Net Zero Living: Meet The Innovator - Webinar Series

Webinar 1: Decarbonisation of Buildings and the Public Estate

24th February 2025

UKRI Innovate UK

Our Purpose & Vision

We are part of Innovate UK, the UK's innovation agency.

We create diverse connections to drive positive change.

To establish a network of innovators so powerful its ideas will change the world.

UKRI Innovate UK | Business Connect

Our Network

46,229
Unique Organisations

72%
Small

15%
Medium

13%
Large

335,478
innovators

Every university in the UK

UKRI Innovate UK | Business Connect

Innovate UK Net Zero Living Programme

https://iuk-business-connect.org.uk/programme/net-zero-living/

A £60 million, three-year programme that aims to help places and businesses across the UK to accelerate the delivery of the transition to net zero.

Two core focus areas

Providing support to 52 local authorities, their partners and communities to overcome non-technical systemic barriers to the scaling and adoption of net zero solutions.

Supporting businesses to better understand and respond to the needs, opportunities and barriers preventing the large-scale roll out of net zero solutions.

UKRI Innovate UK | Business Connect

Kat Runnalls

Fairer Warmth

Daniel Hill

Dark Matter Labs

Nick Tune

Optimise AI

UKRI Innovate UK | Business Connect

Fairer Warmth

Decarbonisation of Buildings and the Public Estate

24th February 2025

Kat Runnalls

Fairer Warmth

Fairer Warmth App

Introducing Fairer Warmth

Fairer Warmth

The Challenge

The perspectives of varying demographic groups and businesses differs, and people require tailored support throughout all phases of a Net Zero Transition:

1. Current consumer information can be **difficult to access and complicated**
2. Current ‘top down’ projects can risk investments through **planning and engagement difficulties** and objections
3. These issues **compound together**, making the energy transition **less accessible** for those **most in need** of support.

Before

- How do I prepare?
- Do I have a choice?
- Will my business be affected?
- How do I get involved?
- Will I stay warm?
- How do I identify the best solution for me?

During

- How long will my energy supply be off?
- How can my needs be met?
- How will I fund the changes?
- How do I stay informed?
- I am concerned about people in my home.

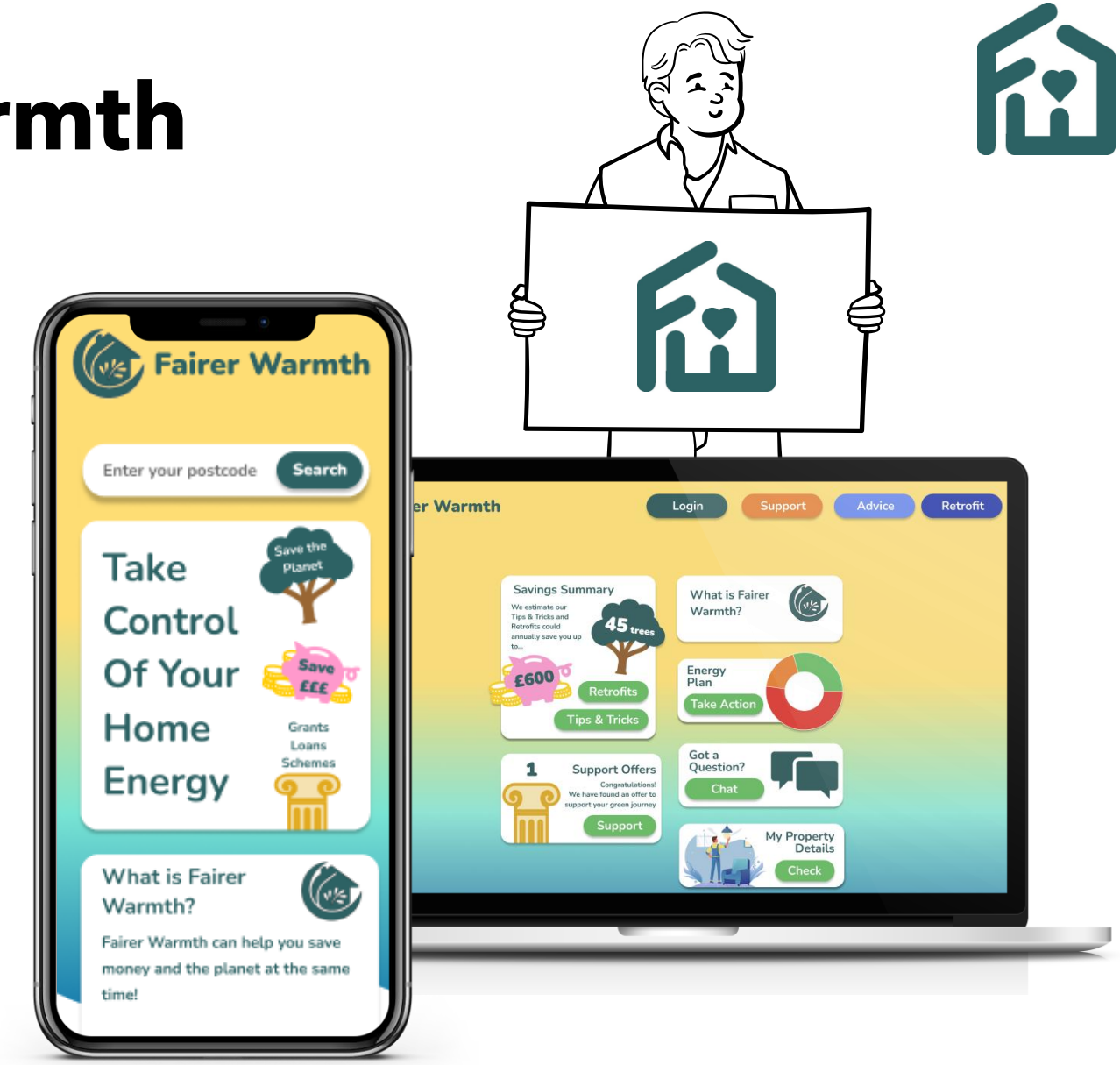
Enduring

- How will I pay for appliances?
- Will my bills be affected?
- Will my metering change?
- Can I use current tradespeople?

Introducing Fairer Warmth

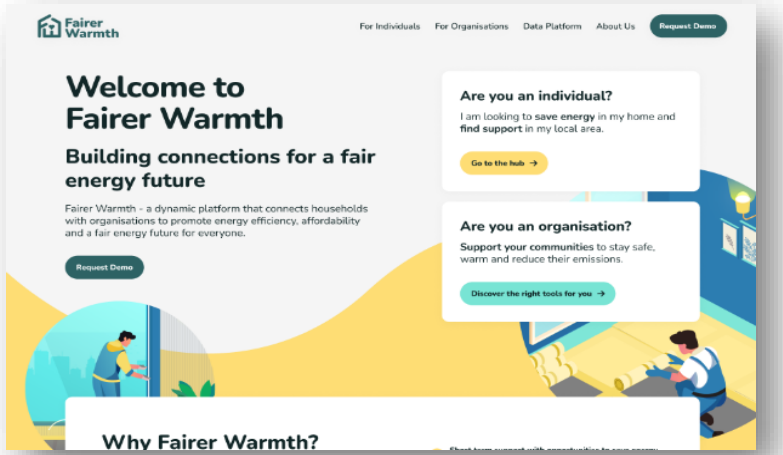
Fairer Warmth is designed to engage people and communities about reducing their home energy consumption and costs, helping:

- **Home Occupiers:** Receive the advice and support they need to save energy, money and reduce CO2.
- **Champions:** Provide anyone with a desire to support their neighbors and communities with the tools and training to do so.
- **Communities:** Initiate, grow, monitor and analyse effective community engagement and support programs.



The Fairer Warmth Toolkit

Fairer Warmth Hub Website



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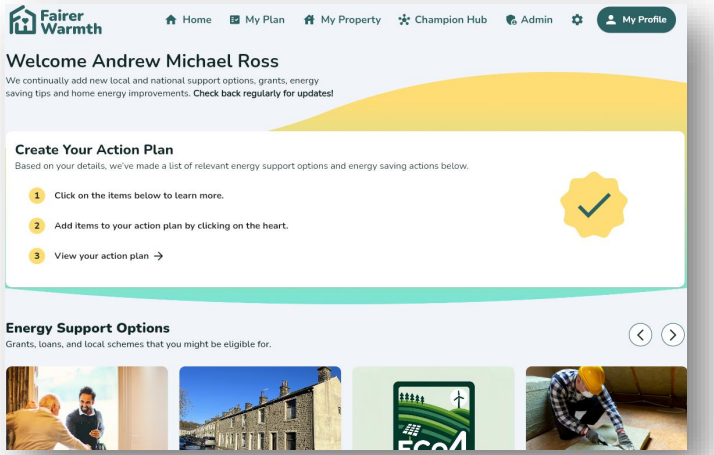

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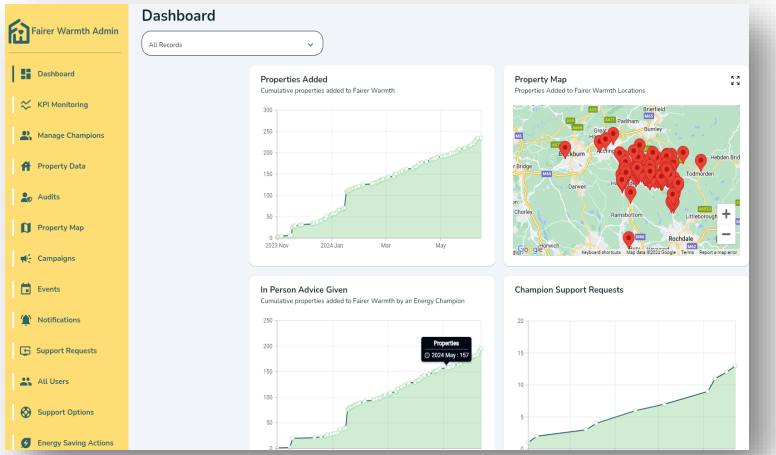

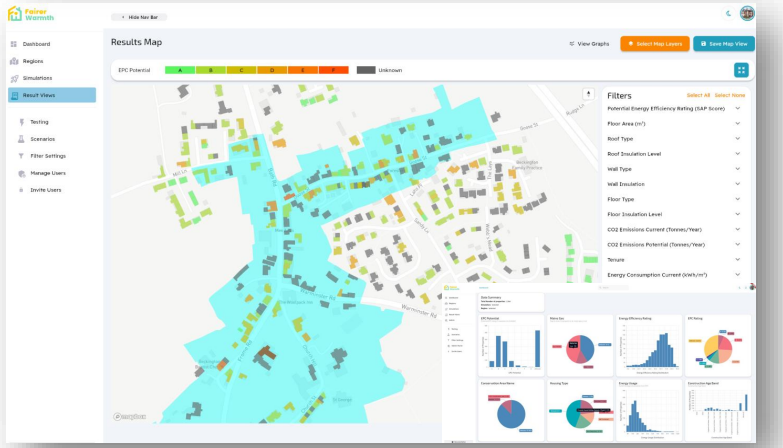

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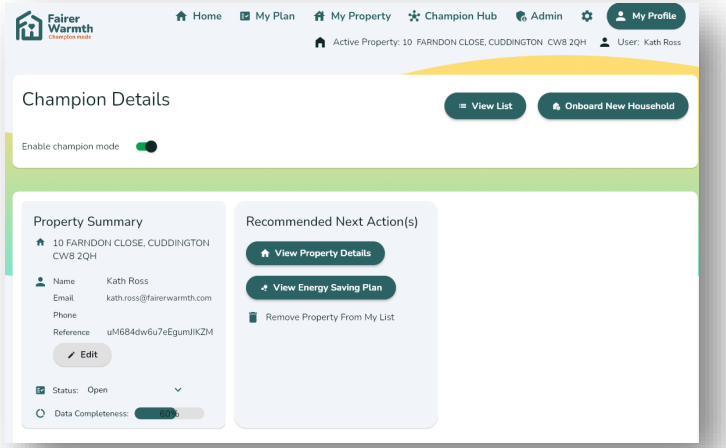

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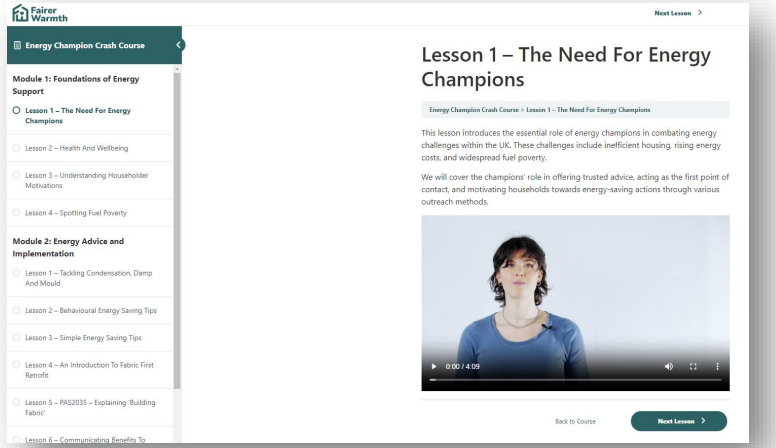

E-Learning Platform

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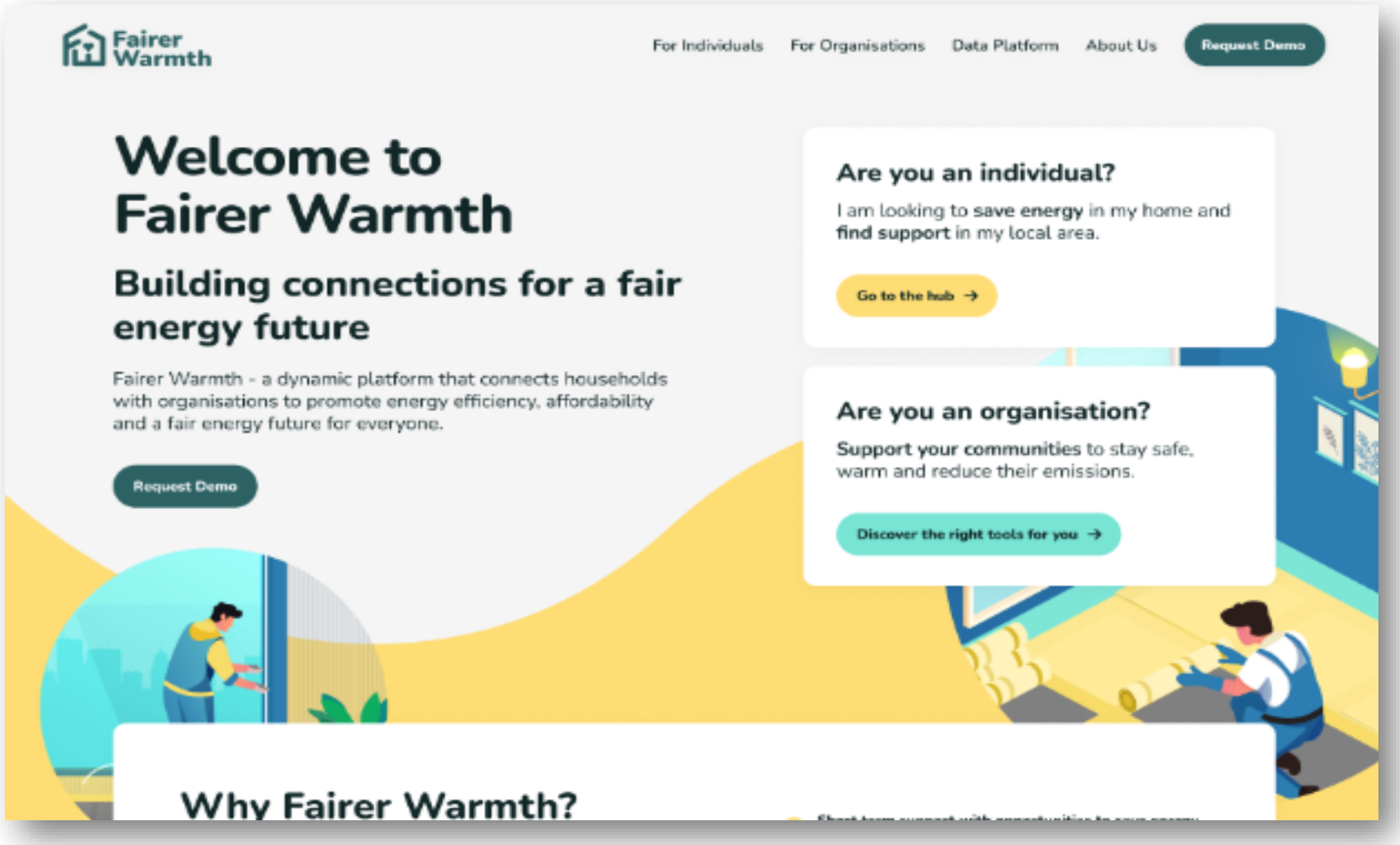

https://www.fairerwarmth.com/

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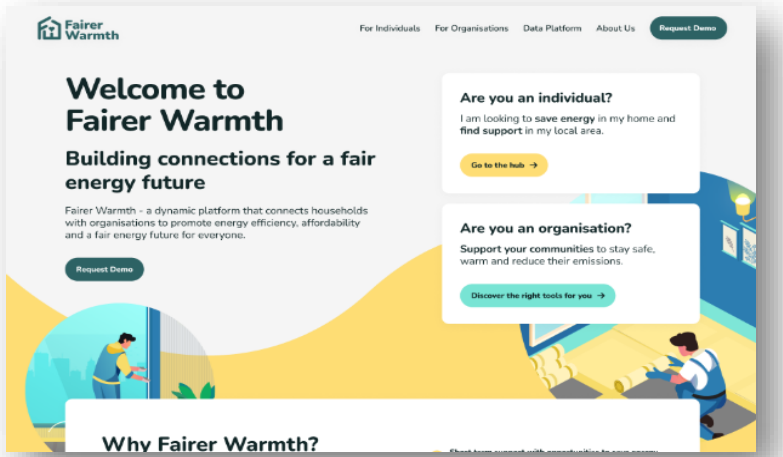

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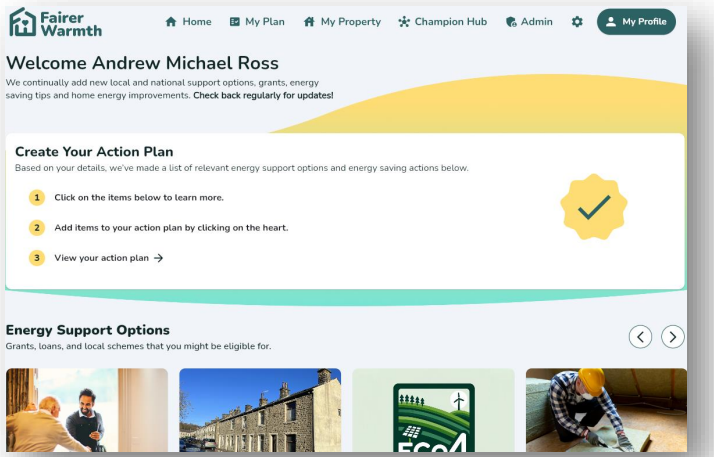

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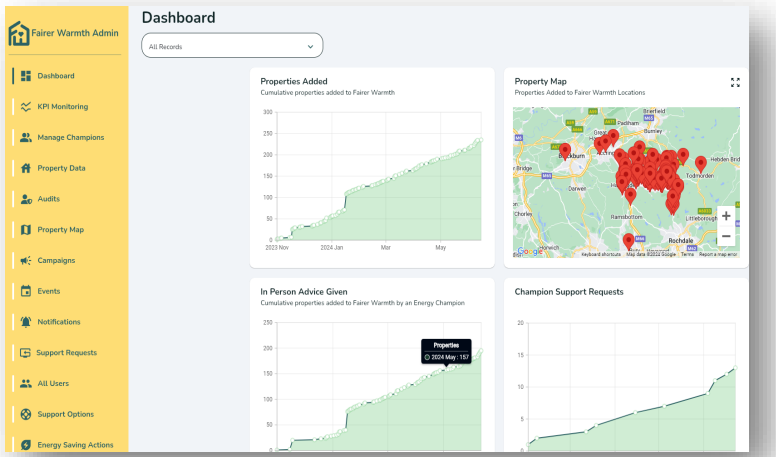

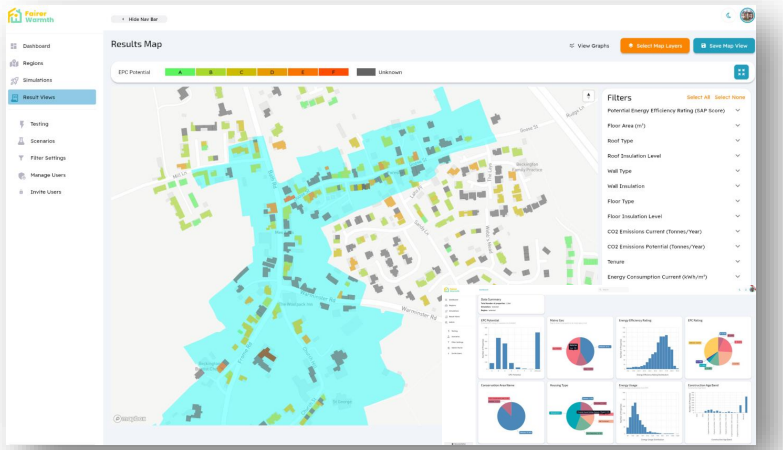

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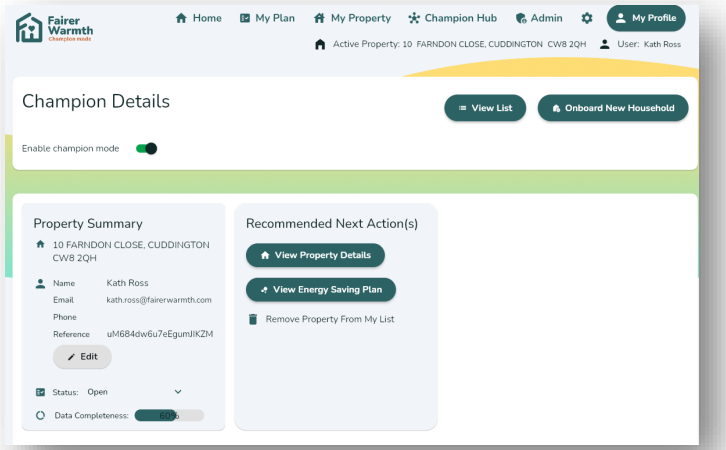

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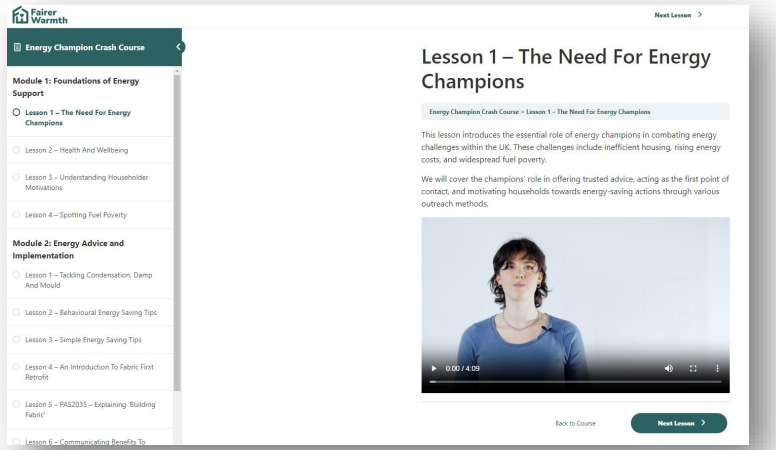

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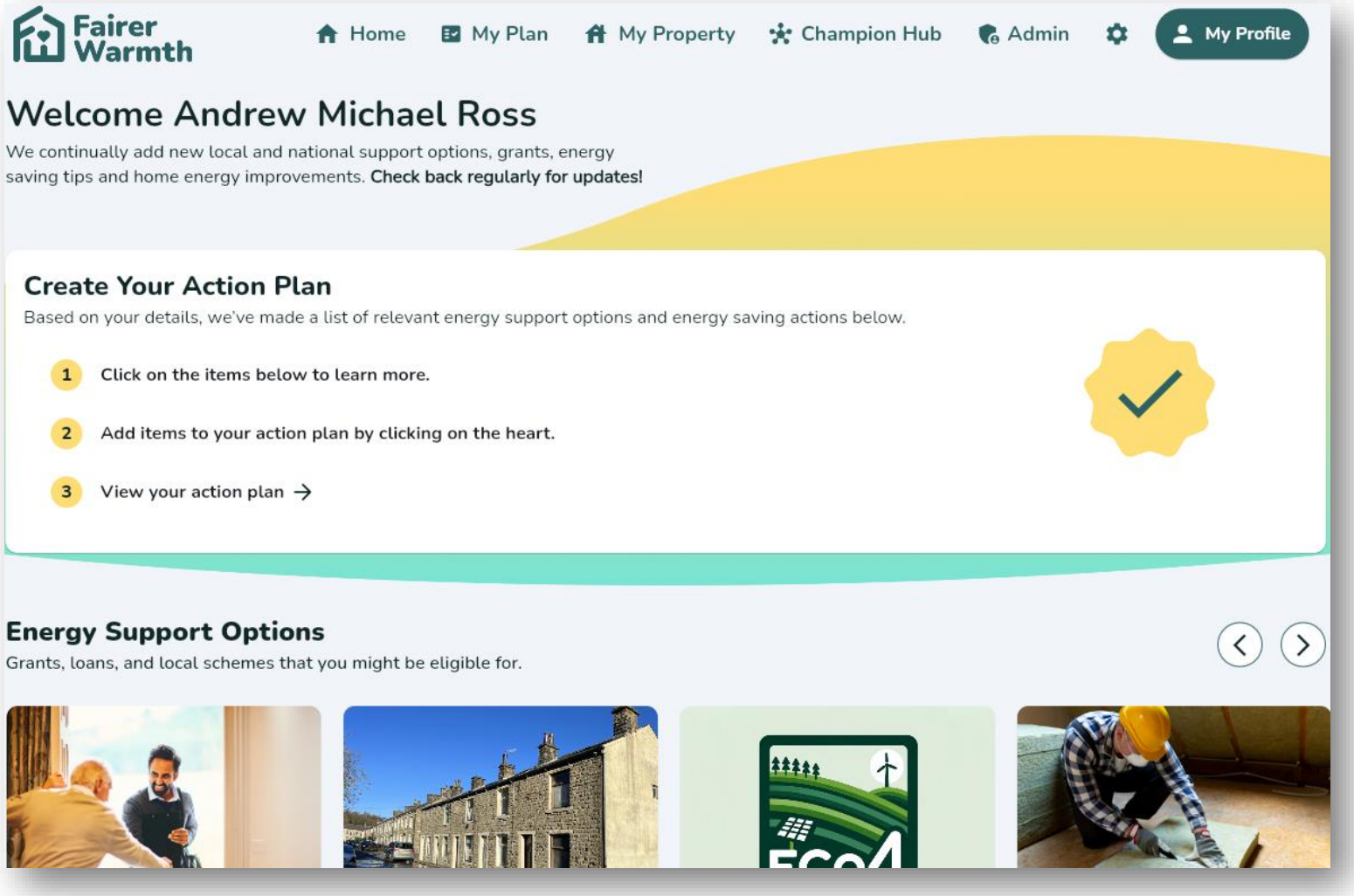

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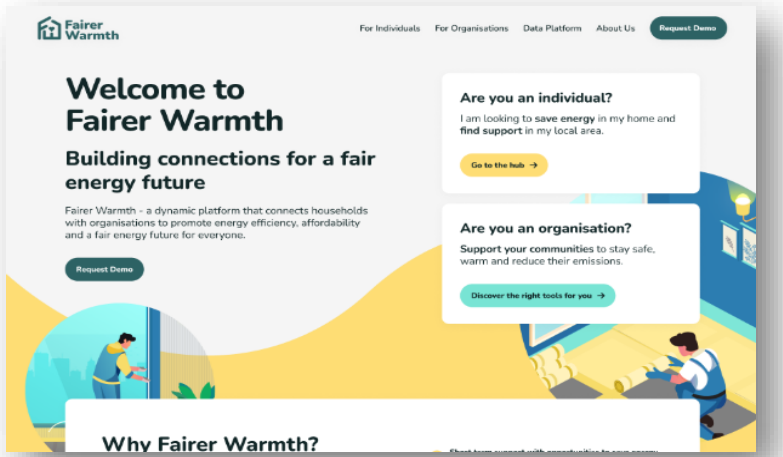

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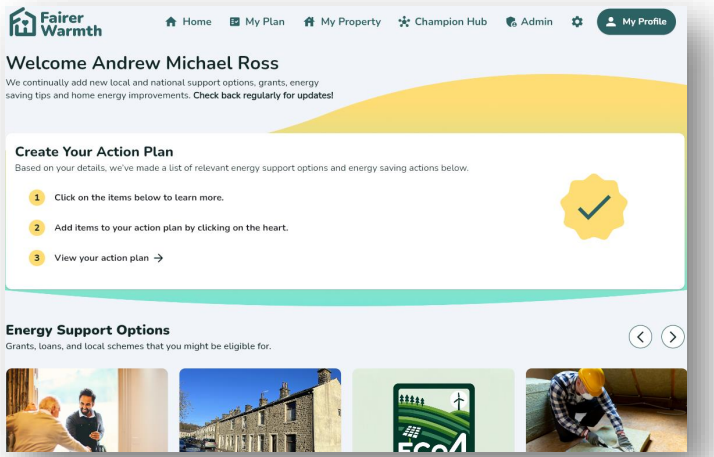

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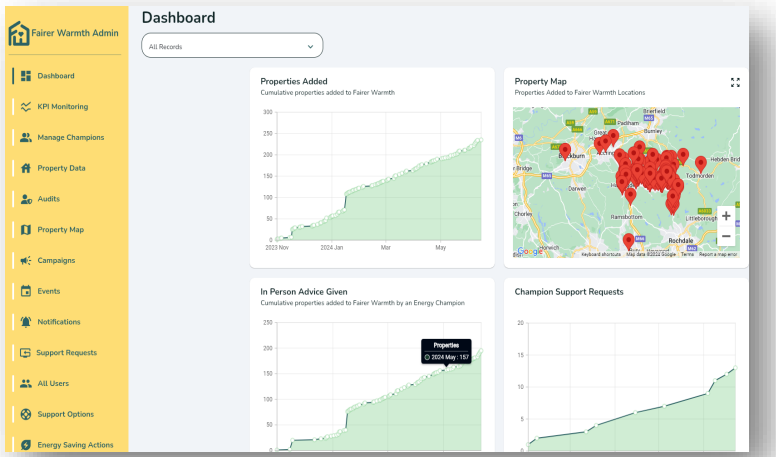

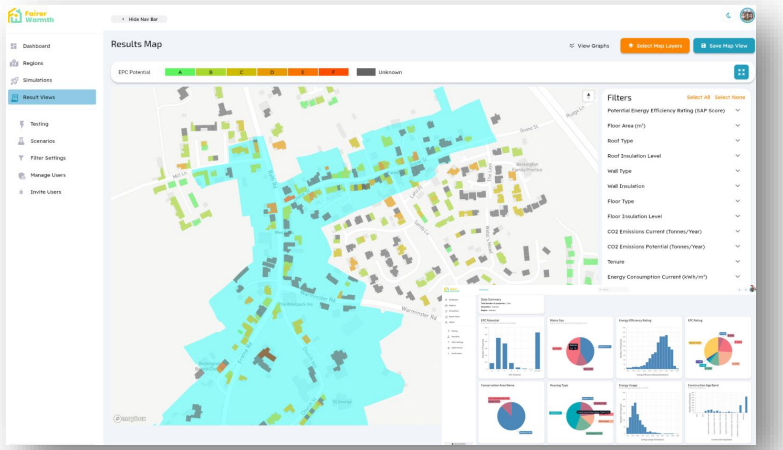

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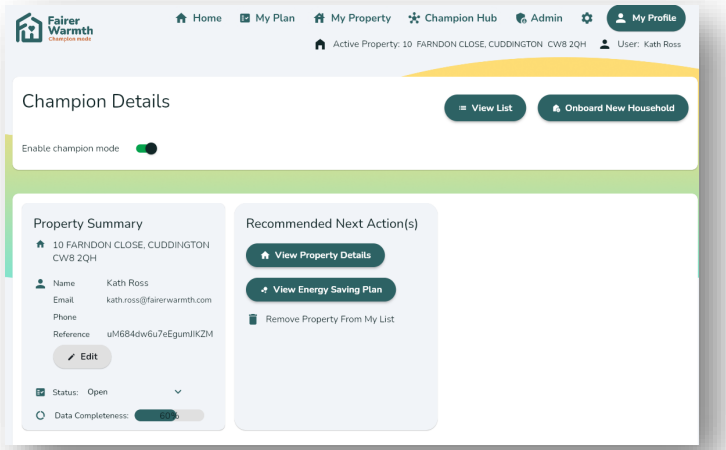

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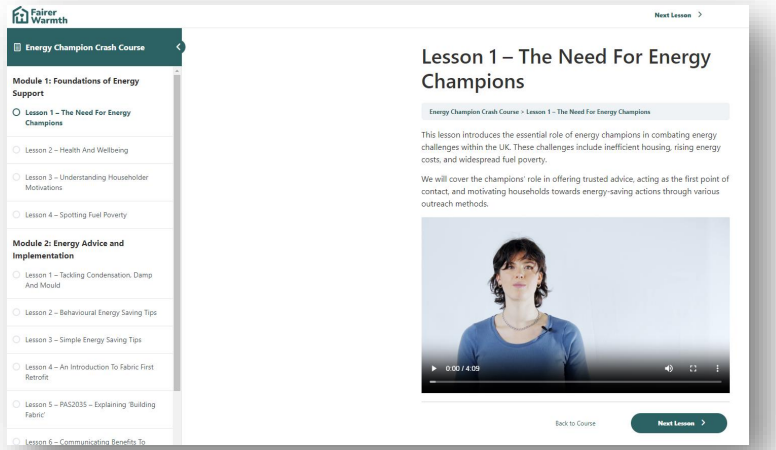

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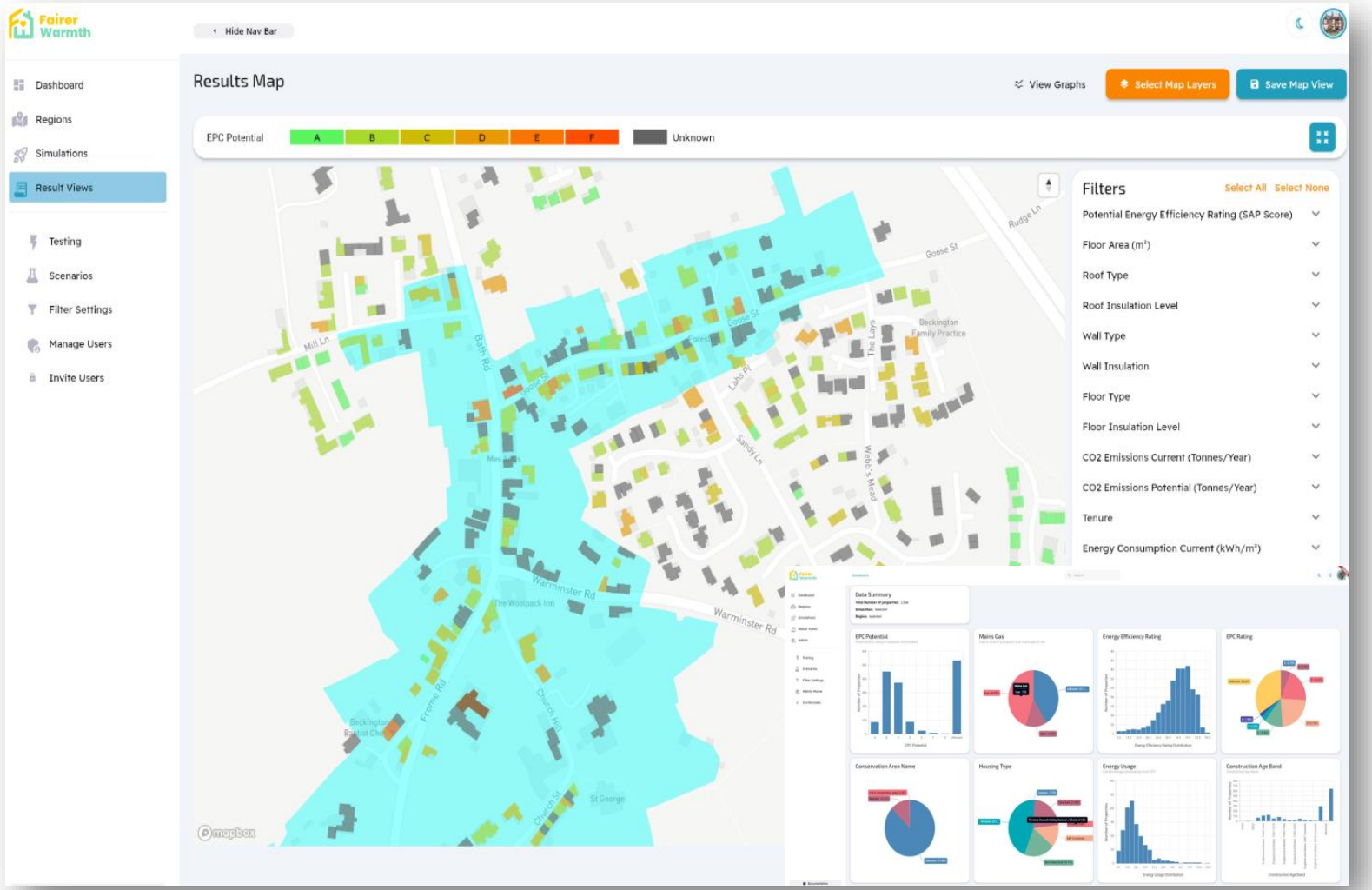

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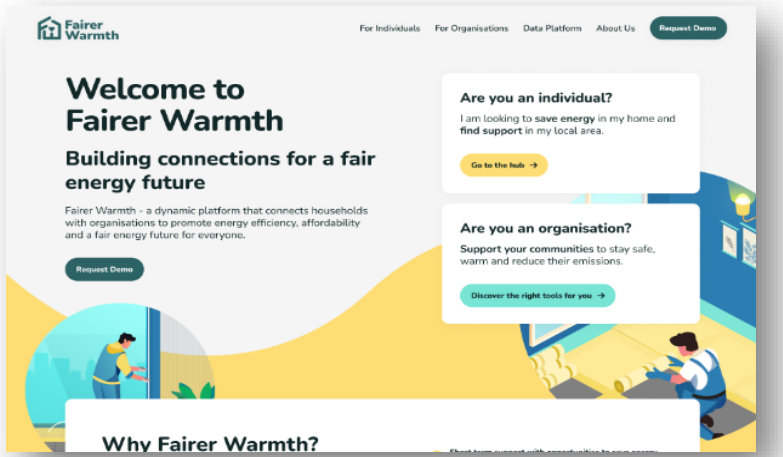

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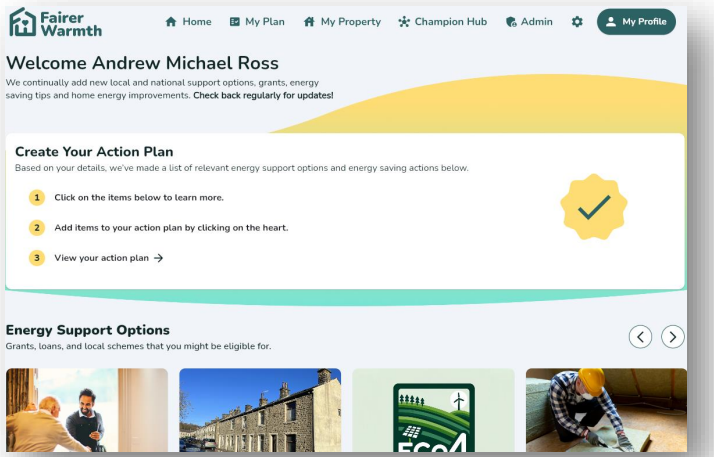

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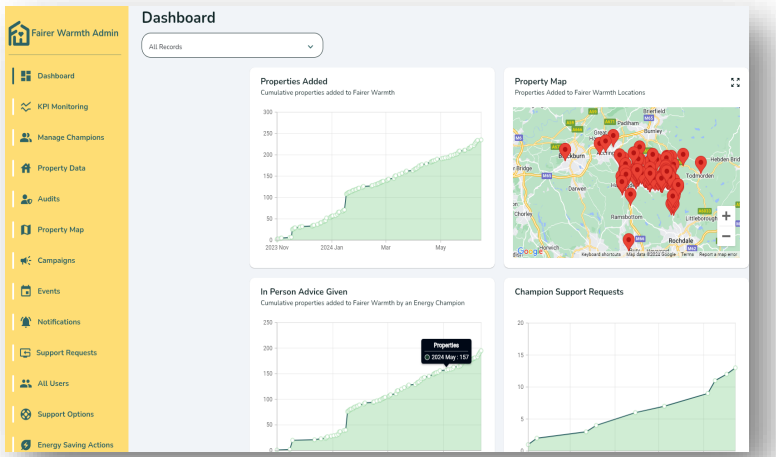

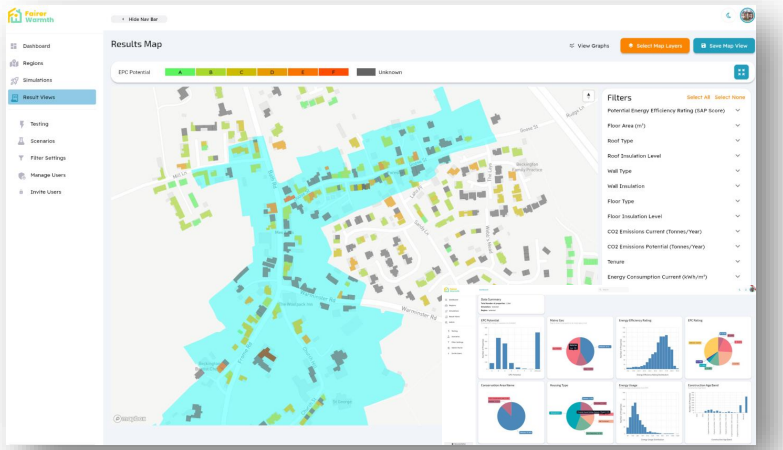

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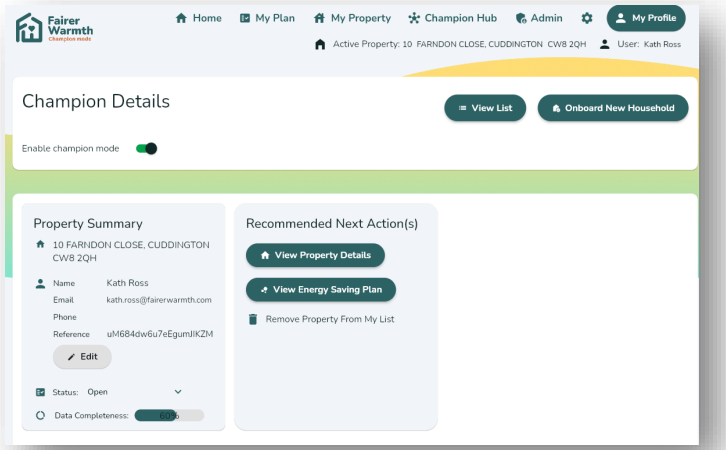

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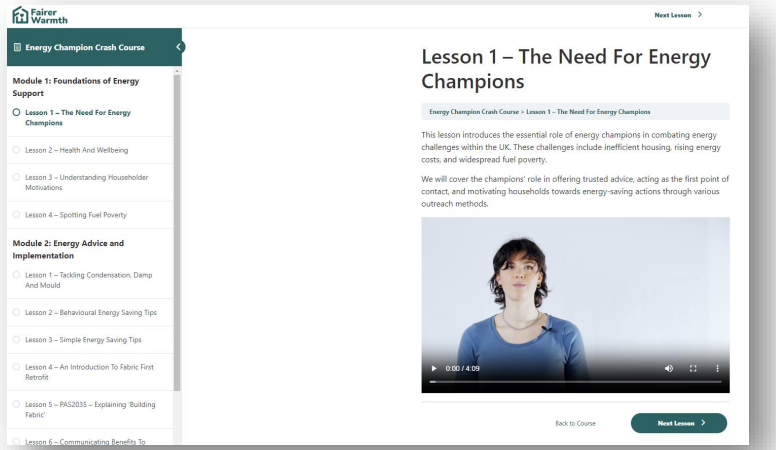

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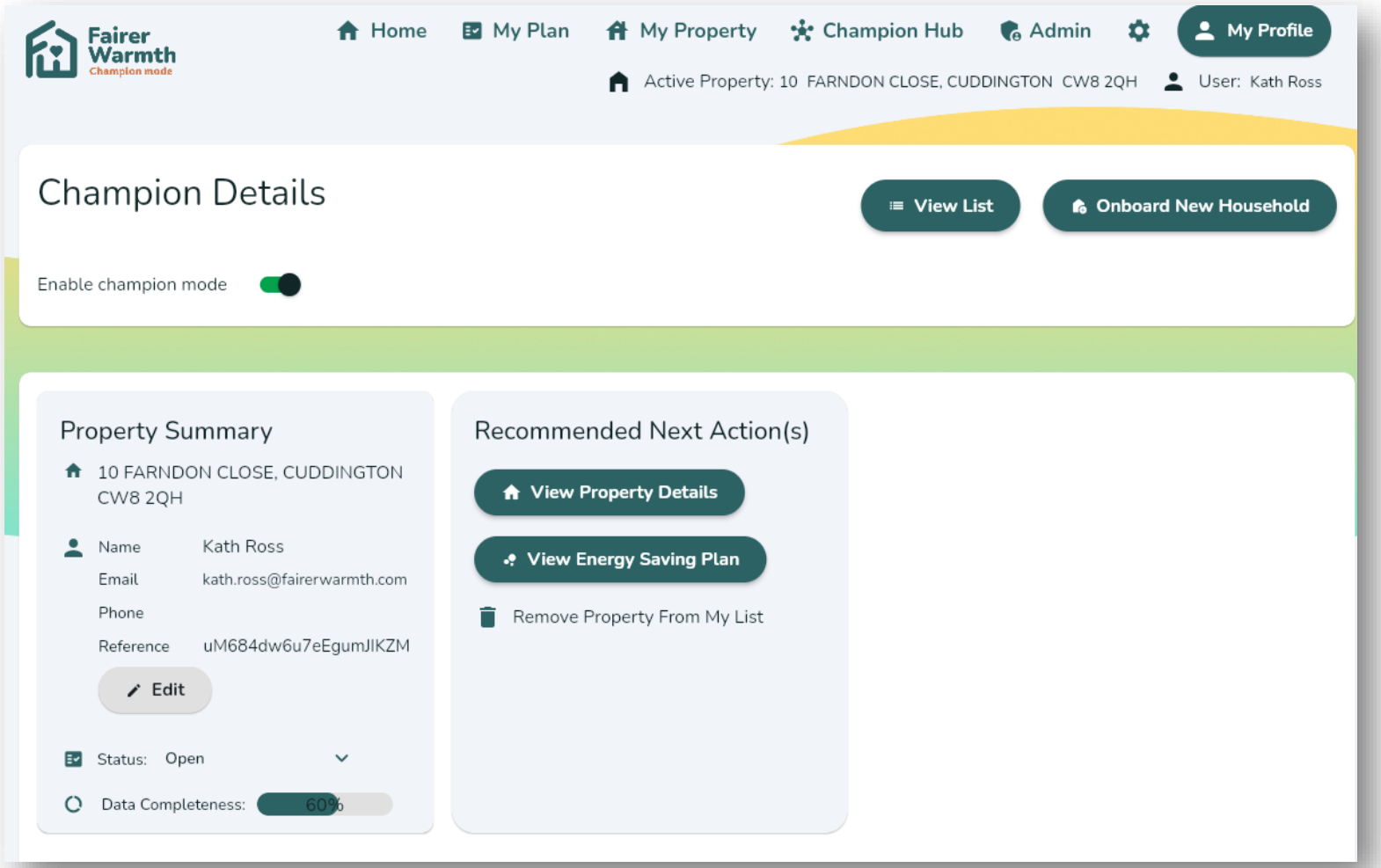

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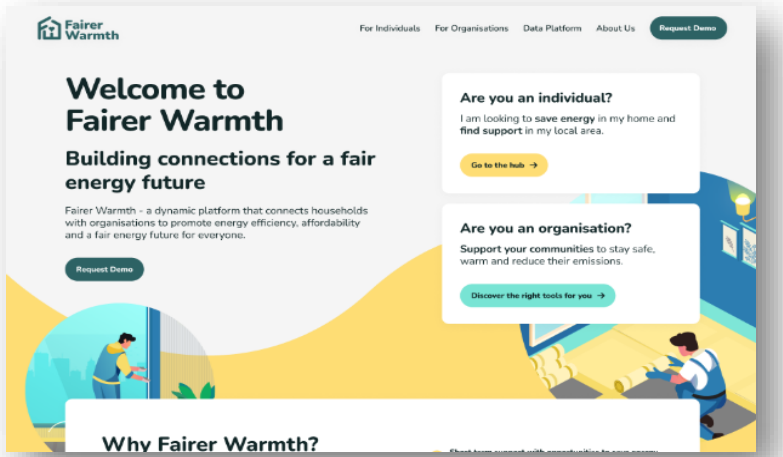

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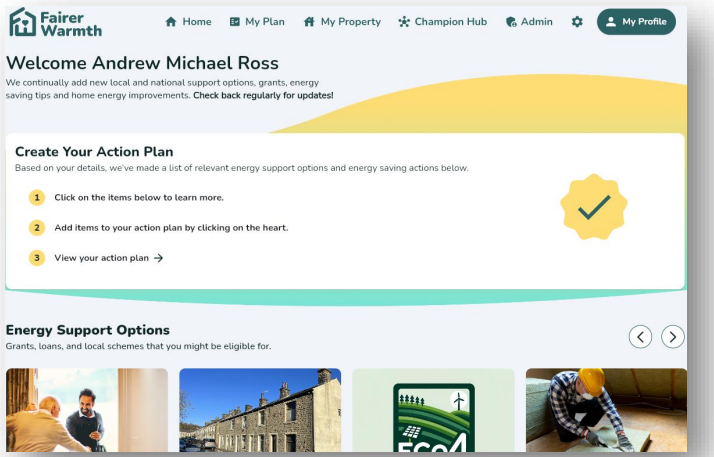

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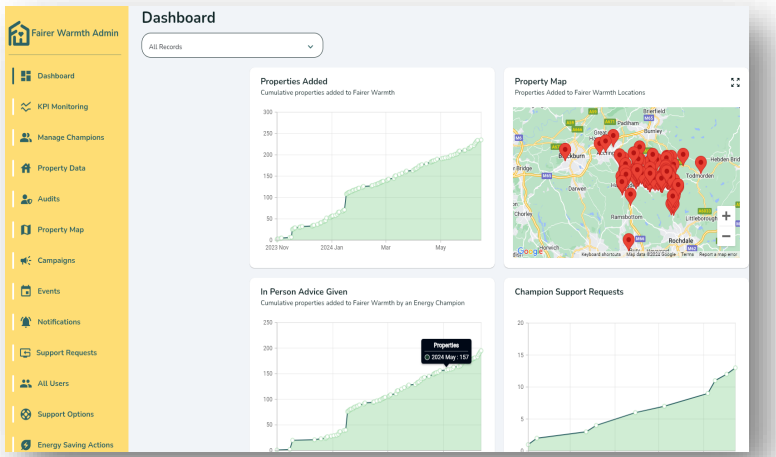

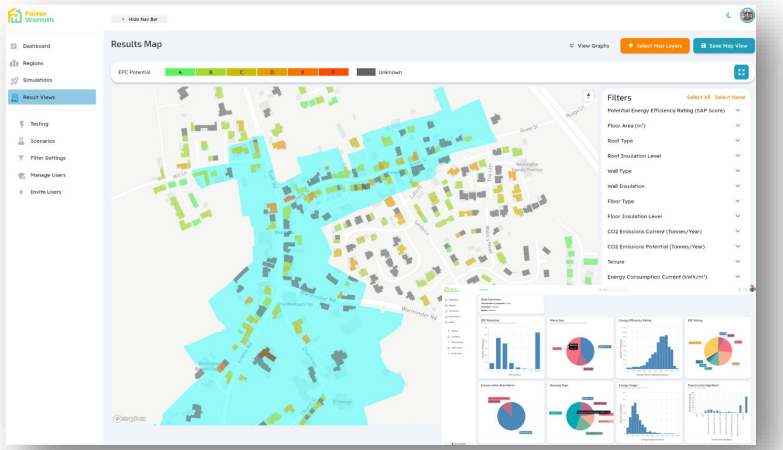

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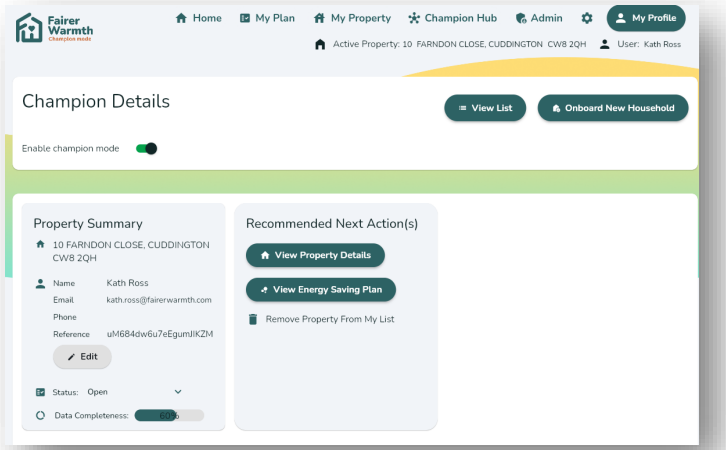

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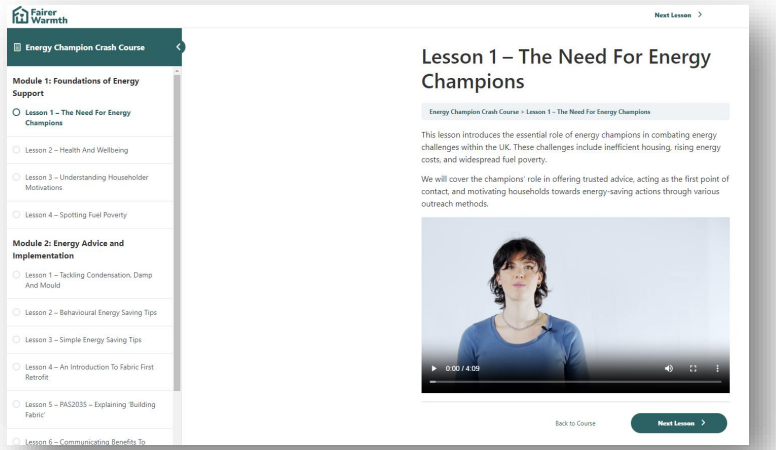

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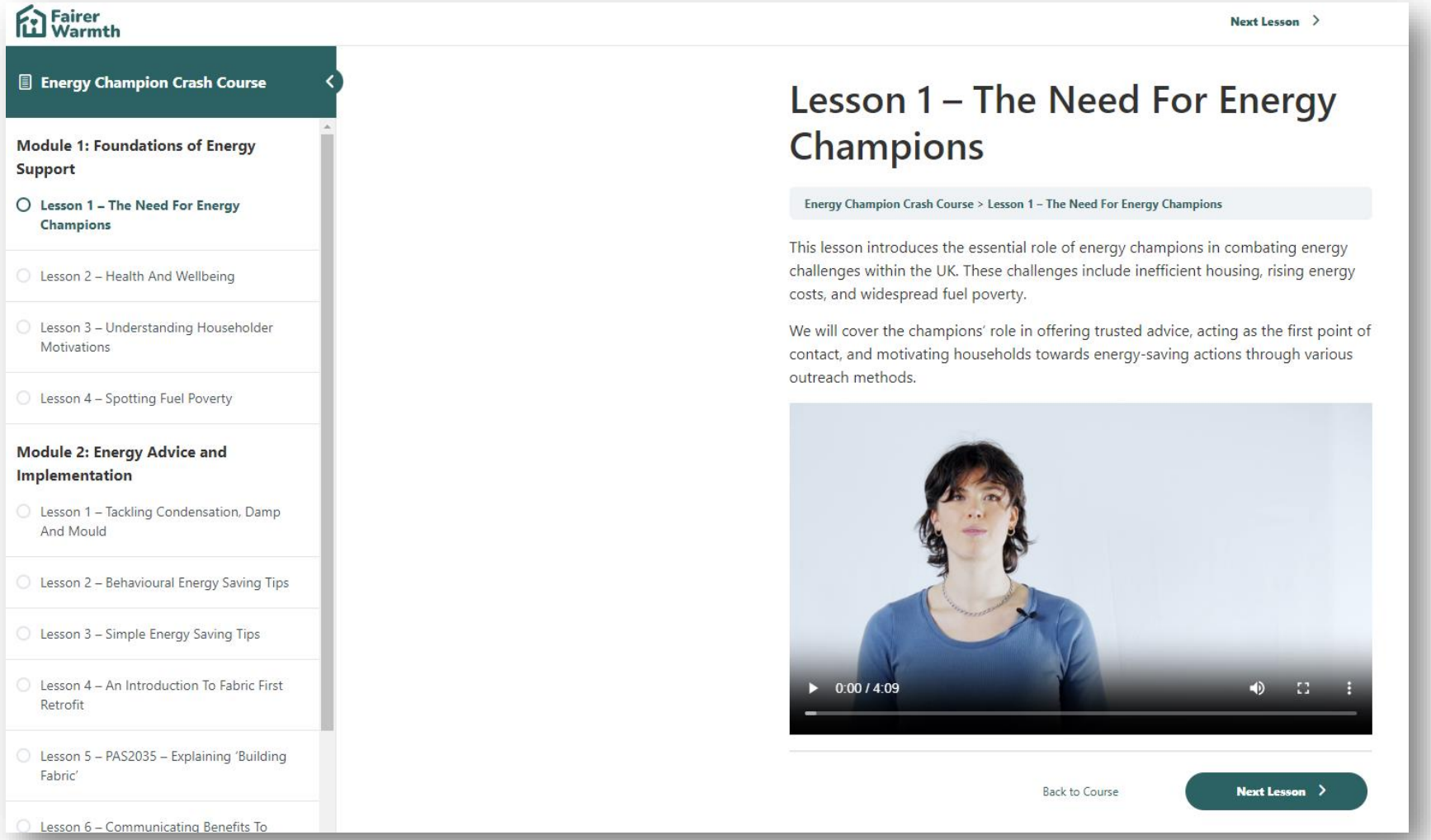

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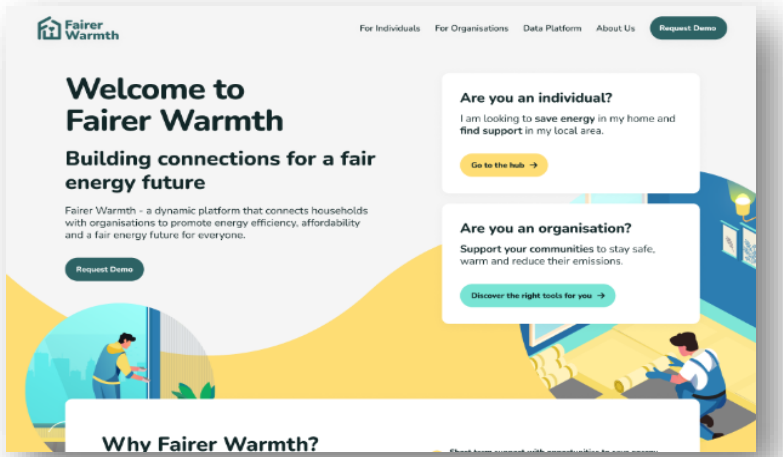

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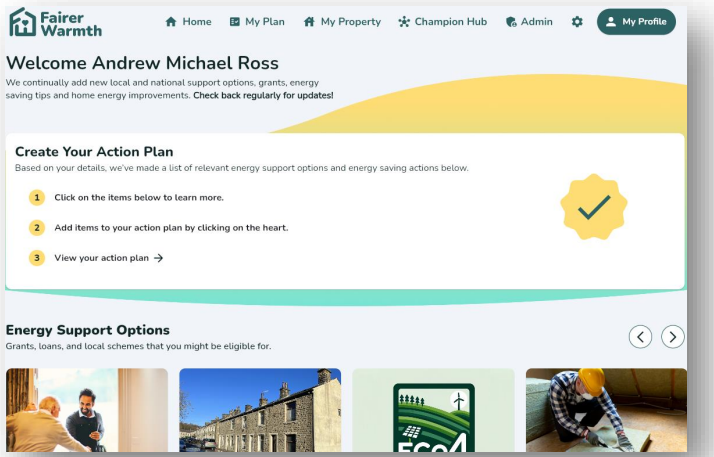

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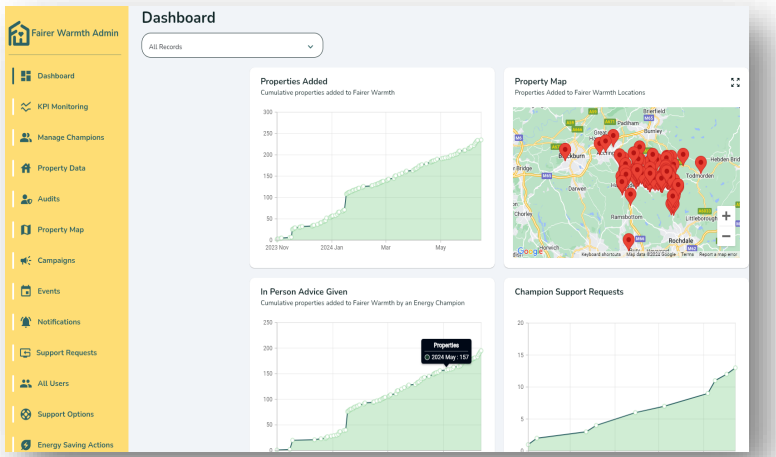

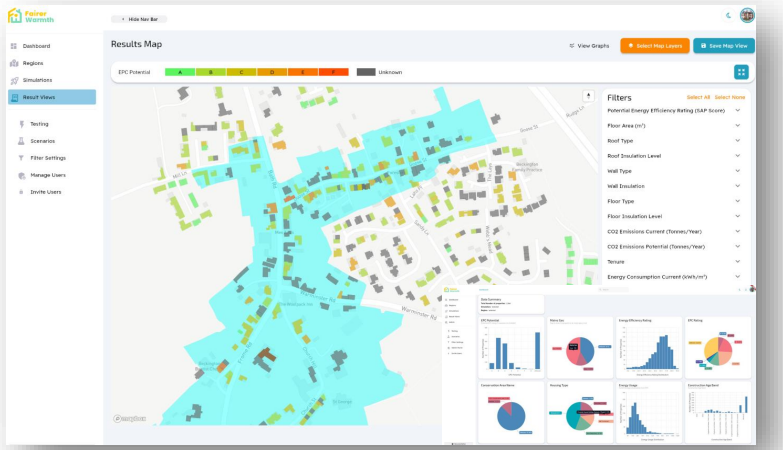

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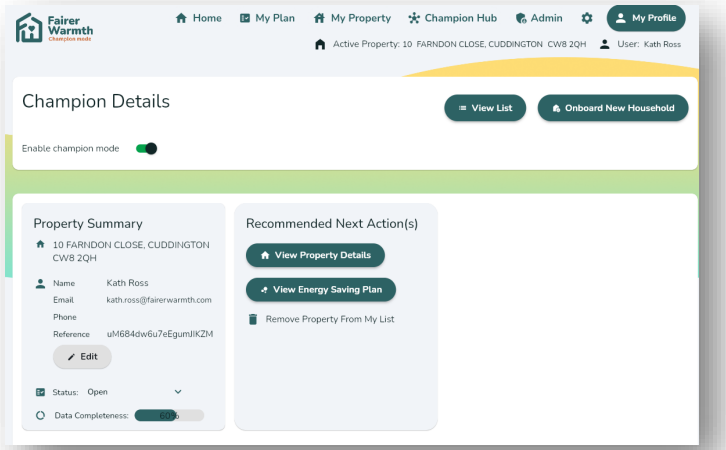

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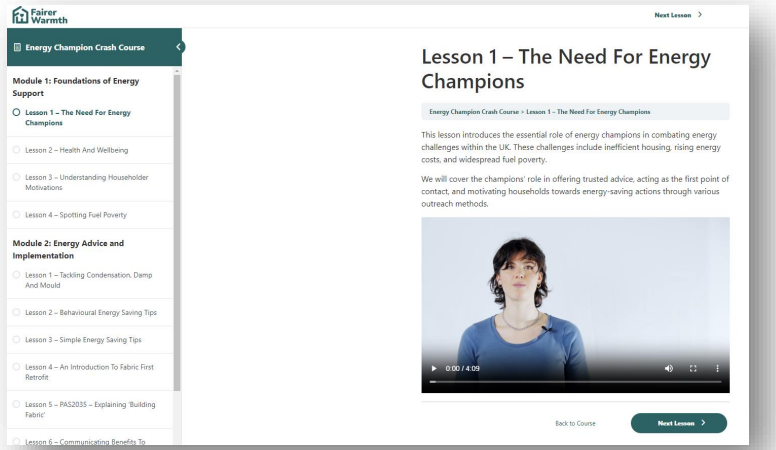

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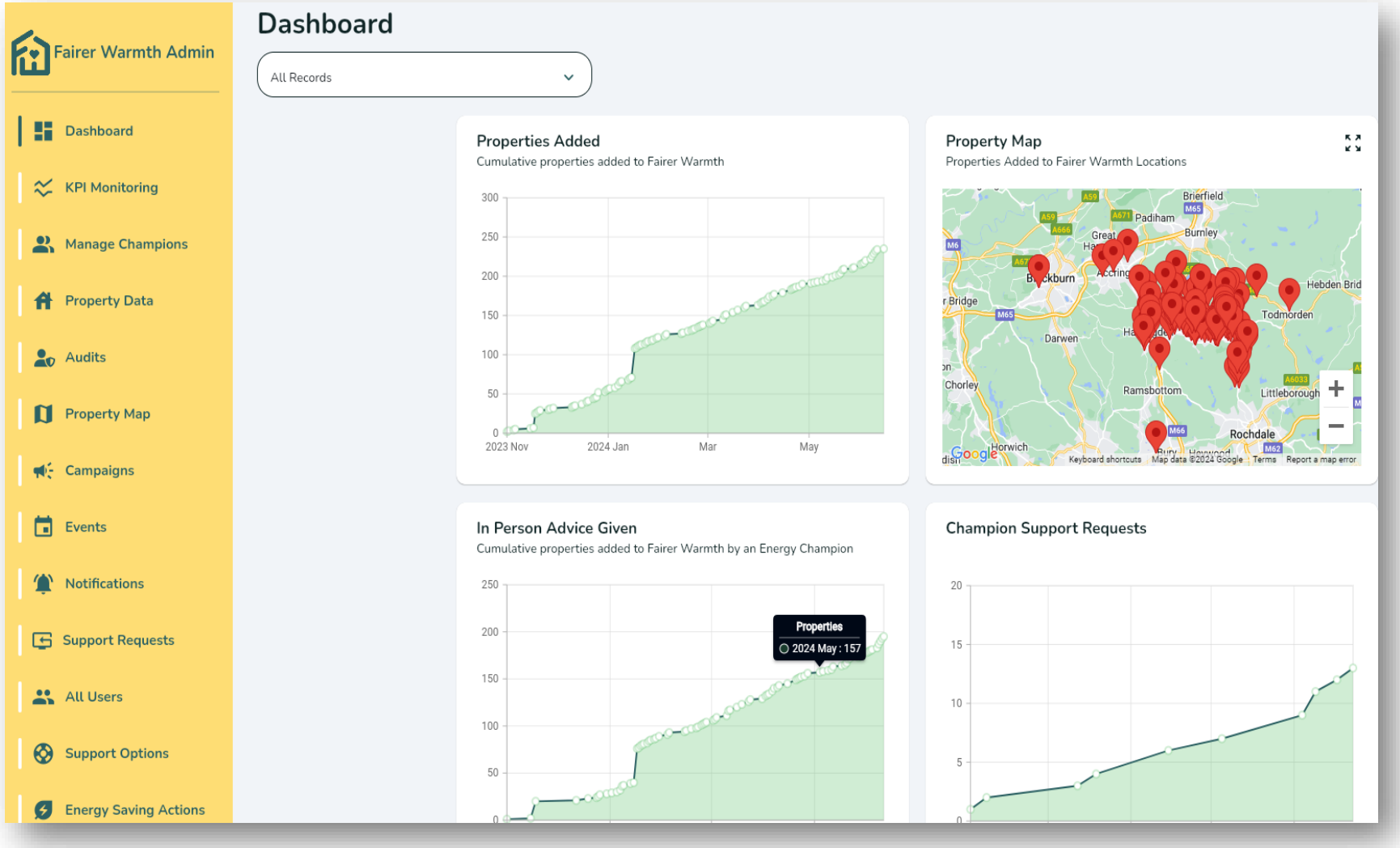


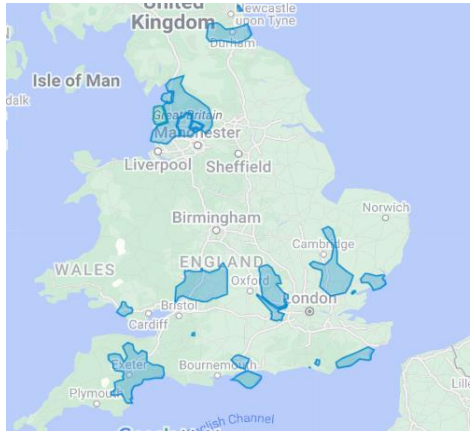
Our Impact so far

FWH has already gained significant momentum to date

Established 20+ Fairer Warmth Communities nationwide

- ~2500+ individual users
- 100 Energy Champions across multiple communities

- Collaborating with Regional Hubs through Local Energy Advice Demonstrators
- Utilised for DESNZ Pathfinder Projects and network projects including Net Zero Terrace Streets
- MCS Charitable Trust Funded project in Somerset



Driving Energy Efficiency Across Lancashire

Challenge:

Vulnerable residents- poor engagement in energy efficiency measures.
Needed **detailed reports** of effectiveness of energy advice and grant uptake.

Solution:

Fairer Warmth- data driven identification of areas most in need of support and **eligible for grant funding.**
Targeted campaigns to **reach vulnerable communities.**
Established network of **Energy Champions** to reach digitally excluded- personalised, in person support.

Outcomes:

10+ Energy Champions trained and providing community-based support

Clear signposting to retrofit and energy efficiency schemes, in a **single-trusted resource**.

500+ residents have received detailed, tailored energy advice.

Over **700 active users** engaging with Fairer Warmth app.

Increased uptake of **HUG** funding

Growing interest of **low-carbon technology and heating solutions.**

Benefits of Fairer Warmth

Fairer Warmth

- Aggregate supply chains and create one-stop-shops
- Generate leads for grants
- Improve quality of life by promoting healthier living
- Support the local economy and green jobs and businesses
- Foster community engagement on sustainability initiatives
- Improve the overall energy efficiency of homes and businesses in the region

Join Us!

Fairer Warmth

k.runnalls@cee-uk.com

www.fairerwarmth.com

Fairer Warmth App

2025

Dark Matter Labs

Demonstrating tomorrow’s civic infrastructures

Dm 00 Dark Matter Labs

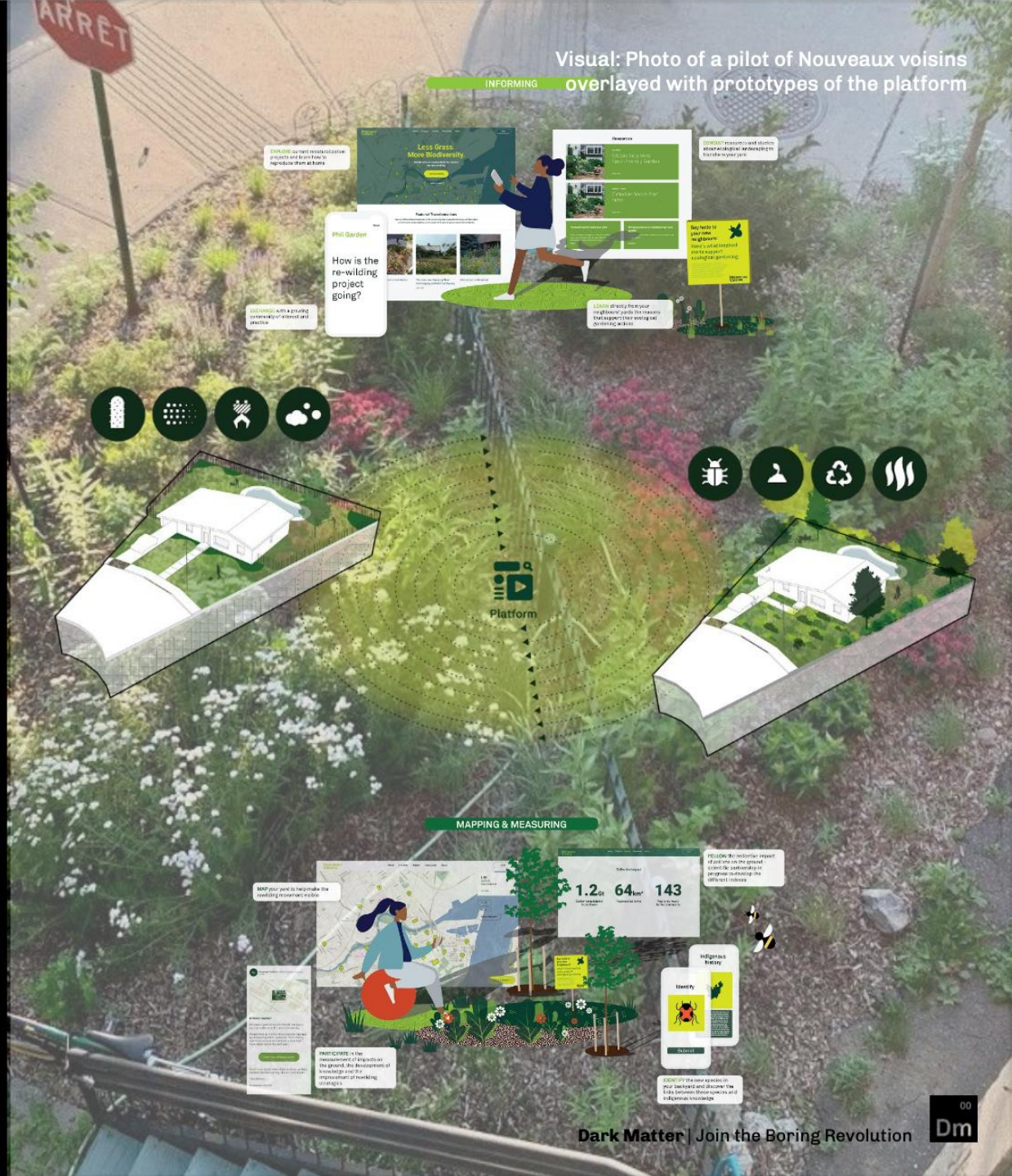
We live in an age of profound dissonance marked by cascading planetary crises ...

We imagine a thriving civic future - where neighbours, commons, civic economies and plural forms of organising drive the renewal of our world around us

Visual:
Compendium for the Civic Economy by 00

With local government and communities, we are co-building a new class of civic infrastructures:

- Whole neighbourhood public/commons retrofits and energy systems
- Civically-maintained nature
- New models of housing
- Material registries and data platforms



Visual: Photo of a pilot of Nouveaux voisins overlayed with prototypes of the platform

Dark Matter Labs is a not for profit agency.

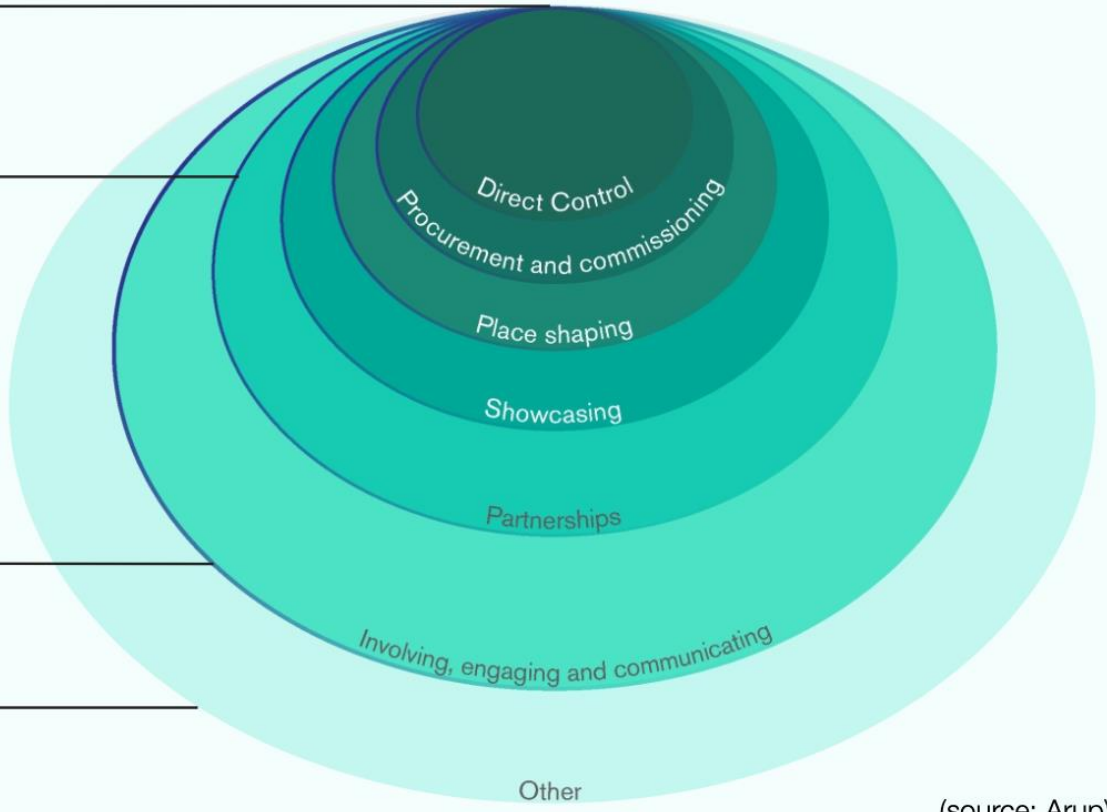
All our work is open source.

We have built a team capable of making 21st century institutions and infrastructures, with expertise in:

Decarbonisation of the built environment
Financial Structuring
Governance Innovation
Systems Mapping & Design
Philanthropy Strategy
Policy, Legal and Regulatory Design
Strategic Design & Architecture
Urban & Regional Planning & Transformation
Local climate action planning
Data Visualization
Organizational Development
Civic Technologies & Innovation
Bioregional Transitions & Financing
Participatory Futuring & Engagement

Local authorities must act, but also influence and convene

2-5%	**Direct emissions**	→ Estate → Council operations → Council building energy → Fleet
+25%	**Indirect Control over emissions**	→ Procurement (not above sectors) → Transport policy → Waste services → Economic development → Spatial and energy planning → New and existing buildings (non Council) → Land use and planning → Innovation projects on public estate → Place-based partnerships → Jobs and training
+40%	**Some influence**	→ Communications and codesign → Climate Assemblies → Community-led delivery and action
+30%	**Very limited / no influence**	→ Central government → Other market forces



(source: Arup)

Newham's Just Transition plan

3 Principles

- Increasing equity
- Reducing emissions
- Future-readiness

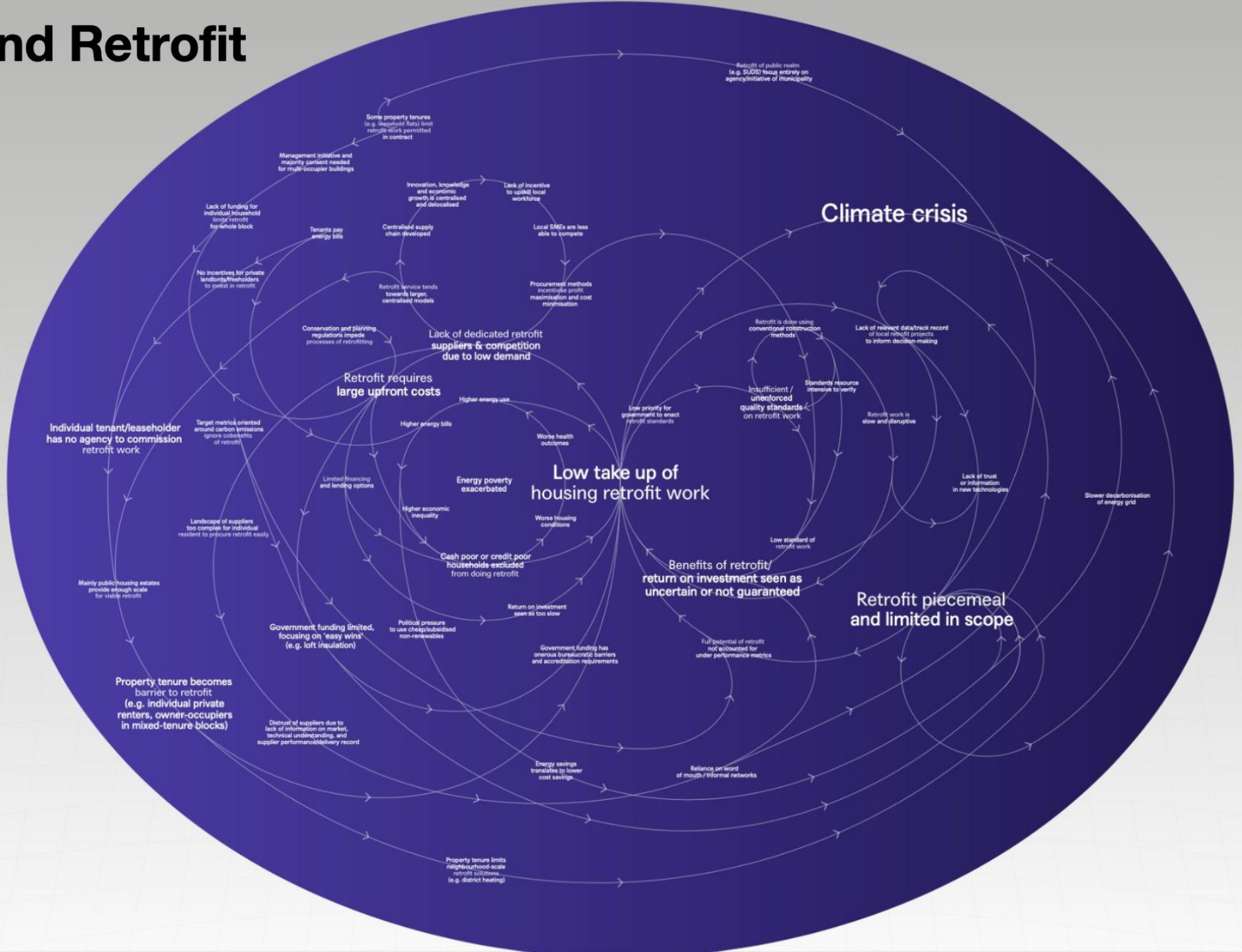
6 Futures

- Our homes, workplaces and schools are comfortable, healthy and efficient
- Our energy system is resilient, equitable and not dependent on fossil fuels
- We prefer to walk, cycle or use public transport and goods are safely moved without polluting our streets
- We increase sharing and reduce waste building a sharing and circular economy
- We eat well and sustainably
- Our neighbourhoods are resilient, connected and green

5 Enablers

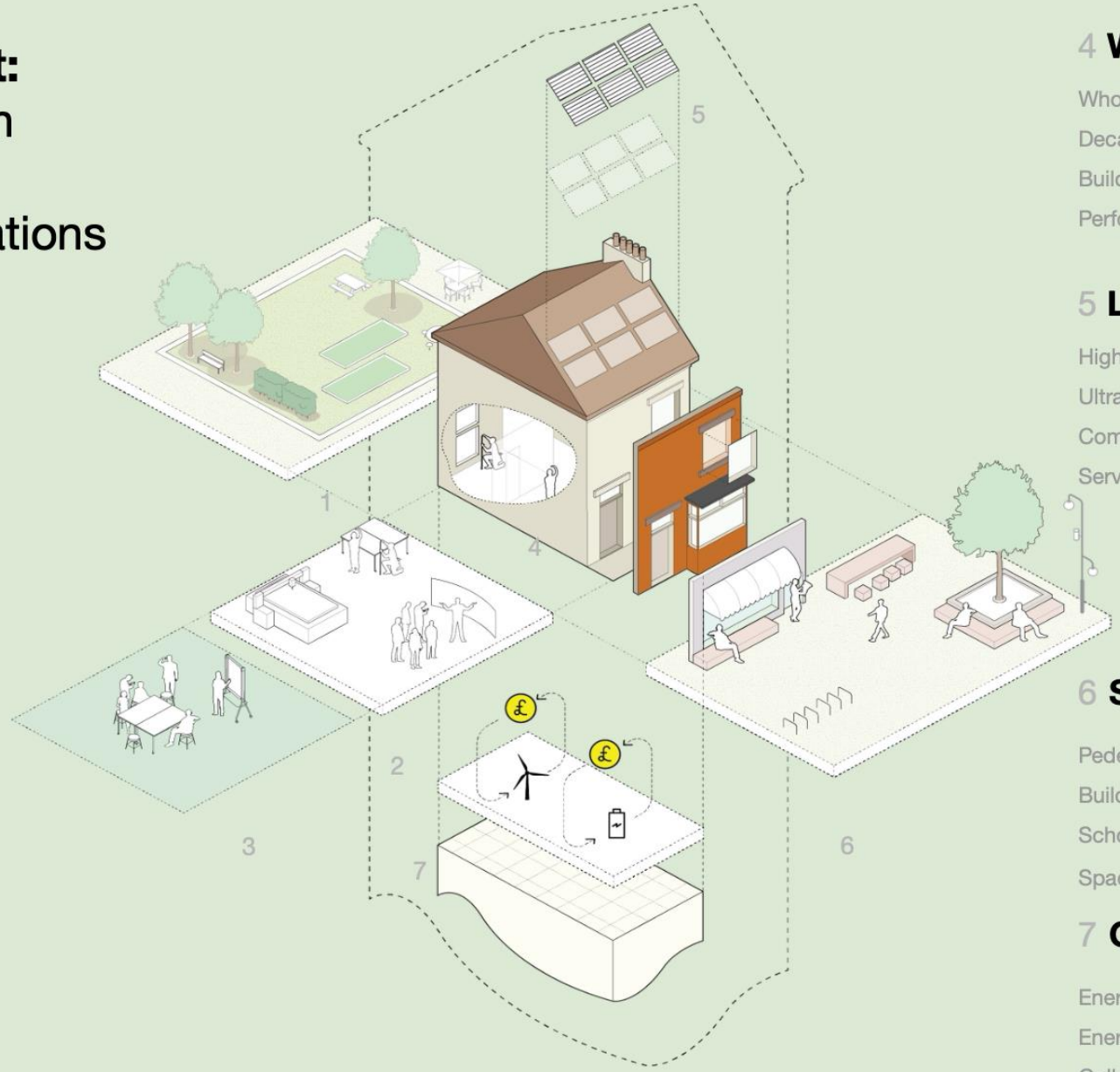
- Growing the Council's Climate Action capacity and effectiveness
- Targeting and increasing investment
- Partnering with Newham's Anchor Institutions
- Enabling civic and place-based action
- Working beyond Newham's borders

Energy and Retrofit systems



Neighbourhood Retrofit:

Barnet, Newham, London Councils, Birmingham, Edinburgh, civic organisations etc.



1 Sustainable commons

Shared green space

Sustainable drainage

2 Local skills & training

Upskilling & training workshop

Build trust to reduce perception of risk/disruption

Decentralised local manufacturing

3 Resident participation

Co-design with current inhabitants

Designed for direct procurement by citizens

Adaptable throughout lifecycle

4 Whole building retrofit

Whole house renovation

Decarbonisation

Buildings passports and performance registries

Performance monitoring infrastructure

5 Local energy/services

High quality, zero carbon housing as standard

Ultra low energy

Community generated energy

Services packages

6 Streetscape

Pedestrianisation and active travel

Building biodiversity

Schools and local retail opportunities

Space for community initiatives

7 Community wealth

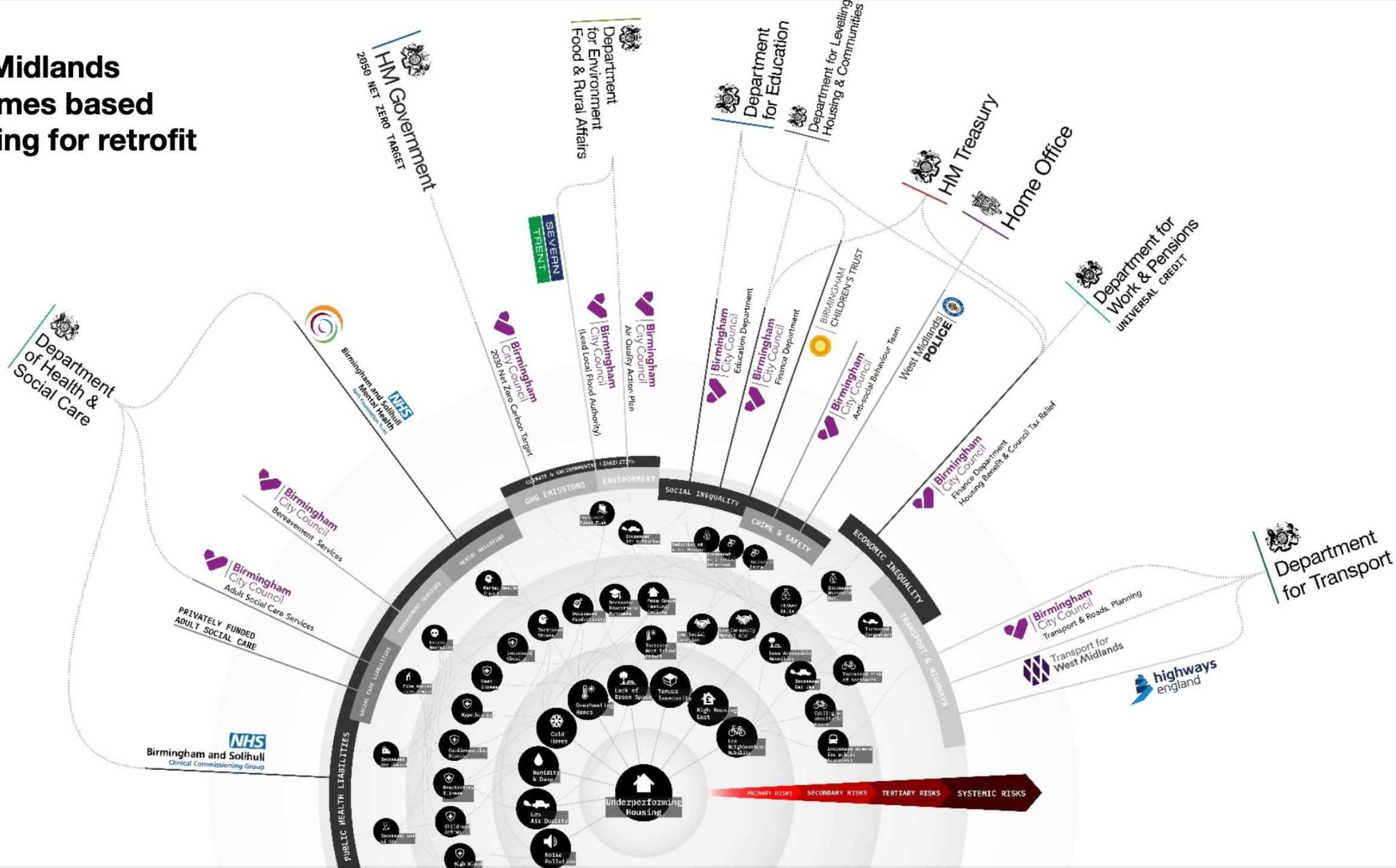
Energy outcome contracting

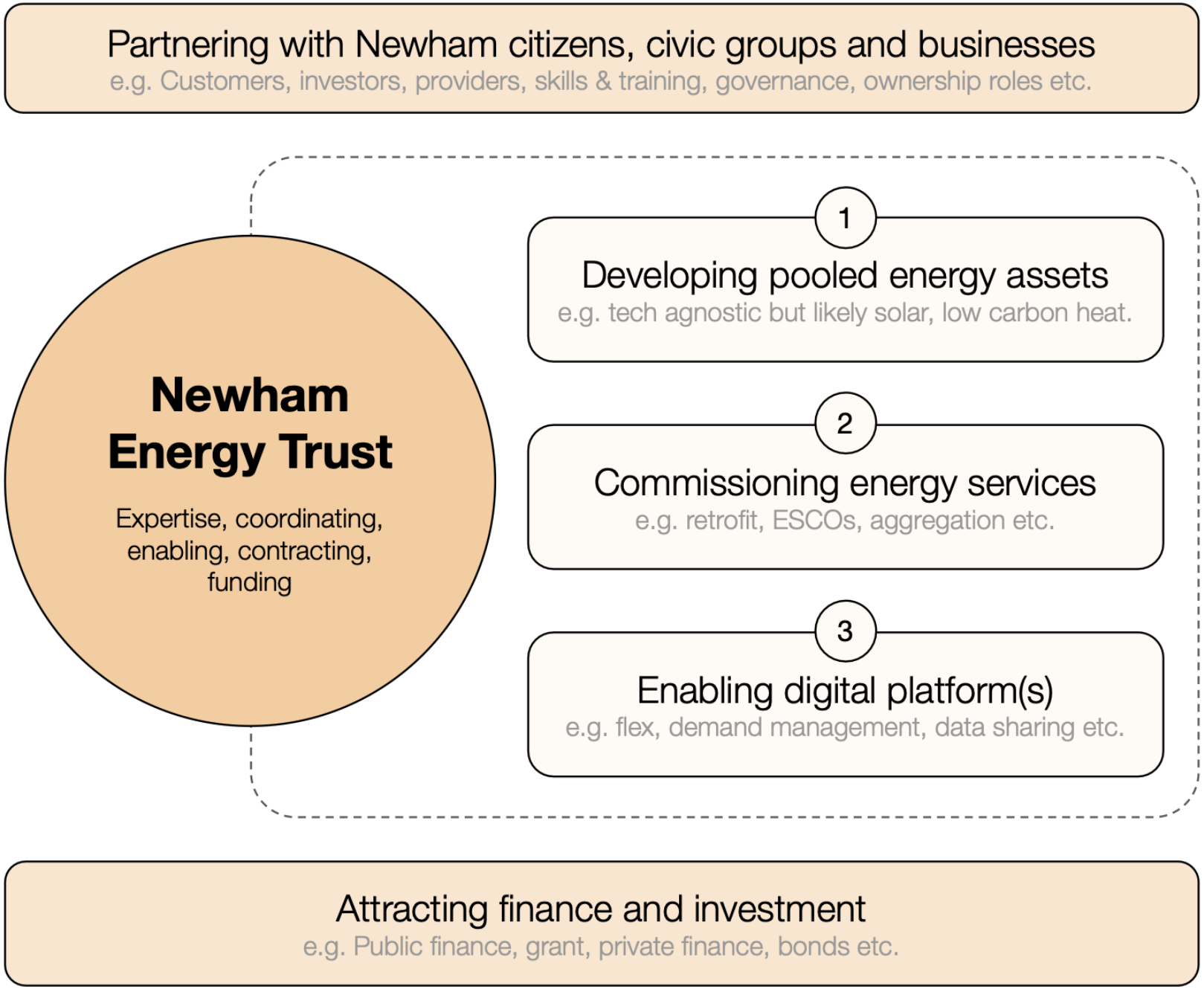
Energy cooperatives

Collective ownership and management

Community investment in shared assets

West Midlands Outcomes based financing for retrofit




Partnering with Newham citizens, civic groups and businesses
e.g. Customers, investors, providers, skills & training, governance, ownership roles etc.
Newham Energy Trust
Expertise, coordinating, enabling, contracting, funding
1
Developing pooled energy assets
e.g. tech agnostic but likely solar, low carbon heat.
2
Commissioning energy services
e.g. retrofit, ESCOs, aggregation etc.
3
Enabling digital platform(s)
e.g. flex, demand management, data sharing etc.
Attracting finance and investment
e.g. Public finance, grant, private finance, bonds etc.

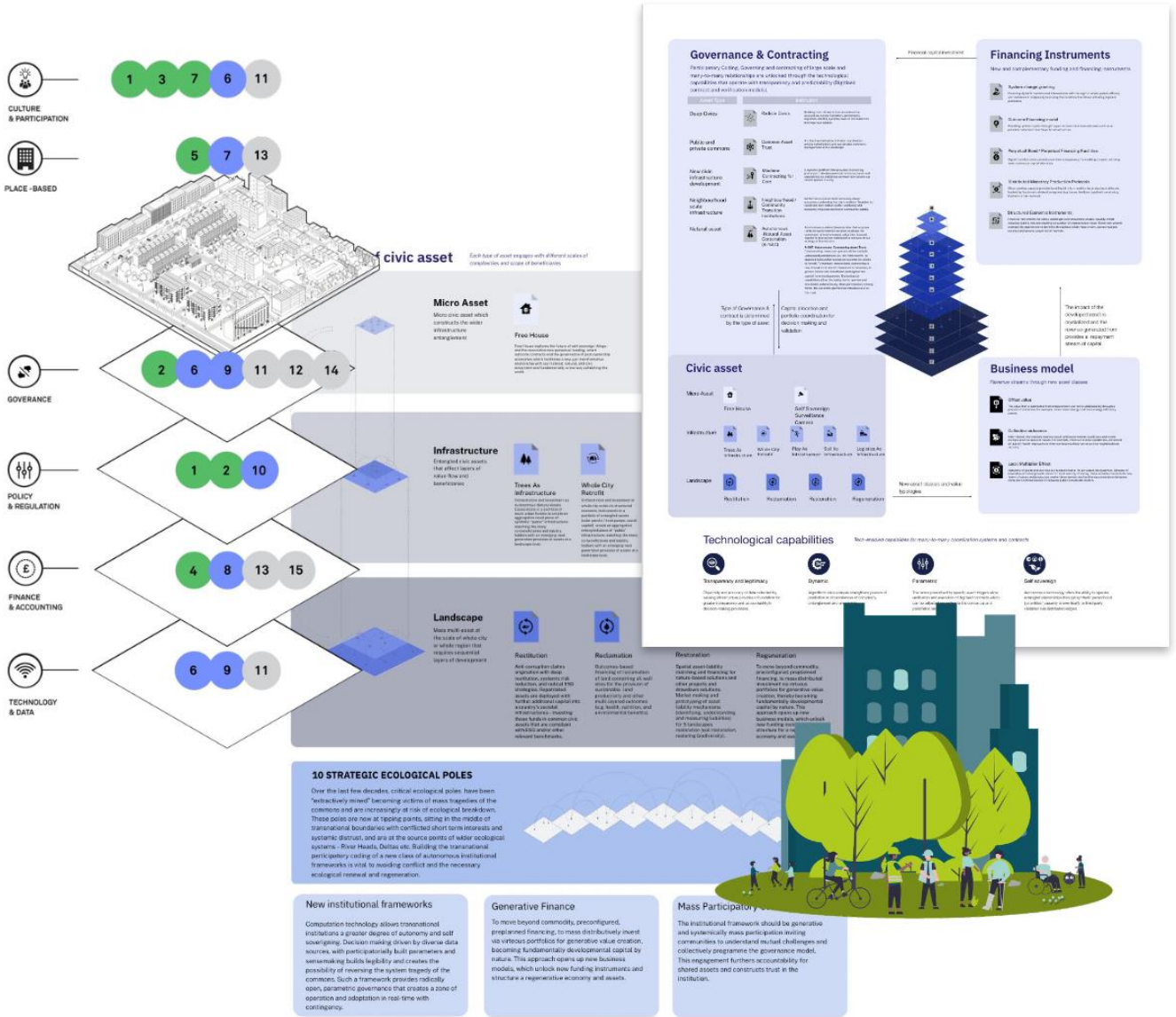
Community powered retrofit aims to mobilise residents and communities as part of designing neighbourhood transition programmes.

Civic Square Link Road Engagement

City transitions

Net Zero Cities

EU funded programme as part of its Mission for 100 Climate Neutral Cities by 2030. DML is part of the consortium delivering the mission platform.



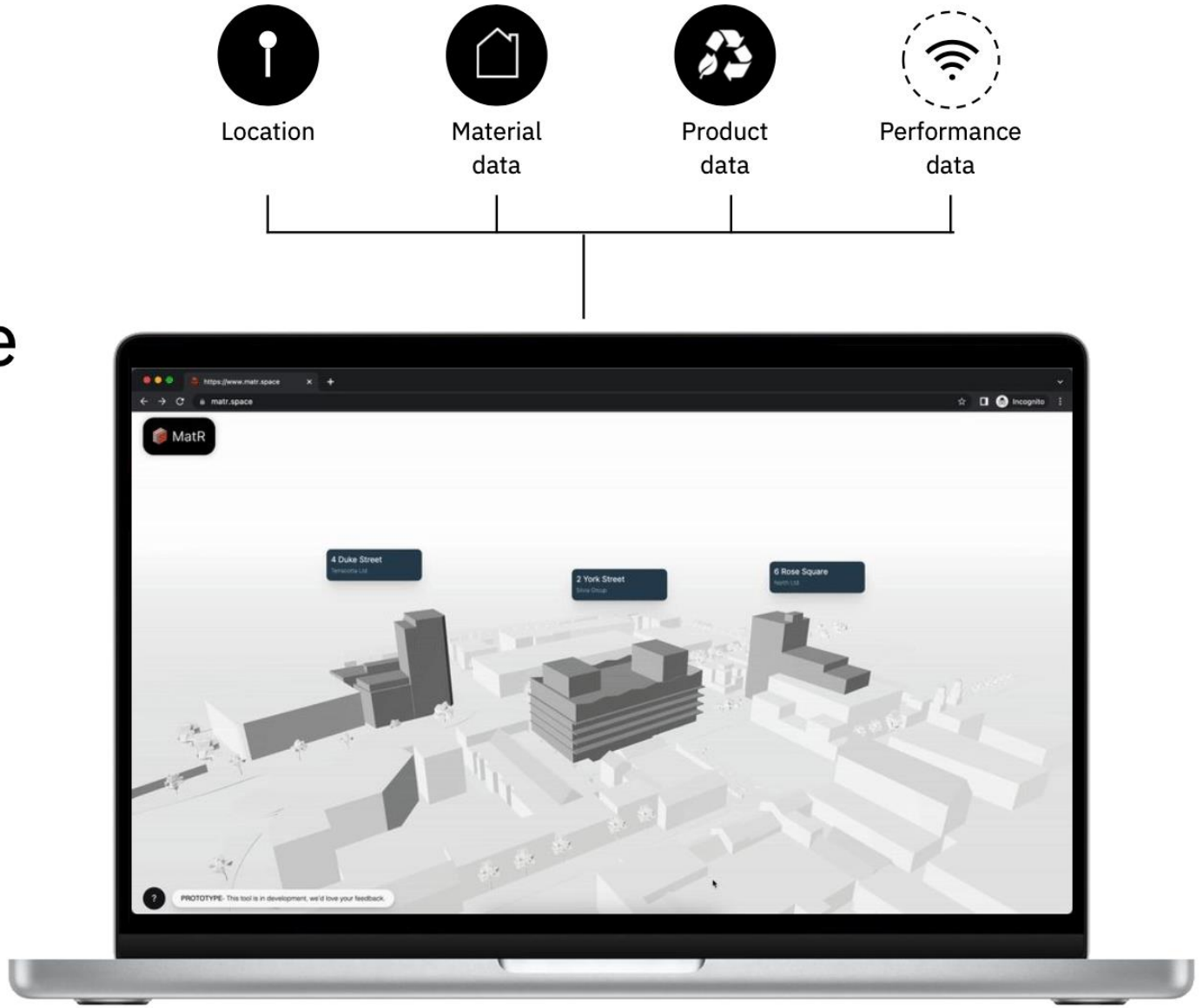
MatR

A material registry

An operating system for material and performance data in buildings

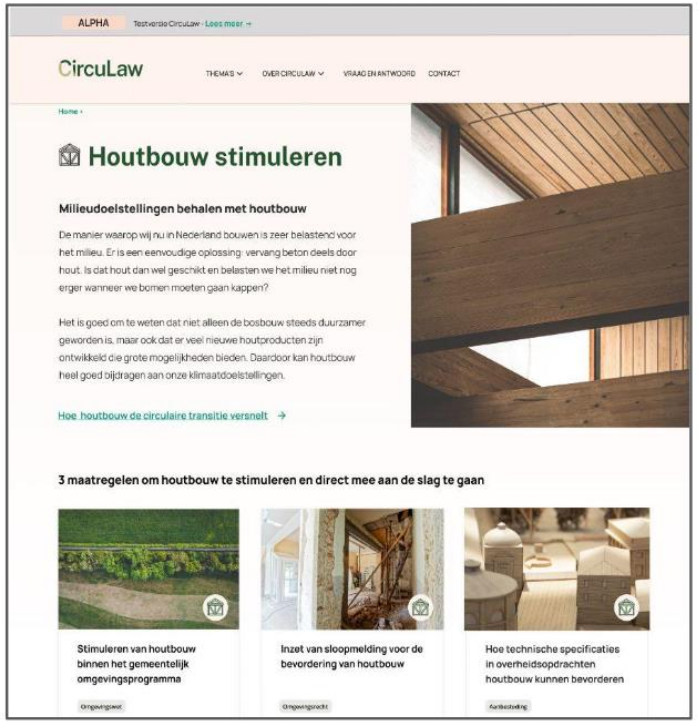
MatR is a prototype open source web tool to log and monitor what buildings are made of and how well they perform.

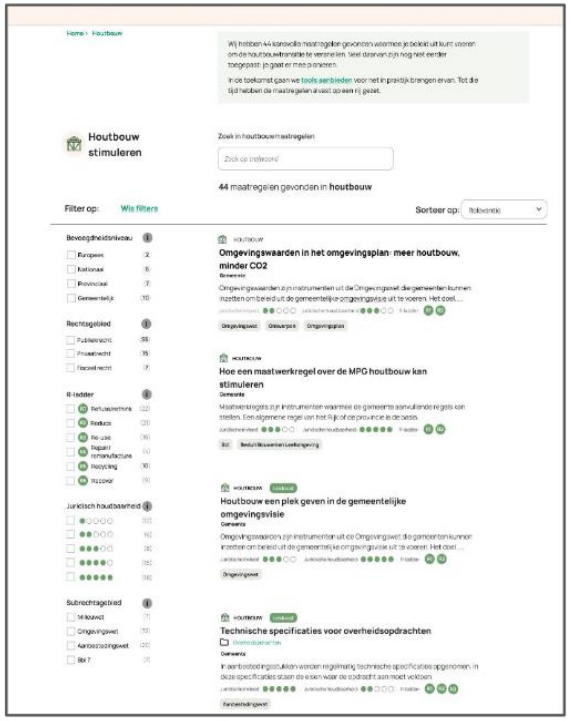
Our aim is to create a digital repository for every building.



CircuLaw

Open Public Service tool to support the transition to a circular economy: from law as text to law as a service.





On the right: demo of the CircuLaw platform

Partners

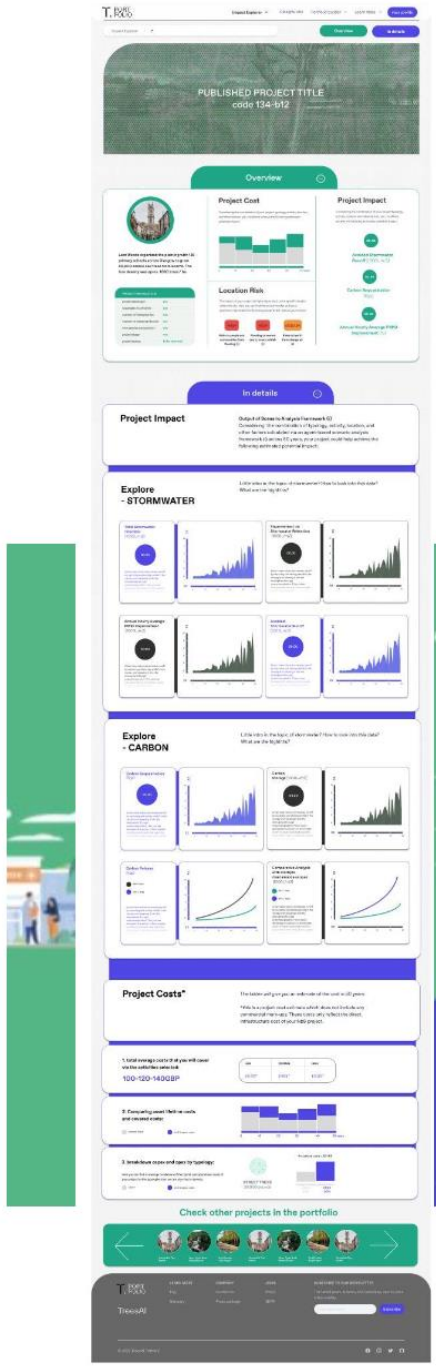
Gemeente Amsterdam · Belastingdienst · AMS Amsterdam Institute for Advanced Metropolitan Solutions · Erasmus School of Law Erasmus Universiteit Rotterdam · TU Delft · Het Groene Brein

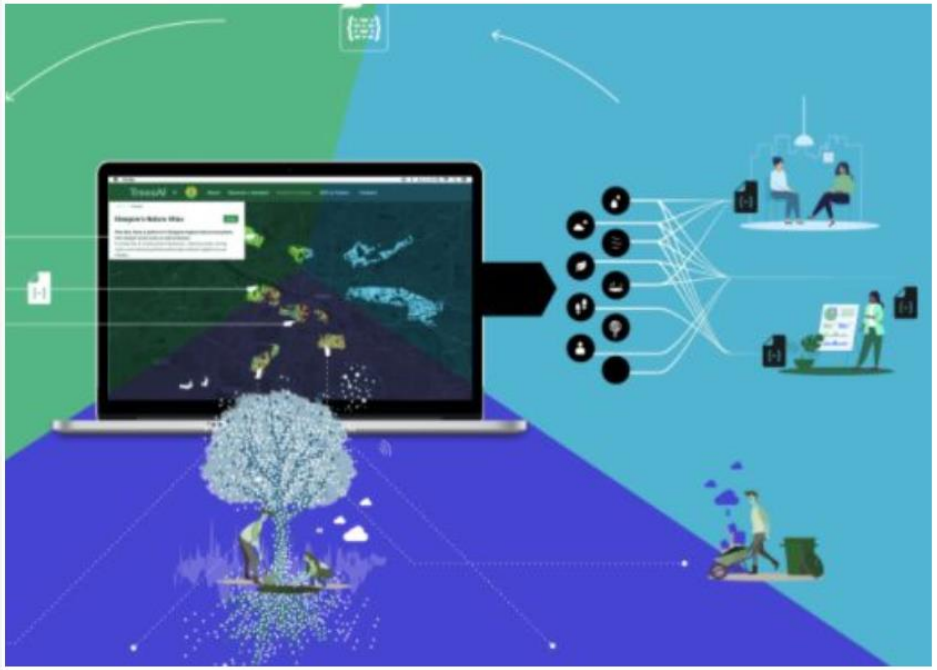
eit Climate-KIC · Ministerie van Financiën · Universiteit van Amsterdam · Wageningen University & Research · VU Vrije Universiteit Amsterdam · Provincie Noord-Holland

Rijksdienst voor Ondernemend Nederland · Ministerie van Infrastructuur en Waterstaat · Nederland Circulair! · Provincie Flevoland · nen Standaard voor vooruitgang · metropool regioamsterdam

TreesAI

An open source platform that values nature beyond carbon, establishing urban nature as an investable asset





Shifting our strategies

Individual, standardised, transactional	→	Collective, people centered, trust building
Extractive, payback financial lens	→	Local economic value
Cherry picking ‘viable’ assets	→	Integrated investments
Focus on ‘measures’ or Carbon	→	Focus on systemic outcomes e.g. health

Zoom Work

Optimise AI

Optimised energy management of buildings

Decarbonising buildings, one zero at a time

Date 2025

Nick Tune
CEO and Co-Founder
Optimise AI

Our Mission

Mission

We operate on the edge of science to develop instant clarity and journey maps for those reducing building emissions across the globe.

What is success?

We will remove over 10Mt of Carbon emissions each year by enabling our clients to exploit their data .

The Problem

99%

Buildings lack data

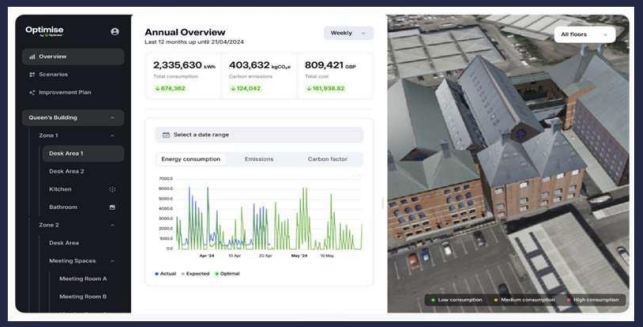
99% of Non-Domestic buildings don’t have a Building Energy Management System and 90% of those that do generally lack actionable insights.

Limited data = lack of insight and lack of savings

The solution: Semantics + AI

Draw from a decade of research data and a proprietary AL/ML tools to generate energy saving insights across your portfolio.

We create a Semantic Digital Twin, via ML/LLMs and Ontologies. These provide a richer context of your building.

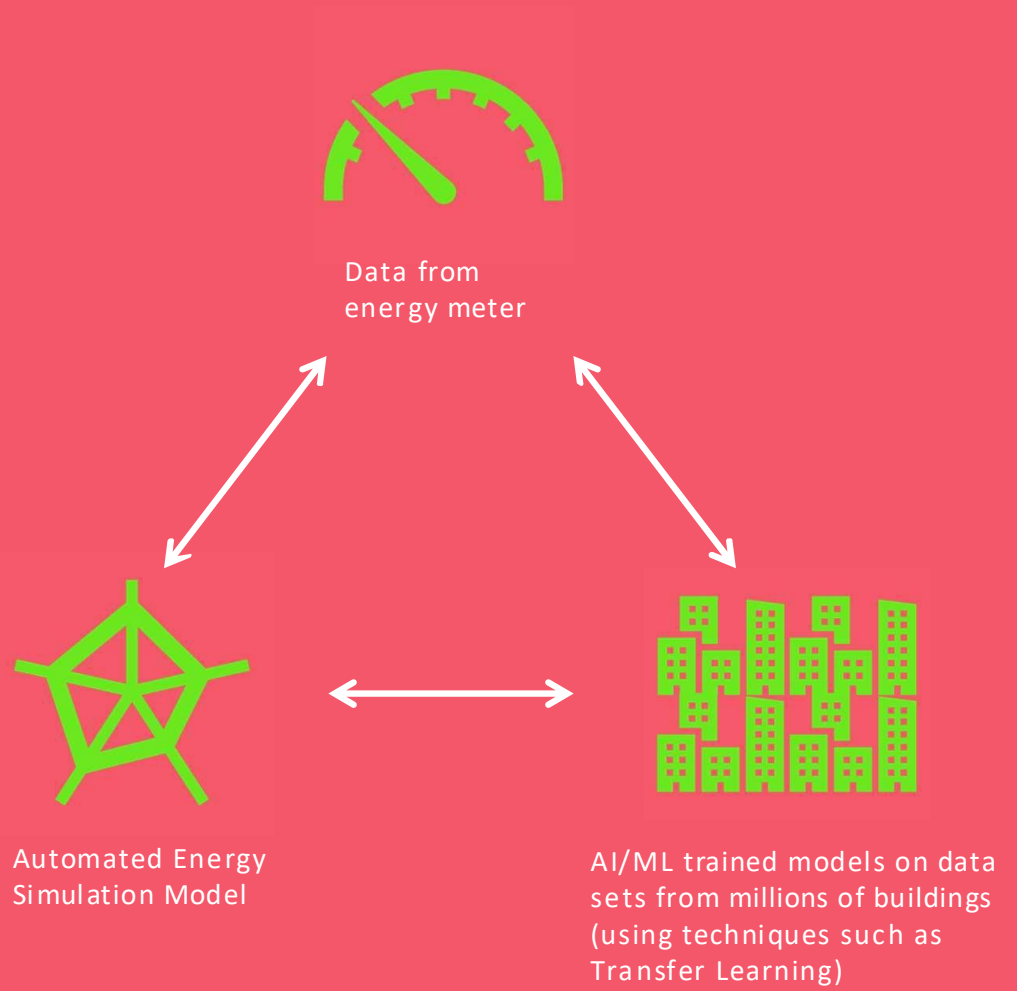


This provides more complex and insightful questions about the building being optimised.

Deeper insights and context allow for greater savings in energy, carbon and cost.

How we do it

We create a semantic digital twin by adding real time energy data (from meters, BMSs/IoT) with a building physics model and an AI trained large data model.



Net zero has to be a journey

Low data maturity

Limited insights

Limited Savings

High data Maturity

Deep Insights

Deep Savings

Net zero has to be a journey

Minimal data – no problem

Get Started with your Smart Meter using 'Predict' and our decade of data. Uncover valuable insights about your buildings and receive specific guidance on how to enhance them.

Further accuracy and new insights

Progress by incorporating details about the physical properties of your building, such as U-values, glazing ratios, and the efficiency of your equipment, among others.

Optimise building energy management, even at room level

Utilising your data, optimise provides you with a plan and what measures you can implement and when to achieve significant savings.

Case Studies

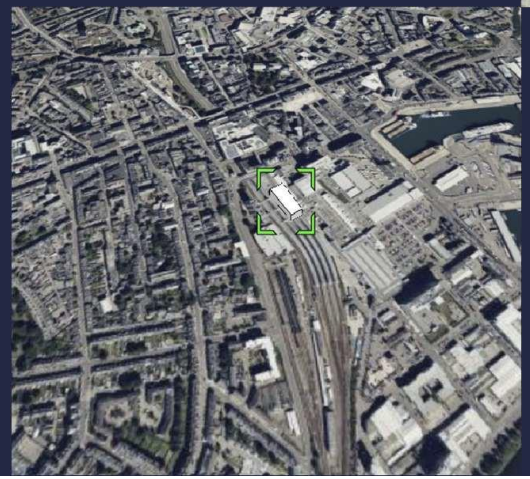
Clients we've worked with and who are already seeing the benefits of up to 40% energy savings with Optimise-AI.

Bristol TM Station

A digital twin of Bristol train station, pioneering energy and carbon emissions optimisation within the station's operations.

Luton Airport

We implemented a semantic digital twin of the airport to simulate, predict and optimise the operational energy and carbon emissions and identified how to affordably save over 20%

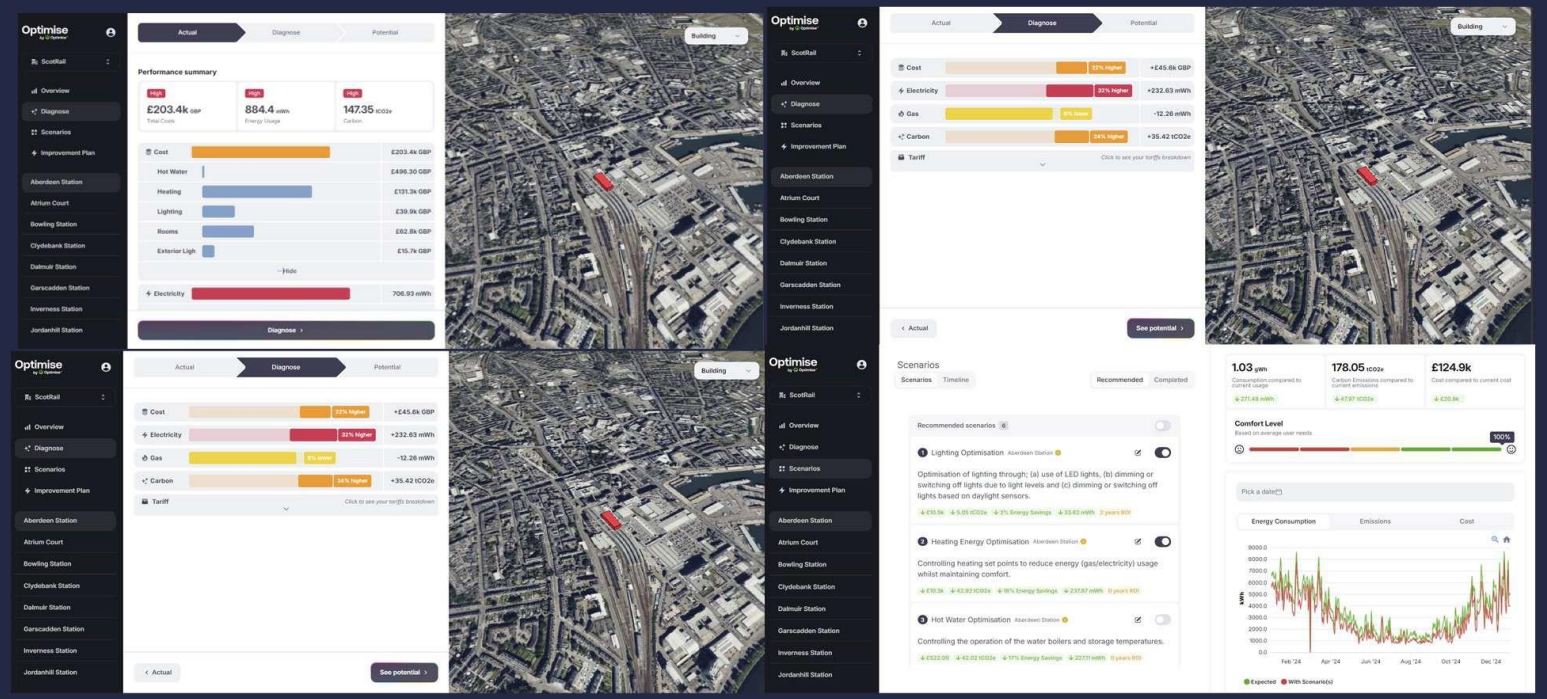


Scot Rail

A created semantic digital twins of 15 stations and depots and identified over 30% of savings with support on how to make the savings

Predict Scot Rail

A whole estate digital twin that provides a helicopter view of the energy consumption, cost and carbon emissions for all your buildings.



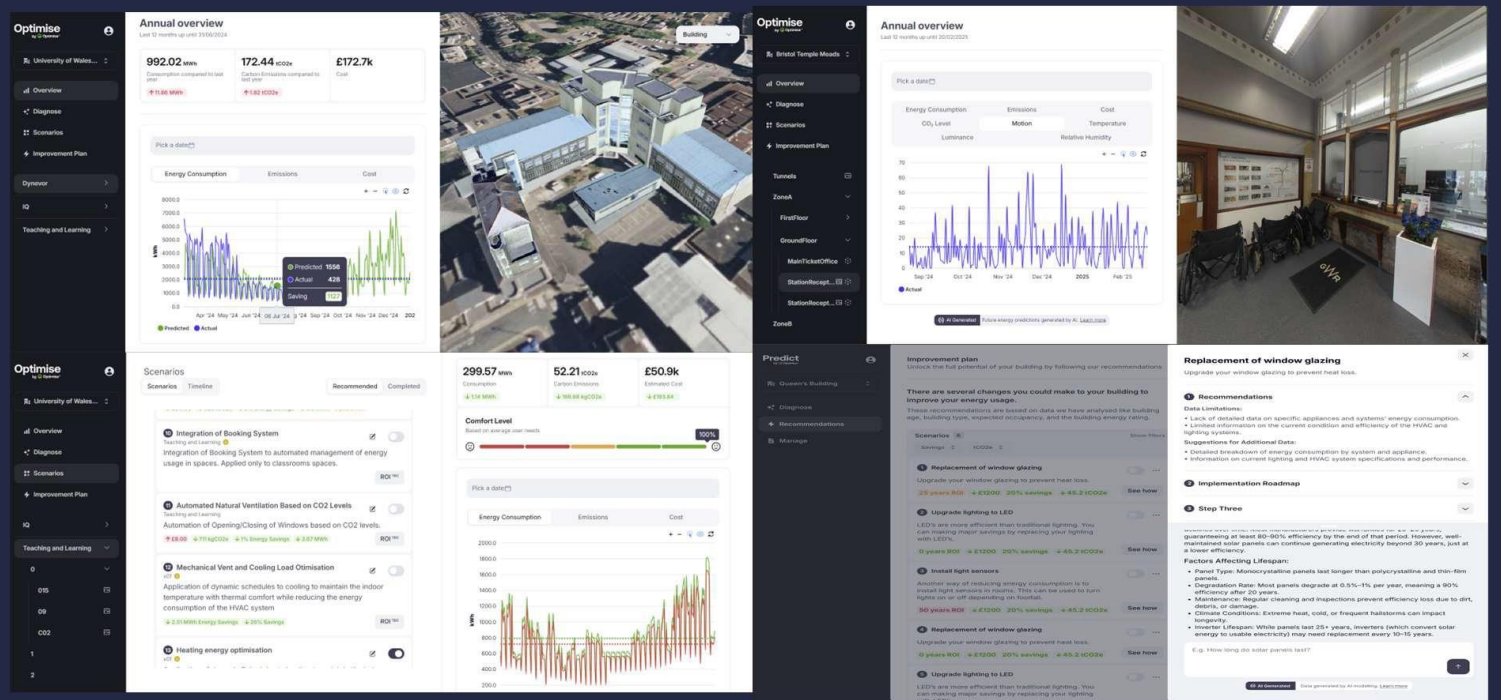
Optimise

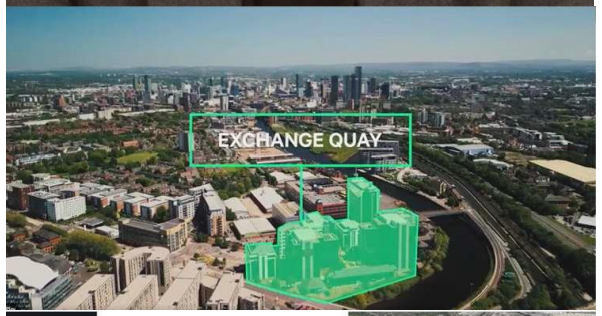
Uni of Wales

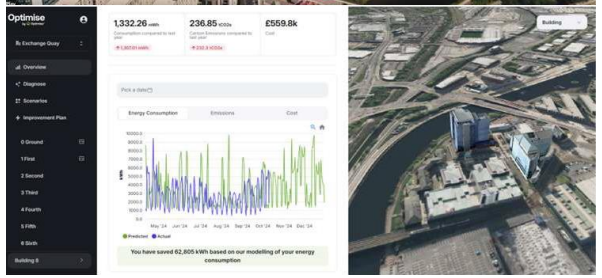
Save up to

40%

Granular digital twin of your building with our advanced AI technology







"I was initially skeptical… now I'm a firm believer in the benefits of digital twins"

Platform: **Predict**
Time in use: **6 months**
Estate: **40,413 square meters**
Typical Floor Size: **1,080 square meters**

Just like many commercial building owners, Till Asset Management was struggling to get a clear picture of their energy usage and carbon emissions at Exchange Quay. The limited access to meter data and the complexity of information from their Building Management Systems (BMS) made it a real challenge.

By working with Optimise AI, they were able to simply connect their smart meters and BMS systems to the Predict platform. The team started to have clear insights into building performance from day one.

Optimise AI uses advanced Machine Learning and AI algorithms to analyze the data, compare it to an energy simulation model, and benchmark it against data from millions of other buildings. This gives a comprehensive understanding of the building's performance and spots opportunities for optimization.

Now, Till Asset Management benefits from real-time performance insights and actionable recommendations to boost energy efficiency and cut emissions. The long-term plan is even more ambitious: enabling Optimise AI's algorithms to autonomously control the BMS, ensuring optimal user comfort while slashing energy consumption and carbon output.

Case Studies

Awards

Funding

Carbon13

Department for Energy Security & Net Zero

Llywodraeth Cymru
Welsh Government

Clients

Prifysgol Cymru
Y Drindod Dewi Sant
University of Wales
Trinity Saint David

London Luton Airport

gleeds

NetworkRail

ABP
KEEPING BRITAIN TRADING

ScotRail
SCOTLAND'S RAILWAY

CATAPULT

Call to Action – Test Predict for your buildings that have Smart Meters

Thank you

Nick Tune

CEO, Co-founder

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Web, www.optimise-ai.com

Q&A

www.iuk.ktn-uk.org

Innovate UK | Business Connect

Upcoming Events

Climate Change Adaptation - Webinar Series:

- Cooling Systems - 26th April 10-11 AM

Meet the Innovator Webinar Series:

- Decarbonisation of transport - 17th March 12-1PM
- Consumption and the circular economy – 7th April 12-1PM
- Biodiversity – 28th April 12-1PM