



Colchester
AMPHORA ENERGY



Colchester Council

Northern Gateway Heat Network & Micro Grid



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Concession Area

- Northern Gateway is a major regeneration project for the Council
- Heat Network to be delivered by Colchester Amphora Energy (CAEL - Council owned ESCo)
- CAEL granted a Concession (similar to Olympic Park) to mandate connection to the network
- Location south of Junction 28 of A12 road, north of Colchester



Heat Network Scheme Outline

- 800 kW Open loop ground source heat pump
- 2 abstraction & 3 reinjection boreholes 135 metres deep into Confined Chalk aquifer, Taking 8 degree of heat, 13 to 5 degree C
- Gas boilers for back up & top up during peak winter loads
- Low temperature pipe network (65 degrees)
- Customers: Houses (200), Flats (450), Offices (35K m2), Healthcare (9k m2)
- Max Annual demand 6.35 million kWhrs - 75% from heat pump

Borehole locations: Installed 2018-19



BH 2
Heat Network Energy Centre

BH 1

BH 3

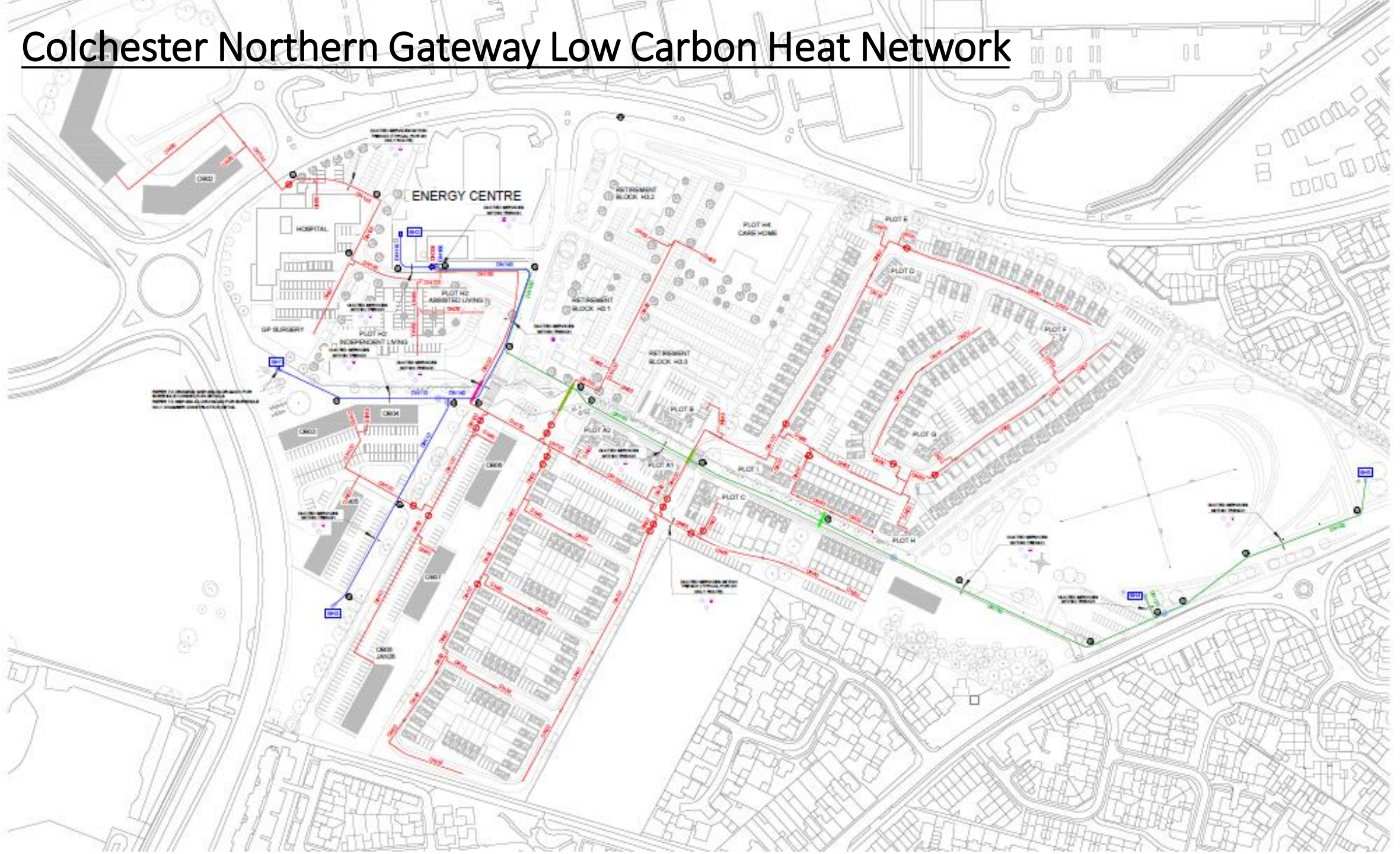
BH 4

BH 5

Borehole 5: Summer 2019



Colchester Northern Gateway Low Carbon Heat Network

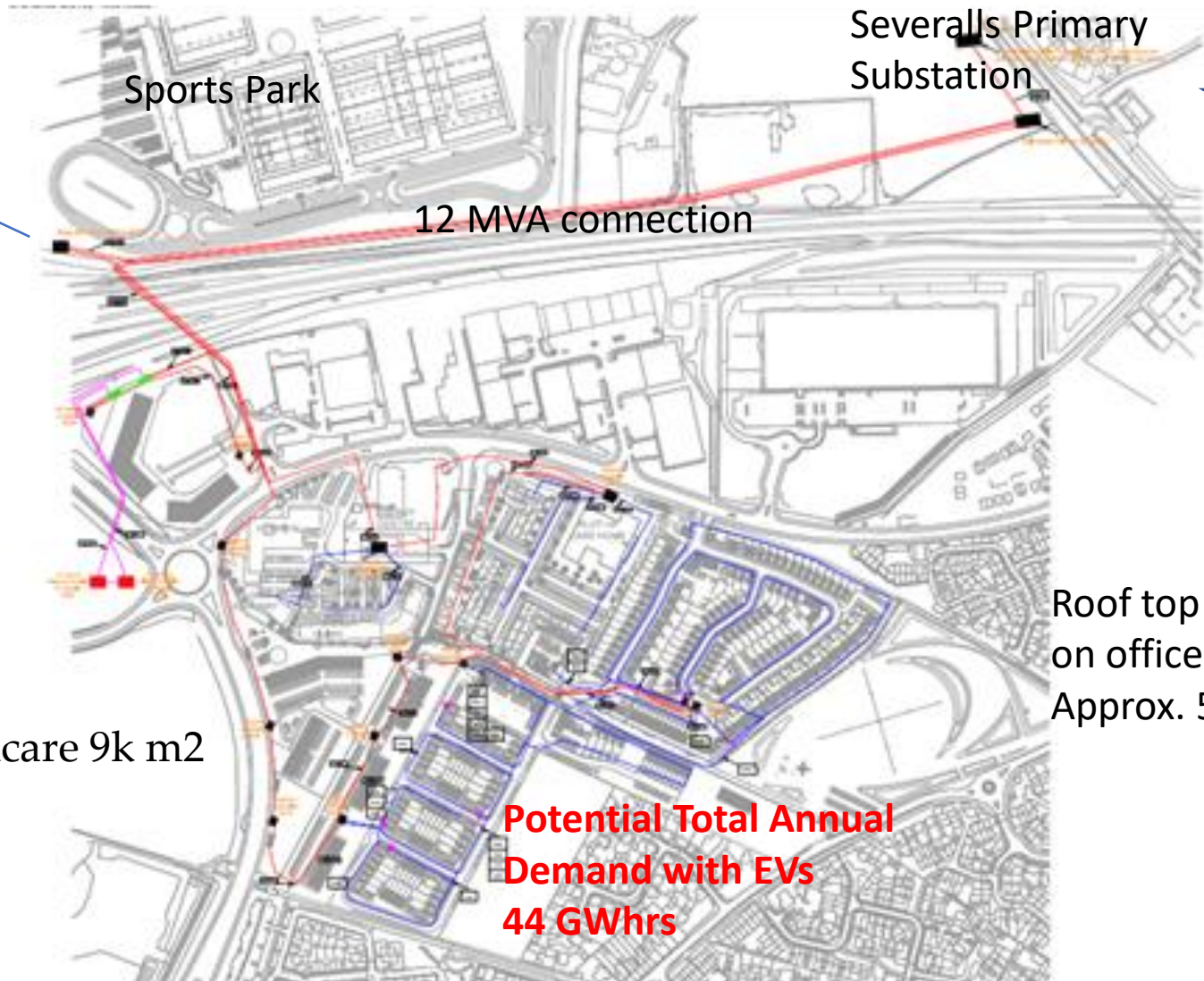


Colchester Northern Gateway Micro Grid

- Development requires approx. £7 million of infrastructure, normally “given” to DNO or IDNO
- 44 GWhrs Potential Total Annual Demand with EVs with 9 to 17 MVA grid connection needed over next 10 years depending on rate of development in the Northern Gateway area
- Approx 5 MVA of spare grid capacity at nearest primary substation without Network Upgrades (in excess of £7 million and new primary substation required)
- Battery storage to reduce peak loads to defer and potential reduce upgrade required.
- Solar PV generation: reduce midday peak loads (summer) and lower cost energy into micro grid: no network charges giving significant margin between PPA price to grid and domestic or commercial rates.
- Engaging with DNO (UKPN) over capacity issues - “local energy plan”
- Business model in development

Colchester Northern Gateway Potential Micro Grid

Possible 2MW car port PV on Park and Ride & EV charging Station



Potential site for Ground mount Solar PV & battery storage

Customers

Houses 200

Flats 450

Offices 45K m²

Hospital/ Healthcare 9k m²

Roof top Solar PV in development on offices & blocks of flats
Approx. 500 kW