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Mr A Clarke
Miller Homes
Lapwing House
Peel Avenue
Calder Park
Wakefield
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Date: 11th April 2025

Our ref: C10281/GLH/10855

Dear Adam,

GAS RISK ASSESSMENT LETTER REPORT - HERMITAGE PARK, LEPTON

INTRODUCTION

Sirius Geotechnical Ltd (Sirius) was commissioned by Miller Homes to undertake intrusive investigation works at land off Hermitage Park, Lepton ('the site'). Further to our Supplementary Geoenvironmental Appraisal Report (SGAR) for the site (Sirius report ref. C10281/GAR), the planned period of ground gas monitoring is now complete. This letter presents the results of that monitoring and an assessment of the risk posed by hazardous ground gases to the proposed development.

The proposed site layout is shown on JRP Associates Drawing No. 22:5611:01 C, dated 13.11.24, a copy of which is provided in Attachment A. The proposed layout shows 80 no. two storey residential properties, areas of public open space (POS) and two attenuation basins. Based on drawings produced by Fortem Civil Engineering Consultants Ltd (Fortem) on behalf of Miller Homes (Level Strategy and Earthworks Review, Drawing refs. 1161-002-SK21 and 1161-002-SK24), it is anticipated that cut and fill earthworks will be undertaken to achieve proposed development levels. Ground levels below proposed plots are shown to be cut by up to 0.8m and raised by up to 1.9m from existing.

The site has previously been the subject of a desk study by Betts Geo Consulting Engineers on behalf of KCS Developments Ltd. (report ref. 20FRT010/DS Rev 1, dated January 2021) and site investigation by FWS Consultants Ltd on behalf of KCS Developments Ltd. (report ref. 3959OR01 Rev 03, dated January 2024). The previous site investigation identified evidence of potential shallow coal mining posing a surface stability risk to the proposed development which required further investigation/assessment.

The above referenced Sirius SGAR included a review of the existing desk study and site investigation reports and discussed the findings of the supplementary intrusive investigation at the site.

Whilst this letter discusses pertinent findings of the investigation, it should be read in conjunction with the previously mentioned reports, which present details of the site setting and findings of the intrusive investigation.

In undertaking this assessment, we have taken account of current best practice guidance in the assessment risk posed by hazardous permanent ground gases, including;

- BS8485:2015+A1:2019 “Code of Practice for the Design of Protective Measures for Methane and Carbon Dioxide Ground Gases for New Buildings” (hereafter, “BS8485”);
- BS8576:2013 “Guidance on Investigations for Ground Gas – Permanent Gases and Volatile Organic Compounds (VOCs)”;
- CIRIA, “Assessing Risks Posed by Hazardous Ground Gases to Buildings”, report C665, 2007;
- CIRIA, “The VOCs Handbook. Investigating, Assessing and Managing Risks from Inhalation of VOCs at Land Affected by Contamination”, report C682, 2009;
- CIRIA, “Good Practice on the Testing and Verification of Protection Systems for Buildings against Hazardous Ground Gas”, report C735, 2014;
- CL:AIRE “A Pragmatic Approach to Ground Gas Risk Assessment”, report ref. RB17, November 2012;
- CL:AIRE, “Good Practice for Risk Assessment for Coal Mine Gas Emissions”, 2021;
- NHBC, “Hazardous Ground Gas, an Essential Guide for Developers” NF94, 2023;
- Environment Agency “Good Practice for Decommissioning Redundant Boreholes and wells”, 2012;
- Scottish Environment Protection Agency “Good Practice for Decommissioning Redundant Boreholes and wells”, 2014.

REPORT LIMITATIONS

This report, which was designed to meet the requirements of relevant current guidance, presents the factual information available during this appraisal from our own sources, an interpretation of the data obtained and recommendations relevant to the defined objectives. This report considers ground gas risk only.

This report has been prepared for the sole use of Miller Homes. No other third party may rely upon or reproduce the contents of this report without the written approval of Sirius. If any unauthorised third party comes into possession of this report, they rely on it entirely at their own risk and the authors do not owe them any duty of care or skill.

BACKGROUND INFORMATION

Site Description

The site comprises undeveloped agricultural fields, with tree lined field boundaries, forming several parcels of land. The site is formed by a slope, with the lowest topographical point located in the west at a level of c. 126m above Ordnance Datum (AOD). The site slopes up towards the east and northeast, with high points of c. 144m and 149m AOD respectively.

Site History

The earliest historical Ordnance Survey (OS) maps dated 1854 show the site to comprise open fields, with a well shown in the southeast. A possible tree lined ditch is located within the northernmost field, up until 1908. Off site, sandstone quarries are shown from 330m to the northwest.

An old air shaft is shown c. 5m west of the site from 1893, up until the mid 1950’s. By 1906, Victoria Colliery is shown c. 20m to the northeast of the site, later with associated earthworks and pitting. A tramway is shown to cross the northern most area of the site between 1916 and 1948. A cricket ground / pitch and associated pavilion building is shown within the northwest of the site between 1916 and the mid 1960’s. The site appears to have been in use as agricultural land since the early 1970’s.

Recorded Geology

On British Geological Survey (BGS) mapping, the site is shown to be underlain by Carboniferous Pennine Lower Coal Measures Formation (PLCMF) strata, comprising undifferentiated strata in the east and Kirkburton Sandstone in the west. A thin un-named sandstone band is shown within the northeastern extent of the site. No made ground or superficial deposits are shown to underlie the site.

On BGS mapping, the Crow Coal is conjectured to outcrop through the centre of the site in an approximate northwest-southeast orientation and dipping towards the northeast, with a thickness of <0.1m. Although the Crow Coal is not shown on later geological maps, the presence of an inconsistent 'thin' un-named coal is conjectured to outcrop in the northeast of the site.

On BGS mapping, the Black Bed Coal is conjectured to outcrop c.20m to the west of the site, orientated approximately northwest-southeast, dipping to the east / northeast (i.e., below the site) at a recorded thickness of 0.45m. The Better Bed Coal is conjectured to outcrop c.350m to the west of the site, orientated approximately northwest-southeast, dipping to the east / northeast at a recorded thickness of 0.45m.

Waste Disposal

An historical landfill is located 300m to the south, named as Netheroyd Hill Tip. No further relevant information is provided within the desk study report.

Mining and Quarrying

The Coal Authority (CA) Consultants Mining Report within the SGAR records workings within the Black Bed coal seam, at depths of between 37m and 41m and an extraction thickness of 50cm. Underground coal mine workings are evident on abandonment plans reviewed within the northeast and east of the site, dated from 1910. Two mine shafts are also evident on an abandonment plan, c. 30m to the northeast of the site, one of which is labelled '48 yds [43.9m] to Black Bed Coal'.

A mine entry (CA ref. 419414-004) is located 5m to the west of the site. The CA report states that 'a partial search by trial trenching to the east of Hermitage House did not locate the shaft'. The shaft is reported to be named as Victoria Colliery Air Shaft and is 4.6m,deep.

The CA report states that there are also probable unrecorded shallow mine workings beneath the site.

No evidence of quarrying or pitting is evident within the site.

Radon

No radon protective measures are considered necessary in the construction of new dwellings.

Previous Site Investigation

Intrusive site investigation was undertaken by FWS at the site in February and March 2022, comprising a series of trial pits, trial trenching within the locality of the potential air shaft, window sample boreholes and rotary open hole boreholes. Gas and groundwater monitoring wells were installed in 5 no. window sample boreholes.

Bedrock was found to comprise highly weathered mudstone interbedded with sandstone and was proven at depths of between 0.9 m to 3.1 m bgl. Thin coal seams (0.1 m to 0.4 m thick) were encountered near surface, and evidence of mine workings in the form of voids and loss of flush returns, generally of between 0.3 m to 0.9 m thick, were recorded at depths of between 4.9 m to 18.6 m bgl.

FWS inferred evidence of mine workings within the Crow Coal and Black Bed, and recommended probe drilling to confirm the presence of competent cover above the Black Bed and drill and grout stabilisation within the thin coal seam and Crow Coal, which were considered to be within influencing depth of the proposed development.

Gas and groundwater monitoring undertaken by FWS identified methane at concentrations of between <0.1% and 0.3% and carbon dioxide at concentrations of between 0.1% and 8.1%. Borehole gas flow rates of between <0.1 to 2.0 l/hr v/v were recorded.

It was concluded that Characteristic Situation 2 (CS2) conditions applied to the site, associated with mine gas emissions from shallow mine workings and migration from the offsite air shaft.

Preliminary Conceptual Site Model

Potential sources of hazardous ground gases were identified on, and in the vicinity of, the site as part of the previous desk study and site investigation reports, including mines gas. It was noted, however, that the gas and groundwater monitoring wells installed as part of the FWS investigation included response zones installed into shallow window sample boreholes and located within natural residual clay soils and shallow weathered mudstone and sandstone bedrock and occasional intact thin coal seams. Response zones were not deep enough to intercept shallow mine workings.

At this site, it was considered that mines gases could migrate vertically or laterally from shallow mine workings through permeable strata (e.g., jointed rock), and / or via preferential pathways, e.g., faults, fissures and any unrecorded mine entries and crown holes associated with instability in shallow mine workings.

SIRIUS FIELDWORKS

An intrusive investigation was carried out under the supervision of a Sirius Geo-environmental Engineer between 21st and 25th October 2024 and comprised:

- Excavation of 20 No. machine-excavated trial pits / trenches to a maximum depth of 3.8m bgl, and;
- Drilling of 37 No. rotary openhole boreholes (BH100 to BH136) to a maximum depth of 30.0m bgl.

Permanent monitoring installations for both groundwater and ground gas were installed into natural strata in 10 No. rotary boreholes across the site (ref. BH104, BH105, BH109, BH111, BH114, BH116, BH118, BH125, BH135 and BH136).

An exploratory hole location plan is shown as Drawing No. C10281/03 included within Attachment A.

Logs for those boreholes within which gas monitoring wells were installed are included within Attachment B.

GROUND INVESTIGATION FINDINGS

The following information is based on exploratory holes completed as part of the Sirius 2024 investigation.

Proven Ground Conditions

Topsoil and Made Ground

Topsoil was recorded across the site to depths of between 0.2m and 0.4m below ground level (bgl). Made ground, comprising reworked clays were encountered within TP104 to a depth of 1.4m bgl, in the locality of the former cricket pitch.

Residual/Competent Bedrock

Residual PLCMF strata were recorded across the site in all locations. These soils generally comprised an upper locally softened natural cohesive stratum to up to c.1.2m bgl, underlain by firm to stiff, medium to high strength cohesive residual soils, and localised medium dense to dense granular residual strata. Highly weathered sandstone bedrock was identified from depths of between 0.90m and 2.50m bgl with bands of intact coal and evidence of shallow mine workings within the Crow Coal from c. 5m bgl.

Groundwater

Groundwater was encountered at depths of between 3.06m and 17.63m bgl within monitoring wells during post fieldwork monitoring.

GROUND GAS MONITORING DATA

The ground gas monitoring programme comprised nine visits over a 5 month period. A tenth visit was undertaken for groundwater level monitoring only. Gas monitoring installation details are summarised in Table 1. The monitoring data is included in full in Attachment C and summarised in Table 2.

Table 1. Summary of Monitoring Installations

Monitoring Installation ID	Depth of Response Zone (m bgl)	Strata withing Response Zone
BH104	3.0 - 9.0	Mudstone and sandstone bands / dark mudstone with coal traces
BH105	3.0 - 9.0	Mudstone / dark mudstone with coal traces
BH109	3.0 - 18.0	Mudstone and sandstone bands / dark mudstone with coal traces / intact coal
BH111	3.0 - 25.0	Mudstone and sandstone bands / dark mudstone with coal traces / broken ground (mine workings)
BH114	2.0 - 5.0	Mudstone and sandstone bands
BH116	2.0 - 5.0	Sandstone
BH118	2.0 - 20.0	Mudstone and sandstone bands / soft ground (mine workings)
BH125	3.0 - 9.0	Sandstone / intact coal
BH135	2.0 - 5.0	Sandstone
BH136	2.0 - 5.0	Sandstone

Table 2. Summary of All Ground Gas / Water Monitoring Data

Well	Concentration ranges (%v/v)			Flow (litres/hour)		Groundwater Depth (m bgl)	Groundwater Depth (m AOD)
	Methane (Peak)	Carbon Dioxide (Steady)	Oxygen (Min.)	Peak	Steady		
BH104	ND	ND - 5.2	4.5 - 19.7	ND to - 5.4	ND - 1.2	4.32 - 8.79	128.31 - 132.78
BH105	ND	ND - 3.2	3.5 - 19.0	ND to - 1.5	ND - 0.4	DRY - 5.44	DRY - 134.16
BH109	ND	0.2 - 3.4	12.9 - 18.6	ND - 0.5	ND - 0.4	9.34 - 17.63	114.07 - 122.36
BH111	ND	0.4 - 2.1	8.4 - 19.8	ND to - 1.0	ND - 0.6	DRY - 7.83	DRY - 128.87
BH114	ND	ND - 4.1	11.1 - 19.8	ND - 1.8	ND - 0.4	DRY	DRY
BH116	ND	ND - 1.5	14.8 - 20.1	ND - 0.4	ND - 0.3	DRY - 4.47	DRY - 130.53
BH118	ND	0.3 - 1.8	12.2 - 18.4	ND to - 0.5	ND - 0.2	DRY - 3.82	DRY - 129.38
BH125	ND	ND - 1.4	9.7 - 19.7	ND to - 1.5	ND - 0.3	3.06 - 8.57	129.53 - 135.04
BH135	ND	ND - 2.0	15.9 - 20.0	ND to - 1.0	ND - 0.2	DRY - 2.35	DRY - 125.85
BH136	ND	ND - 3.0	15.3 - 19.8	ND to - 1.0	ND - 0.2	DRY - 2.35	DRY - 125.85

ND = not detected

The monitoring data above was recorded across nine visits under atmospheric pressure conditions ranging from 973 to 1009 mbar, with periods of falling, rising and steady pressure trends.

No visual or olfactory evidence of hydrocarbon contamination was recorded during the intrusive investigation works, and no evidence of contamination was recorded on water bailed out of the boreholes during monitoring.

The results of gas monitoring undertaken revealed a maximum steady carbon dioxide concentration of 5.2% v/v in BH104 during visit no. 9 (10th March 2025).

No detectable methane concentrations were recorded across all nine visits.

Steady state and peak hydrogen sulphide and carbon monoxide concentrations were generally recorded marginally above or below the limit of detection. A maximum carbon monoxide concentration of 13ppm was detected within BH118 on the first monitoring visit. This is less than the Health and Safety Executive's long-term workplace exposure limit of 30ppm.

Borehole gas flows were detected in each borehole during the monitoring period, with the maximum peak flow being -5.4 l/hr, in BH104 on visit no. 8. The maximum positive peak flow rate was 1.8 l/hr, recorded in BH114 on visit no. 5. Steady borehole gas flow rates were recorded in each borehole on at least one monitoring visit each, with the maximum steady flow rate being 1.2 l/hr, recorded in BH104 on visit no. 2.

Where no detectable concentrations of carbon dioxide or methane have been recorded, the limit of detection of the gas detector instrument used (0.1%) has been assumed within the gas risk assessment. Similarly, the instrument's limit of detection for gas flow rate (0.1 l/hr) was used where no flow was detected.

In summary, the key findings for gas concentrations / flow rates used in the assessment of ground gas regime were:

- Maximum peak methane concentration: <0.1% v/v
- Maximum steady carbon dioxide concentration: 5.2% v/v
- Maximum steady gas flow rate: 1.2 l/hr
- Maximum peak gas flow rate: 5.4l/hr (assuming that the maximum recorded negative flow could be reversed to a positive flow).

REVISED CONCEPTUAL SITE MODEL FOR HAZARDOUS GROUND GASES

Based on the findings of the site investigation, abandoned underground mine workings within the Crow Coal and deeper Black Bed coal seams are considered to be the principal potential source of hazardous ground gas.

Potential migration / transport pathways in the site's gas regime are considered to be vertical migration through nearby mine entries, and potentially through any recorded mine entries on the site, and lateral and vertical migration within the shallow residual soils and competent bedrock. Potential fractures within the sandstone and mudstone bedrock may also act as preferential pathways for ground gas migration. No faults are recorded directly underlying the site. Once ground gases have migrated to shallower depths via the potential vertical pathways described above, they could migrate laterally throughout the development via preferential pathways, such as underground service ducts and trenches filled with granular materials, to accumulate within confined spaces within buildings and structures. The potential pathways, via which ground gases may migrate to below proposed buildings and may then enter buildings are illustrated in Figure 2 of BS8485.

At this stage it is understood that dwellings constructed within areas identified with deeper made ground / tree influence, may require piled foundations. Due to the absence of any significant thicknesses of low permeability soils, it is considered unlikely that piled foundations will substantially alter the conceptual model for ground gases.

Principal potential receptors of ground gas migration / accumulation are the proposed future dwellings and their occupants.

GROUND GAS RISK ASSESSMENT

Qhg (quantity of hazardous gas) values for methane and carbon dioxide were calculated in accordance with BS8485 on the basis of measured gas flows and concentrations or a limit of detection of 0.1 l/hr and 0.1% v/v respectively, whichever is the higher.

The Qhg is calculated in two ways, with increasing levels of conservatism. This includes the worst-credible case at each monitoring well (based on the maximum flow and maximum gas concentration from any monitoring event, excluding any disregarded concentrations and / or flows), and the worst-possible case for the whole site.

In accordance with the requirements of BS8485, the worst-possible case condition for the site has been calculated for methane and carbon dioxide as a 'worst-case' check, using the representative concentrations and flow rates discussed above. In accordance with the guidance, adopting the worst case Qhg as the Gas Screening Value (GSV) should be undertaken only when considered prudent and reasonable to do so.

Based on the monitoring results obtained across all nine visits, the worst possible Qhg values of 0.0054 l/hr and 0.0624 l/hr have been calculated for methane and carbon dioxide, respectively. If these values are applied as GSV's for the site, they are indicative of Characteristic Situation 1 (CS1) ground gas risk conditions, as defined in Table 2 of BS8485.

The above-referenced CL:AIRE (2021) guidance states that the empirical methods of calculating gas risks from recorded gas concentrations and flow rates given in BS8485 are intended for gas migration through soils, and not for mines gas migration through discontinuities and artificial pathways (e.g., mine entries, faults, fissures and unsealed boreholes) in rock. Accordingly, the Characteristic Situation assessment system should not be used in isolation for sites affected by coal mining, such as this one.

The factors listed in the CL:AIRE guidance that influence the overall risk from ground gases at the site include:

- Identified coal mine workings at depths between 4.1m and 29m bgl (acting as a source of hazardous gases).
- Absence of low permeability drift deposits (which can act to prevent upwards migration of gases) at the site.
- Three CA recorded mine entries are located within 50m of the site.
- No recorded faults underlying the site.

Based on the above factors, the site would be classified as lying within a 'High Risk Zone' with respect to mines gas risk in accordance with Figure 13.1 of the CL:AIRE (2021) guidance.

Carbon monoxide and hydrogen sulphide concentrations were generally within normal ranges / parameters however it should be noted that significantly lower than atmospheric oxygen levels (<15% v/v) were recorded within a number of monitoring wells.

CONCLUSIONS AND RECOMMENDATIONS

Concentrations of carbon dioxide and lower than atmospheric oxygen recorded during some of the monitoring visits could indicate the influence of shallow mine gas migrating via fractured bedrock to shallow depths. On the basis of the findings of both this, and the previous FWS investigation, as well as the guidance on mines gas risk provided in CL:AIRE (2021), it is considered that the site should be classified as CS2 and treated accordingly with respect to mitigation of potential hazardous gas risk.

For CS2 conditions, ground gas protection measures providing a minimum protection "score" of 3.5 points are required for private houses (Type A buildings) in accordance with Table 4 of BS8485. To achieve the required gas protection score, a combination of two or more of the following three types of protection measures should be used:

- The structural barrier of the floor slab
- Sub-floor ventilation measures

- Gas resistant membrane

Should pre-cast suspended (beam and block) floor slab construction be used, this would achieve 0 points for ground gas protection in Table 4 of BS8485.

By way of example only, a gas protection points score of 3.5 could be achieved by the use of a passive subfloor ventilation layer designed to achieve "good" performance (1.5 points) and the installation and verification of an appropriate gas resistant membrane (2 points). More details are provided in Tables 5 to 7 of BS8485.

Prior to undertaking any construction on the site, the proposed design of gas protection measures and strategy for verification ("Ground Gas Verification Plan") must be prepared in accordance with CIRIA Report C753 and agreed with the local authority and building warranty provider. The building construction details (including foundation and floor slab arrangements) will need to be known in order to produce a Ground Gas Verification Plan.

Should the land use or proposed building types change from those assumed in the preparation of this letter, then re-evaluation of the conclusions and recommendations will be required. Notwithstanding the above, gas monitoring of all excavations and / or underground spaces should be carried out prior to personnel entry, with continuous monitoring throughout the period of working. Gas monitoring by way of example should include as a minimum: methane, carbon dioxide, carbon monoxide, and oxygen. Gas monitor(s) shall emit both audible and visual warnings. Alarm levels should be set with due regard to the relevant Occupational Exposure Limits given in HSE EH40/2005, and for low oxygen concentrations. If any anomalous or significantly elevated / depleted gas concentrations are detected, then all personnel should immediately evacuate the area and the advice of an appropriate specialist be obtained before work continues.

All redundant monitoring wells should be decommissioned (i.e., backfilled) and sealed prior to development. This should be undertaken in a manner that prevents them from acting as migration pathways for mine gas, in accordance with the guidance provided by the Coal Authority, the Environment Agency (2012) and Scottish Environment Protection Agency (2014).

CLOSING

The conclusions and recommendations presented in this letter report are considered reasonable based on the findings of the work described. However, these cannot be guaranteed to gain regulatory or other approvals and, therefore, the report should be passed by the client to the appropriate regulatory authorities and/or other appropriate organisations for their comment and approval prior to undertaking any development works at the site.

We trust that the above and attached are acceptable, however should you have any queries, please do not hesitate to contact us.

Yours sincerely,

G Halliday

Gemma Halliday
Principal Engineer

For and on behalf of Sirius Geotechnical Ltd

Enc.:
Attachment A - Drawings

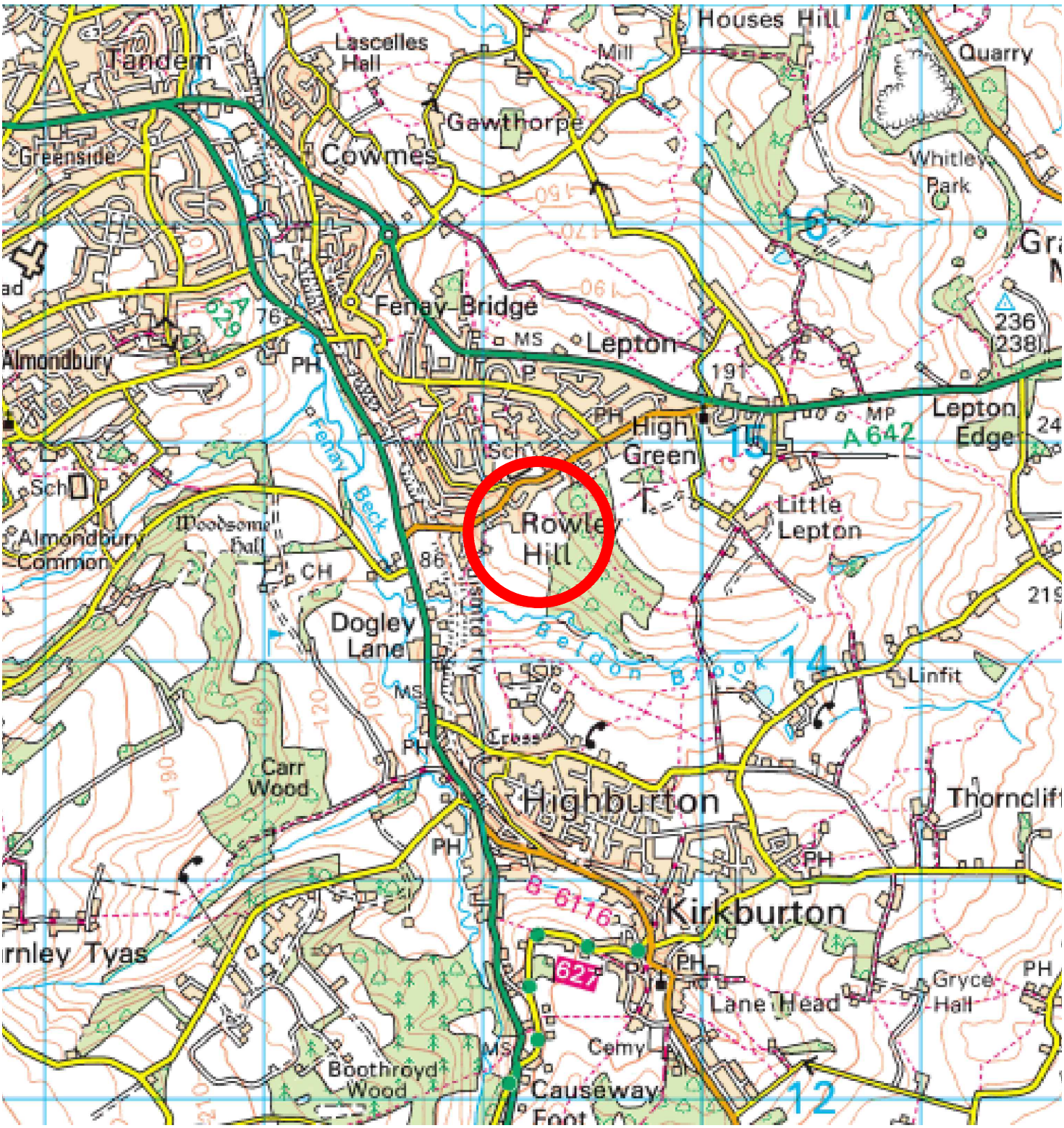
- C10281/01 - Site Location Plan
- C10281/03 - Exploratory Hole Location Plan
- Site Layout (drawing ref. 22.5611.01.C, dated October 2024)

Attachment B - Monitoring Well Logs

Attachment C - Ground Gas Monitoring Results

ATTACHMENT A

DRAWINGS



NOTES

Site Location

REVISION	
0	For Information
A	>>
B	>>
C	>>
D	>>

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CLIENT	DRAWING NO.	REVISION NO.
Miller Homes	C10281/01	0
SITE: Hermitage Park, Lepton	DRAWN BY: MF	APPROVED BY: GH
DRAWING TITLE: Site Location Plan	DATE: December 2024	SCALE: 1:25,000

A4

NOTES

- Site Boundary
- Rotary Borehole Location
- Trial Pit / Trench Location
- Approximate extent of well trench

Notes

1. This drawing should not be viewed in isolation from the accompanying report.
2. All exploratory hole locations are approximate and based on handheld GPS coordinates unless stated otherwise on the exploratory hole logs.
3. All marked site features shown on this drawing are given for indicative purposes only. This drawing should not be underlaid in isolation to determine proposed development layouts. Reference should be made to the accompanying report for commentary on the potential location of these features including coordinates if available and any further works required to locate features if required.

REVISION		BY	DATE
0	For Information	MF	16/12/24
A	>>	>>	>>
B	>>	>>	>>
C	>>	>>	>>
D	>>	>>	>>

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CLIENT

Miller Homes

SITE

**Hermitage Park,
Lepton**

DRAWING TITLE

**Exploratory Hole
Location Plan**

DRAWING NO.	REVISION NO.
C10281/03	0
DRAWN BY	APPROVED BY
MF	GH

DATE	SCALE	PAPER SIZE
December 2024	1:1,000	A2

01 / SITE LAYOUT

SCHEDULE OF ACCOMODATION

Ref	Housetype	Type	Parking	Storey	Bed	Sq Ft	No	Total Sq Ft
AFFORDABLE								
BAY	Baymont	Semi	PS	2	2	850	4	3400
		End	PS	2	2	850	4	3400
		Mid	PS	2	2	850	2	1700
LOC	Lockton	Semi	PS	2	3	1001	6	6006
						SUB TOTAL	**16**	**14506**
OPEN MARKET								
WHI	Whitton	Det	PS	2	2	947	7	6629
BRA	Braxton	Det	PS	2	2	996	8	7968
POR	Portstone	Det	SG	2	3	1212	2	2424
DEN	Denstone	Det	INT	2	3	1368	9	12312
CHE	Cherrystone	Det	INT	2	3	1296	6	7776
BEA	Beauwood	Det	SG	2	4	1379	6	8274
SAN	Sandalwood	Det	SG	2	4	1422	2	2844
HOM	Homesford	Det	DDG	2	5	1568	5	7840
DEF	Denford	Det	INT	2	5	1640	12	19680
GRA	Grayford	Det	SG	2	5	1780	6	10680
			DDG	2	5	1780	1	1780
						SUB TOTAL	**64**	**88207**
						TOTAL	**80**	**102713**

SALES AREA EXTRACT

PLANNING LAYOUT LAYERS KEY

- 1800mm PIER AND PANEL WALL
- 1800mm TIMBER FENCE
- 2000mm ACCOUSTIC FENCE
- 1100mm METAL RAILINGS
- 600mm KNEE HIGH RAIL
- 1200mm POST & RAIL
- 1500mm RAILING WITH HEDGE BEHIND
- EXISTING STONE WALL TO BE REPAIRED
- APPLICATION BOUNDARY
- LOCKABLE GATE
- AFFORDABLE / AFFORDABLE RENT
- AFFORDABLE / SHARED OWNERSHIP
- TREES
- VISIBILITY SPLAYS
- CARS (VISITOR PARKING)
- BIN COLLECTION POINT
- BINS
- CYCLE SHEDS
- BLOCK PAVING (SHARED SURFACES)
- BLOCK PAVING (RAISED TABLE)

NORTH

1:500 SCALE

10m 50m

Rev	Date	Description	Drawn	Check
C	13.11.24	MAINTENANCE ACCESS GATE MOVED IN LINE WITH CLIENT REQUEST	JP	VS
B	11.11.24	LAYOUT UPDATED IN RESPONSE TO PRE-APP COMMENTS.	JP	VS
A	17.07.24	AFFORDABLE TENURE UPDATED IN LINE WITH CLIENTS REQUEST	JP	VS

Architecture Planning Urban Design Landscape

CLIENT: MILLER HOMES

PROJECT: HERMITAGE PARK, LEPTON

DRAWING: SITE LAYOUT

DRAWING NUMBER: 22:5611:01 C

SCALE @ A0: 1:500

DRAWN: JP DATE: OCT '24

CHECKED: VS DATE: OCT '24

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ATTACHMENT B

MONITORING WELL LOGS

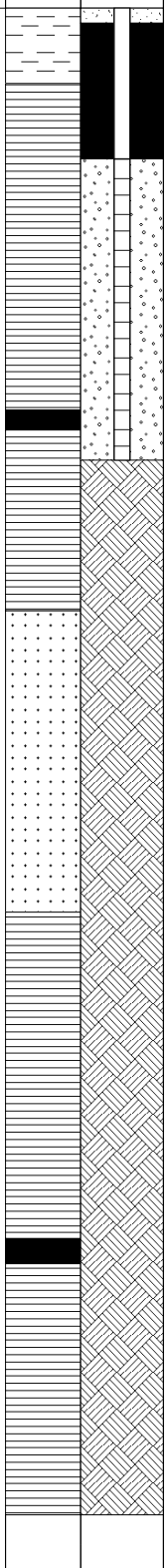
BOREHOLE RECORD

BH No. **BH104**
Sheet 1 of 1

Site: Hermitage Park, Lepton
Contract No: C10281
Client: Miller Homes
Date(s): 24/10/2024
Method: Open rotary hole drilling
Scale: 1:150
Logged By: Driller
Checked By: GH
Driller: SDS

SAMPLE DETAILS | STRATA RECORD

Depth From - To(m)	TCR	SCR	RQD	FI	Ground -water	Description	Depth (m)	Level (m AOD)
						OVERBURDEN (DRILLER'S DESCRIPTION).		
						Grey MUDSTONE with SANDSTONE bands (DRILLER'S DESCRIPTION).	1.50	135.67
						Dark MUDSTONE with COAL trace (DRILLER'S DESCRIPTION).	8.00	129.17
						Grey MUDSTONE (DRILLER'S DESCRIPTION).	8.40	128.77
						SANDSTONE (DRILLER'S DESCRIPTION).	12.00	125.17
						Grey MUDSTONE(DRILLER'S DESCRIPTION).	18.00	119.17
						COAL (DRILLER'S DESCRIPTION).	24.50	112.67
						Grey MUDSTONE with SANDSTONE bands (DRILLER'S DESCRIPTION).	25.00	112.17
						End of Borehole at 30.00m	30.00	107.17
	TCR	SCR	RQD	FI				



Remarks and Groundwater Observations:

1.Borehole complete at 30.00m bgl. 2. Drilled using air flush. 3. Logged based on arisings from the borehole during drilling. 4. Installed with gas/groundwater monitoring well, as detailed above.

GL (m AOD) 137.17
Eastings: 419269.30
Northings: 414716.50

Fig No. BH104

BOREHOLE RECORD

BH No. **BH105**
Sheet 1 of 1

Site: Hermitage Park, Lepton
Contract No: C10281
Client: Miller Homes
Date(s): 25/10/2024
Method: Open rotary hole drilling
Scale: 1:150
Logged By: Driller
Checked By: GH
Driller: SDS

SAMPLE DETAILS | STRATA RECORD

Depth From - To(m)	TCR	SCR	RQD	FI	Ground -water	Description	Depth (m)	Level (m AOD)
						OVERBURDEN (DRILLER'S DESCRIPTION).		
						Dark MUDSTONE with COAL trace (DRILLER'S DESCRIPTION).	3.00	136.62
						Grey MUDSTONE (DRILLER'S DESCRIPTION).	3.10	136.52
						Dark MUDSTONE with COAL trace (DRILLER'S DESCRIPTION).	15.00	124.62
						Grey MUDSTONE (DRILLER'S DESCRIPTION).	15.20	124.42
						SANDSTONE (DRILLER'S DESCRIPTION).	21.00	118.62
						SOFT/NO RETURNS (DRILLER'S DESCRIPTION).	27.30	112.32
						HARD STRATA / NO RETURNS (DRILLER'S DESCRIPTION).	28.00	111.62
						End of Borehole at 30.00m	30.00	109.62
	TCR	SCR	RQD	FI				

Legend | Well

Remarks and Groundwater Observations:

1.Borehole complete at 30.00m bgl. 2. Drilled using air flush. 3. Logged based on arisings from the borehole during drilling. 4. Installed with gas/groundwater monitoring well, as detailed above.

GL (m AOD) 139.62
Eastings: 419316.50
Northings: 414724.70

Fig No. BH105

BOREHOLE RECORD

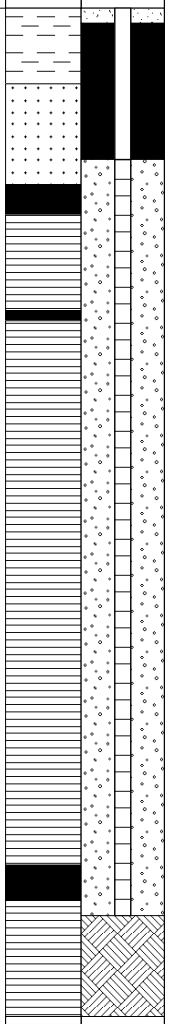
BH No. **BH109**
Sheet 1 of 1

Site: Hermitage Park, Lepton
Contract No: C10281
Client: Miller Homes
Date(s): 24/10/2024
Method: Open rotary hole drilling
Scale: 1:150
Logged By: Driller
Checked By: GH
Driller: SDS

SAMPLE DETAILS | STRATA RECORD

Depth From - To(m)	TCR	SCR	RQD	FI	Ground -water	Description	Depth (m)	Level (m AOD)
						OVERBURDEN (DRILLER'S DESCRIPTION).		
						SANDSTONE (DRILLER'S DESCRIPTION).	1.50	130.20
						Dark MUDSTONE with COAL trace (DRILLER'S DESCRIPTION).	3.50	128.20
						Grey MUDSTONE (DRILLER'S DESCRIPTION).	4.10	127.60
						Dark MUDSTONE with COAL trace (DRILLER'S DESCRIPTION).	6.00	125.70
						Grey MUDSTONE with SANDSTONE bands (DRILLER'S DESCRIPTION).	6.20	125.50
						COAL (DRILLER'S DESCRIPTION).	17.00	114.70
						Grey MUDSTONE (DRILLER'S DESCRIPTION).	17.70	114.00
						End of Borehole at 20.00m	20.00	111.70

Legend | Well



TCR SCR RQD FI

Remarks and Groundwater Observations:

1.Borehole complete at 20.00m bgl. 2. Drilled using water flush. 3. Logged based on arisings from the borehole during drilling. 4. Installed with gas/groundwater monitoring well, as detailed above.

GL (m AOD) 131.70
Eastings: 419187.70
Northings: 414653.00

Fig No.
BH109

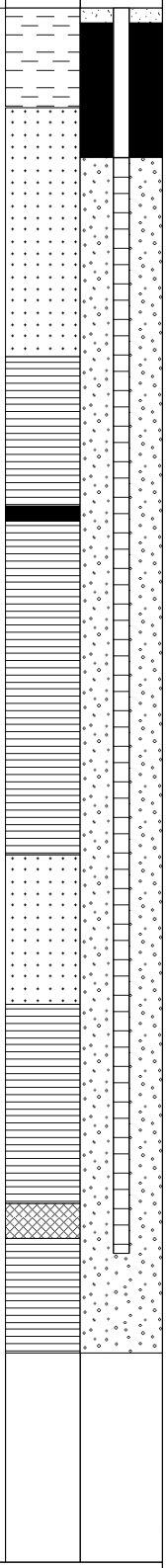
BOREHOLE RECORD

BH No. **BH111**
Sheet 1 of 1

Site: Hermitage Park, Lepton
Contract No: C10281
Client: Miller Homes
Date(s): 24/10/2024
Method: Open rotary hole drilling
Scale: 1:150
Logged By: Driller
Checked By: GH
Driller: SDS

SAMPLE DETAILS | STRATA RECORD

Depth From - To(m)	TCR	SCR	RQD	FI	Ground -water	Description	Depth (m)	Level (m AOD)
						OVERBURDEN (DRILLER'S DESCRIPTION).		
						SANDSTONE (DRILLER'S DESCRIPTION).	2.00	134.77
						Grey MUDSTONE with SANDSTONE bands (DRILLER'S DESCRIPTION).	7.00	129.77
						Dark MUDSTONE with COAL trace (DRILLER'S DESCRIPTION).	10.00	126.77
						Grey MUDSTONE (DRILLER'S DESCRIPTION).	10.30	126.47
						SANDSTONE (DRILLER'S DESCRIPTION).	17.00	119.77
						Grey MUDSTONE with SANDSTONE bands (DRILLER'S DESCRIPTION).	20.00	116.77
						BROKEN GROUND / NO RETURNS (DRILLER'S DESCRIPTION).	24.00	112.77
						HARD STRATA / NO RETURNS (DRILLER'S DESCRIPTION).	24.70	112.07
						End of Borehole at 27.00m	27.00	109.77



Remarks and Groundwater Observations:

1.Borehole complete at 27.00m bgl. 2. Drilled using air flush. 3. Logged based on arisings from the borehole during drilling. 4. Installed with gas/groundwater monitoring well, as detailed above.

GL (m AOD) 136.77
Eastings: 419277.50
Northings: 414668.90

Fig No. BH111

BOREHOLE RECORD

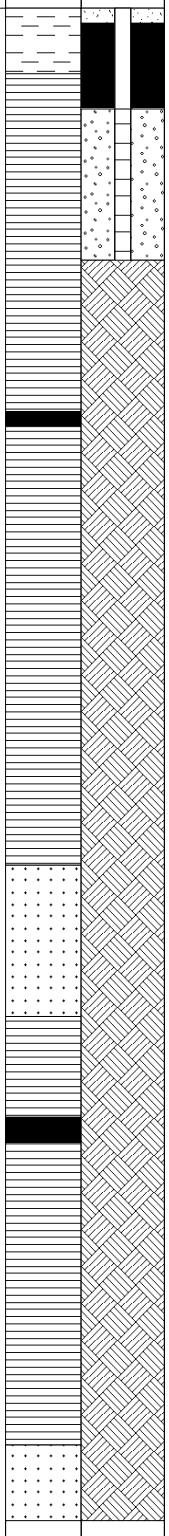
BH No. **BH114**
Sheet 1 of 1

Site: Hermitage Park, Lepton
Contract No: C10281
Client: Miller Homes
Date(s): 25/10/2024
Method: Open rotary hole drilling
Scale: 1:150
Logged By: Driller
Checked By: GH
Driller: SDS

SAMPLE DETAILS | STRATA RECORD

Depth From - To(m)	TCR	SCR	RQD	FI	Ground -water	Description	Depth (m)	Level (m AOD)
						OVERBURDEN (DRILLER'S DESCRIPTION).		
						Grey MUDSTONE with SANDSTONE (DRILLER'S DESCRIPTION).	1.30	134.58
						Dark MUDSTONE with COAL trace (DRILLER'S DESCRIPTION).	8.00	127.88
						Grey MUDSTONE (DRILLER'S DESCRIPTION).	8.30	127.58
						SANDSTONE (DRILLER'S DESCRIPTION).	17.00	118.88
						Grey MUDSTONE (DRILLER'S DESCRIPTION).	20.00	115.88
						COAL (DRILLER'S DESCRIPTION).	22.00	113.88
						Grey MUDSTONE (DRILLER'S DESCRIPTION).	22.50	113.38
						SANDSTONE (DRILLER'S DESCRIPTION).	28.50	107.38
						End of Borehole at 30.00m	30.00	105.88
	TCR	SCR	RQD	FI				

Legend | Well



Remarks and Groundwater Observations:

1.Borehole complete at 30.00m bgl. 2. Drilled using air flush. 3. Logged based on arisings from the borehole during drilling. 4. Installed with gas/groundwater monitoring well, as detailed above.

GL (m AOD) 135.88
Eastings: 419257.80
Northings: 414641.40

Fig No. BH114

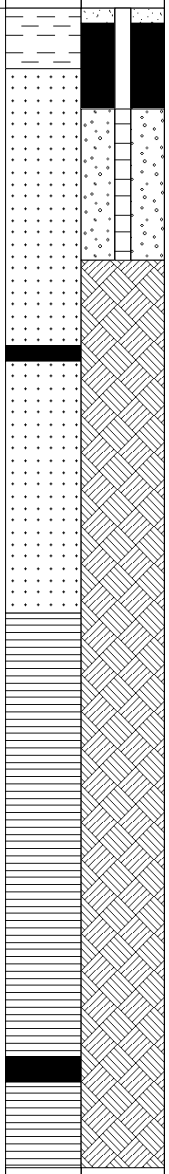
BOREHOLE RECORD

BH No. **BH116**
Sheet 1 of 1

Site: Hermitage Park, Lepton
Contract No: C10281
Client: Miller Homes
Date(s): 23/10/2024
Method: Open rotary hole drilling
Scale: 1:150
Logged By: Driller
Checked By: GH
Driller: SDS

SAMPLE DETAILS | STRATA RECORD

Depth From - To(m)	TCR	SCR	RQD	FI	Ground -water	Description	Depth (m)	Level (m AOD)
						OVERBURDEN (DRILLER'S DESCRIPTION).		
						SANDSTONE (DRILLER'S DESCRIPTION).	1.20	133.85
						Dark MUDSTONE with COAL trace (DRILLER'S DESCRIPTION).	6.70	128.35
						SANDSTONE (DRILLER'S DESCRIPTION).	7.00	128.05
						Grey MUDSTONE (DRILLER'S DESCRIPTION).	12.00	123.05
						COAL (DRILLER'S DESCRIPTION).	20.80	114.25
						Grey MUDSTONE (DRILLER'S DESCRIPTION).	21.30	113.75
						End of Borehole at 23.00m	23.00	112.05



Remarks and Groundwater Observations:

1.Borehole complete at 23.00m bgl. 2. Drilled using air flush. 3. Logged based on arisings from the borehole during drilling. 4. Installed with gas/groundwater monitoring well, as detailed above.

GL (m AOD) 135.05
Eastings: 419238.40
Northings: 414613.50

Fig No. BH116

BOREHOLE RECORD

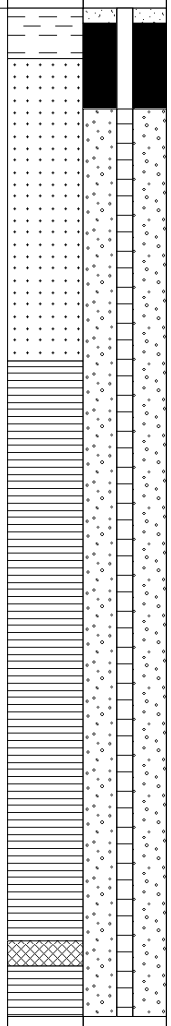
BH No. **BH118**
Sheet 1 of 1

Site: Hermitage Park, Lepton
Contract No: C10281
Client: Miller Homes
Date(s): 22/10/2024
Method: Open rotary hole drilling
Scale: 1:150
Logged By: Driller
Checked By: GH
Driller: SDS

SAMPLE DETAILS | STRATA RECORD

Depth From - To(m)	TCR	SCR	RQD	FI	Ground -water	Description	Depth (m)	Level (m AOD)
						OVERBURDEN (DRILLER'S DESCRIPTION).		
						SANDSTONE (DRILLER'S DESCRIPTION).	1.00	132.25
						Grey MUDSTONE with SANDSTONE bands (DRILLER'S DESCRIPTION).	7.00	126.25
						SOFT / PART RETURNS (DRILLER'S DESCRIPTION).	18.50	114.75
						Grey MUDSTONE / PART RETURNS (DRILLER'S DESCRIPTION).	19.00	114.25
						End of Borehole at 20.00m	20.00	113.25

Legend | Well



TCR SCR RQD FI

Remarks and Groundwater Observations:

1.Borehole complete at 20.00m bgl. 2. Drilled using air flush. 3. Logged based on arisings from the borehole during drilling. 4. Installed with gas/groundwater monitoring well, as detailed above.

GL (m AOD) 133.25
Eastings: 419219.00
Northings: 414585.80

Fig No. BH118

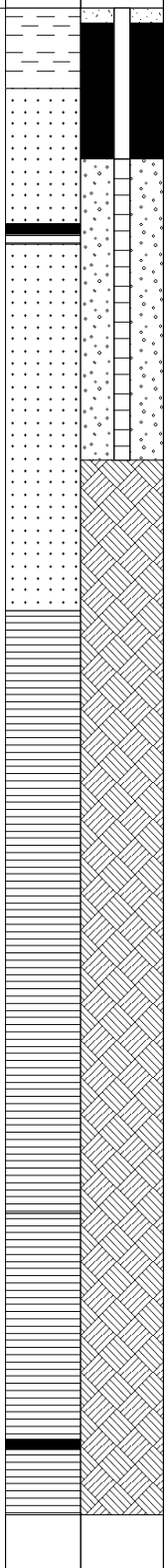
BOREHOLE RECORD

BH No. **BH125**
Sheet 1 of 1

Site: Hermitage Park, Lepton
Contract No: C10281
Client: Miller Homes
Date(s): 23/10/2024
Method: Open rotary hole drilling
Scale: 1:150
Logged By: Driller
Checked By: GH
Driller: SDS

SAMPLE DETAILS | STRATA RECORD

Depth From - To(m)	TCR	SCR	RQD	FI	Ground -water	Description	Depth (m)	Level (m AOD)
						OVERBURDEN (DRILLER'S DESCRIPTION).		
						SANDSTONE (DRILLER'S DESCRIPTION).	1.60	136.59
						COAL (DRILLER'S DESCRIPTION).	4.30	133.89
						Dark MUDSTONE (DRILLER'S DESCRIPTION).	4.50	133.69
						SANDSTONE (DRILLER'S DESCRIPTION).	4.70	133.49
						Grey MUDSTONE (DRILLER'S DESCRIPTION).	12.00	126.19
						Grey MUDSTONE with SANDSTONE bands (DRILLER'S DESCRIPTION).	24.00	114.19
						Dark MUDSTONE with COAL trace (DRILLER'S DESCRIPTION).	28.50	109.69
						Grey MUDSTONE (DRILLER'S DESCRIPTION).	28.70	109.49
						End of Borehole at 30.00m	30.00	108.19



Remarks and Groundwater Observations:

1.Borehole complete at 30.00m bgl. 2. Drilled using air flush. 3. Logged based on arisings from the borehole during drilling. 4. Installed with gas/groundwater monitoring well, as detailed above.

GL (m AOD) 138.19
Eastings: 419341.20
Northings: 414583.10

Fig No. BH125

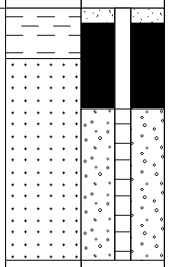
BOREHOLE RECORD

BH No. **BH135**
Sheet 1 of 1

Site: Hermitage Park, Lepton
Contract No: C10281
Client: Miller Homes
Date(s): 22/10/2024
Method: Open rotary hole drilling
Scale: 1:150
Logged By: Driller
Checked By: GH
Driller: SDS

SAMPLE DETAILS | STRATA RECORD

Depth From - To(m)	TCR	SCR	RQD	FI	Ground -water	Description	Depth (m)	Level (m AOD)	Legend	Well
						OVERBURDEN (DRILLER'S DESCRIPTION).				
						SANDSTONE (DRILLER'S DESCRIPTION).	1.00	127.23		
						End of Borehole at 5.00m	5.00	123.23		



TCR SCR RQD FI

Remarks and Groundwater Observations:

1.Borehole complete at 5.00m bgl. 2. Drilled using air flush. 3. Logged based on arisings from the borehole during drilling. 4. Installed with gas/groundwater monitoring well, as detailed above.

GL (m AOD) 128.23
Eastings: 419167.60
Northings: 414609.80

Fig No.
BH135

BOREHOLE RECORD

BH No. **BH136**
Sheet 1 of 1

Site: Hermitage Park, Lepton
Contract No: C10281
Client: Miller Homes
Date(s): 22/10/2024
Method: Open rotary hole drilling
Scale: 1:150
Logged By: Driller
Checked By: GH
Driller: SDS

SAMPLE DETAILS | STRATA RECORD

Depth From - To(m)	TCR	SCR	RQD	FI	Ground -water	Description	Depth (m)	Level (m AOD)	Legend	Well
						OVERBURDEN (DRILLER'S DESCRIPTION).				
					1	SANDSTONE (DRILLER'S DESCRIPTION).	1.00	127.28		
					2					
					3					
					4					
					5	End of Borehole at 5.00m	5.00	123.28		
					6					
					7					
					8					
					9					
					10					
					11					
					12					
					13					
					14					
					15					
					16					
					17					
					18					
					19					
					20					
					21					
					22					
					23					
					24					
					25					
					26					
					27					
					28					
					29					
					30					
	TCR	SCR	RQD	FI						

Remarks and Groundwater Observations:

1.Borehole complete at 5.00m bgl. 2. Drilled using air flush. 3. Logged based on arisings from the borehole during drilling. 4. Installed with gas/groundwater monitoring well, as detailed above.

GL (m AOD) 128.28
Eastings: 419173.00
Northings: 414568.80

Fig No.
BH136

ATTACHMENT C

GAS AND GROUNDWATER MONITORING RESULTS

Ground Gas and Groundwater Monitoring Record Sheet

JOB DETAILS:

Client: Miller Homes
Site: Hermitage Park, Lepton
Date: 04/11/2024

Job No: C10281
Visit No: 1 **of** 9
Operator: JC/RT **Project Manager:** GH

Monitoring Point	GAS CONCENTRATIONS												VOLATILES		FLOW DATA				Qhg per borehole		WELL AND WATER DATA					Comments
	Methane (%v/v)		%LEL		Carbon dioxide (%v/v)		Carbon monoxide (ppmv)		Hydrogen sulphide (ppmv)		Oxygen (%v/v)		PID Peak (ppm)	Product thickness (mm)	Flow rate (l/hr)		Differential borehole Pressure (Pa)	Time for flow to equalise (secs)	Methane (l/hr)	CO2 (l/hr)	Water level (mbgl)	Depth of well (m)	Top of BH (mAOD)	Water level (mAOD)	Response Zone	
	Peak	Steady	Peak	Steady	Peak	**Steady**	Peak	Steady	Peak	Steady	Min.	Steady			Peak	Steady										
BH104	**ND**	ND	ND	ND	0.4	**0.4**	ND	ND	ND	ND	17.7	17.7	NR	NR	ND	ND	ND	NR	0.0001	0.0004	4.32	9.00	137.10	132.78	3.0 - 9.0m	
BH105	**ND**	ND	ND	ND	0.4	**0.4**	5	5	ND	ND	17.8	17.8	NR	NR	ND	ND	ND	NR	0.0001	0.0004	5.44	8.96	139.60	134.16	3.0 - 9.0m	
BH109	**ND**	ND	ND	ND	0.2	**0.2**	ND	ND	ND	ND	18.6	18.6	NR	NR	ND	ND	ND	NR	0.0001	0.0002	9.34	17.96	131.70	122.36	3.0 - 18.0m	
BH111	**ND**	ND	ND	ND	0.9	**0.9**	ND	ND	2	2	15.2	15.2	NR	NR	ND	ND	ND	NR	0.0001	0.0009	7.83	25.02	136.70	128.87	3.0 - 25.0m	
BH114	**ND**	ND	ND	ND	0.4	**0.4**	ND	ND	ND	ND	17.9	17.9	NR	NR	ND	ND	ND	NR	0.0001	0.0004	DRY	5.23	135.80	DRY	2.0 - 5.0m	
BH116	**ND**	ND	ND	ND	0.3	**0.3**	1	1	2	2	18.5	18.5	NR	NR	ND	ND	ND	NR	0.0001	0.0003	4.87	5.82	135.00	130.13	2.0 - 5.0m	
BH118	**ND**	ND	ND	ND	0.5	**0.5**	13	13	2	2	14.4	14.4	NR	NR	ND	ND	ND	NR	0.0001	0.0005	3.82	20.00	133.20	129.38	2.0 - 20.0m	
BH125	**ND**	ND	ND	ND	0.8	**0.8**	ND	ND	ND	ND	17.1	17.1	NR	NR	ND	ND	ND	NR	0.0001	0.0008	3.06	9.43	138.10	135.04	3.0 - 9.0m	
BH135	**ND**	ND	ND	ND	ND	**ND**	ND	ND	ND	ND	19.9	19.9	NR	NR	ND	ND	ND	NR	0.0001	0.0001	DRY	4.79	128.20	DRY	2.0 - 5.0m	
BH136	**ND**	ND	ND	ND	0.9	**0.9**	1	1	ND	ND	18.2	18.2	NR	NR	ND	ND	ND	NR	0.0001	0.0009	4.60	4.88	128.20	123.60	2.0 - 5.0m	
Max	**ND**	**ND**	**ND**	**ND**	**0.9**	**0.9**	**13**	**13**	**2**	**2**	**19.9**	**19.9**	**NR**	**NR**	**ND**	**ND**	**ND**	**NR**	**0.0001**	**0.0009**	**9.34**			**135.04**		
Min	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**14.4**	**14.4**	**NR**	**NR**	**ND**	**ND**	**ND**	**NR**	**0.0001**	**0.0001**	**DRY**			**DRY**		

ND - Not detected

NR - Not recorded

NB: Where no flow (ND) recorded, Qhg values are calculated using equiment limit of detection (0.1l/hr). Where negative flows recorded, these are converted to positive values for calculation of Qhg.

METEOROLOGICAL AND SITE INFORMATION:

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

State of ground:		Dry	X	Moist		Wet		Snow		Frozen
Wind:	X	Calm		Light		Moderate		Strong		
Cloud cover:		None	X	Slight		Cloudy		Overcast		
Precipitation:	X	None		Slight		Moderate		Heavy		
Time monitoring performed:			09:30	Start			12:00	End		
Barometric pressure (mbar):			1009	Start			1008	End		
Pressure trend (Daily):				Falling	X	Steady		Rising		
Source:	https://www.timeanddate.com/weather/uk/huddersfield/historic									
Air Temperature (Deg. C):			9	Before			10	After		

INSTRUMENTATION TECHNICAL SPECIFICATIONS:

Ground gas meter: GMF430 (BM36)
Gas Range: **CH_4** 0 - 100% **CO_2** 0 - 100% **O_2** 0 - 25%
Gas Flow range: +100/-50 l/hour
Differential Pressure: (+/-) 1000 Pa
Date of last external calibration: 13/05/2024
Date of next external calibration: 13/05/2025

Ambient air check: **CH_4** ND **CO_2** ND **O_2** 20.3

Ground Gas and Groundwater Monitoring Record Sheet

JOB DETAILS:

Client: Miller Homes
Site: Hermitage Park, Lepton
Date: 21/11/2024
Job No: C10281
Visit No: 2 **of** 9
Operator: RT/CP
Project Manager: GH

Monitoring Point	GAS CONCENTRATIONS: Methane (%v/v) Peak	Methane (%v/v) Steady	%LEL Peak	%LEL Steady	Carbon dioxide (%v/v) Peak	Carbon dioxide (%v/v) Steady	Carbon monoxide (ppmv) Peak	Carbon monoxide (ppmv) Steady	Hydrogen sulphide (ppmv) Peak	Hydrogen sulphide (ppmv) Steady	Oxygen (%v/v) Min.	Oxygen (%v/v) Steady	VOLATILES: PID Peak (ppm)	Product thickness (mm)	FLOW DATA: Flow rate (l/hr) Peak	Flow rate (l/hr) Steady	Differential borehole Pressure (Pa)	Time for flow to equalise (secs)	Qhg per borehole: Methane (l/hr)	CO2 (l/hr)	WELL AND WATER DATA: Water level (mbgl)	Depth of well (m)	Top of BH (mAOD)	Water level (mAOD)	Response Zone	Comments
BH104	**ND**	ND	ND	ND	ND	**ND**	1	ND	1	ND	19.7	19.7	ND	NR	1.3	1.2	5	10	0.0013	0.0012	8.33	9.00	137.10	128.77	3.0 - 9.0m	
BH105	**ND**	ND	ND	ND	1.7	**1.7**	2	1	1	ND	5.2	5.2	ND	NR	0.6	0.4	2	120	0.0006	0.0068	DRY	8.96	139.60	DRY	3.0 - 9.0m	
BH109	**ND**	ND	ND	ND	1.9	**1.9**	1	ND	1	ND	13.3	13.3	ND	NR	0.5	0.4	1	180	0.0005	0.0076	17.63	17.96	131.70	114.07	3.0 - 18.0m	
BH111	**ND**	ND	ND	ND	1.4	**1.4**	1	1	1	1	15.5	15.5	ND	NR	0.7	0.6	2	60	0.0007	0.0084	DRY	25.02	136.70	DRY	3.0 - 25.0m	
BH114	**ND**	ND	ND	ND	1.2	**1.2**	1	ND	1	ND	14.5	14.4	ND	NR	0.7	0.4	2	120	0.0007	0.0048	NR	5.23	135.80	NR	2.0 - 5.0m	Stuck Bung
BH116	**ND**	ND	ND	ND	0.4	**0.4**	1	ND	ND	ND	17.7	17.7	ND	NR	0.4	0.3	1	180	0.0004	0.0012	DRY	5.82	135.00	DRY	2.0 - 5.0m	
BH118	**ND**	ND	ND	ND	1.5	**1.5**	2	ND	2	ND	12.2	12.2	ND	NR	0.3	0.2	ND	60	0.0003	0.0030	19.33	20.00	133.20	113.87	2.0 - 20.0m	
BH125	**ND**	ND	ND	ND	0.7	**0.7**	1	ND	1	ND	17.4	17.4	ND	NR	0.4	0.3	1	120	0.0004	0.0021	8.57	9.43	138.10	129.53	3.0 - 9.0m	
BH135	**ND**	ND	ND	ND	0.4	**0.4**	1	ND	1	ND	18.4	18.4	ND	NR	0.2	0.2	ND	10	0.0002	0.0008	DRY	4.79	128.20	DRY	2.0 - 5.0m	
BH136	**ND**	ND	ND	ND	2.1	**2.1**	1	ND	1	ND	15.4	15.4	ND	NR	0.4	0.2	1	180	0.0004	0.0042	DRY	4.88	128.20	DRY	2.0 - 5.0m	
Max	**ND**	**ND**	**ND**	**ND**	**2.1**	**2.1**	**2**	**1**	**2**	**1**	**19.7**	**19.7**	**ND**	**NR**	**1.3**	**1.2**	**5**	**180**	**0.0013**	**0.0084**	**19.33**			**129.53**		
Min	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**1**	**ND**	**ND**	**ND**	**5.2**	**5.2**	**ND**	**NR**	**0.2**	**0.2**	**ND**	**10**	**0.0002**	**0.0008**	**DRY**			**DRY**		

ND - Not detected

NR - Not recorded

NB: Where no flow (ND) recorded, Qhg values are calculated using equiment limit of detection (0.1l/hr). Where negative flows recorded, these are converted to positive values for calculation of Qhg.

METEOROLOGICAL AND SITE INFORMATION: (Select correct box with X or enter data, as applicable)

State of ground:		Dry		Moist		Wet	X	Snow	X	Frozen
Wind:	X	Calm		Light		Moderate		Strong		
Cloud cover:		None	X	Slight		Cloudy		Overcast		
Precipitation:	X	None		Slight		Moderate		Heavy		
Time monitoring performed:			09:20	Start			11:40	End		
Barometric pressure (mbar):			999	Start			997	End		
Pressure trend (Daily):			X	Falling		Steady		Rising		
Source:	https://www.timeanddate.com/weather/uk/huddersfield/historic									
Air Temperature (Deg. C):			-1	Before			1	After		

INSTRUMENTATION TECHNICAL SPECIFICATIONS:

Ground gas meter: GMF430 (BM36)
Gas Range: **CH_4** 0 - 100% **CO_2** 0 - 100% **O_2** 0 - 25%
Gas Flow range: +100/-50 l/hour
Differential Pressure: (+/-) 1000 Pa
Date of last external calibration: 13/05/2024
Date of next external calibration: 13/05/2025

Ambient air check: **CH_4** ND **CO_2** ND **O_2** 19.6

PID: LE76
Calibrated range: 5
Calibration gas: Benzene C6H6
Response time: 2 seconds
Accuracy: (+/-) 3% displayed reading
Date of last external calibration: 10/07/2024
Date of next external calibration: 10/07/2025

Ground Gas and Groundwater Monitoring Record Sheet

JOB DETAILS:

Client: Miller Homes
Site: Hermitage Park, Lepton
Date: 05/12/2024
Job No: C10281
Visit No: 3 **of** 9
Operator: RT **Project Manager:** GH

Monitoring Point	GAS CONCENTRATIONS												VOLATILES		FLOW DATA				Qhg per borehole		WELL AND WATER DATA					Comments
	Methane (%v/v)		%LEL		Carbon dioxide (%v/v)		Carbon monoxide (ppmv)		Hydrogen sulphide (ppmv)		Oxygen (%v/v)		PID Peak (ppm)	Product thickness (mm)	Flow rate (l/hr)		Differential borehole Pressure (Pa)	Time for flow to equalise (secs)	Methane (l/hr)	CO2 (l/hr)	Water level (mbgl)	Depth of well (m)	Top of BH (mAOD)	Water level (mAOD)	Response Zone	
	Peak	Steady	Peak	Steady	Peak	**Steady**	Peak	Steady	Peak	Steady	Min.	Steady			Peak	Steady										
BH104	**ND**	ND	ND	ND	3.8	**3.8**	2	1	1	ND	10.3	10.3	ND	NR	0.8	0.7	3	20	0.0008	0.0266	8.01	9.00	137.10	129.09	3.0 - 9.0m	
BH105	**ND**	ND	ND	ND	0.9	**0.9**	2	1	1	ND	5.7	5.7	ND	NR	ND	ND	ND	NR	0.0001	0.0009	7.19	8.96	139.60	132.41	3.0 - 9.0m	
BH109	**NR**	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	131.70	NR	3.0 - 18.0m	Inaccesible
BH111	**ND**	ND	ND	ND	0.5	**0.5**	2	1	1	ND	18.8	18.8	ND	NR	0.2	0.1	ND	5	0.0002	0.0005	24.34	25.02	136.70	112.36	3.0 - 25.0m	
BH114	**ND**	ND	ND	ND	1.6	**1.6**	2	1	1	ND	12.4	12.4	ND	NR	ND	ND	ND	NR	0.0001	0.0016	NR	NR	135.80	NR	2.0 - 5.0m	Bung stuck in pipe
BH116	**ND**	ND	ND	ND	ND	**ND**	2	1	1	ND	19.8	19.8	ND	NR	ND	ND	ND	NR	0.0001	0.0001	4.77	5.82	135.00	130.23	2.0 - 5.0m	
BH118	**ND**	ND	ND	ND	0.4	**0.4**	2	2	2	ND	18.1	18.1	ND	NR	ND	ND	ND	NR	0.0001	0.0004	19.04	20.00	133.20	114.16	2.0 - 20.0m	
BH125	**ND**	ND	ND	ND	0.6	**0.6**	2	1	1	ND	16.0	16.0	ND	NR	ND	ND	ND	NR	0.0001	0.0006	8.25	9.43	138.10	129.85	3.0 - 9.0m	
BH135	**ND**	ND	ND	ND	ND	**ND**	1	1	1	ND	20.0	20.0	ND	NR	ND	ND	ND	NR	0.0001	0.0001	4.40	4.79	128.20	123.80	2.0 - 5.0m	
BH136	**ND**	ND	ND	ND	1.2	**1.2**	2	1	1	ND	15.3	15.4	ND	NR	ND	ND	ND	NR	0.0001	0.0012	3.75	4.88	128.20	124.45	2.0 - 5.0m	
Max	**ND**	**ND**	**ND**	**ND**	**3.8**	**3.8**	**2**	**2**	**2**	**ND**	**20.0**	**20.0**	**ND**	**NR**	**0.8**	**0.7**	**3**	**20**	**0.0008**	**0.0266**	**24.34**			**132.41**		
Min	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**1**	**1**	**1**	**ND**	**5.7**	**5.7**	**ND**	**NR**	**ND**	**ND**	**ND**	**NR**	**0.0001**	**0.0001**	**3.75**			**112.36**		

ND - Not detected

NR - Not recorded

NB: Where no flow (ND) recorded, Qhg values are calculated using equiment limit of detection (0.1l/hr). Where negative flows recorded, these are converted to positive values for calculation of Qhg.

METEOROLOGICAL AND SITE INFORMATION: (Select correct box with X or enter data, as applicable)

State of ground:		Dry		Moist	X	Wet		Snow		Frozen
Wind:		Calm		Light	X	Moderate		Strong	
Cloud cover:		None		Slight		Cloudy	X	Overcast	
Precipitation:		None	X	Slight	X	Moderate		Heavy	
Time monitoring performed:			12:30	Start			14:30	End	
Barometric pressure (mbar):			1001	Start			997	End	
Pressure trend (Daily):			X	Falling		Steady		Rising	
Source:	https://www.timeanddate.com/weather/uk/huddersfield/historic								
Air Temperature (Deg. C):			9	Before			10	After	

INSTRUMENTATION TECHNICAL SPECIFICATIONS:

Ground gas meter: GMF430 (BM36)
Gas Range: **CH_4** 0 - 100 % **CO_2** 0 - 100% **O_2** 0 - 25%
Gas Flow range: +100/-50 l/hour
Differential Pressure: (+/-) 1000 Pa
Date of last external calibration: 13/05/2024
Date of next external calibration: 13/05/2025

Ambient air check: **CH_4** ND **CO_2** ND **O_2** 20.2

PID: LE76
Calibrated range: 5
Calibration gas: Benzene C6H6
Response time: 2 seconds
Accuracy: (+/-) 3% displayed reading
Date of last external calibration: 10/07/2024
Date of next external calibration: 10/07/2025

Ground Gas and Groundwater Monitoring Record Sheet

JOB DETAILS:

Client: Miller Homes
Site: Hermitage Park, Lepton
Date: 17/12/2024
Job No: C10281
Visit No: 4 **of** 9
Operator: RT **Project Manager:** GH

Monitoring Point	GAS CONCENTRATIONS												VOLATILES		FLOW DATA				Qhg per borehole		WELL AND WATER DATA					Comments
	Methane (%v/v)		%LEL		Carbon dioxide (%v/v)		Carbon monoxide (ppmv)		Hydrogen sulphide (ppmv)		Oxygen (%v/v)		PID Peak (ppm)	Product thickness (mm)	Flow rate (l/hr)		Differential borehole Pressure (Pa)	Time for flow to equalise (secs)	Methane (l/hr)	CO2 (l/hr)	Water level (mbgl)	Depth of well (m)	Top of BH (mAOD)	Water level (mAOD)	Response Zone	
	Peak	Steady	Peak	Steady	Peak	**Steady**	Peak	Steady	Peak	Steady	Min.	Steady			Peak	Steady										
BH104	**ND**	ND	ND	ND	3.3	**3.3**	2	ND	1	ND	16.0	16.0	ND	NR	ND	ND	ND	NR	0.0001	0.0033	7.86	9.00	137.10	129.24	3.0 - 9.0m	
BH105	**ND**	ND	ND	ND	0.9	**0.9**	2	1	1	ND	15.3	15.3	ND	NR	ND	ND	ND	NR	0.0001	0.0009	7.02	8.96	139.60	132.58	3.0 - 9.0m	
BH109	**ND**	ND	ND	ND	0.8	**0.8**	2	ND	1	ND	17.4	17.4	ND	NR	ND	ND	ND	NR	0.0001	0.0008	14.97	17.96	131.70	116.73	3.0 - 18.0m	
BH111	**ND**	ND	ND	ND	0.8	**0.8**	2	1	2	ND	17.5	17.5	ND	NR	ND	ND	ND	NR	0.0001	0.0008	24.31	25.02	136.70	112.39	3.0 - 25.0m	
BH114	**ND**	ND	ND	ND	ND	ND	2	1	1	ND	19.2	19.2	ND	NR	ND	ND	ND	NR	0.0001	0.0001	NR	NR	135.80	NR	2.0 - 5.0m	
BH116	**ND**	ND	ND	ND	0.1	**0.1**	2	ND	1	ND	17.1	17.1	ND	NR	ND	ND	ND	NR	0.0001	0.0001	5.19	5.82	135.00	129.81	2.0 - 5.0m	
BH118	**ND**	ND	ND	ND	0.3	**0.3**	2	ND	1	ND	18.4	18.4	ND	NR	ND	ND	ND	NR	0.0001	0.0003	19.05	20.00	133.20	114.15	2.0 - 20.0m	
BH125	**ND**	ND	ND	ND	0.6	**ND**	4	1	1	ND	17.7	17.7	ND	NR	ND	ND	ND	NR	0.0001	0.0001	8.20	9.43	138.10	129.90	3.0 - 9.0m	
BH135	**ND**	ND	ND	ND	ND	**ND**	4	2	2	ND	19.8	19.8	ND	NR	ND	ND	ND	NR	0.0001	0.0001	4.50	4.79	128.20	123.70	2.0 - 5.0m	
BH136	**ND**	ND	ND	ND	1.4	**1.4**	2	1	1	ND	15.7	15.7	ND	NR	ND	ND	ND	NR	0.0001	0.0014	2.90	4.88	128.20	125.30	2.0 - 5.0m	
Max	**ND**	**ND**	**ND**	**ND**	**3.3**	**3.3**	**4**	**2**	**2**	**ND**	**19.8**	**19.8**	**ND**	**NR**	**ND**	**ND**	**ND**	**NR**	**0.0001**	**0.0033**	**24.31**			**132.58**		
Min	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**2**	**ND**	**1**	**ND**	**15.3**	**15.3**	**ND**	**NR**	**ND**	**ND**	**ND**	**NR**	**0.0001**	**0.0001**	**2.90**			**112.39**		

ND - Not detected

NR - Not recorded

NB: Where no flow (ND) recorded, Qhg values are calculated using equiment limit of detection (0.1l/hr). Where negative flows recorded, these are converted to positive values for calculation of Qhg.

METEOROLOGICAL AND SITE INFORMATION: (Select correct box with X or enter data, as applicable)

State of ground:		Dry	X	Moist		Wet		Snow		Frozen
Wind:		Calm	X	Light		Moderate		Strong	
Cloud cover:		None		Slight		Cloudy	X	Overcast	
Precipitation:	X	None		Slight		Moderate		Heavy	
Time monitoring performed:			09:30	Start			11:40	End	
Barometric pressure (mbar):			1003	Start			1001	End	
Pressure trend (Daily):			X	Falling		Steady		Rising	
Source:	https://www.timeanddate.com/weather/uk/huddersfield/historic								
Air Temperature (Deg. C):			8	Before			9	After	

INSTRUMENTATION TECHNICAL SPECIFICATIONS:

Ground gas meter: GMF430 (BM36)
Gas Range: **CH_4** 0 - 100 % **CO_2** 0 - 100% **O_2** 0 - 25%
Gas Flow range: +100/-50 l/hour
Differential Pressure: (+/-) 1000 Pa
Date of last external calibration: 13/05/2024
Date of next external calibration: 13/05/2025

Ambient air check: **CH_4** ND **CO_2** ND **O_2** 19.6

PID: LE76
Calibrated range: 5
Calibration gas: Benzene C6H6
Response time: 2 seconds
Accuracy: (+/-) 3% displayed reading
Date of last external calibration: 10/07/2024
Date of next external calibration: 10/07/2025

Ground Gas and Groundwater Monitoring Record Sheet

JOB DETAILS:

Client: Miller Homes
Site: Hermitage Park, Lepton
Date: 03/01/2025
Job No: C10281
Visit No: 5 **of** 9
Operator: RT **Project Manager:** GH

Monitoring Point	GAS CONCENTRATIONS: Methane (%v/v) Peak	Methane (%v/v) Steady	%LEL Peak	%LEL Steady	Carbon dioxide (%v/v) Peak	Carbon dioxide (%v/v) Steady	Carbon monoxide (ppmv) Peak	Carbon monoxide (ppmv) Steady	Hydrogen sulphide (ppmv) Peak	Hydrogen sulphide (ppmv) Steady	Oxygen (%v/v) Min.	Oxygen (%v/v) Steady	VOLATILES: PID Peak (ppm)	Product thickness (mm)	FLOW DATA: Flow rate (l/hr) Peak	Flow rate (l/hr) Steady	Differential borehole Pressure (Pa)	Time for flow to equalise (secs)	Qhg per borehole: Methane (l/hr)	CO2 (l/hr)	WELL AND WATER DATA: Water level (mbgl)	Depth of well (m)	Top of BH (mAOD)	Water level (mAOD)	Response Zone	Comments
BH104	**ND**	ND	ND	ND	2.4	**2.4**	4	1	1	ND	15.1	15.1	ND	NR	0.6	0.6	2	1	0.0006	0.0144	8.79	9.00	137.10	128.31	3.0 - 9.0m	
BH105	**ND**	ND	ND	ND	1.7	**0.5**	4	2	1	ND	6.2	12.3	ND	NR	ND	ND	ND	NR	0.0001	0.0005	7.32	8.96	139.60	132.28	3.0 - 9.0m	
BH109	**ND**	ND	ND	ND	1.7	**1.7**	1	ND	1	ND	14.9	15.0	ND	NR	0.1	ND	ND	5	0.0001	0.0017	14.20	17.96	131.70	117.50	3.0 - 18.0m	
BH111	**ND**	ND	ND	ND	0.8	**0.8**	2	1	1	ND	17.7	18.0	ND	NR	ND	ND	ND	NR	0.0001	0.0008	24.34	25.02	136.70	112.36	3.0 - 25.0m	
BH114	**ND**	ND	ND	ND	2.1	**2.1**	4	2	1	ND	13.0	13.0	ND	NR	1.8	ND	3	5	0.0018	0.0021	NR	NR	135.80	NR	2.0 - 5.0m	
BH116	**ND**	ND	ND	ND	ND	**ND**	2	1	1	ND	19.2	19.4	ND	NR	ND	ND	ND	NR	0.0001	0.0001	4.47	5.82	135.00	130.53	2.0 - 5.0m	
BH118	**ND**	ND	ND	ND	0.6	**0.6**	2	1	2	ND	16.7	16.7	ND	NR	0.3	ND	ND	5	0.0003	0.0006	19.04	20.00	133.20	114.16	2.0 - 20.0m	
BH125	**ND**	ND	ND	ND	ND	**ND**	4	2	1	ND	12.9	12.9	ND	NR	ND	ND	ND	NR	0.0001	0.0001	8.20	9.43	138.10	129.90	3.0 - 9.0m	
BH135	**ND**	ND	ND	ND	ND	**ND**	2	1	1	ND	19.5	19.5	ND	NR	0.1	0.1	ND	2	0.0001	0.0001	3.96	4.79	128.20	124.24	2.0 - 5.0m	
BH136	**ND**	ND	ND	ND	0.5	**0.5**	2	1	2	1	15.5	15.5	ND	NR	0.3	0.1	ND	20	0.0003	0.0005	2.88	4.88	128.20	125.32	2.0 - 5.0m	
Max	**ND**	**ND**	**ND**	**ND**	**2.4**	**2.4**	**4**	**2**	**2**	**1**	**19.5**	**19.5**	**ND**	**NR**	**1.8**	**0.6**	**3**	**20**	**0.0018**	**0.0144**	**24.34**			**132.28**		
Min	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**1**	**ND**	**1**	**ND**	**6.2**	**12.3**	**ND**	**NR**	**ND**	**ND**	**ND**	**NR**	**0.0001**	**0.0001**	**2.88**			**112.36**		

ND - Not detected

NR - Not recorded

NB: Where no flow (ND) recorded, Qhg values are calculated using equiment limit of detection (0.1l/hr). Where negative flows recorded, these are converted to positive values for calculation of Qhg.

METEOROLOGICAL AND SITE INFORMATION: (Select correct box with X or enter data, as applicable)

State of ground:		Dry		Moist	X	Wet		Snow	X	Frozen
Wind:		Calm	X	Light		Moderate		Strong		
Cloud cover:		None		Slight		Cloudy	X	Overcast		
Precipitation:		None	X	Slight		Moderate		Heavy		
Time monitoring performed:			09:00	Start			11:00	End		
Barometric pressure (mbar):			1001	Start			1002	End		
Pressure trend (Daily):				Falling		Steady	X	Rising		
Source:	https://www.timeanddate.com/weather/uk/huddersfield/historic									
Air Temperature (Deg. C):			2	Before			3	After		

INSTRUMENTATION TECHNICAL SPECIFICATIONS:

Ground gas meter: GMF430 (BM36)
Gas Range: **CH_4** 0 - 100% **CO_2** 0 - 100% **O_2** 0 - 25%
Gas Flow range: +100/-50 l/hour
Differential Pressure: (+/-) 1000 Pa
Date of last external calibration: 13/05/2024
Date of next external calibration: 13/05/2025

Ambient air check: **CH_4** ND **CO_2** ND **O_2** 20.3

PID: LE76
Calibrated range: 5
Calibration gas: Benzene C6H6
Response time: 2 Seconds
Accuracy: (+/-) 3% displayed reading
Date of last external calibration: 10/07/2024
Date of next external calibration: 10/07/2025

Ground Gas and Groundwater Monitoring Record Sheet

JOB DETAILS:

Client: Miller Homes
Site: Hermitage Park, Lepton
Date: 23/01/2025

Job No: C10281
Visit No: 6 **of** 9
Operator: RT **Project Manager:** GH

Monitoring Point	GAS CONCENTRATIONS												VOLATILES		FLOW DATA				Qhg per borehole		WELL AND WATER DATA					Comments
	Methane (%v/v)		%LEL		Carbon dioxide (%v/v)		Carbon monoxide (ppmv)		Hydrogen sulphide (ppmv)		Oxygen (%v/v)		PID Peak (ppm)	Product thickness (mm)	Flow rate (l/hr)		Differential borehole Pressure (Pa)	Time for flow to equalise (secs)	Methane (l/hr)	CO2 (l/hr)	Water level (mbgl)	Depth of well (m)	Top of BH (mAOD)	Water level (mAOD)	Response Zone	
	Peak	Steady	Peak	Steady	Peak	**Steady**	Peak	Steady	Peak	Steady	Min.	Steady			Peak	Steady										
BH104	**ND**	ND	ND	ND	3.0	**3.0**	2	1	1	ND	6.7	6.8	ND	NR	0.1	ND	ND	2	0.0001	0.0030	8.75	9.00	137.10	128.35	3.0 - 9.0m	
BH105	**ND**	ND	ND	ND	1.3	**1.3**	2	1	1	ND	8.0	8.0	ND	NR	ND	ND	ND	NR	0.0001	0.0013	6.37	8.96	139.60	133.23	3.0 - 9.0m	
BH109	**ND**	ND	ND	ND	0.6	**0.6**	2	1	1	ND	13.7	13.7	ND	NR	0.1	ND	ND	2	0.0001	0.0006	14.42	17.96	131.70	117.28	3.0 - 18.0m	
BH111	**ND**	ND	ND	ND	0.8	**0.8**	2	1	1	ND	8.4	15.2	ND	NR	ND	ND	ND	NR	0.0001	0.0008	24.32	25.02	136.70	112.38	3.0 - 25.0m	
BH114	**ND**	ND	ND	ND	0.9	**0.9**	2	1	1	ND	13.4	13.4	ND	NR	0.1	ND	ND	2	0.0001	0.0009	NR	NR	135.80	NR	2.0 - 5.0m	
BH116	**ND**	ND	ND	ND	0.5	**ND**	2	1	1	ND	14.8	14.8	ND	NR	ND	ND	ND	NR	0.0001	0.0001	4.86	5.82	135.00	130.14	2.0 - 5.0m	
BH118	**ND**	ND	ND	ND	0.9	**0.9**	2	1	1	ND	13.2	14.0	ND	NR	ND	ND	ND	NR	0.0001	0.0009	19.12	20.00	133.20	114.08	2.0 - 20.0m	
BH125	**ND**	ND	ND	ND	1.4	**1.4**	2	1	1	ND	9.7	9.7	ND	NR	0.1	ND	ND	5	0.0001	0.0014	8.20	9.43	138.10	129.90	3.0 - 9.0m	
BH135	**ND**	ND	ND	ND	ND	**ND**	2	1	1	ND	19.2	19.3	ND	NR	0.1	ND	ND	2	0.0001	0.0001	4.61	4.79	128.20	123.59	2.0 - 5.0m	
BH136	**ND**	ND	ND	ND	0.5	**0.5**	2	1	1	ND	18.3	183.0	ND	NR	ND	ND	ND	NR	0.0001	0.0005	2.35	4.88	128.20	125.85	2.0 - 5.0m	
Max	**ND**	**ND**	**ND**	**ND**	**3.0**	**3.0**	**2**	**1**	**1**	**ND**	**19.2**	**183.0**	**ND**	**NR**	**0.1**	**ND**	**ND**	**5**	**0.0001**	**0.0030**	**24.32**			**133.23**		
Min	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**2**	**1**	**1**	**ND**	**6.7**	**6.8**	**ND**	**NR**	**ND**	**ND**	**ND**	**NR**	**0.0001**	**0.0001**	**2.35**			**112.38**		

ND - Not detected

NR - Not recorded

NB: Where no flow (ND) recorded, Qhg values are calculated using equiment limit of detection (0.1l/hr). Where negative flows recorded, these are converted to positive values for calculation of Qhg.

METEOROLOGICAL AND SITE INFORMATION: (Select correct box with X or enter data, as applicable)

State of ground:		Dry	X	Moist	X	Wet		Snow		Frozen
Wind:		Calm	X	Light		Moderate		Strong		
Cloud cover:		None		Slight		Cloudy	X	Overcast		
Precipitation:		None	X	Slight		Moderate		Heavy		
Time monitoring performed:			13:00	Start			15:15	End		
Barometric pressure (mbar):			975	Start			973	End		
Pressure trend (Daily):			X	Falling		Steady		Rising		
Source:	https://www.timeanddate.com/weather/uk/huddersfield/historic									
Air Temperature (Deg. C):			5	Before			5	After		

INSTRUMENTATION TECHNICAL SPECIFICATIONS:

Ground gas meter: GMF430 (BM36)
Gas Range: **CH_4** 0 - 100% **CO_2** 0 - 100% **O_2** 0 - 25%
Gas Flow range: +100/-50 l/C60hour
Differential Pressure: (+/-) 1000Pa
Date of last external calibration: 13/05/2024
Date of next external calibration: 13/05/2025

Ambient air check: **CH_4** ND **CO_2** ND **O_2** 19.7

PID: LE76
Calibrated range: 5
Calibration gas: Benzene C6H6
Response time: 2 seconds
Accuracy: (+/-) 3% displayed reading
Date of last external calibration: 10/07/2024
Date of next external calibration: 10/07/2025

Ground Gas and Groundwater Monitoring Record Sheet

JOB DETAILS:

Client: Miller Homes
Site: Hermitage Park, Lepton
Date: 07/02/2025

Job No: C10281
Visit No: 7 **of** 9
Operator: RT **Project Manager:** GH

Monitoring Point	GAS CONCENTRATIONS: Methane (%v/v) Peak	Methane (%v/v) Steady	%LEL Peak	%LEL Steady	Carbon dioxide (%v/v) Peak	Carbon dioxide (%v/v) Steady	Carbon monoxide (ppmv) Peak	Carbon monoxide (ppmv) Steady	Hydrogen sulphide (ppmv) Peak	Hydrogen sulphide (ppmv) Steady	Oxygen (%v/v) Min.	Oxygen (%v/v) Steady	VOLATILES: PID Peak (ppm)	Product thickness (mm)	FLOW DATA: Flow rate (l/hr) Peak	Flow rate (l/hr) Steady	Differential borehole Pressure (Pa)	Time for flow to equalise (secs)	Qhg per borehole: Methane (l/hr)	CO2 (l/hr)	WELL AND WATER DATA: Water level (mbgl)	Depth of well (m)	Top of BH (mAOD)	Water level (mAOD)	Response Zone	Comments
BH104	**ND**	ND	ND	ND	3.6	**3.6**	2	1	1	ND	4.5	4.6	ND	NR	0.5	0.3	1	10	0.0005	0.0108	7.89	9.00	137.10	129.21	3.0 - 9.0m	
BH105	**ND**	ND	ND	ND	ND	**ND**	2	1	2	1	19.0	19.1	ND	NR	0.1	ND	ND	2	0.0001	0.0001	6.76	8.96	139.60	132.84	3.0 - 9.0m	
BH109	**ND**	ND	ND	ND	1.2	**1.2**	2	1	1	ND	15.6	15.6	ND	NR	0.3	0.1	ND	5	0.0003	0.0012	15.07	17.96	131.70	116.63	3.0 - 18.0m	
BH111	**ND**	ND	ND	ND	0.4	**0.4**	2	1	1	ND	18.4	18.5	ND	NR	0.4	0.3	1	10	0.0004	0.0012	24.37	25.02	136.70	112.33	3.0 - 25.0m	
BH114	**ND**	ND	ND	ND	1.3	**1.3**	1	ND	ND	ND	11.1	11.1	ND	NR	0.2	0.1	ND	5	0.0002	0.0013	NR	NR	135.80	NR	2.0 - 5.0m	
BH116	**ND**	ND	ND	ND	0.4	**ND**	4	1	2	ND	17.1	17.9	ND	NR	0.1	ND	ND	2	0.0001	0.0001	5.21	5.82	135.00	129.79	2.0 - 5.0m	
BH118	**ND**	ND	ND	ND	0.5	**0.5**	2	1	1	ND	17.7	17.7	ND	NR	0.3	0.2	ND	5	0.0003	0.0010	DRY	20.00	133.20	DRY	2.0 - 20.0m	
BH125	**ND**	ND	ND	ND	ND	**ND**	2	1	1	ND	18.9	19.2	ND	NR	0.3	0.2	ND	10	0.0003	0.0002	8.24	9.43	138.10	129.86	3.0 - 9.0m	
BH135	**ND**	ND	ND	ND	0.2	**ND**	2	1	1	ND	18.9	19.6	ND	NR	0.1	ND	ND	5	0.0001	0.0001	DRY	4.79	128.20	DRY	2.0 - 5.0m	
BH136	**ND**	ND	ND	ND	1.0	**1.0**	3	2	2	1	16.8	16.8	ND	NR	0.2	0.1	ND	5	0.0002	0.0010	3.95	4.88	128.20	124.25	2.0 - 5.0m	
Max	**ND**	**ND**	**ND**	**ND**	**3.6**	**3.6**	**4**	**2**	**2**	**1**	**19.0**	**19.6**	**ND**	**NR**	**0.5**	**0.3**	**1**	**10**	**0.0005**	**0.0108**	**24.37**			**132.84**		
Min	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**1**	**ND**	**ND**	**ND**	**4.5**	**4.6**	**ND**	**NR**	**0.1**	**ND**	**ND**	**2**	**0.0001**	**0.0001**	**DRY**			**DRY**		

ND - Not detected

NR - Not recorded

NB: Where no flow (ND) recorded, Qhg values are calculated using equiment limit of detection (0.1l/hr). Where negative flows recorded, these are converted to positive values for calculation of Qhg.

METEOROLOGICAL AND SITE INFORMATION: (Select correct box with X or enter data, as applicable)

State of ground:		Dry	X	Moist		Wet		Snow		Frozen
Wind:		Calm		Light	X	Moderate		Strong	
Cloud cover:		None		Slight		Cloudy	X	Overcast	
Precipitation:		None	X	Slight		Moderate		Heavy	
Time monitoring performed:			14:30	Start			16:30	End	
Barometric pressure (mbar):			1009	Start			1008	End	
Pressure trend (Daily):			X	Falling		Steady		Rising	
Source:	https://www.timeanddate.com/weather/uk/huddersfield/historic								
Air Temperature (Deg. C):			4	Before			5	After	

INSTRUMENTATION TECHNICAL SPECIFICATIONS:

Ground gas meter: GMF430 (BM36)
Gas Range: **CH_4** 0 - 100% **CO_2** 0 - 100% **O_2** 0 - 25%
Gas Flow range: +100/-50 l/hour
Differential Pressure: (+/-) 1000Pa
Date of last external calibration: 13/05/2024
Date of next external calibration: 13/05/2025

Ambient air check: **CH_4** ND **CO_2** ND **O_2** 19.9

PID: LE76
Calibrated range: 5
Calibration gas: Benzene C6H6
Response time: 2 Seconds
Accuracy: (+/-) 3% displayed reading
Date of last external calibration: 10/07/2024
Date of next external calibration: 10/07/2025

Ground Gas and Groundwater Monitoring Record Sheet

JOB DETAILS:

Client: Miller Homes
Site: Hermitage Park, Lepton
Date: 24/02/2025
Job No: C10281
Visit No: 8 **of** 9
Operator: RT **Project Manager:** GH

Monitoring Point	GAS CONCENTRATIONS: Methane (%v/v)		%LEL		Carbon dioxide (%v/v)		Carbon monoxide (ppmv)		Hydrogen sulphide (ppmv)		Oxygen (%v/v)		VOLATILES: PID Peak (ppm)	Product thickness (mm)	FLOW DATA: Flow rate (l/hr)		Differential borehole Pressure (Pa)	Time for flow to equalise (secs)	Qhg per borehole: Methane (l/hr)	CO2 (l/hr)	WELL AND WATER DATA: Water level (mbgl)	Depth of well (m)	Top of BH (mAOD)	Water level (mAOD)	Response Zone	Comments
	Peak	Steady	Peak	Steady	Peak	**Steady**	Peak	Steady	Peak	Steady	Min.	Steady			Peak	Steady									
BH104	**ND**	ND	ND	ND	5.0	**4.9**	1	ND	ND	ND	8.0	8.2	ND	NR	-5.4	ND	-5	2	0.0054	0.0049	7.92	9.00	137.10	129.18	3.0 - 9.0m	
BH105	**ND**	ND	ND	ND	2.5	**2.5**	1	ND	ND	ND	5.6	5.7	ND	NR	-1.5	ND	-3	4	0.0015	0.0025	6.50	8.96	139.60	133.10	3.0 - 9.0m	
BH109	**ND**	ND	ND	ND	3.4	**3.4**	ND	ND	ND	ND	12.9	12.9	ND	NR	ND	ND	ND	NR	0.0001	0.0034	14.32	17.96	131.70	117.38	3.0 - 18.0m	
BH111	**ND**	ND	ND	ND	0.8	**0.8**	ND	ND	ND	ND	19.8	19.8	ND	NR	-1.0	ND	-5	5	0.0010	0.0008	24.33	25.02	136.70	112.37	3.0 - 25.0m	
BH114	**ND**	ND	ND	ND	4.2	**4.1**	1	ND	1	ND	11.4	11.4	ND	NR	-0.5	ND	2	5	0.0005	0.0041	NR	NR	135.80	NR	2.0 - 5.0m	
BH116	**ND**	ND	ND	ND	0.2	**0.2**	ND	ND	ND	ND	20.1	20.1	ND	NR	ND	ND	ND	NR	0.0001	0.0002	4.77	5.82	135.00	130.23	2.0 - 5.0m	
BH118	**ND**	ND	ND	ND	1.1	**1.1**	2	ND	1	ND	18.3	18.3	ND	NR	-0.5	ND	-3	5	0.0005	0.0011	19.04	20.00	133.20	114.16	2.0 - 20.0m	
BH125	**ND**	ND	ND	ND	0.2	**0.2**	2	ND	ND	ND	19.7	19.8	ND	NR	-1.5	ND	-4	3	0.0015	0.0002	8.37	9.43	138.10	129.73	3.0 - 9.0m	
BH135	**ND**	ND	ND	ND	2.5	**2.0**	1	ND	1	ND	15.9	16.6	ND	NR	-1.0	ND	-2	2	0.0010	0.0020	2.35	4.79	128.20	125.85	2.0 - 5.0m	
BH136	**ND**	ND	ND	ND	0.7	**ND**	ND	ND	ND	ND	19.8	20.0	ND	NR	-1.0	ND	-5	2	0.0010	0.0001	4.35	4.88	128.20	123.85	2.0 - 5.0m	
Max	**ND**	**ND**	**ND**	**ND**	**5.0**	**4.9**	**2**	**ND**	**1**	**ND**	**20.1**	**20.1**	**ND**	**NR**	**-5.4**	**ND**	**2**	**5**	**0.0054**	**0.0049**	**24.33**			**133.10**		
Min	**ND**	**ND**	**ND**	**ND**	**0.2**	**ND**	**ND**	**ND**	**ND**	**ND**	**5.6**	**5.7**	**ND**	**NR**	**ND**	**ND**	**ND**	**NR**	**0.0001**	**0.0001**	**2.35**			**112.37**		

ND - Not detected

NR - Not recorded

NB: Where no flow (ND) recorded, Qhg values are calculated using equiment limit of detection (0.1l/hr). Where negative flows recorded, these are converted to positive values for calculation of Qhg.

METEOROLOGICAL AND SITE INFORMATION: (Select correct box with X or enter data, as applicable)

State of ground:		Dry	X	Moist		Wet		Snow		Frozen
Wind:		Calm		Light	X	Moderate		Strong	
Cloud cover:		None	X	Slight		Cloudy		Overcast	
Precipitation:	X	None		Slight		Moderate		Heavy	
Time monitoring performed:			14:30	Start			16:30	End	
Barometric pressure (mbar):			987	Start			987	End	
Pressure trend (Daily):				Falling	X	Steady		Rising	
Source:	https://www.timeanddate.com/weather/uk/huddersfield/historic								
Air Temperature (Deg. C):			11	Before			11	After	

INSTRUMENTATION TECHNICAL SPECIFICATIONS:

Ground gas meter: GMF430 (BM36)
Gas Range: **CH_4** 0 - 100% **CO_2** 0 - 100% **O_2** 0 - 25%
Gas Flow range: +100/-50 l/hour
Differential Pressure: (+/-) 1000 Pa
Date of last external calibration: 13/05/2024
Date of next external calibration: 13/05/2025

Ambient air check: **CH_4** ND **CO_2** ND **O_2** 20.5

PID: LE76
Calibrated range: 5
Calibration gas: Benzene C6H6
Response time: 2 Seconds
Accuracy: (+/-) 3% displayed reading
Date of last external calibration: 10/07/2024
Date of next external calibration: 10/07/2025

Ground Gas and Groundwater Monitoring Record Sheet

JOB DETAILS:

Client: Miller Homes
Site: Hermitage Park, Lepton
Date: 10/03/2025
Job No: C10281
Visit No: 9 **of** 9
Operator: RT **Project Manager:** GH

Monitoring Point	GAS CONCENTRATIONS												VOLATILES		FLOW DATA				Qhg per borehole		WELL AND WATER DATA					Comments
	Methane (%v/v)		%LEL		Carbon dioxide (%v/v)		Carbon monoxide (ppmv)		Hydrogen sulphide (ppmv)		Oxygen (%v/v)		PID Peak (ppm)	Product thickness (mm)	Flow rate (l/hr)		Differential borehole Pressure (Pa)	Time for flow to equalise (secs)	Methane (l/hr)	CO2 (l/hr)	Water level (mbgl)	Depth of well (m)	Top of BH (mAOD)	Water level (mAOD)	Response Zone	
	Peak	Steady	Peak	Steady	Peak	**Steady**	Peak	Steady	Peak	Steady	Min.	Steady			Peak	Steady										
BH104	**ND**	ND	ND	ND	5.2	**5.2**	ND	ND	ND	ND	7.0	7.0	ND	NR	ND	ND	ND	NR	0.0001	0.0052	8.34	9.00	137.10	128.76	3.0 - 9.0m	
BH105	**ND**	ND	ND	ND	3.2	**3.2**	ND	ND	ND	ND	3.5	3.6	ND	NR	ND	ND	ND	NR	0.0001	0.0032	8.22	8.96	139.60	131.38	3.0 - 9.0m	
BH109	**ND**	ND	ND	ND	1.9	**1.9**	1	ND	2	1	17.5	17.6	ND	NR	ND	ND	ND	NR	0.0001	0.0019	15.07	17.96	131.70	116.63	3.0 - 18.0m	
BH111	**ND**	ND	ND	ND	2.1	**2.1**	ND	ND	ND	ND	17.7	17.7	ND	NR	ND	ND	ND	NR	0.0001	0.0021	24.78	25.02	136.70	111.92	3.0 - 25.0m	
BH114	**ND**	ND	ND	ND	0.2	**0.2**	ND	ND	ND	ND	19.8	19.8	ND	NR	ND	ND	ND	NR	0.0001	0.0002	DRY	5.23	135.80	DRY	2.0 - 5.0m	
BH116	**ND**	ND	ND	ND	1.5	**1.5**	ND	ND	2	ND	18.8	18.9	ND	NR	ND	ND	ND	NR	0.0001	0.0015	4.88	5.82	135.00	130.12	2.0 - 5.0m	
BH118	**ND**	ND	ND	ND	1.8	**1.8**	1	ND	3	1	16.6	16.6	ND	NR	ND	ND	ND	NR	0.0001	0.0018	19.48	20.00	133.20	113.72	2.0 - 20.0m	
BH125	**ND**	ND	ND	ND	1.3	**1.3**	ND	ND	ND	ND	17.8	17.9	ND	NR	ND	ND	ND	NR	0.0001	0.0013	8.36	9.43	138.10	129.74	3.0 - 9.0m	
BH135	**ND**	ND	ND	ND	0.6	**0.6**	ND	ND	ND	ND	20.0	20.1	ND	NR	ND	ND	ND	NR	0.0001	0.0006	4.60	4.79	128.20	123.60	2.0 - 5.0m	
BH136	**ND**	ND	ND	ND	3.0	**3.0**	ND	ND	ND	ND	16.9	16.9	ND	NR	ND	ND	ND	NR	0.0001	0.0030	3.26	4.88	128.20	124.94	2.0 - 5.0m	
Max	**ND**	**ND**	**ND**	**ND**	**5.2**	**5.2**	**1**	**ND**	**3**	**1**	**20.0**	**20.1**	**ND**	**NR**	**ND**	**ND**	**ND**	**NR**	**0.0001**	**0.0052**	**24.78**			**131.38**		
Min	**ND**	**ND**	**ND**	**ND**	**0.2**	**0.2**	**ND**	**ND**	**ND**	**ND**	**3.5**	**3.6**	**ND**	**NR**	**ND**	**ND**	**ND**	**NR**	**0.0001**	**0.0002**	**DRY**			**DRY**		

ND - Not detected

NR - Not recorded

NB: Where no flow (ND) recorded, Qhg values are calculated using equiment limit of detection (0.1l/hr). Where negative flows recorded, these are converted to positive values for calculation of Qhg.

METEOROLOGICAL AND SITE INFORMATION: (Select correct box with X or enter data, as applicable)

State of ground:		Dry	X	Moist		Wet		Snow		Frozen
Wind:		Calm		Light	X	Moderate		Strong	
Cloud cover:		None		Slight		Cloudy	X	Overcast	
Precipitation:	X	None		Slight		Moderate		Heavy	
Time monitoring performed:			14:00	Start			16:00	End	
Barometric pressure (mbar):			989	Start			989	End	
Pressure trend (Daily):				Falling	X	Steady		Rising	
Source:	https://www.timeanddate.com/weather/uk/huddersfield/historic								
Air Temperature (Deg. C):			9	Before			9	After	

INSTRUMENTATION TECHNICAL SPECIFICATIONS:

Ground gas meter: GMF430 (BM36)
Gas Range: **CH_4** 0 - 100% **CO_2** 0 - 100% **O_2** 0 - 25%
Gas Flow range: +100/-50 l/hour
Differential Pressure: (+/-) 1000 Pa
Date of last external calibration: 13/05/2024
Date of next external calibration: 13/05/2025

Ambient air check: **CH_4** ND **CO_2** ND **O_2** 20.5

PID: LE76
Calibrated range: 5
Calibration gas: Benzene C6H6
Response time: 2 Seconds
Accuracy: (+/-) 3% displayed reading
Date of last external calibration: 10/07/2024
Date of next external calibration: 10/07/2025

Ground Gas and Groundwater Monitoring Record Sheet

JOB DETAILS:

Client: Miller Homes
Site: Hermitage Park, Lepton
Date: 14/03/2025

Job No: C10281
Visit No: 9A **of** 9
Operator: RT **Project Manager:** GH

Monitoring Point	GAS CONCENTRATIONS												VOLATILES		FLOW DATA				Qhg per borehole		WELL AND WATER DATA					Comments
	Methane (%v/v)		%LEL		Carbon dioxide (%v/v)		Carbon monoxide (ppmv)		Hydrogen sulphide (ppmv)		Oxygen (%v/v)		PID Peak (ppm)	Product thickness (mm)	Flow rate (l/hr)		Differential borehole Pressure (Pa)	Time for flow to equalise (secs)	Methane (l/hr)	CO2 (l/hr)	Water level (mbgl)	Depth of well (m)	Top of BH (mAOD)	Water level (mAOD)	Response Zone	
	Peak	Steady	Peak	Steady	Peak	**Steady**	Peak	Steady	Peak	Steady	Min.	Steady			Peak	Steady										
BH104	**NR**	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	7.94	9.00	137.10	129.16	3.0 - 9.0m	
BH105	**NR**	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	7.65	8.96	139.60	131.95	3.0 - 9.0m	
BH109	**NR**	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	15.06	17.96	131.70	116.64	3.0 - 18.0m	
BH111	**NR**	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	24.43	25.02	136.70	112.27	3.0 - 25.0m	
BH114	**NR**	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	DRY	5.23	135.80	DRY	2.0 - 5.0m	
BH116	**NR**	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	5.12	5.82	135.00	129.88	2.0 - 5.0m	
BH118	**NR**	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	19.08	20.00	133.20	114.12	2.0 - 20.0m	
BH125	**NR**	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	8.32	9.43	138.10	129.78	3.0 - 9.0m	
BH135	**NR**	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	4.49	4.79	128.20	123.71	2.0 - 5.0m	
BH136	**NR**	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	3.21	4.88	128.20	124.99	2.0 - 5.0m	
Max	**NR**	**NR**	**NR**	**NR**	**NR**	**NR**	**NR**	**NR**	**NR**	**NR**	**NR**	**NR**	**NR**	**NR**	**NR**	**NR**	**NR**	**NR**	**NR**	**NR**	**24.43**			**131.95**		
Min	**NR**	**NR**	**NR**	**NR**	**NR**	**NR**	**NR**	**NR**	**NR**	**NR**	**NR**	**NR**	**NR**	**NR**	**NR**	**NR**	**NR**	**NR**	**NR**	**NR**	**DRY**			**DRY**		

ND - Not detected

NR - Not recorded

NB: Where no flow (ND) recorded, Qhg values are calculated using equiment limit of detection (0.1l/hr). Where negative flows recorded, these are converted to positive values for calculation of Qhg.

METEOROLOGICAL AND SITE INFORMATION: (Select correct box with X or enter data, as applicable)

State of ground:	X	Dry		Moist		Wet		Snow		Frozen
Wind:		Calm	X	Light		Moderate		Strong	
Cloud cover:		None		Slight	X	Cloudy		Overcast	
Precipitation:	X	None		Slight		Moderate		Heavy	

Ground Gas and Groundwater Monitoring Record Sheet

Summary of all gas monitoring events

JOB DETAILS:

Client: Miller Homes **Job No:** C10281
Site: Hermitage Park, Lepton
Start Date: 04/11/2024
End Date: 14/03/2025 **No. events:** 9

Monitoring Point	GAS CONCENTRATIONS												PID	FLOW DATA						Max. Qhg Recorded		Worst-credible Qhg		Comments
	Methane (%v/v)		%LEL		Carbon dioxide (%v/v)		Carbon monoxide (ppmv)		Hydrogen sulphide (ppmv)		Oxygen (%v/v)		Peak (ppm)	Peak flow rate (l/hr)		Steady flow rate (l/hr)		Differential borehole Pressure (Pa)	Time for flow to equalise (secs)	Methane (l/hr)	CO2 (l/hr)	Methane (l/hr)	CO2 (l/hr)	
	Peak	Steady	Peak	Steady	Peak	**Steady**	Peak	Steady	Peak	Steady	Min.	Steady		Max.	Min.	Max.	Min.						
BH104	**ND**	ND	ND	ND	5.2	**5.2**	4	1	1	ND	4.5	4.6	ND	1.3	-5.4	1.2	ND	5.0	20	0.0054	0.0266	0.0054	0.0624	
BH105	**ND**	ND	ND	ND	3.2	**3.2**	5	5	2	1	3.5	3.6	ND	0.6	-1.5	0.4	ND	2.0	120	0.0015	0.0068	0.0015	0.0128	
BH109	**ND**	ND	ND	ND	3.4	**3.4**	2	1	2	1	12.9	12.9	ND	0.5	ND	0.4	ND	1.0	180	0.0005	0.0076	0.0005	0.0136	
BH111	**ND**	ND	ND	ND	2.1	**2.1**	2	1	2	2	8.4	15.2	ND	0.7	-1.0	0.6	ND	2.0	60	0.0010	0.0084	0.0010	0.0126	
BH114	**ND**	ND	ND	ND	4.2	**4.1**	4	2	1	ND	11.1	11.1	ND	1.8	-0.5	0.4	ND	3.0	120	0.0018	0.0048	0.0018	0.0164	
BH116	**ND**	ND	ND	ND	1.5	**1.5**	4	1	2	2	14.8	14.8	ND	0.4	ND	0.3	ND	1.0	180	0.0004	0.0015	0.0004	0.0045	
BH118	**ND**	ND	ND	ND	1.8	**1.8**	13	13	3	2	12.2	12.2	ND	0.3	-0.5	0.2	ND	-3.0	60	0.0005	0.0030	0.0005	0.0036	
BH125	**ND**	ND	ND	ND	1.4	**1.4**	4	2	1	ND	9.7	9.7	ND	0.4	-1.5	0.3	ND	1.0	120	0.0015	0.0021	0.0015	0.0042	
BH135	**ND**	ND	ND	ND	2.5	**2.0**	4	2	2	ND	15.9	16.6	ND	0.2	-1.0	0.2	ND	-2.0	10	0.0010	0.0020	0.0010	0.0040	
BH136	**ND**	ND	ND	ND	3.0	**3.0**	3	2	2	1	15.3	15.4	ND	0.4	-1.0	0.2	ND	1.0	180	0.0010	0.0042	0.0010	0.0060	
Max	**ND**	**ND**	**ND**	**ND**	**5.2**	**5.2**	**13**	**13**	**3**	**2**	**15.9**	**16.6**	**ND**	**1.8**	**-5.4**	**1.2**	**ND**	**5.0**	**180**	**0.0054**	**0.0266**	**0.0054**	**0.0624**	
Min	**ND**	**ND**	**ND**	**ND**	**1.4**	**1.4**	**2**	**1**	**1**	**ND**	**3.5**	**3.6**	**ND**	**0.2**	**ND**	**0.2**	**ND**	**-3.0**	**10**	**0.0004**	**0.0015**	**0.0004**	**0.0036**	

Worst-possible Qhg	
0.0054	**0.0624**

ND - Not detected
NR - Not recorded

Qhg calculated for methane on the basis of peak flow and concentration (short-term explosive risk).
Qhg calculated for carbon dioxide on the basis of steady flow and concentration (risk of long-term accumulation of suffocating mixture).
For calculation purposes, it is assumed that negative flows could be realised as positive flows.
Max. Qhg recorded is the highest Qhg determined in any individual monitoring event.
Worst-credible Qhg is the value calculated from the highest concentration and flow recorded in any monitoring event for an individual borehole.
Worst-possible Qhg is the value calculated from the highest concentration and flow recorded in any monitoring event for any borehole.

Summary of Groundwater Data

JOB DETAILS:

Client: Miller Homes **Job No:** C10281
Site: Hermitage Park, Lepton
Start Date: 04/11/2024
End Date: 14/03/2025 **No. events:** 9

Monitoring Point	Product thickness (mm)	Water level (mbgl)		Water level (mAOD)		Water level range (m)	Response zone
	Max.	Max.	Min.	Max.	Min.		
BH104	ND	8.79	4.32	128.31	132.78	4.47	3.0 - 9.0m
BH105	ND	5.44	DRY	134.16	DRY	3.52	3.0 - 9.0m
BH109	ND	17.63	9.34	114.07	122.36	8.29	3.0 - 18.0m
BH111	ND	7.83	DRY	128.87	DRY	17.17	3.0 - 25.0m
BH114	ND	DRY	DRY	DRY	DRY	NA	2.0 - 5.0m
BH116	ND	4.47	DRY	130.53	DRY	1.35	2.0 - 5.0m
BH118	ND	3.82	DRY	129.38	DRY	16.18	2.0 - 20.0m
BH125	ND	3.06	8.57	129.53	135.04	5.51	3.0 - 9.0m
BH135	ND	2.35	DRY	125.85	DRY	2.44	2.0 - 5.0m
BH136	ND	2.88	DRY	125.32	DRY	2.00	2.0 - 5.0m
Max.	**ND**	**DRY**	**DRY**	**DRY**	**DRY**	**17.17**	
Min.	**NR**	**2.35**	**4.32**	**114.07**	**122.36**	**1.35**	