



Our Ref: E19/7366/DP/001A

12th May 2022

FAO Stewart Brown

Stewart@yorkshirecountryproperties.co.uk

Dear Sir,

Re: Development at Station Road, Skelmanthorpe

Following the Phase 2 Site Investigation works it was found that the site lies directly adjacent a former open cast mine, with a small portion of the potential workings encroaching on the northern boundary of the site. At present intact coal has been proven in the remaining boreholes on site.

Gas testing was therefore undertaken at the above development to confirm if elevated gases from nearby mine workings would adversely affect the development.

Four boreholes were constructed and installed with gas monitoring standpipes and lockable covers. The standpipes were backfilled with single size gravels and sealed with bentonite. One of the monitoring points was located in the deeper zone of fill, found on the site boundary adjacent the former open cast mine.

Six rounds of gas monitoring were undertaken between 6th March and 5th June 2019 using a Gas Data GFM436.

The results to date are tabulated in the Appendix.

The gas monitoring was undertaken over a range in barometric pressures between 996mb and 1009mb. With the readings being carried out under falling barometric pressure.

During the first set of readings, both BH01A and BH04A were flooded to the surface, recording a water level of 0m below ground level. As the water level was above the top of the slotted pipe, there was no air space for the ground gas ingress and a response zone of 0m has been recorded.

On 29th March 2019, BH01A and BH07A recorded initial peak levels of methane of 0.5%. This quickly dropped to zero and a steady reading of no methane detected was recorded. No methane has been detected within any of the boreholes on any other occasion. This is considered an anomaly, from the artificial confined conditions within the standpipe where it is possible for the gases to accumulate.

Carbon dioxide values were found between 0.0 and 3.8% with oxygen levels between 10.8 and 20.6%.

No flow was recorded in any of the samples. However on 06th March 2019, BH01 recorded an exceptionally high flow level of 16.2l/hr. It was determined that the high flow level was a result of a high water level in the borehole, creating a reduced

response zone and increased pressure. The high flow rate has therefore been disregarded for the discussions below.

Discussions

Based on a high sensitivity end use under the NHBC traffic light system in conjunction with CIRIA C665, the GSV value corresponds to the site being characterised as **Green**. The GSV value is obtained by multiplying the maximum gas concentration by maximum borehole flow rate.

i.e. Carbon Dioxide – $0.038 \times 0.1 = 0.0038$ l/hr.

In addition, we can confirm that the site is not within an area where radon protection measures are required.

When consulting BS 8485:2015 Table 2 the site can be characterised as CS1 for Type A buildings, therefore gas protection measures are not required. The following foundation construction details are therefore proposed.

- Fully vented minimum 150mm deep void below suspended slab. Based on medium shrinkability clays, voids should be increased to 250mm where the proximity of trees affect the foundation construction.
- Continuous membrane across the cavity/party walls.
- Cavity tray in the external walls.
- Fully sealed service entries and ducts to manufactures specification.
- Beam and block floor
- A 1200 Gauge Visqueen DPM installed to manufacturers specification.

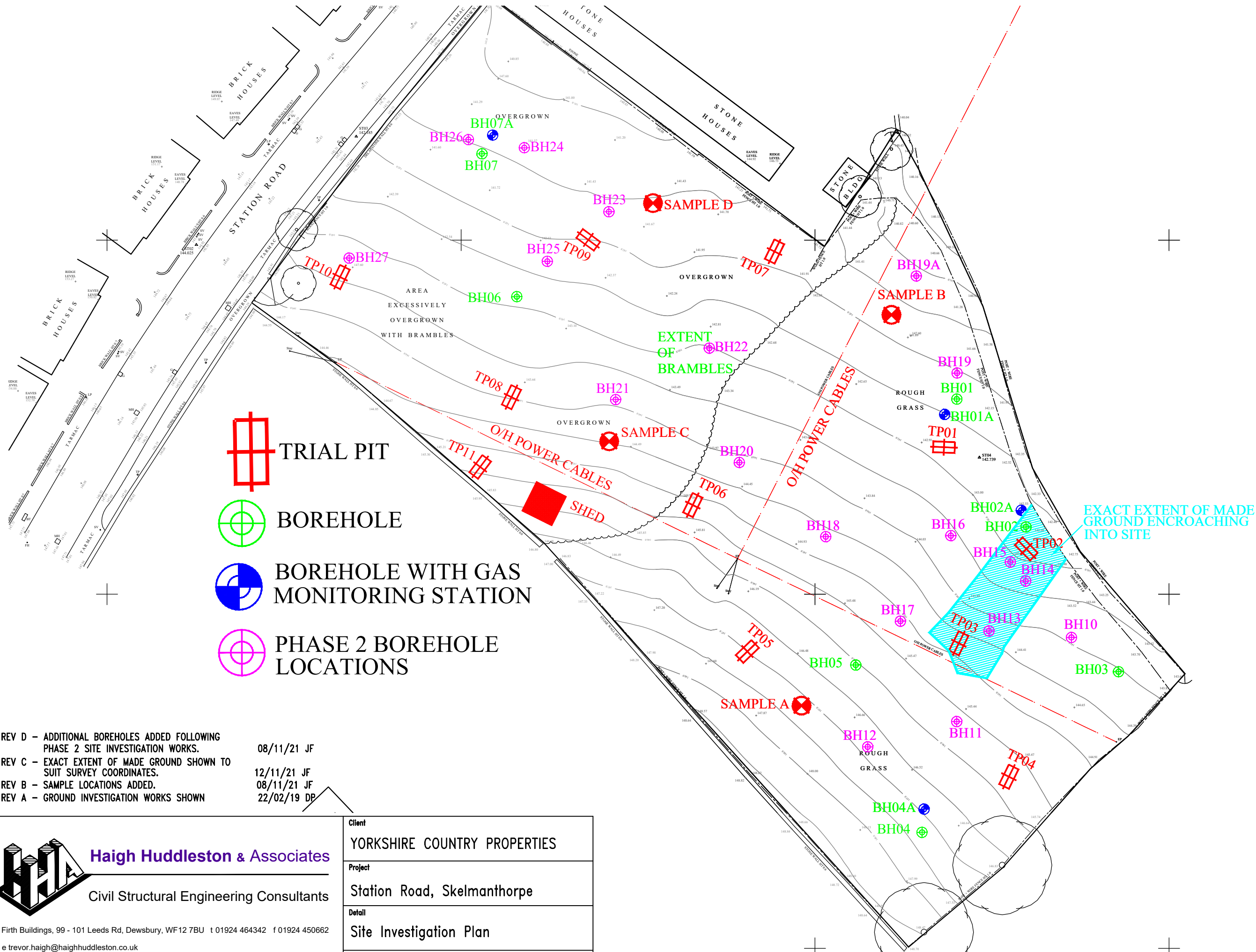
We hope that the above is sufficient for your requirements. However, should you have any queries please do not hesitate to contact me direct.

Yours sincerely,

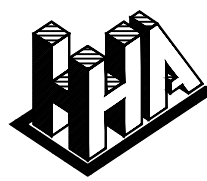


DANIEL PERCIVAL
d.percival@haighhuddleston.co.uk

Appendix



REV D - ADDITIONAL BOREHOLES ADDED FOLLOWING
PHASE 2 SITE INVESTIGATION WORKS. 08/11/21 JF
REV C - EXACT EXTENT OF MADE GROUND SHOWN TO
SUIT SURVEY COORDINATES. 12/11/21 JF
REV B - SAMPLE LOCATIONS ADDED. 08/11/21 JF
REV A - GROUND INVESTIGATION WORKS SHOWN 22/02/19 DP



Haigh Huddleston & Associates
Civil Structural Engineering Consultants

Firth Buildings, 99 - 101 Leeds Rd, Dewsbury, WF12 7BU t 01924 464342 f 01924 450662
e trevor.haigh@haighhuddleston.co.uk

Client	YORKSHIRE COUNTRY PROPERTIES
Project	Station Road, Skelmanthorpe
Detail	Site Investigation Plan
Scale	1/500@A3 DP
Dwn	JM
Chkd	14-01-19
Date	
Dwg No.	E18/7366/03D

SITE:	Station Road, Skelmanthorpe	
CLIENT:	Yorkshire Country Properties	
JOB NO:	7366	
SHEET NO:	1	

GAS MONITORING RESULTS

	GAS CONCENTRATIONS												FLOW DATA				Qhg per borehole		WELL AND WATER DATA				A Pressure (mB)	Comments
Monitoring Point	Methane (%v/v)		%LEL		Carbon dioxide (%v/v)		Oxygen (%v/v)		H2S (ppm)	CO (ppm)	Hex (%)	PIDCf ()	Flow rate (l/hr)		Differential borehole Pressure (Pa)	Time for flow to equalise (secs)	Methane (l/hr)	CO2 (l/hr)	Water level (mbgl)	Depth of well (m)	Response Zone			
	Peak	Steady	Peak	Steady	Peak	Steady	Min	Steady					Steady	Peak										
Ambient Air							20.3	20.3									-	-				962	Time: 2.15pm Date: 06.03.19	
BH01A	ND	ND	ND	ND	1.7	1.7	16.0	16.0	0.0	0.0	0.024	1.0	-16.0	10.2	-186		NR	0.272	0.00	3.20	0.00m	962	Ground wet, cold, rainy	
BH02A	ND	ND	ND	ND	3.8	3.7	10.8	10.8	0.0	0.0	0.025	1.0	ND	ND	-195		NR	0.0038	DRY	3.20	1.00 - 3.20m	962		
BH04A	ND	ND	ND	ND	0.9	0.0	16.2	16.0	0.0	0.0	0.024	1.0	ND	ND	0		NR	0.0009	0.00	3.20	0.00m	962		
BH07A	ND	ND	ND	ND	2.3	2.3	12.2	12.1	0.0	0.0	0.027	1.0	ND	ND	0		NR	0.0023	1.60	3.20	1.00 - 1.60m	962		
Ambient Air							20.3	20.3									-	-				1014	Time: 2pm Date: 29/3/19	
BH01A	0.5	ND	10.0	ND	1.3	1.3	18.2	18.2	0.0	0.0	0.029	1.0	ND	ND			0.0005	0.0013	2.60	3.20	1.00 - 2.60m	1014	Ground dry, warm, sunny	
BH02A	ND	ND	ND	ND	1.2	0.8	19.7	19.6	0.0	0.0	0.030	1.0	ND	ND			NR	0.0012	DRY	3.20	1.00 - 3.20m	1014		
BH04A	ND	ND	ND	ND	1.2	0.9	16.2	16.2	0.0	0.0	0.024	1.0	ND	ND			NR	0.0012	2.00	3.20	1.00 - 2.00m	1014		
BH07A	0.5	ND	10.0	ND	1.8	1.8	18.6	18.6	0.0	0.0	0.032	1.0	ND	ND			0.0005	0.0018	1.80	3.20	1.00 - 1.80m	1014	Falling Air Pressure	
Ambient Air							20.3	20.3									-	-				1001	Time: 12.30pm Date: 15/4/19	
BH01A	ND	ND	ND	ND	1.8	1.8	17.6	17.6	0.0	0.0	0.038	1.0	ND	ND	0		NR	0.0018	2.90	3.20	1.00 - 2.90m	1001	Ground dry, warm, windy	
BH02A	ND	ND	ND	ND	2.3	2.3	15.3	15.3	0.0	0.0	0.038	1.0	ND	ND	0		NR	0.0023	DRY	3.20	1.00 - 3.20m	1001		
BH04A	ND	ND	ND	ND	2.4	2.4	15.5	15.6	0.0	0.0	0.036	1.0	ND	ND	0		NR	0.0024	3.10	3.20	1.00 - 3.10m	1001		
BH07A	ND	ND	ND	ND	2.4	2.4	17.5	17.5	0.0	0.0	0.042	1.0	ND	ND	0		NR	0.0024	1.80	3.20	1.00 - 1.80m	1001	Falling Air Pressure	
Ambient Air							20.3	20.3									-	-				1007	Time: 3.30pm Date:29/4/19	
BH01A	ND	ND	ND	ND	1.8	1.8	18.0	18.0	0.0	0.0	0.036	1.0	ND	ND			NR	0.0018	3.00	3.20	1.00 - 3.00m	1007	Ground dry, warm, windy	
BH02A	ND	ND	ND	ND	0.9	1.0	19.0	19.1	0.0	0.0	0.034	1.0	ND	ND			NR	0.0009	3.15	3.20	1.00 - 3.15m	1007		
BH04A	ND	ND	ND	ND	2.1	2.3	15.1	15.1	0.0	0.0	0.032	1.0	ND	ND			NR	0.0021	DRY	3.20	1.00 - 3.20m	1007		
BH07A	ND	ND	ND	ND	2.3	2.4	17.6	17.6	0.0	0.0	0.038	1.0	ND	ND			NR	0.0023	1.80	3.20	1.00 - 1.80m	1007	Falling Air Pressure	
Ambient Air							20.3	20.3									-	-				1001	Time: 1.05pm Date: 16/05/19	
BH01A	ND	ND	ND	ND	1.7	1.7	18.2	18.2	0.0	0.0	0.034	1.0	ND	ND			NR	0.0017	2.90	3.20	1.00 - 2.90m	1001	Ground dry, warm, windy	
BH02A	ND	ND	ND	ND	3.1	3.1	11.6	11.6	0.0	0.0	0.033	1.0	ND	ND			NR	0.0031	DRY	3.20	1.00 - 3.20m	1001		
BH04A	ND	ND	ND	ND	ND	ND	20.6	20.6	0.0	0.0	0.035	1.0	ND	ND			NR	NR	3.10	3.20	1.00 - 3.10m	1001		
BH07A	ND	ND	ND	ND	2.3	2.3	16.9	16.9	0.0	0.0	0.040	1.0	ND	ND			NR	0.0023	1.50	3.20	1.00 - 1.50m	1001	Falling Air Pressure	



Civil & Structural Engineering Consultants

Firth Buildings, 99 -101 Leeds Road, Dewsbury, WF12 7BU

t 01924 464342 f 01924 450662 e trevor.haigh@haighhuddleston.co.uk

[illegible]