



Geotechnical Investigation Report

at

Havant and South Downs College, Havant, Hampshire PO9 1QL

for

Havant and South Downs College

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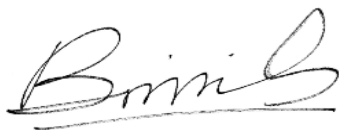
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This is not a valid document for use in the design of the project unless it is titled Final in the document status box.

Current regulations and good practice were used in the preparation of this report. The recommendations given in this report must be reviewed by an appropriately qualified person at the time of preparation of the scheme design to ensure that any recommendations given remain valid in light of changes in regulation and practice, or additional information obtained regarding the site.



Commission

This document comprises the Geotechnical Investigation Report (GIR) and incorporates the results, discussion, and conclusions to this intrusive works. General site data is recorded below:

Commission Record	
Client	Havant and South Downs College
Site Name	Havant and South Downs College, Havant, Hampshire PO9 1QL
Grid Reference	SU 713 069
Soils Limited Quotation Ref	Q27926, dated 12 th July 2023.
Clients Purchase Order	Q27926, dated 25 th July 2023

The record of revision to this document is presented below:

Record Of Revisions		
Revision	Date	Reason
21060/GIRrev1.0	September 2023	Original copy

Note(s): The latest revised document supersedes all previous revisions of the GIR produced by Soils Limited.

Limitations and Disclaimers

The report was prepared solely for the brief described in Section 1.1 of this report.

The contents, recommendations and advice given in the report are subject to the Terms and Conditions given in Soils Limited's Quotation

Soils Limited disclaims any responsibility to the Client and others in respect of any matters outside the scope of the above.

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The ground is a product of continuing natural and artificial processes. As a result, the ground will exhibit a variety of characteristics that vary from place to place across a site, and also with time. Whilst a ground investigation will mitigate to a greater or lesser degree against the resulting risk from variation, the risks cannot be eliminated.

The investigation, interpretations, and recommendations given in this report were prepared for the sole benefit of the Client in accordance with their brief. As such these do not necessarily address all aspects of ground behaviour at the site.

Current regulations and good practice were used in the preparation of this report. An appropriately qualified person must review the recommendations given in this report at the time of preparation of the scheme design to ensure that any recommendations given remain valid in light of changes in regulation and practice, or additional information obtained regarding the site.

If the term "competent person" is used in this report or any Soils Limited document, it means an engineering geologist or civil engineer with a minimum of three years post graduate experience in the understanding and application of the appropriate codes of practice.

Unless the site investigation works have been designed and specified in accordance with EC7, this report is a Geotechnical Investigation Report and is not necessarily a Ground Investigation Report as defined by EC7 (Eurocode 7 Part 1, §3.4, Part 2, §6.1) or a Geotechnical Design Report (Eurocode 7 Part 1, §2.8) as defined by Eurocode 7 and as such may not characterise the ground conditions and additional works may be required to comply with the requirements of EC7.

Within the report reference to ground level relates to the site level at the time of the investigation, unless otherwise stated.

Exploratory hole is a generic term used to describe a method of direct investigation. The term trial pit, borehole or window sample borehole implies the specific technique used to produce an exploratory hole.

The depth to roots and/or of desiccation may vary from that found during the investigation. The Client is responsible for establishing the depth to roots and/or of desiccation on a plot by plot basis prior to the construction of foundations. Supplied site surveys may not include substantial shrubs or bushes and is also unlikely to have data on any trees, bushes or shrubs removed prior to or following the site survey.

Where trees are mentioned in the text this means existing trees, substantial bushes or shrubs, recently removed trees (approximately 20 years to full recovery on cohesive soils) and those planned as part of the site landscaping).

The geotechnical laboratory testing was performed by GEO Site & Testing Services Ltd (GSTL) in accordance with the methods given in BS 1377:1990 Parts 1 to 8 and their UKAS accredited test methods.

For the preparation of this report, the relevant BS code of practice were adopted for the geotechnical laboratory testing technical specifications, in the absence of the relevant Eurocode specifications (ref: ISO TS 17892).

The chemical analyses were undertaken by Derwentside Environmental Testing Services (DETS) in accordance with their UKAS and MCERTS accredited test methods or their documented in-house testing procedures. This investigation did not comprise an environmental audit of the site or its environs.

Ordinary watercourses (OWs) are defined as rivers (which are not designated as main rivers), streams, ditches, drains, culverts, cuts and sewers (other than public sewers). This includes all OWs that are not mapped. Ordinary watercourse consent (OWC) is required from the Lead Local Flood Authority (LLFA) when changing/adapting/adding to the cross sections of OWs. Installations of any structure or obstruction into an OW that impedes the flow without consent is prohibited by the Land Drainage Act 1991 Section 23.

Failure to remove obstructions may result in legal action by the LLFA with powers under Section 25 of the Land Drainage Act 1991.

We suggest surveying the site for OW usually seen in rural areas as boundary ditches in order to avoid potential impacts to residents downstream and prosecution. OWC can be applied for from your LLFA.

Ownership of land brings with it onerous legal liabilities in respect of harm to the environment. "Contaminated Land" is defined in Section 57 of the Environment Act 1995 (as updated 2021) as:

“Land which is in such a condition by reason of substances in, on or under the land that significant harm is being caused or that there is a significant possibility of such harm being caused or that pollution of controlled waters is being, or is likely to be caused”.

It must be noted that a detailed survey of the possible presence or absence of invasive species, such as Japanese Knotweed, is outside of the scope of investigation.

Deleterious materials may be present in any Made Ground that pose a potential risk to site workers, end users and adjacent vulnerable receptors. These could include a range of contaminants, including asbestos, especially if the material includes large fractions of demolition derived materials.

The investigation, analysis or recommendations in respect of contamination are made solely in respect of the prevention of harm to vulnerable receptors, using where possible best practice at the date of preparation of the report. The investigation and report do not address, define or make recommendations in respect of environmental liabilities. A separate environmental audit and liaison with statutory authorities is required to address these issues.

All environmental works are undertaken in the context of, and in compliance with, BS10175+A2 2017 and LCRM (EA 2021) and all other pertinent planning, standards, documentation and guidance appropriate to the site at the time of production which may include, but are not necessarily limited to, documents provided by BS/CEN/ISO, NHBC, AGS, CIEH, CIRIA, SoBRA and CLAIRE.

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Section I Introduction

I.1 Objective of Investigation

The Client commissioned Soils Limited to undertake an intrusive ground investigation and to prepare a Geotechnical Investigation Report to supply the Client and their designers with information regarding ground conditions, to assist in preparing a foundation scheme for development that was appropriate to the settings present on the site.

The investigation was to be undertaken to provide comment on appropriate foundation options for the proposed development. The investigation was to be made by means of in-situ testing and geotechnical laboratory testing undertaken on soil samples taken from the exploratory holes.

The Client did not commission a Preliminary Investigation Report (Desk Study) but requested limited soil contamination testing. Soil samples were to be taken for basic brown field chemical laboratory testing for health and safety and waste disposal purposes.

I.2 Site Description

The site was located within the grounds of Havant and South Downs College, within the southeastern corner of the College. The works area (site) was bound to the southeast by mature trees lining a fence which marked the edge of the College's property, with Petersfield Road beyond. No structures existed within the works area, however it was bound to the north and west by two separate three-storey buildings. The south was bounded by New Road. The site was entirely soft landscaped, with the exception of one single pathway which tracked across the northwestern corner of site. The site sloped down to the southwest from the northeast at $\sim 1^\circ$.

The site location plan is given in Figure 1. An aerial photograph of the site and its close environs has been included in Figure 2.

I.3 Proposed Development

The proposed development comprised the erection of a three storey educational facility covering 750m², with a pathway running through the soft landscaping to the rear of the proposed, following the southeastern site boundary.

In compiling this report reliance was placed on a draft drawing, numbered HVT-ACG-XX-00-DR-A-2000, dated August 2023 and was prepared by Ayre Chamberlain Gaunt. The recommendations provided within this report are made exclusively in relation to the scheme outlined above, and must not be applied to any other scheme without further consultation with Soils Limited. Soils Limited must be notified about any change or deviation from the scheme outlined.

Development plans provided by the Client are presented in Appendix F.

1.4 Anticipated Geology

The 1:50,000 BGS map showed the site to be located upon the bedrock London Clay Formation with overlying superficial deposits of River Terrace Deposits. The London Clay Formation is underlain by the soils of the Lambeth Group.

1.4.1 River Terrace Deposits

The rivers of the south-east of England, including the River Thames and its tributaries, have been subject to at least three changes of level since Pleistocene times. One result has been the formation of a complex series of River Terrace Deposits. These terraces represent ancient floodplain deposits that became isolated as the river cut downwards to lower levels. The composition of the River Terrace Deposits varies greatly, depending on the source material available in the river's catchment. Deposits generally consist of sand and gravel of roughly bedded flint or chert commonly in a matrix of silt and clay.

1.4.2 London Clay Formation

The London Clay Formation in the Hampshire region comprises silty and sandy clay, clayey and sandy silt, silty sand; sporadic claystones and thin beds of flint pebbles. The formation includes the Bognor Sand, Whitecliff Sand, Durley Sand, Portsmouth Sand and Nursling Sand Members. Crystals of gypsum (Selenite) are often found within the weathered part of the London Clay, and precautions against sulphate attack to concrete are sometimes required.

The lowest part of the London Clay Formation rests on the Reading Formation (Lambeth Group).

1.4.3 Lambeth Group

The Lambeth Group (formerly the Woolwich and Reading Beds) occurs in the London and Hampshire Basins, where it directly overlies the Chalk or Thanet Sand Formation, and is succeeded by the Harwich and London Clay Formations. Although generally less than 50 metres thick, its lithological variability and position beneath much of London has concerned tunnelling engineers since the early 19th century.

The relationship between the different depositional environments is seen in central and south-east London, where deposits of fine-grained sand, flint gravel beds, mottled clay, shell beds and altered beds form a complex interdigitating sequence, which is divided into three formations, the Woolwich and the Reading Formation, depending on the local succession, both overlying the Upnor Formation.

Vertically and laterally variable sequences mainly of clay, some silty or sandy, with some sands and gravels, minor limestones and lignites and occasional sandstone and conglomerate.

The top of the Lambeth Group is marked by the eroded or interburrowed surface at the base of the overlying Thames Group. The uppermost part of the Lambeth Group can be the Reading Formation or the Woolwich Formation, depending on the local succession, or the Upnor Formation, depending on the depth of pre-Thames Group erosion. The Lambeth Group is overlain by sands, silts, clays or gravel beds of the Harwich

Formation, depending on the local sequences, or gravelly sandy clays at the base of the London Clay Formation.

The base of the Lambeth Group is taken at the base of the Upnor Formation. In the Hampshire Basin and the west of the London Basin, the Lambeth Group overlies the Chalk Group. In the centre and east of the London Basin it overlies the Thanet Formation, and in Suffolk the Ormesby Clay Member of the Lista Formation.

Section 2 Site Works

2.1 Proposed Project Works

The proposed intrusive investigation was designed to provide information on the ground conditions and to aid the design of foundations for the proposed educational development. The intended investigation, as outlined within the Soils Limited quotation (Q27926, dated 12th July 2023), was to comprise the following items:

- CAT & Genny scan of all trial hole positions
- 4No (up to) 4m windowless sampler boreholes;
- 4No (up to) 6m deep dynamic probe DPSH;
- 2No. falling head soakage tests in windowless sample locations
- 1No 20m deep cable percussive boreholes with alternate SPT/U100 testing at 1m centres for the top 5m and at 1.5m centres thereafter.
- Geotechnical laboratory testing
- Basic contamination laboratory testing.

2.1.1 Actual Project Works

The actual project works were undertaken on 9th August 2023, with subsequent sample logging, laboratory testing, and reporting. The actual works comprised:

- CAT & Genny scan of all trial hole positions
- 4No 4m windowless sampler boreholes;
- 4No 6m deep dynamic probe DPSH;
- 2No. falling head soakage tests in windowless sample locations
- 1No 12.5m deep cable percussive boreholes with alternate SPT/U100 testing at 1m centres for the top 5m and at 1.5m centres thereafter.
- Geotechnical laboratory testing
- Basic contamination laboratory testing.

The four windowless sampler borehole locations (WS1 – WS4) were backfilled with gravel upon completion of the drilling/falling head soakage testing.

The cable percussive borehole (BH1) was backfilled with arisings upon completion.

All exploratory hole locations have been presented in Figure 3.

Following completion of site works, soil cores were logged and sub sampled so that samples could be sent to the laboratory for both contamination and geotechnical testing.

2.2 Ground Conditions

On 9th August 2023 four windowless sampler boreholes (WS1 – WS4) were drilled, using a Premier Compact 110 Seies drilling rig, to depths of 4.00m below ground level (bgl) at

locations selected by Soils Limited using a development plan provided by the Client.

Four super heavy dynamic probes, (DP1 – DP4) were driven prior and adjacent to their corresponding windowless sampler borehole to depths of 6.00m bgl.

One cable percussive borehole (BH1) was drilled to a depth of 12.50m bgl where groundwater was encountered. The borehole was terminated due to excessive water ingress preventing safe progress of the borehole.

The maximum depths of exploratory holes have been included in Table 2.1.

All exploratory holes were scanned with a Cable Avoidance Tool (C.A.T.) and GENNY prior to excavation to ensure the health and safety of the operatives.

Table 2.1 Final Depth of Exploratory Holes

Exploratory Hole	Depth (m bgl)	Exploratory Hole	Depth (m bgl)
WS1	4.00	DP1	6.00
WS2	4.00	DP2	6.00
WS3	4.00	DP3	6.00
WS4	4.00	DP4	6.00
BH1	12.50	-	-
Note(s): The depths given in this table are taken from the ground level on-site at the time of investigation.			

The approximate exploratory hole locations are shown on Figure 3.

The soil conditions encountered were recorded and soil sampling commensurate with the purposes of the investigation was carried out. The depths given on the exploratory hole logs and quoted in this report were measured from ground level.

The soils encountered from immediately below ground surface have been described in the following manner. Where the soil incorporated an organic content such as either decomposing leaf litter or roots or has been identified as part of the in-situ weathering profile, it has been described as Topsoil both on the logs and within this report. Where man has clearly either placed the soil, or the composition altered, with say greater than an estimated 5% of a non-natural constituent, it has been referred to as Made Ground both on the log and within this report.

For more complete information about the soils encountered within the general area of the site reference must be made to the detailed records given within Appendix B, but for the purposes of discussion, the succession of conditions encountered in the exploratory holes in descending order can be summarised as:

Made Ground/Topsoil (MG/TS)
River Terrace Deposits (RTD)
London Clay Formation (LC)

The ground conditions encountered in the exploratory holes are summarised in Table 2.2.

Table 2.2 Ground Conditions

Strata	Depth Encountered (m bgl)		Typical Thickness (m)	Typical Description
	Top	Bottom		
TS	0.00	0.10	0.10	Soft brown slightly sandy clayey SILT.
MG	0.00	0.25 – 0.50	0.35	Firm brownish grey, slightly gravelly, sandy, SILT, with fine charcoal fragments and glass fragments
cRTD	0.10 – 0.50	1.60 – 2.00	1.50	Firm dark brown slightly sandy, slightly gravelly CLAY.
gRTD	1.60 – 2.00	3.10 – 4.10	1.90	Light brown and cream, very silty GRAVEL.
LC	3.10 – 4.10	4.00 ¹ – 12.50 ¹	Not proven ²	Stiff greyish brown, becoming grey with depth, CLAY

Note(s): ¹ Final depth of exploratory hole. ² Base of strata not encountered. C = cohesive. G = Granular. The depths given in this table are taken from the ground level on-site at the time of investigation.

2.3 Ground Conditions Encountered in Exploratory Holes

The ground conditions encountered in exploratory holes have been described below in descending order. The engineering logs are presented in Appendix B.1.

2.3.1 Made Ground and Topsoil

Soils described as Made Ground were encountered in four out of the five exploratory holes from ground level to depths ranging between 0.25 (WS3, WS4) and 0.50m bgl (WS2).

The Made Ground typically comprised soft becoming firm, brownish grey, slightly gravelly, sandy, SILT. Sand was fine and the gravel was subangular fine to medium flint and brick with rare fine charcoal fragments and glass fragments and occasional rootlets.

Soils described as Topsoil were encountered in one exploratory hole (BH1) from ground level to a depth of 0.10m bgl.

The Topsoil comprised soft brown slightly sandy clayey SILT. Sand is fine to coarse with occasional rootlets.

The established depth of Made Ground and Topsoil found at each exploratory hole location have been included in Table 2.3.

Table 2.3 Established Depth of Made Ground/Topsoil

Exploratory Hole	Strata	Depth (m bgl)
WS1	MG	0.40
WS2	MG	0.50
WS3	MG	0.25

Exploratory Hole	Strata	Depth (m bgl)
WS4	MG	0.25
BH1	TS	0.10

2.3.2 River Terrace Deposits (Cohesive)

The River Terrace Deposits were encountered and established within all of the exploratory holes, from immediately below the Topsoil/Made Ground to depths ranging between 1.60 (DP2) and 2.00m bgl (BH1).

The River Terrace Deposits can be separated into cohesive and granular soils, and in each exploratory hole the cohesive soils were found to overlie the granular soils.

The cohesive River Terrace Deposits typically comprised firm dark brown mottled orangish brown slightly sandy, slightly gravelly CLAY. Sand was fine and the gravel was subangular fine to medium flint with rare desiccated rootlets.

Table 2.4 shows the established depth of cohesive River Terrace Deposits respectively, found at each exploratory hole location.

Table 2.4 Established Depth of Cohesive River Terrace Deposits

Exploratory Hole	Depth (m bgl)	Exploratory Hole	Depth (m bgl)
WS1	1.75	DPI	1.90
WS2	1.70	DP2	1.60
WS3	1.80	DP3	1.80
WS4	1.80	DP4	1.80
BH1	2.00	-	-

2.3.3 River Terrace Deposits (Granular)

The granular River Terrace Deposits were encountered underlying the cohesive River Terrace Deposits to depths ranging between 3.10 (DP2, DP3) and 4.10m bgl (BH1). The granular soils comprised light brown and cream, very silty GRAVEL. Sand was fine to coarse and the gravel was angular fine to coarse flint and chalk.

Table 2.5 shows the established depth of granular River Terrace Deposits respectively, found at each exploratory hole location.

Table 2.5 Established Depth of Granular River Terrace Deposits

Exploratory Hole	Depth (m bgl)	Exploratory Hole	Depth (m bgl)
WS1	4.00 ¹	DPI	3.90
WS2	3.75	DP2	3.10
WS3	3.50	DP3	3.10
WS4	3.75	DP4	3.40
BH1	4.10	-	-

Note(s): ¹ Final depth of exploratory hole.

2.3.4 London Clay Formation

The London Clay Formation was encountered and established within all but one (WS1) of the five exploratory holes underlying the granular River Terrace Deposits to the final exploratory depths of each position.

The London Clay Formation typically comprised Stiff greyish brown, becoming grey with depth, CLAY.

The established depth of London Clay Formation found at each exploratory hole location have been included in Table 2.6.

Table 2.6 Established Depth of London Clay Formation

Exploratory Hole	Depth (m bgl)	Exploratory Hole	Depth (m bgl)
WS1	Not encountered	DPI	6.00 ¹
WS2	4.00 ¹	DP2	6.00 ¹
WS3	4.00 ¹	DP3	6.00 ¹
WS4	4.00 ¹	DP4	6.00 ¹
BHI	12.30	-	-

Note(s): ¹ Final depth of exploratory hole.

2.4 Roots

Roots were encountered in all of the five exploratory holes at depths ranging between 0.25 and 1.40m bgl. Visually assessed desiccated roots were encountered within two of the five exploratory holes from 1.00 to 1.80m bgl.

The established depth of root penetration found at the exploratory hole locations has been included in Table 2.7.

Table 2.7 Established Depth of Root Penetration

Exploratory Hole	Depth (m bgl)
WS1	1.40
WS2	1.00
WS3	0.25/1.80 ¹
WS4	0.25/1.00 ¹
BHI	0.30

Note(s): ¹ Desiccated roots

Roots may be found to greater depth at other locations on the site particularly close to trees and/or trees that have been removed both within the site and its close environs.

It must be emphasised that the probability of determining the maximum depth of roots from a narrow diameter borehole is low. A direct observation such as from within a trial pit is necessary to gain a better indication of the maximum root depth.

Google Earth™ showed no evidence of the removal of trees or mature shrubs on

available maps of the site in the last 20 years.

2.5 Groundwater

Groundwater was encountered within two exploratory holes. Within WS1 groundwater was struck at 3.80m bgl within a band of granular River Terrace Deposits but was not encountered within any of the other positions on site.

Within BH1 groundwater was struck at 12.30m bgl at the boundary between the London Clay and the Lambeth Group. The water rose under artesian pressure to 3.80m bgl in 20 minutes.

Changes in groundwater level occur for a number of reasons including seasonal effects and variations in drainage. The investigation was conducted in August (2023), when groundwater levels should be falling from their annual maximum (highest) which typically occurs around March to their annual minimum (lowest) elevation, which typically occurs around September.

Section 3 Geotechnical In-Situ and Laboratory Testing

3.1 Standard Penetration Tests

Standard Penetration Tests (SPTs) were undertaken in BH1. The results were interpreted based on the classifications outlined in Appendix C.1, Table C.1.1 To Table C.1.2.

Table 3.1 SPT Hammer Efficiency

SPT Hammer Ref	Energy Ratio Er (%)
DDI60035	82

Table 3.2 Standard Penetration Tests (SPT) Interpretation

Strata	Depth Range (m bgl)	N60 Range	Cohesive Soils	
			Classification	Inferred Cohesion
cRTD	1.20	25	High strength	Cu = 125kPa
LC	6.50 – 9.50	30	Very high strength	Cu = 150kPa
Strata	Depth Range (m bgl)	N60 Range	Granular Soils	
			Classification	Relative Density
gRTD	2.00 – 4.00	8 - 19	Silty GRAVEL	Loose to medium dense
LC	12.30	>68	Clayey SAND	Very dense

A full interpretation of the SPT results, are outlined in Appendix C.2, Table C.2.1.

3.2 Dynamic Probe Tests

The results were converted to equivalent SPT “N60” values based on dynamic energy using commercial computer software (Geostru). The results were then interpreted based on the classifications outlined in Appendix C.1, Table C.1.1 to **Error! Reference source not found.**

Table 3.3 SPT Hammer Efficiency

Rig Reference	Energy Ratio Er (%)
Premier 3	87.45

Table 3.4 Inferred SPT Interpretation

Strata	Depth Range (m bgl)	Inferred N60 Range	Cohesive Soils	
			Strength Classification	Inferred Cohesion
cRTD	0.20 – 1.90	4 - 25	Low to high	20 – 125kPa
LC	3.10 – 6.00	4 - 17	Low to high	20 – 85kPa
Strata	Depth Range (m bgl)	Inferred N60 Range	Granular Soils	
			Classification	Relative Density
gRTD	1.60 – 3.90	<4 - >50	Silty gravel	Loose to very dense

Note(s): SPT “N60” values presented have been corrected in accordance with BS EN 22476 Part 3

A full interpretation of the DPSH tests, are outlined in Appendix C.2, Table C.2.2.

3.3 Falling Head Tests

Three falling head soakage tests were undertaken within the granular River Terrace Deposits within WS1 and WS3 between 2.00 and 4.00m bgl. **Estimated** soakage rates were calculated and outlined in Table 3.5.

Table 3.5 Soakage Rates

Exploratory Hole	Test No.	Soakage Rate (Ltr/Sec)	Comment
WS1	1	0.106	Hole collapsed after water added
	2	0.0585	Hole collapsed after water added
WS3	1	0.156	Hole collapsed after water added

3.4 Quick Unconsolidated Undrained Triaxial Compression Tests

Quick Unconsolidated Undrained Triaxial Compression Tests (QUU) were performed on two samples obtained from the London Clay Formation. The strength interpretation was based on the classification outlined in Table C.2.3.

Table 3.6 Undrained Cohesion Results Classification

Strata	Depth (m bgl)	Cohesive Soils	
		Classification	Undrained Cohesion Range (Cu)
LC	5.00 – 11.45	Medium	55 – 60kPa

A full interpretation of the QUU tests are outlined Table C.2.3, Appendix C.2 and the laboratory report in Appendix C.3.

3.5 Atterberg Limit Tests

Atterberg Limit tests were performed on six samples, one obtained from the granular River Terrace Deposits, four from the cohesive River Terrace and one from the London Clay Formation. The results were classified in accordance with BRE Digest 240 and NHBC Standards Chapter 4.2.

The sample taken from the granular River Terrace Deposits was tested due to the unknown nature of the soils, and its borderline cohesive nature. The test classified the sample as non-plastic with only 12% passing the 43 micron sieve.

Table 3.7 Atterberg Limit Results Classification

Strata	Depth (m bgl)	Classification	
		NHBC	BRE 240
cRTD	0.50 – 2.20	Low to medium	Low to medium
LC	3.90	High	High

A full interpretation of the Atterberg Limit tests, are outlined in Table C.2.4, Appendix C.2 and the laboratory report in Appendix C.3.

3.6 Particle Size Distribution Tests

Particle Size Distribution (PSD) tests were performed on three samples from the granular River Terrace Deposits.

Table 3.8 Particle Size Distribution Classification

Strata	Depth (m bgl)	VCP Classification	
		NHBC	BRE 240
gRTD	2.30 – 3.45	No	Yes

Note that a cohesive soil is only classified as having a volume change potential if it is also plastic and an Atterberg Limit test can be conducted on the strata.

A full interpretation of the PSD tests, are outlined in Table C.2.5, Appendix C.2 and the laboratory report in Appendix C.3.

3.7 Sulphate and pH Tests

Water soluble sulphate (2:1) and pH testing in accordance with Building Research Establishment Special Digest 1, 2005, 'Concrete in Aggressive Ground'.

Table 3.9 Sulphate and pH Test Results

Strata	Depth (m bgl)	Sulphate Concentration (mg/l)	pH
cRTD	0.50	<10	7.7
	1.80	13	7.8
gRTD	2.80	13	8.2
LC	3.80	58	7.8
	5.45	303	7.9
	12.30-12.50	177	7.9

The significance of the sulphate and pH Test results are discussed in Section 5.2 and the laboratory report in Appendix C.3.

Section 4 Engineering Appraisal

4.1 Established Ground Conditions

An engineering appraisal of the soil types encountered during the site investigation and likely to be encountered during the redevelopment of this site is presented. Soil descriptions are based on analysis of disturbed samples taken from the exploratory holes.

4.1.1 Made Ground and Topsoil

Soils described as Made Ground were encountered in four out of the five exploratory holes from ground level to depths ranging between 0.25 (WS3, WS4) and 0.50m bgl (WS2).

Soils described as Topsoil were encountered in one of the five exploratory holes from ground level to a depth of 0.10m bgl (BH1).

Foundations must not be placed on non-engineered fill unless such use can be justified on the basis of a thorough ground investigation and detailed design. Foundations must be taken through any Topsoil and/or Made Ground and either into, or onto a suitable underlying natural stratum of adequate bearing characteristics.

4.1.2 Cohesive River Terrace Deposits

Soils described as cohesive River Terrace Deposits were encountered and established within all nine of the exploratory holes directly below the Topsoil/Made Ground and persisted to depths ranging between 1.60 and 2.00m bgl.

Soils of the cohesive River Terrace Deposits are normally consolidated, predominantly cohesive soils and as such are expected to display low to moderate bearing capacities with moderate to high settlement characteristics.

4.1.3 Granular River Terrace Deposits

Soils described as granular River Terrace Deposits were encountered and established within all nine of the exploratory holes directly below the cohesive River Terrace soils and persisted to depths ranging between 3.10 and 4.10m bgl.

The granular River Terrace Deposits were seen to be very variable both compositionally and in terms of density across the site. The proposed development is to be positioned towards the northwestern section of the site, close to the position of WS/DP1 and BH1 where the granular soils were seen to be looser. The granular soils are considered to be a suitable bearing stratum for the proposed development, provided foundations are taken through any soft spots identified or further investigation is carried out in the northwestern portion of site.

Soils of the granular River Terrace Deposits are predominantly granular soils and as such are expected to display low to moderate bearing capacities with moderate settlement characteristics.

4.1.4 London Clay Formation

Soils described as London Clay Formation were encountered underlying the River Terrace Deposits from 3.10m to 4.10m bgl and persisted to a depth of 12.30m bgl.

Soils of the London Clay Formation are overconsolidated, predominantly cohesive soils and as such are expected to display moderate bearing capacities with moderate settlement characteristics.

4.1.5 Guidance on Shrinkable Soils

The ground conditions were established as River Terrace Deposits, with a typical thickness of 3.40m, overlying the bedrock of London Clay Formation.

The volume change potential for each strata was established and presented in Table 4.1.

Table 4.1 Established Volume Change Potential by Strata

Strata	Volume Change Potential		Established Lower Boundary (m bgl)
	BRE	NHBC	
cRTD	Medium	Medium	1.60 – 2.00
gRTD	Yes (low)	None	3.10 – 4.10
LC	High	High	12.30

Foundations coming into contact with the cohesive River Terrace Deposits must be designed for a medium volume change potential. Foundations taken completely into the granular River Terrace Deposits can be designed with a low volume change potential, however this was considered unlikely given the depth of the upper horizon of the granular deposits.

A high volume change potential must be adopted for any foundations taken into the London Clay Formation.

4.1.6 Groundwater

Groundwater was encountered within two exploratory holes. Within WS1 groundwater was struck at 3.80m bgl within a band of granular River Terrace Deposits not encountered within any of the other positions on site.

Within BH1 groundwater was struck at 12.30m bgl at the boundary between the London Clay and the Lambeth Group. The water rose under artesian pressure to 3.80m bgl in 20 minutes.

Changes in groundwater level occur for a number of reasons including seasonal effects and variations in drainage. The investigation was conducted in August (2023), when groundwater levels should be falling from their annual maximum (highest) which typically occurs around March to their annual minimum (lowest) elevation, which typically occurs around September.

The groundwater strike within WS1 occurred within a band of granular River Terrace soils not seen in any other position. The low blow counts (0s and 1s) also seen at this

depth further indicate the presence of a soft spot, and highlight the varying composition within this north-western corner of site. Further investigation should be undertaken in the north-western portion of site to better understand the extent of this soft spot.

If soft spots are identified during construction, foundations must be taken through these strata into suitably strong bearing strata below.

Section 5 Foundation Scheme

5.1 Foundation Recommendations

Foundations **must not** be constructed within any Made Ground/Topsoil due to the likely variability and potential for large load induced settlements both total and differential.

Roots were encountered in each of the five exploratory holes at depths ranging between 0.25m bgl and 1.40m bgl. Desiccated roots extended to a maximum depth of 1.80m bgl and were found within WS3 and WS4 only. If roots are encountered during the construction phase foundations **must not be placed within any live root penetrated or desiccated cohesive soils or those with a volume change potential**. Should the foundation excavations reveal such materials, the excavations **must** be extended to greater depth in order to bypass these unsuitable soils. Excavations must be checked by a suitable person prior to concrete being poured.

Considering the type of development, a shallow foundation solution was considered the suitable.

Although not strictly applicable to non-residential structures, the proposed development is likely to be both light and brittle. It is therefore considered that foundation design is undertaken using NHBC Standards Chapter 4.2.

Foundations must be taken through any Made Ground and cohesive River Terrace Deposits and into the underlying granular River Terrace Deposits

Further investigation should be undertaken in the north-western portion of site to better understand the extent the soft spot identified within WS/DP1.

If soft spots are identified during construction, foundations must be taken through these strata into suitably strong bearing strata below.

5.1.1 Shallow Foundations into the Granular River Terrace Deposits

Based on a 5.00 by 0.75m strip foundation, using commercial software Table 5.1 shows the calculated bearing values and anticipated settlement characteristics.

Table 5.1 Allowable Bearing Capacities in the Granular River Terrace Deposits

Depth (m bgl)	Size (m)	Bearing Capacity (kPa)	Anticipated Settlement (mm)
1.80	5.00 x 0.75	150	<25

Note(s): Based on worst case ground conditions from north-western portion of site.

The granular River Terrace Deposits were seen to be variable across site. On the eastern and southern portion of the site (WS2, WS3, WS4) a very dense band of gravels rested on the London Clay Formation. Conversely in the western portion of site (WS1, BH1), a loose, groundwater bearing layer of clayey gravel was identified overlying on the London Clay Formation, recording dynamic probe blow counts of 0 and 1.

The proposed development drawings were not available at the time of the siteworks. Upon receiving the drawings, they showed that the proposed will be situated in the northwestern portion of the site, closer to the position of WS1 and BH1. The above bearing capacities and anticipated settlement have been calculated using the values seen on the western portion of site, as they are much poorer soils. As such, the proposed development is expected to experience differential settlements due to the large variation in gravel density seen between the eastern and western portion of the site. Differential settlements in the order of 15mm could be encountered

Further investigation **should** be carried out on the northwestern portion of site, via a series of dynamic probes, to better understand the nature of the soils in this area, specifically the loose, groundwater bearing gravels encountered between 2.70 and 4.00m bgl in WS1, and the soils recording low SPT N60 blow counts around 3.00m bgl within BH1.

All foundation formations must be examined, recorded, and signed off by a competent person.

The use of reinforced trench fill foundations reduces the potential for differential settlement affecting the foundations.

For the allowable bearing value given above, settlements should not exceed the presented values, provided that excavation bases are carefully bottomed out and blinded or concreted as soon after excavation as possible and kept dry.

Foundations must not be constructed over former structures and other hard spots. The foundations design must be suitable for the conditions present at the site.

Isolated pad foundations must be kept at least 1.5 times the width of the largest adjacent pad apart (face to adjacent face) to ensure that their vertical stress “bowls” do not interact. Failure to do so may result in additional settlements.

The anticipated settlement includes both elastic settlement and long-term drained settlement (in the case of cohesive soils).

Anticipated settlements may be taken as proportional to the bearing capacity adopted (for the same configuration of foundation), therefore if the bearing value is halved the anticipated settlement will halve.

All loose material, loose blocks of chalk, soft spots and Made Ground must be removed from the base of the excavations. Failure to do so could results in increased settlements.

It has been assumed that the foundations to any existing structures have been grubbed out. Where foundations have been grubbed out the new foundation must be taken through any backfill material into suitable natural ground as outlined in this report.

5.1.2 Ground Floor Slab

NHBC Standards 2023 states ground floors should be constructed as suspended floors where:

- *“the foundation depth dictated by the NHBC Standards 2023, Chapter 4.2.10 would exceed 1.5m bgl;”*
- *“ground floor construction is undertaken when the surface soils are seasonally desiccated;”*
- *“the depth of fill exceeds 600mm;”*
- *“there is shrinkable soil that could be subject to movement, expansive material or other unstable soils;”*
- *“the ground has been subject to vibratory improvement;” or*
- *“ground or fill is not suitable to support ground-bearing slabs.”*

Shrinkable soils exist on site that could be subject to movement. As such, ground floors should be constructed as suspended floors.

5.2 Subsurface Concrete

The sulphate and pH tests carried out in accordance with BRE Special Digest 1, 2005, ‘Concrete in Aggressive Ground’, established the site concrete classifications for each stratum as presented in Table 5.2.

Table 5.2 Concrete Classification

Stratum	Design Sulphate Class	ACEC Class
cRTD	DS-I	AC-I
gRTD	DS-I	AC-I
LC	DS-I	AC-I

Concrete to be placed in contact with soil or groundwater must be designed in accordance with the recommendations of Building Research Establishment Special Digest 1 2005, ‘Concrete in Aggressive Ground’ taking into account any possible exposure of potentially pyrite bearing natural ground and the pH of the soils.

5.3 Excavations

Shallow excavations in the Made Ground/Topsoil and River Terrace Deposits are likely to be marginally stable in the short term at best.

Deeper excavations taken into the River Terrace Deposits and London Clay Formation are likely to be unstable and require support. Unsupported earth faces formed during excavation may be liable to collapse without warning and suitable safety precautions must therefore be taken to ensure that such earth faces are adequately supported or battered back to a safe angle of repose.

Excavations beneath the groundwater table are likely to be unstable and dewatering of foundation trenches may be necessary.

Section 6 Determination of Chemical Analysis

6.1 Site Characterisation

Basic chemical analysis was undertaken for health and safety and waste disposal purposes.

Soils Limited have not been provided with a PIR or initial Conceptual Site Model (CSM) nor was one instructed by the Client.

The Geotechnical Investigation identified Made Ground to depths between 0.25m and 0.50m bgl.

6.2 Determination of Chemical Analysis

The chemical analyses were carried out on three samples of Made Ground. The nature of the analyses is detailed in Table 6.1.

Table 6.1 Chemical Analyses Suites - Soil

No. of Tests	Determinants	Soil Tested MG
3	Metal suites: Arsenic, Boron (Water Soluble), Cadmium, Chromium (total & hexavalent), Copper, Lead, Mercury, Nickel, Selenium, Vanadium, Zinc	✓
3	Organic Matter	✓
3	pH	✓
3	Polycyclic aromatic hydrocarbons (PAH) – (EPA 16)	✓
3	Phenols – total monohydric	✓
3	Extractable petroleum hydrocarbons (EPH) – Texas banding	✓
2	Waste acceptance criteria (WAC)	✓
3	Asbestos screening	✓

The soil testing was carried out in compliance with the MCERTS performance standard, and the results are shown in Appendix D.1, test report 23-10646.

6.3 Risk Assessment – Made Ground

Table 6.2 outlines the sample that have exceeded their relevant assessment criteria. The full laboratory report is presented in Appendix D.1.

Table 6.2 Summary of GAC Exceedances – Made Ground

Location	Depth (m bgl)	Contaminant	Concentration	Guidance Level
WS1	0.30	No contaminants exceeded the adopted GAC		
WS3	0.10	No contaminants exceeded the adopted GAC		
WS4	0.10	No contaminants exceeded the adopted GAC		

6.4 Asbestos

The test certificate for each sample submitted for contamination analysis during this investigation includes the results of an Asbestos Screen.

In each case 'Not detected' was reported.

This finding does not obviate the risk of asbestos being present on the site and the Client must seek advice from qualified and competent asbestos specialist during and prior to undertaking works to ensure compliance with appropriate legislation and guidance.

6.5 HazWasteOnline

The waste classification tool HazWasteOnline™ to provide a general indication for future waste removal.

The samples were classified as Non-Hazardous, with the HazWasteOnline™ report presented in Appendix E. The WAC certificate is presented in Appendix D.1, within Test Report 23-10646.

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Appendix F Information Provided by the Client

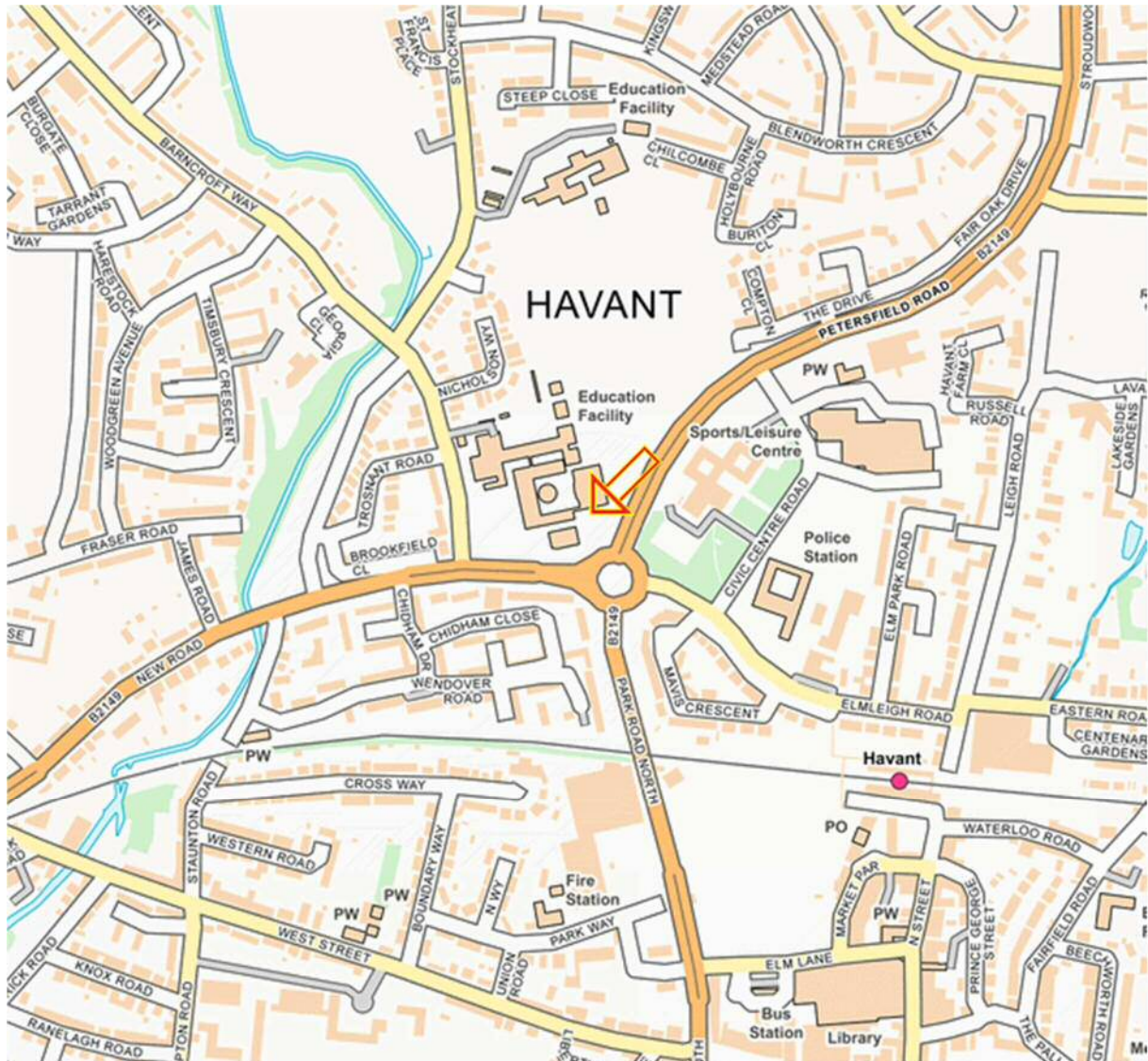


Figure 1 – Site Location Map



Job Number
21060

Project
Havant and South Downs College, Havant,
Hampshire PO9 1QL

Client
Havant and South Downs College

Date
September 2023



Figure 2 – Aerial Photograph

Project

Havant and South Downs College,
Havant, Hampshire PO9 1QL

Client

Havant and South Downs College

Date

September 2023

Job Number

21060



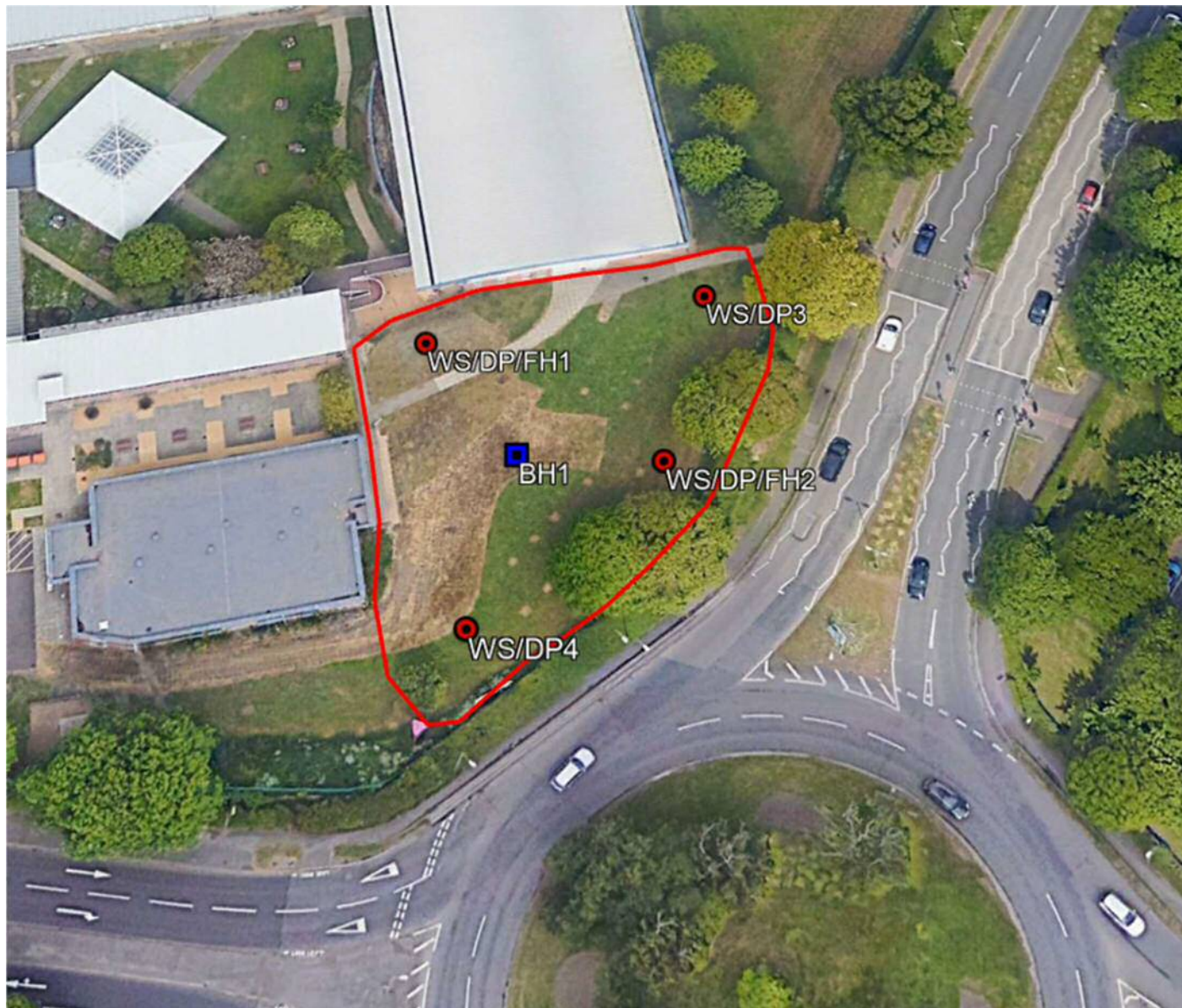


Figure 3 – Exploratory Hole Plan

Project

Havant and South Downs College,
Havant, Hampshire PO9 1QL

Client

Havant and South Downs College

Date

September 2023

Job Number

21060

Appendix A Standards and Resources

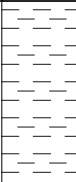
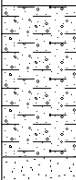
The site works, soil descriptions and geotechnical testing was undertaken in accordance with the following standards were applicable:

- BS 5930:2015 and BS EN ISO 22476-2 2005+A1:2011
- BS 5930:2015 and BS EN ISO 22476-2&3:2005+A1:2011
- BS 5930:2015 and BS EN ISO 22476-3:2005+A1:2011
- BS EN 1997-1:2004+A1:2013 Eurocode 7. Geotechnical design
- BS EN ISO 14688-1:2018 - Geotechnical investigation and testing - Identification and description
- BS EN ISO 14688-2:2018 - Geotechnical investigation and testing - Principles for a classification
- BS 10175:2011+A2:2017 - Investigation of potentially contaminated sites
- LCRM 2021 Environment Agency
- BS 8004:2015 – Code of practice for foundations
- BS 1377:1990 Parts 1 to 8
- BRE Digest 241 “Low-rise buildings on shrinkable clay soils: Part 2
- BRE Special Digest 1, 2005, ‘Concrete in Aggressive Ground’
- Stroud, M. A. 1974, “The Standard Penetration Test – its application and interpretation”, Proc. ICE Conf. on Penetration Testing in the UK, Birmingham. Thomas Telford, London.
- N.E. Simons, B.K. Menzies, “A Short Course in Foundation Engineering”
- NHBC Standards Chapter 4.2, January 2023.
- SP1010: Development of Category 4 Screening Levels for Assessment of Land Affected by Contamination December 2014
- CIRIA C733, Asbestos in soil and made ground: a guide to understanding and managing risks and CAR2012 regulations.
- Google Earth
- British Geological Survey Website & iGeology App

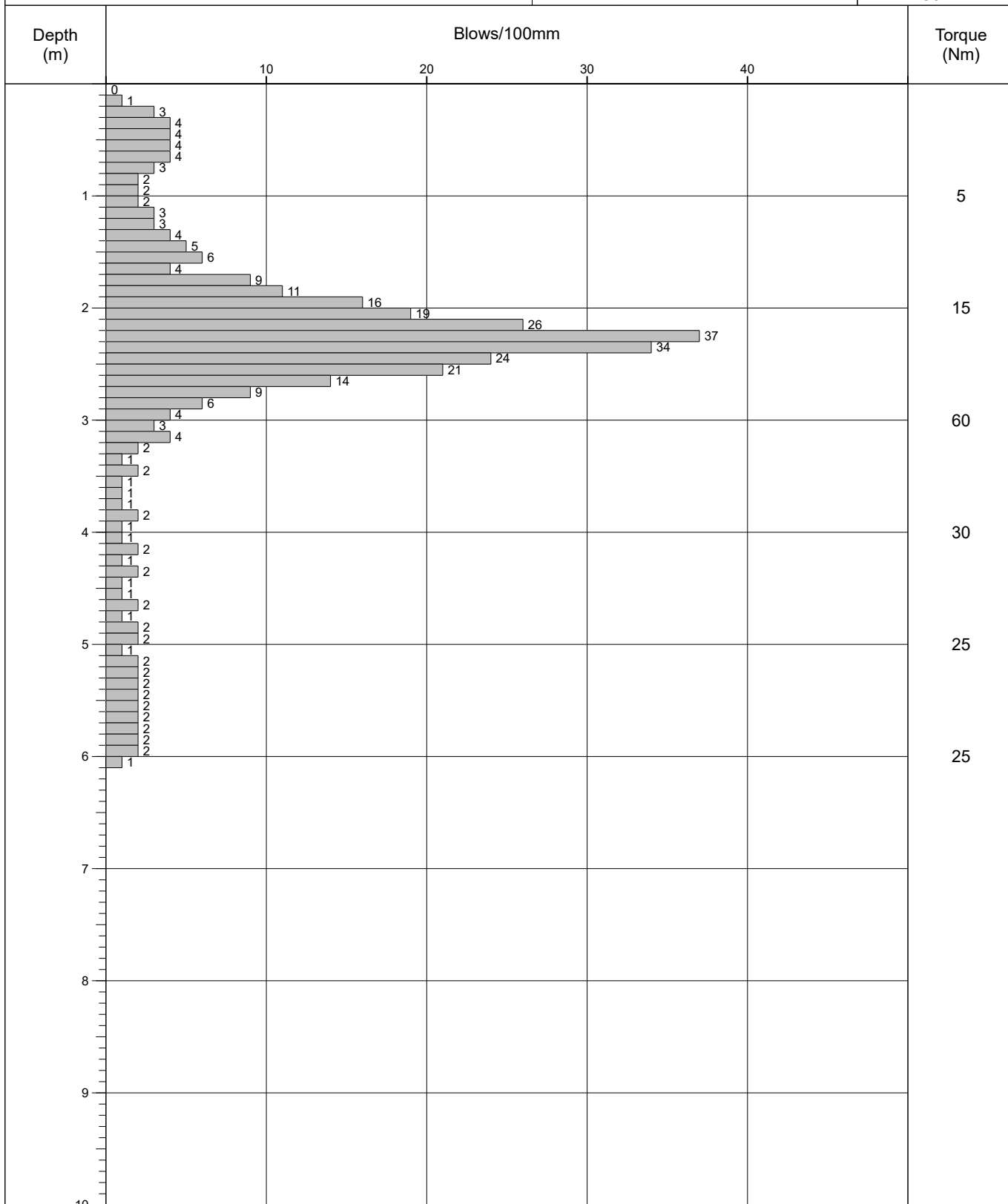
Appendix B Field Work

Appendix B.1 Engineers Logs

Start & End of Shift Observations					Borehole Diameter		Casing Diameter		Remarks:					
Date	Time	Depth (m)	Casing (m)	Water (m)	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)						
							4.30	150						
									Water Strikes					
Chiselling					Installation				Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
From (m)	To (m)	Duration	Remarks		Top (m)	Base (m)	Type	Dia (mm)	12.30			20	3.80	
11.30	12.30	02:30												
Hand vane (HV), Hand penetrometer (HP) reported in kPa. PID reported in ppm.														

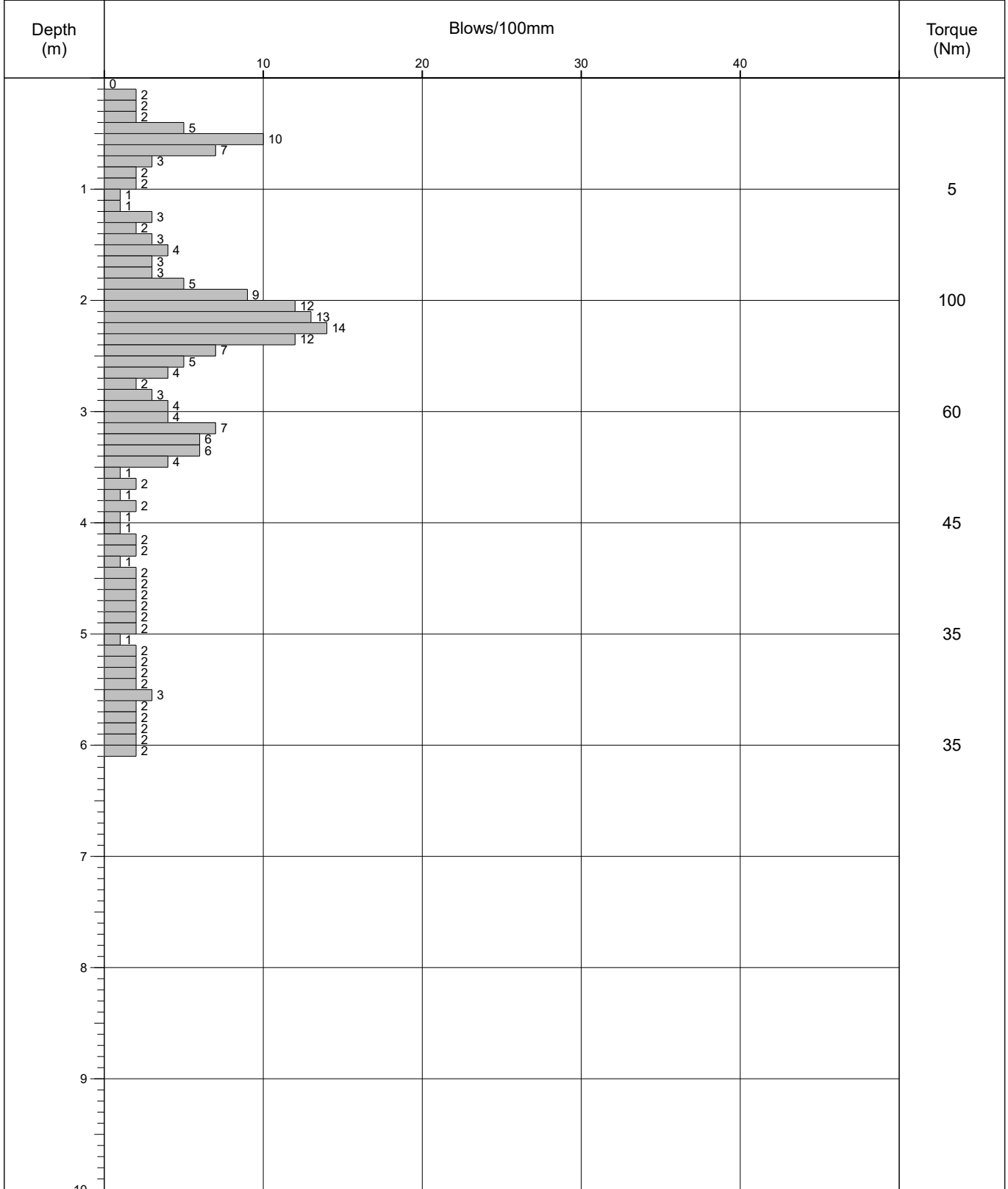
			Contract Name: Havant and South Downs College, Havant, Hampshire, PO9 1QJ					Client: Havant and South Downs College			Hole ID: BH1			
			Contract Number: 21060		Start and End Date: 09/08/23		Logged By: EF		Checked By: JA		Status: FINAL	Hole Type: CP		
			Easting:		Northing:		Ground Level:		Plant Used: Dando 2000		Print Date: 22/09/2023	Scale: 1:50		
Weather:				Termination:				SPT Hammer: N/R, Energy Ratio: 82%				Sheet 2 of 2		
Samples & In Situ Testing					Strata Details							Groundwater		
Depth	Type	Results	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description					Water Strike	Backfill/ Installation		
10.50	D	80 (25 for 70mm/80 for 150mm)				Stiff to very stiff grey CLAY. LONDON CLAY FORMATION								
11.00 - 11.45	U										11			
11.45	D			11.30		Soft grey slightly sandy gravelly CLAY. Gravel is rounded, fine to coarse black flint. Sand is greenish, fine to medium. LONDON CLAY FORMATION								
12.00	D			(1.00)							12			
12.30	SPT			12.30										
12.30 - 12.50	D			12.50										
						End of Borehole at 12.50m								
											13			
											14			
											15			
											16			
											17			
											18			
											19			
											20			
Start & End of Shift Observations					Borehole Diameter		Casing Diameter		Remarks:					
Date	Time	Depth (m)	Casing (m)	Water (m)	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)						
							4.30	150						
Chiselling					Installation				Water Strikes					
From (m)	To (m)	Duration	Remarks		Top (m)	Base (m)	Type	Dia (mm)	Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
11.30	12.30	02:30							12.30			20	3.80	
Hand vane (HV), Hand penetrometer (HP) reported in kPa. PID reported in ppm.														

Project Name:	Havant and South Downs College, Havant, Hampshire, PO9 1QL	Project No. 21060	Co-ords:		Hole Type DP
Location:	Havant and South Downs College, Havant, PO9 1QL		Level:	m AOD	Scale 1:50
Client:	Havant and South Downs College		Dates:	09/08/2023	Logged By GJB



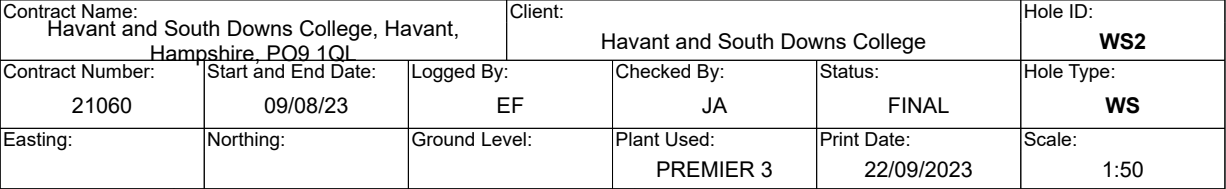
Remarks	Fall Height	760mm	Cone Base Diameter	mm
	Hammer Weight	63.5kg	Final Depth	6m
	Probe Type	DPSH-B	Energy Ratio (Er)	87.45%

Project Name:	Havant and South Downs College, Havant, Hampshire, PO9 1QL	Project No. 21060	Co-ords:		Hole Type DP
Location:	Havant and South Downs College, Havant, PO9 1QL		Level:	m AOD	Scale 1:50
Client:	Havant and South Downs College		Dates:	09/08/2023	Logged By GJB



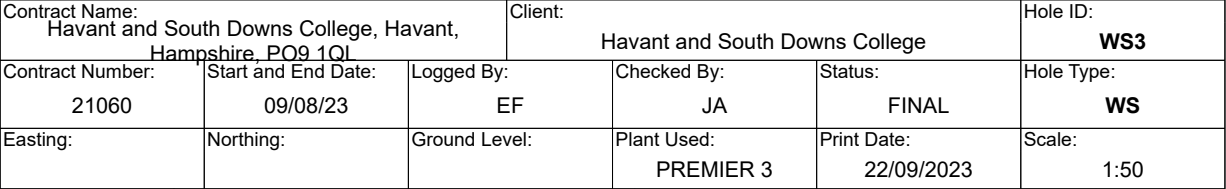
Remarks	Fall Height	760mm	Cone Base Diameter	mm
	Hammer Weight	63.5kg	Final Depth	6m
	Probe Type	DPSH-B	Energy Ratio (Er)	87.45%

	Contract Name: Havant and South Downs College, Havant, Hampshire, PO9 1QJ				Client: Havant and South Downs College				Hole ID: WS1					
	Contract Number: 21060		Start and End Date: 09/08/23		Logged By: EF		Checked By: JA		Status: FINAL		Hole Type: WS			
	Easting:		Northing:		Ground Level:		Plant Used: PREMIER 3		Print Date: 22/09/2023		Scale: 1:50			
Weather:			Termination:					Sheet 1 of 1						
Samples & In Situ Testing					Strata Details							Groundwater		
Depth	Type	Results	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description						Water Strike	Backfill/Installation	
0.10	ES			0.20		Soft brown slightly clayey, slightly sandy, slightly gravelly SILT. Sand is fine to coarse. Gravel is subrounded fine to medium flint. Occasional rootlets. MADE GROUND Firm brown, becoming greyish brown with depth, slightly sandy, slightly gravelly CLAY. Sand is fine to coarse. Gravel is subangular fine to coarse flint and concrete. Rare rootlets. MADE GROUND								
0.30	WAC			0.40										
0.60	ES			(0.70)		Firm brown mottled dark grey, slightly sandy, slightly gravelly CLAY. Sand is fine. Gravel is subangular fine to medium flint. Rare pyrite nodules. Rare rootlets. RIVER TERRACE DEPOSITS						1		
0.80	D			1.10										
1.20	D			(0.35)		Firm light brown mottled light grey, slightly sandy, slightly gravelly CLAY. Sand is fine to coarse. Gravel is subrounded fine to coarse flint. RIVER TERRACE DEPOSITS								
1.60	D			1.45 (0.30)										
1.90	D			1.75		Light brown, slightly clayey, slightly silty, very gravelly SAND. Sand is fine to coarse. Gravel is subangular fine to coarse flint. RIVER TERRACE DEPOSITS						2		
				2.00										
				(0.80)		Light brown and cream, very silty GRAVEL. Sand is fine to coarse. Gravel is subangular fine to coarse flint and chalk. RIVER TERRACE DEPOSITS								
				2.80										
2.80	D			(1.20)		Brown clayey GRAVEL. Gravel is Subangular fine to coarse flint. RIVER TERRACE DEPOSITS						3		
				4.00										
3.80	D					End of Borehole at 4.00m						4		
											5			
											6			
											7			
											8			
											9			
											10			
Start & End of Shift Observations					Borehole Diameter		Casing Diameter		Remarks:					
Date	Time	Depth (m)	Casing (m)	Water (m)	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)	Rootlets encountered to 1.40m bgl. Poor recovery 2.00-4.00m bgl.					
Chiselling					Installation				Water Strikes					
From (m)	To (m)	Duration	Remarks		Top (m)	Base (m)	Type	Dia (mm)	Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
									3.80			20	3.80	
Hand vane (HV), Hand penetrometer (HP) reported in kPa. PID reported in ppm.														



Weather:	Termination:		Sheet 1 of 1
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Start & End of Shift Observations					Borehole Diameter		Casing Diameter		Remarks: Rootlets encountered to 1.00m bgl.					
Date	Time	Depth (m)	Casing (m)	Water (m)	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)						
Chiselling					Installation				Water Strikes					
From (m)	To (m)	Duration	Remarks		Top (m)	Base (m)	Type	Dia (mm)	Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
												0	0.00	No ground water encountered



Weather:	Termination:		Sheet 1 of 1
----------	--------------	--	--------------

Start & End of Shift Observations					Borehole Diameter		Casing Diameter		Remarks:						
Date	Time	Depth (m)	Casing (m)	Water (m)	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)							
									Rootlets encountered to 0.25m bgl. Dessicated rootlets encountered to 1.80m bgl.						
Chiselling					Installation				Water Strikes						
From (m)	To (m)	Duration	Remarks		Top (m)	Base (m)	Type	Dia (mm)	Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks	
												0	0.00	No ground water encountered	
Hand vane (HV), Hand penetrometer (HP) reported in kPa. PID reported in ppm.															

	Contract Name: Havant and South Downs College, Havant, Hampshire, PO9 1QJ				Client: Havant and South Downs College			Hole ID: WS4						
	Contract Number: 21060		Start and End Date: 09/08/23		Logged By: SAN		Checked By: JA		Status: FINAL		Hole Type: WS			
	Easting:		Northing:		Ground Level:		Plant Used: PREMIER 3		Print Date: 22/09/2023		Scale: 1:50			
Weather:				Termination:								Sheet 1 of 1		
Samples & In Situ Testing					Strata Details							Groundwater		
Depth	Type	Results	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description						Water Strike	Backfill/Installation	
0.10	WAC			0.08		Soft dark brown SILT with abundant roots and rootlets. MADE GROUND								
0.30	ES			0.25		Soft dark brown gravelly REWORKED SILT, Gravel is subangular fine to coarse consisting of quartz and flint. MADE GROUND								
0.50	ES			0.43		Firm brown slightly gravelly SILT. Gravel is subangular fine to medium flint. RIVER TERRACE DEPOSITS								
0.65	D			(0.56)		Brown silty GRAVEL. Gravel is subangular, fine to coarse flint. RIVER TERRACE DEPOSITS								
				1.05		Firm dark brown mottled orangey brown CLAY with rare desiccated rootlets. RIVER TERRACE DEPOSITS						1		
1.15	D			(0.75)		Firm orangish brown very gravelly CLAY. Gravel is subangular fine to coarse consisting of flint. RIVER TERRACE DEPOSITS								
1.65	D			1.80		Light brown and cream very silty GRAVEL. Sand is fine to coarse. Gravel is subangular fine to coarse of flint and subrounded fine to medium chalk. RIVER TERRACE DEPOSITS						2		
2.30	D													
2.80	D			(1.95)								3		
				3.75		Stiff greyish brown gravelly CLAY, becoming grey with depth. Gravel is subangular fine to medium of flint. LONDON CLAY FORMATION						4		
3.75	D			4.00		End of Borehole at 4.00m								
Start & End of Shift Observations					Borehole Diameter		Casing Diameter		Remarks:					
Date	Time	Depth (m)	Casing (m)	Water (m)	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)	Rootlets encountered to 0.25m bgl. Dessicated rootlets encountered to 1.00m bgl.					
Chiselling					Installation				Water Strikes					
From (m)	To (m)	Duration	Remarks		Top (m)	Base (m)	Type	Dia (mm)	Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
												0	0.00	No ground water encountered
Hand vane (HV), Hand penetrometer (HP) reported in kPa. PID reported in ppm.														

Appendix C Geotechnical In-Situ and Laboratory Testing

Appendix C.1 Classification

Classification based on SPT “N” values:

The inferred undrained strength of the cohesive soils was based on the SPT “N” blow counts, derived from the relationship suggested by Stroud (1974) and classified using Table C.1.1. (Ref: Stroud, M. A. 1974, “The Standard Penetration Test – its application and interpretation”, Proc. ICE Conf. on Penetration Testing in the UK, Birmingham. Thomas Telford, London.).

Table C.1.1 SPT “N” Blow Count Cohesive Classification

Classification	Undrained Cohesive Strength C_u (kPa)
Extremely low	<10
Very low	10 – 20
Low	20 – 40
Medium	40 – 75
High	75 – 150
Very high	150 – 300
Extremely high	> 300

Note(s): (Ref: BS EN ISO 14688-2:2004+A1:2013 Clause 5.3.)

The relative density of granular soils was classified based of the relationship given in Table C.1.2.

The *UK National Annex to Eurocode 7: Geotechnical design – Part 2: Ground investigation and testing, NA 3.7 SPT test, BS EN 1997-2:2007, Annex F* states “Relative density descriptions on borehole records should also be based on uncorrected SPT N values, unless significantly disturbed, using the density classification in BS 5930:2015, Table 7.

Table C.1.2 SPT “N” Blow Count Granular Classification

Classification	SPT “N” blow count (blows/300mm)
Very loose	0 to 4
Loose	4 to 10
Medium dense	10 to 30
Dense	30 to 50
Very dense	Greater than 50

Note(s): (Ref: The Standard Penetration Test (SPT): Methods and Use, CIRIA Report 143, 1995)

Appendix C.2 Interpretation**Table C.2.1 Interpretation of SPT Tests**

BH	Strata	SPT N60 Blow Counts	Inferred Cohesive Strength/Granular Density
BHI	RTD 1.20 – 2.00 Gravelly CLAY	25	High ($C_u = 125\text{kPa}$)
	RTD 2.00 – 4.10 Silty GRAVEL	8 - 19	Loose to medium dense
	LC 4.10 – 12.30 Silty CLAY	30	Very high ($C_u = 150\text{kPa}$)
	LC 12.30 – 12.50 Clayey SAND	>68	Very dense

Table C.2.2 Interpretation of DPSH Blow Counts

DP	Strata	Equivalent SPT N60 Blow Counts	Inferred Cohesive Strength/Granular Density
DPI	RTD 0.50 – 1.90 Gravelly CLAY	4 - 17	Low to high ($C_u = 20 - 85\text{kPa}$)
	RTD 1.90 – 2.70 Silty GRAVEL	4 - 13	Loose to medium dense
	RTD 2.70 – 3.90 Clayey GRAVEL	<4 - 13	Loose to medium dense
	LC CLAY ¹ 3.90 – 6.00	4 - 8	Low ($C_u = 20 - 40\text{kPa}$)
	DP2		
DP2	RTD 0.20 – 1.60 Gravelly CLAY	8 - 25	Medium to high ($C_u = 40 - 125\text{kPa}$)
	RTD 1.60 – 3.10 Silty GRAVEL	13 - >50	Medium dense to very dense
	LC 3.10 – 6.00 CLAY	4 - 8	Low ($C_u = 20 - 40\text{kPa}$)
DP3	RTD 0.30 – 1.80 Gravelly CLAY	8 - 17	Medium to high ($C_u = 40 - 85\text{kPa}$)
	RTD 1.80 – 3.10 Silty GRAVEL	25 - >50	Medium dense to very dense

DP	Strata	Equivalent SPT N60 Blow Counts	Inferred Cohesive Strength/Granular Density
DP4	LC 3.10 – 6.00 CLAY	4 - 17	Low to high ($C_u = 20 - 85\text{kPa}$)
	RTD 0.30 – 1.80 Gravelly CLAY	4 – 21	Low to high ($C_u = 20 - 105\text{kPa}$)
	RTD 1.80 – 3.40 Silty GRAVEL	8 - >50	Loose to very dense
	LC 3.40 – 6.00 CLAY	4 - 13	Low to medium ($C_u = 20 - 65\text{kPa}$)

Note(s): ¹ Ground conditions inferred past the base of windowless sampler boreholes.

Table C.2.3 Interpretation of QUU Tests

Location	Stratum	Sample Depth (m bgl)	Moisture Content (%)	Soil Strength	Shear Strength (kPa)
BHI	LC	5.00	28	Medium	60
BHI	LC	11.00	24	Medium	55

Table C.2.4 Interpretation of Atterberg Limit Tests

Stratum	Moisture Content (%)	Plasticity Index (%)	Passing 425µm Sieve (%)	Modified Plasticity Index (%)	Soil Classification	Volume Change Potential	
						BRE	NHBC
cRTD	12 - 19	15 - 26	79 – 89	12 - 23	CL - CI	Low to medium	Low to medium
gRTD	6.1		12		Non-plastic		
LC	27	43	100	43	CV	High	High

Note(s): BRE Volume Change Potential refers to BRE Digest 240 (based on Atterberg results)

NHBC Volume Change Potential refers to NHBC Standards Chapter 4.2

Soils Classification based on British Soil Classification System

The most common use of the term clay is to describe a soil that contains enough clay-sized material or clay minerals to exhibit cohesive properties. The fraction of clay-sized material required varies, but can be as low as 15%. Unless stated otherwise, this is the sense used in Digest 240. The term can be used to denote the clay minerals. These are specific, naturally occurring chemical compounds, predominately silicates. The term is often used as a particle size descriptor. Soil particles that have a nominal diameter of less than 2 µm are normally considered to be of clay size, but they are not necessarily clay minerals. Some clay minerals are larger than 2 µm and some particles, 'rock flour' for example, can be finer than 2 µm but are not clay minerals.

(The Atterberg Limit Tests were undertaken in accordance with BS 1377:Part 2:1990 Clauses 3.2, 4.3 and 5)

Table C.2.5 Interpretation of PSD Tests

Location	Depth (m bgl)	Soil Description	Volume Change Potential		Passing 63µm Sieve (%)
			BRE	NHBC	
BH1	3.00-3.45	Brown fine to coarse sandy silty/ clayey fine to coarse GRAVEL	Yes	No	29
WS3	2.30	Off white/ brown fine to coarse sandy silty/ clayey fine to coarse GRAVEL	Yes	No	23
WS4	2.80	Off white fine to coarse sandy silty/ clayey fine to coarse GRAVEL	Yes	No	28

Note(s): BRE 240 states that a soil has a volume change potential when the clay fraction **exceeds 15%**. Only the silt and clay combined fraction are determined by sieving therefore the volume change potential is estimated from the percentage passing the 63µm sieve. NHBC Standards Chapter 4.2 states that a soil is shrinkable if the percentage of silt and clay passing the 63µm sieve is greater than 35% and the Plasticity Index is greater than 10%.

(The Particle Size Distribution Tests were undertaken in accordance with BS 1377: Part 2: 1990 Clause 9)

Appendix C.3 Geotechnical In-Situ and Laboratory Results



Laboratory Report



Contract Number: 68213

Client Ref: **21060**
Client PO: **21060/JA**

Date Received: **18-08-2023**
Date Completed: **24-08-2023**
Report Date: **24-08-2023**

Client: **Soils Limited**
Newton House
Cross Road
Tadworth
Surrey
KT20 5SR

This report has been checked and approved by:

Richard John
Quality/Technical Manager

Contract Title: **Havant and South Downs College**
For the attention of: **James Adey**

Test Description	Qty
Moisture Content of Soil BS1377 : Part 2 : Clause 3.2 : 1990 - * UKAS	6
1 Point Liquid & Plastic Limit BS 1377:1990 - Part 2 : 4.4 & 5.3 - * UKAS	6
PSD Wet & Dry Sieve method BS 1377:1990 - Part 2 : 9.2 - * UKAS	3
Quick Undrained Triaxial Compression test - single specimen at one confining pressure (100mm or 38mm diameter) BS 1377:1990 - Part 7 : 8 - * UKAS	2
Disposal of samples for job	1

Notes: Observations and Interpretations are outside the UKAS Accreditation
* - denotes test included in laboratory scope of accreditation
- denotes test carried out by approved contractor
@ - denotes non accredited tests

This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This test report/certificate shall not be reproduced except in full, without the approval of GEO Site & Testing Services Ltd. Any opinions or interpretations stated - within this report/certificate are excluded from the laboratories UKAS accreditation.

Approved Signatories:

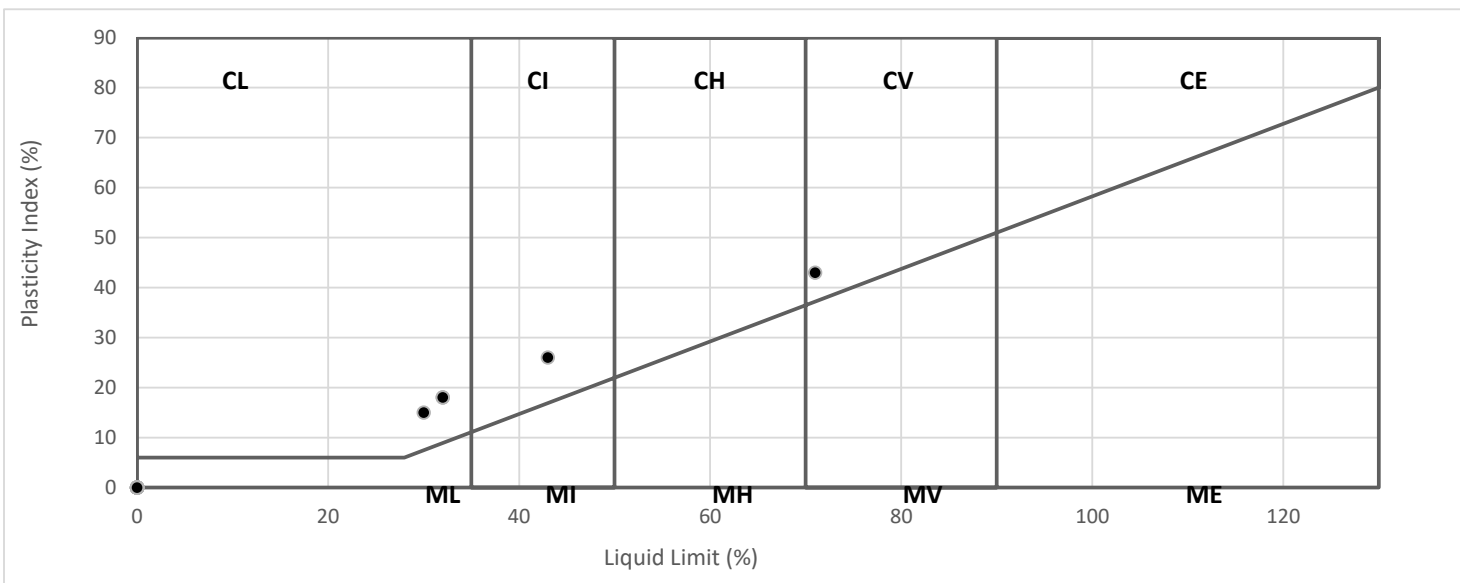
Brendan Evans (Office Administrator) - Darren Bourne (Quality Senior Technician) - Paul Evans (Director)
Richard John (Quality/Technical Manager) - Shaun Jones (Laboratory manager) - Shaun Thomas (Site Manager)
Wayne Honey (Human Resources/ Health and Safety Manager)

Contract Number	68213	
Project Name	Havant and South Downs College	
Date Tested	22/08/2023	

[illegible]

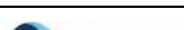
Symbols: NP : Non Plastic # : Liquid Limit and Plastic Limit Wet Sieved

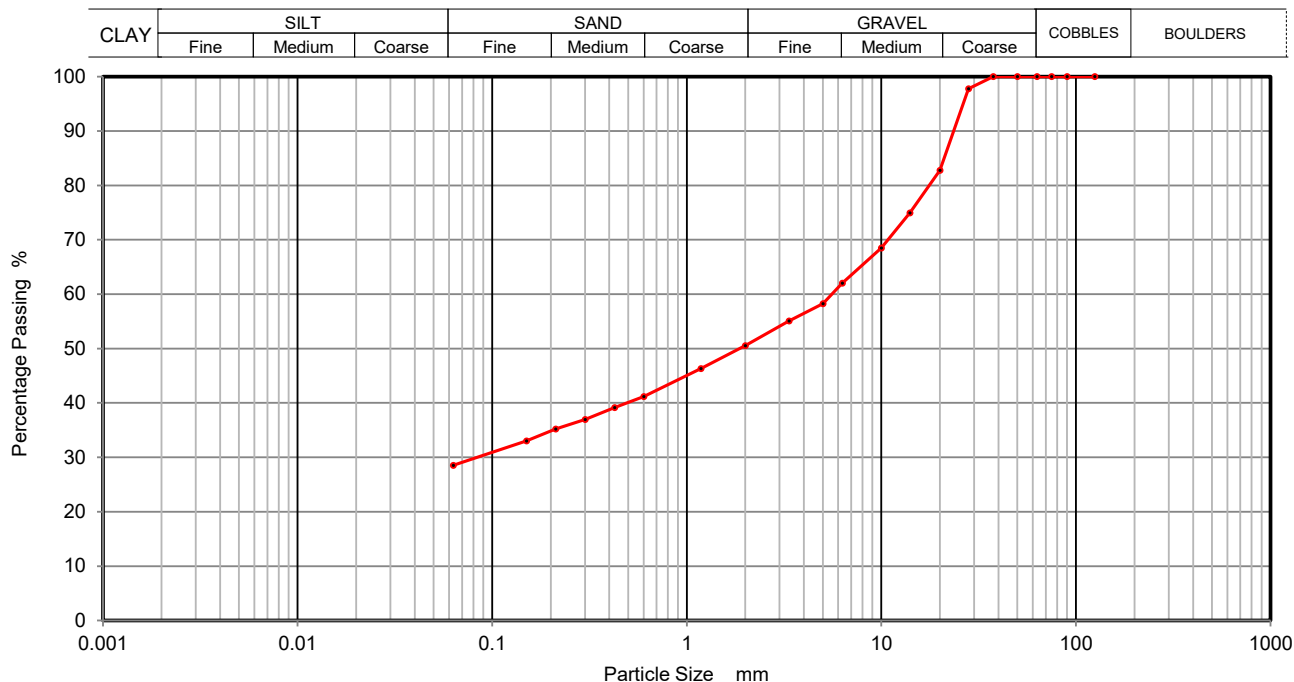
PLASTICITY CHART FOR CASAGRANDE CLASSIFICATION



Operator
Clayton Jenkins

**PARTICLE SIZE DISTRIBUTION
BS 1377 Part 2:1990
Wet Sieve, Clause 9.2**

 GSTL GEOTECHNICAL SITE & TESTING LABORATORIES	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	68213
		Borehole/Pit No.	BH1
Project Name	Havant and South Downs College	Sample No.	1
Soil Description	Brown fine to coarse sandy silty/ clayey fine to coarse GRAVEL	Depth Top	3.00
		Depth Base	3.45
Date Tested	23/08/2023	Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	98		
20	83		
14	75		
10	68		
6.3	62		
5	58		
3.35	55		
2	51		
1.18	46		
0.6	41		
0.425	39		
0.3	37		
0.212	35		
0.15	33		
0.063	29		

Sample Proportions	% dry mass
Cobbles	0
Gravel	49
Sand	22
Silt and Clay	29

Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operator
David Edwards

PARTICLE SIZE DISTRIBUTION
BS 1377 Part 2:1990
Wet Sieve, Clause 9.2

Contract Number 68213

Borehole/Pit No. WS3

Project Name Havant and South Downs College

Sample No. 1

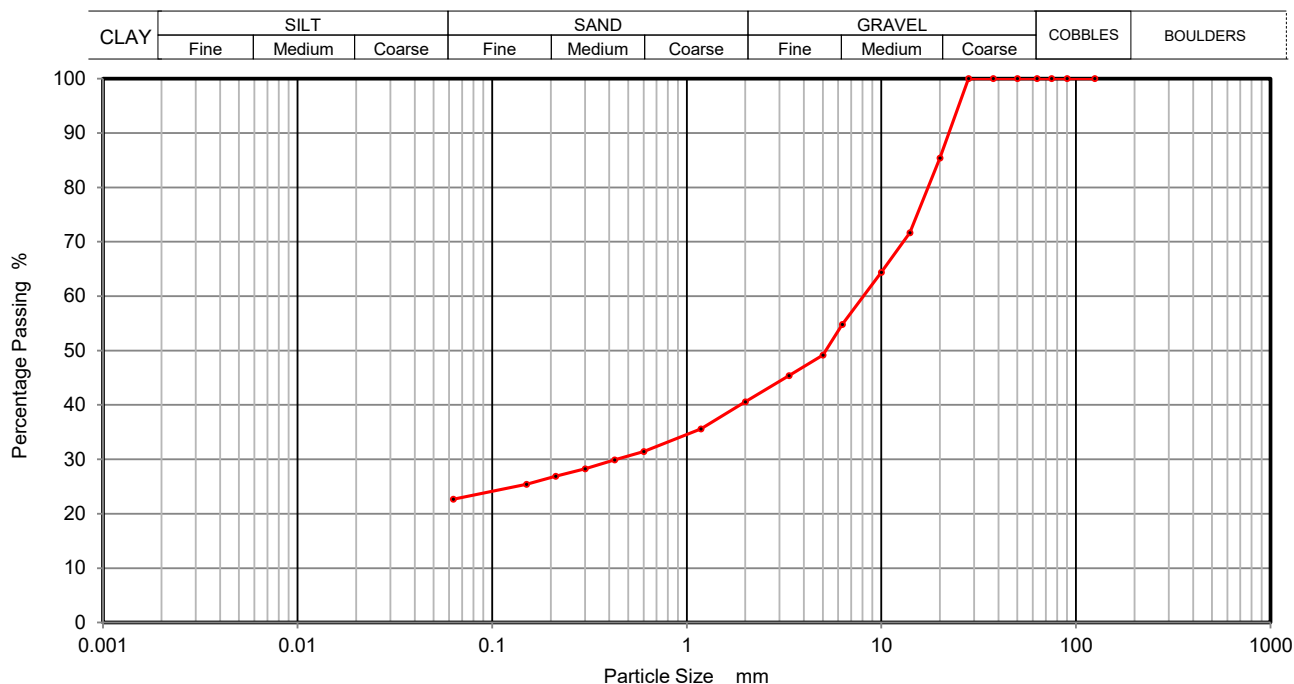
Soil Description Off white/ brown fine to coarse sandy silty/ clayey fine to coarse GRAVEL

Depth Top 2.30

Depth Base

Date Tested 23/08/2023

Sample Type D



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	85		
14	72		
10	64		
6.3	55		
5	49		
3.35	45		
2	41		
1.18	36		
0.6	31		
0.425	30		
0.3	28		
0.212	27		
0.15	25		
0.063	23		

Sample Proportions	% dry mass
Cobbles	0
Gravel	59
Sand	18
Silt and Clay	23

Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operator

David Edwards

PARTICLE SIZE DISTRIBUTION
BS 1377 Part 2:1990
Wet Sieve, Clause 9.2

Contract Number 68213

Borehole/Pit No. WS4

Project Name Havant and South Downs College

Sample No. 1

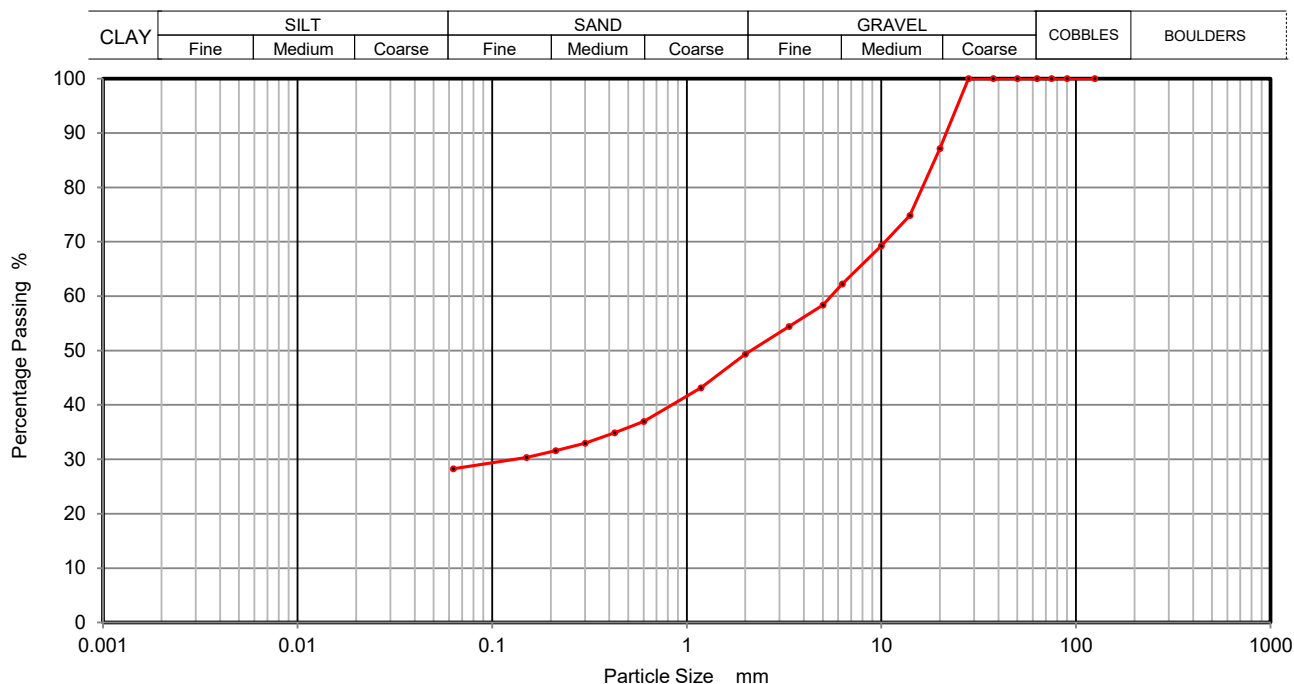
Soil Description Off white fine to coarse sandy silty/ clayey fine to coarse GRAVEL

Depth Top 2.80

Depth Base

Date Tested 23/08/2023

Sample Type D



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	87		
14	75		
10	69		
6.3	62		
5	58		
3.35	54		
2	49		
1.18	43		
0.6	37		
0.425	35		
0.3	33		
0.212	32		
0.15	30		
0.063	28		

Sample Proportions	% dry mass
Cobbles	0
Gravel	51
Sand	21
Silt and Clay	28

Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operator

David Edwards

**Single Stage Unconsolidated-Undrained Triaxial
Test
BS 1377 : 1990 Part 7 : 8**

Contract Number 68213

Borehole/Pit No. BH01

Project Name Havant and South Downs College

Sample No. 1

Soil Description Grey Silty CLAY

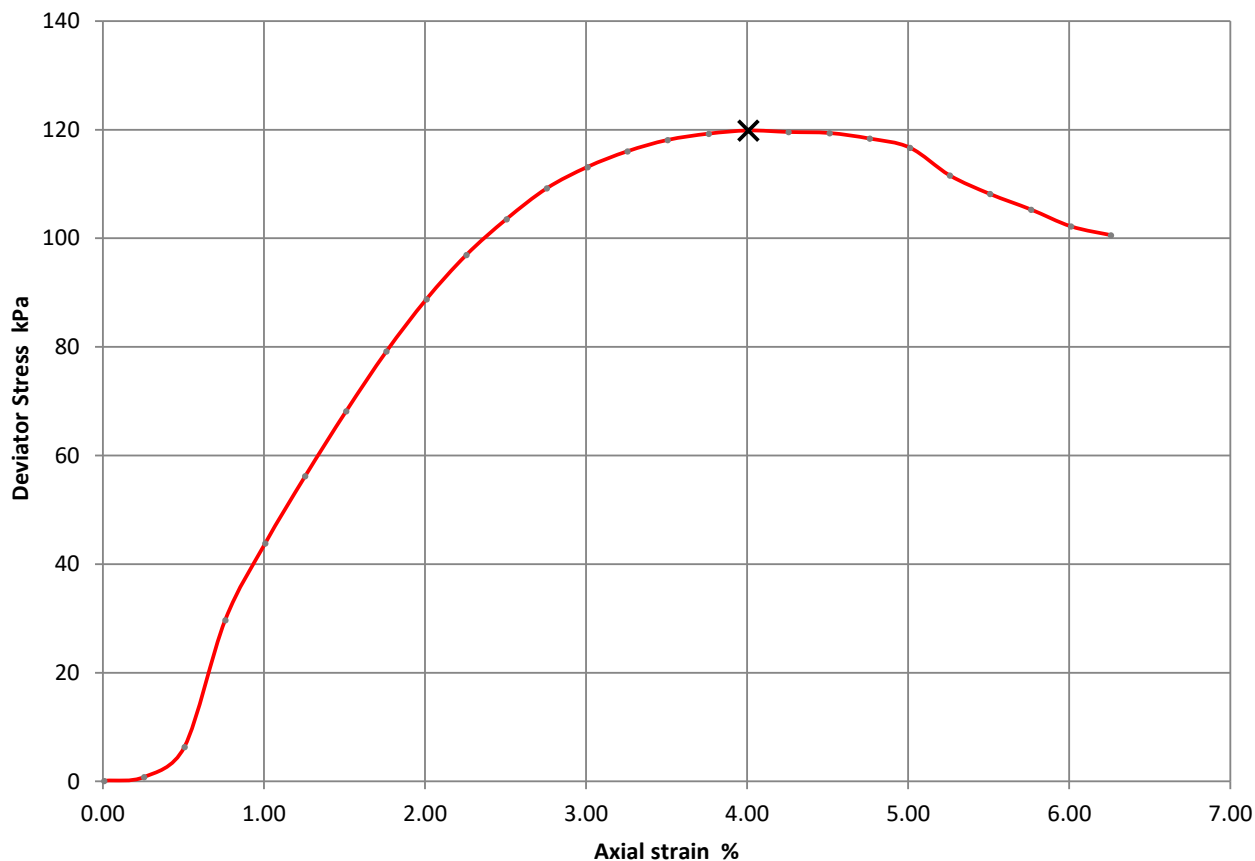
Depth Top (m) 5.00

Depth Base (m) 5.45

Date Tested 21/08/2023

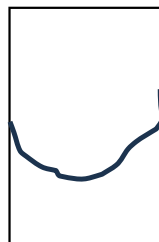
Sample Type U

Operator Jordan



Moisture Content (%)	28
Bulk Density (Mg/m ³)	1.99
Dry Density (Mg/m ³)	1.56
Specimen Length (mm)	207.83
Specimen Diameter (mm)	101.46
Cell Pressure (kPa)	100
Deviator Stress (kPa)	120
Undrained Shear Strength (kPa)	60
Failure Strain (%)	4
Mode Of Failure	Brittle
Membrane Used/Thickness	Rubber/0.2mm
Rate of Strain (%/min)	1.32

Notes.



Failure Sketch.

**Single Stage Unconsolidated-Undrained Triaxial
Test
BS 1377 : 1990 Part 7 : 8**

Contract Number 68213

Borehole/Pit No. BH01

Project Name Havant and South Downs College

Sample No. 1

Soil Description Grey Fine To Medium Gravelly CLAY

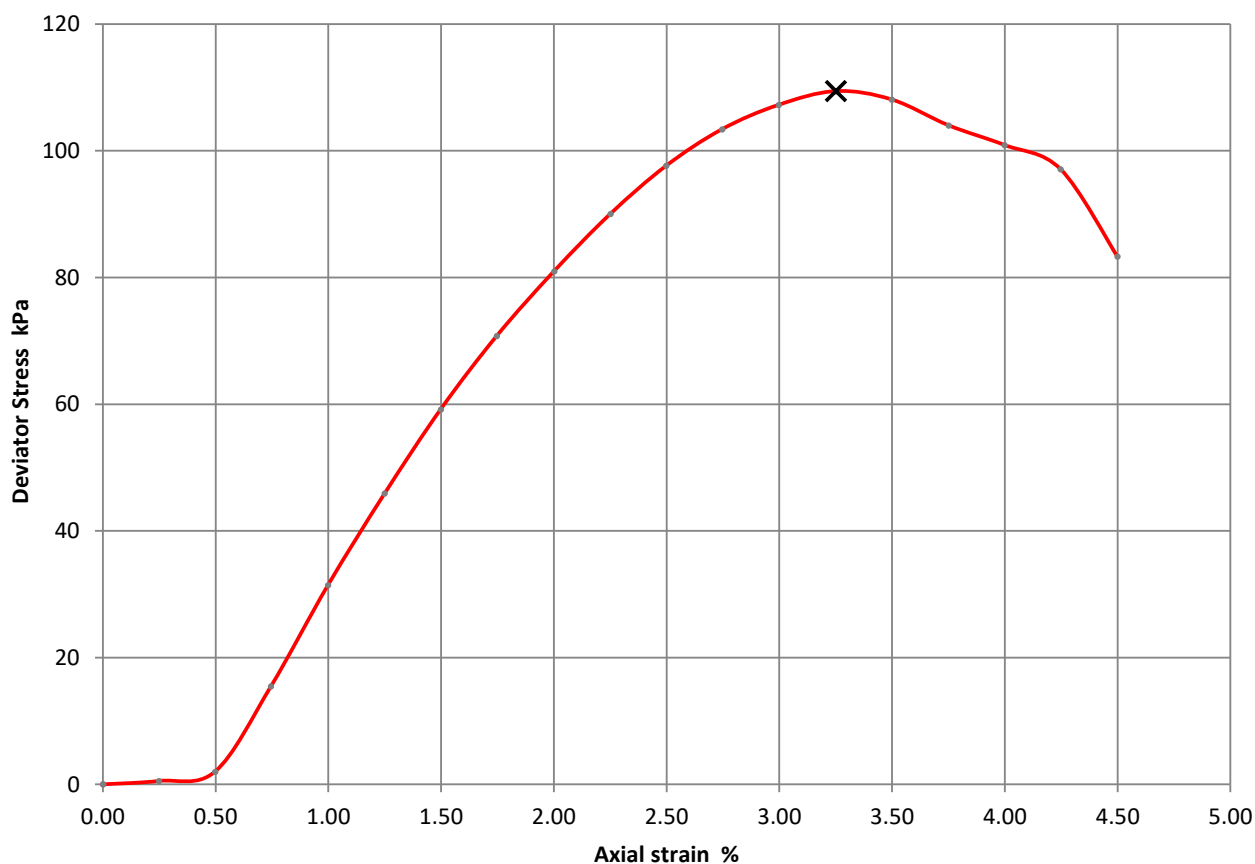
Depth Top (m) 11.00

Depth Base (m) 11.45

Date Tested 21/08/2023

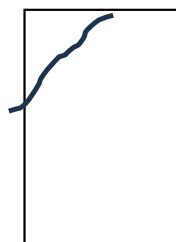
Sample Type U

Operator Jordan



Moisture Content (%)	24
Bulk Density (Mg/m ³)	1.98
Dry Density (Mg/m ³)	1.60
Specimen Length (mm)	208.03
Specimen Diameter (mm)	102.77
Cell Pressure (kPa)	220
Deviator Stress (kPa)	109
Undrained Shear Strength (kPa)	55
Failure Strain (%)	3
Mode Of Failure	Brittle
Membrane Used/Thickness	Rubber/0.2mm
Rate of Strain (%/min)	1.32

Notes.



Failure Sketch.



James Adey
Soils Ltd
Thomas Telford House - Unit 11
Sun Valley Business Park
Winnall Close
Winchester
SO23 0LB

Derwentside Environmental Testing Services Ltd
Unit 1
Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Kent
ME17 2JN
t: 01622 850410

DETS Report No: 23-10647

Site Reference: Havant and South Downs College

Project / Job Ref: 21060

Order No: 21060/JA

Sample Receipt Date: 18/08/2023

Sample Scheduled Date: 18/08/2023

Report Issue Number: 1

Reporting Date: 24/08/2023

Authorised by:

Dave Ashworth
Technical Manager

Dates of laboratory activities for each tested analyte are available upon request.

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DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410



Soil Analysis Certificate						
DETS Report No: 23-10647	Date Sampled	09/08/23	09/08/23	15/08/23	15/08/23	15/08/23
Soils Ltd	Time Sampled	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Site Reference: Havant and South Downs College	TP / BH No	BH1	BH1	WS1	WS3	WS3
Project / Job Ref: 21060	Additional Refs	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Order No: 21060/JA	Depth (m)	5.45	12.30 - 12.50	2.80	1.80	3.80
Reporting Date: 24/08/2023	DETS Sample No	670609	670610	670611	670612	670613

Determinand	Unit	RL	Accreditation	(n)				
pH	pH Units	N/a	MCERTS	7.9	7.9	8.2	7.8	7.8
Total Sulphate as SO ₄	mg/kg	< 200	MCERTS	1053		402	< 200	
Total Sulphate as SO ₄	%	< 0.02	MCERTS	0.11		0.04	< 0.02	
W/S Sulphate as SO ₄ (2:1)	mg/l	< 10	MCERTS	303	177	13	13	58
W/S Sulphate as SO ₄ (2:1)	g/l	< 0.01	MCERTS	0.30	0.18	0.01	0.01	0.06
Total Sulphur	%	< 0.02	NONE	0.41		0.02	< 0.02	
Ammonium as NH ₄	mg/kg	< 0.5	MCERTS	9.9		4.1	4.2	
Ammonium as NH ₄	mg/l	< 0.05	MCERTS	0.99		0.41	0.42	
W/S Chloride (2:1)	mg/kg	< 1	MCERTS	13		7	8	
W/S Chloride (2:1)	mg/l	< 0.5	MCERTS	6.7		3.6	4	
Water Soluble Nitrate (2:1) as NO ₃	mg/kg	< 3	MCERTS	< 3		< 3	< 3	
Water Soluble Nitrate (2:1) as NO ₃	mg/l	< 1.5	MCERTS	< 1.5		< 1.5	< 1.5	
W/S Magnesium	mg/l	< 0.1	NONE	6.9		0.7	1.1	

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30°C. The Method Description page describes if the test is performed on the dried or as-received portion

Subcontracted analysis (S)

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



DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410



Soil Analysis Certificate						
DETS Report No: 23-10647	Date Sampled	15/08/23				
Soils Ltd	Time Sampled	None Supplied				
Site Reference: Havant and South Downs College	TP / BH No	WS4				
Project / Job Ref: 21060	Additional Refs	None Supplied				
Order No: 21060/JA	Depth (m)	0.50				
Reporting Date: 24/08/2023	DETS Sample No	670614				

Determinand	Unit	RL	Accreditation				
pH	pH Units	N/a	MCERTS	7.7			
Total Sulphate as SO ₄	mg/kg	< 200	MCERTS				
Total Sulphate as SO ₄	%	< 0.02	MCERTS				
W/S Sulphate as SO ₄ (2:1)	mg/l	< 10	MCERTS	< 10			
W/S Sulphate as SO ₄ (2:1)	g/l	< 0.01	MCERTS	< 0.01			
Total Sulphur	%	< 0.02	NONE				
Ammonium as NH ₄	mg/kg	< 0.5	MCERTS				
Ammonium as NH ₄	mg/l	< 0.05	MCERTS				
W/S Chloride (2:1)	mg/kg	< 1	MCERTS				
W/S Chloride (2:1)	mg/l	< 0.5	MCERTS				
Water Soluble Nitrate (2:1) as NO ₃	mg/kg	< 3	MCERTS				
Water Soluble Nitrate (2:1) as NO ₃	mg/l	< 1.5	MCERTS				
W/S Magnesium	mg/l	< 0.1	NONE				

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30°C. The Method Description page describes if the test is performed on the dried or as-received portion
Subcontracted analysis (S)



DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410



Soil Analysis Certificate - Sample Descriptions

DETS Report No: 23-10647	
Soils Ltd	
Site Reference: Havant and South Downs College	
Project / Job Ref: 21060	
Order No: 21060/JA	
Reporting Date: 24/08/2023	

DETS Sample No	TP / BH No	Additional Refs	Depth (m)	Moisture Content (%)	Sample Matrix Description
670609	BH1	None Supplied	5.45	19.3	Grey clay
670610	BH1	None Supplied	12.30 - 12.50	14	Grey sandy clay
670611	WS1	None Supplied	2.80	8.7	Light grey sandy gravel with stones and chalk
670612	WS3	None Supplied	1.80	9.4	Brown sandy clay with stones and chalk
670613	WS3	None Supplied	3.80	20.1	Light brown clay
670614	WS4	None Supplied	0.50	11.7	Light brown sandy clay

Moisture content is part of procedure E003 & is not an accredited test

Insufficient Sample ^{1/5}

Unsuitable Sample ^{0/5}



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Tel : 01622 850410



Soil Analysis Certificate - Methodology & Miscellaneous Information

DETS Report No: 23-10647

Soils Ltd

Site Reference: Havant and South Downs College

Project / Job Ref: 21060

Order No: 21060/JA

Reporting Date: 24/08/2023

Matrix	Analysed On	Determinand	Brief Method Description	Method No
Soil	D	Boron - Water Soluble	Determination of water soluble boron in soil by 2:1 hot water extract followed by ICP-OES	E012
Soil	AR	BTEX	Determination of BTEX by headspace GC-MS	E001
Soil	D	Cations	Determination of cations in soil by aqua-regia digestion followed by ICP-OES	E002
Soil	D	Chloride - Water Soluble (2:1)	Determination of chloride by extraction with water & analysed by ion chromatography	E009
Soil	AR	Chromium - Hexavalent	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry	E016
Soil	AR	Cyanide - Complex	Determination of complex cyanide by distillation followed by colorimetry	E015
Soil	AR	Cyanide - Free	Determination of free cyanide by distillation followed by colorimetry	E015
Soil	AR	Cyanide - Total	Determination of total cyanide by distillation followed by colorimetry	E015
Soil	D	Cyclohexane Extractable Matter (CEM)	Gravimetrically determined through extraction with cyclohexane	E011
Soil	AR	Diesel Range Organics (C10 - C24)	Determination of hexane/acetone extractable hydrocarbons by GC-FID	E004
Soil	AR	Electrical Conductivity	Determination of electrical conductivity by addition of saturated calcium sulphate followed by electrometric measurement	E022
Soil	AR	Electrical Conductivity	Determination of electrical conductivity by addition of water followed by electrometric measurement	E023
Soil	D	Elemental Sulphur	Determination of elemental sulphur by solvent extraction followed by GC-MS	E020
Soil	AR	EPH (C10 - C40)	Determination of acetone/hexane extractable hydrocarbons by GC-FID	E004
Soil	AR	EPH Product ID	Determination of acetone/hexane extractable hydrocarbons by GC-FID	E004
Soil	AR	EPH TEXAS (C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C40)	Determination of acetone/hexane extractable hydrocarbons by GC-FID for C8 to C40. C6 to C8 by headspace GC-MS	E004
Soil	D	Fluoride - Water Soluble	Determination of Fluoride by extraction with water & analysed by ion chromatography	E009
Soil	D	Fraction Organic Carbon (FOC)	Determination of TOC by combustion analyser.	E027
Soil	D	Organic Matter (SOM)	Determination of TOC by combustion analyser.	E027
Soil	D	TOC (Total Organic Carbon)	Determination of TOC by combustion analyser.	E027
Soil	AR	Exchangeable Ammonium	Determination of ammonium by discrete analyser.	E029
Soil	D	FOC (Fraction Organic Carbon)	Determination of fraction of organic carbon by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	D	Loss on Ignition @ 450oC	Determination of loss on ignition in soil by gravimetrically with the sample being ignited in a muffle furnace	E019
Soil	D	Magnesium - Water Soluble	Determination of water soluble magnesium by extraction with water followed by ICP-OES	E025
Soil	D	Metals	Determination of metals by aqua-regia digestion followed by ICP-OES	E002
Soil	AR	Mineral Oil (C10 - C40)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge	E004
Soil	AR	Moisture Content	Moisture content; determined gravimetrically	E003
Soil	D	Nitrate - Water Soluble (2:1)	Determination of nitrate by extraction with water & analysed by ion chromatography	E009
Soil	D	Organic Matter	Determination of organic matter by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	AR	PAH - Speciated (EPA 16)	Determination of PAH compounds by extraction in acetone and hexane followed by GC-MS with the use of surrogate and internal standards	E005
Soil	AR	PCB - 7 Congeners	Determination of PCB by extraction with acetone and hexane followed by GC-MS	E008
Soil	D	Petroleum Ether Extract (PEE)	Gravimetrically determined through extraction with petroleum ether	E011
Soil	AR	pH	Determination of pH by addition of water followed by electrometric measurement	E007
Soil	AR	Phenols - Total (monohydric)	Determination of phenols by distillation followed by colorimetry	E021
Soil	D	Phosphate - Water Soluble (2:1)	Determination of phosphate by extraction with water & analysed by ion chromatography	E009
Soil	D	Sulphate (as SO4) - Total	Determination of total sulphate by extraction with 10% HCl followed by ICP-OES	E013
Soil	D	Sulphate (as SO4) - Water Soluble (2:1)	Determination of sulphate by extraction with water & analysed by ion chromatography	E009
Soil	D	Sulphate (as SO4) - Water Soluble (2:1)	Determination of water soluble sulphate by extraction with water followed by ICP-OES	E014
Soil	AR	Sulphide	Determination of sulphide by distillation followed by colorimetry	E018
Soil	D	Sulphur - Total	Determination of total sulphur by extraction with aqua-regia followed by ICP-OES	E024
Soil	AR	SVOC	Determination of semi-volatile organic compounds by extraction in acetone and hexane followed by GC-MS	E006
Soil	AR	Thiocyanate (as SCN)	Determination of thiocyanate by extraction in caustic soda followed by acidification followed by addition of ferric nitrate followed by colorimetry	E017
Soil	D	Toluene Extractable Matter (TEM)	Gravimetrically determined through extraction with toluene	E011
Soil	D	Total Organic Carbon (TOC)	Determination of organic matter by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	AR	TPH CWG (ali: C5- C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C34, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge for C8 to C35. C5 to C8 by headspace GC-MS	E004
Soil	AR	TPH LQM (ali: C5-C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C35, C35-C44, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35, C35-C44)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge for C8 to C44. C5 to C8 by headspace GC-MS	E004
Soil	AR	VOCS	Determination of volatile organic compounds by headspace GC-MS	E001
Soil	AR	VPH (C6-C8 & C8-C10)	Determination of hydrocarbons C6-C8 by headspace GC-MS & C8-C10 by GC-FID	E001

D Dried
AR As Received



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Maidstone
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Tel : 01622 850410



List of HWOL Acronyms and Operators	
DETS Report No: 23-10647	
Soils Ltd	
Site Reference: Havant and South Downs College	
Project / Job Ref: 21060	
Order No: 21060/JA	
Reporting Date: 24/08/2023	

Acronym	Description
HS	Headspace analysis
EH	Extractable Hydrocarbons - i.e. everything extracted by the solvent
CU	Clean-up - e.g. by florisil, silica gel
1D	GC - Single coil gas chromatography
2D	GC-GC - Double coil gas chromatography
Total	Aliphatics & Aromatics
AL	Aliphatics only
AR	Aromatics only
#1	EH_2D_Total but with humics mathematically subtracted
#2	EH_2D_Total but with fatty acids mathematically subtracted
	Operator - underscore to separate acronyms (exception for +)
+	Operator to indicate cumulative eg. EH+HS_Total or EH_CU+HS_Total
Det - Acronym	

Appendix D Chemical Laboratory Analyses

Appendix D.1 Chemical Laboratory Results



James Adey
Soils Ltd
Thomas Telford House - Unit 11
Sun Valley Business Park
Winnall Close
Winchester
SO23 0LB

Derwentside Environmental Testing Services Ltd
Unit 1
Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Kent
ME17 2JN
t: 01622 850410

DETS Report No: 23-10646

Site Reference: Havant And South Downs College

Project / Job Ref: 21060

Order No: 21060/JA

Sample Receipt Date: 18/08/2023

Sample Scheduled Date: 18/08/2023

Report Issue Number: 1

Reporting Date: 24/08/2023

Authorised by:

Dave Ashworth
Technical Manager

Dates of laboratory activities for each tested analyte are available upon request.

Opinions and interpretations are outside the laboratory's scope of ISO 17025 accreditation. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced except in full, without the prior written approval of the laboratory.

For Topsoil and WAC analysis the expanded uncertainty measurement should be considered while evaluating results against compliance values.



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Soil Analysis Certificate						
DETS Report No: 23-10646	Date Sampled	15/08/23	15/08/23	15/08/23		
Soils Ltd	Time Sampled	None Supplied	None Supplied	None Supplied		
Site Reference: Havant And South Downs College	TP / BH No	WS1	WS3	WS4		
Project / Job Ref: 21060	Additional Refs	None Supplied	None Supplied	None Supplied		
Order No: 21060/JA	Depth (m)	0.30	0.10	0.10		
Reporting Date: 24/08/2023	DETS Sample No	670606	670607	670608		

Determinand	Unit	RL	Accreditation				
Asbestos Screen ^(S)	N/a	N/a	ISO17025	Not Detected	Not Detected	Not Detected	
pH	pH Units	N/a	MCERTS	7.7	7.2	7.4	
Organic Matter (SOM)	%	< 0.1	MCERTS	2.7	3.4	3.4	
Arsenic (As)	mg/kg	< 2	MCERTS	8	8	9	
W/S Boron	mg/kg	< 1	NONE	< 1	< 1	< 1	
Cadmium (Cd)	mg/kg	< 0.2	MCERTS	0.2	0.2	0.3	
Chromium (Cr)	mg/kg	< 2	MCERTS	16	17	17	
Chromium (hexavalent)	mg/kg	< 2	NONE	< 2	< 2	< 2	
Copper (Cu)	mg/kg	< 4	MCERTS	23	26	35	
Lead (Pb)	mg/kg	< 3	MCERTS	51	77	116	
Mercury (Hg)	mg/kg	< 1	MCERTS	< 1	< 1	< 1	
Nickel (Ni)	mg/kg	< 3	MCERTS	12	12	12	
Selenium (Se)	mg/kg	< 2	MCERTS	< 2	< 2	< 2	
Vanadium (V)	mg/kg	< 1	MCERTS	26	28	29	
Zinc (Zn)	mg/kg	< 3	MCERTS	70	73	86	
Total Phenols (monohydric)	mg/kg	< 2	NONE	< 2	< 2	< 2	

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30°C. The Method Description page describes if the test is performed on the dried or as-received portion
 Subcontracted analysis (S)



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Soil Analysis Certificate - Speciated PAHs						
DETS Report No: 23-10646	Date Sampled	15/08/23	15/08/23	15/08/23		
Soils Ltd	Time Sampled	None Supplied	None Supplied	None Supplied		
Site Reference: Havant And South Downs College	TP / BH No	WS1	WS3	WS4		
Project / Job Ref: 21060	Additional Refs	None Supplied	None Supplied	None Supplied		
Order No: 21060/JA	Depth (m)	0.30	0.10	0.10		
Reporting Date: 24/08/2023	DETS Sample No	670606	670607	670608		

Determinand	Unit	RL	Accreditation				
Naphthalene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	
Acenaphthylene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	
Acenaphthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	
Fluorene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	0.15	
Phenanthrene	mg/kg	< 0.1	MCERTS	< 0.1	0.22	2.31	
Anthracene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	0.34	
Fluoranthene	mg/kg	< 0.1	MCERTS	0.37	0.53	2.81	
Pyrene	mg/kg	< 0.1	MCERTS	0.32	0.49	2.19	
Benzo(a)anthracene	mg/kg	< 0.1	MCERTS	0.24	0.25	0.96	
Chrysene	mg/kg	< 0.1	MCERTS	0.20	0.26	0.97	
Benzo(b)fluoranthene	mg/kg	< 0.1	MCERTS	0.27	0.31	0.82	
Benzo(k)fluoranthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	0.25	
Benzo(a)pyrene	mg/kg	< 0.1	MCERTS	0.26	0.25	0.68	
Indeno(1,2,3-cd)pyrene	mg/kg	< 0.1	MCERTS	0.18	0.16	0.36	
Dibenz(a,h)anthracene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	
Benzo(ghi)perylene	mg/kg	< 0.1	MCERTS	0.17	0.15	0.32	
Total EPA-16 PAHs	mg/kg	< 1.6	MCERTS	2	2.6	12.2	



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Kent ME17 2JN
Tel : 01622 850410



Soil Analysis Certificate - EPH Texas Banded

DETS Report No: 23-10646	Date Sampled	15/08/23	15/08/23	15/08/23		
Soils Ltd	Time Sampled	None Supplied	None Supplied	None Supplied		
Site Reference: Havant And South Downs College	TP / BH No	WS1	WS3	WS4		
Project / Job Ref: 21060	Additional Refs	None Supplied	None Supplied	None Supplied		
Order No: 21060/JA	Depth (m)	0.30	0.10	0.10		
Reporting Date: 24/08/2023	DETS Sample No	670606	670607	670608		

Determinand	Unit	RL	Accreditation					
EPH Texas (C6 - C8) : HS 1D MS Total	mg/kg	< 0.05	NONE	< 0.05	< 0.05	< 0.05		
EPH Texas (>C8 - C10) : EH 1D Total	mg/kg	< 1	MCERTS	< 1	< 1	< 1		
EPH Texas (>C10 - C12) : EH 1D Total	mg/kg	< 1	MCERTS	< 1	< 1	< 1		
EPH Texas (>C12 - C16) : EH 1D Total	mg/kg	< 1	MCERTS	< 1	< 1	< 1		
EPH Texas (>C16 - C21) : EH 1D Total	mg/kg	< 1	MCERTS	1	4	14		
EPH Texas (>C21 - C40) : EH 1D Total	mg/kg	< 6	MCERTS	11	15	16		
EPH Texas (C6 - C40) : HS 1D MS+EH 1D Total	mg/kg	< 6	NONE	12	19	31		

Waste Acceptance Criteria Analytical Certificate - BS EN 12457/2																																							
DETS Report No: 23-10646		Date Sampled	15/08/23		<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="3" style="text-align: left; padding: 5px;">Landfill Waste Acceptance Criteria Limits</th> </tr> <tr> <th style="width: 33%; padding: 5px;">Inert Waste Landfill</th> <th style="width: 33%; padding: 5px;">Stable Non-reactive HAZARDOUS waste in non-hazardous Landfill</th> <th style="width: 33%; padding: 5px;">Hazardous Waste Landfill</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">3%</td> <td style="text-align: center;">5%</td> <td style="text-align: center;">6%</td> </tr> <tr> <td style="text-align: center;">--</td> <td style="text-align: center;">--</td> <td style="text-align: center;">10%</td> </tr> <tr> <td style="text-align: center;">6</td> <td style="text-align: center;">--</td> <td style="text-align: center;">--</td> </tr> <tr> <td style="text-align: center;">1</td> <td style="text-align: center;">--</td> <td style="text-align: center;">--</td> </tr> <tr> <td style="text-align: center;">500</td> <td style="text-align: center;">--</td> <td style="text-align: center;">--</td> </tr> <tr> <td style="text-align: center;">100</td> <td style="text-align: center;">--</td> <td style="text-align: center;">--</td> </tr> <tr> <td style="text-align: center;">--</td> <td style="text-align: center;">>6</td> <td style="text-align: center;">--</td> </tr> <tr> <td style="text-align: center;">--</td> <td style="text-align: center;">To be evaluated</td> <td style="text-align: center;">To be evaluated</td> </tr> </tbody> </table>					Landfill Waste Acceptance Criteria Limits			Inert Waste Landfill	Stable Non-reactive HAZARDOUS waste in non-hazardous Landfill	Hazardous Waste Landfill	3%	5%	6%	--	--	10%	6	--	--	1	--	--	500	--	--	100	--	--	--	>6	--	--	To be evaluated	To be evaluated
Landfill Waste Acceptance Criteria Limits																																							
Inert Waste Landfill	Stable Non-reactive HAZARDOUS waste in non-hazardous Landfill	Hazardous Waste Landfill																																					
3%	5%	6%																																					
--	--	10%																																					
6	--	--																																					
1	--	--																																					
500	--	--																																					
100	--	--																																					
--	>6	--																																					
--	To be evaluated	To be evaluated																																					
Soils Ltd		Time Sampled	None Supplied																																				
Site Reference: Havant And South Downs College		TP / BH No	WS1																																				
Project / Job Ref: 21060		Additional Refs	None Supplied																																				
Order No: 21060/JA		Depth (m)	0.30																																				
Reporting Date: 24/08/2023		DETS Sample No	670606																																				
Determinand	Unit	MDL																																					
TOC ^{MU}	%	< 0.1	1.6																																				
Loss on Ignition ^{MU}	%	< 0.01	4.50																																				
BTEX ^{MU}	mg/kg	< 0.05	< 0.05																																				
Sum of PCBs	mg/kg	< 0.1	< 0.1																																				
Mineral Oil ^{MU}	mg/kg	< 10	< 10																																				
Total PAH ^{MU}	mg/kg	< 1.7	2																																				
pH ^{MU}	pH Units	N/a	7.7																																				
Acid Neutralisation Capacity	mol/kg (+/-)	< 1	< 1																																				
Eluate Analysis			10:1 mg/l			Cumulative 10:1 mg/kg	Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg (mg/kg)																																
Arsenic ^U			< 0.01			< 0.1	0.5	2	25																														
Barium ^U			< 0.02			< 0.2	20	100	300																														
Cadmium ^U			< 0.0005			< 0.005	0.04	1	5																														
Chromium ^U			< 0.005			< 0.05	0.5	10	70																														
Copper ^U			< 0.01			< 0.1	2	50	100																														
Mercury ^U			< 0.0005			< 0.005	0.01	0.2	2																														
Molybdenum ^U			0.001			0.01	0.5	10	30																														
Nickel ^U			< 0.007			< 0.07	0.4	10	40																														
Lead ^U			< 0.005			< 0.05	0.5	10	50																														
Antimony ^U			< 0.005			< 0.05	0.06	0.7	5																														
Selenium ^U			< 0.005			< 0.05	0.1	0.5	7																														
Zinc ^U			0.015			0.15	4	50	200																														
Chloride ^U			1.8			18	800	15000	25000																														
Fluoride ^U			< 0.5			< 5	10	150	500																														
Sulphate ^U			2.7			27	1000	20000	50000																														
TDS			63			630	4000	60000	100000																														
Phenol Index ^U			< 0.01			< 0.1	1	-	-																														
DOC ^U			19.5			195	500	800	1000																														
Leach Test Information																																							
Sample Mass (kg)			0.10																																				
Dry Matter (%)			93.1																																				
Moisture (%)			7.4																																				
Stage 1																																							
Volume Eluate L10 (litres)			0.89																																				

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30°C. The Samples Descriptions page describes if the test is performed on the dried or as-received portion

Stated limits are for guidance only and DETS Ltd cannot be held responsible for any discrepancies with current legislation

M Denotes MCERTS accredited test

U Denotes ISO17025 accredited test

Waste Acceptance Criteria Analytical Certificate - BS EN 12457/2										
DETS Report No: 23-10646		Date Sampled	15/08/23		Landfill Waste Acceptance Criteria Limits			Inert Waste Landfill Stable Non-reactive HAZARDOUS waste in non-hazardous Landfill Hazardous Waste Landfill		
Soils Ltd		Time Sampled	None Supplied							
Site Reference: Havant And South Downs College		TP / BH No	WS4							
Project / Job Ref: 21060		Additional Refs	None Supplied							
Order No: 21060/JA		Depth (m)	0.10							
Reporting Date: 24/08/2023		DETS Sample No	670608							
Determinand		Unit	MDL							
TOC ^{MU}		%	< 0.1 2							
Loss on Ignition ^{MU}		%	< 0.01 5.30							
BTEX ^{MU}		mg/kg	< 0.05 < 0.05							
Sum of PCBs		mg/kg	< 0.1 < 0.1							
Mineral Oil ^{MU}		mg/kg	< 10 < 10							
Total PAH ^{MU}		mg/kg	< 1.7 12.2							
pH ^{MU}		pH Units	N/a 7.4							
Acid Neutralisation Capacity		mol/kg (+/-)	< 1 < 1							
Eluate Analysis			10:1 mg/l			Cumulative 10:1 mg/kg	Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg (mg/kg)			
Arsenic ^U			< 0.01			< 0.1	0.5	2	25	
Barium ^U			< 0.02			< 0.2	20	100	300	
Cadmium ^U			< 0.0005			< 0.005	0.04	1	5	
Chromium ^U			< 0.005			< 0.05	0.5	10	70	
Copper ^U			< 0.01			< 0.1	2	50	100	
Mercury ^U			< 0.0005			< 0.005	0.01	0.2	2	
Molybdenum ^U			< 0.001			< 0.01	0.5	10	30	
Nickel ^U			< 0.007			< 0.07	0.4	10	40	
Lead ^U			< 0.005			< 0.05	0.5	10	50	
Antimony ^U			< 0.005			< 0.05	0.06	0.7	5	
Selenium ^U			< 0.005			< 0.05	0.1	0.5	7	
Zinc ^U			0.017			0.17	4	50	200	
Chloride ^U			2.0			20	800	15000	25000	
Fluoride ^U			< 0.5			< 5	10	150	500	
Sulphate ^U			1.1			11	1000	20000	50000	
TDS			40			400	4000	60000	100000	
Phenol Index ^U			< 0.01			< 0.1	1	-	-	
DOC ^U			17.5			175	500	800	1000	
Leach Test Information										
Sample Mass (kg)			0.10							
Dry Matter (%)			86.5							
Moisture (%)			15.8							
Stage 1										
Volume Eluate L10 (litres)			0.89							
Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30°C. The Samples Descriptions page describes if the test is performed on the dried or as-received portion Stated limits are for guidance only and DETS Ltd cannot be held responsible for any discrepancies with current legislation M Denotes MCERTS accredited test U Denotes ISO17025 accredited test										



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Soil Analysis Certificate - Sample Descriptions

DETS Report No: 23-10646	
Soils Ltd	
Site Reference: Havant And South Downs College	
Project / Job Ref: 21060	
Order No: 21060/JA	
Reporting Date: 24/08/2023	

DETS Sample No	TP / BH No	Additional Refs	Depth (m)	Moisture Content (%)	Sample Matrix Description
670606	WS1	None Supplied	0.30	6.9	Light brown sandy clay with stones
670607	WS3	None Supplied	0.10	14.8	Brown sandy clay with vegetation
670608	WS4	None Supplied	0.10	13.6	Brown sandy clay with stones and vegetation

Moisture content is part of procedure E003 & is not an accredited test

Insufficient Sample ^{1/5}

Unsuitable Sample ^{U/5}



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Lenham Heath
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Tel : 01622 850410



Soil Analysis Certificate - Methodology & Miscellaneous Information

DETS Report No: 23-10646

Soils Ltd

Site Reference: Havant And South Downs College

Project / Job Ref: 21060

Order No: 21060/JA

Reporting Date: 24/08/2023

Matrix	Analysed On	Determinand	Brief Method Description	Method No
Soil	D	Boron - Water Soluble	Determination of water soluble boron in soil by 2:1 hot water extract followed by ICP-OES	E012
Soil	AR	BTEX	Determination of BTEX by headspace GC-MS	E001
Soil	D	Cations	Determination of cations in soil by aqua-regia digestion followed by ICP-OES	E002
Soil	D	Chloride - Water Soluble (2:1)	Determination of chloride by extraction with water & analysed by ion chromatography	E009
Soil	AR	Chromium - Hexavalent	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry	E016
Soil	AR	Cyanide - Complex	Determination of complex cyanide by distillation followed by colorimetry	E015
Soil	AR	Cyanide - Free	Determination of free cyanide by distillation followed by colorimetry	E015
Soil	AR	Cyanide - Total	Determination of total cyanide by distillation followed by colorimetry	E015
Soil	D	Cyclohexane Extractable Matter (CEM)	Gravimetrically determined through extraction with cyclohexane	E011
Soil	AR	Diesel Range Organics (C10 - C24)	Determination of hexane/acetone extractable hydrocarbons by GC-FID	E004
Soil	AR	Electrical Conductivity	Determination of electrical conductivity by addition of saturated calcium sulphate followed by electrometric measurement	E022
Soil	AR	Electrical Conductivity	Determination of electrical conductivity by addition of water followed by electrometric measurement	E023
Soil	D	Elemental Sulphur	Determination of elemental sulphur by solvent extraction followed by GC-MS	E020
Soil	AR	EPH (C10 - C40)	Determination of acetone/hexane extractable hydrocarbons by GC-FID	E004
Soil	AR	EPH Product ID	Determination of acetone/hexane extractable hydrocarbons by GC-FID	E004
Soil	AR	EPH TEXAS (C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C40)	Determination of acetone/hexane extractable hydrocarbons by GC-FID for C8 to C40. C6 to C8 by headspace GC-MS	E004
Soil	D	Fluoride - Water Soluble	Determination of Fluoride by extraction with water & analysed by ion chromatography	E009
Soil	D	Fraction Organic Carbon (FOC)	Determination of TOC by combustion analyser.	E027
Soil	D	Organic Matter (SOM)	Determination of TOC by combustion analyser.	E027
Soil	D	TOC (Total Organic Carbon)	Determination of TOC by combustion analyser.	E027
Soil	AR	Exchangeable Ammonium	Determination of ammonium by discrete analyser.	E029
Soil	D	FOC (Fraction Organic Carbon)	Determination of fraction of organic carbon by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	D	Loss on Ignition @ 450°C	Determination of loss on ignition in soil by gravimetrically with the sample being ignited in a muffle furnace	E019
Soil	D	Magnesium - Water Soluble	Determination of water soluble magnesium by extraction with water followed by ICP-OES	E025
Soil	D	Metals	Determination of metals by aqua-regia digestion followed by ICP-OES	E002
Soil	AR	Mineral Oil (C10 - C40)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge	E004
Soil	AR	Moisture Content	Moisture content; determined gravimetrically	E003
Soil	D	Nitrate - Water Soluble (2:1)	Determination of nitrate by extraction with water & analysed by ion chromatography	E009
Soil	D	Organic Matter	Determination of organic matter by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	AR	PAH - Speciated (EPA 16)	Determination of PAH compounds by extraction in acetone and hexane followed by GC-MS with the use of surrogate and internal standards	E005
Soil	AR	PCB - 7 Congeners	Determination of PCB by extraction with acetone and hexane followed by GC-MS	E008
Soil	D	Petroleum Ether Extract (PEE)	Gravimetrically determined through extraction with petroleum ether	E011
Soil	AR	pH	Determination of pH by addition of water followed by electrometric measurement	E007
Soil	AR	Phenols - Total (monohydric)	Determination of phenols by distillation followed by colorimetry	E021
Soil	D	Phosphate - Water Soluble (2:1)	Determination of phosphate by extraction with water & analysed by ion chromatography	E009
Soil	D	Sulphate (as SO4) - Total	Determination of total sulphate by extraction with 10% HCl followed by ICP-OES	E013
Soil	D	Sulphate (as SO4) - Water Soluble (2:1)	Determination of sulphate by extraction with water & analysed by ion chromatography	E009
Soil	D	Sulphate (as SO4) - Water Soluble (2:1)	Determination of water soluble sulphate by extraction with water followed by ICP-OES	E014
Soil	AR	Sulphide	Determination of sulphide by distillation followed by colorimetry	E018
Soil	D	Sulphur - Total	Determination of total sulphur by extraction with aqua-regia followed by ICP-OES	E024
Soil	AR	SVOC	Determination of semi-volatile organic compounds by extraction in acetone and hexane followed by GC-MS	E006
Soil	AR	Thiocyanate (as SCN)	Determination of thiocyanate by extraction in caustic soda followed by acidification followed by addition of ferric nitrate followed by colorimetry	E017
Soil	D	Toluene Extractable Matter (TEM)	Gravimetrically determined through extraction with toluene	E011
Soil	D	Total Organic Carbon (TOC)	Determination of organic matter by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	AR	TPH CWG (ali: C5- C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C34, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge for C8 to C35. C5 to C8 by headspace GC-MS	E004
Soil	AR	TPH LQM (ali: C5-C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C35, C35-C44, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35, C35-C44)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge for C8 to C44. C5 to C8 by headspace GC-MS	E004
Soil	AR	VOCs	Determination of volatile organic compounds by headspace GC-MS	E001
Soil	AR	VPH (C6-C8 & C8-C10)	Determination of hydrocarbons C6-C8 by headspace GC-MS & C8-C10 by GC-FID	E001

D Dried
AR As Received



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Water Analysis Certificate - Methodology & Miscellaneous Information

DETS Report No: 23-10646

Soils Ltd

Site Reference: Havant And South Downs College

Project / Job Ref: 21060

Order No: 21060/JA

Reporting Date: 24/08/2023

Matrix	Analysed On	Determinand	Brief Method Description	Method No
Water	UF	Alkalinity	Determination of alkalinity by titration against hydrochloric acid using bromocresol green as the end point	E103
Water	F	Ammoniacal Nitrogen	Determination of ammoniacal nitrogen by discrete analyser.	E126
Water	UF	BTEX	Determination of BTEX by headspace GC-MS	E101
Water	F	Cations	Determination of cations by filtration followed by ICP-MS	E102
Water	UF	Chemical Oxygen Demand (COD)	Determination using a COD reactor followed by colorimetry	E112
Water	F	Chloride	Determination of chloride by filtration & analysed by ion chromatography	E109
Water	F	Chromium - Hexavalent	Determination of hexavalent chromium by acidification, addition of 1,5 diphenylcarbazide followed by	E116
Water	UF	Cyanide - Complex	Determination of complex cyanide by distillation followed by colorimetry	E115
Water	UF	Cyanide - Free	Determination of free cyanide by distillation followed by colorimetry	E115
Water	UF	Cyanide - Total	Determination of total cyanide by distillation followed by colorimetry	E115
Water	UF	Cyclohexane Extractable Matter (CEM)	Gravimetrically determined through liquid:liquid extraction with cyclohexane	E111
Water	F	Diesel Range Organics (C10 - C24)	Determination of liquid:liquid extraction with hexane followed by GC-FID	E104
Water	F	Dissolved Organic Content (DOC)	Determination of DOC by filtration followed by low heat with persulphate addition followed by IR detection	E110
Water	UF	Electrical Conductivity	Determination of electrical conductivity by electrometric measurement	E123
Water	F	EPH (C10 - C40)	Determination of liquid:liquid extraction with hexane followed by GC-FID	E104
Water	F	EPH TEXAS (C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C40)	Determination of liquid:liquid extraction with hexane followed by GC-FID for C8 to C40. C6 to C8 by headspace GC-MS	E104
Water	F	Fluoride	Determination of Fluoride by filtration & analysed by ion chromatography	E109
Water	F	Hardness	Determination of Ca and Mg by ICP-MS followed by calculation	E102
Leachate	F	Leachate Preparation - NRA	Based on National Rivers Authority leaching test 1994	E301
Leachate	F	Leachate Preparation - WAC	Based on BS EN 12457 Pt1, 2, 3	E302
Water	F	Metals	Determination of metals by filtration followed by ICP-MS	E102
Water	F	Mineral Oil (C10 - C40)	Determination of liquid:liquid extraction with hexane followed by GI-FID	E104
Water	F	Nitrate	Determination of nitrate by filtration & analysed by ion chromatography	E109
Water	UF	Monohydric Phenol	Determination of phenols by distillation followed by colorimetry	E121
Water	F	PAH - Speciated (EPA 16)	Determination of PAH compounds by concentration through SPE cartridge, collection in dichloromethane followed by GC-MS	E105
Water	F	PCB - 7 Congeners	Determination of PCB compounds by concentration through SPE cartridge, collection in dichloromethane followed by GC-MS	E108
Water	UF	Petroleum Ether Extract (PEE)	Gravimetrically determined through liquid:liquid extraction with petroleum ether	E111
Water	UF	pH	Determination of pH by electrometric measurement	E107
Water	F	Phosphate	Determination of phosphate by filtration & analysed by ion chromatography	E109
Water	UF	Redox Potential	Determination of redox potential by electrometric measurement	E113
Water	F	Sulphate (as SO4)	Determination of sulphate by filtration & analysed by ion chromatography	E109
Water	UF	Sulphide	Determination of sulphide by distillation followed by colorimetry	E118
Water	F	SVOC	Determination of semi-volatile organic compounds by concentration through SPE cartridge, collection in dichloromethane followed by GC-MS	E106
Water	UF	Toluene Extractable Matter (TEM)	Gravimetrically determined through liquid:liquid extraction with toluene	E111
Water	UF	Total Organic Carbon (TOC)	Low heat with persulphate addition followed by IR detection	E110
Water	F	TPH CWG (ali: C5-C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C34, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35)	Determination of liquid:liquid extraction with hexane, fractionating with SPE followed by GC-FID for C8 to C35. C5 to C8 by headspace GC-MS	E104
Water	F	TPH LQM (ali: C5-C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C35, C35-C44, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35, C35-C44)	Determination of liquid:liquid extraction with hexane, fractionating with SPE followed by GC-FID for C8 to C44. C5 to C8 by headspace GC-MS	E104
Water	UF	VOCs	Determination of volatile organic compounds by headspace GC-MS	E101
Water	UF	VPH (C6-C8 & C8-C10)	Determination of hydrocarbons C6-C8 by headspace GC-MS & C8-C10 by GC-FID	E101

Key

F Filtered
UF Unfiltered



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List of HWOL Acronyms and Operators

DETS Report No: 23-10646

Soils Ltd

Site Reference: Havant And South Downs College

Project / Job Ref: 21060

Order No: 21060/JA

Reporting Date: 24/08/2023

Acronym	Description
HS	Headspace analysis
EH	Extractable Hydrocarbons - i.e. everything extracted by the solvent
CU	Clean-up - e.g. by florisil, silica gel
1D	GC - Single coil gas chromatography
2D	GC-GC - Double coil gas chromatography
Total	Aliphatics & Aromatics
AL	Aliphatics only
AR	Aromatics only
#1	EH_2D_Total but with humics mathematically subtracted
#2	EH_2D_Total but with fatty acids mathematically subtracted
_	Operator - underscore to separate acronyms (exception for +)
+	Operator to indicate cumulative eg. EH+HS_Total or EH_CU+HS_Total

Det - Acronym

EPH Texas (C10 - C12) - EH_1D_Total
EPH Texas (C12 - C16) - EH_1D_Total
EPH Texas (C16 - C21) - EH_1D_Total
EPH Texas (C21 - C40) - EH_1D_Total
EPH Texas (C6 - C40) - HS_1D_MS+EH_1D_Total
EPH Texas (C6 - C8) - HS_1D_MS_Total
EPH Texas (C8 - C10) - EH_1D_Total
Mineral Oil (C10 - C40) (BS EN 12457-2) - EH_CU_1D_AL
Total BTEX (BS EN 12457-2) - HS_1D_MS_Total

Parameter	Matrix Type	Suite Reference	Expanded Uncertainty Measurement	Unit
TOC	Soil	BS EN 12457	10.4	%
Loss on Ignition	Soil	BS EN 12457	16.9	%
BTEX	Soil	BS EN 12457	14.0	%
Sum of PCBs	Soil	BS EN 12457	21.1	%
Mineral Oil	Soil	BS EN 12457	9.0	%
Total PAH	Soil	BS EN 12457	17.9	%
pH	Soil	BS EN 12457	0.282	Units
Acid Neutralisation Capacity	Soil	BS EN 12457	18.0	%
Arsenic	Leachate	BS EN 12457	19.5	%
Barium	Leachate	BS EN 12457	12.2	%
Cadmium	Leachate	BS EN 12457	17.2	%
Chromium	Leachate	BS EN 12457	20.7	%
Copper	Leachate	BS EN 12457	14.1	%
Mercury	Leachate	BS EN 12457	16.7	%
Molybdenum	Leachate	BS EN 12457	13.3	%
Nickel	Leachate	BS EN 12457	14.0	%
Lead	Leachate	BS EN 12457	12.1	%
Antimony	Leachate	BS EN 12457	16.1	%
Selenium	Leachate	BS EN 12457	15.5	%
Zinc	Leachate	BS EN 12457	14.0	%
Chloride	Leachate	BS EN 12457	15.7	%
Fluoride	Leachate	BS EN 12457	19.1	%
Sulphate	Leachate	BS EN 12457	27.6	%
TDS	Leachate	BS EN 12457	10.0	%
Phenol Index	Leachate	BS EN 12457	12.9	%
DOC	Leachate	BS EN 12457	20.4	%
Clay Content	Soil	BS 3882: 2015	15.0	%
Silt Content	Soil	BS 3882: 2015	14.0	%
Sand Content	Soil	BS 3882: 2015	13.0	%
Loss on Ignition	Soil	BS 3882: 2015	16.9	%
pH	Soil	BS 3882: 2015	0.282	Units
Carbonate	Soil	BS 3882: 2015	12.0	%
Total Nitrogen	Soil	BS 3882: 2015	12.0	%
Phosphorus (Extractable)	Soil	BS 3882: 2015	24.0	%
Potassium (Extractable)	Soil	BS 3882: 2015	20.0	%
Magnesium (Extractable)	Soil	BS 3882: 2015	26.0	%
Zinc	Soil	BS 3882: 2015	19.8	%
Copper	Soil	BS 3882: 2015	23.2	%
Nickel	Soil	BS 3882: 2015	32.6	%
Available Sodium	Soil	BS 3882: 2015	23.0	%
Available Calcium	Soil	BS 3882: 2015	23.0	%
Electrical Conductivity	Soil	BS 3882: 2015	10.0	%

Appendix E HazWasteOnline Report

Waste Classification Report

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

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



KLZNI-BJPCM-A7UXE

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

Job name

21060

Description/Comments

Made Ground

Project

21060

Site

Havant and South Downs College, Havant, PO9 1QL

Classified by

Name: **Margaret Lo**
Date: **18 Sep 2023 10:40 GMT**
Telephone: **07467803676**

Company: **Soils Ltd**
Pool Innovation Centre
Redruth
Cornwall
TR15 3PL

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

HazWasteOnline™ Certification:

CERTIFIED

Course

Hazardous Waste Classification

Date

06 Apr 2023

Next 3 year Refresher due by Apr 2026

Purpose of classification

2 - Material Characterisation

Address of the waste

Havant and South Downs College, Havant,

Post Code **PO9 1QL**

SIC for the process giving rise to the waste

Description of industry/producer giving rise to the waste

Made Ground

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

Made Ground

Description of the waste

Made Ground

Job summary

#	Sample name	Depth [m]	Classification Result	Hazard properties	Page
1	WS1-0.30-15/08/2023	0.30	Non Hazardous		3
2	WS3-0.10-15/08/2023	0.10	Non Hazardous		5
3	WS4-0.10-15/08/2023	0.10	Non Hazardous		7

Related documents

#	Name	Description
1	23-10646.1.hwol	DETS South .hwol file used to populate the Job
2	Soils Suite 2 2022	waste stream template used to create this Job

Report

Created by: Margaret Lo

Created date: 18 Sep 2023 10:40 GMT

Appendices	Page
Appendix A: Classifier defined and non GB MCL determinands	9
Appendix B: Rationale for selection of metal species	10
Appendix C: Version	11

Classification of sample: WS1-0.30-15/08/2023

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

Sample details

Sample name:	LoW Code:
WS1-0.30-15/08/2023	Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:	Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)
0.30 m	
Moisture content:	
6.9%	
(wet weight correction)	

Hazard properties

None identified

Determinands

Moisture content: 6.9% Wet Weight Moisture Correction applied (MC)

#		Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number								
1		arsenic { arsenic trioxide }				8 mg/kg	1.32	9.834 mg/kg	0.000983 %	✓		
		033-003-00-0	215-481-4	1327-53-3								
2		boron { diboron trioxide ; boric oxide }				<1 mg/kg	3.22	<3.22 mg/kg	<0.000322 %		<LOD	
		005-008-00-8	215-125-8	1303-86-2								
3		cadmium { cadmium oxide }				0.2 mg/kg	1.142	0.213 mg/kg	0.0000213 %	✓		
		048-002-00-0	215-146-2	1306-19-0								
4		chromium in chromium(III) compounds {  chromium(III) oxide (worst case) }				16 mg/kg	1.462	21.771 mg/kg	0.00218 %	✓		
			215-160-9	1308-38-9								
5		chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }				<2 mg/kg	2.27	<4.54 mg/kg	<0.000454 %		<LOD	
		024-017-00-8										
6		copper { dicopper oxide ; copper (I) oxide }				23 mg/kg	1.126	24.109 mg/kg	0.00241 %	✓		
		029-002-00-X	215-270-7	1317-39-1								
7		lead { lead chromate }			1	51 mg/kg	1.56	74.062 mg/kg	0.00475 %	✓		
		082-004-00-2	231-846-0	7758-97-6								
8		mercury { mercury dichloride }				<1 mg/kg	1.353	<1.353 mg/kg	<0.000135 %		<LOD	
		080-010-00-X	231-299-8	7487-94-7								
9		nickel { nickel chromate }				12 mg/kg	2.976	33.251 mg/kg	0.00333 %	✓		
		028-035-00-7	238-766-5	14721-18-7								
10		selenium { nickel selenate }				<2 mg/kg	2.554	<5.108 mg/kg	<0.000511 %		<LOD	
		028-031-00-5	239-125-2	15060-62-5								
11		vanadium {  divanadium pentaoxide ; vanadium pentoxide }				26 mg/kg	1.785	43.212 mg/kg	0.00432 %	✓		
		023-001-00-8	215-239-8	1314-62-1								
12		zinc { zinc chromate }				70 mg/kg	2.774	180.791 mg/kg	0.0181 %	✓		
		024-007-00-3	236-878-9	13530-65-9								
13		TPH (C6 to C40) petroleum group				12 mg/kg		11.172 mg/kg	0.00112 %	✓		
				TPH								
14		pH				7.7 pH		7.7 pH	7.7 pH			
				PH								
15		naphthalene				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD	
		601-052-00-2	202-049-5	91-20-3								

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
16	acenaphthylene	205-917-1	208-96-8		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
17	acenaphthene	201-469-6	83-32-9		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
18	fluorene	201-695-5	86-73-7		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
19	phenanthrene	201-581-5	85-01-8		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
20	anthracene	204-371-1	120-12-7		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
21	fluoranthene	205-912-4	206-44-0		0.37 mg/kg		0.344 mg/kg	0.0000344 %	✓	
22	pyrene	204-927-3	129-00-0		0.32 mg/kg		0.298 mg/kg	0.0000298 %	✓	
23	benzo[a]anthracene	601-033-00-9	200-280-6		0.24 mg/kg		0.223 mg/kg	0.0000223 %	✓	
24	chrysene	601-048-00-0	205-923-4		0.2 mg/kg		0.186 mg/kg	0.0000186 %	✓	
25	benzo[b]fluoranthene	601-034-00-4	205-911-9		0.27 mg/kg		0.251 mg/kg	0.0000251 %	✓	
26	benzo[k]fluoranthene	601-036-00-5	205-916-6		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
27	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5		0.26 mg/kg		0.242 mg/kg	0.0000242 %	✓	
28	indeno[123-cd]pyrene	205-893-2	193-39-5		0.18 mg/kg		0.168 mg/kg	0.0000168 %	✓	
29	dibenz[a,h]anthracene	601-041-00-2	200-181-8		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
30	benzo[ghi]perylene	205-883-8	191-24-2		0.17 mg/kg		0.158 mg/kg	0.0000158 %	✓	
31	monohydric phenols		P1186		<2 mg/kg		<2 mg/kg	<0.0002 %		<LOD
Total:								0.0391 %		

Key

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

Supplementary Hazardous Property Information

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

Force this Hazardous property to non hazardous because insufficient liquid phase to be significant (<100mg/kg in C8-C16 range)

Hazard Statements hit:

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

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.00112%)

Classification of sample: WS3-0.10-15/08/2023

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

Sample details

Sample name:	LoW Code:
WS3-0.10-15/08/2023	Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:	Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)
0.10 m	
Moisture content:	
14.8%	
(wet weight correction)	

Hazard properties

None identified

Determinands

Moisture content: 14.8% Wet Weight Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number								
1	arsenic { arsenic trioxide }				8 mg/kg	1.32	8.999 mg/kg	0.0009 %	✓		
	033-003-00-0	215-481-4	1327-53-3								
2	boron { diboron trioxide; boric oxide }				<1 mg/kg	3.22	<3.22 mg/kg	<0.000322 %			<LOD
	005-008-00-8	215-125-8	1303-86-2								
3	cadmium { cadmium oxide }				0.2 mg/kg	1.142	0.195 mg/kg	0.0000195 %	✓		
	048-002-00-0	215-146-2	1306-19-0								
4	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }				17 mg/kg	1.462	21.169 mg/kg	0.00212 %	✓		
		215-160-9	1308-38-9								
5	chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }				<2 mg/kg	2.27	<4.54 mg/kg	<0.000454 %			<LOD
	024-017-00-8										
6	copper { dicopper oxide; copper (I) oxide }				26 mg/kg	1.126	24.941 mg/kg	0.00249 %	✓		
	029-002-00-X	215-270-7	1317-39-1								
7	lead { lead chromate }			1	77 mg/kg	1.56	102.33 mg/kg	0.00656 %	✓		
	082-004-00-2	231-846-0	7758-97-6								
8	mercury { mercury dichloride }				<1 mg/kg	1.353	<1.353 mg/kg	<0.000135 %			<LOD
	080-010-00-X	231-299-8	7487-94-7								
9	nickel { nickel chromate }				12 mg/kg	2.976	30.429 mg/kg	0.00304 %	✓		
	028-035-00-7	238-766-5	14721-18-7								
10	selenium { nickel selenate }				<2 mg/kg	2.554	<5.108 mg/kg	<0.000511 %			<LOD
	028-031-00-5	239-125-2	15060-62-5								
11	vanadium { divanadium pentaoxide; vanadium pentoxide }				28 mg/kg	1.785	42.587 mg/kg	0.00426 %	✓		
	023-001-00-8	215-239-8	1314-62-1								
12	zinc { zinc chromate }				73 mg/kg	2.774	172.541 mg/kg	0.0173 %	✓		
	024-007-00-3	236-878-9	13530-65-9								
13	TPH (C6 to C40) petroleum group		TPH		19 mg/kg		16.188 mg/kg	0.00162 %	✓		
14	pH		PH		7.2 pH		7.2 pH	7.2 pH			
15	naphthalene				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %			<LOD
	601-052-00-2	202-049-5	91-20-3								

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
16	acenaphthylene	205-917-1	208-96-8		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
17	acenaphthene	201-469-6	83-32-9		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
18	fluorene	201-695-5	86-73-7		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
19	phenanthrene	201-581-5	85-01-8		0.22 mg/kg		0.187 mg/kg	0.0000187 %	✓	
20	anthracene	204-371-1	120-12-7		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
21	fluoranthene	205-912-4	206-44-0		0.53 mg/kg		0.452 mg/kg	0.0000452 %	✓	
22	pyrene	204-927-3	129-00-0		0.49 mg/kg		0.417 mg/kg	0.0000417 %	✓	
23	benzo[a]anthracene	601-033-00-9	200-280-6		0.25 mg/kg		0.213 mg/kg	0.0000213 %	✓	
24	chrysene	601-048-00-0	205-923-4		0.26 mg/kg		0.222 mg/kg	0.0000222 %	✓	
25	benzo[b]fluoranthene	601-034-00-4	205-911-9		0.31 mg/kg		0.264 mg/kg	0.0000264 %	✓	
26	benzo[k]fluoranthene	601-036-00-5	205-916-6		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
27	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5		0.25 mg/kg		0.213 mg/kg	0.0000213 %	✓	
28	indeno[123-cd]pyrene	205-893-2	193-39-5		0.16 mg/kg		0.136 mg/kg	0.0000136 %	✓	
29	dibenz[a,h]anthracene	601-041-00-2	200-181-8		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
30	benzo[ghi]perylene	205-883-8	191-24-2		0.15 mg/kg		0.128 mg/kg	0.0000128 %	✓	
31	monohydric phenols		P1186		<2 mg/kg		<2 mg/kg	<0.0002 %		<LOD
Total:								0.0402 %		

Key

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

Supplementary Hazardous Property Information

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

Force this Hazardous property to non hazardous because insufficient liquid phase to be significant (<100mg/kg in C8-C16 range)

Hazard Statements hit:

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

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.00162%)

Classification of sample: WS4-0.10-15/08/2023

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

Sample details

Sample name:	LoW Code:
WS4-0.10-15/08/2023	Chapter:
Sample Depth:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
0.10 m	Entry:
Moisture content:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
13.6%	
(wet weight correction)	

Hazard properties

None identified

Determinands

Moisture content: 13.6% Wet Weight Moisture Correction applied (MC)

#		Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number								
1		arsenic { arsenic trioxide }				9 mg/kg	1.32	10.267 mg/kg	0.00103 %	✓		
		033-003-00-0	215-481-4	1327-53-3								
2		boron { diboron trioxide ; boric oxide }				<1 mg/kg	3.22	<3.22 mg/kg	<0.000322 %			<LOD
		005-008-00-8	215-125-8	1303-86-2								
3		cadmium { cadmium oxide }				0.3 mg/kg	1.142	0.296 mg/kg	0.0000296 %	✓		
		048-002-00-0	215-146-2	1306-19-0								
4		chromium in chromium(III) compounds { chromium(III) oxide (worst case) }				17 mg/kg	1.462	21.467 mg/kg	0.00215 %			✓
			215-160-9	1308-38-9								
5		chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }				<2 mg/kg	2.27	<4.54 mg/kg	<0.000454 %		<LOD	
		024-017-00-8										
6		copper { dicopper oxide ; copper (I) oxide }				35 mg/kg	1.126	34.047 mg/kg	0.0034 %			✓
		029-002-00-X	215-270-7	1317-39-1								
7		lead { lead chromate }			1	116 mg/kg	1.56	156.331 mg/kg	0.01 %	✓		
		082-004-00-2	231-846-0	7758-97-6								
8		mercury { mercury dichloride }				<1 mg/kg	1.353	<1.353 mg/kg	<0.000135 %			<LOD
		080-010-00-X	231-299-8	7487-94-7								
9		nickel { nickel chromate }				12 mg/kg	2.976	30.858 mg/kg	0.00309 %	✓		
		028-035-00-7	238-766-5	14721-18-7								
10		selenium { nickel selenate }				<2 mg/kg	2.554	<5.108 mg/kg	<0.000511 %			<LOD
		028-031-00-5	239-125-2	15060-62-5								
11		vanadium { divanadium pentaoxide ; vanadium pentoxide }				29 mg/kg	1.785	44.73 mg/kg	0.00447 %	✓		
		023-001-00-8	215-239-8	1314-62-1								
12		zinc { zinc chromate }				86 mg/kg	2.774	206.13 mg/kg	0.0206 %			✓
		024-007-00-3	236-878-9	13530-65-9								
13		TPH (C6 to C40) petroleum group				31 mg/kg		26.784 mg/kg	0.00268 %	✓		
				TPH								
14		pH				7.4 pH		7.4 pH	7.4 pH			
				PH								
15		naphthalene				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD	
		601-052-00-2	202-049-5	91-20-3								

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
16	acenaphthylene	205-917-1	208-96-8		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
17	acenaphthene	201-469-6	83-32-9		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
18	fluorene	201-695-5	86-73-7		0.15 mg/kg		0.13 mg/kg	0.000013 %	✓	
19	phenanthrene	201-581-5	85-01-8		2.31 mg/kg		1.996 mg/kg	0.0002 %	✓	
20	anthracene	204-371-1	120-12-7		0.34 mg/kg		0.294 mg/kg	0.0000294 %	✓	
21	fluoranthene	205-912-4	206-44-0		2.81 mg/kg		2.428 mg/kg	0.000243 %	✓	
22	pyrene	204-927-3	129-00-0		2.19 mg/kg		1.892 mg/kg	0.000189 %	✓	
23	benzo[a]anthracene	601-033-00-9	200-280-6		0.96 mg/kg		0.829 mg/kg	0.0000829 %	✓	
24	chrysene	601-048-00-0	205-923-4		0.97 mg/kg		0.838 mg/kg	0.0000838 %	✓	
25	benzo[b]fluoranthene	601-034-00-4	205-911-9		0.82 mg/kg		0.708 mg/kg	0.0000708 %	✓	
26	benzo[k]fluoranthene	601-036-00-5	205-916-6		0.25 mg/kg		0.216 mg/kg	0.0000216 %	✓	
27	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5		0.68 mg/kg		0.588 mg/kg	0.0000588 %	✓	
28	indeno[123-cd]pyrene	205-893-2	193-39-5		0.36 mg/kg		0.311 mg/kg	0.0000311 %	✓	
29	dibenz[a,h]anthracene	601-041-00-2	200-181-8		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
30	benzo[ghi]perylene	205-883-8	191-24-2		0.32 mg/kg		0.276 mg/kg	0.0000276 %	✓	
31	monohydric phenols		P1186		<2 mg/kg		<2 mg/kg	<0.0002 %		<LOD
Total:								0.0502 %		

Key

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

Supplementary Hazardous Property Information

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

Force this Hazardous property to non hazardous because insufficient liquid phase to be significant (<100mg/kg in C8-C16 range)

Hazard Statements hit:

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

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.00268%)

Appendix A: Classifier defined and non GB MCL determinands

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

Description/Comments: Data from C&L Inventory Database

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

Data source date: 17 Jul 2015

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

■ **divanadium pentaoxide; vanadium pentoxide** (EC Number: 215-239-8, CAS Number: 1314-62-1)

GB MCL index number: 023-001-00-8

Description/Comments: Hazard statements H301, H330, H350 added by HazWasteOnline due to ATP 18 (Regulation (EU) 2022/692) considers vanadium pentoxide to be Carc. 1B; H350. The GB MCL Agency has reached the same opinion [but is yet to formerly make this change to the MCL List]. Substance has therefore been self-classified.

Additional Hazard Statement(s): Carc. 1B; H350 , Acute Tox. 3; H301 , Acute Tox. 2; H330

Reason for additional Hazards Statement(s):

20 Sep 2022 - Carc. 1B; H350 hazard statement sourced from: ATP 18 (Regulation (EU) 2022/692) considers vanadium pentoxide to be Carc. 1B; H350. The GB MCL Agency has reached the same opinion [but is yet to formerly make this change to the MCL List]. Substance has therefore been self-classified.

28 Sep 2022 - Acute Tox. 3; H301 hazard statement sourced from: ATP 18 (Regulation (EU) 2022/692) considers vanadium pentoxide to be "Acute tox 3; H301". The GB MCL Agency has reached the same opinion [but is yet to formerly make this change to the MCL List]. Substance has therefore been self-classified.

28 Sep 2022 - Acute Tox. 2; H330 hazard statement sourced from: ATP 18 (Regulation (EU) 2022/692) considers vanadium pentoxide to be "Acute tox 2; H330". The GB MCL Agency has reached the same opinion [but is yet to formerly make this change to the MCL List]. Substance has therefore been self-classified.

■ **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

■ **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: Muta. 2; H341, Acute Tox. 3; H331, Acute Tox. 3; H311, Acute Tox. 3; H301, STOT RE 2; H373, Skin Corr. 1B; H314, Skin Corr. 1B; H314 >= 3 %, Skin Irrit. 2; H315 1 % conc. < 3 %, Eye Irrit. 2; H319 1 % conc. < 3 %, 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) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex}

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

copper {dicopper oxide; copper (I) oxide}

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

lead {lead chromate}

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

mercury {mercury dichloride}

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

nickel {nickel chromate}

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

selenium {nickel selenate}

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

vanadium {divanadium pentaoxide; vanadium pentoxide}

Worst case species (edit as required)

zinc {zinc chromate}

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

Appendix C: Version

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

HazWasteOnline Classification Engine Version: 2023.237.5731.10565 (25 Aug 2023)

HazWasteOnline Database: 2023.237.5731.10565 (25 Aug 2023)

This classification utilises the following guidance and legislation:

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

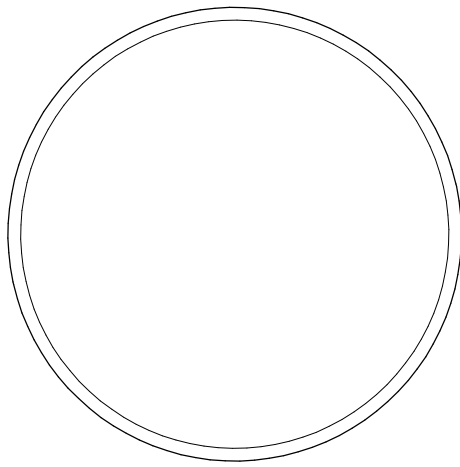
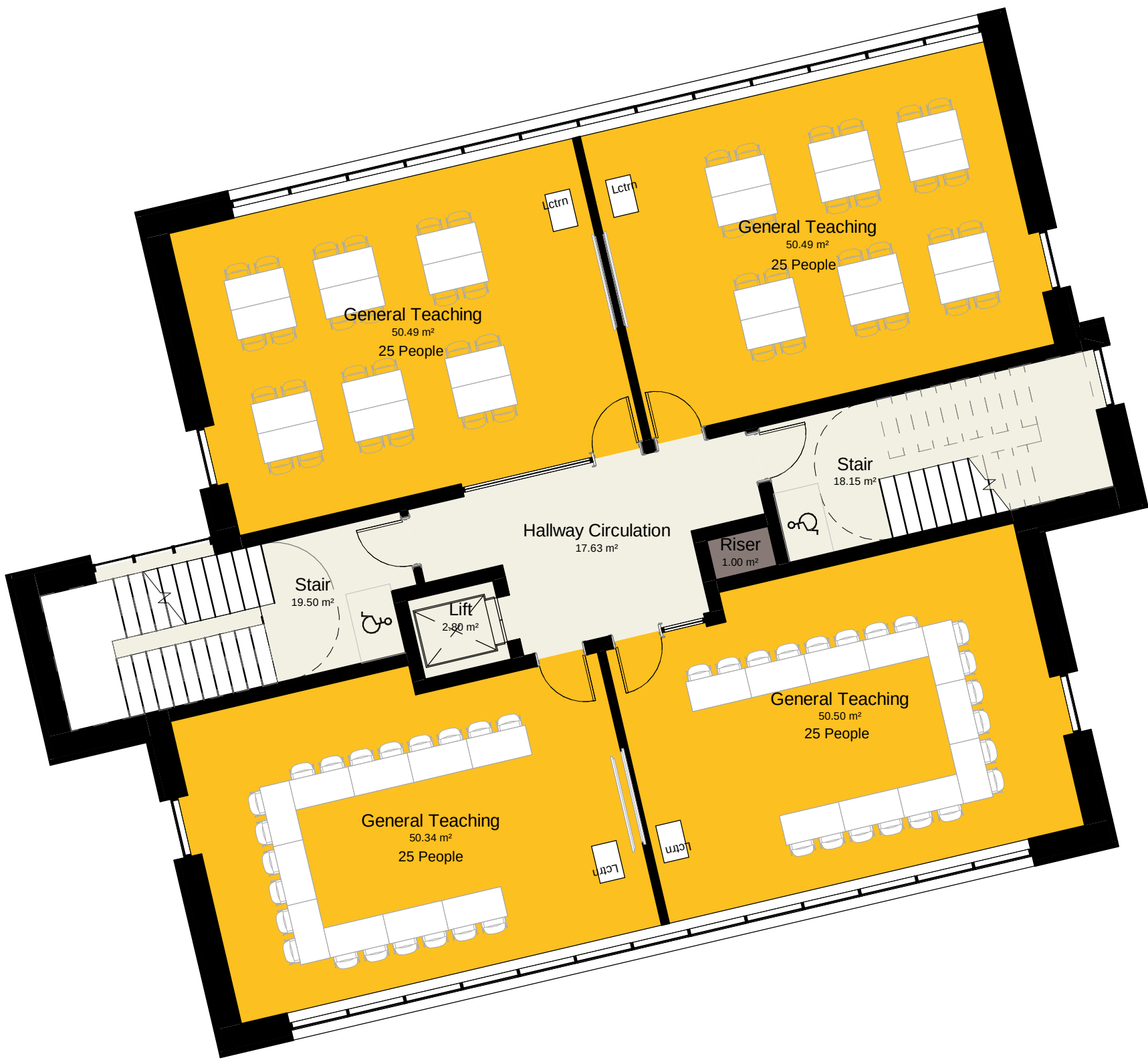
The Chemicals (Health and Safety) and Genetically Modified Organisms (Contained Use)(Amendment etc.) (EU Exit)

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

The Waste and Environmental Permitting etc. (Legislative Functions and Amendment etc.) (EU Exit) Regulations 2020 - UK: 2020 No. 1540 of 16th December 2020

GB MCL List - version 1.1 of 09 June 2021

Appendix F Information Provided by the Client



NOTES:

DO NOT SCALE. USE FIGURED DIMENSIONS ONLY.

All dimensions to be checked on site.
Drawing to be read in conjunction with all relevant
Architectural, Interiors, Structural, M&E, Drainage/ Public
Health, Landscape and Civils drawings and specifications.
Any discrepancies between consultant's drawings to be
reported to the Architect before any work commences.
The Contractor's attention is drawn to the Health &
Safety matters identified in the Health & Safety plan as
being potentially hazardous.
These items should not be considered as a full and final
list.

The Work Package Contractor's normal Health & Safety
obligations still apply when undertaking constructional
operations both on and off site.

Ayre Chamberlain Gaunt take no responsibility for the
location of legal boundaries indicated on this drawing and
advise a separate drawing to be completed by specialist
surveyor in order to establish exact boundaries.
DWG files provided for information only. Refer to PDF
record.

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PROJECT

Havant Campus
HSDC, Havant, New Road Havant
PO9 1QL

DRAWING TITLE

First Floor Plan

REV.	DATE	DESCRIPTION
P1	31.08.23	First Issue. Draft Issue for information
P2	05.08.23	Issued for Information
P3	11.09.23	Issued for Information.

DRAFT

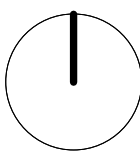
DRWN BY	CHKD BY	APPD BY
ME	TH	DG

DRAWING NO.

project code - originator - volume - level - type - role - number

HVT-ACG-XX-01-DR-A-2001

STAGE	SUITABILITY
RIBA stage	code description
2	S2 Suitable for Information



NOTES:

DO NOT SCALE. USE FIGURED DIMENSIONS ONLY.

All dimensions to be checked on site.
Drawing to be read in conjunction with all relevant Architectural, Interiors, Structural, M&E, Drainage/ Public Health, Landscape and Civils drawings and specifications.
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PROJECT

Havant Campus
HSDC, Havant, New Road Havant
PO9 1QL

DRAWING TITLE

Second Floor Plan

REV.	DATE	DESCRIPTION
P1	31.08.23	First Issue. Draft Issue for information
P2	05.08.23	Issued for Information
P3	11.09.23	Issued for Information.
DRAFT		

DRWN BY	CHKD BY	APPD BY
ME	TH	DG

DRAWING NO.

project code - originator - volume - level - type - role - number

HVT-ACG-XX-02-DR-A-2002

STAGE	SUITABILITY	
RIBA stage	code	description
2	S2	Suitable for Co-ordination

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