

South West Net Zero Hub

5i Heat Network Project - Investment



Introduction to the 5i Heat Network Project

Sam Moore
Project Manager
SW Net Zero Hub



Housekeeping

1. Today's 2 hour session will be recorded for sharing
2. There will be three dedicated sessions for questions
3. Q&A is allowed during speaker presentations in the chat function
4. Any unanswered questions please raise your virtual hand in the Q&A session at the end of all of the presentations and I will come to you in turn
5. All presentations will be shared with all attendees as a pack
6. Follow up support is available from the Net Zero hubs

Agenda

1500: Welcome, Introductions, Setting the Scene

- Ken Hunnisett, Triple Point
- Jim Gillion, Gateshead Council
- Q&A

1600: Break

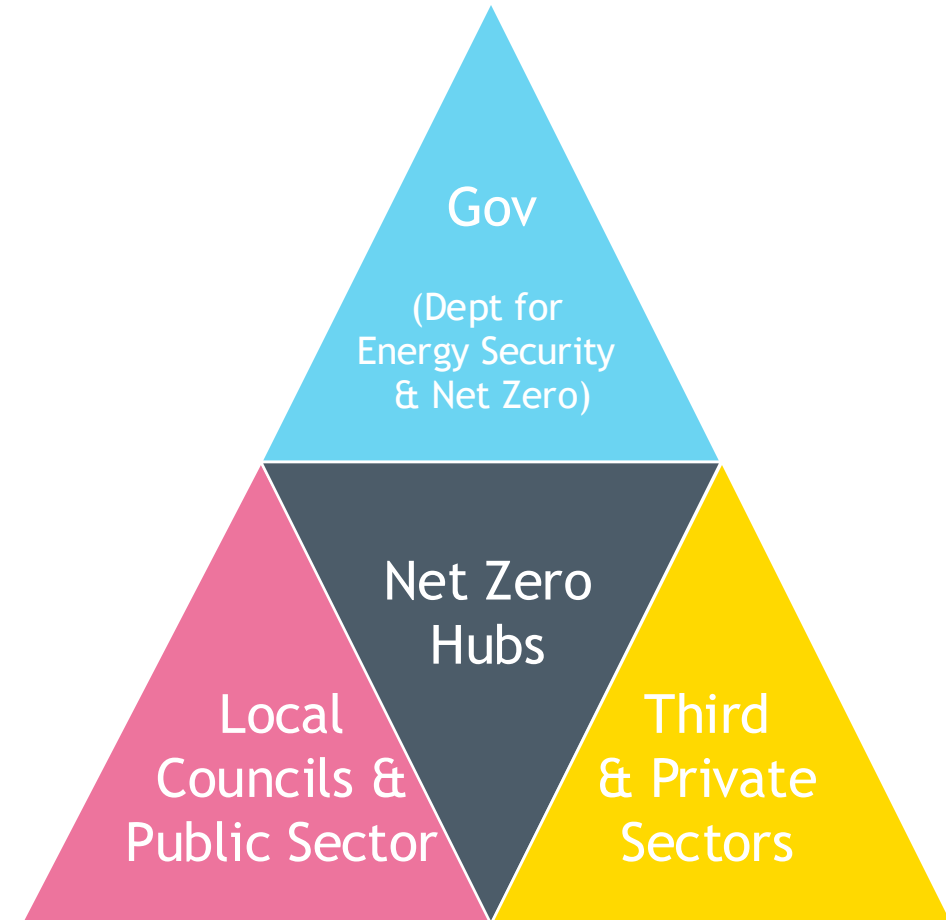
- Simon Carman, Asteros
- Peter Chalmers, UKIB
- Q&A
- Wrap up discussion

Breakout Rooms

1700: Finish

South West Net Zero Hub

The South West Net Zero Hub provides impartial advice, technical support and funding to public and not-for-profit organisations, to develop projects that accelerate emission reductions and enable the transition to a more sustainable future.



South West Net Zero Hub

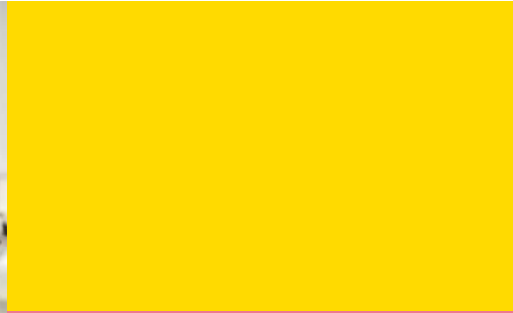


Government Net Zero Strategy established 5 regional hubs with core objectives:

1. **Attract commercial investment** and help LAs and other local public sector bodies to develop investment models which accelerate progress to net zero
2. Continue to **increase the number, quality, and scale of local Net Zero projects** being delivered across the region in line with national targets and strategies, including supporting the early-stage development and delivery of projects.
3. **Collaborate** with the Department of Energy Security & Net Zero to develop & support Net Zero elements to wider programmes & initiatives including Levelling Up
4. Support a national **knowledge transfer programme** to improve information sharing, training & evaluation
5. **Raise local awareness** of opportunities & benefits of local Net Zero investment

TriplePoint Investment Management Unlocking Private Finance

Ken Hunnisett
Head of Clean Heat





Triple Point

Unlocking Private Finance in Heat Networks

Ken Hunnisett, Head of Clean Heat

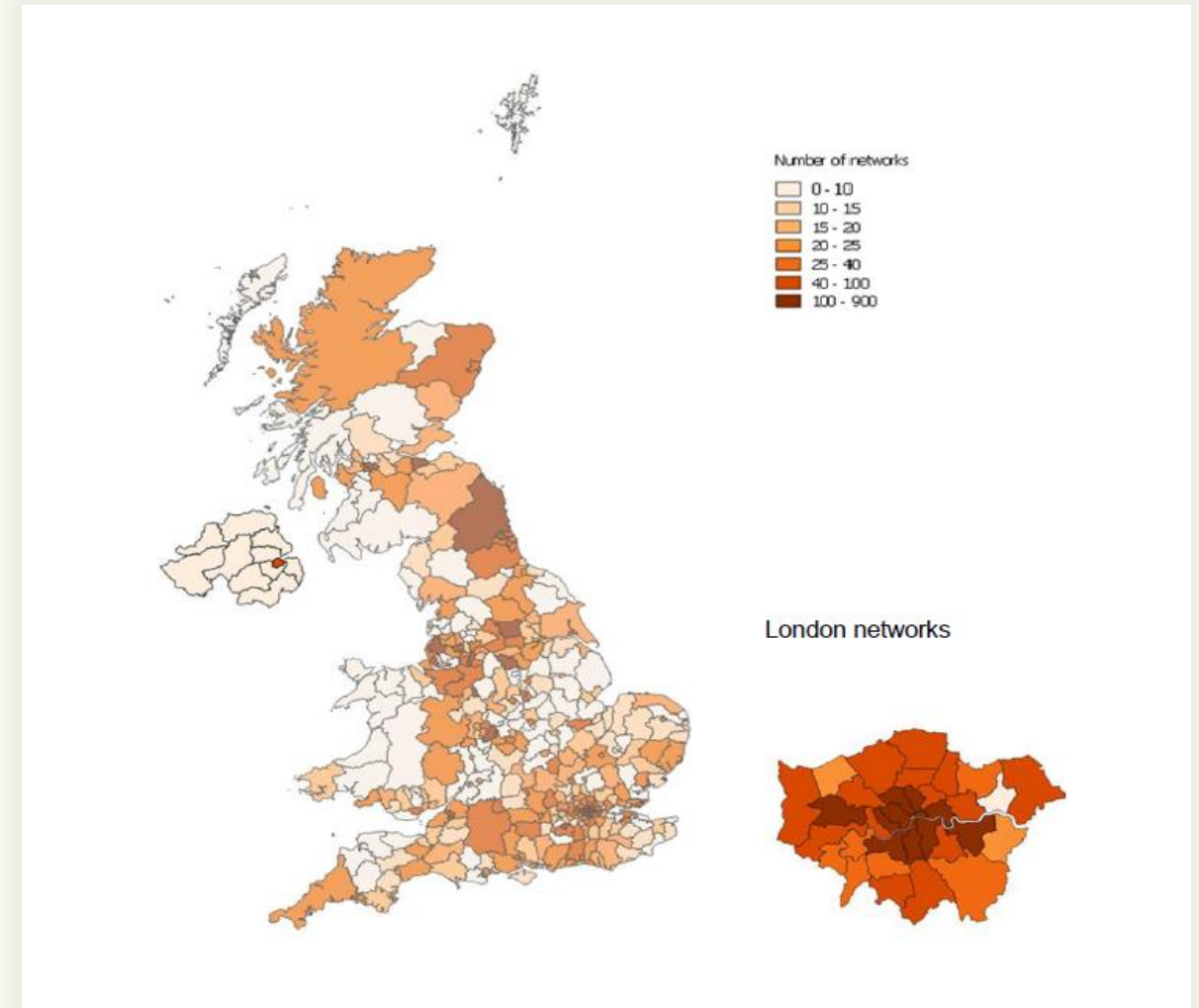
20
YEARS



Heat Networks – today to 2050

Heat networks currently provide almost 3% of UK heat demand and with Government support could provide 20% of heat demand by 2050. They can unlock otherwise inaccessible large-scale renewable and recovered heat sources such as waste heat from industry and heat from rivers and mines.

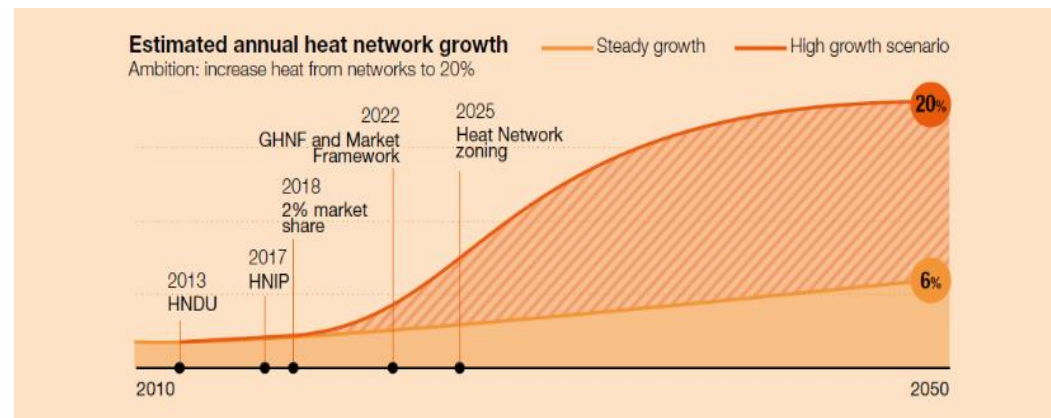
They deliver broader system benefits as they can run during lower peak times and can take advantage of lower carbon electricity and reduce the investment needed in local energy grids. The investment potential presents between £60 and £80 billion by 2050 and is considered the biggest heat network investment opportunity in Europe.





Heat network investment potential is estimated to be £60 billion to £80 billion by 2050.

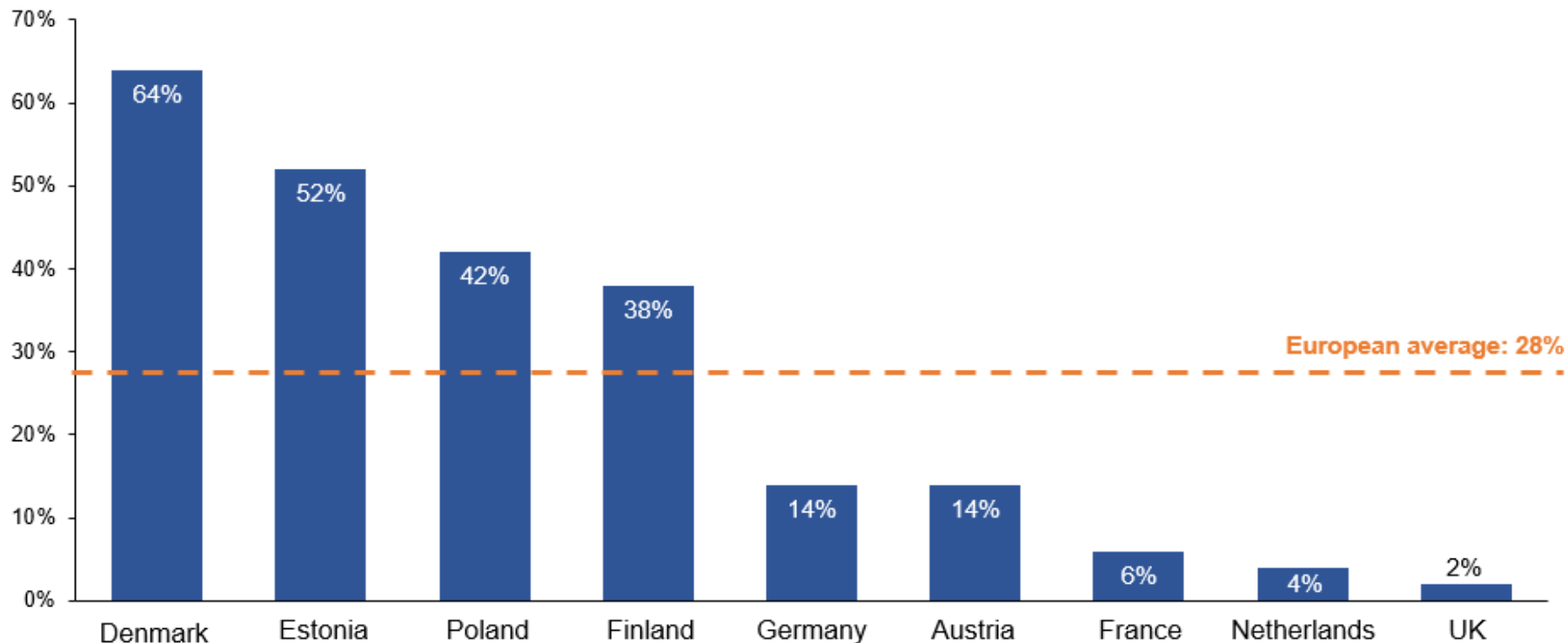
The UK government is creating a market framework to protect consumers, encourage low-carbon development, and promote investment. Government is also working with industry to build a competitive and innovative UK market that delivers and sustains jobs, exports and economic benefits.





UK District heating: Historical underinvestment means the UK is lagging European peers

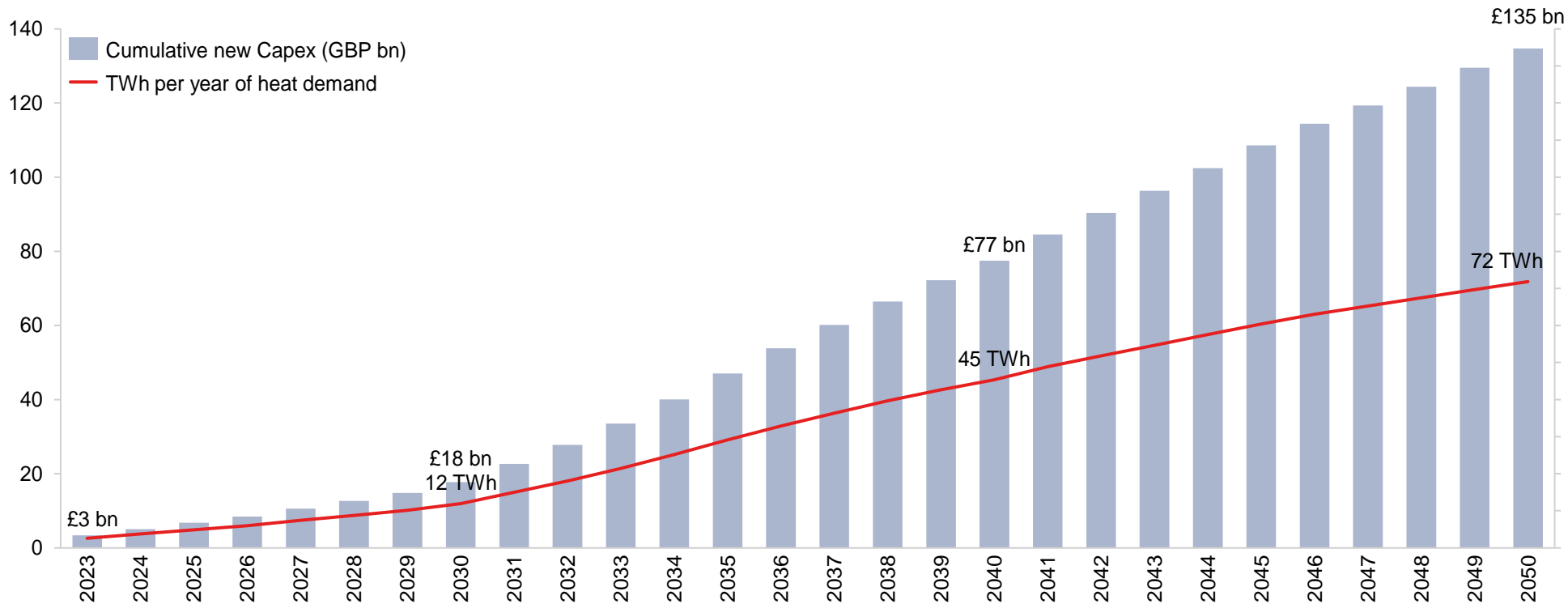
Selected Market share of European District Heating from total residential heat demand





UK District heating: Stable government support is bolstering market confidence

GBP Bn / TWh per year





Overview of Policy Areas

- Heat policy is a devolved policy area in the UK
-
- The UK Government is working with industry and local authorities – and investing in funds and programmes – to develop new heat networks and improve existing ones through the **Heat Network Transformation Programme**.
-
- This brings together a set of projects. These include:
- Introducing regulation to **improve consumer protection** and **limit emissions** and **helping customers with their bills**
 - **Introducing heat network zoning** in England by 2025
 - Accelerating the deployment of low carbon heat through the **Green Heat Network Fund**
 - **Improve performance of existing networks** through the Heat Networks Efficiency scheme
 - **Provide grant funding and guidance** for heat network project development to local authorities and other key stakeholders
 - Work with industry to **increase skills and capacity in the UK supply chain**

Heat network transformation programme

Consumer Protection

Minimum Technical Standards

Heat Network Zoning

Subsidy support

Skills



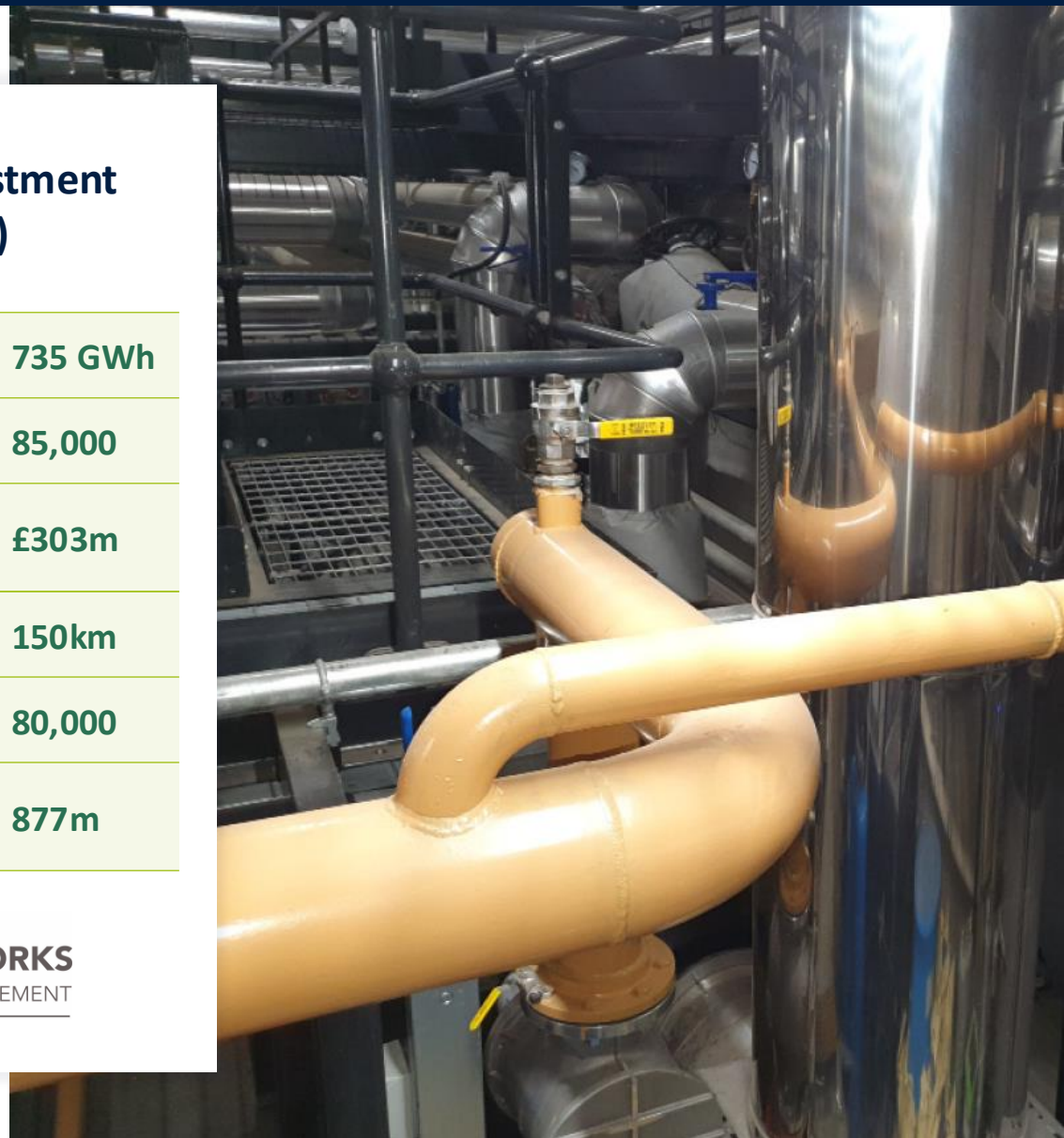
Green Heat Network Fund (GHNF)

Annual heat delivered	741 GWh
Home to be connected	27,800
Total offers made to the value of	£334m
Network trench length	422km
Saved more than	130,000*
Total capex of active projects	936m



Heat Network Investment Project (HNIP)

Annual heat delivered	735 GWh
Home to be connected	85,000
Total offers made to the value of	£303m
Network trench length	150km
Saved more than	80,000
Total capex of active projects	877m





Some of our Successful Projects

GHN Funded Projects



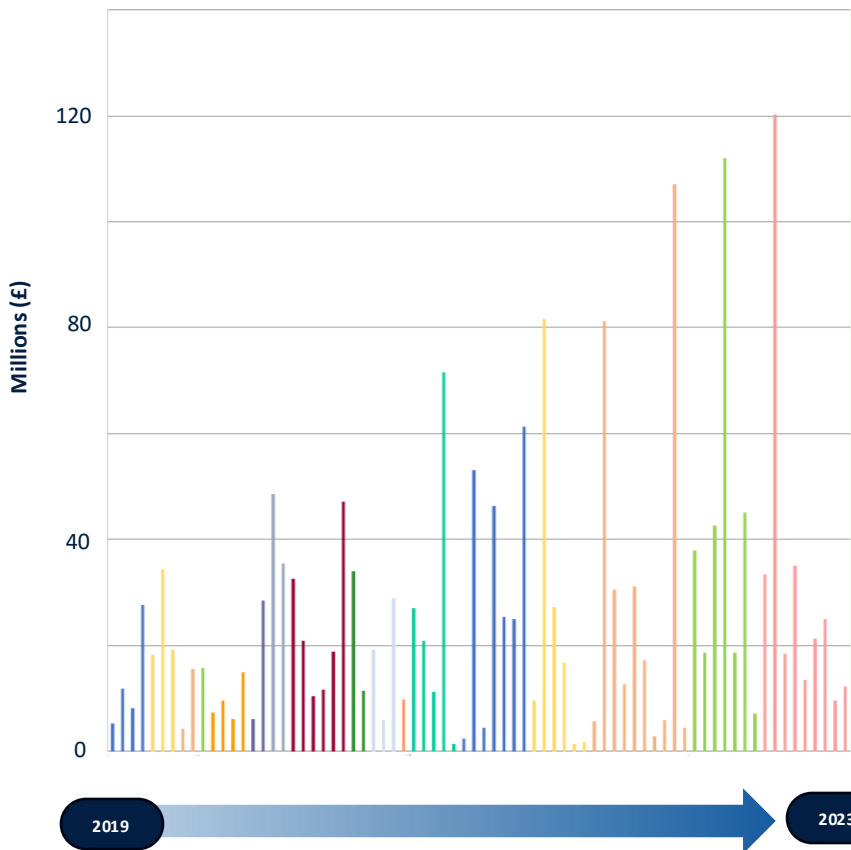
- 1 Hull District Heat Network**
Hull, East Riding of Yorkshire
- 2 Rotherham Energy Network**
Rotherham, South Yorkshire
- 3 Bradford Energy Network**
Bradford, West Yorkshire
- 4 Peterborough Integrated Renewables Infrastructure (PIRI)**
Peterborough, Cambridgeshire
- 5 Pudding Mill Lane**
Stratford, East London
- 6 Goole District Energy Network**
Goole, East Riding of Yorkshire
- 7 Huddersfield District Energy Network**
Huddersfield, West Yorkshire
- 8 Langarth Deep Geothermal Heat Network**
Cornwall
- 9 Civic District Energy Scheme**
Plymouth, Devon
- 10 Whiteknights Energy Centre Phase 1 Decarbonisation**
Reading, Berkshire
- 11 Handforth Garden Village Heat Network**
Cheshire
- 12 Old Oak and Park Royal Development Corporation (OPDC)**
West London
- 13 Chilton Woods**
Suffolk
- 14 Watford Community Housing**
Watford, South-West Hertfordshire
- 15 Lancaster University**
Lancaster, Lancashire
- 16 Kilburn District Energy Scheme**
Brent, London
- 17 Greenwich Peninsula**
Greenwich, London
- 18 Hull East Heat Network**
Hull, East Riding of Yorkshire
- 19 Exeter Energy Network**
Exeter, Devon
- 20 Bolton District Heating Network**
Bolton, Greater Manchester



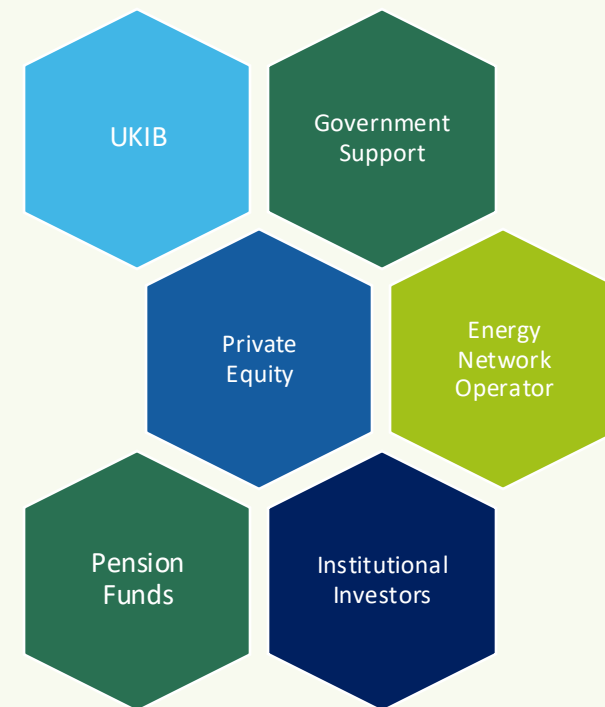
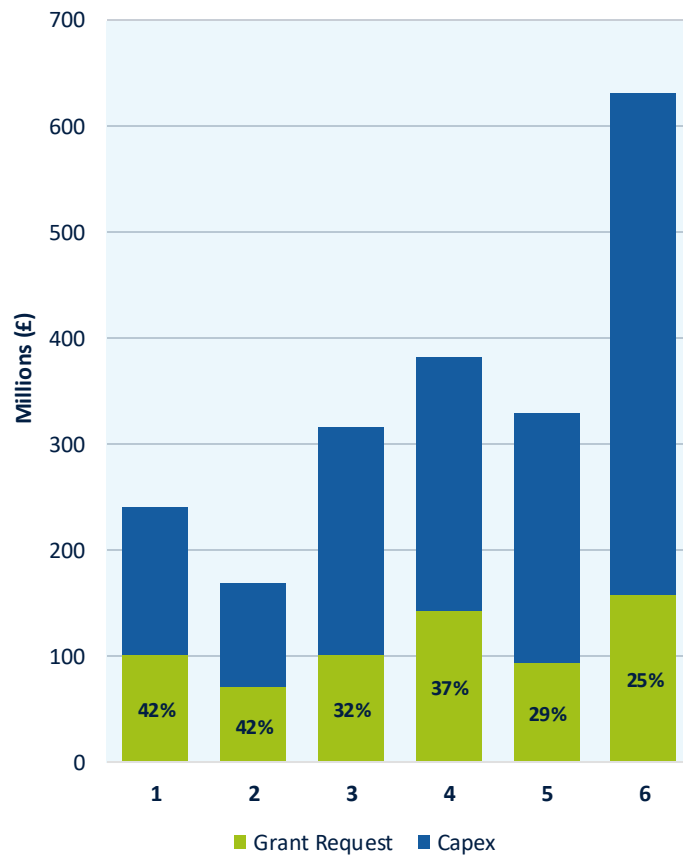


Step change in investment scale

HNIP / GHNF – Awarded Project Capex



Capex vs Request





Building reputation and regulatory certainty

- Introducing a regulatory framework equivalent to other critical infrastructure markets
- Driving up performance of worse performing networks and outcomes for consumers

Reducing development burden and risks

- Introducing statutory rights and powers equivalent to other utilities
- Developing standardised project documentation and guidance

Improving investor understanding of costs and returns

- Published Whole Life Cost of Energy tool (February 2020)
- Sharing anonymised project data and learning from Heat Networks Investment Project

Supporting heat networks as local solution

- Working with DLUHC to ensure Building Regulations & SAP work better for heat networks



District heating: What is working well?

The market is moving towards private capital with increasing understanding of risk allocation and decision-making challenges

Grant funding: bridging the “hard to solve” network challenges.

Government policy: zoning and net zero targets are key

Statutory undertaker rights: will play a pivotal role

Strong pipeline: > £2bn cumulative capex.





District heating: what needs to change?

Cost of heat: The cost of low carbon heat is remains more expensive than gas

Construction: UK is one of the most expensive (and difficult) place to build infrastructure.

Procurement processes: too many are slow, delayed or stop projects getting built

Contractual arrangements: focus needs to be on simplicity and clarity

Routing and design: detailed work needs to be undertaken pre-contract signing, but by the entity taking risk on the trench

Interaction: between highway agencies, planning departments, local authorities





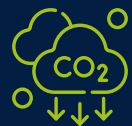
Who you might have heard from today?



Well-funded new players

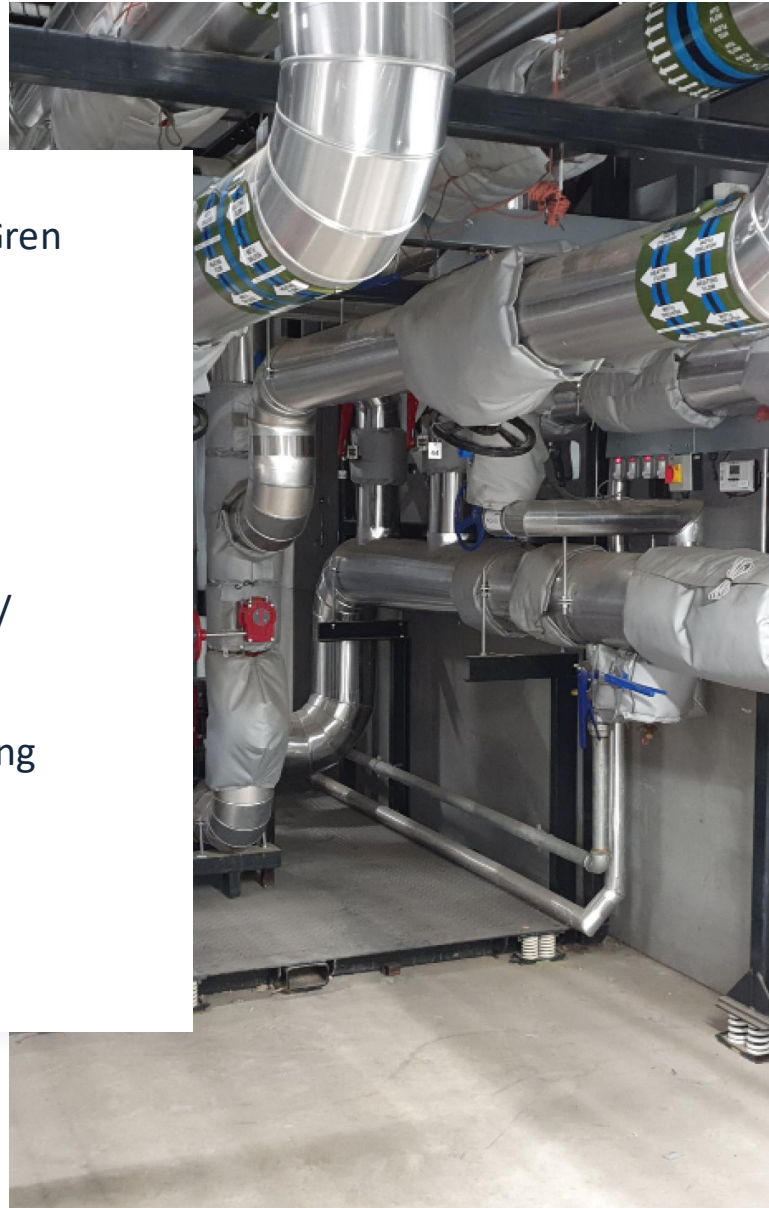


Network operators



Retail investors

- ✓ Equitix's EESI portfolio - Partners Group / Gren
- ✓ Equans portfolio – Swiss Life / Schroders Greencoat
- ✓ Future Homes Standard driving growth in GSHP & ASHP
- ✓ £150m pipeline Last Mile Heat - Rendesco / Last Mile
- ✓ Green Mortgage – Nationwide 0% to existing borrowers
- ✓ Abundance's Community Municipal Investments - £1m per Local Authority





Eyes on the future?

**Institutional
investors**



**Asset
finance**



**Project finance
debt**



**Development
Bank finance?**



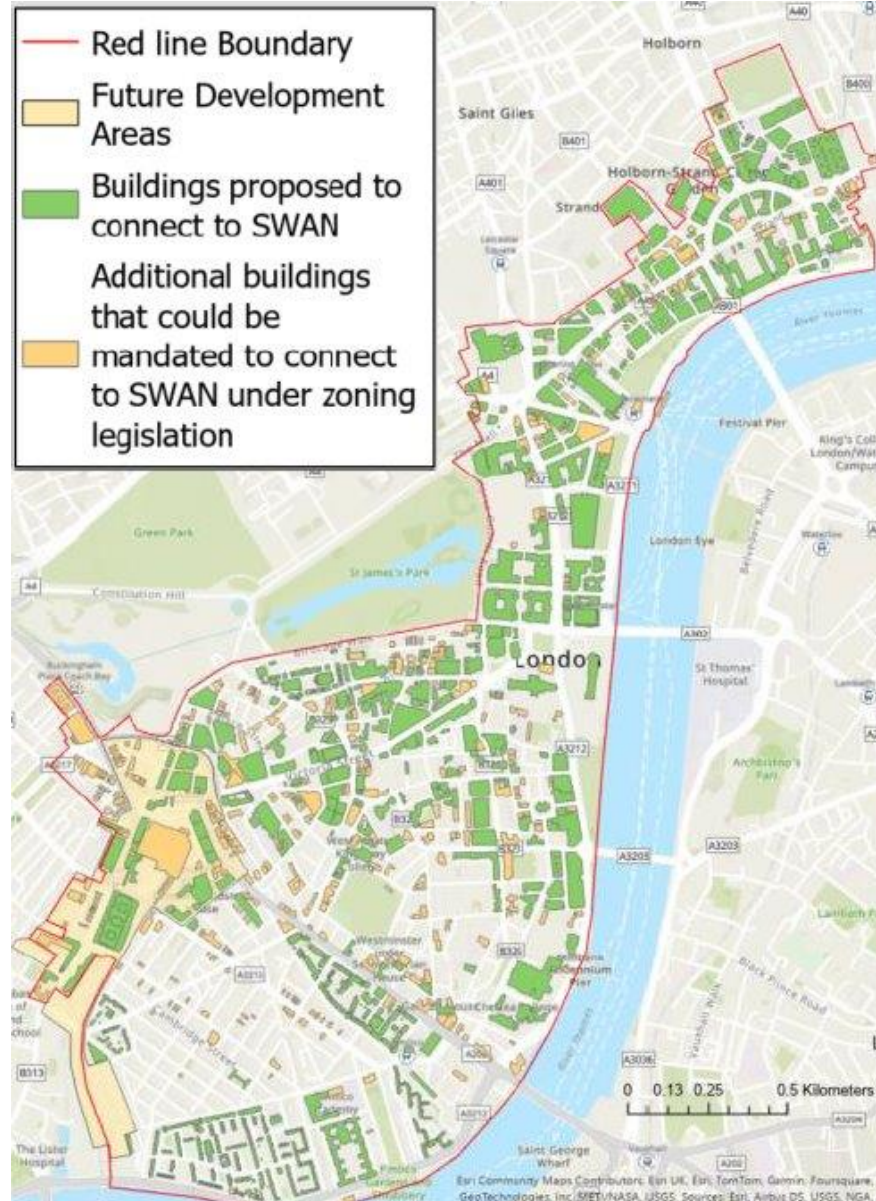


From ugly ducklings to a beautiful SWAN...



- Private Sector Stakeholders
- Public Sector Stakeholders
- Third Sector Stakeholders

THE SOUTH WESTMINSTER AREA NETWORK



Round 7 GHNF Application sponsored by DESNZ

Construction scheduled from 2027 to 2029

Decarbonisation of existing gas-powered heat networks.

High profile connections: Whitehall, HoP, Future Victoria, National Gallery.

c£400m net financing requirement expected to be met by a developer partner identified at the end of a 4 month procurement.



→ Investors and investment come in many forms

→ Blended finance already present in many projects

→ Zoning and regulation is already catalysing DH market growth but there's so much further to go



Key:
Heat Consumers —
Heat Sources —



THANK YOU!

Ken Hunnisett

Head of Clean Heat
Triple Point

Ken.hunniestt@triplepoint.co.uk

Investment Opportunities at a Local Authority

Jim Gillon
Service Director, Gateshead Council



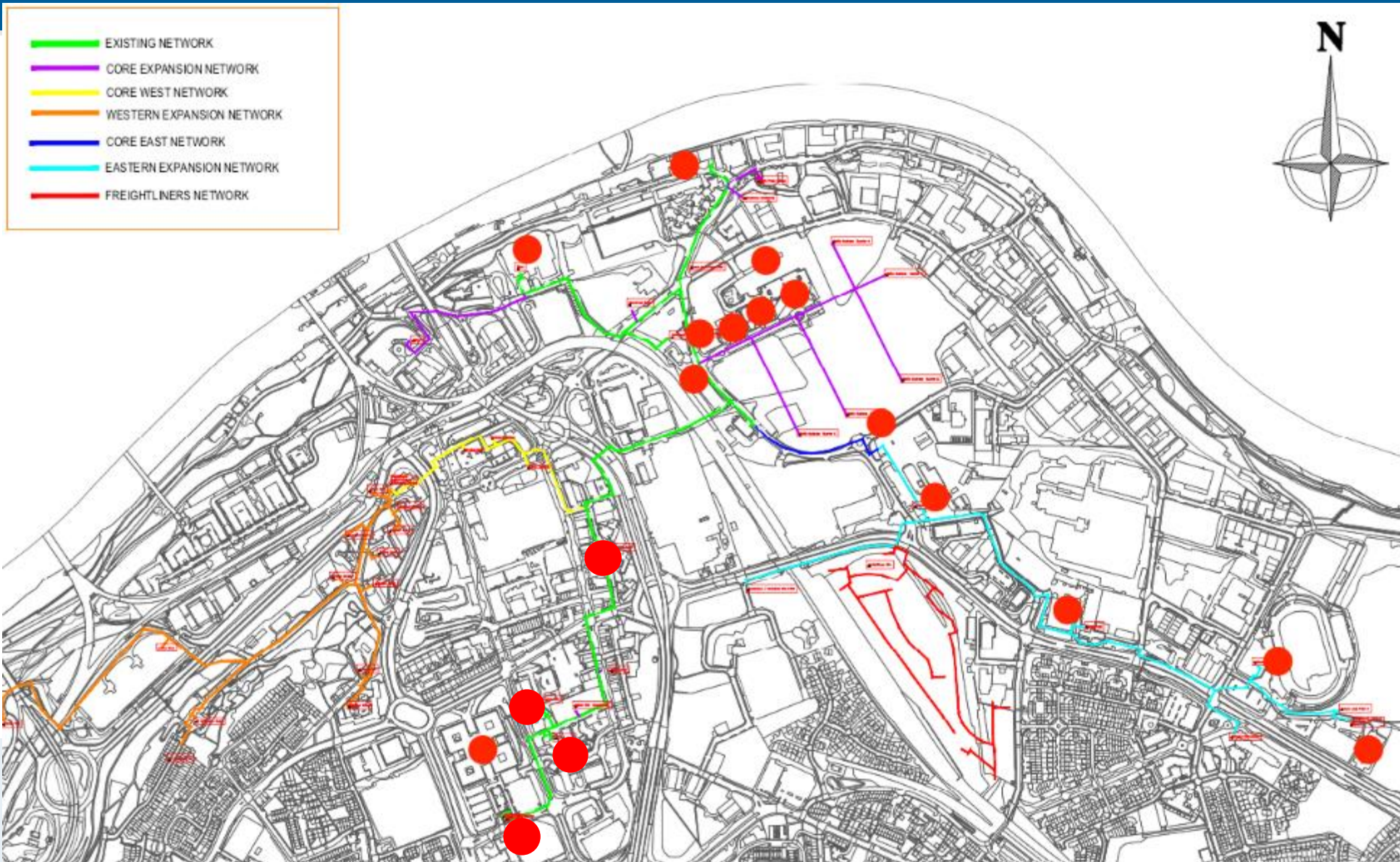
Net Zero Now – Gateshead’s Innovative Energy Network

Jim Gillon

Service Director, Energy and Design

Gateshead Council

CEO, Gateshead Energy Company



Town Centre	Quays	East Extension	Leisure Centre Cluster	Baltic Quarter
Civic Centre	Gateshead College	Shearlegs Rd (depot)	Gateshead Leisure Centre	Baltimore House - office
Warwick Court (80 homes)	The Glasshouse	Park Rd (depot)	Gateshead Library	PROTO - office
Park, Peareth and Priory Courts (120 homes)	The Baltic	Freight Depot (270 new homes)	Gibside School	RIGA - office
Regent's Court (159 homes)	GB Lubricants	Gateshead Stadium	Shipleigh Art Gallery	Multi-Storey Car Park
St Josephs RC Primary School	<i>Future – Sage International Conference Centre</i>	Gateshead Academy of Sport	Sunderland Talmudical College	Baltic Solar Park
<i>Future – Australia Flats (200 homes)</i>	<i>Future – Quays Hotel</i>	Stadium Solar Park	Prince Consort Road Offices	Northern Design Centre
<i>Future - Exemplar Neighbourhood (393 new homes)</i>	<i>Future – Sage Arena</i>	Old Fold Estate (16 homes pilot – 550 existing homes)		





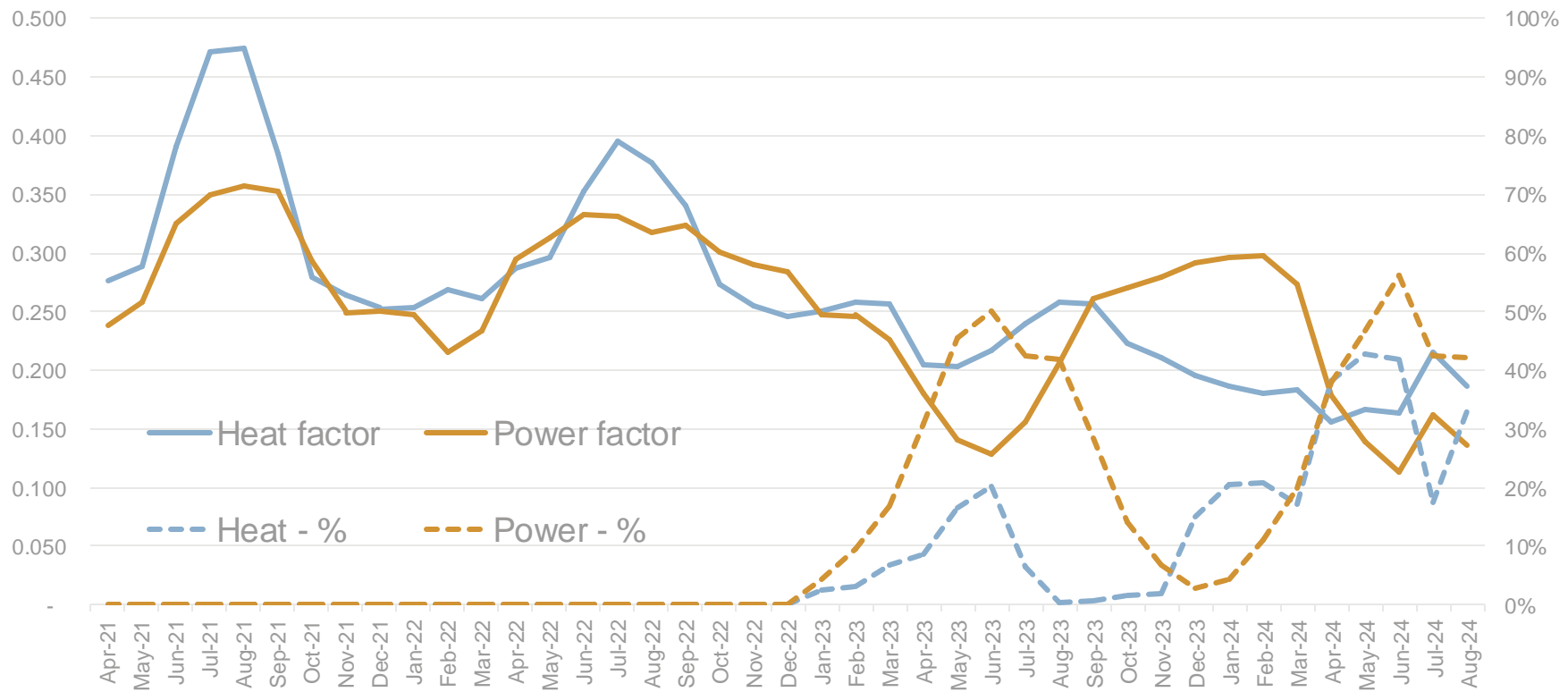




Baltic Solar Park
2.7MW



Monthly carbon factor (kg CO₂/kWh)
and % energy from renewables





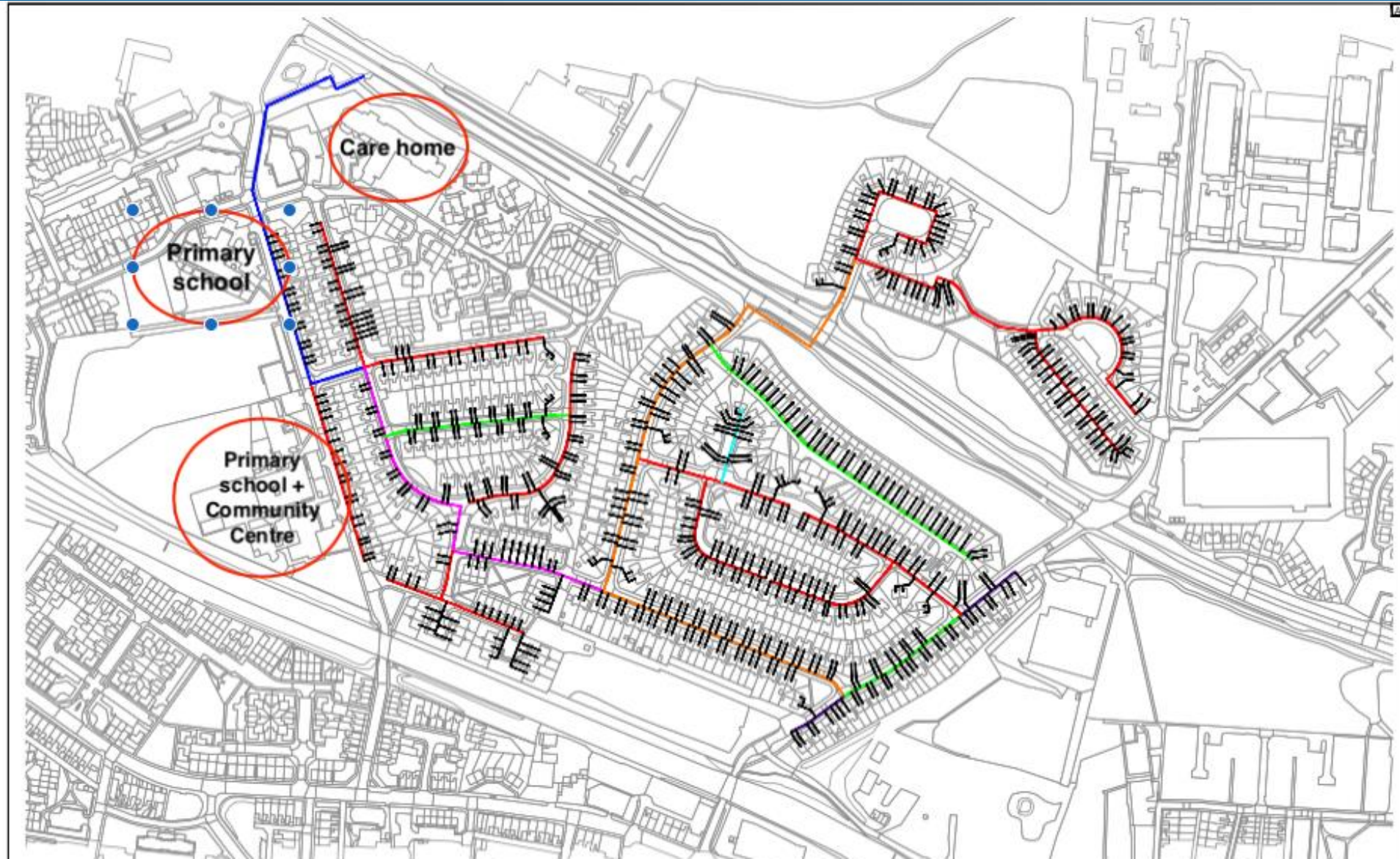
The Sage ICC and Arena



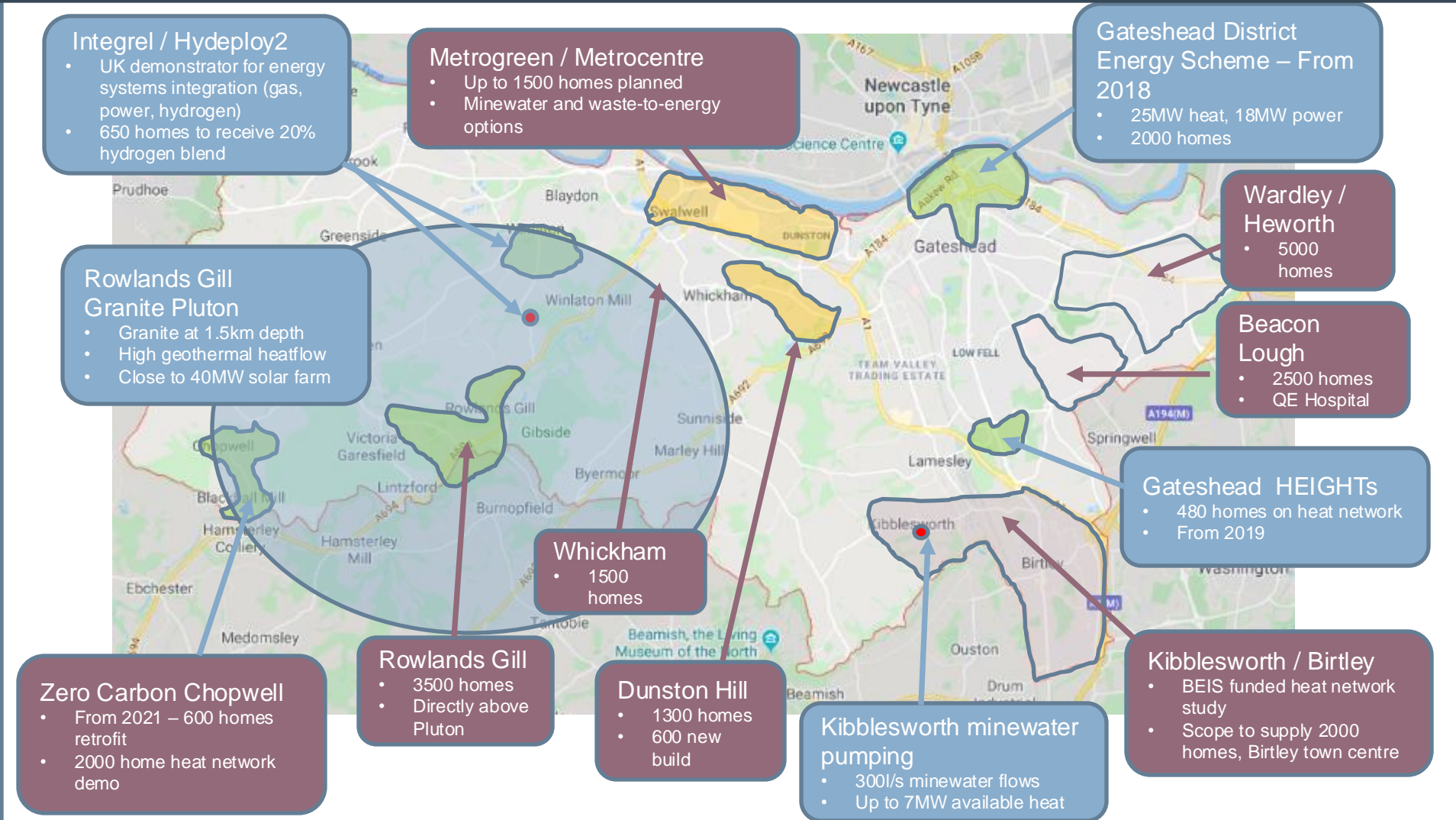


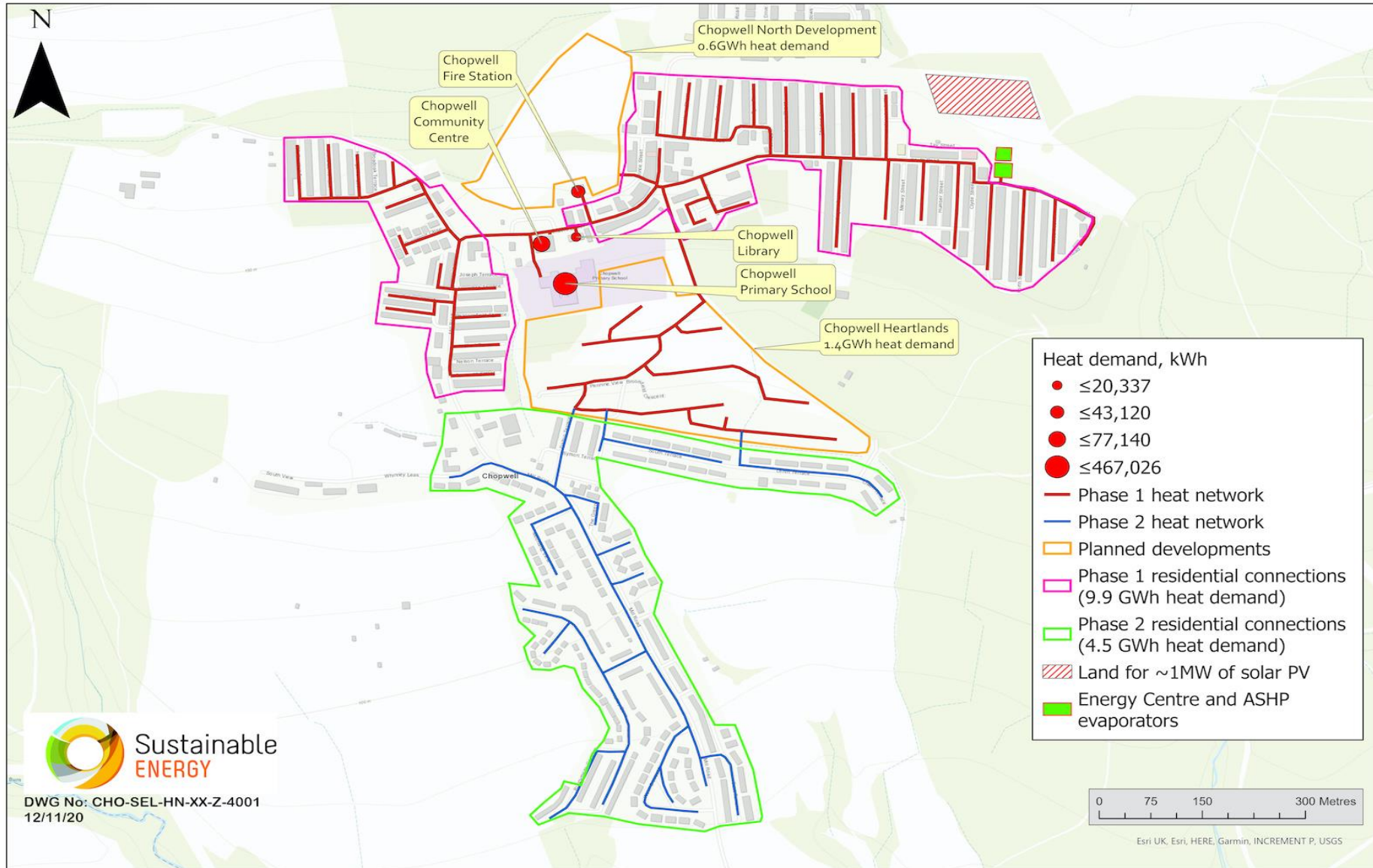
GNHF bid (£10.7m scheme)

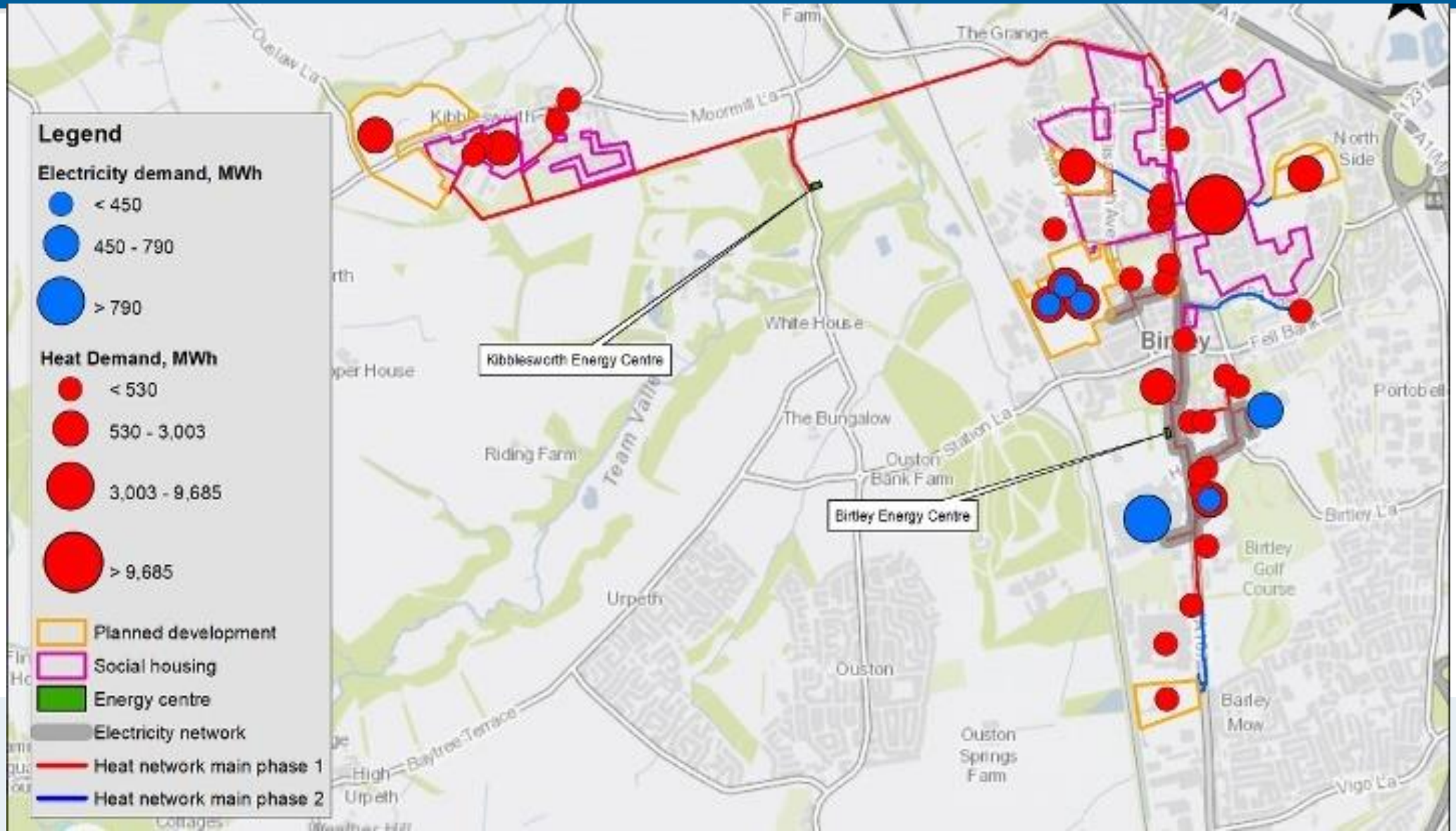
- Tesco – Trinity Square
 - Robertsons – Baltic Place
- PSDS Round 4?
- NHS – QE Hospital

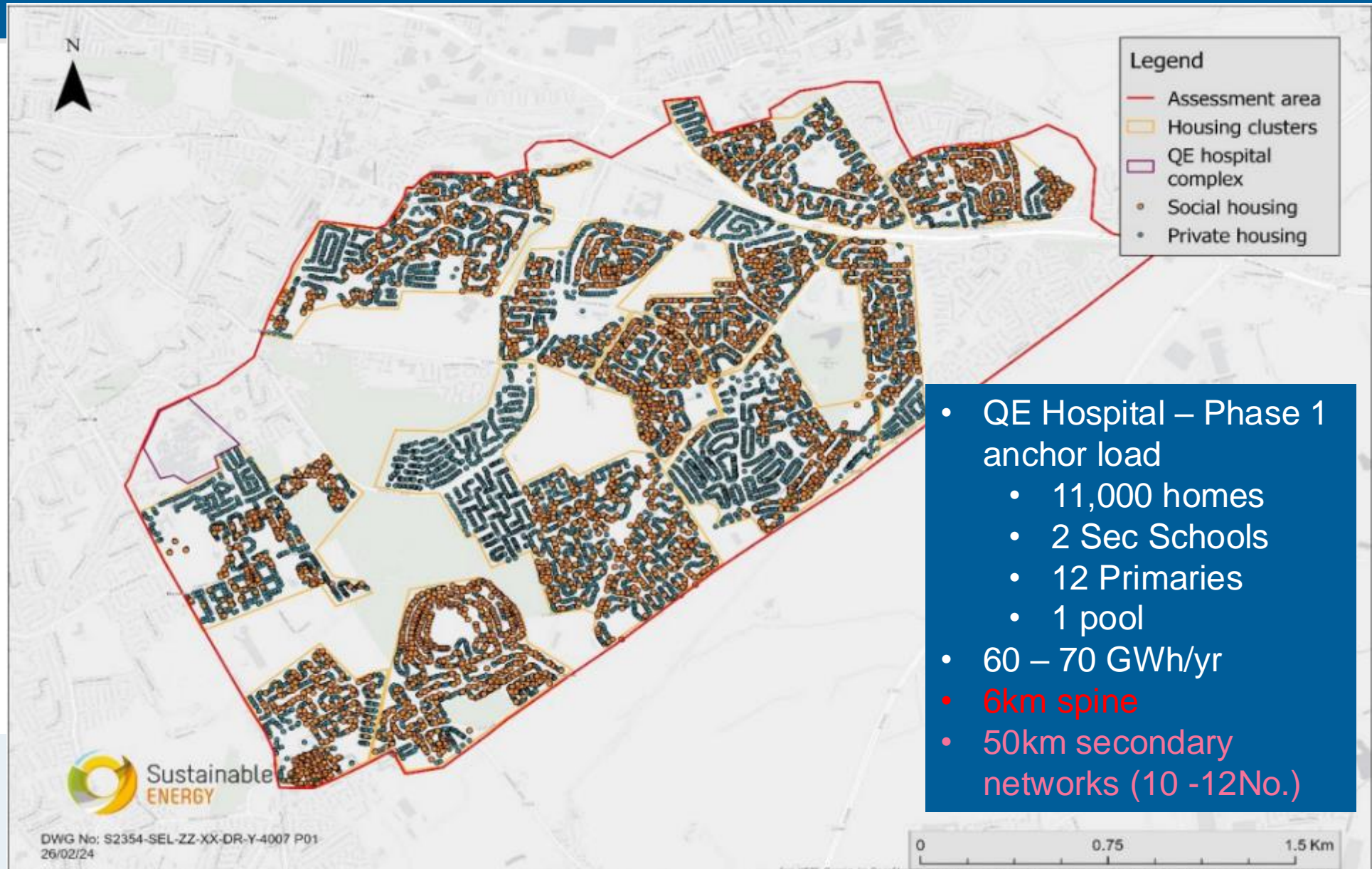






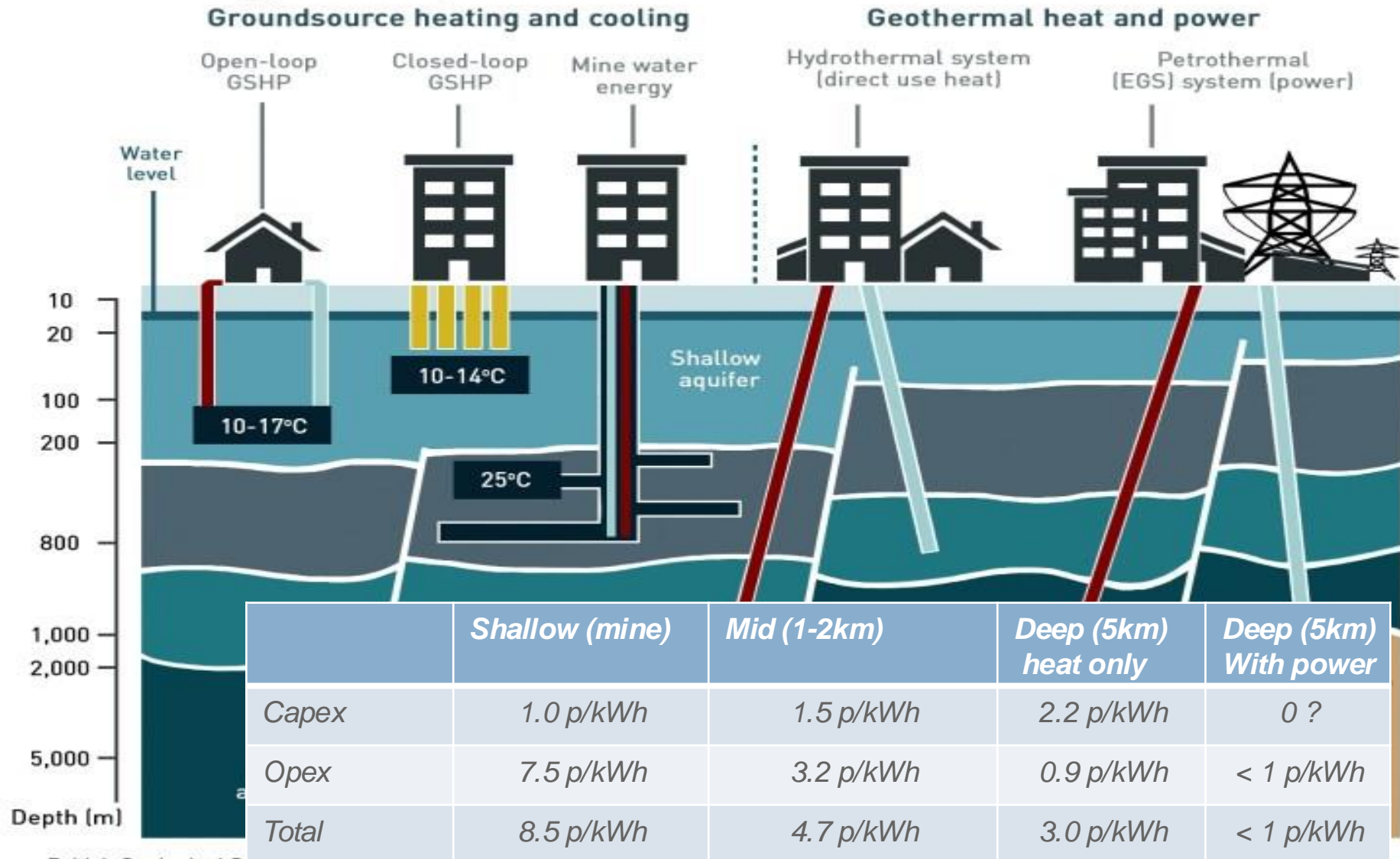






- QE Hospital – Phase 1 anchor load
 - 11,000 homes
 - 2 Sec Schools
 - 12 Primaries
 - 1 pool
- 60 – 70 GWh/yr
- 6km spine
- 50km secondary networks (10 -12No.)

Geothermal energy technologies



Source: British Geological Survey

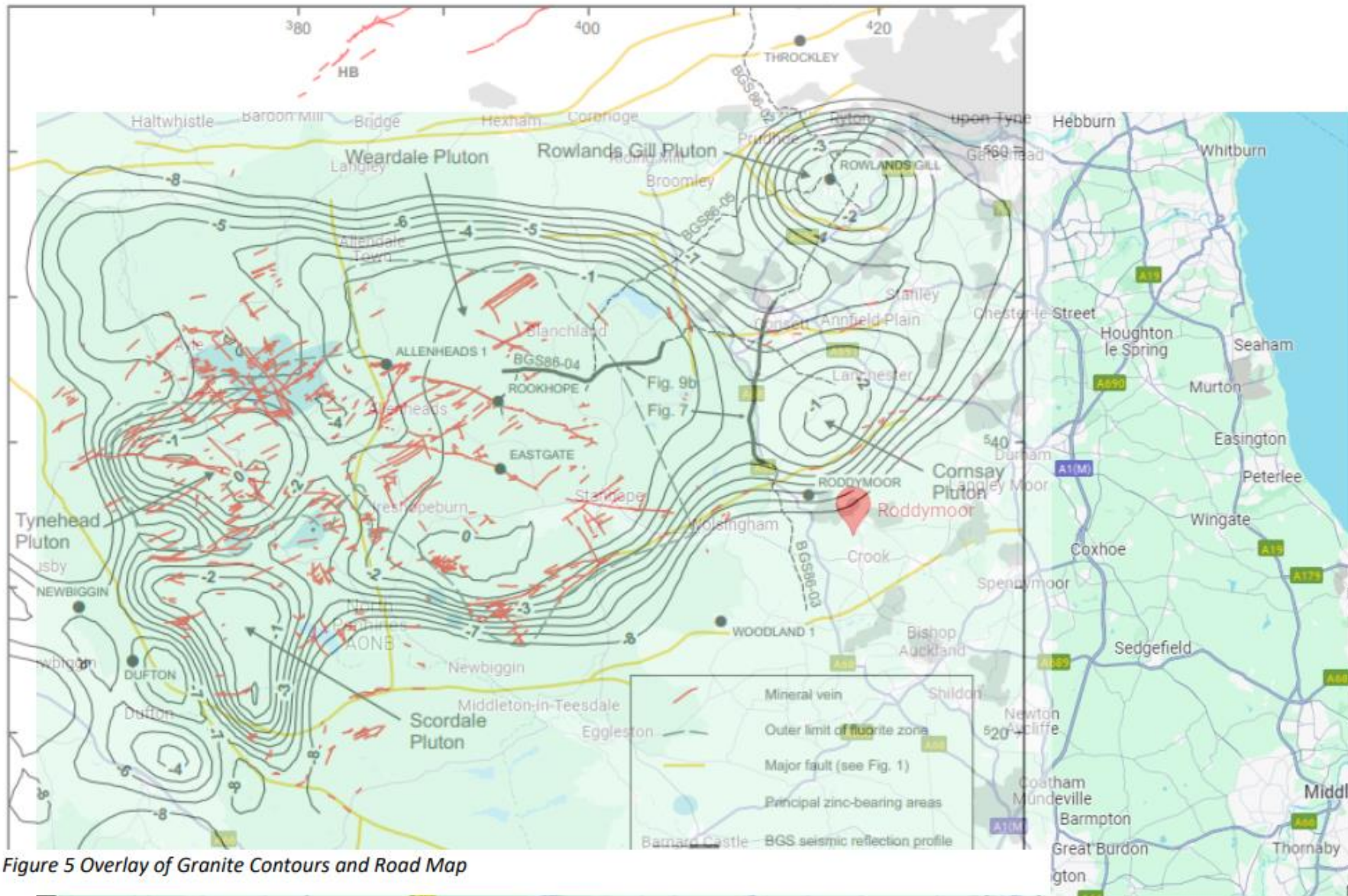
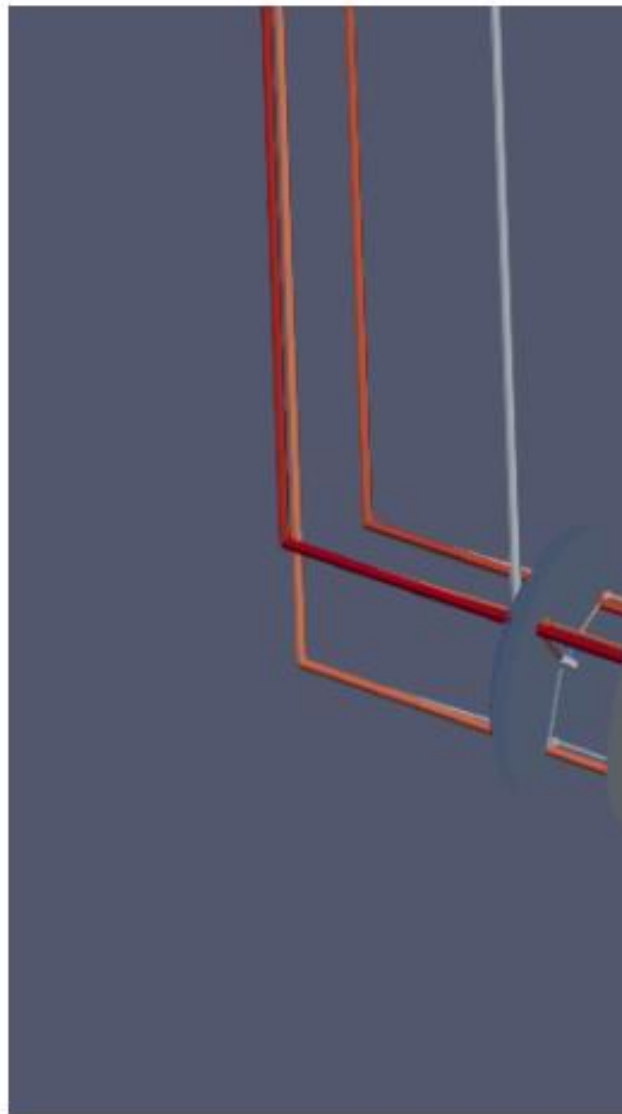
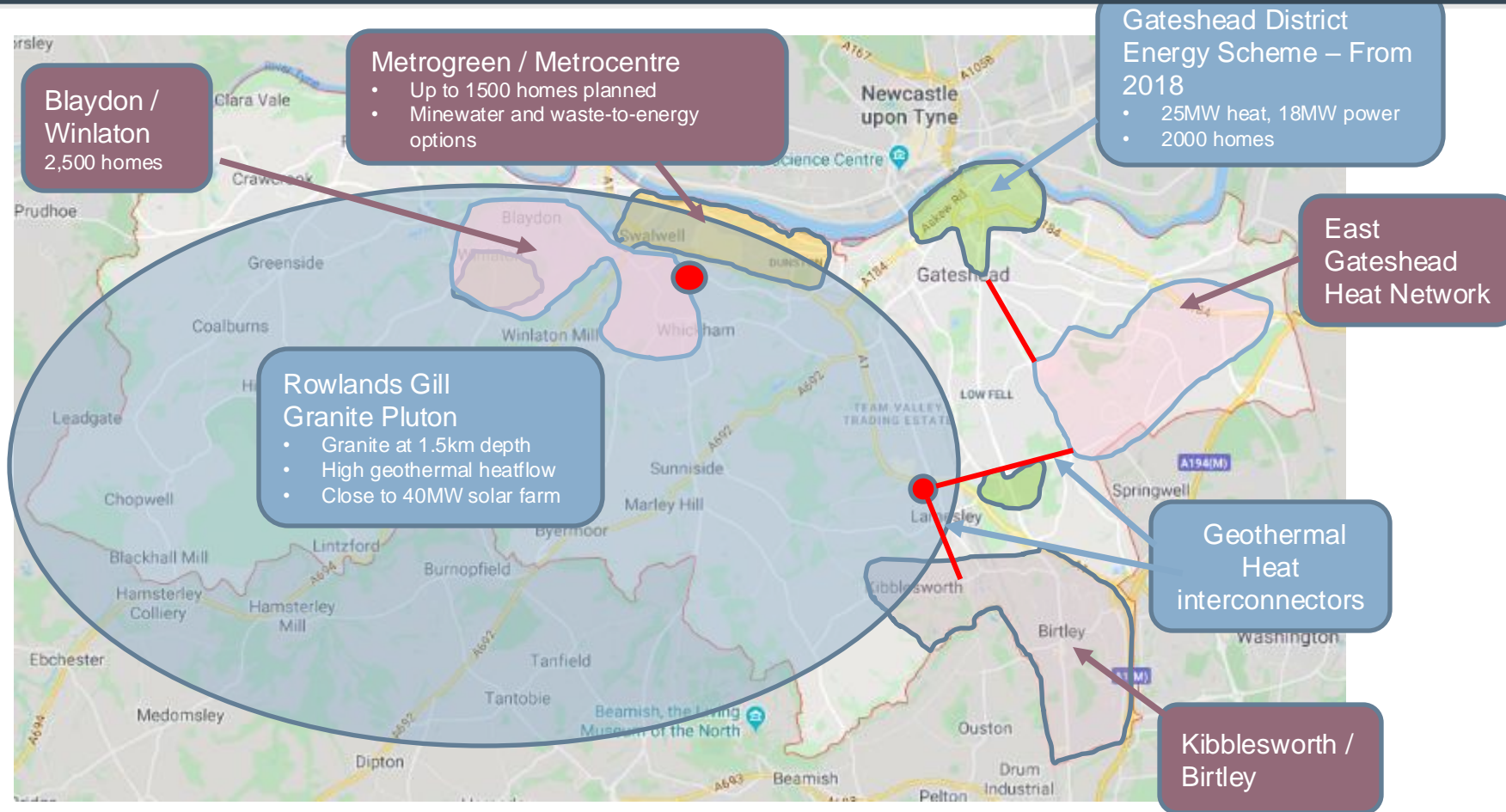


Figure 5 Overlay of Granite Contours and Road Map







 Geothermal sites, industrial / retail power hubs

ZERO  **CARBON**



Three strands

- DH-ready communities
- DH-ready supply chains
- Legal / financial to increase scale

Ambition

- £400m, 5yrs – drives skills investment
- Increase jobs, reduce install costs
- Prove suburban heat network viability
 - A UK first??

Fast Followers – Net Zero Innovation for Heat networks

Innovate UK

**Jim Gillon
Gateshead Council**

jimgillon@gateshead.gov.uk

0191 4333923



Q&A:

Ken Hunnisett
Jim Gillon



We are in the break - starts again soon

Host: Sam Moore, SWNZH

5i Heat Network Project Investment



Asteros - Heat Network Investment

Simon Carman
Director



DISTRICT HEATING INVESTMENT

Webinar 3

SEPTEMBER 2024



INVESTING IN HEAT NETWORKS



ASTEROS

TO COVER

1. Financing Heat Networks – how the cashflows work
2. Commercial Models – options for Local Authorities including financing options.
 - Procurement routes available
 - Best practice/ standards/support available
3. Scheme viability with – and without – Local Authority finance

DISTRICT HEATING SCHEMES

HEAT NETWORK CASH FLOWS - ILLUSTRATION



ASTEROS

	Total 40 Years	01/04/2026 31/03/2027	01/04/2027 31/03/2028	01/04/2028 31/03/2029	01/04/2029 31/03/2030	01/04/2030 31/03/2031	01/04/2031 31/03/2032
Capital Expenditure	(42,000)	(35,000)	-	-	-	-	(5,000)
Replacement Expenditure	(14,000)	-	-	-	-	-	-
Revenue							
Connection Fee Income	27,435	4,000	8,500	-	-	-	115
Variable Heat Charge Income	182,900	-	2,500	2,600	2,600	2,600	2,600
Operational Expenditure							
Maintenance Costs	(16,000)	-	(400)	(400)	(400)	(400)	(400)
SPV Running Costs	(6,000)	-	(150)	(150)	(150)	(150)	(150)
Heat Purchase Cost	(1,000)	-	(25)	(25)	(25)	(25)	(25)
Electricity (National Grid)	(40,000)	-	(1,000)	(1,000)	(1,000)	(1,000)	(1,000)
Natural Gas	(400)	-	(10)	(10)	(10)	(10)	(10)
LA Loan Repayment							
Principal	(7,532)	-	(55)	(58)	(61)	(65)	(68)
Interest	(11,268)	-	(415)	(412)	(409)	(405)	(402)
Corporation Tax	(18,033)	-	(816)	(291)	(291)	(291)	(298)
Dividends	(66,634)	-	(8,129)	(254)	(254)	(254)	-
GHNF Grant Funding	5,000	5,000	-	-	-	-	-
Loan (Drawdown)	7,532	7,532	-	-	-	-	-
Equity (Investor)							
Injection	23,106	18,468	-	-	-	-	4,638
Repayment	(23,106)	-	-	-	-	-	-
Net Cash Flow	(0)	-	-	-	-	-	-
IRR	10.078%	(18,468)	8,129	254	254	254	(4,638)

Heat Network Delivery Stages

- Feasibility / Project Development (not Shown)
- Build
- Operation
- Hand-back / Transfer?

Self-sustaining (ish)

- Income from heat customers less costs
- Surplus pays for financing costs, tax and investor returns
- Local Authorities are usually customers
- Local Authorities can be investors

Public Sector Support

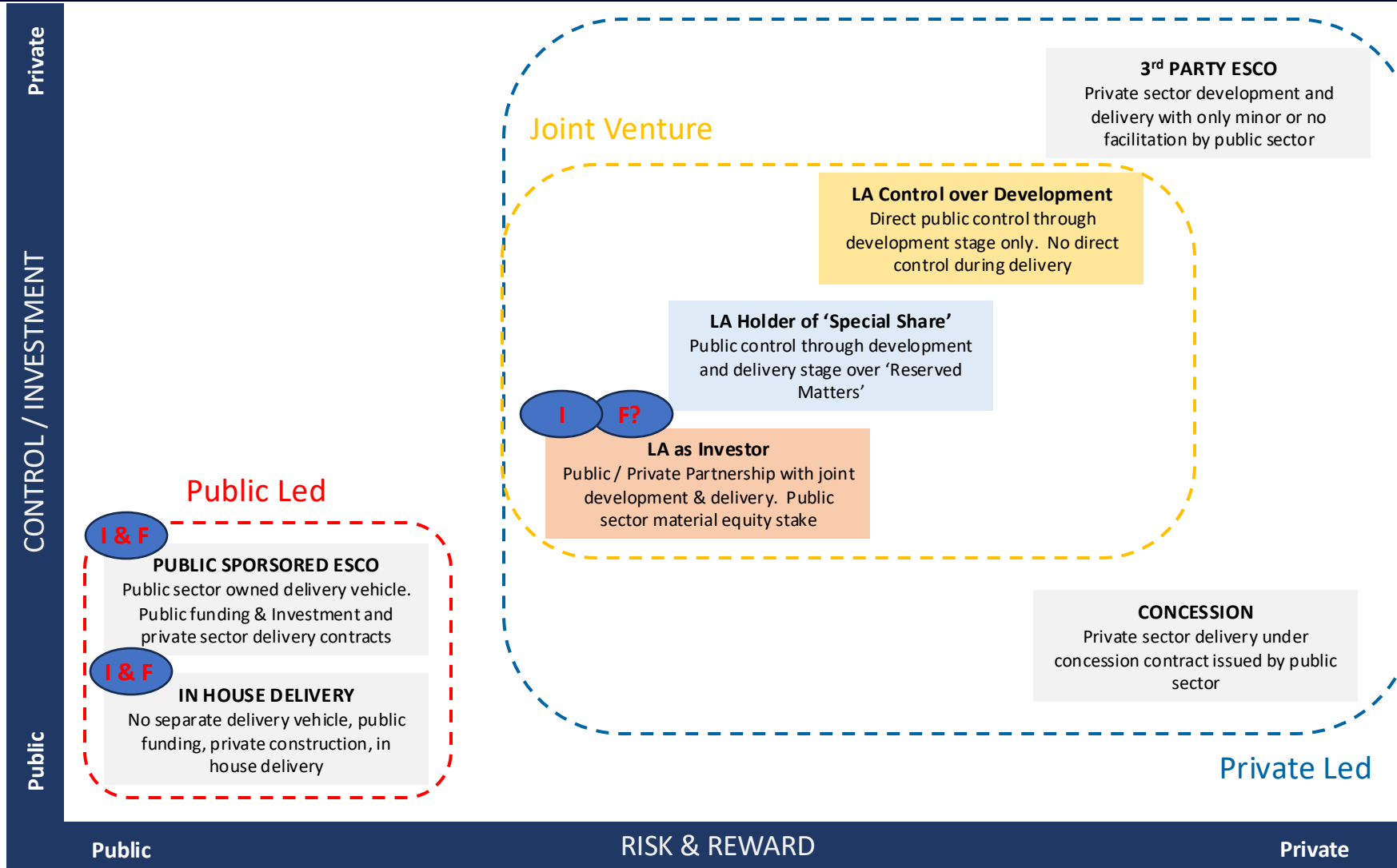
- Most schemes currently reliant on Grant or low cost Finance.

DISTRICT HEATING SCHEMES

ROLE OF LOCAL AUTHORITIES



ASTEROS



Local Authority

- I** – Investor / Owner
- F** – Finance Provider

Investment

- Cash
- Assets
- In-Kind

Finance

On-Loan Sourced from

- PWLB
- UKIB

NB Grant

DISTRICT HEATING SCHEMES

SCHEME VIABILITY – RELIANCE ON PUBLIC SECTOR SUPPORT



ASTEROS

Feasibility

- Usually led by LA
- Funded by HNDU
- Approval to proceed to DPD

- Reliance on Public Sector
- Grant to LA

Detailed Project Development

- Usually led by LA
- Funded by HNDU
- OBC Approval to proceed to procurement

- Reliance on Public Sector
- Grant to LA

Commercialisation

- Often commenced by LA and completed by private partner
- Say 50:50

- GHNH Commercialisation Grant
- Private sector contribution

Build / Finance

- Depends on commercial model
- Even if 100% financed by private sector most still require grant to be viable
- Early schemes needed c 50% of capex as grant
- Now closer to 25%
- May also require 'cheap' finance from public sector

Operate

- Should not require additional financing during operating period
- Any scheme expansion will require further investment, hopefully no further public subsidy



SIMON CARMAN

Director, Asteros Advisers

E: simon.carman@asteros.co.uk

T: +44 (0) 7974 204 287

Simon specialises in providing financial and commercial advice to the public and private sectors for the delivery of Public Sector Infrastructure and similar projects. Advice includes securing the funding and financing on the infrastructure and supporting the public sector or the private sector through the procurement of the scheme – often including the infrastructure being privately or part privately financed.

Simon has developed a particular specialism in heat networks and leads the Asteros offering in this sector.

Simon has been involved since the early stages of the developing heat network market in the UK and has been at the forefront of key sector initiatives that have transformed the development and delivery of heat networks particularly across England and Wales. This includes the development of the Heat Network Investment Programme (HNIP) grant and loan support scheme and the subsequent assessment of applications to HNIP and then to the successor Green Heat Network Funding scheme. Simon has also worked closely with DESNZ for a number of years as their financial adviser and commercial adviser on the City Deep Decarbonisation Programme and then more recently supporting the Advanced Zoning Programme. His role has included contributing to the development of Government Heat Zoning policy through the wider Heat Network Zoning Transition Programme (HNZTP).

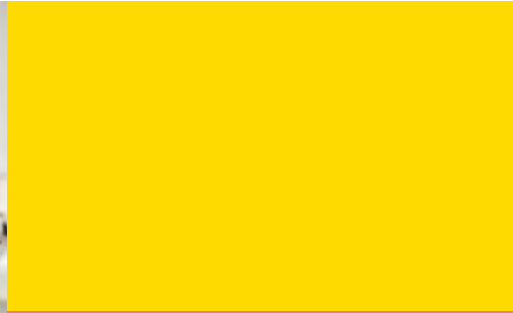
Simon has supported numerous heat network projects where the sponsor has been a Local Authority or DESNZ and increasingly is working directly with private sector developers of Heat Networks.



ASTEROS

UK Infrastructure Bank (UKIB)

Peter Chalmers - Director, Heat
Networks & Local Authority Advisory
& Lending



Heat Networks Sector Financing

UKIB's Role in Financing LA-led Heat Networks in The UK

September 2024

Mission

To partner with the private sector and local government to increase infrastructure investment in pursuit of our two strategic objectives

Objectives

Tackling climate change – helping to meet the government's 2050 net zero emissions targets

Supporting regional and local economic growth – providing opportunities for new jobs and higher levels of productivity through better connectedness

Principles

- Investing in infrastructure assets or networks, or in new infrastructure technology
- Delivering a positive financial return, in line with the Bank’s financial framework
 - Crowding in significant private capital over time

£22bn financing capacity

£8bn equity & debt

£10bn guarantees

£4bn Local Authority lending

Five Priority Sectors

Clean Energy (incl Heat), Transport, Waste, Water, Digital

Current Obstacles

Implementation viability

Development complexity, supply chain immaturity

Revenue uncertainty

Penetration rates, credit quality, end-user proposition

Regulation

Zoning in development but regulatory outcomes uncertain

Technology

Lower carbon heat sources can make projects more expensive

We are here

Niche market

Grant reliance

Limited private sector investment appetite

UKIB interventions

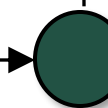
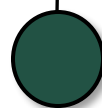
- **Risk appetite** to lean into uncertainties around initial construction, roll out and market take-up
- **Flexible capital** to calibrate repayments to the uncertainty of net cashflow generation
- **Tailored finance** to suit the requirements of individual opportunities - with pricing reflecting existing international track-record and benchmark asset classes
- **Scale contribution** with the ability to provide a meaningful proportion of a project's cost (minimum ticket size £25m)
- **Local Authority focus** with a specialised advisory and funding arm to help Local Authorities develop schemes

We want to be here

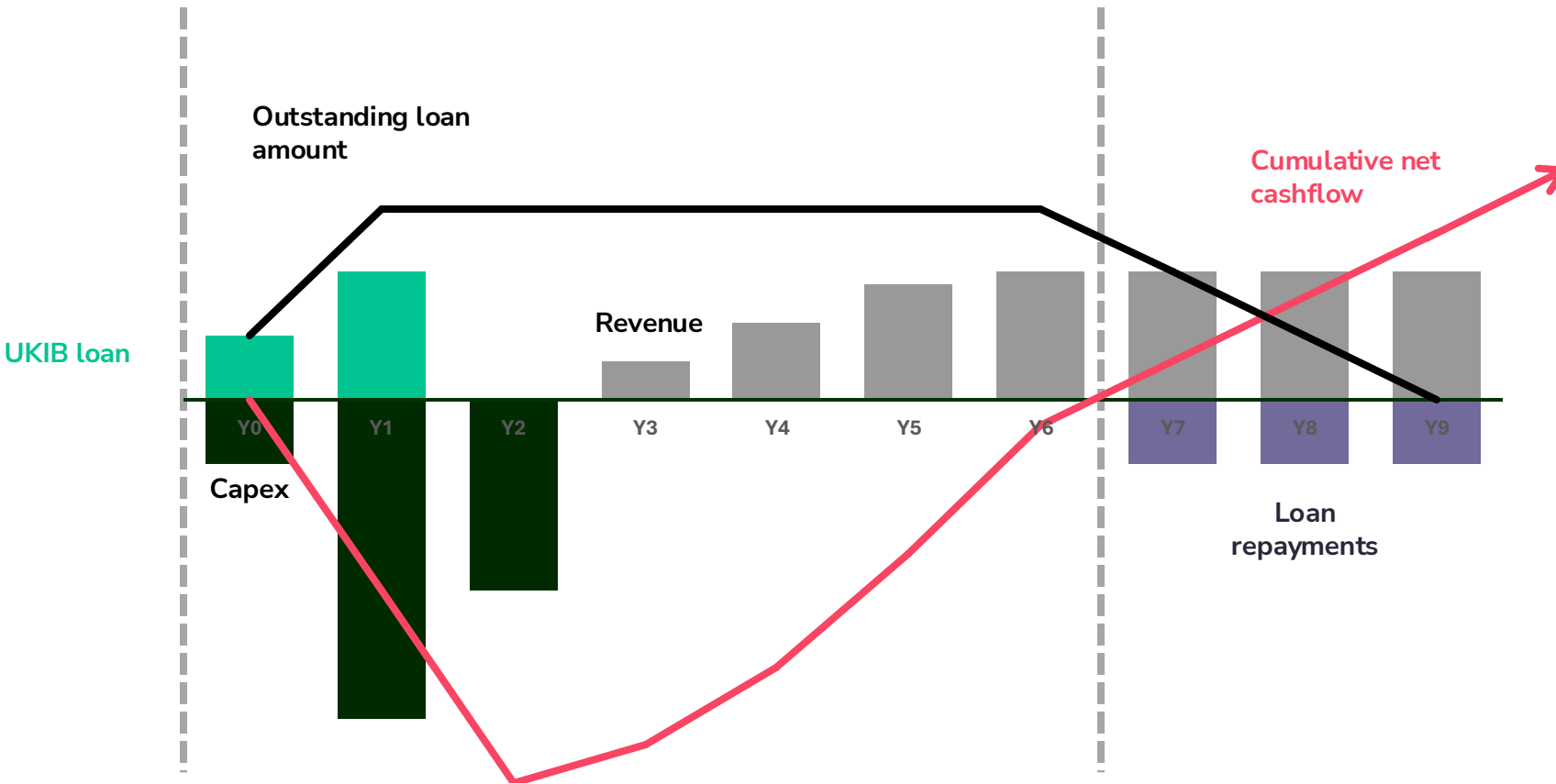
Mature infrastructure asset

Wide access to capital markets

Utility-style stable long-term returns



Early stage debt facility - stylised example




An early-stage debt facility could achieve its objectives in helping create a sustainable, long-term debt market for the Heat Networks asset class whilst overcoming the key barriers:

1. **Construction/ ramp-up risk:** Bank facility would come in prior to revenue streams coming online
2. **Connection charges:** Provision of debt can reduce reliance on up-front connection charges to fund capex, and allow developers to offer more payment flexibility to consumers
3. **Project economics:** Senior debt is a cheaper product than equity, and therefore could help reduce the overall funding costs of the project

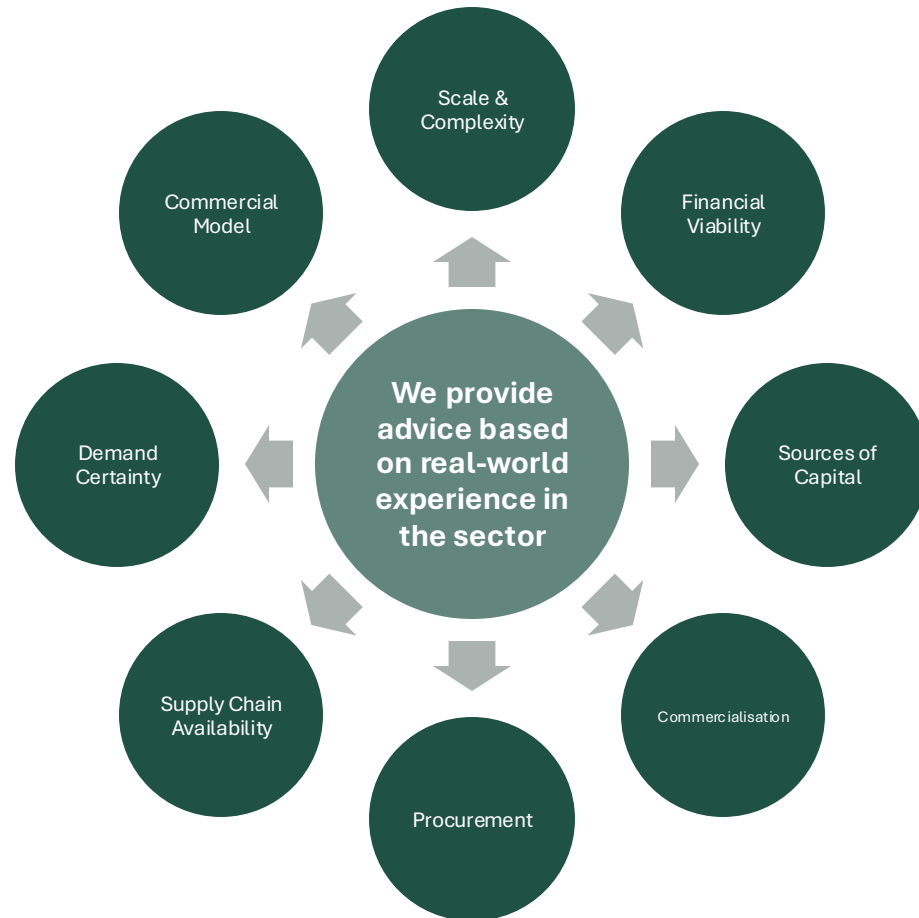
UKIB – LA Specific Offer

- **Advisory offer:** a highly experienced, multi-disciplinary team providing early-stage commercial and financing advice to LA-led projects. Advice is based on UKIB's unique perspective of seeing and working across the whole of the UK heat network market. Advisory offering is flexible, geared towards an LA's specific needs and is not stapled to UKIB funding. Currently no charge for this service.
- UKIB does not provide legal, technical or procurement advice.
- **LA offer: min £5m @ gilts + 40bps** (i.e. 40bps lower than PWLB). Flexible interest payments and flexible repayment profile to match project characteristics. Up to 40 years tenor and roll up initial payments during construction phase. Supported by advisory role.

Key considerations for Heat Network Projects

- 
- Large scale, long-life utility assets. High upfront capex, ongoing expansion capex, replacement capex and operational costs
 - Heat network will grow over time, scale is important. Initial phase(s) will be economically less attractive given relatively high capex, but economics will evolve as the network expands
 - LA-led projects are being delivered using a wide variety of commercial models. There is no “standard” approach
 - Increasing interest in the sector from industrial partners & private capital (infra funds, LGPS). But capacity is finite
 - Heat source(s) will dictate the cost of heat for consumers. Electrification of heat exposes projects to electricity price
 - Early engagement with stakeholders is vital, especially key anchor loads in initial phases. These connections can make or break the viability of the network

Typical Challenges We See With LA-Led Projects



- LA's will play a vital role in bringing forward meaningful decarbonisation of heat
- With this opportunity comes an increasing number of challenges and obstacles;
 - Increasing scale/complexity
 - Borderline viable projects
 - Insufficient capital
 - The challenges of getting connections signed up
 - What to take to market, how, and when?
 - Who to partner with
 - Zoning and demand uncertainty
 - What will the delivery model look like?
- These also present a lot of opportunity for innovation

When to Engage With Us

UKIB is open to engagement with LA-led projects at any stage of development;

Advisory

- We would encourage early engagement. UKIB advice can aid LA's in establishing what they really need and want to get out of the project. We help to bring focus to business case preparations and grant applications
- In cases where LA's are seeking to partner with the private sector, we also encourage early engagement. UKIB can provide in-depth advice around commercial models, risk sharing and share observations from across the UK market

Lending

- Early engagement is encouraged. Understanding that UKIB can only make a lending decision once a project is well advanced and nearing ready-to-build status
- The LA lending product can help to optimise financial model financing assumptions and therefore optimise project returns when making investment cases or grant submission. Financing assumptions can form part of our advisory scope

Local Authority Activity Map 2024

LA
Cardiff
GMCA
Peterborough
Plymouth
Sheffield
Cambridge
Oxfordshire
Leeds
East Riding
Fife
Dundee
Glasgow City
Hull
Newcastle
Wakefield



Borough
Kensington & Chelsea
Hackney
Haringey
Hounslow

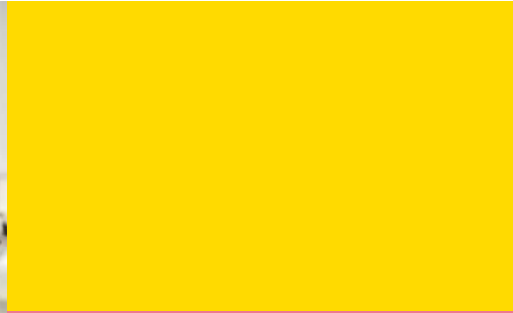
Thank you

For more information about the UK Infrastructure Bank,
or to contact us, visit www.ukib.org.uk.



Q&A:

Simon Carman
Peter Chalmers



Panel discussion and wrap up

Ken Hunnisett: Triple Point
Jim Gillon: Gateshead Council
Simon Carman: Asteros
Peter Chalmers: UKIB
Sam Moore: SWNZH



And finally...

1. Thank you for your time today
2. We will be making the recording of today available on our website and on the website of other Hubs to share learning on this topic
3. Next event 15 Oct : [5i Heat Network Project](#)
4. Please share your [feedback here](#) and help us make these webinars more actionable and useful
5. Please do consider signing up to our newsletter (every two months): [South West Net Zero Hub Newsletter](#)
6. Email: sam.moore@WestOfEngland-CA.gov.uk

Breakout Room



**WHAT ABOUT
YOU?**