



# MANCHESTER GEOTHERMAL HEAT NETWORK - CHALLENGES AND LESSONS LEARNT

THE FOURTH GEOTHERMAL SYMPOSIUM, 13<sup>TH</sup> OCTOBER 2014



# ABOUT GT ENERGY

## DEVELOPMENT ACTIVITIES

- 1<sup>st</sup> company to secure full planning permission for a geothermal heat project in the UK
- Targeting major cities for the development of geothermal district heating systems

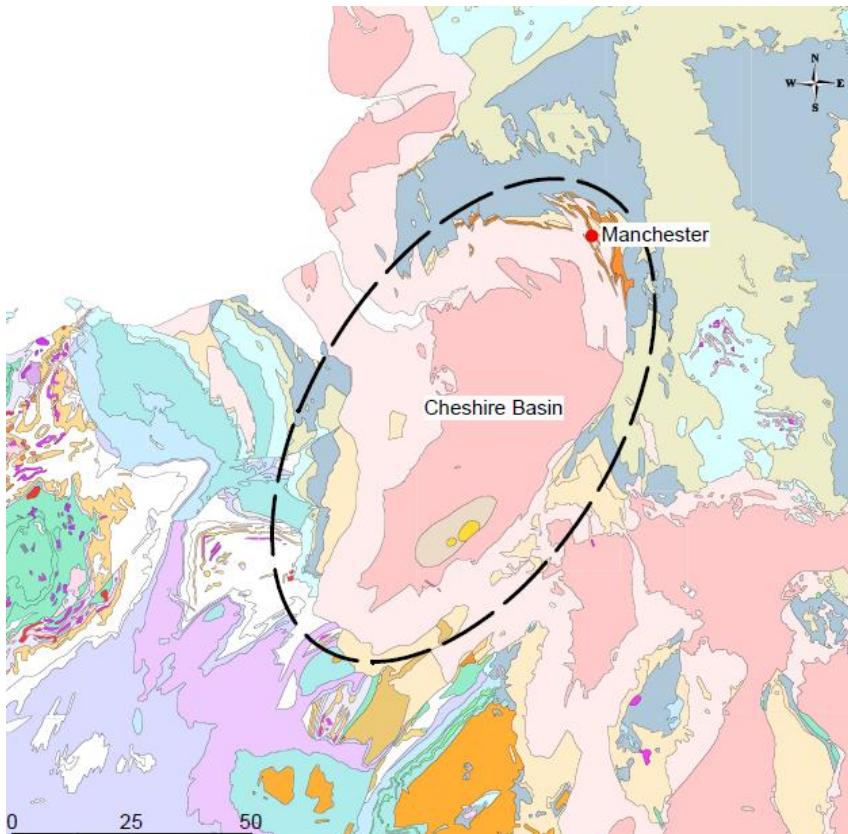
## CONSULTANCY

- Leading team of experts in geothermal district heating heating
- Strong track record of working with local authorities
- Advisory services covering all aspects of geothermal development



# MANCHESTER GEOTHERMAL PROJECT

## Geology of Manchester



- GT Energy commissioned a geological study which investigated available geological information to determine the geothermal potential of Manchester.
- Manchester lies at the edge of the **Cheshire Basin** of which extensive data from .
- Significant coal mining, oil and gas exploration [information available](#) in the area.
- Geophysical data is available from [historical 2D seismic reflection surveys](#).
- [Fracture Carboniferous Limestone](#) target for geothermal energy production.

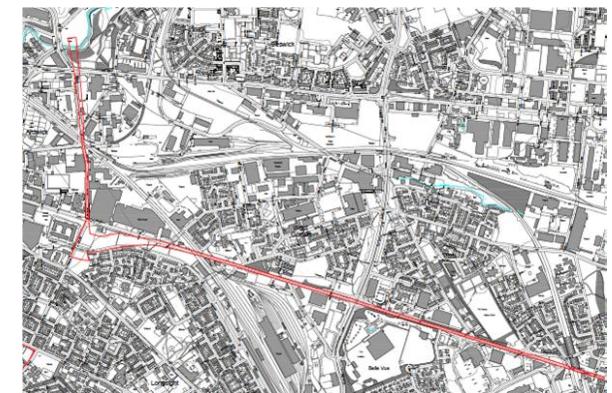
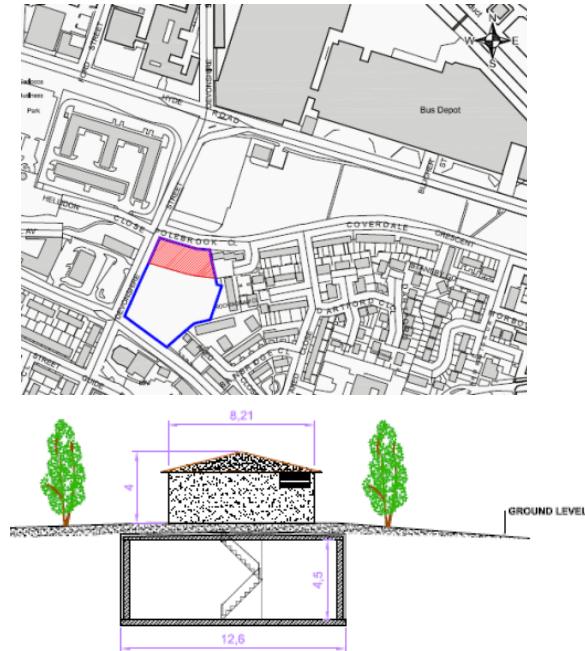
# PROJECT DEVELOPMENT ASPECTS

- Planning
- Exploration and Data acquisition
- Customer Acquisition
- Financing / Funding

# PLANNING

## CHALLENGES

- Close proximity to main city centre < 1km from the Oxford Road Corridor
- Owners & Tenants Notification for **Above and Below Ground Works** :
  - the surface area (energy centre/DHN) **and**
  - the underground area (geothermal well paths)
- Private company does not have utility status and therefore:
  - cannot avail of permitted development (PD) rights and
  - must seek planning permission for the proposed route of the district heating network (DHN)



# PLANNING

## LESSONS LEARNT

- Difficulty in identifying exact well paths at the time of a planning application
- DHN alternative route or extension outside the planning applicant's submitted red line requires a new planning permission
- Wide planning application area required to ensure cover for potential routes of deviated wells & any DHN route alternatives
- 500m radius around the Manchester site would have required us to notify up to 3,000 separate land owners

## SOLUTIONS

- The Department for Communities and Local Government (DCLG) decision on "*Revised requirements relating to planning applications for onshore oil and gas*"
  - **remove this requirement for owners of land beyond the site surface area ie the owners of land where solely underground operations may take place.**
  - **GT Energy would urge the Government to adopt the same regulatory changes for the geothermal industry**
- Local Development Orders (LDO) give flexibility to the for a change of route or for future extension of the network once the works are carried out in the pre defined area i.e. 3km x 3km area
  - **GTE would urge that LDOs are adopted by Councils and its LPA nationwide in order to accelerate the deployment of DHNs.**

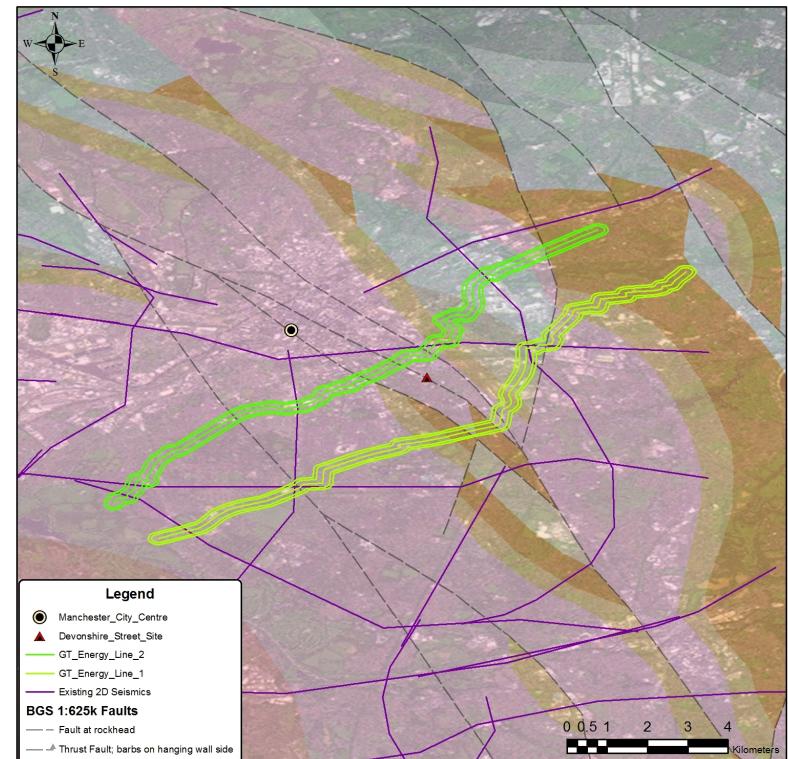
# EXPLORATION

## COMPLETED WORK:

- Reprocessing of c. 70 km of 2D seismic line data
- Review of existing hydrocarbon borehole data
- Coal Authority Data review
- Sampling and core testing programme
- Initial 3D Geological Model
- Well Path

## SUBSEQUENT WORK:

- Additional seismic line data acquisition
- Improved 3D reservoir model



# EXPLORATION

## CHALLENGES

- Historical seismic line data quality limitations
- Well Path Selection when considering planning requirements
- Logistics of new data acquisition to ensure highest data quality in the reservoir area
- Very limited reservoir information



## SOLUTIONS

- Assess seismic line data quality early – don't assume it will be useful !!
- Plan acquisition routes early & alternatives where acquisition may not be possible



# CUSTOMER ACQUISITION

## CHALLENGES & LESSONS LEARNT

- Securing Large Heat Customers
  - Renewable Heat Strategy (or lack thereof)
  - Existing infrastructure (steam network)
  - Low fuel prices
  - Long Term Investment View
- Securing Large No. Smaller Customers
  - Limited resources for customer engagement
  - Early engagement not possible
  - Bankability & Risk



## SOLUTIONS

- Local Authorities
  - take a leading role in the development of the district heat network

# FINANCING & FUNDING

## CHALLENGES

- Project Development timeline – 5 to 7 years
- Funding the period from initial project concept through to financing:
  - Corporate funding
  - Pre-development work



## LESSONS LEARNT

- Funding the pre-development work is increasingly difficult

## SOLUTIONS

- Funding similar to HNDU for technology feasibilities for geothermal schemes should be available to Local Authorities

# ACTUAL PROJECT TIMELINE

Project commenced in 2009!

| Milestone                                       | Status                |
|---|-----------------------|
| Planning  | Granted               |
| EA Groundwater Investigation Consent (GIC)      | Granted               |
| EA Long Duration Abstraction License (24 years) | Granted               |
| Coal Authority Permit                           | Granted               |
| 20km 2D seismic acquisition                     | Q3 2014 - outstanding |
| Procurement of drilling contract                | Q3 2015               |
| Construction commencement                       | Q4 2015               |
| Practical Completion                            | Q4 2016               |



Thank You for your Attention



Riccardo Pasquali,  
Head of Geology,  
GT Energy,

T: +44 (0) 208 207 7390

Email: Riccardo.Pasquali@gtenergy.net

