

## Mine Workings Treatment Contract Mawdesley to Warrington Gas Pipeline.

**Period** – 2000/2002    **Value** - Stage 1 - £695k, Stage 2 - £2.1m  
**Client** – Stage 1— Transco. Stage 2—Transco/McAlpine Preussag JV  
**Designer** – Wardell Armstrong  
**Date**—Stage 1 May -September 1999, Stage 2 - March - August 2000

Major site investigation and mine workings treatment scheme for 40km gas pipeline.

### Stage 1 - Description of Work:

Investigation of near surface ground conditions and shallow coal workings along the 40km route of the proposed pipeline, in order to assess potential sources of instability. Work included;

- 336No. rotary open hole and cored holes up to 50m depth
- 1250m of coring and 11,300m of rotary open hole
- Rotary percussive probing to locate 7No. Mineshafts
- Drilling in artesian water conditions requiring use of wellhead control systems
- Sampling and logging of boreholes and cores
- In-situ testing in boreholes e.g. SPT permeability
- Installation of stand pipes
- Geophysical logging of selected boreholes
- testing of soil and rock samples
- Production of completion report.



Drilling work was carried out by Casagrande C6S 'Dual Head' and Klemm KR904 Geotechnical Drilling Rigs.

The Dual Head system enables rapid simultaneous casing of holes in areas where up to 40m of loose sands and gravels were present.

The majority of the work was in agricultural and farmland areas, and clean drilling methods were used to comply with the strict environment controls that were established.

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### Stage 2 - Description of Work:

The investigation phase was followed by a major shallow mine workings treatment scheme over 26km of the pipeline route. This included;

- Further site investigation drilling to each treatment grid area to confirm final extent of stabilisation work
- Drilling 10,000 grout holes to depths of up to 60m
- Drilling through up to 40m of unstable overburden with specialist overburden drilling systems
- Drilling in areas with artesian water conditions using integral wellhead systems to prevent potentially contaminated mine water loss
- Injecting 50,000t of pfa and pfa/sand based grout
- Treatment of fissures and other geotechnical abnormalities beneath roads, canals and railway lines
- Working concurrently in several different areas of the site at once and resourcing 15 drilling rigs and 6 grouting set ups to meet the short 15 week programme
- The project required strict environmental controls to be observed which included preparing working platforms for each treatment grid surrounded by a collection bund for flush returns and surface run off. Collected flush returns were taken to water treatment facility by tractor/tanker



- Work also included annulus grouting of pipelines in tunnelled crossings of roads, canals and railway lines using bentonite based non shrink grouts