

**APPENDIX
D**

Ground Gas Monitoring and Flow Results

Project Number AG2983-19 **Time of Monitoring (24Hr):** 09.30-11.15
Project/Site Name Haverhill Business Park, Suffolk **Date of Monitoring :** 02/04/2019
Phase of Monitoring: 1 of 4

BH No.	Flow Range (litres/hr over 3 mins)			Differential Pressure (pa)	Methane % v/v		Carbon dioxide % v/v		Oxygen % v/v		VOC (ppm)	Installed Depth (m bgl)	Diameter of installation (mm)	Water level (m bgl)	Ground Level (m AOD)	Water Level (m AOD)
	Max	Min	Avg		Peak	Steady	Peak	Steady	Min	Steady						
DCS202	*	*	*	*	*	*	*	*	*	*	*	1.50	50	*	81.86	Dry
DCS203	<0.1	<0.1	<0.1	<1	<0.1	<0.1	1.9	1.9	19.2	19.2	0.2	3.00	50	Dry	81.84	Dry
DCS204	<0.1	<0.1	<0.1	<1	<0.1	<0.1	1.7	1.7	18.3	18.3	<0.1	5.00	50	Dry	81.9	Dry
DCS205	<0.1	<0.1	<0.1	<1	19.5	19.5	7.4	7.4	12.2	12.2	0.1	3.00	50	Dry	81.9	Dry
DCS206	<0.1	<0.1	<0.1	<1	16.1	16.1	12.9	12.9	0.3	0.3	<0.1	4.00	50	Dry	79.62	Dry
DCS207	<0.1	<0.1	<0.1	<1	0.7	<0.1	4.0	4.0	18.0	18.0	0.8	3.00	50	Dry	79.62	Dry
DCS208	<0.1	<0.1	<0.1	<1	0.3	0.3	4.9	4.9	16.4	16.4	0.3	4.00	50	Dry	79.63	Dry
DCS209	<0.1	<0.1	<0.1	1.1	0.2	<0.1	0.9	0.9	19.2	19.2	0.1	1.30	50	Dry	81.89	Dry
DCS210	<0.1	<0.1	<0.1	<1	<0.1	<0.1	0.9	0.9	17.5	17.5	0.7	3.00	50	Dry	81.55	Dry
DCS211	<0.1	<0.1	<0.1	<1	<0.1	<0.1	1.2	1.2	19.1	19.1	1.5	3.00	50	Dry	81.54	Dry
DCS212	<0.1	<0.1	<0.1	<1	<0.1	<0.1	1.3	1.3	19.5	19.5	0.7	3.00	50	Dry	81.53	Dry

Meteorological Data

Atmospheric Pressure (mb)	Start: 990
Atmospheric Pressure (mb)	Finish: 991
Pressure Rising or Falling	Falling
Weather Conditions	Cloud
Atmospheric Oxygen (% vol)	20.4
Wind Speed & Direction	Gentle breeze - W
Ambient Air Temperature (°C)	3.0

Site Data

Monitoring Personnel	Kevin Harper
GPS Instrument	
Gasmeter Serial Number	G505737
FID Serial Number	110423
Ground Conditions (vegetation stress, visual contamination)	

* DCS202 inaccessible

Instrument specification data and calibration information is provided on a separate data sheet

Ground Gas Monitoring and Flow Results

Project Number AG2983-19
 Project/Site Name Haverhill Business Park, Suffolk

Time of Monitoring (24Hr): 12:00-13:45
 Date of Monitoring : 11/04/2019
 Phase of Monitoring: 2 of 4

BH No.	Flow Range (litres/hr over 3 mins)			Differential Pressure (pa)	Methane % v/v		Carbon dioxide % v/v		Oxygen % v/v		VOC (ppm)	Installed Depth (m bgl)	Diameter of installation (mm)	Water level (m bgl)	Ground Level (m AOD)	Water Level (m AOD)
	Max	Min	Avg		Peak	Steady	Peak	Steady	Min	Steady						
DCS202	-0.4	-2.2	<0.01	-5.09	<0.1	<0.1	0.1	0.1	21.0	21.1	NR	1.50	50	0.43	81.86	81.43
DCS203	<0.01	<0.01	<0.01	-0.02	<0.1	<0.1	2.0	2.0	19.5	19.5	NR	3.00	50	Dry	81.84	Dry
DCS204	<0.01	<0.01	<0.01	0.00	<0.1	<0.1	2.1	2.1	17.9	17.9	NR	5.00	50	Dry	81.9	Dry
DCS205	<0.01	<0.01	<0.01	-0.05	5.5	5.5	5.9	5.9	16.1	16.1	NR	3.00	50	Dry	81.9	Dry
DCS206	-0.1	-0.1	-0.1	-0.09	<0.1	<0.1	0.1	0.1	21.0	21.0	NR	4.00	50	Dry	79.62	Dry
DCS207	<0.01	<0.01	<0.01	0.00	<0.1	<0.1	3.9	3.9	19.2	19.2	NR	3.00	50	Dry	79.62	Dry
DCS208	<0.01	<0.01	<0.01	0.00	0.2	0.2	5.1	5.1	17.5	17.5	NR	4.00	50	Dry	79.63	Dry
DCS209	<0.01	<0.01	<0.01	-0.03	<0.1	<0.1	1.4	1.4	19.5	19.5	NR	1.30	50	Dry	81.89	Dry
DCS210	<0.01	<0.01	<0.01	0.05	<0.1	<0.1	1.3	1.3	17.9	17.9	0.4	3.00	50	Dry	81.55	Dry
DCS211	<0.01	<0.01	<0.01	0.00	<0.1	<0.1	1.2	1.2	19.7	19.7	0.3	3.00	50	Dry	81.54	Dry
DCS212	<0.01	<0.01	<0.01	-0.10	<0.1	<0.1	1.3	1.3	19.6	19.6	0.3	3.00	50	Dry	81.53	Dry

Meteorological Data

Atmospheric Pressure (mb)	Start: 1019
Atmospheric Pressure (mb)	Finish: 1020
Pressure Rising or Falling	Rising
Weather Conditions	Partially cloudy, dry
Atmospheric Oxygen (% vol)	20.8
Wind Speed & Direction	Light, ENE
Ambient Air Temperature (°C)	9.0

Site Data

Monitoring Personnel	Malcolm Mcglone
GPS Instrument	
Gasmeter Serial Number	G505737
PID Serial Number	110423
Ground Conditions (vegetation stress, visual contamination)	

PID not working after first three boreholes monitored.

Instrument specification data and calibration information is provided on a separate data sheet

APPLIED GEOLOGY

Ground Gas Monitoring and Flow Results

Project Number AG2983-19
 Project/Site Name Haverhill Business Park, Suffolk

Time of Monitoring (24Hr): 10.00-11.45
 Date of Monitoring : 18/04/2019
 Phase of Monitoring: 3 of 4

BH No.	Flow Range (litres/hr over 3 mins)			Differential Pressure (pa)	Methane % v/v		Carbon dioxide % v/v		Oxygen % v/v		VOC (ppm)	Installed Depth (m bgl)	Diameter of installation (mm)	Water level (m bgl)	Ground Level (m AOD)	Water Level (m AOD)
	Max	Min	Avg		Peak	Steady	Peak	Steady	Min	Steady						
DCS202	<0.1	<0.1	<0.1	0.03	<0.1	<0.1	0.2	0.1	20.0	20.0	<0.1	1.50	50	0.50	81.86	81.36
DCS203	<0.1	<0.1	<0.1	0.03	<0.1	<0.1	2.0	2.0	18.5	18.5	1.3	3.00	50	Dry	81.84	Dry
DCS204	<0.1	<0.1	<0.1	0.03	<0.1	<0.1	2.3	2.3	16.6	16.6	0.5	5.00	50	Dry	81.9	Dry
DCS205	-0.1	-0.1	-0.1	0.05	5.3	5.2	6.2	6.2	14.5	14.5	<0.1	3.00	50	Dry	81.9	Dry
DCS206	<0.1	<0.1	<0.1	-0.05	<0.1	<0.1	0.2	0.2	19.2	19.3	<0.1	4.00	50	Dry	79.62	Dry
DCS207	-0.1	-0.1	-0.1	-0.05	<0.1	<0.1	3.8	3.8	18.1	18.1	<0.1	3.00	50	Dry	79.62	Dry
DCS208	<0.1	<0.1	<0.1	0.10	<0.1	<0.1	5.1	5.1	16.5	16.5	<0.1	4.00	50	Dry	79.63	Dry
DCS209	<0.1	<0.1	<0.1	0.12	<0.1	<0.1	1.7	1.7	18.4	18.4	<0.1	1.30	50	Dry	81.89	Dry
DCS210	<0.1	<0.1	<0.1	0.00	<0.1	<0.1	1.5	1.5	17.2	17.2	0.3	3.00	50	Dry	81.55	Dry
DCS211	-0.1	-0.1	-0.1	0.09	<0.1	<0.1	1.2	1.1	18.6	18.6	0.2	3.00	50	Dry	81.54	Dry
DCS212	<0.1	<0.1	<0.1	0.00	<0.1	<0.1	0.1	0.1	19.1	19.2	<0.1	3.00	50	Dry	81.53	Dry

Meteorological Data

Atmospheric Pressure (mb)	Start: 1015
Atmospheric Pressure (mb)	Finish: 1013
Pressure Rising or Falling	Rising
Weather Conditions	Sunny, warm
Atmospheric Oxygen (% vol)	20.3
Wind Speed & Direction	Light S/SE
Ambient Air Temperature (°C)	19.0

Site Data

Monitoring Personnel	Malcolm Mcgione
GPS Instrument	
Gasmeter Serial Number	G505737
PID Serial Number	105597
Ground Conditions (vegetation stress, visual contamination)	

Instrument specification data and calibration information is provided on a separate data sheet

APPLIED GEOLOGY

Ground Gas Monitoring and Flow Results

Project Number AG2983-19
 Project/Site Name Haverhill Business Park, Suffolk

Time of Monitoring (24Hr): 10:00-11:40
 Date of Monitoring : 25/04/2019
 Phase of Monitoring: 4 of 4

BH No.	Flow Range (litres/hr over 3 mins)			Differential Pressure (pa)	Methane % v/v		Carbon dioxide % v/v		Oxygen % v/v		VOC (ppm)	Installed Depth (m bgl)	Diameter of installation (mm)	Water level (m bgl)	Ground Level (m AOD)	Water Level (m AOD)
	Max	Min	Avg		Peak	Steady	Peak	Steady	Min	Steady						
DCS202	<0.1	<0.1	<0.1	<1	<0.1	<0.1	0.2	0.2	19.7	19.7	0.3	1.50	50	0.65	81.86	81.21
DCS203	<0.1	<0.1	<0.1	<1	<0.1	<0.1	2.4	2.4	17.9	17.9	6.6	3.00	50	Dry	81.84	Dry
DCS204	<0.1	<0.1	<0.1	<1	<0.1	<0.1	2.7	2.7	16.1	16.1	0.2	5.00	50	Dry	81.9	Dry
DCS205	<0.1	<0.1	<0.1	<1	15.4	15.4	8.1	8.1	11.0	11.0	0.3	3.00	50	Dry	81.9	Dry
DCS206	<0.1	<0.1	<0.1	<1	6.2	6.2	5.2	5.2	12.0	12.0	0.2	4.00	50	Dry	79.62	Dry
DCS207	<0.1	<0.1	<0.1	<1	0.2	<0.1	3.9	3.9	19.0	19.0	3.1	3.00	50	Dry	79.62	Dry
DCS208	<0.1	<0.1	<0.1	<1	<0.1	<0.1	5.4	5.4	17.5	17.5	3.0	4.00	50	Dry	79.63	Dry
DCS209	<0.1	<0.1	<0.1	<1	<0.1	<0.1	2.2	2.2	18.6	18.6	2.7	1.30	50	Dry	81.89	Dry
DCS210	<0.1	<0.1	<0.1	<1	<0.1	<0.1	1.8	1.8	17.2	17.2	4.4	3.00	50	Dry	81.55	Dry
DCS211	<0.1	<0.1	<0.1	<1	<0.1	<0.1	1.3	1.3	19.2	19.2	3.5	3.00	50	Dry	81.54	Dry
DCS212	<0.1	<0.1	<0.1	<1	<0.1	<0.1	0.8	0.8	19.7	19.7	3.6	3.00	50	Dry	81.53	Dry

Meteorological Data

Site Data

Atmospheric Pressure (mb)	Start: 990
Atmospheric Pressure (mb)	Finish: 992
Pressure Rising or Falling	Rising
Weather Conditions	Cloudy
Atmospheric Oxygen (% vol)	21.1
Wind Speed & Direction	14mph
Ambient Air Temperature (°C)	13.0

Monitoring Personnel	Kevin Harper
GPS Instrument	
Gasmeter Serial Number	G505737
PID Serial Number	108308
Ground Conditions (vegetation stress, visual contamination)	

Instrument specification data and calibration information is provided on a separate data sheet

Gas Monitoring Equipment Specification and Accuracy Details

Instrument Specifications


Instrument	Atmospheric Pressure Range	Temperature Range	Flow Range	Flow Resolution	Borehole Pressure Range
GA5000	500-1500 mb +/- 5 mb	-10°C to + 50°C	0-20 l/hr +/- 0.3 l/hr	0.1l/hr	+500/-500 mbar +/- 4 mbar
Pro Check Tiger	-	-20 to + 60°C (Certified to -15 to + 45°C)	-	-	-

Instrument Accuracy

Instrument	Methane	Lower Explosive Limit	Carbon Dioxide	Oxygen	Volatile Organic Compounds	Hydrogen Sulphide	Carbon Monoxide
GA5000	Detection Range	0-100%	-	0-100%	0-25%	NA	0 - 1000ppm response <30 Secs
	Detection Accuracy	+/- 0.5% @ 0 to 70%, +/-1.5% @ 70 to 100% Response < 10 secs	N/A	+/- 0.5% @ 0 to 60%, +/-1.5% @ 60 to 100% Response < 10 secs	+/- 1.0% @ 0 to 25%, Response < 20 secs	NA	+/- 1.5% FS
Pro Check Tiger	Detection Range	N/A	N/A	N/A	N/A	1 ppb - 10,000 ppm	N/A
	Detection Accuracy	N/A	N/A	N/A	N/A	+/- 1ppb +/- 5% of actual displayed accuracy +/- One digit Response < 2sec	N/A

Calibration Frequency

Equipment Serial Numbers

<p>Instruments are calibrated annually.</p> <p>Details of the instrument calibration certificates and service records are available if required.</p>	<p>GA5000 (G503948, G505383, G505737)</p> <p>Pro Check Tiger - (T-106308, T-109597, T-109598, T-110423)</p>	
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