Our Ref J3374/16/E
5th April 2016

Ashmount Homes Ltd,
203 Askern Road,
Bentley,
Doncaster
DN5 0JR

For the attention of Gary Manterfield,

Dear Sir,

Ref: Land Off Wombwell Lane, Barnsley S70 3NR.

Further to our report on a geo-environmental investigation (J3374/16/E) which was presented in March 2016, we have now completed the gas monitoring and present our findings.

Gas Monitoring

Three gas monitoring standpipes were installed to the full depth of windowless sample boreholes WS1, WS3 and WS4. The details of the installations are shown on the borehole records. The monitoring standpipe consisted of a perforated pipe from the base of the borehole to between 0.3m and 1.0m below surface, with a non-perforated pipe to ground level. The response zone was filled with pea gravel, with a bentonite seal above and the installation was capped with a stop box cover in a concrete surround.

The standpipe locations are provided on the site plan which is presented as Appendix 1 of the geo-environmental report. Visits were made to site during the period between the 8th to the 30th March 2016 when the gas standpipes were monitored. The results of this work are tabulated below.

Table 1: Gas*/water level monitoring*

Borehole No	Date	CH_4 (%)	CO_2 (%)	O_2 (%)	Flow (l/hr)	Barometric Pressure (mb)	Water Level (m)	Standpipe Depth (m)
WS1	08.03.16	0.0	0.2	21.4	0.2	1005	-	3.91
	15.03.16	0.0	6.0	4.4	0.1	1027	-	
	22.03.16	0.0	6.1	5.1	0.2	1011	-	
	30.03.16	0.0	4.7	5.9	0.3	1002	-	
WS3	08.03.16	0.0	0.5	20.8	0.0	1005	1.31	1.93
	15.03.16	0.0	1.0	17.8	0.1	1027	1.75	
	22.03.16	0.0	1.1	18.7	0.1	1012	1.87	
	30.03.16	0.0	1.2	17.6	0.3	1002	1.60	
WS4	08.03.16	0.0	0.1	21.2	0.3	1005	0.53	0.98
	15.03.16	0.0	0.2	20.8	0.1	1027	0.98	
	22.03.16	0.0	0.7	20.4	0.1	1011	-	
	30.03.16	0.0	0.5	20.5	0.1	1002	-	

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This work was undertaken using a Geotechnical Instruments (UK) Ltd GA5000 (Serial No. G503524), which was last calibrated on the 29th February 2016.

Reference is made to Tables 5.5a and 5.5b of CIRIA report C665 (2007)[1]. Accepting that the proposed development is of high sensitivity (residential with gardens) and that the generation potential is very low to low, these tables suggest that between 6 and 9 readings could be undertaken over a period of 3 to 6 months. 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 four week time period, at which point monitoring was terminated because it was decided to assume a Characteristic Situation Level 2 for the site. Therefore, according to Table 8.6 of CIRIA C665, 2 levels of protection are required, as discussed in Paragraph 11.3.3 *Strategy – Construction* of the geo-environmental report (J3374/16/E). The sufficiency of gas monitoring data is considered in BS 8576: 2013: *Guidance on investigations for ground gas – Permanent gasses and Volatile Organic Compounds (VOC's). In this standard Table F3, Assessing sufficiency of data* has been employed to justify the curtailment of monitoring.

In this context it should be noted that the gas screening value threshold for Characteristic Situation Level 2 is <0.7 l/hr. Assuming the flow rate remains constant at 0.3 l/hr the gas concentration would need to exceed 100% to move into the next risk band, which is not possible. Moreover, by keeping the concentration constant, the flow rate would need to be in excess of 11.5 l/hr to move into the next band, which is over a twelve fold increase. We consider that these increases are not feasible as the fill is not deleterious, thus the site is not a generating source.

In view of the above it is considered that the site is fully characterised and that the additional results do not materially alter the recommendations provided in the geo-environmental report.

[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) BS8576: *Guidance on investigations for ground gas – Permanent gasses and Volatile Organic Compounds (VOCs).* 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

Gabriel Bobrowicz MSc, PhD, MCSM, FGS
Principal Geotechnical Engineer