



Client:

Storage World Self Storage & Workspace LLP
40 Ashton Old Rd
Manchester
M12 6LP

Architect/Consultant

Thomasons
3 Brewery Yard
Deva City Office Park
Trinity Way
Manchester
M3 7BB

Ground Gas Risk Assessment

Storage World Ambrose Street, Manchester

Jan 2023

Site Ref: 6101/VAJ-GRA v1.00

Unit 4
Sheffield Street
Heaton Norris
Stockport
Cheshire
SK4 1RU
Telephone : 0161 480 8885
e-mail : info@geoassist.co.uk

Client:

Storage World Self Storage & Workspace LLP
40 Ashton Old Rd
Manchester
M12 6LP

Architect/Consultant

Thomasons
3 Brewery Yard
Deva City Office Park
Trinity Way
Manchester
M3 7BB

Ground Gas Risk Assessment

1. Introduction	3
2. Description of the Site	3
2.1 Present	3
2.2 Proposed Development	4
3. Ground Gas	4
4. Conceptual Model	5

Appendices

- A1. Site Plan
- A2. Gas Monitoring Results & Risk Assessment
- A3. Exploratory Hole Logs
- A4. Gas Monitor Calibration Certificate

Client:

Storage World Self Storage & Workspace LLP
40 Ashton Old Rd
Manchester
M12 6LP

Architect/Consultant

Thomasons
3 Brewery Yard
Deva City Office Park
Trinity Way
Manchester
M3 7BB

Ground Gas Risk Assessment

1. Introduction

This report forms the gas risk assessment following the completion of a Phase II intrusive investigation at Storage World Ambrose Street, Manchester. Further background details are provided within the Phase I and Phase II reports referenced 6101/VAJ undertaken by GeoAssist. The work was commissioned following acceptance of the quotation and an instruction to proceed issued on behalf of Storage World Self Storage & Workspace LLP on 3rd November 2022.

The approximate grid reference for the centre of the site is 387260, 397200. The particular area of the site scheduled for investigation is outlined with a solid red line on the site plan in Appendix A1. The positions of exploratory holes are also indicated on the plan.

2. Description of the Site

2.1 Present

The site is located to the northern side of Ambrose Street at the junction of Pottery Lane and is presently occupied by a large warehouse structure with associated exterior hardstanding areas. The building is subdivided into smaller commercial/light industrial and retail lettings. The site is roughly rectangular in shape and the general topography of the site is relatively level. A small brick bunded above ground diesel storage tank is located between the railway and the rear of the building to the north approximately mid-way along the building from east to west. The Tank was noted to be empty and did not look like it had been used for some years. A faint odour of stale diesel was noted as is common in such circumstances. No obvious signs of leaks or containment failure were noted.

A railway line forms the northern boundary to the site. Commercial/industrial property is located along the eastern boundary of the site. The southern boundary to the site abuts Ambrose Street over which more commercial/industrial property is located. To the west the site abuts Pottery Lane across which more commercial /warehousing/light industrial units are located.

Where observed the condition of the concrete floor was not uniform or consistent. At the time of the site walkover no visual or olfactory observations of contaminants were noted.

2.2 Proposed Development

The proposed development comprises a new storage facility occupying a similar footprint to the existing unit with new concrete floor slabs and external hardstanding. The proposed plan for the Site forms appendix A2 to this report.

3. Ground Gas

The subsurface stratigraphy obtained from the exploratory holes on this site proves that the depth of made ground is variable across the site and no putrescible materials were present capable of generating ground gases at significant quantities such that the proposed development would be impacted.

Findings from this ground gas risk assessment confirm that made ground with the potential of producing quantities of ground gas has not been identified on the site.

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

Analysis of the gas monitoring data recorded from the installations show that Methane, Hydrogen Sulphide and Carbon Monoxide have not been detected during the monitoring period. Carbon Dioxide has been detected at levels between 0.0 and 1.4 % v/v within the exploratory holes. Peak CO₂ levels were detected in BH6 during the monitoring readings undertaken on the 16/12/2022. Gas flow rates have been recorded at the Limit of detection during the monitoring period. The combined worst-case Gas Screening Values (GSVs) in accordance with Ciria C665 are calculated at less than 0.001 across the site.

Consequently, the risk to any future development from potential ground gas ingress is classified as low based on the data, the ground conditions encountered in the exploratory holes and the results of the ground gas monitoring undertaken. The information indicates that the site is a Ciria Characteristic Situation 1 site and no particular measures will need to be adopted based on the recommendations within Ciria C665 and Claire RB 17 best practice guidance. Consideration to increasing the Characteristic situation from 1 to 2 has been made but dismissed on the grounds that calculated GSV values are low. This is further justified by the low sensitivity of the end user (commercial) and the likely design form that such buildings take ie a cast insitu floor slab with s DPM and the large volume open air space commercial portal frame structures take.

Based on the above information and the ground gas risk assessment it is considered that the duration and extent of monitoring undertaken to date adequately allows for a simplified ground gas risk assessment to be undertaken. Consequently, the findings in this report should be considered to be sufficient to correctly assess the low risk to the development from ground gas and that no further gas monitoring is required.

4. Conceptual Model

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

Table 4.0 Amended Conceptual Site Model based on information as 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 & Present ON SITE Land uses:</i>				
1. Greenfield Land/ Residential Property	Ground contamination Low Risk	See DoE Profiles	~~Dermal Contact~~ ~~Ingestion~~ ~~Inhalation~~	Site Users Construction workers Controlled Waters
	Gas from in-filled ground Low Risk	None	Vertical and Lateral Migration	Site Users Future Buildings & Services
2. Made Ground	Ground contamination Low to moderate Risk Given a commercial end use	Asbestos Chrysotile Identified	~~Dermal Contact~~ ~~Ingestion~~ ~~Inhalation~~	Site Users (low risk) Construction workers (low to moderate risk)
	Gas from in-filled ground Low Risk	CO2 GSV = 0.001	~~Vertical and Lateral Migration~~	Site Users Future Buildings & Services
3. Boiler Works	Ground contamination Low to moderate Risk Given a commercial end use	Asbestos Chrysotile Identified	~~Dermal Contact~~ ~~Ingestion~~ ~~Inhalation~~	Site Users (low risk) Construction workers (low to moderate risk)
	Gas from in-filled ground Low Risk	CO2 GSV = 0.001	~~Vertical and Lateral Migration~~	Site Users Future Buildings & Services
4. Iron Works with Chimney	Ground contamination Moderate Risk Given a commercial end use	None Identified	~~Dermal Contact~~ ~~Ingestion~~ ~~Inhalation~~	Site Users Construction workers Controlled Waters
	Gas from in-filled ground Low Risk	CO2 GSV = 0.001	~~Vertical and Lateral Migration~~	Site Users Future Buildings & Services
5. Works	Ground contamination Low Risk Given a commercial end use	None Identified	~~Dermal Contact~~ ~~Ingestion~~ ~~Inhalation~~	Site Users Construction workers Controlled Waters
	Gas from in-filled ground Low Risk	CO2 GSV = 0.001	~~Vertical and Lateral Migration~~	Site Users Future Buildings & Services
<i>Previous OFF SITE land uses within 250m as indicated by Historical Plans Including:</i>				
7. Refuse Heap	Ground contamination Low Risk	See DoE Profiles	None	Site Users Construction workers Controlled Waters
	Gas from in-filled ground Low Risk Site developed	Methane, Carbon Dioxide	None	Site Users Future Buildings & Services
8. Chemical Works	Ground contamination Low Risk	See DoE Profiles	None	Site Users Construction workers Controlled Waters
	Gas from in-filled ground Low Risk	None	None	Site Users Future Buildings & Services
9. Railway Works	Ground contamination Low Risk	See DoE Profiles	None	Site Users Construction workers Controlled Waters
	Gas from in-filled ground Low Risk	None	None	Site Users Future Buildings & Services
10. Starch Works	Ground contamination Low Risk	See DoE Profiles	None	Site Users Construction workers Controlled Waters

Storage World Ambrose Street, Manchester

	Gas from in-filled ground Low Risk	None	None	Site Users Future Buildings & Services
11. Cotton Mill	Ground contamination Low Risk	See DoE Profiles	None	Site Users Construction workers Controlled Waters
	Gas from in-filled ground Low Risk	None	None	Site Users Future Buildings & Services
12. Soap Works	Ground contamination Low Risk	See DoE Profiles	None	Site Users Construction workers Controlled Waters
	Gas from in-filled ground Low Risk	None	None	Site Users Future Buildings & Services
13. Kiln	Ground contamination Low Risk	See DoE Profiles	None	Site Users Construction workers Controlled Waters
	Gas from in-filled ground Low Risk	None	None	Site Users Future Buildings & Services
14. Gas & Oil Engine Works	Ground contamination Low Risk	See DoE Profiles	None	Site Users Construction workers Controlled Waters
	Gas from in-filled ground Low Risk	None	None	Site Users Future Buildings & Services
15. Print Finishing Mill	Ground contamination Low Risk	See DoE Profiles	None	Site Users Construction workers Controlled Waters
	Gas from in-filled ground Low Risk	None	None	Site Users Future Buildings & Services
16. Rubber Works	Ground contamination Low Risk	See DoE Profiles	None	Site Users Construction workers Controlled Waters
	Gas from in-filled ground Low Risk	None	None	Site Users Future Buildings & Services
17. Garage	Ground contamination Low Risk	See DoE Profiles	None	Site Users Construction workers Controlled Waters
	Gas from in-filled ground Low Risk	None	None	Site Users Future Buildings & Services
18. Coal Workings & Mineral Extraction	Geotechnical Hazard Low Risk	None	None	Humans (site users) Future Buildings & Services
	Ground contamination Low Risk	None	None	Site Users Services
	Mine Gas Low Risk	None	None	Humans (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.

Table 8.6 Typical scope of protective measures (risk management)

Characteristic situation (From Table 8.5)	Residential building (Not low-rise traditional housing) ¹		Office/commercial/industrial development	
	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

The complete gas risk assessment forms appendix A2 to this report.



Matthew Benson MSc GMICE
Geotechnical/Environmental Engineer



Mark Richardson MSc CEng MICE
Technical Director

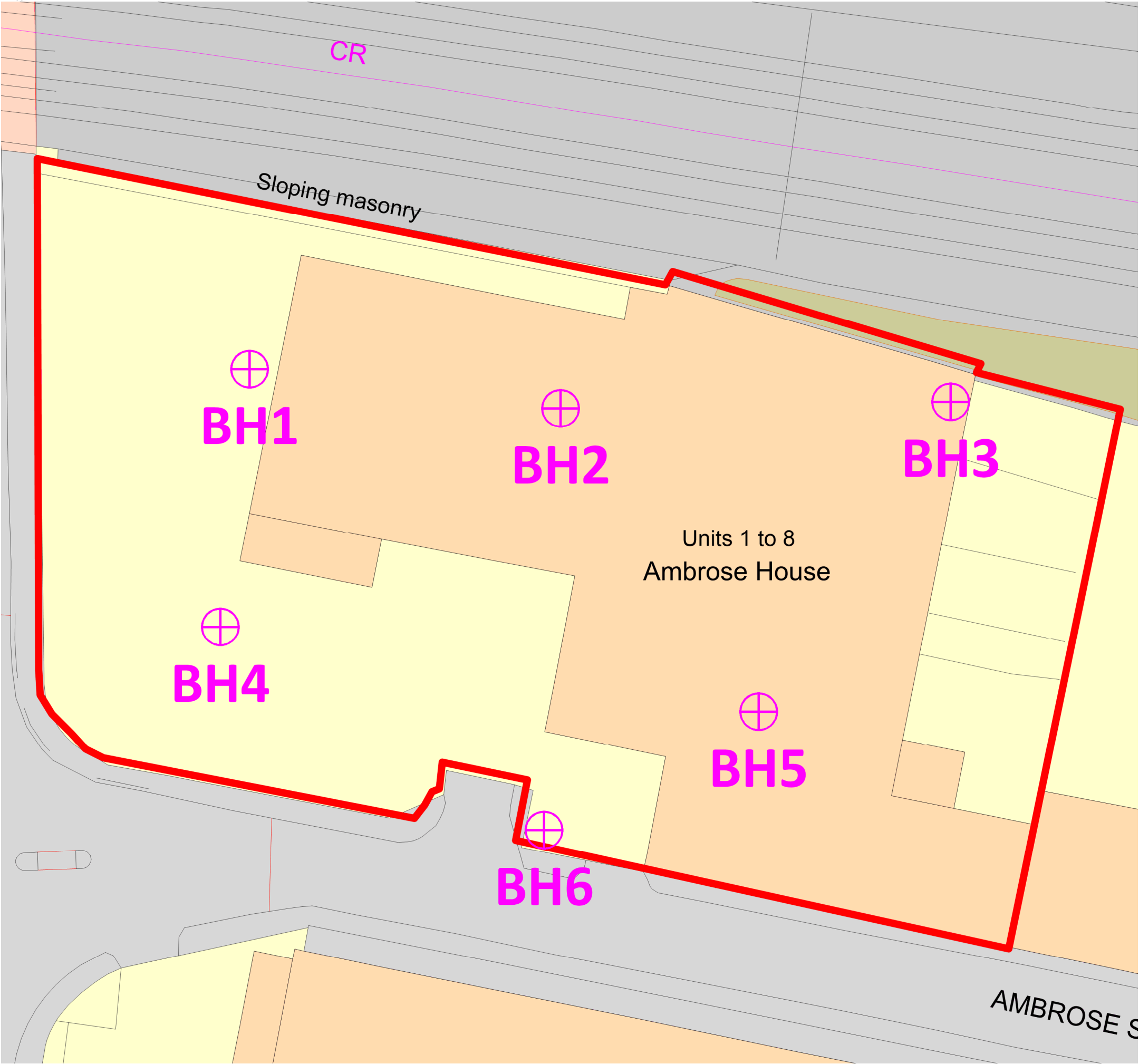
Field investigations have been restricted to a level of detail required to achieve the stated objectives of the work. Ground conditions are, and can be, variable and have only been tested at isolated locations across the site. Therefore, the potential exists for ground conditions to be encountered which 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 Storage World Self Storage & Workspace LLP. The report is confidential to Storage World Self Storage & Workspace LLP, 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. Storage World Self Storage & Workspace LLP may use the report for their/her/his own purposes.

Appendix A

- A1 Site Plan & Exploratory Hole Locations
- A2 Gas Monitoring Results & Risk Assessment
- A3 Exploratory Hole Logs
- A4 Gas Monitor Calibration Certificate



A1 Site Plan

Site Name	Storage World Ambrose Street
Location	Manchester
GeoAssist Ref	
Client	Storage World Self Storage & Workspace LLP
	40 Ashton Old Rd Manchester M12 6LP
Planning Consultant	
NGR (centre of site)	387260,397200
Production Date	Feb 2023
Survey Method	
Surveyor	Others
Status	Final v1.00
Base Survey	OSGB36

Site Reference:	6101 VAJ
Project Site:	Storage World Ambrose Street
Project Location:	Manchester
Client:	Storage World Self Storage & Workspace

Factual Data Summary										Interpretation & Risk Assessment					
BH Ref.	Response zone / strata	Evidence of Gas contamination	No of Monitoring occasions	Max. Recorded Methane	Max. Recorded Carbon Dioxide (%)	Min. Oxygen (%)	Max. Recorded Flow (l/hr)	Water Level (mbgl)	Atmospheric Pressure Range (mb)	Is Water Level within top 10 % of the response zone?	Are readings considered representative	Explanation / Justification	Gas Screening Value (GSV) Methane *	Gas Screening Value (GSV) Carbon Dioxide *	Risk Classification & Characteristic Situation **
BH1	1.00 - 4.00m Clay	No	4	0	0.6	16.8	0	1.9	982-1028	No	Yes	Clay Aquiclude holding water	0.000	0.001	Low Risk Characteristic Situation 1
BH3	1.00 - 4.00m Made Ground over Clay	No	Not Accessible.										-	-	
BH6	1.00 - 4.50m Made Ground over Clay with sand bands	No	4	0	1.4	18.1	0	0.8	980-1027	Yes	Yes	Clay Aquiclude holding water	0.000	0.001	Low Risk Characteristic Situation 1
Worst Case	1.00 - 4.00m Made Ground over Clay with sand bands	No	8	0	1.4	16.8	0	0.8	980-1028	No	Yes	Clay Aquiclude holding water	0.000	0.001	Low Risk Characteristic Situation 1

* Where no flow measured, GSV value is determined with an instrument minimum value of 0.1 l/hr

GeoAssist Limited Consultant: Thomasons Client: Storage World Self Storage & Workspace LLP	Exploratory Hole Record Sheet Project: Storage World Ambrose Street Location: Manchester		Ref: BH1 Sheet: 1					
	Equipment: Archway Dart Rig		Ground Level: 52.75 m.AOD Co-ordinates: Easting: 387241.3(m) Northing: 397217.2(m) Dates: 16/11/2022 to 16/11/2022					
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	Sample Type/No	Blow Count N/(U)	Field Records

0	Grey/brown sandy gravel, brick and concrete fragments - MADE GROUND	(0.40) 0.40	52.35		0.30	C1		
	Stiff to very stiff brown with light grey gravelly sandy silty CLAY	(0.60) 1.00	51.75		0.80 1.00 1.20	D1 CP1 D2	9	TRLDCP Test CBR at 0.40m- 13%
1	Stiff to very stiff brown high to very high strength gravelly slightly sandy silty CLAY							Hand penetrometer at 1.20m - 164kPa
2					2.00	CP2	13	Hand penetrometer at 1.80m - >250kPa
3		(3.60)			3.00	CP3	13	Hand penetrometer at 2.50m - 220kPa
4		4.60	48.15		4.00	CP4	7	Hand penetrometer at 3.50m - 182kPa
5	Very stiff brown/grey very high strength gravelly sandy silty CLAY with occasional sand inclusions	(0.40) 5.00	47.75		4.90	CP5	9	Hand penetrometer at 4.50m - 144kPa Hand penetrometer at 4.80m - 219kPa
	Exploratory Hole complete at 5.00m							16/11/2022: On completion of exploratory hole at 5.00m. Casing at 2.00m. Standing water level Nil with casing. On withdrawal of casing groundwater/gas monitoring standpipe installed to 4.00m with response zone from 1.00m to 4.00m.
6								
7								
8								
9								
10								

Remarks: 16/11/2022: 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: 21/11/2022 Checked: M Richardson Date: 25/11/2022 Site Ref: 6101/VAJ Scale 1:50
---	---

GeoAssist Limited		Exploratory Hole Record Sheet				Ref: BH2	
Consultant: Thomasons		Project: Storage World Ambrose Street				Sheet: 1	
Client: Storage World Self Storage & Workspace LLP		Location: Manchester				Ground Level: NR m.AOD	
		Equipment: Archway Dart Rig				Co-ordinates: Easting: NR(m) Northing: NR(m)	
						Dates: 14/11/2022 to 14/11/2022	
Drilling Foreman: M Walton		Depth (Thick) (m)	Reduced Level (mAOD)	Strata Legend/ Standpipe Backfill	Samples/Tests		Field Records
STRATUM DESCRIPTION Engineer/Geologist: M Benson					Depth (m) from to	Sample Type/No	
0 CONCRETE		0.10					
Brown sandy gravel with brick and sandstone fragments - MADE GROUND		0.20			0.40	C1	
Very soft to firm grey with black very low to medium strength inclusions very silty clay - MADE GROUND					0.50	CP1	9
1		(1.80)			0.90	D1	
					1.00	CP2	1
					1.50	CP3	4
2		2.00			2.00	CP4	10
Firm to stiff brown medium to high strength gravelly sandy silty CLAY with cobbles from 3.00 to 4.00m depth					2.20	D2	Hand penetrometer at 2.20m - 209kPa
3		(3.00)			3.00	CP5	15
							Hand penetrometer at 3.50m - >250kPa
4					4.00	CP6	13
							Hand penetrometer at 4.50m - 170kPa
5		5.00			4.90	CP7	26
Exploratory Hole complete at 5.00m							14/11/2022: On completion of exploratory hole at 5.00m. Casing at 2.00m. Standing water level Nil with casing. On withdrawal of casing exploratory hole backfilled and reinstated.
6							
7							
8							
9							
10							
Remarks: 14/11/2022: Concrete slab precored 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: 21/11/2022 Checked: M Richardson Date: 25/11/2022 Site Ref: 6101/VAJ Scale 1:50	

GeoAssist Limited	Exploratory Hole Record Sheet						Ref:	BH3
Consultant:	Project: Storage World Ambrose Street						Sheet:	1
Thomasons	Location: Manchester							
Client:	Equipment:						Ground Level:	NR m.AOD
Storage World Self Storage & Workspace LLP	Archway Dart Rig						Co-ordinates:	Easting: NR(m) Northing: NR(m)
							Dates:	14/11/2022 to 14/11/2022
Drilling Foreman:	M Walton	Depth (Thick) (m)	Reduced Level (mAOD)	Strata Legend/ Standpipe Backfill	Samples/Tests			Field Records
STRATUM DESCRIPTION					Depth (m) from to	Sample Type/No	Blow Count N/(U)	
Engineer/Geologist:	M Benson							

Depth (m)	Description	Soil Type / Material	Penetration Test Results (kPa)	Notes
0.00 - 0.10	CONCRETE	Concrete	-	
0.10 - 0.30	Light grey concrete fragments - MADE GROUND	Made Ground	-	
0.30 - 0.50	Orange/brown brick fragments - MADE GROUND	Made Ground	-	
0.50 - 2.70	Very soft to soft grey with black silty clay, ash and cinders - MADE GROUND	Made Ground	(2.20)	
2.70 - 6.00	Stiff to very stiff brown/grey high to very high strength gravelly sandy silty CLAY	Clay	(3.30)	
6.00 - 6.00	Exploratory Hole complete at 6.00m	-	-	

Remarks: 14/11/2022: Concrete slab precored 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: 21/11/2022 Checked: M Richardson Date: 25/11/2022 Site Ref: 6101/VAJ Scale 1:50
---	--

[illegible]

Remarks: 16/11/2022: 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: 21/11/2022 Checked: M Richardson Date: 25/11/2022 Site Ref: 6101/VAJ Scale 1:50
--	--

GeoAssist Limited		Exploratory Hole Record Sheet					Ref: BH5	
Consultant: Thomasons		Project: Storage World Ambrose Street Location: Manchester					Sheet: 1	
Client: Storage World Self Storage & Workspace LLP		Equipment: Archway Dart Rig					Ground Level: NR m.AOD Co-ordinates: Easting: NR(m) Northing: NR(m) Dates: 14/11/2022 to 14/11/2022	
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 Sample Type/No		Blow Count N/(U)	Field Records
0 CONCRETE		0.30						
Dark grey/brown sandy gravel with cinders, brick and timber fragments - MADE GROUND		(1.10)			0.50 0.50	CP1 C1	15	
1		1.40			1.00 1.00	CP2 D1	3	
Firm to stiff brown medium to high strength gravelly sandy silty CLAY		(0.60)			1.50 1.60	CP3 D2	7	Hand penetrometer at 1.60m - 160kPa
2 Very stiff brown very high strength gravelly sandy silty CLAY		2.00			2.00	CP4	10	
3					3.00	CP5	9	Hand penetrometer at 2.50m - 187kPa
4		(3.00)			4.00	CP6	8	Hand penetrometer at 3.50m - 162kPa
5		5.00			4.90	CP7	16	Hand penetrometer at 4.50m - 170kPa
Exploratory Hole complete at 5.00m								14/11/2022: On completion of exploratory hole at 5.00m. Casing at 2.00m. Standing water level Nil with casing. On withdrawal of casing exploratory hole backfilled and reinstated.
6								
7								
8								
9								
10								
Remarks: 14/11/2022: Concrete slab precored 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: 21/11/2022 Checked: M Richardson Date: 25/11/2022 Site Ref: 6101/VAJ Scale 1:50	

GeoAssist Limited	Exploratory Hole Record Sheet		Ref: BH6
	Project: Storage World Ambrose Street Location: Manchester		Sheet: 1
Consultant: Thomasons	Equipment: Archway Dart Rig		Ground Level: 51.86 m.AOD Co-ordinates: Easting: 387268.8(m) Northing: 397174(m) Dates: 15/11/2022 to 15/11/2022
Client: Storage World Self Storage & Workspace LLP	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 Sample Type/No Blow Count N/(U)
		Field Records	

0	CONCRETE	0.10	51.76									
	Brown sand, gravel and brick fragments - MADE GROUND	0.30	51.56			0.30	C1					
	Soft to firm brown/grey gravelly sandy silty clay - MADE GROUND	(0.70)				0.80	D1					
		1.00	50.86			1.00	CP1	1			Wet at 1.00m depth	
1	Very soft brown with grey gravelly sandy silty clay - MADE GROUND	(0.90)				1.40	D2					
		1.90	49.96									
2	Stiff brown high strength gravelly sandy silty CLAY					2.00	CP2	6			Hand penetrometer at 1.90m - 122kPa Hand penetrometer at 2.20m - 109kPa	
		(1.10)										
3	Brown silty fine to medium SAND	3.00	48.86			3.00	CP3	11			Hand penetrometer at 2.80m - 164kPa	
	Stiff brown high strength gravelly sandy silty CLAY	3.20	48.66								Wet from 3.20m depth	
		(0.80)									Hand penetrometer at 3.50m - 134kPa	
4	Medium dense brown with occasional black silty fine to medium SAND	4.00	47.86			4.00	CP4	12				
		(0.80)										
		4.80	47.06									
5	Brown/grey gravelly sandy silty CLAY	5.00	46.86			4.90	CP5	21			15/11/2022: On completion of exploratory hole at 5.00m. Casing at 2.00m. Standing water level at 3.80m with casing. On withdrawal of casing groundwater/gas monitoring standpipe installed to 4.50m with response zone from 1.00m to 4.50m.	
	Exploratory Hole complete at 5.00m											
6												
7												
8												
9												
10												

Remarks: 15/11/2022: 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: 21/11/2022 Checked: M Richardson Date: 25/11/2022 Site Ref: 6101/VAJ Scale 1:50
---	---

TEST DATE AND CONDITIONS			
Date		23/11/2022	
Atmospheric Pressure		967	mB
Ambient Temperature		19.6	°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



GAS DATA
LISTEN • ANALYSE • INFORM

Fax 02476307711

Customer	GeoAssist Ltd
Certificate Number	123690
Order Number	332653

Serial Number	13237
Software Version	G436-00.0027/0010

Recalibration DUE Date
23/11/23

Instrument Checks					
Keyboard	✓		Display Contrast	✓	
Pump Flow In	450	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 %	
	59.7	60	40.1	40	20.9	20.9
	Accept ±3.0		Accept ±3.0		Accept ±0.5	
	5.1	5	5.1	5	6.0	6
	Accept ±0.3		Accept ±0.3		Accept ±0.3	
Zero Reading 100% N ₂	0.0	0	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	
H ₂ S	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	30		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		967	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	-29.8	Accept ± 3.0	-346	-348	Accept ± 50
-3	-3.0	Accept ± 1.0	-18	-18	Accept ± 6.0
0	0.0	Accept ± 0.0	0	0	Accept ± 0.5
3	3.0	Accept ± 0.5	17	17	Accept ± 3.0
30	30.0	Accept ± 3.0	388	386	Accept ± 50
60	60.5	Accept ± 6.0	1191	1201	Accept ± 130
90	92.2	Accept ± 9.0	2349	>>>>	Accept ± 250

Temperature Checks		
Calibration Temperature	Instrument Temperature Reading $^{\circ}\text{C}$	
Applied Temperature $^{\circ}\text{C}$		
-10	-10.0	Accept ± 2.0
0	0.0	Accept ± 1.0
30	30.0	Accept ± 1.0
60	60.0	Accept ± 1.0
100	100.0	Accept ± 1.0

Technician:
Jack Rutland

Date Tested:
23/11/2022

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, BS EN ISO14001:2015, BS EN ISO45001:2018 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.

Gas Data Ltd is certified to BS EN ISO9001:2015, BS EN ISO14001:2015, BS EN ISO45001:2018.