Meridian Community Primary School
Roderick Avenue
Peacehaven
East Sussex

Geotechnical Assessment

Report No. R16-11361

May 2016

Report prepared for the benefit of:

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EXECUTIVE SUMMARY

The following presents a summary of the main findings of the ground investigation. It is emphasised that no reliance should be placed on any individual point until the whole of the report has been read as other sections of the report may put into context the information contained herein.

The proposed development plans for Meridian Community Primary School, Peacehaven, East Sussex, comprise the construction of a 12 classroom, two-storey extension to be built to the east of the existing school building.

Reference to geological datasets indicates that the site is expected to be underlain by the Lambeth Group soils underlain by White Chalk Subgroup deposits. The ground investigation confirmed the underlying soils to comprise a shallow thickness of made ground, overlying the expected geological sequence.

The Lambeth Group and White Chalk Subgroup deposits are classed as Secondary A and Principal aquifers, respectively. The site does not lie within an Environment Agency Source Protection Zone with regard to the protection of the quality of groundwater that is abstracted for potable supply. Groundwater was not encountered during the short period of the intrusive works.

In general it is recommended that the design of precautions against shrinkage and heave for any new foundation system should assume a low volume change potential for the fine grained Lambeth Group soils and take into account current guidance such as that given by the Building Research Establishment (BRE) or the National House Builders Council (NHBC). It may be prudent to assume a medium volume change potential where fine grained soils containing a low percentage of coarse grained material are present.

For design purposes, a net allowable bearing capacity of 150kN/m^2 may be assumed for spread (pad or strip) foundations up to 2.0m across bearing within the Lambeth Group soils of at least stiff consistency or medium dense relative density. If foundations are constructed onto soils of only firm consistency a reduced bearing capacity of 100kN/m^2 should be adopted. A bearing capacity of 225kN/m^2 may be adopted for similarly dimensioned foundations constructed onto structureless Grade Dc chalk, increasing to 300kN/m^2 for foundations constructed directly onto the structured Grade C (or better) chalk deposits. The quoted bearing capacities are expected to limit settlement to less than 25mm.

As an alternative to conventional spread foundations, it is considered that piled foundations would provide a viable foundation solution at this site. Indicative pile capacities are included in the body of the report.

Ground bearing floor slabs may be adopted providing the criteria set out within this report is met.

A design equilibrium CBR value of no greater than 2% should be assumed for the design of pavement bearing on the made ground soils. The subgrade is likely to be susceptible to frost heave.

It is considered that the White Chalk Subgroup soils are capable of accepting surface water discharge via stormwater infiltration systems.

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1. INTRODUCTION

The proposed development plans for Meridian Community Primary School, Peacehaven, East Sussex, comprise the construction of a 12 classroom, two-storey extension to be constructed to the east of the existing building.

Ashdown Site Investigation Limited was commissioned to carry out a ground investigation and geotechnical assessment of the site by Mr Stephen Kemp of Mackellar Schwerdt Architects, The Old Library, Albion Street, Lewes, East Sussex BN7 2ND.

The scope of the commission and the terms and conditions under which the work was undertaken are set out within the offer letter Q16-4710 dated 22nd March 2016.

The instruction to proceed was received on behalf of the client, Emcor Group (UK) Plc., in an email dated 23rd March 2016.

The objectives of the works were to:

a) Establish the expected geology, hydrogeology and hydrology at the site;
b) Investigate the ground and groundwater conditions in the area of the proposed development; and
c) Provide advice to assist others in undertaking design of foundations, ground floors, road pavement and soakaways.

2. SITE CONTEXT

2.1 Site Description

The site comprises an irregular shaped plot of land located at Roderick Avenue, Peacehaven, East Sussex, and is centred on the approximate Ordnance Survey national grid reference TQ 4144 0239. A site location plan and site plan are presented as Figure 1 and Figure 2, respectively.

The school is situated within a residential area on the outskirts of Peacehaven and surrounded by residential properties on all sides. The site is accessed via an entrance road linking Roderick Avenue to the west.

The school grounds comprise the access road and parking areas within its north western corner with the main school building located roughly centrally within the northern part of the site. Hard and soft play areas were present to the east of the main school building and north of the car park, respectively. A grass surfaced sports field was located in the southern part of the school grounds.

The area of investigation was located to the east of the school buildings, over a mainly hard surfaced play area with some localised areas of soft landscaping.

2.2 Geological Data Review

2.2.1 Expected Geology

The stratigraphic succession that may be expected to underlie the site, as presented in the following table, has been determined from reference to the British Geological Survey lexicon of named rock units and British Geological Survey mapping data.

Table 1. Expected Geological Strata

Type	Stratum
Bedrock Deposits	Lambeth Group
	White Chalk Subgroup (Newhaven Chalk Formation)

2.2.1.1 Lambeth Group

The site is shown on geological mapping to be located on the southernmost extent of an out crop of Lambeth Group Deposits; these are not shown to extend across the full area of the site. The Lambeth Group (formerly named the Woolwich and Reading Beds) comprises a complex and laterally variable sequence of sedimentary deposits including clay, silt, sand and gravel. Inter-laminated clay and sand deposits are common in the lower part of the succession. The component formations are the Upnor Formation, Reading Formation and Woolwich Formation.

2.2.1.2 White Chalk Subgroup

The White Chalk Subgroup, which is shown to underlie the Lambeth Group deposits in the area and to extend beneath the full extent of the site, comprises a weak, white chalk locally with

flint bands together with scattered nodular flints. It may be expected to have a deeply convoluted upper surface as a result of solution weathering. The presence of natural cavities in the chalk is very rare and solution features, if present, can be expected to be infilled with overlying deposits.

The infill material may be significantly weaker than the surrounding chalk. Solution features can comprise pipes extending to several metres deep into the chalk or conical depressions and basin shaped structures.

Historically, chalk deposits were often mined locally. Most commonly historical mines characteristically comprise a narrow shaft with a number of chambers radiating from the base. These structures are colloquially known as "deneholes", "chalk-wells" or "chalkangles". The depth of the features reflects the depth to the underlying chalk bedrock. The shaft width was commonly in the order of 2m to 3m, widening out into galleries at depth. The chalk was extracted for soil improvement and was usually applied directly to fields though sometimes the chalk was processed, typically by burning in kilns where the chalk was used to produce quicklime (calcium oxide). Once they had reached their limits the mines were commonly capped. Various capping techniques were used; examples include the use of upturned trees or brick arching. Records pertaining to the distribution of these localised mines are incomplete, usually being limited to features marked as shafts or the occurrence of circular depressions on historic Ordnance Survey maps. In the field they are most likely to be visible as shallow depressions, if at all.

Site inspection and inspection of historical maps extending back in time to 1873 does not reveal the presence of any significant features at the site though, for reasons given above, their presence cannot be fully discounted. It is therefore recommended that all stripped formation levels should be inspected for evidence of historical backfilled shafts as a precaution.

2.3 Hydrogeology

The Environment Agency designates aquifers in accordance with the Water Framework Directive. These designations reflect not only the importance of aquifers in terms of groundwater as a resource (drinking water supply) but also their role in supporting surface water flows and wetland ecosystems. The aquifer designation data is based on geological mapping provided by the British Geological Survey.

The Lambeth Group expected beneath the site is classified as a Secondary A Aquifer. Secondary A Aquifers are characterised by permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers.

The White Chalk Subgroup expected beneath the site is classified as a Principal Aquifer. Principal Aquifers comprise deposits that have high intergranular and/or fracture permeability, usually providing a high level of water storage. They may support water supply and/or river base flow on a strategic scale.

The site does not lie within an Environment Agency Source Protection Zone with regard to the protection of the quality of groundwater that is abstracted for potable supply.

3. GROUND INVESTIGATION

3.1 Introduction

The ground investigation comprised the excavation of a series of dynamic sampler boreholes with accompanying (super heavy) dynamic probing, together with a hand dug trial pit excavated to enable in situ testing to be carried out. The fieldwork was carried out on the 4th of April 2016. The exploratory hole locations are shown on Figure 2.

Descriptions of the strata encountered and comments on groundwater conditions are shown in the exploratory hole records given in Appendix A, together with notes to assist in their interpretation.

3.2 Exploratory Holes

3.2.1 Dynamic Sampler Boreholes

Four boreholes (designated WS1 to WS4) were each drilled to a depth of 5.00m below ground level.

The boreholes were formed by a series of 1.0m long, open ended, hollow steel tubes of up to 100mm diameter, each containing a removable plastic liner. The tubes, progressively reducing in diameter, were driven into the ground by means of a track-mounted drop weight. Each tube was extracted from the ground using a hydraulically operated jack and the enclosed sample was recovered in its plastic liner.

The system enables the recovery of relatively undisturbed samples for laboratory testing and detailed examination.

3.2.2 Trial Pit

A single trial pit (designated TP1) was dug using hand tools to a depth of 0.80m below ground level to enable in situ testing to be carried out.

3.3 Sampling

Undisturbed and disturbed samples of soil were taken at the depths shown in the exploratory hole records and were collected in plastic liners, plastic bags, plastic tubs or amber jars fitted with gas tight lids.

On collection the amber jars were stored in cool boxes with cooling blocks to maintain temperatures below 4°C until transferred to refrigerators upon return to the office and subsequently forwarded to the external accredited chemical testing laboratory.

3.4 In Situ Testing

The depths of in situ testing, together with the test results, are either given on the exploratory hole records or are summarised separately in Appendix A. Notes providing additional information on the tests performed are included in the appendix.

3.4.1 DPSH Dynamic Probe (Super Heavy) Testing

Continuous dynamic probe tests were undertaken adjacent to boreholes WS1 to WS4 and at position DP1. At each position the probing extended to 10.00m depth. Probing was undertaken in accordance with BS EN ISO 22476-2:2005 using a super heavy DPSH-B probing geometry.

The DPSH-B configuration is similar to that of the standard penetration test (SPT); the main differences being that the tip comprises a 90° cone, the driving rods are lighter than those used for SPT testing and the blow counts are recorded over 100mm increments rather than 300mm, as is the case for the SPT.

The blow counts recorded and the calculated dynamic point resistances, which account for inertia of the anvil and driving rods, are presented on the borehole records and separately in Appendix A.

3.4.2 Undrained Shear Strength

Where possible, undrained shear strength determinations were made within samples of the fine grained soils held in the dynamic sampler liners using a hand penetrometer.

3.4.3 California Bearing Ratio Tests

Testing to determine the in situ California Bearing Ratio (CBR) of soils was conducted at shallow depth adjacent to trial pit TP1 using a Transport Road Laboratory (TRL) cone penetrometer.

3.4.4 Soakage Testing

Falling head soakage tests were undertaken in boreholes WS2 and WS3 with the holes at a depth of 3.00m. The tests were carried out in general accordance with The Soakaway Design Guide published by Kent County Council (2000).

3.5 Laboratory Testing

Geotechnical testing was undertaken by Ashdown Site Investigation Ltd in accordance with the methods given in BS1377:1990 Parts 1 to 8 'Methods of test for soils for civil engineering purposes'. Chemical testing to enable classification of the chemical environment of soils in accordance with BRE SD1 was undertaken by an external UKAS accredited laboratory. The test results, together with notes to assist with their interpretation, are contained within Appendix B.

4. GROUND CONDITIONS

4.1 Stratigraphy

4.1.1 Surface Covering

Each of the exploratory holes was excavated through a surface cover of topsoil some 100mm to 200mm in thickness.

4.1.2 Made Ground

Made ground was recorded to a depth of 0.80m below ground level at the positions of exploratory holes WS1, WS3 and TP1; it is noted that trial pit TP1 was terminated within the made ground at 0.80m depth. The made ground generally comprised sandy gravelly clay. The gravel fraction comprised variable quantities of brick, flint, concrete, chalk, geotextile material and wood.

4.1.3 Lambeth Group

Underlying the made ground/surfacing, each dynamic sampler borehole progressed into undisturbed generally stiff (though locally firm or very stiff) sandy gravelly clay deposits locally interbedded with medium dense, sand deposits. These soils, considered to represent the Lambeth Group deposits indicated on the published geological map, persisted to depths of between 1.70m and 2.15m below ground level.

4.1.4 White Chalk Subgroup

Beneath the Lambeth Group deposits, chalk of the White Chalk Subgroup was encountered continuing to the full depth of the investigation at 5.00m below ground level.

The chalk deposits were classified in accordance with CIRIA C574 'Engineering in Chalk'. Within the western part of the site, at the locations of boreholes WS1 and WS3, the ground investigation recorded the chalk deposits to comprise structureless Grade Dc chalk extending to a depth of some 4.2m below ground level. Below 4.2m depth at these positions, and directly beneath the Lambeth Group soils at the positions of boreholes WS2 and WS4, structured chalk deposits, considered to be the equivalent of Grade C or better, were encountered persisting to the full depth of the ground investigation.

4.2 Stability

Each of the exploratory holes was recorded to remain stable during the course of excavation.

4.3 Groundwater Conditions

Each of the exploratory holes was recorded to remain dry during excavation.

5. GEOTECHNICAL ASSESSMENT

At the time of preparation of this report it was understood that the proposed new structure was to comprise a two-storey building. No details were available concerning the specific loads likely to be applied to the foundations.

5.1 Foundations

5.1.1 Soil Shrinkage/Heave Potential

The fine grained soils of the Lambeth Group have been classified as clays of low to high plasticity and with modified plasticity indices in the range of 5% to 11% the soils may be expected to generally exhibit a non-plastic to low volume change potential.

In general it is considered that the design of precautions against shrinkage and heave for any new foundation system may assume a low volume change potential for the fine grained Lambeth Group soils and take into account current guidance such as that given by the Building Research Establishment (BRE) or the National House Builders Council (NHBC). It may be prudent however to assume a medium volume change potential where fine grained soils containing a low percentage of coarse grained material are present.

Whilst this report has been prepared to provide advice to assist designers in undertaking detailed design, the report itself does not represent a detailed design statement. It is recommended that an arboricultural survey of the site should be conducted to establish the species and maturity of the existing trees in the areas of the proposed new buildings; small trees and bushes having been noted within the south western area of the proposed build and trees being present along the northern and eastern site boundaries of the school in this area. The survey should be extended to include a review of historical photographs and detailed site plans (if available) to establish the species and location of any felled trees that may affect foundation design. The information obtained from the arboricultural survey, information on proposed planting schemes and the findings of this report should be provided to the structural engineer responsible for the detailed design of foundation systems, including assessment of minimum founding depths for spread foundations, requirements for sleeving or reinforcing of piled foundations and requirements for placement of void formers et cetera.

5.1.2 Spread Foundations

Unless evidence exists to the contrary, all made ground and any soils disturbed by the construction or removal of any previously existing foundations or services should be regarded as being variable in nature and state of compaction and, as such, unsuitable as a founding medium for shallow footings. New footings should be constructed so as to bear below such soils and onto undisturbed, competent, natural deposits.

For design purposes, a net allowable bearing capacity of 150kN/m^2 may be assumed for spread (pad or strip) foundations up to 2.0m across bearing within the Lambeth Group soils of at least stiff consistency or medium dense relative density. If foundations are constructed onto firm soils a reduced bearing capacity of 100kN/m^2 should be adopted. A bearing capacity of 225kN/m^2 may be adopted for similarly dimensioned foundations constructed onto structureless Grade Dc chalk, increasing to 300kN/m^2 for foundations constructed directly onto the structured Grade C (or better) chalk deposits. The quoted bearing capacities are expected to limit settlement to less than 25mm.

In general a minimum depth to formation of 0.75m should be adopted, although foundations should be deepened where made ground is found to extend below this depth or where there is a requirement to protect foundations against seasonal soil volume changes induced by trees.

5.1.3 Piled Foundations

It is considered that the White Chalk Subgroup would provide support to piled foundations. It is understood that consideration is being given to the use of screw piles (comprising a tubular steel shaft to which helical steel plates are welded) constructed into the chalk deposits to provide structural support. However the method of installation would have to accommodate the presence of naturally occurring weak chalk rock strata containing very strong flint gravel and cobbles. The capacity of individual piles and the ability to install piles within specific ground conditions is largely dependent on the plant available to the contractor; specifically the torque capacity of the rotary head driving the installation. The installation of screw piles has certain advantages over conventional piling including facilitating quick installation and minimisation of spoil arisings but they are, in general, less effective at resisting lateral loads. Where screw piles are to be considered, the advice of a competent and experienced screw pile installation contractor should be sought.

The proven ground conditions would indicate that bored piles could be employed to provide a suitable foundation solution. Depending on the method employed it is considered likely that driving displacement (driven piles) through the underlying soils may prove difficult and could be disruptive to nearby structures.

For the purpose of this initial discussion and for reasons given above, consideration has been given to the adoption of cast in situ piles (e.g. CFA). The use of CFA piles would prove beneficial as this method does not require casing or the use of bentonite slurries but there are certain practical constraints that should be taken into account in the selection of pile type, such as when considering the incorporation of pile reinforcement.

Calculations to determine illustrative working loads for axially loaded piles have been undertaken; each calculation assuming a single pile acting in compression. Indicative capacities are presented in the following table. Available capacities may vary for piles acting in tension.

The soil profile assumed for these calculations has been based on examination of the recovered samples and the results of in situ and laboratory testing. A model profile of Lambeth Group deposits extending to 2.00m below ground level over chalk deposits has been adopted for the provisional calculations as given below. Groundwater has been assumed to be present below the depth of the piles.

In consideration of the possibility for medium volume change potential clay soils at the site, and the proximity of existing trees, the benefit of shaft adhesion through the Lambeth Group; soils has been conservatively discounted.

Table 2. Indicative Axially Loaded Pile Working Capacities

Working Loads of Piles (kN)			
	Size (mm)		
Length (m)	**300**	**300**	**600**
5	75	155	260
8	130	240	375
10	175	305	465

Notes:
The structural strength of the concrete used in construction may limit the available working loads of the piles. Indicated pile lengths are from existing ground level. A factor of safety of 3.0 has been applied. The benefit of shaft resistance within the upper 2m has been discounted.

Working capacities for pile groups should be assessed when final design details are known, although for preliminary design purposes it is likely that piles spaced at least 3 x pile diameter from other piles in any group will behave as single piles.

Where preliminary and working pile load tests are undertaken it may be appropriate to reduce Safety Factors, although 2.5 may be a minimum local authority requirement. Should testing not be undertaken it is suggested that a factor of safety of at least 3.0 should be adopted.

For all piling options it is recommended that the advice of specialist foundation contractors should be sought at the earliest opportunity and that piling specifications should be obtained with reference to their particular products as this may affect the calculated pile capacity. In addition, the selection of piling techniques should consider access constraints applicable to particular plant and potential vibration effects on existing services, structures and roadways.

5.2 Groundwater

Groundwater was not encountered during the recent works. However it is possible that heavy precipitation during construction could lead to the ingress of perched groundwater or surface water run-off into excavations. In such circumstances it would be expected that water entering into excavations would be adequately managed by either pumping from sumps or natural drainage, or a combination of the two.

5.3 Stability of Excavations

All made ground, any coarse grained natural soils and structureless chalk deposits exposed in excavations should be assumed to be unstable, even in the short term. Whilst fine grained natural soils and structured chalk deposits may remain stable for a short period of time if not subjected to surcharge loads (such as may be imposed by existing foundations, traffic or storage of materials), the stability of these soils if left unsupported should be assumed to have the potential to deteriorate. Where stable excavations are required excavations should either be suitably supported or side slopes should be battered back to a safe angle of repose.

All excavations requiring human entry must be shored or battered as necessary to conform to current best practice, as accepted by the Health and Safety Executive (HSE); relevant guidance is given on the HSE website (www.hse.gov.uk). Current legislation requires that where personnel access is required into any excavation a competent person must inspect excavation supports or battering of slopes at the start of the working shift and at other specified times. No work should take place until the excavation is safe. Excavations should also be inspected after any event that may have affected their stability, such as a significant weather event, changes in surcharge loadings imposed by temporary storage of materials or

changes in site traffic plans or alteration of support systems. Inspections should be formally recorded and any faults that are found should be corrected immediately.

Particular attention must be paid to ensuring the stability of nearby structures and services.

5.4 Aggressivity to Concrete

In consideration of the soils encountered beneath the site it is considered that 'natural ground conditions' may be assumed for the purpose of assessing the aggressivity of the chemical environment for concrete classification (ACEC class). Given the absence of groundwater during the recent works, 'static groundwater' conditions may be assumed.

Assessment of the chemical analysis of the soil indicates a sulphate content falling into Design Sulfate Class DS-1 of Table C1 of the Building Research Establishment Special Digest No 1 "Concrete in aggressive ground", 2005. The results of the pH tests indicate that the underlying soils are slightly alkaline.

In accordance with the digest, a DS-1 Design Sulfate Class and an AC-1s ACEC classification may be assumed as a minimum for the design of concrete in contact with the ground.

5.5 Ground Floors

In view of the variable thickness of made ground and the presence of soils of low and possibly medium volume change potential underlying the site, it is recommended that ground floors for all sensitive structures should be suspended.

Current guidance suggests that ground bearing floor slabs may, however, be considered where made ground soils are not present or are to be removed from beneath building footprints and the depth of foundations required to protect against seasonal soil volume changes close to trees is less than 1.5m. In such circumstances further works should be undertaken to demonstrate, that close to the time of construction, no significant soil desiccation is present. If ground bearing floors are adopted it is recommended that the potential for differential movement, both between the floor slab and walls and across the floor slab itself, should be anticipated. Such floors should be fully debonded from walls. Formations should be adequately proof rolled and any excessively soft materials excavated and replaced with a suitable, well graded granular fill. The depth of any fill should be limited to a maximum of 600mm unless placed to an engineering specification designed to limit internal settlement of the fill materials to a tolerance to be advised by the designer.

The detailing of services through, or under, ground-bearing floors should incorporate flexible connections and, where appropriate, enhanced falls.

5.6 Pavement Design

A cone penetrometer test undertaken to establish the California bearing ratio (CBR) of the in situ soils at the location of TP1, indicated CBR values ranging between 4% and >20% but typical values of 4% to 10% were recorded within the made ground soils at the time of the investigation. It is noted that CBR values are, in part, dependent on the moisture content of the tested soils and are consequently subject to seasonal variation.

Laboratory CBR values ranging between 1.1% and 3.7%, but typically in the range 1.9% to 2.3%, were determined on a disturbed and remoulded sample. These results are considered indicative of worst case scenario values that could occur where the soils are reworked or heavily trafficked.

Based upon review of the in situ and laboratory test results, and the quoted guidance, it is recommended that a CBR value of no greater than 2% should be adopted for preliminary pavement design.

All formations should be proof rolled and any excessively large, soft, degradable or otherwise unsuitable materials thus identified should be removed and be replaced with well compacted coarse grained fill. Prepared subgrades should be protected from severe adverse weather by ensuring they are graded to falls to prevent ponding, and they should be reasonably protected from trafficking during construction.

Given the variable nature of made ground soils the subgrade should be assumed to be susceptible to frost heave.

5.7 Stormwater Infiltration Systems

In situ infiltration testing was undertaken in accordance with 'The Soakaway Design Guide' published by Kent County Council (July 2000). From the test results, calculations were made to estimate the infiltration rate that could be expected for soakaways constructed to discharge into the underlying soils within the test zone.

The infiltration rates derived from the tests are summarised in the following table.

Table 3. Calculated Infiltration Rates

Exploratory Hole	Test Response Zone Depth (m)		Stratum	Infiltration Rate (f) (m/sec)	Driving Head of Water (m)
	Top	Bottom			
WS2	2.00	3.00	White Chalk Subgroup	1.3×10^{-4}	1.0 or 2.0
WS3	2.00	3.00	White Chalk Subgroup	4.0×10^{-4}	1.0 or 2.0

The value 'f' is equivalent to the soil infiltration coefficient 'q' quoted in the Construction Industry Research and Information Association (CIRIA) Report 156.

The results from the infiltration tests indicate that the White Chalk Subgroup soils are likely to be capable of disposing of storm runoff to the ground using infiltration systems.

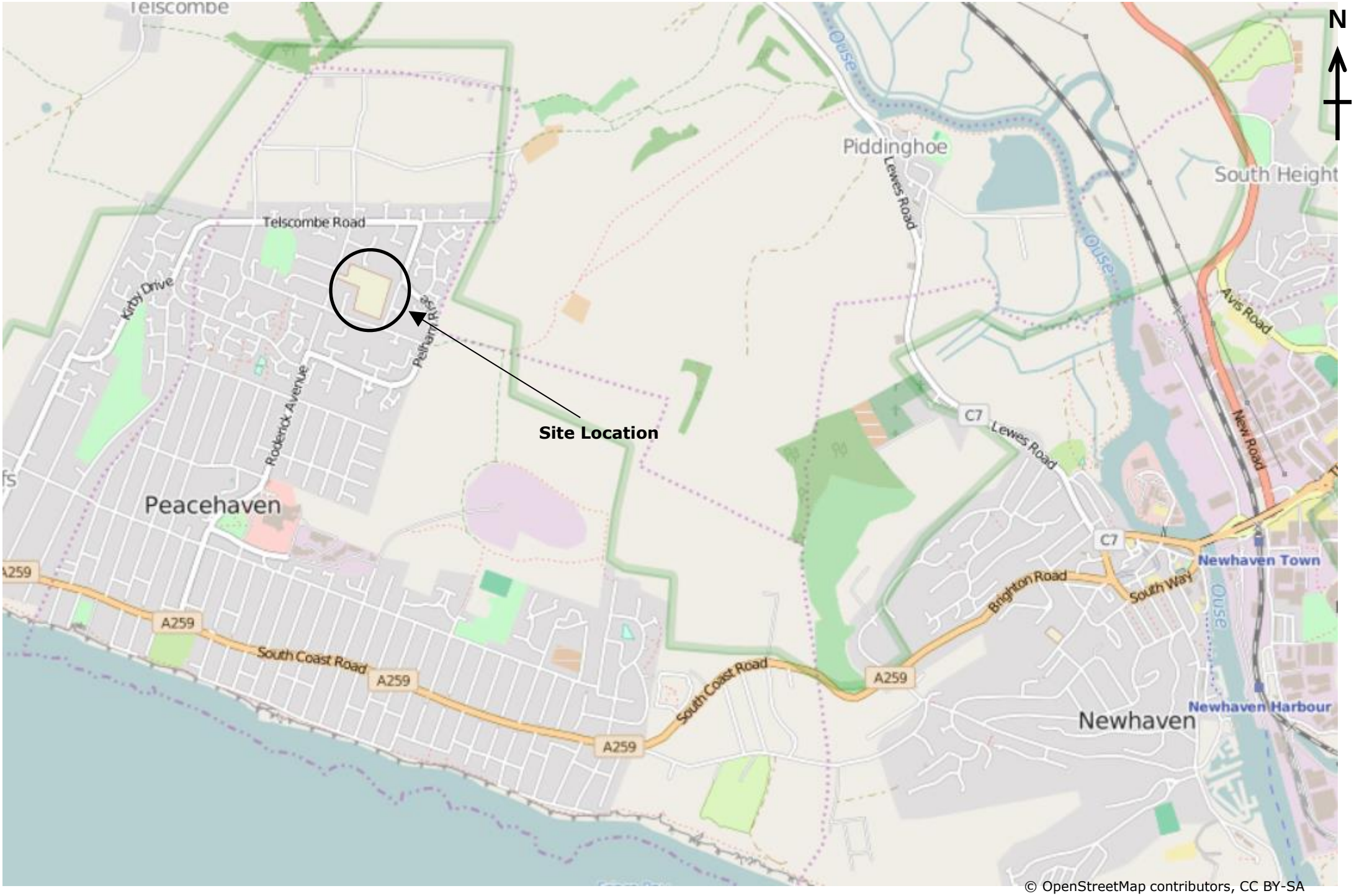
To minimise the risk of subsidence, point discharging infiltration systems should be located a minimum of 10m distance from proposed or existing buildings.

In the event that discharge to ground via infiltration systems is proposed, it is recommended that designers the system provides for the prevention of pollution of groundwater. In this regard appropriate consideration should be given to whether there is a need for inclusion of interceptors and oil separators. The Local Authority and/or relevant water company should be consulted in relation to consent for discharge of water from rooftops, areas of hardstanding and roadways to drains.

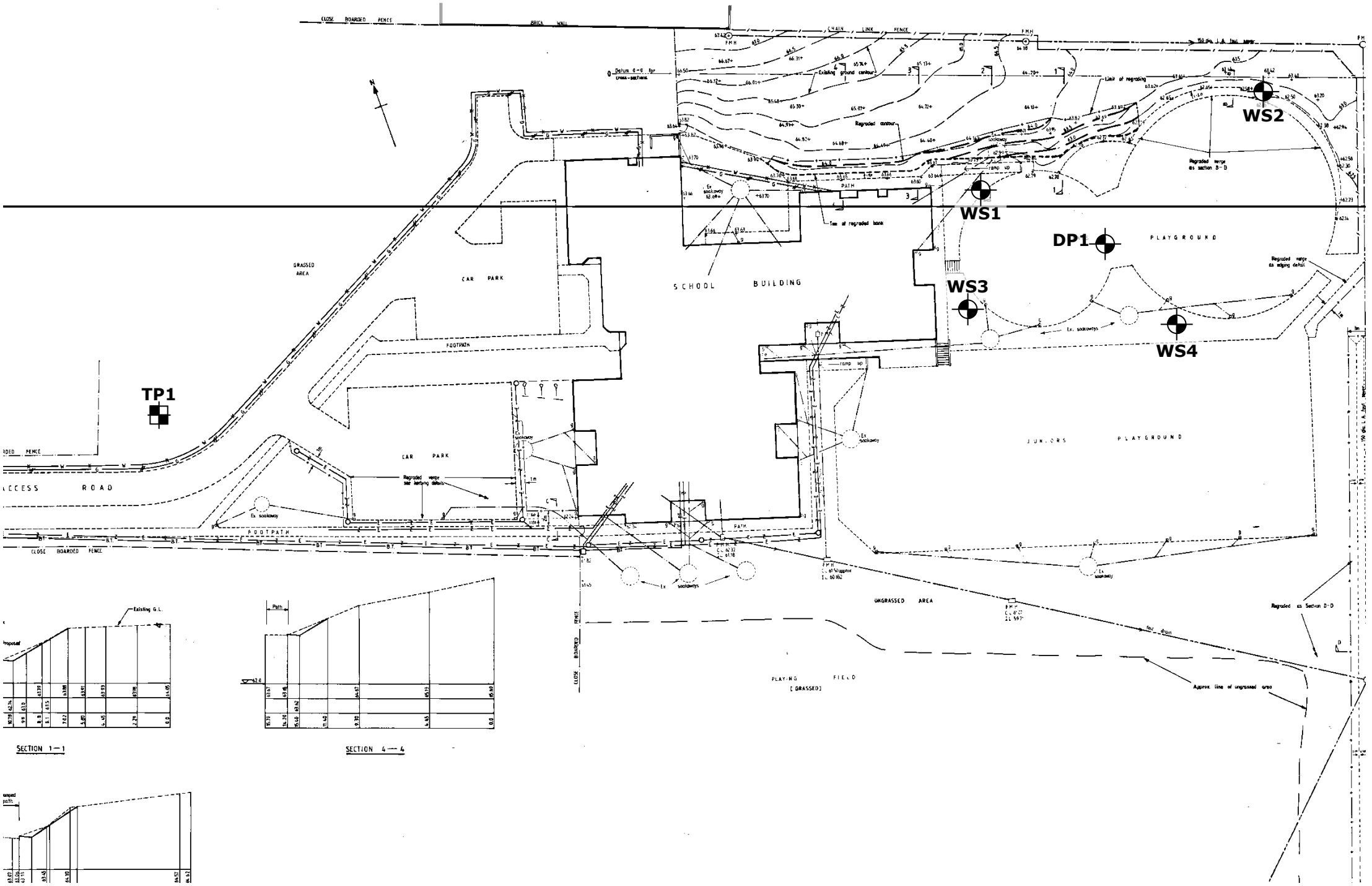
Pollution Prevention Guidance Notes (PPGs) previously published by the Environment Agency for advice on legal requirements and good practice to reduce risks to groundwater have been withdrawn as the Environment Agency's current stated position is that 'Pollution prevention guidance contained a mix of regulatory requirements and good practice advice [and the] Environment Agency does not [now] provide 'good practice' guidance.' However it may be informative for designers to refer to PPGs 1 and 3 (available on the National Archive website) as these documents provided general advice on the prevention of pollution and the use and design of oil separators in surface water drainage systems, respectively.

Ashdown Site Investigation Ltd.
May 2016

FIGURES



ASHDOWN SITE INVESTIGATION LIMITED	Site: Meridian Community Primary School, Peacehaven, East Sussex	Site Location Plan. Not To Scale	Figure 1 R16-11361



ASHDOWN SITE INVESTIGATION LIMITED	Site: Meridian Community Primary School, Peacehaven, East Sussex	Site Plan Not To Scale
		Figure 2 R16-11361

APPENDIX A

Exploratory Hole Notes
In Situ Testing Notes
CIRIA Chalk Classification Notes
Exploratory Hole Records
DPSH-B Dynamic Probe Records
Summary of In Situ TRL Cone Penetrometer (CBR) Test Results
Summary of Borehole Falling Head Soakage Test Results

NOTES FOR THE INTERPRETATION OF EXPLORATORY HOLE RECORDS

1 Symbols and abbreviations

Samples

U 'Undisturbed' Sample: - also known as 'U100' or 'U4' - 100mm diameter by 450mm long. The number of blows to drive in the sampling tube is shown after the test index letter in the SPT column.
Uo Sample not obtained.
U* Full penetration of sample not obtained.
Pi Piston Sample: 'Undisturbed' sample 100mm diameter by 600mm long.
D Disturbed Sample.
R Root Sample.
B Bulk Disturbed Sample.
W Water Sample.
J Jar Sample (sample taken in amber glass jar fitted with gas tight lid)
T Tub Sample
Vi Vial Sample

In situ Testing

S Standard penetration test (SPT): In the borehole record the depth of the test is that at the start of the normal 450mm penetration. The number of blows per 75mm penetration is recorded, with the initial 150mm for seating blows being recorded followed by the blows recorded for the remaining 300mm of the test. The total blows to achieve the standard penetration of 300mm, discounting the seating blows, is noted as the N value on the log. Where the full penetration of the test cannot be achieved (a refusal) the number of blows achieved and the penetration achieved will be reported.

C Standard Penetration Test (SPT) conducted usually in coarse grained soils or weak rocks using the same procedure as for the SPT but with a 50mm diameter, 60º apex solid cone fitted in place of the sampler. Variations in test results are indicated by the same symbols as for the SPT (above).

V Shear Vane Test: Undrained shear strength (cohesion) (kN/m^2) shown within the Vane/Pen Test and N Value column.

H Hand penetrometer Test: Undrained shear strength (cohesion) (kN/m^2) shown within the Vane/Pen Test and N Value column.

P Perth Penetrometer Test: See "In Situ Testing Notes" for full description. Number of blows for 300mm penetration shown under Vane/Pen Test and N Value column. In sand the number of blows is approximately equivalent to the SPT "N" value.

Excavation Method

CP Cable Percussion Borehole
WLS Dynamic Sampler Borehole using windowless sampler tubes
WS Dynamic Sampler Borehole using window sampler tubes
TP Trial Pit excavated using mechanic excavator
HDP Trial Pit excavated using hand tools

2 Soil Description

Description and classification of soils has been carried out using as a general basis the British Standard Geotechnical investigation and testing – Identification and classification of soil, Part 1 Identification and description (BS EN ISO 14688-1:2002+A1:2013) and Part 2 Principles of classification (BS EN 14688-2:2004+A1:2013) as well as the BS5930:2015 code of Practice for Ground Investigations.

Fine Grained Soils

The consistency of fine grained soils given in the report is based on visual inspection of the samples and the strength is based on results of in situ and/or laboratory undrained shear strength tests when carried out.

The consistency is determined on the following basis:

Consistency	**Manual Test**
Very Soft	Soil exudes between fingers when squeezed in hand
Soft	Soils can be moulded by light finger pressure
Firm	Cannot be moulded by finger but rolled to 3mm threads without breaking/crumbling
Stiff	Crumbles/breaks when rolled to 3mm thick threads but can be moulded into a lump again
Very Stiff	Cannot be moulded and crumbles under pressure, can be indented by thumbnail

The terms used for the designation of the undrained shear strength are as follows:

Undrained Shear Strength	
Extremely to Very Low	<20 kPa
Low	20-40 kPa
Medium	40-75 kPa
High	75-150 kPa
Very High	150-300 kPa
Extremely high	300-600 kPa

Note: The undrained shear strength of the soils is measured either by laboratory testing or in the field using hand shear vane.

It is recognised that any coarse grained soil that has in excess of approximately 35% fine grained soil (clay and silt) can often be expected to behave as a fine grained soil despite the dominance of coarse grained material within the soil mass. To reflect this, it is the soil type that dominates the behaviour of the soil mass that appears on the exploratory hole records.

Coarse Grained Soils

The relative densities of coarse grained soils (sand and gravel) given in the report are based on field estimations and the results of the Standard Penetration Test (SPT) and equivalent correlation from other testing. The classification in terms of "N" Values is as follows:

SPT 'N' Value	**Relative Density**
0-4	Very Loose
4-10	Loose
10-30	Medium Dense
30-50	Dense
Greater than 50	Very Dense

3 Rock Description

Description and classification of rocks has been carried out using as a general basis the British Standard Geotechnical investigation and testing – Identification and classification of rock, Part 1 Identification and classification (BS EN ISO 14689-1:2003) as well as the BS5930:2015 code of Practice for Ground Investigations.

The description of rock mass includes the type of rock, structure, discontinuities and weathering.

The unconfined compressive strength of rock material is determined on the following basis:

Term	**Field Identification**	**Unconfined Compressive Strength (MPa)**
Extremely Weak	Indented by thumbnail	Less than 1
Very Weak	Crumbles under firm blows with point of geological hammer, peeled by pocket knife	1 to 5
Weak	Peeled by pocket knife with difficulty, shallow indentations made by firm blow with geological hammer	5 to 25
Medium Strong	Cannot be peeled or scraped with knife, can be fractured with single firm blow of geological hammer	25 to 50
Strong	Requires more than one blow of geological hammer to fracture	50 to 100
Very Strong	Requires may blows of geological hammer to fracture it	100 to 250
Extremely Strong	Can only be chipped with geological hammer	Greater and 250

The terms describing discontinuity and bedding spacing are as follows:

Bedding Thickness	
Very Thick	>2000mm
Thick	2000-600mm
Medium	600-200mm
Thin	200-60mm
Very Thin	60-20mm
Thickly Laminated	20-6mm
Thinly Laminated	<6mm

Discontinuity Spacing	
Very Wide	>2000mm
Wide	2000-600mm
Medium	600-200mm
Close	200-60mm
Very Close	60-20mm
Extremely Close	<20mm

Chalk

Chalk description is based on BS EN ISO 14688, BS EN ISO 14689 and BS5930. The classification of chalk generally follows the guidance offered by the Construction Industry Research and Information Association (CIRIA) C574, 'Engineering in Chalk'. This is based on assessment of chalk density, discontinuity and aperture spacing, and the proportion of intact chalk to silt of chalk. See additional chalk classification notes.

IN SITU TESTING NOTES

1 Standard Penetration Testing

Standard penetration testing (SPT) is carried out within a cased cable percussion borehole. The test is performed using a either a split spoon (barrel) sampler in finer grained deposits, or, in coarser grained soils or weak rocks, using a 50mm diameter, 60º apex solid cone fitted in place of the sampler.

The sampler is driven into the deposits at the base of the borehole by means of a 63.5kg hammer falling freely through 760mm.

In the borehole record the depth of the test is that at the start of the normal 450mm penetration, the number of blows to achieve the standard penetration of 300mm (the "N" value) is shown after the test index letter, but the seating blows through the initial 150mm penetration are not reported unless the full penetration of 450mm cannot be achieved.

(BS EN ISO 22476-3:2005+A1:2011, Geotechnical investigation and testing – Field Testing, Part 3 and BS5930:2015 code of practice of for ground investigations)

2 Dynamic Probe Testing

The DPH (heavy) dynamic probing rig drives a 32mm diameter rod with a 15cm^2 area, 90º end cone into the ground by means of a 50kg hammer which falls freely through a distance of 0.5m. The number of blows per 100mm penetration (N_{100}) is recorded.

The DPSH (super heavy) dynamic probing rig drives a 35mm diameter rod with a 20cm^2 area, 90º end cone into the ground by means of a 63.5kg hammer that falls freely through a distance of 0.75m. The number of blows per 100mm penetration (N_{100}) is recorded. The results can provide a useful indication of the relative strength of the material. The dynamic probing is carried out in accordance with BS EN ISO 22476-2:2005+A1:2011 and BS5930.

3 Perth Penetrometer Test

In this test a hardened stainless steel rod is driven into the deposit by a 9.5kg sliding hammer falling freely through 600mm. After an initial penetration of 150mm the number of blows required to drive the rod a further 300mm is recorded. In sand the Perth blow count gives a close correlation to the "N-value" that could be expected from a standard penetration test (SPT) made in similar materials. The results are less reliable in coarser grained materials but can give an indication of their engineering properties. The perth penetrometer test is carried out in accordance with the Australian Standard AS 1289:6.3.3-1997, Method of Testing Soils for Engineering Purposes, there is no European equivalent code.

4 Undrained Shear Strength

Undrained shear strength determinations are made in situ within the fine grained soils using a Geonor hand shear vane or (usually in the case of window sampler boreholes) a hand penetrometer. The test records the undrained shear strength (cohesion) in kN/m^2. The shear vane records a maximum shear strength of 130kN/m^2 and the hand penetrometer records a maximum shear strength of 250kN/m^2.

3 California Bearing Ratio Test

In this test a hand held Farnell cone penetrometer apparatus is pushed into the deposits for the estimation of the California bearing ratio of the subgrade (for use in pavement design). The test equipment is design for the estimation of the bearing ratio of fine grained soils (clay and silt) only and is unsuitable for use in coarse grained soils and rock.

CHALK CLASSIFICATION NOTES

Classification of chalk based from Construction Industry Research and Information Association (CIRIA) Report C574 'Engineering in Chalk' (2002). Description of chalk based on BS EN 1SO 14688, BS EN 1SO 14689 and BS5930.

1 Engineering classification of chalk

Structure			***Grades***	***Suffix***
Structureless	Melange of fines and intact chalk lumps		Grade D	c <35% fines m >35% fines
Structured	Intact chalk with bedding, discontinuity.	Density Scale see below	Grade A, B or C see below	1, 2, 3, 4 or 5 see below

2 Density Scale

Field Identification	***Density Scale***	***Intact Dry Density (Mg/m^3)***	***Porosity (n) (G_s of calcite 2.7)***	***Saturation Moisture Content***
30-40mm fragments crushed by finger pressure and remould to putty	Low density	<1.55	>0.43	>27.5%
30-40mm fragments break with both hands, will not crush with finger pressure.	Medium density	1.55 to 1.70	0.43 to 0.37	27.5% to 21.8%
Cannot break 30-40mm fragments in two, difficult to break slabs, <10mm thick corners/edges broken of lumps.	High density	1.70 to 1.95	0.37 to 0.28	21.8% to 14.3%
Unable to break by hand, 100mm lump held in hand broken by single hammer blow.	Very high density	>1.95	<0.28	<14.3

3 Discontinuities

Typical discontinuity aperture

Grade A	No infill, closed
Grade B	Open, infilled <3mm
Grade C	Open, infilled <3mm

Typical discontinuity spacing

Suffix	Typical Spacing (t)
1	t > 600mm
2	200mm <t < 600mm
3	60mm < t < 200mm
4	20mm < t < 60mm
5	t < 20mm

Notes: Chalk classifications will be made where possible. Within boreholes chalk will be described recovered as.

Examples: Structureless CHALK composed of off white silty gravel. Clasts are weak medium density. Matrix is pale brown. (White Chalk Subgroup, Grade Dc)

Structured weak high density off white with black speckling CHALK. Fractures are closely spaced (50/100/200), infilled (0/1/3) with comminuted chalk. With occasional flints. (White Chalk Subgroup, Grade B3)

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Site Name: Meridian Community Primary School, Peacehaven, East Sussex

Job Number: R16-11361

Start Date: 04/04/2016

End Date: 04/04/2016

Borehole Number: **WS1**

Standpipe	Sample/ Test Type	Depth From (m)	Depth To (m)	Test Result	Dynamic Probe Blows/100mm 0 5 10 15 20 25 30	Legend	Depth	Stratum Description
							0.00	Grass over Topsoil
	J T	0.05					0.10	MADE GROUND: Brown sandy gravelly clay. Sand is fine. Gravel is subangular to rounded fine to coarse flint, brick and concrete.
	J T	0.40						
	D	0.90					0.80	Stiff brown sandy slightly gravelly CLAY. Sand is fine. Gravel is subangular to rounded fine to coarse flint and ironstone. (Lambeth Group)
	H	1.20		90				
	J T	1.20						
	D	1.60					1.50	Stiff green brown very sandy CLAY. (Lambeth Group)
	J T	1.60						
	D	2.00					1.90	Stiff orange brown slightly sandy gravelly CLAY. Sand is fine. Gravel is subangular to rounded fine to coarse flint and chalk. (Lambeth Group)
	D	2.20					2.10	Off white weak structureless CHALK. Recovered as silty gravel with a brown and off white matrix with orange staining. (White Chalk Subgroup, Grade Dc)
	J T	2.50						
	D	2.80						
	D	3.20						
	D	3.80						
	D	4.50					4.20	Off white with orange staining weak structured CHALK recovered as comminuted chalk. With flints. (White Chalk Subgroup, Grade C or better)
	J T	4.50						
							5.00	End of borehole at 5.00m

Remarks

Groundwater: Borehole dry on completion.

Stability: Borehole stable on completion.

Notes: n/a

Excavation Method: WLS

Borehole Diameter: Various

Made By: EM

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Site Name: Meridian Community Primary School, Peacehaven, East Sussex

Job Number: R16-11361

Start Date: 04/04/2016

End Date: 04/04/2016

Borehole Number: **WS2**

Standpipe	Sample/ Test Type	Depth From (m)	Depth To (m)	Test Result	Dynamic Probe Blows/100mm 0 5 10 15 20 25 30	Legend	Depth	Stratum Description
	J T	0.10					0.00	Grass over Topsoil.
	D	0.30					0.20	Firm brown sandy slightly gravelly CLAY. Sand is fine. Gravel is subangular to rounded fine to coarse flint and ironstone. (Lambeth Group)
	J T	0.30					0.40	
	D	0.45					0.50	Green brown slightly clayey fine SAND. (Lambeth Group)
	H	0.60		115				Stiff orange brown slightly sandy gravelly CLAY. Sand is fine. Gravel is subangular to rounded fine to coarse flint and ironstone. (Lambeth Group)
	D	0.80						
	J T	0.80						
	H	0.90		115			1.00	Stiff off white mottled brown silty gravelly CLAY. Gravel is subangular to subrounded fine to coarse chalk. (Lambeth Group)
	D	1.20						
	J T	1.20					1.30	Very stiff orange brown slightly sandy gravelly CLAY. Sand is fine. Gravel is subangular to rounded fine to coarse flint and ironstone. (Lambeth Group)
	H	1.40		170				
	D	1.50						
	H	1.70		195				
	D	1.90					1.80	Off white weak structured CHALK. recovered as comminuted chalk, with occasional flint and orange staining. (White Chalk Subgroup, Grade C or better)
	D	2.20						
	J T	2.50						
	D	2.80						
	D	3.50						
	D	3.80						
	D	4.50					5.00	End of borehole at 5.00m

Remarks

Groundwater: Standing water depth at 3.60m on completion of borehole - dry before falling head soakage test.

Stability: Borehole stable on completion.

Notes: n/a

Excavation Method: WLS

Borehole Diameter: Various

Made By: EM

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Site Name: Meridian Community Primary School, Peacehaven, East Sussex

Job Number: R16-11361

Start Date: 04/04/2016

End Date: 04/04/2016

Borehole Number: **WS3**

Standpipe	Sample/ Test Type	Depth From (m)	Depth To (m)	Test Result	Dynamic Probe Blows/100mm 0 5 10 15 20 25 30	Legend	Depth	Stratum Description
							0.00	Grass over Topsoil
							0.10	MADE GROUND: Brown sandy gravelly clay. Sand is fine. Gravel is subangular to rounded fine to coarse flint, brick and concrete.
		0.40						
							0.80	Firm brown sandy gravelly CLAY. Sand is fine. Gravel is subangular to rounded fine to coarse flint. (Lambeth Group)
	D	0.90						
	D	1.20						becoming stiff below 1.20m depth.
	H	1.20		90				
	J T	1.20						
	U	1.60	2.00					
	D	2.10					2.15	Off white weak structureless CHALK. Recovered as silty gravel with a brown and off white matrix with orange staining. (White Chalk Subgroup, Grade Dc)
	D	2.20						
	J T	2.50						matrix becoming off white from 2.40m depth.
	D	2.80						
	D	3.90					4.20	Off white with orange staining weak structured CHALK recovered as comminuted chalk. With flints. (White Chalk Subgroup, Grade C or better)
	D	4.50						
	J T	4.50						
							5.00	End of borehole at 5.00m

Remarks

Groundwater: Standing water depth at 3.50m on completion of borehole- dry before falling head soakage test.

Stability: Borehole stable on completion.

Notes: n/a

Excavation Method: WLS

Borehole Diameter: Various

Made By: EM

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Site Name: Meridian Community Primary School, Peacehaven, East Sussex

Job Number: R16-11361

Start Date: 04/04/2016

End Date: 04/04/2016

Borehole Number: **WS4**

Standpipe	Sample/ Test Type	Depth From (m)	Depth To (m)	Test Result	Dynamic Probe Blows/100mm 0 5 10 15 20 25 30	Legend	Depth	Stratum Description
	J T	0.10					0.00	Grass over Topsoil
							0.20	Firm brown slightly sandy gravelly CLAY. Sand is fine. Gravel is subangular to rounded fine to coarse flint and chalk. (Lambeth Group)
	J T	0.40						
	D	0.70					0.80	Stiff brown mottled off white slightly sandy gravelly CLAY. Sand is fine to coarse. Gravel is subangular to rounded fine to coarse chalk and flint. (Lambeth Group)
	D	1.00						
	J T	1.00					1.20	Medium dense green brown slightly clayey fine SAND. (Lambeth Group)
	D	1.30						
	D	1.60					1.50	Stiff brown mottled off white slightly sandy gravelly CLAY. Sand is fine to coarse. Gravel is subangular to rounded fine to coarse chalk and flint. (Lambeth Group)
	D	1.80					1.70	Off white with orange staining weak structured CHALK recovered as comminuted chalk. With flints. (White Chalk Subgroup, Grade C or better)
	D	2.50						
	D	3.50						
	J T	3.50						
	D	4.50					5.00	End of borehole at 5.00m

Remarks

Groundwater: Borehole dry on completion.

Stability: Borehole stable on completion.

Notes: n/a

Excavation Method: WLS

Borehole Diameter: Various

Made By: EM

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Site Name: Meridian Community Primary School, Peacehaven, East Sussex

Job Number: R16-11361

Start Date: 04/04/2016

End Date: 04/04/2016

Trial Pit Number: **TP1**

Samples and In Situ Testing				Legend	Depth/ Reduced Level	Stratum Description
Sample/ Test Type	Depth From (m)	Depth To (m)	Test Result			
					0.00	Grass over Topsoil
B	0.30	0.80			0.20	MAGE GROUND: Brown sandy slightly gravelly clay. Sand is fine. Gravel is subangular to subrounded fine to coarse flint, chalk, concrete, brick, geotextile and wood.
					0.80	End of trial pit at 0.80m

Remarks

Groundwater: Trial pit dry on completion.

Stability: n/a

Notes: n/a

Excavation Method:	HDP
Pit Length:	n/a
Pit Width:	n/a
Made By:	EM

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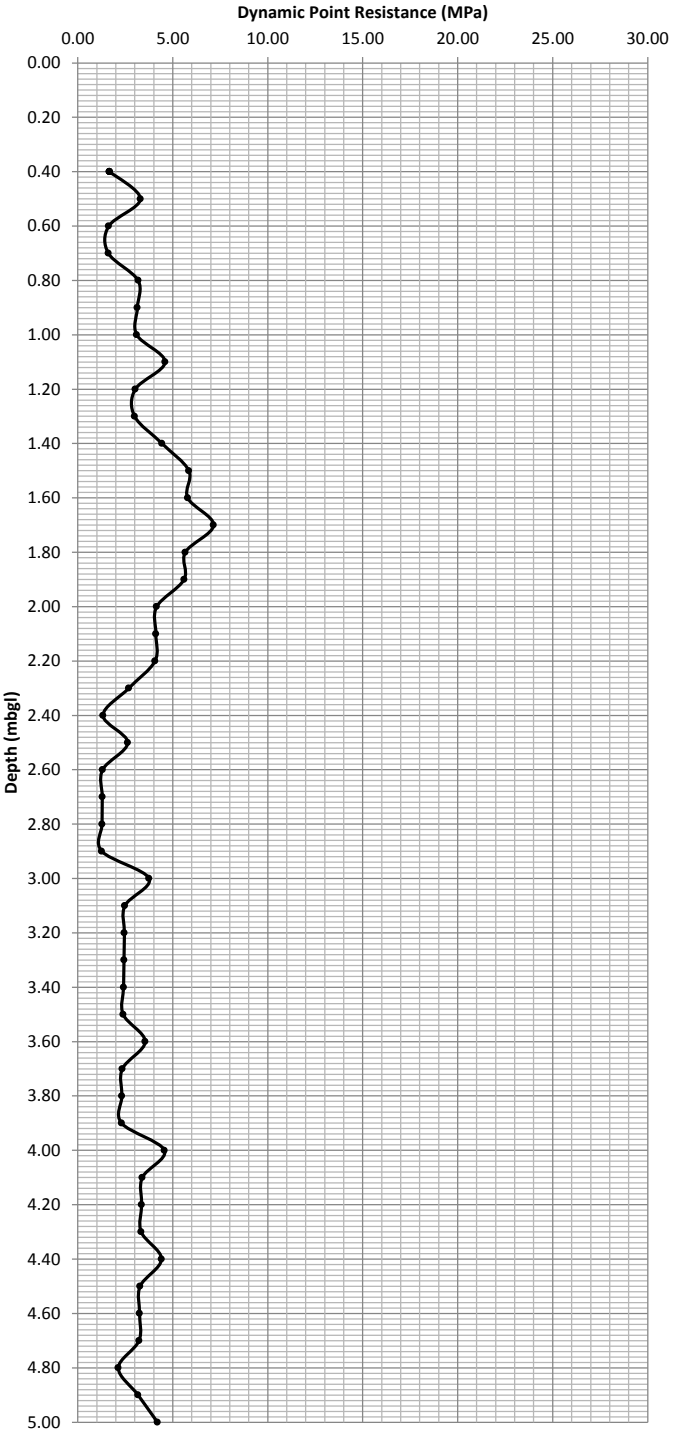
Dynamic Probe Record

SITE Meridian Community Primary School, Peacehaven, East Sussex **Report Ref.** R16-11361

Test Location Reference	DP1

Depth (mbgl)	Blows (per 100mm)	Average Penetration per Blow (m)	Unit Point Resistance (MPa)	Dynamic Point Resistance (MPa)
0.10				
0.20				
0.30				
0.40	1	0.10	1.79	1.67
0.50	2	0.05	3.59	3.30
0.60	1	0.10	1.79	1.63
0.70	1	0.10	1.79	1.61
0.80	2	0.05	3.59	3.17
0.90	2	0.05	3.59	3.14
1.00	2	0.05	3.59	3.10
1.10	3	0.03	5.38	4.59
1.20	2	0.05	3.59	3.03
1.30	2	0.05	3.59	2.99
1.40	3	0.03	5.38	4.44
1.50	4	0.03	7.18	5.85
1.60	4	0.03	7.18	5.78
1.70	5	0.02	8.97	7.15
1.80	4	0.03	7.18	5.66
1.90	4	0.03	7.18	5.60
2.00	3	0.03	5.38	4.15
2.10	3	0.03	5.38	4.11
2.20	3	0.03	5.38	4.06
2.30	2	0.05	3.59	2.68
2.40	1	0.10	1.79	1.33
2.50	2	0.05	3.59	2.63
2.60	1	0.10	1.79	1.30
2.70	1	0.10	1.79	1.29
2.80	1	0.10	1.79	1.28
2.90	1	0.10	1.79	1.26
3.00	3	0.03	5.38	3.75
3.10	2	0.05	3.59	2.48
3.20	2	0.05	3.59	2.45
3.30	2	0.05	3.59	2.43
3.40	2	0.05	3.59	2.41
3.50	2	0.05	3.59	2.39
3.60	3	0.03	5.38	3.55
3.70	2	0.05	3.59	2.34
3.80	2	0.05	3.59	2.32
3.90	2	0.05	3.59	2.30
4.00	4	0.03	7.18	4.56
4.10	3	0.03	5.38	3.39
4.20	3	0.03	5.38	3.36
4.30	3	0.03	5.38	3.33
4.40	4	0.03	7.18	4.41
4.50	3	0.03	5.38	3.28
4.60	3	0.03	5.38	3.25
4.70	3	0.03	5.38	3.22
4.80	2	0.05	3.59	2.13
4.90	3	0.03	5.38	3.17
5.00	4	0.03	7.18	4.19



Notes:

Hammer Mass	63.5	kg
Fall Height	0.76	m
Cone Area	0.0019	m^2
E_{theor}	473	J
Energy Ratio	0.72	
Anvil Mass	1.25	kg
Rod Mass	8.79	kg/m

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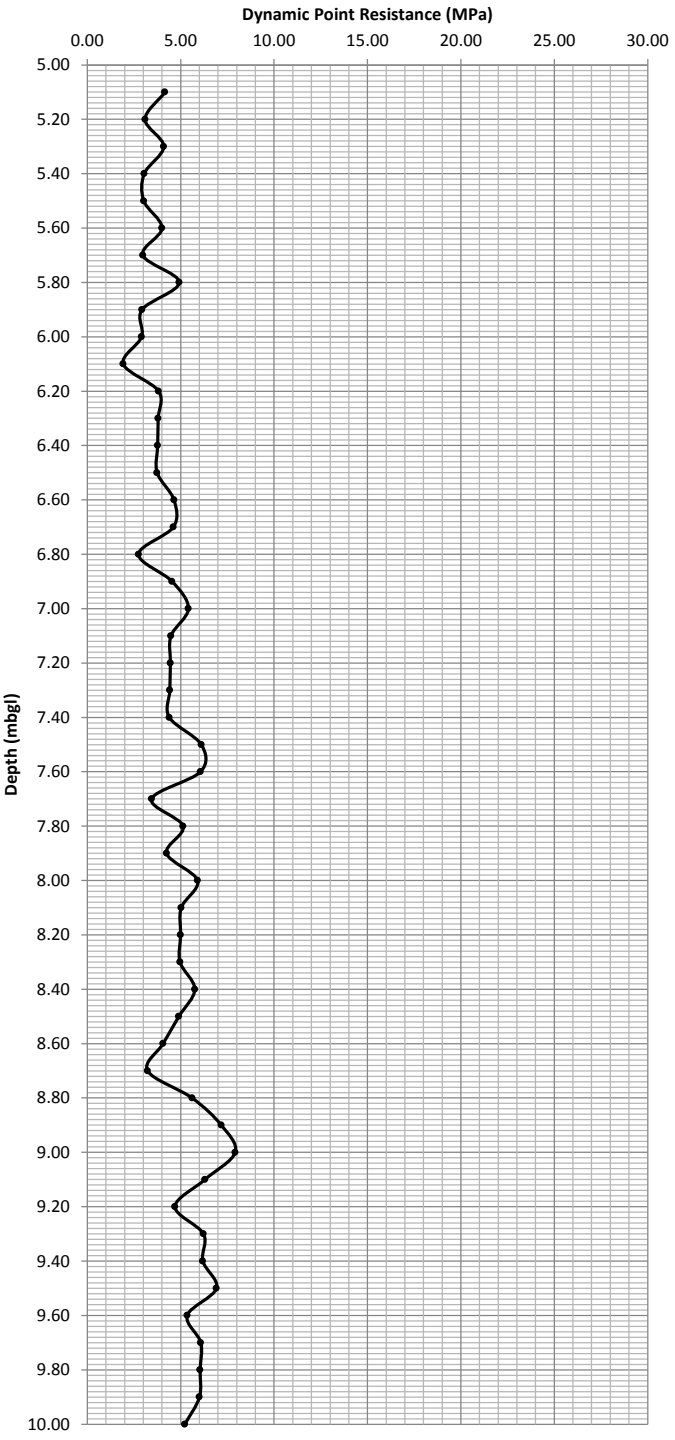
Dynamic Probe Record

SITE Meridian Community Primary School, Peacehaven, East Sussex **Report Ref.** R16-11361

Test Location Reference	DP1

Depth (mbgl)	Blows (per 100mm)	Average Penetration per Blow (m)	Unit Point Resistance (MPa)	Dynamic Point Resistance (MPa)
5.10	4	0.03	7.18	4.16
5.20	3	0.03	5.38	3.09
5.30	4	0.03	7.18	4.09
5.40	3	0.03	5.38	3.05
5.50	3	0.03	5.38	3.02
5.60	4	0.03	7.18	4.00
5.70	3	0.03	5.38	2.98
5.80	5	0.02	8.97	4.92
5.90	3	0.03	5.38	2.93
6.00	3	0.03	5.38	2.91
6.10	2	0.05	3.59	1.93
6.20	4	0.03	7.18	3.82
6.30	4	0.03	7.18	3.79
6.40	4	0.03	7.18	3.77
6.50	4	0.03	7.18	3.74
6.60	5	0.02	8.97	4.64
6.70	5	0.02	8.97	4.61
6.80	3	0.03	5.38	2.75
6.90	5	0.02	8.97	4.54
7.00	6	0.02	10.76	5.41
7.10	5	0.02	8.97	4.48
7.20	5	0.02	8.97	4.45
7.30	5	0.02	8.97	4.42
7.40	5	0.02	8.97	4.39
7.50	7	0.01	12.56	6.10
7.60	7	0.01	12.56	6.06
7.70	4	0.03	7.18	3.44
7.80	6	0.02	10.76	5.13
7.90	5	0.02	8.97	4.25
8.00	7	0.01	12.56	5.91
8.10	6	0.02	10.76	5.03
8.20	6	0.02	10.76	5.00
8.30	6	0.02	10.76	4.97
8.40	7	0.01	12.56	5.76
8.50	6	0.02	10.76	4.90
8.60	5	0.02	8.97	4.06
8.70	4	0.03	7.18	3.23
8.80	7	0.01	12.56	5.61
8.90	9	0.01	16.15	7.17
9.00	10	0.01	17.94	7.92
9.10	8	0.01	14.35	6.30
9.20	6	0.02	10.76	4.70
9.30	8	0.01	14.35	6.22
9.40	8	0.01	14.35	6.19
9.50	9	0.01	16.15	6.92
9.60	7	0.01	12.56	5.35
9.70	8	0.01	14.35	6.08
9.80	8	0.01	14.35	6.04
9.90	8	0.01	14.35	6.01
10.00	7	0.01	12.56	5.23



Notes:

Hammer Mass	63.5	kg
Fall Height	0.76	m
Cone Area	0.0019	m^2
E_{theor}	473	J
Energy Ratio	0.72	
Anvil Mass	1.25	kg
Rod Mass	8.79	kg/m

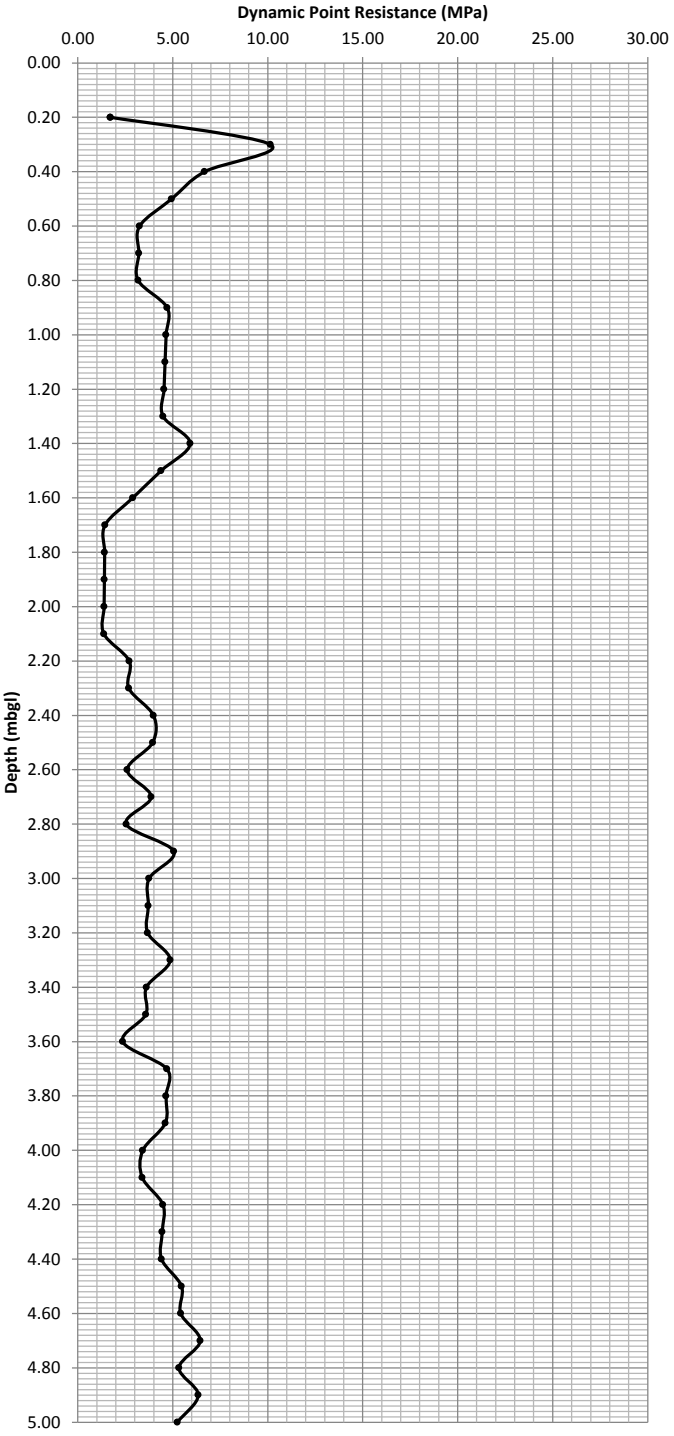
ASHDOWN SITE INVESTIGATION LTD

Dynamic Probe Record

SITE Meridian Community Primary School, Peacehaven, East Sussex **Report Ref.** R16-11361

Test Location Reference	WS1

Depth (mbgl)	Blows (per 100mm)	Average Penetration per Blow (m)	Unit Point Resistance (MPa)	Dynamic Point Resistance (MPa)
0.10				
0.20	1	0.10	1.79	1.71
0.30	6	0.02	10.76	10.14
0.40	4	0.03	7.18	6.68
0.50	3	0.03	5.38	4.94
0.60	2	0.05	3.59	3.25
0.70	2	0.05	3.59	3.21
0.80	2	0.05	3.59	3.17
0.90	3	0.03	5.38	4.70
1.00	3	0.03	5.38	4.65
1.10	3	0.03	5.38	4.59
1.20	3	0.03	5.38	4.54
1.30	3	0.03	5.38	4.49
1.40	4	0.03	7.18	5.91
1.50	3	0.03	5.38	4.39
1.60	2	0.05	3.59	2.89
1.70	1	0.10	1.79	1.43
1.80	1	0.10	1.79	1.41
1.90	1	0.10	1.79	1.40
2.00	1	0.10	1.79	1.38
2.10	1	0.10	1.79	1.37
2.20	2	0.05	3.59	2.71
2.30	2	0.05	3.59	2.68
2.40	3	0.03	5.38	3.98
2.50	3	0.03	5.38	3.94
2.60	2	0.05	3.59	2.60
2.70	3	0.03	5.38	3.86
2.80	2	0.05	3.59	2.55
2.90	4	0.03	7.18	5.05
3.00	3	0.03	5.38	3.75
3.10	3	0.03	5.38	3.72
3.20	3	0.03	5.38	3.68
3.30	4	0.03	7.18	4.86
3.40	3	0.03	5.38	3.61
3.50	3	0.03	5.38	3.58
3.60	2	0.05	3.59	2.36
3.70	4	0.03	7.18	4.69
3.80	4	0.03	7.18	4.64
3.90	4	0.03	7.18	4.60
4.00	3	0.03	5.38	3.42
4.10	3	0.03	5.38	3.39
4.20	4	0.03	7.18	4.48
4.30	4	0.03	7.18	4.44
4.40	4	0.03	7.18	4.41
4.50	5	0.02	8.97	5.46
4.60	5	0.02	8.97	5.42
4.70	6	0.02	10.76	6.45
4.80	5	0.02	8.97	5.33
4.90	6	0.02	10.76	6.34
5.00	5	0.02	8.97	5.24



Notes:

Hammer Mass	63.5	kg
Fall Height	0.76	m
Cone Area	0.0019	m^2
E_{theor}	473	J
Energy Ratio	0.72	
Anvil Mass	1.25	kg
Rod Mass	8.79	kg/m

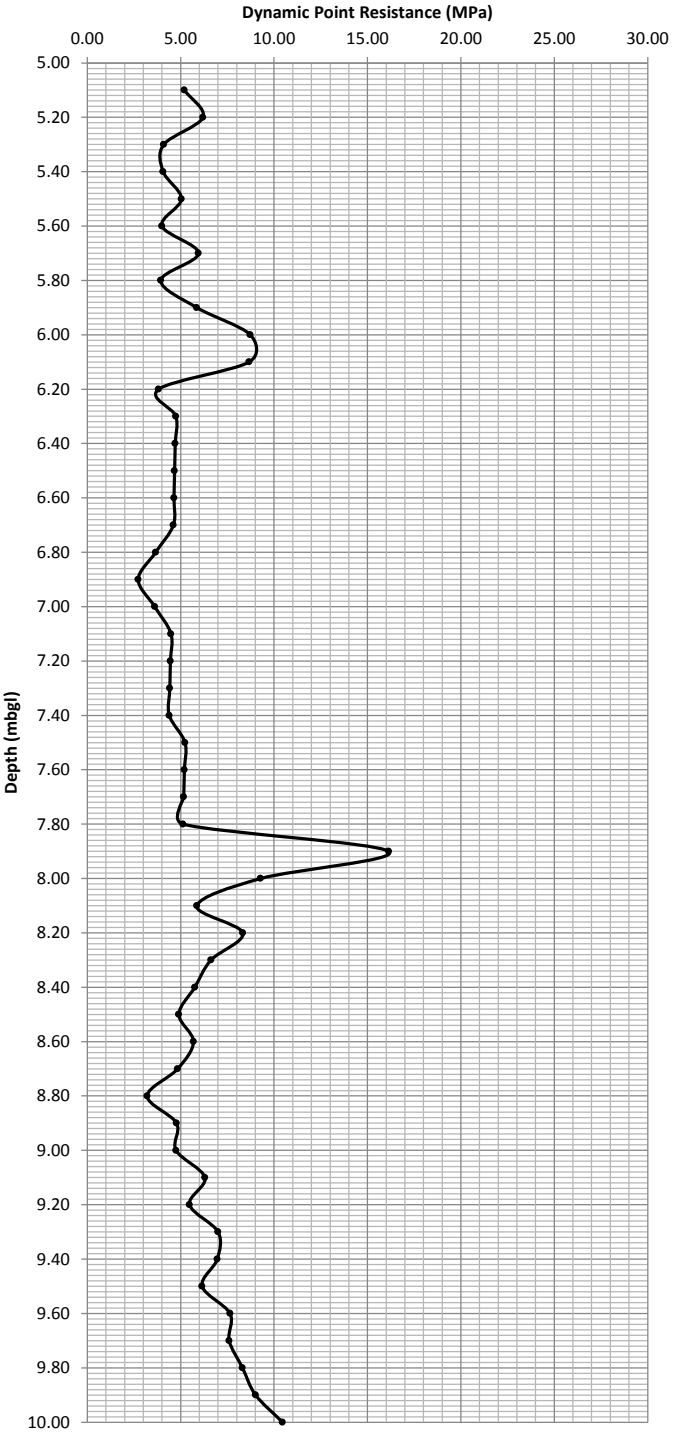
ASHDOWN SITE INVESTIGATION LTD

Dynamic Probe Record

SITE Meridian Community Primary School, Peacehaven, East Sussex **Report Ref.** R16-11361

Test Location Reference	WS1

Depth (mbgl)	Blows (per 100mm)	Average Penetration per Blow (m)	Unit Point Resistance (MPa)	Dynamic Point Resistance (MPa)
5.10	5	0.02	8.97	5.20
5.20	6	0.02	10.76	6.19
5.30	4	0.03	7.18	4.09
5.40	4	0.03	7.18	4.06
5.50	5	0.02	8.97	5.04
5.60	4	0.03	7.18	4.00
5.70	6	0.02	10.76	5.95
5.80	4	0.03	7.18	3.94
5.90	6	0.02	10.76	5.86
6.00	9	0.01	16.15	8.73
6.10	9	0.01	16.15	8.66
6.20	4	0.03	7.18	3.82
6.30	5	0.02	8.97	4.74
6.40	5	0.02	8.97	4.71
6.50	5	0.02	8.97	4.67
6.60	5	0.02	8.97	4.64
6.70	5	0.02	8.97	4.61
6.80	4	0.03	7.18	3.66
6.90	3	0.03	5.38	2.73
7.00	4	0.03	7.18	3.61
7.10	5	0.02	8.97	4.48
7.20	5	0.02	8.97	4.45
7.30	5	0.02	8.97	4.42
7.40	5	0.02	8.97	4.39
7.50	6	0.02	10.76	5.23
7.60	6	0.02	10.76	5.20
7.70	6	0.02	10.76	5.16
7.80	6	0.02	10.76	5.13
7.90	19	0.01	34.09	16.13
8.00	11	0.01	19.73	9.28
8.10	7	0.01	12.56	5.87
8.20	10	0.01	17.94	8.33
8.30	8	0.01	14.35	6.62
8.40	7	0.01	12.56	5.76
8.50	6	0.02	10.76	4.90
8.60	7	0.01	12.56	5.68
8.70	6	0.02	10.76	4.84
8.80	4	0.03	7.18	3.21
8.90	6	0.02	10.76	4.78
9.00	6	0.02	10.76	4.75
9.10	8	0.01	14.35	6.30
9.20	7	0.01	12.56	5.48
9.30	9	0.01	16.15	7.00
9.40	9	0.01	16.15	6.96
9.50	8	0.01	14.35	6.15
9.60	10	0.01	17.94	7.64
9.70	10	0.01	17.94	7.60
9.80	11	0.01	19.73	8.31
9.90	12	0.01	21.53	9.01
10.00	14	0.01	25.12	10.45



Notes:

Hammer Mass	63.5	kg
Fall Height	0.76	m
Cone Area	0.0019	m^2
E_{theor}	473	J
Energy Ratio	0.72	
Anvil Mass	1.25	kg
Rod Mass	8.79	kg/m

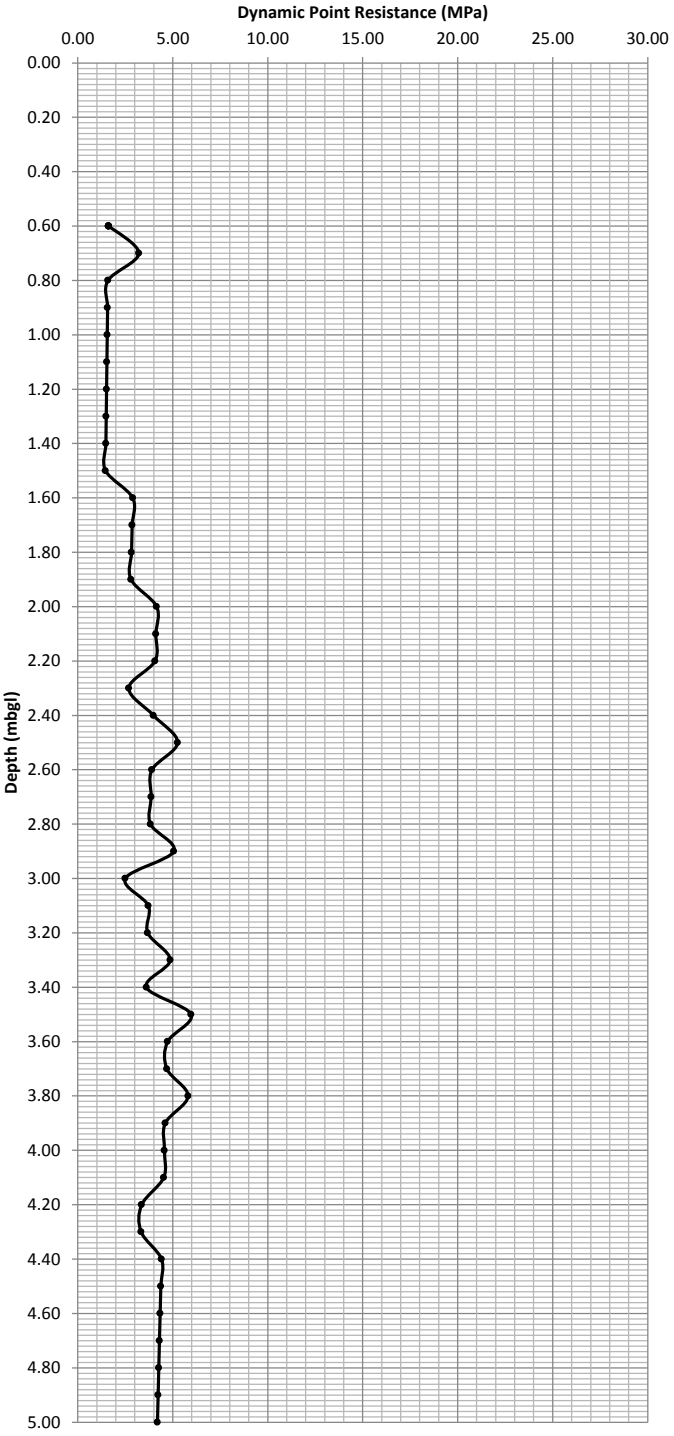
ASHDOWN SITE INVESTIGATION LTD

Dynamic Probe Record

SITE Meridian Community Primary School, Peacehaven, East Sussex **Report Ref.** R16-11361

Test Location Reference	WS2

Depth (mbgl)	Blows (per 100mm)	Average Penetration per Blow (m)	Unit Point Resistance (MPa)	Dynamic Point Resistance (MPa)
0.10				
0.20				
0.30				
0.40				
0.50				
0.60	1	0.10	1.79	1.63
0.70	2	0.05	3.59	3.21
0.80	1	0.10	1.79	1.59
0.90	1	0.10	1.79	1.57
1.00	1	0.10	1.79	1.55
1.10	1	0.10	1.79	1.53
1.20	1	0.10	1.79	1.51
1.30	1	0.10	1.79	1.50
1.40	1	0.10	1.79	1.48
1.50	1	0.10	1.79	1.46
1.60	2	0.05	3.59	2.89
1.70	2	0.05	3.59	2.86
1.80	2	0.05	3.59	2.83
1.90	2	0.05	3.59	2.80
2.00	3	0.03	5.38	4.15
2.10	3	0.03	5.38	4.11
2.20	3	0.03	5.38	4.06
2.30	2	0.05	3.59	2.68
2.40	3	0.03	5.38	3.98
2.50	4	0.03	7.18	5.26
2.60	3	0.03	5.38	3.90
2.70	3	0.03	5.38	3.86
2.80	3	0.03	5.38	3.83
2.90	4	0.03	7.18	5.05
3.00	2	0.05	3.59	2.50
3.10	3	0.03	5.38	3.72
3.20	3	0.03	5.38	3.68
3.30	4	0.03	7.18	4.86
3.40	3	0.03	5.38	3.61
3.50	5	0.02	8.97	5.96
3.60	4	0.03	7.18	4.73
3.70	4	0.03	7.18	4.69
3.80	5	0.02	8.97	5.80
3.90	4	0.03	7.18	4.60
4.00	4	0.03	7.18	4.56
4.10	4	0.03	7.18	4.52
4.20	3	0.03	5.38	3.36
4.30	3	0.03	5.38	3.33
4.40	4	0.03	7.18	4.41
4.50	4	0.03	7.18	4.37
4.60	4	0.03	7.18	4.33
4.70	4	0.03	7.18	4.30
4.80	4	0.03	7.18	4.26
4.90	4	0.03	7.18	4.23
5.00	4	0.03	7.18	4.19



Notes:

Hammer Mass	63.5	kg
Fall Height	0.76	m
Cone Area	0.0019	m^2
E_{theor}	473	J
Energy Ratio	0.72	
Anvil Mass	1.25	kg
Rod Mass	8.79	kg/m

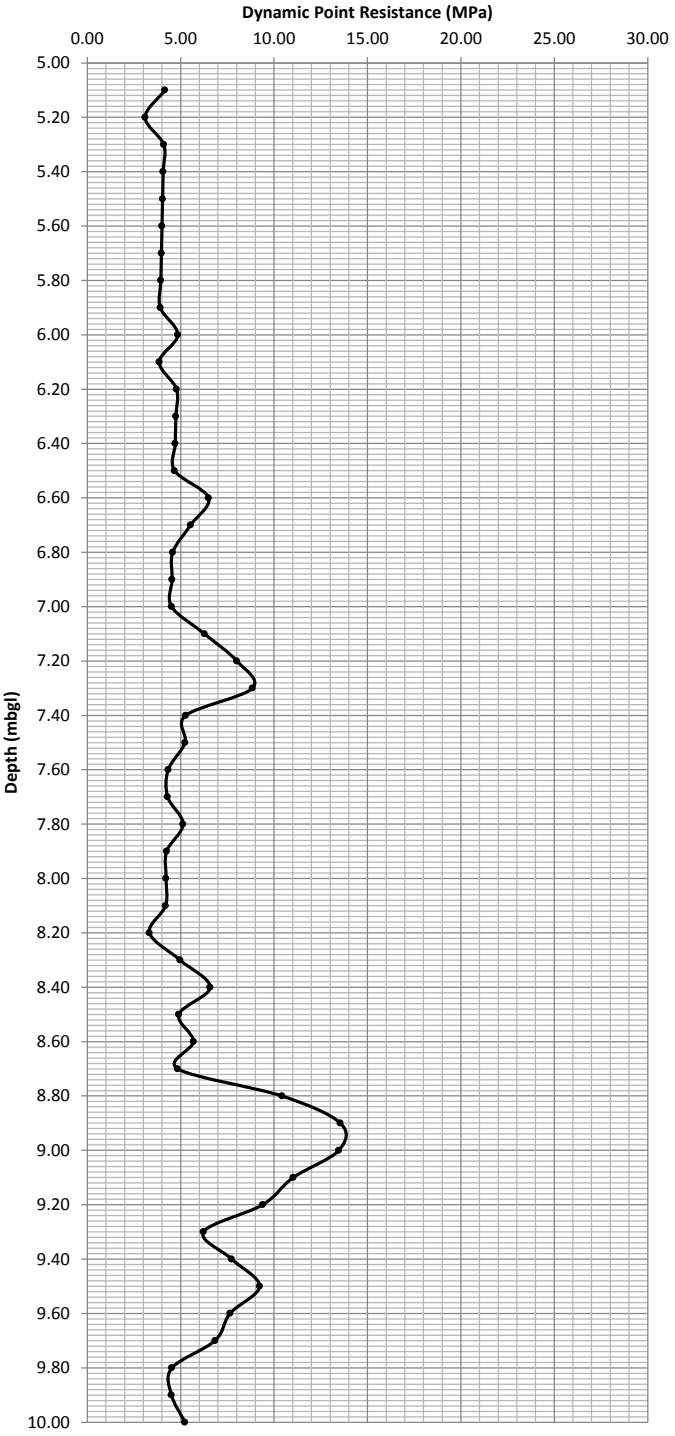
ASHDOWN SITE INVESTIGATION LTD

Dynamic Probe Record

SITE Meridian Community Primary School, Peacehaven, East Sussex **Report Ref.** R16-11361

Test Location Reference	WS2

Depth (mbgl)	Blows (per 100mm)	Average Penetration per Blow (m)	Unit Point Resistance (MPa)	Dynamic Point Resistance (MPa)
5.10	4	0.03	7.18	4.16
5.20	3	0.03	5.38	3.09
5.30	4	0.03	7.18	4.09
5.40	4	0.03	7.18	4.06
5.50	4	0.03	7.18	4.03
5.60	4	0.03	7.18	4.00
5.70	4	0.03	7.18	3.97
5.80	4	0.03	7.18	3.94
5.90	4	0.03	7.18	3.91
6.00	5	0.02	8.97	4.85
6.10	4	0.03	7.18	3.85
6.20	5	0.02	8.97	4.78
6.30	5	0.02	8.97	4.74
6.40	5	0.02	8.97	4.71
6.50	5	0.02	8.97	4.67
6.60	7	0.01	12.56	6.50
6.70	6	0.02	10.76	5.53
6.80	5	0.02	8.97	4.58
6.90	5	0.02	8.97	4.54
7.00	5	0.02	8.97	4.51
7.10	7	0.01	12.56	6.27
7.20	9	0.01	16.15	8.01
7.30	10	0.01	17.94	8.84
7.40	6	0.02	10.76	5.27
7.50	6	0.02	10.76	5.23
7.60	5	0.02	8.97	4.33
7.70	5	0.02	8.97	4.30
7.80	6	0.02	10.76	5.13
7.90	5	0.02	8.97	4.25
8.00	5	0.02	8.97	4.22
8.10	5	0.02	8.97	4.19
8.20	4	0.03	7.18	3.33
8.30	6	0.02	10.76	4.97
8.40	8	0.01	14.35	6.58
8.50	6	0.02	10.76	4.90
8.60	7	0.01	12.56	5.68
8.70	6	0.02	10.76	4.84
8.80	13	0.01	23.32	10.43
8.90	17	0.01	30.50	13.55
9.00	17	0.01	30.50	13.47
9.10	14	0.01	25.12	11.02
9.20	12	0.01	21.53	9.39
9.30	8	0.01	14.35	6.22
9.40	10	0.01	17.94	7.73
9.50	12	0.01	21.53	9.22
9.60	10	0.01	17.94	7.64
9.70	9	0.01	16.15	6.84
9.80	6	0.02	10.76	4.53
9.90	6	0.02	10.76	4.51
10.00	7	0.01	12.56	5.23



Notes:

Hammer Mass	63.5	kg
Fall Height	0.76	m
Cone Area	0.0019	m^2
E_{theor}	473	J
Energy Ratio	0.72	
Anvil Mass	1.25	kg
Rod Mass	8.79	kg/m

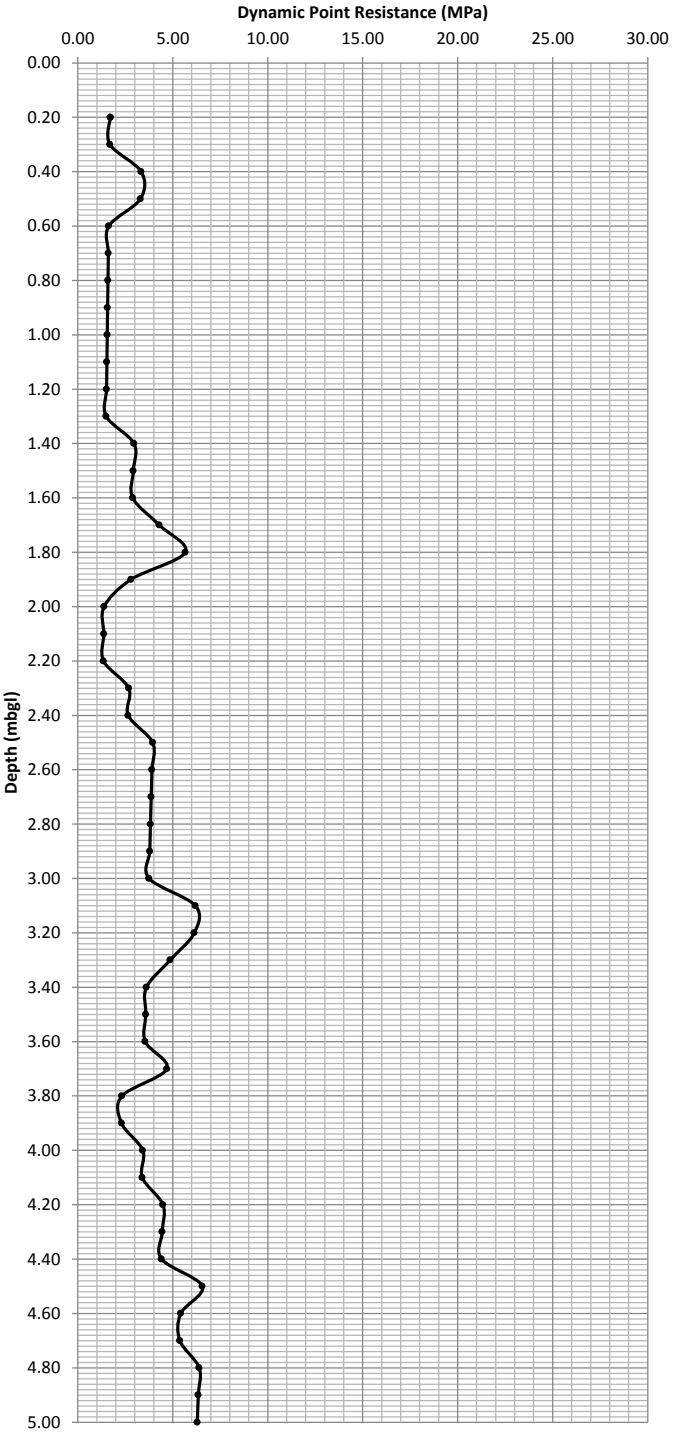
ASHDOWN SITE INVESTIGATION LTD

Dynamic Probe Record

SITE Meridian Community Primary School, Peacehaven, East Sussex **Report Ref.** R16-11361

Test Location Reference	WS3

Depth (mbgl)	Blows (per 100mm)	Average Penetration per Blow (m)	Unit Point Resistance (MPa)	Dynamic Point Resistance (MPa)
0.10				
0.20	1	0.10	1.79	1.71
0.30	1	0.10	1.79	1.69
0.40	2	0.05	3.59	3.34
0.50	2	0.05	3.59	3.30
0.60	1	0.10	1.79	1.63
0.70	1	0.10	1.79	1.61
0.80	1	0.10	1.79	1.59
0.90	1	0.10	1.79	1.57
1.00	1	0.10	1.79	1.55
1.10	1	0.10	1.79	1.53
1.20	1	0.10	1.79	1.51
1.30	1	0.10	1.79	1.50
1.40	2	0.05	3.59	2.96
1.50	2	0.05	3.59	2.92
1.60	2	0.05	3.59	2.89
1.70	3	0.03	5.38	4.29
1.80	4	0.03	7.18	5.66
1.90	2	0.05	3.59	2.80
2.00	1	0.10	1.79	1.38
2.10	1	0.10	1.79	1.37
2.20	1	0.10	1.79	1.35
2.30	2	0.05	3.59	2.68
2.40	2	0.05	3.59	2.65
2.50	3	0.03	5.38	3.94
2.60	3	0.03	5.38	3.90
2.70	3	0.03	5.38	3.86
2.80	3	0.03	5.38	3.83
2.90	3	0.03	5.38	3.79
3.00	3	0.03	5.38	3.75
3.10	5	0.02	8.97	6.19
3.20	5	0.02	8.97	6.13
3.30	4	0.03	7.18	4.86
3.40	3	0.03	5.38	3.61
3.50	3	0.03	5.38	3.58
3.60	3	0.03	5.38	3.55
3.70	4	0.03	7.18	4.69
3.80	2	0.05	3.59	2.32
3.90	2	0.05	3.59	2.30
4.00	3	0.03	5.38	3.42
4.10	3	0.03	5.38	3.39
4.20	4	0.03	7.18	4.48
4.30	4	0.03	7.18	4.44
4.40	4	0.03	7.18	4.41
4.50	6	0.02	10.76	6.55
4.60	5	0.02	8.97	5.42
4.70	5	0.02	8.97	5.37
4.80	6	0.02	10.76	6.39
4.90	6	0.02	10.76	6.34
5.00	6	0.02	10.76	6.29



Notes:

Hammer Mass	63.5	kg
Fall Height	0.76	m
Cone Area	0.0019	m^2
E_{theor}	473	J
Energy Ratio	0.72	
Anvil Mass	1.25	kg
Rod Mass	8.79	kg/m

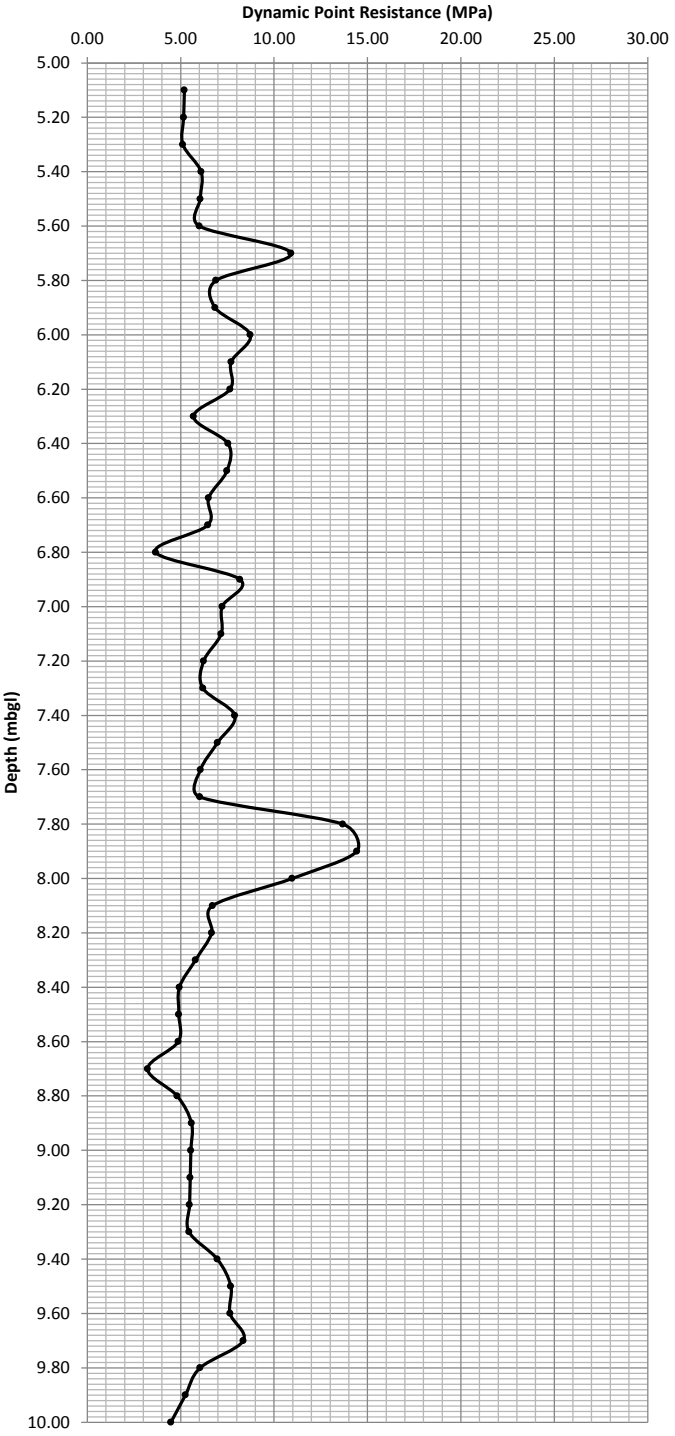
ASHDOWN SITE INVESTIGATION LTD

Dynamic Probe Record

SITE Meridian Community Primary School, Peacehaven, East Sussex **Report Ref.** R16-11361

Test Location Reference	WS3

Depth (mbgl)	Blows (per 100mm)	Average Penetration per Blow (m)	Unit Point Resistance (MPa)	Dynamic Point Resistance (MPa)
5.10	5	0.02	8.97	5.20
5.20	5	0.02	8.97	5.16
5.30	5	0.02	8.97	5.12
5.40	6	0.02	10.76	6.09
5.50	6	0.02	10.76	6.05
5.60	6	0.02	10.76	6.00
5.70	11	0.01	19.73	10.91
5.80	7	0.01	12.56	6.89
5.90	7	0.01	12.56	6.84
6.00	9	0.01	16.15	8.73
6.10	8	0.01	14.35	7.70
6.20	8	0.01	14.35	7.64
6.30	6	0.02	10.76	5.69
6.40	8	0.01	14.35	7.53
6.50	8	0.01	14.35	7.48
6.60	7	0.01	12.56	6.50
6.70	7	0.01	12.56	6.45
6.80	4	0.03	7.18	3.66
6.90	9	0.01	16.15	8.18
7.00	8	0.01	14.35	7.22
7.10	8	0.01	14.35	7.17
7.20	7	0.01	12.56	6.23
7.30	7	0.01	12.56	6.19
7.40	9	0.01	16.15	7.90
7.50	8	0.01	14.35	6.98
7.60	7	0.01	12.56	6.06
7.70	7	0.01	12.56	6.02
7.80	16	0.01	28.70	13.68
7.90	17	0.01	30.50	14.44
8.00	13	0.01	23.32	10.97
8.10	8	0.01	14.35	6.71
8.20	8	0.01	14.35	6.66
8.30	7	0.01	12.56	5.79
8.40	6	0.02	10.76	4.93
8.50	6	0.02	10.76	4.90
8.60	6	0.02	10.76	4.87
8.70	4	0.03	7.18	3.23
8.80	6	0.02	10.76	4.81
8.90	7	0.01	12.56	5.58
9.00	7	0.01	12.56	5.55
9.10	7	0.01	12.56	5.51
9.20	7	0.01	12.56	5.48
9.30	7	0.01	12.56	5.45
9.40	9	0.01	16.15	6.96
9.50	10	0.01	17.94	7.69
9.60	10	0.01	17.94	7.64
9.70	11	0.01	19.73	8.36
9.80	8	0.01	14.35	6.04
9.90	7	0.01	12.56	5.26
10.00	6	0.02	10.76	4.48



Notes:

Hammer Mass	63.5	kg
Fall Height	0.76	m
Cone Area	0.0019	m^2
E_{theor}	473	J
Energy Ratio	0.72	
Anvil Mass	1.25	kg
Rod Mass	8.79	kg/m

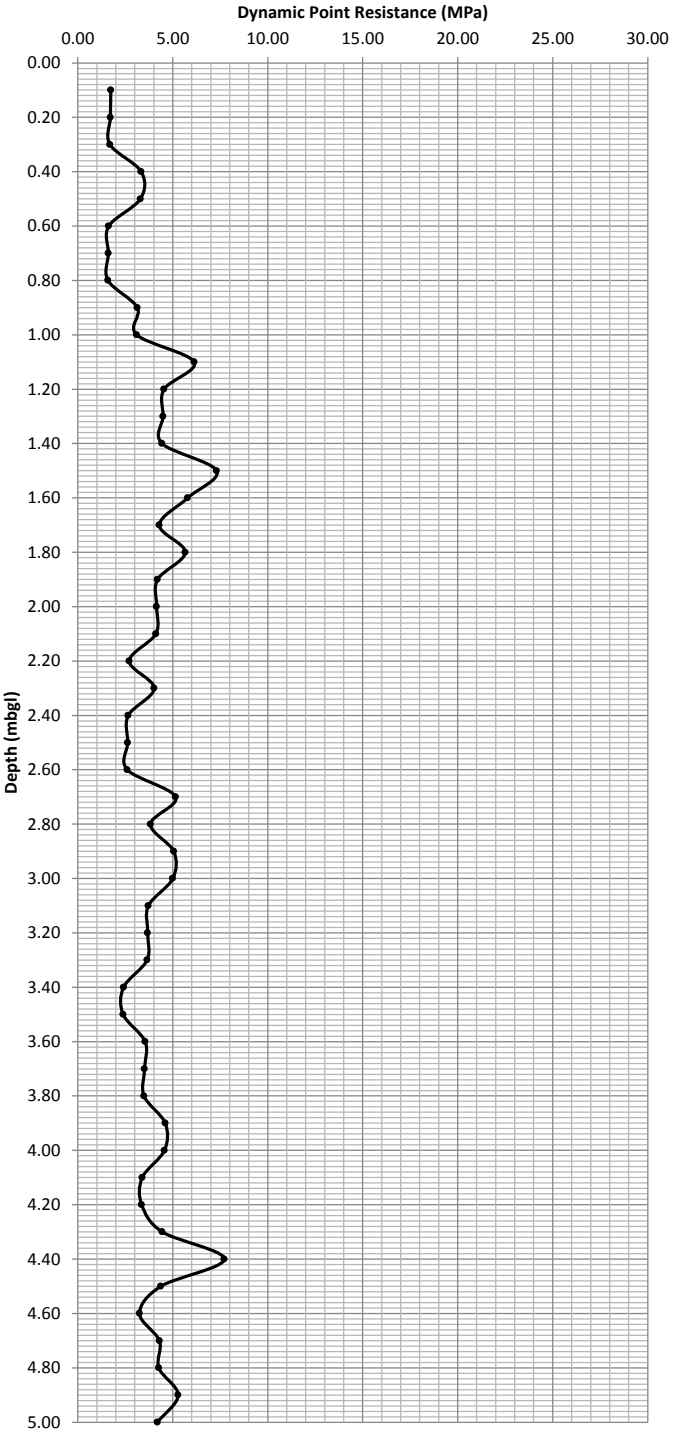
ASHDOWN SITE INVESTIGATION LTD

Dynamic Probe Record

SITE Meridian Community Primary School, Peacehaven, East Sussex **Report Ref.** R16-11361

Test Location Reference	WS4

Depth (mbgl)	Blows (per 100mm)	Average Penetration per Blow (m)	Unit Point Resistance (MPa)	Dynamic Point Resistance (MPa)
0.10	1	0.10	1.79	1.74
0.20	1	0.10	1.79	1.71
0.30	1	0.10	1.79	1.69
0.40	2	0.05	3.59	3.34
0.50	2	0.05	3.59	3.30
0.60	1	0.10	1.79	1.63
0.70	1	0.10	1.79	1.61
0.80	1	0.10	1.79	1.59
0.90	2	0.05	3.59	3.14
1.00	2	0.05	3.59	3.10
1.10	4	0.03	7.18	6.12
1.20	3	0.03	5.38	4.54
1.30	3	0.03	5.38	4.49
1.40	3	0.03	5.38	4.44
1.50	5	0.02	8.97	7.31
1.60	4	0.03	7.18	5.78
1.70	3	0.03	5.38	4.29
1.80	4	0.03	7.18	5.66
1.90	3	0.03	5.38	4.20
2.00	3	0.03	5.38	4.15
2.10	3	0.03	5.38	4.11
2.20	2	0.05	3.59	2.71
2.30	3	0.03	5.38	4.02
2.40	2	0.05	3.59	2.65
2.50	2	0.05	3.59	2.63
2.60	2	0.05	3.59	2.60
2.70	4	0.03	7.18	5.15
2.80	3	0.03	5.38	3.83
2.90	4	0.03	7.18	5.05
3.00	4	0.03	7.18	5.00
3.10	3	0.03	5.38	3.72
3.20	3	0.03	5.38	3.68
3.30	3	0.03	5.38	3.65
3.40	2	0.05	3.59	2.41
3.50	2	0.05	3.59	2.39
3.60	3	0.03	5.38	3.55
3.70	3	0.03	5.38	3.51
3.80	3	0.03	5.38	3.48
3.90	4	0.03	7.18	4.60
4.00	4	0.03	7.18	4.56
4.10	3	0.03	5.38	3.39
4.20	3	0.03	5.38	3.36
4.30	4	0.03	7.18	4.44
4.40	7	0.01	12.56	7.71
4.50	4	0.03	7.18	4.37
4.60	3	0.03	5.38	3.25
4.70	4	0.03	7.18	4.30
4.80	4	0.03	7.18	4.26
4.90	5	0.02	8.97	5.28
5.00	4	0.03	7.18	4.19



Notes:

Hammer Mass	63.5	kg
Fall Height	0.76	m
Cone Area	0.0019	m^2
E_{theor}	473	J
Energy Ratio	0.72	
Anvil Mass	1.25	kg
Rod Mass	8.79	kg/m

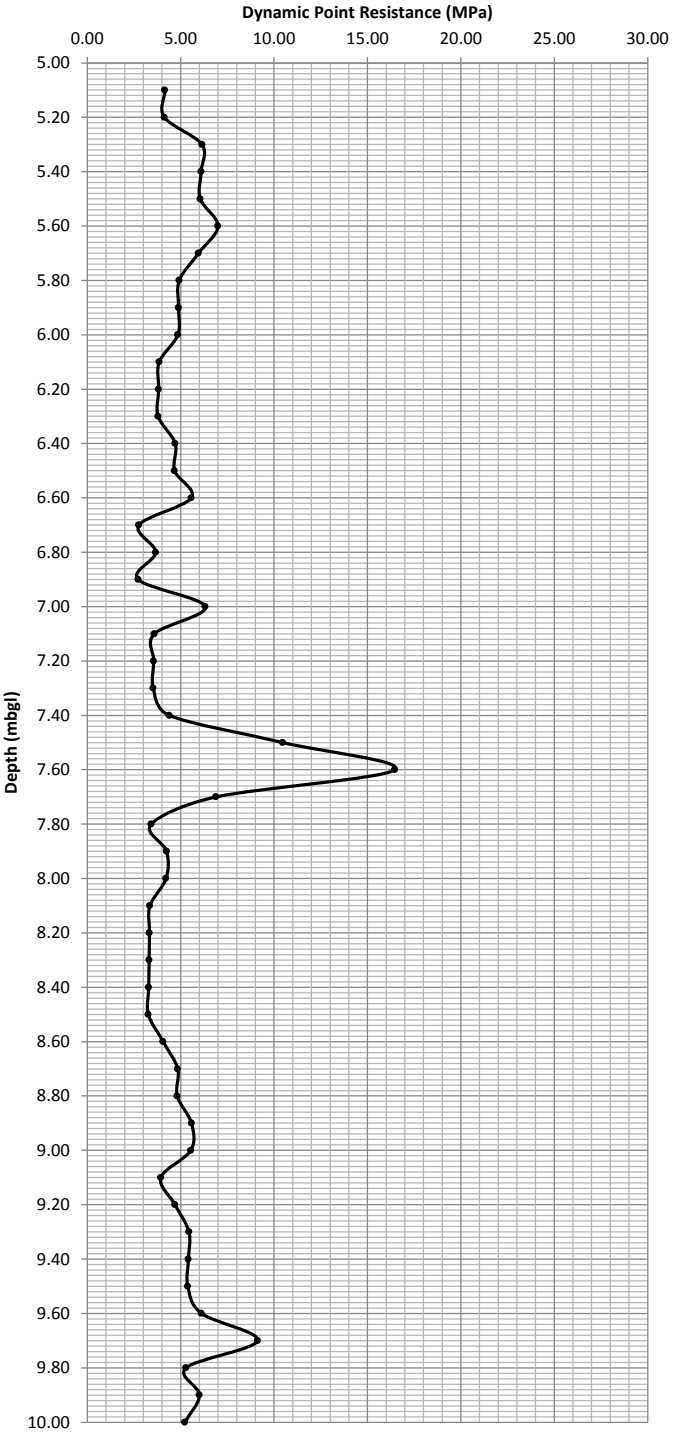
ASHDOWN SITE INVESTIGATION LTD

Dynamic Probe Record

SITE Meridian Community Primary School, Peacehaven, East Sussex **Report Ref.** R16-11361

Test Location Reference	WS4

Depth (mbgl)	Blows (per 100mm)	Average Penetration per Blow (m)	Unit Point Resistance (MPa)	Dynamic Point Resistance (MPa)
5.10	4	0.03	7.18	4.16
5.20	4	0.03	7.18	4.13
5.30	6	0.02	10.76	6.14
5.40	6	0.02	10.76	6.09
5.50	6	0.02	10.76	6.05
5.60	7	0.01	12.56	7.00
5.70	6	0.02	10.76	5.95
5.80	5	0.02	8.97	4.92
5.90	5	0.02	8.97	4.89
6.00	5	0.02	8.97	4.85
6.10	4	0.03	7.18	3.85
6.20	4	0.03	7.18	3.82
6.30	4	0.03	7.18	3.79
6.40	5	0.02	8.97	4.71
6.50	5	0.02	8.97	4.67
6.60	6	0.02	10.76	5.57
6.70	3	0.03	5.38	2.76
6.80	4	0.03	7.18	3.66
6.90	3	0.03	5.38	2.73
7.00	7	0.01	12.56	6.32
7.10	4	0.03	7.18	3.58
7.20	4	0.03	7.18	3.56
7.30	4	0.03	7.18	3.54
7.40	5	0.02	8.97	4.39
7.50	12	0.01	21.53	10.46
7.60	19	0.01	34.09	16.46
7.70	8	0.01	14.35	6.88
7.80	4	0.03	7.18	3.42
7.90	5	0.02	8.97	4.25
8.00	5	0.02	8.97	4.22
8.10	4	0.03	7.18	3.35
8.20	4	0.03	7.18	3.33
8.30	4	0.03	7.18	3.31
8.40	4	0.03	7.18	3.29
8.50	4	0.03	7.18	3.27
8.60	5	0.02	8.97	4.06
8.70	6	0.02	10.76	4.84
8.80	6	0.02	10.76	4.81
8.90	7	0.01	12.56	5.58
9.00	7	0.01	12.56	5.55
9.10	5	0.02	8.97	3.94
9.20	6	0.02	10.76	4.70
9.30	7	0.01	12.56	5.45
9.40	7	0.01	12.56	5.41
9.50	7	0.01	12.56	5.38
9.60	8	0.01	14.35	6.11
9.70	12	0.01	21.53	9.12
9.80	7	0.01	12.56	5.29
9.90	8	0.01	14.35	6.01
10.00	7	0.01	12.56	5.23



Notes:

Hammer Mass	63.5	kg
Fall Height	0.76	m
Cone Area	0.0019	m^2
E_{theor}	473	J
Energy Ratio	0.72	
Anvil Mass	1.25	kg
Rod Mass	8.79	kg/m

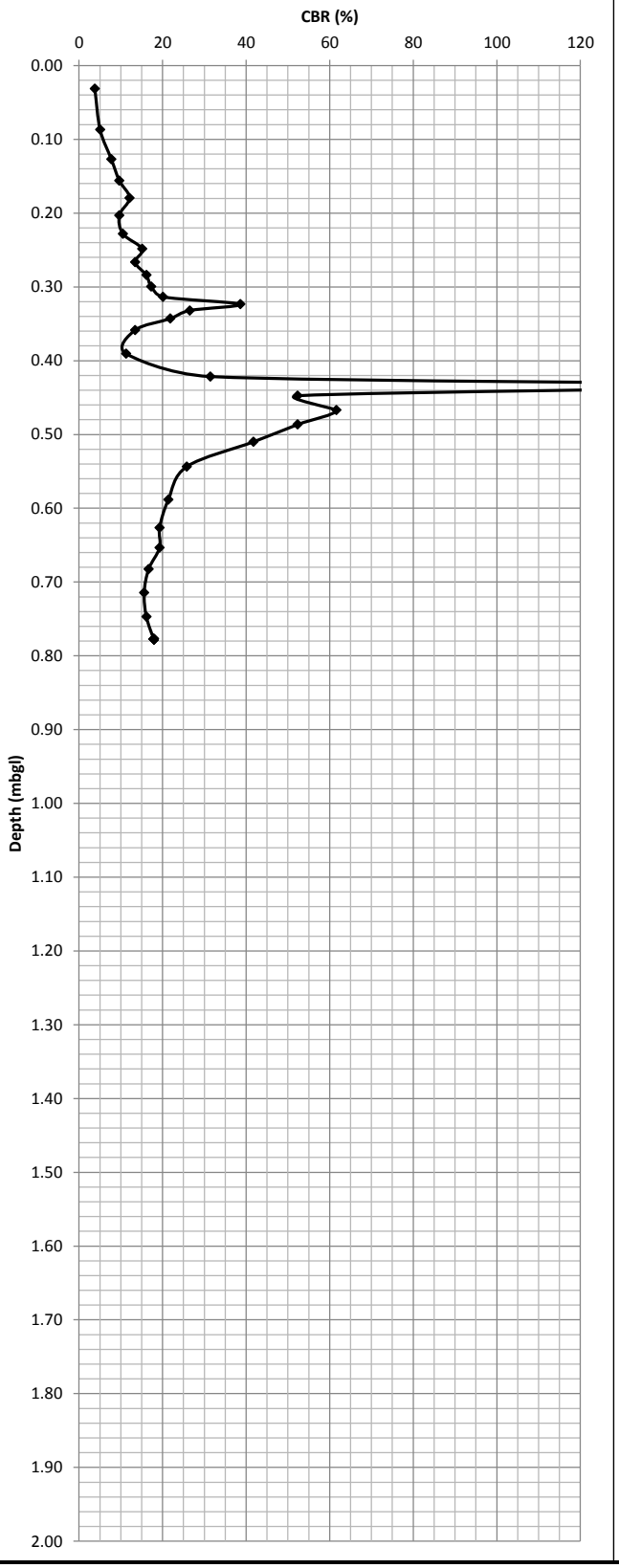
ASHDOWN SITE INVESTIGATION LTD

TRL Dynamic Cone Penetrometer Record

SITE Meridian Community Primary School, Peacehaven, East Sussex **Report Ref.** R16-11361

Test Location Reference	TP1
Depth of Start of Test (mbgl)	0.00

No. Blows	Total Blows	Reading (mm)	Depth (mbgl)	CBR%
DCP Zero Reading		125	0.00	
1	1	188	0.06	4
1	2	236	0.11	5
1	3	268	0.14	8
1	4	294	0.17	10
1	5	315	0.19	12
1	6	341	0.22	10
1	7	365	0.24	10
1	8	382	0.26	15
1	9	401	0.28	13
1	10	417	0.29	16
1	11	432	0.31	17
1	12	445	0.32	20
1	13	452	0.33	39
1	14	462	0.34	26
1	15	474	0.35	22
1	16	493	0.37	13
2	18	538	0.41	11
2	20	555	0.43	31
4	24	562	0.44	167
4	28	583	0.46	52
4	32	601	0.48	62
4	36	622	0.50	52
4	40	648	0.52	42
4	44	689	0.56	26
4	48	738	0.61	21
2	50	765	0.64	19
2	52	792	0.67	19
2	54	823	0.70	17
2	56	856	0.73	16
2	58	888	0.76	16
2	60	917	0.79	18



Notes: CBR Value calculated in accordance with the TRRL equation given in TRL Road Note 8.

ASHDOWN SITE INVESTIGATION LIMITED

Site: Meridian Community Primary School, Peacehaven, East Sussex	Report No.: R16-11361

SUMMARY OF BOREHOLE FALLING HEAD SOAKAGE TEST RESULTS

Borehole **WS2, test 1**	
Time (mins)	Depth to water (m bgl)
0	0.00
1	0.58
2	0.92
4	1.60
6	2.00
Borehole Depth (m bgl)	3.00
Casing Depth (m bgl)	2.00
Borehole Diameter (mm)	92.00
Casing Diameter (mm)	105.00

Borehole **WS2, test 2**	
Time (mins)	Depth to water (m bgl)
0	0.00
1	0.43
2	1.20
4	1.80
6	2.05
Borehole Depth (m bgl)	3.00
Casing Depth (m bgl)	2.00
Borehole Diameter (mm)	92.00
Casing Diameter (mm)	105.00

Borehole **WS2, test 3**	
Time (mins)	Depth to water (m bgl)
0	0.00
1	0.50
2	0.90
4	1.74
5	2.00
Borehole Depth (m bgl)	3.00
Casing Depth (m bgl)	2.00
Borehole Diameter (mm)	92.00
Casing Diameter (mm)	105.00

Notes: bgl – below ground level.

ASHDOWN SITE INVESTIGATION LIMITED

Site: Meridian Community Primary School, Peacehaven, East Sussex	Report No.: R16-11361

SUMMARY OF BOREHOLE FALLING HEAD SOAKAGE TEST RESULTS

Borehole **WS3, test 1**	
Time (mins)	Depth to water (m bgl)
0	2.10
1	2.71
2	2.82
Borehole Depth (m bgl)	3.00
Casing Depth (m bgl)	2.00
Borehole Diameter (mm)	92.00
Casing Diameter (mm)	105.00

Borehole **WS3, test 2**	
Time (secs)	Depth to water (m bgl)
0	2.50
30	2.60
60	2.65
90	2.70
120	2.80
180	dry
Borehole Depth (m bgl)	3.00
Casing Depth (m bgl)	2.00
Borehole Diameter (mm)	92.00
Casing Diameter (mm)	105.00

Borehole **WS3, test 3**	
Time (secs)	Depth to water (m bgl)
0	2.45
30	2.55
60	2.60
90	2.65
120	dry
Borehole Depth (m bgl)	3.00
Casing Depth (m bgl)	2.00
Borehole Diameter (mm)	92.00
Casing Diameter (mm)	105.00

Notes: bgl – below ground level.

APPENDIX B

Geotechnical Laboratory Testing Notes
Geotechnical Test Results

GEOTECHNICAL LABORATORY TESTING NOTES

1 Soil Description

Description and classification of soils has been carried out using as a general basis the British Standard Geotechnical investigation and testing – Identification and classification of soil, Part 1 Identification and description (BS EN ISO 14688-1:2002+A1:2013) and Part 2 Principles of classification (BS EN 14688-2:2004 +A1:2013) as well as the BS5930:2015 code of Practice for Ground Investigations.

2 Index Tests

Index (Atterberg Limit) tests are undertaken on samples of fine grained soils provide the primary information for the classification of fine grained soils.

Fine grained soil is tested to determine its liquid and plastic limits, which are moisture contents that define boundaries between material consistency states. These tests are used to evaluate indices used for soil identification and to help determine the shrinkage and swelling characteristics of the soil under conditions of changing moisture content. The tests are carried out in accordance with BS1377: Part 2: 1990 + A1:1996 Classification tests.

The consistency index is derived from the Index Tests and is summarized in the following table. These divisions may be approximate, particularly for low plasticity soils. The consistency recorded on the soil classification summary is derived from the consistency index.

Consistency	Consistency Index
Very Soft	<0.25
Soft	0.25 to 0.50
Firm	0.50 to 0.75
Stiff	0.75 to 1.00
Very Stiff	>1.00

3 Particle Size Distribution Tests

Sieve analyses are carried out soil samples to establish their particle size distribution that can assist in the assessment of the permeability and classification of granular soils.

The tests are carried out in accordance with BS1377: Part 2: 1990 + A1:1996 Classification tests.

4 Natural Moisture/ Saturated Moisture Content Determination of Chalk

The results of natural moisture or saturated moisture content tests of disturbed samples of chalk are used to assist in the classification of the chalk to determine key geotechnical parameters of strength, density and crushing properties.

The tests are carried out in accordance with BS1377: Part 2: 1990 + A1:1996 Classification tests.

5 Soil Suction Testing

Soil suction tests are undertaken for the determination of the state of desiccation in clay soils.

The testing is carried out in accordance with the Building Research Establishment Information Paper IP4/93, dated February 1993.

6 Triaxial Compression Tests

Undrained triaxial compression tests are carried out on undisturbed samples of cohesive soil in order to assist in the determination of the undrained shear strength of the soil. The results of moisture content and density determinations are also included.

The tests are carried out in accordance with BS1377: Part 7: 1990 + A1:1994 Shear strength tests (total stress).

7 Shear Vane and Hand Penetrometer Testing

Undisturbed samples are tested in the laboratory using a Geonor Hand Shear Vane for the determination of their undrained shear strength.

The vane tests are carried out in general accordance with BS1377: Part 7: 1990 + A1:1994 Shear strength tests (total stress).

8 One Dimensional Consolidation Tests

One-dimensional consolidation tests are performed on undisturbed soil samples to ascertain their settlement characteristics.

The tests are carried out in accordance with BS1377: Part 5: 1990 + A1:1994 Compressibility, Permeability and Durability tests.

9 Dry Density / Moisture Content Relationship (Compaction) Testing

Compaction testing for the determination of the dry density / moisture content relationship is carried out on using either a 2.5kg, 4.5kg hammer or a vibrating hammer.

The tests are carried out in accordance with the British Standard BS1377: Part 4: 1990 + A1 & A2:2002 Compaction-related tests.

10 California Bearing Ratio

The soil is usually compacted at the as dug “natural” moisture content and often at moisture contents around the natural moisture content.

The California bearing ratio is determined in accordance with the British Standard BS1377: Part 4: 1990 + A1 & A2:2002 Compaction related tests.

11 Chemical Testing

Soil samples are tested for their concentration of water soluble sulphate and pH for use in concrete mix design.

Water samples are tested for total sulphate concentration and pH value.

Where a water soluble sulphate content in soils or a total sulphate content in groundwater exceeds 3000mg/l SO_4 the magnesium sulphate content of the samples is required to be determined (BRE Special Digest 1:2005).

Swanborough Farm Swanborough Lewes, East Sussex BN73PF	**ASHDOWN SITE INVESTIGATION LTD** **Geotechnical and Geoenvironmental Engineers**	ASHDOWN SITE INVESTIGATION L·I·M·I·T·E·D

Site:	Meridian Community Primary School, Peacehaven, East Sussex.	Job No:	R16-11361
		Sheet No:	1

SOIL CLASSIFICATION SUMMARY

BH/TP No.	Depth (m)	Nat. Moist. Cont. (w %)	Equiv. Moist. Cont. (w_a %)	Atterberg Limits			Class'n	Cons. Index (I_c)	% passing 425 µm sieve	Visual Description of Sample
				W_l %	W_p %	I_p %				
WS1	2.00	19		60	27	33	CH	1.24*	32	Very stiff brown gravelly sandy CLAY. Gravel is fine to coarse flint.
WS2	1.20	29		33	25	8	ML		78	White occasionally light brown clayey GRAVEL. Gravel is fine to medium chalk.
WS3	0.90	15		22	14	8	CL	0.88*	66	Stiff dark brown slightly gravelly sandy CLAY. Gravel is fine to medium flint and sandstone.
WS4	1.60	13		27	17	10	CL	1.40*	64	Very stiff brown gravelly sandy CLAY. Gravel is fine to coarse chalk, flint and sandstone.

Test Method: Classification Tests BS1377: Part 2: 1990: Method 4.4, 5.3 and 5.4

* Consistency index based on natural moisture content and not the equivalent moisture content.

Swanborough Farm Swanborough Lewes, East Sussex BN73PF	**ASHDOWN SITE INVESTIGATION LTD** **Geotechnical and Geoenvironmental Engineers**	ASHDOWN SITE INVESTIGATION LIMITED

California Bearing Ratio (CBR)

Site Name	Meridian Community Primary School, Peacehaven, East Sussex.	Job No.	R16-11361
Soil Description	Brown slightly gravelly sandy silty CLAY. Gravel is fine to coarse flint and rare tile. (Probable Fill)	BH/TP No.	TP1
Test Method	BS1377 : Part 4 : 1990, clause 7	Depth (m)	0.30

Specimen Preparation

Condition	Remoulded
Details	Recompacted with specified standard effort using 2.5kg rammer

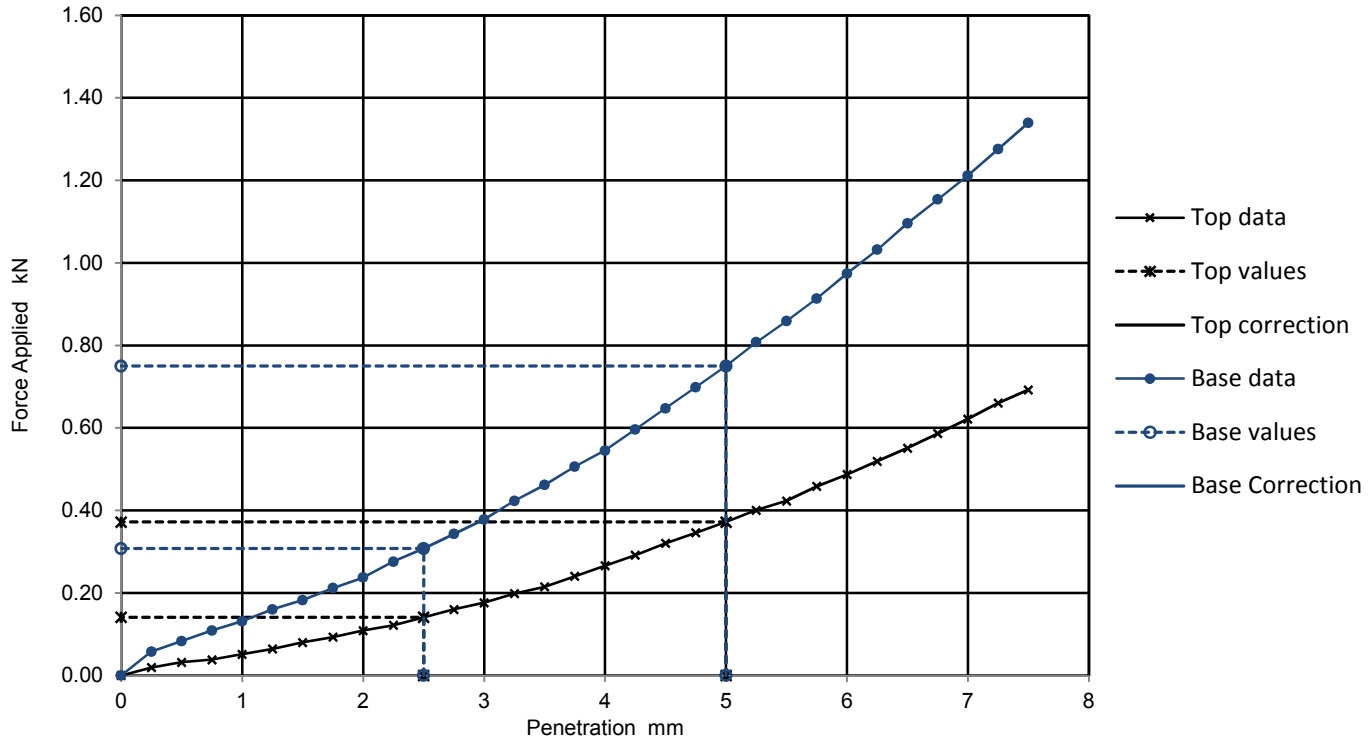
Material retained on 20mm sieve removed*	7	%

Initial Specimen details	Bulk density	2.12	Mg/m^3
	Dry density	1.86	Mg/m^3
	Moisture content	14.0	%

Soaking details	Not soaked	
Period of soaking		days
Time to surface		days
Amount of swell recorded		mm
Dry density after soaking		Mg/m^3

Surcharge applied	12	kg
	7	kPa

Force v Penetration Plots



Results

	Curve correction applied	CBR Values %				Moisture Content %
		2.5mm	5.0mm	Highest	Average	
TOP		1.1	1.9	1.9	N/A	14
BASE		2.3	3.7	3.7		14

General remarks

Where CBR values at each end are within 10% of the mean value the average is reported.
* retained fraction percentage based on initial mass and not dry mass of sample.

Test specific remarks

Sheet No 1

Unit A2
Windmill Road
Ponswood Industrial Estate
St Leonards on Sea
East Sussex
TN38 9BY
[redacted]

2683

THE ENVIRONMENTAL LABORATORY LTD

Analytical Report Number: 16-06361

Issue: 1

Date of Issue: 12/04/2016

Contact: David Harris

Customer Details: Ashdown Site Investigation Ltd
The Old Dairy
Swanborough Farm
Lewes
East SussexBN7 3PF

Quotation No: Q15-00267

Order No: 3424

Customer Reference: R16-11361

Date Received: 06/04/2016

Date Approved: 12/04/2016

Details: Meridian School, Peacehaven

Approved by: [redacted]

John Wilson, Operations Manager

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

Sample Summary

Report No.: 16-06361

Elab No.	Client's Ref.	Date Sampled	Date Scheduled	Description	Deviations
58892	WS1 0.40	04/04/2016	06/04/2016	Sandy silty loam	
58893	WS2 0.80	04/04/2016	06/04/2016	Silty clayey loam	
58894	WS3 1.20	04/04/2016	06/04/2016	Silty loam	
58895	WS4 4.50	04/04/2016	06/04/2016	chalk	

Results Summary

Report No.: 16-06361

			ELAB Reference	58892	58893	58894	58895
			Customer Reference				
			Sample ID				
			Sample Type	SOIL	SOIL	SOIL	SOIL
			Sample Location	WS1	WS2	WS3	WS4
			Sample Depth (m)	0.40	0.80	1.20	4.50
			Sampling Date	04/04/2016	04/04/2016	04/04/2016	04/04/2016
Determinand	**Codes**	**Units**	**LOD**				
Anions							
Water Soluble Sulphate	M	g/l	0.02	0.04	< 0.02	< 0.02	^ < 0.02
Miscellaneous							
pH	M	pH units	0.1	8.4	8.3	8.0	^ 8.7

2683

Method Summary

Report No.: 16-06361

Parameter	Codes	Analysis Undertaken On	Date Tested	Method Number	Technique
Soil					
pH	M	Air dried sample	12/04/2016	113	Electromeric
Water soluble anions	M	Air dried sample	11/04/2016	172	Ion Chromatography

Report Information

Report No.: 16-06361

Key

U	hold UKAS accreditation
M	hold MCERTS and UKAS accreditation
N	do not currently hold UKAS accreditation
^	MCERTS accreditation not applicable for sample matrix
*	UKAS accreditation not applicable for sample matrix
S	Subcontracted to approved laboratory UKAS Accredited for the test
SM	Subcontracted to approved laboratory MCERTS/UKAS Accredited for the test
I/S	Insufficient Sample
U/S	Unsuitable sample
n/t	Not tested
<	means "less than"
>	means "greater than"

Soil sample results are expressed on an air dried basis
Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
PCB congener results may include any coeluting PCBs
Uncertainty of measurement for the determinands tested are available upon request

Deviation Codes

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

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

Sample Retention and Disposal

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

ASHDOWN SITE INVESTIGATION
L•I•M•I•T•E•D

GEOTECHNICAL
AND
ENVIRONMENTAL
ENGINEERS

The Old Dairy
Swanborough Farm
Lewes
East Sussex
BN7 3PF

Telephone
01273 483119

Website
www.AshdownSI.co.uk

Email
contact@AshdownSI.co.uk

Date: 6th May 2015 **Our Ref:** R16-11361/waste

Stephen Kemp
Mackellar Schwerdt Architects
The Old Library
Albion Street
Lewes
BN7 2ND

Dear Stephen

Meridian Community Primary School, Roderick Avenue, Peacehaven, Waste Classification & Waste Acceptance Criteria (WAC) Test Results

As part of a geotechnical assessment for the site, presented in Ashdown Site Investigation Ltd., *Geotechnical Assessment,* Report No. R16-11361, dated May 2016, selected samples of soils were tested for a range of commonly occurring contaminants to allow assessment of the material for removal from site. The laboratory test results are attached.

Exploratory hole logs and site plans for the location of exploratory hole positions are presented within the geotechnical assessment report.

Analysis of the results of the laboratory testing of samples was undertaken using the HazWasteOnline tool. The output sheets are also attached.

The following table summarises the samples tested, the description of the sample and the classification of the material with a code from the Environment Agency WM3 List of Wastes (Low).

Sample tested for waste classification, classification and code from LoW

Sample Location	Depth (m)	Sample Description	Classification	Code from Low
WS1	1.20	Made Ground: Brown sandy gravelly clay.	Non-Hazardous	17 05 04
WS3	0.40	Made Ground: Brown sandy gravelly clay.	Non-Hazardous	17 05 04
WS3	2.5	Lambeth Group: Brown sandy gravelly clay.	Non-Hazardous	17 05 04

Waste acceptance criteria (WAC) testing was undertaken on: the sample of made ground soils from WS3 at 0.30m. The WAC testing undertaken indicates that the made ground soils will be suitable for disposal at a landfill licenced to accept inert waste.

It is noted that the disposal site has the final decision on whether to accept any materials and we would recommend that all the testing and classification information be provided to them.

Soils and other materials taken for disposal should be handled, transferred and disposed of as controlled waste in accordance with the requirements of the Waste Management, Duty of Care Regulations. Copies of waste transfer notes detailing the site address, the waste type, details of the haulage contractor and full details of the disposal site must be kept.

Company Registration Number
242 6786

[redacted]

Stuart Card
Ashdown Site Investigation Limited
Encl
Waste Classification Statement
Laboratory Test Results

Waste Classification Report

5VKV2-H8UND-RDZ5Y

Job name

R16-11361 - Meridian Community Primary School, Peacehaven

Waste Stream

ASI Standard WM3 v1

Comments

Project

Site

Classified by

Name:
Card, Stuart
Date:
03/05/2016 16:29 UTC
Telephone:
01273 483119

Company:
Ashdown Site Investigation Limited
The Old Dairy
Swanborough Farm, Swanborough
Lewes
BN7 3PF

Report

Created by: Card, Stuart
Created date: 03/05/2016 16:29 UTC

Job summary

#	Sample Name	Depth [m]	Classification Result	Hazardous properties	Page
1	WS1	1.20	Potentially Hazardous	HP 3(i)	2
2	WS3	0.40	Non Hazardous		4
3	WS3[1]	2.50	Potentially Hazardous	HP 3(i)	6

Classification of sample: WS1

Potentially Hazardous Waste
Classified as **17 05 04** or **17 05 03 ***
in the List of Waste

Sample details

Sample Name:
WS1
Sample Depth:
1.20 m
Moisture content: **0%**
(no correction)

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

Hazard properties (substances considered hazardous until shown otherwise)

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"

Hazard Statements hit:

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

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.0004%)

Determinands (Moisture content: 0%, no correction)

acenaphthene: (Whole conc. entered as: <0.1 mg/kg or <0.00001%) IGNORED Because: "<LOD"
acenaphthylene: (Whole conc. entered as: <0.1 mg/kg or <0.00001%) IGNORED Because: "<LOD"
anthracene: (Whole conc. entered as: <0.1 mg/kg or <0.00001%) IGNORED Because: "<LOD"
arsenic trioxide: (Cation conc. entered: 16.3 mg/kg, converted to compound conc.:21.521 mg/kg or 0.00215%)
benzo[a]anthracene: (Whole conc. entered as: <0.1 mg/kg or <0.00001%) IGNORED Because: "<LOD"
benzo[a]pyrene; benzo[def]chrysene: (Whole conc. entered as: <0.1 mg/kg or <0.00001%) IGNORED Because: "<LOD"
benzo[b]fluoranthene: (Whole conc. entered as: <0.1 mg/kg or <0.00001%) IGNORED Because: "<LOD"
benzo[ghi]perylene: (Whole conc. entered as: <0.1 mg/kg or <0.00001%) IGNORED Because: "<LOD"
benzo[k]fluoranthene: (Whole conc. entered as: <0.1 mg/kg or <0.00001%) IGNORED Because: "<LOD"
boron tribromide/trichloride/trifluoride (combined): (Cation conc. entered: 0.6 mg/kg, converted to compound conc.:8.058 mg/kg or 0.000806%)
cadmium sulfide: (Cation conc. entered: <0.5 mg/kg, converted to compound conc.:<0.643 mg/kg or <0.0000643%, Note 1 conc.: <0.00005%) IGNORED Because: "<LOD"
chromium(III) oxide: (Cation conc. entered: 71.1 mg/kg, converted to compound conc.:103.917 mg/kg or 0.0104%)
chromium(VI) oxide: (Cation conc. entered: <0.8 mg/kg, converted to compound conc.:<1.538 mg/kg or <0.000154%) IGNORED Because: "<LOD"
chrysene: (Whole conc. entered as: 0.1 mg/kg or 0.00001%)
copper (I) oxide: (Cation conc. entered: 15.9 mg/kg, converted to compound conc.:17.902 mg/kg or 0.00179%)
dibenz[a,h]anthracene: (Whole conc. entered as: <0.1 mg/kg or <0.00001%) IGNORED Because: "<LOD"
fluoranthene: (Whole conc. entered as: <0.1 mg/kg or <0.00001%) IGNORED Because: "<LOD"
fluorene: (Whole conc. entered as: <0.1 mg/kg or <0.00001%) IGNORED Because: "<LOD"
indeno[123-cd]pyrene: (Whole conc. entered as: <0.1 mg/kg or <0.00001%) IGNORED Because: "<LOD"
lead compounds with the exception of those specified elsewhere in this Annex: (Cation conc. entered: 26.7 mg/kg, converted to compound conc.:26.7 mg/kg or 0.00267%, Note 1 conc.: 0.00267%)
mercury dichloride: (Cation conc. entered: <0.5 mg/kg, converted to compound conc.:<0.677 mg/kg or <0.0000677%) IGNORED Because: "<LOD"
naphthalene: (Whole conc. entered as: <0.1 mg/kg or <0.00001%) IGNORED Because: "<LOD"
nickel dihydroxide: (Cation conc. entered: 40 mg/kg, converted to compound conc.:63.18 mg/kg or 0.00632%)
pH: (Whole conc. entered as: 8 pH, converted to conc.:8 pH or 8 pH)

phenanthrene: (Whole conc. entered as: <0.1 mg/kg or <0.00001%) IGNORED Because: "<LOD"
pyrene: (Whole conc. entered as: <0.1 mg/kg or <0.00001%) IGNORED Because: "<LOD"
selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex: (Cation conc. entered: <1 mg/kg, converted to compound conc.:<2.554 mg/kg or <0.000255%) IGNORED Because: "<LOD"
TPH (C6 to C40) petroleum group: (Whole conc. entered as: 4 mg/kg or 0.0004%)
zinc chloride: (Cation conc. entered: 68.5 mg/kg, converted to compound conc.:142.79 mg/kg or 0.0143%)

Notes utilised in assessment

C14: Step 5
"identify whether any individual ecotoxic substance is present at or above a cut-off value ..." , used on:

Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "arsenic trioxide"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "chromium(III) oxide"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "chrysene"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "copper (I) oxide"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "lead compounds with the exception of those specified elsewhere in this Annex"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "nickel dihydroxide"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "zinc chloride"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "TPH (C6 to C40) petroleum group"

Note 1 , used on:

Test: "HP 5 on STOT SE 2; H371, STOT RE 2; H373" for determinand: "lead compounds with the exception of those specified elsewhere in this Annex"
Test: "HP 6 on Acute Tox. 4; H302" for determinand: "lead compounds with the exception of those specified elsewhere in this Annex"
Test: "HP 6 on Acute Tox. 4; H332" for determinand: "lead compounds with the exception of those specified elsewhere in this Annex"
Test: "HP 7 on Carc. 2; H351" for determinand: "lead compounds with the exception of those specified elsewhere in this Annex"
Test: "HP 10 on Repr. 1A; H360, Repr. 1A; H360D, Repr. 1A; H360Df, Repr. 1A; H360F, Repr. 1A; H360Fd, Repr. 1A; H360FD, Repr. 1B; H360, Repr. 1B; H360D, Repr. 1B; H360Df, Repr. 1B; H360F, Repr. 1B; H360Fd, Repr. 1B; H360FD " for determinand: "lead compounds with the exception of those specified elsewhere in this Annex"
Test: "HP 10 on Repr. 2; H361, Repr. 2; H361d, Repr. 2; H361f, Repr. 2; H361fd" for determinand: "lead compounds with the exception of those specified elsewhere in this Annex"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "lead compounds with the exception of those specified elsewhere in this Annex"

Determinand notes

Note 1 , used on:

determinand: "lead compounds with the exception of those specified elsewhere in this Annex"

Note A , used on:

determinand: "lead compounds with the exception of those specified elsewhere in this Annex"

WM3: Unknown oil , used on:

determinand: "TPH (C6 to C40) petroleum group"

Classification of sample: WS3

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

Sample details

Sample Name:
WS3
Sample Depth:
0.40 m
Moisture content: **0%**
(no correction)

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

Hazard properties

None identified

Determinands (Moisture content: 0%, no correction)

acenaphthene: (Whole conc. entered as: <0.1 mg/kg or <0.00001%) IGNORED Because: "<LOD"
acenaphthylene: (Whole conc. entered as: <0.1 mg/kg or <0.00001%) IGNORED Because: "<LOD"
anthracene: (Whole conc. entered as: <0.1 mg/kg or <0.00001%) IGNORED Because: "<LOD"
arsenic trioxide: (Cation conc. entered: 15.3 mg/kg, converted to compound conc.:20.201 mg/kg or 0.00202%)
benzo[a]anthracene: (Whole conc. entered as: <0.1 mg/kg or <0.00001%) IGNORED Because: "<LOD"
benzo[a]pyrene; benzo[def]chrysene: (Whole conc. entered as: <0.1 mg/kg or <0.00001%) IGNORED Because: "<LOD"
benzo[b]fluoranthene: (Whole conc. entered as: <0.1 mg/kg or <0.00001%) IGNORED Because: "<LOD"
benzo[ghi]perylene: (Whole conc. entered as: <0.1 mg/kg or <0.00001%) IGNORED Because: "<LOD"
benzo[k]fluoranthene: (Whole conc. entered as: <0.1 mg/kg or <0.00001%) IGNORED Because: "<LOD"
boron tribromide/trichloride/trifluoride (combined): (Cation conc. entered: 1 mg/kg, converted to compound conc.:13.43 mg/kg or 0.00134%)
cadmium sulfide: (Cation conc. entered: 0.6 mg/kg, converted to compound conc.:0.771 mg/kg or 0.0000771%, Note 1 conc.: 0.00006%)
chromium(III) oxide: (Cation conc. entered: 63.8 mg/kg, converted to compound conc.:93.247 mg/kg or 0.00932%)
chromium(VI) oxide: (Cation conc. entered: <0.8 mg/kg, converted to compound conc.:<1.538 mg/kg or <0.000154%) IGNORED Because: "<LOD"
chrysene: (Whole conc. entered as: <0.1 mg/kg or <0.00001%) IGNORED Because: "<LOD"
copper (I) oxide: (Cation conc. entered: 15.5 mg/kg, converted to compound conc.:17.451 mg/kg or 0.00175%)
dibenz[a,h]anthracene: (Whole conc. entered as: <0.1 mg/kg or <0.00001%) IGNORED Because: "<LOD"
fluoranthene: (Whole conc. entered as: <0.1 mg/kg or <0.00001%) IGNORED Because: "<LOD"
fluorene: (Whole conc. entered as: <0.1 mg/kg or <0.00001%) IGNORED Because: "<LOD"
indeno[123-cd]pyrene: (Whole conc. entered as: <0.1 mg/kg or <0.00001%) IGNORED Because: "<LOD"
lead compounds with the exception of those specified elsewhere in this Annex: (Cation conc. entered: 18.4 mg/kg, converted to compound conc.:18.4 mg/kg or 0.00184%, Note 1 conc.: 0.00184%)
mercury dichloride: (Cation conc. entered: <0.5 mg/kg, converted to compound conc.:<0.677 mg/kg or <0.0000677%) IGNORED Because: "<LOD"
naphthalene: (Whole conc. entered as: <0.1 mg/kg or <0.00001%) IGNORED Because: "<LOD"
nickel dihydroxide: (Cation conc. entered: 31.2 mg/kg, converted to compound conc.:49.28 mg/kg or 0.00493%)
pH: (Whole conc. entered as: 8.1 pH, converted to conc.:8.1 pH or 8.1 pH)
phenanthrene: (Whole conc. entered as: <0.1 mg/kg or <0.00001%) IGNORED Because: "<LOD"
pyrene: (Whole conc. entered as: <0.1 mg/kg or <0.00001%) IGNORED Because: "<LOD"
selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex: (Cation conc. entered: <1 mg/kg, converted to compound conc.:<2.554 mg/kg or <0.000255%) IGNORED Because: "<LOD"
TPH (C6 to C40) petroleum group: (Whole conc. entered as: <1 mg/kg or <0.0001%) IGNORED Because: "<LOD"
zinc chloride: (Cation conc. entered: 72.2 mg/kg, converted to compound conc.:150.502 mg/kg or 0.0151%)

Notes utilised in assessment

C14: Step 5
"identify whether any individual ecotoxic substance is present at or above a cut-off value ..." , used on:

Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "cadmium sulfide"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "arsenic trioxide"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "chromium(III) oxide"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "copper (I) oxide"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "lead compounds with the exception of those specified elsewhere in this Annex"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "nickel dihydroxide"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "zinc chloride"

Note 1 , used on:

Test: "HP 5 on STOT SE 1; H370, STOT RE 1; H372" for determinand: "cadmium sulfide"
Test: "HP 7 on Carc. 1A; H350, Carc. 1B; H350, Carc. 1A; H350i, Carc. 1B; H350i" for determinand: "cadmium sulfide"
Test: "HP 11 on Muta. 2; H341" for determinand: "cadmium sulfide"

Determinand notes

Note 1 , used on:

determinand: "cadmium sulfide"
determinand: "lead compounds with the exception of those specified elsewhere in this Annex"

Note A , used on:

determinand: "lead compounds with the exception of those specified elsewhere in this Annex"

Classification of sample: WS3[1]

Potentially Hazardous Waste
Classified as **17 05 04** or **17 05 03 ***
in the List of Waste

Sample details

Sample Name:
WS3[1]
Sample Depth:
2.50 m
Moisture content: **0%**
(no correction)

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

Hazard properties (substances considered hazardous until shown otherwise)

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"

Hazard Statements hit:

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

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.0001%)

Determinands (Moisture content: 0%, no correction)

acenaphthene: (Whole conc. entered as: <0.1 mg/kg or <0.00001%) IGNORED Because: "<LOD"
acenaphthylene: (Whole conc. entered as: <0.1 mg/kg or <0.00001%) IGNORED Because: "<LOD"
anthracene: (Whole conc. entered as: <0.1 mg/kg or <0.00001%) IGNORED Because: "<LOD"
arsenic trioxide: (Cation conc. entered: 2.9 mg/kg, converted to compound conc.:3.829 mg/kg or 0.000383%)
benzo[a]anthracene: (Whole conc. entered as: <0.1 mg/kg or <0.00001%) IGNORED Because: "<LOD"
benzo[a]pyrene; benzo[def]chrysene: (Whole conc. entered as: <0.1 mg/kg or <0.00001%) IGNORED Because: "<LOD"
benzo[b]fluoranthene: (Whole conc. entered as: <0.1 mg/kg or <0.00001%) IGNORED Because: "<LOD"
benzo[ghi]perylene: (Whole conc. entered as: <0.1 mg/kg or <0.00001%) IGNORED Because: "<LOD"
benzo[k]fluoranthene: (Whole conc. entered as: <0.1 mg/kg or <0.00001%) IGNORED Because: "<LOD"
boron tribromide/trichloride/trifluoride (combined): (Cation conc. entered: <0.5 mg/kg, converted to compound conc.:<6.715 mg/kg or <0.000672%) IGNORED Because: "<LOD"
cadmium sulfide: (Cation conc. entered: 0.5 mg/kg, converted to compound conc.:0.643 mg/kg or 0.0000643%, Note 1 conc.: 0.00005%)
chromium(III) oxide: (Cation conc. entered: 9.1 mg/kg, converted to compound conc.:13.3 mg/kg or 0.00133%)
chromium(VI) oxide: (Cation conc. entered: <0.8 mg/kg, converted to compound conc.:<1.538 mg/kg or <0.000154%) IGNORED Because: "<LOD"
chrysene: (Whole conc. entered as: <0.1 mg/kg or <0.00001%) IGNORED Because: "<LOD"
copper (I) oxide: (Cation conc. entered: <5 mg/kg, converted to compound conc.:<5.629 mg/kg or <0.000563%) IGNORED Because: "<LOD"
dibenz[a,h]anthracene: (Whole conc. entered as: <0.1 mg/kg or <0.00001%) IGNORED Because: "<LOD"
fluoranthene: (Whole conc. entered as: <0.1 mg/kg or <0.00001%) IGNORED Because: "<LOD"
fluorene: (Whole conc. entered as: <0.1 mg/kg or <0.00001%) IGNORED Because: "<LOD"
indeno[123-cd]pyrene: (Whole conc. entered as: <0.1 mg/kg or <0.00001%) IGNORED Because: "<LOD"
lead compounds with the exception of those specified elsewhere in this Annex: (Cation conc. entered: 27.1 mg/kg, converted to compound conc.:27.1 mg/kg or 0.00271%, Note 1 conc.: 0.00271%)
mercury dichloride: (Cation conc. entered: <0.5 mg/kg, converted to compound conc.:<0.677 mg/kg or <0.0000677%) IGNORED Because: "<LOD"
naphthalene: (Whole conc. entered as: <0.1 mg/kg or <0.00001%) IGNORED Because: "<LOD"
nickel dihydroxide: (Cation conc. entered: 7.8 mg/kg, converted to compound conc.:12.32 mg/kg or 0.00123%)

pH: (Whole conc. entered as: 8.7 pH, converted to conc.:8.7 pH or 8.7 pH)
phenanthrene: (Whole conc. entered as: <0.1 mg/kg or <0.00001%) IGNORED Because: "<LOD"
pyrene: (Whole conc. entered as: <0.1 mg/kg or <0.00001%) IGNORED Because: "<LOD"
selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex: (Cation conc. entered: <1 mg/kg, converted to compound conc.:<2.554 mg/kg or <0.000255%) IGNORED Because: "<LOD"
TPH (C6 to C40) petroleum group: (Whole conc. entered as: 1 mg/kg or 0.0001%)
zinc chloride: (Cation conc. entered: 17.4 mg/kg, converted to compound conc.:36.271 mg/kg or 0.00363%)

Notes utilised in assessment

C14: Step 5
"identify whether any individual ecotoxic substance is present at or above a cut-off value ..." , used on:

Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "arsenic trioxide"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "chromium(III) oxide"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "lead compounds with the exception of those specified elsewhere in this Annex"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "nickel dihydroxide"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "zinc chloride"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "TPH (C6 to C40) petroleum group"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "cadmium sulfide"

Note 1 , used on:

Test: "HP 5 on STOT SE 1; H370, STOT RE 1; H372" for determinand: "cadmium sulfide"
Test: "HP 5 on STOT SE 2; H371, STOT RE 2; H373" for determinand: "cadmium sulfide"
Test: "HP 6 on Acute Tox. 4; H302" for determinand: "cadmium sulfide"
Test: "HP 6 on Acute Tox. 4; H332" for determinand: "lead compounds with the exception of those specified elsewhere in this Annex"
Test: "HP 7 on Carc. 1A; H350, Carc. 1B; H350, Carc. 1A; H350i, Carc. 1B; H350i" for determinand: "cadmium sulfide"
Test: "HP 7 on Carc. 2; H351" for determinand: "lead compounds with the exception of those specified elsewhere in this Annex"
Test: "HP 10 on Repr. 1A; H360, Repr. 1A; H360D, Repr. 1A; H360Df, Repr. 1A; H360F, Repr. 1A; H360Fd, Repr. 1A; H360FD, Repr. 1B; H360, Repr. 1B; H360D, Repr. 1B; H360Df, Repr. 1B; H360F, Repr. 1B; H360Fd, Repr. 1B; H360FD " for determinand: "lead compounds with the exception of those specified elsewhere in this Annex"
Test: "HP 10 on Repr. 2; H361, Repr. 2; H361d, Repr. 2; H361f, Repr. 2; H361fd" for determinand: "lead compounds with the exception of those specified elsewhere in this Annex"
Test: "HP 11 on Muta. 2; H341" for determinand: "cadmium sulfide"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "lead compounds with the exception of those specified elsewhere in this Annex"

Determinand notes

Note 1 , used on:

determinand: "cadmium sulfide"
determinand: "lead compounds with the exception of those specified elsewhere in this Annex"

Note A , used on:

determinand: "lead compounds with the exception of those specified elsewhere in this Annex"

WM3: Unknown oil , used on:

determinand: "TPH (C6 to C40) petroleum group"

Appendix A: Classifier defined and non CLP determinands

acenaphthene (CAS Number: 83-32-9)

Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 17/07/2015
Risk Phrases: R36, R37, R38, N; R50/53, N; R51/53
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

acenaphthylene (CAS Number: 208-96-8)

Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 17/07/2015
Risk Phrases: R22, R26, R27, R36, R37, R38
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

anthracene (CAS Number: 120-12-7)

Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 17/07/2015
Risk Phrases: R36, R37, R38, R43, N; R50/53
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

benzo[ghi]perylene (CAS Number: 191-24-2)

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: 23/07/2015
Risk Phrases: N; R50/53
Hazard Statements: Aquatic Acute 1; H400, Aquatic Chronic 1; H410

boron tribromide/trichloride/trifluoride (combined) (CAS Number: 10294-33-4, 10294-34-5, 7637-07-2)

Conversion factor: 13.43
Comments: Combines the hazard statements and the average of the conversion factors for boron tribromide, boron trichloride and boron trifluoride
Data source: N/A
Data source date: 06/08/2015
Risk Phrases: R14, T+; R26/28, C; R34, C; R35
Hazard Statements: EUH014, Acute Tox. 2; H330, Acute Tox. 2; H300, Skin Corr. 1A; H314, Skin Corr. 1B; H314

chromium(III) oxide (CAS Number: 1308-38-9)

Conversion factor: 1.462
Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 17/07/2015
Risk Phrases: R20, R22, R36, R37, R38, R42, R43, R50/53, R60, R61
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

fluoranthene (CAS Number: 206-44-0)

Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 21/08/2015
Risk Phrases: Xn; R22, N; R50/53
Hazard Statements: Acute Tox. 4; H302, Aquatic Acute 1; H400, Aquatic Chronic 1; H410

fluorene (CAS Number: 86-73-7)

Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 06/08/2015
Risk Phrases: N; R50/53
Hazard Statements: Aquatic Acute 1; H400, Aquatic Chronic 1; H410

indeno[123-cd]pyrene (CAS Number: 193-39-5)

Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 06/08/2015
Risk Phrases: R40
Hazard Statements: Carc. 2; H351

lead compounds with the exception of those specified elsewhere in this Annex

CLP index number: 082-001-00-6
Data source: Regulation 1272/2008/EC - Classification, labelling and packaging of substances and mixtures. (CLP)
Additional Risk Phrases: None.
Additional Hazard Statements: Carc. 2; H351
Reason:
03/06/2015 - Carc. 2; H351 hazard statement sourced from: Larsen et al., 2014; Survey of lead and lead compounds, Environmental Project No. 1539, The Danish Environmental Protection Agency

pH

Comments: Appendix C4
Data source: WM3 1st Edition 2015
Data source date: 25/05/2015
Risk Phrases: None.
Hazard Statements: None.

phenanthrene (CAS Number: 85-01-8)

Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 06/08/2015
Risk Phrases: R22, R36, R37, R38, R40, R43, N; R50/53
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

pyrene (CAS Number: 129-00-0)

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: 21/08/2015
Risk Phrases: Xi; R36/37/38, N; R50/53
Hazard Statements: Skin Irrit. 2; H315, Eye Irrit. 2; H319, STOT SE 3; H335, Aquatic Acute 1; H400, Aquatic Chronic 1; H410

TPH (C6 to C40) petroleum group

Comments: Hazard statements taken from WM3 1st Edition 2015; Risk phrases: WM2 3rd Edition 2013
Data source: WM3 1st Edition 2015
Data source date: 25/05/2015
Risk Phrases: R10, R45, R46, R51/53, R63, R65
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

Appendix B: Notes

C14: Step 5

from section: WM3: C14 in the document: "WM3 - Waste Classification"

"identify whether any individual ecotoxic substance is present at or above a cut-off value ..."

Note 1

from section: 1.1.3.2, Annex VI in the document: "CLP Regulations"

"The concentration stated or, in the absence of such concentrations, the generic concentrations of this Regulation (Table 3.1) or the generic concentrations of Directive 1999/45/EC (Table 3.2), are the percentages by weight of the metallic element calculated with reference to the total weight of the mixture."

Note A

from section: 1.1.3.1, Annex VI in the document: "CLP Regulations"

"Without prejudice to Article 17(2), the name of the substance must appear on the label in the form of one of the designations given in Part 3. In Part 3, use is sometimes made of a general description such as '... compounds' or '... salts'. In this case, the supplier is required to state on the label the correct name, due account being taken of section 1.1.1.4."

WM3: Unknown oil

from section: Chapter 3: 4. Waste oils and other wastes containing or contaminated with oil in the document: "WM3 - Waste Classification"

"If the identity of the oil is unknown, and the petroleum group cannot be established, then the oil contaminating the waste can be classified as non-carcinogenic due to the presence of oil if all three of the following criteria are met:

- the waste contains **benzo[a]pyrene (BaP)** at a concentration of less than 0.01% (1/10,000th) of the TPH concentration (This is the carcinogenic limit specified in table 3.2 of the CLP for BaP)
- this has been determined by an appropriate and representative sampling approach in accordance with the principles set out in Appendix D, and
- the analysis clearly demonstrates, for example by carbon bands or chromatograph, and the laboratory has reasonably concluded that the hydrocarbons present have not arisen from petrol or diesel

"

Appendix C: Version

Classification utilises the following:

- CLP Regulations - 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 Wastes 2014 - Decision 2014/955/EU of 18 December 2014
- WM3 - Waste Classification - May 2015
- 7th ATP - Regulation 2015/1221/EU of 24 July 2015
- POPs Regulation 2004 - Regulation 850/2004/EC of 29 April 2004
- 1st ATP to POPs Regulation - Regulation 756/2010/EU of 24 August 2010
- 2nd ATP to POPs Regulation - Regulation 757/2010/EU of 24 August 2010

HazWasteOnline Engine: WM3 1st Edition, May 2015
HazWasteOnline Engine Version: 2016.92.3052.6057 (01 Apr 2016)
HazWasteOnline Database: 2016.92.3052.6057 (03 Apr 2016)

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2683

THE ENVIRONMENTAL LABORATORY LTD

Analytical Report Number:	16-06360
Issue:	1
Date of Issue:	13/04/2016
Contact:	David Harris
Customer Details:	Ashdown Site Investigation Ltd The Old Dairy Swanborough Farm Lewes East SussexBN7 3PF
Quotation No:	Q15-00267
Order No:	3425
Customer Reference:	R16-11361
Date Received:	06/04/2016
Date Approved:	13/04/2016
Details:	Meridian School, Peacehaven
Approved by:	[redacted]

John Wilson, Operations Manager

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

Sample Summary

Report No.: 16-06360

Elab No.	Client's Ref.	Date Sampled	Date Scheduled	Description	Deviations
58889	WS1 1.20	04/04/2016	06/04/2016	Sandy silty loam	
58890	WS3 0.40	04/04/2016	06/04/2016	Silty loam	
58891	WS3 2.50	04/04/2016	06/04/2016	chalk	

Results Summary

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			ELAB Reference	58889	58890	58891
			Customer Reference			
			Sample ID			
			Sample Type	SOIL	SOIL	SOIL
			Sample Location	WS1	WS3	WS3
			Sample Depth (m)	1.20	0.40	2.50
			Sampling Date	04/04/2016	04/04/2016	04/04/2016
Determinand	**Codes**	**Units**	**LOD**			
Metals						
Arsenic	M	mg/kg	1	16.3	15.3	^ 2.9
Cadmium	M	mg/kg	0.5	< 0.5	0.6	^ 0.5
Chromium	M	mg/kg	5	71.1	63.8	^ 9.1
Copper	M	mg/kg	5	15.9	15.5	^ < 5.0
Lead	M	mg/kg	5	26.7	18.4	^ 27.1
Mercury	M	mg/kg	0.5	< 0.5	< 0.5	^ < 0.5
Nickel	M	mg/kg	5	40.0	31.2	^ 7.8
Selenium	M	mg/kg	1	< 1.0	< 1.0	^ < 1.0
Zinc	M	mg/kg	5	68.5	72.2	^ 17.4
Inorganics						
Hexavalent Chromium	N	mg/kg	0.8	< 0.8	< 0.8	< 0.8
Acid Soluble Sulphate (SO4)	U	%	0.02	0.03	0.06	0.15
Water Soluble Boron	N	mg/kg	0.5	0.6	1.0	< 0.5
Miscellaneous						
Acid Neutralisation Capacity	N	mol/kg	0.1	n/t	< 0.1	n/t
Loss On Ignition (450°C)	M	%	0.01	n/t	2.42	n/t
Moisture Content	N	%	0.1	14.8	16.2	24.8
pH	M	pH units	0.1	8.0	8.1	^ 8.7
Soil Organic Matter	U	%	0.1	0.5	1.4	0.5
Total Organic Carbon	N	%	0.01	n/t	0.55	n/t
Organics						
>C8-C10 BCB	N	mg/kg	1	< 1.0	< 1.0	< 1.0
>C10-C12 BCB	N	mg/kg	1	< 1.0	< 1.0	< 1.0
>C12-C16 BCB	N	mg/kg	1	< 1.0	< 1.0	< 1.0
>C16-C21 BCB	N	mg/kg	1	< 1.0	< 1.0	< 1.0
>C21-C35 BCB	N	mg/kg	1	3.6	< 1.0	1.3
>C35-C40 BCB	N	mg/kg	1	< 1.0	< 1.0	< 1.0
Total (>C8-C40) BCB	N	mg/kg	1	3.6	< 1.0	1.3
Polyaromatic hydrocarbons						
Naphthalene	M	mg/kg	0.1	< 0.1	< 0.1	^ < 0.1
Acenaphthylene	M	mg/kg	0.1	< 0.1	< 0.1	^ < 0.1
Acenaphthene	M	mg/kg	0.1	< 0.1	< 0.1	^ < 0.1
Fluorene	M	mg/kg	0.1	< 0.1	< 0.1	^ < 0.1
Phenanthrene	M	mg/kg	0.1	< 0.1	< 0.1	^ < 0.1
Anthracene	M	mg/kg	0.1	< 0.1	< 0.1	^ < 0.1
Fluoranthene	M	mg/kg	0.1	< 0.1	< 0.1	^ < 0.1
Pyrene	M	mg/kg	0.1	< 0.1	< 0.1	^ < 0.1
Benzo(a)anthracene	M	mg/kg	0.1	< 0.1	< 0.1	^ < 0.1
Chrysene	M	mg/kg	0.1	0.1	< 0.1	^ < 0.1
Benzo (b) fluoranthene	M	mg/kg	0.1	< 0.1	< 0.1	^ < 0.1
Benzo(k)fluoranthene	M	mg/kg	0.1	< 0.1	< 0.1	^ < 0.1
Benzo (a) pyrene	M	mg/kg	0.1	< 0.1	< 0.1	^ < 0.1
Indeno (1,2,3-cd) pyrene	M	mg/kg	0.1	< 0.1	< 0.1	^ < 0.1
Dibenzo(a,h)anthracene	M	mg/kg	0.1	< 0.1	< 0.1	^ < 0.1
Benzo[g,h,i]perylene	M	mg/kg	0.1	< 0.1	< 0.1	^ < 0.1
Total PAH(16)	M	mg/kg	0.4	< 0.4	< 0.4	^ < 0.4
Total PAH (Including Coronene)	N	mg/kg	2	n/t	< 2	n/t
BTEX						
Total BTEX	M	mg/kg	0.01	n/t	< 0.01	n/t
Total Petroleum Hydrocarbons						
Mineral Oil	U	mg/kg	5	n/t	< 5	n/t
PCB (ICES 7 congeners)						
PCB (Total of 7 Congeners)	M	mg/kg	0.03	n/t	< 0.03	n/t

Results Summary

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WAC Analysis								
Elab Ref:	58890					**Landfill Waste Acceptance Criteria Limits**		
Sample Date:	04/04/2016					**Inert Waste Landfill**	**Stable Non-reactive Hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Sample ID:	WS3							
Depth (m)	0.4							
Site:	Meridian School, Peacehaven							
Determinand		**Code**	**Units**					
Total Organic Carbon		N	%		0.55	3	5	6
Loss on Ignition		M	%		2.4	--	--	10
Total BTEX		M	mg/kg		< 0.01	6	--	--
Total PCBs (7 congeners)		M	mg/kg		< 0.03	1	--	--
TPH Total WAC		M	mg/kg		< 5	500	--	--
Total (of 17) PAHs		N	mg/kg		< 2	100	--	--
pH		M			8.1	--	>6	--
Acid Neutralisation Capacity		N	mol/kg		< 0.1	--	To evaluate	To evaluate
Eluate Analysis			**10:1**		**10:1**	**Limit values for compliance leaching test using BS EN 12457-2 at L/S 10 l/kg**		
			mg/l		**mg/kg**			
Arsenic		N	< 0.005		< 0.05	0.5	2	25
Barium		N	< 0.005		< 0.05	20	100	300
Cadmium		N	< 0.001		< 0.01	0.04	1	5
Chromium		N	< 0.005		< 0.05	0.5	10	70
Copper		N	< 0.005		< 0.05	2	50	100
Mercury		N	< 0.005		< 0.01	0.01	0.2	2
Molybdenum		N	< 0.005		< 0.05	0.5	10	30
Nickel		N	0.001		< 0.05	0.4	10	40
Lead		N	< 0.001		< 0.05	0.5	10	50
Antimony		N	< 0.005		< 0.05	0.06	0.7	5
Selenium		N	< 0.005		< 0.05	0.1	0.5	7
Zinc		N	< 0.005		< 0.05	4	50	200
Chloride		N	< 5		< 50	800	15000	25000
Fluoride		N	< 5		< 10	10	150	500
Sulphate		N	4		44.10	1000	20000	50000
Total Dissolved Solids		N	< 100		1000.00	4000	60000	100000
Phenol Index		N	< 0.01		< 0.10	1	-	-
Dissolved Organic Carbon		N	13.800		138.00	500	800	1000
Leach Test Information								
pH		N	7.9					
Conductivity (uS/cm)		N	124					
Dry mass of test portion (g)			90.000					
Dry Matter (%)			86					
Moisture (%)			17					
Eluent Volume (ml)			853					

Results are expressed on a dry weight basis, after correction for moisture content where applicable
Stated limits are for guidance only and ELAB cannot be held responsible for any discrepencies with current legislation

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Results Summary

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Asbestos Qualitative Results

Analytical result only applies to the sample as submitted by the client. Any comments, opinions or interpretations (marked #) in this report are outside UKAS accreditation (Accreditation No2683). They are subjective comments only which must be verified by the client.

Elab No	Depth (m)	Clients Reference	Description of Sample Matrix #	Result
58890	0.40	WS3	Silty loam	No asbestos detected

Method Summary

Report No.: 16-06360

Parameter	Codes	Analysis Undertaken On	Date Tested	Method Number	Technique
Soil					
Hexavalent chromium	N	As submitted sample	07/04/2016	110	Colorimetry
Acid Soluble Sulphate	U	Air dried sample	12/04/2016	115	Ion Chromatography
Aqua regia extractable metals	M	Air dried sample	11/04/2016	118	ICPMS
PAH (GC-FID)	M	As submitted sample	07/04/2016	133	GC-FID
Water soluble boron	N	Air dried sample	11/04/2016	202	Colorimetry
Basic carbon banding in soil	N	As submitted sample	07/04/2016	218	GC-FID
Soil organic matter	U	Air dried sample	11/04/2016	BS1377:P3	Titrimetry
Asbestos identification	U	As submitted sample	08/04/2016	PMAN	Microscopy
Leachate					
Arsenic*	N		12/04/2016	101	ICPMS
Cadmium*	N		12/04/2016	101	ICPMS
Chromium*	N		12/04/2016	101	ICPMS
Lead*	N		12/04/2016	101	ICPMS
Nickel*	N		12/04/2016	101	ICPMS
Copper*	N		12/04/2016	101	ICPMS
Zinc*	N		12/04/2016	101	ICPMS
Mercury*	N		12/04/2016	101	ICPMS
Selenium*	N		12/04/2016	101	ICPMS
Antimony	N		12/04/2016	101	ICPMS
Barium*	N		12/04/2016	101	ICPMS
Molybdenum*	N		12/04/2016	101	ICPMS
pH Value*	N		12/04/2016	113	Electrometric
Electrical Conductivity*	N		12/04/2016	136	Probe
Dissolved Organic Carbon	N		12/04/2016	102	TOC analyser
Chloride*	N		12/04/2016	131	Ion Chromatography
Fluoride*	N		12/04/2016	131	Ion Chromatography
Sulphate*	N		12/04/2016	131	Ion Chromatography
Total Dissolved Solids	N		12/04/2016	144	Gravimetric
Phenol index	N		12/04/2016	121	HPLC
WAC Solids analysis	N				
pH Value**	M	Air dried sample	12/04/2016	113	Electrometric
Total Organic Carbon	N	Air dried sample	12/04/2016	210	IR
Loss on Ignition**	M	Air dried sample	13/04/2016	129	Gravimetric
Acid Neutralization Capacity to pH 7	N	Air dried sample	12/04/2016	NEN 737	Electrometric
Total BTEX**	M	As submitted sample	08/04/2016	181	GCMS
Mineral Oil**	U	As submitted sample	07/04/2016	117	GCFID
Total PCBs (7 congeners)	M	Air dried sample	11/04/2016	120	GCMS
Total PAH (17)**	N	As submitted sample	08/04/2016	133	GCFID

Tests marked N are not UKAS accredited

Report Information

Report No.: 16-06360

Key

U	hold UKAS accreditation
M	hold MCERTS and UKAS accreditation
N	do not currently hold UKAS accreditation
^	MCERTS accreditation not applicable for sample matrix
*	UKAS accreditation not applicable for sample matrix
S	Subcontracted to approved laboratory UKAS Accredited for the test
SM	Subcontracted to approved laboratory MCERTS/UKAS Accredited for the test
I/S	Insufficient Sample
U/S	Unsuitable sample
n/t	Not tested
<	means "less than"
>	means "greater than"

Soil sample results are expressed on an air dried basis
Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
PCB congener results may include any coeluting PCBs
Uncertainty of measurement for the determinands tested are available upon request

Deviation Codes

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

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

Sample Retention and Disposal

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