

Cambridge
City-Centre
Heat Network

Danish Embassy conference
17 November 2022



Sustainability Co.



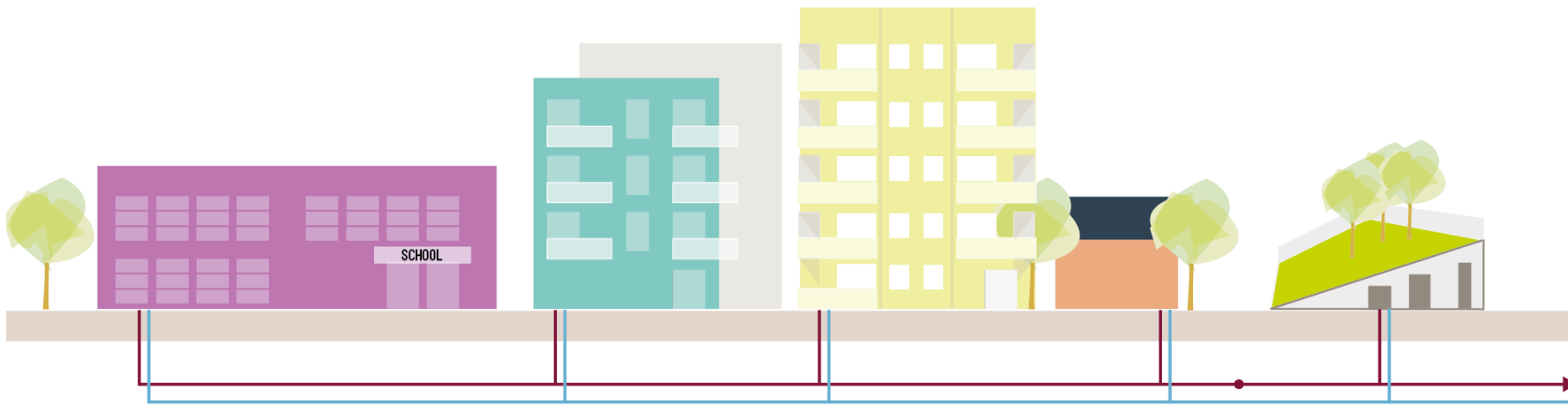
2. Introductions

- Sustainability Co. helps local authorities & businesses respond to the climate emergency.
- We've been appointed to help Cambridge City Council develop the 'Cambridge City Centre Heat Network.'
- Jeff Laidler is the Founder and Managing Director of Sustainability Co.



3. What is a heat network?

Heat networks use water pipes and local energy source(s) to supply heat to buildings across cities.



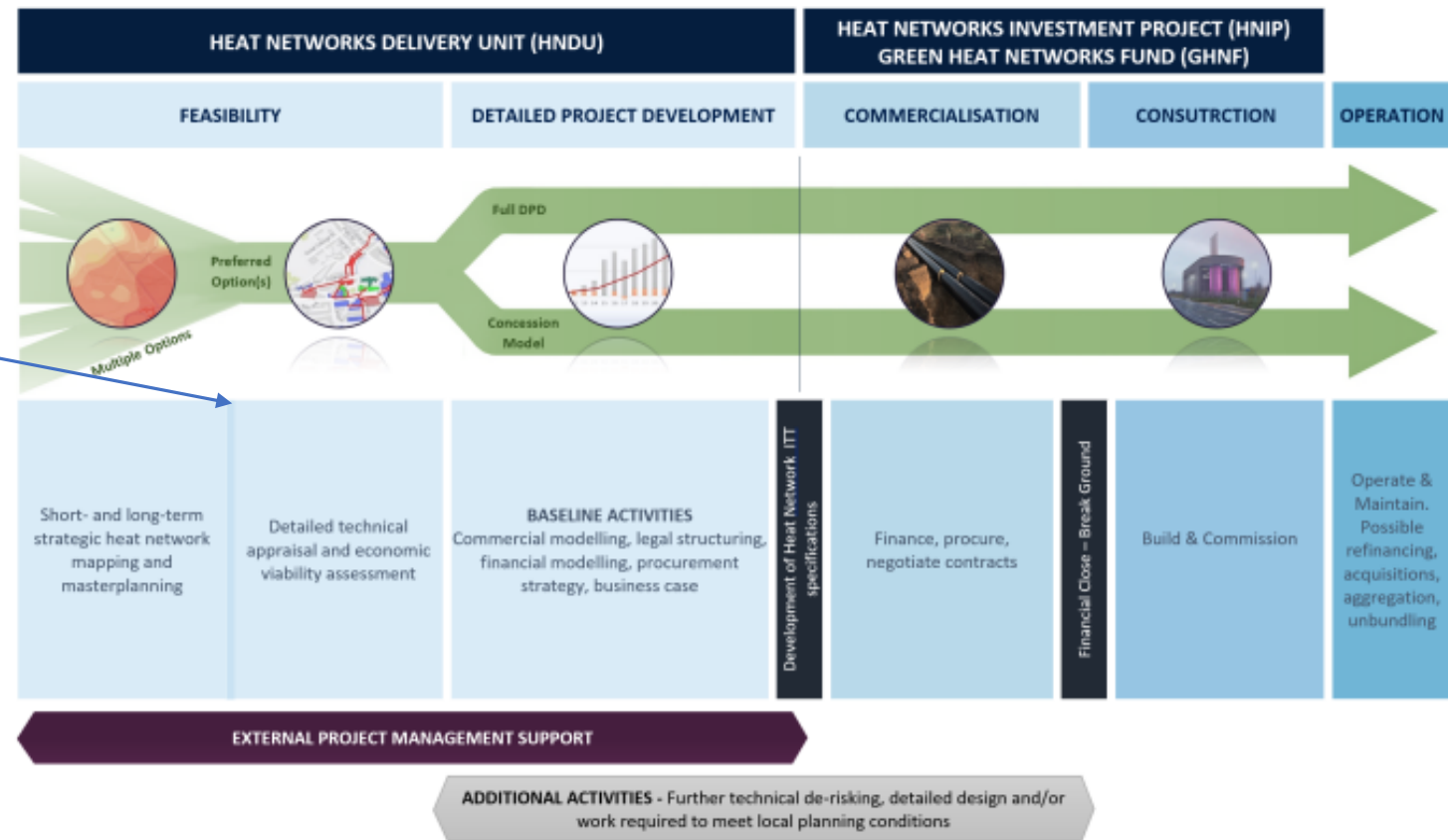
Heat networks are not new: they have been around for over 100 years:

- 98% of Copenhagen is connected to a heat network
- 1 in 3 people in Berlin are connected to a heat network
- 1 in 8 people in Amsterdam are connected to a heat network

Heat networks are perfectly suited to densely populated urban areas: residents, businesses and public buildings can benefit from 100% renewable heat and/or industrial waste heat.

4. UK Government's Heat Network Pipeline

Figure 1: Heat Network Development Stages



The Cambridge City-Centre Heat Network is here

5. Cambridge City-Centre Heat Network

What's the story so far?

- Sustainability Co: employed as heat network consultants, Dec 2021.
- Developed funding bid to UK government: for Feasibility Study
- Letters of support:
 - CEO & Leader Cambridge City Council
 - Vice-Chancellor University of Cambridge
 - 18 University Colleges
- Successful HNDU funding bid, September 2022: £97k grant, with £16.5k match funding from both the Council & University.
- Scope of works developed: October & November 2022
- Procurement of Feasibility Study consultants: to start in January 2022 & report by summer 2023
- If feasibility study is successful: proceed to Business Case development, procurement and Final Investment Decision
- Construction starts: potentially 2027
- First 'Heat On:' around 2028

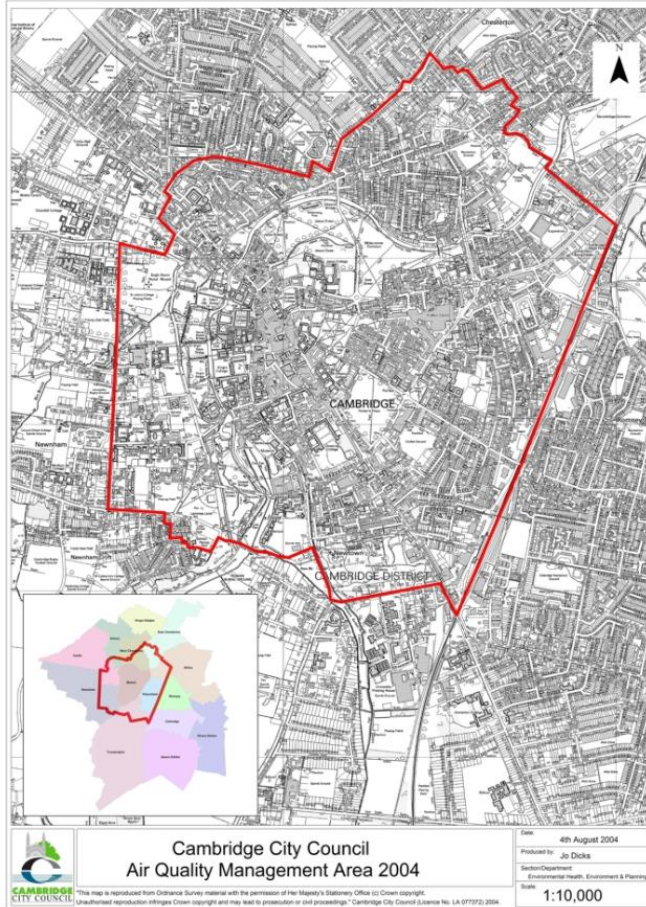




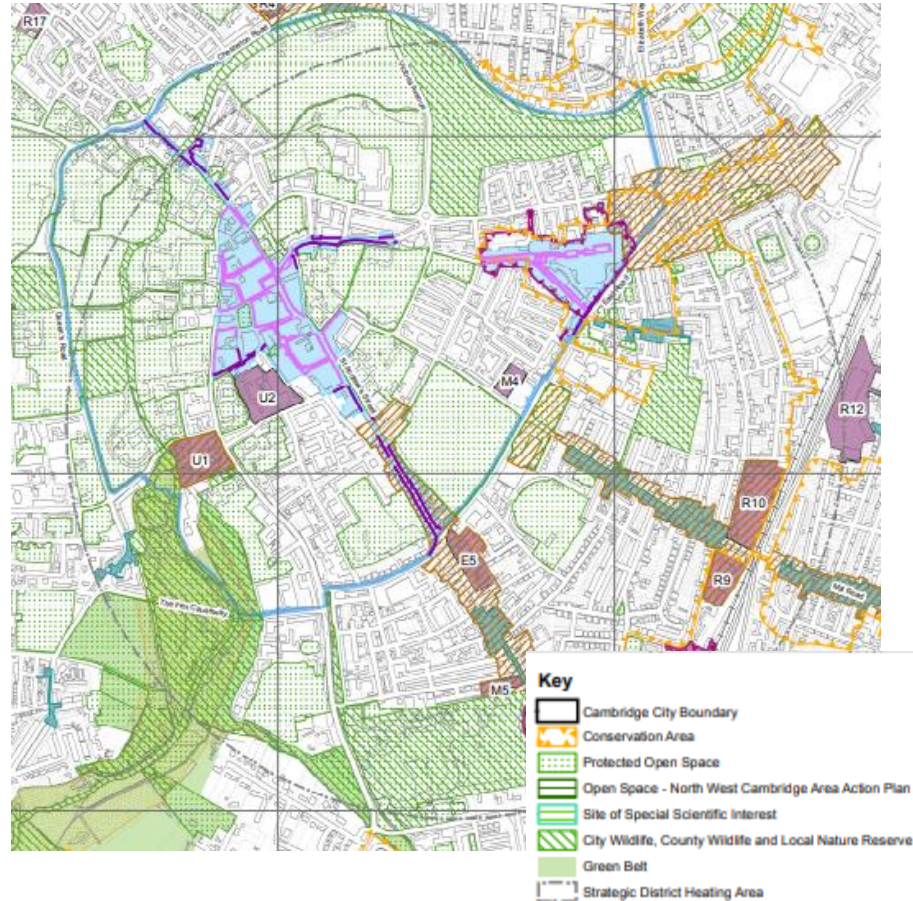
6. Cambridge City-Centre Heat Network

What is the opportunity?

1. City-Centre AQMA



2. City-Centre 'Strategic District Heating Area'



3. City-Centre Conservation Area



7. Cambridge City-Centre Heat Network

What is the opportunity?

1. Zero-carbon heating and hot water for Cambridge's historic city-centre: it's the only way to help create a carbon neutral city.
2. Scale: large city-centre core scheme balances ambition & practical delivery.
3. Heat pump-led heat networks: the new normal.
4. City Council & University of Cambridge: enablers of change.
5. Significant heat demand & expansion opportunity.
6. Listed buildings in historic Conservation Area: no visual impact.
7. Clean air: helps reduce NO_x in 'Clean Air Zone.'
8. Planning Policy requires connection: 'Strategic District Heating Area.'
9. Gap funding is available from UK government: Heat Network Delivery Unit (HNDU) & Green Heat Network Fund.
10. City's track record in heat network development: King's College, Jesus College, Homerton College and Emmanuel College and Eddington.



8. Cambridge Heat Clusters

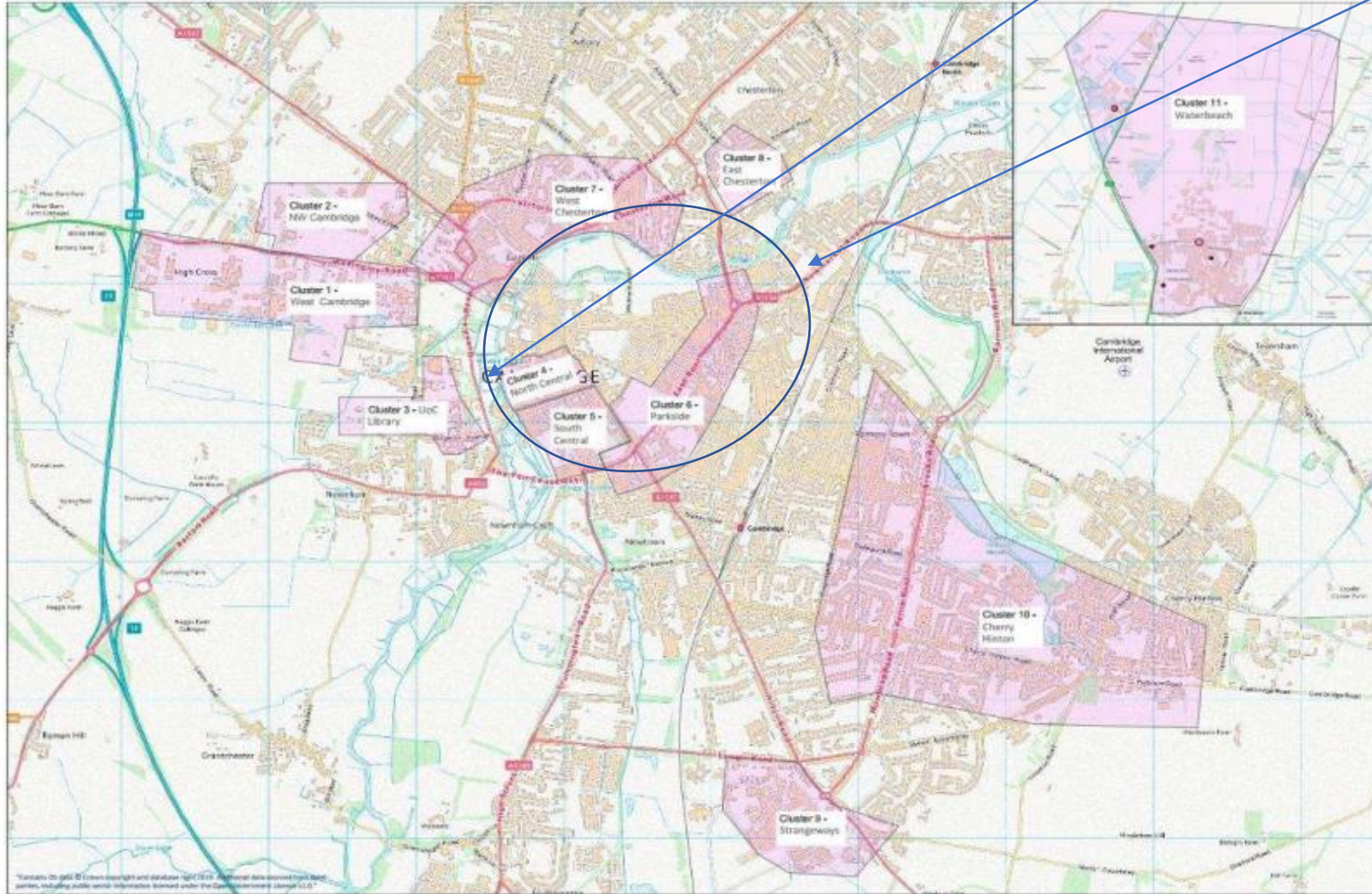
2019 HNDU Mapping and Masterplanning Study

River crossing to Sidgwick site

Cambridge City-Centre

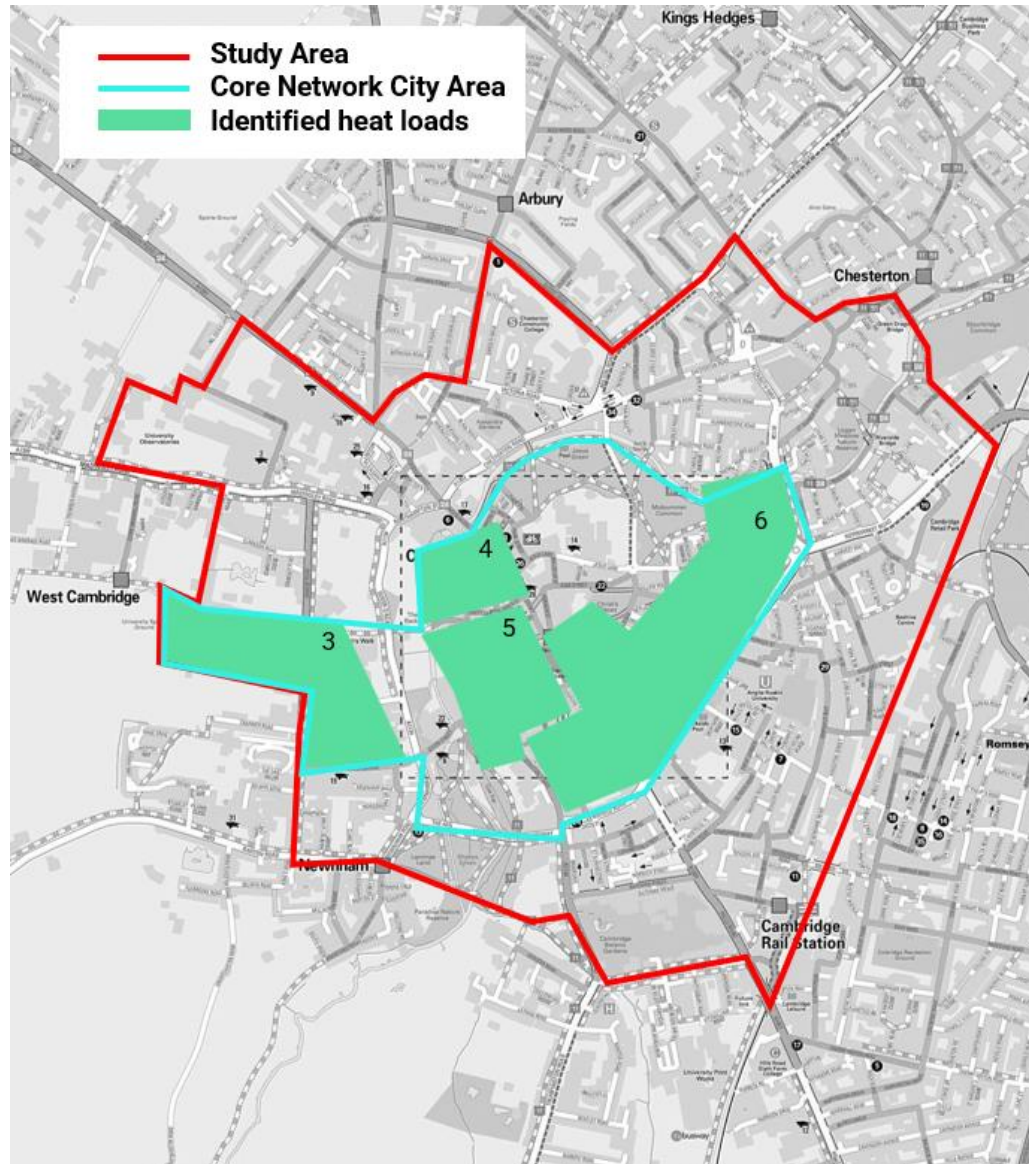


Figure 1-1: Cluster boundaries within the study area





Cluster	Heat Demand (GWh/year)
City-Centre	
• North Central (4)	23
• South Central (5)	28
• Parkside (6)	25
	76
Business Expansion opportunity	
1. Sidgwick Site/UoC Library (3)	14
2. West Cambridge (1)	2.2
3. North West Cambridge (2)	42.2
West Chesterton (7)	1.7
East Chesterton (8)	2.6
Strangeways/Addenbrookes (9)	36
Cheery Hinton (10)	4.9
Waterbeach (11)	94
<i>EfW, Cambridge Research Park and new town</i>	


9. Feasibility Study Area




10.City Map: the bigger picture

 Identified City Centre heat loads (Clusters 3,4,5,6)

 Existing heat network

 University of Cambridge

 Council leases/land

 New / proposed development

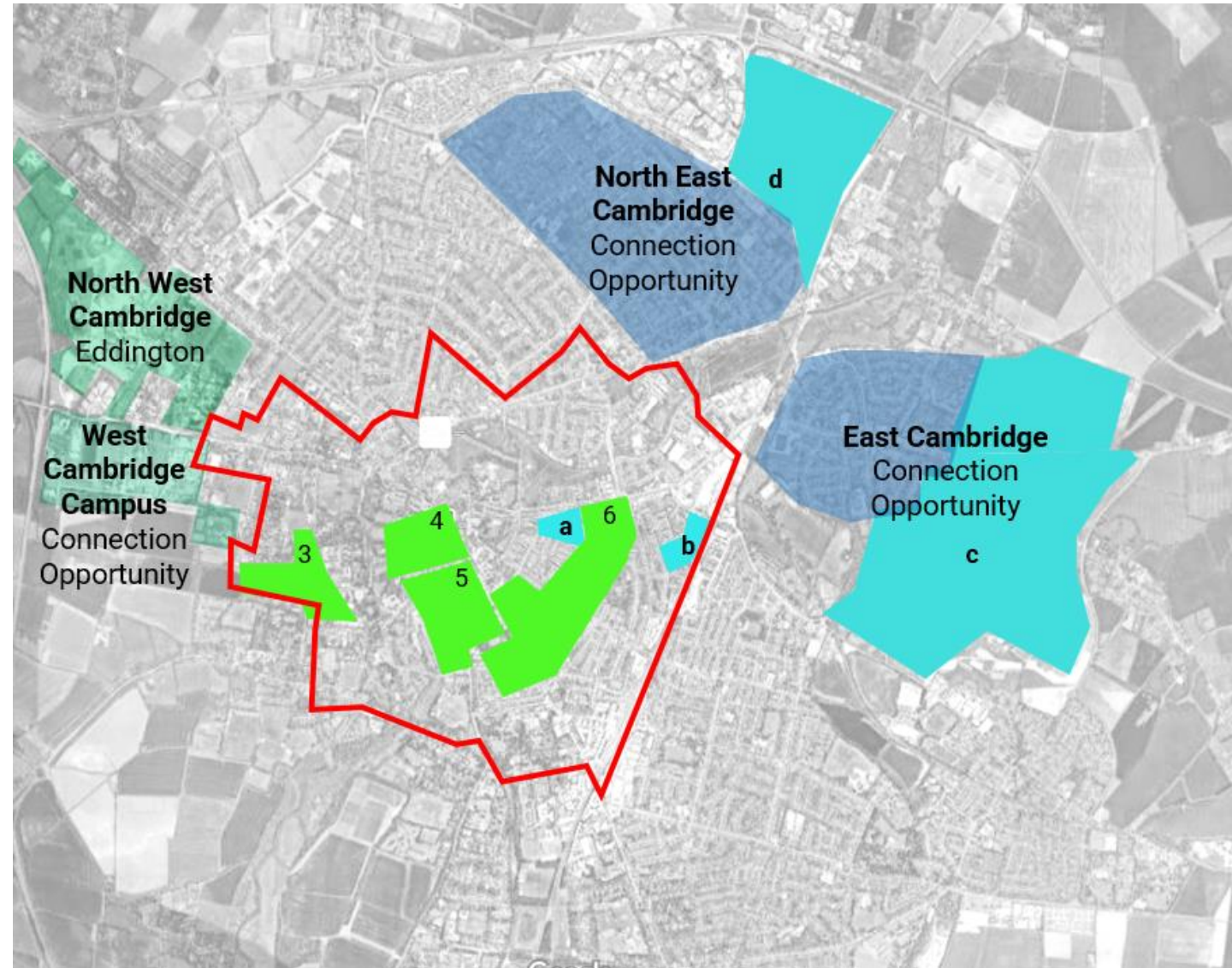
a. Grafton Centre

b. Beehive

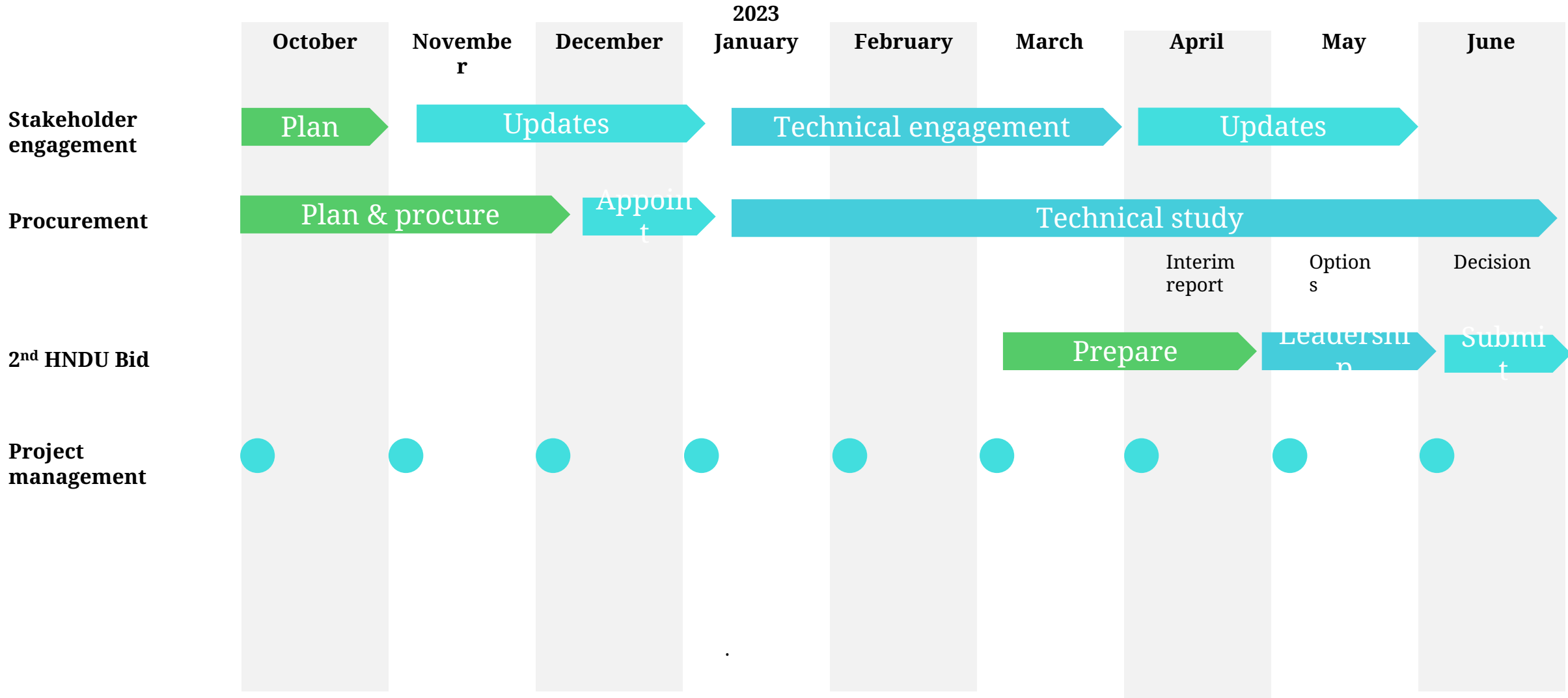
c. Marshalls

d. North East Cambridge

Connection Opportunity	Planning Status
East Cambridge	Pre-planning
North East Cambridge	AAP developed Phase 1 delivery underway
Eddington	Live heat network



11. Timeline



12. Lessons learned

	Lesson learned	Explanation
1	Step 1:	Start at the top and seek the buy-in of the CEO and senior politicians
2	Excite people about the opportunity	Generate momentum
3	Recognise the important role of Local Authorities as 'heat network enablers'	<ul style="list-style-type: none">• Decarbonisation: it's the only way to decarbonise corporate stock and meet Council's zero-carbon ambition.• Customers: the Council and University both benefit as a heat network customers• Planning policy is an important lever: requires heat network connections• Addresses multiple corporate priorities: clean air, zero-carbon, economic development, regeneration and fuel poverty
4	Take lessons learned from elsewhere:	Bring in client-side heat network skills and experience
5	Develop a 'Win Strategy' for funding bids	Focus on Unique Selling Points and funding criteria
6	Put customers first from the start	Design 'monopoly' heat network for customers, who can't choose heat supplier
7	Think big ...	Heat networks work best at scale: investigate at least one > £100m option
8	Allow plenty of time for Council approval processes	It always takes longer than you think!
9	Ensure financial model is based on operational reality	Don't use theoretical assumptions
10	Create a strong business case	Follow HM Treasury's Green Book Business Case



Questions and thoughts?