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STATION HILL, READING

GROUND INVESTIGATION REPORT

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Scope	
Purpose of this report	Ramboll UK has been appointed by Lincoln mgt to produce a Ground Investigation Report for the south side of a proposed development of the Station Hill Road site, Reading. This report has been prepared in order to provide a geo-environmental contaminated land risk assessment for a proposed mixed commercial and residential end use, along with geotechnical interpretation of the factual data obtained during the recent Ground Investigation to inform the design and provide Geotechnical Design Parameters required for the proposed foundation design solutions, considered in the Stage 3 report.
Proposed development	The proposed development consists of the demolition of the current buildings on the south side development, and the construction of mixed residential and commercial Plots E and F. Plots E and F will contain two residential buildings that vary in height from between 6 and 12 storeys above podium level. At podium level itself there is a combination of retail, amenity spaces, bicycle parking and residential apartments. Below podium level there is a split-level car park of 1-2 storeys, which also houses plant rooms.
Site Information	
Grid Ref	471370, 173710
Current Site Description	The site is located in central Reading, bounded by Friars Street to the south, Greyfriars Road to the west, Garrard Street to the north, and Merchants Place road to the east. The site is currently occupied by the vacant Friars Walk shopping centre and Telecoms House, a 4-storey vacant office building, both structures are due to be demolished at a later stage.
Site History	Historical maps date back to 1879, when the wider Station Hill site was occupied predominantly by terraced housing, with surrounding open fields and woodland. During the 1900s, the site became increasingly more developed. From the 1940s onwards, historical plans show a factory in the northwest corner of the site in with a large garage in the centre of the site. The garage, houses and factory were eventually demolished sometime before 1980 to make way for a multi-storey car park, an office building in the west and Friar's Walk Shopping Centre in the south site, which included a rooftop car park.
Ground Investigation	
Contract Details	Geotechnical Engineering Limited (GEL) were appointed to undertake a ground investigation at the south site. The ground investigation was designed and specified by Ramboll UK. The specification was designed to assess the contamination status of the site, and to provide information for substructure design and address uncertainty for the mitigation and management of the ground-based risks at the site. The fieldwork was undertaken between 12th November and 3rd December 2018.
Scope of Works	The ground investigation works comprised 3no. boreholes (3no. cable percussive with rotary follow on) and 16no.window sample holes, 10.no of which reached depth and 6.no of which refused. *In situ* testing (SPTs) was carried out and samples were taken from the exploratory holes for chemical and geotechnical testing. Groundwater and ground gas monitoring was undertaken from the installations in the boreholes.
Ground Conditions	
Ground Conditions	The ground investigation confirmed the general succession indicated by the historical borehole records, previous Ground Investigation information and information within the Desktop Site Appraisal. As anticipated, the geology has been identified to comprise Made Ground overlying Alluvium and Taplow Gravels of varying extents, in turn overlying the Upper Chalk formation which comprised a layer of weathered Structureless Chalk above stronger Structured Chalk. The Structured Chalk was only encountered in the percussive/rotary boreholes. *In situ* concrete of varying thicknesses was encountered at the top of the Made Ground in all exploratory hole locations. The average confirmed thickness of the concrete was 0.31m. In several locations, a second layer of concrete was encountered, separated from the first by Made Ground materials, but the full extent of the deeper concrete could not be determined.
Groundwater	The Environment Agency classifies the Made Ground as unproductive strata, the Alluvium and Taplow Gravel as a Secondary A Aquifer and the Upper Chalk Formation is classified as a Principal Aquifer. Water strikes were recorded in 7no. exploratory holes during the ground investigation. Groundwater level data collected during subsequent groundwater monitoring visits, indicated a groundwater level between 36.70m AOD and 34.57m AOD.
Ground Aggressivity	Soil samples were scheduled for chemical analyses to establish the ground aggressivity. Sulphate and pH tests were carried out on soil samples and one groundwater sample. An assessment of the soil data, in accordance with BRE Special Digest 1 (BRE, 2005) suggests a Design Sulphate Class of DS-1 for all the strata present. The Aggressive Chemical Environment for Concrete (ACEC) Classification is AC-1 for all the strata present.
Ground Gas & Contamination	Chemical analysis of thirty-four soil samples was undertaken for a range of contaminants and screened against Ramboll's Generic Assessment Criteria (GAC) for residential without plant uptake. Exceedances were limited to heavy-end petroleum hydrocarbons and benzo[a]pyrene in samples of shallow Made Ground at 0.2m bgl in the north west of the site. Seventeen samples of shallow Made Ground were screened for asbestos. Chrysotile asbestos was detected in one sample, with a quantification of <0.001% w/w. Although asbestos was only detected at low levels, asbestos can be present in soil in discrete pockets and any sampling frequency cannot guarantee the absence of contaminants of this nature in areas between sample locations. Management of the risk from asbestos to construction workers during the development works must therefore be considered. Due to the shallow depth at which the hydrocarbon exceedances and single asbestos detection were identified, it is considered likely that this material will be excavated and disposed off-site as part of the earthworks. A Materials Management Plan should be put in place prior to the works to consider whether this material is being managed by being removed from site or being reused under hardstanding or floor slabs. None of the three groundwater samples contained concentrations of any determinands that exceeded any of the respective GAC for the proposed end use. Six ground gas monitoring visits were undertaken, and the results of the ground gas assessment suggest that the site may be classified as CIRIA Characteristic Situation 1 (CS1, Very Low Risk). CS1 indicates that no ground gas protection measures are required to be incorporated into the design of the proposed building.
Conclusions and Recommendations	
	This report has reviewed the Ground Investigation Factual Report for the Station Hill South site and presents the Geotechnical Design Parameters recommended for the design of the Station Hill sub-structure. This report has also provided an indication of the contamination status of the site, however additional investigation is required to confirm the risks to human health and controlled waters. On the basis of the ground investigation and assessments within this report, no specific remediation measures have been highlighted as being required at this stage, however, due to this investigation being undertaken prior to demolition of the existing buildings and access therefore being limited to certain areas of the site, further site investigation is recommended post-demolition to further assess the ground conditions and contamination status of the site. Additional investigation should focus in particular on the north east of the site where the largest area without coverage is to target potential for contamination relating to historical site uses. The ground investigation on the Station Hill north site should be used to gain greater understanding of the Structured Chalk level across the site.

1. INTRODUCTION

1.1. Background

Ramboll has been appointed by Lincoln mgt (the Client) to undertake a Geotechnical and Geo-Environmental Ground Investigation Report for the south side of the Station Hill site, which comprises the proposed Plot E and Plot F. The boundary for the south section of the Station Hill site is defined in Drawing 1.

As part of the scope of works, Ramboll designed and specified a ground investigation in order to characterise the geology, groundwater and potential for contamination underlying the site. The information provided by the fieldwork and laboratory testing will be used to develop Geotechnical Design Parameters for the sub-structure design.

Ground Engineering Limited (GEL) was appointed to undertake the Ground Investigation in September 2018. The fieldwork was undertaken between Monday 12th November and Monday 3rd December. The site investigation comprised 3no. cable percussive boreholes with rotary follow on, and 16no. window sample holes, 10no. of which reached depth and 6no. refused.

The information obtained from the Ground Investigation works, has been presented in the GEL Factual Report, February 2019.

Ramboll have been instructed by the Client to produce a Ground Investigation Report based on the factual information provided by the Ground Investigation. The report will include a contaminated land risk assessment and ground conditions encountered at the site to provide recommendations for the Geotechnical Design Parameters that will be adopted for the substructure design for the proposed development.

1.2. Objectives

The objectives of the Phase II Ground Investigation were to assess the ground conditions and the potential for soil and/or groundwater contamination that could have resulted from current and historical contaminant sources identified within the Phase I Desk Study Report (ref. 1620004716-SHR-RAM-GE-002-Desk Study, 2018).

Specific objectives include:

- Determine the progression of geological strata and ground conditions beneath the site and its variability across the site, in order to provide sufficient coverage across the plots;
- Characterise the ground conditions to the depths required to inform foundation design and determine the geotechnical design parameters for the proposed structure;
- Characterise the hydrogeological regime and ground gas regime; and,
- Characterise the potential for ground contamination across the site (including asbestos screening).

1.3. Scope of Works

The original scope of work for this investigation (south site) comprised a minimum of:

- 12no. mechanically-excavated trial pits to max. depth 4.5m bgl;
- 6no. window sample holes to max. depth 6m bgl; and,
- 4no. cable percussive boreholes with rotary follow on, three of which to a depth of 25 m bgl and one to 18 m bgl.

Due to access restrictions the scope of work plan changed to as follows:

- 16no. window sample holes to a maximum depth of 6m bgl 10.no of which reached depth and 6.no of which refused;
- 3no. cable percussive boreholes with rotary follow on, to the depth of 25 m bgl;
- Gas and groundwater monitoring of the installed window sample holes on six occasions for ground gases and rest groundwater levels, and the collection of groundwater samples;
- Groundwater sampling from the three installed boreholes;
- Submission of selected soil and groundwater samples to a Ramboll approved MCERTs and UKAS accredited laboratory for analysis for a relevant range of determinands; and,
- The production of a Ground Investigation Report (*this report*), including comparison of the analytical results with Ramboll Generic Assessment Criteria (GAC), derived in accordance with UK guidance on risk assessment, and a qualitative source-pathway-receptor risk assessment, based upon the GEL Factual Report, February 2019.

In the preparation of this report Ramboll has referred to UK regulatory guidance and methodologies, including, but not limited to: CLR 11 Model Procedures for the Management of Land Contamination; BS 5930:2015 Code of Practice for Site Investigation; and BS10175:2011 + A2:2017 Code of Practice for the Investigation of Potentially Contaminated Sites.

2. SITE DESCRIPTION

2.1. Site Description

The site is located at National Grid Reference 471370, 173710 on Station Hill.

A site location and layout plan has been presented as Drawing 1 of this report. A full description of the site is detailed in Ramboll's Phase I Desk Study Report (ref. 1620004716-SHR-RAM-GE-002-Desk Study, 2018).

The site is bounded to the north by Garrard Street; to the east by Merchants Place and a number of commercial buildings; to the south by Friar Street and further commercial buildings; and to the west by Greyfriars Road. Building heights surrounding the site vary considerably from two and three storey buildings to the southeast to Thames Tower towards the northeast of the site which hosts fifteen storeys and is approximately 53m tall.

2.2. Site History

Historical Ordnance Survey maps were reviewed as part of Ramboll's Phase I Desk Study Report (ref. 1620004716-SHR-RAM-GE-002-Desk Study, 2018) and have been summarised below.

2.2.1. On-Site History

The earliest historical maps dated 1879, when the wider Station Hill site was shown to be occupied by terraced housing, a Malt House, a Timber Yard, and a Coal Yard. The remaining northeast section of the site is shown as open fields and woodland. During the 1900s, the site is shown to have become further developed with a large building marked in the centre of the site by 1931. From the 1940s onward, a factory is marked in the northwest corner of the site in 1957, with the large central building annotated as a garage. A number of depositories and warehouses were then built on the site, with a carpark present by the 1960s. By the late 1960s, a ballroom had been constructed on the western portion of the car park along with a bus station. A coal yard was present in the south of the site, and Western Tower and its adjoining office block had been built along the northern boundary of the site. The garage, houses and factory were eventually demolished sometime before 1980 to make way for a multi-storey car park in the centre, an office building in the west and Friar's Walk Shopping Centre in the south, which included a rooftop car park.

3. PRELIMINARY CONCEPTUAL SITE MODEL

The preliminary Conceptual Site Model (CSM) is a simplified representation of the environmental conditions at the site, and in the vicinity of the site, and is used to identify potentially sensitive receptors and potential pollutant linkages. Information obtained during the ground investigation, described in the following sections of this report, is then used to refine and update this preliminary CSM.

The information provided in the preliminary conceptual site model is based on Ramboll's Phase I Desk Study and is summarised in Table 3.1 below.

Table 3-1 Preliminary Conceptual Site Model

Potential Sources of Contamination The preliminary contaminated land risk assessment identified a number of sources of potential contamination, including current and former land uses at the site and in the surrounding area. The wider Station Hill site has been previously occupied by a garage, car park, coal yard and bus station. The historical maps illustrate a garage located in the centre of the wider site, with a car park and bus station constructed by the early 1960s. A coal yard was present to the south of the site. The historical data report from Envirocheck identified two potentially fuel related tanks on site. Whilst no tanks were identified during the site walkover (September 2018), residual contamination may be present. In addition, three electrical sub-stations were noted across the site during the site walkover, with unknown potential for release of PCBs. A review of the surrounding areas history highlighted industrial land use within 100m of the site. The Great Western Railway runs parallel to the wider site boundary approximately 60m north, since before first maps in the late 1870s. Garages were situated approximately 90m southwest and 50m southeast of the site by 1957. Engineering works were identified on the historical maps to the northwest and north of the site. Four electrical sub-stations were also identified within approximately 80m of the site. Historical Building Plans Information identified three underground fuel tanks and oil storage within 100m south of the site. As such there is the potential for ground contamination from off-site sources, which could migrate onto site as a result of groundwater migration.
Geology The geology of the site comprises superficial deposits of Alluvium and the Taplow Gravel Formation, underlain by the Upper Chalk Formation, the upper layers of which comprise variable and significant thicknesses of Structureless Chalk. The Made Ground is classified as an Unproductive Strata, with the Environment Agency classifying the Alluvium and Taplow Gravel Formation as Secondary A Aquifers and the Upper Chalk Formation as a Principal Aquifer. The site is not located within a Source Protection Zone (I, II, III). There are 12 recorded groundwater abstractions within a 1km radius of the wider Station Hill site, the closest of which is located approximately 0.16km to the southwest of the site, associated with a Primark and used as drinking and washing water.
Hydrogeology Shallow groundwater is anticipated within the Alluvium, Taplow Gravel Formation, and Upper Chalk Formation. Isolated perched groundwater bodies may also be present within parts of the Made Ground or Fill.
Hydrology The nearest surface water feature is a drain approximately 320m northwest of the site, associated with the railway line. Followed by the easterly flowing River Thames which, at its closest point, lies approximately 420m northeast of the site. The River Kennet is located approximately 500m southeast of the site and also flows in an easterly direction.

Table 3-1 Preliminary Conceptual Site Model

Potential Receptors to Contamination (if present)			**Receptor Present?**
Human Health	On-site	Future site users in a mixed residential and commercial setting.	Yes
	Off-site	The site is surrounded by predominantly commercial properties.	Yes
Water Environment	On-site	The site is underlain by alluvium and gravels which are classified as Secondary A Aquifers. The underlying Chalk aquifer is a Principal Aquifer.	Yes
	Off-site	The site is underlain by alluvium and gravels which are a Secondary A Aquifer.	Yes
		Surface Water: The nearest surface water feature is a drain approximately 320m northwest of the site.	Yes
Ecological Receptors	On-site	There are no statutory designated ecologically sensitive sites present on-site.	No
	Off-site	There are no statutory designated ecologically sensitive sites present within 250m of the site.	No
Built Environment	On-site	The site is currently predomiantly dereltict buildings, with the intended end-use of the site being mixed commercial and residential.	Yes

The site investigation strategy was designed to assess the key potential contamination sources and potential pollutant linkages identified in the preliminary Conceptual Site Model. The following sections describe the site investigation strategy, the results of laboratory chemical analysis and a qualitative source-pathway-receptor risk assessment; the revised conceptual model is then presented in Section 10.

4. GROUND INVESTIGATION

4.1. Rationale and Design Philosophy

A ground investigation was designed and specified by Ramboll UK based on conditions identified within the Phase I Geotechnical and Geoenvironmental Desk Study (2018). The ground investigation was designed to provide a robust characterisation of the ground conditions, Geotechnical Design Parameters for substructure design and address uncertainty with respect to ground based geotechnical risks at the site, as well as provide site wide coverage of the contamination present. Due to the ground investigation being undertaken prior to demolition of the current buildings on site, the investigation was limited by access restrictions to a reconnaissance level ground investigation only.

Related Documents

- Ramboll (2018), *Site Investigation Specification* (report ref: 1620004761-SHR-RAM-GE-002-Ground Investigation Specification), Ramboll UK Ltd, 2018;
- Ramboll (2018), *Geotechnical and Geoenvironmental Desk Study* (report ref: 1620004716-SHR-RAM-GE-002-Desk Study), Ramboll UK Ltd, 2018; and,
- Factual Report on Ground Investigation (report ref: 34769), Geotechnical Engineering Limited, February 2019.

The key objectives of the investigation were as follows:

- Investigate and confirm the geological and hydrogeological regime of the site including anticipated obstructions through ground investigation;
- Recover samples of soils and groundwater;
- Undertake *in situ* and laboratory based geotechnical testing of soils, to determine Geotechnical Design Parameters for foundation and retaining wall design;
- Installation of combined ground gas and groundwater monitoring standpipes, and piezometers, undertake chemical testing of the soil and groundwater samples and characterise the ground gas and groundwater regimes at the site; and,
- Assess the contamination status of the site.

The locations of the exploratory holes were chosen to provide both representative coverage of the site and specifically the ground conditions beneath each of the proposed buildings (Plots E1, E2, E3, and F).

The ground investigation was undertaken in general accordance with the following codes and standards:

- BS EN 1997-1:2004 Eurocode 7: Geotechnical Design – Part 1: General Rules (BSI, 2004);
- BS EN 1997-2:2007 Eurocode 7: Geotechnical Design – Part 2: Ground Investigation and Testing (BSI, 2007);
- BS1377-1:2016 Methods of Test for Soils for Civil Engineering Purposes (BSI, 2016)
- BS EN ISO 22475-1:2006 Geotechnical investigation and testing – Sampling methods and groundwater measurements – Part 1 Technical principles for execution (BSI, 2006); and,
- BS5930:2015 + Amendment A1: 2015 Code of Practice for Site Investigation (BSI, 2015).

4.2. Summary of Ground Investigation Works

The fieldwork was undertaken in the period between 12th November and 3rd December 2018. The fieldwork was completed by Geotechnical Engineering Limited (GEL), and Ramboll UK carried out regular site visits throughout the works. The exploratory holes were logged and sampled for geotechnical and chemical testing by GEL.

The ground investigation comprised the following scope of works:

- Prior to intrusive works, GEL undertook below ground utility service clearance at all exploratory hole locations. A preliminary UXO risk assessment undertaken by 1st Line Defence classified the risk level as 'minimal' therefore no further actions were undertaken with regards with UXO.
- Where possible, all exploratory locations were hand-dug to approximately 1.2 m bgl in advance of drilling.
- Three cable percussion boreholes with rotary follow on in the chalk. Originally four deep boreholes were proposed (BH301-304). BH302 could not be undertaken due to permission not being granted by the landlord of the neighbouring car park in time.
- Sixteen windowless samples were proposed (WS301-WS316); ten of which reached depth and six of which refused on concrete.
- Nine 50mm ground gas and groundwater monitoring standpipes were installed.
- Three 19mm standpipe piezometer were installed.
- One round of groundwater monitoring was undertaken on the 31st January 2019. Groundwater samples were taken from BH301, BH303 and BH304.
- *In situ* geotechnical testing within the exploratory holes.
- Geotechnical and geo-environmental laboratory testing carried out on all strata.
- Targeted soil samples were taken from each exploratory hole location and screened on-site using a hand-held photo-ionisation detector (PID) for the presence of volatile organic compounds.
- A total of thirty-four soil samples were submitted for selected laboratory analysis. Selected soil samples were analysed for a predetermined suite of contaminants, designed to be reflective of the site's historic uses.
- Six subsequent rounds of ground gas monitoring were undertaken on the 10th December, 17th December, 10th January, 21st January, 30th December and 4th February using a portable gas analyser from nine locations. These were taken over an approximately three-month period in accordance CIRIA C665, for a residential without plant uptake proposed end use. A hand-held PID was also used to measure volatile organic compounds in the monitoring wells during the monitoring round.

4.2.1. Exploratory Holes

The investigation comprised 3no. cable percussive borehole to a maximum of 4.5m depth with rotary core follow on to a maximum depth of 25.5m, as detailed in the Factual Report on Ground Investigation compiled by GEL.

A void was encountered in WS305 at 0.18m depth while concrete coring was being undertaken which necessitated moving the position by a few metres, as WS305a. WS305a,

WS306, WS309, WS312, WS313, and WS316, were all aborted at depths varying from 0.3 to 1.45m due to being unable to progress any deeper with the equipment available.

The borehole and window sample positions and coordinates are shown on the exploratory hole location plan provided in Drawing 1. Exploratory hole details are summarised in **Error! Reference source not found.**1, specifying the type of boreholes, scheduled depths and achieved depths. Further information regarding the descriptions of strata encountered and comments on the groundwater conditions are given in the borehole records in the GEL Final Factual Report, February 2019.

Table 4-1: Summary of Exploratory Boreholes

Hole ID	Type	Scheduled Depth (m bgl)	Achieved Depth (m bgl)
BH301	CP/RC	25.00	25.50
BH303	CP/RC	25.00	25.50
BH304	CP/RC	25.00	24.60
WS301	WS	6.00	6.00
WS302	WS	6.00	6.45
WS303	WS	6.00	6.45
WS304	WS	6.00	6.45
WS305	WS	6.00	0.31
WS305a	WS	6.00	1.45
WS306	WS	6.00	0.80
WS307	WS	6.00	6.45
WS308	WS	6.00	0.30
WS309	WS	6.00	0.90
WS310	WS	6.00	6.45
WS311	WS	6.00	6.45
WS312	WS	6.00	0.45
WS313	WS	6.00	1.05
WS314	WS	6.00	6.45
WS315	WS	6.00	6.00
WS316	WS	6.00	1.08

CP = Cable Percussive, RC = Rotary Core WS = Windowless Sample

4.2.2. Monitoring Installation

Three shallow 50mm gas and groundwater standpipes were installed in boreholes BH301, BH304, WS301, WS302, WS308, WS310. WS311, WS314, and WS315. The gas and groundwater standpipe consisted of a 50mm 1D diameter HDPE slotted pipe set in pea shingle response zone with a plain pipe bentonite pellet seal above and below. A 19mm standpipe piezometers were installed in boreholes BH301, BH303, and BH304.

4.2.3. Table 4-2: Summary of Monitoring Installations

2 summaries the installation details of the piezometers and standpipes, and the corresponding water levels recorded are summarised in Section 5.66.

Table 4-2: Summary of Monitoring Installations

Borehole ID	Installation Type	Response Zone (m bgl)	Response Zone (m OD)	Stratum at Response Zone
BH301	19mm Vibrating Wire Piezometer	+5.0 - +6.0	+34.9 – +33.9	Structureless Chalk
BH301	50mm Gas/Groundwater Monitoring Standpipe	+1.0 - +2.0	+38.9 – +37.9	Made Ground
BH303	19mm Vibrating Wire Piezometer	+6.5 - +7.5	+34.0 - +33.0	Structureless Chalk
BH304	19mm Vibrating Wire Piezometer	+2.5 - +8.0	+39.0 - +33.5	Structureless Chalk
BH304	50mm Gas/Groundwater Monitoring Standpipe	+1.0 - +1.8	+40.5 - +39.7	Made Ground
WS301	50mm Gas/Groundwater Monitoring Standpipe	+0.2 - +1.0	+39.85 – +39.05	Made Ground
WS304	50mm Gas/Groundwater Monitoring Standpipe	+1.0 - +2.0	+38.14 – +37.14	Made Ground/Gravels
WS310	50mm Gas/Groundwater Monitoring Standpipe	+0.5 - +1.0	+40.78 - +40.28	Made ground
WS311	50mm Gas/Groundwater Monitoring Standpipe	+0.4 - +1.4	+40.17 - +39.17	Made Ground
WS314	50mm Gas/Groundwater Monitoring Standpipe	+1.0 - +1.85	+38.2 - +37.35	Made Ground
WS315	50mm Gas/Groundwater Monitoring Standpipe	+0.4 - +0.5	+45.32 – +45.22	Gravels

Following completion of the Ground Investigation, 6no. post field works monitoring visits were undertaken between the 10th December 2018 to 4th February 2019.

4.3. Sampling and *in situ* Testing

Representative soil samples were recovered from all strata in all cable percussive and rotary core boreholes for laboratory geotechnical and contamination testing to enable preliminary classification and assessment of the engineering properties of the strata beneath the site.

Standard penetration tests (SPTs) were carried out in accordance with BS EN ISO 22476-3 (2005) at regular intervals through the depth of all boreholes.

4.4. Geotechnical Laboratory Testing

The samples collected from the exploratory holes were scheduled by Ramboll for geotechnical and chemical testing. The testing was carried out in accordance with BS 1377 (1990/2018) unless otherwise stated and included in Table 4.3 below.

Table 4-3: Geotechnical Lab Tests Complete

Test Method	Quantity	Accredited Test
Water Content	25	Yes
Liquid & Plastic Limits	18	Yes
Liquid (Casagrande Method) & Plastic Limits	3	No
Saturation Moisture Content	11	Yes
Saturation Moisture Content (Subcontracted to Terra Tek)	7	No
Density – Linear Measurement	5	Yes
Particle Density - Pycnometer	2	Yes
Particle Size Distribution - Wet Sieve	22	Yes
Particle Size Distribution - Pipette	9	Yes
Water Content of Rock	3	No
Uniaxial Compressive Strength of Rock	2	Yes
Point Load Strength Test	128	Yes
BRE SD1 Suite (Subcontracted)	11	Yes/No[1]
Organic Matter Content (Subcontracted)	6	Yes

[1] Moisture content, Magnesium (Water soluble) content, and Nitrate (Water Soluble) content, weren't accredited tests.

4.5. Geoenvironmental Sampling and Monitoring

4.5.1. Soil Samples

Soil samples were taken from each of the exploratory locations, across all strata in accordance with BS 10175:2011+A1:2013 and were stored within appropriate sample containers and forwarded to an independent MCERTS accredited analytical laboratory by GEL. Selected soil samples were tested on-site for the presence of volatile organic compounds (VOCs) using a photo-ionisation detector (PID). The PID screens for a wide range of VOCs but does not indicate a specific compound; therefore, the results of the PID screening provide a semi-quantitative indication of the concentration of VOCs present in soil pore spaces.

4.5.2. Groundwater Monitoring

Nine monitoring wells were installed for ground gas and groundwater monitoring purposes (BH301, BH303, BH304, WS301, WS304, WS310, WS311, WS314, WS315). Groundwater monitoring was undertaken on the 31st January 2019 from the three borehole locations. Not enough groundwater was present within the window sample locations to obtain samples. The three groundwater samples from the centre of the south site were sent to an MCERTS accredited analytical laboratory by GEL.

4.5.3. Ground Gas Monitoring

Ground gas monitoring was carried out by GEL on six occasions on; 10th December 17th December 2018, 10th January 21st January 31st January and 4th February 2019. Ground gas monitoring was completed using a calibrated GFM 435 instrument with reference to CIRIA C665 and BS 8576:2013 Guidance on Investigations for Ground Gas. The following parameters were monitored:

- Methane (% by volume).
- Carbon dioxide (% by volume).
- Oxygen (% by volume).
- Flow rate (litres/hour).

A hand-held PID was also used to measure VOCs (in parts per million by volume) in the installed monitoring wells. The results of the ground gas monitoring are discussed in further detail in Section 9.

4.6. Geoenvironmental Laboratory Analysis

4.6.1. Analytical Rationale

Table 4.4 summarises the analytical schedule for soil and groundwater samples together with the rationale for analysis.

Table 4-4: Summary of Analytical Strategy

Analytical Suite	Rationale	No. of soil samples scheduled	No. groundwater samples scheduled
Metals (arsenic, boron, cadmium, trivalent chromium, hexavalent chromium, copper, lead, mercury, nickel, selenium, zinc)	Typically associated with brownfield sites historically used for industrial purposes.	34	3
Phenols	Typically associated with industrial site uses.	34	-
Cyanide	Typically associated with historical industrial sites and brownfield land.	34	-
Polycyclic Aromatic Hydrocarbons (PAHs)	Typically associated with fuels and oils, combustion products and heavy end hydrocarbons such as tars.	34	3
Total Petroleum Hydrocarbons Carbon Working Group (TPH CWG) including MTBE and BTEX	Typically associated with fuels and oils.	34	3
Volatile Organic Compounds (VOCs)	Typically associated with solvents and sometimes with fuels and oils.	34	3
Semi-Volatile Organic Compounds (SVOCs)		34	-
Polychlorinated biphenyls (PCBs)	Typically associated with older electrical equipment.	7	3
Asbestos	Typically associated with brownfield sites / Made Ground. Provides an indication of presence / absence of asbestos.	17	-

4.6.2. Data Quality Assurance

The laboratory selected by GEL to perform the analysis is accredited by UKAS to ISO 17025 and MCerts standards. Internal quality assurance checks are carried out by the laboratory data prior to the laboratory certificates being issued.

5. GROUND CONDITIONS

5.1. General

The general stratigraphy encountered beneath the site, based on the anticipated ground conditions in the Desktop Site Appraisal (Ramboll, 2018) and the exploratory holes undertaken during the Ground Investigation, is presented in this chapter.

Ground level on site varies between approximately 39m AOD at Garrard Street in the north and 45m AOD at Friars Street in the south. At surface level, a thin layer of concrete overlies up to 1.85m thickness of Made Ground recorded across the site. Beneath this, further superficial deposits of occasional Alluvium and Taplow Gravels were encountered. These in turn were found to overlie the solid geology of the Upper Chalk Formation, which had a top layer of Structureless Chalk (CIRIA Grade Dm and Dc) up to 6.8m thick, over Structured Chalk of CIRIA Grades B5 to A3 to an unproven depth.

The stratigraphic succession identified during this investigation confirms the general ground profile indicated from the historical borehole records as reviewed in the Phase I Desk Study, however the chalk material was encountered at higher levels than anticipated.

A summary of the general succession of strata is presented in Table 5-1.

Table 5-1:Summary of Ground Conditions

Stratum	Level at Top of Stratum (m OD)		Thickness (m)		Exploratory Holes where Stratum Encountered
	Range	Average	Range	Average	
Made Ground	+39.2 - +45.7	+40.7	0.4 – 1.9	0.9	ALL
Alluvium	+37.2 - +38.8	+37.9	0.3 – 0.8	0.5	BH301, WS302, WS304, WS314
Taplow Gravels	+37.6 - +45.2	+39.9	0.3 – 2.5	1.2	WS302, WS303, WS304, WS307, WS311, WS315
Upper Chalk (Structureless)	+35.4 - +44.9	+38.6	4.4 – 6.8	5.9	BH301, BH303, BH304, WS301, WS302, WS303, WS304, WS307, WS310, WS311, WS314, WS315,
Upper Chalk (Structured)	+30.9 - +31.2	31.0	>16.6 (Unproven)	(Unproven)	BH301, BH303, BH304

An exploratory hole location plan is presented in Appendix 1 and geological cross-sections in Appendix 2.

5.2. Made Ground

Made Ground was encountered within all exploratory holes with recorded thicknesses ranging between 0.35m (WS307) to 1.85m (WS314) (where full extent encountered). The Made Ground was found to be highly variable in nature and reference should be made to the fieldwork records for detailed descriptions of the materials encountered.

The Made Ground is variable but is generally described as dark bluish grey angular medium and coarse sandy crystalline gravel and light brown slightly silty sandy subangular to rounded fine and medium brick, concrete, flint, and chalk gravel. There are also clay units which have brick, chalk, and flint gravels.

With the existing structures being demolished at a later stage, hardstanding is present across the site, as such concrete was encountered at the top of the Made Ground in all of the exploratory holes varying in thickness between 0.06m to 0.6m with WS305, WS306, WS308, and WS316 all failing to penetrate the full extent of the concrete. The average confirmed thickness of the concrete was 0.31m. In BH301, BH303, BH304, WS305a, and WS316, there is a second layer of concrete below the first separated by Made Ground. This second layer of concrete may represent existing foundations, or historic structures present on site.

5.2.1. Classification

1no. particle size distribution tests was carried out on Made Ground samples, as given in Figure 5.1. The results indicate that the sample contained fairly uniform composition of particles, with a large portion attributed to gravel (80%), a smaller portion of sand (15%) and a minor portion of silt/ clay (5%).

The Natural Moisture Content of the Made Ground was measured in a single Atterberg Limits test providing a value of 6%.

The Atterberg limit test revealed a plastic limit of 17%, and a liquid limit of 30%. The plasticity index is 13%. As illustrated in Figure 5.2, the result indicates that the material comprises clay of very low plasticity. The variation in plasticity index and liquid limit suggest a low volume change potential in accordance with the NHBC Standards. The moisture contents and plastic limits are recorded to be fairly similar and so the Made Ground may be seen occasionally to be near the limit of its plasticity.

One organic matter test was undertaken on a sample from the Made Ground strata, with the result indicating an organic content of <0.4%.

The bulk density has been assumed on the basis of the material types encountered, typical published values for such materials provided in guidance BS8002:2015 and based on Ramboll's experience of similar materials. A value of 19kN/m^3 is recommended for design.

5.2.2. *In situ* Testing

7no. Standard Penetration Tests (SPTs) were carried out within the Made Ground, with the uncorrected SPT N values obtained ranging between 4 and 50. The results of the SPTs are plotted in Figure 5.3, where the uncorrected N values greater than 50 were extrapolated using the technique recommended in CIRIA Report 143. This reflects both the density and stiffness of the deposit in its *in situ* state. One test was excluded which was influenced by encountering concrete giving a very high extrapolated value. The corrected N60 values, taking account of the hammer energy ratio, range between 5 and 67 with an average of 27. The $(N_1)_{60}$ values range between 6 and 71, with an average of 28. The corrected SPT values are plotted in Figure 5.4. A conservative characteristic value of 20 is recommended.

5.2.3. Drained Shear Strength Parameters

The SPT $(N_1)_{60}$ results can be used to estimate the internal angle of shearing resistance and the stiffness of the Made Ground. Subject to empirical relationships between the corrected SPT N value and angle of shearing resistance for granular material (Peck & Stroud, 1989) as seen in Figure 5.5, the angle of shearing resistance, Ø', using a conservative characteristic SPT $(N_1)_{60}$ value of 20 for granular material is approximately 34°. However, the variability and inconsistency of the Made Ground, means that this should not be relied upon to provide significant support to foundations without benefit of prior improvement. Due to this it is recommended that the Made Ground be removed or improved if it is to be used as a founding material.

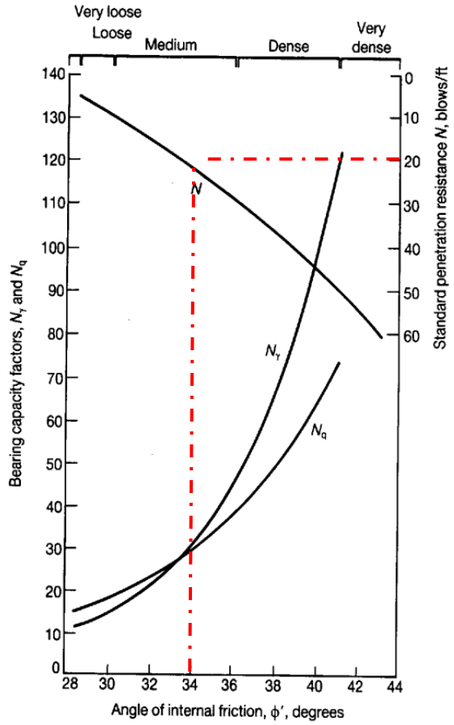


Figure 5.5 Relation between NSPT value and Angle of internal friction. Taken from CIRIA 143.

5.2.4. Stiffness

The stiffness properties of the Made Ground have been estimated according to Stroud (1989) (as reported in CIRIA 143). Stroud (1989) suggests that for normally consolidated granular deposits a reasonable approximation can be made to estimate the vertical drained stiffness E′ from *in situ* SPT N tests using the relationship E′/N=1MN/m^2. Therefore, for a corrected SPT N=20, it is recommended that;

$$E' \text{ (MPa)} = 20\text{MN/m}^2$$

The full results are plotted in Figure 5.6.

5.2.5. Summary of parameters for Made Ground

The range of measured and characteristic soil parameters for the Made Ground are summarised in Table 5.2.

Table 5-2: Summary of Geotechnical Parameters for Made Ground

Soil Parameters	Unit	Range	Characteristic Value	Justification
Level at Top of Stratum	m AOD	+39.15 to +45.72	+40.50	GI
Thickness	m	0.35 to 1.85	0.9	GI
Bulk Density	kN/m^3	-	19	Assumed
SPT $(N_1)_{60}$ value	-	6 – 71	20	Corrected *in situ* tests
Angle of Shearing Resistance	degrees	-	25	Based on Ramboll's experience and considering inherent variability of this stratum
Drained Stiffness	MN/m^2	6 – 50+	20	Correlation with CIRIA C143 and considering inherent variability of this stratum

5.3. Alluvium and Taplow Gravels

The Alluvium and Taplow Gravels are discontinuous across the site with the Alluvium only being encountered in 4no. exploratory holes in the north of the site with an average thickness of 0.5m. The Taplow Gravels are encountered in 6no. window samples, each borehole also has a layer of silty gravelly chalk which due to the destructive nature of using shell and auger drilling techniques at this depth, could have included a layer of gravel which has been subsumed by the chalk. Test results from this stratum match closer to the structureless chalk results and so have been included in the analysis covered in Section 5.4.

The average thickness of the gravels varied between 0.5 and 1m with an average thickness of 0.7m.

The Alluvium is generally described as stiff light brown slightly sandy gravelly silty CLAY, with the gravel being subangular to rounded fine to coarse flint and chalk.

The Taplow Gravel is described as orangish brown clayey sandy subangular and subrounded fine to coarse flint and rare chalk GRAVEL.

5.3.1. Classification

3no. particle size distribution tests were carried out on the Taplow Gravel as given in Figure 5.7. The results indicated a significant variation between the samples. The gravel fraction varied between 65% and 19%, the sand fraction varied between 13% and 30%, the fraction of silt size and finer varied between 5.7% and 66.7%.

The Natural Moisture Content of the Alluvium and Taplow Gravels was measured in 3 no. Atterberg limit tests, the single Alluvium result was 9.8%. The two Taplow Gravel results were 7.2% and 5.3%.

The Atterberg limit tests on the Alluvium recorded a plastic limit of 17%, and a liquid limit of 24%. Resulting in a plasticity index of 7%. As illustrated in Figure 5.8, the results indicate that the sample comprises clay of very low plasticity. As can be seen, the moisture content and plastic limit are recorded to be very similar and so the Alluvium may be seen occasionally to be at the or near the limit of its plasticity.

The Atterberg limit tests on the more cohesive layers of the Taplow Gravel recorded a plastic limit 16%, and a liquid limit ranging between 20% and 33%. Resulting in a plasticity index of 17%. As illustrated in Figure 5.8, the results indicate that the sample comprises material

of low plasticity. As can be seen, the moisture content and plastic limit are recorded to be fairly similar and so the Taplow Gravel may be seen occasionally to be near the limit of its plasticity.

Organic matter tests were undertaken on 1no. sample from the Alluvium Strata, and 1 no. sample from the Taplow Gravels. The result from the Alluvium sample indicating 0.59% organic matter and the result from the Taplow Gravel indicating <0.4%.

No density tests were undertaken on this stratum, typical published values for such materials provided in guidance BS8002:1994 and based on Ramboll's experience of similar materials. A value of 20kN/m^3 is recommended for design.

5.3.2. *In situ* Testing

3no. SPTs were carried out within the Alluvium, with the uncorrected SPT N values obtained ranging between 15 and 57. The results of the SPTs are plotted in Figure 5.9, where the uncorrected N values greater than 50 were extrapolated using the technique in CIRIA Report 143. This reflects both the density and stiffness of the deposit in its *in situ* state. The corrected N60 values taking account of the hammer energy ratio range between 20 and 76 and are plotted in Figure 5.10. A design N60 value of 20 is recommended.

3no SPTs were carried out in the Taplow Gravels with uncorrected N values ranging between 20 and 117. The corrected $(N_1)_{60\ values}$ range between 26 and 122. Taking account of the limited number of tests carried out and the variability of the results a conservative design value of 26 is recommended.

5.3.3. Undrained Shear Strength Parameters

Alluvium

The undrained shear strength of this material can be estimated from the *in situ* SPT testing carried out. The shear strength can be calculated from uncorrected SPT N results using the relationship suggested by Stroud (1989) (as reported in CIRIA 143, 1995) as follows;

$Cu = f_1 \times N$ (kN/m^2) (CIRIA 143, 1995)

Where f_1 is a correlation factor that depends on the plasticity of the material, and N is the number of total blows from the *in situ* SPT test. For an average Plasticity Index of 7%, the correlation factor f_1 can be taken to be 5.0 (CIRIA 143, 1995). However, in Ramboll's experience the plasticity index of Alluvium is significantly higher as such an f_1 factor of 4 has been used the results are plotted in Figure 5.11.

For design purposes the following undrained shear strength profile can therefore be estimated as:

Cu = 4 x 20

Cu = 80 kN/m^2 (over depth of Alluvium)

Taplow Gravels

The SPT $(N_1)_{60}$ results can be used to estimate the internal angle of shearing resistance and the stiffness of the Taplow Gravels. Subject to empirical relationships between the corrected SPT N value and angle of shearing resistance for granular material (Peck & Stroud, 1989) as seen in Figure 5.5, the angle of shearing resistance, Ø', using a conservative characteristic SPT $(N_1)_{60}$ value of 26 for granular material is approximately 35°. However, the limited number of tests and large variability of the results, means that this should not be relied upon to provide significant support to foundations without benefit of prior improvement, if it is to be considered as a material to be founded upon/ potential backfill material.

5.3.4. Stiffness

Alluvium

The stiffness response of Alluvium varies according to the direction of stress changes (vertical or horizontal); the period of response (short term - undrained or long term - drained) and the strain level.

Based on literature, case studies and experience of the response of foundations on Alluvium, the following relationships between Young's modulus and undrained shear strength are recommended for foundation design. These factors can be applied to the undrained shear strength design profile detailed in Section 5.3.3 the results are plotted in Figure 5.12 and Figure 5.13.

Table 5-3:Stiffness Parameters for Alluvium

Stiffness	
$E_u = 400C_u$	E_u = 32 MPa
$E' = 0.75E_u$	E' = 24.0 MPa

Taplow Gravels

Using the relationship described in Section 0 and an $(N_1)_{60\ value}$ of 26 an E' value of 26 MPa is recommended for foundation design.

5.3.5. Summary of parameters for Alluvium and Taplow Gravel.

The range of measured and characteristic soil parameters for the soil stratum are summarised in Table 5.4.

Table 5-4:Summary of Geotechnical Parameters for Alluvium

Soil Parameters	Unit	Range	Characteristic Value	Justification
Level at Top of Stratum	m OD	+37.15 to +38.79	+37.9	GI
Thickness	m	0.3 to 0.8	0.5	GI
Bulk Density	kN/m^3	-	20	Assumed
SPT N60 Value	-	20 – 76	20	*In situ* tests
Undrained Shear Strength	kN/m^2	-	100	*In situ* test results and correlation with CIRIA C143
Stiffness (Foundations)	MN/m^2	-	E_u = 32	Correlations recommended in Foundation Design and construction, *Tomlinson* 2001
		-	E' = 24	

Table 5-5:Summary of Geotechnical Parameters for Taplow Gravels

Soil Parameters	Unit	Range	Characteristic Value	Justification
Level at Top of Stratum	m OD	+37.55 to +45.22	+40.3	GI
Thickness	m	0.3 to 2.5	0.6	GI
Bulk Density	kN/m^3	-	20	Assumed

Soil Parameters	Unit	Range	Characteristic Value	Justification
SPT $(N_1)_{60}$ Value	-	26 – 122	26	*In situ* tests
Angle of shearing Resistance	°	-	35	*In situ* test results and correlation with CIRIA C143
Drained Stiffness	MN/m^2	-	26	Assumed as a linear relationship

5.4. Structureless Chalk

The Structureless Chalk was encountered across the site in all completed exploratory holes at levels ranging between +35.4m AOD to +44.9m AOD. It should be noted that the maximum value was taken from WS315 in the south of the site which has a higher ground level than the rest of the site. The average top of stratum level of the structureless chalk excluding WS315 is 34.9m AOD. The thickness of the unit varied between 4.4m (BH301) and 6.8m (BH304). Note the full extent of the structureless chalk was only observed in the boreholes. A contour map of the apparent top of stratum level for the chalk is shown in Figure 5.14. Not the rise in the level of the chalk in the south will be due to the presence of the retaining wall highlighted in red, rather than the gradual change portrayed by the map.

The structureless chalk has a CIRIA grade of Dm or Dc. With a typical description consisting of; structureless chalk composed of white slightly gravelly Silt. Gravel is subangular and subrounded fine to coarse very weak medium density white with frequent black specks chalk, rarely angular fine to coarse flint.

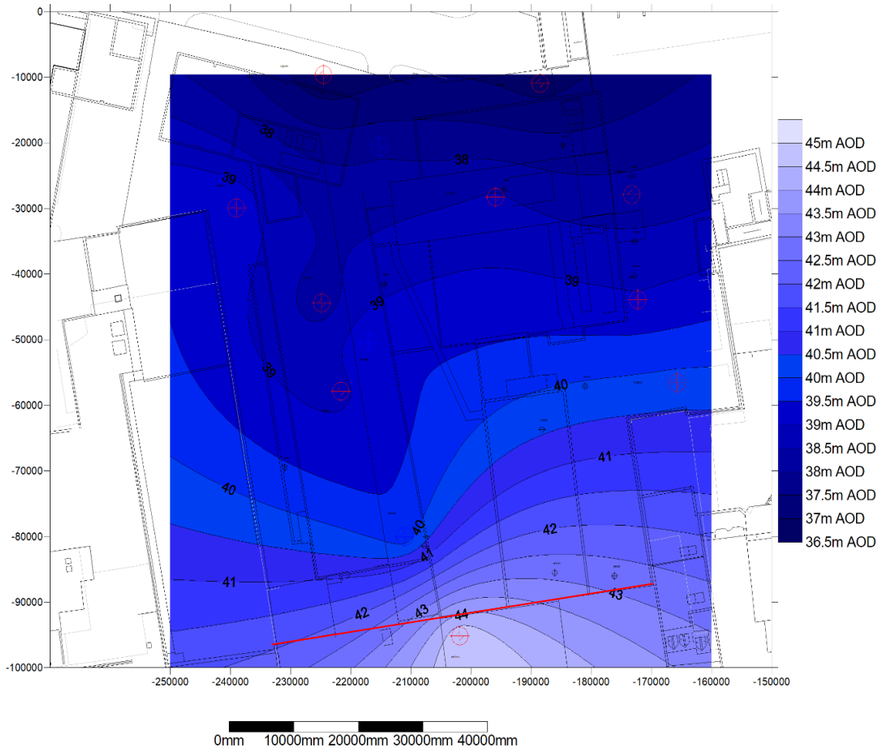


Figure 5.14 Contour Map showing the level of the Structureless Chalk across the site

5.4.1. Classification

15no. particle size distribution tests were carried out on samples from the Structureless Chalk Samples as given in Figure 5.15. The results indicate a large degree of variability in the stratum. With the gravel fraction varying between 61% and 6%, the sand fraction varying between 11% and 37%The remaining particles consisting of silt/clay/fine particles varies between 80% and 27%.

The Natural Moisture Content of the Structureless Chalk was measured 32 times in a combination of Atterberg Limits tests (20), Saturation Moisture Content tests (7), and Density Linear measurement tests (5). The results of which range between 18.3% and 30.1% with an average value of 23.9%. The results are shown in Figure 5.16.

The results of Atterberg limit tests revealed a plastic limit ranging between 21% to 26%, and the liquid limit from 27% to 34%. The plasticity index ranged from 5% to 9%. As illustrated in Figure 5.17, the results indicate that the sample comprises, material of very low plasticity. As can be seen, the moisture contents and plastic limits are recorded to be very similar and so the Structureless Chalk may be seen occasionally to be at the, or near the, limit of its plasticity.

The bulk density was measured using the linear measurement method on 5 no. samples of Structureless Chalk. It was also measured as part of measuring the saturation moisture content of 7 No. samples. The results of these tests range between 18.6kN/m^3 and 20.2kN/m^3 with an average of 19.5 kN/m^3, this can be seen in Figure.5.18. 12 No. dry density tests were undertaken on the structureless chalk resulting in a maximum value of 1.69Mg/m^3 and minimum value of 1.49 Mg/m^3 with an average of 1.57 Mg/m^3.

Organic matter tests were undertaken on 3 No. samples from the Structureless Chalk, with each result indicating an organic content of <0.4%.

5.4.2. *In situ* Testing

50no. SPTs were carried out within the Structureless Chalk, with the uncorrected SPT N values obtained ranging between 4 and 60. The results of the SPTs are plotted in Figure 5.19. The corrected N60 values taking account of the hammer energy ratio range between 5.3 and 80 with an average of 25.5. Due to no observable trend observed in Figure 5.20 a design N60 value of 20 is recommended.

5.4.3. Unconfined Compressive Strength

Stroud (1989) (as reported in CIRIA 143) suggests that for chalk the unconfined compressive strength can be estimated using the following relationship:

$$\sigma_c = 50\ N_{60}.$$

Using an N60 value of 20 this would equate to an σ_c value of 1.0 Mpa.

Matthews and Clayton (1993) (as reported in CIRIA 143) suggests the relationship proposed in Figure 5.21 relating dry density and porosity to the unconfined compressive strength.

Using an average dry density value of 1.57 Mg/m^3 a UCS of approximately 3 MPa can be observed.

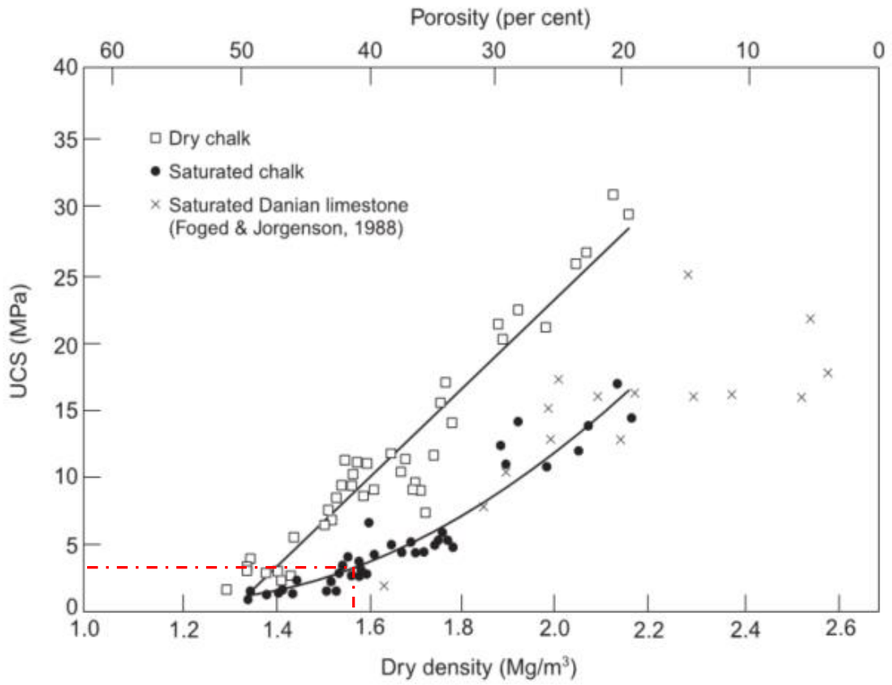


Figure 5.21: Relationship between unconfined compressive strength and intact dry density

20 No. point load tests were undertaken on samples from the Structureless Chalk strata applying a correlation factor of 24 as described in Bieniawski (1975) to the point load index value. A UCS value can be obtained. This results in a range between 0.24 MPa and 5.28 MPa with an average value of 2.96 MPa.

Considering the methods described plotted in Figure 5.22 a design UCS value of 2.0 MPa is considered suitable for the chalk fragments which make up the structureless chalk. For the structureless chalk rock mass CIRIA 574 recommends using the following strength parameters:

C′ = 0

Φ′ = 32°

BS800:2015 provides a correlation with the plasticity Index to find the Φ′ the results of this are plotted in Figure 5.23 considering this a design value of 32° is recommended.

5.4.4. Stiffness

Stroud (1989) (as reported in CIRIA 143) suggests that for chalk deposits a conservative approximation can be made to estimate the drained stiffness E′ for settlement calculations from *in situ* SPT N tests using the relationship E′/N_{60} =5MPa. The results are plotted in Figure 5.24, for a corrected SPT N=25 it is recommended that;

E′ = 100MN/m^2

5.4.5. Summary of Parameters for Structureless Chalk

The range of measured and characteristic soil parameters for the soil stratum are summarised in Table 5.6.

Table 5-6: Summary of Geotechnical Parameters for Structureless Chalk

Soil Parameters	Unit	Range	Characteristic Value	Justification
Level at Top of Stratum	m OD	+35.4 to +44.92	n/a	GI
Thickness	m	4.4 to 6.8	n/a	GI
Bulk Density	kN/m^3	18.6 – 20.2	19.5	Lab test results
SPT N_{60} value	-	5.3 – 80	20	Corrected in situ tests
C′	kN/m^2	-	0	CIRIA 574
Effective angle of friction	°	-	32	CIRIA 574
E'	MN/m^2	26.7 – 400	100	Correlation with CIRIA C143

5.5. Structured Chalk

The structured chalk was only encountered in the boreholes. With a top of stratum level ranging between 30.9m AOD and 31.2m AOD. The thickness was unproven. The CIRIA grade of the chalk included B5, B4, B3, A5, A4, A3. Two fracture sets are present with one predominantly sub horizontal to 30°, and the second set between predominantly 45° and 70°. Thin layers (5mm) of cobbled sized black nodular flint were encountered.

The typical description consists of very weak medium density white CHALK with frequent black specks and yellowish orange staining.

5.5.1. Classification

1no. particle size distribution test was carried out on a sample from the Structured Chalk strata as given in Figure 5.25. The results indicate this sample to be predominantly gravel (84%) with a 7% sand fraction and 9% silt sized fraction.

The moisture content of the Structured Chalk was measured 17 times in Atterberg limit tests (1), Saturation Moisture Content tests (11), Rock Water Content tests (3), and UCS (2) tests. The results of which ranged from 22.2% to 28% with an average value of 25%, the results are plotted in Figure 5.26. Due to the low plasticity of the sample the Atterberg limit test only measured the natural moisture content of the sample.

The bulk density was measured as part of the Uniaxial Compressive Strength test on 2 no. samples of Structured Chalk. It was also measured as part of measuring the saturation moisture content of 11 No. samples. The results of these tests range between 19.1kN/m^3 and 20.3kN/m^3 with an average of 19.7 kN/m^3, this can be seen in Figure 5.27. 11 No. dry density tests were undertaken on the structured chalk resulting in a maximum value of 1.66Mg/m^3 and minimum value of 1.54 Mg/m^3 with an average of 1.57 Mg/m^3.

No Organic Matter tests were undertaken on the Structured Chalk strata.

5.5.2. In situ Testing

25 No. SPT's were carried out in the Structured Chalk with the uncorrected SPT N values obtained ranging between 13 and 250. The results of the SPTs are plotted in Figure 5.28. The

corrected N60 values taking account of the hammer energy ratio range between 16 and 308 and are plotted in Figure 5.29. The following N60 design line is recommended, with a cap of 120:

N = 40+9z (where z is depth below +30m AOD)

5.5.3. Strength Parameters

Using the NSPT relationship from Stroud (1989) the unconfined compressive strength for the Structured Chalk can be estimated to be:

UCS (MPa) = 2 +0.45z (where z is depth below +30m AOD)

Using the relationship proposed by Matthews and Clayton (1993) using an average dry density of 1.57 kN/m^3 a UCS of approximately 3 MPa can be assessed.

130 No. point load tests were undertaken on samples from the Structured Chalk strata applying a correlation factor of 24 as described in Bieniawski (1975) to the point load index value. A UCS value can be obtained. This results range between 0.48 MPa and 6.48 MPa with an average value of 2.6 MPa. There is no observable trend with depth for the point load tests.

2no Uniaxial Compressive Strength Tests were completed on samples from the Structured Chalk. These gave UCS values of 2.85MPa and 2.08 MPa.

The UCS test results and derived UCS values using different methodologies are plotted in Figure 5.30. Considering the methods described a design UCS value of 2.5 MPa is considered suitable.

5.5.4. Stiffness

Stroud (1989) suggests that for chalk deposits a conservative approximation can be made to estimate the drained stiffness (E') for settlement calculations from in situ SPT N tests using the relationship.

E'/N60 =5MPa.

Therefore, using the design line suggested in Section 5.5.2 it is recommended that;

E' (MPa) = 245+45z (where z is depth below +30m AOD). The is plotted in Figure 5.31.

A relationship relating porosity and dry density to the intact Youngs Modulus is detailed in Matthews and Clayton (1993), as seen in Figure 5.32. Using an average dry density of 1.57 Mg/m^3. An intact Youngs Modulus of approximately 5 GPa can be observed.

CIRIA 574 recommends the following parameters for structured chalk.:

C' =20kN/m^2

Φ' = 34

5.5.5. Summary of Parameters for Structured Chalk

The range of measured and characteristic soil parameters for the soil stratum are summarised in **Error! Reference source not found.**7.

Table 5-7:Summary of Geotechnical Parameters for Structured Chalk

Soil Parameters	Unit	Range	Characteristic Value	Justification
Level at Top of Stratum	m OD	+30.9 to +31.2	+31.0	GI
Thickness	m	>14.4	Unproven	GI

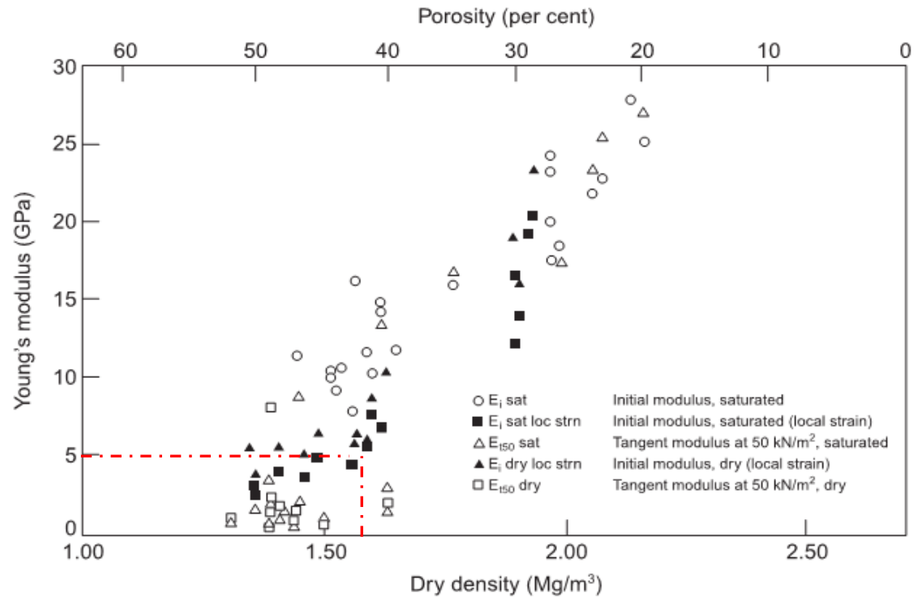


Figure 5.32 Relationship between dry density and porosity to Intact Youngs Modulus (Matthews and Clayton 1993). CIRIA 574.

Soil Parameters	Unit	Range	Characteristic Value	Justification
Bulk Density	kN/m^3	19.1 – 20.3	19.7	Lab test results
SPT N60 value	-	16 – 308	40+9z	*In situ* tests
Undrained compressive strength	MN/m^2	-	2.5	Lab test results and correlation with CIRIA C143
C'	kN/m^2	-	20	CIRIA 474
Effective angle of friction	°	-	34	CIRIA 474
Drained Stiffness	MN/m^2	-	245+45z	Assumed as a linear relationship
Intact Stiffness	GPa		5GPa	Correlation with CIRIA C574

5.6. Groundwater

The Environment Agency classification has the Made Ground as an Unproductive Strata, the Alluvium and Taplow Gravel as a Secondary A aquifer, and the Upper chalk formation as a Principal Aquifer.

Water strikes occurred in 7no. exploratory holes summarised in Table 5-8 below.

Table 5-8 Water Strikes during the Site Investigation

Exploratory Hole	Strike Level (mAOD)	Rise (mAOD)	Time to Rise (Minutes)	Stratum
BH301	35.95	36.4	20	Structureless Chalk
WS301	34.95	36.05	20	Structureless Chalk
WS302	35.79	35.79	20	Structureless Chalk
WS303	35.98	35.98	20	Structureless Chalk
WS304	33.95	35.75	20	Structureless Chalk
WS311	35.57	35.97	20	Structureless Chalk
WS314	34.57	34.57	20	Structureless Chalk

A summary of the ground water monitoring installations is provided in **Error! Reference source not found.**. Six rounds of monitoring visits were planned taking place on 10/12/18, 17/12/18, 10/01/19, 21/01/19, 31/01/19, 04/02/19, unfortunately due to access issues on the 10/12/18 only BH301 was measured. The results of the groundwater monitoring are presented in **Error! Reference source not found.** and Figure 5.34. All of the window sample installations were dry at the time of monitoring and as such haven't been included. The highest water level measured was +36.7m AOD and the lowest water level measured was +36.05m AOD.

Table 5-9: Groundwater Monitoring Installations

Borehole	Installation Type	Response Zone (m OD)		Stratum at Response Zone
		Top	Bottom	
BH301	19mm Vibrating Wire Piezometer	34.9	33.9	Structureless Chalk
BH301	50mm Gas/Groundwater Monitoring Standpipe	38.9	37.9	Structureless Chalk
BH303	19mm Vibrating Wire Piezometer	34	33	Structureless Chalk
BH304	19mm Vibrating Wire Piezometer	39	33.5	Structureless Chalk
BH304	50mm Gas/Groundwater Monitoring Standpipe	40.5	39.7	Structureless Chalk
WS301	50mm Gas/Groundwater Monitoring Standpipe	39.95	39.05	Made ground
WS304	50mm Gas/Groundwater Monitoring Standpipe	38.14	37.14	Alluvium
WS310	50mm Gas/Groundwater Monitoring Standpipe	40.78	40.28	Made ground
WS311	50mm Gas/Groundwater Monitoring Standpipe	40.17	39.17	Made Ground
WS314	50mm Gas/Groundwater Monitoring Standpipe	38.2	37.35	Alluvium
WS315	50mm Gas/Groundwater Monitoring Standpipe	45.32	45.22	Made Ground

Combining the water strike and installations data an average water level of +36.15m AOD can be observed. A design water level of +36.5m AOD is recommended.

It is important to note that with respect to water strikes and groundwater level observations made during drilling, that levels given in the borehole records may not reflect true equilibrium conditions for a number of reasons. For example, water has been added to assist drilling, and where strikes were encountered, the water may not have reached an equilibrium level within the duration of the test observations, typically 20mins. Additionally, groundwater levels and pressures can increase from those recorded during the monitoring period subject to seasonal change.

Table 5-8: Ground Water Monitoring Results

Ground Water Monitoring Results	Ground Water Level (mAOD)					
	10/12/2018	*17/12/2018*	*10/01/2019*	*21/01/2019*	*31/01/2019*	*04/02/2019*
BH301 *(Gravelly Chalk)*	36.4	36.55	36.46	36.5	36.7	36.6
BH303 *(Structureless Chalk)*	No Measurement taken	36.24	36.19	36.2	36.25	36.3
BH304 *(Structureless Chalk)*	No Measurement taken	36.17	36.05	36.12	36.15	36.2

5.7. Ground Aggressivity

Sulphates and acids which occur naturally in the ground can be destructive to concrete through expansion and softening of the concrete (BRE, 2005). Therefore, as part of the chemical testing programme, soil samples were tested for water soluble sulphate (WSS) and pH to assess the potential chemical attack on the concrete structures. Water soluble sulphate (WSS) and pH tests were carried out on 1 No. sample within the Made Ground, 1 No. sample within the Alluvium, 1 No. sample within the Taplow Gravels, and 8 No. within the Structureless Chalk. 3 No. groundwater samples were also taken. The data was assessed, with reference to the BRE Special Digest 1 – Concrete Aggressive Ground (BRE, 2005) to determine the appropriate concrete classification.

The assessment for the proposed works has considered 'brownfield location' and 'mobile groundwater' (conservative) conditions. A summary of the test results for the assessment of the Design Sulphate class and Aggressive Chemical Environment for Concrete (ACEC) classification is presented in Table 5.11.

Table 5-9:Results from testing for Aggressive Ground Conditions

	Made Ground	Alluvium	Taplow Gravels	Chalk[1]	Groundwater
Water-soluble Sulphate (SO_4 mg/kg)	190	<10	51	0.2	63
pH in 2.5:1 water/soil extract	8.3	8.7	8.3	8.8	7.4
Design Sulphate Class	DS-1[4]	DS-1	DS-1	DS-1	DS-1
ACEC Class	AC-1[4]	AC-1	AC-1	AC-1	AC-1

[1]The highest measured sulphate concentration of the soil samples is taken as the characteristic value; and the lowest measured value of pH as the characteristic value for pH

Therefore, in accordance with the BRE guidance, the Design Sulphate Class for the site can be classified as DS-1; the Aggressive Chemical Environment for Concrete (ACEC) can be inferred to be AC-1 to depth across the site.

6. SUMMARY OF GEOTECHNICAL PARAMETERS

This report has reviewed the Ground Investigation Factual Report for Station Hill South Site and presents the Geotechnical Design Parameters recommended for the design of the Station Hill sub-structure. The stratigraphy has been found to vary slightly from that reported for the historic North Site ground investigation. With both the structureless and structured chalk being encountered at higher elevations. For each stratum, the geotechnical parameters recommended for foundation design are summarised in Table 6.1.

There is still significant uncertainty remaining in the east of the site, due to being unable to complete BH302. Upon completion of the North Site ground investigation later this year this uncertainty will be greatly reduced. It is therefore recommended that the findings of this report are re-evaluated with the additional site investigation data.

Table 6-1:Summary of Geotechnical Parameters

Parameter	Unit	Range	Characteristic Value
Made Ground			
Level at Top of Stratum	m AOD	+39.15 to +45.72	+40.50
Thickness	m	0.35 to 1.85	0.9
Bulk Density	kN/m^3	-	19
SPT $(N_1)_{60}$ value	-	6 – 71	20
Angle of Shearing Resistance	degrees	-	25
Drained Stiffness	MN/m^2	6 – 50+	20
Alluvium			
Level at Top of Stratum	m OD	+37.15 to +38.79	+37.9
Thickness	m	0.3 to 0.8	0.5
Bulk Density	kN/m^3	-	20
SPT N60 Value	-	20 – 76	20
Undrained Shear Strength	kN/m^2	-	100
Stiffness (Foundations)	MN/m^2	-	E_u = 32
		-	E’ = 24
Taplow Gravels			
Level at Top of Stratum	m OD	+37.55 to +45.22	+40.3
Thickness	m	0.3 to 2.5	0.6
Bulk Density	kN/m^3	-	20
SPT $(N_1)_{60}$ Value	-	26 – 122	26
Angle of shearing Resistance	°	-	35
Drained Stiffness	MN/m^2	-	26
Structureless Chalk			
Level at Top of Stratum	m OD	+35.4 to +44.92	n/a
Thickness	m	4.4 to 6.8	n/a
Bulk Density	kN/m^3	18.6 – 20.2	19.5
Parameter	**Unit**	**Range**	**Characteristic Value**
SPT N_{60} value	-	5.3 – 80	25
C’	kN/m^2	-	0
Effective angle of friction	°	-	32
Drained Stiffness	MN/m^2	26.7 – 400	125.5
Intact Stiffness	GPa		5
Structured Chalk			
Level at Top of Stratum	m OD	+30.9 to +31.2	+31.0
Thickness	m	>14.4	Unproven
Bulk Density	kN/m^3	19.1 – 20.3	19.7
SPT N60 value	-	16 – 308	40+9z
Undrained Shear Strength	MN/m^2	-	2.5
C’	kN/m^2	-	20
Effective angle of friction	°	-	34
Drained Stiffness	MN/m^2	-	245+45z
Intact Stiffness	GPa		5GPa

7. GENERIC QUANTITATIVE RISK ASSESMENT

7.1. Assessment Approach

The main environmental legislation relating to contaminated land in the UK is Part 2A of the Environmental Protection Act 1990. The philosophy behind Part 2A is the source-pathway-receptor linkage; for land to be contaminated all three aspects of this linkage must be present (i.e. a contaminant must be present and able to move along a pathway and impact a receptor).

Ramboll has derived generic assessment criteria (GAC) for the interpretation of soil and groundwater chemical analyses. The GAC are threshold-based screening criteria, below which a significant risk is not considered to be present.

It should be noted that contaminants at concentrations that exceed the Ramboll GAC do not infer that an unacceptable risk is present; rather that further assessment is required to more fully understand potential contamination risks. The outcome of the screening is assessed further in the context of a qualitative source-pathway-receptor risk assessment presented in Section 10.

7.2. Environmental Analytical Results

7.2.1. Asbestos

Seventeen samples taken from the Made Ground were submitted for asbestos screening. One sample (BH303 at 0.2m) detected chrysotile loose fibres in the sample. There were no observations of possible asbestos containing material (ACM) observed in soil during the site investigation. An asbestos quantification test was then scheduled on the sample BH303 at 0.2m and the result was <0.001%. Significant asbestos was therefore not detected during the ground investigation.

7.2.2. Soils

Thirty-four samples have been screened against the Ramboll GACs for a residential without plant uptake end use. The proposed development for the site comprises two residential apartment buildings with no gardens. The proposed development comprises predominantly hardstanding across the site and the majority of the ground floor level is proposed to be a combination of retail, amenity space, bicycle parking, with limited residential apartments on the ground floor.

The exceedances were limited to hydrocarbons in the form of benzo(a)pyrene (BaP), a polyaromatic hydrocarbon (PAH), and heavy end aromatic total petroleum hydrocarbons (TPH).

BaP (and contaminants that use the BaP GAC as a surrogate) were detected in WS301 at 0.2m bgl at a maximum concentration of 32 mg/kg. This exceeds the residential without plant uptake C4SL of 5.3mg/kg, however does not exceed the C4SL for commercial use, that is 76mg/kg.

Heavy end Aromatic TPH C16-21 and C21-C35 exceed the GAC for residential without plant uptake in WS301 at 0.2 m bgl and BH301 at 0.2m bgl. The maximum concentration of 2,600mg/kg was detected in WS301 at 0.2m bgl. This exceeds the GAC for residential use without plant uptake used, 1,900mg/kg. No TPH results exceed the GAC for commercial use at 29,000mg/kg.

Possible contamination was noted in one location during the ground investigation in WS304 at 2.9 m bgl at the top of the structureless chalk.

The contamination encountered during the ground investigation is limited to the north west of the south site in locations BH301, WS301 and WS304 (and asbestos in BH303).

The analytical certificates for soils are presented in the GEL Final Factual Report, February 2019.

7.2.3. Groundwater

One round of groundwater sampling was undertaken on 31st January 2019 from the three borehole locations. The groundwaters were scheduled for chemical analysis to compliment the soils suite. No results exceeded the relevant GACs.

7.3. Discussion of Results

7.3.1. Soil (Human Health)

Based on the results obtained in this investigation, the risks to future site users from contaminants in soil are considered to be low to moderate, due to the likelihood of shallow Made Ground being excavated as part of the earthworks, and the proposed development comprising limited soft landscaping or residential use at ground level, however further ground investigation is recommended post-demolition of the existing buildings to further assess the ground conditions and levels of asbestos and hydrocarbons present at the site.

7.3.2. Groundwater (Human Health and Controlled Waters)

Three groundwater samples were obtained on 31st January 2019 and scheduled for chemical analysis. None of the groundwater samples contained concentrations of any determinands that exceeded any of the respective GAC for the proposed use. A risk from groundwater to future site users or controlled waters is not considered.

7.3.3. Construction Workers

This report and the generic assessment criteria (GAC) consider long term and chronic risk to humans based on defined exposure scenarios set out in the Contaminated Land Exposure Assessment (CLEA) model. In some cases, contaminants may also pose acute hazards to workers at a site, or a worker's exposure scenario may differ from the scenarios considered when deriving the GAC.

As exposure times for construction workers are generally short term, risks from site contamination are generally addressed through the use of appropriate working procedures and the use of personal protective equipment (PPE) in line with the Management of Health and Safety at Work Regulations (1999), Construction (Design and Management) Regulations (2015) for some sites and the Control of Substances Hazardous to Health Regulations (2002). This potential source-pathway-receptor linkage is considered further in Section 10.

8. CONTROLLED WATERS RISK ASSESMENT

8.1. Assessment Approach

The water assessment has considered the most stringent value from the following:

- Environmental Quality Standards (EQS) values according to the Water Framework Directive with regard to surface water; and
- Water Framework Directive Threshold Values (TVs) for groundwater within a drinking water protected area with regard to groundwater as a drinking water resource.

For those determinands included in the analytical suite which do not have a corresponding UK screening criterion derived from the above sources, reference is made to a hierarchy of international guidance in accordance with EA guidance.

8.2. Analytical Results

The analytical results from the groundwater samples taken have been compared against Controlled Waters GACs. All determinands analysed were either below laboratory method reporting limits or below the relevant GAC.

Groundwater analytical certificates are presented in the GEL Factual Report.

The outcome of the screening is assessed further in the context of a qualitative source-pathway-receptor risk assessment presented in Section 10.

8.3. Discussion

The laboratory analysis has detected no exceedances for the proposed use, with the majority of analytes being below detect. The risks from groundwaters is therefore considered to be low.

9. BUILT ENVIRONMENT RISK ASSESSMENT

9.1. Ground Gas Risk Assessment

Six ground gas monitoring visits were undertaken over a three-month period (10 December, 17 December 2018, 10 January, 21 January, 31 January and 4 February 2019), in accordance with CIRIA C665. The ground gas monitoring results are presented in full in the GEL Factual Report and are summarised below:

- Atmospheric pressure recorded onsite during the monitoring visits ranged from 984 millibar (mb) and 1032 mb.
- No steady flow rates were recorded in excess of -0.6 litres per hour (l/h) during the monitoring rounds. The maximum initial gas flow recorded was 5.0 l/hr in WS310. No methane or carbon dioxide was detected in this location on any of the monitoring rounds.
- The maximum recorded concentration of carbon dioxide on the site during the monitoring rounds was 0.5 % v/v in WS301.
- No methane was recorded in any location during any of the monitoring rounds.
- The maximum concentration of carbon monoxide detected was 10 ppm in WS304, WS311, WS314 and WS315.

Readings from the monitoring have been used to generate a worst-case gas screening value (GSV) for the site based on CIRIA C665 guidance. The GSV is the maximum volume of methane or carbon dioxide gas that could be produced each hour. The GSV for the site has been calculated as 0.025 l/hr.

On the basis of the conceptual site model and the ground gas monitoring results, the site has been classified in line with CIRIA C665 as Characteristic Situation 1 (CS1 Very Low Risk). Characteristic Situation 1 indicates that no ground gas protection measures are likely to be required. No further ground gas monitoring or assessment is considered necessary.

The Building Regulations, Approved Document C (2004) states that where methane concentrations do not exceed 1% and that the floor of the building to be constructed is suspended and ventilated, no further protection needs to be provided. Above 1% by volume there is a need to consider possible measures to prevent gas ingress into new buildings.

9.2. Vapours Risk Assessment

The maximum volatile organic compounds (VOCs) recorded during monitoring was at a maximum concentration of 1.1 ppm (parts per million by volume) in WS304. Possible contamination and a hydrocarbon odour were noted in the log in this location. Further investigation should be undertaken in this area during the investigation post-demolition.

There were no SVOC or VOCs exceedances in soil. The exceedances in soil were limited to BaP and heavy end aromatic TPHs, neither of these are considered to be volatile. There were no exceedances detected in the groundwater samples analysed.

9.3. Water Supply Pipes

Buried water supply pipes can be at risk from permeation and accelerated deterioration from certain contaminants. A detailed assessment of existing and future pipe materials is outside of the scope of this investigation; however, architects and designers should liaise with the local water supply company and are directed to the following document for guidance:

- Guidance for the Selection of Water Supply Pipes to be used in Brownfield Sites; UK Water Industry Research (UK WIR), 2010 (Ref. 10/WM/03/21).

10. REVISED CONCEPTUAL SITE MODEL

10.1. Revised Conceptual Site Model

Using information obtained during this site investigation, the preliminary conceptual site model presented in Section 6 has been refined and is described in Table 10.1 below:

Table 10-1: Revised Conceptual Site Model

- Sources of Contamination
- The data obtained during this site investigation has identified that:

Soil:

- Hydrocarbons (heavy end aromatic TPHs and BaP) were detected in shallow Made Ground soils within the top 0.5m bgl.
- Visual and olfactory contamination was noted in one location during the ground investigation in WS304 at 2.9 m bgl at the top of the structureless chalk, as abundant dark grey with frequent pockets of greenish brown staining (possible contamination) with a strong hydrocarbon odour.
- Asbestos was detected in one out of seventeen Made Ground samples screened. This was chrysotile with a quantification test result of <0.001%.

Groundwater:

- Three groundwater samples from the three boreholes were taken and analysed.
- No determinands were detected exceeding the laboratory reporting limits or relevant GACs.

Ground Gas:

- The maximum recorded concentration of carbon dioxide was 0.5 % v/v.
- No methane was detected in any locations during the monitoring.
- No steady flow rates were recorded in excess of -0.6 litres per hour (l/h) during the monitoring rounds. The maximum initial gas flow recorded was 5.0 l/hr in WS310.
- A preliminary SGSV for the site has been calculated as 0.025l/h, which lies within CIRIA C665 Characteristic Situation 1 (CS1 Very Low Risk).

Geology

The investigation locations confirmed the anticipated geological sequence at the site. Ground cover comprises concrete overlying up to 1.85m thickness of Made Ground across the site. Beneath this, further superficial deposits of occasional Alluvium and gravels were encountered. These in turn were found to overly the solid geology of the Upper Chalk Formation.

Hydrogeology

- The Made Ground is classed as unproductive strata.
- The Alluvium and Taplow Gravel Formation are Secondary A Aquifers.
- The Chalk is a Principal Aquifer.

Hydrology

- The nearest surface water feature is a drainage network 320m northwest of the site, associated with the railway line.
- Followed by the easterly flowing River Thames which, at its closest point, lies 420m northeast of the site.
- The river Kennet is located approximately 500m southeast of the Site and also flows in an easterly direction.
- Overall the site is considered to be of low environmental sensitivity in terms of surface water receptors.

Table 10-1: Revised Conceptual Site Model

Potential Contaminant Linkages The following potential pollutant linkages have been identified at the Site and are considered further in the qualitative risk assessment:			**Potential Contaminant Linkage**
Human Health (Future construction workers and site users)	On-site	• Dermal contact, ingestion of soil and soil derived dust. • Ingestion and inhalation of soil derived particulates and dust. • Inhalation of vapours.	PCL1
Water Environment	On-site	• Potential for leaching of contaminants in the shallow soils to groundwater.	PCL2
	Off-site	• Migration of contaminants off-site within groundwater, onto third party land and towards off-site surface water features.	PCL3
Built Environment	On-site	• Migration of ground gases (and depleted oxygen levels) in buildings and structures.	PCL4

Qualitative Risk Assessment

The principal sources of contamination, receptors and potential pollutant linkages have been assessed using a qualitative source-pathway-receptor approach and are summarised in Table 10.2.

Table 10-2: Qualitative Source-Pathway-Receptor Risk Assessment

Potential Contaminant Linkage	Contaminants	Pathways	Receptors	Discussion	Risk Rating
PCL1	Contaminants in soils	Dermal contact. Ingestion and inhalation of soil derived particulates and dust. Inhalation of vapours.	Future site users Construction workers.	**Current/Future Site Users** The investigation identified heavy end aromatic TPH and BaP at concentrations exceeding the generic assessment criteria (GAC) for a residential without plant uptake end use. These exceedances were predominantly located in the north west of the site. Asbestos (chrysotile) was detected in one sample out of seventeen samples screened, at a quantification level below <0.001%. The levels of asbestos present within the Made Ground is therefore considered to be low, however pockets of unidentified contamination cannot be discounted. It is recommended that the shallow Made Ground material containing the hydrocarbon exceedances and asbestos fibre is managed during the earthworks phase, by either being excavated and disposed off-site as part of the earthworks or reused under hardstanding or floor slabs under an appropriate Materials Management Plan. Due to the proposed development plans comprising predominantly hardstanding over the majority of the site, the risks to end users are considered to be low to moderate.	**Low to Moderate**
				Construction Workers There is potential for site maintenance workers to come into contact with contaminated soils, including asbestos during the earthworks. The use of appropriate risk assessment and working procedures, such as hygiene measures and PPE, will mitigate risks to workers.	**Moderate**
PCL2	Contaminants in soils	Leaching of contaminants in the shallow soils to potential groundwater.	Localised perched shallow groundwater.	Analysis of groundwater did not identify any contaminants exceeding the relevant GACs and therefore the risks from the potential for leaching of contaminants in the shallow soils to groundwater is considered low.	**Low**
PCL3	Contaminants in groundwater	Lateral migration of groundwater	Off-site third-party land and its users. Off-site surface water features.	Due to no contaminants being detected within the groundwater samples, the risks from groundwaters off-site within groundwater, onto third party land and towards off-site surface water features is considered low.	**Low**
PCL4	Ground Gas.	Lateral and vertical migration	Future site users and built environment	The results of the preliminary ground gas assessment suggest that the site may be classified as CIRIA Characteristic Situation 1 (CS1, Very Low Risk). Based on this, the risks from ground gases in the context of the site's proposed end use are considered low.	**Low**

11. CONCLUSIONS AND RECOMMENDATIONS

11.1. Conclusions

This ground investigation report has been prepared for the proposed development of the Station Hill South site based on the findings of the ground investigation conducted by Ground Engineering Ltd. Three deep boreholes and ten window sample holes were completed and installed across the site.

Concrete was encountered at the top of the Made Ground in all of the exploratory holes varying in thickness. The average confirmed thickness of the concrete was 0.31m. In several locations, the full extent of the concrete was not determined, with second a layer of concrete below the first being encountered, separated by Made Ground. This is underlain by alluvium and river terrace gravels. The chalk was encountered in the three boreholes undertaken.

Analysis of 34 soils samples identified contaminants in excess of Ramboll's generic assessment criteria (GAC) for a residential without plant uptake end use. The exceedances were limited to heavy end aromatic TPHs and benzo(a)pyrene. Possible contamination was noted in one location during the ground investigation in WS304 at 2.9 m bgl at the top of the structureless chalk.

The laboratory exceedances were limited to shallow made ground soils at 0.2 m bgl and further limited to the north west of the south site, in locations BH301, WS301 and asbestos in BH303. It is considered likely that this material will be removed as part of the earthworks.

Analysis of the groundwater samples did not identify any contaminants above the relevant GAC for the site.

The results of the ground gas assessment suggest that the site may be classified as CIRIA Characteristic Situation 1 (CS1, Very Low Risk). CS1 indicates that no ground gas protection measures are required to be incorporated into the design of the proposed building.

This report has reviewed the Ground Investigation Factual Report for Station Hill South site and presents the Geotechnical Design Parameters recommended for the design of the Station Hill sub-structure. The stratigraphy has been found to vary slightly from that reported for the historic North Site ground investigation. With both the structureless and structured chalk being encountered at higher elevations.

There is still significant uncertainty remaining in the east of the site with regards to environmental and geotechnical information, due to being unable to complete BH302. Upon completion of the Station Hill North Site ground investigation later this year this uncertainty will be greatly reduced.

11.2. Recommendations

On the basis of the ground investigation and assessments within this report, no specific remediation measures have been highlighted as being required at this stage. However, additional ground investigation is recommended following demolition of the buildings on site to allow for investigation in areas that were limited by access during this investigation. Additional site investigation should focus in particular on the north east of the site where the largest area without any installed window sample or boreholes locations is currently.

Based on the current site investigation, assuming that no previously unidentified contamination is encountered during further works, then the following best practice measures are recommended.

Table 11-1:Mitigation Measures

Category	Description of Recommended Mitigation Measures
Protective measures during construction	Many of the potentially significant effects on the construction work force are mitigated as part of the health and safety precautions. Risk to construction workers should be dealt with by the Contractor based on the identified hazards. These should also be revised based on the ground conditions encountered during on site activities. The Contractor will be responsible for site health and safety and will manage the risk through control of suitable Health and Safety measures including provision of PPE, education of the workforce and inductions for all site staff and visitors. The proposed development is subject to CDM Regulations. Works to be undertaken in accordance with the Construction Code of Practice.
Environmental Management Plan	An Environmental Management Plan (EMP) should be implemented in order to prevent construction work and future operations from giving rise to land contamination. The EMP should include the risk management measures proposed above as well as the following measures: • Mitigation and risk management measures identified in this report; • Legislative compliance; • Noise and Vibration Management; • Imported soils control and verification; • Site Welfare; • Control of Excavation Works; • Waste Management; • Air Quality and Dust; and, • Environmental Accidents and Emergency Situations. • Protocol for dealing with areas of unforeseen contamination including procedures to be adopted in the event that Asbestos Containing Material is identified (see below).
Site Enabling and Clearance works	Best practice approaches including bunding of materials should be implemented in order to minimise cross contamination of excavation materials and/or perched water, if encountered in any excavations during the site works. Should any previously unidentified contamination be encountered during site works, an environmental watching brief will be required.
Underground Services	Laying underground services in potentially contaminated Made Ground materials has the potential to establish preferential flow pathways. In addition, certain contaminants e.g. hydrocarbons may penetrate and impact on water supply. Therefore, materials should be used appropriate to the level of contamination identified on site, particularly with regard to underground mains water supply.
Soft Landscaping	For any soft landscaped areas, Made Ground soils are not considered suitable for the use in soft landscaped areas. Any topsoil imported for use within any soft landscaped areas should be tested and deemed suitable for use.
Waste Management and MMP	Waste disposal should be undertaken in accordance with current legislative requirements. A materials management plan (MMP) is likely to be required to track material movements for the development.
Asbestos Management Protocol (can be incorporated into EMP)	One sample contained chrysotile at <0.001% in the shallow Made Ground soils, however contaminants such as asbestos can be present in soil in discrete pockets and any sampling frequency cannot guarantee the absence of contaminants of this nature in areas between sample locations. The Client should therefore ensure that this risk is addressed and mitigated through the preparation and adoption of health and safety risk assessments and method statements, which should be prepared in accordance with the Control of Asbestos Regulations 2012, to ensure the health and safety of all construction workers during the excavation of Made Ground. Details of on-site procedures to be adopted in the event that asbestos containing material is suspected and or encountered. Details may include but not limited to: Monitoring; Watching briefs;

Category	Description of Recommended Mitigation Measures
	Competency of personnel; Licenced contractors; and HSE notification (if required).
Unforeseen Contamination	Due to the potential for previously unidentified contamination to be present in areas which were inaccessible at the time of this investigation, an allowance for a watching brief during earthworks should be allowed for at this stage. During the watching brief, if unforeseen contamination is identified, contaminated materials will be segregated and dealt with appropriately and the Local Authority notified if appropriate.
Verification	If contamination is encountered during further site investigation or during the construction phase, a Verification Plan would be required. A Verification Plan outlines a formal monitoring procedure to be conducted throughout the works and will determine whether the remedial objective has been met. In accordance with EA guidance document a 'Verification and Remediation of Land Contamination Report SC030114/R1' will need to be produced in order to verify the completion of works and any previously unforeseen contamination encountered during the construction phase of works. Testing of materials for chemical suitability is to ensure that materials on site are not likely to cause risk to human health, future structures, or the environment following development of the site. All laboratory analysis conducted as part of the verification phase of works will need to be submitted to a UKAS / MCERTs accredited laboratory to ensure the accuracy of data obtained. Information contained within the verification report will include, but not limited to: • Summary verification works from site diary; • Plan denoting sample locations; • Plan showing the location of re-use of site derived materials; • Quantities of re-used, imported and disposed material; • Waste Classification Certificates; • Receiving / Originating Sites; • Sources, type of import and placement location; • Carrier / receiving facility Licences; • Details and demonstration of any relevant permits or exemptions required by the Environment Agency for re-using material or importing material, particularly where there is the potential for material being considered waste; • Waste Transfer Notes; • Areas of unexpected contamination and subsequent works conducted; • Details of any water discharges / off-site removal of groundwater; • Laboratory Chemical testing results of validation samples, imported material, waste material; • Details of remedial measures taken, i.e. verification of depth, chemical composition and identification of marker layer; • Photographic log / site diary of works; • Details of site audits completed; • Details of watching briefs completed (site works diary); and, • Details of any liaison and agreements with Regulators.

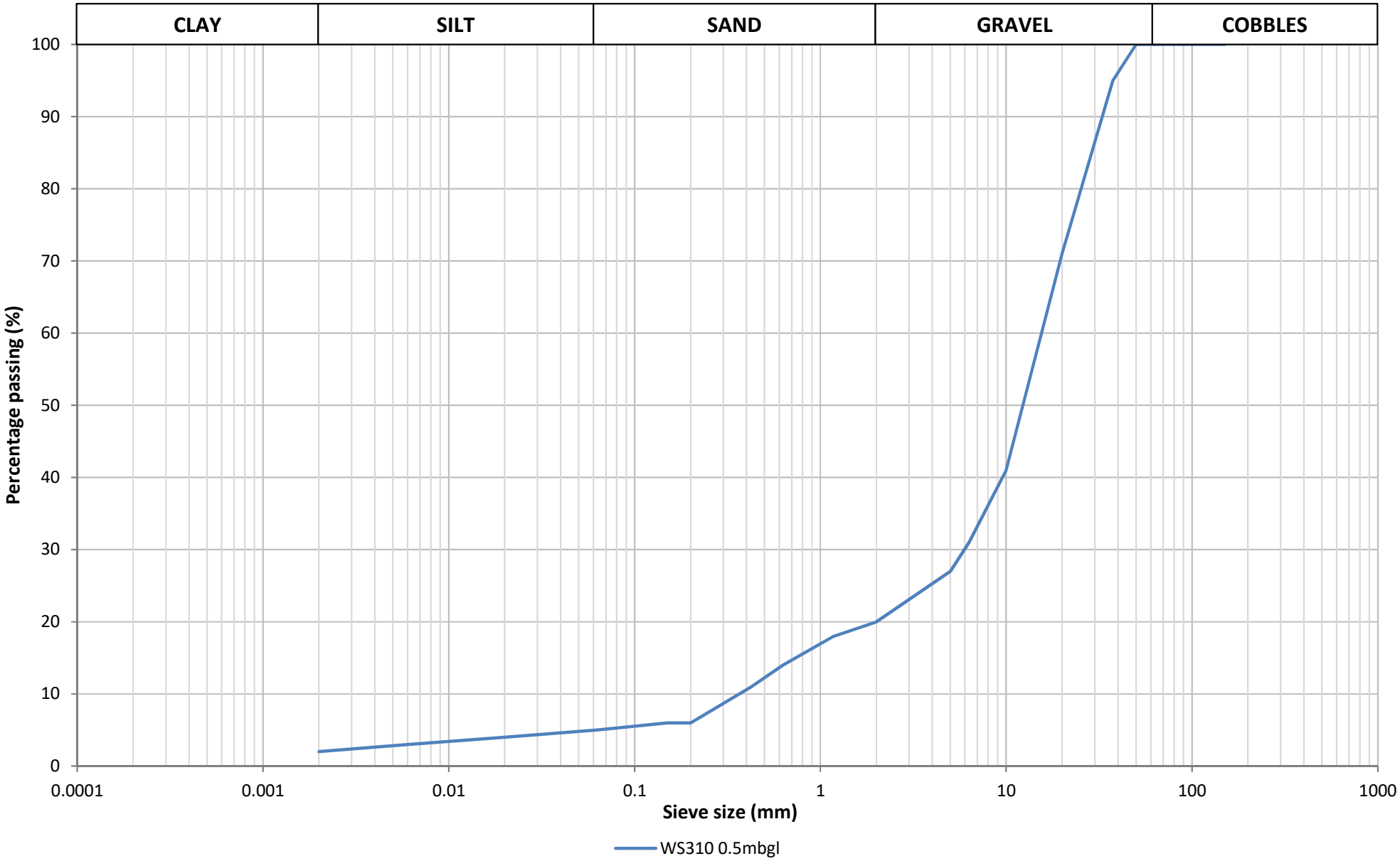
12. REFERENCES

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- BS5930:2015 Code of Practice for Site Investigation.
- BS10175:2011 + A1:2013 Code of Practice for the Investigation of Potentially Contaminated Sites.

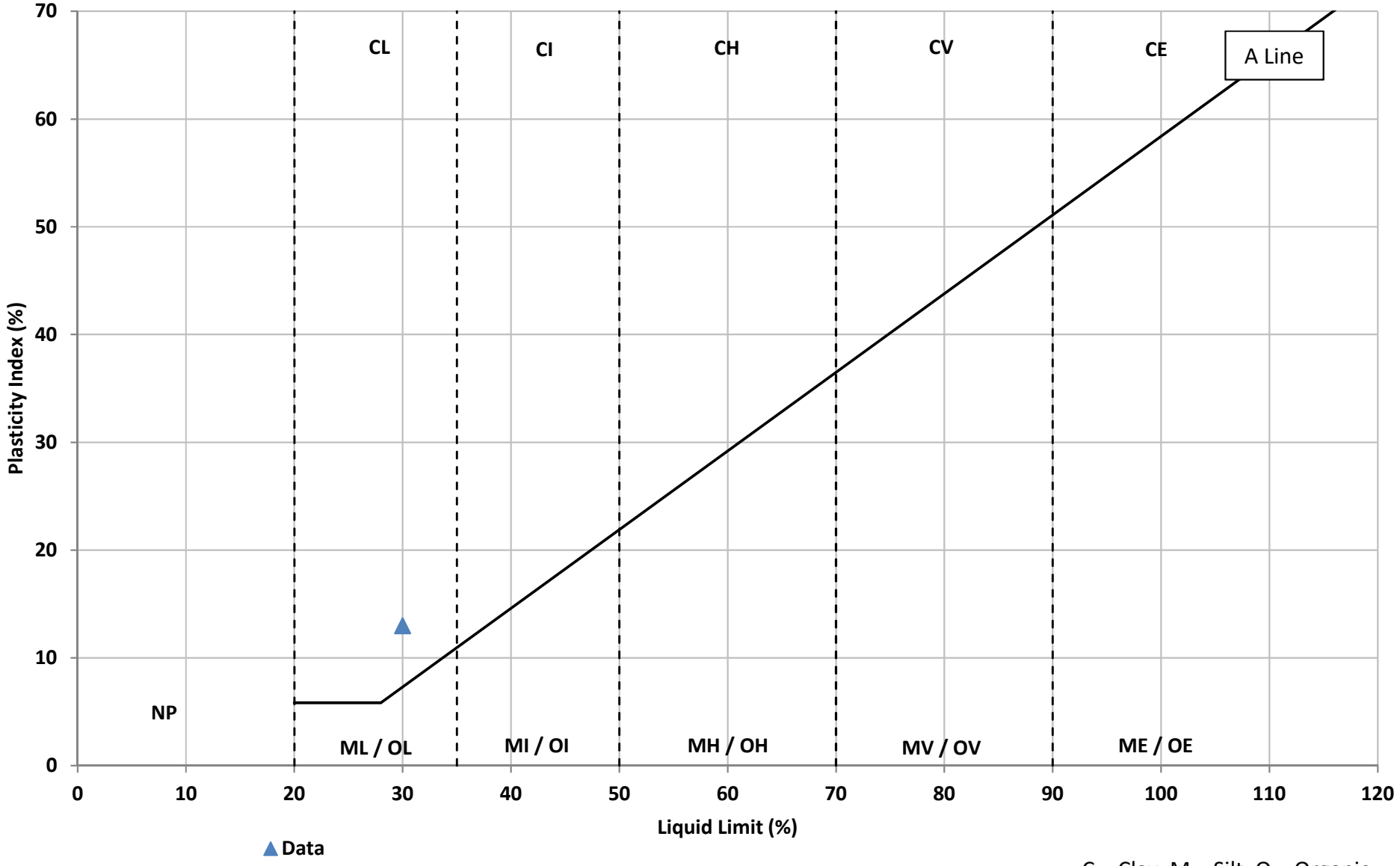
FIGURES

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	Location: Station Hill Road, Reading	**Client:** Lincoln	



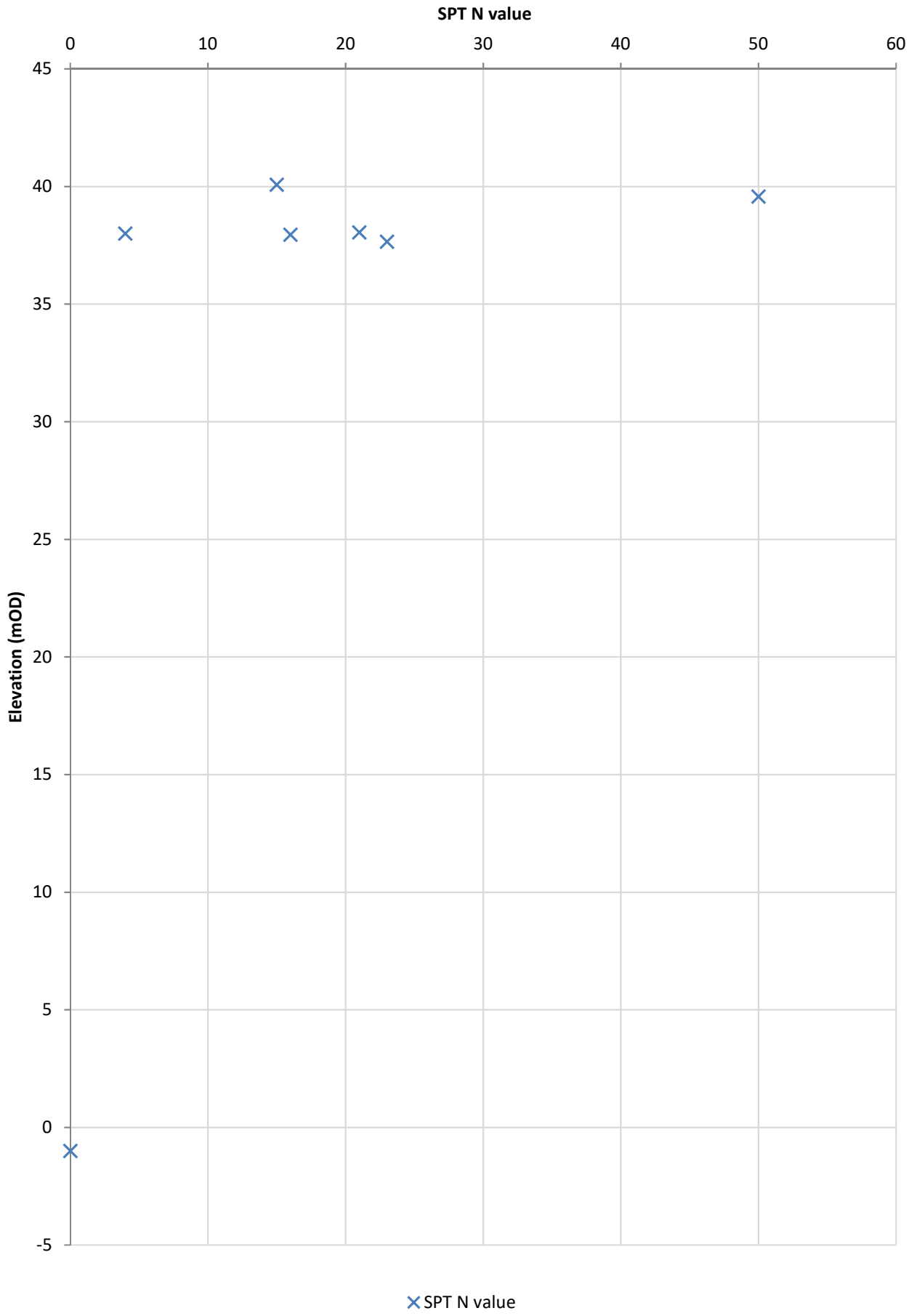
Title: Particle size distribution (PSD) by Sample for Made Ground	**Figure No:** 5.1	**Status:**	**Drawn:** MTRUBS	**Date:** 26/02/2019
			Checked:	**Date:**

RAMBOLL	**Project:** STATION HILL, READING	**Job No:** 1620004716	
	Location: Station Hill Road, Reading	**Client:** Lincoln	



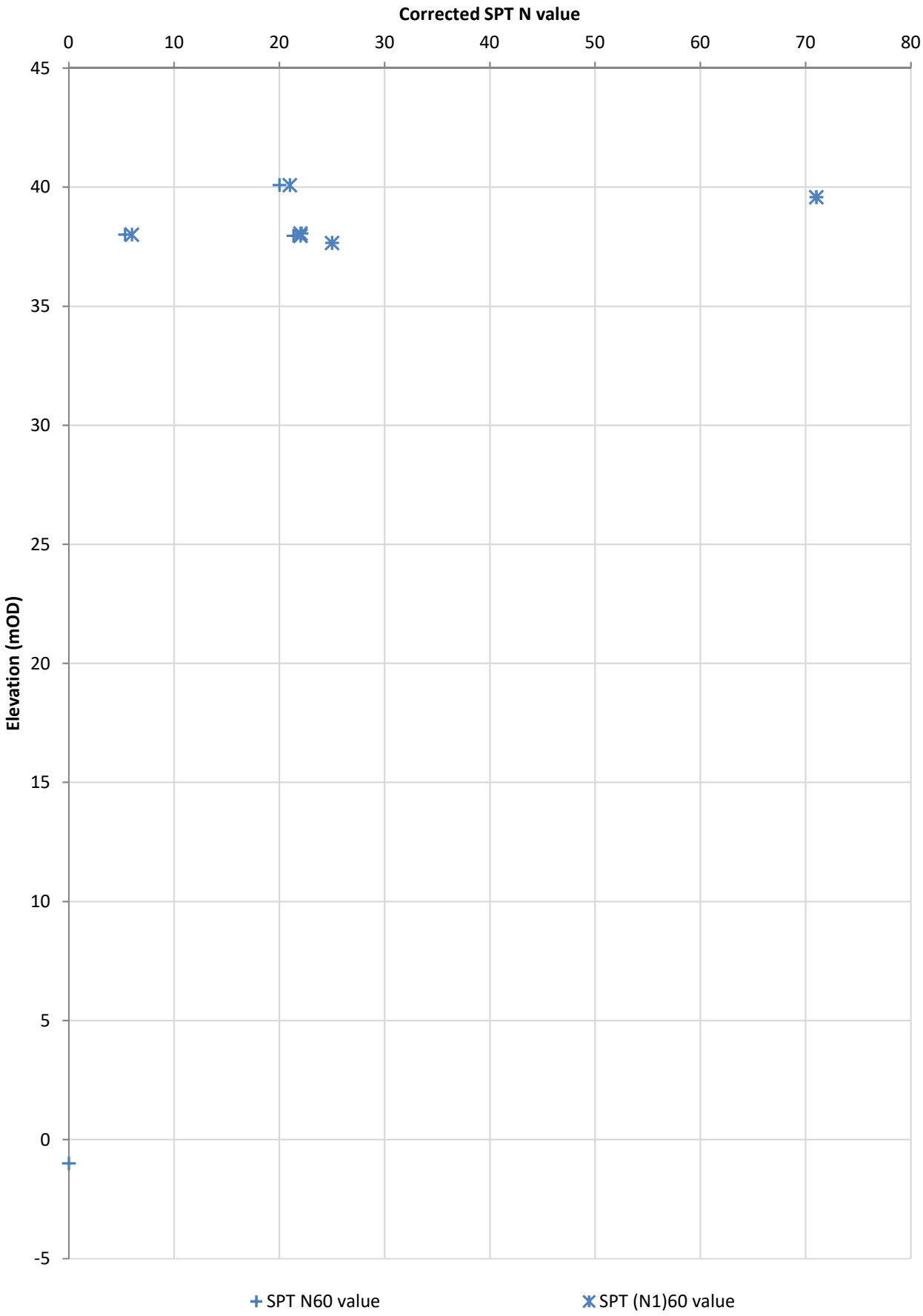
Title: Plasticity Chart for MADE GROUND	**Figure No:** 5.2	**Status:**	**Drawn:** MTRUBS	**Date:** 26/02/2019
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	Location: Station Hill Road, Reading	Client: Lincoln



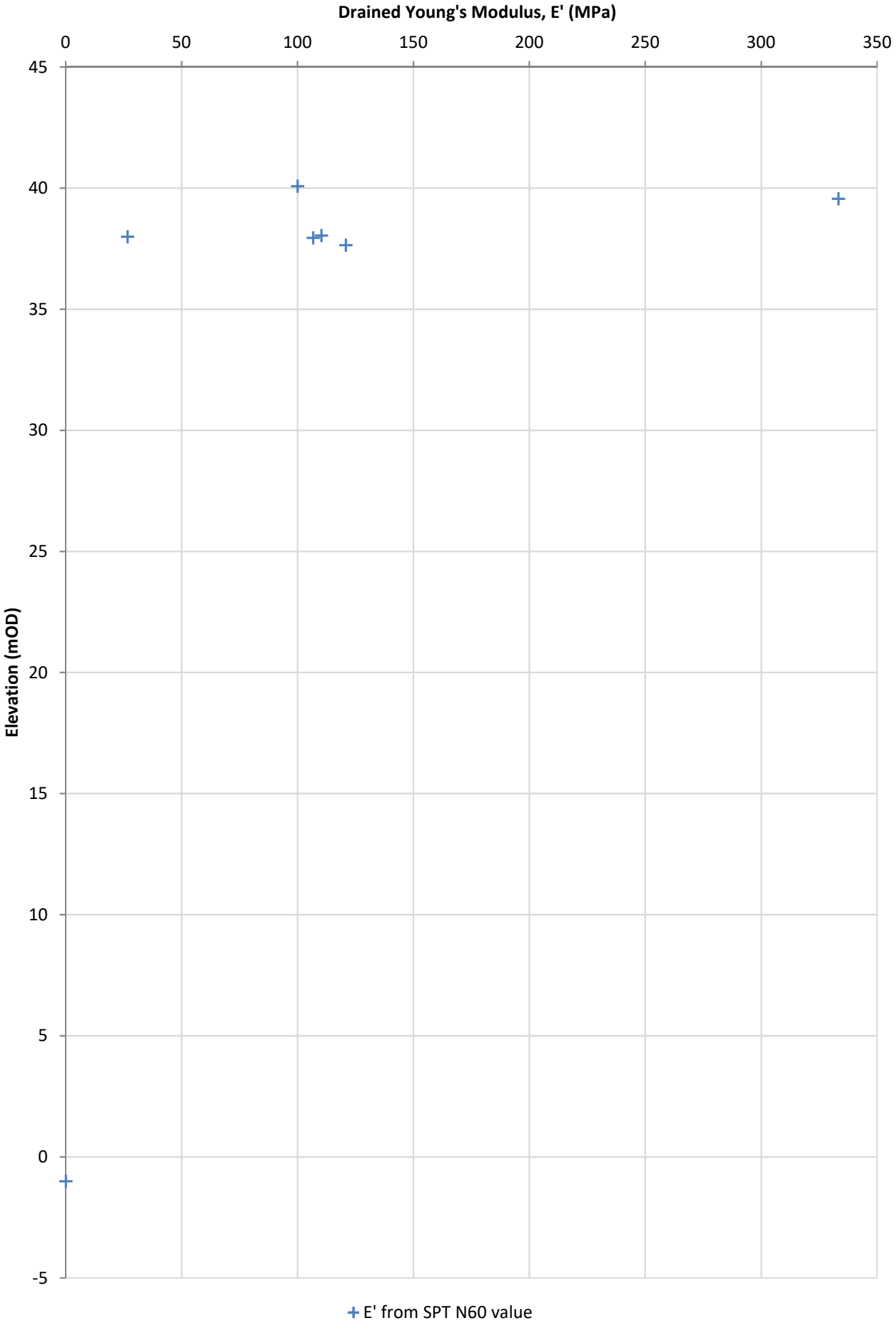
Title:	Uncorrected SPT N value by Elevation for MADE GROUND	Figure No: 5.3	Drawn: MTRUBS	Date: 26/02/2019
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RAMBOLL	Project:	STATION HILL, READING	Job No:	1620004716
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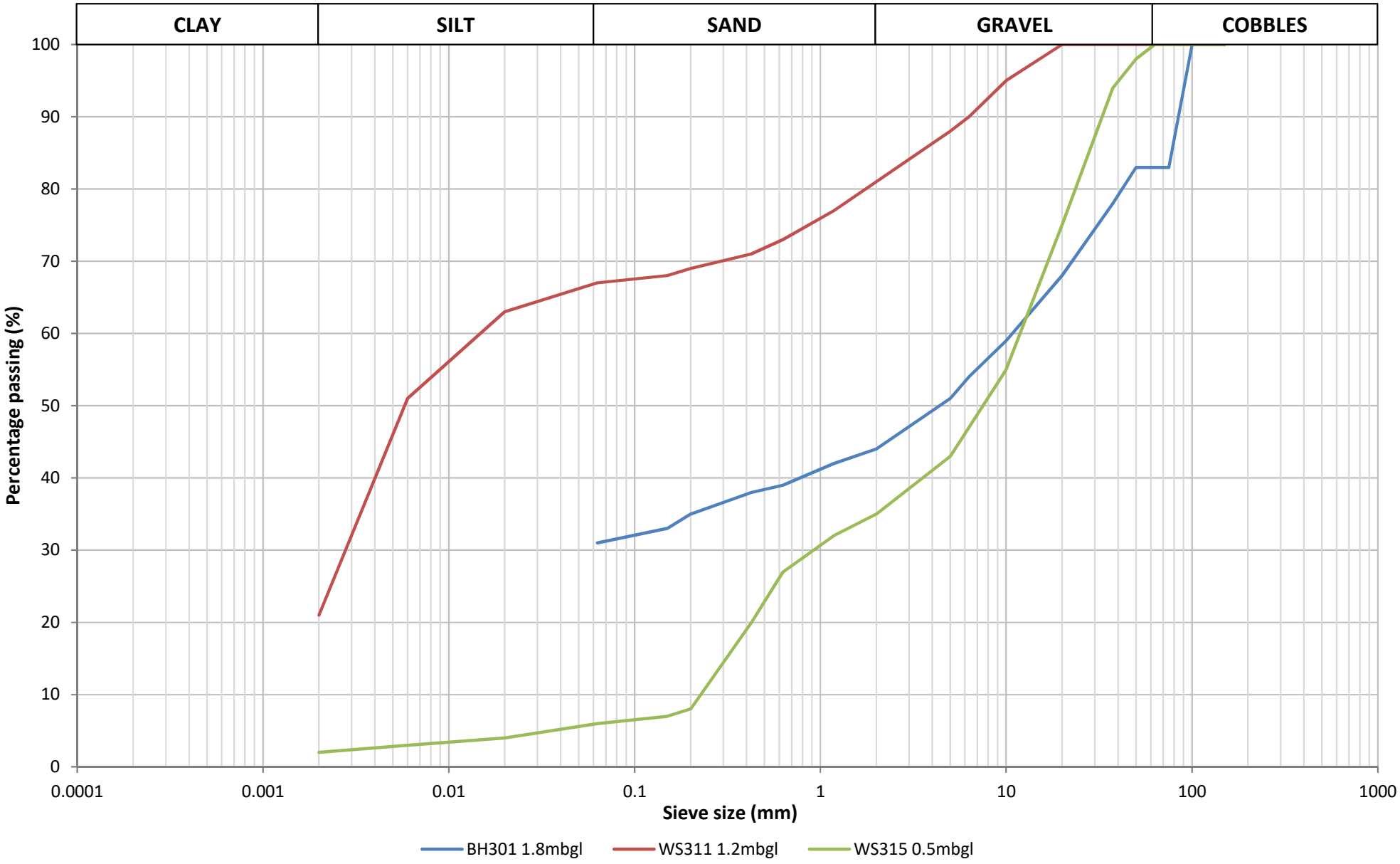
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	Location: Station Hill Road, Reading	**Client:**	Lincoln



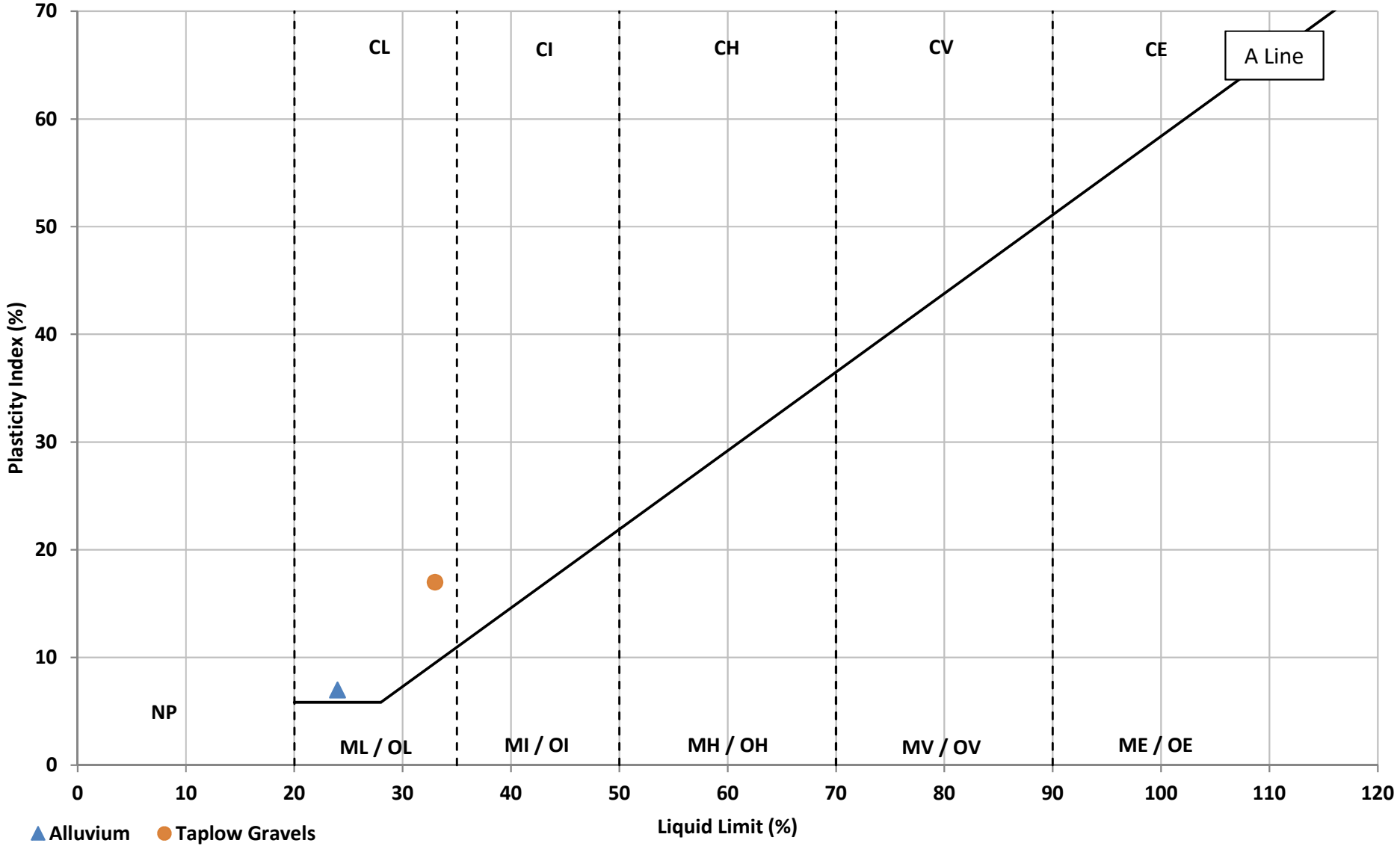
Title:	Drained Young's Modulus by Elevation for MADE GROUND	**Figure No:**	5.6	**Drawn:** MTRUBS	**Date:** 26/02/2019
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RAMBOLL	**Project:** STATION HILL, READING	**Job No:** 1620004716	
	Location: Station Hill Road, Reading	**Client:** Lincoln	



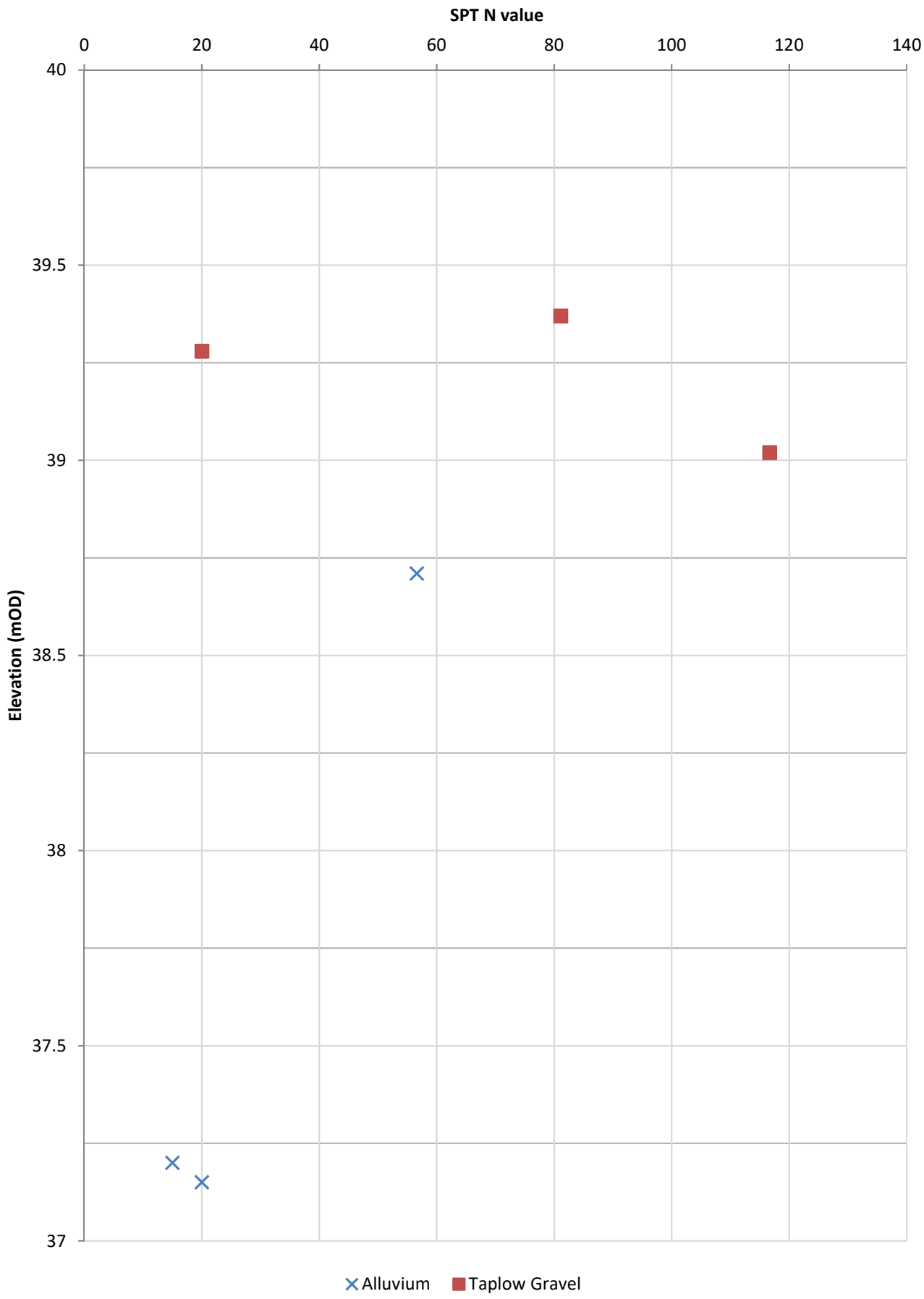
Title: Particle size distribution (PSD) by Sample for Taplow Gravel	**Figure No:** 5.7	**Status:**	**Drawn:** MTRUBS	**Date:** 26/02/2019
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RAMBOLL	**Project:** STATION HILL, READING	**Job No:** 1620004716	
	Location: Station Hill Road, Reading	**Client:** Lincoln	



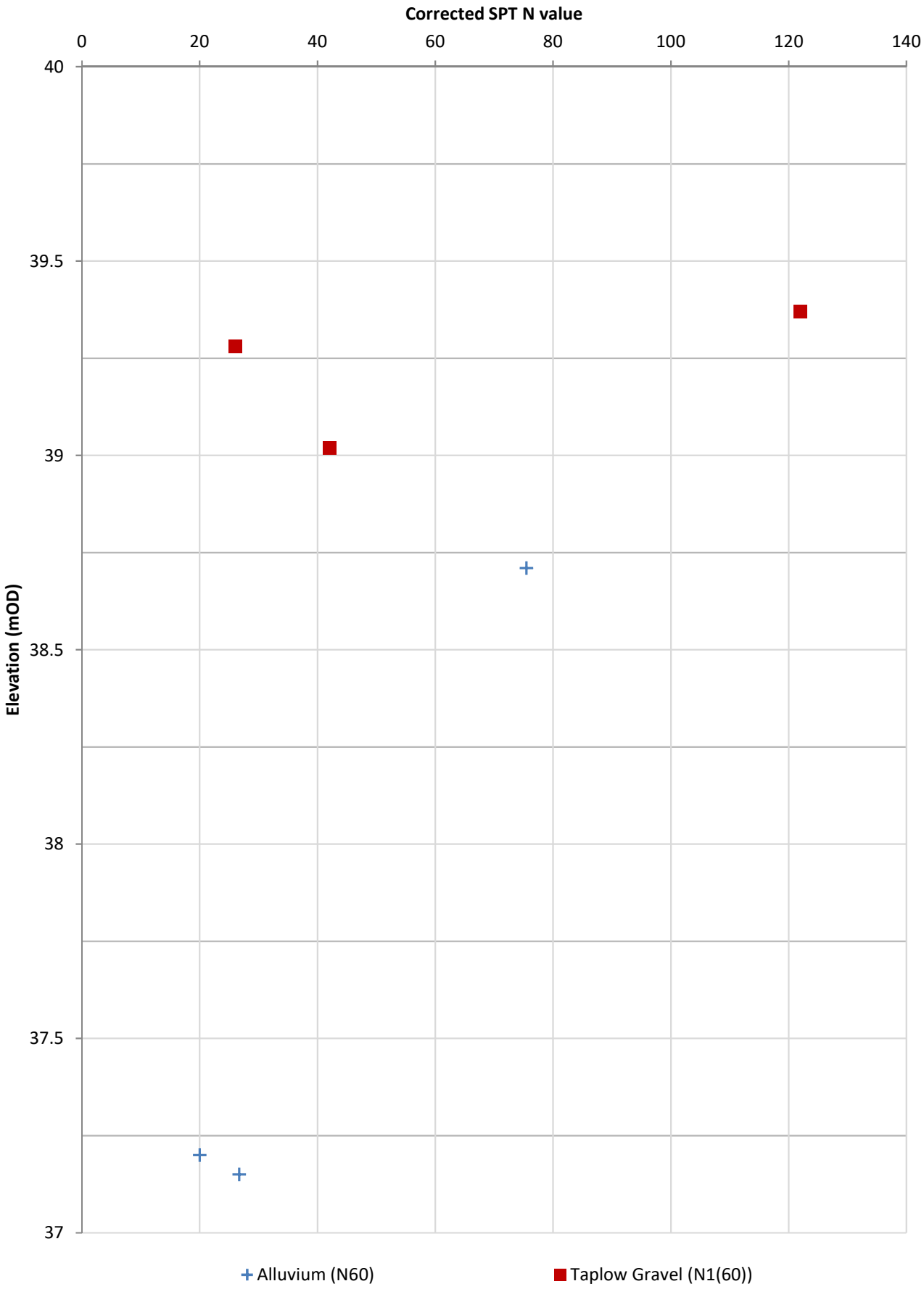
Title: Plasticity Chart for ALLUVIUM & TAPLOW GRAVEL	**Figure No:** 5.8	**Status:**	**Drawn:** MTRUBS	**Date:** 26/02/2019
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RAMBOLL	Project: STATION HILL, READING	Job No: 1620004716
	Location: Station Hill Road, Reading	Client: Lincoln



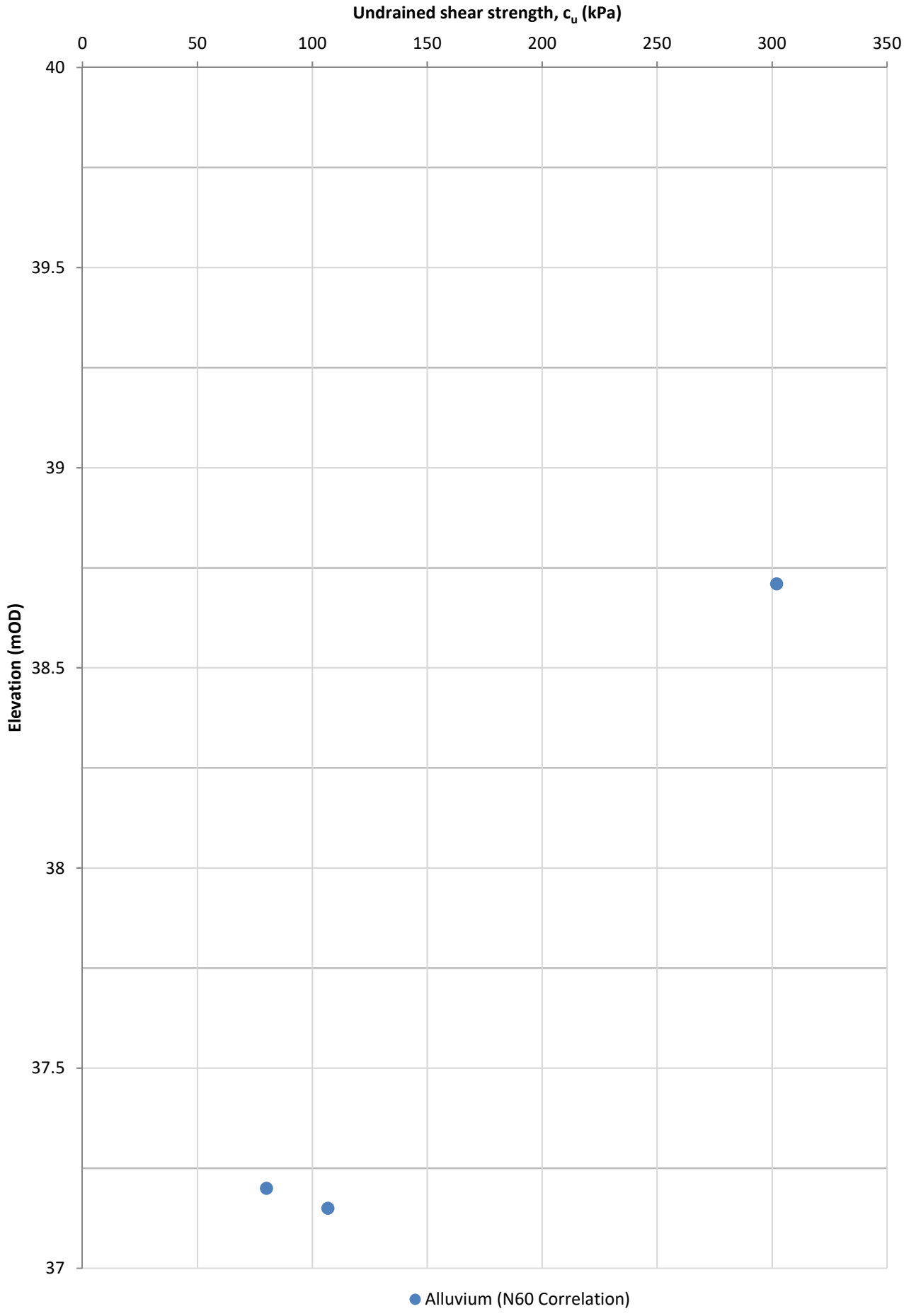
Title:	Uncorrected SPT N value by Elevation for ALLUVIUM & TAPLOW GRAVEL	Figure No: 5.9	Drawn: MTRUBS	Date: 26/02/2019
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RAMBOLL	**Project:** STATION HILL, READING	**Job No:**	1620004716
	Location: Station Hill Road, Reading	**Client:**	Lincoln



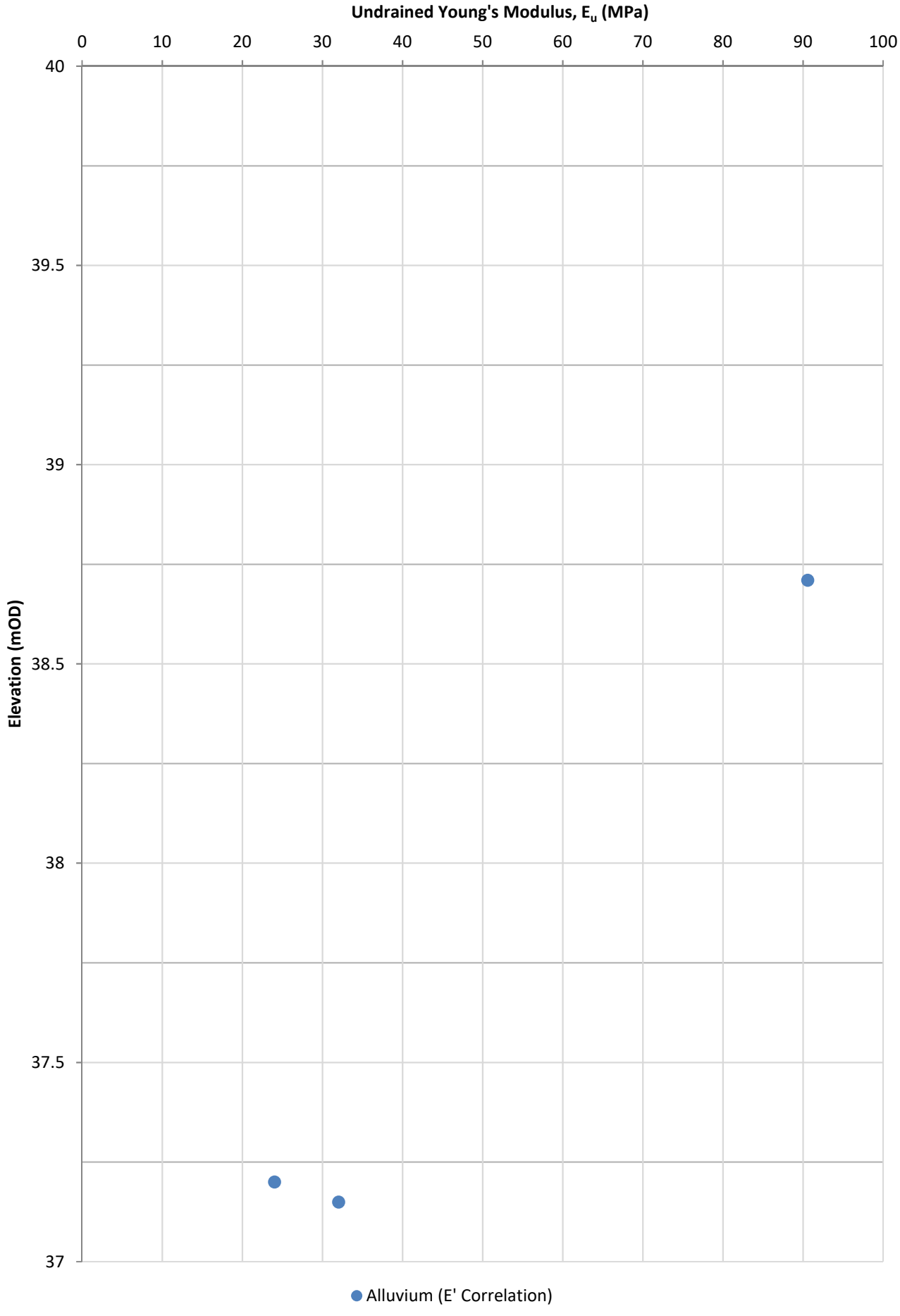
Title:	Corrected SPT N value by Elevation for ALLUVIUM & TAPLOW GRAVEL	**Figure No:** 5.10	**Drawn:** MTRUBS	**Date:**	26/02/2019
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RAMBOLL	Project:	STATION HILL, READING	Job No:	1620004716
	Location:	Station Hill Road, Reading	Client:	Lincoln



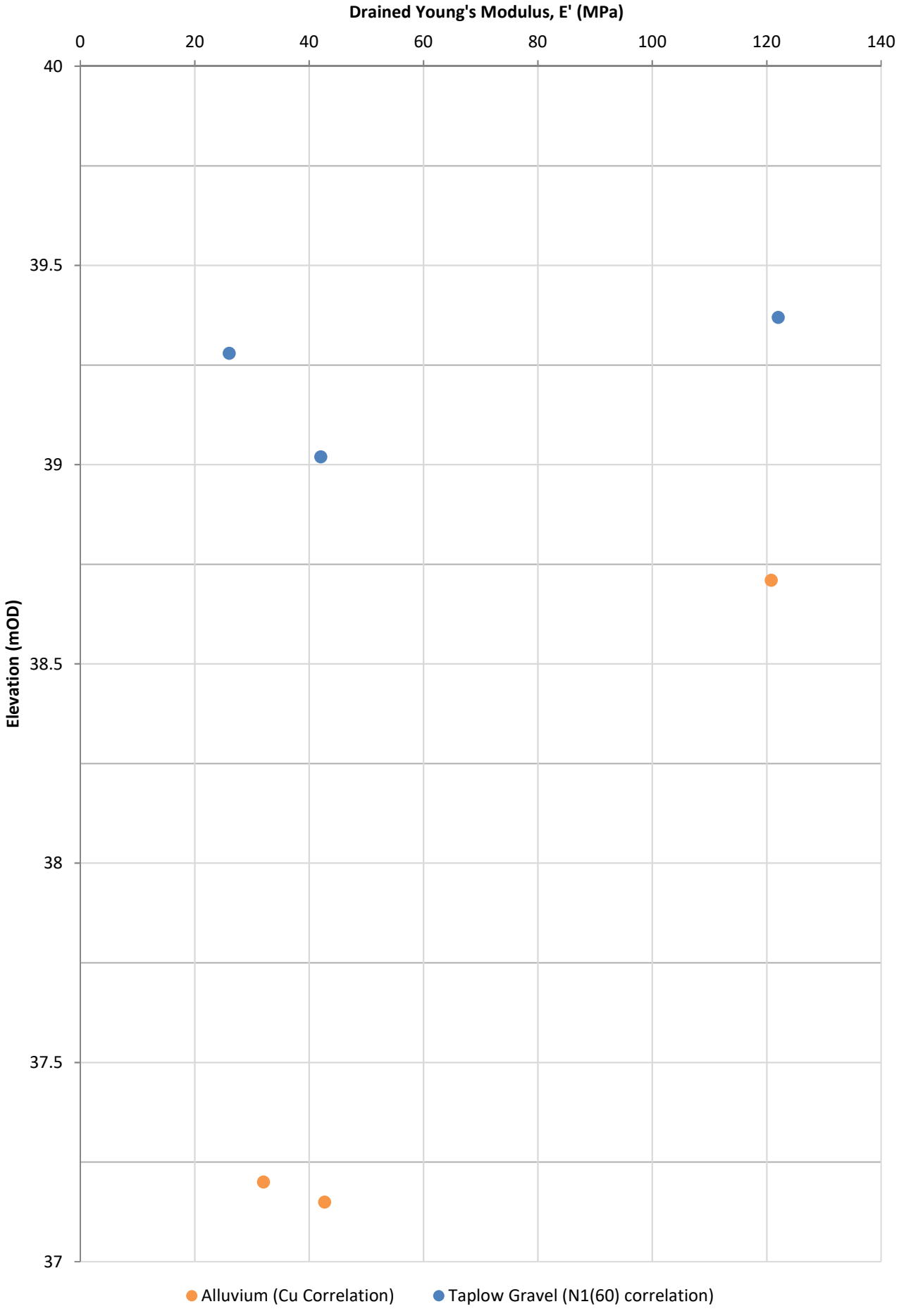
Title:	Undrained shear strength by Elevation for ALLUVIUM	Figure No: 5.11	Drawn: MTRUBS	Date: 26/02/2019
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RAMBOLL	Project:	STATION HILL, READING	Job No:	1620004716
	Location:	Station Hill Road, Reading	Client:	Lincoln



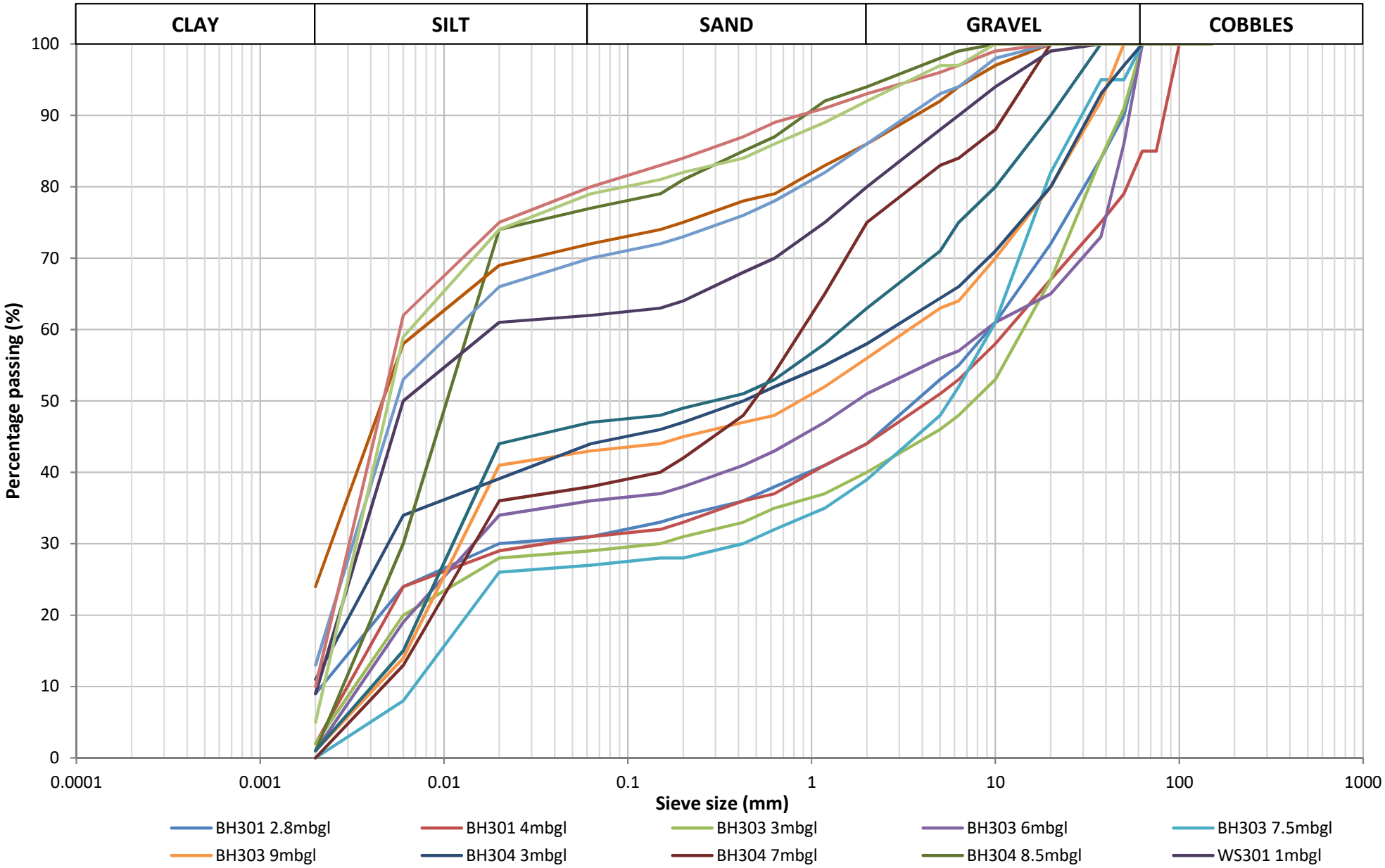
Title:	Undrained Young's Modulus by Elevation for ALLUVIUM	Figure No: 5.12	Drawn: MTRUBS	Date: 26/02/2019
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RAMBOLL	Project:	STATION HILL, READING	Job No:	1620004716
	Location:	Station Hill Road, Reading	Client:	Lincoln



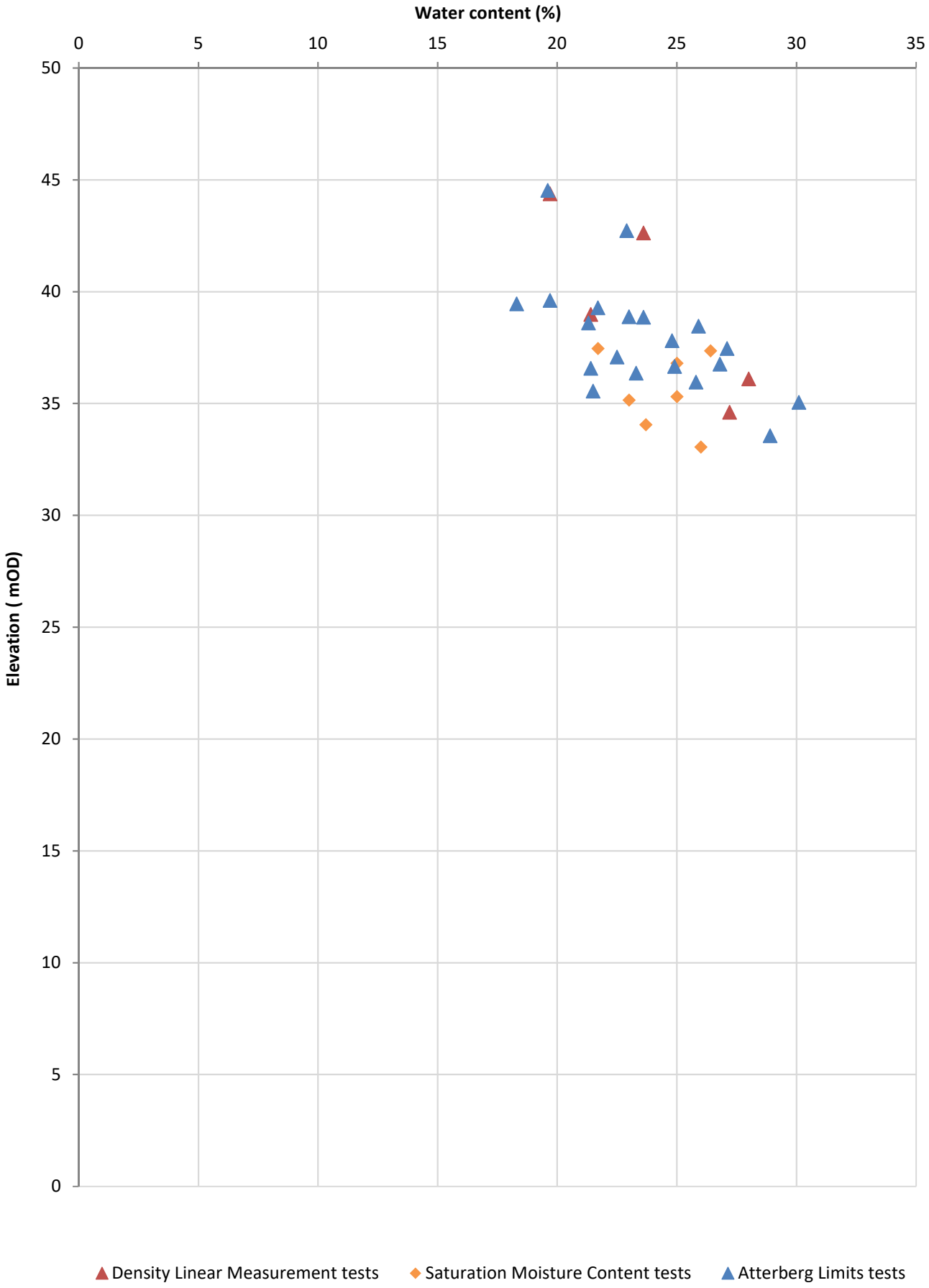
Title:	Drained Young's Modulus by Elevation for ALLUVIUM & TAPLOW GRAVEL	Figure No: 5.13	Drawn: MTRUBS	Date: 26/02/2019
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RAMBOLL	**Project:** STATION HILL, READING	**Job No:** 1620004716	
	Location: Station Hill Road, Reading	**Client:** Lincoln	



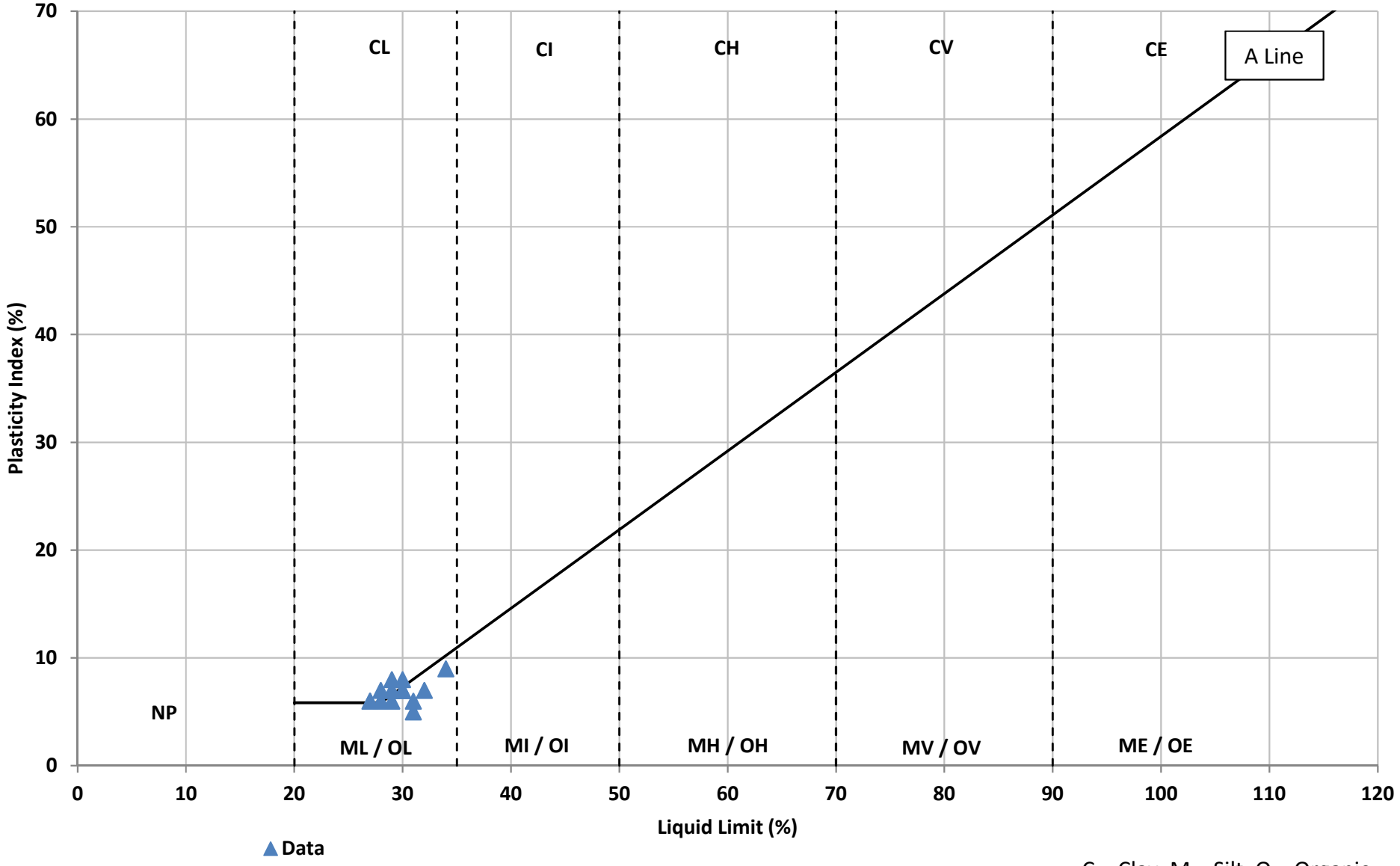
Title: Particle size distribution (PSD) by Sample for Structureless Chalk	**Figure No:** 5.15	**Status:**	**Drawn:** MTRUBS	**Date:** 26/02/2019
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RAMBOLL	Project:	STATION HILL, READING	Job No:	1620004716
	Location:	Station Hill Road, Reading	Client:	Lincoln



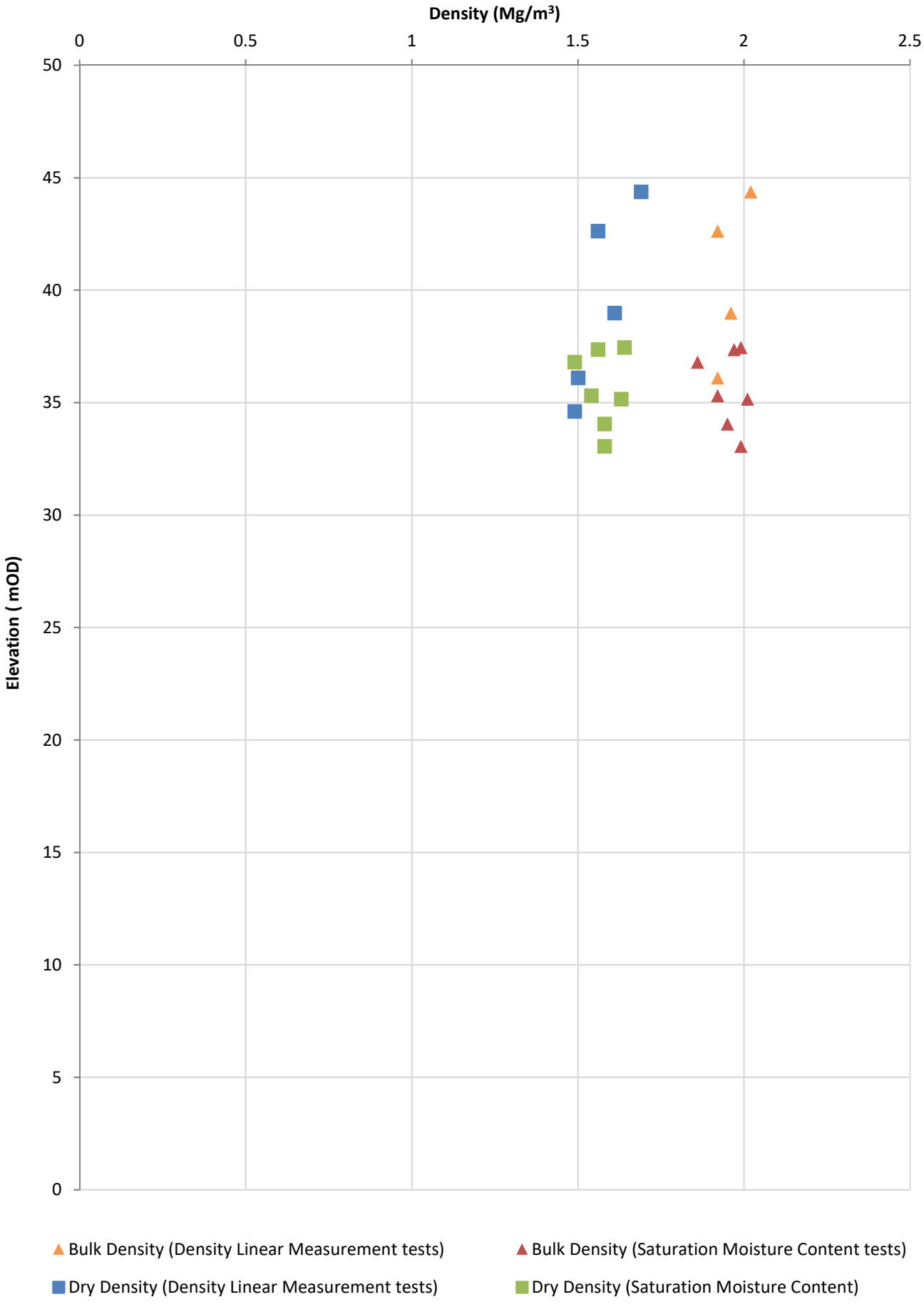
Title:	Moisture content by Elevation for STRUCTURELESS CHALK	Figure No: 5.16	Drawn: MTRUBS	Date: 27/02/2019
		Revision:	Checked:	Date:

RAMBOLL	**Project:** STATION HILL, READING	**Job No:** 1620004716	
	Location: Station Hill Road, Reading	**Client:** Lincoln	



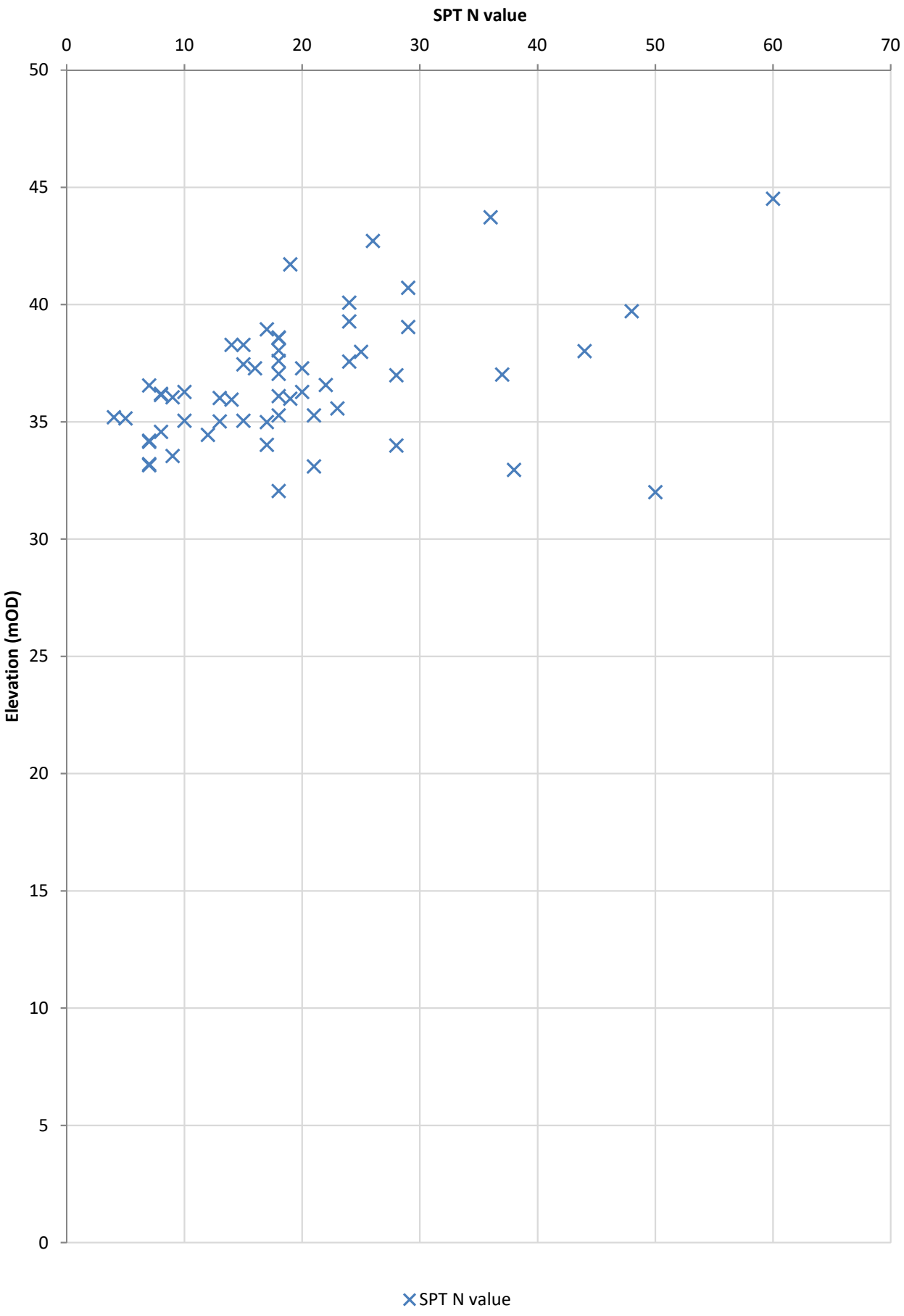
Title: Plasticity Chart for STRUCTURELESS CHALK	**Figure No:** 5.17	**Status:**	**Drawn:** MTRUBS	**Date:** 26/02/2019
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RAMBOLL	**Project:** STATION HILL, READING	**Job No:**	1620004716
	Location: Station Hill Road, Reading	**Client:**	Lincoln



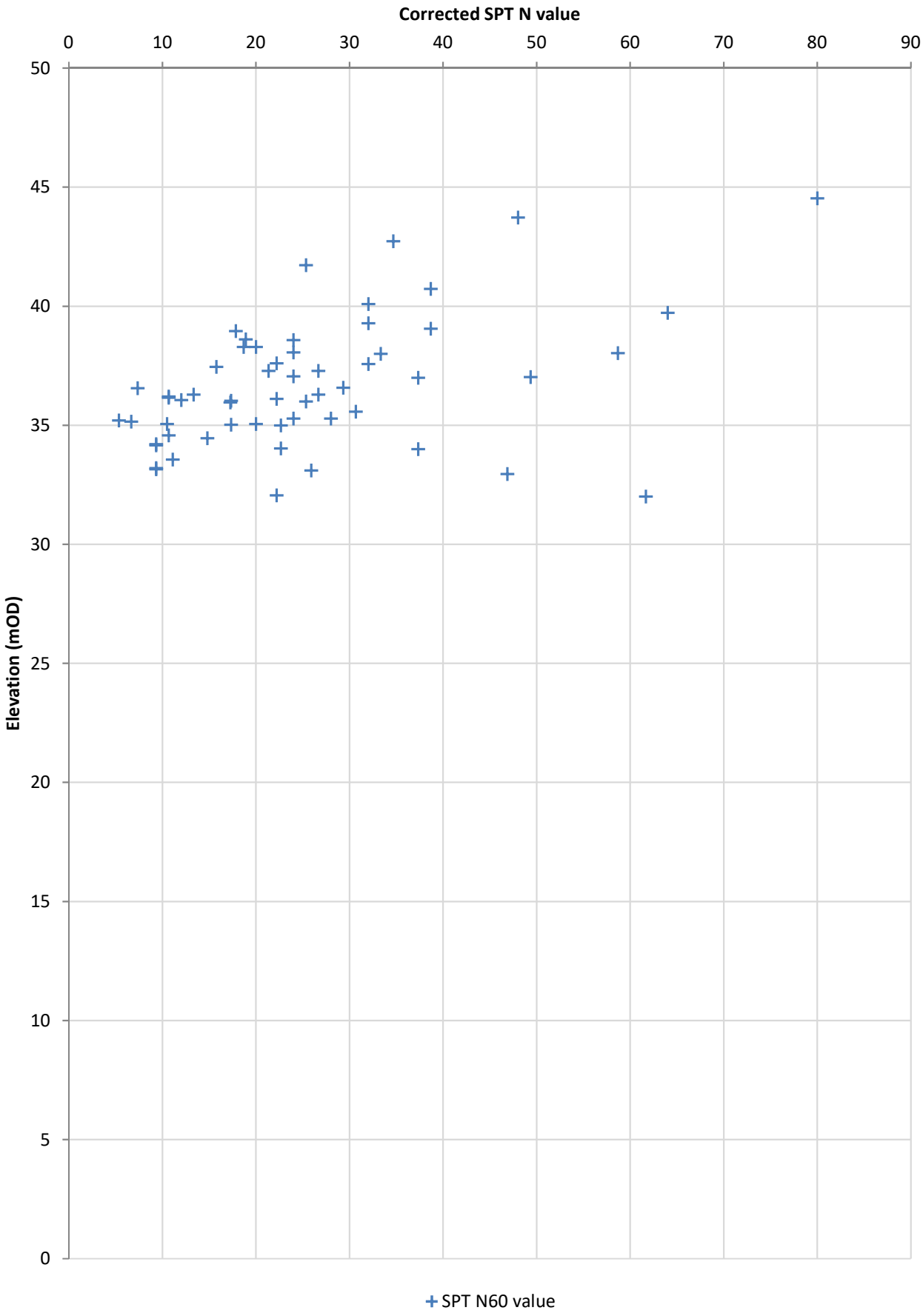
Title:	Dry and bulk density by Elevation for STRUCTURELESS CHALK	**Figure No:**	5.18	**Drawn:**	MTRUBS	**Date:**	27/02/2019
		Revision:		**Checked:**		**Date:**	

RAMBOLL	Project:	STATION HILL, READING	Job No:	1620004716
	Location:	Station Hill Road, Reading	Client:	Lincoln



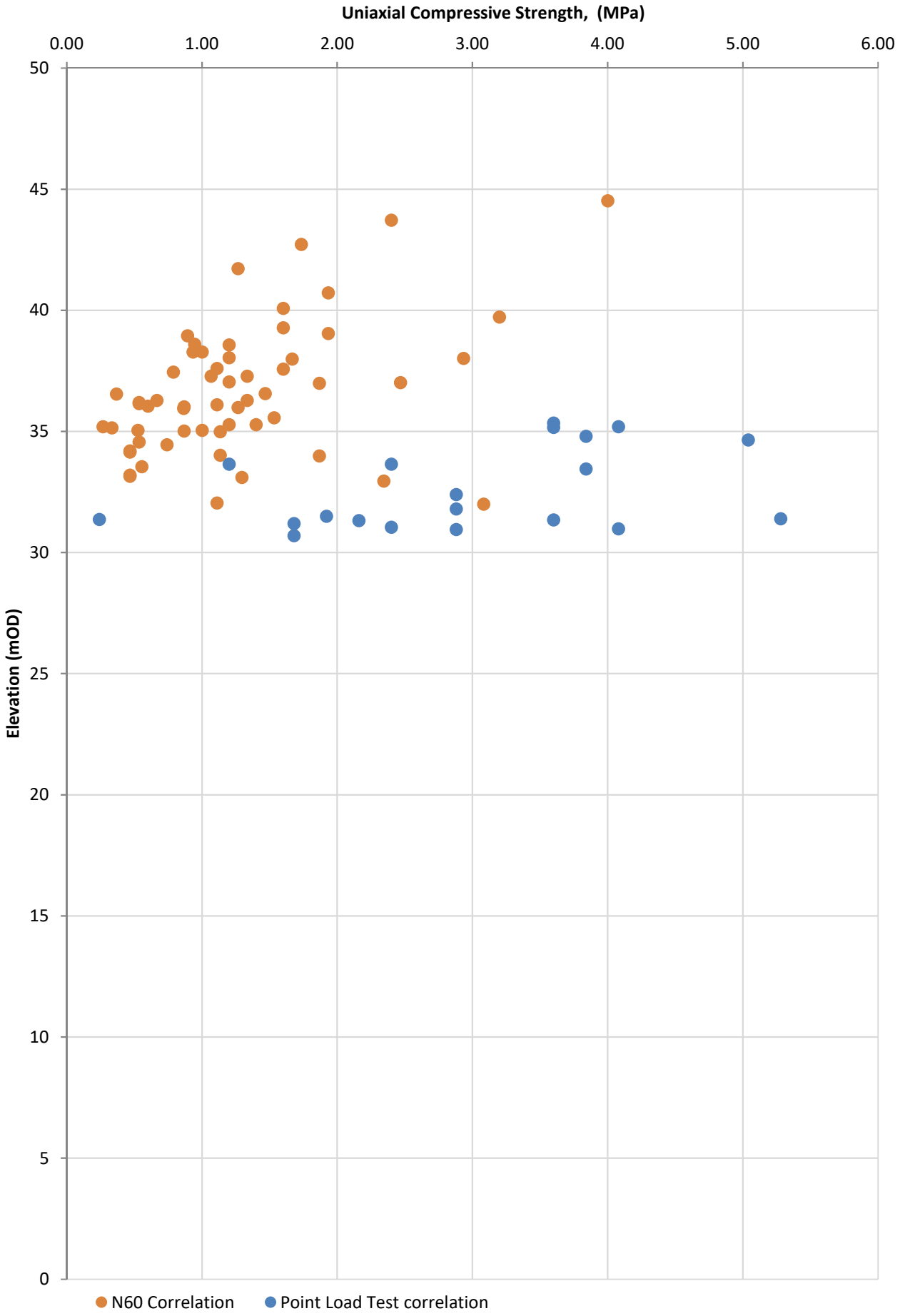
Title:	Uncorrected SPT N value by Elevation for STRUCTURELESS CHALK	Figure No:	5.19	Drawn:	MTRUBS	Date:	28/02/2019
		Status:		Checked:		Date:	

RAMBOLL	**Project:** STATION HILL, READING	**Job No:**	1620004716
	Location: Station Hill Road, Reading	**Client:**	Lincoln



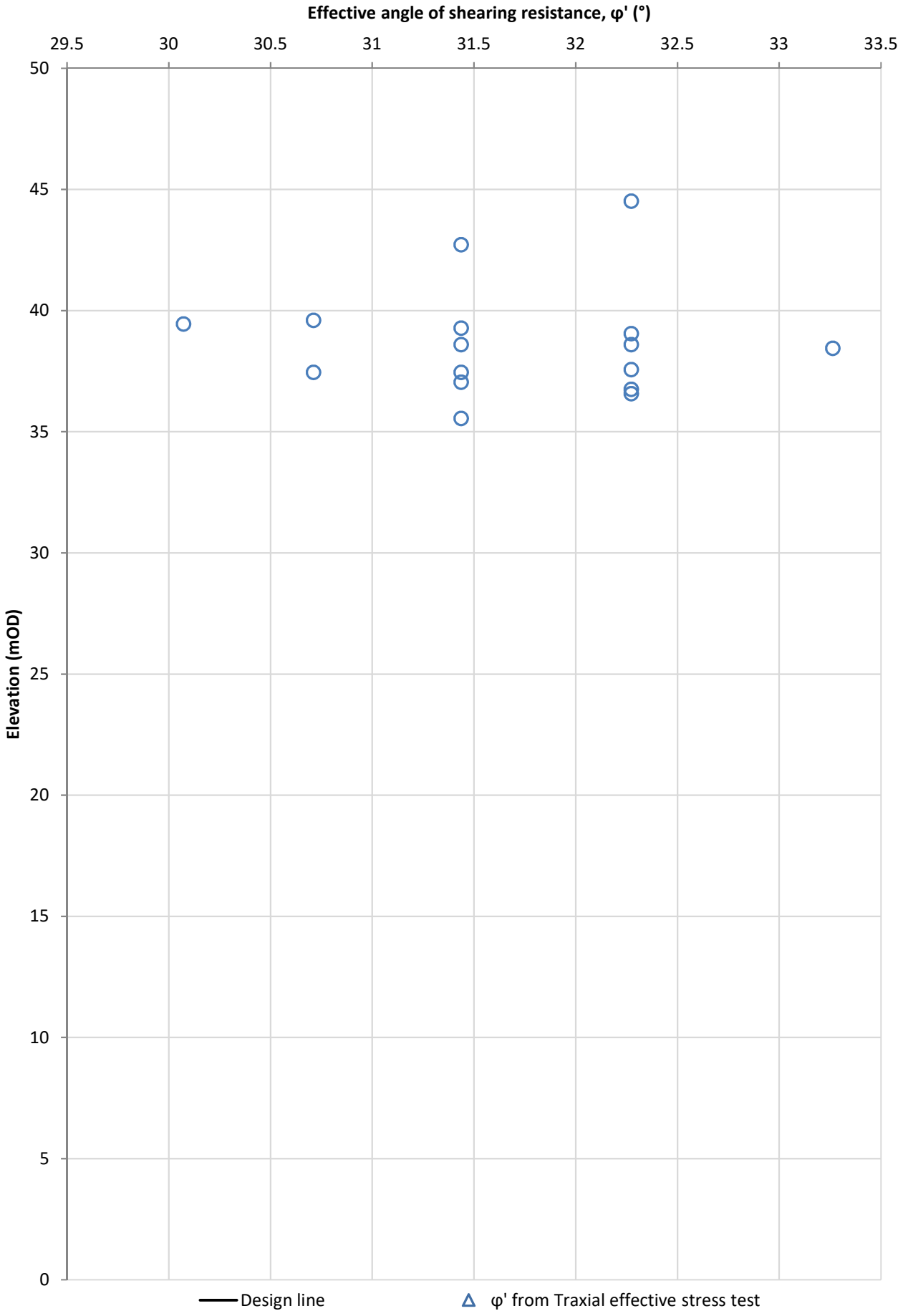
Title:	Corrected SPT N value by Elevation for STRUCTURELESS CHALK	**Figure No:**	5.20	**Drawn:** MTRUBS	**Date:** 28/02/2019
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RAMBOLL	Project:	STATION HILL, READING	Job No:	1620004716
	Location:	Station Hill Road, Reading	Client:	Lincoln



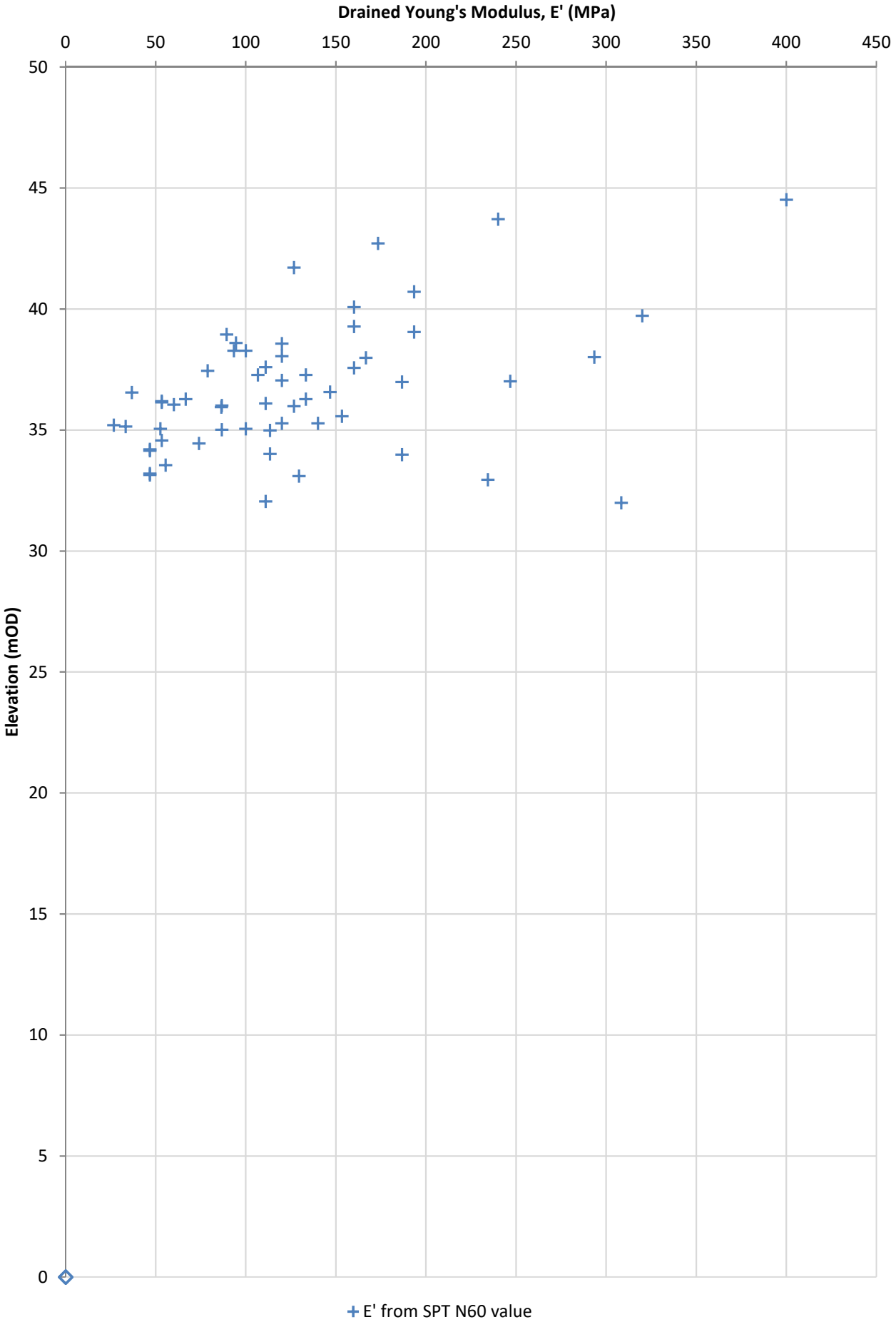
Title:	Uniaxial Compressive strength by Elevation for STRUCTURELESS CHALK	Figure No:	5.22	Drawn:	MTRUBS	Date:	26/02/2019
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RAMBOLL	**Project:** STATION HILL, READING	**Job No:**	1620004716
	Location: Station Hill Road, Reading	**Client:**	Lincoln



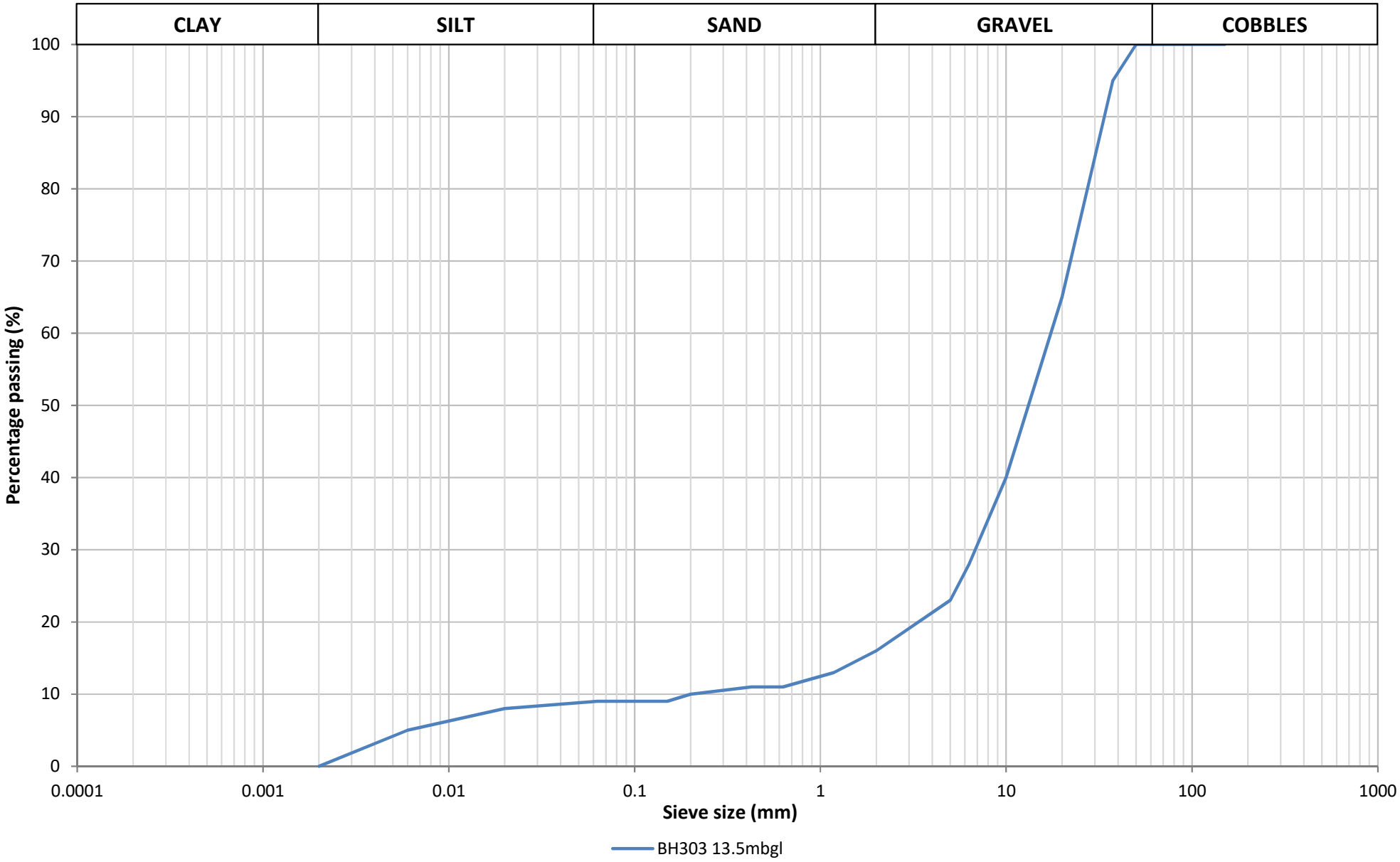
Title:	Effective angle of shearing resistance by Elevation for STRUCTURELESS CHALK	**Figure No:** 5.23	**Drawn:** MTRUBS	**Date:**	26/02/2019
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RAMBOLL	Project:	STATION HILL, READING	Job No:	1620004716
	Location:	Station Hill Road, Reading	Client:	Lincoln



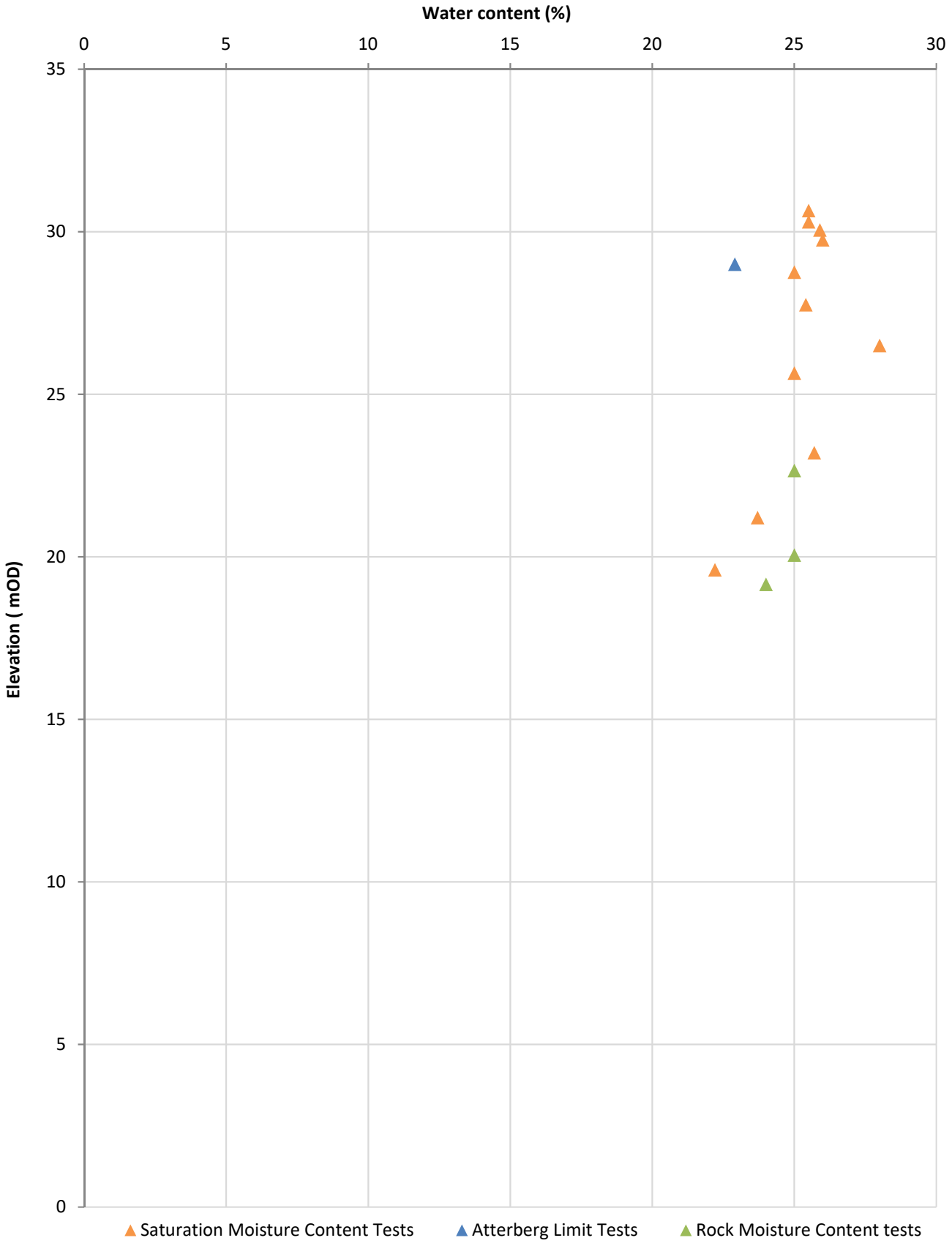
Title:	Drained Young's Modulus by Elevation for STRUCTURELESS CHALK	Figure No: 5.24	Drawn: MTRUBS	Date: 26/02/2019
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RAMBOLL	**Project:** STATION HILL, READING	**Job No:** 1620004716	
	Location: Station Hill Road, Reading	**Client:** Lincoln	



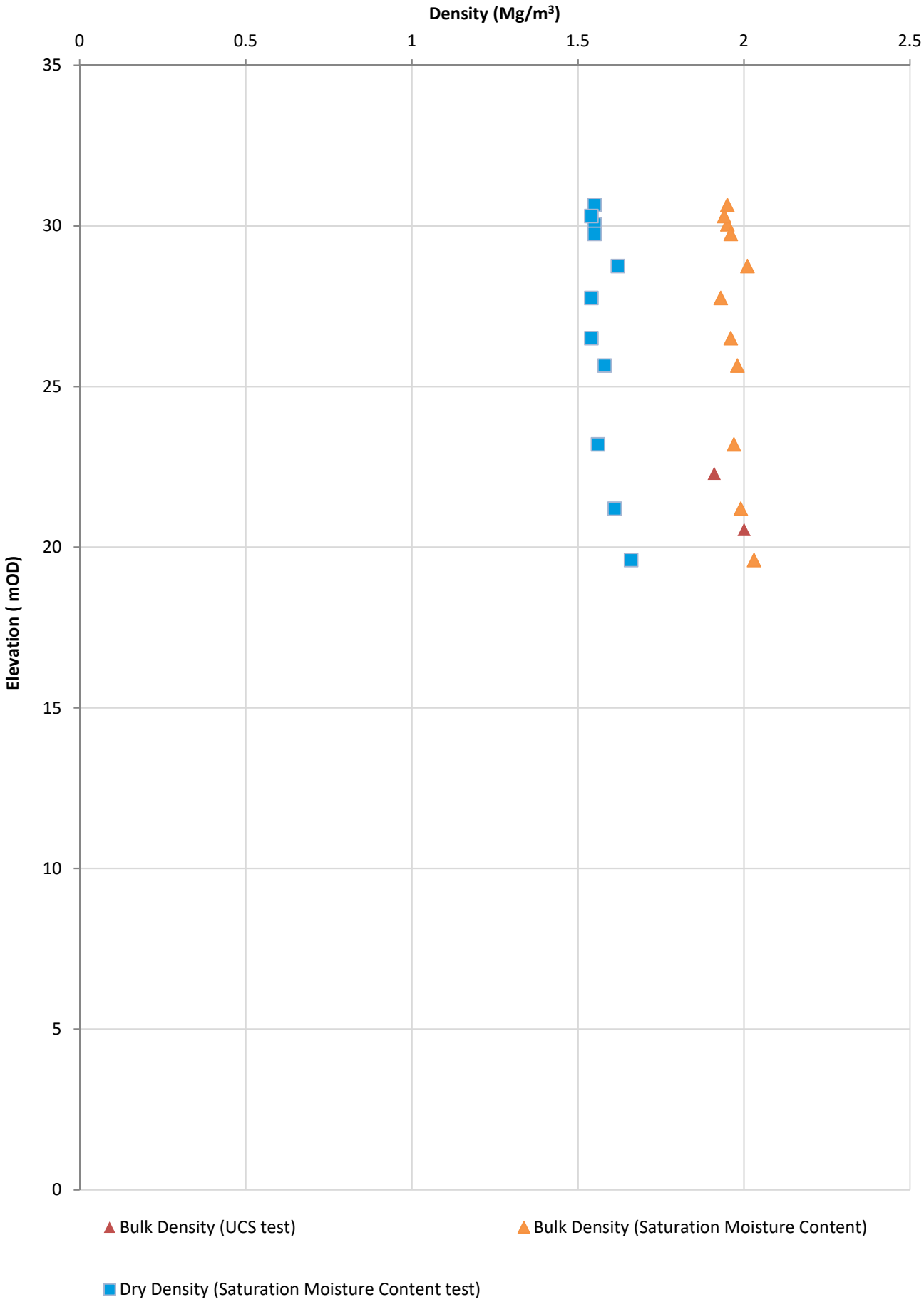
Title: Particle size distribution (PSD) by Sample for Structured Chalk	**Figure No:** 5.25	**Status:**	**Drawn:** MTRUBS	**Date:** 26/02/2019
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RAMBOLL	Project:	STATION HILL, READING	Job No:	1620004716
	Location:	Station Hill Road, Reading	Client:	Lincoln



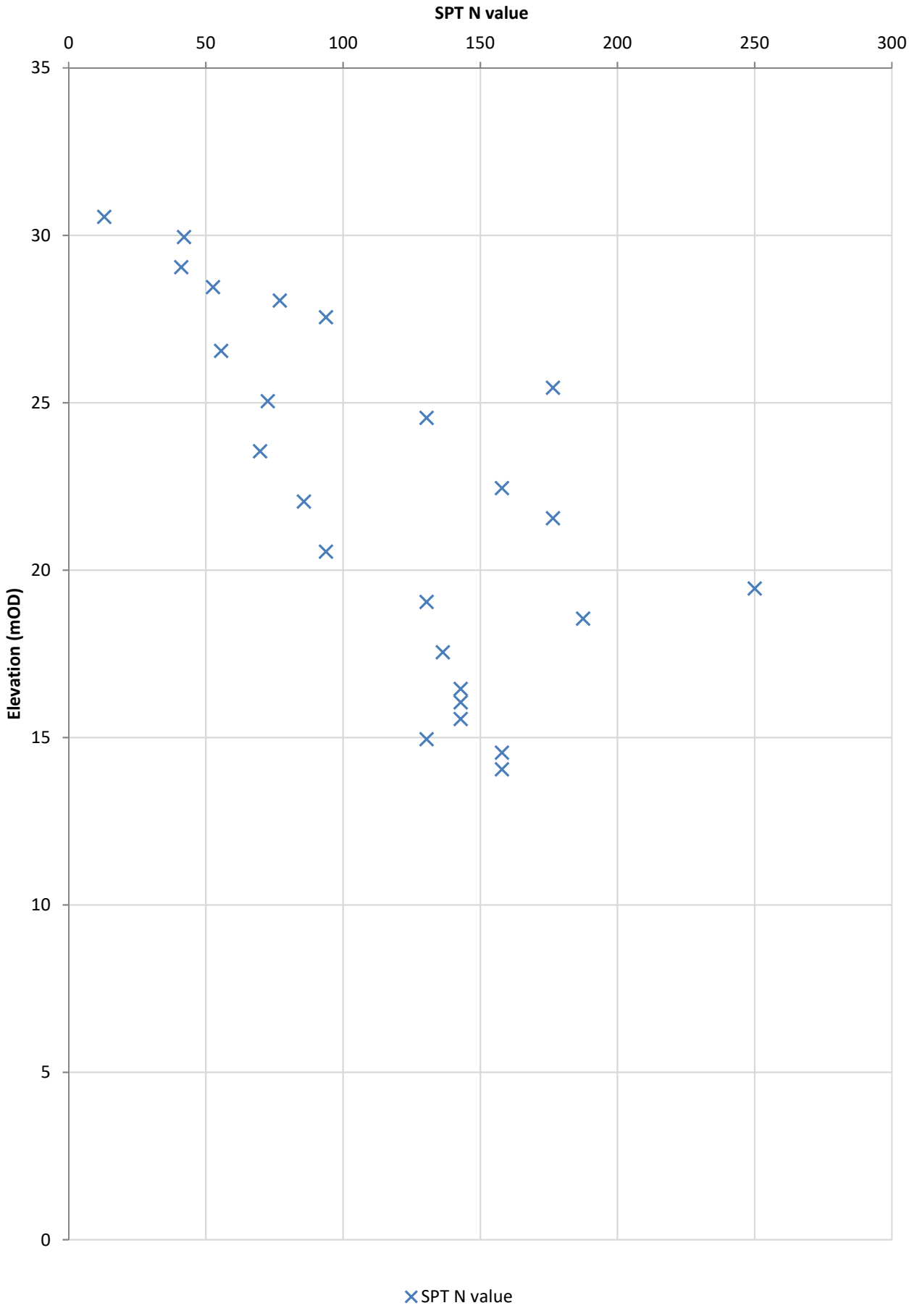
Title:	Moisture content by Elevation for STRUCTURED CHALK	Figure No: 5.26	Drawn: MTRUBS	Date: 27/02/2019
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	Location: Station Hill Road, Reading	**Client:**	Lincoln



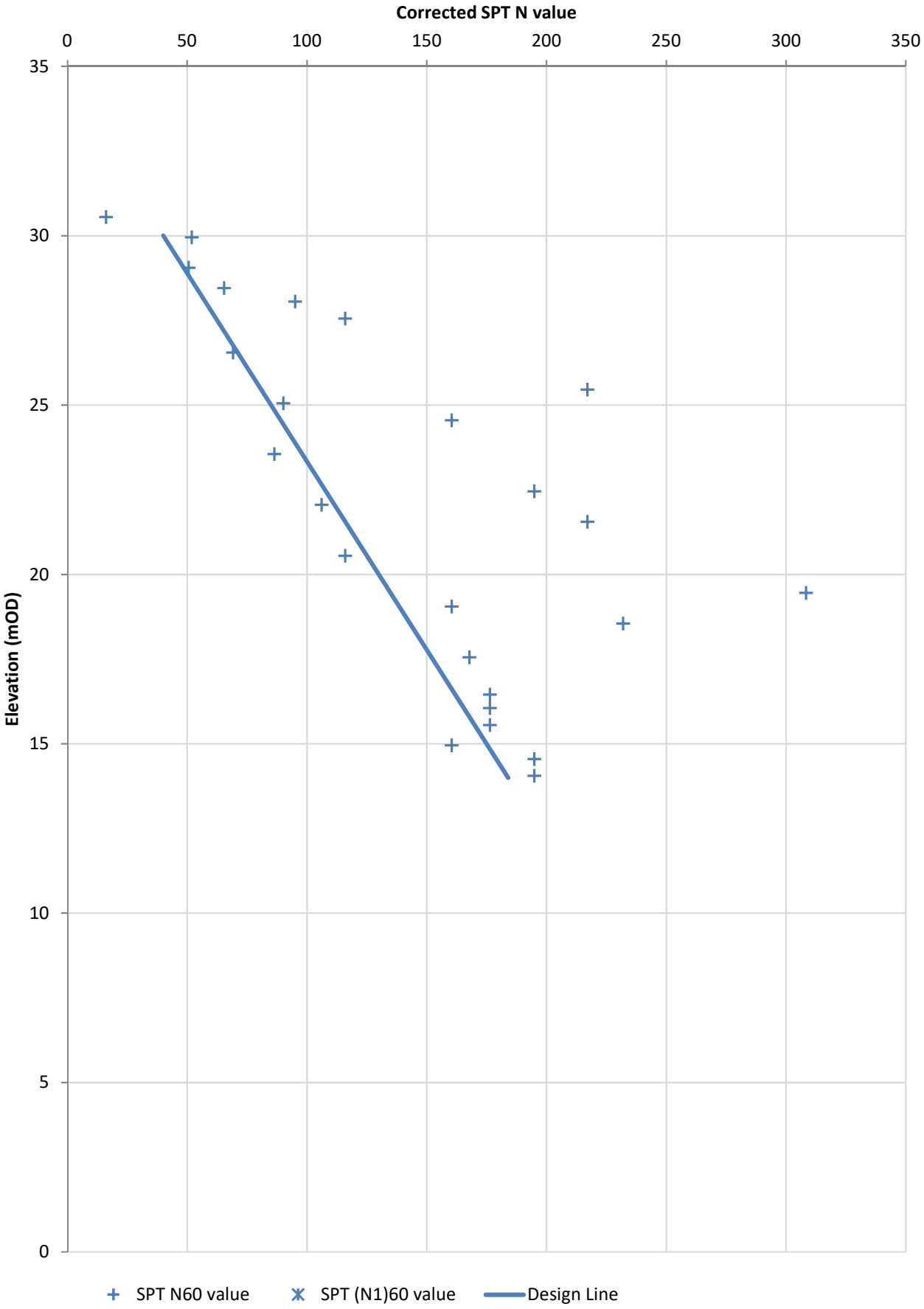
Title:	Dry and bulk density by Elevation for STRUCTURED CHALK	**Figure No:** 5.27		**Drawn:**	MTRUBS	**Date:**	27/02/2019
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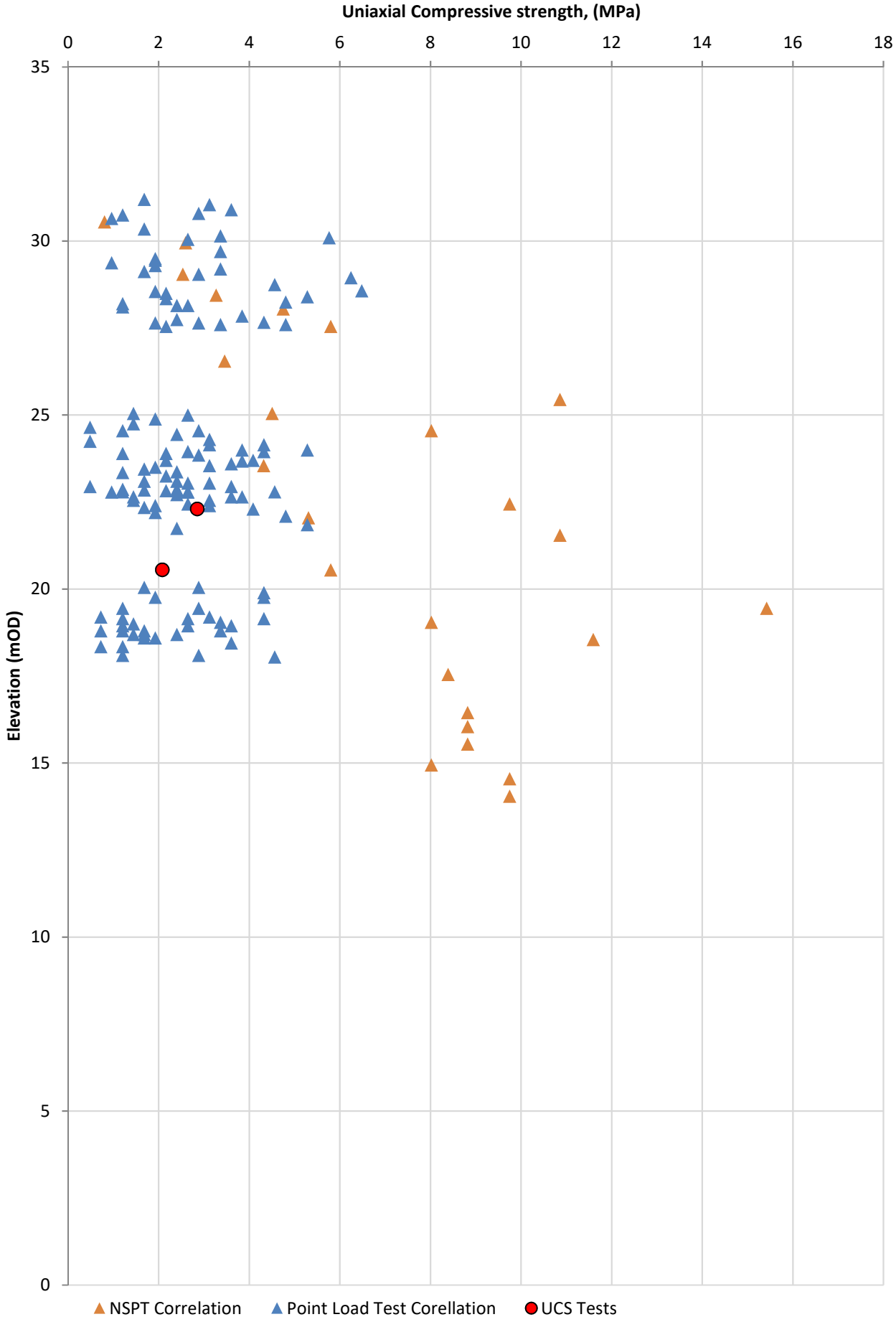
Title:	Uncorrected SPT N value by Elevation for STRUCTURED CHALK	Figure No: 5.28	Drawn: MTRUBS	Date: 26/02/2019
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	Location: Station Hill Road, Reading	Client: Lincoln



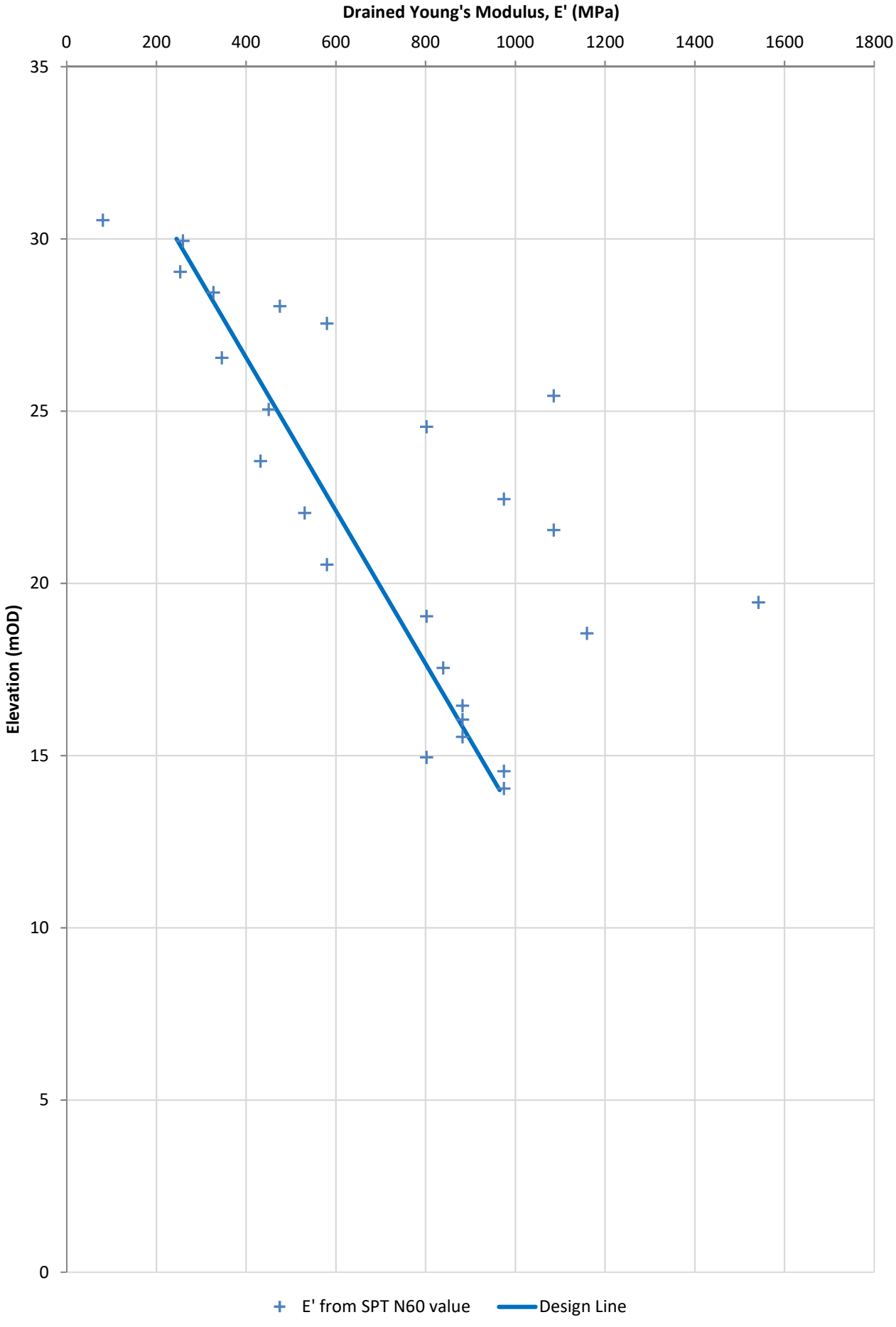
Title:	Corrected SPT N value by Elevation for STRUCTURED CHALK	Figure No: 5.29	Drawn: MTRUBS	Date: 26/02/2019
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	Location: Station Hill Road, Reading	**Client:** Lincoln	



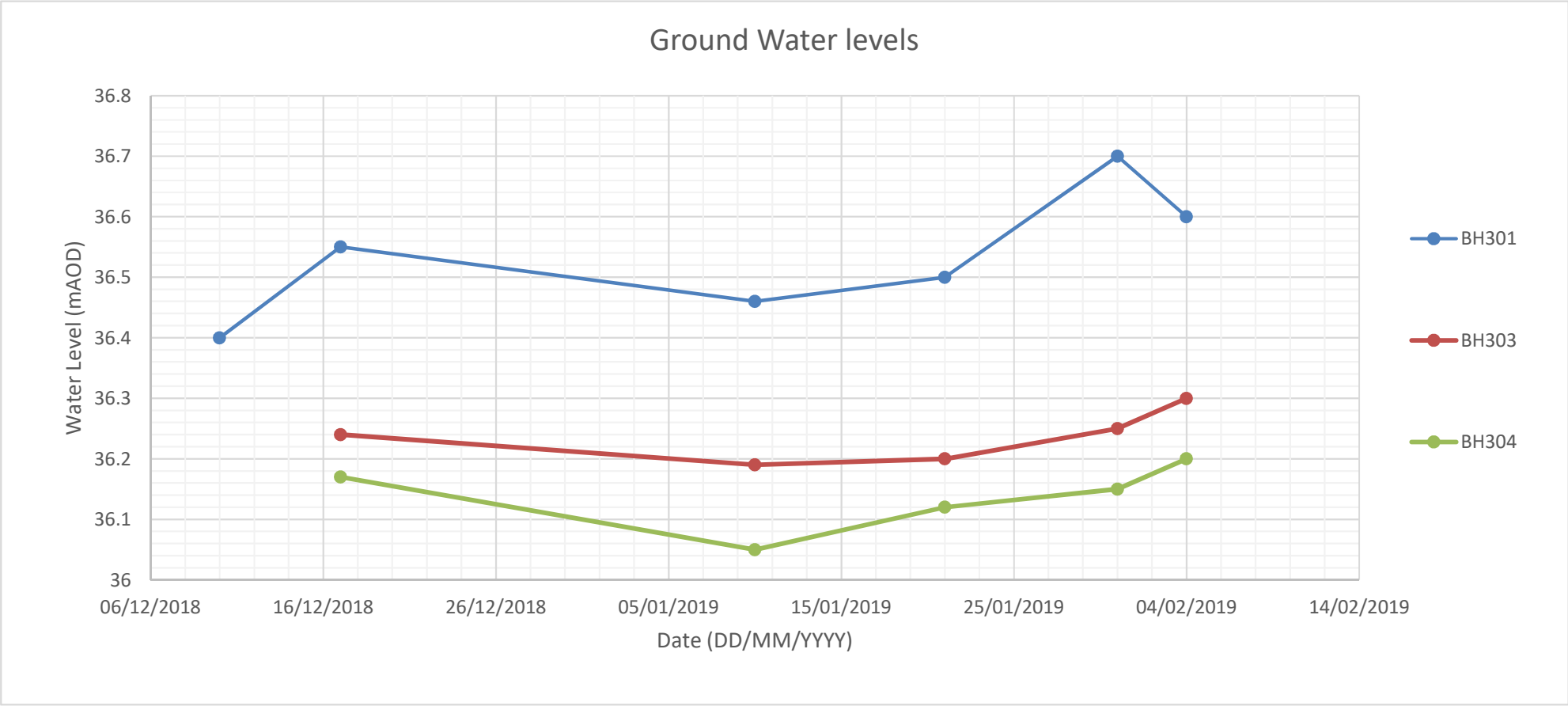
Title:	Unixaial Compressive Strength by Elevation for STRUCTURED CHALK	**Figure No:** 5.30	**Drawn:** MTRUBS	**Date:** 26/02/2019
		Status:	**Checked:**	**Date:**

RAMBOLL	Project:	STATION HILL, READING	Job No:	1620004716
	Location:	Station Hill Road, Reading	Client:	Lincoln



Title:	Drained Young's Modulus by Elevation for STRUCTURED CHALK	Figure No: 5.31	Drawn: MTRUBS	Date: 26/02/2019
		Status:	Checked:	Date:

RAMBOLL	**Project:** Station HILL, READING	**Job No:** 1620004716	
	Location: Station Hill Road, Reading	**Client:** Lincoln	



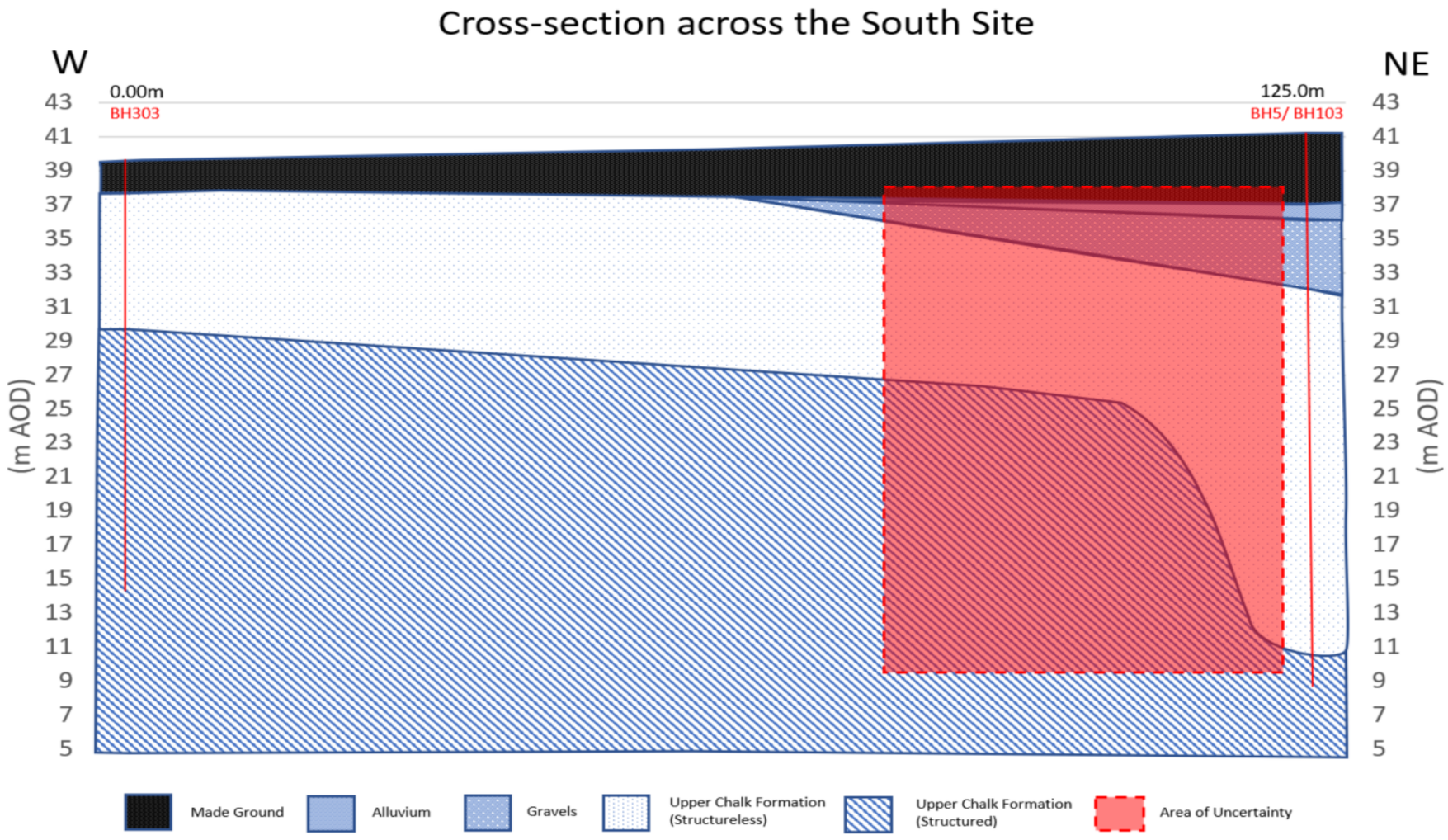
Title: Ground Water Levels	**Figure No:** 5.33	**Status:**	**Drawn:** MTRUBS	**Date:** 26/02/2019	
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APPENDIX 1

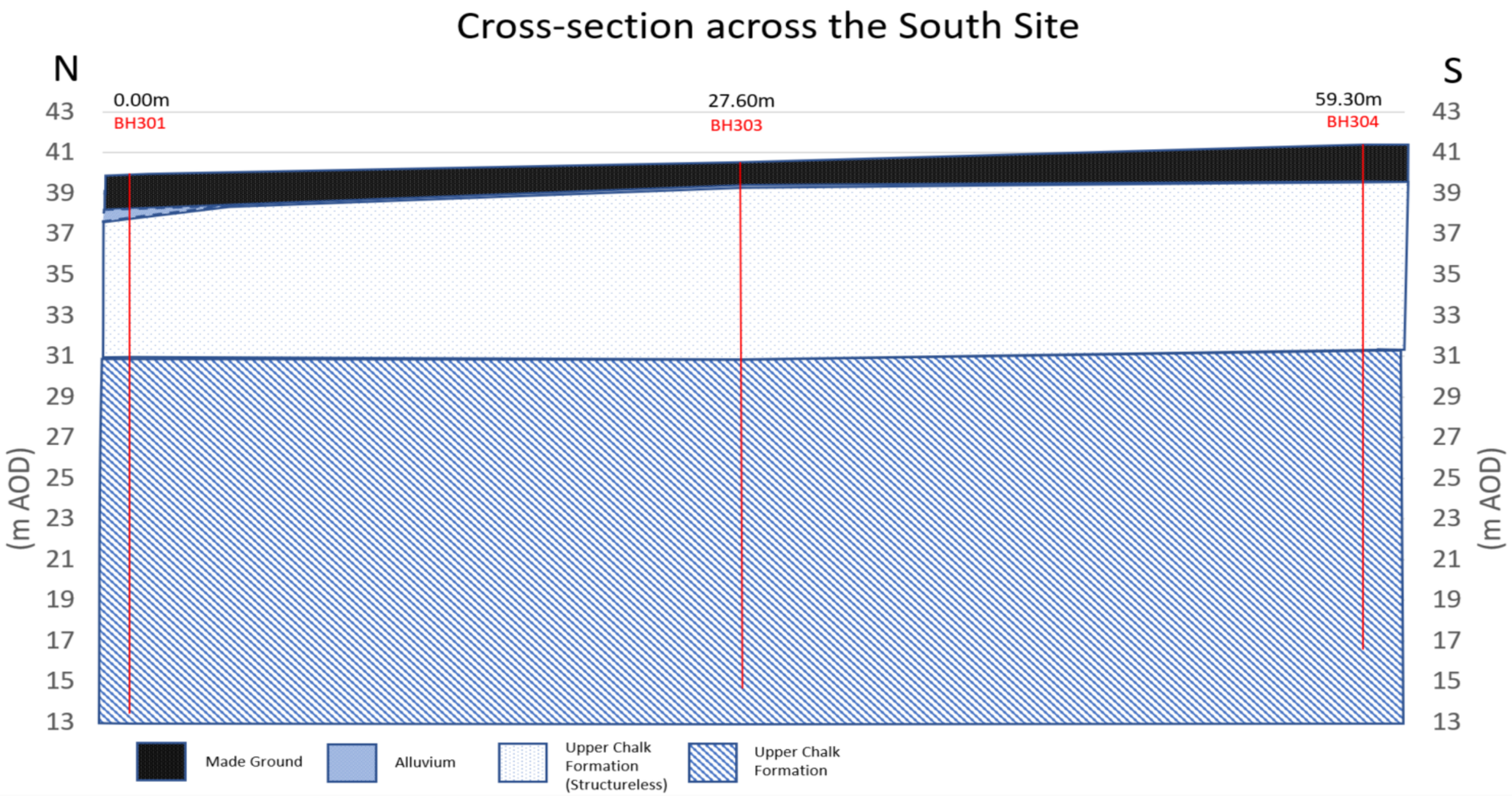
APPENDIX 1


Western Tower
Retail Parade
Xaffinity House
Former Bingo Hall/ Bus Station
NCP Carpark
North Side
South Side
BH301
WS304
WS306
WS314
WS303
WS305a
WS305
WS301
BH302
WS302
WS308
WS311
WS309
BH303
WS307
WS310
WS312
Telecoms House
Friars Walk Shopping Centre
BH304
WS316
WS315
WS313
STATION HILL
VACHEL STREET
GREYFRIARS ROAD
GARRARD STREET
STANSHAWE ROAD
MERCHANTS PLACE
FRIAR STREET
Aborted Windowless sample
As Scheduled Windowless Sample
As Scheduled Borehole
Aborted Borehole
Site Boundary (Indicative)
Existing Buildings
Existing Link Bridge
FRIARS Walk Shopping Centre 1st floor parking
Exploratory hole Installation
Building name
Existing basement

APPENDIX 2



Cross Section 1: West to North East from BH302 in the west to BH5 and BH103 in the north site



Cross section 2: North to south from BH301 to BH304 in the south site.

APPENDIX 3

STATION HILL, READING

FACTUAL REPORT ON GROUND INVESTIGATION

Prepared for SH READING MASTER LLP

Report Ref: 34769

Geotechnical Engineering Ltd
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STATION HILL, READING

FACTUAL REPORT ON GROUND INVESTIGATION

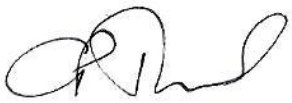
Prepared for SH READING MASTER LLP

Report Ref: 34769

PROJECT: Redevelopment of Old Shopping Centre

CONSULTANT: Ramboll UK Ltd

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ORIGINATOR	APPROVER
	
A TATNELL Senior Engineering Geologist	C THOMAS Geotechnical Consultant

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1. INTRODUCTION

It is proposed to redevelop a former shopping centre at Station Hill, Reading. Geotechnical Engineering Limited (GEL) was instructed by Ramboll Uk Ltd (the Consultant) acting on behalf of SH Reading Master LLP (the Client) to carry out an investigation to determine the ground conditions.

The scope of works and terms and conditions of appointment were specified by the Consultant and GEL correspondence reference T28836_02 dated 15th October 2018. The investigation was carried out under direction and part-time supervision of the Consultant.

This report describes the investigation and presents the findings.

2. SITE LOCATION AND GEOLOGY

The site is situated directly south of Garrard Street, Reading and may be located by its National Grid co-ordinates SU 713 736.

British Geological Survey (BGS) England and Wales (Sheet No. 268, 1:50,000, 2000) and the BGS online geology (1:50,000) indicate the site is underlain by superficial deposits of the Taplow Gravel Member (sand and gravel) locally underlying Alluvium (clay, silt, sand and gravel) to the north. Bedrock geology comprises the Seaford Chalk Formation and the Newhaven Chalk Formation. Made Ground was anticipated associated with road and building construction.

3. GROUND INVESTIGATION

3.1 Fieldwork

The fieldwork was carried out in general accordance with BS5930:2015 during the period 12th to the 30th November 2018 and comprised three boreholes, seventeen dynamic sample boreholes.

The exploratory hole locations were selected by the Consultant and set out by this Company and are shown on Figure 1. The ground level and co-ordinates at boreholes BH301, BH303 and BH304 and dynamic sample boreholes WS301, WS04 and WS314 were established by this Company using GPS techniques. The remaining exploratory hole locations were not established due being located within buildings. Ground levels for WS302, WS305, WS305A, WS307, WS310, WS311 and WS315 have been provided by the Consultant.

The boreholes, referenced BH301, BH303 and BH304 (Appendix A), were formed using a light cable tool (shell and auger) rig utilising 200mm tools and casing. Initially, rotary coring (250mm) techniques were utilised to penetrate tarmacadam and concrete hardstanding. An inspection pit was then hand excavated to 1.20m to check for buried services. The boreholes were then advanced using a clay cutter and bailer. Boreholes were suspended upon Consultant instruction and 168mm diameter rotary casing was installed prior to rotary follow-on drilling.

Disturbed samples of the arisings were taken and retained in plastic bags and airtight containers.

The boreholes, referenced BH301, BH303 and BH304 (Appendix A), were subsequently extended using a track-mounted Geotechnical Pioneer Rig. Following Consultant instruction to suspend cable percussive techniques and the installation of rotary casing, the boreholes were advanced by heavy duty dynamic sampling techniques to produce a continuous

disturbed sample of 112mm nominal diameter as the borehole was advanced. The samples were recovered in semi-rigid plastic liner.

On refusal to dynamic sampling the boreholes were continued by rotary core drilling techniques utilising a water flush. A double-tube swivel core barrel with semi-rigid plastic liner was utilised to recover a continuous sample of 120mm diameter. Where appropriate, dynamic sampling techniques were carried out to recover dropped core or where rotary core drilling was not suitable.

The dynamic samples and rotary core were extracted horizontally from the sampler and core barrel respectively, the semi-rigid liner was cut to length and each end sealed to retain moisture content. All samples and core were retained in sequence in labelled, wooden coreboxes.

Standard penetration tests (SPT) were carried out in general accordance with BS EN ISO 22476-3:2005+A1:2011. A split barrel or a solid cone was used depending upon the materials encountered and the split barrel samples retained in airtight jars. The SPT N value was taken as the number of blows to penetrate the 300mm test drive following a 150mm seating drive. Where low penetration was recorded the seating drive was terminated at 25 blows and the test drive completed after a further 50 blows. Detailed SPT results, together with the energy ratio (E_r), are presented in Appendix A and summarised as uncorrected N values on the borehole logs.

Boreholes were monitored for groundwater ingress as boring proceeded. Upon encountering water in BH301, boring was temporarily stopped to allow the level to stabilise. Water levels were also recorded at the start and finish of each day's work and on completion of the borehole and are presented on the relevant log. Groundwater was not encountered in borehole BH303 or BH304.

On completion, dual slotted standpipes and gas/water monitoring standpipes were installed in BH301 and BH304. Each standpipe consisted of a 19mm ID PVC slotted tube set in a granular filter medium and sealed above and below with a bentonite plug. Each gas/water monitoring standpipe consisted of a 50mm ID HDPE slotted tube set in a filter response zone of non-calcareous pea gravel. The installations were sealed above and below with a bentonite plug and accessed via a double valve assembly. The installations were protected at the surface by a lockable stopcock cover set in concrete. Installation details are given on the relevant borehole log and summarised in Table 3.1 in Section 3.3.

On completion, a slotted standpipe was installed in borehole BH303. Each standpipe consisted of a 19mm ID PVC slotted tube set in a granular filter medium and sealed above and below with a bentonite plug. The installation was protected at the surface by a lockable stopcock cover set in concrete. Installation details are given on the relevant borehole log and summarised in Table 3.1 in Section 3.3. Subsequent water level readings are tabulated in Appendix A.

Initially, sixteen dynamic sample boreholes were scheduled to be undertaken. However, dynamic sample boreholes WS306, WS308, WS309 and WS313 were cancelled by the Consultant due to time constraints. Initially, rotary coring (250mm) techniques were utilised to penetrate concrete hardstanding at these exploratory hole locations. An inspection pit was then hand excavated at borehole WS309 and WS313 to a maximum depth of 1.05m to check for buried services. Disturbed samples of the hand excavated material were taken and retained in a combination of plastic tubs, bags and glass jars.

The remaining dynamic sample boreholes, referenced WS301 to WS305, WS305A, WS307, WS310 to WS312, WS314 to WS316 (Appendix A), were formed using a Terrier 2000 rig. Initially, rotary coring (250mm) techniques were utilised to penetrate concrete hardstanding. An inspection pit was then hand excavated at each borehole location to a maximum depth of 1.20m to check for buried services. Dynamic sample borehole WS305 and WS12 were

terminated due to the presence of hard strata, with WS305 relocated and renamed WS305A. Disturbed samples were taken and retained in a combination of plastic tubs, bags and glass jars.

Dynamic sampling techniques were then employed to produce a continuous disturbed sample of 83mm diameter reducing to 70mm, 60mm and 50mm (where appropriate) as the borehole was advanced (or 97mm reducing to 83mm and 70mm in WS301). The samples were recovered in semi-rigid plastic liner.

The samples were extracted horizontally from the sampler, labelled and caps placed each end to retain moisture.

Standard penetration tests (SPT) were carried out in general accordance with BS EN ISO 22476-3:2005+A1:2011. A split barrel or a solid cone was used depending upon the materials encountered and the split barrel samples retained in airtight jars. The SPT N value was taken as the number of blows to penetrate the 300mm test drive following a 150mm seating drive. Where low penetration was recorded the seating drive was terminated at 25 blows and the test drive completed after a further 50 blows. Detailed SPT results, together with the energy ratio (E_r), are presented in Appendix A and summarised as uncorrected N values on the borehole logs.

Boreholes were monitored for groundwater ingress as dynamic sampling proceeded. Upon encountering water in WS301 to WS304, WS311 and WS314, sampling was temporarily stopped to allow the level to stabilise. Water levels were also recorded at the start and finish of each day's work and on completion of the borehole and are presented on the relevant log.

On completion, gas/water monitoring standpipes were installed in WS301, WS304, WS310, WS311, WS314 and WS315. Each installation consisted of a 50mm ID HDPE slotted tube set in a filter response zone of non-calcareous pea gravel. The installation was sealed above and

below with a bentonite plug and accessed via a valve assembly. The installations were protected at the surface by a lockable stopcock cover set in concrete. Installation details are given on the relevant borehole log and summarised in Table 3.1 in Section 3.3.

On completion, dynamic sample boreholes WS302, WS303, WS305 to WS309, WS312, WS313 and WS316 were backfilled with bentonite pellets, arisings (where appropriate) and the concrete surface reinstated.

Samples for chemical analyses were dispatched from site directly to i2 Analytical Ltd under a Chain of Custody. The headspace of these environmental samples was monitored for Volatile Organic Compounds (VOC's) using a MiniRAE 3000 Portable Photo-Ionisation Detector (PID) with a 10.6eV gas discharge lamp. The detector uses an ultra violet light source to break down the chemicals into positive and negative ions (ionisation). The detector measures the charge of the ionised gas and converts the signal into current. The current is then amplified and displayed as "ppm"; the readings are presented on the relevant exploratory hole logs in Appendix A.

The remaining samples were brought to this Company's laboratory for testing and storage.

3.2 Logging

The logging of soils and rocks was carried out by an Engineering Geologist in general accordance with BS5930:2015 and CIRIA C574. Chalk encountered where cable percussive drilling methods in boreholes BH301, BH303 and BH304 were used have been logged in accordance with BS5930:2015 and no chalk grade presented (due to the destructive method of drilling). A key to the exploratory hole logs is presented in Appendix A.

Detailed descriptions of the core and samples are given in the borehole logs, Appendix A, along with details of sampling, in situ testing, groundwater ingress, installations and relevant comments on drilling techniques.

Suitable core subsamples were selected by this Company. The core was carefully logged and prepared prior to preserving the subsample by wrapping in clingfilm and tinfoil prior to coating with at least three layers of wax. The sample was further protected by a covering of waxed cheesecloth, labelled and transported horizontally in padded, wooden coreboxes.

Prior to logging, photographs of the core were taken and are presented separately.

3.3 Post Fieldwork Monitoring

Following the main fieldwork, a period of monitoring was undertaken between 17th December 2018 and 4th February 2019. The response zone of each installation is presented in Table 3.1 below.

Borehole	Standpipe (50mm) Response Zone (m bgl)	Standpipe (19mm) Response Zone (m bgl)
BH301	1.00 - 2.00	5.00 - 6.00
BH303	-	6.50 - 7.50
BH304	1.00 - 1.80	2.50 - 8.00
WS301	0.10 - 1.00	-
WS304	1.00 - 2.00	-
WS310	0.50 - 1.00	-
WS311	0.40 - 1.40	-
WS314	1.00 - 1.85	-
WS315	0.40 - 0.50	-

Table 3.1: Summary of installation response zones

The gas/water installations (50mm standpipes) were monitored for gas flow and then tested for methane, carbon dioxide, oxygen, hydrogen sulphide, and carbon monoxide using a Gas Data GFM 435 gas analyser. Subsequent readings, along with water level records from all installations, are tabulated in Appendix A.

The gas/water installations were also monitored for Volatile Organic Compounds (VOC's) using a MiniRAE 2000 Portable Photo-Ionisation Detector (PID) with a 10.6eV gas discharge lamp. The readings are presented in Appendix A.

Water levels for the standpipe and gas/water installations are presented in Appendix A.

3.4 Laboratory Testing

Two schedules of laboratory tests were prepared by the Consultant the following tests being carried out in accordance with BS1377:1990, unless stated otherwise. The number in brackets refers to the test number given in that standard. The results are presented in Appendix B.

The natural water content was determined on twenty-five selected samples in accordance with BS EN ISO 17892-1:2014.

Liquid limit, plastic limit and plasticity index tests [Part 2:4.3-4.5, 5.3 and 5.4] were carried out on twenty-one selected samples. Atterberg line plots have also been presented.

The saturated moisture content [Part 2:3.3] was determined on eleven selected samples by this Company and seven selected samples by Terra Tek Ltd.

The bulk density was determined on five samples by the linear measurement method in accordance with BS EN ISO 17892-2:2014-5.1.

Particle densities were determined for two samples using the fluid pycnometer method in accordance with BS EN ISO 17892-3:2015.

Particle size distributions were determined in accordance with BS EN ISO 17892-4:2016 for twenty-two samples by wet sieving [5.2]. The fine fractions of twenty-one of these samples were further analysed by sedimentation using the pipette method [5.4]. The results are presented as grading curves.

The following tests on rock samples were carried out in accordance with ISRM (2007) unless stated otherwise. Test results are presented in Appendix B.

The natural moisture content of rock was determined on three selected cores.

Two rock cores were tested for their unconfined compressive strength.

Point load index tests were carried out on one hundred and twenty-eight selected lengths of core.

The BRE SD1 (2005) suite of tests was carried out on eleven samples by Chemtest Ltd using in-house methods.

The organic matter content was determined for six selected samples by Chemtest Ltd using in-house methods.

Selected samples were despatched to i2 Analytical Ltd, where chemical analyses were carried out to in-house methods for a suite of contaminants. The results are presented in Appendix C.

4. REFERENCES

British Standards Institution (2015): Code of practice for ground investigations. BS 5930:2015.

British Standards Institution (2016): Methods of test for soils for civil engineering purposes – Part 1: General requirements and sample preparation. BS1377-1:2016.

British Standards Institution (1990): Methods of tests for soils for civil engineering purposes. BS 1377 Parts 2-9.

British Standards Institution (2014): Geotechnical investigation and testing – Laboratory testing of soil. Part 1: Determination of water content. BS EN ISO 17892-1:2014.

British Standards Institution (2014): Geotechnical investigation and testing – Laboratory testing of soil. Part 2: Determination of bulk density. BS EN ISO 17892-2:2014.

British Standards Institution (2016): Geotechnical investigation and testing – Laboratory testing of soil. Part 3: Determination of particle density. BS EN ISO 17892-3:2015.

British Standards Institution (2016): Geotechnical investigation and testing – Laboratory testing of soil. Part 4: Determination of particle size distribution. BS EN ISO 17892-4:2016.

British Standards Institution (2012): Geotechnical investigation and testing. Field testing. Standard penetration test. BS EN ISO 22476-3:2005+A1:2011.

Lord J A, Clayton C R I and Mortimore R N (2002): Engineering in Chalk. CIRIA Report No. C574.

Building Research Establishment (2005): Concrete in aggressive ground. BRE Special Digest 1. Third Edition.

International Society for Rock Mechanics (2007). The complete ISRM suggested methods for rock characterization, testing and monitoring: 1974-2006, edited by R Ulusay & J A Hudson. Ankara, Turkey: Turkish National Group of the International Society for Rock Mechanics.



Exploratory hole location overview

Key.

- Borehole Location
- Dynamic Sample Location
- Approximate Dynamic Sample Location

Notes:

Drawing supplied by the Consultant

geotechnical

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Client:	SH READING MASTER LLP
Consultants:	RAMBOLL
Site:	STATION HILL, READING
Title:	EXPLORATORY HOLE LOCATION PLAN

Drawn By:	Checked By:	Paper Size:
AT	CT	A3

Scale:	Date:
1:500	January 2019

Contract:	Figure:
34769	1

APPENDIX A

FIELDWORK DATA

Geotechnical Engineering Limited

KEY TO EXPLORATORY HOLE LOGS

Sample type

D Small disturbed	U Undisturbed	L Dynamic	ES Environmental - soil	Cs Core subsample (prepared)
B Bulk disturbed	UT Undisturbed thin wall	C Core	EW Environmental - water	Ls Dynamic subsample (prepared)
LB Large bulk disturbed	P Piston	W Water		

Test type

S SPT - Split spoon sampler followed by uncorrected SPT 'N' Value

C SPT - Solid cone followed by uncorrected SPT 'N' Value

(*250 - Where full test drive not completed, linearly extrapolated 'N' value reported, ** - Denotes no effective penetration)

H Hand vane - direct reading in kPa - not corrected for BS1377 (1990). Re* denotes refusal

M Mackintosh probe - number of blows to achieve 100mm penetration

Mx Mexe cone - average reading of equivalent CBR value in %

PP Pocket penetrometer - direct reading in kg/sq.cm

Vo Headspace vapour reading, uncorrected peak values in ppm, using a PID (calibrated with Isobutylene, using a 10.6eV bulb)

Sample/core range/I_f

Dynamic sample

Undisturbed sample - open drive including thin wall. Symbol length reflects recovery

x x = Total Core Recovery (TCR) as percentage of core run

y y = Solid Core Recovery (SCR) as percentage of core run. Assessment of core is based on full diameter.

z z = Rock Quality Designation (RQD). The amount of solid core greater than 100mm expressed as percentage of core run.

Where SPT has been carried out at beginning of core run, disturbed section of core excluded from SCR and RQD assessment.

I_f - fracture spacing - the modal fracture spacing (mm) over the indicated length of core. Where spacing varies significantly, the minimum, mode and maximum values are given. NI = non-intact core NA = not applicable

Instrumentation

Porous tip | Perforated standpipe | Granular response zone | Bentonite seal | Cement/ bentonite grout | Soil Backfill | Concrete

Stratum boundaries

Estimated boundary

Grading boundary

Logging

The logging of soils and rocks has been carried out in general accordance with BS 5930:2015.

Chalk is logged in general accordance with Lord et al (2002) CIRIA C574. Where possible, dynamic samples in chalk have been logged in accordance with CIRIA C574; descriptions and gradings (if presented) should be treated with caution given the potential for sample disturbance.

For rocks the term fracture has been used to identify a mechanical break within the core. Where possible incipient and drilling induced fractures have been excluded from the assessment of fracture state. Where doubt exists, a note has been made in the descriptions. All fractures are considered to be continuous unless otherwise reported.

Made Ground is readily identifiable when, within the material make up, man made constituents are evident. Where Made Ground appears to be reworked natural material the differentiation between in situ natural deposits and Made Ground is much more difficult to ascertain. The interpretation of Made Ground within the logs should therefore be treated with caution.

The descriptors "topsoil" and "tarmacadam" are used as generic terms and do not imply conformation to any particular standard or composition.

Rootlets are defined as being less than 2mm in diameter, roots are defined as in excess of 2mm diameter.

General Comments

The process of drilling and sampling will inevitably lead to disturbance, mixing or loss of material in some soil and rocks.

Indicated water levels are those recorded during the process of drilling or excavating exploratory holes and may not represent standing water levels.

All depths are measured along the axis of the borehole and are related to ground level at the point of entry. All inclinations are measured normal to the axis of the core.

Where provided, the stratigraphic names/geological rock units are for guidance only and may not be wholly accurate.

Geotechnical Engineering Limited

BOREHOLE LOG

BH301

CLIENT SH READING MASTER LLP

SITE STATION HILL, READING — Sheet 1 of 3

Start Date 12 November 2018 — Easting 471329.2 — Scale 1 : 50

End Date 29 November 2018 — Northing 173674.1 — Ground level 39.55mOD — Depth 25.50 m

progress date/time water depth	sample no & type	depth (m) from to	casing depth (m)	test type & value	samp. /core range	I_f	instru -ment	description	depth (m)	reduced level (m)	legend
12/11/18 1500hrs	C	0.00 - 0.60	Nil		100			MADE GROUND comprising black TARMACADAM.	0.10	39.45	
	1B	0.20 - 0.40							0.30	39.25	
	1ES	0.20		Vo 0.0				Brown, red and black clayey very sandy subangular fine to coarse flint, brick, concrete and chalk GRAVEL with a low angular brick and concrete cobble content. With fragments of metal (5% up to 50mm), glass (5% up to 20mm) and tiles (5% up to 10mm). (MADE GROUND)	0.50	39.05	
	2B	0.60 - 0.80									
12/11/18 1605hrs Dry	2ES	0.70		Vo 0.0							
	3B	1.00 - 1.20						MADE GROUND comprising poorly cemented grey CONCRETE.			
13/11/18 0930hrs Dry	3ES	1.20		Vo 0.0					1.50	38.05	
	4D	1.50 - 1.95	1.50	S 21				Brown and black slightly sandy gravelly CLAY with a low brick and concrete cobble content. Gravel is subangular fine to coarse flint, brick and chalk. With fragments of metal (5% up to 50mm), glass (5% up to 20mm) and tiles (5% up to 10mm). (MADE GROUND)	1.70	37.85	
	4ES	1.70		Vo 0.0				1.20 - 1.50m: Slightly gravelly.	2.00	37.55	
	5B	1.80						Soft orangish brown slightly sandy slightly gravelly silty CLAY. Gravel is subangular fine to coarse flint. (ALLUVIUM)			
	6B	2.80									
	7D	3.00 - 3.45	3.00	S 7				Medium dense off-white and orangish brown sandy very silty subangular and subrounded fine to coarse chalk and flint GRAVEL with a medium subangular chalk cobble content and with rare pockets (up to 100mm) of soft brown clay. (TAPLOW GRAVEL)			
	5ES	3.50		Vo 0.0							
	8B	4.00						Off-white CHALK recovered as sandy gravelly SILT. Gravel is angular to subrounded fine to coarse low density chalk with rare fine and medium flint gravel. (STRUCTURELESS CHALK)			
13/11/18 1100hrs 4.20m	9D	4.50 - 4.95	4.50	S 10					4.50	35.05	
29/11/18 0900hrs 3.50m	10L	4.50 - 6.00						Structureless CHALK composed of white locally stained yellowish brown slightly sandy gravelly SILT. Gravel is angular to subrounded fine and medium rarely coarse chalk, rarely angular fine and medium flint. (Probably CIRIA Grade Dm). (STRUCTURELESS CHALK)			
	6ES	5.00 - 5.20		Vo 0.0							
	11D	6.00 - 6.45	4.50	S 9							
	12C	6.00 - 7.50	6.00		70	NA					
						NA			6.45	33.10	
	13D	7.50 - 7.95	6.00	S 18				Structureless CHALK composed of silty sandy subangular and subrounded fine and medium GRAVEL. Clasts are white locally stained yellowish brown chalk. Matrix is white. Rare angular to subrounded fine and medium flint gravel. (Probably CIRIA Grade Dc) (STRUCTURELESS CHALK) 6.80 - 7.00m: Frequent flint gravel.			
	14C	7.50 - 9.00			67 6 6						
								Continued Next Page	{8.00}		

EQUIPMENT: Light cable percussive (shell and auger) rig and Geotechnical Pioneer rig.

METHOD: Rotary core drilled (250mm) 0.00-0.60m. Hand dug inspection pit 0.60-1.20m. Cable percussion (200mm) 1.20-4.50m. Dynamic sampled (128mm) 4.50-6.00m. Waterflush rotary core drilled (146mm) 6.00-25.50m.

CASING: 200mm diam to 4.50m and 168mm diam to 9.00m.

BACKFILL: On 30/11/2018, hole backfilled with bentonite pellets 25.50-6.00m. A slotted standpipe (19mm) was installed to 6.00m, granular response zone 6.00-5.00m and bentonite seal 5.00-2.00m. A second slotted standpipe (50mm) was installed to 2.00m, granular response zone 2.00-1.00m, bentonite seal 1.00-0.30m, gravel drain 0.30-0.20m, concrete and stopcock cover 0.20-0.00m.

REMARKS: Driller notes reduced flush between 6.00-25.50m (approx. 50-75% returned).

Chalk grade based CIRIA C574 (2002).

EXPLORATORY HOLE LOGS SHOULD BE READ IN CONJUNCTION WITH KEY SHEETS

water strike (m)	casing (m)	rose to (m)	time to rise (min)	remarks
3.60	Nil	3.50	20	

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Geotechnical Engineering Limited

BOREHOLE LOG

BH301

CLIENT SH READING MASTER LLP

SITE STATION HILL, READING — Sheet 2 of 3

Start Date 12 November 2018 — Easting 471329.2 — Scale 1 : 50

End Date 29 November 2018 — Northing 173674.1 — Ground level 39.55mOD — Depth 25.50 m

progress date/time water depth	sample no & type	depth (m) from to	casing depth (m)	test type & value	samp. /core range	I_f	instru -ment	description	depth (m)	reduced level (m)	legend
								8.60 - 8.90m: Clasts have frequent black specks.			
	15D	9.00 - 9.45	9.00	S 13		NI 35 190			8.90	30.65	
	16C	9.00 - 10.50			100 32 7			Very weak low density white CHALK. Fractures are subhorizontal to 10º and 50-60º very closely and closely spaced planar and undulating smooth and rough infilled (up to 3mm) with white silt, locally stained brownish yellow with rare black specks. Medium spaced bands of angular fine to coarse gravel sized flint. (CIRIA Grade B4) (STRUCTURED CHALK)			
	17D	10.50 - 10.95	9.00	S 41							
	18C	10.50 - 12.00			67 26 0						
								11.60 - 12.35m: Widely spaced bands of cobble sized rinded black nodular flint.			
	19D	12.00 - 12.24	9.00	S*94							
	20C	12.00 - 13.50			81 35 13						
						NI 80 180			13.20	26.35	
	21C	13.50 - 15.00	9.00		100 72 21			Extremely weak low and medium density white CHALK. Fractures are subhorizontal and 60-70º closely spaced planar and undulating smooth infilled (up to 2mm) with white silt, stained brownish yellow with frequent black specks. Widely spaced bands of subangular fine to coarse gravel sized flint. (CIRIA Grade B3) (STRUCTURED CHALK)			
									14.60	24.95	
						NI 160 380		Very weak locally extremely weak medium density white CHALK. Fractures are subhorizontal to 10º and 70-80º closely and medium spaced planar and undulating smooth, locally stained yellowish brown with rare black specks. Widely spaced bands of angular fine to coarse gravel sized flint. (CIRIA Grade A3) (STRUCTURED CHALK)			
		15.00 - 15.19	9.00	C*130							
	22C	15.00 - 16.50			67 43 19						
	23C	16.50 - 18.00	9.00		95 73 45						
	24Cs	17.25 - 17.64									
		18.00 - 18.17	9.00	C*176							
								Continued Next Page	{18.00}		

water strike (m) casing (m) rose to (m) time to rise (m) remarks

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Geotechnical Engineering Ltd, Tel. 01452 527743 34769 STATION HILL, READING.GPJ TRIALJH.GPJ GEOTECH2.GLB 26/02/2019 10:26:44 NS/AT RB

Geotechnical Engineering Limited

BOREHOLE LOG

BH301

CLIENT SH READING MASTER LLP

SITE STATION HILL, READING — Sheet 3 of 3

Start Date 12 November 2018 — Easting 471329.2 — Scale 1 : 50

End Date 29 November 2018 — Northing 173674.1 — Ground level 39.55mOD — Depth 25.50 m

progress date/time water depth	sample no & type	depth (m) from to	casing depth (m)	test type & value	samp. /core range	I_f	instru -ment	description	depth (m)	reduced level (m)	legend
	25C	18.00 - 19.50			100 73 27						
	26C	19.50 - 21.00	9.00		100 93 47						
		21.00 - 21.16	9.00	C*188							
	27C	21.00 - 22.50			65 49 42						
									22.50	17.05	
	28C	22.50 - 24.00	9.00		5	NA		Limited recovery (5%) of cobble sized rinded dark grey FLINT, recovered non intact. Core loss presumed to be chalk, not recovered due to flint jamming in core barrel. (STRUCTURED CHALK)			
		24.00 - 24.18	9.00	C*143					24.00	15.55	
	29C	24.00 - 25.50			88 69 42	NI 85 170		Very weak medium density white CHALK. Fractures are subhorizontal to 10º closely and medium spaced planar and undulating smooth with rare black specks. Medium spaced bands of subrounded fine to coarse gravel sized flint. (CIRIA Grade A3) (STRUCTURED CHALK)			
29/11/18 1645hrs 6.89m		25.50 - 25.68	9.00	C*158					25.50	14.05	
30/11/18 0815hrs 5.21m								Borehole completed at 25.50m.	{28.00}		

water strike (m) casing (m) rose to (m) time to rise (m) remarks

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BOREHOLE LOG

BH303

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SITE STATION HILL, READING — Sheet 1 of 3

Start Date 14 November 2018 — Easting 471329.6 — Scale 1 : 50

End Date 28 November 2018 — Northing 173648.3 — Ground level 40.45mOD — Depth 25.50 m

progress date/time water depth	sample no & type	depth (m) from to	casing depth (m)	test type & value	samp. /core range	I_f	instru -ment	description	depth (m)	reduced level (m)	legend
14/11/18 1400hrs	C	0.00 - 1.00	Nil		100			MADE GROUND comprising black TARMACADAM.	0.10	40.35	
	1ES	0.20		Vo 0.0				Brown, red and black clayey very gravelly fine to coarse SAND with a low angular brick and concrete cobble content. Gravel is subangular fine to coarse flint, brick, concrete and chalk. With fragments of tarmacadam (5% up to 100mm) and tiles (5% up to 10mm). (MADE GROUND)	0.40	40.05	
	1B	0.30									
	2ES	1.00		Vo 0.0					1.00	39.45	
	2B	1.00						MADE GROUND comprising grey CONCRETE.			
	3D	1.50 - 1.95	1.50	S 17				White CHALK recovered as white slightly sandy gravelly SILT. Gravel is angular to subrounded fine to coarse chalk, rarely angular fine and medium flint. (STRUCTURELESS CHALK)			
	4B	2.00						1.00 - 1.20m: Rare pockets (up to 10mm) of brown silt.			
14/11/18 1600hrs Dry	5D	3.00 - 3.45	3.00	S 15							
27/11/18 1050hrs Dry	6L	3.00 - 4.50									
	7B	3.00							3.50	36.95	
								Structureless CHALK composed of white stained yellowish brown slightly sandy slightly gravelly SILT. Gravel is subangular and subrounded fine and medium chalk. (Probably CIRIA Grade Dm) (STRUCTURELESS CHALK)			
	8D	4.50 - 4.95	3.00	S 14							
	9L	4.50 - 6.00									
									5.70	34.75	
	10D	6.00 - 6.45	3.00	S 12				Structureless CHALK composed of white stained orangish yellow slightly sandy gravelly SILT. Gravel is angular to subrounded fine and medium rarely coarse chalk, rarely subrounded and rounded fine and medium flint. (Probably CIRIA Grade Dm) (STRUCTURELESS CHALK)			
	11L	6.00 - 7.50	6.00								
	12D	7.50 - 7.95	6.00	S 38							
	13C	7.50 - 9.00	7.50		32	NA		7.50 - 9.00m: Limited recovery (32%). Core loss presumed chalk, not recovered due to flint jamming in core barrel.			
								Continued Next Page	{8.00}		

EQUIPMENT: Light cable percussive (shell and auger) rig and Geotechnical Pioneer rig.

METHOD: Rotary core drilled (250mm) 0.00-1.00m. Hand dug inspection pit 1.00-1.20m. Cable percussion (200mm) 1.20-3.00m. Dynamic sampled (128mm) 3.00-7.50m. Waterflush rotary core drilled (146mm) 7.50-25.50m.

CASING: 200mm diam to 3.00m and 168mm diam to 7.50m.

BACKFILL: On completion, hole backfilled with bentonite pellets 25.50-7.50m. A slotted standpipe (19mm) was installed to 7.50m, granular response zone 7.50-6.50m, bentonite seal 6.50-0.30m, concrete and stopcock cover 0.30-0.00m.

REMARKS: Driller notes flush returns reduced between 7.50- 16.50m (approx. 10-50% returned) and loss of flush from 16.50-25.50m. Chalk grade based on CIRIA C574 (2002).

EXPLORATORY HOLE LOGS SHOULD BE READ IN CONJUNCTION WITH KEY SHEETS

water strike (m)	casing (m)	rose to (m)	time to rise (min)	remarks
				Groundwater not encountered prior to use of water flush.

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BOREHOLE LOG

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SITE STATION HILL, READING — Sheet 2 of 3

Start Date 14 November 2018 — Easting 471329.6 — Scale 1 : 50

End Date 28 November 2018 — Northing 173648.3 — Ground level 40.45mOD — Depth 25.50 m

progress date/time water depth	sample no & type	depth (m) from to	casing depth (m)	test type & value	samp. /core range	I_f	instru -ment	description	depth (m)	reduced level (m)	legend
	14C	9.00 - 10.50	7.50		68 53 0						
						NI 10 15		Extremely weak locally very weak low density white CHALK. Fractures are randomly orientated extremely closely spaced planar smooth infilled (up to 3mm) with white silt. Medium spaced bands (up to 10mm) of subangular and subrounded fine to coarse flint gravel. (CIRIA Grade B5) (STRUCTURED CHALK)	9.60	30.85	
	15D	10.50 - 10.95	7.50	S 42							
	16C	10.50 - 12.00			100 45 0						
						NI 55 90		Very weak low density white CHALK. Fractures are subhorizontal to 10º and 50-60º very closely and closely spaced planar smooth locally stained brownish yellow. (CIRIA Grade A4) (STRUCTURED CHALK)	11.05	29.40	
	17D	12.00 - 12.44	7.50	S*53							
	18C	12.00 - 13.50			83 49 0						
	19C	13.50 - 15.00	7.50		65 21 0			14.20 - 15.50m: Recovered non intact as silty sandy subangular fine to coarse gravel (possibly drilling disturbed).			
27/11/18 1630hrs 5.89m		15.00 - 15.17	7.50	C*176							
28/11/18 0830hrs 5.01m	20C	15.00 - 16.50			90 59 15						
						NI 110 240		Extremely weak and very weak low density white CHALK. Fractures are subhorizontal to 10º and 70-80º closely and medium spaced planar smooth infilled (up to 2mm) with white silt locally stained orangish yellow. Widely spaced bands (up to 15mm) of angular and subangular fine to coarse flint gravel. (CIRIA Grade (B3) (STRUCTURED CHALK)	15.50	24.95	
	21C	16.50 - 18.00	7.50		100 89 26						
		18.00 - 18.18	7.50	C*158							
								Continued Next Page	{18.00}		

water strike (m) casing (m) rose to (m) time to rise (m) remarks

Groundwater not encountered prior to use of water flush.

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BOREHOLE LOG

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SITE STATION HILL, READING — Sheet 3 of 3

Start Date 14 November 2018 — Easting 471329.6 — Scale 1 : 50

End Date 28 November 2018 — Northing 173648.3 — Ground level 40.45mOD — Depth 25.50 m

progress date/time water depth	sample no & type	depth (m) from to	casing depth (m)	test type & value	samp./core range	I_f	instru-ment	description	depth (m)	reduced level (m)	legend
	22C	18.00 - 19.50			67 33 0			19.00 - 19.50m: Assumed zone of core loss.			
	23C	19.50 - 21.00	7.50		99 91 43	NI 140 450		Very weak medium locally high density white CHALK. Fractures are subhorizontal to 10° closely and medium spaced planar and undulating smooth locally stained off-white with frequent black specks. Widely spaced bands (up to 15mm) of angular fine and medium flint gravel. (CIRIA Grade A3) (STRUCTURED CHALK)	19.60	20.85	
		21.00 - 21.14	7.50	C*250							
	24C	21.00 - 22.50			93 70 57			21.00 - 21.80m: 70° planar smooth fracture.			
								22.30m: Cobble sized rinded black nodular flint.			
	25C	22.50 - 24.00	7.50		80 60 60						
		24.00 - 24.23	7.50	C*143							
	26C	24.00 - 25.50			100 68 55						
	27Cs	24.36 - 24.81									
28/11/18 1230hrs 4.03m		25.50 - 25.71	7.50	C*130				24.95 - 25.10m: Subvertical planar smooth fracture.			
								Borehole completed at 25.50m.	25.50	14.95	
									{28.00}		

water strike (m) casing (m) rose to (m) time to rise (m) remarks

Groundwater not encountered prior to use of water flush.

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BOREHOLE LOG

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SITE STATION HILL, READING

Sheet 1 of 3

Start Date 12 November 2018 Easting 471335.4 Scale 1 : 50

End Date 26 November 2018 Northing 173616.0 Ground level 41.60mOD Depth 24.60 m

progress date/time water depth	sample no & type	depth (m) from to	casing depth (m)	test type & value	samp. /core range	I_f	instru -ment	description	depth (m)	reduced level (m)	legend
12/11/18 1215hrs	C	0.00 - 0.40	Nil		100			MADE GROUND comprising black TARMACADAM.	0.06	41.54	
	1B	0.30						Dark grey very sandy subangular fine to coarse flint, brick, concrete and chalk GRAVEL. (MADE GROUND)	0.14	41.46	
13/11/18 1330hrs Dry	1ES	0.50		Vo 0.0				MADE GROUND comprising poorly cemented grey CONCRETE.	0.41	41.19	
	2B	0.70									
	2ES	1.00		Vo 0.0				Brown, red and grey clayey very gravelly fine to coarse SAND with a low angular brick and concrete cobble content. Gravel is subangular fine to coarse flint, brick, concrete and chalk. With fragments of tiles (5% up to 10mm). (MADE GROUND)	1.40	40.20	
	3B	1.40						1.00 - 1.20m: Concrete boulder.			
		1.50 - 1.95	1.50	C 23							
	3ES	1.50		Vo 0.0					1.80	39.80	
	4B	2.00						Medium dense orangish brown gravelly very clayey fine to coarse SAND. Gravel is subangular fine to coarse flint and chalk. (MADE GROUND?)			
13/11/18 1500hrs Dry	5D	3.00 - 3.45	3.00	S 18				White CHALK recovered as white slightly sandy gravelly SILT with a low very weak medium density chalk cobble content. Gravel is angular to subangular fine to coarse extremely weak low density chalk with rare angular fine to coarse flint. (STRUCTURELESS CHALK)			
22/11/18 1230hrs Dry	6B	3.00						1.80 - 2.00m: Rare pockets (up to 15mm) of brown silt.			
	7L	3.00 - 4.00						3.45 - 3.50m: No recovery.	3.50	38.10	
	8D	4.00 - 4.45	4.00	S 18				Structureless CHALK composed of white slightly gravelly SILT. Gravel is subangular and subrounded fine to coarse very weak medium density white with frequent black specks chalk. (Probably CIRIA Grade Dm). (STRUCTURELESS CHALK)	4.00	37.60	
	9L	4.00 - 5.50									
								Structureless CHALK composed of white slightly gravelly SILT. Gravel is angular to subrounded fine to coarse very weak medium density white with frequent black specks chalk, rarely angular fine to coarse flint. (Probably CIRIA Grade Dm). (STRUCTURELESS CHALK)			
	10D	5.50 - 5.95	5.00	S 18				4.20m: Flint cobble recovered as angular fine to coarse gravel.	5.50	36.10	
	11C	5.50 - 7.00	5.30		67			4.70 - 5.20m: White slightly sandy silty angular to subrounded fine to coarse low density chalk gravel with frequent black specks and yellowish orange staining.			
								5.30 - 5.50m: Assessed zone of core loss.			
	12D	7.00 - 7.45						Structureless CHALK composed of white slightly gravelly SILT. Gravel is angular to subrounded fine to coarse very weak low and medium density white with frequent black specks chalk, rarely angular medium and coarse flint. (Probably CIRIA Grade Dm). (STRUCTURELESS CHALK)			
	13C	7.00 - 8.50			7			5.70m: Cobble sized rinded black nodular flint.			
								6.30m: Very weak medium density white chalk cobble with black specks and yellowish orange staining.			
								6.50 - 7.00m: Assessed zone of core loss. Possibly due to flint cobble scrubbing sample barrel.			
								Continued Next Page	{8.00}		

EQUIPMENT: Light cable percussive (shell and auger) rig and Geotechnical Pioneer rig.

METHOD: Rotary core drilled (250mm) 0.00-0.40m. Hand dug inspection pit 0.40-1.20m. Cable percussion (200mm) 1.20-3.00m. Dynamic sampled (128mm) 3.00-5.50m. Waterflush rotary core drilled (146mm) 5.50-24.60m.

CASING: 200mm diam to 3.00m and 168mm diam to 5.30m.

BACKFILL: On 27/11/2018, hole backfilled with bentonite pellets 24.60-8.00m. A slotted standpipe (19mm) was installed to 8.00m, granular response zone 8.00-2.50m and bentonite seal 2.50-1.80m. A second slotted standpipe (50mm) was installed to 1.80m, granular response zone 1.80-1.00m, bentonite seal 1.00-0.30m, gravel 0.30-0.20m, concrete and stopcock cover 0.20-0.00m.

REMARKS: Flush returns reduced between 17.10-20.10m (approx. 30% returned). Flush returns lost from 20.10-24.60m. Dynamic sampling carried out to recover dropped core. 8.70-9.60m recovered 0.60m. Chalk grade based on CIRIA C574 (2002).

EXPLORATORY HOLE LOGS SHOULD BE READ IN CONJUNCTION WITH KEY SHEETS

water strike (m)	casing (m)	rose to (m)	time to rise (min)	remarks
				Groundwater not encountered prior to use of water flush.

AGS

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BOREHOLE LOG

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SITE STATION HILL, READING — Sheet 2 of 3

Start Date 12 November 2018 — Easting 471335.4 — Scale 1 : 50

End Date 26 November 2018 — Northing 173616.0 — Ground level 41.60mOD — Depth 24.60 m

progress date/time water depth	sample no & type	depth (m) from to	casing depth (m)	test type & value	samp. /core range	I_f	instru -ment	description	depth (m)	reduced level (m)	legend
	14D	8.50 - 8.95	5.30	S 21				7.00 - 7.10m: Recovered non intact as angular fine and medium flint gravel.			
	15C	8.50 - 8.70			50			7.10 - 8.50m: Assessed zone of core loss. Core loss presumed chalk, not recovered due to flint jamming in core barrel.			
	C	8.70 - 9.60	5.30		44			8.70 - 9.60m: Assessed zone of core loss. Recovered as sand cuttings. Probably due to flint jamming in core barrel.			
22/11/18 1600hrs 2.00m	16D	9.60 - 10.05	5.30	S 50							
23/11/18 0900hrs 5.60m	17C	9.60 - 11.10			97 30 0						
						NI NI 100		Very weak medium density white stained yellowish orange with frequent black specks CHALK . Fractures are subhorizontal to 30° and 70° to subvertical extremely closely spaced planar smooth infilled (up to 5mm) with silt locally stained brownish orange. (CIRIA grade C5). (STRUCTURED CHALK)	10.30	31.30	
	18D	11.10 - 11.45	5.30	S*77					11.10	30.50	
	19C	11.10 - 12.60			100 23 10			Very weak medium density white CHALK with frequent black specks and yellowish orange staining. Fractures are 30° to subvertical extremely closely to closely spaced planar smooth. (CIRIA grade A5). (STRUCTURED CHALK)			
	20D	12.60 - 13.02	5.30	S*56					12.60	29.00	
	21C	12.60 - 14.10			97 36 13	NI 80 190		Very weak low density white with rare locally frequent black specks CHALK. Fractures are subhorizontal and 45-50º closely spaced planar smooth infilled (up to 1mm) with white silt locally stained brownish orange. (CIRIA Grade B3) (STRUCTURED CHALK)			
	22D	14.10 - 14.40	5.30	S*73							
	23C	14.10 - 15.60			100 43 29						
	24D	15.60 - 15.97	5.30	S*70				15.40 - 15.45m: Cobble sized rinded black nodular flint. 15.55m: Thin bed of angular fine and medium flint gravel.			
	25C	15.60 - 17.10			96 61 29				15.90	25.70	
						NI 130 310		Very weak low and medium density white with rare black specks CHALK. Fractures are subhorizontal and 20º closely and medium spaced planar smooth stained greyish brown and brownish yellow with frequent black specks. (CIRIA Grade A3) (STRUCTURED CHALK) 16.25 - 16.30m: Cobble sized rinded black nodular flint.			
23/11/18 1500hrs 4.20m	26D	17.10 - 17.43	5.30	S*86							
26/11/18 1100hrs 4.87m	27C	17.10 - 18.60			91 53 42			17.65 - 17.85m: 70º fracture stained off-white.			
								Continued Next Page	{18.00}		

water strike (m) casing (m) rose to (m) time to rise (m) remarks

Groundwater not encountered prior to use of water flush.

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BOREHOLE LOG

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SITE STATION HILL, READING — Sheet 3 of 3

Start Date 12 November 2018 — Easting 471335.4 — Scale 1 : 50

End Date 26 November 2018 — Northing 173616.0 — Ground level 41.60mOD — Depth 24.60 m

progress date/time water depth	sample no & type	depth (m) from	depth (m) to	casing depth (m)	test type & value	samp. /core range	I_f	instru -ment	description	depth (m)	reduced level (m)	legend
	28Cs	18.15	18.47						17.85m: Angular coarse flint clast.			
	29D	18.60	18.87	5.30	S*94							
	30C	18.60	20.10			81 43 7						
							NI 15 40		Extremely weak medium density white CHALK. Fractures are 80° to subvertical extremely closely and very closely spaced planar smooth infilled (up to 2mm) with white silt, rarely stained off-white with frequent black specks. (CIRIA Grade B5) (STRUCTURED CHALK)	19.60	22.00	
		20.10	20.34	5.30	C*130							
	31C	20.10	21.60			77 58 35						
							NI 140 330		Very weak locally weak medium density white CHALK. Fractures are subhorizontal to 10° closely and medium spaced planar and undulating smooth locally stained orangish yellow with rare black specks. Medium spaced bands (up to 20mm) of subangular to rounded fine and medium flint gravel. (CIRIA Grade A3) (STRUCTURED CHALK) 21.20 - 21.60m: Assessed zone of core loss. 21.40 - 21.60m: 70° planar smooth fracture.	20.50	21.10	
	32Cs	21.05	21.38									
		21.60	21.83	5.30	C*136							
	33C	21.60	23.10			80 68 35						
		23.10	23.28	5.30	C*143							
	34C	23.10	24.60			92 76 15	NI 70 130		Very weak low and medium density white CHALK. Fractures are subhorizontal to 20° and 70° closely spaced planar smooth infilled (up to 3mm) with white silt. Closely spaced bands (up to 10mm) of angular to subangular fine and medium flint gravel. (CIRIA Grade B3) (STRUCTURED CHALK)	23.10	18.50	
26/11/18 1400hrs 6.39m		24.60	24.76	5.30	C*158					24.60	17.00	
27/11/18 0900hrs 5.17m									Borehole completed at 24.60m.	{28.00}		

water strike (m) casing (m) rose to (m) time to rise (m) remarks

Groundwater not encountered prior to use of water flush.

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STANDARD PENETRATION TEST

CLIENT SH READING MASTER LLP

SITE STATION HILL, READING

borehole no.	borehole depth (m)	s.w.p (m)	bottom depth (m)	casing depth (m)	water level (m)	seating drive blows	seating drive pen (mm)	test drive blows	test drive pen (mm)	test type	N	energy ratio (%)
BH301	1.50		1.95	1.50	Dry	1 3	75 75	4 5 5 7	75 75 75 75	S	21	63
BH301	3.00		3.45	3.00	Dry	1 1	75 75	3 2 1 1	75 75 75 75	S	7	63
BH301	4.50		4.95	4.50	Dry	1 2	75 75	2 3 2 3	75 75 75 75	S	10	63
BH301	6.00		6.45	4.50	4.89	4 2	75 75	2 2 2 3	75 75 75 75	S	9	74
BH301	7.50		7.95	6.00	2.80	3 4	75 75	4 5 5 4	75 75 75 75	S	18	74
BH301	9.00		9.45	9.00	Dry	3 2	75 75	2 3 4 4	75 75 75 75	S	13	74
BH301	10.50		10.95	9.00	4.87	4 5	75 75	7 8 8 18	75 75 75 75	S	41	74
BH301	12.00		12.24	9.00	4.12	22 3	75 5	20 22 8	75 75 10	S	94	74
BH301	15.00		15.19	9.00	4.29	25	75	31 19	75 40	C	130	74
BH301	18.00		18.17	9.00	4.07	17 8	75 10	35 15	75 10	C	176	74
BH301	21.00		21.16	9.00	5.01	19 6	75 5	41 9	75 5	C	188	74
BH301	24.00		24.18	9.00	5.29	25	70	29 21	75 30	C	143	74
BH301	25.50		25.68	9.00	5.79	21 4	75 5	33 17	75 20	C	158	74
BH303	1.50		1.95	1.50	Dry	1 2	75 75	4 4 4 5	75 75 75 75	S	17	63
BH303	3.00		3.45	3.00	Dry	3 3	75 75	3 4 4 4	75 75 75 75	S	15	63
BH303	4.50		4.95	3.00	Dry	4 3	75 75	3 4 3 4	75 75 75 75	S	14	74
BH303	6.00		6.45	3.00	Dry	1 3	75 75	2 3 3 4	75 75 75 75	S	12	74
BH303	7.50		7.95	6.00	1.27	4 6	75 75	10 11 9 8	75 75 75 75	S	38	74
BH303	10.50		10.95	7.50	4.29	6 6	75 75	8 10 12 12	75 75 75 75	S	42	74
BH303	12.00		12.44	7.50	4.63	6 8	75 75	8 11 14 17	75 75 75 60	S	53	74
BH303	15.00		15.17	7.50	4.93	17 8	75 5	41 9	75 10	C	176	74
BH303	18.00		18.18	7.50	4.97	18 7	75 10	34 16	75 20	C	158	74
BH303	21.00		21.14	7.50	5.39	25	75	50	60	C	250	74
BH303	24.00		24.23	7.50	5.13	10 15	75 50	26 24	75 30	C	143	74

notes:

1. Test carried out in general accordance with BS EN ISO 22476-3:2005 + A1:2011
2. s.w.p = self weight penetration.
3. N values have not been subjected to any correction.
4. Test carried out using split spoon S, solid cone C.
5. Where full test drive not completed, linearly extrapolated N value reported.
6. ** Denotes no effective penetration.

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STANDARD PENETRATION TEST

CLIENT SH READING MASTER LLP

SITE STATION HILL, READING

borehole no.	borehole depth (m)	s.w.p (m)	bottom depth (m)	casing depth (m)	water level (m)	seating drive blows	seating drive pen (mm)	test drive blows	test drive pen (mm)	test type	N	energy ratio (%)
BH303	25.50		25.71	7.50	4.03	16 9	75 20	23 27	75 40	C	130	74
BH304	1.50		1.95	1.50	Dry	1 2	75 75	7 6 5 5	75 75 75 75	C	23	63
BH304	3.00		3.45	3.00	Dry	1 3	75 75	4 3 5 6	75 75 75 75	S	18	63
BH304	4.00		4.45	4.00	2.70	8 6	75 75	5 4 3 6	75 75 75 75	S	18	74
BH304	5.50		5.95	5.00	2.70	3 3	75 75	3 4 5 6	75 75 75 75	S	18	74
BH304	8.50		8.95	5.30	2.00	2 5	75 75	5 5 5 6	75 75 75 75	S	21	74
BH304	9.60		10.05	5.30	5.70	4 8	75 75	12 14 12 12	75 75 75 75	S	50	74
BH304	11.10		11.45	5.30	5.70	5 8	75 75	10 15 25	75 75 45	S	77	74
BH304	12.60		13.02	5.30	3.40	4 13	75 75	11 9 20 10	75 75 75 45	S	56	74
BH304	14.10		14.40	5.30	4.00	10 15	75 10	17 20 15	75 75 65	S	73	74
BH304	15.60		15.97	5.30	4.20	2 7	75 75	12 19 19	75 75 65	S	70	74
BH304	17.10		17.43	5.30	4.20	8 13	75 75	18 20 12	75 75 25	S	86	74
BH304	18.60		18.87	5.30	3.93	13 12	75 30	23 22 5	75 75 10	S	94	74
BH304	20.10		20.34	5.30	3.89	10 15	75 50	25 25	75 40	C	130	74
BH304	21.60		21.83	5.30	5.09	11 14	75 40	29 21	75 35	C	136	74
BH304	23.10		23.28	5.30	4.53	25	75	27 23	75 30	C	143	74
BH304	24.60		24.76	5.30	5.91	25	60	31 19	75 20	C	158	74

notes:

1. Test carried out in general accordance with BS EN ISO 22476-3:2005 + A1:2011
2. s.w.p = self weight penetration.
3. N values have not been subjected to any correction.
4. Test carried out using split spoon S, solid cone C.
5. Where full test drive not completed, linearly extrapolated N value reported.
6. ** Denotes no effective penetration.

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BOREHOLE LOG

WS301

CLIENT SH READING MASTER LLP

SITE STATION HILL, READING — Sheet 1 of 1

Start Date 12 November 2018 — Easting 471309.2 — Scale 1 : 50

End Date 22 November 2018 — Northing 173661.6 — Ground level 40.05mOD — Depth 6.00 m

progress date/time water depth	sample no & type	depth (m) from to	casing depth (m)	test type & value	samp. /core range	instru -ment	description	depth (m)	reduced level (m)	legend
12/11/18 1130hrs	C	0.00 - 0.09	Nil		100		MADE GROUND comprising light grey CONCRETE.	0.09	39.96	
	1B	0.20 - 0.30					Dark bluish grey sandy angular medium and coarse crystalline GRAVEL. (MADE GROUND)	0.10	39.95	
22/11/18 1415hrs Dry	1ES	0.20 - 0.30		Vo 0.1				0.30	39.75	
	2B	0.30 - 0.40					Dark grey slightly silty sandy angular to rounded fine to coarse concrete, crystalline, slag and rare chalk and flint GRAVEL with a low concrete cobble content. Frequent fragments of orange ceramic pipe (up to 30mm). (MADE GROUND)	0.65	39.40	
	2ES	0.30 - 0.40		Vo 0.0						
	3L	0.70 - 1.00	Nil							
	4B	0.70 - 1.20								
	3ES	0.70 - 1.20		Vo 0.0						
	5D	1.00 - 1.45	Nil	S 29						
	6L	1.00 - 2.00					Light brown slightly silty sandy subangular to rounded fine and medium brick, concrete, flint and chalk GRAVEL. (MADE GROUND) 0.60m: Flint cobble (160x150x120mm).	1.60	38.45	
	7D	1.70 - 1.80								
	4ES	1.85 - 2.00		Vo 0.0						
	8D	2.00 - 2.45	Nil	S 18						
	9L	2.00 - 3.00					Structureless CHALK composed of cream slightly gravelly clayey SILT. Gravel is subangular and subrounded fine and medium weak low and medium density white chalk, rarely subangular medium flint. (CIRIA Grade Dm) (STRUCTURELESS CHALK)			
	10D	2.70 - 2.80								
	11D	3.00 - 3.45	Nil	S 18						
	12L	3.00 - 4.00					Structureless CHALK composed of very silty angular to subrounded fine to coarse GRAVEL. Clasts are weak low density white with frequent black specks and black staining chalk. Matrix is cream with rare orange staining. Medium spaced bands of subrounded coarse gravel to cobble sized flint. (Probably CIRIA Grade Dc) (STRUCTURELESS CHALK)			
	13D	3.60 - 3.70								
	14D	4.00 - 4.45	Nil	S 9						
	15L	4.00 - 5.00						4.60	35.45	
	16D	4.70 - 4.80					Structureless CHALK composed of silty angular to subangular fine to coarse GRAVEL. Clasts are weak low and medium density white with rare black staining chalk. Matrix is cream with frequent orange staining. Rare subangular medium flint gravel. (Probably CIRIA Grade Dc) (STRUCTURELESS CHALK)			
	5ES	4.85 - 5.00		Vo 0.0						
	17D	5.00 - 5.45	Nil	S 15						
	18L	5.00 - 6.00								
22/11/18 1605hrs 4.00m	19D	5.80 - 5.90						6.00	34.05	
							Borehole completed at 6.00m.	{8.00}		

EQUIPMENT: Hand Held Coring unit and Geotechnical Terrier 2000 rig.

METHOD: Rotary core drilled (250mm) 0.00-0.09m. Hand dug inspection pit 0.09-0.70m. Dynamic sampled (113mm) 0.70-3.00m, (98mm) 3.00-5.00m and (84mm) 5.00-6.00m.

CASING: None used.

BACKFILL: On completion, hole backfilled with bentonite pellets 6.00-1.00m. A slotted standpipe (50mm) was installed to 1.00m, granular response zone 1.00-0.10m, concrete and stopcock cover 0.10-0.00m.

REMARKS: Chalk grade based on CIRIA C574 (2002).

EXPLORATORY HOLE LOGS SHOULD BE READ IN CONJUNCTION WITH KEY SHEETS

water strike (m)	casing (m)	rose to (m)	time to rise (min)	remarks
5.10	Nil	4.00	20	Encountered during SPT 5.00-5.45m.

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Geotechnical Engineering Limited

BOREHOLE LOG

WS302

CLIENT SH READING MASTER LLP

SITE STATION HILL, READING — Sheet 1 of 1

Start Date 12 November 2018 — Scale 1 : 50

End Date 21 November 2018 — Ground level 39.99mOD — Depth 6.45 m

progress date/time water depth	sample no & type	depth (m) from to	casing depth (m)	test type & value	samp. /core range	instru -ment	description	depth (m)	reduced level (m)	legend
12/11/18 1100hrs	C	0.00 - 0.50	Nil		100		MADE GROUND comprising light grey CONCRETE.			
	1B	0.50 - 0.70						0.50	39.49	
	1ES	0.50 - 0.70		Vo 0.0			Light brown slightly clayey gravelly fine to coarse SAND. Gravel is subangular to rounded fine to coarse flint, chalk and rare quartzite. (TAPLOW GRAVEL)			
20/11/18 1600hrs Dry	2B	1.00 - 1.10								
	2ES	1.00 - 1.10		Vo 0.1						
	3ES	1.20 - 1.35		Vo 0.2				1.20	38.79	
21/11/18 0930hrs Dry		1.28 - 1.62	Nil	C*57			Firm light brown mottled off-white slightly sandy gravelly CLAY. Gravel is subangular and subrounded medium and coarse flint and chalk. (TAPLOW GRAVEL)			
	3L	1.28 - 2.00						1.75	38.24	
	4D	1.80 - 1.90					Structureless CHALK composed of silty subangular to subrounded fine to coarse GRAVEL. Clasts are weak medium density white with frequent black specks and black staining chalk. Matrix is off-white with frequent black specks and rare orangish brown and yellowish brown staining. (Probably CIRIA Grade Dc) (STRUCTURELESS CHALK)			
	4ES	1.85 - 2.00		Vo 0.0						
	5D	2.00 - 2.45	Nil	S 25						
	6L	2.00 - 3.00								
	7D	2.70 - 2.80								
	8D	3.00 - 3.45	Nil	S 28						
	9L	3.00 - 4.00						3.40	36.59	
	10D	4.00 - 4.45	Nil	S 19			Structureless CHALK composed of silty subangular to subrounded fine to coarse GRAVEL. Clasts are weak medium density white with rare black staining chalk. Matrix is cream mottled off-white with rare orangish yellow staining. Frequent subangular and subrounded flint. (Probably CIRIA Grade Dc) (STRUCTURELESS CHALK) 3.40 - 4.00m: Limited recovery.			
	11L	4.00 - 5.00								
	12D	4.60 - 4.70								
	5ES	4.85 - 5.00		Vo 0.0						
	13D	5.00 - 5.45	Nil	S 17						
	14L	5.00 - 6.00								
	15D	5.55 - 5.65								
21/11/18 1330hrs 4.20m	16D	6.00 - 6.45	Nil	S 28				6.45	33.54	
							Borehole completed at 6.45m.	{8.00}		

EQUIPMENT: Hand Held Coring unit and Geotechnical Terrier 2000 rig.

METHOD: Rotary core drilled (250mm) 0.00-0.50m. Hand dug inspection pit 0.50-1.00m. Dynamic sampled using Hand Held Percussive Sampler (98mm) 1.00-1.15m, (84mm) 1.15-1.25m and (64mm) 1.25-1.35m. Dynamic sampled using Geotechnical Terrier 2000 rig (84mm) 1.28-3.00m and (74mm) 3.00-6.00m.

CASING: None used.

BACKFILL: On completion, hole backfilled with bentonite pellets 6.45-0.50m and concrete 0.50-0.00m.

REMARKS: Hand Held Percussive Sampler yielded limited penetration prior to hole collapse between 1.35-1.28m. Hole advanced with Geotechnical Terrier 2000 rig. CPT at 1.28m performed on collapsed material, treat result with caution.

Hand Held Liners 1.00-1.15m, 1.15-1.25m and 1.25-1.38m retained in plastic bags, tubs and glass jars.

Chalk grade based on CIRIA C574 (2002). Ground level provided by Consultant.

EXPLORATORY HOLE LOGS SHOULD BE READ IN CONJUNCTION WITH KEY SHEETS

water strike (m)	casing (m)	rose to (m)	time to rise (min)	remarks
4.20	Nil	4.20	20	Encountered during run 4.00-5.00m.

AGS

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34769	**CT**

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BOREHOLE LOG

WS303

CLIENT SH READING MASTER LLP

SITE STATION HILL, READING

Sheet 1 of 1

Start Date 19 November 2018

Scale 1 : 50

End Date 23 November 2018

Ground level 41.28

Depth 6.45 m

progress date/time water depth	sample no & type	depth (m) from to	casing depth (m)	test type & value	samp. /core range	instru -ment	description	depth (m)	reduced level (m)	legend
19/11/18 1200hrs	C	0.00 - 0.50	Nil		100		MADE GROUND comprising strongly cemented grey CONCRETE.			
	1B	0.60 - 0.80								
	1ES	0.60 - 0.80		Vo 0.0				0.50	40.78	
23/11/18 1010hrs Dry	2B	0.80 - 1.00					Dark brown slightly sandy gravelly SILT. Gravel is angular to subrounded fine and medium flint and brick. (MADE GROUND) 0.75 - 1.30m: Rare animal bone fragments (up to 50mm).			
	2ES	0.80 - 1.00		Vo 0.0						
	3B	1.00 - 1.20								
	3ES	1.00 - 1.20		Vo 0.0						
	4D	1.20 - 1.65	Nil	S 15						
	5L	1.20 - 2.00	1.20					1.40	39.88	
	6D	2.00 - 2.45	2.00	S 20			Medium dense dark brown sandy angular to rounded fine and medium flint GRAVEL. (TAPLOW GRAVEL) 1.40 - 1.50m: Rare inclusions of white subangular fine and medium chalk gravel.			
	7L	2.00 - 3.00								
	4ES	2.00 - 2.20		Vo 0.0						
								2.70	38.58	
	8D	3.00 - 3.45	3.00	S 15			Structureless CHALK composed of white slightly gravelly SILT. Gravel is angular to subrounded fine to coarse white with frequent black specs and yellowish staining chalk, rarely angular medium and coarse flint. (Probably CIRIA Grade Dm). (STRUCTURELESS CHALK)			
	9L	3.00 - 4.00								
	10D	4.00 - 4.45	3.00	S 20						
	11L	4.00 - 5.00								
	12D	5.00 - 5.45	3.00	S 10						
	12L	5.00 - 6.00								
	5ES	5.50 - 5.80		Vo 0.0						
23/11/18 1245hrs 5.30m	13D	6.00 - 6.45	3.00	S 21				6.45	34.83	
							Borehole completed at 6.45m.	{8.00}		

EQUIPMENT: Hand Held Coring unit and Geotechnical Terrier 2000 rig.

METHOD: Rotary core drilled (250mm) 0.00-0.50m. Hand dug inspection pit 0.00-1.20m. Dynamic sampled (98mm) 1.20-3.00m, (84mm) 3.00-4.00m and (76mm) 4.00-6.00m.

CASING: 113mm diam to 3.00m.

BACKFILL: On completion, hole backfilled with bentonite pellets 6.45-0.50m and concrete 0.50-0.00m.

REMARKS: Chalk grade based on CIRIA C574 (2002). Ground level provided by Consultant.

EXPLORATORY HOLE LOGS SHOULD BE READ IN CONJUNCTION WITH KEY SHEETS

water strike (m)	casing (m)	rose to (m)	time to rise (min)	remarks
5.30	3.00	5.30	20	Encountered during run 5.00-6.00m.

AGS

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BOREHOLE LOG

WS304

CLIENT SH READING MASTER LLP

SITE STATION HILL, READING — Sheet 1 of 1

Start Date 19 November 2018 — Easting 471359.1 — Scale 1 : 50

End Date 22 November 2018 — Northing 173684.9 — Ground level 39.15mOD — Depth 6.45 m

progress date/time water depth	sample no & type	depth (m) from to	casing depth (m)	test type & value	samp. /core range	instru -ment	description	depth (m)	reduced level (m)	legend
19/11/18 1015hrs	C	0.00 - 0.30	Nil		100		MADE GROUND comprising light grey CONCRETE.	0.30	38.85	
22/11/18 0930hrs Dry	1B	0.40 - 0.50					Soft brown slightly sandy gravelly CLAY. Gravel is angular to subrounded fine to coarse brick, chalk and rare flint and slag. (MADE GROUND)			
	1ES	0.40 - 0.50		Vo 1.6						
	2B	1.00 - 1.20								
	2ES	1.00 - 1.20		Vo 0.6						
	3D	1.20 - 1.65	Nil	S 16						
	4L	1.20 - 2.00	1.20				1.20m: Stiff.	1.60	37.55	
	5D	1.70 - 1.80					Orangish brown clayey sandy subangular and subrounded fine to coarse flint and rare chalk GRAVEL. (TAPLOW GRAVEL)			
	3ES	1.80 - 2.00		Vo 1.6						
	6D	2.00 - 2.45	2.00	S 20				2.00	37.15	
	7L	2.00 - 3.00					Stiff light brown slightly sandy gravelly silty CLAY. Gravel is subangular to rounded fine to coarse flint and chalk. (TAPLOW GRAVEL)	2.35	36.80	
	8D	2.50 - 2.60					Structureless CHALK composed of silty subangular to subrounded fine to coarse GRAVEL. Clasts are very weak low density white with frequent black staining chalk. Matrix is cream and white with frequent orangish yellow staining. (Probably CIRIA Grade Dc) (STRUCTURELESS CHALK) 2.90 - 3.95m: Abundant dark grey and grey staining with frequent pockets of greenish brown staining (possible contamination). Strong hydrocarbon odour.			
	4ES	2.90 - 3.00		Vo 2.3						
	9D	3.00 - 3.45	3.00	S 8						
	10L	3.00 - 4.00								
	5ES	3.30 - 3.40		Vo 6.4						
	11D	3.50 - 3.60								
	12D	4.00 - 4.45	4.00	S 5				3.95	35.20	
	13L	4.00 - 5.00					Structureless CHALK composed of silty subangular to subrounded fine to coarse GRAVEL with a low subangular cobble content. Clasts are extremely weak low density white with rare black staining chalk. Matrix is cream with abundant orangish yellow staining. (Probably CIRIA Grade Dc) (STRUCTURELESS CHALK) 4.20 - 4.30m: Subrounded medium and coarse flint gravel. 5.00 - 6.00m: Limited recovery (30%).			
	14D	4.60 - 4.70								
	6ES	4.85 - 5.00		Vo 1.6						
	15D	5.00 - 5.45	5.00	S 7						
	16L	5.00 - 6.00								
	17D	5.80 - 5.90								
22/11/18 1120hrs 3.40m	18D	6.00 - 6.45	6.00	S 7				6.45	32.70	
							Borehole completed at 6.45m.	{8.00}		

EQUIPMENT: Hand Held Coring unit and Geotechnical Terrier 2000 rig.

METHOD: Rotary core drilled (250mm) 0.00-0.30m. Hand dug inspection pit 0.30-1.20m. Dynamic sampled (98mm) 1.20-6.00m.

CASING: 113mm diam to 6.00m.

BACKFILL: On completion, hole backfilled with bentonite pellets 6.45-2.00m. A slotted standpipe (50mm) was installed to 2.00m, granular response zone 2.00-1.00m, bentonite seal 1.00-0.50m, concrete and stopcock cover 0.50-0.00m.

REMARKS: Chalk grade based on CIRIA C574 (2002).

EXPLORATORY HOLE LOGS SHOULD BE READ IN CONJUNCTION WITH KEY SHEETS

water strike (m)	casing (m)	rose to (m)	time to rise (min)	remarks
5.20	5.00	3.40	20	Encountered during run 5.00-6.00m.

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BOREHOLE LOG

WS305

CLIENT SH READING MASTER LLP

SITE STATION HILL, READING

Sheet 1 of 1

Start Date 19 November 2018

Scale 1 : 50

End Date 19 November 2018

Ground level 40.57mOD

Depth 0.31 m

progress date/time water depth	sample no & type	depth (m) from to	casing depth (m)	test type & value	samp. /core range		instru -ment	description	depth (m)	reduced level (m)	legend
19/11/18 1400hrs	C	0.00 - 0.18	Nil		100			MADE GROUND comprising strongly cemented light grey CONCRETE.	0.06	40.51	
19/11/18 1415hrs Dry								MADE GROUND comprising dark grey and grey BRICKWORK.	0.18	40.39	
								VOID. 0.31m: Grey concrete across pit. Borehole completed at 0.31m.	0.31	40.26	
									{8.00}		

EQUIPMENT: Hand Held Coring unit.

METHOD: Rotary core drilled (250mm) 0.00-0.31m.

CASING: None used.

BACKFILL: On completion, hole backfilled with concrete.

REMARKS: Hole terminated on Consultant's instruction due to encountering void. Hole reattempted as WS305A approximately 10.00m to the west.

Ground level provided by Consultant.

EXPLORATORY HOLE LOGS SHOULD BE READ IN CONJUNCTION WITH KEY SHEETS

water strike (m)	casing (m)	rose to (m)	time to rise (min)	remarks
				Groundwater not encountered.

AGS

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BOREHOLE LOG

WS305A

CLIENT SH READING MASTER LLP

SITE STATION HILL, READING

Sheet 1 of 1

Start Date 19 November 2018

Scale 1 : 50

End Date 29 November 2018

Ground level 40.57mOD

Depth 1.45 m

progress date/time water depth	sample no & type	depth (m) from to	casing depth (m)	test type & value	samp. /core range		instru -ment	description	depth (m)	reduced level (m)	legend
19/11/18 1400hrs	C	0.00 - 0.42	Nil		100			MADE GROUND comprising strongly cemented grey CONCRETE.	0.06	40.51	
								MADE GROUND comprising strongly cemented brownish grey CONCRETE.	0.42	40.15	
29/11/18 1145hrs Dry	1B	0.50 - 0.80									
	1ES	0.50 - 0.80		Vo 0.3				Brown silty sandy angular to subrounded fine to coarse flint, concrete and brick GRAVEL with a low subangular concrete cobble content. (MADE GROUND)	1.05	39.52	
29/11/18 1420hrs Dry	2D	1.00 - 1.45	Nil	S 50				MADE GROUND comprising poorly cemented greyish brown CONCRETE.	1.45	39.12	
								Borehole completed at 1.45m.	{8.00}		

EQUIPMENT: Hand Held Coring unit and Geotechnical Terrier 2000 rig.

METHOD: Rotary core drilled (250mm) 0.00-0.42m. Hand dug inspection pit 0.42-1.00m.

CASING: None used.

BACKFILL: On completion, hole backfilled with bentonite pellets 1.45-0.42m and concrete 0.42-0.00m.

REMARKS: Hole terminated due to encountering concrete within SPT 1.00-1.45m. Ground level provided by Consultant.

EXPLORATORY HOLE LOGS SHOULD BE READ IN CONJUNCTION WITH KEY SHEETS

water strike (m)	casing (m)	rose to (m)	time to rise (min)	remarks
				Groundwater not encountered.

AGS

CONTRACT	CHECKED
34769	**CT**

Geotechnical Engineering Limited

BOREHOLE LOG

WS306

CLIENT SH READING MASTER LLP

SITE STATION HILL, READING

Start Date 15 November 2018

End Date 15 November 2018

Sheet 1 of 1

Scale 1 : 50

Depth 0.80 m

progress date/time water depth	sample no & type	depth (m) from to	casing depth (m)	test type & value	samp. /core range		instru -ment	description	depth (m)	reduced level (m)	legend
15/11/18 1400hrs	C	0.00 - 0.80	Nil		100			MADE GROUND comprising strongly cemented light grey CONCRETE.	0.80		
15/11/18 1430hrs Dry								Borehole completed at 0.80m.	{8.00}		

EQUIPMENT: Hand Held Coring unit.

METHOD: Rotary core drilled (250mm) 0.00-0.80m.

CASING: None used.

BACKFILL: On completion, hole backfilled with concrete.

REMARKS: Hole cancelled on Consultant's instruction due to time constraints.

EXPLORATORY HOLE LOGS SHOULD BE READ IN CONJUNCTION WITH KEY SHEETS

water strike (m)	casing (m)	rose to (m)	time to rise (min)	remarks
				Groundwater not encountered.

AGS

CONTRACT	CHECKED
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BOREHOLE LOG

WS307

CLIENT SH READING MASTER LLP

SITE STATION HILL, READING — Sheet 1 of 1

Start Date 12 November 2018 — Scale 1 : 50

End Date 21 November 2018 — Ground level 40.02mOD — Depth 6.45 m

progress date/time water depth	sample no & type	depth (m) from to	casing depth (m)	test type & value	samp. /core range	instru -ment	description	depth (m)	reduced level (m)	legend
12/11/18 1330hrs	C	0.00 - 0.35	Nil		100		MADE GROUND comprising light grey CONCRETE. 0.05m: 20mm diam steel reinforcement bar.	0.35	39.67	
21/11/18 1450hrs 0.00m	1B	0.40 - 0.50					Light brown slightly sandy subrounded medium and coarse flint GRAVEL with a medium subrounded flint cobble content. (TAPLOW GRAVEL)	0.50	39.52	
	1ES	0.40 - 0.50		Vo 0.1						
	2B	0.60 - 0.70								
	2ES	0.60 - 0.70		Vo 0.1						
		1.00 - 1.22	Nil	C*117			Light brown slightly clayey sandy angular to rounded fine to coarse flint and chalk GRAVEL with a low subrounded flint cobble content. (TAPLOW GRAVEL)	1.15	38.87	
	3L	1.00 - 2.00								
	4D	1.60 - 1.70					Structureless CHALK composed of silty subangular to subrounded fine and medium GRAVEL. Clasts are white with rare black staining chalk. Matrix is cream and off-white with rare black specks and rare orange staining. Rare subrounded medium and coarse flint. (Probably CIRIA Grade Dc) (STRUCTURELESS CHALK)			
	3ES	1.85 - 2.00		Vo 0.0						
	5D	2.00 - 2.45	Nil	S 44						
	6L	2.00 - 3.00								
	7D	2.70 - 2.80								
	8D	3.00 - 3.45	Nil	S 37						
	9L	3.00 - 4.00						3.40	36.62	
	10D	3.70 - 3.80					Structureless CHALK composed of clayey subangular to subrounded fine to coarse GRAVEL. Clasts are weak medium density white with frequent black specks and rare black staining chalk. Matrix is off-white with rare orange staining. (Probably CIRIA Grade Dc) (STRUCTURELESS CHALK)			
	11D	4.00 - 4.45	Nil	S 13						
	12L	4.00 - 5.00								
	13D	4.50 - 4.70								
	4ES	4.85 - 5.00		Vo 0.0						
	14D	5.00 - 5.45	Nil	S 13				5.00	35.02	
	15L	5.00 - 6.00					Structureless CHALK composed of silty subangular to subrounded fine and medium GRAVEL. Clasts are white with rare black specks and rare black staining chalk. Matrix is cream with rare orange staining. (Probably CIRIA Grade Dc) (STRUCTURELESS CHALK)			
	16D	5.70 - 5.90								
21/11/18 1715hrs Dry	17D	6.00 - 6.45	Nil	S 17				6.45	33.57	
							Borehole completed at 6.45m.	{8.00}		

EQUIPMENT: Hand Held Coring unit and Geotechnical Terrier 2000 rig.

METHOD: Rotary core drilled (250mm) 0.00-0.35m. Hand dug inspection pit 0.35-1.00m. Dynamic sampled (98mm) 1.00-2.00m, (84mm) 2.00-3.00m, (76mm) 3.00-4.00m and (66mm) 4.00-6.00m.

CASING: None used.

BACKFILL: On completion, hole backfilled with bentonite pellets 6.45-0.35m and concrete.

REMARKS: Chalk grade based on CIRIA C574 (2002). Ground level provided by Consultant.

EXPLORATORY HOLE LOGS SHOULD BE READ IN CONJUNCTION WITH KEY SHEETS

water strike (m)	casing (m)	rose to (m)	time to rise (min)	remarks
				Groundwater not encountered.

AGS

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Geotechnical Engineering Limited

BOREHOLE LOG



WS308

CLIENT SH READING MASTER LLP

SITE STATION HILL, READING

Start Date 15 November 2018

End Date 15 November 2018

Sheet 1 of 1

Scale 1 : 50

Depth 0.30 m

progress date/time water depth	sample no & type	depth (m) from to	casing depth (m)	test type & value	samp. /core range		instru -ment	description	depth (m)	reduced level (m)	legend
15/11/18 1030hrs	C	0.00 - 0.30	Nil		100			MADE GROUND comprising strongly cemented light grey CONCRETE.	0.06		
15/11/18 1045hrs Dry								MADE GROUND comprising strongly cemented brownish grey CONCRETE.	0.30		
								Borehole completed at 0.30m.	{8.00}		

EQUIPMENT: Hand Held Coring unit.

METHOD: Rotary core drilled (250mm) 0.00-0.30m.

CASING: None used.

BACKFILL: On completion, hole backfilled with concrete.

REMARKS: Hole cancelled on Consultant's instruction due to time constraints.

EXPLORATORY HOLE LOGS SHOULD BE READ IN CONJUNCTION WITH KEY SHEETS

water strike (m)	casing (m)	rose to (m)	time to rise (min)	remarks
				Groundwater not encountered.

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BOREHOLE LOG

WS309

CLIENT SH READING MASTER LLP

SITE STATION HILL, READING

Start Date 15 November 2018

End Date 27 November 2018

Sheet 1 of 1

Scale 1 : 50

Depth 0.90 m

progress date/time water depth	sample no & type	depth (m) from to	casing depth (m)	test type & value	samp. /core range		instru -ment	description	depth (m)	reduced level (m)	legend
15/11/18 1430hrs	C	0.00 - 0.41	Nil		100			MADE GROUND comprising strongly cemented light grey CONCRETE.	0.06		
									0.41		
27/11/18 0830hrs Dry	1B 1ES	0.50 - 0.80 0.50 - 0.80		Vo 0.0				MADE GROUND comprising strongly cemented brownish grey CONCRETE.			
								Brown sandy locally very sandy subangular to rounded fine to coarse flint, quartzite rarely brick GRAVEL with a low rounded flint cobble content. (MADE GROUND)	0.90		
27/11/18 0915hrs Dry								Borehole completed at 0.90m.	{8.00}		

EQUIPMENT: Hand Held Coring unit.

METHOD: Rotary core drilled (250mm) 0.00-0.41m. Hand dug inspection pit 0.41-0.90m.

CASING: None used.

BACKFILL: On completion, hole backfilled with arisings 0.90-0.41m and concrete 0.41-0.00m.

REMARKS: Hole cancelled on Consultant's instruction due to time constraints.

EXPLORATORY HOLE LOGS SHOULD BE READ IN CONJUNCTION WITH KEY SHEETS

water strike (m)	casing (m)	rose to (m)	time to rise (min)	remarks
				Groundwater not encountered.

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BOREHOLE LOG

WS310

CLIENT SH READING MASTER LLP

SITE STATION HILL, READING

Sheet 1 of 1

Start Date 19 November 2018

Scale 1 : 50

End Date 28 November 2018

Ground level 41.28mOD

Depth 6.45 m

progress date/time water depth	sample no & type	depth (m) from to	casing depth (m)	test type & value	samp. /core range	instru -ment	description	depth (m)	reduced level (m)	legend
19/11/18 1245hrs	C	0.00 - 0.40	Nil		100		MADE GROUND comprising strongly cemented brownish grey CONCRETE.	0.40	40.88	
28/11/18 0800hrs Dry	1B	0.50 - 0.80					Brown clayey very sandy subangular to rounded fine to coarse flint rarely brick and chalk GRAVEL with a low subrounded flint cobble content. (MADE GROUND)			
	1ES	0.50 - 0.80		Vo 0.0				1.10	40.18	
	2D	1.20 - 1.65	Nil	S 24			Structureless CHALK composed of white slightly sandy slightly gravelly SILT. Gravel is subangular to subrounded fine and medium chalk. (Probably CIRIA Grade Dm) (STRUCTURELESS CHALK)			
	3L	1.20 - 2.00	1.20							
	2ES	1.80 - 2.00		Vo 0.0						
	4D	2.00 - 2.45	2.00	S 24			1.90 - 2.40m: Stained light brownish yellow.			
	5L	2.00 - 3.00								
	6D	3.00 - 3.45	2.00	S 14						
	7L	3.00 - 4.00								
	8D	4.00 - 4.45	2.00	S 16						
	9L	4.00 - 5.00					4.30 - 4.40m: Rounded fine and medium flint gravel.			
	3ES	4.70 - 5.00		Vo 0.0						
	10D	5.00 - 5.45	2.00	S 20			4.90 - 5.50m: Gravel has rare black specks.			
	11L	5.00 - 6.00					5.10 - 6.00m: No recovery.			
28/11/18 1045hrs Dry	12D	6.00 - 6.45	2.00	S 18				6.45	34.83	
							Borehole completed at 6.45m.	{8.00}		

EQUIPMENT: Hand Held Coring unit and Geotechnical Terrier 2000 rig.

METHOD: Rotary core drilled (250mm) 0.00-0.40m. Hand dug inspection pit 0.40-1.20m. Dynamic sampled (98mm) 1.20-2.00m, (84mm) 2.00-4.00m and (76mm) 4.00-6.00m.

CASING: 113mm diam to 2.00m.

BACKFILL: On completion, hole backfilled with bentonite pellets 6.45-1.00m. A slotted standpipe (50mm) was installed to 1.00m, granular response zone 1.00-0.50m, bentonite seal 0.50-0.20m, concrete and stopcock cover 0.20-0.00m.

REMARKS: Chalk grade based on CIRIA C574 (2002). Ground level provided by Consultant.

EXPLORATORY HOLE LOGS SHOULD BE READ IN CONJUNCTION WITH KEY SHEETS

water strike (m)	casing (m)	rose to (m)	time to rise (min)	remarks
				Groundwater not encountered.

AGS

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BOREHOLE LOG

WS311

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SITE STATION HILL, READING

Sheet 1 of 1

Start Date 12 November 2018

Scale 1 : 50

End Date 28 November 2018

Ground level 40.57mOD

Depth 6.45 m

progress date/time water depth	sample no & type	depth (m) from to	casing depth (m)	test type & value	samp. /core range	instru -ment	description	depth (m)	reduced level (m)	legend
12/11/18 1130hrs	C	0.00 - 0.40	Nil		100		MADE GROUND comprising strongly cemented grey CONCRETE.	0.12	40.45	
								0.40	40.17	
27/11/18 1600hrs Dry	1B	0.50 - 0.80					MADE GROUND comprising strongly cemented brownish grey CONCRETE. 0.35m: 5mm diam steel reinforcement.	0.50	40.07	
	1ES	0.50 - 0.80		Vo 0.2						
	2D	1.20 - 1.46	Nil	S*81			Brown silty sandy angular and subangular fine to coarse flint and brick rarely sandstone GRAVEL. (MADE GROUND)			
28/11/18 1355hrs Dry	3L	1.20 - 2.00						1.50	39.07	
	2ES	1.80 - 2.00		Vo 0.0			Brown and light brown clayey sandy angular to subrounded fine and medium rarely coarse flint rarely chalk GRAVEL. (TAPLOW GRAVEL) 1.20m: Very dense.			
	4D	2.00 - 2.45	Nil	S 18						
	5L	2.00 - 3.00					Structureless CHALK composed of white locally stained brownish yellow slightly sandy slightly gravelly SILT. Gravel is subangular and subrounded fine and medium chalk, rarely angular fine and medium flint. (Probably CIRIA Grade Dm) (STRUCTURELESS CHALK)			
	6D	3.00 - 3.45	Nil	S 24						
	7L	3.00 - 4.00								
	8D	4.00 - 4.45	Nil	S 22			3.70 - 3.90m: Frequent subangular coarse gravel of extremely weak low density chalk.			
	9L	4.00 - 5.00								
	3ES	4.30 - 4.60		Vo 0.0			4.60 - 5.00m: No recovery.			
	10D	5.00 - 5.45	Nil	S 23						
	11L	5.00 - 6.00								
28/11/18 1530hrs 4.60m	12D	6.00 - 6.45	Nil	S 8				6.45	34.12	
							Borehole completed at 6.45m.	{8.00}		

EQUIPMENT: Hand Held Coring unit and Geotechnical Terrier 2000 rig.

METHOD: Rotary core drilled (250mm) 0.00-0.40m. Hand dug inspection pit 0.40-1.20m. Dynamic sampled (98mm) 1.20-3.00m, (84mm) 3.00-5.00m and (76mm) 5.00-6.00m.

CASING: None used.

BACKFILL: On completion, hole backfilled with bentonite pellets 6.45-1.40m. A slotted standpipe (50mm) was installed to 1.40m, granular response zone 1.40-0.40m, bentonite seal 0.40-0.20m, concrete and stopcock cover 0.20-0.00m.

REMARKS: Chalk grade based on CIRIA C574 (2002). Ground level provided by Consultant.

EXPLORATORY HOLE LOGS SHOULD BE READ IN CONJUNCTION WITH KEY SHEETS

water strike (m)	casing (m)	rose to (m)	time to rise (min)	remarks
5.00	Nil	4.60	20	Encountered during SPT 5.00-5.45m.

AGS

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Geotechnical Engineering Limited

BOREHOLE LOG

WS312

CLIENT SH READING MASTER LLP

SITE STATION HILL, READING

Start Date 15 November 2018

End Date 26 November 2018

Sheet 1 of 1

Scale 1 : 50

Depth 0.45 m

progress date/time water depth	sample no & type	depth (m) from to	casing depth (m)	test type & value	samp. /core range		instru -ment	description	depth (m)	reduced level (m)	legend
15/11/18 1115hrs	C	0.00 - 0.30	Nil		100			MADE GROUND comprising strongly cemented grey CONCRETE.	0.06		
	1B	0.30 - 0.45						MADE GROUND comprising strongly cemented brownish grey CONCRETE.	0.30		
26/11/08 1600hrs Dry	1ES	0.30 - 0.45		Vo 0.0				Brown silty gravelly fine and medium SAND. Gravel is angular and subangular fine to coarse flint and concrete. (MADE GROUND) 0.45m: Grey concrete across pit.	0.45		
								Borehole completed at 0.45m.	{8.00}		

EQUIPMENT: Hand Held Coring unit.

METHOD: Rotary core drilled (250mm) 0.00-0.30m. Hand dug inspection pit 0.30-0.45m.

CASING: None used.

BACKFILL: On completion, hole backfilled with arisings 0.45-0.30m and concrete 0.30-0.00m.

REMARKS: Hole terminated due to concrete obstruction.

EXPLORATORY HOLE LOGS SHOULD BE READ IN CONJUNCTION WITH KEY SHEETS

water strike (m)	casing (m)	rose to (m)	time to rise (min)	remarks
				Groundwater not encountered.

AGS

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BOREHOLE LOG



WS313

CLIENT SH READING MASTER LLP

SITE STATION HILL, READING

Start Date 19 November 2018

End Date 30 November 2018

Sheet 1 of 1

Scale 1 : 50

Depth 1.05 m

progress date/time water depth	sample no & type	depth (m) from to	casing depth (m)	test type & value	samp. /core range		instru -ment	description	depth (m)	reduced level (m)	legend
19/11/18 1600hrs	C	0.00 - 0.24	Nil		100			MADE GROUND comprising strongly cemented light grey CONCRETE.	0.03		
30/11/18 0855hrs Dry	1B	0.40 - 0.60						MADE GROUND comprising strongly cemented brownish grey CONCRETE.	0.24		
	1ES	0.40 - 0.60		Vo 0.5				Dark bluish grey subangular to rounded fine to coarse flint GRAVEL. (MADE GROUND)	0.35		
	2B	0.80 - 1.00						Light brown sandy angular and subangular fine to coarse flint and brick GRAVEL. (MADE GROUND)	0.60		
	2ES	0.80 - 1.00		Vo 0.0				Brown clayey sandy angular to subrounded fine to coarse flint and brick rarely chalk GRAVEL with a low subangular brick cobble content. (MADE GROUND)	1.05		
30/11/18 0950hrs Dry								Borehole completed at 1.05m.	{8.00}		

EQUIPMENT: Hand Held Coring unit.

METHOD: Rotary core drilled (250mm) 0.00-0.24m. Hand dug inspection pit 0.24-1.05m.

CASING: None used.

BACKFILL: On completion, hole backfilled with arisings 1.05-0.24m and concrete 0.24-0.00m.

REMARKS: Hole terminated due to hard strata on Consultant's instruction.

EXPLORATORY HOLE LOGS SHOULD BE READ IN CONJUNCTION WITH KEY SHEETS

water strike (m)	casing (m)	rose to (m)	time to rise (min)	remarks
				Groundwater not encountered.

AGS

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BOREHOLE LOG

WS314

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SITE STATION HILL, READING — Sheet 1 of 1

Start Date 19 November 2018 — Easting 471322.2 — Scale 1 : 50

End Date 20 November 2018 — Northing 173684.8 — Ground level 39.20mOD — Depth 6.45 m

progress date/time water depth	sample no & type	depth (m) from to	casing depth (m)	test type & value	samp. /core range	instru -ment	description	depth (m)	reduced level (m)	legend
19/11/18 1000hrs	C	0.00 - 0.10	Nil		100		MADE GROUND comprising light grey CONCRETE.	0.10	39.10	
	1B	0.20 - 0.30						0.30	38.90	
20/11/18 1225hrs Dry	1ES	0.20 - 0.30		Vo 0.1			Dark brown and brown slightly clayey sandy angular to rounded fine to coarse flint, brick, concrete and slag GRAVEL with rare fragments of metal (up to 50mm). (MADE GROUND)	0.70	38.50	
	2B	0.40 - 0.50								
	2ES	0.40 - 0.50		Vo 0.0						
	3B	0.80 - 0.90								
	3ES	0.80 - 0.90		Vo 0.0			Soft dark brown mottled brown sandy gravelly CLAY. Gravel is subangular and subrounded fine to coarse flint, brick, concrete, chalk and rare slag. (MADE GROUND)			
	4D	1.20 - 1.65	Nil	S 4						
	5L	1.20 - 2.00	1.20							
	6D	1.70 - 1.80					Very soft to soft brown slightly gravelly sandy CLAY. Gravel is subangular to rounded fine and medium flint, brick, chalk and rare slag. (MADE GROUND)	1.85	37.35	
	7D	2.00 - 2.45	2.00	S 15						
	8L	2.00 - 3.00					Firm to stiff brown mottled orangish brown sandy gravelly CLAY. Gravel is subangular to rounded fine to coarse flint and rare chalk. (TAPLOW GRAVEL)			
	4ES	2.25 - 2.35		Vo 0.1						
	9D	2.50 - 2.60						2.65	36.55	
	10D	3.00 - 3.45	3.00	S 8			Structureless CHALK composed of silty subrounded to rounded fine to coarse GRAVEL. Clasts are very weak low density white chalk. Matrix is light brown and cream. Frequent subangular coarse flint. (Probably CIRIA Grade Dc) (STRUCTURELESS CHALK)			
	11L	3.00 - 4.00								
	12D	3.50 - 3.60								
	13D	4.00 - 4.45	4.00	S 4				4.00	35.20	
	14L	4.00 - 5.00					Structureless CHALK composed of silty subrounded fine to coarse GRAVEL. Clasts are very weak medium density white with rare orangish brown staining chalk. Matrix is off-white. (Probably CIRIA Grade Dc) (STRUCTURELESS CHALK) 4.55m: Rare subrounded coarse flint.			
	15D	4.50 - 4.60								
	5ES	4.90 - 5.00		Vo 0.0						
	16D	5.00 - 5.45	5.00	S 7						
	17L	5.00 - 6.00					5.45 - 6.00m: No recovery.			
20/11/18 1500hrs 4.63m	18D	6.00 - 6.45	6.00	S 7				6.45	32.75	
							Borehole completed at 6.45m.	{8.00}		

EQUIPMENT: Hand Held Coring unit and Geotechnical Terrier 2000 rig.

METHOD: Rotary core drilled (250mm) 0.00-0.10m. Hand dug inspection pit 0.10-1.20m. Dynamic sampled (98mm) 1.20-6.00m.

CASING: 113mm diam to 6.00m.

BACKFILL: On completion, hole backfilled with bentonite pellets 6.45-1.85m. A slotted standpipe (50mm) was installed to 1.85m, granular response zone 1.85-1.00m, bentonite seal 1.00-0.50m, concrete and stopcock cover 0.50-0.00m.

REMARKS: Chalk grade based on CIRIA C574 (2002).

EXPLORATORY HOLE LOGS SHOULD BE READ IN CONJUNCTION WITH KEY SHEETS

water strike (m)	casing (m)	rose to (m)	time to rise (min)	remarks
4.63	4.00	4.63	20	Encountered during run 4.00-5.00m.

AGS

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BOREHOLE LOG

WS315

CLIENT SH READING MASTER LLP

SITE STATION HILL, READING

Sheet 1 of 1

Start Date 15 November 2018

Scale 1 : 50

End Date 27 November 2018

Ground level 45.72mOD

Depth 6.00 m

progress date/time water depth	sample no & type	depth (m) from to	casing depth (m)	test type & value	samp. /core range	instru -ment	description	depth (m)	reduced level (m)	legend
15/11/18 1230hrs	C	0.00 - 0.38	Nil		100		MADE GROUND comprising strongly cemented brownish grey CONCRETE.	0.38	45.34	
23/11/18 1435hrs Dry	1B	0.50 - 0.80					Brown sandy angular and subangular fine to coarse brick and flint GRAVEL. (MADE GROUND)	0.50	45.22	
	1ES	0.50 - 0.80		Vo 0.0				0.80	44.92	
	2B	0.80 - 0.95					Brown silty very sandy angular to subrounded fine to coarse flint rarely chalk GRAVEL with a low subrounded flint cobble content. (TAPLOW GRAVEL)			
	2ES	0.80 - 0.95		Vo 0.0						
		1.20 - 1.60	Nil	C*60						
27/11/18 1220hrs Dry	3L	1.20 - 2.00	1.20				Structureless CHALK composed of white stained light brown slightly sandy slightly gravelly SILT. Gravel is subangular and subrounded fine and medium chalk, rarely angular fine and medium flint. (Probably CIRIA Grade Dm). (STRUCTURELESS CHALK)	1.40	44.32	
	3ES	1.90 - 2.00		Vo 0.0						
	4D	2.00 - 2.45	2.00	S 36						
	5L	2.00 - 3.00					Structureless CHALK composed of white slightly sandy slightly gravelly SILT. Gravel is subrounded and rounded fine and medium chalk. (STRUCTURELESS CHALK) 2.50 - 2.70m: Stained light orangish yellow.			
	6D	3.00 - 3.45	3.00	S 26						
	7L	3.00 - 4.00					3.50 - 3.55m: Stained light orangish yellow. 3.70 - 3.85m: Gravelly.			
	8D	4.00 - 4.45	3.00	S 19						
	9L	4.00 - 5.00								
	4ES	4.80 - 5.00		Vo 0.0			4.80 - 4.90m: Rare medium and coarse flint gravel. 4.85m: Subhorizontal thin laminae stained brownish yellow. Possible relict fracture. 4.95 - 5.00m: Stained light brownish yellow.			
	10D	5.00 - 5.45	3.00	S 29						
	11L	5.00 - 6.00						5.60	40.12	
27/11/18 1400hrs Dry		6.00 - 6.45	3.00	S 48			Structureless CHALK composed of white slightly sandy gravelly SILT. Gravel is subangular to rounded fine and medium rarely coarse extremely weak low density chalk. (Probably CIRIA Grade Dm). (STRUCTURELESS CHALK)	6.00	39.72	
							Borehole completed at 6.00m.	{8.00}		

EQUIPMENT: Hand Held Coring unit and Geotechnical Terrier 2000 rig.

METHOD: Rotary core drilled (250mm) 0.00-0.38m. Hand dug inspection pit 0.38-1.20m. Dynamic sampled (98mm) 1.20-3.00m, (84mm) 3.00-5.00m and (76mm) 5.00-6.00m.

CASING: 113mm diam to 3.00m.

BACKFILL: On completion, hole backfilled with bentonite pellets 6.45-0.50m. A slotted standpipe (50mm) was installed to 0.50m, granular response zone 0.50-0.40m, bentonite seal 0.40-0.20m, concrete and stopcock cover 0.20-0.00m.

REMARKS: Chalk grade based on CIRIA C574 (2002). Ground level provided by Consultant.

EXPLORATORY HOLE LOGS SHOULD BE READ IN CONJUNCTION WITH KEY SHEETS

water strike (m)	casing (m)	rose to (m)	time to rise (min)	remarks
				Groundwater not encountered.

AGS

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BOREHOLE LOG



WS316

CLIENT SH READING MASTER LLP

SITE STATION HILL, READING

Start Date 15 November 2018

End Date 27 November 2018

Sheet 1 of 1

Scale 1 : 50

Depth 1.08 m

progress date/time water depth	sample no & type	depth (m) from to	casing depth (m)	test type & value	samp. /core range		instru -ment	description	depth (m)	reduced level (m)	legend
15/11/18 1500hrs	C	0.00 - 0.50	Nil		100			MADE GROUND comprising strongly cemented brownish grey CONCRETE.	0.50		
27/11/18 1145hrs Dry	1B 1ES	0.60 - 0.90 0.60 - 0.90		Vo 0.1				Brown very sandy angular to subrounded fine to coarse flint, brick and concrete rarely chalk GRAVEL with a low subangular flint cobble content. (MADE GROUND)	1.05		
27/11/18 1225hrs Dry		1.00 - 1.08	Nil	C**				MADE GROUND comprising strongly cemented brownish grey CONCRETE. Borehole completed at 1.08m.	1.08 {8.00}		

EQUIPMENT: Hand Held Coring unit and Geotechnical Terrier 2000 rig.

METHOD: Rotary core drilled (250mm) 0.00-0.50m. Hand dug inspection pit 0.50-1.00m.

CASING: None used.

BACKFILL: On completion, hole backfilled with arisings 1.00-0.50m and concrete 0.50-0.00m.

REMARKS: Hole terminated due to concrete obstruction.

EXPLORATORY HOLE LOGS SHOULD BE READ IN CONJUNCTION WITH KEY SHEETS

water strike (m)	casing (m)	rose to (m)	time to rise (min)	remarks
				Groundwater not encountered.

AGS

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STANDARD PENETRATION TEST

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SITE STATION HILL, READING

borehole no.	borehole depth (m)	s.w.p (m)	bottom depth (m)	casing depth (m)	water level (m)	seating drive blows	seating drive pen (mm)	test drive blows	test drive pen (mm)	test type	N	energy ratio (%)
WS301	1.00		1.45	Nil	Dry	5 11	75 75	9 7 7 6	75 75 75 75	S	29	80
WS301	2.00		2.45	Nil	Dry	3 6	75 75	4 5 5 4	75 75 75 75	S	18	80
WS301	3.00		3.45	Nil	Dry	7 5	75 75	4 5 4 5	75 75 75 75	S	18	80
WS301	4.00		4.45	Nil	Dry	1 1	75 75	1 2 3 3	75 75 75 75	S	9	80
WS301	5.00		5.45	Nil	Damp	2 2	75 75	3 2 3 7	75 75 75 75	S	15	80
WS302	1.28		1.62	Nil	Dry	23 2	75 3	15 13 15 7	75 75 75 40	C	57	80
WS302	2.00		2.45	Nil	Dry	7 7	75 75	7 6 5 7	75 75 75 75	S	25	80
WS302	3.00		3.45	Nil	Dry	6 7	75 75	7 7 7 7	75 75 75 75	S	28	80
WS302	4.00		4.45	Nil	Dry	7 9	75 75	5 5 5 4	75 75 75 75	S	19	80
WS302	5.00		5.45	Nil	4.20	3 2	75 75	3 4 4 6	75 75 75 75	S	17	80
WS302	6.00		6.45	Nil	4.20	4 4	75 75	6 6 8 8	75 75 75 75	S	28	80
WS303	1.20		1.65	Nil	Dry	1 1	75 75	2 3 4 6	75 75 75 75	S	15	80
WS303	2.00		2.45	2.00	Dry	4 4	75 75	5 5 4 6	75 75 75 75	S	20	80
WS303	3.00		3.45	3.00	Dry	3 3	75 75	3 3 4 5	75 75 75 75	S	15	80
WS303	4.00		4.45	3.00	Dry	4 5	75 75	6 5 4 5	75 75 75 75	S	20	80
WS303	5.00		5.45	3.00	Dry	2 2	75 75	2 3 3 2	75 75 75 75	S	10	80
WS303	6.00		6.45	3.00	5.30	4 6	75 75	6 5 4 6	75 75 75 75	S	21	80
WS304	1.20		1.65	1.20	Dry	2 3	75 75	3 4 5 4	75 75 75 75	S	16	80
WS304	2.00		2.45	2.00	Dry	3 6	75 75	6 5 4 5	75 75 75 75	S	20	80
WS304	3.00		3.45	3.00	Dry	3 2	75 75	2 2 2 2	75 75 75 75	S	8	80
WS304	4.00		4.45	4.00	Dry	1 1	75 75	1 1 1 2	75 75 75 75	S	5	80
WS304	5.00		5.45	5.00	Damp	1 1	75 75	1 2 2 2	75 75 75 75	S	7	80
WS304	6.00		6.45	6.00	3.40	1 1	75 75	1 1 3 2	75 75 75 75	S	7	80
WS305A	1.00		1.45	Nil	Dry	2 5	75 75	8 10 12 20	75 75 75 75	S	50	80

notes:

1. Test carried out in general accordance with BS EN ISO 22476-3:2005 + A1:2011
2. s.w.p = self weight penetration.
3. N values have not been subjected to any correction.
4. Test carried out using split spoon S, solid cone C.
5. Where full test drive not completed, linearly extrapolated N value reported.
6. ** Denotes no effective penetration.

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Geotechnical Engineering Limited

STANDARD PENETRATION TEST

CLIENT SH READING MASTER LLP

SITE STATION HILL, READING

borehole no.	borehole depth (m)	s.w.p (m)	bottom depth (m)	casing depth (m)	water level (m)	seating drive blows	seating drive pen (mm)	test drive blows	test drive pen (mm)	test type	N	energy ratio (%)
WS307	1.00		1.22	Nil	Dry	8 17	75 75	28	72	C	117	80
WS307	2.00		2.45	Nil	Dry	12 12	75 75	10 12 10 12	75 75 75 75	S	44	80
WS307	3.00		3.45	Nil	Dry	6 7	75 75	6 11 10 10	75 75 75 75	S	37	80
WS307	4.00		4.45	Nil	Dry	6 4	75 75	2 3 4 4	75 75 75 75	S	13	80
WS307	5.00		5.45	Nil	Dry	4 3	75 75	4 3 2 4	75 75 75 75	S	13	80
WS307	6.00		6.45	Nil	Dry	4 5	75 75	5 4 4 4	75 75 75 75	S	17	80
WS310	1.20		1.65	Nil	Dry	4 6	75 75	7 6 5 6	75 75 75 75	S	24	80
WS310	2.00		2.45	2.00	Dry	5 5	75 75	6 5 6 7	75 75 75 75	S	24	80
WS310	3.00		3.45	2.00	Dry	3 5	75 75	4 3 4 3	75 75 75 75	S	14	80
WS310	4.00		4.45	2.00	Dry	3 3	75 75	4 4 3 5	75 75 75 75	S	16	80
WS310	5.00		5.45	2.00	Dry	3 2	75 75	3 7 6 4	75 75 75 75	S	20	80
WS310	6.00		6.45	2.00	Dry	3 3	75 75	4 3 5 6	75 75 75 75	S	18	80
WS311	1.20		1.46	Nil	Dry	22 3	75 3	17 22 11	75 75 35	S	81	80
WS311	2.00		2.45	Nil	Dry	3 5	75 75	5 3 4 6	75 75 75 75	S	18	80
WS311	3.00		3.45	Nil	Dry	4 7	75 75	6 6 5 7	75 75 75 75	S	24	80
WS311	4.00		4.45	Nil	Dry	4 4	75 75	5 8 6 3	75 75 75 75	S	22	80
WS311	5.00		5.45	Nil	4.60	2 3	75 75	6 5 5 7	75 75 75 75	S	23	80
WS311	6.00		6.45	Nil	4.60	3 3	75 75	2 2 2 2	75 75 75 75	S	8	80
WS314	1.20		1.65	Nil	Dry	1 1	75 75	1 1 1 1	75 75 75 75	S	4	80
WS314	2.00		2.45	2.00	Dry	3 4	75 75	4 3 4 4	75 75 75 75	S	15	80
WS314	3.00		3.45	3.00	Dry	3 2	75 75	2 2 2 2	75 75 75 75	S	8	80
WS314	4.00		4.45	4.00	Dry	1 1	75 75	1 1 1 1	75 75 75 75	S	4	80
WS314	5.00		5.45	5.00	4.63	2 1	75 75	1 2 2 2	75 75 75 75	S	7	80
WS314	6.00		6.45	6.00	4.63	1 2	75 75	2 1 1 3	75 75 75 75	S	7	80

notes:

1. Test carried out in general accordance with BS EN ISO 22476-3:2005 + A1:2011
2. s.w.p = self weight penetration.
3. N values have not been subjected to any correction.
4. Test carried out using split spoon S, solid cone C.
5. Where full test drive not completed, linearly extrapolated N value reported.
6. ** Denotes no effective penetration.

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Geotechnical Engineering Limited

STANDARD PENETRATION TEST

CLIENT SH READING MASTER LLP

SITE STATION HILL, READING

borehole no.	borehole depth (m)	s.w.p (m)	bottom depth (m)	casing depth (m)	water level (m)	seating drive blows	seating drive pen (mm)	test drive blows	test drive pen (mm)	test type	N	energy ratio (%)
WS315	1.20		1.60	Nil	Dry	11 14	75 75	15 14 16 5	75 75 75 25	C	60	80
WS315	2.00		2.45	2.00	Dry	6 10	75 75	9 8 9 10	75 75 75 75	S	36	80
WS315	3.00		3.45	3.00	Dry	5 5	75 75	6 6 8 6	75 75 75 75	S	26	80
WS315	4.00		4.45	3.00	Dry	5 6	75 75	4 4 6 5	75 75 75 75	S	19	80
WS315	5.00		5.45	3.00	Dry	4 5	75 75	6 6 8 9	75 75 75 75	S	29	80
WS315	6.00		6.45	3.00	Dry	5 9	75 75	10 10 14 14	75 75 75 75	S	48	80
WS316	1.00		1.08	Nil	Dry	20 5	75 5	50	0	C	**	80

notes:

1. Test carried out in general accordance with BS EN ISO 22476-3:2005 + A1:2011
2. s.w.p = self weight penetration.
3. N values have not been subjected to any correction.
4. Test carried out using split spoon S, solid cone C.
5. Where full test drive not completed, linearly extrapolated N value reported.
6. ** Denotes no effective penetration.

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Geotechnical Engineering Limited

GAS AND GROUNDWATER LEVELS

CLIENT: SH READING MASTER LLP

SITE: STATION HILL, READING

Borehole /trial pit no.	install	date and time	barometric pressure (mb)	pressure differentiation (mm H_2O)	carbon dioxide (%)	methane (%)	oxygen (%)	LEL (%)	hydrogen sulphide (ppm)	carbon monoxide (ppm)	VOC (ppm)	gas flow (ltr/hr)	temperature (°C)	water level (m - bgl)	remarks
BH301	Shallow	10/12/18 09:55:00	1021	0.00								0.0	7		
BH301	Shallow	10/12/18 09:56:00										0.0			
BH301	Shallow	10/12/18 09:57:00										0.0			
BH301	Shallow	10/12/18 09:58:00										0.0			
BH301	Shallow	10/12/18 09:59:00										0.0			
BH301	Shallow	10/12/18 10:00:00			0.3	0.0	18.7	0.0	0	10	0.0				
BH301	Shallow	10/12/18 10:01:00			0.3	0.0	18.7	0.0	0	10	0.0				
BH301	Shallow	10/12/18 10:02:00			0.3	0.0	18.6	0.0	0	10	0.0				
BH301	Shallow	10/12/18 10:03:00			0.3	0.0	18.6	0.0	0	10	0.0				
BH301	Shallow	10/12/18 10:04:00			0.3	0.0	18.6	0.0	0	10	0.0				
BH301	Shallow	10/12/18 10:05:00			0.3	0.0	18.6	0.0	0	10	0.0				
BH301	Shallow	10/12/18 10:06:00			0.3	0.0	18.6	0.0	0	10	0.0				
BH301	Shallow	10/12/18 10:07:00			0.3	0.0	18.5	0.0	0	10	0.0				
BH301	Shallow	10/12/18 10:08:00			0.3	0.0	18.5	0.0	0	10	0.0				
BH301	Shallow	10/12/18 10:09:00			0.3	0.0	18.5	0.0	0	10	0.0				
BH301	Shallow	10/12/18 10:10:00												Dry	
BH301	Shallow	17/12/18 09:55:00	1009	0.00								0.0	2		
BH301	Shallow	17/12/18 09:56:00										0.0			

remarks
denotes result exceeding capacity of gas monitoring equipment
Equipment used - Gas Data GFM 435 Gas Analyser

CONTRACT **34769**

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Geotechnical Engineering Limited

GAS AND GROUNDWATER LEVELS

CLIENT: SH READING MASTER LLP

SITE: STATION HILL, READING

Borehole /trial pit no.	install	date and time	barometric pressure (mb)	pressure differentiation (mm H_2O)	carbon dioxide (%)	methane (%)	oxygen (%)	LEL (%)	hydrogen sulphide (ppm)	carbon monoxide (ppm)	VOC (ppm)	gas flow (ltr/hr)	temperature (°C)	water level (m - bgl)	remarks
BH301	Shallow	17/12/18 09:57:00										0.0			
BH301	Shallow	17/12/18 09:58:00										0.0			
BH301	Shallow	17/12/18 09:59:00										0.0			
BH301	Shallow	17/12/18 10:00:00			0.3	0.0	19.2	0.0	0	0	0.0				
BH301	Shallow	17/12/18 10:01:00			0.3	0.0	19.2	0.0	0	0	0.0				
BH301	Shallow	17/12/18 10:02:00			0.3	0.0	19.2	0.0	0	0	0.0				
BH301	Shallow	17/12/18 10:03:00			0.3	0.0	19.2	0.0	0	0	0.0				
BH301	Shallow	17/12/18 10:04:00			0.2	0.0	19.2	0.0	0	0	0.0				
BH301	Shallow	17/12/18 10:05:00			0.2	0.0	19.2	0.0	0	0	0.0				
BH301	Shallow	17/12/18 10:06:00			0.2	0.0	19.2	0.0	0	0	0.0				
BH301	Shallow	17/12/18 10:07:00			0.2	0.0	19.2	0.0	0	0	0.0				
BH301	Shallow	17/12/18 10:08:00			0.2	0.0	19.2	0.0	0	0	0.0				
BH301	Shallow	17/12/18 10:09:00			0.2	0.0	19.2	0.0	0	0	0.0				
BH301	Shallow	17/12/18 10:10:00												Dry	
BH301	Shallow	04/01/19 10:38:00			0.0	0.0	20.3	0.0	0	0	0.0		7		
BH301	Shallow	04/01/19 10:39:00			0.0	0.0	20.4	0.0	0	0	0.0		7		
BH301	Shallow	04/01/19 10:40:00			0.0	0.0	20.4	0.0	0	0	0.0		7		
BH301	Shallow	04/01/19 10:41:00			0.0	0.0	20.4	0.0	0	0	0.0		7		

remarks
denotes result exceeding capacity of gas monitoring equipment
Equipment used - Gas Data GFM 435 Gas Analyser

CONTRACT **34769**

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Geotechnical Engineering Limited

GAS AND GROUNDWATER LEVELS

CLIENT: SH READING MASTER LLP

SITE: STATION HILL, READING

Borehole /trial pit no.	install	date and time	barometric pressure (mb)	pressure differentiation (mm H_2O)	carbon dioxide (%)	methane (%)	oxygen (%)	LEL (%)	hydrogen sulphide (ppm)	carbon monoxide (ppm)	VOC (ppm)	gas flow (ltr/hr)	temperature (°C)	water level (m - bgl)	remarks
BH301	Shallow	04/01/19 10:42:00			0.0	0.0	20.4	0.0	0	0	0.0		7		
BH301	Shallow	04/01/19 10:43:00			0.0	0.0	20.4	0.0	0	0	0.0		7		
BH301	Shallow	04/01/19 10:44:00			0.0	0.0	20.4	0.0	0	0	0.0		7		
BH301	Shallow	04/01/19 10:45:00			0.0	0.0	20.4	0.0	0	0	0.0		7		
BH301	Shallow	04/01/19 10:46:00			0.0	0.0	20.4	0.0	0	0	0.0		7		
BH301	Shallow	04/01/19 10:47:00			0.0	0.0	20.4	0.0	0	0	0.0		7		
BH301	Shallow	04/01/19 10:48:00			0.0	0.0	20.4	0.0	0	0	0.0		7		
BH301	Shallow	04/01/19 10:49:00												Dry	
BH301	Shallow	10/01/19 12:00:00	1032	-0.41								0.0	5		
BH301	Shallow	10/01/19 12:01:00										0.0			
BH301	Shallow	10/01/19 12:02:00										0.0			
BH301	Shallow	10/01/19 12:03:00										0.0			
BH301	Shallow	10/01/19 12:04:00										0.0			
BH301	Shallow	10/01/19 12:05:00			0.2	0.0	20.7	0.0	0	0	0.0				
BH301	Shallow	10/01/19 12:06:00			0.2	0.0	20.7	0.0	0	0	0.0				
BH301	Shallow	10/01/19 12:07:00			0.2	0.0	20.7	0.0	0	0	0.0				
BH301	Shallow	10/01/19 12:08:00			0.2	0.0	20.7	0.0	0	0	0.0				
BH301	Shallow	10/01/19 12:09:00			0.1	0.0	20.8	0.0	0	0	0.0				

remarks
denotes result exceeding capacity of gas monitoring equipment
Equipment used - Gas Data GFM 435 Gas Analyser

CONTRACT **34769**

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Geotechnical Engineering Limited

GAS AND GROUNDWATER LEVELS

CLIENT: SH READING MASTER LLP

SITE: STATION HILL, READING

Borehole /trial pit no.	install	date and time	barometric pressure (mb)	pressure differentiation (mm H_2O)	carbon dioxide (%)	methane (%)	oxygen (%)	LEL (%)	hydrogen sulphide (ppm)	carbon monoxide (ppm)	VOC (ppm)	gas flow (ltr/hr)	temperature (°C)	water level (m - bgl)	remarks
BH301	Shallow	10/01/19 12:10:00			0.1	0.0	20.8	0.0	0	0	0.0				
BH301	Shallow	10/01/19 12:11:00			0.1	0.0	20.8	0.0	0	0	0.0				
BH301	Shallow	10/01/19 12:12:00			0.1	0.0	20.8	0.0	0	0	0.0				
BH301	Shallow	10/01/19 12:13:00			0.1	0.0	20.8	0.0	0	0	0.0				
BH301	Shallow	10/01/19 12:14:00			0.1	0.0	20.8	0.0	0	0	0.0				
BH301	Shallow	10/01/19 12:15:00												Dry	
BH301	Shallow	21/01/19 15:17:00	1012	0								0.0	4		
BH301	Shallow	21/01/19 15:18:00										0.0			
BH301	Shallow	21/01/19 15:19:00										0.0			
BH301	Shallow	21/01/19 15:20:00										0.0			
BH301	Shallow	21/01/19 15:21:00										0.0			
BH301	Shallow	21/01/19 15:22:00										0.0			
BH301	Shallow	21/01/19 15:23:00										0.0			
BH301	Shallow	21/01/19 15:24:00										0.0			
BH301	Shallow	21/01/19 15:25:00										0.0			
BH301	Shallow	21/01/19 15:26:00										0.0			
BH301	Shallow	21/01/19 15:27:00			0.1	0.0	20.3	0.0	0	0	0.0				
BH301	Shallow	21/01/19 15:28:00			0.1	0.0	20.1	0.0	0	0	0.0				

remarks
denotes result exceeding capacity of gas monitoring equipment
Equipment used - Gas Data GFM 435 Gas Analyser

CONTRACT **34769**

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Geotechnical Engineering Limited

GAS AND GROUNDWATER LEVELS

CLIENT: SH READING MASTER LLP

SITE: STATION HILL, READING

Borehole /trial pit no.	install	date and time	barometric pressure (mb)	pressure differentiation (mm H_2O)	carbon dioxide (%)	methane (%)	oxygen (%)	LEL (%)	hydrogen sulphide (ppm)	carbon monoxide (ppm)	VOC (ppm)	gas flow (ltr/hr)	temperature (°C)	water level (m - bgl)	remarks
BH301	Shallow	21/01/19 15:29:00			0.1	0.0	20.0	0.0	0	0	0.0				
BH301	Shallow	21/01/19 15:30:00			0.1	0.0	19.9	0.0	0	0	0.0				
BH301	Shallow	21/01/19 15:31:00			0.1	0.0	19.9	0.0	0	0	0.0				
BH301	Shallow	21/01/19 15:32:00			0.1	0.0	20.0	0.0	0	0	0.0				
BH301	Shallow	21/01/19 15:33:00			0.1	0.0	19.9	0.0	0	0	0.0				
BH301	Shallow	21/01/19 15:34:00			0.1	0.0	20.0	0.0	0	0	0.0				
BH301	Shallow	21/01/19 15:35:00			0.1	0.0	20.0	0.0	0	0	0.0				
BH301	Shallow	21/01/19 15:36:00												Dry	
BH301	Shallow	31/01/19 11:44:00	987	0								0.0	1		
BH301	Shallow	31/01/19 11:45:00										0.0			
BH301	Shallow	31/01/19 11:46:00										0.0			
BH301	Shallow	31/01/19 11:47:00										0.0			
BH301	Shallow	31/01/19 11:48:00										0.0			
BH301	Shallow	31/01/19 11:49:00										0.0			
BH301	Shallow	31/01/19 11:53:00			0.0	0.0	19.1	0.0	0	0	0.0				
BH301	Shallow	31/01/19 11:54:00			0.0	0.0	19.1	0.0	0	0	0.0				
BH301	Shallow	31/01/19 11:55:00			0.0	0.0	19.0	0.0	0	0	0.0				
BH301	Shallow	31/01/19 11:56:00			0.0	0.0	19.0	0.0	0	0	0.0				

remarks
denotes result exceeding capacity of gas monitoring equipment
Equipment used - Gas Data GFM 435 Gas Analyser

CONTRACT **34769**

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Geotechnical Engineering Limited

GAS AND GROUNDWATER LEVELS

CLIENT: SH READING MASTER LLP

SITE: STATION HILL, READING

Borehole /trial pit no.	install	date and time	barometric pressure (mb)	pressure differentiation (mm H_2O)	carbon dioxide (%)	methane (%)	oxygen (%)	LEL (%)	hydrogen sulphide (ppm)	carbon monoxide (ppm)	VOC (ppm)	gas flow (ltr/hr)	temperature (°C)	water level (m - bgl)	remarks
BH301	Shallow	31/01/19 11:57:00			0.0	0.0	18.9	0.0	0	0	0.0				
BH301	Shallow	31/01/19 11:58:00			0.0	0.0	18.9	0.0	0	0	0.0				
BH301	Shallow	31/01/19 11:59:00			0.0	0.0	18.9	0.0	0	0	0.0				
BH301	Shallow	31/01/19 12:00:00			0.0	0.0	18.9	0.0	0	0	0.0				
BH301	Shallow	31/01/19 12:01:00			0.0	0.0	18.8	0.0	0	0	0.0				
BH301	Shallow	31/01/19 12:02:00			0.0	0.0	18.8	0.0	0	0	0.0				
BH301	Shallow	31/01/19 12:03:00			0.0	0.0	18.8	0.0	0	0	0.0				
BH301	Shallow	31/01/19 12:04:00												Dry	
BH301	Shallow	04/02/19 09:34:00	1009	0								0.0	7		
BH301	Shallow	04/02/19 09:35:00										0.0			
BH301	Shallow	04/02/19 09:36:00										0.0			
BH301	Shallow	04/02/19 09:37:00										0.0			
BH301	Shallow	04/02/19 09:38:00										0.0			
BH301	Shallow	04/02/19 09:39:00										0.0			
BH301	Shallow	04/02/19 09:40:00			0.1	0.0	20.7	0.0	0	0	0.0				
BH301	Shallow	04/02/19 09:41:00			0.1	0.0	20.7	0.0	0	0	0.0				
BH301	Shallow	04/02/19 09:42:00			0.1	0.0	20.6	0.0	0	0	0.0				
BH301	Shallow	04/02/19 09:43:00			0.1	0.0	20.6	0.0	0	0	0.0				

remarks
denotes result exceeding capacity of gas monitoring equipment
Equipment used - Gas Data GFM 435 Gas Analyser

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Geotechnical Engineering Limited

GAS AND GROUNDWATER LEVELS

CLIENT: SH READING MASTER LLP

SITE: STATION HILL, READING

Borehole /trial pit no.	install	date and time	barometric pressure (mb)	pressure differentiation (mm H_2O)	carbon dioxide (%)	methane (%)	oxygen (%)	LEL (%)	hydrogen sulphide (ppm)	carbon monoxide (ppm)	VOC (ppm)	gas flow (ltr/hr)	temperature (°C)	water level (m - bgl)	remarks
BH301	Shallow	04/02/19 09:44:00			0.1	0.0	20.6	0.0	0	0	0.0				
BH301	Shallow	04/02/19 09:45:00			0.1	0.0	20.6	0.0	0	0	0.0				
BH301	Shallow	04/02/19 09:46:00			0.1	0.0	20.6	0.0	0	0	0.0				
BH301	Shallow	04/02/19 09:47:00			0.1	0.0	20.6	0.0	0	0	0.0				
BH301	Shallow	04/02/19 09:48:00			0.1	0.0	20.6	0.0	0	0	0.0				
BH301	Shallow	04/02/19 09:49:00			0.1	0.0	20.6	0.0	0	0	0.0				
BH301	Shallow	04/02/19 09:50:00			0.1	0.0	20.6	0.0	0	0	0.0				
BH301	Shallow	04/02/19 09:51:00												Dry	

remarks
denotes result exceeding capacity of gas monitoring equipment
Equipment used - Gas Data GFM 435 Gas Analyser

CONTRACT **34769**

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Geotechnical Engineering Limited

GAS AND GROUNDWATER LEVELS

CLIENT: SH READING MASTER LLP

SITE: STATION HILL, READING

Borehole /trial pit no.	install	date and time	barometric pressure (mb)	pressure differentiation (mm H_2O)	carbon dioxide (%)	methane (%)	oxygen (%)	LEL (%)	hydrogen sulphide (ppm)	carbon monoxide (ppm)	VOC (ppm)	gas flow (ltr/hr)	temperature (°C)	water level (m - bgl)	remarks
BH301	Deep	10/12/18 10:30:00												3.50	Unable to take water sample due to bend in pipe.
BH301	Deep	17/12/18 10:25:00												3.35	
BH301	Deep	10/01/19 12:16:00												3.44	
BH301	Deep	21/01/19 15:37:00												3.40	
BH301	Deep	31/01/19 12:05:00												3.20	Water sample obtained.
BH301	Deep	04/02/19 09:52:00												3.30	

remarks
denotes result exceeding capacity of gas monitoring equipment
Equipment used - Gas Data GFM 435 Gas Analyser

CONTRACT **34769**

CHECKED **CT**

Geotechnical Engineering Limited

GAS AND GROUNDWATER LEVELS

CLIENT: SH READING MASTER LLP

SITE: STATION HILL, READING

Borehole /trial pit no.	install	date and time	barometric pressure (mb)	pressure differentiation (mm H_2O)	carbon dioxide (%)	methane (%)	oxygen (%)	LEL (%)	hydrogen sulphide (ppm)	carbon monoxide (ppm)	VOC (ppm)	gas flow (ltr/hr)	temperature (°C)	water level (m - bgl)	remarks
BH303	Single	17/12/18 11:35:00												4.26	Unable to take water sample due to bend in pipe.
BH303	Single	10/01/19 11:55:00												4.31	
BH303	Single	21/01/19 15:00:00												4.30	
BH303	Single	31/01/19 11:40:00												4.25	Water sample obtained.
BH303	Single	04/02/19 10:05:00												4.20	

remarks
denotes result exceeding capacity of gas monitoring equipment
Equipment used - Gas Data GFM 435 Gas Analyser

CONTRACT **34769**

CHECKED **CT**

Geotechnical Engineering Limited

GAS AND GROUNDWATER LEVELS

CLIENT: SH READING MASTER LLP

SITE: STATION HILL, READING

Borehole /trial pit no.	install	date and time	barometric pressure (mb)	pressure differentiation (mm H_2O)	carbon dioxide (%)	methane (%)	oxygen (%)	LEL (%)	hydrogen sulphide (ppm)	carbon monoxide (ppm)	VOC (ppm)	gas flow (ltr/hr)	temperature (°C)	water level (m - bgl)	remarks
BH304	Shallow	17/12/18 11:40:00	1012	0.00								0.0	5		
BH304	Shallow	17/12/18 11:41:00										0.0			
BH304	Shallow	17/12/18 11:42:00										0.0			
BH304	Shallow	17/12/18 11:43:00										0.0			
BH304	Shallow	17/12/18 11:44:00										0.0			
BH304	Shallow	17/12/18 11:45:00			0.0	0.0	19.1	0.0	0	0	0.0				
BH304	Shallow	17/12/18 11:46:00			0.0	0.0	19.1	0.0	0	0	0.0				
BH304	Shallow	17/12/18 11:47:00			0.0	0.0	19.1	0.0	0	0	0.0				
BH304	Shallow	17/12/18 11:48:00			0.0	0.0	19.1	0.0	0	0	0.0				
BH304	Shallow	17/12/18 11:49:00			0.0	0.0	19.1	0.0	0	0	0.0				
BH304	Shallow	17/12/18 11:50:00			0.0	0.0	19.1	0.0	0	0	0.0				
BH304	Shallow	17/12/18 11:51:00			0.0	0.0	19.1	0.0	0	0	0.0				
BH304	Shallow	17/12/18 11:52:00			0.0	0.0	19.1	0.0	0	0	0.0				
BH304	Shallow	17/12/18 11:53:00			0.0	0.0	19.1	0.0	0	0	0.0				
BH304	Shallow	17/12/18 11:54:00			0.0	0.0	19.1	0.0	0	0	0.0				
BH304	Shallow	17/12/18 11:55:00												Dry	
BH304	Shallow	10/01/19 11:30:00	1032	-0.28								-0.1	5		
BH304	Shallow	10/01/19 11:31:00										0.0			

remarks
denotes result exceeding capacity of gas monitoring equipment
Equipment used - Gas Data GFM 435 Gas Analyser

CONTRACT **34769**

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Geotechnical Engineering Limited

GAS AND GROUNDWATER LEVELS

CLIENT: SH READING MASTER LLP

SITE: STATION HILL, READING

Borehole /trial pit no.	install	date and time	barometric pressure (mb)	pressure differentiation (mm H_2O)	carbon dioxide (%)	methane (%)	oxygen (%)	LEL (%)	hydrogen sulphide (ppm)	carbon monoxide (ppm)	VOC (ppm)	gas flow (ltr/hr)	temperature (°C)	water level (m - bgl)	remarks
BH304	Shallow	10/01/19 11:32:00										0.0			
BH304	Shallow	10/01/19 11:33:00										0.0			
BH304	Shallow	10/01/19 11:34:00										0.0			
BH304	Shallow	10/01/19 11:35:00			0.0	0.0	21.0	0.0	0	0	0.0				
BH304	Shallow	10/01/19 11:36:00			0.0	0.0	21.0	0.0	0	0	0.0				
BH304	Shallow	10/01/19 11:37:00			0.0	0.0	21.0	0.0	0	0	0.0				
BH304	Shallow	10/01/19 11:38:00			0.0	0.0	21.0	0.0	0	0	0.0				
BH304	Shallow	10/01/19 11:39:00			0.0	0.0	21.0	0.0	0	0	0.0				
BH304	Shallow	10/01/19 11:40:00			0.0	0.0	21.0	0.0	0	0	0.0				
BH304	Shallow	10/01/19 11:41:00			0.0	0.0	21.0	0.0	0	0	0.0				
BH304	Shallow	10/01/19 11:42:00			0.0	0.0	21.0	0.0	0	0	0.0				
BH304	Shallow	10/01/19 11:43:00			0.0	0.0	21.0	0.0	0	0	0.0				
BH304	Shallow	10/01/19 11:44:00			0.0	0.0	21.0	0.0	0	0	0.0				
BH304	Shallow	10/01/19 11:45:00												Dry	
BH304	Shallow	21/01/19 13:37:00	1018	0								0.0	4		
BH304	Shallow	21/01/19 13:38:00										0.0			
BH304	Shallow	21/01/19 13:39:00										0.0			
BH304	Shallow	21/01/19 13:40:00										0.0			

remarks
denotes result exceeding capacity of gas monitoring equipment
Equipment used - Gas Data GFM 435 Gas Analyser

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Geotechnical Engineering Limited

GAS AND GROUNDWATER LEVELS

CLIENT: SH READING MASTER LLP

SITE: STATION HILL, READING

Borehole /trial pit no.	install	date and time	barometric pressure (mb)	pressure differentiation (mm H_2O)	carbon dioxide (%)	methane (%)	oxygen (%)	LEL (%)	hydrogen sulphide (ppm)	carbon monoxide (ppm)	VOC (ppm)	gas flow (ltr/hr)	temperature (°C)	water level (m - bgl)	remarks
BH304	Shallow	21/01/19 13:41:00										0.0			
BH304	Shallow	21/01/19 13:42:00										0.0			
BH304	Shallow	21/01/19 13:43:00										0.0			
BH304	Shallow	21/01/19 13:44:00										0.0			
BH304	Shallow	21/01/19 13:45:00										0.0			
BH304	Shallow	21/01/19 13:46:00										0.0			
BH304	Shallow	21/01/19 13:47:00			0.0	0.0	20.2	0.0	0	0	0.0				
BH304	Shallow	21/01/19 13:48:00			0.0	0.0	20.1	0.0	0	0	0.0				
BH304	Shallow	21/01/19 13:49:00			0.0	0.0	20.1	0.0	0	0	0.0				
BH304	Shallow	21/01/19 13:50:00			0.0	0.0	20.1	0.0	0	0	0.0				
BH304	Shallow	21/01/19 13:51:00			0.0	0.0	20.1	0.0	0	0	0.0				
BH304	Shallow	21/01/19 13:52:00			0.0	0.0	20.0	0.0	0	0	0.0				
BH304	Shallow	21/01/19 13:53:00			0.0	0.0	20.1	0.0	0	0	0.0				
BH304	Shallow	21/01/19 13:54:00			0.0	0.0	20.1	0.0	0	0	0.0				
BH304	Shallow	21/01/19 13:55:00			0.0	0.0	20.1	0.0	0	0	0.0				
BH304	Shallow	21/01/19 13:56:00			0.0	0.0	20.2	0.0	0	0	0.0				
BH304	Shallow	21/01/19 13:57:00												Dry	
BH304	Shallow	31/01/19 11:13:00	990	0								0.0			

remarks
denotes result exceeding capacity of gas monitoring equipment
Equipment used - Gas Data GFM 435 Gas Analyser

CONTRACT **34769**

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Geotechnical Engineering Limited

GAS AND GROUNDWATER LEVELS

CLIENT: SH READING MASTER LLP

SITE: STATION HILL, READING

Borehole /trial pit no.	install	date and time	barometric pressure (mb)	pressure differentiation (mm H_2O)	carbon dioxide (%)	methane (%)	oxygen (%)	LEL (%)	hydrogen sulphide (ppm)	carbon monoxide (ppm)	VOC (ppm)	gas flow (ltr/hr)	temperature (°C)	water level (m - bgl)	remarks
BH304	Shallow	31/01/19 11:14:00	990	-1								-0.1			
BH304	Shallow	31/01/19 11:15:00	989	0								0.0			
BH304	Shallow	31/01/19 11:16:00	989	-1								0.0			
BH304	Shallow	31/01/19 11:17:00	989	-2								-0.1			
BH304	Shallow	31/01/19 11:18:00	988	-2								-0.1			
BH304	Shallow	31/01/19 11:22:00			0.0	0.0	19.4	0.0	0	0	0.0				
BH304	Shallow	31/01/19 11:23:00			0.0	0.0	19.2	0.0	0	0	0.0				
BH304	Shallow	31/01/19 11:24:00			0.0	0.0	19.1	0.0	0	0	0.0				
BH304	Shallow	31/01/19 11:25:00			0.0	0.0	19.1	0.0	0	0	0.0				
BH304	Shallow	31/01/19 11:26:00			0.0	0.0	19.1	0.0	0	0	0.0				
BH304	Shallow	31/01/19 11:27:00			0.0	0.0	19.1	0.0	0	0	0.0				
BH304	Shallow	31/01/19 11:28:00			0.0	0.0	19.1	0.0	0	0	0.0				
BH304	Shallow	31/01/19 11:29:00			0.0	0.0	19.1	0.0	0	0	0.0				
BH304	Shallow	31/01/19 11:30:00			0.0	0.0	19.1	0.0	0	0	0.0				
BH304	Shallow	31/01/19 11:31:00			0.0	0.0	19.1	0.0	0	0	0.0				
BH304	Shallow	31/01/19 11:32:00			0.0	0.0	19.1	0.0	0	0	0.0				
BH304	Shallow	31/01/19 11:33:00												Dry	
BH304	Shallow	04/02/19 10:20:00	1009	0								0.0	7		

remarks
denotes result exceeding capacity of gas monitoring equipment
Equipment used - Gas Data GFM 435 Gas Analyser

CONTRACT **34769**

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Geotechnical Engineering Limited

GAS AND GROUNDWATER LEVELS

CLIENT: SH READING MASTER LLP

SITE: STATION HILL, READING

Borehole /trial pit no.	install	date and time	barometric pressure (mb)	pressure differentiation (mm H_2O)	carbon dioxide (%)	methane (%)	oxygen (%)	LEL (%)	hydrogen sulphide (ppm)	carbon monoxide (ppm)	VOC (ppm)	gas flow (ltr/hr)	temperature (°C)	water level (m - bgl)	remarks
BH304	Shallow	04/02/19 10:21:00										0.0			
BH304	Shallow	04/02/19 10:22:00										0.1			
BH304	Shallow	04/02/19 10:23:00										0.0			
BH304	Shallow	04/02/19 10:24:00										0.0			
BH304	Shallow	04/02/19 10:25:00										0.0			
BH304	Shallow	04/02/19 10:30:00			0.0	0.0	20.8	0.0	0	0	0.0				
BH304	Shallow	04/02/19 10:31:00			0.0	0.0	20.6	0.0	0	0	0.0				
BH304	Shallow	04/02/19 10:32:00			0.0	0.0	20.6	0.0	0	0	0.0				
BH304	Shallow	04/02/19 10:33:00			0.0	0.0	20.6	0.0	0	0	0.0				
BH304	Shallow	04/02/19 10:34:00			0.0	0.0	20.6	0.0	0	0	0.0				
BH304	Shallow	04/02/19 10:35:00			0.0	0.0	20.6	0.0	0	0	0.0				
BH304	Shallow	04/02/19 10:36:00			0.0	0.0	20.6	0.0	0	0	0.0				
BH304	Shallow	04/02/19 10:37:00			0.0	0.0	20.6	0.0	0	0	0.0				
BH304	Shallow	04/02/19 10:38:00			0.0	0.0	20.6	0.0	0	0	0.0				
BH304	Shallow	04/02/19 10:39:00			0.0	0.0	20.6	0.0	0	0	0.0				
BH304	Shallow	04/02/19 10:40:00			0.0	0.0	20.6	0.0	0	0	0.0				
BH304	Shallow	04/02/19 10:41:00												Dry	

remarks
denotes result exceeding capacity of gas monitoring equipment
Equipment used - Gas Data GFM 435 Gas Analyser

CONTRACT **34769**

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Geotechnical Engineering Limited

GAS AND GROUNDWATER LEVELS

CLIENT: SH READING MASTER LLP

SITE: STATION HILL, READING

Borehole /trial pit no.	install	date and time	barometric pressure (mb)	pressure differentiation (mm H_2O)	carbon dioxide (%)	methane (%)	oxygen (%)	LEL (%)	hydrogen sulphide (ppm)	carbon monoxide (ppm)	VOC (ppm)	gas flow (ltr/hr)	temperature (°C)	water level (m - bgl)	remarks
BH304	Deep	17/12/18 12:10:00												5.33	Unable to take water sample due to bend in pipe.
BH304	Deep	10/01/19 11:46:00												5.45	
BH304	Deep	21/01/19 13:57:00												5.38	
BH304	Deep	31/01/19 11:34:00												5.35	Water sample obtained.
BH304	Deep	04/02/19 10:42:00												5.30	

remarks
denotes result exceeding capacity of gas monitoring equipment
Equipment used - Gas Data GFM 435 Gas Analyser

CONTRACT **34769**

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Geotechnical Engineering Limited

GAS AND GROUNDWATER LEVELS

CLIENT: SH READING MASTER LLP

SITE: STATION HILL, READING

Borehole /trial pit no.	install	date and time	barometric pressure (mb)	pressure differentiation (mm H_2O)	carbon dioxide (%)	methane (%)	oxygen (%)	LEL (%)	hydrogen sulphide (ppm)	carbon monoxide (ppm)	VOC (ppm)	gas flow (ltr/hr)	temperature (°C)	water level (m - bgl)	remarks
WS301	Single	10/12/18 09:55:00	1025	0.00								0.0	9		
WS301	Single	10/12/18 09:56:00										0.0			
WS301	Single	10/12/18 09:57:00										0.0			
WS301	Single	10/12/18 09:58:00										0.0			
WS301	Single	10/12/18 09:59:00										0.0			
WS301	Single	10/12/18 10:00:00										0.0			
WS301	Single	10/12/18 10:01:00			0.5	0.0	19.5	0.0	0	0	0.4				
WS301	Single	10/12/18 10:02:00			0.5	0.0	19.4	0.0	0	0	0.6				
WS301	Single	10/12/18 10:03:00			0.5	0.0	19.4	0.0	0	0	0.6				
WS301	Single	10/12/18 10:04:00			0.5	0.0	19.4	0.0	0	0	0.4				
WS301	Single	10/12/18 10:05:00			0.5	0.0	19.4	0.0	0	0	0.1				
WS301	Single	10/12/18 10:06:00			0.5	0.0	19.4	0.0	0	0	0.0				
WS301	Single	10/12/18 10:07:00			0.5	0.0	19.4	0.0	0	0	0.0				
WS301	Single	10/12/18 10:08:00			0.5	0.0	19.4	0.0	0	0	0.0				
WS301	Single	10/12/18 10:09:00			0.5	0.0	19.4	0.0	0	0	0.0				
WS301	Single	10/12/18 10:10:00			0.5	0.0	19.4	0.0	0	0	0.0				
WS301	Single	10/12/18 10:11:00												Dry	
WS301	Single	17/12/18 12:35:00	1013	0.00								0.0	5		

remarks
denotes result exceeding capacity of gas monitoring equipment
Equipment used - Gas Data GFM 435 Gas Analyser

CONTRACT **34769**

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Geotechnical Engineering Limited

GAS AND GROUNDWATER LEVELS

CLIENT: SH READING MASTER LLP

SITE: STATION HILL, READING

Borehole /trial pit no.	install	date and time	barometric pressure (mb)	pressure differentiation (mm H_2O)	carbon dioxide (%)	methane (%)	oxygen (%)	LEL (%)	hydrogen sulphide (ppm)	carbon monoxide (ppm)	VOC (ppm)	gas flow (ltr/hr)	temperature (°C)	water level (m - bgl)	remarks
WS301	Single	17/12/18 12:36:00										0.0			
WS301	Single	17/12/18 12:37:00										0.0			
WS301	Single	17/12/18 12:38:00										0.0			
WS301	Single	17/12/18 12:39:00										0.0			
WS301	Single	17/12/18 12:40:00			0.0	0.0	19.9	0.0	0	0	0.0				
WS301	Single	17/12/18 12:41:00			0.0	0.0	20.0	0.0	0	0	0.0				
WS301	Single	17/12/18 12:42:00			0.0	0.0	20.0	0.0	0	0	0.0				
WS301	Single	17/12/18 12:43:00			0.0	0.0	20.1	0.0	0	0	0.0				
WS301	Single	17/12/18 12:44:00			0.0	0.0	20.1	0.0	0	0	0.0				
WS301	Single	17/12/18 12:45:00			0.0	0.0	20.1	0.0	0	0	0.0				
WS301	Single	17/12/18 12:46:00			0.0	0.0	20.1	0.0	0	0	0.0				
WS301	Single	17/12/18 12:47:00			0.0	0.0	20.1	0.0	0	0	0.0				
WS301	Single	17/12/18 12:48:00			0.0	0.0	20.1	0.0	0	0	0.0				
WS301	Single	17/12/18 12:49:00			0.0	0.0	20.1	0.0	0	0	0.0				
WS301	Single	17/12/18 12:50:00												Dry	
WS301	Single	10/01/19 11:10:00	1032	10.25								0.0	5		
WS301	Single	10/01/19 11:11:00										0.0			
WS301	Single	10/01/19 11:12:00										0.0			

remarks
denotes result exceeding capacity of gas monitoring equipment
Equipment used - Gas Data GFM 435 Gas Analyser

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GAS AND GROUNDWATER LEVELS

CLIENT: SH READING MASTER LLP

SITE: STATION HILL, READING

Borehole /trial pit no.	install	date and time	barometric pressure (mb)	pressure differentiation (mm H_2O)	carbon dioxide (%)	methane (%)	oxygen (%)	LEL (%)	hydrogen sulphide (ppm)	carbon monoxide (ppm)	VOC (ppm)	gas flow (ltr/hr)	temperature (°C)	water level (m - bgl)	remarks
WS301	Single	10/01/19 11:13:00										0.0			
WS301	Single	10/01/19 11:14:00										0.0			
WS301	Single	10/01/19 11:15:00			0.0	0.0	21.0	0.0	0	0	0.0				
WS301	Single	10/01/19 11:16:00			0.0	0.0	21.0	0.0	0	0	0.0				
WS301	Single	10/01/19 11:17:00			0.0	0.0	21.0	0.0	0	0	0.0				
WS301	Single	10/01/19 11:18:00			0.0	0.0	21.0	0.0	0	0	0.0				
WS301	Single	10/01/19 11:19:00			0.0	0.0	21.0	0.0	0	0	0.0				
WS301	Single	10/01/19 11:20:00			0.0	0.0	21.0	0.0	0	0	0.0				
WS301	Single	10/01/19 11:21:00			0.0	0.0	21.0	0.0	0	0	0.0				
WS301	Single	10/01/19 11:22:00			0.0	0.0	21.0	0.0	0	0	0.0				
WS301	Single	10/01/19 11:23:00			0.0	0.0	21.0	0.0	0	0	0.0				
WS301	Single	10/01/19 11:24:00			0.0	0.0	21.0	0.0	0	0	0.0				
WS301	Single	10/01/19 11:25:00												Dry	
WS301	Single	21/01/19 14:27:00	1015	-2								0.0	4		
WS301	Single	21/01/19 14:28:00										0.0			
WS301	Single	21/01/19 14:29:00										0.0			
WS301	Single	21/01/19 14:30:00										0.0			
WS301	Single	21/01/19 14:31:00										0.0			

remarks
denotes result exceeding capacity of gas monitoring equipment
Equipment used - Gas Data GFM 435 Gas Analyser

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Geotechnical Engineering Limited

GAS AND GROUNDWATER LEVELS

CLIENT: SH READING MASTER LLP

SITE: STATION HILL, READING

Borehole /trial pit no.	install	date and time	barometric pressure (mb)	pressure differentiation (mm H_2O)	carbon dioxide (%)	methane (%)	oxygen (%)	LEL (%)	hydrogen sulphide (ppm)	carbon monoxide (ppm)	VOC (ppm)	gas flow (ltr/hr)	temperature (°C)	water level (m - bgl)	remarks
WS301	Single	21/01/19 14:32:00										-0.6			
WS301	Single	21/01/19 14:33:00										0.0			
WS301	Single	21/01/19 14:34:00										0.0			
WS301	Single	21/01/19 14:35:00										0.0			
WS301	Single	21/01/19 14:36:00										0.0			
WS301	Single	21/01/19 14:37:00										0.0			
WS301	Single	21/01/19 14:38:00										0.0			
WS301	Single	21/01/19 14:39:00			0.0	0.0	20.6	0.0	0	0	0.0				
WS301	Single	21/01/19 14:40:00			0.0	0.0	20.6	0.0	0	0	0.0				
WS301	Single	21/01/19 14:41:00			0.0	0.0	20.6	0.0	0	0	0.0				
WS301	Single	21/01/19 14:42:00			0.0	0.0	20.6	0.0	0	0	0.0				
WS301	Single	21/01/19 14:43:00			0.0	0.0	20.6	0.0	0	0	0.0				
WS301	Single	21/01/19 14:44:00			0.0	0.0	20.6	0.0	0	0	0.0				
WS301	Single	21/01/19 14:45:00			0.0	0.0	20.6	0.0	0	0	0.0				
WS301	Single	21/01/19 14:46:00			0.0	0.0	20.6	0.0	0	0	0.0				
WS301	Single	21/01/19 14:47:00			0.0	0.0	20.6	0.0	0	0	0.0				
WS301	Single	21/01/19 14:48:00			0.0	0.0	20.6	0.0	0	0	0.0				
WS301	Single	21/01/19 14:49:00												Dry	

remarks
denotes result exceeding capacity of gas monitoring equipment
Equipment used - Gas Data GFM 435 Gas Analyser

CONTRACT **34769**

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Geotechnical Engineering Limited

GAS AND GROUNDWATER LEVELS

CLIENT: SH READING MASTER LLP

SITE: STATION HILL, READING

Borehole /trial pit no.	install	date and time	barometric pressure (mb)	pressure differentiation (mm H_2O)	carbon dioxide (%)	methane (%)	oxygen (%)	LEL (%)	hydrogen sulphide (ppm)	carbon monoxide (ppm)	VOC (ppm)	gas flow (ltr/hr)	temperature (°C)	water level (m - bgl)	remarks
WS301	Single	31/01/19 12:36:00	987	-1								0.0	1		
WS301	Single	31/01/19 12:37:00										0.0			
WS301	Single	31/01/19 12:38:00										-0.1			
WS301	Single	31/01/19 12:39:00										0.0			
WS301	Single	31/01/19 12:40:00										0.0			
WS301	Single	31/01/19 12:41:00										0.0			
WS301	Single	31/01/19 12:42:00			0.0	0.0	19.3	0.0	0	0	0.0				
WS301	Single	31/01/19 12:43:00			0.0	0.0	19.4	0.0	0	0	0.0				
WS301	Single	31/01/19 12:44:00			0.0	0.0	19.3	0.0	0	0	0.0				
WS301	Single	31/01/19 12:45:00			0.0	0.0	19.3	0.0	0	0	0.0				
WS301	Single	31/01/19 12:46:00			0.0	0.0	19.3	0.0	0	0	0.0				
WS301	Single	31/01/19 12:47:00			0.0	0.0	19.3	0.0	0	0	0.0				
WS301	Single	31/01/19 12:48:00			0.0	0.0	19.3	0.0	0	0	0.0				
WS301	Single	31/01/19 12:49:00			0.0	0.0	19.3	0.0	0	0	0.0				
WS301	Single	31/01/19 12:50:00			0.0	0.0	19.3	0.0	0	0	0.0				
WS301	Single	31/01/19 12:51:00			0.0	0.0	19.3	0.0	0	0	0.0				
WS301	Single	31/01/19 12:52:00			0.0	0.0	19.3	0.0	0	0	0.0				
WS301	Single	31/01/19 12:53:00												Dry	

remarks
denotes result exceeding capacity of gas monitoring equipment
Equipment used - Gas Data GFM 435 Gas Analyser

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Geotechnical Engineering Limited

GAS AND GROUNDWATER LEVELS

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Borehole /trial pit no.	install	date and time	barometric pressure (mb)	pressure differentiation (mm H_2O)	carbon dioxide (%)	methane (%)	oxygen (%)	LEL (%)	hydrogen sulphide (ppm)	carbon monoxide (ppm)	VOC (ppm)	gas flow (ltr/hr)	temperature (°C)	water level (m - bgl)	remarks
WS301	Single	04/02/19 10:32:00	1008	0.00								0.0	7		
WS301	Single	04/02/19 10:33:00										0.0			
WS301	Single	04/02/19 10:34:00										0.0			
WS301	Single	04/02/19 10:35:00										0.0			
WS301	Single	04/02/19 10:36:00										0.0			
WS301	Single	04/02/19 10:37:00										0.0			
WS301	Single	04/02/19 10:38:00			0.0	0.0	20.3	0.0	0	0	0.0				
WS301	Single	04/02/19 10:39:00			0.0	0.0	20.4	0.0	0	0	0.0				
WS301	Single	04/02/19 10:40:00			0.0	0.0	20.4	0.0	0	0	0.0				
WS301	Single	04/02/19 10:41:00			0.0	0.0	20.4	0.0	0	0	0.0				
WS301	Single	04/02/19 10:42:00			0.0	0.0	20.4	0.0	0	0	0.0				
WS301	Single	04/02/19 10:43:00			0.0	0.0	20.4	0.0	0	0	0.0				
WS301	Single	04/02/19 10:44:00			0.0	0.0	20.4	0.0	0	0	0.0				
WS301	Single	04/02/19 10:45:00			0.0	0.0	20.4	0.0	0	0	0.0				
WS301	Single	04/02/19 10:46:00			0.0	0.0	20.4	0.0	0	0	0.0				
WS301	Single	04/02/19 10:47:00			0.0	0.0	20.4	0.0	0	0	0.0				
WS301	Single	04/02/19 10:48:00			0.0	0.0	20.4	0.0	0	0	0.0				
WS301	Single	04/02/19 10:49:00												Dry	

remarks
denotes result exceeding capacity of gas monitoring equipment
Equipment used - Gas Data GFM 435 Gas Analyser

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Geotechnical Engineering Limited

GAS AND GROUNDWATER LEVELS

CLIENT: SH READING MASTER LLP

SITE: STATION HILL, READING

Borehole /trial pit no.	install	date and time	barometric pressure (mb)	pressure differentiation (mm H_2O)	carbon dioxide (%)	methane (%)	oxygen (%)	LEL (%)	hydrogen sulphide (ppm)	carbon monoxide (ppm)	VOC (ppm)	gas flow (ltr/hr)	temperature (°C)	water level (m - bgl)	remarks
WS304	Single	10/12/18 10:15:00	1025	0.00								0.0	9		
WS304	Single	10/12/18 10:16:00										0.0			
WS304	Single	10/12/18 10:17:00										0.0			
WS304	Single	10/12/18 10:18:00										0.0			
WS304	Single	10/12/18 10:19:00										0.0			
WS304	Single	10/12/18 10:20:00										0.0			
WS304	Single	10/12/18 10:21:00			0.2	0.0	20.4	0.0	0	0	1.0				
WS304	Single	10/12/18 10:22:00			0.2	0.0	20.4	0.0	0	0	1.1				
WS304	Single	10/12/18 10:23:00			0.2	0.0	20.4	0.0	0	0	1.0				
WS304	Single	10/12/18 10:24:00			0.2	0.0	20.4	0.0	0	0	0.8				
WS304	Single	10/12/18 10:25:00			0.2	0.0	20.4	0.0	0	0	0.7				
WS304	Single	10/12/18 10:26:00			0.2	0.0	20.4	0.0	0	0	0.5				
WS304	Single	10/12/18 10:27:00			0.2	0.0	20.4	0.0	0	0	0.3				
WS304	Single	10/12/18 10:28:00			0.2	0.0	20.4	0.0	0	0	0.0				
WS304	Single	10/12/18 10:29:00			0.1	0.0	20.5	0.0	0	0	0.0				
WS304	Single	10/12/18 10:30:00			0.1	0.0	20.5	0.0	0	0	0.0				
WS304	Single	10/12/18 10:31:00												Dry	
WS304	Single	17/12/18 09:35:00	1009	0.00								0.0	2		

remarks
denotes result exceeding capacity of gas monitoring equipment
Equipment used - Gas Data GFM 435 Gas Analyser

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Geotechnical Engineering Limited

GAS AND GROUNDWATER LEVELS

CLIENT: SH READING MASTER LLP

SITE: STATION HILL, READING

Borehole /trial pit no.	install	date and time	barometric pressure (mb)	pressure differentiation (mm H_2O)	carbon dioxide (%)	methane (%)	oxygen (%)	LEL (%)	hydrogen sulphide (ppm)	carbon monoxide (ppm)	VOC (ppm)	gas flow (ltr/hr)	temperature (°C)	water level (m - bgl)	remarks
WS304	Single	17/12/18 09:36:00										0.0			
WS304	Single	17/12/18 09:37:00										0.0			
WS304	Single	17/12/18 09:38:00										0.0			
WS304	Single	17/12/18 09:39:00										0.0			
WS304	Single	17/12/18 09:40:00			0.2	0.0	20.1	0.0	0	0	0.0				
WS304	Single	17/12/18 09:41:00			0.2	0.0	20.0	0.0	0	0	0.0				
WS304	Single	17/12/18 09:42:00			0.2	0.0	20.0	0.0	0	0	0.0				
WS304	Single	17/12/18 09:43:00			0.2	0.0	20.0	0.0	0	0	0.0				
WS304	Single	17/12/18 09:44:00			0.2	0.0	20.0	0.0	0	0	0.0				
WS304	Single	17/12/18 09:45:00			0.2	0.0	20.0	0.0	0	0	0.0				
WS304	Single	17/12/18 09:46:00			0.2	0.0	20.0	0.0	0	0	0.0				
WS304	Single	17/12/18 09:47:00			0.2	0.0	20.0	0.0	0	0	0.0				
WS304	Single	17/12/18 09:48:00			0.2	0.0	20.0	0.0	0	0	0.0				
WS304	Single	17/12/18 09:49:00			0.2	0.0	20.0	0.0	0	0	0.0				
WS304	Single	17/12/18 09:50:00												Dry	
WS304	Single	10/01/19 10:45:00	1032	-0.15								0.0	5		
WS304	Single	10/01/19 10:46:00										0.0			
WS304	Single	10/01/19 10:47:00										0.0			

remarks
denotes result exceeding capacity of gas monitoring equipment
Equipment used - Gas Data GFM 435 Gas Analyser

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Geotechnical Engineering Limited

GAS AND GROUNDWATER LEVELS

CLIENT: SH READING MASTER LLP

SITE: STATION HILL, READING

Borehole /trial pit no.	install	date and time	barometric pressure (mb)	pressure differentiation (mm H_2O)	carbon dioxide (%)	methane (%)	oxygen (%)	LEL (%)	hydrogen sulphide (ppm)	carbon monoxide (ppm)	VOC (ppm)	gas flow (ltr/hr)	temperature (°C)	water level (m - bgl)	remarks
WS304	Single	10/01/19 10:48:00										0.0			
WS304	Single	10/01/19 10:49:00										0.0			
WS304	Single	10/01/19 10:50:00			0.2	0.0	20.8	0.0	0	0	0.0				
WS304	Single	10/01/19 10:51:00			0.2	0.0	20.8	0.0	0	0	0.0				
WS304	Single	10/01/19 10:52:00			0.2	0.0	20.9	0.0	0	0	0.0				
WS304	Single	10/01/19 10:53:00			0.2	0.1	20.9	1.0	0	0	0.0				
WS304	Single	10/01/19 10:54:00			0.2	0.1	20.9	1.0	0	0	0.0				
WS304	Single	10/01/19 10:55:00			0.2	0.1	21.0	1.0	0	0	0.0				
WS304	Single	10/01/19 10:56:00			0.2	0.1	21.0	1.0	0	0	0.0				
WS304	Single	10/01/19 10:57:00			0.2	0.1	21.0	1.0	0	0	0.0				
WS304	Single	10/01/19 10:58:00			0.2	0.1	21.0	1.0	0	0	0.0				
WS304	Single	10/01/19 10:59:00			0.2	0.1	21.0	1.0	0	0	0.0				
WS304	Single	10/01/19 11:00:00												Dry	
WS304	Single	21/01/19 15:50:00	1012	0.00								0.0	4		
WS304	Single	21/01/19 15:51:00										0.0			
WS304	Single	21/01/19 15:52:00										0.0			
WS304	Single	21/01/19 15:53:00										0.0			
WS304	Single	21/01/19 15:54:00										0.0			

remarks
denotes result exceeding capacity of gas monitoring equipment
Equipment used - Gas Data GFM 435 Gas Analyser

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Geotechnical Engineering Limited

GAS AND GROUNDWATER LEVELS

CLIENT: SH READING MASTER LLP

SITE: STATION HILL, READING

Borehole /trial pit no.	install	date and time	barometric pressure (mb)	pressure differentiation (mm H_2O)	carbon dioxide (%)	methane (%)	oxygen (%)	LEL (%)	hydrogen sulphide (ppm)	carbon monoxide (ppm)	VOC (ppm)	gas flow (ltr/hr)	temperature (°C)	water level (m - bgl)	remarks
WS304	Single	21/01/19 15:55:00										0.0			
WS304	Single	21/01/19 15:56:00										0.0			
WS304	Single	21/01/19 15:57:00										0.0			
WS304	Single	21/01/19 15:58:00										0.0			
WS304	Single	21/01/19 15:59:00										0.0			
WS304	Single	21/01/19 16:00:00										0.0			
WS304	Single	21/01/19 16:01:00										0.0			
WS304	Single	21/01/19 16:02:00			0.0	0.0	20.3	0.0	0	0	0.0				
WS304	Single	21/01/19 16:03:00			0.0	0.0	20.3	0.0	0	0	0.0				
WS304	Single	21/01/19 16:04:00			0.0	0.0	20.3	0.0	0	0	0.0				
WS304	Single	21/01/19 16:05:00			0.0	0.0	20.3	0.0	0	0	0.0				
WS304	Single	21/01/19 16:06:00			0.0	0.0	20.3	0.0	0	0	0.0				
WS304	Single	21/01/19 16:07:00			0.0	0.0	20.4	0.0	0	0	0.0				
WS304	Single	21/01/19 16:08:00			0.0	0.0	20.3	0.0	0	0	0.0				
WS304	Single	21/01/19 16:09:00			0.0	0.0	20.4	0.0	0	0	0.0				
WS304	Single	21/01/19 16:10:00			0.0	0.0	20.4	0.0	0	0	0.0				
WS304	Single	21/01/19 16:11:00			0.0	0.0	20.3	0.0	0	0	0.0				
WS304	Single	21/01/19 16:12:00			0.0	0.0	20.3	0.0	0	0	0.0			Dry	

remarks
denotes result exceeding capacity of gas monitoring equipment
Equipment used - Gas Data GFM 435 Gas Analyser

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GAS AND GROUNDWATER LEVELS

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SITE: STATION HILL, READING

Borehole /trial pit no.	install	date and time	barometric pressure (mb)	pressure differentiation (mm H_2O)	carbon dioxide (%)	methane (%)	oxygen (%)	LEL (%)	hydrogen sulphide (ppm)	carbon monoxide (ppm)	VOC (ppm)	gas flow (ltr/hr)	temperature (°C)	water level (m - bgl)	remarks
WS304	Single	31/01/19 13:03:00	988	-1								0.0	1		
WS304	Single	31/01/19 13:04:00										0.0			
WS304	Single	31/01/19 13:05:00										0.0			
WS304	Single	31/01/19 13:06:00										-0.1			
WS304	Single	31/01/19 13:07:00										0.0			
WS304	Single	31/01/19 13:08:00										0.0			
WS304	Single	31/01/19 13:11:00			0.0	0.0	19.4	0.0	0	0	0.0				
WS304	Single	31/01/19 13:12:00			0.0	0.0	19.4	0.0	0	0	0.0				
WS304	Single	31/01/19 13:13:00			0.1	0.0	19.4	0.0	0	0	0.0				
WS304	Single	31/01/19 13:14:00			0.1	0.0	19.4	0.0	0	0	0.0				
WS304	Single	31/01/19 13:15:00			0.1	0.0	19.3	0.0	0	0	0.0				
WS304	Single	31/01/19 13:16:00			0.1	0.0	19.3	0.0	0	0	0.0				
WS304	Single	31/01/19 13:17:00			0.1	0.0	19.3	0.0	0	0	0.0				
WS304	Single	31/01/19 13:18:00			0.1	0.0	19.3	0.0	0	0	0.0				
WS304	Single	31/01/19 13:19:00			0.1	0.0	19.3	0.0	0	0	0.0				
WS304	Single	31/01/19 13:20:00			0.1	0.0	19.3	0.0	0	0	0.0				
WS304	Single	31/01/19 13:21:00			0.1	0.0	19.3	0.0	0	0	0.0				
WS304	Single	31/01/19 13:22:00												Dry	

remarks
denotes result exceeding capacity of gas monitoring equipment
Equipment used - Gas Data GFM 435 Gas Analyser

CONTRACT **34769**

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Geotechnical Engineering Limited

GAS AND GROUNDWATER LEVELS

CLIENT: SH READING MASTER LLP

SITE: STATION HILL, READING

Borehole /trial pit no.	install	date and time	barometric pressure (mb)	pressure differentiation (mm H_2O)	carbon dioxide (%)	methane (%)	oxygen (%)	LEL (%)	hydrogen sulphide (ppm)	carbon monoxide (ppm)	VOC (ppm)	gas flow (ltr/hr)	temperature (°C)	water level (m - bgl)	remarks
WS304	Single	04/02/19 10:10:00	1007	0.00								0.0	7		
WS304	Single	04/02/19 10:11:00										0.0			
WS304	Single	04/02/19 10:12:00										0.0			
WS304	Single	04/02/19 10:13:00										0.0			
WS304	Single	04/02/19 10:14:00										0.0			
WS304	Single	04/02/19 10:15:00										0.0			
WS304	Single	04/02/19 10:16:00			0.1	0.0	20.5	0.0	0	0	0.0				
WS304	Single	04/02/19 10:17:00			0.1	0.0	20.3	0.0	0	0	0.0				
WS304	Single	04/02/19 10:18:00			0.1	0.0	20.3	0.0	0	0	0.0				
WS304	Single	04/02/19 10:19:00			0.1	0.0	20.3	0.0	0	10	0.0				
WS304	Single	04/02/19 10:20:00			0.1	0.0	20.3	0.0	0	0	0.0				
WS304	Single	04/02/19 10:21:00			0.1	0.0	20.3	0.0	0	0	0.0				
WS304	Single	04/02/19 10:22:00			0.1	0.0	20.3	0.0	0	0	0.0				
WS304	Single	04/02/19 10:23:00			0.1	0.0	20.3	0.0	0	0	0.0				
WS304	Single	04/02/19 10:24:00			0.1	0.0	20.2	0.0	0	0	0.0				
WS304	Single	04/02/19 10:25:00			0.1	0.0	20.2	0.0	0	0	0.0				
WS304	Single	04/02/19 10:26:00			0.1	0.0	20.2	0.0	0	0	0.0				
WS304	Single	04/02/19 10:27:00												Dry	

remarks
denotes result exceeding capacity of gas monitoring equipment
Equipment used - Gas Data GFM 435 Gas Analyser

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Geotechnical Engineering Limited

GAS AND GROUNDWATER LEVELS

CLIENT: SH READING MASTER LLP

SITE: STATION HILL, READING

Borehole /trial pit no.	install	date and time	barometric pressure (mb)	pressure differentiation (mm H_2O)	carbon dioxide (%)	methane (%)	oxygen (%)	LEL (%)	hydrogen sulphide (ppm)	carbon monoxide (ppm)	VOC (ppm)	gas flow (ltr/hr)	temperature (°C)	water level (m - bgl)	remarks
WS310	Single	17/12/18 13:45:00	1012	0.00								0.0	5		
WS310	Single	17/12/18 13:46:00										0.0			
WS310	Single	17/12/18 13:47:00										0.0			
WS310	Single	17/12/18 13:48:00										0.0			
WS310	Single	17/12/18 13:49:00										0.0			
WS310	Single	17/12/18 13:50:00			0.0	0.0	19.9	0.0	0	0	0.0				
WS310	Single	17/12/18 13:51:00			0.0	0.0	19.9	0.0	0	0	0.0				
WS310	Single	17/12/18 13:52:00			0.0	0.0	19.9	0.0	0	0	0.0				
WS310	Single	17/12/18 13:53:00			0.0	0.0	19.9	0.0	0	0	0.0				
WS310	Single	17/12/18 13:54:00			0.0	0.0	19.9	0.0	0	0	0.0				
WS310	Single	17/12/18 13:55:00			0.0	0.0	19.9	0.0	0	0	0.0				
WS310	Single	17/12/18 13:56:00			0.0	0.0	19.9	0.0	0	0	0.0				
WS310	Single	17/12/18 13:57:00			0.0	0.0	19.9	0.0	0	0	0.0				
WS310	Single	17/12/18 13:58:00			0.0	0.0	19.9	0.0	0	0	0.0				
WS310	Single	17/12/18 13:59:00			0.0	0.0	19.9	0.0	0	0	0.0				
WS310	Single	17/12/18 14:00:00												Dry	
WS310	Single	10/01/19 10:20:00	1032	-0.14								0.0	3		
WS310	Single	10/01/19 10:21:00										0.0			

remarks
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Equipment used - Gas Data GFM 435 Gas Analyser

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GAS AND GROUNDWATER LEVELS

CLIENT: SH READING MASTER LLP

SITE: STATION HILL, READING

Borehole /trial pit no.	install	date and time	barometric pressure (mb)	pressure differentiation (mm H_2O)	carbon dioxide (%)	methane (%)	oxygen (%)	LEL (%)	hydrogen sulphide (ppm)	carbon monoxide (ppm)	VOC (ppm)	gas flow (ltr/hr)	temperature (°C)	water level (m - bgl)	remarks
WS310	Single	10/01/19 10:22:00										0.0			
WS310	Single	10/01/19 10:23:00										0.0			
WS310	Single	10/01/19 10:24:00										0.0			
WS310	Single	10/01/19 10:25:00			0.0	0.0	20.7	0.0	0	0	0.0				
WS310	Single	10/01/19 10:26:00			0.0	0.0	20.7	0.0	0	0	0.0				
WS310	Single	10/01/19 10:27:00			0.0	0.0	20.7	0.0	0	0	0.0				
WS310	Single	10/01/19 10:28:00			0.0	0.0	20.7	0.0	0	0	0.0				
WS310	Single	10/01/19 10:29:00			0.0	0.0	20.7	0.0	0	0	0.0				
WS310	Single	10/01/19 10:30:00			0.0	0.0	20.7	0.0	0	0	0.0				
WS310	Single	10/01/19 10:31:00			0.0	0.0	20.7	0.0	0	0	0.0				
WS310	Single	10/01/19 10:32:00			0.0	0.0	20.7	0.0	0	0	0.0				
WS310	Single	10/01/19 10:33:00			0.0	0.0	20.7	0.0	0	0	0.0				
WS310	Single	10/01/19 10:34:00			0.0	0.0	20.7	0.0	0	0	0.0				
WS310	Single	10/01/19 10:35:00												Dry	
WS310	Single	31/01/19 15:43:00	986	1.2								3.0	1		
WS310	Single	31/01/19 15:44:00										5.0			
WS310	Single	31/01/19 15:45:00										5.0			
WS310	Single	31/01/19 15:46:00										5.0			

remarks
denotes result exceeding capacity of gas monitoring equipment
Equipment used - Gas Data GFM 435 Gas Analyser

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Geotechnical Engineering Limited

GAS AND GROUNDWATER LEVELS

CLIENT: SH READING MASTER LLP

SITE: STATION HILL, READING

Borehole /trial pit no.	install	date and time	barometric pressure (mb)	pressure differentiation (mm H_2O)	carbon dioxide (%)	methane (%)	oxygen (%)	LEL (%)	hydrogen sulphide (ppm)	carbon monoxide (ppm)	VOC (ppm)	gas flow (ltr/hr)	temperature (°C)	water level (m - bgl)	remarks
WS310	Single	31/01/19 15:47:00										3.0			
WS310	Single	31/01/19 15:48:00										5.0			
WS310	Single	31/01/19 15:50:00			0.0	0.0	19.6	0.0	0	0	0.2				
WS310	Single	31/01/19 15:51:00			0.0	0.0	19.3	0.0	0	0	0.0				
WS310	Single	31/01/19 15:52:00			0.0	0.0	19.3	0.0	0	0	0.0				
WS310	Single	31/01/19 15:53:00			0.0	0.0	19.3	0.0	0	0	0.0				
WS310	Single	31/01/19 15:54:00			0.0	0.0	19.3	0.0	0	0	0.0				
WS310	Single	31/01/19 15:55:00			0.0	0.0	19.3	0.0	0	0	0.0				
WS310	Single	31/01/19 15:56:00			0.0	0.0	19.3	0.0	0	0	0.0				
WS310	Single	31/01/19 15:57:00			0.0	0.0	19.3	0.0	0	0	0.0				
WS310	Single	31/01/19 15:58:00			0.0	0.0	19.3	0.0	0	0	0.0				
WS310	Single	31/01/19 15:59:00			0.0	0.0	19.3	0.0	0	0	0.0				
WS310	Single	31/01/19 16:00:00			0.0	0.0	19.3	0.0	0	0	0.0				
WS310	Single	31/01/19 16:01:00												Dry	
WS310	Single	04/02/19 11:08:00	1009	0								0.0	7		
WS310	Single	04/02/19 11:09:00										0.0			
WS310	Single	04/02/19 11:10:00										0.0			
WS310	Single	04/02/19 11:11:00										0.0			

remarks
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GAS AND GROUNDWATER LEVELS

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Borehole /trial pit no.	install	date and time	barometric pressure (mb)	pressure differentiation (mm H_2O)	carbon dioxide (%)	methane (%)	oxygen (%)	LEL (%)	hydrogen sulphide (ppm)	carbon monoxide (ppm)	VOC (ppm)	gas flow (ltr/hr)	temperature (°C)	water level (m - bgl)	remarks
WS310	Single	04/02/19 11:12:00										0.0			
WS310	Single	04/02/19 11:13:00										0.0			
WS310	Single	04/02/19 11:14:00			0.0	0.0	20.4	0.0	0	0	0.0				
WS310	Single	04/02/19 11:15:00			0.0	0.0	20.4	0.0	0	0	0.0				
WS310	Single	04/02/19 11:16:00			0.0	0.0	20.3	0.0	0	0	0.0				
WS310	Single	04/02/19 11:17:00			0.0	0.0	20.3	0.0	0	10	0.0				
WS310	Single	04/02/19 11:18:00			0.0	0.0	20.2	0.0	0	0	0.0				
WS310	Single	04/02/19 11:19:00			0.0	0.0	20.2	0.0	0	0	0.0				
WS310	Single	04/02/19 11:20:00			0.0	0.0	20.1	0.0	0	0	0.0				
WS310	Single	04/02/19 11:21:00			0.0	0.0	20.1	0.0	0	0	0.0				
WS310	Single	04/02/19 11:22:00			0.0	0.0	20.1	0.0	0	0	0.0				
WS310	Single	04/02/19 11:23:00			0.0	0.0	20.0	0.0	0	0	0.0				
WS310	Single	04/02/19 11:24:00			0.0	0.0	20.0	0.0	0	0	0.0				
WS310	Single	04/02/19 11:25:00												Dry	

remarks
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GAS AND GROUNDWATER LEVELS

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Borehole /trial pit no.	install	date and time	barometric pressure (mb)	pressure differentiation (mm H_2O)	carbon dioxide (%)	methane (%)	oxygen (%)	LEL (%)	hydrogen sulphide (ppm)	carbon monoxide (ppm)	VOC (ppm)	gas flow (ltr/hr)	temperature (°C)	water level (m - bgl)	remarks
WS311	Single	17/12/18 13:30:00	1012	0.00								0.0	5		
WS311	Single	17/12/18 13:31:00										0.0			
WS311	Single	17/12/18 13:32:00										0.0			
WS311	Single	17/12/18 13:33:00										0.0			
WS311	Single	17/12/18 13:34:00										0.0			
WS311	Single	17/12/18 13:35:00			0.0	0.0	19.9	0.0	0	0	0.0				
WS311	Single	17/12/18 13:36:00			0.0	0.0	19.9	0.0	0	0	0.0				
WS311	Single	17/12/18 13:37:00			0.0	0.0	19.9	0.0	0	0	0.0				
WS311	Single	17/12/18 13:38:00			0.0	0.0	19.9	0.0	0	0	0.0				
WS311	Single	17/12/18 13:39:00			0.0	0.0	19.9	0.0	0	0	0.0				
WS311	Single	17/12/18 13:40:00			0.0	0.0	19.9	0.0	0	0	0.0				
WS311	Single	17/12/18 13:41:00			0.0	0.0	19.9	0.0	0	0	0.0				
WS311	Single	17/12/18 13:42:00			0.0	0.0	19.9	0.0	0	0	0.0				
WS311	Single	17/12/18 13:43:00			0.0	0.0	19.9	0.0	0	0	0.0				
WS311	Single	17/12/18 13:44:00			0.0	0.0	19.9	0.0	0	0	0.0				
WS311	Single	17/12/18 13:45:00												Dry	
WS311	Single	10/01/19 10:00:00	1033	-0.38								-0.1	3		
WS311	Single	10/01/19 10:01:00										0.0			

remarks
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GAS AND GROUNDWATER LEVELS

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Borehole /trial pit no.	install	date and time	barometric pressure (mb)	pressure differentiation (mm H_2O)	carbon dioxide (%)	methane (%)	oxygen (%)	LEL (%)	hydrogen sulphide (ppm)	carbon monoxide (ppm)	VOC (ppm)	gas flow (ltr/hr)	temperature (°C)	water level (m - bgl)	remarks
WS311	Single	10/01/19 10:02:00										0.0			
WS311	Single	10/01/19 10:03:00										0.0			
WS311	Single	10/01/19 10:04:00										0.0			
WS311	Single	10/01/19 10:05:00			0.0	0.1	20.8	1.0	0	0	0.0				
WS311	Single	10/01/19 10:06:00			0.0	0.1	20.8	1.0	0	0	0.0				
WS311	Single	10/01/19 10:07:00			0.1	0.1	20.8	1.0	0	0	0.0				
WS311	Single	10/01/19 10:08:00			0.1	0.1	20.8	1.0	0	0	0.0				
WS311	Single	10/01/19 10:09:00			0.1	0.1	20.8	1.0	0	0	0.0				
WS311	Single	10/01/19 10:10:00			0.1	0.1	20.8	1.0	0	0	0.0				
WS311	Single	10/01/19 10:11:00			0.1	0.1	20.8	1.0	0	0	0.0				
WS311	Single	10/01/19 10:12:00			0.1	0.1	20.8	1.0	0	0	0.0				
WS311	Single	10/01/19 10:13:00			0.1	0.1	20.8	1.0	0	0	0.0				
WS311	Single	10/01/19 10:14:00			0.1	0.1	20.8	1.0	0	0	0.0				
WS311	Single	10/01/19 10:15:00												Dry	
WS311	Single	31/01/19 15:43:00	984	1.8								5.0	1		
WS311	Single	31/01/19 15:44:00										9.0			
WS311	Single	31/01/19 15:45:00										7.0			
WS311	Single	31/01/19 15:46:00										5.0			

remarks
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GAS AND GROUNDWATER LEVELS

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Borehole /trial pit no.	install	date and time	barometric pressure (mb)	pressure differentiation (mm H_2O)	carbon dioxide (%)	methane (%)	oxygen (%)	LEL (%)	hydrogen sulphide (ppm)	carbon monoxide (ppm)	VOC (ppm)	gas flow (ltr/hr)	temperature (°C)	water level (m - bgl)	remarks
WS311	Single	31/01/19 15:47:00										5.0			
WS311	Single	31/01/19 15:48:00										5.0			
WS311	Single	31/01/19 15:50:00			0.0	0.0	19.4	0.0	0	0	0.2				
WS311	Single	31/01/19 15:51:00			0.0	0.0	19.6	0.0	0	0	0.0				
WS311	Single	31/01/19 15:52:00			0.0	0.0	19.6	0.0	0	0	0.0				
WS311	Single	31/01/19 15:53:00			0.0	0.0	19.6	0.0	0	0	0.0				
WS311	Single	31/01/19 15:54:00			0.0	0.0	19.6	0.0	0	0	0.0				
WS311	Single	31/01/19 15:55:00			0.0	0.0	19.6	0.0	0	0	0.0				
WS311	Single	31/01/19 15:56:00			0.0	0.0	19.6	0.0	0	0	0.0				
WS311	Single	31/01/19 15:57:00			0.0	0.0	19.6	0.0	0	0	0.0				
WS311	Single	31/01/19 15:58:00			0.0	0.0	19.6	0.0	0	0	0.0				
WS311	Single	31/01/19 15:59:00			0.0	0.0	19.6	0.0	0	0	0.0				
WS311	Single	31/01/19 16:00:00			0.0	0.0	19.6	0.0	0	0	0.0				
WS311	Single	31/01/19 16:01:00												Dry	
WS311	Single	04/02/19 11:35:00	1009	0								0.0	7		
WS311	Single	04/02/19 11:36:00										0.0			
WS311	Single	04/02/19 11:37:00										0.0			
WS311	Single	04/02/19 11:38:00										0.0			

remarks
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Borehole /trial pit no.	install	date and time	barometric pressure (mb)	pressure differentiation (mm H_2O)	carbon dioxide (%)	methane (%)	oxygen (%)	LEL (%)	hydrogen sulphide (ppm)	carbon monoxide (ppm)	VOC (ppm)	gas flow (ltr/hr)	temperature (°C)	water level (m - bgl)	remarks
WS311	Single	04/02/19 11:39:00										0.0			
WS311	Single	04/02/19 11:40:00										0.0			
WS311	Single	04/02/19 11:41:00			0.0	0.0	20.3	0.0	0	0	0.0				
WS311	Single	04/02/19 11:42:00			0.0	0.0	20.3	0.0	0	0	0.0				
WS311	Single	04/02/19 11:43:00			0.0	0.0	20.3	0.0	0	0	0.0				
WS311	Single	04/02/19 11:44:00			0.0	0.0	20.3	0.0	0	10	0.0				
WS311	Single	04/02/19 11:45:00			0.0	0.0	20.3	0.0	0	0	0.0				
WS311	Single	04/02/19 11:46:00			0.0	0.0	20.3	0.0	0	0	0.0				
WS311	Single	04/02/19 11:47:00			0.0	0.0	20.3	0.0	0	0	0.0				
WS311	Single	04/02/19 11:48:00			0.0	0.0	20.3	0.0	0	0	0.0				
WS311	Single	04/02/19 11:49:00			0.0	0.0	20.3	0.0	0	0	0.0				
WS311	Single	04/02/19 11:50:00			0.0	0.0	20.3	0.0	0	0	0.0				
WS311	Single	04/02/19 11:51:00			0.0	0.0	20.3	0.0	0	0	0.0				
WS311	Single	04/02/19 11:52:00												Dry	

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Borehole /trial pit no.	install	date and time	barometric pressure (mb)	pressure differentiation (mm H_2O)	carbon dioxide (%)	methane (%)	oxygen (%)	LEL (%)	hydrogen sulphide (ppm)	carbon monoxide (ppm)	VOC (ppm)	gas flow (ltr/hr)	temperature (°C)	water level (m - bgl)	remarks
WS314	Single	17/12/18 09:20:00	1011	0.00								0.0	2		
WS314	Single	17/12/18 09:21:00										0.0			
WS314	Single	17/12/18 09:22:00										0.0			
WS314	Single	17/12/18 09:23:00										0.0			
WS314	Single	17/12/18 09:24:00										0.0			
WS314	Single	17/12/18 09:25:00			0.3	0.0	19.8	0.0	0	0	0.0				
WS314	Single	17/12/18 09:26:00			0.3	0.0	19.8	0.0	0	0	0.0				
WS314	Single	17/12/18 09:27:00			0.3	0.0	19.8	0.0	0	0	0.0				
WS314	Single	17/12/18 09:28:00			0.3	0.0	19.8	0.0	0	0	0.0				
WS314	Single	17/12/18 09:29:00			0.3	0.0	19.8	0.0	0	0	0.0				
WS314	Single	17/12/18 09:30:00			0.3	0.0	19.8	0.0	0	0	0.0				
WS314	Single	17/12/18 09:31:00			0.3	0.0	19.8	0.0	0	0	0.0				
WS314	Single	17/12/18 09:32:00			0.3	0.0	19.8	0.0	0	0	0.0				
WS314	Single	17/12/18 09:33:00			0.3	0.0	19.8	0.0	0	0	0.0				
WS314	Single	17/12/18 09:34:00			0.3	0.0	19.8	0.0	0	0	0.0				
WS314	Single	17/12/18 09:35:00												Dry	
WS314	Single	10/01/19 12:25:00	1032	-0.22								0.0	5		
WS314	Single	10/01/19 12:26:00										0.0			

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Borehole /trial pit no.	install	date and time	barometric pressure (mb)	pressure differentiation (mm H_2O)	carbon dioxide (%)	methane (%)	oxygen (%)	LEL (%)	hydrogen sulphide (ppm)	carbon monoxide (ppm)	VOC (ppm)	gas flow (ltr/hr)	temperature (°C)	water level (m - bgl)	remarks
WS314	Single	10/01/19 12:27:00										0.0			
WS314	Single	10/01/19 12:28:00										0.0			
WS314	Single	10/01/19 12:29:00										0.0			
WS314	Single	10/01/19 12:30:00			0.2	0.0	21.0	0.0	0	0	0.0				
WS314	Single	10/01/19 12:31:00			0.2	0.0	21.0	0.0	0	0	0.0				
WS314	Single	10/01/19 12:32:00			0.2	0.0	21.0	0.0	0	0	0.0				
WS314	Single	10/01/19 12:33:00			0.2	0.0	21.0	0.0	0	0	0.0				
WS314	Single	10/01/19 12:34:00			0.2	0.0	21.0	0.0	0	0	0.0				
WS314	Single	10/01/19 12:35:00			0.2	0.0	21.0	0.0	0	0	0.0				
WS314	Single	10/01/19 12:36:00			0.2	0.0	21.0	0.0	0	0	0.0				
WS314	Single	10/01/19 12:37:00			0.2	0.0	21.0	0.0	0	0	0.0				
WS314	Single	10/01/19 12:38:00			0.2	0.0	21.0	0.0	0	0	0.0				
WS314	Single	10/01/19 12:39:00			0.2	0.0	21.0	0.0	0	0	0.0				
WS314	Single	10/01/19 12:40:00												Dry	
WS314	Single	21/01/19 16:17:00	1013	0.00								0.0	4		
WS314	Single	21/01/19 16:18:00	1013									0.0			
WS314	Single	21/01/19 16:19:00	1013									0.0			
WS314	Single	21/01/19 16:20:00	1013									0.0			

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Borehole /trial pit no.	install	date and time	barometric pressure (mb)	pressure differentiation (mm H_2O)	carbon dioxide (%)	methane (%)	oxygen (%)	LEL (%)	hydrogen sulphide (ppm)	carbon monoxide (ppm)	VOC (ppm)	gas flow (ltr/hr)	temperature (°C)	water level (m - bgl)	remarks
WS314	Single	21/01/19 16:21:00	1013									0.0			
WS314	Single	21/01/19 16:22:00	1013									0.0			
WS314	Single	21/01/19 16:23:00	1012									0.0			
WS314	Single	21/01/19 16:24:00	1012									0.0			
WS314	Single	21/01/19 16:25:00	1012									0.0			
WS314	Single	21/01/19 16:26:00	1012									0.0			
WS314	Single	21/01/19 16:27:00			0.4	0.0	19.8	0.0	0	0	0.0				
WS314	Single	21/01/19 16:28:00			0.4	0.0	19.8	0.0	0	0	0.0				
WS314	Single	21/01/19 16:29:00			0.4	0.0	19.7	0.0	0	0	0.0				
WS314	Single	21/01/19 16:30:00			0.4	0.0	19.7	0.0	0	0	0.0				
WS314	Single	21/01/19 16:31:00			0.4	0.0	19.7	0.0	0	0	0.0				
WS314	Single	21/01/19 16:32:00			0.4	0.0	19.7	0.0	0	0	0.0				
WS314	Single	21/01/19 16:33:00			0.4	0.0	19.7	0.0	0	0	0.0				
WS314	Single	21/01/19 16:34:00			0.4	0.0	19.7	0.0	0	0	0.0				
WS314	Single	21/01/19 16:35:00			0.4	0.0	19.7	0.0	0	0	0.0				
WS314	Single	21/01/19 16:36:00			0.4	0.0	19.7	0.0	0	0	0.0				
WS314	Single	21/01/19 16:37:00			0.4	0.0	19.7	0.0	0	0	0.0			Dry	
WS314	Single	31/01/19 12:05:00	987	-2								0.0	1		

remarks
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Borehole /trial pit no.	install	date and time	barometric pressure (mb)	pressure differentiation (mm H_2O)	carbon dioxide (%)	methane (%)	oxygen (%)	LEL (%)	hydrogen sulphide (ppm)	carbon monoxide (ppm)	VOC (ppm)	gas flow (ltr/hr)	temperature (°C)	water level (m - bgl)	remarks
WS314	Single	31/01/19 12:06:00										0.0			
WS314	Single	31/01/19 12:07:00										0.0			
WS314	Single	31/01/19 12:08:00										0.0			
WS314	Single	31/01/19 12:09:00										-0.1			
WS314	Single	31/01/19 12:10:00										-0.1			
WS314	Single	31/01/19 12:13:00			0.4	0.0	18.9	0.0	0	0	0.0				
WS314	Single	31/01/19 12:14:00			0.4	0.0	18.8	0.0	0	0	0.0				
WS314	Single	31/01/19 12:15:00			0.4	0.0	18.8	0.0	0	0	0.0				
WS314	Single	31/01/19 12:16:00			0.4	0.0	18.8	0.0	0	0	0.0				
WS314	Single	31/01/19 12:17:00			0.4	0.0	18.8	0.0	0	0	0.0				
WS314	Single	31/01/19 12:18:00			0.4	0.0	18.8	0.0	0	0	0.0				
WS314	Single	31/01/19 12:19:00			0.4	0.0	18.9	0.0	0	0	0.0				
WS314	Single	31/01/19 12:20:00			0.3	0.0	18.9	0.0	0	0	0.0				
WS314	Single	31/01/19 12:21:00			0.3	0.0	18.9	0.0	0	0	0.0				
WS314	Single	31/01/19 12:22:00			0.3	0.0	18.9	0.0	0	0	0.0				
WS314	Single	31/01/19 12:23:00			0.3	0.0	19.0	0.0	0	0	0.0				
WS314	Single	31/01/19 12:24:00												Dry	
WS314	Single	04/02/19 09:48:00	1010	0								0.0	7		

remarks
denotes result exceeding capacity of gas monitoring equipment
Equipment used - Gas Data GFM 435 Gas Analyser

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Geotechnical Engineering Limited

GAS AND GROUNDWATER LEVELS

CLIENT: SH READING MASTER LLP

SITE: STATION HILL, READING

Borehole /trial pit no.	install	date and time	barometric pressure (mb)	pressure differentiation (mm H_2O)	carbon dioxide (%)	methane (%)	oxygen (%)	LEL (%)	hydrogen sulphide (ppm)	carbon monoxide (ppm)	VOC (ppm)	gas flow (ltr/hr)	temperature (°C)	water level (m - bgl)	remarks
WS314	Single	04/02/19 09:49:00										0.0			
WS314	Single	04/02/19 09:50:00										0.0			
WS314	Single	04/02/19 09:51:00										0.0			
WS314	Single	04/02/19 09:52:00										0.0			
WS314	Single	04/02/19 09:53:00										0.0			
WS314	Single	04/02/19 09:54:00			0.0	0.0	20.7	0.0	0	0	0.0				
WS314	Single	04/02/19 09:55:00			0.0	0.0	20.7	0.0	0	10	0.0				
WS314	Single	04/02/19 09:56:00			0.0	0.0	20.7	0.0	0	10	0.0				
WS314	Single	04/02/19 09:57:00			0.0	0.0	20.7	0.0	0	0	0.0				
WS314	Single	04/02/19 09:58:00			0.0	0.0	20.7	0.0	0	0	0.0				
WS314	Single	04/02/19 09:59:00			0.0	0.0	20.7	0.0	0	0	0.0				
WS314	Single	04/02/19 10:00:00			0.0	0.0	20.6	0.0	0	0	0.0				
WS314	Single	04/02/19 10:01:00			0.0	0.0	20.6	0.0	0	0	0.0				
WS314	Single	04/02/19 10:02:00			0.0	0.0	20.6	0.0	0	0	0.0				
WS314	Single	04/02/19 10:03:00			0.0	0.0	20.6	0.0	0	0	0.0				
WS314	Single	04/02/19 10:04:00			0.0	0.0	20.6	0.0	0	0	0.0				
WS314	Single	04/02/19 10:05:00												Dry	

remarks
denotes result exceeding capacity of gas monitoring equipment
Equipment used - Gas Data GFM 435 Gas Analyser

CONTRACT **34769**

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Geotechnical Engineering Limited

GAS AND GROUNDWATER LEVELS

CLIENT: SH READING MASTER LLP

SITE: STATION HILL, READING

Borehole /trial pit no.	install	date and time	barometric pressure (mb)	pressure differentiation (mm H_2O)	carbon dioxide (%)	methane (%)	oxygen (%)	LEL (%)	hydrogen sulphide (ppm)	carbon monoxide (ppm)	VOC (ppm)	gas flow (ltr/hr)	temperature (°C)	water level (m - bgl)	remarks
WS315	Single	17/12/18 13:05:00	1012	0.00								0.0	5		
WS315	Single	17/12/18 13:06:00		0.00								0.0			
WS315	Single	17/12/18 13:07:00		0.00								0.0			
WS315	Single	17/12/18 13:08:00		0.00								0.0			
WS315	Single	17/12/18 13:09:00		0.00								0.0			
WS315	Single	17/12/18 13:10:00			0.0	0.0	20.0	0.0	0	0	0.0				
WS315	Single	17/12/18 13:11:00			0.0	0.0	19.9	0.0	0	0	0.0				
WS315	Single	17/12/18 13:12:00			0.0	0.0	20.0	0.0	0	0	0.0				
WS315	Single	17/12/18 13:13:00			0.0	0.0	20.0	0.0	0	0	0.0				
WS315	Single	17/12/18 13:14:00			0.0	0.0	20.0	0.0	0	0	0.0				
WS315	Single	17/12/18 13:15:00			0.0	0.0	20.0	0.0	0	0	0.0				
WS315	Single	17/12/18 13:16:00			0.0	0.0	20.0	0.0	0	0	0.0				
WS315	Single	17/12/18 13:17:00			0.0	0.0	20.0	0.0	0	0	0.0				
WS315	Single	17/12/18 13:18:00			0.0	0.0	20.0	0.0	0	0	0.0				
WS315	Single	17/12/18 13:19:00			0.0	0.0	20.0	0.0	0	0	0.0				
WS315	Single	17/12/18 13:20:00												Dry	
WS315	Single	10/01/19 10:45:00	1032	-0.21								0.0	3		
WS315	Single	10/01/19 10:46:00										0.0			

remarks
denotes result exceeding capacity of gas monitoring equipment
Equipment used - Gas Data GFM 435 Gas Analyser

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GAS AND GROUNDWATER LEVELS

CLIENT: SH READING MASTER LLP

SITE: STATION HILL, READING

Borehole /trial pit no.	install	date and time	barometric pressure (mb)	pressure differentiation (mm H_2O)	carbon dioxide (%)	methane (%)	oxygen (%)	LEL (%)	hydrogen sulphide (ppm)	carbon monoxide (ppm)	VOC (ppm)	gas flow (ltr/hr)	temperature (°C)	water level (m - bgl)	remarks
WS315	Single	10/01/19 10:47:00										0.0			
WS315	Single	10/01/19 10:48:00										0.0			
WS315	Single	10/01/19 10:49:00										0.0			
WS315	Single	10/01/19 10:50:00			0.0	0.0	20.8	0.0	0	0	0.0				
WS315	Single	10/01/19 10:51:00			0.0	0.0	20.8	0.0	0	0	0.0				
WS315	Single	10/01/19 10:52:00			0.0	0.1	20.8	1.0	0	0	0.0				
WS315	Single	10/01/19 10:53:00			0.0	0.1	20.8	1.0	0	0	0.0				
WS315	Single	10/01/19 10:54:00			0.0	0.1	20.8	1.0	0	0	0.0				
WS315	Single	10/01/19 10:55:00			0.0	0.0	20.8	0.0	0	0	0.0				
WS315	Single	10/01/19 10:56:00			0.0	0.0	20.8	0.0	0	0	0.0				
WS315	Single	10/01/19 10:57:00			0.0	0.0	20.8	0.0	0	0	0.0				
WS315	Single	10/01/19 10:58:00			0.0	0.0	20.8	0.0	0	0	0.0				
WS315	Single	10/01/19 10:59:00			0.0	0.0	20.8	0.0	0	0	0.0				
WS315	Single	10/01/19 11:00:00												Dry	
WS315	Single	31/01/19 14:53:00	986	0								0.0	1		
WS315	Single	31/01/19 14:54:00										0.0			
WS315	Single	31/01/19 14:55:00										0.0			
WS315	Single	31/01/19 14:56:00										0.0			

remarks
denotes result exceeding capacity of gas monitoring equipment
Equipment used - Gas Data GFM 435 Gas Analyser

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Geotechnical Engineering Limited

GAS AND GROUNDWATER LEVELS

CLIENT: SH READING MASTER LLP

SITE: STATION HILL, READING

Borehole /trial pit no.	install	date and time	barometric pressure (mb)	pressure differentiation (mm H_2O)	carbon dioxide (%)	methane (%)	oxygen (%)	LEL (%)	hydrogen sulphide (ppm)	carbon monoxide (ppm)	VOC (ppm)	gas flow (ltr/hr)	temperature (°C)	water level (m - bgl)	remarks
WS315	Single	31/01/19 14:57:00										0.0			
WS315	Single	31/01/19 14:58:00										0.0			
WS315	Single	31/01/19 15:00:00			0.0	0.0	19.2	0.0	0	0	0.1				
WS315	Single	31/01/19 15:01:00			0.0	0.0	19.2	0.0	0	0	0.0				
WS315	Single	31/01/19 15:02:00			0.1	0.0	19.2	0.0	0	0	0.0				
WS315	Single	31/01/19 15:03:00			0.1	0.0	19.2	0.0	0	0	0.0				
WS315	Single	31/01/19 15:04:00			0.1	0.0	19.3	0.0	0	0	0.0				
WS315	Single	31/01/19 15:05:00			0.1	0.0	19.3	0.0	0	0	0.0				
WS315	Single	31/01/19 15:06:00			0.1	0.0	19.3	0.0	0	0	0.0				
WS315	Single	31/01/19 15:07:00			0.1	0.0	19.3	0.0	0	0	0.0				
WS315	Single	31/01/19 15:08:00			0.1	0.0	19.3	0.0	0	0	0.0				
WS315	Single	31/01/19 15:09:00			0.1	0.0	19.3	0.0	0	0	0.0				
WS315	Single	31/01/19 15:10:00			0.1	0.0	19.3	0.0	0	0	0.0				
WS315	Single	31/01/19 15:11:00												Dry	
WS315	Single	04/02/19 11:09:00	1010	-0.1								-0.1	7		
WS315	Single	04/02/19 11:10:00										0.0			
WS315	Single	04/02/19 11:11:00										0.0			
WS315	Single	04/02/19 11:12:00										0.0			

remarks
denotes result exceeding capacity of gas monitoring equipment
Equipment used - Gas Data GFM 435 Gas Analyser

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Geotechnical Engineering Limited

GAS AND GROUNDWATER LEVELS

CLIENT: SH READING MASTER LLP

SITE: STATION HILL, READING

Borehole /trial pit no.	install	date and time	barometric pressure (mb)	pressure differentiation (mm H_2O)	carbon dioxide (%)	methane (%)	oxygen (%)	LEL (%)	hydrogen sulphide (ppm)	carbon monoxide (ppm)	VOC (ppm)	gas flow (ltr/hr)	temperature (°C)	water level (m - bgl)	remarks
WS315	Single	04/02/19 11:13:00										-0.1			
WS315	Single	04/02/19 11:14:00										0.0			
WS315	Single	04/02/19 11:16:00			0.0	0.0	20.8	0.0	0	10	0.0				
WS315	Single	04/02/19 11:17:00			0.0	0.0	20.7	0.0	0	0	0.0				
WS315	Single	04/02/19 11:18:00			0.0	0.0	20.6	0.0	0	0	0.0				
WS315	Single	04/02/19 11:19:00			0.0	0.0	20.7	0.0	0	0	0.0				
WS315	Single	04/02/19 11:20:00			0.0	0.0	20.7	0.0	0	0	0.0				
WS315	Single	04/02/19 11:21:00			0.0	0.0	20.7	0.0	0	0	0.0				
WS315	Single	04/02/19 11:22:00			0.0	0.0	20.6	0.0	0	0	0.0				
WS315	Single	04/02/19 11:23:00			0.0	0.0	20.6	0.0	0	0	0.0				
WS315	Single	04/02/19 11:24:00			0.0	0.0	20.7	0.0	0	0	0.0				
WS315	Single	04/02/19 11:25:00			0.0	0.0	21.1	0.0	0	0	0.0				
WS315	Single	04/02/19 11:26:00			0.0	0.0	20.7	0.0	0	0	0.0				
WS315	Single	04/02/19 11:27:00												Dry	

remarks
denotes result exceeding capacity of gas monitoring equipment
Equipment used - Gas Data GFM 435 Gas Analyser

CONTRACT **34769**

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APPENDIX B

LABORATORY TESTING

2718

GEOTECHNICAL ENGINEERING LIMITED

Version No.	2
For the attention of Dave Owen/Andrew Tatnell	Page No. 1 of 36
Date of Issue	12/02/2019

TEST REPORT

PROJECT/SITE	STATION HILL, READING	Samples received	10/12/2018
GEL REPORT NUMBER	34769	Schedule received	10/12/2018
Your ref/PO:		Testing commenced	13/12/2018
Test report refers to	Schedule A	Status	Final

SUMMARY OF RESULTS ATTACHED

TEST METHOD & DESCRIPTION	QUANTITY	ACCREDITED TEST
BS EN ISO 17892-1: 2014:5. Water Content	13	YES
BS1377: Part 2: 1990:4.2-4.4&5.2-5.4, Liquid & Plastic Limits	8	YES
BS1377: Part 2: 1990:4.5-4.6&5.2-5.4, Liquid (Casagrande Method) & Plastic Limits	1	NO
BS1377: Part 2: 1990:3.3, Saturation Moisture Content	10	YES
BS1377: Part 2: 1990:3.3, Saturation Moisture Content (Subcontracted)	7	NO
BS EN ISO 17892-2: 2014:5.1 Density - Linear Measurement	2	YES
BS EN ISO 17892-3: 2015:5, Particle Density - Pycnometer	2	YES
BS EN ISO 17892-4: 2016: 5.2, Particle Size Distribution - Wet Sieve	13	YES
BS EN ISO 17892-4: 2016: 5.4, Particle Size Distribution - Pipette	12	YES
ISRM: Suggested Methods: Water Content of Rock	3	NO
ISRM: Suggested Methods: 1981: Uniaxial Compressive Strength of Rock	2	YES
ISRM: 2007: Point Load Strength Test	128	YES
BRE SD1 Suite (Subcontracted)	8	YES/NO
Organic Matter Content (Subcontracted)	3	YES

Remarks

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Approved Signatories:

W Jones (Lab Manager) E Crimp (Senior Engineer)

W Jones (Technical Support) J Hanson (Director) N Parry (Director)



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Sort code: 16-22-11 **Bank account**: 11125135

Geotechnical Engineering Limited

LIQUID AND PLASTIC LIMITS

BS.1377 : PART 2 : 1990 : 4 and 5

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SITE STATION HILL, READING

borehole /trial pit no.	sample no./type	sample depth (m)	specimen depth (m)	natural water content (%)	specimen preparation and test method	fraction >0.425 mm (%)	liquid limit (%)	plastic limit (%)	plasticity index (%)	description and remarks
BH301	6B	2.80	2.80	26.8	BXE	49	31	25	6	Off white slightly sandy gravelly SILT (chalk)
BH301	8B	4.00	4.00	21.5	BXE	43	32	25	7	Off white slightly sandy gravelly SILT (chalk)
BH301	9D	4.50	4.50	30.1	E					Off white slightly sandy slightly gravelly SILT (chalk)
BH301	11D	6.00	6.00	28.9	E					Off white slightly sandy slightly gravelly SILT (chalk)
BH303	2B	1.00	1.00	18.3	BYE	62	34	25	9	Off white mottled brown slightly sandy gravelly SILT (chalk)
BH303	4B	2.00	2.00	25.9	BZE	40	31	26	5	Off white slightly sandy slightly gravelly SILT (chalk)
BH303	6L	3.00	3.80	24.9	BXE	59	30	22	8	Off white slightly sandy gravelly SILT (chalk)
BH303	7B	3.00	3.00	27.1	BXE	51	30	23	7	Off white slightly sandy gravelly SILT (chalk)
BH303	8D	4.50	4.50	25.8	E					Off white slightly sandy slightly gravelly SILT (chalk)
BH304	4B	2.00	2.00	19.7	BYE	52	29	21	8	Off white mottled brown slightly sandy gravelly SILT (chalk)
BH304	6B	3.00	3.00	21.3	BXE	45	28	22	6	Off white slightly sandy gravelly SILT (chalk)
BH304	7L	3.00	3.80	24.8	BYE	50	30	23	7	Off white slightly sandy grvaelly SILT (chalk)
BH304	20D	12.60	12.60	22.9	E					Off white slightly sandy slightly gravelly SILT (chalk)

general remarks

natural water content determined in accordance with BS EN ISO 17892 - 1 : 2014 (unless specified)

NP denotes non plastic

denotes sample tested is smaller than that which is recommended in accordance with BS1377 or BS EN ISO 17892

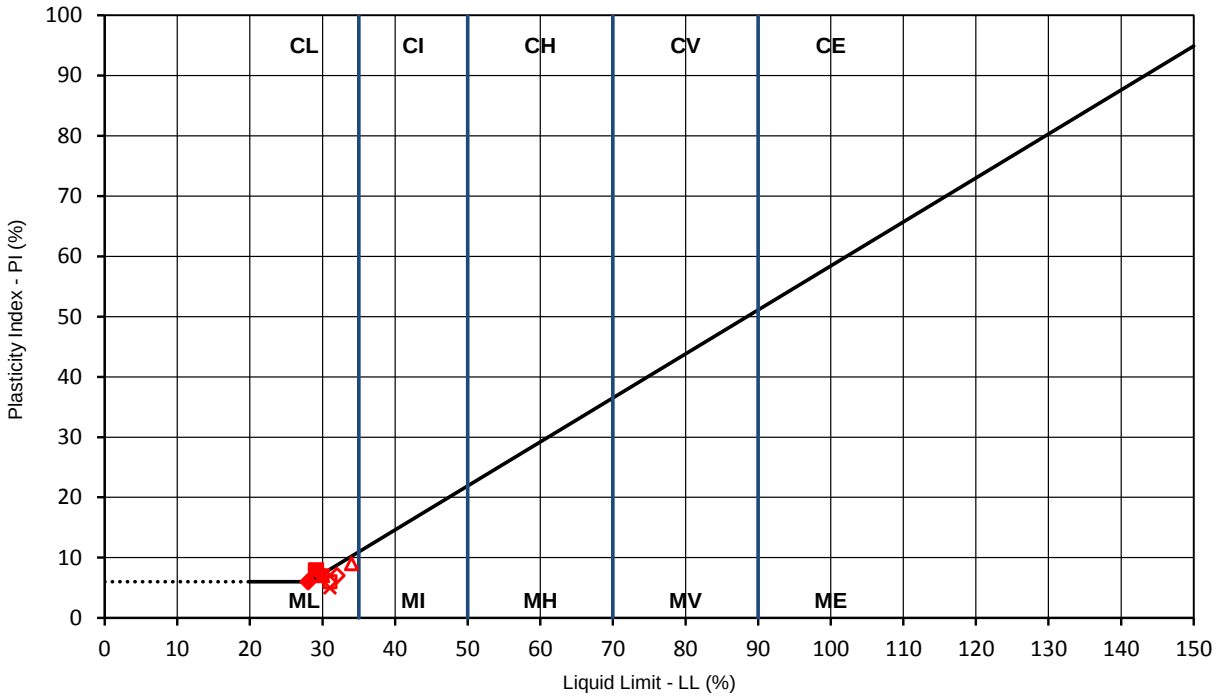
specimen preparation		test method	CONTRACT	CHECKED
A - as received	D - oven dried (60oC)	X - cone penetrometer (test 4.3)		
B - washed on 0.425mm sieve	E - oven dried (105oC)	Y - cone penetrometer (test 4.4)	**34769**	**TB**
C - air dried	F - not known	Z - casagrande apparatus (test 4.5)		

Geotechnical Engineering Limited

ATTERBERG LINE PLOT

CLIENT SH READING MASTER LLP

SITE STATION HILL, READING



	BH/TP No.	depth (m)	LL	PL	PI	remarks
□	BH301	2.80	31	25	6	
◇	BH301	4.00	32	25	7	
△	BH303	1.00	34	25	9	
×	BH303	2.00	31	26	5	
+	BH303	3.80	30	22	8	
○	BH303	3.00	30	23	7	
■	BH304	2.00	29	21	8	
◆	BH304	3.00	28	22	6	
▲	BH304	3.80	30	23	7	

CONTRACT	CHECKED
34769	**TB**

Geotechnical Engineering Limited

SATURATION MOISTURE CONTENT OF CHALK

BS.1377 : PART 2 : 1990 : 3.3

CLIENT SH READING MASTER LLP

SITE STATION HILL, READING

borehole /trial pit no.	sample		specimen depth (m)	natural moisture content (%)	bulk density (Mg/m3)	dry density (Mg/m3)	saturation moisture content (%)	porosity (%)	description and remarks
	no./type	depth (m)							
BH301	10L	4.50	5.50	23.70	1.95	1.58	26	42	White CHALK #
BH301	14C	7.50	8.90	25.50	1.95	1.55	27	42	White CHALK
BH301	16C	9.00	9.50	25.90	1.95	1.55	28	43	White CHALK
BH301	18C	10.50	11.80	25.40	1.93	1.54	28	43	White CHALK #
BH303	7B	3.00	3.00	21.70	1.99	1.64	24	39	White CHALK #
BH303	14C	9.00	10.15	25.50	1.94	1.54	28	43	White CHALK
BH304	11C	5.50	6.30	25.00	1.92	1.54	28	43	White CHALK #
BH304	27C	17.10	18.40	25.70	1.97	1.56	27	42	White CHALK
BH304	31C	20.10	20.40	23.70	1.99	1.61	25	40	White CHALK
BH304	33C	21.60	22.00	22.20	2.03	1.66	23	39	White CHALK

general remarks

natural moisture content determined in accordance with BS1377 : Part 2 : 1990 : 3.2 (unless specified)

denotes sample tested is smaller than that which is recommended in accordance with BS1377

test method

immersion in water (test 3.3)

CONTRACT	CHECKED
34769	**TB**

TERRA TEK
SITE INVESTIGATION & LABORATORY SERVICES

Geotechnical Engineering Limited
Centurion House
Olympus Park
Quedgeley
Gloucester
GL2 4NF
For the attention of Wendy Jones

Report No: B22272
Issue No 01

LABORATORY TEST REPORT

Project Name	**STATION HILL, READING**		
Project Number	**B22272**	Date samples received	23/01/2019
Your Ref		Date written instructions received	23/01/2019
Purchase Order	34679/WJ	Date testing commenced	23/01/2019

Please find enclosed the results as summarised below

Figure / Table	Test Quantity	Description	ISO 17025 Accredited
1	7	Saturation Moisture Content of Chalk	No

Remarks :

Issued by : Stephen Langman Date of Issue : 06/02/2019

Approved Signatories : S. Langman 06/02/2019

G Wilson (JMD/Laboratories Director), S Langman (Laboratory Coordinator)

Key to symbols used in this report
S/C : Testing was sub-contracted

Unless we are notified to the contrary, samples will be disposed after a period of one month from this date.
The results reported relate to samples received in the laboratory only.
All results contained in this report are provisional unless signed by an approved signatory
This report should not be reproduced except in full without the written approval of the laboratory.
Under multisite accreditation the testing contained in this report may have been performed at another Terra Tek laboratory.
The enclosed results remain the property of Terra Tek Limited and we reserve the right to withdraw
our report if we have not received cleared funds in accordance with our standard terms and conditions
Only those results indicated in this report are UKAS accredited and any opinions or interpretations expressed are outside the scope of UKAS accreditation.
Feedback on the this report may be left via our website www.terratek.co.uk/contact-us

mCERTS THE ENVIRONMENT AGENCY'S MONITORING CERTIFICATION SCHEME
UKAS TESTING 0126
25 YEARS 1990-2015

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TERRA TEK
SITE INVESTIGATION AND LABORATORY SERVICES

Site STATION HILL, READING

Client Geotechnical Engineering Limited

Engineer

Contract No B22272

Hole ID	Sample	Depth (m)	Description	Moisture Content %	Bulk Density Mg/m³	Dry Density Mg/m³	Saturation Moisture Content %	Porosity %
BH301	469591	7.30	White CHALK.	26	1.99	1.58	26	41
BH301	469592	13.85	White CHALK.	25	1.98	1.58	26	42
BH303	469593	5.70	White CHALK.	23	2.01	1.63	24	39
BH303	469594	11.70	White CHALK.	25	2.01	1.62	25	40
BH303	469595	13.90	White CHALK.	28	1.96	1.54	28	43
BH304	469596	4.80	White CHALK.	25	1.86	1.49	30	45
BH304	469597	22.20	White CHALK.	26	1.96	1.55	27	43

Originator	Checked & Approved
PM	S. Langman 20/02/2019

SATURATION MOISTURE CONTENT OF CHALK
BS1377:Part2:1990:Clause 3.3

Figure 1

Moor Lane, Witton, Birmingham, B6 7HG

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DENSITY (LINEAR MEASUREMENT METHOD)

BS EN ISO 17892 - 2 : 2014 Clause 5.1

CLIENT SH READING MASTER LLP

SITE STATION HILL, READING

borehole /trial pit no.	sample no./type	sample depth (m)	specimen depth (m)	test method	natural water content (%)	bulk density (Mg/m3)	dry density (Mg/m3)	description and remarks
BH304	10D	5.50	5.50	A	28	1.92	1.50	White slightly sandy slightly gravelly SILT (chalk)
BH304	12D	7.00	7.00	A	27.2	1.90	1.49	White slightly sandy slightly gravelly SILT (chalk)

general remarks

denotes sample tested is smaller than that which is recommended in accordance with BS EN ISO 17892 - 2 : 2014

test method

A - linear measurement (5.1)
B - immersion in fluid (5.2)
C - fluid displacement (5.3)

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PARTICLE DENSITY - PYCNOMETER METHOD

BS EN ISO 17892 - 3 : 2015 : 5

CLIENT SH READING MASTER LLP

SITE STATION HILL, READING

borehole /trial pit no.	sample no./type	sample depth (m)	specimen depth (m)	test method	mean particle density Mg/m3	description and remarks
BH303	10D	6.00	6.00	SP	2.72	Off white mottled brown slightly sandy slightly gravelly SILT (chalk)
BH304	11C	5.50	5.80	SP	2.73	Off white slightly sandy slightly gravelly SILT (chalk)

general remarks

denotes sample tested is smaller than that which is recommended in accordance with BS EN ISO 17892

test method
SP - small pycnometer ~ 50ml (test 5.1)
LP - large pycnometer ~ 100ml (test 5.1)

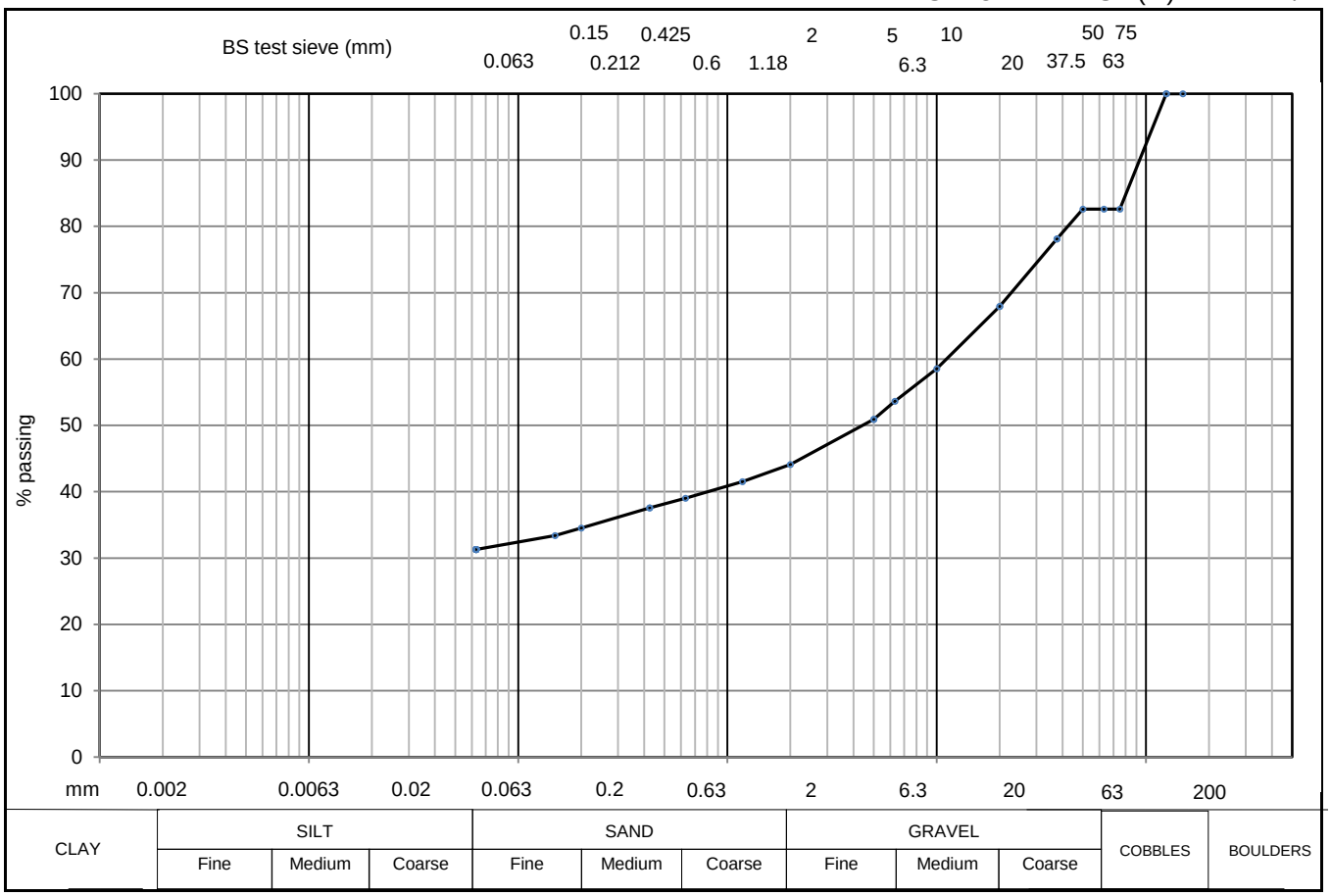
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PARTICLE SIZE DISTRIBUTION

BS EN ISO 17892 - 4 : 2016 : 5

CLIENT	SH READING MASTER LLP	BH/TP No.	BH301
SITE	STATION HILL, READING	SAMPLE No./TYPE	5B
		SAMPLE DEPTH (m)	1.80
DESCRIPTION	Off white and brown sandy very silty GRAVEL with medium cobble content	SPECIMEN TOP (m)	1.80
		SPECIMEN BASE (m)	N/A



soil type	% fraction
CLAY	
SILT	
SILT & CLAY	31
SAND	13
GRAVEL	38
COBBLE & BOULDER	17
test method(s)	5.2#

test method

5.2 - sieving

5.3 - sedimentation by hydrometer

5.4 - sedimentation by pipette

BS test sieve (mm)	% passing	BS test sieve (mm)	% passing	BS test sieve (µm)	% finer
150	100	5	51	20	
75	83	2	44	6	
63	83	1.18	42	2	
50	83	0.63	39		
37.5	78	0.425	38		
20	68	0.2	35		
10	59	0.15	33		
6.3	54	0.063	31		

remarks

denotes sample tested is smaller than that which is recommended in accordance with BS EN 17892

Particle density assigned an assumed value of 2.70 Mg/m3

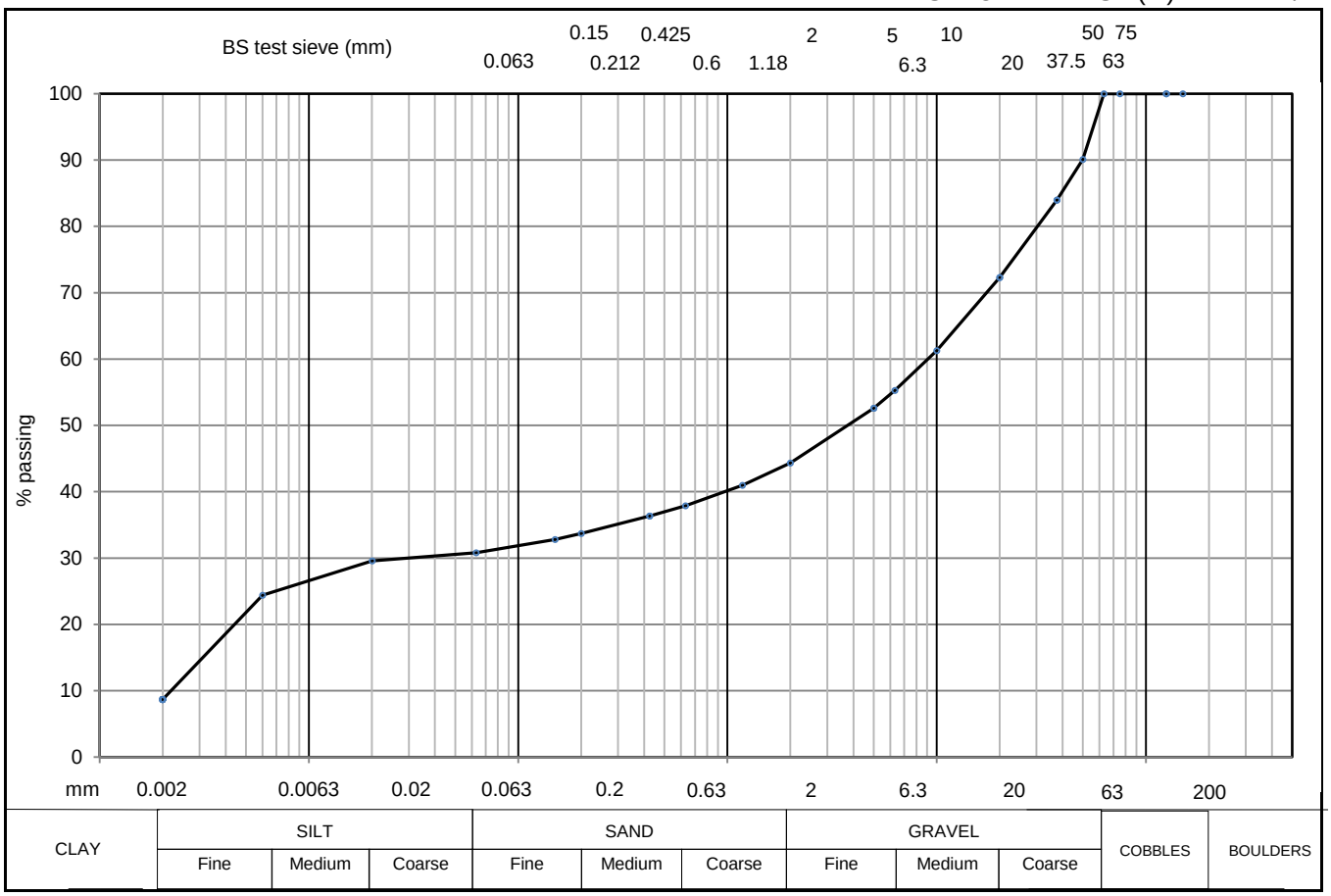
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PARTICLE SIZE DISTRIBUTION

BS EN ISO 17892 - 4 : 2016 : 5

CLIENT	SH READING MASTER LLP	BH/TP No.	BH301
SITE	STATION HILL, READING	SAMPLE No./TYPE	6B
		SAMPLE DEPTH (m)	2.80
DESCRIPTION	Off white sandy very silty GRAVEL (chalk)	SPECIMEN TOP (m)	2.80
		SPECIMEN BASE (m)	N/A



soil type	% fraction
CLAY	9
SILT	22
SILT & CLAY	31
SAND	14
GRAVEL	56
COBBLE & BOULDER	0
test method(s)	5.2 & 5.4
test method	
5.2 - sieving	
5.3 - sedimentation by hydrometer	
5.4 - sedimentation by pipette	

BS test sieve (mm)	% passing
150	
75	
63	100
50	90
37.5	84
20	72
10	61
6.3	55

BS test sieve (mm)	% passing
5	53
2	44
1.18	41
0.63	38
0.425	36
0.2	34
0.15	33
0.063	31

BS test sieve (µm)	% finer
20	30
6	24
2	9

remarks

denotes sample tested is smaller than that which is recommended in accordance with BS EN 17892

Particle density assigned an assumed value of 2.70 Mg/m3

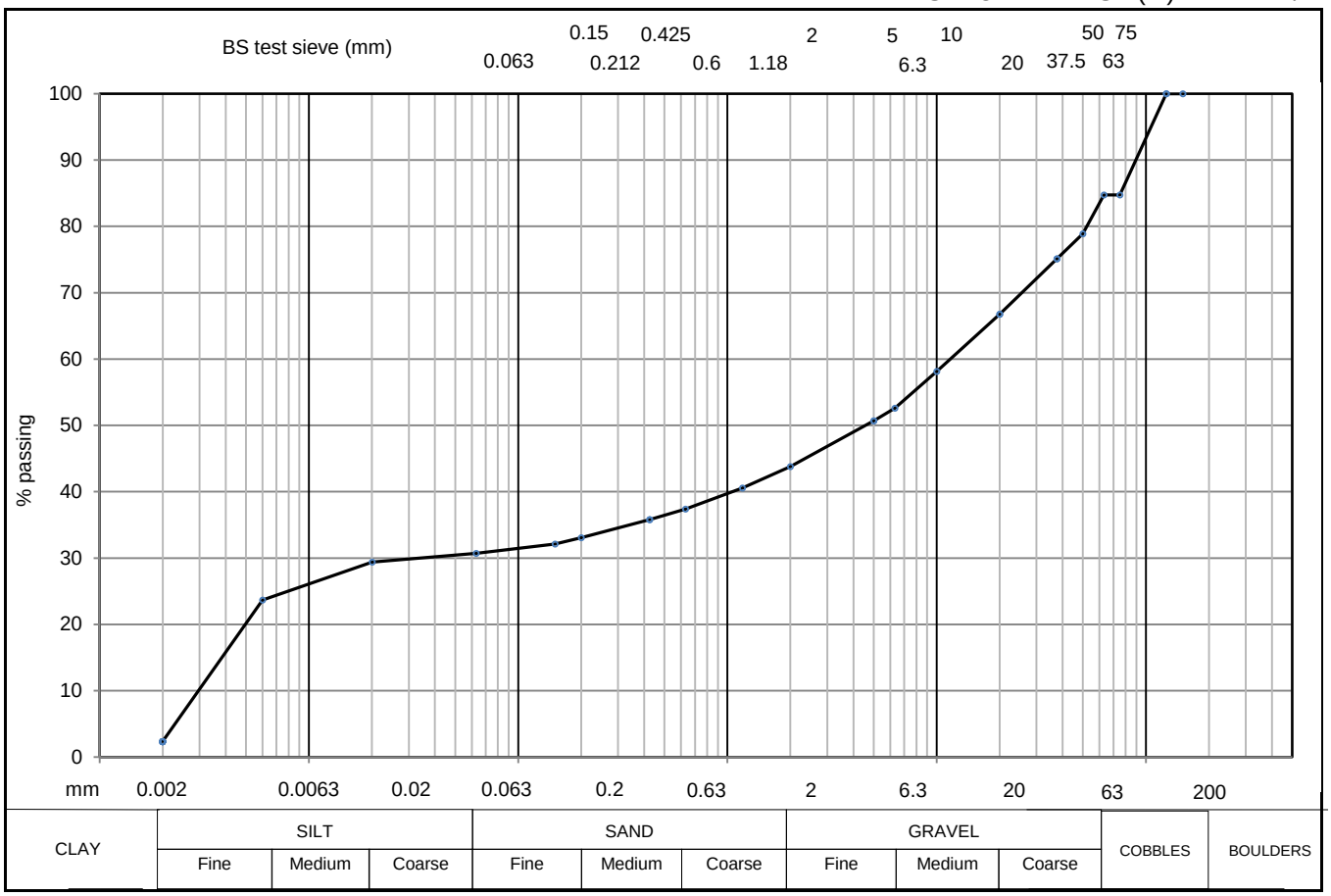
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PARTICLE SIZE DISTRIBUTION

BS EN ISO 17892 - 4 : 2016 : 5

CLIENT	SH READING MASTER LLP	BH/TP No.	BH301
SITE	STATION HILL, READING	SAMPLE No./TYPE	8B
		SAMPLE DEPTH (m)	4.00
DESCRIPTION	Off white sandy very silty GRAVEL with medium cobble content (chalk)	SPECIMEN TOP (m)	4.00
		SPECIMEN BASE (m)	N/A



soil type	% fraction
CLAY	2
SILT	28
SILT & CLAY	31
SAND	13
GRAVEL	41
COBBLE & BOULDER	15
test method(s)	5.2# & 5.4
test method	
5.2 - sieving	
5.3 - sedimentation by hydrometer	
5.4 - sedimentation by pipette	

BS test sieve (mm)	% passing
150	100
75	85
63	85
50	79
37.5	75
20	67
10	58
6.3	53

BS test sieve (mm)	% passing
5	51
2	44
1.18	41
0.63	37
0.425	36
0.2	33
0.15	32
0.063	31

BS test sieve (µm)	% finer
20	29
6	24
2	2

remarks

denotes sample tested is smaller than that which is recommended in accordance with BS EN 17892

Particle density assigned an assumed value of 2.70 Mg/m3

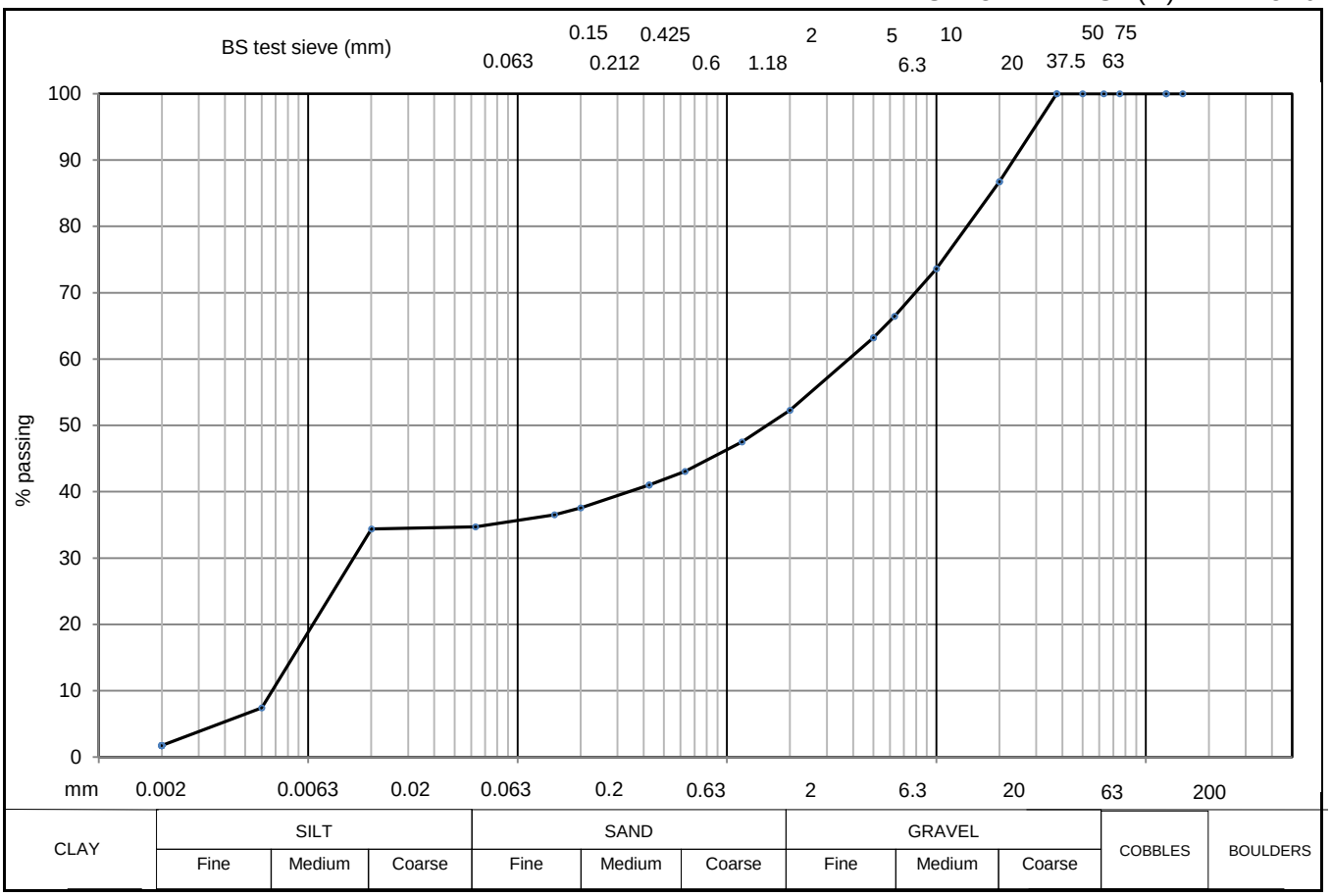
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PARTICLE SIZE DISTRIBUTION

BS EN ISO 17892 - 4 : 2016 : 5

CLIENT	SH READING MASTER LLP	BH/TP No.	BH303
SITE	STATION HILL, READING	SAMPLE No./TYPE	6L
		SAMPLE DEPTH (m)	3.00
DESCRIPTION	Off white slightly sandy gravelly SILT (chalk)	SPECIMEN TOP (m)	3.60
		SPECIMEN BASE (m)	3.70



soil type	% fraction
CLAY	2
SILT	33
SILT & CLAY	35
SAND	18
GRAVEL	48
COBBLE & BOULDER	0
test method(s)	5.2 & 5.4
test method	
5.2 - sieving	
5.3 - sedimentation by hydrometer	
5.4 - sedimentation by pipette	

BS test sieve (mm)	% passing
150	
75	
63	
50	
37.5	100
20	87
10	74
6.3	66

BS test sieve (mm)	% passing
5	63
2	52
1.18	48
0.63	43
0.425	41
0.2	38
0.15	37
0.063	35

BS test sieve (µm)	% finer
20	34
6	7
2	2

remarks

denotes sample tested is smaller than that which is recommended in accordance with BS EN 17892

Particle density assigned an assumed value of 2.70 Mg/m3

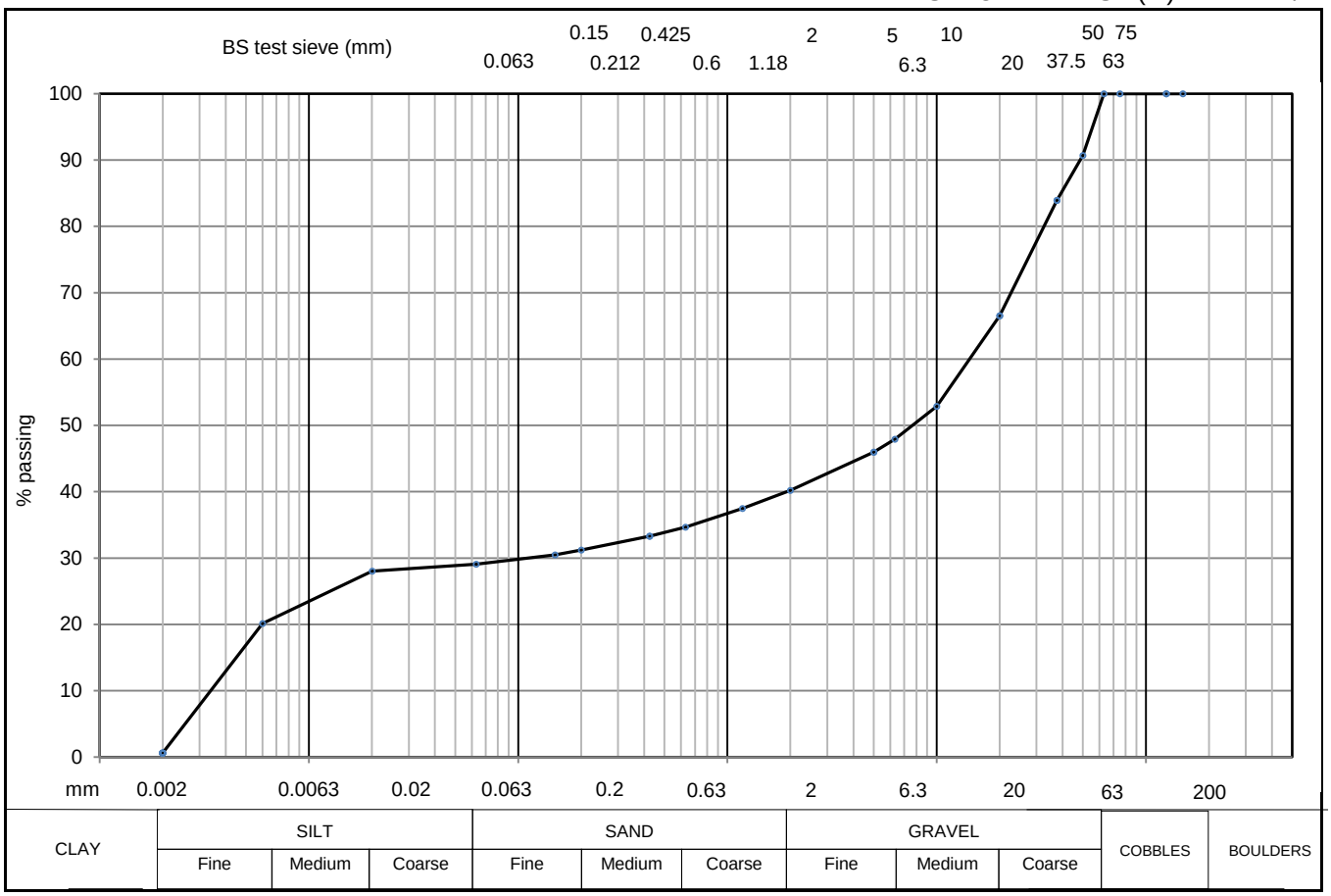
CONTRACT	CHECKED
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PARTICLE SIZE DISTRIBUTION

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CLIENT	SH READING MASTER LLP	BH/TP No.	BH303
SITE	STATION HILL, READING	SAMPLE No./TYPE	7B
		SAMPLE DEPTH (m)	3.00
DESCRIPTION	Off white sandy very silty GRAVEL (chalk)	SPECIMEN TOP (m)	3.00
		SPECIMEN BASE (m)	N/A



soil type	% fraction
CLAY	1
SILT	29
SILT & CLAY	29
SAND	11
GRAVEL	60
COBBLE & BOULDER	0
test method(s)	5.2 & 5.4
test method	
5.2 - sieving	
5.3 - sedimentation by hydrometer	
5.4 - sedimentation by pipette	

BS test sieve (mm)	% passing
150	
75	
63	100
50	91
37.5	84
20	67
10	53
6.3	48

BS test sieve (mm)	% passing
5	46
2	40
1.18	37
0.63	35
0.425	33
0.2	31
0.15	30
0.063	29

BS test sieve (µm)	% finer
20	28
6	20
2	1

remarks

denotes sample tested is smaller than that which is recommended in accordance with BS EN 17892

Particle density assigned an assumed value of 2.70 Mg/m3

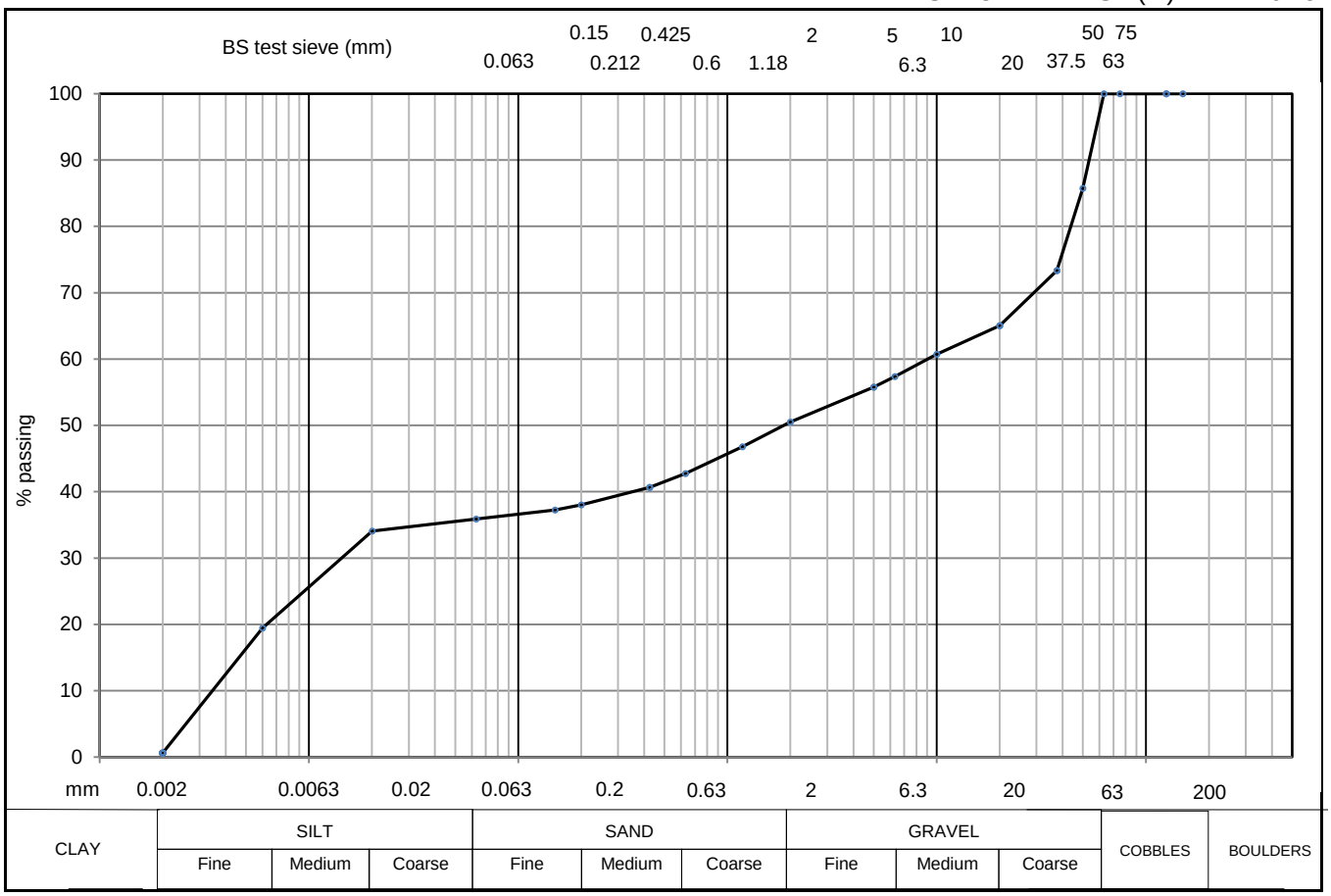
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BS EN ISO 17892 - 4 : 2016 : 5

CLIENT	SH READING MASTER LLP	BH/TP No.	BH303
SITE	STATION HILL, READING	SAMPLE No./TYPE	11L
		SAMPLE DEPTH (m)	6.00
DESCRIPTION	Off white slightly sandy gravelly SILT (chalk)	SPECIMEN TOP (m)	6.35
		SPECIMEN BASE (m)	6.45



soil type	% fraction
CLAY	1
SILT	35
SILT & CLAY	36
SAND	15
GRAVEL	49
COBBLE & BOULDER	0
test method(s)	5.2# & 5.4
test method	
5.2 - sieving	
5.3 - sedimentation by hydrometer	
5.4 - sedimentation by pipette	

BS test sieve (mm)	% passing	BS test sieve (mm)	% passing	BS test sieve (µm)	% finer
150		5	56	20	34
75		2	51	6	19
63	100	1.18	47	2	1
50	86	0.63	43		
37.5	73	0.425	41		
20	65	0.2	38		
10	61	0.15	37		
6.3	57	0.063	36		

remarks

denotes sample tested is smaller than that which is recommended in accordance with BS EN 17892

Particle density assigned an assumed value of 2.70 Mg/m3

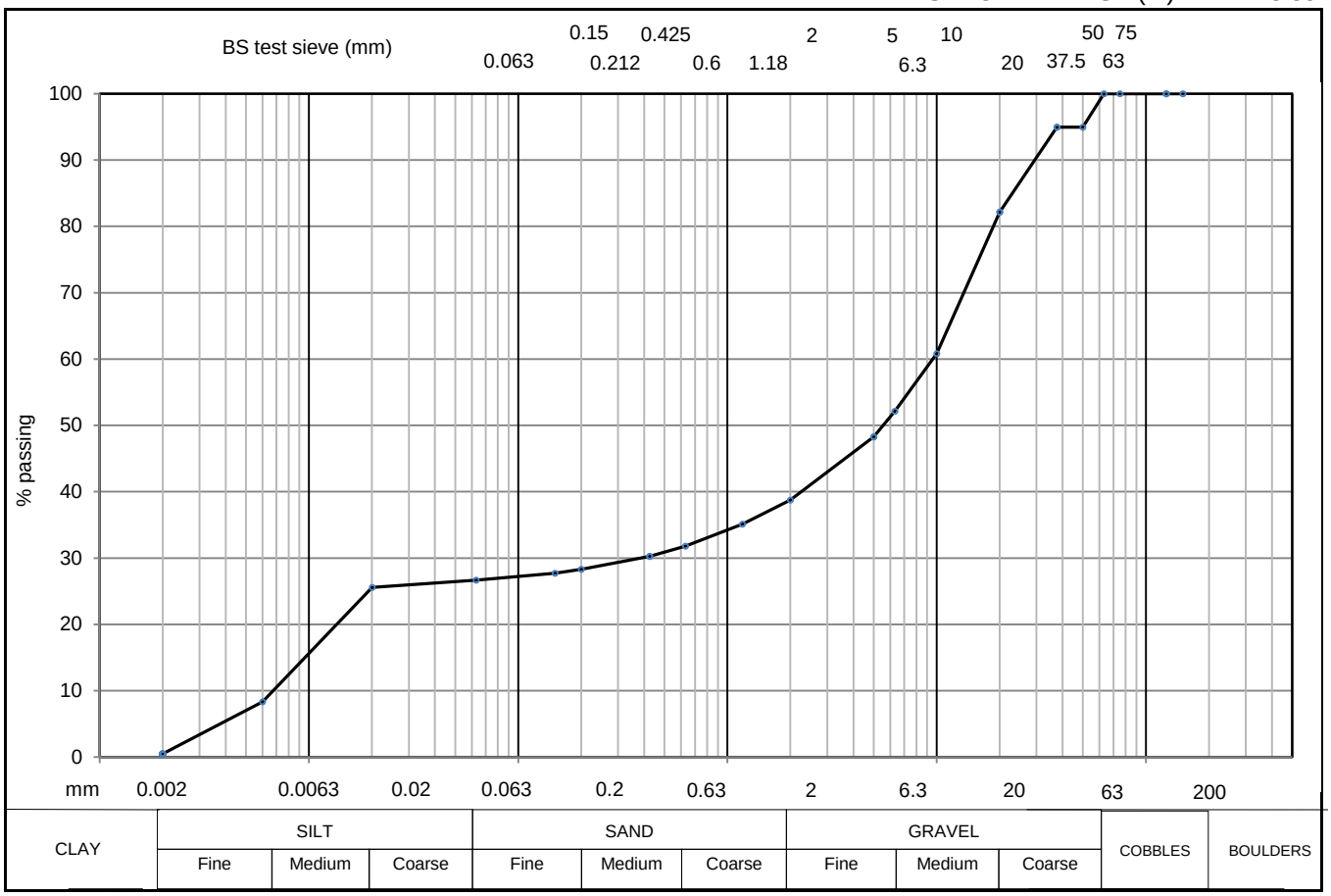
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PARTICLE SIZE DISTRIBUTION

BS EN ISO 17892 - 4 : 2016 : 5

CLIENT	SH READING MASTER LLP	BH/TP No.	BH303
SITE	STATION HILL, READING	SAMPLE No./TYPE	13C
		SAMPLE DEPTH (m)	7.50
DESCRIPTION	Off white sandy very silty GRAVEL (chalk)	SPECIMEN TOP (m)	7.50
		SPECIMEN BASE (m)	8.85



soil type	% fraction
CLAY	1
SILT	26
SILT & CLAY	27
SAND	12
GRAVEL	61
COBBLE & BOULDER	0
test method(s)	5.2 & 5.4
test method	
5.2 - sieving	
5.3 - sedimentation by hydrometer	
5.4 - sedimentation by pipette	

BS test sieve (mm)	% passing
150	
75	
63	100
50	95
37.5	95
20	82
10	61
6.3	52

BS test sieve (mm)	% passing
5	48
2	39
1.18	35
0.63	32
0.425	30
0.2	28
0.15	28
0.063	27

BS test sieve (µm)	% finer
20	26
6	8
2	0

remarks

denotes sample tested is smaller than that which is recommended in accordance with BS EN 17892

Particle density assigned an assumed value of 2.70 Mg/m3

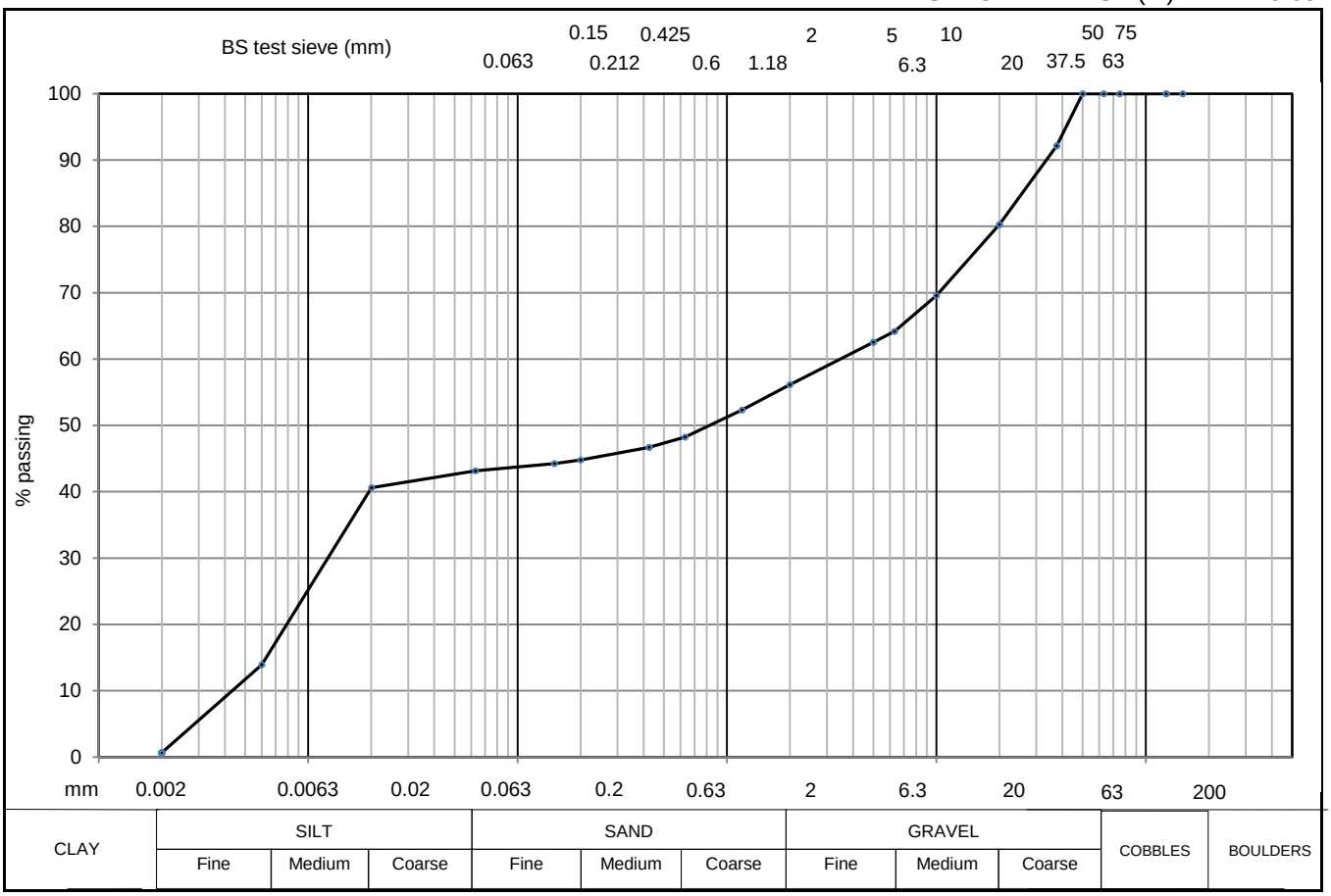
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PARTICLE SIZE DISTRIBUTION

BS EN ISO 17892 - 4 : 2016 : 5

CLIENT	SH READING MASTER LLP	BH/TP No.	BH303
SITE	STATION HILL, READING	SAMPLE No./TYPE	14C
		SAMPLE DEPTH (m)	9.00
DESCRIPTION	Off white slightly sandy gravelly SILT (chalk)	SPECIMEN TOP (m)	9.00
		SPECIMEN BASE (m)	9.65



soil type	% fraction
CLAY	1
SILT	43
SILT & CLAY	43
SAND	13
GRAVEL	44
COBBLE & BOULDER	0
test method(s)	5.2# & 5.4
test method	
5.2 - sieving	
5.3 - sedimentation by hydrometer	
5.4 - sedimentation by pipette	

BS test sieve (mm)	% passing	BS test sieve (mm)	% passing	BS test sieve (µm)	% finer
150		5	63	20	41
75		2	56	6	14
63		1.18	52	2	1
50	100	0.63	48		
37.5	92	0.425	47		
20	80	0.2	45		
10	70	0.15	44		
6.3	64	0.063	43		

remarks

denotes sample tested is smaller than that which is recommended in accordance with BS EN 17892

Particle density assigned an assumed value of 2.70 Mg/m3

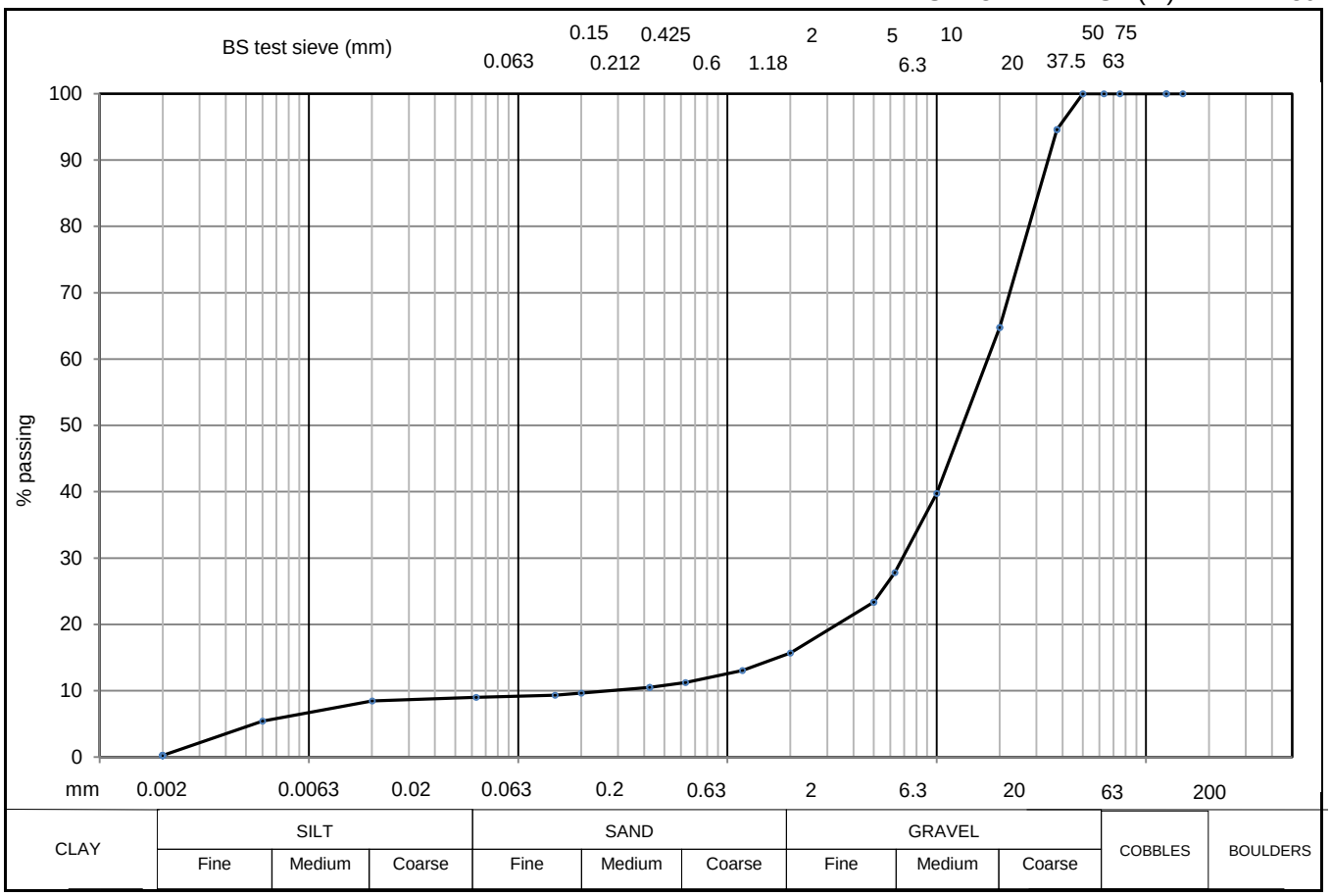
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PARTICLE SIZE DISTRIBUTION

BS EN ISO 17892 - 4 : 2016 : 5

CLIENT	SH READING MASTER LLP	BH/TP No.	BH303
SITE	STATION HILL, READING	SAMPLE No./TYPE	19C
		SAMPLE DEPTH (m)	13.50
DESCRIPTION	Off white sandy silty GRAVEL (chalk)	SPECIMEN TOP (m)	14.50
		SPECIMEN BASE (m)	14.80



soil type	% fraction
CLAY	0
SILT	9
SILT & CLAY	9
SAND	7
GRAVEL	84
COBBLE & BOULDER	0
test method(s)	5.2# & 5.4
test method	
5.2 - sieving	
5.3 - sedimentation by hydrometer	
5.4 - sedimentation by pipette	

BS test sieve (mm)	% passing	BS test sieve (mm)	% passing	BS test sieve (µm)	% finer
150		5	23	20	8
75		2	16	6	5
63		1.18	13	2	0
50	100	0.63	11		
37.5	95	0.425	11		
20	65	0.2	10		
10	40	0.15	9		
6.3	28	0.063	9		

remarks

denotes sample tested is smaller than that which is recommended in accordance with BS EN 17892

Particle density assigned an assumed value of 2.70 Mg/m3

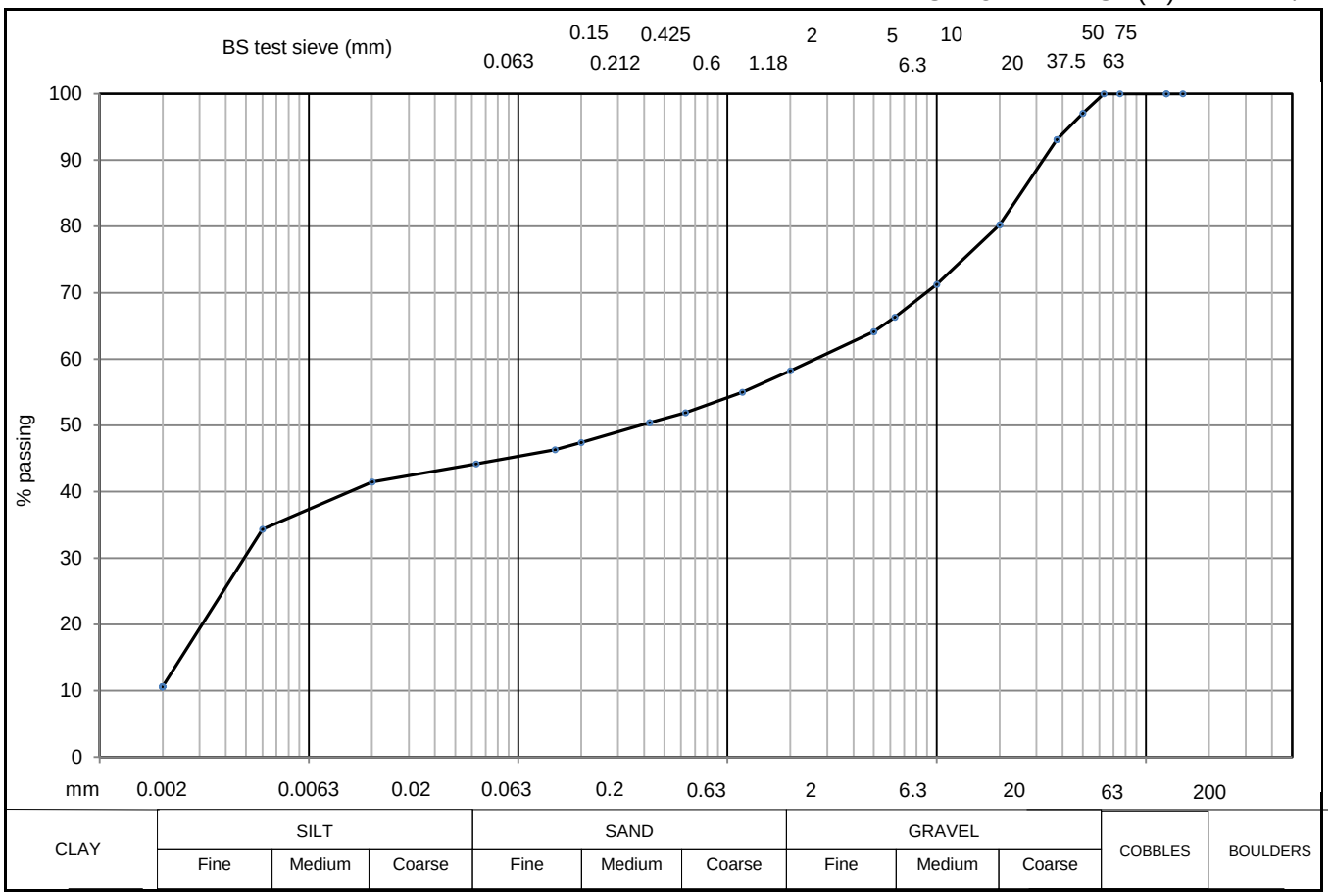
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PARTICLE SIZE DISTRIBUTION

BS EN ISO 17892 - 4 : 2016 : 5

CLIENT	SH READING MASTER LLP	BH/TP No.	BH304
SITE	STATION HILL, READING	SAMPLE No./TYPE	6B
		SAMPLE DEPTH (m)	3.00
DESCRIPTION	Off white slightly sandy gravelly clayey SILT (chalk)	SPECIMEN TOP (m)	3.00
		SPECIMEN BASE (m)	N/A



soil type	% fraction
CLAY	11
SILT	34
SILT & CLAY	44
SAND	14
GRAVEL	42
COBBLE & BOULDER	0
test method(s)	5.2# & 5.4
test method	
5.2 - sieving	
5.3 - sedimentation by hydrometer	
5.4 - sedimentation by pipette	

BS test sieve (mm)	% passing
150	
75	
63	100
50	97
37.5	93
20	80
10	71
6.3	66

BS test sieve (mm)	% passing
5	64
2	58
1.18	55
0.63	52
0.425	50
0.2	47
0.15	46
0.063	44

BS test sieve (µm)	% finer
20	41
6	34
2	11

remarks

denotes sample tested is smaller than that which is recommended in accordance with BS EN 17892

Particle density assigned an assumed value of 2.70 Mg/m3

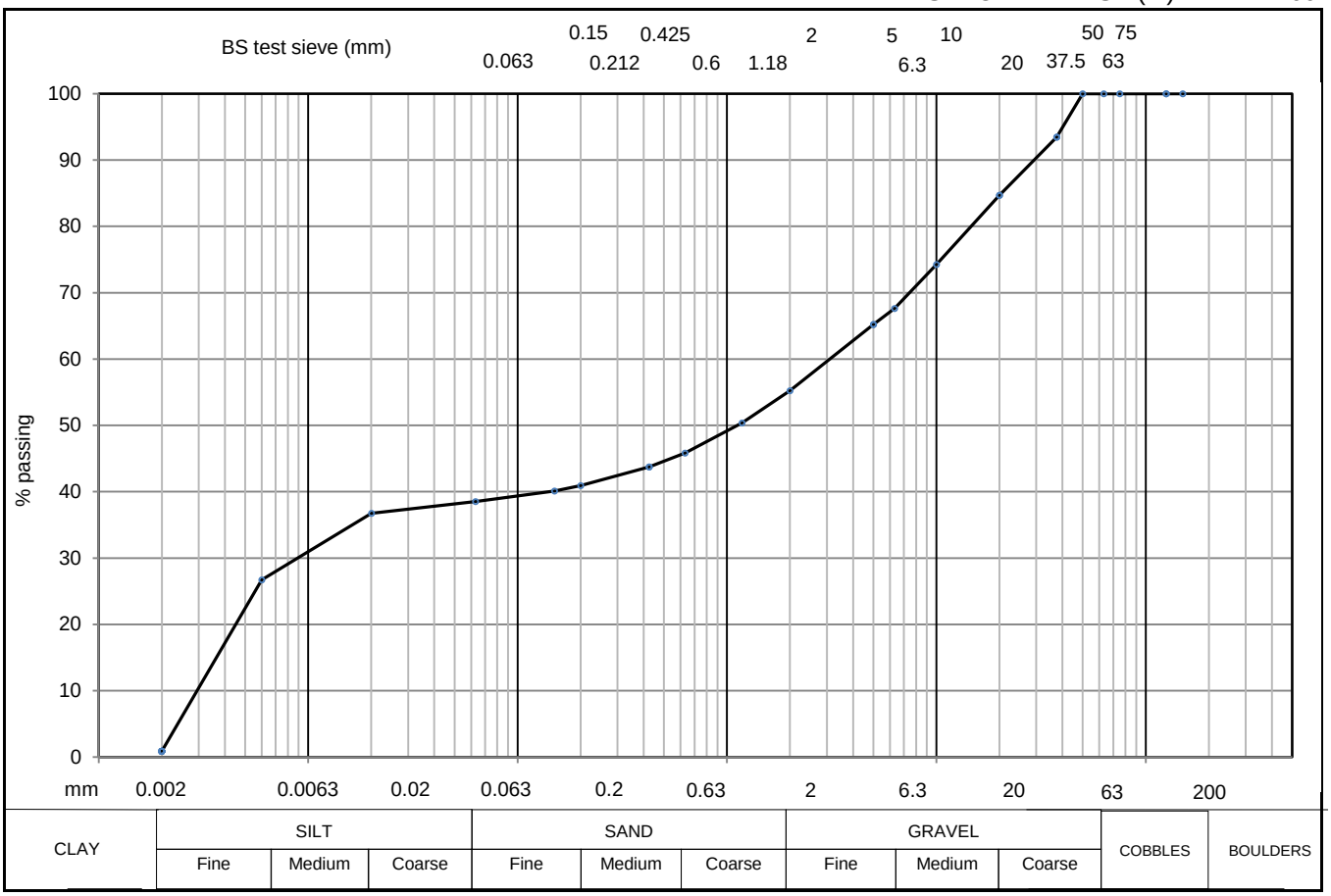
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PARTICLE SIZE DISTRIBUTION

BS EN ISO 17892 - 4 : 2016 : 5

CLIENT	SH READING MASTER LLP	BH/TP No.	BH304
SITE	STATION HILL, READING	SAMPLE No./TYPE	7L
		SAMPLE DEPTH (m)	3.00
DESCRIPTION	Off white slightly sandy gravelly SILT (chalk)	SPECIMEN TOP (m)	3.80
		SPECIMEN BASE (m)	4.00



soil type	% fraction
CLAY	1
SILT	38
SILT & CLAY	39
SAND	17
GRAVEL	45
COBBLE & BOULDER	0
test method(s)	5.2# & 5.4
test method	
5.2 - sieving	
5.3 - sedimentation by hydrometer	
5.4 - sedimentation by pipette	

BS test sieve (mm)	% passing	BS test sieve (mm)	% passing	BS test sieve (µm)	% finer
150		5	65	20	37
75		2	55	6	27
63		1.18	50	2	1
50	100	0.63	46		
37.5	93	0.425	44		
20	85	0.2	41		
10	74	0.15	40		
6.3	68	0.063	39		

remarks

denotes sample tested is smaller than that which is recommended in accordance with BS EN 17892

Particle density assigned an assumed value of 2.70 Mg/m3

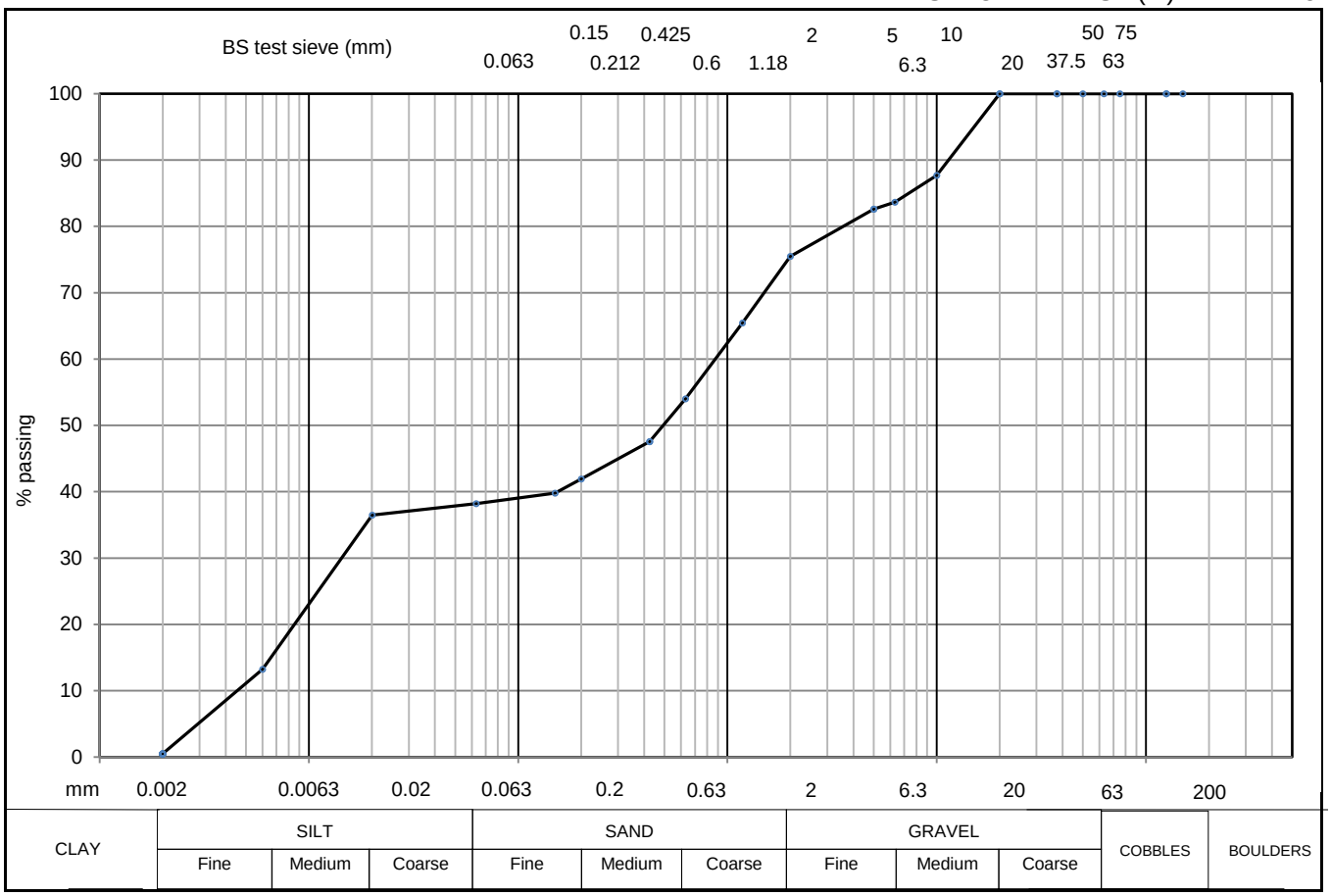
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PARTICLE SIZE DISTRIBUTION

BS EN ISO 17892 - 4 : 2016 : 5

CLIENT	SH READING MASTER LLP	BH/TP No.	BH304
SITE	STATION HILL, READING	SAMPLE No./TYPE	12D
		SAMPLE DEPTH (m)	7.00
DESCRIPTION	Off white slightly gravelly sandy SILT (chalk)	SPECIMEN TOP (m)	7.00
		SPECIMEN BASE (m)	7.45



soil type	% fraction
CLAY	1
SILT	38
SILT & CLAY	38
SAND	37
GRAVEL	25
COBBLE & BOULDER	0
test method(s)	5.2# & 5.4
test method	
5.2 - sieving	
5.3 - sedimentation by hydrometer	
5.4 - sedimentation by pipette	

BS test sieve (mm)	% passing	BS test sieve (mm)	% passing	BS test sieve (µm)	% finer
150		5	83	20	36
75		2	75	6	13
63		1.18	65	2	0
50		0.63	54		
37.5		0.425	48		
20	100	0.2	42		
10	88	0.15	40		
6.3	84	0.063	38		

remarks

denotes sample tested is smaller than that which is recommended in accordance with BS EN 17892

Particle density assigned an assumed value of 2.70 Mg/m3

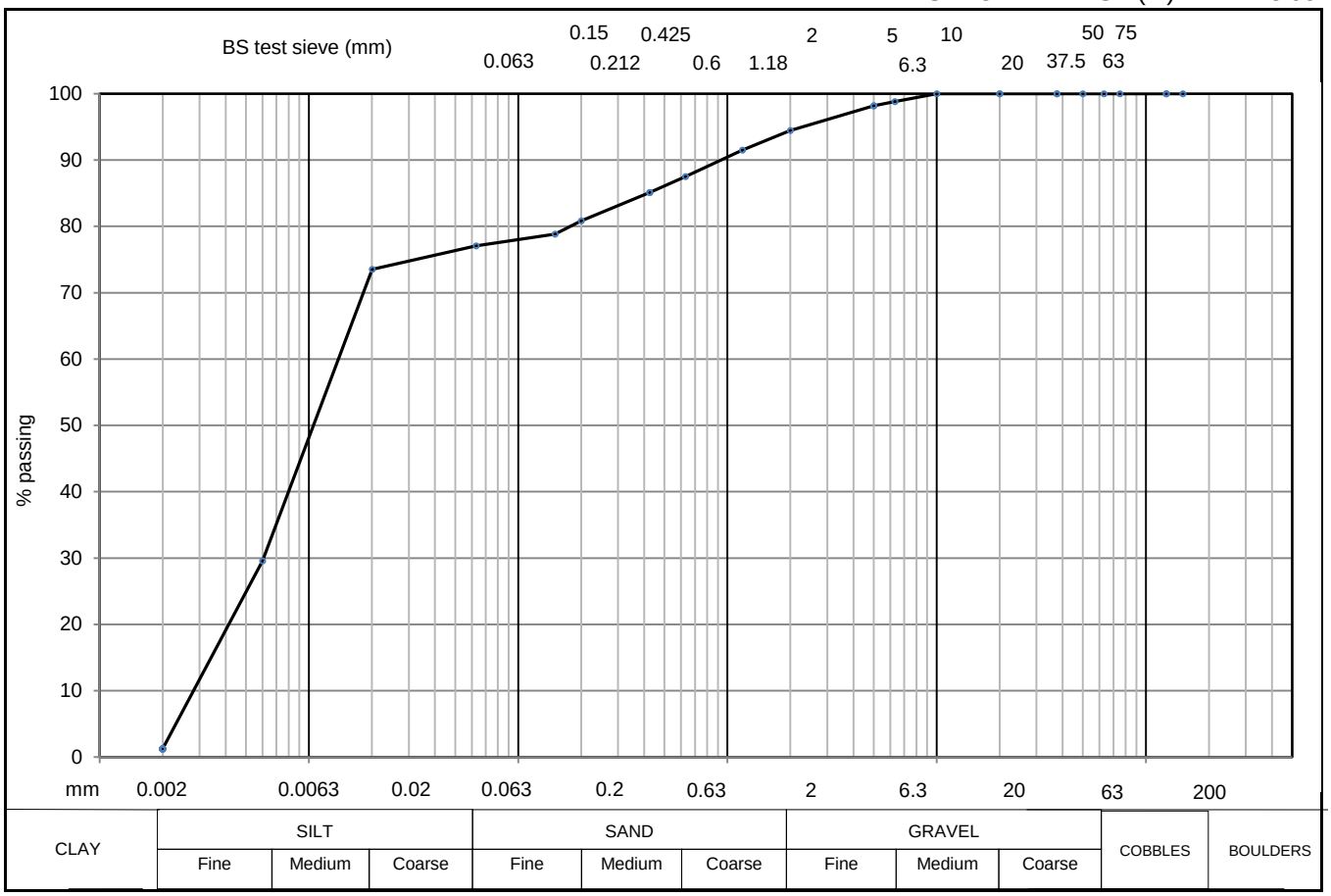
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PARTICLE SIZE DISTRIBUTION

BS EN ISO 17892 - 4 : 2016 : 5

CLIENT	SH READING MASTER LLP	BH/TP No.	BH304
SITE	STATION HILL, READING	SAMPLE No./TYPE	14D
		SAMPLE DEPTH (m)	8.50
DESCRIPTION	Off white slightly gravelly silghtly sandy SILT (chalk)	SPECIMEN TOP (m)	8.50
		SPECIMEN BASE (m)	8.95



soil type	% fraction
CLAY	1
SILT	76
SILT & CLAY	77
SAND	17
GRAVEL	6
COBBLE & BOULDER	0
test method(s)	5.2 & 5.4
test method	
5.2 - sieving	
5.3 - sedimentation by hydrometer	
5.4 - sedimentation by pipette	

BS test sieve (mm)	% passing
150	
75	
63	
50	
37.5	
20	
10	100
6.3	99

BS test sieve (mm)	% passing
5	98
2	94
1.18	92
0.63	87
0.425	85
0.2	81
0.15	79
0.063	77

BS test sieve (µm)	% finer
20	74
6	30
2	1

remarks

denotes sample tested is smaller than that which is recommended in accordance with BS EN 17892

Particle density assigned an assumed value of 2.70 Mg/m3

CONTRACT	CHECKED
34769	**TB**

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ROCK WATER CONTENT

I.S.R.M. Suggested Methods : 2007 Edition

CLIENT SH READING MASTER LLP

SITE STATION HILL, READING

borehole /trial pit no.	sample no./type	sample depth (m)	specimen depth (m)	natural water content (%)	description and remarks
BH301	26C	19.50	19.50	25	White CHALK
BH303	21C	16.50	17.80	25	White CHALK
BH303	24C	21.00	21.30	24	White CHALK

general remarks

natural water content determined unless otherwise specified

test method

samples oven dried at 105°C

CONTRACT	CHECKED
34769	**TB**

Geotechnical Engineering Limited

UNIAXIAL COMPRESSIVE STRENGTH OF ROCK

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CLIENT SH READING MASTER LLP

SITE STATION HILL, READING

borehole /trial pit no.	sample no./type	sample depth (m)	specimen depth (m)	diameter D (mm)	height H (mm)	H/D	moisture content (%)	bulk density (Mg/m3)	loading rate (kN/min)	time to failure (min:sec)	UCS (MPa)	description, codes and remarks
BH301	24Cs	17.25	17.25	113.5	304.3	2.68	24.1	1.91	3	09:21	2.85	White CHALK, N, Ax
BH304	32Cs	21.05	21.05	114.0	285.4	2.50	26.2	2.00	3	07:04	2.08	Off white CHALK, N, AxCa

general remarks

sample obtained from vertically drilled core (unless specified), test machine - VJT6000

coding:

moisture condition	sample storage	failure mode
N - natural moisture content	U - not wrapped	Ax - axial cleavage
F - fully saturated	F - wrapped in cling film/foil	Ca - cataclasis
S - soaked	W - waxed	Sh - shear
P - air/partially dried	G - contained in sealed Geoline	Ex - explosive
		Ot - other

CONTRACT	CHECKED
34769	**TB**

Geotechnical Engineering Limited

POINT LOAD STRENGTH TEST

I.S.R.M. Suggested Methods : 2007 Edition

CLIENT SH READING MASTER LLP

SITE STATION HILL, READING

borehole /trial pit no.	sample depth (m)	test type	test orien-tation	moisture condition	width W (mm)	length L (mm)	platen sep. D (mm)	failure load P (kN)	equiv. diam. De (mm)	Is (MPa)	size factor	Is(50) (MPa)	description and remarks
BH301	5.90	D	Y	P		40	90	0.29	90.00	0.04	1.30	0.05	White CHALK
BH301	5.90	A	X	P	90		35	0.36	63.33	0.09	1.11	0.10	White CHALK
BH301	6.10	I	U	P	50	50	40	0.41	50.46	0.16	1.00	0.16	White CHALK
BH301	7.15	I	U	P	70	90	70	0.59	78.99	0.09	1.23	0.12	White CHALK
BH301	7.75	I	U	P	70	90	35	0.35	55.85	0.11	1.05	0.12	White CHALK
BH301	8.15	I	U	P	40	50	40	0.46	45.14	0.23	0.95	0.22	White CHALK
BH301	8.20	I	U	P	40	40	40	0.32	45.14	0.16	0.95	0.15	White CHALK
BH301	8.35	I	U	P	50	50	40	0.19	50.46	0.07	1.00	0.07	White CHALK
BH301	8.50	I	U	P	40	50	40	0.22	45.14	0.11	0.95	0.10	White CHALK
BH301	8.57	I	U	P	50	70	40	0.43	50.46	0.17	1.00	0.17	White CHALK
BH301	8.60	I	U	P	50	60	40	0.31	50.46	0.12	1.00	0.12	White CHALK
BH301	8.85	I	U	P	60	60	30	0.17	47.87	0.07	0.98	0.07	White CHALK
BH301	11.20	I	U	P	80	110	50	0.41	71.36	0.08	1.17	0.09	White CHALK
BH301	11.40	I	U	P	80	110	45	0.38	67.70	0.08	1.15	0.10	White CHALK
BH301	11.44	I	U	P	50	70	30	0.11	43.70	0.06	0.94	0.05	White CHALK
BH301	11.70	I	U	P	80	90	35	0.52	59.71	0.15	1.08	0.16	White CHALK
BH301	11.88	I	U	P	55	60	40	0.49	52.93	0.17	1.03	0.18	White CHALK
BH301	11.90	I	U	P	60	100	30	0.19	47.87	0.08	0.98	0.08	White CHALK
BH301	11.95	I	U	P	50	50	40	0.51	50.46	0.20	1.00	0.20	White CHALK

general remarks

tests carried out in accordance with I.S.R.M.(2007): Suggested Methods for Determining Point Load Strength

test machine PLM02

test type	test orientation relative to discontinuities		moisture condition	CONTRACT	CHECKED
A - axial	X - perpendicular	U - unknown	N - natural moisture content		
D - diametral	Y - parallel		P - partially air dried	**34769**	**TB**
I - irregular lump	Z - oblique		S - soaked		

Geotechnical Engineering Limited

POINT LOAD STRENGTH TEST

I.S.R.M. Suggested Methods : 2007 Edition

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SITE STATION HILL, READING

borehole /trial pit no.	sample depth (m)	test type	test orien-tation	moisture condition	width W (mm)	length L (mm)	platen sep. D (mm)	failure load P (kN)	equiv. diam. De (mm)	Is (MPa)	size factor	Is(50) (MPa)	description and remarks
BH301	15.00	I	U	P	70	90	60	0.56	73.13	0.10	1.19	0.12	White CHALK
BH301	15.30	I	U	P	70	70	50	0.06	66.76	0.01	1.14	0.02	White CHALK
BH301	15.40	I	U	P	90	140	45	0.78	71.81	0.15	1.18	0.18	White CHALK
BH301	15.60	I	U	P	60	90	60	0.42	67.70	0.09	1.15	0.11	White CHALK
BH301	15.65	D	Y	P		70	110	0.76	110.00	0.06	1.43	0.09	White CHALK
BH301	15.65	A	X	P	110		60	0.31	91.67	0.04	1.31	0.05	White CHALK
BH301	15.85	I	U	P	60	90	20	0.16	39.09	0.10	0.90	0.09	White CHALK
BH301	15.87	I	U	P	50	90	40	0.41	50.46	0.16	1.00	0.16	White CHALK
BH301	15.95	I	U	P	90	90	60	0.84	82.92	0.12	1.26	0.15	White CHALK
BH301	16.10	I	U	P	90	100	60	0.41	82.92	0.06	1.26	0.07	White CHALK
BH301	16.18	I	U	P	110	120	60	0.62	91.67	0.07	1.31	0.10	White CHALK
BH301	16.50	I	U	P	100	120	50	0.66	79.79	0.10	1.23	0.13	White CHALK
BH301	16.60	I	U	P	90	110	80	1.01	95.75	0.11	1.34	0.15	White CHALK
BH301	16.68	D	Y	P		50	120	0.45	120.00	0.03	1.48	0.05	White CHALK
BH301	16.68	A	X	P	120		50	0.59	87.40	0.08	1.29	0.10	White CHALK
BH301	16.72	D	Y	P		50	110	0.77	110.00	0.06	1.43	0.09	White CHALK
BH301	16.72	A	X	P	110		45	0.49	79.39	0.08	1.23	0.10	White CHALK
BH301	16.76	D	Y	P		60	110	0.36	110.00	0.03	1.43	0.04	White CHALK
BH301	16.76	A	X	P	110		50	0.59	83.68	0.08	1.26	0.11	White CHALK

general remarks

tests carried out in accordance with I.S.R.M.(2007): Suggested Methods for Determining Point Load Strength

test machine PLM02

test type	test orientation relative to discontinuities		moisture condition	CONTRACT	CHECKED
A - axial	X - perpendicular	U - unknown	N - natural moisture content		
D - diametral	Y - parallel		P - partially air dried	**34769**	**TB**
I - irregular lump	Z - oblique		S - soaked		

Geotechnical Engineering Limited

POINT LOAD STRENGTH TEST

I.S.R.M. Suggested Methods : 2007 Edition

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SITE STATION HILL, READING

borehole /trial pit no.	sample depth (m)	test type	test orien-tation	moisture condition	width W (mm)	length L (mm)	platen sep. D (mm)	failure load P (kN)	equiv. diam. De (mm)	Is (MPa)	size factor	Is(50) (MPa)	description and remarks
BH301	16.83	I	U	P	80	110	60	0.51	78.18	0.08	1.22	0.10	White CHALK
BH301	17.10	A	X	P	110		35	0.46	70.01	0.09	1.16	0.11	White CHALK
BH301	17.15	D	Y	P		40	110	0.64	110.00	0.05	1.43	0.08	White CHALK
BH301	17.15	A	X	P	110		50	0.73	83.68	0.10	1.26	0.13	White CHALK
BH301	17.70	I	U	P	90	110	40	0.89	67.70	0.19	1.15	0.22	White CHALK
BH301	17.80	I	U	P	70	80	45	0.36	63.33	0.09	1.11	0.10	White CHALK
BH301	19.50	D	Y	P		60	120	0.70	120.00	0.05	1.48	0.07	White CHALK
BH301	19.50	A	X	P	120		50	0.72	87.40	0.09	1.29	0.12	White CHALK
BH301	19.65	I	U	P	40	60	25	0.27	35.68	0.21	0.86	0.18	White CHALK
BH301	19.78	D	Y	P		50	110	0.67	110.00	0.06	1.43	0.08	White CHALK
BH301	19.78	A	X	P	110		40	0.84	74.85	0.15	1.20	0.18	White CHALK
BH301	20.10	D	Y	P		50	110	0.43	110.00	0.04	1.43	0.05	White CHALK
BH301	20.10	A	X	P	110		50	0.69	83.68	0.10	1.26	0.12	White CHALK
BH301	20.35	D	Y	P		40	110	0.29	110.00	0.02	1.43	0.03	White CHALK
BH301	20.35	A	X	P	110		40	0.61	74.85	0.11	1.20	0.13	White CHALK
BH301	20.40	I	U	P	60	100	30	0.42	47.87	0.18	0.98	0.18	White CHALK
BH301	20.55	I	U	P	100	120	50	0.31	79.79	0.05	1.23	0.06	White CHALK
BH301	20.60	I	U	P	100	150	50	0.77	79.79	0.12	1.23	0.15	White CHALK
BH301	20.75	D	Y	P		50	120	0.26	120.00	0.02	1.48	0.03	White CHALK

general remarks

tests carried out in accordance with I.S.R.M.(2007): Suggested Methods for Determining Point Load Strength

test machine PLM02

test type	test orientation relative to discontinuities		moisture condition	CONTRACT	CHECKED
A - axial	X - perpendicular	U - unknown	N - natural moisture content		
D - diametral	Y - parallel		P - partially air dried	**34769**	**TB**
I - irregular lump	Z - oblique		S - soaked		

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POINT LOAD STRENGTH TEST

I.S.R.M. Suggested Methods : 2007 Edition

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SITE STATION HILL, READING

borehole /trial pit no.	sample depth (m)	test type	test orien-tation	moisture condition	width W (mm)	length L (mm)	platen sep. D (mm)	failure load P (kN)	equiv. diam. De (mm)	Is (MPa)	size factor	Is(50) (MPa)	description and remarks
BH301	20.75	A	X	P	120		50	0.41	87.40	0.05	1.29	0.07	White CHALK
BH301	20.85	D	Y	P		40	120	0.69	120.00	0.05	1.48	0.07	White CHALK
BH301	20.85	A	X	P	120		45	0.53	82.92	0.08	1.26	0.10	White CHALK
BH303	5.10	I	U	P	40	50	50	0.37	50.46	0.15	1.00	0.15	White CHALK
BH303	9.70	I	U	P	50	70	30	0.10	43.70	0.05	0.94	0.05	White CHALK
BH303	9.80	I	U	P	70	70	45	0.16	63.33	0.04	1.11	0.04	White CHALK
BH303	10.10	I	U	P	40	50	35	0.13	42.22	0.07	0.93	0.07	White CHALK
BH303	10.30	I	U	P	50	80	45	0.39	53.52	0.14	1.03	0.14	White CHALK
BH303	10.35	I	U	P	45	50	35	0.51	44.78	0.25	0.95	0.24	White CHALK
BH303	10.40	I	U	P	40	50	40	0.24	45.14	0.12	0.95	0.11	White CHALK
BH303	11.00	I	U	P	60	80	45	0.27	58.63	0.08	1.07	0.08	White CHALK
BH303	11.07	I	U	P	50	70	30	0.09	43.70	0.05	0.94	0.04	White CHALK
BH303	11.25	I	U	P	80	140	60	0.71	78.18	0.12	1.22	0.14	White CHALK
BH303	11.32	I	U	P	55	90	30	0.16	45.83	0.08	0.96	0.07	White CHALK
BH303	11.50	I	U	P	60	80	50	0.89	61.80	0.23	1.10	0.26	White CHALK
BH303	11.70	I	U	P	75	80	50	0.79	69.10	0.17	1.16	0.19	White CHALK
BH303	11.88	I	U	P	50	60	30	0.54	43.70	0.28	0.94	0.27	White CHALK
BH303	11.90	I	U	P	90	100	50	0.36	75.69	0.06	1.21	0.08	White CHALK
BH303	11.95	I	U	P	80	90	60	0.46	78.18	0.08	1.22	0.09	White CHALK

general remarks

tests carried out in accordance with I.S.R.M.(2007): Suggested Methods for Determining Point Load Strength

test machine PLM02

test type	test orientation relative to discontinuities		moisture condition	CONTRACT	CHECKED
A - axial	X - perpendicular	U - unknown	N - natural moisture content		
D - diametral	Y - parallel		P - partially air dried	**34769**	**TB**
I - irregular lump	Z - oblique		S - soaked		

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POINT LOAD STRENGTH TEST

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SITE STATION HILL, READING

borehole /trial pit no.	sample depth (m)	test type	test orien-tation	moisture condition	width W (mm)	length L (mm)	platen sep. D (mm)	failure load P (kN)	equiv. diam. De (mm)	Is (MPa)	size factor	Is(50) (MPa)	description and remarks
BH303	15.40	I	U	P	50	50	40	0.14	50.46	0.05	1.00	0.06	White CHALK
BH303	15.45	I	U	P	90	120	90	0.81	101.55	0.08	1.38	0.11	White CHALK
BH303	15.56	I	U	P	50	50	40	0.21	50.46	0.08	1.00	0.08	White CHALK
BH303	15.80	I	U	P	50	70	50	0.07	56.42	0.02	1.06	0.02	White CHALK
BH303	15.90	I	U	P	40	50	40	0.11	45.14	0.05	0.95	0.05	White CHALK
BH303	16.00	I	U	P	40	60	40	0.21	45.14	0.10	0.95	0.10	White CHALK
BH303	15.70	I	U	P	50	50	35	0.13	47.20	0.06	0.97	0.06	White CHALK
BH303	16.15	I	U	P	60	80	50	0.46	61.80	0.12	1.10	0.13	White CHALK
BH303	16.30	I	U	P	90	110	60	0.71	82.92	0.10	1.26	0.13	White CHALK
BH303	16.45	I	U	P	60	90	50	0.56	61.80	0.15	1.10	0.16	White CHALK
BH303	16.60	I	U	P	70	120	40	0.39	59.71	0.11	1.08	0.12	White CHALK
BH303	16.90	I	U	P	40	60	60	0.39	55.28	0.13	1.05	0.13	White CHALK
BH303	17.10	I	U	P	70	120	70	0.26	78.99	0.04	1.23	0.05	White CHALK
BH303	17.20	I	U	P	100	140	60	0.51	87.40	0.07	1.29	0.09	White CHALK
BH303	17.40	I	U	P	60	90	50	0.39	61.80	0.10	1.10	0.11	White CHALK
BH303	17.50	I	U	P	70	80	50	0.08	66.76	0.02	1.14	0.02	White CHALK
BH303	17.60	I	U	P	60	90	40	0.21	55.28	0.07	1.05	0.07	White CHALK
BH303	17.65	D	Y	P		50	120	0.51	120.00	0.04	1.48	0.05	White CHALK
BH303	17.65	A	X	P	120		50	0.66	87.40	0.09	1.29	0.11	White CHALK

general remarks

tests carried out in accordance with I.S.R.M.(2007): Suggested Methods for Determining Point Load Strength

test machine PLM02

test type	test orientation relative to discontinuities		moisture condition	CONTRACT	CHECKED
A - axial	X - perpendicular	U - unknown	N - natural moisture content		
D - diametral	Y - parallel		P - partially air dried	**34769**	**TB**
I - irregular lump	Z - oblique		S - soaked		

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POINT LOAD STRENGTH TEST

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SITE STATION HILL, READING

borehole /trial pit no.	sample depth (m)	test type	test orien-tation	moisture condition	width W (mm)	length L (mm)	platen sep. D (mm)	failure load P (kN)	equiv. diam. De (mm)	Is (MPa)	size factor	Is(50) (MPa)	description and remarks
BH303	17.80	D	Y	P		30	100	0.43	100.00	0.04	1.37	0.06	White CHALK
BH303	17.80	A	X	P	100		35	0.60	66.76	0.13	1.14	0.15	White CHALK
BH303	17.90	D	Y	P		20	120	0.58	120.00	0.04	1.48	0.06	White CHALK
BH303	17.90	A	X	P	120		30	0.51	67.70	0.11	1.15	0.13	White CHALK
BH303	21.30	D	Y	P		50	110	0.46	110.00	0.04	1.43	0.05	White CHALK
BH303	21.30	A	X	P	110		60	0.71	91.67	0.08	1.31	0.11	White CHALK
BH303	21.40	I	U	P	70	110	50	0.56	66.76	0.13	1.14	0.14	White CHALK
BH303	21.50	D	Y	P		60	120	0.49	120.00	0.03	1.48	0.05	White CHALK
BH303	21.50	A	X	P	120		60	0.77	95.75	0.08	1.34	0.11	White CHALK
BH303	21.65	D	Y	P		40	110	0.41	110.00	0.03	1.43	0.05	White CHALK
BH303	21.65	A	X	P	110		35	0.60	70.01	0.12	1.16	0.14	White CHALK
BH303	21.75	I	U	P	90	90	60	0.32	82.92	0.05	1.26	0.06	White CHALK
BH303	21.85	D	Y	P		50	120	0.68	120.00	0.05	1.48	0.07	White CHALK
BH303	21.85	A	X	P	120		50	0.49	87.40	0.06	1.29	0.08	White CHALK
BH303	22.00	I	U	P	60	100	60	0.60	67.70	0.13	1.15	0.15	White CHALK
BH303	22.10	D	Y	P		30	120	0.31	120.00	0.02	1.48	0.03	White CHALK
BH303	22.10	A	X	P	120		25	0.18	61.80	0.05	1.10	0.05	White CHALK
BH303	22.35	D	Y	P		40	120	0.48	120.00	0.03	1.48	0.05	White CHALK
BH303	22.35	A	X	P	120		40	0.61	78.18	0.10	1.22	0.12	White CHALK

general remarks

tests carried out in accordance with I.S.R.M.(2007): Suggested Methods for Determining Point Load Strength

test machine PLM02

test type	test orientation relative to discontinuities		moisture condition	CONTRACT	CHECKED
A - axial	X - perpendicular	U - unknown	N - natural moisture content		
D - diametral	Y - parallel		P - partially air dried	**34769**	**TB**
I - irregular lump	Z - oblique		S - soaked		

Geotechnical Engineering Limited

POINT LOAD STRENGTH TEST

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CLIENT SH READING MASTER LLP

SITE STATION HILL, READING

borehole /trial pit no.	sample depth (m)	test type	test orien-tation	moisture condition	width W (mm)	length L (mm)	platen sep. D (mm)	failure load P (kN)	equiv. diam. De (mm)	Is (MPa)	size factor	Is(50) (MPa)	description and remarks
BH303	22.40	I	U	P	90	110	50	0.89	75.69	0.16	1.21	0.19	White CHALK
BH304	6.40	I	U	P	60	90	50	0.59	61.80	0.15	1.10	0.17	White CHALK
BH304	6.43	I	U	P	45	80	35	0.31	44.78	0.15	0.95	0.15	White CHALK
BH304	6.80	I	U	P	65	78	40	0.49	57.54	0.15	1.07	0.16	White CHALK
BH304	6.95	I	U	P	40	80	30	0.36	39.09	0.24	0.90	0.21	White CHALK
BH304	10.10	I	U	P	30	40	30	0.11	33.85	0.10	0.84	0.08	White CHALK
BH304	10.23	I	U	P	40	50	25	0.02	35.68	0.02	0.86	0.01	White CHALK
BH304	10.28	I	U	P	70	70	40	0.31	59.71	0.09	1.08	0.09	White CHALK
BH304	10.40	I	U	P	90	95	80	0.46	95.75	0.05	1.34	0.07	White CHALK
BH304	10.55	I	U	P	100	150	60	0.76	87.40	0.10	1.29	0.13	White CHALK
BH304	10.70	I	U	P	40	40	20	0.19	31.92	0.19	0.82	0.15	White CHALK
BH304	10.80	I	U	P	50	70	40	0.31	50.46	0.12	1.00	0.12	White CHALK
BH304	11.90	I	U	P	60	65	45	0.46	58.63	0.13	1.07	0.14	White CHALK
BH304	12.10	I	U	P	30	60	25	0.10	30.90	0.10	0.81	0.08	White CHALK
BH304	12.30	I	U	P	70	110	50	0.31	66.76	0.07	1.14	0.08	White CHALK
BH304	12.55	I	U	P	100	100	30	0.43	61.80	0.11	1.10	0.12	White CHALK
BH304	13.20	I	U	P	70	80	50	0.86	66.76	0.19	1.14	0.22	White CHALK
BH304	13.35	I	U	P	70	70	50	0.79	66.76	0.18	1.14	0.20	White CHALK
BH304	13.40	I	U	P	120	150	60	0.31	95.75	0.03	1.34	0.05	White CHALK

general remarks

tests carried out in accordance with I.S.R.M.(2007): Suggested Methods for Determining Point Load Strength

test machine PLM02

test type	test orientation relative to discontinuities		moisture condition	CONTRACT	CHECKED
A - axial	X - perpendicular	U - unknown	N - natural moisture content		
D - diametral	Y - parallel		P - partially air dried	**34769**	**TB**
I - irregular lump	Z - oblique		S - soaked		

Geotechnical Engineering Limited

POINT LOAD STRENGTH TEST

I.S.R.M. Suggested Methods : 2007 Edition

CLIENT SH READING MASTER LLP

SITE STATION HILL, READING

borehole /trial pit no.	sample depth (m)	test type	test orien-tation	moisture condition	width W (mm)	length L (mm)	platen sep. D (mm)	failure load P (kN)	equiv. diam. De (mm)	Is (MPa)	size factor	Is(50) (MPa)	description and remarks
BH304	13.45	I	U	P	110	150	50	0.62	83.68	0.09	1.26	0.11	White CHALK
BH304	13.85	I	U	P	95	120	60	0.57	85.19	0.08	1.27	0.10	White CHALK
BH304	13.95	I	U	P	70	90	50	0.47	66.76	0.11	1.14	0.12	White CHALK
BH304	14.00	I	U	P	100	110	60	0.84	87.40	0.11	1.29	0.14	White CHALK
BH304	14.05	I	U	P	90	110	50	0.44	75.69	0.08	1.21	0.09	White CHALK
BH304	17.65	I	U	P	80	90	50	0.76	71.36	0.15	1.17	0.18	White CHALK
BH304	17.90	I	U	P	80	90	45	0.69	67.70	0.15	1.15	0.17	White CHALK
BH304	18.10	I	U	P	80	110	30	0.23	55.28	0.08	1.05	0.08	White CHALK
BH304	18.50	D	Y	P		40	120	0.69	120.00	0.05	1.48	0.07	White CHALK
BH304	18.50	A	X	P	120		50	0.61	87.40	0.08	1.29	0.10	White CHALK
BH304	17.60	I	U	P	70	110	30	0.57	51.71	0.21	1.02	0.22	White CHALK
BH304	18.80	I	U	P	70	110	50	0.76	66.76	0.17	1.14	0.19	White CHALK
BH304	18.95	I	U	P	70	100	40	0.54	59.71	0.15	1.08	0.16	White CHALK
BH304	19.25	I	U	P	100	120	30	0.24	61.80	0.06	1.10	0.07	White CHALK
BH304	19.30	I	U	P	90	100	50	0.82	75.69	0.14	1.21	0.17	White CHALK
BH304	19.40	I	U	P	110	110	40	0.36	74.85	0.06	1.20	0.08	White CHALK
BH304	19.50	I	U	P	70	110	50	0.77	66.76	0.17	1.14	0.20	White CHALK

general remarks

tests carried out in accordance with I.S.R.M.(2007): Suggested Methods for Determining Point Load Strength

test machine PLM02

test type	test orientation relative to discontinuities		moisture condition	CONTRACT	CHECKED
A - axial	X - perpendicular	U - unknown	N - natural moisture content		
D - diametral	Y - parallel		P - partially air dried	**34769**	**TB**
I - irregular lump	Z - oblique		S - soaked		

Chemtest
The right chemistry to deliver results
Chemtest Ltd.
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.com

UKAS TESTING
2183

Final Report

Report No.:	18-39601-1
Initial Date of Issue:	19-Dec-2018
Client	Geotechnical Engineering Ltd
Client Address:	Centurion House Olympus Park Quedgeley Gloucester Gloucestershire GL2 4NF
Contact(s):	GEL Wendy Jones
Project	34769 Station Hill, Reading

Quotation No.:		**Date Received:**	17-Dec-2018
Order No.:	34769/WJ	**Date Instructed:**	17-Dec-2018
No. of Samples:	9		
Turnaround (Wkdays):	3	**Results Due:**	19-Dec-2018
Date Approved:	19-Dec-2018		

Approved By:



Details: Martin Dyer, Laboratory Manager

Chemtest
The right chemistry to deliver results

Results - Soil

Project: 34769 Station Hill, Reading

Client: Geotechnical Engineering Ltd					**Chemtest Job No.:**	18-39601	18-39601	18-39601	18-39601	18-39601	18-39601	18-39601
Quotation No.:					**Chemtest Sample ID.:**	742934	742935	742936	742937	742938	742939	742940	742941
					Client Sample ID.:	6B	8B	2B	4B	5L	6D	4B	5B
					Sample Location:	BH301	BH301	BH303	BH303	BH303	BH303	BH304	BH304
					Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
					Top Depth (m):	2.80	4.00	1.00	2.00	3.00	3.00	2.00	3.00
					Bottom Depth (m):					4.50	3.45		
					Date Sampled:	12-Dec-2018	12-Dec-2018	12-Dec-2018	13-Dec-2018	13-Dec-2018	12-Dec-2018	13-Dec-2018	13-Dec-2018
Determinand	**Accred.**	**SOP**	**Units**	**LOD**									
Moisture	N	2030	%	0.020		21	22	15	20	17	19	15	17
pH	U	2010		N/A		8.9	8.8	10.9	9.6		9.3	10.3	9.2
Magnesium (Water Soluble)	N	2120	g/l	0.010		< 0.010	< 0.010	< 0.010	< 0.010		< 0.010	< 0.010	< 0.010
Sulphate (2:1 Water Soluble) as SO4	U	2120	g/l	0.010		< 0.010	< 0.010	0.20	< 0.010		< 0.010	0.075	< 0.010
Total Sulphur	U	2175	%	0.010		< 0.010	0.016	0.053	< 0.010		< 0.010	0.023	0.015
Chloride (Water Soluble)	U	2220	g/l	0.010		< 0.010	0.017	< 0.010	< 0.010		< 0.010	< 0.010	< 0.010
Nitrate (Water Soluble)	N	2220	g/l	0.010		< 0.010	< 0.010	< 0.010	< 0.010		< 0.010	< 0.010	< 0.010
Sulphate (Acid Soluble)	U	2430	%	0.010		0.025	0.019	0.090	0.019		0.015	0.045	0.024
Organic Matter	U	2625	%	0.40		< 0.40				< 0.40			< 0.40

Results - Soil

Project: 34769 Station Hill, Reading

Client: Geotechnical Engineering Ltd			**Chemtest Job No.:**		18-39601
Quotation No.:			**Chemtest Sample ID.:**		742942
			Client Sample ID.:		7L
			Sample Location:		BH304
			Sample Type:		SOIL
			Top Depth (m):		3.00
			Bottom Depth (m):		4.00
			Date Sampled:		13-Dec-2018
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
Moisture	N	2030	%	0.020	17
pH	U	2010		N/A	10.1
Magnesium (Water Soluble)	N	2120	g/l	0.010	< 0.010
Sulphate (2:1 Water Soluble) as SO4	U	2120	g/l	0.010	0.054
Total Sulphur	U	2175	%	0.010	0.011
Chloride (Water Soluble)	U	2220	g/l	0.010	< 0.010
Nitrate (Water Soluble)	N	2220	g/l	0.010	< 0.010
Sulphate (Acid Soluble)	U	2430	%	0.010	0.040
Organic Matter	U	2625	%	0.40	

Test Methods

SOP	Title	Parameters included	Method summary
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2175	Total Sulphur in Soils	Total Sulphur	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2220	Water soluble Chloride in Soils	Chloride	Aqueous extraction and measuremernt by 'Aquakem 600' Discrete Analyser using ferric nitrate / mercuric thiocyanate.
2430	Total Sulphate in soils	Total Sulphate	Acid digestion followed by determination of sulphate in extract by ICP-OES.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.

Report Information

Key

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

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis
The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols
For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

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

Sample Retention and Disposal

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

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

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GEOTECHNICAL ENGINEERING LIMITED

Version No.	1
For the attention of Dave Owen/Andrew Tatnell	Page No. 1 of 18
	Date of Issue 31/01/2019

TEST REPORT

PROJECT/SITE	STATION HILL, READING	Samples received	19/12/2018
GEL REPORT NUMBER	34769	Schedule received	19/12/2018
Your ref/PO:		Testing commenced	11/01/2019
Test report refers to	Schedule B	Status	Final

SUMMARY OF RESULTS ATTACHED

TEST METHOD & DESCRIPTION	QUANTITY	ACCREDITED TEST
BS EN ISO 17892-1: 2014:5. Water Content	12	YES
BS1377: Part 2: 1990:4.2-4.4&5.2-5.4, Liquid & Plastic Limits	10	YES
BS1377: Part 2: 1990:4.5-4.6&5.2-5.4, Liquid (Casagrande Method) & Plastic Limits	2	NO
BS1377: Part 2: 1990:3.3, Saturation Moisture Content	1	YES
BS EN ISO 17892-2: 2014:5.1 Density - Linear Measurement	3	YES
BS EN ISO 17892-4: 2016: 5.2, Particle Size Distribution - Wet Sieve	9	YES
BS EN ISO 17892-4: 2016: 5.4, Particle Size Distribution - Pipette	9	YES
BRE SD1 Suite (Subcontracted)	3	YES/NO
Organic Matter Content (subcontracted)	3	YES

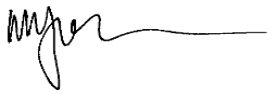
Remarks

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Approved Signatories:

W Jones (Lab Manager) E Crimp (Senior Engineer)

J Hanson (Director) N Parry (Director)



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LIQUID AND PLASTIC LIMITS

BS.1377 : PART 2 : 1990 : 4 and 5

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SITE STATION HILL, READING

borehole /trial pit no.	sample no./type	sample depth (m)	specimen depth (m)	natural water content (%)	specimen preparation and test method	fraction >0.425 mm (%)	liquid limit (%)	plastic limit (%)	plasticity index (%)	description and remarks
WS301	6L	1.00	1.20	23.6	BXE	38	29	23	6	Off white slightly sandy slightly gravelly SILT (chalk)
WS301	12L	3.00	3.70	23.3	BYE	56	29	22	7	Off white slightly sandy slightly gravelly SILT (chalk)
WS304	5D	1.70	1.70	7.2	BXE	79	33	16	17	Orangish brown sandy clayey GRAVEL
WS304	6D	2.00	2.00	9.8	BZE	56	24	17	7	Off white slightly sandy gravelly SILT (chalk)
WS310	1B	0.50	0.50	6	BZE	84	30	17	13	Brown clayey very sandy GRAVEL
WS310	5L	2.00	2.00	21.7	BXE	27	28	21	7	Off white slightly sandy slightly gravelly clayey SILT (chalk)
WS311	3L	1.20	1.70	23	BXE	25	29	23	6	Off white slightly sandy slightly gravelly clayey SILT (chalk)
WS311	7L	3.00	3.50	22.5	BXE	38	28	22	6	Off white slightly sandy slightly gravelly clayey SILT (chalk)
WS311	9L	4.00	4.00	21.4	BXE	36	27	21	6	Off white slightly sandy slightly gravelly clayey SILT (chalk)
WS315	1B	0.50	0.50	5.2	BYE	81	20	NP		Brown silty very sandy GRAVEL
WS315	3L	1.20	1.20	19.6	BXE	10	27	21	6	Off white slightly sandy slightly gravelly SILT (chalk)
WS315	7L	3.00	3.00	22.9	BXE	14	30	23	7	Off white slightly sandy slightly gravelly SILT (chalk)

general remarks

natural water content determined in accordance with BS EN ISO 17892 - 1 : 2014 (unless specified)

NP denotes non plastic

denotes sample tested is smaller than that which is recommended in accordance with BS1377 or BS EN ISO 17892

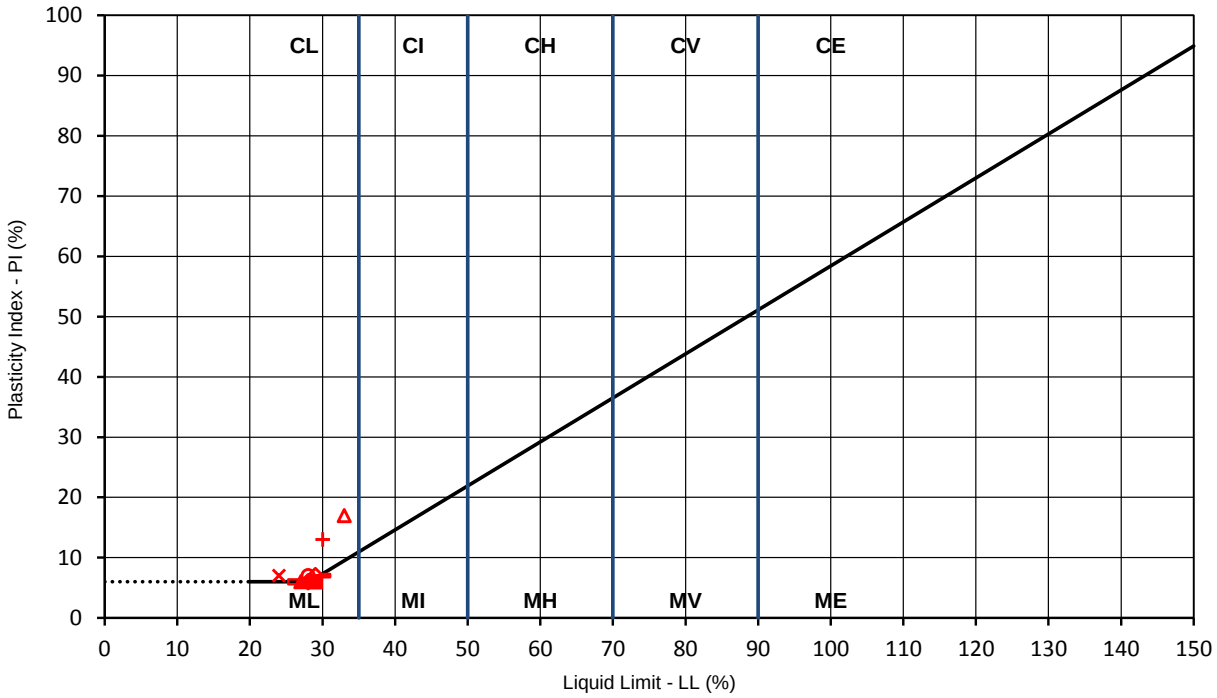
specimen preparation		test method	CONTRACT	CHECKED
A - as received	D - oven dried (60oC)	X - cone penetrometer (test 4.3)		
B - washed on 0.425mm sieve	E - oven dried (105oC)	Y - cone penetrometer (test 4.4)	**34769**	**TB**
C - air dried	F - not known	Z - casagrande apparatus (test 4.5)		

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ATTERBERG LINE PLOT

CLIENT SH READING MASTER LLP

SITE STATION HILL, READING



	BH/TP No.	depth (m)	LL	PL	PI	remarks
□	WS301	1.20	29	23	6	
◇	WS301	3.70	29	22	7	
△	WS304	1.70	33	16	17	
×	WS304	2.00	24	17	7	
+	WS310	0.50	30	17	13	
○	WS310	2.00	28	21	7	
■	WS311	1.70	29	23	6	
◆	WS311	3.50	28	22	6	
▲	WS311	4.00	27	21	6	
	WS315	0.50	20	NP		
▭	WS315	1.20	27	21	6	
▪	WS315	3.00	30	23	7	

CONTRACT	CHECKED
34769	**TB**

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SATURATION MOISTURE CONTENT OF CHALK

BS.1377 : PART 2 : 1990 : 3.3

CLIENT SH READING MASTER LLP

SITE STATION HILL, READING

borehole /trial pit no.	sample		specimen depth (m)	natural moisture content (%)	bulk density (Mg/m3)	dry density (Mg/m3)	saturation moisture content (%)	porosity (%)	description and remarks
	no./type	depth (m)							
WS301	9L	2.00	2.70	26.40	1.97	1.56	27	42	White CHALK #

general remarks

natural moisture content determined in accordance with BS1377 : Part 2 : 1990 : 3.2 (unless specified)

denotes sample tested is smaller than that which is recommended in accordance with BS1377

test method

immersion in water (test 3.3)

CONTRACT	CHECKED
34769	**TB**

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DENSITY (LINEAR MEASUREMENT METHOD)

BS EN ISO 17892 - 2 : 2014 Clause 5.1

CLIENT SH READING MASTER LLP

SITE STATION HILL, READING

borehole /trial pit no.	sample no./type	sample depth (m)	specimen depth (m)	test method	natural water content (%)	bulk density (Mg/m3)	dry density (Mg/m3)	description and remarks
WS310	5L	2.00	2.30	A	21.4	1.96	1.61	Off white slightly sandy slightly gravelly SILT (chalk)
WS315	3L	1.20	1.35	A	19.7	2.02	1.69	Off white slightly sandy slightly gravelly SILT (chalk)
WS315	7L	3.00	3.10	A	23.6	1.92	1.56	Off white slightly sandy slightly gravelly SILT (chalk)

general remarks

denotes sample tested is smaller than that which is recommended in accordance with BS EN ISO 17892 - 2 : 2014

test method

A - linear measurement (5.1)
B - immersion in fluid (5.2)
C - fluid displacement (5.3)

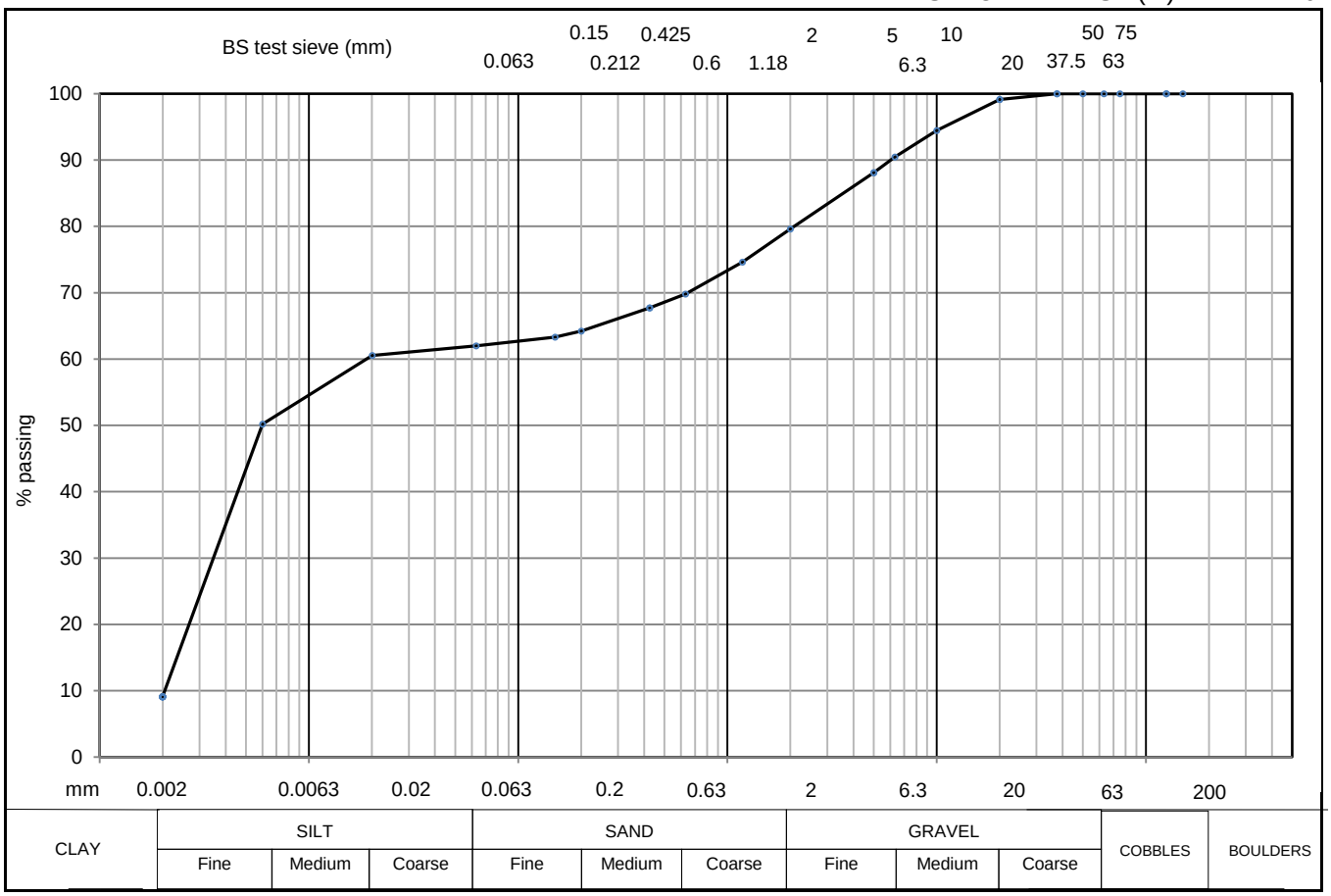
CONTRACT	CHECKED
34769	**TB**

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PARTICLE SIZE DISTRIBUTION

BS EN ISO 17892 - 4 : 2016 : 5

CLIENT	SH READING MASTER LLP	BH/TP No.	WS301
SITE	STATION HILL, READING	SAMPLE No./TYPE	6L
		SAMPLE DEPTH (m)	1.00
DESCRIPTION	Off white slightly sandy slightly gravelly SILT (chalk)	SPECIMEN TOP (m)	1.50
		SPECIMEN BASE (m)	1.70



soil type	% fraction
CLAY	9
SILT	53
SILT & CLAY	62
SAND	18
GRAVEL	20
COBBLE & BOULDER	0
test method(s)	5.2 & 5.4
test method	
5.2 - sieving	
5.3 - sedimentation by hydrometer	
5.4 - sedimentation by pipette	

BS test sieve (mm)	% passing
150	
75	
63	
50	
37.5	100
20	99
10	94
6.3	90

BS test sieve (mm)	% passing
5	88
2	80
1.18	75
0.63	70
0.425	68
0.2	64
0.15	63
0.063	62

BS test sieve (µm)	% finer
20	61
6	50
2	9

remarks

denotes sample tested is smaller than that which is recommended in accordance with BS EN 17892

Particle density assigned an assumed value of 2.70 Mg/m3

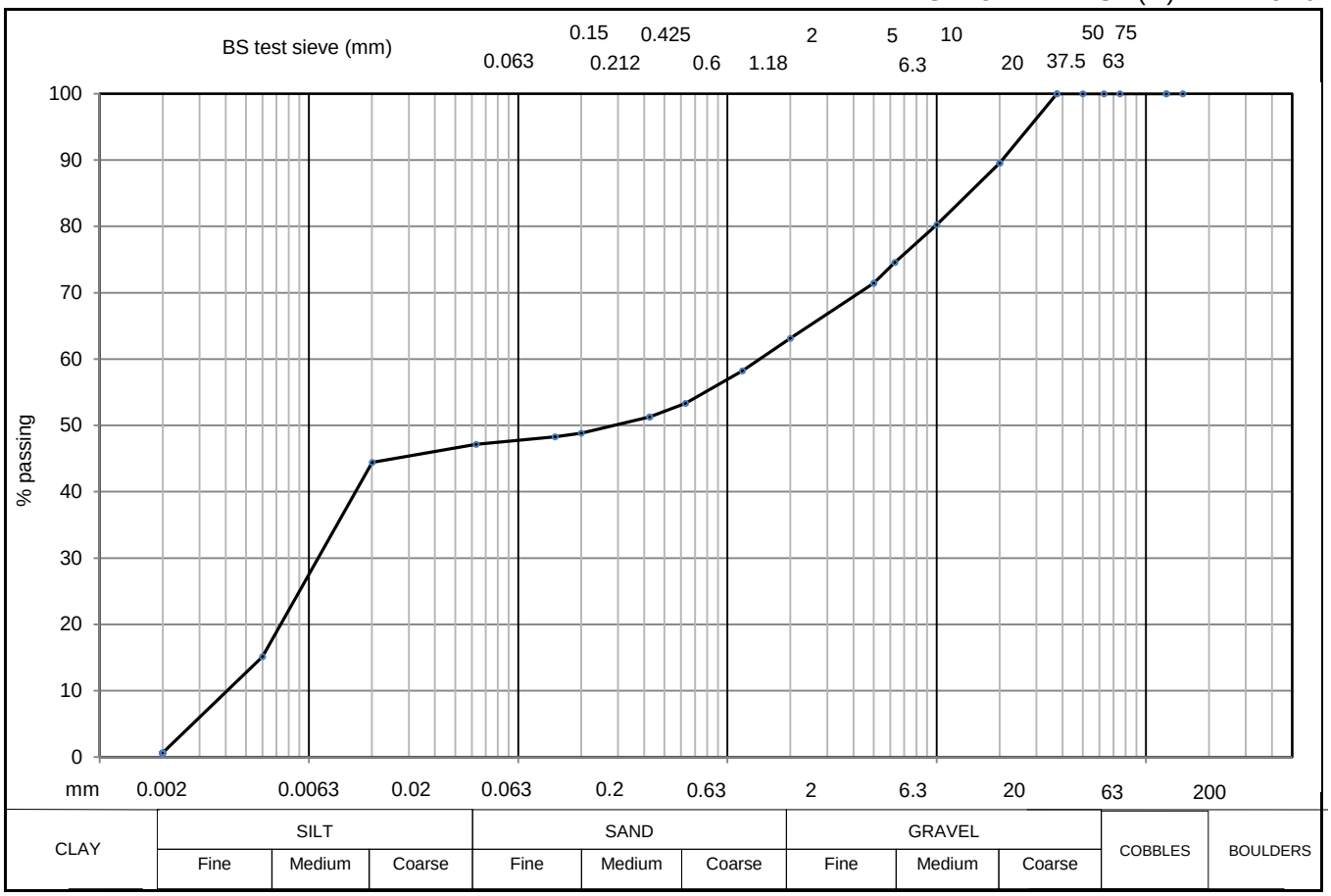
CONTRACT	CHECKED
34769	**TB**

Geotechnical Engineering Limited

PARTICLE SIZE DISTRIBUTION

BS EN ISO 17892 - 4 : 2016 : 5

CLIENT	SH READING MASTER LLP	BH/TP No.	WS301
SITE	STATION HILL, READING	SAMPLE No./TYPE	12L
		SAMPLE DEPTH (m)	3.00
DESCRIPTION	Off white slightly sandy gravelly SILT (chalk)	SPECIMEN TOP (m)	3.00
		SPECIMEN BASE (m)	3.40



soil type	% fraction
CLAY	1
SILT	47
SILT & CLAY	47
SAND	16
GRAVEL	37
COBBLE & BOULDER	0
test method(s)	5.2# & 5.4
test method	
5.2 - sieving	
5.3 - sedimentation by hydrometer	
5.4 - sedimentation by pipette	

BS test sieve (mm)	% passing	BS test sieve (mm)	% passing	BS test sieve (µm)	% finer
150		5	71	20	44
75		2	63	6	15
63		1.18	58	2	1
50		0.63	53		
37.5	100	0.425	51		
20	90	0.2	49		
10	80	0.15	48		
6.3	75	0.063	47		

remarks

denotes sample tested is smaller than that which is recommended in accordance with BS EN 17892

Particle density assigned an assumed value of 2.70 Mg/m3

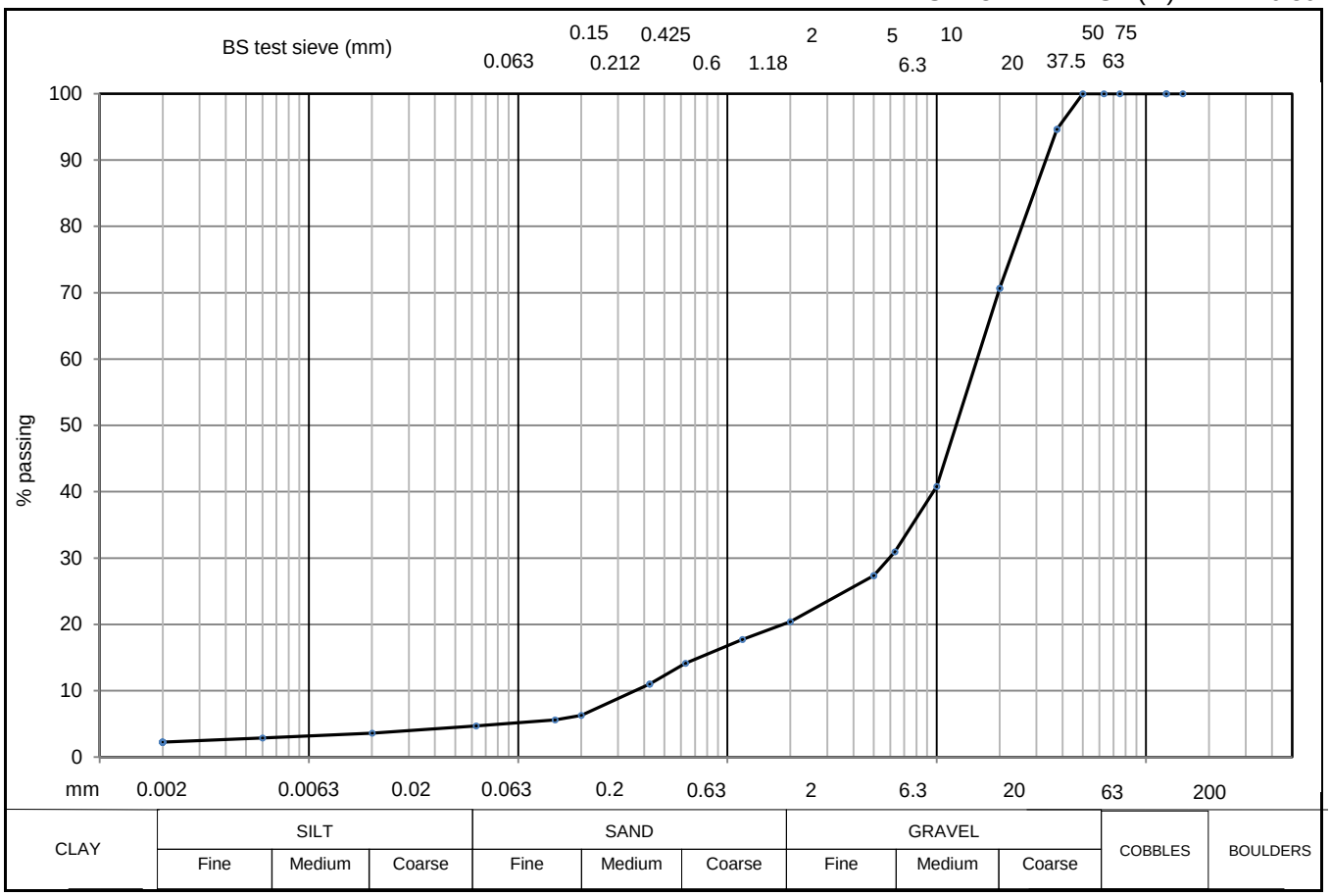
CONTRACT	CHECKED
34769	**TB**

Geotechnical Engineering Limited

PARTICLE SIZE DISTRIBUTION

BS EN ISO 17892 - 4 : 2016 : 5

CLIENT	SH READING MASTER LLP	BH/TP No.	WS310
SITE	STATION HILL, READING	SAMPLE No./TYPE	1B
		SAMPLE DEPTH (m)	0.50
DESCRIPTION	Brown slightly clayey sandy GRAVEL	SPECIMEN TOP (m)	0.50
		SPECIMEN BASE (m)	0.80



soil type	% fraction
CLAY	2
SILT	2
SILT & CLAY	5
SAND	16
GRAVEL	80
COBBLE & BOULDER	0
test method(s)	5.2# & 5.4
test method	
5.2 - sieving	
5.3 - sedimentation by hydrometer	
5.4 - sedimentation by pipette	

BS test sieve (mm)	% passing
150	
75	
63	
50	100
37.5	95
20	71
10	41
6.3	31

BS test sieve (mm)	% passing
5	27
2	20
1.18	18
0.63	14
0.425	11
0.2	6
0.15	6
0.063	5

BS test sieve (µm)	% finer
20	4
6	3
2	2

remarks

denotes sample tested is smaller than that which is recommended in accordance with BS EN 17892

Particle density assigned an assumed value of 2.70 Mg/m3

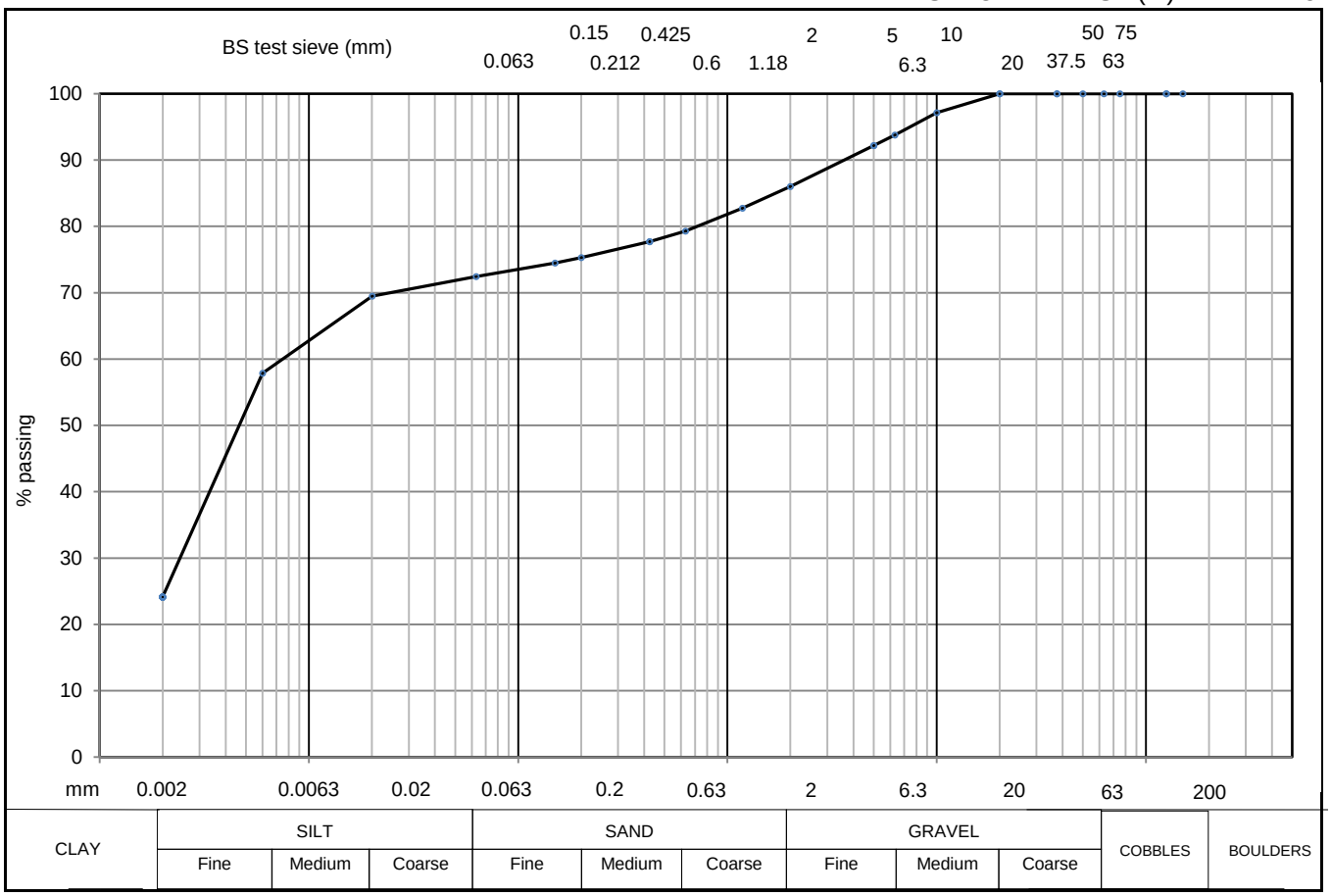
CONTRACT	CHECKED
34769	**TB**

Geotechnical Engineering Limited

PARTICLE SIZE DISTRIBUTION

BS EN ISO 17892 - 4 : 2016 : 5

CLIENT	SH READING MASTER LLP	BH/TP No.	WS310
SITE	STATION HILL, READING	SAMPLE No./TYPE	5L
		SAMPLE DEPTH (m)	2.00
DESCRIPTION	Off white slightly sandy slightly gravelly clayey SILT (chalk)	SPECIMEN TOP (m)	2.15
		SPECIMEN BASE (m)	2.25



soil type	% fraction
CLAY	24
SILT	48
SILT & CLAY	72
SAND	14
GRAVEL	14
COBBLE & BOULDER	0
test method(s)	5.2 & 5.4
test method	
5.2 - sieving	
5.3 - sedimentation by hydrometer	
5.4 - sedimentation by pipette	

BS test sieve (mm)	% passing	BS test sieve (mm)	% passing	BS test sieve (µm)	% finer
150		5	92	20	69
75		2	86	6	58
63		1.18	83	2	24
50		0.63	79		
37.5		0.425	78		
20	100	0.2	75		
10	97	0.15	74		
6.3	94	0.063	72		

remarks

denotes sample tested is smaller than that which is recommended in accordance with BS EN 17892

Particle density assigned an assumed value of 2.70 Mg/m3

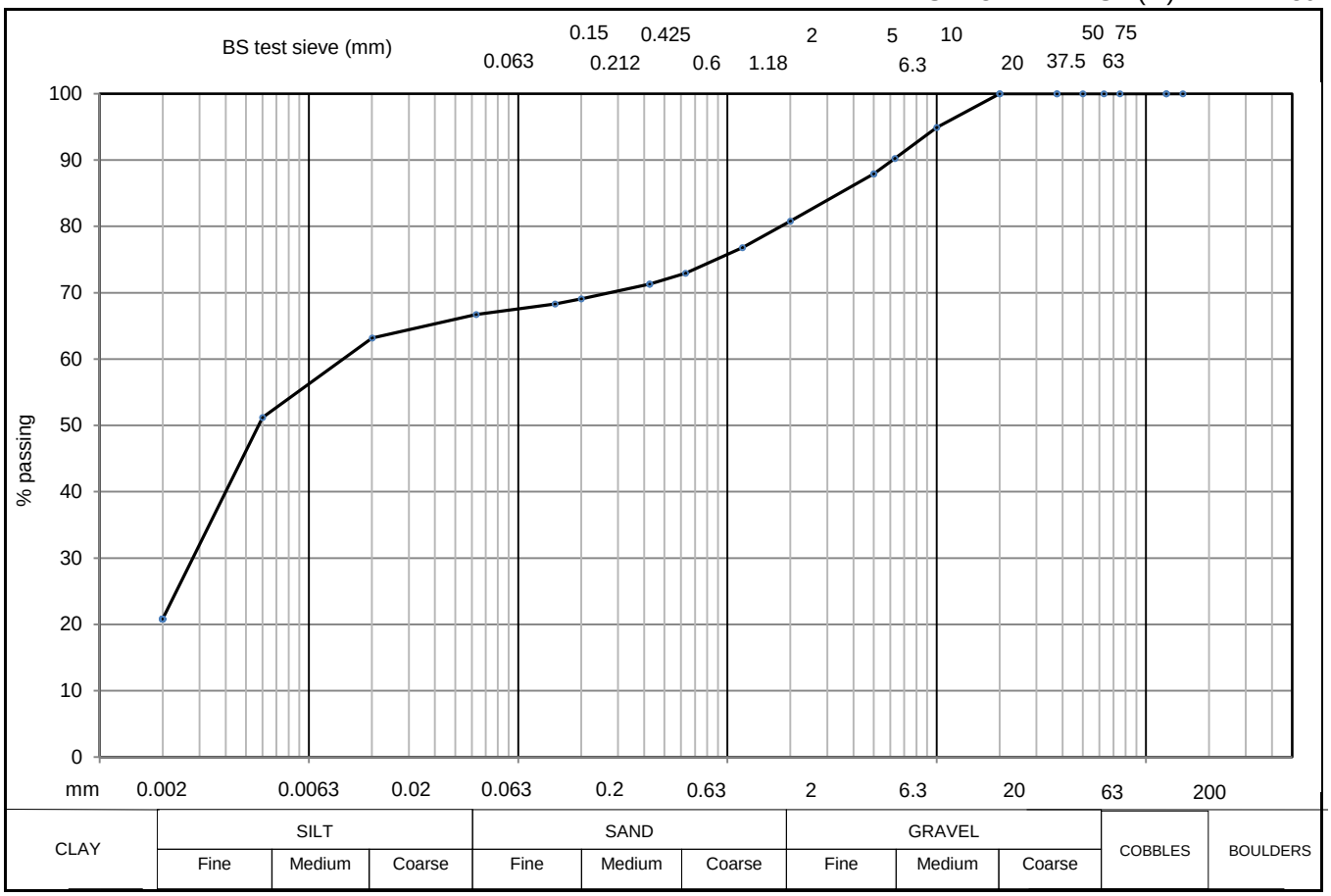
CONTRACT	CHECKED
34769	**TB**

Geotechnical Engineering Limited

PARTICLE SIZE DISTRIBUTION

BS EN ISO 17892 - 4 : 2016 : 5

CLIENT	SH READING MASTER LLP	BH/TP No.	WS311
SITE	STATION HILL, READING	SAMPLE No./TYPE	3L
		SAMPLE DEPTH (m)	1.20
DESCRIPTION	Off white slightly sandy slightly gravelly clayey SILT (chalk)	SPECIMEN TOP (m)	1.75
		SPECIMEN BASE (m)	1.80



soil type	% fraction
CLAY	21
SILT	46
SILT & CLAY	67
SAND	14
GRAVEL	19
COBBLE & BOULDER	0
test method(s)	5.2 & 5.4
test method	
5.2 - sieving	
5.3 - sedimentation by hydrometer	
5.4 - sedimentation by pipette	

BS test sieve (mm)	% passing
150	
75	
63	
50	
37.5	
20	100
10	95
6.3	90

BS test sieve (mm)	% passing
5	88
2	81
1.18	77
0.63	73
0.425	71
0.2	69
0.15	68
0.063	67

BS test sieve (µm)	% finer
20	63
6	51
2	21

remarks

denotes sample tested is smaller than that which is recommended in accordance with BS EN 17892

Particle density assigned an assumed value of 2.70 Mg/m3

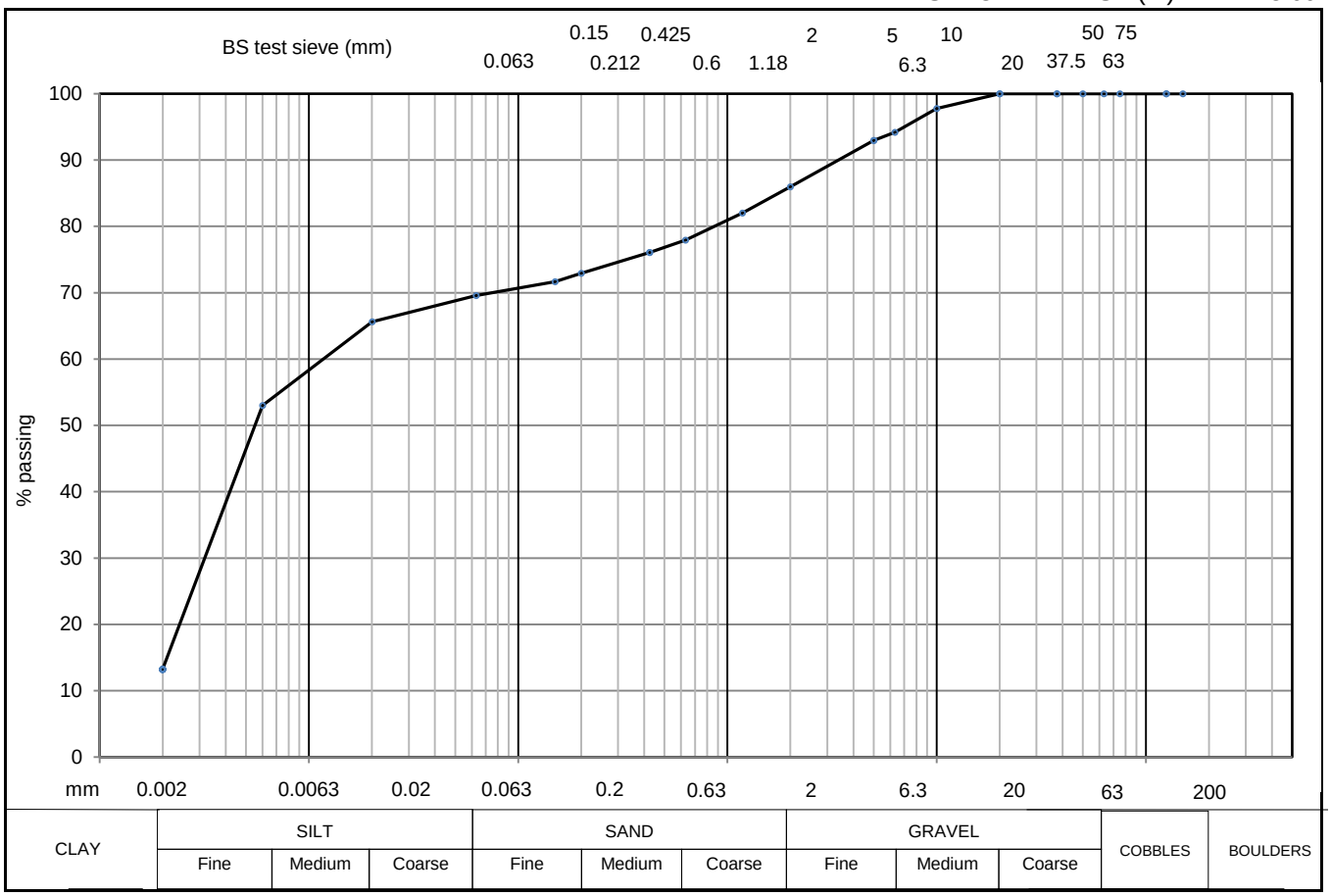
CONTRACT	CHECKED
34769	**TB**

Geotechnical Engineering Limited

PARTICLE SIZE DISTRIBUTION

BS EN ISO 17892 - 4 : 2016 : 5

CLIENT	SH READING MASTER LLP	BH/TP No.	WS311
SITE	STATION HILL, READING	SAMPLE No./TYPE	7L
		SAMPLE DEPTH (m)	3.00
DESCRIPTION	Off white slightly gravelly slightly sandy clayey SILT (chalk)	SPECIMEN TOP (m)	3.55
		SPECIMEN BASE (m)	3.60



soil type	% fraction
CLAY	13
SILT	56
SILT & CLAY	70
SAND	16
GRAVEL	14
COBBLE & BOULDER	0
test method(s)	5.2 & 5.4
test method	
5.2 - sieving	
5.3 - sedimentation by hydrometer	
5.4 - sedimentation by pipette	

BS test sieve (mm)	% passing
150	
75	
63	
50	
37.5	
20	100
10	98
6.3	94

BS test sieve (mm)	% passing
5	93
2	86
1.18	82
0.63	78
0.425	76
0.2	73
0.15	72
0.063	70

BS test sieve (µm)	% finer
20	66
6	53
2	13

remarks

denotes sample tested is smaller than that which is recommended in accordance with BS EN 17892

Particle density assigned an assumed value of 2.70 Mg/m3

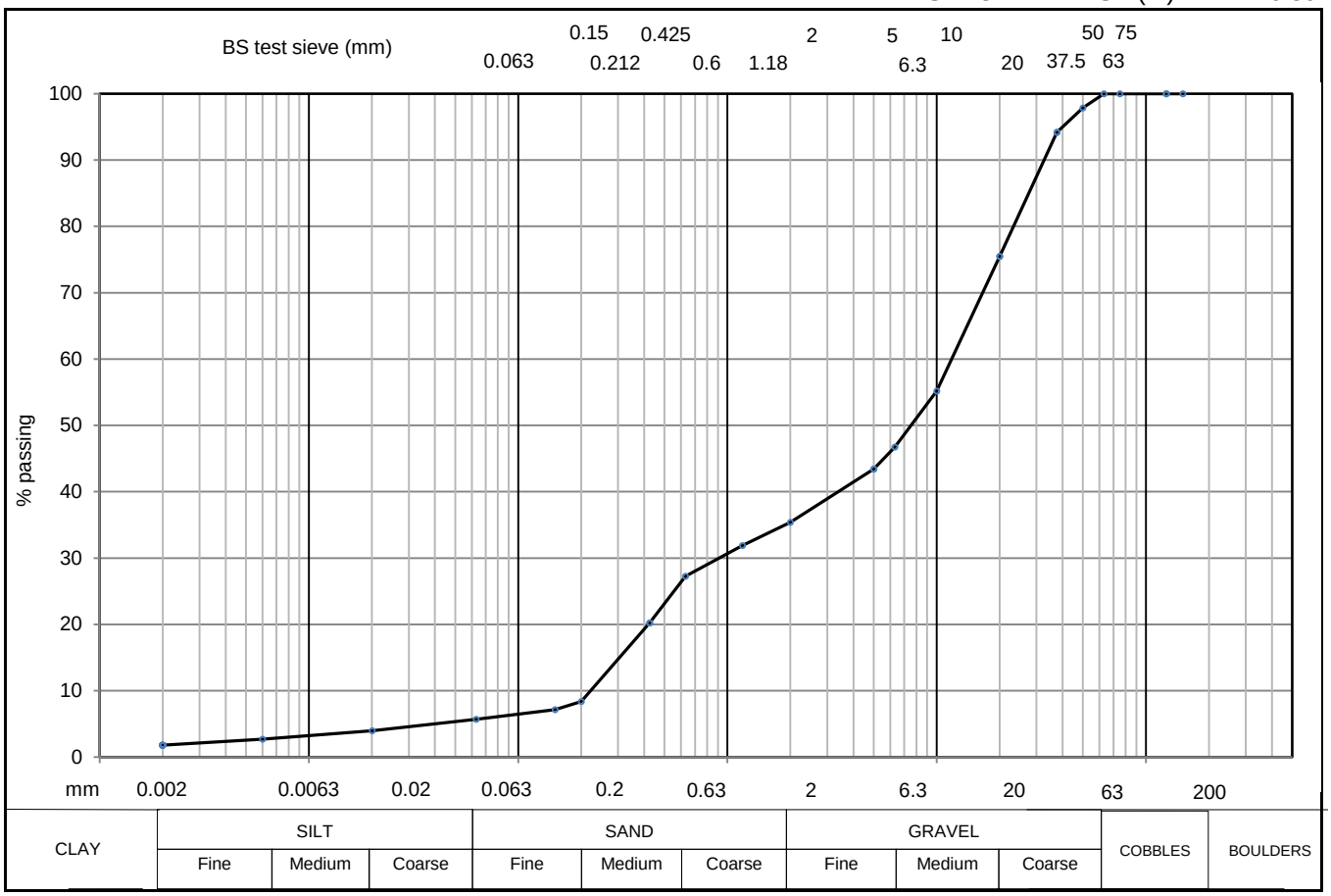
CONTRACT	CHECKED
34769	**TB**

Geotechnical Engineering Limited

PARTICLE SIZE DISTRIBUTION

BS EN ISO 17892 - 4 : 2016 : 5

CLIENT	SH READING MASTER LLP	BH/TP No.	WS315
SITE	STATION HILL, READING	SAMPLE No./TYPE	1B
		SAMPLE DEPTH (m)	0.50
DESCRIPTION	Brown silty very sandy GRAVEL	SPECIMEN TOP (m)	0.50
		SPECIMEN BASE (m)	0.80



soil type	% fraction
CLAY	2
SILT	4
SILT & CLAY	6
SAND	30
GRAVEL	65
COBBLE & BOULDER	0
test method(s)	5.2# & 5.4
test method	
5.2 - sieving	
5.3 - sedimentation by hydrometer	
5.4 - sedimentation by pipette	

BS test sieve (mm)	% passing
150	
75	
63	100
50	98
37.5	94
20	75
10	55
6.3	47

BS test sieve (mm)	% passing
5	43
2	35
1.18	32
0.63	27
0.425	20
0.2	8
0.15	7
0.063	6

BS test sieve (µm)	% finer
20	4
6	3
2	2

remarks

denotes sample tested is smaller than that which is recommended in accordance with BS EN 17892

Particle density assigned an assumed value of 2.70 Mg/m3

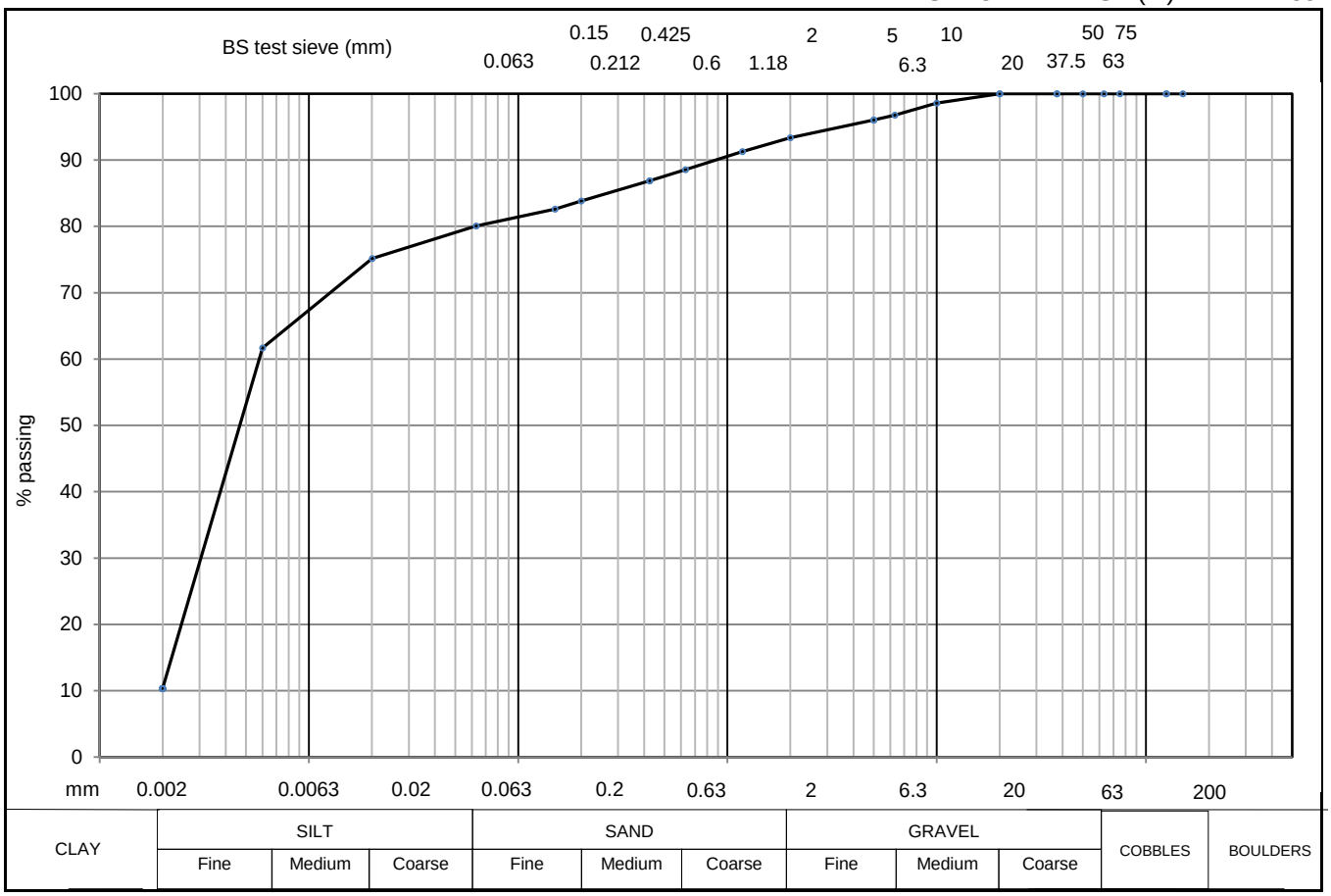
CONTRACT	CHECKED
34769	**TB**

Geotechnical Engineering Limited

PARTICLE SIZE DISTRIBUTION

BS EN ISO 17892 - 4 : 2016 : 5

CLIENT	SH READING MASTER LLP	BH/TP No.	WS315
SITE	STATION HILL, READING	SAMPLE No./TYPE	3L
		SAMPLE DEPTH (m)	1.20
DESCRIPTION	Off white slightly gravelly slightly sandy SILT (chalk)	SPECIMEN TOP (m)	1.30
		SPECIMEN BASE (m)	1.35



soil type	% fraction
CLAY	10
SILT	70
SILT & CLAY	80
SAND	13
GRAVEL	7
COBBLE & BOULDER	0
test method(s)	5.2 & 5.4
test method	
5.2 - sieving	
5.3 - sedimentation by hydrometer	
5.4 - sedimentation by pipette	

BS test sieve (mm)	% passing
150	
75	
63	
50	
37.5	
20	100
10	99
6.3	97

BS test sieve (mm)	% passing
5	96
2	93
1.18	91
0.63	89
0.425	87
0.2	84
0.15	83
0.063	80

BS test sieve (µm)	% finer
20	75
6	62
2	10

remarks

denotes sample tested is smaller than that which is recommended in accordance with BS EN 17892

Particle density assigned an assumed value of 2.70 Mg/m3

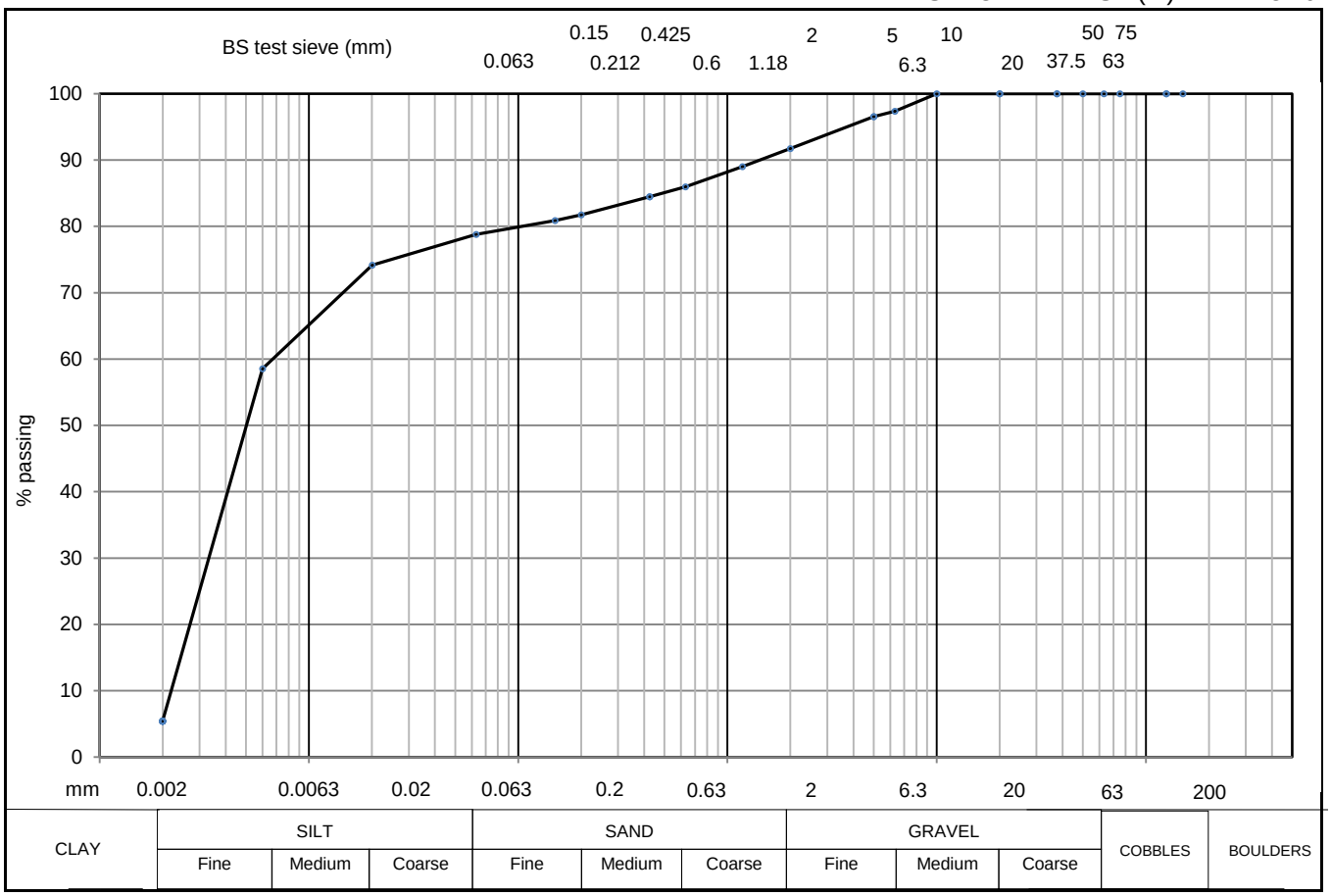
CONTRACT	CHECKED
34769	**TB**

Geotechnical Engineering Limited

PARTICLE SIZE DISTRIBUTION

BS EN ISO 17892 - 4 : 2016 : 5

CLIENT	SH READING MASTER LLP	BH/TP No.	WS315
SITE	STATION HILL, READING	SAMPLE No./TYPE	7L
		SAMPLE DEPTH (m)	3.00
DESCRIPTION	Off white slightly gravelly slightly sandy SILT (chalk)	SPECIMEN TOP (m)	3.05
		SPECIMEN BASE (m)	3.10



soil type	% fraction
CLAY	5
SILT	73
SILT & CLAY	79
SAND	13
GRAVEL	8
COBBLE & BOULDER	0
test method(s)	5.2 & 5.4
test method	
5.2 - sieving	
5.3 - sedimentation by hydrometer	
5.4 - sedimentation by pipette	

BS test sieve (mm)	% passing
150	
75	
63	
50	
37.5	
20	
10	100
6.3	97

BS test sieve (mm)	% passing
5	97
2	92
1.18	89
0.63	86
0.425	84
0.2	82
0.15	81
0.063	79

BS test sieve (µm)	% finer
20	74
6	59
2	5

remarks

denotes sample tested is smaller than that which is recommended in accordance with BS EN 17892

Particle density assigned an assumed value of 2.70 Mg/m3

CONTRACT	CHECKED
34769	**TB**

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

Final Report

Report No.:	19-00938-1
Initial Date of Issue:	16-Jan-2019
Client	Geotechnical Engineering Ltd
Client Address:	Centurion House Olympus Park Quedgeley Gloucester Gloucestershire GL2 4NF
Contact(s):	GEL Wendy Jones
Project	34769 Station Hill, Reading

Quotation No.:		**Date Received:**	14-Jan-2019
Order No.:	34769B/WJ	**Date Instructed:**	14-Jan-2019
No. of Samples:	4		
Turnaround (Wkdays):	3	**Results Due:**	16-Jan-2019
Date Approved:	16-Jan-2019		

Approved By:



Details: Robert Monk, Technical Manager

Chemtest
The right chemistry to deliver results

Results - Soil

Project: 34769 Station Hill, Reading

Client: Geotechnical Engineering Ltd			**Chemtest Job No.:**		19-00938	19-00938	19-00938	19-00938
Quotation No.:			**Chemtest Sample ID.:**		752318	752319	752320	752321
			Client Sample ID.:		6L	5D	6D	5L
			Sample Location:		WS301	WS304	WS304	WS310
			Sample Type:		SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		1.00	1.70	2.00	2.00
			Bottom Depth (m):		2.00	1.80	2.45	3.00
			Date Sampled:		11-Jan-2019	11-Jan-2019	11-Jan-2019	11-Jan-2019
Determinand	**Accred.**	**SOP**	**Units**	**LOD**				
Moisture	N	2030	%	0.020	19	5.1	6.2	18
pH	U	2010		N/A	8.3	8.3	8.7	
Magnesium (Water Soluble)	N	2120	g/l	0.010	0.013	< 0.010	< 0.010	
Sulphate (2:1 Water Soluble) as SO4	U	2120	g/l	0.010	0.19	0.051	< 0.010	
Total Sulphur	U	2175	%	0.010	0.10	0.021	0.021	
Chloride (Water Soluble)	U	2220	g/l	0.010	< 0.010	< 0.010	< 0.010	
Nitrate (Water Soluble)	N	2220	g/l	0.010	< 0.010	< 0.010	< 0.010	
Sulphate (Acid Soluble)	U	2430	%	0.010	0.10	0.019	0.038	
Organic Matter	U	2625	%	0.40		< 0.40	< 0.40	0.59

Test Methods

SOP	Title	Parameters included	Method summary
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2175	Total Sulphur in Soils	Total Sulphur	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2220	Water soluble Chloride in Soils	Chloride	Aqueous extraction and measuremernt by 'Aquakem 600' Discrete Analyser using ferric nitrate / mercuric thiocyanate.
2430	Total Sulphate in soils	Total Sulphate	Acid digestion followed by determination of sulphate in extract by ICP-OES.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.

Report Information

Key

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

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis
The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols
For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

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

Sample Retention and Disposal

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

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

APPENDIX C

CHEMICAL ANALYSES

Andrew Tatnell
Geotechnical Engineering Ltd
Centurion House
Olympus Park
Quedgeley
Gloucester
GL2 4NF

t: 01452 527 743
f: 01452 729 314
e: andrew.tatnell@geoeng.co.uk

i2 Analytical Ltd.
7 Woodshots Meadow,
Croxley Green
Business Park,
Watford,
Herts,
WD18 8YS

t: 01923 225404
f: 01923 237404
e: reception@i2analytical.com

Analytical Report Number : 18-21818

Replaces Analytical Report Number : 18-21818, issue no. 1

Project / Site name:	Station Hill, Reading	**Samples received on:**	30/12/2018
Your job number:	34769	**Samples instructed on:**	11/12/2018
Your order number:		**Analysis completed by:**	16/01/2019
Report Issue Number:	2	**Report issued on:**	16/01/2019
Samples Analysed:	6 soil samples		

Signed

Jordan Hill
Reporting Manager
For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41 -711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

soils	- 4 weeks from reporting
leachates	- 2 weeks from reporting
waters	- 2 weeks from reporting
asbestos	- 6 months from reporting

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This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number: 18-21818

Project / Site name: Station Hill, Reading

Lab Sample Number				1111356	1111357	1111358	1111359	1111360
Sample Reference				BH301	BH301	BH304	BH304	BH303
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.20	1.20	0.50	1.50	0.20
Date Sampled				12/11/2018	12/11/2018	13/11/2018	13/11/2018	14/11/2018
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	N/A	NONE	12	15	16	9.2	11
Total mass of sample received	kg	0.001	NONE	2.0	2.0	2.0	2.0	2.0
Asbestos in Soil Screen / Identification Name	Type	N/A	ISO 17025	-	-	-	-	Chrysotile
Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	-	Not-detected	-	Detected
Asbestos Quantification (Stage 2)	%	0.001	ISO 17025	-	-	-	-	< 0.001
Asbestos Quantification Total	%	0.001	ISO 17025	-	-	-	-	< 0.001
General Inorganics								
Total Cyanide	mg/kg	1	MCERTS	-	< 1	-	-	-
Speciated PAHs								
Naphthalene	mg/kg	0.05	MCERTS	0.28	0.34	0.52	< 0.05	0.26
Acenaphthylene	mg/kg	0.05	MCERTS	1.2	0.29	1.0	< 0.05	0.60
Acenaphthene	mg/kg	0.05	MCERTS	1.3	1.0	6.6	< 0.05	0.93
Fluorene	mg/kg	0.05	MCERTS	1.2	1.3	6.9	< 0.05	0.67
Phenanthrene	mg/kg	0.05	MCERTS	11	11	37	0.70	7.0
Anthracene	mg/kg	0.05	MCERTS	4.4	2.3	13	0.30	2.8
Fluoranthene	mg/kg	0.05	MCERTS	29	12	51	1.3	20
Pyrene	mg/kg	0.05	MCERTS	28	9.9	42	1.0	18
Benzo(a)anthracene	mg/kg	0.05	MCERTS	17	5.0	22	0.53	9.3
Chrysene	mg/kg	0.05	MCERTS	12	3.6	15	0.47	7.5
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	16	4.3	17	0.45	9.5
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	11	1.6	8.0	0.29	4.4
Benzo(a)pyrene	mg/kg	0.05	MCERTS	17	3.9	16	0.41	9.2
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	11	2.2	9.0	0.29	5.6
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	3.5	0.69	3.0	< 0.05	1.8
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	12	2.3	9.7	0.33	6.2
Total PAH								
Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	175	61.7	257	6.08	103
Heavy Metals / Metalloids								
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	30	29	12	9.0	14
Boron (water soluble)	mg/kg	0.2	MCERTS	1.1	1.3	1.6	1.1	1.4
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2	0.3
Chromium (hexavalent)	mg/kg	4	MCERTS	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	40	33	19	24	25
Copper (aqua regia extractable)	mg/kg	1	MCERTS	61	25	240	30	55
Lead (aqua regia extractable)	mg/kg	1	MCERTS	180	300	44	33	140
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	19	16	33	25	22
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	1.6	< 1.0	< 1.0	< 1.0	< 1.0
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	130	140	92	53	110

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The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number: 18-21818

Project / Site name: Station Hill, Reading

Lab Sample Number				1111356	1111357	1111358	1111359	1111360
Sample Reference				BH301	BH301	BH304	BH304	BH303
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.20	1.20	0.50	1.50	0.20
Date Sampled				12/11/2018	12/11/2018	13/11/2018	13/11/2018	14/11/2018
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Monoaromatics								
Benzene	ug/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
p & m-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Petroleum Hydrocarbons								
TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	3.1	< 1.0	2.0	< 1.0	1.8
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	40	< 2.0	31	< 2.0	13
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	72	< 8.0	54	< 8.0	21
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	400	29	150	< 8.0	74
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	510	37	230	< 10	110
TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	5.1	5.4	15	< 1.0	1.2
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	61	20	120	4.4	19
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	610	96	630	19	180
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	2500	160	1300	44	560
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	3200	280	2100	68	750

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Analytical Report Number: 18-21818

Project / Site name: Station Hill, Reading

Lab Sample Number				1111356	1111357	1111358	1111359	1111360
Sample Reference				BH301	BH301	BH304	BH304	BH303
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.20	1.20	0.50	1.50	0.20
Date Sampled				12/11/2018	12/11/2018	13/11/2018	13/11/2018	14/11/2018
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
VOCs								
Chloromethane	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chloroethane	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromomethane	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Vinyl Chloride	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trichlorofluoromethane	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethene	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2-Trichloro 1,2,2-Trifluoroethane	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Cis-1,2-dichloroethene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
2,2-Dichloropropane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trichloromethane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,1-Trichloroethane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloroethane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloropropene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trans-1,2-dichloroethene	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Benzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloromethane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloropropane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trichloroethene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dibromomethane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromodichloromethane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Cis-1,3-dichloropropene	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trans-1,3-dichloropropene	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2-Trichloroethane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3-Dichloropropane	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dibromochloromethane	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloroethene	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dibromoethane	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chlorobenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,1,2-Tetrachloroethane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
p & m-Xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Styrene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tribromomethane	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-Xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2,2-Tetrachloroethane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Isopropylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromobenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
n-Propylbenzene	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
2-Chlorotoluene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
4-Chlorotoluene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3,5-Trimethylbenzene	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
tert-Butylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,4-Trimethylbenzene	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
sec-Butylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3-Dichlorobenzene	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
p-Isopropyltoluene	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichlorobenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,4-Dichlorobenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Butylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dibromo-3-chloropropane	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,4-Trichlorobenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Hexachlorobutadiene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,3-Trichlorobenzene	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0

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Analytical Report Number: 18-21818

Project / Site name: Station Hill, Reading

Lab Sample Number				1111356	1111357	1111358	1111359	1111360
Sample Reference				BH301	BH301	BH304	BH304	BH303
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.20	1.20	0.50	1.50	0.20
Date Sampled				12/11/2018	12/11/2018	13/11/2018	13/11/2018	14/11/2018
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
SVOCs								
Aniline	mg/kg	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Phenol	mg/kg	0.2	ISO 17025	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
2-Chlorophenol	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Bis(2-chloroethyl)ether	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
1,3-Dichlorobenzene	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
1,2-Dichlorobenzene	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
1,4-Dichlorobenzene	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Bis(2-chloroisopropyl)ether	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
2-Methylphenol	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Hexachloroethane	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Nitrobenzene	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
4-Methylphenol	mg/kg	0.2	NONE	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Isophorone	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
2-Nitrophenol	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
2,4-Dimethylphenol	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Bis(2-chloroethoxy)methane	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
1,2,4-Trichlorobenzene	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Naphthalene	mg/kg	0.05	MCERTS	0.28	0.34	0.52	< 0.05	0.26
2,4-Dichlorophenol	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
4-Chloroaniline	mg/kg	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Hexachlorobutadiene	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
4-Chloro-3-methylphenol	mg/kg	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
2,4,6-Trichlorophenol	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
2,4,5-Trichlorophenol	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
2-Methylnaphthalene	mg/kg	0.1	NONE	< 0.1	< 0.1	0.6	< 0.1	< 0.1
2-Chloronaphthalene	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Dimethylphthalate	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
2,6-Dinitrotoluene	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Acenaphthylene	mg/kg	0.05	MCERTS	1.2	0.29	1.0	< 0.05	0.60
Acenaphthene	mg/kg	0.05	MCERTS	1.3	1.0	6.6	< 0.05	0.93
2,4-Dinitrotoluene	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Dibenzofuran	mg/kg	0.2	MCERTS	< 0.2	0.7	2.6	< 0.2	0.4
4-Chlorophenyl phenyl ether	mg/kg	0.3	ISO 17025	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Diethyl phthalate	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
4-Nitroaniline	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Fluorene	mg/kg	0.05	MCERTS	1.2	1.3	6.9	< 0.05	0.67
Azobenzene	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Bromophenyl phenyl ether	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Hexachlorobenzene	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Phenanthrene	mg/kg	0.05	MCERTS	11	11	37	0.70	7.0
Anthracene	mg/kg	0.05	MCERTS	4.4	2.3	13	0.30	2.8
Carbazole	mg/kg	0.3	MCERTS	1.2	1.0	3.1	< 0.3	0.6
Dibutyl phthalate	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Anthraquinone	mg/kg	0.3	MCERTS	< 0.3	< 0.3	1.8	< 0.3	< 0.3
Fluoranthene	mg/kg	0.05	MCERTS	29	12	51	1.3	20
Pyrene	mg/kg	0.05	MCERTS	28	9.9	42	1.0	18
Butyl benzyl phthalate	mg/kg	0.3	ISO 17025	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Benzo(a)anthracene	mg/kg	0.05	MCERTS	17	5.0	22	0.53	9.3
Chrysene	mg/kg	0.05	MCERTS	12	3.6	15	0.47	7.5
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	16	4.3	17	0.45	9.5
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	11	1.6	8.0	0.29	4.4
Benzo(a)pyrene	mg/kg	0.05	MCERTS	17	3.9	16	0.41	9.2
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	11	2.2	9.0	0.29	5.6
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	3.5	0.69	3.0	< 0.05	1.8
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	12	2.3	9.7	0.33	6.2

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Analytical Report Number: 18-21818

Project / Site name: Station Hill, Reading

Lab Sample Number				1111356	1111357	1111358	1111359	1111360
Sample Reference				BH301	BH301	BH304	BH304	BH303
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.20	1.20	0.50	1.50	0.20
Date Sampled				12/11/2018	12/11/2018	13/11/2018	13/11/2018	14/11/2018
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
PCBs by GC-MS								
PCB Congener 28	mg/kg	0.001	MCERTS	-	< 0.001	-	-	-
PCB Congener 52	mg/kg	0.001	MCERTS	-	< 0.001	-	-	-
PCB Congener 101	mg/kg	0.001	MCERTS	-	< 0.001	-	-	-
PCB Congener 118	mg/kg	0.001	MCERTS	-	< 0.001	-	-	-
PCB Congener 138	mg/kg	0.001	MCERTS	-	< 0.001	-	-	-
PCB Congener 153	mg/kg	0.001	MCERTS	-	< 0.001	-	-	-
PCB Congener 180	mg/kg	0.001	MCERTS	-	< 0.001	-	-	-
Total PCBs by GC-MS								
Total PCBs	mg/kg	0.007	MCERTS	-	< 0.007	-	-	-

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Analytical Report Number: 18-21818

Project / Site name: Station Hill, Reading

Lab Sample Number				1111361				
Sample Reference				BH303				
Sample Number				None Supplied				
Depth (m)				1.00				
Date Sampled				14/11/2018				
Time Taken				None Supplied				
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Stone Content	%	0.1	NONE	< 0.1				
Moisture Content	%	N/A	NONE	19				
Total mass of sample received	kg	0.001	NONE	1.8				
Asbestos in Soil Screen / Identification Name	Type	N/A	ISO 17025	-				
Asbestos in Soil	Type	N/A	ISO 17025	-				
Asbestos Quantification (Stage 2)	%	0.001	ISO 17025	-				
Asbestos Quantification Total	%	0.001	ISO 17025	-				
General Inorganics								
Total Cyanide	mg/kg	1	MCERTS	< 1				
Speciated PAHs								
Naphthalene	mg/kg	0.05	MCERTS	< 0.05				
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05				
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05				
Fluorene	mg/kg	0.05	MCERTS	< 0.05				
Phenanthrene	mg/kg	0.05	MCERTS	0.27				
Anthracene	mg/kg	0.05	MCERTS	0.10				
Fluoranthene	mg/kg	0.05	MCERTS	0.69				
Pyrene	mg/kg	0.05	MCERTS	0.51				
Benzo(a)anthracene	mg/kg	0.05	MCERTS	0.23				
Chrysene	mg/kg	0.05	MCERTS	0.21				
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	0.21				
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	0.13				
Benzo(a)pyrene	mg/kg	0.05	MCERTS	0.17				
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	< 0.05				
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05				
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05				
Total PAH								
Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	2.52				
Heavy Metals / Metalloids								
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	2.0				
Boron (water soluble)	mg/kg	0.2	MCERTS	0.4				
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	0.3				
Chromium (hexavalent)	mg/kg	4	MCERTS	< 4.0				
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	3.3				
Copper (aqua regia extractable)	mg/kg	1	MCERTS	5.5				
Lead (aqua regia extractable)	mg/kg	1	MCERTS	2.9				
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3				
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	6.2				
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0				
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	7.5				

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Analytical Report Number: 18-21818

Project / Site name: Station Hill, Reading

Lab Sample Number				1111361				
Sample Reference				BH303				
Sample Number				None Supplied				
Depth (m)				1.00				
Date Sampled				14/11/2018				
Time Taken				None Supplied				
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Monoaromatics								
Benzene	ug/kg	1	MCERTS	< 1.0				
Toluene	µg/kg	1	MCERTS	< 1.0				
Ethylbenzene	µg/kg	1	MCERTS	< 1.0				
p & m-xylene	µg/kg	1	MCERTS	< 1.0				
o-xylene	µg/kg	1	MCERTS	< 1.0				
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	< 1.0				
Petroleum Hydrocarbons								
TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.001	MCERTS	< 0.001				
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.001	MCERTS	< 0.001				
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001				
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0				
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0				
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	< 8.0				
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	< 8.0				
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	< 10				
TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.001	MCERTS	< 0.001				
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.001	MCERTS	< 0.001				
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001				
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0				
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0				
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	< 10				
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	< 10				
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	12				

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Analytical Report Number: 18-21818

Project / Site name: Station Hill, Reading

Lab Sample Number				1111361				
Sample Reference				BH303				
Sample Number				None Supplied				
Depth (m)				1.00				
Date Sampled				14/11/2018				
Time Taken				None Supplied				
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
VOCs								
Chloromethane	µg/kg	1	ISO 17025	< 1.0				
Chloroethane	µg/kg	1	NONE	< 1.0				
Bromomethane	µg/kg	1	ISO 17025	< 1.0				
Vinyl Chloride	µg/kg	1	NONE	< 1.0				
Trichlorofluoromethane	µg/kg	1	NONE	< 1.0				
1,1-Dichloroethene	µg/kg	1	NONE	< 1.0				
1,1,2-Trichloro 1,2,2-Trifluoroethane	µg/kg	1	ISO 17025	< 1.0				
Cis-1,2-dichloroethene	µg/kg	1	MCERTS	< 1.0				
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	< 1.0				
1,1-Dichloroethane	µg/kg	1	MCERTS	< 1.0				
2,2-Dichloropropane	µg/kg	1	MCERTS	< 1.0				
Trichloromethane	µg/kg	1	MCERTS	< 1.0				
1,1,1-Trichloroethane	µg/kg	1	MCERTS	< 1.0				
1,2-Dichloroethane	µg/kg	1	MCERTS	< 1.0				
1,1-Dichloropropene	µg/kg	1	MCERTS	< 1.0				
Trans-1,2-dichloroethene	µg/kg	1	NONE	< 1.0				
Benzene	µg/kg	1	MCERTS	< 1.0				
Tetrachloromethane	µg/kg	1	MCERTS	< 1.0				
1,2-Dichloropropane	µg/kg	1	MCERTS	< 1.0				
Trichloroethene	µg/kg	1	MCERTS	< 1.0				
Dibromomethane	µg/kg	1	MCERTS	< 1.0				
Bromodichloromethane	µg/kg	1	MCERTS	< 1.0				
Cis-1,3-dichloropropene	µg/kg	1	ISO 17025	< 1.0				
Trans-1,3-dichloropropene	µg/kg	1	ISO 17025	< 1.0				
Toluene	µg/kg	1	MCERTS	< 1.0				
1,1,2-Trichloroethane	µg/kg	1	MCERTS	< 1.0				
1,3-Dichloropropane	µg/kg	1	ISO 17025	< 1.0				
Dibromochloromethane	µg/kg	1	ISO 17025	< 1.0				
Tetrachloroethene	µg/kg	1	NONE	< 1.0				
1,2-Dibromoethane	µg/kg	1	ISO 17025	< 1.0				
Chlorobenzene	µg/kg	1	MCERTS	< 1.0				
1,1,1,2-Tetrachloroethane	µg/kg	1	MCERTS	< 1.0				
Ethylbenzene	µg/kg	1	MCERTS	< 1.0				
p & m-Xylene	µg/kg	1	MCERTS	< 1.0				
Styrene	µg/kg	1	MCERTS	< 1.0				
Tribromomethane	µg/kg	1	NONE	< 1.0				
o-Xylene	µg/kg	1	MCERTS	< 1.0				
1,1,2,2-Tetrachloroethane	µg/kg	1	MCERTS	< 1.0				
Isopropylbenzene	µg/kg	1	MCERTS	< 1.0				
Bromobenzene	µg/kg	1	MCERTS	< 1.0				
n-Propylbenzene	µg/kg	1	ISO 17025	< 1.0				
2-Chlorotoluene	µg/kg	1	MCERTS	< 1.0				
4-Chlorotoluene	µg/kg	1	MCERTS	< 1.0				
1,3,5-Trimethylbenzene	µg/kg	1	ISO 17025	< 1.0				
tert-Butylbenzene	µg/kg	1	MCERTS	< 1.0				
1,2,4-Trimethylbenzene	µg/kg	1	ISO 17025	< 1.0				
sec-Butylbenzene	µg/kg	1	MCERTS	< 1.0				
1,3-Dichlorobenzene	µg/kg	1	ISO 17025	< 1.0				
p-Isopropyltoluene	µg/kg	1	ISO 17025	< 1.0				
1,2-Dichlorobenzene	µg/kg	1	MCERTS	< 1.0				
1,4-Dichlorobenzene	µg/kg	1	MCERTS	< 1.0				
Butylbenzene	µg/kg	1	MCERTS	< 1.0				
1,2-Dibromo-3-chloropropane	µg/kg	1	ISO 17025	< 1.0				
1,2,4-Trichlorobenzene	µg/kg	1	MCERTS	< 1.0				
Hexachlorobutadiene	µg/kg	1	MCERTS	< 1.0				
1,2,3-Trichlorobenzene	µg/kg	1	ISO 17025	< 1.0				

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The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number: 18-21818

Project / Site name: Station Hill, Reading

Lab Sample Number				1111361				
Sample Reference				BH303				
Sample Number				None Supplied				
Depth (m)				1.00				
Date Sampled				14/11/2018				
Time Taken				None Supplied				
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
SVOCs								
Aniline	mg/kg	0.1	NONE	< 0.1				
Phenol	mg/kg	0.2	ISO 17025	< 0.2				
2-Chlorophenol	mg/kg	0.1	MCERTS	< 0.1				
Bis(2-chloroethyl)ether	mg/kg	0.2	MCERTS	< 0.2				
1,3-Dichlorobenzene	mg/kg	0.2	MCERTS	< 0.2				
1,2-Dichlorobenzene	mg/kg	0.1	MCERTS	< 0.1				
1,4-Dichlorobenzene	mg/kg	0.2	MCERTS	< 0.2				
Bis(2-chloroisopropyl)ether	mg/kg	0.1	MCERTS	< 0.1				
2-Methylphenol	mg/kg	0.3	MCERTS	< 0.3				
Hexachloroethane	mg/kg	0.05	MCERTS	< 0.05				
Nitrobenzene	mg/kg	0.3	MCERTS	< 0.3				
4-Methylphenol	mg/kg	0.2	NONE	< 0.2				
Isophorone	mg/kg	0.2	MCERTS	< 0.2				
2-Nitrophenol	mg/kg	0.3	MCERTS	< 0.3				
2,4-Dimethylphenol	mg/kg	0.3	MCERTS	< 0.3				
Bis(2-chloroethoxy)methane	mg/kg	0.3	MCERTS	< 0.3				
1,2,4-Trichlorobenzene	mg/kg	0.3	MCERTS	< 0.3				
Naphthalene	mg/kg	0.05	MCERTS	< 0.05				
2,4-Dichlorophenol	mg/kg	0.3	MCERTS	< 0.3				
4-Chloroaniline	mg/kg	0.1	NONE	< 0.1				
Hexachlorobutadiene	mg/kg	0.1	MCERTS	< 0.1				
4-Chloro-3-methylphenol	mg/kg	0.1	NONE	< 0.1				
2,4,6-Trichlorophenol	mg/kg	0.1	MCERTS	< 0.1				
2,4,5-Trichlorophenol	mg/kg	0.2	MCERTS	< 0.2				
2-Methylnaphthalene	mg/kg	0.1	NONE	< 0.1				
2-Chloronaphthalene	mg/kg	0.1	MCERTS	< 0.1				
Dimethylphthalate	mg/kg	0.1	MCERTS	< 0.1				
2,6-Dinitrotoluene	mg/kg	0.1	MCERTS	< 0.1				
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05				
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05				
2,4-Dinitrotoluene	mg/kg	0.2	MCERTS	< 0.2				
Dibenzofuran	mg/kg	0.2	MCERTS	< 0.2				
4-Chlorophenyl phenyl ether	mg/kg	0.3	ISO 17025	< 0.3				
Diethyl phthalate	mg/kg	0.2	MCERTS	< 0.2				
4-Nitroaniline	mg/kg	0.2	MCERTS	< 0.2				
Fluorene	mg/kg	0.05	MCERTS	< 0.05				
Azobenzene	mg/kg	0.3	MCERTS	< 0.3				
Bromophenyl phenyl ether	mg/kg	0.2	MCERTS	< 0.2				
Hexachlorobenzene	mg/kg	0.3	MCERTS	< 0.3				
Phenanthrene	mg/kg	0.05	MCERTS	0.27				
Anthracene	mg/kg	0.05	MCERTS	0.10				
Carbazole	mg/kg	0.3	MCERTS	< 0.3				
Dibutyl phthalate	mg/kg	0.2	MCERTS	< 0.2				
Anthraquinone	mg/kg	0.3	MCERTS	< 0.3				
Fluoranthene	mg/kg	0.05	MCERTS	0.69				
Pyrene	mg/kg	0.05	MCERTS	0.51				
Butyl benzyl phthalate	mg/kg	0.3	ISO 17025	< 0.3				
Benzo(a)anthracene	mg/kg	0.05	MCERTS	0.23				
Chrysene	mg/kg	0.05	MCERTS	0.21				
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	0.21				
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	0.13				
Benzo(a)pyrene	mg/kg	0.05	MCERTS	0.17				
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	< 0.05				
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05				
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05				

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Analytical Report Number: 18-21818

Project / Site name: Station Hill, Reading

Lab Sample Number				1111361				
Sample Reference				BH303				
Sample Number				None Supplied				
Depth (m)				1.00				
Date Sampled				14/11/2018				
Time Taken				None Supplied				
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
PCBs by GC-MS								
PCB Congener 28	mg/kg	0.001	MCERTS	< 0.001				
PCB Congener 52	mg/kg	0.001	MCERTS	< 0.001				
PCB Congener 101	mg/kg	0.001	MCERTS	< 0.001				
PCB Congener 118	mg/kg	0.001	MCERTS	< 0.001				
PCB Congener 138	mg/kg	0.001	MCERTS	< 0.001				
PCB Congener 153	mg/kg	0.001	MCERTS	< 0.001				
PCB Congener 180	mg/kg	0.001	MCERTS	< 0.001				
Total PCBs by GC-MS								
Total PCBs	mg/kg	0.007	MCERTS	< 0.007				

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Analytical Report Number: 18-21818
Project / Site name: Station Hill, Reading
Your Order No:

Certificate of Analysis - Asbestos Quantification

Methods:

Qualitative Analysis

The samples were analysed qualitatively for asbestos by polarising light and dispersion staining as described by the Health and Safety Executive in HSG 248.

Quantitative Analysis

The analysis was carried out using our documented in-house method A006 based on HSE Contract Research Report No: 83/1996: Development and Validation of an analytical method to determine the amount of asbestos in soils and loose aggregates (Davies et al, 1996) and HSG 248. Our method includes initial examination of the entire representative sample, then fractionation and detailed analysis of each fraction, with quantification by hand picking and weighing.

The limit of detection (reporting limit) of this method is 0.001 %.

The method has been validated using samples of at least 100 g, results for samples smaller than this should be interpreted with caution.

Both Qualitative and Quantitative Analyses are UKAS accredited.

Sample Number	Sample ID	Sample Depth (m)	Sample Weight (g)	Asbestos Containing Material Types Detected (ACM)	PLM Results	Asbestos by hand picking/weighing (%)	Total % Asbestos in Sample
1111360	BH303	0.20	154	Loose Fibres	**Chrysotile**	< 0.001	**< 0.001**

Opinions and interpretations expressed herein are outside the scope of UKAS accreditation.

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Analytical Report Number : 18-21818

Project / Site name: Station Hill, Reading

* These descriptions are only intended to act as a cross check if sample identities are questioned. The major constituent of the sample is intended to act with respect to MCERTS validation. The laboratory is accredited for sand, clay and loam (MCERTS) soil types. Data for unaccredited types of solid should be interpreted with care.

Stone content of a sample is calculated as the % weight of the stones not passing a 10 mm sieve. Results are not corrected for stone content.

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
1111356	BH301	None Supplied	0.20	Brown sand with rubble and brick.
1111357	BH301	None Supplied	1.20	Brown sand with brick and gravel
1111358	BH304	None Supplied	0.50	Brown loam and clay with vegetation and gravel
1111359	BH304	None Supplied	1.50	Brown loam and clay with gravel and brick.
1111360	BH303	None Supplied	0.20	Brown loam and clay with gravel and brick.
1111361	BH303	None Supplied	1.00	Beige chalk. **

** Non MCERTS matrix.

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Analytical Report Number : 18-21818

Project / Site name: Station Hill, Reading

Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Water (PrW)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Asbestos identification in soil	Asbestos Identification with the use of polarised light microscopy in conjunction with disperion staining techniques.	In house method based on HSG 248	A001-PL	D	ISO 17025
Asbestos Quantification - Gravimetric	Asbestos quantification by gravimetric method - in house method based on references.	HSE Report No: 83/1996, HSG 248, HSG 264 & SCA Blue Book (draft).	A006-PL	D	ISO 17025
Boron, water soluble, in soil	Determination of water soluble boron in soil by hot water extract followed by ICP-OES.	In-house method based on Second Site Properties version 3	L038-PL	D	MCERTS
BTEX and MTBE in soil (Monoaromatics)	Determination of BTEX in soil by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	MCERTS
Hexavalent chromium in soil	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method	L080-PL	W	MCERTS
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L038-PL	D	MCERTS
Moisture Content	Moisture content, determined gravimetrically.	In-house method based on BS1377 Part 2, 1990, Chemical and Electrochemical Tests	L019-UK/PL	W	NONE
PCB's By GC-MS in soil	Determination of PCB by extraction with acetone and hexane followed by GC-MS.	In-house method based on USEPA 8082	L027-PL	D	MCERTS
Semi-volatile organic compounds in soil	Determination of semi-volatile organic compounds in soil by extraction in dichloromethane and hexane followed by GC-MS.	In-house method based on USEPA 8270	L064-PL	D	MCERTS
Speciated EPA-16 PAHs in soil	Determination of PAH compounds in soil by extraction in dichloromethane and hexane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270	L064-PL	D	MCERTS
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
Total cyanide in soil	Determination of total cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
TPHCWG (Soil)	Determination of hexane extractable hydrocarbons in soil by GC-MS/GC-FID.	In-house method with silica gel split/clean up.	L088/76-PL	W	MCERTS
Volatile organic compounds in soil	Determination of volatile organic compounds in soil by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	MCERTS

For method numbers ending in 'UK' analysis have been carried out in our laboratory in the United Kingdom.
For method numbers ending in 'PL' analysis have been carried out in our laboratory in Poland.
Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.

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Sample ID	Other_ID	Sample Type	Job	Sample Number	Sample Deviation Code	test_name	test_ref	Test Deviation code
BH301		S	18-21818	1111356	c	Hexavalent chromium in soil	L080-PL	c
BH301		S	18-21818	1111356	c	BTEX and MTBE in soil (Monoaromatics)	L073B-PL	c
BH301		S	18-21818	1111356	c	Semi-volatile organic compounds in soil	L064-PL	c
BH301		S	18-21818	1111356	c	Speciated EPA-16 PAHs in soil	L064-PL	c
BH301		S	18-21818	1111356	c	TPHCWG (Soil)	L088/76-PL	c
BH301		S	18-21818	1111356	c	Volatile organic compounds in soil	L073B-PL	c
BH301		S	18-21818	1111357	c	Hexavalent chromium in soil	L080-PL	c
BH301		S	18-21818	1111357	c	BTEX and MTBE in soil (Monoaromatics)	L073B-PL	c
BH301		S	18-21818	1111357	c	PCB's By GC-MS in soil	L027-PL	c
BH301		S	18-21818	1111357	c	Semi-volatile organic compounds in soil	L064-PL	c
BH301		S	18-21818	1111357	c	Speciated EPA-16 PAHs in soil	L064-PL	c
BH301		S	18-21818	1111357	c	TPHCWG (Soil)	L088/76-PL	c
BH301		S	18-21818	1111357	c	Total cyanide in soil	L080-PL	c
BH301		S	18-21818	1111357	c	Volatile organic compounds in soil	L073B-PL	c
BH303		S	18-21818	1111360	c	BTEX and MTBE in soil (Monoaromatics)	L073B-PL	c
BH303		S	18-21818	1111360	c	Semi-volatile organic compounds in soil	L064-PL	c
BH303		S	18-21818	1111360	c	Speciated EPA-16 PAHs in soil	L064-PL	c
BH303		S	18-21818	1111360	c	TPHCWG (Soil)	L088/76-PL	c
BH303		S	18-21818	1111360	c	Volatile organic compounds in soil	L073B-PL	c
BH303		S	18-21818	1111361	c	BTEX and MTBE in soil (Monoaromatics)	L073B-PL	c
BH303		S	18-21818	1111361	c	PCB's By GC-MS in soil	L027-PL	c
BH303		S	18-21818	1111361	c	Semi-volatile organic compounds in soil	L064-PL	c
BH303		S	18-21818	1111361	c	Speciated EPA-16 PAHs in soil	L064-PL	c
BH303		S	18-21818	1111361	c	TPHCWG (Soil)	L088/76-PL	c
BH303		S	18-21818	1111361	c	Total cyanide in soil	L080-PL	c
BH303		S	18-21818	1111361	c	Volatile organic compounds in soil	L073B-PL	c
BH304		S	18-21818	1111358	c	BTEX and MTBE in soil (Monoaromatics)	L073B-PL	c
BH304		S	18-21818	1111358	c	Semi-volatile organic compounds in soil	L064-PL	c
BH304		S	18-21818	1111358	c	Speciated EPA-16 PAHs in soil	L064-PL	c
BH304		S	18-21818	1111358	c	TPHCWG (Soil)	L088/76-PL	c
BH304		S	18-21818	1111358	c	Volatile organic compounds in soil	L073B-PL	c
BH304		S	18-21818	1111359	c	BTEX and MTBE in soil (Monoaromatics)	L073B-PL	c
BH304		S	18-21818	1111359	c	Semi-volatile organic compounds in soil	L064-PL	c
BH304		S	18-21818	1111359	c	Speciated EPA-16 PAHs in soil	L064-PL	c
BH304		S	18-21818	1111359	c	TPHCWG (Soil)	L088/76-PL	c
BH304		S	18-21818	1111359	c	Volatile organic compounds in soil	L073B-PL	c

Key: a - No sampling date b - Incorrect container
c - Holding time d - Headspace e - Temperature

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Analytical Report Number : 18-21821

Project / Site name:	Station Hill, Reading	**Samples received on:**	30/12/2018
Your job number:	34769	**Samples instructed on:**	11/12/2018
Your order number:		**Analysis completed by:**	17/12/2018
Report Issue Number:	1	**Report issued on:**	17/12/2018
Samples Analysed:	4 soil samples		

Signed

Jordan Hill
Reporting Manager
For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41 -711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

soils	- 4 weeks from reporting
leachates	- 2 weeks from reporting
waters	- 2 weeks from reporting
asbestos	- 6 months from reporting

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The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number: 18-21821

Project / Site name: Station Hill, Reading

Lab Sample Number				1111364	1111365	1111366	1111367	
Sample Reference				WS314	WS314	WS302	WS302	
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	
Depth (m)				0.40-0.50	2.25-2.35	0.50-0.70	1.00-1.10	
Date Sampled				20/11/2018	20/11/2018	20/11/2018	20/11/2018	
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Stone Content	%	0.1	NONE	< 0.1	< 0.1	15	22	
Moisture Content	%	N/A	NONE	11	6.0	7.5	4.1	
Total mass of sample received	kg	0.001	NONE	2.0	1.6	2.0	2.0	
Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	-	Not-detected	-	
General Inorganics								
Total Cyanide	mg/kg	1	MCERTS	< 1	-	-	-	
Speciated PAHs								
Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	
Fluorene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	
Phenanthrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	
Anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	
Fluoranthene	mg/kg	0.05	MCERTS	0.34	< 0.05	< 0.05	< 0.05	
Pyrene	mg/kg	0.05	MCERTS	0.29	< 0.05	< 0.05	< 0.05	
Benzo(a)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	
Chrysene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	
Benzo(a)pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	
Total PAH								
Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	< 0.80	< 0.80	< 0.80	< 0.80	
Heavy Metals / Metalloids								
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	18	29	20	11	
Boron (water soluble)	mg/kg	0.2	MCERTS	0.9	0.7	0.7	0.3	
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2	
Chromium (hexavalent)	mg/kg	4	MCERTS	< 4.0	< 4.0	< 4.0	< 4.0	
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	23	33	18	15	
Copper (aqua regia extractable)	mg/kg	1	MCERTS	31	18	26	8.8	
Lead (aqua regia extractable)	mg/kg	1	MCERTS	91	13	8.7	7.4	
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	28	45	44	38	
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	61	62	64	44	

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Analytical Report Number: 18-21821

Project / Site name: Station Hill, Reading

Lab Sample Number				1111364	1111365	1111366	1111367	
Sample Reference				WS314	WS314	WS302	WS302	
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	
Depth (m)				0.40-0.50	2.25-2.35	0.50-0.70	1.00-1.10	
Date Sampled				20/11/2018	20/11/2018	20/11/2018	20/11/2018	
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Monoaromatics								
Benzene	ug/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	
Toluene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	
Ethylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	
p & m-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	
o-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	
Petroleum Hydrocarbons								
TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	1.9	< 1.0	< 1.0	
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0	4.9	< 2.0	< 2.0	
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	< 8.0	8.8	< 8.0	< 8.0	
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	< 8.0	43	< 8.0	< 8.0	
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	< 10	59	< 10	< 10	
TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0	< 2.0	
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10	
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10	
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10	

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Analytical Report Number: 18-21821

Project / Site name: Station Hill, Reading

Lab Sample Number				1111364	1111365	1111366	1111367	
Sample Reference				WS314	WS314	WS302	WS302	
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	
Depth (m)				0.40-0.50	2.25-2.35	0.50-0.70	1.00-1.10	
Date Sampled				20/11/2018	20/11/2018	20/11/2018	20/11/2018	
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
VOCs								
Chloromethane	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
Chloroethane	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	
Bromomethane	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
Vinyl Chloride	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	
Trichlorofluoromethane	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	
1,1-Dichloroethene	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	
1,1,2-Trichloro 1,2,2-Trifluoroethane	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
Cis-1,2-dichloroethene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	
1,1-Dichloroethane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	
2,2-Dichloropropane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	
Trichloromethane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	
1,1,1-Trichloroethane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	
1,2-Dichloroethane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	
1,1-Dichloropropene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	
Trans-1,2-dichloroethene	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	
Benzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	
Tetrachloromethane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	
1,2-Dichloropropane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	
Trichloroethene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	
Dibromomethane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	
Bromodichloromethane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	
Cis-1,3-dichloropropene	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
Trans-1,3-dichloropropene	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
Toluene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	
1,1,2-Trichloroethane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	
1,3-Dichloropropane	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
Dibromochloromethane	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
Tetrachloroethene	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	
1,2-Dibromoethane	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
Chlorobenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	
1,1,1,2-Tetrachloroethane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	
Ethylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	
p & m-Xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	
Styrene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	
Tribromomethane	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	
o-Xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	
1,1,2,2-Tetrachloroethane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	
Isopropylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	
Bromobenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	
n-Propylbenzene	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
2-Chlorotoluene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	
4-Chlorotoluene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	
1,3,5-Trimethylbenzene	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
tert-Butylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	
1,2,4-Trimethylbenzene	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
sec-Butylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	
1,3-Dichlorobenzene	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
p-Isopropyltoluene	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
1,2-Dichlorobenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	
1,4-Dichlorobenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	
Butylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	
1,2-Dibromo-3-chloropropane	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
1,2,4-Trichlorobenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	
Hexachlorobutadiene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	
1,2,3-Trichlorobenzene	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	

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Analytical Report Number: 18-21821

Project / Site name: Station Hill, Reading

Lab Sample Number				1111364	1111365	1111366	1111367	
Sample Reference				WS314	WS314	WS302	WS302	
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	
Depth (m)				0.40-0.50	2.25-2.35	0.50-0.70	1.00-1.10	
Date Sampled				20/11/2018	20/11/2018	20/11/2018	20/11/2018	
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
SVOCs								
Aniline	mg/kg	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	
Phenol	mg/kg	0.2	ISO 17025	< 0.2	< 0.2	< 0.2	< 0.2	
2-Chlorophenol	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	
Bis(2-chloroethyl)ether	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2	
1,3-Dichlorobenzene	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2	
1,2-Dichlorobenzene	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	
1,4-Dichlorobenzene	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2	
Bis(2-chloroisopropyl)ether	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	
2-Methylphenol	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	
Hexachloroethane	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	
Nitrobenzene	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	
4-Methylphenol	mg/kg	0.2	NONE	< 0.2	< 0.2	< 0.2	< 0.2	
Isophorone	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2	
2-Nitrophenol	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	
2,4-Dimethylphenol	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	
Bis(2-chloroethoxy)methane	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	
1,2,4-Trichlorobenzene	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	
Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	
2,4-Dichlorophenol	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	
4-Chloroaniline	mg/kg	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	
Hexachlorobutadiene	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	
4-Chloro-3-methylphenol	mg/kg	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	
2,4,6-Trichlorophenol	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	
2,4,5-Trichlorophenol	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2	
2-Methylnaphthalene	mg/kg	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	
2-Chloronaphthalene	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	
Dimethylphthalate	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	
2,6-Dinitrotoluene	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	
2,4-Dinitrotoluene	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2	
Dibenzofuran	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2	
4-Chlorophenyl phenyl ether	mg/kg	0.3	ISO 17025	< 0.3	< 0.3	< 0.3	< 0.3	
Diethyl phthalate	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2	
4-Nitroaniline	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2	
Fluorene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	
Azobenzene	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	
Bromophenyl phenyl ether	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2	
Hexachlorobenzene	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	
Phenanthrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	
Anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	
Carbazole	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	
Dibutyl phthalate	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2	
Anthraquinone	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	
Fluoranthene	mg/kg	0.05	MCERTS	0.34	< 0.05	< 0.05	< 0.05	
Pyrene	mg/kg	0.05	MCERTS	0.29	< 0.05	< 0.05	< 0.05	
Butyl benzyl phthalate	mg/kg	0.3	ISO 17025	< 0.3	< 0.3	< 0.3	< 0.3	
Benzo(a)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	
Chrysene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	
Benzo(a)pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	

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Analytical Report Number: 18-21821

Project / Site name: Station Hill, Reading

Lab Sample Number				1111364	1111365	1111366	1111367	
Sample Reference				WS314	WS314	WS302	WS302	
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	
Depth (m)				0.40-0.50	2.25-2.35	0.50-0.70	1.00-1.10	
Date Sampled				20/11/2018	20/11/2018	20/11/2018	20/11/2018	
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
PCBs by GC-MS								
PCB Congener 28	mg/kg	0.001	MCERTS	< 0.001	-	-	-	
PCB Congener 52	mg/kg	0.001	MCERTS	< 0.001	-	-	-	
PCB Congener 101	mg/kg	0.001	MCERTS	< 0.001	-	-	-	
PCB Congener 118	mg/kg	0.001	MCERTS	< 0.001	-	-	-	
PCB Congener 138	mg/kg	0.001	MCERTS	< 0.001	-	-	-	
PCB Congener 153	mg/kg	0.001	MCERTS	< 0.001	-	-	-	
PCB Congener 180	mg/kg	0.001	MCERTS	< 0.001	-	-	-	
Total PCBs by GC-MS								
Total PCBs	mg/kg	0.007	MCERTS	< 0.007	-	-	-	

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Analytical Report Number : 18-21821

Project / Site name: Station Hill, Reading

* These descriptions are only intended to act as a cross check if sample identities are questioned. The major constituent of the sample is intended to act with respect to MCERTS validation. The laboratory is accredited for sand, clay and loam (MCERTS) soil types. Data for unaccredited types of solid should be interpreted with care.

Stone content of a sample is calculated as the % weight of the stones not passing a 10 mm sieve. Results are not corrected for stone content.

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
1111364	WS314	None Supplied	0.40-0.50	Brown loam and clay with gravel.
1111365	WS314	None Supplied	2.25-2.35	Brown loam and clay with gravel.
1111366	WS302	None Supplied	0.50-0.70	Light brown sandy gravel with stones. **
1111367	WS302	None Supplied	1.00-1.10	Light brown gravelly sand with stones.

** Non MCERTS matrix.

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Analytical Report Number : 18-21821

Project / Site name: Station Hill, Reading

Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Water (PrW)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Asbestos identification in soil	Asbestos Identification with the use of polarised light microscopy in conjunction with disperion staining techniques.	In house method based on HSG 248	A001-PL	D	ISO 17025
Boron, water soluble, in soil	Determination of water soluble boron in soil by hot water extract followed by ICP-OES.	In-house method based on Second Site Properties version 3	L038-PL	D	MCERTS
BTEX and MTBE in soil (Monoaromatics)	Determination of BTEX in soil by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	MCERTS
Hexavalent chromium in soil	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method	L080-PL	W	MCERTS
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L038-PL	D	MCERTS
Moisture Content	Moisture content, determined gravimetrically.	In-house method based on BS1377 Part 2, 1990, Chemical and Electrochemical Tests	L019-UK/PL	W	NONE
PCB's By GC-MS in soil	Determination of PCB by extraction with acetone and hexane followed by GC-MS.	In-house method based on USEPA 8082	L027-PL	D	MCERTS
Semi-volatile organic compounds in soil	Determination of semi-volatile organic compounds in soil by extraction in dichloromethane and hexane followed by GC-MS.	In-house method based on USEPA 8270	L064-PL	D	MCERTS
Speciated EPA-16 PAHs in soil	Determination of PAH compounds in soil by extraction in dichloromethane and hexane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270	L064-PL	D	MCERTS
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
Total cyanide in soil	Determination of total cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
TPHCWG (Soil)	Determination of hexane extractable hydrocarbons in soil by GC-MS/GC-FID.	In-house method with silica gel split/clean up.	L088/76-PL	W	MCERTS
Volatile organic compounds in soil	Determination of volatile organic compounds in soil by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	MCERTS

For method numbers ending in 'UK' analysis have been carried out in our laboratory in the United Kingdom.
For method numbers ending in 'PL' analysis have been carried out in our laboratory in Poland.
Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.

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Sample ID	Other_ID	Sample Type	Job	Sample Number	Sample Deviation Code	test_name	test_ref	Test Deviation code
WS302		S	18-21821	1111366	c	BTEX and MTBE in soil (Monoaromatics)	L073B-PL	c
WS302		S	18-21821	1111366	c	Volatile organic compounds in soil	L073B-PL	c
WS302		S	18-21821	1111367	c	BTEX and MTBE in soil (Monoaromatics)	L073B-PL	c
WS302		S	18-21821	1111367	c	Volatile organic compounds in soil	L073B-PL	c
WS314		S	18-21821	1111364	c	BTEX and MTBE in soil (Monoaromatics)	L073B-PL	c
WS314		S	18-21821	1111364	c	Total cyanide in soil	L080-PL	c
WS314		S	18-21821	1111364	c	Volatile organic compounds in soil	L073B-PL	c
WS314		S	18-21821	1111365	c	BTEX and MTBE in soil (Monoaromatics)	L073B-PL	c
WS314		S	18-21821	1111365	c	Volatile organic compounds in soil	L073B-PL	c

Key: a - No sampling date b - Incorrect container
c - Holding time d - Headspace e - Temperature

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Analytical Report Number : 18-21822

Project / Site name:	Station Hill, Reading	**Samples received on:**	30/11/2018
Your job number:	34769	**Samples instructed on:**	11/12/2018
Your order number:		**Analysis completed by:**	17/12/2018
Report Issue Number:	1	**Report issued on:**	17/12/2018
Samples Analysed:	3 soil samples		

Signed

Jordan Hill
Reporting Manager
For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41 -711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

soils	- 4 weeks from reporting
leachates	- 2 weeks from reporting
waters	- 2 weeks from reporting
asbestos	- 6 months from reporting

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The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number: 18-21822

Project / Site name: Station Hill, Reading

Lab Sample Number				1111368	1111369	1111370		
Sample Reference				WS302	WS307	WS307		
Sample Number				None Supplied	None Supplied	None Supplied		
Depth (m)				4.85-5.00	0.60-0.70	1.85-2.00		
Date Sampled				21/11/2018	21/11/2018	21/11/2018		
Time Taken				None Supplied	None Supplied	None Supplied		
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Stone Content	%	0.1	NONE	< 0.1	23	< 0.1		
Moisture Content	%	N/A	NONE	23	5.9	19		
Total mass of sample received	kg	0.001	NONE	1.2	2.0	1.5		
Asbestos in Soil	Type	N/A	ISO 17025	-	Not-detected	-		
Speciated PAHs								
Naphthalene	mg/kg	0.05	NONE	< 0.05	< 0.05	< 0.05		
Acenaphthylene	mg/kg	0.05	NONE	< 0.05	< 0.05	< 0.05		
Acenaphthene	mg/kg	0.05	NONE	< 0.05	< 0.05	< 0.05		
Fluorene	mg/kg	0.05	NONE	< 0.05	< 0.05	< 0.05		
Phenanthrene	mg/kg	0.05	NONE	< 0.05	< 0.05	< 0.05		
Anthracene	mg/kg	0.05	NONE	< 0.05	< 0.05	< 0.05		
Fluoranthene	mg/kg	0.05	NONE	< 0.05	< 0.05	< 0.05		
Pyrene	mg/kg	0.05	NONE	< 0.05	< 0.05	< 0.05		
Benzo(a)anthracene	mg/kg	0.05	NONE	< 0.05	< 0.05	< 0.05		
Chrysene	mg/kg	0.05	NONE	< 0.05	< 0.05	< 0.05		
Benzo(b)fluoranthene	mg/kg	0.05	NONE	< 0.05	< 0.05	< 0.05		
Benzo(k)fluoranthene	mg/kg	0.05	NONE	< 0.05	< 0.05	< 0.05		
Benzo(a)pyrene	mg/kg	0.05	NONE	< 0.05	< 0.05	< 0.05		
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	NONE	< 0.05	< 0.05	< 0.05		
Dibenz(a,h)anthracene	mg/kg	0.05	NONE	< 0.05	< 0.05	< 0.05		
Benzo(ghi)perylene	mg/kg	0.05	NONE	< 0.05	< 0.05	< 0.05		
Total PAH								
Speciated Total EPA-16 PAHs	mg/kg	0.8	NONE	< 0.80	< 0.80	< 0.80		
Heavy Metals / Metalloids								
Arsenic (aqua regia extractable)	mg/kg	1	NONE	< 1.0	15	< 1.0		
Boron (water soluble)	mg/kg	0.2	NONE	0.3	0.5	0.3		
Cadmium (aqua regia extractable)	mg/kg	0.2	NONE	< 0.2	< 0.2	0.4		
Chromium (hexavalent)	mg/kg	4	NONE	< 4.0	< 4.0	< 4.0		
Chromium (aqua regia extractable)	mg/kg	1	NONE	1.5	14	< 1.0		
Copper (aqua regia extractable)	mg/kg	1	NONE	3.7	54	4.3		
Lead (aqua regia extractable)	mg/kg	1	NONE	2.8	5.9	2.9		
Mercury (aqua regia extractable)	mg/kg	0.3	NONE	< 0.3	< 0.3	< 0.3		
Nickel (aqua regia extractable)	mg/kg	1	NONE	2.9	31	9.1		
Selenium (aqua regia extractable)	mg/kg	1	NONE	< 1.0	< 1.0	< 1.0		
Zinc (aqua regia extractable)	mg/kg	1	NONE	7.3	57	9.3		

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Analytical Report Number: 18-21822

Project / Site name: Station Hill, Reading

Lab Sample Number				1111368	1111369	1111370		
Sample Reference				WS302	WS307	WS307		
Sample Number				None Supplied	None Supplied	None Supplied		
Depth (m)				4.85-5.00	0.60-0.70	1.85-2.00		
Date Sampled				21/11/2018	21/11/2018	21/11/2018		
Time Taken				None Supplied	None Supplied	None Supplied		
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Monoaromatics								
Benzene	ug/kg	1	NONE	< 1.0	< 1.0	< 1.0		
Toluene	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0		
Ethylbenzene	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0		
p & m-xylene	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0		
o-xylene	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0		
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0		
Petroleum Hydrocarbons								
TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.001	NONE	< 0.001	< 0.001	< 0.001		
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.001	NONE	< 0.001	< 0.001	< 0.001		
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.001	NONE	< 0.001	< 0.001	< 0.001		
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	NONE	< 1.0	< 1.0	< 1.0		
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	NONE	< 2.0	3.8	< 2.0		
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	NONE	< 8.0	9.4	< 8.0		
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	NONE	< 8.0	25	< 8.0		
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	NONE	< 10	38	< 10		
TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.001	NONE	< 0.001	< 0.001	< 0.001		
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.001	NONE	< 0.001	< 0.001	< 0.001		
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.001	NONE	< 0.001	< 0.001	< 0.001		
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	NONE	< 1.0	< 1.0	< 1.0		
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	NONE	< 2.0	< 2.0	< 2.0		
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	NONE	< 10	< 10	< 10		
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	NONE	< 10	< 10	< 10		
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	NONE	< 10	11	< 10		

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Analytical Report Number: 18-21822

Project / Site name: Station Hill, Reading

Lab Sample Number				1111368	1111369	1111370		
Sample Reference				WS302	WS307	WS307		
Sample Number				None Supplied	None Supplied	None Supplied		
Depth (m)				4.85-5.00	0.60-0.70	1.85-2.00		
Date Sampled				21/11/2018	21/11/2018	21/11/2018		
Time Taken				None Supplied	None Supplied	None Supplied		
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
VOCs								
Chloromethane	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0		
Chloroethane	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0		
Bromomethane	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0		
Vinyl Chloride	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0		
Trichlorofluoromethane	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0		
1,1-Dichloroethene	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0		
1,1,2-Trichloro 1,2,2-Trifluoroethane	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0		
Cis-1,2-dichloroethene	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0		
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0		
1,1-Dichloroethane	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0		
2,2-Dichloropropane	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0		
Trichloromethane	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0		
1,1,1-Trichloroethane	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0		
1,2-Dichloroethane	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0		
1,1-Dichloropropene	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0		
Trans-1,2-dichloroethene	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0		
Benzene	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0		
Tetrachloromethane	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0		
1,2-Dichloropropane	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0		
Trichloroethene	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0		
Dibromomethane	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0		
Bromodichloromethane	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0		
Cis-1,3-dichloropropene	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0		
Trans-1,3-dichloropropene	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0		
Toluene	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0		
1,1,2-Trichloroethane	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0		
1,3-Dichloropropane	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0		
Dibromochloromethane	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0		
Tetrachloroethene	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0		
1,2-Dibromoethane	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0		
Chlorobenzene	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0		
1,1,1,2-Tetrachloroethane	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0		
Ethylbenzene	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0		
p & m-Xylene	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0		
Styrene	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0		
Tribromomethane	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0		
o-Xylene	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0		
1,1,2,2-Tetrachloroethane	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0		
Isopropylbenzene	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0		
Bromobenzene	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0		
n-Propylbenzene	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0		
2-Chlorotoluene	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0		
4-Chlorotoluene	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0		
1,3,5-Trimethylbenzene	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0		
tert-Butylbenzene	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0		
1,2,4-Trimethylbenzene	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0		
sec-Butylbenzene	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0		
1,3-Dichlorobenzene	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0		
p-Isopropyltoluene	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0		
1,2-Dichlorobenzene	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0		
1,4-Dichlorobenzene	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0		
Butylbenzene	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0		
1,2-Dibromo-3-chloropropane	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0		
1,2,4-Trichlorobenzene	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0		
Hexachlorobutadiene	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0		
1,2,3-Trichlorobenzene	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0		

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Analytical Report Number: 18-21822

Project / Site name: Station Hill, Reading

Lab Sample Number				1111368	1111369	1111370		
Sample Reference				WS302	WS307	WS307		
Sample Number				None Supplied	None Supplied	None Supplied		
Depth (m)				4.85-5.00	0.60-0.70	1.85-2.00		
Date Sampled				21/11/2018	21/11/2018	21/11/2018		
Time Taken				None Supplied	None Supplied	None Supplied		
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
SVOCs								
Aniline	mg/kg	0.1	NONE	< 0.1	< 0.1	< 0.1		
Phenol	mg/kg	0.2	NONE	< 0.2	< 0.2	< 0.2		
2-Chlorophenol	mg/kg	0.1	NONE	< 0.1	< 0.1	< 0.1		
Bis(2-chloroethyl)ether	mg/kg	0.2	NONE	< 0.2	< 0.2	< 0.2		
1,3-Dichlorobenzene	mg/kg	0.2	NONE	< 0.2	< 0.2	< 0.2		
1,2-Dichlorobenzene	mg/kg	0.1	NONE	< 0.1	< 0.1	< 0.1		
1,4-Dichlorobenzene	mg/kg	0.2	NONE	< 0.2	< 0.2	< 0.2		
Bis(2-chloroisopropyl)ether	mg/kg	0.1	NONE	< 0.1	< 0.1	< 0.1		
2-Methylphenol	mg/kg	0.3	NONE	< 0.3	< 0.3	< 0.3		
Hexachloroethane	mg/kg	0.05	NONE	< 0.05	< 0.05	< 0.05		
Nitrobenzene	mg/kg	0.3	NONE	< 0.3	< 0.3	< 0.3		
4-Methylphenol	mg/kg	0.2	NONE	< 0.2	< 0.2	< 0.2		
Isophorone	mg/kg	0.2	NONE	< 0.2	< 0.2	< 0.2		
2-Nitrophenol	mg/kg	0.3	NONE	< 0.3	< 0.3	< 0.3		
2,4-Dimethylphenol	mg/kg	0.3	NONE	< 0.3	< 0.3	< 0.3		
Bis(2-chloroethoxy)methane	mg/kg	0.3	NONE	< 0.3	< 0.3	< 0.3		
1,2,4-Trichlorobenzene	mg/kg	0.3	NONE	< 0.3	< 0.3	< 0.3		
Naphthalene	mg/kg	0.05	NONE	< 0.05	< 0.05	< 0.05		
2,4-Dichlorophenol	mg/kg	0.3	NONE	< 0.3	< 0.3	< 0.3		
4-Chloroaniline	mg/kg	0.1	NONE	< 0.1	< 0.1	< 0.1		
Hexachlorobutadiene	mg/kg	0.1	NONE	< 0.1	< 0.1	< 0.1		
4-Chloro-3-methylphenol	mg/kg	0.1	NONE	< 0.1	< 0.1	< 0.1		
2,4,6-Trichlorophenol	mg/kg	0.1	NONE	< 0.1	< 0.1	< 0.1		
2,4,5-Trichlorophenol	mg/kg	0.2	NONE	< 0.2	< 0.2	< 0.2		
2-Methylnaphthalene	mg/kg	0.1	NONE	< 0.1	< 0.1	< 0.1		
2-Chloronaphthalene	mg/kg	0.1	NONE	< 0.1	< 0.1	< 0.1		
Dimethylphthalate	mg/kg	0.1	NONE	< 0.1	< 0.1	< 0.1		
2,6-Dinitrotoluene	mg/kg	0.1	NONE	< 0.1	< 0.1	< 0.1		
Acenaphthylene	mg/kg	0.05	NONE	< 0.05	< 0.05	< 0.05		
Acenaphthene	mg/kg	0.05	NONE	< 0.05	< 0.05	< 0.05		
2,4-Dinitrotoluene	mg/kg	0.2	NONE	< 0.2	< 0.2	< 0.2		
Dibenzofuran	mg/kg	0.2	NONE	< 0.2	< 0.2	< 0.2		
4-Chlorophenyl phenyl ether	mg/kg	0.3	NONE	< 0.3	< 0.3	< 0.3		
Diethyl phthalate	mg/kg	0.2	NONE	< 0.2	< 0.2	< 0.2		
4-Nitroaniline	mg/kg	0.2	NONE	< 0.2	< 0.2	< 0.2		
Fluorene	mg/kg	0.05	NONE	< 0.05	< 0.05	< 0.05		
Azobenzene	mg/kg	0.3	NONE	< 0.3	< 0.3	< 0.3		
Bromophenyl phenyl ether	mg/kg	0.2	NONE	< 0.2	< 0.2	< 0.2		
Hexachlorobenzene	mg/kg	0.3	NONE	< 0.3	< 0.3	< 0.3		
Phenanthrene	mg/kg	0.05	NONE	< 0.05	< 0.05	< 0.05		
Anthracene	mg/kg	0.05	NONE	< 0.05	< 0.05	< 0.05		
Carbazole	mg/kg	0.3	NONE	< 0.3	< 0.3	< 0.3		
Dibutyl phthalate	mg/kg	0.2	NONE	< 0.2	< 0.2	< 0.2		
Anthraquinone	mg/kg	0.3	NONE	< 0.3	< 0.3	< 0.3		
Fluoranthene	mg/kg	0.05	NONE	< 0.05	< 0.05	< 0.05		
Pyrene	mg/kg	0.05	NONE	< 0.05	< 0.05	< 0.05		
Butyl benzyl phthalate	mg/kg	0.3	NONE	< 0.3	< 0.3	< 0.3		
Benzo(a)anthracene	mg/kg	0.05	NONE	< 0.05	< 0.05	< 0.05		
Chrysene	mg/kg	0.05	NONE	< 0.05	< 0.05	< 0.05		
Benzo(b)fluoranthene	mg/kg	0.05	NONE	< 0.05	< 0.05	< 0.05		
Benzo(k)fluoranthene	mg/kg	0.05	NONE	< 0.05	< 0.05	< 0.05		
Benzo(a)pyrene	mg/kg	0.05	NONE	< 0.05	< 0.05	< 0.05		
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	NONE	< 0.05	< 0.05	< 0.05		
Dibenz(a,h)anthracene	mg/kg	0.05	NONE	< 0.05	< 0.05	< 0.05		
Benzo(ghi)perylene	mg/kg	0.05	NONE	< 0.05	< 0.05	< 0.05		

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Analytical Report Number : 18-21822

Project / Site name: Station Hill, Reading

* These descriptions are only intended to act as a cross check if sample identities are questioned. The major constituent of the sample is intended to act with respect to MCERTS validation. The laboratory is accredited for sand, clay and loam (MCERTS) soil types. Data for unaccredited types of solid should be interpreted with care.

Stone content of a sample is calculated as the % weight of the stones not passing a 10 mm sieve. Results are not corrected for stone content.

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
1111368	WS302	None Supplied	4.85-5.00	Beige chalk. **
1111369	WS307	None Supplied	0.60-0.70	Brown sandy gravel with stones. **
1111370	WS307	None Supplied	1.85-2.00	Beige chalk. **

** Non MCERTS matrix.

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Analytical Report Number : 18-21822

Project / Site name: Station Hill, Reading

Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Water (PrW)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Asbestos identification in soil	Asbestos Identification with the use of polarised light microscopy in conjunction with disperion staining techniques.	In house method based on HSG 248	A001-PL	D	ISO 17025
Boron, water soluble, in soil	Determination of water soluble boron in soil by hot water extract followed by ICP-OES.	In-house method based on Second Site Properties version 3	L038-PL	D	MCERTS
BTEX and MTBE in soil (Monoaromatics)	Determination of BTEX in soil by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	MCERTS
Hexavalent chromium in soil	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method	L080-PL	W	MCERTS
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L038-PL	D	MCERTS
Moisture Content	Moisture content, determined gravimetrically.	In-house method based on BS1377 Part 2, 1990, Chemical and Electrochemical Tests	L019-UK/PL	W	NONE
Semi-volatile organic compounds in soil	Determination of semi-volatile organic compounds in soil by extraction in dichloromethane and hexane followed by GC-MS.	In-house method based on USEPA 8270	L064-PL	D	MCERTS
Speciated EPA-16 PAHs in soil	Determination of PAH compounds in soil by extraction in dichloromethane and hexane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270	L064-PL	D	MCERTS
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
TPHCWG (Soil)	Determination of hexane extractable hydrocarbons in soil by GC-MS/GC-FID.	In-house method with silica gel split/clean up.	L088/76-PL	W	MCERTS
Volatile organic compounds in soil	Determination of volatile organic compounds in soil by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	MCERTS

For method numbers ending in 'UK' analysis have been carried out in our laboratory in the United Kingdom.
For method numbers ending in 'PL' analysis have been carried out in our laboratory in Poland.
Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.

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Sample ID	Other_ID	Sample Type	Job	Sample Number	Sample Deviation Code	test_name	test_ref	Test Deviation code
WS302		S	18-21822	1111368	c	BTEX and MTBE in soil (Monoaromatics)	L073B-PL	c
WS302		S	18-21822	1111368	c	Volatile organic compounds in soil	L073B-PL	c
WS307		S	18-21822	1111369	c	BTEX and MTBE in soil (Monoaromatics)	L073B-PL	c
WS307		S	18-21822	1111369	c	Volatile organic compounds in soil	L073B-PL	c
WS307		S	18-21822	1111370	c	BTEX and MTBE in soil (Monoaromatics)	L073B-PL	c
WS307		S	18-21822	1111370	c	Volatile organic compounds in soil	L073B-PL	c

Key: a - No sampling date b - Incorrect container
c - Holding time d - Headspace e - Temperature

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Analytical Report Number : 18-21823

Project / Site name:	Station Hill, Reading	**Samples received on:**	30/11/2018
Your job number:	34769	**Samples instructed on:**	11/12/2018
Your order number:		**Analysis completed by:**	17/12/2018
Report Issue Number:	1	**Report issued on:**	17/12/2018
Samples Analysed:	6 soil samples		

Signed

Jordan Hill
Reporting Manager
For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41 -711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

soils	- 4 weeks from reporting
leachates	- 2 weeks from reporting
waters	- 2 weeks from reporting
asbestos	- 6 months from reporting

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Analytical Report Number: 18-21823

Project / Site name: Station Hill, Reading

Lab Sample Number				1111371	1111372	1111373	1111374	1111375
Sample Reference				WS304	WS304	WS304	WS301	WS301
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.40	1.80	3.30	0.20	1.85
Date Sampled				22/11/2018	22/11/2018	22/11/2018	22/11/2018	22/11/2018
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	16	< 0.1
Moisture Content	%	N/A	NONE	15	8.1	20	8.0	19
Total mass of sample received	kg	0.001	NONE	2.0	1.9	1.7	2.0	1.8
Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	-	-	Not-detected	-
General Inorganics								
Total Cyanide	mg/kg	1	MCERTS	-	-	< 1	< 1	-
Speciated PAHs								
Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	1.1	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	1.3	< 0.05
Fluorene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	0.87	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	8.6	< 0.05
Anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	4.9	< 0.05
Fluoranthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	49	< 0.05
Pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	43	< 0.05
Benzo(a)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	30	< 0.05
Chrysene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	22	< 0.05
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	34	< 0.05
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	18	< 0.05
Benzo(a)pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	32	< 0.05
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	16	< 0.05
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	5.2	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	18	< 0.05
Total PAH								
Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	< 0.80	< 0.80	< 0.80	282	< 0.80
Heavy Metals / Metalloids								
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	13	33	1.1	13	2.0
Boron (water soluble)	mg/kg	0.2	MCERTS	2.1	0.6	< 0.2	1.5	0.3
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	0.3	< 0.2
Chromium (hexavalent)	mg/kg	4	MCERTS	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	21	32	3.6	21	< 1.0
Copper (aqua regia extractable)	mg/kg	1	MCERTS	95	14	6.7	53	2.4
Lead (aqua regia extractable)	mg/kg	1	MCERTS	120	13	2.5	18	2.3
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	21	49	4.3	23	1.5
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	65	63	11	37	4.5

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Analytical Report Number: 18-21823

Project / Site name: Station Hill, Reading

Lab Sample Number				1111371	1111372	1111373	1111374	1111375
Sample Reference				WS304	WS304	WS304	WS301	WS301
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.40	1.80	3.30	0.20	1.85
Date Sampled				22/11/2018	22/11/2018	22/11/2018	22/11/2018	22/11/2018
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Monoaromatics								
Benzene	ug/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
p & m-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Petroleum Hydrocarbons								
TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	7.7	< 1.0
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0	< 2.0	42	48	< 2.0
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	13	< 8.0	88	58	< 8.0
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	< 8.0	< 8.0	9.9	270	< 8.0
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	19	< 10	140	380	< 10
TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	1.8	< 1.0
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0	< 2.0	40	62	< 2.0
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	< 10	< 10	96	610	< 10
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	< 10	< 10	19	2600	< 10
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	11	< 10	160	3300	< 10

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Analytical Report Number: 18-21823

Project / Site name: Station Hill, Reading

Lab Sample Number				1111371	1111372	1111373	1111374	1111375
Sample Reference				WS304	WS304	WS304	WS301	WS301
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.40	1.80	3.30	0.20	1.85
Date Sampled				22/11/2018	22/11/2018	22/11/2018	22/11/2018	22/11/2018
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
VOCs								
Chloromethane	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chloroethane	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromomethane	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Vinyl Chloride	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trichlorofluoromethane	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethene	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2-Trichloro 1,2,2-Trifluoroethane	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Cis-1,2-dichloroethene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
2,2-Dichloropropane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trichloromethane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,1-Trichloroethane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloroethane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloropropene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trans-1,2-dichloroethene	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Benzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloromethane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloropropane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trichloroethene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dibromomethane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromodichloromethane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Cis-1,3-dichloropropene	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trans-1,3-dichloropropene	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2-Trichloroethane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3-Dichloropropane	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dibromochloromethane	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloroethene	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dibromoethane	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chlorobenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,1,2-Tetrachloroethane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
p & m-Xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Styrene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tribromomethane	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-Xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2,2-Tetrachloroethane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Isopropylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromobenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
n-Propylbenzene	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
2-Chlorotoluene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
4-Chlorotoluene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3,5-Trimethylbenzene	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
tert-Butylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,4-Trimethylbenzene	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
sec-Butylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3-Dichlorobenzene	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
p-Isopropyltoluene	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichlorobenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,4-Dichlorobenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Butylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dibromo-3-chloropropane	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,4-Trichlorobenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Hexachlorobutadiene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,3-Trichlorobenzene	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0

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Analytical Report Number: 18-21823

Project / Site name: Station Hill, Reading

Lab Sample Number				1111371	1111372	1111373	1111374	1111375
Sample Reference				WS304	WS304	WS304	WS301	WS301
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.40	1.80	3.30	0.20	1.85
Date Sampled				22/11/2018	22/11/2018	22/11/2018	22/11/2018	22/11/2018
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
SVOCs								
Aniline	mg/kg	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Phenol	mg/kg	0.2	ISO 17025	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
2-Chlorophenol	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Bis(2-chloroethyl)ether	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
1,3-Dichlorobenzene	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
1,2-Dichlorobenzene	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
1,4-Dichlorobenzene	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Bis(2-chloroisopropyl)ether	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
2-Methylphenol	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Hexachloroethane	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Nitrobenzene	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
4-Methylphenol	mg/kg	0.2	NONE	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Isophorone	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
2-Nitrophenol	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
2,4-Dimethylphenol	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Bis(2-chloroethoxy)methane	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
1,2,4-Trichlorobenzene	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
2,4-Dichlorophenol	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
4-Chloroaniline	mg/kg	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Hexachlorobutadiene	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
4-Chloro-3-methylphenol	mg/kg	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
2,4,6-Trichlorophenol	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
2,4,5-Trichlorophenol	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
2-Methylnaphthalene	mg/kg	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
2-Chloronaphthalene	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Dimethylphthalate	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
2,6-Dinitrotoluene	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	1.1	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	1.3	< 0.05
2,4-Dinitrotoluene	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Dibenzofuran	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	0.3	< 0.2
4-Chlorophenyl phenyl ether	mg/kg	0.3	ISO 17025	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Diethyl phthalate	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
4-Nitroaniline	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Fluorene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	0.87	< 0.05
Azobenzene	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Bromophenyl phenyl ether	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Hexachlorobenzene	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Phenanthrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	8.6	< 0.05
Anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	4.9	< 0.05
Carbazole	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	0.9	< 0.3
Dibutyl phthalate	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Anthraquinone	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Fluoranthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	49	< 0.05
Pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	43	< 0.05
Butyl benzyl phthalate	mg/kg	0.3	ISO 17025	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Benzo(a)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	30	< 0.05
Chrysene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	22	< 0.05
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	34	< 0.05
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	18	< 0.05
Benzo(a)pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	32	< 0.05
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	16	< 0.05
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	5.2	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	18	< 0.05

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Analytical Report Number: 18-21823

Project / Site name: Station Hill, Reading

Lab Sample Number				1111371	1111372	1111373	1111374	1111375
Sample Reference				WS304	WS304	WS304	WS301	WS301
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.40	1.80	3.30	0.20	1.85
Date Sampled				22/11/2018	22/11/2018	22/11/2018	22/11/2018	22/11/2018
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
PCBs by GC-MS								
PCB Congener 28	mg/kg	0.001	MCERTS	-	-	< 0.001	< 0.001	-
PCB Congener 52	mg/kg	0.001	MCERTS	-	-	< 0.001	< 0.001	-
PCB Congener 101	mg/kg	0.001	MCERTS	-	-	< 0.001	< 0.001	-
PCB Congener 118	mg/kg	0.001	MCERTS	-	-	< 0.001	< 0.001	-
PCB Congener 138	mg/kg	0.001	MCERTS	-	-	< 0.001	< 0.001	-
PCB Congener 153	mg/kg	0.001	MCERTS	-	-	< 0.001	< 0.001	-
PCB Congener 180	mg/kg	0.001	MCERTS	-	-	< 0.001	< 0.001	-
Total PCBs by GC-MS								
Total PCBs	mg/kg	0.007	MCERTS	-	-	< 0.007	< 0.007	-

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Analytical Report Number: 18-21823

Project / Site name: Station Hill, Reading

Lab Sample Number				1111376				
Sample Reference				WS307				
Sample Number				None Supplied				
Depth (m)				4.85				
Date Sampled				22/11/2018				
Time Taken				None Supplied				
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Stone Content	%	0.1	NONE	< 0.1				
Moisture Content	%	N/A	NONE	20				
Total mass of sample received	kg	0.001	NONE	0.39				
Asbestos in Soil	Type	N/A	ISO 17025	-				
General Inorganics								
Total Cyanide	mg/kg	1	MCERTS	-				
Speciated PAHs								
Naphthalene	mg/kg	0.05	MCERTS	< 0.05				
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05				
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05				
Fluorene	mg/kg	0.05	MCERTS	< 0.05				
Phenanthrene	mg/kg	0.05	MCERTS	< 0.05				
Anthracene	mg/kg	0.05	MCERTS	< 0.05				
Fluoranthene	mg/kg	0.05	MCERTS	< 0.05				
Pyrene	mg/kg	0.05	MCERTS	< 0.05				
Benzo(a)anthracene	mg/kg	0.05	MCERTS	< 0.05				
Chrysene	mg/kg	0.05	MCERTS	< 0.05				
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	< 0.05				
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	< 0.05				
Benzo(a)pyrene	mg/kg	0.05	MCERTS	< 0.05				
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	< 0.05				
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05				
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05				
Total PAH								
Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	< 0.80				
Heavy Metals / Metalloids								
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	1.6				
Boron (water soluble)	mg/kg	0.2	MCERTS	0.3				
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	0.3				
Chromium (hexavalent)	mg/kg	4	MCERTS	< 4.0				
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	3.3				
Copper (aqua regia extractable)	mg/kg	1	MCERTS	4.1				
Lead (aqua regia extractable)	mg/kg	1	MCERTS	2.1				
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3				
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	1.9				
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0				
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	9.8				

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Analytical Report Number: 18-21823

Project / Site name: Station Hill, Reading

Lab Sample Number				1111376				
Sample Reference				WS307				
Sample Number				None Supplied				
Depth (m)				4.85				
Date Sampled				22/11/2018				
Time Taken				None Supplied				
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Monoaromatics								
Benzene	ug/kg	1	MCERTS	< 1.0				
Toluene	µg/kg	1	MCERTS	< 1.0				
Ethylbenzene	µg/kg	1	MCERTS	< 1.0				
p & m-xylene	µg/kg	1	MCERTS	< 1.0				
o-xylene	µg/kg	1	MCERTS	< 1.0				
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	< 1.0				

Petroleum Hydrocarbons

TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.001	MCERTS	< 0.001				
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.001	MCERTS	< 0.001				
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001				
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0				
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0				
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	< 8.0				
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	< 8.0				
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	< 10				

TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.001	MCERTS	< 0.001				
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.001	MCERTS	< 0.001				
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001				
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0				
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0				
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	< 10				
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	< 10				
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	< 10				

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Analytical Report Number: 18-21823

Project / Site name: Station Hill, Reading

Lab Sample Number				1111376				
Sample Reference				WS307				
Sample Number				None Supplied				
Depth (m)				4.85				
Date Sampled				22/11/2018				
Time Taken				None Supplied				
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
VOCs								
Chloromethane	µg/kg	1	ISO 17025	< 1.0				
Chloroethane	µg/kg	1	NONE	< 1.0				
Bromomethane	µg/kg	1	ISO 17025	< 1.0				
Vinyl Chloride	µg/kg	1	NONE	< 1.0				
Trichlorofluoromethane	µg/kg	1	NONE	< 1.0				
1,1-Dichloroethene	µg/kg	1	NONE	< 1.0				
1,1,2-Trichloro 1,2,2-Trifluoroethane	µg/kg	1	ISO 17025	< 1.0				
Cis-1,2-dichloroethene	µg/kg	1	MCERTS	< 1.0				
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	< 1.0				
1,1-Dichloroethane	µg/kg	1	MCERTS	< 1.0				
2,2-Dichloropropane	µg/kg	1	MCERTS	< 1.0				
Trichloromethane	µg/kg	1	MCERTS	< 1.0				
1,1,1-Trichloroethane	µg/kg	1	MCERTS	< 1.0				
1,2-Dichloroethane	µg/kg	1	MCERTS	< 1.0				
1,1-Dichloropropene	µg/kg	1	MCERTS	< 1.0				
Trans-1,2-dichloroethene	µg/kg	1	NONE	< 1.0				
Benzene	µg/kg	1	MCERTS	< 1.0				
Tetrachloromethane	µg/kg	1	MCERTS	< 1.0				
1,2-Dichloropropane	µg/kg	1	MCERTS	< 1.0				
Trichloroethene	µg/kg	1	MCERTS	< 1.0				
Dibromomethane	µg/kg	1	MCERTS	< 1.0				
Bromodichloromethane	µg/kg	1	MCERTS	< 1.0				
Cis-1,3-dichloropropene	µg/kg	1	ISO 17025	< 1.0				
Trans-1,3-dichloropropene	µg/kg	1	ISO 17025	< 1.0				
Toluene	µg/kg	1	MCERTS	< 1.0				
1,1,2-Trichloroethane	µg/kg	1	MCERTS	< 1.0				
1,3-Dichloropropane	µg/kg	1	ISO 17025	< 1.0				
Dibromochloromethane	µg/kg	1	ISO 17025	< 1.0				
Tetrachloroethene	µg/kg	1	NONE	< 1.0				
1,2-Dibromoethane	µg/kg	1	ISO 17025	< 1.0				
Chlorobenzene	µg/kg	1	MCERTS	< 1.0				
1,1,1,2-Tetrachloroethane	µg/kg	1	MCERTS	< 1.0				
Ethylbenzene	µg/kg	1	MCERTS	< 1.0				
p & m-Xylene	µg/kg	1	MCERTS	< 1.0				
Styrene	µg/kg	1	MCERTS	< 1.0				
Tribromomethane	µg/kg	1	NONE	< 1.0				
o-Xylene	µg/kg	1	MCERTS	< 1.0				
1,1,2,2-Tetrachloroethane	µg/kg	1	MCERTS	< 1.0				
Isopropylbenzene	µg/kg	1	MCERTS	< 1.0				
Bromobenzene	µg/kg	1	MCERTS	< 1.0				
n-Propylbenzene	µg/kg	1	ISO 17025	< 1.0				
2-Chlorotoluene	µg/kg	1	MCERTS	< 1.0				
4-Chlorotoluene	µg/kg	1	MCERTS	< 1.0				
1,3,5-Trimethylbenzene	µg/kg	1	ISO 17025	< 1.0				
tert-Butylbenzene	µg/kg	1	MCERTS	< 1.0				
1,2,4-Trimethylbenzene	µg/kg	1	ISO 17025	< 1.0				
sec-Butylbenzene	µg/kg	1	MCERTS	< 1.0				
1,3-Dichlorobenzene	µg/kg	1	ISO 17025	< 1.0				
p-Isopropyltoluene	µg/kg	1	ISO 17025	< 1.0				
1,2-Dichlorobenzene	µg/kg	1	MCERTS	< 1.0				
1,4-Dichlorobenzene	µg/kg	1	MCERTS	< 1.0				
Butylbenzene	µg/kg	1	MCERTS	< 1.0				
1,2-Dibromo-3-chloropropane	µg/kg	1	ISO 17025	< 1.0				
1,2,4-Trichlorobenzene	µg/kg	1	MCERTS	< 1.0				
Hexachlorobutadiene	µg/kg	1	MCERTS	< 1.0				
1,2,3-Trichlorobenzene	µg/kg	1	ISO 17025	< 1.0				

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Analytical Report Number: 18-21823

Project / Site name: Station Hill, Reading

Lab Sample Number				1111376				
Sample Reference				WS307				
Sample Number				None Supplied				
Depth (m)				4.85				
Date Sampled				22/11/2018				
Time Taken				None Supplied				
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
SVOCs								
Aniline	mg/kg	0.1	NONE	< 0.1				
Phenol	mg/kg	0.2	ISO 17025	< 0.2				
2-Chlorophenol	mg/kg	0.1	MCERTS	< 0.1				
Bis(2-chloroethyl)ether	mg/kg	0.2	MCERTS	< 0.2				
1,3-Dichlorobenzene	mg/kg	0.2	MCERTS	< 0.2				
1,2-Dichlorobenzene	mg/kg	0.1	MCERTS	< 0.1				
1,4-Dichlorobenzene	mg/kg	0.2	MCERTS	< 0.2				
Bis(2-chloroisopropyl)ether	mg/kg	0.1	MCERTS	< 0.1				
2-Methylphenol	mg/kg	0.3	MCERTS	< 0.3				
Hexachloroethane	mg/kg	0.05	MCERTS	< 0.05				
Nitrobenzene	mg/kg	0.3	MCERTS	< 0.3				
4-Methylphenol	mg/kg	0.2	NONE	< 0.2				
Isophorone	mg/kg	0.2	MCERTS	< 0.2				
2-Nitrophenol	mg/kg	0.3	MCERTS	< 0.3				
2,4-Dimethylphenol	mg/kg	0.3	MCERTS	< 0.3				
Bis(2-chloroethoxy)methane	mg/kg	0.3	MCERTS	< 0.3				
1,2,4-Trichlorobenzene	mg/kg	0.3	MCERTS	< 0.3				
Naphthalene	mg/kg	0.05	MCERTS	< 0.05				
2,4-Dichlorophenol	mg/kg	0.3	MCERTS	< 0.3				
4-Chloroaniline	mg/kg	0.1	NONE	< 0.1				
Hexachlorobutadiene	mg/kg	0.1	MCERTS	< 0.1				
4-Chloro-3-methylphenol	mg/kg	0.1	NONE	< 0.1				
2,4,6-Trichlorophenol	mg/kg	0.1	MCERTS	< 0.1				
2,4,5-Trichlorophenol	mg/kg	0.2	MCERTS	< 0.2				
2-Methylnaphthalene	mg/kg	0.1	NONE	< 0.1				
2-Chloronaphthalene	mg/kg	0.1	MCERTS	< 0.1				
Dimethylphthalate	mg/kg	0.1	MCERTS	< 0.1				
2,6-Dinitrotoluene	mg/kg	0.1	MCERTS	< 0.1				
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05				
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05				
2,4-Dinitrotoluene	mg/kg	0.2	MCERTS	< 0.2				
Dibenzofuran	mg/kg	0.2	MCERTS	< 0.2				
4-Chlorophenyl phenyl ether	mg/kg	0.3	ISO 17025	< 0.3				
Diethyl phthalate	mg/kg	0.2	MCERTS	< 0.2				
4-Nitroaniline	mg/kg	0.2	MCERTS	< 0.2				
Fluorene	mg/kg	0.05	MCERTS	< 0.05				
Azobenzene	mg/kg	0.3	MCERTS	< 0.3				
Bromophenyl phenyl ether	mg/kg	0.2	MCERTS	< 0.2				
Hexachlorobenzene	mg/kg	0.3	MCERTS	< 0.3				
Phenanthrene	mg/kg	0.05	MCERTS	< 0.05				
Anthracene	mg/kg	0.05	MCERTS	< 0.05				
Carbazole	mg/kg	0.3	MCERTS	< 0.3				
Dibutyl phthalate	mg/kg	0.2	MCERTS	< 0.2				
Anthraquinone	mg/kg	0.3	MCERTS	< 0.3				
Fluoranthene	mg/kg	0.05	MCERTS	< 0.05				
Pyrene	mg/kg	0.05	MCERTS	< 0.05				
Butyl benzyl phthalate	mg/kg	0.3	ISO 17025	< 0.3				
Benzo(a)anthracene	mg/kg	0.05	MCERTS	< 0.05				
Chrysene	mg/kg	0.05	MCERTS	< 0.05				
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	< 0.05				
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	< 0.05				
Benzo(a)pyrene	mg/kg	0.05	MCERTS	< 0.05				
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	< 0.05				
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05				
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05				

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Analytical Report Number: 18-21823

Project / Site name: Station Hill, Reading

Lab Sample Number				1111376				
Sample Reference				WS307				
Sample Number				None Supplied				
Depth (m)				4.85				
Date Sampled				22/11/2018				
Time Taken				None Supplied				
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
PCBs by GC-MS								
PCB Congener 28	mg/kg	0.001	MCERTS	-				
PCB Congener 52	mg/kg	0.001	MCERTS	-				
PCB Congener 101	mg/kg	0.001	MCERTS	-				
PCB Congener 118	mg/kg	0.001	MCERTS	-				
PCB Congener 138	mg/kg	0.001	MCERTS	-				
PCB Congener 153	mg/kg	0.001	MCERTS	-				
PCB Congener 180	mg/kg	0.001	MCERTS	-				

Total PCBs by GC-MS

Total PCBs	mg/kg	0.007	MCERTS	-				

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Analytical Report Number : 18-21823

Project / Site name: Station Hill, Reading

* These descriptions are only intended to act as a cross check if sample identities are questioned. The major constituent of the sample is intended to act with respect to MCERTS validation. The laboratory is accredited for sand, clay and loam (MCERTS) soil types. Data for unaccredited types of solid should be interpreted with care.

Stone content of a sample is calculated as the % weight of the stones not passing a 10 mm sieve. Results are not corrected for stone content.

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
1111371	WS304	None Supplied	0.40	Brown loam and clay with gravel and stones.
1111372	WS304	None Supplied	1.80	Brown clay and loam with gravel.
1111373	WS304	None Supplied	3.30	Beige chalk. **
1111374	WS301	None Supplied	0.20	Brown gravelly sand with stones.
1111375	WS301	None Supplied	1.85	Beige chalk. **
1111376	WS307	None Supplied	4.85	Beige chalk. **

** Non MCERTS matrix.

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Analytical Report Number : 18-21823

Project / Site name: Station Hill, Reading

Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Water (PrW)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Asbestos identification in soil	Asbestos Identification with the use of polarised light microscopy in conjunction with disperion staining techniques.	In house method based on HSG 248	A001-PL	D	ISO 17025
Boron, water soluble, in soil	Determination of water soluble boron in soil by hot water extract followed by ICP-OES.	In-house method based on Second Site Properties version 3	L038-PL	D	MCERTS
BTEX and MTBE in soil (Monoaromatics)	Determination of BTEX in soil by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	MCERTS
Hexavalent chromium in soil	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method	L080-PL	W	MCERTS
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L038-PL	D	MCERTS
Moisture Content	Moisture content, determined gravimetrically.	In-house method based on BS1377 Part 2, 1990, Chemical and Electrochemical Tests	L019-UK/PL	W	NONE
PCB's By GC-MS in soil	Determination of PCB by extraction with acetone and hexane followed by GC-MS.	In-house method based on USEPA 8082	L027-PL	D	MCERTS
Semi-volatile organic compounds in soil	Determination of semi-volatile organic compounds in soil by extraction in dichloromethane and hexane followed by GC-MS.	In-house method based on USEPA 8270	L064-PL	D	MCERTS
Speciated EPA-16 PAHs in soil	Determination of PAH compounds in soil by extraction in dichloromethane and hexane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270	L064-PL	D	MCERTS
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
Total cyanide in soil	Determination of total cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
TPHCWG (Soil)	Determination of hexane extractable hydrocarbons in soil by GC-MS/GC-FID.	In-house method with silica gel split/clean up.	L088/76-PL	W	MCERTS
Volatile organic compounds in soil	Determination of volatile organic compounds in soil by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	MCERTS

For method numbers ending in 'UK' analysis have been carried out in our laboratory in the United Kingdom.
For method numbers ending in 'PL' analysis have been carried out in our laboratory in Poland.
Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.

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Sample ID	Other_ID	Sample Type	Job	Sample Number	Sample Deviation Code	test_name	test_ref	Test Deviation code
WS301		S	18-21823	1111374	c	BTEX and MTBE in soil (Monoaromatics)	L073B-PL	c
WS301		S	18-21823	1111374	c	Total cyanide in soil	L080-PL	c
WS301		S	18-21823	1111374	c	Volatile organic compounds in soil	L073B-PL	c
WS301		S	18-21823	1111375	c	BTEX and MTBE in soil (Monoaromatics)	L073B-PL	c
WS301		S	18-21823	1111375	c	Volatile organic compounds in soil	L073B-PL	c
WS304		S	18-21823	1111371	c	BTEX and MTBE in soil (Monoaromatics)	L073B-PL	c
WS304		S	18-21823	1111371	c	Volatile organic compounds in soil	L073B-PL	c
WS304		S	18-21823	1111372	c	BTEX and MTBE in soil (Monoaromatics)	L073B-PL	c
WS304		S	18-21823	1111372	c	Volatile organic compounds in soil	L073B-PL	c
WS304		S	18-21823	1111373	c	BTEX and MTBE in soil (Monoaromatics)	L073B-PL	c
WS304		S	18-21823	1111373	c	Total cyanide in soil	L080-PL	c
WS304		S	18-21823	1111373	c	Volatile organic compounds in soil	L073B-PL	c
WS307		S	18-21823	1111376	c	BTEX and MTBE in soil (Monoaromatics)	L073B-PL	c
WS307		S	18-21823	1111376	c	Volatile organic compounds in soil	L073B-PL	c

Key: a - No sampling date b - Incorrect container
c - Holding time d - Headspace e - Temperature

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Analytical Report Number : 18-21824

Project / Site name:	Station Hill, Reading	**Samples received on:**	30/11/2018
Your job number:	34769	**Samples instructed on:**	11/12/2018
Your order number:		**Analysis completed by:**	17/12/2018
Report Issue Number:	1	**Report issued on:**	17/12/2018
Samples Analysed:	3 soil samples		

Signed

Jordan Hill
Reporting Manager
For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41 -711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

soils	- 4 weeks from reporting
leachates	- 2 weeks from reporting
waters	- 2 weeks from reporting
asbestos	- 6 months from reporting

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The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number: 18-21824

Project / Site name: Station Hill, Reading

Lab Sample Number				1111377	1111378	1111379		
Sample Reference				WS316	WS315	WS315		
Sample Number				None Supplied	None Supplied	None Supplied		
Depth (m)				0.60	0.50	0.80		
Date Sampled				27/11/2018	24/11/2018	24/11/2018		
Time Taken				None Supplied	None Supplied	None Supplied		
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Stone Content	%	0.1	NONE	31	12	20		
Moisture Content	%	N/A	NONE	4.6	4.5	10		
Total mass of sample received	kg	0.001	NONE	2.0	2.0	1.8		
Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Not-detected	-		
General Inorganics								
Total Cyanide	mg/kg	1	MCERTS	-	< 1	< 1		
Speciated PAHs								
Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05		
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05		
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05		
Fluorene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05		
Phenanthrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05		
Anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05		
Fluoranthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05		
Pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05		
Benzo(a)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05		
Chrysene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05		
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05		
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05		
Benzo(a)pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05		
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05		
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05		
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05		
Total PAH								
Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	< 0.80	< 0.80	< 0.80		
Heavy Metals / Metalloids								
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	19	17	7.4		
Boron (water soluble)	mg/kg	0.2	MCERTS	0.4	0.8	0.4		
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2	0.2		
Chromium (hexavalent)	mg/kg	4	MCERTS	< 4.0	< 4.0	< 4.0		
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	15	16	6.4		
Copper (aqua regia extractable)	mg/kg	1	MCERTS	11	20	11		
Lead (aqua regia extractable)	mg/kg	1	MCERTS	38	14	4.6		
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3		
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	23	26	13		
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0		
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	33	55	29		

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Analytical Report Number: 18-21824

Project / Site name: Station Hill, Reading

Lab Sample Number				1111377	1111378	1111379		
Sample Reference				WS316	WS315	WS315		
Sample Number				None Supplied	None Supplied	None Supplied		
Depth (m)				0.60	0.50	0.80		
Date Sampled				27/11/2018	24/11/2018	24/11/2018		
Time Taken				None Supplied	None Supplied	None Supplied		
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Monoaromatics								
Benzene	ug/kg	1	MCERTS	< 1.0	< 1.0	< 1.0		
Toluene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0		
Ethylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0		
p & m-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0		
o-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0		
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0		
Petroleum Hydrocarbons								
TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001		
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001		
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001		
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0		
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0		
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0		
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0		
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	< 10	< 10	< 10		
TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001		
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001		
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001		
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0		
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0		
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	< 10	< 10	< 10		
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	< 10	< 10	< 10		
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	< 10	< 10	< 10		

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Analytical Report Number: 18-21824

Project / Site name: Station Hill, Reading

Lab Sample Number				1111377	1111378	1111379		
Sample Reference				WS316	WS315	WS315		
Sample Number				None Supplied	None Supplied	None Supplied		
Depth (m)				0.60	0.50	0.80		
Date Sampled				27/11/2018	24/11/2018	24/11/2018		
Time Taken				None Supplied	None Supplied	None Supplied		
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
VOCs								
Chloromethane	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0		
Chloroethane	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0		
Bromomethane	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0		
Vinyl Chloride	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0		
Trichlorofluoromethane	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0		
1,1-Dichloroethene	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0		
1,1,2-Trichloro 1,2,2-Trifluoroethane	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0		
Cis-1,2-dichloroethene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0		
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0		
1,1-Dichloroethane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0		
2,2-Dichloropropane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0		
Trichloromethane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0		
1,1,1-Trichloroethane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0		
1,2-Dichloroethane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0		
1,1-Dichloropropene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0		
Trans-1,2-dichloroethene	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0		
Benzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0		
Tetrachloromethane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0		
1,2-Dichloropropane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0		
Trichloroethene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0		
Dibromomethane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0		
Bromodichloromethane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0		
Cis-1,3-dichloropropene	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0		
Trans-1,3-dichloropropene	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0		
Toluene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0		
1,1,2-Trichloroethane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0		
1,3-Dichloropropane	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0		
Dibromochloromethane	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0		
Tetrachloroethene	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0		
1,2-Dibromoethane	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0		
Chlorobenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0		
1,1,1,2-Tetrachloroethane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0		
Ethylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0		
p & m-Xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0		
Styrene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0		
Tribromomethane	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0		
o-Xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0		
1,1,2,2-Tetrachloroethane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0		
Isopropylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0		
Bromobenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0		
n-Propylbenzene	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0		
2-Chlorotoluene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0		
4-Chlorotoluene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0		
1,3,5-Trimethylbenzene	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0		
tert-Butylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0		
1,2,4-Trimethylbenzene	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0		
sec-Butylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0		
1,3-Dichlorobenzene	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0		
p-Isopropyltoluene	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0		
1,2-Dichlorobenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0		
1,4-Dichlorobenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0		
Butylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0		
1,2-Dibromo-3-chloropropane	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0		
1,2,4-Trichlorobenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0		
Hexachlorobutadiene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0		
1,2,3-Trichlorobenzene	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0		

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Analytical Report Number: 18-21824

Project / Site name: Station Hill, Reading

Lab Sample Number				1111377	1111378	1111379		
Sample Reference				WS316	WS315	WS315		
Sample Number				None Supplied	None Supplied	None Supplied		
Depth (m)				0.60	0.50	0.80		
Date Sampled				27/11/2018	24/11/2018	24/11/2018		
Time Taken				None Supplied	None Supplied	None Supplied		
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
SVOCs								
Aniline	mg/kg	0.1	NONE	< 0.1	< 0.1	< 0.1		
Phenol	mg/kg	0.2	ISO 17025	< 0.2	< 0.2	< 0.2		
2-Chlorophenol	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1		
Bis(2-chloroethyl)ether	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2		
1,3-Dichlorobenzene	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2		
1,2-Dichlorobenzene	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1		
1,4-Dichlorobenzene	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2		
Bis(2-chloroisopropyl)ether	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1		
2-Methylphenol	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3		
Hexachloroethane	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05		
Nitrobenzene	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3		
4-Methylphenol	mg/kg	0.2	NONE	< 0.2	< 0.2	< 0.2		
Isophorone	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2		
2-Nitrophenol	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3		
2,4-Dimethylphenol	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3		
Bis(2-chloroethoxy)methane	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3		
1,2,4-Trichlorobenzene	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3		
Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05		
2,4-Dichlorophenol	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3		
4-Chloroaniline	mg/kg	0.1	NONE	< 0.1	< 0.1	< 0.1		
Hexachlorobutadiene	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1		
4-Chloro-3-methylphenol	mg/kg	0.1	NONE	< 0.1	< 0.1	< 0.1		
2,4,6-Trichlorophenol	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1		
2,4,5-Trichlorophenol	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2		
2-Methylnaphthalene	mg/kg	0.1	NONE	< 0.1	< 0.1	< 0.1		
2-Chloronaphthalene	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1		
Dimethylphthalate	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1		
2,6-Dinitrotoluene	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1		
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05		
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05		
2,4-Dinitrotoluene	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2		
Dibenzofuran	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2		
4-Chlorophenyl phenyl ether	mg/kg	0.3	ISO 17025	< 0.3	< 0.3	< 0.3		
Diethyl phthalate	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2		
4-Nitroaniline	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2		
Fluorene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05		
Azobenzene	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3		
Bromophenyl phenyl ether	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2		
Hexachlorobenzene	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3		
Phenanthrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05		
Anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05		
Carbazole	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3		
Dibutyl phthalate	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2		
Anthraquinone	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3		
Fluoranthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05		
Pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05		
Butyl benzyl phthalate	mg/kg	0.3	ISO 17025	< 0.3	< 0.3	< 0.3		
Benzo(a)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05		
Chrysene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05		
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05		
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05		
Benzo(a)pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05		
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05		
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05		
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05		

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Analytical Report Number: 18-21824

Project / Site name: Station Hill, Reading

Lab Sample Number				1111377	1111378	1111379		
Sample Reference				WS316	WS315	WS315		
Sample Number				None Supplied	None Supplied	None Supplied		
Depth (m)				0.60	0.50	0.80		
Date Sampled				27/11/2018	24/11/2018	24/11/2018		
Time Taken				None Supplied	None Supplied	None Supplied		
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
PCBs by GC-MS								
PCB Congener 28	mg/kg	0.001	MCERTS	-	-	< 0.001		
PCB Congener 52	mg/kg	0.001	MCERTS	-	-	< 0.001		
PCB Congener 101	mg/kg	0.001	MCERTS	-	-	< 0.001		
PCB Congener 118	mg/kg	0.001	MCERTS	-	-	< 0.001		
PCB Congener 138	mg/kg	0.001	MCERTS	-	-	< 0.001		
PCB Congener 153	mg/kg	0.001	MCERTS	-	-	< 0.001		
PCB Congener 180	mg/kg	0.001	MCERTS	-	-	< 0.001		
Total PCBs by GC-MS								
Total PCBs	mg/kg	0.007	MCERTS	-	-	< 0.007		

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The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number : 18-21824

Project / Site name: Station Hill, Reading

* These descriptions are only intended to act as a cross check if sample identities are questioned. The major constituent of the sample is intended to act with respect to MCERTS validation. The laboratory is accredited for sand, clay and loam (MCERTS) soil types. Data for unaccredited types of solid should be interpreted with care.

Stone content of a sample is calculated as the % weight of the stones not passing a 10 mm sieve. Results are not corrected for stone content.

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
1111377	WS316	None Supplied	0.60	Brown sand with gravel and stones.
1111378	WS315	None Supplied	0.50	Brown sand with gravel and stones.
1111379	WS315	None Supplied	0.80	Beige gravelly sand with stones.

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Analytical Report Number : 18-21824

Project / Site name: Station Hill, Reading

Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Water (PrW)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Asbestos identification in soil	Asbestos Identification with the use of polarised light microscopy in conjunction with disperion staining techniques.	In house method based on HSG 248	A001-PL	D	ISO 17025
Boron, water soluble, in soil	Determination of water soluble boron in soil by hot water extract followed by ICP-OES.	In-house method based on Second Site Properties version 3	L038-PL	D	MCERTS
BTEX and MTBE in soil (Monoaromatics)	Determination of BTEX in soil by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	MCERTS
Hexavalent chromium in soil	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method	L080-PL	W	MCERTS
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L038-PL	D	MCERTS
Moisture Content	Moisture content, determined gravimetrically.	In-house method based on BS1377 Part 2, 1990, Chemical and Electrochemical Tests	L019-UK/PL	W	NONE
PCB's By GC-MS in soil	Determination of PCB by extraction with acetone and hexane followed by GC-MS.	In-house method based on USEPA 8082	L027-PL	D	MCERTS
Semi-volatile organic compounds in soil	Determination of semi-volatile organic compounds in soil by extraction in dichloromethane and hexane followed by GC-MS.	In-house method based on USEPA 8270	L064-PL	D	MCERTS
Speciated EPA-16 PAHs in soil	Determination of PAH compounds in soil by extraction in dichloromethane and hexane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270	L064-PL	D	MCERTS
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
Total cyanide in soil	Determination of total cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
TPHCWG (Soil)	Determination of hexane extractable hydrocarbons in soil by GC-MS/GC-FID.	In-house method with silica gel split/clean up.	L088/76-PL	W	MCERTS
Volatile organic compounds in soil	Determination of volatile organic compounds in soil by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	MCERTS

For method numbers ending in 'UK' analysis have been carried out in our laboratory in the United Kingdom.
For method numbers ending in 'PL' analysis have been carried out in our laboratory in Poland.
Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.

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Sample ID	Other_ID	Sample Type	Job	Sample Number	Sample Deviation Code	test_name	test_ref	Test Deviation code
WS315		S	18-21824	1111378	c	BTEX and MTBE in soil (Monoaromatics)	L073B-PL	c
WS315		S	18-21824	1111378	c	Total cyanide in soil	L080-PL	c
WS315		S	18-21824	1111378	c	Volatile organic compounds in soil	L073B-PL	c
WS315		S	18-21824	1111379	c	BTEX and MTBE in soil (Monoaromatics)	L073B-PL	c
WS315		S	18-21824	1111379	c	Total cyanide in soil	L080-PL	c
WS315		S	18-21824	1111379	c	Volatile organic compounds in soil	L073B-PL	c

Key: a - No sampling date b - Incorrect container
c - Holding time d - Headspace e - Temperature

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Analytical Report Number : 18-21826

Project / Site name:	Station Hill, Reading	**Samples received on:**	30/11/2018
Your job number:	34769	**Samples instructed on:**	11/12/2018
Your order number:		**Analysis completed by:**	17/12/2018
Report Issue Number:	1	**Report issued on:**	17/12/2018
Samples Analysed:	6 soil samples		

Signed

Jordan Hill
Reporting Manager
For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41 -711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

soils	- 4 weeks from reporting
leachates	- 2 weeks from reporting
waters	- 2 weeks from reporting
asbestos	- 6 months from reporting

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The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number: 18-21826

Project / Site name: Station Hill, Reading

Lab Sample Number				1111386	1111387	1111388	1111389	1111390
Sample Reference				WS312	WS309	WS310	WS310	WS311
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.30	0.50	0.50	1.80	0.50
Date Sampled				28/11/2018	28/11/2018	28/11/2018	28/11/2018	28/11/2018
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Stone Content	%	0.1	NONE	17	15	36	< 0.1	< 0.1
Moisture Content	%	N/A	NONE	4.3	2.7	3.4	16	10
Total mass of sample received	kg	0.001	NONE	2.0	2.0	2.0	1.9	2.0
Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Not-detected	Not-detected	-	Not-detected
General Inorganics								
Total Cyanide	mg/kg	1	MCERTS	< 1	-	< 1	-	-
Speciated PAHs								
Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	0.32	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Fluorene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	1.5	< 0.05	< 0.05	< 0.05	< 0.05
Anthracene	mg/kg	0.05	MCERTS	0.40	< 0.05	< 0.05	< 0.05	< 0.05
Fluoranthene	mg/kg	0.05	MCERTS	3.3	< 0.05	< 0.05	< 0.05	< 0.05
Pyrene	mg/kg	0.05	MCERTS	2.6	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(a)anthracene	mg/kg	0.05	MCERTS	1.8	< 0.05	< 0.05	< 0.05	< 0.05
Chrysene	mg/kg	0.05	MCERTS	1.0	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	1.1	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	0.79	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(a)pyrene	mg/kg	0.05	MCERTS	1.1	< 0.05	< 0.05	< 0.05	< 0.05
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	0.60	< 0.05	< 0.05	< 0.05	< 0.05
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	0.26	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	0.59	< 0.05	< 0.05	< 0.05	< 0.05
Total PAH								
Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	15.3	< 0.80	< 0.80	< 0.80	< 0.80
Heavy Metals / Metalloids								
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	11	25	16	< 1.0	16
Boron (water soluble)	mg/kg	0.2	MCERTS	1.4	0.4	0.7	0.2	0.8
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	0.4	< 0.2
Chromium (hexavalent)	mg/kg	4	MCERTS	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	17	17	15	3.6	22
Copper (aqua regia extractable)	mg/kg	1	MCERTS	74	9.2	14	4.3	26
Lead (aqua regia extractable)	mg/kg	1	MCERTS	29	7.3	13	2.5	8.3
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	25	28	22	4.5	25
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	62	32	38	14	31

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Analytical Report Number: 18-21826

Project / Site name: Station Hill, Reading

Lab Sample Number				1111386	1111387	1111388	1111389	1111390
Sample Reference				WS312	WS309	WS310	WS310	WS311
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.30	0.50	0.50	1.80	0.50
Date Sampled				28/11/2018	28/11/2018	28/11/2018	28/11/2018	28/11/2018
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Monoaromatics								
Benzene	ug/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
p & m-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Petroleum Hydrocarbons								
TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	2.2	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	42	< 2.0	< 2.0	< 2.0	< 2.0
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	65	< 8.0	< 8.0	< 8.0	< 8.0
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	47	< 8.0	< 8.0	< 8.0	< 8.0
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	160	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	15	< 2.0	< 2.0	< 2.0	< 2.0
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	79	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	84	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	180	< 10	< 10	< 10	< 10

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Analytical Report Number: 18-21826

Project / Site name: Station Hill, Reading

Lab Sample Number				1111386	1111387	1111388	1111389	1111390
Sample Reference				WS312	WS309	WS310	WS310	WS311
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.30	0.50	0.50	1.80	0.50
Date Sampled				28/11/2018	28/11/2018	28/11/2018	28/11/2018	28/11/2018
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
VOCs								
Chloromethane	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chloroethane	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromomethane	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Vinyl Chloride	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trichlorofluoromethane	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethene	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2-Trichloro 1,2,2-Trifluoroethane	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Cis-1,2-dichloroethene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
2,2-Dichloropropane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trichloromethane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,1-Trichloroethane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloroethane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloropropene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trans-1,2-dichloroethene	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Benzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloromethane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloropropane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trichloroethene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dibromomethane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromodichloromethane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Cis-1,3-dichloropropene	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trans-1,3-dichloropropene	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2-Trichloroethane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3-Dichloropropane	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dibromochloromethane	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloroethene	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dibromoethane	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chlorobenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,1,2-Tetrachloroethane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
p & m-Xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Styrene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tribromomethane	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-Xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2,2-Tetrachloroethane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Isopropylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromobenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
n-Propylbenzene	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
2-Chlorotoluene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
4-Chlorotoluene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3,5-Trimethylbenzene	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
tert-Butylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,4-Trimethylbenzene	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
sec-Butylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3-Dichlorobenzene	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
p-Isopropyltoluene	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichlorobenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,4-Dichlorobenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Butylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dibromo-3-chloropropane	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,4-Trichlorobenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Hexachlorobutadiene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,3-Trichlorobenzene	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0

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Analytical Report Number: 18-21826

Project / Site name: Station Hill, Reading

Lab Sample Number				1111386	1111387	1111388	1111389	1111390
Sample Reference				WS312	WS309	WS310	WS310	WS311
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.30	0.50	0.50	1.80	0.50
Date Sampled				28/11/2018	28/11/2018	28/11/2018	28/11/2018	28/11/2018
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
SVOCs								
Aniline	mg/kg	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Phenol	mg/kg	0.2	ISO 17025	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
2-Chlorophenol	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Bis(2-chloroethyl)ether	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
1,3-Dichlorobenzene	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
1,2-Dichlorobenzene	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
1,4-Dichlorobenzene	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Bis(2-chloroisopropyl)ether	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
2-Methylphenol	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Hexachloroethane	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Nitrobenzene	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
4-Methylphenol	mg/kg	0.2	NONE	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Isophorone	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
2-Nitrophenol	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
2,4-Dimethylphenol	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Bis(2-chloroethoxy)methane	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
1,2,4-Trichlorobenzene	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
2,4-Dichlorophenol	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
4-Chloroaniline	mg/kg	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Hexachlorobutadiene	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
4-Chloro-3-methylphenol	mg/kg	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
2,4,6-Trichlorophenol	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
2,4,5-Trichlorophenol	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
2-Methylnaphthalene	mg/kg	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
2-Chloronaphthalene	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Dimethylphthalate	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
2,6-Dinitrotoluene	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Acenaphthylene	mg/kg	0.05	MCERTS	0.32	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
2,4-Dinitrotoluene	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Dibenzofuran	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
4-Chlorophenyl phenyl ether	mg/kg	0.3	ISO 17025	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Diethyl phthalate	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
4-Nitroaniline	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Fluorene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Azobenzene	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Bromophenyl phenyl ether	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Hexachlorobenzene	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Phenanthrene	mg/kg	0.05	MCERTS	1.5	< 0.05	< 0.05	< 0.05	< 0.05
Anthracene	mg/kg	0.05	MCERTS	0.40	< 0.05	< 0.05	< 0.05	< 0.05
Carbazole	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Dibutyl phthalate	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Anthraquinone	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Fluoranthene	mg/kg	0.05	MCERTS	3.3	< 0.05	< 0.05	< 0.05	< 0.05
Pyrene	mg/kg	0.05	MCERTS	2.6	< 0.05	< 0.05	< 0.05	< 0.05
Butyl benzyl phthalate	mg/kg	0.3	ISO 17025	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Benzo(a)anthracene	mg/kg	0.05	MCERTS	1.8	< 0.05	< 0.05	< 0.05	< 0.05
Chrysene	mg/kg	0.05	MCERTS	1.0	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	1.1	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	0.79	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(a)pyrene	mg/kg	0.05	MCERTS	1.1	< 0.05	< 0.05	< 0.05	< 0.05
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	0.60	< 0.05	< 0.05	< 0.05	< 0.05
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	0.26	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	0.59	< 0.05	< 0.05	< 0.05	< 0.05

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Analytical Report Number: 18-21826

Project / Site name: Station Hill, Reading

Lab Sample Number				1111386	1111387	1111388	1111389	1111390
Sample Reference				WS312	WS309	WS310	WS310	WS311
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.30	0.50	0.50	1.80	0.50
Date Sampled				28/11/2018	28/11/2018	28/11/2018	28/11/2018	28/11/2018
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
PCBs by GC-MS								
PCB Congener 28	mg/kg	0.001	MCERTS	< 0.001	-	< 0.001	-	-
PCB Congener 52	mg/kg	0.001	MCERTS	< 0.001	-	< 0.001	-	-
PCB Congener 101	mg/kg	0.001	MCERTS	< 0.001	-	< 0.001	-	-
PCB Congener 118	mg/kg	0.001	MCERTS	< 0.001	-	< 0.001	-	-
PCB Congener 138	mg/kg	0.001	MCERTS	< 0.001	-	< 0.001	-	-
PCB Congener 153	mg/kg	0.001	MCERTS	< 0.001	-	< 0.001	-	-
PCB Congener 180	mg/kg	0.001	MCERTS	< 0.001	-	< 0.001	-	-
Total PCBs by GC-MS								
Total PCBs	mg/kg	0.007	MCERTS	< 0.007	-	< 0.007	-	-

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Analytical Report Number: 18-21826

Project / Site name: Station Hill, Reading

Lab Sample Number				1111391				
Sample Reference				WS311				
Sample Number				None Supplied				
Depth (m)				1.80				
Date Sampled				28/11/2018				
Time Taken				None Supplied				
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Stone Content	%	0.1	NONE	< 0.1				
Moisture Content	%	N/A	NONE	19				
Total mass of sample received	kg	0.001	NONE	1.8				
Asbestos in Soil	Type	N/A	ISO 17025	-				
General Inorganics								
Total Cyanide	mg/kg	1	MCERTS	< 1				
Speciated PAHs								
Naphthalene	mg/kg	0.05	MCERTS	< 0.05				
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05				
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05				
Fluorene	mg/kg	0.05	MCERTS	< 0.05				
Phenanthrene	mg/kg	0.05	MCERTS	< 0.05				
Anthracene	mg/kg	0.05	MCERTS	< 0.05				
Fluoranthene	mg/kg	0.05	MCERTS	< 0.05				
Pyrene	mg/kg	0.05	MCERTS	< 0.05				
Benzo(a)anthracene	mg/kg	0.05	MCERTS	< 0.05				
Chrysene	mg/kg	0.05	MCERTS	< 0.05				
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	< 0.05				
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	< 0.05				
Benzo(a)pyrene	mg/kg	0.05	MCERTS	< 0.05				
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	< 0.05				
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05				
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05				
Total PAH								
Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	< 0.80				
Heavy Metals / Metalloids								
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0				
Boron (water soluble)	mg/kg	0.2	MCERTS	0.2				
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	0.4				
Chromium (hexavalent)	mg/kg	4	MCERTS	< 4.0				
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	5.6				
Copper (aqua regia extractable)	mg/kg	1	MCERTS	3.8				
Lead (aqua regia extractable)	mg/kg	1	MCERTS	2.6				
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3				
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	2.6				
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0				
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	8.9				

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Analytical Report Number: 18-21826

Project / Site name: Station Hill, Reading

Lab Sample Number				1111391				
Sample Reference				WS311				
Sample Number				None Supplied				
Depth (m)				1.80				
Date Sampled				28/11/2018				
Time Taken				None Supplied				
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Monoaromatics								
Benzene	ug/kg	1	MCERTS	< 1.0				
Toluene	µg/kg	1	MCERTS	< 1.0				
Ethylbenzene	µg/kg	1	MCERTS	< 1.0				
p & m-xylene	µg/kg	1	MCERTS	< 1.0				
o-xylene	µg/kg	1	MCERTS	< 1.0				
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	< 1.0				

Petroleum Hydrocarbons

TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.001	MCERTS	< 0.001				
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.001	MCERTS	< 0.001				
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001				
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0				
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0				
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	< 8.0				
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	< 8.0				
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	< 10				

TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.001	MCERTS	< 0.001				
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.001	MCERTS	< 0.001				
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001				
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0				
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0				
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	< 10				
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	< 10				
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	< 10				

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Analytical Report Number: 18-21826

Project / Site name: Station Hill, Reading

Lab Sample Number				1111391				
Sample Reference				WS311				
Sample Number				None Supplied				
Depth (m)				1.80				
Date Sampled				28/11/2018				
Time Taken				None Supplied				
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
VOCs								
Chloromethane	µg/kg	1	ISO 17025	< 1.0				
Chloroethane	µg/kg	1	NONE	< 1.0				
Bromomethane	µg/kg	1	ISO 17025	< 1.0				
Vinyl Chloride	µg/kg	1	NONE	< 1.0				
Trichlorofluoromethane	µg/kg	1	NONE	< 1.0				
1,1-Dichloroethene	µg/kg	1	NONE	< 1.0				
1,1,2-Trichloro 1,2,2-Trifluoroethane	µg/kg	1	ISO 17025	< 1.0				
Cis-1,2-dichloroethene	µg/kg	1	MCERTS	< 1.0				
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	< 1.0				
1,1-Dichloroethane	µg/kg	1	MCERTS	< 1.0				
2,2-Dichloropropane	µg/kg	1	MCERTS	< 1.0				
Trichloromethane	µg/kg	1	MCERTS	< 1.0				
1,1,1-Trichloroethane	µg/kg	1	MCERTS	< 1.0				
1,2-Dichloroethane	µg/kg	1	MCERTS	< 1.0				
1,1-Dichloropropene	µg/kg	1	MCERTS	< 1.0				
Trans-1,2-dichloroethene	µg/kg	1	NONE	< 1.0				
Benzene	µg/kg	1	MCERTS	< 1.0				
Tetrachloromethane	µg/kg	1	MCERTS	< 1.0				
1,2-Dichloropropane	µg/kg	1	MCERTS	< 1.0				
Trichloroethene	µg/kg	1	MCERTS	< 1.0				
Dibromomethane	µg/kg	1	MCERTS	< 1.0				
Bromodichloromethane	µg/kg	1	MCERTS	< 1.0				
Cis-1,3-dichloropropene	µg/kg	1	ISO 17025	< 1.0				
Trans-1,3-dichloropropene	µg/kg	1	ISO 17025	< 1.0				
Toluene	µg/kg	1	MCERTS	< 1.0				
1,1,2-Trichloroethane	µg/kg	1	MCERTS	< 1.0				
1,3-Dichloropropane	µg/kg	1	ISO 17025	< 1.0				
Dibromochloromethane	µg/kg	1	ISO 17025	< 1.0				
Tetrachloroethene	µg/kg	1	NONE	< 1.0				
1,2-Dibromoethane	µg/kg	1	ISO 17025	< 1.0				
Chlorobenzene	µg/kg	1	MCERTS	< 1.0				
1,1,1,2-Tetrachloroethane	µg/kg	1	MCERTS	< 1.0				
Ethylbenzene	µg/kg	1	MCERTS	< 1.0				
p & m-Xylene	µg/kg	1	MCERTS	< 1.0				
Styrene	µg/kg	1	MCERTS	< 1.0				
Tribromomethane	µg/kg	1	NONE	< 1.0				
o-Xylene	µg/kg	1	MCERTS	< 1.0				
1,1,2,2-Tetrachloroethane	µg/kg	1	MCERTS	< 1.0				
Isopropylbenzene	µg/kg	1	MCERTS	< 1.0				
Bromobenzene	µg/kg	1	MCERTS	< 1.0				
n-Propylbenzene	µg/kg	1	ISO 17025	< 1.0				
2-Chlorotoluene	µg/kg	1	MCERTS	< 1.0				
4-Chlorotoluene	µg/kg	1	MCERTS	< 1.0				
1,3,5-Trimethylbenzene	µg/kg	1	ISO 17025	< 1.0				
tert-Butylbenzene	µg/kg	1	MCERTS	< 1.0				
1,2,4-Trimethylbenzene	µg/kg	1	ISO 17025	< 1.0				
sec-Butylbenzene	µg/kg	1	MCERTS	< 1.0				
1,3-Dichlorobenzene	µg/kg	1	ISO 17025	< 1.0				
p-Isopropyltoluene	µg/kg	1	ISO 17025	< 1.0				
1,2-Dichlorobenzene	µg/kg	1	MCERTS	< 1.0				
1,4-Dichlorobenzene	µg/kg	1	MCERTS	< 1.0				
Butylbenzene	µg/kg	1	MCERTS	< 1.0				
1,2-Dibromo-3-chloropropane	µg/kg	1	ISO 17025	< 1.0				
1,2,4-Trichlorobenzene	µg/kg	1	MCERTS	< 1.0				
Hexachlorobutadiene	µg/kg	1	MCERTS	< 1.0				
1,2,3-Trichlorobenzene	µg/kg	1	ISO 17025	< 1.0				

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Analytical Report Number: 18-21826

Project / Site name: Station Hill, Reading

Lab Sample Number				1111391				
Sample Reference				WS311				
Sample Number				None Supplied				
Depth (m)				1.80				
Date Sampled				28/11/2018				
Time Taken				None Supplied				
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
SVOCs								
Aniline	mg/kg	0.1	NONE	< 0.1				
Phenol	mg/kg	0.2	ISO 17025	< 0.2				
2-Chlorophenol	mg/kg	0.1	MCERTS	< 0.1				
Bis(2-chloroethyl)ether	mg/kg	0.2	MCERTS	< 0.2				
1,3-Dichlorobenzene	mg/kg	0.2	MCERTS	< 0.2				
1,2-Dichlorobenzene	mg/kg	0.1	MCERTS	< 0.1				
1,4-Dichlorobenzene	mg/kg	0.2	MCERTS	< 0.2				
Bis(2-chloroisopropyl)ether	mg/kg	0.1	MCERTS	< 0.1				
2-Methylphenol	mg/kg	0.3	MCERTS	< 0.3				
Hexachloroethane	mg/kg	0.05	MCERTS	< 0.05				
Nitrobenzene	mg/kg	0.3	MCERTS	< 0.3				
4-Methylphenol	mg/kg	0.2	NONE	< 0.2				
Isophorone	mg/kg	0.2	MCERTS	< 0.2				
2-Nitrophenol	mg/kg	0.3	MCERTS	< 0.3				
2,4-Dimethylphenol	mg/kg	0.3	MCERTS	< 0.3				
Bis(2-chloroethoxy)methane	mg/kg	0.3	MCERTS	< 0.3				
1,2,4-Trichlorobenzene	mg/kg	0.3	MCERTS	< 0.3				
Naphthalene	mg/kg	0.05	MCERTS	< 0.05				
2,4-Dichlorophenol	mg/kg	0.3	MCERTS	< 0.3				
4-Chloroaniline	mg/kg	0.1	NONE	< 0.1				
Hexachlorobutadiene	mg/kg	0.1	MCERTS	< 0.1				
4-Chloro-3-methylphenol	mg/kg	0.1	NONE	< 0.1				
2,4,6-Trichlorophenol	mg/kg	0.1	MCERTS	< 0.1				
2,4,5-Trichlorophenol	mg/kg	0.2	MCERTS	< 0.2				
2-Methylnaphthalene	mg/kg	0.1	NONE	< 0.1				
2-Chloronaphthalene	mg/kg	0.1	MCERTS	< 0.1				
Dimethylphthalate	mg/kg	0.1	MCERTS	< 0.1				
2,6-Dinitrotoluene	mg/kg	0.1	MCERTS	< 0.1				
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05				
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05				
2,4-Dinitrotoluene	mg/kg	0.2	MCERTS	< 0.2				
Dibenzofuran	mg/kg	0.2	MCERTS	< 0.2				
4-Chlorophenyl phenyl ether	mg/kg	0.3	ISO 17025	< 0.3				
Diethyl phthalate	mg/kg	0.2	MCERTS	< 0.2				
4-Nitroaniline	mg/kg	0.2	MCERTS	< 0.2				
Fluorene	mg/kg	0.05	MCERTS	< 0.05				
Azobenzene	mg/kg	0.3	MCERTS	< 0.3				
Bromophenyl phenyl ether	mg/kg	0.2	MCERTS	< 0.2				
Hexachlorobenzene	mg/kg	0.3	MCERTS	< 0.3				
Phenanthrene	mg/kg	0.05	MCERTS	< 0.05				
Anthracene	mg/kg	0.05	MCERTS	< 0.05				
Carbazole	mg/kg	0.3	MCERTS	< 0.3				
Dibutyl phthalate	mg/kg	0.2	MCERTS	< 0.2				
Anthraquinone	mg/kg	0.3	MCERTS	< 0.3				
Fluoranthene	mg/kg	0.05	MCERTS	< 0.05				
Pyrene	mg/kg	0.05	MCERTS	< 0.05				
Butyl benzyl phthalate	mg/kg	0.3	ISO 17025	< 0.3				
Benzo(a)anthracene	mg/kg	0.05	MCERTS	< 0.05				
Chrysene	mg/kg	0.05	MCERTS	< 0.05				
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	< 0.05				
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	< 0.05				
Benzo(a)pyrene	mg/kg	0.05	MCERTS	< 0.05				
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	< 0.05				
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05				
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05				

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Analytical Report Number: 18-21826

Project / Site name: Station Hill, Reading

Lab Sample Number				1111391				
Sample Reference				WS311				
Sample Number				None Supplied				
Depth (m)				1.80				
Date Sampled				28/11/2018				
Time Taken				None Supplied				
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
PCBs by GC-MS								
PCB Congener 28	mg/kg	0.001	MCERTS	< 0.001				
PCB Congener 52	mg/kg	0.001	MCERTS	< 0.001				
PCB Congener 101	mg/kg	0.001	MCERTS	< 0.001				
PCB Congener 118	mg/kg	0.001	MCERTS	< 0.001				
PCB Congener 138	mg/kg	0.001	MCERTS	< 0.001				
PCB Congener 153	mg/kg	0.001	MCERTS	< 0.001				
PCB Congener 180	mg/kg	0.001	MCERTS	< 0.001				
Total PCBs by GC-MS								
Total PCBs	mg/kg	0.007	MCERTS	< 0.007				

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Analytical Report Number : 18-21826

Project / Site name: Station Hill, Reading

* These descriptions are only intended to act as a cross check if sample identities are questioned. The major constituent of the sample is intended to act with respect to MCERTS validation. The laboratory is accredited for sand, clay and loam (MCERTS) soil types. Data for unaccredited types of solid should be interpreted with care.

Stone content of a sample is calculated as the % weight of the stones not passing a 10 mm sieve. Results are not corrected for stone content.

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
1111386	WS312	None Supplied	0.30	Brown sand with stones and gravel
1111387	WS309	None Supplied	0.50	Brown sand with stones and gravel
1111388	WS310	None Supplied	0.50	Brown sand with stones and gravel
1111389	WS310	None Supplied	1.80	Beige clay with chalk.
1111390	WS311	None Supplied	0.50	Light brown clay with gravel and chalk.
1111391	WS311	None Supplied	1.80	White clay with chalk.

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Analytical Report Number : 18-21826

Project / Site name: Station Hill, Reading

Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Water (PrW)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Asbestos identification in soil	Asbestos Identification with the use of polarised light microscopy in conjunction with disperion staining techniques.	In house method based on HSG 248	A001-PL	D	ISO 17025
Boron, water soluble, in soil	Determination of water soluble boron in soil by hot water extract followed by ICP-OES.	In-house method based on Second Site Properties version 3	L038-PL	D	MCERTS
BTEX and MTBE in soil (Monoaromatics)	Determination of BTEX in soil by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	MCERTS
Hexavalent chromium in soil	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method	L080-PL	W	MCERTS
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L038-PL	D	MCERTS
Moisture Content	Moisture content, determined gravimetrically.	In-house method based on BS1377 Part 2, 1990, Chemical and Electrochemical Tests	L019-UK/PL	W	NONE
PCB's By GC-MS in soil	Determination of PCB by extraction with acetone and hexane followed by GC-MS.	In-house method based on USEPA 8082	L027-PL	D	MCERTS
Semi-volatile organic compounds in soil	Determination of semi-volatile organic compounds in soil by extraction in dichloromethane and hexane followed by GC-MS.	In-house method based on USEPA 8270	L064-PL	D	MCERTS
Speciated EPA-16 PAHs in soil	Determination of PAH compounds in soil by extraction in dichloromethane and hexane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270	L064-PL	D	MCERTS
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
Total cyanide in soil	Determination of total cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
TPHCWG (Soil)	Determination of hexane extractable hydrocarbons in soil by GC-MS/GC-FID.	In-house method with silica gel split/clean up.	L088/76-PL	W	MCERTS
Volatile organic compounds in soil	Determination of volatile organic compounds in soil by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	MCERTS

For method numbers ending in 'UK' analysis have been carried out in our laboratory in the United Kingdom.
For method numbers ending in 'PL' analysis have been carried out in our laboratory in Poland.
Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.

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Sample ID	Other_ID	Sample Type	Job	Sample Number	Sample Deviation Code	test_name	test_ref	Test Deviation code
WS310		S	18-21826	1111388	c	Total cyanide in soil	L080-PL	c
WS311		S	18-21826	1111391	c	Total cyanide in soil	L080-PL	c
WS312		S	18-21826	1111386	c	Total cyanide in soil	L080-PL	c

Key: a - No sampling date b - Incorrect container
c - Holding time d - Headspace e - Temperature

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Analytical Report Number : 18-21829

Project / Site name:	Station Hill, Reading	**Samples received on:**	30/11/2018
Your job number:	34769	**Samples instructed on:**	11/12/2018
Your order number:		**Analysis completed by:**	17/12/2018
Report Issue Number:	1	**Report issued on:**	17/12/2018
Samples Analysed:	6 soil samples		

Signed

Jordan Hill
Reporting Manager
For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41 -711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

soils	- 4 weeks from reporting
leachates	- 2 weeks from reporting
waters	- 2 weeks from reporting
asbestos	- 6 months from reporting

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Analytical Report Number: 18-21829

Project / Site name: Station Hill, Reading

Lab Sample Number				1111395	1111396	1111397	1111398	1111399
Sample Reference				WS305A	WS313	WS313	WS303	WS303
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.50	0.40-0.60	0.80	0.60	0.80-1.00
Date Sampled				29/11/2018	29/11/2018	29/11/2018	23/11/2018	23/11/2018
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Stone Content	%	0.1	NONE	18	30	17	12	21
Moisture Content	%	N/A	NONE	3.2	8.5	7.1	6.1	7.7
Total mass of sample received	kg	0.001	NONE	2.0	2.0	2.0	2.0	2.0
Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Not-detected	-	Not-detected	-
General Inorganics								
Total Cyanide	mg/kg	1	MCERTS	< 1	-	-	-	-
Speciated PAHs								
Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Fluorene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Fluoranthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(a)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Chrysene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(a)pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Total PAH								
Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	< 0.80	< 0.80	< 0.80	< 0.80	< 0.80
Heavy Metals / Metalloids								
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	5.4	14	16	19	11
Boron (water soluble)	mg/kg	0.2	MCERTS	0.5	0.8	1.4	0.8	0.8
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	0.7	< 0.2	< 0.2	< 0.2	< 0.2
Chromium (hexavalent)	mg/kg	4	MCERTS	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	6.7	12	20	22	18
Copper (aqua regia extractable)	mg/kg	1	MCERTS	10	17	20	19	13
Lead (aqua regia extractable)	mg/kg	1	MCERTS	22	17	34	20	9.9
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	8.3	14	24	23	20
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	110	29	51	55	51

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Analytical Report Number: 18-21829

Project / Site name: Station Hill, Reading

Lab Sample Number				1111395	1111396	1111397	1111398	1111399
Sample Reference				WS305A	WS313	WS313	WS303	WS303
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.50	0.40-0.60	0.80	0.60	0.80-1.00
Date Sampled				29/11/2018	29/11/2018	29/11/2018	23/11/2018	23/11/2018
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Monoaromatics								
Benzene	ug/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
p & m-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Petroleum Hydrocarbons								
TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0	< 8.0	< 8.0
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	< 8.0	19	< 8.0	< 8.0	< 8.0
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	< 10	26	< 10	< 10	< 10
TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10	< 10

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Analytical Report Number: 18-21829

Project / Site name: Station Hill, Reading

Lab Sample Number				1111395	1111396	1111397	1111398	1111399
Sample Reference				WS305A	WS313	WS313	WS303	WS303
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.50	0.40-0.60	0.80	0.60	0.80-1.00
Date Sampled				29/11/2018	29/11/2018	29/11/2018	23/11/2018	23/11/2018
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
VOCs								
Chloromethane	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chloroethane	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromomethane	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Vinyl Chloride	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trichlorofluoromethane	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethene	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2-Trichloro 1,2,2-Trifluoroethane	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Cis-1,2-dichloroethene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
2,2-Dichloropropane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trichloromethane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,1-Trichloroethane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloroethane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloropropene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trans-1,2-dichloroethene	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Benzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloromethane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloropropane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trichloroethene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dibromomethane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromodichloromethane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Cis-1,3-dichloropropene	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trans-1,3-dichloropropene	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2-Trichloroethane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3-Dichloropropane	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dibromochloromethane	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloroethene	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dibromoethane	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chlorobenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,1,2-Tetrachloroethane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
p & m-Xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Styrene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tribromomethane	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-Xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2,2-Tetrachloroethane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Isopropylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromobenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
n-Propylbenzene	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
2-Chlorotoluene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
4-Chlorotoluene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3,5-Trimethylbenzene	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
tert-Butylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,4-Trimethylbenzene	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
sec-Butylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3-Dichlorobenzene	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
p-Isopropyltoluene	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichlorobenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,4-Dichlorobenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Butylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dibromo-3-chloropropane	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,4-Trichlorobenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Hexachlorobutadiene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,3-Trichlorobenzene	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0

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Analytical Report Number: 18-21829

Project / Site name: Station Hill, Reading

Lab Sample Number				1111395	1111396	1111397	1111398	1111399
Sample Reference				WS305A	WS313	WS313	WS303	WS303
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.50	0.40-0.60	0.80	0.60	0.80-1.00
Date Sampled				29/11/2018	29/11/2018	29/11/2018	23/11/2018	23/11/2018
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
SVOCs								
Aniline	mg/kg	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Phenol	mg/kg	0.2	ISO 17025	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
2-Chlorophenol	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Bis(2-chloroethyl)ether	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
1,3-Dichlorobenzene	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
1,2-Dichlorobenzene	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
1,4-Dichlorobenzene	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Bis(2-chloroisopropyl)ether	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
2-Methylphenol	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Hexachloroethane	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Nitrobenzene	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
4-Methylphenol	mg/kg	0.2	NONE	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Isophorone	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
2-Nitrophenol	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
2,4-Dimethylphenol	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Bis(2-chloroethoxy)methane	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
1,2,4-Trichlorobenzene	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
2,4-Dichlorophenol	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
4-Chloroaniline	mg/kg	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Hexachlorobutadiene	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
4-Chloro-3-methylphenol	mg/kg	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
2,4,6-Trichlorophenol	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
2,4,5-Trichlorophenol	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
2-Methylnaphthalene	mg/kg	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
2-Chloronaphthalene	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Dimethylphthalate	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
2,6-Dinitrotoluene	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
2,4-Dinitrotoluene	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Dibenzofuran	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
4-Chlorophenyl phenyl ether	mg/kg	0.3	ISO 17025	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Diethyl phthalate	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
4-Nitroaniline	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Fluorene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Azobenzene	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Bromophenyl phenyl ether	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Hexachlorobenzene	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Phenanthrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Carbazole	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Dibutyl phthalate	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Anthraquinone	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Fluoranthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Butyl benzyl phthalate	mg/kg	0.3	ISO 17025	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Benzo(a)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Chrysene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(a)pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05

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Analytical Report Number: 18-21829

Project / Site name: Station Hill, Reading

Lab Sample Number				1111395	1111396	1111397	1111398	1111399
Sample Reference				WS305A	WS313	WS313	WS303	WS303
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.50	0.40-0.60	0.80	0.60	0.80-1.00
Date Sampled				29/11/2018	29/11/2018	29/11/2018	23/11/2018	23/11/2018
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
PCBs by GC-MS								
PCB Congener 28	mg/kg	0.001	MCERTS	< 0.001	-	-	-	-
PCB Congener 52	mg/kg	0.001	MCERTS	< 0.001	-	-	-	-
PCB Congener 101	mg/kg	0.001	MCERTS	< 0.001	-	-	-	-
PCB Congener 118	mg/kg	0.001	MCERTS	< 0.001	-	-	-	-
PCB Congener 138	mg/kg	0.001	MCERTS	< 0.001	-	-	-	-
PCB Congener 153	mg/kg	0.001	MCERTS	< 0.001	-	-	-	-
PCB Congener 180	mg/kg	0.001	MCERTS	< 0.001	-	-	-	-
Total PCBs by GC-MS								
Total PCBs	mg/kg	0.007	MCERTS	< 0.007	-	-	-	-

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Analytical Report Number: 18-21829

Project / Site name: Station Hill, Reading

Lab Sample Number				1111400				
Sample Reference				WS303				
Sample Number				None Supplied				
Depth (m)				2.00				
Date Sampled				23/11/2018				
Time Taken				None Supplied				
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Stone Content	%	0.1	NONE	< 0.1				
Moisture Content	%	N/A	NONE	6.3				
Total mass of sample received	kg	0.001	NONE	2.0				
Asbestos in Soil	Type	N/A	ISO 17025	-				
General Inorganics								
Total Cyanide	mg/kg	1	MCERTS	-				
Speciated PAHs								
Naphthalene	mg/kg	0.05	MCERTS	< 0.05				
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05				
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05				
Fluorene	mg/kg	0.05	MCERTS	< 0.05				
Phenanthrene	mg/kg	0.05	MCERTS	< 0.05				
Anthracene	mg/kg	0.05	MCERTS	< 0.05				
Fluoranthene	mg/kg	0.05	MCERTS	< 0.05				
Pyrene	mg/kg	0.05	MCERTS	< 0.05				
Benzo(a)anthracene	mg/kg	0.05	MCERTS	< 0.05				
Chrysene	mg/kg	0.05	MCERTS	< 0.05				
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	< 0.05				
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	< 0.05				
Benzo(a)pyrene	mg/kg	0.05	MCERTS	< 0.05				
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	< 0.05				
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05				
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05				
Total PAH								
Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	< 0.80				
Heavy Metals / Metalloids								
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	18				
Boron (water soluble)	mg/kg	0.2	MCERTS	0.3				
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2				
Chromium (hexavalent)	mg/kg	4	MCERTS	< 4.0				
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	21				
Copper (aqua regia extractable)	mg/kg	1	MCERTS	13				
Lead (aqua regia extractable)	mg/kg	1	MCERTS	6.1				
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3				
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	30				
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0				
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	46				

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Analytical Report Number: 18-21829

Project / Site name: Station Hill, Reading

Lab Sample Number				1111400				
Sample Reference				WS303				
Sample Number				None Supplied				
Depth (m)				2.00				
Date Sampled				23/11/2018				
Time Taken				None Supplied				
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Monoaromatics								
Benzene	ug/kg	1	MCERTS	< 1.0				
Toluene	µg/kg	1	MCERTS	< 1.0				
Ethylbenzene	µg/kg	1	MCERTS	< 1.0				
p & m-xylene	µg/kg	1	MCERTS	< 1.0				
o-xylene	µg/kg	1	MCERTS	< 1.0				
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	< 1.0				

Petroleum Hydrocarbons

TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.001	MCERTS	< 0.001				
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.001	MCERTS	< 0.001				
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001				
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0				
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0				
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	< 8.0				
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	< 8.0				
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	< 10				

TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.001	MCERTS	< 0.001				
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.001	MCERTS	< 0.001				
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001				
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0				
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0				
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	< 10				
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	< 10				
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	< 10				

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Analytical Report Number: 18-21829

Project / Site name: Station Hill, Reading

Lab Sample Number				1111400				
Sample Reference				WS303				
Sample Number				None Supplied				
Depth (m)				2.00				
Date Sampled				23/11/2018				
Time Taken				None Supplied				
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
VOCs								
Chloromethane	µg/kg	1	ISO 17025	< 1.0				
Chloroethane	µg/kg	1	NONE	< 1.0				
Bromomethane	µg/kg	1	ISO 17025	< 1.0				
Vinyl Chloride	µg/kg	1	NONE	< 1.0				
Trichlorofluoromethane	µg/kg	1	NONE	< 1.0				
1,1-Dichloroethene	µg/kg	1	NONE	< 1.0				
1,1,2-Trichloro 1,2,2-Trifluoroethane	µg/kg	1	ISO 17025	< 1.0				
Cis-1,2-dichloroethene	µg/kg	1	MCERTS	< 1.0				
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	< 1.0				
1,1-Dichloroethane	µg/kg	1	MCERTS	< 1.0				
2,2-Dichloropropane	µg/kg	1	MCERTS	< 1.0				
Trichloromethane	µg/kg	1	MCERTS	< 1.0				
1,1,1-Trichloroethane	µg/kg	1	MCERTS	< 1.0				
1,2-Dichloroethane	µg/kg	1	MCERTS	< 1.0				
1,1-Dichloropropene	µg/kg	1	MCERTS	< 1.0				
Trans-1,2-dichloroethene	µg/kg	1	NONE	< 1.0				
Benzene	µg/kg	1	MCERTS	< 1.0				
Tetrachloromethane	µg/kg	1	MCERTS	< 1.0				
1,2-Dichloropropane	µg/kg	1	MCERTS	< 1.0				
Trichloroethene	µg/kg	1	MCERTS	< 1.0				
Dibromomethane	µg/kg	1	MCERTS	< 1.0				
Bromodichloromethane	µg/kg	1	MCERTS	< 1.0				
Cis-1,3-dichloropropene	µg/kg	1	ISO 17025	< 1.0				
Trans-1,3-dichloropropene	µg/kg	1	ISO 17025	< 1.0				
Toluene	µg/kg	1	MCERTS	< 1.0				
1,1,2-Trichloroethane	µg/kg	1	MCERTS	< 1.0				
1,3-Dichloropropane	µg/kg	1	ISO 17025	< 1.0				
Dibromochloromethane	µg/kg	1	ISO 17025	< 1.0				
Tetrachloroethene	µg/kg	1	NONE	< 1.0				
1,2-Dibromoethane	µg/kg	1	ISO 17025	< 1.0				
Chlorobenzene	µg/kg	1	MCERTS	< 1.0				
1,1,1,2-Tetrachloroethane	µg/kg	1	MCERTS	< 1.0				
Ethylbenzene	µg/kg	1	MCERTS	< 1.0				
p & m-Xylene	µg/kg	1	MCERTS	< 1.0				
Styrene	µg/kg	1	MCERTS	< 1.0				
Tribromomethane	µg/kg	1	NONE	< 1.0				
o-Xylene	µg/kg	1	MCERTS	< 1.0				
1,1,2,2-Tetrachloroethane	µg/kg	1	MCERTS	< 1.0				
Isopropylbenzene	µg/kg	1	MCERTS	< 1.0				
Bromobenzene	µg/kg	1	MCERTS	< 1.0				
n-Propylbenzene	µg/kg	1	ISO 17025	< 1.0				
2-Chlorotoluene	µg/kg	1	MCERTS	< 1.0				
4-Chlorotoluene	µg/kg	1	MCERTS	< 1.0				
1,3,5-Trimethylbenzene	µg/kg	1	ISO 17025	< 1.0				
tert-Butylbenzene	µg/kg	1	MCERTS	< 1.0				
1,2,4-Trimethylbenzene	µg/kg	1	ISO 17025	< 1.0				
sec-Butylbenzene	µg/kg	1	MCERTS	< 1.0				
1,3-Dichlorobenzene	µg/kg	1	ISO 17025	< 1.0				
p-Isopropyltoluene	µg/kg	1	ISO 17025	< 1.0				
1,2-Dichlorobenzene	µg/kg	1	MCERTS	< 1.0				
1,4-Dichlorobenzene	µg/kg	1	MCERTS	< 1.0				
Butylbenzene	µg/kg	1	MCERTS	< 1.0				
1,2-Dibromo-3-chloropropane	µg/kg	1	ISO 17025	< 1.0				
1,2,4-Trichlorobenzene	µg/kg	1	MCERTS	< 1.0				
Hexachlorobutadiene	µg/kg	1	MCERTS	< 1.0				
1,2,3-Trichlorobenzene	µg/kg	1	ISO 17025	< 1.0				

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Analytical Report Number: 18-21829

Project / Site name: Station Hill, Reading

Lab Sample Number				1111400				
Sample Reference				WS303				
Sample Number				None Supplied				
Depth (m)				2.00				
Date Sampled				23/11/2018				
Time Taken				None Supplied				
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
SVOCs								
Aniline	mg/kg	0.1	NONE	< 0.1				
Phenol	mg/kg	0.2	ISO 17025	< 0.2				
2-Chlorophenol	mg/kg	0.1	MCERTS	< 0.1				
Bis(2-chloroethyl)ether	mg/kg	0.2	MCERTS	< 0.2				
1,3-Dichlorobenzene	mg/kg	0.2	MCERTS	< 0.2				
1,2-Dichlorobenzene	mg/kg	0.1	MCERTS	< 0.1				
1,4-Dichlorobenzene	mg/kg	0.2	MCERTS	< 0.2				
Bis(2-chloroisopropyl)ether	mg/kg	0.1	MCERTS	< 0.1				
2-Methylphenol	mg/kg	0.3	MCERTS	< 0.3				
Hexachloroethane	mg/kg	0.05	MCERTS	< 0.05				
Nitrobenzene	mg/kg	0.3	MCERTS	< 0.3				
4-Methylphenol	mg/kg	0.2	NONE	< 0.2				
Isophorone	mg/kg	0.2	MCERTS	< 0.2				
2-Nitrophenol	mg/kg	0.3	MCERTS	< 0.3				
2,4-Dimethylphenol	mg/kg	0.3	MCERTS	< 0.3				
Bis(2-chloroethoxy)methane	mg/kg	0.3	MCERTS	< 0.3				
1,2,4-Trichlorobenzene	mg/kg	0.3	MCERTS	< 0.3				
Naphthalene	mg/kg	0.05	MCERTS	< 0.05				
2,4-Dichlorophenol	mg/kg	0.3	MCERTS	< 0.3				
4-Chloroaniline	mg/kg	0.1	NONE	< 0.1				
Hexachlorobutadiene	mg/kg	0.1	MCERTS	< 0.1				
4-Chloro-3-methylphenol	mg/kg	0.1	NONE	< 0.1				
2,4,6-Trichlorophenol	mg/kg	0.1	MCERTS	< 0.1				
2,4,5-Trichlorophenol	mg/kg	0.2	MCERTS	< 0.2				
2-Methylnaphthalene	mg/kg	0.1	NONE	< 0.1				
2-Chloronaphthalene	mg/kg	0.1	MCERTS	< 0.1				
Dimethylphthalate	mg/kg	0.1	MCERTS	< 0.1				
2,6-Dinitrotoluene	mg/kg	0.1	MCERTS	< 0.1				
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05				
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05				
2,4-Dinitrotoluene	mg/kg	0.2	MCERTS	< 0.2				
Dibenzofuran	mg/kg	0.2	MCERTS	< 0.2				
4-Chlorophenyl phenyl ether	mg/kg	0.3	ISO 17025	< 0.3				
Diethyl phthalate	mg/kg	0.2	MCERTS	< 0.2				
4-Nitroaniline	mg/kg	0.2	MCERTS	< 0.2				
Fluorene	mg/kg	0.05	MCERTS	< 0.05				
Azobenzene	mg/kg	0.3	MCERTS	< 0.3				
Bromophenyl phenyl ether	mg/kg	0.2	MCERTS	< 0.2				
Hexachlorobenzene	mg/kg	0.3	MCERTS	< 0.3				
Phenanthrene	mg/kg	0.05	MCERTS	< 0.05				
Anthracene	mg/kg	0.05	MCERTS	< 0.05				
Carbazole	mg/kg	0.3	MCERTS	< 0.3				
Dibutyl phthalate	mg/kg	0.2	MCERTS	< 0.2				
Anthraquinone	mg/kg	0.3	MCERTS	< 0.3				
Fluoranthene	mg/kg	0.05	MCERTS	< 0.05				
Pyrene	mg/kg	0.05	MCERTS	< 0.05				
Butyl benzyl phthalate	mg/kg	0.3	ISO 17025	< 0.3				
Benzo(a)anthracene	mg/kg	0.05	MCERTS	< 0.05				
Chrysene	mg/kg	0.05	MCERTS	< 0.05				
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	< 0.05				
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	< 0.05				
Benzo(a)pyrene	mg/kg	0.05	MCERTS	< 0.05				
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	< 0.05				
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05				
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05				

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Analytical Report Number: 18-21829

Project / Site name: Station Hill, Reading

Lab Sample Number				1111400				
Sample Reference				WS303				
Sample Number				None Supplied				
Depth (m)				2.00				
Date Sampled				23/11/2018				
Time Taken				None Supplied				
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
PCBs by GC-MS								
PCB Congener 28	mg/kg	0.001	MCERTS	-				
PCB Congener 52	mg/kg	0.001	MCERTS	-				
PCB Congener 101	mg/kg	0.001	MCERTS	-				
PCB Congener 118	mg/kg	0.001	MCERTS	-				
PCB Congener 138	mg/kg	0.001	MCERTS	-				
PCB Congener 153	mg/kg	0.001	MCERTS	-				
PCB Congener 180	mg/kg	0.001	MCERTS	-				

Total PCBs by GC-MS

Total PCBs	mg/kg	0.007	MCERTS	-				

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Analytical Report Number : 18-21829

Project / Site name: Station Hill, Reading

* These descriptions are only intended to act as a cross check if sample identities are questioned. The major constituent of the sample is intended to act with respect to MCERTS validation. The laboratory is accredited for sand, clay and loam (MCERTS) soil types. Data for unaccredited types of solid should be interpreted with care.

Stone content of a sample is calculated as the % weight of the stones not passing a 10 mm sieve. Results are not corrected for stone content.

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
1111395	WS305A	None Supplied	0.50	Brown gravelly sand with stones.
1111396	WS313	None Supplied	0.40-0.60	Light brown clay and sand with stones and chalk.
1111397	WS313	None Supplied	0.80	Light brown clay and sand with stones and brick.
1111398	WS303	None Supplied	0.60	Light brown clay and sand with gravel and stones.
1111399	WS303	None Supplied	0.80-1.00	Light brown clay and sand with gravel and stones.
1111400	WS303	None Supplied	2.00	Light brown gravelly clay.

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Analytical Report Number : 18-21829

Project / Site name: Station Hill, Reading

Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Water (PrW)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Asbestos identification in soil	Asbestos Identification with the use of polarised light microscopy in conjunction with disperion staining techniques.	In house method based on HSG 248	A001-PL	D	ISO 17025
Boron, water soluble, in soil	Determination of water soluble boron in soil by hot water extract followed by ICP-OES.	In-house method based on Second Site Properties version 3	L038-PL	D	MCERTS
BTEX and MTBE in soil (Monoaromatics)	Determination of BTEX in soil by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	MCERTS
Hexavalent chromium in soil	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method	L080-PL	W	MCERTS
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L038-PL	D	MCERTS
Moisture Content	Moisture content, determined gravimetrically.	In-house method based on BS1377 Part 2, 1990, Chemical and Electrochemical Tests	L019-UK/PL	W	NONE
PCB's By GC-MS in soil	Determination of PCB by extraction with acetone and hexane followed by GC-MS.	In-house method based on USEPA 8082	L027-PL	D	MCERTS
Semi-volatile organic compounds in soil	Determination of semi-volatile organic compounds in soil by extraction in dichloromethane and hexane followed by GC-MS.	In-house method based on USEPA 8270	L064-PL	D	MCERTS
Speciated EPA-16 PAHs in soil	Determination of PAH compounds in soil by extraction in dichloromethane and hexane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270	L064-PL	D	MCERTS
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
Total cyanide in soil	Determination of total cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
TPHCWG (Soil)	Determination of hexane extractable hydrocarbons in soil by GC-MS/GC-FID.	In-house method with silica gel split/clean up.	L088/76-PL	W	MCERTS
Volatile organic compounds in soil	Determination of volatile organic compounds in soil by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	MCERTS

For method numbers ending in 'UK' analysis have been carried out in our laboratory in the United Kingdom.
For method numbers ending in 'PL' analysis have been carried out in our laboratory in Poland.
Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.

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Sample ID	Other_ID	Sample Type	Job	Sample Number	Sample Deviation Code	test_name	test_ref	Test Deviation code
WS303		S	18-21829	1111398	c	BTEX and MTBE in soil (Monoaromatics)	L073B-PL	c
WS303		S	18-21829	1111398	c	Volatile organic compounds in soil	L073B-PL	c
WS303		S	18-21829	1111399	c	BTEX and MTBE in soil (Monoaromatics)	L073B-PL	c
WS303		S	18-21829	1111399	c	Volatile organic compounds in soil	L073B-PL	c
WS303		S	18-21829	1111400	c	BTEX and MTBE in soil (Monoaromatics)	L073B-PL	c
WS303		S	18-21829	1111400	c	Volatile organic compounds in soil	L073B-PL	c
WS305A		S	18-21829	1111395	c	Total cyanide in soil	L080-PL	c

Key: a - No sampling date b - Incorrect container
c - Holding time d - Headspace e - Temperature

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Analytical Report Number : 19-27256

Project / Site name:	Station Hill, Reading	**Samples received on:**	01/02/2019
Your job number:	34769	**Samples instructed on:**	01/02/2019
Your order number:	34769-DO	**Analysis completed by:**	08/02/2019
Report Issue Number:	1	**Report issued on:**	08/02/2019
Samples Analysed:	3 water samples		

Signed:

Jordan Hill
Reporting Manager
For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41 -711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

soils	- 4 weeks from reporting
leachates	- 2 weeks from reporting
waters	- 2 weeks from reporting
asbestos	- 6 months from reporting

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The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number: 19-27256

Project / Site name: Station Hill, Reading

Your Order No: 34769-DO

Lab Sample Number				1146126	1146127	1146128		
Sample Reference				BH301	BH303	BH304		
Sample Number				1D	1D	1D		
Depth (m)				3.20	4.25	5.35		
Date Sampled				31/01/2019	31/01/2019	31/01/2019		
Time Taken				None Supplied	None Supplied	None Supplied		
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
General Inorganics								
pH	pH Units	N/A	ISO 17025	8.1	7.4	7.7		
Sulphate as SO_4	µg/l	45	ISO 17025	84000	47300	62700		
Sulphate as SO_4	mg/l	0.045	ISO 17025	84.0	47.3	62.7		
Speciated PAHs								
Naphthalene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01		
Acenaphthylene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01		
Acenaphthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01		
Fluorene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01		
Phenanthrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01		
Anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01		
Fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01		
Pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01		
Benzo(a)anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01		
Chrysene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01		
Benzo(b)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01		
Benzo(k)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01		
Benzo(a)pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01		
Indeno(1,2,3-cd)pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01		
Dibenz(a,h)anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01		
Benzo(ghi)perylene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01		
Total PAH								
Total EPA-16 PAHs	µg/l	0.16	ISO 17025	< 0.16	< 0.16	< 0.16		
Heavy Metals / Metalloids								
Arsenic (dissolved)	µg/l	0.15	ISO 17025	4.11	1.84	4.62		
Boron (dissolved)	µg/l	10	ISO 17025	68	64	340		
Cadmium (dissolved)	µg/l	0.02	ISO 17025	< 0.02	< 0.02	< 0.02		
Chromium (dissolved)	µg/l	0.2	ISO 17025	0.4	0.4	0.2		
Copper (dissolved)	µg/l	0.5	ISO 17025	2.1	0.9	0.6		
Lead (dissolved)	µg/l	0.2	ISO 17025	0.3	0.3	< 0.2		
Mercury (dissolved)	µg/l	0.05	ISO 17025	0.97	0.43	1.59		
Nickel (dissolved)	µg/l	0.5	ISO 17025	4.7	3.4	4.3		
Selenium (dissolved)	µg/l	0.6	ISO 17025	5.3	5.7	5.2		
Zinc (dissolved)	µg/l	0.5	ISO 17025	1.1	1.5	2.2		

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Analytical Report Number: 19-27256

Project / Site name: Station Hill, Reading

Your Order No: 34769-DO

Lab Sample Number				1146126	1146127	1146128		
Sample Reference				BH301	BH303	BH304		
Sample Number				1D	1D	1D		
Depth (m)				3.20	4.25	5.35		
Date Sampled				31/01/2019	31/01/2019	31/01/2019		
Time Taken				None Supplied	None Supplied	None Supplied		
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Monoaromatics & Oxygenates								
Benzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		
Toluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		
Ethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		
p & m-xylene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		
o-xylene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		
MTBE (Methyl Tertiary Butyl Ether)	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		
Petroleum Hydrocarbons								
TPH-CWG - Aliphatic >C5 - C6	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		
TPH-CWG - Aliphatic >C6 - C8	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		
TPH-CWG - Aliphatic >C8 - C10	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		
TPH-CWG - Aliphatic >C10 - C12	µg/l	10	NONE	< 10	< 10	< 10		
TPH-CWG - Aliphatic >C12 - C16	µg/l	10	NONE	< 10	< 10	< 10		
TPH-CWG - Aliphatic >C16 - C21	µg/l	10	NONE	< 10	< 10	< 10		
TPH-CWG - Aliphatic >C21 - C35	µg/l	10	NONE	< 10	< 10	< 10		
TPH-CWG - Aliphatic (C5 - C35)	µg/l	10	NONE	< 10	< 10	< 10		
TPH-CWG - Aromatic >C5 - C7	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		
TPH-CWG - Aromatic >C7 - C8	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		
TPH-CWG - Aromatic >C8 - C10	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		
TPH-CWG - Aromatic >C10 - C12	µg/l	10	NONE	< 10	< 10	< 10		
TPH-CWG - Aromatic >C12 - C16	µg/l	10	NONE	< 10	< 10	< 10		
TPH-CWG - Aromatic >C16 - C21	µg/l	10	NONE	< 10	< 10	< 10		
TPH-CWG - Aromatic >C21 - C35	µg/l	10	NONE	< 10	< 10	< 10		
TPH-CWG - Aromatic (C5 - C35)	µg/l	10	NONE	< 10	< 10	< 10		

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Analytical Report Number: 19-27256

Project / Site name: Station Hill, Reading

Your Order No: 34769-DO

Lab Sample Number				1146126	1146127	1146128		
Sample Reference				BH301	BH303	BH304		
Sample Number				1D	1D	1D		
Depth (m)				3.20	4.25	5.35		
Date Sampled				31/01/2019	31/01/2019	31/01/2019		
Time Taken				None Supplied	None Supplied	None Supplied		
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
PCBs by GC-MS								
PCB Congener 28	µg/l	0.02	NONE	< 0.02	< 0.02	< 0.02		
PCB Congener 52	µg/l	0.02	NONE	< 0.02	< 0.02	< 0.02		
PCB Congener 101	µg/l	0.02	NONE	< 0.02	< 0.02	< 0.02		
PCB Congener 118	µg/l	0.02	NONE	< 0.02	< 0.02	< 0.02		
PCB Congener 138	µg/l	0.02	NONE	< 0.02	< 0.02	< 0.02		
PCB Congener 153	µg/l	0.02	NONE	< 0.02	< 0.02	< 0.02		
PCB Congener 180	µg/l	0.02	NONE	< 0.02	< 0.02	< 0.02		
PCBs by GC-MS								
Total PCBs	µg/l	0.14	NONE	< 0.14	< 0.14	< 0.14		

U/S = Unsuitable Sample I/S = Insufficient Sample

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Analytical Report Number : 19-27256

Project / Site name: Station Hill, Reading

Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Water (PrW)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Boron in water	Determination of boron in water by acidification followed by ICP-OES. Accredited matrices: SW PW GW	In-house method based on MEWAM	L039-PL	W	ISO 17025
BTEX and MTBE in water (Monoaromatics)	Determination of BTEX and MTBE in water by headspace GC-MS. Accredited matrices: SW PW GW	In-house method based on USEPA8260	L073B-PL	W	ISO 17025
Metals in water by ICP-MS (dissolved)	Determination of metals in water by acidification followed by ICP-MS. Accredited Matrices: SW, GW, PW except B=SW,GW, Hg=SW,PW, Al=SW,PW.	In-house method based on USEPA Method 6020 & 200.8 "for the determination of trace elements in water by ICP-MS.	L012-PL	W	ISO 17025
PCB's By GC-MS in water	Determination of PCB by extraction with acetone and hexane followed by GC-MS.	In-house method based on USEPA 8082	L028-PL	W	NONE
pH at 20oC in water (automated)	Determination of pH in water by electrometric measurement. Accredited matrices: SW PW GW	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L099-PL	W	ISO 17025
Speciated EPA-16 PAHs in water	Determination of PAH compounds in water by extraction in dichloromethane followed by GC-MS with the use of surrogate and internal standards. Accredited matrices: SW PW GW	In-house method based on USEPA 8270	L102B-PL	W	ISO 17025
Sulphate in water	Determination of sulphate in water by acidification followed by ICP-OES. Accredited matrices: SW PW GW, PrW.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L039-PL	W	ISO 17025
TPHCWG (Waters)	Determination of dichloromethane extractable hydrocarbons in water by GC-MS, speciation by interpretation.	In-house method	L070-PL	W	NONE

For method numbers ending in 'UK' analysis have been carried out in our laboratory in the United Kingdom.
For method numbers ending in 'PL' analysis have been carried out in our laboratory in Poland.
Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.

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Sample ID	Other_ID	Sample Type	Job	Sample Number	Sample Deviation Code	test_name	test_ref	Test Deviation code
BH301	1D	W	19-27256	1146126	c	pH at 20oC in water (automated)	L099-PL	c
BH303	1D	W	19-27256	1146127	c	pH at 20oC in water (automated)	L099-PL	c
BH304	1D	W	19-27256	1146128	c	pH at 20oC in water (automated)	L099-PL	c

Key: a - No sampling date b - Incorrect container
c - Holding time d - Headspace e - Temperature