



GROUNDTECH
CONSULTING

WITHINGTON CDC

GEO-ENVIRONMENTAL APPRAISAL

CCS CONSULTING

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SUMMARY

Site Details	
Site Location	<i>The site is located circa 5.85km south of Manchester City Centre and is approximately centred on National Grid Reference 383735, 392007.</i>
Site Area	<p><i>The site is rectangular in shape and covers an area of 0.56 hectares. The topography gently slopes upwards towards the centre of the site and has likely been created as a result of previous buildings on site being demolished.</i></p> <p><i>The site is currently disused and heavily overgrown with weeds, moss and young trees. Semi-mature trees line the eastern, southern, and western borders. A manhole cover was identified in the northern part of the site.</i></p>
Ground Model	
Made Ground Soils	<p><i>The surfacing of the site comprised brown slightly clayey slightly gravelly fine to coarse sand to a maximum depth of 0.30m bgl.</i></p> <p><i>The remainder of the Made Ground generally consisted of brown and yellow brown clayey gravelly sand to depths of up to 2.6m bgl. Soft grey slightly sandy slightly gravelly clay was encountered in TP04 from 1.5m to a maximum depth of 1.7m bgl.</i></p>
Natural Soils	<p><i>Three main natural stratification encountered during the investigation and are described below:</i></p> <ul style="list-style-type: none"> <i>Medium dense to dense Light grey brown gravelly fine to coarse Sand was encountered in CP01, CP02 and TP04 from 2.0m to a maximum depth of 7.4m bgl. Orange grey gravelly fine to coarse Sand was in TP03 from 1.6m to a maximum depth of 2.7m bgl where the pit was terminated.</i> <i>Firm to stiff brown sandy gravelly Clay was in CP01 and CP02 from 6.1m to the base of the boreholes at a maximum of 14.92m bgl.</i>
Bedrock	<i>Bedrock was not encountered during this investigation.</i>
Groundwater	<i>A groundwater strike was observed in CP01 at 6.0m bgl.</i>
Ground Engineering Assessment	
Foundations	<i>Traditional shallow foundations may be suitable for the proposed Endoscopy building. If this is not the preferred solution, mini piled foundations end bearing in the natural dense granular deposits beneath the site will be considered feasible.</i>
Highways	<i>A minimum CBR value of 7.6% was recorded at ground level and will meet the design criteria of 5%. As a minimum, the subgrade should be proof rolled prior to construction.</i>
SuDS	<i>Due to the depth of Made Ground across the site, it is unlikely that a SuDS drainage solution will be feasible for the proposed development. However, in areas where shallower Made Ground was encountered, such as TP02 and TP03, SuDS may be possible due to the granular deposits encountered beneath the site.</i>

Constraints	<p><i>Made Ground has been encountered to a depth of 2.6m bgl within the area of the proposed endoscopy unit. Shallow foundations will need to be deepened through this should they choose to be adopted.</i></p> <p><i>Natural firm gravelly sandy Clay has been encountered beneath the natural Sand from 6.1m bgl. Should piled foundation be adopted, they should end bear in the granular deposits to avoid the implication of heave precautions.</i></p>
GQRA and Revised (PL) Assessment	
Human Health	<p><i>Testing on the Made Ground beneath the site indicated no elevated levels of metals, PAHs and PCBs. Asbestos was detected in three out of the six samples. As areas of soft landscaping are to be included as part of the proposed development, a clean cover system will need to be adopted in order to mitigate the risk. Currently, the risk is considered to be Moderate.</i></p>
Controlled Waters	<p><i>No evidence of mobile contamination was encountered during the ground investigation and no surface water features are present within 250m of the site. The risk is therefore Low.</i></p>
Permanent Ground Gas	<p><i>Gas monitoring visits classify the site as CS2 due to the elevated GSV calculated for carbon dioxide and basic gas protection measures will need to be incorporated adopted such as beam and block or underfloor ventilation. The risk is considered to be Moderate with respect to ground gases.</i></p> <p><i>Radon measures not required.</i></p>
Final Appraisal	

The following further work is considered necessary to progress the site to construction phase:

- *Tree survey by a qualified arboriculturist.*
- *Detailed foundation design.*
- *Confirmation of recommendations made in this appraisal with regulators.*

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Plans		
<i>Plan Reference</i>	<i>Revision</i>	<i>Title</i>
GRO-23019-P01	-	Project Location Plan
GRO-23019-P04	-	Exploratory Hole Location Plan
GRO-23019-P05	-	Generalised Ground Model
GRO-23019-P06	-	Illustrative Revised CSM

1.0 INTRODUCTION

1.1 Project Objectives

Groundtech Consulting Limited have been instructed by CCS Consulting to undertake a Ground Investigation for site at Withington Community Hospital in Manchester.

A main investigation was undertaken in accordance with BS 5930:2015, BS 10175:2017, BS 8576:2013 and Eurocode 7 to revise the CSM and quantify the level of risk identified in the PRA. The Appraisal has been prepared in accordance with current UK Legislation and to discharge Land Quality pre-commencement planning conditions.

The report has been undertaken to fulfil the requirements of a preliminary risk assessment in accordance with current LCRM risk assessment guidance.

A Preliminary Risk Assessment has previously been prepared for the site by Groundtech Consulting Limited referenced GRO-23019-4177_1.1, dated 16th June 2023.

1.2 Proposed Development

The proposed development is commercial end use comprising an endoscopy and cardiorespiratory unit to be linked up to the existing hospital building adjacent to the site.



1.3 Limitations

Other conditions may exist on the site that have not been taken into account in this assessment as they are outside the scope of works. Groundtech Consulting are not responsible for these circumstances that are not outlined in the report.

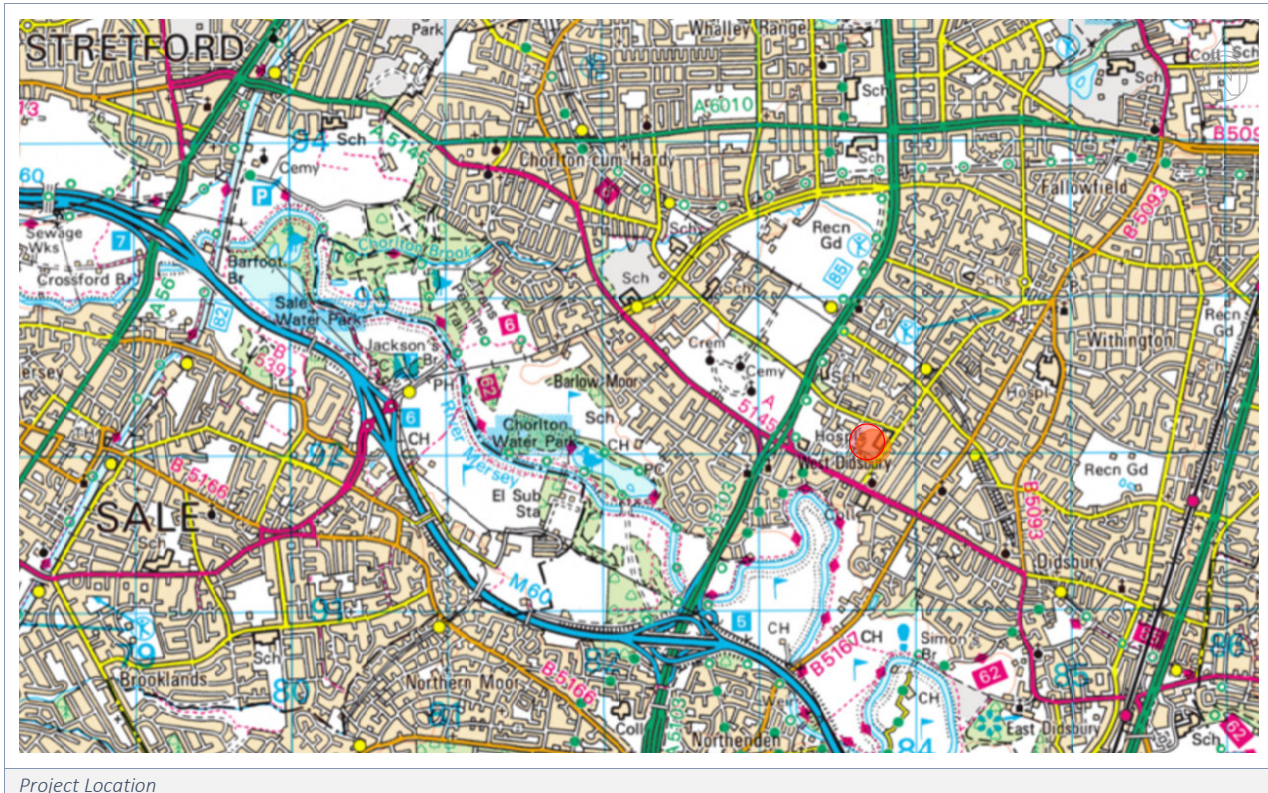


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2.0 SITE SETTING

2.1 Location

The site is located circa 5.85km south of Manchester City Centre as shown on the Project Location Plan GRO-23019-P01 and is approximately centred on National Grid Reference 383735, 392007.



Access to the site is gained off Nell Lane to the north.

2.2 Site Description

The site is irregular in shape and covers an area of 0.56 hectares. The topography gently slopes upwards towards the centre of the site and has likely been created as a result of previous buildings on site being demolished.

Onsite Features

The site is currently disused and heavily overgrown with weeds, moss and young trees. Semi-mature trees line the eastern, southern, and western borders.

A manhole cover was identified in the northern portion of the site.

No other significant features were recorded onsite.

Boundaries and Surrounding Land Uses

The southern boundary is marked by metal security fencing whilst the remaining boundaries are formed by vegetation.



The site is surrounded by following features/land uses:

- *North* - *Withington Community Hospital and associated tarmacked car park.*
- *East* - *Residential properties.*
- *South* - *Residential properties.*
- *West* - *Care home.*

Photographs are presented in *Appendix 2*.

3.0 SUMMARY OF PRELIMINARY RISK ASSESSMENT

3.1 Introduction

A Preliminary Risk Assessment was previously completed by Groundtech Consulting Limited dated 16th June 2023 and referenced *GRO-23019-4177_1.1*. The pertinent information is summarised in the following sections.

3.2 Site History

The site was undeveloped up to 1955 when several government buildings were constructed. The site remained unchanged until 2003 when the buildings were demolished, and the site has remained unchanged since then.

3.3 Geology/ Hydrogeology

Made Ground is not indicated to be present on any of the available geological plans however, due to the previous buildings onsite, Made Ground is to be anticipated.

The site is indicated to be underlain by superficial deposits of Glaciofluvial sand and gravel deposits comprising sand and gravel, locally with lenses of silt, clay or organic material.

The bedrock beneath the site is the Wilmslow Sandstone Formation comprising red fine to medium grained cross bedded sandstones.

There are no geological faults on or within influencing distance of site.

The superficial Glaciofluvial sand and gravel deposits are classified as a Secondary A Aquifer and the Wilmslow Sandstone Formation is classified as a Principal Aquifer.

The site does not lie within 500m of a Source Protection Zone.

There are two active groundwater abstraction licences within 2000m, the nearest being 1438m west at Chorlton-Cum-Hardy Golf Club.

No potable water abstractions are present within 2000m of the site.

There are no surface water abstractions within 2000m of the site.

3.4 Preliminary Conceptual Site Model

The following risks were determined by Groundtech Consulting Limited:

Human Health

Receptor	Level of Risk	Comments
Site End Users (Soils)	Moderate to Low	<i>Made Ground potentially present from the buildings formerly onsite could be a source of heavy metals, PAHs and asbestos. An electricity substation located west of site could also be a source of PCBs, although these are likely to be relatively immobile.</i>

Site End Users (VOCs)	Low	No significant sources of vapours have been identified onsite so no pollution linkage is considered to exist.
Site End Users (Ground Gas)	Moderate	Made Ground potentially present onsite from the demolition of the buildings formerly onsite could be a source of ground gases.
Adjacent Residents	Low	No significant sources of pollution have been identified so no viable pollution linkage is considered to exist.
Water Supply Pipe	Low to Moderate	Made Ground is likely to be present at installation depth, so a potential pollution linkage is considered to exist, therefore a local water company risk assessment is required for the potable water supply.

Controlled Waters

Receptor	Level of Risk	Comments
Aquifers	Low	No significant sources of mobile contamination have been identified and due to the cohesive nature of the superficial deposits no pollution linkage is considered to exist.
Surface Waters	Low	There are no surface water features within 250m of site and no mobile sources of contamination have been identified.

4.0 SCOPE OF INVESTIGATION AND RATIONALE

4.1 Project Objectives

The aim of the fieldwork was to:

Determine the stratification beneath the site.
Maintain a watching brief for visual and olfactory evidence of contamination.
Obtain samples using methodology in current guidance for contamination analysis.
Identify realistic pollution linkages to groundwater.
Obtain relevant geotechnical parameters for preliminary foundation design to address both ULS and SLS conditions.
Determine if targeted supplementary investigation in areas of concern is required and for remedial design.
Install monitoring standpipes for gas and groundwater monitoring.
Assess the identified pollution linkages in the CSM.

4.2 Scope of Works

The following scope of works was completed between the dates of 9th and 10th May 2023.

- 5 No. Trial Pits were excavated to a maximum depth of 3.2m bgl.
- 2 No. Cable Percussive boreholes were advanced to a maximum depth of 14.5m bgl.
- 2 No. Plate Load Tests were carried out to determine CBR values.

The exploratory hole locations are presented on Groundtech Plan GRO-23019-P04 and the logs are in Appendix 3.

The exploratory holes were positioned to establish the stratification beneath the site and target any areas of concern as summarised in the table below:

Location	Target Rationale
CP01 and CP02 TP03 to TP05	Within the vicinity of the proposed development.
TP01 and TP02	Areas of proposed car park to the north west.
PL01 and PL02	Areas of proposed new highways.

The exploratory holes were logged by a suitably experienced geo-environmental engineer in general accordance with the following current guidance:

- BS 5930 'Code of Practice for Site Investigations' 2015.
- BS EN 14688-1:2002 'Geotechnical Investigation and Testing – Identification and classification of soil'.

4.3 Soil Sampling

During the intrusive investigation, representative samples were taken at regular intervals, changes of strata and where evidence of contamination existed. Laboratory analysis was scheduled on the samples obtained.

The samples obtained are summarised in the table below:

Soil Sample	Number
<i>Environmental Sample</i>	22
<i>Disturbed Sample</i>	10
<i>Bulk Sample</i>	26
<i>Undisturbed U100 Sample</i>	5

The samples have been obtained in accordance with current environmental and geotechnical guidance. The sampling plan has been designed to obtain samples from all required strata using the correct methodology.

Disturbed samples of soil for geo-environmental testing were placed in the correct sampling containers as required by the laboratory in accordance with their MCERTS and UKAS Accreditation. Transportation was arranged in a timely manner and the samples were at the correct temperature.

The sample locations and depths are recorded on the exploratory logs.

4.4 Geo-Environmental Testing

To inform the Generic Quantitative Risk Assessment, the following geo-environmental testing was scheduled to assess the risk from contamination on the site. The testing is based on the potential sources identified in the PRA and observations during the Ground Investigation.

Contaminant of Concern (CoC)	Matrix	Number
<i>Arsenic, cadmium, chromium (total and hexavalent), copper, lead, mercury, nickel, selenium, zinc and pH.</i>	<i>Soil</i>	6
<i>PCBs</i>	<i>Soil</i>	2
<i>Speciated PAHs</i>	<i>Soil</i>	6
<i>Waste Acceptance Criteria (WAC)</i>	<i>Soil</i>	6
<i>Asbestos Screen</i>	<i>Soil</i>	6
<i>Asbestos Quantification</i>	<i>Soil</i>	3

The Geo-Environmental Laboratory Testing Results are presented in *Appendix 4*.

Representative disturbed samples were obtained for all soil types encountered. Selected samples were scheduled for testing at an approved laboratory in accordance with BS 1377 'Method of Test for Soils for Civil Engineering Purposes' 1990. The following tests were scheduled:

British Standard	Test Method	Number
<i>Part 2</i>	<i>Water Content</i>	4
<i>Part 2</i>	<i>Atterberg Limits</i>	4
<i>Part 3</i>	<i>pH Value</i>	1
<i>Part 3</i>	<i>Water Soluble Sulphate Content</i>	1
<i>Part 7</i>	<i>Undrained Shear Strength in Triaxial Compression</i>	3

The Geotechnical Laboratory Testing Results are presented in *Appendix 5*.

4.5 Gas Monitoring

Gas and groundwater monitoring installations were constructed in the boreholes. The standpipes consisted of high-density polyethylene (HDPE) pipe - a bentonite seal was placed around the plain pipe and a clean gravel pack was placed around the slotted pipe. A summary of the installation construction is presented in the table below:

Location	Depth	Response Zone (m bgl)	Targeted Strata	Reason
CP01	14.88	1-6	Made Ground	Ground Gas
CP02	18.92	1-5	Made Ground	Ground Gas

Permanent gas and flow rate monitoring was carried out using GFM 436 infrared gas monitor with integral electronic flow analyser. The measurements taken are listed below:

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

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

Permanent gas and groundwater monitoring results are presented in *Appendix 6*.

5.0 GROUND MODEL

5.1 Made Ground

The surfacing of the site comprised brown slightly clayey slightly gravelly fine to coarse sand to a maximum depth of 0.30m bgl.

Made Ground was encountered in all exploratory holes during the investigation as described below:

- *Brown gravelly fine to coarse sand was encountered in CP02 from 0.2m bgl to a maximum depth of 0.8m.*
- *Dark grey concrete was encountered in TP04 from 1.3m to a maximum depth of 1.4m bgl.*
- *Brown clayey gravelly fine to coarse sand was encountered in CP01 to CP02 and TP01 to TP05 from 0.3m to a maximum depth of 2.6m bgl.*
- *Yellow brown clayey gravelly fine to coarse sand was in CP02, TP04 and TP05 from 1.0m bgl to a maximum depth of 2.2m bgl.*
- *Soft grey slightly sandy slightly gravelly clay was encountered in TP04 from 1.5m to a maximum depth of 1.7m bgl.*



5.2 Natural Strata

The natural strata encountered generally confirmed the published geological records.

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

- *Light greyish brown gravelly fine to coarse Sand was encountered in CP01, CP02 and TP04 from 2.0m to a maximum depth of 7.4m bgl.*
- *Firm to stiff brown sandy gravelly clay was encountered in CP01 and CP02 from 6.1m bgl to the base of the boreholes at a maximum of 14.92m bgl.*
- *Orange mottled grey gravelly fine to coarse Sand was encountered in TP03 from 1.6m to a maximum depth of 2.7m bgl where the borehole was terminated.*

5.3 Bedrock

Bedrock was not encountered in this investigation.

5.4 Groundwater

A groundwater strike was observed in CP01 only at 6.00m bgl.

5.5 Watching Brief

A watching brief was maintained during the Ground Investigation for visual and olfactory evidence of contamination.

No evidence of contamination was noted.

5.6 Excavation Stability

TP02 experienced collapse of the pit walls in the natural sand deposits.

5.7 Excavation Progress

An obstruction in the form of a concrete slab was encountered in TP04 at 0.8m in the east side of the pit so the pit was relocated to the west to avoid the obstruction and the trial pit was continued. Another concrete slab was also encountered in TP05 at 1.6m terminating the trial pit.

6.0 GROUND ENGINEERING

6.1 Geotechnical Testing Results

Comparison of water content and the value of 0.4 times the Liquid Limit in accordance with BRE Digest 412 'Desiccation in Clay Soils' suggests significant desiccation has taken place when 0.4 times the Liquid Limit is greater than the actual water measured water content. This is a rudimentary method but also a good guide.

Results of the moisture content of the Clay is summarised in the table below:

Reference	Depth (m bgl)	Moisture Content (%)
CP01	7.50	18
CP01	14.50	15
CP02	9.00	26
CP02	13.50	18

Results of the Quick Undrained Triaxial test are summarised below:

Reference	Depth (m)	Shear Strength (kPa)	Strength Classification
CP01	7.50 - 7.95	84	High
CP01	9.00 - 9.45	54	Medium
CP02	7.50 - 7.95	82	High

6.2 Assessment Background

The ground engineering investigation has been undertaken to formulate an accurate ground model in order to undertake preliminary foundation design. The ground model has been constructed with a moderate to high level of confidence and has evolved from the information obtained by the PRA. The Ground Engineering Model is visually represented on Drawing *GRO-23019-P05*.

The site is currently disused and heavily overgrown with weeds, moss and young trees. Semi-mature trees line the east, south, and west borders. A manhole cover was identified in the northern part of the site. The topography of the site gently slopes upwards towards the centre of the site and has likely been created as a result of previous buildings on site being demolished.

It is proposed to strip back all vegetation and trees present on site and construct an endoscopy and cardiorespiratory unit to be linked up to the existing hospital building adjacent to the site. New highways and areas of hardsurfaced car parking will also be incorporated within the western area of the site.

Ground Conditions

Made Grund has been encountered beneath the site to a maximum depth of 3.0m bgl and was generally underlain by medium dense to dense gravelly Sand to depths of between 6.1m and 7.4m bgl. This was followed by firm sandy gravelly Clay to the base of the boreholes between 14.88m and 14.92m bgl.

A groundwater strikes was noted at 6.0m bgl in CP01 within the natural granular soils.

Limitations

The main limitation to the proposed development is the deep Made Ground encountered to depths of between 1.3m and 3.0m bgl. Foundations will need to be deepened through this Made Ground in order to end bear in the underlying natural granular deposits.

Obstructions in the form of a concrete slab was encountered in TP04 at 0.8m and at 1.6m bgl in TP05. These obstructions will require breaking out and grubbing up prior to the construction phase.

Trees are currently present across the majority of the site and will require removing as part of the enabling works.

6.3 Geotechnical Parameters

The geotechnical test results have been evaluated to derive geotechnical parameters for the soils underlying the site. A 'depth to SPT N value' graph is presented on Plan GRO-23019-P05 in Appendix 7 to provide a generalised ground model for the site.

Characterisation of the geotechnical parameters above has been undertaken to select a characteristic value, which is a cautious estimate of the value affecting the occurrence of the limit state.

- *For the medium dense Sand deposits, a characteristic SPT 'N' value of 19 has been recorded and by correlation, a ϕ' of 32° has been selected for ULS conditions.*
- *For the dense Sand deposits, a characteristic SPT 'N' value of 25 has been recorded and by correlation, a ϕ' of 35° has been selected for ULS conditions.*
- *For the medium strength Clay, an undrained shear strength (C_u) characteristic value of 54kPa has been selected to satisfy ULS conditions based on the laboratory testing results.*
- *For the high strength Clay, an undrained shear strength (C_u) characteristic value of 82kPa has been selected to satisfy ULS conditions based on the laboratory testing results.*

6.4 Preliminary Foundation Design

The most suitable foundations for the proposed development are considered to be traditional trench fill and pad foundations constructed within the underlying natural medium dense to dense granular deposits encountered from 1.3m bgl within the proposed development area. Foundations will require deepening through Made Ground deposits.

Preliminary foundation design has been calculated, and a safe allowable bearing capacity of 250kN/m² is provided for ultimate limit state design for a 1.00m wide pad foundation constructed within the medium dense gravelly Sand deposits at 2.0m bgl.

Within CP01, Made Ground was encountered to 2.6m bgl, therefore foundations will need to be deepened locally within this area of the site.

Using the above pressures, settlement criteria of 25mm will not be exceeded and Serviceability Limit State conditions will be satisfied. As foundations are to be constructed in the medium dense to dense granular soils, the majority of the settlement will occur during the construction phase.

As the proposed development is an extension, consideration should be given to issues arising from differential settlement, movement joints should be installed between the existing hospital building and

proposed extension and the angle of distortion taken into consideration to ensure settlement will be within an allowable tolerance.

Alternative Solution – Mini Piles

If load capacities are greater than anticipated or trench fill foundations are deemed too deep to be suitable, a traditional driven pile foundation is also considered feasible for the proposed development where loads can be transferred to the underlying medium dense to dense Sand deposits that have been encountered from between 3.0m and 5.0m bgl. The preliminary design by calculation is based on the following ground conditions encountered in CP02:

• Made Ground	-	2.20m bgl
• Medium dense gravelly Sand	-	5.00m bgl
• Dense gravelly Sand	-	6.00m bgl
• Firm sandy gravelly Clay	-	14.92m bgl

For a single driven 300mm square pile 5.0m in length end bearing in the dense gravelly Sand deposits an allowable load of 400kN has been calculated. If greater loads are required, the piles should be installed in groups or larger diameter piles should be considered. The above should be considered when the loadings are confirmed. A more efficient design can be achieved using partial factors in accordance with EC7, permanent and variable loads are required to undertake EC7 compliant calculations.

Piled Solution – Design Validation

The piling type, length, depth of reinforcement and design should be discussed with a specialist piling contractor. They can then undertake the detailed design including drawings and specifications to provide fitness for purpose design.

The depth of investigation does not meet the requirements of 5.0m beyond the base of the pile and the piling contractor should be consulted to confirm validation and warranty requirements.

The piling works should be carried out in accordance with Execution Standard BS EN 12699:2015 'Execution of special geotechnical works. Displacement piles'. If driven piles are the preferred installation method, they will be driven to set using pile driving formulae in accordance with Eurocode 7.

Construction Recommendations

The recommendations in this appraisal are preliminary and the detailed design should be developed in advance and during the construction phase. If the ground conditions or groundwater regime encountered during the construction phase differ significantly to the conditions encountered during the Ground Investigation, work should cease and Groundtech Consulting contacted for further advice.

During the construction phase, supervision by a suitably qualified geotechnical engineer should be on a continuous basis to check the design assumptions are correct and construction conforms to design in accordance with EC7. Supervision should include inspections, Control Ground Investigations and monitoring by a suitably qualified geotechnical engineer.

6.5 Building Near Trees

Trees are currently present across the site, and these are set to be removed as part of the enabling works.

Foundations are set to be constructed within the natural granular deposits beneath the site and are therefore unlikely to encounter cohesive strata. Heave precautions are not deemed necessary.

6.6 Floor Slabs

A suspended floor slab is recommended for the proposed development due to the depth of Made Ground. Additionally, if piled foundations are adopted, a suspended floor slab will be required.

6.7 Construction

The trial pits indicate that instability of excavations in natural soils is anticipated locally. Instability of the Made Ground is a possibility and should be considered in the groundworks method statements.

Tracked high specification plant is recommended to maintain the build programme and breaking equipment will be required to break through obstructions identified during the Ground Investigation.

Groundwater is unlikely to be observed in foundation excavations.

6.8 Concrete Classification

Made Ground

Water soluble sulphate testing was undertaken on six samples of the Made Ground. The range of soluble sulphate (SO₄) recorded is 20.3mg/l to 128.7mg/l and associated pH values ranged between 8.34 and 9.72 indicating slightly alkaline conditions.

Natural Strata

Water soluble sulphate testing was also undertaken on one sample of the natural strata. Water soluble sulphate was recorded at 23.4 mg/l and the associated pH values was recorded at 8.04 indicating slightly alkaline conditions.

A groundwater strike was observed at 6.0m bgl in CP01 within the natural granular deposits and is therefore considered to be relatively immobile.

The results of laboratory pH and sulphate content indicate that ACEC Class AC-1 and sulphate class DS-1 conditions prevail in accordance with BRE Special Digest 1 "Concrete in aggressive ground" 2005. The specific concrete mixes (the Design Concrete Class) to be used on site will be determined by the site-specific concrete requirements in terms of the durability and structural performance. These are assessed in terms of the Structural Performance Level (SPL) and any need for Additional Protective Measures (APM) detailed in Part D of BRE Special Digest 1 with further guidance in Pt E and F.

6.9 Highway/Pavement Design

Plate load testing was undertaken at ground level in order to obtain representative CBR values. The full results are presented in *Appendix 8* and a summary of the results is below:

Location	Depth (m bgl)	Strata	Plate Diameter (mm)	CBR Value (%)
PLT01	Ground level	Made Ground	450	14.6%
PLT02	Ground level	Made Ground	450	7.6%

CBR testing was undertaken at two locations within the proposed development area (PLT01 and PLT02). A minimum CBR value of 7.6% was recorded at ground level and will meet the design criteria of 5%. As a minimum, the subgrade should be proof rolled prior to construction.



The soils are considered to be frost susceptible due to the fines content and highway/pavement construction should be a minimum thickness of 450mm to mitigate the risk.

6.10 Sustainable Urban Drainage System (SuDS)

Made Ground was encountered to depths of between 1.3m and 3.0m bgl and was typically underlain by slightly clayey slightly gravelly Sand.

Due to the depth of Made Ground across the site, it is unlikely that a SuDS drainage solution will be feasible for the proposed development. However, in areas where shallower Made Ground was encountered such as TP02 and TP03, SuDS may be feasible due to the granular deposits encountered beneath the site.

7.0 LAND QUALITY

7.1 Geo-Environmental Testing Results - Soils

Samples of Made Ground and natural strata have been tested for a range of relevant Contaminants of Concern. In accordance with LCRM, a Generic Quantitative Risk Assessment (GQRA) has been undertaken to determine the significance of the concentrations as derived through Geo-Environmental testing.

The GQRA process comprises the comparison of the actual concentrations measured on site with Generic Assessment Criteria (GACs) for the protection of human health.

The GACs used for the assessment of soil concentrations have been derived using the CLEA model. The GACs used are listed below:

- *Soil Guideline Values (SGVs) which demonstrate minimal risk.*
- *LQM/CIEH S4ULs which use the same toxicological data as the SGVs but different exposure criteria.*
- *C4SLs which demonstrate low risk.*

In deriving the GACs for use on Brownfield sites, we have assumed worst case of 1% Soil Organic Matter.

The proposed end-use for the site is a commercial development comprising an endoscopy and cardiorespiratory unit to be linked up to the existing hospital building adjacent to the site, with associated areas of car parking and soft landscaping. We have therefore undertaken the GQRA on the basis that the proposed development site falls under the Commercial land-use scenario as defined in SR3 (EA, 2009b).

The strata or sources of contamination targeted by the laboratory testing scheduled is summarised in the table below:

Strata	Number of Samples Tested	Locations
<i>Granular Made Ground (Population 1)</i>	6	<i>CP01, CP02, TP01, TP03-TP05,</i>

A summary of the Geo-Environmental Testing results is presented below and the GQRA screening values are presented in *Appendix 9*:

Contaminant	Range (mg/kg)	Metals		
		Screening value (mg/kg)	Exceedances	Locations
<i>Arsenic</i>	<i>7.0 - 8.6</i>	<i>640</i>	<i>0</i>	<i>-</i>
<i>Cadmium</i>	<i>0.2 - 0.6</i>	<i>230</i>	<i>0</i>	<i>-</i>
<i>Chromium</i>	<i>30.8 - 44.6</i>	<i>8,600</i>	<i>0</i>	<i>-</i>
<i>Hexavalent Chromium</i>	<i><0.3</i>	<i>49</i>	<i>0</i>	<i>-</i>
<i>Copper</i>	<i>13 - 26</i>	<i>68,000</i>	<i>0</i>	<i>-</i>
<i>Lead</i>	<i>33 - 101</i>	<i>2,300</i>	<i>0</i>	<i>-</i>
<i>Mercury</i>	<i><0.1 - 1.5</i>	<i>26</i>	<i>0</i>	<i>-</i>
<i>Nickel</i>	<i>9.5 - 14.6</i>	<i>1,800</i>	<i>0</i>	<i>-</i>
<i>Selenium</i>	<i><1 - 1</i>	<i>13,000</i>	<i>0</i>	<i>-</i>
<i>Zinc</i>	<i>54 - 110</i>	<i>730,000</i>	<i>0</i>	<i>-</i>

Polycyclic Aromatic Hydrocarbons (PAHs)				
Contaminant	Range (mg/kg)	Screening value (mg/kg)	Exceedances	Locations
Naphthalene	0.05 - 0.40	190	0	-
Acenaphthylene	0.04 - 0.30	83,000	0	-
Acenaphthene	0.08 - 0.88	84,000	0	-
Fluorene	0.06 - 0.66	63,000	0	-
Phenanthrene	0.68 - 8.41	22,000	0	-
Anthracene	0.28 - 3.73	520,000	0	-
Fluoranthene	3.05 - 17.12	23,000	0	-
Pyrene	2.94 - 14.54	54,000	0	-
Benzo(a)anthracene	1.57 - 6.87	170	0	-
Chrysene	1.75 - 7.13	350	0	-
Benzo(b)fluoranthene	2.41 - 8.84	44	0	-
Benzo(k)fluoranthene	0.94 - 3.44	1,200	0	-
Benzo(a)pyrene	2.20 - 7.99	35	0	-
Indeno(123cd)pyrene	1.51 - 5.59	500	0	-
Dibenzo(ah)anthracene	0.23 - 0.98	3.5	0	-
Benzo(ghi)perylene	1.45 - 4.89	3,900	0	-
TPH CWG - Aromatics				
Contaminant	Range (mg/kg)	Screening value (mg/kg)	Exceedances	Locations
MTBE	<0.005	7,900	0	-
Benzene	<0.005	95	0	-
Toluene	<0.005	4,400	0	-
Ethylbenzene	<0.005	2,800	0	-
m/p-Xylene	<0.005	3,200	0	-
o-Xylene	<0.005	2,600	0	-
Others				
Organic Matter	1.07 - 3.51%			
Asbestos Screen				
Position	Depth (m bgl)	Result	Quantification	
CP01	1.00	None Detected	n/a	
CP02	0.50	None Detected	n/a	
TP05	0.40	None Detected	n/a	
TP03	0.40	Fibre Bundles detected		
TP01	1.20	Fibre Bundles detected		
TP04	1.50	Fibre Bundles detected		

All PCBs were recorded below the limit of laboratory detection.

7.2 Generic Quantitative Risk Assessment - Soils

The site is currently disused and heavily overgrown with weeds, moss and sapling trees. Historically, the site was undeveloped up to 1955 when several government buildings were constructed. The site remained unchanged until 2003 when the buildings were demolished. No new constructions have occurred on site since.

No visual or olfactory evidence of contamination was noted during the ground investigation.

Metals

No elevated levels of metals were recorded in any of the samples tested.

Speciated Polycyclic Aromatic Hydrocarbons (PAHs)

No elevated levels of any PAHs were recorded in any of the samples tested.

PCBs

All PCBs were recorded below the limits of laboratory detection.

Asbestos

Asbestos was detected in three out of the six samples tested and quantification of these results has been scheduled. A revised report will follow once these results have been received.

7.3 Permanent Ground Gases

Two standpipes were installed for ground gas monitoring within CP01 and CP02. Four monitoring visits have been carried out between 25th July and 30th August 2023.

Methane was not recorded within any of the boreholes. Carbon dioxide was detected at a maximum concentration of 12.8% v/v and associated depleted oxygen levels recorded a minimum concentration of 9.3% v/v.

No positive gas flow rates were recorded during the monitoring period.

The atmospheric pressure recorded ranged between 1000mb and 1013mb and the monitoring visits were undertaken during periods of rising and falling barometric pressure.

Groundwater was recorded between depths of 3.82m and 4.10m bgl within the monitoring standpipes.

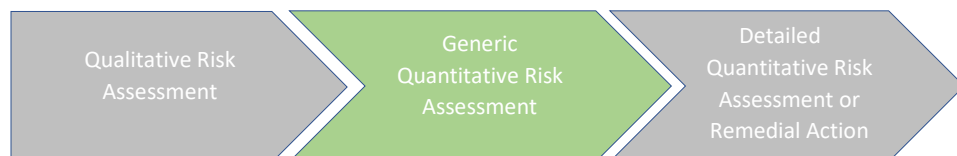
The GSV for carbon dioxide has been calculated based on the monitoring visits and the calculated GSV places the site within CS2 where basic gas protection measures are required such as reinforced concrete cast in situ floor slab, beam and block or underfloor venting.

The site is not in an area requiring Radon precautions.

7.4 Revised Pollution Linkage Assessment

The CSM has been revised based on the Ground Investigation and testing using Source-Pathway-Receptor assessment criteria that is applicable in the UK, a risk assessment has been completed to determine if a plausible pollution linkage exists between the identified contaminants and receptors. The risk classification has been estimated in accordance with the CIRIA C552 assessment criteria outlined in *Appendix 10*.

Human Health Pollution Linkage Assessment



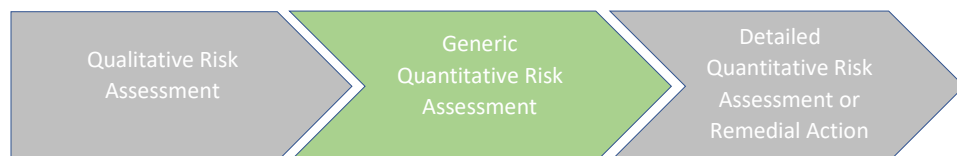
- The table below represents the second stage in the land quality risk assessment process - **the Generic Quantitative Risk Assessment**.
- In order for a development site to be deemed 'suitable for use' the level of risk needs to be reduced to an acceptable level - low to negligible risk. The purpose of each stage of risk assessment is to establish if there is a requirement for additional stages of assessment in order to have sufficient confidence to support a risk characterisation or remedial action.

Conceptual Site Model					Generic Quantitative Risk Assessment	
PL	Potential Source	Pollution Linkage	Likelihood	Consequence/ Severity	Risk Rating	Rationale and Action
PL1	Contaminated Soils	Ingestion of soil and dust. Dermal contact with soil.	Low Likelihood	Medium	Moderate	<p>Pollution Linkage 1 refers to proposed site users coming into contact with contaminated soils on the site.</p> <p>Made Ground has been encountered beneath the site depths of between 1.3m and 3.00m bgl. Testing indicated no elevated levels of metals, PAHs or PCBs. However, asbestos was encountered in three of the six samples tested.</p> <p>The proposed development is of commercial end use however plans indicate that areas of soft landscaping are set to be included as part of the development. A pollution linkage is therefore considered to exist between the contaminated Made Ground soils and site end users.</p> <p>To mitigate the risk, a clean cover system should be placed within areas of planned soft surfacing, consisting of a minimum 600mm of clean soil inclusive of 150mm of topsoil to act as a growing medium. The cover system will require validating for depth and chemical suitability.</p>

Conceptual Site Model					Generic Quantitative Risk Assessment	
PL	Potential Source	Pollution Linkage	Likelihood	Consequence/ Severity	Risk Rating	Rationale and Action
PL2	Contaminated Soils	Inhalation of vapour.	Unlikely	Medium to Severe	Low	<p>Pollution linkage 2 refers to vapours migrating into confined spaces within the proposed development.</p> <p>No sources of mobile contamination have been identified and no evidence of hydrocarbon contamination was identified during the ground investigation. No risk from vapours is considered to exist.</p>
PL3	Contaminated Soils	Inhalation of soil dust by adjacent site users.	Unlikely	Medium	Low	<p>Pollution Linkage 3 relates to contamination on the subject site affecting adjacent site users.</p> <p>No evidence of mobile contamination has been encountered during the ground investigation therefore a pollution linkage does not exist.</p>
PL4	Contaminated Soils	Attacking potable water supply pipe.	Unlikely	Medium	Low	<p>Pollution Linkage 4 refers to the possible contaminants permeating potable water pipes and consumption by the future site end users of the tainted water supply.</p> <p>No elevated contaminants have been encountered in the Made Ground beneath the site. No risk is therefore considered to be present.</p>
PL5	Ground Gas	Migration and accumulation of	Likely	Medium to Severe	Moderate	<p>Four monitoring visits have been undertaken at the site. Methane was not recorded within any of the boreholes. Carbon dioxide was detected at a maximum concentration</p>

Conceptual Site Model					Generic Quantitative Risk Assessment	
PL	Potential Source	Pollution Linkage	Likelihood	Consequence/ Severity	Risk Rating	Rationale and Action
		ground gas in internal spaces.				<p>of 12.8% v/v and associated depleted oxygen levels recorded a minimum concentration of 19.4% v/v.</p> <p>The GSV for carbon dioxide has been calculated based on the monitoring visits and the calculated GSV places the site within CS2 where basic gas protection measures are required, such as suspended floor slabs, beam and block or underfloor venting.</p> <p>The risk from ground gases is therefore considered to be Moderate.</p> <p>The site is not within an area requiring radon precautions within foundations.</p>

Controlled Waters Pollution Linkage Assessment



- The table below represents the second stage in the land quality risk assessment process – **Generic Quantitative Risk Assessment**.
- In order for a development site to be deemed 'suitable for use' the level of risk needs to be reduced to an acceptable level - low to negligible risk. The purpose of each stage of risk assessment is to establish if there is a requirement for additional stages of assessment in order to have sufficient confidence to support a risk characterisation or remedial action.

Conceptual Site Model					Generic Quantitative Risk Assessment	
PL	Potential source	Pollution linkage	Likelihood	Severity	Level of risk	Rationale
PL6	Contaminated Soils	<p>Impaction of groundwater from soil contamination (diffuse and point).</p> <p>Impaction of groundwater from groundwater plume.</p>	Unlikely	Medium	Low	<p>Made Ground was identified to a maximum depth of 3.0m bgl and testing revealed no elevated levels of any contaminants of concern. No mobile contamination was identified during the Ground Investigation.</p> <p>Sand and gravel were encountered beneath the Made Ground to a maximum depth of 7.4m bgl. This was underlain by firm gravelly sandy Clay which will restrict the migration of any contamination into the principal bedrock aquifer beneath the site.</p> <p>As no contamination was identified during the Ground Investigation, a pollution linkage is not considered to exist.</p>

Conceptual Site Model					Generic Quantitative Risk Assessment	
PL	Potential source	Pollution linkage	Likelihood	Severity	Level of risk	Rationale
PL7	Contaminated Soils	Migration of soil and groundwater contamination impacting surface waters.	Unlikely	Medium	Low	<p>No water courses have been identified within 250m of the site. Furthermore, no evidence of mobile contamination was encountered during the ground investigation.</p> <p>No pollution link is therefore considered to exist.</p>

7.5 Outline Remedial Strategy

The proposed development comprises the construction of an endoscopy and cardiorespiratory unit to be linked up to the existing hospital building adjacent to the site with associated areas of hard standing car park spaces and soft landscaping.

Soils

Made Ground was encountered to a maximum depth of 3.0m bgl. No elevated levels of metals, PAHs or PCBs have been encountered within the soils tested beneath the site. Asbestos has been detected within TP01, TP03 and TP04. Due to the presence of asbestos, a pollution linkage will exist where soft landscaped areas of POS are proposed and to mitigate the risk, a clean cover system should be placed within areas of planned soft surfacing, consisting of a minimum 600mm of clean soil inclusive of 150mm of topsoil to act as a growing medium. The cover system will require validating for depth and chemical suitability. This will be reviewed upon retrieval of the asbestos quantification results.

Ground Gas

Interim ground gas monitoring results place the site within CS2 and gas protection measures are deemed necessary. Gas protection measures as outlined in CIRIA C665 for CS2 are as follows:

- a. *Reinforced concrete cast in situ floor slab (suspended, non-suspended or raft) with at least 1200-gauge DPM.*
- b. *Beam and block or precast concrete slab and minimum 2000-gauge DPM/reinforced gas membrane.*
- c. *Possibly underfloor venting or pressurisation in combination with a) and b) depending on use.*

All joints and penetrations must be sealed.

The site is not in an area requiring radon protection measures and no risk from vapours has been identified.

Controlled Waters

No risk to controlled waters has been identified.

Watching Brief

A watching brief should be in place during ground works and construction. If previously unidentified contamination is encountered, work should cease in that area and Groundtech Consulting contacted for advice.

Regulatory compliance should be obtained pre-commencement to avoid delays during the construction phase which will have cost implications.

7.6 Asbestos in Soils

The presence of asbestos within the ground will require, a safe system of work to be set up on site to deal with the asbestos risk from the made ground. This may include but be not limited to:

- *The use of qualified personnel where required.*
- *Careful segregation of stockpiles on site.*
- *Defining transport routes.*
- *Cleaning down of machinery in designated areas.*

- *Decontamination unit for ground workers.*
- *Damping down of soils to prevent dust migration.*

Quantification testing is currently being undertaken to fully assess the risk.

7.7 Health and Safety – Construction and Groundworkers

During the reclamation and construction phases of the site development it will be necessary to protect the health and safety of site personnel. The risk to construction and ground workers is assessed in the table below:

PL Ref	Potential Source	Pollution Linkage	Likelihood	Severity	Level of Risk
PL8	Made Ground	Ingestion, direct contact, inhalation of dusts.	Unlikely	Medium	Low
PL8	Asbestos	Inhalation of dusts.	Low Likelihood	Medium	Moderate to Low

Asbestos has been detected in three samples of Made Ground and the risk should be communicated to ground workers through a site induction.

General guidance on these matters is given in the Health and Safety Executive (HSE) document “Protection of Workers and the General Public during the Redevelopment of Contaminated Land”. In summary, the following measures are suggested to provide a minimum level of protection:

- *All ground workers should be issued with the relevant protective clothing, footwear and gloves. These protective items should not be removed from the site and personnel should be instructed as to why and how they are to be used.*
- *Hand-washing and boot-washing facilities should be provided.*
- *Care should be taken to minimise the potential for off-site migration of contamination by the provision of dust suppression control and wheel cleaning equipment during the construction works.*
- *Good practices relating to personal hygiene should be adopted on the site.*
- *The contractor shall satisfy the Health and Safety Executive with regard to any other matters concerning the health, safety and welfare of persons on the site.*

7.8 Waste Classification by Assessment

We have reviewed the testing results and inputted them into the HazWasteOnline model which allows users to code and classify waste as defined in the EWC (European Waste Catalogue 2002) based on EC Regulation 1272/2008 on the Classification, labelling and packaging of substances and mixtures (CLP) and latest Environment Agency guidance (WM3 “Guidance on the classification and assessment of waste (1st edition 2015)-Technical Guidance”).

This is a useful tool as waste producers have the legal responsibility to classify any waste they produce.

Ten samples were tested to assess whether they contained any contaminants in the hazardous range when screened against assessment criteria within WM3. The results are in the Waste Classification Report presented in *Appendix 11*.

Based on the assessment tool, the made ground soils have been classified as *Non-Hazardous* for waste disposal purposes.

Total testing was not undertaken on the natural soils and are assumed too also be *Non-Hazardous*.

Asbestos has been recorded in three of the samples tested. Provided quantification results are less than 0.1%, the overall waste classification of the samples will not be affected.

7.9 Waste Acceptance Criteria (WAC) Results

The Landfill Directive (Directive 1999/31/EC on the landfilling of waste) led to the establishment of a methodology for classifying wastes. Wastes can only be accepted at a landfill if they meet the relevant Waste Acceptance Criteria (WAC) for that type of landfill. There are three different WAC, these are for:

- *Inert waste*
- *Non-Hazardous waste*
- *Hazardous waste*

Wastes should first be classified based on their total concentrations as detailed in the previous section. WAC testing is then required if the end disposal route is a landfill.

Solid and eluate WAC analysis was undertaken on six samples, the findings of which are presented in the table below.

Reference	Depth (m)	Strata Type	Classification by Assessment	WAC Analysis	Landfill Disposal
CP01	0.50	Made Ground	Non-Hazardous	Stable Non-reactive	Non-Hazardous
CP02	2.00	Made Ground	Non-Hazardous	Inert	Inert
TP05	0.40	Made Ground	Non-Hazardous	Inert	Inert
TP03	0.40	Made Ground	Non-Hazardous	Inert	Inert
TP04	1.50	Made Ground	Non-Hazardous	Inert	Inert
TP05	0.40	Made Ground	Non-Hazardous	Inert	Inert

The WAC testing has revealed that if the end disposal route of the Made Ground is landfill, the material would be accepted at an *Inert Landfill*. The Made Ground material from CP01 would be accepted at a *Non-Hazardous Landfill*.

The possibility of automatic inert classification of the natural soils should be explored in accordance with Section 4.3 of the EA guidance document. The Council Decision includes a list of wastes in Section 2.1.1 of the document that are assumed to be inert and therefore acceptable at a landfill for inert waste without testing, this is the case if:

- *They are single stream waste of a single waste type (although different waste types from the list may be accepted together if they are from a single source)*
and
- *There is no suspicion of material or substances such as metals, asbestos, plastics, chemicals, etc to an extent which increases the risk associated with the waste sufficiently to justify contamination and they do not contain other their disposal in other classes of landfill.*



If any organic contaminated material is encountered during the construction phase, it is possible that this may be classified as hazardous, and testing should be undertaken at that time.

Materials should be segregated and where necessary sufficient time is allowed to further classify the material properly, including discussion with landfill sites and waste transfer stations to find the best disposal route. It is recommended that where possible that the soils could be recycled at a suitable local waste treatment plant or transfer station rather than a landfill disposal route.

The reuse of soils on the site this should be done in accordance with the CL:AIRE "Development Industry Code of Practice for the Definition of Waste" (CL:AIRE CoP). Any re-use scheme should be designed to minimise disposal costs.

After a cut and fill balance plan/volume calculation has been carried out, a U1 and T5 exemption could be registered. This will allow the use of the following soils without a waste permit or under Dow CoP MMP:

- *1,000 tonnes (c.600m³) of non-hazardous soil*
- *5,000 tonnes (c.3,000m³) of natural sand and gravels.*
- *50,000 tonnes (c.25,000m³) of bituminous material to be used in roadways.*
- *5,000 tonnes (c.3,000m³) of crushed concrete/stone.*

8.0 FINAL APPRAISAL

8.1 Land Quality

Historically, the site was undeveloped up to 1955. Serval government buildings were then constructed on site and are indicated on plans until 2003 where they were demolished. Currently, the site is disused and heavily overgrown with weeds, moss and young trees. Semi-mature trees line the east, south, and west borders.

Made Ground has been encountered to depths of between 1.3m and 3.0m bgl across the site. No visual or olfactory evidence of contamination was noted during the ground investigation.

No elevated levels of metals, PAHs or PCBs were recorded based off the Made Ground samples tested. Asbestos was detected in three out of the six samples and quantification of this has been scheduled.

Areas of soft landscaping are set to be included as part of the proposed development. Whilst dependent on the quantification results, due to the asbestos encountered, a clean cover system should be placed consisting of a minimum 600mm of clean soil inclusive of 150mm of topsoil to act as a growing medium.

No evidence of mobile contamination was noted during the ground investigation. The risk from vapours is therefore considered to be *Low*.

Gas monitoring visits classify the site as CS2 due to the elevated GSV calculated for carbon dioxide and basic gas protection measures will need to be adopted. The risk is considered to be *Moderate* with respect to ground gases.

No mobile contamination was encountered during the ground investigation and no watercourses are present within 250m of the site. The risk to controlled water is therefore *Low*.

The soils beneath the site have been classified as being Non-Hazardous for waste disposal purposes.

8.2 Ground Engineering

Traditional trench fill foundations may be suitable for the proposed Endoscopy building founding in the medium dense to dense Sand. If this is not the preferred solution, mini piled foundations end bearing in the natural dense granular deposits beneath the site will be considered feasible.

Suspended floor slabs will be required due to the depth of Made Ground encountered across the development area.

Due to the depth of Made Ground across the site, it is unlikely that a SuDS drainage solution will be feasible for the proposed development. However, in areas where shallower Made Ground was encountered such as TP02 and TP03, SuDS may be possible due to the granular deposits encountered beneath the site.

8.3 Required Further Work

The following further work is considered necessary to progress the site to construction phase:



Tree survey by qualified arboriculturist.

Detailed foundation design.

Confirmation of recommendations made in this appraisal with regulators.

9.0 RELEVANT INDUSTRY REFERENCES

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Total Petroleum Hydrocarbon Criteria Working Group Volume 2 Composition of Petroleum Mixtures May 1998.

Total Petroleum Hydrocarbon Criteria Working Group Volume 3 Selection of Representative TPH Fractions Based on Fate and Transport Considerations July 1997.

Total Petroleum Hydrocarbon Criteria Working Group Volume 4 Development of Fraction Specific Reference Doses (RfDs) and Reference Concentrations (RfCs) for Total Petroleum Hydrocarbons (TPH).

Total Petroleum Hydrocarbon Criteria Working Group Volume 5 Human Health Risk-Based Evaluation of Petroleum Release Sites: Implementing the Working Group Approach June 1999.



APPENDIX 1 - Plans

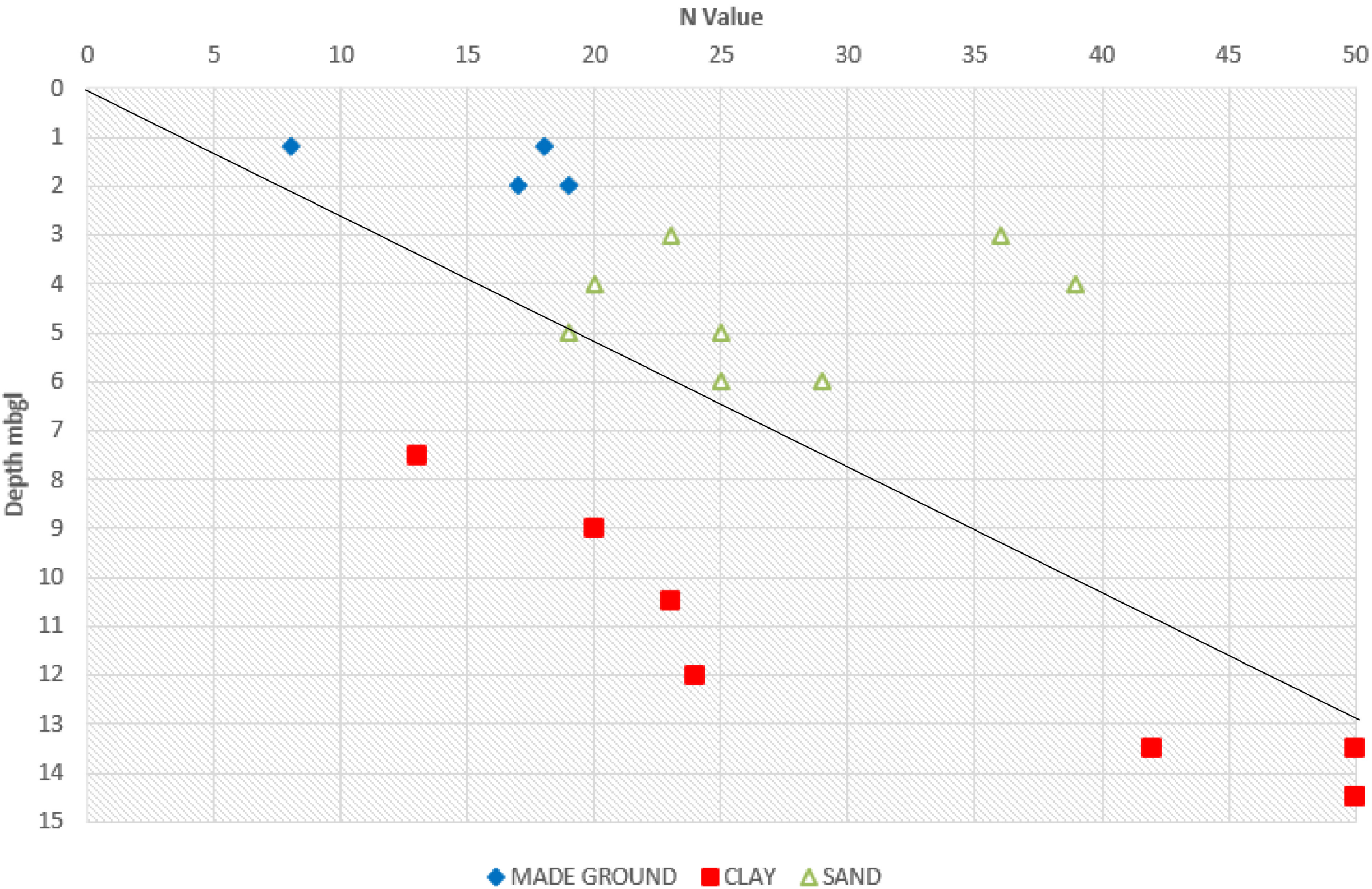


<div>GROUNDTECH</div> <div>CONSULTING</div> <div></div>	CLIENT	DATE				Status		<div>Notes</div> <div><div><div></div></div><div>SITE LOCATION</div></div>
	CCS CONSULTING	FEBRUARY 2023				Preliminary		
	PROJECT TITLE	SCALE				Draft		
	WITHINGTON CDC	NTS				Issued	<div></div>	
	PLAN TITLE	PLAN NUMBER				For Comment		
	PROJECT LOCATION PLAN	GRO-23019-P01	Rev.	Details	Date	Approved		



<div>GROUNDTECH</div> <div>CONSULTING</div> <div></div>	CLIENT	DATE			Status		<div>Notes</div> <div> Cable percussive borehole locations</div> <div> Trial pit locations</div> <div> Plate load test locations</div>
	CCS CONSULTING	SEPTEMBER 2023			Preliminary	☒	
	PROJECT TITLE	SCALE			Draft	☐	
	WITHINGTON CDC	NTS			Issued	☐	
	PLAN TITLE	PLAN NUMBER			For Comment	☐	
	EXPLORATORY HOLE LOCATION PLAN	GRO-23019-P04	Rev.	Details	Date	Approved	

DEPTH vs SPT 'N' VALUE



GROUNDTECH
CONSULTING



CLIENT

CCS CONSULTING

PROJECT TITLE

WITHINGTON CDC

PLAN TITLE

GENERSIED GROUND MODEL

DATE

SEPTEMBER 2023

SCALE

NTS

PLAN NUMBER

GRO-23019-P05

Rev.

Details

Date

Status

Preliminary

Draft

Issued

For Comment

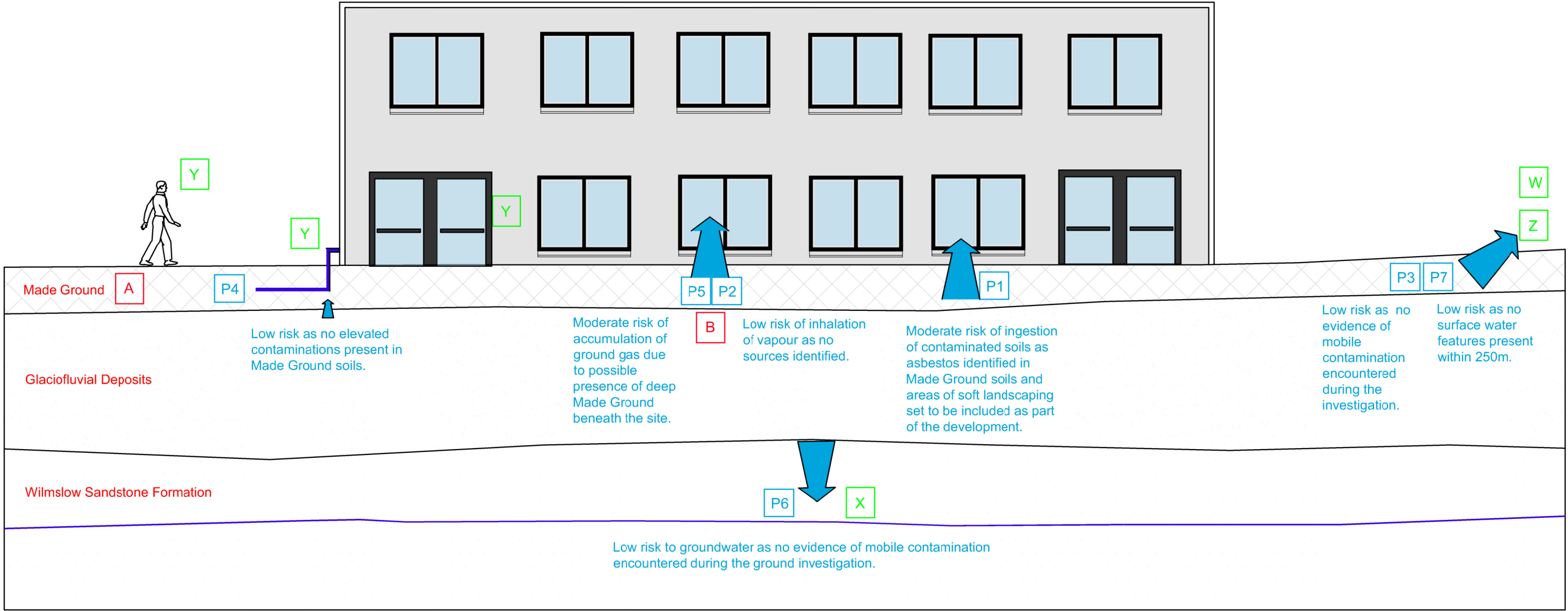
Approved

Notes



SOURCES	POLLUTION LINKAGES	RECEPTORS
A. Contaminated soils / Made Ground. B. Ground gas.	P1. Ingestion of soil and dust. P2. Inhalation of vapour. P3. Inhalation of soil dust by adjacent site users. P4. Attacking of potable water supply pipe. P5. Migration and accumulation of ground gas in internal places. P6. Impaction of groundwater from soil contamination. P7. Migration of soil and groundwater contamination impacting surface waters.	W. Nearby surface waters. X. Groundwater within the Secondary A and Principal Aquifers. Y. Site end users. Z. Adjacent site users.

Proposed Withington CDC Development



	CLIENT	DATE			Status	Notes
	CCS CONSULTING	SPETEMBER 2023			Preliminary	
	PROJECT TITLE	SCALE			Draft	
	WITHINGTON CDC	NTS			Issued	
	PLAN TITLE	PLAN NUMBER			For Comment	
	ILLUSTRATIVE REVISED CSM	GRO-23019-P06	Rev.	Details	Date	Approved



APPENDIX 2 - Site Photographs



Photograph 1 – Excavated TP01 with arisings.



Photograph 2 – Excavated TP01.



Photograph 3 – Excavated TP02 from above.



Photograph 4 - Arisings from TP02.



Photograph 5 – Excavated TP03.



Photograph 6 – Arisings from TP03.



Photograph 7 – Excavated TP04.



Photograph 8 – Arisings from TP04.



Photograph 9 – Northern section of the site.



Photograph 10 – South west section of the site.



Photograph 11 – South east section of the site.



Photograph 12 – Centre of the site.



APPENDIX 3 – Exploratory Hole Logs



GROUNDTECH
CONSULTING

Borehole Log

Borehole No.

CP01

Sheet 1 of 2

Project Name: WITHINGTON CDC

Project No.
GRO-23019

Co-ords: -

Hole Type
CP

Location: WITHINGTON

Level:

Scale
1:50

Client: CCS CONSULTING

Dates: 04/07/2023 - 05/07/2023

Logged By
AJ

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.10	ES		0.30			MADE GROUND: Grass covering brown slightly clayey slightly gravelly fine to coarse sand. Gravel is angular fine to medium of brick, cement and concrete.	1
		0.50	B						
		0.50	ES						
		1.00	D						
		1.00	ES						
		1.20		N=18 (3,3/4,4,5,5)					
		1.20 - 1.65	B		2.60			MADE GROUND: Brown clayey gravelly fine to coarse sand. Gravel is angular to subangular fine to coarse of brick, cement and concrete.	2
		2.00	B						
		2.00	ES						
		2.00		N=17 (3,3/3,4,5,5)					
		2.80	D						
		3.00	B						
		3.00	ES						
		3.00		N=36 (4,4/7,9,10,10)					
		4.00	B						
		4.00		N=39 (4,4/6,9,10,14)					
		5.00	B						
		5.00		N=19 (3,3/3,4,5,7)					
		6.00	B						
		6.00		N=29 (4,4/5,5,9,10)					
		7.00	B						
		7.50	D		7.40			Dense light brown gravelly fine to coarse SAND. Gravel is fine to medium subrounded to rounded of sandstone.	3
		7.50		N=13 (2,2/2,3,4,4)					
		7.50 - 7.95	U						
		8.00	B						
		9.00 - 9.45	U						
		10.00	B						4
									5
									6
									7
									8
									9
									10

Continued on next sheet

Remarks

1. Location cleared of services using hand held CAT scanner. 2. Hand excavated inspection pit to 1.20m bgl. 3. Groundwater encountered at 6.0m bgl. 4. Borehole terminated at 14.88m bgl due to SPT refusal in the very stiff clay. 5. Monitoring standpipe installed to 7.00m bgl (1.00m plain and 6.00m slotted).





GROUNDTECH
CONSULTING

Borehole Log

Borehole No.

CP01

Sheet 2 of 2

Project Name: WITHINGTON CDC

Project No.
GRO-23019

Co-ords: -

Hole Type
CP

Location: WITHINGTON

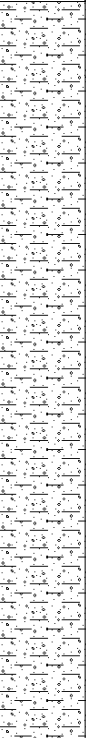
Level:

Scale
1:50

Client: CCS CONSULTING

Dates: 04/07/2023 - 05/07/2023

Logged By
AJ

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		10.50		N=23 (3,4/4,7,6,6)				Becoming very stiff at 10.50m bgl.	
		11.00	B						11
		12.00 - 12.45	U						12
		13.50		N=50 (4,5/50 for 250mm)					13
		13.50 - 13.95	B						14
		14.50	B	N=50 (6,7/50 for 230mm)					15
		14.50			14.88			End of borehole at 14.88 m	15
									16
									17
									18
									19
									20

Remarks

1. Location cleared of services using hand held CAT scanner. 2. Hand excavated inspection pit to 1.20m bgl. 3. Groundwater encountered at 6.0m bgl. 4. Borehole terminated at 14.88m bgl due to SPT refusal in the very stiff clay. 5. Monitoring standpipe installed to 7.00m bgl (1.00m plain and 6.00m slotted).





GROUNDTECH
CONSULTING

Borehole Log

Borehole No.

CP02

Sheet 1 of 2

Project Name: WITHINGTON CDC

Project No.
GRO-23019

Co-ords: -

Hole Type
CP

Location: WITHINGTON

Level:

Scale
1:50

Client: CCS CONSULTING

Dates: 05/07/2023 - 06/07/2023

Logged By
AJ

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.10	ES		0.20			MADE GROUND: Grass covering brown slightly clayey slightly gravelly fine to coarse sand. Gravel is angular fine to medium of brick, cement and concrete.	
		0.50	B					MADE GROUND: Brown gravelly fine to coarse sand. Gravel is angular to subangular fine to medium of brick, concrete and cement.	
		0.50	ES		0.80			MADE GROUND: Brown clayey gravelly fine to coarse sand. Gravel is angular to subangular fine to coarse of brick, cement, concrete and sandstone.	1
		1.00	D						
		1.00	ES	N=8 (1,1/1,2,2,3)					
		1.20							
					1.80				
		2.00	B					MADE GROUND: Yellowish brown clayey gravelly fine to coarse SAND. Gravel is angular to subangular fine to medium of brick, cement and concrete.	2
		2.00	ES	N=19 (3,4/4,4,5,6)	2.20				
		2.00						Medium dense light brown gravelly fine to coarse SAND. Gravel is subrounded to rounded fine to medium of sandstone.	
		3.00	B						3
		3.00	ES	N=23 (3,4/5,4,6,8)					
		3.00							
		4.00	B						4
		4.00		N=20 (3,3/4,5,5,6)					
		5.00	B						5
		5.00		N=25 (5,3/4,6,6,9)					
		6.00	B		6.10				6
		6.00		N=25 (4,4/5,6,7,7)				Very stiff brown sandy gravelly CLAY. Gravel is subrounded to rounded fine to coarse of sandstone. Sand is fine to coarse.	
		7.00	B						7
		7.50 - 7.95	U						
		8.00	B						8
		8.00	D						
		9.00	B						9
		9.00		N=20 (3,3/4,5,5,6)					
		10.00	D						10

Continued on next sheet

Remarks

1. Location cleared of services using hand held CAT scanner. 2. Hand excavated inspection pit to 1.20m bgl. 3. No groundwater encountered. 4. Borehole terminated at 14.92m bgl due to SPT refusal in the stiff clay. 5. Monitoring standpipe installed to 6.00m bgl (1.00m plain and 5.00m slotted).





GROUNDTECH
CONSULTING

Borehole Log

Borehole No.

CP02

Sheet 2 of 2

Project Name: WITHINGTON CDC

Project No.
GRO-23019

Co-ords: -

Hole Type
CP

Location: WITHINGTON

Level:

Scale
1:50

Client: CCS CONSULTING

Dates: 05/07/2023 - 06/07/2023

Logged By
AJ

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		10.50 - 10.95	U						
		11.00 11.00	B D						11
		12.00 12.00 - 12.45	B	N=24 (3,3/4,6,7,7)					12
		13.50 13.50 - 13.95	B	N=42 (5,6/7,10,10,15)					13
		14.50 14.50	B	N=50 (5,6/50 for 270mm)					14
					14.92			End of borehole at 14.92 m	15
									16
									17
									18
									19
									20

Remarks

1. Location cleared of services using hand held CAT scanner. 2. Hand excavated inspection pit to 1.20m bgl. 3. No groundwater encountered. 4. Borehole terminated at 14.92m bgl due to SPT refusal in the stiff clay. 5. Monitoring standpipe installed to 6.00m bgl (1.00m plain and 5.00m slotted).



Trial Pit Log

Trialpit No
TP01
Sheet 1 of 1

Project Name: WITHINGTON CDC

Project No.
GRO-23019

Co-ords: -
Level:

Date
09/05/2023

Location: WITHINGTON

Dimensions (m):

2

Depth
3.00

0.6

Scale
1:25

Logged
AJ

Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth	Type	Results					
				0.30			MADE GROUND: Dark brown slightly clayey slightly gravelly sandy topsoil with frequent rootlets. Gravel is angular to subangular fine to coarse of mixed lithologies including brick and ceramic. Sand is fine to coarse.	
	1.20	ES					MADE GROUND: Dark brown slightly clayey slightly gravelly fine to coarse sand. Gravel is angular to subangular fine to coarse of mixed lithologies including bricks, concrete and ceramic.	1
	2.00	ES		2.10				2
	3.00	ES		3.00			MADE GROUND: Grey brown gravelly fine to coarse sand. Gravel is angular fine to coarse of mixed lithologies including concrete, wood, brick and metal.	
							End of pit at 3.00 m	3
								4
								5

Remarks: 1. Location cleared of utilities using hand held CAT scanner. 2. No groundwater encountered. 3. Trial pit terminated at 3.0m bgl due to maximum reach of excavator. 4. Trial pit backfilled with arisings.

Stability: Stable.



Trial Pit Log

Trialpit No
TP02
Sheet 1 of 1

Project Name: WITHINGTON CDC

Project No.
GRO-23019

Co-ords: -
Level:

Date
10/05/2023

Location: WITHINGTON

Dimensions (m):

2

Scale
1:25

Client: CCS CONSULTING

Depth
3.20

0.6

Logged
AJ

Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth	Type	Results					
	0.20	ES		0.20			MADE GROUND: Dark brown slightly clayey slightly gravelly sandy topsoil with frequent rootlets. Gravel is angular to subangular fine to coarse of mixed lithologies including brick and ceramic. Sand is fine to coarse.	1
	1.50	ES		1.40			MADE GROUND: Dark brown slightly clayey slightly gravelly fine to coarse sand. Gravel is angular to subrounded fine to coarse of mixed lithologies including brick, tarmac, concrete, metal and plastics.	
	2.20	D					Light orange slightly clayey slightly gravelly fine to coarse SAND. Gravel is subangular to subrounded fine to coarse of mixed lithologies including sandstone.	2
	3.20	D		3.20			End of pit at 3.20 m	3
								4
								5

Remarks: 1. Location cleared of utilities using hand held CAT scanner. 2. No groundwater encountered. 3. Trial pit terminated at 3.20m bgl due to collapse of trial pit walls. 4. Trial pit backfilled with arisings.

Stability: Unstable and collapsing.



Trial Pit Log

Trialpit No
TP03
Sheet 1 of 1

Project Name: WITHINGTON CDC

Project No.
GRO-23019

Co-ords: -
Level:

Date
10/05/2023

Location: WITHINGTON

Dimensions
(m):

2

Scale
1:25

Client: CCS CONSULTING

Depth
2.70

0.6

Logged
AJ

Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth	Type	Results					
	0.40	ES		0.20			MADE GROUND: Dark brown slightly clayey slightly gravelly sandy topsoil with frequent rootlets. Gravel is angular to subangular fine to coarse of mixed lithologies including brick and ceramic. Sand is fine to coarse.	
							MADE GROUND: Dark brown slightly clayey slightly gravelly fine to coarse sand. Gravel is angular to subangular fine to coarse of mixed lithologies including concrete, brick and ceramic.	
	1.50	ES		1.30			Light orange very clayey fine to coarse SAND.	1
	1.70	ES		1.60			Orangish grey gravelly fine to coarse SAND. Gravel is subangular to subrounded fine to medium of mixed lithologies including sandstone.	2
				2.70			End of pit at 2.70 m	3
								4
								5

Remarks: 1. Location cleared of utilities using hand held CAT scanner. 2. No groundwater encountered. 3. Trial pit terminated at 2.7m bgl due to collapse of trial pit walls. 4. Trial pit backfilled with arisings.

Stability: Unstable and collapsing.



Trial Pit Log

Trialpit No
TP04
Sheet 1 of 1

Project Name: WITHINGTON CDC	Project No. GRO-23019	Co-ords: - Level:	Date 10/05/2023
Location: WITHINGTON	Dimensions (m): Depth 3.00		Scale 1:25 Logged AJ
Client: CCS CONSULTING	<div style="display: flex; align-items: center;"> <div style="border: 1px solid black; width: 100px; height: 40px; margin: 0 10px;"></div> <div style="writing-mode: vertical-rl; transform: rotate(180deg); font-size: small;">0.6</div> </div>		

Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth	Type	Results					
	0.50	ES		0.20			MADE GROUND: Dark brown slightly clayey slightly gravelly sandy topsoil with frequent rootlets. Gravel is angular to subangular fine to coarse of mixed lithologies including brick and ceramic. Sand is fine to coarse. MADE GROUND: Dark brown slightly clayey slightly gravelly fine to coarse sand. Gravel is angular to subrounded fine to coarse of mixed lithologies including tarmac, brick, concrete and metal.	1
	1.60	ES		1.30 1.40 1.50			MADE GROUND: Dark grey concrete. MADE GROUND: Dark brown sandy angular to subangular fine to coarse gravel of mixed lithologies including bricks and concrete. Sand is fine to coarse. MADE GROUND: Soft grey slightly sandy gravelly clay. Gravel is angular to subrounded fine to medium of mixed lithologies including brick and concrete. Sand is fine to coarse.	2
	2.20	D		2.00			MADE GROUND: Light orange slightly clayey fine to coarse sand. Light grey gravelly fine to coarse SAND. Gravel is subrounded to rounded fine to medium of mixed lithologies including sandstone.	3
				3.00			End of pit at 3.00 m	4
								5

Remarks: 1. Location cleared of utilities using hand held CAT scanner. 2. No groundwater encountered. 3. Trial pit terminated at 3.00m bgl due to collapse of trial pit walls. 4. Trial pit backfilled with arisings.

Stability: Unstable and collapsing.



Trial Pit Log

Trialpit No
TP05
Sheet 1 of 1

Project Name: WITHINGTON CDC

Project No.
GRO-23019

Co-ords: -
Level:

Date
10/05/2023

Location: WITHINGTON

Dimensions
(m):

2

Scale
1:25

Client: CCS CONSULTING

Depth
1.60

0.6

Logged
AJ

Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth	Type	Results					
	0.40	ES		0.20			MADE GROUND: Dark brown slightly clayey slightly gravelly sandy topsoil with frequent rootlets. Gravel is angular to subangular fine to coarse of mixed lithologies including brick and ceramic. Sand is fine to coarse.	
							MADE GROUND: Dark brown slightly clayey slightly gravelly fine to coarse sand. Gravel is angular to subrounded fine to coarse of mixed lithologies including brick, concrete and ceramic.	
				1.00			MADE GROUND: Light orange slightly clayey fine to coarse sand.	1
	1.50	ES		1.10			MADE GROUND: Dark brown slightly clayey slightly gravelly fine to coarse sand. Gravel is angular to subrounded fine to coarse of mixed lithologies including brick, concrete and ceramic.	
				1.60			MADE GROUND: Grey concrete slab.	
				1.60			End of pit at 1.60 m	2
								3
								4
								5

Remarks: 1. Location cleared of utilities using hand held CAT scanner. 2. No groundwater encountered. 3. Trial pit terminated at 1.6m bgl due to concrete slab. 4. Trial pit backfilled with arisings.

Stability: Stable.





APPENDIX 4 – Geo-Environmental Testing Results

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



4225



Attention : Andrew Janson
Date : 9th August, 2023
Your reference : GRO-23019
Our reference : Test Report 23/11645 Batch 1
Location : Withington CDC
Date samples received : 15th July, 2023
Status : Final Report
Issue : 1

Fifteen samples were received for analysis on 15th July, 2023 of which ten 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.

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-23019
Location: Withington CDC
Contact: Andrew Janson
EMT Job No: 23/11645

Report : Solid

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

EMT Sample No.	5-8	9-12	17-20	25-28	33-36	41-43	44-47	48-51	52-55	56	Please see attached notes for all abbreviations and acronyms		
Sample ID	CP01	CP01	CP01	CP02	CP02	TP05	TP03	TP01	TP04	HP05			
Depth	0.50	1.00	3.00	0.50	2.00	0.40	0.40	1.20	1.50	0.40			
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	V J T	T			
Sample Date	12/07/2023	12/07/2023	12/07/2023	13/07/2023	13/07/2023	14/07/2023	14/07/2023	14/07/2023	13/07/2023	14/07/2023			
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil			
Batch Number	1	1	1	1	1	1	1	1	1	1			
Date of Receipt	15/07/2023	15/07/2023	15/07/2023	15/07/2023	15/07/2023	15/07/2023	15/07/2023	15/07/2023	15/07/2023	15/07/2023	LOD/LOR	Units	Method No.
Arsenic #	-	8.1	-	7.0	-	8.6	8.6	8.5	8.3	-	<0.5	mg/kg	TM30/PM15
Cadmium #	-	0.6	-	0.3	-	0.4	0.2	0.2	0.3	-	<0.1	mg/kg	TM30/PM15
Chromium #	-	31.6	-	30.8	-	44.6	43.2	37.2	34.3	-	<0.5	mg/kg	TM30/PM15
Copper #	-	26	-	13	-	26	20	20	16	-	<1	mg/kg	TM30/PM15
Lead #	-	75	-	33	-	101	55	65	48	-	<5	mg/kg	TM30/PM15
Mercury #	-	1.5	-	<0.1	-	<0.1	0.2	0.2	<0.1	-	<0.1	mg/kg	TM30/PM15
Nickel #	-	12.8	-	9.5	-	14.6	13.3	13.3	12.3	-	<0.7	mg/kg	TM30/PM15
Selenium #	-	<1	-	<1	-	1	<1	<1	<1	-	<1	mg/kg	TM30/PM15
Zinc #	-	110	-	54	-	102	78	84	72	-	<5	mg/kg	TM30/PM15
PAH MS													
Naphthalene #	<0.40 _{AB}	<0.20 _{AA}	-	0.07	0.20	<0.40 _{AB}	0.09	0.10	0.06	0.05	<0.04	mg/kg	TM4/PM8
Acenaphthylene	<0.30 _{AB}	0.19 _{AA}	-	0.04	0.07	<0.30 _{AB}	0.07	0.07	0.07	0.09	<0.03	mg/kg	TM4/PM8
Acenaphthene #	0.88 _{AB}	0.45 _{AA}	-	0.08	0.76	<0.50 _{AB}	0.16	0.15	0.11	0.09	<0.05	mg/kg	TM4/PM8
Fluorene #	0.66 _{AB}	0.32 _{AA}	-	0.04	0.64	<0.40 _{AB}	0.11	0.11	0.08	0.06	<0.04	mg/kg	TM4/PM8
Phenanthrene #	8.41 _{AB}	3.54 _{AA}	-	0.68	5.78	4.22 _{AB}	1.45	1.47	1.00	0.83	<0.03	mg/kg	TM4/PM8
Anthracene #	3.73 _{AB}	1.42 _{AA}	-	0.28	1.88	1.55 _{AB}	0.48	0.50	0.42	0.34	<0.04	mg/kg	TM4/PM8
Fluoranthene #	17.12 _{AB}	13.87 _{AA}	-	3.05	9.44	10.15 _{AB}	3.55	3.66	4.02	3.32	<0.03	mg/kg	TM4/PM8
Pyrene #	14.54 _{AB}	13.46 _{AA}	-	2.94	7.86	8.66 _{AB}	3.30	3.38	3.78	3.17	<0.03	mg/kg	TM4/PM8
Benzo(a)anthracene #	6.87 _{AB}	6.73 _{AA}	-	1.57	3.64	4.30 _{AB}	1.74	1.78	2.18	1.77	<0.06	mg/kg	TM4/PM8
Chrysene #	7.13 _{AB}	6.87 _{AA}	-	1.75	3.70	4.21 _{AB}	1.93	1.93	2.11	1.96	<0.02	mg/kg	TM4/PM8
Benzo(bk)fluoranthene #	11.44 _{AB}	12.28 _{AA}	-	3.35	6.34	7.27 _{AB}	3.71	3.73	4.50	3.79	<0.07	mg/kg	TM4/PM8
Benzo(a)pyrene #	7.03 _{AB}	7.99 _{AA}	-	2.20	4.24	4.57 _{AB}	2.37	2.40	2.70	2.29	<0.04	mg/kg	TM4/PM8
Indeno(123cd)pyrene #	4.81 _{AB}	5.58 _{AA}	-	1.51	2.80	2.86 _{AB}	1.71	1.77	1.97	1.71	<0.04	mg/kg	TM4/PM8
Dibenzo(ah)anthracene #	0.98 _{AB}	0.80 _{AA}	-	0.30	0.34	0.52 _{AB}	0.23	0.24	0.36	0.24	<0.04	mg/kg	TM4/PM8
Benzo(ghi)perylene #	4.41 _{AB}	4.89 _{AA}	-	1.45	2.58	2.99 _{AB}	1.50	1.55	1.91	1.73	<0.04	mg/kg	TM4/PM8
Coronene	0.66 _{AB}	-	-	-	0.28	-	0.25	-	0.38	0.34	<0.04	mg/kg	TM4/PM8
PAH 16 Total	-	78.4 _{AA}	-	19.3	-	51.3 _{AB}	22.4	22.8	25.3	-	<0.6	mg/kg	TM4/PM8
PAH 17 Total	88.67 _{AB}	-	-	-	50.55	-	22.65	-	25.65	21.78	<0.64	mg/kg	TM4/PM8
Benzo(b)fluoranthene	8.24 _{AB}	8.84 _{AA}	-	2.41	4.56	5.23 _{AB}	2.67	2.69	3.24	2.73	<0.05	mg/kg	TM4/PM8
Benzo(k)fluoranthene	3.20 _{AB}	3.44 _{AA}	-	0.94	1.78	2.04 _{AB}	1.04	1.04	1.26	1.06	<0.02	mg/kg	TM4/PM8
PAH Surrogate % Recovery	89 _{AB}	92 _{AA}	-	95	96	85 _{AB}	96	95	96	93	<0	%	TM4/PM8
Mineral Oil (C10-C40) (EH_CU_1D_AL)	670	-	-	-	90	59	135	-	184	76	<30	mg/kg	TM5/PM8/PM16
MTBE #	<5	-	-	-	<5	<5	<5	-	<5	<5	<5	ug/kg	TM36/PM12
Benzene #	<5	-	-	-	<5	<5	<5	-	<5	<5	<5	ug/kg	TM36/PM12
Toluene #	<5	-	-	-	<5	<5	<5	-	7	<5	<5	ug/kg	TM36/PM12
Ethylbenzene #	<5	-	-	-	<5	<5	<5	-	<5	<5	<5	ug/kg	TM36/PM12
m/p-Xylene #	<5	-	-	-	<5	<5	<5	-	<5	<5	<5	ug/kg	TM36/PM12
o-Xylene #	<5	-	-	-	<5	<5	<5	-	<5	<5	<5	ug/kg	TM36/PM12
PCB 28 #	<5	<5	-	-	<5	<5	<5	-	<5	<5	<5	ug/kg	TM17/PM8
PCB 52 #	<5	<5	-	-	<5	<5	<5	-	<5	<5	<5	ug/kg	TM17/PM8

Element Materials Technology

Client Name: Groundtech Consulting Limited
Reference: GRO-23019
Location: Withington CDC
Contact: Andrew Janson
EMT Job No: 23/11645

Report : Solid

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

EMT Sample No.	5-8	9-12	17-20	25-28	33-36	41-43	44-47	48-51	52-55	56	Please see attached notes for all abbreviations and acronyms		
Sample ID	CP01	CP01	CP01	CP02	CP02	TP05	TP03	TP01	TP04	HP05			
Depth	0.50	1.00	3.00	0.50	2.00	0.40	0.40	1.20	1.50	0.40			
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	V J T	T			
Sample Date	12/07/2023	12/07/2023	12/07/2023	13/07/2023	13/07/2023	14/07/2023	14/07/2023	14/07/2023	13/07/2023	14/07/2023			
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil			
Batch Number	1	1	1	1	1	1	1	1	1	1	LOD/LOR	Units	Method No.
Date of Receipt	15/07/2023	15/07/2023	15/07/2023	15/07/2023	15/07/2023	15/07/2023	15/07/2023	15/07/2023	15/07/2023	15/07/2023			
PCB 101 [#]	<5	<5	-	-	<5	<5	<5	-	<5	<5	<5	ug/kg	TM17/PM8
PCB 118 [#]	<5	<5	-	-	<5	<5	<5	-	<5	<5	<5	ug/kg	TM17/PM8
PCB 138 [#]	<5	<5	-	-	<5	<5	<5	-	<5	<5	<5	ug/kg	TM17/PM8
PCB 153 [#]	<5	<5	-	-	<5	<5	<5	-	<5	<5	<5	ug/kg	TM17/PM8
PCB 180 [#]	<5	<5	-	-	<5	<5	<5	-	<5	<5	<5	ug/kg	TM17/PM8
Total 7 PCBs [#]	<35	<35	-	-	<35	<35	<35	-	<35	<35	<35	ug/kg	TM17/PM8
Natural Moisture Content	13.7	13.7	-	10.1	13.1	13.1	13.4	13.3	12.6	8.1	<0.1	%	PM4/PM0
Hexavalent Chromium [#]	-	<0.3	-	<0.3	-	<0.3	<0.3	<0.3	<0.3	-	<0.3	mg/kg	TM38/PM2
Sulphate as SO4 (2:1 Ext) [#]	-	0.1272	0.0234	0.1156	-	0.1212	0.0203	0.0598	0.1287	-	<0.0015	g/l	TM38/PM2
Total Organic Carbon [#]	3.51	-	-	-	2.26	1.68	1.83	-	1.64	1.07	<0.02	%	TM21/PM2
Organic Matter	-	2.3	-	2.0	-	2.9	3.2	3.0	2.8	-	<0.2	%	TM21/PM2
ANC at pH4	1.66	-	-	-	0.76	0.69	0.36	-	1.47	0.88	<0.03	mol/kg	TM77/PMC
ANC at pH7	0.12	-	-	-	0.07	0.04	0.03	-	<0.03	<0.03	<0.03	mol/kg	TM77/PMC
Loss on Ignition [#]	3.4	-	-	-	4.0	3.2	3.1	-	3.1	2.1	<1.0	%	TM22/PMC
pH [#]	9.32	9.72	8.04	8.89	8.48	8.39	8.34	8.50	8.38	8.36	<0.01	pH units	TM73/PM1

Element Materials Technology

Client Name: Groundtech Consulting Limited
Reference: GRO-23019
Location: Withington CDC
Contact: Andrew Janson
EMT Job No: 23/11645

Report : CEN 10:1 1 Batch

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

[illegible]

Mass of sample taken (kg)	0.1022	Moisture Content Ratio (%) =	13.7
Mass of dry sample (kg) =	0.09	Dry Matter Content Ratio (%) =	88.0
Particle Size <4mm =	>95%		
EMT Job No	23/11645	Landfill Waste Acceptance Criteria Limits	
Sample No	7		
Client Sample No	CP01		
Depth/Other	0.50		
Sample Date	12/07/2023		
Batch No	1		
Solid Waste Analysis		Inert Waste Landfill	Stable Non-reactive Hazardous Waste in Non- Hazardous Landfill
Total Organic Carbon (%)	3.51	3	5
Loss on Ignition (%)	3.4	-	10
Sum of BTEX (mg/kg)	<0.025	6	-
Sum of 7 PCBs (mg/kg)	<0.035	1	-
Mineral Oil (mg/kg) (EH_CU_1D_AL)	670	500	-
PAH Sum of 17(mg/kg)	88.67	100	-
pH (pH Units)	9.32	-	>6
ANC to pH 7 (mol/kg)	0.12	-	to be evaluated
ANC to pH 4 (mol/kg)	1.66	-	to be evaluated
Eluate Analysis	10:1 conc ⁿ leached		Limit values for compliance leaching test using BS EN 12457-2 at L/S 10 l/kg
	C ₁₀ mg/l	A ₁₀ mg/kg	
Arsenic	0.0079	0.079	0.5
Barium	0.024	0.24	20
Cadmium	<0.0005	<0.005	0.04
Chromium	0.0016	0.016	0.5
Copper	<0.007	<0.07	2
Mercury	<0.001	<0.01	0.01
Molybdenum	0.002	0.02	0.5
Nickel	<0.002	<0.02	0.4
Lead	<0.005	<0.05	0.5
Antimony	<0.002	<0.02	0.06
Selenium	<0.003	<0.03	0.1
Zinc	0.005	0.05	4
Chloride	0.6	6	800
Fluoride	0.7	7	10
Sulphate as SO ₄	22.4	224	1000
Total Dissolved Solids	83	830	4000
Phenol	<0.01	<0.1	1
Dissolved Organic Carbon	<2	<20	500

Mass of sample taken (kg)	0.1068	Moisture Content Ratio (%) =	18.9
Mass of dry sample (kg) =	0.09	Dry Matter Content Ratio (%) =	84.1
Particle Size <4mm =	>95%		
EMT Job No	23/11645	Landfill Waste Acceptance Criteria Limits	
Sample No	35		
Client Sample No	CP02		
Depth/Other	2.00		
Sample Date	13/07/2023		
Batch No	1		
Solid Waste Analysis		Inert Waste Landfill	Stable Non-reactive Hazardous Waste in Non- Hazardous Landfill
Total Organic Carbon (%)	2.26	3	5
Loss on Ignition (%)	4.0	-	10
Sum of BTEX (mg/kg)	<0.025	6	-
Sum of 7 PCBs (mg/kg)	<0.035	1	-
Mineral Oil (mg/kg) (EH_CU_1D_AL)	90	500	-
PAH Sum of 17(mg/kg)	50.55	100	-
pH (pH Units)	8.48	-	>6
ANC to pH 7 (mol/kg)	0.07	-	to be evaluated
ANC to pH 4 (mol/kg)	0.76	-	to be evaluated
Eluate Analysis	10:1 conc ⁿ leached		Limit values for compliance leaching test using BS EN 12457-2 at L/S 10 l/kg
	C ₁₀ mg/l	A ₁₀ mg/kg	
Arsenic	<0.0025	<0.025	0.5
Barium	0.023	0.23	20
Cadmium	<0.0005	<0.005	0.04
Chromium	0.0020	0.020	0.5
Copper	0.010	0.10	2
Mercury	<0.001	<0.01	0.01
Molybdenum	0.009	0.09	0.5
Nickel	<0.002	<0.02	0.4
Lead	<0.005	<0.05	0.5
Antimony	<0.002	<0.02	0.06
Selenium	<0.003	<0.03	0.1
Zinc	<0.003	<0.03	4
Chloride	2.0	20	800
Fluoride	0.6	6	10
Sulphate as SO ₄	25.1	251	1000
Total Dissolved Solids	146	1460	4000
Phenol	<0.01	<0.1	1
Dissolved Organic Carbon	14	140	500

Mass of sample taken (kg)	0.1023	Moisture Content Ratio (%) =	13.1
Mass of dry sample (kg) =	0.09	Dry Matter Content Ratio (%) =	88.4
Particle Size <4mm =	>95%		
EMT Job No	23/11645	Landfill Waste Acceptance Criteria Limits	
Sample No	43		
Client Sample No	TP05		
Depth/Other	0.40		
Sample Date	14/07/2023		
Batch No	1		
Solid Waste Analysis		Inert Waste Landfill	Stable Non-reactive Hazardous Waste in Non- Hazardous Landfill
Total Organic Carbon (%)	1.68	3	5
Loss on Ignition (%)	3.2	-	10
Sum of BTEX (mg/kg)	<0.025	6	-
Sum of 7 PCBs (mg/kg)	<0.035	1	-
Mineral Oil (mg/kg) (EH_CU_1D_AL)	59	500	-
PAH Sum of 17(mg/kg)	51.83	100	-
pH (pH Units)	8.39	-	>6
ANC to pH 7 (mol/kg)	0.04	-	to be evaluated
ANC to pH 4 (mol/kg)	0.69	-	to be evaluated
Eluate Analysis	10:1 conc ⁿ leached		Limit values for compliance leaching test using BS EN 12457-2 at L/S 10 l/kg
	C ₁₀ mg/l	A ₁₀ mg/kg	
Arsenic	0.0051	0.051	0.5
Barium	0.026	0.26	20
Cadmium	<0.0005	<0.005	0.04
Chromium	<0.0015	<0.015	0.5
Copper	<0.007	<0.07	2
Mercury	<0.001	<0.01	0.01
Molybdenum	0.002	<0.02	0.5
Nickel	<0.002	<0.02	0.4
Lead	<0.005	<0.05	0.5
Antimony	<0.002	<0.02	0.06
Selenium	<0.003	<0.03	0.1
Zinc	0.004	0.04	4
Chloride	<0.3	<3	800
Fluoride	0.8	8	10
Sulphate as SO ₄	12.1	121	1000
Total Dissolved Solids	61	610	4000
Phenol	<0.01	<0.1	1
Dissolved Organic Carbon	<2	<20	500

Mass of sample taken (kg)	0.1029	Moisture Content Ratio (%) =	14.3
Mass of dry sample (kg) =	0.09	Dry Matter Content Ratio (%) =	87.5
Particle Size <4mm =	>95%		
EMT Job No	23/11645	Landfill Waste Acceptance Criteria Limits	
Sample No	46		
Client Sample No	TP03		
Depth/Other	0.40		
Sample Date	14/07/2023		
Batch No	1		
Solid Waste Analysis		Inert Waste Landfill	Stable Non-reactive Hazardous Waste in Non- Hazardous Landfill
Total Organic Carbon (%)	1.83	3	5
Loss on Ignition (%)	3.1	-	10
Sum of BTEX (mg/kg)	<0.025	6	-
Sum of 7 PCBs (mg/kg)	<0.035	1	-
Mineral Oil (mg/kg) (EH_CU_1D_AL)	135	500	-
PAH Sum of 17(mg/kg)	22.65	100	-
pH (pH Units)	8.34	-	>6
ANC to pH 7 (mol/kg)	0.03	-	to be evaluated
ANC to pH 4 (mol/kg)	0.36	-	to be evaluated
Eluate Analysis	10:1 conc ⁿ leached		Limit values for compliance leaching test using BS EN 12457-2 at L/S 10 l/kg
	C ₁₀ mg/l	A ₁₀ mg/kg	
Arsenic	0.0046	0.046	0.5
Barium	0.028	0.28	20
Cadmium	<0.0005	<0.005	0.04
Chromium	<0.0015	<0.015	0.5
Copper	<0.007	<0.07	2
Mercury	<0.001	<0.01	0.01
Molybdenum	0.002	<0.02	0.5
Nickel	<0.002	<0.02	0.4
Lead	<0.005	<0.05	0.5
Antimony	<0.002	<0.02	0.06
Selenium	<0.003	<0.03	0.1
Zinc	<0.003	<0.03	4
Chloride	<0.3	<3	800
Fluoride	0.7	7	10
Sulphate as SO ₄	5.2	52	1000
Total Dissolved Solids	75	750	4000
Phenol	<0.01	<0.1	1
Dissolved Organic Carbon	3	30	500

Mass of sample taken (kg)	0.1003	Moisture Content Ratio (%) =	11.0
Mass of dry sample (kg) =	0.09	Dry Matter Content Ratio (%) =	90.1
Particle Size <4mm =	>95%		
EMT Job No	23/11645	Landfill Waste Acceptance Criteria Limits	
Sample No	54		
Client Sample No	TP04		
Depth/Other	1.50		
Sample Date	13/07/2023		
Batch No	1		
Solid Waste Analysis		Inert Waste Landfill	Stable Non-reactive Hazardous Waste in Non- Hazardous Landfill
Total Organic Carbon (%)	1.64	3	5
Loss on Ignition (%)	3.1	-	10
Sum of BTEX (mg/kg)	<0.025	6	-
Sum of 7 PCBs (mg/kg)	<0.035	1	-
Mineral Oil (mg/kg) (EH_CU_1D_AL)	184	500	-
PAH Sum of 17(mg/kg)	25.65	100	-
pH (pH Units)	8.38	-	>6
ANC to pH 7 (mol/kg)	<0.03	-	to be evaluated
ANC to pH 4 (mol/kg)	1.47	-	to be evaluated
Eluate Analysis	10:1 conc ⁿ leached		Limit values for compliance leaching test using BS EN 12457-2 at L/S 10 l/kg
	C ₁₀ mg/l	A ₁₀ mg/kg	
Arsenic	0.0034	0.034	0.5
Barium	0.019	0.19	20
Cadmium	<0.0005	<0.005	0.04
Chromium	<0.0015	<0.015	0.5
Copper	<0.007	<0.07	2
Mercury	<0.001	<0.01	0.01
Molybdenum	0.003	0.03	0.5
Nickel	<0.002	<0.02	0.4
Lead	<0.005	<0.05	0.5
Antimony	0.002	<0.02	0.06
Selenium	<0.003	<0.03	0.1
Zinc	0.003	<0.03	4
Chloride	0.9	9	800
Fluoride	0.7	7	10
Sulphate as SO ₄	18.7	187	1000
Total Dissolved Solids	74	740	4000
Phenol	<0.01	<0.1	1
Dissolved Organic Carbon	5	50	500

Mass of sample taken (kg)	0.1261	Moisture Content Ratio (%) =	40.5
Mass of dry sample (kg) =	0.09	Dry Matter Content Ratio (%) =	71.2
Particle Size <4mm =	>95%		
EMT Job No	23/11645	Landfill Waste Acceptance Criteria Limits	
Sample No	56		
Client Sample No	HP05		
Depth/Other	0.40		
Sample Date	14/07/2023		
Batch No	1		
Solid Waste Analysis		Inert Waste Landfill	Stable Non-reactive Hazardous Waste in Non- Hazardous Landfill
Total Organic Carbon (%)	1.07	3	5
Loss on Ignition (%)	2.1	-	10
Sum of BTEX (mg/kg)	<0.025	6	-
Sum of 7 PCBs (mg/kg)	<0.035	1	-
Mineral Oil (mg/kg) (EH_CU_1D_AL)	76	500	-
PAH Sum of 17(mg/kg)	21.78	100	-
pH (pH Units)	8.36	-	>6
ANC to pH 7 (mol/kg)	<0.03	-	to be evaluated
ANC to pH 4 (mol/kg)	0.88	-	to be evaluated
Eluate Analysis	10:1 conc ⁿ leached		Limit values for compliance leaching test using BS EN 12457-2 at L/S 10 l/kg
	C ₁₀ mg/l	A ₁₀ mg/kg	
Arsenic	0.0039	0.039	0.5
Barium	0.025	0.25	20
Cadmium	<0.0005	<0.005	0.04
Chromium	<0.0015	<0.015	0.5
Copper	<0.007	<0.07	2
Mercury	<0.001	<0.01	0.01
Molybdenum	<0.002	<0.02	0.5
Nickel	<0.002	<0.02	0.4
Lead	<0.005	<0.05	0.5
Antimony	<0.002	<0.02	0.06
Selenium	<0.003	<0.03	0.1
Zinc	0.003	0.03	4
Chloride	<0.3	<3	800
Fluoride	0.9	9	10
Sulphate as SO ₄	14.6	146	1000
Total Dissolved Solids	83	830	4000
Phenol	<0.01	<0.1	1
Dissolved Organic Carbon	4	40	500

Client Name: Groundtech Consulting Limited
Reference: GRO-23019
Location: Withington CDC
Contact: Andrew Janson

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
23/11645	1	CP01	1.00	11	Simon Postlewhite	08/08/2023	General Description (Bulk Analysis)	Brown soil/stones
					Simon Postlewhite	08/08/2023	Asbestos Fibres	NAD
					Simon Postlewhite	08/08/2023	Asbestos ACM	NAD
					Simon Postlewhite	08/08/2023	Asbestos Type	NAD
23/11645	1	CP02	0.50	27	Simon Postlewhite	08/08/2023	General Description (Bulk Analysis)	Brown soil/stones
					Simon Postlewhite	08/08/2023	Asbestos Fibres	NAD
					Simon Postlewhite	08/08/2023	Asbestos ACM	NAD
					Simon Postlewhite	08/08/2023	Asbestos Type	NAD
23/11645	1	TP05	0.40	42	Simon Postlewhite	08/08/2023	General Description (Bulk Analysis)	Brown soil/stones
					Simon Postlewhite	08/08/2023	Asbestos Fibres	NAD
					Simon Postlewhite	08/08/2023	Asbestos ACM	NAD
					Simon Postlewhite	08/08/2023	Asbestos Type	NAD
23/11645	1	TP03	0.40	47	Charlotte Taylor	08/08/2023	General Description (Bulk Analysis)	brown soil/stones
					Charlotte Taylor	08/08/2023	Asbestos Fibres	Fibre Bundles
					Charlotte Taylor	08/08/2023	Asbestos Fibres (2)	Fibre Bundles
					Charlotte Taylor	08/08/2023	Asbestos ACM	NAD
					Charlotte Taylor	08/08/2023	Asbestos ACM (2)	NAD
					Charlotte Taylor	08/08/2023	Asbestos Type	Chrysotile
					Charlotte Taylor	08/08/2023	Asbestos Type (2)	Amosite
23/11645	1	TP01	1.20	50	Charlotte Taylor	08/08/2023	General Description (Bulk Analysis)	brown soil/stones
					Charlotte Taylor	08/08/2023	Asbestos Fibres	Fibre Bundles
					Charlotte Taylor	08/08/2023	Asbestos Fibres (2)	Fibre Bundles
					Charlotte Taylor	08/08/2023	Asbestos ACM	NAD
					Charlotte Taylor	08/08/2023	Asbestos ACM (2)	NAD
					Charlotte Taylor	08/08/2023	Asbestos Type	Chrysotile
					Charlotte Taylor	08/08/2023	Asbestos Type (2)	Amosite
23/11645	1	TP04	1.50	55	Catherine Coles	09/08/2023	General Description (Bulk Analysis)	brown soil,stone
					Catherine Coles	09/08/2023	Asbestos Fibres	Fibre Bundles
					Catherine Coles	09/08/2023	Asbestos Fibres (2)	Fibre Bundles
					Catherine Coles	09/08/2023	Asbestos ACM	NAD
					Catherine Coles	09/08/2023	Asbestos ACM (2)	NAD
					Catherine Coles	09/08/2023	Asbestos Type	Chrysotile
					Catherine Coles	09/08/2023	Asbestos Type (2)	Amosite

Client Name: Groundtech Consulting Limited

Matrix : Solid

Reference: GRO-23019

Location: Withington CDC

Contact: Andrew Janson

[illegible]

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.

NOTES TO ACCOMPANY ALL SCHEDULES AND REPORTS

EMT Job No.: 23/11645

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.

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
AA	x5 Dilution
AB	x10 Dilution

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: 23/11645

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/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
TM5	Modified 8015B v2:1996 method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) within the range C8-C40 by GCFID. For waters the solvent extracts dissolved phase plus a sheen if present.	PM8/PM16	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required/Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE.			AR	Yes
TM17	Modified US EPA method 8270D v5:2014. Determination of specific Polychlorinated Biphenyl congeners 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
TM20	Modified BS 1377-3:1990/USEPA 160.1/3 (TDS/TS: 1971) Gravimetric determination of Total Dissolved Solids/Total Solids	PM0	No preparation is required.			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
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.	Yes		AD	Yes
TM22	Modified BS1377-3:1990 Gravimetric determination of Loss on Ignition by temperature controlled Muffle Furnace (35C-440C). On request modified ASTM D2974-00 LOI (105C-440C)	PM0	No preparation is required.	Yes		AD	Yes
TM26	Determination of phenols by Reversed Phased High Performance Liquid Chromatography and Electro-Chemical Detection.	PM0	No preparation is required.			AR	Yes

EMT Job No: 23/11645

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/ANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
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
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	PM17	Modified method BS EN12457-2:2002 As received solid samples are leached with water in a 10:1 water to soil ratio for 24 hours, the moisture content of the sample is included in the ratio.	Yes		AR	Yes
TM36	Modified US EPA method 8015B v2:1996. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID. MTBE by GC/FID co-elutes with 3-methylpentane if present and therefore can give a false positive. Positive MTBE results will be re-run using GC-MS to double check, when requested.	PM12	Modified US EPA method 5021A v2:2014. Preparation of solid and liquid samples for GC headspace analysis.			AR	Yes
TM36	Modified US EPA method 8015B v2:1996. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID. MTBE by GC/FID co-elutes with 3-methylpentane if present and therefore can give a false positive. Positive MTBE results will be re-run using GC-MS to double check, when requested.	PM12	Modified US EPA method 5021A v2:2014. Preparation of solid and liquid samples for GC headspace analysis.	Yes		AR	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	PM0	No preparation is required.	Yes		AR	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
TM60	TC/TOC analysis of Waters by High Temperature Combustion followed by NDIR detection. Based on the following modified standard methods: USEPA 9060A (2002), APHA SMEWW 5310B:1999 22nd Edition, ASTM D 7573, and USEPA 415.1.	PM0	No preparation is required.			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

EMT Job No: 23/11645

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
TM77	Modified DDCE/TS method 15364:2006. Determination of Acid Neutralization Capacity by Metrohm automated probe analyser.	PM0	No preparation is required.			AR	No
TM173	Analysis of fluoride by ISE (Ion Selective Electrode) using modified ISE method 9214 - 340.2 (EPA 1998)	PM0	No preparation is required.			AR	Yes
NONE	No Method Code	PM17	Modified method BS EN12457-2:2002 As received solid samples are leached with water in a 10:1 water to soil ratio for 24 hours, the moisture content of the sample is included in the ratio.				
NONE	No Method Code	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.			AR	

APPENDIX 5 – Geotechnical Testing Results



LABORATORY REPORT



Contract Number: PSL23/7423

Report Date: 06 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: Withington CDC

Date Received: 4/9/2023

Date Commenced: 4/9/2023

Date Completed: 6/9/2023

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)

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Page 1 of

SUMMARY OF LABORATORY SOIL DESCRIPTIONS

[illegible]

Withington CDC

Contract No:

PSL23/7423

Client Ref:

GRO-23019

SUMMARY OF SOIL CLASSIFICATION TESTS

(BS1377 : PART 2 : 1990)

[illegible]

SYMBOLS : NP : Non Plastic

*** : Liquid Limit and Plastic Limit Wet Sieved.**



Withington CDC

Contract No:

PSL23/7423

Client Ref:

GRO-23019

UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION

WITHOUT MEASUREMENT OF PORE PRESSURE

BS1377 : Part7 : 1990: Clause 8

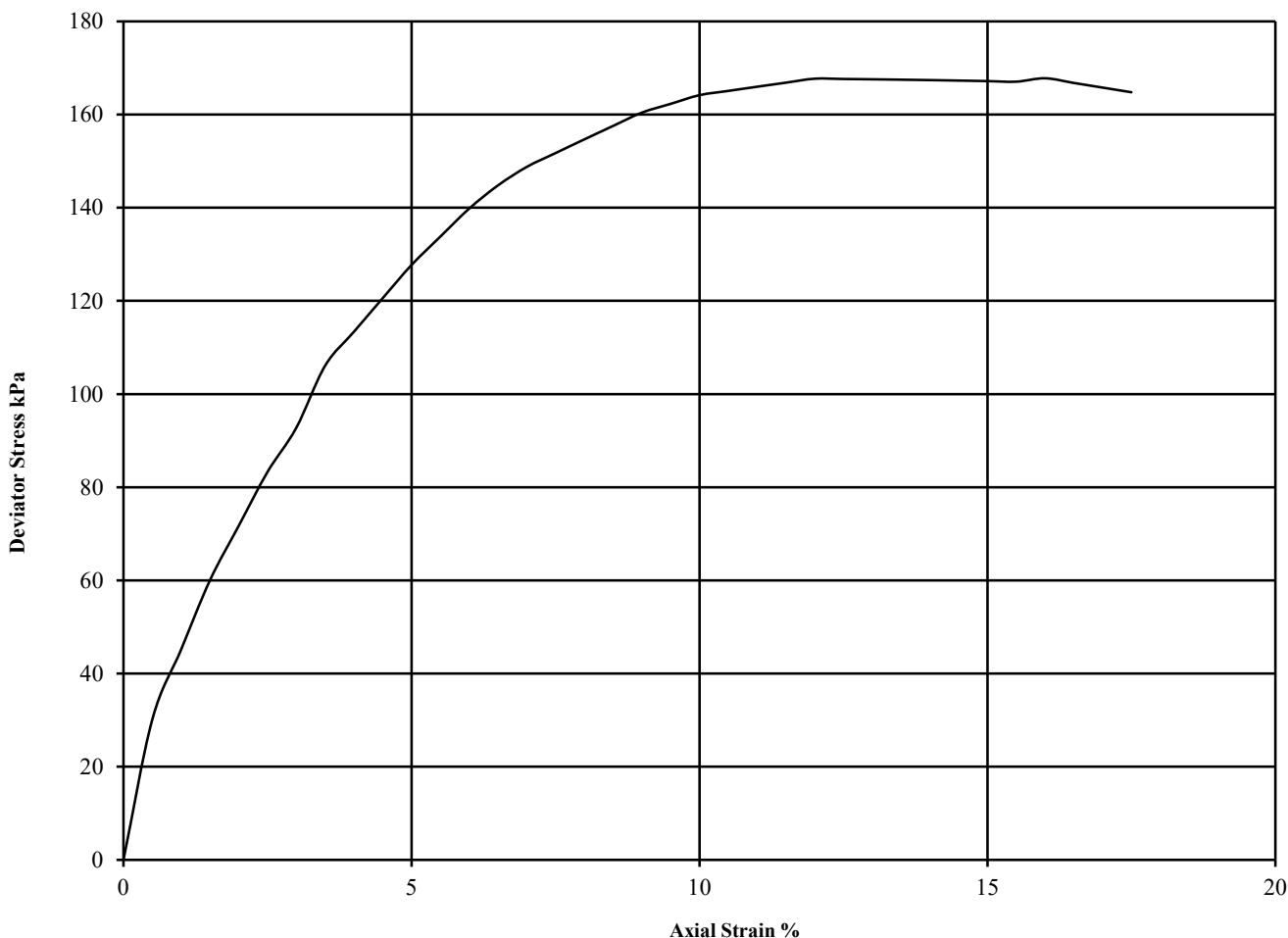
Hole Number: CP01

Top Depth (m): 7.50

Sample Number:

Base Depth (m): 7.95

Sample Type U



Diameter (mm):		102		Height (mm):		204		Test:	UU Single Stage		Remarks:
Specimen	Moisture Content (%)	Bulk Density (Mg/m3)	Dry Density (Mg/m3)	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 0.34 See summary of soil descriptions		
				θ_3	$(\theta_1 - \theta_3)_f$	$\frac{1}{2}(\theta_1 - \theta_3)_f$					
1	20	2.15	1.79	150	168	84	16.0	Plastic			



Withington CDC

Contract No:

PSL23/7423

Client Ref:

GRO-23019

UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION

WITHOUT MEASUREMENT OF PORE PRESSURE

BS1377 : Part7 : 1990: Clause 8

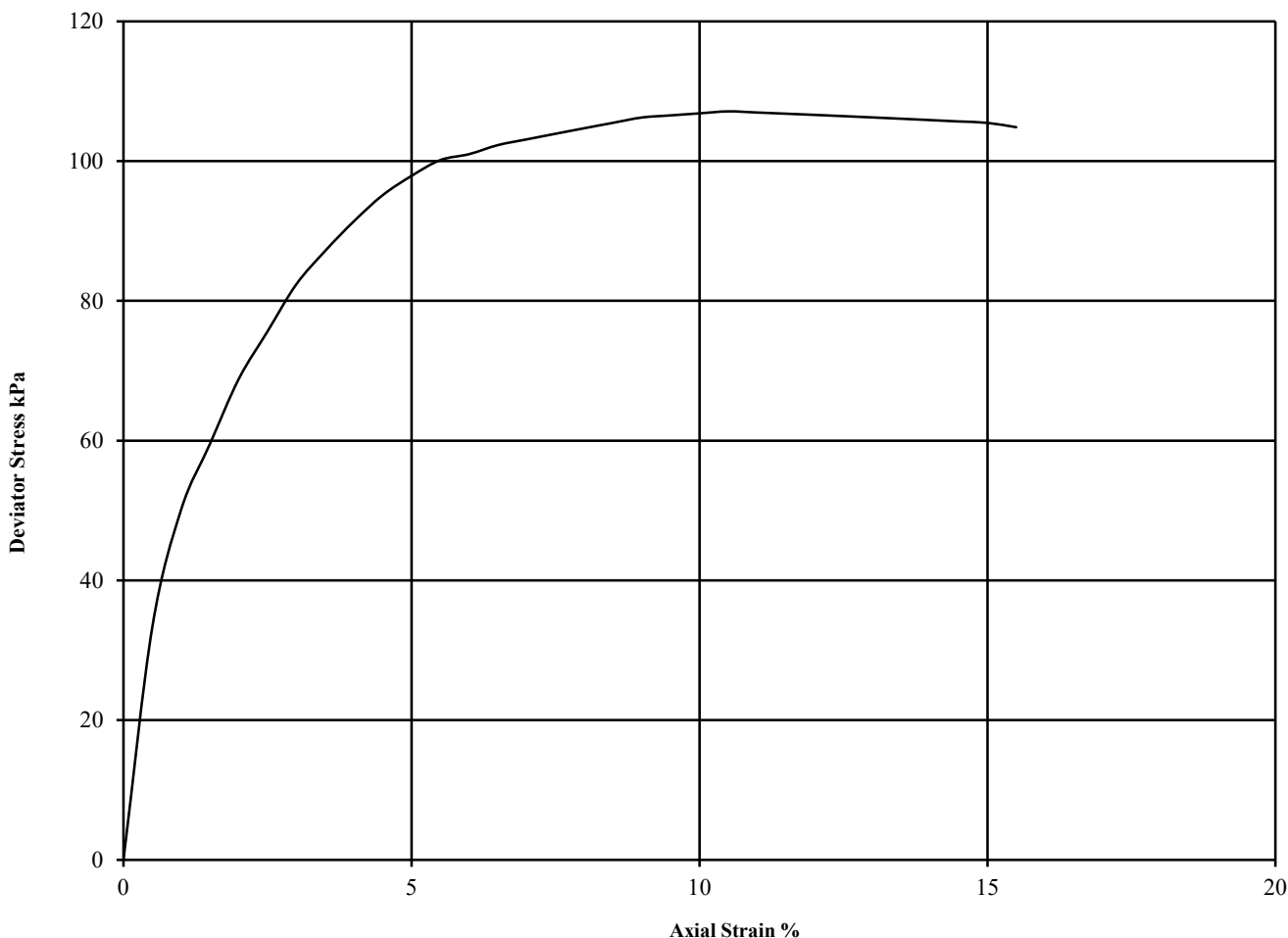
Hole Number: CP01

Top Depth (m): 9.00

Sample Number:

Base Depth (m): 9.45

Sample Type U



Diameter (mm):		102		Height (mm):		204		Test:	UU Single Stage		Remarks:
Specimen	Moisture Content (%)	Bulk Density (Mg/m3)	Dry Density (Mg/m3)	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		
				θ_3	$(\theta_1 - \theta_3)_f$	$\frac{1}{2}(\theta_1 - \theta_3)_f$					
1	25	1.98	1.59	180	107	54	10.5	Plastic			



Withington CDC

Contract No:

PSL23/7423

Client Ref:

GRO-23019

UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION

WITHOUT MEASUREMENT OF PORE PRESSURE

BS1377 : Part7 : 1990: Clause 8

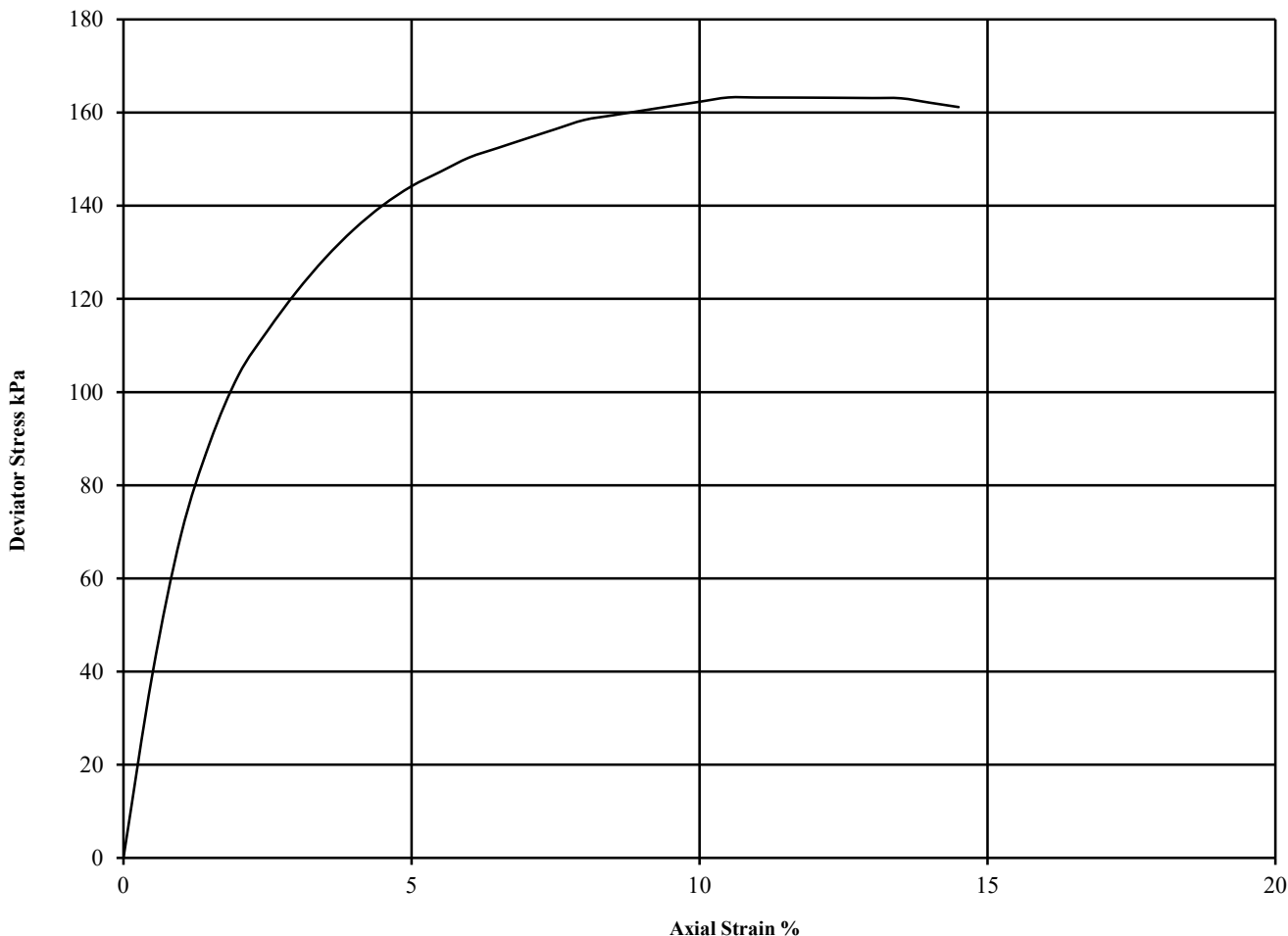
Hole Number: CP02

Top Depth (m): 7.50

Sample Number:

Base Depth (m): 7.95

Sample Type U



Diameter (mm):		102	Height (mm):		204	Test:	UU Single Stage		Remarks:
Specimen	Moisture Content (%)	Bulk Density (Mg/m3)	Dry Density (Mg/m3)	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
				θ_3	$(\theta_1 - \theta_3)_f$	$\frac{1}{2}(\theta_1 - \theta_3)_f$			
1	24	2.05	1.66	150	163	82	10.5	Plastic	



Withington CDC

Contract No:

PSL23/7423

Client Ref:

GRO-23019



APPENDIX 6 – Gas Monitoring Results

SITE NAME:		WITHINGTON CDC				ENGINEER:		Jack Perkins				
CLIENT:		CCS CONSULTING LTD				DATE:		25/07/2023				
JOB NO:		GRO-23019										
Pressure Trend:		Rising	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	7.9	7.3	10.5	11.0	0.0	0.0	0.0	0.0	0.0079	0.0000	1002	-	N	N/A	N/A	3.89
CP02	0.0	0.0	0.00	0.0	0.0	0.0	10.1	9.2	10.3	11.5	0.0	0.0	0.0	0.0	0.0101	0.0000	1002	-	N	N/A	N/A	4.10
Notes:																						

SITE NAME:		WITHINGTON CDC				ENGINEER:		Jack Perkins				
CLIENT:		CCS CONSULTING LTD				DATE:		07/08/2023				
JOB NO:		GRO-23019										
Pressure Trend:		Steady	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	4.2	3.1	15.0	16.6	0.0	0.0	0.0	0.0	0.0042	0.0000	1011	-	N	N/A	N/A	3.82
CP02	0.0	0.0	0.00	0.0	0.0	0.0	12.7	12.7	9.3	9.4	0.0	0.0	0.0	0.0	0.0127	0.0000	1010	-	N	N/A	N/A	4.02

Notes:

SITE NAME:		WITHINGTON CDC				ENGINEER:		Ethan Hitchcow				
CLIENT:		CCS CONSULTING LTD				DATE:		16/08/2023				
JOB NO:		GRO-23019										
Pressure Trend:		Rising	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		20.8	0.0	0.0	0.0	0.0	0.0					
Finish		20.8	0.0	0.0	0.0	0.0	0.0					

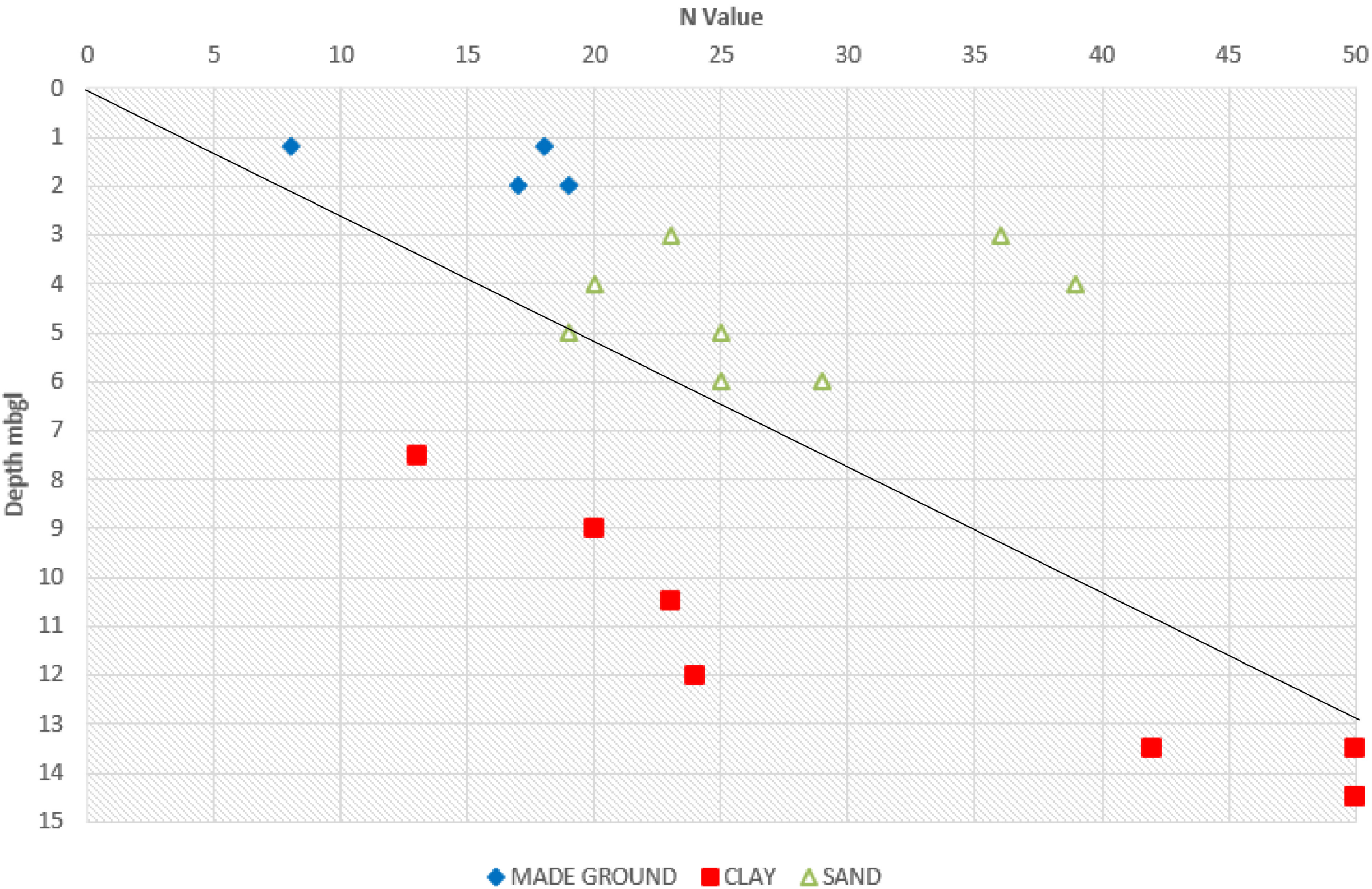
BH Ref.	Gas Flow Rate (l/hr)		Borehole Pressure (mb)	Methane (%v/v)			Carbon Dioxide (%v/v)		Oxygen (%v/v)		Hydrogen Sulphide (ppm)		Carbon Monoxide (ppm)		Q _{hg} CO ₂ (l/hr)	Q _{hg} CH ₄ (l/hr)	Atmos Press (mb)	PID (ppm)	Sheen (Y/N)	LNAPL (Y/N)	DNAPL (Y/N)	Depth to Water (m bgl)
	Peak	Steady		Peak	Steady	LEL	Peak	Steady	Peak	Steady	Peak	Steady	Peak	Steady								
CP01	0.0	0.0	0.00	0.0	0.0	0.0	2.8	2.3	17.5	17.9	0.0	0.0	0.0	0.0	0.0028	0.0000	1012	-	N	N/A	N/A	3.83
CP02	0.0	0.0	0.00	0.0	0.0	0.0	12.1	8.5	10.1	13.3	0.0	0.0	0.0	0.0	0.0121	0.0000	1013	-	N	N/A	N/A	4.04

SITE NAME:		WITHINGTON CDC				ENGINEER:		Ethan Hitchcow				
CLIENT:		CCS CONSULTING LTD				DATE:		30/08/2023				
JOB NO:		GRO-23019										
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		20.5	0.0	0.0	0.0	0.0	0.0					
Finish		20.5	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	12.8	11.9	9.0	9.7	0.0	0.0	0.0	0.0	0.0128	0.0000	1000	-	N	N/A	N/A	4.06
CP02	0.0	0.0	0.00	0.0	0.0	0.0	4.7	1.3	14.8	19.2	0.0	0.0	0.0	0.0	0.0047	0.0000	1000	-	N	N/A	N/A	3.85
Notes:																						

APPENDIX 7 – Generalised Ground Model

DEPTH vs SPT 'N' VALUE



GROUNDTECH
CONSULTING



CLIENT

CCS CONSULTING

PROJECT TITLE

WITHINGTON CDC

PLAN TITLE

GENERSIED GROUND MODEL

DATE

SEPTEMBER 2023

SCALE

NTS

PLAN NUMBER

GRO-23019-P05

Rev.

Details

Date

Status

Preliminary

Draft

Issued

For Comment

Approved

Notes





APPENDIX 8 – CBR Results



LABORATORY REPORT



Contract Number: PSL23/3352

Report Date: 10 May 2023

Client's Reference:

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

For the attention of: Esme Bridge

Contract Title: Nell Lane, Manchester, M20 2LR

Date Received: 9/5/2023

Date Commenced: 9/5/2023

Date Completed: 10/5/2023

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:

L Knight
(Assistant Laboratory Manager)

R Berriman
(Associate Director)

S Royle
(Laboratory Manager)

A Watkins
(Managing Director)


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Page 1 of

VERTICAL DEFORMATION TESTS.

BS 1377 : Part 9 : 1990.

Date of Test: 09-May-23

Test Ref: 1

Grid Ref:

Depth (m): G/L

Layer:

Comments:

Maximum Applied Pressure (kPa):

104.74

Maximum Deformation (mm):

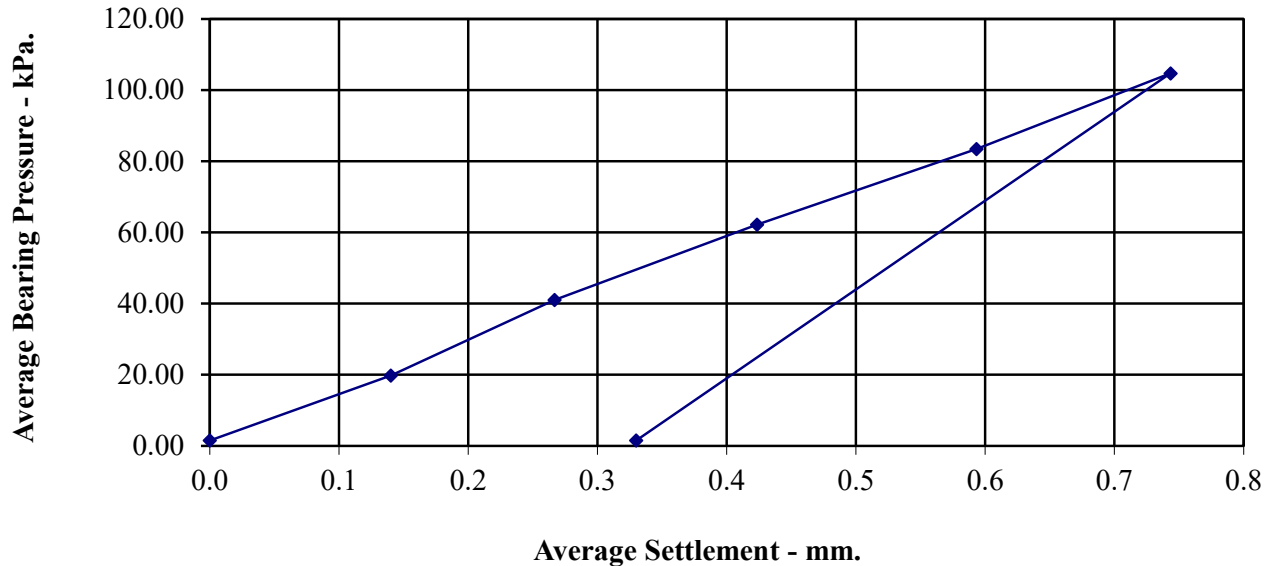
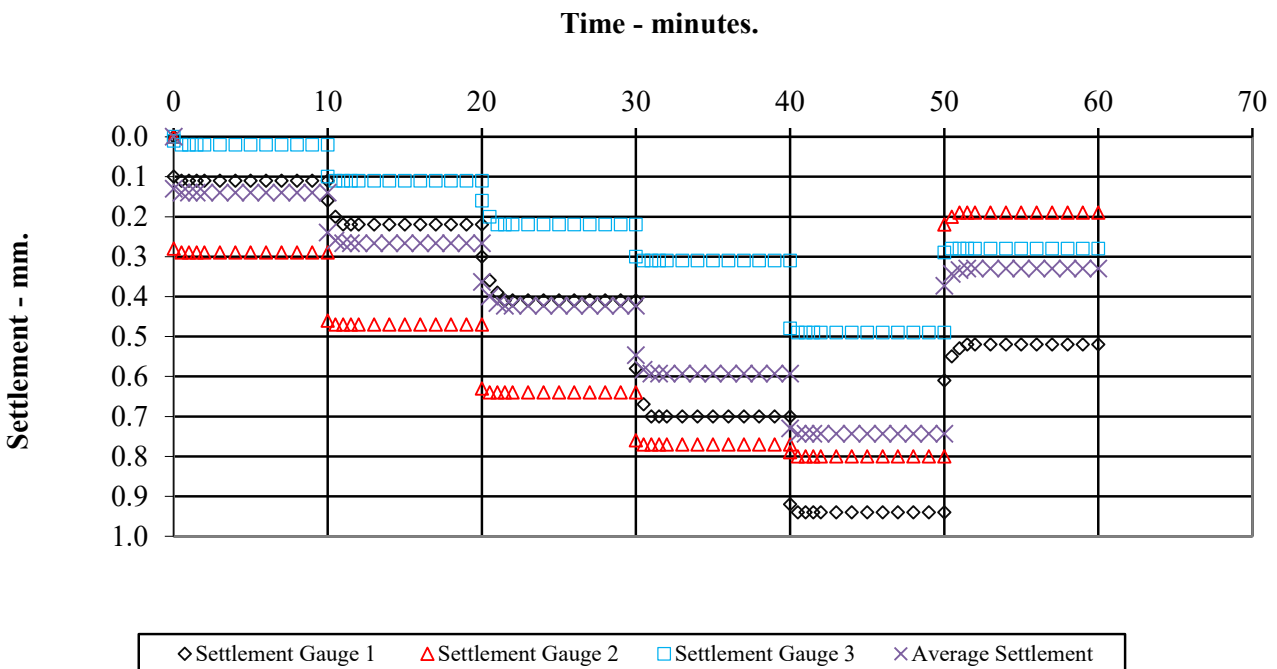
0.74

Plate Area (m²):

0.2922

Description:

MADE GROUND



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 9-May-23

Test Ref 1

Depth (m) G/L

Grid Ref

Layer

Comments

Description MADE GROUND

Maximum Deflection 0.74 mm

Deflection required for CBR value 1.25 mm

Load at 0.74mm 105 kN/m²

Plate diameter 610 mm

Conversion factor for plate diameter 0.816

K₇₆₂(modulus of subgrade reaction)
calculated using 1.25mm settlement > 68.4 kN/m²/mm

CBR Value > 14.6 %



Nell Lane, Manchester, M20 2LR

Contract No:

PSL23/3352

Client Ref:

VERTICAL DEFORMATION TESTS.

BS 1377 : Part 9 : 1990.

Date of Test: 09-May-23

Test Ref: 2

Grid Ref:

Depth (m): G/L

Layer:

Comments:

Maximum Applied Pressure (kPa):

104.74

Maximum Deformation (mm):

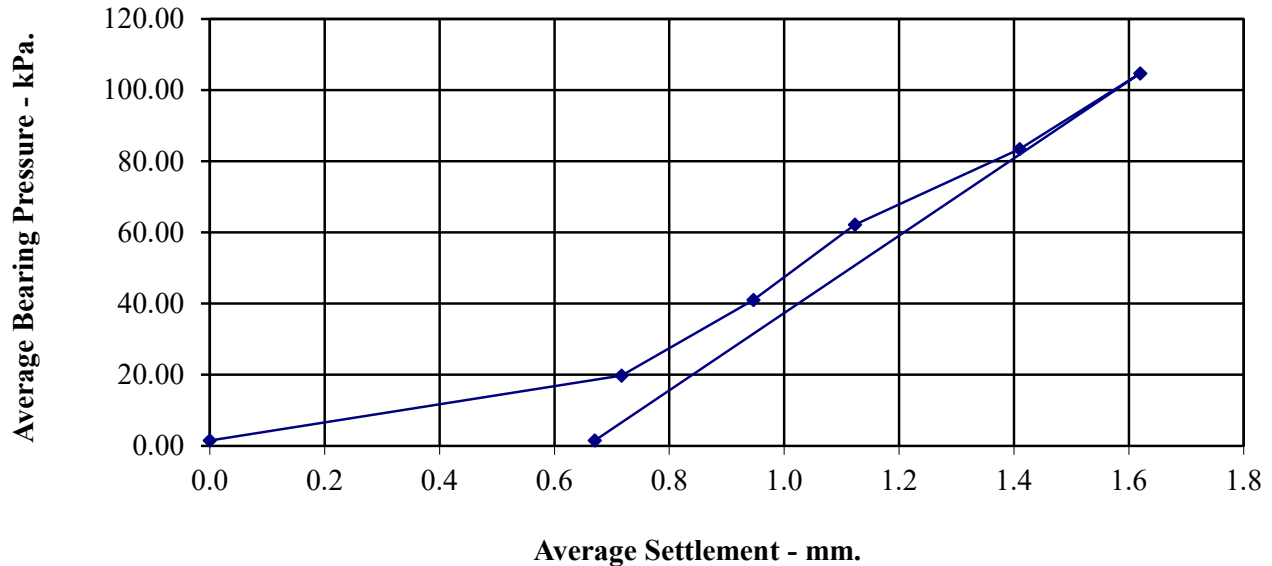
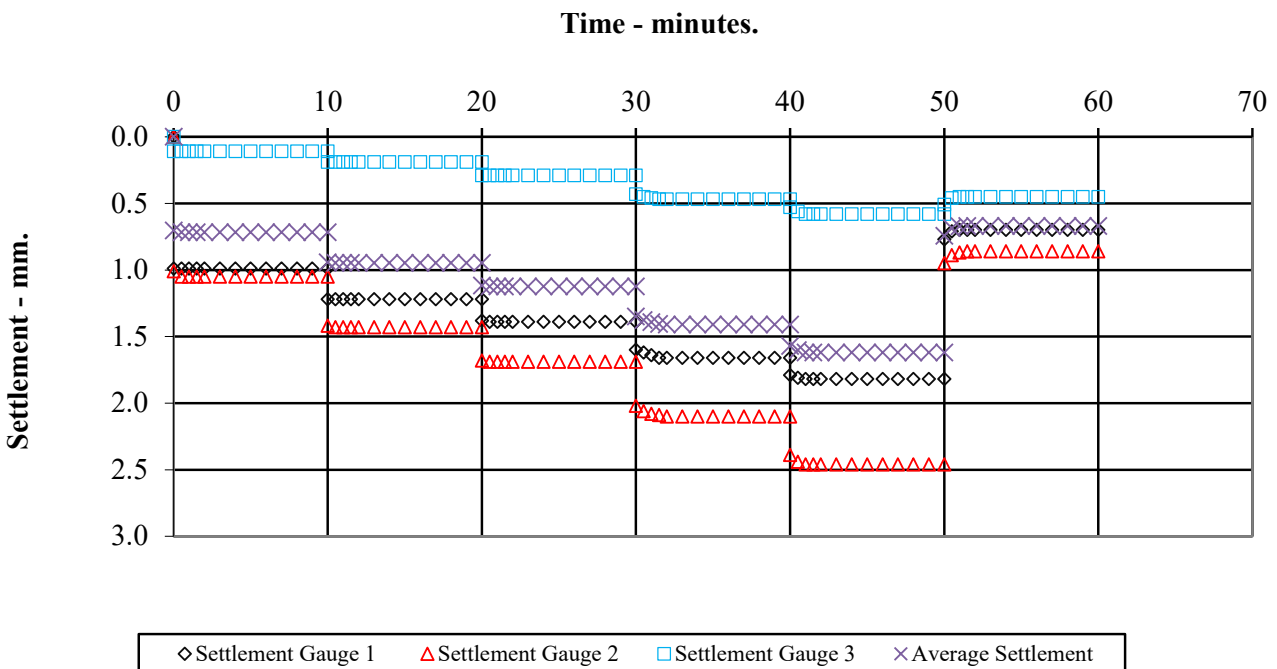
1.62

Plate Area (m²):

0.2922

Description:

MADE GROUND



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 9-May-23

Test Ref 2

Depth (m) G/L

Grid Ref

Layer

Comments

Description MADE GROUND

Maximum Deflection 1.62 mm

Deflection required for CBR value 1.25 mm

Load at 1.25mm 72 kN/m²

Plate diameter 610 mm

Conversion factor for plate diameter 0.816

K₇₆₂(modulus of subgrade reaction)
calculated using 1.25mm settlement 46.8 kN/m²/mm

CBR Value 7.6 %



Nell Lane, Manchester, M20 2LR

Contract No:

PSL23/3352

Client Ref:



APPENDIX 9 – Screening Values (Commercial)

				230					
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		
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) ^{sof}	5900 (558) ^{sof}	12000 (1150) ^{sof}	LQM S4ULs	
Aliphatic EC 6 - 8	mg/kg	100	230	530	7800 (144) ^{sof}	17000 (322) ^{sof}	40000 (736) ^{sof}	LQM S4ULs	
Aliphatic EC 8 - 10	mg/kg	27	65	150	2000 (78) ^{sof}	4800 (190) ^{sof}	11000 (451) ^{sof}	LQM S4ULs	
Aliphatic EC 10 - 12	mg/kg	130 (48) ^{sof}	330 (118) ^{sof}	760 (283) ^{sof}	9700 (48) ^{sof}	23000 (118) ^{sof}	47000 (283) ^{sof}	LQM S4ULs	
Aliphatic EC 12 - 16	mg/kg	1100 (24) ^{sof}	2400 (59) ^{sof}	4300 (142) ^{sof}	59000 (24) ^{sof}	82000 (59) ^{sof}	90000 (142) ^{sof}	LQM S4ULs	
Aliphatic EC 16 - 35	mg/kg	65000 (8.48) ^{f,sof}	92000 (21) ^{f,sof}	110000 ^f	1600000 ^f	1700000 ^f	1800000 ^f	LQM S4ULs	
Aliphatic EC 35 - 44	mg/kg	65000 (8.48) ^{f,sof}	92000 (21) ^{f,sof}	110000 ^f	1600000 ^f	1700000 ^f	1800000 ^f	LQM S4ULs	
Aromatic EC 5 - 7	mg/kg	70	140	300	26000 (1220) ^{sof}	46000 (2260) ^{sof}	86000 (4710) ^{sof}	LQM S4ULs	
Aromatic EC 7 - 8	mg/kg	130	290	660	56000 (869) ^{sof}	110000 (1920) ^{sof}	180000 (4360) ^{sof}	LQM S4ULs	
Aromatic EC 8 - 10	mg/kg	34	83	190	3500 (613) ^{sof}	8100 (1500) ^{sof}	17000 (3580) ^{sof}	LQM S4ULs	
Aromatic EC 10 - 12	mg/kg	74	180	380	16000 (364) ^{sof}	28000 (899) ^{sof}	34000 (2150) ^{sof}	LQM S4ULs	
Aromatic EC 12 - 16	mg/kg	140	330	660	36000 (169) ^{sof}	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) ^{sof}	97000 (141) ^{sof}	100000	LQM SAULs	
Acenaphthylene	mg/kg	170	420	920	83000 (86.1) ^{sof}	97000 (212) ^{sof}	100000	LQM S4ULs	
Anthracene	mg/kg	2400	5400	11000	520000	540000	540000	LQM S4ULs	
Benzo(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) ^{sof}	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) ^{sof}	460 ^f (183) ^{sof}	1100 ^f (432) ^{sof}	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) ^{vop}	3.3 (0.5) ^{vop}	4.9	110 (0.2) ^{vop}	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) ^{vop}	120 (98.1) ^{vop}	240 (235) ^{vop}	LQM S4ULs
1,2,3,4-Tetrachlorobenzene	mg/kg	15	36	78	1700 (122) ^{vop}	3080 (304) ^{vop}	4400 (728) ^{vop}	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) ^{vop}	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) ^{sol}	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) ^{vop}	7400 (0.007) ^{vop}	8400 (0.016) ^{vop}	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)
^{vop} 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_{inh,g} for localised affects
^g S4UL based on comparison of inhalation exposure with inhalation TDI for localised effects
^{dis} 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 10 - CIRIA 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.

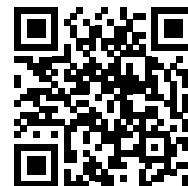


APPENDIX 11 – Waste Classification Report

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)



14SI4-XY70-DYNN8

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

Job name

EMT-23-11645-Batch-1-202308091610

Description/Comments

Project

GRO-23019

Site

Withington CDC

Classified by

Name: **Richard Wyatt**
Date: **07 Sep 2023 08:42 GMT**
Telephone: **07742660133**
Company: **Groundtech Consulting Limited**
First Floor, Lloyd House
Orford Court, Greenfold Way
Leigh
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	Date
Hazardous Waste Classification	50% complete

Purpose of classification

4 - Classification of Waste Products

Address of the waste

Post Code

SIC for the process giving rise to the waste

Description of industry/producer giving rise to the waste

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

Description of the waste

Job summary

#	Sample name	Depth [m]	Classification Result	Hazard properties	Page
1	CP01-12/07/2023-0.50m		Non Hazardous		3
2	CP01-12/07/2023-1.00m		Non Hazardous		5
3	CP01-12/07/2023-3.00m		Non Hazardous		7
4	CP02-13/07/2023-0.50m		Non Hazardous		8
5	CP02-13/07/2023-2.00m		Non Hazardous		10
6	TP05-14/07/2023-0.40m		Non Hazardous		12
7	TP03-14/07/2023-0.40m		Non Hazardous		14
8	TP01-14/07/2023-1.20m		Non Hazardous		16
9	TP04-13/07/2023-1.50m		Non Hazardous		18
10	HP05-14/07/2023-0.40m		Non Hazardous		20

Related documents

#	Name	Description
1	EMT-23-11645-Batch-1-202308091610.HWOL	Element .hwol file used to populate the Job
2	Example waste stream template for contaminated soils	waste stream template used to create this Job

Report

Created by: Richard Wyatt

Created date: 07 Sep 2023 08:42 GMT

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Appendix A: Classifier defined and non GB MCL determinands	22
Appendix B: Rationale for selection of metal species	23
Appendix C: Version	24

Classification of sample: CP01-12/07/2023-0.50m

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

Sample details

Sample name:	LoW Code:
CP01-12/07/2023-0.50m	Chapter:
Moisture content:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
13.7%	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
(dry weight correction)	Entry:

Hazard properties

None identified

Determinands

Moisture content: 13.7% 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	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
	603-181-00-X	216-653-1	1634-04-4							
2	benzene				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
	601-020-00-8	200-753-7	71-43-2							
3	toluene				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
	601-021-00-3	203-625-9	108-88-3							
4	ethylbenzene				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
	601-023-00-4	202-849-4	100-41-4							
5	xylene				<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]							
6	pH				9.32 pH		9.32 pH	9.32 pH		
			PH							
7	naphthalene				<0.4 mg/kg		<0.4 mg/kg	<0.00004 %		<LOD
	601-052-00-2	202-049-5	91-20-3							
8	acenaphthylene				<0.3 mg/kg		<0.3 mg/kg	<0.00003 %		<LOD
		205-917-1	208-96-8							
9	acenaphthene				0.88 mg/kg		0.774 mg/kg	0.0000774 %	✓	
		201-469-6	83-32-9							
10	fluorene				0.66 mg/kg		0.58 mg/kg	0.000058 %	✓	
		201-695-5	86-73-7							
11	phenanthrene				8.41 mg/kg		7.397 mg/kg	0.00074 %	✓	
		201-581-5	85-01-8							
12	anthracene				3.73 mg/kg		3.281 mg/kg	0.000328 %	✓	
		204-371-1	120-12-7							
13	fluoranthene				17.12 mg/kg		15.057 mg/kg	0.00151 %	✓	
		205-912-4	206-44-0							
14	pyrene				14.54 mg/kg		12.788 mg/kg	0.00128 %	✓	
		204-927-3	129-00-0							
15	benzo[a]anthracene				6.87 mg/kg		6.042 mg/kg	0.000604 %	✓	
	601-033-00-9	200-280-6	56-55-3							
16	chrysene				7.13 mg/kg		6.271 mg/kg	0.000627 %	✓	
	601-048-00-0	205-923-4	218-01-9							

#	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							
17	benzo[b]fluoranthene 601-034-00-4	205-911-9	205-99-2		8.24 mg/kg		7.247 mg/kg	0.000725 %	✓	
18	benzo[k]fluoranthene 601-036-00-5	205-916-6	207-08-9		3.2 mg/kg		2.814 mg/kg	0.000281 %	✓	
19	benzo[a]pyrene; benzo[def]chrysene 601-032-00-3	200-028-5	50-32-8		7.03 mg/kg		6.183 mg/kg	0.000618 %	✓	
20	indeno[123-cd]pyrene 205-893-2	193-39-5			4.81 mg/kg		4.23 mg/kg	0.000423 %	✓	
21	dibenz[a,h]anthracene 601-041-00-2	200-181-8	53-70-3		0.98 mg/kg		0.862 mg/kg	0.0000862 %	✓	
22	benzo[ghi]perylene 205-883-8	191-24-2			4.41 mg/kg		3.879 mg/kg	0.000388 %	✓	
23	polychlorobiphenyls; PCB 602-039-00-4	215-648-1	1336-36-3		<0.035 mg/kg		<0.035 mg/kg	<0.0000035 %		<LOD
24	coronene 205-881-7	191-07-1			0.66 mg/kg		0.58 mg/kg	0.000058 %	✓	
Total:								0.00788 %		

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)
<LOD	Below limit of detection

Classification of sample: CP01-12/07/2023-1.00m

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

Sample details

Sample name:	LoW Code:
CP01-12/07/2023-1.00m	Chapter:
Moisture content:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
13.7%	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
(dry weight correction)	Entry:

Hazard properties

None identified

Determinands

Moisture content: 13.7% 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 trioxide }				8.1	mg/kg	1.32	9.406	mg/kg	0.000941 %	✓	
	033-003-00-0	215-481-4	1327-53-3									
2	cadmium { cadmium oxide }				0.6	mg/kg	1.142	0.603	mg/kg	0.0000603 %	✓	
	048-002-00-0	215-146-2	1306-19-0									
3	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }				31.6	mg/kg	1.462	40.62	mg/kg	0.00406 %	✓	
		215-160-9	1308-38-9									
4	chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }				<0.3	mg/kg	2.27	<0.681	mg/kg	<0.0000681 %		<LOD
	024-017-00-8											
5	copper { dicopper oxide; copper (I) oxide }				26	mg/kg	1.126	25.746	mg/kg	0.00257 %	✓	
	029-002-00-X	215-270-7	1317-39-1									
6	lead { lead chromate }			1	75	mg/kg	1.56	102.89	mg/kg	0.0066 %	✓	
	082-004-00-2	231-846-0	7758-97-6									
7	mercury { mercury dichloride }				1.5	mg/kg	1.353	1.786	mg/kg	0.000179 %	✓	
	080-010-00-X	231-299-8	7487-94-7									
8	nickel { nickel chromate }				12.8	mg/kg	2.976	33.506	mg/kg	0.00335 %	✓	
	028-035-00-7	238-766-5	14721-18-7									
9	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									
10	zinc { zinc chromate }				110	mg/kg	2.774	268.387	mg/kg	0.0268 %	✓	
	024-007-00-3	236-878-9	13530-65-9									
11	pH				9.72	pH		9.72	pH	9.72 pH		
12	naphthalene				<0.2	mg/kg		<0.2	mg/kg	<0.00002 %		<LOD
	601-052-00-2	202-049-5	91-20-3									
13	acenaphthylene				0.19	mg/kg		0.167	mg/kg	0.0000167 %	✓	
		205-917-1	208-96-8									
14	acenaphthene				0.45	mg/kg		0.396	mg/kg	0.0000396 %	✓	
		201-469-6	83-32-9									
15	fluorene				0.32	mg/kg		0.281	mg/kg	0.0000281 %	✓	
		201-695-5	86-73-7									
16	phenanthrene				3.54	mg/kg		3.113	mg/kg	0.000311 %	✓	
		201-581-5	85-01-8									

#	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							
17	anthracene	204-371-1	120-12-7		1.42 mg/kg		1.249 mg/kg	0.000125 %	✓	
18	fluoranthene	205-912-4	206-44-0		13.87 mg/kg		12.199 mg/kg	0.00122 %	✓	
19	pyrene	204-927-3	129-00-0		13.46 mg/kg		11.838 mg/kg	0.00118 %	✓	
20	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3	6.73 mg/kg		5.919 mg/kg	0.000592 %	✓	
21	chrysene	601-048-00-0	205-923-4	218-01-9	6.87 mg/kg		6.042 mg/kg	0.000604 %	✓	
22	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2	8.84 mg/kg		7.775 mg/kg	0.000777 %	✓	
23	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9	3.44 mg/kg		3.026 mg/kg	0.000303 %	✓	
24	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8	7.99 mg/kg		7.027 mg/kg	0.000703 %	✓	
25	indeno[123-cd]pyrene	205-893-2	193-39-5		5.58 mg/kg		4.908 mg/kg	0.000491 %	✓	
26	dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3	0.8 mg/kg		0.704 mg/kg	0.0000704 %	✓	
27	benzo[ghi]perylene	205-883-8	191-24-2		4.89 mg/kg		4.301 mg/kg	0.00043 %	✓	
28	polychlorobiphenyls; PCB	602-039-00-4	215-648-1	1336-36-3	<0.035 mg/kg		<0.035 mg/kg	<0.0000035 %		<LOD
Total:								0.0518 %		

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
<LOD	Below limit of detection
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: CP01-12/07/2023-3.00m

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

Sample details

Sample name:	LoW Code:	
CP01-12/07/2023-3.00m	Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
	Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 0% 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	● pH				8.04 pH		8.04 pH	8.04 pH		
Total:								0%		

Key

- User supplied data
- Determinand defined or amended by HazWasteOnline (see Appendix A)

Classification of sample: CP02-13/07/2023-0.50m

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

Sample details

Sample name:	LoW Code:
CP02-13/07/2023-0.50m	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)
10.1% (dry weight correction)	

Hazard properties

None identified

Determinands

Moisture content: 10.1% 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 trioxide }				7 mg/kg	1.32	8.394 mg/kg	0.000839 %		✓	
	033-003-00-0	215-481-4	1327-53-3								
2	cadmium { cadmium oxide }				0.3 mg/kg	1.142	0.311 mg/kg	0.0000311 %		✓	
	048-002-00-0	215-146-2	1306-19-0								
3	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }				30.8 mg/kg	1.462	40.886 mg/kg	0.00409 %		✓	
		215-160-9	1308-38-9								
4	chromium in chromium(VI) compounds { chromium(VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }				<0.3 mg/kg	2.27	<0.681 mg/kg	<0.0000681 %			<LOD
	024-017-00-8										
5	copper { dicopper oxide; copper (I) oxide }				13 mg/kg	1.126	13.294 mg/kg	0.00133 %		✓	
	029-002-00-X	215-270-7	1317-39-1								
6	lead { lead chromate }			1	33 mg/kg	1.56	46.752 mg/kg	0.003 %		✓	
	082-004-00-2	231-846-0	7758-97-6								
7	mercury { mercury dichloride }				<0.1 mg/kg	1.353	<0.135 mg/kg	<0.0000135 %			<LOD
	080-010-00-X	231-299-8	7487-94-7								
8	nickel { nickel chromate }				9.5 mg/kg	2.976	25.681 mg/kg	0.00257 %		✓	
	028-035-00-7	238-766-5	14721-18-7								
9	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								
10	zinc { zinc chromate }				54 mg/kg	2.774	136.062 mg/kg	0.0136 %		✓	
	024-007-00-3	236-878-9	13530-65-9								
11	pH				8.89 pH		8.89 pH	8.89 pH			
			PH								
12	naphthalene				0.07 mg/kg		0.0636 mg/kg	0.00000636 %		✓	
	601-052-00-2	202-049-5	91-20-3								
13	acenaphthylene				0.04 mg/kg		0.0363 mg/kg	0.00000363 %		✓	
		205-917-1	208-96-8								
14	acenaphthene				0.08 mg/kg		0.0727 mg/kg	0.00000727 %		✓	
		201-469-6	83-32-9								
15	fluorene				0.04 mg/kg		0.0363 mg/kg	0.00000363 %		✓	
		201-695-5	86-73-7								
16	phenanthrene				0.68 mg/kg		0.618 mg/kg	0.0000618 %		✓	
		201-581-5	85-01-8								

#	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							
17	anthracene	204-371-1	120-12-7		0.28 mg/kg		0.254 mg/kg	0.0000254 %	✓	
18	fluoranthene	205-912-4	206-44-0		3.05 mg/kg		2.77 mg/kg	0.000277 %	✓	
19	pyrene	204-927-3	129-00-0		2.94 mg/kg		2.67 mg/kg	0.000267 %	✓	
20	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3	1.57 mg/kg		1.426 mg/kg	0.000143 %	✓	
21	chrysene	601-048-00-0	205-923-4	218-01-9	1.75 mg/kg		1.589 mg/kg	0.000159 %	✓	
22	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2	2.41 mg/kg		2.189 mg/kg	0.000219 %	✓	
23	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9	0.94 mg/kg		0.854 mg/kg	0.0000854 %	✓	
24	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8	2.2 mg/kg		1.998 mg/kg	0.0002 %	✓	
25	indeno[123-cd]pyrene	205-893-2	193-39-5		1.51 mg/kg		1.371 mg/kg	0.000137 %	✓	
26	dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3	0.3 mg/kg		0.272 mg/kg	0.0000272 %	✓	
27	benzo[ghi]perylene	205-883-8	191-24-2		1.45 mg/kg		1.317 mg/kg	0.000132 %	✓	
Total:								0.0276 %		

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
<LOD	Below limit of detection
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: CP02-13/07/2023-2.00m

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

Sample details

Sample name:	LoW Code:
CP02-13/07/2023-2.00m	Chapter:
Moisture content:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
13.1% (dry weight correction)	Entry:
	17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 13.1% 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	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.005 mg/kg		<0.005 mg/kg		<0.0000005 %		<LOD
	603-181-00-X	216-653-1	1634-04-4								
2	benzene				<0.005 mg/kg		<0.005 mg/kg		<0.0000005 %		<LOD
	601-020-00-8	200-753-7	71-43-2								
3	toluene				<0.005 mg/kg		<0.005 mg/kg		<0.0000005 %		<LOD
	601-021-00-3	203-625-9	108-88-3								
4	ethylbenzene				<0.005 mg/kg		<0.005 mg/kg		<0.0000005 %		<LOD
	601-023-00-4	202-849-4	100-41-4								
5	xylene				<0.01 mg/kg		<0.01 mg/kg		<0.000001 %		<LOD
	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]								
6	pH				8.48 pH		8.48 pH		8.48 pH		
			PH								
7	naphthalene				0.2 mg/kg		0.177 mg/kg		0.0000177 %	✓	
	601-052-00-2	202-049-5	91-20-3								
8	acenaphthylene				0.07 mg/kg		0.0619 mg/kg		0.00000619 %	✓	
		205-917-1	208-96-8								
9	acenaphthene				0.76 mg/kg		0.672 mg/kg		0.0000672 %	✓	
		201-469-6	83-32-9								
10	fluorene				0.64 mg/kg		0.566 mg/kg		0.0000566 %	✓	
		201-695-5	86-73-7								
11	phenanthrene				5.78 mg/kg		5.111 mg/kg		0.000511 %	✓	
		201-581-5	85-01-8								
12	anthracene				1.88 mg/kg		1.662 mg/kg		0.000166 %	✓	
		204-371-1	120-12-7								
13	fluoranthene				9.44 mg/kg		8.347 mg/kg		0.000835 %	✓	
		205-912-4	206-44-0								
14	pyrene				7.86 mg/kg		6.95 mg/kg		0.000695 %	✓	
		204-927-3	129-00-0								
15	benzo[a]anthracene				3.64 mg/kg		3.218 mg/kg		0.000322 %	✓	
	601-033-00-9	200-280-6	56-55-3								
16	chrysene				3.7 mg/kg		3.271 mg/kg		0.000327 %	✓	
	601-048-00-0	205-923-4	218-01-9								

#	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							
17	benzo[b]fluoranthene				4.56 mg/kg		4.032 mg/kg	0.000403 %	✓	
	601-034-00-4	205-911-9	205-99-2							
18	benzo[k]fluoranthene				1.78 mg/kg		1.574 mg/kg	0.000157 %	✓	
	601-036-00-5	205-916-6	207-08-9							
19	benzo[a]pyrene; benzo[def]chrysene				4.24 mg/kg		3.749 mg/kg	0.000375 %	✓	
	601-032-00-3	200-028-5	50-32-8							
20	indeno[123-cd]pyrene				2.8 mg/kg		2.476 mg/kg	0.000248 %	✓	
		205-893-2	193-39-5							
21	dibenz[a,h]anthracene				0.34 mg/kg		0.301 mg/kg	0.0000301 %	✓	
	601-041-00-2	200-181-8	53-70-3							
22	benzo[ghi]perylene				2.58 mg/kg		2.281 mg/kg	0.000228 %	✓	
		205-883-8	191-24-2							
23	polychlorobiphenyls; PCB				<0.035 mg/kg		<0.035 mg/kg	<0.0000035 %		<LOD
	602-039-00-4	215-648-1	1336-36-3							
24	coronene				0.28 mg/kg		0.248 mg/kg	0.0000248 %	✓	
		205-881-7	191-07-1							
Total:								0.00448 %		

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)
<LOD	Below limit of detection

Classification of sample: TP05-14/07/2023-0.40m

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

Sample details

Sample name:	LoW Code:
TP05-14/07/2023-0.40m	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)
13.1% (dry weight correction)	

Hazard properties

None identified

Determinands

Moisture content: 13.1% 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 trioxide }				8.6 mg/kg	1.32	10.04 mg/kg	0.001 %		✓	
	033-003-00-0	215-481-4	1327-53-3								
2	cadmium { cadmium oxide }				0.4 mg/kg	1.142	0.404 mg/kg	0.0000404 %		✓	
	048-002-00-0	215-146-2	1306-19-0								
3	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }				44.6 mg/kg	1.462	57.635 mg/kg	0.00576 %		✓	
		215-160-9	1308-38-9								
4	chromium in chromium(VI) compounds { chromium(VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }				<0.3 mg/kg	2.27	<0.681 mg/kg	<0.0000681 %			<LOD
	024-017-00-8										
5	copper { dicopper oxide; copper (I) oxide }				26 mg/kg	1.126	25.882 mg/kg	0.00259 %		✓	
	029-002-00-X	215-270-7	1317-39-1								
6	lead { lead chromate }			1	101 mg/kg	1.56	139.294 mg/kg	0.00893 %		✓	
	082-004-00-2	231-846-0	7758-97-6								
7	mercury { mercury dichloride }				<0.1 mg/kg	1.353	<0.135 mg/kg	<0.0000135 %			<LOD
	080-010-00-X	231-299-8	7487-94-7								
8	nickel { nickel chromate }				14.6 mg/kg	2.976	38.42 mg/kg	0.00384 %		✓	
	028-035-00-7	238-766-5	14721-18-7								
9	selenium { nickel selenate }				1 mg/kg	2.554	2.258 mg/kg	0.000226 %		✓	
	028-031-00-5	239-125-2	15060-62-5								
10	zinc { zinc chromate }				102 mg/kg	2.774	250.188 mg/kg	0.025 %		✓	
	024-007-00-3	236-878-9	13530-65-9								
11	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %			<LOD
	603-181-00-X	216-653-1	1634-04-4								
12	benzene				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %			<LOD
	601-020-00-8	200-753-7	71-43-2								
13	toluene				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %			<LOD
	601-021-00-3	203-625-9	108-88-3								
14	ethylbenzene				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %			<LOD
	601-023-00-4	202-849-4	100-41-4								
15	xylene				<0.01 mg/kg		<0.01 mg/kg	<0.000001 %			<LOD
	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]								

#	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							
16	pH				8.39 pH		8.39 pH	8.39 pH		
17	naphthalene				<0.4 mg/kg		<0.4 mg/kg	<0.00004 %		<LOD
	601-052-00-2	202-049-5	91-20-3							
18	acenaphthylene				<0.3 mg/kg		<0.3 mg/kg	<0.00003 %		<LOD
		205-917-1	208-96-8							
19	acenaphthene				<0.5 mg/kg		<0.5 mg/kg	<0.00005 %		<LOD
		201-469-6	83-32-9							
20	fluorene				<0.4 mg/kg		<0.4 mg/kg	<0.00004 %		<LOD
		201-695-5	86-73-7							
21	phenanthrene				4.22 mg/kg		3.731 mg/kg	0.000373 %	✓	
		201-581-5	85-01-8							
22	anthracene				1.55 mg/kg		1.37 mg/kg	0.000137 %	✓	
		204-371-1	120-12-7							
23	fluoranthene				10.15 mg/kg		8.974 mg/kg	0.000897 %	✓	
		205-912-4	206-44-0							
24	pyrene				8.66 mg/kg		7.657 mg/kg	0.000766 %	✓	
		204-927-3	129-00-0							
25	benzo[a]anthracene				4.3 mg/kg		3.802 mg/kg	0.00038 %	✓	
	601-033-00-9	200-280-6	56-55-3							
26	chrysene				4.21 mg/kg		3.722 mg/kg	0.000372 %	✓	
	601-048-00-0	205-923-4	218-01-9							
27	benzo[b]fluoranthene				5.23 mg/kg		4.624 mg/kg	0.000462 %	✓	
	601-034-00-4	205-911-9	205-99-2							
28	benzo[k]fluoranthene				2.04 mg/kg		1.804 mg/kg	0.00018 %	✓	
	601-036-00-5	205-916-6	207-08-9							
29	benzo[a]pyrene; benzo[def]chrysene				4.57 mg/kg		4.041 mg/kg	0.000404 %	✓	
	601-032-00-3	200-028-5	50-32-8							
30	indeno[123-cd]pyrene				2.86 mg/kg		2.529 mg/kg	0.000253 %	✓	
		205-893-2	193-39-5							
31	dibenz[a,h]anthracene				0.52 mg/kg		0.46 mg/kg	0.000046 %	✓	
	601-041-00-2	200-181-8	53-70-3							
32	benzo[ghi]perylene				2.99 mg/kg		2.644 mg/kg	0.000264 %	✓	
		205-883-8	191-24-2							
33	polychlorobiphenyls; PCB				<0.035 mg/kg		<0.035 mg/kg	<0.0000035 %		<LOD
	602-039-00-4	215-648-1	1336-36-3							
Total:								0.0522 %		

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
<LOD	Below limit of detection
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: TP03-14/07/2023-0.40m

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

Sample details

Sample name:	LoW Code:
TP03-14/07/2023-0.40m	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)
13.4% (dry weight correction)	

Hazard properties

None identified

Determinands

Moisture content: 13.4% 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 trioxide }				8.6 mg/kg	1.32	10.013 mg/kg	0.001 %	✓		
		033-003-00-0	215-481-4	1327-53-3								
2		cadmium { cadmium oxide }				0.2 mg/kg	1.142	0.201 mg/kg	0.0000201 %	✓		
		048-002-00-0	215-146-2	1306-19-0								
3		chromium in chromium(III) compounds { chromium(III) oxide (worst case) }				43.2 mg/kg	1.462	55.678 mg/kg	0.00557 %	✓		
			215-160-9	1308-38-9								
4		chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }				<0.3 mg/kg	2.27	<0.681 mg/kg	<0.0000681 %		<LOD	
		024-017-00-8										
5		copper { dicopper oxide; copper (I) oxide }				20 mg/kg	1.126	19.857 mg/kg	0.00199 %	✓		
		029-002-00-X	215-270-7	1317-39-1								
6		lead { lead chromate }			1	55 mg/kg	1.56	75.652 mg/kg	0.00485 %	✓		
		082-004-00-2	231-846-0	7758-97-6								
7		mercury { mercury dichloride }				0.2 mg/kg	1.353	0.239 mg/kg	0.0000239 %	✓		
		080-010-00-X	231-299-8	7487-94-7								
8		nickel { nickel chromate }				13.3 mg/kg	2.976	34.907 mg/kg	0.00349 %	✓		
		028-035-00-7	238-766-5	14721-18-7								
9		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								
10		zinc { zinc chromate }				78 mg/kg	2.774	190.814 mg/kg	0.0191 %	✓		
		024-007-00-3	236-878-9	13530-65-9								
11		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD	
		603-181-00-X	216-653-1	1634-04-4								
12		benzene				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD	
		601-020-00-8	200-753-7	71-43-2								
13		toluene				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD	
		601-021-00-3	203-625-9	108-88-3								
14		ethylbenzene				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD	
		601-023-00-4	202-849-4	100-41-4								
15		xylene				<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD	
		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]								

#	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							
16	pH				8.34 pH		8.34 pH	8.34 pH		
17	naphthalene				0.09 mg/kg		0.0794 mg/kg	0.00000794 %	✓	
	601-052-00-2	202-049-5	91-20-3							
18	acenaphthylene				0.07 mg/kg		0.0617 mg/kg	0.00000617 %	✓	
		205-917-1	208-96-8							
19	acenaphthene				0.16 mg/kg		0.141 mg/kg	0.0000141 %	✓	
		201-469-6	83-32-9							
20	fluorene				0.11 mg/kg		0.097 mg/kg	0.0000097 %	✓	
		201-695-5	86-73-7							
21	phenanthrene				1.45 mg/kg		1.279 mg/kg	0.000128 %	✓	
		201-581-5	85-01-8							
22	anthracene				0.48 mg/kg		0.423 mg/kg	0.0000423 %	✓	
		204-371-1	120-12-7							
23	fluoranthene				3.55 mg/kg		3.131 mg/kg	0.000313 %	✓	
		205-912-4	206-44-0							
24	pyrene				3.3 mg/kg		2.91 mg/kg	0.000291 %	✓	
		204-927-3	129-00-0							
25	benzo[a]anthracene				1.74 mg/kg		1.534 mg/kg	0.000153 %	✓	
	601-033-00-9	200-280-6	56-55-3							
26	chrysene				1.93 mg/kg		1.702 mg/kg	0.00017 %	✓	
	601-048-00-0	205-923-4	218-01-9							
27	benzo[b]fluoranthene				2.67 mg/kg		2.354 mg/kg	0.000235 %	✓	
	601-034-00-4	205-911-9	205-99-2							
28	benzo[k]fluoranthene				1.04 mg/kg		0.917 mg/kg	0.0000917 %	✓	
	601-036-00-5	205-916-6	207-08-9							
29	benzo[a]pyrene; benzo[def]chrysene				2.37 mg/kg		2.09 mg/kg	0.000209 %	✓	
	601-032-00-3	200-028-5	50-32-8							
30	indeno[123-cd]pyrene				1.71 mg/kg		1.508 mg/kg	0.000151 %	✓	
		205-893-2	193-39-5							
31	dibenz[a,h]anthracene				0.23 mg/kg		0.203 mg/kg	0.0000203 %	✓	
	601-041-00-2	200-181-8	53-70-3							
32	benzo[ghi]perylene				1.5 mg/kg		1.323 mg/kg	0.000132 %	✓	
		205-883-8	191-24-2							
33	polychlorobiphenyls; PCB				<0.035 mg/kg		<0.035 mg/kg	<0.0000035 %		<LOD
	602-039-00-4	215-648-1	1336-36-3							
34	coronene				0.25 mg/kg		0.22 mg/kg	0.000022 %	✓	
		205-881-7	191-07-1							
Total:								0.0383 %		

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
<LOD	Below limit of detection
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: TP01-14/07/2023-1.20m

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

Sample details

Sample name:	LoW Code:
TP01-14/07/2023-1.20m	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)
13.3% (dry weight correction)	

Hazard properties

None identified

Determinands

Moisture content: 13.3% 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 trioxide }				8.5	mg/kg	1.32	9.905	mg/kg	0.000991 %	✓	
		033-003-00-0	215-481-4	1327-53-3									
2		cadmium { cadmium oxide }				0.2	mg/kg	1.142	0.202	mg/kg	0.0000202 %	✓	
		048-002-00-0	215-146-2	1306-19-0									
3		chromium in chromium(III) compounds { chromium(III) oxide (worst case) }				37.2	mg/kg	1.462	47.988	mg/kg	0.0048 %	✓	
			215-160-9	1308-38-9									
4		chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }				<0.3	mg/kg	2.27	<0.681	mg/kg	<0.0000681 %		<LOD
		024-017-00-8											
5		copper { dicopper oxide; copper (I) oxide }				20	mg/kg	1.126	19.874	mg/kg	0.00199 %	✓	
		029-002-00-X	215-270-7	1317-39-1									
6		lead { lead chromate }			1	65	mg/kg	1.56	89.486	mg/kg	0.00574 %	✓	
		082-004-00-2	231-846-0	7758-97-6									
7		mercury { mercury dichloride }				0.2	mg/kg	1.353	0.239	mg/kg	0.0000239 %	✓	
		080-010-00-X	231-299-8	7487-94-7									
8		nickel { nickel chromate }				13.3	mg/kg	2.976	34.938	mg/kg	0.00349 %	✓	
		028-035-00-7	238-766-5	14721-18-7									
9		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									
10		zinc { zinc chromate }				84	mg/kg	2.774	205.674	mg/kg	0.0206 %	✓	
		024-007-00-3	236-878-9	13530-65-9									
11		pH				8.5	pH		8.5	pH	8.5 pH		
				PH									
12		naphthalene				0.1	mg/kg		0.0883	mg/kg	0.00000883 %	✓	
		601-052-00-2	202-049-5	91-20-3									
13		acenaphthylene				0.07	mg/kg		0.0618	mg/kg	0.00000618 %	✓	
			205-917-1	208-96-8									
14		acenaphthene				0.15	mg/kg		0.132	mg/kg	0.0000132 %	✓	
			201-469-6	83-32-9									
15		fluorene				0.11	mg/kg		0.0971	mg/kg	0.00000971 %	✓	
			201-695-5	86-73-7									
16		phenanthrene				1.47	mg/kg		1.297	mg/kg	0.00013 %	✓	
			201-581-5	85-01-8									

#	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							
17	anthracene	204-371-1	120-12-7		0.5 mg/kg		0.441 mg/kg	0.0000441 %	✓	
18	fluoranthene	205-912-4	206-44-0		3.66 mg/kg		3.23 mg/kg	0.000323 %	✓	
19	pyrene	204-927-3	129-00-0		3.38 mg/kg		2.983 mg/kg	0.000298 %	✓	
20	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3	1.78 mg/kg		1.571 mg/kg	0.000157 %	✓	
21	chrysene	601-048-00-0	205-923-4	218-01-9	1.93 mg/kg		1.703 mg/kg	0.00017 %	✓	
22	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2	2.69 mg/kg		2.374 mg/kg	0.000237 %	✓	
23	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9	1.04 mg/kg		0.918 mg/kg	0.0000918 %	✓	
24	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8	2.4 mg/kg		2.118 mg/kg	0.000212 %	✓	
25	indeno[123-cd]pyrene	205-893-2	193-39-5		1.77 mg/kg		1.562 mg/kg	0.000156 %	✓	
26	dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3	0.24 mg/kg		0.212 mg/kg	0.0000212 %	✓	
27	benzo[ghi]perylene	205-883-8	191-24-2		1.55 mg/kg		1.368 mg/kg	0.000137 %	✓	
Total:								0.04 %		

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
<LOD	Below limit of detection
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: TP04-13/07/2023-1.50m

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

Sample details

Sample name:	LoW Code:
TP04-13/07/2023-1.50m	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)
12.6% (dry weight correction)	

Hazard properties

None identified

Determinands

Moisture content: 12.6% 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 trioxide }				8.3 mg/kg	1.32	9.732 mg/kg	0.000973 %	✓		
		033-003-00-0	215-481-4	1327-53-3								
2		cadmium { cadmium oxide }				0.3 mg/kg	1.142	0.304 mg/kg	0.0000304 %	✓		
		048-002-00-0	215-146-2	1306-19-0								
3		chromium in chromium(III) compounds {  chromium(III) oxide (worst case) }				34.3 mg/kg	1.462	44.522 mg/kg	0.00445 %	✓		
			215-160-9	1308-38-9								
4		chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }				<0.3 mg/kg	2.27	<0.681 mg/kg	<0.0000681 %		<LOD	
		024-017-00-8										
5		copper { dicopper oxide; copper (I) oxide }				16 mg/kg	1.126	15.998 mg/kg	0.0016 %	✓		
		029-002-00-X	215-270-7	1317-39-1								
6		lead { lead chromate }			1	48 mg/kg	1.56	66.493 mg/kg	0.00426 %	✓		
		082-004-00-2	231-846-0	7758-97-6								
7		mercury { mercury dichloride }				<0.1 mg/kg	1.353	<0.135 mg/kg	<0.0000135 %		<LOD	
		080-010-00-X	231-299-8	7487-94-7								
8		nickel { nickel chromate }				12.3 mg/kg	2.976	32.512 mg/kg	0.00325 %	✓		
		028-035-00-7	238-766-5	14721-18-7								
9		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								
10		zinc { zinc chromate }				72 mg/kg	2.774	177.388 mg/kg	0.0177 %	✓		
		024-007-00-3	236-878-9	13530-65-9								
11		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD	
		603-181-00-X	216-653-1	1634-04-4								
12		benzene				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD	
		601-020-00-8	200-753-7	71-43-2								
13		toluene				0.007 mg/kg		0.0062 mg/kg	0.00000622 %	✓		
		601-021-00-3	203-625-9	108-88-3								
14		ethylbenzene				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD	
		601-023-00-4	202-849-4	100-41-4								
15		xylene				<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD	
		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]								

#	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							
16	pH				8.38 pH		8.38 pH	8.38 pH		
17	naphthalene				0.06 mg/kg		0.0533 mg/kg	0.0000533 %	✓	
	601-052-00-2	202-049-5	91-20-3							
18	acenaphthylene				0.07 mg/kg		0.0622 mg/kg	0.0000622 %	✓	
		205-917-1	208-96-8							
19	acenaphthene				0.11 mg/kg		0.0977 mg/kg	0.0000977 %	✓	
		201-469-6	83-32-9							
20	fluorene				0.08 mg/kg		0.071 mg/kg	0.000071 %	✓	
		201-695-5	86-73-7							
21	phenanthrene				1 mg/kg		0.888 mg/kg	0.000888 %	✓	
		201-581-5	85-01-8							
22	anthracene				0.42 mg/kg		0.373 mg/kg	0.000373 %	✓	
		204-371-1	120-12-7							
23	fluoranthene				4.02 mg/kg		3.57 mg/kg	0.000357 %	✓	
		205-912-4	206-44-0							
24	pyrene				3.78 mg/kg		3.357 mg/kg	0.000336 %	✓	
		204-927-3	129-00-0							
25	benzo[a]anthracene				2.18 mg/kg		1.936 mg/kg	0.000194 %	✓	
	601-033-00-9	200-280-6	56-55-3							
26	chrysene				2.11 mg/kg		1.874 mg/kg	0.000187 %	✓	
	601-048-00-0	205-923-4	218-01-9							
27	benzo[b]fluoranthene				3.24 mg/kg		2.877 mg/kg	0.000288 %	✓	
	601-034-00-4	205-911-9	205-99-2							
28	benzo[k]fluoranthene				1.26 mg/kg		1.119 mg/kg	0.000112 %	✓	
	601-036-00-5	205-916-6	207-08-9							
29	benzo[a]pyrene; benzo[def]chrysene				2.7 mg/kg		2.398 mg/kg	0.00024 %	✓	
	601-032-00-3	200-028-5	50-32-8							
30	indeno[123-cd]pyrene				1.97 mg/kg		1.75 mg/kg	0.000175 %	✓	
		205-893-2	193-39-5							
31	dibenz[a,h]anthracene				0.36 mg/kg		0.32 mg/kg	0.000032 %	✓	
	601-041-00-2	200-181-8	53-70-3							
32	benzo[ghi]perylene				1.91 mg/kg		1.696 mg/kg	0.00017 %	✓	
		205-883-8	191-24-2							
33	polychlorobiphenyls; PCB				<0.035 mg/kg		<0.035 mg/kg	<0.000035 %		<LOD
	602-039-00-4	215-648-1	1336-36-3							
34	coronene				0.38 mg/kg		0.337 mg/kg	0.0000337 %	✓	
		205-881-7	191-07-1							
Total:								0.0349 %		

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
<LOD	Below limit of detection
CLP: Note 1	Only the metal concentration has been used for classification

Supplementary Hazardous Property Information

HP 3(i): Flammable "flammable liquid waste: liquid waste having a flash point below 60°C or waste gas oil, diesel and light heating oils having a flash point > 55°C and ≤ 75°C"

Force this Hazardous property to non hazardous because No evidence of free phase contamination on site.

Hazard Statements hit:

Flam. Liq. 2; H225 "Highly flammable liquid and vapour."

Because of determinand:

toluene: (conc.: 6.22e-07%)

Classification of sample: HP05-14/07/2023-0.40m

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

Sample details

Sample name:	LoW Code:
HP05-14/07/2023-0.40m	Chapter:
Moisture content:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
8.1% (dry weight correction)	Entry:
	17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 8.1% 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	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane 603-181-00-X	216-653-1	1634-04-4		<0.005 mg/kg		<0.005 mg/kg		<0.0000005 %		<LOD
2	benzene 601-020-00-8	200-753-7	71-43-2		<0.005 mg/kg		<0.005 mg/kg		<0.0000005 %		<LOD
3	toluene 601-021-00-3	203-625-9	108-88-3		<0.005 mg/kg		<0.005 mg/kg		<0.0000005 %		<LOD
4	ethylbenzene 601-023-00-4	202-849-4	100-41-4		<0.005 mg/kg		<0.005 mg/kg		<0.0000005 %		<LOD
5	xylene 601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<0.01 mg/kg		<0.01 mg/kg		<0.000001 %		<LOD
6	pH		PH		8.36 pH		8.36 pH		8.36 pH		
7	naphthalene 601-052-00-2	202-049-5	91-20-3		0.05 mg/kg		0.0463 mg/kg		0.00000463 %	✓	
8	acenaphthylene 205-917-1	208-96-8			0.09 mg/kg		0.0833 mg/kg		0.00000833 %	✓	
9	acenaphthene 201-469-6	83-32-9			0.09 mg/kg		0.0833 mg/kg		0.00000833 %	✓	
10	fluorene 201-695-5	86-73-7			0.06 mg/kg		0.0555 mg/kg		0.00000555 %	✓	
11	phenanthrene 201-581-5	85-01-8			0.83 mg/kg		0.768 mg/kg		0.0000768 %	✓	
12	anthracene 204-371-1	120-12-7			0.34 mg/kg		0.315 mg/kg		0.0000315 %	✓	
13	fluoranthene 205-912-4	206-44-0			3.32 mg/kg		3.071 mg/kg		0.000307 %	✓	
14	pyrene 204-927-3	129-00-0			3.17 mg/kg		2.932 mg/kg		0.000293 %	✓	
15	benzo[a]anthracene 601-033-00-9	200-280-6	56-55-3		1.77 mg/kg		1.637 mg/kg		0.000164 %	✓	
16	chrysene 601-048-00-0	205-923-4	218-01-9		1.96 mg/kg		1.813 mg/kg		0.000181 %	✓	

#	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							
17	benzo[b]fluoranthene 601-034-00-4	205-911-9	205-99-2		2.73 mg/kg		2.525 mg/kg	0.000253 %	✓	
18	benzo[k]fluoranthene 601-036-00-5	205-916-6	207-08-9		1.06 mg/kg		0.981 mg/kg	0.0000981 %	✓	
19	benzo[a]pyrene; benzo[def]chrysene 601-032-00-3	200-028-5	50-32-8		2.29 mg/kg		2.118 mg/kg	0.000212 %	✓	
20	indeno[123-cd]pyrene 205-893-2	193-39-5			1.71 mg/kg		1.582 mg/kg	0.000158 %	✓	
21	dibenz[a,h]anthracene 601-041-00-2	200-181-8	53-70-3		0.24 mg/kg		0.222 mg/kg	0.0000222 %	✓	
22	benzo[ghi]perylene 205-883-8	191-24-2			1.73 mg/kg		1.6 mg/kg	0.00016 %	✓	
23	polychlorobiphenyls; PCB 602-039-00-4	215-648-1	1336-36-3		<0.035 mg/kg		<0.035 mg/kg	<0.0000035 %		<LOD
24	coronene 205-881-7	191-07-1			0.34 mg/kg		0.315 mg/kg	0.0000315 %	✓	
Total:								0.00202 %		

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)
<LOD	Below limit of detection

Appendix A: Classifier defined and non GB MCL determinands

■ ethylbenzene (EC Number: 202-849-4, CAS Number: 100-41-4)

GB MCL index number: 601-023-00-4

Description/Comments:

Additional Hazard Statement(s): Carc. 2; H351

Reason for additional Hazards Statement(s):

20 Nov 2021 - Carc. 2; H351 hazard statement sourced from: IARC Group 2B (77) 2000

■ pH (CAS Number: PH)

Description/Comments: Appendix C4

Data source: WM3 1st Edition 2015

Data source date: 25 May 2015

Hazard Statements: None.

■ acenaphthylene (EC Number: 205-917-1, CAS Number: 208-96-8)

Description/Comments: Data from C&L Inventory Database

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

Data source date: 17 Jul 2015

Hazard Statements: Acute Tox. 4; H302 , Acute Tox. 1; H330 , Acute Tox. 1; H310 , Eye Irrit. 2; H319 , STOT SE 3; H335 , Skin Irrit. 2; H315

■ acenaphthene (EC Number: 201-469-6, CAS Number: 83-32-9)

Description/Comments: Data from C&L Inventory Database

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

Data source date: 17 Jul 2015

Hazard Statements: Eye Irrit. 2; H319 , STOT SE 3; H335 , Skin Irrit. 2; H315 , Aquatic Acute 1; H400 , Aquatic Chronic 1; H410 , Aquatic Chronic 2; H411

■ fluorene (EC Number: 201-695-5, CAS Number: 86-73-7)

Description/Comments: Data from C&L Inventory Database

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

Data source date: 06 Aug 2015

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

■ phenanthrene (EC Number: 201-581-5, CAS Number: 85-01-8)

Description/Comments: Data from C&L Inventory Database

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

Data source date: 06 Aug 2015

Hazard Statements: Acute Tox. 4; H302 , Eye Irrit. 2; H319 , STOT SE 3; H335 , Carc. 2; H351 , Skin Sens. 1; H317 , Aquatic Acute 1; H400 , Aquatic Chronic 1; H410 , Skin Irrit. 2; H315

■ anthracene (EC Number: 204-371-1, CAS Number: 120-12-7)

Description/Comments: Data from C&L Inventory Database

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

Data source date: 17 Jul 2015

Hazard Statements: Eye Irrit. 2; H319 , STOT SE 3; H335 , Skin Irrit. 2; H315 , Skin Sens. 1; H317 , Aquatic Acute 1; H400 , Aquatic Chronic 1; H410

■ fluoranthene (EC Number: 205-912-4, CAS Number: 206-44-0)

Description/Comments: Data from C&L Inventory Database

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

Data source date: 21 Aug 2015

Hazard Statements: Acute Tox. 4; H302 , Aquatic Acute 1; H400 , Aquatic Chronic 1; H410

■ pyrene (EC Number: 204-927-3, CAS Number: 129-00-0)

Description/Comments: Data from C&L Inventory Database; SDS Sigma Aldrich 2014

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

Data source date: 21 Aug 2015

Hazard Statements: Skin Irrit. 2; H315 , Eye Irrit. 2; H319 , STOT SE 3; H335 , Aquatic Acute 1; H400 , Aquatic Chronic 1; H410

■ indeno[123-cd]pyrene (EC Number: 205-893-2, CAS Number: 193-39-5)

Description/Comments: Data from C&L Inventory Database

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

Data source date: 06 Aug 2015

Hazard Statements: Carc. 2; H351

▪ **benzo[ghi]perylene** (EC Number: 205-883-8, CAS Number: 191-24-2)

Description/Comments: Data from C&L Inventory Database; SDS Sigma Aldrich 28/02/2015
Data source: <http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>
Data source date: 23 Jul 2015
Hazard Statements: Aquatic Acute 1; H400 , Aquatic Chronic 1; H410

▪ **polychlorobiphenyls; PCB** (EC Number: 215-648-1, CAS Number: 1336-36-3)

GB MCL index number: 602-039-00-4
Description/Comments: Worst Case: IARC considers PCB Group 1; Carcinogenic to humans;

POP specific threshold from ATP1 (Regulation 756/2010/EU) to POPs Regulation (Regulation 850/2004/EC). Where applicable, the calculation method laid down in European standards EN 12766-1 and EN 12766-2 shall be applied.
Additional Hazard Statement(s): Carc. 1A; H350
Reason for additional Hazards Statement(s):
20 Nov 2021 - Carc. 1A; H350 hazard statement sourced from: IARC Group 1 (23, Sup 7, 100C) 2012

▪ **coronene** (EC Number: 205-881-7, CAS Number: 191-07-1)

Description/Comments: Data from C&L Inventory Database; no entries in Registered Substances or Pesticides Properties databases; SDS: Sigma Aldrich, 1907/2006 compliant, dated 2012 - no entries; IARC – Group 3, not carcinogenic.
Data source: <http://clp-inventory.echa.europa.eu/SummaryOfClassAndLabelling.aspx?SubstanceID=17010&HarmOnly=no?fc=true&lang=en>
Data source date: 16 Jun 2014
Hazard Statements: STOT SE 2; H371

▪ **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 trioxide}

Reasonable case CLP species based on hazard statements/molecular weight and most common (stable) oxide of arsenic. Industrial sources include: smelting; main precursor to other arsenic compounds (edit as required)

cadmium {cadmium oxide}

Reasonable case CLP species based on hazard statements/molecular weight, very low solubility in water. Industrial sources include: electroplating baths, electrodes for storage batteries, catalysts, ceramic glazes, phosphors, pigments and nematocides. (edit as required) Worst case compounds in CLP: cadmium sulphate, chloride, fluoride & iodide not expected as either very soluble and/or compound's industrial usage not related to site history (edit as required)

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

Reasonable case species based on hazard statements/molecular weight. Industrial sources include: tanning, pigment in paint, inks and glass (edit as required)

chromium in chromium(VI) compounds {chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex}

Worst case species based on hazard statements/molecular weight (edit as required)

copper {dicopper oxide; copper (I) oxide}

Reasonable case CLP species based on hazard statements/molecular weight and insolubility in water. Industrial sources include: oxidised copper metal, brake pads, pigments, antifouling paints, fungicide. (edit as required) Worst case copper sulphate is very soluble and likely to have been leached away if ever present and/or not enough soluble sulphate detected. (edit as required)

lead {lead chromate}

Worst case CLP species based on hazard statements/molecular weight (edit as required)

mercury {mercury dichloride}

Worst case CLP species based on hazard statements/molecular weight (edit as required)

nickel {nickel chromate}

Worst case CLP species based on hazard statements/molecular weight (edit as required)

selenium {nickel selenate}

Worst case CLP species based on hazard statements/molecular weight (edit as required)

zinc {zinc chromate}

Worst case CLP species based on hazard statements/molecular weight (edit as required)

Appendix C: Version

HazWasteOnline Classification Engine: **WM3 1st Edition v1.2.GB - Oct 2021**
HazWasteOnline Classification Engine Version: 2023.237.5731.10565 (25 Aug 2023)
HazWasteOnline Database: 2023.237.5731.10565 (25 Aug 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 12 –Contaminated Land 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 13 - 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.

