



Department  
of Energy &  
Climate Change



# CHP Outreach Workshops

*Programme: Reducing Energy Costs with Combined Heat & Power*

London 10<sup>th</sup> March 2015

Manchester 12<sup>th</sup> March 2015



# Opportunities for heat linking

Robin Wiltshire, BRE



# CHP for Buildings (likely)

- Hospitals
- Universities
- Hotels - large
- Leisure facilities with swimming pools
- Multi-residential blocks.



# CHP for Buildings (less likely)

- Cottage hospitals, doctor's surgeries
- Schools
- Hotels - small
- Leisure facilities without swimming pools
- Low-rise housing
- Offices
- Retail.



# Individual site CHP

- Maybe just one building (hotel)
- Or maybe many buildings (campus university)
- More than one building: need connecting pipes
- Heat linking of buildings therefore not uncommon
- Heat linking beyond the site boundary is less common but may offer significant benefits.



# CHP at single building – Arnold leisure centre





# CHP at campus university – East Anglia





# Heat linking to other organisations

- Higher overall demand
- Smoother aggregate load profile
- Higher heat sales, stronger economic case
- Connection of individual buildings that could not justify CHP on their own
- No need for heating (or chilling) plant in buildings...
- Less items of plant to buy and maintain
- Perhaps a larger CHP.





# Complementary profiles

- Each building has its own characteristic heat demand profile
- Generically, some buildings have higher demand during 'office hours': offices, schools...
- ... while homes tend to have higher demand out of office hours...
- ... and hospitals have significant demand 24/7
- Together the profiles tend to be complementary – where there is a lot of heat linking this 'load diversity' can be substantial.



# Why don't more do it?

- Carrying on with the status quo
- Existing CHP (or other) plant already working well
- Desire to keep decision making at site level
- Fears about reliability
- Lack of obvious adjacent sites to link with
- Adjacent sites may be reluctant or already have new plant
- (Lack of) awareness of heat linking and CHP
- Not core business: who will take the initiative, who will devote the resource?
- Who will take ownership and responsibility?



# Who has done it?

- Our site visit!
- Tachbrook triangle – new-build apartments and some office space linked to CHP at Pimlico District Heating Undertaking
- Aberdeen Heat & Power: several multi-residential blocks supplied from one CHP engine.



# Tachbrook triangle



- Newly built private and affordable apartments with some commercial office space for the Westminster Primary Care Trust
- Connected to the Pimlico District Heating Undertaking (PDHU).



# Seaton, Aberdeen

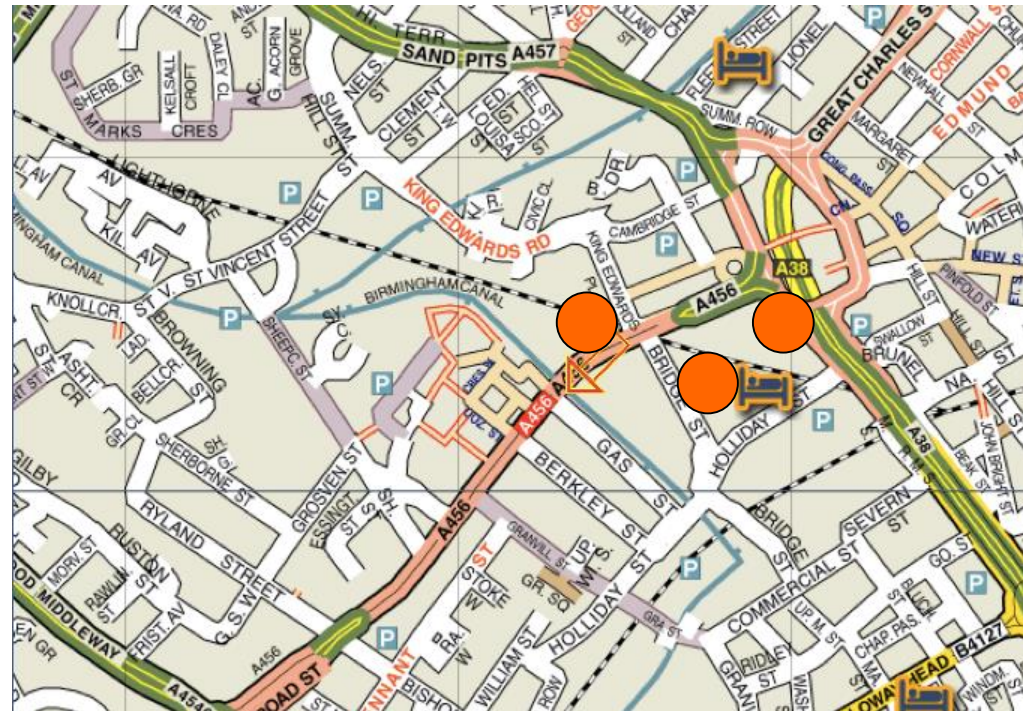


- 1 MWe gas-fired CHP
- Linking 740 flats in 8 tower blocks
- Has already linked to other non-domestic buildings in the vicinity.



## Extending CHP supply with heat linking

- Local authority owned buildings are often significant consumers of heat that can be used as anchor loads for heat linking.

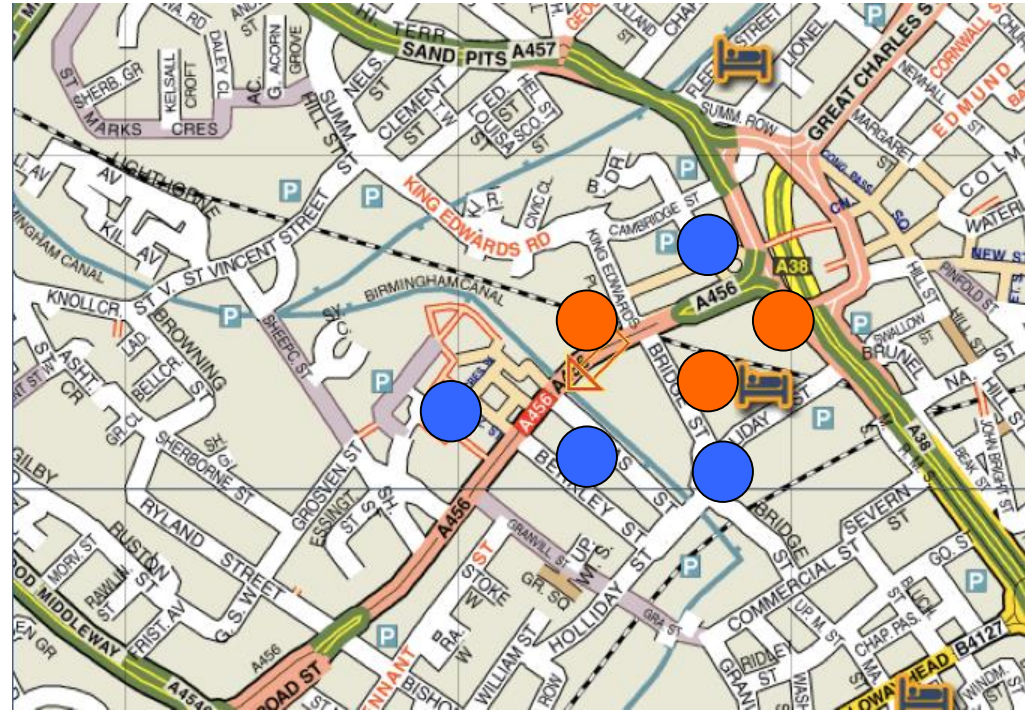


LA authority buildings as anchor loads



## Extending CHP supply with heat linking

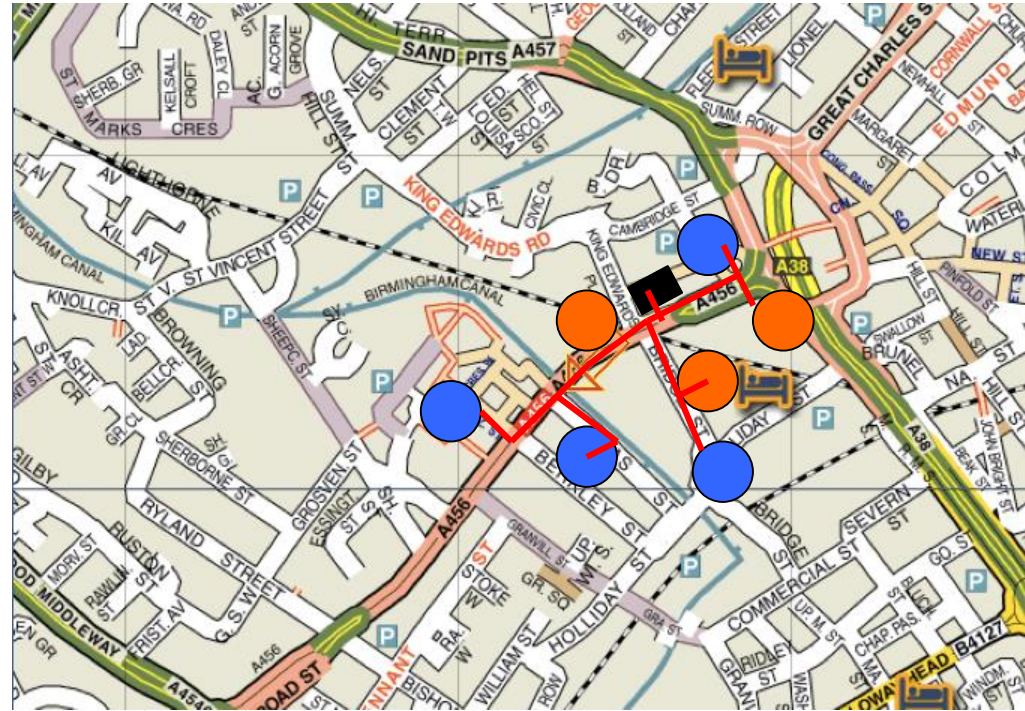
- Heat contract agreements can also be sought with other public and private single users of heat ...
- ...adding to the business case.



**LA owned buildings plus other private single heat user**

## Extending CHP supply with heat linking

- Now with the connections in place the buildings are linked and receiving heat from the CHP at the energy centre.



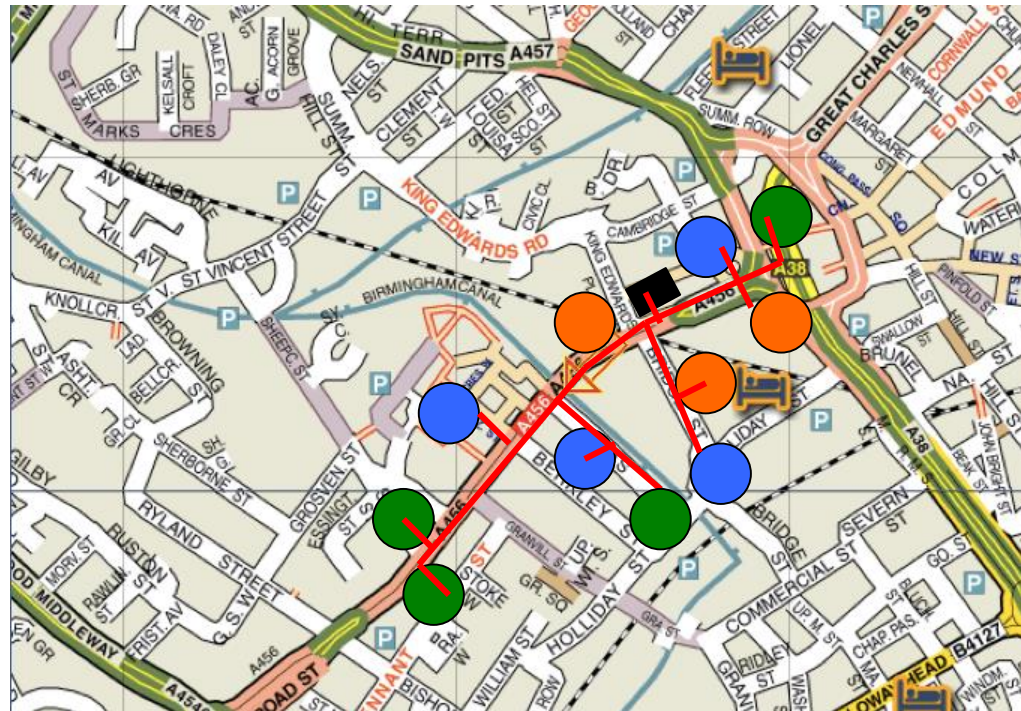
**LA owned buildings plus other private single heat user and energy centre**





# Extending CHP supply with heat linking

- Further heat linking can also take place...
- by connecting to other existing buildings and also new build developments
- All connected buildings are therefore receiving heat from the CHP at the energy centre.



**LA owned buildings plus other private single heat user, energy centre and expansion of DH network**