



Client:

Cringle Rd Developments Ltd
7 Leegate Close
Heaton Moor
Stockport
SK4 3NN

Architect/Consultant

Ground Gas Risk Assessment - Update

Land off Cringle Road, Levenshulme, Manchester

Oct 2022

Site Ref: 6048/VCR-GRAU v2.00

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Ground Gas Risk Assessment

1. Introduction

This report forms the gas risk assessment following the completion of a Phase II intrusive investigation for the Land off Cringle Road, Levenshulme, Manchester. Further background details are provided within the previously Phase II report referenced 6048 VCR and dated October 2020 respectively. The work was commissioned following acceptance of the quotation and an instruction to proceed issued on behalf of Cringle Rd Developments Ltd on 5th August 2020. The approximate grid reference for the centre of the site is 388410, 393160 and the total area of the site is approximately 16,700m². A plan depicting the location of the gas monitoring points forms Appendix A1 to this report.

2. Description of the Site

2.1 Present

The site is located on Land off Cringle Road, Levenshulme, Manchester. The current access is off Nelstrop Road North. The site forms an irregular shape, the topography of which is generally flat and level with the surrounding area. The land is currently in use as stables and associated pasture.

At the time of the site visit, there were several small building structures and stables located to the southeast corner of the site. The rest of the site consists of heavily grazed paddocks divided by wooden fencing.

The site is bound by Highfield Country Park to the north and west, Cringle Road bounds part of the site to the south, followed by residential property. Nelstrop Road North borders the east of the site, over which lies further grazed paddocks.

2.2 Proposed

It is understood that the proposed plan for the Site is to construct upto 57 residential dwelling houses with associated gardens off road car parking and associated infrastructure such as access roads.

The proposed development plan for the Site forms appendix A2 to this report.

3. Ground Gas Background

The preliminary risk assessment undertaken by others indicated the potential for the presence of ground gas from an adjacent neighbouring historical landfill site to the north and west of the site. Subsequent searches with Manchester City Council confirmed that perimeter monitoring points on the Former Cringle Road Landfill showed only low levels of Methane and Carbon Dioxide in 2009. Gas flow rates are also recorded to be low.

Planning records indicate that a Methane Stripping Plant was installed in 2009 in order to lower levels of dissolved methane within extracted landfill leachate before being discharged to foul drainage systems. The system is planned to be operational for 15 to 25 years.

Data obtained from the recent site investigation and ground gas risk assessment confirm that no landfill has been identified on the site and only limited areas of relatively shallow made ground with limited potential to produce ground gas have been identified on the site.

4. Ground Gas

The ground gas monitoring protocol used by GeoAssist follows standard practice and measures flow rates followed by gas concentrations. The gas concentrations are measured by pumping for 90 seconds followed by a 5 second stabilization period. Once readings have been logged the instrument is then purge pumped in atmosphere for the same period. The gas analysis equipment is manufactured by Gas Data Limited and is serviced and maintained at the manufacturers recommended intervals and calibrated every 12 months.

Gas monitoring has been carried out over a period of 3 to 6 months and has incorporated periods of low and falling pressure in accordance with best practice guidance.

Analysis of the gas monitoring data collected from the installations show that the following regime has been identified beneath the site as follows:

- 1) Upper deposits including made ground and natural superficial deposits of Boulder Clays with sand inclusions and high water levels with concentrations of Methane (monitored only in WS2 and WS4) and Carbon Dioxide with steady flow rates below the limit of detection for the instrument (0.1l/hr).

The ground gas readings are summarised along with the gas risk assessment in Appendix B1.

The Characteristic Situation is assessed to be 2 in accordance with Ciria R149 as a consequence of the methane exceeding the 1% v/v level (monitored only in WS2) and Carbon dioxide exceeding the 5% v/v level. Consequently, the levels of protection required are dependent on the type of foundations to be utilised across the development. It is understood that reinforced traditional strip footings with beam and block ground floors and a clear void are the selected option across the site.

The NHBC Traffic Light System for low rise housing developments has been adopted for gas mitigation measures and allows for safe and economical ground gas mitigation measures to be designed across the site. The NHBC Traffic light System provides Gas Screening Value (GSV) thresholds for carbon dioxide and methane along with

typical gas maximum concentrations for both gases. The small print associated with the method states that GSV thresholds should not generally be exceeded however typical maximum gas concentrations can be exceeded. The worst case (highest gas concentration and highest flow rate noted in any hole) GSV contour mapping for both Carbon Dioxide and Methane are presented in appendix A3 to this report and show that the calculated GSVs for both CO₂ and CH₄ fall well below the Green / Amber 1 Threshold GSVs of 0.16 and 0.78 respectively and hence Amber 1 protection levels are recommended for the site. The summary table below provides commentary where typical maximum concentrations are noted elevated above the threshold for Amber 1.

Exploratory Hole Ref	Date of monitoring	Air Pressure (mb)	Reading CO ₂ unless otherwise stated (%v/v)	Commentary
BH1	04/09/2020	110	11.5	Monitoring Pipe Extends Down to Sandstone Bedrock Which is known to emit CO ₂ . Foundations are shallow in very low permeability natural Boulder Clay Strata which is of a significant thickness. Readings from BH1 are not relevant to the evaluation of the site as piles are not required on the site and as a consequence a conduit to the bedrock will not be established.
	03/11/2020	1004	13.1	
	02/12/2020	1006	15.2	
	15/12/2020	976	14.0	
	18/12/2020	995	15.4	
	07/01/2021	1009	12.2	
	16/02/2021	994	15.2	
	23/02/2021	1006	14.8	
	02/03/2021	1020	15.2	
	17/03/2021	1025	12.5	
WS2	02/10/2020	986	10.1	Minor exceedances of 10%v/v typical max Concentration during low pressure event. No Pressure driving mechanism identified and gas flows of zero.
WS4	02/10/2020	987	12.9	
WS8	20/10/2020	990	12.5	
	23/02/2021	1007	10.2	
WS2	02/10/2020	986	10.4 CH ₄	Minor exceedances of 5%v/v typical max Concentration during low pressure event. No Pressure driving mechanism identified and gas flows of zero.
	20/10/2020	988	5.8 CH ₄	

A review of the protective measures necessary based on the monitoring results using the BS8485: 2015 +A1 2019 methodology, The ciria C665 methodology and the NHBC traffic light System/BRE 414 is presented below:

Building Type	NHBC Traffic Light for low rise housing development	Ciria R149 Characteristic Situation	BS8485 Req'd Score	BS8485 Structural Barrier Obtained Score	BS8485 Ventilation Obtained Score	BS8485 Gas protection Obtained Score	BS8485 Total Score
Type A	Amber	CS2	3.5	0	1.5 to 2.5	2.5	4 - 5
Private Ownership with no building management controls on to the internal structure (private housing)	Low-level ground gas protection measures are required, using a membrane and ventilated sub-floor void that creates a permeability contrast to limit the ingress of gas into buildings. Gas protection measures are to be installed as prescribed in BRE 414. Ventilation of the sub-floor void should be designed to provide a minimum of one complete volume change per 24 hours	a) Reinforced concrete cast in situ floor slab (suspended, non-suspended or raft) with at least 1200g DPM9 and underfloor venting b) Beam and block or pre-cast concrete and 2000 g DPM/reinforced gas membrane and underfloor venting. All joints and penetrations sealed.	NA	Beam and Block	Sub Floor clear void	Resistant membrane Methane Transmission Rate of <40ml/day/m2/atm	4>3.5 Therefore measures acceptable

Given the likely foundation solution at the site, the NHBC traffic light system for low rise housing development is deemed to provide appropriate measures to protect the development from the ingress of ground gases at this site. It should be noted that the NHBC measures require a minimum air exchange rate of one subfloor volume per 24hrs. It is imperative that the incorporation of gas measures into any foundation solution is confirmed prior to being constructed on site. Provided this precaution is adhered to then measures are likely to provide effective and economical gas mitigation measures for the proposed development.

5. Conceptual Model

The conceptual model updated from the Phase II report and based on the information presented in this report including contamination sources, pathways and receptors is presented below.

Table 1.0 Amended Conceptual Site Model to depict the Site post construction based on information presented within this report.

Potential Source /Hazard	Nature of Hazard (Risk Level to site given a Residential end use)	Contaminants Associated with Source	Potential Pathway	Potential Receptor
<i>Previous ON SITE Land uses:</i>				
1. Previous Land Use Agricultural/ equine land	Ground contamination Low Risk	None Identified	Dermal Contact Ingestion Inhalation	Site Users Construction workers Controlled Waters
	Gas from in-filled ground Low Risk Ciria C665 CS2	Methane Carbon Dioxide	Vertical and Lateral Migration	Site Users Future Buildings & Services
2. Previous Land Use Small Pond Feature (Infilled)	Ground contamination Low to Moderate Risk Reduced to low with removal and cover	ACM fragments	Inhalation	Site Users Construction workers
	Gas from in-filled ground Low Risk Ciria C665 CS2	Methane Carbon Dioxide	Vertical and Lateral Migration Considered unlikely given limited size non putrescible nature of source	Site Users Future Buildings & Services
3. Variable Depth Made Ground (not municipal landfill) Along western Boundary of site	Ground contamination Low to Moderate Risk Reduced to low with removal and cover	Lead and B(a)P only	Dermal Contact Ingestion Inhalation	Site Users Construction workers
	Gas from in-filled ground Low Risk Ciria C665 CS2	Methane Carbon Dioxide	Vertical and Lateral Migration	Site Users Future Buildings & Services
<i>Previous OFF SITE land uses within 250m as indicated by Historical Plans Including:</i>				
4. Clay Pit, Landfill & Refuse Tip	Ground contamination Low Risk	None Identified	Dermal Contact Ingestion Inhalation	Site Users Construction workers Controlled Waters
	Gas from in-filled ground Low Risk Ciria C665 CS2	Methane Carbon Dioxide	Vertical and Lateral Migration Considered unlikely dissolved Methane Scrubbing and active Leachate Removal in Adjoining landfill	Site Users Future Buildings & Services
5. Pond Features (Infilled)	Ground contamination Low Risk	None Identified	Dermal Contact Ingestion Inhalation	Site Users Construction workers
	Gas from in-filled ground Low Risk Ciria C665 CS2	Methane Carbon Dioxide	Vertical and Lateral Migration Considered unlikely given limited size of source and distance to site	Site Users Future Buildings & Services
6. Electricity Substation	Ground contamination Low Risk	None Identified	Dermal Contact Ingestion Inhalation	Site Users Construction workers
	Gas from in-filled ground Low Risk Ciria C665 CS2	None	None	Site Users Future Buildings & Services
7. Coal Workings	Geotechnical Hazard Low Risk	None Identified	Ground Collapse Subsidence	Humans (site users) Future Buildings & Services
	Ground contamination Low Risk	None Identified	None	Site Users Services
	Gas from in-filled ground Low Risk Ciria C665 CS2	None	None	Site Users Future Buildings & Services

Only sources that have not been present on site in the past, or currently, are considered within the off site category. Unless the information is deemed to be pertinent to the analysis.

6. Conclusion

The gas regime identified at the site requires Amber 1 gas mitigation measures in accordance with the NHBC traffic light system for low rise housing.

ALL membranes used site should be

- installed correctly following the manufacturers instructions with recommended tapes seals and ancillary items
- detailed in accordance with the attached typical drawings (including footnotes) and;
- protected from damage following installation
- All sub floor voids should be a minimum of 200mm and the sub-floor void should be designed to provide a minimum of one complete volume change per 24 hours.

The membranes used in Plot numbers 8 to 25 inclusive can be any of the following from popular manufacturers. The developer can select to install a different membrane of equivalent specification but does so at their own risk.

- Monarflex CO2 membrane (Green and Black)– Spec attached
- Visqueen low permeability Gas Membrane (Yellow) – Spec Attached
- Capitol Valley Plastics Radbar Amber1 – (Orange) – Spec Attached

Plot Numbers 1 to 7 and 26 to 57 can adopt a standard/proprietary 1200gauge Damp Proof Membrane. This should still have sealed laps, be continuous across the cavity tray and be fully sealed at service penetrations.

The developer and any sub-contractors thereof should be notified that post construction validation inspections will be a requirement of the LPA for all membranes used for gas resistance. Inspections must be undertaken as work progresses and following installation. Photographic evidence of installations will be required to confirm the installation meets the required performance level across all plots. Any defects noted during the initial installation inspection should be rectified, logged and reinspected prior to any further construction on the affected plot. It is critical that the membranes are protected from damage following installation.

It is imperative that both building control and the contaminated land section of the LPA confirm they are satisfied with the recommendations of this report in writing prior to installation of membranes. Failure to do so could result in significant time and cost delays during the end stages of the project.

Table 2 from BS 8485 - 2015 CS by site characteristic GSV reproduced below

Table 2 CS by site characteristic GSV

CS	Hazard potential	Site characteristic GSV ^{A)} L/h	Additional factors
CS1	Very low	<0.07	Typically <1% methane concentration and <5% carbon dioxide concentration (otherwise consider an increase to CS2)
CS2	Low	0.07 to <0.7	Typical measured flow rate <70 L/h (otherwise consider an increase to CS3)
CS3	Moderate	0.7 to <3.5	–
CS4	Moderate to high	3.5 to <15	–
CS5	High	15 to <70	–
CS6	Very high	>70	–

^{A)} The figures used in this column are empirical.

NOTE The CS is equivalent to the characteristic GSV in CIRIA C665 [6].

Table 4 from BS 8485 - 2015 Gas Protection score by CS and Type of Building reproduced below

Table 4 Gas protection score by CS and type of building

CS	Minimum gas protection score (points)			
	High risk	Medium risk		Low risk
	Type A building	Type B building	Type C building	Type D building
1	0	0	0	0
2	3.5	3.5	2.5	1.5
3	4.5	4	3	2.5
4	6.5 ^{A)}	5.5 ^{A)}	4.5	3.5
5	— ^{B)}	6.5 ^{A)}	5.5	4.5
6	— ^{B)}	— ^{B)}	7.5	6.5

^{A)} Residential buildings should not be built on CS4 or higher sites unless the type of construction or site circumstances allow additional levels of protection to be incorporated, e.g. high-performance ventilation or pathway intervention measures, and an associated sustainable system of management of maintenance of the gas control system, e.g. in institutional and/or fully serviced contractual situations.

^{B)} The gas hazard is too high for this empirical method to be used to define the gas protection measures.

Table 14.1 NHBC Traffic Light System Typical scope of gas protection measures.

Traffic Light Classification	Methane ¹		Carbon Dioxide ¹	
	Typical Maximum Concentration ³ (%v/v)	Gas Screening Value ^{2,4} (l/hr)	Typical Maximum Concentration ³ (%v/v)	Gas Screening Value ^{2,4} (l/hr)
Green	1	0.16	5	0.78
Amber 1	5	0.63	10	1.56
Amber 2	20	1.56	30	3.10
Red				

Table 14.2: Ground Gas Protection Measures Required for the Traffic Lights

Traffic Light	Ground Gas Protection Measures Required
Green	Ground gas protection measures are not required.
Amber 1	Low-level ground gas protection measures are required, using a membrane and ventilated sub-floor void that creates a permeability contrast to limit the ingress of gas into buildings. Gas protection measures are to be installed as prescribed in BRE 414. Ventilation of the sub-floor void should be designed to provide a minimum of one complete volume change per 24 hours.
Amber 2	High-level ground gas protection measures are required, creating a permeability contrast to prevent ingress of gas into buildings. Gas protection measures are to be installed as prescribed in BRE 414. Membranes used should always be fitted by a specialist contractor and should be fully certified (see Appendix E). As with Amber 1, ventilation of the sub-floor void should be designed to provide a minimum of one complete volume change per 24 hours.
Red	Standard residential housing is not normally acceptable without further Ground Gas Risk Assessment and/or possible remedial mitigation measures to reduce/remove the source of the ground gases. In certain circumstances, active protection methods could be applied, but only when there is a legal agreement assuring the management and maintenance of the system for the life of the property.

Table 8.6 Ciria C665 Typical scope of gas protection measures.

Table 8.6 *Typical scope of protective measures (risk management)*

Characteristic situation	Residential building (Not low-rise traditional housing) ¹		Office/commercial/industrial development	
(From Table 8.5)	Number of levels of protection	Typical scope of protective measures	Number of levels of protection	Typical scope of protective measures
1	None	No special precautions	None	No special precautions
2	2	a) Reinforced concrete cast <i>in situ</i> floor slab (suspended, non-suspended or raft) with at least 1200 g DPM ⁹ and underfloor venting b) Beam and block or pre-cast concrete and 2000 g DPM/reinforced gas membrane and underfloor venting All joints and penetrations sealed.	1 to 2	a) Reinforced concrete cast <i>in situ</i> floor slab (suspended, non-suspended or raft) with at least 1200 g DPM ⁹ b) Beam and block or pre cast concrete slab and minimum 2000 g DPM/reinforced gas membrane c) Possibly underfloor venting or pressurisation in combination with a) and b) depending on use All joints and penetrations sealed.
3	2	All types of floor slab as above. All joints and penetrations sealed. Proprietary gas resistant membrane and passively ventilated or positively pressurised underfloor sub-space.	1 to 2	All types of floor slab as above. All joints and penetrations sealed. Minimum 2000 g/reinforced gas proof membrane and passively ventilated underfloor sub-space or positively pressurised underfloor sub-space
4	3	All types of floor slab as above. All joints and penetrations sealed. Proprietary gas resistant membrane and passively ventilated underfloor subspace or positively pressurised underfloor sub-space, oversite capping or blinding and in ground venting layer.	2 to 3	All types of floor slab as above. All joints and penetrations sealed. Proprietary gas resistant membrane and passively ventilated or positively pressurised underfloor sub-space with monitoring facility.
5	4	Reinforced concrete cast in situ floor slab (suspended, non-suspended or raft). All joints and penetrations sealed. Proprietary gas resistant membrane and ventilated or positively pressurised underfloor sub-space, oversite capping and in ground venting layer and in ground venting wells or barriers.	3 to 4	Reinforced concrete cast <i>in-situ</i> floor slab (suspended, non-suspended or raft). All joints and penetrations sealed. Proprietary gas resistant membrane and passively ventilated or positively pressurised underfloor sub-space with monitoring facility. In ground venting wells or barriers.
6	5	Not suitable unless gas regime is reduced first and quantitative risk assessment carried out to assess design of protection measures in conjunction with foundation design.	4 to 5	Reinforced concrete cast <i>in-situ</i> floor slab (suspended, non-suspended or raft). All joints and penetrations sealed. Proprietary gas resistant membrane and actively ventilated or positively pressurised underfloor sub-space with monitoring facility, with monitoring. In ground venting wells and reduction of gas regime.



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Technical Director

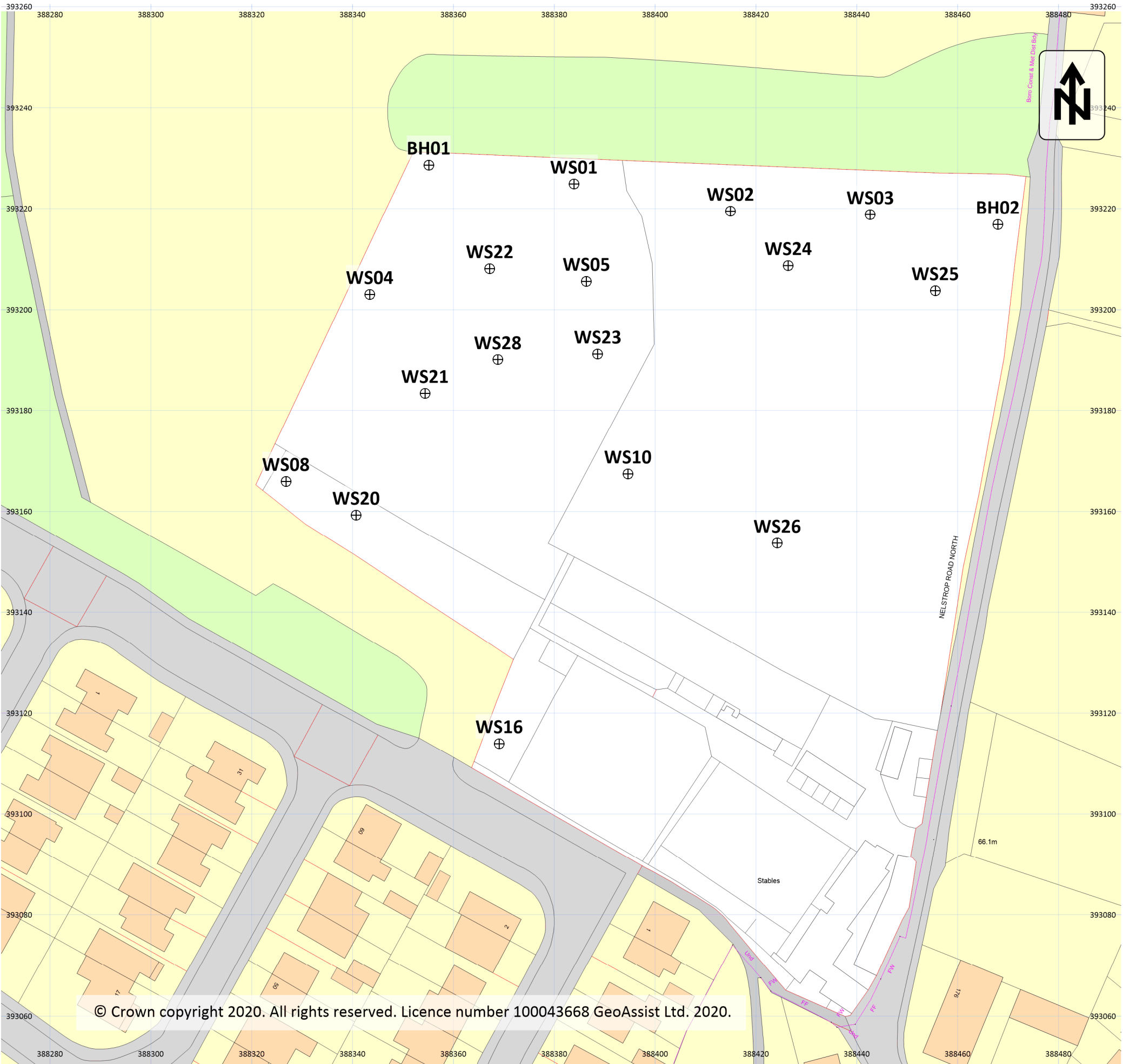
Field investigations have been restricted to a level of detail required to achieve the stated objectives of the work. Ground conditions are, and can be, variable and have only been tested at isolated locations across the site. Therefore, the potential exists for ground conditions to be encountered which are different to those considered in this report.

Ground gas measurements were undertaken for a range of typical gases based on a professional understanding of the historical and operational data available at the time and it should not be inferred or otherwise, that other ground gases are not present

This report has been prepared by GeoAssist Limited with all reasonable professional skill, care and diligence within the terms of the contract with Cringle Rd Developments Ltd. The report is confidential to Cringle Rd Developments Ltd, their/the named persons, advisors and bankers, and GeoAssist Limited accepts no responsibility of whatever nature to third parties to whom this report may be divulged. GeoAssist Limited owns the copyright in this report. All rights are reserved, and unauthorised use is prohibited. Cringle Rd Developments Ltd may use the report for their/her/his own purposes.

Appendix A

- A1 Site Plan & Exploratory Hole Locations
- A2 Proposed Site Plan
- A3 GSV Contour Plots



A1 Site Plan

Site Name	Land off Cringle Road
Location	Levenshulme, Manchester
GeoAssist Ref	
Client	Cringle Rd Developments Ltd
	7 Leegate Close Heaton Moor Stockport SK4 3NN
Planning Consultant	
NGR (centre of site)	388410,393160
Production Date	Oct 2022
Survey Method	
Surveyor	Others
Status	Final v1.00
Base Survey	OSGB36



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A2 Proposed Plan

Site Name	Land off Cringle Road
Location	Levenshulme, Manchester
GeoAssist Ref	
Client	Cringle Rd Developments Ltd
	7 Leegate Close Heaton Moor Stockport SK4 3NN
Planning Consultant	
NGR (centre of site)	388410,393160
Production Date	Oct 2022
Survey Method	
Surveyor	Others
Status	Final v1.00
Base Survey	OSGB36



A3 GSV Contour CO₂

Site Name	Land off Cringle Road
Location	Levenshulme, Manchester
GeoAssist Ref	
Client	Cringle Rd Developments Ltd
	7 Leegate Close Heaton Moor Stockport SK4 3NN
Planning Consultant	
NGR (centre of site)	388410,393160
Production Date	Oct 2022
Survey Method	
Surveyor	Others
Status	Final v1.00
Base Survey	OSGB36



A3 GSV Contour CH₄

Site Name	Land off Cringle Road
Location	Levenshulme, Manchester
GeoAssist Ref	
Client	Cringle Rd Developments Ltd
	7 Leegate Close Heaton Moor Stockport SK4 3NN
Planning Consultant	
NGR (centre of site)	388410,393160
Production Date	Oct 2022
Survey Method	
Surveyor	Others
Status	Final v1.00
Base Survey	OSGB36

Appendix B

- B1 Gas Monitoring Results and Risk Assessment
- B2 Gas Analyser Calibration Certification

BH Ref.	Response zone/strata	Evidence of contamination	No. of Monitoring occasions	Max. Recorded Methane	Max. Recorded Carbon Dioxide (%)	Min. Oxygen (%)	Max. Recorded Flow (l/hr)	Water Level (mbgl) Highest	Atmospheric Pressure Range (mb)	Is Water Level within top 10% of the response	Are readings considered representative	Explanation / Justification	Gas Screening Value (GSV) Methane	Gas Screening Value (GSV) Carbon Dioxide	Risk Classification & Characteristic Situation
BH1	1.00 - 8.00m Clay with sand inc/Sandstone	No	14	0.0	15.4	0.0	0.0	0.0	974-1027	N	Y		0.000	0.015	Low Risk CS2
BH2	1.00 - 10.00m Clay with sand inclusions	No	14	0.0	7.8	9.5	0.0	0.0	974-1027	N	Y		0.000	0.008	Low Risk CS2
WS1	1.00 - 6.00m Clay with sand inclusions	No	14	0.0	7.6	13.5	0.0	0.0	974-1027	N	Y		0.000	0.008	Low Risk CS2
WS2	1.00 - 5.70m Clay with sand inclusions	No	14	10.4	10.1	0.1	0.0	0.0	974-1027	N	Y		0.010	0.010	Low Risk CS2
WS3	1.00 - 5.30m Clay with sand inclusions	No	14	0.0	4.6	3.8	0.0	0.0	974-1027	Y	Y		0.000	0.005	Low Risk CS2
WS4	1.00 - 6.00m Made Ground/Organic Clay with sand inclusions	No	14	0.9	12.9	0.1	0.0	0.0	974-1027	Y	Y		0.001	0.013	Low Risk CS2
WS5	1.00 - 6.00m Made Ground/Organic Clay with sand inclusions	No	14	0.2	4.8	16.3	0.0	0.0	974-1027	Y	Y		0.000	0.005	Very Low Risk CS1
WS8	1.00 - 6.00m Made Ground/Clay with sand incs	No	14	0.0	12.5	4.6	0.0	0.0	974-1027	Y	Y		0.000	0.013	Low Risk CS2
WS10	1.00 - 6.00m Clay with sand inclusions	No	14	0.0	4.1	12.8	0.0	0.0	974-1027	Y	Y		0.000	0.004	Very Low Risk CS1
WS16	1.00 - 6.00m Clay with sand inclusions	No	14	0.0	6.9	15.2	0.0	0.0	974-1027	Y	Y		0.000	0.007	Low Risk CS2
WS20	1.00 - 3.00m Clay with sand inclusions	No	9	0.0	5.9	0.0	0.0	0.0	974-1027	Y	Y		0.000	0.006	Low Risk CS2
WS21	1.00 - 3.00m Clay with sand inclusions	No	9	0.0	1.9	0.0	0.0	0.0	974-1027	Y	Y		0.000	0.002	Very Low Risk CS1
WS22	1.00 - 3.00m Clay with sand inclusions	No	9	0.0	3.6	0.0	0.0	0.0	974-1027	Y	Y		0.000	0.004	Very Low Risk CS1
WS23	1.00 - 3.00m Clay with sand inclusions	No	9	0.0	5.0	0.0	0.0	0.0	974-1027	Y	Y		0.000	0.005	Very Low Risk CS1
WS24	1.00 - 3.00m Clay	No	9	0.0	0.8	0.0	0.0	0.0	974-1027	Y	Y		0.000	0.001	Very Low Risk CS1
WS25	1.00 - 3.00m Clay with sand inclusions	No	9	0.0	2.5	13.5	0.0	0.0	974-1027	Y	Y		0.000	0.003	Very Low Risk CS1
WS26	1.00 - 3.00m Clay with sand inclusions	No	9	0.0	4.9	0.0	0.0	0.0	974-1027	Y	Y		0.000	0.005	Very Low Risk CS1
WS28	1.00 - 3.00m Clay with sand inclusions	No	9	0.0	4.9	0.0	0.0	0.0	974-1027	Y	Y		0.000	0.005	Very Low Risk CS1
Zone 1	NA														
Zone 2	NA														
Worst Case		No	212	10.4	15.4	0.0	0.1	0.0	974-1027	Y	Y		0.010	0.015	Low Risk CS2

Site Reference:	6048 VCR
Project Site:	Land off Cringle Road
Project Location:	Levenshulme, Manchester
Client:	Cringle Rd Developments Ltd

Ground Gas Readings

Date - Time	BH	CH4 (%)	CO2 (%)	O2 (%)	H2S (ppm)	CO (ppm)	LEL (%)	aP (mb)	Flw (l/h)	H2O (m)	State
04/09/2020	BH1	0.0	11.5	8.2	0.0	0.0		1010	0.0	dry	8.0
04/09/2020	BH2	0.0	4.0	14.4	0.0	0.0		1011	0.0	1.6	10.0
04/09/2020	WS1	0.0	0.3	20.3	0.0	0.0		1011	0.0	0.4	6.0
04/09/2020	WS2	0.0	0.1	20.5	0.0	0.0		1011	0.0	dry	5.7
04/09/2020	WS3	0.0	1.4	16.4	0.0	0.0		1010	0.0	3.4	5.3
04/09/2020	WS4	0.9	9.1	0.1	0.0	0.0	22.0	1010	0.0	1.5	6.0
04/09/2020	WS5	0.0	0.3	20.4	0.0	0.0		1011	0.0	0.4	6.0
04/09/2020	WS8	0.0	2.3	16.5	0.0	0.0		1010	0.0	7.4	8.0
04/09/2020	WS10	0.0	1.0	20.1	0.0	0.0		1011	0.0	0.4	6.0
04/09/2020	WS16	0.0	1.8	19.0	0.0	0.0		1012	0.0	0.6	6.0
28/09/2020	BH1	0.0	1.9	18.3	0.0	0.0		1004	0.0	dry	8.0
28/09/2020	BH2	0.0	4.3	13.8	0.0	0.0		1004	0.0	2.0	10.0
28/09/2020	WS1	0.0	0.4	20.1	0.0	0.0		1004	0.0	1.1	6.0
28/09/2020	WS2	0.0	0.7	19.3	0.0	0.0		1004	0.0	dry	5.7
28/09/2020	WS3	0.0	4.4	8.1	0.0	0.0		1004	0.0	3.5	5.3
28/09/2020	WS4	0.0	6.0	11.4	0.0	0.0		1004	0.0	1.7	6.0
28/09/2020	WS5	0.0	0.5	20.1	0.0	0.0		1004	0.0	0.7	6.0
28/09/2020	WS8	0.0	3.4	16.1	0.0	0.0		1004	0.0	7.5	8.0
28/09/2020	WS10	0.0	0.9	20.1	0.0	0.0		1004	0.0	0.8	6.0
28/09/2020	WS16	0.0	1.9	18.9	0.0	0.0		1006	0.0	1.2	6.0
02/10/2020	BH1	0.0	4.8	10.7	0.0	0.0		987	0.0	dry	8.0
02/10/2020	BH2	0.0	5.0	12.3	0.0	0.0		986	0.0	2.0	10.0
02/10/2020	WS1	0.0	0.4	19.9	0.0	0.0		987	0.0	1.0	6.0
02/10/2020	WS2	10.4	10.1	0.1	0.0	0.0		986	0.0	dry	5.7
02/10/2020	WS3	0.0	3.9	8.7	0.0	0.0		986	0.0	3.5	5.3
02/10/2020	WS4	0.0	12.9	0.2	0.0	0.0		987	0.0	1.7	6.0
02/10/2020	WS5	0.0	0.8	19.7	0.0	0.0		987	0.0	0.8	6.0
02/10/2020	WS8	0.0	7.7	11.8	0.0	0.0		987	0.0	7.4	8.0
02/10/2020	WS10	0.0	1.8	19.7	0.0	0.0		987	0.0	0.7	6.0
02/10/2020	WS16	0.0	2.0	18.8	0.0	0.0		987	0.0	1.2	6.0
20/10/2020	BH1	0.0	10.0	8.7	0.0	0.0		989	0.0	dry	8.0
20/10/2020	BH2	0.0	6.4	9.8	0.0	0.0		988	0.0	1.4	10.0
20/10/2020	WS1	0.0	2.0	18.6	0.0	0.0		989	0.0	0.4	6.0
20/10/2020	WS2	5.8	9.7	0.1	0.0	0.0		988	0.0	dry	5.7
20/10/2020	WS3	0.0	4.0	5.5	0.0	0.0		988	0.0	3.2	5.3
20/10/2020	WS4	0.0	4.6	7.4	0.0	0.0		987	0.0	1.5	6.0
20/10/2020	WS5	0.2	2.3	18.4	0.0	0.0	6.1	988	0.0	0.5	6.0
20/10/2020	WS8	0.0	12.5	4.6	0.0	0.0		990	0.0	7.2	8.0
20/10/2020	WS10	0.0	3.0	17.2	0.0	0.0		988	0.0	0.4	6.0
20/10/2020	WS16	0.0	6.9	15.7	0.0	0.0		990	0.0	0.5	6.0
03/11/2020	BH1	0.0	13.1	0.1	0.0	0.0		1004	0.0	6.9	8.0
03/11/2020	BH2	0.0	0.0	19.7	0.0	0.0		1005	0.0	1.2	10.0
03/11/2020	WS1	0.0	4.7	16.6	0.0	0.0		1004	0.0	0.2	6.0
03/11/2020	WS2	2.6	4.1	5.8	0.0	0.0	61.2	1004	0.0	dry	5.7
03/11/2020	WS3	0.0	2.1	17.8	0.0	0.0		1005	0.0	3.0	5.3
03/11/2020	WS4	0.0	0.7	18.2	0.0	0.0		1004	0.0	1.1	6.0
03/11/2020	WS5	0.0	3.2	18.3	0.0	0.0		1004	0.0	0.3	6.0
03/11/2020	WS8	0.0	7.2	10.4	0.0	0.0		1004	0.0	7.0	8.0
03/11/2020	WS10	0.0	4.1	12.8	0.0	0.0		1004	0.0	0.0	6.0
03/11/2020	WS16	0.0	4.1	15.2	0.0	0.0		1004	0.0	0.1	6.0

Site Reference:	6048 VCR
Project Site:	Land off Cringle Road
Project Location:	Levenshulme, Manchester
Client:	Cringle Rd Developments Ltd

Ground Gas Readings

Date - Time	BH	CH4 (%)	CO2 (%)	O2 (%)	H2S (ppm)	CO (ppm)	LEL (%)	aP (mb)	Flw (l/h)	H2O (m)	State
11/11/2020	BH1	0.0	8.1	15.5	0.0	0.0		1007	0.0	7.0	8.0
11/11/2020	BH2	0.0	1.2	19.9	0.0	0.0	0.0	1007	0.0	1.0	10.0
11/11/2020	WS1	0.0	4.3	18.3	0.0	0.0		1007	0.0	0.3	6.0
11/11/2020	WS2	0.0	1.8	18.6	0.0	0.0		1007	0.0	dry	5.7
11/11/2020	WS3	0.0	2.2	17.4	0.0	0.0		1007	0.0	3.1	5.3
11/11/2020	WS4	0.0	7.4	11.4	0.0	0.0	0.0	1006	0.0	1.4	6.0
11/11/2020	WS5	0.0	1.3	19.4	0.0	0.0		1007	0.0	0.4	6.0
11/11/2020	WS8	0.0	5.7	12.5	0.0	0.0		1006	0.0	7.0	8.0
11/11/2020	WS10	0.0	1.5	19.2	0.0	0.0		1007	0.0	0.3	6.0
11/11/2020	WS16	0.0	4.2	24.4	0.0	0.0		1006	0.0	0.3	6.0
02/12/2020	BH1	0.0	15.2	2.0	0.0	0.0	0.0	1006	0.0	7.0	8.0
02/12/2020	BH2	0.0	3.8	13.7	0.0	0.0	0.0	1007	0.0	1.4	10.0
02/12/2020	WS1	0.0	7.6	13.5	0.0	0.0		1006	0.0	0.1	6.0
02/12/2020	WS2	0.0	5.2	17.9	0.0	0.0		1006	0.0	dry	5.7
02/12/2020	WS3	0.0	3.6	7.1	0.0	0.0		1007	0.0	2.9	5.3
02/12/2020	WS4	0.0	6.6	0.6	0.0	0.0		1006	0.0	0.6	6.0
02/12/2020	WS5	0.0	3.8	16.6	0.0	0.0	0.0	1006	0.0	0.4	6.0
02/12/2020	WS8	0.0	4.3	14.1	0.0	0.0		1005	0.0	7.0	8.0
02/12/2020	WS10	0.0	3.3	15.8	0.0	0.0		1006	0.0	0.2	6.0
02/12/2020	WS16	0.0	3.6	16.0	0.0	0.0		1005	0.0	0.3	6.0
11/12/2020	BH1	0.0	14.0	0.1	0.0	0.0		976	0.0	6.8	8.0
11/12/2020	BH2	0.0	7.8	9.7	0.0	0.0		976	0.0	1.2	10.0
11/12/2020	WS1									GL	6.0
11/12/2020	WS2	0.0	0.0	20.2	0.0	0.0		976	0.0	dry	5.7
11/12/2020	WS3	0.0	0.4	19.8	0.0	0.0		975	0.0	2.8	5.3
11/12/2020	WS4	0.0	1.6	14.4	0.0	0.0	0.0	976	0.0	1.0	6.0
11/12/2020	WS5	0.0	4.8	17.2	0.0	0.0	0.0	975	0.0	0.3	6.0
11/12/2020	WS8	0.0	3.0	15.9	0.0	0.0		976	0.0	6.6	8.0
11/12/2020	WS10	0.0	0.2	20.1	0.0	0.0		975	0.0	0.2	6.0
11/12/2020	WS16									GL	6.0
11/12/2020	WS20	0.0	5.0	18.5	0.0	0.0	0.0	976	0.0	GL	3.0
11/12/2020	WS21	0.0	1.9	19.7	0.0	0.0		976	0.0	0.2	3.0
11/12/2020	WS22	0.0	3.3	18.3	0.0	0.0		976	0.0	0.3	3.0
11/12/2020	WS23	0.0	5.0	16.2	0.0	0.0	0.0	975	0.0	0.1	3.0
11/12/2020	WS24	0.0	0.1	19.8	0.0	0.0		975	0.0	0.2	3.0
11/12/2020	WS25	0.0	2.5	13.5	0.0	0.0		975	0.0	GL	3.0
11/12/2020	WS26	0.0	0.0	20.2	0.0	0.0		974	0.0	0.1	3.0
11/12/2020	WS28										4.0
18/12/2020	BH1	0.0	15.4	0.9	0.0	0.0		995	0.0	6.5	8.0
18/12/2020	BH2	0.0	4.2	13.3	0.0	0.0		994	0.0	1.2	10.0
18/12/2020	WS1									0.2	6.0
18/12/2020	WS2	1.1	6.6	2.5	0.0	0.0		995	0.0	5.6	5.7
18/12/2020	WS3	0.0	4.3	4.7	0.0	0.0		994	0.0	2.8	5.3
18/12/2020	WS4	0.0	1.6	14.1	0.0	0.0	0.0	995	0.0	1.0	6.0
18/12/2020	WS5	0.0	1.7	19.1	0.0	0.0	0.0	995	0.0	0.3	6.0
18/12/2020	WS8	0.0	3.9	14.9	0.0	0.0		996	0.0	6.7	8.0
18/12/2020	WS10	0.0	0.8	19.6	0.0	0.0		995	0.0	0.2	6.0
18/12/2020	WS16									GL	6.0
18/12/2020	WS20	0.0	5.9	18.1	0.0	0.0	0.0	996	0.0	GL	3.0
18/12/2020	WS21	0.0	1.5	19.9	0.0	0.0		996	0.0	GL	3.0
18/12/2020	WS22	0.0	3.6	19.0	0.0	0.0		995	0.0	0.3	3.0

Site Reference:	6048 VCR
Project Site:	Land off Cringle Road
Project Location:	Levenshulme, Manchester
Client:	Cringle Rd Developments Ltd

Ground Gas Readings

Date - Time	BH	CH4 (%)	CO2 (%)	O2 (%)	H2S (ppm)	CO (ppm)	LEL (%)	aP (mb)	Flw (l/h)	H2O (m)	State
18/12/2020	WS23	0.0								0.2	3.0
18/12/2020	WS24	0.0	0.8	19.1	0.0	0.0		995	0.0	0.2	3.0
18/12/2020	WS25									GL	3.0
18/12/2020	WS26									GL	3.0
18/12/2020	WS28	0.0	0.8	20.2	0.0	0.0		995	0.0	GL	4.0
07/01/2021	BH1	0.0	12.2	6.4	0.0	0.0		1009	0.0	6.8	8.0
07/01/2021	BH2	0.0	3.0	15.0	0.0	0.0		1007	0.0	1.3	10.0
07/01/2021	WS1									0.3	6.0
07/01/2021	WS2	0.0	4.8	17.3	0.0	0.0		1008	0.0	DRY	5.7
07/01/2021	WS3	0.0	2.9	10.2	0.0	0.0		1008	0.0	2.6	5.3
07/01/2021	WS4	0.0	0.8	18.2	0.0	0.0		1009	0.0	1.1	6.0
07/01/2021	WS5	0.0	3.1	16.3	0.0	0.0		1008	0.0	0.4	6.0
07/01/2021	WS8	0.0	6.9	12.3	0.0	0.0		1010	0.0	6.8	8.0
07/01/2021	WS10	0.0	2.7	17.0	0.0	0.0		1008	0.0	0.3	6.0
07/01/2021	WS16									0.3	6.0
07/01/2021	WS20									0.2	3.0
07/01/2021	WS21	0.0	0.2	20.1	0.0	0.0		1010	0.0	0.5	3.0
07/01/2021	WS22	0.0	0.0	20.4	0.0	0.0		1009	0.0	0.5	3.0
07/01/2021	WS23									0.3	3.0
07/01/2021	WS24	0.0	0.6	19.8	0.0	0.0		1008	0.0	0.3	3.0
07/01/2021	WS25									GL	3.0
07/01/2021	WS26									0.1	3.0
07/01/2021	WS28	0.0	0.0	20.2	0.0	0.0		1009	0.0	0.5	4.0
14/01/2021	WS20									GL	3.0
14/01/2021	WS21									0.2	3.0
14/01/2021	WS22									0.2	3.0
14/01/2021	WS23									0.1	3.0
14/01/2021	WS24									0.1	3.0
14/01/2021	WS25									GL	3.0
14/01/2021	WS26									0.1	3.0
14/01/2021	WS28									GL	4.0
15/01/2021	WS20									GL	3.0
15/01/2021	WS21									0.3	3.0
15/01/2021	WS22									0.6	3.0
15/01/2021	WS23									0.3	3.0
15/01/2021	WS24									0.4	3.0
15/01/2021	WS25									1.7	3.0
15/01/2021	WS26									2.1	3.0
15/01/2021	WS28									GL	4.0
16/02/2021	BH1	0.0	15.2	0.1	0.0	0.0	0.0	994	0.0	7.0	8.0
16/02/2021	BH2	0.0	2.7	14.9	0.0	0.0	0.0	994	0.0	1.5	10.0
16/02/2021	WS1	0.0	0.7	17.7	0.0	0.0	0.0	994	0.0	0.3	6.0
16/02/2021	WS2	0.0	4.1	7.3	0.0	0.0	0.0	994	0.0	DRY	5.7
16/02/2021	WS3	0.0	2.1	11.4	0.0	0.0	0.0	995	0.0	2.6	5.3
16/02/2021	WS4	0.0	0.3	20.1	0.0	0.0	0.0	994	0.0	1.0	6.0
16/02/2021	WS5	0.0	0.2	20.1	0.0	0.0	0.0	993	0.0	0.4	6.0
16/02/2021	WS8	0.0	4.5	13.6	0.0	0.0	0.0	995	0.0	6.6	8.0
16/02/2021	WS10	0.0	2.9	17.0	0.0	0.0	0.0	994	0.0	0.4	6.0
16/02/2021	WS16	0.0	2.2	17.0	0.0	0.0	0.0	996	0.0	0.3	6.0
16/02/2021	WS20	0.0	0.3	20.4	0.0	0.0	0.0	995	0.0	0.5	3.0
16/02/2021	WS21	0.0	0.6	20.2	0.0	0.0	0.0	994	0.0	0.6	3.0

Site Reference:	6048 VCR
Project Site:	Land off Cringle Road
Project Location:	Levenshulme, Manchester
Client:	Cringle Rd Developments Ltd

Ground Gas Readings

Date - Time	BH	CH4 (%)	CO2 (%)	O2 (%)	H2S (ppm)	CO (ppm)	LEL (%)	aP (mb)	Flw (l/h)	H2O (m)	State
16/02/2021	WS22	0.0	0.2	20.5	0.0	0.0	0.0	993	0.0	0.8	3.0
16/02/2021	WS23	0.0	0.3	20.2	0.0	0.0	0.0	994	0.0	0.4	3.0
16/02/2021	WS24	0.0	0.3	20.2	0.0	0.0	0.0	994	0.0	0.2	3.0
16/02/2021	WS25	0.0	1.3	19.0	0.0	0.0	0.0	994	0.0	0.4	3.0
16/02/2021	WS26	0.0	4.9	14.2	0.0	0.0	0.0	995	0.0	1.0	3.0
16/02/2021	WS28	0.0	0.4	20.4	0.0	0.0	0.0	994	0.0	0.6	4.0
23/02/2021	BH1	0.0	14.8	0.0	0.0	0.0	0.0	1006	0.0	6.8	8.0
23/02/2021	BH2	0.0	7.1	9.5	0.0	0.0	0.0	1006	0.0	1.5	10.0
23/02/2021	WS1	0.0	0.4	19.9	0.0	0.0	0.0	1006	0.0	0.3	6.0
23/02/2021	WS2	0.0	4.5	12.4	0.0	0.0	0.0	1006	0.0	DRY	5.7
23/02/2021	WS3	0.0	2.4	10.2	0.0	0.0	0.0	1006	0.0	2.6	5.3
23/02/2021	WS4	0.0	0.3	20.0	0.0	0.0	0.0	1006	0.0	1.1	6.0
23/02/2021	WS5	0.0	0.4	19.9	0.0	0.0	0.0	1006	0.0	0.4	6.0
23/02/2021	WS8	0.0	10.2	7.4	0.0	0.0	0.0	1007	0.0	6.5	8.0
23/02/2021	WS10	0.0	0.4	20.3	0.0	0.0	0.0	1006	0.0	0.3	6.0
23/02/2021	WS16	0.0	2.0	19.3	0.0	0.0	0.0	1007	0.0	0.3	6.0
23/02/2021	WS20	0.0	0.5	20.3	0.0	0.0	0.0	1007	0.0	0.4	3.0
23/02/2021	WS21	0.0	0.8	20.1	0.0	0.0	0.0	1006	0.0	0.5	3.0
23/02/2021	WS22	0.0	0.5	20.3	0.0	0.0	0.0	1006	0.0	0.8	3.0
23/02/2021	WS23	0.0	0.5	20.2	0.0	0.0	0.0	1006	0.0	0.4	3.0
23/02/2021	WS24	0.0	0.2	20.2	0.0	0.0	0.0	1006	0.0	0.2	3.0
23/02/2021	WS25	0.0	1.2	19.0	0.0	0.0	0.0	1006	0.0	0.3	3.0
23/02/2021	WS26	0.0	3.3	16.4	0.0	0.0	0.0	1006	0.0	0.5	3.0
23/02/2021	WS28	0.0	0.4	20.2	0.0	0.0	0.0	1006	0.0	0.5	4.0
02/03/2021	BH1	0.0	15.2	0.0	0.0	0.0	0.0	1020	0.0	6.8	8.0
02/03/2021	BH2	0.0	5.4	11.4	0.0	0.0	0.0	1020	0.0	1.4	10.0
02/03/2021	WS1	0.0	0.0	20.0	0.0	0.0	0.0	1020	0.0	0.4	6.0
02/03/2021	WS2	0.0	0.1	20.5	0.0	0.0	0.0	1020	0.0	DRY	5.7
02/03/2021	WS3	0.0	4.1	5.3	0.0	0.0	0.0	1020	0.0	2.7	5.3
02/03/2021	WS4	0.0	0.2	20.2	0.0	0.0	0.0	1020	0.0	1.2	6.0
02/03/2021	WS5	0.0	0.5	20.1	0.0	0.0	0.0	1020	0.0	0.5	6.0
02/03/2021	WS8	0.0	7.7	10.5	0.0	0.0	0.0	1021	0.0	6.7	8.0
02/03/2021	WS10	0.0	2.8	19.0	0.0	0.0	0.0	1020	0.0	0.3	6.0
02/03/2021	WS16	0.0	2.4	19.2	0.0	0.0	0.0	1023	0.0	0.4	6.0
02/03/2021	WS20	0.0	0.7	0.0	0.0	0.0	0.0	1022	0.0	0.5	3.0
02/03/2021	WS21	0.0	0.8	0.0	0.0	0.0	0.0	1021	0.0	0.7	3.0
02/03/2021	WS22	0.0	0.5	0.0	0.0	0.0	0.0	1020	0.0	0.8	3.0
02/03/2021	WS23	0.0	0.5	0.0	0.0	0.0	0.0	1020	0.0	0.5	3.0
02/03/2021	WS24	0.0	0.1	0.0	0.0	0.0	0.0	1020	0.0	0.3	3.0
02/03/2021	WS25	0.0			0.0	0.0	0.0			0.2	3.0
02/03/2021	WS26	0.0	2.0	0.0	0.0	0.0	0.0	1020	0.0	0.3	3.0
02/03/2021	WS28	0.0	0.3	0.0	0.0	0.0	0.0	1021	0.0	0.6	4.0
17/03/2021	BH1	0.0	12.5	3.3	0.0	0.0	0.0	1025	0.0	6.4	8.0
17/03/2021	BH2	0.0	3.9	13.6	0.0	0.0	0.0	1024	0.0	1.3	10.0
17/03/2021	WS1	0.0	4.4	18.6	0.0	0.0	0.0	1025	0.0	GL	6.0
17/03/2021	WS2	0.0	0.4	20.2	0.0	0.0	0.0	1024	0.0	0.0	5.7
17/03/2021	WS3	0.0	4.6	3.8	0.0	0.0	0.0	1024	0.0	2.6	5.3
17/03/2021	WS4	0.0	0.1	20.3	0.0	0.0	0.0	1025	0.0	1.0	6.0
17/03/2021	WS5	0.0	0.6	20.0	0.0	0.0	0.0	1025	0.0	0.4	6.0
17/03/2021	WS8	0.0	7.6	10.1	0.0	0.0	0.0	1026	0.0	6.4	8.0
17/03/2021	WS10	0.0			0.0	0.0	0.0			0.3	6.0
17/03/2021	WS16	0.0			0.0	0.0	0.0			GL	6.0

Site Reference:	6048 VCR
Project Site:	Land off Cringle Road
Project Location:	Levenshulme, Manchester
Client:	Cringle Rd Developments Ltd

Ground Gas Readings

Date - Time	BH	CH4 (%)	CO2 (%)	O2 (%)	H2S (ppm)	CO (ppm)	LEL (%)	aP (mb)	Flw (l/h)	H2O (m)	State
17/03/2021	WS20	0.0	0.8	20.2	0.0	0.0	0.0	1027	0.0	0.2	3.0
17/03/2021	WS21	0.0	0.5	20.4	0.0	0.0	0.0	1026	0.0	0.3	3.0
17/03/2021	WS22	0.0	0.5	20.4	0.0	0.0	0.0	1025	0.0	0.6	3.0
17/03/2021	WS23	0.0	0.0	20.1	0.0	0.0	0.0	1024	0.0	0.2	3.0
17/03/2021	WS24	0.0	0.1	20.4	0.0	0.0	0.0	1023	0.0	0.1	3.0
17/03/2021	WS25	0.0	2.0	17.7	0.0	0.0	0.0	1024	0.0	1.9	3.0
17/03/2021	WS26	0.0	2.0	18.6	0.0	0.0	0.0	1026	0.0	1.0	3.0
17/03/2021	WS28	0.0			0.0	0.0	0.0			0.3	4.0

TEST DATE AND CONDITIONS			
Date		11/08/2020	
Atmospheric Pressure		999	mB
Ambient Temperature		21.9	°C
EnviroNics Serial No.		5089	

**GFM436 Final Inspection & Calibration
Check Certificate**

GAS DATA LTD

Unit 4, Fairfield Court

Seven Stars Estate

Wheler Rd

Coventry

CV3 4LJ

Tel 02476303311

Fax 02476307711



Customer	GeoAssist
Certificate Number	121929
Order Number	326396

Serial Number	13237
Software Version	G436-00.0027/0010

Recalibration DUE Date
11/08/21

Instrument Checks					
Keyboard	✓		Display Contrast	✓	
Pump Flow In	400	Accept > 200 cc/min	Pump Flow @ -200mB	300	Accept > 200 cc/min
Clock Set / Running	✓		Labels Fitted	✓	

Gas Checks						
Sensor	CH ₄		CO ₂		O ₂	
	Instrument Gas	True Gas Value %	Instrument Gas	True Gas Value %	Instrument Gas	True Gas Value %
	Readings %		Readings %		Readings %	
	60	60	40	40	20.9	20.9
	Accept ±3.0		Accept ±3.0		Accept ±0.5	
	5	5	4.9	5	6	6
	Accept ±0.3		Accept ±0.3		Accept ±0.3	
Zero Reading 100% N2	0	0	0	0	0	0
	Accept ±0.0		Accept ±0.0		Accept ±0.1	

Optional Gas Checks						
Applied Gas & Range		Concentration Tested @ (ppm)	Instrument Readings (ppm)			
Gas Type	Range (ppm)		Zero Reading		Instrument Gas Reading	
H2S	5000	1500	0	Accept ±0.0	1500	Accept ±5.0
CO	2000	1000	0	Accept ±0.0	999	Accept ±5.0
Hexane	2.0%	2.0%	0	Accept ±0.0	1.99	Accept ±10.0

Cross Gas Effects									
Applied Gas (ppm)		Instrument Readings (ppm)							
Gas Type	Concentration	Toxic 1:	H2S	Toxic 2:	CO	Toxic 3:	HEX		
H2S	1500	1500		0		0			
CO	1000	40		999		0			
Hexane	2.0%	0		0		1.99			

Pressure Checks			
Atmospheric Pressure [AP] (mB)			
Current Atmospheric Pressure (mB)		Instrument Atmospheric Pressure Reading (mB)	
AP Open Ports		999	Accept ± 2.0
AP Port (Internal)	+800 mB	800	Accept ± 5.0
	+1200mb	1200	Accept ± 5.0

Flow Checks					
Borehole Flow			Differential Pressure		
Applied Reading (l/h)	Instrument Reading (l/h)		Applied Pressure (Pa)	Instrument Reading (Pa)	
-30	-30	Accept ± 3.0	-250	-250	Accept ± 50
-3	-3	Accept ± 1.0	-15	-14	Accept ± 6.0
0	0	Accept ± 0.0	0	0	Accept ± 0.5
3	3	Accept ± 0.5	16	16	Accept ± 3.0
30	30	Accept ± 3.0	321	319	Accept ± 50
60	60	Accept ± 6.0	955	953	Accept ± 130
90	90.7	Accept ± 9.0	1858	1897	Accept ± 250

Temperature Checks		
Calibration Temperature	Instrument Temperature Reading $^{\circ}\text{C}$	
Applied Temperature $^{\circ}\text{C}$		
-10	-10	Accept ± 2.0
0	0	Accept ± 1.0
30	30	Accept ± 1.0
60	60	Accept ± 1.0
100	100	Accept ± 1.0

Technician:
<i>Jack Rutland</i>

Date Tested:
<i>12/08/2020</i>

The instrument identified by the serial number stated above has been tested by Gas Data personnel for calibration accuracy on the date and under the ambient conditions stated. Gas Data Ltd internal BS EN ISO9001:2015 compliant workshop procedures were followed to apply known calibration test gases, gas flow rates, pressures and temperatures of the values stated. The results displayed on the instrument at each stage are recorded above.

Appendix C

C1 Exploratory Hole Logs

GeoAssist Limited		Exploratory Hole Record Sheet					Ref: BH1	
Consultant:		Project: Land off Cringle Road					Sheet: 1	
0		Location: Levenshulme, Manchester					Ground Level: 64.65 m.AOD	
Client:		Equipment:					Co-ordinates: Easting: 388355.1(m) Northing: 393228.7(m)	
Cringle Rd Developments Ltd		Archway Dart Rig with 100mm diamter sampling					Dates: 13/08/2020 to 13/08/2020	
Drilling Foreman: M Walton		STRATUM DESCRIPTION	Depth (Thick) (m)	Reduced Level (mAOD)	Strata Legend/ Standpipe Backfill	Samples/Tests		Field Records
Engineer/Geologist: M Benson						Depth (m) from to	Sample Type/No	
0 Dark grey clayey TOPSOIL with rootlets			(0.40) 0.40	64.25		0.30 0.40	C1	Hand penetrometer at 0.60m - 110kPa
Stiff to very stiff orange/brown with light grey gravelly sandy silty CLAY						0.50 0.60 0.60 0.70	C2 D1	
-1			(1.30)					
			1.70	62.95				Hand penetrometer at 1.50m - 204kPa
Brown silty fine to medium SAND			2.00	62.65				
2 Stiff to very stiff brown gravelly sandy silty CLAY						2.50 2.60	D2	Hand penetrometer at 2.50m - 195kPa
-3								Hand penetrometer at 3.50m - 200kPa
								Hand penetrometer at 4.50m - 144kPa
4								Hand penetrometer at 5.50m - 125kPa
								Hand penetrometer at 6.50m - 217kPa
-5								Hand penetrometer at 7.50m - >250kPa
								13/08/2020: On completion of exploratory hole at 8.10m. Casing at 2.00m. Standing water level Nil. On withdrawal of casing gas/groundwater standpipe installed to 8.00m depth with response zone from 1.00m to 8.10m.
			7.60	57.05				
Light brown with orange/brown silty fine to medium SAND			(0.40) 8.00	56.65				
8 Orange/brown silty fine to medium SAND - weathered Sandstone			8.10	56.55				
Exploratory Hole terminated at 8.10m								
-9								
-10								

Remarks:		Logged: M Benson
		Date: 14/08/2020
		Checked: M Richardson
		Date: 17/09/2020
		Site Ref: 6048/VCR
		Scale 1:50

The groundwater conditions entered on the exploratory hole logs are those observed at the time of the drilling operations and the water level may not have reached equilibrium with the surrounding water level prior to the record being taken.

Standing groundwater levels will be subject to seasonal variation or changes in local drainage conditions and could be higher at certain times of the year particularly after periods of heavy rainfall.

GeoAssist Limited		Exploratory Hole Record Sheet					Ref: BH2	
Consultant:		Project: Land off Cringle Road					Sheet: 1	
0		Location: Levenshulme, Manchester					Ground Level: 66.57 m.AOD	
Client:		Equipment:					Co-ordinates: Easting: 388468(m) Northing: 393216.9(m)	
Cringle Rd Developments Ltd		Archway Dart Rig with 100mm diamter sampling					Dates: 12/08/2020 to 12/08/2020	
Drilling Foreman: M Walton		STRATUM DESCRIPTION	Depth (Thick) (m)	Reduced Level (mAOD)	Strata Legend/ Standpipe Backfill	Samples/Tests		Field Records
Engineer/Geologist: M Benson						Depth (m) from to	Sample Type/No	
0 Rough vegetation over brown sandy TOPSOIL with roots		0.30	66.27		0.30	0.40	C1	Hand penetrometer at 0.80m - 164kPa
Brown/grey very sandy silty CLAY		0.50	66.07		0.60	0.70	C2	
Stiff to very stiff orange/brown with light grey slightly gravelly sandy silty CLAY					0.90	1.00	D1	
-1		(1.50)						Hand penetrometer at 1.50m - 92kPa
2 Stiff to very stiff brown/grey gravelly sandy silty CLAY		2.00	64.57		2.10	2.20	D2	Hand penetrometer at 2.10m - 207kPa
-3								
4								Hand penetrometer at 3.50m - 237kPa
-5								Hand penetrometer at 4.50m - 204kPa
6		(8.00)						Hand penetrometer at 5.50m - >250kPa
-7								Hand penetrometer at 6.50m - 200kPa
-8								Hand penetrometer at 7.50m - 152kPa
-9								Hand penetrometer at 8.50m - 114kPa Hand penetrometer at 9.50m - 177kPa 12/08/2020: On completion of exploratory hole at 10.00m. Casing at 3.00m. Standing water level Nil. On withdrawal of casing gas/groundwater standpipe installed to 10.00m depth with response zone from 1.00m to 10.00m.
10 Exploratory Hole complete at 10.00m		10.00	56.57					

Remarks:		Logged: M Benson
		Date: 14/08/2020
		Checked: M Richardson
		Date: 17/09/2020
		Site Ref: 6048/VCR
		Scale 1:50

The groundwater conditions entered on the exploratory hole logs are those observed at the time of the drilling operations and the water level may not have reached equilibrium with the surrounding water level prior to the record being taken.

Standing groundwater levels will be subject to seasonal variation or changes in local drainage conditions and could be higher at certain times of the year particularly after periods of heavy rainfall.

GeoAssist Limited		Exploratory Hole Record Sheet					Ref: WS1	
Consultant:		Project: Land off Cringle Road					Sheet: 1	
0		Location: Levenshulme, Manchester					Ground Level: 64.94 m.AOD	
Client:		Equipment:					Co-ordinates: Easting: 388383.9(m)	
Cringle Rd Developments Ltd		Archway Dart Rig					Northing: 393224.9(m)	
							Dates: 13/08/2020 to 13/08/2020	
Drilling Foreman: M Walton		STRATUM DESCRIPTION	Depth (Thick) (m)	Reduced Level (mAOD)	Strata Legend/ Standpipe Backfill	Samples/Tests		Field Records
Engineer/Geologist: M Benson						Depth (m) from to	Sample Type/No	
0 Grass over dark brown clayey TOPSOIL		0.10	64.84					
Dark brown very gravelly sandy clay - MADE GROUND		(0.50)				0.50	0.60	
		0.60	64.34					
Stiff orange/brown with light grey gravelly sandy silty CLAY		(0.40)						Hand vane at 0.80m - 109kPa
		1.00	63.94					
Stiff brown with light grey gravelly sandy silty CLAY		(0.90)						Hand penetrometer at 1.50m - 125kPa
		1.90	63.04					Wet at 1.90m depth
-2 Brown silty fine to medium SAND		2.10	62.84					
Brown sandy very silty CLAY		2.40	62.54					Hand penetrometer at 2.50m - >250kPa
Stiff to very stiff brown gravelly sandy silty CLAY								
-3								Hand penetrometer at 3.50m - 114kPa
4		(3.60)						Hand penetrometer at 4.50m - 170kPa
-5								Hand penetrometer at 5.50m - 179kPa
6		6.00	58.94					13/08/2020: On completion of exploratory hole at 6.00m. Casing at 3.00m. Standing water level Nil. On withdrawal of casing gas/groundwater standpipe installed to 6.00m depth with response zone from 1.00m to 6.00m.
Exploratory Hole complete at 6.00m								
-7								
-8								
-9								
-10								

Remarks:		Logged: M Benson	
		Date: 14/08/2020	
		Checked: M Richardson	
		Date: 17/09/2020	
		Site Ref: 6048/VCR	
		Scale 1:50	

The groundwater conditions entered on the exploratory hole logs are those observed at the time of the drilling operations and the water level may not have reached equilibrium with the surrounding water level prior to the record being taken.

Standing groundwater levels will be subject to seasonal variation or changes in local drainage conditions and could be higher at certain times of the year particularly after periods of heavy rainfall.

GeoAssist Limited		Exploratory Hole Record Sheet					Ref: WS2	
Consultant:		Project: Land off Cringle Road					Sheet: 1	
0		Location: Levenshulme, Manchester					Ground Level: 65.22 m.AOD	
Client:		Equipment:					Co-ordinates: Easting: 388415(m)	
Cringle Rd Developments Ltd		Archway Dart Rig					Northing: 393219.5(m)	
							Dates: 11/08/2020 to 11/08/2020	
Drilling Foreman: M Walton		STRATUM DESCRIPTION	Depth (Thick) (m)	Reduced Level (mAOD)	Strata Legend/ Standpipe Backfill	Samples/Tests		Field Records
Engineer/Geologist: M Benson						Depth (m) from to	Sample Type/No	
0 Grass over dark brown clayey sandy TOPSOIL with rootlets		(0.40) 0.40	64.82		0.30 0.40	C1		
Stiff orange/brown with light grey gravelly sandy silty CLAY					0.50 0.60	D1		Hand penetrometer at 0.60m - 87kPa
-1		(1.60)						Hand penetrometer at 1.30m - 114kPa
-2		2.00	63.22					Hand penetrometer at 2.50m - >250kPa
Very stiff brown gravelly sandy silty CLAY								Hand penetrometer at 3.50m - >250kPa
-3		(3.70)						Hand penetrometer at 4.50m - 212kPa
-4								Hand penetrometer at 5.50m - 145kPa
Brown gravelly sandy silty CLAY with sand inclusions		5.70 (0.45) 6.15	59.52 59.07		5.70 6.15	P1	34	P1 at 5.70m - 9,10/8,7,10,9
Exploratory Hole complete at 5.70m								11/08/2020: On completion of exploratory hole at 6.15m. Casing at 2.00m. Standing water level Nil. On withdrawal of casing gas/groundwater standpipe installed to 5.70m depth with response zone from 1.00m to 5.70m.
-6								
-7								
-8								
-9								
-10								

Remarks:		Logged: M Benson
		Date: 17/08/2020
		Checked: M Richardson
		Date: 17/09/2020
		Site Ref: 6048/VCR
		Scale 1:50

The groundwater conditions entered on the exploratory hole logs are those observed at the time of the drilling operations and the water level may not have reached equilibrium with the surrounding water level prior to the record being taken.

Standing groundwater levels will be subject to seasonal variation or changes in local drainage conditions and could be higher at certain times of the year particularly after periods of heavy rainfall.

GeoAssist Limited		Exploratory Hole Record Sheet					Ref: WS3		
Consultant:		Project: Land off Cringle Road					Sheet: 1		
0		Location: Levenshulme, Manchester					Ground Level: 65.62 m.AOD		
Client:		Equipment:					Co-ordinates: Easting: 388442.7(m) Northing: 393218.8(m)		
Cringle Rd Developments Ltd		Archway Dart Rig					Dates: 11/08/2020 to 11/08/2020		
Drilling Foreman: M Walton		STRATUM DESCRIPTION		Depth (Thick) (m)	Reduced Level (mAOD)	Strata Legend/ Standpipe Backfill	Samples/Tests		Field Records
Engineer/Geologist: M Benson							Depth (m) from to	Sample Type/No	
0 Grass over dark brown sandy TOPSOIL		(0.40) 0.40	65.22						
Dark brown sandy silty clay with brick fragments - MADE GROUND		0.50	65.12						
Very stiff orange/brown with light grey gravelly sandy silty CLAY		(0.80)							Hand penetrometer at 0.90m - 169kPa
-1		1.30	64.32						Hand penetrometer at 1.50m - 130kPa
Stiff to very stiff brown gravelly sandy silty CLAY with sand inclusions at depth									Hand penetrometer at 2.50m - 247kPa
-2									Hand penetrometer at 3.50m - 214kPa
-									Hand penetrometer at 4.50m - 177kPa
-									Hand penetrometer at 5.50m - 134kPa
-3									11/08/2020: On completion of exploratory hole at 6.00m. Casing at 2.00m. Standing water level at 5.00m depth. On withdrawal of casing gas/groundwater standpipe installed to 5.30m depth with response zone from 1.00m to 5.30m.
-									
-									
4									
-									
-									
-5									
-									
-									
6		6.00	59.62						
Exploratory Hole complete at 6.00m									
-									
-									
-7									
-									
-									
-8									
-									
-									
-9									
-									
-									
-10									

Remarks:		Logged: M Benson
		Date: 21/08/2020
		Checked: M Richardson
		Date: 17/09/2020
		Site Ref: 6048/VCR
		Scale 1:50

The groundwater conditions entered on the exploratory hole logs are those observed at the time of the drilling operations and the water level may not have reached equilibrium with the surrounding water level prior to the record being taken.

Standing groundwater levels will be subject to seasonal variation or changes in local drainage conditions and could be higher at certain times of the year particularly after periods of heavy rainfall.

GeoAssist Limited		Exploratory Hole Record Sheet				Ref: WS4	
Consultant: 0		Project: Land off Cringle Road Location: Levenshulme, Manchester				Sheet: 1	
Client: Cringle Rd Developments Ltd		Equipment: Archway Dart Rig				Ground Level: 64.78 m.AOD Co-ordinates: Easting: 388343.4(m) Northing: 393203(m) Dates: 17/08/2020 to 17/08/2020	
Drilling Foreman: M Walton STRATUM DESCRIPTION Engineer/Geologist: M Benson		Depth (Thick) (m)	Reduced Level (m.AOD)	Strata Legend/ Standpipe Backfill	Samples/Tests		Field Records
					Depth (m) from to	Sample Type/No	
0 Grass over dark brown sandy silty clay with rootlets - MADE GROUND		0.30	64.48		0.30 0.40	C1	
Brown/grey sandy silty clay with brick rubble, concrete and timber fragments - MADE GROUND					0.90 1.00	D1	
-1 (1.80)							
-2		2.10	62.68				
Soft brown and dark grey very silty CLAY with organic inclusions		(0.40) 2.50	62.28		2.50 2.60	C2	Hand vane at 2.30m - 23kPa Hand penetrometer at 2.60m - 194kPa
Very stiff brown gravelly sandy silty CLAY					2.60 2.70	D2	
-3							
-4 (3.50)							
-5							
-6		6.00	58.78				
Exploratory Hole complete at 6.00m							
-7							
-8							
-9							
-10							

Remarks:		Logged: M Benson
		Date: 18/08/2020
		Checked: M Richardson
		Date: 17/09/2020
		Site Ref: 6048/VCR
		Scale 1:50

The groundwater conditions entered on the exploratory hole logs are those observed at the time of the drilling operations and the water level may not have reached equilibrium with the surrounding water level prior to the record being taken.

Standing groundwater levels will be subject to seasonal variation or changes in local drainage conditions and could be higher at certain times of the year particularly after periods of heavy rainfall.

GeoAssist Limited		Exploratory Hole Record Sheet					Ref: WS5	
Consultant:		Project: Land off Cringle Road					Sheet: 1	
0		Location: Levenshulme, Manchester					Ground Level: 65.22 m.AOD	
Client:		Equipment:					Co-ordinates: Easting: 388386.4(m) Northing: 393205.6(m)	
Cringle Rd Developments Ltd		Archway Dart Rig					Dates: 13/08/2020 to 13/08/2020	
Drilling Foreman: M Walton		STRATUM DESCRIPTION	Depth (Thick) (m)	Reduced Level (mAOD)	Strata Legend/ Standpipe Backfill	Samples/Tests		Field Records
Engineer/Geologist: M Benson						Depth (m) from to	Sample Type/No	
0		Grass over brown/grey gravelly clay, timber and asbestos/cement fragments - MADE GROUND	0.10	65.12		0.50 0.60	C1	
		Dark brown/grey clayey sandy gravel, cinders and brick fragments - MADE GROUND	(0.60) 0.70	64.52				
		Brown gravelly sandy silty clay and brick fragments - MADE GROUND	1.00	64.22		0.80 0.90	C2	
		Dark grey and light grey sandy cinders and concrete fragments - MADE GROUND	(0.60) 1.60	63.62				
		Soft grey/light grey silty CLAY and organic peat inclusions	(0.60) 2.20	63.02		1.50 1.60	D1	Hand vane at 1.70m - 31kPa
		Stiff to very stiff brown gravelly sandy silty CLAY						
						2.30 2.40	D2	Hand penetrometer at 2.30m - 137kPa
								Hand penetrometer at 3.50m - >250kPa
			(3.80)					Hand penetrometer at 4.50m - >250kPa Hand penetrometer at 4.50m - 235kPa
								13/08/2020: On completion of exploratory hole at 6.00m. Casing at 3.00m. Standing water level at 0.70m depth. On withdrawal of casing gas/groundwater standpipe installed to 6.00m depth with response zone from 1.00m to 6.00m.
								
								
								
								
								
								
								
								

GeoAssist Limited		Exploratory Hole Record Sheet					Ref: WS8	
Consultant:		Project: Land off Cringle Road					Sheet: 1	
0		Location: Levenshulme, Manchester					Ground Level: 65.01 m.AOD	
Client:		Equipment:					Co-ordinates: Easting: 388326.8(m)	
Cringle Rd Developments Ltd		Archway Dart Rig with 100mm diameter sampling					Northing: 393165.9(m)	
							Dates: 19/08/2020 to 19/08/2020	
Drilling Foreman: M Walton		STRATUM DESCRIPTION	Depth (Thick) (m)	Reduced Level (mAOD)	Strata Legend/ Standpipe Backfill	Samples/Tests		Field Records
Engineer/Geologist: M Benson						Depth (m) from to	Sample Type/No	
0 Grass over dark brown sandy TOPSOIL with roots		(0.40) 0.40	64.61					
Brown with orange silty sand, gravel and brick fragments with rootlets - MADE GROUND		(0.70)				0.50 0.60	C1	
1 Stiff orange/brown with light grey slightly gravelly sandy silty CLAY		1.10	63.91			1.00 1.10	D1	
						1.10 1.20	C2	
						1.20 1.30	D2	
-2		(1.90)						Hand vane at 1.20m - 77kPa Hand penetrometer at 1.20m - 97kPa Hand penetrometer at 1.80m - 140kPa
								Hand penetrometer at 2.50m - 147kPa
3 Stiff to very stiff brown gravelly sandy silty to very silty CLAY		3.00	62.01					Hand penetrometer at 3.50m - 204kPa
4		(3.00)						Hand penetrometer at 4.50m - 149kPa
								Hand penetrometer at 5.80m - >250kPa
6 Very stiff brown gravelly sandy silty CLAY		6.00	59.01					Hand penetrometer at 6.50m - 175kPa
-7		(2.40)						Hand penetrometer at 7.50m - 220kPa
8 Red/brown silty fine to medium SAND - weathered Sandstone		8.40	56.61			8.40 8.85	P1	P1 at 8.40m - (76 for 135mm)
Exploratory Hole complete at 8.53m		8.50	56.51					19/08/2020: On completion of exploratory hole at 8.53m. Casing at 2.00m. Standing water level Nil. On withdrawal of casing gas/groundwater standpipe installed to 8.00m depth with response zone from 1.00m to 8.50m.
-9								
-10								

Remarks:		Logged: M Benson
		Date: 20/08/2020
		Checked: M Richardson
		Date: 17/09/2020
		Site Ref: 6048/VCR
		Scale 1:50

The groundwater conditions entered on the exploratory hole logs are those observed at the time of the drilling operations and the water level may not have reached equilibrium with the surrounding water level prior to the record being taken.

Standing groundwater levels will be subject to seasonal variation or changes in local drainage conditions and could be higher at certain times of the year particularly after periods of heavy rainfall.

GeoAssist Limited		Exploratory Hole Record Sheet					Ref: WS10	
Consultant:		Project: Land off Cringle Road					Sheet: 1	
0		Location: Levenshulme, Manchester					Ground Level: 65.07 m.AOD	
Client:		Equipment:					Co-ordinates: Easting: 388394.6(m)	
Cringle Rd Developments Ltd		Archway Dart Rig					Northing: 393167.4(m)	
							Dates: 17/08/2020 to 17/08/2020	
Drilling Foreman: M Walton		STRATUM DESCRIPTION	Depth (Thick) (m)	Reduced Level (mAOD)	Strata Legend/ Standpipe Backfill	Samples/Tests		Field Records
Engineer/Geologist: M Benson						Depth (m) from to	Sample Type/No	
0		Grass over dark brown clayey TOPSOIL with roots	(0.40) 0.40	64.67				
1		Firm orange/brown with light grey slightly gravelly sandy silty CLAY with sand inclusioss	(1.00)					Hand vane at 0.70m - 57kPa
			1.40	63.67				Hand vane at 1.20m - 52kPa Wet at 1.40m depth
		Grey/brown silty fine to medium SAND with clay inclusions	(0.40) 1.80	63.27				
2		Firm brown gravelly sandy silty CLAY	2.00	63.07				Hand vane at 1.90m - 67kPa
		Stiff to very stiff brown gravelly sandy silty to very silty CLAY						Hand penetrometer at 2.50m - >250kPa
3								Hand penetrometer at 3.50m >250kPa
4			(4.00)					Hand penetrometer at 4.50m - >250kPa
5								Hand penetrometer at 5.50m - 109kPa
6		Exploratory Hole complete at 6.00m	6.00	59.07				17/08/2020: On completion of exploratory hole at 6.00m. Casing at 2.00m. Standing water level at 5.80m depth. On withdrawal of casing gas/groundwater standpipe installed to 6.00m depth with response zone from 1.00m to 6.00m.
7								
8								
9								
10								

Remarks:		Logged: M Benson
		Date: 21/08/2020
		Checked: M Richardson
		Date: 17/09/2020
		Site Ref: 6048/VCR
		Scale 1:50

The groundwater conditions entered on the exploratory hole logs are those observed at the time of the drilling operations and the water level may not have reached equilibrium with the surrounding water level prior to the record being taken.

Standing groundwater levels will be subject to seasonal variation or changes in local drainage conditions and could be higher at certain times of the year particularly after periods of heavy rainfall.

Remarks: 20/08/2020: Inspection pit excavated to 1.00m depth to avoid services. The groundwater conditions entered on the exploratory hole logs are those observed at the time of the drilling operations and the water level may not have reached equilibrium with the surrounding water level prior to the record being taken. Standing groundwater levels will be subject to seasonal variation or changes in local drainage conditions and could be higher at certain times of the year particularly after periods of heavy rainfall.	Logged: M Benson Date: 20/08/2020 Checked: M Richardson Date: 17/09/2020 Site Ref: 6048/VCR Scale 1:50
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GeoAssist Limited		Exploratory Hole Record Sheet				Ref: WS20		
Consultant: 0		Project: Land off Cringle Road				Sheet: 1		
Client: Cringle Rd Developments Ltd		Location: Levenshulme, Manchester				Ground Level: 65.29 m.AOD		
		Equipment: Archway Dart Rig				Co-ordinates: Easting: 388340.7(m) Northing: 393159.3(m)		
						Dates: 03/12/2020 to 03/12/2020		
Drilling Foreman: M Walton		STRATUM DESCRIPTION	Depth (Thick) (m)	Reduced Level (mAOD)	Strata Legend/ Standpipe Backfill	Samples/Tests		Field Records
Engineer/Geologist: M Benson						Depth (m) from to	Sample Type/No	
0 Grass over dark brown clayey TOPSOIL		0.20	65.09					
Dark brown/dark grey clayey sandy gravel with brick fragments - MADE GROUND		(1.10)						
1 Orange/brown with light grey gravelly sandy silty CLAY		1.30	63.99					Wet at 1.00m depth
2		(1.70)						
3		3.00	62.29					03/12/2020: On completion of exploratory hole at 3.00m. Casing at 1.00m. Standing water level 2.60m depth. On withdrawal of casing gas/groundwater standpipe installed to 3.00m depth with response zone from 1.00m to 3.00m.
Exploratory Hole terminated at 3.00m								
4								
5								
6								
7								
8								
9								
10								

Remarks:		Logged: M Benson
		Date: 07/12/2020
		Checked: M Richardson
		Date: 07/12/2020
		Site Ref: 6048/VCR
		Scale 1:50

The groundwater conditions entered on the exploratory hole logs are those observed at the time of the drilling operations and the water level may not have reached equilibrium with the surrounding water level prior to the record being taken.

Standing groundwater levels will be subject to seasonal variation or changes in local drainage conditions and could be higher at certain times of the year particularly after periods of heavy rainfall.

GeoAssist Limited		Exploratory Hole Record Sheet				Ref: WS21	
Consultant: 0		Project: Land off Cringle Road Location: Levenshulme, Manchester				Sheet: 1	
Client: Cringle Rd Developments Ltd		Equipment: Archway Dart Rig				Ground Level: 65.23 m.AOD Co-ordinates: Easting: 388354.4(m) Northing: 393183.4(m) Dates: 03/12/2020 to 03/12/2020	
Drilling Foreman: M Walton STRATUM DESCRIPTION Engineer/Geologist: M Benson		Depth (Thick) (m)	Reduced Level (mAOD)	Strata Legend/ Standpipe Backfill	Samples/Tests Depth (m) from to		Field Records
0 Grass over dark brown clayey TOPSOIL		0.20	65.03				
Dark brown/dark grey clayey sandy gravel, brick and concrete rubble - MADE GROUND		(0.90)					
1 Orange/brown with light grey gravelly sandy silty CLAY		1.10	64.13				
		(1.90)					
2							
3		3.00	62.23				
4							
5							
6							
7							
8							
9							
10							
Exploratory Hole complete at 3.00m							

03/12/2020: On completion of exploratory hole at 3.00m. Casing at 2.00m. Standing water level Nil. On withdrawal of casing gas/groundwater standpipe installed to 3.00m depth with response zone from 1.00m to 3.00m.

Remarks:		Logged: M Benson
		Date: 07/12/2020
		Checked: M Richardson
		Date: 07/12/2020
		Site Ref: 6048/VCR
		Scale 1:50

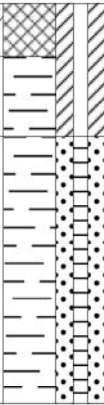
The groundwater conditions entered on the exploratory hole logs are those observed at the time of the drilling operations and the water level may not have reached equilibrium with the surrounding water level prior to the record being taken.
Standing groundwater levels will be subject to seasonal variation or changes in local drainage conditions and could be higher at certain times of the year particularly after periods of heavy rainfall.

GeoAssist Limited		Exploratory Hole Record Sheet				Ref: WS23		
Consultant: 0		Project: Land off Cringle Road				Sheet: 1		
Client: Cringle Rd Developments Ltd		Location: Levenshulme, Manchester				Ground Level: 65.21 m.AOD		
		Equipment: Archway Dart Rig				Co-ordinates: Easting: 388388.6(m) Northing: 393191.2(m)		
						Dates: 03/12/2020 to 03/12/2020		
Drilling Foreman: M Walton		STRATUM DESCRIPTION	Depth (Thick) (m)	Reduced Level (mAOD)	Strata Legend/ Standpipe Backfill	Samples/Tests		Field Records
Engineer/Geologist: M Benson						Depth (m) from to	Sample Type/No	
0 Grass over dark brown clayey TOPSOIL		0.20	65.01					
Dark grey/brown sandy silty CLAY		0.50	64.71					
Orange/brown with light grey gravelly sandy silty CLAY		(0.70)						
1 Brown gravelly sandy silty CLAY with sand inclusions		1.20	64.01					
-2		(1.80)						
-3		3.00	62.21					
Exploratory Hole complete at 3.00m								
4								
-5								
6								
-7								
-8								
-9								
-10								

Remarks:		Logged: M Benson
		Date: 07/12/2020
		Checked: M Richardson
		Date: 07/12/2020
		Site Ref: 6048/VCR
		Scale 1:50

The groundwater conditions entered on the exploratory hole logs are those observed at the time of the drilling operations and the water level may not have reached equilibrium with the surrounding water level prior to the record being taken.

Standing groundwater levels will be subject to seasonal variation or changes in local drainage conditions and could be higher at certain times of the year particularly after periods of heavy rainfall.

GeoAssist Limited		Exploratory Hole Record Sheet				Ref: WS24		
Consultant: 0		Project: Land off Cringle Road				Sheet: 1		
Client: Cringle Rd Developments Ltd		Location: Levenshulme, Manchester				Ground Level: 65.49 m.AOD		
		Equipment: Archway Dart Rig				Co-ordinates: Easting: 388426.4(m) Northing: 393208.7(m)		
						Dates: 04/12/2020 to 04/12/2020		
Drilling Foreman: M Walton		STRATUM DESCRIPTION	Depth (Thick) (m)	Reduced Level (mAOD)	Strata Legend/ Standpipe Backfill	Samples/Tests		Field Records
Engineer/Geologist: M Benson						Depth (m) from to	Sample Type/No	
0 Grass over dark brown clayey TOPSOIL			0.10	65.39				04/12/2020: On completion of exploratory hole at 3.00m. Casing at 1.00m. Standing water level Nil. On withdrawal of casing gas/groundwater standpipe installed to 3.00m depth with response zone from 1.00m to 3.00m.
Dark grey/brown sandy silty CLAY			(0.40)	65.09				
Orange/brown with light grey gravelly sandy silty CLAY			(0.60)					
			1.00	64.49				
Brown gravelly sandy silty CLAY								
			(2.00)					
-3 Exploratory Hole complete at 3.00m			3.00	62.49				
4								
-5								
-7								
-8								
-9								
-10								

Remarks:		Logged: M Benson
The groundwater conditions entered on the exploratory hole logs are those observed at the time of the drilling operations and the water level may not have reached equilibrium with the surrounding water level prior to the record being taken.		Date: 07/12/2020
Standing groundwater levels will be subject to seasonal variation or changes in local drainage conditions and could be higher at certain times of the year particularly after periods of heavy rainfall.		Checked: M Richardson
		Date: 07/12/2020
		Site Ref: 6048/VCR
		Scale 1:50

GeoAssist Limited		Exploratory Hole Record Sheet				Ref: WS25	
Consultant: 0		Project: Land off Cringle Road Location: Levenshulme, Manchester				Sheet: 1	
Client: Cringle Rd Developments Ltd		Equipment: Archway Dart Rig				Ground Level: 65.7 m.AOD Co-ordinates: Easting: 388455.6(m) Northing: 393203.8(m) Dates: 04/12/2020 to 04/12/2020	
Drilling Foreman: M Walton STRATUM DESCRIPTION Engineer/Geologist: M Benson		Depth (Thick) (m)	Reduced Level (mAOD)	Strata Legend/ Standpipe Backfill	Samples/Tests		Field Records
					Depth (m) from to	Sample Type/No	Blow Count N/(U)
0 Grass over dark brown clayey TOPSOIL		0.20	65.50				
Orange/brown with light grey gravelly sandy silty CLAY		(0.80)					
1 Brown gravelly sandy silty CLAY		1.00	64.70				
		(2.00)					
3 Exploratory Hole complete at 3.00m		3.00	62.70				
4							
5							
6							
7							
8							
9							
10							

04/12/2020: On completion of exploratory hole at 3.00m. Casing at 1.00m. Standing water level Nil. On withdrawal of casing gas/groundwater standpipe installed to 3.00m depth with response zone from 1.00m to 3.00m.

Remarks:		Logged: M Benson
The groundwater conditions entered on the exploratory hole logs are those observed at the time of the drilling operations and the water level may not have reached equilibrium with the surrounding water level prior to the record being taken.		Date: 07/12/2020
Standing groundwater levels will be subject to seasonal variation or changes in local drainage conditions and could be higher at certain times of the year particularly after periods of heavy rainfall.		Checked: M Richardson
		Date: 07/12/2020
		Site Ref: 6048/VCR
		Scale 1:50

Remarks: The groundwater conditions entered on the exploratory hole logs are those observed at the time of the drilling operations and the water level may not have reached equilibrium with the surrounding water level prior to the record being taken. Standing groundwater levels will be subject to seasonal variation or changes in local drainage conditions and could be higher at certain times of the year particularly after periods of heavy rainfall.	Logged:	M Benson
	Date:	07/12/2020
	Checked:	M Richardson
	Date:	07/12/2020
	Site Ref:	6048/VCR
Scale 1:50		

GeoAssist Limited		Exploratory Hole Record Sheet				Ref: WS28	
Consultant: 0		Project: Land off Cringle Road Location: Levenshulme, Manchester				Sheet: 1	
Client: Cringle Rd Developments Ltd		Equipment: Archway Dart Rig				Ground Level: 65.26 m.AOD Co-ordinates: Easting: 388368.8(m) Northing: 393190.1(m) Dates: 04/12/2020 to 04/12/2020	
Drilling Foreman: M Walton STRATUM DESCRIPTION Engineer/Geologist: M Benson		Depth (Thick) (m)	Reduced Level (m.AOD)	Strata Legend/ Standpipe Backfill	Samples/Tests Depth (m) from to		Field Records
0 Grass over dark brown clayey TOPSOIL		0.20	65.06				
Dark brown/dark grey clayey sandy gravel with brick and concrete fragments - MADE GROUND							
-1							
		(2.30)					
-2							
		2.50	62.76				Wet at 2.00m depth
Dark grey/brown clayey PEAT		(0.40)					
-3 Light grey/brown organic very silty CLAY		2.90	62.36				
		(1.10)					
4 Exploratory Hole complete at 4.00m		4.00	61.26				04/12/2020: On completion of exploratory hole at 4.00m. Casing at 1.00m. Standing water level Nil. On withdrawal of casing exploratory hole backfilled and reinstated.
-5							
-6							
-7							
-8							
-9							
-10							

Remarks:		Logged: M Benson
		Date: 07/12/2020
		Checked: M Richardson
		Date: 07/12/2020
		Site Ref: 6048/VCR
		Scale 1:50
The groundwater conditions entered on the exploratory hole logs are those observed at the time of the drilling operations and the water level may not have reached equilibrium with the surrounding water level prior to the record being taken. Standing groundwater levels will be subject to seasonal variation or changes in local drainage conditions and could be higher at certain times of the year particularly after periods of heavy rainfall.		