

Seqirus Site 6, Speke, Liverpool

Ground Investigation Report





Tetra Tech LTD
Quay West at MediaCityUK,
Trafford Wharf Road,
Trafford Park,
Manchester
M17 1HH
0161 872 3223

tetratech.com

Ground Investigation Report

B033528.GIR.3

October 2022

PRESENTED TO

Seqirus UK Limited

Point, Level 3,
29 Market Street,
Maidenhead,
SL6 8AA

PRESENTED BY

Tetra Tech LTD

Quay West at
MediaCityUK,
Trafford Wharf Road,
Trafford Park,
Manchester
M17 1HH

0161 872 3223

tetratecheurope.com

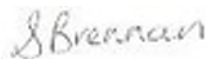
Prepared by:



Stephanie Geddes BSc (Hons)
MSc FGS
Geo-Environmental Consultant

October 2022

Reviewed by:



Sara Brennan BSc (Hons) MSc
FGS
Principal Consultant

October 2022

Authorized by:



Andrew Moore BSc MSc FGS
CGeol MICE Ceng SiLC QP
Technical Director

October 2022

EXECUTIVE SUMMARY

Brief	Tetra Tech was commissioned by Seqirus UK Limited, to provide a Ground Investigation Report to support the development of a proposed extension to the main warehouse.
The Site	The site is located off Renaissance Way, Speke, Liverpool, L24 9PL and comprises a warehouse with associated soft and hard landscaping.
Ground Investigation	The Ground Investigation comprised: • Three Window Sampling boreholes to a maximum termination depth of 5.45m bgl with in-situ SPTs; • Three Cable Percussion boreholes to a maximum termination depth of 15.45m bgl with in-situ testing; and • Six return gas and groundwater monitoring visits.
Proposed Development	The proposed development comprises an extension to the existing warehouse housing seven incubators.
Ground Conditions	Made Ground comprised: • Asphalt hard standing; • Made Ground of predominantly granular deposits of sand and gravel of a maximum thickness of 4.10m; • Deeper Made Ground at the location of an infilled road cutting identified in WS03, WS03A and CP03 and comprising layers of gravelly sand, limestone gravel, sandy brick gravel and locally clayey slightly gravelly sand. Superficial Strata (Glacial Till) comprised: • Firm to stiff sandy gravelly silty clay to a maximum encountered depth of 15.45m bgl in CP02. Groundwater was encountered at 10.20m bgl in CP01 and 13.20m bgl in CP02. Perched groundwater was encountered 0.77m bgl in WS01.
Geotechnical Assessment	Based on the proposed single storey extension to the existing warehouse, and the encountered strata and test results within its footprint: • Piled foundations or ground improvement are recommended as possible foundation solutions, due to the thickness of Made Ground (proven up to 4.1m thick). • Piling or ground improvement foundation solutions are subject to consultation with, and design by, specialist Contractors. • Suspended floor slabs should be adopted if piled foundations are constructed, subject to specialist design. Ground bearing floor slabs may be practicable with some ground improvement solutions. • Soakaway drainage is not considered to be feasible. • The design classification for concrete is DS-1 and an ACEC class of AC-1d. • Contractors should make an allowance for pumping operations to maintain dry working conditions.
Contamination Screening	No soil samples exhibit contamination concentrations above the General Acceptance Criteria for Commercial Land Use with 1% SOM. Asbestos fibres were detected at concentrations <0.001% in shallow Made Ground at two locations.
Hazwaste Assessment	Basic characterization indicates Made Ground should be classified as non-hazardous. WAC testing indicates Made Ground is acceptable for disposal at a landfill licensed to accept inert waste however, liaison with the landfill to discuss the results of the testing should be undertaken.

Ground Gas Assessment	A ground gas risk assessment classifies the site as CS1.
Refined Risk Assessment	The risk posed by onsite sources of contamination is considered to be low to all future site users, construction workers, underlying aquifers, adjacent land uses as well as buildings and services. Locally moderate/low risk is attributed to elevations of TPH-CWG against the UU threshold values therefore barrier pipe is likely to be required however, the locations of proposed service supply lines should be specified and additional testing undertaken along the proposed route in accordance with UKWIR and United Utilities guidance.
Conclusions & Recommendations	Considered likely further works for the proposed development: • Further testing of soils along proposed water supplier routes. • Consultation of a specialist foundation contractor to assess the suitability of a combined mini pile and pad foundation solution.

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Figure 1 (Existing Site Plan: Borehole Locations)
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ACRONYMS/ABBREVIATIONS

Acronyms/Abbreviations	Definition
AOD	above Ordnance Datum
bgl	below ground level
BGS	British Geological Survey
BTEX	Benzene, Toluene, Ethylbenzene and Xylenes
C4SL	Category 4 Screening Levels
CIEH	Chartered Institute of Environmental Health
CLEA	Contaminated Land Exposure Assessment
CoC	Constituent of Concern
CSM	Conceptual Site Model
DEFRA	Department of Environment, Food and Rural Affairs
DQRA	Detailed Quantitative Risk Assessment
DTS	Desktop Study
DRO	Diesel Range Organics
DWS	Drinking Water Standard
EA	Environment Agency (England)
EPH	Extractable Petroleum Hydrocarbons
EQS	Environmental Quality Standards
FOC	Fraction Organic Carbon
GPR	Ground Penetrating Radar
LOD	Limit Of Detection
LQM	Land Quality Management
NRW	Natural Resources Wales
OS	Ordnance Survey
PAH	Polycyclic Aromatic Hydrocarbons
PCB	Poly Chlorinated Biphenyl
PPE	Personal Protective Equipment
ppm	parts per million
PRO	Petroleum Range Organics
SGV	Soil Guideline Values
SOM	Soil Organic Matter
SVOC	Semi Volatile Organic Compounds
TPH	Total Petroleum Hydrocarbons
TSV	Tier 1 Screening Values
VOC	Volatile Organic Compounds
VPH	Volatile Petroleum Hydrocarbons

1.0 INTRODUCTION

1.1 INSTRUCTION

Tetra Tech Ltd (Tetra Tech) was commissioned by Seqirus UK Limited (the Client) to undertake a Ground Investigation Report for Seqirus Site 6, Speke (known hereafter as “the site”).

The location of the site is shown on Drawing No. B033528-TTE-00-XX-DR-U-0001 Site Location Plan.

1.2 BRIEF & SCOPE OF SERVICES

The brief was to provide a Phase 1 Geo-environmental Desk Study (undertaken separately under B033528.DTS.0 dated January 2022) and Ground Investigation Report describing the intrusive works and to provide details of the encountered ground conditions to inform a geotechnical and contamination risk assessment of the site in relation to the proposed Seqirus Site 6 Incubator Extension.

This report includes the following key elements:

- Full factual records of the ground investigation site works carried out;
- Summary of the ground conditions encountered;
- In-situ test results;
- Environmental laboratory test results;
- Geotechnical laboratory test results;
- Interpretation of geo-environmental laboratory data, including a qualitative ground contamination risk assessment (compliant with CIRIA 552 (CIRIA, 2001) methodology); and
- An executive summary of the report to allow a rapid, layman's overview.

1.3 PROPOSED DEVELOPMENT

It is understood that the existing warehouse is to be extended with a single storey extension on the eastern side of the building as shown by Drawing 21027-FRA-XX-00-DR-A-PL-3100 P3 by Fletcher Rae. The proposed internal layout of the extension is shown on Drawing 21027-FRA-XX-00-DR-A-PL-3101 P3, also by Fletcher Rae. Both drawings are dated 9th September 2022 and were provided to Tetra Tech by the Client.

1.4 LIMITATIONS

The recommendations and opinions expressed in this report are based on information obtained as part of the desk study or provided by others. Information provided from other sources is taken in good faith and Tetra Tech cannot guarantee its accuracy.

This report is subject to the report conditions presented in Appendix A.

The information contained in this report is intended for the use of the Client (Seqirus UK Limited) and Tetra Tech can take no responsibility for the use of this information by any third party or for uses other than that described in this report or detailed within the terms of our engagement.

2.0 SUMMARY OF SITE INFORMATION

2.1 LOCATION

Key details for the site are provided in Table 2.1 below and a full summary of the site is provided within the Tetra Tech Geo Environmental Desk Study dated January 2022. The site location is shown by Tetra Tech Drawing No. B033528-TTE-00-XX-DR-U-0001 and the existing layout is shown on Drawing 21027-FRA-XX-00-DR-A-PL-3002 by Fletcher Rae.

Table 2-1 – Site Address and Size

Item	Detail
Address	Seqirus Site 6, 1a Renaissance Way, Speke, Liverpool, L24 9PL
National Grid Reference	SJ438843.
Area of Proposed Development	Approximately 1.52 Hectares

2.2 SITE DESCRIPTION

The site currently comprises of a warehouse unit with associated hardstanding of an asphalt carpark and areas of concrete hardstanding.

The site is accessed through electronic gates to the southwest of the development area, off Renaissance Way. All site boundaries are defined by palisade fencing, with significant semi-mature to mature vegetation present along the western and northern boundaries with some more sparse semi-mature vegetation located along the eastern and southern boundaries. The Garston and Warrington railway line is located beyond the vegetation to the north of the site.

The Seqirus warehouse unit is situated to the centre of the Phase 1 red line boundary and to the west of the development area. Electric plant rooms, a pump house and an associated cylindrical tank are present to the northwest of the development area. A refuse area is also located to the west within the Phase 1 redline boundary. There is an electrical substation located to the northeast just beyond the Phase 1 boundary.

The site is generally level at approximately 31m Above Ordnance Datum (m AOD) as indicated by Google Earth.

The surrounding land uses are summarised in Table 2.2 below.

Table 2-2 – Site Surrounds

Item	Detail
North	Garston and Warrington railway line, pharmaceutical works beyond.
East	Commercial units.
South	Commercial units.
West	Commercial units.

3.0 TETRA TECH 2021 SITE INVESTIGATION

Initial Ground Investigation fieldworks were undertaken between 20th and 21st December 2021. Since the investigation, Tetra Tech has been supplied with a drawing which details the foundations to the existing warehouse plan, reference 23799_100_J Foundation General Arrangement by Curtins dated May 2000. The drawing also details the line of a historic infilled road which passes below the existing structure and potentially below the proposed extension. As a result, an additional borehole (CP03) was commissioned in this area and was undertaken on the 25th February 2022 in order to determine the depth and nature of fill.

The works were undertaken in general accordance with BS 10175: Code of Practice for Site Investigations of Potentially Contaminative Sites, BS 5930, BS EN1997-2, BS EN ISO 14688/9 and BS 8576.

The scope of the complete site investigation works was as follows:

- Six 300mm diameter cores to a maximum depth of 0.19m bgl to allow for drilling through sub-surface strata.
- Three Window Sampling boreholes to a maximum termination depth of 5.45m bgl with in-situ SPTs;
- Three Cable Percussion boreholes to a maximum termination depth of 15.45m bgl with in-situ testing;
- Installation of three 50mm dia. ground gas and groundwater monitoring wells;
 - One Window Sample borehole, (WS02); and,
 - Two Cable Percussion boreholes (CP01 and CPO2);
- On-site inspection and logging of recovered samples;
- Representative soil sampling for geotechnical laboratory classification testing;
- Representative soil sampling for chemical laboratory analysis;
- Six return visits to monitor ground gas composition and groundwater levels.

Figure 1 shows the layout of the exploratory holes advanced during the site investigation in relation to the existing development layout and existing site features.

Figure 2 shows the layout of the exploratory holes in relation to the proposed development.

Exploratory borehole logs are presented in Appendix B.

Details of the fieldwork methods are given in the notes section at the end of this report.

4.0 ENCOUNTERED GROUND CONDITIONS

4.1 STRATA ENCOUNTERED

The Ground Investigation works confirm the anticipated strata, as detailed by the Tetra Tech Geo Environmental Desk Study dated January 2022, with the sequence of strata encountered as:

- Asphalt Hard standing;
- Made Ground; and
- Glacial Deposits.

A summary of each strata is detailed in the subsequent sections. Exploratory hole logs are presented in Appendix B with photographic plates available in Appendix C.

4.2 ASPHALT

Asphalt was encountered within all exploratory holes at ground level, with a thickness of between 0.13m (CP02) and 0.19m (WS03), this was underlain by Made Ground.

4.3 MADE GROUND

Made Ground was encountered within all exploratory hole locations to a maximum encountered thickness of 4.10m bgl (CP03) and typically comprised of silty sand and gravel with a locally low cobble content. Gravels encountered in the Made Ground deposits on site were found to be of mixed lithologies including brick, concrete, sandstone and limestone. Cobbles were of angular to sub-angular concrete and brick.

Occasional fragments of wood were encountered within the Made Ground.

In CP02, deposits of slightly gravelly silty sand were encountered between 1.00-1.30m bgl. In WS02, a stiff slightly sandy slightly gravelly clay was encountered between 0.90-1.20m bgl.

A locally clayey silty slightly gravelly sand was encountered in WS03 and WS03A between 0.70 - 0.90m bgl. This was underlain by limestone gravel, which appeared to be a hardcore sub-base from between 0.90 - 1.60m bgl. The base of the Made Ground was not proven at WS03 and WS03A due to refusal of the window sample rig.

In CP03, the asphalt surface was underlain by Made Ground deposits similar to those found across much of the site, to 0.35m bgl. This stratum was underlain by a yellowish brown slightly gravelly slightly silty sand to 1.25m bgl. Gravels encountered were of angular to sub-angular sandstone. Limestone gravel, characteristic of that encountered in WS03 and WS03A was present between 1.25 and 2.60m bgl. A thin layer of slightly sandy brick gravel was encountered between 1.90 and 2.00m bgl. The limestone gravels were underlain by greenish brown locally clayey slightly gravelly sand to 4.10m bgl. Gravels comprised of sub-angular sandstone.

It is anticipated that the Made Ground deposits encountered in CP03, WS03 and WS03A may have been associated with the infilled road as detailed in the desk study.

It was noted that the Made Ground generally became deeper in the north of the site.

4.4 SUPERFICIAL DEPOSITS

Glacial Till was encountered across the majority of site (excluding WS03/3A which terminated within the Made Ground) and comprised of a firm to stiff reddish brown mottled grey sandy silty gravelly clay. Gravels were found to be of mixed lithologies including mudstone, siltstone and sandstone directly underlying the Made Ground.

The Glacial Till was encountered to a depth of 15.45m bgl in CP02 where the borehole was terminated. Localised bands of fine to medium sand were recorded within the clay in CP02 and organic material was noted in CP01 (2.45-2.50m bgl).

In WS01, a thin layer of stiff grey mottled orangish brown slightly sandy slightly gravelly clay directly overlaid the Glacial Till between 0.90-1.10m bgl. Gravels were sub-rounded mudstone.

The base of the Glacial Till was not proven at any exploratory hole location during this investigation.

4.5 BEDROCK

Bedrock was not encountered at any exploratory hole locations during this ground investigation.

4.6 VISUAL AND OLFACTORY EVIDENCE OF CONTAMINATION

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

4.7 GROUNDWATER

Groundwater was observed during the Ground Investigation works and summarised in Table 4.1 below.

Table 4-1 – Groundwater Observations During Ground Investigation

Exploratory Borehole	Depth to Perched Groundwater strike (m bgl)	Details
WS01	0.77	Perched Groundwater
CP01	10.20	Seepage Only
CP02	3.10, 13.20	Seepage Only

Six return groundwater monitoring visits have been undertaken following the completion of the ground investigation. The monitoring data is presented in Appendix I and is summarised in Table 4.2 below.

Table 4-2 – Groundwater Levels Post Investigation

Location	Base of borehole (m bgl)	Depth to water (m bgl)		
		Shallowest	Mean	Deepest
CP01	9.51	3.14	3.25	3.30
CP02	13.56	6.67	7.05	7.36
WS02	0.94	0.86	-	DRY

WAB = Wet at Base

These readings are not considered to be representative of the groundwater profile and are likely associated with inclement weather infilling the installation, as suggested by the varying water levels within consistent strata and close proximity.

4.8 OBSTRUCTIONS

Difficult ground conditions were encountered in the hand-dug inspection pits at all exploratory hole locations. The depths at which are detailed below:

- CP01 – 0.40m bgl.
- CP02 – 0.50m bgl.

- WS01 – 0.80m bgl.
- WS02 – 1.00m bgl.
- WS03 – 0.90m bgl.
- WS03A – 0.90m bgl.

Prior to the commencement of drilling at each exploratory hole location, the base of the pit was cleared of services using a calibrated Cable Avoidance Tool (CAT) and Genny, used in conjunction with service drawings.

Significant Made Ground was encountered in WS03 with the window sample barrel unable to progress beyond 1.60m bgl. A second position, WS03A, was attempted approximately 200mm from WS03 where difficult digging conditions were encountered and an SPT refusal was recorded at the base of the hand pit with the hole was terminated at 1.28m bgl.

No buried structures were encountered in as part of the investigation.

5.0 LABORATORY TESTING

5.1 ENVIRONMENTAL TESTING

Environmental chemistry was investigated by specialist chemical analysis of selected soil samples carried out by Element Materials Technology, an approved supplier in accordance with the requirements of Tetra Tech's quality system and UKAS and MCERTS accredited for a range of chemical analyses. The testing was scheduled by Tetra Tech and is summarised in Table 5.1 for soil samples. The test results are included in Appendix E.

Table 5-1 - Summary of Environmental Testing

Test Suite	No.
<u>Soil Samples:</u> Tetra Tech Suite C ○ Heavy metals including Chromium (Hexavalent), Boron (water soluble), Arsenic, Beryllium, Cadmium, Chromium, Copper, Lead, Mercury, Nickel, Selenium, Vanadium and Zinc; ○ Inorganics – including pH, Water soluble Sulphate as SO₄ (2:1 Extract), Cyanide (Easily liberatable- low level); ○ Speciated Petroleum Hydrocarbons (TPH CWG); ○ Speciated Polyaromatic Hydrocarbons (USEPA 16); ○ BTEX and MTBE; ○ Asbestos Screen; and, ○ Phenol.	10
Asbestos Quantification	2
Two Stage Waste Acceptance Criteria testing (S)	2

5.2 GEOTECHNICAL TESTING

A programme of laboratory classification testing was carried out on samples taken from the various strata encountered during the site investigation. Geotechnical testing was scheduled by Tetra Tech and carried out by CC Geotechnical Limited and their sub-contractor The Environmental Laboratory Ltd, approved suppliers in accordance with the requirements of Tetra Tech's quality system and UKAS accredited for a range of geotechnical tests.

The test procedures used were generally in accordance with the methods described in BS1377:1990. Details of the specific tests used in each case are given in Table 5.2. Laboratory geotechnical test result certificates are presented in Appendix D.

Table 5-2 –Geotechnical Testing

Test	No.	Test Method
Moisture Content	6	BS1377:1990 Part 2:3.2
Atterberg Limits	6	BS1377:1990 Part 2:4.3&5.3
Particle Size Distribution (PSD) – Wet Sieve	2	BS1377:1990 Part 2:9.2
Sedimentation Analysis (Pipette)	2	BS1377:1990 Part 2:9.4
One Dimensional Consolidation (Oedometer)	2	BS1377:1990 Part 5 3

pH and Water-Soluble Sulphate	4	BS1377:1990 Part 3 & BRE CP2/79 (non-accredited test)
Unconsolidated Undrained Triaxial Compression	6	BS1377-7: 1990 (a)

6.0 GROUND CONTAMINATION ASSESSMENT – HUMAN HEALTH

6.1 INTRODUCTION

The UK Contaminated Land Regime (CLR) allows for a tiered approach to the assessment of ground contamination which is designed to allow increasingly site-specific assessment. In order to assess the potential risk posed by contaminants contained within the soils at the study area a Generic Quantitative Risk Assessment (GQRA) has been undertaken by comparing recorded concentrations of chemical constituents in soil with Generic Assessment Criteria (GAC) to identify whether, at the concentrations recorded, the presence of the constituent has the potential to adversely affect the health of site users (a Tier 1 assessment). GAC are set at levels where potential exposure is deemed to be within acceptable limits.

If the recorded concentrations of a particular constituent are below the GAC then the risk is generally considered to be acceptable and further assessment / or mitigation measures are not required. Where a substance is recorded at concentrations higher than GAC this does not necessarily indicate that a particular risk is present, however, it does typically signify the requirement to undertake further assessment in line with the UK tiered risk assessment framework.

6.2 ASSESSMENT CRITERIA

6.2.1 Generic Assessment Criteria

The following GAC for soils have been utilised for the screening process, in order of preference:

- CL:AIRE published C4SL (DEFRA, 2014);
- CIEH/LQM published S4UL (LQM/CIEH, 2015);
- Tetra Tech internal Tier 1 Screening Criteria (issue 15) derived using the derivation tool CLEA version 1.06, in line with the current UK Contaminated Land Regime.

C4SL are currently available for arsenic, benzene, benzo(a)pyrene, cadmium, chromium VI and lead¹. The C4SL were originally developed to support the categorisation of sites in accordance with Part 2A are also, based on DEFRA guidance, considered suitable for use during the assessment of sites as part of the planning process.

Where C4SLs are not available, 'Suitable for Use Levels' (S4UL) developed by CIEH/LQM have been used. The S4UL provide GAC based on minimal or tolerable risk intended to be protective of human health for individual or mixtures of substances. It is considered conservative and appropriate to use these values for contaminants for which C4SL are unavailable. GAC for volatile and semi-volatile organic compounds (VOC and SVOC) not presented in the S4UL document are sourced from CL:AIRE (CL:AIRE, January 2010).

Where no published screening values are available Tetra Tech have derived their own values (easily liberatable cyanide).

The CLEA model states that "For most exposure pathways, the contamination is assumed to be at or within one metre of the surface" (Environment Agency, 2009). It is considered that at depths greater than 1.0m, the probability of human exposure via the direct contact pathways are significantly reduced, leaving inhalation of volatile compounds as the dominant pathway with regard to human health risks. Typically, volatile compounds only significantly affect the indoor inhalation pathway. The same screening concentrations have been used for all depths at this stage, though it is noted that these are highly conservative for depths below 1.00m bgl.

¹ Arsenic, benzene, benzo(a)pyrene, cadmium, chromium VI, lead assuming 6% SOM (1% SOM C4SL also published for benzene).

Assessment of Total Petroleum Hydrocarbons (TPH-CWG) concentrations has been made with reference to the UK Approach for Evaluating Human Health Risks from Petroleum Hydrocarbons in Soils (Science Report P5-080/TR5), Environment Agency, 2005. This calculates the combined toxicological effects of the TPH fractions by calculation of a Hazard Index, which if greater than 1 may indicate a potential risk to human health.

6.2.2 Proposed End Use

The proposed development on site will comprise of a single-story extension on the eastern side of the existing warehouse unit on site.

The proposed development plans are detailed in Drawing 21027-FRA-XX-00-DR-A-PL-3101 by Fletcher Rae, dated September 2022.

6.2.3 Soil Organic Matter

For organic contaminants, the generic soil screening values have been derived for a range of concentrations of soil organic matter (1%, 2.5%, 6%).

The Fraction of Organic Carbon (FOC) of the samples tested with an average value of 0.005. Soil Organic Matter (SOM) is calculated as follows:

$$SOM (\%) = FOC \times (100/0.58)$$

The above equation gives SOM of 0.86%. To this end, a conservative SOM of 1.0% has been applied. If required following the initial screening the SOM will be reviewed in light of applying more site-specific screening criteria.

6.3 TIER 1 – SOIL SCREENING

A total number of eight soil samples were screened against the GAC for Commercial Land Use and SOM of 1% as part of the Ground Investigation works.

Comparison of the chemical analysis results with the generic assessment criteria for Commercial/Industrial end use has identified the following exceedances, as detailed in Table 6.1 below.

Table 6-1 - Summary of Constituents of Concern

Constituent of Concern	No. of Samples	Min	Max	SSV	Exceedances	
					No.	Location
pH	10	8.33	11.37	<5, >9	6	CP01 at 0.50m bgl (pH11.37) CP02 at 1.0m bgl (pH10.90) CP03 at 1.0m bgl (pH9.61) WS01 at 0.70m bgl (pH10.89) WS02 at 0.30m bgl (pH10.83) WS03 at 0.80m bgl (pH 9.75)

Elevated pH levels are anticipated to be associated with concrete present within the Made Ground soils.

A tabulation of the full Tier 1 screening data set is presented in Appendix F.

6.4 ASBESTOS

Asbestos screening of ten samples was undertaken, eight from Made Ground soils and two from natural strata. Natural strata would not be expected to contain asbestos but the screen is a standard test within Tetra Tech's Suite C.

Chrysotile asbestos was detected as loose fibre bundles in two samples of Made Ground, (CP01 at 0.50m bgl and WS02 at 0.30m bgl). Quantification indicates a concentration of <0.001% in both samples.

6.5 WATER PIPES ASSESSMENT

Assessment of soil chemical analysis data has been undertaken to identify pipe materials that are suitable for use based on information provided in the following documents:

- UK Water Industry Research 2011, Guidance for the Selection of Water Supply Pipes to be used in Brownfield Sites, 10/WM/03/21.
- Water UK 2014, Contaminated Land Assessment Guidance
- Supplementary guidance for the selection of water pipes in land potentially affected by contamination by United Utilities (UU).

Preliminary assessment of TPH-CWG data indicates exceedances of the threshold United Utilities (UU) values for the use of polyethylene pipe occur within soil samples from the typical water pipe depths of between 0.75m and 1.35m bgl as shown by Appendix G.

CP01 at 0.50m bgl, and WS02 at 0.30m bgl had elevated concentrations of the Total C11 – C20 for aliphatic and aromatic hydrocarbon fractions with 37mg/kg and 136mg/kg respectively, against a UU threshold value of 10mg/kg. In WS02 at 0.30m bgl, an elevation of the Total C21 – C40 for aliphatic and aromatic hydrocarbon fractions was identified as 564mg/kg against a UU threshold value of 500mg/kg.

On the basis of these results, barrier pipes should be specified if water supply pipes are to be laid in the ground as part of the proposed extension. However, the future routes of water supply pipes are not known at this stage so the investigation and sampling strategy may not be fully compliant with UKWIR recommendations, or the proposed depth and location of the pipes is within uncontaminated soils. Further testing may be appropriate when water pipe routes are known and to ensure investigations in line with the supplier's criteria (United Utilities).

7.0 WASTE CLASSIFICATION ASSESSMENT

Waste classification is a two-stage process, with the first step comprising a hazard assessment of the soil quality data in line with the guidance set out in the Environment Agency waste classification technical guidance WM3² document. Once the hazardous properties of the materials are known, the second step is to assess the potential performance of the materials in a landfill, undertaken by considering the results of waste acceptance criteria (WAC) testing.

7.1 WASTE CLASSIFICATION

The chemical analysis data obtained from the ground investigation has been used to undertake a basic characterization of soils in the event that site soils are to be disposed to landfill.

An assessment was undertaken using HazWaste Online, web-based software for waste classification. The software follows Environment Agency guidance and European regulations. The waste classification reports are presented in Appendix H.

A total of eleven samples are included within the waste assessment.

After a review of the relevant exploratory hole logs, HP3 (flammability) was removed from six of the eleven samples as it was identified by the software, as relatively low concentrations were present and there was no evidence observed of free product during the ground investigation. The assessment sheets in Appendix H detail which samples this edit has been applied to.

The HazWaste Online assessment indicates all samples are non-hazardous. This waste classification is limited to the laboratory data available and as such there is the potential for unidentified contamination which could result in a hazardous classification.

7.2 ASBESTOS

A manual review of the laboratory asbestos data was carried out and indicated that asbestos has been identified in two samples, CP01 at 0.50m bgl and WS02 at 0.30m bgl. Quantification has been undertaken and shows the Total Gravimetric Quantification to be <0.001% for each sample. The hazardous waste threshold is 0.1% and, therefore, both samples are deemed to be below hazardous concentrations so the overall classification of soils remains non-hazardous.

7.3 WASTE ACCEPTANCE CRITERIA TESTING

Two representative samples of Made Ground were scheduled for WAC analysis (CP02 at 0.40m bgl and CP03 at 3.00m bgl). The WAC analysis results are used by the waste facility to determine whether that facility can accept the material. The results of the WAC analysis are included in Appendix E.

The results indicate the Made Ground meets the inert classification.

It is considered that the materials designated for disposal in this area are likely to be acceptable for disposal at a landfill licensed to accept inert waste however, liaison with the landfill to discuss the results of the testing should be undertaken.

² Environment Agency 2018. Technical Guidance WM3: Guidance on the classification and assessment of waste (Version 1.1).

7.4 WASTE RECOMMENDATIONS

The waste assessment has shown that all tested samples have been classified as non-hazardous using HazWasteOnline and have the potential to be disposed to a facility accepting inert waste.

It is the responsibility of the contractor, as waste producer, to classify the waste and to identify a suitable waste disposal facility based on the chemical composition of the material. Therefore, prior to disposal the characteristics of any excavated soils will need final classification in consultation with the landfill sites and waste disposal contractors. Further testing and analysis, including additional WAC testing, may be required on the actual soil arisings which constitute the waste.

7.5 MATERIALS MANAGEMENT

Any material excavated on site may be classified as waste and it is the responsibility of the holder of a material to form their own view on whether or not it is waste. This includes determining when waste that has been treated in some way can cease to be classed as waste for a particular purpose.

If site-won material is to be reused on site, or soils other than primary aggregate or aggregates produced under the WRAP Protocol, imported to site, a Materials Management Plan will be required, signed off by a Qualified Person as defined in the 'Development Industry Definition of Waste Code of Practice' (CL:AIRE, 2011).

8.0 GROUND GAS ASSESSMENT

8.1 INTRODUCTION

Gas monitoring began on the 5th January 2022 with six visits having been undertaken following the completion of the ground investigation and were completed on the 11th March 2022.

The positioning of the installation wells is shown on Figures 1 & 2 in relation to the existing and proposed site layouts, respectively.

8.2 GROUND GAS RESULTS

Table 8.1 below summarises the ground gas monitoring results. Full results are presented in Appendix I along with the calibration certificate for the GA5000 gas analyser used.

Table 8-1 - Summary of Ground Gas Monitoring Data

Location	Max. Methane (Steady) (% vol)	Max. Carbon Dioxide (Steady) (% vol)	Min. Oxygen (Steady) (% vol)	Max. Carbon Monoxide (Steady) (ppm)	Max. Hydrogen Sulphide (Steady) (ppm)	Max.* Borehole flow (Steady) (l/h)	Condition of Response Zone (Visits)
CP01	0.20	2.00	19.80	1	<1	0.30	Not Flooded
CP02	0.20	2.20	13.90	1	<1	0.30	Not Flooded
WS02	0.20	0.20	17.40	<1	<1	0.30	Not Flooded

Note: Results based on worst case steady readings.

*Where negative flow identified the minimum steady concentration was recorded.

8.3 SUMMARY OF MONITORING VISITS

Elevated PID readings were generally not detected. The highest PID reading was 3.2ppm taken from WS02 on 14th January 2021.

Due to predominantly dry conditions, cohesive nature of the soils identified as part of the ground investigation and subsequent inclement weather following the ground investigation works. The water levels are not considered to be representative of the underlying strata and likely perched water infilling the installations.

8.4 CARBON MONOXIDE AND HYDROGEN SULPHIDE

Maximum concentrations of carbon monoxide (1ppm) were reported in CP01. Hydrogen sulphide concentrations were below the limit of detection. The recorded concentrations are considered to be suitably low to negate the requirement for additional risk assessment.

8.5 ATMOSPHERIC PRESSURE TRENDS

Four of the gas monitoring visits were undertaken in falling atmospheric conditions. Two visits have been undertaken in rising atmospheric conditions.

8.6 GROUND GAS ASSESSMENT

Ground gas results have been assessed using the CIRIA C665 document Assessing Risks posed by Hazardous Ground Gases to Buildings (2007) and BS:8485(2015) +A1:2019. The assessment methodology is based on both volume percentages and volume flow rate of gases. In accordance with the CIRIA and BS:8485 methodology, a conservative Gas Screening Value (GSV) has been calculated using a worst-case scenario (i.e. highest peak gas concentration combined with highest steady state flow rate). Where readings are not recorded above the instrument detection limit, the value of the instrument detection limit is used to calculate the GSV. The calculation of the GSV is as follows:

- Gas Screening Value = Gas Concentration in % divided by 100 then multiplied by flow rate in l/h.

Steady State Emission (0.30l/h) Flow Rate

- $2.20\% \text{ CO}_2 / 100 \times 0.30 \text{ l/hr} = 0.0066 \text{ l/hr CO}_2$
- $0.20\% \text{ CH}_4 / 100 \times 0.30 \text{ l/hr} = 0.0006 \text{ l/hr CH}_4$

Based on the set of results, occurrences of raised CO_2 and CH_4 values and the GSV calculated from the worst-case peak gas concentrations and the highest steady state flow rates, the site would fall into a Characteristic Situation 1 (CS1) – Very Low Risk and as such no special gas protection measures are required for the development in line with CIRIA C665 guidance.

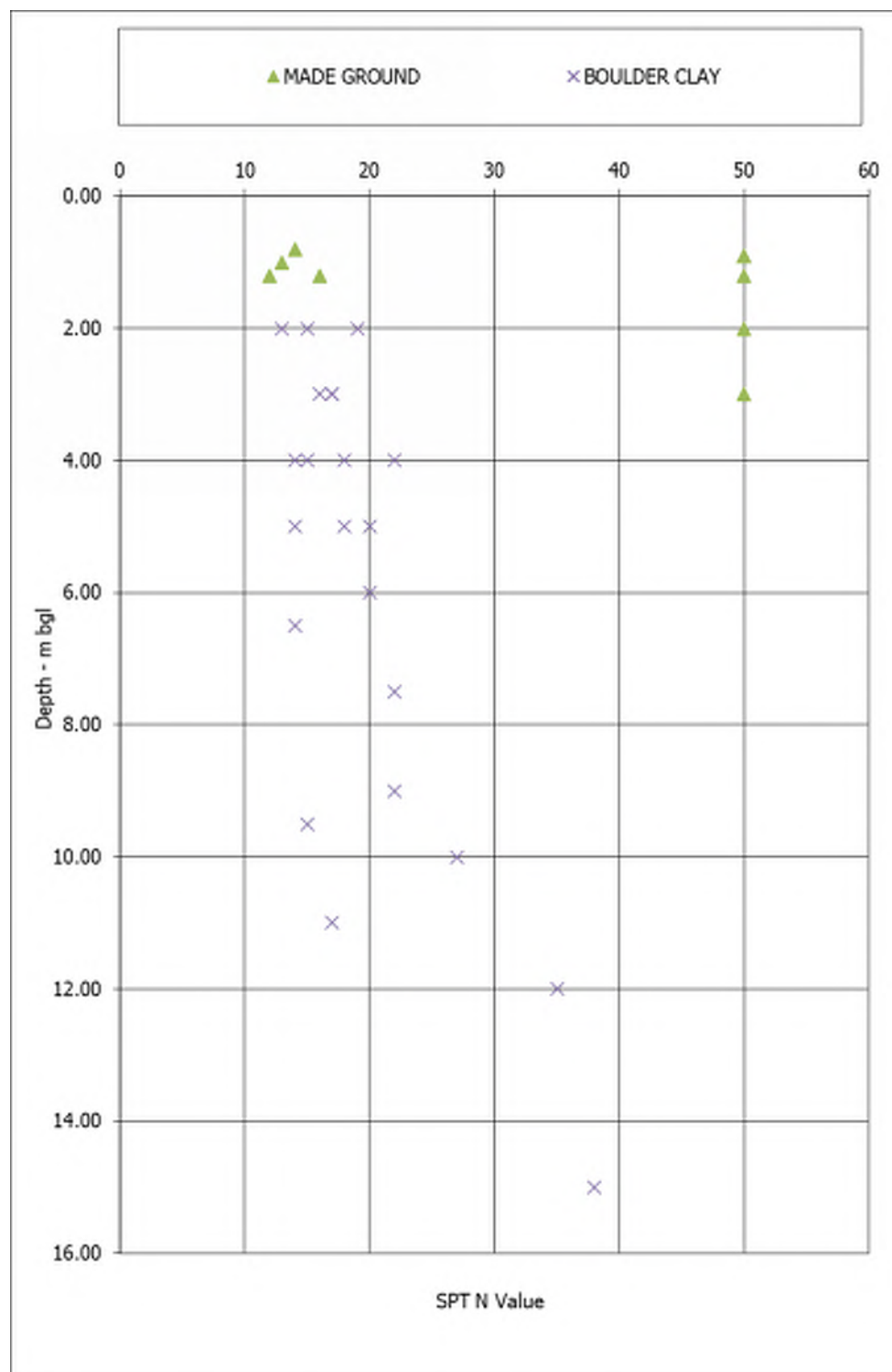
Based on a review of the consistent ground conditions across site described by the gas monitoring visits, this data is considered to be representative of the true ground gas conditions.

9.0 PRELIMINARY GEOTECHNICAL ASSESSMENT

9.1 STANDARD PENETRATION TESTS

A graph of the SPT data is presented below. The graph shows that in-situ soil density generally increased with depth.

Graph 9.1 –SPT over Depth (m AOD)



The SPTs undertaken in the Made Ground generally displayed SPT N values of between 12 – 16. SPT refusal was recorded in both WS03 and WS03A in the inspection pits, and in CP03 (1.20, 2.00 and 3.00m bgl). It is anticipated that these locations are representative of the location of the infilled road identified in the desk study.

The Glacial Till recorded SPT N values of between 13 and 38 typically increasing with depth.

9.2 MATERIAL PROPERTIES

Samples retrieved from the ground investigation were submitted for a suite of geotechnical laboratory classification testing, a summary of which is provided below as Tables 9.1 and 9.2. Full geotechnical testing results are presented in Appendix D.

Table 9-1 - Summary of Geotechnical Test Results

Test	No. of results	Range (min-max)	
Natural moisture content (%)	12	12-20%	
Liquid limit (LL %)	8	27-29%	
Plastic limit (PL %)	8	13-14%	
Plasticity index (PI %)	8	13-15%	
SPT N Values	24	12 - 50 (Refusal)	
One Dimensional Consolidation Test (Mv) / (MPa)	2	Coefficient of Volume Compressibility (M _v)	Coefficient of Consolidation (C _v)
		0.02 – 0.43 MPa	1.2 – 5.4 m ² /yr
Undrained shear strength (kPa):	5	54.4 – 128.0	

The clay has a low plasticity, and the modified plasticity index of the clay describes the clay as having a low volume change potential.

Table 9-2 - Summary of Particle Size Distribution Test Results

Location	Depth to Top of Sample (mbgl)	Soil Type	Cobbles (%)	Gravel (%)	Sand (%)	Silt (%) (Sedimentation fines >10%)	Clay (%) (Sedimentation fines >10%)
CP01	1.20	Clay	-	7	44	31	18
CP02	4.00	Clay	-	10	39	33	18

9.3 FOUNDATION AND FLOOR SLAB DESIGN

9.3.1 Adjacent Foundations

The existing foundation plan for the current commercial unit (immediately adjacent to the subject site's proposed extension) has been provided by the Client. The drawing is appended to this report as ref. no. 23799, dated May 2000 by Curtins. The plan shows the use of both shallow pad foundations and piled foundations, with associated ground beams. The piles comprise pre-cast concrete square piles tied into a pile cap.

The piled foundations are understood to have been adopted due to deeper deposits of Made Ground within the alignment of an infilled former road that runs beneath the existing building.

9.3.2 Proposed Foundations Discussion

The Engineer's anticipated loadings at structural columns have not been communicated at the time of writing and the derivation of geotechnical design parameters is outside the scope of this report. Therefore, this discussion provides indicative foundation options only, for further design development by others.

The proposed development comprises a single storey extension on the eastern side of the building as shown on Fletcher Rae Drawings 21027-FRA-XX-00-DR-A-PL-3100 P3 & 21027-FRA-XX-00-DR-A-PL-3101 P3.

The ground conditions recorded at the boreholes within the proposed extension footprint (CP02, CP03, WS03 & WS03A, as shown on Figure 2) found that the proposed extension lies over the deepest Made Ground deposits recorded by the investigation (4.1m at CP03) with unknown depths in places (unproven thicknesses of at least 1.6m at WS03 and 1.28m at WS03A). The Made Ground deposits are underlain by generally stiff, sometimes firm becoming stiff, slightly gravelly sandy silty Clay (Glacial Till) proven to a maximum termination depth of 15.45m bgl.

It is therefore considered that shallow spread foundations are not suitable for adoption, due to the risk of large total and/or differential settlement within the Made Ground soils. The 4.1m maximum proven thickness of Made Ground means that the adoption of trench fill foundations bearing on the stiff Clay (Glacial Till) is considered unlikely to be practical or economical.

It is recommended that a deep foundation solution is adopted. This may comprise piles tied into reinforced concrete pile caps at the base of structural columns. Driven pile types would likely be suitable in the observed ground conditions if driven to a calculated length within the stiff Clay (Glacial Till) e.g. pre-cast concrete square piles, as used for the existing building on adjacent land, or steel tubular piles.

If a driven pile type is selected, tolerances for noise and vibration should be confirmed with respect to operations at the Client's existing premises adjoining the development area.

Should driven piles not be preferred, consideration may also be given to bored, cast in-situ concrete piles.

Specialist piling contractors are required to provide supporting calculations for their own proprietary pile types in isolation, and in groups, as appropriate to the pile layout design.

Alternatively, ground improvement options such as controlled modulus columns (CMC's) may be considered for adoption. Specialist contractors should be consulted to confirm the suitability of any desired ground improvement technique within the observed ground conditions.

9.3.3 Proposed Floor Slabs Discussion

If a piled foundation solution is adopted, it is likely that a suspended floor slab will be utilised spanning over pile caps and ground beams, subject to the Engineer's design.

Ground bearing floor slabs may be utilised in conjunction with some ground improvement techniques, subject to specialist consultation and design.

Should significant planting or vegetation removal be undertaken, future assessment of heave potential is unlikely to be required, given the low plasticity / low volume change potential of the in-situ cohesive soils indicated by laboratory testing.

9.4 CHEMICAL ATTACK ON BURIED CONCRETE

Chemical tests undertaken on representative samples from the glacial deposits was assessed in accordance with BRE Special Digest 1:2005 3rd Edition with Amendments (2017) to provide design values for in ground concrete. The assessment is presented on Table 9.3.

Table 9-3 - Soil Sulphate Concentration & pH Level Assessment

Strata	No. of results	pH	Characteristic pH (mean)	Sulphate (mg/l)	Characteristic Sulphate Value (mg/l)
Made Ground	8	8.35 – 11.37	8.65*	17.30 – 311.90	300**
Natural Ground	6	8.10 – 8.70	8.2*	21.00 – 41.30	100**

*mean of lowest two results

**mean of highest two results rounded to the nearest 100mg/l

Based on the encountered strata and “dry” conditions identified in the Ground Investigation and in accordance with BRE SD1:2005 Concrete in Aggressive Ground, “Mobile” groundwater has been assumed. The above results indicate, that for all the encountered strata design classification of DS-1 and an ACEC class of AC-1d can be assumed.

9.5 DRAINAGE

The site comprises cohesive Glacial Till which is considered a low permeability stratum and as such soakaways are unlikely to be effective and therefore alternative forms of drainage should be utilised.

9.6 EXCAVATIONS AND GROUNDWATER CONTROL

The strata onsite comprised of predominantly firm to stiff clays however, Made Ground was noted across site to a depth of generally between 0.90m and 1.30m but were found to be deeper towards the north of the site (> 1.60m bgl in WS03 and 4.10m bgl in CP03) and therefore Contractors should consider allowing for side supports to excavations during the construction program.

Local perched water was recorded as part of the ground investigation works (WS01) and water levels have been recorded as part of the monitoring works settled within the Made Ground deposits and natural cohesive strata within the exploratory hole installations across site. Contractors should therefore make an allowance for pumping operations to maintain dry working conditions during excavations if necessary.

9.7 MATERIALS REUSE

Geotechnical earthworks and materials testing was not undertaken on the underlying strata and would need to be undertaken in accordance with Specification for Highways Works Series 600 Table 6/1 if the soils are to utilised onsite.

10.0 CONCEPTUAL SITE MODEL AND REFINED GROUND CONTAMINATION RISK ASSESSMENT

10.1 OVERVIEW

The information presented in the previous sections of this report have been collated and evaluated to establish a refined qualitative risk assessment for the site.

The site has been considered with regard to current UK legislation and guidance, namely Part 2A of the Environmental Protection Act 1990 and the Contaminated Land (England) Regulations 2006, as amended, and in accordance with current UK good practice guidelines (for example BS10175:2011).

In general, ground contamination can occur through several causes, particularly from historical operations and activities. Contamination can result from either on-site sources or from on-site migration from off-site sources, leading to long term liabilities under recent legislation for any site owner.

For a risk of pollution or environmental harm to occur as a result of ground contamination, all of the following elements must be present:

- Source, i.e. a substance that is capable of causing pollution or harm;
- Pathway, i.e. a route by which the contaminant can reach a target; and
- Receptor (target), i.e. something which could be adversely affected by the contaminant.

If one of these elements is absent there can be no significant risk. If all are present then the magnitude of the risk is a function of the magnitude and mobility of the source, the sensitivity of the receptor and the nature of the migration pathway.

10.2 CURRENT SITE USAGE AND PROPOSED DEVELOPMENT

It is understood that the existing warehouse is to be extended with a single storey extension on the eastern side of the building as detailed by the drawing 21027-FRA-XX-00-DR-A-PL-3101 by Fletcher Rae, dated September 2022, and provided to Tetra Tech by the client.

10.3 CONCEPTUAL SITE MODEL

The key source, pathways and receptor model is outlined below within the context of potential development of the site. The following risk assessment is undertaken in the context of a commercial/ industrial end use scenario.

10.3.1 Sources of Contamination

The main sources of contamination on the site are associated with existing features as well as historical land uses on the site as summarised below.

Onsite Sources

- Residual contaminant concentrations within Made Ground in areas not previously investigated;
- Asbestos fibres in Made Ground.

Off Site Sources

Offsite sources of contamination are likely to be similar to those within the realms of the site and have therefore not been considered further.

10.3.2 Potential Contaminant Pathways

The following contaminant pathways are considered to potentially be active based on the current site use and proposed development:

Human Exposure Pathways

- Direct dermal contact or ingestion of soils, or inhalation of dust and/or vapours (i.e. human interaction with surface and sub-surface materials).
- Inhalation of dust created during constructions and to pose a risk to site construction workers and/or adjacent site users.

Environmental Pathways

- Leaching and horizontal or vertical migration through the unsaturated ground, either through permeable sub-surface materials and/or preferential pathways.
- Lateral and vertical migration of groundwater through permeable sub-surface materials and/ or preferential pathways.
- Leaching to surface water run-off/drainage.

10.3.3 Potential Receptors at Risk

The following potential receptors have been identified:

Human Health

- Future site users (commercial).
- Construction / Maintenance Workers (during construction).
- Adjacent site users (commercial).

Wider Environment

- Building Infrastructure and supply pipes.
- Adjacent Properties.
- Underlying Secondary Undifferentiated Aquifer (Glacial Till).
- Underlying Principal Aquifer (Chester Formation).

10.4 GROUND CONDITIONS RISK ASSESSMENT

The source, pathway, receptor linkages identified in the previous section are outlined and a qualitative risk assessment shown in the following tables.

The risk assessment considers the site within an area context and assesses potential risks to identified receptors in relation to the existing site setting and the proposed development. CIRIA C552 has been used to define the risk rating presented in the Qualitative Risk Assessment matrix, the methodology for which is presented in Appendix J.

Table 10-1 – CIRIA C552 Qualitative Risk Assessment

This matrix is based on CIRIA C552 risk evaluation methodology, definitions for risk ratings is presented in Appendix E						
Source	Pathway	Receptor	Consequence of risk being realised	Probability of risk being realised	Risk Classification	Justification & Potential Risk Management (if required)
Ground Conditions – Asbestos within the Made Ground	Dermal contact, ingestion and/or inhalation of or dusts	Human Health – Future site users (commercial)	Medium	Unlikely	Low	The proposed development will act as a barrier to break the source pathway receptor linkage.
		Human Health (Construction and Maintenance Workers with PPE)	Severe	Unlikely	Moderate/Low	Asbestos has been identified within the Made Ground in two locations at <0.001%. Risk reduced to Low through the use of appropriate site practices and PPE.
Ground Conditions – Residual contamination in areas not investigated	Dermal contact, ingestion and/or inhalation of or dusts	Human Health – Future site users (Commercial)	Medium	Unlikely	Low	The samples tested did not identify any raised concentrations above the GAC. Furthermore, based on the proposed development and through the use of hardstanding, the source pathway receptor linkage is broken by the impermeable hardstanding and therefore future site users are unlikely to come into contact with possible unforeseen contamination.
		Human Health (Construction and Maintenance Workers with PPE)				The samples tested did not identify any raised concentrations above the GAC. The risk rating is based on the use of Personal Protective Equipment (PPE) and appropriate working procedures. Should unforeseen quantities of contaminants be identified a specialist should be contacted.
	Leaching to groundwater, drainage and lateral / vertical migration.	Adjacent properties and land users	Medium	Unlikely	Low	The samples tested did not identify any raised concentrations above the GAC. Given the cohesive impermeable nature of the superficial soils any unidentified contamination is likely to be localised as there is no pathway to the underlying aquifers and if significant quantities observed a specialist should be contacted.
		Secondary Undifferentiated Aquifer				
		Principal Aquifer				

	Migration along/into service ducts and pipework	Buildings and Services	Medium	Low	Moderate/Low	Elevated concentrations of pH were identified however they are considered to be associated with concrete fragments within the Made Ground. Elevated TPH-CWG against the UU threshold values in the Made Ground, indicate that barrier pipe maybe required however, testing of the soil in the locations of proposed service supply lines should be undertaken in accordance with UKWIR and United Utilities guidance.
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11.0 CONCLUSIONS AND RECOMMENDATIONS

11.1 CONCLUSIONS

11.1.1 Contamination Summary

The risk posed by the development from onsite sources of contamination is considered to be **low** for all given receptors.

Low level asbestos fibre quantities <0.001% are present within the Made Ground and present a Moderate/Low risk to construction workers, however this risk can be reduced to low through the use of appropriate PPE and good site practices. If asbestos containing materials are encountered, then an asbestos specialist should be contacted.

A review of the TPH-CWG data against the UU screening values indicates that there are raised levels of TPH against the threshold for use of polyethylene pipe occurring within samples from the typical water pipe depths of between 0.75m and 1.35m bgl. On this basis, barrier pipe is recommended. However, at the time of the investigation the future routes of water supply pipes had not been established hence the investigation and sampling strategy may not be fully compliant with UKWIR and UU recommendations.

11.1.2 Ground Gas

It is considered that there is a **low** risk of ground gas being present onsite as the concentrations and the peak steady flow rate classify the site as Characteristic Situation 1 (CS1). Therefore, gas protection measures are not considered required in line with CIRIA C665 guidance.

11.1.3 Waste

The Hazwaste assessment has shown that all the tested samples can be classified as non-hazardous. Based on WAC test results, there is the potential to classify Made Ground as inert for disposal. Natural soils can be considered inert.

If site-won material is to be reused on site, or soils other than primary aggregate or aggregates produced under the WRAP Protocol, imported to site, a Materials Management Plan will be required.

11.1.4 Geotechnical

Given the anticipated loadings of the proposed extension, it is considered that pad foundations will likely be suitable taken into the natural Glacial Till subject to specialist design.

As a result of deeper Made Ground to the north onsite, of up to 4.10m bgl (CP03), a combined foundation solution may be required utilising mini piles and pads subject to specialist advice.

If a piled solution is adopted suspended floor slabs may be utilised over pile caps and ground beams subject to the engineer's design. However, if ground improvement is undertaken ground bearing floor slabs may be utilised subject to specialist consultation.

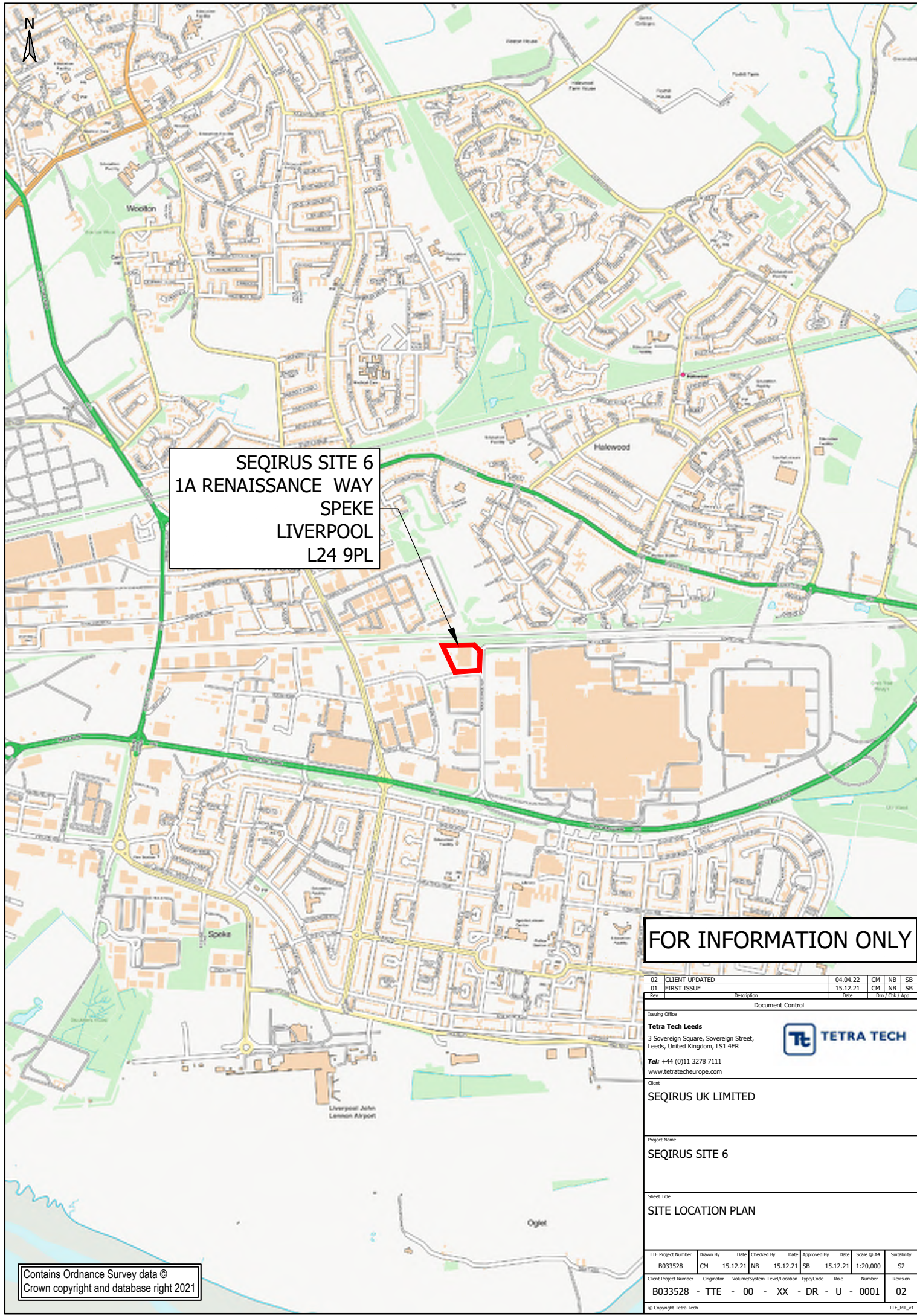
Concrete classification for the site found that all strata can be classified as DS-1 AC-1d.

Groundwater control measures are likely to be needed during construction to maintain dry conditions.

11.2 RECOMMENDATIONS

The following items are considered likely further works for the proposed development:

- Further testing of soils along proposed water supplier routes once locations are confirmed, inline with providers criteria (United Utilities).
- Consultation of a specialist piling contractor and liaison with the designer in relation to the proposed use of a combined foundation solution.



SEQIRUS SITE 6
1A RENAISSANCE WAY
SPEKE
LIVERPOOL
L24 9PL

FOR INFORMATION ONLY

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Issuing Office
Tetra Tech Leads
3 Sovereign Square, Sovereign Street,
Leeds, United Kingdom, LS1 4ER
Tel: +44 (0)11 3278 7111
www.tetrateteurope.com



Client
SEQIRUS UK LIMITED

Project Name
SEQIRUS SITE 6

Sheet Title
SITE LOCATION PLAN

TTE Project Number	Drawn By	Date	Checked By	Date	Approved By	Date	Scale @ A4	Suitability
B033528	CM	15.12.21	NB	15.12.21	SB	15.12.21	1:20,000	S2

Client Project Number	Originator	Volume/System	Level/Location	Type/Code	Role	Number	Revision
B033528	- TTE	- 00	- XX	- DR	- U	- 0001	02

General Notes

Do not scale from this drawing. Only work to written dimensions.

All site dimensions shall be verified by the Contractor on site prior to commencing any works.

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Areas Colour Key

- Plant Room
- Incubators
- Access Corridor
- Services Distribution
- Existing Building

Keys

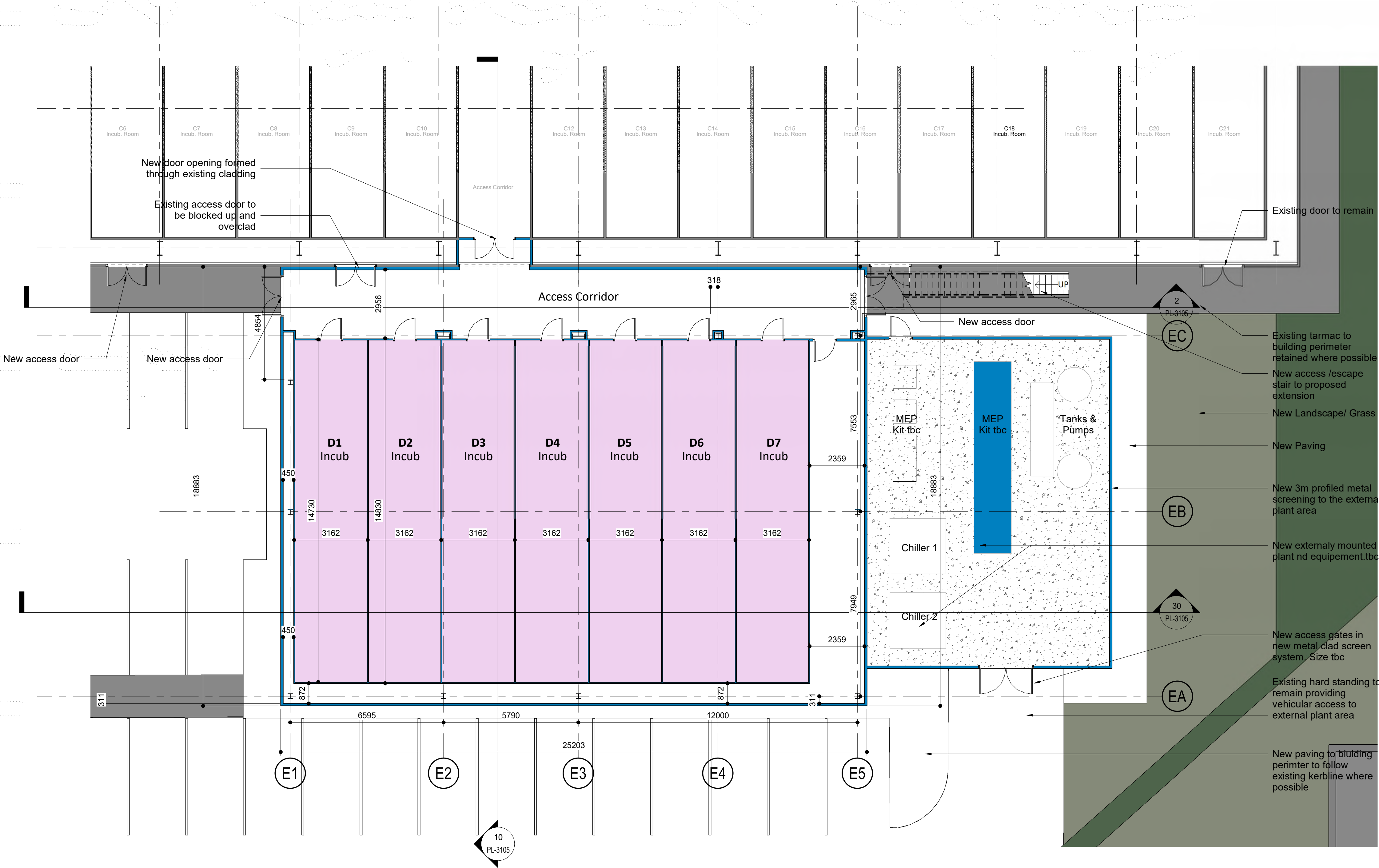
- Existing walls
- Walls to be demolished
- Proposed walls
- Doors / windows / stairs etc. to be demolished
- existing structural joints in ground floor slab

P3	Building position adjusted to align with existing columns and incubators	2022.10.12	NP	RCT
P2	Revised as per comments	2022.09.14	NP	RCT
P1	Issued for Planning	2022.09.09	NP	RCT
Rev.	Description	Date	ISS	APP
Scale	As indicated @ A1			
Status	S1 - Co-ordination			
Drawn By	NP			
Checked By	RCT			
Date	2022.09.09			

Client:
Seqirus

Project:
Seqirus Site 6 - Incubator Extension

Sheet Name:
Proposed 00 Plan



DRAWINGS

APPENDICES

APPENDIX A – REPORT CONDITIONS

APPENDIX A - REPORT CONDITIONS

GROUND INVESTIGATION

This report is produced solely for the benefit of Seqirus UK Limited and no liability is accepted for any reliance placed on it by any other party unless specifically agreed in writing otherwise.

This report refers, within the limitations stated, to the condition of the site at the time of the inspections. No warranty is given as to the possibility of future changes in the condition of the site.

This report is based on a visual site inspection, reference to accessible referenced historical records, information supplied by those parties referenced in the text and preliminary discussions with local and Statutory Authorities. Some of the opinions are based on unconfirmed data and information and are presented as the best that can be obtained without further extensive research. Where ground contamination is suspected but no physical site test results are available to confirm this, the report must be regarded as initial advice only, and further assessment should be undertaken prior to activities related to the site. Where test results undertaken by others have been made available these can only be regarded as a limited sample. The possibility of the presence of contaminants, perhaps in higher concentrations, elsewhere on the site cannot be discounted.

Whilst confident in the findings detailed within this report because there are no exact UK definitions of these matters, being subject to risk analysis, we are unable to give categoric assurances that they will be accepted by Authorities or Funds etc. without question as such bodies often have unpublished, more stringent objectives. This report is prepared for the proposed uses stated in the report and should not be used in a different context without reference to Tetra Tech EPT. In time improved practices or amended legislation may necessitate a re-assessment.

The assessment of ground conditions within this report is based upon the findings of the study undertaken. We have interpreted the ground conditions in between locations on the assumption that conditions do not vary significantly. However, no investigation can inspect each and every part of the site and therefore changes or variances in the physical and chemical site conditions as described in this report cannot be discounted.

The report is limited to those aspects of land contamination specifically reported on and is necessarily restricted and no liability is accepted for any other aspect especially concerning gradual or sudden pollution incidents. The opinions expressed cannot be absolute due to the limitations of time and resources imposed by the agreed brief and the possibility of unrecorded previous use and abuse of the site and adjacent sites. The report concentrates on the site as defined in the report and provides an opinion on surrounding sites. If migrating pollution or contamination (past or present) exists further extensive research will be required before the effects can be better determined.

APPENDIX B – EXPLORATORY HOLE LOGS

 Project: Seqirus Site 6 Location: Speke Client: Seqirus UK Limited						Location Details Easting: 343936.00 Northing: 384365.00 Level: 31.00mAOD Depth: 10.45m Logger: TB Type: CP Inclination: 90°						Status FINAL		Borehole Number CP01																																									
												Sheet 1 of 2																																											
Method, Plant and Crew <table><tr><th>From (m)</th><th>To (m)</th><th>Type</th><th>Plant Used</th><th>Crew</th></tr><tr><td>0.00</td><td>1.20</td><td>Inspection Pit</td><td>Hand Tools/Dando 2000</td><td>KB/RB</td></tr><tr><td>1.20</td><td>10.45</td><td>Cable Percussion</td><td>Dando 2000</td><td>KB/RB</td></tr></table>					From (m)	To (m)	Type	Plant Used	Crew	0.00	1.20	Inspection Pit	Hand Tools/Dando 2000	KB/RB	1.20	10.45	Cable Percussion	Dando 2000	KB/RB	Diameter <table><tr><th>Depth (m)</th><th>Diam (mm)</th></tr><tr><td>0.50</td><td>300</td></tr><tr><td>2.00</td><td>200</td></tr><tr><td>10.00</td><td>150</td></tr><tr><td>10.45</td><td>50</td></tr></table>		Depth (m)	Diam (mm)	0.50	300	2.00	200	10.00	150	10.45	50	Casing <table><tr><th>Depth(m)</th><th>Diam (mm)</th></tr><tr><td>2.00</td><td>200</td></tr></table>		Depth(m)	Diam (mm)	2.00	200	Drilling Progress by Time <table><tr><th>Date</th><th>Time</th><th>Depth (m)</th><th>Casing (m)</th><th>Water (m)</th></tr><tr><td>20/12</td><td>16:00</td><td>10.45</td><td>-</td><td></td></tr></table>						Date	Time	Depth (m)	Casing (m)	Water (m)	20/12	16:00	10.45	-		Scale: 1:50 Checked By: NB Approved By: SB Start Date: 20/12/2021 Finish Date: 21/12/2021	
From (m)	To (m)	Type	Plant Used	Crew																																																			
0.00	1.20	Inspection Pit	Hand Tools/Dando 2000	KB/RB																																																			
1.20	10.45	Cable Percussion	Dando 2000	KB/RB																																																			
Depth (m)	Diam (mm)																																																						
0.50	300																																																						
2.00	200																																																						
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2.00	200																																																						
Date	Time	Depth (m)	Casing (m)	Water (m)																																																			
20/12	16:00	10.45	-																																																				
Strata Description						Legend	Depth (m)	Reduced Level (mAOD)	Water Level (m)	Inst / Backfill	Samples and Testing <table><tr><th>Depth (m)</th><th>Ref</th><th>Tests / Results</th></tr></table>				Depth (m)	Ref	Tests / Results																																						
Depth (m)	Ref	Tests / Results																																																					
MADE GROUND: Black ASPHALT.							0.14	30.86																																															
MADE GROUND: Dark grey silty SAND and GRAVEL with low cobble content. Sand is fine to coarse. Gravel is angular to rounded fine to coarse of mixed lithologies including brick and concrete. Cobbles are sub-angular concrete.												0.30 - 0.70	B1																																										
												0.50	ES2																																										
												0.70 - 1.20	B3																																										
												1.00	ES4			1																																							
												1.20 - 1.65	B6	SPT(S) 1.20m, N=16 (2,3/4,4,4,4)																																									
												1.20 - 1.65	D5																																										
												1.50	ES7																																										
Stiff brown slightly gravelly sandy silty CLAY. Sand is fine to medium. Gravel is sub-angular to rounded of mixed lithologies including mudstone siltstone and sandstone.							1.30	29.70																																															
												2.00 - 2.45	U8	Ublows=68 Recovery=80%		2																																							
												2.50	D9																																										
												3.00 - 3.45	D10	SPT(S) 3.00m, N=16 (2,4/4,4,4,4)		3																																							
												4.00 - 4.50	U11	Ublows=66 Recovery=100%		4																																							
												4.50	D12																																										
												5.00 - 5.45	D13	SPT(S) 5.00m, N=18 (2,4/4,4,5,5)		5																																							
												6.00 - 6.45	U14	Ublows=72 Recovery=85%		6																																							
												6.50	D15																																										
												7.00	D16			7																																							
												7.50 - 7.95	D17	SPT(S) 7.50m, N=22 (3,5/5,5,6,6)																																									
												8.50	D18			8																																							
												9.00 - 9.45	U19	Ublows=64 Recovery=100%		9																																							
												9.50	D20																																										
												10.00 - 10.45	D21	SPT(S) 10.00m, N=27 (4,5/7,7,6,7)		10																																							
Observations / Remarks 1. Co-ordinates and ground level determined using GPS OS mobile application (Accurate to 6.00 metres). 2. Difficult digging conditions encountered in inspection pit at 0.40m bgl. 3. Groundwater seepage encountered at 10.20m bgl. 4. Exploratory hole installed to 10.00m bgl.										Chiselling <table><tr><th>From (m)</th><th>To (m)</th><th>Time (mins)</th></tr><tr><td></td><td></td><td></td></tr></table>			From (m)	To (m)	Time (mins)				Water Added <table><tr><th>From (m)</th><th>To (m)</th></tr><tr><td></td><td></td></tr></table>		From (m)	To (m)			Hammer Information <table><tr><th>Serial No.</th><th>Energy Ratio %</th></tr><tr><td>HD1</td><td>70</td></tr></table>		Serial No.	Energy Ratio %	HD1	70																									
From (m)	To (m)	Time (mins)																																																					
From (m)	To (m)																																																						
Serial No.	Energy Ratio %																																																						
HD1	70																																																						
										Groundwater <table><tr><th>Strike (m)</th><th>Casing (m)</th><th>Sealed (m)</th><th>Time (min)</th><th>Rose To (m)</th><th>Remarks</th></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td></tr></table>			Strike (m)	Casing (m)	Sealed (m)	Time (min)	Rose To (m)	Remarks							Project Number 784-B033528																														
Strike (m)	Casing (m)	Sealed (m)	Time (min)	Rose To (m)	Remarks																																																		

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Tetra Tech Project: Seqirus Site 6 Location: Speke Client: Seqirus UK Limited							Location Details Easting: 343926.00 Northing: 384391.00 Level: 31.00mAOD Depth: 15.45m Logger: TB Type: CP Inclination: 90°					Status FINAL		Borehole Number CP02		
												Sheet 1 of 2				
Method, Plant and Crew					Diameter		Casing		Drilling Progress by Time					Scale: 1:50		
From (m)	To (m)	Type	Plant Used	Crew	Depth (m)	Diam (mm)	Depth(m)	Diam (mm)	Date	Time	Depth (m)	Casing (m)	Water (m)	Checked By:	NB	
0.00	1.20	Inspection Pit	Hand Tools/Dando 2000	KB/RB	0.50	300	2.00	200	21/12	15:00	15.45	2.00		Approved By:	SB	
1.20	15.45	Cable Percussion	Dando 2000	KB/RB	2.00	200								Start Date:	21/12/2021	
					15.00	150								Finish Date:	21/12/2021	
					15.45	50										
Strata Description							Legend	Depth (m)	Reduced Level (mAOD)	Water Level (m)	Inst / Backfill	Samples and Testing				
												Depth (m)	Ref	Tests / Results		
MADE GROUND: Black ASPHALT.								0.13	30.87			0.30 - 0.70	B1 ES2	SPT(S) 1.20m, N=12 (4,3/3,3,3,3)		1
MADE GROUND: Dark brown silty SAND and GRAVEL with low cobble content. Sand is fine to coarse. Gravel is angular to rounded fine to coarse of mixed lithologies including brick and concrete. Cobbles are angular concrete.								1.00	30.00			0.70 - 1.00	B3 ES4			
MADE GROUND: Light brown slightly gravelly silty SAND. Sand is fine to coarse. Gravel is angular to sub-angular sandstone and limestone.								1.30	29.70			1.20	E55 D6	SPT(S) 2.00m, N=19 (2,3/4,5,5,5)		2
Stiff reddish brown slightly gravelly sandy silty CLAY with occasional bands of sand. Sand is fine to medium. Gravel is sub-angular to rounded of mixed lithologies including mudstone siltstone and sandstone.								1.20 - 1.65	ES7							
													Ublows=74 Recovery=95%	3		
																1.80
													SPT(S) 4.00m, N=15 (2,2/3,4,4,4)	4		
																2.00 - 2.45
													Ublows=72 Recovery=80%	5		
																3.00 - 3.45
													SPT(S) 6.00m, N=20 (3,3/4,5,5,6)	6		
																3.50
													Ublows=86 Recovery=80%	7		
																4.00 - 4.45
													SPT(S) 9.00m, N=22 (4,5/5,5,6,6)	9		
																4.00 - 4.45
														10		
																5.00 - 5.45
														8		
																5.50
														7		
																6.00 - 6.45
														6		
																7.50 - 7.95
														5		
																8.00
														4		
																9.00 - 9.45
														3		
														2		
														1		

Observations / Remarks										Chiselling			Water Added		Hammer Information	
1. Co-ordinates and ground level determined using GPS OS mobile application (Accurate to 6.00 metres). 2. Difficult digging conditions encountered in inspection pit at 0.50m bgl. 3. Groundwater seepage encountered at 3.10 and 13.20m bgl. 4. Exploratory hole installed to 14.00m bgl.										From (m)	To (m)	Time (mins)	From (m)	To (m)	Serial No.	Energy Ratio %
										Groundwater						Project Number
Strike (m)	Casing (m)	Sealed (m)	Time (min)	Rose To (m)	Remarks	784-B033528										
3.10	-	-	20	3.10	Seepage Only.											

Tetra Tech Project: Seqirus Site 6 Location: Speke Client: Seqirus UK Limited										Location Details Easting: 343926.00 Northing: 384391.00 Level: 31.00mAOD Depth: 15.45m Logger: TB Type: CP Inclination: 90°										Status FINAL		Borehole Number CP02	
																				Sheet 2 of 2			
Method, Plant and Crew							Diameter		Casing		Drilling Progress by Time						Scale: 1:50						
From (m)	To (m)	Type	Plant Used	Crew	Depth (m)	Diam (mm)	Depth(m)	Diam (mm)	Date	Time	Depth (m)	Casing (m)	Water (m)	Checked By:	NB								
0.00	1.20	Inspection Pit	Hand Tools/Dando 2000	KB/RB	0.50	300	2.00	200	21/12	15:00	15.45	2.00		Approved By:	SB								
1.20	15.45	Cable Percussion	Dando 2000	KB/RB	15.00	150								Start Date:	21/12/2021								
					15.45	50								Finish Date:	21/12/2021								
Strata Description							Legend	Depth (m)	Reduced Level (mAOD)	Water Level (m)	Inst / Backfill	Samples and Testing											
												Depth (m)	Ref	Tests / Results									
Stiff reddish brown slightly gravelly sandy silty CLAY with occasional bands of sand. Sand is fine to medium. Gravel is sub-angular to rounded of mixed lithologies including mudstone siltstone and sandstone.								15.45	15.55			10.50 - 10.95	U19	Ublows=89 Recovery=100%									
												11.00	D20										
												12.00 - 12.45	D21	SPT(S) 12.00m, N=35 (4,6/8,8,9,10)									
												13.00	D22										
												13.50 - 13.95	U23	Ublows=92 Recovery=100%									
												14.50	D24										
												15.00 - 15.45	D25	SPT(S) 15.00m, N=38 (6,8/9,9,10,10)									
EOH at 15.45m - Target Depth Achieved.																							
Observations / Remarks							Chiselling			Water Added		Hammer Information		Project Number									
							Groundwater																
							Strike (m)	Casing (m)	Sealed (m)	Time (min)	Rose To (m)	Remarks											
13.20	-	-	20	13.20	Seepage Only.																		
													784-B033528										

Tt TETRA TECH Project: Seqirus Site 6 Location: Speke Client: Seqirus UK Limited						Location Details Easting: 343911.00 Northing: 384408.00 Level: 31.00mAOD Depth: 12.50m Logger: TB Type: CP Inclination: 90°						Status FINAL		Borehole Number CP03		
												Sheet 1 of 2				
Method, Plant and Crew From (m) To (m) Type 0.00 1.20 Inspection Pit 1.20 12.50 Cable Percussion Plant Used Hand Tools Dando 2000 Crew JG/DA JG/DA					Diameter Depth (m) 1.20 6.00 12.50 Diam (mm) 300 150 100		Casing Depth(m) 6.00 Diam (mm) 150		Drilling Progress by Time Date Time Depth (m) Casing (m) Water (m)						Scale: 1:50 Checked By: NB Approved By: SB Start Date: 25/02/2022 Finish Date: 25/02/2022	
Strata Description						Legend		Depth (m)	Reduced Level (mAOD)	Water Level (m)	Inst / Backfill	Samples and Testing Depth (m) Ref Tests / Results				
MADE GROUND: Black ASPHALT.								0.15	30.85							
MADE GROUND: Brown slightly silty gravelly fine to coarse SAND. Gravel is angular to rounded fine to coarse of mixed lithologies including brick concrete asphalt and sandstone.								0.35	30.65				0.30	ES1	PID 0.30m, 0.0ppm	
MADE GROUND: Yellowish brown slightly gravelly slightly silty fine to coarse SAND. Gravel is angular to sub-angular sandstone.													1.00	ES2	PID 1.00m, 0.0ppm SPT(C) 1.20m, 50 (25 for 70mm/50 for 50mm)	
MADE GROUND: Dense light grey slightly sandy angular coarse GRAVEL of limestone. Sand is fine to coarse.								1.25	29.75							
MADE GROUND: Reddish brown and dark brown slightly sandy angular fine to coarse GRAVEL of brick. Sand is fine to coarse.								1.90	29.10							
MADE GROUND: Dense light grey slightly sandy angular medium to coarse GRAVEL of limestone. Sand is fine to coarse.								2.00	29.00							
MADE GROUND: Medium dense to dense greenish brown locally clayey slightly gravelly fine to medium SAND. Gravel is sub-angular fine to coarse sandstone.								2.60	28.40				3.00	ES3	SPT(C) 3.00m, 50 (25 for 140mm/50 for 210mm) PID 3.00m, 0.0ppm	
Stiff reddish brown slightly gravelly slightly sandy silty CLAY. Sand is fine. Gravel is sub-angular to sub-rounded of mixed lithologies including sandstone.								4.10	26.90				4.00 - 4.45	D4	SPT(S) 4.00m, N=14 (1,3/3,3,4,4) Ublows=18 Recovery=100%	
													5.00 - 5.45	U5	Ublows=65 Recovery=55%	
													5.50	D6		
													6.50 - 6.95	D7	SPT(S) 6.50m, N=14 (1,2/3,3,4,4) Ublows=17 Recovery=100%	
													8.00 - 8.45	U8	Ublows=60 Recovery=100%	
													8.50	D9		
													9.50 - 9.95	D10	SPT(S) 9.50m, N=15 (1,2/3,3,4,5) Ublows=18 Recovery=100%	
Observations / Remarks 1. Co-ordinates and ground level determined using GPS OS mobile application (Accurate to 6.00 metres). 2. Groundwater not encountered.						Chiselling From (m) To (m) Time (mins)						Water Added From (m) To (m)		Hammer Information Serial No. Energy Ratio %		
												PB1		73		
						Groundwater Strike (m) Casing (m) Sealed (m) Time (min) Rose To (m) Remarks						Project Number 784-B033528				

[illegible]

Tt TETRA TECH Project: Seqirus Site 6 Location: Speke Client: Seqirus UK Limited						Location Details						Status		Borehole Number								
						Easting: 343949.00 Northing: 384369.00 Level: 31.00mAOD Depth: 5.45m Logger: TB Type: WLS Inclination: 90°						FINAL		WS02								
																Sheet 1 of 2						
Method, Plant and Crew					Diameter		Casing		Groundwater						Scale: 1:25							
From (m)	To (m)	Type	Plant Used	Crew	Depth (m)	Diam (mm)	Depth(m)	Diam (mm)	Strike (m)	Casing (m)	Sealed (m)	Rose To (m)	Time (mins)	Remarks	Checked By:	NB						
0.00	1.20	Inspection Pit	Hand Tools/Tracked Windowless Sampling Rig	GP/AN											Approved By:	SB						
1.20	5.45	Dynamic Windowless Sampling	Tracked Windowless Sampling Rig	GP/AN											Start Date:	21/12/2021						
															Finish Date:	21/12/2021						
Strata Description							Legend	Depth (m)	Reduced Level (mAOD)	Water Level (m)	Inst / Backfill	Samples and Testing										
												Depth (m)	Ref	Tests / Results								
MADE GROUND: Black ASPHALT.								0.17	30.83			0.30	ES1									
MADE GROUND: Reddish brown silty SAND and GRAVEL with low cobble content. Sand is fine to coarse. Gravel is angular to sub-angular of mixed lithologies including brick and concrete. Cobbles are angular brick and concrete. Occasional fragments of wood.																						
MADE GROUND: Light brown slightly SAND and GRAVEL. Sand is fine to coarse. Gravel is angular to sub-angular fine to coarse of mixed lithologies including brick and concrete.																	0.60	30.40		0.75	ES2	
MADE GROUND: Stiff dark grey slightly sandy slightly gravelly CLAY. Sand is fine to medium. Gravel is angular fine to coarse of mixed lithologies including granite and concrete.																						
Firm to stiff brown slightly gravelly sandy silty CLAY. Sand is fine to medium. Gravel is sub-angular to rounded of mixed lithologies including mudstone siltstone and sandstone.																	1.20	29.80		1.00	ES3	SPT(S) 1.00m, N=13 (4,4/4,3,3,3)
From 3.00m bgl: Becoming stiff.							1.50	D4														
							2.00 - 2.45					D5	SPT(S) 2.00m, N=13 (2,3/3,2,4,4)		2							
							3.00 - 3.45		D6		SPT(S) 3.00m, N=17 (2,2/4,3,4,6)		3									
							4.00 - 4.45		D7		SPT(S) 4.00m, N=22 (3,4/4,5,6,7)		4									
							5.00 - 5.45		D8	SPT(S) 5.00m, N=14 (2,3/3,3,3,5)		5										
Observations / Remarks												Sampling Runs			Hammer Information							
1. Co-ordinates and ground level determined using GPS OS mobile application (Accurate to 6.00 metres). 2. Difficult digging conditions encountered in inspection pit at 1.00m bgl. 3. Groundwater not encountered. 4. Exploratory hole installed to 1.00m bgl with bentonite seal to 1.50m bgl.												From (m)	To (m)	Diam (mm)	Recovery %	Remarks	Serial No.	Energy Ratio %				
												1.00	2.00	102	100		DART239	69				
												2.00	3.00	87	50							
												3.00	4.00	77	85							
												4.00	5.00	47	65							
												Project Number										
												784-B033528										

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Tt TETRA TECH Project: Seqirus Site 6 Location: Speke Client: Seqirus UK Limited						Location Details						Status FINAL		Borehole Number WS03				
						Easting: 343938.00 Northing: 384399.00 Level: 31.00mAOD Depth: 1.60m Logger: TB Type: WLS Inclination: 90°												
						Method, Plant and Crew						Diameter		Casing		Groundwater		
From (m)	To (m)	Type	Plant Used	Crew	Depth (m)	Diam (mm)	Depth(m)	Diam (mm)	Strike (m)	Casing (m)	Sealed (m)	Rose To (m)	Time (mins)	Remarks	Checked By: NB	Approved By: SB	Start Date: 21/12/2021	Finish Date: 21/12/2021
0.00	1.20	Inspection Pit	Hand Tools/Tracked Windowless Sampling Rig	GP/AN														
1.20	1.60	Dynamic Windowless Sampling	Tracked Windowless Sampling Rig	GP/AN														
Strata Description							Legend	Depth (m)	Reduced Level (mAOD)	Water Level (m)	Inst / Backfill	Samples and Testing						
MADE GROUND: Black ASPHALT.													Depth (m)	Ref	Tests / Results			
MADE GROUND: Dark brown silty SAND and GRAVEL with low cobble content. Sand is fine to coarse. Gravel is angular to rounded fine to coarse of mixed lithologies including concrete and brick. Cobbles are angular concrete.								0.19	30.81				0.30	ES1	SPT(S) 0.90m, 50 (12,11/50 for 150mm)			
MADE GROUND: Light brown silty SAND and GRAVEL. Sand is fine to coarse. Gravel is angular to sub-angular fine to coarse sandstone.								0.50	30.50			0.60	ES2					
MADE GROUND: Very light brown slightly clayey slightly gravelly silty SAND. Sand is fine to coarse. Gravel is angular to sub-angular fine to coarse limestone.								0.70	30.30			0.80	ES3					
MADE GROUND: Very dense light grey angular fine to coarse GRAVEL of limestone.								0.90	30.10									
EOH at 1.60m - Refusal of sampling barrel at 1.60m bgl.								1.60	29.40									
Observations / Remarks							Sampling Runs							Hammer Information				
1. Co-ordinates and ground level determined using GPS OS mobile application (Accurate to 6.00 metres). 2. Difficult digging conditions encountered in inspection pit at 0.90m bgl. 3. Groundwater not encountered. 4. Exploratory hole backfilled with arisings.							From (m)	To (m)	Diam (mm)	Recovery %	Remarks	Serial No.	Energy Ratio %					
							1.00	1.60	87	100		DART239	69					
							Project Number 784-B033528											

[illegible]

SPT Hammer Energy Test Report

in accordance with BSEN ISO 22476-3:2005

Unit 8
Orton Enterprise Centre
Orton Southgate
Peterborough
PE2 6XU

SPT Hammer Ref: HD1
 Test Date: 30/04/2021
 Report Date: 30/04/2021
 File Name: HD1.spt
 Test Operator: PR

Instrumented Rod Data

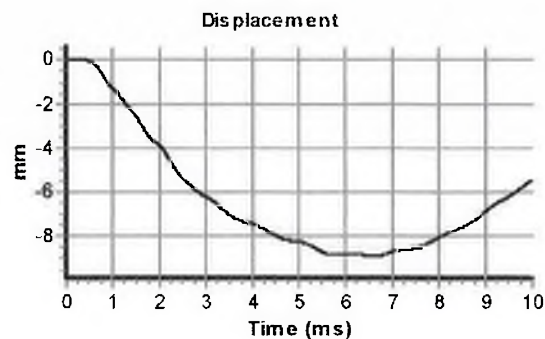
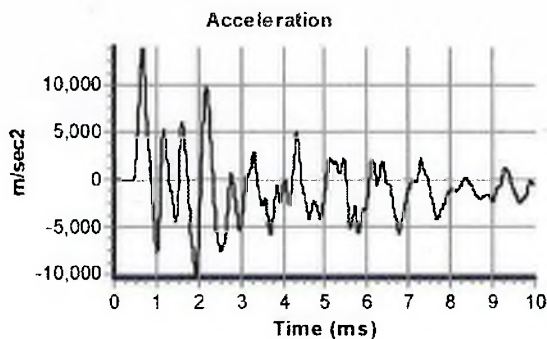
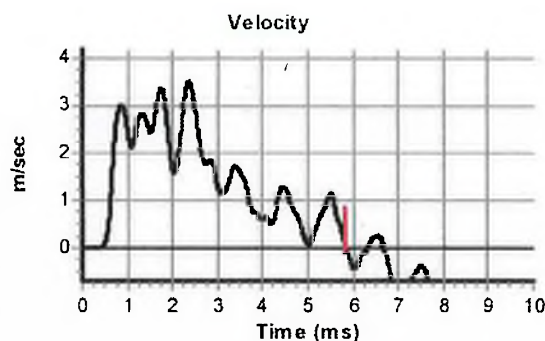
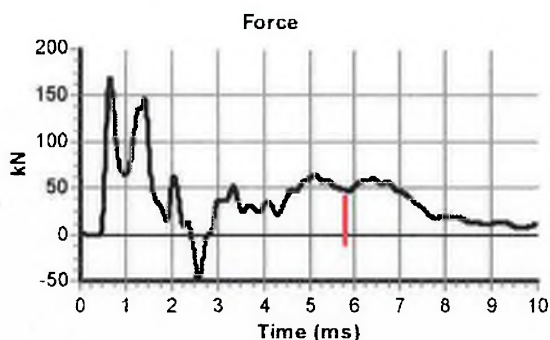
Diameter d_r (mm): 54
 Wall Thickness t_r (mm): 6.3
 Assumed Modulus E_a (GPa): 208
 Accelerometer No.1: 11853
 Accelerometer No.2: 10332

SPT Hammer Information

Hammer Mass m (kg): 63.0
 Falling Height h (mm): 760
 SPT String Length L (m): 15.0

Comments / Location

Recommended calibration interval is 6 months, maximum 12.



Calculations

Area of Rod A (mm²): 944
 Theoretical Energy E_{theor} (J): 473
 Measured Energy E_{meas} (J): 333

Energy Ratio E_r (%): **70**

P. Rodgman

Signed: PR
 Title: Operator



Scott Pincher
JB Site Investigations
DC103/9
Windmill Way West
Ramparts Business Park

SPT Hammer Energy Test Report

in accordance with BSEN ISO 22476-3:2005

SPT Hammer Ref: PB1
 Test Date: 23/07/2021
 Report Date: 26/07/2021
 File Name: PB1.spt
 Test Operator: SP



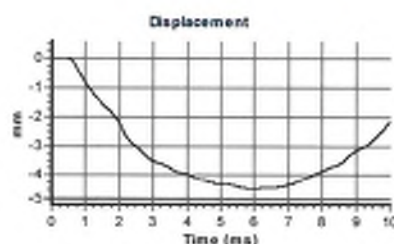
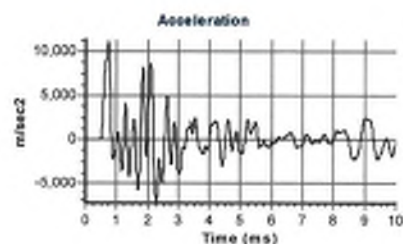
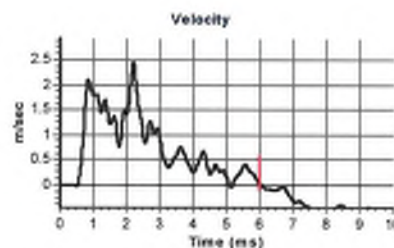
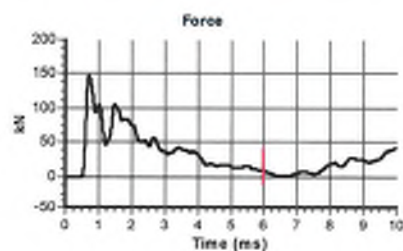
Instrumented Rod Data

Diameter d_r (mm): 54
 Wall Thickness t_r (mm): 6.1
 Rod Length l_r (m): 1.0
 Assumed Modulus E_a (GPa): 208
 Accelerometer No.1: 6178
 Accelerometer No.2: 5843

SPT Hammer Information

Hammer Mass m (kg): 63.5
 Falling Height h (mm): 760
 SPT String Length L (m): 14.2

Comments / Location



Calculations

Area of Rod A (mm^2): 918
 Theoretical Energy E_{theor} (J): 473
 Measured Energy E_{meas} (J): 347

Energy Ratio E_r (%): **73**

Signed:

Title: Director

APPENDIX C – PHOTO PLATES



Photo Plate No. 01: WS01 sample, from 1.00mbgl to 2.00mbgl.



Photo Plate No. 02: WS02 sample, from 3.00mbgl to 4.00mbgl.

Quay West at MediaCityUK,
Trafford Wharf Road,
Trafford Park,
Manchester M17 1HH

Tel: 0161 872 3223
Fax: 0161 872 3192
E-mail WYG.Enquiries@tetrattech.com

Environmental Consultancy
Ground Technologies & Investigation



Project: Seqirus Site 6, Speke

Client: Seqirus UK Limited

Ground Investigation Photo Plates

Project No.: B033528

Date: April 2022



Photo Plate No. 03: WS03 hand excavated inspection pit, from 0.00mbgl to 0.90mbgl.



Photo Plate No. 04: WS03 cored location and surface disturbance.

Quay West at MediaCityUK,
Trafford Wharf Road,
Trafford Park,
Manchester M17 1HH

Tel: 0161 872 3223
Fax: 0161 872 3192
E-mail WYG.Enquiries@tetrattech.com

Environmental Consultancy
Ground Technologies & Investigation



Project: Seqirus Site 6, Speke

Client: Seqirus UK Limited

Ground Investigation Photo Plates

Project No.: B033528

Date: April 2022



Photo Plate No. 03: Earth Engineering sub-contractors with tracked windowless sampling rig at location WS01.



Photo Plate No. 06: Dando 2000 cable pit rig at location CP01, facing south.

Quay West at MediaCityUK,
Trafford Wharf Road,
Trafford Park,
Manchester M17 1HH

Tel: 0161 872 3223
Fax: 0161 872 3192
E-mail WYG.Enquiries@tetrattech.com

Environmental Consultancy
Ground Technologies & Investigation



**Project: Seqirus Site 6,
Speke**

Client: Seqirus UK Limited

Ground Investigation Photo Plates

Project No.: B033528

Date: April 2022



Photo Plate No. 07: Coring of location WS02.



Photo Plate No. 08: Reinstatement and installation of CP02.

**Quay West at MediaCityUK,
Trafford Wharf Road,
Trafford Park,
Manchester M17 1HH**

**Tel: 0161 872 3223
Fax: 0161 872 3192
E-mail WYG.Enquiries@tetrattech.com**

**Environmental Consultancy
Ground Technologies & Investigation**



Project: Seqirus Site 6, Speke

Client: Seqirus UK Limited

Ground Investigation Photo Plates

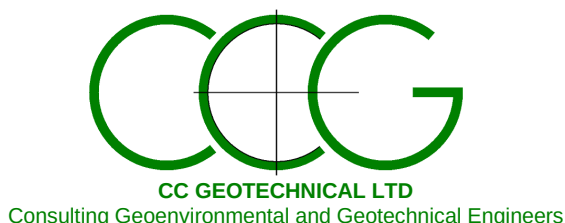
Project No.: B033528

Date: April 2022

APPENDIX D – GEOTECHNICAL TESTING RESULTS

Units 1 & 2
Deltic Place
Deltic Way
Knowsley Industrial Estate
Liverpool
L33 7BU

Telephone: (0151) 545 2750
Fax: (0151) 548 7892
Email: enquiries@ccgeotechnical.com
www.ccgeotechnical.com



LABORATORY REPORT

CONTRACT NUMBER: CCG-C-21-12837

CONTRACT TITLE: SEQIRUS SITE 6, SPEKE

CLIENT: TETRA TECH

Quay West at MediaCityUK, Trafford Wharf Road, Trafford Park, Manchester M17 1HH

DATE RECEIVED: 22/12/21
DATE COMMENCED: 04/01/22
DATE COMPLETED: 12/01/22
REPORT DATE: 12/01/22

Test Description	Qty
Determination of Moisture Content BS 1377-2:1990 (a)	4
Determination of Liquid & Plastic Limits BS 1377-2:1990 (a)	4
Particle Size Distribution BS 1377-2:1990 (a)	2
Sedimentation by Hydrometer BS1377-2:1990 (#)	2
Unconsolidated Undrained Triaxial Compression BS1377-7:1990 (a)	4
One-Dimensional Consolidation BS1377-5:1990 (a)	2
pH Value (s)	4
Water Soluble Sulphate (s)	4

Notes: Observations and interpretations are not accredited by UKAS
All testing undertaken at laboratory permanent facilities
denotes non-accredited test
a denotes UKAS accredited test
s denotes test undertaken by approved subcontractor
Test results only relate to the samples tested
Sample and sample information supplied by client

This report is issued in accordance with the requirements of the United Kingdom Accreditation Services and EN ISO/IEC 17025:2017. The results reported herein relate only to the material supplied to the laboratory. This report shall not be reproduced except in full, without the prior written approval of the laboratory.

Approved Signatories: Chris Bolan (Managing Director) – Daniel Kerfoot (Laboratory Manager)

SUMMARY OF LABORATORY SOIL TEST RESULTS

BH / TP / WS Number	Sample Type	Depth From (m)	Depth To (m)	Moisture Content (%)	Bulk Density (Mg/m³)	Dry Density (Mg/m³)	Shear Strength (kN/m²)	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index (%)	Passing 0.425mm (%)	Soil Classification	UKAS accredited test (Y/N)	Description / Test Method Samples described in accordance with BS EN ISO 14688-2 2004
CP01	B	1.20	1.65	-	-	-	-	-	-	-	-	-	Y	Brown sandy slightly gravelly silty CLAY. Gravel is fine to coarse subrounded sandstone. (BS1377Pt2:9.2,9.5)
CP01	D	2.50	2.50	14	-	-	-	28	13	15	95	CL	Y	Brown sandy slightly gravelly silty CLAY. Gravel is fine to medium subrounded sandstone. (BS1377Pt2:3.2,4.4,5)
CP01	U	4.00	4.50	14	2.31	2.02	80	-	-	-	-	-	Y	Brown sandy slightly gravelly silty CLAY of high undrained shear strength. Gravel is fine to medium subrounded sandstone. (BS1377Pt2:3.2,Pt7:8)
CP01	D	7.00	7.00	15	-	-	-	28	14	14	90	CL	Y	Brown sandy slightly gravelly silty CLAY. Gravel is fine to medium subrounded sandstone. (BS1377Pt2:3.2,4.4,5)
CP01	U	9.00	9.45	14	2.32	2.04	51	-	-	-	-	-	Y	Brown sandy slightly gravelly silty CLAY of medium undrained shear strength. Gravel is fine to medium subrounded sandstone. (BS1377Pt2:3.2,Pt7:8)
CP02	U	3.00	3.45	14	2.30	2.01	81	-	-	-	-	-	Y	Brown sandy slightly gravelly silty CLAY of high undrained shear strength. Gravel is fine to medium subrounded sandstone. (BS1377Pt2:3.2,Pt7:8)
CP02	D	4.00	4.45	15	-	-	-	29	14	15	92	CL	Y	Brown sandy slightly gravelly silty CLAY. Gravel is fine to medium subrounded sandstone. (BS1377Pt2:3.2,4.4,5)
CP02	B	4.00	4.45	-	-	-	-	-	-	-	-	-	Y	Brown sandy slightly gravelly silty CLAY. Gravel is fine to coarse subrounded sandstone. (BS1377Pt2:9.2,9.5)
CP02	U	7.50	7.95	14	2.29	2.01	80	-	-	-	-	-	Y	Brown sandy slightly gravelly silty CLAY of high undrained shear strength. Gravel is fine to medium subrounded sandstone. (BS1377Pt2:3.2,Pt7:8)
CP02	D	9.00	9.45	12	-	-	-	27	14	13	90	CL	Y	Brown sandy slightly gravelly silty CLAY. Gravel is fine to medium subrounded sandstone. (BS1377Pt2:3.2,4.4,5)

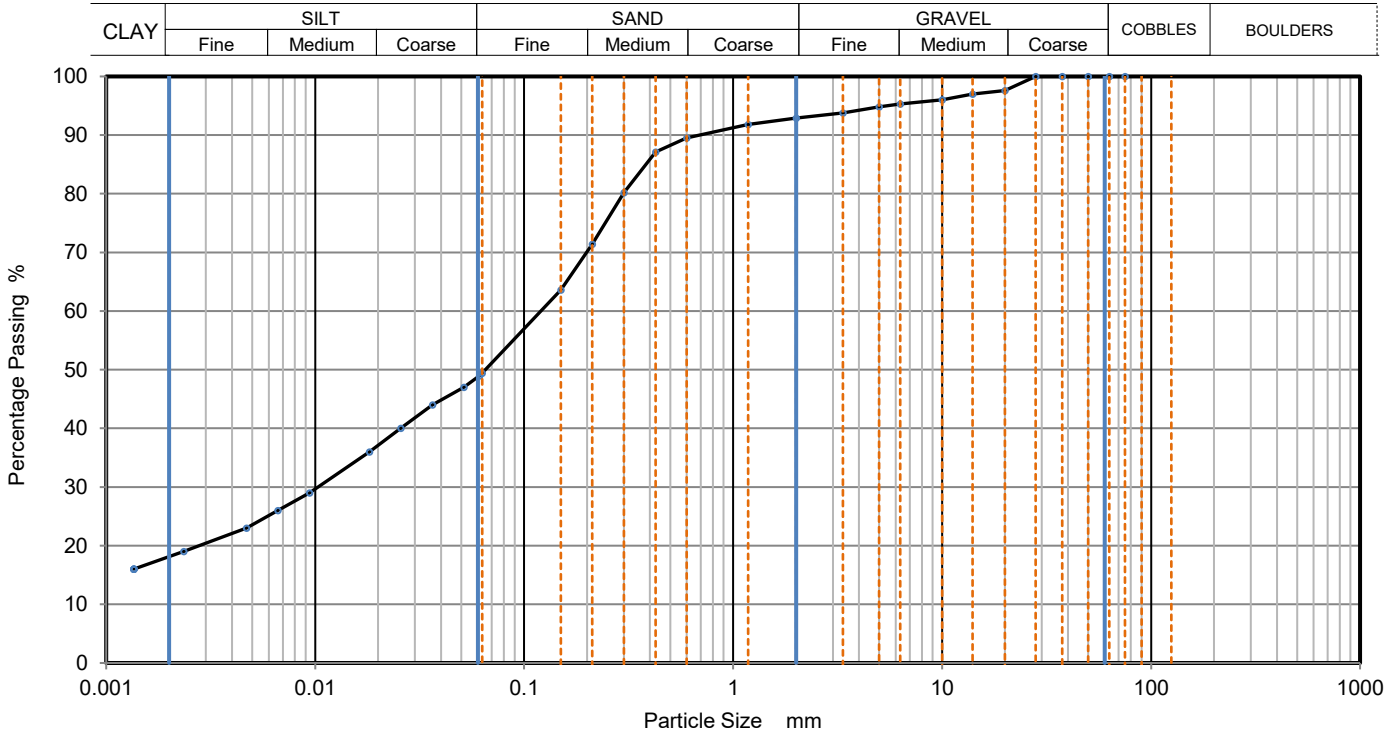
SITE: SEQIRUS SITE 6, SPEKE (CCG-C-21-12837)
CLIENT: TETRA TECH

DATE: 06.01.22

Key:- BD = Bulk Disturbed; SD = Small Disturbed; U100 = Undisturbed 100mm; WS = Window Sample
CL = Low Plasticity; CI = Intermediate; CH = High; CV = Very high; CE = Extremely high; NP = Non-plastic
(* Denotes Hand Shear Vane test result)
Sample description not accredited by UKAS



 CC Geotechnical Ltd Tel: 0151 545 2750 e: lab@ccgeotechnical.com		PARTICLE SIZE DISTRIBUTION		Job Ref	CCG-C-21-12837
				Borehole/Pit No.	CP01
Site Name	SEQIRUS SITE 6, SPEKE			Sample No.	1
Specimen Description	Brown sandy slightly gravelly silty CLAY			Depth, m	1.20
Specimen Reference		Specimen Depth	m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5			KeyLAB ID	CCGL202201055



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0612	49
		0.0514	47
75	100	0.0364	44
63	100	0.0257	40
50	100	0.0182	36
37.5	100	0.0094	29
28	100	0.0066	26
20	98	0.0047	23
14	97	0.0023	19
10	96	0.0014	16
6.3	95		
5	95		
3.35	94		
2	93		
1.18	92		
0.6	90	Particle density (assumed) 2.65 Mg/m3	
0.425	87		
0.3	80		
0.212	71		
0.15	64		
0.063	49		

Dry Mass of sample, g	
-----------------------	--

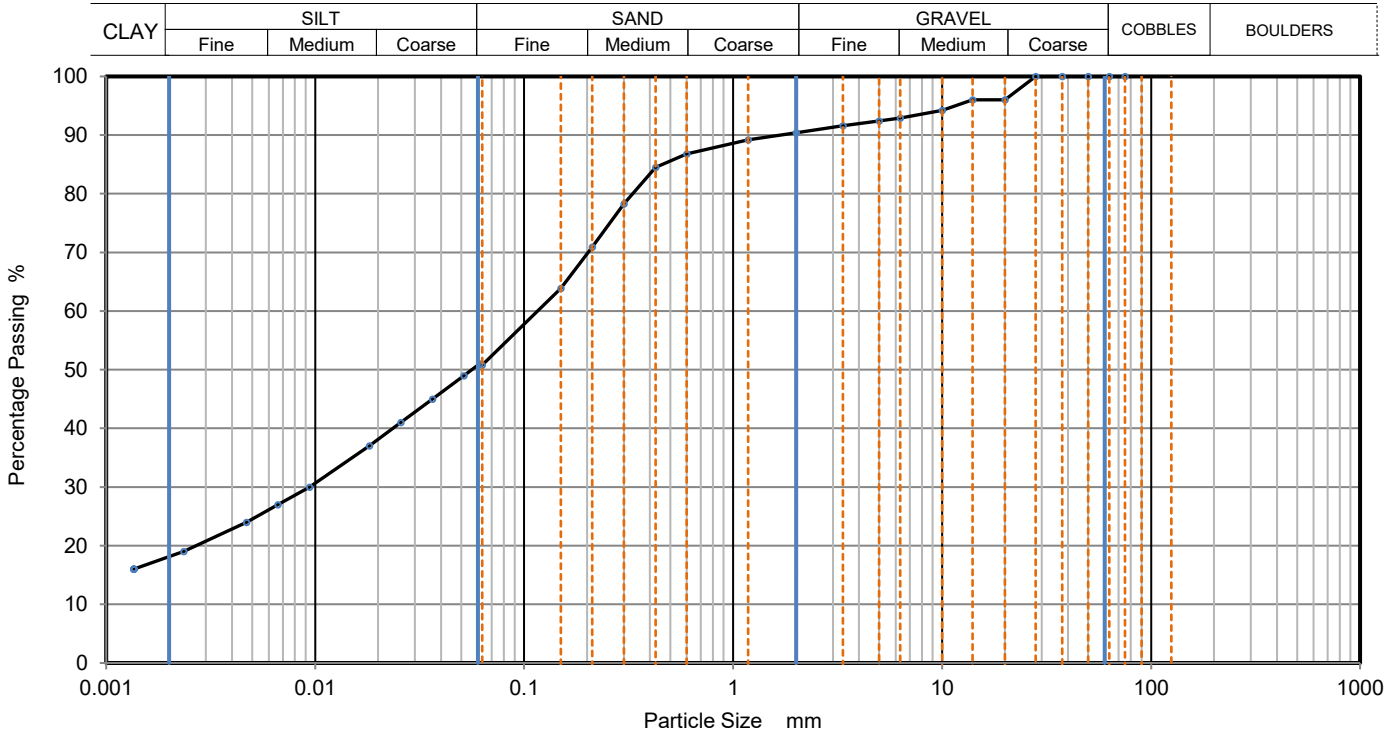
Sample Proportions		% dry mass
Very coarse		0
Gravel		7
Sand		44
Silt		31
Clay		18

Grading Analysis		
D100	mm	
D60	mm	0.121
D30	mm	0.0102
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks
Preparation and testing in accordance with BS1377 unless noted below

Operator	Checked	Approved	Sheet printed	Fig 1 Sheet
HW	DK	DK	06/01/2022 15:56	

 CC Geotechnical Ltd Tel: 0151 545 2750 e: lab@ccgeotechnical.com		PARTICLE SIZE DISTRIBUTION		Job Ref	CCG-C-21-12837
				Borehole/Pit No.	CP02
Site Name	SEQIRUS SITE 6, SPEKE			Sample No.	1
Specimen Description	Brown sandy slightly gravelly silty CLAY			Depth, m	4.00
Specimen Reference		Specimen Depth	m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5			KeyLAB ID	CCGL202201056



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0612	51
		0.0514	49
75	100	0.0364	45
63	100	0.0257	41
50	100	0.0182	37
37.5	100	0.0094	30
28	100	0.0066	27
20	96	0.0047	24
14	96	0.0023	19
10	94	0.0014	16
6.3	93		
5	92		
3.35	92		
2	90		
1.18	89		
0.6	87	Particle density (assumed) 2.65 Mg/m3	
0.425	85		
0.3	78		
0.212	71		
0.15	64		
0.063	51		

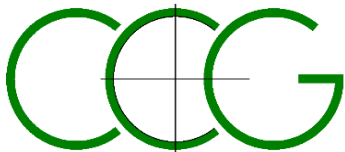
Dry Mass of sample, g

Sample Proportions		% dry mass
Very coarse		0
Gravel		10
Sand		39
Silt		33
Clay		18

Grading Analysis		
D100	mm	
D60	mm	0.116
D30	mm	0.00921
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

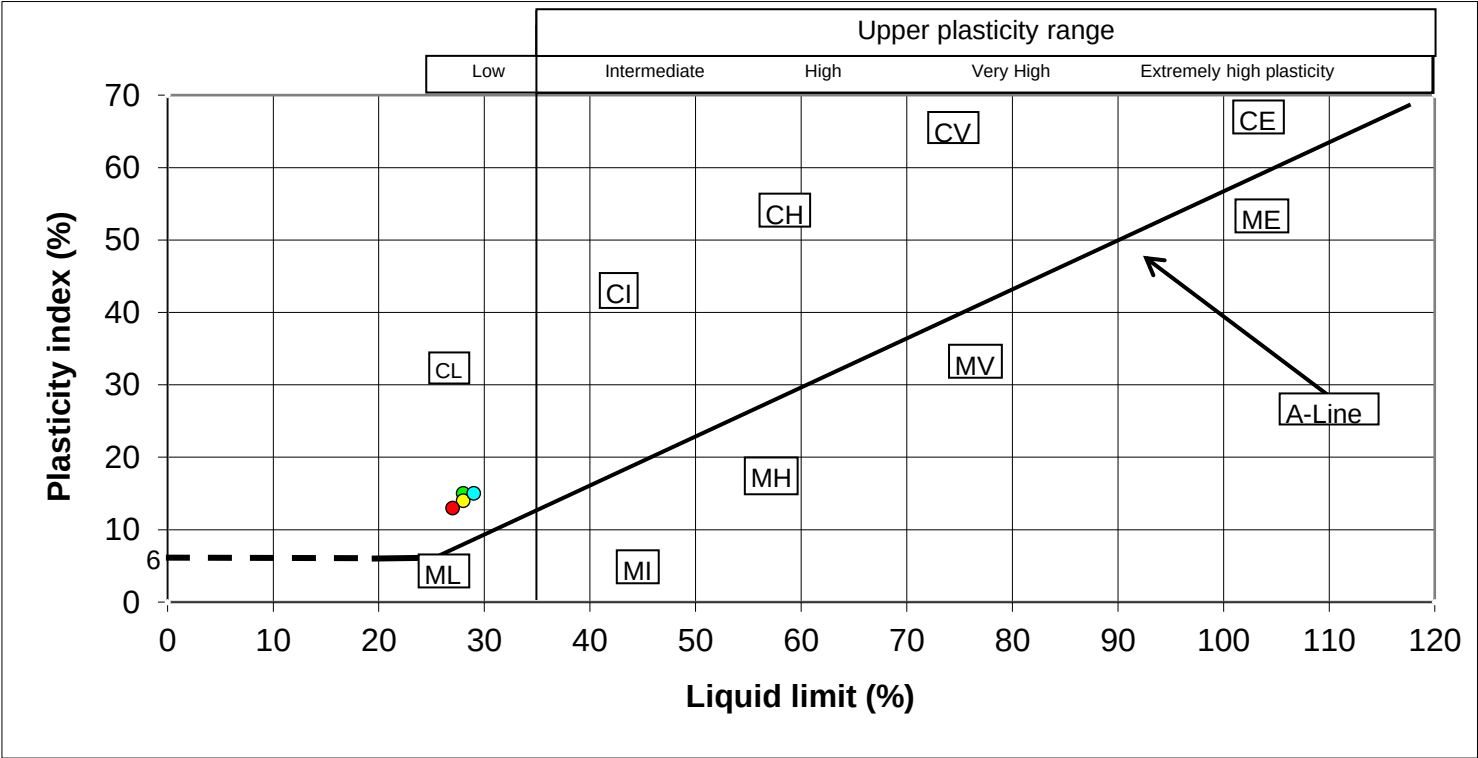
Remarks
Preparation and testing in accordance with BS1377 unless noted below

Operator	Checked	Approved	Sheet printed	Fig 1 Sheet
HW	DK	DK	06/01/2022 15:56	



ATTERBERG TEST RESULT SHEET
BS 1377:Part 2:1990:cl 4.4,5

SILT (M-SOIL), M plots below A-Line , CLAY,C, plots above A-Line, M and C may be combined as FINE SOIL, F.



BH	Sample Depth	Liquid limit	Plasticity index
CP01	2.50	28.0	15.0
CP01	7.00	28.0	14.0
CP02	4.00	29.0	15.0
CP02	9.00	27.0	13.0



APPROVED BY DK

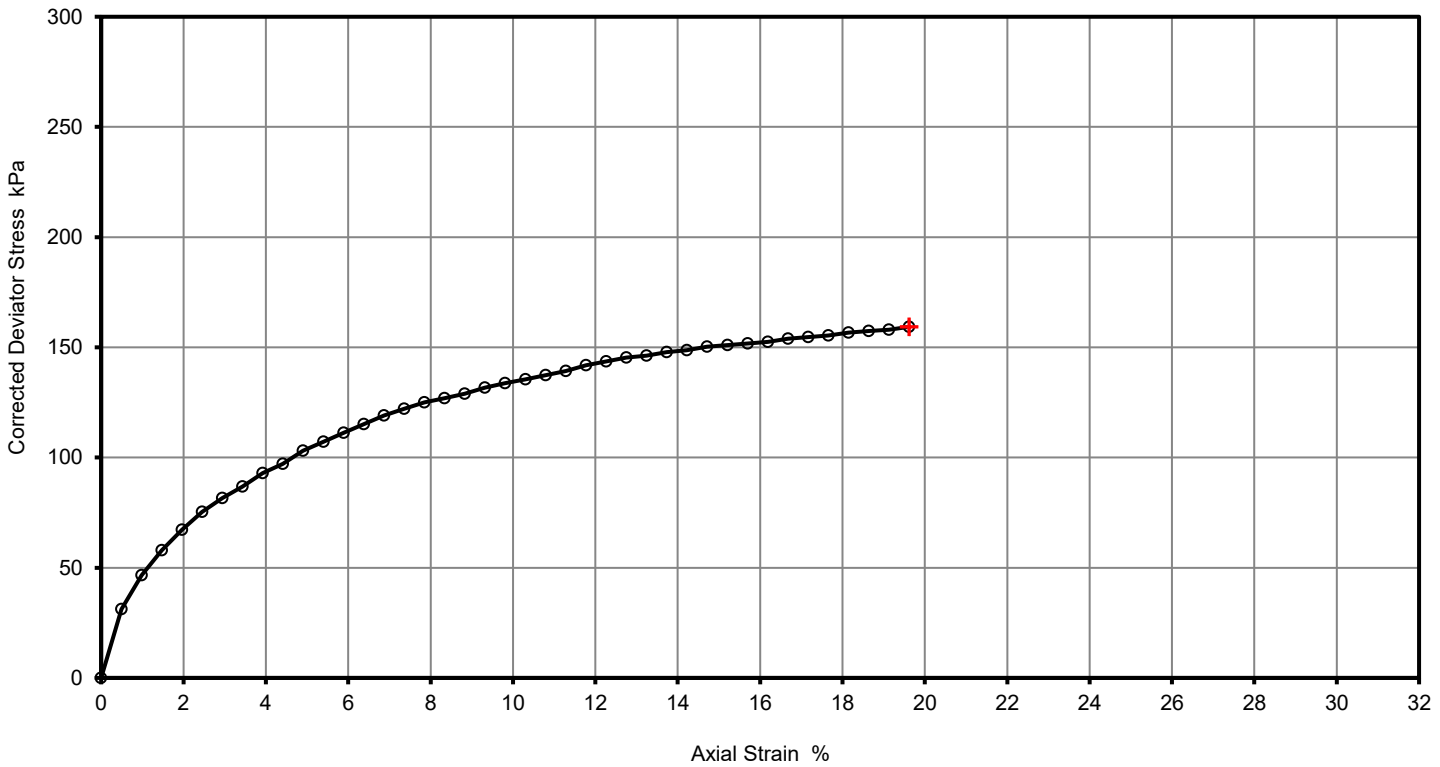
CLIENT: TETRA TECH SITE: SEQIRUS SITE 6, SPEKE (CCG-C-21-12837)

 CC Geotechnical Ltd Tel: 0151 545 2750 e: lab@ccgeotechnical.com	Unconsolidated Undrained Triaxial Compression Test without measurement of pore pressure - single specimen		Job Ref	CCG-C-21-12837
			Borehole/Pit No.	CP01
Site Name	SEQIRUS SITE 6, SPEKE		Sample No.	1
Soil Description			Depth	4.00
Specimen Reference		Specimen Depth	Sample Type	U
Specimen Description	Brown sandy slightly gravelly silty CLAY		Date of test	
Test Method	BS1377 : Part 7 : 1990, clause 8, single specimen			04/01/2022



Test Number	1	
Length	203.9	mm
Diameter	100.3	mm
Bulk Density	2.31	Mg/m3
Moisture Content	13.9	%
Dry Density	2.02	Mg/m3
Rate of Strain	2.0	%/min
Cell Pressure	80	kPa
At failure	19.6	%
Axial Strain	159	kPa
Deviator Stress, ($\sigma_1 - \sigma_3$)f	80	kPa $\frac{1}{2}(\sigma_1 - \sigma_3)$ f
Undrained Shear Strength, cu		
Mode of Failure	Plastic	

Deviator Stress v Axial Strain



Remarks

Test scheduled for multi-stage test but sample failed at cell pressure stage 1

Approved

DanielKerfoot

Printed

06/01/2022 09:43

Fig. No.

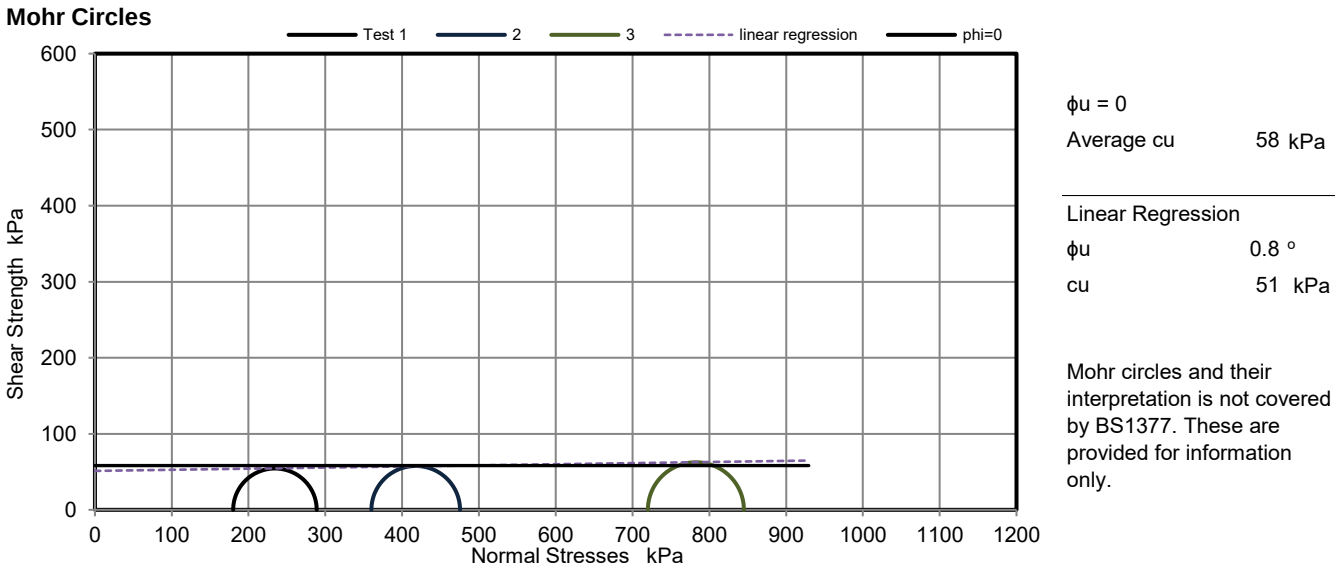
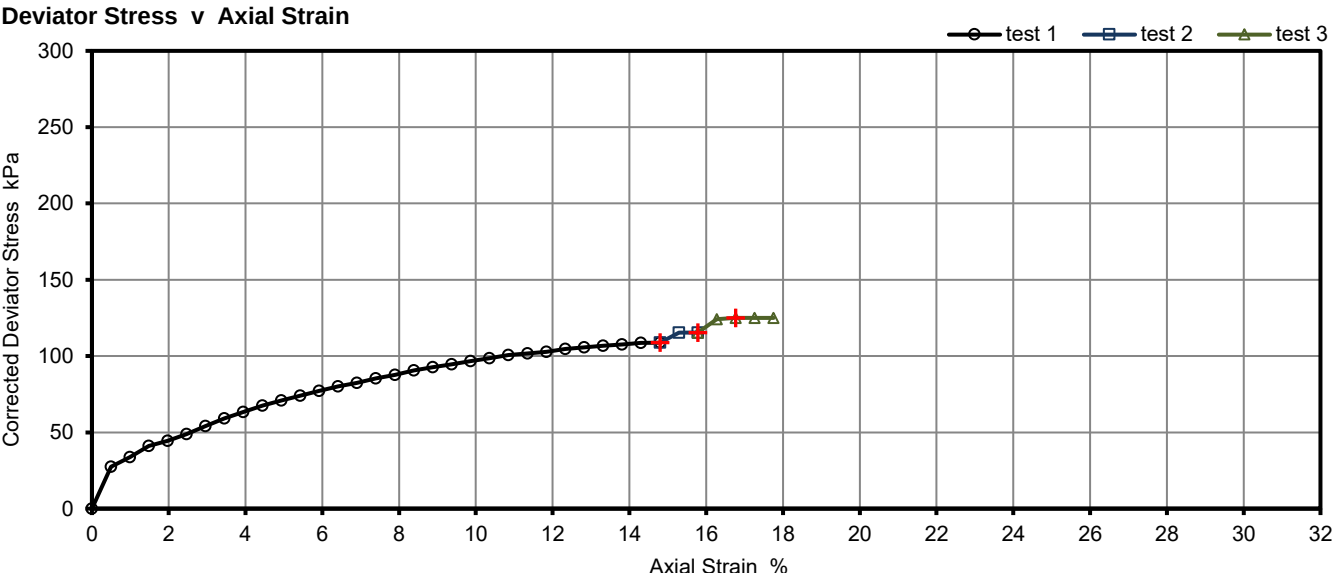
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Sheet

1

	Unconsolidated Undrained Triaxial Compression Test without measurement of pore pressure - Multistage test			Job Ref	CCG-C-21-12837
				Borehole/Pit No.	CP01
Site Name	SEQIRUS SITE 6, SPEKE			Sample No.	1
Soil Description				Depth	9.00
Specimen Reference		Specimen Depth	m	Sample Type	U
Specimen Description	Brown sandy slightly gravelly silty CLAY			KeyLAB ID	CCGL202201052
Test Method	BS1377:Part 7:1990, clause 9, multistage test on a single specir			Date of test	04/01/2022

Length	mm	202.8			
Diameter	mm	101.9			
Bulk Density	Mg/m3	2.32			
Moisture Content	%	13.9			
Dry Density	Mg/m3	2.04			
Rate of Strain	%/min	2.00			
Stage Number		1	2	3	
Cell Pressure	kPa	180	360	720	
End of stage	%	14.8	15.8	16.8	
Axial Strain	kPa	108.7	115.4	125.0	
Deviator Stress, ($\sigma_1 - \sigma_3$) corrected for area and membrane	kPa	54.4	57.7	62.5	
Shear strength, cu					
Mode of failure	Plastic				



$\phi_u = 0$
Average cu 58 kPa

Linear Regression
 ϕ_u 0.8 °
cu 51 kPa

Mohr circles and their interpretation is not covered by BS1377. These are provided for information only.

Remarks

Lab Sheet Reference :

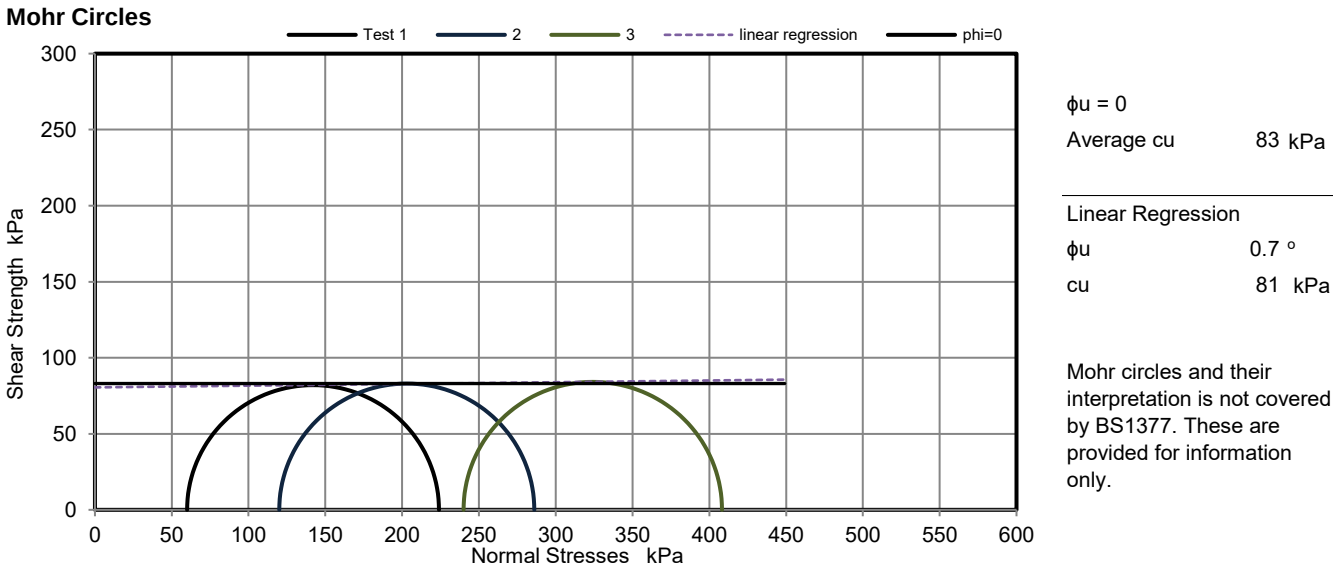
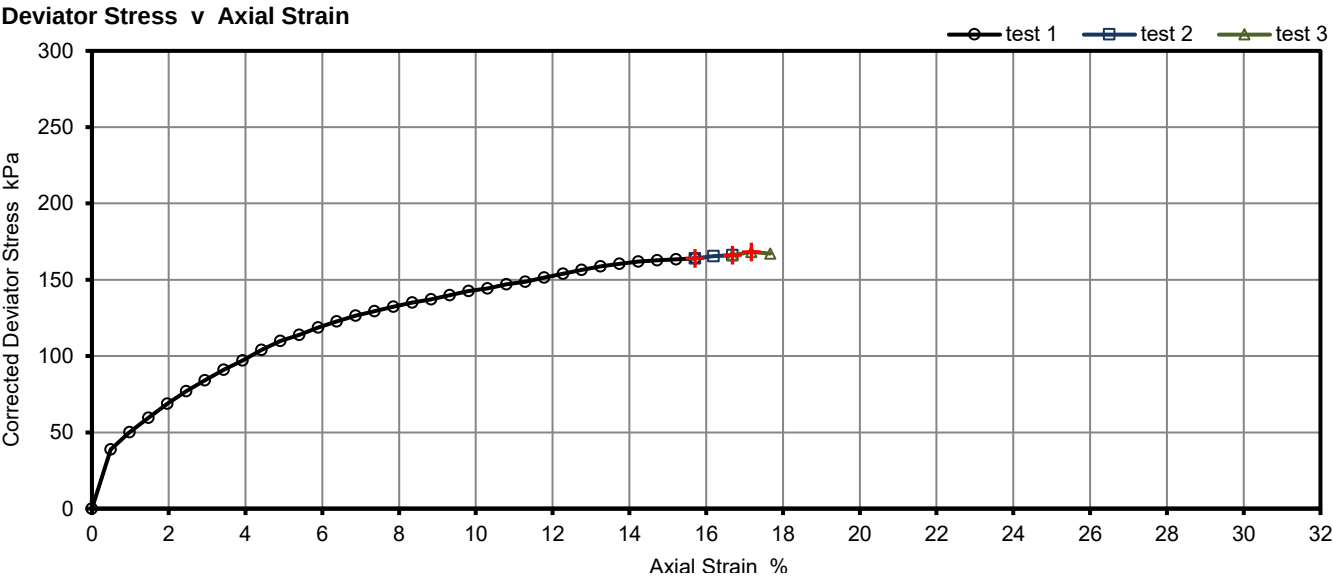
Approved
DanielKerfoot

Printed
06/01/2022 09:44

Fig. No.
1
Sheet
3

	Unconsolidated Undrained Triaxial Compression Test without measurement of pore pressure - Multistage test			Job Ref	CCG-C-21-12837
				Borehole/Pit No.	CP02
Site Name	SEQIRUS SITE 6, SPEKE			Sample No.	1
Soil Description				Depth	3.00
Specimen Reference		Specimen Depth	m	Sample Type	U
Specimen Description	Brown sandy slightly gravelly silty CLAY			KeyLAB ID	CCGL202201053
Test Method	BS1377:Part 7:1990, clause 9, multistage test on a single specir			Date of test	04/01/2022

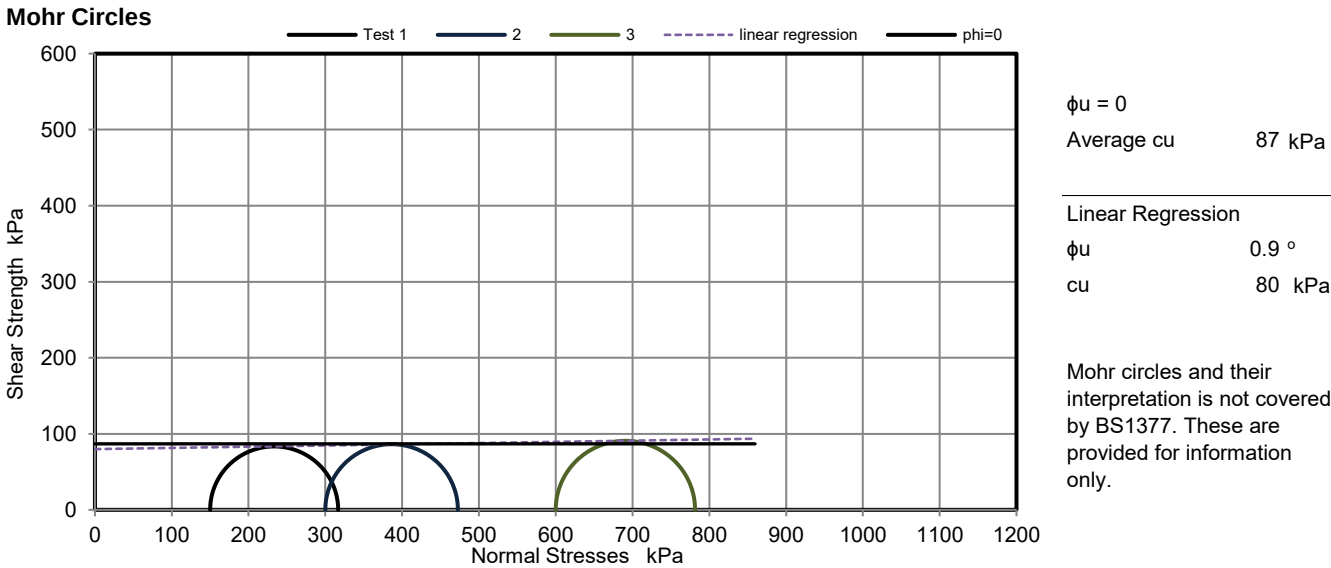
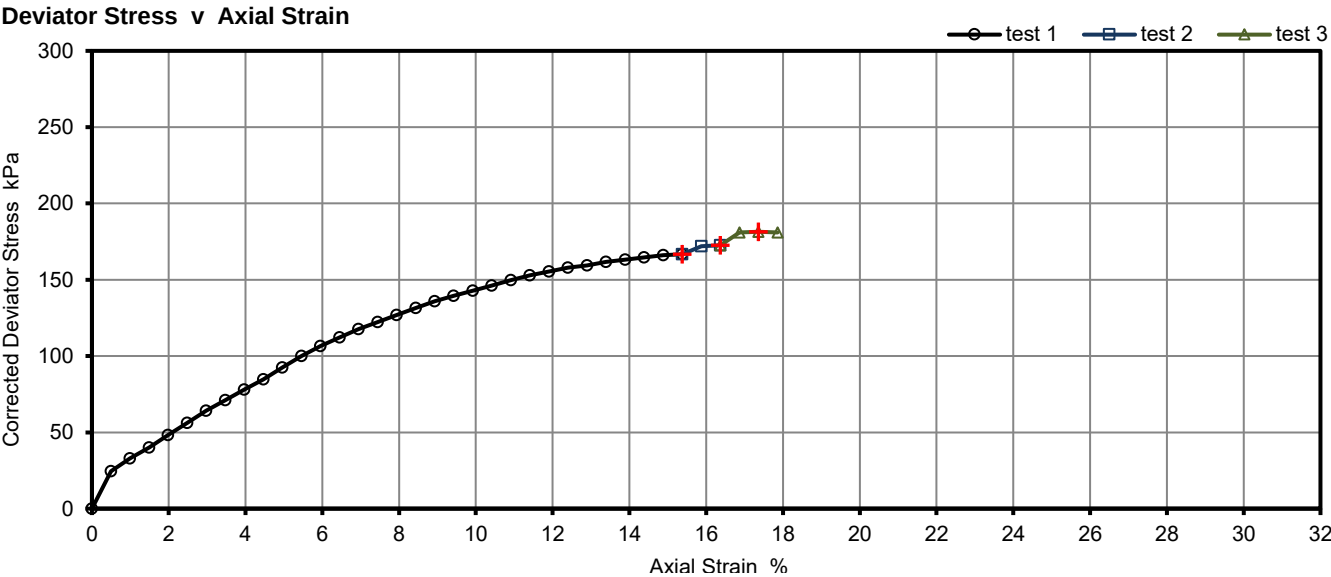
Length	mm	203.8			
Diameter	mm	100.6			
Bulk Density	Mg/m3	2.30			
Moisture Content	%	14.4			
Dry Density	Mg/m3	2.01			
Rate of Strain	%/min	2.00			
Stage Number		1	2	3	
Cell Pressure	kPa	60	120	240	
End of stage	%	15.7	16.7	17.2	
Axial Strain	kPa	164.0	166.1	168.3	
Deviator Stress, ($\sigma_1 - \sigma_3$) corrected for area and membrane	kPa	82.0	83.0	84.1	
Shear strength, cu					
Mode of failure	Brittle				



Remarks	Approved	Printed	Fig. No.
	DanielKerfoot	06/01/2022 09:44	1
Lab Sheet Reference :			Sheet
			1

	Unconsolidated Undrained Triaxial Compression Test without measurement of pore pressure - Multistage test			Job Ref	CCG-C-21-12837
				Borehole/Pit No.	CP02
Site Name	SEQIRUS SITE 6, SPEKE			Sample No.	1
Soil Description				Depth	7.50
Specimen Reference		Specimen Depth	m	Sample Type	U
Specimen Description	Brown sandy slightly gravelly silty CLAY			KeyLAB ID	CCGL202201054
Test Method	BS1377:Part 7:1990, clause 9, multistage test on a single specir			Date of test	04/01/2022

Length	mm	201.6			
Diameter	mm	101.9			
Bulk Density	Mg/m3	2.29			
Moisture Content	%	13.6			
Dry Density	Mg/m3	2.01			
Rate of Strain	%/min	2.00			
Stage Number		1	2	3	
Cell Pressure	kPa	150	300	600	
End of stage	%	15.4	16.4	17.4	
Axial Strain	kPa	166.7	172.6	181.5	
Deviator Stress, ($\sigma_1 - \sigma_3$) corrected for area and membrane	kPa	83.3	86.3	90.7	
Shear strength, cu					
Mode of failure	Plastic				



Remarks	Approved	Printed	Fig. No.
	DanielKerfoot	06/01/2022 09:44	1
Lab Sheet Reference :			Sheet
			2

One Dimensional Consolidation Properties
(Oedometer)

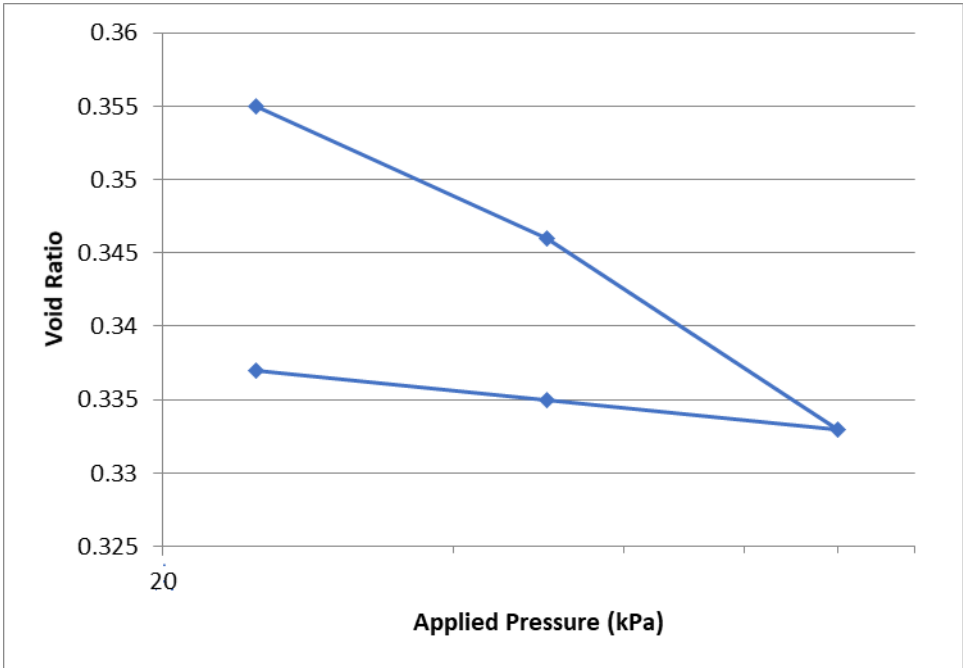


Client	TETRA TECH	Lab Ref	
Project	SEQIRUS SITE 6, SPEKE	Job	CCG C 21 12837
Borehole	CP01	Sample	1

Test Details			
Standard	BS 1377: Part 5: 1990: Clause 3	Particle Density (assumed)	2.65 Mg/m3
Sample Type	Undisturbed sample - open drive	Lab Temperature	20.0 deg.C
Sample Depth	2.00 m		
Sample Description	Brown sandy slightly gravelly silty CLAY		
Variations from Procedure	None		

Specimen Details			
Specimen Reference	A	Description	
Depth within Sample	120 mm	Orientation within Sample	
Specimen Mass	193.81 g	Condition	Natural Moisture
Specimen Height	20.01 mm	Preparation	
Comments			

Test Apparatus			
Ring Number	1	Ring Diameter	74.95 mm
Ring Height	20.01 mm	Ring Weight	129.34 g
Lever Ratio	9.00: 1		



Height of Solid Particles	14.61 mm	Swelling Pressure	
---------------------------	----------	-------------------	--

One Dimensional Consolidation Properties
(Oedometer)



Client	TETRA TECH	Lab Ref	
Project	SEQIRUS SITE 6, SPEKE	Job	CCG C 21 12837
Borehole	CP01	Sample	1

Initial Moisture Content*	13.4 %	Final Moisture Content	14.2 %
Initial Bulk Density	2.20 Mg/m ³	Final Bulk Density	2.26 Mg/m ³
Initial Dry Density	1.94 Mg/m ³	Final Dry Density	1.98 Mg/m ³
Initial Void Ratio	0.3692	Final Void Ratio	0.3370
Initial Degree of Saturation	96.37 %	Final Degree of Saturation	111.79 %

* Calculated from initial and dry weights of whole specimen

Pressure (Loading Stages)	Coefficient of Volume Compressibility (m _v)	Coefficient of Consolidation (c _v)
0.00		
25.0 kPa	0.43 m ² /MN	5.4 m ² / yr
50.0 kPa	0.26 m ² /MN	2.5 m ² / yr
100.0 kPa	0.20 m ² /MN	3.4 m ² / yr
50.0 kPa	0.030 m ² /MN	-----
25.0 kPa	0.070 m ² /MN	-----

Method of Time Fitting Used	Log time
-----------------------------	----------

Tested by and Date:	DK 12.01.22
Checked by and Date:	DK 12.01.22
Approved by and Date:	CB 12.01.22

One Dimensional Consolidation Properties
(Oedometer)

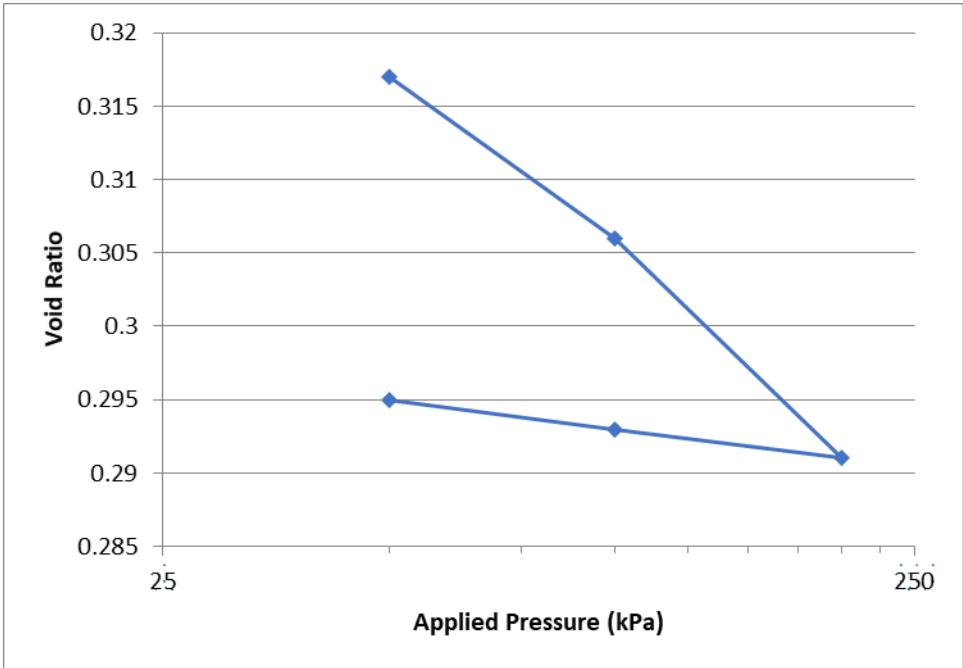


Client	TETRA TECH	Lab Ref	
Project	SEQIRUS SITE 6, SPEKE	Job	CCG C 21 12837
Borehole	CP02	Sample	1

Test Details			
Standard	BS 1377: Part 5: 1990: Clause 3	Particle Density (assumed)	2.65 Mg/m3
Sample Type	Undisturbed sample - open drive	Lab Temperature	20.0 deg.C
Sample Depth	5.00 m		
Sample Description	Brown sandy slightly gravelly silty CLAY		
Variations from Procedure	None		

Specimen Details			
Specimen Reference	A	Description	
Depth within Sample	100 mm	Orientation within Sample	
Specimen Mass	200.55 g	Condition	Natural Moisture
Specimen Height	20.22 mm	Preparation	
Comments			

Test Apparatus			
Ring Number	9	Ring Diameter	75.01 mm
Ring Height	20.22 mm	Ring Weight	127.43 g
Lever Ratio	9.00: 1		



Height of Solid Particles	15.01 mm	Swelling Pressure	
---------------------------	----------	-------------------	--

One Dimensional Consolidation Properties
(Oedometer)



Client	TETRA TECH	Lab Ref	
Project	SEQIRUS SITE 6, SPEKE	Job	CCG C 21 12837
Borehole	CP02	Sample	1

Initial Moisture Content*	13.4 %	Final Moisture Content	12.9 %
Initial Bulk Density	2.24 Mg/m ³	Final Bulk Density	2.31 Mg/m ³
Initial Dry Density	1.98 Mg/m ³	Final Dry Density	2.05 Mg/m ³
Initial Void Ratio	0.3394	Final Void Ratio	0.2951
Initial Degree of Saturation	104.95 %	Final Degree of Saturation	115.69 %

* Calculated from initial and dry weights of whole specimen

Pressure (Loading Stages)	Coefficient of Volume Compressibility (m _v)	Coefficient of Consolidation (c _v)
0.00		
50.0 kPa	0.33 m ² /MN	1.2 m ² / yr
100.0 kPa	0.17 m ² /MN	1.8 m ² / yr
200.0 kPa	0.12 m ² /MN	1.9 m ² / yr
100.0 kPa	0.020 m ² /MN	-----
50.0 kPa	0.040 m ² /MN	-----

Method of Time Fitting Used	Log time
-----------------------------	----------

Tested by and Date:	DK 12.01.22
Checked by and Date:	DK 12.01.22
Approved by and Date:	CB 12.01.22



Unit A2
Windmill Road
Ponswood Industrial Estate
St Leonards on Sea
East Sussex
TN38 9BY
Telephone: (01424) 718618

cs@elab-uk.co.uk
info@elab-uk.co.uk

THE ENVIRONMENTAL LABORATORY LTD

Analytical Report Number: 22-37907

Issue: 1

Date of Issue: 12/01/2022

Contact: Daniel Kerfoot

Customer Details: CC Geotechnical Ltd
Unit 1 & 2 Deltic Place
Deltic Way
Liverpool
Merseyside L33 7BA

Quotation No: Q14-00045

Order No: Not Supplied

Customer Reference: CCG-C-21-12837

Date Received: 06/01/2022

Date Approved: 12/01/2022

Details: Seqirus Site 6, Speke

Approved by: 

Mike Varley, General Manager

Any comments, opinions or interpretations expressed herein are outside the scope of UKAS accreditation (Accreditation Number 2683)

This report may only be reproduced in full



Sample Summary

Report No.: 22-37907, issue number 1

Elab No.	Client's Ref.	Date Sampled	Date Scheduled	Description	Deviations
262969	CP01 5.00	04/01/2022	06/01/2022	Silty clayey loam	
262970	CP01 7.50	04/01/2022	06/01/2022	Silty clayey loam	
262971	CP02 2.00	04/01/2022	06/01/2022	Silty clayey loam	
262972	CP02 9.00	04/01/2022	06/01/2022	Silty clayey loam	



Results Summary

Report No.: 22-37907, issue number 1

ELAB Reference				262969	262970	262971	262972
Customer Reference							
Sample ID							
Sample Type				DISTURBED	DISTURBED	DISTURBED	DISTURBED
Sample Location				CP01	CP01	CP02	CP02
Sample Depth (m)				5.00	7.50	2.00	9.00
Sampling Date				04/01/2022	04/01/2022	04/01/2022	04/01/2022
Determinand	Codes	Units	LOD				
Soil sample preparation parameters							
Moisture Content	N	%	0.1	11.1	11.6	14.5	10.8
Material removed	N	%	0.1	< 0.1	< 0.1	< 0.1	< 0.1
Description of Inert material removed	N		0	None	None	None	None
Anions							
Water Soluble Sulphate	M	mg/l	20	24	24	37	21
Miscellaneous							
pH	M	pH units	0.1	8.3	8.5	8.1	8.7



Method Summary
Report No.: 22-37907, issue number 1

Parameter	Codes	Analysis Undertaken On	Date Tested	Method Number	Technique
Soil					
pH	M	Air dried sample	10/01/2022	113	Electromeric
Water soluble anions	M	Air dried sample	10/01/2022	172	Ion Chromatography



Report Information

Report No.: 22-37907, issue number 1

Key

U	hold UKAS accreditation
M	hold MCERTS and UKAS accreditation
N	do not currently hold UKAS accreditation
^	MCERTS accreditation not applicable for sample matrix
*	UKAS accreditation not applicable for sample matrix
S	Subcontracted to approved laboratory UKAS Accredited for the test
SM	Subcontracted to approved laboratory MCERTS/UKAS Accredited for the test
NS	Subcontracted to approved laboratory. UKAS accreditation is not applicable.
I/S	Insufficient Sample
U/S	Unsuitable sample
n/t	Not tested
<	means "less than"
>	means "greater than"
LOD	LOD refers to limit of detection, except in the case of pH soils and pH waters where it means limit of discrimination. Soil sample results are expressed on an air dried basis (dried at < 30°C), and are uncorrected for inert material removed. ELAB are unable to provide an interpretation or opinion on the content of this report. The results relate only to the sample received. PCB congener results may include any coeluting PCBs Uncertainty of measurement for the determinands tested are available upon request Unless otherwise stated, sample information has been provided by the client. This may affect the validity of the results.

Deviation Codes

a	No date of sampling supplied
b	No time of sampling supplied (Waters Only)
c	Sample not received in appropriate containers
d	Sample not received in cooled condition
e	The container has been incorrectly filled
f	Sample age exceeds stability time (sampling to receipt)
g	Sample age exceeds stability time (sampling to analysis)

Where a sample has a deviation code, the applicable test result may be invalid.

Sample Retention and Disposal

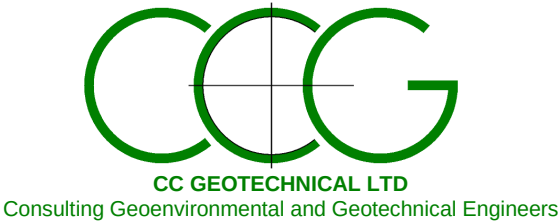
All soil samples will be retained for a period of one month
 All water samples will be retained for 7 days following the date of the test report
 Charges may apply to extended sample storage

TPH Classification - HWOL Acronym System

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	EH_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

Units 1 & 2
Deltic Place
Deltic Way
Knowsley Industrial Estate
Liverpool
L33 7BU

Telephone: (0151) 545 2750
Fax: (0151) 548 7892
Email: enquiries@ccgeotechnical.com
www.ccgeotechnical.com



LABORATORY REPORT

CONTRACT NUMBER: CCG-C-22-12973

CONTRACT TITLE: SEQIRUS SITE 6, SPEKE

CLIENT: TETRA TECH
Quay West at MediaCityUK, Trafford Wharf Road, Trafford Park, Manchester M17 1HH

DATE RECEIVED: 07/03/22
DATE COMMENCED: 14/03/22
DATE COMPLETED: 17/03/22
REPORT DATE: 18/03/22

Test Description	Qty
Determination of Moisture Content BS 1377-2:1990 (a)	3
Determination of Liquid & Plastic Limits BS 1377-2:1990 (a)	2
Unconsolidated Undrained Triaxial Compression BS1377-7:1990 (a)	1

Notes: Observations and interpretations are not accredited by UKAS
All testing undertaken at laboratory permanent facilities
denotes non-accredited test
a denotes UKAS accredited test
s denotes test undertaken by approved subcontractor
Test results only relate to the samples tested
Sample and sample information supplied by client

This report is issued in accordance with the requirements of the United Kingdom Accreditation Services and EN ISO/IEC 17025:2017. The results reported herein relate only to the material supplied to the laboratory. This report shall not be reproduced except in full, without the prior written approval of the laboratory.

Approved Signatories: Chris Bolan (Managing Director) – Daniel Kerfoot (Laboratory Manager)



SUMMARY OF LABORATORY SOIL TEST RESULTS

BH / TP / WS Number	Sample Type	Depth From (m)	Depth To (m)	Moisture Content (%)	Bulk Density (Mg/m³)	Dry Density (Mg/m³)	Shear Strength (kN/m²)	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index (%)	Passing 0.425mm (%)	Soil Classification	UKAS accredited test (Y/N)	Description / Test Method Samples described in accordance with BS EN ISO 14688-2 2004
CP03	U	5.00	5.45	13	-	-	90*	-	-	-	-	-	Y	Brown slightly sandy slightly gravelly silty CLAY. Gravel is fine to medium subrounded sandstone. (BS1377Pt2:3.2)
CP03	D	6.50	6.95	13	-	-	-	28	14	14	89	CL	Y	Brown slightly sandy slightly gravelly silty CLAY. Gravel is fine to medium subrounded sandstone. (BS1377Pt2:3.2,4.4,5)
CP03	D	8.50	8.95	13	-	-	-	29	14	15	91	CL	Y	Brown slightly sandy slightly gravelly silty CLAY. Gravel is fine to medium subrounded sandstone. (BS1377Pt2:3.2,4.4,5)
CP03	U	12.00	12.45	20	2.17	1.81	128	-	-	-	-	-	Y	Brown slightly sandy slightly gravelly silty CLAY of high undrained shear strength. Gravel is fine to medium subrounded sandstone. (BS1377Pt2:3.2,Pt7:8)

SITE: SEQIRUS SITE 6, SPEKE (CCG-C-22-12973)
CLIENT: TETRA TECH

DATE: 18.03.22

Key:- BD = Bulk Disturbed; SD = Small Disturbed; U100 = Undisturbed 100mm; WS = Window Sample
CL = Low Plasticity; CI = Intermediate; CH = High; CV = Very high; CE = Extremely high; NP = Non-plastic
(* Denotes Hand Shear Vane test result)
Sample description not accredited by UKAS

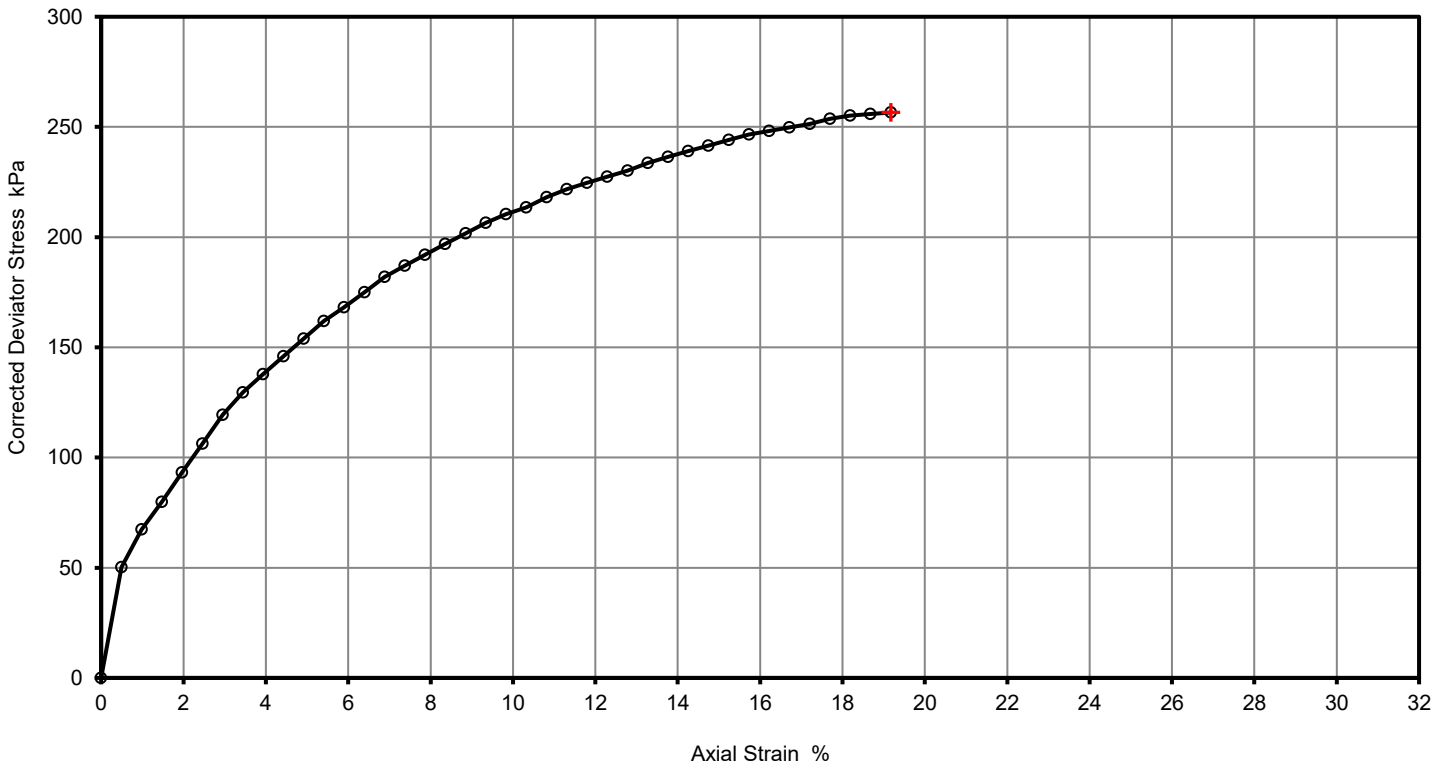


 CC Geotechnical Ltd Tel: 0151 545 2750 e: lab@ccgeotechnical.com	Unconsolidated Undrained Triaxial Compression Test without measurement of pore pressure - single specimen		Job Ref	CCG-C-22-12973	
			Borehole/Pit No.	CP03	
Site Name	SEQIRUS SITE 6, SPEKE		Sample No.	1	
Soil Description			Depth	12.00	
Specimen Reference		Specimen Depth	m	Sample Type	U
Specimen Description	Brown slightly sandy slightly gravelly silty CLAY		Date of test		
Test Method	BS1377 : Part 7 : 1990, clause 8, single specimen		14/03/2022		



Test Number	1	
Length	203.4	mm
Diameter	102.8	mm
Bulk Density	2.17	Mg/m3
Moisture Content	19.5	%
Dry Density	1.81	Mg/m3
Rate of Strain	2.0	%/min
Cell Pressure	480	kPa
At failure	19.2	%
Axial Strain	257	kPa
Deviator Stress, ($\sigma_1 - \sigma_3$)f	128	kPa $\frac{1}{2}(\sigma_1 - \sigma_3)$ f
Undrained Shear Strength, cu		
Mode of Failure	Plastic	

Deviator Stress v Axial Strain



Remarks

Approved

DanielKerfoot

Printed

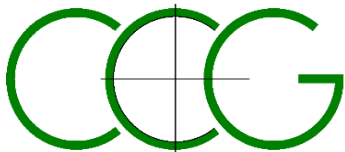
18/03/2022 14:12

Fig. No.

1

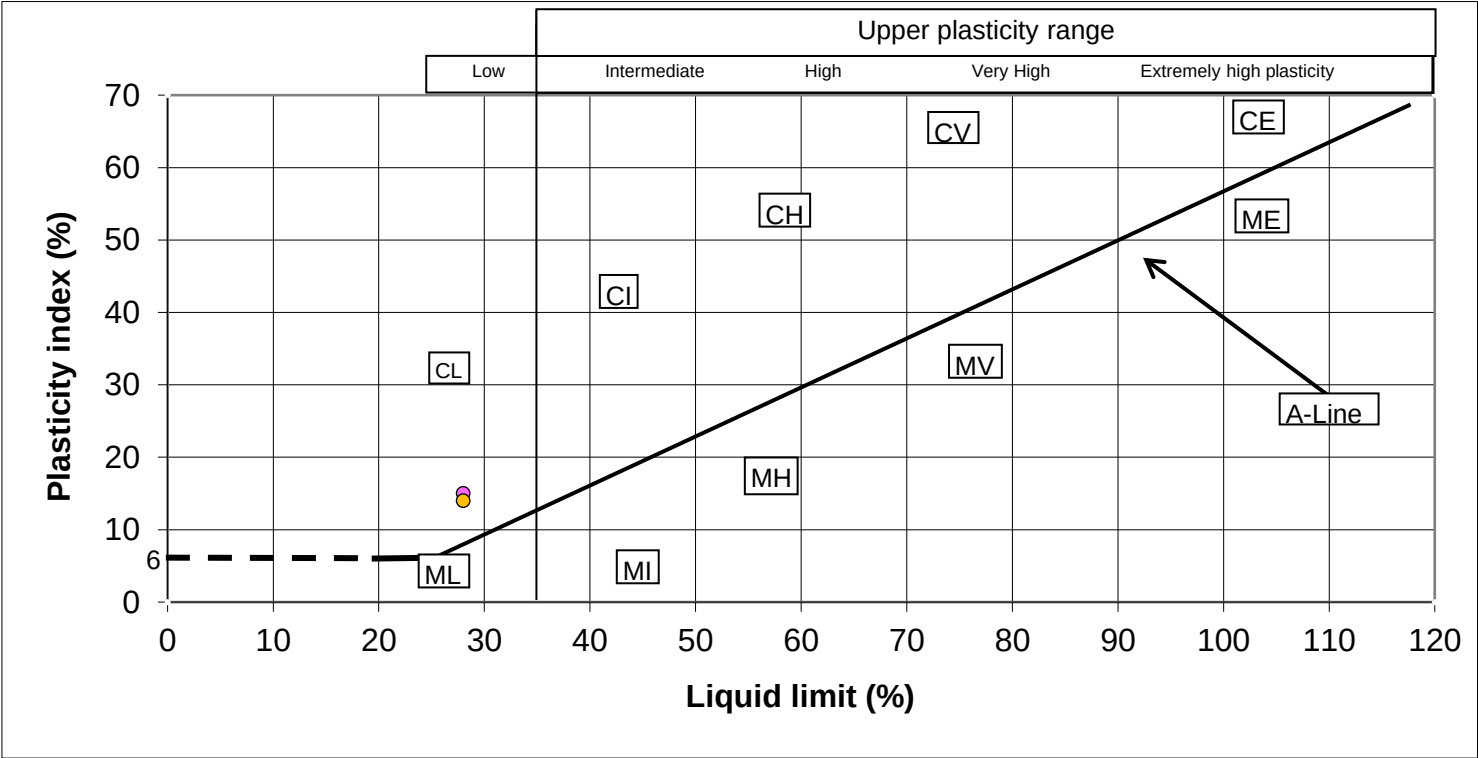
Sheet

1



ATTERBERG TEST RESULT SHEET
BS 1377:Part 2:1990:cl 4.4,5

SILT (M-SOIL), M plots below A-Line , CLAY,C, plots above A-Line, M and C may be combined as FINE SOIL, F.



BH	Sample Depth	Liquid limit	Plasticity index
CP03	6.50	28.0	15.0
CP03	8.50	28.0	14.0



4514

APPROVED BY	DK
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CLIENT: TETRA TECH	SITE: SEQIRUS SITE 6, SPEKE (CCG-C-22-12973)
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APPENDIX E – ENVIRONMENTAL TESTING RESULTS

Tetra Tech
Quay West at MediaCityUK
Trafford Wharf Road
Trafford Park,
Manchester
M17 1HH

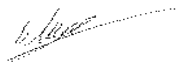


Attention : Nicholas Brook
Date : 11th January, 2022
Your reference : 784-B033528
Our reference : Test Report 21/20519 Batch 1
Location : Seqirus Site 6, 1a Renaissance Way, Speke
Date samples received : 22nd December, 2021
Status : Final Report
Issue : 1

Sixteen samples were received for analysis on 22nd December, 2021 of which nine 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:



Bruce Leslie
Project Manager

Please include all sections of this report if it is reproduced

Element Materials Technology

Client Name: Tetra Tech
Reference: 784-B033528
Location: Seqirus Site 6, 1a Renaissance Way, Speke
Contact: Nicholas Brook
EMT Job No: 21/20519

Report : Solid

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

EMT Sample No.	1-4	9-12	13-16	21-23	24-27	32-35	40-43	48-51	60-63		Please see attached notes for all abbreviations and acronyms		
Sample ID	CP01 ES2	CP01 ES7	CP02 ES2	CP02 ES5	CP02 ES7	WS01 ES2	WS02 ES1	WS02 ES3	WS03 ES3				
Depth	0.50	1.50	0.40	1.20	1.80	0.70	0.30	1.00	0.80				
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				
Sample Date	20/12/2021	20/12/2021	21/12/2021	21/12/2021	21/12/2021	21/12/2021	21/12/2021	21/12/2021	21/12/2021				
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil				
Batch Number	1	1	1	1	1	1	1	1	1				
Date of Receipt	22/12/2021	22/12/2021	22/12/2021	22/12/2021	22/12/2021	22/12/2021	22/12/2021	22/12/2021	22/12/2021		LOD/LOR	Units	Method No.
Arsenic #	5.1	5.7	-	4.6	6.4	3.3	6.8	4.1	1.7		<0.5	mg/kg	TM30/PM15
Beryllium	0.7	1.0	-	<0.5	1.2	0.5	1.0	0.7	<0.5		<0.5	mg/kg	TM30/PM15
Cadmium #	0.3	<0.1	-	0.5	<0.1	0.1	0.4	0.2	<0.1		<0.1	mg/kg	TM30/PM15
Chromium #	44.4	56.8	-	43.6	59.1	70.7	40.3	43.5	32.7		<0.5	mg/kg	TM30/PM15
Copper #	28	16	-	16	17	23	77	16	12		<1	mg/kg	TM30/PM15
Lead #	72	8	-	37	11	108	343	42	14		<5	mg/kg	TM30/PM15
Mercury #	<0.1	<0.1	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1		<0.1	mg/kg	TM30/PM15
Nickel #	15.2	33.0	-	12.1	37.1	12.7	19.0	18.9	9.4		<0.7	mg/kg	TM30/PM15
Selenium #	<1	<1	-	<1	<1	<1	<1	<1	<1		<1	mg/kg	TM30/PM15
Vanadium	25	35	-	14	39	21	33	25	9		<1	mg/kg	TM30/PM15
Water Soluble Boron #	2.2	0.5	-	0.6	0.4	0.8	2.2	0.8	0.3		<0.1	mg/kg	TM74/PM32
Zinc #	75	41	-	22	45	54	142	41	15		<5	mg/kg	TM30/PM15
PAH MS													
Naphthalene #	0.10	<0.04	0.15	<0.04	<0.04	0.07	0.10	<0.04	<0.04		<0.04	mg/kg	TM4/PM8
Acenaphthylene	0.07	<0.03	0.07	<0.03	<0.03	0.03	0.07	<0.03	<0.03		<0.03	mg/kg	TM4/PM8
Acenaphthene #	0.24	<0.05	0.12	<0.05	<0.05	0.09	0.16	<0.05	<0.05		<0.05	mg/kg	TM4/PM8
Fluorene #	0.18	<0.04	0.10	<0.04	<0.04	0.07	0.13	<0.04	<0.04		<0.04	mg/kg	TM4/PM8
Phenanthrene #	1.94	<0.03	1.08	0.30	<0.03	1.27	1.42	<0.03	0.05		<0.03	mg/kg	TM4/PM8
Anthracene #	0.64	<0.04	0.35	0.10	<0.04	0.32	0.38	<0.04	<0.04		<0.04	mg/kg	TM4/PM8
Fluoranthene #	3.72	<0.03	2.09	0.57	0.03	1.62	2.44	0.05	0.04		<0.03	mg/kg	TM4/PM8
Pyrene #	3.49	<0.03	2.90	0.60	0.03	1.46	2.63	0.05	0.04		<0.03	mg/kg	TM4/PM8
Benzo(a)anthracene #	1.89	<0.06	1.40	0.28	<0.06	0.72	1.22	<0.06	<0.06		<0.06	mg/kg	TM4/PM8
Chrysene #	1.95	<0.02	1.49	0.30	0.02	0.80	1.42	0.04	0.03		<0.02	mg/kg	TM4/PM8
Benzo(k)fluoranthene #	2.56	<0.07	2.15	0.47	<0.07	1.14	2.14	<0.07	<0.07		<0.07	mg/kg	TM4/PM8
Benzo(a)pyrene #	1.43	<0.04	1.13	0.24	<0.04	0.60	1.16	<0.04	<0.04		<0.04	mg/kg	TM4/PM8
Indeno(123cd)pyrene #	0.92	<0.04	0.80	0.20	<0.04	0.42	0.84	<0.04	<0.04		<0.04	mg/kg	TM4/PM8
Dibenzo(ah)anthracene #	0.27	<0.04	0.18	0.05	<0.04	0.11	0.21	<0.04	<0.04		<0.04	mg/kg	TM4/PM8
Benzo(ghi)perylene #	0.73	<0.04	0.72	0.16	<0.04	0.39	0.78	<0.04	<0.04		<0.04	mg/kg	TM4/PM8
Coronene	-	-	0.15	-	-	-	-	-	-		<0.04	mg/kg	TM4/PM8
PAH 16 Total	20.1	<0.6	-	3.3	<0.6	9.1	15.1	<0.6	<0.6		<0.6	mg/kg	TM4/PM8
PAH 17 Total	-	-	14.88	-	-	-	-	-	-		<0.64	mg/kg	TM4/PM8
Benzo(b)fluoranthene	1.84	<0.05	1.55	0.34	<0.05	0.82	1.54	<0.05	<0.05		<0.05	mg/kg	TM4/PM8
Benzo(k)fluoranthene	0.72	<0.02	0.60	0.13	<0.02	0.32	0.60	<0.02	<0.02		<0.02	mg/kg	TM4/PM8
PAH Surrogate % Recovery	90	91	92	90	89	91	90	92	92		<0	%	TM4/PM8
Mineral Oil (C10-C40) (EH_CU_1D_AL)	-	-	251	-	-	-	-	-	-		<30	mg/kg	TM5/PM8/PM16

Element Materials Technology

Client Name: Tetra Tech
Reference: 784-B033528
Location: Seqirus Site 6, 1a Renaissance Way, Speke
Contact: Nicholas Brook
EMT Job No: 21/20519

Report : Solid

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

EMT Sample No.	1-4	9-12	13-16	21-23	24-27	32-35	40-43	48-51	60-63		Please see attached notes for all abbreviations and acronyms		
Sample ID	CP01 ES2	CP01 ES7	CP02 ES2	CP02 ES5	CP02 ES7	WS01 ES2	WS02 ES1	WS02 ES3	WS03 ES3				
Depth	0.50	1.50	0.40	1.20	1.80	0.70	0.30	1.00	0.80				
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				
Sample Date	20/12/2021	20/12/2021	21/12/2021	21/12/2021	21/12/2021	21/12/2021	21/12/2021	21/12/2021	21/12/2021				
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil				
Batch Number	1	1	1	1	1	1	1	1	1				
Date of Receipt	22/12/2021	22/12/2021	22/12/2021	22/12/2021	22/12/2021	22/12/2021	22/12/2021	22/12/2021	22/12/2021		LOD/LOR	Units	Method No.
TPH CWG													
Aliphatics													
>C5-C6 (HS_1D_AL) #	<0.1	<0.1	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1		<0.1	mg/kg	TM36/PM12
>C6-C8 (HS_1D_AL) #	<0.1	<0.1	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1		<0.1	mg/kg	TM36/PM12
>C8-C10 (HS_1D_AL)	<0.1	<0.1	-	0.1	<0.1	<0.1	<0.1	<0.1	<0.1		<0.1	mg/kg	TM36/PM12
>C10-C12 (EH_CU_1D_AL) #	<0.2	<0.2	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	mg/kg	TMS/PM8/PM16
>C12-C16 (EH_CU_1D_AL) #	<4	<4	-	<4	<4	<4	6	<4	<4		<4	mg/kg	TMS/PM8/PM16
>C16-C21 (EH_CU_1D_AL) #	<7	<7	-	<7	<7	<7	23	<7	<7		<7	mg/kg	TMS/PM8/PM16
>C21-C35 (EH_CU_1D_AL) #	70	<7	-	33	<7	142	185	<7	<7		<7	mg/kg	TMS/PM8/PM16
>C35-C44 (EH_1D_AL)	12	<7	-	<7	<7	23	16	<7	<7		<7	mg/kg	TMS/PM8/PM16
Total aliphatics C5-44 (EH+HS_1D_AL)	82	<26	-	33	<26	165	230	<26	<26		<26	mg/kg	TMS/PM8/PM16/PM12/PM10
Aromatics													
>C5-EC7 (HS_1D_AR) #	<0.1	<0.1	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1		<0.1	mg/kg	TM36/PM12
>EC7-EC8 (HS_1D_AR) #	<0.1	<0.1	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1		<0.1	mg/kg	TM36/PM12
>EC8-EC10 (HS_1D_AR) #	<0.1	<0.1	-	0.9	<0.1	<0.1	<0.1	<0.1	<0.1		<0.1	mg/kg	TM36/PM12
>EC10-EC12 (EH_CU_1D_AR) #	<0.2	<0.2	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	mg/kg	TMS/PM8/PM16
>EC12-EC16 (EH_CU_1D_AR) #	<4	<4	-	<4	<4	<4	13	<4	<4		<4	mg/kg	TMS/PM8/PM16
>EC16-EC21 (EH_CU_1D_AR) #	37	<7	-	<7	<7	<7	94	<7	<7		<7	mg/kg	TMS/PM8/PM16
>EC21-EC35 (EH_CU_1D_AR) #	180	<7	-	98	<7	276	320	<7	<7		<7	mg/kg	TMS/PM8/PM16
>EC35-EC44 (EH_1D_AR)	30	<7	-	16	<7	44	43	<7	<7		<7	mg/kg	TMS/PM8/PM16
Total aromatics C5-44 (EH+HS_1D_AR)	247	<26	-	115	<26	320	470	<26	<26		<26	mg/kg	TMS/PM8/PM16/PM12/PM10
Total aliphatics and aromatics(C5-44) (EH+HS_CU_1D_Total)	329	<52	-	148	<52	485	700	<52	<52		<52	mg/kg	TMS/PM8/PM16/PM12/PM10
MTBE #	<5	<5	<5	<5	<5	<5	<5	<5	<5		<5	ug/kg	TM36/PM12
Benzene #	8	<5	<5	<5	<5	<5	<5	<5	<5		<5	ug/kg	TM36/PM12
Toluene #	<5	<5	<5	<5	<5	<5	<5	<5	<5		<5	ug/kg	TM36/PM12
Ethylbenzene #	<5	<5	10	175	<5	<5	<5	<5	<5		<5	ug/kg	TM36/PM12
m/p-Xylene #	9	<5	30	669	<5	<5	<5	<5	<5		<5	ug/kg	TM36/PM12
o-Xylene #	<5	<5	6	57	<5	<5	<5	<5	<5		<5	ug/kg	TM36/PM12
PCB 28 #	-	-	<5	-	-	-	-	-	-		<5	ug/kg	TM17/PM8
PCB 52 #	-	-	<5	-	-	-	-	-	-		<5	ug/kg	TM17/PM8
PCB 101 #	-	-	<5	-	-	-	-	-	-		<5	ug/kg	TM17/PM8
PCB 118 #	-	-	<5	-	-	-	-	-	-		<5	ug/kg	TM17/PM8
PCB 138 #	-	-	<5	-	-	-	-	-	-		<5	ug/kg	TM17/PM8
PCB 153 #	-	-	<5	-	-	-	-	-	-		<5	ug/kg	TM17/PM8
PCB 180 #	-	-	<5	-	-	-	-	-	-		<5	ug/kg	TM17/PM8
Total 7 PCBs #	-	-	<35	-	-	-	-	-	-		<35	ug/kg	TM17/PM8
Total Phenols HPLC	<0.15	<0.15	-	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15		<0.15	mg/kg	TM26/PM21B
Natural Moisture Content	15.5	14.8	12.0	12.6	15.9	10.7	15.2	9.0	6.8		<0.1	%	PM4/PM0
Hexavalent Chromium #	<0.3	<0.3	-	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3		<0.3	mg/kg	TM38/PM20

Element Materials Technology

Client Name: Tetra Tech
Reference: 784-B033528
Location: Seqirus Site 6, 1a Renaissance Way, Speke
Contact: Nicholas Brook
EMT Job No: 21/20519

Report : Solid

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

[illegible]

Mass of sample taken (kg)	-	Moisture Content Ratio (%) =	8.6
Mass of dry sample (kg) =	0.09	Dry Matter Content Ratio (%) =	92.1
Particle Size <4mm =	>95%		
EMT Job No	21/20519	Landfill Waste Acceptance Criteria Limits	
Sample No	15		
Client Sample No	CP02 ES2		
Depth/Other	0.40		
Sample Date	21/12/2021		
Batch No	1		
Solid Waste Analysis		Inert Waste Landfill	Stable Non-reactive Hazardous Waste in Non- Hazardous Landfill
Total Organic Carbon (%)	0.81	3	5
Loss on Ignition (%)	2.6	-	10
Sum of BTEX (mg/kg)	0.046	6	-
Sum of 7 PCBs (mg/kg)	<0.035	1	-
Mineral Oil (mg/kg) (EH_CU_1D_AL)	251	500	-
PAH Sum of 17(mg/kg)	14.88	100	-
pH (pH Units)	11.24	-	>6
ANC to pH 7 (mol/kg)	0.11	-	to be evaluated
ANC to pH 4 (mol/kg)	0.45	-	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	A ₁₀	
	mg/l	mg/kg	
Arsenic	<0.0025	<0.025	0.5
Barium	0.008	0.08	2
Cadmium	<0.0005	<0.005	100
Chromium	0.0068	0.068	0.04
Copper	<0.007	<0.07	1
Mercury	<0.001	<0.01	5
Molybdenum	0.004	0.04	0.5
Nickel	<0.002	<0.02	10
Lead	<0.005	<0.05	0.4
Antimony	0.004	0.04	10
Selenium	<0.003	<0.03	0.5
Zinc	<0.003	<0.03	50
Chloride	16.9	169	0.06
Fluoride	<0.3	<3	0.7
Sulphate as SO ₄	49.5	495	0.1
Total Dissolved Solids	228	2279	0.5
Phenol	<0.01	<0.1	4
Dissolved Organic Carbon	3	30	50
			800
			1000

Client Name: Tetra Tech
Reference: 784-B033528
Location: Seqirus Site 6, 1a Renaissance Way, Speke
Contact: Nicholas Brook

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). Samples are retained for not less than 6 months from the date of analysis unless specifically requested.

Opinions, including ACM type and Asbestos level less than 0.1%, lie outside the scope of our UKAS accreditation.

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

EMT Job No.	Batch	Sample ID	Depth	EMT Sample No.	Date Of Analysis	Analysis	Result
21/20519	1	CP01 ES2	0.50	3	31/12/2021	General Description (Bulk Analysis)	Soil/Stone
					31/12/2021	Asbestos Fibres	Fibre Bundles
					31/12/2021	Asbestos ACM	NAD
					31/12/2021	Asbestos Type	Chrysotile
					31/12/2021	Asbestos Level Screen	less than 0.1%
					07/01/2022	Total ACM Gravimetric Quantification (% Asb)	<0.001 (mass %)
					07/01/2022	Total Detailed Gravimetric Quantification (% Asb)	<0.001 (mass %)
					07/01/2022	Total Gravimetric Quantification (ACM + Detailed) (% Asb)	<0.001 (mass %)
					11/01/2022	Asbestos PCOM Quantification (Fibres)	<0.001 (mass %)
					11/01/2022	Asbestos Gravimetric & PCOM Total	<0.001 (mass %)
21/20519	1	CP01 ES7	1.50	11	31/12/2021	General Description (Bulk Analysis)	Soil/Stone
					31/12/2021	Asbestos Fibres	NAD
					31/12/2021	Asbestos ACM	NAD
					31/12/2021	Asbestos Type	NAD
					31/12/2021	Asbestos Level Screen	NAD
21/20519	1	CP02 ES5	1.20	23	31/12/2021	General Description (Bulk Analysis)	Soil/Stone
					31/12/2021	Asbestos Fibres	NAD
					31/12/2021	Asbestos ACM	NAD
					31/12/2021	Asbestos Type	NAD
					31/12/2021	Asbestos Level Screen	NAD
21/20519	1	CP02 ES7	1.80	26	31/12/2021	General Description (Bulk Analysis)	Soil/Stone
					31/12/2021	Asbestos Fibres	NAD
					31/12/2021	Asbestos ACM	NAD
					31/12/2021	Asbestos Type	NAD
					31/12/2021	Asbestos Level Screen	NAD
21/20519	1	WS01 ES2	0.70	34	31/12/2021	General Description (Bulk Analysis)	Soil/Stone
					31/12/2021	Asbestos Fibres	NAD
					31/12/2021	Asbestos ACM	NAD
					31/12/2021	Asbestos Type	NAD
					31/12/2021	Asbestos Level Screen	NAD
21/20519	1	WS02 ES1	0.30	42	31/12/2021	General Description (Bulk Analysis)	Soil/Stone
					31/12/2021	Asbestos Fibres	Fibre Bundles
					31/12/2021	Asbestos ACM	NAD
					31/12/2021	Asbestos Type	Chrysotile

Client Name: Tetra Tech
Reference: 784-B033528
Location: Seqirus Site 6, 1a Renaissance Way, Speke
Contact: Nicholas Brook

EMT Job No.	Batch	Sample ID	Depth	EMT Sample No.	Date Of Analysis	Analysis	Result
21/20519	1	WS02 ES1	0.30	42	31/12/2021	Asbestos Level Screen	less than 0.1%
					07/01/2022	Total ACM Gravimetric Quantification (% Asb)	<0.001 (mass %)
					07/01/2022	Total Detailed Gravimetric Quantification (% Asb)	<0.001 (mass %)
					07/01/2022	Total Gravimetric Quantification (ACM + Detailed) (% Asb)	<0.001 (mass %)
					11/01/2022	Asbestos PCOM Quantification (Fibres)	<0.001 (mass %)
					11/01/2022	Asbestos Gravimetric & PCOM Total	<0.001 (mass %)
21/20519	1	WS02 ES3	1.00	50	31/12/2021	General Description (Bulk Analysis)	Soil/Stone
					31/12/2021	Asbestos Fibres	NAD
					31/12/2021	Asbestos ACM	NAD
					31/12/2021	Asbestos Type	NAD
					31/12/2021	Asbestos Level Screen	NAD
21/20519	1	WS03 ES3	0.80	62	31/12/2021	General Description (Bulk Analysis)	Soil/Stone
					31/12/2021	Asbestos Fibres	NAD
					31/12/2021	Asbestos ACM	NAD
					31/12/2021	Asbestos Type	NAD
					31/12/2021	Asbestos Level Screen	NAD

Client Name: Tetra Tech
Reference: 784-B033528
Location: Seqirus Site 6, 1a Renaissance Way, Speke
Contact: Nicholas Brook

[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.: 21/20519

SOILS

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.

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.

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.

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 UKAS requirement 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.

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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.

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 calibration range, the result should be considered the minimum value. The actual result could be significantly higher.
*	Analysis subcontracted to an Element Materials Technology approved laboratory.
AD	Samples are dried at 35°C ±5°C
CO	Suspected carry over
LOD/LOR	Limit of Detection (Limit of Reporting) in line with ISO 17025 and MCERTS
ME	Matrix Effect
NFD	No Fibres Detected
BS	AQC Sample
LB	Blank Sample
N	Client Sample
TB	Trip Blank Sample
OC	Outside Calibration Range

HWOL ACRONYMS AND OPERATORS USED

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

EMT Job No: 21/20519

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
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.	Yes		AR	Yes
TM5/TM36	please refer to TM5 and TM36 for method details	PM8/PM12/PM16	please refer to PM8/PM16 and PM12 for method details			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	Dried and ground solid samples are washed with hydrochloric acid, then rinsed with deionised water to remove the mineral carbon before TOC analysis.			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	Dried and ground solid samples are washed with hydrochloric acid, then rinsed with deionised water to remove the mineral carbon before TOC analysis.	Yes		AD	Yes

EMT Job No: 21/20519

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
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
TM26	Determination of phenols by Reversed Phased High Performance Liquid Chromatography and Electro-Chemical Detection.	PM21B	As Received samples are extracted in Methanol: Water (60:40) by reciprocal shaker.			AR	Yes
TM30	Determination of Trace Metals by ICP-OES (Inductively Coupled Plasma – Optical Emission Spectrometry); WATERS by Modified USEPA Method 200.7, Rev. 4.4, 1994; Modified EPA Method 6010B, Rev.2, Dec 1996; Modified BS EN ISO 11885:2009: SOILS by Modified USEP 6010B, Rev.2, Dec.1996; Modified EPA Method 3050B, Rev.2, Dec.1996	PM15	Acid digestion of dried and ground solid samples using Aqua Regia refluxed at 112.5 °C. Samples containing asbestos are not dried and ground.			AD	Yes
TM30	Determination of Trace Metals by ICP-OES (Inductively Coupled Plasma – Optical Emission Spectrometry); WATERS by Modified USEPA Method 200.7, Rev. 4.4, 1994; Modified EPA Method 6010B, Rev.2, Dec 1996; Modified BS EN ISO 11885:2009: SOILS by Modified USEP 6010B, Rev.2, Dec.1996; Modified EPA Method 3050B, Rev.2, Dec.1996	PM15	Acid digestion of dried and ground solid samples using Aqua Regia refluxed at 112.5 °C. Samples containing asbestos are not dried and ground.	Yes		AD	Yes
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: 2013	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: 2013	PM20	Extraction of dried and ground or as received samples with deionised water in a 2:1 water to solid ratio using a reciprocal shaker for all analytes except hexavalent chromium. Extraction of as received sample using 10:1 ratio of 0.2M sodium hydroxide to soil for hexavalent chromium using a reciprocal shaker.	Yes		AD	Yes
TM38	Soluble Ion analysis using Discrete Analyser. Modified US EPA methods: Chloride 325.2 (1978), Sulphate 375.4 (Rev.2 1993), o-Phosphate 365.2 (Rev.2 1993), TON 353.1 (Rev.2 1993), Nitrite 354.1 (1971), Hex Cr 7196A (1992), NH4+ 350.1 (Rev.2 1993) – All anions comparable to BS ISO 15923-1: 2013	PM20	Extraction of dried and ground or as received samples with deionised water in a 2:1 water to solid ratio using a reciprocal shaker for all analytes except hexavalent chromium. Extraction of as received sample using 10:1 ratio of 0.2M sodium hydroxide to soil for hexavalent chromium using a reciprocal shaker.	Yes		AR	Yes

EMT Job No: 21/20519

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
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 First edition (2006)	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
TM74	Analysis of water soluble boron (20:1 extract) by ICP-OES.	PM32	Hot water soluble boron is extracted from dried and ground samples using a 20:1 ratio.	Yes		AD	Yes
TM77	Modified DDCE/TS method 15364:2006. Determination of Acid Neutralization Capacity by Metrohm automated probe analyser.	PM0	No preparation is required.			AR	No
TM89	Modified USEPA method OIA-1667 (1999). Determination of cyanide by Flow Injection Analyser. Where WAD cyanides are required a Ligand displacement step is carried out before analysis.	PM45	As received solid samples are extracted with 1M NaOH by orbital shaker for Cyanide, Sulphide and Thiocyanate analysis.			AR	Yes
TM131	Quantification of Asbestos Fibres and ACM based on HSG248 First edition:2006, HSG 264 Second edition:2012, HSE Contract Research Report No.83/1996, MDHS 87:1998, WM3 1st Edition v1.1:2018	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	Yes
TM170	Determination of Trace Metals by ICP-MS (Inductively Coupled Plasma – Mass Spectrometry): Modified USEPA Method 200.8, Rev. 5.4, 1994; Modified EPA Method 6020A, Rev.1, Feb 2007; Modified BS EN ISO 17294-2:2016	PM14	Preparation of waters and leachates for metals by ICP OES/ICP MS. Samples are filtered for Dissolved metals, and remain unfiltered for Total metals then acidified			AR	Yes
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	NONE	No Method Code			AD	Yes

EMT Job No: 21/20519

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
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	

Tetra Tech
Quay West at MediaCityUK
Trafford Wharf Road
Trafford Park,
Manchester
M17 1HH

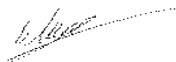


Attention : Nicholas Brook
Date : 16th March, 2022
Your reference : 784-B033528
Our reference : Test Report 22/3369 Batch 1
Location : Seqirus Site 6
Date samples received : 1st March, 2022
Status : Final Report
Issue : 1

Three samples were received for analysis on 1st March, 2022 of which two 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:



Bruce Leslie
Project Manager

Please include all sections of this report if it is reproduced

Client Name: Tetra Tech
Reference: 784-B033528
Location: Seqirus Site 6
Contact: Nicholas Brook
EMT Job No: 22/3369

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

Please see attached notes for all abbreviations and acronyms

Element Materials Technology

Client Name: Tetra Tech
Reference: 784-B033528
Location: Seqirus Site 6
Contact: Nicholas Brook
EMT Job No: 22/3369

Report : Solid

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

EMT Sample No.	4-6	7-9									Please see attached notes for all abbreviations and acronyms		
Sample ID	CP03	CP03											
Depth	1.00	3.00											
COC No / misc													
Containers	V J T	V J T											
Sample Date	25/02/2022	25/02/2022											
Sample Type	Soil	Soil											
Batch Number	1	1											
Date of Receipt	01/03/2022	01/03/2022									LOD/LOR	Units	Method No.
TPH CWG													
Aliphatics													
>C5-C6 (HS_1D_AL) #	<0.1	<0.1									<0.1	mg/kg	TM36/PM12
>C6-C8 (HS_1D_AL) #	<0.1	<0.1									<0.1	mg/kg	TM36/PM12
>C8-C10 (HS_1D_AL)	<0.1	<0.1									<0.1	mg/kg	TM36/PM12
>C10-C12 (EH_CU_1D_AL) #	<0.2	<0.2									<0.2	mg/kg	TM5/PM8/PM16
>C12-C16 (EH_CU_1D_AL) #	<4	<4									<4	mg/kg	TM5/PM8/PM16
>C16-C21 (EH_CU_1D_AL) #	<7	12									<7	mg/kg	TM5/PM8/PM16
>C21-C35 (EH_CU_1D_AL) #	<7	105									<7	mg/kg	TM5/PM8/PM16
>C35-C44 (EH_1D_AL)	<7	30									<7	mg/kg	TM5/PM8/PM16
Total aliphatics C5-44 (EH+HS_1D_AL)	<26	147									<26	mg/kg	TM5/PM8/PM16/PM12/PM10
Aromatics													
>C5-EC7 (HS_1D_AR) #	<0.1	<0.1									<0.1	mg/kg	TM36/PM12
>EC7-EC8 (HS_1D_AR) #	<0.1	<0.1									<0.1	mg/kg	TM36/PM12
>EC8-EC10 (HS_1D_AR) #	<0.1	<0.1									<0.1	mg/kg	TM36/PM12
>EC10-EC12 (EH_CU_1D_AR) #	<0.2	<0.2									<0.2	mg/kg	TM5/PM8/PM16
>EC12-EC16 (EH_CU_1D_AR) #	<4	<4									<4	mg/kg	TM5/PM8/PM16
>EC16-EC21 (EH_CU_1D_AR) #	<7	<7									<7	mg/kg	TM5/PM8/PM16
>EC21-EC35 (EH_CU_1D_AR) #	114	112									<7	mg/kg	TM5/PM8/PM16
>EC35-EC44 (EH_1D_AR)	102	70									<7	mg/kg	TM5/PM8/PM16
Total aromatics C5-44 (EH+HS_1D_AR)	216	182									<26	mg/kg	TM5/PM8/PM16/PM12/PM10
Total aliphatics and aromatics(C5-44) (EH+HS_CU_1D_Total)	216	329									<52	mg/kg	TM5/PM8/PM16/PM12/PM10
MTBE #	<5	<5									<5	ug/kg	TM36/PM12
Benzene #	<5	<5									<5	ug/kg	TM36/PM12
Toluene #	<5	<5									<5	ug/kg	TM36/PM12
Ethylbenzene #	<5	<5									<5	ug/kg	TM36/PM12
m/p-Xylene #	<5	7									<5	ug/kg	TM36/PM12
o-Xylene #	<5	<5									<5	ug/kg	TM36/PM12
PCB 28 #	-	<5									<5	ug/kg	TM17/PM8
PCB 52 #	-	<5									<5	ug/kg	TM17/PM8
PCB 101 #	-	<5									<5	ug/kg	TM17/PM8
PCB 118 #	-	<5									<5	ug/kg	TM17/PM8
PCB 138 #	-	<5									<5	ug/kg	TM17/PM8
PCB 153 #	-	<5									<5	ug/kg	TM17/PM8
PCB 180 #	-	<5									<5	ug/kg	TM17/PM8
Total 7 PCBs #	-	<35									<35	ug/kg	TM17/PM8
Total Phenols HPLC	<0.15	<0.15									<0.15	mg/kg	TM26/PM21E
Hexavalent Chromium#	<0.3	<0.3									<0.3	mg/kg	TM38/PM20
Sulphate as SO4 (2:1 Ext) #	0.0173	0.0862									<0.0015	g/l	TM38/PM20
Chromium III	31.4	57.8									<0.5	mg/kg	NONE/NONE

Element Materials Technology

Client Name: Tetra Tech
Reference: 784-B033528
Location: Seqirus Site 6
Contact: Nicholas Brook
EMT Job No: 22/3369

Report : Solid

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

[illegible]

Mass of sample taken (kg)	-	Moisture Content Ratio (%) =	8.3
Mass of dry sample (kg) =	0.09	Dry Matter Content Ratio (%) =	92.3
Particle Size <4mm =	>95%		
EMT Job No	22/3369	Landfill Waste Acceptance Criteria Limits	
Sample No	9		
Client Sample No	CP03		
Depth/Other	3.00		
Sample Date	25/02/2022		
Batch No	1		
Solid Waste Analysis		Inert Waste Landfill	Stable Non-reactive Hazardous Waste in Non- Hazardous Landfill
Total Organic Carbon (%)	0.20	3	5
Loss on Ignition (%)	<1.0	-	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)	147	500	-
PAH Sum of 17(mg/kg)	2.43	100	-
pH (pH Units)	8.95	-	>6
ANC to pH 7 (mol/kg)	0.07	-	to be evaluated
ANC to pH 4 (mol/kg)	0.51	-	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	A ₁₀	
	mg/l	mg/kg	
Arsenic	<0.0025	<0.025	0.5
Barium	0.009	0.09	2
Cadmium	<0.0005	<0.005	100
Chromium	<0.0015	<0.015	300
Copper	<0.007	<0.07	0.04
Mercury	<0.001	<0.01	1
Molybdenum	0.006	0.06	5
Nickel	<0.002	<0.02	0.5
Lead	<0.005	<0.05	10
Antimony	0.029	0.29	70
Selenium	<0.003	<0.03	2
Zinc	<0.003	<0.03	50
Chloride	11.0	110	0.01
Fluoride	<0.3	<3	0.2
Sulphate as SO ₄	24.1	241	2
Total Dissolved Solids	87	870	0.5
Phenol	<0.01	<0.1	10
Dissolved Organic Carbon	<2	<20	30
			40
			50
			0.06
			0.1
			0.5
			1
			5
			7
			10
			50
			100
			200
			500
			1000
			15000
			25000
			50000
			100000
			-
			-

Note:

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.

[illegible]

Client Name: Tetra Tech
Reference: 784-B033528
Location: Seqirus Site 6
Contact: Nicholas Brook

[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.: 22/3369

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 UKAS requirement 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 calibration range, the result should be considered the minimum value. The actual result could be significantly higher.
*	Analysis subcontracted to an Element Materials Technology approved laboratory.
AD	Samples are dried at 35°C ±5°C
CO	Suspected carry over
LOD/LOR	Limit of Detection (Limit of Reporting) in line with ISO 17025 and MCERTS
ME	Matrix Effect
NFD	No Fibres Detected
BS	AQC Sample
LB	Blank Sample
N	Client Sample
TB	Trip Blank Sample
OC	Outside Calibration Range

HWOL ACRONYMS AND OPERATORS USED

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

EMT Job No: 22/3369

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
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.	Yes		AR	Yes
TM5/TM36	please refer to TM5 and TM36 for method details	PM8/PM12/PM16	please refer to PM8/PM16 and PM12 for method details			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	Dried and ground solid samples are washed with hydrochloric acid, then rinsed with deionised water to remove the mineral carbon before TOC analysis.			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	Dried and ground solid samples are washed with hydrochloric acid, then rinsed with deionised water to remove the mineral carbon before TOC analysis.	Yes		AD	Yes

EMT Job No: 22/3369

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
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
TM26	Determination of phenols by Reversed Phased High Performance Liquid Chromatography and Electro-Chemical Detection.	PM21B	As Received samples are extracted in Methanol: Water (60:40) by reciprocal shaker.			AR	Yes
TM30	Determination of Trace Metals by ICP-OES (Inductively Coupled Plasma – Optical Emission Spectrometry); WATERS by Modified USEPA Method 200.7, Rev. 4.4, 1994; Modified EPA Method 6010B, Rev.2, Dec 1996; Modified BS EN ISO 11885:2009: SOILS by Modified USEP 6010B, Rev.2, Dec.1996; Modified EPA Method 3050B, Rev.2, Dec.1996	PM15	Acid digestion of dried and ground solid samples using Aqua Regia refluxed at 112.5 °C. Samples containing asbestos are not dried and ground.			AD	Yes
TM30	Determination of Trace Metals by ICP-OES (Inductively Coupled Plasma – Optical Emission Spectrometry); WATERS by Modified USEPA Method 200.7, Rev. 4.4, 1994; Modified EPA Method 6010B, Rev.2, Dec 1996; Modified BS EN ISO 11885:2009: SOILS by Modified USEP 6010B, Rev.2, Dec.1996; Modified EPA Method 3050B, Rev.2, Dec.1996	PM15	Acid digestion of dried and ground solid samples using Aqua Regia refluxed at 112.5 °C. Samples containing asbestos are not dried and ground.	Yes		AD	Yes
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: 2013	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: 2013	PM20	Extraction of dried and ground or as received samples with deionised water in a 2:1 water to solid ratio using a reciprocal shaker for all analytes except hexavalent chromium. Extraction of as received sample using 10:1 ratio of 0.2M sodium hydroxide to soil for hexavalent chromium using a reciprocal shaker.	Yes		AD	Yes
TM38	Soluble Ion analysis using Discrete Analyser. Modified US EPA methods: Chloride 325.2 (1978), Sulphate 375.4 (Rev.2 1993), o-Phosphate 365.2 (Rev.2 1993), TON 353.1 (Rev.2 1993), Nitrite 354.1 (1971), Hex Cr 7196A (1992), NH4+ 350.1 (Rev.2 1993) – All anions comparable to BS ISO 15923-1: 2013	PM20	Extraction of dried and ground or as received samples with deionised water in a 2:1 water to solid ratio using a reciprocal shaker for all analytes except hexavalent chromium. Extraction of as received sample using 10:1 ratio of 0.2M sodium hydroxide to soil for hexavalent chromium using a reciprocal shaker.	Yes		AR	Yes

EMT Job No: 22/3369

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
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
TM74	Analysis of water soluble boron (20:1 extract) by ICP-OES.	PM32	Hot water soluble boron is extracted from dried and ground samples using a 20:1 ratio.	Yes		AD	Yes
TM77	Modified DDCE/TS method 15364:2006. Determination of Acid Neutralization Capacity by Metrohm automated probe analyser.	PM0	No preparation is required.			AR	No
TM89	Modified USEPA method OIA-1667 (1999). Determination of cyanide by Flow Injection Analyser. Where WAD cyanides are required a Ligand displacement step is carried out before analysis.	PM45	As received solid samples are extracted with 1M NaOH by orbital shaker for Cyanide, Sulphide and Thiocyanate analysis.			AR	Yes
TM170	Determination of Trace Metals by ICP-MS (Inductively Coupled Plasma – Mass Spectrometry): Modified USEPA Method 200.8, Rev. 5.4, 1994; Modified EPA Method 6020A, Rev.1, Feb 2007; Modified BS EN ISO 17294-2:2016	PM14	Preparation of waters and leachates for metals by ICP OES/ICP MS. Samples are filtered for Dissolved metals, and remain unfiltered for Total metals then acidified			AR	Yes
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	NONE	No Method Code			AD	Yes
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 F – TIER 1 SCREENING RESULTS

Sample Identity	England and Wales (mg/kg) where		CP01 ES2	CP01 ES7	CP02 ES5	CP02 ES7	CP03 ES2	CP03 ES3	WS01 ES2	WS02 ES1	WS02 ES3	WS03 ES3
Depth (m bgl)	Soil Organic Matter 1%		0.50	1.50	1.20	1.80	1.00	3.00	0.70	0.30	1.00	0.80
Reference		Screen Value	1	1	1	1	1	1	1	1	1	1
Sample Date	Units	Commercial	20/12/2021	20/12/2021	21/12/2021	21/12/2021	25/02/2022	25/02/2022	21/12/2021	21/12/2021	21/12/2021	21/12/2021
pH		<5, >9	11.37	8.65	10.9	8.33	9.61	8.95	10.89	10.83	8.35	9.75
Asbestos	%	Presence	<1% (Chrysotile)	NAD	NAD	NAD	NAD	NAD	NAD	<1% (Chrysotile)	NAD	NAD
HEAVY METALS/METALLOIDS												
Arsenic	mg/kg	640	5.1	5.7	4.6	6.4	1.3	1.3	3.3	6.8	4.1	1.7
Cadmium	mg/kg	410	0.3	<0.1	0.5	<0.1	<0.1	<0.1	0.1	0.4	0.2	<0.1
Chromium (III)	mg/kg	8,600	44.4	56.8	43.6	59.1	31.4	57.8	70.7	40.3	43.5	32.7
Chromium (VI)	mg/kg	49	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3
Lead	mg/kg	2,300	72	8	37	11	<5	26	108	343	42	14
Mercury (Elemental)	mg/kg	58 (25.8)vap	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	980	15.2	33	12.1	37.1	11.7	15.7	12.7	19	18.9	9.4
Selenium	mg/kg	12,000	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Beryllium	mg/kg	12	0.7	1	<0.5	1.2	<0.5	<0.5	0.5	1	0.7	<0.5
Boron	mg/kg	240,000	2.2	0.5	0.6	0.4	<0.1	0.3	0.8	2.2	0.8	0.3
Vanadium	mg/kg	9,000	25	35	14	39	11	14	21	33	25	9
Copper	mg/kg	68,000	28	16	16	17	20	29	23	77	16	12
Zinc	mg/kg	730,000	75	41	22	45	6	15	54	142	41	15
GENERAL INORGANICS												
Easily Liberatable Cyanide (free)	mg/kg	40	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
US EPA PRIORITY PAHs												
Acenaphthene	mg/kg	84,000 (57.0)sol	0.24	<0.05	<0.05	<0.05	<0.05	<0.05	0.09	0.16	<0.05	<0.05
Acenaphthylene	mg/kg	83,000 (86.1)sol	0.07	<0.03	<0.03	<0.03	<0.03	<0.03	0.03	0.07	<0.03	<0.03
Anthracene	mg/kg	520,000	0.64	<0.04	0.1	<0.04	<0.04	0.1	0.32	0.38	<0.04	<0.04
Benzo(a)anthracene	mg/kg	170	1.89	<0.06	0.28	<0.06	<0.06	0.19	0.72	1.22	<0.06	<0.06
Benzo(b)fluoranthene	mg/kg	44	2.56	1.84	1.55	0.34	<0.05	0.17	<0.05	0.82	1.54	<0.05
Benzo(k)fluoranthene	mg/kg	1,200	2.56	0.72	0.6	0.13	<0.02	0.07	<0.02	0.32	0.6	<0.02
Benzo(g,h,i)perylene	mg/kg	3,900	0.73	<0.04	0.16	<0.04	<0.04	0.08	0.39	0.78	<0.04	<0.04
Benzo(a)pyrene	mg/kg	77	1.43	<0.04	0.24	<0.04	<0.04	0.11	0.6	1.16	<0.04	<0.04
Chrysene	mg/kg	350	1.95	<0.02	0.3	0.02	<0.02	0.2	0.8	1.42	0.04	0.03
Di-benzo(a,h)anthracene	mg/kg	3.5	0.27	<0.04	0.05	<0.04	<0.04	<0.04	0.11	0.21	<0.04	<0.04
Fluoranthene	mg/kg	23,000	3.72	<0.03	0.57	0.03	<0.03	0.44	1.62	2.44	0.05	0.04
Fluorene	mg/kg	63000 (30.9)sol	0.18	<0.04	<0.04	<0.04	<0.04	0.05	0.07	0.13	<0.04	<0.04
Indeno(1,2,3-cd)pyrene	mg/kg	500	0.92	<0.04	0.2	<0.04	<0.04	0.09	0.42	0.84	<0.04	<0.04
Naphthalene	mg/kg	190 (76.4)sol	0.1	<0.04	<0.04	<0.04	<0.04	0.09	0.07	0.1	<0.04	<0.04
Phenanthrene	mg/kg	22,000	1.94	<0.03	0.3	<0.03	<0.03	0.48	1.27	1.42	<0.03	0.05
Pyrene	mg/kg	54,000	3.49	<0.03	0.6	0.03	<0.03	0.36	1.46	2.63	0.05	0.04
Phenolics												
Phenol	mg/kg	440	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15
TPH												
TPH Aliphatic >C5-6	mg/kg	3,200 (304)sol	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
TPH Aliphatic >C6-8	mg/kg	7,800 (144)sol	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
TPH Aliphatic >C8-10	mg/kg	2,000 (78)sol	<0.1	<0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
TPH Aliphatic >C10-12	mg/kg	9,700 (48)sol	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
TPH Aliphatic >C12-16	mg/kg	59,000 (24)sol	<4	<4	<4	<4	<4	<4	<4	6	<4	<4
TPH Aliphatic > C16-21	mg/kg	1,000,000#	<7	<7	<7	<7	<7	12	<7	23	<7	<7
TPH Aliphatic >C21-35	mg/kg	1,000,000#	70	<7	33	<7	<7	105	142	185	<7	<7
TPH Aliphatic >C35-44	mg/kg	1,000,000#	12	<7	<7	<14	<7	30	23	16	<7	<7
TPH Aromatic >EC5-7 (Benzene)	mg/kg	27	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
TPH Aromatic >EC7-8	mg/kg	56,000 (869)vap	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
TPH Aromatic >EC8-10	mg/kg	3,500 (613)vap	<0.1	<0.1	0.9	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
TPH Aromatic >EC10-12	mg/kg	16,000 (364)sol	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
TPH Aromatic >EC12-16	mg/kg	36,000 (169)sol	<4	<4	<4	<4	<4	<4	<4	13	<4	<4
TPH Aromatic >EC16-21	mg/kg	28,000	37	<7	<7	<7	<7	<7	<7	94	<7	<7
TPH Aromatic >EC21-35	mg/kg	28,000	180	<7	98	<7	114	<7	276	320	<7	<7
TPH Aromatic >EC35-44	mg/kg	28,000	30	<7	16	<7	102	70	44	43	<7	<7
BTEX												
Benzene	mg/kg	27	0.008	<0.005	<0.005	<0.005	<5	<5	<0.005	<0.005	<0.005	<0.005
Toluene	mg/kg	56,000 (869) vap	<0.005	<0.005	<0.005	<0.005	<5	<5	<0.005	<0.005	<0.005	<0.005
Ethylbenzene	mg/kg	5,700 (518) vap	<0.005	<0.005	0.175	<0.005	<5	<5	<0.005	<0.005	<0.005	<0.005
m/p-Xylene	mg/kg	6,200 (625) vap	0.009	<0.005	0.669	<0.005	<5	7	<0.005	<0.005	<0.005	<0.005
o-Xylene	mg/kg	6,600 (478) sol	<0.005	<0.005	0.057	<0.005	<5	<5	<0.005	<0.005	<0.005	<0.005
Other												
Fraction Organic Carbon			0.008	0.001	0.005	0.001	<0.001	0.002	0.005	0.02	0.004	0.002
Sulphate as SO4 (2:1 Ext)	g/l		0.3119	0.0413	0.0911	0.0272	0.0173	0.0862	0.1206	0.2792	0.0129	0.0174
MTBE	mg/kg		<0.005	<0.005	<0.005	<0.005	<5	<5	<0.005	<0.005	<0.005	<0.005
Natural Moisture Content	%		15.5	14.8	12.6	15.9	-	8.3	10.7	15.2	9	6.8



Sample Identity	CP01 ES2	CP01 ES7	CP02 ES5	CP02 ES7	CP03 ES2	CP03 ES3	WS01 ES2	WS02 ES1	WS02 ES3	WS03 ES3
Depth (m bgl)	0.50	1.50	1.20	1.80	1.00	3.00	0.70	0.30	1.00	0.80
Benzo(a)anthracene	1.89	0.06	0.28	0.06	0.06	0.19	0.72	1.22	0.06	0.06
Benzo(b)fluoranthene	2.56	1.84	1.55	0.34	0.05	0.17	0.05	0.82	1.54	0.05
Benzo(k)fluoranthene	2.56	0.72	0.6	0.13	0.02	0.07	0.02	0.32	0.6	0.02
Benzo(g,h,i)perylene	0.73	0.04	0.16	0.04	0.04	0.08	0.39	0.78	0.04	0.04
Benzo(a)pyrene	1.43	0.04	0.24	0.04	0.04	0.11	0.6	1.16	0.04	0.04
Chrysene	1.95	0.02	0.3	0.02	0.02	0.2	0.8	1.42	0.04	0.03
Di-benzo(a,h)anthracene	0.27	0.04	0.05	0.04	0.04	0.04	0.11	0.21	0.04	0.04
Indeno(1,2,3-cd)pyrene	0.92	0.04	0.2	0.04	0.04	0.09	0.42	0.84	0.04	0.04

Ratio to BaP											Min	Max	CULP Study Limits	
Chrysene	1.3636	0.5000	1.2500	0.5000	0.5000	0.5000	1.3333	1.2241	1.0000	0.7500	0.5000	1.3636	0.12	11.61
Benzo(b)fluoranthene	1.7902	46.0000	6.4583	8.5000	1.2500	1.2500	0.0833	0.7069	38.5000	1.2500	0.0833	46.0000	0.11	10.85
Benzo(k)fluoranthene	1.7902	18.0000	2.5000	3.2500	0.5000	0.5000	0.0333	0.2759	15.0000	0.5000	0.0333	18.0000	0.04	3.72
Dibenzo(ah)anthracene	0.1888	1.0000	0.2083	1.0000	1.0000	1.0000	0.1833	0.1810	1.0000	1.0000	0.1833	1.0000	0.01	1.38
Indeno(123cd)pyrene	0.6434	1.0000	0.8333	1.0000	1.0000	1.0000	0.7000	0.7241	1.0000	1.0000	0.6434	1.0000	0.07	7.27
Benzo(ghi)perylene	0.5105	1.0000	0.6667	1.0000	1.0000	1.0000	0.6500	0.6724	1.0000	1.0000	0.5105	1.0000	0.08	8.22

TPH Hazard Indexing		Sample ID	CP01 ES2	HI	CP01 ES7	HI	CP02 ES5	HI	CP02 ES7	HI	CP03 ES2	HI	CP03 ES3	HI	WS01 ES2	HI	WS02 ES1	HI	WS02 ES3	HI	WS03 ES3	HI
		Depth (mbgl)	0.50		1.50		1.20		1.80		1.00		3.00		0.70		0.30		1.00		0.80	
Aliphatics	Units	TSV																				
TPH Aliphatic >C5-6	mg/kg	3,200	0.10	0.00	0.10	0.00	0.10	0.00	0.10	0.00	0.10	0.00	0.10	0.00	0.10	0.00	0.10	0.00	0.10	0.00	0.10	0.00
TPH Aliphatic >C6-8	mg/kg	7,800	0.10	0.00	0.10	0.00	0.10	0.00	0.10	0.00	0.10	0.00	0.10	0.00	0.10	0.00	0.10	0.00	0.10	0.00	0.10	0.00
TPH Aliphatic >C8-10	mg/kg	2,000	0.10	0.00	0.10	0.00	0.10	0.00	0.10	0.00	0.10	0.00	0.10	0.00	0.10	0.00	0.10	0.00	0.10	0.00	0.10	0.00
TPH Aliphatic >C10-12	mg/kg	9,700	0.20	0.00	0.20	0.00	0.20	0.00	0.20	0.00	0.20	0.00	0.20	0.00	0.20	0.00	0.20	0.00	0.20	0.00	0.20	0.00
TPH Aliphatic >C12-16	mg/kg	59,000	4	0.00	4	0.00	4	0.00	4	0.00	4.00	0.00	4.00	0.00	4	0.00	6	0.00	4	0.00	4	0.00
TPH Aliphatic >C16-21	mg/kg	1,000,000	7	0.00	7	0.00	7	0.00	7	0.00	7.00	0.00	12.00	0.00	7	0.00	23	0.00	7	0.00	7	0.00
TPH Aliphatic >C21-35	mg/kg	1,000,000	70	0.00	7	0.00	33	0.00	7	0.00	7.00	0.00	105.00	0.00	142	0.00	185	0.00	7	0.00	7	0.00
TPH Aliphatic >C35-44	mg/kg	1,000,000	12	0.00	7	0.00	7	0.00	7	0.00	7.00	0.00	30.00	0.00	23	0.00	16	0.00	7	0.00	7	0.00
Aliphatic Hazard Index				0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00
Aromatics																						
TPH Aromatic >EC5-7 (Benzene)	mg/kg	27	0.10	0.00	0.10	0.00	0.10	0.00	0.10	0.00	0.10	0.00	0.10	0.00	0.10	0.00	0.10	0.00	0.10	0.00	0.10	0.00
TPH Aromatic >EC7-8	mg/kg	56,000	0.10	0.00	0.10	0.00	0.10	0.00	0.10	0.00	0.10	0.00	0.10	0.00	0.10	0.00	0.10	0.00	0.10	0.00	0.10	0.00
TPH Aromatic >EC8-10	mg/kg	3,500	0.10	0.00	0.10	0.00	0.90	0.00	0.10	0.00	0.10	0.00	0.10	0.00	0.10	0.00	0.10	0.00	0.10	0.00	0.10	0.00
TPH Aromatic >EC10-12	mg/kg	16,000	0.20	0.00	0.20	0.00	0.20	0.00	0.20	0.00	0.20	0.00	0.20	0.00	0.20	0.00	0.20	0.00	0.20	0.00	0.20	0.00
TPH Aromatic >EC12-16	mg/kg	36,000	4	0.00	4	0.00	4	0.00	4	0.00	4.00	0.00	4.00	0.00	4	0.00	13	0.00	4.00	0.00	4	0.00
TPH Aromatic >EC16-21	mg/kg	28,000	37	0.00	7	0.00	7	0.00	7	0.00	7.00	0.00	7.00	0.00	7	0.00	94	0.00	7	0.00	7	0.00
TPH Aromatic >EC21-35	mg/kg	28,000	180	0.01	7	0.00	98	0.00	7	0.00	112.00	0.00	276.00	0.01	276	0.01	320	0.01	7	0.00	7	0.00
TPH Aromatic >EC35-44	mg/kg	28,000	30	0.00	7	0.00	16	0.00	7	0.00	70.00	0.00	44.00	0.00	44	0.00	43	0.00	7	0.00	7	0.00
Aromatic Hazard Index				0.01		0.00		0.01		0.00		0.01		0.02		0.02		0.02		0.00		0.00
Hazard Index				0.01		0.00		0.01		0.00		0.01		0.02		0.02		0.02		0.00		0.00

pH and Sulphate - Seqirus Site 6

Sample Identity	England and Wales (mg/kg) where		CP01 ES2	CP01 ES7	CP01 D13	CP01 D17	CP02 ES5	CP02 ES7	CP02 D8	CP02 D18	CP03 ES2	CP03 ES3	WS01 ES2	WS02 ES1	WS02 ES3	WS03 ES3
Depth (m bgl)	Soil Organic Matter <1%		0.50	1.50	5.00-5.45	7.50-7.95	1.20	1.80	2.00-2.45	9.00-9.45	1.00	3.00	0.70	0.30	1.00	0.80
	Screen Value															
Sample Date	Units	Commercial	20/12/2021	20/12/2021	20/12/2021	20/12/2021	21/12/2021	21/12/2021	21/12/2021	21/12/2021	25/02/2022	25/02/2022	21/12/2021	21/12/2021	21/12/2021	21/12/2021
pH		<5, >9	11.37	8.65	8.30	8.50	10.9	8.33	8.10	8.70	9.61	8.95	10.89	10.83	8.35	9.75
Water Soluble Sulphate as SO4 2:1 Extract	mg/l		311.90	41.30	24.00	24.00	91.10	27.20	37.00	21.00	17.30	86.20	120.60	279.20	12.90	17.40

Average pH 9.373571
Average Sulphate 79.36429



APPENDIX G – WATER PIPES ASSESSMENT

[illegible]

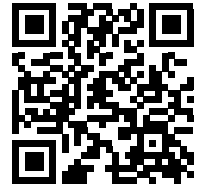
APPENDIX H – HAZWASTE ONLINE DATA



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)



GK7T2-ZLBMK-39JHT

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

Job name

B033528 - Seqirus Site 6

Description/Comments

Project

B033528

Site

Seqirus Site 6

Classified by

Name: **Abigail Walters**
Date: **11 Jan 2022 14:00 GMT**
Telephone: **01623 684 565**

Company: **Tetra Tech (WYG (White Young Green))**
Geneva Building, Lake View Drive,
Sherwood Business Park, Annesley
Nottingham
NG15 0ED

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

HazWasteOnline™ Certification:

Course
Hazardous Waste Classification
3 year Refresher overdue

Date
15 Mar 2018

Job summary

#	Sample name	Depth [m]	Classification Result	Hazard properties	Page
1	CP01 ES2	0.50	Non Hazardous		2
2	CP01 ES7	1.50	Non Hazardous		5
3	CP02 ES2	0.40	Non Hazardous		7
4	CP02 ES5	1.20	Non Hazardous		9
5	CP02 ES7	1.80	Non Hazardous		12
6	WS01 ES2	0.70	Non Hazardous		14
7	WS02 ES1	0.30	Non Hazardous		17
8	WS02 ES3	1.00	Non Hazardous		20
9	WS03 ES3	0.80	Non Hazardous		22

Related documents

#	Name	Description
1	Example waste stream template for contaminated soils	waste stream template used to create this Job

Report

Created by: Abigail Walters

Created date: 11 Jan 2022 14:00 GMT

Appendices	Page
Appendix A: Classifier defined and non GB MCL determinands	24
Appendix B: Rationale for selection of metal species	25
Appendix C: Version	26



Classification of sample: CP01 ES2

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

Sample details

Sample name:	LoW Code:
CP01 ES2	Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:	Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)
0.50 m	
Moisture content:	
15.5%	
(no correction)	

Hazard properties

None identified

Determinands

Moisture content: 15.5% No 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 }				5.1 mg/kg	1.32	6.734 mg/kg	0.000673 %			
	033-003-00-0	215-481-4	1327-53-3								
2	boron { diboron trioxide; boric oxide }				2.2 mg/kg	3.22	7.084 mg/kg	0.000708 %			
	005-008-00-8	215-125-8	1303-86-2								
3	cadmium { cadmium oxide }				0.3 mg/kg	1.142	0.343 mg/kg	0.0000343 %			
	048-002-00-0	215-146-2	1306-19-0								
4	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }				44.4 mg/kg	1.462	64.893 mg/kg	0.00649 %			
		215-160-9	1308-38-9								
5	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										
6	copper { dicopper oxide; copper (I) oxide }				28 mg/kg	1.126	31.525 mg/kg	0.00315 %			
	029-002-00-X	215-270-7	1317-39-1								
7	lead { lead chromate }			1	72 mg/kg	1.56	112.307 mg/kg	0.0072 %			
	082-004-00-2	231-846-0	7758-97-6								
8	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								
9	nickel { nickel chromate }				15.2 mg/kg	2.976	45.239 mg/kg	0.00452 %			
	028-035-00-7	238-766-5	14721-18-7								
10	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								
11	zinc { zinc chromate }				75 mg/kg	2.774	208.061 mg/kg	0.0208 %			
	024-007-00-3	236-878-9	13530-65-9								
12	TPH (C6 to C40) petroleum group		TPH		329 mg/kg		329 mg/kg	0.0329 %			
13	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								
14	benzene				0.008 mg/kg		0.008 mg/kg	0.0000008 %			
	601-020-00-8	200-753-7	71-43-2								
15	toluene				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %			<LOD
	601-021-00-3	203-625-9	108-88-3								



#	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	ethylbenzene 601-023-00-4	202-849-4	100-41-4		<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %			<LOD
17	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]		0.009 mg/kg		0.009 mg/kg	0.0000009 %			
18	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex } 006-007-00-5				<0.5 mg/kg	1.884	<0.942 mg/kg	<0.0000942 %			<LOD
19	pH		PH		11.37 pH		11.37 pH	11.37 pH			
20	naphthalene 601-052-00-2	202-049-5	91-20-3		0.1 mg/kg		0.1 mg/kg	0.00001 %			
21	acenaphthylene 205-917-1		208-96-8		0.07 mg/kg		0.07 mg/kg	0.000007 %			
22	acenaphthene 201-469-6		83-32-9		0.24 mg/kg		0.24 mg/kg	0.000024 %			
23	fluorene 201-695-5		86-73-7		0.18 mg/kg		0.18 mg/kg	0.000018 %			
24	phenanthrene 201-581-5		85-01-8		1.94 mg/kg		1.94 mg/kg	0.000194 %			
25	anthracene 204-371-1		120-12-7		0.64 mg/kg		0.64 mg/kg	0.000064 %			
26	fluoranthene 205-912-4		206-44-0		3.72 mg/kg		3.72 mg/kg	0.000372 %			
27	pyrene 204-927-3		129-00-0		3.49 mg/kg		3.49 mg/kg	0.000349 %			
28	benzo[a]anthracene 601-033-00-9	200-280-6	56-55-3		1.89 mg/kg		1.89 mg/kg	0.000189 %			
29	chrysene 601-048-00-0	205-923-4	218-01-9		1.95 mg/kg		1.95 mg/kg	0.000195 %			
30	benzo[b]fluoranthene 601-034-00-4	205-911-9	205-99-2		1.84 mg/kg		1.84 mg/kg	0.000184 %			
31	benzo[k]fluoranthene 601-036-00-5	205-916-6	207-08-9		0.72 mg/kg		0.72 mg/kg	0.000072 %			
32	benzo[a]pyrene; benzo[def]chrysene 601-032-00-3	200-028-5	50-32-8		1.43 mg/kg		1.43 mg/kg	0.000143 %			
33	indeno[123-cd]pyrene 205-893-2		193-39-5		0.92 mg/kg		0.92 mg/kg	0.000092 %			
34	dibenz[a,h]anthracene 601-041-00-2	200-181-8	53-70-3		0.27 mg/kg		0.27 mg/kg	0.000027 %			
35	benzo[ghi]perylene 205-883-8		191-24-2		0.73 mg/kg		0.73 mg/kg	0.000073 %			
36	phenol 604-001-00-2	203-632-7	108-95-2		<0.15 mg/kg		<0.15 mg/kg	<0.000015 %			<LOD
Total:									0.079 %		

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
ND	Not detected
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 Relatively low concentrations present and no evidence of free phase product in samples

Hazard Statements hit:

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

Because of determinand:

benzene: (conc.: 8.0e-07%)

Flam. Liq. 3; H226 "Flammable liquid and vapour."

Because of determinands:

TPH (C6 to C40) petroleum group: (conc.: 0.0329%)

xylene: (conc.: 9.0e-07%)



Classification of sample: CP01 ES7

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

Sample details

Sample name:	LoW Code:
CP01 ES7	Chapter:
Sample Depth:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
1.50 m	Entry:
Moisture content:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
14.8%	
(no correction)	

Hazard properties

None identified

Determinands

Moisture content: 14.8% No 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 }				5.7 mg/kg	1.32	7.526 mg/kg	0.000753 %		
	033-003-00-0	215-481-4	1327-53-3							
2	boron { diboron trioxide; boric oxide }				0.5 mg/kg	3.22	1.61 mg/kg	0.000161 %		
	005-008-00-8	215-125-8	1303-86-2							
3	cadmium { cadmium oxide }				<0.1 mg/kg	1.142	<0.114 mg/kg	<0.0000114 %		<LOD
	048-002-00-0	215-146-2	1306-19-0							
4	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }				56.8 mg/kg	1.462	83.016 mg/kg	0.0083 %		
		215-160-9	1308-38-9							
5	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									
6	copper { dicopper oxide; copper (I) oxide }				16 mg/kg	1.126	18.014 mg/kg	0.0018 %		
	029-002-00-X	215-270-7	1317-39-1							
7	lead { lead chromate }			1	8 mg/kg	1.56	12.479 mg/kg	0.0008 %		
	082-004-00-2	231-846-0	7758-97-6							
8	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							
9	nickel { nickel chromate }				33 mg/kg	2.976	98.217 mg/kg	0.00982 %		
	028-035-00-7	238-766-5	14721-18-7							
10	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							
11	zinc { zinc chromate }				41 mg/kg	2.774	113.74 mg/kg	0.0114 %		
	024-007-00-3	236-878-9	13530-65-9							
12	TPH (C6 to C40) petroleum group				<52 mg/kg		<52 mg/kg	<0.0052 %		<LOD
			TPH							
13	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							
14	benzene				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
	601-020-00-8	200-753-7	71-43-2							
15	toluene				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
	601-021-00-3	203-625-9	108-88-3							



#	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	ethylbenzene				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
	601-023-00-4	202-849-4	100-41-4							
17	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]							
18	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<0.5 mg/kg	1.884	<0.942 mg/kg	<0.0000942 %		<LOD
	006-007-00-5									
19	pH				8.65 pH		8.65 pH	8.65 pH		
			PH							
20	naphthalene				<0.04 mg/kg		<0.04 mg/kg	<0.000004 %		<LOD
	601-052-00-2	202-049-5	91-20-3							
21	acenaphthylene				<0.03 mg/kg		<0.03 mg/kg	<0.000003 %		<LOD
		205-917-1	208-96-8							
22	acenaphthene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
		201-469-6	83-32-9							
23	fluorene				<0.04 mg/kg		<0.04 mg/kg	<0.000004 %		<LOD
		201-695-5	86-73-7							
24	phenanthrene				<0.03 mg/kg		<0.03 mg/kg	<0.000003 %		<LOD
		201-581-5	85-01-8							
25	anthracene				<0.04 mg/kg		<0.04 mg/kg	<0.000004 %		<LOD
		204-371-1	120-12-7							
26	fluoranthene				<0.03 mg/kg		<0.03 mg/kg	<0.000003 %		<LOD
		205-912-4	206-44-0							
27	pyrene				<0.03 mg/kg		<0.03 mg/kg	<0.000003 %		<LOD
		204-927-3	129-00-0							
28	benzo[a]anthracene				<0.06 mg/kg		<0.06 mg/kg	<0.000006 %		<LOD
	601-033-00-9	200-280-6	56-55-3							
29	chrysene				<0.02 mg/kg		<0.02 mg/kg	<0.000002 %		<LOD
	601-048-00-0	205-923-4	218-01-9							
30	benzo[b]fluoranthene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
	601-034-00-4	205-911-9	205-99-2							
31	benzo[k]fluoranthene				<0.02 mg/kg		<0.02 mg/kg	<0.000002 %		<LOD
	601-036-00-5	205-916-6	207-08-9							
32	benzo[a]pyrene; benzo[def]chrysene				<0.04 mg/kg		<0.04 mg/kg	<0.000004 %		<LOD
	601-032-00-3	200-028-5	50-32-8							
33	indeno[123-cd]pyrene				<0.04 mg/kg		<0.04 mg/kg	<0.000004 %		<LOD
		205-893-2	193-39-5							
34	dibenz[a,h]anthracene				<0.04 mg/kg		<0.04 mg/kg	<0.000004 %		<LOD
	601-041-00-2	200-181-8	53-70-3							
35	benzo[ghi]perylene				<0.04 mg/kg		<0.04 mg/kg	<0.000004 %		<LOD
		205-883-8	191-24-2							
36	phenol				<0.15 mg/kg		<0.15 mg/kg	<0.000015 %		<LOD
	604-001-00-2	203-632-7	108-95-2							
Total:								0.0387 %		

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
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification



Classification of sample: CP02 ES2

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

Sample details

Sample name:	LoW Code:
CP02 ES2	Chapter:
Sample Depth:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
0.40 m	Entry:
Moisture content:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
12%	
(no correction)	

Hazard properties

None identified

Determinands

Moisture content: **12% No 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				0.01 mg/kg		0.01 mg/kg	0.000001 %		
	601-023-00-4	202-849-4	100-41-4							
5	xylene				0.036 mg/kg		0.036 mg/kg	0.0000036 %		
	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				11.24 pH		11.24 pH	11.24 pH		
			PH							
7	naphthalene				0.15 mg/kg		0.15 mg/kg	0.000015 %		
	601-052-00-2	202-049-5	91-20-3							
8	acenaphthylene				0.07 mg/kg		0.07 mg/kg	0.000007 %		
		205-917-1	208-96-8							
9	acenaphthene				0.12 mg/kg		0.12 mg/kg	0.000012 %		
		201-469-6	83-32-9							
10	fluorene				0.1 mg/kg		0.1 mg/kg	0.00001 %		
		201-695-5	86-73-7							
11	phenanthrene				1.08 mg/kg		1.08 mg/kg	0.000108 %		
		201-581-5	85-01-8							
12	anthracene				0.35 mg/kg		0.35 mg/kg	0.000035 %		
		204-371-1	120-12-7							
13	fluoranthene				2.09 mg/kg		2.09 mg/kg	0.000209 %		
		205-912-4	206-44-0							
14	pyrene				2.9 mg/kg		2.9 mg/kg	0.00029 %		
		204-927-3	129-00-0							
15	benzo[a]anthracene				1.4 mg/kg		1.4 mg/kg	0.00014 %		
	601-033-00-9	200-280-6	56-55-3							
16	chrysene				1.49 mg/kg		1.49 mg/kg	0.000149 %		
	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				1.55 mg/kg		1.55 mg/kg	0.000155 %		
	601-034-00-4	205-911-9	205-99-2							
18	benzo[k]fluoranthene				0.6 mg/kg		0.6 mg/kg	0.00006 %		
	601-036-00-5	205-916-6	207-08-9							
19	benzo[a]pyrene; benzo[def]chrysene				1.13 mg/kg		1.13 mg/kg	0.000113 %		
	601-032-00-3	200-028-5	50-32-8							
20	indeno[123-cd]pyrene				0.8 mg/kg		0.8 mg/kg	0.00008 %		
		205-893-2	193-39-5							
21	dibenz[a,h]anthracene				0.18 mg/kg		0.18 mg/kg	0.000018 %		
	601-041-00-2	200-181-8	53-70-3							
22	benzo[ghi]perylene				0.72 mg/kg		0.72 mg/kg	0.000072 %		
		205-883-8	191-24-2							
Total:								0.00148 %		

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
ND	Not detected

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 Relatively low concentrations present and no evidence of free phase product in samples

Hazard Statements hit:

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

Because of determinand:

ethylbenzene: (conc.: 1.0e-06%)

Flam. Liq. 3; H226 "Flammable liquid and vapour."

Because of determinand:

xylene: (conc.: 3.6e-06%)



Classification of sample: CP02 ES5

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

Sample details

Sample name:	LoW Code:
CP02 ES5	Chapter:
Sample Depth:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
1.20 m	Entry:
Moisture content:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
12.6%	
(no correction)	

Hazard properties

None identified

Determinands

Moisture content: 12.6% No 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 }				4.6 mg/kg	1.32	6.073 mg/kg	0.000607 %		
	033-003-00-0	215-481-4	1327-53-3							
2	boron { diboron trioxide; boric oxide }				0.6 mg/kg	3.22	1.932 mg/kg	0.000193 %		
	005-008-00-8	215-125-8	1303-86-2							
3	cadmium { cadmium oxide }				0.5 mg/kg	1.142	0.571 mg/kg	0.0000571 %		
	048-002-00-0	215-146-2	1306-19-0							
4	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }				43.6 mg/kg	1.462	63.724 mg/kg	0.00637 %		
		215-160-9	1308-38-9							
5	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									
6	copper { dicopper oxide; copper (I) oxide }				16 mg/kg	1.126	18.014 mg/kg	0.0018 %		
	029-002-00-X	215-270-7	1317-39-1							
7	lead { lead chromate }			1	37 mg/kg	1.56	57.713 mg/kg	0.0037 %		
	082-004-00-2	231-846-0	7758-97-6							
8	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							
9	nickel { nickel chromate }				12.1 mg/kg	2.976	36.013 mg/kg	0.0036 %		
	028-035-00-7	238-766-5	14721-18-7							
10	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							
11	zinc { zinc chromate }				22 mg/kg	2.774	61.031 mg/kg	0.0061 %		
	024-007-00-3	236-878-9	13530-65-9							
12	TPH (C6 to C40) petroleum group		TPH		148 mg/kg		148 mg/kg	0.0148 %		
13	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							
14	benzene				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
	601-020-00-8	200-753-7	71-43-2							
15	toluene				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
	601-021-00-3	203-625-9	108-88-3							



#	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	ethylbenzene				0.175 mg/kg		0.175 mg/kg	0.0000175 %		
	601-023-00-4	202-849-4	100-41-4							
17	xylene				0.726 mg/kg		0.726 mg/kg	0.0000726 %		
	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]							
18	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<0.5 mg/kg	1.884	<0.942 mg/kg	<0.0000942 %		<LOD
	006-007-00-5									
19	pH				10.9 pH		10.9 pH	10.9 pH		
			PH							
20	naphthalene				<0.04 mg/kg		<0.04 mg/kg	<0.000004 %		<LOD
	601-052-00-2	202-049-5	91-20-3							
21	acenaphthylene				<0.03 mg/kg		<0.03 mg/kg	<0.000003 %		<LOD
		205-917-1	208-96-8							
22	acenaphthene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
		201-469-6	83-32-9							
23	fluorene				<0.04 mg/kg		<0.04 mg/kg	<0.000004 %		<LOD
		201-695-5	86-73-7							
24	phenanthrene				0.3 mg/kg		0.3 mg/kg	0.00003 %		
		201-581-5	85-01-8							
25	anthracene				0.1 mg/kg		0.1 mg/kg	0.00001 %		
		204-371-1	120-12-7							
26	fluoranthene				0.57 mg/kg		0.57 mg/kg	0.000057 %		
		205-912-4	206-44-0							
27	pyrene				0.6 mg/kg		0.6 mg/kg	0.00006 %		
		204-927-3	129-00-0							
28	benzo[a]anthracene				0.28 mg/kg		0.28 mg/kg	0.000028 %		
	601-033-00-9	200-280-6	56-55-3							
29	chrysene				0.3 mg/kg		0.3 mg/kg	0.00003 %		
	601-048-00-0	205-923-4	218-01-9							
30	benzo[b]fluoranthene				0.34 mg/kg		0.34 mg/kg	0.000034 %		
	601-034-00-4	205-911-9	205-99-2							
31	benzo[k]fluoranthene				0.13 mg/kg		0.13 mg/kg	0.000013 %		
	601-036-00-5	205-916-6	207-08-9							
32	benzo[a]pyrene; benzo[def]chrysene				0.24 mg/kg		0.24 mg/kg	0.000024 %		
	601-032-00-3	200-028-5	50-32-8							
33	indeno[123-cd]pyrene				0.2 mg/kg		0.2 mg/kg	0.00002 %		
		205-893-2	193-39-5							
34	dibenz[a,h]anthracene				0.05 mg/kg		0.05 mg/kg	0.000005 %		
	601-041-00-2	200-181-8	53-70-3							
35	benzo[ghi]perylene				0.16 mg/kg		0.16 mg/kg	0.000016 %		
		205-883-8	191-24-2							
36	phenol				<0.15 mg/kg		<0.15 mg/kg	<0.000015 %		<LOD
	604-001-00-2	203-632-7	108-95-2							
Total:								0.0381 %		

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
ND	Not detected
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 Relatively low concentrations present and no evidence of free phase product in samples

Hazard Statements hit:

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

Because of determinand:

ethylbenzene: (conc.: 0.00001%)

Flam. Liq. 3; H226 "Flammable liquid and vapour."

Because of determinands:

TPH (C6 to C40) petroleum group: (conc.: 0.0148%)

xylene: (conc.: 0.00007%)



Classification of sample: CP02 ES7

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

Sample details

Sample name:	LoW Code:
CP02 ES7	Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:	Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)
1.80 m	
Moisture content:	
15.9%	
(no correction)	

Hazard properties

None identified

Determinands

Moisture content: **15.9% No 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 }				6.4 mg/kg	1.32	8.45 mg/kg	0.000845 %			
	033-003-00-0	215-481-4	1327-53-3								
2	boron { diboron trioxide; boric oxide }				0.4 mg/kg	3.22	1.288 mg/kg	0.000129 %			
	005-008-00-8	215-125-8	1303-86-2								
3	cadmium { cadmium oxide }				<0.1 mg/kg	1.142	<0.114 mg/kg	<0.0000114 %			<LOD
	048-002-00-0	215-146-2	1306-19-0								
4	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }				59.1 mg/kg	1.462	86.378 mg/kg	0.00864 %			
		215-160-9	1308-38-9								
5	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										
6	copper { dicopper oxide; copper (I) oxide }				17 mg/kg	1.126	19.14 mg/kg	0.00191 %			
	029-002-00-X	215-270-7	1317-39-1								
7	lead { lead chromate }			1	11 mg/kg	1.56	17.158 mg/kg	0.0011 %			
	082-004-00-2	231-846-0	7758-97-6								
8	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								
9	nickel { nickel chromate }				37.1 mg/kg	2.976	110.419 mg/kg	0.011 %			
	028-035-00-7	238-766-5	14721-18-7								
10	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								
11	zinc { zinc chromate }				45 mg/kg	2.774	124.837 mg/kg	0.0125 %			
	024-007-00-3	236-878-9	13530-65-9								
12	TPH (C6 to C40) petroleum group		TPH		<52 mg/kg		<52 mg/kg	<0.0052 %			<LOD
13	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								
14	benzene				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %			<LOD
	601-020-00-8	200-753-7	71-43-2								
15	toluene				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %			<LOD
	601-021-00-3	203-625-9	108-88-3								



#	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	ethylbenzene 601-023-00-4	202-849-4	100-41-4		<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %			<LOD
17	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
18	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex } 006-007-00-5				<0.5 mg/kg	1.884	<0.942 mg/kg	<0.0000942 %			<LOD
19	pH		PH		8.33 pH		8.33 pH	8.33 pH			
20	naphthalene 601-052-00-2	202-049-5	91-20-3		<0.04 mg/kg		<0.04 mg/kg	<0.000004 %			<LOD
21	acenaphthylene 205-917-1		208-96-8		<0.03 mg/kg		<0.03 mg/kg	<0.000003 %			<LOD
22	acenaphthene 201-469-6		83-32-9		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %			<LOD
23	fluorene 201-695-5		86-73-7		<0.04 mg/kg		<0.04 mg/kg	<0.000004 %			<LOD
24	phenanthrene 201-581-5		85-01-8		<0.03 mg/kg		<0.03 mg/kg	<0.000003 %			<LOD
25	anthracene 204-371-1		120-12-7		<0.04 mg/kg		<0.04 mg/kg	<0.000004 %			<LOD
26	fluoranthene 205-912-4		206-44-0		0.03 mg/kg		0.03 mg/kg	0.000003 %			
27	pyrene 204-927-3		129-00-0		0.03 mg/kg		0.03 mg/kg	0.000003 %			
28	benzo[a]anthracene 601-033-00-9	200-280-6	56-55-3		<0.06 mg/kg		<0.06 mg/kg	<0.000006 %			<LOD
29	chrysene 601-048-00-0	205-923-4	218-01-9		0.02 mg/kg		0.02 mg/kg	0.000002 %			
30	benzo[b]fluoranthene 601-034-00-4	205-911-9	205-99-2		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %			<LOD
31	benzo[k]fluoranthene 601-036-00-5	205-916-6	207-08-9		<0.02 mg/kg		<0.02 mg/kg	<0.000002 %			<LOD
32	benzo[a]pyrene; benzo[def]chrysene 601-032-00-3	200-028-5	50-32-8		<0.04 mg/kg		<0.04 mg/kg	<0.000004 %			<LOD
33	indeno[123-cd]pyrene 205-893-2		193-39-5		<0.04 mg/kg		<0.04 mg/kg	<0.000004 %			<LOD
34	dibenz[a,h]anthracene 601-041-00-2	200-181-8	53-70-3		<0.04 mg/kg		<0.04 mg/kg	<0.000004 %			<LOD
35	benzo[ghi]perylene 205-883-8		191-24-2		<0.04 mg/kg		<0.04 mg/kg	<0.000004 %			<LOD
36	phenol 604-001-00-2	203-632-7	108-95-2		<0.15 mg/kg		<0.15 mg/kg	<0.000015 %			<LOD
Total:									0.0419 %		

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
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification



Classification of sample: WS01 ES2

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

Sample details

Sample name:	LoW Code:
WS01 ES2	Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:	Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)
0.70 m	
Moisture content:	
10.7%	
(no correction)	

Hazard properties

None identified

Determinands

Moisture content: 10.7% No 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 }				3.3 mg/kg	1.32	4.357 mg/kg	0.000436 %			
	033-003-00-0	215-481-4	1327-53-3								
2	boron { diboron trioxide; boric oxide }				0.8 mg/kg	3.22	2.576 mg/kg	0.000258 %			
	005-008-00-8	215-125-8	1303-86-2								
3	cadmium { cadmium oxide }				0.1 mg/kg	1.142	0.114 mg/kg	0.0000114 %			
	048-002-00-0	215-146-2	1306-19-0								
4	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }				70.7 mg/kg	1.462	103.332 mg/kg	0.0103 %			
		215-160-9	1308-38-9								
5	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										
6	copper { dicopper oxide; copper (I) oxide }				23 mg/kg	1.126	25.895 mg/kg	0.00259 %			
	029-002-00-X	215-270-7	1317-39-1								
7	lead { lead chromate }			1	108 mg/kg	1.56	168.46 mg/kg	0.0108 %			
	082-004-00-2	231-846-0	7758-97-6								
8	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								
9	nickel { nickel chromate }				12.7 mg/kg	2.976	37.799 mg/kg	0.00378 %			
	028-035-00-7	238-766-5	14721-18-7								
10	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								
11	zinc { zinc chromate }				54 mg/kg	2.774	149.804 mg/kg	0.015 %			
	024-007-00-3	236-878-9	13530-65-9								
12	TPH (C6 to C40) petroleum group		TPH		485 mg/kg		485 mg/kg	0.0485 %			
13	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								
14	benzene				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %			<LOD
	601-020-00-8	200-753-7	71-43-2								
15	toluene				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %			<LOD
	601-021-00-3	203-625-9	108-88-3								



#	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	ethylbenzene 601-023-00-4	202-849-4	100-41-4		<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %			<LOD
17	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
18	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex } 006-007-00-5				<0.5 mg/kg	1.884	<0.942 mg/kg	<0.0000942 %			<LOD
19	pH		PH		10.89 pH		10.89 pH	10.89 pH			
20	naphthalene 601-052-00-2	202-049-5	91-20-3		0.07 mg/kg		0.07 mg/kg	0.000007 %			
21	acenaphthylene 205-917-1		208-96-8		0.03 mg/kg		0.03 mg/kg	0.000003 %			
22	acenaphthene 201-469-6		83-32-9		0.09 mg/kg		0.09 mg/kg	0.000009 %			
23	fluorene 201-695-5		86-73-7		0.07 mg/kg		0.07 mg/kg	0.000007 %			
24	phenanthrene 201-581-5		85-01-8		1.27 mg/kg		1.27 mg/kg	0.000127 %			
25	anthracene 204-371-1		120-12-7		0.32 mg/kg		0.32 mg/kg	0.000032 %			
26	fluoranthene 205-912-4		206-44-0		1.62 mg/kg		1.62 mg/kg	0.000162 %			
27	pyrene 204-927-3		129-00-0		1.46 mg/kg		1.46 mg/kg	0.000146 %			
28	benzo[a]anthracene 601-033-00-9	200-280-6	56-55-3		0.72 mg/kg		0.72 mg/kg	0.000072 %			
29	chrysene 601-048-00-0	205-923-4	218-01-9		0.8 mg/kg		0.8 mg/kg	0.00008 %			
30	benzo[b]fluoranthene 601-034-00-4	205-911-9	205-99-2		0.82 mg/kg		0.82 mg/kg	0.000082 %			
31	benzo[k]fluoranthene 601-036-00-5	205-916-6	207-08-9		0.32 mg/kg		0.32 mg/kg	0.000032 %			
32	benzo[a]pyrene; benzo[def]chrysene 601-032-00-3	200-028-5	50-32-8		0.6 mg/kg		0.6 mg/kg	0.00006 %			
33	indeno[123-cd]pyrene 205-893-2		193-39-5		0.42 mg/kg		0.42 mg/kg	0.000042 %			
34	dibenz[a,h]anthracene 601-041-00-2	200-181-8	53-70-3		0.11 mg/kg		0.11 mg/kg	0.000011 %			
35	benzo[ghi]perylene 205-883-8		191-24-2		0.39 mg/kg		0.39 mg/kg	0.000039 %			
36	phenol 604-001-00-2	203-632-7	108-95-2		<0.15 mg/kg		<0.15 mg/kg	<0.000015 %			<LOD
Total:									0.093 %		

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
ND	Not detected
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 Relatively low concentrations present and no evidence of free phase product in samples

Hazard Statements hit:

Flam. Liq. 3; H226 "Flammable liquid and vapour."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.0485%)



Classification of sample: WS02 ES1

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

Sample details

Sample name:	LoW Code:
WS02 ES1	Chapter:
Sample Depth:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
0.30 m	Entry:
Moisture content:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
15.2%	
(no correction)	

Hazard properties

None identified

Determinands

Moisture content: 15.2% No 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 }				6.8 mg/kg	1.32	8.978 mg/kg	0.000898 %		
	033-003-00-0	215-481-4	1327-53-3							
2	boron { diboron trioxide; boric oxide }				2.2 mg/kg	3.22	7.084 mg/kg	0.000708 %		
	005-008-00-8	215-125-8	1303-86-2							
3	cadmium { cadmium oxide }				0.4 mg/kg	1.142	0.457 mg/kg	0.0000457 %		
	048-002-00-0	215-146-2	1306-19-0							
4	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }				40.3 mg/kg	1.462	58.901 mg/kg	0.00589 %		
		215-160-9	1308-38-9							
5	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									
6	copper { dicopper oxide; copper (I) oxide }				77 mg/kg	1.126	86.693 mg/kg	0.00867 %		
	029-002-00-X	215-270-7	1317-39-1							
7	lead { lead chromate }			1	343 mg/kg	1.56	535.017 mg/kg	0.0343 %		
	082-004-00-2	231-846-0	7758-97-6							
8	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							
9	nickel { nickel chromate }				19 mg/kg	2.976	56.549 mg/kg	0.00565 %		
	028-035-00-7	238-766-5	14721-18-7							
10	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							
11	zinc { zinc chromate }				142 mg/kg	2.774	393.929 mg/kg	0.0394 %		
	024-007-00-3	236-878-9	13530-65-9							
12	TPH (C6 to C40) petroleum group		TPH		700 mg/kg		700 mg/kg	0.07 %		
13	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							
14	benzene				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
	601-020-00-8	200-753-7	71-43-2							
15	toluene				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
	601-021-00-3	203-625-9	108-88-3							



#	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	ethylbenzene				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %			<LOD
	601-023-00-4	202-849-4	100-41-4								
17	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]								
18	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<0.5 mg/kg	1.884	<0.942 mg/kg	<0.0000942 %			<LOD
	006-007-00-5										
19	pH				10.83 pH		10.83 pH	10.83 pH			
			PH								
20	naphthalene				0.1 mg/kg		0.1 mg/kg	0.00001 %			
	601-052-00-2	202-049-5	91-20-3								
21	acenaphthylene				0.07 mg/kg		0.07 mg/kg	0.000007 %			
		205-917-1	208-96-8								
22	acenaphthene				0.16 mg/kg		0.16 mg/kg	0.000016 %			
		201-469-6	83-32-9								
23	fluorene				0.13 mg/kg		0.13 mg/kg	0.000013 %			
		201-695-5	86-73-7								
24	phenanthrene				1.42 mg/kg		1.42 mg/kg	0.000142 %			
		201-581-5	85-01-8								
25	anthracene				0.38 mg/kg		0.38 mg/kg	0.000038 %			
		204-371-1	120-12-7								
26	fluoranthene				2.44 mg/kg		2.44 mg/kg	0.000244 %			
		205-912-4	206-44-0								
27	pyrene				2.63 mg/kg		2.63 mg/kg	0.000263 %			
		204-927-3	129-00-0								
28	benzo[a]anthracene				1.22 mg/kg		1.22 mg/kg	0.000122 %			
	601-033-00-9	200-280-6	56-55-3								
29	chrysene				1.42 mg/kg		1.42 mg/kg	0.000142 %			
	601-048-00-0	205-923-4	218-01-9								
30	benzo[b]fluoranthene				1.54 mg/kg		1.54 mg/kg	0.000154 %			
	601-034-00-4	205-911-9	205-99-2								
31	benzo[k]fluoranthene				0.6 mg/kg		0.6 mg/kg	0.00006 %			
	601-036-00-5	205-916-6	207-08-9								
32	benzo[a]pyrene; benzo[def]chrysene				1.16 mg/kg		1.16 mg/kg	0.000116 %			
	601-032-00-3	200-028-5	50-32-8								
33	indeno[123-cd]pyrene				0.84 mg/kg		0.84 mg/kg	0.000084 %			
		205-893-2	193-39-5								
34	dibenz[a,h]anthracene				0.21 mg/kg		0.21 mg/kg	0.000021 %			
	601-041-00-2	200-181-8	53-70-3								
35	benzo[ghi]perylene				0.78 mg/kg		0.78 mg/kg	0.000078 %			
		205-883-8	191-24-2								
36	phenol				<0.15 mg/kg		<0.15 mg/kg	<0.000015 %			<LOD
	604-001-00-2	203-632-7	108-95-2								
Total:									0.168 %		

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
ND	Not detected
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 Relatively low concentrations present and no evidence of free phase product in samples

Hazard Statements hit:

Flam. Liq. 3; H226 "Flammable liquid and vapour."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.07%)



Classification of sample: WS02 ES3

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

Sample details

Sample name:	LoW Code:
WS02 ES3	Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:	Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)
1.00 m	
Moisture content:	
9%	
(no correction)	

Hazard properties

None identified

Determinands

Moisture content: 9% No 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 }				4.1 mg/kg	1.32	5.413 mg/kg	0.000541 %		
	033-003-00-0	215-481-4	1327-53-3							
2	boron { diboron trioxide; boric oxide }				0.8 mg/kg	3.22	2.576 mg/kg	0.000258 %		
	005-008-00-8	215-125-8	1303-86-2							
3	cadmium { cadmium oxide }				0.2 mg/kg	1.142	0.228 mg/kg	0.0000228 %		
	048-002-00-0	215-146-2	1306-19-0							
4	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }				43.5 mg/kg	1.462	63.578 mg/kg	0.00636 %		
		215-160-9	1308-38-9							
5	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									
6	copper { dicopper oxide; copper (I) oxide }				16 mg/kg	1.126	18.014 mg/kg	0.0018 %		
	029-002-00-X	215-270-7	1317-39-1							
7	lead { lead chromate }			1	42 mg/kg	1.56	65.512 mg/kg	0.0042 %		
	082-004-00-2	231-846-0	7758-97-6							
8	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							
9	nickel { nickel chromate }				18.9 mg/kg	2.976	56.251 mg/kg	0.00563 %		
	028-035-00-7	238-766-5	14721-18-7							
10	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							
11	zinc { zinc chromate }				41 mg/kg	2.774	113.74 mg/kg	0.0114 %		
	024-007-00-3	236-878-9	13530-65-9							
12	TPH (C6 to C40) petroleum group		TPH		<52 mg/kg		<52 mg/kg	<0.0052 %		<LOD
13	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							
14	benzene				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
	601-020-00-8	200-753-7	71-43-2							
15	toluene				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
	601-021-00-3	203-625-9	108-88-3							



#	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	ethylbenzene 601-023-00-4	202-849-4	100-41-4		<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %			<LOD
17	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
18	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex } 006-007-00-5				<0.5 mg/kg	1.884	<0.942 mg/kg	<0.0000942 %			<LOD
19	pH		PH		8.35 pH		8.35 pH	8.35 pH			
20	naphthalene 601-052-00-2	202-049-5	91-20-3		<0.04 mg/kg		<0.04 mg/kg	<0.000004 %			<LOD
21	acenaphthylene 205-917-1		208-96-8		<0.03 mg/kg		<0.03 mg/kg	<0.000003 %			<LOD
22	acenaphthene 201-469-6		83-32-9		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %			<LOD
23	fluorene 201-695-5		86-73-7		<0.04 mg/kg		<0.04 mg/kg	<0.000004 %			<LOD
24	phenanthrene 201-581-5		85-01-8		<0.03 mg/kg		<0.03 mg/kg	<0.000003 %			<LOD
25	anthracene 204-371-1		120-12-7		<0.04 mg/kg		<0.04 mg/kg	<0.000004 %			<LOD
26	fluoranthene 205-912-4		206-44-0		0.05 mg/kg		0.05 mg/kg	0.000005 %			
27	pyrene 204-927-3		129-00-0		0.05 mg/kg		0.05 mg/kg	0.000005 %			
28	benzo[a]anthracene 601-033-00-9	200-280-6	56-55-3		<0.06 mg/kg		<0.06 mg/kg	<0.000006 %			<LOD
29	chrysene 601-048-00-0	205-923-4	218-01-9		0.04 mg/kg		0.04 mg/kg	0.000004 %			
30	benzo[b]fluoranthene 601-034-00-4	205-911-9	205-99-2		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %			<LOD
31	benzo[k]fluoranthene 601-036-00-5	205-916-6	207-08-9		<0.02 mg/kg		<0.02 mg/kg	<0.000002 %			<LOD
32	benzo[a]pyrene; benzo[def]chrysene 601-032-00-3	200-028-5	50-32-8		<0.04 mg/kg		<0.04 mg/kg	<0.000004 %			<LOD
33	indeno[123-cd]pyrene 205-893-2		193-39-5		<0.04 mg/kg		<0.04 mg/kg	<0.000004 %			<LOD
34	dibenz[a,h]anthracene 601-041-00-2	200-181-8	53-70-3		<0.04 mg/kg		<0.04 mg/kg	<0.000004 %			<LOD
35	benzo[ghi]perylene 205-883-8		191-24-2		<0.04 mg/kg		<0.04 mg/kg	<0.000004 %			<LOD
36	phenol 604-001-00-2	203-632-7	108-95-2		<0.15 mg/kg		<0.15 mg/kg	<0.000015 %			<LOD
Total:									0.0359 %		

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
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification



Classification of sample: WS03 ES3

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

Sample details

Sample name:	LoW Code:
WS03 ES3	Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:	Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)
0.80 m	
Moisture content:	
6.8%	
(no correction)	

Hazard properties

None identified

Determinands

Moisture content: 6.8% No 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 }				1.7 mg/kg	1.32	2.245 mg/kg	0.000224 %		
	033-003-00-0	215-481-4	1327-53-3							
2	boron { diboron trioxide; boric oxide }				0.3 mg/kg	3.22	0.966 mg/kg	0.0000966 %		
	005-008-00-8	215-125-8	1303-86-2							
3	cadmium { cadmium oxide }				<0.1 mg/kg	1.142	<0.114 mg/kg	<0.0000114 %		<LOD
	048-002-00-0	215-146-2	1306-19-0							
4	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }				32.7 mg/kg	1.462	47.793 mg/kg	0.00478 %		
		215-160-9	1308-38-9							
5	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									
6	copper { dicopper oxide; copper (I) oxide }				12 mg/kg	1.126	13.511 mg/kg	0.00135 %		
	029-002-00-X	215-270-7	1317-39-1							
7	lead { lead chromate }			1	14 mg/kg	1.56	21.837 mg/kg	0.0014 %		
	082-004-00-2	231-846-0	7758-97-6							
8	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							
9	nickel { nickel chromate }				9.4 mg/kg	2.976	27.977 mg/kg	0.0028 %		
	028-035-00-7	238-766-5	14721-18-7							
10	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							
11	zinc { zinc chromate }				15 mg/kg	2.774	41.612 mg/kg	0.00416 %		
	024-007-00-3	236-878-9	13530-65-9							
12	TPH (C6 to C40) petroleum group		TPH		<52 mg/kg		<52 mg/kg	<0.0052 %		<LOD
13	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							
14	benzene				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
	601-020-00-8	200-753-7	71-43-2							
15	toluene				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
	601-021-00-3	203-625-9	108-88-3							



#	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	ethylbenzene				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %			<LOD
	601-023-00-4	202-849-4	100-41-4								
17	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]								
18	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<0.5 mg/kg	1.884	<0.942 mg/kg	<0.0000942 %			<LOD
	006-007-00-5										
19	pH				9.75 pH		9.75 pH	9.75 pH			
			PH								
20	naphthalene				<0.04 mg/kg		<0.04 mg/kg	<0.000004 %			<LOD
	601-052-00-2	202-049-5	91-20-3								
21	acenaphthylene				<0.03 mg/kg		<0.03 mg/kg	<0.000003 %			<LOD
		205-917-1	208-96-8								
22	acenaphthene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %			<LOD
		201-469-6	83-32-9								
23	fluorene				<0.04 mg/kg		<0.04 mg/kg	<0.000004 %			<LOD
		201-695-5	86-73-7								
24	phenanthrene				0.05 mg/kg		0.05 mg/kg	0.000005 %			
		201-581-5	85-01-8								
25	anthracene				<0.04 mg/kg		<0.04 mg/kg	<0.000004 %			<LOD
		204-371-1	120-12-7								
26	fluoranthene				0.04 mg/kg		0.04 mg/kg	0.000004 %			
		205-912-4	206-44-0								
27	pyrene				0.04 mg/kg		0.04 mg/kg	0.000004 %			
		204-927-3	129-00-0								
28	benzo[a]anthracene				<0.06 mg/kg		<0.06 mg/kg	<0.000006 %			<LOD
	601-033-00-9	200-280-6	56-55-3								
29	chrysene				0.03 mg/kg		0.03 mg/kg	0.000003 %			
	601-048-00-0	205-923-4	218-01-9								
30	benzo[b]fluoranthene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %			<LOD
	601-034-00-4	205-911-9	205-99-2								
31	benzo[k]fluoranthene				<0.02 mg/kg		<0.02 mg/kg	<0.000002 %			<LOD
	601-036-00-5	205-916-6	207-08-9								
32	benzo[a]pyrene; benzo[def]chrysene				<0.04 mg/kg		<0.04 mg/kg	<0.000004 %			<LOD
	601-032-00-3	200-028-5	50-32-8								
33	indeno[123-cd]pyrene				<0.04 mg/kg		<0.04 mg/kg	<0.000004 %			<LOD
		205-893-2	193-39-5								
34	dibenz[a,h]anthracene				<0.04 mg/kg		<0.04 mg/kg	<0.000004 %			<LOD
	601-041-00-2	200-181-8	53-70-3								
35	benzo[ghi]perylene				<0.04 mg/kg		<0.04 mg/kg	<0.000004 %			<LOD
		205-883-8	191-24-2								
36	phenol				<0.15 mg/kg		<0.15 mg/kg	<0.000015 %			<LOD
	604-001-00-2	203-632-7	108-95-2								
Total:									0.0205 %		

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
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification



Appendix A: Classifier defined and non GB MCL determinands

■ **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

■ **TPH (C6 to C40) petroleum group** (CAS Number: TPH)

Description/Comments: Hazard statements taken from WM3 1st Edition 2015; Risk phrases: WM2 3rd Edition 2013

Data source: WM3 1st Edition 2015

Data source date: 25 May 2015

Hazard Statements: Flam. Liq. 3; H226, Asp. Tox. 1; H304, STOT RE 2; H373, Muta. 1B; H340, Carc. 1B; H350, Repr. 2; H361d, Aquatic Chronic 2; H411

■ **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

■ **salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex**

GB MCL index number: 006-007-00-5

Description/Comments: Conversion factor based on a worst case compound: sodium cyanide

Additional Hazard Statement(s): EUH032 >= 0.2 %

Reason for additional Hazards Statement(s):

20 Nov 2021 - EUH032 >= 0.2 % hazard statement sourced from: WM3, Table C12.2

■ **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

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)

boron {diboron trioxide; boric oxide}

Reasonable case CLP species based on hazard statements/ molecular weight, physical form and low solubility. Industrial sources include: fluxing agent for glass/enamels; additive for fibre optics, borosilicate glass (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) Worse 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)



cyanides {salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex}

Harmonised group entry used as most reasonable case as complex cyanides and those specified elsewhere in the annex are not likely to be present in this soil: [Note conversion factor based on a worst case compound: sodium cyanide] (edit as required)

Appendix C: Version

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

HazWasteOnline Classification Engine Version: 2022.11.4970.9430 (11 Jan 2022)

HazWasteOnline Database: 2022.4.4967.9426 (04 Jan 2022)

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

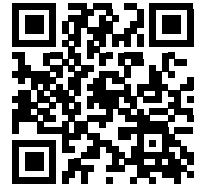
GB MCL List - version 1.1 of 09 June 2021



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)



KLOX9-MC8BK-GENI3

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

Job name

B033528 Sequirus 6

Description/Comments

Project

B033528

Site

Sequirus 6

Classified by

Name: **Abigail Walters**
Date: **24 Mar 2022 19:13 GMT**
Telephone: **01623 684 565**

Company: **Tetra Tech (WYG (White Young Green))**
Geneva Building, Lake View Drive,
Sherwood Business Park, Annesley
Nottingham
NG15 0ED

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

HazWasteOnline™ Certification:

Course
Hazardous Waste Classification
3 year Refresher overdue

Date
15 Mar 2018

Job summary

#	Sample name	Depth [m]	Classification Result	Hazard properties	Page
1	CP03	1.00	Non Hazardous		2
2	CP03[2]	3.00	Non Hazardous		5

Related documents

#	Name	Description
1	Example waste stream template for contaminated soils	waste stream template used to create this Job

Report

Created by: Abigail Walters

Created date: 24 Mar 2022 19:13 GMT

Appendices	Page
Appendix A: Classifier defined and non GB MCL determinands	8
Appendix B: Rationale for selection of metal species	9
Appendix C: Version	10



Classification of sample: CP03

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

Sample details

Sample name:	LoW Code:
CP03	Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:	Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)
1.00 m	

Hazard properties

None identified

Determinands

Moisture content: 0% No 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 }				1.3	mg/kg	1.32	1.716	mg/kg	0.000172 %		
	033-003-00-0	215-481-4	1327-53-3									
2	beryllium { beryllium oxide }				<0.5	mg/kg	2.775	<1.388	mg/kg	<0.000139 %		<LOD
	004-003-00-8	215-133-1	1304-56-9									
3	boron { diboron trioxide; boric oxide }				<0.1	mg/kg	3.22	<0.322	mg/kg	<0.0000322 %		<LOD
	005-008-00-8	215-125-8	1303-86-2									
4	cadmium { cadmium oxide }				<0.1	mg/kg	1.142	<0.114	mg/kg	<0.0000114 %		<LOD
	048-002-00-0	215-146-2	1306-19-0									
5	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }				31.4	mg/kg	1.462	45.893	mg/kg	0.00459 %		
		215-160-9	1308-38-9									
6	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											
7	copper { dicopper oxide; copper (I) oxide }				20	mg/kg	1.126	22.518	mg/kg	0.00225 %		
	029-002-00-X	215-270-7	1317-39-1									
8	lead { lead chromate }			1	<5	mg/kg	1.56	<7.799	mg/kg	<0.0005 %		<LOD
	082-004-00-2	231-846-0	7758-97-6									
9	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									
10	nickel { nickel chromate }				11.7	mg/kg	2.976	34.822	mg/kg	0.00348 %		
	028-035-00-7	238-766-5	14721-18-7									
11	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									
12	zinc { zinc chromate }				6	mg/kg	2.774	16.645	mg/kg	0.00166 %		
	024-007-00-3	236-878-9	13530-65-9									
13	TPH (C6 to C40) petroleum group				216	mg/kg		216	mg/kg	0.0216 %		
			TPH									
14	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									
15	benzene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
	601-020-00-8	200-753-7	71-43-2									
16	toluene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
	601-021-00-3	203-625-9	108-88-3									



#	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	ethylbenzene 601-023-00-4	202-849-4	100-41-4		<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %			<LOD
18	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]		<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %			<LOD
19	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex } 006-007-00-5				<0.5 mg/kg	1.884	<0.942 mg/kg	<0.0000942 %			<LOD
20	pH		PH		9.61 pH		9.61 pH	9.61 pH			
21	naphthalene 601-052-00-2	202-049-5	91-20-3		<0.04 mg/kg		<0.04 mg/kg	<0.000004 %			<LOD
22	acenaphthylene 205-917-1		208-96-8		<0.03 mg/kg		<0.03 mg/kg	<0.000003 %			<LOD
23	acenaphthene 201-469-6		83-32-9		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %			<LOD
24	fluorene 201-695-5		86-73-7		<0.04 mg/kg		<0.04 mg/kg	<0.000004 %			<LOD
25	phenanthrene 201-581-5		85-01-8		<0.03 mg/kg		<0.03 mg/kg	<0.000003 %			<LOD
26	anthracene 204-371-1		120-12-7		<0.04 mg/kg		<0.04 mg/kg	<0.000004 %			<LOD
27	fluoranthene 205-912-4		206-44-0		<0.03 mg/kg		<0.03 mg/kg	<0.000003 %			<LOD
28	pyrene 204-927-3		129-00-0		<0.03 mg/kg		<0.03 mg/kg	<0.000003 %			<LOD
29	benzo[a]anthracene 601-033-00-9	200-280-6	56-55-3		<0.06 mg/kg		<0.06 mg/kg	<0.000006 %			<LOD
30	chrysene 601-048-00-0	205-923-4	218-01-9		<0.02 mg/kg		<0.02 mg/kg	<0.000002 %			<LOD
31	benzo[b]fluoranthene 601-034-00-4	205-911-9	205-99-2		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %			<LOD
32	benzo[k]fluoranthene 601-036-00-5	205-916-6	207-08-9		<0.02 mg/kg		<0.02 mg/kg	<0.000002 %			<LOD
33	benzo[a]pyrene; benzo[def]chrysene 601-032-00-3	200-028-5	50-32-8		<0.04 mg/kg		<0.04 mg/kg	<0.000004 %			<LOD
34	indeno[123-cd]pyrene 205-893-2		193-39-5		<0.04 mg/kg		<0.04 mg/kg	<0.000004 %			<LOD
35	dibenz[a,h]anthracene 601-041-00-2	200-181-8	53-70-3		<0.04 mg/kg		<0.04 mg/kg	<0.000004 %			<LOD
36	benzo[ghi]perylene 205-883-8		191-24-2		<0.04 mg/kg		<0.04 mg/kg	<0.000004 %			<LOD
37	phenol 604-001-00-2	203-632-7	108-95-2		<0.15 mg/kg		<0.15 mg/kg	<0.000015 %			<LOD
Total:									0.035 %		

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
ND	Not detected
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 Relatively low concentrations present and no evidence of free phase product in samples

Hazard Statements hit:

Flam. Liq. 3; H226 "Flammable liquid and vapour."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.0216%)



Classification of sample: CP03[2]

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

Sample details

Sample name:	LoW Code:
CP03[2]	Chapter:
Sample Depth:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
3.00 m	Entry:
Moisture content:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
8.3%	
(no correction)	

Hazard properties

None identified

Determinands

Moisture content: 8.3% No 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 }				1.3 mg/kg	1.32	1.716 mg/kg	0.000172 %		
	033-003-00-0	215-481-4	1327-53-3							
2	beryllium { beryllium oxide }				<0.5 mg/kg	2.775	<1.388 mg/kg	<0.000139 %		<LOD
	004-003-00-8	215-133-1	1304-56-9							
3	boron { diboron trioxide; boric oxide }				0.3 mg/kg	3.22	0.966 mg/kg	0.0000966 %		
	005-008-00-8	215-125-8	1303-86-2							
4	cadmium { cadmium oxide }				<0.1 mg/kg	1.142	<0.114 mg/kg	<0.0000114 %		<LOD
	048-002-00-0	215-146-2	1306-19-0							
5	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }				57.8 mg/kg	1.462	84.478 mg/kg	0.00845 %		
		215-160-9	1308-38-9							
6	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									
7	copper { dicopper oxide; copper (I) oxide }				29 mg/kg	1.126	32.651 mg/kg	0.00327 %		
	029-002-00-X	215-270-7	1317-39-1							
8	lead { lead chromate }			1	26 mg/kg	1.56	40.555 mg/kg	0.0026 %		
	082-004-00-2	231-846-0	7758-97-6							
9	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							
10	nickel { nickel chromate }				15.7 mg/kg	2.976	46.727 mg/kg	0.00467 %		
	028-035-00-7	238-766-5	14721-18-7							
11	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							
12	zinc { zinc chromate }				15 mg/kg	2.774	41.612 mg/kg	0.00416 %		
	024-007-00-3	236-878-9	13530-65-9							
13	TPH (C6 to C40) petroleum group				329 mg/kg		329 mg/kg	0.0329 %		
			TPH							
14	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							
15	benzene				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
	601-020-00-8	200-753-7	71-43-2							



#	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	toluene				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
	601-021-00-3	203-625-9	108-88-3							
17	ethylbenzene				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
	601-023-00-4	202-849-4	100-41-4							
18	xylene				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<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]							
19	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<0.5 mg/kg	1.884	<0.942 mg/kg	<0.0000942 %		<LOD
	006-007-00-5									
20	pH				8.95 pH		8.95 pH	8.95 pH		
21	naphthalene				0.09 mg/kg		0.09 mg/kg	0.000009 %		
	601-052-00-2	202-049-5	91-20-3							
22	acenaphthylene				<0.03 mg/kg		<0.03 mg/kg	<0.000003 %		<LOD
		205-917-1	208-96-8							
23	acenaphthene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
		201-469-6	83-32-9							
24	fluorene				0.05 mg/kg		0.05 mg/kg	0.000005 %		
		201-695-5	86-73-7							
25	phenanthrene				0.48 mg/kg		0.48 mg/kg	0.000048 %		
		201-581-5	85-01-8							
26	anthracene				0.1 mg/kg		0.1 mg/kg	0.00001 %		
		204-371-1	120-12-7							
27	fluoranthene				0.44 mg/kg		0.44 mg/kg	0.000044 %		
		205-912-4	206-44-0							
28	pyrene				0.36 mg/kg		0.36 mg/kg	0.000036 %		
		204-927-3	129-00-0							
29	benzo[a]anthracene				0.19 mg/kg		0.19 mg/kg	0.000019 %		
	601-033-00-9	200-280-6	56-55-3							
30	chrysene				0.2 mg/kg		0.2 mg/kg	0.00002 %		
	601-048-00-0	205-923-4	218-01-9							
31	benzo[b]fluoranthene				0.17 mg/kg		0.17 mg/kg	0.000017 %		
	601-034-00-4	205-911-9	205-99-2							
32	benzo[k]fluoranthene				0.07 mg/kg		0.07 mg/kg	0.000007 %		
	601-036-00-5	205-916-6	207-08-9							
33	benzo[a]pyrene; benzo[def]chrysene				0.11 mg/kg		0.11 mg/kg	0.000011 %		
	601-032-00-3	200-028-5	50-32-8							
34	indeno[123-cd]pyrene				0.09 mg/kg		0.09 mg/kg	0.000009 %		
		205-893-2	193-39-5							
35	dibenz[a,h]anthracene				<0.04 mg/kg		<0.04 mg/kg	<0.000004 %		<LOD
	601-041-00-2	200-181-8	53-70-3							
36	benzo[ghi]perylene				0.08 mg/kg		0.08 mg/kg	0.000008 %		
		205-883-8	191-24-2							
37	phenol				<0.15 mg/kg		<0.15 mg/kg	<0.000015 %		<LOD
	604-001-00-2	203-632-7	108-95-2							
Total:								0.0572 %		



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
ND	Not detected
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 Relatively low concentrations present and no evidence of free phase product in samples

Hazard Statements hit:

Flam. Liq. 3; H226 "Flammable liquid and vapour."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.0329%)



Appendix A: Classifier defined and non GB MCL determinands

■ **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

■ **TPH (C6 to C40) petroleum group** (CAS Number: TPH)

Description/Comments: Hazard statements taken from WM3 1st Edition 2015; Risk phrases: WM2 3rd Edition 2013

Data source: WM3 1st Edition 2015

Data source date: 25 May 2015

Hazard Statements: Flam. Liq. 3; H226, Asp. Tox. 1; H304, STOT RE 2; H373, Muta. 1B; H340, Carc. 1B; H350, Repr. 2; H361d, Aquatic Chronic 2; H411

■ **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

■ **salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex**

GB MCL index number: 006-007-00-5

Description/Comments: Conversion factor based on a worst case compound: sodium cyanide

Additional Hazard Statement(s): EUH032 >= 0.2 %

Reason for additional Hazards Statement(s):

20 Nov 2021 - EUH032 >= 0.2 % hazard statement sourced from: WM3, Table C12.2

■ **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

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)

beryllium {beryllium oxide}

Reasonable case CLP species based on hazard statements/molecular weight. Industrial sources include: most common (non alloy) form, used in ceramics (edit as required)

boron {diboron trioxide; boric oxide}

Reasonable case CLP species based on hazard statements/ molecular weight, physical form and low solubility. Industrial sources include: fluxing agent for glass/enamels; additive for fibre optics, borosilicate glass (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) Worse 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)

cyanides {salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex}

Harmonised group entry used as most reasonable case as complex cyanides and those specified elsewhere in the annex are not likely to be present in this soil: [Note conversion factor based on a worst case compound: sodium cyanide] (edit as required)

Appendix C: Version

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

HazWasteOnline Classification Engine Version: 2017.202.300.300 (23 Mar 2022)

HazWasteOnline Database: 2022.81.5064.9565 (22 Mar 2022)

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 I – GAS AND GROUNDWATER MONITORING SHEETS



Client Seqirus UK Limited
Project Seqirus Site 6, Speke
Job Number 784-B033528
Gas Analyser: G502069

Calibration Due: Sep-22

Date 05/01/2022 **Start** 09:30 **End** 10:15 **By** **TB** **AP Trend** Rising **Weather** Clear Skies

Instruments used - GA5000 with internal flow pod, Oil/Water Interface Meter.

Background (start) CH₄ 0.1 CO₂ 0.1 O₂ 21.4% AP 1009
Background (end) CH₄ 0.1 CO₂ 0.1 O₂ 21.7% AP 1009

Installation	BH Pressure	CH ₄ (% vol)			CO ₂ (% vol)			O ₂ (% vol)			CO (ppm)	H ₂ S (ppm)	PID		Flow Rate (l/hr)		Atmospheric Pressure (mbar)	Depth to Water (mbgl)	Depth to Base (mbgl)	Remarks
	mb	Peak	Min	Steady	Peak	Min		Peak	Min	Steady	Peak	Peak	Peak	Steady	Peak	Steady				
CP01	-0.10	0.1	0.1	0.1	0.1	0.1	0.1	21.5	19.8	19.8	1	0	-	-	0.3	0.3	1009	3.29	9.51	-
CP02	-0.09	0.1	0.1	0.1	0.9	0.1	0.9	21.3	18.4	18.4	0	0	-	-	0.3	0.2	1009	7.36	13.56	-
WS02	-0.10	0.1	0.1	0.1	0.1	0.1	0.1	21.4	18.4	18.4	0	0	-	-	0.2	0.2	1009	WAB	0.94	-

WAB = Wet at base



Client Seqirus UK Limited
Project Seqirus Site 6, Speke
Job Number 784-B033528
Gas Analyser: G502069

Calibration Due: Sep-22
Date 14/01/2022 **Start** 09:15 **End** 10:20 **By** **TB/SG** **AP Trend** Falling **Weather** Clear Skies

Instruments used - GA5000 with internal flow pod, Oil/Water Interface Meter.

Background (start) CH₄ 0.1 CO₂ 0.1 O₂ 21.4% **AP** 1033
Background (end) CH₄ 0.1 CO₂ 0.1 O₂ 21.4% **AP** 1033

Installation	BH Pressure	CH ₄ (% vol)			CO ₂ (% vol)			O ₂ (% vol)			CO (ppm)	H ₂ S (ppm)	PID		Flow Rate (l/hr)		Atmospheric Pressure (mbar)	Depth to Water (mbgl)	Depth to Base (mbgl)	Remarks
	mb	Peak	Min	Steady	Peak	Min	Steady	Peak	Min	Steady	Peak	Peak	Peak	Steady	Peak	Steady				
CP01	-0.10	0.1	0.1	0.1	0.1	0.1	0.1	21.1	20.8	21.1	1	0	2.5	0.8	0.3	0.3	1033	3.29	9.51	-
CP02	-0.10	0.1	0.1	0.1	1.3	0.1	1.3	21.4	17.2	17.2	0	0	0.4	0.3	0.3	0.3	1033	7.26	13.57	-
WS02	1.21	0.1	0.1	0.1	0.2	0.1	0.1	20.8	18.0	18.0	0	0	3.2	0.8	0.3	0.3	1033	DRY	0.93	SAB

WAB = Wet at base

SAB = Silty at base



Client Seqirus UK Limited
Project Seqirus Site 6, Speke
Job Number 784-B033528
Gas Analyser: G502069

Calibration Due: Sep-22

Date 31/01/2022 **Start** 11:55 **End** 13:00 **By** **SG** **AP Trend** Falling **Weather** Clear Skies

Instruments used - GA5000 with internal flow pod, Oil/Water Interface Meter.

Background (start) CH₄ 0.1 CO₂ 0.1 O₂ 21.4% AP 1023
Background (end) CH₄ 0.1 CO₂ 0.1 O₂ 21.4% AP 1023

Installation	BH Pressure	CH ₄ (% vol)			CO ₂ (% vol)			O ₂ (% vol)			CO (ppm)	H ₂ S (ppm)	PID		Flow Rate (l/hr)		Atmospheric Pressure (mbar)	Depth to Water (mbgl)	Depth to Base (mbgl)	Remarks
	mb	Peak	Min	Steady	Peak	Min	Steady	Peak	Min	Steady	Peak	Peak	Peak	Steady	Peak	Steady				
CP01	-0.12	0.1	0.1	0.1	0.1	0.1	0.1	21.6	21.5	19.9	0	0	0	0	0.2	0.2	1023	3.30	9.62	SAB
CP02	-0.12	0.1	0.1	0.1	1.3	0.1	1.3	21.4	19.3	19.8	0	0	0	0	0.1	0.2	1023	7.21	13.86	-
WS02	-0.14	0.2	0.1	0.1	0.2	0.1	0.1	21.4	19.4	19.4	0	0	0.2	0.0	0.3	0.3	1023	0.86	0.93	-

WAB = Wet at base

SAB = Silty at base



Client Seqirus UK Limited
Project Seqirus Site 6, Speke
Job Number 784-B033528
Gas Analyser: G502069

Calibration Due: Sep-22
Date 17/02/22 **Start** 09:00 **End** 11:00 **By** **SG** **AP Trend** falling **Weather** CLEAR DRY

Instruments used - GA5000 with internal flow pod, Oil/Water Interface Meter.

Background (start) CH₄ 0.2 CO₂ 0.2 O₂ 21.0% **AP** 1001
Background (end) CH₄ 0.2 CO₂ 0.2 O₂ 21.1% **AP** 1001

Installation	BH Pressure	CH ₄ (% vol)			CO ₂ (% vol)			O ₂ (% vol)			CO (ppm)	H ₂ S (ppm)	PID		Flow Rate (l/hr)		Atmospheric Pressure (mbar)	Depth to Water (mbgl)	Depth to Base (mbgl)	Remarks
	mb	Peak	Min	Steady	Peak	Min	Steady	Peak	Min	Steady	Peak	Peak	Peak	Steady	Peak	Steady				
CP01	-0.12	0.2	0.2	0.2	2.0	0.2	0.1	21.0	19.8	19.8	0	0	0	0	0.2	0.2	1001	3.28	9.57	SAB
CP02	-0.14	0.2	0.2	0.2	1.4	0.1	1.4	18.1	14.1	14.3	0	0	0	0	0.2	0.2	1001	7.05	13.87	-
WS02	-0.14	0.2	0.2	0.2	0.1	0.1	0.1	19.9	17.5	17.5	0	0	0.2	0.0	0.3	0.3	1001	0.88	0.94	-

WAB = Wet at base

SAB = Silty at base



Client Seqirus UK Limited
Project Seqirus Site 6, Speke
Job Number 784-B033528
Gas Analyser: G501785

Calibration Due: May-22

Date 04/03/2022 **Start** 08:45 **End** 09:15 **By** **TB** **AP Trend** Rising **Weather** Clear Skies

Instruments used - GA5000 with internal flow pod, Oil/Water Interface Meter.

Background (start) CH₄ 0.0 CO₂ 0.1 O₂ 21.2% AP 1015
Background (end) CH₄ 0.0 CO₂ 0.1 O₂ 21.6% AP 1015

Installation	BH Pressure	CH ₄ (% vol)			CO ₂ (% vol)			O ₂ (% vol)			CO (ppm)	H ₂ S (ppm)	PID		Flow Rate (l/hr)		Atmospheric Pressure (mbar)	Depth to Water (mbgl)	Depth to Base (mbgl)	Remarks
	mb	Peak	Min	Steady	Peak	Min	Steady	Peak	Min	Steady	Peak	Peak	Peak	Steady	Peak	Steady				
CP01	-0.26	0.0	0.0	0.0	0.1	0.1	0.1	21.2	21.1	21.1	1	0	0.0	0.0	-0.5	0.1	1015	3.14	9.51	-
CP02	-0.33	0.0	0.0	0.0	1.9	0.1	1.9	21.5	13.9	13.9	1	0	0.0	0.0	-0.2	0.1	1015	6.75	13.51	-
WS02	-0.41	0.0	0.0	0.0	0.1	0.0	0.0	21.2	17.4	17.4	0	0	0.0	0.0	-0.2	0.1	1015	0.87	0.95	-

WAB = Wet at base

SAB = Silty at base



Client Seqirus UK Limited
Project Seqirus Site 6, Speke
Job Number 784-B033528
Gas Analyser: G501785

Calibration Due: May-22

Date 11/03/2022 **Start** 09:45 **End** 10:15 **By** **TB** **AP Trend** Falling **Weather** Overcast

Instruments used - GA5000 with internal flow pod, Oil/Water Interface Meter.

Background (start) CH₄ 0.0 CO₂ 0.1 O₂ 21.2% AP 996
Background (end) CH₄ 0.0 CO₂ 0.1 O₂ 21.4% AP 996

Installation	BH Pressure	CH ₄ (% vol)			CO ₂ (% vol)			O ₂ (% vol)			CO (ppm)	H ₂ S (ppm)	PID		Flow Rate (l/hr)		Atmospheric Pressure (mbar)	Depth to Water (mbgl)	Depth to Base (mbgl)	Remarks
	mb	Peak	Min	Steady	Peak	Min	Steady	Peak	Min	Steady	Peak	Peak	Peak	Steady	Peak	Steady				
CP01	-0.19	0.0	0.0	0.0	0.1	0.1	0.1	21.2	21.2	21.2	1	0	0.0	0.0	-0.4	0.1	996	3.19	9.51	SAB
CP02	-0.15	0.0	0.0	0.0	2.2	0.1	2.2	21.4	13.9	13.9	1	0	0.0	0.0	-0.4	0.1	996	6.67	13.56	-
WS02	-0.41	0.0	0.0	0.0	0.1	0.1	0.1	21.3	21.3	21.3	0	0	0.0	0.0	-0.4	0.1	996	0.86	0.94	-

WAB = Wet at base

SAB = Silty at base

CERTIFICATION OF CALIBRATION



Date Of Calibration: 19-Aug-2021

Certificate Number: G502069_2/28698

Issued by: QED Environmental Systems Ltd.

Customer: Tetra Tech Limited
Purchase Ledger Department PO Box 893 Leeds
West Yorkshire LS1 9UL UNITED KINGDOM

Description: Gas Analyser

Model: GA5000

Serial Number: G502069

UKAS Accredited results:

Results after adjustment :

Methane (CH ₄)		
Certified Gas (%)	Instrument Reading (%)	Uncertainty (%)
5.0	4.9	0.072
14.9	14.8	0.13
59.7	59.4	0.42

Carbon Dioxide (CO ₂)		
Certified Gas (%)	Instrument Reading (%)	Uncertainty (%)
5.0	4.9	0.074
15.1	14.9	0.13
40.3	40.2	0.29

Oxygen (O ₂)		
Certified Gas (%)	Instrument Reading (%)	Uncertainty (%)
21.1	21.2	0.25

The inwards assessment was carried out 06-Aug-2021.

The maximum adjustment is larger than the specification limit.

Inwards assessment data is available if requested.

All concentrations are molar.

CH₄, CO₂ readings recorded at : 32.5 °C ± 2.5 °C

O₂ readings recorded at : 22.5 °C ± 2.5 °C

Barometric Pressure : 1003 mbar ± 4 mbar

Method of Test : The analyser is calibrated in a temperature controlled chamber using a series of reference gases, in compliance with procedure LP004.

Instrument has passed calibration as the measurement result is within the specification limit. The specification limit takes into account the measurement uncertainty.

The results relate only to the item calibrated

This certificate is issued in accordance with the laboratory accreditation requirements of the United Kingdom Accreditation Service. It provides traceability of measurement to the SI system of units and/or to units of measurement realised at the National Physical Laboratory or other recognised national metrology institutes. This certificate may not be reproduced other than in full, except with the prior written approval of the issuing laboratory.

Calibration Instance: 112 IGC Instance: 112

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www.qedenv.com +44 (0) 333 800 0088 sales@qedenv.co.uk

QED Environmental Systems Ltd. Cyan Park - Unit 3, Jimmy Hill Way, Coventry, CV2 4QP, UNITED KINGDOM

Registered in England and Wales 1898734

CERTIFICATION OF CALIBRATION



Date Of Calibration: 19-Aug-2021

Certificate Number: G502069_2/28698

Issued by: QED Environmental Systems Ltd.

The reported expanded uncertainty is based on a standard uncertainty multiplied by a coverage factor of $k=2$, providing a level of confidence of approximately 95%. The uncertainty evaluation has been carried out in accordance with UKAS requirements.

Calibrations marked 'Non-UKAS Accredited results' on this certificate have been included for completeness.

Non-UKAS accredited results after adjustment:

Barometer (mbar)	
Reference	Instrument Reading
1003	1003

Additional Gas Cells		
Gas	Certified Gas (ppm)	Instrument Reading (ppm)
CO	509	512
H ₂ S	250	250

Internal Flow	
Applied (l/hr)	Instrument Reading (l/hr)
5	4.9
10	9.9

Date of Issue : 24-Aug-2021

Approved by Signatory

Dawn Hemings

Laboratory Inspection

End of Certificate

This certificate is issued in accordance with the laboratory accreditation requirements of the United Kingdom Accreditation Service. It provides traceability of measurement to the SI system of units and/or to units of measurement realised at the National Physical Laboratory or other recognised national metrology institutes. This certificate may not be reproduced other than in full, except with the prior written approval of the issuing laboratory.

Calibration Instance: 112 IGC Instance: 112

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QED Environmental Systems Ltd. Cyan Park - Unit 3, Jimmy Hill Way, Coventry, CV2 4QP, UNITED KINGDOM

Registered in England and Wales 1898734

Instrument Service Report

Unit Type: GA5000	Part Number: GA5K0AC0-301	Date: 24-Aug-2021	Next Service Due: 19-Feb-2022	Customer Name: Tetra Tech Limited
Serial Number: G502069				
Actions/Investigation Description		Result	Comments	
Serial Number Check		Yes		
Battery Requires Replacing		No		
Internal Flow Calibrated		Yes		
Full Automatic Calibration		Pass		
Serial Comms Test (USB)		Pass		
Service history of instrument reviewed		Yes		
Inwards gas check data reviewed		Yes		
Instrument turns on		Pass		
Backlight operates correctly		Yes		
External visual inspection performed		Pass		
Internal visual inspection performed		Pass		
All screws tightened to correct torque		Yes		
All connectors are secure		Pass		
Check diagnostic channels		Pass		
Case compression test		Pass		
Impact and stability test		Pass		
Pressure transducer test(s) as per user operation		Pass		

Instrument Service Report

Unit Type: GA5000	Part Number: GA5K0AC0-301	Date: 24-Aug-2021	Next Service Due: 19-Feb-2022	Customer Name: Tetra Tech Limited
Serial Number: G502069				
Actions/Investigation Description		Result	Comments	
Final visual inspection on instrument		Pass		
Case assembly closed and screws tightened to correct torque		Yes		
PTFE filters replaced		Yes		
Pump flow greater than 550 ml/min		Pass		
Automated instrument pressure system test (leak test)		Pass		
Pump vacuum greater than -400 mb and flow fails		Pass		
GPS function test		Pass		
Temperature probe tested		Pass		
Anemometer tested		Pass		
Chemical gas sensors calibrated – refer to Calibration Certificate		Pass		
Check main PCB and sensor PCB have the latest software		Yes		
Transducers calibrated		Pass		
As Received Chemical Cell Gas Assessment Performed (CAL16)		Yes		
As Received Gas Assessment Performed (CAL01 or CAL02)		Yes		
Chemical sensor(s) replacement over 2yrs UK and 21mths overseas.		No		
O2 sensor replacement over 3yrs UK, 33mths overseas		Pass		

Instrument Service Report

Unit Type: GA5000

Part Number:

Date:

Next Service Due:

Customer Name:

Serial Number: G502069

GA5K0AC0-301

24-Aug-2021

19-Feb-2022

Tetra Tech Limited

Customer Comments

Returned for full service and calibration

Accessory Test

	Result	Comments
Charger	Pass	Charger output is in spec.
Water Trap	Pass	Replaced PTFE filter. Replaced tubing. Replaced hose barb. Tested ok.

General Comments/Feedback

Thank you for returning your gas analyser to the QED Service Centre for full service and calibration. We are pleased to inform you that the analyser was received and fully assessed by one of our experienced Service Engineers and no significant faults or issues were observed during the assessment. Our extensive service was carried out, and any necessary components replaced. The analyser has successfully passed all of our rigorous testing and quality checks and has been calibrated using our bespoke, state of the art calibration facility. For further information about how to get the best use from your instrument please visit our YouTube channel <http://www.youtube.com/GeotechTV> and on our Website <https://qedenv.com>

If you require any further assistance with your instrument please email our Technical Support Team at technical@qedenv.co.uk or call us on +44 (0) 333 800 0088 (Monday to Thursday 08.30 - 17.00 & Friday 08.30 - 15.30) UK time zone.

Service Details: Service Scheme	☒	Service Engineer:	Calibration Engineer:	Approved By:	Signature:
Standard Service	☐	Ricky Cottrill	Suk Balrey	Anthony Ashbery	

CERTIFICATION OF CALIBRATION



Date Of Calibration: 11-Mar-2022

Certificate Number: G502069_1/30037

Issued by: QED Environmental Systems Ltd.

Customer: Tetra Tech Limited
Purchase Ledger Department PO Box 893 Leeds
West Yorkshire LS1 9UL UNITED KINGDOM

Description: Gas Analyser

Model: GA5000

Serial Number: G502069

UKAS Accredited results:

Results after adjustment :

Methane (CH ₄)		
Certified Gas (%)	Instrument Reading (%)	Uncertainty (%)
5.0	5.0	0.072
14.9	14.9	0.13
60.0	59.8	0.42

Carbon Dioxide (CO ₂)		
Certified Gas (%)	Instrument Reading (%)	Uncertainty (%)
5.0	4.8	0.074
15.1	14.8	0.13
40.0	40.0	0.29

Oxygen (O ₂)		
Certified Gas (%)	Instrument Reading (%)	Uncertainty (%)
21.1	21.2	0.25

The inwards assessment was carried out 02-Mar-2022.

The maximum adjustment is larger than the specification limit.

Inwards assessment data is available if requested.

All concentrations are molar.

CH₄, CO₂ readings recorded at : 31.7 °C ± 2.5 °C

O₂ readings recorded at : 23.3 °C ± 2.5 °C

Barometric Pressure : 0992 mbar ± 4 mbar

Method of Test : The analyser is calibrated in a temperature controlled chamber using a series of reference gases, in compliance with procedure LP004.

Instrument has passed calibration as the measurement result is within the specification limit. The specification limit takes into account the measurement uncertainty.

The results relate only to the item calibrated

This certificate is issued in accordance with the laboratory accreditation requirements of the United Kingdom Accreditation Service. It provides traceability of measurement to the SI system of units and/or to units of measurement realised at the National Physical Laboratory or other recognised national metrology institutes. This certificate may not be reproduced other than in full, except with the prior written approval of the issuing laboratory.

Calibration Instance:114 IGC Instance:114

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www.qedenv.com +44 (0) 333 800 0088 sales@qedenv.co.uk

QED Environmental Systems Ltd. Cyan Park - Unit 3, Jimmy Hill Way, Coventry, CV2 4QP, UNITED KINGDOM

Registered in England and Wales 1898734

CERTIFICATION OF CALIBRATION

Date Of Calibration: 11-Mar-2022



Certificate Number: G502069_1/30037

Issued by: QED Environmental Systems Ltd.

The reported expanded uncertainty is based on a standard uncertainty multiplied by a coverage factor of $k=2$, providing a level of confidence of approximately 95%. The uncertainty evaluation has been carried out in accordance with UKAS requirements.

Calibrations marked 'Non-UKAS Accredited results' on this certificate have been included for completeness.

Non-UKAS accredited results after adjustment:

Barometer (mbar)		
Reference	Instrument Reading	
992	992	

Additional Gas Cells		
Gas	Certified Gas (ppm)	Instrument Reading (ppm)
CO	500	507
H ₂ S	259	259

Internal Flow	
Applied (l/hr)	Instrument Reading (l/hr)
5	4.9
10	9.9

Date of Issue: 14-Mar-2022

Approved by Signatory

Laura McBride

Laboratory Inspection

End of Certificate

This certificate is issued in accordance with the laboratory accreditation requirements of the United Kingdom Accreditation Service. It provides traceability of measurement to the SI system of units and/or to units of measurement realised at the National Physical Laboratory or other recognised national metrology institutes. This certificate may not be reproduced other than in full, except with the prior written approval of the issuing laboratory.

Calibration Instance: 114 IGC Instance: 114

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APPENDIX J- CIRIA C552 RISK METHODOLOGY

The following tables are derived from CIRIA C552 and have been used to define the risk rating presented in the Qualitative Risk Assessment matrix.

Classification of consequence

Classification	Definition
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 (note; Water Resources Act contains no scope for considering significant pollution) of sensitive water resource. Catastrophic damage to building/property. A short-term risk to a particular ecosystem, or organism forming part of such ecosystem. (Note the definitions of ecological systems within the Draft Circular on Contaminated Land DETR, 2000).
Medium	Chronic damage to human health ('significant harm', as defined In DETR, 2000). Pollution of sensitive water resources (note; Water Resources Act contains no scope for considering significant pollution). A significant change in a particular ecosystem, or an organism forming part of such an ecosystem. (Note the definitions of ecological systems within the Draft Circular on Contaminated Land DETR, 2000).
Mild	Pollution of non-sensitive water resources. Significant damage to crops, buildings, structures and services ('significant harm', as defined In DETR, 2000). Damage to sensitive buildings/structures/services or the environment.
Minor	Harm, although not necessarily significant harm, which may result in a financial loss, or expenditure to resolve. Non-permanent health effects to human health (easily prevented by means such as personal protective clothing etc). Easily repairable effects of damage to buildings, structures and services.

Classification of probability

Classification	Definition
High likelihood	There is a pollution linkage and an event that either 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 pollutant linkage and all the elements are present and in the right place, which means that it is probable that an event will occur. Circumstances are such that an 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 that even over a longer period that such an event would take place, and is even less likely in the shorter term.
Unlikely	There is a pollution linkage but circumstances are such that it is improbable that an event would occur even in the very long term.

Matrix of consequence against probability to gain a risk classification

		Consequence			
		Severe	Medium	Mild	Minor
Probability	High Likelihood	Very High Risk	High Risk	Moderate Risk	Moderate/Low Risk
	Likely	High Risk	Moderate Risk	Moderate/Low Risk	Low Risk
	Low likelihood	Moderate Risk	Moderate/Low Risk	Low Risk	Very Low Risk
	Unlikely	Moderate/Low Risk	Low Risk	Very Low Risk	Very Low Risk