Colchester
AMPHORA ENERGY

Colchester Council

Colchester Northern Gateway Heat Network

Colchester
AMPHORA ENERGY


Google Earth

Scheme Outline

- Customers: Houses (200), Apartments (400), Offices (35K m2), Healthcare (9k m2)
- Energy Centre producing low carbon heating and domestic hot water
- Renewable heat source: water from 5 boreholes 135 metres deep into confined chalk aquifer
- 800 kW heat pump takes 8 degree of heat out of the water, 13 to 5 degree C
- Gas boilers for back up & peak winter loads
- Max expected annual demand 6.35 million kWhrs - 75% from heat pump

Colchester
AMPHORA ENERGY

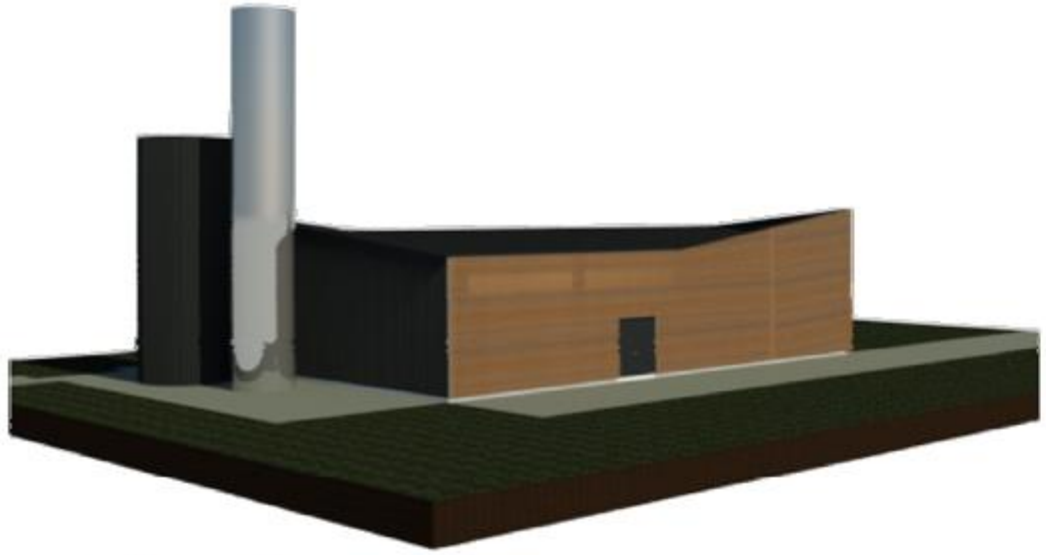
Heat Network Progress

- 2017: Obtained £3.4 million BEIS Heat Network Investment Project grant
- 2018 / 2019: Boreholes installed & tested: 2 abstraction & 3 reinjection
- 2019/2020: Outline Design by WSP (client's engineer)
- 2021: Installation tendered : Winner Pinnacle Power: project put on hold
- 2022: Detail design by Pinnacle Power under pre contract service agreement
- 2023: Commence Energy Centre Build

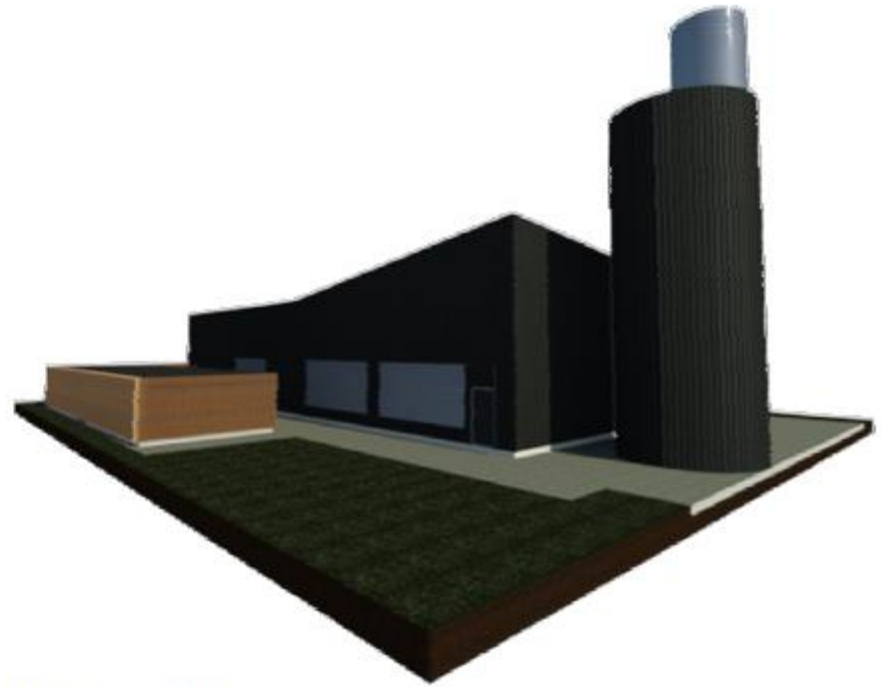
Colchester
AMPHORA ENERGY

SOUTH-EAST VIEW

NORTH-EAST VIEW



SOUTH-WEST VIEW



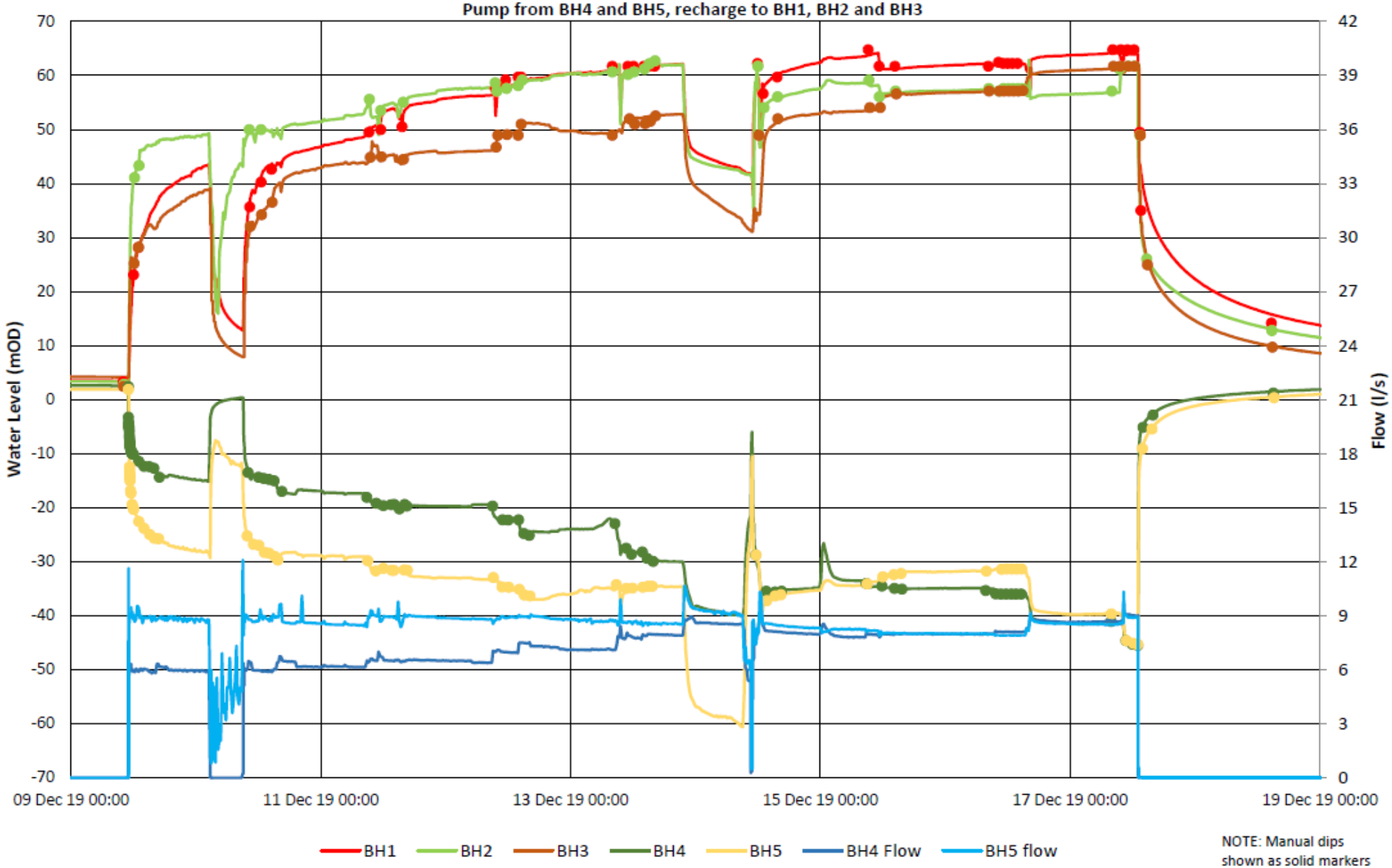
NORTH-WEST VIEW

Borehole locations: Installed 2018-19

Borehole 5: Summer 2019

Figure 11: Hydraulic Balance Test

Pump from BH4 and BH5, recharge to BH1, BH2 and BH3



NOTE: Manual dips shown as solid markers in same colour

Borehole Locations

18 l/s Water abstracted from BH 4 & 5 at 13 degrees

Heat Pump

Hot water - 65 degrees to houses

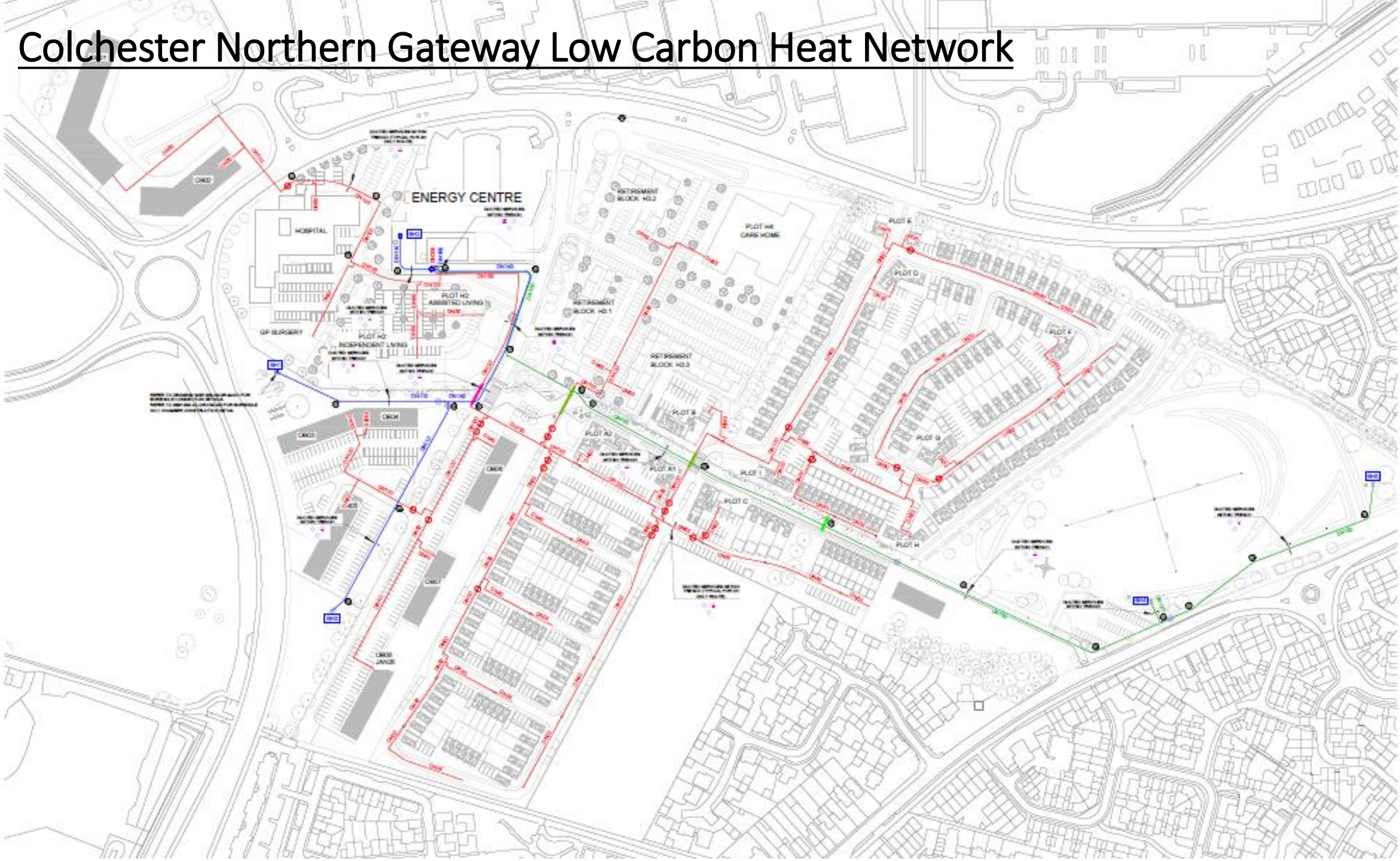
Water re-injected in to BH 1, 2 & 3 at 5 degrees

Colchester
AMPHORA ENERGY

Boreholes Installation Lessons Learnt

- Many risks – but some can be mitigated
- Have a design for the whole system & plan for unexpected
- Have a call off contract for borehole installation with prices for demobilisation and re-mobilisation
- Know how decisions are going to be made to deal with issues, changes & uncertainty
- Data collection
- Probably more expensive that you think – Ground protection, water testing, water disposal, dealing with neighbours

Colchester Northern Gateway Low Carbon Heat Network



General Lessons learnt

- Boreholes in a chalk aquifer come with uncertainty / risk
- Not an exact science of how they will perform and develop
- Risks can be mitigated; for example balancing of heat abstraction and reinjection
- Greenfield sites = upfront investment and potentially unknowns of when returns will develop

Colchester
AMPHORA ENERGY

Michael Woods – Energy Manager

michael.woods@colchesteramphora.com

Colchester
AMPHORA ENERGY