

Net Zero Living: Meet The Innovator - Webinar Series

Webinar 2: Heat Pumps

Monday 2nd March 2026





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.



Innovate
UK

Business
Connect

Our Network



46,229
Unique
Organisations



72%
Small

15%
Medium

13%
Large



335,478
innovators



**Every university
in the UK**



**Innovate
UK**

**Business
Connect**

The Net Zero Living Programme

Helping local authorities and businesses work together to deliver new solutions that improve local services and open markets for economic growth.

- Places are seizing the opportunities that come with decarbonisation and creating warmer homes, cheaper local energy, new skills, and more secure work for their communities.
- But their teams are overstretched and they have limited resources and investment.
- Innovate UK's Net Zero Living Programme is providing funding, insights, and specialist assistance to nearly 300 businesses and local authorities so they can adopt social, policy, and technical innovation and help their place prosper.
- A £60m programme from 2023-2026, including large-scale demonstrator projects
- <https://iuk-business-connect.org.uk/programme/net-zero-living>





Heat Pumps



Innovate
UK

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**Codrina
Cretu
Nesta**



**Stuart
Gadsden
Kensa**



**Chris
Founds
Founds Group**



**Hayley
O'Brien
Founds Group**



Innovate
UK

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nesta a sustainable future

Optimising HP installations in social housing



A sustainable future

Our goal is to reduce UK household emissions by 30% by 2030.

This would mean cutting greenhouse gas emissions from homes by 20 million tonnes a year.

It's in line with the Climate Change Committee's most ambitious path to net zero.



We're currently focusing on five challenges (our 'areas of focus'):

- 01 Making heat pumps more affordable
- 02 Reducing hassle and increasing appeal of heat pumps
- 03 Building the supply capacity of the heat pump sector
- 04 Making existing heating systems more efficient
- 05 Shifting electricity demand from the peak



Optimising heat pump installations in social housing (Bristol Council partnership)

Aims

- Learn about installations and engagement with residents.
- Translate learnings into practical insights for future installations.
- Improve the lives of residents through repairs.

Activities

- 39 technical audits of HP installations.
- 31 in-person interviews.
- Interviews with stakeholders.
- Remedial work (just started)
- Phone interviews (coming-up)

Who are the residents?

Social housing,
vulnerable
tenants due to
old age or
disability, single
parents

Around half had
the heat pump
retrofitted;
others moved in
when it was
already installed
(mostly new
builds)

A range of
experience,
from a few
months to over
10 years living
with a heat
pump.

Successes and friction points (findings from qual research)

High satisfaction

Air Source Heat Pumps were broadly welcomed; residents value steady warmth and improved safety over legacy systems.

Knowledge and confidence gap

Limited tenant knowledge leads to a fear of "getting it wrong," undermining trust in the technology.

Running cost anxiety

High bills (or the fear of them) lead to self-rationing and "on/off" behavior.

Inefficient use

Without clear support, many residents default to "boiler habits" (turning systems on and off) which increases costs

Technical findings

- Audits found an average SCOP of 2.6 (vs. MCS 2.8 goal), with many falling well below this. This gap can be the difference between a resident saving money or falling into fuel poverty
- All of the heat pumps audited had issues, with main driver of this being the lack of quality system design and installation
- Most of these issues are invisible to residents, but critical to bills, for example uninsulated external pipes, disabled weather compensation, and poor flow temperature optimisation and commissioning

Key takeaway: These aren't just snags; they are basic design and commissioning issues that can be addressed at the tendering stage; having requisite qualification does not guarantee good system design and installation

Conclusions and recommendations (1)

- **Structured handover:** Handover must be a multi-stage process, not a one-off event; it must be clear and consistent for all types of tenants and properties.
- **Ongoing communication:** Focus on messages around using the system continuously and managing expectations regarding radiator temperatures.
- **Smart tendering:** Tendering for quality by supporting smaller businesses to compete for contracts and setting clear KPIs for what good installation looks like (minimum SCOPs, good system design, expected commissioning settings).
- **Technical audits:** Use technical audits to assess the quality of installs and hold contractors accountable.

Conclusions and recommendations (2)

- **Staff training & confidence:** Training non-technical staff to spot red flags, know what 'good' looks like, and more confidently manage the process as commissioners.
- **Default monitoring & optimisation:** Consider installing monitoring and optimisers by default to ensure quality control and better efficiency.
- **Process review & improvement:** Conduct a review of all heat pump touchpoints across social housing to identify gaps, opportunities, and improve the deployment process.

Thanks for listening!

Get in touch

cretu.codrina@nesta.org.uk

Decarbonising social housing with GSHP

For Innovate UK Business Connect “Meet the Innovator – Webinar Series 2”

Presented by: Stuart Gadsden, Sales Director



About Kensa



British

made in the UK, reducing supply chain risks

15 years

experience in social housing

Turnkey solution

manufacturing, design, installation

17,000+

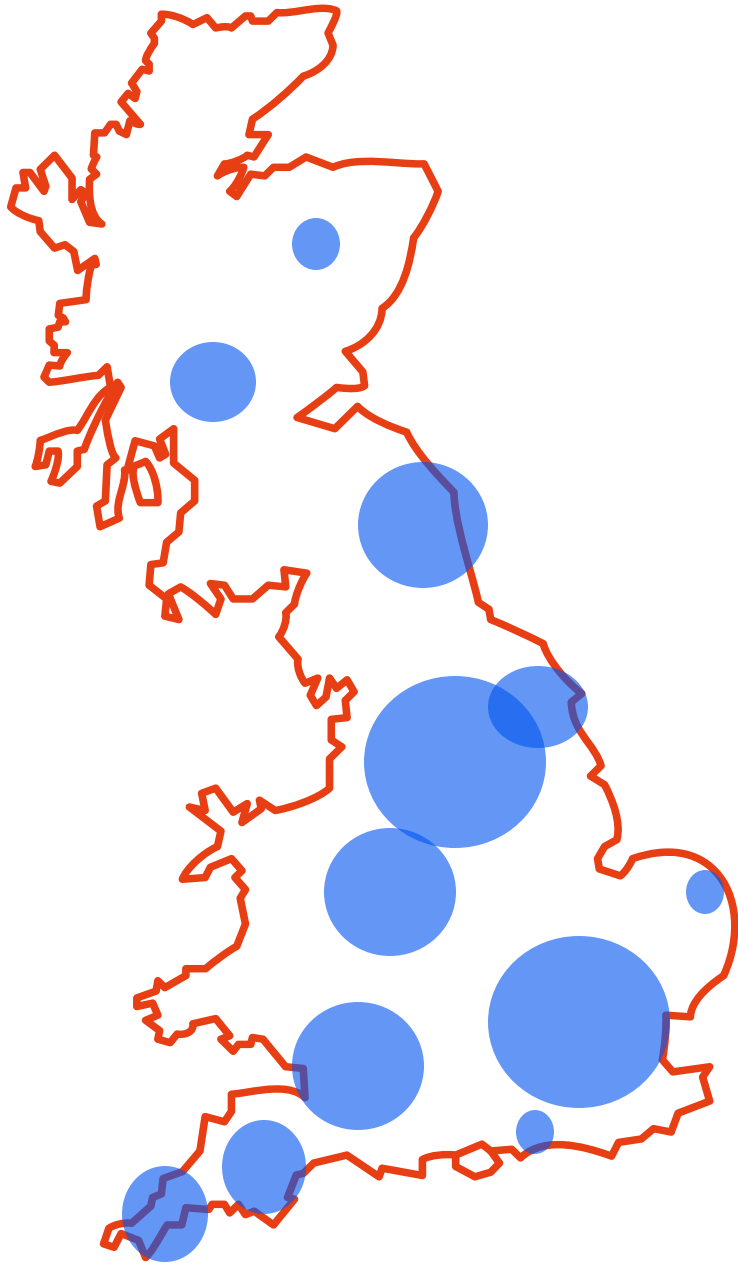
heat pumps installed to date

1 million

tonnes of CO₂ will be saved from installed Kensa heat pumps over their lifespan



octopus energy



**100 new build development projects –
social and private – and counting**

Optional funded CapEx model available.

**215 social housing retrofit projects and
counting**

Largest and most established player across social housing.

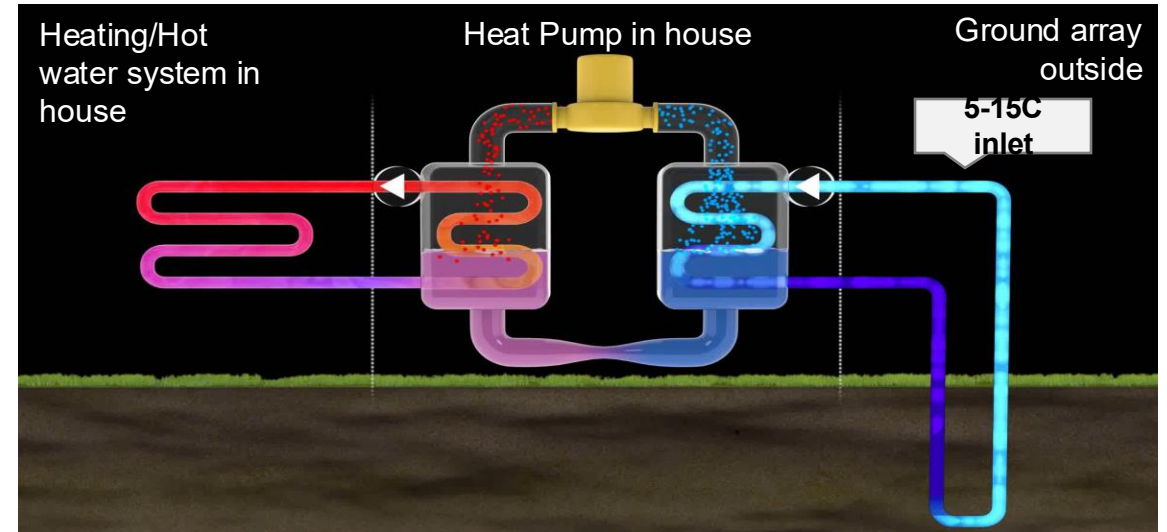
More than 30 high rise building retrofits

Most experienced at 'hard to decarbonise' high- and low-rise flats.

How a ground source heat pump works

Like a gas boiler...

...but 4-5x more efficient, with no combustion or NOx/SOx emissions



- White boxes that produce heating and hot water
- Domestic and non-domestic buildings
- New build and retrofit

- Take energy stored in the ground from 100-300m deep boreholes, collect it at a 5-15C inlet, and the heat pump uses electricity to upgrade it to your 45-60C flow temperature for heating & hot water
- Heat pump does this inside the box

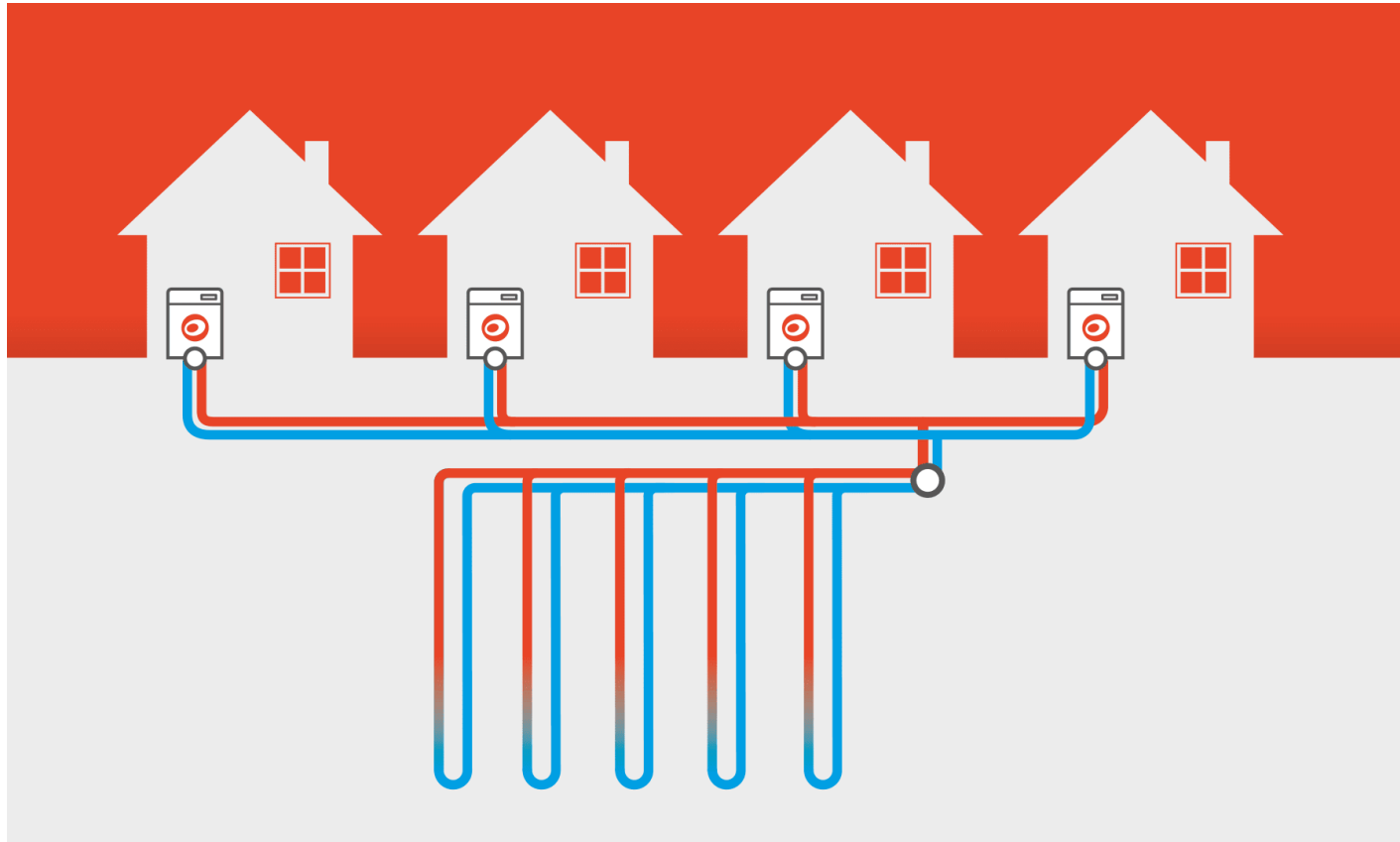
The typical image of ground source?



- One new build 'Eco' house
- One ground array – lots of space
- One single ground source heat pump

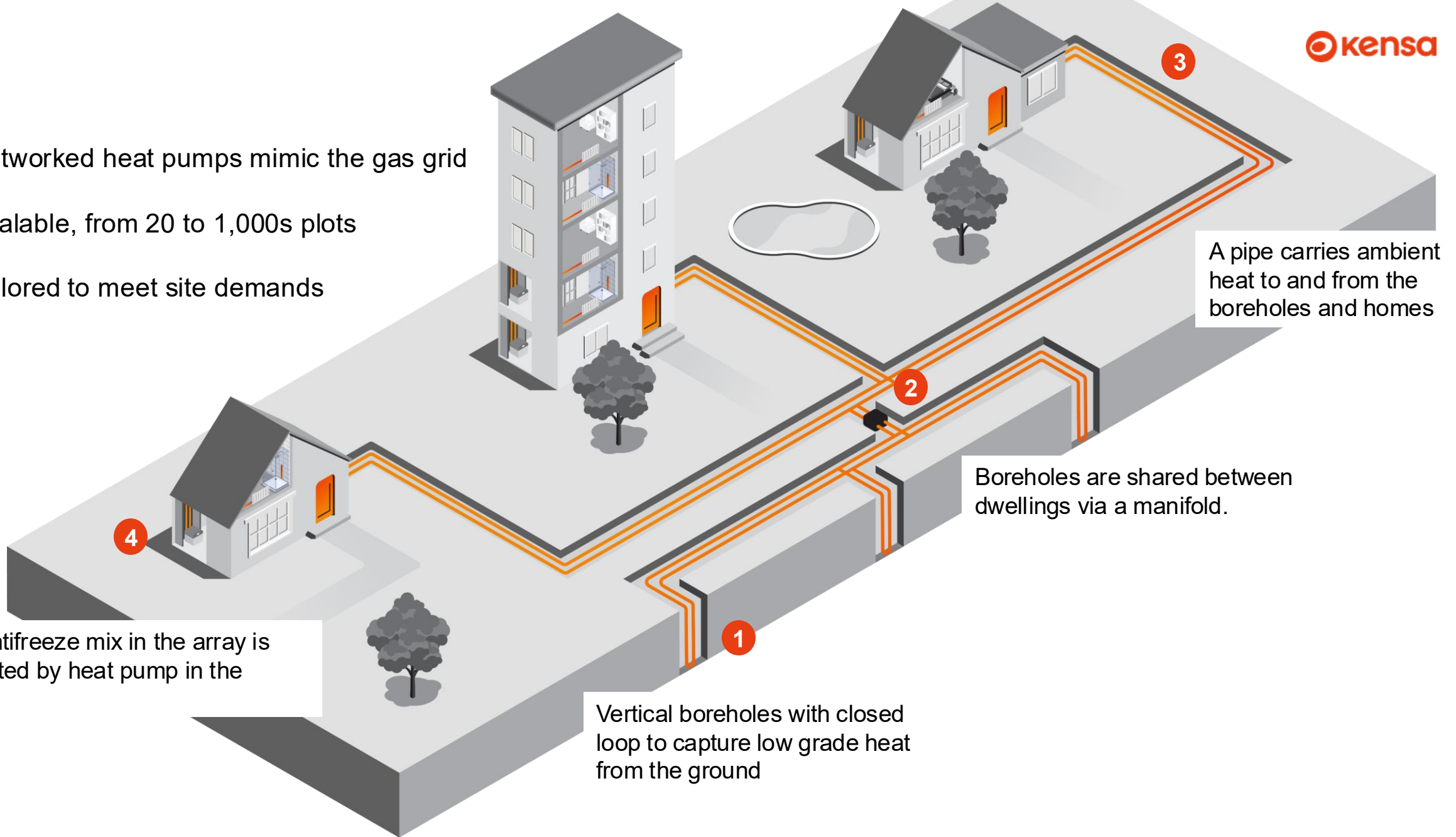


A 'networked' solution linking multiple dwellings



- This creates economies of scale, meaning we drill multiple holes, link them together and connect to each white box
- Very much like the gas network today

- Networked heat pumps mimic the gas grid
- Scalable, from 20 to 1,000s plots
- Tailored to meet site demands



Why Ground Source

**Strong resident
appeal**

Lowest Carbon

**Lowest Cost
Cooling**

**Lowest
Substation Costs**



**Lowest Running
Costs**



Least Noise



**Least Maintenance &
Replacement Hassle**



No Visual Impact

No noisy & unsightly box outside, peace of mind & running cost benefits.

Lowest running costs

Technology	Fuel cost per kWh	Efficiency	Delivered heat cost per kWh	Annual Running Costs (6,000 kWh demand)	Annual Standing Charge	Total annual costs
GSHP	24.67p*	320%	7.71p	£463	£0	£463
ASHP	24.67p*	250%	9.87p	£592	£0	£592
Mains Gas Boiler	5.74p*	80%	7.18p	£431	£106*	£537
Direct electric	24.67p*	100%	24.67p	£1,480	£0	£1,480

- Time of use tariffs can reduce GSHP running costs still further – could be up to a further 30% reduction

*Source – ofgem.gov.uk price cap 1/4/26 to 30/6/26

Why Ground Source

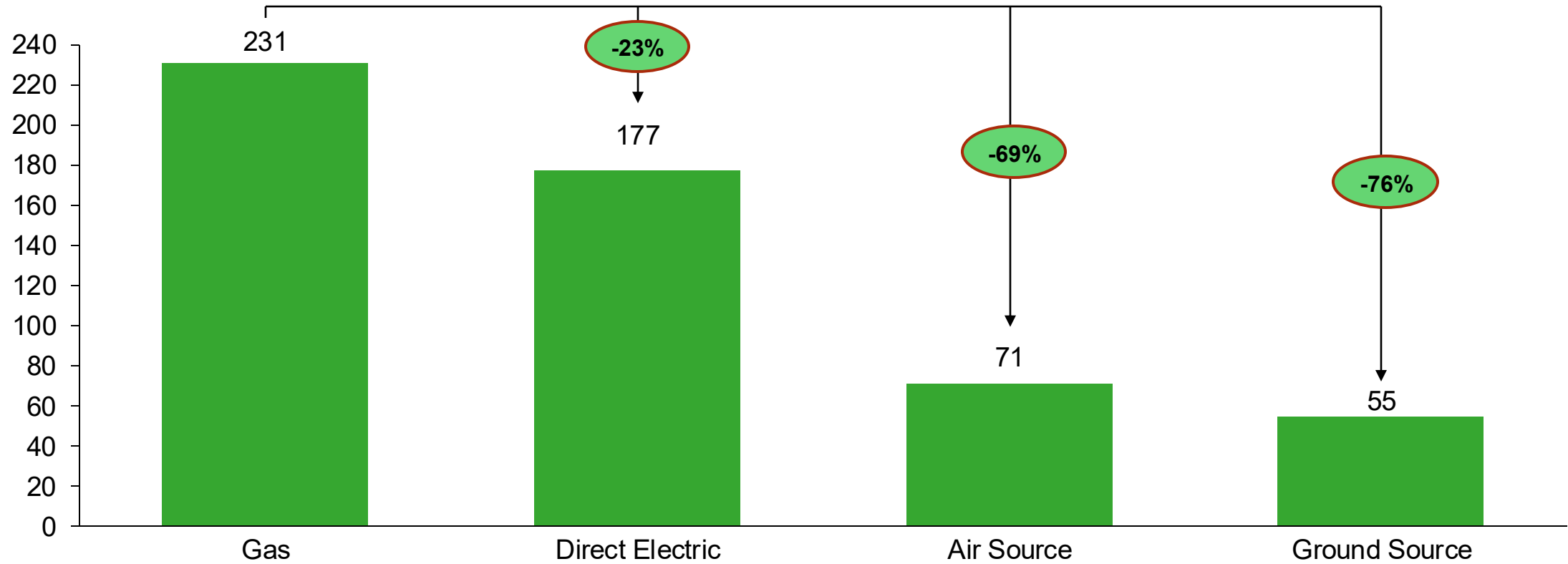
Strong resident appeal

Lowest Carbon

Lowest Cost Cooling

Lowest Substation Costs

Heating Emissions (gCO₂e/kWh-heat)



Assumptions: 2.5 ASHP SCOP, 3.2 GSHP SCOP, 80% efficient boiler, 177gCO₂/kWh electric grid intensity (DESNZ), 185gCO₂/kWh gas burned (Carbon Independent)

Why Ground Source

Strong resident appeal

Lowest Carbon

Lowest Cost Cooling

Lowest Substation Costs

Passive Cooling

‘Free cooling’ – just the circulation pump



- 1) Fan coil
- 2) AHU
- 3) Passive Beams
- 4) MVHR

Cardiff cooling during the heatwave

Last summer during the 32°C+ heatwave, passive cooled rooms at 21°C all day vs non-cooled rooms at 28°C

Done at an effective cost of £20 per year to run

Why Ground Source

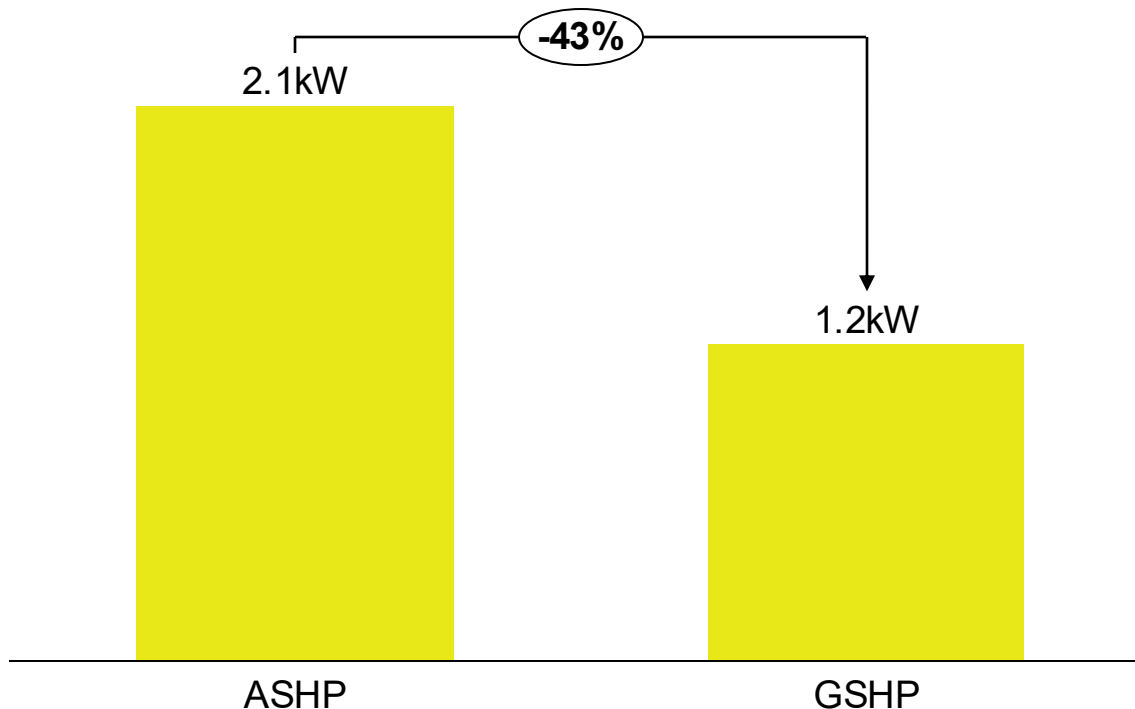
Strong resident appeal

Lowest Carbon

Lowest Cost Cooling

Lowest Substation Costs

kW to deliver 5kW heat on the coldest day (peak)

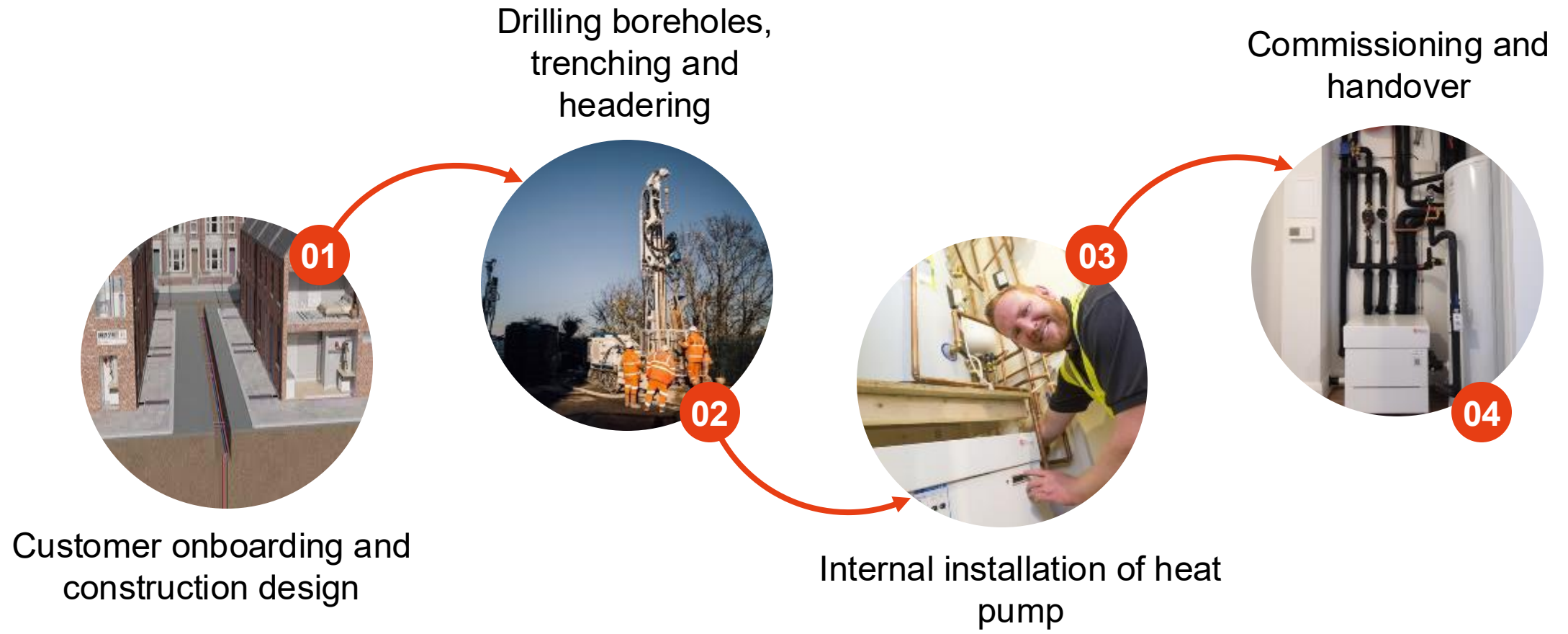


With <60% of the peak addition of air-source, ground-source should pose much less of an issue on grid-constrained sites

This can mean faster access to site, unlock sites with grid constraints, and cheaper grid/substation upgrades

This comes from the ground being a constant 5-10C inlet, whereas air-source on the coldest (i.e. peak) day will likely have a <0C inlet, while also needing to defrost itself

Kensa's turn-key solution



Three high rise social housing retrofit blocks in Essex

Chadwell St Mary, Thurrock Council
273 flats with storage heaters
66% cut in heating bills

<https://kensa.co.uk/social-housing/case-study/chadwell-st-mary-ground-source-heating>

Ashford Clusters for Ashford Council



In brief:

- Retrofit, 74 council properties
- 3 estates
- Mix of property types: bungalows, terraced houses, low rise flats
- Mix of existing heating systems: direct electric, oil boiler, gas boiler
- Funding from SHDF Wave 2
- Achieving EPC Band C minimum

<https://kensa.co.uk/social-housing/case-study/low-carbon-heating-system-benefits-ashford-borough-council>

Tower Blocks for Renfrewshire Council



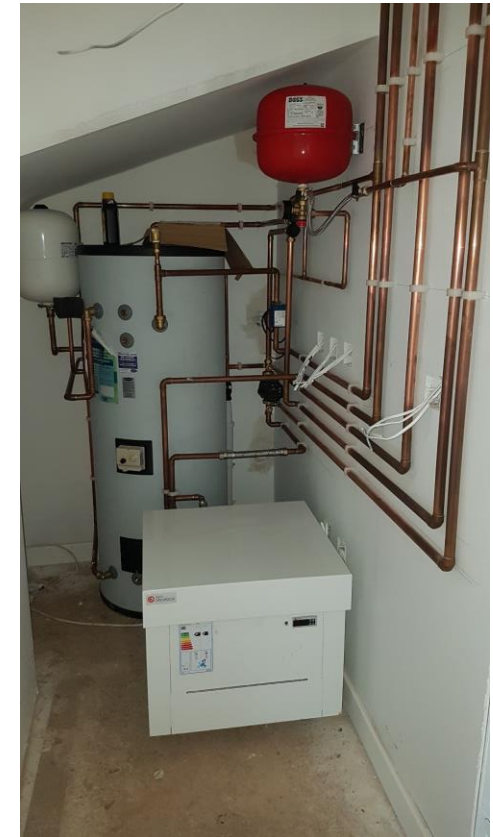
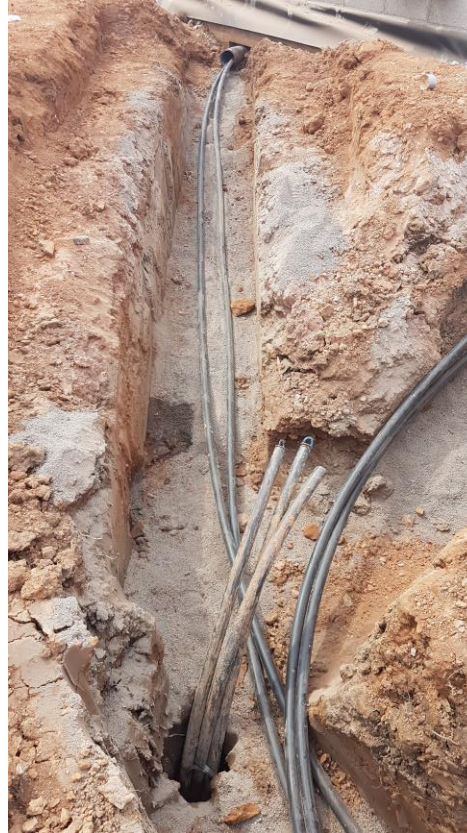
In brief:

- Retrofit, 2 tower blocks, 180 flats
- Replacing failing gas boilers
- Funding from SHNF
- On site – visits can be arranged

New Build for Bristol City Council

In brief:

- New build, 133 units
- Mix of private sale and social rental
- Partnership between Willmott Dixon and Bristol City Council
- Heating options considered were gas combi boilers, centralised LTHW network, individual ASHP and shared ground loop GSHP
- Shared ground loop chosen – after 2 due diligence tests



Putting people at the heart of your programme

- Upgrading homes to be warm or cool, all year round
- At a cost people can afford
- And supporting local jobs and benefits in your community

Diane Barr
Thurrock resident

"The heating before was a big expense, and we all dreaded the winter months. The new heating system is easy to use, keeps our home warm and is much cheaper than the old system that we had."



Thanks

Stuart Gadsden

Tel: 0750 800 5541

Email: stuart.gadsden@kensa.co.uk

5GIR
Programme

**Decarbonising
across Greater
Manchester**

together
we are **GREATER
MANCHESTER**



Department for
Science, Innovation,
& Technology

**UK
RI**

**Innovate
UK**

**Business
Connect**

Building from strategic Priorities – GMS 2025 to 2035



together
we are **GREATER
MANCHESTER**

- Delivering Live well
- Delivering Housing First
- Good Landlord Charter
- Economic Growth & Investment in GM Growth Locations
- Get Online GM – Tackling Digital Exclusion
- GM Net Zero
- GM Transport Strategy 2040



together
we are
**GREATER
MANCHESTER**

Greater Manchester Strategy 2025–35
Summary



CHIPs Objectives and Principles

To create a Connected Places Programme and framework for the delivery and management of IoT and smart technology in Social Housing across GM



Aligned and consistent with GM and partner strategic priorities and targets



Allows for scalable and sustainable solution deployment across GM



Encourages collaboration, knowledge sharing, best practice



Inclusive innovation



Utilisation and expansion of our worldclass infrastructure



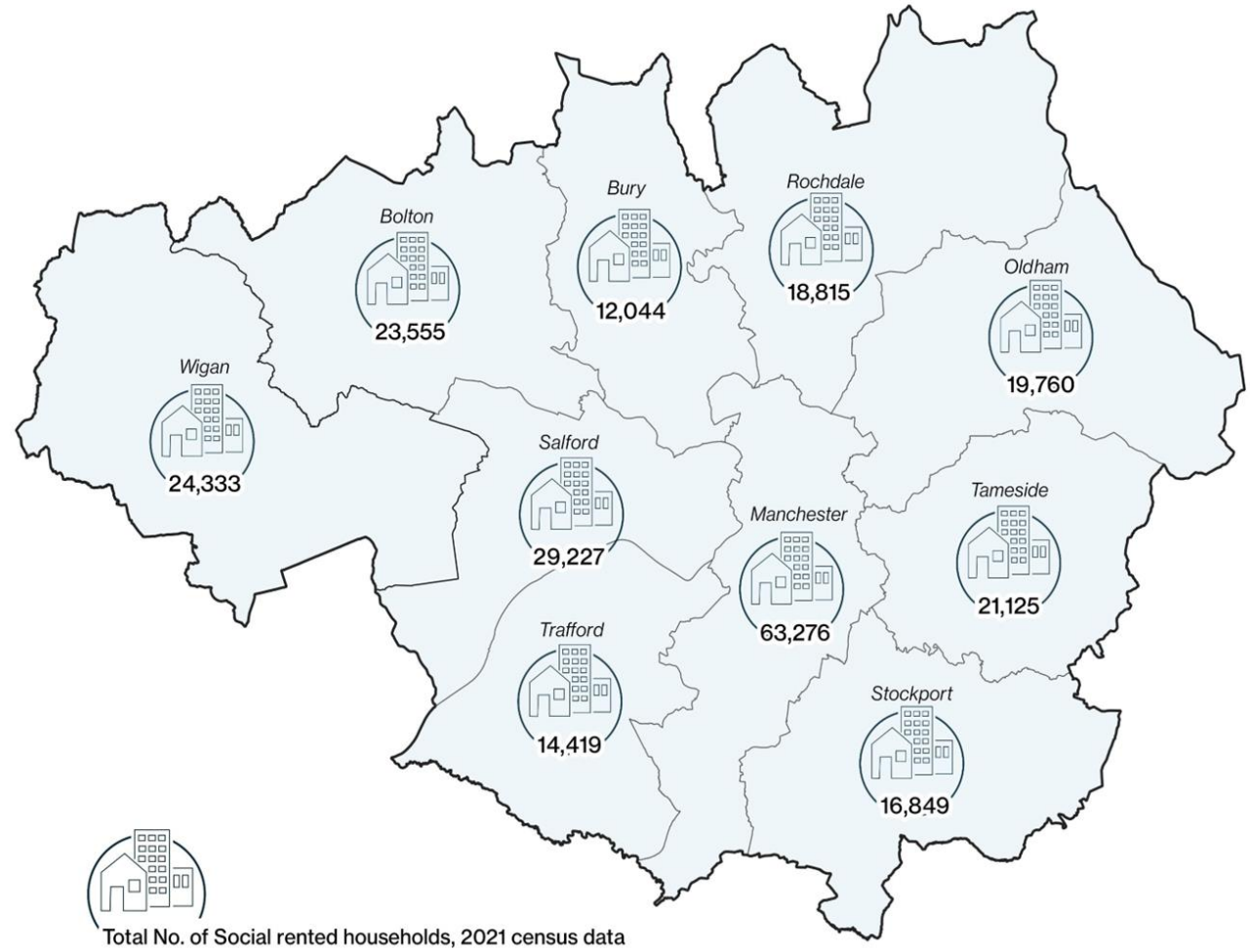
In Greater Manchester, approximately 25% of local carbon emissions come from domestic gas use, making it imperative to transition toward low-carbon heating.

With government targets under consultation to bring all social housing to EPC B and C by 2030, heat pumps are considered as a key solution.



“We already knew connectivity was important, but this project put a real spotlight on it.”

– New Business Director, Daikin UK



Social housing accounts for around a quarter of the GM housing stock & plays a vital role in this shift.



**125 Homes
Connected**



**500+ Residents
Engaged**




**19 Industry
Partners**



**2 Transport
Corridors**



An aerial photograph of a residential neighborhood, likely in Manchester, showing rows of terraced houses, green spaces, and a school. A dark blue diagonal overlay covers the left side of the image, containing white text. The text reads: "A forward-thinking initiative which aligns with greater Manchester's target to be carbon neutral by 2038 – promotes energy efficiency and improves quality of life for our residents".

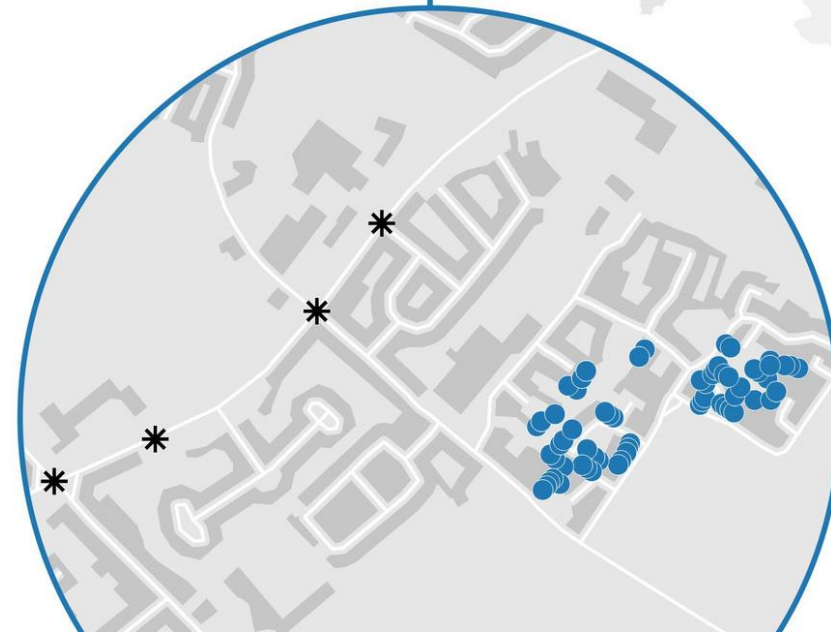
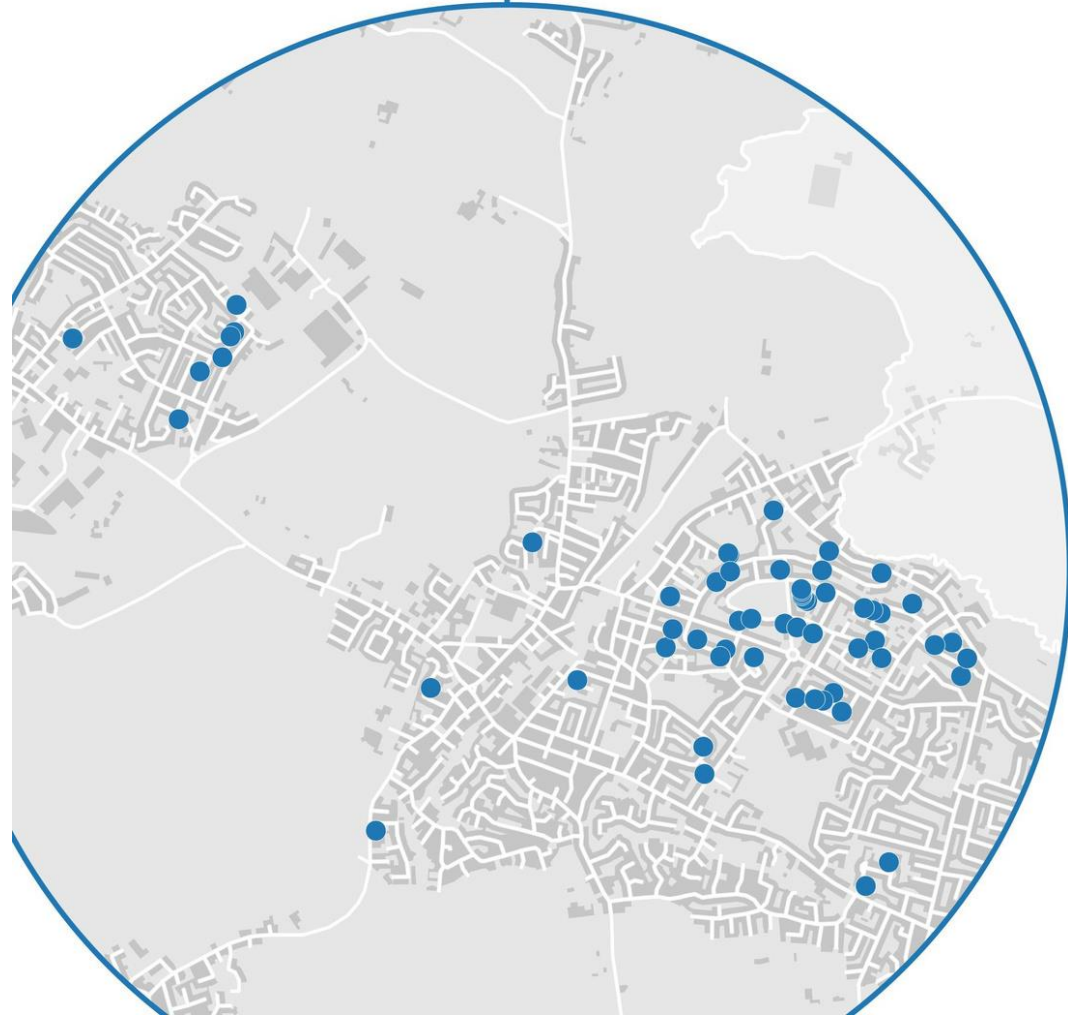
**“A forward-thinking initiative
which aligns with greater
Manchester’s target to be carbon
neutral by 2038 – promotes
energy efficiency and improves
quality of life for our residents”**

- Retrofit Surveyor, Southway Housing Trust

- * Smart Route points
- Air Source Heat Pumps

Hindley Site

Chorlton Site



Connectivity must be considered at a whole city level to leverage existing assets and networks

Policy context





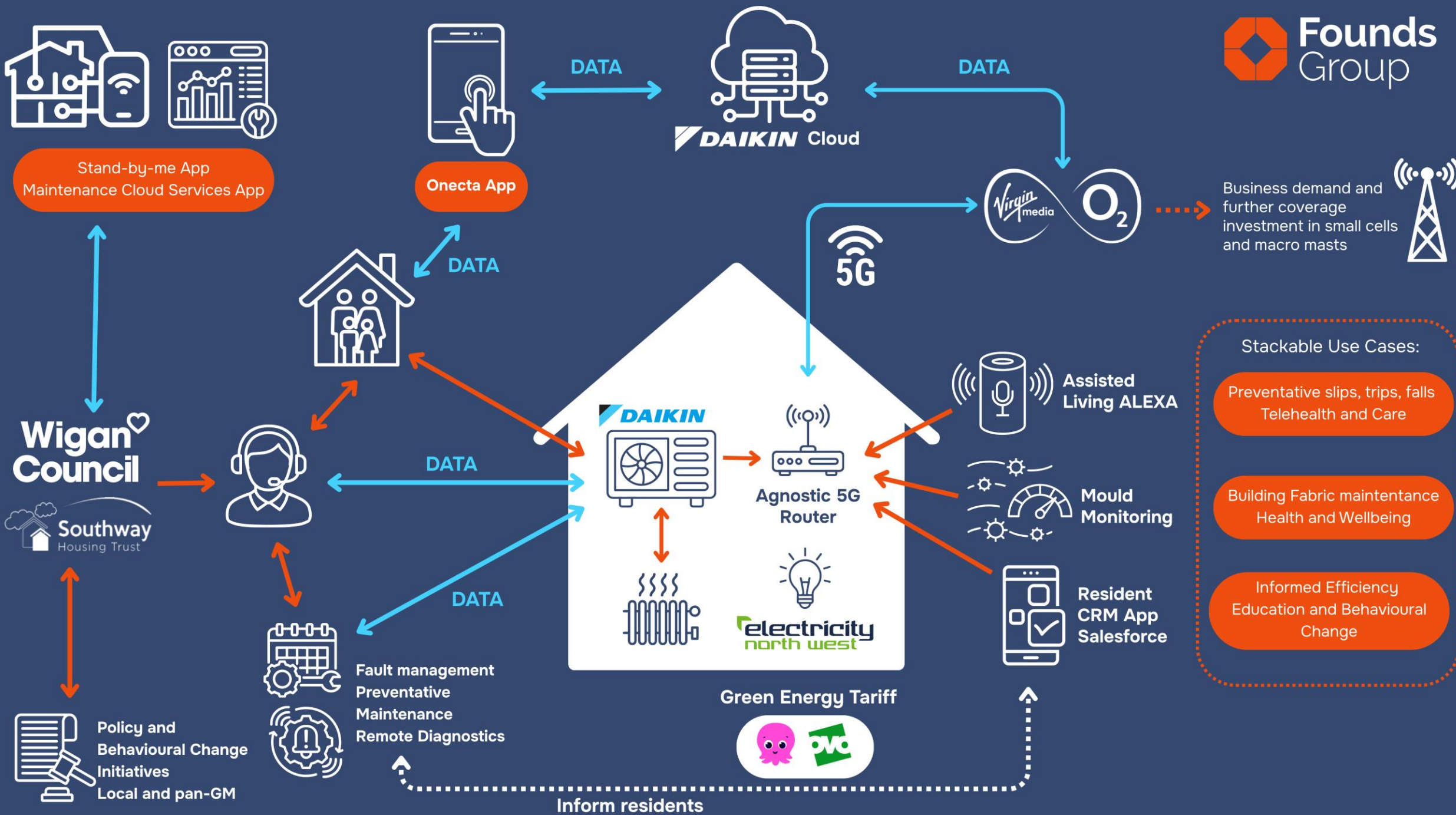
Developing Stackable Use Cases



Stackable Use Cases

- Assisted Living
- Damp and Mould Sensor Tech
- Telehealth Monitoring





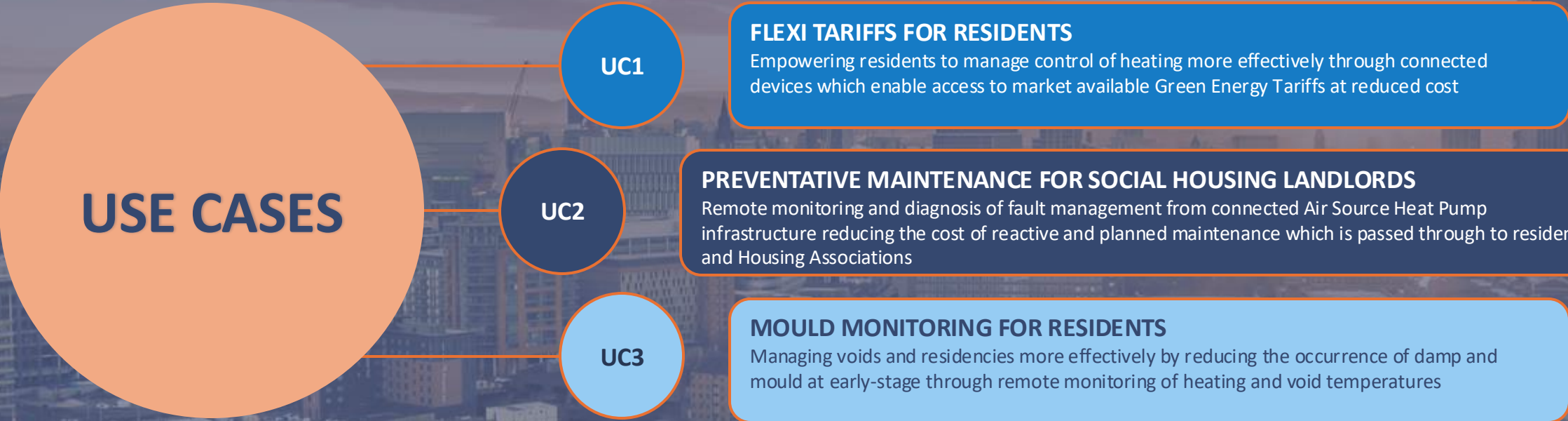
Business demand and further coverage investment in small cells and macro masts

- Stackable Use Cases:**
- Preventative slips, trips, falls
Telehealth and Care
 - Building Fabric maintenance
Health and Wellbeing
 - Informed Efficiency
Education and Behavioural Change

Developing Commercial Use Cases Applications



Theme	Connected solutions	Outcomes sought	Alignment
Sustainability	Air quality, Damp/Mould, smoke alarms, Net zero	Minimum air quality standards, fire prevention	Good Landlords Charter
Facilities Management	Void monitoring, preventative maintenance, energy,	Improve efficiency and reduce SHP costs	Social Housing Decarbonisation



Indicative Benefit Cost Ratio – Scalable for Smart Homes



Proposed Capital Costs (4years)

	2025	2026	2027	2028	Totals
5G Router	415	0	0	0	415
Router Energy	36	37	37	38	147
Survey and Install	540	0	0	0	540
Resident Engagement	330	0	0	0	330
MNO Data Contract	60	0	0	60	120
Management Costs	150	0	0	150	300
Mould Monitors	1,000	0	0	0	1,000
					Total cost per property £2,852

Use Case Benefits / Savings

UC1 - Flexi Tariffs	450	457	464	471	1,841
UC2 - Maintenance	480	483	487	491	1,941
UC3- Mould Monitoring	1115	115	115	115	1,460
					Total saving per property £5,242

Confidence Levels

ASHP's 95%
Mould and Damp 90%

Pan GM Scalability Benefit

		ASHP only	D&M only	BOTH
No. of Properties	1	2,084	146,042	146,042
Cost	2,852	£3.13m	£2.57m	£5.71m
Saving	5,242	£7.88m	£10.66m	£18.54m
Simple BCR	2	2.5	4.1	3.2

Benefits shown are Direct only and do not account for Indirect Benefits such as Net Zero, Wellbeing, Compliance, Inclusion etc which are estimated to add a further **+£25m** to the combined Benefit and hence an overall BCR value of **7.6**

Benefits shown are for primary use cases with potential for further benefits with more IoT connected devices.

Do you want to feel the benefit of lower energy costs?



Make the most of your heat pump - join the **Smart Heat Pump Network**

How joining benefits you

- ✓ Access the best possible energy tariffs - so you could lower your bills
- ✓ Control the temperature even when you're not home via an app
- ✓ Have fewer visits from engineers as they can detect and fix issues without visiting your home

Join the Network for free and receive

£100

in LoveToShop vouchers

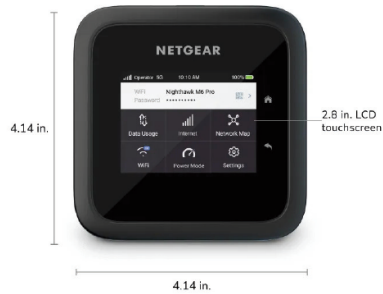


What is involved

To connect you to the network a small wireless device (called a router) will be installed near your heat pump. You can then control your heat pump using an app on your smartphone or tablet. This app will help you manage your heat pump settings.

Please note that tenants who have the Daikin heat pump are the only residents eligible for this project.

The small router



Scan the QR code to find out more and sign-up via the project website.



Lessons Learned



Tailored Engagement



Cross-sector collaboration



Scalable and flexible architecture



Digital literacy and tariff awareness



Procurement and commissioning

Benefits & Impact



Heat Pump Education

identified & delivered to residents, engineers & social schemes



Lower energy costs

For residents through access to wider range of tariffs



Warmer homes

for people living in social housing



Reduced maintenance

for social housing providers, leading to cost savings



Blueprint

for how social housing providers can utilise smart technology to improve their services and better support their residents



Influencing Policy

Social Housing Decarbonisation Fund (SHDF) policy



Decarbonisation

Of social housing stock



Foundation

For future stackable use cases



Rebuilding Trust

with residents through open and honest engagement to pave the way for future intervention

Legacy and Future Development Opportunities

- Place based deployment creates greater impact
- Removing vendor lock-in and dumb assets
- Flexible architecture enables use case stacking
- Blueprint for scalable adoption
- Body of Knowledge to support CHIPs > (SHOP)
- Future Commissioning and Procurement policy



5GIR Playbook



GREATER MANCHESTER
DOING DIGITAL DIFFERENTLY

Department for Science, Innovation, & Technology

GM 5G Innovation Region Playbook

SMART DECARBONISATION NETWORK

GMCA

WWW.GREATERMANCHESTER.CO.UK

Delivered with our Partners



“A forward thinking initiative which aligns with greater Manchester's target to be carbon neutral by 2038 – promotes energy efficiency and improves quality of life for our residents”
—Retrofit Surveyor, Southway Housing Trust

GMCA 5GIR SDN

02

GMCA

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GMCA 5GIR Pilot Background

This pilot project was conceived within the context of funding and strategic direction provided by the Department for Science, Innovation and Technology (DSIT), with the clear purpose of exploring and demonstrating innovative applications of 4G/5G connectivity in Greater Manchester.

The original deliverables and ambitions focused on testing a range of solutions that leverage advanced connectivity to support both energy management and transport monitoring. The project's scope was deliberately broad in addition to integrating connected heat pumps in social housing to drive decarbonisation and deploying sensors along transport corridors to improve real-time traffic and environmental monitoring. It also aimed to explore smart grid management techniques in collaboration with Electricity North West Limited (ENWL) and additional residents focused use cases with Local Authority Housing Teams. This multi-faceted approach was designed to show how connected technologies could work together to create smarter, more sustainable urban infrastructure.

The scope was carefully chosen to target areas where these technologies could have the most immediate and meaningful impact, aligning with Greater Manchester's wider strategies, including the 'Live Well' and 'Housing First'.

Central to the pilot's approach was assembling a consortium of partners with complementary expertise. This included formalising commitments such as the Memorandum of Understanding (MoU) between Dain and Greater Manchester Combined Authority (GMCA), ensuring strong collaboration between technology providers, energy networks, and local authorities. Throughout the pilot, the focus has been on developing and refining use cases that demonstrate the potential benefits of smart connectivity for decarbonisation and smarter transport management. These use cases were selected to reflect both technical feasibility and alignment with regional priorities, positioning the pilot as a crucial step towards scalable, real-world deployments.

Purpose & User Guide

The Greater Manchester 5G Innovation Region (5GIR) programme, funded by the Department for Science, Innovation and Technology (DSIT), has set out to test and prove concepts around how advanced wireless can be an important enabler to creating a smarter society. The programme has tested initiatives, worked with industry suppliers and developed stackable use cases (and business investment cases) that demonstrate the significant scalability benefits of advanced wireless applications. The development and delivery of the programme has established some guiding principles and learnings that can be shared and disseminated.

This playbook therefore provides an overview of the programme for interested parties, and captures the learnings, recommendations and tools that can be considered for any adopting organisation. The playbook demonstrates how advanced wireless technologies can be deployed to connect assets in social housing, along transport corridors and in a wider place-based approach, creating smart, connected societies in support of decarbonisation and resident wellbeing.

Who Should Read This Playbook?

This Playbook is designed to appeal to a broad audience, including:

- Devolved Regions
- Local Authorities
- Housing Associations and Social Landlords
- Transport Operators
- Highway Infrastructure owners
- Technology suppliers and integrators
- Industry partners

Whether you're planning a pilot, scaling a smart infrastructure initiative, or exploring use cases for 5G and IoT in your locality, this playbook offers practical insights and tools to help support your development and implementation journey.

Purpose of the Playbook

- Shares practical guidance, advice and lessons learned from our deployment of advanced wireless connectivity across housing and transport use cases.
- Provides real-world evidence, examples, and data to support future planning and investment decisions.
- Offers a toolkit of methods, technologies, and strategies that can be reused or adapted in other settings.
- Stimulates discussion and collaboration among stakeholders and regions to drive the adoption of best practices in the use of 5G advanced wireless connectivity.

By documenting successes, challenges encountered, and lessons learned, the playbook serves as a resource for those seeking to replicate or learn from our own experiences, avoiding repeated failures and fast-tracking adoption.

The playbook aims to foster a culture of openness and shared learning within a wider ecosystem of digital infrastructure and advanced wireless providers, with contact details and further resources that can be accessed. A toolkit is offered for interested parties to adopt and help avoid re-inventing the wheel, developed through lived programme experiences and identifying best practice along the journey.



03

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GMCA 5GIR SDN

Approach & Methodology

Spatial Mapping

A critical early step in the project was a structured mapping phase to identify suitable sites, assets, and partners for the deployment of advanced wireless technologies across both the Smart Energy and Smart Transport sub-networks. This phase laid the groundwork for successful delivery by aligning technical feasibility with strategic priorities. The mapping process involved collaboration with local authorities, housing associations, and transport leads to identify:

- Social housing sites with existing or planned air source heat pump installations
 - Transport corridors or junctions where sensor deployment could deliver valuable data for planning, traffic management, or air quality monitoring
 - Street furniture or infrastructure suitable for hosting sensors or connectivity equipment (e.g. lampposts, bus shelters)
- Sites were selected based on a combination of factors including decarbonisation potential, housing stock characteristics, existing connectivity coverage, and density of assets and their proximity to energy substations. Higher asset density increases the value of data aggregation and supports future smart grid applications, such as demand-side response or predictive maintenance at the substation level. Where clusters of heat pumps could be linked to a common substation, this presents a stronger case for investment in connectivity and data infrastructure.

Technology Solution

In the initial design phase, the project considered deploying a private 5G network, supported by small cell infrastructure, to provide dedicated, high-speed connectivity across selected sites. This approach was intended to offer maximum control over the network environment, supporting low-latency, high-reliability applications—particularly in dense urban settings. However, during the mapping phase, it became clear that the cost, complexity, and lead times associated with deploying a private network and installing small cells at scale would significantly impact the project's ability to demonstrate scalability.

The team pivoted to leverage the existing public 4G and 5G network, working closely with mobile network operators and technology partners to:

- Assess signal strength and capacity across proposed sites
- Identify potential coverage issues or network "dead zones"
- Understand how data traffic from sensors and connected assets would be routed to cloud and edge platforms

On-site signal testing and de-obscured coverage analysis were used to validate the feasibility of public network use, helping the team match use case requirements (e.g. bandwidth, latency, data volume) to available infrastructure.

While this approach required close alignment with operators and flexibility in site selection, it enabled faster deployment, lower upfront investment, and offered a more scalable model for potential future rollouts.

INSERT QUOTE ABOUT TESTING 5G on Wheels

03

GMCA

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GMCA 5GIR SDN

A key aim of the GM 5GIR Programme was to develop "stackable use cases": modular solutions that can be layered, combined, and then scaled across different settings, partners, and geographies. By designing use cases in this way, we have maximised the longer-term value of investment and simplified the ability to replicate and reduce barriers to any wider adoption of 5G technologies.

WHAT DO WE MEAN BY "STACKABLE" ?



Modular

Built around components (devices, platforms, processes) that can be reused or reconfigured in different contexts

Composable

able to be combined with other use cases to unlock greater value or new functionality — centered around a single point of connectivity

Scalable

Capable of growing from pilot deployments to regional or national implementations without major redesign

Interoperable

Designed with open standards, and flexible data production, enabling integration across various systems and vendors

How we developed stackable use cases

Throughout the programme, we focused on use cases that addressed immediate local needs but had clear potential to scale across GM. For example:

- For the Smart Home, we began by enabling basic remote monitoring of air source heat pumps to support maintenance and performance analysis. This foundational use case can then be extended to include predictive maintenance, automated fault alerts, or even grid-interactive optimisation as energy markets and policies evolve.
- For the Smart Transport corridor, the initial focus was on deploying connected sensors to collect traffic and environmental data. These can be layered with additional applications such as dynamic traffic signal optimisation, multi-modal transport insights, crash and safety detection, or real-time air quality interventions.

We deliberately selected technologies and platforms that could support multiple use cases, allowing future layering (e.g. adding more sensors to existing air quality monitoring points without duplicating infrastructure, or connectivity).

Traditionally, individual IoT solutions have been deployed with their own dedicated connectivity. While functional, this model introduces duplication, increased costs, unnecessary complexity, and a wider attack surface for security.

To overcome this, we've implemented a single, scalable connectivity platform based on 5G and Wi-Fi technologies. This shared infrastructure is designed to support multiple IoT use cases, both current and future, across any GM housing stock.



GMCA 5GIR SDN



Delivering safe journeys and improving network management through 5G Connectivity

The Smart Transport workstream explored how connected traffic sensors on existing street furniture, connected via a public 5G network, could generate real-time data to inform transport decision-making, operational response, and long-term planning. This has tested new approaches to collecting and using movement data in a live environment and forms part of Greater Manchester's broader ambitions to build a city region digital twin.

Deployment Objectives

Sensors were installed on existing street furniture along selected corridors to collect vehicle flow data. This

Key Outcomes and Learnings

- Demonstrated feasibility of low-cost, connected sensors, on existing street infrastructure and connected via public 4G/5G networks
- Enabled real-time data capture supporting more responsive network management
- Strengthened our understanding of how sensor data can inform multi-agency decision-making including operational response, planning and environmental strategies
- Provided valuable early insight into how this data collection can benefit transport operators, by:
- Enabling faster incident response (e.g. detecting congestion build-up, route blockages)
- Supporting dynamic traffic light sequencing and routing
- Informing bus prioritisation measures based on actual flow and delay data

Offering baseline data for evaluating interventions and creating the business case for scaling across GM

Reflections

This programme has proven an early yet important step in GM's ambition to build a digitally connected, real-time view of transport across the city-region. For transport operators, the ability to access live, granular movement data, captured and transmitted using advanced 5G wireless networks, opens up new opportunities for targeted, evidence-based interventions.

"The aspiration is that this becomes a regional twin for everything — one that helps us understand not just how people and cars are moving, but how people are moving across Greater Manchester in real time. These programmes allow us to test and prove concepts to make sure we're aligned and working together on a shared systems-wide approach"

—Mehmet Turk, TfGM

Contact Us



Chris Founds
Managing Director
chris.founds@foundsgroup.co.uk



Hayley O'Brien
Project Manager
hayley.obrien@foundsgroup.co.uk

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Upcoming Events

Net Zero Living Programme Showcase:

- Manchester, 5th March, 9:30-16:30.