

Plymouth Heat Networks Delivery

Natural Infrastructure and Growth Scrutiny Panel, 29th October 2024



Key points to emphasise at the outset:

- Government driven initiative, Plymouth selected as one of 17 locations prior to roll out of zoning, under Advanced Zoning Programme.
- DESNZ has provided significant funding for design, procurement and grant application
- The most significant single action we can take to reduce our greenhouse gas emissions
- Heat network proposed in every **CEAP/NZAP** since 2019
- **Joint Local Plan** policy with many developments 'connection- ready'
- Strong alignment with **Corporate Plan** priority Green Investment, Jobs & Skills.
- Delivery approach proposed **does not** require any PCC capital funding
- Strong market interest currently & Plymouth a frontrunner, but risk of market saturation.

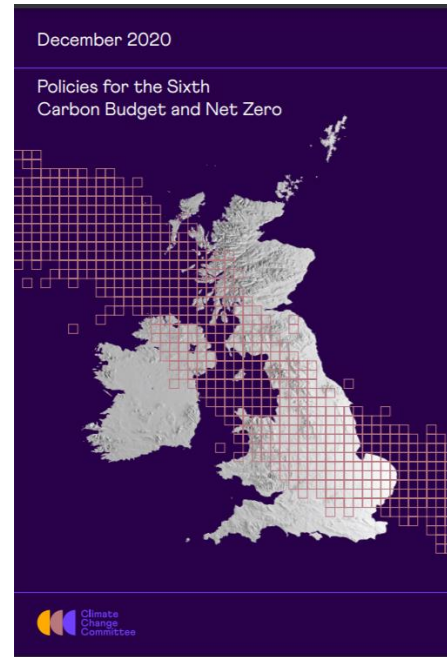
Heat Decarbonisation & role of Heat Networks



Heat represents the biggest energy use in the UK accounts for **46% of all the energy** used in the UK and **around 30% of UK emissions**. 90% of emissions from gas.

28% Plymouths carbon emissions are heating buildings

Could save in excess of **31,000tCO₂ per annum** (over 3% of the current city emissions) with initial zonal build out.

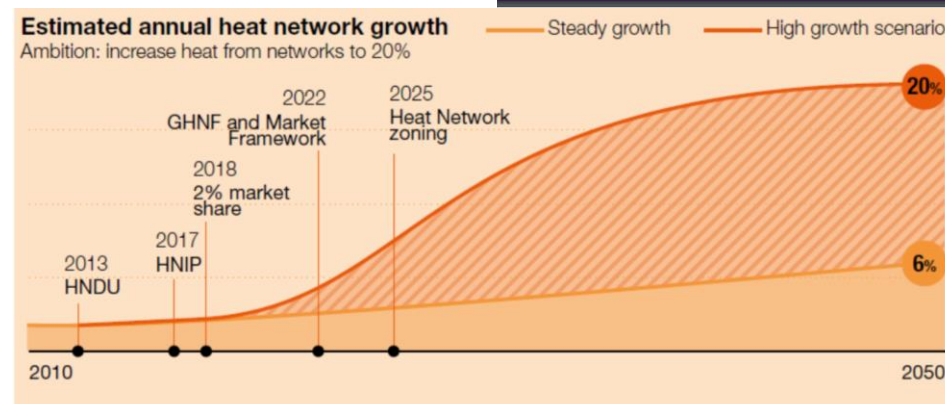


Climate Change Committee

Estimated that heat networks will grow in all pathways set out by the Climate Change Committee, to supply over 8 million customers and about 20% of heat demand by 2050.

This is estimated to be an overall investment of £80 billion.

Can also deliver **jobs, improved energy security** and **improved air quality**.



What are the national legal / policy drivers?



- **Energy Act 2023** provides powers for government to implement **heat network zoning** in England
- **Heat Network Regulations** anticipated 2025
- **Heat Network Zones:**
 - Geographic zones where heat networks expected to be '**lowest cost solution**' for decarbonising heat.
 - Zones identified on basis of heat demand by Government, using national model.
 - Requirements for certain buildings to connect to a heat network
 - Local authority involvement in managing zones, as Zone Coordinator.
- **Advanced Zoning Programme:**

AZP areas (incl Plymouth, as one of 17 cities) able to move forward first (government support and funding available)

What are the local policy drivers?



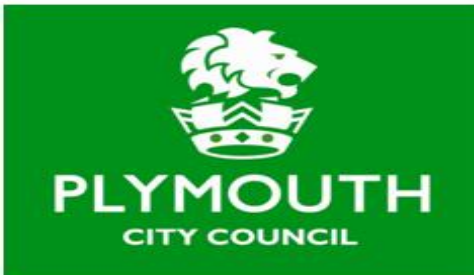
- **Plymouth Plan** & Climate Emergency pledge to be carbon neutral city by 2030
- **Corporate Plan** - green investment, jobs and skills priority
- Heat networks project identified in every **CEAP & NZAP** between 2020 and 2024, including:
 - Submitting funding applications to support development and delivery of heat network
 - Feasibility studies and testing for different heat sources
 - Delivering heat network cluster around Civic Centre
 - Participation in government's Heat Network Zoning pilot
- **NZAP 2024-27** includes the latest action commitment:
 - Develop a strategic heat network delivery programme for the city, including the city centre/waterfront and Derriford areas, including the procurement of a delivery partner, aided through participation in the Government's Advanced Zoning Programme
- **Joint Local Plan** (March 2019) – requires developments in areas to be futureproofed for connection.
- **Plymouth Economic Strategy** (draft) (March 2024) - targets inward investment and growth activity from businesses linked to Net Zero opportunities, including specifically heat networks.

Being part of the AZP

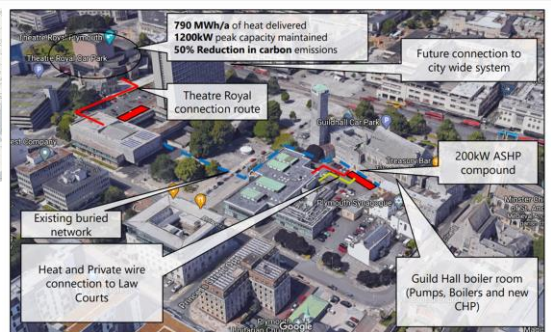


- Favourable position to secure grant DESNZ'S **Green Heat Network Fund**
 - DESNZ support to apply for grant towards Phase I (overall cost c£60m)
- **Significant consultancy support** provided directly by DESNZ:
 - Design Phase I (technical, financial and commercial)
 - Procurement Support
 - GHNF application
- Plymouth amongst 6 selected towns and cities identified (out of 17) to be part of the government's plan 'to accelerate the delivery of heat networks across England in areas where zones are likely to be designated in the future'.
- Further support to achieve early delivery, helping to address energy security and low-cost green heat to benefit local businesses and communities.

Plymouth Heat Network Journey



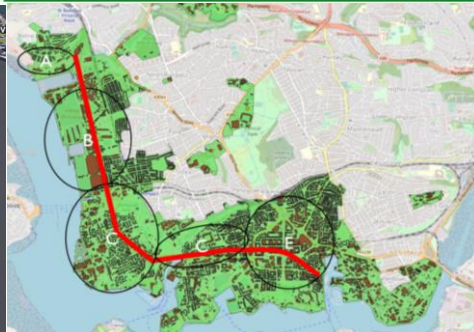
City Wide Energy Strategy
Heat network opportunity areas adopted into JLP
Strong policy for futureproofing



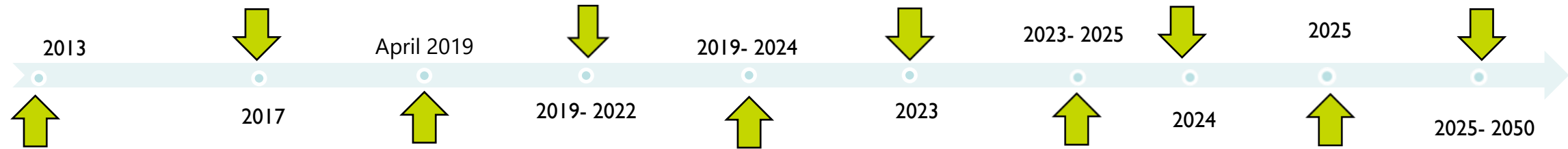
Civic Centre & Millbay
Phase 1 Civic (Salix) and Millbay (HeatNet) enabling works
Phase 2 Civic Business Case approval & GHN application success



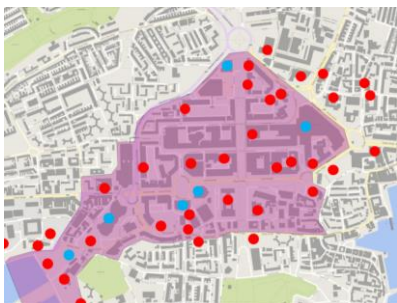
HNDU refresh/ Devonport Feasibility Study
LA vision of heat off take expansion
MoD site modernization
Oceangate developments



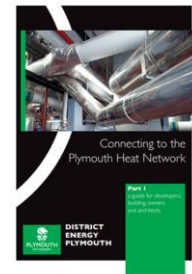
Roll out of Heat Network scheme
Total Zone heat demand of ~340 GWh/a and ~150GWh/a of mandatable loads



ICE UK and WSP studies



Climate Emergency Declaration
Net Zero national targets
Local Targets



HeatNet and D2Grids EU projects
Millbay
Civic Centre
Geothermal wells
Waste Heat from cooling
Heat Network infrastructure

BEIS Heat Network Zoning Pilot and AZP
Plymouth one of 28 and 19 pilot cities

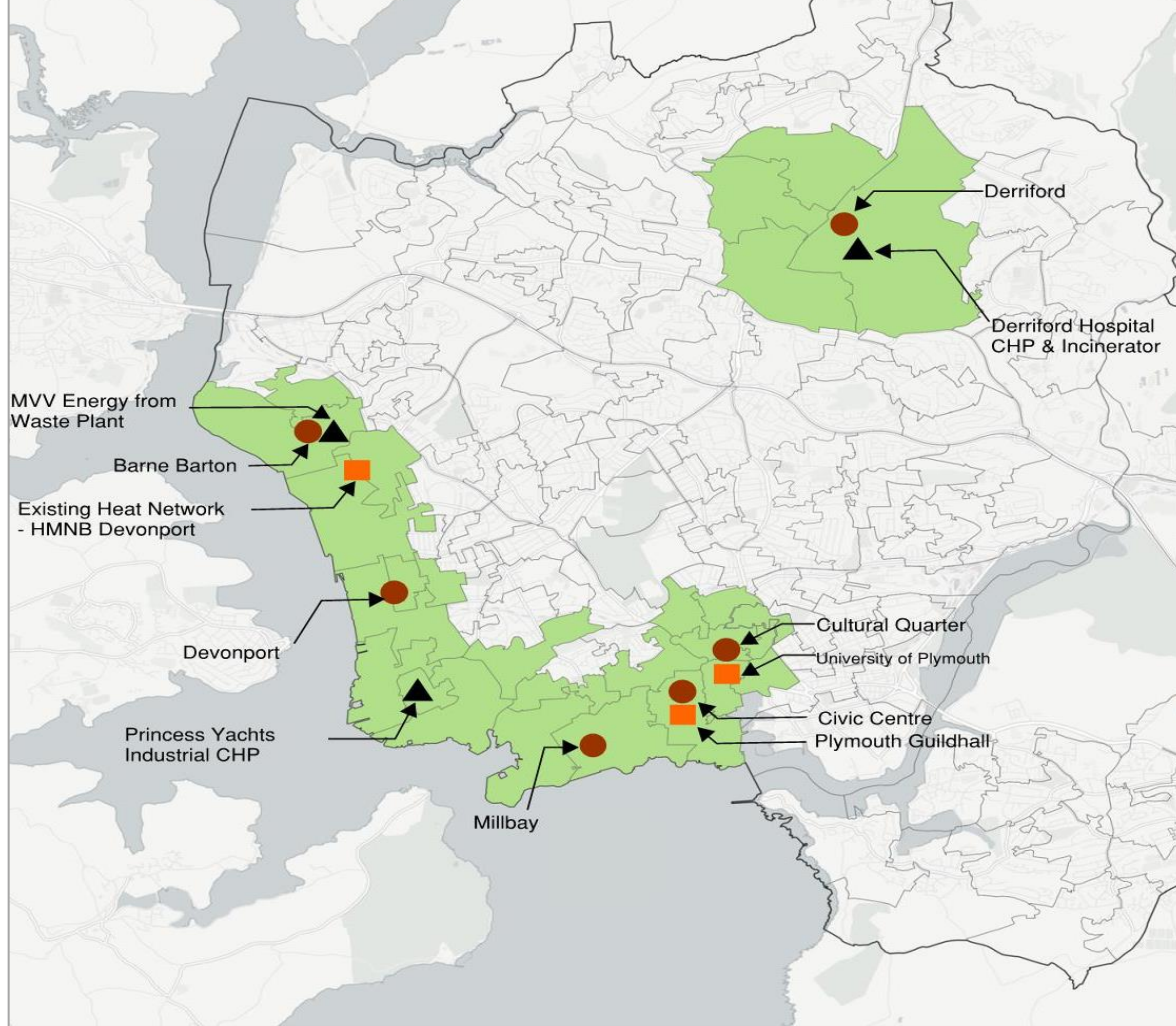


BEIS Gov: Heat Network Zoning Legislation
Legislation for mandating new developments to shared low-carbon energy infrastructure and Regulation of Heat

Plymouth Joint Local Plan- strong planning policies since 2019, within ‘opportunity areas’

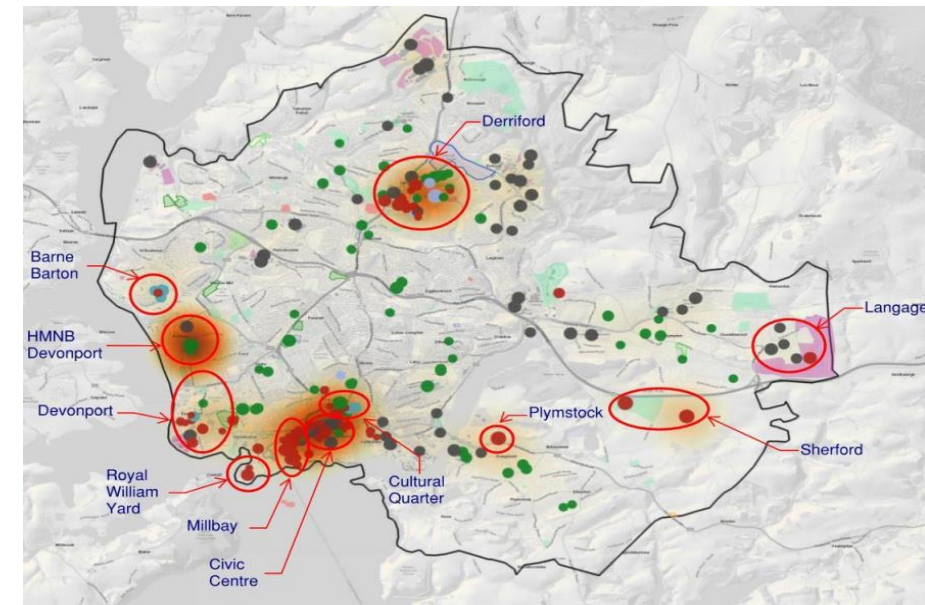


JLP District Energy Opportunity Areas



Joint Local Plan Policy

DEV 32.6 Developments **will be required to connect to existing district energy networks** in the locality or, where there is a future network planned, to be **designed to be capable of connection to that network**. Where appropriate, proportionate contributions will be sought to enable a network to be established or completed.

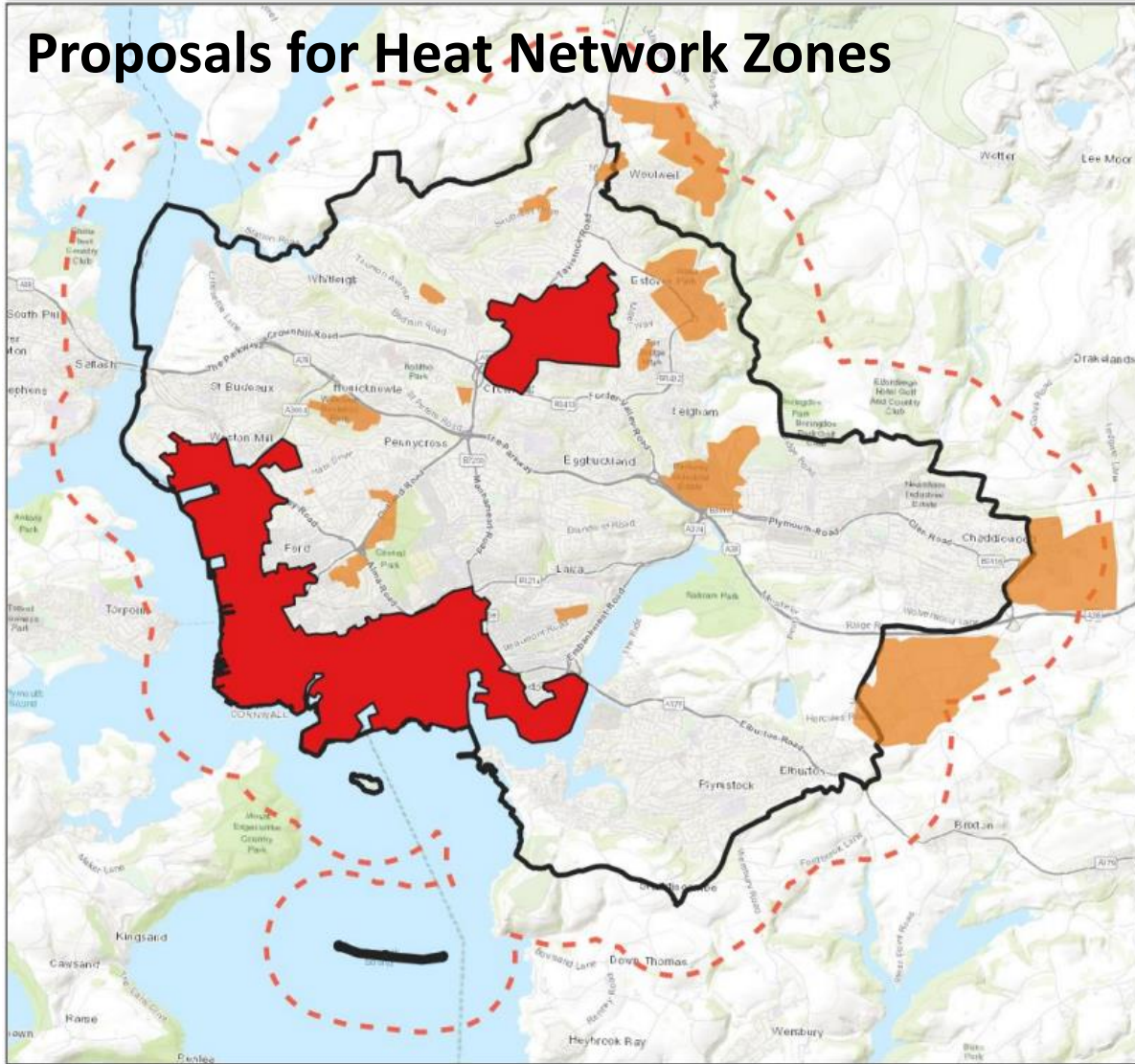


Plymouth Heat Network Zonal Opportunities



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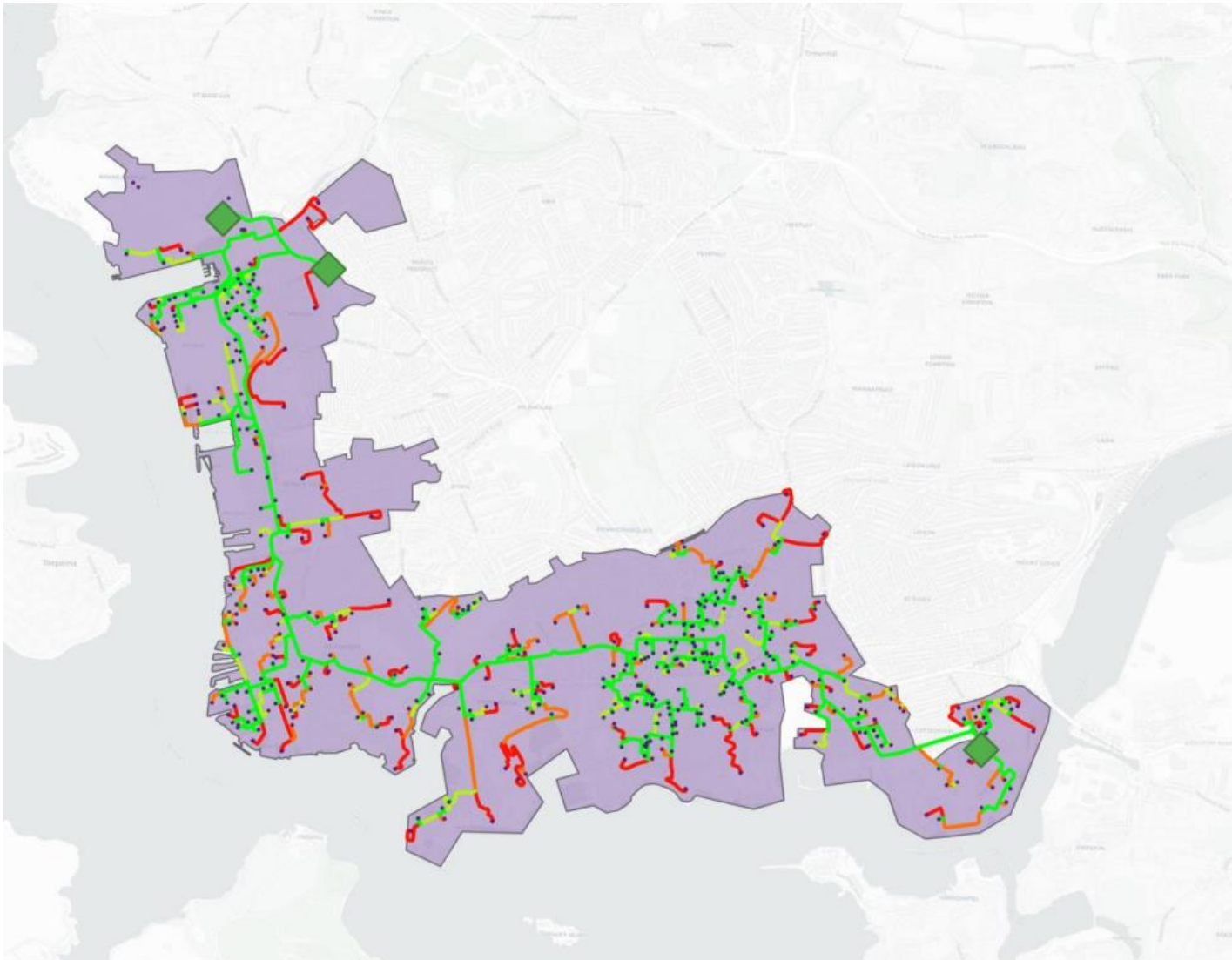
Proposals for Heat Network Zones



Existing Joint Local Plan Opportunity Areas



Southern Waterfront Zone: AZP work



Development of Strategic Heat Main:

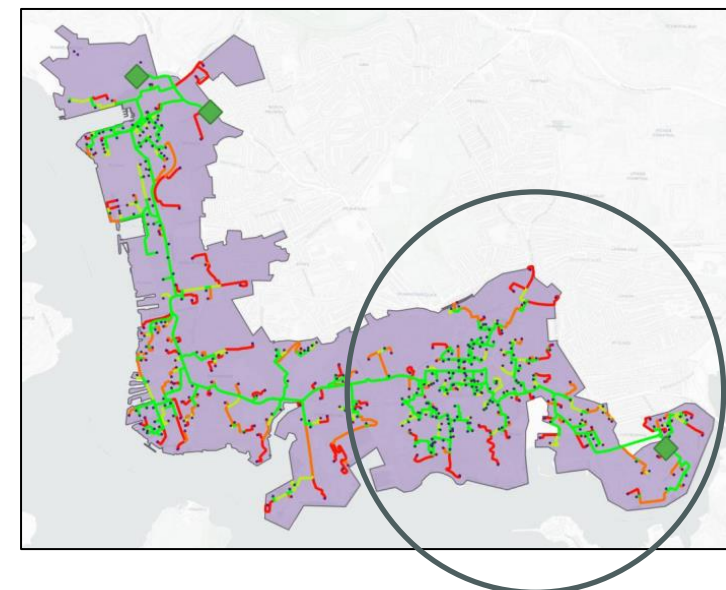
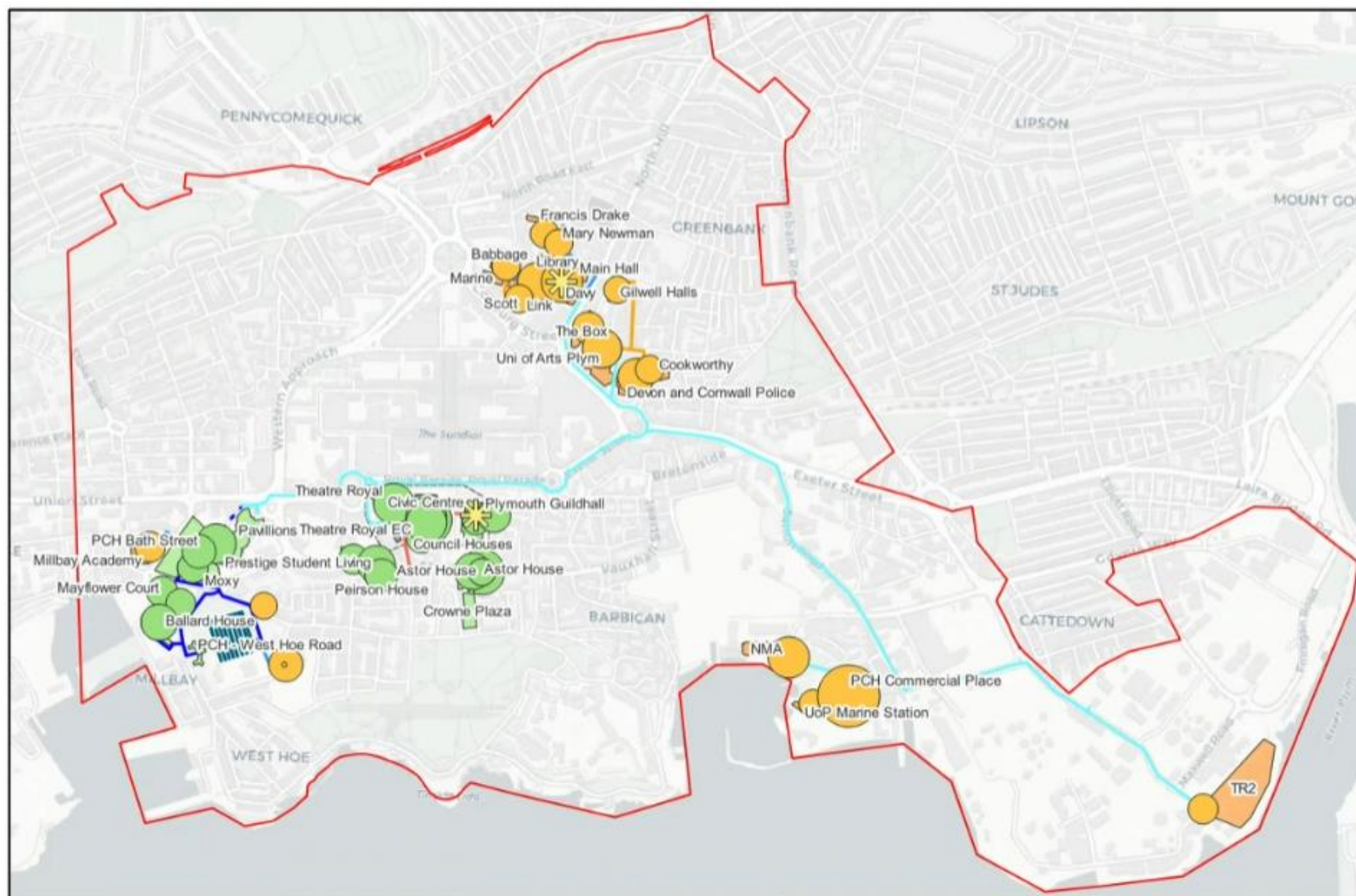
- 204 GWh/ yr heat demand
- 37 Km pipework
- 26,000 tCO₂/ annum reduction
- £300m

Two principal large waste heat sources.

Phase I - AZP reference scheme



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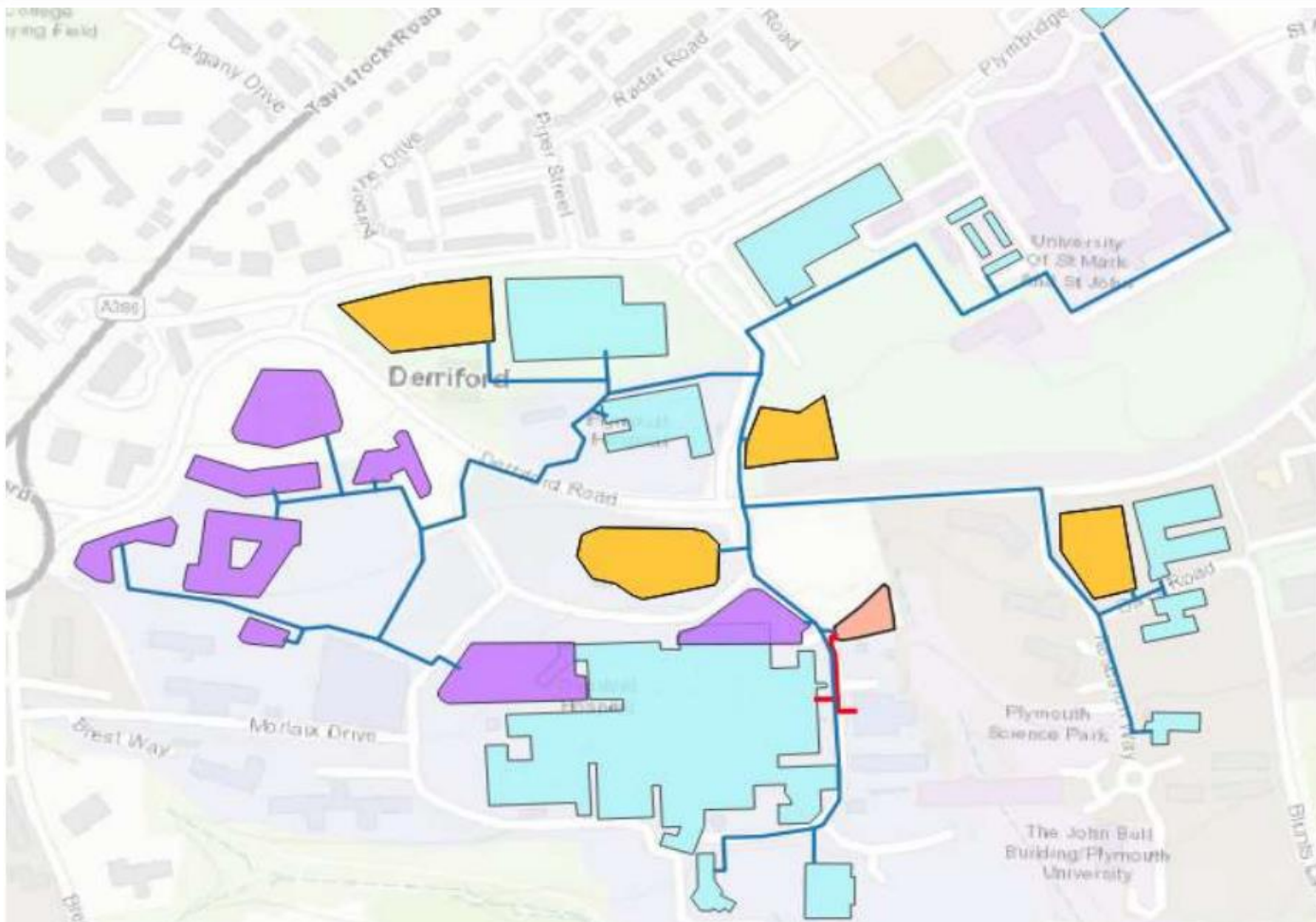
Reference scheme for Phase I:

- 20 GWh/ yr heat demand
- 6 Km pipework
- 7,000 tCO₂ reduction
- £60m

Derriford Zone

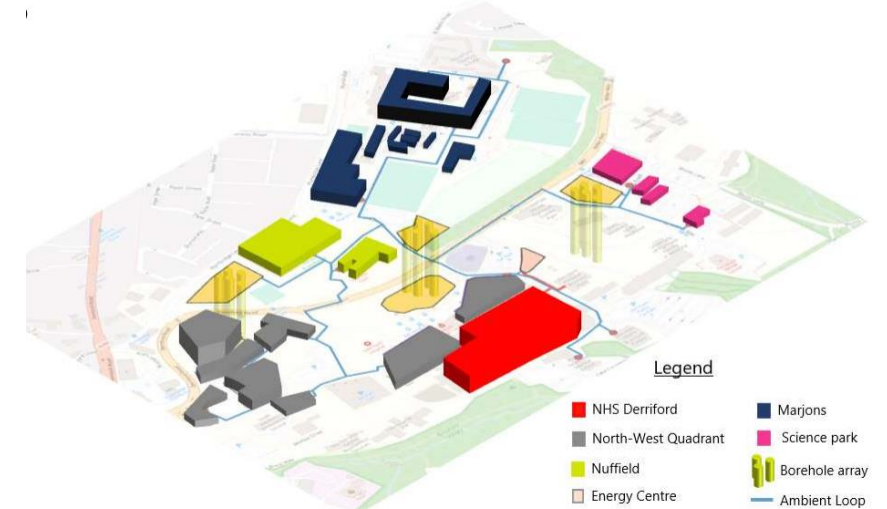


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Partial development of Derriford zone:

- 30 GWh/ yr heating demand
- 16 GWh/ yr cooling demand
- 3 Km pipework
- 5,300 tCO₂/ annum reduction
- £40m



What are the benefits?



- **Inward investment** zonal opportunity of **over £400m** (£60m phase I)
- **Green jobs and skills**, contributing to green economy - over **400 direct local jobs**.
- **Other Social & Local Value** outcomes.
- **Decarbonisation – single most impactful** measure
 - Heat accounts for **28%** Plymouth's carbon emissions.
 - Phase I: **7,000 tCO2 reduction**
 - Zonal approach: at least **3-5% Plymouth's carbon emissions**
- **Air quality** improvements by displacing NOX emissions from gas boilers
- **Energy Security** futureproofed through diversity of local heat source
- **Reputational benefits**, demonstrating commitment to tackling the climate emergency
- Collectively, these benefits **support many other agendas**: Ageing Well, public health, cost of living, local economy, community wellbeing etc.

What impacts? Disruption with delivery works. Can be mitigated by PCC leading process

The Delivery Model options (advised by Burges Salmon)



PCC owned and operated

Heat network either delivered and operated in-house, or through PCC owned delivery vehicle with construction / operation contracted out to private sector.

Joint Venture with PCC Shareholding

PCC establishes a 50/50 (or alternative split) joint venture vehicle with a private sector partner. PCC contributes finance and/or assets.

PCC led procurement

PCC procures a private sector partner to invest in, deliver and operate/ maintain heat network. PCC would have influence through its contractual or other relationship. Typical approaches include JV Golden Share, Joint Development Agreement or concession model.

Private Sector only (Government led)

Government facilitate private sector delivery. Only minor or no involvement / facilitation from PCC.

Summary of 'Risk and Reward' analysis for PCC



Option	Risk	Reward
PCC Owned and Managed	Substantial ongoing finance required Major financial risks and liabilities Reputational risks if the energy company fails	Retain full control over project Retain all profits if successful Social value outcomes able to be maximised
Joint Venture with Shareholding	Limited liability as a shareholder Greater financial implications and risks, depending on level of shareholding Greater reputational risks	Greater influence on social value and other outcomes Potential revenue generation
PCC led procurement	Can be delivered without significant financial implications or risks for PCC No PCC liability for delivery or operation of the network Some reputational risks	Influence on social value and other outcomes Little or no opportunity for revenue generation
Private Sector only	No financial implications or risks for PCC No control of phasing / locations Greater risk of cherry picking.	Little or no influence on outcomes No opportunity for revenue generation

Risk

Reward

Delivery approach



- ***Cabinet endorsed PCC led procurement approach– limited risks with significant scope for rewards***
- PCC owned and managed option ruled out - too much risk for PCC, notwithstanding potential rewards
- Joint Venture 50:50 or alternative – still carries significant risk, when PCC can still have significant influence through PCC led procurement option, with lower risk
- Private sector option not attractive - would leave PCC with minimal influence on local or social outcomes

Market engagement



- Strong interest from **heat network developers**, with significant investment to deploy.
- Over 10 respondents to **market testing** from main heat network investors/ developers **confirming interest**. All very positive about Plymouth opportunity.
- Preference for PCC led procurement.
- Caution around market saturation from a number, reflecting the number of opportunities coming to the market in the near future, which may mean they prioritise some over others. Timing important.
- Many keen to provide all funding alongside any GHNF grant available.
- Many emphasised social value benefits, opportunities with local supply chains/ create jobs.

Timetable



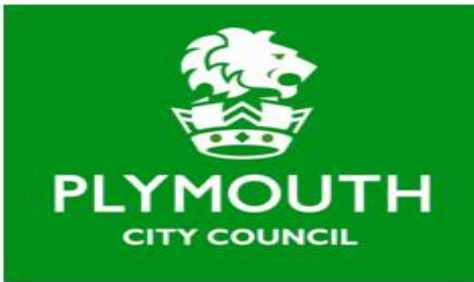
- November 2024 – Exec Decision Business Case approval to go to procurement for delivery partner against favoured delivery option & GHNF application
- January 2025 – GHNF application submitted.
- Q1 2025 Procurement launch anticipated
- Q3 2025 – preferred partner selected
- 2026 – stop/go decision in consultation with Cabinet Member for Climate Change and the Environment

Recommendations



1. Support the zonal approach to heat network roll out in Plymouth, as set out in the report, and approved by Cabinet on 9th September 2024.
2. Support the procurement of a development partner to take forward these proposals to delivery, through the Business Case.
3. Support an application for government Green Heat Network Fund grant towards the first phase, through the Business Case.

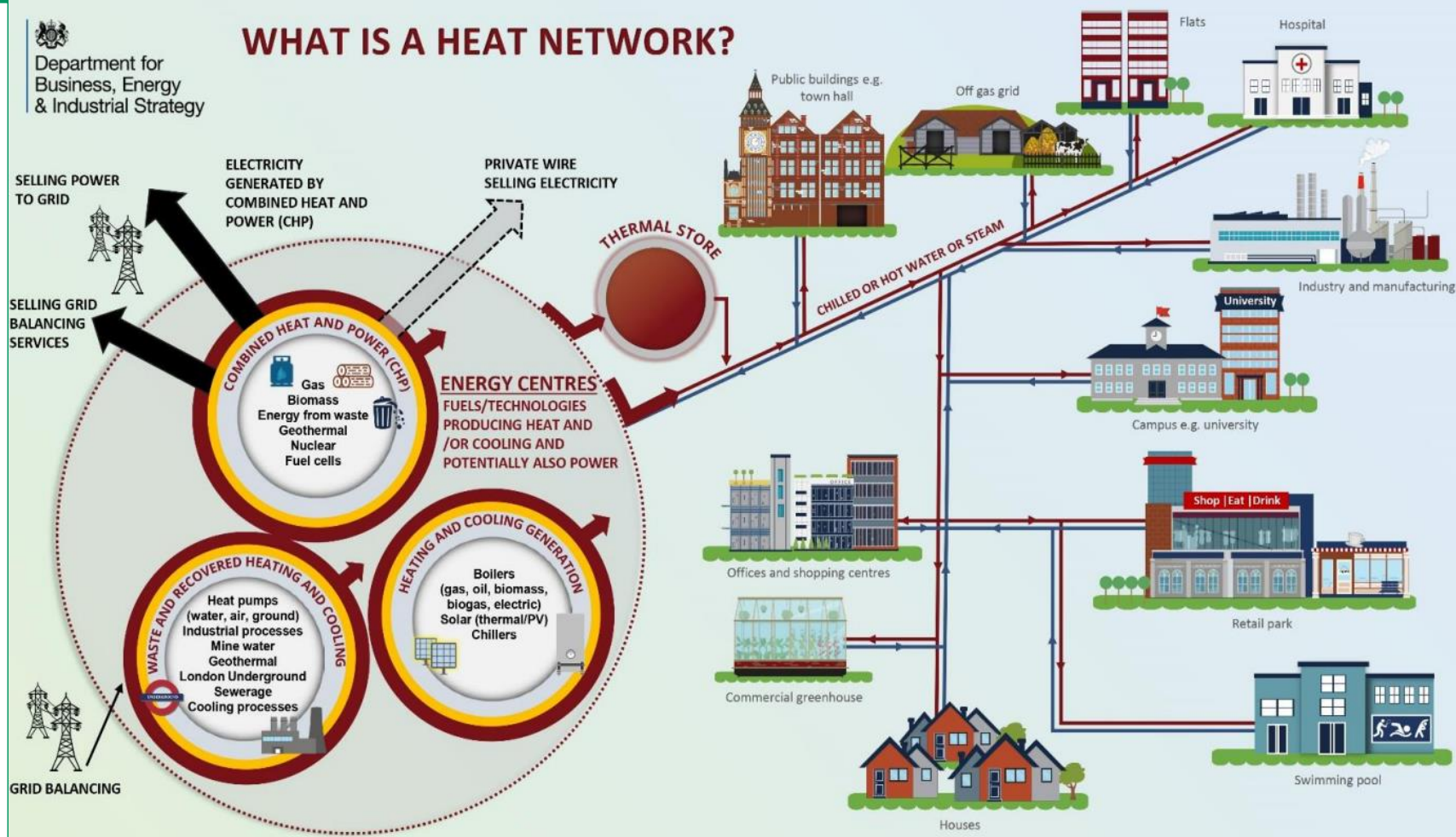
Any Questions?



What is a heat network?



- Heat distribution system providing heating, hot water and cooling
- Accesses **lowest cost, low carbon** heat sources at scale, including:
 - Waste heat (water treatment, EfW, data centres etc)
 - Heat pumps (air, ground, water)
- Over 14,000 heat networks in the UK
- Widely used in Northern Europe



Preliminary risk analysis for proposed PCC led procurement



Risk	Consequences	Possible mitigations
Fail to attract suitable Development Partner	Delays to delivery. Alternative options for delivery pursued.	Continuing market engagement. Secure grant funding to support scheme.
Lack of performance of Development Partner	Slower delivery. Outputs not achieved. Scale not achieved	Procurement outputs contractually binding. Contract reviews and key milestones for delivery/ outputs. Consider penalties for non-performance.
Lack of take up/ connections	Slower delivery. Smaller scale.	Planning policies ensure that new and existing buildings are required to connect.
Delivery issues e.g. costs escalations/ unforeseen	Slower delivery. Changes to scheme/ approach.	First phase sufficiently commercialised in advance of procurement, to reduce risks, and further work before final decision gateway. Risks primarily with Development Partner.
Fail to meet requirements for Zonal Developer	Development Partner not accepted by Ofgem as Zone Developer. Other Development Partners selected	Ofgem, as Regulator will authorise Zone Developers. Procurement will demonstrate a competitive process in line with this, also due diligence through the evaluation criteria.
Reputational risks	PCC as scheme sponsor associated with scheme progress.	Contractual mechanisms/ commitments, and engagement. Role of Ofgem will also ensure provide additional oversight.
Cherry picking	Slight risks if areas where proposals don't meet hurdle rates	Contractually binding commitments/ reviews. Potential grant options in areas with sub-economic.
Entity goes bust	Under zonal legislation, Ofgem likely to step in and reappoint for continuity.	Regular monitoring and reviews under contract. Option through contract for 'last resort' step in rights.

Social & Local Value outcomes



Alongside significant green investment, potential for a range of social value outcomes, which can be determined through a procurement process, including:

- Local Jobs (nationally 35,000 anticipated) around construction and operation / maintenance
- Skills with potential link to Blue/ Green Skills Hub
- Apprenticeships
- Opportunities for care experienced young people
- Local supply chains
- Air Quality Improvements with reduction in NOX emissions
- Ability to influence link and coordination with other utilities