

# P J HIRONS

**DRILLING CONTRACTOR**  
**BOREHOLES FOR WATER SUPPLY**

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For the attention of Mr Robert Hoogeveen  
 By Facsimile 01743 248600 (Four Pages)

9 July 2003

Dear Robert

## BROMSGROVE CHADWICH LANE QUARRY CONSTRUCTION OF OBSERVATION BOREHOLES BOREHOLE DRILLING RECORDS

With reference to Salop Sand & Gravel Supply Co Ltd orders 6/2503 and 7/0303 we confirm that sitework was carried out during the period 30<sup>th</sup> June to 3<sup>rd</sup> July 2003 and the record of strata penetrated as assessed by the driller and the detail of each installation are set out below:

**BOREHOLE 1** Assessed relative ground level 189.9m. NGR SO 9609 7670, both using GP system.

DRILLING RECORD		Driller comments
Ground level to 2.2m	Topsoil	
2.2 to 3.4m	Red sand	
3.4 to 4.1m	Stoney band	
4.1 to 6.2m	Moist red sandstone	Temporary casing to 6m
6.2 to 18.6m	Soft red sandstone	
18.6 to 22.4m	Dark red silty sandstone	Moist drilling
22.4 to 26.1m	Red Sandstone	Dry drilling
26.1 to 27.2m	Brown/ Red sandstone	Wet drilling
27.2 to 41.0m	Red brown sandstone	Drilling completed at 41.0m

Groundwater first observed at 26.1m depth.

INSTALLATION	
41 to 16m	50mm diam slotted hdpe casing with 650 micron filter sock and end cap.
16 to 0.3m AGL	50mm diam hdpe casing
0.5m BGL to .5m AGL	200mm diam steel casing with locking cap concreted in place
41 to 15m	Granular filter
15 to 13m	Bentonite seal
13 to 0.5m	Material arising

The rest water level 24 hours after the installation was completed was 35.5m BGL.

BROMSGROVE CHADWICH LANE QUARRY  
CONSTRUCTION OF OBSERVATION BOREHOLES  
BOREHOLE DRILLING RECORDS (Cont.)

BOREHOLE 2 Assessed relative ground level 183.2m, NGR SO 9584 7661, both using GP system

DRILLING RECORD		Driller comments
Ground level to 0.75m	Topsoil	No temporary casing
0.75 to 1.25m	Brown clay	
1.25 to 2.1m	Stoney band in clay	
2.1 to 10.2m	Red sand	
10.2 to 10.7m	Marl band	
10.7 to 19.2m	Dark red sandstone	
19.2 to 20.0m	Silty marl band	
20.0 to 21.0m	Red sandstone	Wet drilling from 21.0m
21.0 to 36.0m	Red brown sandstone	Drilling completed at 36.0m

Groundwater first observed at 21.0m depth.

INSTALLATION	
36 to 11m	50mm diam slotted hdpe casing with 650 micron filter sock and end cap.
11 to 0.3m AGL	50mm diam hdpe casing
0.5m BGL to .5m AGL	200mm diam steel casing with locking cap concreted in place
36 to 10m	Granular filter
10 to 8m	Bentonite seal
8 to 0.5m	Material arising

The rest water level 24 hours after the installation was completed was 20.15m BGL.

BOREHOLE 3 Assessed relative ground level 196.6m NGR SO 9568 7673, both using GP system

DRILLING RECORD		Driller comments
Ground level to 2.0m	Brown boulder clay	
2.0 to 16.2m	Red brown sandstone with gravel bands	Temporary casing to 3m
16.2 to 18.4m	Brown sandstone with silty clay bands	Moist
18.4 to 26.5m	Red brown sandstone	
26.5 to 27.4m	Red brown sandstone	Moist
27.4 to 36.25m	Silty sandstone	
36.25 to 63.0m	Red sandstone	Wet drilling from 48.5m Drilling completed at 63.0m

Groundwater first observed at 48.5m depth, rose to 46.6 after one hour.

INSTALLATION	
63 to 38m	50mm diam slotted hdpe casing with 650 micron filter sock and end cap.
38 to 0.3m AGL	50mm diam hdpe casing
0.5m BGL to .5m AGL	200mm diam steel casing with locking cap concreted in place
63 to 37m	Granular filter
37 to 35m	Bentonite seal
35 to 0.5m	Material arising

The rest water level 24 hours after the installation was completed was 35.51m BGL.

**BROMSGROVE CHADWICH LANE QUARRY  
CONSTRUCTION OF OBSERVATION BOREHOLES  
BOREHOLE DRILLING RECORDS (Cont.)**

**BOREHOLE 4** Assessed relative ground level 177.4m, NGR SO 9547 7665, both using GP system

DRILLING RECORD		Driller comments
Ground level to 0.3m	Topsoil	No temporary casing
0.3 to 0.8m	Brown sandstone	
0.8 to 1.2m	Dark brown sandstone	
1.2 to 8.0m	Red brown sandstone	
8.0 to 13.25m	Red brown sandstone	Moist
13.25 to 15.0m	Red brown sandstone	Dry
15.0 to 24.5m	Red brown sandstone	Moist
24.5 to 30.25m	Red brown sandstone	Dry
30.25 to 33.0m	Red brown sandstone	Mainly dry
33.0 to 48.0m	Red brown sandstone	Damp
		Wet
Drilling completed at 48.0m		

Groundwater first observed at 33.0m depth.

INSTALLATION	
48 to 23m	50mm diam slotted hdpe casing with 650 micron filter sock and end cap.
23 to 0.3m AGL	50mm diam hdpe casing
0.5m BGL to .5m AGL	200mm diam steel casing with locking cap concreted in place
48 to 22m	Granular filter
22 to 20m	Bentonite seal
20 to 0.5m	Material arising

The rest water level 24 hours after the installation was completed was 28.73m BGL.

**BOREHOLE 5** Assessed relative ground level 176.6m, NGR SO 9530 7686, both using GP system

DRILLING RECORD		Driller comments
Ground level to 1.4m	Topsoil	No temporary casing
1.4 to 3.2m	Red sand	Stoney band 3.0 to 3.2m
3.2 to 12.1m	Red sandstone	
12.1 to 17.6m	Red sandstone	Moist
17.6 to 19.6m	Dark brown sandstone	
19.6 to 21.3m	Silty marl band	
21.3 to 26.7m	Red brown sandstone	
26.7 to 27.9m	Red sandstone	Damp
27.9 to 30.0m	Dark red silty sandstone	
30.0 to 45.0m	Red sandstone	Wet drilling from 30.0m
Drilling completed at 45.0m		

Groundwater first observed at 30.0m depth.

INSTALLATION	
45 to 20m	50mm diam slotted hdpe casing with 650 micron filter sock and end cap.
20 to 0.3m AGL	50mm diam hdpe casing
0.5m BGL to .5m AGL	200mm diam steel casing with locking cap concreted in place
45 to 19m	Granular filter
19 to 17m	Bentonite seal
17 to 0.5m	Material arising

The rest water level 24 hours after the installation was completed was 25.81m BGL.

BROMSGROVE CHADWICH LANE QUARRY  
CONSTRUCTION OF OBSERVATION BOREHOLES  
BOREHOLE DRILLING RECORDS (Cont.)

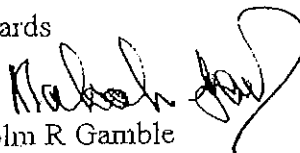
**BOREHOLE 6** Assessed relative ground level and NGR Not assessed.

DRILLING RECORD		Driller comments
Ground level to 10.0m	Grey landfill material	No temporary casing
		Drilling completed at 10.0m

Groundwater was not observed during drilling. Disturbed samples from the drill returns were taken at depths of 4, 7 and 10 metres depth.

No installation was required.

Regards



Malcolm R Gamble  
For and on behalf of P J Hirons