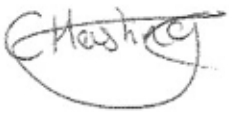


GROUNDTECH
CONSULTING

Job title:	Aldi Holbeach
Report type:	Permanent Ground Gas Risk Assessment
Prepared for:	Aldi Stores Limited
Date:	January 2023

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Document Control Form	
PROJECT	*ALDI HOLBEACH*
REPORT NAME	*PERMANENT GROUND GAS RISK ASSESSMENT*
REPORT REFERENCE	*GRO-21400-4202*
STATUS	*FINAL*
ISSUE DATE	*31 JANUARY 2023*
REVISION	
CLIENT	*ALDI STORES LIMITED*
CLIENT CONTACT	-
For and Behalf of Groundtech Consulting	
SIGNATURE	
AUTHOR	Connor Hastings BSc (Hons)
SIGNATURE	
CHECKED	Richard Wyatt MEng (Hons) FGS
SIGNATURE	
REVIEWED	James Doyle BSc (Hons) CGeol FGS

Introduction

We are pleased to present our findings following the completion of the gas monitoring programme undertaken at the above site for the proposed commercial development.

Preliminary Risk Assessment Information

A Geo-Environmental Appraisal was carried out by Groundtech Consulting referenced *GRO-21400-3186*, dated 25 April 2022.

The site is occupied by two rectangular shaped commercial buildings, one along the western boundary and the other in the eastern area. The buildings in the western area of the site are currently still active whereas the eastern building has been vacant for some time.

From information gained from the PRA, Made Ground is likely present beneath the site due to the historical development onsite and deep Made Ground may be present associated with the historic drain, former pond/landfill and previously demolished buildings. Depending on the composition of the backfill material, ground gases may be generated. The former onsite sewage treatment works is also a potential source of ground gas depending on the construction and demolition and the location of the demolished materials.

Potential offsite sources of ground gas include brick pits, marshland and varying ponds. Tidal Flat Deposits are also indicated around the site and may be a source.

A Moderate to High Risk from permanent ground gases was determined.

Ground Model

Made Ground

Made Ground was encountered in all locations and was generally present beneath the site to depths between 0.2m and 0.7m bgl, however in CP2 and SuDS2 located in the central and eastern areas of the site, Made Ground was observed to a maximum depth of 2.5m and 1.3m respectively.

The Made Ground encountered in SuDS2 is anticipated to be associated with the former infilled pond and the Made Ground within CP2 is likely to be associated with the former drain.

Four main Made Ground populations were identified during the investigation and are described below:

- *Pale brown sandy gravel in all exploratory holes excluding WS12, WS13 and WS15 between depths of 0.05m and 0.7m bgl.*
- *Black ashy gravel in WS8 and WS12 between 0.05m and 0.35m bgl.*
- *Very soft gravelly clay was in CP2 between 0.3m to 2.5m bgl.*
- *Demolition material inclusive of bricks, roof tiles and suspected asbestos sheeting was encountered in SuDS2, which was coated in a black hydrocarbon odorous liquid between depths of 0.5m to 1.3m bgl.*

Natural Ground

Three main natural stratification were identified during the investigation and are described below:

- *Very soft to soft gravelly Clay in all of the exploratory holes from a minimum depth of 0.4m to a maximum depth of 9.0m bgl.*

- *Loose to medium dense very clayey very silty Sand in CP1 to CP3 between depths of 5.0m and 16.0m bgl.*

- *Firm to stiff gravelly Clay in CP1 to CP3 between depths of 13.0m and 19.7m bgl.*

Bedrock

Bedrock was encountered in CP1 to CP3 from depths of between 18.2m and 19.7m bgl and comprised extremely weak residually weathered Mudstone recovered as stiff gravelly silty Clay.

Groundwater

Shallow groundwater strikes were observed beneath the site between depths of 0.8m and 1.5m bgl, this was encountered in all locations within the Tidal Flat deposits. A second groundwater strike was observed in CP1 at 9.0m and CP3 at 9.5m bgl within clayey silty Sand.

The exploratory hole positions are shown on the Exploratory Hole Location Plan *GRO-21400-P04* and the logs are appended.

Gas Monitoring

During the Ground Investigation works, monitoring standpipes were installed in the following holes and a summary of the installations is provided in the table below.

Location	Depth (m)	Response Zone (m bgl)	Targeted Strata	Reason
CP1	*6.0*	*3.0 – 6.0*	*Very Soft Clay*	*Ground Gas*
CP2	*6.0*	*3.0 – 6.0*	*Very Soft Clay*	*Ground Gas*
CP3	*6.0*	*3.0 – 6.0*	*Very Soft Clay*	*Ground Gas*
WS01	*4.0*	*1.0 – 4.0*	*Very Soft Clay*	*Ground Gas*
WS06	*4.0*	*1.0 – 4.0*	*Very Soft Clay*	*Ground Gas*
WS08	*4.0*	*1.0 – 4.0*	*Very Soft Clay*	*Ground Gas*
WS13	*4.0*	*1.0 – 4.0*	*Very Soft Clay*	*Ground Gas*
WS14	*4.0*	*1.0 – 4.0*	*Very Soft Clay*	*Ground Gas*

The standpipes consisted of polyvinyl chloride (PVC) and high-density polyethylene (HDPE) pipe - a bentonite seal was placed around the plain pipe and a clean gravel pack was placed around the slotted pipe.

Four ground gas monitoring visits have been completed between 22nd February and 21st July 2022. Monitoring of the weather conditions and predicted atmospheric pressures (Met Office Surface Pressure Charts) was carried out up to 72 hours in advance of proposed monitoring visits in order that a reasonable period of data was obtained to determine atmospheric trends, and also to target the 'worst case' scenario.

Permanent gas and flow rate monitoring was carried out using a GFM436 infrared gas monitor with integral electronic flow analyser. The measurements taken are listed below:

- *Oxygen (O_2), carbon dioxide (CO_2) and methane (CH_4) as the percentage volume in air (%v/v).*
- *Hydrogen sulphide (H_2S) and carbon monoxide (CO) as the percentage volume in air (%v/v).*
- *Lower Explosive Limit (% LEL) of methane.*
- *Atmospheric and borehole pressure, including pressure trend.*
- *Flow measurements (l/hr).*

Both peak and steady state conditions were monitored to understand the behaviour of the permanent ground gas, the steady state conditions were recorded by allowing the gas monitor to run for a minimum of 3 minutes.

Permanent gas and groundwater monitoring results are appended.

Gas Monitoring Results

Concentrations of methane (CH_4) have been recorded in all of the standpipes to a maximum concentration of 67.3% v/v and detectable levels of carbon dioxide (CO_2) were recorded up to a maximum level of 32.2% v/v. Associated depleted oxygen (O_2) was recorded with a minimum concentration of 0.2% v/v being detected.

Generally, no positive flow rates were recorded in the standpipes with the exception of two occurrences. Positive gas flow rates of 18.4 l/hr have been recorded during the second monitoring visit in CP2 and at 3.3 l/hr in WS14 during the third visit. Positive borehole pressures were recorded in these boreholes and relates to gas trapped within the plain pipe as the groundwater was above response zone of the standpipe. These flow rates are therefore not considered to be representative of site conditions as no other positive flow rates have been recorded.

The atmospheric pressure ranged between 1000mb and 1023mb and the monitoring was carried out during periods of steady, falling and rising barometric pressure.

Groundwater was encountered within all of the standpipes between 0.49m and 1.48m bgl and was present within the response zone of the standpipes on occasions.

Characterisation of the Gas Screening Value (GSV)

In accordance with CIRIA Report C665, November 2007 it is felt that an adequate risk assessment can be undertaken based on the following limiting factors:

- *The proposed development has been considered as **low sensitivity** based on the site being developed with a commercial outlet (Table 5.5 – Typical/Idealised frequency and period of monitoring, after Wilson et al, 2005).*
- *The risk associated with the generation potential of a source is considered as **moderate**, (assessment based on the environmental setting as well as observations noted during the fieldworks).*

Based upon the results recorded, in accordance with CIRIA Report C665, the risk to the site from ground gases has been assessed by converting the results to gas screening values (GSVs), calculated by multiplying the typical maximum gas concentrations with the recorded maximum positive flow rates. In addition, individual "hazardous gas flow rates" (Qhg) have been derived for each monitoring point.

GSV (l/hr) = max borehole flow rate (l/hr) x max gas concentration (%)

For this assessment, the maximum recorded concentrations of carbon dioxide of 32.2% v/v and methane of 67.3% v/v have been used. Positive flow rates of 18.4 l/hr and 3.3 l/hr have been detected however, these are not representative of the site and so a flow rate of 0.1 l/h and has been used to calculate the GSV.

Carbon Dioxide GSV = 0.322 (32.2%) x 0.1 = 0.0322 l/hr

Methane GSV = 0.673 (67.3%) x 0.1 = 0.0673 l/hr

Assessment

Made Ground is generally present beneath the site to depths between 0.2m and 0.7m bgl, however in CP2 and SuDS2 located within the central and eastern area of the site, Made Ground was observed to a maximum depth of 2.5m and 1.3m respectively and is likely associated with a former pond and drain.

Carbon dioxide concentrations recorded are typically less than 3.5% v/v. However, carbon dioxide concentrations have reached 32.2% v/v at a single location (WS14) and is likely associated with the former infilled pond/landfill which was identified as a potential ground gas source that is located immediately south of WS14.

High methane concentrations have been recorded across the development area and are likely associated with the natural organic Tidal Flat Deposits encountered beneath the site or the infilled pond/landfill, drain feature or sewage works.

When considering the results, in accordance with CIRIA C665 (Section A Development and Table 8.5 – Modified Wilson and Card Classification) it can be seen that the GSV values for methane and carbon dioxide correspond with CS1 criteria (GSV of less than 0.07 l/hr). However, significantly high concentrations of methane and carbon dioxide have consistently been recorded above the respective threshold values of 1.0% v/v for methane and 5.0% v/v for carbon dioxide and the classification of the site has been increased to CS3 based on the levels recorded.

Characteristic Situation 3

An extract of the table is presented below.

<table>
<tr><th rowspan="3">Characteristic Situation (Wilson and Card)</th><th rowspan="3">Traffic Light Classification (NHBC)</th><th colspan="4">Methane</th><th colspan="4">Carbon Dioxide</th></tr>
<tr><th colspan="2">NHBC</th><th colspan="2">Wilson and Card</th><th colspan="2">NHBC</th><th colspan="2">Wilson and Card</th></tr>
<tr><th>Gas Screening Value (l/hr)</th><th>Typical Maximum Concentration (%v/v)</th><th>Gas Screening Value (l/hr)</th><th>Typical Maximum Concentration (%v/v)</th><th>Gas Screening Value (l/hr)</th><th>Typical Maximum Concentration (%v/v)</th><th>Gas Screening Value (l/hr)</th><th>Typical Maximum Concentration (%v/v)</th></tr>
<tr><td>1</td><td>Green</td><td rowspan="2">0.16</td><td rowspan="2">1</td><td><0.07</td><td><1</td><td rowspan="2">0.78</td><td rowspan="2">5</td><td><0.07</td><td><5</td></tr>
<tr><td>2</td><td rowspan="2">Amber 1</td><td><0.7</td><td>Borehole flow rate not greater than 70l/hr</td><td><0.7</td><td>Borehole flow rate not greater than 70l/hr</td></tr>
<tr><td>3</td><td rowspan="2">0.63</td><td rowspan="2">5</td><td><3.5</td><td></td><td rowspan="2">1.56</td><td rowspan="2">10</td><td><3.5</td><td></td></tr>
<tr><td>4</td><td rowspan="2">Amber 2</td><td><15</td><td>Quantitative Risk Assessment Required</td><td><15</td><td>Quantitative Risk Assessment Required</td></tr>
<tr><td>5</td><td rowspan="2">1.56</td><td rowspan="2">20</td><td><70</td><td></td><td rowspan="2">3.10</td><td rowspan="2">30</td><td><70</td><td></td></tr>
<tr><td>6</td><td>Red</td><td>>70</td><td></td><td>>70</td><td></td></tr>
</table>

Gas protection measures as outlined in CIRIA C665 for CS3 are as follows:

- *All types of floor slab as above.*
- *All joints and penetrations sealed. Minimum 2000-gauge reinforced gas proof membrane and passively ventilated underfloor sub-space or positively pressurised underfloor sub-space.*

The proposed commercial development is classified as a Building Type C in accordance with BS8485:2015 and as the site has been classified as CS3, in accordance with Table 2 of the above guidance, 3 points of protection are required for the proposed commercial development and gas protection measures are necessary.

Gas precautionary measures outlined in BS8485:2015 include the following to reach the required number of protection points:

Structural Barrier / Floor Slab

- *Cast in situ monolithic reinforced ground bearing raft or reinforced cast in situ suspended floor slab with minimal penetrations – 1.5 points.*

Ventilation Protection Measures

- *Passive sub floor dispersal layer of good performance – 1.5 points.*

Gas Resistant Membrane

- *Gas resistant membrane (including methane) meeting the criteria outlined in Table 7 of BS 8485:2015 – 2 points.*

Radon Gas

The site lies in an area where radon protective measures are not required within new structures.

Vapours

Hydrocarbons in the volatile range have been detected at location SuDS2 in the south east of the site where free product was observed during the investigation. Hydrocarbon concentrations have been detected above the vapour saturation limit at this location which is close to or within the footprint of the proposed Aldi store depending on the finalised development layout. Excavation and removal of all free product and hydrocarbon impacted soils in the vicinity of SuDS2 should be carried out and will effectively remove the vapour source.

If remediation can be undertaken successfully by excavation and removal, then no further measures will be required with respect to vapour. Alternatively, a vapour resistant membrane may be required.

Conclusions

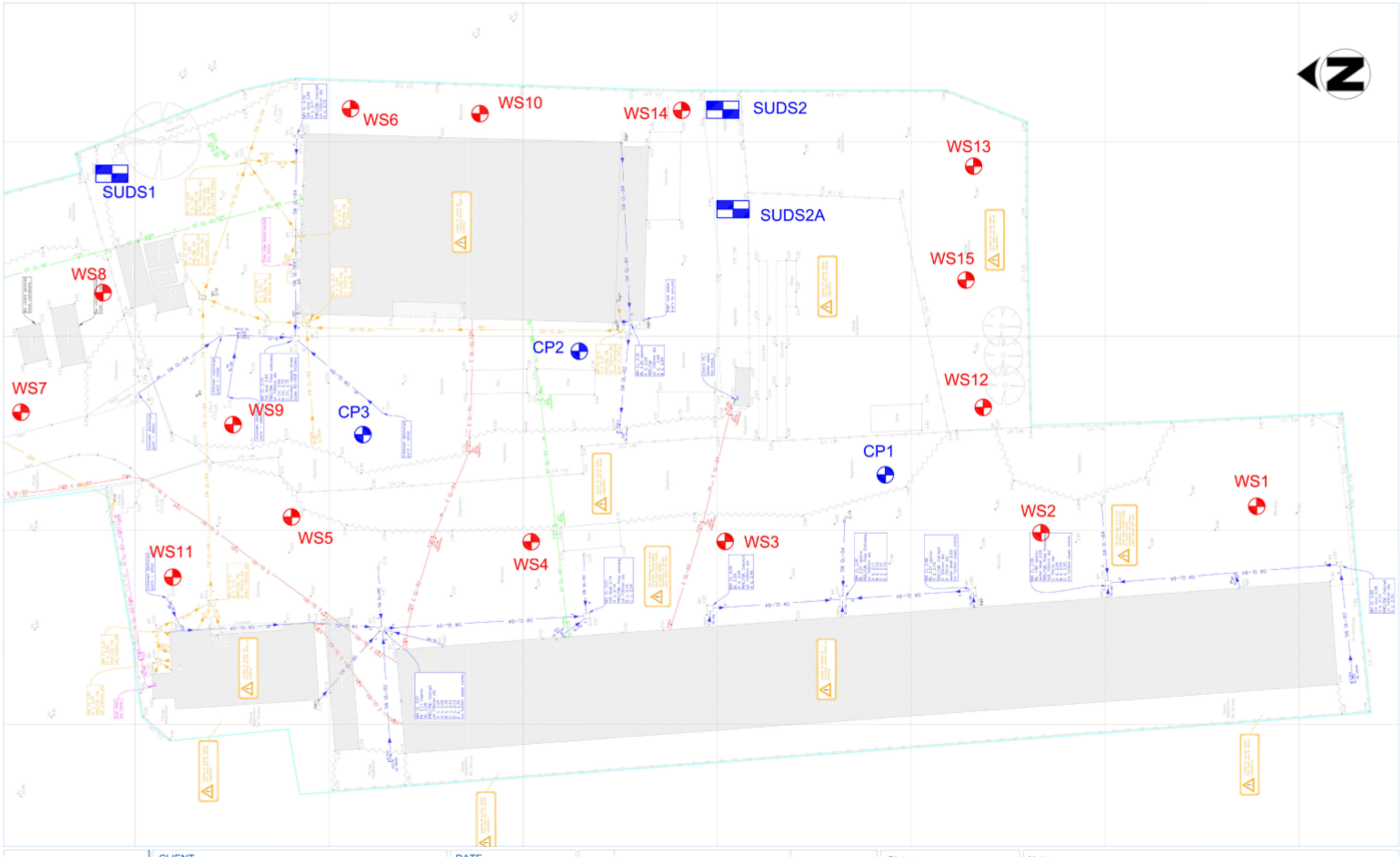
Gas protection measures are required within the proposed commercial development at the site.

No radon precautions are necessary.

The installation and verification of the gas protection measures should be carried out in accordance with CIRIA C735.

It is recommended that confirmation of these findings is made with the Local Authority prior to any irrevocable action being taken.

PLANS



GROUNDTECH CONSULTING	CLIENT	DATE				Status	Notes
	ALDI STORES LIMITED	JANUARY 2022				Preliminary	WINDOWLESS SAMPLE BOREHOLE LOCATION
	PROJECT TITLE	SCALE				Draft	CABLE PERCUSSIVE BOREHOLE LOCATION
	ALDI HOLBEACH	NTS				Issued ●	SOIL PERCOLATION TEST LOCATION
	PLAN TITLE	PLAN NUMBER				For Comment	
	EXPLORATORY HOLE LOCATION PLAN	GRO-21400-P04	Rev.	Details	Date	Approved	

EXPLORATORY HOLE LOGS

Borehole Log

Borehole No. **CP1**

Sheet 1 of 3

Project Name: ALDI HOLBEACH	Project No. GRO-21400	Co-ords: -	Hole Type CP
Location: HOLBEACH		Level:	Scale 1:50
Client: ALDI STORES LIMTED		Dates: 24/01/1900 - 25/01/2022	Logged By CJH

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
					0.05			MADE GROUND: Tarmac.
					0.20			MADE GROUND: Pale brown very sandy angular to subangular fine to coarse gravel of sandstone and limestone. Sand is coarse.
					0.30			MADE GROUND: Concrete.
		0.50 - 0.60	D					Very soft brown grey very sandy very CLAY. Sand is fine.
	▼	1.20		N=4 (0,1/1,1,1,1)				
		1.20 - 1.65	D					
		1.70 - 1.80	D					
		2.00		N=4 (0,1/1,1,1,1)				
		2.00 - 2.45	D					
		2.50 - 2.60	D					
		3.00		N=4 (1,1/1,1,1,1)				
		3.00 - 3.45	D					
		3.50 - 3.60	D					
		4.00		N=6 (1,1/1,1,2,2)				
		4.00 - 4.45	D					
		4.50 - 4.60	D					
		5.00		N=5 (1,1/1,1,1,2)	5.00			Loose grey very clayey very silty fine to medium SAND.
		5.00 - 5.45	D					
		6.00 - 6.10	D					
		6.50		N=7 (0,1/1,2,2,2)				
		6.50 - 6.95	D					
		7.50 - 7.60	D					
	▼	8.00		N=7 (1,2/1,2,2,2)				
		8.00 - 8.45	D					
	▽	9.00 - 9.10	D					
		9.50		N=8 (1,2/2,2,2,2)				
		9.50 - 9.95	D					

Continued on next sheet

Remarks

1. Location cleared using hand held CAT scanner. 2. Hand dug pit to 1.20m bgl. 3. Groundwater encountered at 1.10m rising to 1.00m bgl after 20 minutes and encountered at 9.00m rising to 8.20m bgl after 20 minutes. 4. Monitoring standpipe installed to 6.00m bgl (3.00m plain, 3.00m slotted).

Borehole Log

Borehole No. **CP1** Sheet 2 of 3

Project Name: ALDI HOLBEACH	Project No. GRO-21400	Co-ords: -	Hole Type CP
Location: HOLBEACH		Level:	Scale 1:50
Client: ALDI STORES LIMTED		Dates: 24/01/1900 - 25/01/2022	Logged By CJH

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		10.50 - 10.60	D					
		11.00		N=10 (1,2/2,2,3,3)				
		11.00 - 11.45	D					
		12.00 - 12.10	D		12.00			Medium dense clayey gravelly very silty fine Sand. Gravel is angular to subangular fine to medium of mytilidae shells.
		12.50		N=14 (2,2/2,3,4,5)				
		12.50 - 12.95	D					
		13.50 - 13.60	D					
					13.80			Firm to stiff brown gravelly CLAY. Gravel is angular to subrounded fine to medium of mixed lithologies including chalk.
		14.00		N=18 (2,3/4,4,5,5)				
		14.00 - 14.45	D					
		15.00		N=26 (3,4/5,6,7,8)				
		15.00 - 15.45	D					
		16.00 - 16.10	D					
		16.50		N=22 (3,4/5,5,6,6)				
		16.50 - 16.65	D					
		17.50 - 17.60	D					
		18.00		N=17 (3,4/4,4,4,5)				
		18.00 - 18.45	D		18.20			Extremely weak grey MUDSTONE residually weathered recovered as stiff grey gravelly silty clay. Gravel is angular to subangular fine to coarse of mixed lithologies including chalk.
		19.00 - 19.10	D					

Continued on next sheet

Remarks

1. Location cleared using hand held CAT scanner. 2. Hand dug pit to 1.20m bgl. 3. Groundwater encountered at 1.10m rising to 1.00m bgl after 20 minutes and encountered at 9.00m rising to 8.20m bgl after 20 minutes. 4. Monitoring standpipe installed to 6.00m bgl (3.00m plain, 3.00m slotted).

Borehole Log

Borehole No. **CP1** Sheet 3 of 3

Project Name: ALDI HOLBEACH	Project No. GRO-21400	Co-ords: -	Hole Type CP
Location: HOLBEACH		Level:	Scale 1:50
Client: ALDI STORES LIMTED		Dates: 24/01/1900 - 25/01/2022	Logged By CJH

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		20.00		N=50 (7,9/50 for 280mm)				
		20.00 - 20.45	D					
		21.00 - 21.10	D					
		21.50 - 21.95	U					
		22.50 - 22.60	D					
		23.00 - 23.45	U					
		24.00 - 24.10	D					
		25.00	D	N=50 (9,13/50 for 228mm)	25.00			End of borehole at 25.00 m
		25.00						

Remarks

1. Location cleared using hand held CAT scanner. 2. Hand dug pit to 1.20m bgl. 3. Groundwater encountered at 1.10m rising to 1.00m bgl after 20 minutes and encountered at 9.00m rising to 8.20m bgl after 20 minutes. 4. Monitoring standpipe installed to 6.00m bgl (3.00m plain, 3.00m slotted).

Borehole Log

Borehole No. **CP2**

Sheet 1 of 3

Project Name: ALDI HOLBEACH	Project No. GRO-21400	Co-ords: -	Hole Type CP
Location: HOLBEACH		Level:	Scale 1:50
Client: ALDI STORES LIMTED		Dates: 25/01/2022 - 26/01/2022	Logged By CJH

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
					0.10			MADE GROUND: Tarmac.
					0.30			MADE GROUND: Pale brown very sandy angular to subangular fine to coarse gravel of sandstone and limestone. Sand is coarse.
		0.50	ES					
		0.50 - 0.60	D					
		1.00	ES					MADE GROUND: Soft greenish grey silty sandy slightly gravelly clay. Gravel is angular to subangular fine to coarse of mixed lithologies. Sand is fine to coarse.
		1.20		N=2 (1,0/1,0,0,1)				
		1.20 - 1.65	D					
		1.70 - 1.80	D					
		2.00	ES					
		2.00 - 2.45	U					
		2.50 - 2.60	D		2.50			MADE GROUND: Concrete. (Suspected former drain).
					2.80			Very soft extremely low strength brown grey very sandy CLAY. Sand is fine.
		3.00		N=4 (1,1/1,1,1,1)				
		3.00 - 3.45	D					
		3.50 - 3.60	D					
		4.00 - 4.45	U					
		4.50 - 4.60	D					
		5.00		N=4 (1,1/1,1,1,1)				
		5.00 - 5.45	D					
		6.00 - 6.10	D					
		6.50		N=4 (1,1/1,1,1,1)				
		6.50 - 6.95	D					
		7.50 - 7.60	D					
		8.00 - 8.45	U					
		9.00 - 9.10	D		8.70			Medium dense clayey gravelly fine to coarse Sand. Gravel is angular to subangular fine to medium of mixed lithologies.
		9.50		N=11 (1,2/2,2,3,4)				
		9.50 - 9.95	D					

Continued on next sheet

Remarks

1. Location cleared using hand held CAT scanner. 2. Hand dug pit to 1.20m bgl. 3. Groundwater encountered at 2.50m rising to 1.40m bgl after 20 minutes. 4. Monitoring standpipe installed to 6.00m bgl (3.00m plain, 3.00m slotted).

Borehole Log

Project Name: ALDI HOLBEACH	Project No. GRO-21400	Co-ords: -
Location: HOLBEACH		Level:
Client: ALDI STORES LIMTED		Dates: 25/01/2022 - 26/01/2022

Borehole No. **CP2** Sheet 2 of 3

Hole Type CP

Scale 1:50

Logged By CJH

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		10.50 - 10.60	D					
		11.00		N=8 (1,1/1,2,2,3)				*Becoming loose at 11.0m bgl.*
		11.00 - 11.45	D					
		12.00 - 12.10	D					
		12.50		N=10 (1,2/2,2,3,3)				
		12.50 - 12.95	D					
		13.50 - 13.60	D		13.50			Medium dense gravelly clayey very silty fine Sand. Gravel is angular to subangular fine to medium of mixed lithologies including mytilidae shells.
		14.00		N=15 (1,2/3,3,4,5)				
		14.00 - 14.45	D					
					14.40			Firm to stiff high strength brown gravelly CLAY. Gravel is angular to subrounded fine to medium of mixed lithologies including chalk.
		15.00 - 15.10	D					
		15.50 - 15.95	U					
		16.50 - 16.60	D					
		17.00		N=25 (2,4/5,6,6,8)				
		17.00 - 17.45	D					
		18.00 - 18.10	D					
		18.50		N=32 (4,5/7,8,8,9)	18.40			Extremely weak grey MUDSTONE residually weathered recovered as stiff grey gravelly silty clay. Gravel is angular to subangular fine to coarse of mixed lithologies including chalk.
		18.50 - 18.95	D					
		19.50 - 19.60	D					
		20.00 - 20.45	U					

Continued on next sheet

Remarks

1. Location cleared using hand held CAT scanner. 2. Hand dug pit to 1.20m bgl. 3. Groundwater encountered at 2.50m rising to 1.40m bgl after 20 minutes. 4. Monitoring standpipe installed to 6.00m bgl (3.00m plain, 3.00m slotted).

Borehole Log

Borehole No. **CP2** Sheet 3 of 3

Project Name: ALDI HOLBEACH	Project No. GRO-21400	Co-ords: -	Hole Type CP
Location: HOLBEACH		Level:	Scale 1:50
Client: ALDI STORES LIMTED		Dates: 25/01/2022 - 26/01/2022	Logged By CJH

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		21.00 - 21.10	D					
		21.50		N=33 (2,4/5,8,9,11)				
		21.50 - 21.95	D					
		22.50 - 22.60	D					
		23.00		N=50 (9,13/50 for 231mm)				
		23.00 - 23.45	D					
		24.00 - 24.10	D					
		25.00		N=50 (10,15/50 for 196mm)	25.00			End of borehole at 25.00 m
		25.00 - 25.45	D					

Remarks

1. Location cleared using hand held CAT scanner. 2. Hand dug pit to 1.20m bgl. 3. Groundwater encountered at 2.50m rising to 1.40m bgl after 20 minutes. 4. Monitoring standpipe installed to 6.00m bgl (3.00m plain, 3.00m slotted).

Borehole Log

Borehole No. **CP3** Sheet 1 of 3

Project Name: ALDI HOLBEACH	Project No. GRO-21400	Co-ords: -	Hole Type CP
Location: HOLBEACH		Level:	Scale 1:50
Client: ALDI STORES LIMTED		Dates: 27/01/2022 -	Logged By CJH

Well	Water Strikes	Samples and In Situ Testing: Depth (m)	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
					0.10			MADE GROUND: Tarmac.
					0.30			MADE GROUND: Pale brown very sandy angular to subangular fine to coarse gravel of sandstone and limestone. Sand is coarse.
		0.50	ES					Very soft brown grey CLAY. Sand is fine.
		0.50 - 0.60	D					
		1.00	ES					
		1.20		N=4 (1,0/1,1,1,1)				
		1.20 - 1.65	D					
					1.50			Very soft brown grey very sandy CLAY. Sand is fine.
		1.70 - 1.80	D					
		2.00 - 2.10	D					
		2.50 - 2.60	D					
		3.00		N=4 (1,1/1,1,1,1)				
		3.00 - 3.45	D					
		3.50 - 3.60	D					
		4.00 - 4.45	U					
		4.50 - 4.60	D					
		5.00		N=4 (1,1/1,1,1,1)				
		5.00 - 5.45	D					
		6.00 - 6.10	D					
		6.50 - 6.95	U					
		7.50 - 7.60	D					
		8.00		N=4 (1,1/1,1,1,1)				
		8.00 - 8.45	D					
		9.00 - 9.10	D		9.00			Very loose grey very clayey very silty fine to medium SAND.
		9.50		N=4 (1,1/1,1,1,1)				
		9.50 - 9.95	D					

Continued on next sheet

Remarks

1. Location cleared using hand held CAT scanner. 2. Hand dug pit to 1.20m bgl. 3. Groundwater encountered at 1.30m rising to 1.10m bgl after 20 minutes and encountered at 9.50m rising to 7.60m bgl after 20 minutes. 4. Monitoring standpipe installed to 6.00m bgl (3.00m plain, 3.00m slotted).

Borehole Log

Borehole No. **CP3** Sheet 2 of 3

Project Name: ALDI HOLBEACH	Project No. GRO-21400	Co-ords: -	Hole Type CP
Location: HOLBEACH		Level:	Scale 1:50
Client: ALDI STORES LIMTED		Dates: 27/01/2022 -	Logged By CJH

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		10.50 - 10.60	D						
		11.00		N=5 (1,0/1,1,1,1,2)				*Becoming loose from 11.0m bgl.*	11
		11.00 - 11.45	D						
		12.00 - 12.10	D						12
		12.50		N=10 (1,2/2,2,3,3)					
		12.50 - 12.95	D		12.90			Medium dense clayey gravelly very silty fine Sand. Gravel is angular to subangular fine to medium of mytilidae shells.	13
		13.50 - 13.60	D						
		14.00		N=13 (1,1/2,3,4,4)	14.00			Firm to stiff extremely high strength brown gravelly CLAY. Gravel is angular to subrounded fine to medium of mixed lithologies including chalk.	14
		14.00 - 14.45	D						
		15.00 - 15.10	D						15
		15.50 - 15.95	U						
		16.50 - 16.60	D						16
		17.00		N=19 (2,3/4,4,5,6)					17
		17.00 - 17.45	D						
		18.00 - 18.10	D						18
		18.50		N=17 (2,3/3,4,4,6)					
		18.50 - 18.95	D						19
		19.50 - 19.60	D						
					19.70			Extremely weak grey MUDSTONE residually	
		20.00		N=32 (4,6/7,8,8,9)					20
								Continued on next sheet	

Remarks

1. Location cleared using hand held CAT scanner. 2. Hand dug pit to 1.20m bgl. 3. Groundwater encountered at 1.30m rising to 1.10m bgl after 20 minutes and encountered at 9.50m rising to 7.60m bgl after 20 minutes. 4. Monitoring standpipe installed to 6.00m bgl (3.00m plain, 3.00m slotted).

Borehole Log

Borehole No. **CP3** Sheet 3 of 3

Project Name: ALDI HOLBEACH	Project No. GRO-21400	Co-ords: -	Hole Type CP
Location: HOLBEACH		Level:	Scale 1:50
Client: ALDI STORES LIMTED		Dates: 27/01/2022 -	Logged By CJH

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		20.00 - 20.45	D					weathered recovered as stiff grey gravelly silty clay. Gravel is angular to subangular fine to coarse of mixed lithologies including chalk.
		21.00 - 21.10	D					
		21.50		N=48 (6,10/11,12,12,13)				
		21.50 - 21.95	D					
		22.50 - 22.60	D					
		23.00 - 23.10	D					
		24.00 - 24.10	D					
		25.00		N=50 (9,13/50 for 221mm)	25.00			End of borehole at 25.00 m
		25.00 - 25.45	D					

21 22 23 24 25 26 27 28 29 30

Remarks

1. Location cleared using hand held CAT scanner. 2. Hand dug pit to 1.20m bgl. 3. Groundwater encountered at 1.30m rising to 1.10m bgl after 20 minutes and encountered at 9.50m rising to 7.60m bgl after 20 minutes. 4. Monitoring standpipe installed to 6.00m bgl (3.00m plain, 3.00m slotted).

Borehole Log

Borehole No. **WS01**

Sheet 1 of 1

Project Name: ALDI HOLBEACH	Project No. GRO-21400	Co-ords: -	Hole Type WS
Location: HOLBEACH		Level:	Scale 1:25
Client: ALDI STORES LIMTED		Dates: 25/01/2022 -	Logged By CJH

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
					0.10			MADE GROUND: Tarmac.
		0.20	ES					MADE GROUND: Pale brown very sandy angular to subangular fine to coarse gravel of sandstone and limestone. Sand is coarse.
					0.50			Very soft brown grey very sandy CLAY. Sand is fine.
	▼	1.00	D					
		1.20		N=2 (0,1/0,1,1,0)				
		2.00	D					
		2.00		N=0 (0,0/0,0,0,0)				
		3.00	D					
		3.00		N=1 (0,0/1,0,0,0)				
		4.00	D					
		4.00		N=0 (0,0/0,0,0,0)				
					4.45			End of borehole at 4.45 m

1
2
3
4
5

Remarks

1. Location cleared using hand held CAT scanner. 2. Hand dug pit to 1.20m bgl. 3. Groundwater encountered at 1.10m bgl. 4. Monitoring standpipe installed to 4.00m bgl (1.00m plain, 3.00m slotted).

Borehole Log

Borehole No. **WS02**

Sheet 1 of 1

Project Name: ALDI HOLBEACH	Project No. GRO-21400	Co-ords: -	Hole Type WS
Location: HOLBEACH		Level:	Scale 1:25
Client: ALDI STORES LIMTED		Dates: 25/01/2022 -	Logged By CJH

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.05	ES		0.10			MADE GROUND: Tarmac.
		0.30	ES					MADE GROUND: Pale brown very sandy angular to subangular fine to coarse gravel of sandstone and limestone. Sand is coarse.
					0.50			Very soft orange mottled brown grey very sandy CLAY. Sand is fine.
		1.00	D					
	▼	1.20		N=2 (1,0/1,0,1,0)				
		2.00	D					
		2.00		N=0 (0,0/0,0,0,0)				
		3.00	D					
		3.00		N=0 (0,0/0,0,0,0)				
		4.00	D					
		4.00		N=0 (0,0/0,0,0,0)				
					4.45			End of borehole at 4.45 m

1
2
3
4
5

Remarks

1. Location cleared using hand held CAT scanner. 2. Hand dug pit to 1.20m bgl. 3. Groundwater encountered at 1.20m bgl. 4. Hole backfilled with arisings.

Borehole Log

Borehole No. **WS03**

Sheet 1 of 1

Project Name: ALDI HOLBEACH	Project No. GRO-21400	Co-ords: -	Hole Type WS
Location: HOLBEACH		Level:	Scale 1:25
Client: ALDI STORES LIMTED		Dates: 25/01/2022 -	Logged By CJH

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
					0.10			MADE GROUND: Tarmac.
		0.30	ES					MADE GROUND: Pale brown very sandy angular to subangular fine to coarse gravel of sandstone and limestone. Sand is coarse.
		0.60	ES		0.70			
	▼	1.00	D					Very soft brown grey very sandy CLAY. Sand is fine.
		1.20		N=4 (1,0/1,1,1,1)				
		2.00	D					
		2.00		N=0 (0,0/0,0,0,0)				
		3.00	D					
		3.00		N=0 (0,0/0,0,0,0)				
		4.00	D					
		4.00		N=0 (0,0/0,0,0,0)				
					4.45			End of borehole at 4.45 m

1
2
3
4
5

Remarks

1. Location cleared using hand helf CAT scanner. 2. Hand dug pit to 1.20m bgl. 3. Groundwater encountered at 1.10m bgl. 4. Hole backfilled with arisings.

Borehole Log

Borehole No. **WS04**

Sheet 1 of 1

Project Name: ALDI HOLBEACH	Project No. GRO-21400	Co-ords: -	Hole Type WS
Location: HOLBEACH		Level:	Scale 1:25
Client: ALDI STORES LIMTED		Dates: 25/01/2022 -	Logged By CJH

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
					0.10			MADE GROUND: Tarmac.
		0.30	ES					MADE GROUND: Pale brown very sandy angular to subangular fine to coarse gravel of sandstone and limestone. Sand is coarse.
					0.50			Very soft brown grey very sandy CLAY. Sand is fine.
	▼	1.00	D					
		1.20		N=3 (1,1/1,1,1,0)				
		2.00	D					
		2.00		N=0 (1,0/0,0,0,0)				
		3.00	D					
		3.00		N=0 (0,0/0,0,0,0)				
		4.00	D					
		4.00		N=0 (0,0/0,0,0,0)				
					4.45			End of borehole at 4.45 m

1
2
3
4
5

Remarks

1. Location cleared using hand held CAT scanner. 2. Hand dug pit to 1.20m bgl. 3. Groundwater encountered at 1.00m bgl. 4. Hole backfilled with arisings.

Borehole Log

Project Name: ALDI HOLBEACH	Project No. GRO-21400	Co-ords: -	Borehole No. **WS05** Sheet 1 of 1
Location: HOLBEACH		Level:	Hole Type WS
Client: ALDI STORES LIMTED		Dates: 25/01/2022 -	Scale 1:25
			Logged By CJH

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
					0.10			MADE GROUND: Tarmac.
		0.20	ES					MADE GROUND: Pale brown very sandy angular to subangular fine to coarse gravel of sandstone and limestone. Sand is coarse.
					0.50			Very soft orange mottled brown grey very sandy CLAY. Sand is fine.
		1.00	D					
		1.20		N=0 (1,1/0,0,0,0)				
	▼							
		2.00	D					
		2.00		N=0 (0,0/0,0,0,0)				
		3.00	D					
		3.00		N=0 (1,0/0,0,0,0)				
		4.00	D					
		4.00		N=0 (0,0/0,0,0,0)				
					4.45			End of borehole at 4.45 m

1
2
3
4
5

Remarks

1. Location cleared using hand held CAT scanner. 2. Hand dug pit to 1.20m bgl. 3. Groundwater encountered at 1.50m bgl. 4. Hole backfilled with arisings.

Borehole Log

Borehole No. **WS06**

Sheet 1 of 1

Project Name: ALDI HOLBEACH	Project No. GRO-21400	Co-ords: -	Hole Type WS
Location: HOLBEACH		Level:	Scale 1:25
Client: ALDI STORES LIMTED		Dates: 26/01/2022 -	Logged By CJH

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
					0.10			MADE GROUND: Degraded tarmac.
		0.30	ES					MADE GROUND: Pale brown very sandy angular to subangular fine to coarse gravel of sandstone and limestone. Sand is coarse.
					0.50			Very soft orange brown very sandy CLAY. Sand is fine.
		1.00	D					
		1.20		N=4 (1,0/1,1,1,1)				
	▼							
		2.00 2.00	D	N=0 (0,0/0,0,0,0)				
		3.00 3.00	D	N=0 (0,0/0,0,0,0)				
								Becoming soft at 3.50m bgl.
		4.00 4.00	D	N=0 (0,0/0,0,0,0)				
					4.45			End of borehole at 4.45 m

Remarks

1. Location cleared using hand held CAT scanner. 2. Hand dug pit to 1.20m bgl. 3. Groundwater encountered at 1.50m bgl. 4. Monitoring standpipe installed to 4.00m bgl (1.00m plain, 3.00m slotted).

Borehole Log

Borehole No. **WS07**

Sheet 1 of 1

Project Name: ALDI HOLBEACH	Project No. GRO-21400	Co-ords: -	Hole Type WS
Location: HOLBEACH		Level:	Scale 1:25
Client: ALDI STORES LIMTED		Dates: 26/01/2022 -	Logged By CJH

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.10	ES		0.15			MADE GROUND: Light brown grey very gravelly fine to coarse sand. Gravel is angular to subangualr fine to coarse of mixed lithologies including plastic, concrete and metal fragments.
		0.40	ES					MADE GROUND: Pale brown very sandy angular to subangular fine to coarse gravel of sandstone and limestone. Sand is coarse.
	▼				0.60			Very soft brown grey very sandy CLAY. Sand is fine.
		1.00	D					
		1.20		N=4 (1,1/1,1,1,1)				
		2.00	D					
		2.00		N=0 (0,0/0,0,0,0)				
		3.00	D					
		3.00		N=0 (1,1/0,0,0,0)				
		4.00	D					
		4.00		N=0 (0,0/0,0,0,0)				
					4.45			End of borehole at 4.45 m

1
2
3
4
5

Remarks

1. Location cleared using hand held CAT scanner. 2. Hand dug pit to 1.20m bgl. 3. Groundwater encountered at 0.80m bgl. 4. Hole backfilled with arisings.

Borehole Log

Borehole No. **WS08**

Sheet 1 of 1

Project Name: ALDI HOLBEACH	Project No. GRO-21400	Co-ords: -	Hole Type WS
Location: HOLBEACH		Level:	Scale 1:25
Client: ALDI STORES LIMTED		Dates: 26/01/2022 -	Logged By CJH

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.10	ES		0.05			MADE GROUND: Light brown grey very gravelly fine to coarse sand. Gravel is angular to subangualr fine to coarse of mixed lithologies including plastic, concrete and metal fragments.
					0.20			MADE GROUND: Black ashy angular to subangular fine to coarse gravel of limestone. Moderate hydrocarbon odour present.
		0.50	D					MADE GROUND: Pale brown very sandy angular to subangular fine to coarse gravel of sandstone and limestone. Sand is coarse.
	▼				0.70			Very soft orange brown very sandy CLAY. Sand is fine.
		1.00	D					
		1.20		N=2 (1,0/1,0,0,1)				
		2.00	D					
		2.00		N=2 (0,1/1,0,1,0)				
		3.00	D					
		3.00		N=1 (0,0/1,0,0,0)				
		4.00	D					
		4.00		N=0 (0,0/0,0,0,0)				
					4.45			End of borehole at 4.45 m

1
2
3
4
5

Remarks

1. Location cleared using hand held CAT scanner. 2. Hand dug pit to 1.20m bgl. 3. Groundwater encountered at 0.90m bgl. 4. Monitoring standpipe installed to 4.00m bgl (1.00m plain, 3.00m slotted).

Borehole Log

Borehole No. **WS09**

Sheet 1 of 1

Project Name: ALDI HOLBEACH	Project No. GRO-21400	Co-ords: -	Hole Type WS
Location: HOLBEACH		Level:	Scale 1:25
Client: ALDI STORES LIMTED		Dates: 26/01/2022 -	Logged By CJH

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
					0.10			MADE GROUND: Tarmac.
		0.30	ES					MADE GROUND: Pale brown very sandy angular to subangular fine to coarse gravel of sandstone and limestone. Sand is coarse.
					0.60			Very soft orange mottled grey brown very sandy CLAY. Sand is fine.
	▼	1.00	D					
		1.20		N=2 (0,1/0,1,1,0)				
		2.00	D					
		2.00		N=2 (1,0/0,1,0,1)				
		3.00	D					
		3.00		N=1 (0,0/0,0,0,1)				
		4.00	D					
		4.00		N=0 (0,0/0,0,0,0)				
					4.45			End of borehole at 4.45 m

1
2
3
4
5

Remarks

1. Location cleared using hand held CAT scanner. 2. Hand dug pit to 1.20m bgl. 3. Groundwater encountered at 1.10m bgl. 4. Hole backfilled with arisings.

Borehole Log

Borehole No. **WS10**

Sheet 1 of 1

Project Name: ALDI HOLBEACH	Project No. GRO-21400	Co-ords: -	Hole Type WS
Location: HOLBEACH		Level:	Scale 1:25
Client: ALDI STORES LIMTED		Dates: 26/01/2022 -	Logged By CJH

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
					0.10			MADE GROUND: Degraded tarmac.
		0.20	ES					MADE GROUND: Pale brown very sandy angular to subangular fine to coarse gravel of sandstone and limestone. Sand is coarse.
					0.50			Very soft brown grey very sandy CLAY. Sand is fine.
		1.00	D					
		1.20		N=4 (1,1/1,1,1,1)				
	▼							
		2.00	D					
		2.00		N=1 (1,0/0,1,0,0)				
		3.00	D					
		3.00		N=0 (0,0/0,0,0,0)				
		4.00	D					
		4.00		N=0 (1,0/0,0,0,0)				
					4.45			End of borehole at 4.45 m

1 2 3 4 5

Remarks

1. Location cleared using hand helf CAT scanner. 2. Hand dug pit to 1.20m bgl. 3. Groundwater encountered at 1.50m bgl. 4. Hole backfilled with arisings.

Borehole Log

Borehole No. **WS11**

Sheet 1 of 1

Project Name: ALDI HOLBEACH	Project No. GRO-21400	Co-ords: -	Hole Type WS
Location: HOLBEACH		Level:	Scale 1:25
Client: ALDI STORES LIMTED		Dates: 27/01/2022 -	Logged By CJH

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
					0.10			MADE GROUND: Tarmac.
		0.30	ES					MADE GROUND: Pale brown very sandy angular to subangular fine to coarse gravel of sandstone and limestone. Sand is coarse.
					0.50			Very soft brown grey very sandy CLAY. Sand is fine.
	▼	1.00	D					
		1.20		N=4 (1,1/1,1,1,1)				
		2.00	D					
		2.00		N=1 (1,0/0,1,0,0)				
		3.00	D					
		3.00		N=0 (0,0/0,0,0,0)				
		4.00	D					
		4.00		N=0 (0,0/0,0,0,0)				
					4.45			End of borehole at 4.45 m

1
2
3
4
5

Remarks

1. Location cleared using hand helf CAT scanner. 2. Hand dug pit to 1.20m bgl. 3. Groundwater encountered at 1.00m bgl. 4. Hole backfilled with arisings.

Borehole Log

Borehole No. **WS12**

Sheet 1 of 1

Project Name: ALDI HOLBEACH	Project No. GRO-21400	Co-ords: -	Hole Type WS
Location: HOLBEACH		Level:	Scale 1:25
Client: ALDI STORES LIMTED		Dates: 27/01/2022 -	Logged By CJH

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.30	ES		0.20			MADE GROUND: Grass over brown very gravelly sandy topsoil. Gravel is angular to subangular fine to coarse of mixed lithologies including concrete, plastic and wood. Sand is fine to coarse.
					0.35			MADE GROUND: Black ashy angular to subangular fine to coarse gravel of limestone. Moderate hydrocarbon odour present.
					0.50			MADE GROUND: Concrete.
								End of borehole at 0.50 m

1 2 3 4 5

Remarks

1. Location cleared using hand helf CAT scanner. 2. Hand dug pit to 0.50m bgl. 3. Concrete obstruction encountered within three locations. 4. Hole location terminated.

Borehole Log

Borehole No. **WS13**

Sheet 1 of 1

Project Name: ALDI HOLBEACH	Project No. GRO-21400	Co-ords: -	Hole Type WS
Location: HOLBEACH		Level:	Scale 1:25
Client: ALDI STORES LIMTED		Dates: 27/01/2022 -	Logged By CJH

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.30	ES		0.50			MADE GROUND: Grass over brown very gravelly sandy topsoil. Gravel is angular to subangular fine to coarse of mixed lithologies including concrete, plastic and wood. Sand is fine to coarse.
		1.00	D					Very soft brown grey very sandy CLAY. Sand is fine.
	▼	1.20		N=1 (1,0/1,0,0,0)				
		2.00 2.00	D	N=0 (0,0/0,0,0,0)				
		3.00 3.00	D	N=0 (1,1/0,0,0,0)				
		4.00 4.00	D	N=0 (0,0/0,0,0,0)				
					4.45			End of borehole at 4.45 m

Remarks

1. Location cleared using hand helf CAT scanner. 2. Hand dug pit to 1.20m bgl. 3. Groundwater encountered at 1.30m bgl. 4. Monitoring standpipe installed to 4.00m bgl (1.00m plain, 3.00m slotted).

Borehole Log

Borehole No. **WS14**

Sheet 1 of 1

Project Name: ALDI HOLBEACH	Project No. GRO-21400	Co-ords: -	Hole Type WS
Location: HOLBEACH		Level:	Scale 1:25
Client: ALDI STORES LIMTED		Dates: 27/01/2022 -	Logged By CJH

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
					0.30			MADE GROUND: Heavily degraded tarmac recovered as angular to subangular fine to medium gravel of tarmac.
		0.50	ES		0.60			MADE GROUND: Pale brown very sandy angular to subangular fine to coarse gravel of sandstone and limestone. Sand is coarse.
	▼	1.00	ES					Very soft brown grey very sandy CLAY. Sand is fine.
		1.20		N=2 (1,0/1,0,1,0)				
		2.00 2.00	D	N=1 (0,1/0,0,1,0)				
		3.00 3.00	D	N=0 (1,0/0,0,0,0)				
		4.00 4.00	D	N=1 (0,0/1,0,0,0)				
					4.45			End of borehole at 4.45 m

1 2 3 4 5

Remarks

1. Location cleared using hand helf CAT scanner. 2. Hand dug pit to 1.20m bgl. 3. Groundwater encountered at 0.90m bgl. 4. Monitoring standpipe installed to 4.00m bgl (1.00m plain, 3.00m slotted).

Borehole Log

Borehole No. **WS15**

Sheet 1 of 1

Project Name: ALDI HOLBEACH	Project No. GRO-21400	Co-ords: -	Hole Type WS
Location: HOLBEACH		Level:	Scale 1:25
Client: ALDI STORES LIMTED		Dates: 27/01/2022 -	Logged By CJH

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.30	ES		0.40			MADE GROUND: Grass over brown very gravelly sandy topsoil. Gravel is angular to subangular fine to coarse of mixed lithologies including concrete, plastic and wood. Sand is fine to coarse.
	▼	1.00	D					Very soft brown grey very sandy CLAY. Sand is fine.
		1.20		N=1 (1,1/0,0,0,1)				
		2.00	D					
		2.00		N=1 (0,0/1,0,0,0)				
		3.00	D					
		3.00		N=0 (0,0/0,0,0,0)				
		4.00	D					
		4.00		N=0 (1,0/0,0,0,0)				
					4.45			End of borehole at 4.45 m

1
2
3
4
5

Remarks

1. Location cleared using hand helf CAT scanner. 2. Hand dug pit to 1.20m bgl. 3. Groundwater encountered at 1.00m bgl. 4. Hole backfilled with arisings.

Trial Pit Log

GROUNDTECH CONSULTING

Trialpit No: **SuDS1**

Sheet 1 of 1

Project Name: ALDI HOLBEACH	Project No. GRO-21400	Co-ords: - Level:	Date 27/01/2022
Location: HOLBEACH		Dimensions (m): 1.8 × 0.8, Depth 2.60	Scale 1:25
Client: ALDI STORES LIMTED			Logged CJH

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.10			MADE GROUND: Tarmac.
	0.30	ES					MADE GROUND: Pale brown very sandy angular to subangular fine to coarse gravel of sandstone and limestone. Sand is coarse.
				0.40			Very soft brown grey very sandy CLAY. Sand is fine.
▼	1.00	D					
	2.00	D					
				2.60			End of pit at 2.60 m

1 2 3 4 5

Remarks: 1. Location cleared using hand held CAT scanner. 2. Trial pit excavated to 2.60m bgl. 3. Groundwater encountered at 1.20m bgl. 4. Soil percolation test undertaken. 5. Hole backfilled with arisings.

Stability: Unstable

Trial Pit Log

Trialpit No: **SuDS2**

Sheet 1 of 1

Project Name:	ALDI HOLBEACH	Project No.: GRO-21400	Co-ords: - Level:	Date: 27/01/2022
Location:	HOLBEACH	Dimensions (m): Depth 1.80	1.9 × 0.9	Scale: 1:25
Client:	ALDI STORES LIMTED			Logged: CJH

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
	0.20	ES		0.30			MADE GROUND: Grass over brown very gravelly sandy topsoil. Gravel is angular to subangular fine to coarse of mixed lithologies including concrete, plastic and wood. Sand is fine to coarse.
▼	0.80	ES					MADE GROUND: Black orange demolition material comprising brick, roofing tiles. Black free phase hydrocarbon odorous liquid present at strata.
	1.20	ES		1.30			Very soft brown grey very sandy CLAY. Sand is fine.
	1.60	D		1.80			End of pit at 1.80 m

Remarks: 1. Location cleared using hand held CAT scanner. 2. Trial pit excavated to 1.80m bgl. 3. Perched water encountered at 0.60m bgl. 4. Trial pit terminated due to contamination encountered. 5. Hole backfilled with arisings.

Stability: Unstable

Trial Pit Log

Trialpit No: **SuDS2A**

Sheet 1 of 1

Project Name:	ALDI HOLBEACH	Project No.: GRO-21400	Co-ords: - Level:	Date: 27/01/2022
Location:	HOLBEACH	Dimensions (m): Depth 2.70	1.7 / 1	Scale: 1:25
Client:	ALDI STORES LIMTED			Logged: CJH

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
	0.10	ES					MADE GROUND: Grass over brown very gravelly sandy topsoil. Gravel is angular to subangular fine to coarse of mixed lithologies including concrete, plastic and wood. Sand is fine to coarse.
				0.40			Very soft brown grey very sandy CLAY. Sand is fine.
▼	1.00	D					
	2.00	D					
				2.70			End of pit at 2.70 m

Remarks: 1. Location cleared using hand held CAT scanner. 2. Trial pit excavated to 2.70m bgl. 3. Groundwater encountered at 1.10m bgl. 4. Soil percolation test undertaken. 5. Hole backfilled with arisings.

Stability: Unstable

GROUND GAS MONITORING RESULTS

PERMANENT GROUND GAS MONITORING FORM

GROUNDTECH CONSULTING

SITE NAME:	*ALDI, HOLBEACH*	*ENGINEER:*	*Jack Perkins*
CLIENT:	*ALDI STORES LIMITED*	*DATE:*	*22/02/2022*
JOB NO:	*GRO-21400*		

Pressure Trend:	*Steady*	*Weather:*	*Overcast*	*Equipment:*	*GFM 436*

Ambient:	O_2 (%v/v)	CH_4 (%v/v)	CO_2 (%v/v)	LEL	H_2S (ppm)	CO (ppm)
Start	20.7	0.0	0.0	0.0	0.0	0.0
Finish	20.7	0.0	0.0	0.0	0.0	0.0

BH Ref.	Gas Flow Rate (l/hr)		Borehole Pressure (mb)	Methane (%v/v)			Carbon Dioxide (%v/v)		Oxygen (%v/v)		Hydrogen Sulphide (ppm)		Carbon Monoxide (ppm)		Q_{hg} CO_2 (l/hr)	Q_{hg} CH_4 (l/hr)	Atmos Press (mb)	PID (ppm)	Sheen (Y/N)	Depth to Water (m bgl)
	Peak	Steady		Peak	Steady	LEL	Peak	Steady	Peak	Steady	Peak	Steady	Peak	Steady						
CP01	0.0	0.0	0.00	25.4	13.7	508.0	2.6	1.3	6.6	13.2	0.0	0.0	0.0	0.0	0.0026	0.0254	1009	-	N	0.98
CP02	0.0	0.0	0.00	60.7	31.0	1214.0	2.7	1.2	2.7	11.2	0.0	0.0	0.0	0.0	0.0027	0.0607	1008	-	N	0.94
CP03	0.0	0.0	0.00	11.8	2.3	236.0	0.0	0.0	15.4	19.5	0.0	0.0	0.0	0.0	0.0000	0.0118	1008	-	N	0.49
WS01	0.0	0.0	0.00	29.8	14.1	596.0	1.4	0.6	10.6	15.9	0.0	0.0	0.0	0.0	0.0014	0.0298	1009	-	N	0.73
WS06	0.0	0.0	0.00	0.0	0.0	0.0	0.8	0.7	18.9	19.1	0.0	0.0	0.0	0.0	0.0008	0.0000	1009	-	N	0.54
WS08	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
WS13	0.0	0.0	0.00	0.0	0.0	0.0	1.3	0.5	18.5	19.8	0.0	0.0	0.0	0.0	0.0013	0.0000	1009	-	N	0.88
WS14	0.0	0.0	0.00	2.5	2.1	50.0	2.4	2.1	18.3	18.5	0.0	0.0	0.0	0.0	0.0024	0.0025	1009	-	N	0.81

Notes: WS08 covered by skip.

PERMANENT GROUND GAS MONITORING FORM

GROUNDTECH CONSULTING

SITE NAME:	*ALDI, HOLBEACH*	*ENGINEER:*	*Jack Perkins*
CLIENT:	*ALDI STORES LIMITED*	*DATE:*	*15/03/2022*
JOB NO:	*GRO-21400*		

Pressure Trend:	*Rising*	*Weather:*	*Sunny*	*Equipment:*	*GFM 436*

Ambient:	O_2 (%v/v)	CH_4 (%v/v)	CO_2 (%v/v)	LEL	H_2S (ppm)	CO (ppm)
Start	20.3	0.0	0.0	0.0	0.0	0.0
Finish	20.3	0.0	0.0	0.0	0.0	0.0

BH Ref.	Gas Flow Rate (l/hr)		Borehole Pressure (mb)	Methane (%v/v)			Carbon Dioxide (%v/v)		Oxygen (%v/v)		Hydrogen Sulphide (ppm)		Carbon Monoxide (ppm)		Q_{hg} CO_2 (l/hr)	Q_{hg} CH_4 (l/hr)	Atmos Press (mb)	PID (ppm)	Sheen (Y/N)	Depth to Water (m bgl)
	Peak	Steady		Peak	Steady	LEL	Peak	Steady	Peak	Steady	Peak	Steady	Peak	Steady						
CP01	0.0	0.0	0.00	21.1	13.5	422.0	2.7	1.7	8.0	12.4	0.0	0.0	0.0	0.0	0.0027	0.0211	1019	-	N	0.88
CP02	18.4	18.4	2.03	51.6	32.7	1032.0	2.3	1.5	4.5	10.2	0.0	0.0	0.0	0.0	0.4232	9.4944	1020	-	N	1.22
CP03	0.0	0.0	0.00	1.4	0.1	28.0	0.3	0.1	17.0	18.7	0.0	0.0	0.0	0.0	0.0003	0.0014	1019	-	N	0.62
WS01	0.0	0.0	0.00	9.4	3.9	188.0	0.6	0.3	16.8	18.8	0.0	0.0	19.0	10.0	0.0006	0.0094	1019	-	N	0.98
WS06	0.0	0.0	0.00	0.0	0.0	0.0	1.4	0.2	15.8	19.6	0.0	0.0	10.0	0.0	0.0014	0.0000	1020	-	N	0.52
WS08	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
WS13	0.0	0.0	0.00	0.6	0.0	12.0	1.9	0.3	16.8	19.8	0.0	0.0	0.0	0.0	0.0019	0.0006	1020	-	N	1.08
WS14	0.0	0.0	0.00	42.4	25.6	848.0	18.2	11.5	1.2	8.6	0.0	0.0	0.0	0.0	0.0182	0.0424	1020	-	N	NGW

Notes: WS08 covered by skip.

PERMANENT GROUND GAS MONITORING FORM

GROUNDTECH CONSULTING

SITE NAME:	ALDI, HOLBEACH	ENGINEER:	Jack Perkins
CLIENT:	ALDI STORES LIMITED	DATE:	08/06/2022
JOB NO:	GRO-21400		

Pressure Trend:	Falling	Weather:	Sunny	Equipment:	GFM 436

Ambient:	O_2 (%v/v)	CH_4 (%v/v)	CO_2 (%v/v)	LEL	H_2S (ppm)	CO (ppm)
Start	20.1	0.0	0.0	0.0	0.0	0.0
Finish	20.1	0.0	0.0	0.0	0.0	0.0

BH Ref.	Gas Flow Rate (l/hr)		Borehole Pressure (mb)	Methane (%v/v)			Carbon Dioxide (%v/v)		Oxygen (%v/v)		Hydrogen Sulphide (ppm)		Carbon Monoxide (ppm)		Q_{hg} CO_2 (l/hr)	Q_{hg} CH_4 (l/hr)	Atmos Press (mb)	PID (ppm)	Sheen (Y/N)	Depth to Water (m bgl)
	Peak	Steady		Peak	Steady	LEL	Peak	Steady	Peak	Steady	Peak	Steady	Peak	Steady						
CP01	0.0	0.0	0.00	16.5	15.4	330.0	2.5	2.4	8.0	12.4	0.0	0.0	0.0	0.0	0.0025	0.0165	1001	-	N	0.71
CP02	0.0	0.0	0.00	43.9	29.9	878.0	1.9	1.2	6.4	10.6	0.0	0.0	0.0	0.0	0.0019	0.0439	1000	-	N	1.13
CP03	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
WS01	0.0	0.0	0.00	8.7	6.5	174.0	0.5	0.4	16.8	18.8	0.0	0.0	19.0	10.0	0.0005	0.0087	1002	-	N	0.82
WS06	0.0	0.0	0.00	0.0	0.0	0.0	1.3	0.0	19.3	19.7	0.0	0.0	0.0	0.0	0.0013	0.0000	1002	-	N	0.51
WS08	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
WS13	0.0	0.0	0.00	0.0	0.0	0.0	2.1	1.7	13.0	14.3	0.0	0.0	0.0	0.0	0.0021	0.0000	1001	-	N	1.01
WS14	3.3	3.3	0.19	67.3	44.5	1346.0	32.2	18.4	0.2	8.0	0.0	0.0	18.0	0.0	1.0626	2.2209	1002	-	N	1.12

Notes:

PERMANENT GROUND GAS MONITORING FORM

GROUNDTECH CONSULTING

SITE NAME:	*ALDI, HOLBEACH*	*ENGINEER:*	*William Sandiford-Mitchell*
CLIENT:	*ALDI STORES LIMITED*	*DATE:*	*21/07/2022*
JOB NO:	*GRO-21400*		

Pressure Trend:	*Steady*	*Weather:*	*Overcast*	*Equipment:*	*GFM 436*

Ambient:	O_2 (%v/v)	CH_4 (%v/v)	CO_2 (%v/v)	LEL	H_2S (ppm)	CO (ppm)
Start	20.4	0.0	0.0	0.0	0.0	0.0
Finish	20.4	0.0	0.0	0.0	0.0	0.0

BH Ref.	Gas Flow Rate (l/hr)		Borehole Pressure (mb)	Methane (%v/v)			Carbon Dioxide (%v/v)		Oxygen (%v/v)		Hydrogen Sulphide (ppm)		Carbon Monoxide (ppm)		Q_{hg} CO_2 (l/hr)	Q_{hg} CH_4 (l/hr)	Atmos Press (mb)	PID (ppm)	Sheen (Y/N)	Depth to Water (m bgl)
	Peak	Steady		Peak	Steady	LEL	Peak	Steady	Peak	Steady	Peak	Steady	Peak	Steady						
CP01	0.0	0.0	0.00	1.8	1.3	36.0	3.0	3.0	7.0	15.2	0.0	0.0	0.0	0.0	0.0030	0.0018	1022	-	N	0.89
CP02	0.0	0.0	0.00	41.7	18.3	834.0	2.2	0.9	7.4	15.0	0.0	0.0	0.0	0.0	0.0022	0.0417	1022	-	N	1.43
CP03	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
WS01	0.0	0.0	0.00	1.4	1.3	28.0	3.5	3.4	5.6	7.2	0.0	0.0	0.0	0.0	0.0035	0.0014	1022	-	N	1.48
WS06	0.0	0.0	0.00	14.5	9.6	290.0	2.2	1.5	15.4	17.5	0.0	0.0	0.0	0.0	0.0022	0.0145	1023	-	N	1.20
WS08	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
WS13	0.0	0.0	0.00	0.0	0.0	0.0	1.1	0.8	15.2	17.4	0.0	0.0	0.0	0.0	0.0011	0.0000	1022	-	N	1.11
WS14	0.0	0.0	0.00	22.0	12.6	440.0	29.1	18.3	2.1	9.7	0.0	0.0	0.0	0.0	0.0291	0.0220	1022	-	N	1.32

Notes:

LIMITATIONS

Limitations

This report (Report) forms part of the Services and if applicable Additional Services undertaken by Groundtech Consulting Ltd pursuant to a written contract (Agreement) which contains detailed provisions including express limitations of the liability of Groundtech Consulting Ltd.

This Report was prepared using reasonable skill and care as stated in the Agreement for the purpose including intended end use stated by the Client (Purpose) and the liability of Groundtech Consulting Ltd in respect of the form and content of this Report is no greater than its liability under the Agreement. All records, measurements notes, or any other data (Data) obtained by or for the benefit of the Consultant were obtained at a specific point in time and it may not be assumed by the Client or any person relying on this Report that the Data will remain unaffected by the passage of time, the seasons, weather conditions, changes in the water table or the carrying out and completion of works at the Site.

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Groundtech Consulting Ltd that this Report is to be used for the Purpose. The Purpose was instrumental in determining the scope and of the Services provided. If the Purpose should change, the Client may not be able to rely on the Report without the separate agreement of Groundtech Consulting Ltd.

Since the Report was written, later changes in legislation, statutory requirements and industry best practices have not been considered and this should be allowed for. Ground conditions can also change (see below) and should be investigated if there is any significant delay in acting on the findings of this Report. The period of time may result in changes in site conditions, regulatory or other legal provisions, technology or economic conditions which could render the Report inaccurate or unreliable. The information and conclusions in this Report should not be relied upon in the future without written confirmation from Groundtech Consulting Ltd that it is safe to do so.

The observations and conclusions outlined in this Report are based exclusively on the services that were provided as set out in the agreement between the client and Groundtech Consulting Ltd.

Groundtech Consulting Ltd is not liable for the existence of any condition, the discovery of which would require additional investigation outside the agreed scope of works or core competency. The Report is based upon Groundtech Consulting Ltd's observations of existing physical conditions at the Site gained from site reconnaissance together with interpretation of information including documentation, obtained from third parties and from the Client on the history and usage of the Site. The findings and recommendations contained in this Report are based in part upon information provided by third parties, and Groundtech Consulting Ltd have relied upon such information assuming it to be correct.

Groundtech Consulting Ltd accepts no responsibility for errors or inaccuracies in third party information presented in this Report. Groundtech Consulting Ltd was not authorised to independently verify the accuracy or completeness of information, documentation or materials received from the client or third parties, including laboratories and information services, during the performance of the Services or Additional Services. Groundtech Consulting Ltd is not liable for any inaccurate information, misrepresentation of data or conclusions, which may inform the scope of investigation undertaken by Groundtech Consulting Ltd and forms the contract with the client.

Where field investigations have been carried out these have been restricted to a level of detail required to achieve the stated objectives of the work. Ground conditions may also vary due to the ground's heterogeneous properties and because investigation exploratory locations only allow examination of the ground at discrete

locations. The potential exists for ground conditions to be encountered which are different to those considered in this Report, particularly between exploratory holes. The extent of the limited area depends on the soil and groundwater conditions, together with other constraints such as the position of any existing structures and underground utilities. If so stipulated in the Agreement, geo-environmental testing was carried out for a limited number of parameters based on an understanding of the available operational and historical information, and it should not be inferred that other chemical species are not present.

Any groundwater conditions entered on the exploratory hole records are those observed at the time of investigation. The groundwater level often has not had time to reach equilibrium and a monitoring period is required. Furthermore, groundwater levels are subject to seasonal variation or changes in local drainage conditions and groundwater levels may occur at other times of the year which are higher than were recorded during this investigation.

Any site drawings provided in this Report are preliminary and used to present the general relative locations of features on, and surrounding, the Site.

