

# Geothermal Drilling Certification



Wednesday 16th October 2011  
Homerton College  
CAMBRIDGE

**Brian Stringer**  
**BDA National Secretary**



# ***BRITISH DRILLING ASSOCIATION***

- Trade Association - founded 1976  
(Geological Society Oct 22<sup>nd</sup>)



- Member of



and

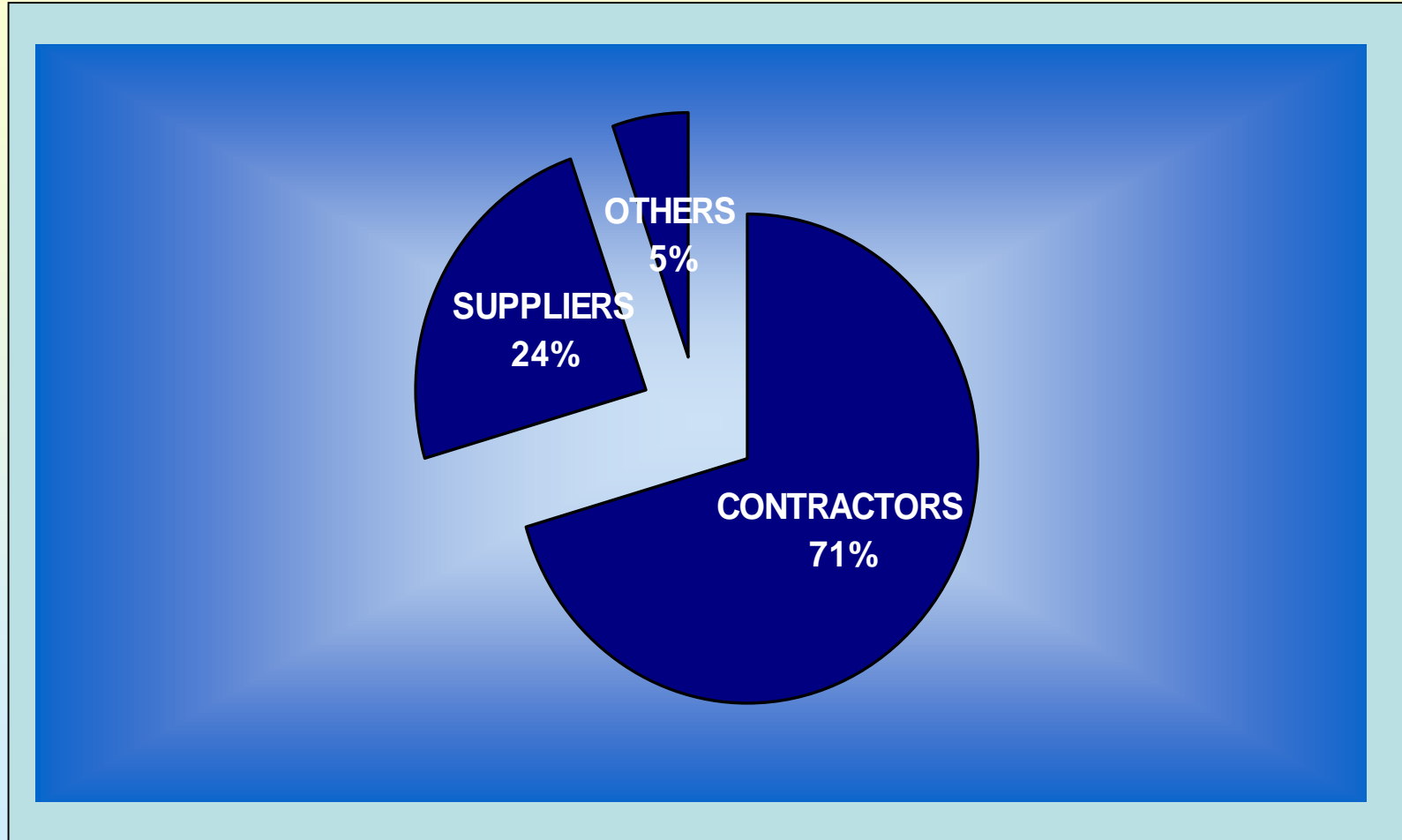


and



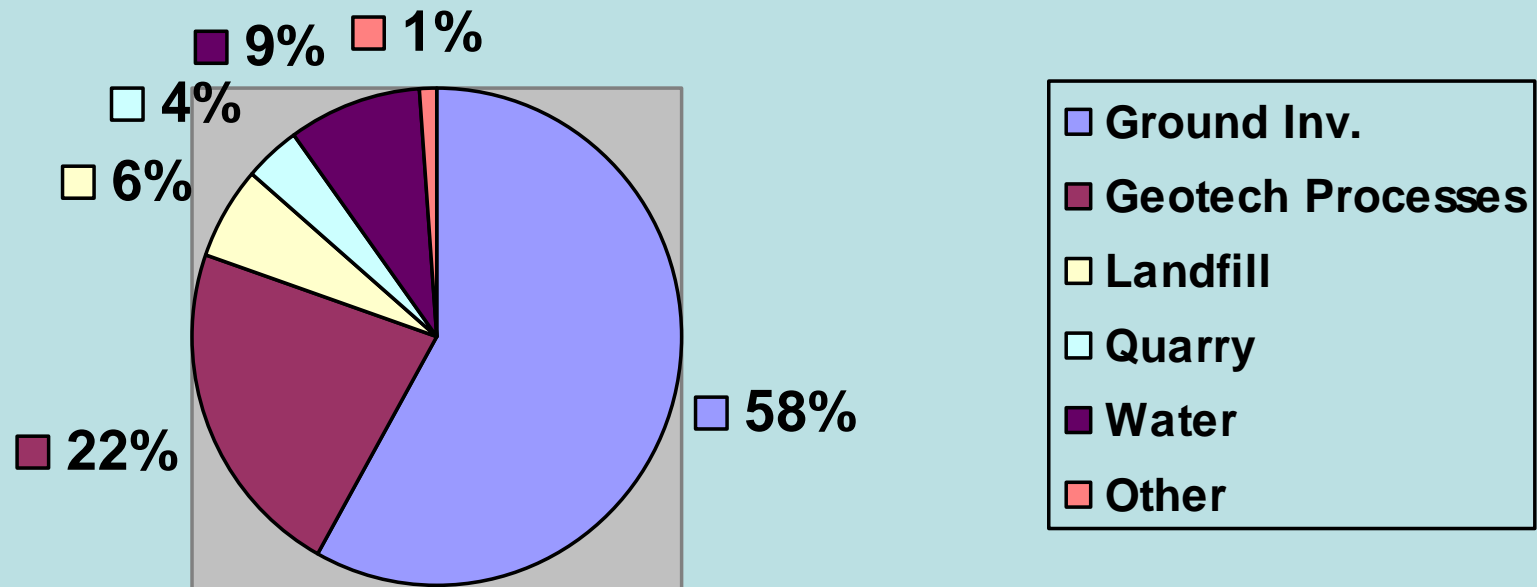
- All Ground Drilling Disciplines excluding Oil/Gas
- Contractors, Manufacturers, Consulting & Civil Engineers, Laboratories, Academics etc.
- 110+ Corporate members
- ***“Committed to Excellence in Health & Safety, Quality of Workmanship and Technical Standards for the Benefit of the Drilling Industry and its Clients”***

# ***BRITISH DRILLING ASSOCIATION***



# ***BRITISH DRILLING ASSOCIATION***

**CONTRACTOR ACTIVITY (by number of companies)**

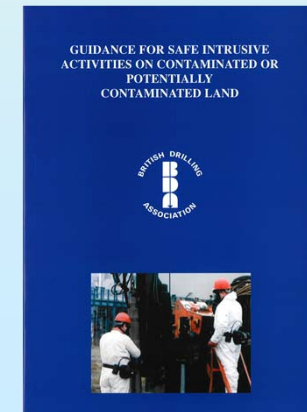
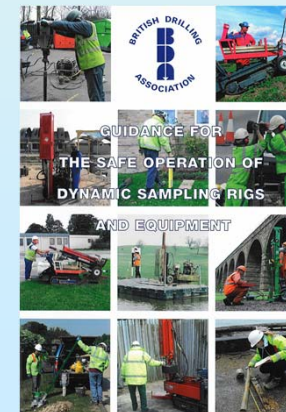
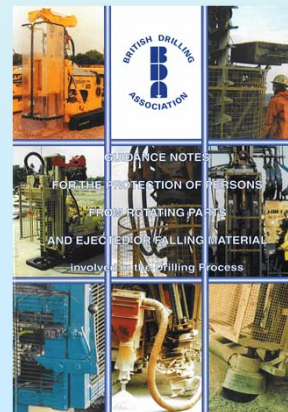
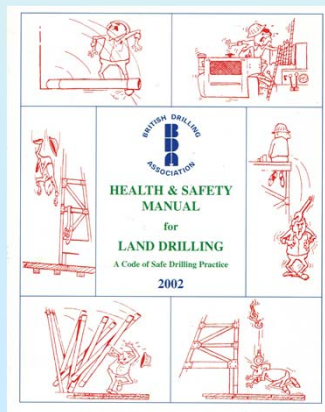


THIS CHART DOES NOT REPRESENT VALUE OF WORKS DONE

# BRITISH DRILLING ASSOCIATION

## SAFETY PUBLICATIONS

- Specific to drilling sector
- Establishes sector safety standards
- HSE supports and helps in their production
- 5 produced in 10 years
- 3 were partially funded by CITB ConstructionSkills
- Funding allows a consultant to be employed
- Sales provide income to BDA



# ***GEOHERMAL DRILLING CERTIFICATION***

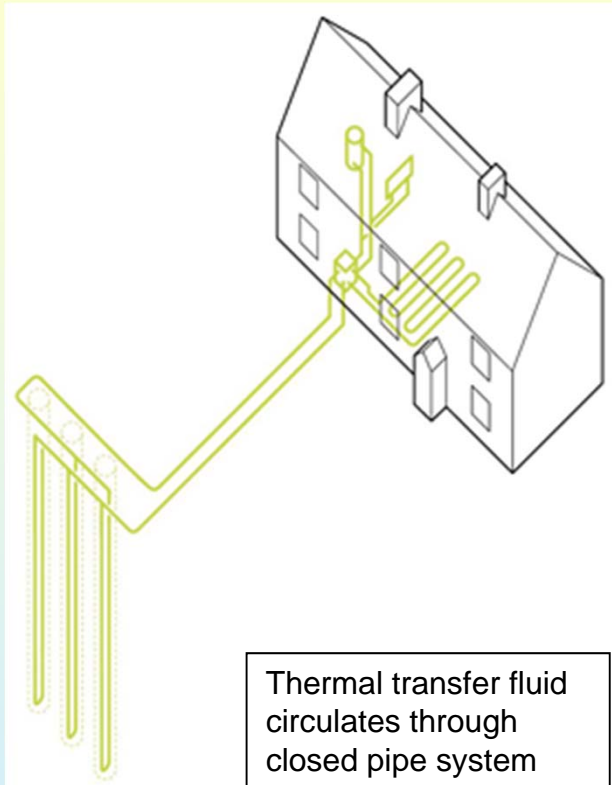
- **WHAT WILL CERTIFICATION ACHIEVE?**
- **WHY CERTIFICATION?**
- **WHAT ARE THE DRIVERS?**
- **WHAT'S THE PROGRESS ON CERTIFICATION?**
- **WHO WILL IT COVER?**
- **WHAT WILL BE THE PROCESS?**

# ***WHAT IS GEOTHERMAL DRILLING?***

- Geothermal Drilling is a specialist activity to install geothermal **closed loops** into the ground or construct water wells/boreholes for extraction/discharge of ground water (**open loops**) as part of installation of a Ground Source Heat Pump system.
- Geothermal Drilling is considered as the drilling and installation of heat exchanger to depths of up to 400m and **termed elsewhere as shallow geothermal drilling**.

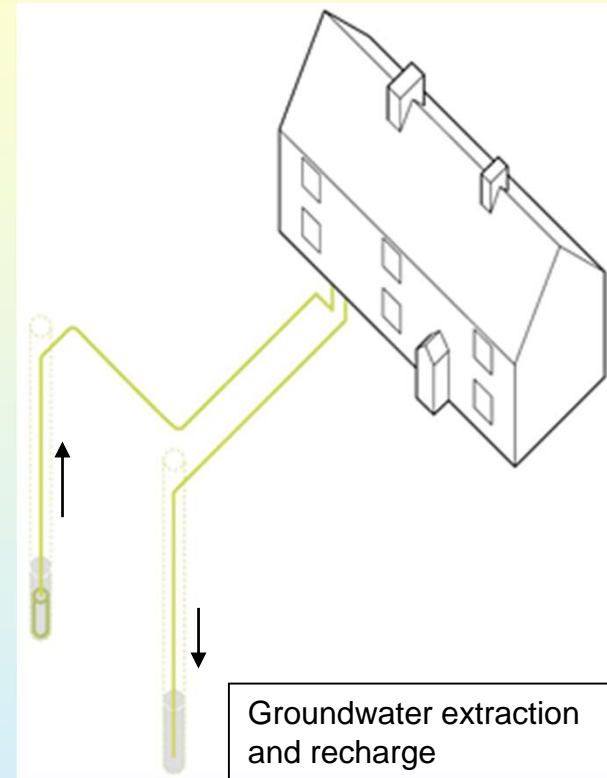


# WHAT IS GEOTHERMAL DRILLING?



## **Closed vertical loop (also inclined, radial)**

The ideal choice when available land surface is limited. Drilling equipment is used to bore small-diameter holes (150mm) from generally 50m to 150m deep.

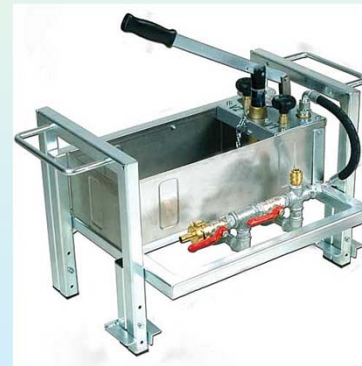


## **Open loops**

Open loop systems utilise ground water as a direct energy source. In ideal conditions, an open loop application can be the most economical type of geothermal system.



# ***GEOHERMAL DRILLING PLANT***



VARIETY OF RIGS, MUD MIXING UNITS,  
HOSE REELS, PRESSURE TESTING  
EQUIPMENT ETC.

# ***WHAT WILL CERTIFICATION ACHIEVE?***



- Increase in client confidence (happy customers)



- Quality ground heat exchanger installations



- Conformance to legislation, standards, codes of practice, industry guidance, benchmarks etc.



- Fair competition (level playing field)



# ***WHAT WILL CERTIFICATION ACHIEVE?***



- **Environmentally friendly drilling**



- **Greater safety**



- **Trained, qualified and competent workforce**



- **Exclusion of 'cowboys'**



## ***WHY CERTIFICATION ?***

- **Self-certification no longer acceptable**
- **Have been rogue jobs already e.g. pipe lengths not to specification; poor backfilling; artesian water flooding**
- **Entry level is too easy to achieve**
  - **buy a rig, employ a JCB driver = drilling contractor**
- **Pending legal actions for leaking GHEs**
- **GHEs have to be fit for 50 years (and still work after 2)**
- **Influx of inexperienced people will cause safety issues**
- **Reputation of drilling sector will take a hit**



# ***WHAT ARE THE DRIVERS ?***

- **GOVERNMENT**

- Wants quality GSHP installations
- No loss of customer confidence or market setback
- UK energy security is a major factor
- Electrical heating high on agenda
- MCS Certification required for pumps / installers
- Recognises that drilling is a weak link



- **INDUSTRY**

- Needs sustained growth
- Can't afford setbacks
- Needs supply of competent drilling contractors
- Trade Associations united for drilling certification

## ***PROGRESS ON CERTIFICATION ?***

- **MARCH 2011**

- BDA awarded £39,550 grant by



- Develop Geothermal Drilling Sector Scheme (GD-SAS)
  - Promote to sector

- **APRIL – JULY 2011**

- Sector Scheme Advisory Committee (SSAC) formed
  - Chairman Professor Barry Clarke (Vice President ICE)
  - Secretary Brian Stringer. Consultant John Grainger.
  - Cross industry participation (clients, consultants, trade associations, contractors etc.)
  - Met 4 times to work on scheme document

# PROGRESS ON CERTIFICATION ?

- **AUGUST 2011**

- **Scheme document (SSD) approved by SSAC**
- **88 pages**
- **A considerable effort by all involved**



- **SEPTEMBER 2011**

- **SSD → UKAS (United Kingdom Accreditation Service) for its approval**
- **First regional seminar (London) 16<sup>th</sup>**
- **Second seminar (Solihull – Motorcycle Museum) 29<sup>th</sup>**



## ***PROGRESS ON CERTIFICATION ?***

- **OCTOBER / NOVEMBER 2011**
  - UKAS approval
  - Publication on UKAS website
  - Certification Bodies apply for accreditation (to audit and award certification)
  - 2 more regional seminars (Manchester 13<sup>th</sup> Oct, Glasgow 25<sup>th</sup> Oct)
- **DECEMBER 2011**
  - Seminar – Bristol 1<sup>st</sup> Dec, Newcastle 13<sup>th</sup> Dec
- **EARLY 2012**
  - First audits carried out and certificates awarded



# ***PROGRESS ON CERTIFICATION ?***



- **OCTOBER 2011**

- **BDA awarded £93,220 grant from**
- **19 month Project**
- **Geothermal Drilling - Qualifications, Training & Skills Development**
- **Upskill existing workforce / train & qualify new entrants**



# WHO WILL IT COVER ?

## ORGANIZATIONS OFFERING FOLLOWING SERVICES

CATEGORY	SUB CATEGORY	CODE
CLOSED LOOP (Drilling & Installation)	Up to 100m depth	GD/CLS/DIB
CLOSED LOOP (Drilling & Installation)	Greater than 100m depth	GD/CLD/DIB
PRESSURE & FLOW TESTING	Closed Loop	GD/CL/PFT
THERMAL RESPONSE TESTING	Closed Loop	GD/CL/TRT
HEADWORKS INSTALLATION	Closed Loop	GD/CL/H
OPEN LOOP (Drilling & Installation)	Any Depth	GD/OL/DIB
ACIDISATION	Open Loop	GD/OL/AC
PUMPING TEST	Open Loop	GD/OL/PT
HEADWORKS INSTALLATION	Open Loop	GD/OL/H

# ***WHAT WILL BE THE PROCESS ?***

- **UKAS SECTOR SCHEMES**

- Are not new
- Some 25 schemes are in existence
- Mainly in highways sector (Highways Agency)
- Are bespoke quality management schemes
- BS 9001 with real relevance (not uninformed paper chase)
- Refer directly to specific requirements of the sector
- Conformity with sector standards, competencies etc.
- Geothermal Drilling will be scheme 29A



## ***WHAT WILL BE THE PROCESS ?***

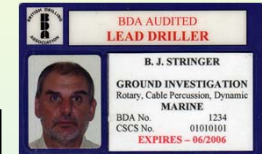
- **BS 9001 Quality Management**
  - Builds on this
  - Organizations must have or obtain BS 9001
- **CERTIFICATION BODIES**
  - Apply to UKAS for accreditation
  - Must have auditors familiar with and knowledgeable about the sector
  - Audit according to scheme document requirements
- **ORGANIZATIONS**
  - Apply to an accredited certification body to be audited for one or more of the Geothermal Drilling categories

# ***WHAT WILL BE THE PROCESS ?***

- **SCHEME DOCUMENT REQUIREMENTS**
  - Detailed according to geothermal drilling category

## **SOME EXAMPLES**

- Drilling operatives NVQ and BDA AUDIT qualified
- All staff suitably trained, experienced, qualified
- Welfare matches CDM requirements
- Plant & equipment is PUWER & LOLER inspected
- Closed loop installation conforms to GSHPA standards
- EA heating & cooling guidance is complied with
- Safety matches BDA Health & Safety CoP
- Documented completion reports
- Coal Authority permissions obtained



## ***RELATIONSHIP TO MCS CERTIFICATION***

- **MCS (MIS 3005)**
  - “Requirements for contractors undertaking the supply, design, installation, set to work, commissioning and handover of microgeneration heat pump **systems**”
  - **System Installation includes drilling / GHE installation**
  - “Any work ... not undertaken by employees of the contractor shall be managed through a formal subcontract agreement ... in accordance with policies and procedures employed by the certified contractor”
  - **Geothermal Drilling certification will be made a requirement for in-house / subcontracted drilling**

# ***SUMMARY***

- **A GSHP SYSTEM IS ONLY AS GOOD AS ITS WEAKEST LEAK**
- **CONTRACTOR / SUBCONTRACTOR CERTIFICATION REQUIRED FOR ALL PARTS OF SYSTEM**
- **GEOHERMAL DRILLING CERTIFICATION NEEDED**
- **AVAILABLE SHORTLY**

