GROUND GAS ADDENDUM

Site:	Hinchley Road, Charlestown
References:	17-994-R1
Date:	23 May 2025
Client:	Miller Homes



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QUALITY ASSURANCE

Report references	17-994-R1

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1. INTRODUCTION

1.1. BACKGROUND

Miller Homes commissioned E3P to undertake a ground gas assessment at Hinchley Road, Charlestown, Manchester, M9 7BX.

E3P has previously completed a ground investigation on the site at Hinchley Road, Charlestown, Manchester, M9 7BX, herein referred to as the site. The findings of the ground investigation are presented within the E3P report entitled Phase II Geoenvironmental Site Assessment. Report reference 17-694-R1, dated January 2024.

During the investigation E3P installed 11 ground gas monitoring wells, which were to be monitored over a period of three months after installation. The data collected from the gas monitoring wells are summarised in this report and this comprises the completed ground gas assessment.

1.2. PROPOSED DEVELOPMENT

Miller Homes are considering the proposed acquisition and future redevelopment of land at Hinchley Road, Blackley, for low-rise residential housing with associated adopted estate roads and utility infrastructure.

A snapshot of the proposed development layout is displayed in Figure 1 and presented as Drawing 17-994-002 in APPENDIX III.

Figure 1 Proposed Development



1.3. OBJECTIVES AND SCOPE

The objectives of the ground gas addendum report are to provide a detailed assessment of ground gas risk based on all available data from the E3P ground investigation works.

1.4. LIMITATIONS

The limitations of this report are presented in APPENDIX I.

1.5. CONFIDENTIALITY

E3P has prepared this report solely for the use of the client and those parties with whom a warranty agreement has been executed or with whom an assignment has been agreed. Should any third party wish to use or rely upon the report's contents, written approval must be sought from E3P; a charge may be levied against such consent.

2. GROUND GAS RISK ASSESSMENT

2.1. RATIONALE

Hazardous ground gas qualitative risk assessment is based on a conceptual site model (CSM) similar to that used for soil and groundwater contamination sources (i.e., source pathway receptor pollutant linkages).

The risk can be assessed based on knowledge of the ground conditions and CSM and a measure of hazardous gas concentrations and gas flow at the site within monitoring standpipes.

2.2. SOURCES AND PATHWAYS OF GROUND GAS

Table 2.1 summarises the potential sources and pathways of ground gas within the context of the recorded site setting and proposed development.

Table 2.1 Identified Potential Sources of Ground Gas

SOURCE
Made Ground Made Ground deposits were encountered to a maximum depth of 2.80 m bgl (WS108), however, these increased depths are noted in areas of historic stockpiling of materials that are to be levelled as part of enabling works. Generally, Made Ground was encountered to depths under 1.00 m bgl across the site. Slight organic odours were noted within two of the locations (TP102 between 1.90 and 2.20 m bgl and WS101 between 0.50 and 1.00 m bgl). No materials that are considered to have the potential to generate ground gas have been identified within the Made Ground. No significant depth of Made Ground that could provide a sustainable gas source/reservoir has been encountered across the site.
Superficial Strata Natural superficial deposits were encountered within the majority of exploratory hole locations with the exception of TP102 and TP115 which were terminated due to obstructions or encountering land drains. The primary superficial deposit consisted of firm to very stiff low permeability CLAY with areas of commonly shallow very soft to soft CLAY. These deposits are unlikely to provide a viable pathway for gas migration. Shallow PEAT deposits were encountered within 21 of the exploratory locations site-wide to a maximum depth of 2.80 m bgl. The PEAT was noted as being within low to moderate degrees of humification, with low to moderate levels of fibres, rootlet, and wood content. Very slight to strong organic odours were noted within 13 of the locations where it was present. Additionally, a peaty CLAY was noted within WS102 from 1.10 m to 2.00 m bgl which pertained a slight organic odour. Peat is a limited source of CO_2 and CH_4 because it forms in waterlogged, anaerobic conditions that slow the decomposition of organic matter. This environment reduces the rate at which carbon is released as CO_2 or CH_4. Intact peatlands act as carbon sinks, sequestering more carbon than they emit, with methane production occurring slowly under anaerobic conditions. Factors like low temperatures and high water tables further limit microbial activity, minimizing greenhouse gas emissions.

However, peat becomes a significant source of CO_2 and CH_4 when disturbed, such as through drainage, land-use changes, or combustion. Drainage introduces oxygen, accelerating aerobic decomposition and CO_2 release, while fluctuating water levels enhance CH_4 emissions. In its natural state, peatlands emit relatively low amounts of greenhouse gases, but human interference can significantly alter this balance.

NF94 states that peat can lead to elevated concentrations of bulk gases, but is a low risk source that cannot generate gas at a significant rate.

Subject to regulatory approval, PEAT and organic soils are to be removed during enabling works, removing the gas source.

Bedrock Strata

The solid bedrock geology was not encountered during the ground investigation. The site is located within a Coal Authority reporting area but not within a development high risk area, however, the bedrock is anticipated at circa 60 m bgl with > 13 m of low permeability clays present across the site.

The presence of potential deep unrecorded coal workings is a source of ground gas, however, the risk is reduced given the presence of >13 m low permeability clays present across the site, that will inhibit the vertical migration.

Landfill Sites

A historical off-site landfill was located 123 m south of the site, active between 1964 and 1974. Lateral migration of gas through deep granular SAND deposits cannot be discounted, however, given the presence of 13 m of low permeability clays present across the site, vertical migration of gas to proposed plots is unlikely.

Other Gases

The site is located within an area where 1-3% of homes are above the radon action level – radon protective measures are not required to new build properties.

No exceedances of volatile contaminants (naphthalene, elemental mercury or light end TPH) have been identified. Additionally, no current or historic source of volatile contamination has been identified on-site.

2.3. MONITORING FREQUENCY

The CIRIA C665 guidance on gas risk assessment includes recommendations for periods frequencies for monitoring visits. These recommendations take into account the nature of the proposed development and the likely generation potential of the source.

The proposed development comprises private residential properties, which would be classified as a Type A development (high sensitivity) in accordance with BS8485:2015+A1:2019. However, it is considered that the likely generation potential of the identified gas sources (taking into account the likelihood of future increases in gas generation) would be best classified as low.

Therefore, within the context of the proposed residential end-use and ground gas generation potential, the gas assessment requires six visits over three months, with at least two sets of readings at low or falling atmospheric pressure.

2.4. GROUND GAS RISK ASSESSMENT METHODOLOGY

The potential impact on the development from ground gases has been assessed with reference to standards and guidelines published in:

- CIRIA Report 665 – Assessing risks posed by hazardous ground gases to buildings (2007).

- BS8485:2015+A1:2019 – Code of Practice for the design of protective measures for methane and carbon dioxide ground gases for new buildings.
- CL:AIRE Publication "Good Practice for Risk Assessment for Coal Mine Gas Emissions" (October 2021)

BS8485 provides guidance on the level of gas protection requirements based upon the characteristic situation (CS) and the proposed development based on building type.

Therefore, in accordance with BS8485, based on the measured flow rates and hazardous gas concentrations, individual hazardous gas flow rates (Q_{hg}) shall be derived for each monitoring point, from which the site characteristic hazardous gas flow rate (Q_{hgs}), and then the Characteristic Situation (CS) can be determined.

The following equation should be utilised:

$$Q_{hg} = q\left(\frac{C_{hg}}{100}\right)$$

Where:

q is the measured flow rate (in litres per hour) of combined gases from the monitoring standpipe.

Chg is the measured hazardous gas concentration (in percentage volume/volume).

The subsequent derived gas screening value (GSV) should be the maximum Q hg (flow rate x concentration as a percentage volume) for all the monitoring events.

A 'worst case check' may be carried out using the maximum recorded flow in any hole with the maximum concentration in any hole with the maximum concentration in any hole to present the plausible worst case conditions. Adoption of the worst case Qhg requires thorough justification and reference to the CSM.

The final derived GSV can then be used to characterise the site as summarised in Table 2.2.

Table 2.2 Site Characterisation by GSV (BS8485:2015+A1:2019)

CS	HAZARD POTENTIAL	GSV (l/hr) FOR METHANE AND CARBON DIOXIDE	ADDITIONAL FACTORS
CS1	Very Low	< 0.07	Typically <1% methane concentration and <5% carbon dioxide concentration (otherwise consider an increase to CS2)
CS2	Low	< 0.70	Typical measured flow rate <70 l/h (otherwise consider an increase to CS3)
CS3	Moderate	< 3.5	N/A
CS4	Moderate to High	< 15	N/A
CS5	High	< 70	N/A
CS6	Very High	> 70	N/A

Notes

1) The CS is equivalent to the characteristic GSC in CIRIA C665.
2) The worst-case ground gas regime identified on the site, either methane or carbon dioxide, at the worst-case temporal conditions that the site may be expected to encounter should be considered.
3) Gas Screening Value is the Borehole Gas Volume Flow Rate, in litres per hour, multiplied by the concentration in the air stream of the particular gas being considered.

4) *The Gas Screening Value thresholds should not generally be exceeded without the completion of a detailed ground gas risk assessment taking into account site-specific conditions.*

It should be noted that in the first instance, this assessment has been carried out in accordance with BS8485:2015+A1(2019) and the thresholds given therein.

2.5. MONITORING METHODOLOGY

Concentrations of methane (CH_4), carbon dioxide (CO_2) and oxygen (O_2) were measured using a calibrated infrared gas analyser (GFM435) with gas flow rates measured using an integrated flow meter.

Gas measurements were recorded for a minimum of 300 seconds (5 minutes) at each location, increasing to 600 seconds if elevated concentrations identified, at which points the maximum concentration of CH_4 and CO_2, together with the lowest concentration of O_2 were recorded.

The results of the ground gas monitoring are presented in Table 2.3.

In addition to the raw data, results for each individual standpipe have been assessed with reference to guidance provided in BS8485:2015+A1:2019. Based on the initial peak measured flow rates and hazardous gas concentrations, individual hazardous gas flow rates (Q_{hg}) have been derived for each monitoring point, from which an individual Characteristic Situation (CS) can be determined.

2.6. SUMMARY OF MONITORING RESULTS

Table 2.3 presents the ground gas and groundwater monitoring results to date.

Table 2.3 Summary of Ground Gas Monitoring Results

WELL	STRATA	DATE	CH_4 PEAK (%V/V)	CH_4 STEADY (%V/V)	CH_4 Q_{hg} (l/hr)	CO_2 PEAK (%V/V)	CO_2 STEADY (%V/V)	CO_2 Q_{hg} (l/hr)	O_2 (%V/V)	ATMOS (mb)	ATMOS. DYNAMIC	PEAK FLOW (l/hr)	STEADY FLOW (l/hr)	RESPONSE ZONE (m bgl)	DEPTH TO BASE (m bgl)	DEPTH TO WATER (m bgl)
WS101	CLAY	18/11/2024	0.1	0.1	0.0001	0.1	0.1	0.0001	18.1	997	Falling	0.1	0.1	1.00-3.00	3.80	1.12
		04/12/2024	0.1	0.1	0.0001	1.5	0.4	0.0015	18.1	1006	Falling	0.1	0.1		3.80	0.80
		16/12/2024	0.1	0.1	0.0001	0.2	0.1	0.0002	20.7	1013	Rising	0.1	0.1		3.76	0.82
		07/01/2025	0.1	0.1	0.0001	0.1	0.1	0.0001	16.9	983	Rising	0.1	0.1		3.76	0.38
		23/01/2025	0.1	0.1	0.0001	3.0	0.3	0.003	20.5	986	Falling	0.1	0.1		3.76	1.03
		18/02/2025	0.1	0.1	0.0001	4.6	4.3	0.0046	13.9	1012	Falling	0.1	0.1		3.76	1.08
WS102	CLAY	18/11/2024	0.1	0.1	0.0001	4.4	4.3	0.0044	12.4	997	Falling	0.1	0.1	1.00-2.00	1.68	Dry
		04/12/2024	0.1	0.1	0.0001	3.3	3.3	0.0033	13.5	1006	Falling	0.1	0.1		1.68	1.13
		16/12/2024	0.1	0.1	0.0001	4.2	4.2	0.0042	15.3	1013	Rising	0.1	0.1		1.74	1.18
		07/01/2025	0.1	0.1	0.0001	0.2	0.2	0.0002	16.9	983	Rising	0.1	0.1		1.73	1.01
		23/01/2025	0.1	0.1	0.0001	4.1	4.1	0.0041	12.4	986	Falling	0.1	0.1		1.73	1.36
		18/02/2025	0.1	0.1	0.0001	4.3	4.2	0.0043	16.3	1012	Falling	0.1	0.1		1.74	1.52
WS103	CLAY	18/11/2024	0.1	0.1	0.0001	0.7	0.6	0.0007	18.1	997	Falling	0.1	0.1	1.00-2.00	1.95	1.18
		04/12/2024	0.1	0.1	0.0001	1.8	0.2	0.0018	17.9	1006	Falling	0.1	0.1		1.95	1.10
		16/12/2024	0.1	0.1	0.0001	0.6	0.2	0.0006	20.6	1013	Rising	0.1	0.1		2.03	0.84
		07/01/2025	0.1	0.1	0.0001	0.1	0.1	0.0001	16.9	983	Rising	0.1	0.1		2.03	0.66
		23/01/2025	0.1	0.1	0.0001	0.1	0.1	0.0001	20.3	986	Falling	0.1	0.1		2.03	0.87
		18/02/2025	0.1	0.1	0.0001	0.6	0.6	0.0006	19.5	1012	Falling	0.1	0.1		2.03	1.05

WELL	STRATA	DATE	CH_4 PEAK (%V/V)	CH_4 STEADY (%V/V)	CH_4 Q_{hg} (l/hr)	CO_2 PEAK (%V/V)	CO_2 STEADY (%V/V)	CO_2 Q_{hg} (l/hr)	O_2 (%V/V)	ATMOS (mb)	ATMOS. DYNAMIC	PEAK FLOW (l/hr)	STEADY FLOW (l/hr)	RESPONSE ZONE (m bgl)	DEPTH TO BASE (m bgl)	DEPTH TO WATER (m bgl)
WS104	CLAY	18/11/2024	0.1	0.1	0.0001	2.8	2.2	0.0028	15.3	997	Falling	0.1	0.1	2.00-3.50	3.00	1.64
		04/12/2024	0.1	0.1	0.0001	**9.2**	**6.5**	0.0092	5	1006	Falling	0.1	0.1		3.00	1.63
		16/12/2024	0.1	0.1	0.0001	**6.3**	**5.8**	0.0063	6.4	1013	Rising	0.1	0.1		3.09	1.60
		07/01/2025	0.1	0.1	0.0001	**7.7**	3.6	0.0077	4.8	983	Rising	0.1	0.1		3.09	1.28
		23/01/2025	0.1	0.1	0.0001	**6.9**	**5.1**	0.0069	6.2	986	Falling	0.1	0.1		3.09	1.71
		18/02/2025	0.1	0.1	0.0001	**8.1**	**5.6**	0.0081	6.2	1012	Falling	0.1	0.1		3.09	1.67
WS105	PEAT & CLAY	18/11/2024	0.1	0.1	0.0001	4.3	1.9	0.0043	17	997	Falling	0.1	0.1	1.00-5.00	4.31	1.25
		04/12/2024	0.1	0.1	0.0001	4.9	0.3	0.0049	17.5	1006	Falling	0.1	0.1		4.31	0.52
		16/12/2024	0.1	0.1	0.0001	**7.1**	2.2	0.0071	19.9	1013	Rising	0.1	0.1		4.39	0.58
		07/01/2025	0.1	0.1	0.0001	**6.7**	3.0	0.0067	15	983	Rising	0.1	0.1		4.40	0.48
		23/01/2025	0.1	0.1	0.0001	0.1	0.1	0.0001	20.1	986	Falling	0.1	0.1		4.39	0.49
		18/02/2025	0.1	0.1	0.0001	**5.6**	1.4	0.0056	19.4	1012	Falling	0.1	0.1		4.39	0.62
WS106	CLAY	18/11/2024	0.1	0.1	0.0001	0.1	0.1	0.0001	18.3	997	Falling	0.1	0.1	2.00-3.00	2.20	0.97
		04/12/2024	0.1	0.1	0.0001	0.2	0.1	0.0002	17.6	1006	Falling	0.1	0.1		2.20	0.98
		16/12/2024	0.1	0.1	0.0001	0.3	0.3	0.0003	20.6	1013	Rising	0.1	0.1		2.30	1.04
		07/01/2025	0.1	0.1	0.0001	0.2	0.2	0.0002	16.6	983	Rising	0.1	0.1		2.30	0.94
		23/01/2025	0.1	0.1	0.0001	0.1	0.1	0.0001	20	986	Falling	0.1	0.1		2.30	0.93
		18/02/2025	0.1	0.1	0.0001	0.1	0.1	0.0001	20.3	1012	Falling	0.1	0.1		2.30	1.06

WELL	STRATA	DATE	CH_4 PEAK (%V/V)	CH_4 STEADY (%V/V)	CH_4 Q_{hg} (l/hr)	CO_2 PEAK (%V/V)	CO_2 STEADY (%V/V)	CO_2 Q_{hg} (l/hr)	O_2 (%V/V)	ATMOS (mb)	ATMOS. DYNAMIC	PEAK FLOW (l/hr)	STEADY FLOW (l/hr)	RESPONSE ZONE (m bgl)	DEPTH TO BASE (m bgl)	DEPTH TO WATER (m bgl)
WS108	MADE GROUND	18/11/2024	0.1	0.1	0.0001	0.9	0.9	0.0009	17.5	997	Falling	0.1	0.1	1.00-2.50	2.08	Dry
		04/12/2024	0.1	0.1	0.0001	**7.9**	**7.9**	0.0079	6.4	1006	Falling	0.1	0.1		2.08	1.62
		16/12/2024	0.1	0.1	0.0001	4.8	4.8	0.0048	13.8	1013	Rising	0.1	0.1		2.13	1.67
		07/01/2025	0.1	0.1	0.0001	**5.9**	4.0	0.0059	9.5	983	Rising	0.1	0.1		2.12	1.04
		23/01/2025	0.1	0.1	0.0001	**7.1**	**7.1**	0.0071	10.3	986	Falling	0.1	0.1		2.12	1.76
		18/02/2025	0.1	0.1	0.0001	0.2	0.2	0.0002	19.9	1012	Falling	0.1	0.1		2.13	1.89
WS109	CLAY	18/11/2024	0.1	0.1	0.0001	1.9	1.7	0.0019	15.3	997	Falling	0.1	0.1	3.00-5.00	4.53	2.72
		04/12/2024	0.1	0.1	0.0001	0.1	0.1	0.0001	17.1	1006	Falling	0.1	0.1		4.53	1.42
		16/12/2024	0.1	0.1	0.0001	0.3	0.1	0.0003	20.7	1013	Rising	0.1	0.1		4.59	1.14
		07/01/2025	0.1	0.1	0.0001	0.4	0.2	0.0004	16.6	983	Rising	0.1	0.1		4.59	1.93
		23/01/2025	0.1	0.1	0.0001	0.2	0.1	0.0002	20.1	986	Falling	0.1	0.1		4.59	1.32
		18/02/2025	0.1	0.1	0.0001	0.1	0.1	0.0001	20.3	1012	Falling	0.1	0.1		4.59	1.70
WS110	CLAY	18/11/2024	0.1	0.1	0.0001	0.1	0.1	0.0001	18.3	997	Falling	0.1	0.1	1.00-2.00	1.90	0.72
		04/12/2024	0.1	0.1	0.0001	0.2	0.2	0.0002	17.9	1006	Falling	0.1	0.1		1.90	0.61
		16/12/2024	0.1	0.1	0.0001	1.1	0.7	0.0011	20.6	1013	Rising	0.1	0.1		1.88	0.67
		07/01/2025	0.1	0.1	0.0001	0.1	0.1	0.0001	16.9	983	Rising	0.1	0.1		1.88	0.63
		23/01/2025	0.1	0.1	0.0001	0.9	0.9	0.0009	19.5	986	Falling	0.1	0.1		1.88	0.69
		18/02/2025	0.1	0.1	0.0001	0.6	0.2	0.0006	20.1	1012	Falling	0.1	0.1		1.88	0.71

WELL	STRATA	DATE	CH_4 PEAK (%V/V)	CH_4 STEADY (%V/V)	CH_4 Q_{hg} (l/hr)	CO_2 PEAK (%V/V)	CO_2 STEADY (%V/V)	CO_2 Q_{hg} (l/hr)	O_2 (%V/V)	ATMOS (mb)	ATMOS. DYNAMIC	PEAK FLOW (l/hr)	STEADY FLOW (l/hr)	RESPONSE ZONE (m bgl)	DEPTH TO BASE (m bgl)	DEPTH TO WATER (m bgl)
WS111	CLAY	18/11/2024	0.1	0.1	0.0001	3.9	3.9	0.0039	15	997	Falling	0.1	0.1	1.00-1.50	0.95	0.81
		04/12/2024	0.1	0.1	0.0001	4.3	4.3	0.0043	13.2	1006	Falling	0.1	0.1		0.95	0.73
		16/12/2024	0.1	0.1	0.0001	4.9	4.9	0.0049	16.2	1013	Rising	0.1	0.1		1.08	0.81
		07/01/2025	0.1	0.1	0.0001	**6.9**	**6.9**	0.0069	11.3	983	Rising	0.1	0.1		1.08	0.62
		23/01/2025	0.1	0.1	0.0001	3.9	3.9	0.0039	16.6	986	Falling	0.1	0.1		1.08	0.73
		18/02/2025	0.1	0.1	0.0001	3.1	2.9	0.0031	17.6	1012	Falling	0.1	0.1		1.08	0.84
WS112	CLAY	18/11/2024	0.1	0.1	0.0001	**7.5**	**6.8**	0.0075	10.8	997	Falling	0.1	0.1	1.00-3.00	2.52	1.45
		04/12/2024	0.1	0.1	0.0001	**12.2**	**12.1**	0.0122	3.6	1006	Falling	0.1	0.1		2.52	1.16
		16/12/2024	0.1	0.1	0.0001	**14.0**	**13.2**	0.014	4.9	1013	Rising	0.1	0.1		2.65	1.31
		07/01/2025	0.1	0.1	0.0001	**7.1**	**6.9**	0.0071	9.4	983	Rising	0.1	0.1		2.65	1.08
		23/01/2025	0.1	0.1	0.0001	**11.5**	**11.5**	0.0115	8.8	986	Falling	0.1	0.1		2.65	1.24
		18/02/2025	0.1	0.1	0.0001	**9.7**	**9.3**	0.0097	10	1012	Falling	0.1	0.1		2.65	1.37

Notes

CIRIA Characteristic Situation	Q_{hg}		
CS1	*<0.07*	*Typical Max CO2 <5 % Typical Max CH4 <1 %*	*Values in BOLD exceed CS1 Thresholds*
CS2	*<0.7*	*Flow rate not to exceed 70 l/hr otherwise consider increase to CS3*	*Values in BLUE denote water above level of response zone (flooded)*
CS3	*<3.5*		
CS4	*<15*	*Quantitative Risk Assessment required to evaluate scope of protective measures*	

2.7. GROUNDWATER

The water level within several of the monitoring wells was recorded to be above the top of the response zone (flooded) on a number of occasions, as summarised in Table 2.4, thus rendering some of the monitoring data unreliable. Therefore, each time a flooded well was encountered, the well was bailed and left to re-equilibrate for the following visit.

Table 2.4 Flooded Monitoring Well Data

WELL	VISIT 1 18/11/2024	VISIT 2 04/12/2024	VISIT 3 16/12/2024	VISIT 4 07/01/2025	VISIT 5 23/01/2025	VISIT 6 18/02/2025
WS101	-	Y	Y	Y	-	-
WS102	-	-	-	-	-	-
WS103	-	-	Y	Y	Y	-
WS104	Y	Y	Y	Y	Y	Y
WS105	-	Y	Y	Y	Y	Y
WS106	Y	Y	Y	Y	Y	Y
WS108	-	-	-	-	-	-
WS109	Y	Y	Y	Y	Y	Y
WS110	Y	Y	Y	Y	Y	Y
WS111	Y	Y	Y	Y	Y	Y
WS112	-	-	-	-	-	-

2.8. BAROMETRIC PRESSURE

Visits 1, 2, 5 and 6 were undertaken during periods of falling pressure, with visit 6 undertaken at relatively high pressure (1012 mbar) and visit 5 undertaken at relatively low pressure (986 mbar). Visits 1 and 2 were undertaken at atmospheric pressures of 997 and 1006 mbar.

Visits 3 and 4 were undertaken during a period of rising pressure. Visit 3 was undertaken during relatively high rising pressure with pressure recorded at 1013 mbar. Visit 4 was undertaken during a relatively low rising pressure, with pressure recorded at 983 mbar.

It is therefore considered that the visits have been undertaken over representative conditions.

2.9. GAS FLOW

Throughout the monitoring period, flow rates were recorded to be 0.1 l/hr (limit detection of the analyser).

2.10. GAS CONCENTRATIONS

The maximum methane value recorded within the monitoring wells was 0.1% v/v (limit of detection of the analyser).

Carbon dioxide concentrations were recorded at concentrations ranging from 0.1% v/v to 14% v/v (WS112).

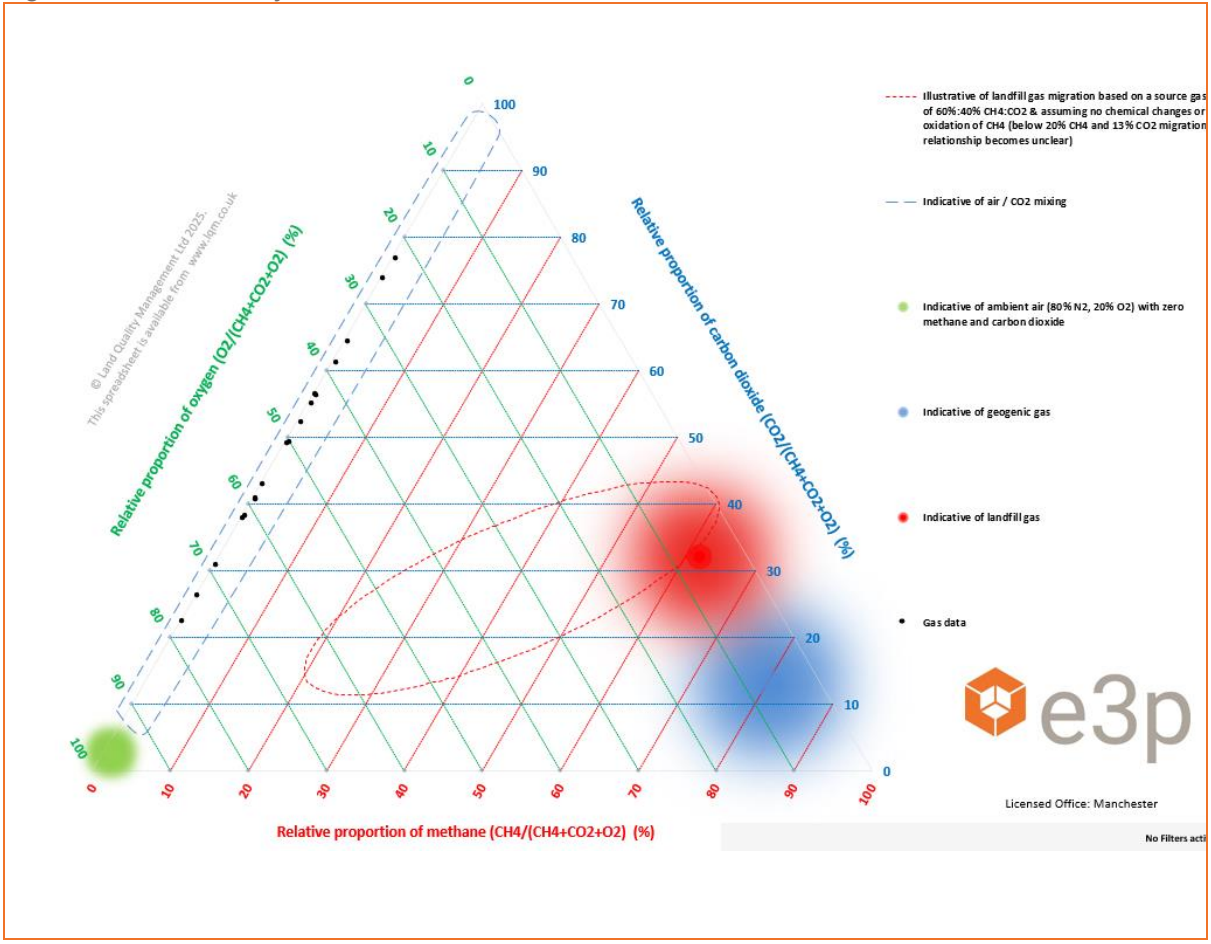
2.11. TERNARY PLOT FOR GROUND GAS

A ternary gas plot is a triangular plot of three variable which equal 100%. They allow the composition of gas to be identified and can help to identify the potential source of gas. As carbon dioxide is present in natural soils (such as Peat), this can lead to uncertainty about whether it is necessary to increase the

gas regime. On this basis, a ternary plot has been used as an assessment tool for the gas monitoring data to identify the likely source of gas for locations which exceeded 5% CO_2 (CS1 threshold).

Figure 2 shows the ternary gas plot for the gas monitoring data.

Figure 2 Ternary Gas Plot



The above plot displays the gas monitoring data points from WS104, WS105, WS108, WS111 and WS112 which exceeded 5% CO_2 (CS1 threshold). The ternary gas plot indicates that the identified exceedances are representative of microbial respiration of organic materials in soil and air/CO_2 mixing, characterised by zero methane and low flow.

The ternary gas plot indicates that the elevated CO_2 readings (>5% v/v) are not representative of a geogenic or landfill gas source.

Across all visits no hazardous gas rates for CO_2 or CH_4 have been recorded above CS1 thresholds. The hazardous flow rates are based upon 'worst case' initial peak flow rates and 'peak gas volumes' recorded within each well.

Should PEAT remain, given the absence of a gas source and LQM ternary plot showing ambient air mixing, no long-term ground gas risk is considered to be present with respect to WS106.

There are organic clay deposits close to the response zone of WS112, with environmental testing within this stratum returning a total organic carbon (TOC) content of 7.4%, this is the most likely source of the elevated readings at this well.

There is a peat layer underlying the response zone of WS108, with granular deposits overlying the strata which may have facilitated the vertical migration of ground gas. The response zone itself lies within the historically stockpiled Made Ground beneath WS108 in the northwestern sector of the site; the TOC

content of the bottom layer of Made Ground overlying the peat at 2.80 m bgl was 9.6%, indicating the presence of organic materials within the Made Ground. Recently turned soils increase the capacity for aerobic microbial respiration by exposing more of the organic materials to air, which the heaping of Made Ground could have facilitated here. The outgassing potential of such soils decreases over time however as organic materials are utilised for microbial respiration, indicating that even if left in-situ, CS2 protection measures may not be necessary over longer timescales. Further monitoring would nevertheless be recommended in the case of such materials being left in-situ.

3. CONCLUSION

The determined Characteristic Situation for each standpipe for each visit is presented in Table 4.1.

Table 4.1 Gas Profile and Location

WELL	DEPTH TO WATER (m/bgl)	MAX FLOW (l/hr)	MAX CH_4 (%V/V)	MAX CH_4 Q_{hg} (l/hr)	MAX CO_2 (%V/V)	MAX CO_2 Qhg (l/hr)	CHARACTERISTIC SITUATION
WS101	0.38-1.12	0.1	0.1	0.0001	4.6	0.0046	CS1
WS102	1.01-1.52	0.1	0.1	0.0001	4.4	0.0044	CS1
WS103	0.66-1.18	0.1	0.1	0.0001	1.8	0.0018	CS1
WS104	Well flooded during all visits						
WS105	0.48-1.25	0.1	0.1	0.0001	4.3	0.0043	CS1
WS106	Well flooded during all visits						
WS108	1.04-1.89	0.1	0.1	0.0001	7.9	0.0079	CS1
WS109	Well flooded during all visits						
WS110	Well flooded during all visits						
WS111	Well flooded during all visits						
WS112	1.08-1.45	0.1	0.1	0.0001	14.0	0.014	CS1

Across all visits no hazardous gas rates for CO_2 or CH_4 have been recorded above CS1 thresholds.

Elevated CO_2 (>5% v/v) was recorded within WS104, WS105, WS108, WS111 and WS112. Review of a ternary gas plot of the data from these wells indicates that the exceedances are representative of microbial respiration of organic materials in soil and air/CO_2 mixing, characterised by zero methane and low flow, and are not representative of a geogenic or landfill gas source.

Shallow PEAT deposits were encountered within 21 of the exploratory locations site-wide to a maximum depth of 2.80 m bgl. NF94 states that peat can lead to elevated concentrations of bulk gases, but is a low risk source that cannot generate gas at a significant rate.

As the peat deposits are currently in a largely saturated state, there is limited potential for ground gas generation. The proposed development will result in a change in the hydrogeology, and this has the potential to change the anaerobic and aerobic environment, which may result in the generation of CH4

and CO2. As such, should PEAT remain on site there is likely to be an initial release of ground gas, however, the length and volume of any potential gas release is unknown.

It is understood that, subject to regulatory approval, PEAT is to be removed from site, thus removing the gas source. Should PEAT be removed from site, no future risk would remain, and the site should classify as CS1 – no gas measures required.

Should PEAT remain in situ, with due consideration to the Conceptual Site Model and the potential for a future gas source (retained peat) and subsequent gas generation potential, it is considered that precautionary CS2 mitigation measures and a Gas Protection Design Report will be required.

END OF REPORT

Appendix I: Limitations



GENERAL

This report and any associated works (together comprising the "Services") were compiled and carried out by E3P for the client (as present in Section 1) under the E3P “Terms of Business” or with those parties with whom a warranty agreement has been executed, or with whom an assignment has been agreed and outlined in the body of the report.

Unless explicitly agreed otherwise, in writing, this report has been prepared under E3P Standard Terms and Business as included within our proposal to the Client.

Project-specific appointment documents may be agreed upon at our discretion and a charge may be levied for both the time to review and finalise appointment documents and also for associated changes to the appointment terms. E3P reserves the right to amend the fee should any changes to the appointment terms create an increased risk to E3P.

The report needs to be considered in light of the proposal and associated limitations of scope. The report needs to be read in full and isolated sections cannot be used without full reference to other elements of the report and any previous works referenced within the report.

PHASE 1 GEOENVIRONMENTAL AND PRELIMINARY RISK ASSESSMENTS

Coverage: This section covers reports with the following titles or combination of titles: Phase 1; Desktop Study; Geoenvironmental Assessment; Development Appraisal; Preliminary Environmental Risk Assessment; Constraints Report; Due Diligence Report; Geotechnical Development Review; Environmental Statement; Environmental Chapter; Baseline Environmental Assessment; Project Scope Summary Report (PSSR), Program Environmental Impact Report (PEIR), Geotechnical Development Risk Register; Agricultural Land Assessment; Mineral Safeguarding Assessment; Desk Top Coal Mining Risk Assessment; Hydrogeological Appraisal; Construction Environmental Management Plan; and Site Water Management Plan.

The works undertaken to prepare this report comprised a study of available and easily documented information from a variety of sources (including the Client), together with (where appropriate) a brief walkover inspection of the Site and correspondence with relevant authorities and other interested parties. Due to the short timescales associated with these projects’ responses may not have been received from all parties. E3P cannot be held responsible for any disclosures that are provided post-production of our report and will not automatically update our report.

The opinions given in this report have been dictated by the finite data on which they are based and are relevant only for the purpose for which the report was commissioned. The information reviewed should not be considered exhaustive and has been accepted in good faith as providing true and representative data pertaining to site conditions. Should additional information become available which may affect the opinions expressed in this report, E3P reserves the right to review such information and, if warranted, to modify the opinions accordingly.

It should be noted that any risks identified in this report are perceived risks based on the information reviewed. Actual risks can only be assessed following intrusive investigations of the site.

Where mention has been made to the identification of Japanese Knotweed and other invasive plant species and asbestos or asbestos-containing materials, this is for indicative purposes only and does not constitute or replace full and proper surveys completed by suitably qualified and experienced specialists in these fields.

E3P does not warrant work/data undertaken/provided by others.

INTRUSIVE INVESTIGATION REPORTS

Coverage: The following report titles (or combination) may cover this category of work: Geoenvironmental Site Investigation; Geotechnical Assessment; GIR (Ground Investigation Reports); Preliminary Environmental And Geotechnical Risk Assessment; Preliminary Summary; Coal Mining Risk Assessment, Ground Gas Addendum; and, Geotechnical Risk Register.

The investigation has been undertaken to provide information concerning either:

- The type and degree of contamination present at the site in order to allow a generic quantitative risk assessment to be undertaken; or
- Information on the soil properties present at the site to allow for geotechnical development constraints to be considered.

The scope of the investigation was selected on the basis of the specific development and land use scenario proposed by the Client and may be inappropriate to another form of development or scheme. If the development layout was not known at the time of the investigation the report findings may need revisiting once the development layout is confirmed.

Unless otherwise specified in the scope of works, any site drawing(s) provided in this report is (are) not meant to be an accurate base plan but is (are) used to present the general relative locations of features on, and surrounding, the site. Features (intrusive and sample locations etc) annotated on site plans are not drawn to scale but are centred over the approximate location. Such features should not be used for setting out and should be considered indicative only.

For contamination purposes, the objectives of the investigation are limited to establishing the risks associated with potential contamination sources with the potential to cause harm to human health, building materials, the environment (including adjacent land), or controlled waters.

For geotechnical investigations, the purpose is to broadly consider potential development constraints associated with the physical property of the soils underlying the site within the context of the proposed future or continued use of the site, as stated within the report.

The amount of exploratory work, soil property testing and chemical testing undertaken has necessarily been restricted by various factors which may include accessibility, the presence of services; existing buildings; current site usage or short timescales. The exploratory holes completed assess only a small percentage of the area in relation to the overall size of the Site, and as such can only provide a general indication of conditions.

The number of sampling points and the methods of sampling and testing do not preclude the possible existence of contamination where concentrations may be significantly higher than those actually encountered or ground conditions that vary from those identified. In addition, there may be exceptional ground conditions elsewhere on the site which have not been disclosed by this investigation and which have therefore not been taken into account in this report

The inspection, testing and monitoring records relate specifically to the investigation points and the timeframe that the works were undertaken. They will also be limited by the techniques employed. As part of this assessment, E3P has used reasonable skill and care to extrapolate conditions between these points based on assumptions to develop our interpretation and conclusions.

The assumption made in forming our conclusions is that the ground and groundwater conditions (both chemically and physically) are the same as have been encountered during the works undertaken at the specific points of investigation and at the time of the investigation.

Conditions can change between investigation points both spatially and over time and these interpretations should therefore be considered indicative. The assessment of extreme weather events and their impact on ground conditions is not within the scope of E3P's work

The risk assessment and opinions provided are based on currently available guidance relating to acceptable contamination concentrations; no liability can be accepted for the retrospective effects of

any future changes or amendments to these values. Specific assumptions associated with the risk assessment process have been outlined within the body or associated appendix of the report.

Additional investigations may be required in order to satisfy relevant planning conditions or to resolve any engineering and environmental issues.

Where soil contamination concentrations recorded as part of this investigation are used for commentary on the potential waste classification of soils for disposal purposes, these should be classed as indicative only. Due consideration should be given to the variability of contaminant concentrations taken from targeted samples versus bulk excavated soils and the potential variability of contaminant concentrations between sampling locations. Where major waste disposal operations are considered, targeted waste classification investigations should be designed and the waste classification and any subsequent disposal option agreed upon with licenced subcontractors and/or the relevant regulators.

The results of the asbestos testing are factually reported and interpretation is given as to how this relates to the previous use of the site, the types of ground encountered and site conceptualisation. This does not however constitute a formal asbestos assessment. These results should be treated cautiously and should not be relied upon to provide detailed and representative information on the delineation, type and extent of bulk ACMs and/or trace loose asbestos fibres within the soil matrix at the site.

If costs have been included in relation to additional site works, and/or site remediation works these must be considered as indicative only and must be confirmed by a qualified quantity surveyor.

EUROCODE 7: GEOTECHNICAL DESIGN

On 1st April 2010, BS EN 1997-1:2004 (Eurocode 7: Geotechnical Design – Part 1) became the mandatory baseline standard for geotechnical ground investigations.

In terms of geotechnical design for foundations, slopes, retaining walls and earthworks, EC7 sets guidance on design procedures including specific guidance on the numbers and spacings of boreholes for geotechnical design, there are limits to methods of ground investigation and the quality of data obtained and there are also prescriptive methods of assessing soil strengths and methods of design. Unless otherwise explicitly stated, the work has not been undertaken in accordance with EC7. A standard geotechnical interpretative report will not meet the requirements of the Geotechnical Design Report (GDR) under Eurocode 7. The GDR can only be prepared following confirmation of all structural loads and serviceability requirements. The report is likely to represent a Ground Investigation Report (GIR) under the Eurocode 7 guidance.

DETAILED QUANTITATIVE RISK ASSESSMENTS AND REMEDIATION AND ENABLING WORK STRATEGY REPORTS

These reports build upon previous report versions and associated notes. The scope of the investigation, further testing and monitoring and associated risk assessments were selected based on the specific development and land use scenario proposed by the Client and may not be appropriate to another form of development or scheme layout. The risk assessment and opinions provided are based on currently available approaches in the generation of Site Specific Assessment Criteria relating to contamination concentrations and are not considered to represent a risk in a specific land use scenario to a specific receptor. No liability can be accepted for the retrospective effects of any future changes or amendments to these values, associated models or associated guidance.

The outputs of the Detailed Quantitative Risk Assessments are based upon the manipulation of standard risk assessment models. These are our interpretation of the risk assessment criteria.

Before adoption on-site, assessment criteria will need to be discussed and agreed upon with the Regulatory Authorities prior to adoption on site. The regulatory discussion and engagement process may result in an alternative interpretation being determined and agreed. The process and timescales

associated with the Regulatory Authority engagement are not within the control of E3P. All costs and programmes presented as a result of this process should be validated by a quantity surveyor and should be presumed to be indicative.

E3P does not accept liability for any subcontract work that has not been completed in strict accordance with an approved E3P Remediation and Enabling Works Strategy.

GEOTECHNICAL DESIGN REPORT (GDR)

The GDR can only be prepared following confirmation of all structural loads and serviceability requirements. All the relevant information needs to be provided to allow for a GDR to be produced.

MONITORING (INCLUDING REMEDIATION MONITORING REPORTS AND BUILD PHASE MITIGATION)

These reports are factual and comprise monitoring, normally groundwater and ground gas and data provided by contractors as part of earthworks or remedial works.

The data is presented and will be compared with assessment criteria.

Appendix II: Glossary



ACM	Asbestos-containing material	MMP	Materials management plan
ADS	Acoustic design statement	ND	Not detected
AST	Above-ground storage tank	NDP	Nuclear density probe
BGS	British Geological Survey	NMP	Noise management plan
BSI	British Standards Institute	NPSE	Noise policy statement for England
BTEX	Benzene, toluene, ethylbenzene, xylenes	NR	Not recorded
MRA	Mining Remediation Authority	PAH	Polycyclic aromatic hydrocarbon
CBR	California bearing ratio	PCB	Polychlorinated biphenyl
CIEH	Chartered Institute of Environmental Health	PI	Plasticity index
CIRIA	Construction Industry Research Association	PID	Photo ionisation detector
CLEA	Contaminated land exposure assessment	POS	Public open space
CML	Council of Mortgage Lenders	PPE	Personnel protective equipment
CoC	Contaminants of concern	ProPG	Professional practice guidance
CSM	Conceptual site model	QA	Quality assurance
DNAPL	Dense non-aqueous phase liquid (chlorinated solvents, PCB)	SGV	Soil guideline value
DWS	Drinking water standard	SPH	Separate-phase hydrocarbon
EA	Environment Agency	SPT	Standard penetration test
EQS	Environmental quality standard	SVOC	Semi-volatile organic compound
FFL	Finished floor level	TPH	Total and speciated petroleum hydrocarbon
GAC	General assessment criteria	TPH CWG	Total Petroleum Hydrocarbon (Criteria Working Group)
GL	Ground level	UKWIR	United Kingdom Water Infrastructure Risk
GSV	Gas screening value	UST	Underground storage tank
HCV	Health criteria value	VCC	Vibro-concrete column
ICSM	Initial conceptual site model	VOC	Volatile organic compound
LEL	Lower explosive limit	VRSC	Vibro-replacement stone columns
LMRL	Lower method reporting limit	VSC	Vibro-stone columns
LNAPL	Light non-aqueous phase liquid (petrol, diesel, kerosene)	WHO	World Health Organisation

MCV	Moisture condition value	**WRAP**	Waste and Resources Action Programme
MIBK	Methyl isobutyl ketone	**WTE**	Water table elevation
m	Metres	**ppm**	Parts per million
km	Kilometres	**mg/m^3**	Milligram per metre cubed
% v/v	Percent volume in air	**m bgl bgl**	Metres below ground level
mb	Millibars (atmospheric pressure)	**m bcl**	Metre below cover level
l/hr	Litres per hour	**mAOD**	Metres above ordnance datum (sea level)
µg/l	Micrograms per litre (parts per billion)	**kN/m^2**	Kilonewtons per metre squared
ppb	Parts per billion	**µm**	Micrometre
mg/kg	Milligrams per kilogram (parts per million)	**SSRT**	Site Specific Remediation Target
PSD	Particle Size Distribution	**DD**	Dry Density
CL:AIRE	Contaminated Land: Applications in Real Environments	**Mc**	Moisture Content
ρ	Bulk Density	**GPR**	Ground Penetrating Radar
NDP	Nuclear Density Probe	**FFL**	Finished Floor Level
LEL	Lower Explosive Limit	**UKWIR**	UK Water Industry Research
CIRIA	Construction Industry Research and Information Association	**LOD**	Limit of Detection
PFAS	Per- and Poly-Fluorinated Substances	**PFOA**	Perfluorooctanoic Acid

Appendix III: Drawings





N

P1	REVA	14.01.2025	TG	MD	MD	
Phase	Issue	Date	Drawn	Checked	PM	

Notes:

Client: Miler Homes LTD

Job No: 17-994

Date: 14.01.2025

Drawing No: 002

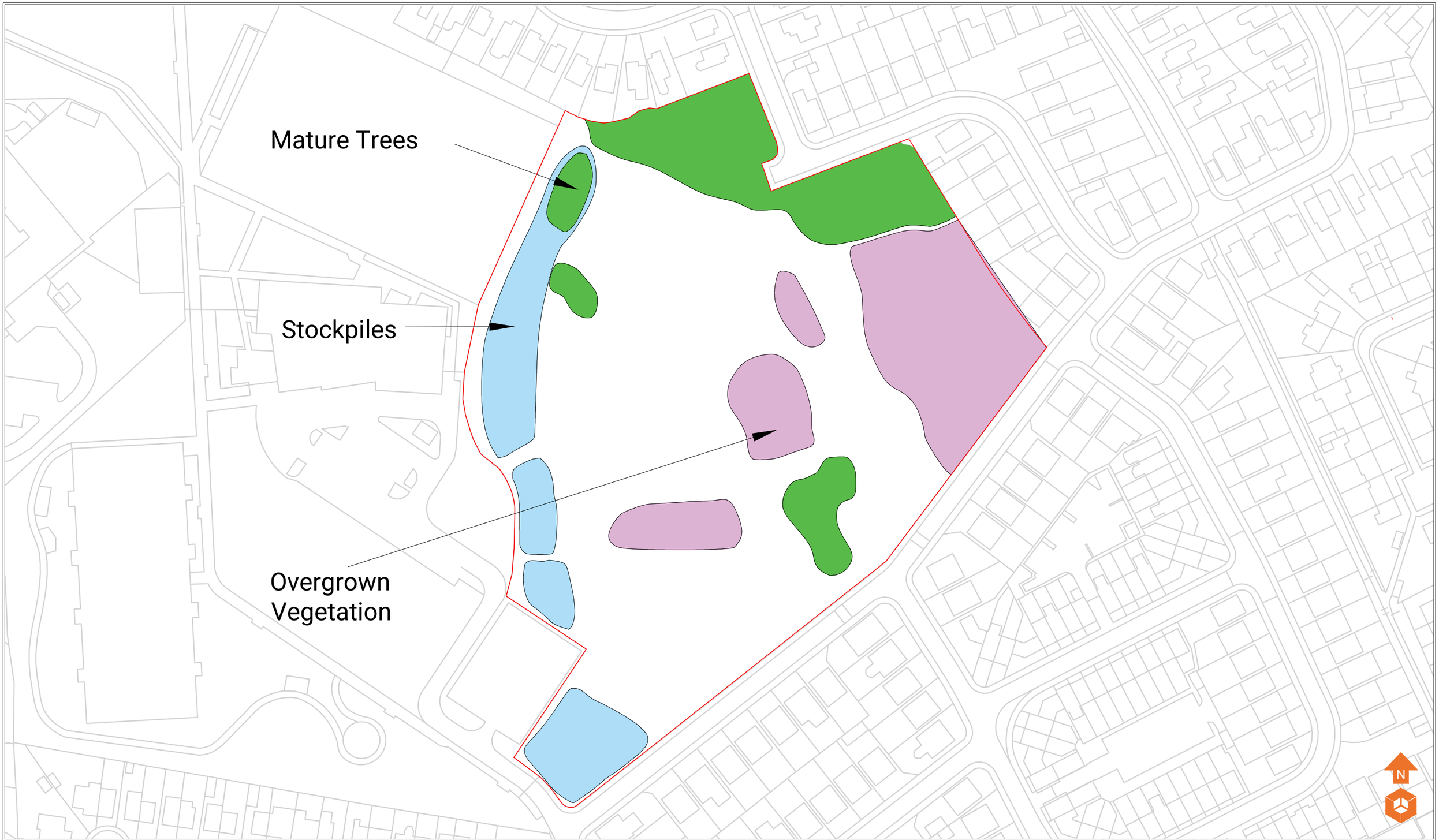
Scale: NTS

Job Title: Hinchley Road, Charlestown

Drawing Title: Proposed Development Plan

Environmental Engineering Partnership Ltd
Taylor Road, Trafford Park
Urmston, Manchester, M41 7JQ
Tel: 0161 707 9612
E-mail: info@e3p.co.uk
Website: www.e3p.co.uk

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Site Features

- Stockpiles
- Mature Trees
- Overgrown Vegetation

Notes:

Phase	Issue	Date	Drawn	Checked	PM
P1	REVA	05.11.2024	TG	LC	LC

Client: Miller Homes LTD

Job No: 17-994

Date: 05.11.2024

Drawing No: 004

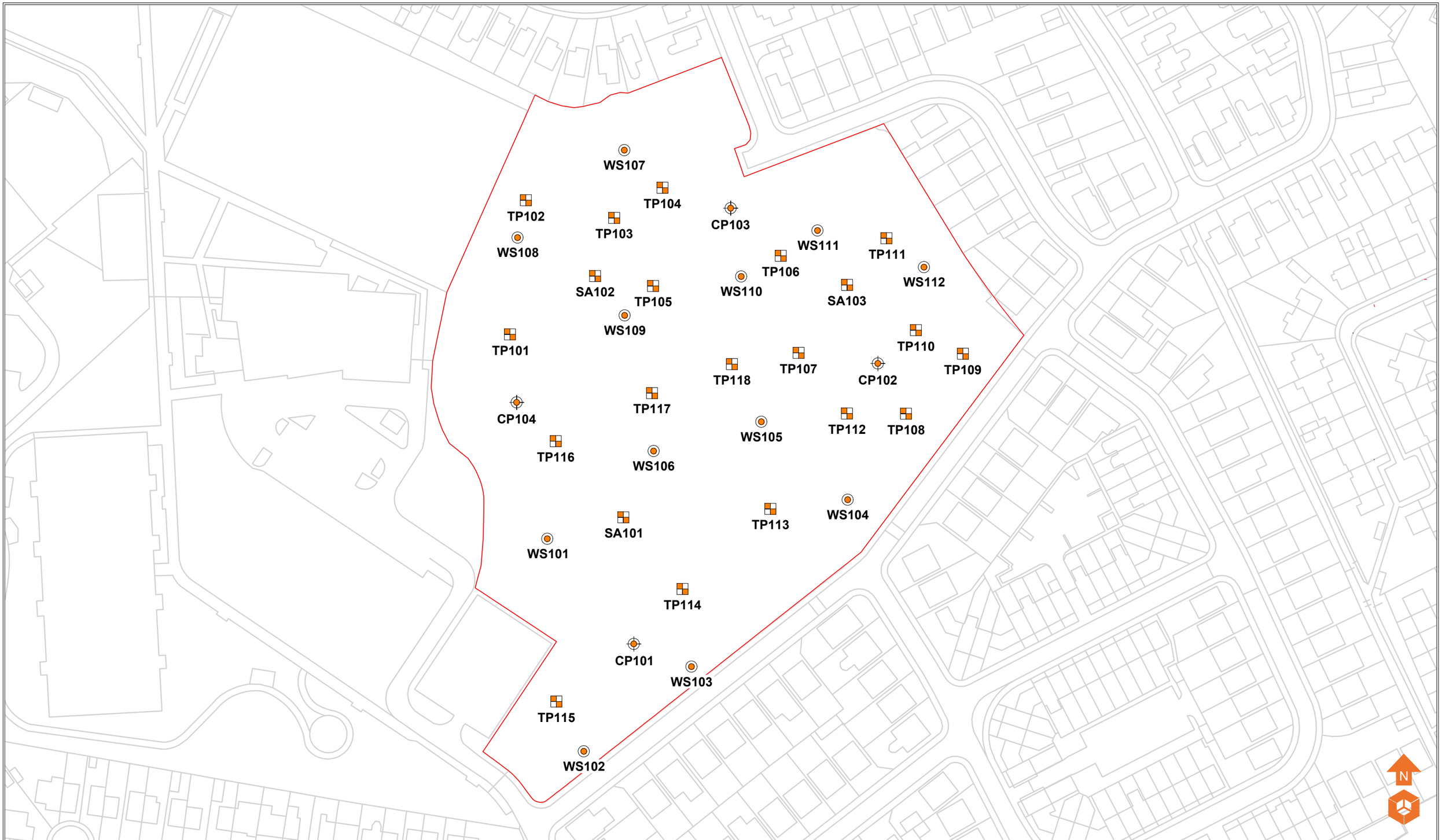
Scale: NTS

Job Title: Hinchley Road, Charlestown

Drawing Title: Site Features Plan

e3p
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Location Symbols

- Approximate Window Sample Probehole Location - E3P Location October 2024
- Approximate Cable Percussive Borehole Location - E3P Location October 2024
- Approximate Soakaway Test Location - E3P Location October 2024
- Approximate Trial Pit Location - E3P Location October 2024

Notes:

P1	REVA	05.11.2024	TG	LC	LC
Phase	Issue	Date	Drawn	Checked	PM

Client: Miller Homes LTD

Job No: 17-994

Date: 05.11.2024

Drawing No: 006

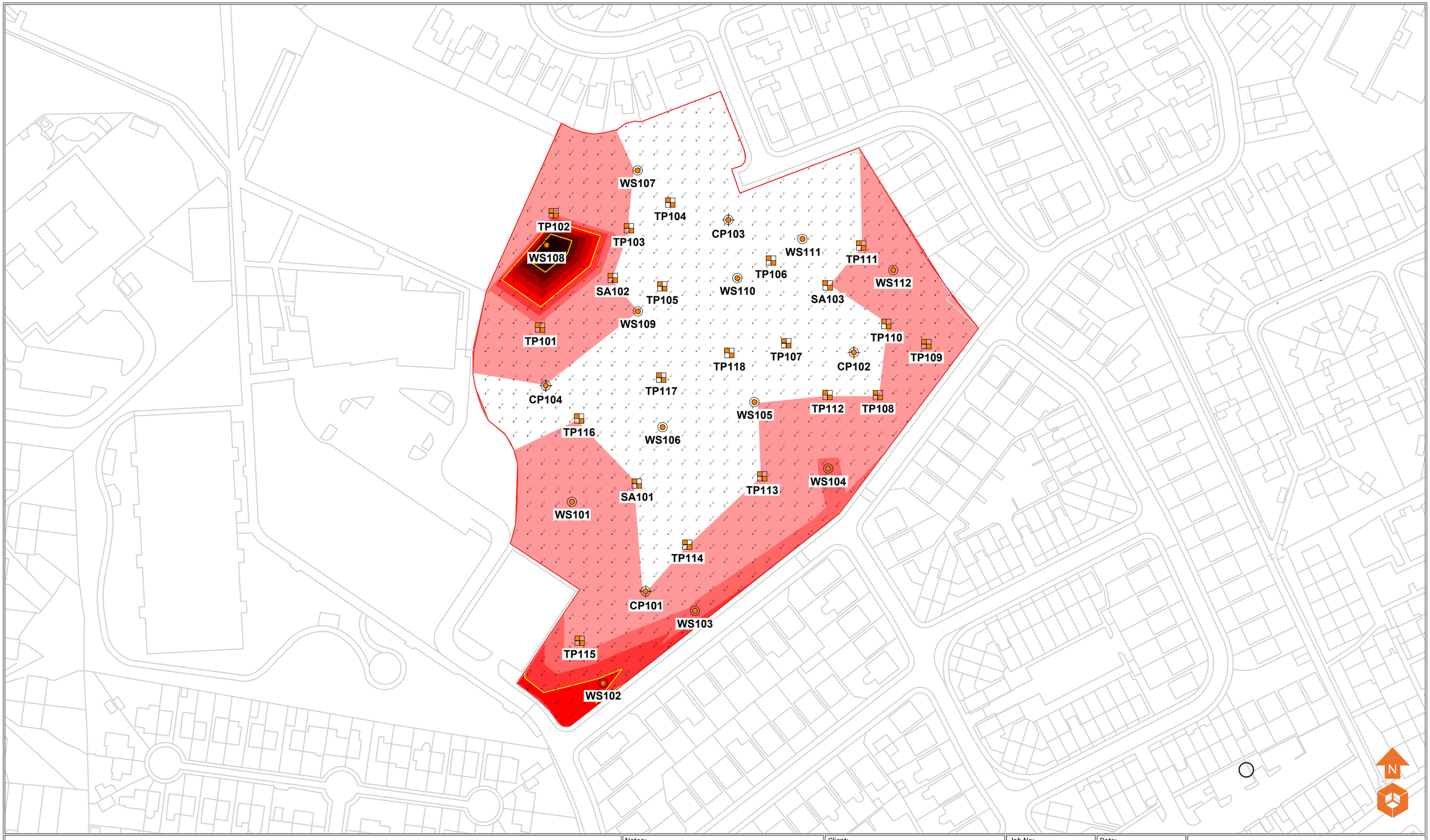
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Job Title: Hinchley Road, Charlestown

Drawing Title: Exploratory Hole Location Plan

e3p
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Location Symbols

- Approximate Window Sample Probehole Location - E3P Location October 2024
- Approximate Cable Percussive Borehole Location - E3P Location October 2024
- Approximate Soakaway Test Location - E3P Location October 2024
- Approximate Trial Pit Location - E3P Location October 2024

Made Ground Depth (m)

- Depth of Made Ground 0.01 - 0.24m
- Depth of Made Ground 0.25 - 0.49m
- Depth of Made Ground 0.50 - 0.74m
- Depth of Made Ground 0.75 - 0.99m
- Depth of Made Ground 1.00 - 1.24m
- Depth of Made Ground 1.25 - 1.49m
- Depth of Made Ground 1.50 - 1.74m
- Depth of Made Ground 1.75 - 1.99m
- Depth of Made Ground >2.00m

Notes:

Phase	Issue	Date	Drawn	Checked	PM
P1	REVB	18.11.2024	OW	LC	MD
P1	REVA	14.11.2024	OW	MD	MD

Client: Miller Homes LTD

Job No: 17-994

Date: 18.11.2024

Drawing No: 007

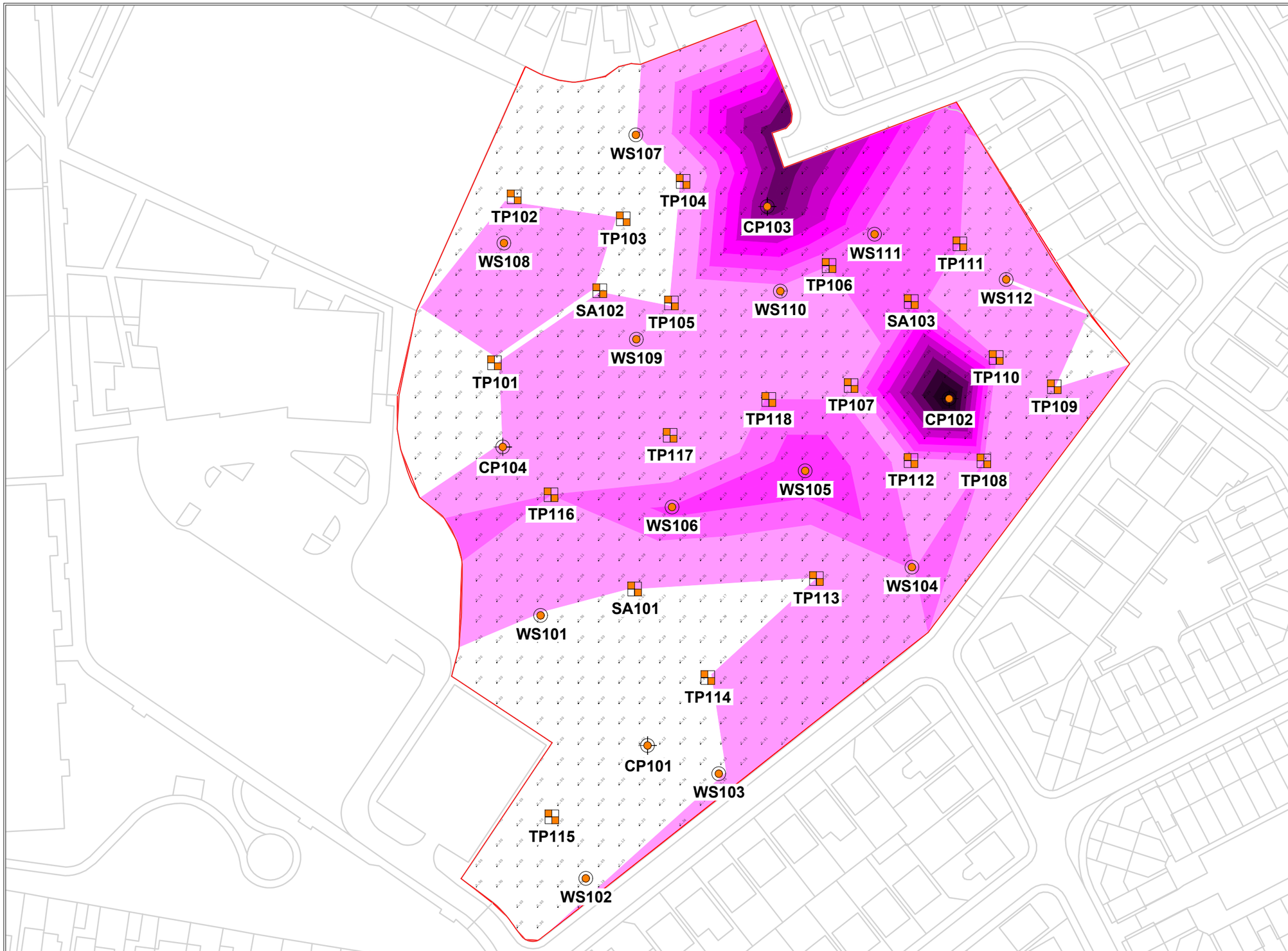
Scale: NTS

Job Title: Hinchley Road, Charlestown

Drawing Title: Depth of Made Ground Plan

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Depth and Thickness of Peat				
Location	Depth to Top of Peat (mBGL)	Depth to Base of Peat (mBGL)	Thickness of Peat (m)	Termination Depth (mBGL)
CP101	-	-	-	15.95
CP102	0.20	2.80	2.60	15.95
CP103	0.10	2.80	2.70	15.45
CP104	-	-	-	15.45
SA101	-	-	-	1.70
SA102	-	-	-	1.60
SA103	0.40	1.00	0.60	2.30
TP101	-	-	-	2.20
TP102	-	-	-	2.20
TP103	-	-	-	1.80
TP104	-	-	-	1.80
TP105	-	-	-	1.90
TP106	0.40	0.90	0.50	2.00
TP107	0.40	0.80	0.40	1.90
TP108	0.40	0.90	0.50	1.60
TP109	-	--		1.40
TP110	0.40	0.90	0.50	1.90
TP111	0.40	0.90	0.50	2.10
TP112	0.50	0.90	0.40	1.80
TP113	0.40	0.80	0.40	2.10
TP114	-	-	-	2.10
TP115	-	-	-	1.20
TP116	0.30	0.80	0.50	1.90
TP117	0.40	1.10	0.70	2.30
TP118	0.40	0.90	0.50	2.10
WS101	-	-	-	5.45
WS102	1.10	2.00	0.90	5.45
WS103	0.60	1.30	0.70	5.45
WS104	0.60	1.10	0.50	4.45
WS105	0.20	0.90	0.70	5.45
WS106	0.20	1.50	1.30	3.40
WS107	-	-	-	5.45
WS108	2.80	3.00	0.20	5.45
WS109	0.20	0.50	0.30	5.45
WS110	0.40	0.80	0.40	5.45
WS111	0.40	1.00	0.60	5.45
WS112	0.70	1.00	0.30	3.42

Location Symbols

- Approximate Window Sample Probehole Location - E3P Location October 2024
- Approximate Cable Percussive Borehole Location - E3P Location October 2024
- Approximate Soakaway Test Location - E3P Location October 2024
- Approximate Trial Pit Location - E3P Location October 2024

Peat Thickness (m)

- Thickness of Peat 0.00 - 0.24m
- Thickness of Peat 0.25 - 0.49m
- Thickness of Peat 0.50 - 0.74m
- Thickness of Peat 0.75 - 0.99m
- Thickness of Peat >1.00m
- 0.80 Recorded Depth to Top of Peat (mBGL)

Notes:

Approximate Volume of Peat - 11,046m³
Approximate Volume of Peat Including 30% Bulking Factor - 14,360m³

Client: Miller Homes LTD

Job No: 17-994

Date: 18.11.2024

Drawing No: 013

Scale: NTS

Phase	Issue	Date	Drawn	Checked	PM
P1	REVB	18.11.2024	OW	LC	MD
P1	REVA	02.03.2020	RW	MD	MD

Job Title: Hinchley Road, Charlestown

Drawing Title: Depth and Thickness of Peat Plan

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Appendix IV: Exploratory Hole Logs



Borehole Log

Borehole No. **CP101**

Sheet 1 of 2

Project Name: Hinchley Road, Charlestown	Project No. 17994	Co-ords: 387800.00 - 403057.00	Hole Type CP
Location: Land off Hinchley Road, Charlestown, Manchester, M9 7BX		Level:	Scale 1:50
Client: Miller Homes		Dates: 28/10/2024 -	Logged By L. CALLISS

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
					0.40			Dark brown slightly sandy CLAY with frequent rootlets. (Topsoil).
		1.00 1.00 - 1.45	D	N=8 (1,2/2,2,2,2)				Stiff medium to high strength brownish grey slightly silty slightly sandy CLAY.
		2.00 2.00 2.00 - 2.45	B D	N=12 (2,2/3,3,3,3)				
		3.00 3.00 - 3.45	D	N=15 (2,3/3,4,4,4)				
					3.50			Very stiff very high strength brown slightly silty gravelly CLAY. Gravel is fine to coarse subangular to rounded of mudstone.
		4.00 4.00 - 4.45	D	N=17 (3,3/4,4,4,5)				
					4.50			Very stiff very high strength brown CLAY.
		5.00 5.00 5.00 - 5.45	B D	N=22 (3,4/5,5,6,6)				
		6.50 6.50 - 6.95	D	N=21 (3,4/4,5,6,6)				
		8.00 8.00 - 8.45	D	N=23 (3,3/4,5,6,8)				
		9.50 9.50 - 9.95	D	N=28 (3,4/6,7,7,8)				
								Continued on next sheet

1 2 3 4 5 6 7 8 9 10

Remarks

1. Complete. 2. What 3 Words: reason.energetic.then

Borehole Log

Borehole No. **CP101**
Sheet 2 of 2

Project Name:	Hinchley Road, Charlestown	Project No. 17994	Co-ords:	387800.00 - 403057.00	Hole Type CP
Location:	Land off Hinchley Road, Charlestown, Manchester, M9 7BX		Level:		Scale 1:50
Client:	Miller Homes		Dates:	28/10/2024 -	Logged By L. CALLISS

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		11.00 - 11.45	U					
		12.50 12.50 - 12.95	D	N=27 (4,4/5,6,7,9)				
		14.00 14.00 - 14.45	D	N=33 (4,4/7,8,8,10)				
		15.50 15.50 - 15.95	D	N=33 (4,4/6,8,10,9)				
					15.95			End of borehole at 15.95 m

11
12
13
14
15
16
17
18
19
20

Remarks
1. Complete. 2. What 3 Words: reason.energetic.then

Borehole Log

Borehole No. **CP102**

Sheet 1 of 2

Project Name: Hinchley Road, Charlestown	Project No. 17994	Co-ords: 387876.00 - 403143.00	Hole Type CP
Location: Land off Hinchley Road, Charlestown, Manchester, M9 7BX		Level:	Scale 1:50
Client: Miller Homes		Dates: 29/10/2024 -	Logged By L. CALLISS

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
					0.20			Dark brown slightly sandy CLAY with frequent rootlets. (Topsoil).
		1.00	B					Soft very low to low dark blackish brown silty PEAT. (Slight organic odour).
		1.00		N=4 (1,0/1,1,1,1)				
		1.00 - 1.45	D					
	▼	2.00		N=4 (1,1/0,1,1,2)				
		2.00 - 2.45	D					
					2.80			Stiff medium to high strength light grey slightly silty slightly sandy CLAY.
		3.00	B					
		3.00		N=10 (1,2/2,2,3,3)				
		3.00 - 3.45	D					
		4.00		N=10 (2,2/2,3,3,2)				
		4.00 - 4.45	D					
		5.00		N=15 (2,3/3,4,4,4)				
		5.00 - 5.45	D					
					6.00			Very stiff high to very high strength brown slightly silty gravelly CLAY. Gravel is fine to coarse subangular to rounded of mudstone.
		6.50		N=19 (3,4/4,5,5,5)				
		6.50 - 6.95	D					
		8.00	B					
		8.00		N=21 (3,4/4,5,6,6)				
		8.00 - 8.45	D					
		9.50 - 9.95	U					

Continued on next sheet

Remarks

1. Complete. 2. What 3 Words: bind.scenes.hardly

Borehole Log

Borehole No. **CP102**

Sheet 2 of 2

Project Name:	Hinchley Road, Charlestown	Project No. 17994	Co-ords: 387876.00 - 403143.00	Hole Type CP
Location:	Land off Hinchley Road, Charlestown, Manchester, M9 7BX		Level:	Scale 1:50
Client:	Miller Homes		Dates: 29/10/2024 -	Logged By L. CALLISS

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		11.00 11.00 - 11.45	D	N=26 (3,5/5,6,7,8)				
		12.50 12.50 - 12.95	D	N=27 (3,4/6,6,7,8)				
		14.00 - 14.45	U					
		15.00 - 15.45	D					
		15.50		N=36 (4,5/8,9,9,10)				
					15.95			End of borehole at 15.95 m

11 12 13 14 15 16 17 18 19 20

Remarks
1. Complete. 2. What 3 Words: bind.scenes.hardly

Borehole Log

Borehole No. **CP103**

Sheet 1 of 2

Project Name: Hinchley Road, Charlestown	Project No. 17994	Co-ords: 387829.00 - 403191.00	Hole Type CP
Location: Land off Hinchley Road, Charlestown, Manchester, M9 7BX		Level:	Scale 1:50
Client: Miller Homes		Dates: 30/10/2024 -	Logged By L. CALLISS

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
					0.10			Dark brown slightly sandy CLAY with frequent rootlets. (Topsoil).
		1.00	B					Very soft very low strength dark blackish brown silty PEAT. (Slight organic odour).
		1.00		N=2 (0,1/0,1,0,1)				
		1.00 - 1.45	D					
		2.00	B		2.00			Soft very low to low strength light grey slightly silty slightly sandy peaty CLAY.
		2.00		N=3 (1,0/1,1,0,1)				
		2.00 - 2.45	D					
					2.80			Very stiff high to very high strength brown slightly silty gravelly CLAY. Gravel is fine to coarse subangular to rounded of mudstone.
		3.00		N=18 (3,4/4,4,5,5)				
		3.00 - 3.45	D					
		4.00		N=20 (3,4/4,5,5,6)				
		4.00 - 4.45	D					
		5.00		N=17 (3,4/4,4,4,5)				
		5.00 - 5.45	B					
		5.00 - 5.45	D					
		6.50 - 6.95	U					
		8.00		N=21 (3,4/5,5,5,6)				
		8.00 - 8.45	D					
		9.50		N=23 (3,4/5,5,6,7)				
		9.50 - 9.95	D					

Continued on next sheet

Remarks

1. Complete. 2. What 3 Words: rewarding.ridge.herds

Borehole Log

Borehole No. **CP103**

Sheet 2 of 2

Project Name: Hinchley Road, Charlestown	Project No. 17994	Co-ords: 387829.00 - 403191.00	Hole Type CP
Location: Land off Hinchley Road, Charlestown, Manchester, M9 7BX		Level:	Scale 1:50
Client: Miller Homes		Dates: 30/10/2024 -	Logged By L. CALLISS

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		11.00 - 11.45	U					
		12.50 12.50 - 12.95	D	N=25 (3,4/5,6,7,7)				
		14.00 14.00 - 14.45	D	N=24 (4,4/5,5,6,8)				
		15.00 15.00 - 15.45	D	N=28 (4,5/5,5,9,9)				
					15.45			End of borehole at 15.45 m

11 12 13 14 15 16 17 18 19 20

Remarks
1. Complete. 2. What 3 Words: rewarding.ridge.herds

Borehole Log

Borehole No. **CP104**

Sheet 1 of 2

Project Name: Hinchley Road, Charlestown	Project No. 17994	Co-ords: 387763.00 - 403131.00	Hole Type CP
Location: Land off Hinchley Road, Charlestown, Manchester, M9 7BX		Level:	Scale 1:50
Client: Miller Homes		Dates: 31/10/2024 -	Logged By L. CALLISS

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		1.00 1.00 - 1.45	D	N=3 (1,0/1,1,0,1)				Dark brown slightly sandy CLAY with frequent rootlets. (Topsoil).
					1.40			Dark brown slightly sandy peaty CLAY.
		2.00 2.00 2.00 - 2.45	B D	N=4 (1,0/1,1,1,1)	1.40			Soft low strength light grey slightly silty sandy CLAY.
					2.60			Stiff to very stiff high strength brown slightly silty gravelly CLAY. Gravel is fine to coarse subangular to rounded of mudstone.
		3.00 3.00 - 3.45	D	N=14 (2,3/3,3,4,4)				
		4.00 4.00 - 4.45	D	N=16 (2,3/4,4,4,4)				
		5.00 5.00 5.00 - 5.45	B D	N=16 (2,3/3,4,4,5)				
		6.50 6.50 - 6.95	D	N=16 (2,3/4,4,4,4)				
		8.00 8.00 - 8.45	D	N=18 (3,4/4,4,5,5)				
		9.50 9.50 - 9.95	D	N=22 (3,4/4,5,6,7)				
					9.80			Very stiff high to very high strength brown slightly
								Continued on next sheet

Remarks

1. Complete. 2. What 3 Words: backs.loans.civil

Borehole Log

Borehole No. **CP104**
Sheet 2 of 2

Project Name: Hinchley Road, Charlestown	Project No. 17994	Co-ords: 387763.00 - 403131.00	Hole Type CP
Location: Land off Hinchley Road, Charlestown, Manchester, M9 7BX		Level:	Scale 1:50
Client: Miller Homes		Dates: 31/10/2024 -	Logged By L. CALLISS

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		11.00 - 11.45	U					silty gravelly CLAY. Gravel is fine to coarse subangular to rounded of mudstone.
		12.50 12.50 - 12.95	D	N=19 (3,4/4,5,5,5)				
		14.00 14.00 - 14.45	D	N=23 (3,4/4,5,6,8)				
		15.00 15.00 - 15.45	D	N=26 (4,4/4,5,8,9)				
					15.45			End of borehole at 15.45 m

11 12 13 14 15 16 17 18 19 20

Remarks
1. Complete. 2. What 3 Words: backs.loans.civil

Borehole Log

Borehole No. **RB101**

Sheet 1 of 4

Project Name:	Hinchley Road, Charlestown	Project No. 17994	Co-ords:	387800E - 403057N	Hole Type BH
Location:	Land off Hinchley Road, Charlestown, Manchester, M9 7BX		Level:		Scale 1:50
Client:	Miller Homes		Dates:	28/10/2024	Logged By L. CALLISS

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
					0.40			Dark brown slightly sandy CLAY with frequent rootlets. (Topsoil).
								Brown slightly sandy CLAY.

Remarks

1. Complete. 2. What 3 Words: reason.energetic.then 3. Rotary borehole backfilled with bentonite to top of bedrock.

Borehole Log

Borehole No. **RB101**

Sheet 2 of 4

Project Name:	Hinchley Road, Charlestown	Project No. 17994	Co-ords:	387800E - 403057N	Hole Type BH
Location:	Land off Hinchley Road, Charlestown, Manchester, M9 7BX		Level:		Scale 1:50
Client:	Miller Homes		Dates:	28/10/2024	Logged By L. CALLISS

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
								Brown slightly sandy CLAY.
					16.20			Brown clayey SAND.
					18.90			Brown gravelly SAND. Gravel is fine to medium subangular to subrounded of mudstone.

11 12 13 14 15 16 17 18 19 20

Remarks

1. Complete. 2. What 3 Words: reason.energetic.then 3. Rotary borehole backfilled with bentonite to top of bedrock.

Borehole Log

Borehole No. **RB101**

Sheet 3 of 4

Project Name:	Hinchley Road, Charlestown	Project No. 17994	Co-ords:	387800E - 403057N	Hole Type BH
Location:	Land off Hinchley Road, Charlestown, Manchester, M9 7BX		Level:		Scale 1:50
Client:	Miller Homes		Dates:	28/10/2024	Logged By L. CALLISS

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
								Brown gravelly SAND. Gravel is fine to medium subangular to subrounded of mudstone.

21
22
23
24
25
26
27
28
29
30

Remarks

1. Complete. 2. What 3 Words: reason.energetic.then 3. Rotary borehole backfilled with bentonite to top of bedrock.

Borehole Log

Borehole No. **RB101**

Sheet 4 of 4

Project Name:	Hinchley Road, Charlestown	Project No. 17994	Co-ords:	387800E - 403057N	Hole Type BH
Location:	Land off Hinchley Road, Charlestown, Manchester, M9 7BX		Level:		Scale 1:50
Client:	Miller Homes		Dates:	28/10/2024	Logged By L. CALLISS

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
								Brown gravelly SAND. Gravel is fine to medium subangular to subrounded of mudstone.
					40.00			End of Borehole at 40.00m

31 32 33 34 35 36 37 38 39 40

Remarks

1. Complete. 2. What 3 Words: reason.energetic.then 3. Rotary borehole backfilled with bentonite to top of bedrock.

Borehole Log

Borehole No. **RB102**

Sheet 1 of 4

Project Name:	Hinchley Road, Charlestown	Project No. 17994	Co-ords: 387876E - 403143N	Hole Type BH
Location:	Land off Hinchley Road, Charlestown, Manchester, M9 7BX		Level:	Scale 1:50
Client:	Miller Homes		Dates: 29/10/2024	Logged By L. CALLISS

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
					0.20			Dark brown slightly sandy CLAY with frequent rootlets. (Topsoil).
								Blackish brown silty PEAT.
					2.80			Brown slightly sandy gravelly cobbly CLAY. Gravel is medium to coarse subrounded to rounded mudstone and sandstone. Cobbles of subangular sandstone.

1 2 3 4 5 6 7 8 9 10

Remarks

1. Complete. 2. What 3 Words: bind.scenes.hardly 3. Rotary borehole backfilled with bentonite to top of bedrock.

Borehole Log

Borehole No. **RB102**

Sheet 2 of 4

Project Name:	Hinchley Road, Charlestown	Project No. 17994	Co-ords:	387876E - 403143N	Hole Type BH
Location:	Land off Hinchley Road, Charlestown, Manchester, M9 7BX		Level:		Scale 1:50
Client:	Miller Homes		Dates:	29/10/2024	Logged By L. CALLISS

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
								Brown slightly sandy gravelly cobbly CLAY. Gravel is medium to coarse subrounded to rounded mudstone and sandstone. Cobbles of subangular sandstone.
					17.20			Brown gravelly SAND. Gravel is fine to medium subangular to subrounded of mudstone. Gravel is occasional in bands.

11 12 13 14 15 16 17 18 19 20

Remarks

1. Complete. 2. What 3 Words: bind.scenes.hardly 3. Rotary borehole backfilled with bentonite to top of bedrock.

Borehole Log

Borehole No. **RB102**

Sheet 3 of 4

Project Name:	Hinchley Road, Charlestown	Project No. 17994	Co-ords:	387876E - 403143N	Hole Type BH
Location:	Land off Hinchley Road, Charlestown, Manchester, M9 7BX		Level:		Scale 1:50
Client:	Miller Homes		Dates:	29/10/2024	Logged By L. CALLISS

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
								Brown gravelly SAND. Gravel is fine to medium subangular to subrounded of mudstone. Gravel is occasional in bands.

21
22
23
24
25
26
27
28
29
30

Remarks

1. Complete. 2. What 3 Words: bind.scenes.hardly 3. Rotary borehole backfilled with bentonite to top of bedrock.

Borehole Log

Borehole No. **RB102**

Sheet 4 of 4

Project Name:	Hinchley Road, Charlestown	Project No. 17994	Co-ords:	387876E - 403143N	Hole Type BH
Location:	Land off Hinchley Road, Charlestown, Manchester, M9 7BX		Level:		Scale 1:50
Client:	Miller Homes		Dates:	29/10/2024	Logged By L. CALLISS

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
								Brown gravelly SAND. Gravel is fine to medium subangular to subrounded of mudstone. Gravel is occasional in bands.
					40.00			End of Borehole at 40.00m

31 32 33 34 35 36 37 38 39 40

Remarks

1. Complete. 2. What 3 Words: bind.scenes.hardly 3. Rotary borehole backfilled with bentonite to top of bedrock.

Borehole Log

Borehole No. **RB103**

Sheet 1 of 4

Project Name:	Hinchley Road, Charlestown	Project No. 17994	Co-ords: 387829E - 403191N	Hole Type BH
Location:	Land off Hinchley Road, Charlestown, Manchester, M9 7BX		Level:	Scale 1:50
Client:	Miller Homes		Dates: 30/10/2024	Logged By L. CALLISS

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
					0.10			Dark brown slightly sandy CLAY with frequent rootlets. (Topsoil).
								Blackish brown silty PEAT.
					2.80			Brown slightly sandy gravelly cobbly CLAY. Gravel is medium to coarse subrounded to rounded mudstone and sandstone. Cobbles of subangular sandstone.

1 2 3 4 5 6 7 8 9 10

Remarks

1. Complete. 2. What 3 Words: rewarding.ridge.herds 3. Rotary borehole backfilled with bentonite to top of bedrock.

Borehole Log

Borehole No. **RB103**

Sheet 2 of 4

Project Name:	Hinchley Road, Charlestown	Project No. 17994	Co-ords:	387829E - 403191N	Hole Type BH
Location:	Land off Hinchley Road, Charlestown, Manchester, M9 7BX		Level:		Scale 1:50
Client:	Miller Homes		Dates:	30/10/2024	Logged By L. CALLISS

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
								Brown slightly sandy gravelly cobbly CLAY. Gravel is medium to coarse subrounded to rounded mudstone and sandstone. Cobbles of subangular sandstone.
					15.90			Brown slightly clayey gravelly SAND. Gravel is fine to medium subangular to subrounded of mudstone. Gravel is occasional in bands.

11 12 13 14 15 16 17 18 19 20

Remarks

1. Complete. 2. What 3 Words: rewarding.ridge.herds 3. Rotary borehole backfilled with bentonite to top of bedrock.

Borehole Log

Borehole No. **RB103**

Sheet 3 of 4

Project Name:	Hinchley Road, Charlestown	Project No. 17994	Co-ords:	387829E - 403191N	Hole Type BH
Location:	Land off Hinchley Road, Charlestown, Manchester, M9 7BX		Level:		Scale 1:50
Client:	Miller Homes		Dates:	30/10/2024	Logged By L. CALLISS

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
								Brown slightly clayey gravelly SAND. Gravel is fine to medium subangular to subrounded of mudstone. Gravel is occasional in bands.

21
22
23
24
25
26
27
28
29
30

Remarks

1. Complete. 2. What 3 Words: rewarding.ridge.herds 3. Rotary borehole backfilled with bentonite to top of bedrock.

Borehole Log

Borehole No. **RB103**

Sheet 4 of 4

Project Name:	Hinchley Road, Charlestown	Project No. 17994	Co-ords:	387829E - 403191N	Hole Type BH
Location:	Land off Hinchley Road, Charlestown, Manchester, M9 7BX		Level:		Scale 1:50
Client:	Miller Homes		Dates:	30/10/2024	Logged By L. CALLISS

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
								Brown slightly clayey gravelly SAND. Gravel is fine to medium subangular to subrounded of mudstone. Gravel is occasional in bands.
					40.00			End of Borehole at 40.00m

31 32 33 34 35 36 37 38 39 40

Remarks

1. Complete. 2. What 3 Words: rewarding.ridge.herds 3. Rotary borehole backfilled with bentonite to top of bedrock.

Trial Pit Log

TrialPit No SA101 Sheet 1 of 1

Project Name: Hinchley Road, Charlestown	Project No. 17994	Co-ords: 387796.10 - 403095.55 Level:	Date 30/10/2024
Location: Land off Hinchley Road, Charlestown, Manchester, M9 7BX		Dimensions (m): 3.10 x 0.60 Depth 1.70	Scale 1:30
Client: Miller Homes			Logged L. CALLISS

Water Strike	Samples & In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
	0.20	ES		0.30			MADE GROUND. Dark brown slightly sandy slightly gravelly clay with frequent rootlets. Gravel is fine to course subangular brick. (Reworked topsoil).
							Dark brown slightly sandy CLAY.
	1.00	HVP	48	0.90			Firm medium strength greyish brown CLAY.
	1.20	ES					
	1.50	HVP	45				
				1.70			End of Pit at 1.70m

1 2 3 4

Trial Pit Photographs



Multiple



Multiple

Remarks: 1. Complete. 2. Soakaway testing undertaken.

Stability: STABLE

Trial Pit Log

TrialPit No: SA102
Sheet 1 of 1

Project Name: Hinchley Road, Charlestown	Project No. 17994	Co-ords: 387787.26 - 403170.99 Level:	Date 30/10/2024
Location: Land off Hinchley Road, Charlestown, Manchester, M9 7BX		Dimensions (m): 2.80 × 0.60 Depth 1.60	Scale 1:30
Client: Miller Homes			Logged L. CALLISS

Water Strike	Samples & In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
	0.40	ES		0.30			Dark brown slightly sandy CLAY with frequent rootlets. (Topsoil).
				0.50			Dark brown silghtly sandy CLAY with rare inclusions of wood.
▼ 0.80	1.00	HVP	93				Stiff high strength light grey CLAY. (Becoming soft at 1.00 m bgl).
	1.40	ES					
	1.50	HVP	32				
				1.60			End of Pit at 1.60m

Trial Pit Photographs



Multiple



Multiple

Remarks: 1. Complete. 2. Soakaway testing undertaken.

Stability: STABLE

Trial Pit Log

TrialPit No: SA103
Sheet 1 of 1

Project Name: Hinchley Road, Charlestown	Project No. 17994	Co-ords: 387865.00 - 403167.94 Level:	Date 30/10/2024
Location: Land off Hinchley Road, Charlestown, Manchester, M9 7BX		Dimensions (m): 2.90 × 0.70 Depth 2.30	Scale 1:30
Client: Miller Homes			Logged L. CALLISS

Water Strike	Samples & In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
	0.20	ES		0.40			Dark brown slightly sandy CLAY with frequent rootlets. (Topsoil).
				1.00			Brown clayey PEAT. (Strong organic odour).
	1.20 1.20	ES HVP	35				Soft low strength light grey slightly sandy CLAY. (Becoming firm medium strength at 1.7 m bgl).
	1.70	HVP	61				
	2.20	HVP	67	2.30			End of Pit at 2.30m

1
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4

Trial Pit Photographs



Multiple



Multiple

Remarks: 1. Complete. 2. Soakaway testing undertaken. 3. Peat H3, F1, R2, W3.

Stability: STABLE

Trial Pit Log

			TrialPit No TP101 Sheet 1 of 1
Project Name: Hinchley Road, Charlestown	Project No. 17994	Co-ords: 387760.99 - 403152.98 Level:	Date 30/10/2024
Location: Land off Hinchley Road, Charlestown, Manchester, M9 7BX		Dimensions (m): 3.60 x 0.70 Depth 2.20	Scale 1:30
Client: Miller Homes			Logged L. CALLISS

Water Strike	Samples & In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.40			MADE GROUND. Dark brown slighlty sandy clay with frequent rootlets. (Reworked topsoil).
	0.80	B					MADE GROUND. Dark brown gravelly sandy clay. Gravel is fine to coarse angular to subangular brick, concrete, asphalt. Cobbles of angular to subangular brick and concrete. Gravel to cobble sized inclusions of plastic, leather, glass and rubber.
	1.00	ES					
	2.00	ES		1.90			Firm medium strength greyish brown slightly gravelly CLAY. Gravel is fine to medium subangular to rounded of sandstone, mudstone and coal.
	2.00	HVP	70	2.20			End of Pit at 2.20m

1 2 3 4

Trial Pit Photographs



Multiple



Multiple

Remarks: 1. Complete.

Stability: STABLE

Trial Pit Log

			TrialPit No TP102 Sheet 1 of 1
Project Name: Hinchley Road, Charlestown	Project No. 17994	Co-ords: 387766.41 - 403194.56 Level:	Date 30/10/2024
Location: Land off Hinchley Road, Charlestown, Manchester, M9 7BX		Dimensions (m): 3.20 x 0.70 Depth 2.20	Scale 1:30
Client: Miller Homes			Logged L. CALLISS

Water Strike	Samples & In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.40			MADE GROUND. Dark brown slightly sandy CLAY with frequent rootlets. (Reworked topsoil).
	0.80	ES					MADE GROUND. Dark brown slightly gravelly sandy clay. Gravel is fine to coarse angular to subangular brick, concrete, plastic. Gravel sized inclusions of wood, metal and glass. Rare cobbles of angular brick and concrete.
	2.00 2.00 2.00	B ES HVP	51	1.90 2.20			MADE GROUND. Firm greyish brown slightly gravelly slightly peaty clay. Gravel is fine to medium subangular to rounded of mudstone, sandstone and coal with rare inclusions of wood and roots. (Slight organic odour). End of Pit at 2.20m

1
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Trial Pit Photographs



Multiple



Multiple

Remarks: 1. Complete. 2. Pit terminated due to land drain located 2.2 m bgl.

Stability: STABLE

Trial Pit Log

TrialPit No: TP103
Sheet 1 of 1

Project Name: Hinchley Road, Charlestown	Project No. 17994	Co-ords: 387793.64 - 403188.41 Level:	Date 30/10/2024
Location: Land off Hinchley Road, Charlestown, Manchester, M9 7BX		Dimensions (m): 3.40 x 0.70 Depth 1.80	Scale 1:30
Client: Miller Homes			Logged L. CALLISS

Water Strike	Samples & In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
	0.20	ES		0.40			Dark brown slightl sandy CLAY with frequent rootlets. (Topsoil).
	0.50	HVP	42				Firm medium strength greyish brown CLAY.
	0.80	ES					
	1.00	HVP	42				
	1.50	HVP	67	1.80			End of Pit at 1.80m

Trial Pit Photographs



Multiple



Multiple

Remarks: 1. Complete.

Stability: STABLE

Trial Pit Log

TrialPit No: TP104
Sheet 1 of 1

Project Name: Hinchley Road, Charlestown	Project No. 17994	Co-ords: 387808.36 - 403197.70 Level:	Date 30/10/2024
Location: Land off Hinchley Road, Charlestown, Manchester, M9 7BX		Dimensions (m): 3.20 x 0.70 Depth 1.80	Scale 1:30
Client: Miller Homes			Logged L. CALLISS

Water Strike	Samples & In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
	0.20	ES		0.50			MADE GROUND. Dark brown slightly sandy clay with frequent rootlets. (Reworked topsoil).
	0.60	HVP	45				Firm medium strength greyish brown CLAY. (Becoming stiff medium strength at 1.6 m bgl).
	1.10	HVP	51				
	1.20	ES					
	1.40	B					
	1.60	HVP	77	1.80			End of Pit at 1.80m

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Trial Pit Photographs



Multiple



Multiple

Remarks: 1. Complete. 2. Land drain located at 0.4 m bgl.

Stability: STABLE

Trial Pit Log

TrialPit No: TP105
Sheet 1 of 1

Project Name: Hinchley Road, Charlestown	Project No. 17994	Co-ords: 387805.41 - 403167.97 Level:	Date 30/10/2024
Location: Land off Hinchley Road, Charlestown, Manchester, M9 7BX		Dimensions (m): 3.40 x 0.70 Depth 1.90	Scale 1:30
Client: Miller Homes			Logged L. CALLISS

Water Strike	Samples & In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
	0.30	ES		0.50			Dark brown slightly sandy CLAY with frequent rootlets. (Topsoil).
	0.60 0.60	ES HVP	51				Firm medium strength greyish brown CLAY. (Becoming stiff medium to high strength from 1.6 m bgl).
	1.10	HVP	67				
	1.60	HVP	99				
				1.90			End of Pit at 1.90m

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Trial Pit Photographs



Multiple



Multiple

Remarks: 1. Complete.

Stability: STABLE

Trial Pit Log

TrialPit No: TP106
Sheet 1 of 1

Project Name: Hinchley Road, Charlestown	Project No. 17994	Co-ords: 387844.62 - 403176.42 Level:	Date 31/10/2024
Location: Land off Hinchley Road, Charlestown, Manchester, M9 7BX		Dimensions (m): 3.40 x 0.70 Depth 2.00	Scale 1:30
Client: Miller Homes			Logged L. CALLISS

Water Strike	Samples & In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.40			Dark brown slightly sandy CLAY with frequent rootlets. (Topsoil).
				0.90			Blackish brown PEAT. (Strong organic odour).
	1.00	HVP	42				Firm medium strength light grey slightly gravelly CLAY. Gravel is fine to medium subangular to rounded or mudstone and coal. (Becoming stiff medium to high strength at 2.0 m bgl).
	1.20	ES					
	1.50	HVP	54				
	2.00	HVP	77	2.00			End of Pit at 2.00m

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4

Trial Pit Photographs



Multiple



Multiple

Remarks: 1. Complete. 2. Peat H6, F2, R2, W1.

Stability: STABLE

Trial Pit Log

TrialPit No: TP107
Sheet 1 of 1

Project Name: Hinchley Road, Charlestown	Project No. 17994	Co-ords: 387850.14 - 403146.94 Level:	Date 31/10/2024
Location: Land off Hinchley Road, Charlestown, Manchester, M9 7BX		Dimensions (m): 3.40 x 0.70 Depth 1.90	Scale 1:30
Client: Miller Homes			Logged L. CALLISS

Water Strike	Samples & In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
	0.30	ES		0.40			Dark brown slightly sandy CLAY with frequent rootlets. (Topsoil).
							Blackish brown PEAT. Strong organic odour.
	0.90	ES		0.80			Soft low strength light greyish brown slightly sandy CLAY.
	1.00	HVP	32	1.00			Soft low strength light grey slightly gravelly CLAY. Gravel is fine to medium subrounded to rounded of mudstone.
	1.50	B					
	1.50	HVP	38				
				1.90			End of Pit at 1.90m

1
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4

Trial Pit Photographs



Multiple



Multiple

Remarks: 1. Complete. 2. Peat H6, F2, R3, W1.

Stability: STABLE

Trial Pit Log

TrialPit No: TP108
Sheet 1 of 1

Project Name: Hinchley Road, Charlestown	Project No. 17994	Co-ords: 387883.23 - 403128.55 Level:	Date 31/10/2024
Location: Land off Hinchley Road, Charlestown, Manchester, M9 7BX		Dimensions (m): 3.80 x 0.70 Depth 1.60	Scale 1:30
Client: Miller Homes			Logged L. CALLISS

Water Strike	Samples & In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.40			Dark brown slightly sandy CLAY with frequent rootlets. (Topsoil).
				0.90			Blackish brown PEAT. (Strong organic odour)
	1.00 1.00	ES HVP	13				Very soft extremely low strength light grey slightly sandy slightly gravelly CLAY. Gravel is fine to medium subrounded to rounded of mudstone.
	1.50	HVP	19	1.60			End of Pit at 1.60m

Trial Pit Photographs



Multiple



Multiple

Remarks: 1. Complete.

Stability: STABLE

Trial Pit Log

TrialPit No: TP109
Sheet 1 of 1

Project Name: Hinchley Road, Charlestown	Project No. 17994	Co-ords: 387901.33 - 403146.64 Level:	Date 31/10/2024
Location: Land off Hinchley Road, Charlestown, Manchester, M9 7BX		Dimensions (m): 3.50 x 0.70 Depth 1.40	Scale 1:30
Client: Miller Homes			Logged L. CALLISS

Water Strike	Samples & In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.30			MADE GROUND. Dark brown slightly sandy CLAY with frequent rootlets. (Reworked topsoil).
	0.50	ES		0.60			MADE GROUND. Greyish brown slightly gravelly clay. Gravel is fine to coarse angular to subrounded concrete, brick and wood.
	0.80 0.80	ES HVP	77				Stiff high strength light brown CLAY
	1.30	HVP	96	1.40			End of Pit at 1.40m

Trial Pit Photographs



Multiple



Multiple

Remarks: 1. Complete.

Stability: STABLE

Trial Pit Log

TrialPit No: TP110
Sheet 1 of 1

Project Name: Hinchley Road, Charlestown	Project No. 17994	Co-ords: 387886.45 - 403152.22 Level:	Date 31/10/2024
Location: Land off Hinchley Road, Charlestown, Manchester, M9 7BX		Dimensions (m): 3.40 x 0.70 Depth 1.90	Scale 1:30
Client: Miller Homes			Logged L. CALLISS

Water Strike	Samples & In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.40			Dark brown slightly sandy CLAY with frequent rootlets. (Topsoil).
				0.90			Blackish brown PEAT. (Slight organic odour)
	1.00 1.00	ES HVP	83	1.40			Stiff high strength greyish brown slightly sandy slightly gravelly CLAY. Gravel is fine to medium subrounded to rounded of mudstone.
	1.50	HVP	19	1.90			Very soft extremely low strength greyish brown slightly sandy slightly gravelly CLAY. Gravel is fine to medium subrounded to rounded of mudstone.
							End of Pit at 1.90m

Trial Pit Photographs



Multiple



Multiple

Remarks: 1. Complete.

Stability: STABLE

Trial Pit Log

TrialPit No: TP111
Sheet 1 of 1

Project Name: Hinchley Road, Charlestown	Project No. 17994	Co-ords: 387878.66 - 403182.47 Level:	Date 31/10/2024
Location: Land off Hinchley Road, Charlestown, Manchester, M9 7BX		Dimensions (m): 3.40 x 0.70 Depth 2.10	Scale 1:30
Client: Miller Homes			Logged L. CALLISS

Water Strike	Samples & In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.40			Dark brown slightly sandy CLAY with frequent rootlets. (Topsoil).
	0.50	ES					Blackish brown slightly clayey PEAT. (Very slight organic odour).
0.80 ▼				0.90			
	1.00	HVP	77	1.10			Stiff high strength light greyish brown slightly sandy CLAY.
	1.50	HVP	83				Stiff high strength light grey slightly gravelly CLAY. Gravel is fine to medium subrounded to rounded of mudstone.
	2.00	HVP	106	2.10			End of Pit at 2.10m

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Trial Pit Photographs



Multiple



Multiple

Remarks: 1. Complete.

Stability: STABLE

Trial Pit Log

TrialPit No: TP112
Sheet 1 of 1

Project Name: Hinchley Road, Charlestown	Project No. 17994	Co-ords: 387865.36 - 403128.65 Level:	Date 31/10/2024
Location: Land off Hinchley Road, Charlestown, Manchester, M9 7BX		Dimensions (m): 3.30 x 0.70 Depth 1.80	Scale 1:30
Client: Miller Homes			Logged L. CALLISS

Water Strike	Samples & In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
	0.30	ES		0.50			Dark brown slightly sandy CLAY with frequent rootlets. (Topsoil).
	1.00 1.00	ES HVP	29	0.90			Blackish brown PEAT.
	1.50	HVP	45	1.80			Very soft to soft low strength light grey slightly gravelly CLAY. Gravel is fine to medium subrounded to rounded of mudstone with rare inclusions of wood and roots.
							End of Pit at 1.80m

Trial Pit Photographs



Multiple



Multiple

Remarks: 1. Complete. 2. Peat H4, R2, F1, W2.

Stability: STABLE

Trial Pit Log

			TrialPit No TP113 Sheet 1 of 1
Project Name: Hinchley Road, Charlestown	Project No. 17994	Co-ords: 387841.64 - 403098.67 Level:	Date 31/10/2024
Location: Land off Hinchley Road, Charlestown, Manchester, M9 7BX		Dimensions (m): 3.50 x 0.70 Depth 2.10	Scale 1:30
Client: Miller Homes			Logged L. CALLISS

Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
	Depth	Type	Results				
	0.20	ES		0.40			Dark brown slightly sandy CLAY with frequent rootlets. (Topsoil).
				0.80			Brown sandy organic CLAY with frequent rootlets.
	0.90	ES					Light greyish brown slightly sandy CLAY
	1.00	HVP	45	1.00			Firm medium strength light grey CLAY. (Becoming firm at 1.5 m bgl).
	1.50	HVP	58				
	1.80	B					
	2.00	HVP	61	2.10			End of Pit at 2.10m

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Trial Pit Photographs



Multiple



Multiple

Remarks: 1. Complete.

Stability: STABLE

Trial Pit Log

TrialPit No: TP114
Sheet 1 of 1

Project Name: Hinchley Road, Charlestown	Project No. 17994	Co-ords: 387814.11 - 403074.02 Level:	Date 31/10/2024
Location: Land off Hinchley Road, Charlestown, Manchester, M9 7BX		Dimensions (m): 3.20 x 0.70 Depth 2.10	Scale 1:30
Client: Miller Homes			Logged L. CALLISS

Water Strike	Samples & In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.40			Dark brown slightly sandy CLAY with frequent rootlets. (Topsoil).
	0.60	ES		0.90			Dark brown slightly sandy CLAY.
	1.50	HVP	32	1.40			Blackish brown PEAT.
	2.00	HVP	38	2.10			Soft low strength light grey CLAY.
							End of Pit at 2.10m

Trial Pit Photographs



TP114 Arisings

Remarks: 1. Complete. 2. Peat H6, F1, R2, W1.

Stability: STABLE

Trial Pit Log

TrialPit No: TP115
Sheet 1 of 1

Project Name: Hinchley Road, Charlestown	Project No. 17994	Co-ords: 387775.01 - 403038.77 Level:	Date 31/10/2024
Location: Land off Hinchley Road, Charlestown, Manchester, M9 7BX		Dimensions (m): 3.10 x 0.60 Depth 1.20	Scale 1:30
Client: Miller Homes			Logged L. CALLISS

Water Strike	Samples & In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.30			MADE GROUND. Dark brown slightly sandy clay with frequent rootlets. (Reworked topsoil).
	0.60	ES		1.20			MADE GROUND. Dark brown slightly sandy gravelly clay. Gravel is fine to coarse angular to subangular brick, concrete and asphalt. Occasional cobble of angular brick and concrete. Frequent inclusions of gravel sized wood and glass.
							End of Pit at 1.20m

Trial Pit Photographs



Multiple



Multiple

Remarks: 1. Refusal at 1.2 m bgl on concrete slab.

Stability: STABLE

Trial Pit Log

TrialPit No: TP116
Sheet 1 of 1

Project Name: Hinchley Road, Charlestown	Project No. 17994	Co-ords: 387775.22 - 403119.08 Level:	Date 31/10/2024
Location: Land off Hinchley Road, Charlestown, Manchester, M9 7BX		Dimensions (m): 3.10 x 0.70 Depth 1.90	Scale 1:30
Client: Miller Homes			Logged L. CALLISS

Water Strike	Samples & In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.30			Dark brown slightly sandy CLAY with frequent rootlets. (Topsoil).
0.60	0.50	ES					Blackish brown PEAT. (Strong organic odour)
	1.00 1.00	ES HVP	45	0.80			Firm medium strength light grey CLAY.
	1.50	HVP	67				
				1.90			End of Pit at 1.90m

Trial Pit Photographs



Multiple



Multiple

Remarks: 1. Complete. 2. Peat H3, F2, R2, W3.

Stability: STABLE

Trial Pit Log

TrialPit No: TP117
Sheet 1 of 1

Project Name: Hinchley Road, Charlestown	Project No. 17994	Co-ords: 387805.55 - 403134.79 Level:	Date 31/10/2024
Location: Land off Hinchley Road, Charlestown, Manchester, M9 7BX		Dimensions (m): 3.40 x 0.70 Depth 2.30	Scale 1:30
Client: Miller Homes			Logged L. CALLISS

Water Strike	Samples & In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.40			Dark brown slightly sandy CLAY with frequent rootlets. (Topsoil).
				1.10			Dark brown slightly sandy organic CLAY with rare inclusions of roots.
	1.30	ES					Soft low strength light grey slightly gravelly CLAY. Gravel is fine to medium subangular to rounded of mudstone and coal.
	1.50	HVP	35				
	2.00	HVP	77	1.90			Stiff medium to high strength light grey slightly gravelly CLAY. Gravel is fine to medium subangular to rounded of mudstone and coal.
				2.30			End of Pit at 2.30m

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Trial Pit Photographs



Multiple



Multiple

Remarks: 1. Complete.

Stability: STABLE

Trial Pit Log

			TrialPit No TP118 Sheet 1 of 1
Project Name: Hinchley Road, Charlestown	Project No. 17994	Co-ords: 387829.04 - 403143.89 Level:	Date 31/10/2024
Location: Land off Hinchley Road, Charlestown, Manchester, M9 7BX		Dimensions (m): 3.10 x 0.70 Depth 2.10	Scale 1:30
Client: Miller Homes			Logged L. CALLISS

Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
	Depth	Type	Results				
	0.30	ES		0.40			Dark brown slightly sandy CLAY with frequent rootlets. (Topsoil).
							Blackish brown PEAT. (Slight organic odour)
	1.00	HVP	54	0.90			Firm to stiff medium to high strength light grey slightly gravelly CLAY. Gravel is fine to medium subangular to rounded of mudstone and coal.
	1.30	ES					
	1.50	HVP	77				
	2.00	HVP	38	1.70			Soft low strength light grey mottled brown slightly sandy slightly gravelly CLAY. Gravel is fine to medium subangular to subrounded of mudstone and coal.
				2.10			End of Pit at 2.10m

1 2 3 4

Trial Pit Photographs



Multiple



Multiple

Remarks: 1. Complete. 2. Peat H2, F2, R3, W3.

Stability: STABLE

Borehole Log

Borehole No. **WS101**

Sheet 1 of 1

Project Name: Hinchley Road, Charlestown	Project No. 17994	Co-ords: 387772.27 - 403086.24	Hole Type WS
Location: Land off Hinchley Road, Charlestown, Manchester, M9 7BX		Level:	Scale 1:50
Client: Miller Homes		Dates: 30/10/2024 -	Logged By L. CALLISS

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
					0.20			MADE GROUND. Dark brown slighlty sandy clay with frequent rootlets. (Reworked topsoil).
		0.50	ES		0.50			MADE GROUND. Brown clayey sandy gravel. Gravel is fine to course angular to subangular brick, asphalt and concrete.
		1.00		N=5 (1,1/1,1,1,2)	1.00			MADE GROUND. Blackish brown slighlty peaty gravelly clay. Gravel is fine to course angular to subangular brick. Peat is rare inclusions of wood and roots. (Slight organic odour).
		1.00 - 1.45	D					
		1.20	ES					
		2.00		N=7 (1,1/1,2,2,2)				Firm to stiff medium to high strength brown mottled grey slightly gravelly CLAY. Gravel is fine to medium subangular to rounded of mudstone and coal.
		2.00 - 2.45	D					
		3.00		N=9 (2,2/2,2,2,3)				
		3.00 - 3.45	D					
		4.00		N=13 (2,2/3,3,3,4)				
		4.00 - 4.45	D					
		5.00		N=14 (2,2/3,3,3,5)				
					5.45			End of borehole at 5.45 m

Remarks

1. Complete. 2. Monitoring well installed. 3. Monitoring zone between 1.00 - 3.00 m bgl.

Borehole Log

Borehole No. **WS102**

Sheet 1 of 1

Project Name: Hinchley Road, Charlestown	Project No. 17994	Co-ords: 387783.74 - 403024.02	Hole Type WS
Location: Land off Hinchley Road, Charlestown, Manchester, M9 7BX		Level:	Scale 1:50
Client: Miller Homes		Dates: 30/10/2024 -	Logged By L. CALLISS

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.40	ES		0.20			MADE GROUND. Dark brown slightly sandy clay with frequent rootlets. (Reworked topsoil).
		1.00 1.00 - 1.45	D	N=4 (2,1/1,1,1,1)	0.90 1.10			MADE GROUND. Brown slightly sandy slightly gravelly clay. Gravel is fine to medium subangular to subrounded sandstone, brick, concrete and asphalt.
		1.40	ES					MADE GROUND. Black sandy GRAVEL. Gravel is fine to course angular to subangular asphalt and brick.
		2.00 2.00 - 2.45	D	N=10 (1,2/2,2,2,4)	2.00			Black sandy peaty CLAY. (Slight organic odour).
		3.00 3.00 - 3.45	D	N=21 (2,3/4,5,5,7)				Stiff to very stiff high strength brown mottled grey slightly gravelly CLAY. Gravel is fine to medium subangular to rounded mudstone and coal.
		4.00		N=21 (4,4/5,5,5,6)				
		5.00 5.00 - 5.45	D	N=28 (4,5/6,6,8,8)				
					5.45			End of borehole at 5.45 m

Remarks

1. Complete. 2. Monitoring well installed. 3. Monitoring zone between 1.00 - 2.00 m bgl.

Borehole Log

Borehole No. **WS103**

Sheet 1 of 1

Project Name: Hinchley Road, Charlestown	Project No. 17994	Co-ords: 387814.89 - 403049.28	Hole Type WS
Location: Land off Hinchley Road, Charlestown, Manchester, M9 7BX		Level:	Scale 1:50
Client: Miller Homes		Dates: 30/10/2024 -	Logged By L. CALLISS

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
					0.20			MADE GROUND. Dark brown slighlty sandy CLAY with frequent rootlets. (Reworked topsoil).
		0.50	ES		0.60			MADE GROUND. Greyish brown slightly gravelly clay. Gravel is fine to coarse angular to subangular asphalt and brick.
		0.80	ES					Firm medium strength blackish brown slightly sandy slightly peaty CLAY. Rare peat inclusions of intact roots and wood.
		1.00		N=7 (1,1/1,2,2,2)				
		1.00 - 1.45	D		1.30			Stiff high strength greyish brown slightly gravelly CLAY. Gravel is fine to medium subrounded to rounded of mudstone.
		2.00		N=12 (1,2/2,3,3,4)				
		2.00 - 2.45	D					
		3.00		N=13 (3,3/3,3,3,4)				
		3.00 - 3.45	D					
		4.00		N=11 (2,2/2,3,3,3)				
		4.00 - 4.45	D					
		5.00		N=16 (3,3/3,4,4,5)				
		5.00 - 5.45	D					
					5.45			End of borehole at 5.45 m

Remarks

1. Complete. 2. Monitoring well installed. 3. Monitoring zone between 1.00 - 2.00 m bgl.

Borehole Log

Borehole No. **WS104**

Sheet 1 of 1

Project Name: Hinchley Road, Charlestown	Project No. 17994	Co-ords: 387864.58 - 403099.70	Hole Type WS
Location: Land off Hinchley Road, Charlestown, Manchester, M9 7BX		Level:	Scale 1:50
Client: Miller Homes		Dates: 30/10/2024 -	Logged By L. CALLISS

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.50	ES		0.20			MADE GROUND. Dark brown slighlty sandy CLAY with frequent rootlets. (Reworked topsoil).
					0.30			MADE GROUND. Black sandy gravel. Gravel is fragments of asphalt and brick.
					0.60			MADE GROUND. Brown sandy gravel. Gravel is fragments of brick, concrete and asphalt.
		1.00		N=4 (1,1/1,1,1,1)				Soft low strength blackish brown PEAT.
		1.00 - 1.45	D		1.10			Firm to stiff medium to high strength grey slightly gravelly CLAY. Gravel is fine to medium subangular to rounded of sandstone, mudstone and coal.
		1.20	ES					
		2.00		N=6 (1,1/1,2,2,1)				
		2.00 - 2.45	D					
		3.00		N=11 (2,2/2,3,3,3)				
		3.00 - 3.45	D					
		4.00		N=15 (2,3/3,3,4,5)				
		4.00 - 4.45	D					
					4.45			End of borehole at 4.45 m

Remarks

1. Hole collapsed. 2. Wet sand at 3 m bgl. 3. Monitoring well installed. 4. Monitoring zone between 2.00 - 3.50 m bgl. 5. Peat H5, R2, F2, W1.

Borehole Log

Borehole No. **WS105**

Sheet 1 of 1

Project Name: Hinchley Road, Charlestown	Project No. 17994	Co-ords: 387837.48 - 403121.31	Hole Type WS
Location: Land off Hinchley Road, Charlestown, Manchester, M9 7BX		Level:	Scale 1:50
Client: Miller Homes		Dates: 30/10/2024 -	Logged By L. CALLISS

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
					0.20			Dark brown slightly sandy CLAY with frequent rootlets. (Topsoil).
		0.70	ES					Soft low strength blackinsh brown PEAT. (Slight organic odour).
		1.00 1.10	ES	N=4 (1,1/1,1,1,1)	1.20			Stiff high strength grey slightly gravelly CLAY. Gravel is fine to medium subangular to rounded of mudstone and coal.
		2.00 2.00 - 2.45	D	N=13 (2,2/2,3,4,4)				
		3.00 3.00 - 3.45	D	N=12 (2,2/3,3,3,3)				
		4.00 4.00 - 4.45	D	N=13 (2,2/3,3,3,4)				
		5.00 5.00 - 5.45	D	N=15 (3,3/3,3,4,5)				
					5.45			End of borehole at 5.45 m

Remarks

1. Complete. 2. Monitoring well installed. 3. Monitoring zone between 1.00 - 5.00 m bgl. 4. Peat H3, R1, F1, W3.

Borehole Log

Borehole No. **WS106**

Sheet 1 of 1

Project Name: Hinchley Road, Charlestown	Project No. 17994	Co-ords: 387804.01 - 403114.43	Hole Type WS
Location: Land off Hinchley Road, Charlestown, Manchester, M9 7BX		Level:	Scale 1:50
Client: Miller Homes		Dates: 30/10/2024 -	Logged By L. CALLISS

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.50	ES		0.20			Dark brown slightly sandy CLAY with frequent rootlets. (Topsoil).
		1.00 1.00 - 1.45	D	N=5 (1,1/1,1,1,2)	0.80			Dark brown sandy slightly peaty CLAY with frequent rootlets and rare inclusions of cobble sized wood.
		1.60	ES		1.50			Firm low strength blackish brown PEAT. (Strong organic odour).
		2.00 2.00 - 2.45	D	N=16 (2,3/3,3,3,7)				Stiff high strength light grey slightly gravelly CLAY. Gravel is fine to medium subangular to rounded of mudstone and coal.
		3.00		50 (7,12/50 for 250mm)				
					3.45			End of borehole at 3.40 m

Remarks

1. Drilled to 3.00 m with no recovery from 2.00 - 3.00 m bgl. 2. Refusal on a cobble at 3.00 m. 3. Peat H6, F2, R1, W2.

Borehole Log

Borehole No. **WS107**

Sheet 1 of 1

Project Name: Hinchley Road, Charlestown	Project No. 17994	Co-ords: 387795.96 - 403202.82	Hole Type WS
Location: Land off Hinchley Road, Charlestown, Manchester, M9 7BX		Level:	Scale 1:50
Client: Miller Homes		Dates: 31/10/2024 -	Logged By L. CALLISS

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.20	ES		0.60			Dark brown slightly sandy CLAY with frequent rootlets. (Topsoil).
		0.80	ES					Stiff high strength light brown slightly gravelly CLAY. Gravel is fine to medium subrounded to rounded of mudstone.
		1.00		N=8 (1,2/2,2,2,2)				
		2.00		N=16 (2,3/3,4,4,5)				
		2.00 - 2.45	D					
		3.00		N=13 (2,2/3,3,3,4)				
		3.00 - 3.45	D					
		4.00		N=12 (2,2/2,3,3,4)				
		5.00		N=17 (3,3/4,4,5,4)				
		5.00 - 5.45	D		5.45			End of borehole at 5.45 m

Remarks
1. Complete.

Borehole Log

Borehole No. **WS108**

Sheet 1 of 1

Project Name: Hinchley Road, Charlestown	Project No. 17994	Co-ords: 387761.93 - 403178.58	Hole Type WS
Location: Land off Hinchley Road, Charlestown, Manchester, M9 7BX		Level:	Scale 1:50
Client: Miller Homes		Dates: 31/10/2024 -	Logged By L. CALLISS

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
					0.20			MADE GROUND. Dark brown slightly sandy clay with frequent rootlets. (Reworked topsoil).
		0.80	ES					MADE GROUND.Dark brown gravelly clay. Gravel is fine to medium subangular to subrounded of sandstone, brick, asphalt, concrete and slag.
		1.00		N=8 (1,3/3,2,2,1)				
		1.00 - 1.45	D					
		2.00		N=8 (2,1/1,2,2,3)				
		2.00 - 2.45	D					
					2.60			MADE GROUND. Black sandy gravel. Gravel is fine to medium subrounded slag.
		2.80	ES		2.80			Blackish brown PEAT.
		3.00		N=11 (2,3/3,2,2,4)	3.00			Stiff high strength light brown slightly gravelly CLAY. Gravel is fine to medium subrounded of mudstone.
		3.00 - 3.45	D					
		3.20	ES					
		4.00		N=20 (3,3/3,4,6,7)				
		4.00 - 4.45	D					
		5.00		N=19 (3,3/3,5,5,6)				
		5.00 - 5.45	D					
					5.45			End of borehole at 5.45 m

Remarks

1. Complete. 2. Monitoring well installed. 3. Monitoring zone between 1.00 - 2.50 m bgl. 4. Peat H6, F2, R1, W1.

Borehole Log

Borehole No. **WS109**

Sheet 1 of 1

Project Name: Hinchley Road, Charlestown	Project No. 17994	Co-ords: 387795.11 - 403153.62	Hole Type WS
Location: Land off Hinchley Road, Charlestown, Manchester, M9 7BX		Level:	Scale 1:50
Client: Miller Homes		Dates: 31/10/2024 -	Logged By L. CALLISS

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.30	ES		0.20			Dark brown slightly sandy CLAY with frequent rootlets. (Topsoil).
					0.50			Blackish brown PEAT. (Slight organic odour)
		1.00		N=4 (1,1/1,1,1,1)				Soft low strength greyish brown slightly sandy CLAY.
		1.00 - 1.45	D					
		1.30	ES					
		2.00		N=14 (1,2/2,3,4,5)	1.80			Stiff high strength light brown slightly gravelly CLAY. Gravel is fine to medium subangular to rounded of mudstone and coal.
		2.00 - 2.45	D					
		3.00		N=13 (2,2/3,3,4,3)				
		3.00 - 3.45	D					
		4.00		N=11 (2,2/2,2,3,4)				
		4.00 - 4.45	D					
		5.00		N=17 (2,3/3,4,5,5)				
		5.00 - 5.45	D					
					5.45			End of borehole at 5.45 m

Remarks

1. Complete. 2. Monitoring well installed. 3. Monitoring zone between 3.00 - 5.00 m bgl.

Borehole Log

Borehole No. **WS110**

Sheet 1 of 1

Project Name: Hinchley Road, Charlestown	Project No. 17994	Co-ords: 387832.14 - 403166.11	Hole Type WS
Location: Land off Hinchley Road, Charlestown, Manchester, M9 7BX		Level:	Scale 1:50
Client: Miller Homes		Dates: 31/10/2024 -	Logged By L. CALLISS

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
					0.40			Dark brown slightly sandy CLAY with frequent rootlets. (Topsoil).
					0.80			Blackish brown PEAT.
		1.00 1.00 - 1.45	 D	N=10 (1,2/3,3,2,2)				Stiff high strength greyish brown slightly gravelly CLAY. Gravel is fine to medium subrounded to subrounded of mudstone sandstone and coal.
		1.60	ES					
		2.00 2.00 - 2.45	 D	N=21 (2,3/3,4,6,8)				
		3.00 3.00 - 3.45 3.00 - 4.00	 D U	N=20 (3,3/3,5,6,6)				
		4.00 4.00 - 4.45	 D	N=15 (2,2/3,3,4,5)				
		5.00 5.00 - 5.45	 D	N=17 (2,3/4,4,4,5)				
					5.45			End of borehole at 5.45 m

Remarks

1. Complete. 2. Monitoring well installed. 3. Monitoring zone between 1.00 - 2.00 m bgl. 4. Peat H4, R2, F1, W2.

Borehole Log

Borehole No. **WS111**

Sheet 1 of 1

Project Name: Hinchley Road, Charlestown	Project No. 17994	Co-ords: 387855.45 - 403180.06	Hole Type WS
Location: Land off Hinchley Road, Charlestown, Manchester, M9 7BX		Level:	Scale 1:50
Client: Miller Homes		Dates: 31/10/2024 -	Logged By L. CALLISS

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
					0.40			Dark brown slightly sandy CLAY with frequent rootlets. (Topsoil).
		0.80	ES					Blackish brown PEAT.
		1.00		N=5 (1,1/1,1,2,1)	1.00			
		1.00 - 1.45	D					Stiff high strength light grey slightly sandy slightly gravelly CLAY. Gravel is fine to medium subrounded to rounded of mudstone.
		1.80	ES					
		2.00		N=8 (1,1/2,2,2,2)				
		2.00 - 2.45	D					
		3.00		N=18 (2,3/3,4,5,6)				
		3.00 - 3.45	D					
		4.00		N=16 (2,3/3,3,5,5)				
		4.00 - 4.45	D					
		5.00		N=17 (3,3/3,4,5,5)				
					5.45			End of borehole at 5.45 m

Remarks

1. Complete. 2. Monitoring well installed. 3. Monitoring zone between 1.00 - 1.50 m bgl. 4. Peat H3, F2, R2, W3.

Borehole Log

Borehole No. **WS112**

Sheet 1 of 1

Project Name:	Hinchley Road, Charlestown	Project No. 17994	Co-ords: 387890.38 - 403167.74	Hole Type WS
Location:	Land off Hinchley Road, Charlestown, Manchester, M9 7BX		Level:	Scale 1:50
Client:	Miller Homes		Dates: 31/10/2024 -	Logged By L. CALLISS

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
					0.30			MADE GROUND. Dark brown slightly sandy CLAY with frequent rootlets. (Reworked topsoil).
		0.80	ES		0.70			MADE GROUND. Dark brown gravelly clay. Gravel is fine to coarse angular to subangular asphalt, brick and coal.
		1.00		N=8 (1,1/2,2,2,2)	1.00			Light brown organic CLAY. Organic rootlet inclusions.
		1.00 - 1.45	D					Firm to stiff medium to high strength light greyish brown slightly sandy slightly gravelly CLAY. Gravel is fine to medium subrounded to rounded of mudstone.
		1.20	ES					
					1.80			Stiff high strength light brown slightly gravelly CLAY. Gravel is fine to medium subrounded to rounded of mudstone.
		2.00		N=25 (2,4/5,6,6,8)				
		2.00 - 2.45	D					
		3.00		50 (8,12/50 for 265mm)				
		3.00 - 3.45	D					
					3.45			End of borehole at 3.42 m

Remarks

1. Refusal at 3.00 m bgl. 2. Monitoring well installed. 3. Monitoring zone between 1.00 - 3.00 m bgl.