ADDENDUM

REPORT	OMEGA ZONE 8	**FROM**	[redacted]
DATE	**14 February 2020**	**CONFIDENTIALITY**	**Public**
SUBJECT	**Omega Zone 8A and 8B – Ground Gas Assessment**		

1. INTRODUCTION

WSP UK Ltd (WSP) was instructed by Omega Warrington Limited (OWL) to update the ground gas risk assessment following completion of the monitoring programme on a parcel of land referred to as Zones 8A and 8B of the Omega South development area (henceforth referred to as 'the site').

This report forms an Addendum to the main WSP Ground Investigation Report as referenced below, which should be consulted for further details:

- Omega South Zone 8A and 8B Ground Investigation Report and Remediation Strategy (ref: 70062937/11482) dated December 2019.

The gas risk assessment forms part of a wider investigation at the site (as detailed within the Ground Investigation Report) to identify potential geotechnical and environmental constraints and opportunities associated with the planned development of the site for the proposed commercial end use.

2. POTENTIAL POLLUTANT LINKAGES

A conceptual site model is presented within the GIR (WSP, December 2019). With respect to ground gas, the following contaminant linkages are potentially viable at the site:

1. Inhalation of ground gases by future site users and construction and maintenance workers; and
2. Accumulation of ground gases and generation of explosive atmosphere.

3. GROUND GAS INVESTIGATION

Six ground gas monitoring visits have been undertaken between 29 October 2019 and 21 January 2020 in accordance within the recommendations within guidance CIRIA C665[1] – six monitoring visits over two months for a low sensitivity, low gas generation potential site.

Groundwater depths were gauged and ground gas concentrations and flow rates were measured using an infra-red gas analyser (GFM435). Initial and steady concentrations of methane (CH_4) carbon dioxide (CO_2) and oxygen (O_2) and trace gases (including carbon monoxide, hydrogen sulphide) were recorded along within initial and steady gas flow rates. Atmospheric pressure was also noted.

4. FINDINGS

Atmospheric pressure during the monitoring varied between 1037 (Round 6) and 988 (Round 3). Regional barometric pressure was falling during Round 1, Round 3, Round 5 and Round 6 considered to represent worst case conditions and rising during Round 2 and Round 4. The results for the gas monitoring to data are attached and summarised in Table 4.1 below.

[1] CIRIA C665, Assessing risks posed by hazardous ground gases to buildings, 2007.

Table 4.1 – Summary of Ground Gas Monitoring Results

Monitoring well	Response Zone (RZ)	Maximum CH_4 (% v/v)		Maximum CO_2 (% v/v)		Flow Rate (l/hr)		Frequency of RZ flooding
		Initial	Steady	Initial	Steady	Initial	Steady	
BH8A01	1.00 – 6.00	0.00	0.00	1.50	0.30	3.00	0.20	6 of 6
BH8A02	1.00 – 5.00	0.00	0.00	1.50	1.70	3.60	0.70	5 of 6
BH8A03	12.00 – 20.10	0.00	0.00	5.40	7.60	42.00	42.00	0 of 6
BH8A05	6.00 – 8.50	0.00	0.00	0.80	1.20	1.20	1.20	6 of 6
BHA806	6.00 – 8.00	0.00	0.00	1.10	1.30	8.30	0.60	6 of 6
BH8A08	6.00 – 12.00	0.00	0.00	1.60	1.50	1.20	0.90	6 of 6
BH8B01	1.00 – 6.00	0.00	0.00	1.80	3.00	0.20	0.00	0 of 6
BH8B03	9.00 – 19.00	0.00	0.00	7.10	7.40	57.30	57.10	0 of 6
WS8A01	1.00 – 5.45	0.00	0.00	7.30	3.80	26.00	4.00	6 of 6
WS8A03	1.00 – 5.45	0.00	0.00	3.00	3.00	58.60	0.60	6 of 6
WS8B02	1.00 – 5.45	0.00	0.00	3.50	3.60	07.50	0.40	6 of 6
WS8B03	1.00 – 5.00	0.00	0.00	2.20	2.30	20.50	3.70	6 of 6
WS8B04	0.50 – 4.50	0.00	0.00	7.20	0.30	0.00	0.00	6 of 6
WS8B05	0.50 – 4.50	0.00	0.00	1.70	1.90	6.70	0.00	6 of 6
WS8B06	1.00 – 4.00	0.00	0.00	0.80	1.80	3.40	0.50	6 of 6
WS8B07	0.50 – 5.00	0.00	0.00	1.60	1.80	9.30	2.00	0 of 6

The data indicates the following:

- No methane concentrations above the limit of detection (0.1%v/v) were recorded.
- Elevated carbon dioxide concentrations (above 5%v/v) were detected in four locations during Round 3 (WS8A01, BH8A03, BH8B03 and WS8B04), and one location during Round 4 and Round 5 (BH8B03). The maximum recorded concentration was 7.60%v/v which was a steady reading from BH8A03, installed within the sandstone. The second highest reading was 7.40%v/v which was a steady reading from BH8B03, which was also recorded in the sandstone. The highest carbon dioxide concentration from a borehole installed within the Till was an initial reading of 7.30%v/v from WS8A01. This reading had reduced to 3.1%v/v for steady state conditions.

- Steady flow rates above the limit of detection typically ranged between 0.40l/hr and 3.70l/hr. Significantly higher steady flow rates were recorded in BH8A03 and BH8B03 during the third round of monitoring (45l/hr and 57.1l/hr respectively).
- Negative flow rates have been observed within a number of wells during the last three rounds of monitoring suggesting gas pressures within the ground are below that of the atmospheric pressure.

During Round 3, elevated carbon dioxide concentrations and extremely high flow rates were recorded in BH8A03 and BH8B03. Both these locations are installed within the bedrock. It is considered the soil gas observed in these wells has likely migrated under high pressure through isolated fractures and joints within the bedrock. It is noted detected ground gas concentrations can potentially increase during falling pressure and rapid drops of barometric pressure, when increased emission rates occur. The atmospheric pressure during Round 3 was low and falling. The ground gas results from BH8A03 and BH8B03 during Round 3 appear to be anomalous and not considered to be representative of the ground gas regime in the sandstone on site. Therefore, these results have been discounted from the ground gas risk assessment.

It is noted that a number of locations which had reported high carbon dioxide concentrations or high flow rates, had fully flooded response zones during the monitoring on one or more occasions. This indicates the gas concentrations in these wells may not accurately reflect ambient soil gas concentrations as ground gas will not be able to flow freely into the well from the unsaturated zone.

5. GROUND GAS RISK ASSESSMENT

Monitoring well response zones were predominantly installed within the Till due to an absence of a significant thickness of Made Ground or organic material. Two locations were installed within the sandstone bedrock. A review of the groundwater depths compared to the monitoring well response zones indicates a number of the wells were fully flooded during the monitoring. Gas monitoring results from these locations are not considered to be representative of the ground gas regime on site and therefore were not included in the ground gas risk assessment. In addition, the ground gas monitoring results from BH8A03 and BH8B03 during Round 3 are considered to be anomalous and have been discounted.

Table 5.1 presents the gas screening values (GSV) for each type of strata in accordance with C665. The GSV is the maximum volume of methane or carbon dioxide gas that could be produced each hour and is calculated as follows:

- GSV = maximum steady carbon dioxide concentrations or methane concentrations (%) / 100 x maximum steady flow rate (l/hr).

As no methane was detected, the GSV has been calculated based on carbon dioxide concentrations.

Table 5.1 – Summary of Ground Gas Monitoring Risk Assessment

Strata	Max Steady Flow Rate (l/hr)	Max Steady Carbon Dioxide (%v/v)	GSV	Characteristic Situation
Till	2.00	3.00	0.06	1 (very low risk)
Sandstone	6.30	7.40	0.46	2 (low risk)

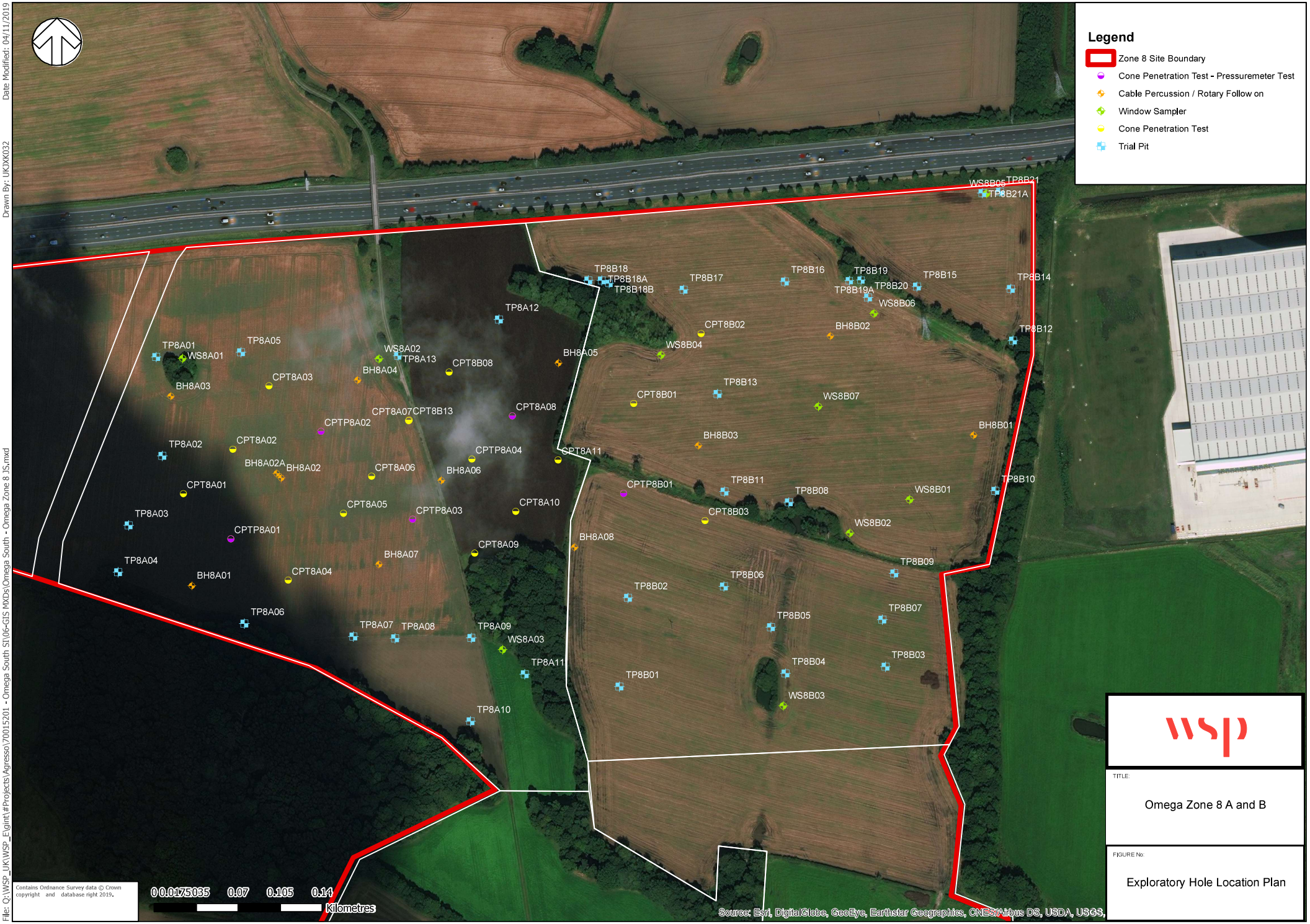
Based on the above the GSV for the Till was 0.06/hr which classifies the site as Characteristic Situation 1 (very low risk) with no gas protection measures required. The GSV for the sandstone was 0.46l/hr which classifies the site as Characteristic Situation 2 (low risk) with gas protection measures indicated to be required.

It is considered that due to absence of a ground gas source in addition to the significant thickness of the low permeability Till overlying the sandstone which will inhibit and/or provide a barrier to gas migration from the bedrock, a classification of CS1 for the site is considered to be appropriate (no gas protection measures required).

6. CONCLUSIONS

The ground gas risk assessment classifies the site as Characteristic Situation 1 based on the assessment of ground gas monitoring data. As such, no ground gas protective measures are considered to be required.

We trust that the above meets your requirements. However, please do not hesitate to contact me if you should have


Legend
Zone 8 Site Boundary
Cone Penetration Test - Pressuremeter Test
Cable Percussion / Rotary Follow on
Window Sampler
Cone Penetration Test
Trial Pit
TP8A01
WS8A01
TP8A05
WS8A02
TP8A13
CPT8B08
BH8A04
BH8A05
CPT8A03
BH8A03
TP8A12
CPT8A07
CPT8B13
CPT8A08
CPTP8A02
TP8A02
CPT8A02
BH8A02A
BH8A02
CPT8A06
BH8A06
CPTP8A04
CPT8A11
CPT8A01
TP8A03
CPT8A05
CPTP8A03
CPT8A10
CPTP8A01
BH8A07
CPT8A09
TP8A04
BH8A01
CPT8A04
TP8A06
TP8A07
TP8A08
TP8A09
WS8A03
TP8A11
TP8A10
TP8B18
TP8B18A
TP8B18B
TP8B17
TP8B16
TP8B19
TP8B19A
TP8B20
TP8B15
TP8B14
WS8B06
CPT8B02
BH8B02
WS8B04
TP8B12
TP8B13
CPT8B01
WS8B07
BH8B03
BH8B01
CPTP8B01
TP8B11
TP8B08
WS8B01
TP8B10
CPT8B03
WS8B02
BH8A08
TP8B09
TP8B06
TP8B02
TP8B07
TP8B05
TP8B04
TP8B03
TP8B01
WS8B03
WS8B05
TP8B21
TP8B21A
Contains Ordnance Survey data © Crown copyright and database right 2019.
0 0.0175035 0.07 0.105 0.14
Kilometres
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS,
wsp
TITLE:
Omega Zone 8 A and B
FIGURE No:
Exploratory Hole Location Plan
Date Modified: 04/11/2019
Drawn By: UKOXK0032
File: Q:\WSP_UK\WSP_Egint\#Projects\Agresso\70015201 - Omega South SI\06-GIS MXDs\Omega South - Omega Zone 8 JS.mxd

OMEGA DEVELOPMENT GI

Key:

Depth to water

- Response zone *fully* flooded during sampling
- Response zone *significantly* flooded during sampling
- Datum or reponse zone information missing. Response zone flooding cannot be calculated

Methane	Carbon Dioxide	Gas Flow
> 1% v/v	> 5% v/v	> 70 l/hr

Visit 1, Event: Round 1, Date: 29/10/2019

Engineer	J. Kinchington
Start/End Time	08:30 - 16:30
Pressure Start/End (mB)	1020 - 1020
Temperature (Deg C)	10.00
Weather Conditions	Clear

Equipment	SerialNo	Calibrated
Gas Analyser	GFM12009	Yes

Comments and Ground Conditions:

Borehole	Response Zone (m)		Gas Flow (l/hr)		Borehole Differential Pressure	Methane (% v/v)		Carbon Dioxide (% v/v)		Oxygen (% v/v)		Other Gases (ppmV)			Depth to Water	Depth to Base	Thickness of product	Sampled ?
	Top	Base	Initial	Steady	Pa	Initial	Steady	Initial	Steady	Initial	Steady	PID	H2S	CO	m	m	mm	Y/N
BH8A01	1.00	6.00	3.00	0.00		0.00	0.00	0.60	0.20	19.50	20.60	1.00	0.00	0.00	0.70	5.67	N/A	No
BH8A02	1.00	5.00	3.60	0.00		0.00	0.00	0.20	0.30	19.80	20.20	1.00	0.00	0.00	1.13	5.07	N/A	No
BH8A03	12.00	20.10	0.00	0.00		0.00	0.00	1.00	0.80	19.30	19.50	1.00	0.00	0.00	17.97	20.50	N/A	No
BH8A05	6.00	8.50	0.00	0.00		0.00	0.00	0.30	0.10	19.40	20.40	1.00	0.00	0.00	5.90	8.61	N/A	No
BH8A06	6.00	8.00	0.00	0.00		0.00	0.00	0.20	0.20	19.80	20.40	1.00	0.00	0.00	1.98	7.81	N/A	No
BH8A08	6.00	12.00	0.00	0.00		0.00	0.00	0.20	0.50	19.80	20.40	1.00	0.00	0.00	3.10	11.97	N/A	No
BH8B01	1.00	6.00	0.00	0.00		0.00	0.00	0.20	0.60	19.90	14.10	1.00	0.00	0.00	3.10	5.95	N/A	No
BH8B03	9.00	19.00	4.50	2.50		0.00	0.00	0.10	1.70	16.30	17.20	1.00	0.00	0.00	17.00	17.79	N/A	No
BH8C01	1.00	3.00	0.00	0.00		0.00	0.00	0.10	0.30	19.80	18.40	1.00	0.00	0.00	0.48	3.00	N/A	No
BH8C02	6.00	9.00	0.00	0.00		0.00	0.00	0.20	0.40	20.10	19.00	1.00	0.00	0.00	6.62	9.13	N/A	No
BH8C03	1.00	4.00	0.00	0.00		0.00	0.20	0.30	0.20	19.70	20.50	1.00	0.00	0.00	0.89	4.00	N/A	No
WS8A01	1.00	5.45	14.00	0.00		0.00	0.00	0.10	1.10	19.10	19.40	1.00	0.00	0.00	0.95	5.98	N/A	No
WS8A03	1.00	5.45	0.00	0.00		0.00	0.00	0.20	0.80	19.90	19.80	1.00	0.00	0.00	0.91	4.99	N/A	No
WS8B02	1.00	5.00	0.00	0.00		0.00	0.00	0.40	0.70	19.90	20.10	1.00	0.00	0.00	0.86	4.97	N/A	No

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Key:

Depth to water

- Response zone *fully* flooded during sampling
- Response zone *significantly* flooded during sampling
- Datum or reponse zone information missing. Response zone flooding cannot be calculated

Methane	Carbon Dioxide	Gas Flow
> 1% v/v	> 5% v/v	> 70 l/hr

Visit 1, Event: Round 1, Date: 29/10/2019

Engineer	J. Kinchington
Start/End Time	08:30 - 16:30
Pressure Start/End (mB)	1020 - 1020
Temperature (Deg C)	10.00
Weather Conditions	Clear

Equipment	SerialNo	Calibrated
Gas Analyser	GFM12009	Yes

Comments and Ground Conditions:

Borehole	Response Zone (m)		Gas Flow (l/hr)		Borehole Differential Pressure	Methane (% v/v)		Carbon Dioxide (% v/v)		Oxygen (% v/v)		Other Gases (ppmV)			Depth to Water	Depth to Base	Thickness of product	Sampled ?
	Top	Base	Initial	Steady	Pa	Initial	Steady	Initial	Steady	Initial	Steady	PID	H2S	CO	m	m	mm	Y/N
WS8B03	0.50	4.50	0.00	0.10		0.00	0.00	0.20	0.30	0.20	0.30	1.00	0.00	0.00	0.29	4.24	N/A	No
WS8B04	0.50	4.50	0.00	0.00		0.00	0.00	0.10	0.20	19.80	20.10	1.00	0.00	0.00	0.29	3.98	N/A	No
WS8B05	1.00	4.00	0.00	0.00		0.00	0.00	0.50	0.20	19.70	20.30	1.00	0.00	0.00	0.55	4.93	N/A	No
WS8B06	0.50	5.00	0.00	0.00		0.00	0.00	0.20	0.30	19.50	20.30	1.00	0.00	0.00	0.25	4.94	N/A	No
WS8B07	1.00	5.00	0.00	0.00		0.00	0.00	0.20	0.20	19.90	16.10	1.00	0.00	0.00	2.06	5.12	N/A	No
WS8C01	1.00	3.00	0.00	-1.90		0.00	0.00	0.20	0.20	18.80	20.30	1.00	0.00	0.00	3.16	3.28	N/A	No
WS8C02	1.00	5.00	0.00	0.00		0.00	0.00	0.10	0.60	20.20	19.30	1.00	0.00	0.00	0.94	4.84	N/A	No
WS8C03	1.00	4.00	2.00	0.00		0.00	0.00	0.20	0.10	19.40	20.30	1.00	0.00	0.00	0.10	3.60	N/A	No
WS8C06	1.00	4.00	0.00	0.00		0.00	0.00	0.20	2.10	19.50	15.40	1.00	0.00	0.00		4.02	N/A	No
WS8C07	1.00	5.00	0.00	0.00		0.00	0.00	0.20	0.10	20.10	20.30	1.00	0.00	0.00	0.24	4.90	N/A	No
WS8C08	1.00	5.45	1.50	0.00		0.00	0.00	0.10	0.50	20.10	20.10	1.00	0.00	0.00	0.40	4.85	N/A	No

OMEGA DEVELOPMENT GI

Key:

Depth to water

- Response zone *fully* flooded during sampling
- Response zone *significantly* flooded during sampling
- Datum or reponse zone information missing. Response zone flooding cannot be calculated

Methane	Carbon Dioxide	Gas Flow
> 1% v/v	> 5% v/v	> 70 l/hr

Visit 3, Event: Round 2, Date: 15/11/2019

Engineer	E. Lyons
Start/End Time	08:30 - 16:30
Pressure Start/End (mB)	1004 - 1004
Temperature (Deg C)	8.00
Weather Conditions	Clear

Equipment	SerialNo	Calibrated
Gas Analyser	GFM12009	No

Comments and Ground Conditions:

Borehole	Response Zone (m)		Gas Flow (l/hr)		Borehole Differential Pressure	Methane (% v/v)		Carbon Dioxide (% v/v)		Oxygen (% v/v)		Other Gases (ppmV)			Depth to Water	Depth to Base	Thickness of product	Sampled ?
	Top	Base	Initial	Steady	Pa	Initial	Steady	Initial	Steady	Initial	Steady	PID	H2S	CO	m	m	mm	Y/N
BH8A01	1.00	6.00	0.00	0.00		0.00	0.00	0.30	0.10	20.00	20.30	1.00	0.00	0.00	0.70	5.67	N/A	No
BH8A02	1.00	5.00	0.00	0.00		0.00	0.00	0.30	0.30	20.00	20.20	1.00	0.00	0.00	0.94	4.98	N/A	No
BH8A03	12.00	20.10	0.00	0.00		0.00	0.00	0.20	0.10	19.90	20.20	1.00	0.00	0.00	17.96	20.25	N/A	No
BH8A05	6.00	8.50	0.00	0.00		0.00	0.00	0.20	0.20	20.40	20.30	1.00	0.00	0.00	5.52	8.60	N/A	No
BH8A06	6.00	8.00	0.00	0.00		0.00	0.00	0.30	0.30	20.30	20.20	1.00	0.00	0.00	1.85	7.63	N/A	No
BH8A08	6.00	12.00	0.00	0.00		0.00	0.00	0.10	0.30	20.60	20.60	1.00	0.00	0.00	2.78	12.10	N/A	No
BH8B01	1.00	6.00	0.00	0.00		0.00	0.00	0.20	0.60	19.60	16.60	1.00	0.00	0.00	3.03	6.05	N/A	No
BH8B03	9.00	19.00	3.70	3.70		0.00	0.00	0.40	3.10	19.60	12.10	1.00	0.00	0.00	16.98	17.27	N/A	No
WS8A01	1.00	5.45	0.00	0.00		0.00	0.00	0.60	0.70	20.10	19.60	1.00	0.00	0.00	0.87	5.07	N/A	No
WS8A03	1.00	5.45	0.00	0.00		0.00	0.00	0.20	0.40	19.80	19.90	1.00	0.00	0.00	0.91	4.94	N/A	No
WS8B02	1.00	5.00	0.00	0.00		0.00	0.00	0.50	0.50	18.70	20.10	1.00	0.00	0.00	0.80	5.00	N/A	No
WS8B03	0.50	4.50	0.00	0.00		0.00	0.00	0.60	0.30	19.70	20.10	1.00	0.00	0.00	0.28	4.38	N/A	No
WS8B04	0.50	4.50	0.00	0.00		0.00	0.00	2.30	0.30	13.40	20.10	1.00	0.00	0.20	0.15	3.88	N/A	No
WS8B05	1.00	4.00	1.60	0.00		0.00	0.00	0.40	0.20	19.40	20.10	1.00	0.00	0.00	0.53	4.93	N/A	No

OMEGA DEVELOPMENT GI

Key:

Depth to water

- Response zone *fully* flooded during sampling
- Response zone *significantly* flooded during sampling
- Datum or reponse zone information missing. Response zone flooding cannot be calculated

Methane	Carbon Dioxide	Gas Flow
> 1% v/v	> 5% v/v	> 70 l/hr

Visit 3, Event: Round 2, Date: 15/11/2019

Engineer	E. Lyons
Start/End Time	08:30 - 16:30
Pressure Start/End (mB)	1004 - 1004
Temperature (Deg C)	8.00
Weather Conditions	Clear

Equipment	SerialNo	Calibrated
Gas Analyser	GFM12009	No

Comments and Ground Conditions:

Borehole	Response Zone (m)		Gas Flow (l/hr)		Borehole Differential Pressure	Methane (% v/v)		Carbon Dioxide (% v/v)		Oxygen (% v/v)		Other Gases (ppmV)			Depth to Water	Depth to Base	Thickness of product	Sampled ?
	Top	Base	Initial	Steady	Pa	Initial	Steady	Initial	Steady	Initial	Steady	PID	H2S	CO	m	m	mm	Y/N
WS8B06	0.50	5.00	1.60	0.50		0.00	0.00	0.30	0.40	19.20	19.80	1.00	0.00	0.00	0.23	5.02	N/A	No
WS8B07	1.00	5.00	9.30	2.00		0.00	0.00	0.50	1.50	15.00	12.10	1.00	0.00	0.00	1.91	5.17	N/A	No

OMEGA DEVELOPMENT GI

Key:

Depth to water

- Response zone *fully* flooded during sampling
- Response zone *significantly* flooded during sampling
- Datum or reponse zone information missing. Response zone flooding cannot be calculated

Methane	Carbon Dioxide	Gas Flow
> 1% v/v	> 5% v/v	> 70 l/hr

Visit 5, Event: Round 3, Date: 29/10/2019

Engineer	J. Kinchington
Start/End Time	08:30 - 16:30
Pressure Start/End (mB)	1020 - 1020
Temperature (Deg C)	10.00
Weather Conditions	Clear

Equipment	SerialNo	Calibrated
Gas Analyser	GFM12009	Yes

Comments and Ground Conditions:

Borehole	Response Zone (m)		Gas Flow (l/hr)		Borehole Differential Pressure	Methane (% v/v)		Carbon Dioxide (% v/v)		Oxygen (% v/v)		Other Gases (ppmV)			Depth to Water	Depth to Base	Thickness of product	Sampled ?
	Top	Base	Initial	Steady	Pa	Initial	Steady	Initial	Steady	Initial	Steady	PID	H2S	CO	m	m	mm	Y/N
BH8A01	1.00	6.00	1.40	0.00		0.00	0.00	1.50	0.30	17.10	19.80	1.00	0.00	0.00	0.52	5.69	N/A	No
BH8A02	1.00	5.00	0.90	0.00		0.00	0.00	0.30	1.30	19.80	19.40	1.00	0.00	0.00	0.83	4.97	N/A	No
BH8A03	12.00	20.10	42.00	42.00		0.00	0.00	5.40	7.60	4.70	1.20	1.00	0.00	0.00	17.91	18.00	N/A	No
BH8A05	6.00	8.50	0.00	0.00		0.00	0.00	0.60	0.90	19.90	16.80	1.00	0.00	0.00	5.55	8.63	N/A	No
BH8A06	6.00	8.00	8.30	0.30		0.00	0.00	0.80	0.90	18.90	19.50	1.00	0.00	0.00	1.91	7.81	N/A	No
BH8A08	6.00	12.00	0.00	0.00		0.00	0.00	0.20	0.80	19.60	20.00	1.00	0.00	0.00	2.79	12.09	N/A	No
BH8B01	1.00	6.00	0.20	0.00		0.00	0.00	0.60	1.60	18.30	5.90	1.00	0.00	0.00	3.09	6.06	N/A	No
BH8B03	9.00	19.00	57.30	57.10		0.00	0.00	6.70	7.30	1.60	0.20	1.00	0.00	0.00		17.28	N/A	No
WS8A01	1.00	5.45	26.00	0.00		0.00	0.00	7.30	3.10	8.90	16.20	1.00	0.00	0.00	0.81	5.04	N/A	No
WS8A03	1.00	5.45	58.60	0.80		0.00	0.00	0.40	3.00	15.70	15.30	1.00	0.00	0.00	0.83	4.89	N/A	No
WS8B02	1.00	5.00	7.50	0.40		0.00	0.00	0.60	1.60	17.90	18.60	1.00	0.00	0.00	0.78	5.00	N/A	No
WS8B03	0.50	4.50	20.50	0.30		0.00	0.00	2.00	2.00	18.00	16.70	1.00	0.00	0.00	0.19	4.32	N/A	No
WS8B04	0.50	4.50	0.00	0.00		0.00	0.00	7.20	0.20	4.40	19.80	1.00	0.00	0.00	0.08	3.91	N/A	No
WS8B05	1.00	4.00	6.70	0.00		0.00	0.00	1.20	1.60	18.60	16.00	1.00	0.00	0.00	0.51	4.98	N/A	No

OMEGA DEVELOPMENT GI

Key:

Depth to water

- Response zone *fully* flooded during sampling
- Response zone *significantly* flooded during sampling
- Datum or reponse zone information missing. Response zone flooding cannot be calculated

Methane	Carbon Dioxide	Gas Flow
> 1% v/v	> 5% v/v	> 70 l/hr

Visit 5, Event: Round 3, Date: 29/10/2019

Engineer	J. Kinchington
Start/End Time	08:30 - 16:30
Pressure Start/End (mB)	1020 - 1020
Temperature (Deg C)	10.00
Weather Conditions	Clear

Equipment	SerialNo	Calibrated
Gas Analyser	GFM12009	Yes

Comments and Ground Conditions:

Borehole	Response Zone (m)		Gas Flow (l/hr)		Borehole Differential Pressure	Methane (% v/v)		Carbon Dioxide (% v/v)		Oxygen (% v/v)		Other Gases (ppmV)			Depth to Water	Depth to Base	Thickness of product	Sampled ?
	Top	Base	Initial	Steady	Pa	Initial	Steady	Initial	Steady	Initial	Steady	PID	H2S	CO	m	m	mm	Y/N
WS8B06	0.50	5.00	3.40	0.00		0.00	0.00	0.60	1.70	17.20	17.10	1.00	0.00	0.00	0.21	5.04	N/A	No

OMEGA DEVELOPMENT GI

Key:

Depth to water

- Response zone *fully* flooded during sampling
- Response zone *significantly* flooded during sampling
- Datum or reponse zone information missing. Response zone flooding cannot be calculated

Methane	Carbon Dioxide	Gas Flow
> 1% v/v	> 5% v/v	> 70 l/hr

Visit 7, Event: Round 4, Date: 02/01/2020

Engineer	E. Lyons
Start/End Time	08:30 - 16:30
Pressure Start/End (mB)	1014 - 1011
Temperature (Deg C)	10.00
Weather Conditions	Overcast

Equipment	SerialNo	Calibrated

Comments and Ground Conditions:

Borehole	Response Zone (m)		Gas Flow (l/hr)		Borehole Differential Pressure	Methane (% v/v)		Carbon Dioxide (% v/v)		Oxygen (% v/v)		Other Gases (ppmV)			Depth to Water	Depth to Base	Thickness of product	Sampled ?
	Top	Base	Initial	Steady	Pa	Initial	Steady	Initial	Steady	Initial	Steady	PID	H2S	CO	m	m	mm	Y/N
BH8A01	1.00	6.00	0.40	0.20		0.00	0.00	0.40	0.30	19.50	19.20	1.00	0.00	0.00	0.48	5.64	N/A	No
BH8A02	1.00	5.00	0.80	0.70		0.00	0.00	1.50	1.50	18.90	18.90	1.00	0.00	0.00	0.78	4.86	N/A	No
BH8A03	12.00	20.10	6.40	6.30		0.00	0.00	0.90	0.90	18.80	19.60	1.00	0.00	0.00	17.89	20.15	N/A	No
BH8A05	6.00	8.50	1.20	1.20		0.00	0.00	0.90	1.20	19.00	16.50	1.00	0.00	0.00	5.84	8.62	N/A	No
BH8A06	6.00	8.00	-5.50	0.60		0.00	0.00	1.10	1.30	18.30	17.50	1.00	0.00	0.00	1.88	7.88	N/A	No
BH8A08	6.00	12.00	1.20	0.90		0.00	0.00	1.60	1.50	19.20	18.50	1.00	0.00	0.00	2.93	11.96	N/A	No
BH8B01	1.00	6.00	0.00	0.00		0.00	0.00	1.80	0.90	9.80	13.40	1.00	0.00	0.00	3.15	6.07	N/A	No
BH8B03	9.00	19.00	5.80	6.30		0.00	0.00	7.10	7.40	2.10	0.00	1.00	0.00	0.00		17.29	N/A	No
WS8A01	1.00	5.45	3.80	0.40		0.00	0.00	3.40	3.80	16.10	13.60	1.00	0.00	0.00	0.83	5.10	N/A	No
WS8A03	1.00	5.45	6.70	0.60		0.00	0.00	3.00	3.00	12.90	12.80	1.00	0.00	0.00	0.77	4.89	N/A	No
WS8B02	1.00	5.00	6.40	0.20		0.00	0.00	3.50	3.60	17.60	17.40	1.00	0.00	0.00	0.79	5.00	N/A	No
WS8B03	0.50	4.50	4.30	0.10		0.00	0.00	2.20	2.30	15.60	14.20	1.00	0.00	0.00	0.21	4.31	N/A	No
WS8B04	0.50	4.50	0.00	0.00		0.00	0.00	0.70	0.20	13.50	19.80	1.00	0.00	0.00	0.11	3.85	N/A	No
WS8B05	1.00	4.00	0.00	0.00		0.00	0.00	1.70	1.80	14.10	12.60	1.00	0.00	0.00	0.55	5.00	N/A	No

OMEGA DEVELOPMENT GI

Key:

Depth to water

- Response zone *fully* flooded during sampling
- Response zone *significantly* flooded during sampling
- Datum or reponse zone information missing. Response zone flooding cannot be calculated

Methane	Carbon Dioxide	Gas Flow
> 1% v/v	> 5% v/v	> 70 l/hr

Visit 7, Event: Round 4, Date: 02/01/2020

Engineer	E. Lyons
Start/End Time	08:30 - 16:30
Pressure Start/End (mB)	1014 - 1011
Temperature (Deg C)	10.00
Weather Conditions	Overcast

Equipment	SerialNo	Calibrated

Comments and Ground Conditions:

Borehole	Response Zone (m)		Gas Flow (l/hr)		Borehole Differential Pressure	Methane (% v/v)		Carbon Dioxide (% v/v)		Oxygen (% v/v)		Other Gases (ppmV)			Depth to Water	Depth to Base	Thickness of product	Sampled ?
	Top	Base	Initial	Steady	Pa	Initial	Steady	Initial	Steady	Initial	Steady	PID	H2S	CO	m	m	mm	Y/N
WS8B06	0.50	5.00	-13.70	0.00		0.00	0.00	0.80	1.60	17.80	14.70	1.00	0.00	0.00	0.24	5.02	N/A	No
WS8B07	1.00	5.00	1.50	0.30		0.00	0.00	1.60	1.70	13.20	10.40	1.00	0.00	0.00	2.23	5.16	N/A	No

OMEGA DEVELOPMENT GI

Key:

Depth to water

- Response zone *fully* flooded during sampling
- Response zone *significantly* flooded during sampling
- Datum or reponse zone information missing. Response zone flooding cannot be calculated

Methane	Carbon Dioxide	Gas Flow
> 1% v/v	> 5% v/v	> 70 l/hr

Visit 9, Event: Round 5, Date: 08/01/2020

Engineer	E. Lyons
Start/End Time	08:30 - 16:30
Pressure Start/End (mB)	1019 - 1017
Temperature (Deg C)	10.00
Weather Conditions	Overcast

Equipment	SerialNo	Calibrated

Comments and Ground Conditions:

Borehole	Response Zone (m)		Gas Flow (l/hr)		Borehole Differential Pressure	Methane (% v/v)		Carbon Dioxide (% v/v)		Oxygen (% v/v)		Other Gases (ppmV)			Depth to Water	Depth to Base	Thickness of product	Sampled ?
	Top	Base	Initial	Steady	Pa	Initial	Steady	Initial	Steady	Initial	Steady	PID	H2S	CO	m	m	mm	Y/N
BH8A01	1.00	6.00	0.20	0.00		0.00	0.00	0.50	0.30	18.40	19.60	1.00	0.00	0.00	0.46	5.67	N/A	No
BH8A02	1.00	5.00	0.20	0.00		0.00	0.00	1.40	1.40	19.20	19.10	1.00	0.00	0.00	0.73	4.87	N/A	No
BH8A03	12.00	20.10	-0.60	-0.10		0.00	0.00	0.70	2.20	18.70	12.80	1.00	0.00	0.00	17.84	20.33	N/A	No
BH8A05	6.00	8.50	0.30	0.10		0.00	0.00	0.80	1.20	19.50	16.80	1.00	0.00	0.00	5.75	8.62	N/A	No
BH8A06	6.00	8.00	-6.80	0.00		0.00	0.00	1.00	1.20	18.90	18.00	1.00	0.00	0.00	1.95	7.80	N/A	No
BH8A08	6.00	12.00	0.70	0.20		0.00	0.00	1.50	1.10	19.40	18.90	1.00	0.00	0.00	2.89	12.03	N/A	No
BH8B01	1.00	6.00	0.00	0.00		0.00	0.00	1.60	1.60	10.20	8.20	1.00	0.00	0.00	3.05	6.04	N/A	No
BH8B03	9.00	19.00	-4.20	-4.20		0.00	0.00	0.60	7.30	19.10	1.10	1.00	0.00	0.00		17.24	N/A	No
WS8A01	1.00	5.45	0.00	0.00		0.00	0.00	3.10	3.40	17.00	15.30	1.00	0.00	0.00	0.83	5.07	N/A	No
WS8A03	1.00	5.45	9.90	0.10		0.00	0.00	2.40	2.50	16.30	15.10	1.00	0.00	0.00	0.68	4.92	N/A	No
WS8B02	1.00	5.00	-4.20	0.00		0.00	0.00	2.40	3.10	17.00	17.70	1.00	0.00	0.00	0.72	5.00	N/A	No
WS8B03	0.50	4.50	-9.80	0.00		0.00	0.00	2.00	2.20	18.30	17.90	1.00	0.00	0.00	0.10	4.29	N/A	No
WS8B04	0.50	4.50	0.00	0.00		0.00	0.00	0.70	0.20	17.20	19.60	1.00	0.00	0.00	0.19	3.88	N/A	No
WS8B05	1.00	4.00	0.00	0.00		0.00	0.00	0.70	1.60	18.60	12.60	1.00	0.00	0.00	0.61	5.00	N/A	No

OMEGA DEVELOPMENT GI

Key:

Depth to water

- Response zone *fully* flooded during sampling
- Response zone *significantly* flooded during sampling
- Datum or reponse zone information missing. Response zone flooding cannot be calculated

Methane	Carbon Dioxide	Gas Flow
> 1% v/v	> 5% v/v	> 70 l/hr

Visit 9, Event: Round 5, Date: 08/01/2020

Engineer	E. Lyons
Start/End Time	08:30 - 16:30
Pressure Start/End (mB)	1019 - 1017
Temperature (Deg C)	10.00
Weather Conditions	Overcast

Equipment	SerialNo	Calibrated

Comments and Ground Conditions:

Borehole	Response Zone (m)		Gas Flow (l/hr)		Borehole Differential Pressure	Methane (% v/v)		Carbon Dioxide (% v/v)		Oxygen (% v/v)		Other Gases (ppmV)			Depth to Water	Depth to Base	Thickness of product	Sampled ?
	Top	Base	Initial	Steady	Pa	Initial	Steady	Initial	Steady	Initial	Steady	PID	H2S	CO	m	m	mm	Y/N
WS8B06	0.50	5.00	-18.20	0.00		0.00	0.00	0.80	1.60	18.60	17.10	1.00	0.00	0.00	0.37	5.04	N/A	No
WS8B07	1.00	5.00	0.00	0.00		0.00	0.00	1.60	1.70	13.10	10.70	1.00	0.00	0.00	2.15	5.16	N/A	No

OMEGA DEVELOPMENT GI

Key:

Depth to water

- Response zone *fully* flooded during sampling
- Response zone *significantly* flooded during sampling
- Datum or reponse zone information missing. Response zone flooding cannot be calculated

Methane	Carbon Dioxide	Gas Flow
> 1% v/v	> 5% v/v	> 70 l/hr

Visit 10, Event: Round 6, Date: 21/01/2020

Engineer	E. Lyons
Start/End Time	08:30 - 16:30
Pressure Start/End (mB)	1037 - 1037
Temperature (Deg C)	8.00
Weather Conditions	Overcast

Equipment	SerialNo	Calibrated

Comments and Ground Conditions:

Borehole	Response Zone (m)		Gas Flow (l/hr)		Borehole Differential Pressure	Methane (% v/v)		Carbon Dioxide (% v/v)		Oxygen (% v/v)		Other Gases (ppmV)			Depth to Water	Depth to Base	Thickness of product	Sampled ?
	Top	Base	Initial	Steady	Pa	Initial	Steady	Initial	Steady	Initial	Steady	PID	H2S	CO	m	m	mm	Y/N
BH8A01	1.00	6.00	-2.40	0.00		0.00	0.00	0.30	0.30	20.20	18.80	1.00	0.00	0.00	0.46	5.50	N/A	No
BH8A02	1.00	5.00	0.90	0.00		0.00	0.00	1.60	1.70	19.00	18.90	1.00	0.00	0.00	0.95	4.85	N/A	No
BH8A03	12.00	20.10	-30.00	-31.30		0.00	0.00	0.30	0.20	20.20	20.20	1.00	0.00	0.00	17.81	20.10	N/A	No
BH8A05	6.00	8.50	0.00	0.00		0.00	0.00	0.70	1.10	19.80	17.50	1.00	0.00	0.00	5.79	8.60	N/A	No
BH8A06	6.00	8.00	-2.50	0.00		0.00	0.00	0.90	1.30	19.20	18.00	1.00	0.00	0.00	1.92	7.63	N/A	No
BH8A08	6.00	12.00	0.00	0.00		0.00	0.00	1.70	0.80	19.30	19.70	1.00	0.00	0.00	3.00	11.89	N/A	No
BH8B01	1.00	6.00	-0.60	0.00		0.00	0.00	1.70	3.00	13.00	7.20	1.00	0.00	0.00	3.04	6.01	N/A	No
BH8B03	9.00	19.00	-34.50	-33.80		0.00	0.00	0.20	0.20	20.50	20.20	1.00	0.00	0.00			N/A	No
WS8A01	1.00	5.45	-3.20	0.00		0.00	0.00	3.10	3.60	17.80	15.80	1.00	0.00	0.00	0.79	5.03	N/A	No
WS8A03	1.00	5.45	10.80	0.00		0.00	0.00	2.40	2.80	17.30	15.90	1.00	0.00	0.00	0.60	4.87	N/A	No
WS8B02	1.00	5.00	-12.10	0.00		0.00	0.00	1.90	3.00	17.80	18.10	1.00	0.00	0.00	0.60	4.69	N/A	No
WS8B03	0.50	4.50	-12.30	0.00		0.00	0.00	2.10	2.40	17.50	15.40	1.00	0.00	0.00	0.06	4.26	N/A	No
WS8B04	0.50	4.50	0.00	0.00		0.00	0.00	0.20	0.20	20.40	20.20	1.00	0.00	0.00	0.16	3.89	N/A	No
WS8B05	1.00	4.00	-1.80	0.00		0.00	0.00	1.80	1.90	16.60	13.90	1.00	0.00	0.00	0.62	4.96	N/A	No

OMEGA DEVELOPMENT GI

Key:

Depth to water

- Response zone *fully* flooded during sampling
- Response zone *significantly* flooded during sampling
- Datum or reponse zone information missing. Response zone flooding cannot be calculated

Methane	Carbon Dioxide	Gas Flow
> 1% v/v	> 5% v/v	> 70 l/hr

Visit 10, Event: Round 6, Date: 21/01/2020

Engineer	E. Lyons
Start/End Time	08:30 - 16:30
Pressure Start/End (mB)	1037 - 1037
Temperature (Deg C)	8.00
Weather Conditions	Overcast

Equipment	SerialNo	Calibrated

Comments and Ground Conditions:

Borehole	Response Zone (m)		Gas Flow (l/hr)		Borehole Differential Pressure	Methane (% v/v)		Carbon Dioxide (% v/v)		Oxygen (% v/v)		Other Gases (ppmV)			Depth to Water	Depth to Base	Thickness of product	Sampled ?
	Top	Base	Initial	Steady	Pa	Initial	Steady	Initial	Steady	Initial	Steady	PID	H2S	CO	m	m	mm	Y/N
WS8B06	0.50	5.00	0.00	0.00		0.00	0.00	1.50	1.80	17.00	17.50	1.00	0.00	0.00	0.34	4.99	N/A	No
WS8B07	1.00	5.00	0.00	0.00		0.00	0.00	1.40	1.80	14.60	10.30	1.00	0.00	0.00	2.08	5.10	N/A	No