



# **QUALITY IN THE GROUND**

## **THE IMPORTANCE OF GOOD GROUND DESIGN AND INSTALLATION**

**Michael Moggeridge  
Contracts Manager**

# OVERVIEW



- **Myths**
- **Site Information**
- **Design Information**
- **Site Expectations**
- **Methods**
- **Management Support**
- **Magpie**
- **Questions**



# MYTHS



- **Fixed Price**
- **Loops and test bores are 100m**
- **Drilling is inherently messy**
- **Mud flush is an expensive luxury**
- **You cannot use air flush**
- **Disposal is at cost plus**
- **Additives are for oil well drillers**
- **We must have exclusive access**
- **We can't specify delivery times**
- **Thermal grouts are OTT**
- **Its not cost effective to go deeper**



# SITE INFORMATION



- **Overview of Works**
  - Site location
  - Where on site are we drilling
  - How do we fit into the build programme
- **Site Geology and Ground Conditions**
  - Normally ground investigation report
  - Anticipated deep geology (BGS records)
  - Groundwater information
  - Test Borehole
- **Main Contractor Attendances and Issues**
  - Are there welfare facilities
  - What is the water supply on site
  - Provision for unloading
  - Access for other Trades
  - Contractor specific requirements
  - Working hours
  - Discharge point



# DESIGN INFORMATION

## CLOSED LOOP



- **Boreholes**
  - Depth
  - Acceptable diameter
  - Spacing – *as important as depth*
- **Installation**
  - Loop diameter
  - Single / double loops
  - Plastic grade and strength
  - Grout / backfill
- **Quality Assurance**
  - Manufacturers certificates
  - Borehole logging - Geology
  - Depth Certainty
  - Pressure testing – WATER ONLY
  - Flushing – CORRECT FLOW RATE
  - Grout testing



# DESIGN INFORMATION

## OPEN LOOP



- **Boreholes**

- EA Consents
- Flow rate
- Spacing
- Casing dimensions
- Materials BS879
- Finished diameter
- Gravel Pack / Seals

- **Development**

- Airlift method
- Acidisation
- Hydrofracturing

- **Pump Testing**

- EA Consents
- Step Test
- Constant rate to waste and recharge
- Local borehole monitoring

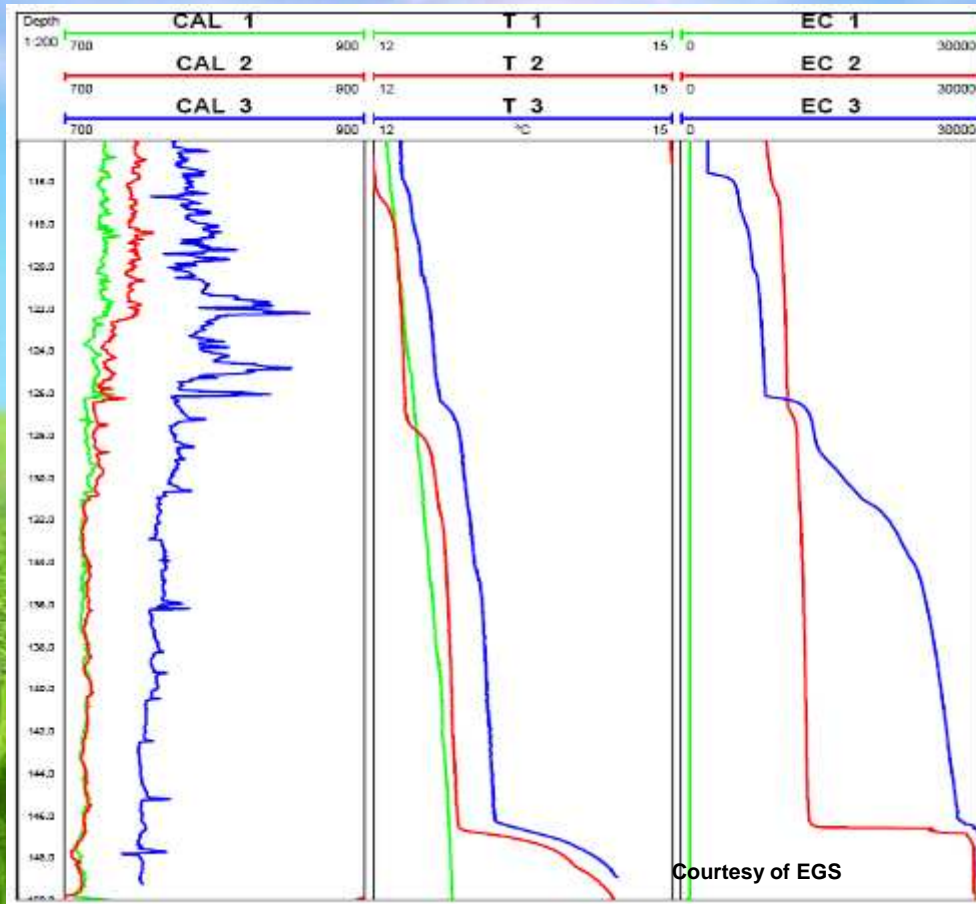
- **Quality Assurance**

- DTH Geophysics
- CCTV
- Flow testing
- Grout cubes

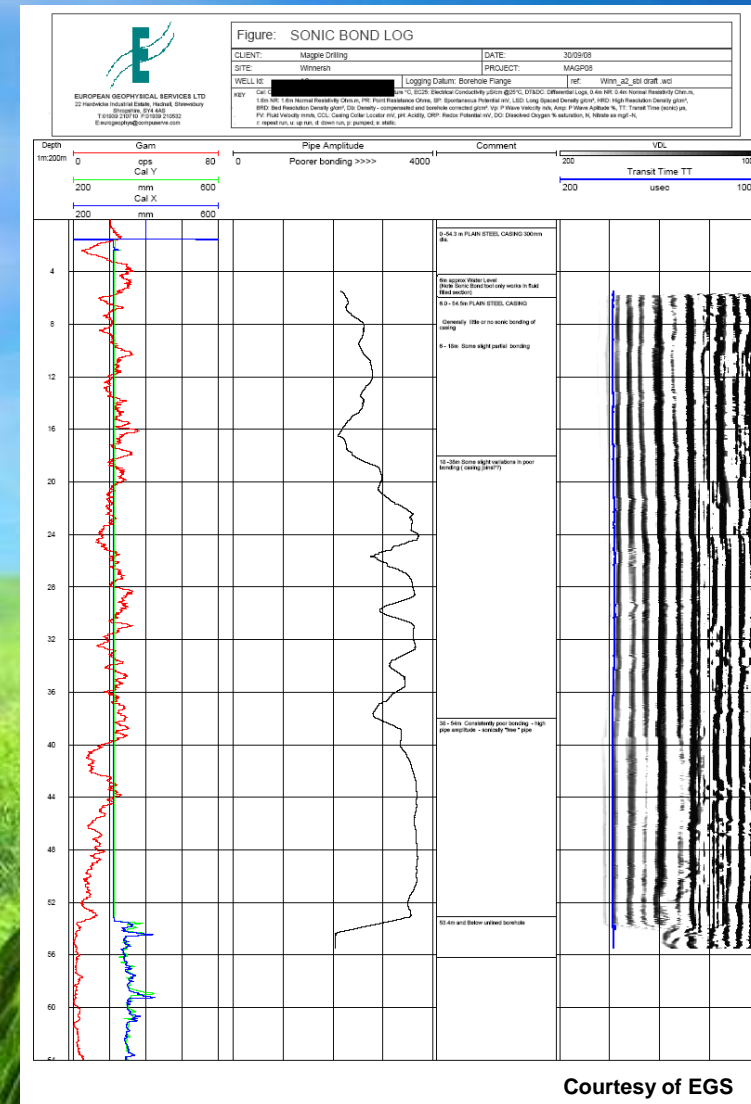
# DTH GEOPHYSICS

Effects of  
Acidisation

Poor Grouting  
of Casing



Courtesy of EGS



Courtesy of EGS

# SITE EXPECTATIONS

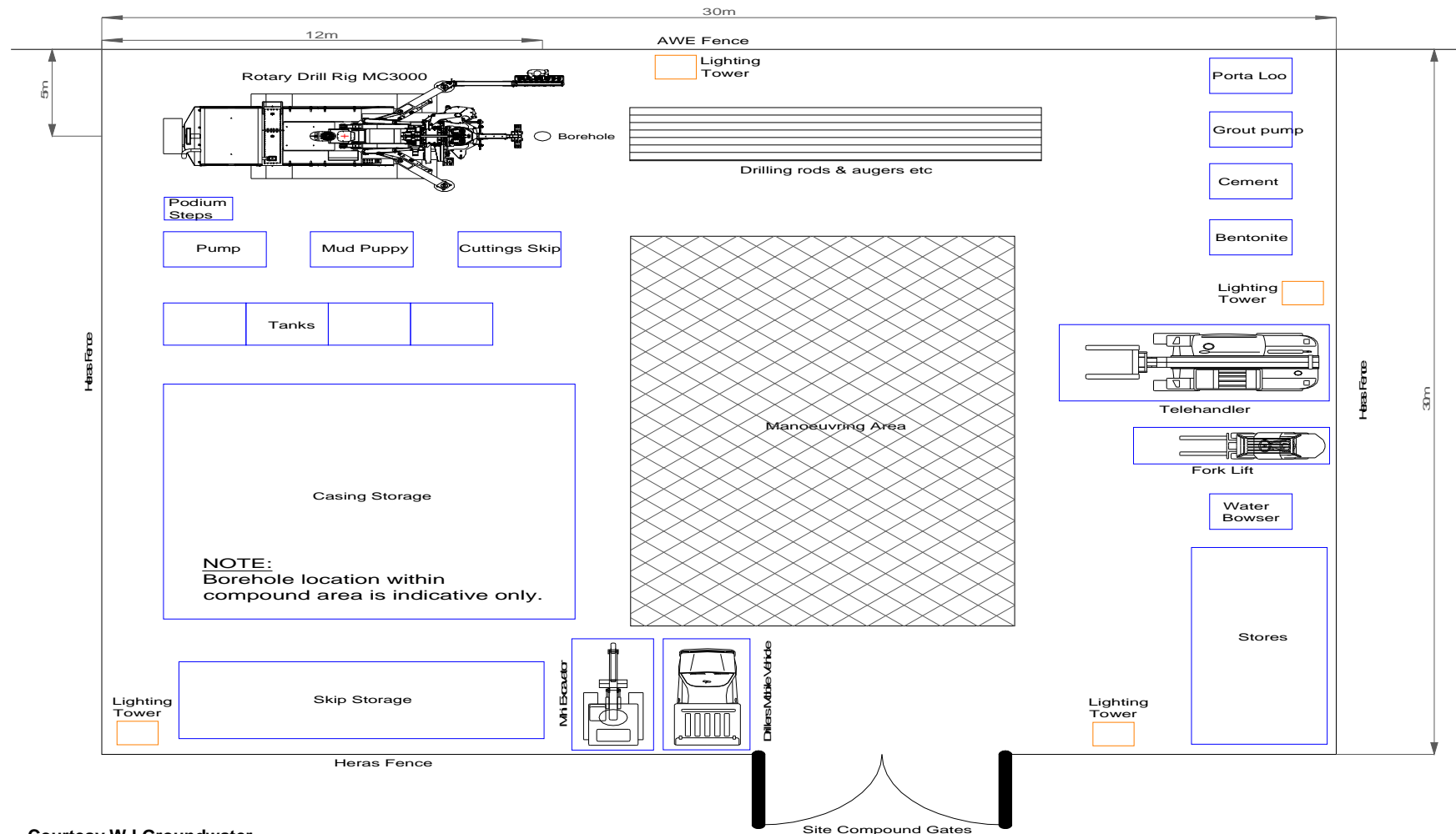


- **Tender Stage**
  - Site Visits by Drilling Company
- **Post Tender Liaison**
  - Key Project Staff
- **Site Tidiness Issues**
  - Make it Clear
- **Allowable Working Area**
  - Be Understanding
- **Programme**
  - Flexibility





# Typical Site Setup



Courtesy WJ Groundwater

# DRILLING METHODS



- **Mud Flush** - **Controlled system**
- **Air Flush** - **Potential water problems**
- **Air Hammer** - **Noise and water problems**
- **CFA** - **Limited capability**



# MANAGEMENT AND EXPERTISE



- Health and Safety
- Site Supervision
- Project Management
- Technical Support
- Quality Assurance
- Accreditation



# MAGPIE OVERVIEW



- ***The UK's leading renewable energy drilling company***
- 18 modern bespoke drilling rigs - more on order for 2009/10
- ***We have successfully drilled and installed some of the largest geothermal projects in the UK with the leading Main Contractors***
- Fully trained geologist as an integral part of the team
- ***We have over 50 years experience within our management team alone***
- MD has helped develop some of the most modern specialist rigs in the UK
- ***Only use recognised first class suppliers and equipment***







**THANKS FOR LISTENING**

[www.magpiedrilling.co.uk](http://www.magpiedrilling.co.uk)

[michael@magpiedrilling.co.uk](mailto:michael@magpiedrilling.co.uk)

Tel. 0191 236 8129

Mob. 0772 5203071