

Our ref: ACV/JR/H17075GRA/2018.07.27

Lauren Simpson  
Planned Contracts Ltd  
Essential Enterprise Village  
Field Head Lane  
Birstall  
WF17 9BN

27<sup>th</sup> July 2018

(by email only)

Dear Lauren,

**PROPOSED RESIDENTIAL DEVELOPMENT AT HEALEY LANE, BATLEY  
HAZARDOUS GROUND GAS RISK ASSESSMENT**

Please find below the addendum gas assessment for the above site following completion of the ground gas monitoring programme.

**Introduction**

Patrick Parsons Ltd (PPL) were commissioned by Planned Contracts Ltd (PCL) to undertake the installation and monitoring of ground gas wells at Healey Lane, Batley. This addendum report presents the findings of the now completed gas and groundwater monitoring programme undertaken as part of the original works (Report Ref. H17075, dated May 2018), which should be read in conjunction with this report.

It is understood that the development will comprise 15 no. low rise detached and terraced residential properties with associated areas of hardstanding, parking and soft landscaping together with an access road. It is considered that the proposed development comprises Type A buildings in accordance with Table 3 of BS8485:2015 guidance.

**Limitations**

This report is based on and limited to an assessment of the resultant information obtained by PPL. This report is prepared for the sole use of PCL and their agents only and should not be relied upon by any third parties without the written permission of PPL.

**Background**

Recent intrusive ground investigations have confirmed the site as having a cover of topsoil (up to 500mm thick) overlying made ground to a maximum depth of 0.9m and comprising reworked sandy gravelly clay or sandy gravel with variable brick and sandstone content. No putrescible or organic content was recorded within the made ground or natural soils and there was no evidence to suggest the presence of hydrocarbon or volatile vapours associated with gross or significant contamination. Beneath the made ground, either natural firm and stiff residual clays or granular soils were proved with competent solid strata present at between 1.0 and 3.8m and comprising sandstone and mudstone.

Historical shallow coal mineworkings were not confirmed as present beneath the site, however, an off site Coal Authority recorded mine shaft is identified as present adjacent to the southeastern site boundary, which was not encountered on the site during the ground investigation.

Additionally, historic shallow coal mineworkings are recorded nearby with deeper mineworkings known to be present beneath the site. The only known surface mining activity is a former clay pit approximately 170m northwest of the site.

An Environment Agency registered historic landfill site is recorded within 250m to the northwest of the site.

In summary, potential sources of hazardous ground gas are considered to be; both on and off site made ground, recorded deep mineworkings beneath the site, off site shallow mineworkings, an off site recorded mine shaft and an off site historic landfill. The primary pathway for the migration of hazardous ground gas to the surface is pore space within soils and through fractures and discontinuities within the deeper rock mass.

### Fieldwork

The fieldwork was undertaken in April 2018 and included the drilling of 6 no. mini percussive boreholes with gas and groundwater monitoring wells installed in 4 no. (WS01 to WS03 and WS06). Response zones were placed within natural clays and mudstone strata at depths of between 1.0 and 3.3m below existing ground level (begl) in WS01, 1.0 to 3.45 begl in WS02, 1.0 to 2.0m begl in WS03 and 1.0 to 2.4m begl in WS06. A plan showing the location of these wells is presented as Drawing No. H17075-703 included in Appendix A. The exploratory hole records are provided in Appendix B.

Following completion, the installed wells were monitored for hazardous ground gases and groundwater levels on 6 no. occasions over a period of 3 months, using a calibrated landfill gas analyser and electronic dip meter in accordance with CIRIA C665 “Assessing risks posed by hazardous ground gases to buildings”, 2007.

### Gas Monitoring Results

The table below summarises the range of recorded ground gas parameters. The full ground gas and groundwater monitoring data is provided in Appendix C.

**Table 1: Summary of Gas Monitoring Results**

| Location | Methane<br>(% v/v) | Carbon<br>Dioxide<br>(% v/v) | Oxygen<br>(% v/v) | Flow<br>(l/hr) | Barometric<br>Pressure<br>(mb) | Maximum GSV*    |                 |
|----------|--------------------|------------------------------|-------------------|----------------|--------------------------------|-----------------|-----------------|
|          |                    |                              |                   |                |                                | CO <sub>2</sub> | CH <sub>4</sub> |
| WS01     | 0.0 – 0.1          | 1.1 – 1.7                    | 17.8 – 19.8       | 0.0            | 993 – 1027                     | 0.118           | <0.07           |
| WS02     | 0.0 – 0.1          | 0.6 – 1.1                    | 19.0 – 19.9       | 0.0            |                                |                 |                 |
| WS03     | 0.0 – 0.1          | 0.6 – 1.9                    | 12.7 – 19.1       | 0.0            |                                |                 |                 |
| WS06     | 0.0                | 0.2 – 5.9                    | 12.8 – 20.2       | 0.1 – 2.0      |                                |                 |                 |

Negligible concentrations of methane (0.1% v/v) were detected together with elevated levels (max. 5.9% v/v) of carbon dioxide. Hydrogen sulphide was not detected during the monitoring program and negligible concentrations (1 ppm) of carbon monoxide were detected. Corresponding depleted oxygen levels (min. 12.7% v/v) were recorded. Flow rates from the boreholes did not exceed 0.2 l/hr. A total of 4 of the monitoring visits were undertaken at low atmospheric pressures between 993 and 999mb with 2 of these visits during periods of falling atmospheric pressure.

### Hazardous Gas Risk Assessment

In accordance with CIRIA C665 (2007) and BS8485 (2015), a hazardous ground gas risk assessment requires the calculation of gas screening values (GSVs) for both methane and carbon dioxide, based on the typical maximum concentrations (TMC) and gas flow rates. The worst-case (highest) concentrations of these two

gases is then applied to establish the site-specific GSV applicable to the proposed development. In the absence of methane in most visits and due to the low concentrations of methane detected, carbon dioxide has been used as the worst-case assessment criteria for this site:

$$CO_2_{max}[\%]/100 * Flow\ rate_{max}[l/hr] = GSV[l/hr]$$
$$0.059 * 2.0\ l/hr = 0.118\ l/hr$$

The calculated GSV is above the lower threshold of 0.07l/hr and below the upper threshold for Characteristic Situation (CS) CS2 of 0.7l/hr and the site would therefore be classified as CS2 in accordance with BS8485. This is a low hazard potential which will require gas protection measures.

#### **Gas Protection Measures**

In accordance with BS8485 guidance, a residential end use equates to a Type A Building scenario. For CS2 gas conditions, a point score of 3.5 must be achieved for adequate gas protection, which can be achieved from a range of measures as described in Section 7 of the standard.

In view of the information obtained during this assessment, it is considered that the provision of gas protection measures to new buildings will be required as per the site's classification. The site is within an area where basic radon protection measures are necessary for new development.

Should you have any queries regarding the above please do not hesitate to contact us.

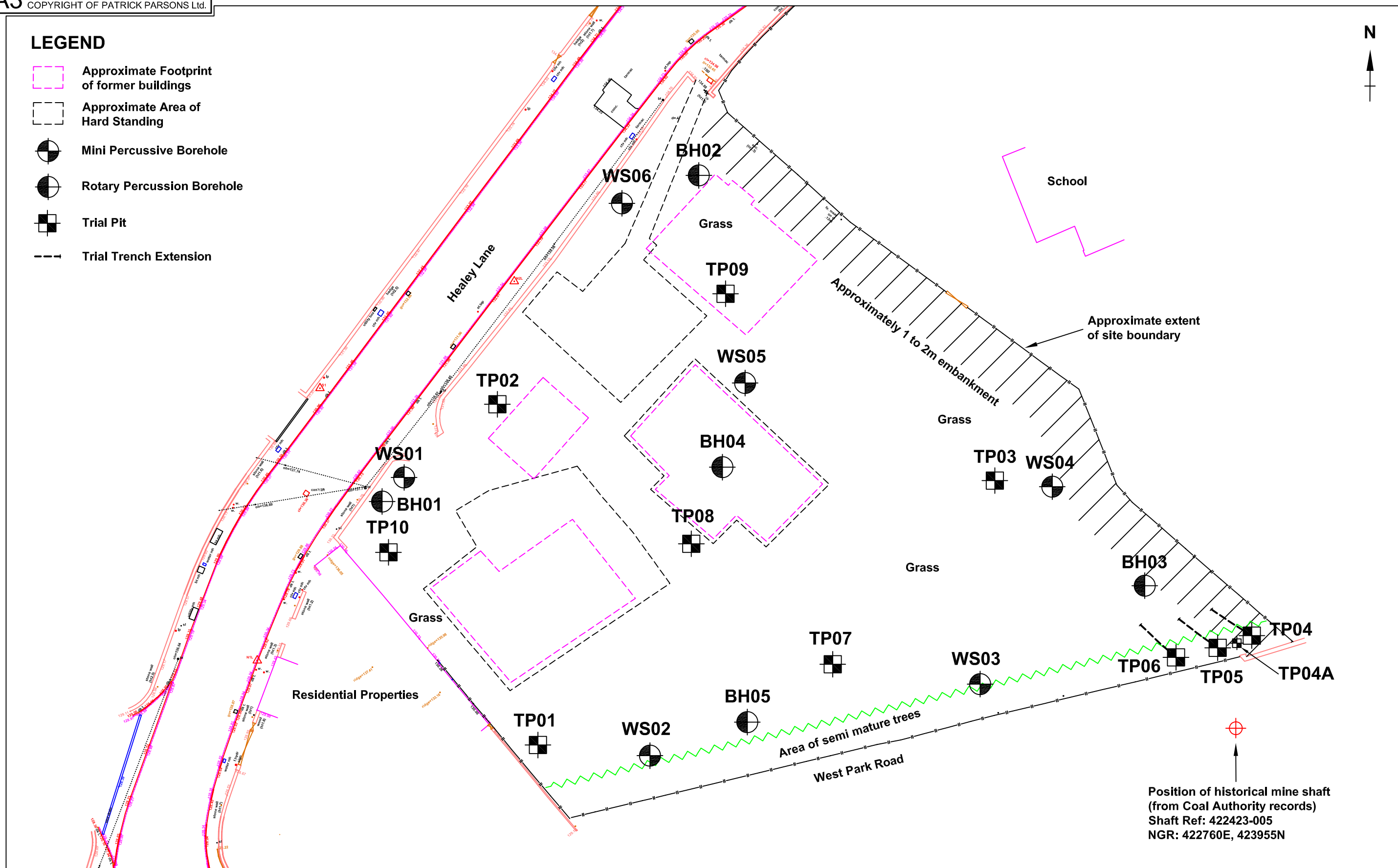
Yours sincerely

**Andrea Chaverra Valencia**  
Geoenvironmental Engineer

**APPENDIX A  
FIGURES**

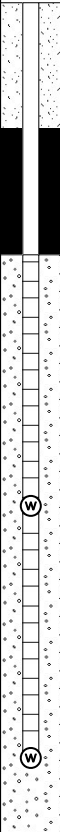
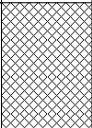
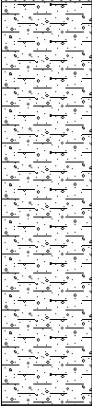
## LEGEND

- Approximate Footprint of former buildings
- Approximate Area of Hard Standing
- Mini Percussive Borehole
- Rotary Percussion Borehole
- Trial Pit
- Trial Trench Extension



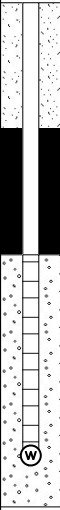
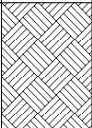
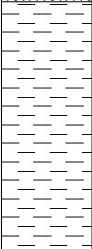
Position of historical mine shaft  
(from Coal Authority records)  
Shaft Ref: 422423-005  
NGR: 422760E, 423955N

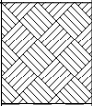
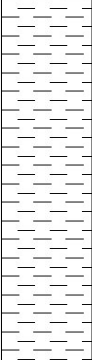
**APPENDIX B**  
**EXPLORATORY HOLE RECORDS**

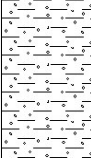
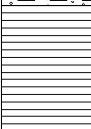
|    |               |                            |      | <b>Window Sample Hole Log      FINAL</b> |               |                              | Borehole No.<br><b>WS01</b><br>Sheet 1 of 1                                                                                                                                                                      |                                                                                       |  |
|-------------------------------------------------------------------------------------|---------------|----------------------------|------|------------------------------------------|---------------|------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|--|
| Project Name:    Healey Lane                                                        |               |                            |      | Project No.<br>H17075                    |               | Co-ords:                     |                                                                                                                                                                                                                  | Hole Type<br>WS                                                                       |  |
| Location:    Batley                                                                 |               |                            |      |                                          |               | Level (m AOD):               |                                                                                                                                                                                                                  | Scale<br>1:30                                                                         |  |
| Client:        Planned Contracts Ltd                                                |               |                            |      |                                          |               | Dates:            24/04/2018 |                                                                                                                                                                                                                  | Logged By<br>ACV                                                                      |  |
| Well                                                                                | Water Strikes | Sample and In Situ Testing |      |                                          | Depth (m bgl) | Level (m AOD)                | Legend                                                                                                                                                                                                           | Stratum Description                                                                   |  |
|                                                                                     |               | Depth (m bgl)              | Type | Results                                  |               |                              |                                                                                                                                                                                                                  |                                                                                       |  |
|   |               |                            |      |                                          | 0.50          |                              |  MADE GROUND: Firm brown sandy, gravelly clay. Sand is fine to coarse. Gravel is fine to coarse angular of sandstone and brick. |                                                                                       |  |
|                                                                                     |               | 1.00                       | SPT  | N=18 (1,2/3,4,5,6)                       |               |                              |  Stiff yellow brown sandy, gravelly CLAY. Sand is fine to coarse. Gravel is fine to coarse angular of mudstone and sandstone.   | 1                                                                                     |  |
|                                                                                     |               | 1.70                       | HSV  | 82kPa                                    |               |                              |                                                                                                                                                                                                                  |                                                                                       |  |
|                                                                                     |               | 2.00                       | SPT  | N=20 (5,5/7,4,4,5)                       | 2.10          |                              |  Weak grey MUDSTONE.                                                                                                           | 2                                                                                     |  |
|                                                                                     |               | 3.00                       | SPT  | 50 (11,8/50 for 125mm)                   | 3.30          |                              |  End of Borehole at 3.30m                                                                                                     | 3                                                                                     |  |
|                                                                                     |               |                            |      |                                          |               |                              |                                                                                                                                                                                                                  | 4                                                                                     |  |
|                                                                                     |               |                            |      |                                          |               |                              |                                                                                                                                                                                                                  | 5                                                                                     |  |
|                                                                                     |               |                            |      |                                          |               |                              |                                                                                                                                                                                                                  | 6                                                                                     |  |
| Remarks:        No groundwater encountered. Monitoring well installed at 3.00m bgl. |               |                            |      |                                          |               |                              |                                                                                                                                                                                                                  |  |  |

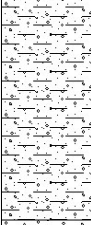
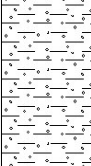
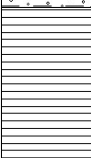




|    |               |                            |            | <b>Window Sample Hole Log      FINAL</b> |               |                                                                                                                                                                                                       | Borehole No.<br><b>WS03</b><br>Sheet 1 of 1                                                                                                                                               |                                                                                       |  |
|-------------------------------------------------------------------------------------|---------------|----------------------------|------------|------------------------------------------|---------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|--|
| Project Name:    Healey Lane                                                        |               |                            |            | Project No.<br>H17075                    |               | Co-ords:                                                                                                                                                                                              |                                                                                                                                                                                           | Hole Type<br>WS                                                                       |  |
| Location:    Batley                                                                 |               |                            |            |                                          |               | Level (m AOD):                                                                                                                                                                                        |                                                                                                                                                                                           | Scale<br>1:30                                                                         |  |
| Client:        Planned Contracts Ltd                                                |               |                            |            |                                          |               | Dates:            24/04/2018                                                                                                                                                                          |                                                                                                                                                                                           | Logged By<br>ACV                                                                      |  |
| Well                                                                                | Water Strikes | Sample and In Situ Testing |            |                                          | Depth (m bgl) | Level (m AOD)                                                                                                                                                                                         | Legend                                                                                                                                                                                    | Stratum Description                                                                   |  |
|                                                                                     |               | Depth (m bgl)              | Type       | Results                                  |               |                                                                                                                                                                                                       |                                                                                                                                                                                           |                                                                                       |  |
|    |               |                            |            |                                          | 0.50          |                                                                                                                                                                                                       |  TOPSOIL: Dark brown sandy, slightly gravelly clay. Sand is fine to coarse. Gravel is fine of sandstone. | 1                                                                                     |  |
|                                                                                     |               | 0.90<br>1.00               | HSV<br>SPT | 78kPa<br>N=10 (1,1/2,2,3,3)              |               |  Stiff yellow brown mottled grey slightly gravelly CLAY. Gravel is fine to coarse angular of sandstone and mudstone. |                                                                                                                                                                                           |                                                                                       |  |
|                                                                                     |               |                            |            |                                          | 1.50          |  Stiff grey slightly sandy CLAY.                                                                                     |                                                                                                                                                                                           |                                                                                       |  |
|                                                                                     |               | 1.80                       | SPT        | 50 (21,4/50 for 115mm)                   | 1.80          |  Weak sandy MUDSTONE.                                                                                                | 2                                                                                                                                                                                         |                                                                                       |  |
|                                                                                     |               |                            |            |                                          | 2.00          | End of Borehole at 2.00m                                                                                                                                                                              |                                                                                                                                                                                           |                                                                                       |  |
| Remarks:        No groundwater encountered. Monitoring well installed at 1.80m bgl. |               |                            |            |                                          |               |                                                                                                                                                                                                       |                                                                                                                                                                                           |                                                                                       |  |
|                                                                                     |               |                            |            |                                          |               |                                                                                                                                                                                                       |                                                                                                                                                                                           |  |  |

|           |                                                                                   |                            |      | <b>Window Sample Hole Log      FINAL</b> |               |                              | Borehole No.<br><b>WS04</b><br>Sheet 1 of 1                                       |                                                                                                                     |                                                                                       |
|--------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|----------------------------|------|------------------------------------------|---------------|------------------------------|-----------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| Project Name:    Healey Lane                                                               |                                                                                   |                            |      | Project No.<br>H17075                    |               | Co-ords:                     |                                                                                   | Hole Type<br>WS                                                                                                     |                                                                                       |
| Location:    Batley                                                                        |                                                                                   |                            |      |                                          |               | Level (m AOD):               |                                                                                   | Scale<br>1:30                                                                                                       |                                                                                       |
| Client:        Planned Contracts Ltd                                                       |                                                                                   |                            |      |                                          |               | Dates:            24/04/2018 |                                                                                   | Logged By<br>ACV                                                                                                    |                                                                                       |
| Well                                                                                       | Water Strikes                                                                     | Sample and In Situ Testing |      |                                          | Depth (m bgl) | Level (m AOD)                | Legend                                                                            | Stratum Description                                                                                                 |                                                                                       |
|                                                                                            |                                                                                   | Depth (m bgl)              | Type | Results                                  |               |                              |                                                                                   |                                                                                                                     |                                                                                       |
|           |  |                            |      |                                          | 0.40          |                              |  | TOPSOIL: Dark brown sandy, slightly gravelly clay. Sand is fine to coarse. Gravel is fine of sandstone.             |                                                                                       |
|                                                                                            |                                                                                   | 0.85                       | HSV  | 80kPa                                    |               |                              |  | Stiff yellow brown mottled grey slightly gravelly CLAY. Gravel is fine to coarse angular of sandstone and mudstone. | 1                                                                                     |
|                                                                                            |                                                                                   | 1.00                       | SPT  | N=15 (2,3/5,3,4,3)                       |               |                              |                                                                                   |                                                                                                                     |                                                                                       |
|                                                                                            |                                                                                   | 1.75                       | HSV  | 84kPa                                    |               |                              |                                                                                   |                                                                                                                     |                                                                                       |
|                                                                                            |                                                                                   | 1.90                       | SPT  | 50 (30 for 135mm/50 for 115mm)           | 1.85          |                              |  | Weak mottled grey and brown MUDSTONE.                                                                               | 2                                                                                     |
|                                                                                            |                                                                                   |                            |      |                                          | 2.15          |                              |                                                                                   | End of Borehole at 2.15m                                                                                            |                                                                                       |
|                                                                                            |                                                                                   |                            |      |                                          |               |                              |                                                                                   |                                                                                                                     | 3                                                                                     |
|                                                                                            |                                                                                   |                            |      |                                          |               |                              |                                                                                   |                                                                                                                     | 4                                                                                     |
|                                                                                            |                                                                                   |                            |      |                                          |               |                              |                                                                                   |                                                                                                                     | 5                                                                                     |
|                                                                                            |                                                                                   |                            |      |                                          |               |                              |                                                                                   |                                                                                                                     | 6                                                                                     |
| Remarks:        Backfilled with arisings to ground level. Groundwater strike at 1.90m bgl. |                                                                                   |                            |      |                                          |               |                              |                                                                                   |                                                                                                                     |  |

|           |                                                                                   |                            |      | <b>Window Sample Hole Log</b> <b>FINAL</b> |                  |                              | Borehole No.<br><b>WS05</b><br>Sheet 1 of 1                                                                                                                                               |                                                                                                                                                                                                         |                                                                                                                              |                          |
|--------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|----------------------------|------|--------------------------------------------|------------------|------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------|--------------------------|
| Project Name:    Healey Lane                                                               |                                                                                   |                            |      | Project No.<br>H17075                      |                  | Co-ords:                     |                                                                                                                                                                                           | Hole Type<br>WS                                                                                                                                                                                         |                                                                                                                              |                          |
| Location:    Batley                                                                        |                                                                                   |                            |      |                                            |                  | Level (m AOD):               |                                                                                                                                                                                           | Scale<br>1:30                                                                                                                                                                                           |                                                                                                                              |                          |
| Client:        Planned Contracts Ltd                                                       |                                                                                   |                            |      |                                            |                  | Dates:            24/04/2018 |                                                                                                                                                                                           | Logged By<br>ACV                                                                                                                                                                                        |                                                                                                                              |                          |
| Well                                                                                       | Water<br>Strikes                                                                  | Sample and In Situ Testing |      |                                            | Depth<br>(m bgl) | Level<br>(m AOD)             | Legend                                                                                                                                                                                    | Stratum Description                                                                                                                                                                                     |                                                                                                                              |                          |
|                                                                                            |                                                                                   | Depth (m bgl)              | Type | Results                                    |                  |                              |                                                                                                                                                                                           |                                                                                                                                                                                                         |                                                                                                                              |                          |
|           |  | 1.00                       | SPT  | N=74 (6,9/74 for 225mm)                    | 0.25             |                              |  TOPSOIL: Dark brown sandy, slightly gravelly clay. Sand is fine to coarse. Gravel is fine of sandstone. | <br>Firm to stiff orange brown mottled grey gravelly CLAY. Gravel is fine to coarse angular of sandstone and mudstone. |  Weak to medium strong grey silty MUDSTONE. | 1                        |
|                                                                                            |                                                                                   |                            |      |                                            | 0.90             |                              |                                                                                                                                                                                           |                                                                                                                                                                                                         |                                                                                                                              |                          |
|                                                                                            |                                                                                   |                            |      |                                            | 1.40             |                              |                                                                                                                                                                                           |                                                                                                                                                                                                         |                                                                                                                              | End of Borehole at 1.40m |
|                                                                                            |                                                                                   |                            |      |                                            |                  |                              |                                                                                                                                                                                           |                                                                                                                                                                                                         |                                                                                                                              | 2                        |
|                                                                                            |                                                                                   |                            |      |                                            |                  |                              |                                                                                                                                                                                           |                                                                                                                                                                                                         |                                                                                                                              | 3                        |
|                                                                                            |                                                                                   |                            |      |                                            |                  |                              |                                                                                                                                                                                           |                                                                                                                                                                                                         |                                                                                                                              | 4                        |
|                                                                                            |                                                                                   |                            |      |                                            |                  |                              |                                                                                                                                                                                           |                                                                                                                                                                                                         |                                                                                                                              | 5                        |
|                                                                                            |                                                                                   |                            |      |                                            |                  |                              |                                                                                                                                                                                           |                                                                                                                                                                                                         |                                                                                                                              | 6                        |
| Remarks:        Backfilled with arisings to ground level. Groundwater strike at 1.00m bgl. |                                                                                   |                            |      |                                            |                  |                              |                                                                                                                                                                                           |                                                                                                                                                                                                         |                                         |                          |

|      |               |                            |      | <b>Window Sample Hole Log      FINAL</b> |               |                              | Borehole No.<br><b>WS06</b><br>Sheet 1 of 1                                                                                                                                                                    |                     |  |
|---------------------------------------------------------------------------------------|---------------|----------------------------|------|------------------------------------------|---------------|------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|--|
| Project Name:    Healey Lane                                                          |               |                            |      | Project No.<br>H17075                    |               | Co-ords:                     |                                                                                                                                                                                                                | Hole Type<br>WS     |  |
| Location:    Batley                                                                   |               |                            |      |                                          |               | Level (m AOD):               |                                                                                                                                                                                                                | Scale<br>1:30       |  |
| Client:        Planned Contracts Ltd                                                  |               |                            |      |                                          |               | Dates:            24/04/2018 |                                                                                                                                                                                                                | Logged By<br>ACV    |  |
| Well                                                                                  | Water Strikes | Sample and In Situ Testing |      |                                          | Depth (m bgl) | Level (m AOD)                | Legend                                                                                                                                                                                                         | Stratum Description |  |
|                                                                                       |               | Depth (m bgl)              | Type | Results                                  |               |                              |                                                                                                                                                                                                                |                     |  |
|     |               |                            |      |                                          | 0.15          |                              |  TOPSOIL: Dark brown sandy, slightly gravelly clay. Sand is fine to coarse. Gravel is fine of sandstone.                      | 1                   |  |
|                                                                                       |               | 1.00                       | SPT  | N=14 (2,4/3,3,4,4)                       | 1.11          |                              |  Stiff friable brown sandy gravelly CLAY. Sand is fine to coarse. Gravel is fine to coarse angular of sandstone and mudstone. |                     |  |
|                                                                                       |               | 2.00                       | SPT  | N=50 (3,6/50 for 225mm)                  | 1.80          |                              |  Stiff grey brown gravelly CLAY. Gravel is fine to coarse angular of mudstone.                                                | 2                   |  |
|                                                                                       |               |                            |      |                                          | 2.40          |                              |  Weak grey shaly MUDSTONE.                                                                                                   |                     |  |
| End of Borehole at 2.40m                                                              |               |                            |      |                                          |               |                              |                                                                                                                                                                                                                | 3                   |  |
|                                                                                       |               |                            |      |                                          |               |                              |                                                                                                                                                                                                                | 4                   |  |
|                                                                                       |               |                            |      |                                          |               |                              |                                                                                                                                                                                                                | 5                   |  |
|                                                                                       |               |                            |      |                                          |               |                              |                                                                                                                                                                                                                | 6                   |  |
| Remarks:        No groundwater encountered. Monitoring well installed at 2.00m bgl.   |               |                            |      |                                          |               |                              |                                                                                                                                                                                                                |                     |  |
|  |               |                            |      |                                          |               |                              |                                                                                                                                                                                                                |                     |  |

**APPENDIX C**  
**GAS MONITORING RESULTS**

Ground Gas and Groundwater Monitoring Records



Job No: H17075  
Site: Healey Lane, Batley  
Client: Planned Contracts Ltd

Visit No: 1 of 6  
Date: 03/05/2018  
Operator: ACV

| Monitoring Point | GAS CONCENTRATIONS |        |                       |        |         |        |                       |        |                         |        |            |        | VOCs           |                        | GAS FLOWS        |        |                              |                                 | WELL AND GROUNDWATER DATA |                       |                       |                     |               | Comments |
|------------------|--------------------|--------|-----------------------|--------|---------|--------|-----------------------|--------|-------------------------|--------|------------|--------|----------------|------------------------|------------------|--------|------------------------------|---------------------------------|---------------------------|-----------------------|-----------------------|---------------------|---------------|----------|
|                  | Methane (%v/v)     |        | Carbon dioxide (%v/v) |        | LEL (%) |        | Carbon monoxide (ppm) |        | Hydrogen sulphide (ppm) |        | Oxygen (%) |        | PID Peak (ppm) | Product thickness (mm) | Flow rate (l/hr) |        | Diff. borehole Pressure (Pa) | Time for flow to equalise (sec) | Water level (m bgl)       | Depth of well (m bgl) | Reduced level (m AOD) | Water level (m AOD) | Response Zone |          |
|                  | Peak               | Steady | Peak                  | Steady | Peak    | Steady | Peak                  | Steady | Peak                    | Steady | Peak       | Steady |                |                        | Peak             | Steady |                              |                                 |                           |                       |                       |                     |               |          |
| WS01             | 0.0                | 0.0    | 1.8                   | 1.7    | 0.0     | 0.0    | 0                     | 0      | 0                       | 0      | 18.1       | 17.8   |                |                        | 0.0              | 0.0    |                              |                                 | 2.50                      | 2.93                  |                       |                     |               |          |
| WS02             | 0.0                | 0.0    | 0.7                   | 0.6    | 0.0     | 0.0    | 0                     | 0      | 0                       | 0      | 19.6       | 19.6   |                |                        | 0.0              | 0.0    |                              |                                 | 2.60                      | 3.22                  |                       |                     |               |          |
| WS03             | 0.0                | 0.0    | 0.6                   | 0.6    | 0.0     | 0.0    | 0                     | 0      | 0                       | 0      | 19.1       | 19.1   |                |                        | 0.0              | 0.0    |                              |                                 | Dry                       | 1.99                  |                       |                     |               |          |
| WS06             | 0.0                | 0.0    | 1.0                   | 0.2    | 0.0     | 0.0    | 1                     | 0      | 0                       | 0      | 20.3       | 20.2   |                |                        | 0.0              | 0.0    |                              |                                 | Dry                       | 2.07                  |                       |                     |               |          |
|                  |                    |        |                       |        |         |        |                       |        |                         |        |            |        |                |                        |                  |        |                              |                                 |                           |                       |                       |                     |               |          |
|                  |                    |        |                       |        |         |        |                       |        |                         |        |            |        |                |                        |                  |        |                              |                                 |                           |                       |                       |                     |               |          |
|                  |                    |        |                       |        |         |        |                       |        |                         |        |            |        |                |                        |                  |        |                              |                                 |                           |                       |                       |                     |               |          |
|                  |                    |        |                       |        |         |        |                       |        |                         |        |            |        |                |                        |                  |        |                              |                                 |                           |                       |                       |                     |               |          |
|                  |                    |        |                       |        |         |        |                       |        |                         |        |            |        |                |                        |                  |        |                              |                                 |                           |                       |                       |                     |               |          |
|                  |                    |        |                       |        |         |        |                       |        |                         |        |            |        |                |                        |                  |        |                              |                                 |                           |                       |                       |                     |               |          |
|                  |                    |        |                       |        |         |        |                       |        |                         |        |            |        |                |                        |                  |        |                              |                                 |                           |                       |                       |                     |               |          |
|                  |                    |        |                       |        |         |        |                       |        |                         |        |            |        |                |                        |                  |        |                              |                                 |                           |                       |                       |                     |               |          |
| Max              | 0.0                | 0.0    | 1.8                   | 1.7    | 0.0     | 0.0    | 1                     | 0      | 0                       | 0      | 20.3       | 20.2   |                |                        | <0.1             | <0.1   |                              |                                 | 2.60                      | 3.22                  |                       |                     |               |          |
| Min              | 0.0                | 0.0    | 0.6                   | 0.2    | 0.0     | 0.0    | 0                     | 0      | 0                       | 0      | 18.1       | 17.8   |                |                        | <0.1             | <0.1   |                              |                                 | 2.50                      | 1.99                  |                       |                     |               |          |

METEOROLOGICAL AND SITE INFORMATION:

State of ground:

X

Dry

Wind:Calm

Cloud cover:None

Precipitation:

X

None

Barometric pressure (mbar):

Pressure trend:

Air Temperature (Deg. C):

(Select correct box with X or enter data, as applicable)

Moist

X

Light

X

SlightBefore

999

FallingBefore

WetModerateCloudyModerate

Steady

X

SnowStrongOvercastHeavyAfter

999

RisingAfter

Frozen

Ground Gas and Groundwater Monitoring Records



Job No: H17075  
Site: Healey Lane, Batley  
Client: Planned Contracts Ltd

Visit No: 2 of 6  
Date: 15/05/2018  
Operator: ACV

| Monitoring Point | GAS CONCENTRATIONS |        |                       |        |         |        |                       |        |                         |        |            |        | VOCs           |                        | GAS FLOWS        |        |                              | WELL AND GROUNDWATER DATA       |                     |                       |                       |                     | Comments |               |
|------------------|--------------------|--------|-----------------------|--------|---------|--------|-----------------------|--------|-------------------------|--------|------------|--------|----------------|------------------------|------------------|--------|------------------------------|---------------------------------|---------------------|-----------------------|-----------------------|---------------------|----------|---------------|
|                  | Methane (%v/v)     |        | Carbon dioxide (%v/v) |        | LEL (%) |        | Carbon monoxide (ppm) |        | Hydrogen sulphide (ppm) |        | Oxygen (%) |        | PID Peak (ppm) | Product thickness (mm) | Flow rate (l/hr) |        | Diff. borehole Pressure (Pa) | Time for flow to equalise (sec) | Water level (m bgl) | Depth of well (m bgl) | Reduced level (m AOD) | Water level (m AOD) |          | Response Zone |
|                  | Peak               | Steady | Peak                  | Steady | Peak    | Steady | Peak                  | Steady | Peak                    | Steady | Peak       | Steady |                |                        | Peak             | Steady |                              |                                 |                     |                       |                       |                     |          |               |
| WS01             | 0.0                | 0.0    | 1.5                   | 1.5    | 0.0     | 0.0    | 0                     | 0      | 0                       | 0      | 19.5       | 18.7   |                |                        | 0.0              | 0.0    |                              |                                 | 2.66                | 2.96                  |                       |                     |          |               |
| WS02             | 0.0                | 0.0    | 1.2                   | 1.1    | 0.0     | 0.0    | 0                     | 0      | 0                       | 0      | 19.0       | 19.0   |                |                        | 0.0              | 0.0    |                              |                                 | 2.77                | 3.25                  |                       |                     |          |               |
| WS03             | 0.0                | 0.0    | 1.2                   | 1.2    | 0.0     | 0.0    | 0                     | 0      | 0                       | 0      | 17.1       | 16.9   |                |                        | 0.0              | 0.0    |                              |                                 | Dry                 | 2.00                  |                       |                     |          |               |
| WS06             | 0.0                | 0.0    | 3.1                   | 3.0    | 0.0     | 0.0    | 0                     | 0      | 0                       | 0      | 17.0       | 16.0   |                |                        | 0.0              | 0.0    |                              |                                 | Dry                 | 2.06                  |                       |                     |          |               |
|                  |                    |        |                       |        |         |        |                       |        |                         |        |            |        |                |                        |                  |        |                              |                                 |                     |                       |                       |                     |          |               |
|                  |                    |        |                       |        |         |        |                       |        |                         |        |            |        |                |                        |                  |        |                              |                                 |                     |                       |                       |                     |          |               |
|                  |                    |        |                       |        |         |        |                       |        |                         |        |            |        |                |                        |                  |        |                              |                                 |                     |                       |                       |                     |          |               |
|                  |                    |        |                       |        |         |        |                       |        |                         |        |            |        |                |                        |                  |        |                              |                                 |                     |                       |                       |                     |          |               |
|                  |                    |        |                       |        |         |        |                       |        |                         |        |            |        |                |                        |                  |        |                              |                                 |                     |                       |                       |                     |          |               |
|                  |                    |        |                       |        |         |        |                       |        |                         |        |            |        |                |                        |                  |        |                              |                                 |                     |                       |                       |                     |          |               |
|                  |                    |        |                       |        |         |        |                       |        |                         |        |            |        |                |                        |                  |        |                              |                                 |                     |                       |                       |                     |          |               |
|                  |                    |        |                       |        |         |        |                       |        |                         |        |            |        |                |                        |                  |        |                              |                                 |                     |                       |                       |                     |          |               |
| Max              | 0.0                | 0.0    | 3.1                   | 3.0    | 0.0     | 0.0    | 0                     | 0      | 0                       | 0      | 19.5       | 19.0   |                |                        | <0.1             | <0.1   |                              |                                 | 2.77                | 3.25                  |                       |                     |          |               |
| Min              | 0.0                | 0.0    | 1.2                   | 1.1    | 0.0     | 0.0    | 0                     | 0      | 0                       | 0      | 17.0       | 16.0   |                |                        | <0.1             | <0.1   |                              |                                 | 2.66                | 2.00                  |                       |                     |          |               |

METEOROLOGICAL AND SITE INFORMATION:

State of ground:

X

Dry

Moist

Wet

Snow

Frozen

Wind:

X

Calm

Light

Moderate

Strong

Cloud cover:

X

None

Slight

Cloudy

Overcast

Precipitation:

X

None

Slight

Moderate

Heavy

Barometric pressure (mbar)

998

Before

X

Falling

Steady

998

After

Pressure trend:

Before

After

Air Temperature (Deg. C):

## Ground Gas and Groundwater Monitoring Records



**Job No:** H17075  
**Site:** Healey Lane, Batley  
**Client:** Planned Contracts Ltd

Visit No: 3 of 6  
Date: 30/05/2018  
Operator: ACV

|                  | GAS CONCENTRATIONS |        |                       |        |         |        |                       |        |                         |        |            |        | VOCs           |                        | GAS FLOWS        |        |                              |                                 | WELL AND GROUNDWATER DATA |                       |                       |                     |               | Comments |
|------------------|--------------------|--------|-----------------------|--------|---------|--------|-----------------------|--------|-------------------------|--------|------------|--------|----------------|------------------------|------------------|--------|------------------------------|---------------------------------|---------------------------|-----------------------|-----------------------|---------------------|---------------|----------|
| Monitoring Point | Methane (%v/v)     |        | Carbon dioxide (%v/v) |        | LEL (%) |        | Carbon monoxide (ppm) |        | Hydrogen sulphide (ppm) |        | Oxygen (%) |        | PID Peak (ppm) | Product thickness (mm) | Flow rate (l/hr) |        | Diff. borehole Pressure (Pa) | Time for flow to equalise (sec) | Water level (m bgl)       | Depth of well (m bgl) | Reduced level (m AOD) | Water level (m AOD) | Response Zone |          |
|                  | Peak               | Steady | Peak                  | Steady | Peak    | Steady | Peak                  | Steady | Peak                    | Steady | Peak       | Steady |                |                        | Peak             | Steady |                              |                                 |                           |                       |                       |                     |               |          |
| WS01             | 0.0                | 0.0    | 1.4                   | 1.3    |         |        |                       |        |                         |        | 19.6       | 19.6   |                |                        | 0.0              | 0.0    |                              |                                 | 2.75                      | 2.94                  |                       |                     |               |          |
| WS02             | 0.0                | 0.0    | 1.0                   | 0.9    |         |        |                       |        |                         |        | 19.9       | 19.9   |                |                        | 0.0              | 0.0    |                              |                                 | 3.03                      | 3.22                  |                       |                     |               |          |
| WS03             | 0.0                | 0.0    | 1.8                   | 1.7    |         |        |                       |        |                         |        | 18.6       | 13.6   |                |                        | 0.0              | 0.0    |                              |                                 | Dry                       | 1.98                  |                       |                     |               |          |
| WS06             | 0.0                | 0.0    | 3.9                   | 3.5    |         |        |                       |        |                         |        | 16.0       | 15.9   |                |                        | 2.0              | 0.1    |                              |                                 | Dry                       | 2.06                  |                       |                     |               |          |
|                  |                    |        |                       |        |         |        |                       |        |                         |        |            |        |                |                        |                  |        |                              |                                 |                           |                       |                       |                     |               |          |
|                  |                    |        |                       |        |         |        |                       |        |                         |        |            |        |                |                        |                  |        |                              |                                 |                           |                       |                       |                     |               |          |
|                  |                    |        |                       |        |         |        |                       |        |                         |        |            |        |                |                        |                  |        |                              |                                 |                           |                       |                       |                     |               |          |
|                  |                    |        |                       |        |         |        |                       |        |                         |        |            |        |                |                        |                  |        |                              |                                 |                           |                       |                       |                     |               |          |
|                  |                    |        |                       |        |         |        |                       |        |                         |        |            |        |                |                        |                  |        |                              |                                 |                           |                       |                       |                     |               |          |
|                  |                    |        |                       |        |         |        |                       |        |                         |        |            |        |                |                        |                  |        |                              |                                 |                           |                       |                       |                     |               |          |
|                  |                    |        |                       |        |         |        |                       |        |                         |        |            |        |                |                        |                  |        |                              |                                 |                           |                       |                       |                     |               |          |
|                  |                    |        |                       |        |         |        |                       |        |                         |        |            |        |                |                        |                  |        |                              |                                 |                           |                       |                       |                     |               |          |
| Max              | 0.0                | 0.0    | 3.9                   | 3.5    |         |        |                       |        |                         |        | 19.9       | 19.9   |                |                        | 2.0              | 0.1    |                              |                                 | 3.03                      | 3.22                  |                       |                     |               |          |
| Min              | 0.0                | 0.0    | 1.0                   | 0.9    |         |        |                       |        |                         |        | 16.0       | 13.6   |                |                        | <0.1             | <0.1   |                              |                                 | 2.75                      | 1.98                  |                       |                     |               |          |

**METEOROLOGICAL AND SITE INFORMATION:**

(Select correct box with X or enter data, as applicable)

|                            |  |      |
|----------------------------|--|------|
| State of ground:           |  | Dry  |
| Wind:                      |  | Calm |
| Cloud cover:               |  | None |
| Precipitation:             |  | None |
| Barometric pressure (mbar) |  |      |
| Pressure trend:            |  |      |
| Air Temperature (Deg. C):  |  |      |

|     |         |   |          |
|-----|---------|---|----------|
|     | Moist   | X | Wet      |
| X   | Light   |   | Moderate |
|     | Slight  | X | Cloudy   |
| X   | Slight  |   | Moderate |
| 993 | Before  |   |          |
|     | Falling | X | Steady   |
|     | Before  |   |          |

|     |          |  |        |
|-----|----------|--|--------|
|     | Snow     |  | Frozen |
|     | Strong   |  |        |
|     | Overcast |  |        |
|     | Heavy    |  |        |
| 993 | After    |  |        |
|     | Rising   |  |        |
|     | After    |  |        |



Ground Gas and Groundwater Monitoring Records



Job No: H17075  
Site: Healey Lane, Batley  
Client: Planned Contracts Ltd

Visit No: 4 of 6  
Date: 13/06/2018  
Operator: ACV

| Monitoring Point | GAS CONCENTRATIONS |        |                       |        |         |        |                       |        |                         |        |            |        | VOCs           |                        | GAS FLOWS        |        |                              |                                 | WELL AND GROUNDWATER DATA |                       |                       |                     |               | Comments |
|------------------|--------------------|--------|-----------------------|--------|---------|--------|-----------------------|--------|-------------------------|--------|------------|--------|----------------|------------------------|------------------|--------|------------------------------|---------------------------------|---------------------------|-----------------------|-----------------------|---------------------|---------------|----------|
|                  | Methane (%v/v)     |        | Carbon dioxide (%v/v) |        | LEL (%) |        | Carbon monoxide (ppm) |        | Hydrogen sulphide (ppm) |        | Oxygen (%) |        | PID Peak (ppm) | Product thickness (mm) | Flow rate (l/hr) |        | Diff. borehole Pressure (Pa) | Time for flow to equalise (sec) | Water level (m bgl)       | Depth of well (m bgl) | Reduced level (m AOD) | Water level (m AOD) | Response Zone |          |
|                  | Peak               | Steady | Peak                  | Steady | Peak    | Steady | Peak                  | Steady | Peak                    | Steady | Peak       | Steady |                |                        | Peak             | Steady |                              |                                 |                           |                       |                       |                     |               |          |
| WS01             | 0.0                | 0.0    | 1.3                   | 1.2    | 0.0     | 0.0    | 0                     | 0      | 0                       | 0      | 19.6       | 19.6   |                |                        | 0.0              | 0.0    |                              |                                 | 2.76                      | 2.95                  |                       |                     |               |          |
| WS02             | 0.0                | 0.0    | 1.2                   | 1.1    | 0.0     | 0.0    | 0                     | 0      | 0                       | 0      | 19.5       | 19.4   |                |                        | 0.0              | 0.0    |                              |                                 | 3.13                      | 3.23                  |                       |                     |               |          |
| WS03             | 0.0                | 0.0    | 1.8                   | 1.8    | 0.0     | 0.0    | 0                     | 0      | 0                       | 0      | 12.8       | 12.7   |                |                        | 0.0              | 0.0    |                              |                                 | Dry                       | 1.99                  |                       |                     |               |          |
| WS06             | 0.0                | 0.0    | 4.6                   | 4.6    | 0.0     | 0.0    | 0                     | 0      | 0                       | 0      | 14.3       | 14.3   |                |                        | 1.5              | 0.0    |                              |                                 | Dry                       | 2.06                  |                       |                     |               |          |
|                  |                    |        |                       |        |         |        |                       |        |                         |        |            |        |                |                        |                  |        |                              |                                 |                           |                       |                       |                     |               |          |
|                  |                    |        |                       |        |         |        |                       |        |                         |        |            |        |                |                        |                  |        |                              |                                 |                           |                       |                       |                     |               |          |
|                  |                    |        |                       |        |         |        |                       |        |                         |        |            |        |                |                        |                  |        |                              |                                 |                           |                       |                       |                     |               |          |
|                  |                    |        |                       |        |         |        |                       |        |                         |        |            |        |                |                        |                  |        |                              |                                 |                           |                       |                       |                     |               |          |
|                  |                    |        |                       |        |         |        |                       |        |                         |        |            |        |                |                        |                  |        |                              |                                 |                           |                       |                       |                     |               |          |
|                  |                    |        |                       |        |         |        |                       |        |                         |        |            |        |                |                        |                  |        |                              |                                 |                           |                       |                       |                     |               |          |
|                  |                    |        |                       |        |         |        |                       |        |                         |        |            |        |                |                        |                  |        |                              |                                 |                           |                       |                       |                     |               |          |
|                  |                    |        |                       |        |         |        |                       |        |                         |        |            |        |                |                        |                  |        |                              |                                 |                           |                       |                       |                     |               |          |
| Max              | 0.0                | 0.0    | 4.6                   | 4.6    | 0.0     | 0.0    | 0                     | 0      | 0                       | 0      | 19.6       | 19.6   |                |                        | 1.5              | <0.1   |                              |                                 | 3.13                      | 3.23                  |                       |                     |               |          |
| Min              | 0.0                | 0.0    | 1.2                   | 1.1    | 0.0     | 0.0    | 0                     | 0      | 0                       | 0      | 12.8       | 12.7   |                |                        | <0.1             | <0.1   |                              |                                 | 2.76                      | 1.99                  |                       |                     |               |          |

METEOROLOGICAL AND SITE INFORMATION:

State of ground:

X

Dry

Wind:

X

Calm

Cloud cover:None

Precipitation:

X

None

Barometric pressure (mbar):

993

Before

Pressure trend:

X

Falling

Air Temperature (Deg. C):Before

(Select correct box with X or enter data, as applicable)

Moist

Light

X

Slight

Slight

993

Before

X

Falling

Before

Wet

Moderate

Cloudy

Moderate

Steady

Snow

Strong

Overcast

Heavy

993

After

Rising

After

Frozen

Ground Gas and Groundwater Monitoring Records



Job No: H17075  
Site: Healey Lane, Batley  
Client: Planned Contracts Ltd

Visit No: 5 of 6  
Date: 26/06/2018  
Operator: ACV

| Monitoring Point | GAS CONCENTRATIONS |        |                       |        |         |        |                       |        |                         |        |            |        | VOCs           |                        | GAS FLOWS        |        |                              | WELL AND GROUNDWATER DATA       |                     |                       |                       |                     | Comments |               |
|------------------|--------------------|--------|-----------------------|--------|---------|--------|-----------------------|--------|-------------------------|--------|------------|--------|----------------|------------------------|------------------|--------|------------------------------|---------------------------------|---------------------|-----------------------|-----------------------|---------------------|----------|---------------|
|                  | Methane (%v/v)     |        | Carbon dioxide (%v/v) |        | LEL (%) |        | Carbon monoxide (ppm) |        | Hydrogen sulphide (ppm) |        | Oxygen (%) |        | PID Peak (ppm) | Product thickness (mm) | Flow rate (l/hr) |        | Diff. borehole Pressure (Pa) | Time for flow to equalise (sec) | Water level (m bgl) | Depth of well (m bgl) | Reduced level (m AOD) | Water level (m AOD) |          | Response Zone |
|                  | Peak               | Steady | Peak                  | Steady | Peak    | Steady | Peak                  | Steady | Peak                    | Steady | Peak       | Steady |                |                        | Peak             | Steady |                              |                                 |                     |                       |                       |                     |          |               |
| WS01             | 0.1                | 0.0    | 1.2                   | 1.1    | 0.0     | 0.0    | 0                     | 0      | 0                       | 0      | 19.5       | 19.3   |                |                        | 0.0              | 0.0    |                              |                                 | 2.82                | 2.95                  |                       |                     |          |               |
| WS02             | 0.1                | 0.0    | 0.6                   | 0.6    | 0.0     | 0.0    | 0                     | 0      | 0                       | 0      | 19.6       | 19.5   |                |                        | 0.0              | 0.0    |                              |                                 | Dry                 | 3.19                  |                       |                     |          |               |
| WS03             | 0.1                | 0.0    | 1.9                   | 1.9    | 0.0     | 0.0    | 0                     | 0      | 0                       | 0      | 13.3       | 13.2   |                |                        | 0.0              | 0.0    |                              |                                 | Dry                 | 1.97                  |                       |                     |          |               |
| WS06             | 0.0                | 0.0    | 4.9                   | 4.9    | 0.0     | 0.0    | 0                     | 0      | 0                       | 0      | 14.6       | 13.6   |                |                        | 0.1              | 0.1    |                              |                                 | Dry                 | 2.06                  |                       |                     |          |               |
|                  |                    |        |                       |        |         |        |                       |        |                         |        |            |        |                |                        |                  |        |                              |                                 |                     |                       |                       |                     |          |               |
|                  |                    |        |                       |        |         |        |                       |        |                         |        |            |        |                |                        |                  |        |                              |                                 |                     |                       |                       |                     |          |               |
|                  |                    |        |                       |        |         |        |                       |        |                         |        |            |        |                |                        |                  |        |                              |                                 |                     |                       |                       |                     |          |               |
|                  |                    |        |                       |        |         |        |                       |        |                         |        |            |        |                |                        |                  |        |                              |                                 |                     |                       |                       |                     |          |               |
|                  |                    |        |                       |        |         |        |                       |        |                         |        |            |        |                |                        |                  |        |                              |                                 |                     |                       |                       |                     |          |               |
|                  |                    |        |                       |        |         |        |                       |        |                         |        |            |        |                |                        |                  |        |                              |                                 |                     |                       |                       |                     |          |               |
|                  |                    |        |                       |        |         |        |                       |        |                         |        |            |        |                |                        |                  |        |                              |                                 |                     |                       |                       |                     |          |               |
|                  |                    |        |                       |        |         |        |                       |        |                         |        |            |        |                |                        |                  |        |                              |                                 |                     |                       |                       |                     |          |               |
| Max              | 0.1                | 0.0    | 4.9                   | 4.9    | 0.0     | 0.0    | 0                     | 0      | 0                       | 0      | 19.6       | 19.5   |                |                        | 0.1              | 0.1    |                              |                                 | 2.82                | 3.19                  |                       |                     |          |               |
| Min              | 0.0                | 0.0    | 0.6                   | 0.6    | 0.0     | 0.0    | 0                     | 0      | 0                       | 0      | 13.3       | 13.2   |                |                        | <0.1             | <0.1   |                              |                                 | 2.82                | 1.97                  |                       |                     |          |               |

METEOROLOGICAL AND SITE INFORMATION:

State of ground:

X

Dry

Moist

Wet

Snow

Frozen

Wind:

X

Calm

Light

Moderate

Strong

Cloud cover:

X

None

Slight

Cloudy

Overcast

Precipitation:

X

None

Slight

Moderate

Heavy

Barometric pressure (mbar)

1027

Before

After

Pressure trend:

Falling

Steady

X

Rising

After

Air Temperature (Deg. C):

Before

After

Ground Gas and Groundwater Monitoring Records



Job No: H17075  
Site: Healey Lane, Batley  
Client: Planned Contracts Ltd

Visit No: 6 of 6  
Date: 13/07/2018  
Operator: ACV

| Monitoring Point | GAS CONCENTRATIONS |        |                       |        |         |        |                       |        |                         |        |            |        | VOCs           |                        | GAS FLOWS        |        |                              | WELL AND GROUNDWATER DATA       |                     |                       |                       |                     | Comments |               |
|------------------|--------------------|--------|-----------------------|--------|---------|--------|-----------------------|--------|-------------------------|--------|------------|--------|----------------|------------------------|------------------|--------|------------------------------|---------------------------------|---------------------|-----------------------|-----------------------|---------------------|----------|---------------|
|                  | Methane (%v/v)     |        | Carbon dioxide (%v/v) |        | LEL (%) |        | Carbon monoxide (ppm) |        | Hydrogen sulphide (ppm) |        | Oxygen (%) |        | PID Peak (ppm) | Product thickness (mm) | Flow rate (l/hr) |        | Diff. borehole Pressure (Pa) | Time for flow to equalise (sec) | Water level (m bgl) | Depth of well (m bgl) | Reduced level (m AOD) | Water level (m AOD) |          | Response Zone |
|                  | Peak               | Steady | Peak                  | Steady | Peak    | Steady | Peak                  | Steady | Peak                    | Steady | Peak       | Steady |                |                        | Peak             | Steady |                              |                                 |                     |                       |                       |                     |          |               |
| WS01             | 0.0                | 0.0    | 1.2                   | 1.1    | 0.0     | 0.0    | 0                     | 0      | 0                       | 0      | 19.8       | 19.8   |                |                        | 0.0              | 0.0    |                              |                                 | 2.85                | 2.95                  |                       |                     |          |               |
| WS02             | 0.0                | 0.0    | 1.0                   | 0.9    | 0.0     | 0.0    | 0                     | 0      | 0                       | 0      | 19.5       | 19.4   |                |                        | 0.0              | 0.0    |                              |                                 | Dry                 | 3.18                  |                       |                     |          |               |
| WS03             | 0.0                | 0.0    | 1.8                   | 1.8    | 0.0     | 0.0    | 0                     | 0      | 0                       | 0      | 17.1       | 16.9   |                |                        | 0.0              | 0.0    |                              |                                 | Dry                 | 1.97                  |                       |                     |          |               |
| WS06             | 0.0                | 0.0    | 6.0                   | 5.9    | 0.0     | 0.0    | 0                     | 0      | 0                       | 0      | 12.8       | 12.8   |                |                        | 0.0              | 0.0    |                              |                                 | Dry                 | 2.04                  |                       |                     |          |               |
|                  |                    |        |                       |        |         |        |                       |        |                         |        |            |        |                |                        |                  |        |                              |                                 |                     |                       |                       |                     |          |               |
|                  |                    |        |                       |        |         |        |                       |        |                         |        |            |        |                |                        |                  |        |                              |                                 |                     |                       |                       |                     |          |               |
|                  |                    |        |                       |        |         |        |                       |        |                         |        |            |        |                |                        |                  |        |                              |                                 |                     |                       |                       |                     |          |               |
|                  |                    |        |                       |        |         |        |                       |        |                         |        |            |        |                |                        |                  |        |                              |                                 |                     |                       |                       |                     |          |               |
|                  |                    |        |                       |        |         |        |                       |        |                         |        |            |        |                |                        |                  |        |                              |                                 |                     |                       |                       |                     |          |               |
|                  |                    |        |                       |        |         |        |                       |        |                         |        |            |        |                |                        |                  |        |                              |                                 |                     |                       |                       |                     |          |               |
|                  |                    |        |                       |        |         |        |                       |        |                         |        |            |        |                |                        |                  |        |                              |                                 |                     |                       |                       |                     |          |               |
|                  |                    |        |                       |        |         |        |                       |        |                         |        |            |        |                |                        |                  |        |                              |                                 |                     |                       |                       |                     |          |               |
| Max              | 0.0                | 0.0    | 6.0                   | 5.9    | 0.0     | 0.0    | 0                     | 0      | 0                       | 0      | 19.8       | 19.8   |                |                        | <0.1             | <0.1   |                              |                                 | 2.85                | 3.18                  |                       |                     |          |               |
| Min              | 0.0                | 0.0    | 1.0                   | 0.9    | 0.0     | 0.0    | 0                     | 0      | 0                       | 0      | 12.8       | 12.8   |                |                        | <0.1             | <0.1   |                              |                                 | 2.85                | 1.97                  |                       |                     |          |               |

METEOROLOGICAL AND SITE INFORMATION:

State of ground:

X

Dry

Moist

Wet

Snow

Frozen

Wind:

Calm

X

Light

Moderate

Strong

Cloud cover:

None

Slight

Cloudy

X

Overcast

Heavy

Precipitation:

X

None

Before

After

Barometric pressure (mbar):

1020

Before

After

Pressure trend:

X

Falling

Rising

Steady

After

Air Temperature (Deg. C):

Before

After

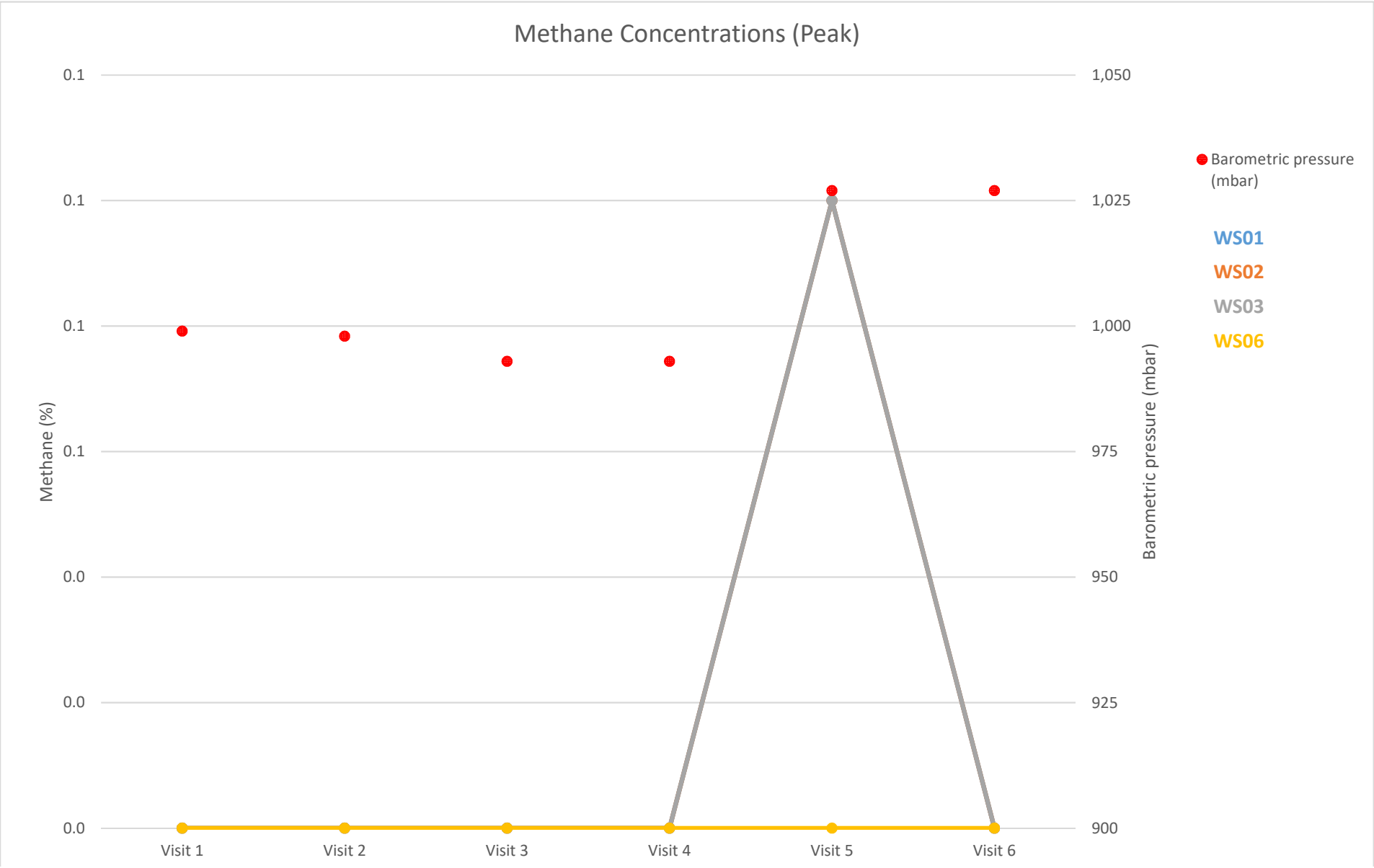
### Summary Table

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Ground Gas and Groundwater Monitoring Records

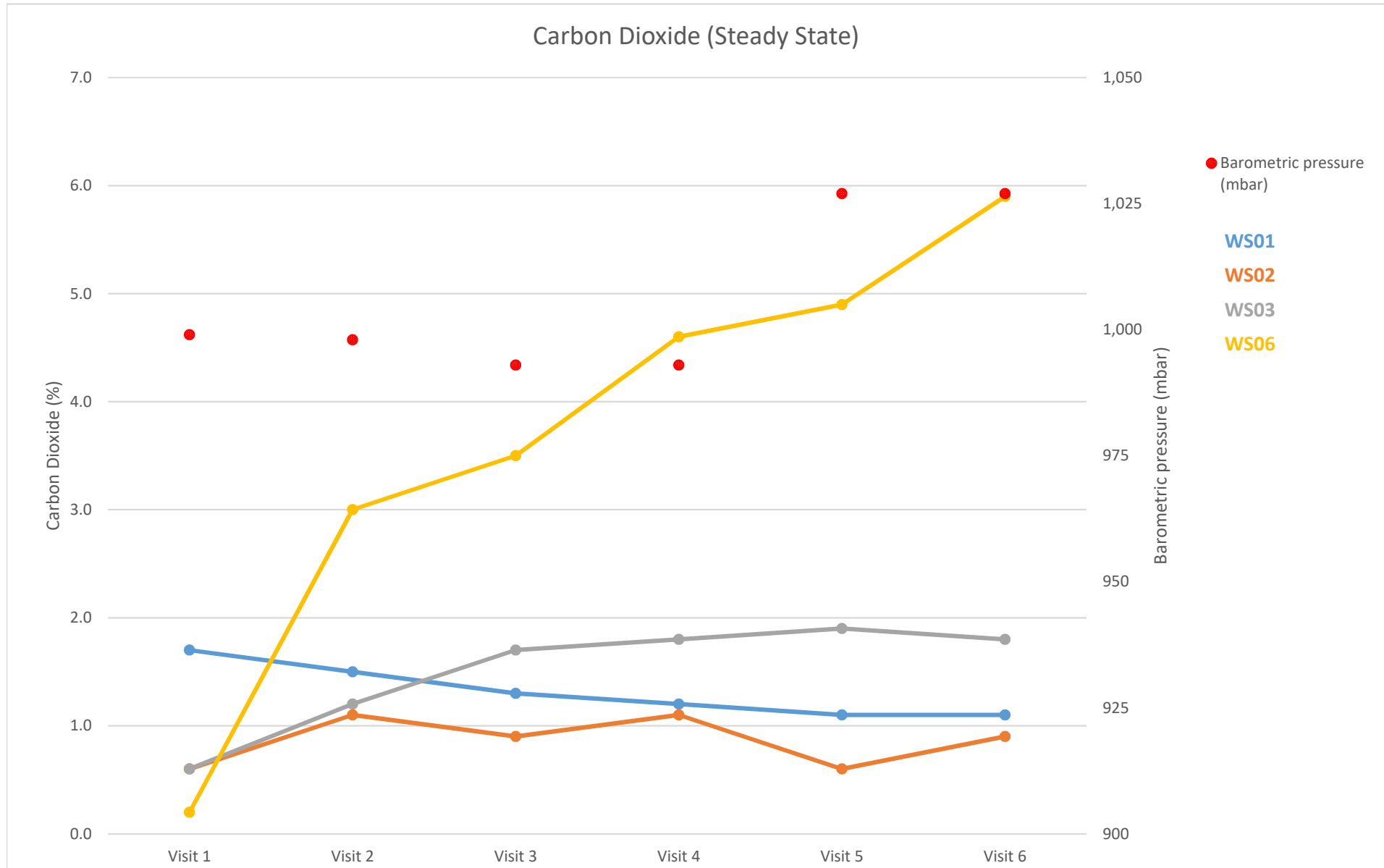


Job No: H17075  
Site: Healey Lane, Batley  
Client: Planned Contracts Ltd



# Ground Gas and Groundwater Monitoring Records

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### Ground Gas and Groundwater Monitoring Records



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