



APPENDIX 6 - Preliminary UXO Risk Assessment

Preliminary Unexploded Ordnance (UXO) Risk Assessment

Project Name	Old Wainfleet Road
Client	Groundtech Consulting Limited
Site Address	Old Wainfleet Road Skegness, PE25 3RR.
Report Reference	PA18572-00
Date	30/08/23
Author	SD
Quality Assurance	AT

1st Line Defence

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Assessment Objective

This preliminary unexploded ordnance (UXO) risk assessment is a qualitative screening exercise to assess the likely potential of encountering UXO at the Old Wainfleet site. The assessment involves the consideration of the basic factors that affect the potential for UXO to be present at a site as outlined in Stage One of the UXO risk management process.

Background

This assessment uses the sources of information available in-house to 1st Line Defence Ltd to enable the placement of a development site in context with events that may have led to the presence of German air-delivered or Allied military UXO. The report will identify any immediate necessity for risk mitigation or additional research in the form of a Detailed UXO Risk Assessment. It makes use of 1st Line Defence's extensive historical archives, library and unique geo-databases, as well as internet resources, and is researched and compiled by UXO specialists and graduate researchers.

The assessment directly follows CIRIA C681 guidelines "Unexploded Ordnance, a Guide for the Construction Industry". The document will therefore assess the following factors:

- Basic Site Data
- Previous Military Use
- Indicators of potential aerial delivered UXO threat
- Consideration of any Mitigating Factors
- Extent of Proposed Intrusive Works
- Any requirement for Further Work

It should be noted that the vast majority of construction sites in the UK will have a low or negligible risk of encountering UXO and should be able to be screened out at this preliminary stage. The report is meant as a common sense 'first step' in the UXO risk management process. The content of the report and conclusions drawn are based on basic, preliminary research using the information available to 1st Line Defence at the time this report was produced. It should be noted that the only way to entirely negate risk from UXO to a project would be to support the works proposed with appropriate UXO risk mitigation measures. It is rarely possible to state that there is absolutely 'no' risk from UXO to a project.

Site Boundary



Risk Assessment Considerations	
Site location and description/current use	<p>The site is located on Old Wainfleet Road in the town of Skegness, Lincolnshire. It is comprised of a large paved car park. It is adjacent to a large building, laying directly to its west. Its northern boundary is comprised of a field, its eastern boundary by several separate buildings, and its south by <i>Old Wainfleet Road</i> itself. It is approximately located on OS grid reference: TF 55909 63491.</p>
Are there any indicators of current/historical military activity on/close to the site?	<p>In-house records do not indicate that the site has had any current/former military use. No features such as WWII defensive positions, encampments or firing ranges are recorded to have been located at or in the immediate vicinity of the site. In addition, no evidence could be found to suggest that items of ordnance have ever been produced, stored or disposed of within the site or its immediate vicinity.</p> <p>The site was occupied by a brick works during the war. While difficult to definitively prove, local military units would often use such premises for ad-hoc disposal of ordnance or training.</p>
What was the pre- and post-WWII history of the site?	<p>Pre-war OS mapping from 1938 depicts the site as falling upon a lot dubbed <i>brick works</i>. It is bounded by fields and a building to the north with further fields to the east, with a hospital just beyond. To its south lay <i>Old Wainfleet Road</i>. On its west lay several buildings. The site itself appears to be undeveloped land.</p> <p>Post-war OS mapping from 1946 depicts the site in a fairly similar manner. It is labelled as <i>brick works</i> and is bounded by the similar overall features. One building that previously lay directly to its north has since been removed, making its northern boundary entirely defined by fields.</p>
Was the area subject to bombing during WWII?	<p>During WWII, the site was situated within the Urban District of Skegness, which according to official Home Office bombing statistics sustained an overall low density bombing campaign. A district of 3,862 acres, Skegness was subject to 98 high explosive (HE) bombs and seven 'fire pots'; a total of 105 incidents and an average of 27.2 items of ordnance recorded per 1,000 acres.</p> <p>The exact location of bombing in relation to the site could not be determined at this preliminary stage. Evidence at this stage suggests both Lincoln Road to the north and Alexandra Road to the south received bombing.</p>
Is there any evidence of bomb damage on/close to the site?	<p>No evidence of bombing can be discerned to have fallen on the site, or on its immediate vicinity. The analysis of aerial photography would be required to determine the wartime state of the site and it unavailable at this preliminary stage.</p>
To what degree would the site have been subject to access?	<p>The site appears to have been part of a wider industrial property, but remained undeveloped as part of a wider estate. It was located nearby to a hospital and the wider <i>brick works</i>.</p> <p>Evidence of UXO is more likely to go unnoticed in areas of infrequent visibility and access.</p>
To what degree has the site been developed post-WWII?	<p>The site has likely been redeveloped. Pre and post-war OS mapping depicts it as an empty lot, however the nature of its use is unable to be discerned at this preliminary stage. However, in the modern day, it is shown to be a paved car park, implying some degree of post-war development.</p>
What is the nature and extent of the intrusive works proposed?	<p>The exact nature of the proposed works was not available at the time of writing.</p>

Summary and Conclusions

During WWII, the site was situated within the Urban District of Skegness, which according to official Home Office bombing statistics sustained an overall low density bombing campaign, across a district of 3,862 acres.

The exact location of bombing in relation to the site could not be determined at this preliminary stage. Evidence at this stage suggests both Lincoln Road to the north and Alexandra Road to the south received bombing.

Recommendations

Given the findings of this preliminary report, further research is recommended in the form of a Detailed UXO Risk Assessment in accordance with CIRIA guidelines. This is recommended in order to better assess the wartime conditions within and around the proposed area of works. Further research would involve the acquisition of any available written local bombing records, WWII-era aerial photography and other archival material.

Prior to or in lieu of a Detailed Assessment, it is recommended that appropriate UXO Risk Mitigation Measures are provided for intrusive works proposed.

If the client has any anecdotal or empirical evidence of UXO risk on site, please contact 1st Line Defence.

1st Line Defence

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APPENDIX 7 - CIRIA C552 Risk Assessment Methodology

Contaminated Land Risk Assessment

Contaminated Land Risk Assessment is a technique that identifies and considers the associated risk, determines whether the risks are significant and whether action needs to be taken. The four main stages of risk assessment are:

Hazard Identification ⇨ Hazard Assessment ⇨ Risk Estimation ⇨ Risk Evaluation

LCRM outlines the framework to be followed for risk assessment in the UK. The framework is designed to be consistent with UK legislation and policies including planning. The starting point of the risk assessment is to identify the context of the problem and the objectives of the process.

Formulating and developing a conceptual model for the site is an important requirement of risk assessment, this supports the identification and assessment of pollutant linkages. Development of the conceptual model forms the main part of preliminary risk assessment, and the model is subsequently refined or revised as more information and understanding is obtained through the risk assessment process.

Risk is a combination of the likelihood of an event occurring and the magnitude of its consequences. Therefore, both the likelihood and the consequences of an event must be taken into account when assessing risk.

The risk assessment process needs to take into account the degree of confidence required in decisions. Identification of uncertainties is an essential step in risk assessment.

The likelihood of an event is classified on a four-point system using the following terms and definitions from CIRIA C552:

- **High likelihood:** There is a pollution linkage and an event appears very likely in the short term and almost inevitable over the long term, or there is evidence at the receptor of harm or pollution;
- **Likely:** There is a pollution linkage and all the elements are present and in the right place, which means it is probable that an event will occur. Circumstances are such that the event is not inevitable, but possible in the short term and likely over the long term;
- **Low likelihood:** There is a pollution linkage and circumstances are possible under which an event could occur. However, it is by no means certain even over a longer period such event would take place, and is less likely in the short term;
- **Unlikely:** There is a pollution linkage but circumstances are such that it is improbable the event would occur even in the long term.

The severity is also classified using a system based on CIRIA C552. The terms and definitions are:

- **Severe:** Short term (acute) risk to human health likely to result in 'significant harm' as defined by the Environment Protection Act 1990, Part IIA. Short-term risk of pollution of sensitive water resources. Catastrophic damage to buildings or property. A short-term risk to a particular ecosystem or organism forming part of that ecosystem (note definition of ecosystem in 'Draft Circular on Contaminated Land', DETR 2000);
Examples – High concentrations of contaminant on surface of recreation area, major spillage of contaminants from site into controlled waters, explosion causing building to collapse;

- Medium:** Chronic damage to human health ('significant harm' as defined in DETR 2000). Pollution of sensitive water resources. A significant change in a particular ecosystem or organism forming part of that ecosystem (note definition of ecosystem in 'Draft Circular on Contaminated Land', DETR 2000);
Examples - Concentrations of contaminants exceed the generic assessment criteria, leaching of contaminants from a site to a Principal or Secondary Aquifer, death of species within a designated nature reserve;
- Mild:** Pollution of non-sensitive water resources. Significant damage to crops, buildings, structures and services ('significant harm' as defined in 'Draft Circular on Contaminated Land', DETR 2000). Damage to sensitive buildings, structures, services or the environment;
Examples – Pollution of non-classified groundwater or damage to buildings rendering it unsafe to occupy.
- Minor:** harm, not necessarily significant harm, which may result in financial loss or expenditure to resolve. Non-permanent health effects to human health (easily prevented by use of personal protective clothing etc). Easily repairable effects of damage to buildings, structures and services.
Examples – Presence of contaminants at such concentrations PPE is required during site work, loss of plants in landscaping scheme or discolouration of concrete.

Once the likelihood and severity have been determined, a risk category can be assigned using the table below.

		Consequences			
		Severe	Medium	Mild	Minor
Probability	Highly likely	Very high	High	Moderate	Moderate/low
	Likely	High	Moderate	Moderate/low	Low
	Low likelihood	Moderate	Moderate/low	Low	Very low
	Unlikely	Moderate/low	Low	Very Low	Very low

Definitions of the risk categories obtained from the above table are as follows together with an assessment of the further work that might be required:

- Very high:** There is a high probability that severe harm could arise to a designated receptor from an identified hazard or there is evidence that severe harm is currently happening. This risk, if realised, could result in substantial liability. Urgent investigation and remediation are likely to be required;
- High:** Harm is likely to arise to a designated receptor from an identified hazard. Realisation of the risk is likely to present a substantial liability. Urgent investigation is required and remedial works may be necessary in the short term and are likely over the longer term;
- Moderate:** It is possible that harm could arise to a designated receptor from an identified hazard. However, it is either relatively unlikely that any such harm would be severe, or if any harm were to occur it would be more likely to be relatively mild. Investigation is normally required to clarify the risk and determine the liability. Some remedial works may be required in the longer term;
- Low:** It is possible that harm could arise to a designated receptor from an identified hazard, but it is likely that this harm, if realised, would at worst normally be mild;
- Very Low:** There is a low possibility that harm could arise to a receptor. In the event of such harm being realised, it is not likely to be severe.



APPENDIX 8 - Exploratory Hole Logs

Borehole Log

Borehole No.

CP01

Sheet 1 of 2

Project Name: CDC SKEGNESS

 Project No.
GR0-23133

Co-ords: -

 Hole Type
CP

Location: OLD WAINFLEET ROAD

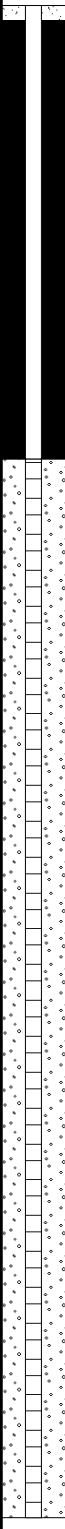
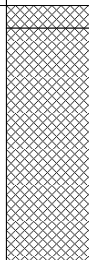
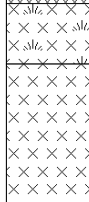
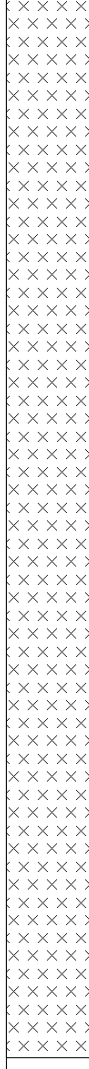
Level:

 Scale
1:50

Client: UNITED LINCOLNSHIRE HOSPITALS NHS TRUST

Dates: 13/09/2023 - 14/09/2023

 Logged By
HM

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.20	D		0.15		MADE GROUND: Tarmac.		
		0.20	ES					MADE GROUND: Light grey angular to subangular fine to coarse gravel of chalk with low cobble content of chalk.	
		0.50	ES						
		1.00	D						
			1.00	ES					1
			1.20		N=3 (1,0/1,0,1,1)				
			1.20 - 1.65	D					
			1.80	D		1.70		Soft dark brown clayey organic SILT locally silty CLAY. (TIDAL FLAT DEPOSITS).	
			2.00		N=1 (1,0/0,1,0,0)				Soft dark grey clayey SILT locally silty CLAY. (TIDAL FLAT DEPOSITS).
			2.00 - 2.45	D		2.10			
			2.50	D					
			3.00		N=1 (1,0/0,0,1,0)				No organic material. Slightly sandy band of silt
			3.00 - 3.45	D					
			4.00		N=1 (0,0/0,0,0,1)				
		4.00 - 4.45	D					4	
		5.00	ES						
		5.00		N=2 (1,0/0,1,0,1)					
		5.00 - 5.45	D					5	
		6.50		N=2 (0,0/1,0,1,0)					
		6.50 - 6.95	D					7	
		8.00		N=3 (1,0/1,1,1,0)					
		8.00 - 8.45	D					8	
		9.50		N=4 (0,1/1,1,1,1)					
		9.50 - 9.95	D					9	
								10	

Continued on next sheet

Remarks

1. Location cleared of services using hand held CAT scanner. 2. Hand excavated inspection pit to 1.2m bgl. 3. Groundwater encountered at 3.10m bgl. 4. Borehole terminated at 19.5m bgl. 5. 50mm standpipe installed to 12.0m bgl (3.0m plain 9.0m slotted).





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Borehole Log

Borehole No.

CP01

Sheet 2 of 2

Project Name: CDC SKEGNESS

Project No.
GR0-23133

Co-ords: -

Hole Type
CP

Location: OLD WAINFLEET ROAD

Level:

Scale
1:50

Client: UNITED LINCOLNSHIRE HOSPITALS NHS TRUST

Dates: 13/09/2023 - 14/09/2023

Logged By
HM

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		11.00 11.00 - 11.45	D	N=4 (1,2/1,0,2,1)	11.00		Soft dark brown slightly sandy slightly clayey SILT locally silty CLAY. (TIDAL FLAT DEPOSITS).	11	
		12.50 12.50 - 12.95	D	N=15 (2,1/15 for 250mm)	12.50		Stiff brown slightly sandy CLAY. Sand is fine to medium. (FERRIBY CHALK FORMATION).	12	
		14.00 - 14.45	D					13	
		14.50	D		14.60			14	
		15.00 15.00 - 16.00	D	N=15 (2,3/3,4,4,4)			Medium dense brown sandy angular to subangular fine to coarse GRAVEL of flint and chalk. Sand is fine to coarse. (FERRIBY CHALK FORMATION).	15	
		16.00 - 16.30	D		16.00			16	
		16.50 16.50 - 16.95	D	N=18 (3,4/3,4,5,6)	16.30		Stiff brown slightly sandy slight gravelly CLAY. Gravel is angular to subangular fine to coarse of mixed lithologies. Sand is fine to coarse. (FERRIBY CHALK FORMATION).	17	
		17.50		N=24 (3,4/5,6,6,7)			Medium dense light grey sandy angular to subangular medium gravel of chalk. Sand is coarse. (FERRIBY CHALK FORMATION).	18	
		18.50 - 18.95	D					19	
		19.00 19.00 - 19.45	D	N=32 (4,4/5,7,10,10)	19.50			19	
							End of borehole at 19.50 m	20	

Remarks

1. Location cleared of services using hand held CAT scanner. 2. Hand excavated inspection pit to 1.2m bgl. 3. Groundwater encountered at 3.10m bgl. 4. Borehole terminated at 19.5m bgl. 5. 50mm standpipe installed to 12.0m bgl (3.0m plain 9.0m slotted).





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Borehole Log

Borehole No.

CP02

Sheet 1 of 3

Project Name: CDC SKEGNESS

Project No.
GR0-23133

Co-ords: -

Hole Type
CP

Location: OLD WAINFLEET ROAD

Level:

Scale
1:50

Client: UNITED LINCOLNSHIRE HOSPITALS NHS TRUST

Dates: 14/09/2023 - 18/09/2023

Logged By
HM

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.20	ES		0.10			MADE GROUND: Tarmac. MADE GROUND: Light grey slightly sandy angular to subangular fine to coarse gravel of chalk with low cobble content of chalk. Sand is fine to coarse. Soft brown mottled grey silty CLAY. (TIDAL FLAT DEPOSITS). Soft brown grey clayey SILT locally silty CLAY. (TIDAL FLAT DEPOSITS).	
		0.40	D		0.50				
		0.50	ES						
		1.00	D						
		1.00	ES	N=3 (1,0/3 for 230mm)	1.00				
		1.20	D						
		1.20 - 1.65	D						
		2.00	ES						
		2.00 - 2.45	U						
		2.50	D						
		3.00		N=1 (1,0/0,0,1,0)	3.00				
		3.00 - 3.45	D						
		4.00		N=1 (0,0/0,0,0,1)	4.00				
	4.00 - 4.45	D							
	5.00		N=2 (1,0/0,1,0,1)	5.00					
	5.00 - 5.45	D							
	6.50		N=2 (0,0/1,0,1,0)	6.50					
	6.50 - 6.95	D							
	8.00		N=3 (1,0/1,1,1,0)	8.00					
	8.00 - 8.45	D							
	9.50		N=4 (0,1/1,1,1,1)	9.50					
	9.50 - 9.95	D							

Continued on next sheet

Remarks

1. Location cleared of services using hand held CAT scanner. 2. Hand excavated inspection pit to 1.2m bgl. 3. Groundwater encountered at 2.5m bgl. 4. Borehole terminated at 22.00m. 5. 50mm standpipe installed to 12.0m bgl (3.0m plain 9.0m slotted).





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Borehole Log

Borehole No.

CP02

Sheet 2 of 3

Project Name: CDC SKEGNESS

Project No.
GR0-23133

Co-ords: -

Hole Type
CP

Location: OLD WAINFLEET ROAD

Level:

Scale
1:50

Client: UNITED LINCOLNSHIRE HOSPITALS NHS TRUST

Dates: 14/09/2023 - 18/09/2023

Logged By
HM

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		11.00 11.00 - 11.45	D	N=4 (1,2/1,0,2,1)				11
		12.50 12.50 - 12.95	D	N=15 (2,1/2,4,4,5)	12.50		Stiff brown slightly sandy CLAY. Sand is fine to coarse. (FERRIBY CHALK FORMATION).	12 13
		14.00 - 14.45	U					14
		14.50 - 14.95	D		14.70			
		15.00 15.00 - 15.45	D	N=18 (3,3/3,4,5,6)			Medium dense brown silty gravelly SAND. Gravel is angular to subangular fine to coarse of chalk. Sand is fine to coarse. (FERRIBY CHALK FORMATION).	15 16
		16.50 16.50 - 16.95	D	N=21 (3,4/21 for 270mm)				17
		18.00 18.00 - 18.45	D	N=20 (4,4/5,4,5,6)				18
	19.50 19.50 - 19.95	D	N=36 (5,5/5,9,10,12)	19.50		Structureless CHALK comprised of slightly clayey gravel. Clasts are very weak low density subangular to subrounded. (Grade Dc) (Ferriby	19 20	

Continued on next sheet

Remarks

1. Location cleared of services using hand held CAT scanner. 2. Hand excavated inspection pit to 1.2m bgl. 3. Groundwater encountered at 2.5m bgl. 4. Borehole terminated at 22.00m. 5. 50mm standpipe installed to 12.0m bgl (3.0m plain 9.0m slotted).





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Borehole Log

Borehole No.

CP02

Sheet 3 of 3

Project Name: CDC SKEGNESS

Project No.
GR0-23133

Co-ords: -

Hole Type
CP

Location: OLD WAINFLEET ROAD

Level:

Scale
1:50

Client: UNITED LINCOLNSHIRE HOSPITALS NHS TRUST

Dates: 14/09/2023 - 18/09/2023

Logged By
HM

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		21.00	D	N=43 (4,5/8,10,10,15)				Chalk Formation).
		21.00 - 21.45						
		22.00		N=40 (1,0/40 for 270mm)	22.00			Structureless CHALK comprised of slightly sandy cobbles. Clasts are very weak low density subangular to subrounded. (Grade Dc) (Ferriby Chalk Formation).
					22.50			
								End of borehole at 22.50 m

Remarks
 1. Location cleared of services using hand held CAT scanner. 2. Hand excavated inspection pit to 1.2m bgl. 3. Groundwater encountered at 2.5m bgl. 4. Borehole terminated at 22.00m. 5. 50mm standpipe installed to 12.0m bgl (3.0m plain 9.0m slotted).





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Borehole Log

Borehole No.

WS01

Sheet 1 of 1

Project Name: CDC SKEGNESS

Project No.
GR0-23133

Co-ords: -

Hole Type
WS

Location: OLD WAINFLEET ROAD

Level:

Scale
1:25

Client: UNITED LINCOLNSHIRE HOSPITALS NHS TRUST

Dates: 15/09/2023 -

Logged By
HM

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.10	D		0.10		MADE GROUND: Tarmac.	1	
		0.10	ES				MADE GROUND: Light grey angular to subangular fine to coarse gravel of chalk with low cobble content of chalk.		
		0.30	ES						
		0.60	D		0.60		MADE GROUND: Brown sandy angular to subangular fine to coarse gravel with a high cobble content of chalk and brick. Sand is fine to coarse.		
		0.60	ES						
		1.00	D		1.00		Soft brown silty CLAY locally clayey SILT. (TIDAL FLAT DEPOSITS).		1
2.30	D		2.30				2		
3.00	D						3		
				4.00			End of borehole at 4.00 m	4	
								5	

Remarks

1. Location cleared of services using hand held CAT scanner. 2. Hand excavated inspection pit to 1.2m bgl. 3. Groundwater encountered at 2.7m bgl. 4. Borehole terminated at 4.00m bgl due to groundwater ingress. 5. 35mm standpipe installed to 4.0m bgl (1.0m plain 3.0m slotted).





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Borehole Log

Borehole No.

WS02

Sheet 1 of 1

Project Name: CDC SKEGNESS

Project No.
GR0-23133

Co-ords: -

Hole Type
WS

Location: OLD WAINFLEET ROAD

Level:

Scale
1:25

Client: UNITED LINCOLNSHIRE HOSPITALS NHS TRUST

Dates: 15/09/2023 -

Logged By
HM

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.00 - 0.10	ES		0.10		MADE GROUND: Tarmac.		
		0.20	ES				MADE GROUND: Light grey angular to subangular fine to coarse gravel of chalk with low cobble content of chalk.		
		0.50	ES		0.50		MADE GROUND: Black sandy angular to subangular fine to coarse gravel with a high cobble content of chalk and brick. Sand is fine to coarse.		
		1.00 1.00	D ES		1.00		Firm brown silty CLAY locally clayey SILT. (TIDAL FLAT DEPOSITS).	1	
		2.00	D					2	
		3.00	D					3	
		4.00	D		4.00			4	
		End of borehole at 4.00 m							5

Remarks

1. Location cleared of services using hand held CAT scanner. 2. Hand excavated inspection pit to 1.2m bgl. 3. Groundwater encountered at 2.4m bgl. 4. Borehole terminated at 4.0m bgl due to groundwater ingress. 5. 35mm standpipe installed to 4.0m bgl (1.0m plain 3.0m slotted).





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Borehole Log

Borehole No.

WS03

Sheet 1 of 1

Project Name: CDC SKEGNESS

Project No.
GR0-23133

Co-ords: -

Hole Type
WS

Location: OLD WAINFLEET ROAD

Level:

Scale
1:25

Client: UNITED LINCOLNSHIRE HOSPITALS NHS TRUST

Dates: 15/09/2023 -

Logged By
HM

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.20	ES		0.20		MADE GROUND: Grey angular to subangular medium to coarse gravel.	
		0.60	ES		0.50		MADE GROUND: Light grey slightly sandy angular to subangular fine to coarse gravel of chalk with low cobble content of chalk. Sand is fine to coarse.	
		1.00	D				Soft to firm dark brown slightly sandy CLAY locally clayey SILT. Sand is fine to coarse. (TIDAL FLAT DEPOSITS).	
		1.00	ES					
		2.00	D					
	3.00	D						
	4.00	D			4.00		End of borehole at 4.00 m	

Remarks

1. Location cleared of services using hand held CAT scanner. 2. Hand excavated inspection pit to 1.2m bgl. 3. Groundwater encountered at 2.5m bgl. 4. Borehole terminated at 4.0m bgl due to groundwater ingress. 5. 35mm standpipe installed to 4.0m bgl (1.0m plain 3.0m slotted).





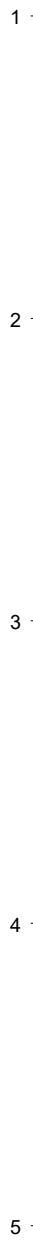
Trial Pit Log

Project Name: CDC SKEGNESS Project No. GR0-23133 Co-ords: - Date 13/09/2023
Level: _____

Location: OLD WAINFLEET ROAD Dimensions (m): Scale 1:25

Client: UNITED LINCOLNSHIRE HOSPITALS NHS TRUST Depth 0.40 Logged HM

Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
	Depth	Type	Results				
	0.20	ES		0.10			MADE GROUND: Tarmac.
				0.40			MADE GROUND: Light grey slightly sandy angular to subangular, fine to coarse gravel of chalk with low cobble content. Sand is fine to coarse.
							----- End of pit at 0.40 m



Remarks: 1. Location cleared of services using hand held CAT scanner. 2. No groundwater encountered. 3. Plate load test undertaken. 4. Backfilled with arisings.

Stability: Stable.


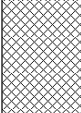


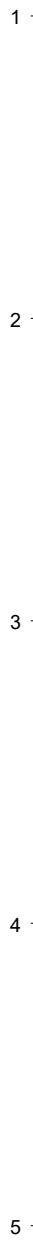
Trial Pit Log

Project Name: CDC SKEGNESS Project No. GR0-23133 Co-ords: - Date 13/09/2023
Level:

Location: OLD WAINFLEET ROAD Dimensions (m): Scale 1:25

Client: UNITED LINCOLNSHIRE HOSPITALS NHS TRUST Depth 0.55 Logged HM

Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
	Depth	Type	Results				
	0.20	ES		0.10			MADE GROUND: Tarmac.
	0.50	ES		0.50			MADE GROUND: Light grey slightly sandy angular to subangular, fine to coarse gravel of chalk with medium cobble content. Sand is fine to coarse.
				0.50			MADE GROUND: Dark brown gravelly fine to coarse sand. Gravel is angular to subangular fine to coarse of brick, metal, ceramic, slag and flint. End of pit at 0.55 m



Remarks: 1. Location cleared of services using hand held CAT scanner. 2. No groundwater encountered. 3. Plate load test undertaken. 4. Backfilled with arisings.

Stability: Stable.


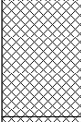



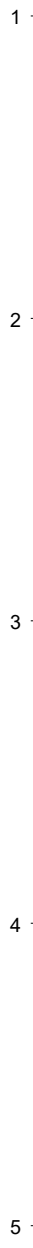
Trial Pit Log

Project Name: CDC SKEGNESS Project No. GR0-23133 Co-ords: - Date 13/09/2023
Level:

Location: OLD WAINFLEET ROAD Dimensions (m): Scale 1:25

Client: UNITED LINCOLNSHIRE HOSPITALS NHS TRUST Depth 0.55 Logged HM

Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
	Depth	Type	Results				
	0.20	ES		0.10			MADE GROUND: Tarmac.
	0.50	ES		0.50 0.55			MADE GROUND: Light grey slightly sandy angular to subangular, fine to coarse gravel of chalk with medium cobble content. Sand is fine to coarse.
							MADE GROUND: Dark brown gravelly fine to coarse sand. Gravel is angular to subangular fine to coarse of brick, metal, ceramic, slag and flint. End of pit at 0.55 m



Remarks: 1. Location cleared of services using hand held CAT scanner. 2. No groundwater encountered. 3. Plate load test undertaken. 4. Backfilled with arisings.

Stability: Stable.





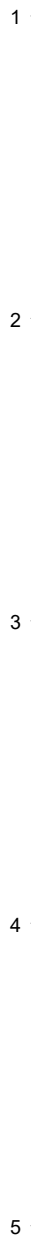
Trial Pit Log

Project Name: CDC SKEGNESS Project No. GR0-23133 Co-ords: - Date 13/09/2023
Level:

Location: OLD WAINFLEET ROAD Dimensions (m): Scale 1:25

Client: UNITED LINCOLNSHIRE HOSPITALS NHS TRUST Depth 0.40 Logged HM

Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
	Depth	Type	Results				
	0.20	ES		0.10			MADE GROUND: Tarmac.
				0.40			MADE GROUND: Light grey slightly sandy angular to subangular, fine to coarse gravel of chalk with low cobble content. Sand is fine to coarse.
							----- End of pit at 0.40 m



Remarks: 1. Location cleared of services using hand held CAT scanner. 2. No groundwater encountered. 3. Plate load test undertaken. 4. Backfilled with arisings.


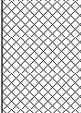
Stability: Stable.

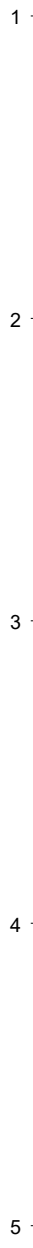


Trial Pit Log

Project Name: CDC SKEGNESS Project No. GR0-23133 Co-ords: - Date 13/09/2023
Level:

Location: OLD WAINFLEET ROAD Dimensions (m): Scale 1:25
Client: UNITED LINCOLNSHIRE HOSPITALS NHS TRUST Depth 0.50 Logged

Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
	Depth	Type	Results				
				0.10			MADE GROUND: Tarmac.
				0.50			MADE GROUND: Light grey slightly sandy angular to subangular, fine to coarse gravel of chalk with low cobble content. Sand is fine to coarse.
							----- End of pit at 0.50 m



Remarks: 1. Location cleared of services using hand held CAT scanner. 2. No groundwater encountered. 3. Plate load test undertaken. 4. Backfilled with arisings.

Stability: Stable.





APPENDIX 9 - Geo-Environmental Testing Results

Groundtech Consulting Limited
PO Box 499
Manchester
United Kingdom
M28 8EE



4225



Attention : Hugo Mackdermott
Date : 31st October, 2023
Your reference : GRO-23133
Our reference : Test Report 23/15430 Batch 1
Location : CDC Skegness
Date samples received : 19th September, 2023
Status : Final Report
Issue : 1

Twenty three samples were received for analysis on 19th September, 2023 of which eight were scheduled for analysis. Please find attached our Test Report which should be read with notes at the end of the report and should include all sections if reproduced. Interpretations and opinions are outside the scope of any accreditation, and all results relate only to samples supplied.

All analysis is carried out on as received samples and reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected.

The greenhouse gas emissions generated (in Carbon – Co2e) to obtain the results in this report are estimated as:

Scope 1&2 emissions - 18.534 kg of CO2

Scope 1&2&3 emissions - 43.802 kg of CO2

Authorised By:



Phil Sommerton BSc

Senior Project Manager

Please include all sections of this report if it is reproduced

Element Materials Technology

Client Name: Groundtech Consulting Limited
Reference: GRO-23133
Location: CDC Skegness
Contact: Hugo Mackdermott
EMT Job No: 23/15430

Report : Solid

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

EMT Sample No.	1-3	23-25	29-31	32-35	36-38	55-57	60-62	63-65					
Sample ID	PLT01	CP1	CP1	CP2	CP2	WS02	WS03	WS03					
Depth	0.20	0.50	2.00	0.50	1.00	0.50	0.20	0.60					
COC No / misc													
Containers	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T					
Sample Date	13/09/2023	13/09/2023	13/09/2023	14/09/2023	14/09/2023	15/09/2023	15/09/2023	15/09/2023					
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil					
Batch Number	1	1	1	1	1	1	1	1					
Date of Receipt	19/09/2023	19/09/2023	19/09/2023	19/09/2023	19/09/2023	19/09/2023	19/09/2023	19/09/2023					
											LOD/LOR	Units	Method No.
Arsenic #	1.2	0.9	11.5	2.8	1.8	11.0	16.2	22.5			<0.5	mg/kg	TM30/PM15
Cadmium #	0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1			<0.1	mg/kg	TM30/PM15
Chromium #	4.0	2.0	49.8	6.2	5.4	29.2	49.9	47.7			<0.5	mg/kg	TM30/PM15
Copper #	6	5	12	7	6	18	14	17			<1	mg/kg	TM30/PM15
Lead #	<5	<5	22	<5	<5	11	23	22			<5	mg/kg	TM30/PM15
Mercury #	<0.1	<0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1			<0.1	mg/kg	TM30/PM15
Nickel #	3.5	2.7	22.6	6.8	3.8	13.3	24.7	41.8			<0.7	mg/kg	TM30/PM15
Selenium #	<1	<1	<1	<1	<1	<1	<1	<1			<1	mg/kg	TM30/PM15
Zinc #	13	11	72	17	13	17	70	85			<5	mg/kg	TM30/PM15
PAH MS													
Naphthalene #	<0.04	<0.04	<0.04	<0.04	<0.04	0.41	<0.04	<0.04			<0.04	mg/kg	TM4/PM8
Acenaphthylene	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03			<0.03	mg/kg	TM4/PM8
Acenaphthene #	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05			<0.05	mg/kg	TM4/PM8
Fluorene #	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04			<0.04	mg/kg	TM4/PM8
Phenanthrene #	<0.03	<0.03	<0.03	<0.03	0.06	0.25	0.25	<0.03			<0.03	mg/kg	TM4/PM8
Anthracene #	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	0.06	<0.04			<0.04	mg/kg	TM4/PM8
Fluoranthene #	<0.03	0.03	<0.03	<0.03	0.18	0.19	0.39	<0.03			<0.03	mg/kg	TM4/PM8
Pyrene #	<0.03	<0.03	<0.03	<0.03	0.15	0.16	0.29	<0.03			<0.03	mg/kg	TM4/PM8
Benzo(a)anthracene #	<0.06	<0.06	<0.06	<0.06	0.14	0.19	0.20	<0.06			<0.06	mg/kg	TM4/PM8
Chrysene #	<0.02	<0.02	<0.02	<0.02	0.12	0.21	0.20	<0.02			<0.02	mg/kg	TM4/PM8
Benzo(bk)fluoranthene #	<0.07	<0.07	<0.07	<0.07	0.22	0.37	0.28	<0.07			<0.07	mg/kg	TM4/PM8
Benzo(a)pyrene #	<0.04	<0.04	<0.04	<0.04	<0.04	0.20	<0.04	<0.04			<0.04	mg/kg	TM4/PM8
Indeno(123cd)pyrene #	<0.04	<0.04	<0.04	<0.04	0.10	0.14	0.11	<0.04			<0.04	mg/kg	TM4/PM8
Dibenzo(ah)anthracene #	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04			<0.04	mg/kg	TM4/PM8
Benzo(ghi)perylene #	<0.04	<0.04	<0.04	<0.04	0.10	0.15	0.11	<0.04			<0.04	mg/kg	TM4/PM8
PAH 16 Total	<0.6	<0.6	<0.6	<0.6	1.1	2.3	1.9	<0.6			<0.6	mg/kg	TM4/PM8
Benzo(b)fluoranthene	<0.05	<0.05	<0.05	<0.05	0.16	0.27	0.20	<0.05			<0.05	mg/kg	TM4/PM8
Benzo(k)fluoranthene	<0.02	<0.02	<0.02	<0.02	0.06	0.10	0.08	<0.02			<0.02	mg/kg	TM4/PM8
PAH Surrogate % Recovery	100	91	91	89	88	93	91	89			<0	%	TM4/PM8
Natural Moisture Content	10.9	10.7	41.6	3.5	10.5	12.5	26.1	27.5			<0.1	%	PM4/PM0
Hexavalent Chromium #	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3			<0.3	mg/kg	TM38/PM20
Sulphate as SO4 (2:1 Ext) #	0.0399	0.0384	0.0392	0.0313	0.0176	0.0518	0.0259	0.0215			<0.0015	g/l	TM38/PM20
Organic Matter	<0.2	<0.2	4.0	0.3	<0.2	6.4	3.7	1.6			<0.2	%	TM21/PM24
pH #	9.22	9.01	7.81	9.23	9.30	8.84	8.43	7.96			<0.01	pH units	TM73/PM11

Please see attached notes for all abbreviations and acronyms

Client Name: Groundtech Consulting Limited
Reference: GRO-23133
Location: CDC Skegness
Contact: Hugo Mackdermott

Note:

Asbestos Screen analysis is carried out in accordance with our documented in-house methods PM042 and TM065 and HSG 248 by Stereo and Polarised Light Microscopy using Dispersion Staining Techniques and is covered by our UKAS accreditation. Detailed Gravimetric Quantification and PCOM Fibre Analysis is carried out in accordance with our documented in-house methods PM042 and TM131 and HSG 248 using Stereo and Polarised Light Microscopy and Phase Contrast Optical Microscopy (PCOM). Asbestos sub-samples are retained for not less than 6 months from the date of analysis unless specifically requested.

The LOQ of the Asbestos Quantification is 0.001% dry fibre of dry mass of sample.

Where the sample is not taken by a Element Materials Technology consultant, Element Materials Technology cannot be responsible for inaccurate or unrepresentative sampling.

Where trace asbestos is reported the amount of asbestos will be <0.1%.

EMT Job No.	Batch	Sample ID	Depth	EMT Sample No.	Analyst Name	Date Of Analysis	Analysis	Result
23/15430	1	PLT01	0.20	3	Simon Postlewhite	25/09/2023	General Description (Bulk Analysis)	Chalk/stones
					Simon Postlewhite	25/09/2023	Asbestos Fibres	NAD
					Simon Postlewhite	25/09/2023	Asbestos ACM	NAD
					Simon Postlewhite	25/09/2023	Asbestos Type	NAD
23/15430	1	CP1	0.50	25	Simon Postlewhite	25/09/2023	General Description (Bulk Analysis)	Chalk/stones
					Simon Postlewhite	25/09/2023	Asbestos Fibres	NAD
					Simon Postlewhite	25/09/2023	Asbestos ACM	NAD
					Simon Postlewhite	25/09/2023	Asbestos Type	NAD
23/15430	1	CP1	2.00	31	Simon Postlewhite	25/09/2023	General Description (Bulk Analysis)	Brown soil/stones
					Simon Postlewhite	25/09/2023	Asbestos Fibres	NAD
					Simon Postlewhite	25/09/2023	Asbestos ACM	NAD
					Simon Postlewhite	25/09/2023	Asbestos Type	NAD
23/15430	1	CP2	0.50	34	Simon Postlewhite	25/09/2023	General Description (Bulk Analysis)	Chalk/stones
					Simon Postlewhite	25/09/2023	Asbestos Fibres	NAD
					Simon Postlewhite	25/09/2023	Asbestos ACM	NAD
					Simon Postlewhite	25/09/2023	Asbestos Type	NAD
23/15430	1	CP2	1.00	38	Simon Postlewhite	25/09/2023	General Description (Bulk Analysis)	Brown soil/stones
					Simon Postlewhite	25/09/2023	Asbestos Fibres	NAD
					Simon Postlewhite	25/09/2023	Asbestos ACM	NAD
					Simon Postlewhite	25/09/2023	Asbestos Type	NAD
23/15430	1	WS02	0.50	57	Catherine Coles	25/09/2023	General Description (Bulk Analysis)	brown soil,stone
					Catherine Coles	25/09/2023	Asbestos Fibres	NAD
					Catherine Coles	25/09/2023	Asbestos ACM	NAD
					Catherine Coles	25/09/2023	Asbestos Type	NAD
23/15430	1	WS03	0.20	62	Simon Postlewhite	25/09/2023	General Description (Bulk Analysis)	Brown soil/stones
					Simon Postlewhite	25/09/2023	Asbestos Fibres	NAD
					Simon Postlewhite	25/09/2023	Asbestos ACM	NAD
					Simon Postlewhite	25/09/2023	Asbestos Type	NAD
23/15430	1	WS03	0.60	65	Catherine Coles	25/09/2023	General Description (Bulk Analysis)	brown soil,stone
					Catherine Coles	25/09/2023	Asbestos Fibres	NAD
					Catherine Coles	25/09/2023	Asbestos ACM	NAD
					Catherine Coles	25/09/2023	Asbestos Type	NAD

Element Materials Technology

Notification of Deviating Samples

Client Name: Groundtech Consulting Limited
Reference: GRO-23133
Location: CDC Skegness
Contact: Hugo Mackdermott

EMT Job No.	Batch	Sample ID	Depth	EMT Sample No.	Analysis	Reason
No deviating sample report results for job 23/15430						

Please note that only samples that are deviating are mentioned in this report. If no samples are listed it is because none were deviating. Only analyses which are accredited are recorded as deviating if set criteria are not met.

It is a requirement under ISO 17025 that we inform clients if samples are deviating i.e. outside what is expected. A deviating sample indicates that the sample 'may' be compromised but not necessarily will be compromised. The result is still accredited and our analytical reports will still show accreditation on the relevant analytes.

NOTES TO ACCOMPANY ALL SCHEDULES AND REPORTS

EMT Job No.: 23/15430

SOILS and ASH

Please note we are only MCERTS accredited (UK soils only) for sand, loam and clay and any other matrix is outside our scope of accreditation.

Where an MCERTS report has been requested, you will be notified within 48 hours of any samples that have been identified as being outside our MCERTS scope. As validation has been performed on clay, sand and loam, only samples that are predominantly these matrices, or combinations of them will be within our MCERTS scope. If samples are not one of a combination of the above matrices they will not be marked as MCERTS accredited.

It is assumed that you have taken representative samples on site and require analysis on a representative subsample. Stones will generally be included unless we are requested to remove them.

All samples will be discarded one month after the date of reporting, unless we are instructed to the contrary. Asbestos samples are retained for 6 months.

If you have not already done so, please send us a purchase order if this is required by your company.

Where appropriate please make sure that our detection limits are suitable for your needs, if they are not, please notify us immediately.

All analysis is reported on a dry weight basis unless stated otherwise. Limits of detection for analyses carried out on as received samples are not moisture content corrected. Results are not surrogate corrected. Samples are dried at 35°C ±5°C unless otherwise stated. Moisture content for CEN Leachate tests are dried at 105°C ±5°C. Ash samples are dried at 37°C ±5°C.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

Where a CEN 10:1 ZERO Headspace VOC test has been carried out, a 10:1 ratio of water to wet (as received) soil has been used.

% Asbestos in Asbestos Containing Materials (ACMs) is determined by reference to HSG 264 The Survey Guide - Appendix 2 : ACMs in buildings listed in order of ease of fibre release.

Sufficient amount of sample must be received to carry out the testing specified. Where an insufficient amount of sample has been received the testing may not meet the requirements of our accredited methods, as such accreditation may be removed.

Negative Neutralization Potential (NP) values are obtained when the volume of NaOH (0.1N) titrated (pH 8.3) is greater than the volume of HCl (1N) to reduce the pH of the sample to 2.0 - 2.5. Any negative NP values are corrected to 0.

The calculation of Pyrite content assumes that all oxidisable sulphides present in the sample are pyrite. This may not be the case. The calculation may be an overestimate when other sulphides such as Barite (Barium Sulphate) are present.

WATERS

Please note we are not a UK Drinking Water Inspectorate (DWI) Approved Laboratory .

ISO17025 accreditation applies to surface water and groundwater and usually one other matrix which is analysis specific, any other liquids are outside our scope of accreditation.

As surface waters require different sample preparation to groundwaters the laboratory must be informed of the water type when submitting samples.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

STACK EMISSIONS

Where an MCERTS report has been requested, you will be notified within 48 hours of any samples that have been identified as being outside our MCERTS scope. As validation for Dioxins and Furans and Dioxin like PCBs has been performed on XAD-2 Resin, only samples which use this resin will be within our MCERTS scope.

Where appropriate please make sure that our detection limits are suitable for your needs, if they are not, please notify us immediately.

DEVIATING SAMPLES

All samples should be submitted to the laboratory in suitable containers with sufficient ice packs to sustain an appropriate temperature for the requested analysis. The temperature of sample receipt is recorded on the confirmation schedules in order that the client can make an informed decision as to whether testing should still be undertaken.

SURROGATES

Surrogate compounds are added during the preparation process to monitor recovery of analytes. However low recovery in soils is often due to peat, clay or other organic rich matrices. For waters this can be due to oxidants, surfactants, organic rich sediments or remediation fluids. Acceptable limits for most organic methods are 70 - 130% and for VOCs are 50 - 150%. When surrogate recoveries are outside the performance criteria but the associated AQC passes this is assumed to be due to matrix effect. Results are not surrogate corrected.

DILUTIONS

A dilution suffix indicates a dilution has been performed and the reported result takes this into account. No further calculation is required.

BLANKS

Where analytes have been found in the blank, the sample will be treated in accordance with our laboratory procedure for dealing with contaminated blanks.

Please include all sections of this report if it is reproduced

All solid results are expressed on a dry weight basis unless stated otherwise.

NOTE

Data is only reported if the laboratory is confident that the data is a true reflection of the samples analysed. Data is only reported as accredited when all the requirements of our Quality System have been met. In certain circumstances where all the requirements of the Quality System have not been met, for instance if the associated AQC has failed, the reason is fully investigated and documented. The sample data is then evaluated alongside the other quality control checks performed during analysis to determine its suitability. Following this evaluation, provided the sample results have not been effected, the data is reported but accreditation is removed. It is a requirement of our Accreditation Body for data not reported as accredited to be considered indicative only, but this does not mean the data is not valid.

Where possible, and if requested, samples will be re-extracted and a revised report issued with accredited results. Please do not hesitate to contact the laboratory if further details are required of the circumstances which have led to the removal of accreditation.

Laboratory records are kept for a period of no less than 6 years.

REPORTS FROM THE SOUTH AFRICA LABORATORY

Any method number not prefixed with SA has been undertaken in our UK laboratory unless reported as subcontracted.

Measurement Uncertainty

Measurement uncertainty defines the range of values that could reasonably be attributed to the measured quantity. This range of values has not been included within the reported results. Uncertainty expressed as a percentage can be provided upon request.

Customer Provided Information

Sample ID and depth is information provided by the customer.

ABBREVIATIONS and ACRONYMS USED

#	ISO17025 (UKAS Ref No. 4225) accredited - UK.
SA	ISO17025 (SANAS Ref No.T0729) accredited - South Africa
B	Indicates analyte found in associated method blank.
DR	Dilution required.
M	MCERTS accredited.
NA	Not applicable
NAD	No Asbestos Detected.
ND	None Detected (usually refers to VOC and/SVOC TICs).
NDP	No Determination Possible
SS	Calibrated against a single substance
SV	Surrogate recovery outside performance criteria. This may be due to a matrix effect.
W	Results expressed on as received basis.
+	AQC failure, accreditation has been removed from this result, if appropriate, see 'Note' on previous page.
>>	Results above quantitative calibration range. The result should be considered the minimum value and is indicative only. The actual result could be significantly higher.
*	Analysis subcontracted to an Element Materials Technology approved laboratory.
AD	Samples are dried at 35°C ±5°C
CO	Suspected carry over
LOD/LOR	Limit of Detection (Limit of Reporting) in line with ISO 17025 and MCERTS
ME	Matrix Effect
NFD	No Fibres Detected
BS	AQC Sample
LB	Blank Sample
N	Client Sample
TB	Trip Blank Sample
OC	Outside Calibration Range

HWOL ACRONYMS AND OPERATORS USED

HS	Headspace Analysis.
EH	Extractable Hydrocarbons - i.e. everything extracted by the solvent.
CU	Clean-up - e.g. by florisil, silica gel.
1D	GC - Single coil gas chromatography.
Total	Aliphatics & Aromatics.
AL	Aliphatics only.
AR	Aromatics only.
2D	GC-GC - Double coil gas chromatography.
#1	EH_Total but with humics mathematically subtracted
#2	EU_Total but with fatty acids mathematically subtracted
_	Operator - underscore to separate acronyms (exception for +).
+	Operator to indicate cumulative e.g. EH+HS_Total or EH_CU+HS_Total
MS	Mass Spectrometry.

EMT Job No: 23/15430

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/S ANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
PM4	Gravimetric measurement of Natural Moisture Content and % Moisture Content at either 35°C or 105°C. Calculation based on ISO 11465:1993(E) and BS1377-2:1990.	PM0	No preparation is required.			AR	
TM4	Modified USEPA 8270D v5:2014 method for the solvent extraction and determination of PAHs by GC-MS.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.			AR	Yes
TM4	Modified USEPA 8270D v5:2014 method for the solvent extraction and determination of PAHs by GC-MS.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.	Yes		AR	Yes
TM21	Modified BS 7755-3:1995, ISO10694:1995 Determination of Total Organic Carbon or Total Carbon by combustion in an Eltra TOC furnace/analyser in the presence of oxygen. The CO2 generated is quantified using infra-red detection. Organic Matter (SOM) calculated as per EA MCERTS Chemical Testing of Soil, March 2012 v4.	PM24	Preparation of Soil and Marine Sediment Samples for Total Organic Carbon.			AD	Yes
TM30	Determination of Trace Metals by ICP-OES (Inductively Coupled Plasma – Optical Emission Spectrometry); WATERS by Modified USEPA Method 200.7, Rev. 4.4, 1994; Modified EPA Method 6010B, Rev.2, Dec 1996; Modified BS EN ISO 11885:2009: SOILS by Modified USEP 6010B, Rev.2, Dec.1996; Modified EPA Method 3050B, Rev.2, Dec.1996	PM15	Acid digestion of dried and ground solid samples using Aqua Regia refluxed at 112.5 °C. Samples containing asbestos are not dried and ground.	Yes		AD	Yes
TM38	Soluble Ion analysis using Discrete Analyser. Modified US EPA methods: Chloride 325.2 (1978), Sulphate 375.4 (Rev.2 1993), o-Phosphate 365.2 (Rev.2 1993), TON 353.1 (Rev.2 1993), Nitrite 354.1 (1971), Hex Cr 7196A (1992), NH4+ 350.1 (Rev.2 1993) – All anions comparable to BS ISO 15923-1: 2013I	PM20	Extraction of dried and ground or as received samples with deionised water in a 2:1 water to solid ratio using a reciprocal shaker for all analytes except hexavalent chromium. Extraction of as received sample using 10:1 ratio of 0.2M sodium hydroxide to soil for hexavalent chromium using a reciprocal shaker.	Yes		AD	Yes
TM38	Soluble Ion analysis using Discrete Analyser. Modified US EPA methods: Chloride 325.2 (1978), Sulphate 375.4 (Rev.2 1993), o-Phosphate 365.2 (Rev.2 1993), TON 353.1 (Rev.2 1993), Nitrite 354.1 (1971), Hex Cr 7196A (1992), NH4+ 350.1 (Rev.2 1993) – All anions comparable to BS ISO 15923-1: 2013I	PM20	Extraction of dried and ground or as received samples with deionised water in a 2:1 water to solid ratio using a reciprocal shaker for all analytes except hexavalent chromium. Extraction of as received sample using 10:1 ratio of 0.2M sodium hydroxide to soil for hexavalent chromium using a reciprocal shaker.	Yes		AR	Yes
TM65	Asbestos Bulk Identification method based on HSG 248 Second edition (2021)	PM42	Modified SCA Blue Book V.12 draft 2017 and WM3 1st Edition v1.1:2018. Solid samples undergo a thorough visual inspection for asbestos fibres prior to asbestos identification using TM065.	Yes		AR	
TM73	Modified US EPA methods 150.1 (1982) and 9045D Rev. 4 - 2004) and BS1377-3:1990. Determination of pH by Metrohm automated probe analyser.	PM11	Extraction of as received solid samples using one part solid to 2.5 parts deionised water.	Yes		AR	No



APPENDIX 10 - Geotechnical Testing Results

Groundtech Consulting Limited
PO Box 499
Manchester
United Kingdom
M28 8EE



4225



Attention : Hugo Mackdermott
Date : 29th September, 2023
Your reference : GRO-23133
Our reference : Test Report 23/15430 Batch 2
Location : CDC Skegness
Date samples received : 23rd September, 2023
Status : Final Report
Issue : 1

Five samples were received for analysis on 23rd September, 2023 of which five were scheduled for analysis. Please find attached our Test Report which should be read with notes at the end of the report and should include all sections if reproduced. Interpretations and opinions are outside the scope of any accreditation, and all results relate only to samples supplied.

All analysis is carried out on as received samples and reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected.

The greenhouse gas emissions generated (in Carbon – Co2e) to obtain the results in this report are estimated as:

Scope 1&2 emissions - 3.982 kg of CO2

Scope 1&2&3 emissions - 9.411 kg of CO2

Authorised By:



Bruce Leslie
Project Manager

Please include all sections of this report if it is reproduced

Element Materials Technology

Client Name: Groundtech Consulting Limited
Reference: GRO-23133
Location: CDC Skegness
Contact: Hugo Mackdermott
EMT Job No: 23/15430

Report : Solid

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

EMT Sample No.	68	69	70	71	72									
Sample ID	CP2	CP1	CP2	CP1	WS01									
Depth	21.00-21.45	15.50-16.00	11.00-11.45	5.00-5.45	2.00									
COC No / misc														
Containers	B	T	B	T	B									
Sample Date	<>	<>	<>	<>	<>									
Sample Type	Soil	Soil	Soil	Soil	Soil									
Batch Number	2	2	2	2	2									
Date of Receipt	23/09/2023	23/09/2023	23/09/2023	23/09/2023	23/09/2023									
												LOD/LOR	Units	Method No.
Sulphate as SO ₄ (2:1 Ext) #	0.0423	0.0827	0.2235	0.0973	0.0303							<0.0015	g/l	TM38/PM20
pH #	9.00	8.74	8.77	8.75	8.45							<0.01	pH units	TM73/PM11

Please see attached notes for all abbreviations and acronyms

Element Materials Technology

Notification of Deviating Samples

Client Name: Groundtech Consulting Limited
Reference: GRO-23133
Location: CDC Skegness
Contact: Hugo Mackdermott

Matrix : Solid

EMT Job No.	Batch	Sample ID	Depth	EMT Sample No.	Analysis	Reason
23/15430	2	CP2	21.00-21.45	68	All analyses	No sampling date given
23/15430	2	CP1	15.50-16.00	69	All analyses	No sampling date given
23/15430	2	CP2	11.00-11.45	70	All analyses	No sampling date given
23/15430	2	CP1	5.00-5.45	71	All analyses	No sampling date given
23/15430	2	WS01	2.00	72	All analyses	No sampling date given

Please note that only samples that are deviating are mentioned in this report. If no samples are listed it is because none were deviating. Only analyses which are accredited are recorded as deviating if set criteria are not met.

It is a requirement under ISO 17025 that we inform clients if samples are deviating i.e. outside what is expected. A deviating sample indicates that the sample ‘may’ be compromised but not necessarily will be compromised. The result is still accredited and our analytical reports will still show accreditation on the relevant analytes.

NOTES TO ACCOMPANY ALL SCHEDULES AND REPORTS

EMT Job No.: 23/15430

SOILS and ASH

Please note we are only MCERTS accredited (UK soils only) for sand, loam and clay and any other matrix is outside our scope of accreditation.

Where an MCERTS report has been requested, you will be notified within 48 hours of any samples that have been identified as being outside our MCERTS scope. As validation has been performed on clay, sand and loam, only samples that are predominantly these matrices, or combinations of them will be within our MCERTS scope. If samples are not one of a combination of the above matrices they will not be marked as MCERTS accredited.

It is assumed that you have taken representative samples on site and require analysis on a representative subsample. Stones will generally be included unless we are requested to remove them.

All samples will be discarded one month after the date of reporting, unless we are instructed to the contrary. Asbestos samples are retained for 6 months.

If you have not already done so, please send us a purchase order if this is required by your company.

Where appropriate please make sure that our detection limits are suitable for your needs, if they are not, please notify us immediately.

All analysis is reported on a dry weight basis unless stated otherwise. Limits of detection for analyses carried out on as received samples are not moisture content corrected. Results are not surrogate corrected. Samples are dried at 35°C ±5°C unless otherwise stated. Moisture content for CEN Leachate tests are dried at 105°C ±5°C. Ash samples are dried at 37°C ±5°C.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

Where a CEN 10:1 ZERO Headspace VOC test has been carried out, a 10:1 ratio of water to wet (as received) soil has been used.

% Asbestos in Asbestos Containing Materials (ACMs) is determined by reference to HSG 264 The Survey Guide - Appendix 2 : ACMs in buildings listed in order of ease of fibre release.

Sufficient amount of sample must be received to carry out the testing specified. Where an insufficient amount of sample has been received the testing may not meet the requirements of our accredited methods, as such accreditation may be removed.

Negative Neutralization Potential (NP) values are obtained when the volume of NaOH (0.1N) titrated (pH 8.3) is greater than the volume of HCl (1N) to reduce the pH of the sample to 2.0 - 2.5. Any negative NP values are corrected to 0.

The calculation of Pyrite content assumes that all oxidisable sulphides present in the sample are pyrite. This may not be the case. The calculation may be an overestimate when other sulphides such as Barite (Barium Sulphate) are present.

WATERS

Please note we are not a UK Drinking Water Inspectorate (DWI) Approved Laboratory .

ISO17025 accreditation applies to surface water and groundwater and usually one other matrix which is analysis specific, any other liquids are outside our scope of accreditation.

As surface waters require different sample preparation to groundwaters the laboratory must be informed of the water type when submitting samples.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

STACK EMISSIONS

Where an MCERTS report has been requested, you will be notified within 48 hours of any samples that have been identified as being outside our MCERTS scope. As validation for Dioxins and Furans and Dioxin like PCBs has been performed on XAD-2 Resin, only samples which use this resin will be within our MCERTS scope.

Where appropriate please make sure that our detection limits are suitable for your needs, if they are not, please notify us immediately.

DEVIATING SAMPLES

All samples should be submitted to the laboratory in suitable containers with sufficient ice packs to sustain an appropriate temperature for the requested analysis. The temperature of sample receipt is recorded on the confirmation schedules in order that the client can make an informed decision as to whether testing should still be undertaken.

SURROGATES

Surrogate compounds are added during the preparation process to monitor recovery of analytes. However low recovery in soils is often due to peat, clay or other organic rich matrices. For waters this can be due to oxidants, surfactants, organic rich sediments or remediation fluids. Acceptable limits for most organic methods are 70 - 130% and for VOCs are 50 - 150%. When surrogate recoveries are outside the performance criteria but the associated AQC passes this is assumed to be due to matrix effect. Results are not surrogate corrected.

DILUTIONS

A dilution suffix indicates a dilution has been performed and the reported result takes this into account. No further calculation is required.

BLANKS

Where analytes have been found in the blank, the sample will be treated in accordance with our laboratory procedure for dealing with contaminated blanks.

Please include all sections of this report if it is reproduced

All solid results are expressed on a dry weight basis unless stated otherwise.

NOTE

Data is only reported if the laboratory is confident that the data is a true reflection of the samples analysed. Data is only reported as accredited when all the requirements of our Quality System have been met. In certain circumstances where all the requirements of the Quality System have not been met, for instance if the associated AQC has failed, the reason is fully investigated and documented. The sample data is then evaluated alongside the other quality control checks performed during analysis to determine its suitability. Following this evaluation, provided the sample results have not been effected, the data is reported but accreditation is removed. It is a requirement of our Accreditation Body for data not reported as accredited to be considered indicative only, but this does not mean the data is not valid.

Where possible, and if requested, samples will be re-extracted and a revised report issued with accredited results. Please do not hesitate to contact the laboratory if further details are required of the circumstances which have led to the removal of accreditation.

Laboratory records are kept for a period of no less than 6 years.

REPORTS FROM THE SOUTH AFRICA LABORATORY

Any method number not prefixed with SA has been undertaken in our UK laboratory unless reported as subcontracted.

Measurement Uncertainty

Measurement uncertainty defines the range of values that could reasonably be attributed to the measured quantity. This range of values has not been included within the reported results. Uncertainty expressed as a percentage can be provided upon request.

Customer Provided Information

Sample ID and depth is information provided by the customer.

ABBREVIATIONS and ACRONYMS USED

#	ISO17025 (UKAS Ref No. 4225) accredited - UK.
SA	ISO17025 (SANAS Ref No.T0729) accredited - South Africa
B	Indicates analyte found in associated method blank.
DR	Dilution required.
M	MCERTS accredited.
NA	Not applicable
NAD	No Asbestos Detected.
ND	None Detected (usually refers to VOC and/SVOC TICs).
NDP	No Determination Possible
SS	Calibrated against a single substance
SV	Surrogate recovery outside performance criteria. This may be due to a matrix effect.
W	Results expressed on as received basis.
+	AQC failure, accreditation has been removed from this result, if appropriate, see 'Note' on previous page.
>>	Results above quantitative calibration range. The result should be considered the minimum value and is indicative only. The actual result could be significantly higher.
*	Analysis subcontracted to an Element Materials Technology approved laboratory.
AD	Samples are dried at 35°C ±5°C
CO	Suspected carry over
LOD/LOR	Limit of Detection (Limit of Reporting) in line with ISO 17025 and MCERTS
ME	Matrix Effect
NFD	No Fibres Detected
BS	AQC Sample
LB	Blank Sample
N	Client Sample
TB	Trip Blank Sample
OC	Outside Calibration Range

HWOL ACRONYMS AND OPERATORS USED

HS	Headspace Analysis.
EH	Extractable Hydrocarbons - i.e. everything extracted by the solvent.
CU	Clean-up - e.g. by florisil, silica gel.
1D	GC - Single coil gas chromatography.
Total	Aliphatics & Aromatics.
AL	Aliphatics only.
AR	Aromatics only.
2D	GC-GC - Double coil gas chromatography.
#1	EH_Total but with humics mathematically subtracted
#2	EU_Total but with fatty acids mathematically subtracted
_	Operator - underscore to separate acronyms (exception for +).
+	Operator to indicate cumulative e.g. EH+HS_Total or EH_CU+HS_Total
MS	Mass Spectrometry.

EMT Job No: 23/15430

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/S ANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
TM38	Soluble Ion analysis using Discrete Analyser. Modified US EPA methods: Chloride 325.2 (1978), Sulphate 375.4 (Rev.2 1993), o-Phosphate 365.2 (Rev.2 1993), TON 353.1 (Rev.2 1993), Nitrite 354.1 (1971), Hex Cr 7196A (1992), NH4+ 350.1 (Rev.2 1993) – All anions comparable to BS ISO 15923-1: 2013	PM20	Extraction of dried and ground or as received samples with deionised water in a 2:1 water to solid ratio using a reciprocal shaker for all analytes except hexavalent chromium. Extraction of as received sample using 10:1 ratio of 0.2M sodium hydroxide to soil for hexavalent chromium using a reciprocal shaker.	Yes		AD	Yes
TM73	Modified US EPA methods 150.1 (1982) and 9045D Rev. 4 - 2004) and BS1377-3:1990. Determination of pH by Metrohm automated probe analyser.	PM11	Extraction of as received solid samples using one part solid to 2.5 parts deionised water.	Yes		AR	No



LABORATORY REPORT



Contract Number: PSL23/8110

Report Date: 11 October 2023
Client's Reference: 23133
Client Name: Groundtech Consulting
First Floor
Lloyd House
Orford Court
Greenfold Way
WN7 3XJ

For the attention of: Hugo Mackdermott

Contract Title: CDC Skegness
Date Received: 25/9/2023
Date Commenced: 25/9/2023
Date Completed: 11/10/2023

Notes: Opinions and Interpretations are outside the UKAS Accreditation

A copy of the Laboratory Schedule of accredited tests as issued by UKAS is attached to this report. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced other than in full, without the prior written approval of the laboratory.

Checked and Approved Signatories:


A Watkins
(Director)

R Berriman
(Quality Manager)

S Royle
(Laboratory Manager)

L Knight
(Assistant Laboratory Manager)

S Eyre
(Senior Technician)


T Watkins
(Senior Technician)

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Page 1 of

SUMMARY OF LABORATORY SOIL DESCRIPTIONS

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Description of Sample
CP2		U	2.00	2.45	Soft brown slightly gravelly CLAY.
CP2		U	14.00	14.45	Very stiff brown slightly gravelly sandy CLAY.
CP01		D	1.80	4.00	Brown slightly gravelly slightly sandy CLAY.
CP01		D	1.80	-	Brown slightly gravelly slightly sandy CLAY.
CP01		D	6.50	9.50	Brown slightly sandy CLAY.
CP01		D	6.50	-	Brown slightly sandy CLAY.
CP01		D	11.00	14.00	Brown mottled grey slightly gravelly sandy CLAY.
CP01		D	12.50	-	Brown mottled grey slightly sandy CLAY.
CP02		D	1.00	4.00	Brown mottled grey slightly gravelly slightly sandy CLAY.
CP02		D	1.00	-	Brown mottled grey slightly gravelly slightly sandy CLAY.
CP02		D	5.00	9.50	Brown slightly sandy CLAY.
CP02		D	6.50	-	Brown slightly sandy CLAY.
CP02		D	12.50	14.50	Brown slightly gravelly very sandy CLAY.
CP02		D	12.50	-	Brown slightly gravelly very sandy CLAY.



CDC Skegness

Contract No:

PSL23/8110

Client Ref:

231333728

SUMMARY OF SOIL CLASSIFICATION TESTS

(BS1377 : PART 2 : 1990)

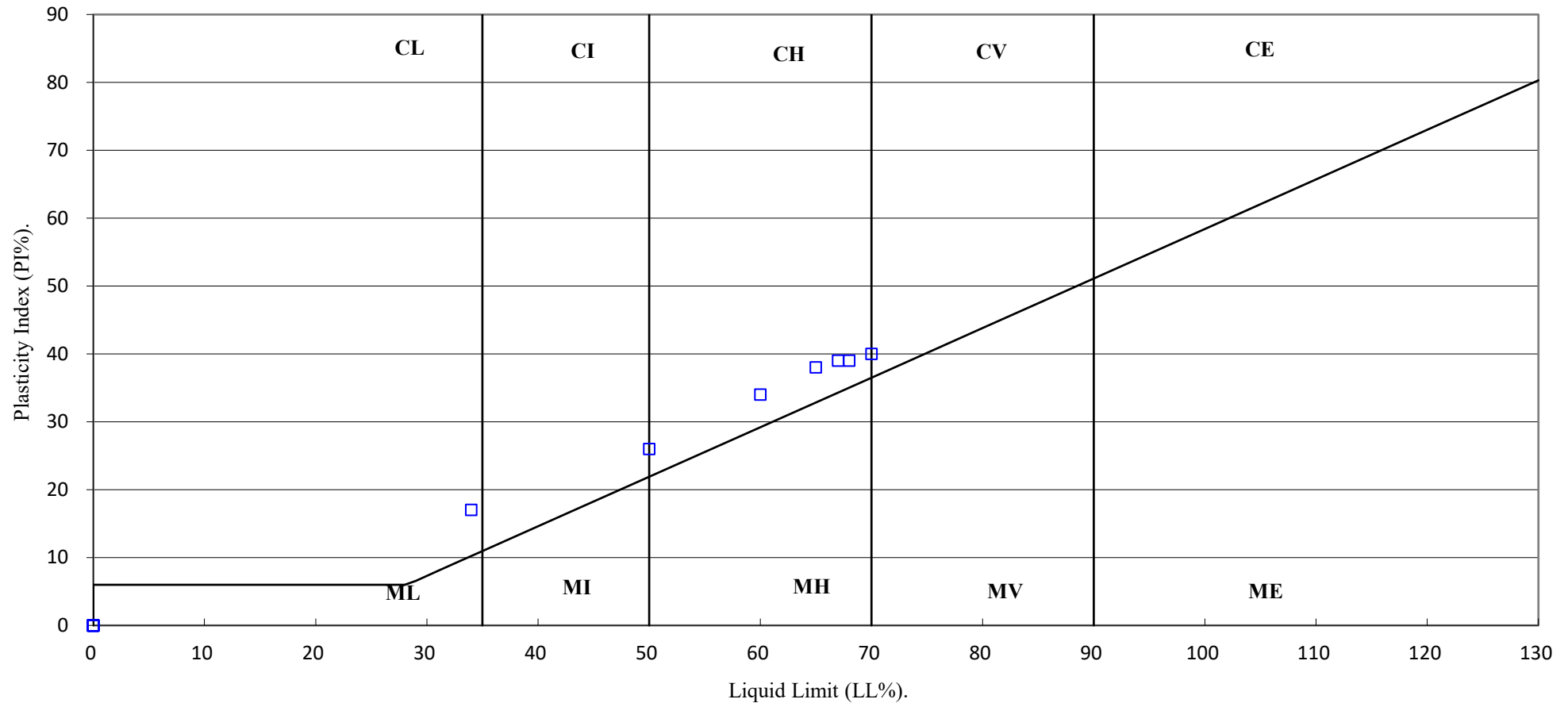
Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Moisture Content % <small>Clause 3.2</small>	Linear Shrinkage % <small>Clause 6.5</small>	Particle Density Mg/m ³ <small>Clause 8.2</small>	Liquid Limit % <small>Clause 4.3/4</small>	Plastic Limit % <small>Clause 5.3</small>	Plasticity Index % <small>Clause 5.4</small>	Passing .425mm %	Remarks
CP2		U	2.00	2.45	36			70	30	40	100	Very High Plasticity CV
CP01		D	1.80		52			65	27	38	97	High Plasticity CH
CP01		D	6.50		54			67	28	39	100	High Plasticity CH
CP01		D	12.50		46			50	24	26	100	High Plasticity CH
CP02		D	1.00		33			68	29	39	98	High Plasticity CH
CP02		D	6.50		49			60	26	34	100	High Plasticity CH
CP02		D	12.50		21			34	17	17	97	Low Plasticity CL

SYMBOLS : NP : Non Plastic

* : Liquid Limit and Plastic Limit Wet Sieved.

 UKAS TESTING 4043	 PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY	CDC Skegness	Contract No: PSL23/8110
			Client Ref: 231333728

PLASTICITY CHART FOR CASAGRANDE CLASSIFICATION.



CDC Skegness

Contract No:

PSL23/8110

Client Ref:

231333728

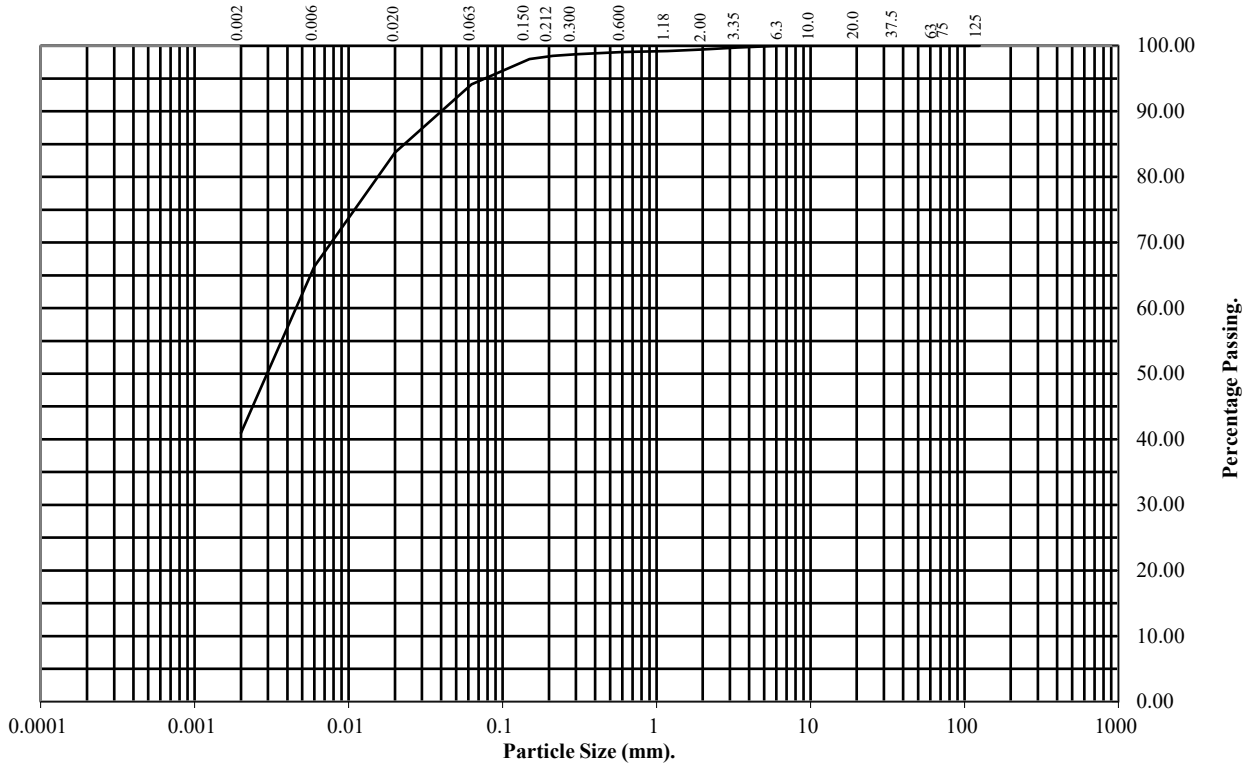
PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990
Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

Hole Number: CP01 **Top Depth (m):** 1.80

Sample Number: **Base Depth(m):** 4.00

Sample Type: D



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	100
10	100
6.3	100
3.35	100
2	99
1.18	99
0.6	99
0.3	99
0.212	98
0.15	98
0.063	94

Particle Diameter	Percentage Passing
0.02	84
0.006	66
0.002	41

Soil Fraction	Total Percentage
Cobbles	0
Gravel	1
Sand	5
Silt	53
Clay	41

Remarks:
See Summary of Soil Descriptions



CDC Skegness

Contract No:
PSL23/8110
Client Ref:
231333728

PARTICLE SIZE DISTRIBUTION TEST

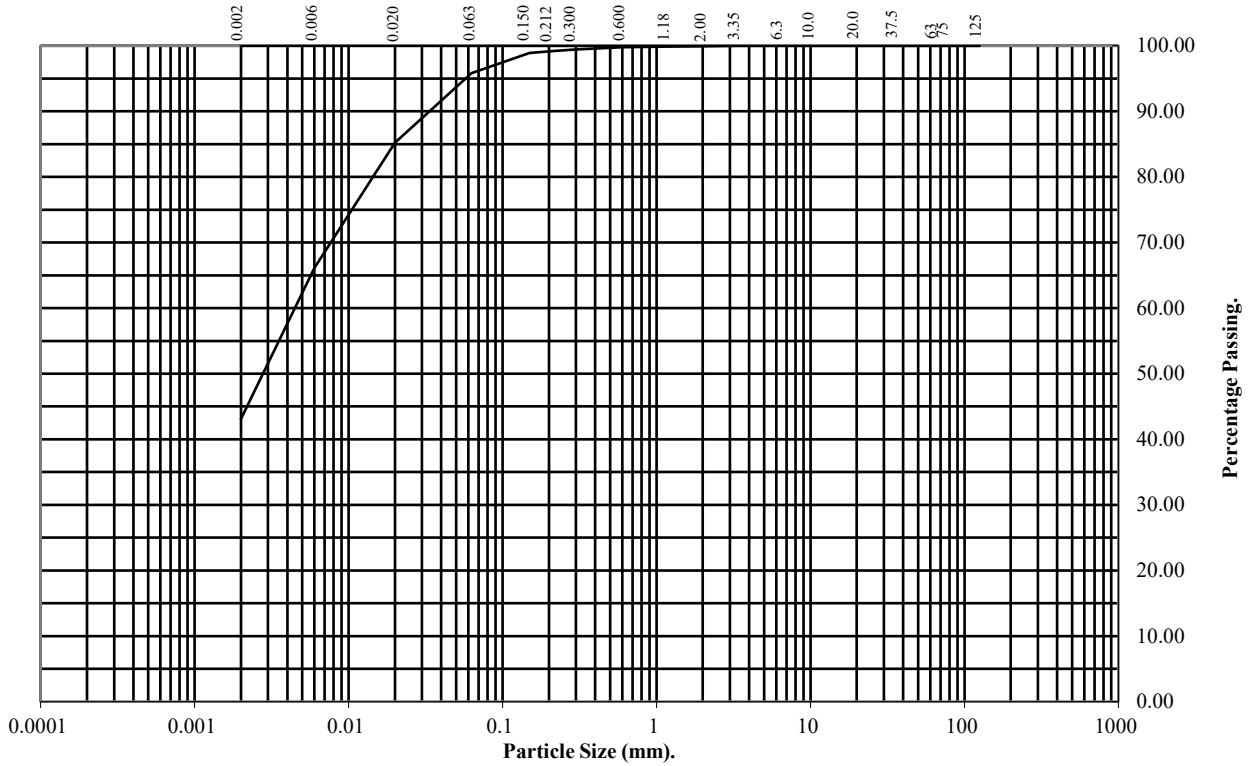
BS1377 : Part 2 : 1990

Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

Hole Number: CP01 **Top Depth (m):** 6.50

Sample Number: **Base Depth(m):** 9.50

Sample Type: D



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	100
10	100
6.3	100
3.35	100
2	100
1.18	100
0.6	100
0.3	99
0.212	99
0.15	99
0.063	96

Particle Diameter	Percentage Passing
0.02	85
0.006	66
0.002	43

Soil Fraction	Total Percentage
Cobbles	0
Gravel	0
Sand	4
Silt	53
Clay	43

Remarks:
See Summary of Soil Descriptions



CDC Skegness

Contract No:
PSL23/8110
Client Ref:
231333728

PARTICLE SIZE DISTRIBUTION TEST

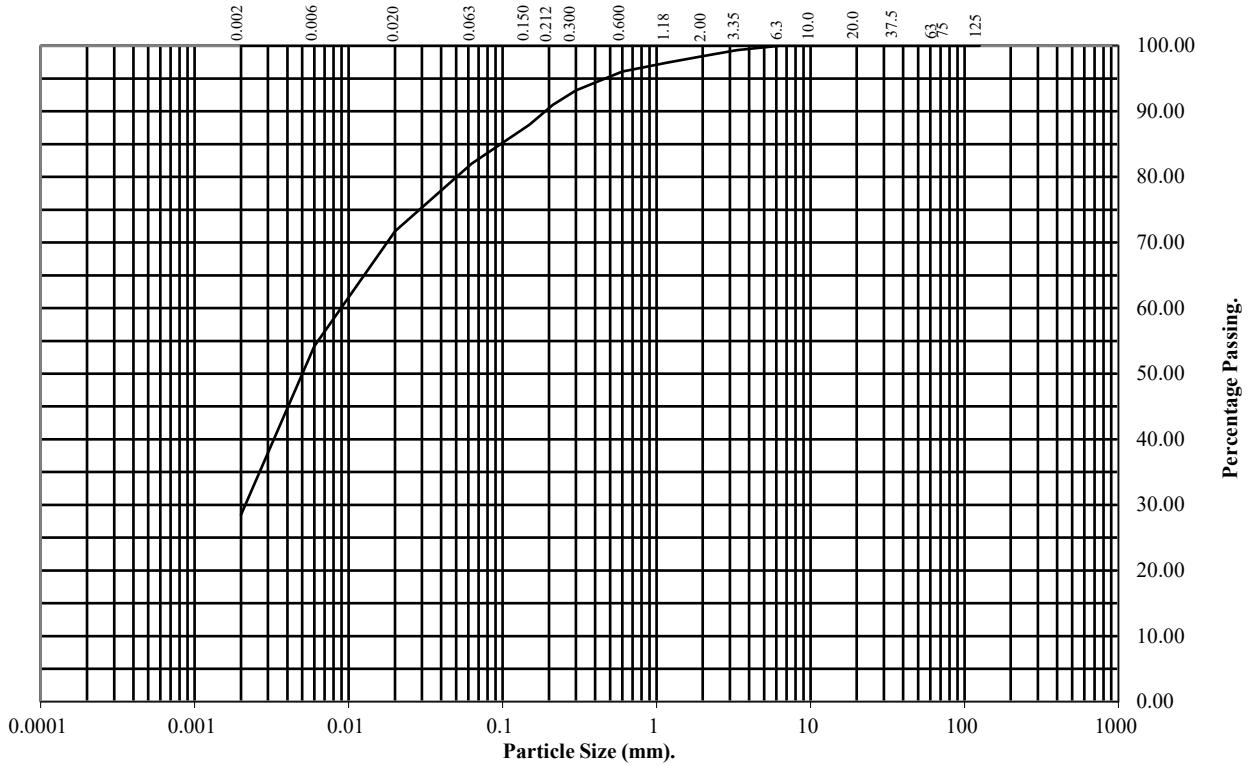
BS1377 : Part 2 : 1990

Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

Hole Number: CP01 Top Depth (m): 11.00

Sample Number: Base Depth(m): 14.00

Sample Type: D



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	100
10	100
6.3	100
3.35	99
2	98
1.18	97
0.6	96
0.3	93
0.212	91
0.15	88
0.063	82

Particle Diameter	Percentage Passing
0.02	72
0.006	54
0.002	28

Soil Fraction	Total Percentage
Cobbles	0
Gravel	2
Sand	16
Silt	54
Clay	28

Remarks:
See Summary of Soil Descriptions



CDC Skegness

Contract No:
PSL23/8110
Client Ref:
231333728

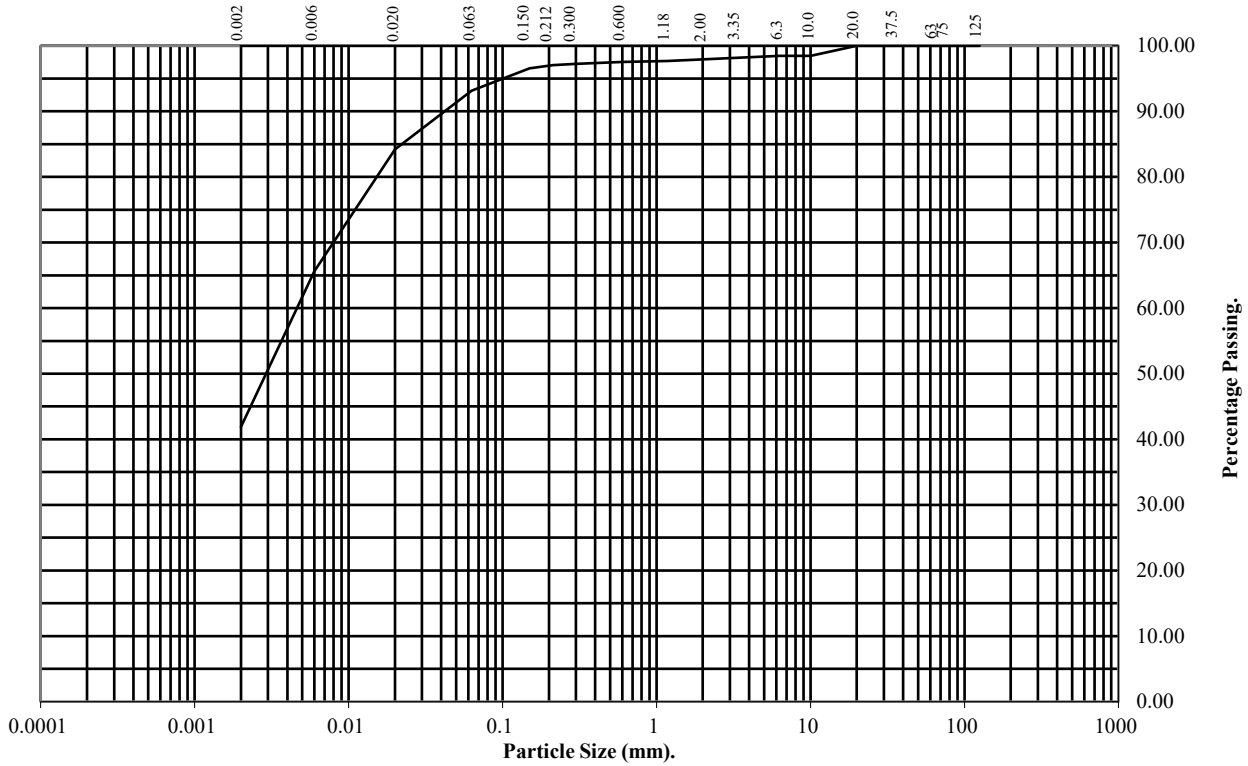
PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990
Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

Hole Number: CP02 **Top Depth (m):** 1.00

Sample Number: **Base Depth(m):** 4.00

Sample Type: D



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	100
10	98
6.3	98
3.35	98
2	98
1.18	98
0.6	98
0.3	97
0.212	97
0.15	97
0.063	93

Particle Diameter	Percentage Passing
0.02	84
0.006	66
0.002	42

Soil Fraction	Total Percentage
Cobbles	0
Gravel	2
Sand	5
Silt	51
Clay	42

Remarks:
See Summary of Soil Descriptions



CDC Skegness

Contract No:
PSL23/8110
Client Ref:
231333728

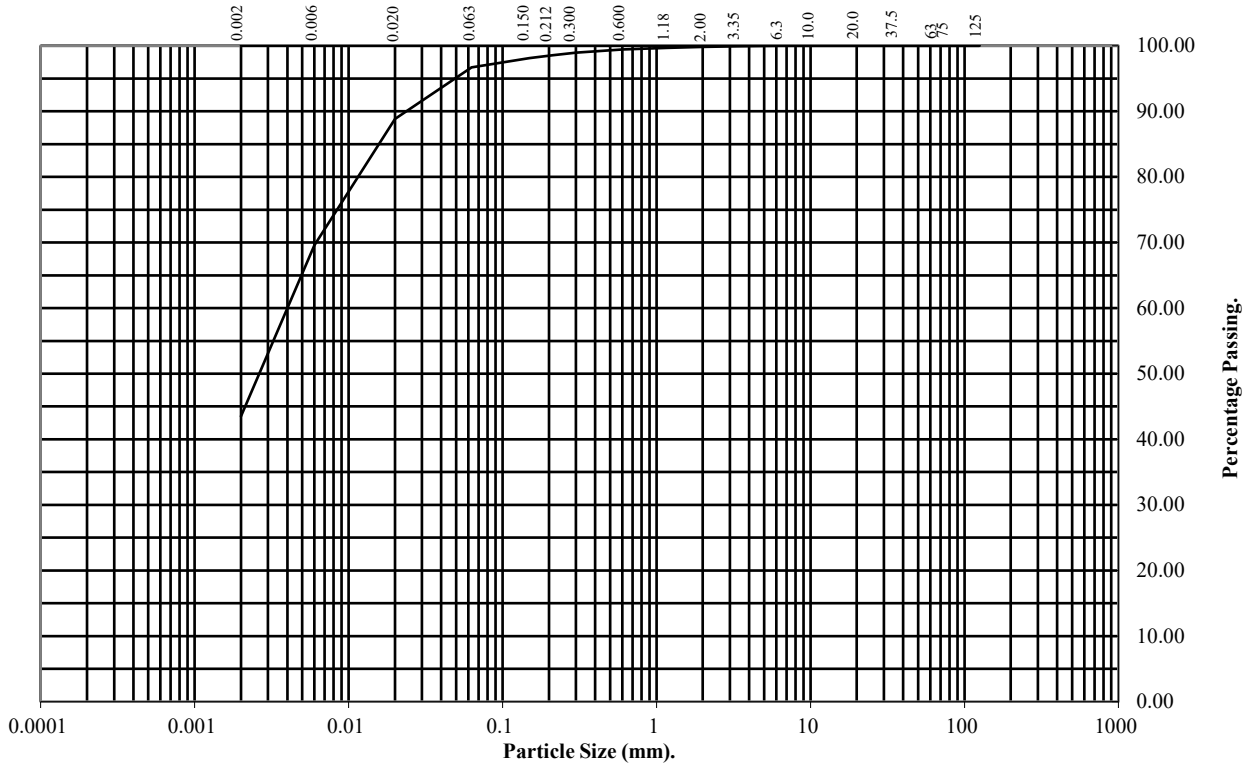
PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990
Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

Hole Number: CP02 **Top Depth (m):** 5.00

Sample Number: **Base Depth(m):** 9.50

Sample Type: D



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	100
10	100
6.3	100
3.35	100
2	100
1.18	100
0.6	99
0.3	99
0.212	99
0.15	98
0.063	97

Particle Diameter	Percentage Passing
0.02	89
0.006	70
0.002	43

Soil Fraction	Total Percentage
Cobbles	0
Gravel	0
Sand	3
Silt	54
Clay	43

Remarks:
See Summary of Soil Descriptions



CDC Skegness

Contract No:
PSL23/8110
Client Ref:
231333728

PARTICLE SIZE DISTRIBUTION TEST

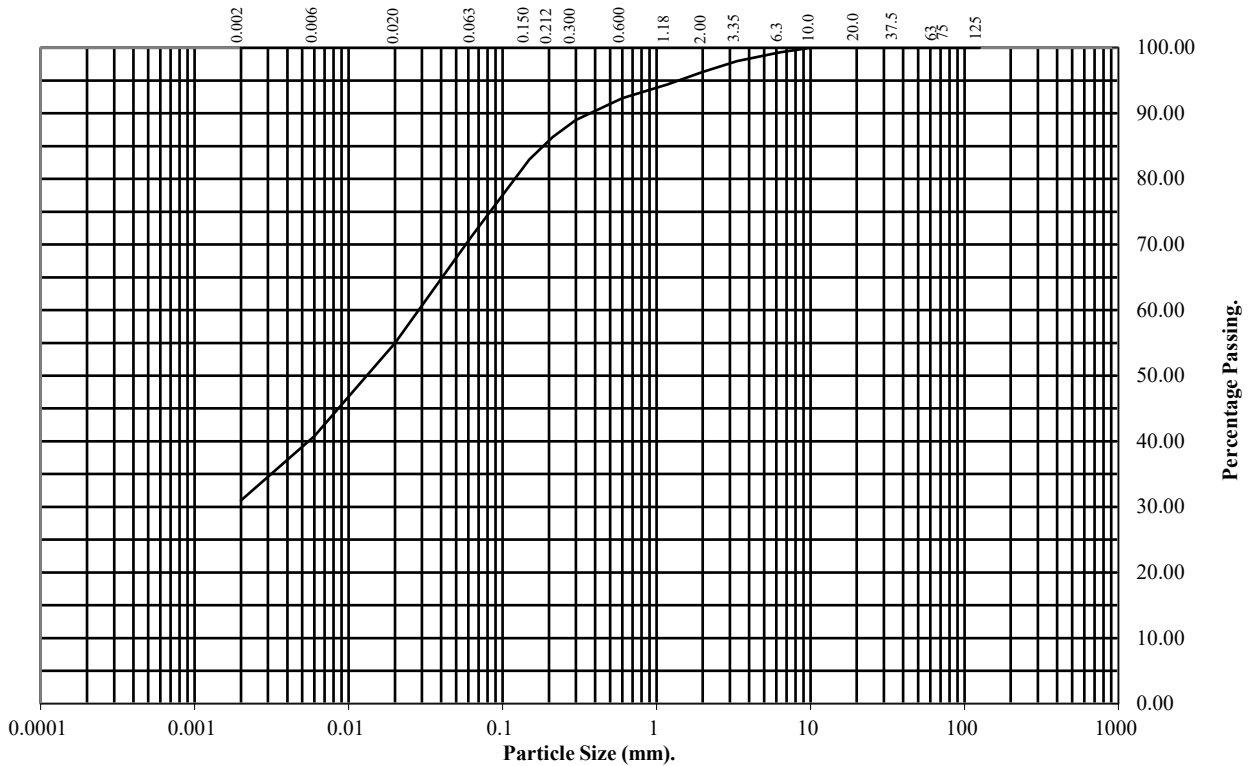
BS1377 : Part 2 : 1990

Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

Hole Number: CP02 Top Depth (m): 12.50

Sample Number: Base Depth(m): 14.50

Sample Type: D



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	100
10	100
6.3	99
3.35	98
2	96
1.18	94
0.6	92
0.3	89
0.212	86
0.15	83
0.063	71

Particle Diameter	Percentage Passing
0.02	55
0.006	41
0.002	31

Soil Fraction	Total Percentage
Cobbles	0
Gravel	4
Sand	25
Silt	40
Clay	31

Remarks:
See Summary of Soil Descriptions



CDC Skegness

Contract No:
PSL23/8110
Client Ref:
231333728

UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION

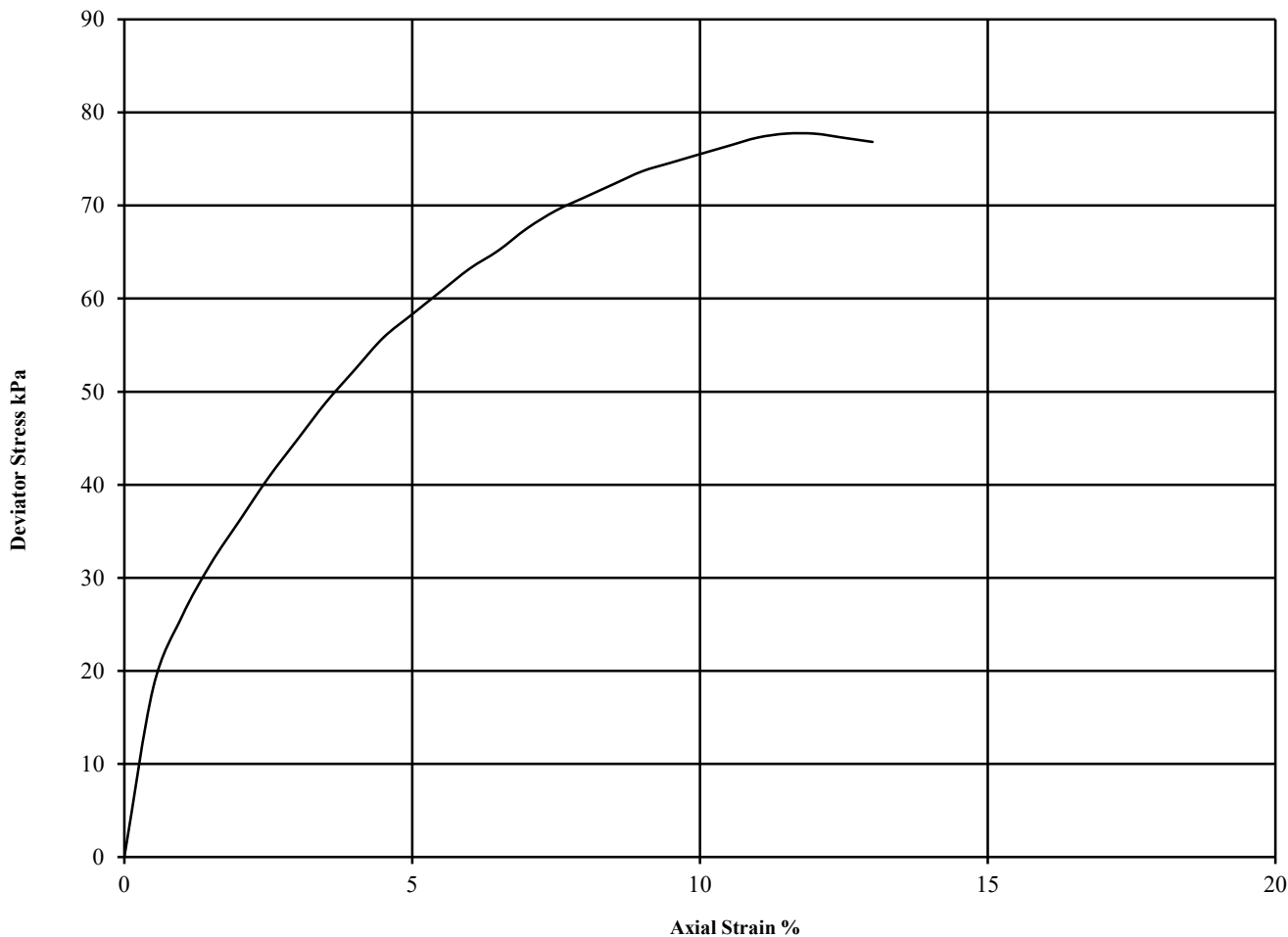
WITHOUT MEASUREMENT OF PORE PRESSURE

BS1377 : Part7 : 1990: Clause 8

Hole Number: CP2 Top Depth (m): 2.00

Sample Number: Base Depth (m): 2.45

Sample Type U



Diameter (mm):		102		Height (mm):		204		Test:		UU Single Stage		Remarks:	
Specimen	Moisture Content (%)	Bulk Density (Mg/m ³)	Dry Density (Mg/m ³)	Cell Pressure (kPa)	Corr. Max. Deviator Stress (kPa)	Shear Strength Cu (kPa)	Failure Strain (%)	Mode of Failure	Undisturbed Sample Sample taken from top of tube Rate of strain = 2 %/min Latex Membrane used 0.2 mm thick, Correction applied 0.35 See summary of soil descriptions				
1	36	1.77	1.30	40	78	39	11.5	Plastic					



CDC Skegness

Contract No:
PSL23/8110
Client Ref:
231333728

UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION

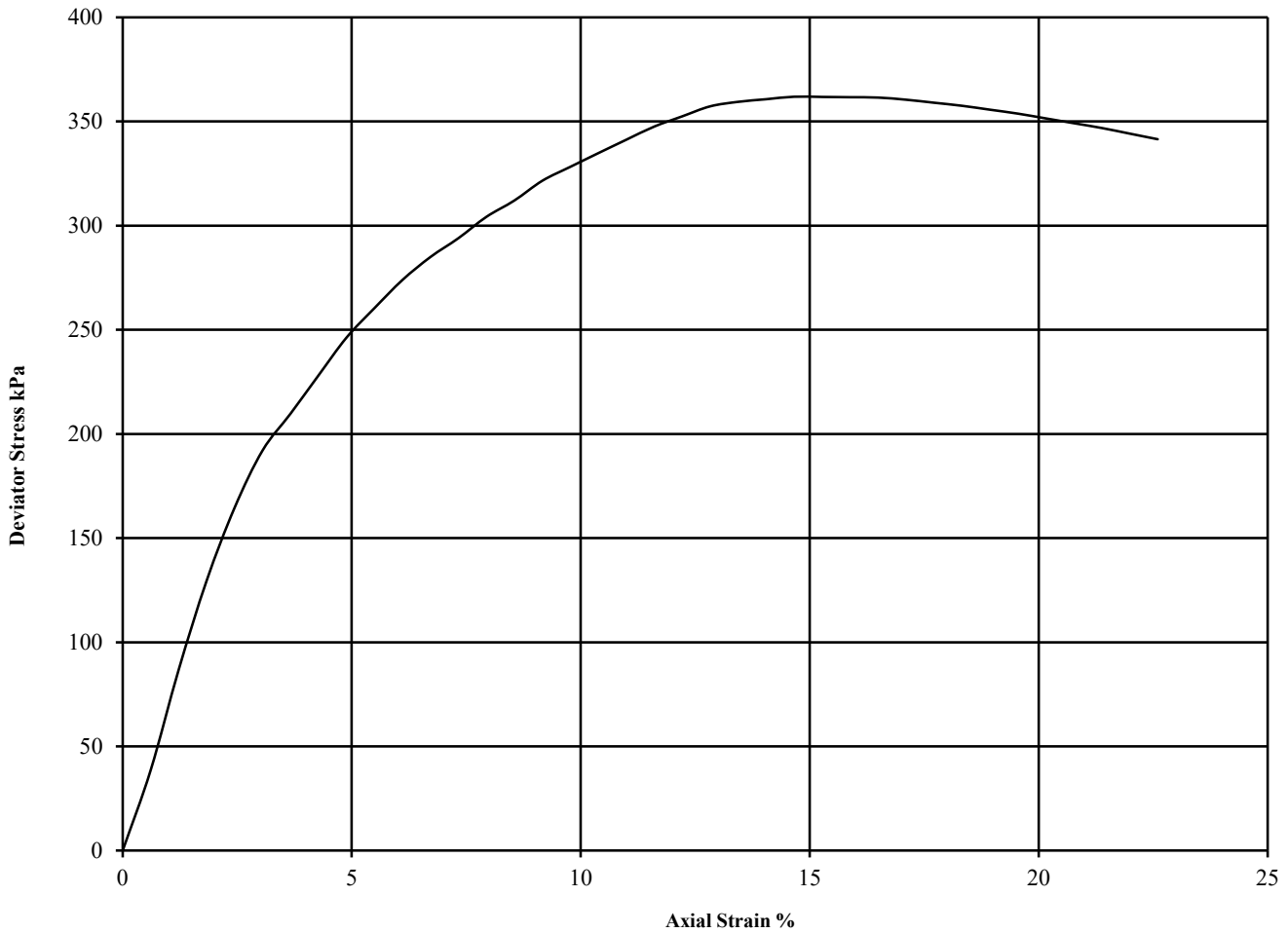
WITHOUT MEASUREMENT OF PORE PRESSURE

BS1377 : Part7 : 1990: Clause 8

Hole Number: CP2 Top Depth (m): 14.00

Sample Number: Base Depth (m): 14.45

Sample Type U



Diameter (mm):		102		Height (mm):		167		Test:		UU Single Stage		Remarks:	
Specimen	Moisture Content (%)	Bulk Density (Mg/m ³)	Dry Density (Mg/m ³)	Cell Pressure (kPa)	Corr. Max. Deviator Stress (kPa)	Shear Strength Cu (kPa)	Failure Strain (%)	Mode of Failure					Undisturbed Sample
				θ_3	$(\theta_1 - \theta_3)_f$	$\frac{1}{2}(\theta_1 - \theta_3)_f$							Sample taken from top of tube
													Rate of strain = 2 %/min
													Latex Membrane used 0.2 mm thick,
													Correction applied 0.34
1	17	2.09	1.79	280	362	181	14.7	Plastic					See summary of soil descriptions



CDC Skegness

Contract No:
PSL23/8110
Client Ref:
231333728



APPENDIX 11 - Interim Ground Gas Monitoring Results

PERMANENT GROUND GAS MONITORING FORM



SITE NAME:	CDC Skegness				ENGINEER:	Ethan Hitchcow			
CLIENT:	United Lincolnshire Hospitals NHS Trust				DATE:	27/09/2023			
JOB NO:	GRO-23133								
Pressure Trend:	Falling	Weather:	Overcast		Equipment:	GFM 436			
Ambient:	O ₂ (%v/v)	CH ₄ (%v/v)	CO ₂ (%v/v)	LEL	H ₂ S (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)	LNAPL (Y/N)	DNAPL (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	0.0	0.0	0.0	0.0	0.0	20.6	20.5	0.0	0.0	0.0	0.0	0.0000	0.0000	1006	-	N	N/A	N/A	1.06
CP02	0.0	0.0	0.00	0.0	0.0	0.0	1.1	0.1	19.9	20.6	0.0	0.0	0.0	0.0	0.0011	0.0000	1006	-	N	N/A	N/A	1.03
WS01	0.0	0.0	0.00	0.0	0.0	0.0	0.7	0.7	18.8	18.8	0.0	0.0	12.0	10.0	0.0007	0.0000	1007	-	N	N/A	N/A	0.49
WS02	0.0	0.0	0.00	0.0	0.0	0.0	1.4	0.8	19.8	19.0	0.0	0.0	10.0	10.0	0.0014	0.0000	1006	-	N	N/A	N/A	1.31
WS05	0.0	0.0	0.00	0.0	0.0	0.0	1.4	1.2	20.4	20.0	0.0	0.0	10.0	0.0	0.0014	0.0000	1005	-	N	N/A	N/A	0.96

Notes:

PERMANENT GROUND GAS MONITORING FORM



SITE NAME:	CDC Skegness				ENGINEER:	Ethan Hitchcow				
CLIENT:	United Lincolnshire Hospitals NHS Trust				DATE:	10/10/2023				
JOB NO:	GRO-23133									
Pressure Trend:	Steady	Weather:	Overcast		Equipment:	GFM 436				
Ambient:	O₂ (%v/v)	CH₄ (%v/v)	CO₂ (%v/v)	LEL	H₂S (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)	LNAPL (Y/N)	DNAPL (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	0.0	0.0	0.0	0.5	0.4	20.4	20.4	0.0	0.0	0.0	0.0	0.0005	0.0000	1009	N/A	N	N/A	N/A	0.81
CP02	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	N/A	N/A
WS01	0.0	0.0	0.00	0.0	0.0	0.0	0.6	0.1	20.5	19.4	0.0	0.0	0.0	0.0	0.0006	0.0000	1010	N/A	N	N/A	N/A	1.10
WS02	0.0	0.0	0.00	0.0	0.0	0.0	1.3	0.7	19.9	19.1	0.0	0.0	0.0	0.0	0.0013	0.0000	1009	N/A	N	N/A	N/A	1.04
WS05	0.0	0.0	0.00	0.0	0.0	0.0	1.8	0.2	20.4	19.8	0.0	0.0	0.0	0.0	0.0018	0.0000	1009	N/A	N	N/A	N/A	0.56

Notes: CP02 was blocked by a digger so could not be monitored.

PERMANENT GROUND GAS MONITORING FORM



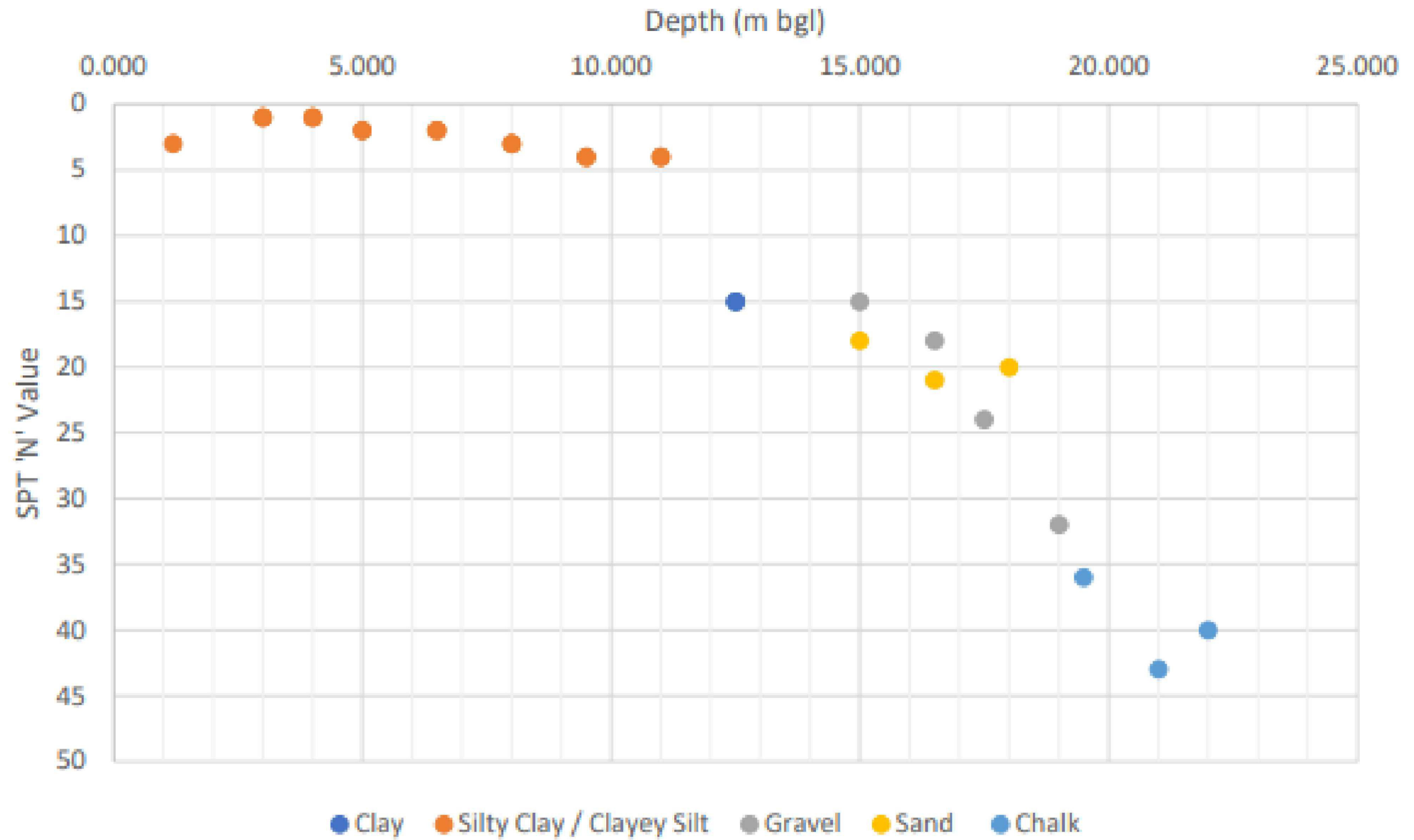
SITE NAME:	CDC Skegness				ENGINEER:	Ethan Hitchcow			
CLIENT:	United Lincolnshire Hospitals NHS Trust				DATE:	23/10/2023			
JOB NO:	GRO-23133								
Pressure Trend:	Steady	Weather:	Overcast		Equipment:	GFM 436			
Ambient:	O₂ (%v/v)	CH₄ (%v/v)	CO₂ (%v/v)	LEL	H₂S (ppm)	CO (ppm)			
Start	20.4	0.0	0.0	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)	LNAPL (Y/N)	DNAPL (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	0.0	0.0	0.0	0.1	0.1	20.4	20.3	0.0	0.0	0.0	0.0	0.0001	0.0000	1005	-	N	N/A	N/A	0.94
CP02	0.0	0.0	0.00	0.0	0.0	0.0	1.5	0.5	19.1	18.3	0.0	0.0	0.0	0.0	0.0015	0.0000	1005	-	N	N/A	N/A	0.92
WS01	0.0	0.0	0.00	0.0	0.0	0.0	2.9	2.9	20.3	16.0	0.0	0.0	0.0	0.0	0.0029	0.0000	1006	-	N	N/A	N/A	0.87
WS02	0.0	0.0	0.00	0.0	0.0	0.0	0.5	0.5	19.5	19.4	0.0	0.0	0.0	0.0	0.0005	0.0000	1005	-	N	N/A	N/A	0.91
WS05	0.0	0.0	0.00	0.0	0.0	0.0	0.5	0.5	19.5	19.5	0.0	0.0	0.0	0.0	0.0005	0.0000	1004	-	N	N/A	N/A	0.45

Notes:



APPENDIX 12 - Generalised Ground Model



CLIENT UNITED LINCONSHIRE HOSPITALS NHS TRUST
PROJECT TITLE CDC SKEGNESS
PLAN TITLE GENERALISED GROUND MODEL

DATE OCTOBER 2023
SCALE NTS
PLAN NUMBER GRO-23133-P05

Rev.	Details	Date

Status	
Preliminary	
Draft	
Issued	●
For Comment	
Approved	

Notes	





APPENDIX 13 - Plate Load Testing Results



LABORATORY REPORT



Contract Number: PSL23/7808

Report Date: 14 September 2023

Client's Reference:

Client Name: Groundtech Consulting
First Floor
Lloyd House
Orford Court
Greenfold Way
WN7 3XJ

For the attention of: Andrew Janson

Contract Title: Old Wainfleet Road, Skegness, PE25 3RR

Date Received: 13/9/2023

Date Commenced: 13/9/2023

Date Completed: 14/9/2023

Notes: Opinions and Interpretations are outside the UKAS Accreditation

A copy of the Laboratory Schedule of accredited tests as issued by UKAS is attached to this report. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced other than in full, without the prior written approval of the laboratory.

Checked and Approved Signatories:


A Watkins
(Director)

R Berriman
(Quality Manager)

S Royle
(Laboratory Manager)

L Knight
(Assistant Laboratory Manager)

S Eyre
(Senior Technician)


T Watkins
(Senior Technician)

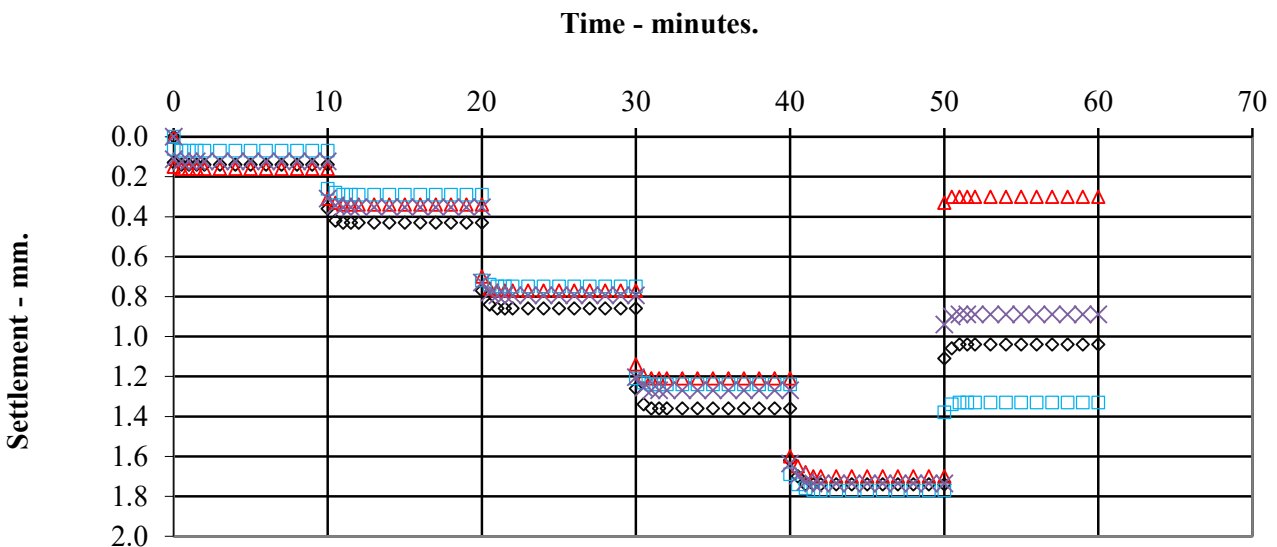
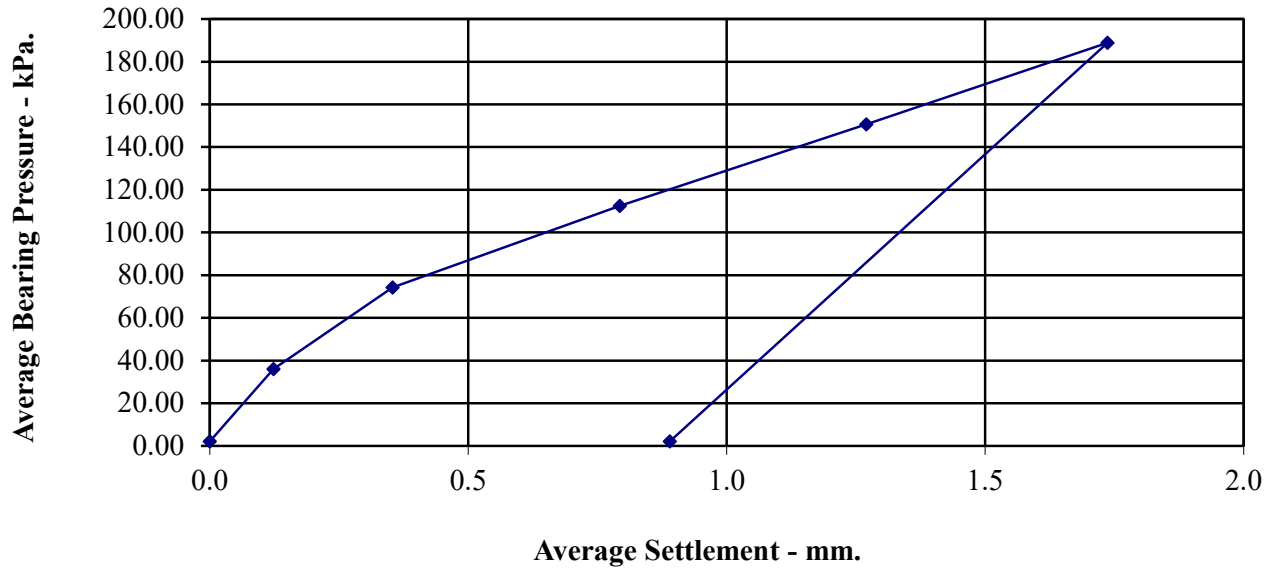
5 – 7 Hexthorpe Road,
Hexthorpe,
Doncaster,
DN4 0AR
Tel: 01302 768098
Email: rberriman@prosoils.co.uk
awatkins@prosoils.co.uk

Page 1 of

VERTICAL DEFORMATION TESTS.

BS 1377 : Part 9 : 1990.

Date of Test:	13-Sep-23	Test Ref:	PBT 1
Grid Ref:		Depth (m):	0.40
Layer:		Comments:	
Maximum Applied Pressure (kPa):		188.85	
Maximum Deformation (mm):		1.74	
Plate Area (m²):		0.1626	
Description:		White CHALK	



◇ Settlement Gauge 1
△ Settlement Gauge 2
□ Settlement Gauge 3
× Average Settlement



Old Wainfleet Road, Skegness

Contract No:

PSL23/7808

Client Ref:

Calculation of Equivalent CBR Value from Plate Bearing Test
Design Manual for Roads and Bridges Volume 7 Section 2 Chapter 4
Incorporating IAN 73/06

Date of Test 13-Sep-23
Test Ref PBT 1
Depth (m) 0.40
Grid Ref
Layer
Comments

Description White CHALK

Maximum Deflection 1.74 mm
Deflection required for CBR value 1.25 mm
Load at 1.25mm 149 kN/m²
Plate diameter 455 mm
Conversion factor for plate diameter 0.629

**K₇₆₂(modulus of subgrade reaction)
calculated using 1.25mm settlement** 75.0 kN/m²/mm

CBR Value 17.1 %



Old Wainfleet Road, Skegness

Contract No:

PSL23/7808

Client Ref:

VERTICAL DEFORMATION TESTS.

BS 1377 : Part 9 : 1990.

Date of Test: 13-Sep-23

Test Ref: PBT 2

Grid Ref:

Depth (m): 0.50

Layer:

Comments:

Maximum Applied Pressure (kPa):

188.85

Maximum Deformation (mm):

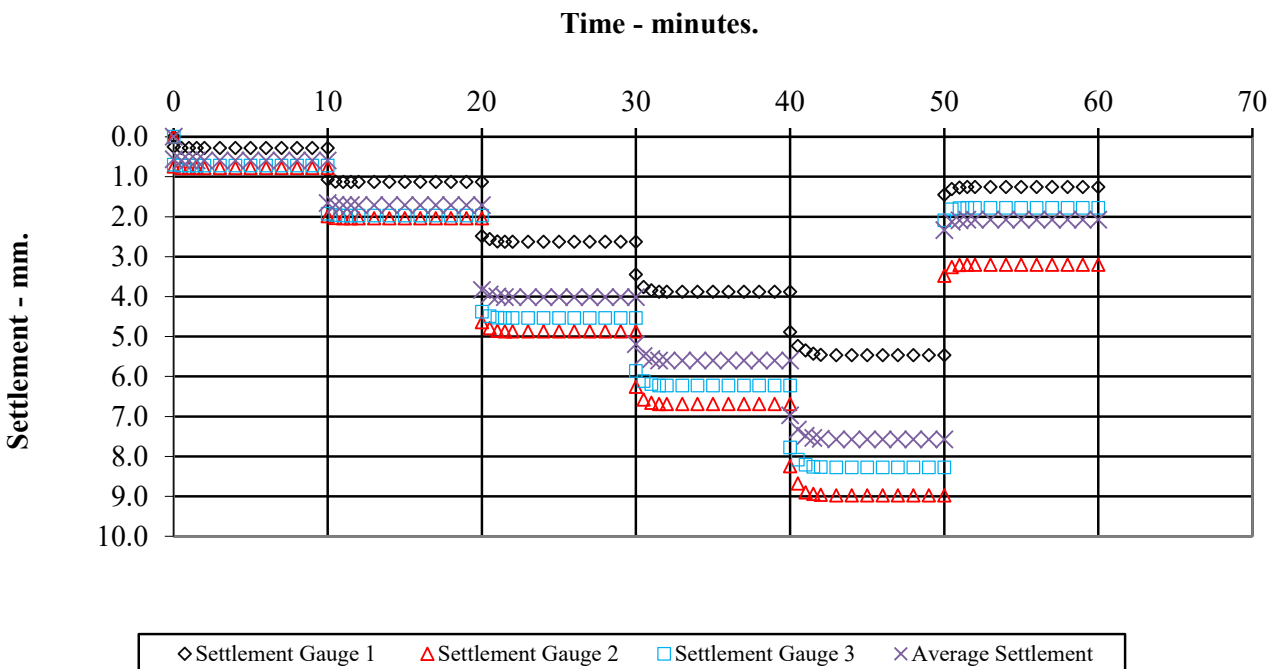
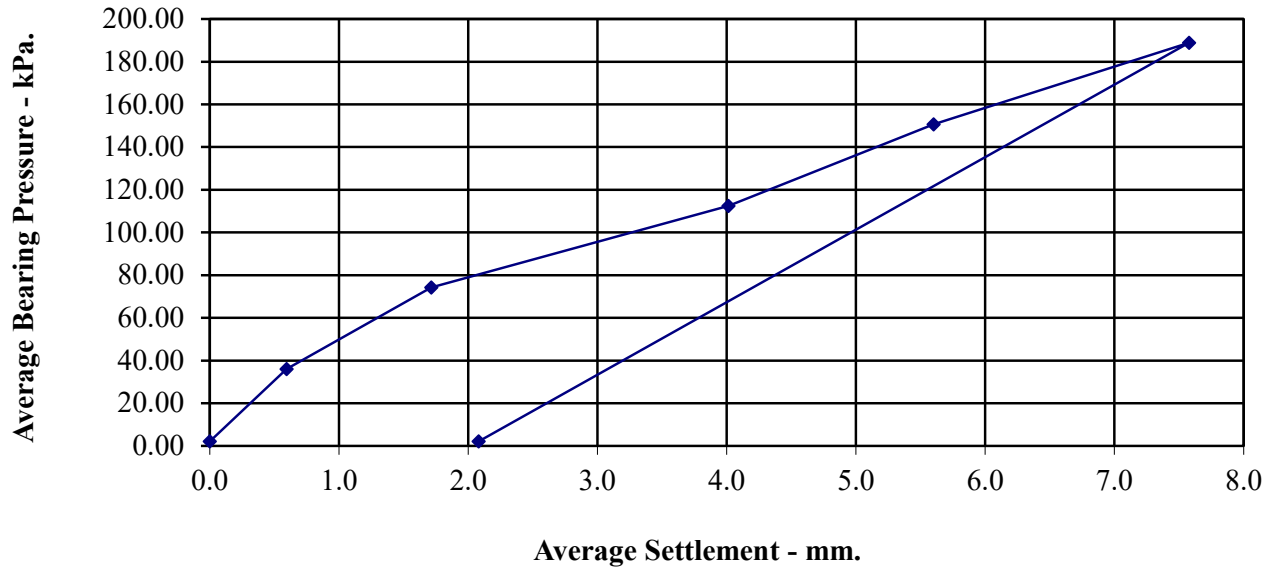
7.58

Plate Area (m²):

0.1626

Description:

Brown gravelly sandy CLAY.



Old Wainfleet Road, Skegness

Contract No:

PSL23/7808

Client Ref:

Calculation of Equivalent CBR Value from Plate Bearing Test
Design Manual for Roads and Bridges Volume 7 Section 2 Chapter 4
Incorporating IAN 73/06

Date of Test 13-Sep-23
Test Ref PBT 2
Depth (m) 0.50
Grid Ref
Layer
Comments

Description Brown gravelly sandy CLAY.

Maximum Deflection 7.58 mm
Deflection required for CBR value 1.25 mm
Load at 1.25mm 58 kN/m²
Plate diameter 455 mm
Conversion factor for plate diameter 0.629

**K₇₆₂(modulus of subgrade reaction)
calculated using 1.25mm settlement** 29.4 kN/m²/mm

CBR Value 3.4 %



Old Wainfleet Road, Skegness

Contract No:

PSL23/7808

Client Ref:

VERTICAL DEFORMATION TESTS.

BS 1377 : Part 9 : 1990.

Date of Test: 13-Sep-23

Test Ref: PBT 3

Grid Ref:

Depth (m): 0.50

Layer:

Comments:

Maximum Applied Pressure (kPa):

188.85

Maximum Deformation (mm):

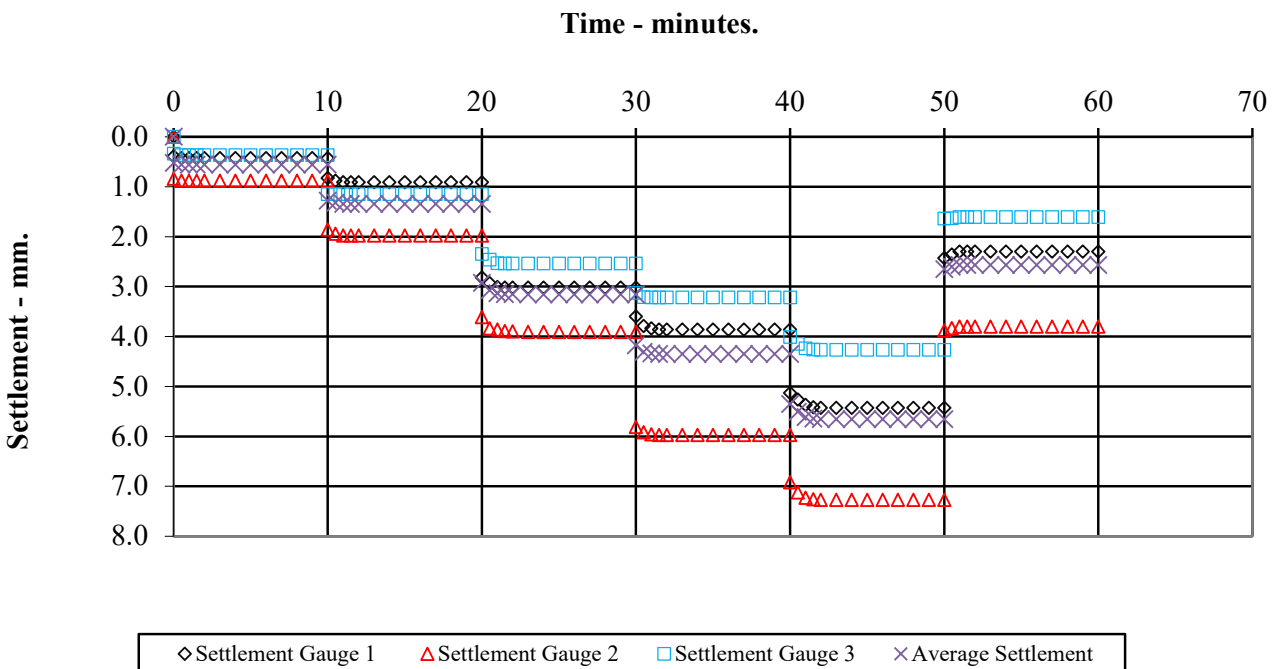
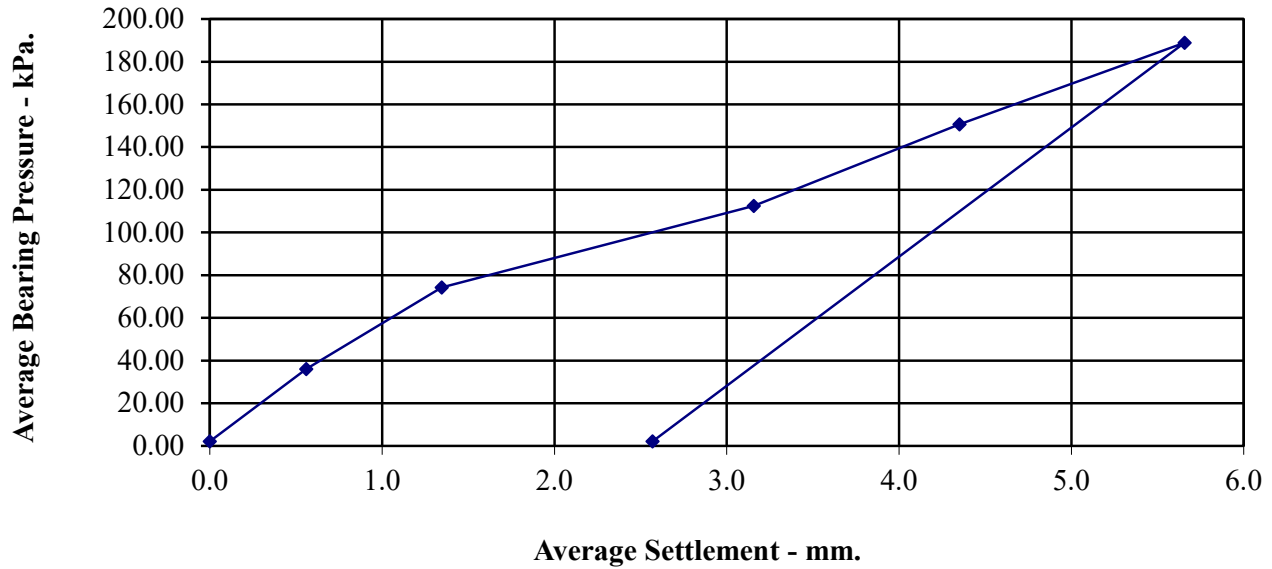
5.66

Plate Area (m²):

0.1626

Description:

Brown gravelly sandy CLAY.



Calculation of Equivalent CBR Value from Plate Bearing Test
Design Manual for Roads and Bridges Volume 7 Section 2 Chapter 4
Incorporating IAN 73/06

Date of Test 13-Sep-23
Test Ref PBT 3
Depth (m) 0.50
Grid Ref
Layer
Comments

Description Brown gravelly sandy CLAY.

Maximum Deflection 5.66 mm
Deflection required for CBR value 1.25 mm
Load at 1.25mm 70 kN/m²
Plate diameter 455 mm
Conversion factor for plate diameter 0.629

**K₇₆₂(modulus of subgrade reaction)
calculated using 1.25mm settlement** 35.0 kN/m²/mm

CBR Value 4.6 %



Old Wainfleet Road, Skegness

Contract No:

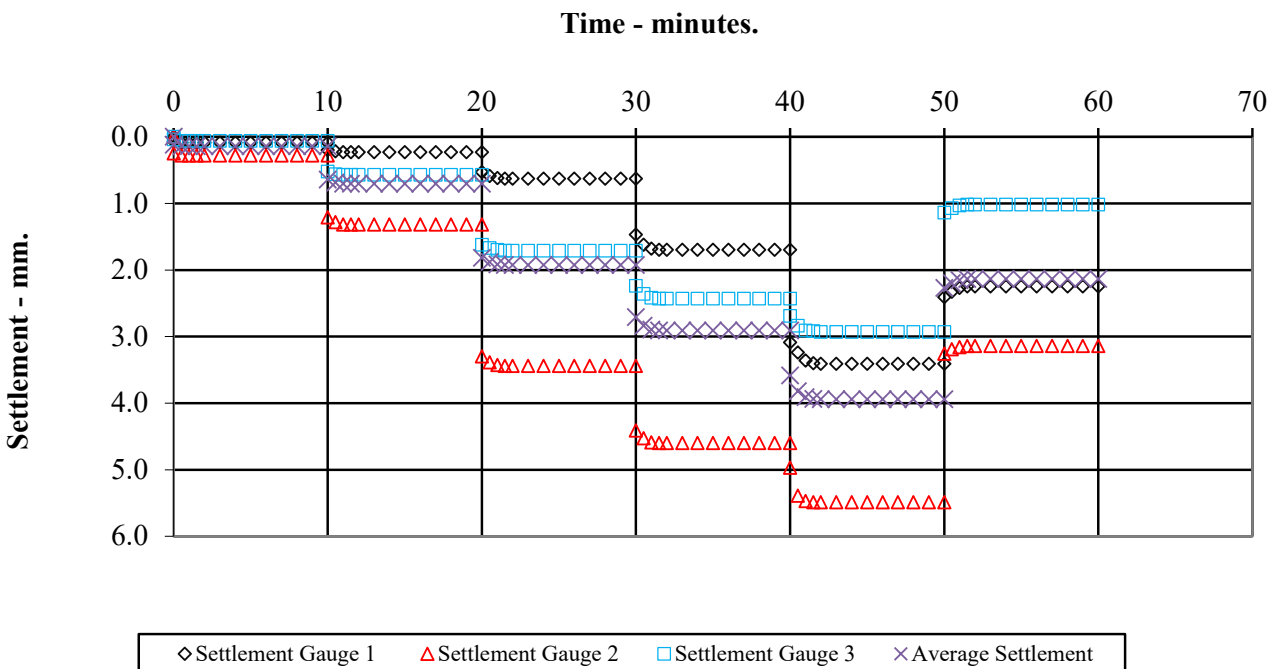
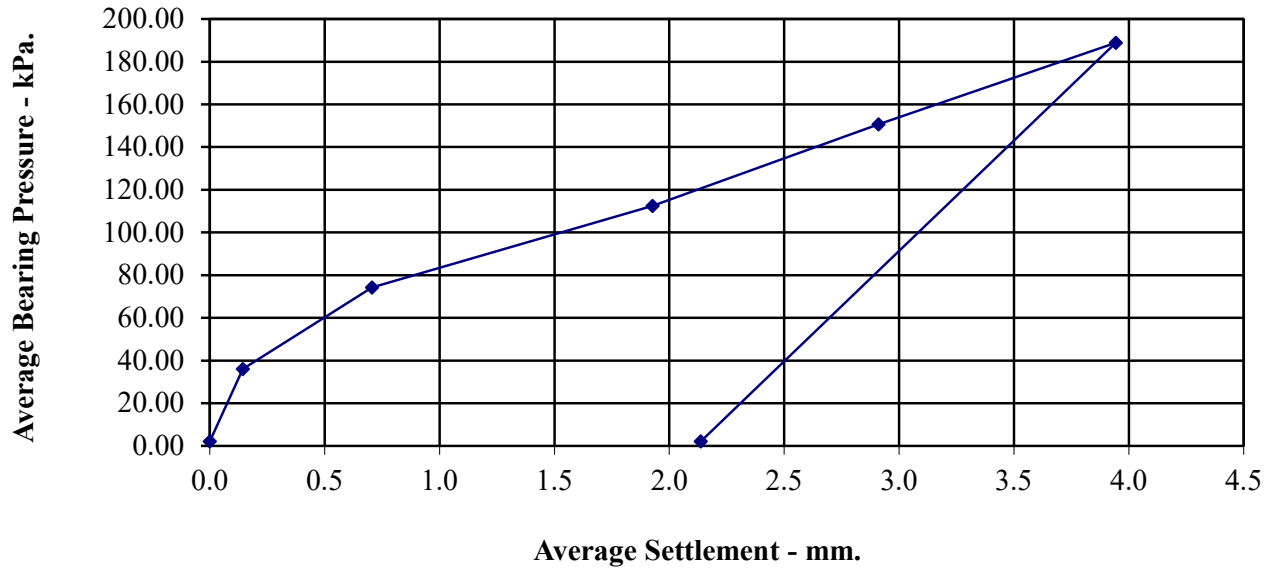
PSL23/7808

Client Ref:

VERTICAL DEFORMATION TESTS.

BS 1377 : Part 9 : 1990.

Date of Test:	13-Sep-23	Test Ref:	PBT 4
Grid Ref:		Depth (m):	0.40
Layer:		Comments:	
Maximum Applied Pressure (kPa):		188.85	
Maximum Deformation (mm):		3.94	
Plate Area (m2):		0.1626	
Description:		White CHALK	



		Old Wainfleet Road, Skegness, PE25 3RR	Contract No: PSL23/7808
			Client Ref:

Calculation of Equivalent CBR Value from Plate Bearing Test
Design Manual for Roads and Bridges Volume 7 Section 2 Chapter 4
Incorporating IAN 73/06

Date of Test 13-Sep-23
Test Ref PBT 4
Depth (m) 0.40
Grid Ref
Layer
Comments

Description White CHALK

Maximum Deflection 3.94 mm
Deflection required for CBR value 1.25 mm
Load at 1.25mm 91 kN/m²
Plate diameter 455 mm
Conversion factor for plate diameter 0.629

**K₇₆₂(modulus of subgrade reaction)
calculated using 1.25mm settlement** 45.9 kN/m²/mm

CBR Value 7.3 %



**Old Wainfleet Road, Skegness, PE25
3RR**

Contract No:

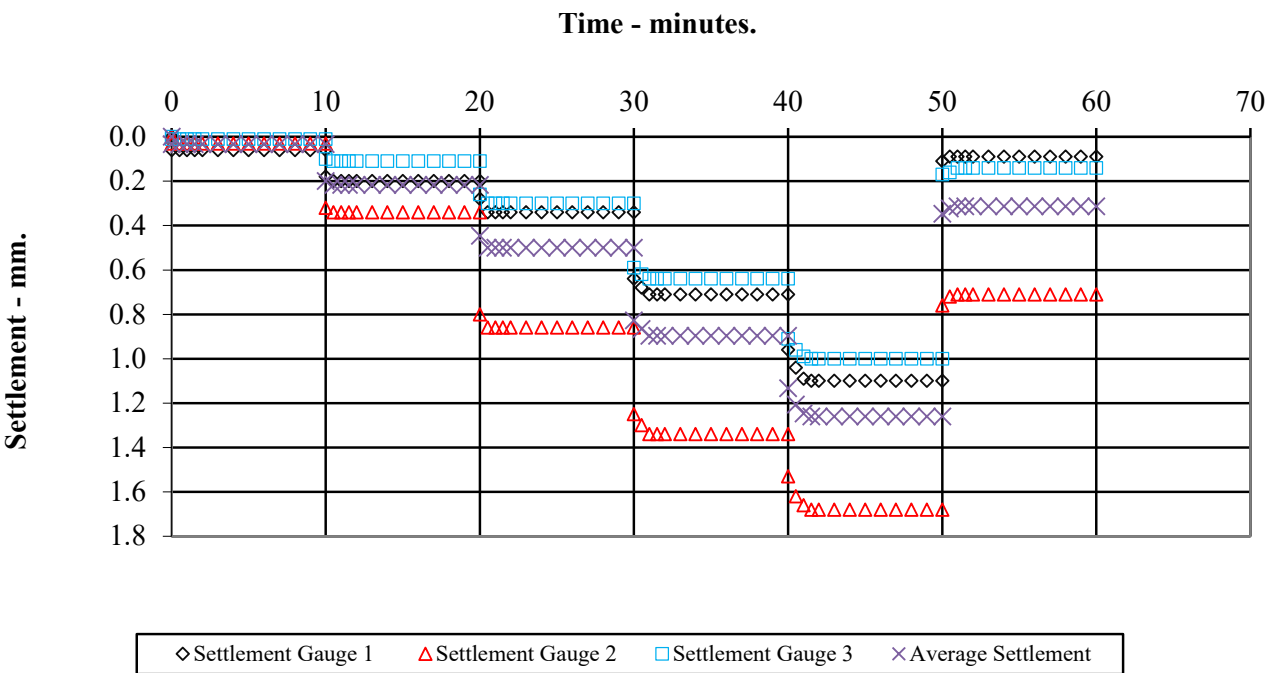
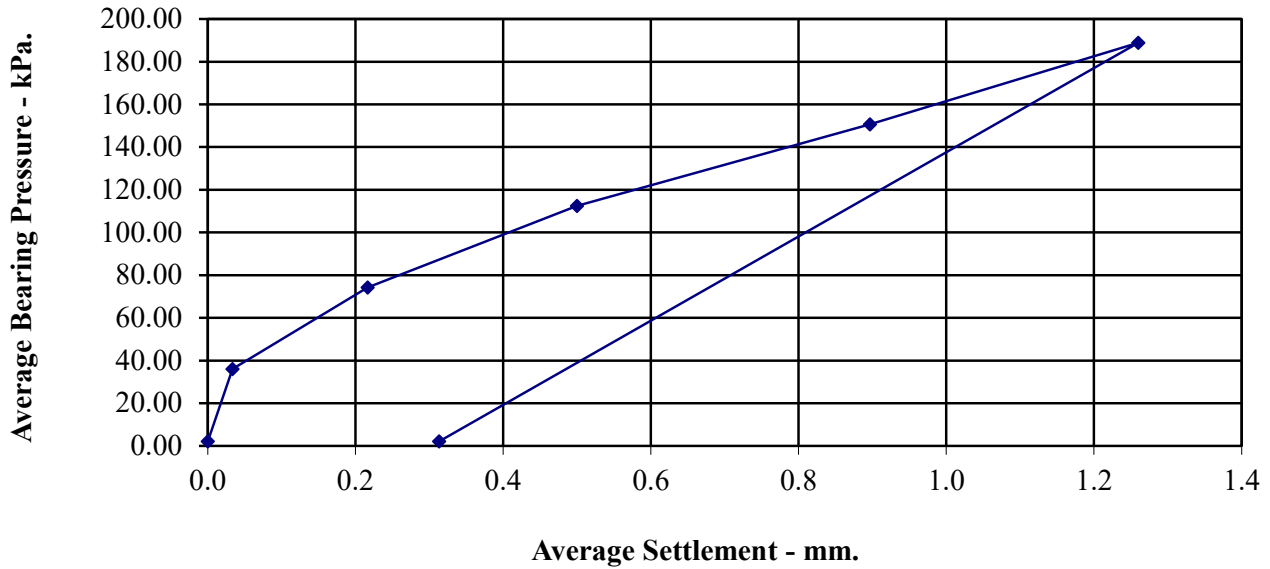
PSL23/7808

Client Ref:

VERTICAL DEFORMATION TESTS.

BS 1377 : Part 9 : 1990.

Date of Test:	13-Sep-23	Test Ref:	PBT 5
Grid Ref:		Depth (m):	0.40
Layer:		Comments:	
Maximum Applied Pressure (kPa):		188.85	
Maximum Deformation (mm):		1.26	
Plate Area (m2):		0.1626	
Description:		CHALK	



Calculation of Equivalent CBR Value from Plate Bearing Test
Design Manual for Roads and Bridges Volume 7 Section 2 Chapter 4
Incorporating IAN 73/06

Date of Test 13-Sep-23
Test Ref PBT 5
Depth (m) 0.40
Grid Ref
Layer
Comments

Description CHALK

Maximum Deflection 1.26 mm
Deflection required for CBR value 1.25 mm
Load at 1.25mm 188 kN/m²
Plate diameter 455 mm
Conversion factor for plate diameter 0.629

**K₇₆₂(modulus of subgrade reaction)
calculated using 1.25mm settlement** 94.5 kN/m²/mm

CBR Value 25.6 %



**Old Wainfleet Road, Skegness, PE25
3RR**

Contract No:
PSL23/7808
Client Ref:



APPENDIX 14 - Commercial Screening Values

Generic Assessment Criteria (GAC)								
Proposed End Use	Unit	Residential with Plant Uptake			Commercial			Source
SOM	%	1	2.5	6	1	2.5	6	
Arsenic	mg/kg	37	37	37	640	640	640	LQM S4ULs
Beryllium	mg/kg	1.7	1.7	1.7	12	12	12	LQM S4ULs
Boron (water soluble)	mg/kg	290	290	290	240000	240000	240000	LQM S4ULs
Cadmium	mg/kg	10	10	10	230	230	230	SGVs
Chromium (Total)	mg/kg	910	910	910	8600	8600	8600	LQM S4ULs
Chromium (VI)	mg/kg	21	21	21	49	49	49	DEFRA C4SLs
Copper	mg/kg	2400	2400	2400	68000	68000	68000	LQM S4ULs
Lead	mg/kg	200	200	200	2300	2300	2300	DEFRA C4SLs
Organic Mercury	mg/kg	1.2	1.2	1.2	26	26	26	LQM S4ULs
Nickel	mg/kg	130	130	130	980	980	980	LQM S4ULs
Selenium	mg/kg	350	350	350	13000	13000	13000	SGVs
Vanadium	mg/kg	410	410	410	9000	9000	9000	LQM S4ULs
Zinc	mg/kg	3700	3700	3700	730000	730000	730000	LQM S4ULs
Aliphatic EC 5 - 6	mg/kg	42	78	160	3200 (304) ^{sol}	5900 (558) ^{sol}	12000 (1150)	LQM S4ULs
Aliphatic EC 6 - 8	mg/kg	100	230	530	7800 (144) ^{sol}	17000 (322) ^{sol}	40000 (736) ^{sol}	LQM S4ULs
Aliphatic EC 8 - 10	mg/kg	27	65	150	2000 (78) ^{sol}	4800 (190) ^{sol}	11000 (451) ^{vap}	LQM S4ULs
Aliphatic EC 10 - 12	mg/kg	130 (48) ^{vap}	330 (118) ^{vap}	760 (283) ^{vap}	9700 (48) ^{sol}	23000 (118) ^{vap}	47000 (283) ^{vap}	LQM S4ULs
Aliphatic EC 12 - 16	mg/kg	1100 (24) ^{sol}	2400 (59) ^{sol}	4300 (142) ^{sol}	59000 (24) ^{sol}	82000 (59) ^{sol}	90000 (142) ^{sol}	LQM S4ULs
Aliphatic EC 16 - 35	mg/kg	65000 (8.48)	92000 (21) ^{f, sol}	110000 ^f	1600000 ^f	1700000 ^f	1800000 ^f	LQM S4ULs
Aliphatic EC 35 - 44	mg/kg	65000 (8.48)	92000 (21) ^{f, sol}	110000 ^f	1600000 ^f	1700000 ^f	1800000 ^f	LQM S4ULs
Aromatic EC 5 - 7	mg/kg	70	140	300	26000 (1220)	46000 (2260)	86000 (4710)	LQM S4ULs
Aromatic EC 7 - 8	mg/kg	130	290	660	56000 (869) ^{vap}	110000 (1920)	180000 (4360)	LQM S4ULs
Aromatic EC 8 - 10	mg/kg	34	83	190	3500 (613) ^{vap}	8100 (1500) ^{vap}	17000 (3580)	LQM S4ULs
Aromatic EC 10 - 12	mg/kg	74	180	380	16000 (364) ^{sol}	28000 (899) ^{sol}	34000 (2150)	LQM S4ULs
Aromatic EC 12 - 16	mg/kg	140	330	660	36000 (169) ^{sol}	37000	38000	LQM S4ULs
Aromatic EC 16 - 21	mg/kg	260 ^f	540 ^f	930 ^f	28000 ^f	28000 ^f	28000 ^f	LQM S4ULs
Aromatic EC 21 - 35	mg/kg	1100 ^f	1500 ^f	1700 ^f	28000 ^f	28000 ^f	28000 ^f	LQM S4ULs
Aromatic EC 35 - 44	mg/kg	1100 ^f	1500 ^f	1700 ^f	28000 ^f	28000 ^f	28000 ^f	LQM S4ULs
Benzene	mg/kg	0.33	0.33	0.33	95	95	95	SGVs
Toluene	mg/kg	610	610	610	4400	4400	4400	SGVs
Ethyl Benzene	mg/kg	350	350	350	2800	2800	2800	SGVs
Xylene - o	mg/kg	250	250	250	2600	2600	2600	SGVs
Xylene - m	mg/kg	240	240	240	3500	3500	3500	SGVs
Xylene - p	mg/kg	230	230	230	3200	3200	3200	SGVs
MTBE (methyl tert-butyl ether)	mg/kg	49	84	160	7900	13000	24000	CL:AIRE 2010
Acenaphthene	mg/kg	210	510	1100	84000 (57) ^{sol}	97000 (141) ^{sol}	100000	LQM SAULs
Acenaphthylene	mg/kg	170	420	920	83000 (86.1) ^{sol}	97000 (212) ^{sol}	100000	LQM S4ULs
Anthracene	mg/kg	2400	5400	11000	520000	540000	540000	LQM S4ULs
Benz(a)anthracene	mg/kg	7.2	11	13	170	170	180	LQM S4ULs
Benzo(a)pyrene	mg/kg	2.2	2.7	5*	35	35	77*	DEFRA C4SL*/LQM
Benzo(b)fluoranthene	mg/kg	2.6	3.3	3.7	44	44	45	LQM S4ULs
Benzo(ghi)perylene	mg/kg	320	340	350	3900	4000	4000	LQM S4ULs
Benzo(k)fluoranthene	mg/kg	77	93	100	1200	1200	1200	LQM S4ULs
Chrysene	mg/kg	15	22	27	350	350	350	LQM S4ULs
Dibenz(ah)anthracene	mg/kg	0.24	0.28	0.3	3.5	3.6	3.6	LQM S4ULs
Fluoranthene	mg/kg	280	560	890	23000	23000	23000	LQM S4ULs
Fluorene	mg/kg	170	400	860	63000 (30.9) ^{sol}	68000	71000	LQM S4ULs
Indeno(123-cd)pyrene	mg/kg	27	36	41	500	510	510	LQM S4ULs
Naphthalene	mg/kg	2.3 ^f	5.6 ^f	13 ^f	190 ^f (76.4) ^{sol}	460 ^f (183) ^{sol}	1100 ^f (432) ^{sol}	LQM S4ULs
Phenanthrene	mg/kg	95	220	440	22000	22000	23000	LQM S4ULs
Pyrene	mg/kg	620	1200	2000	54000	54000	54000	LQM S4ULs

Generic Assessment Criteria (GAC)								GROUNDTECH CONSULTING
Proposed End Use	Unit	Residential with Plant Uptake			Commercial			Source
SOM	%	1	2.5	6	1	2.5	6	
Phenol	mg/kg	420	420	420	3200	3200	3200	SGVs
Chlorophenols	mg/kg	0.87 ^g	2	4.5	3500	4000	4300	LQM S4ULs
Pentachlorophenol	mg/kg	0.22	0.52	1.2	400	400	400	LQM S4ULs
Carbon disulphide	mg/kg	0.14	0.29	0.62	11	22	47	LQM S4ULs
Hexachlorobutadiene	mg/kg	0.29	0.7	1.6	31	66	120	LQM S4ULs
1,1,1,2 Tetrachloroethane	mg/kg	1.6	3.4	7.5	270	550	1100	LQM S4ULs
1,1,1 Trichloroethane	mg/kg	8.8	18	39	660	1300	3000	LQM S4ULs
Trichloroethene	mg/kg	0.016	0.034	0.075	1.2	2.6	5.7	LQM S4ULs
Tetrachloromethane (Carbon Tetrachloride)	mg/kg	0.026	0.056	0.13	2.9	6.3	14	LQM S4ULs
1,2-Dichloroethane	mg/kg	0.0071	0.011	0.019	0.67	0.97	1.7	LQM S4ULs
Chloroethene (Vinyl chloride)	mg/kg	0.00064	0.00087	0.0014	0.059	0.077	0.12	LQM S4ULs
Trichloromethane (Chloroform)	mg/kg	0.91	1.7	3.4	99	170	350	LQM S4ULs
Tetrachloroethene	mg/kg	0.18	0.39	0.9	19	42	95	LQM S4ULs
Hexachlorobenzene	mg/kg	1.8 (0.2) ^{vap}	3.3 (0.5) ^{vap}	4.9	110 (0.2) ^{vap}	120	120	LQM S4ULs
Pentachlorobenzene	mg/kg	5.8	12	22	640 (43) ^{sol}	770 (107) ^{sol}	830	LQM S4ULs
1,2,4,5-Tetrachlorobenzene	mg/kg	0.33	0.77	1.6	42 (19.7) ^{sol}	72 (49.1) ^{sol}	96	LQM S4ULs
1,2,3,5-Tetrachlorobenzene	mg/kg	0.66	1.69	3.7	49 (39.4) ^{vap}	120 (98.1) ^{vap}	240 (235) ^{vap}	LQM S4ULs
1,2,3,4-Tetrachlorobenzene	mg/kg	15	36	78	1700 (122) ^{vap}	3080 (304) ^{vap}	4400 (728) ^{vap}	LQM S4ULs
1,3,5-Trichlorobenzene	mg/kg	0.33	0.81	1.9	23	55	130	LQM S4ULs
1,2,4-Trichlorobenzene	mg/kg	2.6	6.4	15	220	530	1300	LQM S4ULs
1,2,3-Trichlorobenzene	mg/kg	1.5	3.6	8.6	102	250	590	LQM S4ULs
1,4-dichlorobenzene	mg/kg	61 ^f	150 ^f	350 ^f	4400 ^f (224) ^{vap}	10000 ^f (540)	25000 ^f (1280)	LQM S4ULs
1,3-dichlorobenzene	mg/kg	0.4	1	2.3	30	73	170	LQM S4ULs
1,2-Dichlorobenzene	mg/kg	23	55	130	2000 (571) ^{sol}	4800 (1370) ^{sol}	11000 (3240)	LQM S4ULs
Chlorobenzene	mg/kg	0.46	1	2.4	56	130	290	LQM S4ULs
Gamma-Hexachlorocyclohexane	mg/kg	0.06	0.14	0.33	67	69	70	LQM S4ULs
Beta-Hexachlorocyclohexane	mg/kg	0.085	0.2	0.46	65	65	65	LQM S4ULs
Alpha -Hexachlorocyclohexane	mg/kg	0.23	0.55	1.2	170	180	180	LQM S4ULs
Beta -Endosulfan	mg/kg	7	17	39	6300 (0.00007)	7800 (0.0002)	8700	LQM S4ULs
Alpha-Endosulfan	mg/kg	7.4	18	41	5600 (0.003) ^{vap}	7400 (0.007) ^{vap}	8400 (0.016) ^{vap}	LQM S4ULs
Dichlorvos	mg/kg	0.032	0.066	0.14	140	140	140	LQM S4ULs
Atrazine	mg/kg	3.3	7.6	17.4	9300	9400	9400	LQM S4ULs
Dieldrin	mg/kg	0.97	2	3.5	170	170	170	LQM S4ULs
Aldrin	mg/kg	5.7	6.6	7.1	170	170	170	LQM S4ULs
HMX	mg/kg	5.7	13	26	110000	110000	110000	LQM S4ULs
2,4,6-Trinitrotoulene	mg/kg	1.6	3.7	8.1	1000	1000	1000	LQM S4ULs
RDX	mg/kg	120	250	540	210000	210000	210000	LQM S4ULs

^{sol} S4UL exceeds the solubility saturation limit (which is presented in brackets)

^{vap} S4ULs presented exceeds the vapour saturation limit, which is presented in brackets

^f For naphthalene, the S4UL is based on a comparison of inhalation exposure with the TDI_{inhal} for localised affects

^f S4UL based on comparison of inhalation exposure with inhalation TDI for localised effects

^{dir} S4ULs based on a threshold protective direct skin contact with phenol (guideline in brackets based on health effects following long term exposure provided for illustration only)



APPENDIX 15 - Waste classification Report

Waste Classification Report

HazWasteOnline™ classifies waste as either **hazardous** or **non-hazardous** based on its chemical composition, related legislation and the rules and data defined in the current UK or EU technical guidance (Appendix C) (note that HP 9 Infectious is not assessed). It is the responsibility of the classifier named below to:

- understand the origin of the waste
- select the correct List of Waste code(s)
- confirm that the list of determinands, results and sampling plan are fit for purpose
- select and justify the chosen metal species (Appendix B)
- correctly apply moisture correction and other available corrections
- add the meta data for their user-defined substances (Appendix A)
- check that the classification engine is suitable with respect to the national destination of the waste (Appendix C)



39V90-9GUZ3-KMKQL

To aid the reviewer, the laboratory results, assumptions and justifications managed by the classifier are highlighted in pale yellow.

Job name

Skegness

Description/Comments

Project

GRO-23133

Site

Skegness

Classified by

Name: **Connor Hastings**
Date: **17 Oct 2023 16:00 GMT**
Telephone:

Company: **Groundtech Consulting Limited**
First Floor, Lloyd House, Orford Court,
Greenfold Way, WN7 3XJ

HazWasteOnline™ provides a two day, hazardous waste classification course that covers the use of the software and both basic and advanced waste classification techniques. Certification has to be renewed every 3 years.

HazWasteOnline™ Certification:

-

Course

Hazardous Waste Classification

Date

-

Purpose of classification

2 - Material Characterisation

Address of the waste

Old Wainfleet Road, Skegness

Post Code PE25 3RR

SIC for the process giving rise to the waste

Description of industry/producer giving rise to the waste

Redevelopment of former industrial site (inc brick works) commercially

Description of the specific process, sub-process and/or activity that created the waste

Ground Investigation Works

Description of the waste

Made Ground

Job summary

#	Sample name	Depth [m]	Classification Result	Hazard properties	Page
1	PLT01-13/09/2023-0.20m		Non Hazardous		3
2	CP1-13/09/2023-0.50m		Non Hazardous		5
3	CP1-13/09/2023-2.00m		Non Hazardous		7
4	CP2-14/09/2023-0.50m		Non Hazardous		9
5	CP2-14/09/2023-1.00m		Non Hazardous		11
6	WS04-15/09/2023-0.50m		Non Hazardous		13
7	WS05-15/09/2023-0.20m		Non Hazardous		15
8	WS05-15/09/2023-0.60m		Non Hazardous		17

Related documents

#	Name	Description
1	has.HWOL	Element .hwol file used to populate the Job

Report

Created by: Connor Hastings

Created date: 17 Oct 2023 16:00 GMT

Appendices	Page
Appendix A: Classifier defined and non GB MCL determinands	19
Appendix B: Rationale for selection of metal species	19
Appendix C: Version	20

Classification of sample: PLT01-13/09/2023-0.20m

✔ **Non Hazardous Waste**
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:	LoW Code:	
PLT01-13/09/2023-0.20m	Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Moisture content:	Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
10.9% (dry weight correction)		

Hazard properties






None identified

Determinands

Moisture content: 10.9% Dry Weight Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
1	arsenic { arsenic pentoxide }				1.2 mg/kg	1.534	1.66 mg/kg	0.000166 %	✓	
	033-004-00-6	215-116-9	1303-28-2							
2	cadmium { cadmium compounds, with the exception of cadmium sulphoselenide (xCdS.yCdSe), reaction mass of cadmium sulphide with zinc sulphide (xCdS.yZnS), reaction mass of cadmium sulphide with mercury sulphide (xCdS.yHgS), and those specified elsewhere in this Annex }			1	0.1 mg/kg		0.0902 mg/kg	0.00000902 %	✓	
	048-001-00-5									
3	copper { dicopper oxide; copper (I) oxide }				6 mg/kg	1.126	6.091 mg/kg	0.000609 %	✓	
	029-002-00-X	215-270-7	1317-39-1							
4	lead { lead compounds with the exception of those specified elsewhere in this Annex (worst case) }			1	<5 mg/kg		<5 mg/kg	<0.0005 %		<LOD
	082-001-00-6									
5	mercury { mercury }				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
	080-001-00-0	231-106-7	7439-97-6							
6	nickel { nickel diiodide }				3.5 mg/kg	5.324	16.803 mg/kg	0.00168 %	✓	
	028-029-00-4	236-666-6	13462-90-3							
7	selenium { nickel selenate }				<1 mg/kg	2.554	<2.554 mg/kg	<0.000255 %		<LOD
	028-031-00-5	239-125-2	15060-62-5							
8	zinc { zinc oxide }				13 mg/kg	1.245	14.591 mg/kg	0.00146 %	✓	
	030-013-00-7	215-222-5	1314-13-2							
9	chromium in chromium(VI) compounds { chromium(VI) oxide }				<0.3 mg/kg	1.923	<0.577 mg/kg	<0.0000577 %		<LOD
	024-001-00-0	215-607-8	1333-82-0							
10	pH				9.22 pH		9.22 pH	9.22 pH		
			PH							
11	benzo[bk]fluoranthene				<0.07 mg/kg		<0.07 mg/kg	<0.000007 %		<LOD
		[1] 205-911-9 [2] 205-916-6	[1] 205-99-2 [2] 207-08-9							
12	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }				4 mg/kg	1.462	5.272 mg/kg	0.000527 %	✓	
		215-160-9	1308-38-9							
Total:								0.00528 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
	This determinand is defined in the EU CLP Table 3
<LOD	Below limit of detection
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: CP1-13/09/2023-0.50m

✔ **Non Hazardous Waste**
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:	LoW Code:	
CP1-13/09/2023-0.50m	Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Moisture content:	Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
10.7% (dry weight correction)		

Hazard properties






None identified

Determinands


Moisture content: 10.7% Dry Weight Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number									
1	arsenic { arsenic pentoxide }				0.9	mg/kg	1.534	1.247	mg/kg	0.000125 %	✓	
	033-004-00-6	215-116-9	1303-28-2									
2	cadmium { cadmium compounds, with the exception of cadmium sulphoselenide (xCdS.yCdSe), reaction mass of cadmium sulphide with zinc sulphide (xCdS.yZnS), reaction mass of cadmium sulphide with mercury sulphide (xCdS.yHgS), and those specified elsewhere in this Annex }			1	0.1	mg/kg		0.0903	mg/kg	0.00000903 %	✓	
	048-001-00-5											
3	copper { dicopper oxide; copper (I) oxide }				5	mg/kg	1.126	5.085	mg/kg	0.000509 %	✓	
	029-002-00-X	215-270-7	1317-39-1									
4	lead { lead compounds with the exception of those specified elsewhere in this Annex (worst case) }			1	<5	mg/kg		<5	mg/kg	<0.0005 %		<LOD
	082-001-00-6											
5	mercury { mercury }				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
	080-001-00-0	231-106-7	7439-97-6									
6	nickel { nickel diiodide }				2.7	mg/kg	5.324	12.986	mg/kg	0.0013 %	✓	
	028-029-00-4	236-666-6	13462-90-3									
7	selenium { nickel selenate }				<1	mg/kg	2.554	<2.554	mg/kg	<0.000255 %		<LOD
	028-031-00-5	239-125-2	15060-62-5									
8	zinc { zinc oxide }				11	mg/kg	1.245	12.368	mg/kg	0.00124 %	✓	
	030-013-00-7	215-222-5	1314-13-2									
9	chromium in chromium(VI) compounds { chromium(VI) oxide }				<0.3	mg/kg	1.923	<0.577	mg/kg	<0.0000577 %		<LOD
	024-001-00-0	215-607-8	1333-82-0									
10	pH				9.01	pH		9.01	pH	9.01 pH		
11	benzo[bk]fluoranthene				<0.07	mg/kg		<0.07	mg/kg	<0.000007 %		<LOD
		[1] 205-911-9 [2] 205-916-6	[1] 205-99-2 [2] 207-08-9									
12	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }				2	mg/kg	1.462	2.641	mg/kg	0.000264 %	✓	
		215-160-9	1308-38-9									
Total:										0.00427 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
	This determinand is defined in the EU CLP Table 3
<LOD	Below limit of detection
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: CP1-13/09/2023-2.00m

 **Non Hazardous Waste**
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:	LoW Code:	
CP1-13/09/2023-2.00m	Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Moisture content:	Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
41.6% (dry weight correction)		

Hazard properties






None identified

Determinands


Moisture content: 41.6% Dry Weight Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
1	arsenic { arsenic pentoxide }				11.5 mg/kg	1.534	12.457 mg/kg	0.00125 %	✓	
	033-004-00-6	215-116-9	1303-28-2							
2	cadmium { cadmium compounds, with the exception of cadmium sulphoselenide (xCdS.yCdSe), reaction mass of cadmium sulphide with zinc sulphide (xCdS.yZnS), reaction mass of cadmium sulphide with mercury sulphide (xCdS.yHgS), and those specified elsewhere in this Annex }			1	<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
	048-001-00-5									
3	copper { dicopper oxide; copper (I) oxide }				12 mg/kg	1.126	9.541 mg/kg	0.000954 %	✓	
	029-002-00-X	215-270-7	1317-39-1							
4	lead { lead compounds with the exception of those specified elsewhere in this Annex (worst case) }			1	22 mg/kg		15.537 mg/kg	0.00155 %	✓	
	082-001-00-6									
5	mercury { mercury }				0.1 mg/kg		0.0706 mg/kg	0.00000706 %	✓	
	080-001-00-0	231-106-7	7439-97-6							
6	nickel { nickel diiodide }				22.6 mg/kg	5.324	84.978 mg/kg	0.0085 %	✓	
	028-029-00-4	236-666-6	13462-90-3							
7	selenium { nickel selenate }				<1 mg/kg	2.554	<2.554 mg/kg	<0.000255 %		<LOD
	028-031-00-5	239-125-2	15060-62-5							
8	zinc { zinc oxide }				72 mg/kg	1.245	63.291 mg/kg	0.00633 %	✓	
	030-013-00-7	215-222-5	1314-13-2							
9	chromium in chromium(VI) compounds { chromium(VI) oxide }				<0.3 mg/kg	1.923	<0.577 mg/kg	<0.0000577 %		<LOD
	024-001-00-0	215-607-8	1333-82-0							
10	pH				7.81 pH		7.81 pH	7.81 pH		
11	benzo[bk]fluoranthene				<0.07 mg/kg		<0.07 mg/kg	<0.000007 %		<LOD
		[1] 205-911-9 [2] 205-916-6	[1] 205-99-2 [2] 207-08-9							
12	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }				49.8 mg/kg	1.462	51.402 mg/kg	0.00514 %	✓	
		215-160-9	1308-38-9							
Total:								0.0241 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
	This determinand is defined in the EU CLP Table 3
<LOD	Below limit of detection
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: CP2-14/09/2023-0.50m

 **Non Hazardous Waste**
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:	LoW Code:	
CP2-14/09/2023-0.50m	Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Moisture content:	Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
3.5% (dry weight correction)		

Hazard properties






None identified

Determinands

Moisture content: 3.5% Dry Weight Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
1	arsenic { arsenic pentoxide }				2.8 mg/kg	1.534	4.15 mg/kg	0.000415 %	✓	
	033-004-00-6	215-116-9	1303-28-2							
2	cadmium { cadmium compounds, with the exception of cadmium sulphoselenide (xCdS.yCdSe), reaction mass of cadmium sulphide with zinc sulphide (xCdS.yZnS), reaction mass of cadmium sulphide with mercury sulphide (xCdS.yHgS), and those specified elsewhere in this Annex }			1	<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
	048-001-00-5									
3	copper { dicopper oxide; copper (I) oxide }				7 mg/kg	1.126	7.615 mg/kg	0.000761 %	✓	
	029-002-00-X	215-270-7	1317-39-1							
4	lead { lead compounds with the exception of those specified elsewhere in this Annex (worst case) }			1	<5 mg/kg		<5 mg/kg	<0.0005 %		<LOD
	082-001-00-6									
5	mercury { mercury }				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
	080-001-00-0	231-106-7	7439-97-6							
6	nickel { nickel diiodide }				6.8 mg/kg	5.324	34.981 mg/kg	0.0035 %	✓	
	028-029-00-4	236-666-6	13462-90-3							
7	selenium { nickel selenate }				<1 mg/kg	2.554	<2.554 mg/kg	<0.000255 %		<LOD
	028-031-00-5	239-125-2	15060-62-5							
8	zinc { zinc oxide }				17 mg/kg	1.245	20.445 mg/kg	0.00204 %	✓	
	030-013-00-7	215-222-5	1314-13-2							
9	chromium in chromium(VI) compounds { chromium(VI) oxide }				<0.3 mg/kg	1.923	<0.577 mg/kg	<0.0000577 %		<LOD
	024-001-00-0	215-607-8	1333-82-0							
10	pH				9.23 pH		9.23 pH	9.23 pH		
			PH							
11	benzo[bk]fluoranthene				<0.07 mg/kg		<0.07 mg/kg	<0.000007 %		<LOD
		[1] 205-911-9 [2] 205-916-6	[1] 205-99-2 [2] 207-08-9							
12	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }				6.2 mg/kg	1.462	8.755 mg/kg	0.000876 %	✓	
		215-160-9	1308-38-9							
Total:								0.00843 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
	This determinand is defined in the EU CLP Table 3
<LOD	Below limit of detection
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: CP2-14/09/2023-1.00m

✔ **Non Hazardous Waste**
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:	LoW Code:	
CP2-14/09/2023-1.00m	Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Moisture content:	Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
10.5% (dry weight correction)		

Hazard properties






None identified

Determinands


Moisture content: 10.5% Dry Weight Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
1	arsenic { arsenic pentoxide }				1.8 mg/kg	1.534	2.499 mg/kg	0.00025 %	✓	
	033-004-00-6	215-116-9	1303-28-2							
2	cadmium { cadmium compounds, with the exception of cadmium sulphoselenide (xCdS.yCdSe), reaction mass of cadmium sulphide with zinc sulphide (xCdS.yZnS), reaction mass of cadmium sulphide with mercury sulphide (xCdS.yHgS), and those specified elsewhere in this Annex }			1	<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
	048-001-00-5									
3	copper { dicopper oxide; copper (I) oxide }				6 mg/kg	1.126	6.113 mg/kg	0.000611 %	✓	
	029-002-00-X	215-270-7	1317-39-1							
4	lead { lead compounds with the exception of those specified elsewhere in this Annex (worst case) }			1	<5 mg/kg		<5 mg/kg	<0.0005 %		<LOD
	082-001-00-6									
5	mercury { mercury }				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
	080-001-00-0	231-106-7	7439-97-6							
6	nickel { nickel diiodide }				3.8 mg/kg	5.324	18.31 mg/kg	0.00183 %	✓	
	028-029-00-4	236-666-6	13462-90-3							
7	selenium { nickel selenate }				<1 mg/kg	2.554	<2.554 mg/kg	<0.000255 %		<LOD
	028-031-00-5	239-125-2	15060-62-5							
8	zinc { zinc oxide }				13 mg/kg	1.245	14.644 mg/kg	0.00146 %	✓	
	030-013-00-7	215-222-5	1314-13-2							
9	chromium in chromium(VI) compounds { chromium(VI) oxide }				<0.3 mg/kg	1.923	<0.577 mg/kg	<0.0000577 %		<LOD
	024-001-00-0	215-607-8	1333-82-0							
10	pH				9.3 pH		9.3 pH	9.3 pH		
			PH							
11	benzo[bk]fluoranthene				0.22 mg/kg		0.199 mg/kg	0.0000199 %	✓	
		[1] 205-911-9 [2] 205-916-6	[1] 205-99-2 [2] 207-08-9							
12	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }				5.4 mg/kg	1.462	7.142 mg/kg	0.000714 %	✓	
		215-160-9	1308-38-9							
Total:								0.00572 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
	This determinand is defined in the EU CLP Table 3
<LOD	Below limit of detection
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: WS04-15/09/2023-0.50m

 **Non Hazardous Waste**
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:	LoW Code:	
WS04-15/09/2023-0.50m	Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Moisture content:	Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
12.5% (dry weight correction)		

Hazard properties






None identified

Determinands


Moisture content: 12.5% Dry Weight Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
1	arsenic { arsenic pentoxide }				11 mg/kg	1.534	14.998 mg/kg	0.0015 %	✓	
	033-004-00-6	215-116-9	1303-28-2							
2	cadmium { cadmium compounds, with the exception of cadmium sulphoselenide (xCdS.yCdSe), reaction mass of cadmium sulphide with zinc sulphide (xCdS.yZnS), reaction mass of cadmium sulphide with mercury sulphide (xCdS.yHgS), and those specified elsewhere in this Annex }			1	<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
	048-001-00-5									
3	copper { dicopper oxide; copper (I) oxide }				18 mg/kg	1.126	18.014 mg/kg	0.0018 %	✓	
	029-002-00-X	215-270-7	1317-39-1							
4	lead { lead compounds with the exception of those specified elsewhere in this Annex (worst case) }			1	11 mg/kg		9.778 mg/kg	0.000978 %	✓	
	082-001-00-6									
5	mercury { mercury }				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
	080-001-00-0	231-106-7	7439-97-6							
6	nickel { nickel diiodide }				13.3 mg/kg	5.324	62.945 mg/kg	0.00629 %	✓	
	028-029-00-4	236-666-6	13462-90-3							
7	selenium { nickel selenate }				<1 mg/kg	2.554	<2.554 mg/kg	<0.000255 %		<LOD
	028-031-00-5	239-125-2	15060-62-5							
8	zinc { zinc oxide }				17 mg/kg	1.245	18.809 mg/kg	0.00188 %	✓	
	030-013-00-7	215-222-5	1314-13-2							
9	chromium in chromium(VI) compounds { chromium(VI) oxide }				<0.3 mg/kg	1.923	<0.577 mg/kg	<0.0000577 %		<LOD
	024-001-00-0	215-607-8	1333-82-0							
10	pH				8.84 pH		8.84 pH	8.84 pH		
			PH							
11	benzo[bk]fluoranthene				0.37 mg/kg		0.329 mg/kg	0.0000329 %	✓	
		[1] 205-911-9 [2] 205-916-6	[1] 205-99-2 [2] 207-08-9							
12	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }				29.2 mg/kg	1.462	37.935 mg/kg	0.00379 %	✓	
		215-160-9	1308-38-9							
Total:								0.0166 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
	This determinand is defined in the EU CLP Table 3
<LOD	Below limit of detection
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: WS05-15/09/2023-0.20m

 **Non Hazardous Waste**
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:	LoW Code:	
WS05-15/09/2023-0.20m	Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Moisture content:	Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
26.1% (dry weight correction)		

Hazard properties






None identified

Determinands


Moisture content: 26.1% Dry Weight Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
1	arsenic { arsenic pentoxide }				16.2 mg/kg	1.534	19.706 mg/kg	0.00197 %	✓	
	033-004-00-6	215-116-9	1303-28-2							
2	cadmium { cadmium compounds, with the exception of cadmium sulphoselenide (xCdS.yCdSe), reaction mass of cadmium sulphide with zinc sulphide (xCdS.yZnS), reaction mass of cadmium sulphide with mercury sulphide (xCdS.yHgS), and those specified elsewhere in this Annex }			1	<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
	048-001-00-5									
3	copper { dicopper oxide; copper (I) oxide }				14 mg/kg	1.126	12.5 mg/kg	0.00125 %	✓	
	029-002-00-X	215-270-7	1317-39-1							
4	lead { lead compounds with the exception of those specified elsewhere in this Annex (worst case) }			1	23 mg/kg		18.239 mg/kg	0.00182 %	✓	
	082-001-00-6									
5	mercury { mercury }				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
	080-001-00-0	231-106-7	7439-97-6							
6	nickel { nickel diiodide }				24.7 mg/kg	5.324	104.29 mg/kg	0.0104 %	✓	
	028-029-00-4	236-666-6	13462-90-3							
7	selenium { nickel selenate }				<1 mg/kg	2.554	<2.554 mg/kg	<0.000255 %		<LOD
	028-031-00-5	239-125-2	15060-62-5							
8	zinc { zinc oxide }				70 mg/kg	1.245	69.096 mg/kg	0.00691 %	✓	
	030-013-00-7	215-222-5	1314-13-2							
9	chromium in chromium(VI) compounds { chromium(VI) oxide }				<0.3 mg/kg	1.923	<0.577 mg/kg	<0.0000577 %		<LOD
	024-001-00-0	215-607-8	1333-82-0							
10	pH				8.43 pH		8.43 pH	8.43 pH		
11	benzo[bk]fluoranthene				0.28 mg/kg		0.222 mg/kg	0.0000222 %	✓	
		[1] 205-911-9 [2] 205-916-6	[1] 205-99-2 [2] 207-08-9							
12	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }				49.9 mg/kg	1.462	57.836 mg/kg	0.00578 %	✓	
		215-160-9	1308-38-9							
Total:								0.0285 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
	This determinand is defined in the EU CLP Table 3
<LOD	Below limit of detection
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: WS05-15/09/2023-0.60m

 **Non Hazardous Waste**
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:	LoW Code:	
WS05-15/09/2023-0.60m	Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Moisture content:	Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
27.5% (dry weight correction)		

Hazard properties






None identified

Determinands

Moisture content: 27.5% Dry Weight Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
1	arsenic { arsenic pentoxide }				22.5 mg/kg	1.534	27.068 mg/kg	0.00271 %	✓	
	033-004-00-6	215-116-9	1303-28-2							
2	cadmium { cadmium compounds, with the exception of cadmium sulphoselenide (xCdS.yCdSe), reaction mass of cadmium sulphide with zinc sulphide (xCdS.yZnS), reaction mass of cadmium sulphide with mercury sulphide (xCdS.yHgS), and those specified elsewhere in this Annex }			1	<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
	048-001-00-5									
3	copper { dicopper oxide; copper (I) oxide }				17 mg/kg	1.126	15.012 mg/kg	0.0015 %	✓	
	029-002-00-X	215-270-7	1317-39-1							
4	lead { lead compounds with the exception of those specified elsewhere in this Annex (worst case) }			1	22 mg/kg		17.255 mg/kg	0.00173 %	✓	
	082-001-00-6									
5	mercury { mercury }				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
	080-001-00-0	231-106-7	7439-97-6							
6	nickel { nickel diiodide }				41.8 mg/kg	5.324	174.554 mg/kg	0.0175 %	✓	
	028-029-00-4	236-666-6	13462-90-3							
7	selenium { nickel selenate }				<1 mg/kg	2.554	<2.554 mg/kg	<0.000255 %		<LOD
	028-031-00-5	239-125-2	15060-62-5							
8	zinc { zinc oxide }				85 mg/kg	1.245	82.981 mg/kg	0.0083 %	✓	
	030-013-00-7	215-222-5	1314-13-2							
9	chromium in chromium(VI) compounds { chromium(VI) oxide }				<0.3 mg/kg	1.923	<0.577 mg/kg	<0.0000577 %		<LOD
	024-001-00-0	215-607-8	1333-82-0							
10	pH				7.96 pH		7.96 pH	7.96 pH		
			PH							
11	benzo[b]fluoranthene				<0.07 mg/kg		<0.07 mg/kg	<0.000007 %		<LOD
		[1] 205-911-9 [2] 205-916-6	[1] 205-99-2 [2] 207-08-9							
12	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }				47.7 mg/kg	1.462	54.679 mg/kg	0.00547 %	✓	
		215-160-9	1308-38-9							
Total:								0.0375 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
	This determinand is defined in the EU CLP Table 3
<LOD	Below limit of detection
CLP: Note 1	Only the metal concentration has been used for classification

Appendix A: Classifier defined and non GB MCL determinands

cadmium compounds, with the exception of cadmium sulphoselenide (xCdS.yCdSe), reaction mass of cadmium sulphide with zinc sulphide (xCdS.yZnS), reaction mass of cadmium sulphide with mercury sulphide (xCdS.yHgS), and those specified elsewhere in this Annex

EU CLP index number: 048-001-00-5

Description/Comments: Worst Case: IARC considers cadmium compounds Group 1; Carcinogenic to humans

Data source: Regulation 1272/2008/EC - Classification, labelling and packaging of substances and mixtures. (CLP)

)

Hazard Statements: Acute Tox. 4; H332 , Acute Tox. 4; H312 , Acute Tox. 4; H302 , Aquatic Acute 1; H400 , Aquatic Chronic 1; H410 , Carc. 1A; H350

Reason for additional Hazards Statement(s):

29 Sep 2015 - Carc. 1A; H350 hazard statement sourced from: IARC Group 1 (23, Sup 7, 100C) 2012

lead compounds with the exception of those specified elsewhere in this Annex (worst case)

EU CLP index number: 082-001-00-6

Description/Comments: Worst Case: IARC considers lead compounds Group 2A; Probably carcinogenic to humans; Lead REACH Consortium, following CLP protocols, considers lead compounds from smelting industries, flue dust and similar to be Carcinogenic category 1A

Data source: Regulation 1272/2008/EC - Classification, labelling and packaging of substances and mixtures. (CLP)

)

Hazard Statements: Repr. 1A; H360Df , Acute Tox. 4; H332 , Acute Tox. 4; H302 , STOT RE 2; H373 , Aquatic Acute 1; H400 , Aquatic Chronic 1; H410 , Repr. 2; H361f >= 2.5 % , STOT RE 2; H373 >= 0.5 % , Carc. 1A; H350

Reason for additional Hazards Statement(s):

03 Jun 2015 - Carc. 1A; H350 hazard statement sourced from: IARC Group 2A (Sup 7, 87) 2006; Lead REACH Consortium www.reach-lead.eu/substanceinformation.html (worst case lead compounds). Review date 29/09/2015

zinc oxide (EC Number: 215-222-5, CAS Number: 1314-13-2)

EU CLP index number: 030-013-00-7

Description/Comments:

Data source: Regulation 1272/2008/EC - Classification, labelling and packaging of substances and mixtures. (CLP)

)

Hazard Statements: Aquatic Acute 1; H400 , Aquatic Chronic 1; H410

chromium(VI) oxide (EC Number: 215-607-8, CAS Number: 1333-82-0)

EU CLP index number: 024-001-00-0

Description/Comments:

Data source: Regulation 1272/2008/EC - Classification, labelling and packaging of substances and mixtures. (CLP)

)

Hazard Statements: Ox. Sol. 1; H271 , Carc. 1A; H350 , Muta. 1B; H340 , Repr. 2; H361f , Acute Tox. 2; H330 , Acute Tox. 3; H311 , Acute Tox. 3; H301 , STOT RE 1; H372 , Skin Corr. 1A; H314 , Resp. Sens. 1; H334 , Skin Sens. 1; H317 , Aquatic Acute 1; H400 , Aquatic Chronic 1; H410 , STOT SE 3; H335 >= 1 %

pH (CAS Number: PH)

Description/Comments: Appendix C4

Data source: WM3 1st Edition 2015

Data source date: 25 May 2015

Hazard Statements: None.

benzo[*b*]fluoranthene (EC Number: [1] 205-911-9 [2] 205-916-6, CAS Number: [1] 205-99-2 [2] 207-08-9)

Description/Comments: Combined data from harmonised entries in CLP for benzo[*b*] and benzo[*k*]fluoranthene; C&L Inventory Database

Data source: <https://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>

Data source date: 02 Mar 2017

Hazard Statements: Carc. 1B; H350 , Aquatic Acute 1; H400 , Aquatic Chronic 1; H410

chromium(III) oxide (worst case) (EC Number: 215-160-9, CAS Number: 1308-38-9)

Description/Comments: Data from C&L Inventory Database

Data source: <https://echa.europa.eu/information-on-chemicals/cl-inventory-database/-/discli/details/33806>

Data source date: 17 Jul 2015

Hazard Statements: Acute Tox. 4; H332 , Acute Tox. 4; H302 , Eye Irrit. 2; H319 , STOT SE 3; H335 , Skin Irrit. 2; H315 , Resp. Sens. 1; H334 , Skin Sens. 1; H317 , Repr. 1B; H360FD , Aquatic Acute 1; H400 , Aquatic Chronic 1; H410

Appendix B: Rationale for selection of metal species

arsenic {arsenic pentoxide}

Worst case

cadmium {cadmium compounds, with the exception of cadmium sulphoselenide (xCdS.yCdSe), reaction mass of cadmium sulphide with zinc sulphide (xCdS.yZnS), reaction mass of cadmium sulphide with mercury sulphide (xCdS.yHgS), and those specified elsewhere in this Annex}

Cadmium results not speciated.

copper {dicopper oxide; copper (I) oxide}

Copper results not speciated.

lead {lead compounds with the exception of those specified elsewhere in this Annex (worst case)}

Lead results not speciated.

mercury {mercury}

Worst case

nickel {nickel diiodide}

Worst case

selenium {nickel selenate}

Worst case

zinc {zinc oxide}

Zinc results not speciated.

chromium in chromium(VI) compounds {chromium(VI) oxide}

Chromium(VI) compounds not speciated.

chromium in chromium(III) compounds {chromium(III) oxide (worst case)}

Chromium (III) compounds not speciated.

Appendix C: Version

HazWasteOnline Classification Engine: **WM3 1st Edition v1.2.GB - Oct 2021**

HazWasteOnline Classification Engine Version: 2023.289.5779.10675 (16 Oct 2023)

HazWasteOnline Database: 2023.283.5774.10667 (10 Oct 2023)

This classification utilises the following guidance and legislation:

WM3 v1.2.GB - Waste Classification - 1st Edition v1.2.GB - Oct 2021

CLP Regulation - Regulation 1272/2008/EC of 16 December 2008

1st ATP - Regulation 790/2009/EC of 10 August 2009

2nd ATP - Regulation 286/2011/EC of 10 March 2011

3rd ATP - Regulation 618/2012/EU of 10 July 2012

4th ATP - Regulation 487/2013/EU of 8 May 2013

Correction to 1st ATP - Regulation 758/2013/EU of 7 August 2013

5th ATP - Regulation 944/2013/EU of 2 October 2013

6th ATP - Regulation 605/2014/EU of 5 June 2014

WFD Annex III replacement - Regulation 1357/2014/EU of 18 December 2014

Revised List of Waste 2014 - Decision 2014/955/EU of 18 December 2014

7th ATP - Regulation 2015/1221/EU of 24 July 2015

8th ATP - Regulation (EU) 2016/918 of 19 May 2016

9th ATP - Regulation (EU) 2016/1179 of 19 July 2016

10th ATP - Regulation (EU) 2017/776 of 4 May 2017

HP14 amendment - Regulation (EU) 2017/997 of 8 June 2017

13th ATP - Regulation (EU) 2018/1480 of 4 October 2018

14th ATP - Regulation (EU) 2020/217 of 4 October 2019

15th ATP - Regulation (EU) 2020/1182 of 19 May 2020

The Chemicals (Health and Safety) and Genetically Modified Organisms (Contained Use)(Amendment etc.) (EU Exit)

Regulations 2020 - UK: 2020 No. 1567 of 16th December 2020

The Waste and Environmental Permitting etc. (Legislative Functions and Amendment etc.) (EU Exit) Regulations 2020 - UK:

2020 No. 1540 of 16th December 2020

GB MCL List - version 1.1 of 09 June 2021



APPENDIX 16 - Relevant Legislative Background

Legislative Background

Environmental liabilities and risks have been evaluated in terms of a source -pathway - target relationship in accordance with the approach set out in:

- The 1995 Environment Act;
- The Contaminated Land (England) Regulations 2000;
- The DETR circular 02/2000 Environmental Protection Act 1990: Part IIA Contaminated Land.

Contaminated land is defined within the legislative framework as land which is in such condition by reason of substances in, on or under the land that:

- 1) Significant harm is being caused or there is a significant possibility of such harm being caused;
- 2) Significant pollution of controlled waters is being or is likely to be caused.

The potential for harm is based on the presence of three factors:

- **Source** - substances that are potential contaminants or pollutants that may cause harm;
- **Pathway** - a potential route by which contaminants can move from the source to the receptor;
- **Receptor** - a receptor that may be harmed, for example the water environment, humans and water.

Where a source, pathway and target are all present a pollutant linkage exists and there is potential for harm to be caused. The presence of a source does not automatically imply that a contamination problem exists, since contamination must be defined in terms of pollutant linkages and unacceptable risk of harm. The nature and importance of both pathways and receptors are site specific and will vary according to the intended end use of the site, its characteristics and its surroundings.

The key principle which supports the SPR approach is 'suitable for use' criteria. This requires remedial action only where contamination is considered to pose unacceptable actual or potential risks to health or the environment and, taking into account the proposed use of the site.

Relevant Guidance Documents

This report has been prepared in accordance with the list of guidance below however the list is not exhaustive:

- LCRM – Model Procedures;
- Contamination and Environmental Matters - Their implications for Property Professionals (2nd Edition RICS Nov 2003);
- Brownfields – Managing the development of previously developed land – A client's guide, CIRIA 2002;
- DEFRA and Environment Agency publications CLR7 – 10, supported by the TOX guides and SGV guides, dated March 2002;
- DETR Circular 02/2000, Contaminated Land: Implementation of Part IIA of the Environmental Protection Act 1990;
- Environment Agency technical advice to third parties on Pollution of Controlled Waters for Part IIA of the EPA1990, May 2002;

Relevant Legislative Documents

The following is a non-exhaustive list of legislative framework documents that has been considered in the production of this report:

- The Environment Act (1995);
- The Environmental Protection Act 1990: Part 2A Contaminated Land Statutory Guidance (2012);
- The Environment Protection Act (1990);
- The Contaminated Land (England) Act (2000);
- Contaminated Land (England) Regulations (2012);
- The Water Resources Act (1991);
- The Pollution Prevention and Control (England and Wales) Regulations (2000);
- The Landfill Regulations (England and Wales) Regulations (2002);
- The Landfill (England and Wales) (Amendment) Regulations (2004);
- Health and Safety at Work Act;



APPENDIX 17 - 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.

Unless otherwise agreed this Report has been prepared exclusively for the use and reliance of the Client and may not be relied upon, by any other party except as provided for in the Agreement. A third party who relies on this Report, does so at their own and sole risk and Groundtech Consulting Ltd has no liability to such parties.

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.

