PHASE II GEO-ENVIRONMENTAL ASSESSMENT

Llanilltud Faerdref Primary School

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Phase II Geo-Environmental Assessment Report

This report was produced by HSP Consulting Engineers Ltd for Fulcrum Infrastructure Management on behalf of Welsh Education Partnership (WEPCo) as the Phase II Geo-environmental Assessment Report for Llanilltud Faerdref Primary School, Pontypridd to identify possible areas of contamination and provide an assessment of potential ground related development constraints to inform design.

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Executive Summary

HSP Consulting has been commissioned by for Fulcrum Infrastructure Management on behalf of Welsh Education Partnership (WEPCo) undertake an intrusive ground investigation at the site to investigate the existing ground conditions and provide information on likely constraints to the redevelopment, preliminary parameters for design and recommendations for any mitigation measures should they be required.

The site is located off St Illtyds Road, in the north of Church Village, approximately 4.1km south east of Pontypridd. The approximate National Grid Reference for the centre of the site is (NGR) 308660, 186050.

The ground investigation comprised 7No window sample boreholes to a maximum depth of 4.15m, 1No cable percussive boreholes to a maximum depth of 5.30m, and 5No rotary open hole boreholes. The rotary open hole boreholes were undertaken as part of a coal mining investigation. The findings of which are discussed in a separate Coal Mining Risk Assessment which should be read in conjunction with this report.

The ground investigation has proved limited Made Ground to maximum depths of 0.90m begl, overlying sandy gravelly CLAY (Till deposits) and weathered MUDSTONE of the Hughes Member to a maximum depth of 30.00m begl (base not penetrated).

The natural deposits are considered suitable for shallow spread foundations (strip or pad) within the underlying firm to stiff clays of the Diamicton Till or Upper Coal Measures at minimum depths of 0.75m bgl. HSP would recommend that an ABP of 225kN/m^2 could be utilised for design of traditional foundations. Foundations should be deepened within the location of WS05 and WS06 through any reworked materials.

The screening process for on-site human health receptors show that the GACs for a residential without home grown produce setting were not exceeded. The concentrations of potential contaminants recorded at the site indicates an acceptably low risk and therefore mitigation measures are not required as part of the development.

Ground gas concentrations have been monitored on four occasions in order to obtain an indication of the ground gas regime at the site. The gas monitoring indicates that the site generally falls into a Characteristic Situation 2 and therefore ground gas protection measures are required as part of the development.

The results of sulphate and pH testing carried out on selected soil samples taken during this investigation indicate it is appropriate to adopt a basic Design Sulphate Class of DS-1 together with and Aggressive Chemical Environment for Concrete (ACEC) of AC-1s.

Based on the chemical analysis report it is considered that specialist materials are unlikely to be required for water supply pipes at the site due to the low levels of contaminants recorded. However, confirmation of supply pipes should be sought from utility providers.

The executive summary contains an overview of key findings and conclusions. However, no reliance should be placed on the executive summary until the whole of the report has been read. Other sections of the report may contain information which puts into context the findings noted within the executive summary.

1. Introduction

1.1 Background

This report has been prepared to support a feasibility study for the redevelopment of the existing school site. It is proposed to demolish the existing school building and construct a new school to the southeast of the existing school buildings. The car parking, hard and soft landscaping will also be redeveloped as part of the project.

1.2 Client Brief & Scope

HSP Consulting has been commissioned by for Fulcrum Infrastructure Management on behalf of Welsh Education Partnership (WEPCo) to undertake an intrusive ground investigation at the site to investigate the existing ground conditions and provide information on likely constraints to the redevelopment, preliminary parameters for design and recommendations for any mitigation measures should they be required.

The report presents the following information:

- details of the ground investigation undertaken and the ground conditions encountered,
- details and results of the geotechnical testing and contamination analysis,
- recommendations for mitigating constraints to the proposed redevelopment where appropriate and providing parameters for foundation design.

Where applicable, the fieldwork was undertaken in accordance with BS5930:2015+A1:2020 Code of Practice for Ground Investigations and BS10175:2011+A1:2013 Investigation of Potentially Contaminated Sites.

1.3 Report Objectives

The objectives of this report are to:

- establish the geological and hydrogeological conditions using existing available/published information.
- summarise available information and identify site specific geotechnical and environmental hazards which may place a constraint upon the proposed site use.
- produce an updated Conceptual Site Model identifying potential pollution linkages between sources of contamination, pathways and receptors.

1.4 Limitations

The recommendations made in this report are based on the findings of the intrusive ground investigation undertaken by HSP Consulting Ltd between the 21st April and 7th May 2021.

1.5 Previous Reports

HSP Consulting have completed a Phase I Geo-environmental Desk Study Report (Ref 1) for the site, details of which can be found below:

- HSP Consulting Engineers Limited, Phase I Geo-environmental Assessment, ‘Llanilltud Faerdref Primary School. September 2019, Ref: C3103/PI.

2. Review of Existing Information & Geo-environmental Setting

2.1 The Site

2.1.1 Location

The site is located off St Illtyds Road, in the north of Church Village, approximately 4.1km south east of Pontypridd. The approximate National Grid Reference for the centre of the site is (NGR) 308660, 186050. A Site Location Plan is included in Appendix I.

2.1.2 Description

The site is broadly rectangular in shape and approximately 1.22Ha in area. The main vehicle and pedestrian access is located on the south west boundary, whilst another vehicle gate is located on the eastern boundary, at the bottom of the playing field.

The site comprises the existing school buildings in the south west of the site and temporary classroom in the west. Hardstanding is generally asphalt concrete with a playground located to the north of the school buildings and car parking in the west of the site. Hardstanding areas are generally level, with the grassed playing field in the east sloping gradually to the south / south east.

Large metal containers were observed in the west of the site with excess materials stored adjacent, including plastic sheeting, roof tiles and tree cuttings.

A number of mature / semi mature trees and shrubs were observed on site.

The site is generally bound by metal / concrete post and wire fencing or wooden fencing in the north.

2.1.3 Surrounding Land Use

The main features of interest identified are:

North:	Woodland with residential properties and Llantwit Fardre Leisure Centre beyond.
East:	Grounds of the primary school with mixed use beyond, including residential, retail, community and limited industrial.
South:	MUGA (for the adjacent youth centre) with residential properties beyond.
West:	Public open space/playing fields, youth centre, residential properties and Gartholwg Community Campus beyond.

2.1.4 Proposed End Use

A new school is proposed to the southeast of the existing school buildings, which will be demolished as part of the redevelopment. New car parking, hard and soft landscaping will form part of the redevelopment proposals. The end use will remain as a primary school.

2.2 Geology

2.2.1 Made Ground

The BGS mapping does not indicate any Made Ground on the site.

2.2.2 Superficial Deposits

The BGS superficial mapping indicates Diamicton Till underlies the site, described by the BGS as *'unsorted and unstratified drift, generally overconsolidated, deposited directly by and underneath a glacier without subsequent reworking by water from the glacier. It consists of a heterogenous mixture of clay, sand, gravel, and boulders varying widely in size and shape'.*

2.2.3 Bedrock Geology

BGS bedrock mapping indicates the site is underlain by the Hughes Member of the Carboniferous Period (part of the South Wales Upper Coal Measures Formation) described by the BGS as *'Green-grey, lithic arenites ("Pennant Sandstones"), with thin mudstone/siltstone and seatearth interbeds, and mainly thin coals.'* A coal seam is inferred at outcrop in the north of the site, see 2.3 below.

A Coal Mining Risk Assessment was undertaken in March 2019 by HSP Consulting, which has been updated in June 2021 following Rotary Open Hole Drilling. This should be read in conjunction with this report.

2.2.4 Structural Geology

No faults are recorded within a 250m radius of the site boundary, however, dip and dip direction (13° north and 15° south) indicate a small syncline locally.

2.3 Pertinent Site Sensitivity Information

Based on the information collated for the desk study, the geo-environmental setting of the site is summarised as follows:

- The site is shown as agricultural fields from the earliest mapping (1875) until the early 1980s when *Llanilltud Faerdref Primary School* is recorded, the site use remains unchanged.
- The surrounding land use is generally agricultural from the earliest mapping (1875) but the town of Church Village gradually develops and expands through the 1900s, predominantly consisting of residential land use.
- No Made Ground is indicated within the site boundary on the published geological mapping. Superficial deposits of glacial till are expected on site, underlain by bedrock geology of the Hughes Member.
- The superficial deposits are designated as a Secondary Aquifer – Undifferentiated. The bedrock geology is designated a Secondary A Aquifer.
- The site lies within a Coal Authority Reporting Area. A coal seam in inferred to outcrop in the north of the site and is therefore considered a Development High Risk Area.
- A landfill site is recorded approximately 50m north east of the site.

Based on the above, the environmental sensitivity of the site can be considered to be Very Low at this stage.

3. Fieldwork & Factual Information

Site work was carried out between the 6th and 13th April 2021. Where applicable, the fieldwork was undertaken in accordance with BS5930:2015+A1:2020 Code of Practice for Ground Investigations (Ref. 6) and BS10175:2011+A1:2013 Investigation of Potentially Contaminated Sites (Ref. 8).

The exploratory holes were selected by the Client across the wider school site and positioned on site by HSP to account for the position of services, to provide preliminary information for foundation design and obtain representative soil samples for geotechnical and geo-environmental analysis.

3.1 Exploratory Methods

The exploratory methods are detailed in the table below.

Table 1 – Exploratory Methods of Investigation

Type	Quantity	Maximum Depth (m)	Details
Windowless Sampling Boreholes	7	4.15	WS01 to WS07
Cable Percussive Borehole	1	5.30	CP01
Rotary Open Hole (Water Flush) Boreholes	5	30.00	R01 to R05

The exploratory holes were logged and sampled by an Engineer from HSP Consulting Ltd and the logs are presented in Appendix II. The exploratory hole locations are shown on the Ground Investigation Layout Plan presented in Appendix III.

Fragmentary bulk, disturbed and undisturbed samples were recovered from materials revealed within all the exploratory holes. Geo-environmental samples, placed in plastic tubs and glass jars supplied by the laboratory, were also obtained specifically for chemical analysis. The samples were taken to UKAS accredited laboratories for further examination and testing.

The rotary open hole boreholes were undertaken as part of a coal mining investigation. The findings of which are discussed in a separate Coal Mining Risk Assessment which should be read in conjunction with this report.

3.2 In-situ Testing

3.2.1 Standard Penetration Tests

Standard Penetration Tests (SPTs) were carried out at 1.00m intervals in the boreholes to 5.00m depth. The SPTs were undertaken in accordance with EN ISO 22476-2 2005: A1 2011 and the results are included on the appended borehole logs (Appendix II).

3.3 Laboratory Testing

The laboratory testing schedules were prepared by HSP Consulting Ltd.

3.3.1 Geotechnical Testing

Geotechnical testing has been scheduled to be undertaken by a UKAS accredited laboratory as part of the works at the site:

- Plasticity Index
- Natural Moisture Content
- Particle Size Distributions

The laboratory testing is being undertaken by Apex Testing Solutions (UKAS accredited, laboratory No.7771), in accordance with BS1377:1990 using calibrated equipment specifically for the British Standard. Testing certificates are presented within Appendix V.

3.3.2 Chemical Analysis

The geo-environmental samples retained specifically for chemical analysis were stored in cooled containers until delivery to the laboratory by courier.

Chemical analysis was scheduled on eight soil samples for the presence of a selected suite of potential contaminants as outlined in the tables below.

Table 2a – Chemical Analysis

Exploratory Hole Location & Depth	Sample Description	Exploratory Hole Location & Depth	Sample Description
WS01, 0.30m[1,2]	CLAY	WS05, 0.30m	MADE GROUND[1,2,4]
WS01, 1.00m[3]	CLAY	WS05, 1.00m	CLAY[3]
WS02, 0.95m[1,2]	CLAY	WS06, 0.50m	MADE GROUND[1,2,4]
WS02, 2.00m[3]	CLAY	WS06, 0.95m	CLAY[1,2]
WS03, 0.20m[1,2]	CLAY	WS06, 2.00m	CLAY[3]
WS03, 3.00m[3]	CLAY	WS07, 0.60m	CLAY[1,2]
WS04, 0.55m[1,2]	CLAY		

[1] HSP Standard Suite, [2] Organic Matter, [3] BRE Sulphate Suite, [4] Asbestos Screen

Table 2b – HSP Standard Chemical Analysis Suite

Metals	Cadmium	Chromium (III & VI)	Copper
	Lead	Mercury	Nickel
	Zinc		
Semi Metals and Non-metals	Arsenic	Boron	Selenium
Others	pH		
Inorganic Chemicals	Cyanide	Sulphate	Sulphide
Organic Chemicals	PAH (US EPA 16)	TPH (CWG)	Phenol

The contamination analysis was carried out by Eurofins Chemtest Limited (UKAS accredited, laboratory No. 2183) during the period 23rd April to 4th May 20201. The results are presented in Appendix IV.

3.4 Ground Conditions

3.4.1 Published Geology

The published geology indicates superficial Till deposits overlying bedrock geology of the Hughes Member of the Carboniferous Period, as described in section 2.2 above.

3.4.2 Ground Conditions on site or General Geology & Revealed Strata

The exploratory hole data confirms the published information. The strata generally comprises:

Table 3 – Encountered Ground Conditions

Strata		Depth (m begl)	Thickness (m)	Description
Anthropogenic	TOPSOIL	G.L. – 0.25	0.25m	Dark brown slightly sandy slightly gravelly clayey TOPSOIL with many rootlets.
	POTENTIAL REWORKED NATURAL GROUND	0.15 – 0.90	0.75m	POTENTIAL REWORKED NATURAL GROUND comprising brown grey mottled yellow sandy gravelly clay fill with gravels of coal.
Superficial	DIAMICTON TILL	0.15 – 1.30	1.15m	Firm brown grey mottled sandy gravelly CLAY. Gravels are of Mudstone.
		1.30 – 5.40	4.10m	Stiff grey mottled brown slightly sandy gravelly CLAY. Gravels are of Mudstone.
Bedrock	HUGHES MEMBER of the CARBONIFEROUS PERIOD	2.80 - 3.25	0.45m	Extremely weak MUDSTONE (recovered as gravelly Clay).
		3.25 – 15.10	11.85m	Weak grey MUDSTONE with occasional Sandstone bands.
		15.10 – 15.40	0.30m	Black COAL.
		15.40 – 17.40	2.00m	Weak grey MUDSTONE with Sandstone bands.
		17.40 – 17.50	0.10m	Black COAL.
		17.50 – 17.70	0.20m	Weak grey MUDSTONE.
		13.50 – 30.50	27.00m	Weak grey SANDSTONE with trace Coal and Sandstone bands.

3.5 Groundwater Levels

Two groundwater strikes were encountered during the windowless borehole sampling at 1.80m begl within WS05 and 2.50m begl within WS06. Within the rotary open hole boreholes groundwater strikes were encountered between 4.10m (R01) and 13.50m (R02 / R03) begl.

Groundwater level monitoring has been undertaken within the monitoring installations on four occasions in conjunction with the ground gas monitoring. The standpipes installed within WS01 and WS06 were recorded as flooded at the time of the initial monitoring. Subsequent monitoring has recorded groundwater between 0.60m begl (103.9m AOD) and 1.70m begl (102m AOD).

3.6 Ground Gas Monitoring

Dual use gas and groundwater monitoring installations were fitted within three of the boreholes at the site (WS01, WS03 and WS06). Each well has been constructed using plain and slotted 50mm diameter HDPE pipe as shown on the logs in Appendix II. All of the borehole installations have a 6mm pea gravel surround to the slotted pipe with a bentonite seal above and a gas tap. The covers are cemented flush with ground level and are round lockable stopcock covers.

HSP Consulting uses a GFM 430 Gas Analyser. Prior to its use a calibration check can be performed against gas readings in air. It is recommended that this check is undertaken once on each day the analyser is used. Annual calibration is undertaken on the unit and a copy of this certificate has been included within Appendix VI.

The results of the ground gas monitoring are discussed in Section 5.6 below.

3.7 Visual and Olfactory Evidence of Contamination

No visual and olfactory evidence of contamination was noted in the exploratory holes during the ground investigation.

4. Geotechnical Assessment

4.1 Detailed Ground Model

For the purpose of this foundation assessment the information gained from the window sample and cable percussion boreholes has been included. The borehole logs are presented in Appendix II.

4.1.1 Topsoil

Topsoil was encountered within all of the exploratory locations to a maximum depth of 0.25m begl (WS04). The deposits comprised grass over dark brown slightly sandy, slightly gravelly clayey TOPOSIL with many rootlets.

4.1.2 Made Ground

Limited made ground was encountered on site. Within, WS05 and WS06 made ground deposits comprising brown grey mottled yellow sandy gravelly clay, with gravels of coal were encountered to a maximum depth of 0.90m begl. These materials are likely to be reworked natural materials, derived from within the site during the original development, used to form level playing fields. The base of all made ground materials were penetrated.

4.1.3 Diamicton Till

Diamicton Till deposits were encountered within all exploratory boreholes to a maximum depth of 5.40m begl (R04).

The deposits generally comprised Firm brown grey mottled sandy gravelly CLAY to 1.30m begl overlying Stiff grey mottled brown slightly sandy gravelly CLAY to a maximum depth of 5.40m begl (R04).

4.1.4 Hughes Member

Bedrock deposits were encountered within all exploratory hole locations to a maximum depth of 30.00m begl within the rotary boreholes (base not penetrated).

At shallow depths, the deposits generally comprised Extremely weak weathered MUDSTONE which was recovered as gravelly CLAY. These deposits graded into weak grey MUDSTONE with Sandstone bands to 17.70m begl. Two bands of black weathered COAL were encountered between 15.10m begl to 15.40m begl and 17.40m begl to 17.50m begl. The mudstones grade into generally weak grey SANDSTONE with trace Coal and Mudstone bands.

4.1.1 Groundwater

Groundwater level monitoring has been undertaken within the monitoring installations on four occasions in conjunction with the ground gas monitoring. The standpipes installed within WS01 and WS06 were recorded as flooded at the time of the initial monitoring visit. A further three groundwater level monitoring visits have been completed and the groundwater levels have been recorded between 0.60m begl (103.9m AOD) and 1.70m begl (102m AOD). HSP

consider that the recorded entries are trapped meteoric water which may have seeped into the borehole rather than a reflection of true groundwater levels.

4.1.2 In-situ Testing, Laboratory Testing and Assessment

A series of Standard Penetration Tests (SPT's) were undertaken within all boreholes. The following table summarises the N values at depth across the site within the underlying natural deposits.

Table 4 – SPT N Values

Depth (m)	Range of 'N' Values	Mean 'N' Value	Description
1.00	11 – 32	20	TILL (Clay)
2.00	17 - 50	30	TILL (Clay)
3.00	30 - 50	43	TILL (Clay)
	50	50	HUGHES MEMBER (Mudstone)
4.00	50	50	HUGHES MEMBER (Mudstone)
5.00	50	50	HUGHES MEMBER (Mudstone)

Six Plasticity Index tests and two Particle Size Distribution tests have been undertaken to confirm the visual description and engineering behaviour of the soils. The results are presented in full within Appendix V.

The results of the plasticity index testing indicate compliance with the definition of soils of low to intermediate plasticity (CL - CI) after the classification system of BS5930:2015+A1:2020. Fine soils across the site are generally considered to be of a Low Volume Change potential in accordance with the National House Building Council (NHBC) Standards, Chapter 4.2: 2007.

Table 5 - Plasticity and Volume Change Potential

Sample Ref:	Laboratory Material Descriptions	LL (%)	PL (%)	PI (%)	% passing 425µm	Modified PI (%)*	Soil Class	MC (%)
WS01, 1.5m	Grey slightly gravelly CLAY	23	15	8	73	6	CL	11.9
WS02, 2.20m	Grey slightly gravelly CLAY	48	23	25	72	18	CI	16
WS04, 1.90m	Grey, brown slightly gravelly CLAY	39	18	21	82	17	CI	16.4
WS05, 0.90m	Light brown, grey slightly gravelly CLAY	24	15	9	92	8	CL	18.7
WS06, 1.10m	Brown slightly gravelly CLAY	26	14	12	81	10	CL	11.6
WS07, 2.20m	Light brown, grey slightly gravelly CLAY	43	20	23	74	17	CI	14.5

* Rounded up

4.2 Earthworks

Significant earthworks operations are not expected at the site. It is likely that natural near surface soil arisings generated on site will be suitable for use as engineered fill on site, subject to appropriate testing and assessment.

Should materials prove to be suitable, placement and compaction would need to be strictly controlled and supervised. Project programming should consider the 'earthworks window' (prevailing dry & warm climatic conditions) as the soil materials will be susceptible to softening during periods of wet weather and will be easily damaged by site traffic and deterioration at times of heavy rainfall.

4.3 Excavations

In general, excavations to proposed formation levels for new foundations and infrastructure should be feasible using standard excavation plant and equipment. Random and potentially severe falls should be anticipated from the faces of near vertically sided unsupported excavations carried out at the site. Where personnel are required to enter near vertically sided excavations, it is considered that full support should be provided to the full depth of all excavations.

It is recommended that all support systems are continually assessed by fully trained or experienced personnel.

It should be noted that groundwater levels may vary due to seasonal variations or other effects. Should shallow groundwater entries be encountered at the site during groundwork operations, traditional sump and pump dewatering should be sufficient if required.

4.4 Foundations

The development proposals indicate the construction a new one to two storey school to the southeast of the existing school buildings. Upon completion of the new school building the existing buildings will be demolished. The car parking, hard and soft landscaping will also be redeveloped as part of the project. The end use will remain as a primary school.

The foundation assessment is based on the window sample and cable percussion exploratory holes across the development area, as selected by the Client and positioned on site by HSP to account for the position of services.

The table below shows the indicative allowable bearing pressure (ABP) that could be achieved using strip or pad foundations across the site. The ground conditions were generally consistent across the exploratory holes.

An ABP has been calculated using the 'average' corrected SPT N at 1.00m and 2.00m, excluding higher SPT anomalies within WS01.

Table 6 – Allowable Bearing Capacity

Depth (m)	SPT $(N_1)_{60}$ Value	Eurocode 7 Soil Strength Description	Consistency (BS5930) Description	Approximate ABP (k/Nm^2) – 0.60m wide strip footing	Approximate ABP (kN/m^2) – 2x2m pad footing
1.00	27	Medium to High	Stiff	225	235
2.00	37	High	Very stiff	335	350

HSP would recommend that all foundations are taken down to bear upon the competent natural deposits that have been encountered across the site. From the above table HSP would recommend that an ABP of 225kN/m^2 could be utilised for design of traditional foundations from a minimum depth of 0.75m begl. Foundations will need to be deepened where reworked natural ground has been encountered, particularly within the location of WS05 and WS06 however other areas of reworked or made ground may be present on site. The ABP generally increases at 2.00m as detailed in the above table, however we would recommend that the ABP for design is limited to 225kN/m^3 to account for the variability within the SPTs at 2m begl.

It should be noted that design loadings have not been provided at this stage, traditional pad or strip/trench foundations are viable at the site for lightly loaded structures. Where proposed building loads may exceed the ABP, an alternative foundation solution such as piling should be considered. Any piling solution would need to be designed and warranted by a specialist subcontractor. It is recommended the foundation options are reviewed once the layout and loadings have been finalised.

Where foundations (and ground floor slabs) are located within fine grained deposits within influencing distance of existing or proposed trees these will need to be locally deepened in accordance with NHBC Standards Chapter 4.2 Building near Trees for a clay of low volume change potential.

A Coal Mining Risk Assessment was prepared for the site by HSP in March 2019 and has been updated in June 2021 which should be read in conjunction with this report. The assessment concluded that no voids, loss of flush or indication of worked seams were recorded within any of the exploratory locations, indicating further investigation or treatment works should not be required prior to the re-development of the site based on the Coal Authority records and the ground investigation.

There is a low risk of combustion associated with the Westernmoor coal seam outcropping in the north of the site. Should the coal seam be exposed in foundation or service trenches, it should be sealed from the air using compacted clay or concrete, dependant on the seam thickness.

4.5 Ground Floor Slab

A ground bearing floor slab is considered suitable for the proposed development. It would be prudent to either proof roll the areas of WS05 and WS06 or replace the made ground deposits / reworked materials with suitable compacted stone or engineered fill. However, a suspended floor slab may be required as part of ground gas protection measures. The site has been classified as a Characteristic Situation 2 and therefore gas protection measures will be required within the new development.

4.6 Concrete Classification

The results of sulphate and pH testing carried out on selected soil samples taken during this investigation have been compared with the recommendations outlined in BRE Special Digest 1, Part 1: 2005.

The guidelines given in BRE Special Digest 1 are based upon a site classification relating to its previous usage. It is considered appropriate to define this site as a 'natural ground' location for the purposes of concrete classification.

On the basis of the above, it is considered appropriate to adopt a basic Design Sulphate Class for the Made Ground and underlying natural soils of DS-1 together with an Aggressive Chemical Environment for Concrete (ACEC) of AC-1s.

4.7 Drainage

No infiltration testing has been undertaken as part of this investigation. The intrusive works have confirmed firm sandy gravelly Clays overlying weathered very weak Mudstone. Limited Made Ground has been encountered on the site.

Infiltration drainage may be possible at the site and HSP would recommend that soakaway testing in accordance with BRE 365 is undertaken on site to determine the suitability of the underlying soils.

5. Environmental Assessment

5.1 Introduction

The approach to the human health risk assessment reported here follows the principals given in CLR 11, i.e. application of the following assessment hierarchy:

- Tier 1 risk screening by establishment of potential pollutant linkages, i.e. the preliminary conceptual site model (PCSM), or
- Tier 2 generic quantitative assessment using generic assessment criteria (GACs) that represent 'acceptably low' risk, or
- Tier 3 quantitative risk assessment using site specific assessment criteria (SSACs) that represent 'unacceptable risk', or where generic assessment criteria are not available, or they are not applicable to the CSM.

The results of laboratory analysis have been screened against GACs including the Defra Category 4 Screening Levels (C4SL) and LQM and CIEH S4ULs for Human Health Risk Assessment (Copyright Land Quality Management Limited reproduced with permission; Publication Number S4UL3180. All rights reserved). (Refs 11 and 10 respectively).

In the absence of a standard scenario for a school environment the standard exposure scenario of residential without home grown produce has been used to identify potential exposure pathways for human health receptors. Controlled water, flora and fauna and property receptors have also been included within the CSM. Our Tier 2 HHRAs for school sites are screened against the GACs representative of minimal risk for residential without home grown produce end use, we believe this to be appropriate based on the precautionary principle the CLR guidance advocates.

It should be noted that organic contamination (PAH, TPH and BTEX) have been screened against the GAC for 1% Soil Organic Matter (SOM).

The assessment of PAHs is undertaken using the surrogate marker approach; recommended by Health Protection Agency (2010) guidance, providing the PAH profile is sufficiently similar to the coal tars tested by Culp et al (1998). Where PAH profile is not sufficiently coal tar like the TEF method is adopted using the LQM and CIEH S4ULs. Prior to assessment a PAH profile is generated for all samples analysed for PAH using the LQM PAH Profiling Tool v1.3, however, negligible PAHs have been identified as part of the testing and therefore no graphical output has been produced.

5.2 Assessment of Soil Analysis Results

Thirteen samples, as detailed in section 3.3.2, were scheduled for analysis from the proposed redevelopment area. Eight of these samples were scheduled to provide a basis for characterising the soils to outline the potential impacts on human health and any environmental receptors from any contamination found.

The screening process for on-site human health receptors show that none of GACs, representative of minimal risk for a residential with home grown produce setting were exceeded.

Two made ground soil samples were submitted for an asbestos screen and identification. No asbestos has been identified.

5.3 Human Health Mitigation

Concentrations of potential contaminants recorded at the site did not exceed the GACs for a residential without homegrown produce end use indicating an acceptably low risk and therefore significant mitigation measures are unlikely to be required as part of the development.

Should any obvious evidence of unexpected contamination be encountered during the redevelopment works it should be reported to HSP so that an inspection can be made and appropriate sampling and assessment work be carried out.

Appropriate health and safety precautions should be adopted during any excavation works to avoid exposure to potentially contaminated soils and dust. Consideration should be given to the HSE document HSG 66 'Protection of workers and the General Public during Redevelopment of Contaminated Land'.

The approval of the local Environmental Health Officer should be sought with respect to the soil contamination assessment and mitigation proposals.

5.4 Water Supply

The environmental testing for the site has been compared to the following document in order to assess the most appropriate pipe material that should be used upon the site for mains water supply:

> 'Guidance for the selection of water supply pipes to be used in Brownfield sites – UK Water Industry Research – Ref: 10/WM/03/21.'

Based on the chemical analysis report it is considered that specialist materials are unlikely to be required for water supply pipes at the site due to the low levels of contaminants recorded. However, confirmation of supply pipes should be sought from utility providers.

5.5 Ground Gas Risk Assessment

Ground gas concentrations have been monitored on four occasions in order to obtain an indication of the ground gas regime at the site. At the time of the first visit WS01 and WS06 were found to be flooded and it was not possible to monitor these locations.

The results of monitoring indicates that methane has not been recorded above the limits of detection. Carbon dioxide has been recorded at concentrations up to a maximum 5.3% by

volume in air within WS03. Steady state gas flows above the limit of detection have not been recorded during the monitoring visits. From the results above, the maximum steady state gas screening value for the site is 0.0053 l/hr.

The results have been assessed in line with the guidance provided in BS8485:2015 + A1:2019 Code of Practice of the design of protective measures for methane and carbon dioxide ground gas for new buildings (Ref 15) and CIRIA Document C665 'Assessing Risks Posed by Hazardous Ground Gases to Buildings' (Ref 16). Comparison of these results with Table 2 of BS8485:2015 + A1:2019 indicates that the site falls into a Characteristic Situation 2 and therefore ground gas protection measures are likely to be required as part of the development.

The gas protection score should be determined based on Characteristic Situation 2 and Building Type as outline in Tables 3 and 4 of BS8484: 2015 +A1:2019 (Ref 15). The gas protection score will determine the combination of elements required from Table 5 to 7 inclusive (Ref 15) to achieve the minimum recommended gas protection. Detailed design, implementation, verification and reporting should be undertaken in accordance with the guidance (Ref 15).

Slightly depleted oxygen levels were observed during the monitoring visits. This poses a risk of asphyxiation to construction and maintenance workers in confined spaces such as excavations or manhole chambers. A confined spaces risk assessment should be carried out prior to working in any buried structures or excavations.

The gas monitoring certificates to date are presented in Appendix VI.

5.6 Waste Classification

The results of the chemical testing have been assessed using web-based software for classifying hazardous waste, using HazWasteOnline™. From the samples tested, all are classified as non hazardous.

Please note the above classification provides an indication of how the material should be classified for removal off site; however this should be used at your approved waste handler's discretion and further testing may be required prior to any offsite disposal.

The results are included in Appendix VII.

5.7 Conceptual Site Model

Based on the findings of this site investigation and Phase I Report, a conceptual site model has been produced and is presented in the table below.

Table 7 - Updated Conceptual Site Model.

Source	Pathway	Receptor	Consequence	Probability	Risk	Comments
On site **S1:** Historical and Contemporary land use: Agricultural land and Educational Facility. **S2:** Hughes Member (South Wales Upper Coal Measures Formation.) **Off Site (within 250m)** **S3:** Historic landfill recorded approximately 40m north east of the site boundary.	**P1:** Human uptake pathways	**R1:** End Users **R2:** Construction and maintenance workers	Mild	Low Likelihood	Low	Concentrations of contaminants of concern are below the relevant GACs within the near surface deposits sampled across the site and therefore the risk is considered to be LOW.
	P2: Horizontal and vertical migration of contaminants through potentially permeable soils and rocks. **P3:** Migration of contaminants along preferential pathways (man- made). **P4:** Overland flow / Surface runoff.	**R1:** End Users **R2:** Construction and maintenance workers **R3:** Controlled Water: Groundwater & Surface Water	Mild	Low Likelihood	Low	The superficial geology is classified as a Secondary Undifferentiated Aquifer and bedrock geology is classified as a Secondary A Aquifer. Concentrations of contaminants of concern are below the relevant GACs within the near surface deposits sampled across the site, in addition to this given the lack of plausible sources / pathways and the low vulnerability of the underlying aquifers, the risk to controlled water is considered to be LOW.
	P5: Vertical and lateral migration of ground gases and/or vapour.	**R1:** End Users	Mild	Low Likelihood	Low	The gas monitoring indicates that the site falls into a Characteristic Situation 2 and therefore ground gas protection measures will be required as part of the development. At this stage the risk is considered to be LOW.
	P2: Horizontal and vertical migration of contaminants through potentially permeable soils and rocks. **P3:** Migration of contaminants along preferential pathways (man- made). **P4:** Surface runoff.	**R4:** Property, services and substructures **R5:** Adjacent School buildings and Residential Properties	Mild	Low Likelihood	Low	For any concrete likely to be in contact with made ground materials, the chemical analysis indicates it is considered appropriate to adopt a basic Design Sulphate Class of DS-1 together with and Aggressive Chemical Environment for Concrete (ACEC) of AC-1s. Based on the chemical analysis report it is considered that specialist materials are unlikely to be required for water supply pipes at the site due to the low levels of contaminants recorded, however, confirmation should be sought from utility providers. The risk is considered to be LOW. ** In regard to P5, please see the comments in the row above
	P6: Root uptake.	**R6:** Proposed Flora and fauna	Mild	Low Likelihood	Low	Landscaping is likely to form part of the development. The risk of uptake to proposed flora and fauna is considered LOW.

6. References

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17. Department for Environment, Food and Rural Affairs and Contaminated Land: Applications in Real Environments (CL:AIRE) (December 2013). SP1010: Appendix E Provisional C4SLs for Benzo(a)pyrene as a surrogate marker for PAHs.
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20. HMSO, Water Supply (Water Quality) Regulations, 2002

Appendix I


^i ^STV=o` q=Jl ä~åÇëÅ~éÉ=mä~å
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Appendix II

Borehole Log

Borehole No. **CP01**

Sheet 1 of 1

Project Name:	Llanilltud Faerdref Primary School	Project No. C3103	Co-ords:	308678.00 - 186028.00	Hole Type CP
Location:	Pontypridd		Level:	104.20	Scale 1:50
Client:	Fulcrum Infrastructure Management.		Dates:	04/05/2021 -	Logged By DRILLER

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.10 - 0.30	B		0.10	104.10		Brown sandy silty TOPSOIL with occasional rootlets.
		0.30 - 1.00	B		0.30	103.90		Firm brown sandy CLAY. [Diamicton Till].
								Firm brown grey gravelly CLAY. [Diamicton Till].
		1.00		N=11 (1,2/2,3,2,4)				
		1.20 - 1.65	B					
		2.00		N=17 (2,3/4,4,4,5)				
		2.00 - 2.45	B					
		3.00		50 (6,8/50 for 235mm)				
		3.00 - 3.45	B					
					3.70	100.50		Very weak grey weathered MUDSTONE. [Hughes Member].
		4.00		50 (12,13/50 for 235mm)				
		4.00 - 4.45	B					
		5.00		50 (50,/50 for 235mm)	5.00	99.20		Weak grey MUDSTONE. [Hughes Member].
					5.30	98.90		End of borehole at 5.30 m

Remarks

Borehole terminated at 5.30m bgl due to refusal.

Borehole Log

Borehole No. **R01**

Sheet 1 of 4

Project Name:	Llanilltud Faerdref Primary School	Project No. C3103	Co-ords:	308657.00 - 186000.00	Hole Type RO
Location:	Pontypridd		Level:	104.69	Scale 1:50
Client:	Fulcrum Infrastructure Management.		Dates:	04/05/2021 -	Logged By Dom Price

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
					0.20	104.49		Grass over brown sandy silty TOPSOIL with many rootlets and occasional sandstone fine to coarse angular to subrounded gravel.
								Brown sandy CLAY with occasional fine to coarse angular to subrounded sandstone gravels. [Diamicton Till].
	▼							
					4.90	99.79		Grey MUDSTONE with occasional sandstone bands. [Hughes Member].
								Continued on next sheet

1 2 3 4 5 6 7 8 9 10

Remarks

Borehole terminated at 30.50m. Groundwater strikes at 4.10m and 14.00m begl.

AGS

Borehole Log

Borehole No. **R01**

Sheet 2 of 4

Project Name:	Llanilltud Faerdref Primary School	Project No. C3103	Co-ords:	308657.00 - 186000.00	Hole Type RO
Location:	Pontypridd		Level:	104.69	Scale 1:50
Client:	Fulcrum Infrastructure Management.		Dates:	04/05/2021 -	Logged By Dom Price

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
					13.50	91.19		Grey SANDSTONE with trace Coal and Mudstone bands. [Hughes Member].

Continued on next sheet

Remarks

Borehole terminated at 30.50m. Groundwater strikes at 4.10m and 14.00m begl.

Borehole Log

Borehole No. **R01**

Sheet 3 of 4

Project Name:	Llanilltud Faerdref Primary School	Project No. C3103	Co-ords:	308657.00 - 186000.00	Hole Type RO
Location:	Pontypridd		Level:	104.69	Scale 1:50
Client:	Fulcrum Infrastructure Management.		Dates:	04/05/2021 -	Logged By Dom Price

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				

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Continued on next sheet

Remarks

Borehole terminated at 30.50m. Groundwater strikes at 4.10m and 14.00m begl.

Borehole Log

Borehole No. **R01**

Sheet 4 of 4

Project Name:	Llanilltud Faerdref Primary School	Project No. C3103	Co-ords:	308657.00 - 186000.00	Hole Type RO
Location:	Pontypridd		Level:	104.69	Scale 1:50
Client:	Fulcrum Infrastructure Management.		Dates:	04/05/2021 -	Logged By Dom Price

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
					30.50	74.19		End of borehole at 30.50 m

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Remarks

Borehole terminated at 30.50m. Groundwater strikes at 4.10m and 14.00m begl.

AGS

Borehole Log

Borehole No. **R02**

Sheet 1 of 4

Project Name:	Llanilltud Faerdref Primary School	Project No. C3103	Co-ords:	308649.00 - 186019.00	Hole Type RO
Location:	Pontypridd		Level:	104.61	Scale 1:50
Client:	Fulcrum Infrastructure Management.		Dates:	04/05/2021 -	Logged By Dom Price

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
					0.15	104.46		Brown sandy silty TOPSOIL with many rootlets
								Brown sandy CLAY with occasional fine to coarse angular to subrounded sandstone cobbles and gravels. [Diamicton Till].
					1.70	102.91		Grey sandy CLAY with occasional fine to coarse angular to subrounded sandstone cobbles and gravels. [Diamicton Till].
					2.70	101.91		Grey weathered MUDSTONE. [Hughes Member].
					5.10	99.51		Grey MUDSTONE. [Hughes Member].
								Continued on next sheet

1 2 3 4 5 6 7 8 9 10

Remarks

Borehole terminated at 30.50m. Groundwater strike at 13.50m begl.

AGS

Borehole Log

Borehole No. **R02**

Sheet 2 of 4

Project Name:	Llanilltud Faerdref Primary School	Project No. C3103	Co-ords:	308649.00 - 186019.00	Hole Type RO
Location:	Pontypridd		Level:	104.61	Scale 1:50
Client:	Fulcrum Infrastructure Management.		Dates:	04/05/2021 -	Logged By Dom Price

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
	▼				13.70	90.91		Grey SANDSTONE with Mudstone bands. [Hughes Member].
					16.80	87.81		Black COAL. [Hughes Member].
					17.10	87.51		Grey SANDSTONE and MUDSTONE bands with trace Coal. [Hughes Member].
								Continued on next sheet

11 12 13 14 15 16 17 18 19 20

Remarks

Borehole terminated at 30.50m. Groundwater strike at 13.50m begl.

Borehole Log

Borehole No. **R02**

Sheet 3 of 4

Project Name:	Llanilltud Faerdref Primary School	Project No. C3103	Co-ords:	308649.00 - 186019.00	Hole Type RO
Location:	Pontypridd		Level:	104.61	Scale 1:50
Client:	Fulcrum Infrastructure Management.		Dates:	04/05/2021 -	Logged By Dom Price

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				

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Continued on next sheet

Remarks

Borehole terminated at 30.50m. Groundwater strike at 13.50m begl.

Borehole Log

Borehole No. **R02**

Sheet 4 of 4

Project Name:	Llanilltud Faerdref Primary School	Project No. C3103	Co-ords:	308649.00 - 186019.00	Hole Type RO
Location:	Pontypridd		Level:	104.61	Scale 1:50
Client:	Fulcrum Infrastructure Management.		Dates:	04/05/2021 -	Logged By Dom Price

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
					30.50	74.11		End of borehole at 30.50 m

Remarks

Borehole terminated at 30.50m. Groundwater strike at 13.50m begl.

Borehole Log

Borehole No. **R03**

Sheet 1 of 4

Project Name:	Llanilltud Faerdref Primary School	Project No. C3103	Co-ords:	308692.00 - 186046.00	Hole Type RO
Location:	Pontypridd		Level:	103.89	Scale 1:50
Client:	Fulcrum Infrastructure Management.		Dates:	04/05/2021 -	Logged By Dom Price

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
					0.20	103.69		Brown sandy silty TOPSOIL with many rootlets.
								Brown sandy silty CLAY with fine to coarse angular to subrounded sandstone gravels and cobbles. [Diamicton Till].
					2.30	101.59		Grey MUDSTONE with occasional Sandstone bands. [Hughes Member].
								Continued on next sheet

1 2 3 4 5 6 7 8 9 10

Remarks

Borehole terminated at 30.50m. Groundwater strike at 13.50m begl.

AGS

Borehole Log

Borehole No. **R03**

Sheet 2 of 4

Project Name:	Llanilltud Faerdref Primary School	Project No. C3103	Co-ords:	308692.00 - 186046.00	Hole Type RO
Location:	Pontypridd		Level:	103.89	Scale 1:50
Client:	Fulcrum Infrastructure Management.		Dates:	04/05/2021 -	Logged By Dom Price

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
	▼				15.10	88.79		Black COAL. [Hughes Member].
					15.40	88.49		Grey MUDSTONE with Sandstone bands. [Hughes Member].
					17.40	86.49		Black COAL. [Hughes Member].
					17.50	86.39		Grey MUDSTONE. [Hughes Member].
					17.70	86.19		Grey SANDSTONE. [Hughes Member].
								Continued on next sheet

11 12 13 14 15 16 17 18 19 20

Remarks

Borehole terminated at 30.50m. Groundwater strike at 13.50m begl.

Borehole Log

Borehole No. **R03**

Sheet 3 of 4

Project Name:	Llanilltud Faerdref Primary School	Project No. C3103	Co-ords:	308692.00 - 186046.00	Hole Type RO
Location:	Pontypridd		Level:	103.89	Scale 1:50
Client:	Fulcrum Infrastructure Management.		Dates:	04/05/2021 -	Logged By Dom Price

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				

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Continued on next sheet

Remarks

Borehole terminated at 30.50m. Groundwater strike at 13.50m begl.

AGS

Borehole Log

Borehole No. **R03**

Sheet 4 of 4

Project Name:	Llanilltud Faerdref Primary School	Project No. C3103	Co-ords:	308692.00 - 186046.00	Hole Type RO
Location:	Pontypridd		Level:	103.89	Scale 1:50
Client:	Fulcrum Infrastructure Management.		Dates:	04/05/2021 -	Logged By Dom Price

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
					30.50	73.39		End of borehole at 30.50 m

31 32 33 34 35 36 37 38 39 40

Remarks

Borehole terminated at 30.50m. Groundwater strike at 13.50m begl.

AGS

Rotary Core Log

Borehole No. **R04**

Sheet 1 of 4

Project Name:	Llanilltud Faerdref Primary School	Project No. C3103	Co-ords:	308686.00 - 186004.00	Hole Type RO
Location:	Pontypridd		Level:	104.23	Scale 1:50
Client:	Fulcrum Infrastructure Management.		Dates:	04/05/2021 -	Logged By Dom Price

Well	Water Strikes	Depth (m)	Type / FI	Coring TCR	Coring SCR	Coring RQD	Depth (m)	Level (m)	Legend	Stratum Description
							0.20	104.03		Brown sandy silty TOPSOIL with occasional rootlets.
										Brown sandy silty CLAY fine to coarse sandstone gravel. [Diamicton Till].
							3.50	100.73		Grey sandy CLAY with fine to coarse angular to subrounded gravels and cobbles. [Diamicton Till].
							5.40	98.83		Grey weathered fractured MUDSTONE. [Hughes Member].
										Continued on next sheet

1 2 3 4 5 6 7 8 9 10

Remarks

Borehole terminated at 30.50m. Groundwater strike at 13.00m begl.

AGS

Borehole Log

Borehole No. **R04**

Sheet 1 of 4

Project Name:	Llanilltud Faerdref Primary School	Project No. C3103	Co-ords:	308686.00 - 186004.00	Hole Type RO
Location:	Pontypridd		Level:	104.23	Scale 1:50
Client:	Fulcrum Infrastructure Management.		Dates:	04/05/2021 -	Logged By Dom Price

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
					0.20	104.03		Brown sandy silty TOPSOIL with occasional rootlets.
								Brown sandy silty CLAY fine to coarse sandstone gravel. [Diamicton Till].
					3.50	100.73		Grey sandy CLAY with fine to coarse angular to subrounded gravels and cobbles. [Diamicton Till].
					5.40	98.83		Grey weathered fractured MUDSTONE. [Hughes Member].
								Continued on next sheet

1 2 3 4 5 6 7 8 9 10

Remarks

Borehole terminated at 30.50m. Groundwater strike at 13.00m begl.

Borehole Log

Borehole No. **R04**

Sheet 2 of 4

Project Name:	Llanilltud Faerdref Primary School	Project No. C3103	Co-ords:	308686.00 - 186004.00	Hole Type RO
Location:	Pontypridd		Level:	104.23	Scale 1:50
Client:	Fulcrum Infrastructure Management.		Dates:	04/05/2021 -	Logged By Dom Price

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
	▼				13.20	91.03		Grey SANDSTONE with occasional Mudstone bands and trace Coal. {Hughes Member].

Continued on next sheet

Remarks

Borehole terminated at 30.50m. Groundwater strike at 13.00m begl.

Borehole Log

Borehole No. **R04**

Sheet 3 of 4

Project Name:	Llanilltud Faerdref Primary School	Project No. C3103	Co-ords:	308686.00 - 186004.00	Hole Type RO
Location:	Pontypridd		Level:	104.23	Scale 1:50
Client:	Fulcrum Infrastructure Management.		Dates:	04/05/2021 -	Logged By Dom Price

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				

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Continued on next sheet

Remarks

Borehole terminated at 30.50m. Groundwater strike at 13.00m begl.

Borehole Log

Borehole No. **R04**

Sheet 4 of 4

Project Name:	Llanilltud Faerdref Primary School	Project No. C3103	Co-ords:	308686.00 - 186004.00	Hole Type RO
Location:	Pontypridd		Level:	104.23	Scale 1:50
Client:	Fulcrum Infrastructure Management.		Dates:	04/05/2021 -	Logged By Dom Price

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
					30.50	73.73		End of borehole at 30.50 m

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Remarks

Borehole terminated at 30.50m. Groundwater strike at 13.00m begl.

Borehole Log

Borehole No. **R05**

Sheet 1 of 4

Project Name:	Llanilltud Faerdref Primary School	Project No. C3103	Co-ords:	308692.00 - 186017.00	Hole Type RO
Location:	Pontypridd		Level:	104.39	Scale 1:50
Client:	Fulcrum Infrastructure Management.		Dates:	04/05/2021 -	Logged By Dom Price

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
					0.20	104.19		Brown sandy silty TOPSOIL with occasional rootlets.
								Brown sandy silty CLAY fine to coarse sandstone gravels and cobbles. [Diamicton Till].
					3.20	101.19		Grey CLAY with fine to coarse gravels of weathered Mudstone. [Diamicton Till].
					4.30	100.09		Grey MUDSTONE. [Hughes Member].
								Continued on next sheet

1 2 3 4 5 6 7 8 9 10

Remarks

Borehole terminated at 30.50m.. Groundwater strike at 9.90m begl.

AGS

Borehole Log

Borehole No. **R05**

Sheet 2 of 4

Project Name:	Llanilltud Faerdref Primary School	Project No. C3103	Co-ords:	308692.00 - 186017.00	Hole Type RO
Location:	Pontypridd		Level:	104.39	Scale 1:50
Client:	Fulcrum Infrastructure Management.		Dates:	04/05/2021 -	Logged By Dom Price

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
					11.40	92.99		Grey SANDSTONE with occasional Mudstone bands. [Hughes Member].
					14.20	90.19		Dark grey MUDSTONE with occasional Coal bands. [Hughes Member].
					15.40	88.99		Grey SANDSTONE with Mudstone bands and trace Coal. [Hughes Member].
								Continued on next sheet

11 12 13 14 15 16 17 18 19 20

Remarks

Borehole terminated at 30.50m.. Groundwater strike at 9.90m begl.

Borehole Log

Borehole No. **R05**

Sheet 3 of 4

Project Name:	Llanilltud Faerdref Primary School	Project No. C3103	Co-ords:	308692.00 - 186017.00	Hole Type RO
Location:	Pontypridd		Level:	104.39	Scale 1:50
Client:	Fulcrum Infrastructure Management.		Dates:	04/05/2021 -	Logged By Dom Price

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				

21
22
23
24
25
26
27
28
29
30

Continued on next sheet

Remarks

Borehole terminated at 30.50m..

Groundwater strike at 9.90m begl.

Borehole Log

Borehole No. **R05**

Sheet 4 of 4

Project Name:	Llanilltud Faerdref Primary School	Project No. C3103	Co-ords:	308692.00 - 186017.00	Hole Type RO
Location:	Pontypridd		Level:	104.39	Scale 1:50
Client:	Fulcrum Infrastructure Management.		Dates:	04/05/2021 -	Logged By Dom Price

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
					30.50	73.89		End of borehole at 30.50 m

31 32 33 34 35 36 37 38 39 40

Remarks

Borehole terminated at 30.50m.. Groundwater strike at 9.90m begl.

AGS

Borehole Log

Borehole No. **WS01**

Sheet 1 of 1

Project Name:	Llanilltud Faerdref Primary School	Project No. C3103	Co-ords:	308667.00 - 185992.00	Hole Type WS
Location:	Pontypridd		Level:	104.50	Scale 1:50
Client:	Fulcrum Infrastructure Management.		Dates:	21/04/2021 -	Logged By H Brown

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.15	TJ		0.20	104.30		Dark brown slightly sandy slightly gravelly clayey TOPSOIL.
		0.30	TJ					Firm brown grey mottled sandy gravelly CLAY. Gravel is fine to coarse angular of mudstone. [Diamicton Till].
		0.80	B					
		1.00		N=16 (2,4/5,4,3,4)				
		1.00 - 1.45	D		1.30	103.20		Stiff grey mottled brown slightly sandy gravelly CLAY. Gravel is fine to coarse angular of mudstone. [Diamicton Till].
		1.50	B					
		1.80		N=50 (25 for 55mm/50 for 245mm)				
		1.80 - 2.20	D		2.25	102.25		End of borehole at 2.25 m

Remarks

Borehole was terminated at 2.25m begl due to refusal.

Soil was recorded as damp at 1.50m begl.

Borehole Log

Borehole No. **WS02**

Sheet 1 of 1

Project Name:	Llanilltud Faerdref Primary School	Project No. C3103	Co-ords:	308658.00 - 186011.00	Hole Type WS
Location:	Pontypridd		Level:	104.63	Scale 1:50
Client:	Fulcrum Infrastructure Management.		Dates:	21/04/2021 -	Logged By H Brown

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.10	TJ		0.15	104.48		MADE GROUND - Dark brown slightly sandy slightly gravelly clayey topsoil.
		0.40	TJ					Stiff brown mottled grey with black spots sandy gravelly CLAY. Gravel is fine to coarse sub-angular to angular of mixed lithologies and coal fragments. [Diamicton Till].
		0.60	B					
		0.95	TJ		0.90	103.73		Stiff grey yellowish brown mottled brown slightly sandy gravelly CLAY. [Diamicton Till].
		1.00		N=26 (2,5/4,7,7,8)				
		1.00 - 1.45	D					
		1.10	B					
		2.00		N=33 (3,4/5,8,9,11)	2.05	102.58		Very stiff grey gravelly slightly sandy CLAY. [Diamicton Till].
		2.00 - 2.45	D					
		2.20	B					
		2.80		50 (7,6/50 for 200mm)	2.80	101.83		Extremely weak mudstone recovered as gravelly CLAY. [Hughes Member].
		2.80 - 3.25	D					
					3.25	101.38		End of borehole at 3.25 m

Remarks

Borehole was terminated at 3.25m begl due to refusal

Borehole Log

Borehole No. **WS03**

Sheet 1 of 1

Project Name:	Llanilltud Faerdref Primary School	Project No. C3103	Co-ords:	308655.00 - 186032.00	Hole Type WS
Location:	Pontypridd		Level:	104.61	Scale 1:50
Client:	Fulcrum Infrastructure Management.		Dates:	21/04/2021 -	Logged By H Brown

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.20	TJ		0.15	104.46		MADE GROUND - Dark brown slightly sandy slightly gravelly clayey topsoil.
		0.50	TJ					Stiff brown mottled grey with black spots sandy gravelly CLAY. Gravel is fine to coarse sub-angular to angular of mixed lithologies and coal fragments. [Diamicton Till].
		0.90	B					
		1.00		N=22 (3,4/6,5,5,6)				
		1.00 - 1.45	D					
		1.50	B		1.40	103.21		Stiff grey yellowish brown mottled brown slightly sandy gravelly CLAY. [Diamicton Till].
		2.00		N=36 (6,8/6,11,9,10)				
		2.00 - 2.45	D					
		2.85	B		2.80	101.81		Very stiff dark grey gravelly slightly sandy CLAY. [Diamicton Till].
		3.00		N=50 (5,8/50 for 290mm)				
		3.00 - 3.45	D		3.25	101.36		Extremely weak mudstone recovered as gravelly CLAY. [Hughes Member].
					3.45	101.16		End of borehole at 3.45 m

Remarks

Borehole was terminated at 3.45m begl due to refusal.

Soil was recorded as damp at 1.60m begl.

Borehole Log

Borehole No. **WS04**

Sheet 1 of 1

Project Name:	Llanilltud Faerdref Primary School	Project No. C3103	Co-ords:	308675.00 - 186040.00	Hole Type WS
Location:	Pontypridd		Level:	104.12	Scale 1:50
Client:	Fulcrum Infrastructure Management.		Dates:	21/04/2021 -	Logged By H Brown

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.20	TJ		0.25	103.87		MADE GROUND - Dark brown slightly sandy slightly gravelly clayey topsoil.
		0.55	TJ					Stiff brown mottled grey with black spots sandy gravelly CLAY. Gravel is fine to coarse sub-angular to angular of mixed lithologies and coal fragments.
		0.60	B					0.25m-0.35m Very sandy gravelly CLAY band. [Diamicton Till].
		1.00		N=13 (2,3/3,4,3,3)				
		1.00 - 1.45	D		1.20	102.92		Stiff grey mottled yellow brown slightly sandy gravelly CLAY. Gravel is fine to coarse sub angular of mixed lithologies including coal fragments. [Diamicton Till].
		1.20	B					
		1.90	B					
		2.00		N=36 (3,5/7,9,12,8)				
		2.00 - 2.45	D					
					2.80	101.32		Stiff grey gravelly slightly sandy CLAY. [Diamicton Till].
		3.00		N=30 (8,10/5,8,10,7)				
		3.00 - 3.45	D					
		3.50		50 (25 for 15mm/50 for 20mm)				
		3.80	B					
		4.00	D		3.90	100.22		Extremely weak MUDSTONE. [Hughes Member].
					4.15	99.97		End of borehole at 4.15 m

Remarks

Borehole was terminated at 4.15m begl due to refusal.

Soil was recorded as damp at 2.20m begl.

Borehole Log

Borehole No. **WS05**

Sheet 1 of 1

Project Name:	Llanilltud Faerdref Primary School	Project No. C3103	Co-ords:	308678.00 - 186043.00	Hole Type WS
Location:	Pontypridd		Level:	103.80	Scale 1:50
Client:	Fulcrum Infrastructure Management.		Dates:	21/04/2021 -	Logged By H Brown

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.10	TJ		0.15	103.65		MADE GROUND - Dark brown slightly sandy slightly gravelly clay topsoil.
		0.30	TJ					MADE GROUND - Brown grey mottled yellowish brown sandy gravelly clay. Gravel is fine to coarse sub-rounded to angular of mixed lithologies including coal.
		0.85	TJ		0.80	103.00		
		0.90	B					Stiff brown mottled grey sandy gravelly CLAY. Gravel is fine to coarse angular of mudstone. [Diamicton Till]
		1.00		N=21 (4,4/5,7,5,4)				
		1.00 - 1.45	D					
		1.20	B					
	▼				1.70	102.10		Stiff grey mottled yellow brown slightly sandy gravelly CLAY. Gravel is fine to coarse sub angular of mixed lithologies including coal fragments. [Diamicton Till]
		1.90	B					
		2.00		N=17 (3,4/2,4,4,7)				
		2.00 - 2.45	D					
		2.70	B					
		3.00		N=50 (4,7/50 for 235mm)	3.10	100.70		Extremely weak MUDSTONE. [Hughes Member].
		3.00 - 3.45	D					
					3.45	100.35		End of borehole at 3.45 m

Remarks

Borehole was terminated at 3.45m begl due to refusal.

Groundwater was encountered at 1.80m begl.

Borehole Log

Borehole No. **WS06**

Sheet 1 of 1

Project Name:	Llanilltud Faerdref Primary School	Project No. C3103	Co-ords:	308687.00 - 186030.00	Hole Type WS
Location:	Pontypridd		Level:	103.70	Scale 1:50
Client:	Fulcrum Infrastructure Management.		Dates:	21/04/2021 -	Logged By H Brown

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.20	TJ		0.15	103.55		MADE GROUND - Dark brown slightly sandy slightly gravelly clay topsoil.
		0.50	TJ					MADE GROUND - Brown grey mottled yellowish brown sandy gravelly clay. Gravel is fine to coarse sub-rounded to angular of mixed lithologies including coal.
		0.60	B		0.90	102.80		Stiff brown mottled grey sandy gravelly CLAY. Gravel is fine to coarse angular of mudstone. [Diamicton Till].
		0.95	TJ					
		1.00		N=17 (5,2/4,4,5,4)				
		1.00 - 1.45	D					
		1.10	B		1.50	102.20		Stiff grey mottled yellow brown slightly sandy gravelly CLAY. Gravel is fine to coarse sub angular of mixed lithologies including coal fragments. [Diamicton Till]
		2.00		N=21 (2,4/5,6,5,5)				
		2.00 - 2.45	D		2.10	101.60		Firm grey mottled black very sand gravelly CLAY. Gravel is fine to coarse sub-angular to angular of mixed lithologies including coal fragments. [Diamicton Till] No recovery 2.60m-3.00m
		2.40	B					
		3.00		N=34 (6,5/8,7,10,9)	3.00	100.70		Very stiff grey mottled brown slightly sandy gravelly CLAY. Gravel is fine to coarse sub-angular to angular of mudstone. [Hughes Member].
		3.00 - 3.45	D		3.45	100.25		End of borehole at 3.45 m

Remarks

Borehole was terminated at 3.45m begl due to borehole collapse. No recovery between 2.60m and 3.00m begl.
Groundwater was encountered at 2.50m begl.

Borehole Log

Borehole No. **WS07**

Sheet 1 of 1

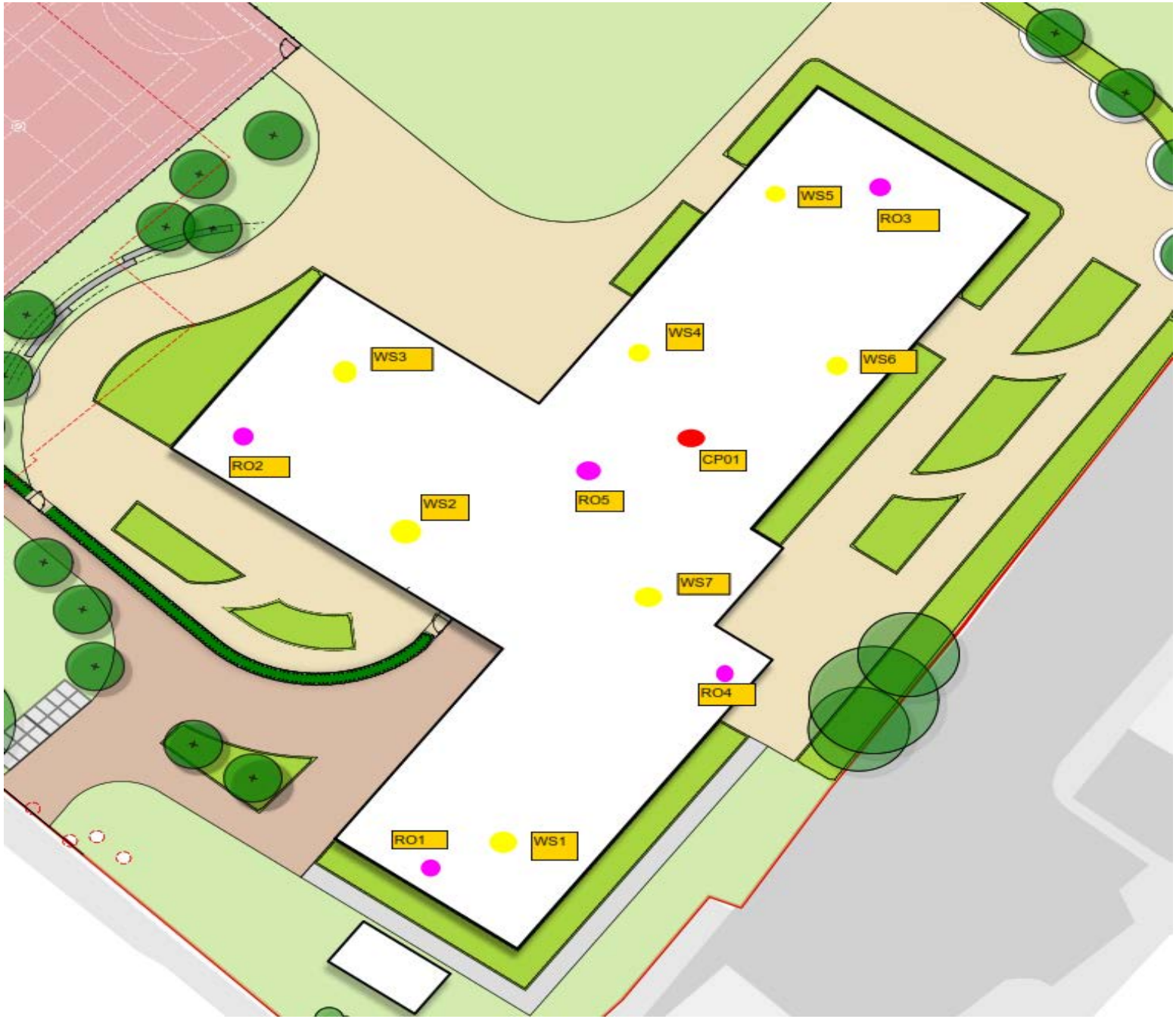
Project Name:	Llanilltud Faerdref Primary School	Project No. C3103	Co-ords:	308669.00 - 186017.00	Hole Type WS
Location:	Pontypridd		Level:	103.99	Scale 1:50
Client:	Fulcrum Infrastructure Management.		Dates:	21/04/2021 -	Logged By H Brown

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.10	TJ		0.15	103.84		MADE GROUND - Dark brown slightly sandy slightly gravelly clay topsoil.
		0.60	TJ					Brown mottled grey sandy gravelly CLAY. Gravel is fine to coarse angular of mudstone. [Diamicton Till]
		0.70	B					
		1.00		N=32 (4,6/5,11,10,6)				
		1.00 - 1.45	D					
		1.30	B					
					1.40	102.59		Stiff grey mottled yellow brown slightly sandy gravelly CLAY. Gravel is fine to coarse sub angular of mixed lithologies including coal fragments. [Diamicton Till].
		2.00		N=30 (3,6/8,7,7,8)	1.90	102.09		Stiff grey mottled black very sand gravelly CLAY. Gravel is fine to coarse sub-angular to angular of mixed lithologies including coal fragments. [Diamicton Till].
		2.00 - 2.45	D					
		2.20	B					
		2.80		N=50 (7,9/50 for 275mm)				
		2.80 - 3.25	D					
					3.25	100.74		End of borehole at 3.25 m

Remarks

Borehole was terminated at 3.25m due to refusal.

Appendix III



DO NOT SCALE

NOTES:

hsp consulting
Lawrence House, Meadowbank Way,
Eastwood, Nottingham, NG16 3SB
Tel: 01773 535 555 Fax: 0870 600 6091
www.hspconsulting.com

CLIENT:
Fulcrum Infrastructure Management

PROJECT:
Llanilltud Faerdref Primary School

TITLE:
Site Investigation Location Plan

SCALE@SIZE :	ISSUE:
NTS	FINAL
DESIGN/DRAWN:	DATE:
HB	May 2021
PROJECT No:	DRAWING No:
C3103	002

Appendix IV

eurofins | Chemtest
Eurofins Chemtest Ltd
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.com

Final Report

Report No.:	21-13333-1
Initial Date of Issue:	04-May-2021
Client	HSP Consulting Engineers Limited
Client Address:	Lawrence House Meadowbank Way Eastwood Nottinghamshire NG16 3SB
Contact(s):	Hallam Brown Laura Jones
Project	C3103 Llanilltud Faedref Primary School

Quotation No.:		**Date Received:**	23-Apr-2021
Order No.:	SC13672	**Date Instructed:**	27-Apr-2021
No. of Samples:	13		
Turnaround (Wkdays):	5	**Results Due:**	04-May-2021
Date Approved:	04-May-2021		

Approved By:

Details: Glynn Harvey, Technical Manager

Results - Soil

Project: C3103 Llanilltud Faedref Primary School

Client: HSP Consulting Engineers Limited		**Chemtest Job No.:**			21-13333	21-13333	21-13333	21-13333	21-13333	21-13333	21-13333	21-13333	21-13333
Quotation No.:		**Chemtest Sample ID.:**			1186023	1186024	1186028	1186030	1186032	1186036	1186038	1186044	1186046
Order No.: SC13672		Client Sample Ref.:			WS01	WS01	WS02	WS02	WS03	WS03	WS04	WS05	WS05
		Sample Location:			WS01	WS01	WS02	WS02	WS03	WS03	WS04	WS05	WS05
		Sample Type:			SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
		Top Depth (m):			0.3	1	0.95	2	0.2	3	0.55	0.3	1
		Bottom Depth (m):				1.45		2.45		3.45			1.45
		Date Sampled:			21-Apr-2021	21-Apr-2021	21-Apr-2021	21-Apr-2021	21-Apr-2021	21-Apr-2021	21-Apr-2021	21-Apr-2021	21-Apr-2021
		Asbestos Lab:										COVENTRY	
Determinand	**Accred.**	**SOP**	**Units**	**LOD**									
ACM Type	U	2192		N/A								-	
Asbestos Identification	U	2192		N/A								No Asbestos Detected	
ACM Detection Stage	U	2192		N/A								-	
Moisture	N	2030	%	0.020	10	9.0	13	8.4	12	8.6	13	17	9.4
pH	U	2010		4.0	6.4	6.1	6.6	6.1	7.8	7.7	6.8	7.3	6.4
Boron (Hot Water Soluble)	U	2120	mg/kg	0.40	< 0.40		< 0.40		< 0.40		< 0.40	< 0.40	
Sulphate (2:1 Water Soluble) as SO4	U	2120	g/l	0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Total Sulphur	U	2175	%	0.010		0.026		0.28		0.034			0.018
Sulphur (Elemental)	U	2180	mg/kg	1.0	5.1		< 1.0		< 1.0		< 1.0	< 1.0	
Cyanide (Free)	U	2300	mg/kg	0.50	< 0.50		< 0.50		< 0.50		< 0.50	< 0.50	
Cyanide (Total)	U	2300	mg/kg	0.50	< 0.50		< 0.50		< 0.50		< 0.50	< 0.50	
Sulphide (Easily Liberatable)	N	2325	mg/kg	0.50	< 0.50		< 0.50		< 0.50		0.53	0.57	
Sulphate (Acid Soluble)	U	2430	%	0.010		0.016		0.71		0.040			0.022
Arsenic	U	2450	mg/kg	1.0	6.9		2.1		9.1		5.9	8.6	
Cadmium	U	2450	mg/kg	0.10	< 0.10		< 0.10		< 0.10		< 0.10	0.10	
Chromium	U	2450	mg/kg	1.0	15		14		16		12	16	
Copper	U	2450	mg/kg	0.50	22		26		16		15	13	
Mercury	U	2450	mg/kg	0.10	< 0.10		< 0.10		< 0.10		< 0.10	< 0.10	
Nickel	U	2450	mg/kg	0.50	16		21		18		13	14	
Lead	U	2450	mg/kg	0.50	14		12		14		8.2	18	
Selenium	U	2450	mg/kg	0.20	0.25		0.22		0.39		0.24	0.91	
Zinc	U	2450	mg/kg	0.50	48		50		43		34	42	
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50		< 0.50		< 0.50		< 0.50	< 0.50	
Organic Matter	U	2625	%	0.40	0.86		0.72		1.9		0.47	2.9	
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0	< 1.0		< 1.0		< 1.0		< 1.0	< 1.0	
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0	< 1.0		< 1.0		< 1.0		< 1.0	< 1.0	
Aliphatic TPH >C8-C10	U	2680	mg/kg	1.0	< 1.0		< 1.0		< 1.0		< 1.0	< 1.0	
Aliphatic TPH >C10-C12	U	2680	mg/kg	1.0	< 1.0		< 1.0		< 1.0		< 1.0	< 1.0	
Aliphatic TPH >C12-C16	U	2680	mg/kg	1.0	< 1.0		< 1.0		< 1.0		< 1.0	< 1.0	
Aliphatic TPH >C16-C21	U	2680	mg/kg	1.0	< 1.0		< 1.0		< 1.0		< 1.0	< 1.0	
Aliphatic TPH >C21-C35	U	2680	mg/kg	1.0	< 1.0		< 1.0		< 1.0		< 1.0	< 1.0	
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0		< 1.0		< 1.0		< 1.0	< 1.0	
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0		< 5.0		< 5.0		< 5.0	< 5.0	
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0	< 1.0		< 1.0		< 1.0		< 1.0	< 1.0	
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0	< 1.0		< 1.0		< 1.0		< 1.0	< 1.0	

Results - Soil

Project: C3103 Llanilltud Faedref Primary School

Client: HSP Consulting Engineers Limited			**Chemtest Job No.:**		21-13333	21-13333	21-13333	21-13333	21-13333	21-13333	21-13333	21-13333	21-13333
Quotation No.:			**Chemtest Sample ID.:**		1186023	1186024	1186028	1186030	1186032	1186036	1186038	1186044	1186046
Order No.: SC13672			Client Sample Ref.:		WS01	WS01	WS02	WS02	WS03	WS03	WS04	WS05	WS05
			Sample Location:		WS01	WS01	WS02	WS02	WS03	WS03	WS04	WS05	WS05
			Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		0.3	1	0.95	2	0.2	3	0.55	0.3	1
			Bottom Depth (m):			1.45		2.45		3.45			1.45
			Date Sampled:		21-Apr-2021	21-Apr-2021	21-Apr-2021	21-Apr-2021	21-Apr-2021	21-Apr-2021	21-Apr-2021	21-Apr-2021	21-Apr-2021
			Asbestos Lab:									COVENTRY	
Determinand	**Accred.**	**SOP**	**Units**	**LOD**									
Aromatic TPH >C8-C10	U	2680	mg/kg	1.0	< 1.0		< 1.0		< 1.0		< 1.0	< 1.0	
Aromatic TPH >C10-C12	U	2680	mg/kg	1.0	< 1.0		< 1.0		< 1.0		< 1.0	< 1.0	
Aromatic TPH >C12-C16	U	2680	mg/kg	1.0	< 1.0		< 1.0		< 1.0		< 1.0	< 1.0	
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0	< 1.0		< 1.0		< 1.0		< 1.0	< 1.0	
Aromatic TPH >C21-C35	U	2680	mg/kg	1.0	< 1.0		< 1.0		< 1.0		< 1.0	< 1.0	
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0		< 1.0		< 1.0		< 1.0	< 1.0	
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0		< 5.0		< 5.0		< 5.0	< 5.0	
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	< 10		< 10		< 10		< 10	< 10	
Naphthalene	U	2700	mg/kg	0.10	< 0.10		< 0.10		< 0.10		< 0.10	< 0.10	
Acenaphthylene	U	2700	mg/kg	0.10	< 0.10		< 0.10		< 0.10		< 0.10	< 0.10	
Acenaphthene	U	2700	mg/kg	0.10	< 0.10		< 0.10		< 0.10		< 0.10	< 0.10	
Fluorene	U	2700	mg/kg	0.10	< 0.10		< 0.10		< 0.10		< 0.10	< 0.10	
Phenanthrene	U	2700	mg/kg	0.10	< 0.10		< 0.10		< 0.10		< 0.10	< 0.10	
Anthracene	U	2700	mg/kg	0.10	< 0.10		< 0.10		< 0.10		< 0.10	< 0.10	
Fluoranthene	U	2700	mg/kg	0.10	< 0.10		< 0.10		< 0.10		< 0.10	< 0.10	
Pyrene	U	2700	mg/kg	0.10	< 0.10		< 0.10		< 0.10		< 0.10	< 0.10	
Benzo[a]anthracene	U	2700	mg/kg	0.10	< 0.10		< 0.10		< 0.10		< 0.10	< 0.10	
Chrysene	U	2700	mg/kg	0.10	< 0.10		< 0.10		< 0.10		< 0.10	< 0.10	
Benzo[b]fluoranthene	U	2700	mg/kg	0.10	< 0.10		< 0.10		< 0.10		< 0.10	< 0.10	
Benzo[k]fluoranthene	U	2700	mg/kg	0.10	< 0.10		< 0.10		< 0.10		< 0.10	< 0.10	
Benzo[a]pyrene	U	2700	mg/kg	0.10	< 0.10		< 0.10		< 0.10		< 0.10	< 0.10	
Indeno(1,2,3-c,d)Pyrene	U	2700	mg/kg	0.10	< 0.10		< 0.10		< 0.10		< 0.10	< 0.10	
Dibenz(a,h)Anthracene	U	2700	mg/kg	0.10	< 0.10		< 0.10		< 0.10		< 0.10	< 0.10	
Benzo[g,h,i]perylene	U	2700	mg/kg	0.10	< 0.10		< 0.10		< 0.10		< 0.10	< 0.10	
Total Of 16 PAH's	U	2700	mg/kg	2.0	< 2.0		< 2.0		< 2.0		< 2.0	< 2.0	
Benzene	U	2760	µg/kg	1.0	< 1.0		< 1.0		< 1.0		< 1.0	< 1.0	
Toluene	U	2760	µg/kg	1.0	< 1.0		< 1.0		< 1.0		< 1.0	< 1.0	
Ethylbenzene	U	2760	µg/kg	1.0	< 1.0		< 1.0		< 1.0		< 1.0	< 1.0	
m & p-Xylene	U	2760	µg/kg	1.0	< 1.0		< 1.0		< 1.0		< 1.0	< 1.0	
o-Xylene	U	2760	µg/kg	1.0	< 1.0		< 1.0		< 1.0		< 1.0	< 1.0	
Methyl Tert-Butyl Ether	U	2760	µg/kg	1.0	< 1.0		< 1.0		< 1.0		< 1.0	< 1.0	
Total Phenols	U	2920	mg/kg	0.10	< 0.10		< 0.10		< 0.10		< 0.10	< 0.10	

Results - Soil

Project: C3103 Llanilltud Faedref Primary School

Client: HSP Consulting Engineers Limited		**Chemtest Job No.:**			21-13333	21-13333	21-13333	21-13333
Quotation No.:		**Chemtest Sample ID.:**			1186050	1186051	1186053	1186056
Order No.: SC13672		Client Sample Ref.:			WS06	WS06	WS06	WS07
		Sample Location:			WS06	WS06	WS06	WS07
		Sample Type:			SOIL	SOIL	SOIL	SOIL
		Top Depth (m):			0.5	0.95	2	0.6
		Bottom Depth (m):					2.45	
		Date Sampled:			21-Apr-2021	21-Apr-2021	21-Apr-2021	21-Apr-2021
		Asbestos Lab:			COVENTRY			
Determinand	**Accred.**	**SOP**	**Units**	**LOD**				
ACM Type	U	2192		N/A	-			
Asbestos Identification	U	2192		N/A	No Asbestos Detected			
ACM Detection Stage	U	2192		N/A	-			
Moisture	N	2030	%	0.020	19	10	10	12
pH	U	2010		4.0	6.9	6.3	6.6	5.9
Boron (Hot Water Soluble)	U	2120	mg/kg	0.40	< 0.40	< 0.40		< 0.40
Sulphate (2:1 Water Soluble) as SO4	U	2120	g/l	0.010	< 0.010	< 0.010	< 0.010	< 0.010
Total Sulphur	U	2175	%	0.010			0.011	
Sulphur (Elemental)	U	2180	mg/kg	1.0	< 1.0	< 1.0		< 1.0
Cyanide (Free)	U	2300	mg/kg	0.50	< 0.50	< 0.50		< 0.50
Cyanide (Total)	U	2300	mg/kg	0.50	< 0.50	< 0.50		< 0.50
Sulphide (Easily Liberatable)	N	2325	mg/kg	0.50	0.68	1.4		1.3
Sulphate (Acid Soluble)	U	2430	%	0.010			0.011	
Arsenic	U	2450	mg/kg	1.0	9.6	5.9		5.0
Cadmium	U	2450	mg/kg	0.10	< 0.10	< 0.10		< 0.10
Chromium	U	2450	mg/kg	1.0	19	13		12
Copper	U	2450	mg/kg	0.50	9.6	12		18
Mercury	U	2450	mg/kg	0.10	< 0.10	< 0.10		< 0.10
Nickel	U	2450	mg/kg	0.50	13	20		23
Lead	U	2450	mg/kg	0.50	15	8.7		11
Selenium	U	2450	mg/kg	0.20	1.2	0.27		0.27
Zinc	U	2450	mg/kg	0.50	36	57		61
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50		< 0.50
Organic Matter	U	2625	%	0.40	1.4	0.41		1.0
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0	< 1.0	< 1.0		< 1.0
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0	< 1.0	< 1.0		< 1.0
Aliphatic TPH >C8-C10	U	2680	mg/kg	1.0	< 1.0	< 1.0		< 1.0
Aliphatic TPH >C10-C12	U	2680	mg/kg	1.0	< 1.0	< 1.0		< 1.0
Aliphatic TPH >C12-C16	U	2680	mg/kg	1.0	< 1.0	< 1.0		< 1.0
Aliphatic TPH >C16-C21	U	2680	mg/kg	1.0	< 1.0	< 1.0		< 1.0
Aliphatic TPH >C21-C35	U	2680	mg/kg	1.0	< 1.0	< 1.0		< 1.0
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 1.0		< 1.0
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0	< 5.0		< 5.0
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0	< 1.0	< 1.0		< 1.0
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0	< 1.0	< 1.0		< 1.0

Results - Soil

Project: C3103 Llanilltud Faedref Primary School

Client: HSP Consulting Engineers Limited			**Chemtest Job No.:**		21-13333	21-13333	21-13333	21-13333
Quotation No.:			**Chemtest Sample ID.:**		1186050	1186051	1186053	1186056
Order No.: SC13672			Client Sample Ref.:		WS06	WS06	WS06	WS07
			Sample Location:		WS06	WS06	WS06	WS07
			Sample Type:		SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		0.5	0.95	2	0.6
			Bottom Depth (m):				2.45	
			Date Sampled:		21-Apr-2021	21-Apr-2021	21-Apr-2021	21-Apr-2021
			Asbestos Lab:		COVENTRY			
Determinand	**Accred.**	**SOP**	**Units**	**LOD**				
Aromatic TPH >C8-C10	U	2680	mg/kg	1.0	< 1.0	< 1.0		< 1.0
Aromatic TPH >C10-C12	U	2680	mg/kg	1.0	< 1.0	< 1.0		< 1.0
Aromatic TPH >C12-C16	U	2680	mg/kg	1.0	< 1.0	< 1.0		< 1.0
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0	< 1.0	< 1.0		< 1.0
Aromatic TPH >C21-C35	U	2680	mg/kg	1.0	< 1.0	< 1.0		< 1.0
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 1.0		< 1.0
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0	< 5.0		< 5.0
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	< 10	< 10		< 10
Naphthalene	U	2700	mg/kg	0.10	< 0.10	< 0.10		< 0.10
Acenaphthylene	U	2700	mg/kg	0.10	< 0.10	< 0.10		< 0.10
Acenaphthene	U	2700	mg/kg	0.10	< 0.10	< 0.10		< 0.10
Fluorene	U	2700	mg/kg	0.10	< 0.10	< 0.10		< 0.10
Phenanthrene	U	2700	mg/kg	0.10	< 0.10	< 0.10		< 0.10
Anthracene	U	2700	mg/kg	0.10	< 0.10	< 0.10		< 0.10
Fluoranthene	U	2700	mg/kg	0.10	< 0.10	< 0.10		< 0.10
Pyrene	U	2700	mg/kg	0.10	< 0.10	< 0.10		< 0.10
Benzo[a]anthracene	U	2700	mg/kg	0.10	< 0.10	< 0.10		< 0.10
Chrysene	U	2700	mg/kg	0.10	< 0.10	< 0.10		< 0.10
Benzo[b]fluoranthene	U	2700	mg/kg	0.10	< 0.10	< 0.10		< 0.10
Benzo[k]fluoranthene	U	2700	mg/kg	0.10	< 0.10	< 0.10		< 0.10
Benzo[a]pyrene	U	2700	mg/kg	0.10	< 0.10	< 0.10		< 0.10
Indeno(1,2,3-c,d)Pyrene	U	2700	mg/kg	0.10	< 0.10	< 0.10		< 0.10
Dibenz(a,h)Anthracene	U	2700	mg/kg	0.10	< 0.10	< 0.10		< 0.10
Benzo[g,h,i]perylene	U	2700	mg/kg	0.10	< 0.10	< 0.10		< 0.10
Total Of 16 PAH's	U	2700	mg/kg	2.0	< 2.0	< 2.0		< 2.0
Benzene	U	2760	µg/kg	1.0	< 1.0	< 1.0		< 1.0
Toluene	U	2760	µg/kg	1.0	< 1.0	< 1.0		< 1.0
Ethylbenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0		< 1.0
m & p-Xylene	U	2760	µg/kg	1.0	< 1.0	< 1.0		< 1.0
o-Xylene	U	2760	µg/kg	1.0	< 1.0	< 1.0		< 1.0
Methyl Tert-Butyl Ether	U	2760	µg/kg	1.0	< 1.0	< 1.0		< 1.0
Total Phenols	U	2920	mg/kg	0.10	< 0.10	< 0.10		< 0.10

Test Methods

SOP	Title	Parameters included	Method summary
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2175	Total Sulphur in Soils	Total Sulphur	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2180	Sulphur (Elemental) in Soils by HPLC	Sulphur	Dichloromethane extraction / HPLC with UV detection
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Allkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.
2325	Sulphide in Soils	Sulphide	Steam distillation with sulphuric acid / analysis by 'Aquakem 600' Discrete Analyser, using N,N–dimethyl-p-phenylenediamine.
2430	Total Sulphate in soils	Total Sulphate	Acid digestion followed by determination of sulphate in extract by ICP-OES.
2450	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2680	TPH A/A Split	Aliphatics: >C5–C6, >C6–C8,>C8–C10, >C10–C12, >C12–C16, >C16–C21, >C21–C35, >C35– C44Aromatics: >C5–C7, >C7–C8, >C8– C10, >C10–C12, >C12–C16, >C16– C21, >C21– C35, >C35– C44	Dichloromethane extraction / GCxGC FID detection
2700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Dichloromethane extraction / GC-FID (GC-FID detection is non-selective and can be subject to interference from co-eluting compounds)
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and TrimethylphenolsNote: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"
SOP	Standard operating procedure
LOD	Limit of detection

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 45 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.com

Appendix V

TEST REPORT
Determination Of Water Content
ISO 17892-1: 2014

Project No:	D21240	**Client:**	HSP Consulting
Project Name:	C3103 - Llanilltud Faerdref	**Address:**	Lawrence House, Meadowbank Way, Nottingham, NG16 3SB
ATS Sample No:	24316		

Site Ref / Hole ID:	WS01	**Depth (m):**	1.50
Sample No:	N/A	**Sample Type:**	Bulk
Sampling Certificate Received:	No	**Material Description:**	Grey slightly gravelly CLAY
Location in Works:	Unknown	**Material Source:**	N/A
Date Sampled:	Unknown	**Material Supplier:**	N/A
Sampled By:	Client	**Specification:**	BS 1377
Date Received:	06 May 2021	**Date Tested:**	10 May 2021

Test Results

Moisture Content (%)	11.9

Remarks:

QA Ref.	**Apex Testing Solutions** Sturmi Way, Village Farm Industrial Est, Pyle, Bridgend, CF33 6BZ Tel: 01656 746762 Fax: 01656 749096	7771	Approver *A Grogan*	Date 12/05/2021	Fig **MC**
BS1377-2 Rev. 2.0			A Grogan, Laboratory Manager		

TEST REPORT
LIQUID LIMIT, PLASTIC LIMIT & PLASTICITY INDEX
BS 1377:Part 2:1990: Clause 4.3/5.3/5.4

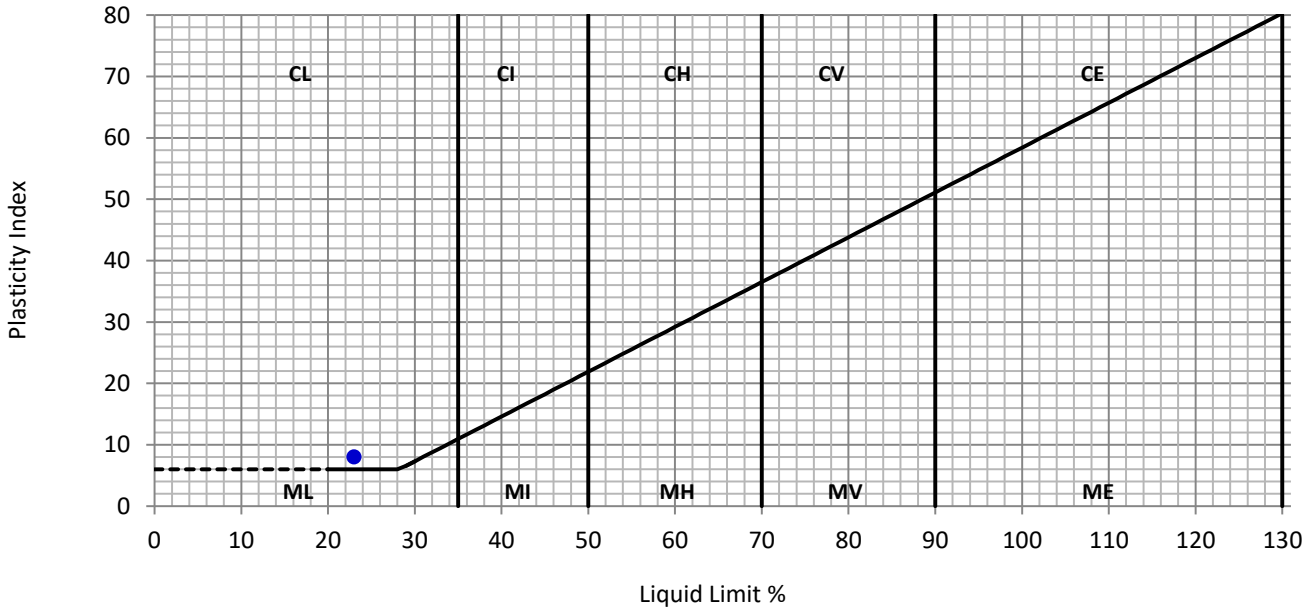
Project No:	D21240	**Client:**	HSP Consulting
Project Name:	C3103 - Llanilltud Faerdref	**Address:**	Lawrence House, Meadowbank Way, Nottingham, NG16 3SB
ATS Sample No:	24316		

Site Ref / Hole ID:	WS01	**Depth (m):**	1.50
Sample No:	N/A	**Sample Type:**	Bulk
Sampling Certificate Received:	No	**Material Description:**	Grey slightly gravelly CLAY
Location in Works:	Unknown	**Material Source:**	N/A
Date Sampled:	Unknown	**Material Supplier:**	N/A
Sampled By:	Client	**Specification:**	BS 1377
Date Received:	06 May 2021	**Date Tested:**	11 May 2021

Test Results

Liquid Limit	23	%
Plastic Limit	15	%
Plasticity Index	8	%

Preparation:	4.2.4 Sieved Specimen	
Proportion retained on 425µm sieve:	27	%



Remarks:

QA Ref.	**Apex Testing Solutions**	Approver	Date	Fig.
BS1377-2 Rev 3.0	Sturmi Way, Village Farm Industrial Est, Pyle, Bridgend, CF33 6BZ Tel: 01656 746762 Fax: 01656 749096	A. Grogan	12/05/2021	**ATT**
	7771	L Davis, Quality Manager		

TEST REPORT
Determination Of Water Content
ISO 17892-1: 2014

Project No:	D21240	**Client:**	HSP Consulting
Project Name:	C3103 - Llanilltud Faerdref	**Address:**	Lawrence House, Meadowbank Way, Nottingham, NG16 3SB
ATS Sample No:	24318		

Site Ref / Hole ID:	WS02	**Depth (m):**	2.20
Sample No:	N/A	**Sample Type:**	Bulk
Sampling Certificate Received:	No	**Material Description:**	Grey slightly gravelly CLAY
Location in Works:	Unknown	**Material Source:**	N/A
Date Sampled:	Unknown	**Material Supplier:**	N/A
Sampled By:	Client	**Specification:**	BS 1377
Date Received:	06 May 2021	**Date Tested:**	12 May 2021

Test Results

Moisture Content (%)	16.0

Remarks:

QA Ref.	**Apex Testing Solutions** Sturmi Way, Village Farm Industrial Est, Pyle, Bridgend, CF33 6BZ Tel: 01656 746762 Fax: 01656 749096	7771	Approver *A Grogan* A Grogan, Laboratory Manager	Date 13/05/2021	Fig **MC**
BS1377-2 Rev. 2.0					

TEST REPORT
LIQUID LIMIT, PLASTIC LIMIT & PLASTICITY INDEX
BS 1377:Part 2:1990: Clause 4.3/5.3/5.4

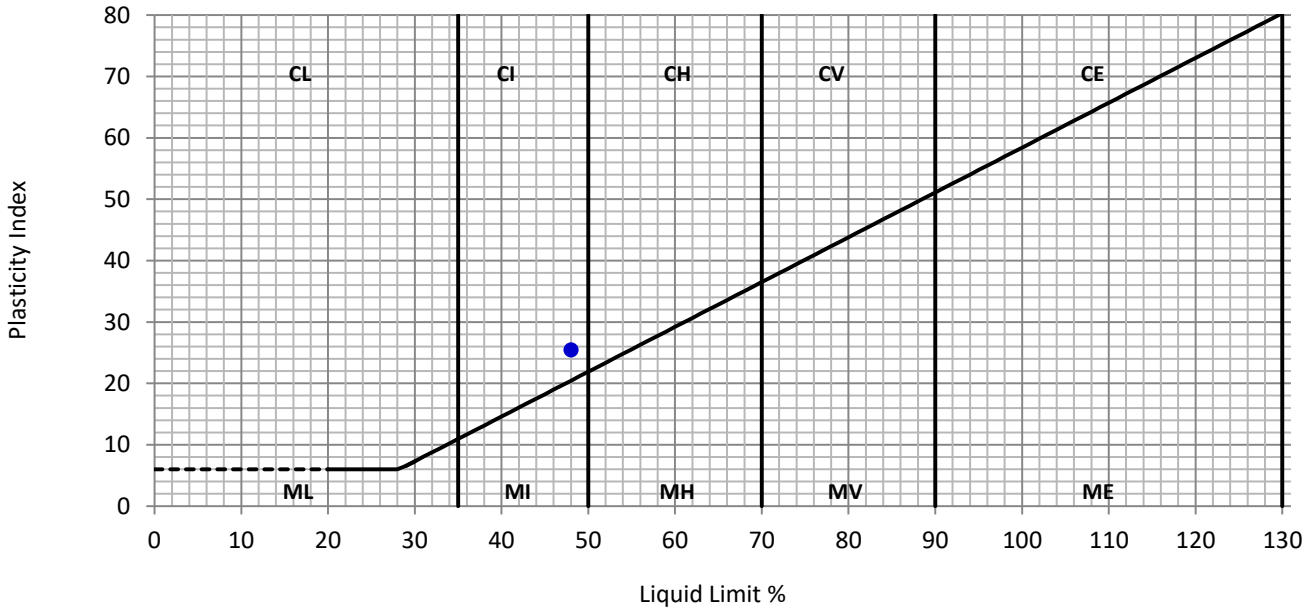
Project No:	D21240	**Client:**	HSP Consulting
Project Name:	C3103 - Llanilltud Faerdref	**Address:**	Lawrence House, Meadowbank Way, Nottingham, NG16 3SB
ATS Sample No:	24318		

Site Ref / Hole ID:	WS02	**Depth (m):**	2.20
Sample No:	N/A	**Sample Type:**	Bulk
Sampling Certificate Received:	No	**Material Description:**	Grey slightly gravelly CLAY
Location in Works:	Unknown	**Material Source:**	N/A
Date Sampled:	Unknown	**Material Supplier:**	N/A
Sampled By:	Client	**Specification:**	BS 1377
Date Received:	06 May 2021	**Date Tested:**	12 May 2021

Test Results

Liquid Limit	48	%
Plastic Limit	23	%
Plasticity Index	25	%

Preparation:	4.2.4 Sieved Specimen	
Proportion retained on 425µm sieve:	28	%



Remarks:

QA Ref.	**Apex Testing Solutions**	Approver	Date	Fig.
BS1377-2 Rev 3.0	Sturmi Way, Village Farm Industrial Est, Pyle, Bridgend, CF33 6BZ Tel: 01656 746762 Fax: 01656 749096 7771	A. Grogan	13/05/2021	**ATT**
		L Davis, Quality Manager		

TEST REPORT
Determination Of Water Content
ISO 17892-1: 2014

Project No:	D21240	**Client:**	HSP Consulting
Project Name:	C3103 - Llanilltud Faerdref	**Address:**	Lawrence House, Meadowbank Way, Nottingham, NG16 3SB
ATS Sample No:	24320		

Site Ref / Hole ID:	WS04	**Depth (m):**	1.90
Sample No:	N/A	**Sample Type:**	Bulk
Sampling Certificate Received:	No	**Material Description:**	Grey / brown slightly gravelly CLAY
Location in Works:	Unknown	**Material Source:**	N/A
Date Sampled:	Unknown	**Material Supplier:**	N/A
Sampled By:	Client	**Specification:**	BS 1377
Date Received:	06 May 2021	**Date Tested:**	10 May 2021

Test Results

Moisture Content (%)	16.4

Remarks:

QA Ref.	**Apex Testing Solutions** Sturmi Way, Village Farm Industrial Est, Pyle, Bridgend, CF33 6BZ Tel: 01656 746762 Fax: 01656 749096	7771	Approver *A Grogan* A Grogan, Laboratory Manager	Date 12/05/2021	Fig **MC**
BS1377-2 Rev. 2.0					

TEST REPORT
LIQUID LIMIT, PLASTIC LIMIT & PLASTICITY INDEX
BS 1377:Part 2:1990: Clause 4.3/5.3/5.4

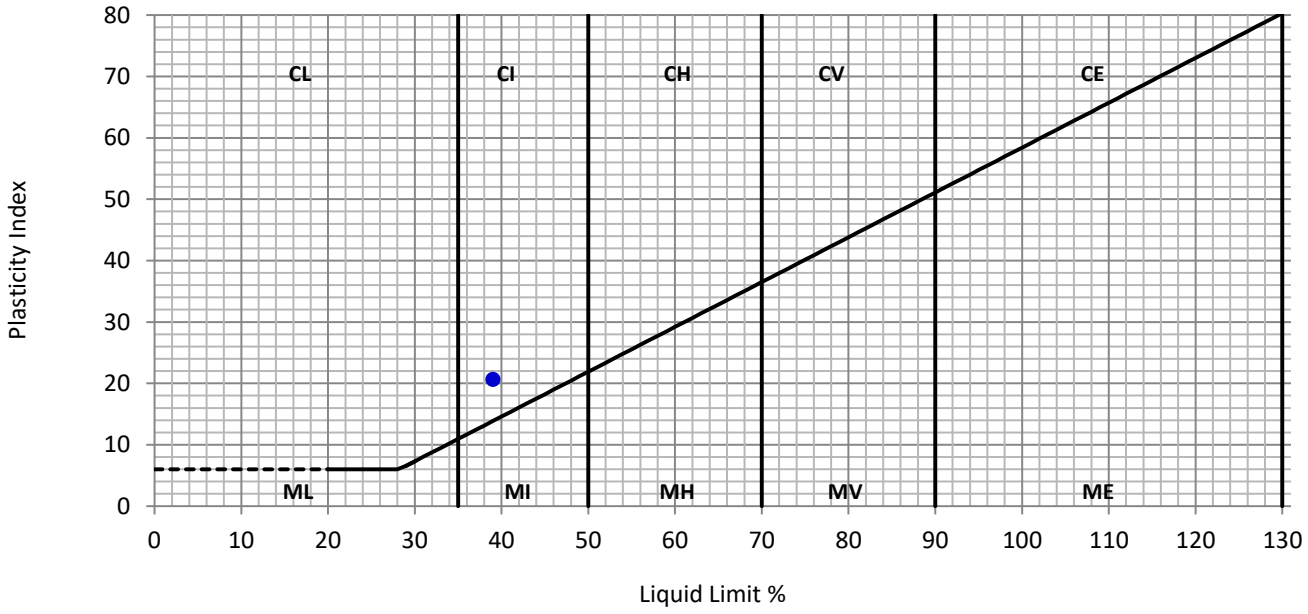
Project No:	D21240	**Client:**	HSP Consulting
Project Name:	C3103 - Llanilltud Faerdref	**Address:**	Lawrence House, Meadowbank Way, Nottingham, NG16 3SB
ATS Sample No:	24320		

Site Ref / Hole ID:	WS04	**Depth (m):**	1.90
Sample No:	N/A	**Sample Type:**	Bulk
Sampling Certificate Received:	No	**Material Description:**	Grey / brown slightly gravelly CLAY
Location in Works:	Unknown	**Material Source:**	N/A
Date Sampled:	Unknown	**Material Supplier:**	N/A
Sampled By:	Client	**Specification:**	BS 1377
Date Received:	06 May 2021	**Date Tested:**	11 May 2021

Test Results

Liquid Limit	39	%
Plastic Limit	18	%
Plasticity Index	21	%

Preparation:	4.2.4 Sieved Specimen	
Proportion retained on 425µm sieve:	18	%



Remarks:

QA Ref.	**Apex Testing Solutions**	Approver	Date	Fig.
BS1377-2 Rev 3.0	Sturmi Way, Village Farm Industrial Est, Pyle, Bridgend, CF33 6BZ Tel: 01656 746762 Fax: 01656 749096 7771	A. Grogan	12/05/2021	**ATT**
		L Davis, Quality Manager		

TEST REPORT
Determination Of Water Content
ISO 17892-1: 2014

Project No:	D21240	**Client:**	HSP Consulting
Project Name:	C3103 - Llanilltud Faerdref	**Address:**	Lawrence House, Meadowbank Way, Nottingham, NG16 3SB
ATS Sample No:	24321		

Site Ref / Hole ID:	WS05	**Depth (m):**	0.90
Sample No:	N/A	**Sample Type:**	Bulk
Sampling Certificate Received:	No	**Material Description:**	Light brown / grey slightly gravelly CLAY
Location in Works:	Unknown	**Material Source:**	N/A
Date Sampled:	Unknown	**Material Supplier:**	N/A
Sampled By:	Client	**Specification:**	BS 1377
Date Received:	06 May 2021	**Date Tested:**	12 May 2021

Test Results

Moisture Content (%)	18.7

Remarks:

TEST REPORT
LIQUID LIMIT, PLASTIC LIMIT & PLASTICITY INDEX
BS 1377:Part 2:1990: Clause 4.3/5.3/5.4

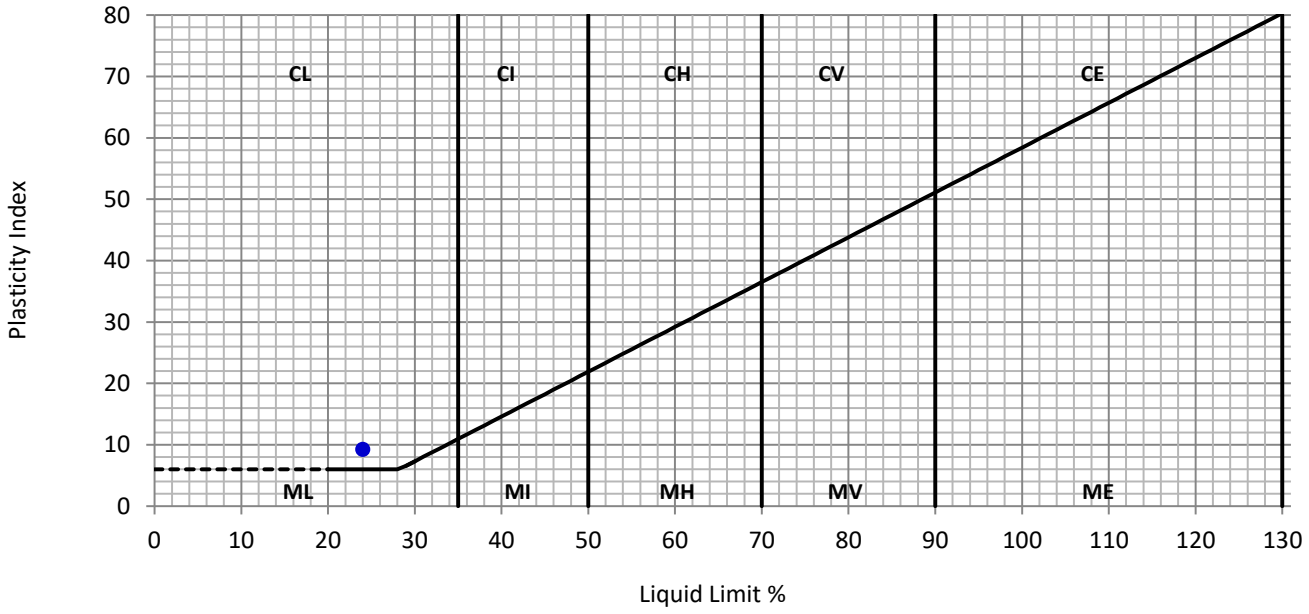
Project No:	D21240	**Client:**	HSP Consulting
Project Name:	C3103 - Llanilltud Faerdref	**Address:**	Lawrence House, Meadowbank Way, Nottingham, NG16 3SB
ATS Sample No:	24321		

Site Ref / Hole ID:	WS05	**Depth (m):**	0.90
Sample No:	N/A	**Sample Type:**	Bulk
Sampling Certificate Received:	No	**Material Description:**	Light brown / grey slightly gravelly CLAY
Location in Works:	Unknown	**Material Source:**	N/A
Date Sampled:	Unknown	**Material Supplier:**	N/A
Sampled By:	Client	**Specification:**	BS 1377
Date Received:	06 May 2021	**Date Tested:**	12 May 2021

Test Results

Liquid Limit	24	%
Plastic Limit	15	%
Plasticity Index	9	%

Preparation:	4.2.4 Sieved Specimen	
Proportion retained on 425µm sieve:	8	%



Remarks:

TEST REPORT
Determination Of Water Content
ISO 17892-1: 2014

Project No:	D21240	**Client:**	HSP Consulting
Project Name:	C3103 - Llanilltud Faerdref	**Address:**	Lawrence House, Meadowbank Way, Nottingham, NG16 3SB
ATS Sample No:	24322		

Site Ref / Hole ID:	WS06	**Depth (m):**	1.10
Sample No:	N/A	**Sample Type:**	Bulk
Sampling Certificate Received:	No	**Material Description:**	Brown slightly gravelly CLAY
Location in Works:	Unknown	**Material Source:**	N/A
Date Sampled:	Unknown	**Material Supplier:**	N/A
Sampled By:	Client	**Specification:**	BS 1377
Date Received:	06 May 2021	**Date Tested:**	10 May 2021

Test Results

Moisture Content (%)	11.6

Remarks:

TEST REPORT
LIQUID LIMIT, PLASTIC LIMIT & PLASTICITY INDEX
BS 1377:Part 2:1990: Clause 4.3/5.3/5.4

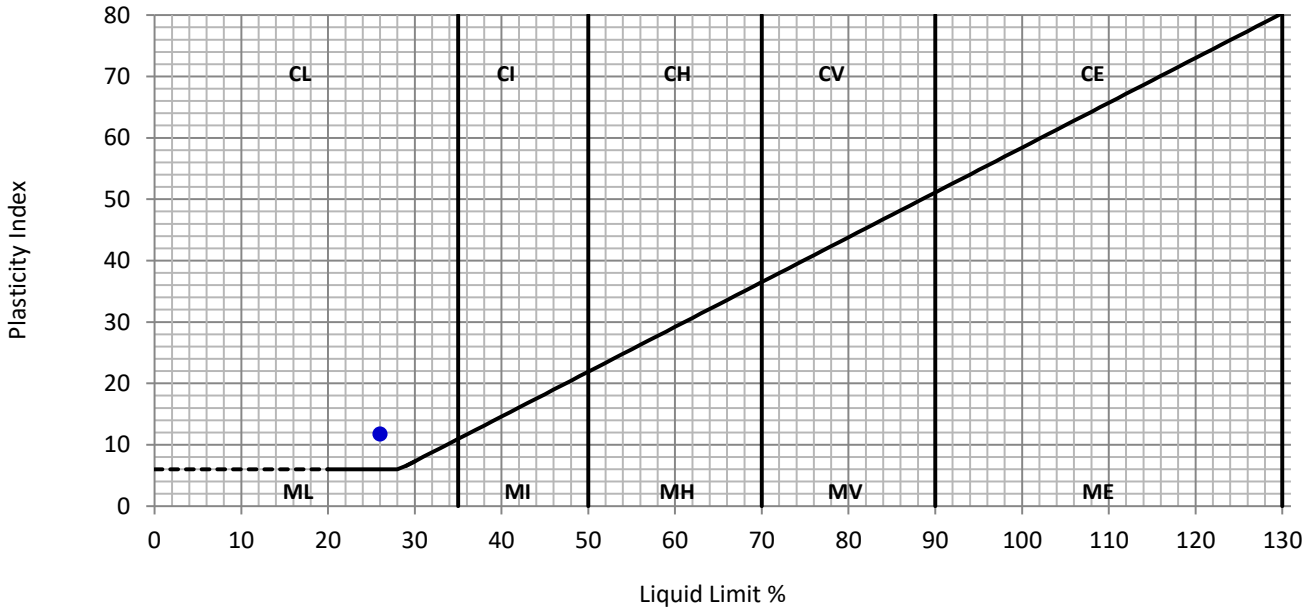
Project No:	D21240	**Client:**	HSP Consulting
Project Name:	C3103 - Llanilltud Faerdref	**Address:**	Lawrence House, Meadowbank Way, Nottingham, NG16 3SB
ATS Sample No:	24322		

Site Ref / Hole ID:	WS06	**Depth (m):**	1.10
Sample No:	N/A	**Sample Type:**	Bulk
Sampling Certificate Received:	No	**Material Description:**	Brown slightly gravelly CLAY
Location in Works:	Unknown	**Material Source:**	N/A
Date Sampled:	Unknown	**Material Supplier:**	N/A
Sampled By:	Client	**Specification:**	BS 1377
Date Received:	06 May 2021	**Date Tested:**	11 May 2021

Test Results

Liquid Limit	26	%
Plastic Limit	14	%
Plasticity Index	12	%

Preparation:	4.2.4 Sieved Specimen	
Proportion retained on 425µm sieve:	19	%



Remarks:

QA Ref.	**Apex Testing Solutions**	Approver	Date	Fig.
BS1377-2 Rev 3.0	Sturmi Way, Village Farm Industrial Est, Pyle, Bridgend, CF33 6BZ Tel: 01656 746762 Fax: 01656 749096	A. Grogan	12/05/2021	**ATT**
	7771	L Davis, Quality Manager		

TEST REPORT
Determination Of Water Content
ISO 17892-1: 2014

Project No:	D21240	**Client:**	HSP Consulting
Project Name:	C3103 - Llanilltud Faerdref	**Address:**	Lawrence House, Meadowbank Way, Nottingham, NG16 3SB
ATS Sample No:	24323		

Site Ref / Hole ID:	WS07	**Depth (m):**	2.20
Sample No:	N/A	**Sample Type:**	Bulk
Sampling Certificate Received:	No	**Material Description:**	Light brown / grey slightly gravelly CLAY
Location in Works:	Unknown	**Material Source:**	N/A
Date Sampled:	Unknown	**Material Supplier:**	N/A
Sampled By:	Client	**Specification:**	BS 1377
Date Received:	06 May 2021	**Date Tested:**	10 May 2021

Test Results

Moisture Content (%)	14.5

Remarks:

QA Ref.	**Apex Testing Solutions** Sturmi Way, Village Farm Industrial Est, Pyle, Bridgend, CF33 6BZ Tel: 01656 746762 Fax: 01656 749096	7771	Approver *A Grogan* A Grogan, Laboratory Manager	Date 12/05/2021	Fig **MC**
BS1377-2 Rev. 2.0					

TEST REPORT
LIQUID LIMIT, PLASTIC LIMIT & PLASTICITY INDEX
BS 1377:Part 2:1990: Clause 4.3/5.3/5.4

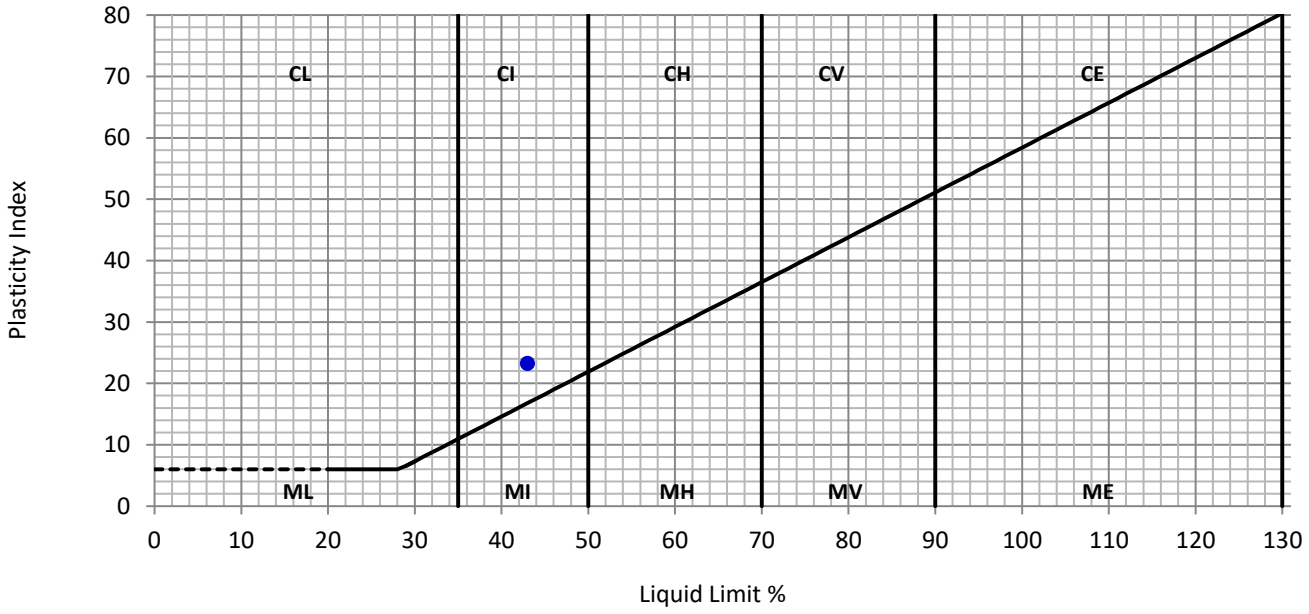
Project No:	D21240	**Client:**	HSP Consulting
Project Name:	C3103 - Llanilltud Faerdref	**Address:**	Lawrence House, Meadowbank Way, Nottingham, NG16 3SB
ATS Sample No:	24323		

Site Ref / Hole ID:	WS07	**Depth (m):**	2.20
Sample No:	N/A	**Sample Type:**	Bulk
Sampling Certificate Received:	No	**Material Description:**	Light brown / grey slightly gravelly CLAY
Location in Works:	Unknown	**Material Source:**	N/A
Date Sampled:	Unknown	**Material Supplier:**	N/A
Sampled By:	Client	**Specification:**	BS 1377
Date Received:	06 May 2021	**Date Tested:**	11 May 2021

Test Results

Liquid Limit	43	%
Plastic Limit	20	%
Plasticity Index	23	%

Preparation:	4.2.4 Sieved Specimen	
Proportion retained on 425µm sieve:	26	%



Remarks:

QA Ref. BS1377-2 Rev 3.0	**Apex Testing Solutions** Sturmi Way, Village Farm Industrial Est, Pyle, Bridgend, CF33 6BZ Tel: 01656 746762 Fax: 01656 749096	7771	Approver: A. Grogan L Davis, Quality Manager	Date: 12/05/2021	Fig. **ATT**

TEST REPORT
PARTICLE SIZE DISTRIBUTION ANALYSIS
BS 1377:Part 2:1990: Clause 9.2 / 9.4

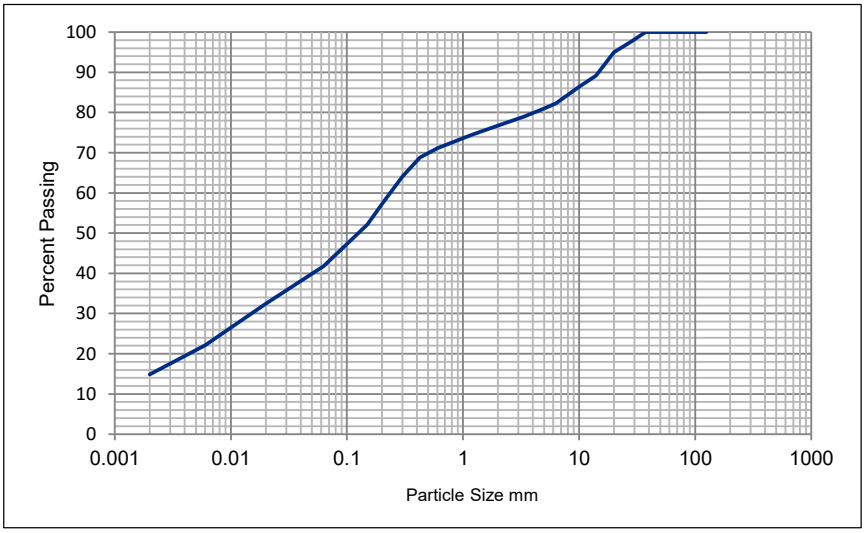
Project No:	D21240	**Client:**	HSP Consulting
Project Name:	C3103 - Llanilltud Faerdref	**Address:**	Lawrence House, Meadowbank Way, Nottingham, NG16 3SB
ATS Sample No:	24317		

Site Ref / Hole ID:	WS02	**Depth (m):**	0.60
Sample No:	N/A	**Sample Type:**	Bulk
Sampling Certificate Received:	No	**Material Description:**	Mottled brown / orange / grey clayey very gravelly very silty SAND
Location in Works:	Unknown	**Material Source:**	N/A
Date Sampled:	Unknown	**Material Supplier:**	N/A
Sampled By:	Client	**Specification:**	BS 1377
Date Received:	06 May 2021	**Date Tested:**	17 May 2021

Test Results

Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
50	100
37.5	100
28	98
20	95
14	89
10	86
6.3	82
5.0	81
3.35	79
2.00	77
1.18	74
0.600	71
0.425	69
0.300	64
0.212	58
0.150	52
0.063	42

Preparation / Pretreatment	
Sieve:	Pre dried
Pipette:	as BS1377



Sedimentation	
Particle Size mm	% Passing
0.0201	33
0.0060	22
0.0020	15

Sample Portions		Particle Density Mg/m3		Uniformity Coefficient
Cobbles / Boulders	0	2.65	assumed	D_{60} / D_{10}
Gravel	23			
Sand	35	**Dry mass of sample, kg**		
Silt	27	2.1		
Clay	15			

Remarks:

QA Ref.	Apex Testing Solutions	Approver	Date	Fig
BS1377 - 2 Rev 3.0	Sturmi Way, Village Farm Industrial Est, Pyle, Bridgend, CF33 6BZ Tel: 01656 746762 Fax: 01656 749096 7771	A Grogan	17/05/2021	**PSD**
		A Grogan, Laboratory Manager		

TEST REPORT
PARTICLE SIZE DISTRIBUTION ANALYSIS
BS 1377:Part 2:1990: Clause 9.2 / 9.4

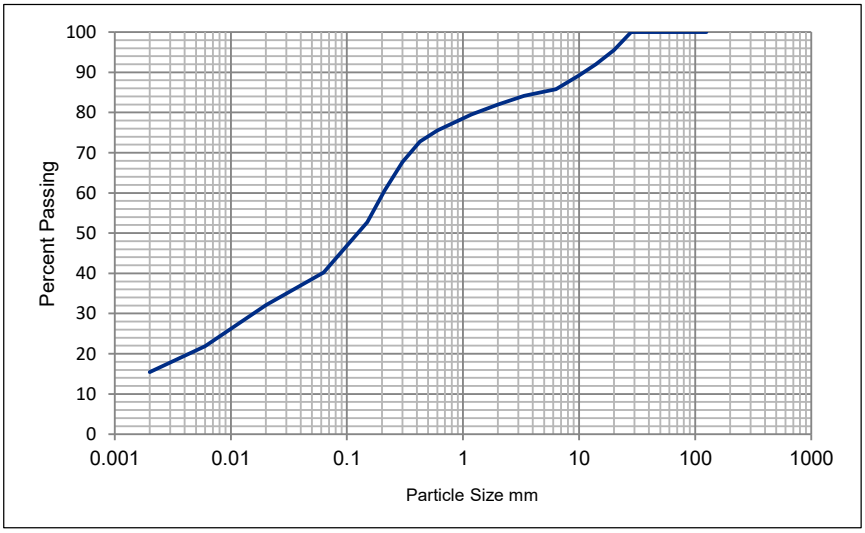
Project No:	D21240	**Client:**	HSP Consulting
Project Name:	C3103 - Llanilltud Faerdref	**Address:**	Lawrence House, Meadowbank Way, Nottingham, NG16 3SB
ATS Sample No:	24319		

Site Ref / Hole ID:	WS04	**Depth (m):**	0.60
Sample No:	N/A	**Sample Type:**	Bulk
Sampling Certificate Received:	No	**Material Description:**	Brown clayey gravelly very silty SAND
Location in Works:	Unknown	**Material Source:**	N/A
Date Sampled:	Unknown	**Material Supplier:**	N/A
Sampled By:	Client	**Specification:**	BS 1377
Date Received:	06 May 2021	**Date Tested:**	17 May 2021

Test Results

Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
50	100
37.5	100
28	100
20	96
14	92
10	89
6.3	86
5.0	85
3.35	84
2.00	82
1.18	80
0.600	76
0.425	73
0.300	68
0.212	61
0.150	53
0.063	40

Preparation / Pretreatment	
Sieve:	Pre dried
Pipette:	as BS1377



Sedimentation	
Particle Size mm	% Passing
0.0201	32
0.0060	22
0.0020	15

Sample Portions		Particle Density Mg/m3		Uniformity Coefficient
Cobbles / Boulders	0	2.65	assumed	D_{60} / D_{10}
Gravel	18			
Sand	42	Dry mass of sample, kg		
Silt	25	2.0		
Clay	15			

Remarks:

QA Ref.	Apex Testing Solutions	Approver	Date	Fig
BS1377 - 2 Rev 3.0	Sturmi Way, Village Farm Industrial Est, Pyle, Bridgend, CF33 6BZ Tel: 01656 746762 Fax: 01656 749096 7771	A Grogan	17/05/2021	PSD
		A Grogan, Laboratory Manager		

Appendix VI

Gas Testing Summary

Project Number	C3103
Project Name	Llanilltud Faerdref Primary School
Client	Fulcrum Infrastructure Management

Methane. (%LEL)						
WS01	F	<0.1	<0.1	<0.1		
WS03	<0.1	<0.1	<0.1	<0.1		
WS06	F	<0.1	<0.1	<0.1		

F = Flooded

Methane. (%vol)						
WS01	F	<0.1	<0.1	<0.1		
WS03	<0.1	<0.1	<0.1	<0.1		
WS06	F	<0.1	<0.1	<0.1		

Oxygen. (%vol)						
WS01	F	19.5	19.8	20		
WS03	18.8	16.3	16.3	15		
WS06	F	19.2	19.4	19.3		

Gas Testing Summary

Project Number	C3103
Project Name	Llanilltud Faerdref Primary School
Client	Fulcrum Infrastructure Management

Carbon Dioxide. (%vol)						
WS01	F	0.8	0.5	0.7		
WS03	0.9	1.1	5.1	5.3		
WS06	F	3.1	2.6	2.9		

Hydrogen Sulphide. (ppm)						
WS01	F	<1	<1	<1		
WS03	0	<1	<1	<1		
WS06	F	1	<1	<1		

Carbon Monoxide. (ppm)						
WS01	F	1	2	4		
WS03	0	<1	<1	<1		
WS06	F	<1	1	<1		

Gas Testing Summary

Project Number	C3103
Project Name	Llanilltud Faerdref Primary School
Client	Fulcrum Infrastructure Management

Gas Flow Rate (l/hr)						
WS01	F	0.1	0.1	0.1		
WS03	0.1	0.1	0.1	0.1		
WS06	F	0.1	0.1	0.1		

Atmospheric Pressure Range						
	996	996	1015	1003		

Max Methane Concentration (%vol)	0
Max Carbon Dioxide Concentration (%vol)	5.3
Max Carbon Monoxide Concentration (ppm)	1
Max Hydrogen Sulphide Concentration (ppm)	4
Max Flow Rate (l/hr)	0.1
Max Volatile Organic Carbon Concentration (ppm)	0
Methane Gas Screening Value	0
Carbon Dioxide Gas Screening Value	0.0053
Carbon Monoxide Gas Screening Value	0.001
Hydrogen Sulphide Gas Screening Value	0.004
Maximum Gas Screening Value	0.0053
Characteristic Situation 1	FAIL
Characteristic Situation 2	PASS
Characteristic Situation 3	PASS
Characteristic Situation 4	PASS
Characteristic Situation 5	PASS
Characteristic Situation 6	PASS
Hydrocarbon Vapour Barrier Required?	NO

Gas Monitoring Certificate

Project Number	C3103
Project Name	Llanilltud Faerdref Primary School
Client	Fulcrum Infrastructure Management

WS01

	Detection Limit								
	<0.1	<0.1	<0.1	<0.1	<1	<1	<0.1		
Time	Gas Flow Rate. (l/hr)	Methane. (%LEL)	Methane. (%vol)	Oxygen. (%vol)	Carbon Dioxide. (%vol)	Hydrogen Sulphide. (ppm)	Carbon Monoxide. (ppm)	Volatile Organic Carbon (ppm)	Depth of Installation. (mbgl)	Depth of Groundwater (mbgl)
00:00	F	F	F	F	F	F	F	F		
00:15										
00:30										
00:45										
01:00										
01:15										
01:30										
01:45										
02:00										
02:15										
02:30										
02:45										
03:00										
03:15										
03:30										
03:45										
04:00										
04:15										
04:30										
04:45										
05:00										
Steady	**F**	**F**	**F**	**F**	**F**	**F**	**F**	**F**	**#####**	**#####**
Peak	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.00**	**0.00**

Date	Notes:			
12.05.2021	Engineer	LAB	Barometric Pressure, mbar	996
			Pressure Trend	Steady
	Equipment	GFM430	Air Temp (˚C)	16

Gas Monitoring Certificate

Project Number	C3103
Project Name	Llanilltud Faerdref Primary School
Client	Fulcrum Infrastructure Management

WS03

		Detection Limit								
		<0.1	<0.1	<0.1	<0.1	<1	<1	<0.1		
Time	Gas Flow Rate. (l/hr)	Methane. (%LEL)	Methane. (%vol)	Oxygen. (%vol)	Carbon Dioxide. (%vol)	Hydrogen Sulphide. (ppm)	Carbon Monoxide. (ppm)	Volatile Organic Carbon (ppm)	Depth of Installation. (mbgl)	Depth of Groundwater (mbgl)
00:00	0.1	<0.1	<0.1	16.8	2.0	0	0		3.00	1.30
00:15	0.1	<0.1	<0.1	16.8	2.0	0	0			
00:30	0.1	<0.1	<0.1	17.6	1.5	0	0			
00:45	0.1	<0.1	<0.1	18.2	1.1	0	0			
01:00	0.1	<0.1	<0.1	18.2	1.1	0	0			
01:15	0.1	<0.1	<0.1	18.2	1.1	0	0			
01:30	0.1	<0.1	<0.1	18.8	0.9	0	0			
01:45	0.1	<0.1	<0.1	18.8	0.9	0	0			
02:00	0.1	<0.1	<0.1	18.8	0.9	0	0			
02:15	0.1	<0.1	<0.1	18.8	0.9	0	0			
02:30	0.1	<0.1	<0.1	18.8	0.9	0	0			
02:45	0.1	<0.1	<0.1	18.8	0.9	0	0			
03:00	0.1	<0.1	<0.1	18.8	0.9	0	0			
03:15	0.1	<0.1	<0.1	18.8	0.9	0	0			
03:30	0.1	<0.1	<0.1	18.8	0.9	0	0			
03:45	0.1	<0.1	<0.1	18.8	0.9	0	0			
04:00	0.1	<0.1	<0.1	18.8	0.9	0	0			
04:15	0.1	<0.1	<0.1	18.8	0.9	0	0			
04:30	0.1	<0.1	<0.1	18.8	0.9	0	0			
04:45	0.1	<0.1	<0.1	18.8	0.9	0	0			
05:00										
Steady	**0.1**	**<0.1**	**<0.1**	**18.8**	**0.9**	**0.0**	**0.0**	**#####**	**3.00**	**1.30**
Peak	**0.1**	**0.0**	**0.0**	**18.8**	**2.0**	**0.0**	**0.0**	**0.0**	**3.00**	**1.30**

Date	Notes:			
12.05.2021	Engineer	LAB	Barometric Pressure, mbar	996
			Pressure Trend	Steady
	Equipment	GFM430	Air Temp (˚C)	16

Gas Monitoring Certificate

Project Number	C3103
Project Name	Llanilltud Faerdref Primary School
Client	Fulcrum Infrastructure Management

WS06

		Detection Limit									
		<0.1	<0.1	<0.1	<0.1	<1	<1	<0.1			
Time	Gas Flow Rate. (l/hr)	Methane. (%LEL)	Methane. (%vol)	Oxygen. (%vol)	Carbon Dioxide. (%vol)	Hydrogen Sulphide. (ppm)	Carbon Monoxide. (ppm)	Volatile Organic Carbon (ppm	Depth of Installation. (mbgl)	Depth of Groundwater (mbgl
00:00	F	F	F	F	F	F	F	F		
00:15										
00:30										
00:45										
01:00										
01:15										
01:30										
01:45										
02:00										
02:15										
02:30										
02:45										
03:00										
03:15										
03:30										
03:45										
04:00										
04:15										
04:30										
04:45										
05:00										
Steady	**F**	**F**	**F**	**F**	**F**	**F**	**F**	**F**	#####	#####
Peak	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.00**	**0.00**

Date	Notes:			
12.05.2021	Engineer	LAB	Barometric Pressure, mbar	996
			Pressure Trend	Steady
	Equipment	GFM430	Air Temp (˚C)	16

Gas Monitoring Certificate

Project Number	C3103
Project Name	Llanilltud Faerdref Primary School
Client	Fulcrum Infrastructure Management

WS01

		Detection Limit								
		<0.1	<0.1	<0.1	<0.1	<1	<1	<0.1		
Time	Gas Flow Rate. (l/hr)	Methane. (%LEL)	Methane. (%vol)	Oxygen. (%vol)	Carbon Dioxide. (%vol)	Hydrogen Sulphide. (ppm)	Carbon Monoxide. (ppm)	Volatile Organic Carbon (ppm)	Depth of Installation. (mbgl)	Depth of Groundwater (mbgl)
00:00	0.1	<0.1	<0.1	21.0	0.1	<1	<1		2.00	0.60
00:15	0.1	<0.1	<0.1	20.5	0.1	<1	<1			
00:30	0.1	<0.1	<0.1	20.5	0.3	<1	1			
00:45	0.1	<0.1	<0.1	20.3	0.3	<1	1			
01:00	0.1	<0.1	<0.1	20.3	0.3	1	2			
01:15	0.1	<0.1	<0.1	20.1	0.8	1	5			
01:30	0.1	<0.1	<0.1	20.1	0.8	<1	1			
01:45	0.1	<0.1	<0.1	20.1	0.5	<1	1			
02:00	0.1	<0.1	<0.1	20.1	0.5	<1	10			
02:15	0.1	<0.1	<0.1	19.8	0.5	<1	8			
02:30	0.1	<0.1	<0.1	19.8	0.9	<1	4			
02:45	0.1	<0.1	<0.1	20.1	0.9	<1	1			
03:00	0.1	<0.1	<0.1	19.8	0.9	1	1			
03:15	0.1	<0.1	<0.1	19.8	0.9	<1	1			
03:30	0.1	<0.1	<0.1	19.8	0.8	<1	1			
03:45	0.1	<0.1	<0.1	19.8	0.8	<1	1			
04:00	0.1	<0.1	<0.1	19.5	0.8	<1	1			
04:15										
04:30										
04:45										
05:00										
Steady	**0.1**	**<0.1**	**<0.1**	**19.5**	**0.8**	**<1**	**1.0**	**#####**	**2.00**	**0.60**
Peak	**0.1**	**0.0**	**0.0**	**21.0**	**0.9**	**1.0**	**10.0**	**0.0**	**2.00**	**0.60**

Date	Notes:			
24.05.2021	Engineer	LAB	Barometric Pressure, mbar	996
			Pressure Trend	rising
	Equipment	GFM430	Air Temp (˚C)	19

Gas Monitoring Certificate

Project Number C3103
Project Name Llanilltud Faerdref Primary School
Client Fulcrum Infrastructure Management

WS03

		Detection Limit								
		<0.1	<0.1	<0.1	<0.1	<1	<1	<0.1		
Time	Gas Flow Rate. (l/hr)	Methane. (%LEL)	Methane. (%vol)	Oxygen. (%vol)	Carbon Dioxide. (%vol)	Hydrogen Sulphide. (ppm)	Carbon Monoxide. (ppm)	Volatile Organic Carbon (ppm	Depth of Installation. (mbgl)	Depth of Groundwater (mbgl)
00:00	0.1	<0.1	<0.1	19.8	0.1	<1	<1		3.00	1.10
00:15	0.1	<0.1	<0.1	17.2	1.1	<1	<1			
00:30	0.1	<0.1	<0.1	17.2	1.5	<1	<1			
00:45	0.1	<0.1	<0.1	17.0	2.3	<1	<1			
01:00	0.1	<0.1	<0.1	15.8	2.3	<1	<1			
01:15	0.1	<0.1	<0.1	15.8	2.3	<1	<1			
01:30	0.1	<0.1	<0.1	15.2	1.7	<1	<1			
01:45	0.1	<0.1	<0.1	14.1	1.7	<1	<1			
02:00	0.1	<0.1	<0.1	14.1	1.1	<1	<1			
02:15	0.1	<0.1	<0.1	14.1	1.1	<1	<1			
02:30	0.1	<0.1	<0.1	15.2	1.1	<1	<1			
02:45	0.1	<0.1	<0.1	15.2	1.1	<1	<1			
03:00	0.1	<0.1	<0.1	15.3	1.1	<1	<1			
03:15	0.1	<0.1	<0.1	15.8	1.1	<1	<1			
03:30	0.1	<0.1	<0.1	15.8	1.1	<1	<1			
03:45	0.1	<0.1	<0.1	15.9	1.1	<1	<1			
04:00	0.1	<0.1	<0.1	16.3	1.1	<1	<1			
04:15	0.1	<0.1	<0.1	16.3	1.1	<1	<1			
04:30	0.1	<0.1	<0.1	16.3	1.1	<1	<1			
04:45	0.1	<0.1	<0.1	16.3	1.1	<1	<1			
05:00	0.1	<0.1	<0.1	16.3	1.1	<1	<1			
Steady	**0.1**	**<0.1**	**<0.1**	**16.3**	**1.1**	**<1**	**<1**	**#####**	**3.00**	**1.10**
Peak	**0.1**	**0.0**	**0.0**	**19.8**	**2.3**	**0.0**	**0.0**	**0.0**	**3.00**	**1.10**

Date	Notes:			
24.05.2021	Engineer	LAB	Barometric Pressure, mbar	996
			Pressure Trend	rising
	Equipment	GFM430	Air Temp (˚C)	19

Gas Monitoring Certificate

Project Number	C3103
Project Name	Llanilltud Faerdref Primary School
Client	Fulcrum Infrastructure Management

WS06

		Detection Limit								
		<0.1	<0.1	<0.1	<0.1	<1	<1	<0.1		
Time	Gas Flow Rate. (l/hr)	Methane. (%LEL)	Methane. (%vol)	Oxygen. (%vol)	Carbon Dioxide. (%vol)	Hydrogen Sulphide. (ppm)	Carbon Monoxide. (ppm)	Volatile Organic Carbon (ppm	Depth of Installation. (mbgl)	Depth of Groundwater (mbgl
00:00	0.1	<0.1	<0.1	17.1	0.1	<1	<1		2.50	0.70
00:15	0.1	<0.1	<0.1	18.3	0.1	<1	1			
00:30	0.1	<0.1	<0.1	18.8	0.9	1	1			
00:45	0.1	<0.1	<0.1	19.2	1.1	1	3			
01:00	0.1	<0.1	<0.1	19.2	1.3	1	4			
01:15	0.1	<0.1	<0.1	19.2	1.3	<1	1			
01:30	0.1	<0.1	<0.1	19.2	2.5	<1	1			
01:45	0.1	<0.1	<0.1	19.2	2.8	<1	<1			
02:00	0.1	<0.1	<0.1	19.2	3.1	<1	<1			
02:15	0.1	<0.1	<0.1	19.2	3.3	1	<1			
02:30	0.1	<0.1	<0.1	19.2	3.3	1	2			
02:45	0.1	<0.1	<0.1	19.2	3.1	1	4			
03:00	0.1	<0.1	<0.1	19.2	3.1	<1	<1			
03:15	0.1	<0.1	<0.1	19.2	3.1	<1	<1			
03:30	0.1	<0.1	<0.1	19.2	3.1	<1	3			
03:45	0.1	<0.1	<0.1	19.2	3.1	1	3			
04:00	0.1	<0.1	<0.1	19.2	3.1	1	<1			
04:15										
04:30										
04:45										
05:00										
Steady	**0.1**	**<0.1**	**<0.1**	**19.2**	**3.1**	**1.0**	**<1**	**#####**	**2.50**	**0.70**
Peak	**0.1**	**0.0**	**0.0**	**19.2**	**3.3**	**1.0**	**4.0**	**0.0**	**2.50**	**0.70**

Date	Notes:			
24.05.2021	Engineer	LAB	Barometric Pressure, mbar	996
			Pressure Trend	rising
	Equipment	GFM430	Air Temp (˚C)	19

Gas Monitoring Certificate

Project Number	C3103
Project Name	Llanilltud Faerdref Primary School
Client	Fulcrum Infrastructure Management

WS01

		Detection Limit								
		<0.1	<0.1	<0.1	<0.1	<1	<1	<0.1		
Time	Gas Flow Rate. (l/hr)	Methane. (%LEL)	Methane. (%vol)	Oxygen. (%vol)	Carbon Dioxide. (%vol)	Hydrogen Sulphide. (ppm)	Carbon Monoxide. (ppm)	Volatile Organic Carbon (ppm)	Depth of Installation. (mbgl)	Depth of Groundwater (mbgl)
00:00	0.1	<0.1	<0.1	20.5	0.2	<1	2		1.95	0.84
00:15	0.1	<0.1	<0.1	20.5	0.2	<1	2			
00:30	0.1	<0.1	<0.1	20.3	0.2	<1	5			
00:45	0.1	<0.1	<0.1	20.3	0.2	<1	9			
01:00	0.1	<0.1	<0.1	20.3	0.2	<1	15			
01:15	0.1	<0.1	<0.1	20.1	0.2	<1	21			
01:30	0.1	<0.1	<0.1	20.1	0.3	<1	17			
01:45	0.1	<0.1	<0.1	20.0	0.3	<1	17			
02:00	0.1	<0.1	<0.1	20.1	0.5	<1	13			
02:15	0.1	<0.1	<0.1	20.0	0.5	<1	12			
02:30	0.1	<0.1	<0.1	20.0	0.5	<1	8			
02:45	0.1	<0.1	<0.1	20.0	0.5	<1	8			
03:00	0.1	<0.1	<0.1	19.8	0.5	<1	8			
03:15	0.1	<0.1	<0.1	19.8	0.5	<1	3			
03:30	0.1	<0.1	<0.1	19.8	0.5	<1	3			
03:45	0.1	<0.1	<0.1	19.8	0.5	<1	3			
04:00	0.1	<0.1	<0.1	19.8	0.5	<1	2			
04:15	0.1	<0.1	<0.1	19.8	0.5	<1	2			
04:30	0.1	<0.1	<0.1	19.8	0.5	<1	2			
04:45	0.1	<.1	<0.1	19.8	0.5	<1	2			
05:00	0.1	<0.1	<0.1	19.8	0.5	<1	2			
Steady	**0.1**	**<0.1**	**<0.1**	**19.8**	**0.5**	**<1**	**2.0**	**#####**	**1.95**	**0.84**
Peak	**0.1**	**0.0**	**0.0**	**20.5**	**0.5**	**0.0**	**21.0**	**0.0**	**1.95**	**0.84**

Date	Notes:			1015
08.06.2021	Engineer	LAB	Barometric Pressure, mbar	
			Pressure Trend	Steady
	Equipment	GFM430	Air Temp (˚C)	21

Gas Monitoring Certificate

Project Number	C3103
Project Name	Llanilltud Faerdref Primary School
Client	Fulcrum Infrastructure Management

WS03

		Detection Limit								
		<0.1	<0.1	<0.1	<0.1	<1	<1	<0.1		
Time	Gas Flow Rate. (l/hr)	Methane. (%LEL)	Methane. (%vol)	Oxygen. (%vol)	Carbon Dioxide. (%vol)	Hydrogen Sulphide. (ppm)	Carbon Monoxide. (ppm)	Volatile Organic Carbon (ppm	Depth of Installation. (mbgl)	Depth of Groundwater (mbgl)
00:00	0.1	<0.1	<0.1	20.1	0.5	<1	<1		2.90	1.20
00:15	0.1	<0.1	<0.1	20.1	0.5	<1	<1			
00:30	0.1	<0.1	<0.1	17.8	0.8	<1	<1			
00:45	0.1	<0.1	<0.1	17.8	0.9	<1	<1			
01:00	0.1	<0.1	<0.1	17.4	1.3	<1	<1			
01:15	0.1	<0.1	<0.1	17.1	1.3	<1	<1			
01:30	0.1	<0.1	<0.1	16.4	2.1	<1	<1			
01:45	0.1	<0.1	<0.1	16.4	2.8	<1	<1			
02:00	0.1	<0.1	<0.1	15.9	4.4	<1	<1			
02:15	0.1	<0.1	<0.1	15.9	4.9	<1	<1			
02:30	0.1	<0.1	<0.1	16.3	5.6	<1	<1			
02:45	0.1	<0.1	<0.1	16.3	5.1	<1	<1			
03:00	0.1	<0.1	<0.1	16.3	5.1	<1	<1			
03:15	0.1	<0.1	<0.1	16.3	5.1	<1	<1			
03:30	0.1	<0.1	<0.1	16.3	5.1	<1	<1			
03:45	0.1	<0.1	<0.1	16.3	5.1	<1	<1			
04:00	0.1	<0.1	<0.1	16.3	5.1	<1	<1			
04:15										
04:30										
04:45										
05:00										
Steady	**0.1**	**<0.1**	**<0.1**	**16.3**	**5.1**	**<1**	**<1**	**#####**	**2.90**	**1.20**
Peak	**0.1**	**0.0**	**0.0**	**20.1**	**5.6**	**0.0**	**0.0**	**0.0**	**2.90**	**1.20**

Date	Notes:			
08.06.2021	Engineer	LAB	Barometric Pressure, mbar	1015
			Pressure Trend	Steady
	Equipment	GFM430	Air Temp (˚C)	21

Gas Monitoring Certificate

Project Number	C3103
Project Name	Llanilltud Faerdref Primary School
Client	Fulcrum Infrastructure Management

WS06

		Detection Limit								
		<0.1	<0.1	<0.1	<0.1	<1	<1	<0.1		
Time	Gas Flow Rate. (l/hr)	Methane. (%LEL)	Methane. (%vol)	Oxygen. (%vol)	Carbon Dioxide. (%vol)	Hydrogen Sulphide. (ppm)	Carbon Monoxide. (ppm)	Volatile Organic Carbon (ppm	Depth of Installation. (mbgl)	Depth of Groundwater (mbgl
00:00	0.1	<0.1	<0.1	20.7	0.5	<1	<1		2.50	1.26
00:15	0.1	<0.1	<0.1	20.5	0.5	<1	<1			
00:30	0.1	<0.1	<0.1	20.5	0.7	<1	1			
00:45	0.1	<0.1	<0.1	20.5	0.7	<1	1			
01:00	0.1	<0.1	<0.1	19.9	0.7	<1	1			
01:15	0.1	<0.1	<0.1	19.9	1.1	<1	1			
01:30	0.1	<0.1	<0.1	19.9	1.1	<1	3			
01:45	0.1	<0.1	<0.1	19.4	1.8	<1	2			
02:00	0.1	<0.1	<0.1	19.4	1.8	<1	2			
02:15	0.1	<0.1	<0.1	19.4	1.8	<1	2			
02:30	0.1	<0.1	<0.1	19.4	3.5	<1	1			
02:45	0.1	<0.1	<0.1	19.4	3.5	<1	2			
03:00	0.1	<0.1	<0.1	19.4	2.6	<1	2			
03:15	0.1	<0.1	<0.1	19.4	2.6	<1	2			
03:30	0.1	<0.1	<0.1	19.4	2.6	<1	1			
03:45	0.1	<0.1	<0.1	19.4	2.6	<1	1			
04:00	0.1	<0.1	<0.1	19.4	2.6	<1	1			
04:15	0.1	<0.1	<0.1	19.4	2.6	<1	1			
04:30										
04:45										
05:00										
Steady	**0.1**	**<0.1**	**<0.1**	**19.4**	**2.6**	**<1**	**1.0**	**#####**	**2.50**	**1.26**
Peak	**0.1**	**0.0**	**0.0**	**20.7**	**3.5**	**0.0**	**3.0**	**0.0**	**2.50**	**1.26**

Date	Notes:			
08.06.2021	Engineer	LAB	Barometric Pressure, mbar	1015
			Pressure Trend	Steady
	Equipment	GFM430	Air Temp (˚C)	21

Gas Monitoring Certificate

Project Number	C3103
Project Name	Llanilltud Faerdref Primary School
Client	Fulcrum Infrastructure Management

WS01

		Detection Limit								
		<0.1	<0.1	<0.1	<0.1	<1	<1	<0.1		
Time	Gas Flow Rate. (l/hr)	Methane. (%LEL)	Methane. (%vol)	Oxygen. (%vol)	Carbon Dioxide. (%vol)	Hydrogen Sulphide. (ppm)	Carbon Monoxide. (ppm)	Volatile Organic Carbon (ppm)	Depth of Installation. (mbgl)	Depth of Groundwater (mbgl)
00:00	0.1	<0.1	<0.1	20.3	0.2	<1	<1		1.86	0.92
00:15	0.1	<0.1	<0.1	20.2	0.6	<1	<1			
00:30	0.1	<0.1	<0.1	20.1	0.6	<1	8			
00:45	0.1	<0.1	<0.1	20.0	0.6	<1	6			
01:00	0.1	<0.1	<0.1	20.0	0.6	<1	63			
01:15	0.1	<0.1	<0.1	20.0	0.6	<1	29			
01:30	0.1	<0.1	<0.1	20.0	0.6	<1	21			
01:45	0.1	<0.1	<0.1	20.0	0.6	<1	9			
02:00	0.1	<0.1	<0.1	20.0	0.6	<1	8			
02:15	0.1	<0.1	<0.1	20.0	0.7	<1	4			
02:30	0.1	<0.1	<0.1	20.0	0.7	<1	3			
02:45	0.1	<0.1	<0.1	20.0	0.7	<1	4			
03:00	0.1	<0.1	<0.1	20.0	0.7	1	4			
03:15	0.1	<0.1	<0.1	20.0	0.7	<1	8			
03:30	0.1	<0.1	<0.1	20.0	0.7	<1	4			
03:45										
04:00										
04:15										
04:30										
04:45										
05:00										
Steady	**0.1**	**<0.1**	**<0.1**	**20.0**	**0.7**	**<1**	**4.0**	**#####**	**1.86**	**0.92**
Peak	**0.1**	**0.0**	**0.0**	**20.3**	**0.7**	**1.0**	**63.0**	**0.0**	**1.86**	**0.92**

Date	Notes:			1003
04.08.2021	Engineer	DRS	Barometric Pressure, mbar	
			Pressure Trend	Steady
	Equipment	GFM430	Air Temp (˚C)	21

Gas Monitoring Certificate

Project Number	C3103
Project Name	Llanilltud Faerdref Primary School
Client	Fulcrum Infrastructure Management

WS03

		Detection Limit								
		<0.1	<0.1	<0.1	<0.1	<1	<1	<0.1		
Time	Gas Flow Rate. (l/hr)	Methane. (%LEL)	Methane. (%vol)	Oxygen. (%vol)	Carbon Dioxide. (%vol)	Hydrogen Sulphide. (ppm)	Carbon Monoxide. (ppm)	Volatile Organic Carbon (ppm	Depth of Installation. (mbgl)	Depth of Groundwater (mbgl)
00:00	0.1	<0.1	<0.1	20.3	<0.1	<1	<1		2.75	1.47
00:15	0.1	<0.1	<0.1	15.7	4.7	<1	<1			
00:30	0.1	<0.1	<0.1	14.5	5.5	<1	<1			
00:45	0.1	<0.1	<0.1	13.8	6.1	<1	<1			
01:00	0.1	<0.1	<0.1	13.1	6.5	<1	<1			
01:15	0.1	<0.1	<0.1	12.7	6.6	<1	<1			
01:30	0.1	<0.1	<0.1	12.4	6.7	<1	<1			
01:45	0.1	<0.1	<0.1	12.3	6.8	<1	<1			
02:00	0.1	<0.1	<0.1	12.2	6.9	<1	<1			
02:15	0.1	<0.1	<0.1	12.2	6.9	<1	<1			
02:30	0.1	<0.1	<0.1	12.2	6.9	<1	<1			
02:45	0.1	<0.1	<0.1	12.2	6.9	<1	<1			
03:00	0.1	<0.1	<0.1	12.7	6.8	<1	<1			
03:15	0.1	<0.1	<0.1	13.2	6.5	<1	<1			
03:30	0.1	<0.1	<0.1	13.6	6.1	<1	<1			
03:45	0.1	<0.1	<0.1	13.9	6.0	<1	<1			
04:00	0.1	<0.1	<0.1	14.2	5.6	<1	<1			
04:15	0.1	<0.1	<0.1	14.5	5.6	<1	<1			
04:30	0.1	<0.1	<0.1	14.7	5.5	<1	<1			
04:45	0.1	<0.1	<0.1	14.9	5.4	<1	<1			
05:00	0.1	<0.1	<0.1	15.0	5.3	<1	<1			
Steady	**0.1**	**<0.1**	**<0.1**	**15.0**	**5.3**	**<1**	**<1**	**#####**	**2.75**	**1.47**
Peak	**0.1**	**0.0**	**0.0**	**20.3**	**6.9**	**0.0**	**0.0**	**0.0**	**2.75**	**1.47**

Date	Notes:			
04.08.2021	Engineer	DRS	Barometric Pressure, mbar	1003
			Pressure Trend	Steady
	Equipment	GFM430	Air Temp (˚C)	21

Gas Monitoring Certificate

Project Number	C3103
Project Name	Llanilltud Faerdref Primary School
Client	Fulcrum Infrastructure Management

WS06

		Detection Limit								
		<0.1	<0.1	<0.1	<0.1	<1	<1	<0.1		
Time	Gas Flow Rate. (l/hr)	Methane. (%LEL)	Methane. (%vol)	Oxygen. (%vol)	Carbon Dioxide. (%vol)	Hydrogen Sulphide. (ppm)	Carbon Monoxide. (ppm)	Volatile Organic Carbon (ppm	Depth of Installation. (mbgl)	Depth of Groundwater (mbgl
00:00	0.1	<0.1	<0.1	20.5	0.1	<1	<1		2.41	1.70
00:15	0.1	<0.1	<0.1	19.6	2.7	<1	6			
00:30	0.1	<0.1	<0.1	19.4	2.8	<1	4			
00:45	0.1	<0.1	<0.1	19.3	2.8	<1	1			
01:00	0.1	<0.1	<0.1	19.3	2.9	1	3			
01:15	0.1	<0.1	<0.1	19.3	2.9	<1	1			
01:30	0.1	<0.1	<0.1	19.3	2.9	<1	3			
01:45	0.1	<0.1	<0.1	19.3	2.9	<1	3			
02:00	0.1	<0.1	<0.1	19.3	2.9	<1	3			
02:15	0.1	<0.1	<0.1	19.3	2.9	<1	4			
02:30	0.1	<0.1	<0.1	19.3	2.9	<1	1			
02:45	0.1	<0.1	<0.1	19.3	2.9	<1	3			
03:00	0.1	<0.1	<0.1	19.3	2.9	<1	<1			
03:15										
03:30										
03:45										
04:00										
04:15										
04:30										
04:45										
05:00										
Steady	**0.1**	**<0.1**	**<0.1**	**19.3**	**2.9**	**<1**	**<1**	**#####**	**2.41**	**1.70**
Peak	**0.1**	**0.0**	**0.0**	**20.5**	**2.9**	**1.0**	**6.0**	**0.0**	**2.41**	**1.70**

Date	Notes:			
04.08.2021	Engineer	DRS	Barometric Pressure, mbar	1003
			Pressure Trend	Steady
	Equipment	GFM430	Air Temp (˚C)	21

Appendix VII

Waste Classification Report

XWETX-76GQU-K7ZHJ

Job name

C3103 - Llanilltud Faerdref Primary School

Description/Comments

Chemical analysis for HHRA - Chemtest data: 21-13333-1

Project

C3103 - LLanilltud Faerdref Primary School

Site

Llanilltud Faerdref Primary School

Related Documents

#	Name	Description
1	HWOL_21-13333-20210504 125324.hwol	.hwol file used to create the Job

Waste Stream Template

Example waste stream template for contaminated soils

Classified by

Name:
Laura Jones
Date:
25 May 2021 13:16 GMT
Telephone:

Company:
HSP Consulting Engineers Limited

HazWasteOnline™ Training Record:

Course	Date
Hazardous Waste Classification	11 Feb 2020
Advanced Hazardous Waste Classification	12 Feb 2020

Report

Created by: Laura Jones
Created date: 25 May 2021 13:16 GMT

Job summary

#	Sample Name	Depth [m]	Classification Result	Hazard properties	Page
1	WS01-WS01-21/04/2021-0.3	0.3	Non Hazardous		3
2	WS02-WS02-21/04/2021-0.95	0.95	Non Hazardous		6
3	WS03-WS03-21/04/2021-0.2	0.2	Non Hazardous		9
4	WS04-WS04-21/04/2021-0.55	0.55	Non Hazardous		12
5	WS05-WS05-21/04/2021-0.3	0.3	Non Hazardous		15
6	WS06-WS06-21/04/2021-0.5	0.5	Non Hazardous		18
7	WS06-WS06-21/04/2021-0.95	0.95	Non Hazardous		21
8	WS07-WS07-21/04/2021-0.6	0.6	Non Hazardous		24

Classification of sample: WS01-WS01-21/04/2021-0.3

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

Sample details

Sample Name:
WS01-WS01-21/04/2021-0.3
Sample Depth:
0.3 m
Moisture content:
10%
(wet weight correction)

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

Hazard properties

None identified

Determinands

Moisture content: 10% Wet Weight Moisture Correction applied (MC)

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		6.9 mg/kg	1.32	8.199 mg/kg	0.00082 %	✓	
2	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		<0.4 mg/kg	3.22	<1.288 mg/kg	<0.000129 %		<LOD
3	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		<0.1 mg/kg	1.142	<0.114 mg/kg	<0.0000114 %		<LOD
4	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		15 mg/kg	1.462	19.731 mg/kg	0.00197 %	✓	
5	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<0.5 mg/kg	1.923	<0.962 mg/kg	<0.0000962 %		<LOD
6	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		22 mg/kg	1.126	22.293 mg/kg	0.00223 %	✓	
7	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	14 mg/kg	1.56	19.654 mg/kg	0.00126 %	✓	
8	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.1 mg/kg	1.353	<0.135 mg/kg	<0.0000135 %		<LOD
9	nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		16 mg/kg	2.976	42.858 mg/kg	0.00429 %	✓	
10	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				0.25 mg/kg	1.405	0.316 mg/kg	0.0000316 %	✓	
11	zinc { zinc chromate }	024-007-00-3	236-878-9	13530-65-9		48 mg/kg	2.774	119.843 mg/kg	0.012 %	✓	
12	TPH (C6 to C40) petroleum group			TPH		<10 mg/kg		<10 mg/kg	<0.001 %		<LOD
13	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD

#		Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
14		benzene	601-020-00-8	200-753-7	71-43-2		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
15		toluene	601-021-00-3	203-625-9	108-88-3		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
16		ethylbenzene	601-023-00-4	202-849-4	100-41-4		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<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]		<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<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		6.4	pH		6.4	pH	6.4 pH		
20		naphthalene	601-052-00-2	202-049-5	91-20-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
21		acenaphthylene		205-917-1	208-96-8		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
22		acenaphthene		201-469-6	83-32-9		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
23		fluorene		201-695-5	86-73-7		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
24		phenanthrene		201-581-5	85-01-8		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
25		anthracene		204-371-1	120-12-7		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
26		fluoranthene		205-912-4	206-44-0		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
27		pyrene		204-927-3	129-00-0		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
28		benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
29		chrysene	601-048-00-0	205-923-4	218-01-9		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
30		benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
31		benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
32		benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
33		indeno[123-cd]pyrene		205-893-2	193-39-5		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
34		dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
35		benzo[ghi]perylene		205-883-8	191-24-2		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
36		sulfur { sulfur }	016-094-00-1	231-722-6	7704-34-9		5.1	mg/kg		4.59	mg/kg	0.000459 %	✓	
37		monohydric phenols			P1186		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
											Total:	0.0246 %		

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 Deteminand - 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: WS02-WS02-21/04/2021-0.95

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

Sample details

Sample Name:
WS02-WS02-21/04/2021-0.95
Sample Depth:
0.95 m
Moisture content:
13%
(wet weight correction)

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

Hazard properties

None identified

Determinands

Moisture content: 13% Wet Weight Moisture Correction applied (MC)

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		2.1 mg/kg	1.32	2.412 mg/kg	0.000241 %	✓	
2	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		<0.4 mg/kg	3.22	<1.288 mg/kg	<0.000129 %		<LOD
3	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		<0.1 mg/kg	1.142	<0.114 mg/kg	<0.0000114 %		<LOD
4	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		14 mg/kg	1.462	17.802 mg/kg	0.00178 %	✓	
5	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<0.5 mg/kg	1.923	<0.962 mg/kg	<0.0000962 %		<LOD
6	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		26 mg/kg	1.126	25.468 mg/kg	0.00255 %	✓	
7	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	12 mg/kg	1.56	16.284 mg/kg	0.00104 %	✓	
8	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.1 mg/kg	1.353	<0.135 mg/kg	<0.0000135 %		<LOD
9	nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		21 mg/kg	2.976	54.376 mg/kg	0.00544 %	✓	
10	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				0.22 mg/kg	1.405	0.269 mg/kg	0.0000269 %	✓	
11	zinc { zinc chromate }	024-007-00-3	236-878-9	13530-65-9		50 mg/kg	2.774	120.675 mg/kg	0.0121 %	✓	
12	TPH (C6 to C40) petroleum group			TPH		<10 mg/kg		<10 mg/kg	<0.001 %		<LOD
13	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
14		benzene				<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
		601-020-00-8	200-753-7	71-43-2									
15		toluene				<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
		601-021-00-3	203-625-9	108-88-3									
16		ethylbenzene				<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
		601-023-00-4	202-849-4	100-41-4									
17		xylene				<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<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				6.6	pH		6.6	pH	6.6 pH		
				PH									
20		naphthalene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-052-00-2	202-049-5	91-20-3									
21		acenaphthylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-917-1	208-96-8									
22		acenaphthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-469-6	83-32-9									
23		fluorene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-695-5	86-73-7									
24		phenanthrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-581-5	85-01-8									
25		anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			204-371-1	120-12-7									
26		fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-912-4	206-44-0									
27		pyrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			204-927-3	129-00-0									
28		benzo[a]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-033-00-9	200-280-6	56-55-3									
29		chrysene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-048-00-0	205-923-4	218-01-9									
30		benzo[b]fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-034-00-4	205-911-9	205-99-2									
31		benzo[k]fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-036-00-5	205-916-6	207-08-9									
32		benzo[a]pyrene; benzo[def]chrysene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-032-00-3	200-028-5	50-32-8									
33		indeno[123-cd]pyrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-893-2	193-39-5									
34		dibenz[a,h]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-041-00-2	200-181-8	53-70-3									
35		benzo[ghi]perylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-883-8	191-24-2									
36		sulfur { sulfur }				<1	mg/kg		<1	mg/kg	<0.0001 %		<LOD
		016-094-00-1	231-722-6	7704-34-9									
37		monohydric phenols				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
				P1186									
										Total:	0.0248 %		

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 Deteminand - 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-WS03-21/04/2021-0.2

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

Sample details

Sample Name:
WS03-WS03-21/04/2021-0.2
Sample Depth:
0.2 m
Moisture content:
12%
(wet weight correction)

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

Hazard properties

None identified

Determinands

Moisture content: 12% Wet Weight Moisture Correction applied (MC)

#		Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1		arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		9.1	mg/kg	1.32	10.573	mg/kg	0.00106 %	✓	
2		boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		<0.4	mg/kg	3.22	<1.288	mg/kg	<0.000129 %		<**LOD**
3		cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		<0.1	mg/kg	1.142	<0.114	mg/kg	<0.0000114 %		<**LOD**
4		chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		16	mg/kg	1.462	20.579	mg/kg	0.00206 %	✓	
5		chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<0.5	mg/kg	1.923	<0.962	mg/kg	<0.0000962 %		<**LOD**
6		copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		16	mg/kg	1.126	15.853	mg/kg	0.00159 %	✓	
7		lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	14	mg/kg	1.56	19.217	mg/kg	0.00123 %	✓	
8		mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.1	mg/kg	1.353	<0.135	mg/kg	<0.0000135 %		<**LOD**
9		nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		18	mg/kg	2.976	47.144	mg/kg	0.00471 %	✓	
10		selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				0.39	mg/kg	1.405	0.482	mg/kg	0.0000482 %	✓	
11		zinc { zinc chromate }	024-007-00-3	236-878-9	13530-65-9		43	mg/kg	2.774	104.974	mg/kg	0.0105 %	✓	
12		TPH (C6 to C40) petroleum group			TPH		<10	mg/kg		<10	mg/kg	<0.001 %		<**LOD**
13		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<**LOD**

#		Determinand	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		CLP index number / EC Number / CAS Number							
14		benzene 601-020-00-8 / 200-753-7 / 71-43-2		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<**LOD**
15		toluene 601-021-00-3 / 203-625-9 / 108-88-3		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<**LOD**
16		ethylbenzene 601-023-00-4 / 202-849-4 / 100-41-4		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<**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]		<0.002 mg/kg		<0.002 mg/kg	<0.0000002 %		<**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		7.8 pH		7.8 pH	7.8 pH		
20		naphthalene 601-052-00-2 / 202-049-5 / 91-20-3		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<**LOD**
21		acenaphthylene 205-917-1 / 208-96-8		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<**LOD**
22		acenaphthene 201-469-6 / 83-32-9		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<**LOD**
23		fluorene 201-695-5 / 86-73-7		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<**LOD**
24		phenanthrene 201-581-5 / 85-01-8		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<**LOD**
25		anthracene 204-371-1 / 120-12-7		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<**LOD**
26		fluoranthene 205-912-4 / 206-44-0		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<**LOD**
27		pyrene 204-927-3 / 129-00-0		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<**LOD**
28		benzo[a]anthracene 601-033-00-9 / 200-280-6 / 56-55-3		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<**LOD**
29		chrysene 601-048-00-0 / 205-923-4 / 218-01-9		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<**LOD**
30		benzo[b]fluoranthene 601-034-00-4 / 205-911-9 / 205-99-2		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<**LOD**
31		benzo[k]fluoranthene 601-036-00-5 / 205-916-6 / 207-08-9		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<**LOD**
32		benzo[a]pyrene; benzo[def]chrysene 601-032-00-3 / 200-028-5 / 50-32-8		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<**LOD**
33		indeno[123-cd]pyrene 205-893-2 / 193-39-5		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<**LOD**
34		dibenz[a,h]anthracene 601-041-00-2 / 200-181-8 / 53-70-3		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<**LOD**
35		benzo[ghi]perylene 205-883-8 / 191-24-2		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<**LOD**
36		sulfur { sulfur } 016-094-00-1 / 231-722-6 / 7704-34-9		<1 mg/kg		<1 mg/kg	<0.0001 %		<**LOD**
37		monohydric phenols P1186		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<**LOD**
						Total:	0.0228 %		

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 Deteminand - 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: WS04-WS04-21/04/2021-0.55

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

Sample details

Sample Name:
WS04-WS04-21/04/2021-0.55
Sample Depth:
0.55 m
Moisture content:
13%
(wet weight correction)

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

Hazard properties

None identified

Determinands

Moisture content: 13% Wet Weight Moisture Correction applied (MC)

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		5.9 mg/kg	1.32	6.777 mg/kg	0.000678 %	✓	
2	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		<0.4 mg/kg	3.22	<1.288 mg/kg	<0.000129 %		<LOD
3	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		<0.1 mg/kg	1.142	<0.114 mg/kg	<0.0000114 %		<LOD
4	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		12 mg/kg	1.462	15.259 mg/kg	0.00153 %	✓	
5	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<0.5 mg/kg	1.923	<0.962 mg/kg	<0.0000962 %		<LOD
6	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		15 mg/kg	1.126	14.693 mg/kg	0.00147 %	✓	
7	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	8.2 mg/kg	1.56	11.128 mg/kg	0.000713 %	✓	
8	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.1 mg/kg	1.353	<0.135 mg/kg	<0.0000135 %		<LOD
9	nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		13 mg/kg	2.976	33.662 mg/kg	0.00337 %	✓	
10	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				0.24 mg/kg	1.405	0.293 mg/kg	0.0000293 %	✓	
11	zinc { zinc chromate }	024-007-00-3	236-878-9	13530-65-9		34 mg/kg	2.774	82.059 mg/kg	0.00821 %	✓	
12	TPH (C6 to C40) petroleum group			TPH		<10 mg/kg		<10 mg/kg	<0.001 %		<LOD
13	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
14		benzene				<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
		601-020-00-8	200-753-7	71-43-2									
15		toluene				<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
		601-021-00-3	203-625-9	108-88-3									
16		ethylbenzene				<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
		601-023-00-4	202-849-4	100-41-4									
17		xylene				<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<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				6.8	pH		6.8	pH	6.8 pH		
				PH									
20		naphthalene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-052-00-2	202-049-5	91-20-3									
21		acenaphthylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-917-1	208-96-8									
22		acenaphthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-469-6	83-32-9									
23		fluorene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-695-5	86-73-7									
24		phenanthrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-581-5	85-01-8									
25		anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			204-371-1	120-12-7									
26		fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-912-4	206-44-0									
27		pyrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			204-927-3	129-00-0									
28		benzo[a]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-033-00-9	200-280-6	56-55-3									
29		chrysene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-048-00-0	205-923-4	218-01-9									
30		benzo[b]fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-034-00-4	205-911-9	205-99-2									
31		benzo[k]fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-036-00-5	205-916-6	207-08-9									
32		benzo[a]pyrene; benzo[def]chrysene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-032-00-3	200-028-5	50-32-8									
33		indeno[123-cd]pyrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-893-2	193-39-5									
34		dibenz[a,h]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-041-00-2	200-181-8	53-70-3									
35		benzo[ghi]perylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-883-8	191-24-2									
36		sulfur { sulfur }				<1	mg/kg		<1	mg/kg	<0.0001 %		<LOD
		016-094-00-1	231-722-6	7704-34-9									
37		monohydric phenols				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
				P1186									
										Total:	0.0176 %		

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 Deteminand - 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: WS05-WS05-21/04/2021-0.3

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

Sample details

Sample Name:
WS05-WS05-21/04/2021-0.3
Sample Depth:
0.3 m
Moisture content:
17%
(wet weight correction)

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

Hazard properties

None identified

Determinands

Moisture content: 17% Wet Weight Moisture Correction applied (MC)

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		8.6 mg/kg	1.32	9.424 mg/kg	0.000942 %	✓	
2	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		<0.4 mg/kg	3.22	<1.288 mg/kg	<0.000129 %		<LOD
3	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		0.1 mg/kg	1.142	0.0948 mg/kg	0.00000948 %	✓	
4	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		16 mg/kg	1.462	19.409 mg/kg	0.00194 %	✓	
5	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<0.5 mg/kg	1.923	<0.962 mg/kg	<0.0000962 %		<LOD
6	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		13 mg/kg	1.126	12.148 mg/kg	0.00121 %	✓	
7	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	18 mg/kg	1.56	23.304 mg/kg	0.00149 %	✓	
8	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.1 mg/kg	1.353	<0.135 mg/kg	<0.0000135 %		<LOD
9	nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		14 mg/kg	2.976	34.584 mg/kg	0.00346 %	✓	
10	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				0.91 mg/kg	1.405	1.061 mg/kg	0.000106 %	✓	
11	zinc { zinc chromate }	024-007-00-3	236-878-9	13530-65-9		42 mg/kg	2.774	96.707 mg/kg	0.00967 %	✓	
12	TPH (C6 to C40) petroleum group			TPH		<10 mg/kg		<10 mg/kg	<0.001 %		<LOD
13	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
14		benzene				<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
		601-020-00-8	200-753-7	71-43-2									
15		toluene				<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
		601-021-00-3	203-625-9	108-88-3									
16		ethylbenzene				<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
		601-023-00-4	202-849-4	100-41-4									
17		xylene				<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<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				7.3	pH		7.3	pH	7.3 pH		
				PH									
20		naphthalene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-052-00-2	202-049-5	91-20-3									
21		acenaphthylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-917-1	208-96-8									
22		acenaphthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-469-6	83-32-9									
23		fluorene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-695-5	86-73-7									
24		phenanthrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-581-5	85-01-8									
25		anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			204-371-1	120-12-7									
26		fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-912-4	206-44-0									
27		pyrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			204-927-3	129-00-0									
28		benzo[a]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-033-00-9	200-280-6	56-55-3									
29		chrysene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-048-00-0	205-923-4	218-01-9									
30		benzo[b]fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-034-00-4	205-911-9	205-99-2									
31		benzo[k]fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-036-00-5	205-916-6	207-08-9									
32		benzo[a]pyrene; benzo[def]chrysene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-032-00-3	200-028-5	50-32-8									
33		indeno[123-cd]pyrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-893-2	193-39-5									
34		dibenz[a,h]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-041-00-2	200-181-8	53-70-3									
35		benzo[ghi]perylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-883-8	191-24-2									
36		sulfur { sulfur }				<1	mg/kg		<1	mg/kg	<0.0001 %		<LOD
		016-094-00-1	231-722-6	7704-34-9									
37		monohydric phenols				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
				P1186									
										Total:	0.0204 %		

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 Deteminand - 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: WS06-WS06-21/04/2021-0.5

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

Sample details

Sample Name:
WS06-WS06-21/04/2021-0.5
Sample Depth:
0.5 m
Moisture content:
19%
(wet weight correction)

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

Hazard properties

None identified

Determinands

Moisture content: 19% Wet Weight Moisture Correction applied (MC)

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		9.6 mg/kg	1.32	10.267 mg/kg	0.00103 %	✓	
2	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		<0.4 mg/kg	3.22	<1.288 mg/kg	<0.000129 %		<LOD
3	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		<0.1 mg/kg	1.142	<0.114 mg/kg	<0.0000114 %		<LOD
4	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		19 mg/kg	1.462	22.493 mg/kg	0.00225 %	✓	
5	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<0.5 mg/kg	1.923	<0.962 mg/kg	<0.0000962 %		<LOD
6	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		9.6 mg/kg	1.126	8.755 mg/kg	0.000875 %	✓	
7	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	15 mg/kg	1.56	18.952 mg/kg	0.00122 %	✓	
8	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.1 mg/kg	1.353	<0.135 mg/kg	<0.0000135 %		<LOD
9	nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		13 mg/kg	2.976	31.34 mg/kg	0.00313 %	✓	
10	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				1.2 mg/kg	1.405	1.366 mg/kg	0.000137 %	✓	
11	zinc { zinc chromate }	024-007-00-3	236-878-9	13530-65-9		36 mg/kg	2.774	80.894 mg/kg	0.00809 %	✓	
12	TPH (C6 to C40) petroleum group			TPH		<10 mg/kg		<10 mg/kg	<0.001 %		<LOD
13	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
14		benzene				<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
		601-020-00-8	200-753-7	71-43-2									
15		toluene				<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
		601-021-00-3	203-625-9	108-88-3									
16		ethylbenzene				<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
		601-023-00-4	202-849-4	100-41-4									
17		xylene				<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<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				6.9	pH		6.9	pH	6.9 pH		
				PH									
20		naphthalene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-052-00-2	202-049-5	91-20-3									
21		acenaphthylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-917-1	208-96-8									
22		acenaphthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-469-6	83-32-9									
23		fluorene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-695-5	86-73-7									
24		phenanthrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-581-5	85-01-8									
25		anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			204-371-1	120-12-7									
26		fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-912-4	206-44-0									
27		pyrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			204-927-3	129-00-0									
28		benzo[a]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-033-00-9	200-280-6	56-55-3									
29		chrysene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-048-00-0	205-923-4	218-01-9									
30		benzo[b]fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-034-00-4	205-911-9	205-99-2									
31		benzo[k]fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-036-00-5	205-916-6	207-08-9									
32		benzo[a]pyrene; benzo[def]chrysene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-032-00-3	200-028-5	50-32-8									
33		indeno[123-cd]pyrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-893-2	193-39-5									
34		dibenz[a,h]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-041-00-2	200-181-8	53-70-3									
35		benzo[ghi]perylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-883-8	191-24-2									
36		sulfur { sulfur }				<1	mg/kg		<1	mg/kg	<0.0001 %		<LOD
		016-094-00-1	231-722-6	7704-34-9									
37		monohydric phenols				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
				P1186									
										Total:	0.0183 %		

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 Deteminand - 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: WS06-WS06-21/04/2021-0.95

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

Sample details

Sample Name:
WS06-WS06-21/04/2021-0.95
Sample Depth:
0.95 m
Moisture content:
10%
(wet weight correction)

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

Hazard properties

None identified

Determinands

Moisture content: 10% Wet Weight Moisture Correction applied (MC)

#		Determinand	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		CLP index number / EC Number / CAS Number							
1		arsenic { arsenic trioxide }		5.9 mg/kg	1.32	7.011 mg/kg	0.000701 %	✓	
		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 %		<LOD
		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) }		13 mg/kg	1.462	17.1 mg/kg	0.00171 %	✓	
		/ 215-160-9 / 1308-38-9							
5		chromium in chromium(VI) compounds { chromium(VI) oxide }		<0.5 mg/kg	1.923	<0.962 mg/kg	<0.0000962 %		<LOD
		024-001-00-0 / 215-607-8 / 1333-82-0							
6		copper { dicopper oxide; copper (I) oxide }		12 mg/kg	1.126	12.16 mg/kg	0.00122 %	✓	
		029-002-00-X / 215-270-7 / 1317-39-1							
7		lead { lead chromate }	1	8.7 mg/kg	1.56	12.213 mg/kg	0.000783 %	✓	
		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 }		20 mg/kg	2.976	53.573 mg/kg	0.00536 %	✓	
		028-035-00-7 / 238-766-5 / 14721-18-7							
10		selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }		0.27 mg/kg	1.405	0.341 mg/kg	0.0000341 %	✓	
		034-002-00-8 / /							
11		zinc { zinc chromate }		57 mg/kg	2.774	142.314 mg/kg	0.0142 %	✓	
		024-007-00-3 / 236-878-9 / 13530-65-9							
12		TPH (C6 to C40) petroleum group		<10 mg/kg		<10 mg/kg	<0.001 %		<LOD
		/ / TPH							
13		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
		603-181-00-X / 216-653-1 / 1634-04-4							

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
14		benzene				<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
		601-020-00-8	200-753-7	71-43-2									
15		toluene				<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
		601-021-00-3	203-625-9	108-88-3									
16		ethylbenzene				<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
		601-023-00-4	202-849-4	100-41-4									
17		xylene				<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<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				6.3	pH		6.3	pH	6.3 pH		
				PH									
20		naphthalene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-052-00-2	202-049-5	91-20-3									
21		acenaphthylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-917-1	208-96-8									
22		acenaphthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-469-6	83-32-9									
23		fluorene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-695-5	86-73-7									
24		phenanthrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-581-5	85-01-8									
25		anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			204-371-1	120-12-7									
26		fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-912-4	206-44-0									
27		pyrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			204-927-3	129-00-0									
28		benzo[a]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-033-00-9	200-280-6	56-55-3									
29		chrysene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-048-00-0	205-923-4	218-01-9									
30		benzo[b]fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-034-00-4	205-911-9	205-99-2									
31		benzo[k]fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-036-00-5	205-916-6	207-08-9									
32		benzo[a]pyrene; benzo[def]chrysene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-032-00-3	200-028-5	50-32-8									
33		indeno[123-cd]pyrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-893-2	193-39-5									
34		dibenz[a,h]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-041-00-2	200-181-8	53-70-3									
35		benzo[ghi]perylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-883-8	191-24-2									
36		sulfur { sulfur }				<1	mg/kg		<1	mg/kg	<0.0001 %		<LOD
		016-094-00-1	231-722-6	7704-34-9									
37		monohydric phenols				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
				P1186									
										Total:	0.0256 %		

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 Deteminand - 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: WS07-WS07-21/04/2021-0.6

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

Sample details

Sample Name:
WS07-WS07-21/04/2021-0.6
Sample Depth:
0.6 m
Moisture content:
12%
(wet weight correction)

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

Hazard properties

None identified

Determinands

Moisture content: 12% Wet Weight Moisture Correction applied (MC)

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		5 mg/kg	1.32	5.809 mg/kg	0.000581 %	✓	
2	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		<0.4 mg/kg	3.22	<1.288 mg/kg	<0.000129 %		<LOD
3	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		<0.1 mg/kg	1.142	<0.114 mg/kg	<0.0000114 %		<LOD
4	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		12 mg/kg	1.462	15.434 mg/kg	0.00154 %	✓	
5	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<0.5 mg/kg	1.923	<0.962 mg/kg	<0.0000962 %		<LOD
6	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		18 mg/kg	1.126	17.834 mg/kg	0.00178 %	✓	
7	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	11 mg/kg	1.56	15.099 mg/kg	0.000968 %	✓	
8	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.1 mg/kg	1.353	<0.135 mg/kg	<0.0000135 %		<LOD
9	nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		23 mg/kg	2.976	60.24 mg/kg	0.00602 %	✓	
10	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				0.27 mg/kg	1.405	0.334 mg/kg	0.0000334 %	✓	
11	zinc { zinc chromate }	024-007-00-3	236-878-9	13530-65-9		61 mg/kg	2.774	148.916 mg/kg	0.0149 %	✓	
12	TPH (C6 to C40) petroleum group			TPH		<10 mg/kg		<10 mg/kg	<0.001 %		<LOD
13	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
14		benzene				<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
		601-020-00-8	200-753-7	71-43-2									
15		toluene				<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
		601-021-00-3	203-625-9	108-88-3									
16		ethylbenzene				<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
		601-023-00-4	202-849-4	100-41-4									
17		xylene				<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<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				5.9	pH		5.9	pH	5.9 pH		
				PH									
20		naphthalene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-052-00-2	202-049-5	91-20-3									
21		acenaphthylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-917-1	208-96-8									
22		acenaphthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-469-6	83-32-9									
23		fluorene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-695-5	86-73-7									
24		phenanthrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-581-5	85-01-8									
25		anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			204-371-1	120-12-7									
26		fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-912-4	206-44-0									
27		pyrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			204-927-3	129-00-0									
28		benzo[a]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-033-00-9	200-280-6	56-55-3									
29		chrysene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-048-00-0	205-923-4	218-01-9									
30		benzo[b]fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-034-00-4	205-911-9	205-99-2									
31		benzo[k]fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-036-00-5	205-916-6	207-08-9									
32		benzo[a]pyrene; benzo[def]chrysene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-032-00-3	200-028-5	50-32-8									
33		indeno[123-cd]pyrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-893-2	193-39-5									
34		dibenz[a,h]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-041-00-2	200-181-8	53-70-3									
35		benzo[ghi]perylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-883-8	191-24-2									
36		sulfur { sulfur }				<1	mg/kg		<1	mg/kg	<0.0001 %		<LOD
		016-094-00-1	231-722-6	7704-34-9									
37		monohydric phenols				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
				P1186									
										Total:	0.0274 %		

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 Deteminand - 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 CLP 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)

CLP index number: 601-023-00-4
Description/Comments:
Data source: Commission Regulation (EU) No 605/2014 – 6th Adaptation to Technical Progress for Regulation (EC) No 1272/2008. (ATP6)
Additional Hazard Statement(s): Carc. 2 H351
Reason for additional Hazards Statement(s):
03 Jun 2015 - 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**

CLP index number: 006-007-00-5
Description/Comments: Conversion factor based on a worst case compound: sodium cyanide
Data source: Commission Regulation (EC) No 790/2009 - 1st Adaptation to Technical Progress for Regulation (EC) No 1272/2008. (ATP1)
Additional Hazard Statement(s): EUH032 >= 0.2 %
Reason for additional Hazards Statement(s):
14 Dec 2015 - 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

- **monohydric phenols** (CAS Number: P1186)

Description/Comments: Combined hazards statements from harmonised entries in CLP for phenol, cresols and xylenols (604-001-00-2, 604-004-00-9, 604-006-00-X)
Data source: CLP combined data
Data source date: 26 Mar 2019
Hazard Statements: Acute Tox. 3 H301 , Acute Tox. 3 H311 , Acute Tox. 3 H331 , Skin Corr. 1B H314 , Skin Corr. 1B H314 >= 3 %, Skin Irrit. 2 H315 1 £ conc. < 3 %, Eye Irrit. 2 H319 1 £ conc. < 3 %, Muta. 2 H341 , STOT RE 2 H373 , Aquatic Chronic 2 H411

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) oxide}

Worst case CLP species based on hazard statements/molecular weight. Industrial sources include: production stainless steel, electroplating, wood preservation, anti-corrosion agents or coatings, pigments (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 {selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex}

Harmonised group entry used as most reasonable case. Pigment cadmium sulphoselenide not likely to be present in this soil. No evidence for the other CLP entries: sodium selenite, nickel II selenite and nickel selenide, to be present in this soil. (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)

sulfur {sulfur}

Elemental sulfur most likely to be worst case scenario hazardous

Appendix C: Version

HazWasteOnline Classification Engine: WM3 1st Edition v1.1, May 2018
HazWasteOnline Classification Engine Version: 2021.138.4779.9121 (18 May 2021)
HazWasteOnline Database: 2021.138.4779.9121 (18 May 2021)

This classification utilises the following guidance and legislation:
WM3 v1.1 - Waste Classification - 1st Edition v1.1 - May 2018
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 2019 - UK: 2019 No. 720 of 27th March 2019
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
POPs Regulation 2019 - Regulation (EU) 2019/1021 of 20 June 2019

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