

Our Ref C4272/26/E/GM
6th March 2026

Farrar Bamforth Associates Ltd
Bates Mill
Colne Road
Huddersfield
HD1 3AG



For the attention of Joe Hobson

Dear Joe

Ref: Gas Monitoring at Spa Fields Industrial Estate, Slaithwaite

Further to our report on a geo-environmental investigation (C4272/24/E/6581) which was presented in March 2025, we have now completed our gas monitoring programme and present our findings.

Monitoring

Gas monitoring standpipes were installed between 1 in boreholes BH01, BH02 and BH03, and the installation details are shown on the appropriate borehole records, the locations of which are provided on the site plan presented as Appendix 1 of the geo-environmental report. Visits were made to the site between the 12th March and the 2nd April 2025. The results of this work are tabulated below:

Table 1: Gas Monitoring								
Location	Date	CH ₄ (%)	CO ₂ (%)	O ₂ (%)	Flow	Barometric Pressure (mb)	Water Level (m)	Standpipe Depth (m)
BH01	12/03/2025	0.1	0.2	21.3	0.0	987↔	*	2.2
	19/03/2025	0.1	0.3	21.3	0.0	1005↔	2.94	
	26/03/2025	0.1	0.4	20.5	0.0	1005↑	2.95	
	02/04/2025	0.1	0.1	21.1	0.0	1009↓	2.92	
BH02	12/03/2025	-	-	-	-	-	-	1.35
	19/03/2025	-	-	-	-	-	-	
	26/03/2025	0.1	0.5	18.9	0.0	1005↑	*	
	02/04/2025	0.0	0.3	20.7	0.0	1009↓	*	
BH03	12/03/2025	0.0	0.1	21.2	0.0	987↔	*	1.2
	19/03/2025	0.0	0.1	21.3	0.0	1005↔	DRY	
	26/03/2025	0.0	0.1	21.0	0.0	1005↑	DRY	
	02/04/2025	0.0	0.1	20.4	0.1	1009↓	DRY	

↑ - rising pressure ↓ - falling pressure ↔ - steady pressure. *Bung found to be stuck, thus unable to dip water level.

This work was undertaken using a Geotechnical Instruments (UK) Ltd. GA5000 (serial No G503524) which was last calibrated on the 25th October 2024.



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Gas Concentrations

With respect to ground gas, the results of the monitoring visits indicated a maximum concentration of 0.1% methane, with concentrations of carbon dioxide ranging between 0.1% and 0.5%, in association with oxygen levels of between 18.9% and 21.3%. It should be appreciated that on non-contaminated sites there is generally about 20% by volume of oxygen, associated with low levels of carbon dioxide. In addition, a maximum flow rate of 0.1 litres per hour was recorded and will be employed in the following calculations.

The principal driving force for initiating the movement of gas in the ground is a change in barometric pressure. The most onerous gas condition on a site is usually observed on days of low or falling barometric pressure, preferably below 1000mb. It has been noted that measurements undertaken solely during high pressure conditions may be of lesser value. At this site the readings undertaken to date were at atmospheric pressures of between 987mb and 1005mb.

In view of the above, it may be appreciated that the continued gas monitoring has revealed no increases in methane or carbon dioxide concentrations or flow rates. Therefore, the risk assessment and remediation strategy provided in the geo-environmental report should be considered with the comments below.

Risk Assessment

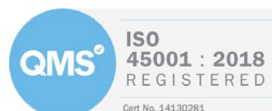
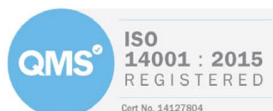
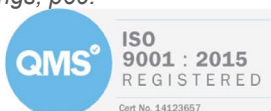
In order to establish the gas screening value (GSV) for carbon dioxide or methane, the maximum gas concentration (expressed as a decimal) is multiplied by the borehole flow rate (l/hr). In this case 0.1% (0.001) methane was recorded along with 0.3% (0.005) carbon dioxide, in association with a flow rate of 0.1 l/hr. This results in a GSV of 0.0001 l/hr for methane and a GSV of 0.0005 l/hr for carbon dioxide.

In accordance with Table 2 of BS8485: 2015, *Code of practice for the design of protective measures for methane and carbon dioxide ground gases for new buildings*, the site may be characterised as *Characteristic Situation Level 1*. It is therefore considered that there is a very low risk of harm to end users and site operatives and no special precautionary measures are required in accordance to Table 8.6, *Typical scope of gas protection measures*, of CIRIA report C665.

With regard to the number of monitoring visits required reference is made to Tables 5.5a and 5.5b of CIRIA report C665 (2007)¹. Accepting that the proposed development is of low sensitivity (commercial) and that the generation potential is very low, these tables suggest that 4 readings could be undertaken over a period of at least 1 month. However, C665 notes that *not all sites will require gas monitoring for the period and frequency indicated in Tables 5.5a and 5.5b*. In this case, a total of 4 monitoring visits were undertaken over a 1 month time period.

In view of the above, it is considered that the site has been fully characterised and no specific gas protection measures are required. The risk to end users is considered to be low and no further action is needed.

¹ Adapted from tables 5.5a and 5.5b of CIRIA C665, 2007, *Assessing risks posed by hazardous ground gas to buildings*, p60.



References

- British Standards Institution (2013), BS 8576 Guidance on Investigations for Ground Gas – Permanent Gases and Volatile Organic Compounds.
- British Standards Institution (2015 +A1:2019) BS8485: *Code of practice for the design of protective measures for methane and carbon dioxide ground gases for new buildings*, B.S.I., London.
- CIRIA Report C665, *Assessing risks posed by ground gasses to building*.

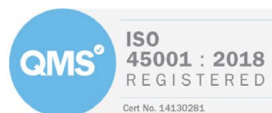
We trust that this information is of interest and should you have any other requirements do not hesitate to contact us.

For Rogers Geotechnical Services Ltd,

Yours Faithfully



Rob Palmer MSc FGS ACIEH
Engineering Director



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CERTIFICATION OF CALIBRATION



PJLA
Calibration

No. 66916



Date Of Calibration: 25-Oct-2024

Certificate Number: G503524_10/36927

Issued by: QED Environmental Systems Inc.

As received Barometric Pressure recorded at: 23.2 °C/73.7 °F

As received gas check readings are only recorded if the instrument is received in a working condition.

Where the instrument is received damaged no reading can be taken.

Date of Issue : 26 Oct 2024

Approved By Signatory

A handwritten signature in blue ink, reading 'Linda Ostrowski', written over a horizontal line.

Linda Ostrowski

Laboratory Inspection

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Calibration Instance: 118

IGC Instance: 118

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QED Environmental Systems Inc. 2355 Bishop Circle West, Dexter, MI 48130

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