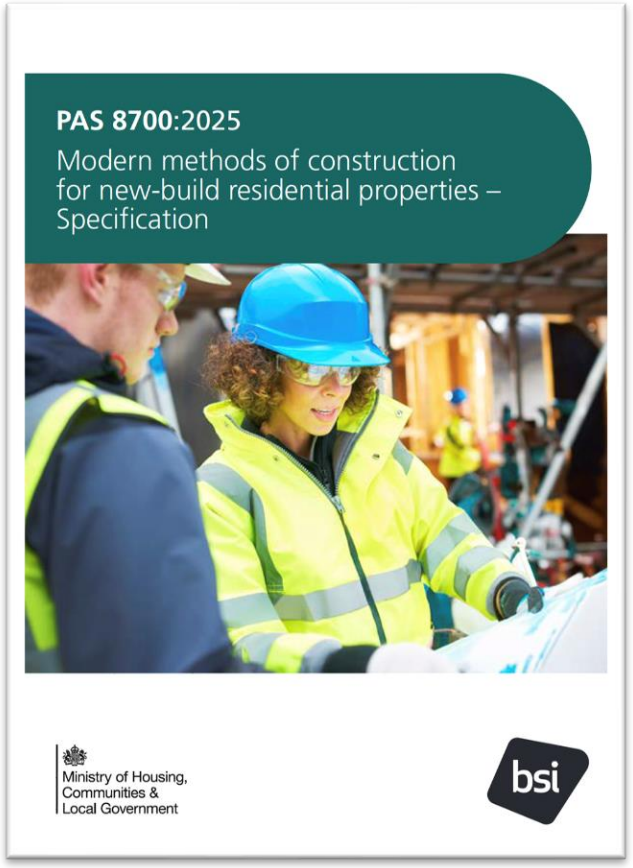
Thank you!

Contact us to arrange a site/factory visit

Fortis House Case Study

Interior 3D Virtual Tour

Additional Resources



Contact

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Collaboration and innovation through MMC

Thank you to Zed Pods for demonstrating how MMC can provide high-quality, sustainable, high-energy performing housing at pace, applying innovative design to enable schemes to be delivered which could not be achieved through traditional construction, whilst also reducing waste, construction costs and construction disruption …

And providing employment opportunities to ex-offenders to reduce reoffending, creating safer communities which benefits everyone.

PBH

ZED PODS

Ashford Borough Council

Sussex Police & Crime Commissioner

QUESTIONS & ANSWERS

Refreshment break

Time to network and speak to your exhibitors

Chartered Institute of Housing

NATIONAL HOUSING FEDERATION

THE HOUSING COMMUNITY SUMMIT

Have you booked your place?

8 – 9 September 2025

ACC Liverpool

Heat networks

Ali Arshad
Head of energy,
L&Q

Henrietta Cooke
DEN specialist,
Haringey Council

Stephen Knight
Chief executive,
Heat Trust

Heat Networks
and consumer protection

Stephen Knight
Chief Executive, Heat Trust

Heat Trust

Independent consumer protection scheme & consumer champion

Heat Trust is the national independent consumer protection scheme for heat networks

- Established by industry and government in 2015
- Covers 90,000 consumers across Great Britain
- Scheme Rules based on gas & electricity license conditions:
  - **Guaranteed Service Standards** – and **compensation** when these aren't met (based on similar standards set by Ofgem for gas and electricity customers)
  - Protection for **vulnerable customers**
  - Access to the **Energy Ombudsman** for independent dispute resolution
- **Consumer champion** role in the heat network sector

District Heating in the UK

1950-90s

- First district heating schemes developed by local councils for social housing to replace coal fires and tackle smog and fuel poverty (eg Pimlico) and to safely heat 1960s tower blocks.

21st Century

- 2004 London Plan drove CHP heating for major developments
- 2011 London Plan greatly strengthened requirements for communal/district heating

Today

- Around **2%** of UK heat is delivered via a heat network. Over 14,000 heat networks
- 500,000+ households

PDHU's 1950 heat store remains the UK's largest

District Heating in the UK

Future

- Climate Change Committee (CCC) estimated that around 18% of UK heat, (up from 2%) will need to come from heat networks by 2050
- Heat Networks will be main route to decarbonising heating in urban areas over next 25 years
- Heat Network Zoning will provide legal framework to drive development
- 5-6 million households on HNs by 2050

Consumer detriment issues

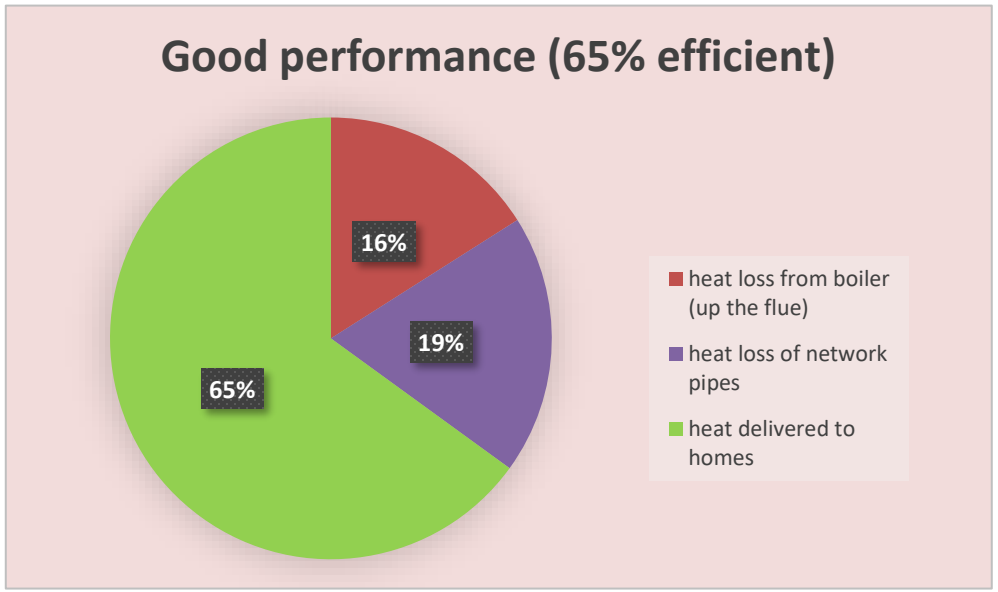
Lack of regulation AND monopoly energy supplier

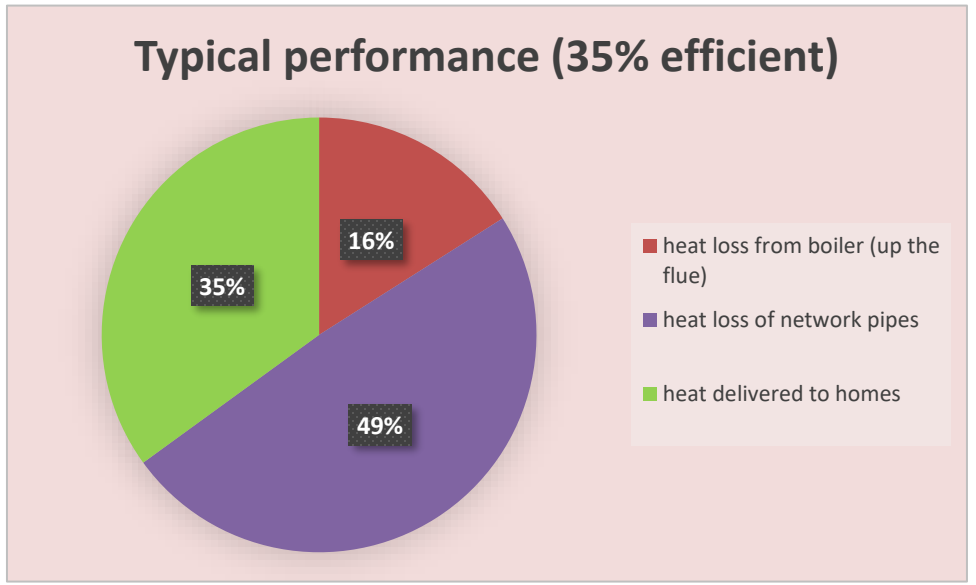
- **Price of heat** (no price cap) and subject to:
  - Unregulated commercial gas prices
  - High inefficiencies due to lack of technical standards
- **Reliability** – unplanned interruptions far too common
  - Lack of mandatory technical standards
  - Overheating corridors
- **Transparency & Billing –** retrospective price rises
  - An energy bill you can get evicted for not paying
- **Metering and billing**
  - Poorly visibility of meters/HIUs (or no meter at all!)
  - AMR meters unreliable
- No **access to Ombudsman**
- No mandatory **PSR protections for vulnerable**

Consumer experience of heat networks

Why efficiency matters

Efficiency, heat losses & price





Cost of heat (assuming gas cost of 7.83p/kWh):
12 p/kWh
(29% more gas/CO_2 than a domestic boiler)

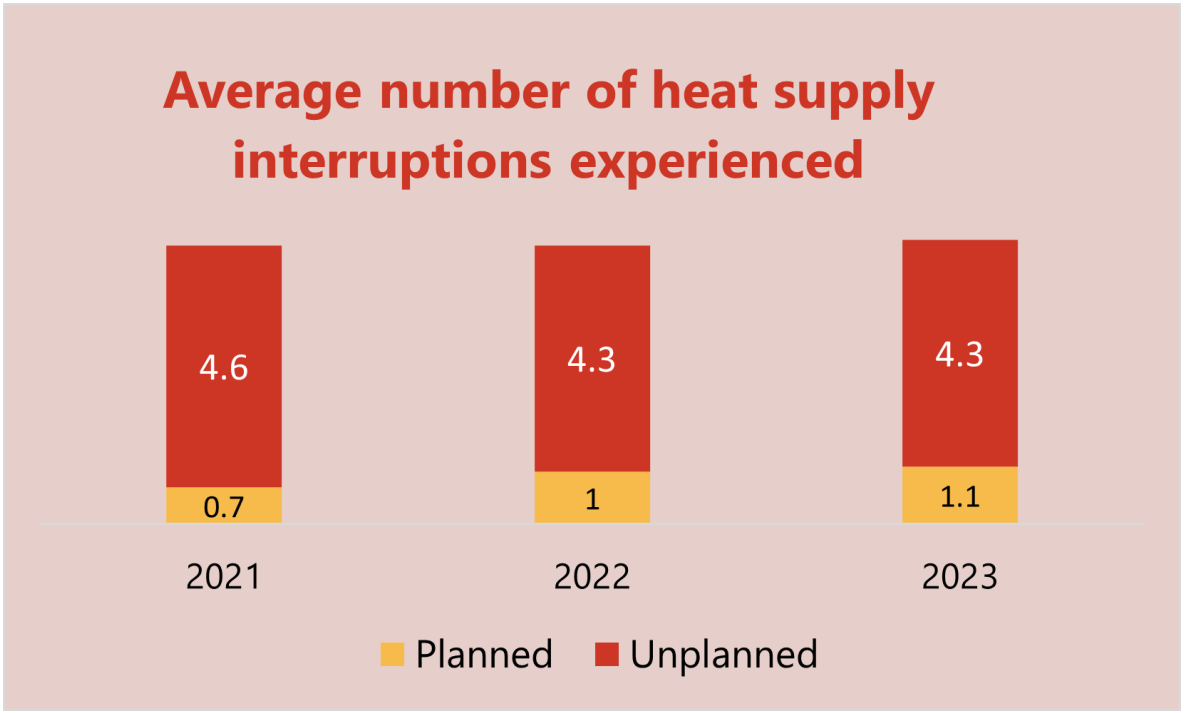
Current domestic gas boiler heat cost: **~8 p/kWh**

Cost of heat (assuming gas cost of 7.83p/kWh):
22 p/kWh
(140% more gas/CO_2 than a domestic boiler)

Reliability

Too many unplanned supply interruptions

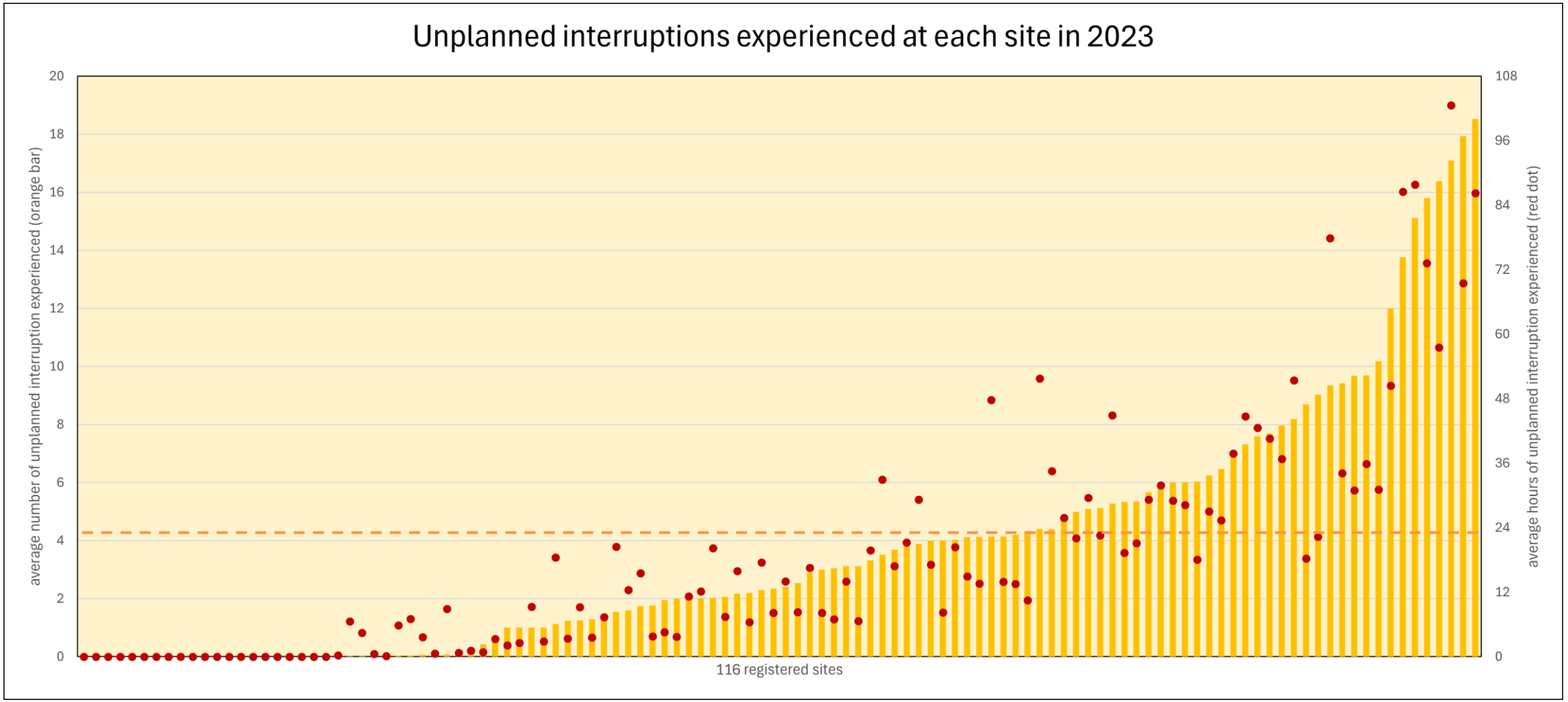
Average customer experiences ~5 supply interruptions per annum
(Average duration 5-6 hrs each)



Heat Trust registered sites are likely to be amongst the most reliable, so the average across the sector could be much worse!

Reliability

Some good performance – but too many poor performers

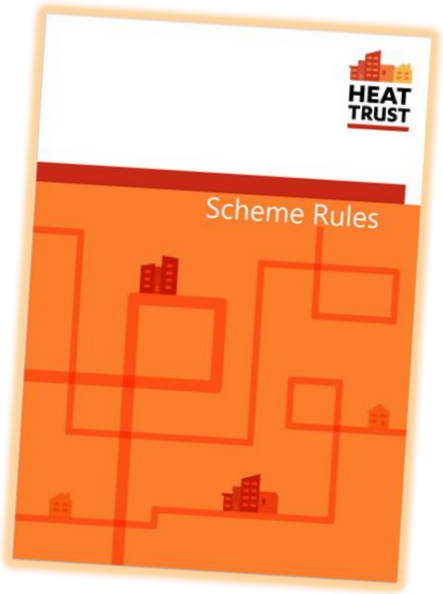


Industry/ADE initiatives

In the absence of statutory framework

- CIBSE/ADE **CP1** in 2014 (updated 2020)
  - Technical standards to raise performance of new heat networks

- **Heat Trust** created in 2015
  - Consumer protection scheme (based on Ofgem rules for gas and electricity)
  - Currently covering around 80,000 consumers (80%+ in London)
  - Mainly ESCos but also LAs, HAs and private developers



Existing regulations

- **Heat Network (Metering & Billing) Regs 2014** (implementing EU Directive) - Amended 2020
  - Duty to notify
  - Duty to install meters (with some exceptions)
  - Billing rules
- **Housing laws (inc Landlord and Tenant Act 1985)**
  - Landlord responsible for heating repairs (Section 11) – amended 1988 to include communal repairs
  - Service charges
- **Consumer Rights Act 2015**
  - Retrospective billing considered an unfair trading terms
- **Consumer Protection from Unfair Trading Regulations 2008**

Heat Network Regulation timeline

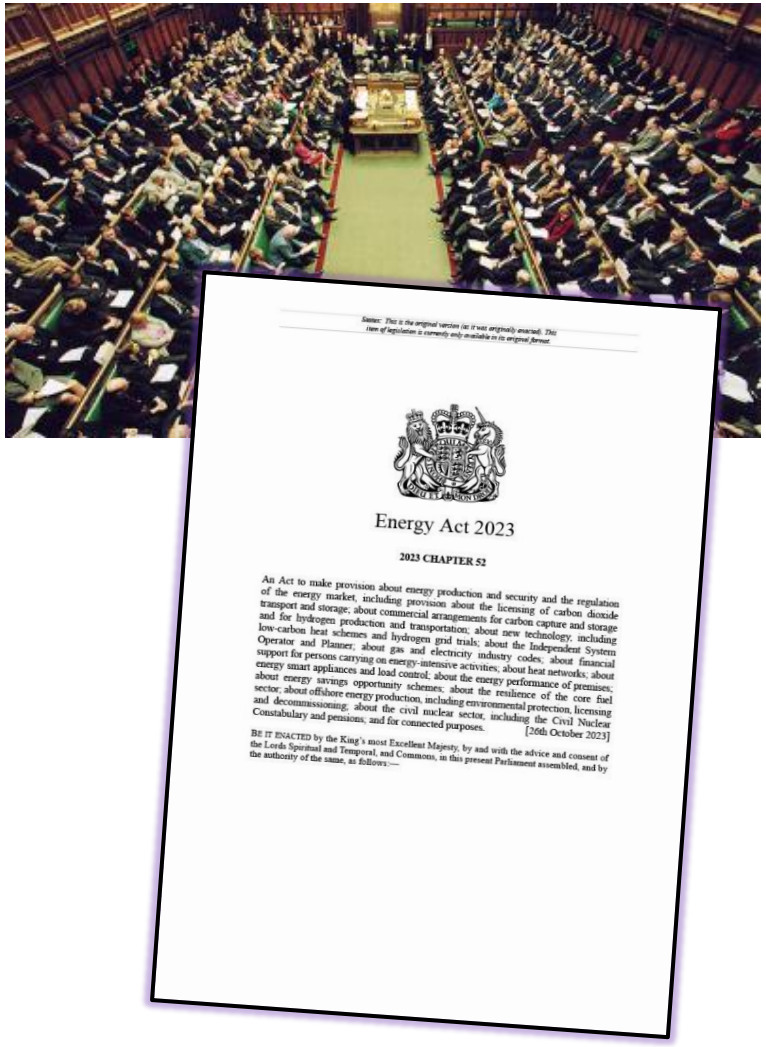
- 2017 (Dec) - **CMA market study** launched into heat networks
- 2018 (July) - **CMA report** – recommends heat network regulation
- 2020 (Feb to June) – Government '**Building a Market Framework**' consultation
- 2023 (Oct) – **Energy Act 2023** gives government legal powers to regulate
- 2025 (March) - The Heat Networks (Market Framework) (Great Britai Regulations 2025

Energy Act 2023

Heat network regulations:

- **Ofgem** to be regulator
- **Ombudsman** dispute resolution for consumers
- Consumer advocacy body (**Citizens Advice**)
- Authorisation regime with conditions on
  - Consumer protection (inc price)
  - Technical standards
  - Step-in and supplier of last resort
- Installation and maintenance licenses

- **Heat Network Zoning**



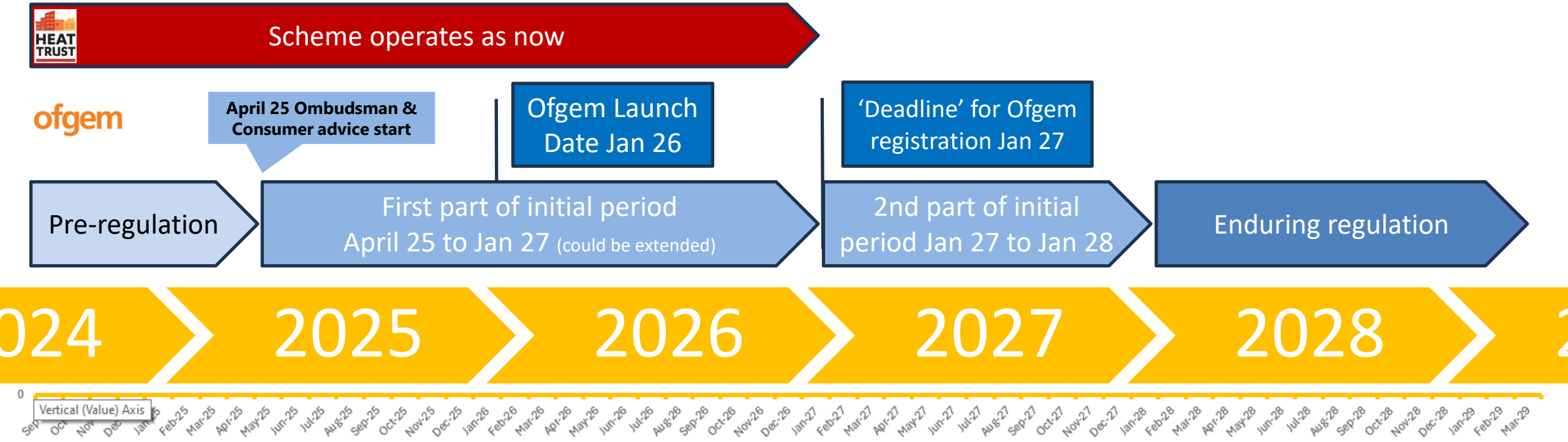
Consumer protection

Government plans for **consumer protections**

- Obligation to register with Energy Ombudsman (from now!)
- Obligation to register with Ofgem (by Jan 2027) and provide monitoring data covering April 26 onwards.
- Aim to give heat customers equivalent consumer protections to gas and electric customers
- Heat Trust rules therefore starting point
- Extend to fair pricing and technical standards
- GSoS compensation payments to customers for supplier failures
- Metering as standard

Timeline for introduction of regulation

As set out in consultation documents – subject to consultation outcome – with our timeline added



Getting regulation-ready

What can you do now?

"By joining Heat Trust now, organisations will not only be able to demonstrate the quality of their service to consumers right now, but they will also be better prepared for the transition to regulation."

DESNZ

Questions?

Stephen Knight, Chief Executive **stephen.knight@heattrust.org**

Ali Arshad

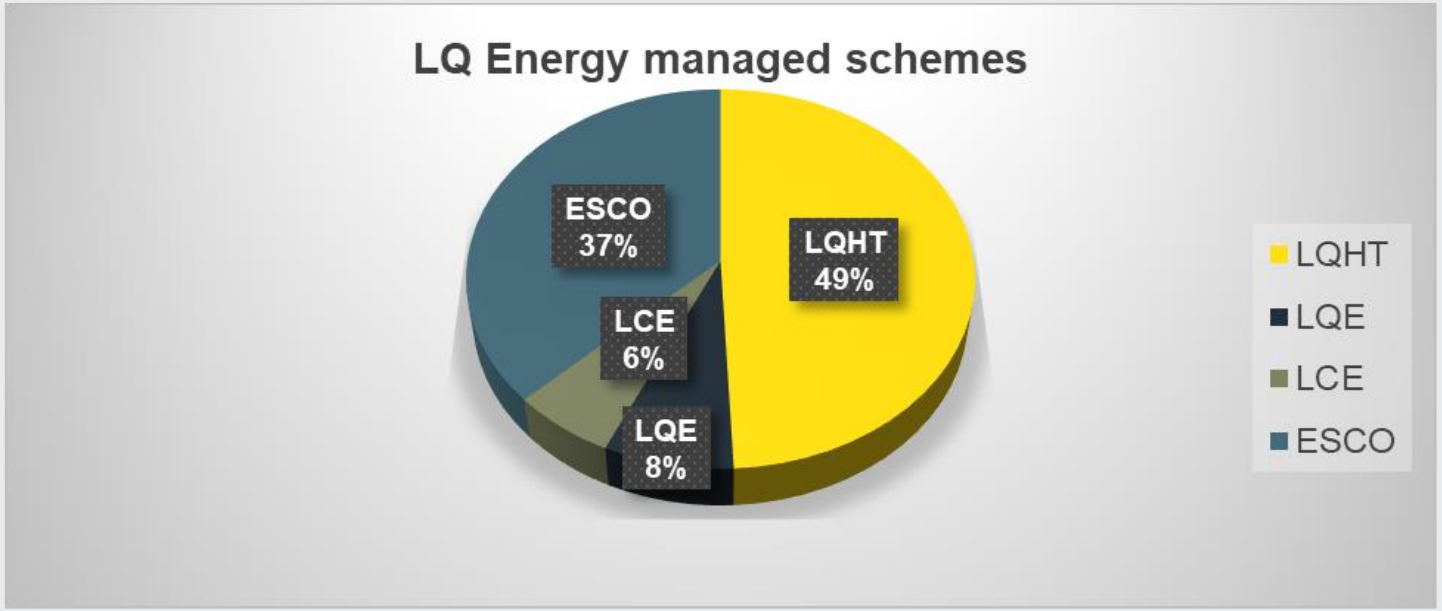
Head of Energy-London & Quadrant

9 May, 2025

L&Q Portfolio:
Heat Networks

Over 21,000 customers on heat networks served via 4 models:

1. **L&Q owned and operated**
2. **L&Q Energy owned and operated**
3. **Third Party ESCO owned and operated**
4. **Managing Agent owned and operated**



Operating Models and WIP

L&Q

- Evaluating efficiency of the networks.
- Retrofitting where necessary.
- Reviewing metering set ups across the portfolio.
- Aligning complaints and compensation processes.

L&Q Energy

- Reviewing MCA obligations and Change in Law impacts.
- Refining Energy Strategies with counterparts.
- Evaluating impacts on customer tariffs and commercial models.

Third Party ESCO's

- Reviewing MCA's, Connection Agreements, and Supply Agreements.
- Evaluating the CiL impact on customer tariffs and Landlord portions.
- Seeking confirmation that the ESCo's are regulation ready.

Managing Agents (LCE)

- Defining roles and responsibilities under the new regulations.
- Seeking confirmation that the MA's are regulation ready.
- Defining a better customer journey.

The costs for these activities are likely to be high and need to be properly forecasted into budgets.

Heat networks + regulation: a local authority perspective

Housing Brighton

8 May 2025

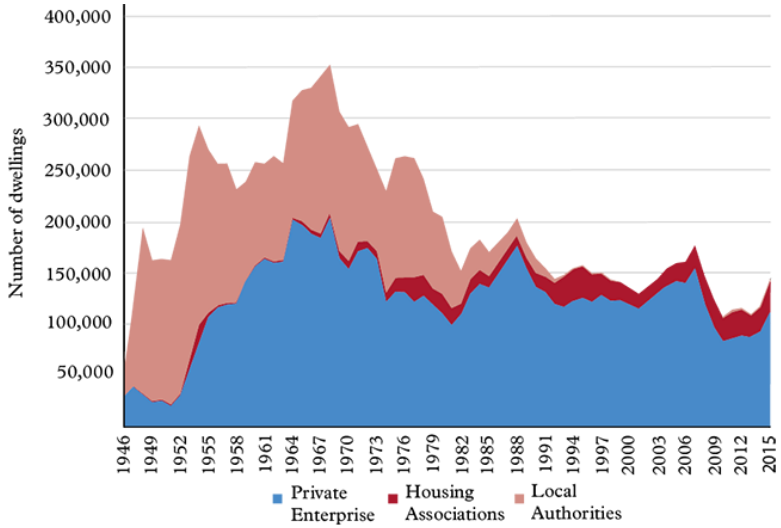
Overview

- Introduction
- Stock: what are we dealing with?
- Process: how is heat supplied now?
- Where are we heading?
- Challenges case study:
  - outsourcing billing + lessons learnt
- Summary

Introduction

- We welcome regulation
- But there are challenges

What are we dealing with?



Haringey – an example

Category	Metering	No sites	No dwellings
Owned and operated by LBH – new	Metered	4	341
Owned and operated by LBH – retrofit (1)	Metered	6	955
Owned and operated by LBH – existing (2)	Unmetered	25	656
LBH buys heat from third party and on-sells to tenants	Metered	3	231
Due for completion in next 12 months	Metered	4	378
Total		**42**	**2,561**

1. Includes one large district heating site (>800 dwellings), all the others communal, 20-40 dwellings per site
2. All existing, various states of repair, all communal, 20-40 dwellings per site

How is heating supplied now?

- Integrated within landlord services
  - Embedded in tenancy and lease agreements
  - Part of general maintenance, repairs and complaints processes
- Limited metering (not needed before 2014) so billing mostly on flat weekly rate included in service charge
- Charges based on cost recovery


Income manage-ment
Rents
Feedback and complaints
Tenancy manage-ment
Lettings
Leasehold manage-ment
Finance
O+M
Housing delivery – new schemes
Digital/ GDPR
No coordinating centre for ‘heat supply’ as a function

What do we need in future?

- Clearly defined ‘heat supply’ function with appropriate governance to drive compliance

Integrating change: M+B as a case study

- Metering brings organisational as well as cost and technical challenges
- For Haringey we needed to decide whether to deliver the billing service ourselves or outsource

When is it worth bringing billing service in house?

➢ Estimated threshold 2,000 customers = c. £120,000

In house v outsource?

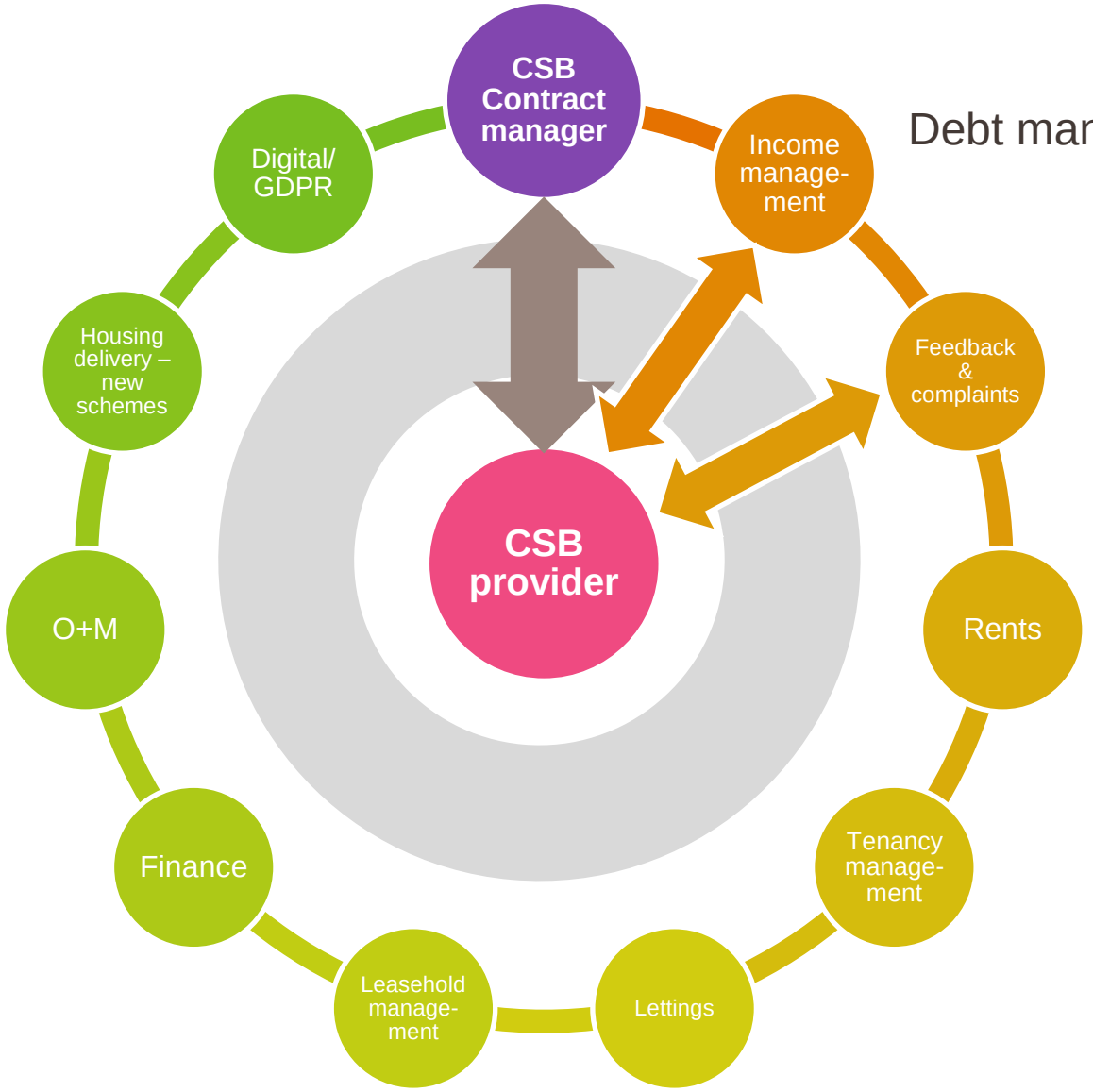
Outsource Pros

- Don’t need to build up in house expertise
- Access to efficient digital systems designed for the job
- Experienced supplier

Outsource Cons

- A lot of interfaces with the Council to manage
- Extra complexity for tenants

➢ Decided to outsource primarily due to lack of internal capacity



Debt management

Complaints

Lessons learnt

- Extremely complex interfaces
- Internal engagement is key and needs investment
- Embedding new processes takes time
- Be prepared to make mistakes!

Overall

- Regulation is a good thing, customers need protection
- But significant organisational challenges – social housing providers need time and financial support to adjust

Lunch break

Time to network and speak to your exhibitors

Chartered Institute of Housing

NATIONAL HOUSING FEDERATION

THE HOUSING COMMUNITY SUMMIT

Have you booked your place?

8 – 9 September 2025

ACC Liverpool

Data and innovation

Peter McBride
Senior national business development manager, Mixergy

Liz Oliver
Strategic housing & transformation consultant, NLP Coach, Inclusive Leadership Specialist

James Erskine
Specification sales manager, Corksol UK

Using Data to Deliver Better, Healthier, and More Affordable Homes with Mixergy

Peter McBride, Sales Director

mixergy

Contents

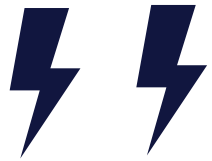
AS WE TRANSITION AWAY FROM GAS AND ELECTRIFY THE HOME, WE WILL HAVE TO DO MUCH MORE WITH MUCH LESS ENERGY

THE DECARBONISATION OF HEAT CHALLENGE

As we transition away from **gas** and electrify the home, we will have to do **much more** with much less **energy***

Gas peak capacity is 65KW** of power

Space heating
Domestic hot water
Cooking



Electricity peak capacity is 18.4** KW of power

Domestic appliances
Lighting
EV charging

*OFGEM: average 2-3 bedroom home with 2-3 residents consumers 11,500 kWh of gas and 1,800 kWh of electricity per year.
**Per meter connection

mixergy

As we transition away from gas and **electrify** the home, we will have to do much more **with much less energy***

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Space heating
Domestic hot water
Cooking
Domestic appliances
Lighting
EV charging

*OFGEM: average 2-3 bedroom home with 2-3 residents consumers 11,500 kWh of gas and 1,800 kWh of electricity per year.
**Per meter connection

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Without instantaneous heat …

Every home needs a cylinder for hot-water storage and/or heating optimisation

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IMAGINE IF EVERY HOT WATER CYLINDER WAS SMART, WORKED JUST LIKE A BATTERY, AND CONNECTED TO THE GRID

OUR MISSION

The challenge with existing hot water cylinders, they heat the whole cylinder, like a kettle

Even though on average we use less than 50%

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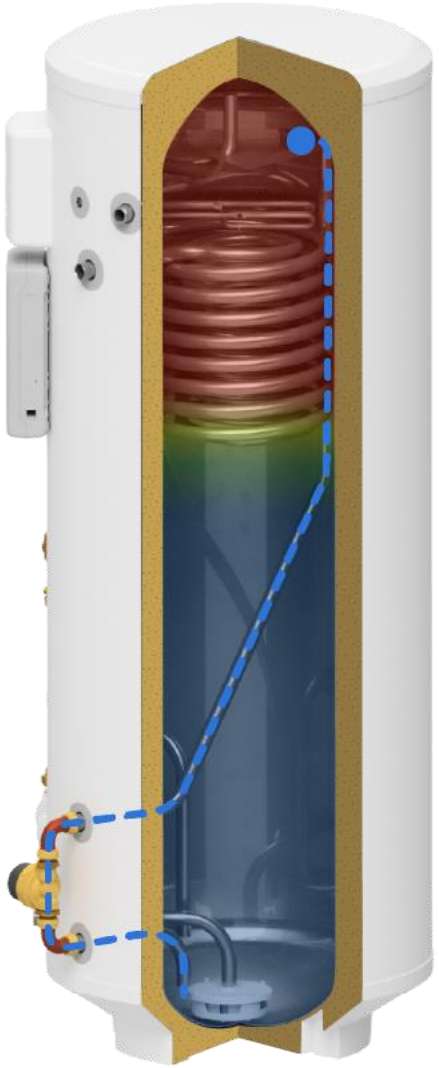
Mixergy only heats what you need — no energy wasted

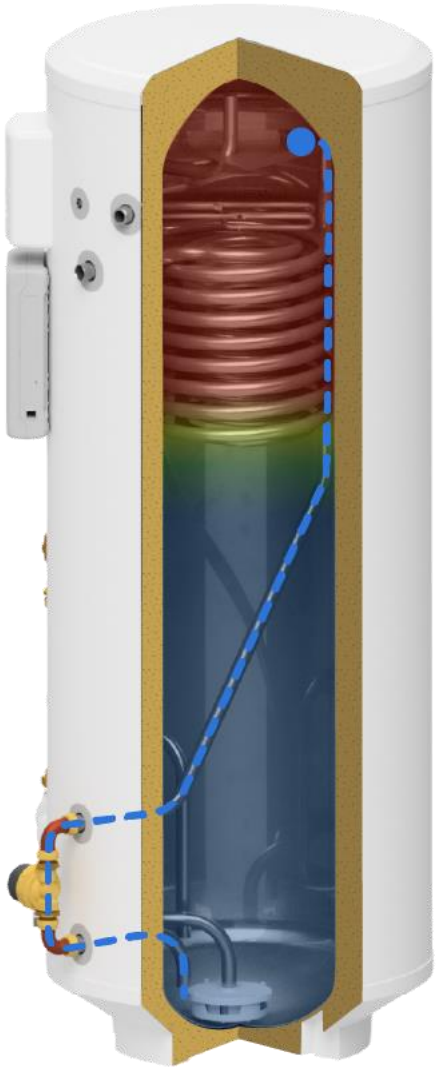


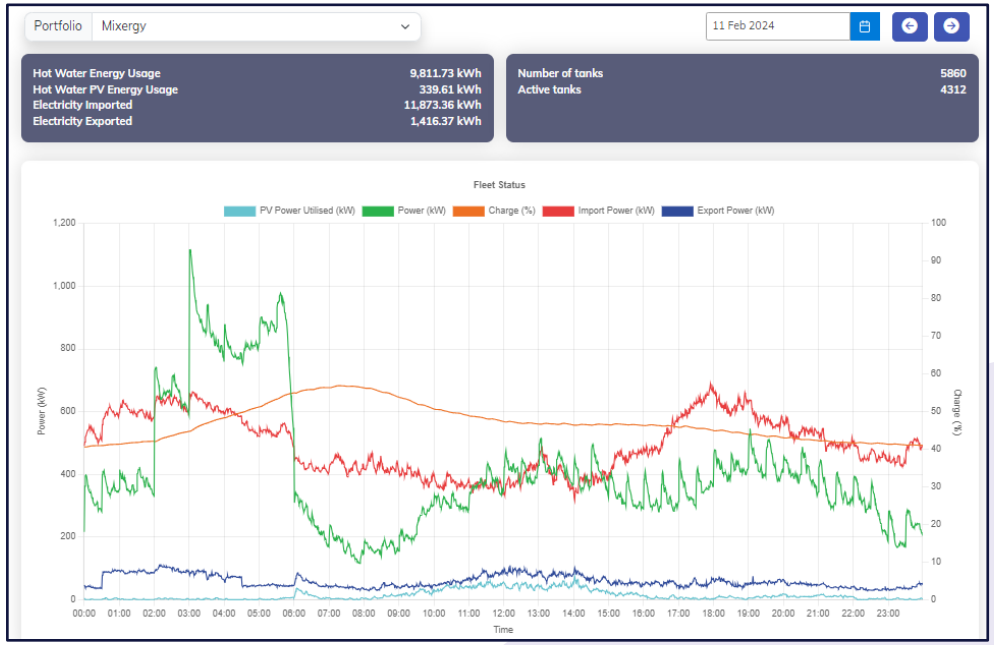
30% more useable hot water, due to 100% of the cylinder heated and pasteurised for legionella

Usable hot water is heated up to 10x faster

Recognised in Appendix Q for SAP uplift

We don’t just track data…we manage and optimise it





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MIXERGY

HEAT WHAT YOU NEED

FLEXIBLE HEAT SOURCE

SIMPLE TO INSTALL

SMART TARIFF READY

- Fastest re-heat time on the market, up to 10x faster
- Takes up a third less space in the home
- Integrates with time-of-use tariffs and enables DSR
- A truly future-proof pathway to net zero, compatible with all heat sources at anytime

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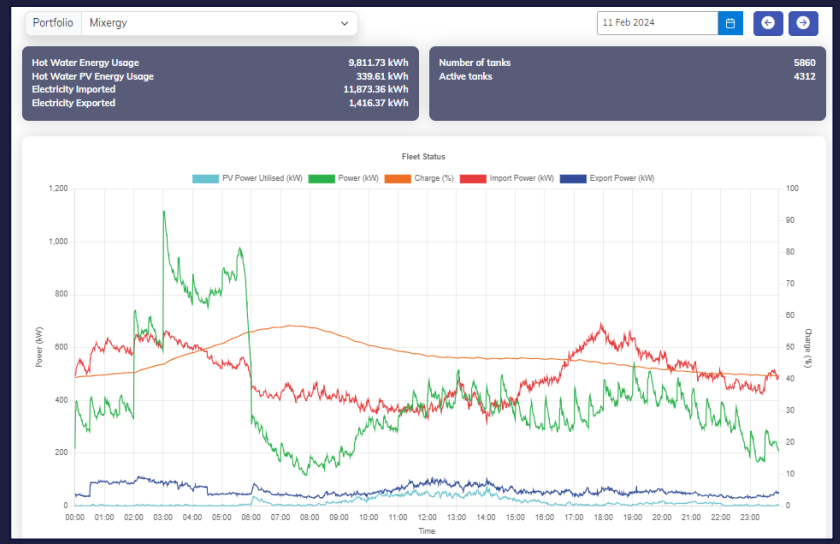
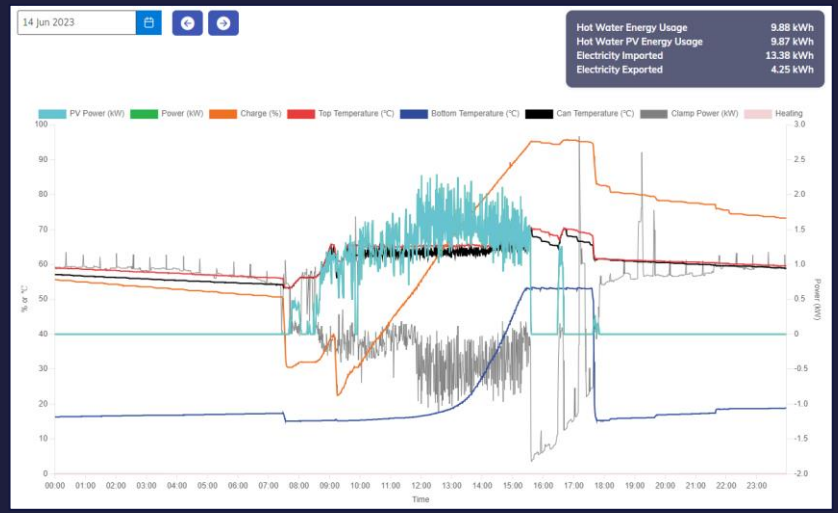
SMART CYLINDER DATA FOR REAL-TIME INSIGHTS, COMPLIANCE, AND FLEET EFFICIENCY

HOW OUR DATA TRANSFORMS EFFICIENCY

FLEET MANAGEMENT & REMOTE MONITORING

- Monitor cleansing cycles for legionella
- Speed up fleet response times by spotting issues early
- Support residents/homeowners remotely
- Understand the whole fleet carbon reduction and money savings





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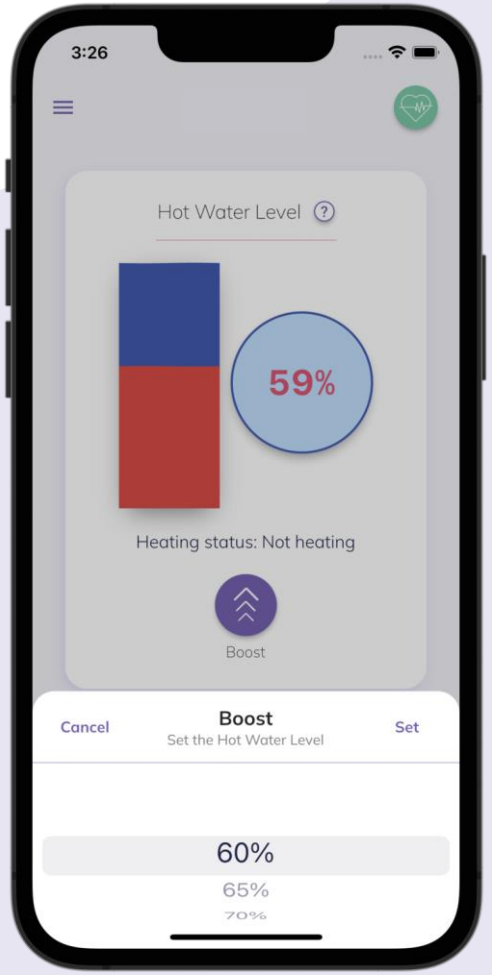
RESIDENT DATA

SAVES MONEY

EASY TO CONTROL

USER FRIENDLY

SMART TARIFF READY



- SMART TARIFF INTEGRATIONS WITH MACHINE LEARNING
- BOOST HOT WATER WHEN NEEDED
- PREDICTIVE LEARNING, WITH WEATHER COMPENSATION AND USER BEHAVIOUR
- CLOUD CONNECTIVITY WITH FREE UPDATE AND REMOTE DIAGNOSIS

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BIRMINGHAM CITY COUNCIL

Challenge

- Meet **Net Zero by 2030** while reducing tenant energy costs
- Upgrade water heating systems with minimal disruption
- Tackle **fuel poverty** and meet **EPC targets**

Solution

- Installed nearly **1,000 Mixergy 'heat-what-you-need'** cylinders
- Enabled **remote diagnostics** and non-disruptive upgrades
- Delivered **machine-learning-driven efficiency**

Why It Worked

- Mixergy's smart technology aligned with **net-zero strategy**
- Easy installs = **high tenant buy-In**
- Scalable, efficient, and **future-proof**

Results

£286,745 Saved on Energy Bills in 2 Years

Tenants collectively saved **£286,745**—averaging about **£286 per household.**

172 Tonnes of CO_2 Emissions Eliminated

That's like removing **40 petrol cars** from the road each year.

328,587 kWh in Energy Savings

Equivalent to powering **100 average UK homes** for a full year.

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HAVEBURY HOUSING

Challenge

- **Support vulnerable residents** with lower-cost, lower-carbon heating
- **Transition away from oil** without major infrastructure change
- Maximise use of **existing solar PV systems**

Solution

- Installed Mixergy smart hot water cylinder with **embedded solar diverter**
- **Replaced inefficient electric showers** with mixer showers
- **Enabled seamless integration with oil boilers** and other home systems

Why It Worked

- Mixergy turns the hot water tank into a **thermal battery**
- **Supports solar-first heating**, then oil backup when needed
- **Works alongside EV chargers** and other smart devices
- **Easy** for contractors to install and residents to use

Results

185 Days Without Oil

The Mixergy tank ran entirely on solar PV for **over half the year.**

3× Lower Carbon Emissions

By blending solar and oil, the tank emitted just **113 kg of CO_2**, compared to **373 kg** if oil had been used exclusively—a **70% emissions cut**.

837 kWh of Free Solar Energy Used

The tank smartly captured **837 kWh** of excess solar—**enough to power a fridge for nearly 5 years.**

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MY OWN HOME'S NET ZERO JOURNEY

Challenge

- **System designed to operate at high temperatures** pipework and emitters
- **Transition away from gas** without major infrastructure change
- **My wife** convincing her the CapEx required will be beneficial and taking up precious garden space to house the heat pump
- **4 bed detached** 145sqm home 2019 build

Solution

- **Installed Mixergy smart hot water cylinder with embedded solar diverter** works as a heat battery
- **Replaced Gas boiler with a Heat Pump** low carbon solution
- **Installed solar PV array 6.37kwp, Home battery 9.5kwh, EV charge Point and Induction hob**
- **Energy Tariff** Time of use and SEG

Why It Worked

- **Mixergy** turns the hot water tank into a heat battery
- **Solar and battery** enables low carbon energy, storage and load shifting
- **Heat Pump** low carbon and highly efficient combined SCOP 367% Oct 24 Mar 25
- **Induction Hob** low carbon cooking
- **Time of use tariff** enables load shifting at cheaper rates and lower carbon intensity and SEG

Results

£181.20 Total Winter Energy Bill Oct 24 - Mar 25

Average energy bill for this time is £30.20

2616 kWh Import Consumption

Total electrical import Oct 24 – Mar 25

2249 kWh of Free Solar Energy

Total solar generation Oct 24 – Mar 25

My home will be carbon positive, and I expect my annual energy bill to be <£400

CONNECT ON LINKEDIN

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077443100169

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Sprayed Cork Coatings

From Insight to Innovation: How Data is Driving Smarter Retrofit Solutions

How CorkSol uses real-world data to shape products, validate outcomes, and rethink retrofit delivery

Presented by James Erskine
Specification & Partnerships Manager
CorkSol UK

Why Retrofit Needs Rethinking

- Too many retrofits are built around assumed performance - not measured results
- Over-insulating, moisture buildup, tenant disruption: all risks driven by chasing numbers
- Our approach: let real data shape how we insulate, deliver, and validate
- It's led us to rethink more than product - we've rethought our entire business

Who We Are – CorkSol, SprayCork, & Contracting

CorkSol UK

- Applicator training & support
- Product distribution
- Product development

SprayCork

- Thin, breathable cork coating for internal & external walls
- Designed to improve heat loss & air tightness
- Low risk, low disruption, low cost

CorkSol Contracting

- Installation services
- Delivering labour & solution at scale
- Supporting services & testing

- This model gives us control over quality, feedback, and results - forming a direct line between site data and product development
- Today, we use what we learn on the ground to drive new products, improve delivery, and develop low-risk, high-performance innovations

Feedback is the New Foundation

We've built a retrofit feedback loop using:

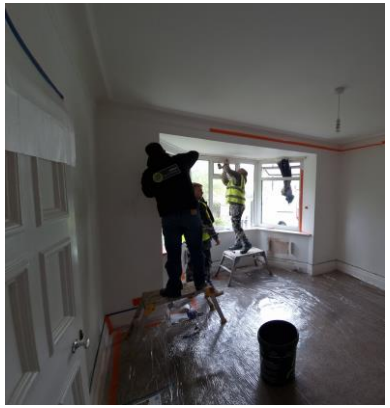
- Air permeability + U-value testing (Build Test Solutions)
- TTL and heat loss risk via Aico's HomeLINK sensors
- Moisture risk modelling

These insights shape:

- Where our product works best
- How we apply it
- What we build next

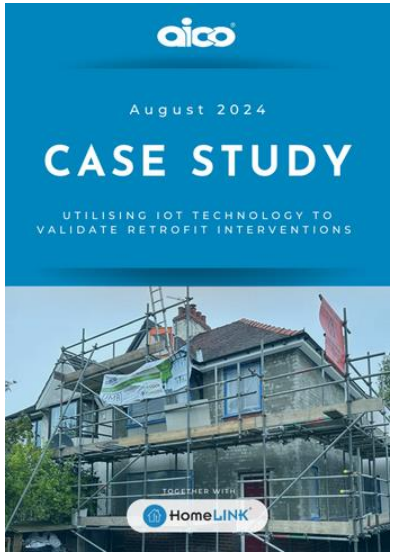
Case Study – Mortomley Vicarage (Sheffield)

- Retrofit of a stone wall vicarage, internal + external SprayCork application
- Independent testing (Build Test Solutions) showed:
  - 24% U-value improvement
  - 28% air permeability reduction
- Delivered without damaging heritage details or requiring extensive works
- EPC improved by 5 points



Case Study – Aico IoT Monitoring (York Semi Detatched)

- 1930s solid-wall home with EPC D60
- HomeLINK IoT sensors monitored:
  - TTL
  - Humidity
  - CO_2
- Post SprayCork results:
  - TTL improved from 28 mins -> 53 mins
  - Heat loss risk dropped from High -> Low/Medium
  - Worst performing room (bay window) improved by over 50%



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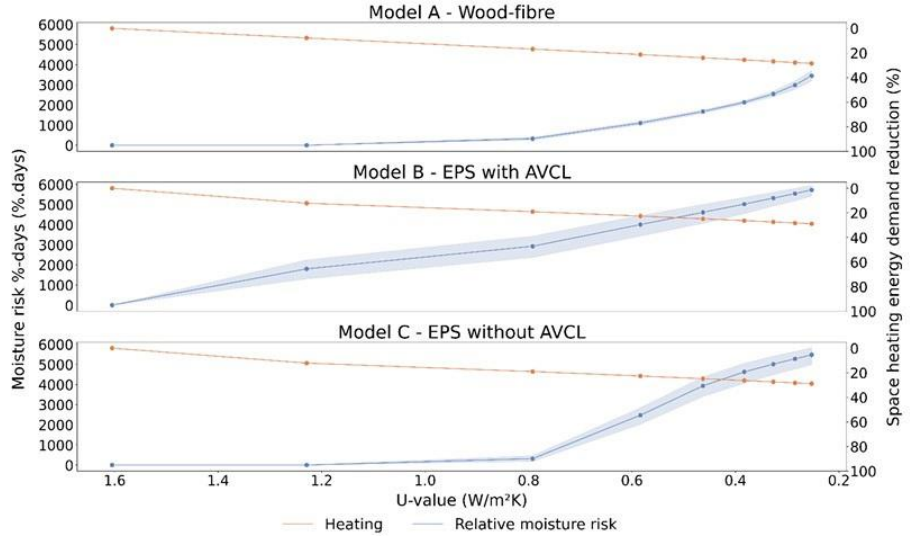
Moisture Risk – Rethinking U-Values Alone

- Over-insulating to chase low U-values can backfire
- Vapour-closed systems trap moisture
- Data from Leeds Beckett shows rising moisture risk at lower U-values
- Our solution: vapour-open, thin-layer systems with no risk of air or moisture building behind
- Will overheating become a problem?

Figure 18: The impact of insulation thickness (U-value) on moisture risk RH.days and space heating energy demand for IWI A-C simulated with the Manchester RWD file



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Final Thoughts – What Data Taught Us

Data doesn't just validate what we do – it tells us what to do next.

It helped us:

- Design smarter products (sustainable, vapour-open, thin, flexible)
- Build better delivery models (low risk, low distruption, low cost, and at scale)
- Win trust through validation (independent testing)
- Adapt to customer needs (fast, efficient, test to support EPCs / funding)

Thank you!

Join our Linkedin group - Damp & Mould Innovation Network: Social Housing Solutions

james@corksoluk.com | 07824 318168

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